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Corporate Offices
(800) 322-2086

Press 1 and the four digit extension of the person you want to reach
Press 2 if you know the last name and you will reach the spell by name directory
Press 0 or stay on the line to be connected to the operator

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Press 2 for technical, application, or warranty information
Press 4 to dial by name

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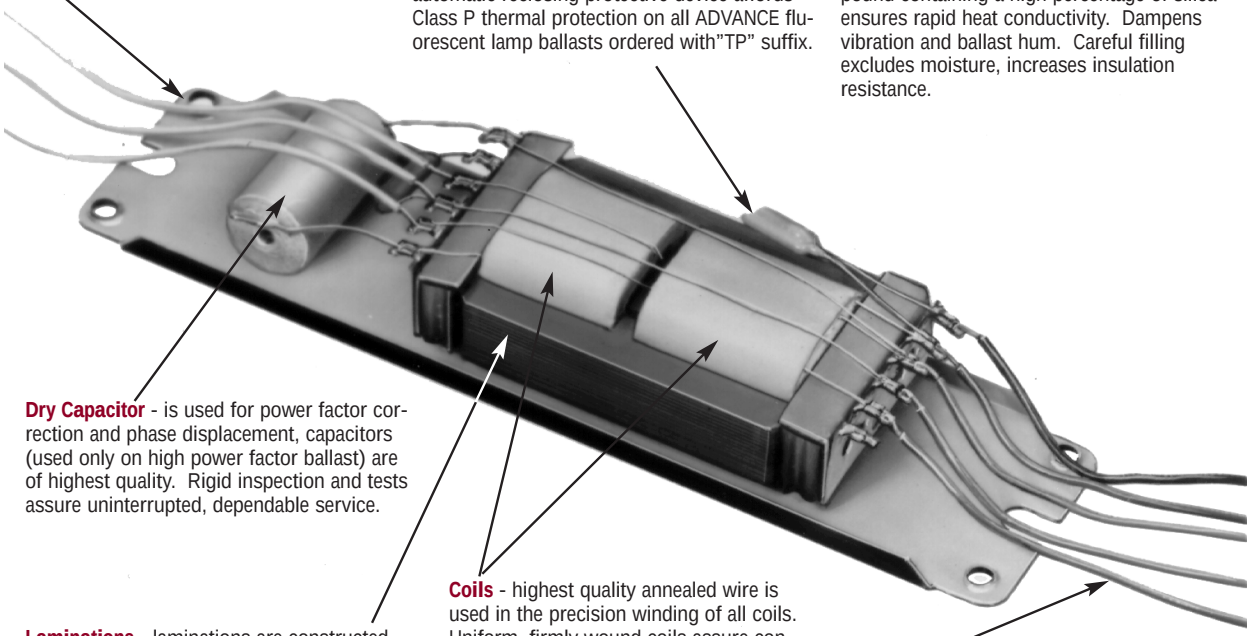


Case - rugged steel ballast case

Thermal Protector - exclusive ADVAN-guard® automatic reclosing protective device affords Class P thermal protection on all ADVANCE fluorescent lamp ballasts ordered with"TP" suffix.

Compound - special thermal-pliable compound containing a high percentage of silica ensures rapid heat conductivity. Dampens vibration and ballast hum. Careful filling excludes moisture, increases insulation resistance.

Dry Capacitor - is used for power factor correction and phase displacement, capacitors (used only on high power factor ballast) are of highest quality. Rigid inspection and tests assure uninterrupted, dependable service.

Laminations - laminations are constructed of high-grade steel, annealed and treated to assure lowest wattage losses. They are precision stamped with carbide steel dies for positive, tight stacking to provide consistent electrical characteristics.

Coils - highest quality annealed wire is used in the precision winding of all coils. Uniform, firmly wound coils assure consistent operating characteristics. Complete core & coil assembly is vacuum impregnated with an exclusive Advance asphalt-wax impregnant.

Lead Wire - PVC covered solid lead wire is firmly anchored to the coils to facilitate positive and permanent connections.

Supply Voltage and Frequency

Each ballast is designed to operate at the nominal voltage shown on the ADVANCE label. Abnormal deviation from these values will result in damage to either the ballast or lamp or both. It is therefore necessary that the voltage applied to ballasts be maintained within the respective limits shown in the adjoining table.

A ballast subjected to higher than nominal voltages will operate at increased temperatures. This will result in reduced ballast life. Low voltage can cause premature lamp failures as well as unreliable lamp starting.

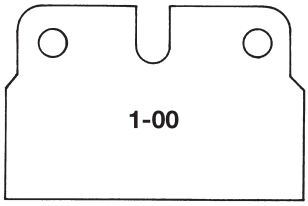
All ballasts are designed for single frequency operation. Therefore, best results will be obtained when that ballast is used on the frequency shown on the ballast label. Frequency limitations are as follows:

Nominal	Frequency Limits
60HZ	57.5 to 62.5
50HZ	47.5 to 52.5

Prefix Code Letters	Normal Voltage	Applied Voltage Limits	Color Label Identification
N	100	95-105	YELLOW
H	120	112-127	YELLOW
R	120	112-127	YELLOW
L	120	112-127	YELLOW
S	120	112-127	YELLOW
C	200	190-210	GREEN
W	208	199-216	BROWN
X	220	210-230	GREEN
M	220/250	210-230 / 235-260	—
Y	240	225-250	ORANGE
V	277	255-290	RED
G	347	322-365	GRAY
D	480	450-500	BLUE

Ballast Date Codes

Advance electromagnetic fluorescent lamp ballasts are date stamped on the ballast cover to designate month and year of manufacture. The month is indicated first, followed by the year. In the example shown (1-00), the manufacturing date is January, 2000. See inside front cover for warranty information.



Certifications

All Advance ballasts unless otherwise indicated bear the seal of Underwriters' Laboratories, Inc. in accordance with UL935 Standard for Fluorescent Ballasts. File No. E14927

Component recognition - yellow card listing in accordance with UL935 Standard for Fluorescent Ballasts. File No. E14927

U.L. RECOGNIZED

Advance ballasts which meet the Canadian Standards Association requirements for Fluorescent Ballasts per CAN/CSA-22.2 No. 74-92 bear the CSA seal. File No. LR7310

Indicates ballast complies with National Energy Conservation Amendments (NAECA) of 1988 to Energy Policy and Conservation Act (EPCA) of 1987.

Indicates ballast complies with Canadian Energy Standards.

Advance fluorescent ballasts are designed and manufactured in accordance with the American National Standards Institute standard for fluorescent ballasts, ANSI C82.1.

Class P Ballasts — Section 410-73(e) of the National Electrical Code (NEC) requires that all indoor fluorescent fixtures shall incorporate ballast protection. Those fixtures employing a simple reactive type ballast are exempted.

The protector is located within the ballast case to prevent physical damage and tampering.

Advance electromagnetic ballasts ordered with ADVAN-guard® Class P ballast protection (TP suffix) are equipped with a thermally actuated automatic reclosing protective device. This revolutionary development was originally designed and introduced by Advance, and today this Class P device is a requirement of the National Electrical Code in all indoor lighting installations.

Safety

The National Electrical Code requires grounding of fluorescent fixtures. The fluorescent ballast case must be grounded either to the fluorescent fixture or, if remote mounted, by other means such as a wire from the ballast case to ground. Without proper fixture and ballast grounding, a shock hazard may exist due to the fluorescent fixture becoming energized by an internal ballast failure to case. Also, all ballasts have normal leakage current. When the ballast is properly grounded, the leakage current does not constitute a hazard.

Starting

The metal of a fluorescent fixture is a starting aid when properly grounded. T12 Fluorescent lamps rated at 40 watts or less used for rapid or trigger start operation must be mounted within 1/2" of a grounded metal surface. T8 Lamps must be mounted within 3/4" of a grounded metal surface. All other lamps must be mounted within 1" of a grounded metal surface.

An important additional factor for proper lamps starting is polarity. The white ballast lead must be connected to the ground of the power supply (neutral) and the black lead to the hot line wire. A reversal of polarity may result in lamp damage or improper lamp starting.

Cold Weather Operation

Lumen ratings of fluorescent lamps apply for operation in still air at a temperature of 77°F. While many fluorescent lamps and fluorescent lamp ballasts are designed to give their best performance at 77°F, they will provide reasonably good light output down to 50°F. Further decreases in ambient temperature will result in decreased light output.

Variables such as humidity, line voltage, fixture design and variations within the particular design of the lamp and the fluorescent lamp ballast play an important part in determining the low temperature starting limit.

These are the two considerations for low temperature application:

1. **Starting of the lamps**
   Low temperatures change the electrical starting characteristics of a fluorescent lamp. As the fluorescent lamp becomes colder, it becomes more difficult to start. Therefore, a fluorescent ballast must have a higher starting voltage; thus, follow the temperature recommendations shown in the tables. **Ballasts designed for low temperature use ensure reliable starting only and not the light output.**

2. **Operating the lamps**
   The light output of any fluorescent lamp depends on the mercury vapor pressure within the lamp. Maximum light output for most fluorescent lamps occurs when the bulb temperature is about 100°F. As bulb wall temperature goes above 100°F the mercury vapor pressure within the tube increases and the light output decreases.

   Interestingly enough, at lower bulb-wall temperatures, the mercury condenses on the tube, pressure drops and the light output again decreases. This is inherent in all fluorescent lamps. In order to prevent reduction in light output at low temperatures the lamp should be enclosed so it has a chance to overcome the low bulb-wall temperature by the heat generated by the lamp.

In general, outdoor lighting installations have tended toward 800 and 1500mA lamps since the additional heat generated by these lamps will provide better illumination in cold weather than can be obtained with 430mA lamps. The 430mA lamps are not recommended by the lamp manufacturer for starting conditions below 0°F. Above this temperature,shielding is required to a greater degree than with the more heavily loaded lamps. Special low temperature lamps, which may be purchased with shields, are available for 1500mA operation.

Ballast Sound

The slight hum present in fluorescent lighting installations originates from the inherent magnetic action in the core & coil assembly of the ballasts. This hum may be amplified by the method of mounting the ballast in the fixture...the fixture design...and, more often than not, this hum is amplified by the resonant qualities of the ceiling, walls, floors and furniture. In planning a lighting installation, careful consideration must be given to the selection of the fluorescent lamp ballast, the lighting fixture and room components. These precautions will ensure the quietest installation possible.

The choice of fluorescent lamp ballast should be made on the basis of selecting the one rated quietest for a specific location or interior as some ballast have a more discernable hum due to basic construction features and electrical ratings.

SOUND RATINGS

For any Installation in:	Average Ambient Noise Level Of Interior	Sound Level Rating*
TV or Radio Station, Library, Reception or Reading Room, Church, School Study Hall	**20-24** DECIBELS	**A**
Residence, Quiet Office, Night School Classroom	**25-30** DECIBELS	**B**
General Office Area, Commercial Building, Storeroom	**31-36** DECIBELS	**C**
Manufacturing Facility, Retail Store, Noisy Office	**37-42** DECIBELS	**D**

*These sound ratings are based on measurements of **Average Ambient** noise levels during conditions of normal occupancy. Audible ballast hum may appear amplified during exceptionally quiet periods and at times when area is unoccupied.

Temperature and Ventilation

Underwriters' Laboratories, Inc. stipulates that the temperature limitation of a fluorescent lamp ballast using Class A insulation at normal operation should have a maximum ballast coil temperature of 105°C (221°F) and maximum ballast case temperature of 90°C (194°F) at its hottest spot. Ballast life will be reduced if it is operated at a temperature above these limits.

A fluorescent lamp ballast, like other electrical equipment, generates heat during normal operation. If not maintained within prescribed limits, this heat will become the primary cause of reduced ballast life. Heat generated in the conventional ballast is transferred to the case through a silica compound which totally surrounds the internal components and is then dissipated to the surrounding air or mounting surface by conduction, convection or radiation.

It is therefore essential that a ballast which is placed in an enclosure be suitably ventilated. Where more than one ballast is installed in an enclosure, the ballast should be positioned far enough apart to provide adequate heat dissipation.

To assist in limiting the temperature rise of ballasts, the following procedures are recommended:

- **Mount ballast with maximum number of sides in direct contact with the metal channel of fixture. Radiators are an excellent way of dissipating heat.**
- **Provide fixture ventilation.**
- **Paint the unpainted fixture channels with a non-metallic finish to increase radiation.**
- **Place ballast in a cooler location outside the fixture.**
- **Place fixture to attain maximum dissipation of heat by conduction, convection or radiation.**

BALLAST TYPE

Magnetic = Standard electromagnetic core and coil construction continues to provide reliable service and economy over a wide variety of lighting system applications. Operates lamps at 60 Hz.

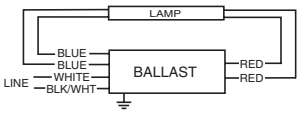
Mark III = Energy-saving electromagnetic ballast designed to provide 10% energy savings over corresponding standard magnetic units while maintaining equivalent full light output. Operates lamps at 60 Hz.

E-PAK 34 & E-PAK 60 = Energy-saving electromagnetic ballast specifically optimized for energy saving lamps to provide 17% energy savings over corresponding standard magnetic units while maintaining equivalent light output. Operates lamps at 60 Hz.

Straight
Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED A

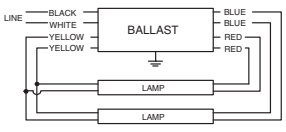
Lamp Data Number	Lamp Data Watts	Input Volts	Min. Starting Temp. (F)	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F17T8 (265mA)															
1	17	120	50	R-1P817-TP	✓	✓			0.21	24	1.01	<20	0.95	T-2	20
		277		V-1P817-TP	✓				0.10	26	1.04	<20	0.94		
2	17	120	50	R-2P817-TP	✓	✓			0.40	47	0.96	<15	0.98	T-2	21
		277		V-2P817-TP	✓				0.17	45	0.98	<20	0.96		
F25T8 (265mA)															
1	25	120	50	R-1P825-TP	✓	✓			0.28	31	0.94	<25	0.92	T-2	20
		277		V-1P825-TP	✓				0.12	30	0.91	<20	0.91		
		347		G-1S32-TP Mark III		✓			0.10	34	1.02	<15	0.98		
2	25	120	50	R-2P825-TP	✓	✓			0.53	62	0.97	<15	0.97	T-2	21
		277		V-2P825-TP	✓				0.23	62	0.96	<20	0.97		
		347		G-2S32-TP Mark III		✓			0.19	66	1.04	<10	0.99		
F32T8 (265mA)															
1	32	120	50	R-1P32-TP Mark III	✓	✓			0.32	35	0.95	<15	0.91	T-2	20
		277		V-1P32-TP Mark III	✓	✓			0.16	41	0.98	<15	0.93		
		347		G-1S32-TP Mark III		✓			0.12	41	0.98	<15	0.98		
2	32	120	50	R-2P32-TP Mark III	✓	✓		✓	0.61	71	0.99	<10	0.97	T-2	21
		277		V-2P32-TP Mark III	✓	✓		✓	0.29	76	0.95	<10	0.95		
		347		G-2S32-TP Mark III		✓		✓	0.23	77	0.98	<15	0.96		
F40T8 (265mA)															
1	40	120	50	R-1P840-TP	✓	✓			0.45	52	1.02	<20	0.96	T-2	20
		277		V-1P840-TP	✓				0.19	50	0.99	<20	0.95		
2	40	120	50	R-2P840-TP	✓	✓			0.73	87	0.87	<15	0.99	T-2	21
		277		V-2P840-TP	✓				0.31	86	0.88	<15	0.99		



Diag. 20

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
T-2	9½	2⅜	1½	8 29/32



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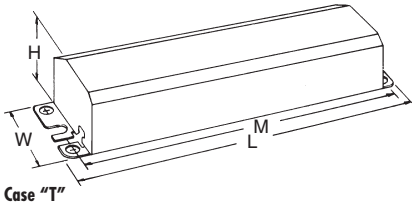


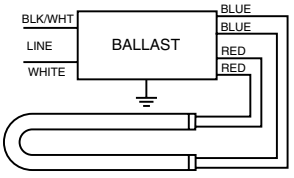
Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

U-Shaped
Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED A

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
FB016T8 (265mA)															
1	16	50	120	R-1P817-TP	✓	✓			0.20	23	0.98	<20	0.96	T-2	114
			277	V-1P817-TP	✓				0.09	24	1.02	<15	0.96		
2	16	50	120	R-2P817-TP	✓	✓			0.39	46	0.99	<20	0.98	T-2	115
			277	V-2P817-TP	✓				0.16	42	0.98	<20	0.95		
FB024T8 (265mA)															
1	24	50	120	R-1P825-TP	✓	✓			0.28	32	0.93	<25	0.95	T-2	114
			277	V-1P825-TP	✓				0.11	31	0.90	<25	0.99		
			347	G-1S32-TP Mark III		✓			0.10	34	1.02	<15	0.98		
2	24	50	120	R-2P825-TP	✓	✓			0.53	62	0.96	<15	0.97	T-2	115
			277	V-2P825-TP	✓				0.23	59	0.95	<15	0.93		
			347	G-2S32-TP Mark III		✓			0.19	66	1.04	<10	0.99		
F32T8/U (265mA)															
1	31	50	120	R-1P32-TP Mark III	✓	✓			0.32	35	0.95	<15	0.91	T-2	114
			277	V-1P32-TP Mark III	✓	✓			0.16	40	0.96	<15	0.90		
			347	G-1S32-TP Mark III		✓			0.12	41	0.98	<15	0.98		
2	31	50	120	R-2P32-TP Mark III	✓	✓		✓	0.61	71	0.99	<10	0.97	T-2	115
			277	V-2P32-TP Mark III	✓	✓		✓	0.29	76	0.95	<10	0.95		
			347	G-2S32-TP Mark III		✓		✓	0.23	77	0.97	<15	0.96		



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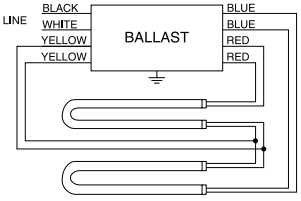
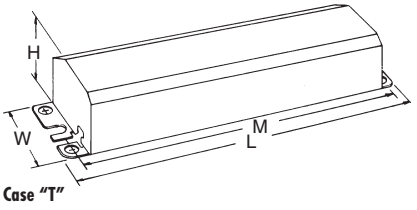


Diag. 115

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
T-2	9½	2⅜	1½	8 29/32



Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Straight
Rapid Start Lamps

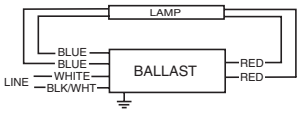
HIGH POWER FACTOR SOUND RATED A

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA-E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F40T10 (420mA)															
1	40	50	120	R-140-TP Mark III	✓	✓	✓	✓	0.46	53	0.95	<15	0.96	T-2	20
		0		RC-1P40-TP	✓	✓			0.42	50	0.80	<15	0.99	R-5	20
		50	220	X-140-TP	✓				0.25	54	0.95	<10	0.98	T-2	20
			240	YHQM-1P40-TP	✓				0.23	52	0.80	<15	0.94	R-5	20
			277	V-140-TP Mark III	✓	✓	✓	✓	0.20	53	0.95	<10	0.96	T-2	20
		0		VC-1P40-TP	✓	✓			0.19	51	0.82	<15	0.97	R-5	20
		50	347	G-140-TP Mark III		✓		✓	0.16	53	0.95	<15	0.95	T-2	20
2	40	50	120	R-2S40-TP Mark III	✓	✓	✓	✓	0.75	88	0.95	<20	0.98	T-2	21
		0		RC-2SP40-TP ●	✓	✓			0.75	84	0.84	<20	0.93	R-5	21
		50	220	XQM-2S40-TP ●	✓	✓			0.45	96	0.95	<25	0.97	T-2	21
			240	YQM-2S40-TP ●	✓	✓			0.42	98	0.95	<25	0.97		
			277	V-2S40-TP Mark III	✓	✓	✓	✓	0.33	88	0.95	<25	0.96		
		0		VC-2SP40-TP ●	✓	✓			0.33	91	0.87	<15	0.99	R-5	21
		50	347	G-2S40-TP Mark III		✓		✓	0.27	88	0.95	<20	0.94	T-2	21

● Sound Rated B

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-5	9½	2⅜	1 11/16	8 29/32
T-2	9½	2⅜	1½	8 29/32



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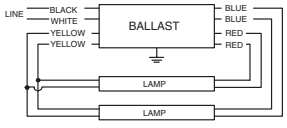

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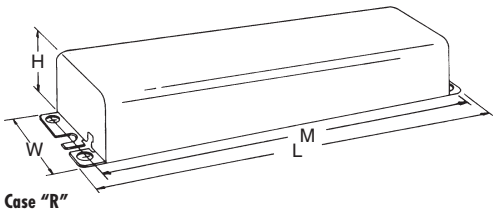
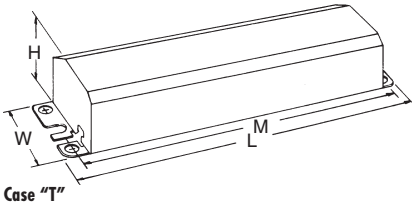


Case "R"



Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T12

ELECTROMAGNETIC BALLASTS

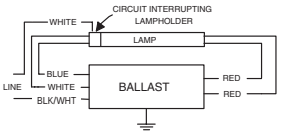
Straight
Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED A

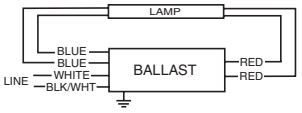
ELECTROMAGNETIC RAPID START

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F30T12 Energy Saver (455mA)															
1	25	60	120	HM-1P30-TP	✓	✓			0.34	40	0.91	<20	0.98	T-2	20
			277	VM-1P30-TP	✓				0.15	40	0.94	<15	0.96		
2	25	60	120	RM-2SP30-TP	✓	✓			0.58	70	0.90	<10	0.99	T-2	21
				R-2SP30-TP Mark III	✓	✓			0.55	65	0.91	<15	0.98		
			277	VM-2SP30-TP	✓				0.26	70	0.93	<10	0.97		
				V-2SP30-TP Mark III	✓				0.24	65	0.91	<15	0.98		
F30T12 (430mA)															
1	30	50	120	RL-140-TP ❊❖	✓	✓			0.60	33	0.71	<10	0.46	R-4	16
				HM-1P30-TP	✓	✓			0.40	47	0.96	<20	0.98	T-2	20
		0		RC-1P40-TP	✓	✓			0.34	41	0.79	<15	0.99	R-5	20
		50	240	YHQM-1P40-TP	✓				0.18	43	0.82	<10	0.99		
			277	VM-1P30-TP	✓				0.18	49	0.99	<15	0.98	T-2	20
		0		VC-1P40-TP	✓	✓			0.15	40	0.83	<15	0.96	R-5	20
		50	347	G-140-TP Mark III		✓			0.13	44	0.88	<15	0.98	T-2	20
2	30	50	120	RM-2SP30-TP	✓	✓			0.66	79	0.97	<10	0.99	T-2	21
				R-2SP30-TP Mark III	✓	✓			0.63	75	0.96	<15	0.99		
		0		RC-2SP40-TP ●	✓	✓			0.62	74	0.85	<15	0.99	R-5	21
		50	277	VM-2SP30-TP	✓				0.29	81	0.97	<10	0.99	T-2	21
				V-2SP30-TP Mark III	✓				0.27	74	0.95	<10	0.99		
		0		VC-2SP40-TP ●	✓	✓			0.27	73	0.86	<15	0.98	R-5	21
		50	347	G-2S40-TP Mark III		✓			0.24	75	0.90	<20	0.90	T-2	21

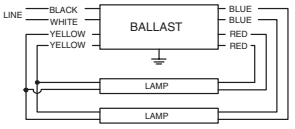
❊ Normal Power Factor
❖ Requires Circuit-Interrupting Lamp Holders
● Sound Rated B



Diag. 16



Diag. 20

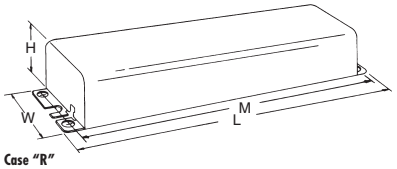


Diag. 21

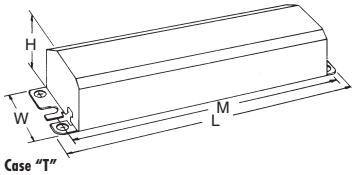
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-4	6½	1 15/16	1⅜	6+
R-5	9½	2⅜	1 11/16	8 29/32
T-2	9½	2⅜	1½	8 29/32

+ Mounting dimensions refer to slots only



Case "R"



Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

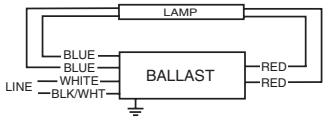
ADVANCE ADVANCE, 10275 WEST HIGGINS ROAD, ROSEMONT, IL 60018. TEL: (847) 390-5000, FAX: (847) 390-5109

Straight
Rapid Start Lamps

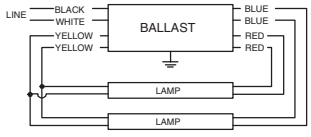
HIGH POWER FACTOR SOUND RATED A

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F40T12 Energy Saver (460mA)															
1	34	60	120	R-140-TP Mark III	✓	✓	✓	✓	0.38	43	0.88	<15	0.94	T-2	20
			220	X-140-TP	✓				0.20	44	0.89	<10	0.99		
			277	V-140-TP Mark III	✓	✓	✓	✓	0.16	43	0.88	<10	0.97		
			347	G-140-TP Mark III		✓		✓	0.13	43	0.88	<15	0.95		
2	34	60	120	RM-2S35-TP ✪	✓	✓	✓		0.46	52	0.64	<20	0.94	T-2	21
				R-2S34-TP E-PAK 34	✓	✓	✓	✓	0.57	68	0.87	<15	0.99		
				R-2S40-TP Mark III	✓	✓	✓	✓	0.63	72	0.88	<15	0.95		
			220	XQM-2S40-TP ●	✓	✓			0.36	78	0.92	<20	0.98	T-2	21
			240	YQM-2S40-TP ●	✓	✓			0.35	84	0.92	<25	0.99		
			277	V-2S34-TP E-PAK 34	✓	✓	✓	✓	0.25	68	0.87	<15	0.98		
				V-2S40-TP Mark III	✓	✓	✓	✓	0.27	72	0.88	<20	0.96		
			347	G-2S40-TP Mark III		✓		✓	0.22	72	0.88	<20	0.94		
3	34	60	120	R-3S34-TP E-PAK 34	✓	✓			0.88	103	0.88	<20	0.97	T-2	30
			277	V-3S34-TP E-PAK 34	✓	✓			0.37	103	0.88	<20	0.99		
4	34	60	120	R-4S40-A-TP-AC Mark III	✓	✓	✓	✓	1.26	144	0.88	<20	0.95	D-2	25

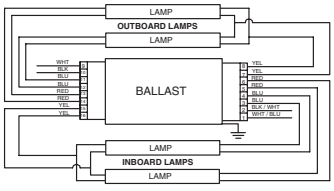
● Sound Rated B
✪ For Residential Use Only



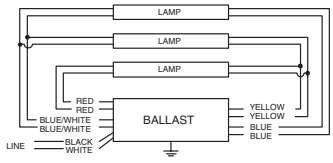
Diag. 20



Diag. 21



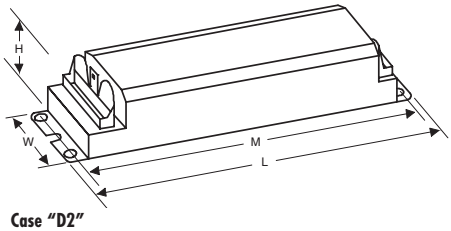
Diag. 25



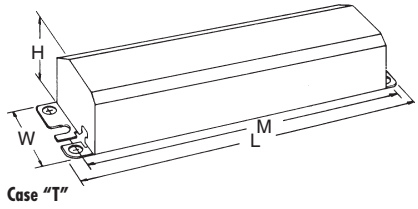
Diag. 30

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
D-2	17	2⅜	1½	16 5/16
T-2	9½	2⅜	1½	8 29/32



Case "D2"



Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T12

ELECTROMAGNETIC BALLASTS

Straight
Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED A

ELECTROMAGNETIC RAPID START

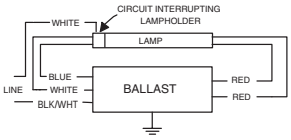
Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications SAE	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F40T12 (430mA)															
1	40	50	120	R-140-TP Mark III	✓	✓	✓	✓	0.43	50	0.95	<10	0.97	T-2	20
				RL-140-TP ✪❖❊	✓	✓			0.53	32	0.63	<15	0.50	R-4	16
		0		RC-1P40-TP	✓	✓			0.39	45	0.78	<15	0.96	R-5	20
		50	220	X-140-TP	✓				0.23	51	0.94	<10	0.99	T-2	20
			240	YHQM-1P40-TP	✓				0.21	49	0.78	<15	0.97	R-5	20
			277	V-140-TP Mark III	✓	✓	✓	✓	0.19	50	0.95	<10	0.95	T-2	20
		0		VC-1P40-TP	✓	✓			0.17	46	0.80	<15	0.98	R-5	20
		50	347	G-140-TP Mark III		✓		✓	0.15	50	0.95	<15	0.96	T-2	20
2	40	50	120	RM-2S35-TP ✪	✓	✓	✓		0.57	62	0.66	<20	0.91	T-2	21
				R-2S34-TP E-PAK34	✓		✓	✓	0.67	79	0.86	<15	0.98		
				R-2S40-TP Mark III	✓	✓	✓	✓	0.73	86	0.95	<15	0.98		
		0		RC-2SP40-TP ●	✓	✓			0.69	82	0.84	<20	0.99	R-5	21
		50	220	XQM-2S40-TP ●	✓	✓			0.43	93	0.97	<25	0.98	T-2	21
			240	YQM-2S40-TP ●	✓	✓			0.42	98	0.99	<25	0.97		
			277	V-2S34-TP E-PAK34	✓	✓	✓	✓	0.30	79	0.86	<15	0.95		
				V-2S40-TP Mark III	✓	✓	✓	✓	0.32	86	0.95	<20	0.97		
		0		VC-2SP40-TP ●	✓	✓			0.33	90	0.87	<15	0.98	R-5	21
		50	347	G-2S40-TP Mark III		✓		✓	0.27	86	0.95	<20	0.92	T-2	21
4	40	50	120	R-4S40-A-TP-AC Mark III	✓	✓	✓	✓	1.46	172	0.95	<20	0.98	D-2	25

● Sound Rated B
✪ For Residential Use Only
❊ Normal Power Factor
❖ Requires Circuit-Interrupting Lamp Holders

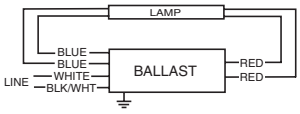
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
D-2	17	2⅜	1½	16⁵⁄₁₆
R-4	6½	1¹⁵⁄₁₆	1⅜	6+
R-5	9½	2⅜	1¹¹⁄₁₆	8²⁹⁄₃₂
T-2	9½	2⅜	1½	8²⁹⁄₃₂

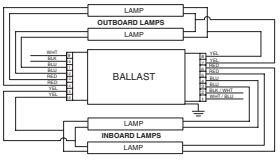
+ Mounting dimensions refer to slots only



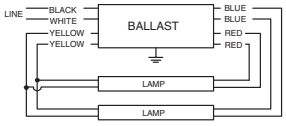
Diag. 16



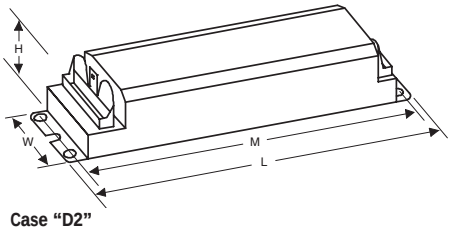
Diag. 20



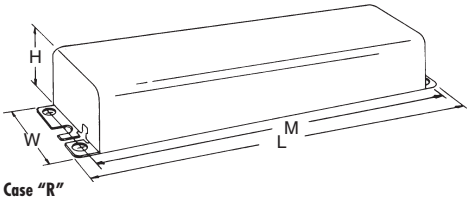
Diag. 25



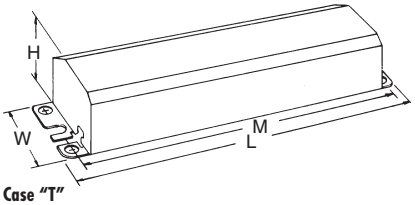
Diag. 21



Case "D2"



Case "R"



Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T12

U-Shaped
Rapid Start Lamps

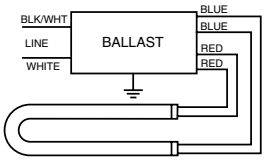
HIGH POWER FACTOR SOUND RATED A

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications ANSI	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F40T12/U Energy Saver (460mA)															
1	34	60	120	R-1U40-TP Mark III	✓	✓	✓		0.39	44	0.93	<30	0.94	T-2	114
			277	V-1U40-TP Mark III	✓		✓		0.16	43	0.91	<25	0.97		
2	34	60	120	RM-2S35-TP ✪	✓	✓			0.46	53	0.63	<15	0.96	T-2	115
				R-2S34-TP E-Pak 34	✓	✓	✓	✓	0.57	68	0.87	<15	0.99		
				R-2S40-TP Mark III	✓	✓	✓	✓	0.63	72	0.88	<15	0.95		
			220	XQM-2S40-TP ●	✓	✓			0.36	78	0.92	<20	0.98		
			240	YQM-2S40-TP ●	✓	✓			0.35	84	0.92	<25	0.99		
			277	V-2S34-TP E-Pak 34	✓	✓	✓	✓	0.25	68	0.87	<15	0.98		
				V-2S40-TP Mark III	✓	✓	✓	✓	0.27	72	0.88	<15	0.96		
			347	G-2S40-TP Mark III		✓		✓	0.22	72	0.88	<20	0.94		
F40T12/U (430mA)															
1	40	50	120	R-1U40-TP Mark III	✓	✓	✓		0.44	52	0.98	<25	0.98	T-2	114
			277	V-1U40-TP Mark III	✓		✓		0.18	49	0.98	<25	0.98		
			347	G-140-TP Mark III		✓		✓	0.15	50	0.95	<20	0.96		
2	40	50	120	RM-2S35-TP ✪	✓	✓			0.57	63	0.67	<20	0.92	T-2	115
				R-2S40-TP Mark III	✓	✓	✓	✓	0.73	86	0.95	<20	0.98		
		0		RC-2SP40-TP ●	✓	✓			0.69	82	0.84	<20	0.99	R-5	115
		50	220	XQM-2S40-TP ●	✓	✓			0.43	93	0.97	<20	0.98	T-2	115
			240	YQM-2S40-TP ●	✓	✓			0.42	98	0.99	<25	0.97		
			277	V-2S40-TP Mark III	✓	✓	✓	✓	0.32	86	0.95	<20	0.97		
		0		VC-2SP40-TP ●	✓	✓			0.33	90	0.87	<15	0.98	R-5	115
		50	347	G-2S40-TP Mark III		✓		✓	0.27	86	0.95	<20	0.92	T-2	115

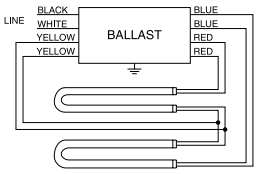
● Sound Rated B
✪ For Residential Use Only

DIMENSIONS

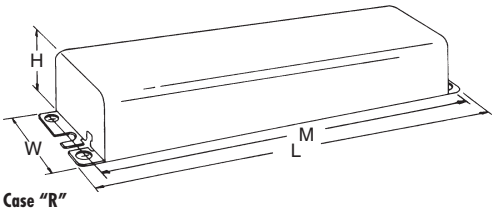
Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-5	9½	2⅜	1 11/16	8 29/32
T-2	9½	2⅜	1½	8 29/32



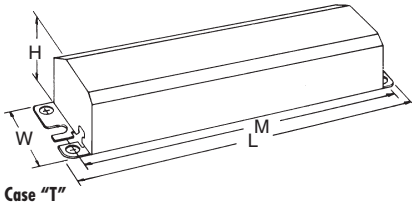
Diag.114



Diag. 115



Case "R"



Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

ELECTROMAGNETIC BALLASTS

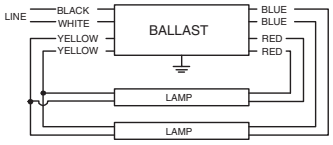
High Output
Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED C

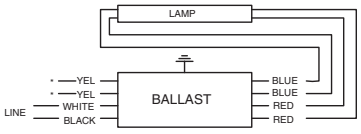
Lamp Data		Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications				Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
Number	Watts				UL	CSA	E	CSA E							
F48T8/H0															
2	44	-20	120	R-2S65-TP Mark III	✓	✓			1.05	120	0.95	<25	0.95	R-9	21
F60T8/H0															
2	55	-20	120	R-2S65-TP Mark III	✓	✓			1.19	138	0.91	<25	0.97	R-9	21
F72T8/H0															
2	65	-20	120	R-2S65-TP Mark III	✓	✓			1.39	161	0.90	<25	0.97	R-9	21
F96T8/H0															
1	86	-20	120	R-2S65-TP Mark III	✓	✓			1.02	114	0.96	<25	0.93	R-9	39
2	86	-20	120	R-2S86-TP Mark III	✓	✓			1.44	172	0.90	<15	0.99	R-9	21
			277	V-2S86-TP Mark III	✓	✓			0.65	168	0.88	<20	0.93		
			347	G-2S86-TP Mark III		✓			0.50	164	0.87	<20	0.95		

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-9	11¾	3³⁄₁₆	2⅝	11⁹⁄₆₄

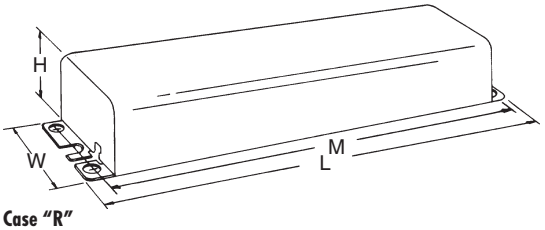


Diag. 21



*For Single Lamp Operation, Insulate Yellow Leads Individually for 600V

Diag. 39



Case "R"

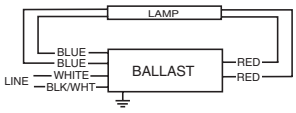
Refer to pages 7-34 to 7-42 for lead lengths and shipping data

High Output
Rapid Start Lamps

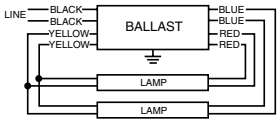
HIGH POWER FACTOR SOUND RATED C

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA-E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F24T12/HO (800mA)															
1	35	-20	120	RC-160-TP	✓	✓			0.57	66	0.96	<10	0.96	R-11	20
			277	VC-160-TP	✓	✓			0.26	66	0.89	<10	0.92		
2	35	50	120	RS-2S60-TP●	✓	✓			0.84	98	0.93	<20	0.97	R-8	21
		-20		RC-2S85-TP	✓	✓			1.01	95	0.78	<45	0.78	R-9	21
			240	YS-2S85-TP	✓	✓			0.55	92	0.79	<50	0.70	R-9	125
		50	277	VS-2S60-TP ●	✓	✓			0.37	101	0.93	<20	0.99	R-8	21
		-20		VC-2S85-TP	✓	✓			0.48	94	0.86	<50	0.71	R-9	21
3	35	-20	120	RC-4S60-TP ■	✓	✓			1.60	148	0.94	<35	0.77	R-9	8
4	35	-20	120	RC-4S60-TP ■	✓	✓			1.80	183	1.00	<30	0.85	R-9	13
F36T12/HO (800mA)															
1	50	-20	120	RC-160-TP	✓	✓			0.61	71	0.93	<15	0.97	R-11	20
			277	VC-160-TP	✓	✓			0.28	73	0.90	<10	0.94		
2	50	50	120	RS-2S60-TP ●	✓	✓			0.96	99	0.95	<15	0.90	R-8	21
		-20		RC-2S85-TP	✓	✓			1.00	107	0.82	<35	0.90	R-9	21
			240	YS-2S85-TP	✓	✓			0.53	103	0.80	<35	0.81	R-9	125
		50	277	VS-2S60-TP ●	✓	✓			0.42	116	0.95	<15	0.99	R-8	21
		-20		VC-2S85-TP	✓	✓			0.47	103	0.82	<35	0.80	R-9	21
3	50	-20	120	RC-4S60-TP ■	✓	✓			1.60	166	0.93	<30	0.86	R-9	8
4	50	-20	120	RC-4S60-TP ■	✓	✓			1.90	212	0.98	<20	0.93	R-9	13
F42T12/HO (800mA)															
2	55	50	120	RS-2S60-TP ●	✓	✓			1.10	138	0.94	<15	0.99	R-8	21
		-20		RC-2S85-TP	✓	✓			1.12	126	0.92	<35	0.94	R-9	21
			240	YS-2S85-TP	✓	✓			0.58	119	0.83	<30	0.86	R-9	125
		50	277	VS-2S60-TP ●	✓	✓			0.51	139	0.98	<15	0.98	R-8	21
		-20		VC-2S85-TP	✓	✓			0.51	124	0.80	<30	0.88	R-9	21

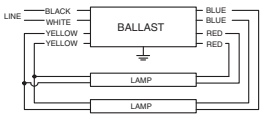
● Sound Rated B
■ Sound Rated D



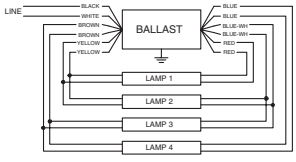
Diag. 20



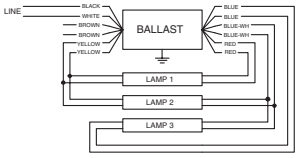
DIAG. 125



Diag. 21



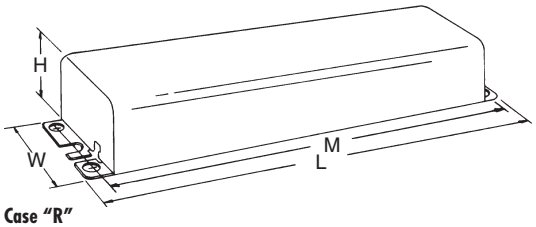
Diag. 13



Note: Insulate unused leads individually as shown on ballast label.
Diag. 8

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-8	11¾	3⁷⁄₆₄	1²⁵⁄₃₂	11⁹⁄₆₄
R-9	11¾	3³⁄₁₆	2⅝	11⁹⁄₆₄
R-11	14⁵⁄₁₆	3³⁄₁₆	2⅝	13¾



Case "R"

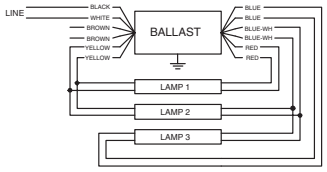
Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F48T12/HO (800mA)															
1	60	50	120	RS-2S60-TP	✓	✓			0.76	87	0.92	<25	0.95	R-8	39
		-20		RC-160-TP	✓	✓			0.71	85	0.94	<15	0.99	R-11	20
				RC-2S85-TP	✓	✓			0.91	79	0.78	<50	0.72	R-9	39
			240	YS-2S85-TP	✓	✓			0.53	82	0.80	<50	0.64	R-9	126
		50	277	VS-2S60-TP	✓	✓			0.32	87	0.92	<20	0.98	R-8	39
		-20		VC-160-TP	✓	✓			0.32	86	0.91	<10	0.97	R-11	20
				VC-2S85-TP	✓	✓			0.46	80	0.78	<50	0.63	R-9	39
2	60	50	120	RS-2S60-TP ●	✓	✓			1.20	149	0.96	<15	0.99	R-8	21
		-20		RC-2S85-TP	✓	✓			1.16	133	0.85	<20	0.96	R-9	21
			240	YS-2S85-TP	✓	✓			0.60	131	0.84	<25	0.91	R-9	125
		50	277	VS-2S60-TP ●	✓	✓			0.56	153	0.96	<15	0.99	R-8	21
		-20		VC-2S85-TP	✓	✓			0.53	131	0.84	<25	0.90	R-9	21
3	60	-20	120	RC-4S60-TP ■	✓	✓			1.90	217	0.92	<20	0.95	R-9	8
				RC-4S85-TP ■	✓	✓			1.70	190	0.86	<10	0.93	R-11	9
4	60	-20	120	RC-4S60-TP ■	✓	✓			2.40	288	0.92	<15	0.99	R-9	13
				RC-4S85-TP ■	✓	✓			1.99	237	0.81	<15	0.99	R-11	13

● Sound Rated B
■ Sound Rated D

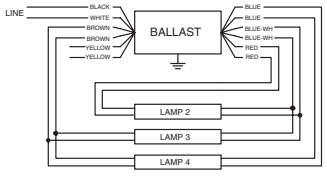
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-8	11¾	3 7/64	1 25/32	11 9/64
R-9	11¾	3 3/16	2⅝	11 9/64
R-11	14 5/16	3 3/16	2⅝	13¾



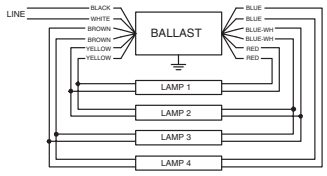
Note: insulate unused leads individually as shown on ballast label

Diag. 8

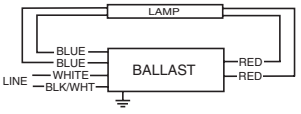


Note: insulate unused leads individually as shown on ballast label

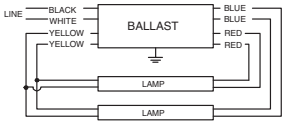
Diag. 9



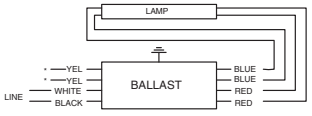
Diag. 13



Diag. 20

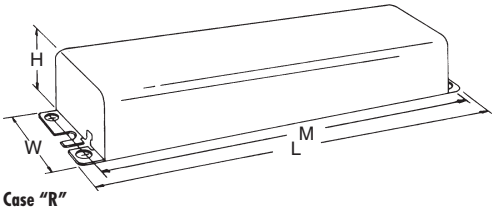


Diag. 21

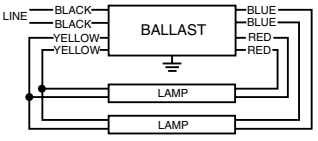


*FOR SINGLE LAMP OPERATION, INSULATE YELLOW LEADS INDIVIDUALLY FOR 600V

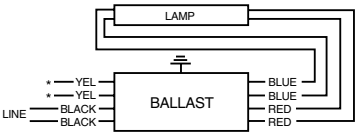
Diag. 39



Case "R"



DIAG. 125



*FOR SINGLE LAMP OPERATION INSULATE YELLOW LEADS INDIVIDUALLY FOR 600V

DIAG. 126

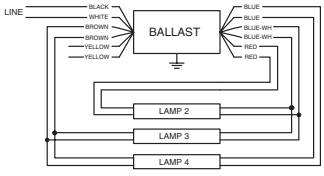
Refer to pages 7-34 to 7-42 for lead lengths and shipping data

High Output
Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED C

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F60T12/HO (800mA)															
1	75	50	120	RS-2S60-TP ●	✓	✓			0.83	97	0.95	<25	0.97	R-8	39
		-20		RC-2S85-TP	✓	✓			0.94	90	0.77	<40	0.80	R-9	39
			240	YS-2S85-TP	✓	✓			0.54	89	0.79	<40	0.69	R-9	126
		50	277	VS-2S60-TP ●	✓	✓			0.37	98	0.95	<20	0.96	R-8	39
		-20		VC-2S85-TP	✓	✓			0.48	87	0.80	<40	0.66	R-9	39
2	75	-20	120	RC-2S85-TP	✓	✓			1.50	178	0.90	<15	0.99	R-9	21
			240	YS-2S85-TP	✓	✓			0.75	166	0.89	<20	0.92	R-9	125
			277	VC-2S85-TP	✓	✓			0.65	170	0.86	<20	0.94	R-9	21
3	75	-20	120	RC-4S85-TP ■	✓	✓			1.90	223	0.83	<20	0.98	R-11	9
4	75	-20	120	RC-4S85-TP ■	✓	✓			2.35	278	0.80	<15	0.99	R-11	13
F64T12/HO (800mA)															
1	80	50	120	RS-2S60-TP ●	✓	✓			0.90	106	0.98	<20	0.98	R-8	39
		-20		RC-2S85-TP	✓	✓			0.99	99	0.82	<40	0.83	R-9	39
			240	YS-2S85-TP	✓	✓			0.56	97	0.80	<40	0.72	R-9	126
		50	277	VS-2S60-TP ●	✓	✓			0.39	107	0.94	<20	0.99	R-8	39
		-20		VC-2S85-TP	✓	✓			0.47	95	0.78	<40	0.73	R-9	39
2	80	-20	120	RC-2S85-TP	✓	✓			1.50	178	0.90	<15	0.99	R-9	21
			240	YS-2S85-TP	✓	✓			0.75	166	0.89	<20	0.92	R-9	125
			277	VC-2S85-TP	✓	✓			0.65	170	0.86	<20	0.94	R-9	21
3	80	-20	120	RC-4S85-TP ■	✓	✓			2.09	246	0.84	<15	0.98	R-11	9
4	80	-20	120	RC-4S85-TP ■	✓	✓			2.64	312	0.78	<10	0.98	R-11	13

● Sound Rated B
■ Sound Rated D

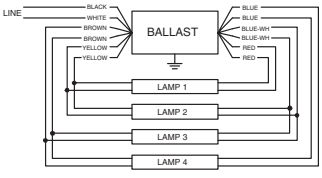


Note: insulate unused leads individually as shown on ballast label

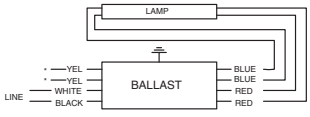
Diag. 9

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-8	11¾	3⁷⁄₆₄	1²⁵⁄₃₂	11⁹⁄₆₄
R-9	11¾	3³⁄₁₆	2⅝	11⁹⁄₆₄
R-11	14⁵⁄₁₆	3³⁄₁₆	2⅝	13¾

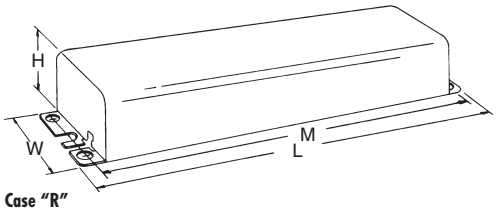


Diag. 13

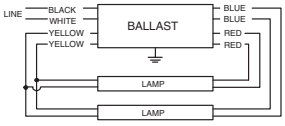


*FOR SINGLE LAMP OPERATION, INSULATE YELLOW LEADS INDIVIDUALLY FOR 600V

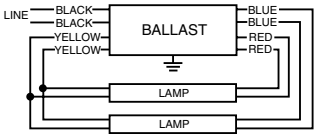
Diag. 39



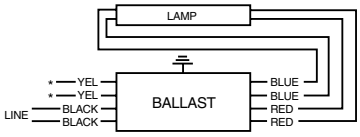
Case "R"



Diag. 21



DIAG. 125



*FOR SINGLE LAMP OPERATION INSULATE YELLOW LEADS INDIVIDUALLY FOR 600V

DIAG. 126

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T12

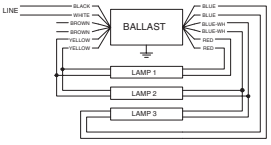
ELECTROMAGNETIC BALLASTS

High Output
Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED C

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F72T12/HO (800mA)															
1	85	-20	120	RC-2S85-TP	✓	✓			0.98	100	0.82	<35	0.85	R-9	39
				RS-110-TP ●	✓	✓			0.96	113	0.98	<30	0.98	R-9	20
			240	YS-2S85-TP	✓	✓			0.53	99	0.83	<35	0.78	R-9	126
			277	VC-2S85-TP	✓	✓			0.47	99	0.81	<35	0.76	R-9	39
				VS-110-TP ●	✓	✓			0.44	116	0.99	<30	0.95	R-9	20
2	85	-20	120	RC-2S85-TP	✓	✓			1.54	184	0.91	<15	0.99	R-9	21
				RS-2S110-TP ●	✓	✓			1.85	214	1.00	<15	0.96		
				R-2S110-TP Mark III	✓	✓			1.60	193	0.95	<15	0.99		
		50	240	YS-2S85-TP	✓	✓			0.75	173	0.89	<20	0.96	R-9	125
		-20		YS-2S110-TP	✓				0.88	203	0.99	<15	0.96	R-9	21
			277	VC-2S85-TP	✓	✓			0.67	180	0.90	<20	0.97		
				VS-2S110-TP ●	✓	✓			0.80	207	0.99	<15	0.93		
				V-2S110-TP Mark III	✓	✓			0.75	201	0.98	<20	0.97		
			347	G-2S110-TP Mark III		✓			0.57	193	0.94	<20	0.98		
3	85	-20	120	RC-4S60-TP ■	✓	✓			2.40	291	0.90	<15	0.99	R-9	8
				RC-4S85-TP ■	✓	✓			2.17	256	0.81	<15	0.98	R-11	9
4	85	-20	120	RC-4S85-TP ■	✓	✓			2.73	323	0.75	<10	0.99	R-11	13
F73T12/HO (1000mA)															
2	100	-20	120	RS-2S100-TP	✓				2.00	226	1.12	<15	0.94	R-9	21
F84T12/HO (800mA)															
1	100	-20	120	RC-2S85-TP	✓				1.03	113	0.83	<30	0.91	R-9	39
			277	VC-2S85-TP	✓				0.47	104	0.81	<35	0.80		
2	100	50	120	RC-2S85-TP	✓				1.76	209	0.90	<15	0.99	R-9	21
			277	VC-2S85-TP	✓				0.73	198	0.89	<20	0.98		

● Sound Rated B
■ Sound Rated D

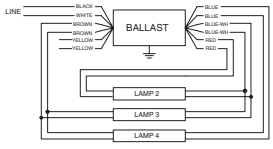


Note: insulate unused leads individually as shown on ballast label

Diag. 8

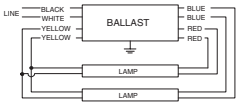
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-9	11¾	3³⁄₁₆	2⅝	11⁹⁄₆₄
R-11	14⁵⁄₁₆	3³⁄₁₆	2⅝	13¾

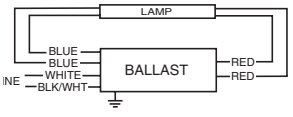


Note: insulate unused leads individually as shown on ballast label

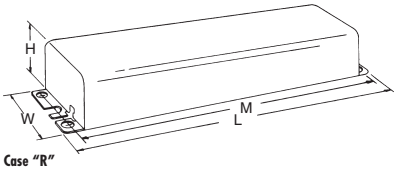
Diag. 9



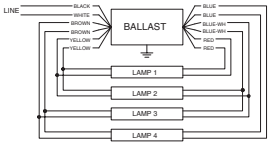
Diag. 21



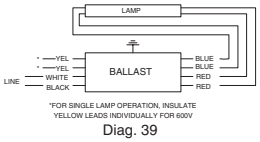
Diag. 20



Case "R"

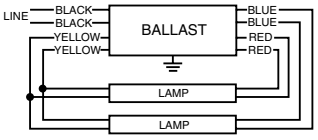


Diag. 13

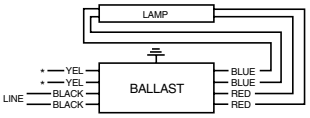


*FOR SINGLE LAMP OPERATION, INSULATE YELLOW LEADS INDIVIDUALLY FOR 600V

Diag. 39



Diag 125



*FOR SINGLE LAMP OPERATION INSULATE YELLOW LEADS INDIVIDUALLY FOR 600V

DIAG. 126

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

High Output
Rapid Start Lamps

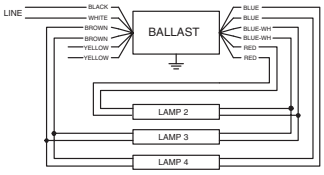
HIGH POWER FACTOR SOUND RATED C

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F96T12/HO Energy Saver (840mA)															
1	95	60	120	RS-110-TP ●	✓	✓			1.00	121	0.94	<35	0.99	R-9	20
			277	VS-110-TP ●	✓	✓			0.47	125	0.95	<35	0.96		
2	95	60	120	RS-2S110-TP ●	✓	✓			1.91	221	0.95	<15	0.96	R-9	21
				R-2S110-TP Mark III	✓	✓	✓	✓	1.70	203	0.91	<20	0.99		
			240	YS-2S110-TP	✓				0.94	216	0.92	<20	0.96		
			277	VS-2S110-TP	✓	✓			0.84	222	0.94	<20	0.95		
				V-2S110-TP Mark III	✓	✓	✓	✓	0.79	210	0.93	<25	0.96		
			347	G-2S110-TP Mark III		✓		✓	0.61	201	0.90	<20	0.95		
F96T12/HO (800mA)															
1	110	-20	120	RC-2S85-TP	✓	✓			1.07	121	0.84	<25	0.94	R-9	39
				RS-110-TP ●	✓	✓			1.20	140	0.98	<35	0.97	R-9	20
			240	YS-2S85-TP	✓	✓			0.57	120	0.85	<30	0.88	R-9	126
			277	VC-2S85-TP	✓	✓			0.48	114	0.83	<30	0.85	R-9	39
				VS-110-TP ●	✓	✓			0.54	145	1.00	<30	0.97	R-9	20
2	110	-20	120	RS-2S110-TP ●	✓	✓			2.14	255	1.01	<15	0.99	R-9	21
				R-2S110-TP Mark III	✓	✓	✓	✓	2.00	237	0.95	<15	0.99		
			240	YS-2S110-TP	✓				1.10	253	0.97	<15	0.96		
			277	VS-2S110-TP ●	✓	✓			0.94	253	0.99	<15	0.97		
				V-2S110-TP Mark III	✓	✓	✓	✓	0.90	245	0.98	<20	0.98		
			347	G-2S110-TP Mark III		✓		✓	0.69	237	0.95	<20	0.99		
3	110	-20	120	RC-4S85-TP ■	✓	✓			2.50	292	0.75	<15	0.97	R-11	9

● Sound Rated B
■ Sound Rated D

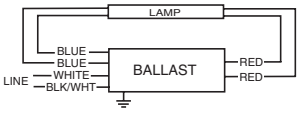
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-9	11¾	3 3/16	2⅝	11 9/64
R-11	14 5/16	3 3/16	2⅝	13¾

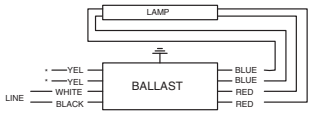


Note: insulate unused leads individually as shown on ballast label

Diag. 9

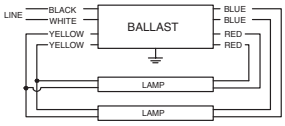


Diag. 20

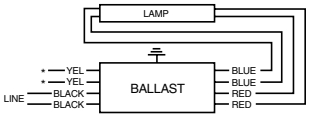


*FOR SINGLE LAMP OPERATION, INSULATE YELLOW LEADS INDIVIDUALLY FOR 600V

Diag. 39

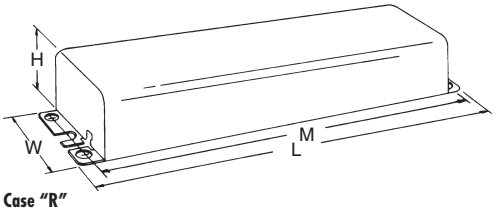


Diag. 21



*FOR SINGLE LAMP OPERATION INSULATE YELLOW LEADS INDIVIDUALLY FOR 600V

DIAG. 126



Case "R"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T10 and T12

ELECTROMAGNETIC BALLASTS

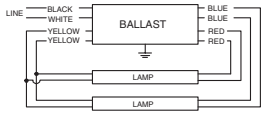
Very High Output

VHO & Powergroove Rapid Start Lamps

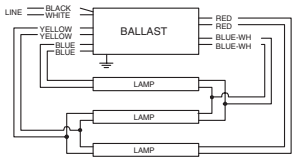
HIGH POWER FACTOR SOUND RATED D

ELECTROMAGNETIC VERY HIGH OUTPUT

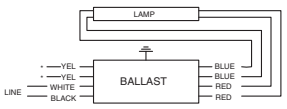
Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F48T10/VHO (1500mA) F48T12/VHO (1500mA) F48PG17/VHO (1500mA)															
1	116	-20	120	RC-2S102-TP	✓	✓			1.70	130	0.87	<30	0.64	R-11	39
			277	VC-2S102-TP	✓	✓			0.59	137	0.85	<35	0.84		
2	116	-20	120	RC-2S102-TP	✓	✓			2.20	230	0.89	<35	0.87	R-11	21
			277	VC-2S102-TP	✓	✓			0.94	241	0.87	<35	0.93		
3	116	-20	120	RC-3S150-TP	✓	✓			2.57	293	0.92	<20	0.95	R-14	27
F60T10/VHO (1500mA) F60T12/VHO (1500mA)															
1	138	-20	120	RC-2S102-TP	✓	✓			1.75	140	0.90	<30	0.67	R-11	39
			277	VC-2S102-TP	✓	✓			0.65	157	0.86	<35	0.87		
2	138	-20	120	RSC-2S155-TP	✓	✓			2.70	250	0.95	<30	0.77	R-14	21
3	138	-20	120	RC-3S150-TP					3.50	385	0.88	<20	0.92	R-14	27
F72T10/VHO (1500mA) F72T12/VHO (1500mA) F72PG17/VHO (1500mA)															
1	168	-20	120	RC-2S102-TP	✓	✓			1.90	173	0.87	<30	0.76	R-11	39
				RSC-2S155-TP	✓	✓			2.40	180	0.81	<35	0.63	R-14	39
			277	VC-2S102-TP	✓	✓			0.69	168	0.87	<35	0.88	R-11	39
2	168	-20	120	RC-2S200-TP	✓	✓			2.51	270	0.89	<20	0.90	R-11	21
				RSC-2S155-TP	✓	✓			2.90	315	0.92	<25	0.91	R-14	21
				RS-2S200-TP	✓	✓			3.41	399	0.99	<15	0.98	R-11	21
			277	VC-2S200-TP	✓				0.95	257	0.78	<20	0.98		
				VS-2S200-TP	✓	✓			1.40	376	0.99	<15	0.97		
3	168	-20	120	RC-3S150-TP	✓	✓			3.57	424	0.82	<15	0.99	R-14	27
				RC-3S200-TP	✓	✓			3.50	400	0.95	<15	0.95		



Diag. 21



Diag. 27

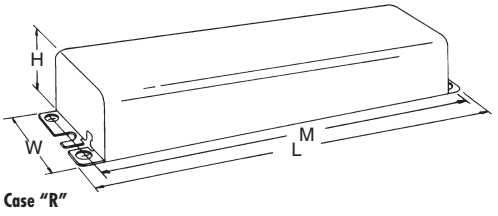


*FOR SINGLE LAMP OPERATION, INSULATE YELLOW LEADS INDIVIDUALLY FOR 600V

Diag. 39

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-11	14 5/16	3 3/16	2 5/8	13 3/4
R-14	19 3/16	3 3/16	2 5/8	18 5/8



Case "R"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

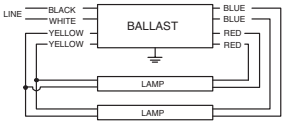
ADVANCE ADVANCE, 10275 WEST HIGGINS ROAD, ROSEMONT, IL 60018. TEL: (847) 390-5000, FAX: (847) 390-5109

T10 and T12

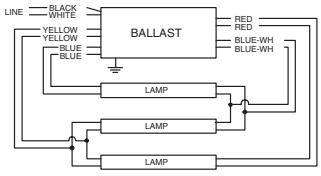
Very High Output
VHO & Powergroove Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED D

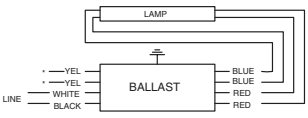
Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F96T12/VHO Energy Saver (1580mA) F96PG17/VHO Energy Saver (1580mA)															
1	185	60	120	RC-2S102-TP	✓	✓			2.00	198	0.87	<35	0.83	R-11	39
				RSC-2S155-TP					2.00	205	0.80	<35	0.85	R-14	39
			277	VC-2S102-TP	✓	✓			0.73	190	0.83	<35	0.94	R-11	39
2	185	60	120	RC-2S200-TP	✓	✓			2.67	304	0.85	<15	0.95	R-11	21
				RS-2S200-TP	✓	✓			3.49	412	0.93	<15	0.98		
			277	VC-2S200-TP	✓				1.18	315	0.85	<15	0.96		
				VS-2S200-TP	✓	✓			1.50	398	0.96	<15	0.96		
F96T10/VHO (1500mA) F96T12/VHO (1500mA) F96PG17/VHO (1500mA)															
1	215	50	120	RC-2S102-TP	✓	✓			2.10	213	0.87	<35	0.85	R-11	39
		-20		RSC-2S155-TP	✓	✓			2.50	218	0.84	<35	0.73	R-14	39
		50	277	VC-2S102-TP	✓	✓			0.89	216	0.88	<35	0.88	R-11	39
2	215	-20	120	RC-2S200-TP	✓	✓			2.88	337	0.93	<15	0.98	R-11	21
				RS-2S200-TP	✓	✓			3.89	467	1.01	<10	0.99		
			277	VC-2S200-TP	✓				1.20	310	0.75	<15	0.93		
				VS-2S200-TP	✓	✓			1.65	442	1.00	<15	0.97		
3	215	-20	120	RC-3S200-TP	✓	✓			4.10	485	0.92	<15	0.99	R-14	27



Diag. 21



Diag. 27

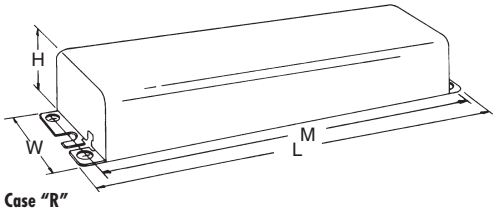


*FOR SINGLE LAMP OPERATION, INSULATE YELLOW LEADS INDIVIDUALLY FOR 600V

Diag. 39

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-11	14 5/16	3 3/16	2 5/8	13 3/4
R-14	19 3/16	3 3/16	2 5/8	18 5/8



Case "R"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T6, T8, T12

ELECTROMAGNETIC BALLASTS

Slimline & Instant Start

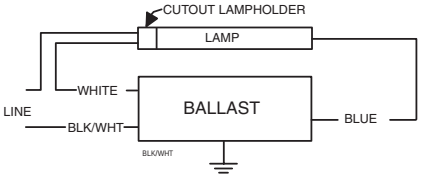
Instant Start Lamps

HIGH POWER FACTOR SOUND RATED C

ELECTROMAGNETIC SLIMLINE

Lamp Data		Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications				Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
Number	Watts				UL	CSA	E	CSA E							
F42T6 (200mA)															
1	25	0	120	SM-125-S-TP ●	✓	✓			0.32	37	0.92	<25	0.96	R-5	10
2	25	0	120	SM-225-S-TP ●	✓	✓			0.66	71	0.95	<15	0.90	R-8	11
F64T6 (200mA)															
1	38	0	120	SM-151-S-TP	✓	✓			0.43	50	0.92	<25	0.97	R-10	10
2	38	0	120	S-251-S-TP ■	✓	✓			1.00	106	1.00	<40	0.90	R-11	11
F72T8 (200mA)															
1	38	0	120	SM-151-S-TP	✓	✓			0.42	49	0.92	<25	0.97	R-10	10
2	38	0	120	S-251-S-TP ■	✓	✓			0.94	100	1.00	<35	0.90	R-11	11
F96T8 (200mA)															
1	51	0	120	SM-151-S-TP	✓	✓			0.50	58	0.90	<20	0.97	R-10	10
2	51	0	120	S-251-S-TP ■	✓	✓			1.30	135	0.97	<40	0.90	R-11	11
F24T12 10W (200mA) **F36T12 15W (200mA)** **F40T12/IS 20W (200mA)** **F42T12 17W (200mA)** **F48T12 20W (200mA)**															
2	—	0	120	SM-225-S-TP ●	✓	✓			0.57	67	0.98	<15	0.98	R-8	11

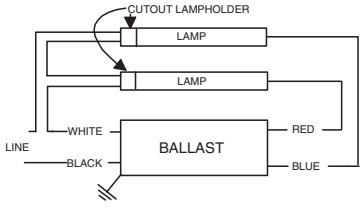
● Sound Rated B
■ Sound Rated D



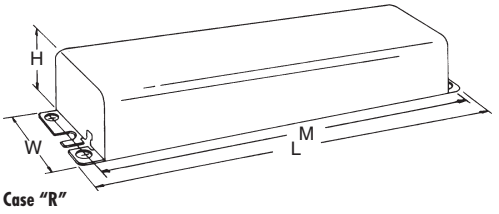
Diag. 10

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-5	9½	2⅜	1 11/16	8 29/32
R-8	11¾	3 7/64	1 25/32	11 9/64
R-10	14 5/16	3 7/64	1 25/32	13¾
R-11	14 5/16	3 3/16	2⅝	13¾



Diag. 11



Case "R"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

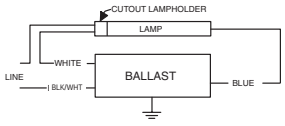
T12 and T17

Slimline & Instant Start
Instant Start Lamps

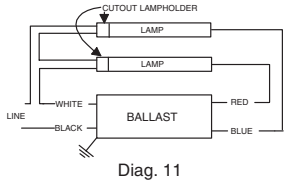
HIGH POWER FACTOR SOUND RATED C

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications ISA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F24T12 (425mA)															
1	20	0	120	SM-140-S-TP	✓	✓			0.45	45	0.93	<35	0.90	R-8	10
2	20	0	120	SI-240-S-TP	✓	✓			0.62	67	0.99	<30	0.90	R-11	11
F36T12 (425mA)															
1	30	0	120	SM-140-S-TP	✓	✓			0.50	57	0.92	<35	0.95	R-8	10
2	30	0	120	SI-240-S-TP	✓	✓			0.78	88	0.99	<35	0.94	R-11	11
		50		SM-2E40-S-TP ●	✓	✓			0.73	83	0.97	<30	0.95	R-6	12
F42T12 (425mA)															
1	34	0	120	SM-140-S-TP	✓	✓			0.51	57	0.90	<35	0.93	R-8	10
2	34	0	120	SI-240-S-TP	✓	✓			0.82	92	0.98	<30	0.93	R-11	11
		50		SM-2E4O-S-TP ●	✓	✓			0.74	87	0.95	<25	0.98	R-6	12
			277	VSM-2E40-S-TP ●	✓	✓			0.34	91	0.93	<25	0.97	R-6	36
F40T12/IS (425mA) F40T17/IS (425mA) F48T12 (425mA)															
1	40	0	120	SM-140-S-TP	✓	✓			0.54	62	0.90	<30	0.96	R-8	10
2	40	0	120	SI-240-S-TP	✓	✓			0.97	107	0.98	<35	0.92	R-11	11
		50		SM-2E40-S-TP ●	✓	✓			0.82	96	0.90	<30	0.98	R-6	12
			277	VSM-2E40-S-TP ●	✓	✓			0.36	98	0.96	<25	0.98	R-6	36
F48T12 ENERGY SAVER (440mA)															
2	30	60	120	SM-2E40-S-TP ●	✓	✓			0.72	80	0.90	<35	0.93	R-6	12
			277	VSM-2E40-S-TP ●	✓	✓			0.33	85	0.85	<30	0.93	R-6	36

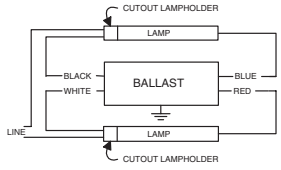
● Sound Rated B



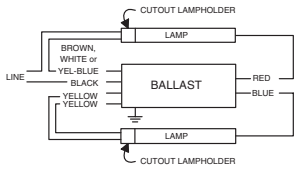
Diag. 10



Diag. 11



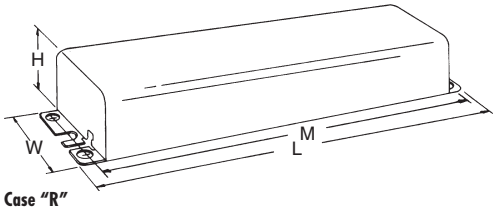
Diag. 12



Diag. 36

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-6	9½	3 7/64	1 25/32	8 29/32
R-8	11¾	3 7/64	1 25/32	11 9/64
R-11	14 5/16	3 3/16	2⅝	13¾

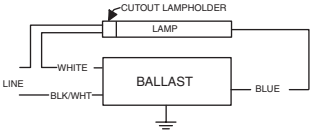


Case "R"

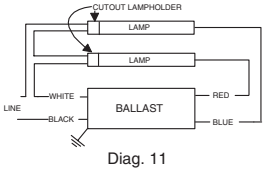
Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F60T12 (425mA)															
1	50	0	120	RSM-175-S-TP	✓	✓			0.74	73	0.93	<50	0.90	R-6	10
			277	VSM-175-S-TP	✓	✓			0.31	72	0.93	<50	0.90		
2	50	50	120	R-2E75-S-TP Mark III	✓	✓			1.03	111	0.94	<30	0.90	R-8	12
		0		SM-2E57-S-TP	✓	✓			1.14	122	0.90	<25	0.90		
				S-275-S-TP ●	✓	✓			1.30	142	0.89	<35	0.91	R-11	11
		50	240	YSM-2E75-S-TP	✓				0.50	109	0.93	<25	0.91	R-8	36
			277	V-2E75-S-TP Mark III	✓	✓			0.47	118	0.93	<30	0.91		
		0		VSH-275-S-TP ●	✓				0.50	132	0.97	<35	0.95	R-11	11
		50	347	G-2E75-S-TP Mark III		✓			0.37	116	0.91	<25	0.90	R-8	36
F64T12 (425mA)															
1	52	0	120	RSM-175-S-TP	✓	✓			0.72	74	0.94	<50	0.90	R-6	10
			277	VSM-175-S-TP	✓	✓			0.31	74	0.93	<50	0.90		
2	52	50	120	R-2E75-S-TP Mark III	✓	✓			1.07	117	0.95	<30	0.91	R-8	12
		0		SM-2E57-S-TP	✓	✓			1.19	131	0.93	<25	0.92		
				S-275-S-TP ●	✓	✓			1.20	135	0.99	<30	0.94	R-11	11
		50	240	YSM-2E75-S-TP	✓				0.51	114	0.90	<25	0.93	R-8	36
			277	V-2E75-S-TP Mark III	✓	✓			0.47	120	0.93	<30	0.92		
		0		VSH-275-S-TP ●	✓				0.47	125	0.95	<30	0.96	R-11	11
		50	347	G-2E75-S-TP Mark III		✓			0.39	122	0.91	<25	0.90	R-8	36
F72T12 (425mA)															
1	57	0	120	RSM-175-S-TP	✓	✓			0.73	80	0.95	<35	0.91	R-6	10
			277	VSM-175-S-TP	✓	✓			0.32	81	0.94	<35	0.91		
2	57	50	120	R-2E75-S-TP Mark III	✓	✓			1.18	132	0.94	<30	0.93	R-8	12
		0		SM-2E57-S-TP	✓	✓			1.25	140	0.95	<20	0.93		
				S-275-S-TP ●	✓	✓			1.48	147	0.99	<30	0.90	R-11	11
		50	240	YSM-2E75-S-TP	✓				0.58	130	0.92	<25	0.93	R-8	36
			277	V-2E75-S-TP Mark III	✓	✓			0.51	132	0.94	<25	0.93		
		0		VSH-275-S-TP ●	✓				0.51	136	0.93	<30	0.96	R-11	11
		50	347	G-2E75-S-TP Mark III		✓			0.42	133	0.93	<25	0.91	R-8	36
F84T12 (425mA)															
2	65	50	120	R-2E75-S-TP Mark III	✓	✓			1.28	147	0.95	<30	0.96	R-8	12
		0		S-275-S-TP ●	✓	✓			1.40	165	1.00	<30	0.98	R-11	11
		50	240	YSM-2E75-S-TP	✓				0.63	144	0.92	<30	0.95	R-8	36
			277	V-2E75-S-TP Mark III	✓	✓			0.57	151	0.94	<25	0.96		
		0		VSH-275-S-TP ●	✓				0.56	149	0.90	<35	0.96	R-11	11
		50	347	G-2E75-S-TP Mark III		✓			0.45	147	0.92	<25	0.94	R-8	36

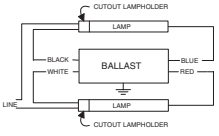
● Sound Rated B



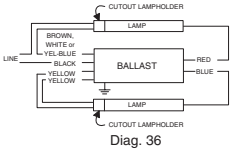
Diag. 10



Diag. 11



Diag. 12



Diag. 36

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Slimline
Instant Start Lamps

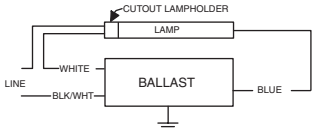
HIGH POWER FACTOR SOUND RATED C

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F96T12 Energy Saver (440mA)															
1	60	60	120	RSM-175-S-TP	✓	✓			0.68	74	0.88	<35	0.91	R-6	10
			277	VSM-175-S-TP	✓	✓			0.30	76	0.88	<35	0.91		
2	60	60	120	R-2E60-S-TP E-PAK 60	✓	✓	✓	✓	1.03	112	0.88	<35	0.91	R-8	12
				R-2E75-S-TP Mark III	✓	✓	✓	✓	1.10	126	0.88	<35	0.95		
			240	YSM-2E75-S-TP	✓				0.60	131	0.90	<35	0.91	R-8	36
			277	V-2E60-S-TP E-PAK 60	✓	✓	✓	✓	0.44	112	0.88	<35	0.92		
				V-2E75-S-TP Mark III	✓	✓	✓	✓	0.47	126	0.88	<25	0.97		
			347	G-2E75-S-TP Mark III		✓		✓	0.40	126	0.88	<30	0.91		
F96T12 (425mA)															
1	75	0	120	RSM-175-S-TP	✓	✓			0.82	92	0.94	<25	0.93	R-6	10
			277	VSM-175-S-TP	✓	✓			0.35	94	0.94	<25	0.97		
2	75	50	120	R-2E60-S-TP E-PAK 60	✓	✓	✓	✓	1.24	144	0.86	<30	0.98	R-8	12
				R-2E75-S-TP Mark III	✓	✓	✓	✓	1.35	158	0.94	<30	0.98		
		0	120	S-275-S-TP ●	✓	✓			1.60	181	0.99	<35	0.94	R-11	11
		50	240	YSM-2E75-S-TP	✓				0.67	155	0.92	<30	0.96	R-8	36
			277	V-2E60-S-TP E-PAK 60	✓	✓	✓	✓	0.54	144	0.86	<30	0.96		
				V-2E75-S-TP Mark III	✓	✓	✓	✓	0.60	158	0.94	<25	0.95		
		0		VSH-275-S-TP ●	✓				0.62	163	0.90	<35	0.95	R-11	11
		50	347	G-2E75-S-TP Mark III		✓		✓	0.49	158	0.94	<25	0.93	R-8	36

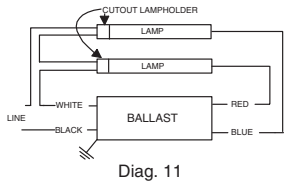
● Sound Rated B

DIMENSIONS

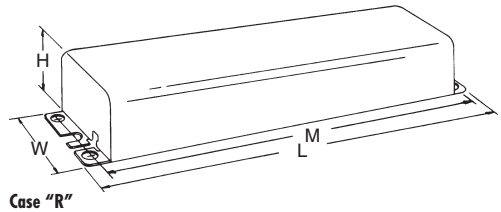
Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-6	9½	3 7/64	1 25/32	8 29/32
R-8	11¾	3 7/64	1 25/32	11 9/64
R-11	14 5/16	3 3/16	2⅝	13¾



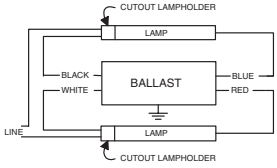
Diag. 10



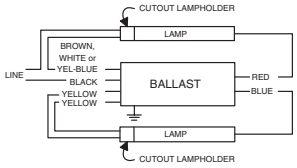
Diag. 11



Case "R"



Diag. 12



Diag. 36

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

ELECTROMAGNETIC BALLASTS

Preheat Lamps

Preheat Ballasts (Starter Required)☆

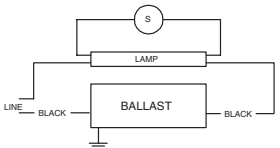
CLASS B INSULATION NORMAL POWER FACTOR SOUND RATED A

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications SA E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F4T5															
1	4	50	120	LPL-5-9 ◆✖❑	✓	✓			0.19	9	1.01	<10	0.39	X-1	116
				LC-4-9-C ★✖	✓	✓			0.20	9	1.07	<10	0.38	C-2	116
F6T5															
1	6	50	120	LPL-5-9 ◆✖❑	✓	✓			0.17	9	1.02	<10	0.44	X-1	116
				LC-4-9-C ★✖	✓	✓			0.19	10	1.07	<10	0.44	C-2	116
F8T5															
1	8	50	120	LPL-5-9 ◆✖❑	✓	✓			0.14	9	1.00	<10	0.54	X-1	116
				LPL-7-9	✓	✓			0.17	11	0.95	<10	0.54	X-2	116
				LC-4-9-C ★✖	✓	✓			0.17	11	1.08	<10	0.54	C-2	116
ELECTRONIC START LOW PROFILE 1	8	50	120	LSX-113-TP ☆ †	✓	✓			0.14	10	0.99	<10	0.60	LS	119
ELECTRONIC START LOW PROFILE 2	8	50	120	LSX-213-TP ☆ †	✓	✓			0.29	19	0.99	<15	0.55	LS	136
F13T5															
1	13	50	120	L-1Q13-TP-W	✓	✓			0.33	18	0.95	<10	0.45	R-4	2
				LS-113-TP †	✓	✓			0.28	17	0.89	<10	0.51	LS	2
ELECTRONIC START LOW PROFILE 1	13	50	120	LSX-113-TP ☆ †	✓	✓			0.14	13	0.88	<15	0.77	LS	119
ELECTRONIC START LOW PROFILE 2	13	50	120	LSX-213-TP ☆ †	✓	✓			0.29	26	0.88	<25	0.75	LS	136
(1) F8T5 & (1) F13T5															
ELECTRONIC START LOW PROFILE 2	8 & 13	50	120	LSX-213-TP ☆ †	✓	✓			0.29	23	0.93	<20	0.66	LS	136

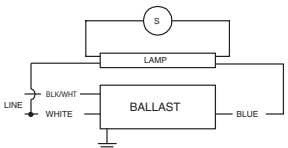
✖ Available with Class P Thermal Protection— Add Suffix -TP to Catalog Number.
◆ Open Core & Coil Ballasts are available without mounting feet— Add Suffix -A to Calalog Number. Units without mounting feet are UL Component Recognized.
★ Core & Coil with Cover, painted white
❑ For Emergency/Exit Fixture applications, add suffix "R" to Catalog Number. Ballasts with this suffix are UL component recognized.
☆ Ballast Includes Built-in Starter
† Class A Insulation

DIMENSIONS

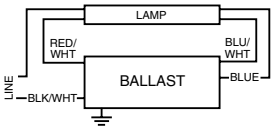
Designation	Length (L) (inches)	Width (W) (inches) Standard	Width (W) (inches) With TP	Height (H) (inches)	Mounting (M) (inches)
C-2	3 1/16	1 3/8	1 19/32	1 13/16	2 3/4
LS	6 7/16	—	1 13/16	15/16	2 3/8
R-4	6 1/2	—	1 15/16	1 3/8	6+
X-1	2 3/8	1 1/8	1 3/8	1 3/8	2
X-2	2 3/8	15/16	—	1 3/8	2



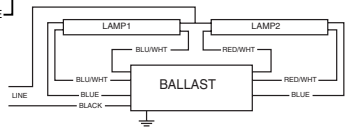
Diag.116



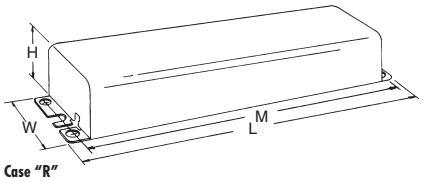
Diag. 2



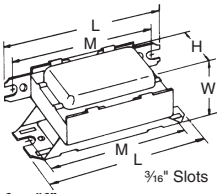
DIAG. 119



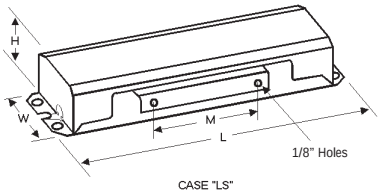
Diag. 136



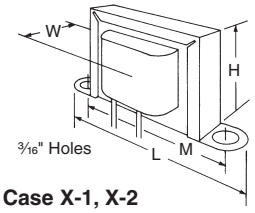
Case "R"



Case "C"



CASE "LS"



Case X-1, X-2

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Preheat Lamps

Preheat Ballasts (Starter Required)☆

CLASS B INSULATION NORMAL POWER FACTOR SOUND RATED A

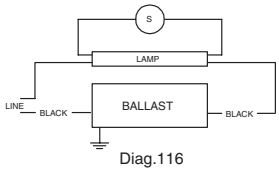
Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications SA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F13T8															
1	13	50	120	LO-13-22 ◆✖❑	✓	✓			0.34	17	0.91	<10	0.42	X-3	116
F14T8															
1	14	50	120	LO-13-22 ◆✖❑	✓	✓			0.32	18	0.90	<20	0.47	X-3	116
				LC-14-20-C ★✖	✓	✓			0.37	20	0.97	<10	0.45	C-2	116
F15T8															
1	15	50	120	LO-13-22 ◆✖❑	✓	✓			0.29	18	0.96	<10	0.52	X-3	116
				LC-14-20-C ★✖	✓	✓			0.34	20	1.08	<10	0.49	C-2	116
				L-120F †●	✓	✓			0.28	17	0.88	<10	0.51	R-1	116
2	15	50	120	L-220F †●	✓	✓			0.57	34	0.93	<10	0.50	R-4	3
F18T8															
1	18	50	120	LO-13-22 ◆✖❑	✓	✓			0.29	17	0.80	<15	0.49	X-3	116
				LC-14-20-C ★✖	✓	✓			0.33	20	0.92	<10	0.51	C-2	116
F19T8															
1	19	50	120	LO-13-22 ◆✖❑	✓	✓			0.28	17	0.90	<15	0.51	X-3	116
				LC-14-20-C ★✖	✓	✓			0.33	20	0.92	<15	0.51	C-2	116
F30T8															
1	30	50	120	L-140F-TP †	✓	✓			0.67	40	0.96	<15	0.50	R-4	2
				LX-140F-TP ☆†	✓	✓			0.64	40	1.00	<10	0.52	R-4	4

✖ Available with Class P Thermal Protection—Add Suffix -TP to Catalog Number.
◆ Open Core & Coil Ballasts are available without mounting feet—Add Suffix -A to Catalog Number. Units without mounting feet are UL Component Recognized.
★ Core & Coil with Cover, painted white
❑ For Emergency/Exit Fixture applications, add suffix "R" to Catalog Number. Ballasts with this suffix are UL component recognized.
☆ Ballast Includes Built-in Starter.
† Class A Insulation
● Sound Rated B

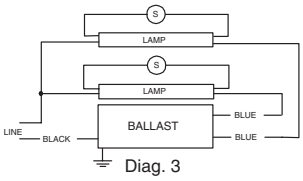
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches) Standard	Width (W) (inches) With TP	Height (H) (inches)	Mounting (M) (inches)
C-2	3 1/16	1 3/8	1 19/32	1 13/16	2 3/4
R-1	4 1/4	2	—	1 7/16	3 9/16
R-4	6 1/2	—	1 15/16	1 3/8	6+
X-3	3 1/16	1 1/4	1 7/16	1 13/16	2 3/4

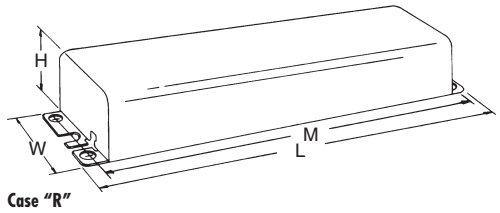
+ Mounting dimensions refer to slots only



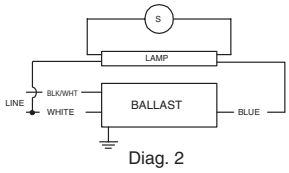
Diag.116



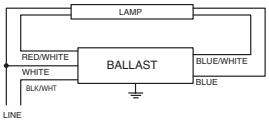
Diag. 3



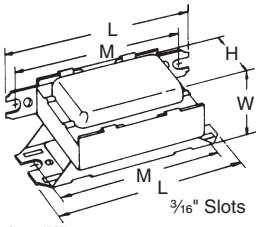
Case "R"



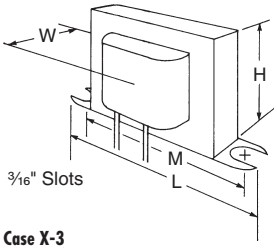
Diag. 2



Diag. 4



Case "C"



Case X-3

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T12

ELECTROMAGNETIC BALLASTS

Preheat Lamps

Preheat Ballasts (Starter Required) ☆

CLASS B INSULATION NORMAL POWER FACTOR SOUND RATED A

ELECTROMAGNETIC PREHEAT

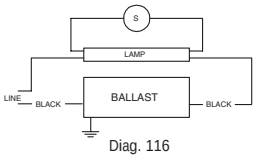
Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F14T12															
1	14	50	120	LO-13-22 ✖◆❑	✓	✓			0.34	18	0.92	<10	0.44	X-3	116
				LC-14-20-C ✖★	✓	✓			0.39	21	1.01	<10	0.45	C-2	116
F15T12															
1	15	50	120	LO-13-22 ✖◆❑	✓	✓			0.32	18	0.97	<10	0.47	X-3	116
				LC-14-20-C ✖★	✓	✓			0.38	21	1.10	<15	0.46	C-2	116
				L-120F †●	✓	✓			0.30	18	0.78	<10	0.50	R-1	116
2	15	50	120	L-220F †●	✓	✓			0.61	36	0.93	<10	0.49	R-4	3
F20T12															
1	20	50	120	LO-13-22 ✖◆❑	✓	✓			0.28	18	0.77	<10	0.54	X-3	116
				LC-14-20-C ✖★	✓	✓			0.33	21	0.93	<10	0.53	C-2	116
				L-120F †●	✓	✓			0.27	19	0.78	<10	0.59	R-1	116
2	20	50	120	L-220F †●	✓	✓			0.55	35	0.75	<10	0.53	R-4	3
F25T12															
1	25	50	120	LC-25 ★✖	✓	✓			0.36	24	0.90	<10	0.56	C-2	116
F30T12															
1	30	50	120	L-140F-TP †	✓	✓			0.73	41	0.95	<10	0.47	R-4	2
				LX-140F-TP †☆	✓	✓			0.73	40	0.95	<10	0.46	R-4	4
F40T12															
1	40	50	120	L-140F-TP †	✓	✓			0.65	41	0.79	<15	0.53	R-4	2
				LX-140F-TP †☆	✓	✓			0.63	40	0.83	<10	0.53	R-4	4

✖ Available with Class P Thermal Protection—
Add Suffix -TP to Catalog Number.
◆ Open Core & Coil Ballasts are available without mounting feet—
Add Suffix -A to Calalog Number. Units without mounting feet are UL Component Recognized.
★ Core & Coil with Cover, painted white
❑ For Emergency/Exit Fixture applications, add suffix "R" to Catalog Number. Ballasts with this suffix are UL component recognized.
☆ Ballast Includes Built-in Starter.
† Class A Insulation
● Sound Rated B

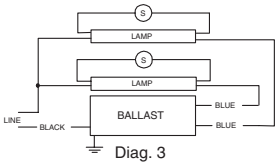
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches) Standard	Width (W) (inches) With TP	Height (H) (inches)	Mounting (M) (inches)
C-2	3 1/16	1 3/8	1 19/32	1 13/16	2 3/4
R-1	4 1/4	2	—	1 7/16	3 9/16
R-4	6 1/2	—	1 15/16	1 3/8	6+
X-3	3 1/16	1 1/4	1 7/16	1 13/16	2 3/4

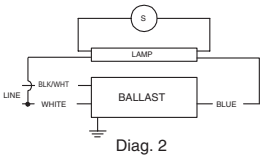
+ Mounting dimensions refer to slots only



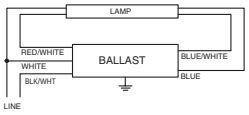
Diag. 116



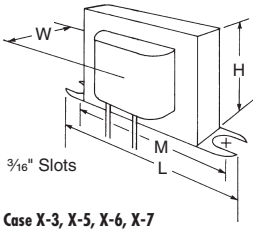
Diag. 3



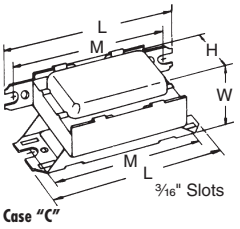
Diag. 2



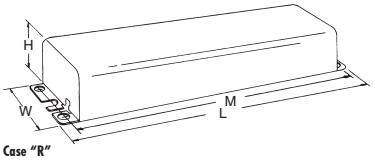
Diag. 4



Case X-3, X-5, X-6, X-7



Case "C"



Case "R"

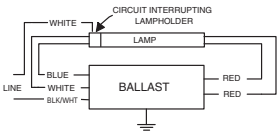
Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Preheat Lamps
Trigger Start Ballasts

NORMAL POWER FACTOR SOUND RATED A

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F4T5 4W F6T5 6W F8T5 8W															
1	8	50	120	LQ-106F-TP	✓				0.34	14	0.86	<25	0.34	R-4	20
			277	VLQ-106F-TP	✓				0.16	14	0.96	<30	0.36		
2	8	50	120	LQ-206-F-TP	✓				0.47	21	0.74	<30	0.37	R-4	21
F13T8															
1	13	20	120	RLQ-120-TP ❖	✓	✓			0.54	23	1.00	<10	0.35	R-4	16
2	13	30	120	RL-2SP20-TP	✓	✓			0.58	36	1.00	<10	0.52	T-1	21
F15T8															
1	15	50	120	RLQ-120-TP ❖	✓	✓			0.56	28	1.01	<10	0.42	R-4	16
		0		HM-1P20-TP ▲	✓	✓			0.24	27	0.90	<15	0.94	T-2	20
			277	VHM-1P20-TP ▲	✓	✓			0.10	27	0.99	<15	0.97		
2	15	50	120	RL-2SP20-TP	✓	✓			0.51	36	0.78	<15	0.59	T-1	21
		20		HM-2SP20-TP ▲	✓	✓			0.47	51	0.99	<20	0.90	T-2	21
		0	277	VM-2SP20-TP ▲	✓				0.21	55	0.94	<20	0.95		
3	15	50	120	RL-3SP20-TP					0.80	64	0.72	<30	0.67	R-5	29
F30T8															
2	30	0	120	RC-2SP830-TP ▲●	✓	✓			0.70	82	0.91	<25	0.98	R-5	21

❖ Requires Circuit-Interrupting Lamp Holders
▲ High Power Factor
● Sound Rated B

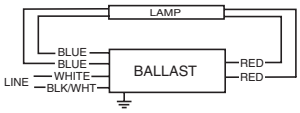


Diag. 16

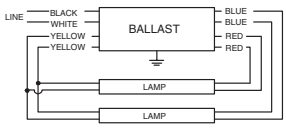
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-4	6½	1 15/16	1⅜	6+
R-5	9½	2⅜	1 11/16	8 29/32
T-1	6½	2⅜	1½	6+
T-2	9½	2⅜	1½	8 29/32

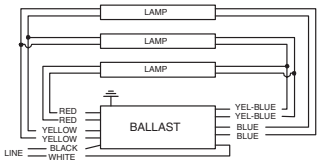
+ Mounting dimensions refer to slots only



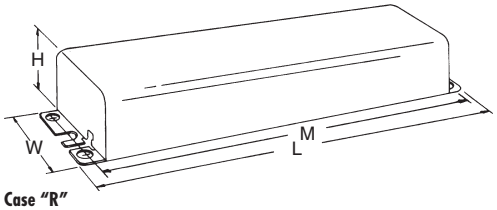
Diag. 20



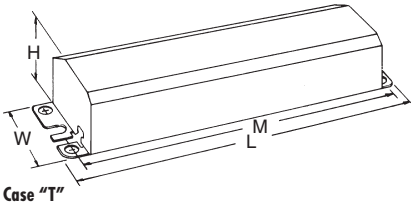
Diag. 21



Diag. 29



Case "R"



Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T12

ELECTROMAGNETIC BALLASTS

Preheat Lamps

Trigger Start Ballasts

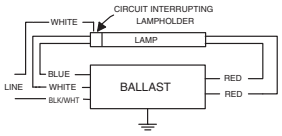
HIGH POWER FACTOR SOUND RATED A

ELECTROMAGNETIC PREHEAT

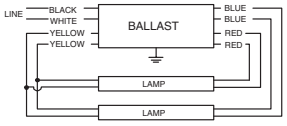
Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications SA E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F14T12															
1	14	50	120	RLQ-120-TP ❖❊	✓	✓			0.58	28	0.92	<10	0.40	R-4	16
		0		HM-1P20-TP	✓	✓			0.21	24	0.82	<10	0.95	T-2	20
			277	VHM-1P20-TP	✓	✓			0.09	25	0.84	<10	0.99		
2	14	0	120	HM-2SP20-TP	✓	✓			0.43	46	0.85	<10	0.90	T-2	21
			277	VM-2SP20-TP	✓				0.19	47	0.88	<15	0.90		
F15T12															
1	15	50	120	RLQ-120-TP ❖❊	✓	✓			0.58	29	0.99	<10	0.42	R-4	16
		0		HM-1P20-TP	✓	✓			0.23	27	0.89	<15	0.98	T-2	20
			277	VHM-1P20-TP	✓	✓			0.10	27	0.94	<10	0.97		
2	15	50	120	RL-2SP20-TP ❊	✓	✓			0.57	41	0.83	<10	0.60	T-1	21
		10		HM-2SP20-TP	✓	✓			0.44	47	0.92	<15	0.90	T-2	21
		0	277	VM-2SP20-TP	✓				0.18	46	0.98	<15	0.92		
3	15	50	120	RL-3SP20-TP ❊	✓	✓			0.89	63	0.94	<10	0.59	R-5	29
F20T12															
1	20	50	120	RLQ-120-TP ❖❊	✓	✓			0.55	28	0.83	<10	0.42	R-4	16
		0		HM-1P20-TP	✓	✓			0.24	29	0.83	<20	0.99	T-2	20
			277	VHM-1P20-TP	✓	✓			0.11	30	0.81	<15	0.98		
2	20	50	120	RL-2SP20-TP ❊	✓	✓			0.49	36	0.61	<15	0.61	T-1	21
		10		HM-2SP20-TP	✓	✓			0.48	53	0.90	<20	0.92	T-2	21
		0	277	VM-2SP20-TP	✓				0.21	54	0.86	<20	0.93		
3	20	50	120	RL-3SP20-TP ❊	✓	✓			0.80	64	0.71	<15	0.67	R-5	29

❖ Requires Circuit-Interrupting Lamp Holders

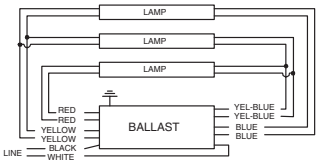
❊ Normal Power Factor



Diag. 16



Diag. 21

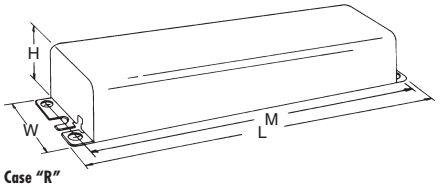


Diag. 29

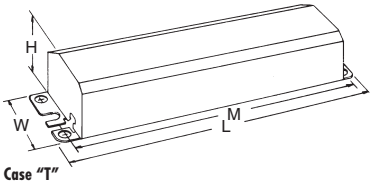
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-4	6½	1 15/16	1⅜	6+
R-5	9½	2⅜	1 11/16	8 29/32
T-1	6½	2⅜	1½	6+
T-2	9½	2⅜	1½	8 29/32

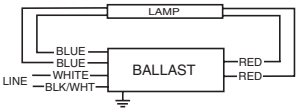
\+ Mounting dimensions refer to slots only



Case "R"



Case "T"



Diag. 20

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Circline Lamps

Preheat Ballasts (Starter Required) ☆

NORMAL POWER FACTOR SOUND RATED A

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
FC6T9															
1	20	50	120	LC-14-20-C-TP ★	✓	✓			0.35	21	0.92	<10	0.50	C-2	43
				LO-13-22-TP ◆	✓	✓			0.30	19	0.82	<10	0.53	X-3	43
FC8T9															
1	22	50	120	LC-14-20-C-TP ★	✓	✓			0.30	21	0.84	<15	0.58	C-2	43
				LO-13-22-TP ◆	✓	✓			0.25	18	0.74	<15	0.60	X-3	43
FC12T9															
1	32	50	120	L-140F-TP	✓	✓			0.75	40	0.90	<10	0.44	R-4	128
				LX-140F-TP ☆	✓	✓			0.71	40	0.91	<10	0.47	R-4	127
FC16T9															
1	40	50	120	L-140F-TP	✓	✓			0.59	39	0.90	<15	0.55	R-4	128
				LX-140F-TP ☆	✓	✓			0.54	37	0.81	<15	0.57	R-4	127

◆ Open Core & Coil Ballasts are available without mounting feet — Add Suffix -A to Calalog Number. Units without mounting feet are UL Component Recognized.

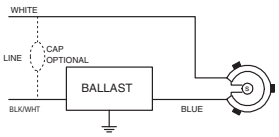
★ Core & Coil with Cover, painted white

☆ Ballast Includes Built-in Starter

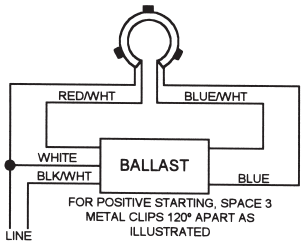
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
C-2	3 1/16	1 19/32	1 13/16	2 3/4
R-4	6 1/2	1 15/16	1 3/8	6+
X-3	3 1/16	1 1/4	1 13/16	2 3/4

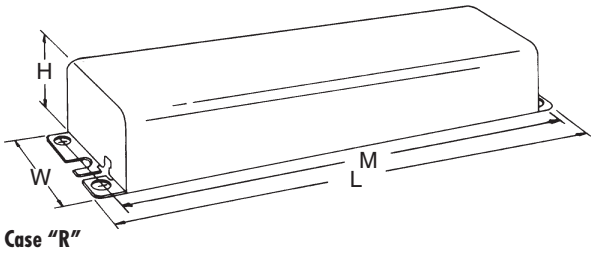
+ Mounting dimensions refer to slots only



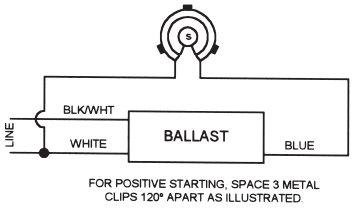
Diag. 43



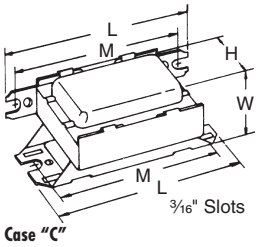
Diag. 127



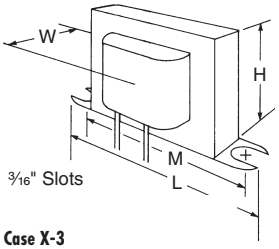
Case "R"



Diag. 128



Case "C"



Case X-3

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Circline Lamps

Rapid Start Ballasts

NORMAL POWER FACTOR SOUND RATED A

Lamp Data		Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications				Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
Number	Watts				UL	CSA	E	E							
FC6T9															
1	20	50	120	RLQS-122-TP-W	✓	✓			0.56	24	0.76	<10	0.36	R-4	32
FC8T9															
1	22	50	120	RLQS-122-TP-W	✓	✓			0.53	25	0.75	<10	0.39	R-4	32
FC12T9															
1	32	50	120	RL-140-TP	✓	✓			0.59	32	0.68	<15	0.45	R-4	31
				RLCS-140-TP-W	✓	✓			0.57	31	0.63	<10	0.45	R-4	32
FC16T9															
1	40	50	120	RL-140-TP	✓	✓			0.46	29	0.55	<15	0.53	R-4	31
				RLCS-140-TP-W	✓	✓			0.44	28	0.50	<15	0.53	R-4	32
(1)FC8T9 & (1)FC12T9															
2	22 & 32	50	120	RS-22-32-TP-W	✓	✓			0.40	46	0.70	<15	0.96	T-1	105
				RMS-22-32-TP-W ▲	✓	✓			0.36	40	0.61	<15	0.93		
(1)FC12T9 & (1)FC16T9															
2	32 & 40	50	120	RS-32-40-TP-W	✓	✓			0.76	56	0.60	<20	0.61	T-1	105
				RMS-32-40-TP-W ▲	✓	✓			0.52	60	0.70	<15	0.96		

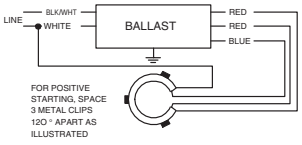
Note: All Ballasts supplied with Circline sockets in white can except RL-140-TP

▲ High Power Factor

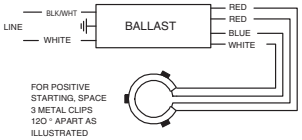
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-4	6½	1 15/16	1⅜	6+
T-1	6½	2⅜	1½	6+

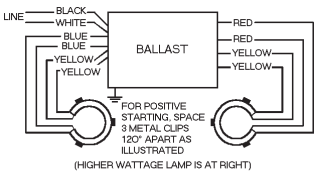
+ Mounting dimensions refer to slots only



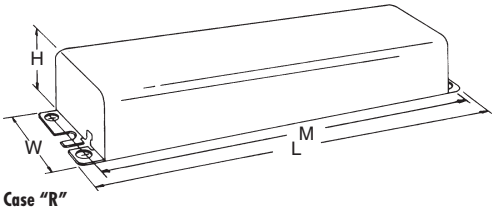
Diag. 31



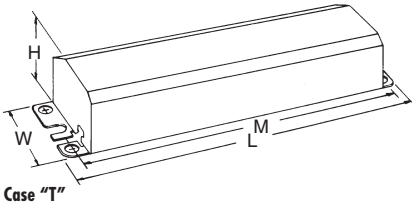
Diag. 32



Diag. 105



Case "R"



Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

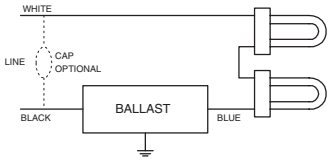
2-Pin Compact Lamps
Preheat Ballasts

CLASS B INSULATION NORMAL POWER FACTOR SOUND RATED A

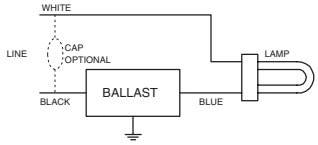
Lamp Data		Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications				Line Current (Amps)			Input Power ANSI (Watts)	Ballast Factor	THD %	Dim.	Wiring Dia.
Number	Watts				UL	CSA	E	CSA E	Operating	Starting	Open Circuit					
CFT5W/G23, PL-S5W, F5 BX, CF5DS																
1	5	0	120	LPL-5-9-TP ◆ ❑	✓	✓			0.19	0.19	—	9	1.06	<10	X-1	140
CFT7W/G23, PL-S7W, F7 BX, CF7DS																
1	7	0	120	LPL-5-9-TP ◆ ❑	✓	✓			0.17	0.19	—	9	0.96	<10	X-1	140
				LC-4-9-C-TP ★	✓	✓			0.19	0.20	—	10	1.06	<10	C-2	140
CFT9W/G23, PL-S9W, F9BX, CF9DS CFQ9W/G23, F9DBX23T4, CF9DD																
1	9	25	120	LPL-5-9-TP ◆ ❑	✓	✓			0.14	0.19	—	10	0.89	<10	X-1	140
				LC-4-9-C-TP ★	✓	✓			0.16	0.20	—	11	1.00	<10	C-2	140
CFT13W/G23, PL-S13W, F13BX, CF13DS CFQ13W/G23, PL-C13W/USA, F13DBX23T4, CF13DD																
1	13	32	120	LC-13-TP ★	✓	✓			0.27	0.37	—	16	0.93	<15	C-2	140
				LO-13-22-TP ◆	✓	✓			0.29	0.44	—	17	1.00	<15	X-3	140
			277	VLO-13-TP ◆	✓	✓			0.30	0.35	—	22	1.00	<10	X-5	140
2	13	32	277	VLO-2S13-TP ◆	✓				0.31	0.38	—	34	0.95	<15	X-8	46

Above Units Available for Outdoor Fixtures labeled "Outdoor Use Only." Eliminate TP from Catalog Number.

- ◆ Open Core & Coil Ballasts are available without mounting feet—Add Suffix -A to Calalog Number. Units without mounting feet are UL Component Recognized.
- ★ Core & Coil with Cover, painted white
- ❑ For Emergency/Exit Fixture Applications, add Suffix "R" to Catalog Number. Ballast with this Suffix are UL Component Recognized.



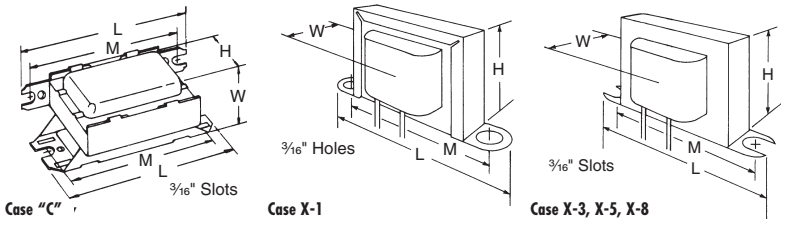
Diag. 46



Diag.140

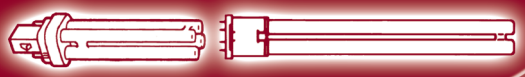
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)		Height (H) (inches)	Mounting (M) (inches)
		Standard	With TP		
C-2	3 1/16	1 3/8	1 19/32	1 13/16	2 3/4
X-1	2 3/8	1 1/8	1 3/8	1 3/8	2
X-3	3 1/16	1 1/4	1 7/16	1 13/16	2 3/4
X-5	3 1/4	1 1/2	1 3/4	2	2 13/16
X-8	4	1 9/16	1 13/16	2 1/4	3 1/2



Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T4 and T5



ELECTROMAGNETIC BALLASTS

2-Pin Compact & 4-Pin Long Twin Tube Lamps

Preheat Ballasts

CLASS B INSULATION NORMAL POWER FACTOR SOUND RATED A

ELECTROMAGNETIC COMPACT

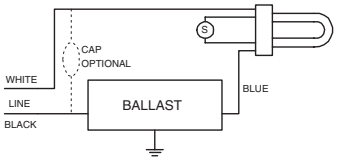
Lamp Data		Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications				Line Current (Amps)			Input Power ANSI (Watts)	Ballast Factor	THD %	Dim.	Wiring Dia.
Number	Watts				UL	CSA	E		Operating	Starting	Open Circuit					
FT18W/2G11, PL-L18 F18 BX, FT18DL																**LONG TWIN TUBE LAMP (STARTER REQUIRED)**
1	18	50	120	LC-25-TP ★	✓	✓			0.39	0.59	—	22	1.05	<15	C-2	44
				LO-13-22-TP ◆	✓	✓			0.21	0.44	—	16	0.89	<20	X-3	44
CFQ20W/GX32d, PL-C 15mm/22W, FDL-22																
1	22	0	120	LO-1Q22 ⊗ ◆	✓	✓			0.51	0.74	—	25	1.07	<20	X-7	107
CFQ26W/G24d, PL-C26W, F26DBXT4, CF26DD																
1	26	50	277	VLO-13-TP ◆	✓	✓			0.27	0.35	—	29	0.80	<10	X-5	140
CFQ27W/GX32d, PL-C15mm/28W, FDL-28																
1	28	-20	120	LO-1Q28-TP ◆	✓	✓			0.59	0.74	—	32	0.97	<10	X-8	140
				LOS-1Q28 ⊗ ◆	✓	✓			0.61	0.74	—	32	0.97	<15	X-6	107

Above Units Available for Outdoor Fixtures labeled "Outdoor Use Only." Eliminate TP from Catalog Number.

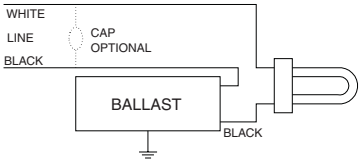
◆ Open Core & Coil Ballasts are available without mounting feet—Add Suffix -A to Calalog Number. Units without mounting feet are UL Component Recognized.

★ Core & Coil with Cover, painted white

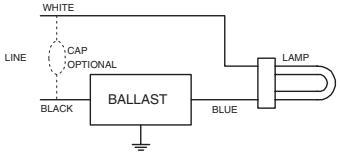
⊗ For Outdoor Use Only



Diag. 44



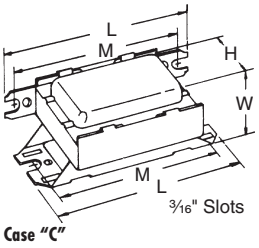
Diag. 107



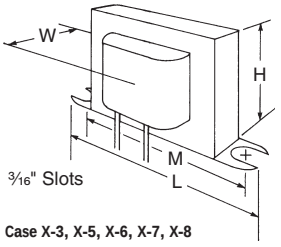
Diag. 140

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)		Height (H) (inches)	Mounting (M) (inches)
		Standard	With TP		
C-2	3 1/16	1 3/8	1 19/32	1 13/16	2 3/4
X-3	3 1/16	1 1/4	1 7/16	1 13/16	2 3/4
X-5	3 1/4	1 1/2	1 3/4	2	2 13/16
X-6	3 1/16	1 5/8	—	1 13/16	2 3/4
X-7	3 1/16	1 3/8	—	1 13/16	2 3/4
X-8	4	1 9/16	1 13/16	2 1/4	3 1/2



Case "C"



Case X-3, X-5, X-6, X-7, X-8

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

2-Pin Compact Lamps
Preheat Ballasts

HIGH POWER FACTOR SOUND RATED A

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog ✧ Number	Certifications UL	Certifications CSA	Certifications E	Certifications SA E	Line Current (Amps) Operating	Line Current (Amps) Starting	Line Current (Amps) Open Circuit	Input Power ANSI (Watts)	Ballast Factor	THD %	Dim.	Wiring Dia.
CFT5W/G23, PL-S5W, F5 BX, CF 5DS																
1	5	0	120	L-1B9-TP ❇	✓	✓			0.19	0.20	—	11	1.00	<10	R-1	45
		25		H-1B9-TP	✓	✓			0.10	0.20	0.13	11	1.06	<20	R-1	47
		0	277	VL-1B9-TP ❇	✓	✓			0.17	0.18	—	15	0.96	<12	R-2	45
				VH-1B9-TP	✓	✓			0.05	0.18	0.17	11	0.95	<35	R-2	47
CFT7W/G23, PL-S7W, F7 BX, CF 7DS																
1	7	0	120	L-1B9-TP ❇	✓	✓			0.18	0.20	—	11	1.00	<10	R-1	45
				H-1B9-TP	✓	✓			0.10	0.20	0.13	11	1.00	<20	R-1	47
			277	VL-1B9-TP ❇	✓	✓			0.17	0.18	—	14	0.95	<15	R-2	45
				VH-1B9-TP	✓	✓			0.05	0.18	0.17	12	0.93	<30	R-2	47
2	7	0	120	H-2B9-TP	✓	✓			0.23	0.21	—	22	1.00	<30	T-1	51
			277	VH-2B9-TP	✓	✓			0.07	0.16	0.10	16	0.85	<15	R-2	50
CFT9W/G23, PL-S9W, F9BX, CF9DS, CFQ9W/G23, F9DBX23T4, CF9DD																
1	9	25	120	L-1B9-TP ❇	✓	✓			0.16	0.20	—	11	0.86	<10	R-1	45
				H-1B9-TP	✓	✓			0.10	0.20	0.13	11	0.92	<20	R-1	47
		0	277	VL-1B9-TP ❇	✓	✓			0.17	0.18	—	14	0.92	<15	R-2	45
				VH-1B9-TP	✓	✓			0.05	0.18	0.17	13	0.95	<35	R-2	47
2	9	25	120	H-2B9-TP	✓	✓			0.25	0.21	—	28	1.00	<30	T-1	51
		0	277	VH-2B9-TP	✓	✓			0.07	0.16	0.10	17	0.82	<20	R-2	50

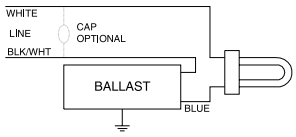
✧ **Ordering Information**
Add suffix -W to Catalog Number for white can with leads exiting end of ballast.
Add suffix -BLS to Catalog Number for black can with bottom leads and studs. See page 1-36.

❇ Normal Power Factor

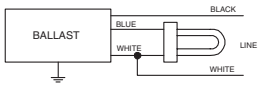
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-1	4¼	2	1 7/16	3 9/16
R-2	4¾	2 7/32	1⅝	4⅜ +
T-1	6½	2⅜	1½	6+

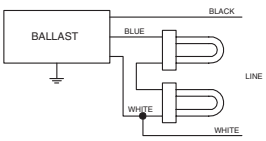
+ Mounting dimensions refer to slots only



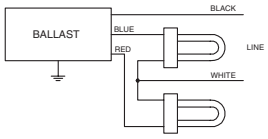
Diag. 45



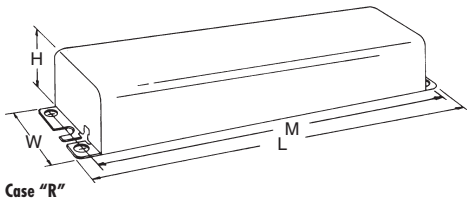
Diag. 47



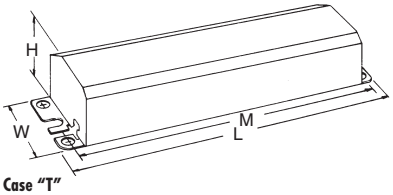
Diag. 50



Diag. 51



Case "R"



Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

ELECTROMAGNETIC BALLASTS

2-Pin Compact Lamps

Preheat Ballasts

HIGH POWER FACTOR SOUND RATED A

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog ✧ Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA E	Line Current (Amps) Operating	Line Current (Amps) Starting	Line Current (Amps) Open Circuit	Input Power ANSI (Watts)	Ballast Factor	THD %	Dim.	Wiring Dia.
CFQ10W/G24d, PL-C10W, F10DBXT4, DULUX-D10																
1	10	0	120	L-1Q13-TP -W❇	✓	✓			0.38	0.19	—	16	0.96	<10	R-4	47
CFQ13W/G24d, PL-C13W, F13DBXT4, DULUX-D13																
1	13	0	120	L-1Q13-TP -W❇	✓	✓			0.35	0.19	—	18	0.93	<10	R-4	47
CFT13W/G23, PL-S13W, F13BX, CF13DS, CFQ13W/G23, PL-C13W/USA, F13DBX23T4, CF13DD																
1	13	32	120	L-1B13-TP ❇	✓	✓			0.26	0.30	—	16	0.93	<15	R-1	45
				H-1B13-TP	✓	✓			0.14	0.36	0.22	16	0.90	<25	R-1	47
				L-1BC13-TP ❇††	✓	✓			0.28	0.35	—	16	1.00	<15	R-2	45
		0	277	VL-1B13-TP ❇	✓	✓			0.26	0.28	—	24	0.98	<15		
				VH-1B13-TP	✓	✓			0.10	0.30	0.26	24	0.99	<30	R-2	47
2	13	32	120	H-2B13-TP	✓	✓			0.30	0.44	—	35	1.02	<30	T-1	51
		0	277	VH-2B13-TP	✓	✓			0.10	0.35	0.21	27	0.92	<30	R-2	50

✧ **Ordering Information**
Add suffix -W to Catalog Number for white can with leads exiting end of ballast.
Add suffix -BLS to Catalog Number for black can with bottom leads and studs. See page 1-36.

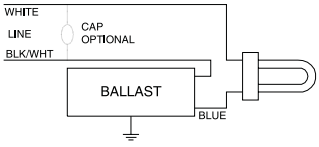
❇ Normal Power Factor

†† Cooler Operating for Insulated Ceiling

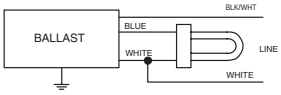
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-1	4¼	2	1 7/16	3 9/16
R-2	4¾	2 7/32	1⅝	4⅜ +
R-4	6½	1 15/16	1⅜	6+
T-1	6½	2⅜	1½	6+

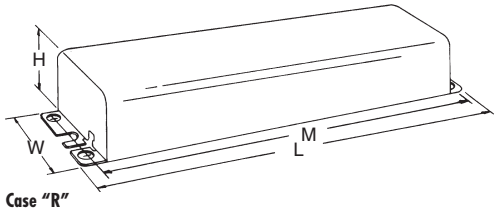
\+ Mounting dimensions refer to slots only



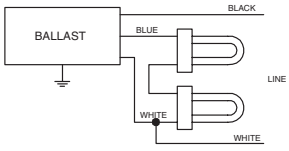
Diag. 45



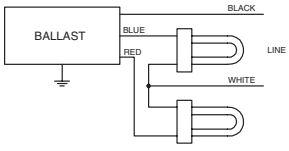
Diag. 47



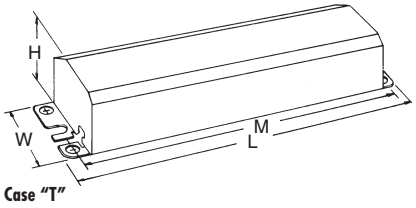
Case "R"



Diag. 50



Diag. 51



Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T4 and T5

2-Pin Compact Lamps
Preheat Ballasts

HIGH POWER FACTOR SOUND RATED A

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number ✧	Certifications UL	Certifications CSA	Certifications E	Certifications	Line Current (Amps) Operating	Line Current (Amps) Starting	Line Current (Amps) Open Circuit	Input Power ANSI (Watts)	Ballast Factor	THD %	Dim.	Wiring Dia.
CFQ18W/G24d, PL-C18W, F18DBXT4, CF 18DD, CFM18W/GX24d, F18TBX, CF 18DT																
1	18	50	120	L-1Q18-TP ❊	✓	✓			0.48	0.27	—	25	0.96	<10	R-4	47
				H-1Q18-TP	✓	✓			0.19	0.27	0.35	23	1.00	<10	T-1	47
			277	VL1Q18-TP ❊	✓	✓			0.22	0.27	—	22	0.99	<15	R-2	45
				VH-1Q18-TP	✓	✓			0.10	0.27	0.16	23	1.00	<30	R-2	47
2	18	50	120	H-2Q18-TP	✓	✓			0.37	0.26	0.73	44	0.94	<25	R-5	50
			277	VH-2Q18-TP	✓	✓			0.15	0.28	—	42	0.93	<25	R-5	51
CFQ20W/GX32d, PL-C15mm/22W, FDL-22																
1	22	0	120	H-1Q22-TP	✓	✓			0.23	0.62	0.31	26	1.01	<20	R-2	47
CFQ26W/G24d, PL-C26W, F26DBXT4, CF 26DD, CFM26W/GX24d, F26TBX, CF 26DT																
1	26	50	120	L-1Q26-TP ❊	✓	✓			0.67	0.46	—	33	0.93	<15	R-4	47
				H-1Q26-TP	✓	✓			0.24	0.33	0.41	28	0.83	<20	T-1	47
			277	VL-1Q26-TP ❊	✓	✓			0.27	0.33	—	31	0.90	<15	R-2	45
				VH-1Q26-TP	✓	✓			0.11	0.38	0.24	32	0.90	<20	R-2	47
2	26	50	120	H-2Q26-TP	✓	✓			0.42	0.34		50	0.82	<15	R-5	50
			277	VH-2Q26-TP	✓	✓			0.21	0.32	—	58	0.87	<25	R-5	51
CFQ27W/GX32d, PL-C 15mm/28W, FDL-28																
1	28	-20	120	H-1Q28-TP	✓	✓			0.27	0.84	0.44	32	0.87	<25	R-2	47

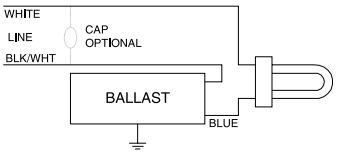
✧ **Ordering Information**
Add suffix -W to Catalog Number for white can with leads exiting end of ballast.
Add suffix -BLS to Catalog Number for black can with bottom leads and studs. See page 1-36.

❊ Normal Power Factor

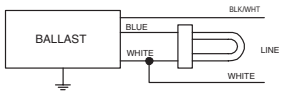
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-2	4¾	2 7/32	1⅝	4⅜ +
R-4	6½	1 15/16	1⅜	6+
R-5	9½	2⅜	1 11/16	8 29/32
T-1	6½	2⅜	1½	6+

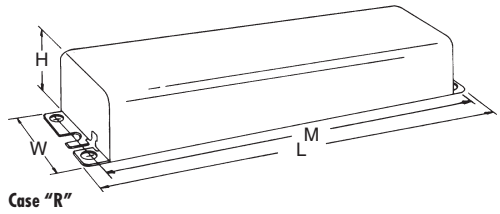
\+ Mounting dimensions refer to slots only



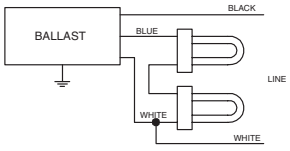
Diag. 45



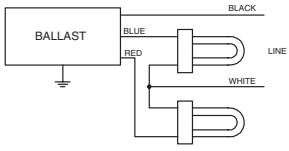
Diag. 47



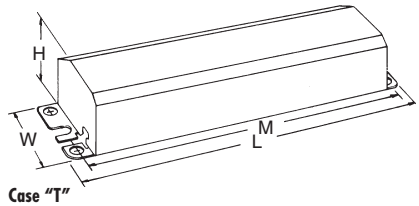
Case "R"



Diag. 50



Diag. 51



Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T4 and T6

ELECTROMAGNETIC BALLASTS

2D Square Shaped Lamps
Preheat Ballasts

HIGH POWER FACTOR SOUND RATED A

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog✧ Number	Certifications UL	Certifications CSA	Certifications E	Certifications CSA E	Line Current (Amps) Operating	Line Current (Amps) Starting	Line Current (Amps) Open Circuit	Input Power ANSI (Watts)	Ballast Factor	THD %	Dim.	Wiring Dia.
CFS16W/GR8, F16 2D																
1	16	25	120	L-1Q18-TP ❇	✓	✓			0.48	0.27	—	24	1.03	<10	R-4	22
				H-1Q18-TP	✓	✓			0.19	0.27	0.35	23	1.06	<10	T-1	22
CFS21W/GR10q, F21 2D/4P																
1	21	25	120	L-1Q26-TP ❇	✓	✓			0.66	0.46	—	32	0.98	<15	R-4	22
				H-1Q26-TP	✓	✓			0.23	0.33	0.41	26	0.82	<15	T-1	22
CFS28W/GR8, F28 2D																
1	28	25	120	L-140-F-TP ❇	✓	✓			0.70	—	—	39	0.94	<15	R-4	22
				L-1Q26-TP ❇	✓	✓			0.63	0.46	—	35	0.97	<15		
				H-1Q26-TP	✓	✓			0.24	0.33	0.41	28	0.80	<20	T-1	22
CFS28W/GR10q, F28 2D/4P																
1	28	50	120	LX-140-F-TP ❇ ☆	✓	✓			0.63	—	—	40	1.02	<15	R-4	129

✧ **Ordering Information**
Add suffix -W to Catalog Number for white can with leads exiting end of ballast.
Add suffix -BLS to Catalog Number for black can with bottom leads and studs.

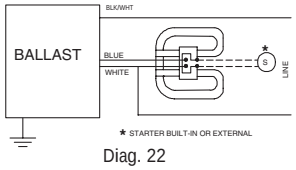
❇ Normal Power Factor

☆ Ballast includes built-in starter

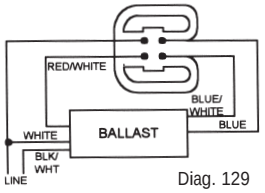
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-4	6½	1 15/16	1⅜	6+
T-1	6½	2⅜	1½	6+

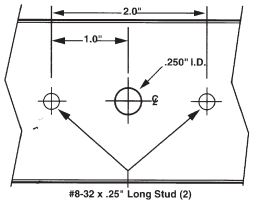
+ Mounting dimensions refer to slots only



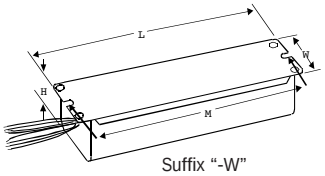
Diag. 22



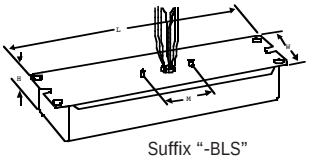
Diag. 129



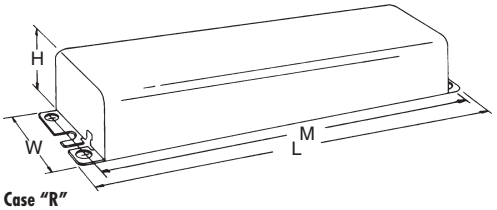
Bottom-lead-with-stud ballast (BLS) base showing lead hole and two studs for mating with junction box. Hole position and dimensions are the same for bottom-lead ballast (BL) without studs.



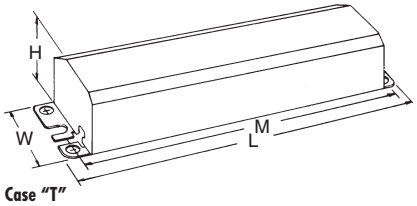
Suffix "-W"



Suffix "-BLS"



Case "R"



Case "T"

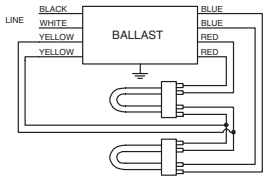
Refer to pages 7-34 to 7-42 for lead lengths and shipping data

4-Pin Compact Lamps
Rapid Start Ballasts

HIGH POWER FACTOR SOUND RATED A

Lamp Data		Min. Starting Temp. (F)	Input Volts	Catalog ✧ Number	Certifications				Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
Number	Watts				UL	CSA	E	CSA E							
CFQ18W/G24q, PL-C18W/4P, F18DBX/4P, CF18DD/E															
2	18	50	120	R-2Q18-4P-TP	✓	✓			0.39	46	1.00	<15	0.98	R-15	41
			277	V-2Q18-4P-TP	✓	✓			0.17	46	1.00	<15	0.98		
CFQ26W/G24q, PL-C26W/4P, F26DBX/4P, CF26DD/E															
2	26	50	120	R-2Q26-4P-TP	✓	✓			0.57	65	1.00	<15	0.95	R-15	41
			277	V-2Q26-4P-TP	✓	✓			0.25	65	1.00	<15	0.95		

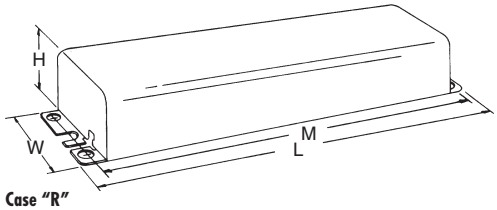
✧ **Ordering Information**
Add suffix -W to Catalog Number for White Can with leads exiting end of ballast.
Add suffix -BLS to Catalog Number for Black Can with Bottom Leads and studs.



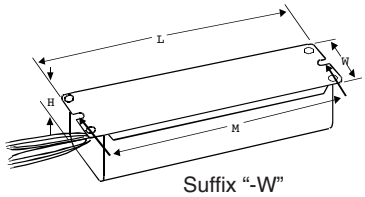
Diag. 41

DIMENSIONS

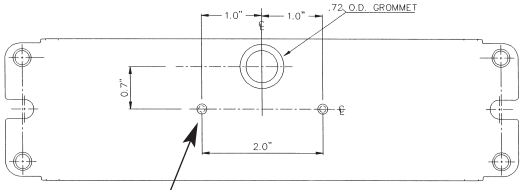
Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-15	8½	2 5/16	1 11/16	7 29/32



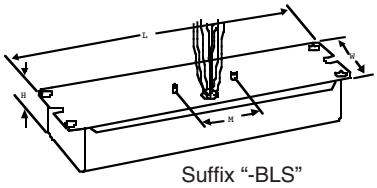
Case "R"



Suffix "-W"



(2) #8–32 x .25" LONG STUDS



Suffix "-BLS"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

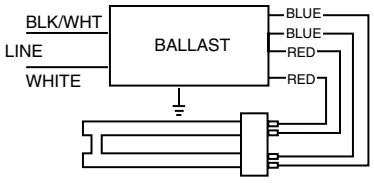
ELECTROMAGNETIC BALLASTS

Long Twin Tube Lamps

Rapid Start Ballasts

HIGH POWER FACTOR SOUND RATED A

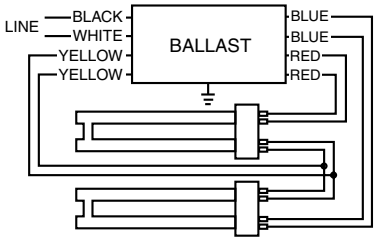
Lamp Data		Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications				Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
Number	Watts				UL	CSA	E	CSA E							
FT 18W/2G11/RS, F18BX/RS, FT 18DL/RS															
1	18	50	120	R-1P817-TP	✓	✓			0.22	25	1.01	<25	0.95	T-2	93
			277	V-1P817-TP	✓				0.10	24	1.05	<20	0.91		
2	18	50	120	R-2P817-TP	✓	✓			0.41	47	0.98	<20	0.95	T-2	94
			277	V-2P817-TP	✓				0.15	40	1.00	<20	0.96		
FT 24W/2G11, PL-L24, F27 BX/RS, FT 24 DL															
1	24-27	50	120	R-1BP27-TP	✓	✓			0.26	30	0.88	<20	0.96	T-2	93
			277	V-1BP27-TP	✓				0.12	31	0.86	<20	0.93		
2	24-27	50	120	R-2BP27-TP	✓	✓			0.56	66	0.95	<15	0.98	T-2	94
			277	V-2BP27-TP	✓				0.23	60	0.96	<20	0.94		
FT 36W/2G11, PL-L36, F39 BX/RS, FT 36 DL															
1	36-39	50	120	R-1BP39-TP	✓	✓			0.45	53	0.97	<20	0.98	T-2	93
			277	V-1BP39-TP	✓				0.20	53	0.98	<20	0.96		
2	36-39	50	120	R-2BS39-TP	✓	✓			0.80	87	0.90	<25	0.91	T-2	94
			277	V-2BS39-TP	✓				0.33	84	0.91	<30	0.92		
FT40 W/2G11/RS, PL-L40, F40 BX/RS, FT 40 DL/RS															
1	40	50	120	R-1BP40-TP	✓	✓			0.41	48	0.97	<20	0.98	T-2	93
			277	V-1BP40-TP	✓				0.18	48	0.98	<25	0.96		
2	40	50	120	R-2BS40-TP	✓	✓			0.65	77	0.87	<20	0.98	T-2	94
			277	V-2BS40-TP	✓				0.30	80	0.88	<20	0.96		



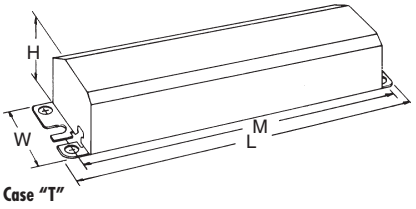
DIAG. 93

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
T-2	9½	2⅜	1½	8 29/32



DIAG. 94



Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T12

Straight & U-Shaped
Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED A

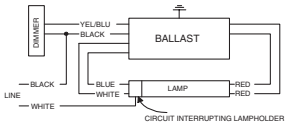
Dimming

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications SAV E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F40T12 (430mA) **F40T12/U (430mA)**															
1	40	50	120	DIM-140-H-TP	✓	✓			0.52	58	1.00	<15	0.93	R-5	17
2	40	50	120	DIM-240-H-TP	✓	✓			0.94	103	0.92	<15	0.91	R-12	84

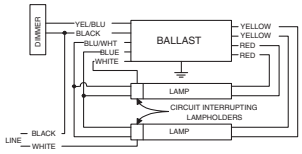
Data listed is for full light output
Line Current Controlled by Control Setting
Dimming Range-100%—5%
All Require Circuit Interrupting Lampholders
Note: Will NOT Operate 34W Energy Saver Lamps

DIMENSIONS

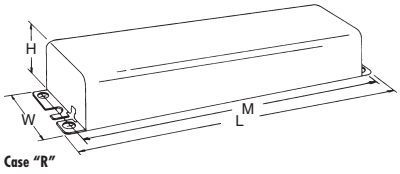
Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-5	9½	2⅜	1 11/16	8 29/32
R-12	15¾	2⅜	1½	14 7/16



Diag. 17



Diag. 84



Case "R"

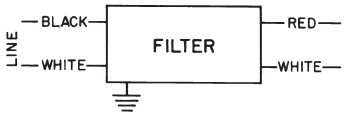
RADIO INTERFERENCE FILTER

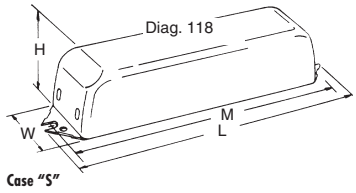
Radio interface is caused by the action of the arc at the lamp electrodes which creates a series of radio waves. This energy may interfere with radio reception by:

1. Direct radiation from the fluorescent lamp to the aerial circuit.
2. Line feedback from the lamp through the power line to the radio.
3. Direct radiation from the electrical supply line to the aerial circuit.

To correct the first cause, it is recommended the radio and aerial circuit be separated at least 10 feet from the fluorescent lamp and the radio provided with a positive ground.

The second and third causes can generally be corrected by the addition of an external capacitor-reactor filter. It is also desirable that the radio and fluorescent lamp fixture be provided a supply voltage from separate branch circuits.





Case "S"

SOUND RATED A

Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Dimensions (inches) Length	Dimensions (inches) Width	Dimensions (inches) Height	Dimensions (inches) Mounting	Wiring Diagram
105-380	RIF-1	✓	✓	4.25 max.	4¾	2 7/32	1⅝	4⅜	118

For bottom leads with studs, add suffix -BLS See page 1-36.

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T12

ELECTROMAGNETIC BALLASTS

High Output
Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED C

Weatherproof

ELECTROMAGNETIC WEATHERPROOF

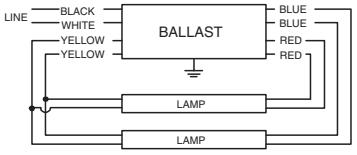
Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications ANSI E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F24T12/HO (800mA)															
2	35	-20	120	RC-2S85-FO	✓				1.01	95	0.78	<45	0.80	FO	21
F36T12/HO (800mA)															
2	50	-20	120	RC-2S85-FO	✓				1.00	107	0.82	<35	0.90	FO	21
F42T12/HO (800mA)															
2	55	-20	120	RC-2S85-FO	✓				1.10	126	0.82	<35	0.95	FO	21
F48T12/HO (800mA)															
1	60	-20	120	RC-2S85-FO	✓				0.91	79	0.78	<50	0.75	FO	39
2	60	-20	120	RC-2S85-FO	✓				1.16	133	0.85	<20	0.95	FO	21
F60T12/HO (800mA)															
1	75	-20	120	RC-2S85-FO	✓				0.94	90	0.77	<40	0.80	FO	39
F64T12/HO (800mA)															
1	80	-20	120	RC-2S85-FO	✓				0.99	99	0.82	<40	0.85	FO	39
2	80	-20	120	RC-2S85-FO	✓				1.50	178	0.92	<15	0.99	FO	21
F72T12/HO (800mA)															
1	85	-20	120	RC-2S85-FO	✓				0.98	100	0.82	<35	0.85	FO	39
2	85	-20	120	RC-2S85-FO	✓				1.54	184	0.91	<15	0.99	FO	21
				RC-2S110-FO ●	✓				1.80	203	0.99	<20	0.94		
			277	VC-2S110-FO ●	✓				0.78	205	0.96	<20	0.95		
F96T12/HO (800mA)															
1	110	-20	120	RC-2S85-FO	✓				1.07	121	0.84	<25	0.94	FO	39
2	110	-20	120	RC-2S110-FO ●	✓				2.10	248	0.98	<15	0.98	FO	21
			277	VC-2S110-FO ●	✓				0.90	249	0.98	<20	0.99		

Note: Can must be mounted vertically
● Sound Rated B

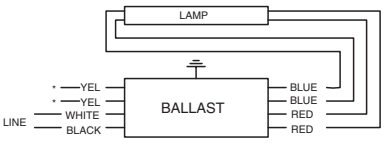
Rectangular Can (FO)

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
FO	21 1/16	3 3/4	3	20 5/16



Diag. 21



*FOR SINGLE LAMP OPERATION, INSULATE YELLOW LEADS INDIVIDUALLY FOR 600V

Diag. 39

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T10 and T12

Very High Output
VHO & Powergroove Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED D

Weatherproof

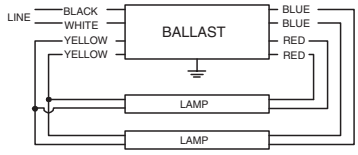
Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	CSA	E	CSA E	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F48T10/VHO (1500mA) F48T12/VHO (1500mA) F48PG17/VHO (1500mA)															
1	116	-20	120	RC-2S102-FO	✓				1.70	130	0.87	<30	0.65	F0	39
			277	VC-2S102-FO	✓				0.59	137	0.85	<35	0.85	F0	39
2	116	-20	120	RC-2S102-FO	✓				2.20	230	0.89	<35	0.90	F0	21
			277	VC-2S102-FO	✓				0.94	241	0.87	<40	0.93	F0	21
F60T10/VHO (1500mA) F60T12/VHO (1500mA)															
1	138	-20	120	RC-2S102-FO	✓				1.75	140	0.90	<30	0.70	F0	39
			277	VC-2S102-FO	✓				0.65	157	0.86	<35	0.87	F0	39
F72T10/VHO (1500mA) F72T12/VHO (1500mA) F72PG17/VHO (1500mA)															
1	168	-20	120	RC-2S102-FO	✓				1.90	173	0.87	<30	0.75	F0	39
			277	VC-2S102-FO	✓				0.69	168	0.87	<35	0.88	F0	39
2	168	-20	120	RS-2S200-FO	✓				3.41	399	0.99	<15	0.98	F0	21
			277	VS-2S200-FO	✓				1.40	376	0.99	<15	0.97	F0	21
F96T10/VHO (1500mA) F96T12/VHO (1500mA) F96PG17/VHO (1500mA)															
1	215	50	120	RC-2S102-FO	✓				2.10	213	0.87	<40	0.85	F0	39
			277	VC-2S102-FO	✓				0.89	216	0.88	<45	0.88	F0	39
2	215	-20	120	RS-2S200-FO	✓				3.89	467	1.01	<10	0.99	F0	21
			277	VS-2S200-FO	✓				1.65	442	1.00	<15	0.97	FO	21

Note: Can must be mounted vertically

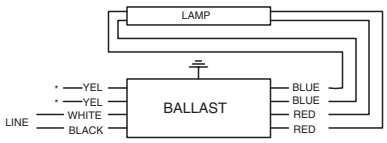
Rectangular Can (FO)

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
FO	21 1/16	3 3/4	3	20 5/16



Diag. 21



*FOR SINGLE LAMP OPERATION, INSULATE YELLOW LEADS INDIVIDUALLY FOR 600V

Diag. 39

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

CLASS P BALLAST IN WHITE CAN

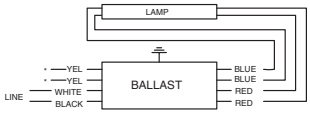
Plastic-Sign

Lamp Data			Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications				Max. Line Current (Amps)	Max. Input Power (Watts)	Open Circuit Volts	Dim.	Wiring Dia.
No. of Lamps	Lamp Footage Min	Lamp Footage Max				UL	CSA	E	CSA E					
T12/HO (800mA)														
1,2	4	12	-20	120	ASB-0412-12-BL-TP	✓	✓			1.48	175	480	BL-1	21,39
2,3,4	6	20			ASB-0620-24-BL-TP	✓	✓			2.56	304	590		5,8,13
2,3,4	12	24			ASB-1224-24-BL-TP	✓	✓			2.70	312	785	BL-2	7,9,13
2,3,4	20●	40●			ASB-2040-24-BL-TP	✓	✓			4.00	472	600	BL-3	5,9,13
4,5,6	12▼	40▼			ASB-1240-46-BL-TP	✓	✓			3.90	462	600		14,15,19
4,5,6	24■	48■			ASB-2448-46-BL-TP	✓	✓			5.19	604	700		

● Total lamp length of each circuit (A) and (B) must not be less than 10 ft. nor more than 20 ft.
Circuit (A) is comprised of lamps 1,2. Circuit (B) is comprised of lamps 3,4. (See wiring diagrams).

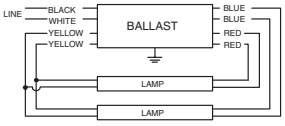
▼ Total lamp length of each circuit (A) and (B) must not be less than 6 ft. nor more than 20 ft.
Circuit (A) is comprised of lamps 1,2,3. Circuit (B) is comprised of lamps 4,5,6. (See wiring diagrams).

■ Total lamp length of each circuit (A) and (B) must not be less than 12 ft. nor more than 24 ft.
Circuit (A) is comprised of lamps 1,2,3. Circuit (B) is comprised of lamps 4,5,6. (See wiring diagrams).

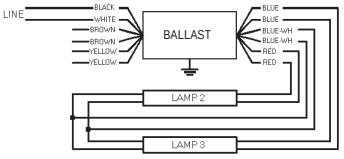


*FOR SINGLE LAMP OPERATION, INSULATE YELLOW LEADS INDIVIDUALLY FOR 600V

Diag. 39

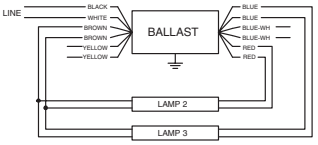


Diag. 21



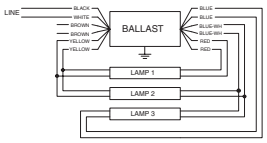
Note: insulate unused leads individually as shown on ballast label

Diag. 5



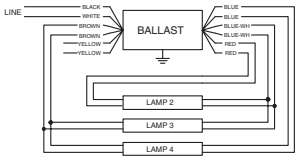
Note: insulate unused leads individually as shown on ballast label

Diag. 7



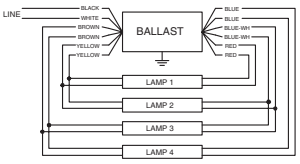
Note: insulate unused leads individually as shown on ballast label

Diag. 8

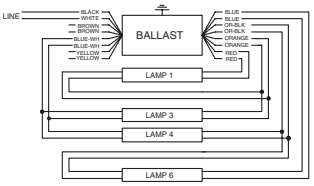


Note: insulate unused leads individually as shown on ballast label

Diag. 9

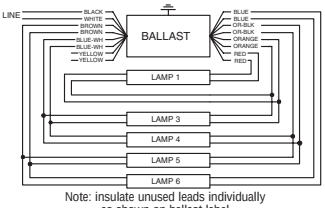


Diag. 13



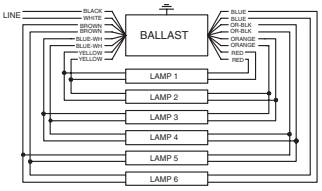
Note: insulate unused leads individually as shown on ballast label

Diag. 14



Note: insulate unused leads individually as shown on ballast label

Diag. 15

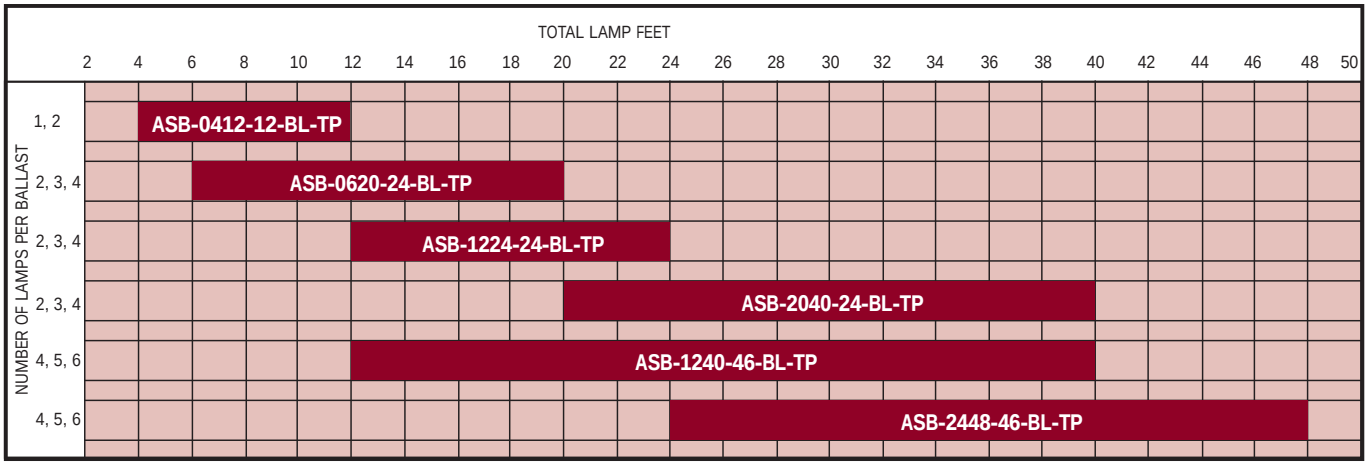


Diag. 19

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

High Output
Rapid Start Lamps

CLASS P BALLAST IN WHITE CAN



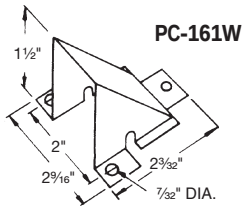
To select the ballast for your particular plastic sign application:

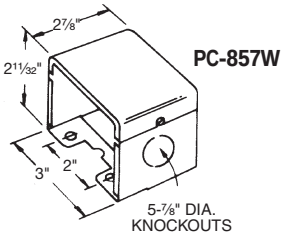
1) Determine the total number of lamp feet required (from 4 to 48 feet) and read down to select the proper Advance Catalog Number. Note that the first ballast you come to, reading down the chart, will be the most economical for your application.

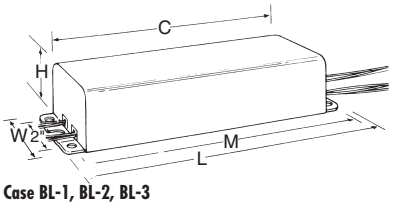
2) The number of lamps per ballast is shown in the left column.

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
BL-1	11¾	3 3/16	2⅝	11 9/64
BL-2	14 5/16	3 3/16	2⅝	13¾
BL-3	19 3/16	3 3/16	2 11/16	18⅝







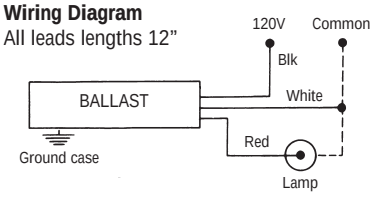
Case BL-1, BL-2, BL-3

HID SIGN BALLASTS

Input Voltage	Circuit Type	Catalog Number	Input Amps			Input Watts	Nom. Open Circuit Voltage	Fuse Rating Amps	Dimensions	Certification	Total Wt. (Lbs)	Max. Ballast to Lamp Distance (ft)
			Operating	Starting	Open Circuit							
150 Watt Lamp, ANSI Code M102 (Medium Base)												
120	HX-HPF	ASB-150-M102-BL	1.60	1.50	3.65	180	240	10	BL-2	UL	13.00	10

60HZ., minimum starting temperature -20˚ F or -30˚ C.

Wiring Diagram
All leads lengths 12"



DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
BL-2	14 5/16	3 3/16	2⅝	13¾

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Contents

POWRKUT® .....2-2 to 2-5

Low frequency electronic ballasts ideal for use in EMI/RFI sensitive applications.

Specifications .....2-6 to 2-11

Fixed Light Output Electronic (Section I) .....2-6 to 2-8

Controlled Light Output Electronic (Section II) .....2-9 to 2-10

Fixed Light Output Electronic Compact (Section III).....2-11

General Information ..... 2-12 to 2-20

SmartMate™ .....2-21 to 2-25

These NEW low profile ballasts for 13 through 42W compact fluorescent lamps (CFLs) are packed with innovative features. Included are the exclusive dual entry SmartMate™ poke-in wire trap connector for both bottom and side lead connection in a single ballast. The connector is color-coded to improve wiring accuracy and minimize assembly/installation time. With the IntelliVolt™ feature, these ballasts can operate on any input voltage from 120V to 277V.

Standard .....2-27 to 2-41

The broadest line of high frequency electronic ballasts for all types of fluorescent lighting. Energy efficient, reliable, quiet and flicker-free. Quick payback of your investment.

Centium™ .....2-42 to 2-54

High frequency electronic ballasts with less than 10% total harmonic distortion. These ballasts are especially useful in applications where current harmonics must be minimized.

Mark V® 2-55

These premium electronic ballasts provide programmed rapid starting for longer lamp life, silent operation and the ability to operate over a wide voltage range. Mark V® ballasts are the only electronic ballasts in the industry to start T8 lamps at 0°F within ANSI guidelines. Mark V® ballasts are also designed with <10% THD on all lamp types, with power factors very close to unity.

Corporate Offices
(800) 322-2086

Press 1 and the four digit extension of the person you want to reach
Press 2 if you know the last name and you will reach the spell by name directory
Press 0 or stay on the line to be connected to the operator

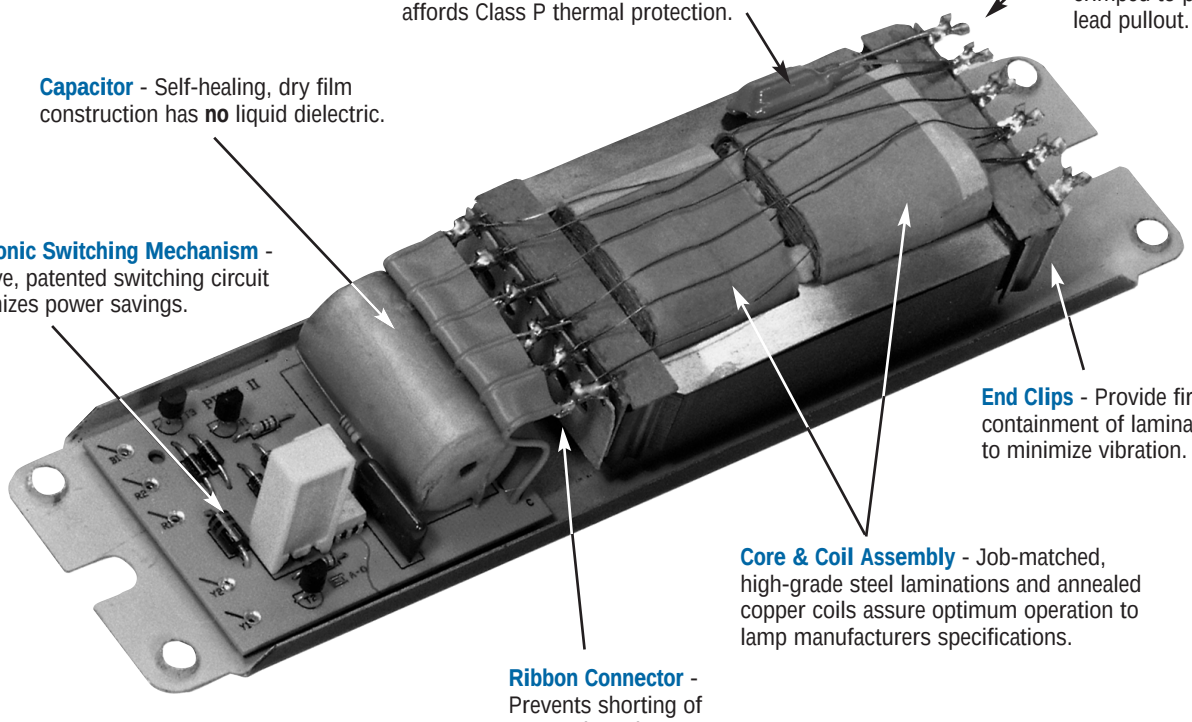
Customer Support/Technical Service
(800) 372-3331 • (+) 1 847 390-5000 (International)

Press 1 for customer support
Press 2 for technical, application, or warranty information
Press 4 to dial by name

Visit our web site at www.advancetransformer.com

NOTES

POWRKUT®



Thermal Protection - ADVAN-guard® automatic reclosing protective device affords Class P thermal protection.

Terminals - Soldered and crimped to prevent lead pullout.

Capacitor - Self-healing, dry film construction has **no** liquid dielectric.

Electronic Switching Mechanism - Positive, patented switching circuit maximizes power savings.

End Clips - Provide firm containment of laminations to minimize vibration.

Core & Coil Assembly - Job-matched, high-grade steel laminations and annealed copper coils assure optimum operation to lamp manufacturers specifications.

Ribbon Connector - Prevents shorting of connecting wires.

Minimum Payback Time

Moderate initial cost coupled with excellent energy savings guarantees faster payback with the PowrKut line. Choose from normal light output or reduced light output, low frequency electronic models to power the popular T8, T10 and T12 standard and energy-saving rapid start lamps.

Only Advance offers you such a wide choice of low frequency electronic ballasts to match your exact replacement, retrofit, renovation or new construction needs. And for even faster payback, PowrKut ballasts are eligible for utility rebates where listed.

- Advance PowrKut ballasts are UL listed, Class P, sound rated A and do not contain PCBs.
- High Power Factor
- All ballasts are physically interchangeable with magnetic counterparts used in the same application.
- Wiring is identical to that of most existing lighting systems; wiring diagrams are included on each ballast label for reference.
- Meet efficacy standards of Public Law No. 100-37, National Appliance Energy Conservation Amendments of 1988, where applicable.

Greater Application Flexibility

When it comes to flexibility in application, the PowrKut gives you plenty of room to meet each job's specifications. It is adaptable, resilient and friendly to surrounding electronic equipment.

PowrKut operation of fluorescent lamps at a frequency of 60Hz will not interfere with high frequency sensitivities of some electronic equipment. Low frequency operation will not interfere with powerline carrier systems, infrared control systems, radio or television reception or portable phone transmission.

The PowrKut also offers excellent protection against transients and voltage surges. All ballast electronic components is in the ballast secondary, protected by the magnetic primary.

PowrKut low frequency electronic ballasts are also extremely versatile in terms of installation, especially where remote, or tandem, mounting is required. There are no "maximum-distance-to-lamp" restrictions. With the PowrKut, mounting distance is limited only by the size of the wire.

Maximum flexibility. Minimum payback time. Two essentials that make PowrKut your optimum choice.

The POWRKUT Secret

One Very Bright Idea

For maximum energy and cost savings, PowrKut models use a unique electronic switching mechanism that cuts off power to the lamp electrodes after the lamps are started.

LOW FREQUENCY ELECTRONIC BALLASTS

Straight & U-Shape Lamps

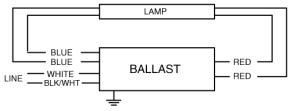
Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED A

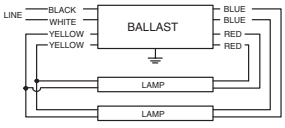
POWRKUT®

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications SA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Dim.
F25T8 (265mA)															
2	25	50	120	RK-2S32-TP	✓	✓			0.45	52	0.89	<20	0.96	T-2	21
			240	YK-2S32-TP		✓			0.23	52	0.89	<20	0.94		
			277	VK-2S32-TP	✓	✓			0.20	52	0.88	<15	0.94		
			347	GK-2S32-TP		✓			0.16	54	0.91	<15	0.97		
F32T8 & F32T8/U (265mA)															
1	32	50	120	RK-132-TP ❇	✓	✓			0.31	34	0.85	<20	0.91	T-2	20 +114
			277	VK-132-TP ❇	✓	✓			0.13	34	0.85	<20	0.94		
			347	GK-132-TP ❇		✓			0.11	36	0.86	<20	0.94		
2	32	50	120	RK-2S32-TP	✓	✓		✓	0.56	62	0.87	<15	0.92	T-2	21 +115
			240	YK-2S32-TP		✓			0.29	63	0.87	<15	0.91		
			277	VK-2S32-TP	✓	✓		✓	0.24	62	0.87	<15	0.93		
			347	GK-2S32-TP		✓		✓	0.20	63	0.89	<15	0.91		

❇ POWRKUT COMPANION: Does not contain electronic switching mechanism.



Diag. 20



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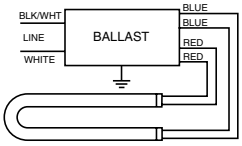

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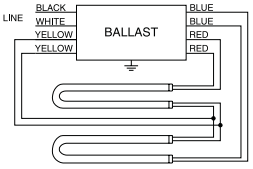
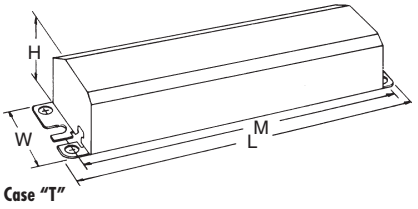


Diag. 115

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
T-2	9½	2⅜	1½	8 29/32



Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

ADVANCE ADVANCE, 10275 WEST HIGGINS ROAD, ROSEMONT, IL 60018. TEL: (847) 390-5000, FAX: (847) 390-5109

T10 and T12

Straight & U-Shape Lamps

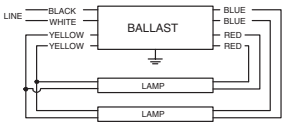
Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED A

POWRKUT®

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Certifications E	Certifications SAA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Dim.	Wiring Dia.
F40T10 (420mA)															
2	40	50	120	RK-2S34-TP	✓	✓	✓	✓	0.66	76	0.83	<20	0.96	T-2	21
				RK-2S40-TP	✓	✓	✓	✓	0.70	80	0.95	<20	0.95		
			277	VK-2S34-TP	✓	✓	✓	✓	0.29	76	0.83	<20	0.95		
				VK-2S40-TP	✓	✓	✓	✓	0.32	80	0.95	<20	0.91		
F30T12 ENERGY SAVER (455mA)															
2	25	60	120	RK-2S34-TP	✓	✓			0.44	52	0.80	<20	0.98	T-2	21
				RK-2S40-TP	✓	✓			0.54	52	0.88	<20	0.90		
			277	VK-2S34-TP	✓	✓			0.20	52	0.80	<20	0.94		
				VK-2S40-TP	✓	✓			0.23	52	0.88	<20	0.90		
F40T12 ENERGY SAVER (460mA)															
2	34	60	120	RK-2S34-TP	✓	✓	✓	✓	0.52	60	0.80	<20	0.96	T-2	21
				RK-2S40-TP	✓	✓		✓	0.57	66	0.88	<15	0.96		
			277	VK-2S34-TP	✓	✓	✓	✓	0.22	60	0.80	<20	0.98		
				VK-2S40-TP	✓	✓		✓	0.26	66	0.88	<20	0.92		
F40T12 & F40T12/U (430mA)															
2	40	50	120	RK-2S34-TP	✓	✓	✓	✓	0.57	68	0.82	<20	0.99	T-2	21 +115
				RK-2S40-TP❊	✓	✓	✓	✓	0.69	80	0.95	<15	0.97		
			277	VK-2S34-TP	✓	✓	✓	✓	0.25	68	0.82	<20	0.98		
				VK-2S40-TP❊	✓	✓	✓	✓	0.31	80	0.95	<20	0.93		

❊ Also operates F40T12/U Lamps



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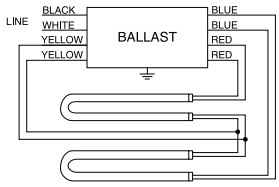
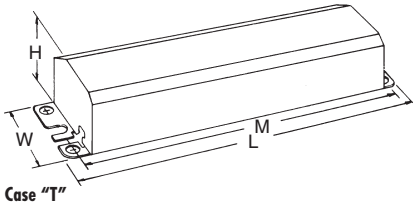


Diag. 115

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
T-2	9½	2⅜	1½	8 29/32



Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

SECTION I – Fixed Light Output Electronic (Fluorescent)

Ballast Specification for Electronic Fluorescent

INSTANT START

INCLUDING: Low Watt, High Light Output, and Reduced Harmonics

Performance Requirements:

1. 1-4 lamp Lamp Parallel Circuit Ballasts shall have Independent Lamp Operation (ILO), allowing remaining lamp(s) to maintain full light output if one or more lamps fail.
2. Ballasts shall operate from 60 Hz input source of 120, 277 Volts, and sustained variations of ± 10% (Voltage & Frequency) with no damage to the ballasts. Intellivolt(models shall operate from a line voltage range of 108-305 volts, 50/60 Hz.
3. Ballasts shall be a high frequency electronic type and operate lamps at a frequency above 42kHz to avoid interference with Infrared devices.
4. Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.7 or less in accordance with lamp manufacturer recommendations.
5. All ballast shall comply with ANSI C82.11 where applicable.
6. Ballasts shall tolerate operation of up to 70°C case temperature without damage.
7. Ballasts shall comply with FCC Part 18 Non-Consumer Equipment, Class A for EMI (Conducted) and (Radiated).
8. Ballasts shall provide transient immunity as recommended by ANSI C62.41
9. Ballasts shall operate lamps with no visible flicker (<3% flicker index).
10. Ballasts shall tolerate sustained open circuit and short circuit output conditions without damage.
11. Normal Light Output Ballast shall have a minimum Ballast Factor of 0.85 for primary lamp applications per ANSI C82.11
12. Ballast Factor for Low Watt models shall be 0.75 minimum.
13. Ballast factor for High Light Output shall be 1.2 for primary lamp applications.
14. Input current Total Harmonic Distortion (THD) shall not exceed 20% (for Standard models) and shall not exceed 10% (for Centium® models) for the primary lamp applications.
15. Ballasts shall have a Power Factor greater than .98 for primary lamp applications.
16. Ballast shall have a Class A+ sound rating.
17. Lamps may be remote or tandem mounted up to a maximum of 20 ft. overall lead length between ballasts and lamps. Consult factory for specific details.
18. Ballast shall be provided with integral leads, color coded to ANSI standard C82.11

Regulatory and Other Requirements

1. The ballasts shall not contain any PCB's (Polychlorinated Biphenyl).
2. Ballast shall be manufactured in an ISO 9002 Certified Facility
3. The manufacturer shall provide written warranty against defects in material or workmanship, including replacement, for five years from date of manufacture.
4. Manufacturer shall have been manufacturing electronic ballasts for at least ten years.
5. Ballasts shall provide instant starting sequence consistent with ANSI standard C82.11.
6. Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor, and CSA certified where applicable.
7. Ballast shall be physically interchangeable with standard core & coil magnetic ballast (when applicable).
8. Ballast shall have a metal enclosure for optimum thermal performance.
9. **Ballast must be Advance Transformer Part # _____or approved equal)**

SECTION I – Fixed Light Output Electronic (Fluorescent)

Ballast Specification for Electronic Fluorescent

PROGRAM RAPID START AND RAPID START

INCLUDING: Reduced Harmonics

Performance Requirements:

1. Ballasts (1-4 lamp) shall operate as a series or series parallel circuit.
2. Ballasts shall operate from 50/60 Hz input source of 120, 277 Volts, and sustained variations of ± 10% (Voltage & Frequency) with no damage to the ballasts.
3. Ballasts shall be a high frequency electronic type and operate lamps at a frequency above 42kHz to avoid interference with Infrared devices.
4. Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.7 or less in accordance with lamp manufacturer recommendation.
5. All ballasts shall comply with ANSI C82.11 where applicable.
6. Ballasts shall tolerate operation of up to 70°C case temperature without damage.
7. Ballasts shall comply with FCC Part 18 Non-Consumer Equipment, Class A for EMI (Conducted) and (Radiated).
8. Ballasts shall provide transient immunity as recommended by ANSI C62.41.
9. Ballasts shall operate lamps with no visible flicker (<3% flicker index).
10. Ballasts shall tolerate sustained open circuit and short circuit output conditions without damage.
11. Ballast shall have a minimum Ballast factor of 0.85 for primary lamp applications, per ANSI C82.11.
12. Input current Total Harmonic Distortion (THD) shall not exceed 20% (for Standard models) and shall not exceed 10% (for Centium® models) for the primary lamp applications.
13. Ballast shall have a power factor greater than 0.98 for primary lamp applications.
14. Ballast shall have a Class A+ sound rating.
15. Ballast shall be provided with integral leads, color coded to ANSI standard C82.11

Regulatory and other Requirements

1. Ballasts shall not contain any PCB's (Polychlorinated Biphenyl).
2. Ballast shall be manufactured in an ISO 9002 Certified Facility
3. The manufacturer shall provide written warranty against defects in material or workmanship, including replacement, for five years from date of manufacture.
4. Manufacturer shall have been manufacturing electronic ballasts for at least ten years.
5. Ballasts shall provide rapid starting sequence consistent with ANSI standard C82.11-1993.
6. Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor, CSA Certified where applicable.
7. Ballast shall be physically interchangeable with standard core & coil magnetic ballast (when applicable).
8. Ballast shall have a metal enclosure for optimum thermal performance.
9. **Ballast must be Advance Transformer Part # _____or approved equal)**

SECTION I – Fixed Light Output Electronic (Fluorescent)

Ballast Specification for Electronic Fluorescent

PROGRAMMED RAPID START

Performance Requirements:

1. Ballasts (1-4 lamp) shall operate as a series or series parallel circuit.
2. Ballasts shall operate from 60 Hz input source of 120, 277 Volts, and sustained variations of ± 10% (Voltage & Frequency) with no damage to the ballasts. Intellivolt(models shall operate from a line voltage range of 108-305 volts, 50/60 Hz.
3. Ballasts shall be a high frequency electronic type and operate lamps at a frequency above 42kHz to avoid interference with Infrared devices.
4. Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.7 or less in accordance with lamp manufacturer recommendation.
5. All ballasts shall comply with ANSI C82.11 where applicable.
6. Ballasts shall tolerate operation of up to 70°C case temperature without damage.
7. Ballasts shall comply with FCC Part 18 Non-Consumer Equipment, Class A for EMI (Conducted) and (Radiated).
8. Ballasts shall provide transient immunity as recommended by ANSI C62.41.
9. Ballasts shall operate lamps with no visible flicker (<3% flicker index).
10. Ballasts shall tolerate sustained open circuit and short circuit output conditions without damage.
11. Ballast factor for T8 lamps shall be a minimum of 0.85 for primary lamp applications. Ballast factor for T5 and T5HO shall be 1.00 for primary lamp, per ANSI C82.11.
12. Input current Total Harmonic Distortion (THD) shall not exceed 20% (for Standard models) and shall not exceed 10% (for Centium® models) for the primary lamp applications.
13. Ballast shall have a power factor greater than 0.98 for primary lamp applications.
14. Ballast shall have a Class A+ sound rating.
15. Ballast shall have a minimum starting temperature of 0°(F) for T5HO and T8 lamps and -20°(F for T8HO).

Regulatory and other Requirements

1. Ballasts shall not contain any PCB's (Polychlorinated Biphenyl).
2. Ballast shall be manufactured in an ISO 9002 Certified Facility
3. The manufacturer shall provide written warranty against defects in material or workmanship, including replacement, for five years from date of manufacture.
4. Manufacturer shall have been manufacturing electronic ballasts for at least ten years.
5. Ballasts shall provide rapid starting sequence consistent with ANSI standard C82.11-1993.
6. Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor, CSA Certified where applicable.
7. Ballast shall be physically interchangeable with standard core & coil magnetic ballast (when applicable).
8. Ballasts for T5HO shall have a maximum height of 1.00"
9. Ballasts for T5 and T5HO shall be provided with poke-in wire trap connectors.
10. Ballasts for T5 and T5HO shall have an end-of-lamp-life detection and shutdown circuit with an auto restart feature to eliminate the need to reset power after lamp replacement.
11. Ballast shall have a metal enclosure for optimum thermal performance.
12. **Ballast must be Advance Transformer Part # _____(or approved equal).**

SECTION II – Controllable Light Output Electronic (Fluorescent)

Ballast Specification for Controllable Light Output Electronic Fluorescent

ELECTRONIC DIMMING

INCLUDING: Continuous Line Voltage and Low Voltage (0-10) operated systems for linear and compact fluorescent lamps.

Performance Requirements:

1. Ballast shall be Programmed Rapid Start.
2. Mark VII shall operate from 50/60Hz input source of 120, 277 Volts, and sustained variations of ± 10% (Voltage & Frequency) with no damage to the ballasts. (Mark X 60Hz only)
3. Ballasts shall be a high frequency electronic type, and operate lamps above 42 kHz to avoid interference with infrared devices.
4. Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.6 or less (throughout dimming range) in accordance with lamp manufacturer recommendation.
5. All ballast shall comply with ANSI C82.11 where applicable.
6. Ballasts shall comply with FCC Part 18 Non-Consumer Equipment, Class A for EMI (Conducted and Radiated).
7. Ballasts shall provide transient immunity as recommended by ANSI C62.41
8. Ballasts shall operate lamps with no visible flicker (<3% flicker index).
9. Ballasts shall tolerate sustained open circuit and short circuit output conditions without damage.
10. Low Voltage Control dimming ballasts (0-10 volt) shall control lamp light output from a ballast factor range of .88 - .05 (100% to 5% of relative light output).
11. Powerline Control dimming ballasts shall control lamp light output from a ballast factor range of 1.0 - .05 (100% to 5% of relative light output).
12. Power factor shall be greater than 98% at full light output.
13. Input current Total Harmonic Distortion shall not exceed 10% at full light output for the primary lamp.
14. Ballast shall have a Class A+ sound rating.
15. Ballast shall have an end of lamp life detection and shutdown circuit that meets ANSI/IEC standards for T4 & T5 models.
16. Ballast shall ignite the lamps at any light output setting selected without first having to go to full light output.
17. Power factor shall be greater than 98% at full light output

Regulatory and Other Requirements

1. The ballast shall not contain PCBs (Polychlorinated Biphenyl).
2. Ballast shall be manufactured in an ISO 9002 Certified Facility.
3. The manufacturer shall provide written warranty against defects in material or workmanship including replacement, for five years from date of manufacture.
4. Manufacturer shall have been manufacturing electronic ballasts for at least ten years.
5. Ballasts shall provide programmed rapid starting sequence consistent with ANSI standard C82.11.
6. Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor, and CSA certified where applicable.
7. Continuous dimming ballasts must be operated with Advance compatible controls.
8. **Ballast must be Advance Transformer Part # _____ (or approved equal)**

SECTION II – Controllable Light Output Electronic (Fluorescent)

Ballast Specification for Controllable Light Output Electronic Fluorescent

BI-LEVEL SWITCHING

Performance Requirements:

1. Ballasts shall operate as an Instant Start Parallel Circuit, allowing remaining lamp(s) to maintain full light output if one or more lamps fail.
2. Electronic BI-level ballasts shall utilize one standard wall switch.
3. BI-level lighting shall be wired by one ballast for four or three lamp operation.
4. BI-level lighting shall have a default setting of 4 lamp operation or three lamp operation (depending on application). BI-level shall be wired and able to toggle between 2 and 4 lamp operation and 2 and 3 lamp operation (depending on application).
5. BI-level lighting shall reset back to default setting if power is in off position for duration longer than 3 seconds.
6. Ballasts shall operate from 60 Hz input source of 120, 277 Volts, and sustained variations of ± 10% (Voltage & Frequency) with no damage to the ballasts.
7. Ballasts shall be a high frequency electronic type and operate lamps at a frequency above 42kHz to avoid interference with Infrared devices.
8. Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.7 or less in accordance with lamp manufacturer recommendations.
9. All ballast shall comply with ANSI C82.11 where applicable.
10. Ballasts shall tolerate operation of up to 70°C case temperature without damage.
11. Ballasts shall comply with FCC Part 18 Non-Consumer Equipment, Class A for EMI (Conducted) and (Radiated).
12. Ballasts shall provide transient immunity as recommended by ANSI C62.41
13. Ballasts shall operate lamps with no visible flicker (<3% flicker index).
14. Ballasts shall tolerate sustained open circuit and short circuit output conditions without damage.
15. Ballast shall have a minimum Ballast Factor of 0.85 for primary lamp applications per ANSI C82.11
16. Input current Total Harmonic Distortion (THD) shall not exceed 20% for the primary lamp applications.
17. Ballasts shall have a Power Factor greater than .98 for primary lamp applications.
18. Ballast shall have a Class A+ sound rating.
19. Lamps may be remote or tandem mounted up to a maximum of 20 ft. overall lead length between ballasts and lamps.
20. Ballast shall be provided with integral leads, color coded to ANSI standard C82.11

Regulatory and Other Requirements

10. The ballasts shall not contain any PCB's (Polychlorinated Biphenyl).
11. Ballast shall be manufactured in an ISO 9002 Certified Facility
12. The manufacturer shall provide written warranty against defects in material or workmanship, including replacement, for five years from date of manufacture.
13. Manufacturer shall have been manufacturing electronic ballasts for at least ten years.
14. Ballasts shall provide instant starting sequence consistent with ANSI standard C82.11.
15. Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor, and CSA certified where applicable.
16. Ballast shall be physically interchangeable with standard core & coil magnetic ballast (when applicable).
17. Ballast shall have a metal enclosure for optimum thermal performance.
18. **Ballast must be Advance Transformer Part # _____or approved equal)**

SECTION III – Fixed Light Output Electronic Compact (Fluorescent)

Ballast Specification for Fixed Light Output

ELECTRONIC COMPACT (FLUORESCENT)

Performance Requirements:

1. Ballast shall be Programmed Rapid Start.
2. Ballasts shall operate from 50/60 Hz input source of 108 through 305 Volts, and sustained variations of ± 10% (Voltage & Frequency) with no damage to the ballasts.
3. Ballasts shall be a high frequency electronic type, and operate lamps at a frequency above 42 kHz to minimize interference with infrared control systems.
4. Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.7 or less in accordance with lamp manufacturer recommendation.
5. All ballast shall comply with ANSI C82.11 where applicable.
6. Ballast shall tolerate operation of up to 80°C case temperature without damage.
7. Ballasts shall comply with FCC Part 18 Non-Consumer Equipment, Class A for EMI (Conducted and Radiated).
8. Ballasts shall provide transient immunity as recommended by ANSI C62.41.
9. Ballasts shall operate lamps with no visible flicker (<3% flicker index).
10. Ballasts shall tolerate sustained open and short circuit output conditions without damage.
11. Ballast shall have a minimum Ballast factor of 0.93 for 13 watt through 42 watt T4 & T5 compact fluorescent lamps.
12. Input current Total Harmonic Distortion shall not exceed 10% for the primary lamp.
13. Ballasts shall have a Power Factor greater than .96.
14. Ballast shall have a Class A+ sound rating.
15. Ballast shall incorporate lamp shutdown circuitry for end of lamp life protection
16. Ballast shall allow for re-lamping without the need to cycle power
17. Ballast shall have a minimum starting temperature of 0° Fahrenheit.
18. Ballast shall be available in a hybrid can or all metal can construction to meet all plenum requirements and to eliminate the need for extra grounding wires.
19. Ballast shall be furnished with poke-in wire trap connectors, color-coded to ANSI C82.11 where applicable.

Regulatory and Other Requirements

1. The ballasts shall not have any PCB's (Polychlorinated Biphenyl).
2. Ballast shall be manufactured in an ISO 9002 Certified Facility.
3. The manufacturer shall provide written warranty against defects in material or workmanship including replacement.
4. Ballasts shall carry a five year warranty when operated at a maximum of 75°C case temperature.
5. Ballasts shall carry a three year warranty when operated at a maximum of 85°C case temperature
6. Manufacturer shall have been manufacturing electronic ballasts for at least ten years.
7. Ballasts shall provide programmed rapid starting sequence consistent with ANSI standard C82.11.
8. Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor, and CSA certified where applicable.
9. **Ballast must be Advance Transformer Part # _____or approved equal)**

Introduction

High efficiency, high frequency electronic ballasts offer enhanced lighting performance and energy savings. The Electric Power Research Institute estimates that lighting consumes 20-25% of all electric power and that lighting energy accounts for 40% of the average commercial electric bill. The retrofit of existing facilities with modern lighting systems increases productivity and can save over one-half the energy of the original system.

This potential for savings has prompted the EPA (Environmental Protection Agency) to create the Green Lights program. U.S. Corporations, in this voluntary program, retrofit their lighting systems with energy efficient lamps and ballasts whenever economically feasible. The economics of lighting retrofits have never been better. Investment payback is often accelerated by "Demand Side Management" programs from electric utilities that offer incentives in the form of rebates for energy efficient measures.

Ballast Basics

Modern electronic ballasts operate at a frequency above 20,000 Hz. This high frequency operates lamps more efficiently (10-15% more light output) and eliminates the 60 cycle hum and visible flicker normally associated with electromagnetic ballasts. Modern solid-state circuitry makes the electronic ballast practical, reliable and cooler running.

LAMP/BALLAST COMPATIBILITY

Standards and Regulations

Typical lamp specifications include starting voltage, operating current, cathode voltage, crest factor, etc. Electronic ballasts from Advance Transformer are designed to meet the lamp manufacturers specifications and the requirements of:

ANSI/IEEE C62.41 (American National Standards Institute)
FCC Part 18 (RFI and EMI)
UL (Underwriter Laboratories)
Public Law No. 100-357 (minimum efficiency standards)
NAECA (National Appliance Energy Conservation Amendments)
CSA (Canadian Standards Association) where applicable
The National Electrical Code and all Municipal Electrical Codes.

No fluorescent lighting system will meet expectations unless the lamp and ballasts are properly matched. Proper (electronic ballast/fluorescent lamp/fixture) combinations result in applications with the correct light levels for the task at hand, lamps that provide rated lamp life, and a safe and aesthetically pleasing installation. Advance® electronic ballasts are tested by independent laboratories to ensure compatibility with lamps from all major manufacturers.

Instant-Start

Instant-start electronic ballasts are the most popular type of electronic ballast today because they provide maximum energy savings and they start lamps without delay or flashing. Since they do not provide lamp electrode heating, instant-start ballasts consume less energy than comparable rapid-start, program rapid-start or programmed-start ballasts. As a result, they provide the most energy efficient solution to fluorescent lamp ballasting. The instant-start ballast uses 1.5 to 2 watts less energy per lamp than the rapid-start alternative.

Instant-Start (cont'd)

Instant-start electronic ballasts provide a high initial voltage (typically 600V for F32T8 lamps) to start the lamp. This high voltage is required to initiate discharge between the unheated electrodes of the lamp. However, the cold electrodes of lamps operated by an instant-start ballast may deteriorate more quickly than the warmed electrodes of lamps operated by a rapid start, program rapid-start or programmed-start ballast. Lamps operated by instant start ballasts will typically withstand 10-15K switch cycles. Instant-start ballasts are typically wired in *parallel*. This means that if one lamp fails, the other lamps in the circuit will remain lit.

Rapid-Start

Rapid-start ballasts have a separate set of windings which provide a low voltage (approx. 3.5 volts) to the electrodes for one second prior to lamp ignition. A starting voltage somewhat lower than that of instant ballast (typically 450-550V for F32T8 lamps) is applied, striking an electrical arc inside the lamp. Most rapid-start electronic ballasts continue to heat the electrode even after the lamp has started, which results in a power loss of 1.5 to 2 watts per lamp. Lamps operated by a rapid-start electronic ballast will typically withstand15-20K switch cycles. Rapid-start ballasts are typically wired in *series*. This means that is one lamp fails, all other lamps in the circuit will extinguish.

Program Rapid-Start

The Advance *Centium*® Program Rapid-Start (PRS) electronic ballasts have been designed for use with occupancy switches by providing up to 30,000 lamp starts. PRS electronic ballasts precisely heat the lamp cathodes to 650°C with virtually no glow current before applying arc voltage to the lamp. Program rapid-start ballasts are typically wired in *series*. However, The Advance *Centium*® PRS ballasts also feature series-parallel lamp operation for the 3 and 4 lamp units. This means that 1 or 2 lamps will continue to operate normally in the event of a single lamp failure.

Programmed-Start

Programmed-start (PS) electronic ballasts provide maximum lamp life in frequent starting conditions (up to 50,000 starts). PS ballasts like the Advance Mark V®, Mark VII® *0-10V,* SmartMate™, and Mark *X*® *Powerline* use a custom integrated circuit (IC) which monitors lamp and ballast conditions to ensure optimal system lighting performance. Like Program rapid-start ballasts, PS ballasts also precisely heat the lamp cathodes. However, PS ballasts heat the lamp cathodes to 700°C prior to lamp ignition. This puts the least amount of stress on the lamp electrodes, resulting in maximum lamp life regardless of the number of lamp starts. Programmed-start ballasts are typically wired in *series*.

Ballast Factor

Light output ratings published by lamp manufacturers are based on powering the lamp with a "reference ballast" as specified by ANSI standards. The ballast factor of a particular ballast provides a measure of expected light output.

Advance Transformer offers electronic ballasts with several different ballast factors. This enables the lighting system designer to adjust the lighting level to meet the requirements of a particular application. The lighting system designer can trade watts for lumens by selecting the appropriate ballast.

$$\text{Ballast Factor} = \frac{\text{Lumen output of lamp operated by rated ballast}}{\text{Lumen output of lamp operated by "reference ballast"}}$$

Crest Factor

Fluorescent lamp manufacturers specify the ratio of peak current to R.M.S. current in the waveform driving the cathode in rapid start lamps (see figure A). When the electronic ballast provides current with a crest factor below the maximum specifications set by the lamp manufacturer, lamp life will not be increased. Ballasts that provide power to the lamp with high crest factors reduce the life of the lamp. Many Advance electronic ballasts have the lowest crest factors in the industry (as low as 1.4).

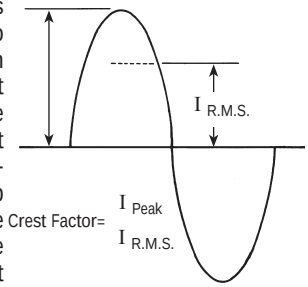


Figure A

POWERLINE INTERFACE

Voltage Regulation

Electric Utilities attempt to maintain constant line voltages; however, in some locations, wide swings may occur during peak power periods. Advance Standard, Centium, Mark X® *Powerline* and SmartMate™ electronic ballasts operate at ±10% voltage variation. The Advance Mark V® and Mark VII® *0-10V* electronic ballasts maintain light output of ±1% through input voltage changes of ±10%, and operate over a wide voltage range.

EMI/RFI

Because they operate at high frequency, electronic ballasts may produce radio frequency interference (RFI) or electromagnetic interference (EMI). This interference could affect the operation of sensitive electrical equipment, such as radios, televisions or medical equipment. The Federal Communications Commission (FCC) regulates electromagnetic frequencies from 450 kilohertz (kHz) to 300 megahertz (Mhz). For electronic ballasts, the limits and regulations are listed in the Code of Federal Regulations, Title 47, Part 18, Subpart C entitled *RF Lighting Devices*. Tables are published for absolute levels of radio frequency voltage that is legal at certain frequencies. There are two levels given: one for Non-Consumer (industrial/commercial) and a more strict one for Consumer (residential). Advance electronic ballasts meet the requirements of the Federal Communications Commission (FCC) f or non-consumer applications.

IEEE and ANSI Requirements

Electronic components are sensitive to sudden surges of high voltage. These surges (or transients) may be caused by lightning strikes to nearby transformers, overhead lines or the ground. Transients may also be caused by switching of loads such as motors or compressors and by short circuits or utility system switching. Although these surges typically last for less than a second, they may cause electronic ballast failure unless the ballast is designed to protect against these surges. Advance electronic ballasts can withstand the conditions specified in ANSI/IEEE C62.41, Cat. A.

Power Factor

The power factor of a ballast (Watts/Volts x Amps) is the measurement of how effectively it converts the voltage and current supplied by the power source into watts of usable power delivered to the lamp. Perfect power utilization would result in a power factor of unity. Advance electronic ballasts operate at very near unity (1.0 or 100%).

$$\text{Power Factor} = \frac{\text{Input Watts}}{\text{LIne Volts x Line Amps}}$$

ELECTRONIC BALLAST HARMONIC DISTORTION AND CURRENT

The exponential growth of electronic equipment and associated line harmonics over the last two decades have raised concerns about overheating transformers and neutral conductors in alternating current power systems. Most electric utilities now require that the Total Harmonic Distortion (THD) of electronic ballasts be below 20%. THD is the measurement of the magnitude of the input current harmonics compared with the amplitude of the fundamental frequency current (see figure B). However, electronic ballasts with THD ratings of 32%, as required by the American National Standards Institute (ANSI), present no problems to a power distribution system. All Advance electronic ballasts are rated for either less than 20% THD (*Standard series*) or less than 10% THD (*Centium series* and *Mark V, VII® 0 - 10V* or *X® Powerline series*).

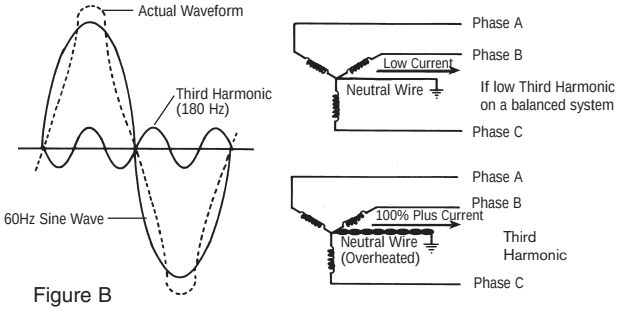


Figure B

Non-Dimming Applications

When selecting a ballast for a lighting application, the Total Harmonic Current (THC) rating of the ballast is more significant than Total Harmonic Distortion (THD). This is because the absolute value of harmonic current, not the percentage, affects the electrical power distribution system. As can been seen in the table on page 2-16, the THC rating of our *Standard* 2-lamp electronic T8 lamp ballast is well below that of both the conventional and energy-saving magnetic T12 lamp ballasts it replaces. Moreover, the THC rating of our *Centium* electronic ballast is even lower.

Dimming Applications

Mark VII® 0-10V

Traditional 0-10 Vdc controlled ballasts like the Mark *VII® 0-10V* typically produce less than 10% THD at full light output and less than 20% THD throughout the entire dimming range, but require extra wires for the control circuit. THC is always lower than that of the conventional or energy-saving magnetic system.

Mark X® Powerline

Mark *X® Powerline* electronic dimming ballasts are controlled by 2-wire modified powerline phase-cut style line voltage dimmers, such as part number REZ-C500-A. Whenever the ballast is dimmed, the input voltage is cut or "chopped", causing the THD and THC to increase and the Power Factor to decrease.

Mark *X® Powerline* electronic dimming systems (ballast and controller) have similar THD and Power Factor levels as the conventional lighting systems they replace. Since a much smaller load is required by the Mark *X® Powerline* electronic dimming system to achieve the same illumination level as a magnetic ballast system (20-30% less), the total input current will be considerably less. As a result, the magnitude of the total harmonic current will be less.

For example, a typical Mark *X® Powerline* electronic ballast and dimmer control might draw a line current of .058A at 15% THD at full light output. If the light level is reduced to 5% of the maximum, the input power is decreased to 0.19A at 95% THD. While the THD level may seem alarmingly high at the 5% maximum light output setting, the total harmonic current is still lower (0.13A) than the conventional T12 magnetic system (0.20A). Moreover, the overall heating effect on the wires and the distribution transformer is never higher than the existing conventional or energy saving T12 magnetic systems.[1]

Conclusions

Our analysis demonstrates that a simple ballast retrofit to electronic ballasts *will not* cause harmonic problems if none existed before the retrofit. Also, in new fixture applications, total harmonic distortion should not be a concern when specifying electronic ballasts. Finally, it is important to remember that electronic ballasts are not the greatest source of THD in an electrical distribution system. Other electronic devices such as computers, laser printers, and other electronic equipment can draw current with more than 100% THD in some cases.

Table 1: Comparison of THD and THC Levels

Advance Part No.	Ballast Type	Light Output Setting	Lamp Type	Input Current	% THD	%THC[2]
RQM-2S40-TP	Conventional Magnetic	100% (Ballast Factor is 0.98)	(2) F40T12	0.84A	<25%	**0.20A**
R2S40-TP	Energy Saving Magnetic	100% (Ballast Factor is 0.95)	(2) F34T12	0.63A	<20%	**0.12A**
REL-2P32-SC	*Standard* Electronic	100% (Ballast Factor is 0.88)	(2) F32T8	0.49A	<20%	**0.10A**
RCN-2P32-SC	*Centium* Electronic	100% (Ballast Factor is 0.87)	(2) F32T8	0.49A	<10%	**0.05A**
RZT-2S32 + Dimming Control	*Mark VII® 0-10V* Electronic	100% (Ballast Factor is 0.88)	(2) F32T8	0.54A	<10%	**0.05A**
RZT-2S32 + Dimming Control	*Mark VII® 0-10V* Electronic	5% (Ballast Factor is 0.05)	(2) F32T8	0.12A	<20%	**0.02A**
REZ-2S32 (Ballast Only)	*Mark X® Powerline* Electronic	100% (Ballast Factor is 1.0)	(2) F32T8	0.58A	<10%	**0.06A**
REZ-2S32 + REZ-C500-A	*Mark X® Powerline* Ballast + Dimmer	100% (Ballast Factor is 1.0)	(2) F32T8	0.58A	<15%	**0.09A**
REZ-2S32 + REZ-C500-A	*Mark X® Powerline* Ballast + Dimmer	5% (Ballast Factor is 0.05)	(2) F32T8	0.19A	<95%	**0.13A**

[1] For a more technical study demonstrating that a Mark *X® Powerline* electronic dimming system produces less transformer heating over its entire dimming range than does an energy saving magnetic system that it replaces, see the article *THD in Advance* Mark *X® Powerline Electronic Dimming Systems* by O.C. Morse. Copies may be obtained through the Advance Technical Support Dept. at tel. (800) 372-3331.

[2] The Total Harmonic Current (THC) of a ballast is calculated by the following equation:

$$\frac{\text{Ballast Input Current}}{\text{Square Root of } (1 + 1/\text{THD}^2)}$$

An approximation of THC may be obtained by simply multiplying the ballast input current by %THD.

ANSI Watts

The American National Standards Institute (ANSI) has a prescribed standard for the measurement of ballast characteristics (C82.2). This standard sets forth these requirements:

1. Ballast and lamps are in a room at 25°C ± 1/2°C (77°F ± 1°F).
2. Minimal draft across lamps (airflow of 1 ft./min. or less is optimum).
3. Lamps should be horizontally mounted, and should be separated by at least 9 inches to prevent mutual heating.
4. Lamps should be seasoned test lamps and operated on a reference ballast until stabilization (15 minutes) before switching to the ballast under test.
5. Measurements shall be taken within 30 seconds after switching in the ballast under test.

The watts obtained from this test method are listed as ANSI watts in the Advance Atlas, and will be the highest out of these 3 commonly-listed categories.

1. ANSI watts
2. Open fixture watts
3. Enclosed fixture watts

The maximum light output and wattage of a fluorescent lamp is obtained when the bulb wall temperature of the lamp is 100°F. When the bulb wall temperature is greater or less than that optimum, light output and wattage will decrease.

Heat generated by lamps and ballasts in an open fixture is usually sufficient to increase bulb wall temperature above 100°F, thereby decreasing light output and input watts by approximately 5%. Enclosing the fixture with a lens will result in higher temperatures, decreasing light output and wattage by approximately 10%.

Ballast Fusing

All Advance electronic ballasts are internally fused to protect the building electrical system against catastrophic failure of the ballast.

No PCB's

Advance electronic ballasts contain no PCB's or other hazardous materials.

Thermal Potting Compound

Most Advance electronic ballasts are filled with a specially formulated potting material designed to transfer heat away from critical components, eliminate thermal hot spots and provide resistance against rough handling.

Cool Operation

Electronic ballasts generate less waste heat than comparable magnetic ballasts. Typically, electronic ballasts will operate 20°-30°C cooler than it's magnetic counterpart. Advance electronic ballasts are designed and warrantied for optimal life at a case temperature of 70°C unless otherwise specified. Ballasts should not be operated in an environment when the case temperature will exceed 75°C. Cooler operation results in longer ballast life and reduced air-condition requirements.

Acoustic Noise

Advance electronic ballasts operate at sound levels lower than electromagnetic ballasts (up to 75% quieter).

Inrush Current

All ballasts have an initial current surge that is greater than it's steady-state operating current. The electrical system should be designed with this issue in mind.

Compatibility With Powerline Carrier Systems

A powerline carrier system (PLC) uses electronic wiring devices to send information via a high frequency signal over the 120V or 277V electrical power distribution system of a building. For example, PLC systems are used in automatic clock systems (master time systems) to synchronize all of the clocks in a building or reset the time after a power outage. They eliminate the need for maintenance personnel to reset hundreds of clocks throughout a facility.

In a PLC system, a generator is used to impose a 1 to 4V high frequency signal on top of the existing voltage sine wave (60 Hz). This signal is generally in the 2500 to 9500Hz range, with some older systems operating at 19,500Hz or higher. Some electronic ballasts which are capacitive can absorb the signal from a PLC system. As a result, the signal becomes too weak to be "heard" by the receiver (like a timeclock) connected to the powerline.

Most Advance Standard (REL-/VEL-) ballasts are inductive and do not absorb the PLC signals that are sent through the powerline. However, other Advance brands may be incompatible with existing PLC systems. These include: Centium™ (RCN-/VCN-), Mark *V*® (RIC-/VIC-), Mark *VII*® *0-10V* (RZT-/VZT-), and Mark *X*® *Powerline* (REZ-/VEZ-). To find out which Advance electronic ballasts are compatible with PLC systems, contact our Technical Support department.

0°F Lamp Ignition with Electronic Instant Start Ballasts

Advance Transformer warrants that Advance Transformer electronic ballast will ignite Philips, GE, and OSRAM/Sylvania lamps at a temperature of 50°F. In addition, Advance Transformer has determined that Philips, GE, and OSRAM/Sylvania will ignite at 0°F satisfactorily given the following conditions:

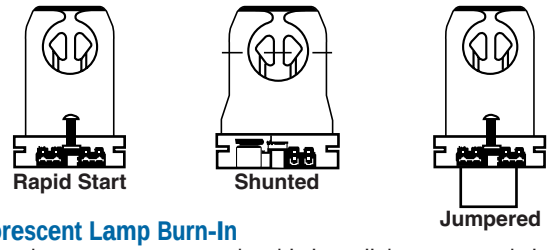
- The ballast is operated at the rated nominal line voltage
- Ballast-to-lamp distance does not exceed the standard lead lengths
- Ballast is not tandem wired

The Advance *Mark V*® series ballasts provide maximum lamp life in 0°F starting applications with their programmed-start design.

The lamp manufacturer should be consulted for lamp specifications and operating characteristics at temperatures below 50°F.

Instant Start vs Rapid Start Sockets

When retrofitting to Advance rapid start, program rapid-start and programmed-start electronic ballast into existing fixtures, sockets must be RAPID START. Many fixtures with T8 Instant Start electronic ballasts use a pre-jumpered, or "shunted" Instant Start socket. Instant Start sockets are designed to accept only one wire from the ballast, while the MKVII and MKX Rapid Start ballasts require two distinctly separate wires for each lamp socket. If you encounter shunted or jumpered sockets in a retrofit application, they must be removed and replaced with Rapid Start sockets.



Fluorescent Lamp Burn-In

In order to get accurate and stable lamp light output and electrical measurements, all new fluorescent lamps should be burned-in for 100 hours at full light before being dimmed. This applies to all types of fluorescent lamps as well as all manufacturer's fluorescent dimming ballasts.

ORDERING INFORMATION

How to Order

Advance Transformer has developed the industry's broadest distribution system for electronic ballasts. More than 3000 stocking distributors nationwide. For information on the distributor best able to serve your needs, please call 800-372-3331.

Electronic CFL Ballast Part Number Breakdown

I | CF | - | 2 | S | 26 | - | H1 | - | LD

Mounting/Connector Options:

BS = Bottom mounting studs with Single entry coded connector
LD = Length mounting feet with SmartMate™ Dual entry coded connector
LS = Length mounting feet with Single entry color coded connector

Can Material / Size:
H1 = Hybrid metal / plastic case with dim. 4.25" L x 2.4" W x 1.0" H; Size 1 case
M1 = Metal case with dim. 4.25" L x 3.0" W x 1.4" H; Size 1 case
M2 = Metal case with dim. 4.25" L x 3.0" W x 1.4" H; Size 2 case
SC = Small Can with dim. 9.5" L x 1.7" W x 1.18" H

Lamp Watts (Primary lamp)

Wiring Configuration:
S = Series connected (SmartMate only)
Q = Quad CFL ballast, series connected (Mark VII® *0-10V* and Mark X® *Powerline* only)
T = Triple CFL ballast, series connected (Mark VII® *0-10V* and Mark X® *Powerline* only)
TTS = Long Twin Tube ballast, Series connected (Standard Mark VII® *0-10V* and Mark X® *Powerline* only)
TTP = Long Twin Tube ballast, Parallel connected (Standard Mark VII® *0-10V* and Mark X® *Powerline* only)

Maximum Number of Lamps

Family Type:
CF = SmartMate Compact Fluorescent
EL = Standard ELectronic
EZ = Easy two-wire dimming (Mark X® *Powerline*)
ZT = Zero to Ten Volt dimming (Mark VII® *0-10V*)

Input Voltage:
I = IntelliVolt™ (accepts input of 120 thru 277V, 50/60 Hz nominal)
R = 120 Volt
V = 277 Volt

- Plan your lighting installation carefully; consider using the services of a qualified lighting designer
- Consult your local electric utility regarding demand side management rebate programs.
- Select the Advance electronic ballast which best matches the requirements of your application. The technical specifications in this catalog (located prior to each product category) will be useful in obtaining bids from electrical contractors.
- Contact your local Advance distributor. You will find them to be a helpful supplier of both products and information.

Corporate Offices
(800) 322-2086

Press 1
And the four digit extension of the person you want to reach
Press 2
If you know the last name and you will reach the spell by name directory
Press 0
Or stay on the line to be connected to the operator

Visit our web site at
www.advance transformer.com

Customer Support/ Technical Service
(800) 372-3331
+1 (847) 390-5000 (International)

Dial the four digit extension of the person you want to reach

Press 1
For customer support
Press 2
For technical applications, or warranty information
Press 4
To dial by name

Linear Fluoresent Electronic Ballast Part Number Breakdown

R | EL | - | 2 | P | 32 | - | *RH | - | *TP

TP = Thermal Protected

HL = High Light Output
LW = Low Watt
RH = Reduced Harmonics
S = Slimline
MC = Micro Can
SC = Small Can

Lamp Watts (Primary lamp)

Wiring Configuration

P = Parallel
S = Series
M = Modified Parallel**

Maximum Number of Lamps supported by this ballast - 1,2, 3 or 4

EL = Standard ELectronic (<20%)
CN = Centium Eletronic (<10%)
IC = Integratated Circuit Design (Mark V)
ZT = Zero to Ten Volt dimming (Mark VII® *0-10V*)
EZ = Easy two-wire dimming (Mark X® *Powerline*)

I = IntelliVolt™ (120 thru 277V 50/60 Hz nominal)
R = 120 Volt
V = 277 Volt
G = 347 Volt
X = 220 Volt

* Many current and all future electronic ballast part numbers will not use the "RH-TP" suffixes even though these ballasts will be thermally protected.
** Parallel Wiring Configuration. However, if one lamp fails, all other lamps in the circuit will extinguish.

REMOTE OR TANDEM WIRING DISTANCES

REMOTE MOUNTING OF ELECTRONIC BALLASTS

Unlike magnetic ballasts, electronic ballasts are limited in remote mounting distance from the lamps they operate. The factors limiting the distance from the electronic ballasts to the lamps are: open circuit voltage as opposed to operating voltage, operating frequency and the lamp operating current.

As the distance from the high frequency electronic ballasts to the lamp increases, so does the capacitance across the lead wire to the lamp. This increase in capacitance is important for two reasons. First, if the capacitance is too high, there will not be sufficient open circuit voltage across the lamp for proper lamp ignition.

Second, if the lamp is capable of ignition, the increased capacitance will cause a loss in the current to the lamp. The added capacitance creates what is known as a "shunt" around the lamp; in other words the current will leak from the red wire (or blue) to the yellow, completely bypassing the lamp. The current through the lamp will be reduced, resulting in lower lumens, with the possibility that the lamp will not be capable of sustained operation.

As a general rule, Advance instant start fixed light output ballasts can be operated up to 20' using 18 AWG wire (see Table 6). However, the remote mounting distances for Advance rapid start, program rapid start and programmed start ballasts vary considerably (see Tables 1 thru 5).

Ballasts for long twin tube compact fluorescent lamps (CFLs) typically have more restrictions: a maximum lead length of 3 feet with the ballast mounted in the fixture (see table 1). Fixed light output ballasts for other CFLs types, such as the Quad and Triple tubes, have less restrictions (see table 3).

The Mark *VII® 0-10V* and Mark *X® Powerline*, 1 and 2 lamp T8 ballasts may be remote mounted to a maximum of 6' (refer to Table 4). The 3 lamp T8 dimming ballasts cannot be remote mounted and must be mounted within the fixture (refer to Table 1). Dimming ballasts are particularly sensitive to high capacitance associated with long lead wires. The dimming ballast is capable of very low dim levels (5%) because constant filament heat is provided to the lamp. If there is any loss of current, the filament current will be reduced and the lamp will begin to flicker, or it will be completely extinguished. It is also important that the red and blue leads not be twisted together. Twisting the red and blue leads will add capacitance, causing the lamp to flicker at the lower dimming levels.

In summary, there is a wide range and varying types of electronic ballast architectures that are capable of being remote mounted for an equally wide range of distances. If you are uncertain of the remote mounting restrictions for a particular electronic ballast please consult Technical Services.

Table 1: No Remote or Tandem Wiring

The following ballasts cannot be remote or tandem wired.

RCN- / VCN-1S28	REL- / VEL-1TTS39	REZ- / VEZ-3S32
RCN- / VCN-2S28	REL- / VEL-1TTS50	REZ- / VEZ-2TTS40
GCN-3S32	REL- / VEL-2TTS50	RIC- / VIC-3S32
IZT - 2Q26-M2-XX	REL- / VEL-3S40-RH-TP	RZT - / VZT-2TTS40
IZT - 1T42-M2-XX	REZ- / VEZ-1T32	RZT- / VZT-3S32
REL- / VEL-2TTS39	REZ- / VEZ-1T42	
REL- / VEL-2TTS40	REZ- / VEZ-2Q26	

Table 2: Remote or Tandem Wiring (with Restrictions)

The following ballasts can be remote or tandem wired using 18 AWG or larger wire to a maximum of 20 ft. overall lead length between the ballasts and lampholders. For tandem wiring, only RED lamp can be remote wiring. BLUE lamp must be mounted in the fixture containing ballast.

GEL-2S32-RH-TP	REL- / VEL-2S110
GEL- / REL- / VEL-2S40-RH-TP	REL- / VEL-2S86
GCN- / RCN- / VCN-2S32	RIC- / VIC-2S32
RCN / VCN-2S40	GCN-2S32

Table 3: CFL Ballast Wiring (with Restrictions)

REMOTE WIRING INFORMATION			
Model	**1 Lamp App**	**2 Lamp App**	**Tandem App**
ICF-2S13-XX	15 ft.	6 ft.	15 ft. red leads only*
ICF-2S18-XX	15 ft.	6 ft.	15 ft. red leads only*
ICF-2S26-XX	15 ft.	6 ft.	15 ft. red leads only*
ICF-2S42-XX	15 ft.	6 ft.	15 ft. red leads only*
Use 18 AWG wire (Connector accepts 16–20 AWG)			
*Mount lamps connected to blue leads in the fixture containing the ballast			

Table 4: Dimming Ballast Wiring (with Restrictions)

The following ballasts can be remote or tandem wired using 18AWG or larger wire to a maximum of 6 ft. overall lead length between ballast and lamps.

REZ- / VEZ-132	REZ- / VEZ-2S32	RZT- / VZT-1TTS40
REZ- / VEZ-1TTS40	RZT- / VZT-132	RZT- / VZT-2S32

Table 5: T8/HO Lamp Ballast Wiring (with Restrictions)

When operating two(2) F96T8/HO lamps, the following ballasts may be remote wired using 18 AWG or larger wire to a maximum of 12 ft. overall lead length between the ballast and lampholders. When operating all other T8/HO lamps, these ballasts may be remote wired using 18 AWG or larger wire to a maximum of 20 ft. overall lead length between the ballast and lampholders. For tandem wiring, only BLUE lamp can be remote wired up to 20 ft. RED lamp must be mounted in the fixture containing ballast.

RCN- / VCN-2S86

Table 6: Remote or Tandem Wiring (No Restrictions)

The following ballasts can be remote or tandem wired using 18 AWG or larger wire to a maximum of 20 ft. overall lead length between ballast and lamps.

GCN-2P32	ICN-2S54	RCN- / VCN-2S32-SC	REL- / VEL-2P32-HL-RH-TP	REL- / VEL-4P32-2LS
GEL-2P32-LW	RCN- / VCN-1TTP40-SC	RCN- / VCN-3S32-SC	REL- / VEL-3P32-HL	REL- / VEL-2P17-RH-TP
GEL-2P32-SC	RCN- / VCN-2TTP40-SC	RCN- / VCN-4S32-SC	REL- / VEL-1P32-HL-SC	REL- / VEL-1S40-RH-TP
GEL-2P59	RCN- / VCN-3TTP40-SC	RCN- / VCN-2P32-LW	REL- / VEL-2P32-HL-SC	REL- / VEL-2S40-RH-TP
GEL-3P32-RH-TP	RCN- / VCN-132-MC	RCN- / VCN-3P32-LW	REL- / VEL-3P32-HL-SC	REL- / VEL-1S40-SC
GEL-4P32-LW-RH-TP	RCN- / VCN-2M32-MC	RCN- / VCN-4P32-LW	REL- / VEL-2P32-LW-RH-TP	REL- / VEL-2S40-SC
GEL-4P32-RH-TP	RCN- / VCN-1P32-SC	RCN- / VCN-2P59	REL- / VEL-3P32-LW-RH-TP	REL- / VEL-2P50-SC
ICN-1P32-SC	RCN- / VCN-2P32-SC	REL- / VEL-1P32-SC	REL- / VEL-4P32-LW-RH-TP	REL- / VEL-2P59-S-RH-TP
ICN-2P32-SC	RCN- / VCN-3P32-SC	REL- / VEL-2P32-SC	REL- / VEL-1P32-LW-SC	REL- / VEL-2P59-HL
ICN-3P32-SC	RCN- / VCN-4P32-SC	REL- / VEL-3P32-SC	REL- / VEL-2P32-LW-SC	REL- 2P60-S
ICN-4P32-SC	RCN- / VCN-1S32-SC	REL- / VEL-4P32-SC	REL- / VEL-3P32-LW-SC	REL- 2P75-S
			REL- / VEL-4P32-LW-SC	RIC- / VIC-132

Reading Date Codes for Warranty Date on Electronic Ballasts

Most date codes are stamped on the back of the ballast (opposite the label side). The date code is part of a larger group of numbers and letters, which call out the various codes for the factory where the ballast was manufactured. Depending upon which Advance Transformer factory manufactured the ballast, the date stamp can vary slightly, in terms of its position on the ballast and the number sequence.

Some electronic ballasts manufactured from 1988 to 1991 may have the date code in ink stamped on the ballast label. Some ballasts have the manufacturing code printed in ink on the end of the ballast.

A typical date code for an electronic ballast will have the week and the year the ballast was manufactured. Some ballasts will have the day of the week included too.

ADVANCE TRANSFORMER'S ELECTRONIC BALLASTS HAVE A (5) YEAR WARRANTY FROM DATE OF MANUFACTURE, EFFECTIVE WITH MANUFACTURING IN JANUARY, 1994 (DATE STAMPED 01-94). ELECTRONIC BALLASTS WITH A DATE CODE PRIOR TO THAT DATE, HAVE A THREE YEAR WARRANTY (DATE STAMPED 52-93 OR EARLIER).

Some examples of these different date codes that you may find are:

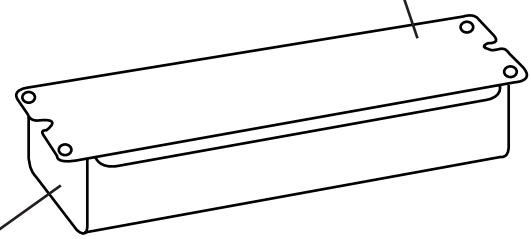
937N1B
B41893
The date code is the 18th week of 1993, stamped one line over the other.
This ballast has a (3) year warranty, that ends the 18th week of 1996.

937N1J
P23292
The date code is the 32nd week of 1992, stamped one line over the other.
This ballast has a (3) year warranty, that ends the 32nd week of 1995.

16
93
973N20P3
The date code is the 16th week of 1993, stamped at the end of the ear on the back.
This ballast has a (3) year warranty, that ends the 16th week of 1996.

892P
259P
24
94
The date code is the 4th week of 1994, stamped on four separate lines.
This ballast has a (5) year warranty that ends the 4th week of 1999.

91405BB0291N
The date code is the 2nd week of 1991, stamped on one line.
This ballast has a (3) year warranty that ends the 2nd week of 1994.



9716T032HD
120432IS24
The date code is the 16th week of 1997, stamped in ink on the end of the ballast.
This ballast has a (5) year warranty that ends the 16th week of 2002.

693P0MMA
53397707
The date code is the 5th day, of the 33rd week of 1997, stamped on the back of the ballast.
This ballast has a (5) year warranty that ends the 33rd week of 2002.

FOR ASSISTANCE IN DETERMINING A DATE CODE – CALL TECHNICAL SERVICE AT 1-800-372-3331

SMARTMATE™ CFL

New Models for two 32W or 42W Triple CFLs

Product Overview

Advance's SmartMate™ family of electronic ballasts represents an innovative breakthrough in CFL ballast design. Applications encompass the most popular lamp combinations currently available: 13-, 18-, and 26- watt Quad lamps and 26-, 32-, and 42- watt Triple lamps. With key exclusive features, SmartMate™ is the ideal choice for fixture manufacturers, retrofitters, and MRO replacement.

Exclusive Color-Coded, Dual-Entry Connector

The SmartMate™ ballasts feature a versatile dual entry connector, for both bottom and side lead connection in a single ballast. It's called the SmartMate™ Dual-Entry Connector. With this feature, ballast selection is easier, there are fewer SKU's to manage, and inventory costs are minimized. Plus, the SmartMate™ connectors are color-coded, and feature poke-in wire traps. Subsequently, wiring accuracy is almost a certainty and assembly/installation time is minimized.

Small In Size – Big In Performance – Big In Features

Compact dimensions and super lightweight design make the SmartMate™ ballasts easier to install, transport and recycle. With IntelliVolt™, these ballasts can operate on any input voltage from 120V to 277V. The ballasts are also capable of powering multiple lamp types. Custom micro-controller circuitry provides programmed starting and lamp End-Of-Life (EOL) detection.

In all, SmartMate™ ballasts are designed to deliver optimized performance for a broad range of CFL lamps, while providing ease of selection, installation and inventory management.

Key Features	Key Benefits
Exclusive SmartMate™ Connector • Dual entry feature • Color coded, poke-in terminals IntelliVolt™ • Operates on either 120 or 277 volts, or any voltage in between • 50 or 60 Hz One ballast operates 1 or 2 lamps most with primary lamps One ballast operates multiple lamp wattages	• Simplifies wiring • Reduces SKU's up to 50% • Ensures simple and accurate wiring • Offers maximum versatility • Broadens the range of applications
Lamp EOL detection with auto-restart	• Detects EOL and safely removes power from the lamp • Eliminates need to reset the mains after lamp is replaced
Cold temperature starting	• Ensures functionality in low temperature applications, down to 0˚F (–18˚C)
Programmed-Start	• Provides long lamp life in frequent starting applications
Operates lamps above 65,000 Hz	• Minimizes risk of interference with infrared remote control systems

SmartMate™ Ballast Specifications

Section I – Physical Characteristics

1.0 The electronic ballast shall be furnished with poke-in wire trap connectors, color coded to ANSI standard C82.11.

Section II – Performance Requirements

2.0 The electronic ballast shall be Intellivolt™ and operate from a line voltage range of 108-305 volts, 50/60 Hz.
2.1 The electronic ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at the nominal line voltage (120V, 277V) with primary lamp(s).
2.2 The electronic ballast shall have a Power Factor greater than 96%.
2.3 The electronic ballast shall have a Programmed-Start type system.
2.4 The electronic ballast shall have a lamp end-of-life detection and shutdown circuit.
2.5 The electronic ballast shall be sound rated A.
2.6 The electronic ballast output frequency to the lamps shall be above 65kHz to minimize interference with infrared control systems, and eliminate visible flicker.
2.7 The electronic ballast shall meet ANSI C82.11, where applicable.
2.8 The electronic ballast shall withstand transients specified in ANSI C62.41, Location Category A3.

Section III – Regulatory Requirements

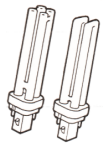
3.0 The electronic ballast shall meet the requirements of the Federal Communications Commission rules and regulations, Title 47 CFR part 18, for Non-Consumer equipment.
3.1 The electronic ballast shall comply with all applicable state and federal efficiency standards.
3.2 The electronic ballast shall be Underwriters Laboratories (UL) Listed (Class P) and CSA Certified where applicable.
3.3 The electronic ballast shall be Underwriters Laboratories (UL) rated for use in air handling spaces.

Section IV – Other

4.0 The electronic ballast shall not contain Polychlorinated Biphenyl (PCB's)
4.1 The electronic ballast shall carry a five-year warranty from the date of manufacture for operation at a case temperature of 75˚C or less. When operated at a case temperature between 75˚C and 85˚C and the warranty shall be three years from the date of manufacture.
4.2 The manufacturer shall have a ten-year history of producing electronic ballast for the North American market.
4.3 The electronic ballast shall be produced in a factory certified to ISO 9002 Quality System Standards.

SMARTMATE™ T4

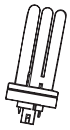
Programmed Start 4-Pin Quad/ Double Tube Lamps



Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor
CFQ13W/G24q - 13W CFL Quad Tube Lamp (PL-C13W/4P, F13DBX/4P, CF13DD/E)									
1	13	0/-18	120	ICF-2S13-XX-XX①	0.13	16	1.00	10	0.96
			230		0.07				
			277		0.06				
2	13	0/-18	120	ICF-2S13-XX-XX①	0.25	29	1.00	10	0.99
			230		0.13				
			277		0.11				
CFQ18W/G24q - 18W CFL Quad Tube Lamp (PL-C18W/4P, F18DBX/4P, CF18DD/E)									
1	18	0/-18	120	ICF-2S18-XX-XX①	0.16	19	1.00	10	0.97
			230		0.08				
			277		0.07				
2	18	0/-18	120	ICF-2S18-XX-XX①	0.30	35	0.95	10	0.99
			230		0.16				
			277		0.13				
CFQ26W/G24q - 26W CFL Quad Tube Lamp (PL-C26W/4P, F26DBX/4P, CF26DD/E)									
1	26	0/-18	120	ICF-2S26-XX-XX①	0.23	27	1.00	10	0.98
			230		0.12				
			277		0.10				
2	26	0/-18	120	ICF-2S26-XX-XX①	0.43	51	1.00	10	0.99
			230		0.22				
			277		0.19				
			120	ICF-2S42-XX-XX①	0.43	52	1.00	10	0.98
			230		0.22				
			277		0.19				

SMARTMATE™ T4

Programmed Start 4-Pin Triple Tube Lamps

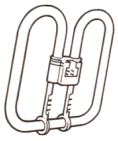


Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor
CFM18W/GX24q - 18W CFL Triple Tube Lamp (PL-T18W/4P, F18TBX/4P, CF18DT/E)									
1	18	0/-18	120	ICF-2S18-XX-XX①	0.17	20	1.05	10	0.97
			230		0.09				
			277		0.08				
2	18	0/-18	120	ICF-2S18-XX-XX①	0.33	39	1.05	10	0.99
			230		0.17				
			277		0.14				
CFM26W/GX24q - 26W CFL Triple Tube Lamp (PL-T26W/4P, F26TBX/4P, CF26DT/E)									
1	26	0/-18	120	ICF-2S26-XX-XX①	0.24	29	1.10	10	0.98
			230		0.13				
			277		0.11				
2	26	0/-18	120	ICF-2S26-XX-XX①	0.45	54	1.00	10	0.99
			230		0.23				
			277		0.20				
			120	ICF-2S42-XX-XX①	0.46	55	1.00	10	0.98
			230		0.24				
			277		0.21				
CFM32W/GX24q - 32W CFL Triple Tube Lamp (PL-T32W/4P, F32TBX/4P, CF32DT/E)									
1	32	0/-18	120	ICF-2S26-XX-XX①	0.31	36	0.98	10	0.98
			230		0.16				
			277		0.13				
2	32	0/-18	120	ICF-2S42-XX-XX①	0.57	68	0.98	10	0.98
			230		0.30				
			277		0.25				
CFM42W/GX24q - 42W CFL Triple Tube Lamp (PL-T42W/4P, F42TBX/4P, CF42DT/E)									
1	42	0/-18	120	ICF-2S26-XX-XX①	0.38	46	0.98	10	0.98
			230		0.20				
			277		0.17				
2	42	0/-18	120	ICF-2S42-XX-XX①	0.78	93	0.97	10	0.99
			230		0.41				
			277		0.33				

①See Page 2-25 for correct case and mounting selection

SMARTMATE™ 2D

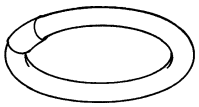
Programmed Start
4-Pin
2D Lamps



Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor
CFS10W/GR10q - 10W 2D Lamp (F10 2D/4P)									
1	10	0/-18	120	ICF-2S13-XX-XX①	0.11	13	1.05	14	0.96
			230		0.06				
			277		0.05				
2	10	0/-18	120	ICF-2S13-XX-XX①	0.19	23	0.95	11	0.97
			230		0.10				
			277		0.09				
CFS16W/GR10q - 16W 2D Lamp (F16 2D/4P)									
1	16	0/-18	120	ICF-2S13-XX-XX①	0.14	17	1.00	12	0.96
			230		0.07				
			277		0.06				
2	16	0/-18	120	ICF-2S18-XX-XX①	0.31	37	1.00	9	0.99
			230		0.16				
			277		0.13				
CFS21W/GR10q - 21W 2D Lamp (F21 2D/4P)									
1	21	0/-18	120	ICF-2S18-XX-XX①	0.16	20	0.90	13	0.97
			230		0.08				
			277		0.07				
2	21	0/-18	120	ICF-2S18-XX-XX①	0.33	40	0.91	8	0.99
			230		0.17				
			277		0.14				
			120	ICF-2S26-XX-XX①	0.42	51	1.12	10	0.99
			230		0.22				
			277		0.18				
CFS28W/GR10q - 28W 2D Lamp (F28 2D/4P)									
1	28	0/-18	120	ICF-2S26-XX-XX①	0.23	27	1.00	10	0.98
			230		0.12				
			277		0.10				
2	28	0/-18	120	ICF-2S42-XX-XX①	0.48	57	1.00	10	0.98
			230		0.25				
			277		0.21				
CFS38W/GR10q - 38W 2D Lamp (F38 2D/4P)									
1	38	0/-18	120	ICF-2S26-XX-XX①	0.26	31	0.85	10	0.98
			230		0.14				
			277		0.11				
2	38	0/-18	120	ICF-2S42-XX-XX①	0.55	62	0.80	10	0.98
			230		0.29				
			277		0.23				

SMARTMATE™ T5

Programmed Start
4-Pin
Circline Lamps



Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor
FC9T5 - 22W T5 Circline Lamp									
1	22	0/-18	120	ICF-2S26-XX-XX①	0.21	25	1.00	13	0.98
			230		0.11				
			277		0.09				
FC12T5 - 40W T5 Circline Lamp									
1	40	0/-18	120	ICF-2S26-XX-XX①	0.32	38	0.95	10	0.98
			230		0.17				
			277		0.14				
(1) FC9T5 & (1) FC12T5 - (1) 22W & (1) 40W Circline Lamp									
2	22+40	0/-18	120	ICF-2S42-XX-XX①	0.51	61	0.85	10	0.98
			230		0.27				
			277		0.22				

①**See Page 2-25 for correct case and mounting selection**

SMARTMATE™

TT5

Programmed Start 4-Pin Long Twin Tube Lamps

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor
Number	Watts								
FT24W/2G11 - 24/27W Long Twin Tube Lamp (PL-L 24W, F27/24BX, FT24DL)									
2	27	0/-18	120	ICF-2S26-XX-XX①	0.41	48	0.93	10	0.99
			230		0.21				
			277		0.18				
			120	ICF-2S42-XX-XX①	0.40	48	0.93	15	0.98
			230		0.21				
			277		0.18				
FT40W/2G11 - 40W Long Twin Tube Lamp (PL-L 40W, F40/30BX, FT40DL)									
2	40	0/-18	120	ICF-2S42-XX-XX①	0.66	78	0.95	10	0.99
			230		0.34				
			277		0.28				

①See Page 2-25 for correct case and mounting selection

Installation Notes

Wiring Insertion/Extraction

To properly insert the input power or lamp leads into the ballast, perform the following steps:

- Strip the copper wire 3/8 inch (wire must be 16-20 AWG solid or tinned)
- Insert stripped end of wire into the ROUND hole in the connector terminal. Wire color should match color of connector terminal.
- Gently pull on wire to ensure proper installation.

To properly extract the input power or lamp leads from the ballast, perform the following steps:

- Insert wire extraction tool (available from Advance) or small flathead screwdriver (approx. 1.2 mm or 3/64 inch wide) into the SQUARE hole in the connector terminal.
- Pull wire out of the connector terminal while pushing on the extraction tool.
- Remove extraction tool from the connector terminal.

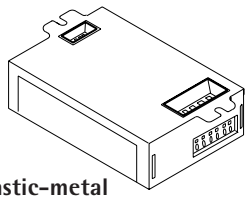
General Application Information

- The SmartMate™ ballast may experience in rush current that is higher than normal line current, when initial power is applied.
- For compatibility with “powerline carriers”, please contact Advance Transformer.
- Ballast grounding is critical. If the ballast is not grounded it can generate higher EMI and may not function properly.

SMARTMATE™ – Ballast Case and Mounting Options

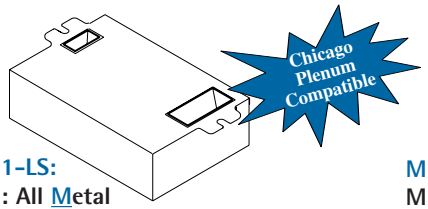
Size 1 Ballast Enclosure Mounting Options

(ICF-2S13-XX-XX, ICF-2S18-XX-XX, ICF-2S26-XX-XX)



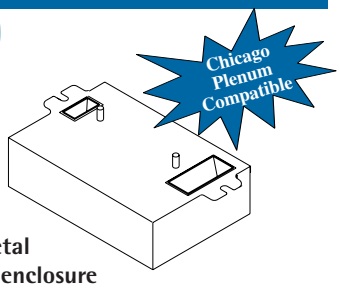
H1-LD:
H: Hybrid plastic-metal
1: Size 1 enclosure
L: Length mounting feet
D: Dual entry connector.

For wall sconce and ceiling or recessed downlighting applications



M1-LS:
M: All Metal
1: Size 1 enclosure
L: Length mounting feet
S: Single entry connector.

For recessed downlighting applications/special plenum requirements

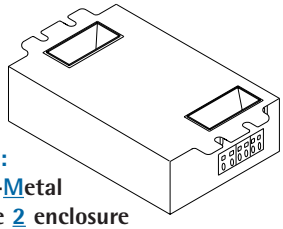


M1-BS:
M: All-Metal
1: Size 1 enclosure
B: Bottom mounting PEM studs
S: Single entry connector.

For recessed downlighting applications/special plenum requirements

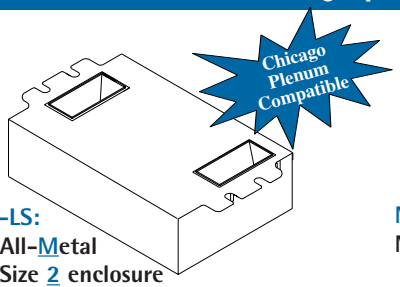
Size 2 Ballast Enclosure Mounting Options

(ICF-2S42-XX-XX)



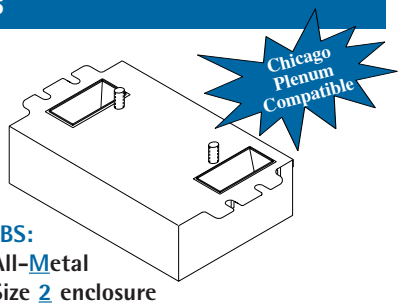
M2-LD:
M: All-Metal
2: Size 2 enclosure
L: Length mounting feet
D: Dual entry connector.

For wall sconce and ceiling or recessed downlighting applications



M2-LS:
M: All-Metal
2: Size 2 enclosure
L: Length mounting feet
S: Single entry connector.

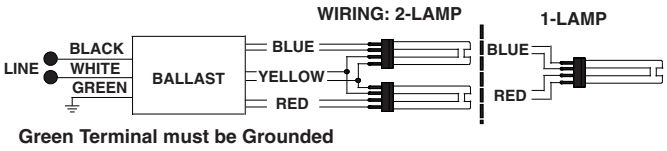
For recessed downlighting applications/special plenum requirements



M2-BS:
M: All-Metal
2: Size 2 enclosure
B: Bottom mounting PEM studs
S: Single entry connector.

For recessed downlighting applications/special plenum requirements

Wiring



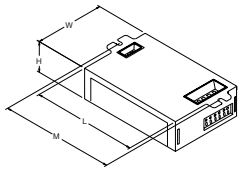
Ballast Mounting Options

	ICF-2S13-XX-XX	ICF-2S18-XX-XX	ICF-2S26-XX-XX	ICF-2S42-XX-XX
H1-LD	✓	✓	✓	
M1-LS	✓	✓	✓	
M1-BS	✓	✓	✓	
M2-LD				✓
M2-LS				✓
M2-BS				✓

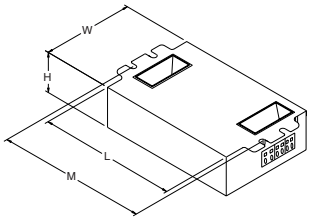
Ballast Enclosure Dimensions

Mounting Options	Length (in.)	Width (in.)	Height (in.)	Mounting Length (in.)
H1-LD	4.20	2.40	0.98	4.60
M1-LS	4.20	2.40	0.98	4.60
M1-BS	4.20	2.40	0.98	2.00
M2-LD	4.20	3.00	1.29	4.60
M2-LS	4.20	3.00	1.29	4.60
M2-BS	4.20	3.00	1.29	2.00

Size 1 Enclosure



Size 2 Enclosure



NOTES

TT5

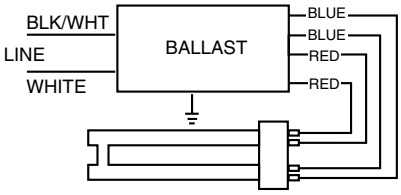
Rapid-Start Long Twin Tube, Normal Light Output
Series

HIGH POWER FACTOR SOUND RATED A

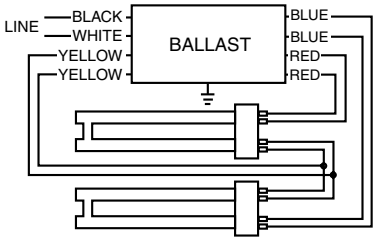
Standard

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
FT36W/2G11/RS												
1	39	50/10	120	REL-1TTS39	✓	✓	0.35	39	1.00	20	0.98	Fig. A/93
			277	VEL-1TTS39	✓	✓	0.15					
2	39	50/10	120	REL-2TTS39	✓	✓	0.59	70	0.85	20	0.98	Fig. A/94
			277	VEL-2TTS39	✓	✓	0.25					
FT40W/2G11/RS												
1	40	50/10	120	REL-1TTS40	✓	✓	0.37	44	1.00	20	0.98	Fig. A/93
			277	VEL-1TTS40	✓	✓	0.16					
2	40	50/10	120	REL-2TTS40	✓	✓	0.60	71	0.85	20	0.98	Fig. A/94
			277	VEL-2TTS40	✓	✓	0.26					
FT50W/2G11/RS												
1	50	50/10	120	REL-1TTS50	✓	✓	0.46	54	0.98	20	0.98	Fig. A/93
			277	VEL-1TTS50	✓	✓	0.20					
2	50	50/10	120	REL-2TTS50	✓	✓	0.90	106	0.98	20	0.98	Fig. A/94
			277	VEL-2TTS50	✓	✓	0.39					
FT55W/2G11/RS												
1	55	50/10	120	REL-1TTS50	✓	✓	0.43	51	0.85	20	0.98	Fig. A/93
			277	VEL-1TTS50	✓	✓	0.20					
2	55	50/10	120	REL-2TTS50	✓	✓	0.83	100	0.84	20	0.98	Fig. A/94
			277	VEL-2TTS50	✓	✓	0.40					

Ballast features EOL protection



DIAG. 93



DIAG. 94

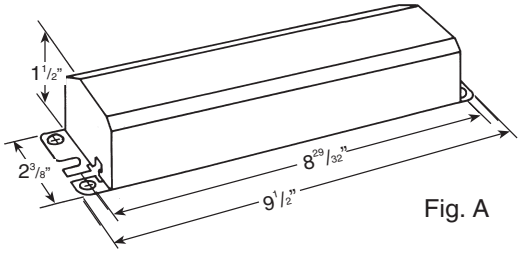


Fig. A

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

HIGH POWER FACTOR SOUND RATED A

Standard/Low Profile

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
F17T8, FB017T8												
1	17	0/-18	120	REL-2P17-RH-TP	✓	✓	0.19	22	1.15	25	0.95	Fig. A/*64
			277	VEL-2P17-RH-TP	✓	✓	0.09					
2	17	0/-18	120	REL-2P17-RH-TP	✓	✓	0.29	34	0.98	20	0.98	Fig. A/64
			277	VEL-2P17-RH-TP	✓	✓	0.13					

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
F17T8, FB017T8												
1	17	0/-18	120	REL-1P32-SC	✓	✓	0.19	20	0.95	30	0.90	Fig. B/63
			277	VEL-1P32-SC	✓	✓	0.08					
2	17	0/-18	120	REL-2P32-SC	✓	✓	0.29	34	0.98	30	0.98	Fig. B/64
			277	VEL-2P32-SC	✓	✓	0.13					
			347	GEL-2P32-SC	✓	✓	0.31		0.92	30	0.91	
3	17	0/-18	120	REL-3P32-SC	✓	✓	0.39	47	0.99	20	0.99	Fig. B/65
			277	VEL-3P32-SC	✓	✓	0.17					
4	17	0/-18	120	REL-4P32-SC	✓	✓	0.51	61	0.96	20	0.99	Fig. B/66
			277	VEL-4P32-SC	✓	✓	0.22					
F25T8, FB025T8												
1	25	0/-18	120	REL-1P32-SC	✓	✓	0.23	27	0.92	25	0.96	Fig. B/63
			277	VEL-1P32-SC	✓	✓	0.10					
			120	REL-2P32-SC	✓	✓	0.29	30	1.10	30	0.90	Fig. B/*64
			277	VEL-2P32-SC	✓	✓	0.13					
2	25	0/-18	120	REL-2P32-SC	✓	✓	0.40	47	0.90	25	0.98	Fig. B/64
			277	VEL-2P32-SC	✓	✓	0.17					
			347	GEL-2P32-SC	✓	✓	0.14	48	0.98	25	0.98	Fig. B/64
			120	REL-3P32-SC	✓	✓	0.42	54	1.06	20	0.99	Fig. B/*65
			277	VEL-3P32-SC	✓	✓	0.19					
3	25	0/-18	120	REL-3P32-SC	✓	✓	0.55	66	0.93	20	0.99	Fig. B/65
			277	VEL-3P32-SC	✓	✓	0.24					
			347	GEL-3P32-RH-TP		✓	0.21	70	0.95	25	0.96	Fig. A/65
			120	REL-4P32-SC	✓	✓	0.62	74	1.04	20	0.99	Fig. B/*66
			277	VEL-4P32-SC	✓	✓	0.27					
4	25	0/-18	120	REL-4P32-SC	✓	✓	0.74	89	0.94	20	0.99	Fig. B/66
			277	VEL-4P32-SC	✓	✓	0.32					
			347	GEL-4P32-RH-TP		✓	0.25	85	0.88	25	0.96	Fig. A/66

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

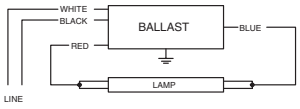
Instant-Start, Normal Light Output

Parallel

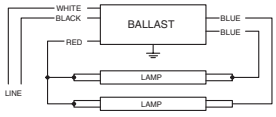
HIGH POWER FACTOR SOUND RATED A

Standard/Low Profile

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
F32T8, FB031T8, F32T8/U6												
1	32	0/-18	120	REL-1P32-SC	✓	✓	0.27	32	0.92	20	0.98	Fig. B/63
			277	VEL-1P32-SC	✓	✓	0.12					
			120	REL-2P32-SC	✓	✓	0.34	38	1.10	25		Fig. B/*64
			277	VEL-2P32-SC	✓	✓	0.15					
			347	GEL-2P32-SC	✓	✓	0.12					
2	32	0/-18	120	REL-2P32-SC	✓	✓	0.49	58	0.87	20	0.98	Fig. B/64
			277	VEL-2P32-SC	✓	✓	0.21					
			347	GEL-2P32-SC	✓	✓	0.17	59	0.87		0.98	Fig.B/64
			120	REL-3P32-SC	✓	✓	0.54	65	1.03		0.99	Fig. B/*65
			277	VEL-3P32-SC	✓	✓	0.24					
3	32	0/-18	120	REL-3P32-SC	✓	✓	0.71	85	0.88	20	0.99	Fig. B/65
			277	VEL-3P32-SC	✓	✓	0.31					
			120	REL-4P32-SC	✓	✓	0.79	94	1.00	20	0.99	Fig. B/*66
			277	VEL-4P32-SC	✓	✓	0.34					
			347	GEL-3P32-RH-TP		✓	0.26	90	0.97	20	0.98	Fig. A/65
4	32	0/-18	120	REL-4P32-SC	✓	✓	0.94	112	0.88	20	0.99	Fig. B/66
			277	VEL-4P32-SC	✓	✓	0.41					
			347	GEL-4P32-RH-TP		✓	0.31	112	0.85	20	0.98	Fig. A/66
F40T8												
2	40	32/0	120	REL-3P32-SC	✓	✓	0.66	79	1.01	20	0.99	Fig. B/*65
			277	VEL-3P32-SC	✓	✓	0.31					
3	40	32/0	120	REL-4P32-SC	✓	✓	0.94	112	0.88	20	0.99	Fig. B/*66
			277	VEL-4P32-SC	✓	✓	0.41					
		50/10	347	GEL-3P32-RH-TP		✓	0.32	TBD	TBD	TBD	TBD	Fig. A/65
				GEL-4P32-RH-TP		✓						Fig. A/66



Diag. 63



Diag. 64

* For Single Lamp Operation, insulate unused blue lead for 600 volts

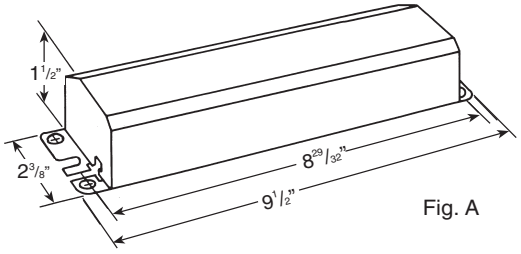
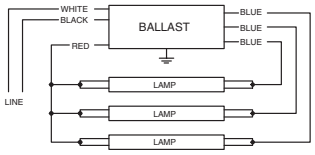
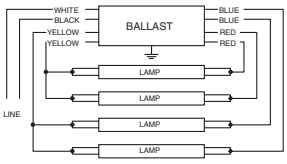


Fig. A



Diag. 65

* For Two Lamp Operation, insulate unused blue lead for 600 volts



Diag. 66

* For Three Lamp Operation, insulate unused blue lead for 600 volts

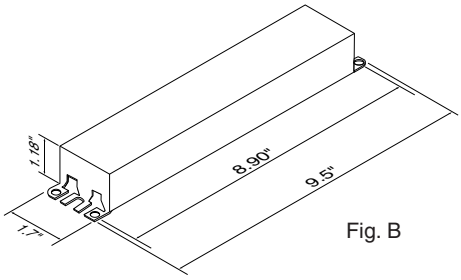


Fig. B

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T8

HIGH FREQUENCY ELECTRONIC BALLASTS

Instant-Start, Low Watt
Parallel

HIGH POWER FACTOR SOUND RATED A

Standard/Low Profile

NEW!

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
F17T8, FBO17T8												
1	17	0/-18	120	REL-1P32-LW-SC	✓	✓	0.17	18	0.87	25	0.90	Fig. B/63
			277	VEL-1P32-LW-SC	✓	✓	0.08					
2	17	0/-18	120	REL-2P32-LW-SC	✓	✓	0.29	30	0.82	30	0.90	Fig. B/64
			277	VEL-2P32-LW-SC	✓	✓	0.12					
		0/-18	120	REL-3P32-LW-SC	✓	✓	0.28	34	0.87	20	0.96	Fig. B/*65
			277	VEL-3P32-LW-SC	✓	✓	0.13					
3	17	0/-18	120	REL-3P32-LW-SC	✓	✓	0.37	44	0.77	20	0.98	Fig. B/65
			277	VEL-3P32-LW-SC	✓	✓	0.16					
		0/-18	120	REL-4P32-LW-SC	✓	✓	0.39	49	0.83	20	0.98	Fig. B/*66
			277	VEL-4P32-LW-SC	✓	✓	0.17					
4	17	0/-18	120	REL-4P32-LW-SC	✓	✓	0.46	54	0.77	20	0.98	Fig. B/66
			277	VEL-4P32-LW-SC	✓	✓	0.20					
F25T8, FBO25T8												
1	25	0/-18	120	REL-1P32-LW-SC	✓	✓	0.21	24	0.82	20	0.95	Fig. B/63
			277	VEL-1P32-LW-SC	✓	✓	0.09					
2	25	0/-18	120	REL-2P32-LW-SC	✓	✓	0.35	41	0.78	25	0.95	Fig. B/64
			277	VEL-2P32-LW-SC	✓	✓	0.15					
		0/-18	120	REL-3P32-LW-SC	✓	✓	0.39	46	0.88	20	0.98	Fig. B/*65
			277	VEL-3P32-LW-SC	✓	✓	0.17					
3	25	0/-18	120	REL-3P32-LW-SC	✓	✓	0.50	59	0.77	20	0.98	Fig. B/65
			277	VEL-3P32-LW-SC	✓	✓	0.21					
		0/-18	120	REL-4P32-LW-SC	✓	✓	0.53	62	0.83	20	0.98	Fig. B/*66
			277	VEL-4P32-LW-SC	✓	✓	0.22					
4	25	0/-18	120	REL-4P32-LW-SC	✓	✓	0.64	76	0.76	20	0.98	Fig. B/66
			277	VEL-4P32-LW-SC	✓	✓	0.28					
F32T8, FBO31T8, F32T8/U6												
1	32	0/-18	120	REL-1P32-LW-SC	✓	✓	0.24	29	0.75	20	0.98	Fig. B/63
			277	VEL-1P32-LW-SC	✓	✓	0.11					
		0/-18	120	REL-2P32-LW-SC	✓	✓	0.30	33	0.93	30	0.90	Fig. B/*64
			277	VEL-2P32-LW-SC	✓	✓	0.13					
2	32	0/-18	120	REL-2P32-LW-SC	✓	✓	0.44	51	0.75	20	0.98	Fig. B/64
			277	VEL-2P32-LW-SC	✓	✓	0.19					
		0/-18	120	REL-3P32-LW-SC	✓	✓	0.49	59	0.87	20	0.98	Fig. B/*65
			277	VEL-3P32-LW-SC	✓	✓	0.21					
3	32	0/-18	120	REL-3P32-LW-SC	✓	✓	0.64	76	0.75	20	0.98	Fig. B/65
			277	VEL-3P32-LW-SC	✓	✓	0.27					
		0/-18	120	REL-4P32-LW-SC	✓	✓	0.69	82	0.81	20	0.98	Fig. B/*66
			277	VEL-4P32-LW-SC	✓	✓	0.29					
4	32	0/-18	120	REL-4P32-LW-SC	✓	✓	0.82	98	0.75	20	0.98	Fig. B/66
			277	VEL-4P32-LW-SC	✓	✓	0.36					
F40T8												
1	40	32/0	120	REL-2P32-LW-SC	✓	✓	0.34	39	0.88	25	0.95	Fig. B/*64
			277	VEL-2P32-LW-SC	✓	✓	0.15					
2	40	32/0	120	REL-3P32-LW-SC	✓	✓	0.59	70	0.86	20	0.98	Fig. B/*65
			277	VEL-3P32-LW-SC	✓	✓	0.26					
3	40	32/0	120	REL-4P32-LW-SC	✓	✓	0.82	98	0.81	20	0.98	Fig. B/*66
			277	VEL-4P32-LW-SC	✓	✓	0.35					

Will be phased in during 2001 to replace standard can product

See Page 2-31 for Diagrams

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Instant-Start, Low Watt

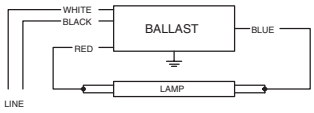
Parallel

HIGH POWER FACTOR SOUND RATED A

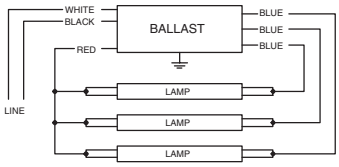
Standard

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F32T8, FB031T8, F32T8/U6												
2	32	0/-18	120	REL-2P32-LW-RH-TP*	✓	✓	0.43	51	0.75	20	0.98	Fig. A/64
			277	VEL-2P32-LW-RH-TP*	✓	✓	0.18					
			347	GEL-2P32-LW-RH-TP	✓	✓	0.15	52				
3	32	0/-18	120	REL-3P32-LW-RH-TP*	✓	✓	0.63	76	0.75	20	0.98	Fig. A/65
			277	VEL-3P32-LW-RH-TP*	✓	✓	0.27					
4	32	0/-18	120	REL-4P32-LW-RH-TP*	✓	✓	0.83	98	0.75	20	0.98	Fig. A/66
			277	VEL-4P32-LW-RH-TP*	✓	✓	0.36					
			347	GEL-4P32-LW-RH-TP	✓	✓	0.29					

*** Will be phased out during 2001 and replaced by small can product**

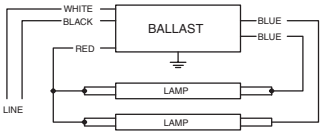


Diag. 63



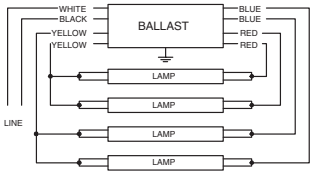
Diag. 65

* For Two Lamp Operation, insulate unused blue lead for 600 volts



Diag. 64

* For Single Lamp Operation, insulate unused blue lead for 600 volts



Diag. 66

* For Three Lamp Operation, insulate unused blue lead for 600 volts

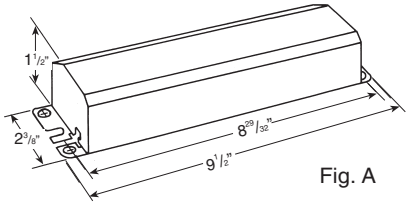


Fig. A

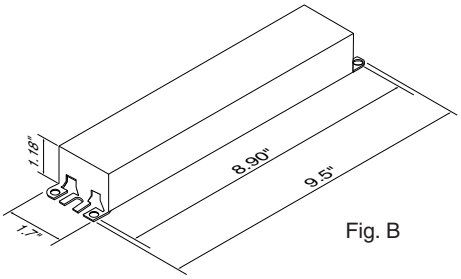


Fig. B

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T8

HIGH FREQUENCY ELECTRONIC BALLASTS

Instant Start, High Light Output
Parallel

HIGH POWER FACTOR SOUND RATED A

Standard/Low Profile

NEW!

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor ★	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
F17T8, FBO16T8												
1	17	0/-18	120	REL-1P32-HL-SC	✓	✓	0.21	25	1.22	20	0.95	Fig. B/63
			277	VEL-1P32-HL-SC	✓	✓	0.10					
2	17	0/-18	120	REL-2P32-HL-SC	✓	✓	0.37	44	1.22	20	0.96	Fig. B/64
			277	VEL-2P32-HL-SC	✓	✓	0.17					
3	17	0/-18	120	REL-3P32-HL-SC	✓	✓	0.52	62	1.20	20	0.98	Fig. B/65
			277	VEL-3P32-HL-SC	✓	✓	0.23					
F25T8, FBO24T8												
1	25	0/-18	120	REL-1P32-HL-SC	✓	✓	0.29	34	1.22	20	0.97	Fig. B/63
			277	VEL-1P32-HL-SC	✓	✓	0.13					
			120	REL-2P32-HL-SC	✓	✓	0.33	38	1.43	20	0.95	Fig. B/*64
			277	VEL-2P32-HL-SC	✓	✓	0.15					
2	25	0/-18	120	REL-2P32-HL-SC	✓	✓	0.52	61	1.22	20	0.98	Fig. B/64
			277	VEL-2P32-HL-SC	✓	✓	0.23					
			120	REL-3P32-HL-SC	✓	✓	0.57	67	1.33	20	0.98	Fig. B/*65
			277	VEL-3P32-HL-SC	✓	✓	0.25					
3	25	0/-18	120	REL-3P32-HL-SC	✓	✓	0.74	88	1.20	20	0.98	Fig. B/65
			277	VEL-3P32-HL-SC	✓	✓	0.32					
F32T8, FBO31T8, F32T8/U6												
1	32	0/-18	120	REL-1P32-HL-SC	✓	✓	0.35	42	1.20	20	0.98	Fig. B/63
			277	VEL-1P32-HL-SC	✓	✓	0.16					
			120	REL-2P32-HL-SC	✓	✓	0.41	49	1.41	20	0.98	Fig. B/*64
			277	VEL-2P32-HL-SC	✓	✓	0.18					
2	32	0/-18	120	REL-2P32-HL-SC	✓	✓	0.66	79	1.20	20	0.98	Fig. B/64
			277	VEL-2P32-HL-SC	✓	✓	0.29					
			120	REL-3P32-HL-SC	✓	✓	0.73	87	1.32	20	0.98	Fig. B/*65
			277	VEL-3P32-HL-SC	✓	✓	0.32					
3	32	0/-18	120	REL-3P32-HL-SC	✓	✓	0.96	114	1.18	20	0.98	Fig. B/65
			277	VEL-3P32-HL-SC	✓	✓	0.42					
F40T8												
1	40	32/0	120	REL-1P32-HL-SC	✓	✓	0.43	51	1.15	20	0.98	Fig. B/63
			277	VEL-1P32-HL-SC	✓	✓	0.19					
			120	REL-2P32-HL-SC	✓	✓	0.49	59	1.38	20	0.98	Fig. B/*64
			277	VEL-2P32-HL-SC	✓	✓	0.22					
2	40	32/0	120	REL-3P32-HL-SC	✓	✓	0.88	105	1.30	20	0.98	Fig. B/*65
			277	VEL-3P32-HL-SC	✓	✓	0.38					

★ Consult lamp manufacturers for applications with Ballast Factor >1.2

Will be phased in during 2001 to replace standard can product

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Instant Start, High Light Output

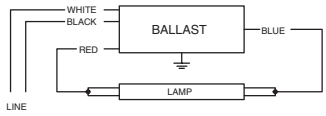
Parallel

HIGH POWER FACTOR SOUND RATED A

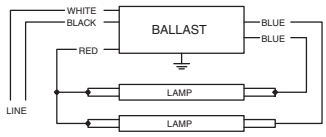
Standard

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F32T8, FB031T8, F32T8/U6												
2	32	0/-18	120	REL-2P32-HL-RH-TP	✓	✓	0.64	76	1.15	20	0.98	Fig. A/64
			277	VEL-2P32-HL-RH-TP	✓	✓	0.28					
3	32	0/-18	120	REL-3P32-HL	✓	✓	0.96	113	1.10	20	0.98	Fig. A/65
			277	VEL-3P32-HL	✓	✓	0.41					

Will be phased out during 2001 and replaced by small can product



Diag. 63



Diag. 64

* For Single Lamp Operation, insulate unused blue lead for 600 volts

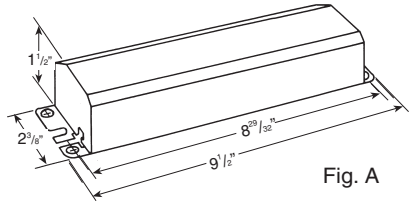
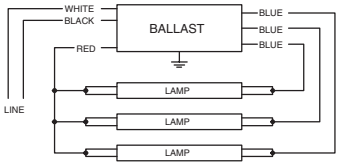


Fig. A



Diag. 65

* For Two Lamp Operation, insulate unused blue lead for 600 volts

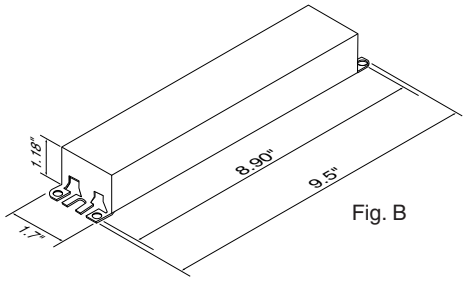


Fig. B

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T8

HIGH FREQUENCY ELECTRONIC BALLASTS

Instant-Start, Normal Light Output
Parallel

Standard

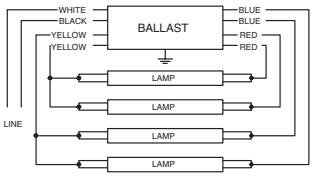
HIGH POWER FACTOR SOUND RATED A

Bi-Level Switching*

Switch 4 to 2 or 3 to 2 lamps using one standard light switch

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F32T8, FB031T8, F32T8/U6												
4	32	32/0	120	REL-4P32-2LS	✓	✓	0.94	110	0.87	20	0.99	Fig. A/66
			277	VEL-4P32-2LS	✓	✓	0.41					
3	32	32/0	120	REL-4P32-2LS	✓	✓	0.79	93	0.96	25	0.98	Fig. A/66
			277	VEL-4P32-2LS	✓	✓	0.35					
2	32	32/0	120	REL-4P32-2LS	✓	✓	0.63	73	1.10	30	0.96	Fig. A/66
			277	VEL-4P32-2LS	✓	✓	0.27					
F25T8, FB024T8												
4	25	32/0	120	REL-4P32-2LS	✓	✓	0.74	88	0.90	25	0.98	Fig. A/66
			277	VEL-4P32-2LS	✓	✓	0.33					
3	25	32/0	120	REL-4P32-2LS	✓	✓	0.64	75	1.00	30	0.97	Fig. A/66
			277	VEL-4P32-2LS	✓	✓	0.28					
2	25	32/0	120	REL-4P32-2LS	✓	✓	0.51	58	1.16	30	0.92	Fig. A/66
			277	VEL-4P32-2LS	✓	✓	0.28					

***Wiring Instructions for Bi-Level Switching Ballasts**
Two lamps must always be connected to the red leads. These lamps are not switched when the wall switch is toggled on and off. Rather, the lamp(s) connected to the blue lead(s) are switched on and off when the wall switch is toggled. To switch between 3 and 2 lamps, insulate one of the blue leads for 600v.



Diag. 66

* For Three Lamp Operation, insulate unused lead for 600 volts

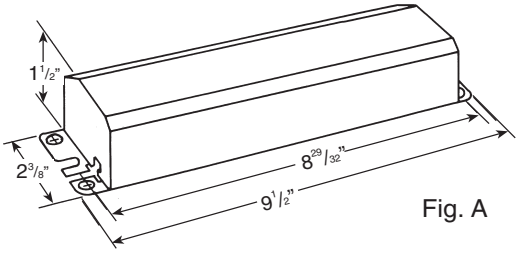


Fig. A

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Slimline Instant-Start
Parallel

HIGH POWER FACTOR SOUND RATED A

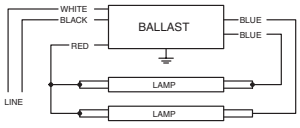
Standard

Normal Light Output

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F96T8												
1	59	32/0	120	REL-2P59-S-RH-TP	✓	✓	0.62	72	1.10	30	0.95	Fig A/*64
		32/0	277	VEL-2P59-S-RH-TP	✓	✓	0.27					
		50/10	347	GEL-2P59	✓	✓	0.22				0.97	
2	59	32/0	120	REL-2P59-S-RH-TP	✓	✓	0.94	110	0.85	20	0.98	Fig A/64
		32/0	277	VEL-2P59-S-RH-TP	✓	✓	0.41					
		50/10	347	GEL-2P59	✓	✓	0.32					

High Light Output

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F96T8												
2	59	32/0	120	REL-2P59-HL	✓	✓	1.19	140	1.10	20	0.98	Fig A/64
		32/0	277	VEL-2P59-HL	✓	✓	0.52					



Diag. 64

* For Single Lamp Operation, insulate unused blue lead for 600 volts

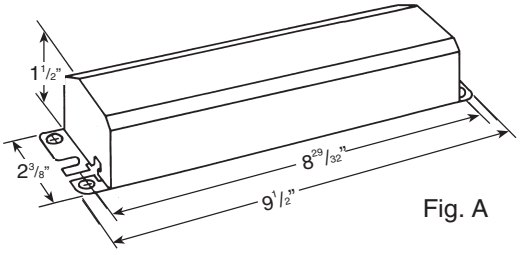


Fig. A

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T8 and T8/HO

HIGH FREQUENCY ELECTRONIC BALLASTS

Rapid-Start, Normal Light Output
Series

HIGH POWER FACTOR SOUND RATED A

Standard

ELECTRONIC FLUORESCENT

STANDARD

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F32T8, FB031T8, F32T8/U6												
2	32	50/10	347	GEL-2S32-RH-TP	✓	✓	0.18	62	0.89	20	0.98	Fig. A/21

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F72T8/HO												
2	66	50/10	120	REL-2S86	✓	✓	1.11	130	0.92	20	0.98	Fig. C/21
			277	VEL-2S86	✓	✓	0.47					
F96T8/HO												
2	86	50/10	120	REL-2S86	✓	✓	1.36	160	0.88	20	0.98	Fig. C/21
			277	VEL-2S86	✓	✓	0.60					

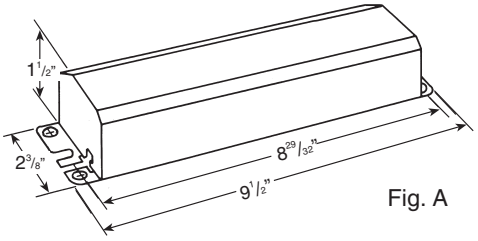
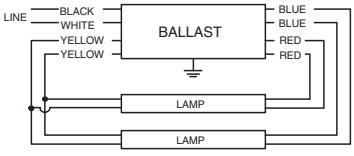


Fig. A



Diag. 21

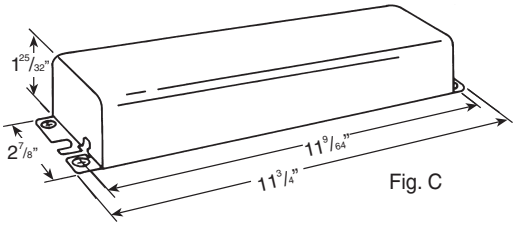


Fig. C

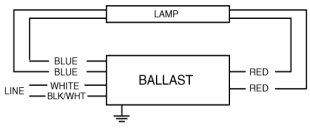
Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Rapid-Start, Normal Light Output
Series

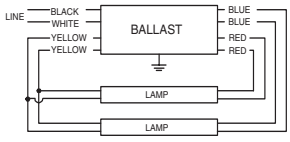
HIGH POWER FACTOR SOUND RATED A

Standard

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
F40T12												
1	40	50/10	120	REL-1S40-RH-TP	✓	✓	0.34	39	0.85	20	0.97	Fig. A/20
			277	VEL-1S40-RH-TP	✓	✓	0.15					
2	40	50/10	120	REL-2S40-RH-TP	✓	✓	0.63	74	0.85	20	0.97	Fig. A/21
			277	VEL-2S40-RH-TP	✓	✓	0.28					
			347	GEL-2S40-RH-TP		✓	0.21	72	0.87	20	0.98	Fig. A/21
3	40	50/10	120	REL-3S40-RH-TP	✓	✓	0.95	112	0.85	20	0.98	Fig. A/30
			277	VEL-3S40-RH-TP	✓	✓	0.41					



Diag. 20



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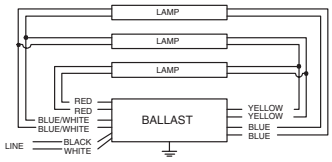


Diag. 30

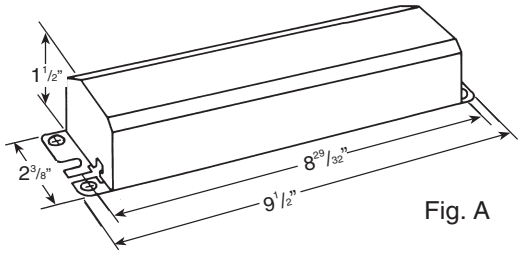
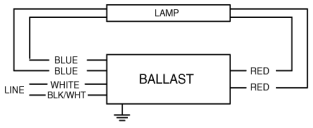


Fig. A

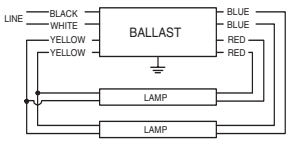
Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F30T12												
1	25	60/16	120	REL-1S40-RH-TP	✓	✓	0.24	27	0.95	20	0.96	Fig. A/20
			277	VEL-1S40-RH-TP	✓	✓	0.10					
	30	50/10	120	REL-1S40-RH-TP	✓	✓	0.27	31				
			277	VEL-1S40-RH-TP	✓	✓	0.12					
2	25	60/16	120	REL-2S40-RH-TP	✓	✓	0.41	48	0.95	20	0.95	Fig. A/21
			277	VEL-2S40-RH-TP	✓	✓	0.18					
	30	50/10	120	REL-2S40-RH-TP	✓	✓	0.51	60				
			277	VEL-2S40-RH-TP	✓	✓	0.22					
3	25	60/16	120	REL-3S40-RH-TP	✓	✓	0.69	80	0.95	20	0.95	Fig. A/30
			277	VEL-3S40-RH-TP	✓	✓	0.30					
	30	50/10	120	REL-3S40-RH-TP	✓	✓	0.78	90				
			277	VEL-3S40-RH-TP	✓	✓	0.34					
F40T12, F40T12/U												
1	34	60/16	120	REL-1S40-RH-TP	✓	✓	0.27	31	0.90	20	0.98	Fig. A/20
			277	VEL-1S40-RH-TP	✓	✓	0.12					
	40	50/10	120	REL-1S40-RH-TP	✓	✓	0.34	38				
			277	VEL-1S40-RH-TP	✓	✓	0.15					
2	34	60/16	120	REL-2S40-RH-TP	✓	✓	0.51	60	0.87	20	0.98	Fig. A/21
			277	VEL-2S40-RH-TP	✓	✓	0.22					
			347	GEL-2S40-RH-TP	✓	✓	0.18	62				
	40	50/10	120	REL-2S40-RH-TP	✓	✓	0.62	72				
			277	VEL-2S40-RH-TP	✓	✓	0.27					
			347	GEL-2S40-RH-TP	✓	✓	0.21	71				
3	34	60/16	120	REL-3S40-RH-TP	✓	✓	0.69	91	0.87	20	0.98	Fig. A/30
			277	VEL-3S40-RH-TP	✓	✓	0.30					
	40	50/10	120	REL-3S40-RH-TP	✓	✓	0.78	107				
			277	VEL-3S40-RH-TP	✓	✓	0.34					

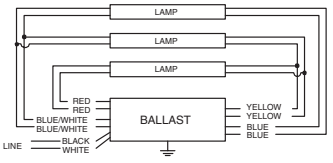
1 & 2 lamp 120 & 277V product will be phased out during 2001 and replaced by Small Can product



Diag. 20



Diag. 21



Diag. 30

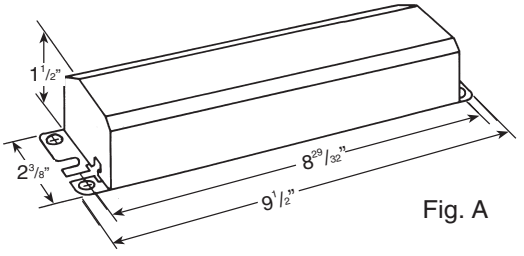


Fig. A

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

HIGH FREQUENCY ELECTRONIC BALLASTS

T12

Rapid-Start, Normal Light Output
Series

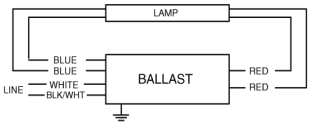
HIGH POWER FACTOR SOUND RATED A

NEW!

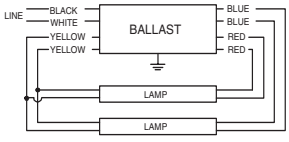
Standard/Low Profile

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
F25T12												
1	25	50/10	120	REL-1S40-SC	✓	✓	0.23	28	1.07	20	0.98	Fig. B/20
			277	VEL-1S40-SC	✓	✓	0.10					
2	25	50/10	120	REL-2S40-SC	✓	✓	0.44	50	1.01	20	0.98	Fig. B/21
			277	VEL-2S40-SC	✓	✓	0.19					
F30T12/ES												
1	25	50/10	120	REL-1S40-SC	✓	✓	0.23	28	1.07	20	0.98	Fig. B/20
			277	VEL-1S40-SC	✓	✓	0.10					
2	25	50/10	120	REL-2S40-SC	✓	✓	0.43	50	1.01	20	0.98	Fig. B/21
			277	VEL-2S40-SC	✓	✓	0.18					
F30T12												
1	30	50/10	120	REL-1S40-SC	✓	✓	0.25	30	0.98	20	0.98	Fig. B/20
			277	VEL-1S40-SC	✓	✓	0.11					
2	30	50/10	120	REL-2S40-SC	✓	✓	0.50	60	0.92	20	0.98	Fig. B/21
			277	VEL-2S40-SC	✓	✓	0.21					
F40T12/ES												
1	34	50/10	120	REL-1S40-SC	✓	✓	0.26	31	0.88	20	0.98	Fig. B/20
			277	VEL-1S40-SC	✓	✓	0.11					
2	34	50/10	120	REL-2S40-SC	✓	✓	0.52	60	0.85	20	0.98	Fig. B/21
			277	VEL-2S40-SC	✓	✓	0.21					
F40T12/F40T12U												
1	40	50/10	120	REL-1S40-SC	✓	✓	0.30	35	0.85	20	0.98	Fig. B/20
			277	VEL-1S40-SC	✓	✓	0.13					
2	40	50/10	120	REL-2S40-SC	✓	✓	0.62	71	0.85	20	0.98	Fig. B/21
			277	VEL-2S40-SC	✓	✓	0.24					

Will be phased in during 2001 to replace standard can product



Diag. 20



Diag. 21

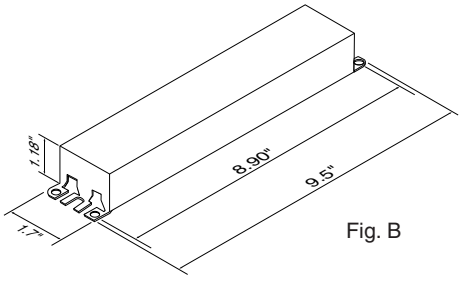


Fig. B

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T12

HIGH FREQUENCY ELECTRONIC BALLASTS

Slimline Instant-Start, Normal Light Output

Parallel

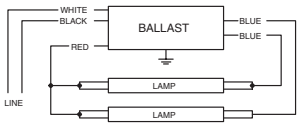
HIGH POWER FACTOR SOUND RATED A

Standard/Low Profile

ELECTRONIC FLUORESCENT

STANDARD/ LOW PROFILE

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F42T12												
1	34	32/0	120	REL-2P50-SC	✓	✓	0.40	48	1.18	20	0.98	Fig. B/*64
			277	VEL-2P50-SC	✓	✓	0.17					
2	34	32/0	120	REL-2P50-SC	✓	✓	0.62	73	0.96	20	0.98	Fig. B/64
			277	VEL-2P50-SC	✓	✓	0.26					
F48T12												
1	39	32/0	120	REL-2P50-SC	✓	✓	0.45	53	1.15	20	0.98	Fig. B/*64
			277	VEL-2P50-SC	✓	✓	0.19					
2	39	32/0	120	REL-2P50-SC	✓	✓	0.69	82	0.94	20	0.98	Fig. B/64
			277	VEL-2P50-SC	✓	✓	0.29					
F60T12												
1	50	32/0	120	REL-2P50-SC	✓	✓	0.54	64	1.15	20	0.98	Fig. B/*64
			277	VEL-2P50-SC	✓	✓	0.23					
2	50	32/0	120	REL-2P50-SC	✓	✓	0.87	103	0.95	20	0.98	Fig. B/64
			277	VEL-2P50-SC	✓	✓	0.37					
F72T12												
1	55	32/0	120	REL-2P50-SC	✓	✓	0.64	76	1.22	20	0.98	Fig. B/*64
			277	VEL-2P50-SC	✓	✓	0.27					
		50/10	120	REL-2P60-S	✓	✓	0.62	70	1.10	30	0.95	Fig. C/*64
			277	VEL-2P75-S	✓	✓	0.27					
2	55	32/0	120	REL-2P50-SC	✓	✓	1.02	120	1.02	20	0.98	Fig. B/64
			277	VEL-2P50-SC	✓	✓	0.43					
		50/10	120	REL-2P60-S	✓	✓	0.95	110	0.92	20	0.97	Fig. C/64
			277	VEL-2P75-S	✓	✓	0.41					
F96T12												
1	60	60/16	120	REL-2P60-S	✓	✓	0.62	70	1.05	30	0.95	Fig. C/*64
			277	VEL-2P75-S	✓	✓	0.27					
	75	50/10	120	REL-2P60-S	✓	✓	0.75	85				
			277	VEL-2P75-S	✓	✓	0.32					
2	60	60/16	120	REL-2P60-S	✓	✓	0.91	107	0.85	20	0.98	Fig. C/64
			277	VEL-2P75-S	✓	✓	0.39					
	75	50/10	120	REL-2P60-S	✓	✓	1.12	132				
			277	VEL-2P75-S	✓	✓	0.49					



Diag. 64

* For Single Lamp Operation, insulate unused lead for 600 volts

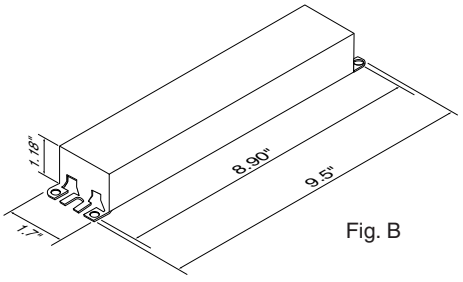


Fig. B

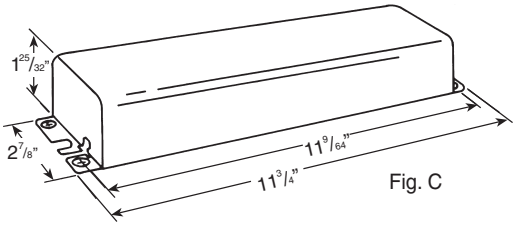


Fig. C

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

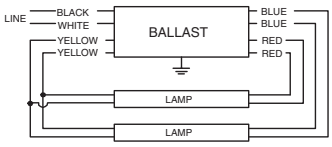
T12/HO

Rapid-Start, Normal Light Output
Series

HIGH POWER FACTOR SOUND RATED A

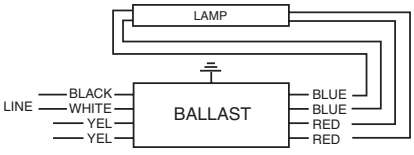
Standard

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
F48T12HO												
2	60	-20/-28	120	REL-2S110	✓	✓	1.13	125	1.15	30	0.90	Fig. C/21
			277	VEL-2S110	✓	✓	0.48	123				
F60T12HO												
2	75	-20/-28	120	REL-2S110	✓	✓	1.29	147	1.00	30	0.95	Fig. C/21
			277	VEL-2S110	✓	✓	0.53	141				
F72T12HO												
2	85	-20/-28	120	REL-2S110	✓	✓	1.40	164	0.90	20	0.98	Fig. C/21
			277	VEL-2S110	✓	✓	0.61					
F96T12HO Energy Saver												
2	95	60/16	120	REL-2S110	✓	✓	1.44	170	0.89	20	0.98	Fig. C/21
			277	VEL-2S110	✓	✓	0.63					
F96T12HO												
1	110	-20/-28	120	REL-2S110	✓	✓	1.10	119	0.91	30	0.92	Fig. C/39A
			277	VEL-2S110	✓	✓	0.46					
2	110	-20/-28	120	REL-2S110	✓	✓	1.74	205	0.89	20	0.98	Fig. C/21
			277	VEL-2S110	✓	✓	0.76					



For single lamp operation insulate yellow leads individually for 1000V as shown below

Diag. 21



Diag. 39A

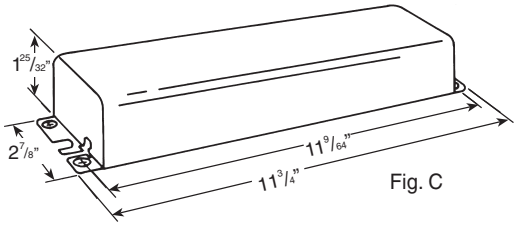


Fig. C

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

TT5

HIGH FREQUENCY ELECTRONIC BALLASTS

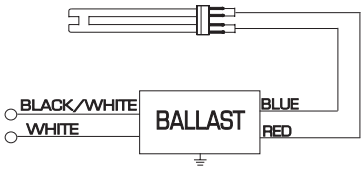
Instant Start Long Twin Tube, Normal Light Output
Parallel

HIGH POWER FACTOR SOUND RATED A

Centium®/Low Profile

NEW!

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
FT40W/2G-11/RS												
1	40	0/-18	120	RCN-1TTP40-SC	✓	✓	0.35	41	0.90	10	0.98	Fig. B/70
			277	VCN-1TTP40-SC	✓	✓	0.16					
			120	RCN-2TTP40-SC	✓	✓	0.38	44	1.00	10	0.99	
			277	VCN-2TTP40-SC	✓	✓	0.16		0.97	15	0.97	
2	40	0/-18	120	RCN-2TTP40-SC	✓	✓	0.62	72	0.88	10	0.99	Fig. B/71
			277	VCN-2TTP40-SC	✓	✓	0.26					
			120	RCN-3TTP40-SC	✓	✓	0.66	78	0.97	10	0.99	
			277	VCN-3TTP40-SC	✓	✓	0.28		0.95			
3	40	0/-18	120	RCN-3TTP40-SC	✓	✓	0.88	103	0.86	10	0.99	Fig. B/72
			277	VCN-3TTP40-SC	✓	✓	0.37					



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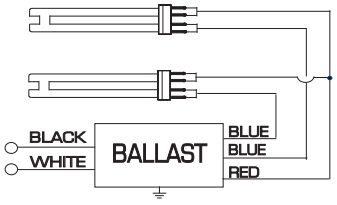

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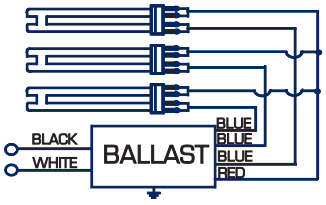


Diag. 72

Fig. B

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T5/HO

Programmed-Start, Normal Light Output
Series

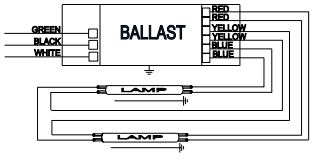
HIGH POWER FACTOR SOUND RATED A

NEW!

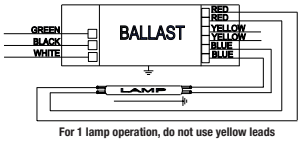
Centium®/Low Profile

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
F54T5H0												
1	54	0/-18	120	ICN-2S54	✓	✓	0.52	62	1.02	15	0.96	Fig. D/73
			230		✓	✓	0.28					
			277		✓	✓	0.23					
2	54	0/-18	120		✓	✓	1.00	120	1.00	10	0.98	Fig. D/74
			230		✓	✓	0.52	117				
			277		✓	✓	0.43					
FT55W/2G11 (55W Long Twin Tube)												
1	55	0/-18	120	ICN-2S54	✓	✓	0.49	58	0.92	15	0.96	Fig. D/73
			230		✓	✓	0.26					
			277		✓	✓	0.22					
2	55	0/-18	120		✓	✓	0.94	112	0.90	10	0.98	Fig. D/74
			230		✓	✓	0.48	109				
			277		✓	✓	0.41					
FT50W/2G11 (50W Long Twin Tube)												
1	50	0/-18	120	ICN-2S54	✓	✓	0.51	61	1.12	15	0.96	Fig. D/73
			230		✓	✓	0.27					
			277		✓	✓	0.23					
2	50	0/-18	120		✓	✓	0.99	118	1.10	10	0.98	Fig. D/74
			230		✓	✓	0.51	115				
			277		✓	✓	0.43					
FT36W/2G11 (36/39W Long Twin Tube)												
1	36/39	0/-18	120	ICN-2S54	✓	✓	0.39	46	1.22	20	0.96	Fig. D/73
			230		✓	✓	0.21					
			277		✓	✓	0.18					
2	36/39	0/-18	120		✓	✓	0.75	89	1.20	10	0.98	Fig. D/74
			230		✓	✓	0.38	86				
			277		✓	✓	0.32					
FC12T6HO (55W Circline)												
1	55	0/-18	120	ICN-2S54	✓	✓	0.46	55	0.87	15	0.96	Fig. D/73
			230		✓	✓	0.25					
			277		✓	✓	0.21					
2	55	0/-18	120		✓	✓	0.89	106	0.85	10	0.98	Fig. D/74
			230		✓	✓	0.45	103				
			277		✓	✓	0.38					

Available 2nd quarter 2001. Specifications subject to change.
Ballast features EOL protection • Poke-in lead ballasts shipped without leads



Diag. 73



Diag. 74

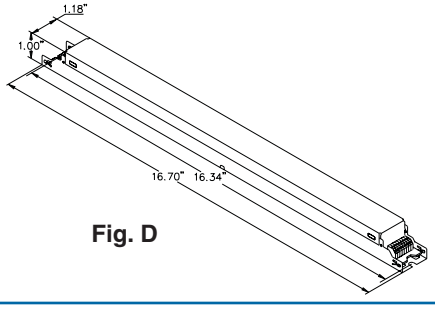


Fig. D

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

HIGH FREQUENCY ELECTRONIC BALLASTS

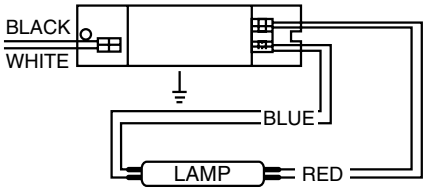
Programmed-Start, Normal Light Output
Series

Centium®

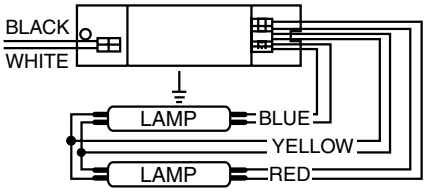
HIGH POWER FACTOR SOUND RATED A

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F21T5												
1	21	50/10	120	RCN-1S28	✓	✓	0.23	27	1.00	10	0.98	Fig. A1/102
			277	VCN-1S28	✓	✓	0.10					
2	21	50/10	120	RCN-2S28	✓	✓	0.45	52	1.00	10	0.98	Fig. A1/103
			277	VCN-2S28	✓	✓	0.20					
F28T5												
1	28	50/10	120	RCN-1S28	✓	✓	0.29	34	1.00	10	0.98	Fig. A1/102
			277	VCN-1S28	✓	✓	0.13					
2	28	50/10	120	RCN-2S28	✓	✓	0.57	66	1.00	10	0.98	Fig. A1/103
			277	VCN-2S28	✓	✓	0.25					

- 50/60 Hz operation
- Poke-in lead ballast shipped without leads
- Ballast features EOL protection



DIAG. 102



DIAG. 103

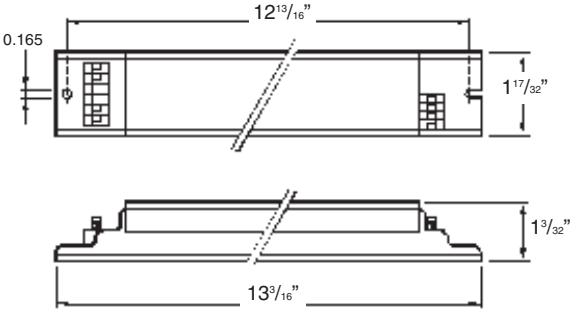


Fig. A1

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Instant-Start (Micro Can), Normal Light Output

HIGH POWER FACTOR SOUND RATED A

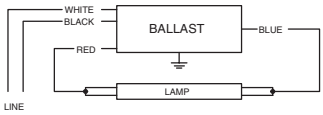
Centium®/Low Profile

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
F21T5												
1	21	0/-18	120	RCN-132-MC	✓	✓	0.22	27	1.10	10	0.99	Fig.A2/63
			277	VCN-132-MC	✓	✓	0.10					
2	21	0/-18	120	RCN-2M32-MC	✓	✓	0.42	50	1.10	10	0.99	Fig.A2/64
			277	VCN-2M32-MC	✓	✓	0.18					
F28T5												
1	28	0/-18	120	RCN-132-MC	✓	✓	0.25	30	0.98	10	0.98	Fig.A2/63
			277	VCN-132-MC	✓	✓	0.11					
2	28	0/-18	120	RCN-2M32-MC	✓	✓	0.50	60	0.98	10	0.99	Fig.A2/64
			277	VCN-2M32-MC	✓	✓	0.22					

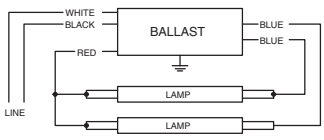
• Consult lamp manufacturers for operation of T5 lamps with this ballast

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
F25T8, FB024T8												
1	25	0/-18	120	RCN-132-MC	✓	✓	0.21	25	0.98	10	0.98	Fig.A2/63
			277	VCN-132-MC	✓	✓	0.09					
2	25	0/-18	120	RCN-2M32-MC	✓	✓	0.41	48	0.88	10	0.99	Fig.A2/64
			277	VCN-2M32-MC	✓	✓	0.18					
F32T8, FB031T8, F32T8/U6												
1	32	0/-18	120	RCN-132-MC	✓	✓	0.25	29	0.98	10	0.98	Fig.A2/63
			277	VCN-132-MC	✓	✓	0.11					
2	32	0/-18	120	RCN-2M32-MC	✓	✓	0.49	58	0.88	10	0.99	Fig.A2/64
			277	VCN-2M32-MC	✓	✓	0.21					

• Micro Can ballast features EOL protection.
• Does not provide independent lamp operation



Diag. 63



Diag. 64

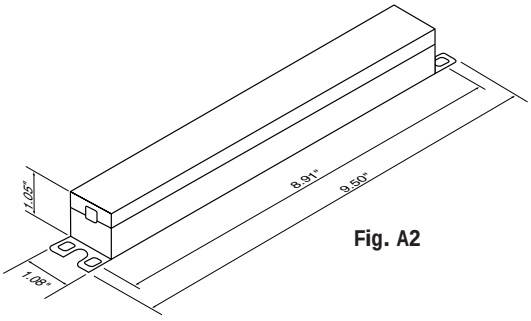


Fig. A2

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Instant-Start, Normal Light Output

Parallel

HIGH POWER FACTOR SOUND RATED A

Centium®/Low Profile

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F17T8, FB016T8												
1	17	0/-18	120	RCN-1P32-SC	✓	✓	0.18	20	0.92	20	0.93	Fig. B/63
			277	VCN-1P32-SC	✓	✓	0.08					
2	17	0/-18	120	RCN-2P32-SC	✓	✓	0.32	35	0.87	20	0.92	Fig. B/64
			277	VCN-2P32-SC	✓	✓	0.14					
3	17	0/-18	120	RCN-3P32-SC	✓	✓	0.39	47	0.99	10	0.99	Fig. B/65
			277	VCN-3P32-SC	✓	✓	0.17					
4	17	0/-18	120	RCN-4P32-SC	✓	✓	0.51	61	0.96	10	0.99	Fig. B/66
			277	VCN-4P32-SC	✓	✓	0.22					
F25T8, FB024T8												
1	25	0/-18	120	RCN-1P32-SC	✓	✓	0.22	27	0.92	10	0.98	FIg. B/63
			277	VCN-1P32-SC	✓	✓	0.10					
2	25	0/-18	120	RCN-2P32-SC	✓	✓	0.42	49	0.90	20	0.98	Fig. B/64
			277	VCN-2P32-SC	✓	✓	0.18					
			120	RCN-3P32-SC	✓	✓	0.42	51	1.06	10	0.99	Fig. B/*65
			277	VCN-3P32-SC	✓	✓	0.19					
3	25	0/-18	120	RCN-3P32-SC	✓	✓	0.55	66	0.93	10	0.99	Fig. B/65
			277	VCN-3P32-SC	✓	✓	0.24					
			120	RCN-4P32-SC	✓	✓	0.62	74	1.04	10	0.99	Fig. B/*66
			277	VCN-4P32-SC	✓	✓	0.27					
4	25	0/-18	120	RCN-4P32-SC	✓	✓	0.74	89	0.94	10	0.99	Fig. B/66
			277	VCN-4P32-SC	✓	✓	0.32					
F32T8, FB031T8, F32T8/U6												
1	32	0/-18	120	RCN-1P32-SC	✓	✓	0.27	32	0.92	10	0.99	Fig. B/63
			277	VCN-1P32-SC	✓	✓	0.12					
			120	RCN-2P32-SC	✓	✓	0.34	38	1.10	20	0.98	Fig. B/*64
			277	VCN-2P32-SC	✓	✓	0.15					
2	32	0/-18	120	RCN-2P32-SC	✓	✓	0.51	59	0.87	10	0.99	Fig. B/64
			277	VCN-2P32-SC	✓	✓	0.22					
			120	RCN-3P32-SC	✓	✓	0.54	65	1.03	10	0.99	Fig. B/*65
			277	VCN-3P32-SC	✓	✓	0.24					
3	32	0/-18	120	RCN-3P32-SC	✓	✓	0.71	85	0.88	10	0.99	Fig. B/65
			277	VCN-3P32-SC	✓	✓	0.31					
			120	RCN-4P32-SC	✓	✓	0.79	94	1.00	10	0.99	Fig. B/*66
			277	VCN-4P32-SC	✓	✓	0.34					
4	32	0/-18	120	RCN-4P32-SC	✓	✓	0.94	112	0.88	10	0.99	Fig. B/66
			277	VCN-4P32-SC	✓	✓	0.41					
F40T8												
2	40	32/0	120	RCN-3P32-SC	✓	✓	0.66	79	1.01	10	0.99	Fig. B/*65
			277	VCN-3P32-SC	✓	✓	0.31					
3	40	32/0	120	RCN-4P32-SC	✓	✓	0.94	112	0.88	10	0.99	Fig. B/*66
			277	VCN-4P32-SC	✓	✓	0.41					

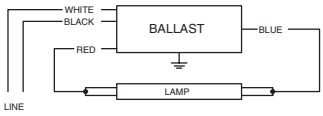
Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Instant-Start, Low Watt
Parallel

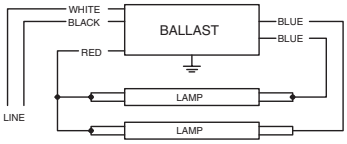
HIGH POWER FACTOR SOUND RATED A

Centium®

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
F25T8, FB024T8												
2	25	0/-18	120	RCN-2P32-LW	✓	✓	0.35	42	0.81	10	0.98	Fig. A/64
			277	VCN-2P32-LW	✓	✓	0.15					
3	25	0/-18	120	RCN-3P32-LW	✓	✓	0.49	58	0.77	10	0.98	Fig. A/65
			277	VCN-3P32-LW	✓	✓	0.22		0.76			
4	25	0/-18	120	RCN-4P32-LW	✓	✓	0.65	78	0.76	10	0.98	Fig. A/66
			277	VCN-4P32-LW	✓	✓	0.29		0.78			
F32T8, FB031T8, F32T8/U6												
2	32	0/-18	120	RCN-2P32-LW	✓	✓	0.43	50	0.78	10	0.98	Fig. A/64
			277	VCN-2P32-LW	✓	✓	0.18					
3	32	0/-18	120	RCN-3P32-LW	✓	✓	0.64	75	0.79	10	0.98	Fig. A/65
			277	VCN-3P32-LW	✓	✓	0.28					
4	32	0/-18	120	RCN-4P32-LW	✓	✓	0.84	99	0.76	10	0.98	Fig. A/66
			277	VCN-4P32-LW	✓	✓	0.36					



Diag. 63



Diag. 64

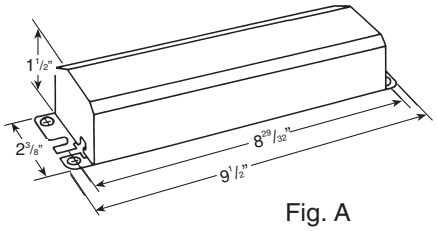
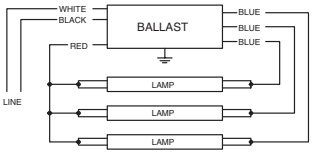
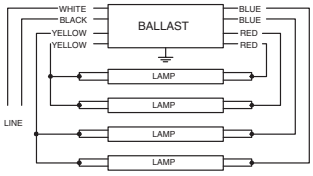


Fig. A



Diag. 65

* For Single Lamp Operation, insulate unused blue lead for 600 volts



Diag. 66

* For Three Lamp Operation, insulate unused blue lead for 600 volts

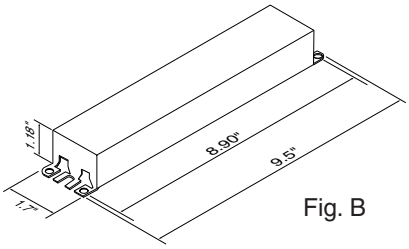


Fig. B

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T8

HIGH FREQUENCY ELECTRONIC BALLASTS

Instant Start, Normal Light Output

Parallel

HIGH POWER FACTOR SOUND RATED A

IntelliVolt™ Low Profile

NEW!

ELECTRONIC FLUORESCENT

CENTIUM INTELLIVOLT™ LOW PROFILE

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F17T8, FBO16T8												
1	17	0/-18	120	ICN-1P32-SC	✓	✓	0.16	19	0.93	15	0.96	Fig. B/63
			230		✓	✓	0.08					
			277		✓	✓	0.07					
		0/-18	120	ICN-2P32-SC	✓	✓	0.18	22	1.07	15	0.95	Fig. B/*63
			230		✓	✓	0.10					
			277		✓	✓	0.09					
2	17	0/-18	120	ICN-2P32-SC	✓	✓	0.28	33	0.93	15	0.97	Fig. B/64
			230		✓	✓	0.14					
			277		✓	✓	0.13					
		0/-18	120	ICN-3P32-SC	✓	✓	0.32	38	1.07	15	0.96	Fig. B/*64
			230		✓	✓	0.17					
			277		✓	✓	0.14					
3	17	0/-18	120	ICN-3P32-SC	✓	✓	0.39	48	0.92	15	0.97	Fig. B/65
			230		✓	✓	0.21					
			277		✓	✓	0.17					
		0/-18	120	ICN-4P32-SC	✓	✓	0.45	53	1.04	15	0.97	Fig. B/*65
			230		✓	✓	0.23					
			277		✓	✓	0.20					
4	17	0/-18	120	ICN-4P32-SC	✓	✓	0.54	64	0.93	10	0.98	Fig. B/66
			230		✓	✓	0.28					
			277		✓	✓	0.23					
F25T8, FBO24T8												
1	25	0/-18	120	ICN-1P32-SC	✓	✓	0.22	26	0.91	10	0.98	Fig. B/63
			230		✓	✓	0.11					
			277		✓	✓	0.10					
		0/-18	120	ICN-2P32-SC	✓	✓	0.24	29	1.06	15	0.97	Fig. B/*63
			230		✓	✓	0.13					
			277		✓	✓	0.11					
2	25	0/-18	120	ICN-2P32-SC	✓	✓	0.40	48	0.91	10	0.98	Fig. B/64
			230		✓	✓	0.21					
			277		✓	✓	0.18					
		0/-18	120	ICN-3P32-SC	✓	✓	0.43	51	1.03	15	0.97	Fig. B/*64
			230		✓	✓	0.22					
			277		✓	✓	0.19					
3	25	0/-18	120	ICN-3P32-SC	✓	✓	0.56	67	0.90	10	0.98	Fig. B/65
			230		✓	✓	0.29					
			277		✓	✓	0.24					
		0/-18	120	ICN-4P32-SC	✓	✓	0.62	74	1.01	10	0.99	Fig. B/*65
			230		✓	✓	0.32					
			277		✓	✓	0.27					
4	25	0/-18	120	ICN-4P32-SC	✓	✓	0.74	89	0.91	10	0.99	Fig. B/66
			230		✓	✓	0.39					
			277		✓	✓	0.32					

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

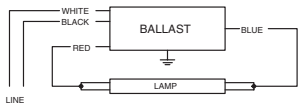
Instant Start, Normal Light Output

Parallel

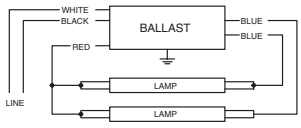
HIGH POWER FACTOR SOUND RATED A

NEW! *IntelliVolt™ Low Profile*

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
F32T8, FBO31T8, F32T8/U6												
1	32	0/-18	120	ICN-1P32-SC	✓	✓	0.26	31	0.90	10	0.98	Fig. B/63
			230		✓	✓	0.13					
			277		✓	✓	0.12					
		0/-18	120	ICN-2P32-SC	✓	✓	0.30	36	1.03	15	0.97	Fig. B/*64
			230		✓	✓	0.16					
			277		✓	✓	0.14					
2	32	0/-18	120	ICN-2P32-SC	✓	✓	0.49	59	0.88	10	0.98	Fig. B/64
			230		✓	✓	0.26					
			277		✓	✓	0.22					
		0/-18	120	ICN-3P32-SC	✓	✓	0.54	65	1.01	10	0.98	Fig. B/*65
			230		✓	✓	0.28					
			277		✓	✓	0.24					
3	32	0/-18	120	ICN-3P32-SC	✓	✓	0.71	85	0.88	10	0.99	Fig. B/65
			230		✓	✓	0.37					
			277		✓	✓	0.31					
		0/-18	120	ICN-4P32-SC	✓	✓	0.78	93	1.00	10	0.99	Fig. B/*66
			230		✓	✓	0.40					
			277		✓	✓	0.33					
4	32	0/-18	120	ICN-4P32-SC	✓	✓	0.94	112	0.88	10	0.99	Fig. B/66
			230		✓	✓	0.49					
			277		✓	✓	0.41					
F40T8												
1	40	32/0	120	ICN-2P32-SC	✓	✓	0.35	42	1.00	10	0.98	Fig. B/*64
			230		✓	✓	0.18					
			277		✓	✓	0.15					
2	40	32/0	120	ICN-3P32-SC	✓	✓	0.65	77	1.00	10	0.98	Fig. B/*65
			230		✓	✓	0.33					
			277		✓	✓	0.28					
3	40	32/0	120	ICN-4P32-SC	✓	✓	0.94	112	0.97	10	0.99	Fig. B/*66
			230		✓	✓	0.49					
			277		✓	✓	0.40					



Diag. 63



Diag. 64

* For Single Lamp Operation, insulate unused blue lead for 600 volts

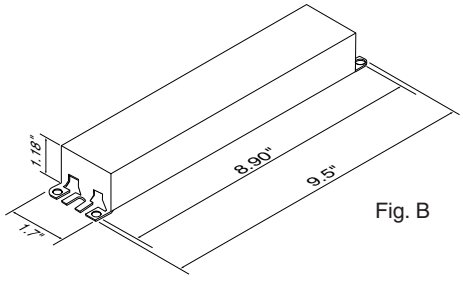
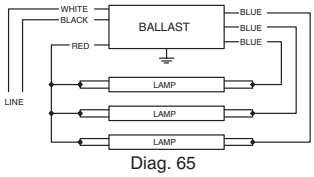
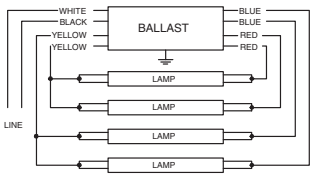


Fig. B



Diag. 65

* For Two Lamp Operation, insulate unused blue lead for 600 volts



Diag. 66

* For Three Lamp Operation, insulate unused blue lead for 600 volts

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

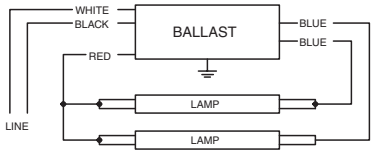
Slimline Instant-Start, Normal Light Output

Parallel

Centium®

HIGH POWER FACTOR SOUND RATED A

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F96T8												
1	59	32/0	120	RCN-2P59	✓	✓	0.63	71	1.05	20	0.95	Fig. A/64
			277	VCN-2P59	✓	✓	0.27					
2	59	32/0	120	RCN-2P59	✓	✓	0.94	110	0.88	10	0.98	Fig. A/*64
			277	VCN-2P59	✓	✓	0.41					



Diag. 64

* For Single Lamp Operation, insulate unused blue lead for 600 volts

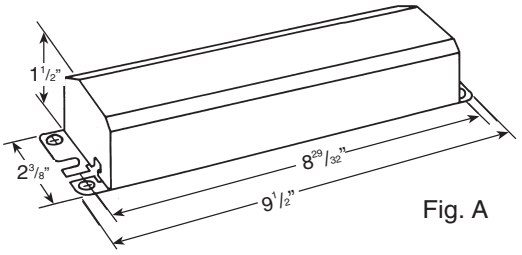


Fig. A

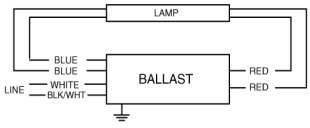
Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Program Rapid-Start, Normal Light Output Series

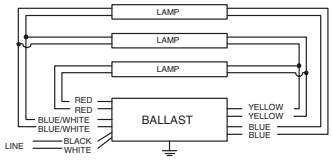
HIGH POWER FACTOR SOUND RATED A

Centium®/Low Profile

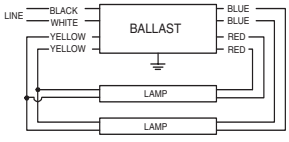
Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F17T8, FB016T8												
1	17	32/0	120	RCN-1S32-SC	✓	✓	0.19	22	1.00	10	0.98	Fig. B/20
			277	VCN-1S32-SC	✓	✓	0.08					
2	17	32/0	120	RCN-2S32-SC	✓	✓	0.33	39	1.00	10	0.99	Fig. B/21
			277	VCN-2S32-SC	✓	✓	0.15					
3	17	32/0	120	RCN-3S32-SC	✓	✓	0.51	61	1.00	10	0.99	Fig. B/30
			277	VCN-3S32-SC	✓	✓	0.22					
4	17	32/0	120	RCN-4S32-SC	✓	✓	0.67	79	1.00	10	0.99	Fig. B/31
			277	VCN-4S32-SC	✓	✓	0.29					
F25T8, FB024T8												
1	25	32/0	120	RCN-1S32-SC	✓	✓	0.24	28	0.95	10	0.98	Fig. B/20
			277	VCN-1S32-SC	✓	✓	0.10					
2	25	32/0	120	RCN-2S32-SC	✓	✓	0.45	53	0.95	10	0.99	Fig. B/21
			277	VCN-2S32-SC	✓	✓	0.20					
3	25	32/0	120	RCN-3S32-SC	✓	✓	0.65	77	0.95	10	0.99	Fig. B/30
			277	VCN-3S32-SC	✓	✓	0.28					
4	25	32/0	120	RCN-4S32-SC	✓	✓	0.84	101	0.95	10	0.99	Fig. B/31
			277	VCN-4S32-SC	✓	✓	0.36					
F32T8, FB031T8, F32T8/U6												
1	32	32/0	120	RCN-1S32-SC	✓	✓	0.29	34	0.88	10	0.98	Fig. B/20
			277	VCN-1S32-SC	✓	✓	0.13					
2	32	32/0	120	RCN-2S32-SC	✓	✓	0.53	63	0.88	10	0.99	Fig. B/21
			277	VCN-2S32-SC	✓	✓	0.23					
3	32	32/0	120	RCN-3S32-SC	✓	✓	0.78	91	0.88	10	0.99	Fig. B/30
			277	VCN-3S32-SC	✓	✓	0.34					
4	32	32/0	120	RCN-4S32-SC	✓	✓	1.03	121	0.88	10	0.99	Fig. B/31
			277	VCN-4S32-SC	✓	✓	0.45					



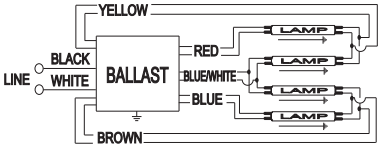
Diag. 20



Diag. 30



Diag. 21



Diag. 31

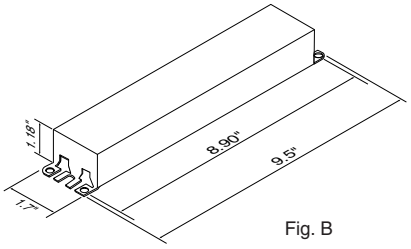
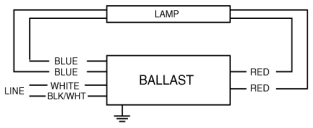


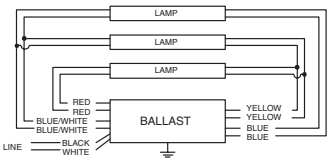
Fig. B

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

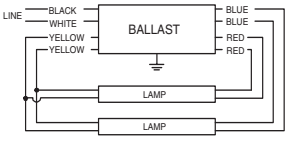
Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts										
F25T8, FB024T8											
1	25	50/10	347	GCN-1S32	✓	0.09	31	0.97	20	0.98	Fig. A/20
2	25	50/10	347	GCN-2S32	✓	0.16	57	1.00	20	0.98	Fig. A/21
3	25	50/10	347	GCN-3S32	✓	0.25	82	1.02	20	0.97	Fig. A/30
F32T8, FB031T8, F32T8/U6											
1	32	50/10	347	GCN-1S32	✓	0.10	34	0.87	10	0.98	Fig. A/20
2	32	50/10	347	GCN-2S32	✓	0.18	63	0.90	10	0.99	Fig. A/21
3	32	50/10	347	GCN-3S32	✓	0.28	94	0.92	10	0.98	Fig. A/30



Diag. 20



Diag. 30



Diag. 21

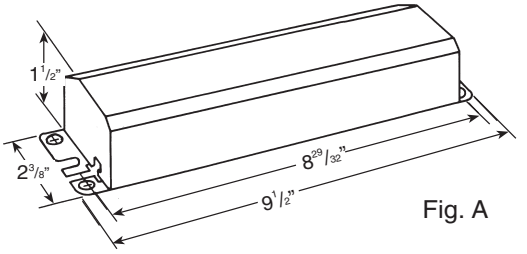


Fig. A

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

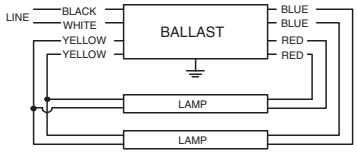
Rapid-Start, Normal Light Output
Series

HIGH POWER FACTOR SOUND RATED A

Centium®

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
F40T10												
2	40	50/10	120	RCN-2S40	✓	✓	0.65	76	0.87	10	0.98	Fig. A/21
			277	VCN-2S40	✓	✓	0.28					

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
F30T12 Energy Saver (460mA)												
2	25	50/10	120	RCN-2S40	✓	✓	0.44	54	0.95	20	0.98	Fig. A/21
			277	VCN-2S40	✓	✓	0.19					
F30T12												
2	30	50/10	120	RCN-2S40	✓	✓	0.51	61	0.95	20	0.98	Fig. A/21
			277	VCN-2S40	✓	✓	0.22					
F40T12 Energy Saver (460mA)												
2	34	60/18	120	RCN-2S40	✓	✓	0.52	63	0.87	10	0.98	Fig. A/21
			277	VCN-2S40	✓	✓	0.23					
F40T12												
2	40	50/10	120	RCN-2S40	✓	✓	0.61	72	0.87	10	0.98	Fig. A/21
			277	VCN-2S40	✓	✓	0.27					



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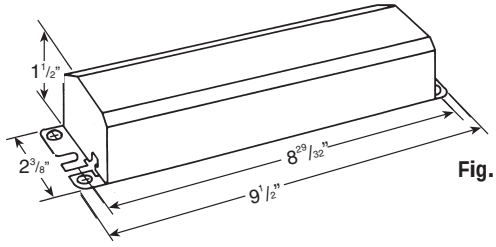


Fig. A

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T8/HO

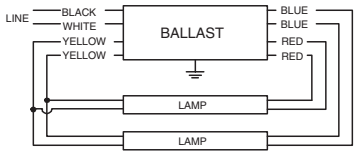
HIGH FREQUENCY ELECTRONIC BALLASTS

Programmed Start, Normal Light Output
Series

Centium®

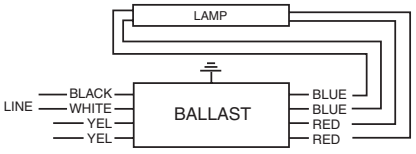
HIGH POWER FACTOR SOUND RATED A

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
F48T8/HO												
1	44	-20/-29	120	RCN-2S86	✓	✓	0.48	57	1.10	20	0.98	Fig. C/39A
			277	VCN-2S86	✓	✓	0.21					
2	44	-20/-29	120	RCN-2S86	✓	✓	0.84	99	1.00	10	0.99	Fig. C/21
			277	VCN-2S86	✓	✓	0.36					
F60T8/HO												
1	55	-20/-29	120	RCN-2S86	✓	✓	0.58	69	1.10	20	0.98	Fig. C/39A
			277	VCN-2S86	✓	✓	0.25					
2	55	-20/-29	120	RCN-2S86	✓	✓	1.04	123	1.00	10	0.99	Fig. C/21
			277	VCN-2S86	✓	✓	0.45					
F72T8/HO												
1	65	-20/-29	120	RCN-2S86	✓	✓	0.68	80	1.10	15	0.99	Fig. C/39A
			277	VCN-2S86	✓	✓	0.30					
2	65	-20/-29	120	RCN-2S86	✓	✓	1.21	147	1.00	10	0.99	Fig. C/21
			277	VCN-2S86	✓	✓	0.54					
F96T8/HO												
1	86	-20/-29	120	RCN-2S86	✓	✓	0.84	99	1.00	10	0.99	Fig. C/39A
			277	VCN-2S86	✓	✓	0.36					
2	86	-20/-29	120	RCN-2S86	✓	✓	1.57	185	1.00	10	0.99	Fig. C/21
			277	VCN-2S86	✓	✓	0.68					



For single lamp operation insulate yellow leads individually for 1000V as shown alongside

Diag. 21



Diag. 39A

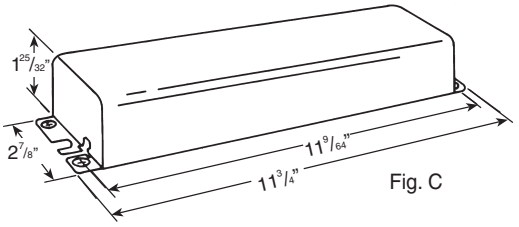


Fig. C

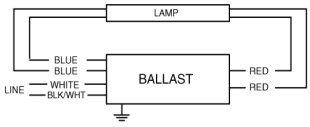
Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Programmed-Start, Normal Light Output
Series

HIGH POWER FACTOR SOUND RATED A

Mark V®

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
F17T8 & FB016T8												
1	17	0/-18	120	RIC-132	✓	✓	0.15	18	0.94	15	0.98	Fig. A/20
			277	VIC-132	✓	✓	0.07					
2	17	0/-18	120	RIC-2S32	✓	✓	0.29	34	0.94	15	0.98	Fig. A/21
			277	VIC-2S32	✓	✓	0.12					
3	17	0/-18	120	RIC-3S32	✓	✓	0.45	53	0.94	15	0.98	Fig. A/30
			277	VIC-3S32	✓	✓	0.19					
F25T8 & FB024T8												
1	25	0/-18	120	RIC-132	✓	✓	0.21	25	0.94	10	0.98	Fig. A/20
			277	VIC-132	✓	✓	0.09					
2	25	0/-18	120	RIC-2S32	✓	✓	0.42	49	0.94	10	0.99	Fig. A/21
			277	VIC-2S32	✓	✓	0.18					
3	25	0/-18	120	RIC-3S32	✓	✓	0.66	76	0.94	10	0.99	Fig. A/30
			277	VIC-3S32	✓	✓	0.28					
F32T8, FB031T8 & F32T8/U												
1	32	0/-18	120	RIC-132	✓	✓	0.28	33	0.88	10	0.99	Fig. A/20
			277	VIC-132	✓	✓	0.12					
2	32	0/-18	120	RIC-2S32	✓	✓	0.54	64	0.88	10	0.99	Fig. A/21
			277	VIC-2S32	✓	✓	0.24					
3	32	0/-18	120	RIC-3S32	✓	✓	0.79	93	0.88	10	0.99	Fig. A/30
			277	VIC-3S32	✓	✓	0.34					



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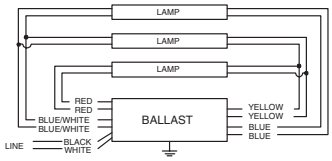

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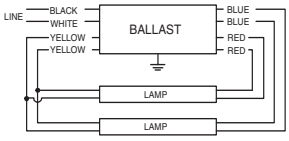

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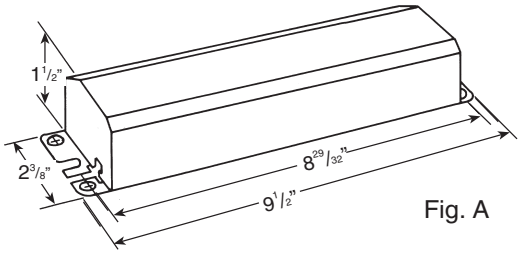


Fig. A

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Contents

Advance offers the lighting professional the most reliability and best quality in low-voltage and 2-wire line voltage electronic dimming ballasts for both linear and CFL applications. Reduce energy cost and computer glare and increase flexibility and productivity with the choice of Advance's Mark VII® *0-10V* and Mark X® *Powerline* electronic dimming ballasts.

Mark VII® *0-10V* . . . . . 3-2 to 3-5

Low voltage controllable electronic ballast designed to dim T8, T5 and T4 applications from 100% to 5% light output. By connecting a compatible 0-10 VDC control gain flexibility and control of your lighting application. Compared to electromagnetic ballasts, up to 80% energy savings can be achieved when controlled by occupancy sensors, photocells, wallbox dimmers or building management system interfaces. Products are available for both 120V and 277V applications.

Mark X® *Powerline* . . . . . 3-6 to 3-9

The original 2-wire line voltage dimmable electronic ballast that wires just like standard fixed light output ballast designed to dim T8, T5 and T4 applications from 100% to 5% light output. No extra wires are required between the ballast and dimmer, making it the easiest electronic dimming ballast to install. When controlled by occupancy sensors, photocells, wallbox dimmers or building management system interfaces up to 80% energy savings can be achieved when compared to electromagnetic ballasts. Products are available for both 120V and 277V applications.

Compatible Controls 3-10

Select the control you need for your application from a list of manufacturers that offer compatible controls for the Mark VII® *0-10V* and Mark X® *Powerline* electronic dimming ballasts. The manufacturers that offer Mark X® *Powerline* controls have built the control according to our specifications to assure the system is compatible. Part numbers and/or brands are listed along with the manufacturer's phone number.

Corporate Offices
(800) 322-2086

Press 1 and the four digit extension of the person you want to reach
Press 2 if you know the last name and you will reach the spell by name directory
Press 0 or stay on the line to be connected to the operator

Customer Support/Technical Service
(800) 372-3331 • (+) 1 847 390-5000 (International)

Press 1 for customer support
Press 2 for technical, application, or warranty information
Press 4 to dial by name

Visit our web site at www.advancetransformer.com

MARK VII® *0-10V* Controllable Electronic Ballasts

Controls F32T8 and F25T8 Rapid-Start Linear Fluorescent Lamps, 40W T5 Long Twin Tube Fluorescent Lamps and (1) 26W, 32W and 42W "Triple" and (1) and (2) 26W "Quad" 4-Pin Rapid Start Compact Fluorescent Lamps.

Definition

The Mark VII® *0-10V* ballast from Advance is the cost-effective, full-range controllable electronic ballast for T8, T5 and T4 lighting systems. The Mark VII® *0-10V* ballast combines the ease of a 0-10V Class 1 or Class 2 low voltage control system with the industry leading 5% dim level. The Mark VII® *0-10V* ballast may be controlled by a wide variety of compatible 0-10VDC controllers available from over 30 manufacturers.

Feature	Benefit
100-5% controllable light output	Gives the user the full control over the lighting and energy use of his local space or entire building.
Operates from compatible 0-10VDC controllers	A wide variety of controls are readily available to meet all of your energy management needs
Lamp ignition at any light output setting	Ballast does not have to ramp up to full light output and then dim. Will start at the 5% dim level. Increases the comfort level of the occupants, and increases user acceptance
Programmed Start	Programmed start provides long lamp life in frequent starting conditions (up to 50,000 starts). Advance programmed start ballasts use a custom integrated circuit which monitors lamp and ballast condition to ensure optimal system lighting performance
Energy efficient	Similar efficiency compared to non-dimming electronic rapid start ballasts, plus the added benefit of reduced energy consumption at reduced light levels
Can be connected to building management systems	Gain full control over energy use by time of day, or based on utility real-time pricing signals
Operates above 40 Khz	Reduces potential interference with infrared remote control systems by not operating in the 33-40 Khz band where IR controls typically operate

ADVANCE MARK VII® *0-10V* ELECTRONIC BALLAST SPECIFICATIONS

Section I – Physical Characteristics

1.1 The electronic ballast shall be physically interchangeable with standard electromagnetic ballasts.
1.2 The electronic ballast T8 and T5 shall be furnished with integral leads, color-coded to ANSI C82.11.
1.3 The electronic ballast for T4 lamps shall be furnished with poke-in wire trap connectors, color-coded to ANSI standard C82.11.

Section II – Performance Requirements

2.1 The electronic ballast shall operate from a nominal line voltage of 120 or 277 volts, 50/60Hz. 120V ballast shall operate from 90V – 145V. 277V ballast shall operate from 200V – 305V.
2.2 The electronic ballast shall maintain constant light output, for line voltage variations from 90% to 110% of rated supply voltage.
2.3 The electronic ballast shall control T8 and T5 lamp light output from a Ballast Factor of 0.88 – .05 (100% to 5% of relative full light output) for primary lamp.
2.4 The electronic ballast shall control T4 lamp light output from a Ballast Factor of 1.00 – .05 (100% to 5% of relative full light output) for primary lamp.
2.5 The electronic ballast shall start the lamps at any selected light output setting without first starting at maximum light output.
2.6 The electronic ballast input current shall have Total Harmonic Distortion (THD) of less than 10% at maximum light output. Total Harmonic Current (THC) at minimum light output shall not exceed THC at maximum light output.
2.7 The electronic ballast shall have a Power Factor greater than 98% at maximum light output, and greater than 90% throughout the control range.
2.8 The electronic ballast shall have a Programmed-Start type system.
2.9 The electronic ballast shall withstand a sustained short to ground or open circuit of any output leads.
2.10 The electronic ballast shall be Sound Rated A.
2.11 The electronic ballast output frequency to the lamps shall be above 40kHz to minimize interference with infrared control systems and eliminate visible flicker.
2.12 The electronic ballast shall meet ANSI C82.11, where applicable.
2.13 The electronic ballast shall withstand transients specified in ANSI C62.41, Location Category A3.
2.14 The electronic ballast for compact fluorescent lamps shall have a lamp end-of-life detection and shutdown circuit.

Section III – Regulatory Requirements

3.1 The electronic ballast shall meet the requirements of the Federal Communications Commission rules and regulations, Title 47 CFR part 18, for Non-Consumer equipment.
3.2 The electronic ballast shall comply with all applicable state and federal efficiency standards.
3.3 The electronic ballast shall be Underwriters Laboratories (UL) Listed (Class P) and CSA Certified here applicable.
3.4 The electronic ballast shall be controlled by a Class 1 or Class 2 low-voltage 0 – 10VDC circuit.

Section IV – Other

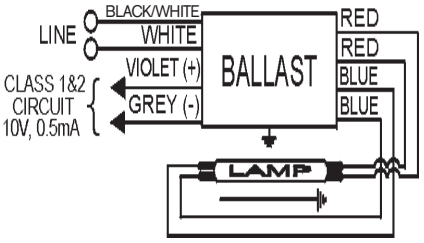
4.1 The electronic ballast shall be controlled by a MARK VII® *0-10V* compatible lighting control.
4.2 The electronic ballast shall be furnished with integral protection circuitry to withstand connection of control leads to mains power supply. In this event, ballast shall default to the maximum light output level.
4.3 The electronic ballast shall not contain Polychlorinated Biphenyl (PCB's).
4.4 The electronic ballast shall carry a five-year warranty from the date of manufacture. Warranty shall be valid for a maximum case temperature of 70°C.
4.5 The manufacturer shall have a ten-year history of producing electronic ballast for the North American market.
4.6 The electronic ballast shall be produced in a factory certified to ISO 9002 Quality System Standards.

Programmed-Start Linear, Normal Light Output
Series

HIGH POWER FACTOR SOUND RATED A

Mark VII® 0-10V Electronic Dimming Ballast

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts) max/min	Ballast Factor max/min	Max. THD % (at full light output)	Min. Power Factor	Dim./ Wiring Diagram
F25T8 STRAIGHT & "U" LAMPS: Length = 3ft.												
1	25	50/10	120	RZT-132	✓	✓	0.21	25-8	0.94-0.05	10	0.98	Fig. A/55
			277	VZT-132	✓	✓	0.09					
2	25	50/10	120	RZT-2S32	✓	✓	0.42	49-13	0.94-0.05	10	0.99	Fig. A/56
			277	VZT-2S32	✓	✓	0.18					
3	25	50/10	120	RZT-3S32	✓	✓	0.66	76-16	0.94-0.05	10	0.99	Fig. A/57
			277	VZT-3S32	✓	✓	0.28					
F32T8 STRAIGHT & "U" LAMPS: Length = 4ft.												
1	32	50/10	120	RZT-132	✓	✓	0.28	33-9	0.88-0.05	10	0.99	Fig. A/55
			277	VZT-132	✓	✓	0.12					
2	32	50/10	120	RZT-2S32	✓	✓	0.54	64-14	0.88-0.05	10	0.99	Fig. A/56
			277	VZT-2S32	✓	✓	0.24					
3	32	50/10	120	RZT-3S32	✓	✓	0.79	93-18	0.88-0.05	10	0.99	Fig. A/57
			277	VZT-3S32	✓	✓	0.34					



Diag. 55

ONLY USE RAPID-START SOCKETS

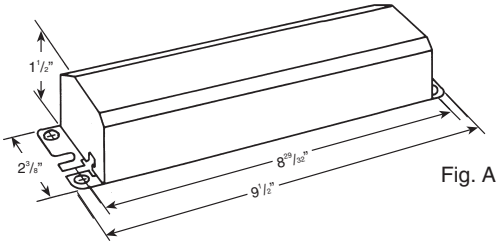
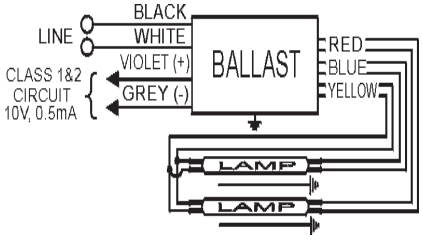


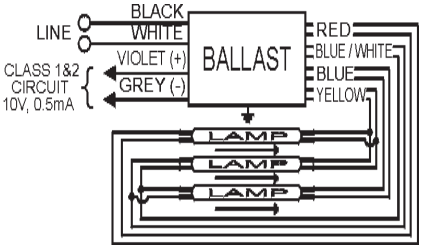
Fig. A



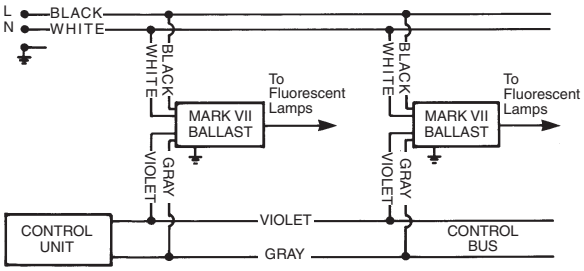
Diag. 56

Mark VII® *0-10V* Control Wiring

Wire Size	Maximum Length (Ft.)
AWG-18	500
AWG-20	320
AWG-22	200
AWG-24	120



Diag. 57



Wire in accordance with the National Electrical Code and all applicable codes.

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Refer to page 3-10 for a list of compatible control manufacturers

SOUND RATED A

Mark VII® 0-10V Electronic Dimming Ballast

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts) max/min	Ballast Factor max/min	Max. THD % (at full light output)	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
FT40W/2G11/RS: Length = 22.5 in.												
1	40	50/10	120	RZT-1TTS40	✓	✓	0.32	38-11	0.88-0.05	10	0.98	Fig. A/93A
			277	VZT-1TTS40	✓	✓	0.14					
2	40	50/10	120	RZT-2TTS40	✓	✓	0.64	76-16	0.88-0.05	10	0.99	Fig. A/94A
			277	VZT-2TTS40	✓	✓	0.28					

Burn in new lamps 100 hours at full light output before dimming.

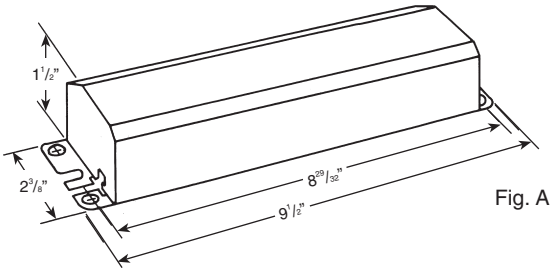
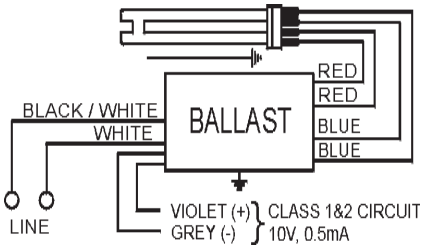


Fig. A

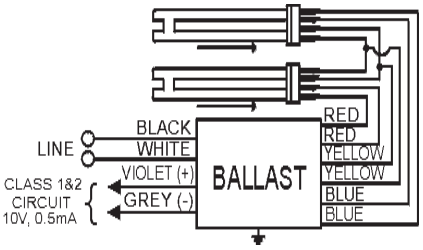


Diag. 93A

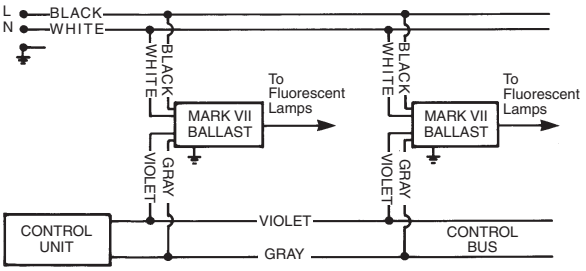
ONLY USE 4-PIN RAPID-START SOCKETS

Mark VII® *0-10V* Control Wiring

Wire Size	Maximum Length (Ft.)
AWG-18	500
AWG-20	320
AWG-22	200
AWG-24	120



Diag. 94A



Wire in accordance with the National Electrical Code and all applicable codes.

Refer to page 3-10 for a list of compatible control manufacturers

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Programmed-Start 4-Pin, Normal Light Output Series

SOUND RATED A

Mark VII® 0-10V Electronic Dimming Ballast

Triple Compact Lamps

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts) max/min	Ballast Factor max/min	Max. THD % (at full light output)	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
CFM26W/GX24q: Length = 5.5 in.												
1	26	50/10	120	IZT-1T42-M2-①	✓	✓	0.25	29-8	1.00/ 0.05	14	0.95	40A
			277		✓	✓	0.11					
2	26	50/10	120	IZT-2Q26-M2-①	✓	✓	0.48	57-12	1.00/ 0.05	10	0.98	40B
			277		✓	✓	0.21					
CFM32W/GX24q: Length = 5.5 in.												
1	32	50/10	120	IZT-1T42-M2-①	✓	✓	0.33	39-9	1.00/ 0.05	10	0.97	40A
			277		✓	✓	0.14					
2	32	50/10	120	IZT-2T42-M3-①	✓	✓	As of March 2001, consult Customer Service or www.advancetransformer.com for data specification					40C
			277		✓	✓						
CFM42W/GX24q: Length = 5.5 in.												
1	42	50/10	120	IZT-1T42-M2-①	✓	✓	0.42	50-9	1.00/ 0.05	10	0.98	40A
			277		✓	✓	0.18					
2	42	50/10	120	IZT-2T42-M3-①	✓	✓	As of March 2001, consult Customer Service or www.advancetransformer.com for data specification					40C
			277		✓	✓						

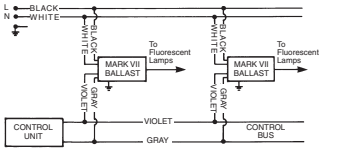
Quad Compact Lamps

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts) max/min	Ballast Factor max/min	Max. THD % (at full light output)	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
CFQ26W/G24q: Length = 6.5 in.												
1	26	50/10	120	IZT-1T42-M2-①	✓	✓	0.25	29-8	1.00/ 0.05	14	0.95	40A
			277		✓	✓	0.11					
2	26	50/10	120	IZT-2Q26-M2-①	✓	✓	0.48	57-12	1.00/ 0.05	10	0.98	40B
			277		✓	✓	0.21					

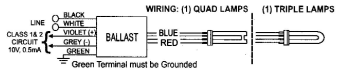
Note:

① Add suffix **-BS** for bottom mounting studs with single color-coded connector or **-LD** for length mounting feet with dual-entry color-coded connectors.

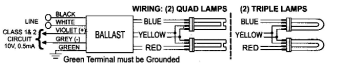
Burn in new lamps 100 hours at full light output before dimming.



Wire in accordance with the National Electrical Code and all applicable codes.



Diag. 40A

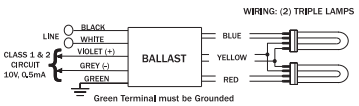


Diag. 40B

ONLY USE 4-PIN RAPID-START SOCKETS

Mark VII® *0-10V* Control Wiring

Wire Size	Maximum Length (Ft.)
AWG-18	500
AWG-20	320
AWG-22	200
AWG-24	120



Diag. 40C

M2

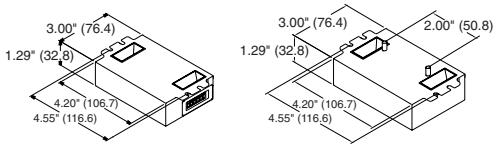


Fig. -LD Fig -BS

M3

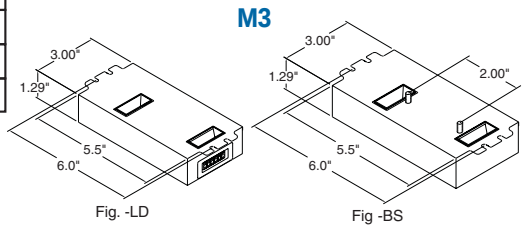


Fig. -LD Fig -BS

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Refer to page 3-10 for a list of compatible control manufacturers

MARK X® *Powerline* Electronic Dimming Ballasts

Controls F32T8 and F25T8 Rapid-Start Linear Fluorescent Lamps, 40W T5 Long Twin Tube Fluorescent Lamps and (1) 26W, 32W and 42W "Triple" and (1) and (2) 26W "Quad" 4-Pin Rapid Start Compact Fluorescent Lamps.

Definition

The Advance Mark X® *Powerline* ballast is the most cost-effective full range architectural dimming ballast for compact fluorescent (CFL) down-lighting and T8 lighting systems. The Mark X® *Powerline* ballast combines the long life and energy efficiency of compact fluorescent and T8 lamps with the controllability and full range dimming capabilities of incandescent lighting. The Mark X® *Powerline* is controlled by a 2-wire phase-cut style line voltage dimming system.

Features	Benefit
100% to 5% full range continuous dimming	Flexibility to adapt the lighted space for a wide variety of uses and moods from meetings and audio/visual presentation to computer work
Operates from Mark X® *Powerline* 2-wire and other compatible dimmer	No extra wiring required when retrofitting an existing incandescent dimming application. Wide choice of controls are available to fit any decor
Lamp ignition at any light output setting	Ballast does not have to ramp up to full light output and then dim. Will start at the 5% dim level, increasing the comfort of occupants
Programmed Start	Programmed start provides long lamp life in frequent starting conditions (up to 50,000 starts). Advance programmed start ballasts use a custom integrated circuit which monitors lamp and ballast condition to ensure optimal system lighting performance
ISO 9002 Certified Manufacturer	Manufacturing adheres to strict world-class Quality System Standards and procedures
Lamp end-of-life (EOL) detection system (CFL models only)	Detects lamp end-of-life and safely removes power from the compact fluorescent lamp in accordance with proposed ANSI/IEC standards
Operates above 40 Khz	Reduces potential interference with infrared remote control systems by not operating in the 33 to 40 Khz band where IR controls typically operate

MARK X® *POWERLINE* ELECTRONIC DIMMING BALLAST SPECIFICATIONS

Section I – Physical Characteristics

1.1 The electronic ballast shall be physically interchangeable with standard electromagnetic ballasts.

1.2 The electronic ballast shall be furnished with integral leads, color-coded to ANSI C82.11.

Section II – Performance Requirements

2.1 The electronic ballast shall operate from a nominal line voltage of 120 or 277 volts, +/-10%, 60Hz.

2.2 The electronic ballast shall control lamp light output from a Ballast Factor of 1.00 – .05 (100% to 5% of relative full light output)

2.3 The electronic ballast shall start the lamps at any selected light output setting without first starting at maximum light output.

2.4 The electronic ballast input current shall have Total Harmonic Distortion (THD) of less than 10% at maximum light output.

2.5 The electronic ballast shall have a Power Factor greater than 98% at maximum light output.

2.6 The electronic ballast shall have a Programmed-Start type system.

2.7 The electronic ballast for compact fluorescent lamps shall have a lamp end-of-life detection and shutdown circuit.

2.8 The electronic ballast shall withstand a sustained short to ground or open circuit of any output leads.

2.9 The electronic ballast shall be Sound Rated A.

2.10 The electronic ballast output frequency to the lamps shall be above 40kHz to minimize interference with infrared control systems and eliminate visible flicker.

2.11 The electronic ballast shall meet ANSI C82.11, where applicable.

2.12 The electronic ballast shall withstand transients specified in ANSI C62.41, Location Category A3.

Section III – Regulatory Requirements

3.1 The electronic ballast shall meet the requirements of the Federal Communications Commission rules and regulations, Title 47 CFR part 18, for Non-Consumer equipment.

3.2 The electronic ballast shall comply with all applicable state and federal efficiency standards.

3.3 The electronic ballast shall be Underwriters Laboratories (UL) Listed (Class P) and CSA Certified where applicable.

Section IV – Other

4.1 The electronic ballast shall be controlled by a Mark X® *Powerline* compatible lighting control.

4.2 The electronic ballast shall not contain Polychlorinated Biphenyl (PCB's).

4.3 The electronic ballast shall carry a five-year warranty from the date of manufacture. Warranty shall be valid for a maximum case temperature of 70°C.

4.4 The manufacturer shall have a ten-year history of producing electronic ballast for the North American market.

4.5 The electronic ballast shall be produced in a factory certified to ISO 9002 Quality System Standards.

Programmed-Start Linear, Normal Light Output
Series

HIGH POWER FACTOR SOUND RATED A

Mark X® Powerline Electronic Dimming Ballast

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts) max/min	Ballast Factor max/min	Max. THD % (at full light output)	Min. Power Factor	Dim./ Wiring Diagram
F25T8 STRAIGHT & "U" LAMPS: Length = 3 ft.												
1	25	50/10	120	REZ-132	✓	✓	0.26	30-8	1.05-0.05	10	0.98	Fig A./20
			277	VEZ-132	✓	✓	0.11					
2	25	50/10	120	REZ-2S32	✓	✓	0.50	59-14	1.05-0.05	10	0.99	Fig A./21
			277	VEZ-2S32	✓	✓	0.22					
3	25	50/10	120	REZ-3S32	✓	✓	0.74	87-18	1.05-0.05	10	0.99	Fig A./30
			277	VEZ-3S32	✓	✓	0.32					
F32T8 STRAIGHT & "U" LAMPS: Length = 4 ft.												
1	32	50/10	120	REZ-132	✓	✓	0.30	35-9	1.00/0.05	10	0.99	Fig A./20
			277	VEZ-132	✓	✓	0.13					
2	32	50/10	120	REZ-2S32	✓	✓	0.60	70-16	1.00/0.05	10	0.99	Fig A./21
			277	VEZ-2S32	✓	✓	0.26					
3	32	50/10	120	REZ-3S32	✓	✓	0.88	104-20	1.00/0.05	10	0.99	Fig A./30
			277	VEZ-3S32	✓	✓	0.38					

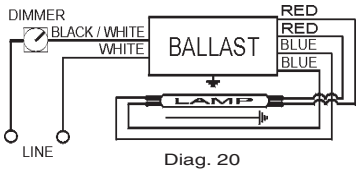
Use with compatible line voltage controls only.

ONLY USE RAPID-START SOCKETS

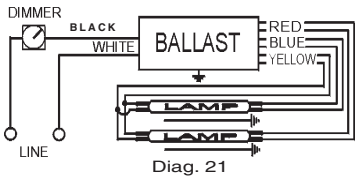
Mark X® *Powerline* Dimmer Specification
Control Type: On/Off Slider
Dimming Control Signal: Modified Powerline Phase Cut
Mounting Requirements: Standard Wallbox
UL Listing and CSA Approved
ANSI C62.41 Category A transient voltage protection
Operate from a nominal line voltage of
(120, 277) with a variation of +/- 10%, 60Hz

Input Voltage	Catalog Number	Maximum Wattage Single Gang	Maximum Wattage Double Gang	Maximum Input Current
120V, 60Hz	REZ-C500-I*	500W	400W	4.2A
277V, 60Hz	VEZ-C500-A			1.8A
120V, 60Hz	REZ-C1200-A*	1200W	—	10.0A
277V, 60Hz	VEZ-C1200-A*			4.3A

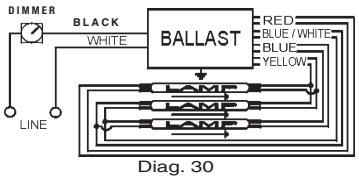
"I" designates Ivory color.
"A" designates Almond color
*All dimmers are 3-way controls.
Cap 1 black lead to convert 3-way into single pole dimmer.



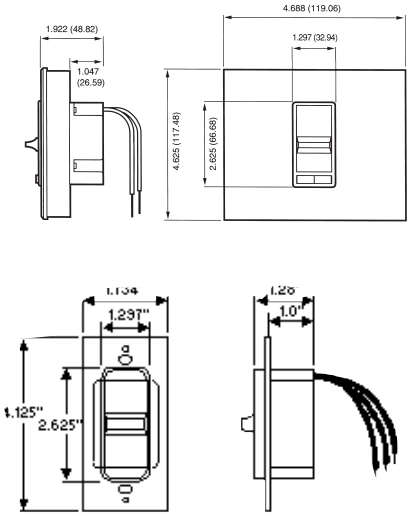
Diag. 20



Diag. 21



Diag. 30



Mark X® *Powerline* 500 Dimmer

Mark X® *Powerline* 1200 Dimmer

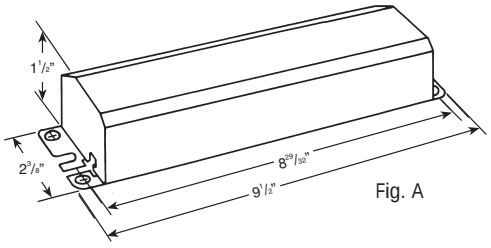


Fig. A

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

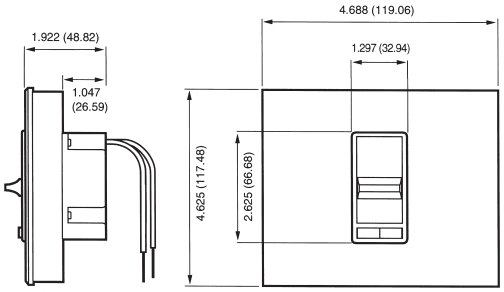
Refer to page 3-10 for a list of compatible control manufacturers

HIGH POWER FACTOR SOUND RATED A

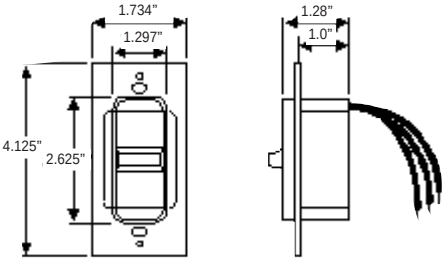
Mark X® Powerline Electronic Dimming Ballast

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts) max/min	Ballast Factor max/min	Max. THD % (at full light output)	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
FT40W/2G11/RS: Length = 22.5 in.												
1	40	50/10	120	REZ-1TTS40	✓	✓	0.34	41-10	1.00-0.05	10	0.98	Fig. A/93B
			277	VEZ-1TTS40	✓	✓	0.15					
2	40	50/10	120	REZ-2TTS40	✓	✓	0.68	80-17	1.00-0.05	10	0.98	Fig. A/94B
			277	VEZ-2TTS40	✓	✓	0.30					

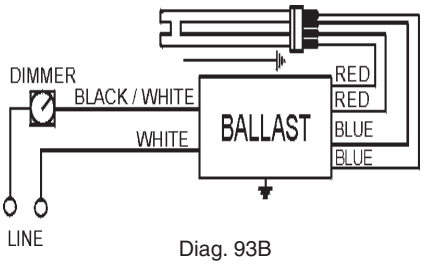
Use with compatible line voltage controls only.
Burn in new lamps 100 hours at full light before dimming.



Mark X® *Powerline* 1200 Dimmer



Mark X® *Powerline* 500W Dimmer



Diag. 93B

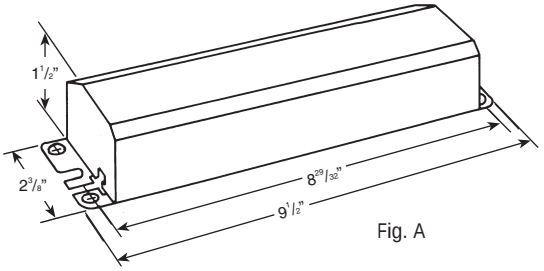
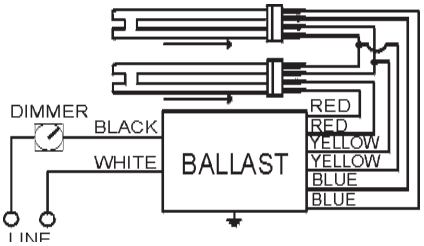


Fig. A



Diag. 94B

ONLY USE 4-PIN RAPID-START SOCKETS

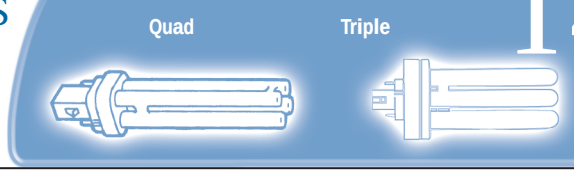
Input Voltage	Catalog Number	Maximum Wattage: Single Gang	Maximum Wattage: Double Gang	Maximum Input Current
120V, 60Hz	REZ-C500-I*	500W	400W	4.2A
277V, 60Hz	VEZ-C500-A			1.8A
120V, 60Hz	REZ-C1200-A*	1200W	—	10.0A
277V, 60Hz	VEZ-C1200-A*			4.3A

"I" designates Ivory color.
"A" designates Almond color.
*All dimmers are 3-way controls.
Cap 1 black lead to convert 3-way into single pole dimmer.

Refer to page 3-10 for a list of compatible control manufacturers

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

T4



Programed-Start 4-Pin Compact Lamps, Normal Light Output

Series

HIGH POWER FACTOR SOUND RATED A

Mark X® Powerline Electronic Dimming Ballast

Triple Compact Lamps

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts) max/min	Ballast Factor max/min	Max. THD % (at full light output)	Min. Power Factor	Dim./ Wiring Diagram
CFM26W/GX24q: Length = 5.5 in.												
1	26	50/10	120	REZ-1T32	✓	✓	0.26	31-8	1.05-0.05	10	0.98	Fig. A/40
			277	VEZ-1T32	✓	✓	0.11					
2	26	50/10	120	REZ-2Q26	✓	✓	0.48	58-16	1.00-0.05	10	0.98	Fig.A/41
			277	VEZ-2Q26	✓	✓	0.21					
CFM32W/GX24q: Length = 5.5 in.												
1	32	50/10	120	REZ-1T32	✓	✓	0.32	38-9	1.00-0.05	10	0.98	Fig. A/40
			277	VEZ-1T32	✓	✓	0.14					
CFM42W/GX24q: Length = 5.5 in.												
1	42	50/10	120	REZ-1T42	✓	✓	0.41	49-10	1.00-0.05	10	0.98	Fig. A/40
			277	VEZ-1T42	✓	✓	0.18					

Quad Compact Lamps

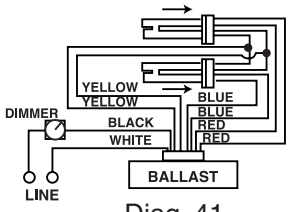
Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts) max/min	Ballast Factor max/min	Max. THD % (at full light output)	Min. Power Factor	Dim./ Wiring Diagram
CFQ26W/G24q: Length = 6.5 in.												
1	26	50/10	120	REZ-1T32	✓	✓	0.26	31-8	1.00-0.05	10	0.98	Fig. A/40
			277	VEZ-2T32	✓	✓	0.11					
2	26	50/10	120	REZ-2Q26	✓	✓	0.48	58-16	1.00-0.05	10	0.98	Fig. A/41
			277	VEZ-2Q26	✓	✓	0.21					

Use with compatible line voltage controls only.
Burn in new lamps 100 hours at full light before dimming.

ONLY USE 4-PIN RAPID-START SOCKETS

Input Voltage	Catalog Number	Maximum Wattage: Single Gang	Maximum Wattage: Double Gang	Maximum Input Current
120V, 60Hz	REZ-C500-I*	500W	400W	4.2A
277V, 60Hz	VEZ-C500-A			1.8A
120V, 60Hz	REZ-C1200-A*	1200W	—	10.0A
277V, 60Hz	VEZ-C1200-A*			4.3A

"I" designates Ivory color; "A" designates Almond color.
*All dimmers are 3-way controls.
Cap 1 black lead to convert 3-way into single pole dimmer.



Diag. 41

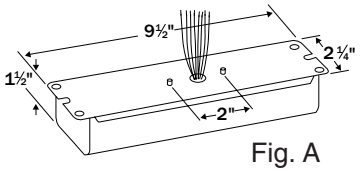
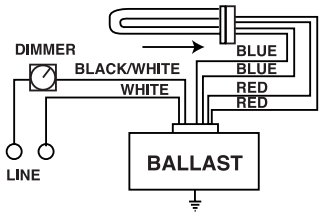
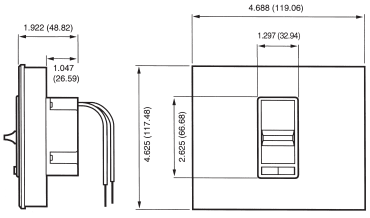


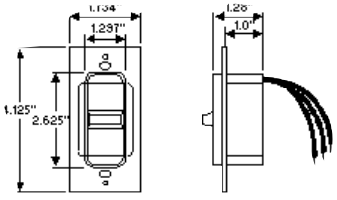
Fig. A



Diag. 40



Mark X® *Powerline* 1200 Dimmer



Mark X® *Powerline* 500W Dimmer

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Refer to page 3-10 for a list of compatible control manufacturers

Control Manufacturers for Advance® Mark VII® *0-10V* Electronic Dimming Ballasts and Mark X® *Powerline* Electronic Dimming Ballasts

MANUFACTURER	PHONE	MARK VII® *0-10V* 4-Wire	MARK X® *Powerline* 2-Wire Line Voltage
Alerton Technologies Inc.	425-869-8400	TX16160	N/A
ALM Systems Inc.	847-860-1490	SS-120 OR SS-277	ABIU
Automated Logic Corp.	770-429-3000	Custom O–10V DC Standard	M Series and S Series
Blackbird	812-944-0799	ZBMO-FLST-AB-IR	BBMO-MX-AB-IR
Colortran, Inc.	503-682-1941	Digital Ballast Controller	ENR, I, I Series E, or I Series Quad
Crestron	201-894-0660	CNLDAB-4	CNA08+CNMS+CLCI8 Control System
Cutler-Hammer	803-481-6870	PRC100DOC (POW-R-Command System)	N/A
Douglas Lighting Controls	604-873-2797	WPC-5700 & WPN-5721	N/A
Electronics Diversified, Inc.	503-645-5533	System Rack, Prolite, Versa-Pak & Electronic Ballast Controller	System Rack, Prolite & Versa-Pak
Electronic Theatre Controls	608-831-4116	SENSOR or UNISON	SENSOR or UNISON
Honeywell, Inc.	800-345-6770	EL7315A1019 or EL7316A1009	N/A
Hunt Dimming	970-484-9048	PS-010 or FD MARK VII series	PS-600 or FD MARK X Series
Johnson Controls	414-274-4000	Application Specific	N/A
Lehigh Electric Products Co.	610-395-3386	Sentry, Solitaire & DCFL Interface	Solitaire & aCFL Interface
Leviton Lighting Control Div.	503-404-5500 800-824-3005	Dimmer & Lite Manager Fluorescent Control System & Occupancy Sensor	MDS, a-2000 & I series e Dimmer System & Renbir™ & Monet™
Lightolier/Genlyte Controls	800-526-2731	ZP600FAM120, MP1500FAM120, & ZP600FAM120-LMROADV277	ZP Series, MP Series, MS Series, MSP Series & OS Series
Lithonia Controls	770-987-4200	LEQ Series, SLD, SQ1DC, Sequel Sys. & MG MC1	DSD, SLD-F, MG MC1, Sequel & Senergy Sys.
Lutron	800-523-9466	NOVA NFTV, MW-LC, & GRAFIK EYE w/GRXTVI	N/A
Marlin Controls	214-553-5700	EFD	STARBRIGHT DIMMING SYSTEM
MyTech Corp	512-450-1100	72-00113 or 72-00116	N/A
Nexlight	651-457-6700	WRT4244 Dimmer	N/A
Novar Controls	330-670-1010	FDI (Fluorescent Dimming Interface)	N/A
Novitas	310-568-9600	13-031, 13-051, 13-041, 01-074, 01-084, & 01-094	N/A
Panja, Inc.	800-222-0193	RADIA (RDM-HDC)	RDD & RDM Series
PDM Electrical Products	514-342-6581	WPC-5700 & WPN-5721	N/A
PLC Multipoint	425-353-7552	EDSAB & RCD Dial	EDSPR
Sensor Switch, Inc.	203-265-2842	CM-ALC	N/A
Sterner Controls	320-543-3595	BPM-ELVFL-0-10 or ARA series	BPM-EHVFL-2W or ARA series
Strand Lighting	310-637-7500	Electronic Fluorescent Ballast Control	DE90 & CD805v Dimming Sys.
Thomas Control Systems	601-842-7271	4000 SRP, 4000 SPB, & 4000 CMS + DBC	N/A
Touch Plate	219-426-1565	CPD-8000D & SLD Series	MCD-4000 & CPD-4000
Triatek, Inc.	888-242-1922	LP & RCS Series	LP & RCS Series and Photo/I
Unenco Lighting Controls	800-245-9135	DT-D Daylight Tracker, FLP220, FLP3220	N/A
Vantage	801-229-2800	SD4008-120	SD4008-120
Vara-Light/Dimatronics/HUB	815-455-4400	PFC-Analog & PGS-M-Digital	DCM with FL-60 or M36 Digital or Analog Control
The Watt Stopper Inc.	408-988-5331	LS 30, LS 100, IRC 1000, & ICT 1 Control Tower	WD 170 & WD 180

The listed manufacturers have indicated that they manufacture products that properly control the Advance Mark VII® *0-10V* electronic dimming ballasts or Advance Mark X® *Powerline* electronic dimming ballasts. Advance Transformer provides this list as a service to our customers and control manufacturers. Advance does not support or recommend one manufacturer over another. Please refer to each manufacturer's catalog for a complete product description and performance specifications.

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Note:
For International HID Ballasts (50Hz and 60Hz),
See International Section, pages 6-14 to 6-19

For Electronic HID Ballasts, See Section 5

Corporate Offices
(800) 322-2086

Press 1 for customer support or technical service
Press 2 if you know the extension or last name of the person you wish to reach
Press 0 to be connected to the operator

Customer Support/Technical Service
(800) 372-3331 • (+) 1 847 390-5000 (International)

Press 1 for customer support
Press 2 for technical, application, or warranty information
Press 4 to dial by name

Visit our web site at www.advancetransformer.com

ADVANCE® HID Lamp Ballasts are available to operate the wide variety of mercury, metal halide, high pressure sodium and low pressure sodium lamps available in today's marketplace.

Like fluorescent, HID lamps are electric discharge lamps. Light is produced by an arc discharge between two electrodes located at opposite ends of an arc tube within the lamp's outer glass envelope. The ballast is the lamp's power supply; its purpose is to provide proper starting and operating voltage and current to initiate and sustain this arc.

LAMP STARTING

Mercury and Probe-Start Metal Halide Lamps

Mercury and the "traditional" probe-start metal halide lamps (175 through 1500 watt) have an additional electrode located at one end of the arc tube to assist in lamp starting. These types of lamps require an open circuit voltage (OCV) approximately two times the lamp's operating voltage to initiate the arc.

High Pressure Sodium and Pulse-Start Metal Halide Lamps

High pressure sodium and modern metal halide lamps which include existing lamps, 150 watt and less, as well as the new generation of pulse-start metal halide lamps, 150 watt and greater, have no starting electrodes. In addition to an OCV of approximately two times the lamp voltage, these lamps utilize an "ignitor" to provide a high voltage starting pulse directly across the main electrodes. Once the lamp's arc is established, the ignitor automatically stops delivering pulses, and the lamp comes up to full brightness on its own.

Low Pressure Sodium

Because they have neither a starting electrode nor an ignitor, low pressure sodium lamps require an open circuit voltage approximately three to seven times the lamp voltage to start and sustain the lamp.

LAMP OPERATION

Electric discharge lamps have a negative resistance characteristic which causes them to draw an increasing amount of current leading to immediate destruction if operated directly from the power line. The ballast, therefore, is utilized to limit the current to the correct level for proper operation of the lamp.

Ballast factor is defined as the ratio of light output produced by a lamp operating on a commercial ballast versus the lamp's rated light output. Advance HID ballasts have a nominal ballast factor of 1.0, thus providing full light output.

HID lamps take several minutes to warm-up and reach full lumen output. Additionally, an interruption in the input power or a sudden voltage drop may cause the arc to extinguish. A lamp that is hot will not restart immediately. Before the lamp will relight, it must cool sufficiently to reduce the vapor pressure within the arc tube to a point where the arc will restrike. The approximate warmup and restriking times of the HID lamp groups are as follows:

LIGHT SOURCE	WARM-UP TIME	RESTRIKE TIME
Mercury Vapor	5-7 minutes	3-6 minutes
Metal Halide (Probe-Start)	3-4 minutes	10-20 minutes
Metal Halide (Pulse-Start)	2 minutes	3-4 minutes
High Pressure Sodium	3-4 minutes	1/2-1 minute
Low Pressure Sodium	7-10 minutes	3-12 seconds

BALLAST INPUT VOLTAGES

Unlike fluorescent lighting which is operated on either 120 volt or 277 volt circuits, power for HID lighting in the U.S. is delivered at any one of five voltages: 120V, 208V, 240V, 277V or 480V. While 120V and 277V are the most popular, because of the heavier loads and sometimes longer runs associated with HID lighting (such as shopping mall parking lots), 208V and 240V power is often used instead of 120V, and 480V instead of 277V.

To address this multiplicity of voltages, the HID ballast industry offers ballasts with multiple input voltage taps on the primary coil. Advance's 4-tap design is called a Quadri-Volt® ballast and operates on either 120V, 208V, 240V or 277V power. There is an Advance Quadri-Volt® ballast for virtually every HID lamp on the market.

FIXTURE FUSING

Many HID lighting fixtures are sold with protective fuses. The purpose of the fuse is to isolate a fixture from the lighting circuit in the event of excessive current draw, such as might be caused by a failed ballast. Unfortunately, the fuse will not protect the ballast from failure, as it is often the failed ballast itself that is causing the high current draw.

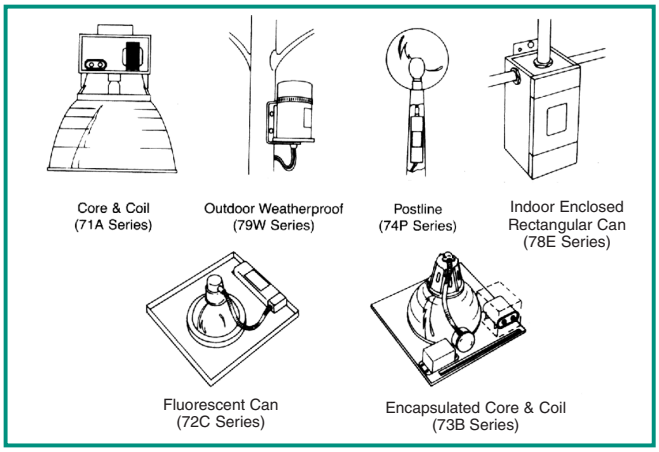
With many fixtures the fuse is physically located in the ballast compartment of the fixture. The air temperature within this compartment can easily reach 80°C and still be within the design limitations of the fixture.

Many fuses are temperature sensitive, meaning that the current rating goes down as the ambient temperature goes up. Fuse current ratings are based on the fuse's performance in a 25°C ambient (77°F). In an 80°C ambient, some fuses will open at half their rating.

As a result, the fuse rating shown in the HID ballast tables is calculated at 2½ to 3 times the highest current draw of the ballast: lamp operating, starting or open circuit conditions. Standard or slow-blow fuses should be used. Fast-blow fuses should be avoided as ballast in-rush currents during power turn-on could cause these fuses to blow unnecessarily. It is not necessary to use current limiting fuses.

BALLAST DESIGN APPLICATIONS

HID lamp ballasts are available in a variety of shapes and sizes for the most popular lighting applications. Six basic designs are in widest use today.



Core & Coil

The basic ballast is the open core & coil which is most often used as a component within a lighting fixture. The core & coil also forms the nucleus of the five other ballast configurations detailed in this section. It consists of either one, two or three copper coils on a core (or "stack") of electrical-grade steel laminations. The coils are assembled to core sections which are then surface-welded together. At Advance Transformer Co. the assembled ballast is vacuum impregnated with a silica-filled polyester varnish to re-enforce the electrical insulation, preclude moisture, inhibit noise, and dissipate heat. Advance utilizes a vacuum-pressure impregnation process. Most other HID ballast manufacturers apply varnish via a preheat-and-dip process which only puts a thin coat of varnish on the outer surface of the ballast. Advance Core & Coil ballasts feature as standard an insulation system rated class H (180°C) for ballasts below 600 watts, and class N (200°C) for ballasts 600 watts and higher. When performing in-fixture testing, the maximum allowable average coil temperature (measured by the change of resistance method) is 165°C for class H ballasts or 185°C for class N ballasts. The maximum allowable coil face temperature (measured by thermocouple) is 150°C for class H ballasts and 170°C for class N ballasts.

ADVANCE, 10275 WEST HIGGINS ROAD, ROSEMONT, IL 60018. TEL: (847) 390-5000, FAX: (847) 390-5109

Encapsulated Core & Coil

Where quiet performance is required, the standard open core & coil ballasts are encapsulated (potted) in a cube-shaped steel can utilizing Class H (180°C) polyester compound. These ballasts carry a Class A noise rating up through 175 watts and Class B for 250 and 400 watts. As with the open core & coil, the capacitor (and ignitor where included) are mounted separately within the fixture.

Fluorescent Can (F-Can)

For indoor commercial applications of HID lighting such as offices, schools and retail stores, ballast noise must be minimized. Ballasts for these fixtures are most often encased and potted in fluorescent ballast type cans and utilize Class A (90°C) asphalt insulating materials (the same as used in fluorescent lamp ballasts).

The Advance line of F-can ballasts comes in two dual-voltage configurations: 120/277 volt for the US market, and 120/347 volt for the Canadian market. Each unit has built-in, automatically resetting, thermal protectors which disconnect the ballast from the power line in the event of overheating. All units are high power factor and include the capacitor within the can. All models for high pressure sodium and low-wattage metal halide lamps also include the ignitor in the can.

Indoor Enclosed

These units are designed for use indoors where the ballast must be mounted remotely from the luminaire. They are most typically used in factories where the luminaire may be mounted in a high-bay where very high ambient temperatures may be experienced. In these instances, the remotely-mounted ballast operates cooler, subsequently providing longer life because it is away from both the heat of the ceiling ambient and lamp heat within the fixture.

The case contains the core & coil potted in a Class H (180°C) heat-dissipating resin. The capacitor(s) and ignitor are contained within a separate compartment. Knockouts in both ends of the case facilitate hook-up in the most convenient manner. Wall mounting is accomplished through flanges on the top and bottom of the case. The ballast is a UL Listed product.

Outdoor Weatherproof

Weatherproof ballasts are designed for remote, pole-mounting outdoor applications under all weather conditions. They may also be placed inside of a transformer pole base, but care must be taken to avoid areas prone to flooding because weatherproof ballasts are not water-submersible.

The core & coil with its capacitor and ignitor (where required) are firmly mounted to the heat-sink base. An aluminum cover is placed over the core-&-coil assembly and is bolted with a weather-tight gasket to the base. An integral 1" threaded nipple with locknut facilities hook-up to electrical conduit or to the mounting bracket when used on a pole. The weatherproof ballast may also be placed nipple-up, with a drip loop in the leads, inside a pole base.

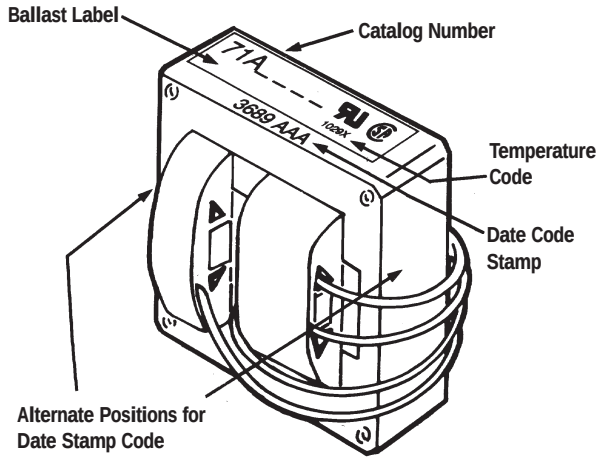
Postline

Lantern-type fixtures mounted on slender poles often require ballasts which will fit into these poles. Special, elongated core & coil ballasts are potted in resin in cylindrical cans having a 2.55" outside diameter. All include leads necessary for direct connection to a photocell.

The capacitor and ignitor (where required) are included within this can. A ½" threaded nipple is used for vertical mounting, and leads extend from both ends of the can for ease of installation. The input leads to the ballast also provide for proper connection to the photocell if such is included within the fixture.

To help prevent overheating, one to three feet of air space should be allowed in the pole above the ballast, and the ballast should be positioned against the post interior wall to provide a heat-sink. All units rated 100W and above now include a mounting kit consisting of an 18" chain to hang the ballast within the pole and a spring clip to force the ballast's cylindrical can to make line contact with the pole's interior surface to maximize heat transfer, thus prolonging the ballast life.

BALLAST DATE AND TEMPERATURE CODES



ADVANCE ® HID Core & Coil ballasts are date stamped on either the top surface or the side surface of the ballast core. The four-digit number represents the *week* and *year* of manufacture. The first two numbers indicate the week and the last two indicate the year the ballast was manufactured. The example shows a ballast manufactured during the 36th week of 1989. The three letters are an Advance factory code.
The ballast's UL Bench Top Rise Temperature Code is shown on the label (see below).

UL BENCH TOP RISE TEMPERATURE CODE

To facilitate UL inspection, each ballast's UL Bench Top Rise Temperature Code is shown on the Advance Core & Coil ballast label as 1029**X**, where 1029 is the UL Standard for HID Ballasts, and the **X** is the temperature code: **A**, **B**, **C**, etc. If a fixture is UL listed for 1029**C**, then automatically, all ballasts with an **A**, **B**, or **C** temperature classification are acceptable for use within that same fixture.

UL Bench Top Rise Letter Code	Temperature Range for Class H (180°C) Ballasts	Temperature Range for Class N (200°C) Ballasts
A	less than 75°C	less than 95°C
B	75°C < 80°C	95°C < 100°C
C	80°C < 85°C	100°C < 105°C
D	85°C < 90°C	105°C < 110°C
E	90°C < 95°C	110°C < 115°C
F	95°C < 100°C	115°C < 120°C
etc.	etc.	etc.

CERTIFICATIONS

Indicates ballast is listed by Underwriters Laboratories, Inc. in accordance with UL 1029 Standard for HID Ballasts. Each ballast is marked appropriately.

Indicates ballast is component recognized by Underwriters Laboratories, Inc. in accordance with UL 1029 Standard for HID Ballasts. Each ballast is marked appropriately.

Indicates ballast is certified by Canadian Standards Association in accordance with CAN/CSA-22.2 No. 74-92.Each ballast is marked appropriately.

All HID Ballasts are designed and manufactured in accordance with the American National Standards Institute Standard for HID Ballasts, ANSI C82.4.

HID

ORDERING INFORMATION

How to Order

Advance Transformer has developed the industry's broadest selection of HID ballasts. More than 3000 stocking distributors nationwide. For information on the distributor best able to serve your needs, please call 800-372-3331.

Advance HID Ballast Part Number Explanation

71A	60	9	1	-500D

Suffix Code* (as applicable)

-001D	ballast replacement kit with dry film capacitor
-001	ballast replacement kit with oil filled capacitor
-500D	core & coil ballast with dry film capacitor
-500	core & coil ballast with oil filled capacitor
-510D	core & coil ballast with welded bracket and dry film capacitor
-510	core & coil ballast with welded bracket and oil filled capacitor
-540D	core & coil ballast with welded angle bracket and dry film capacitor
-600	core & coil ballast (no capacitor)
-610	core & coil ballast with welded bracket (no capacitor)

* Add additional feature codes to the end of suffix where applicable.
i.e. -B = Integral Ignitor, -P = Thermally Protected, -J = J-Box Mounting

Design Code

INPUT VOLTAGE CODE

60 Hz Voltages

0 = 120V
1 = 208V
2 = 240V
3 = 277V
4 = 480V
5 = 120/240V or 120/208/240/277/480V
6 = 240/480V
7 = 120/208/240/277V
8 = 120/277V
9 = 120/208/240/277V

A = 120/277/347V
B = 347V
C = 120/347V
D = 120/240/347V
E = 120/208/240V or 208/240V
F = 277/480V, 277/347V, 277/347/480V or 347/480V
H = 127/220V
J = 220V or 220/240V
Y = 100V or 100/200V

50 Hz Voltages

M = 100/200V
N = 120/220-240V
R = 220/240V

Lamp Type/Wattage/Ballast Circuit Code

Ballast Type

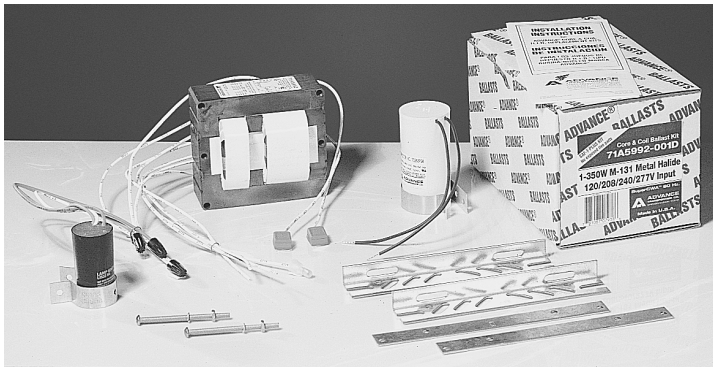
71A = Core and Coil Ballast
72C = F-Can Ballast
73B = Encapsulated Core and Coil Ballast
74P = Postline Ballast
77K = Val-U-Pak Replacement Ballast Kit
78E = Indoor Enclosed Ballast
79W = Outdoor Weatherproof Ballast

HID

Distributor Kits and Replacement Ignitors

Advance furnishes 120/208/240/277 Quadri-Volt® core & coil ballasts to allow the stocking distributor to conveniently meet the replacement and retrofit needs of customers. A Quadri-Volt core & coil along with the appropriate capacitor, ignitor (where required), mounting bracket & hardware and installation instructions are packed in a space-saving shipping carton. These "kits" eliminate the need for distributors or end-users to stock loose components of single voltage ballasts for 120, 208, 240 and 277 volt applications. Kits for the popular 480 volt application are also available.

Ignitors are also packaged in individual cartons for replacement needs. There are several different ignitors to meet the needs of the many different lamps. The appropriate ignitor for each ballast is shown in the far right column on the page in this Atlas where the ballast is listed. Additionally, this information is summarized in the tables on pages 4-48 through 4-51.



Dry Capacitors

We have extended the operating voltage range of our dry capacitors from 330 to 400 volts. This means that our most popular HID replacement kits for 175, 250, and 400-watt metal halide lamps now contain dry capacitors and offer the additional benefits available only with a dry capacitor.

Those benefits are:

- Dry capacitors are typically 25 to 50% smaller than their oil-filled counterparts, assuring that the Advance ballast kit will fit existing fixtures.
- Dry capacitors are rated 100°C, 10° higher than 90°C oil-filled capacitors, thus assuring longer component life.
- Dry capacitors are built using a thermoplastic case, thus eliminating the need for grounding and insuring a faster, easier replacement.
- Unlike oil-filled capacitors with exposed tab terminals, dry capacitors have no exposed live parts and thus protect end-users from hazardous voltages.

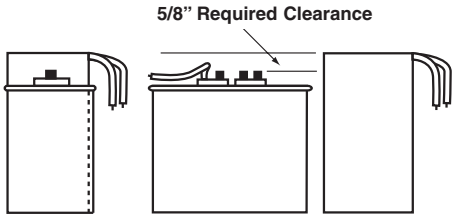
The bottom line is that our expanded use of dry capacitors makes the contractor's job faster and easier. **Look for the "D" at the end of our catalog number, it identifies the ballast kit as one that contains a dry capacitor!**

MERCURY

Input Volts	Catalog Number	Circuit Type	Total Weight (Lbs)	Certifications	
50 Watt Lamp, ANSI Code H46					
120	71A1800-001	HX-NPF	3.3	✓	✓
100 Watt Lamp, ANSI Code H38 or H44					
120/208/240/277	71A2571-001D	CWA	5.0	✓	✓
120	71A2800-001	HX-NPF	3.8	✓	✓
175 Watt Lamp, ANSI Code H39					
120/208/240/277	71A3072-001D	CWA	6.5	✓	✓
480	71A3042-001D	CWA	5.0	✓	✓
120	71A3301-001	HX-NPF	5.0	✓	✓
250 Watt Lamp, ANSI Code H37					
120/208/240/277	71A3572-001D	CWA	8.3	✓	✓
480	71A3542-001D	CWA	7.5	✓	✓
400 Watt Lamp, ANSI Code H33					
120/208/240/277	71A4071-001D	CWA	12.5	✓	✓
480	71A4041-001D	CWA	12.0	✓	✓
Two 400 Watt Lamps, ANSI Code H33					
120	71A4300-001	CWI (2 lamps in series)	20.3	✓	✓
277	71A4330-001				
480	71A4340-001				
1000 Watt Lamp, ANSI Code H36					
120/208/240/277	71A5070-001	CWA	24.3	✓	✓
480	71A5040-001	CWA	23.0	✓	✓

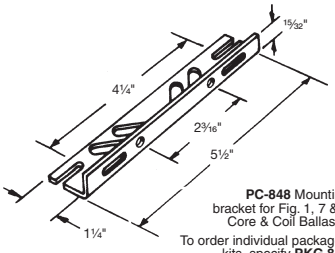
Capacitor Size Comparison

Oil-Filled vs. Advance Dry Type



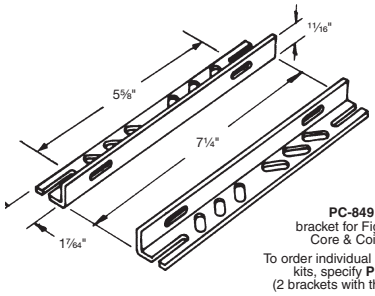
CORE & COIL MOUNTING BRACKETS

Included with Replacement Kits



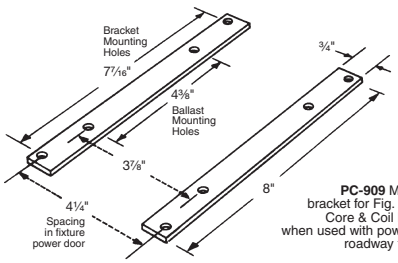
PC-848 Mounting bracket for Fig. 1, 7 & 9 Core & Coil Ballasts.

To order individual packaged kits, specify **PKG 848** (1 bracket with thru-bolts).



PC-849 Mounting bracket for Fig. 2, 3 & 8 Core & Coil Ballasts.

To order individual packaged kits, specify **PKG 849-2** (2 brackets with thru-bolts).



PC-909 Mounting bracket for Fig. 2, 3 & 8 Core & Coil Ballasts when used with power-door roadway fixtures.

METAL HALIDE

Input Volts	Catalog Number	Circuit Type	Total Weight (Lbs)	Certifications	
70 Watt Lamp, ANSI Code M98					
120/208/ 240/277	71A5292-001D	HX-HPF	5.2	✓	✓
100 Watt Lamp, ANSI Code M90/M140					
120/208/ 240/277	71A5390-001D	HX-HPF	6.0	✓	✓
175/150 Watt Lamp, ANSI Code M57/M107 or H39					
120/208/ 240/277	71A5570-001D	CWA	8.5	✓	✓
480	71A5540-001D	CWA	8.5	✓	✓
200 Watt Lamp, ANSI Code M136					
277	71A5637-001D*	Linear Reactor HPF	6.0	✓	
120/208/ 240/277	71A5692-001D	Super CWA	8.0	✓	✓
250 Watt Lamp, ANSI Code M58 or H37					
120/208/ 240/277	71A5770-001D	CWA 4¼ x 4¾ Core	13.0	✓	✓
480	71A5740-001D		12.0	✓	✓
120/208/ 240/277	71A5771-001D	CWA 3x4 Core	11.0	✓	✓
480	71A5741-001D		10.0	✓	✓
250 Watt Lamp, ANSI Code M138					
277	71A5737-001D	Linear Reactor HPF	7.0	✓	✓
120/208/ 240/277	71A5793-001D	Super CWA	9.0	✓	✓
320 Watt Lamp, ANSI Code M132					
277	71A5837-001D*	Linear Reactor HPF	9.5	✓	
120/208/ 240/277	71A5892-001D	Super CWA	11.0	✓	✓
350 Watt Lamp, ANSI Code M131					
277	71A5937-001D*	Linear Reactor HPF	10.0	✓	
120/208/ 240/277	71A5993-001D	Super CWA	11.0	✓	✓

* Includes -540 bracket. See drawing below for details.

METAL HALIDE

New

Input Volts	Catalog Number	Circuit Type	Total Weight (Lbs)	Certifications	
400 Watt Lamp, ANSI Code M59 or H33					
277	71A6037-001D*	Linear Reactor HPF	9.0	✓	
120/208/ 240/277	71A6071-001D	CWA	11.5	✓	✓
480	71A6041-001D	CWA	12.0	✓	✓
120/208/ 240/277/ 480	71A6051-001D	CWA	14.0	✓	✓
400 Watt Lamp, ANSI Code M135					
277	71A6137-001D*	Linear Reactor HPF	9.0	✓	
120/208/ 240/277	71A6092-001D	Super CWA	11.0	✓	✓
Two 400 Watt Lamps, ANSI Code M59 or H33					
120/277	71A6382-001D	CWA Independent Lamp Operation	31.0	✓	✓
480	71A6342-001D		31.0	✓	✓
450 Watt Lamp, ANSI Code M144					
277	71A6337-001D	Linear Reactor HPF	9.0	✓	
120/208/ 240/277	71A6393-001D	Super CWA	11.0	✓	✓
1000 Watt Lamp, ANSI Code M47 or H36					
120/208/ 240/277	71A6572-001	CWA	28.0	✓	✓
480	71A6542-001	CWA	28.0	✓	✓
1500 Watt Lamp, ANSI Code M48					
120/208/ 240/277	71A6772-001	CWA	31.0	✓	✓
480	71A6742-001	CWA	31.0	✓	✓

* Includes -540 bracket. See drawing below for details.

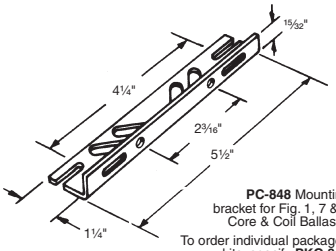
Note:

175, 250, and 400-watt metal halide kits now include dry capacitors!

(see page 4-5 for a full explanation of the features and benefits of dry capacitors)

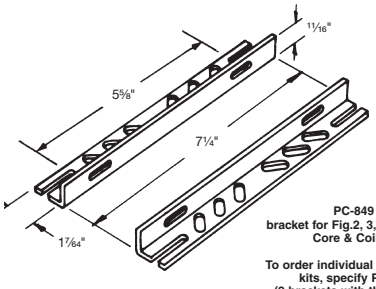
CORE & COIL MOUNTING BRACKETS

Included with all Replacement Kits



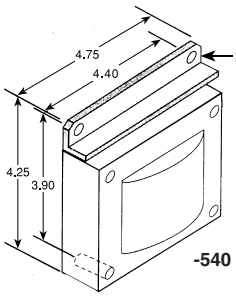
PC-848 Mounting bracket for Fig. 1, 7 & 9 Core & Coil Ballasts.

To order individual packaged kits, specify **PKG 848** (1 bracket with thru-bolts).



PC-849 Mounting bracket for Fig.2, 3, 8, 8a &10 Core & Coil Ballasts.

To order individual packaged kits, specify PKG 849-2 (2 brackets with thru bolts).



Includes welded-on angle bracket (-540 option) standard with -001D kit. Allows Linear Reactor ballast to mount in fixtures designed for standard CWA ballasts without the need for additional brackets.

-540 Bracket Detail

ADVANCE ADVANCE, 10275 WEST HIGGINS ROAD, ROSEMONT, IL 60018. TEL: (847) 390-5000, FAX: (847) 390-5109

HIGH PRESSURE SODIUM

"C" Suffix Denotes Plug-In Ignitor

Input Volts	Catalog Number	Circuit Type	Total Weight (Lbs)	Certifications	
50 Watt Lamp, ANSI Code S68					
120/277	71A7801-001D	HX-HPF	3.5	✓	✓
70 Watt Lamp, ANSI Code S62					
120/208/240/277	71A7971-001D	HX-HPF	5.5	✓	✓
120/208/240/277	71A7991-001DC	HX-HPF	5.5	✓	✓
100 Watt Lamp, ANSI Code S54					
120/208/240/277	71A8071-001D	HX-HPF	7.3	✓	✓
120/208/240/277	71A8091-001DC	HX-HPF	7.3	✓	✓
480	71A8041-001D	HX-HPF	7.0	✓	✓
150 Watt Lamp, ANSI Code S55					
120/208/240/277	71A8172-001D	HX-HPF	8.0	✓	✓
120/208/240/277	71A8192-001DC	HX-HPF	8.0	✓	✓
480	71A8142-001D	HX-HPF	9.5	✓	✓
150 Watt Lamp, ANSI Code S56					
120/208/240/277	71A8176-001D	CWA	8.5	✓	✓
480	71A8146-001D	CWA	8.5	✓	✓
200 Watt Lamp, ANSI Code S66					
120/208/240/277	71A8970-001D	CWA	8.5	✓	✓
480	71A8940-001D	CWA	8.5	✓	✓
250 Watt Lamp, ANSI Code S50					
120/208/240/277	71A8271-001D	CWA	11.5	✓	✓
120/208/240/277	71A8291-001DC	CWA	11.5	✓	✓
480	71A8241-001D	CWA	11.0	✓	✓
310 Watt Lamp, ANSI Code S67					
120/208/240/277	71A8371-001D	CWA	13.8	✓	✓

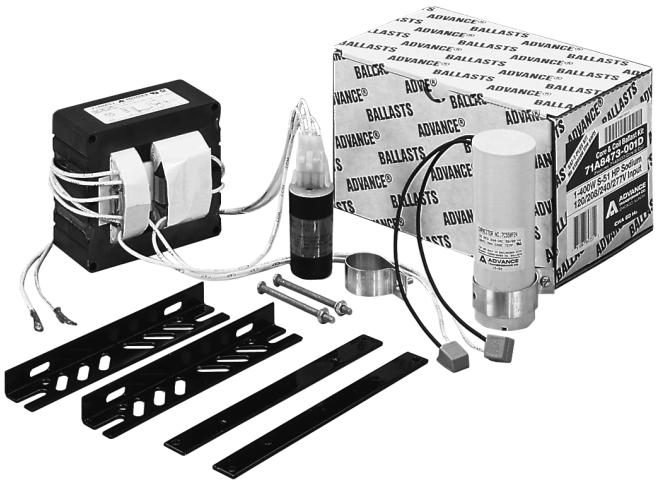
HIGH PRESSURE SODIUM

"C" Suffix Denotes Plug-In Ignitor

Input Volts	Catalog Number	Circuit Type	Total Weight (Lbs)	Certifications	
400 Watt Lamp, ANSI Code S51					
120/208/240/277	71A8473-001D	CWA	15.0	✓	✓
120/208/240/277	71A8493-001DC	CWA	15.0	✓	✓
480	71A8443-001D	CWA	15.5	✓	✓
480	71A8443-001DC	CWA	15.5	✓	✓
1000 Watt Lamp, ANSI Code S52					
120/208/240/277	71A8773-001	CWA	31.0	✓	✓
120/208/240/277	71A8793-001C	CWA	31.0	✓	✓
480	71A8743-001	CWA	31.0	✓	✓
480	71A8743-001C	CWA	31.0	✓	✓

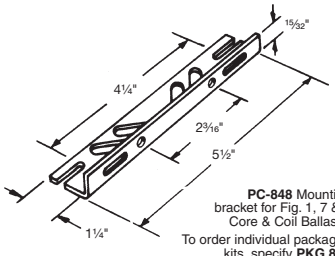
Distributor Kits with Plug-In Ignitors

In addition to the standard H.P.S. kits listed on this page, Advance Transformer also offers select H.P.S. kits with a plug-in ignitor system. No ignitor wiring is required. The ignitor simply plugs in to the mating ballast connector. "C" Suffix denotes plug-in ignitor.



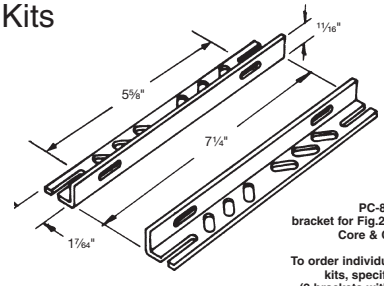
CORE & COIL MOUNTING BRACKETS

Included with Replacement Kits



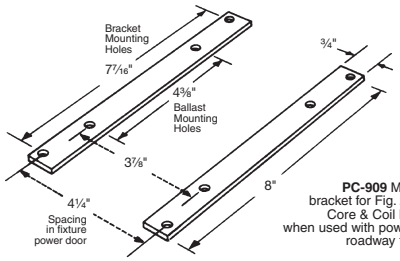
PC-848 Mounting bracket for Fig. 1, 7 & 9 Core & Coil Ballasts.

To order individual packaged kits, specify **PKG 848** (1 bracket with thru-bolts).



PC-849 Mounting bracket for Fig.2, 3, 8, 8a &10 Core & Coil Ballasts.

To order individual packaged kits, specify PKG 849-2 (2 brackets with thru bolts).



PC-909 Mounting bracket for Fig. 2, 3 & 8 Core & Coil Ballasts when used with power-door roadway fixtures.

HID installations just got simpler, more convenient - and up to 30% faster, with the new Val-U-Pak from Advance.

Why Should You Change All the Components?
HID fixtures are generally difficult to reach and to service. Subsequently, the cost of labor can often exceed the cost of the ballast and/or lamp. When the ballast, capacitor or ignitor reach end-of-life, it is recommended that all of these components in the fixture be replaced at the same time. It is equally suggested that the lamp also be replaced, assuring optimal performance of the system and eliminating the need to re-service the fixture during the entire life-cycle of the lamp.

The Advance VAL-U-PAK makes total fixture changeouts easier - packaging labor-saving convenience in an easy-to-carry, all-inclusive carton.

- **Convenience** - lamp*, ballast, components and hardware packed together.
- **Easy Carrying** - sturdy handle and heavy-duty construction throughout.

*VAL-U-PAKs are shipped without lamps. Lamps are added to the kit by the distributor.

HID VAL-U-PAKS are available with the 11 most popular ADVANCE HID ballast replacement kits:

PULSE-START METAL HALIDE

Input Volts	Catalog Number	Circuit Type	Total Weight (Lbs)	Certifications	
320 Watt Lamp, ANSI Code M132					
277	77K5837-001D*	Linear Reactor HPF	9.5	✓	
120/208/ 240/277	77K5892-001D	Super CWA	11.0	✓	✓
350 Watt Lamp, ANSI Code M131					
277	77K5937-001D*	Linear Reactor HPF	10.0	✓	
120/208/ 240/277	77K5993-001D	Super CWA	11.0	✓	✓

* includes -540 Bracket

METAL HALIDE

Input Volts	Catalog Number	Circuit Type	Total Weight (Lbs)	Certifications	
175/150 Watt Lamp, ANSI Code M57/M107 or H39					
120/208/ 240/277	77K5570-001D	CWA	8.5	✓	✓
250 Watt Lamp, ANSI Code M58 or H37					
120/208/ 240/277	77K5770-001D	CWA 4¼ x 4¾ Core	13.0	✓	✓
400 Watt Lamp, ANSI Code M59 or H33					
120/208/ 240/277	77K6071-001D	CWA	11.5	✓	✓

HIGH PRESSURE SODIUM

Input Volts	Catalog Number	Circuit Type	Total Weight (Lbs)	Certifications	
100 Watt Lamp, ANSI Code S54					
120/208/ 240/277	77K8071-001D	HX-HPF	7.3	✓	✓
150 Watt Lamp, ANSI Code S55					
120/208/ 240/277	77K8172-001D	HX-HPF	8.0	✓	✓
250 Watt Lamp, ANSI Code S50					
120/208/ 240/277	77K8271-001D	CWA	11.5	✓	✓
400 Watt Lamp, ANSI Code S51					
120/208/ 240/277	77K8473-001D	CWA	15.0	✓	✓

FOR CANADA

MERCURY

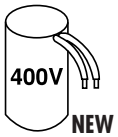
Input Volts	Catalog Number	Circuit Type	Total Weight (Lbs)	Certifications	
100 Watt Lamp, ANSI Code H38 or H44					
120/ 277/347	71A25A1-001D	CWA	5.0	✓	✓
125 Watt Lamp, ANSI Code H42					
120/ 240/347	71A29D1-001D	CWA	5.0		✓
175 Watt Lamp, ANSI Code H39					
120/ 240/347	71A30D2-001D	CWA	5.5		✓
250 Watt Lamp, ANSI Code H37					
120/ 240/347	71A35D2-001D	CWA	7.5		✓
400 Watt Lamp, ANSI Code H33					
120/ 240/347	71A40D1-001D	CWA	10.5		✓

METAL HALIDE

Input Volts	Catalog Number	Circuit Type	Total Weight (Lbs)	Certifications	
70 Watt Lamp, ANSI Code M98					
120/ 277/347	71A52A2-001D	HX-HPF	5.0	✓	✓
100 Watt Lamp, ANSI Code M90					
120/ 277/347	71A53A0-001D	HX-HPF	5.5	✓	✓
175/150 Watt Lamp, ANSI Code M57/M107 or H39					
120/ 277/347	71A55A0-001D	CWA	7.0	✓	✓
250 Watt Lamp, ANSI Code M58 or H37					
120/ 277/347	71A57A0-001D	CWA	10.0	✓	✓
400 Watt Lamp, ANSI Code M59 or H33					
120/ 277/347	71A60A1-001D	CWA	12.0	✓	✓
1000 Watt Lamp, ANSI Code M47 or H36					
120/ 277/347	71A65A2-001	CWA	21.0	✓	✓
1500 Watt Lamp, ANSI Code M48					
120/ 277/347	71A67A2-001	CWA	30.0	✓	✓

Note:

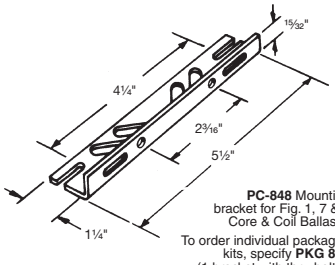
175, 250, and 400-watt metal halide kits now include dry capacitors!



(see page 4-5 for a full explanation of the features and benefits of dry capacitors)

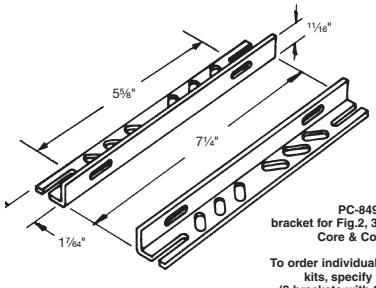
CORE & COIL MOUNTING BRACKETS

Included with Replacement Kits



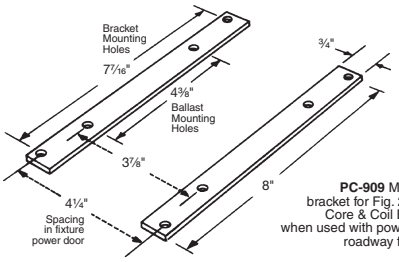
PC-848 Mounting bracket for Fig. 1, 7 & 9 Core & Coil Ballasts.

To order individual packaged kits, specify **PKG 848** (1 bracket with thru-bolts).



PC-849 Mounting bracket for Fig.2, 3, 8, 8a &10 Core & Coil Ballasts.

To order individual packaged kits, specify PKG 849-2 (2 brackets with thru bolts).



PC-909 Mounting bracket for Fig. 2, 3 & 8 Core & Coil Ballasts when used with power-door roadway fixtures.

HIGH PRESSURE SODIUM

Input Volts	Catalog Number	Circuit Type	Total Weight (Lbs)	Certifications	
70 Watt Lamp, ANSI Code S62					
120/ 277/347	71A79A1-001D	HX-HPF	5.5	✓	✓
100 Watt Lamp, ANSI Code S54					
120/ 277/347	71A80A1-001D	HX-HPF	7.5	✓	✓
150 Watt Lamp, ANSI Code S55					
120/ 277/347	71A81A2-001D	HX-HPF	8.0	✓	✓
250 Watt Lamp, ANSI Code S50					
120/ 277/347	71A82A1-001D	CWA	11.5	✓	✓
400 Watt Lamp, ANSI Code S51					
120/ 277/347	71A84A3-001D	CWA	15.0	✓	✓
1000 Watt Lamp, ANSI Code S52					
120/ 277/347	71A87A3-001	CWA	31.0	✓	✓

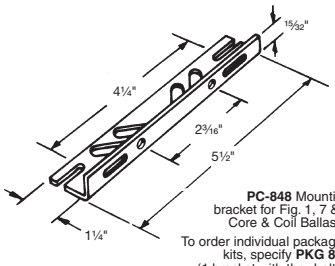
FOR CANADA

LOW PRESSURE SODIUM

Input Volts	Catalog Number	Circuit Type	Total Weight (Lbs)	Certifications	
35 or 55 Watt Lamp, ANSI Code L70 or L71					
120/ 240/347	71A04D0-001D	HX-PFC	8.0	✓	✓
90 Watt Lamp, ANSI Code L72					
120/ 240/347	71A05D0-001D	HX-PFC	11.0		✓
135 or 180 Watt Lamp, ANSI Code L73 or L74					
120/ 240/347	71A07D0-001D	HX-PFC	16.8		✓

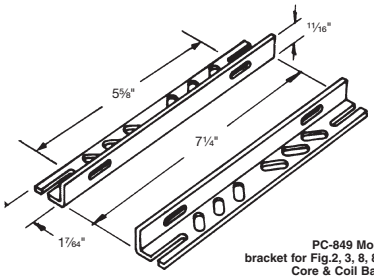
CORE & COIL MOUNTING BRACKETS

Included with Replacement Kits



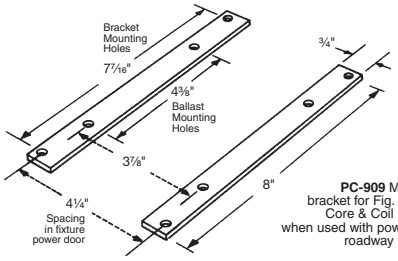
PC-848 Mounting bracket for Fig. 1, 7 & 9 Core & Coil Ballasts.

To order individual packaged kits, specify **PKG 848** (1 bracket with thru-bolts).



PC-849 Mounting bracket for Fig.2, 3, 8, 8a &10 Core & Coil Ballasts.

To order individual packaged kits, specify PKG 849-2 (2 brackets with thru bolts).



PC-909 Mounting bracket for Fig. 2, 3 & 8 Core & Coil Ballasts when used with power-door roadway fixtures.

HID REPLACEMENT KITS

Input Volts	Catalog Number	Circuit Type	Watts Input	Max Input Current	Nom Open Circuit Voltage	Dimensions			Net Wt (lbs)
						Fig	A	B	
MERCURY									
175 Watt Lamp, ANSI Code H39									
120	71A3304-791	HX-NPF	205	3.00	240	A	1.00	2.3	6.0
240	71A3325-791	R-NPF	195	2.70		B	1.75	3.0	5.0
250 Watt Lamp, ANSI Code H37									
120	71A3801-791	HX-NPF	285	4.80	240	A	1.65	2.3	7.5
HIGH PRESSURE SODIUM									
70 Watt Lamp, ANSI Code S62									
120	71A7907-791	R-NPF	86	2.10	120	B	1.50	3.0	3.8
100 Watt Lamp, ANSI Code S54									
120	71A8007-791	R-NPF	115	3.05	120	B	1.50	3.0	4.3
150 Watt Lamp, ANSI Code S55									
120	71A8107-791	R-NPF	170	4.50	120	B	2.00	3.6	5.3

Note: All NEMA Head ballasts include an ignitor integral to the core & coil. All are NPF and do not include a capacitor.

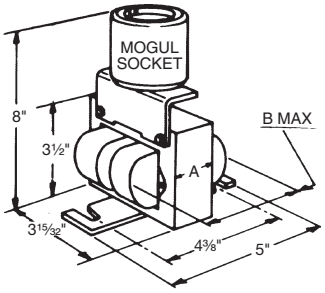


Fig. A

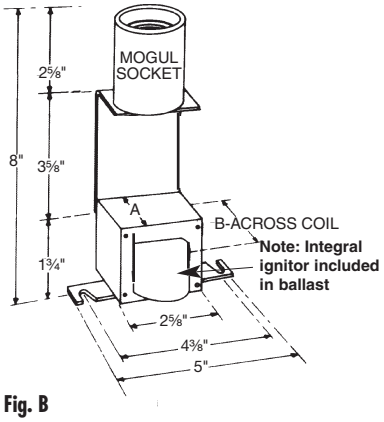


Fig. B

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Mercury

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	U.L. Bench Top Rise Code 1029 (Pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)		
50 Watt Lamp, ANSI Code H46																		
120/277	71A1580	CWA	74	.7/.3	245	2/1	A	1	.9	2.0	7	250	1.25	2.90	—	—	2.8	C/B
120	71A1800 **71A1800-001**	HX-NPF	74	2.1	240	7	B	1	.8	1.9	NOT AVAILABLE						3.0	A
75 Watt Lamp, ANSI Code H43																		
120 277	71A2000 71A2030	CWA	93	.9 .4	250	3 1	A	1	1.1	2.3	8	280	1.25	2.90	—	—	3.5	A A
120	71A2303	HX-NPF	96	2.6	245	7	B	6	.9	1.9	NOT AVAILABLE						2.8	F
100 Watt Lamp, ANSI Code H38 or H44																		
120 480	71A2501 71A2541	CWA	120 125	1.1 .3	250	3 1	A	1	1.1 1.2	2.3 2.5	10	280	1.50	2.90	—	—	4.0 4.5	B D
120/208/ 240/277	71A2591	CWA	125	1.1/.6/ .6/.5	250	3/2/ 2/2	A	1	1.5	2.8	10	280	1.50	2.90	—	—	5.0	D/D/ D/D
120/208/ 240/277	**71A2571-001D**	CWA	125	1.1/.6/ .6/.5	250	3/2/ 2/2	A	1	1.5	2.8	10	280	1.50	2.90	—	—	5.0	D/D/ D/D
120/ 277/347	71A25A1	CWA	125	1.1/ .5/.4	250	3/ 2/1	A	1	1.5	2.8	10	280	1.50	2.90	—	—	5.0	B/ B/B
120/ 277/347	**71A25A1-001D**	CWA	125	1.1/ .5/.4	250	3/ 2/1	A	1	1.5	2.8	10	280	1.50	2.90	—	—	5.0	B/ B/B
120	71A2800 **71A2800-001**	HX-NPF	125	3.6	255	8	B1	1	1.4	2.4	NOT AVAILABLE						4.0	B

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001 or -001D**. Refer to pages 4-5 to 4-8.

Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA circuits, figure is operating current. For HX and R circuits, figure is highest of starting, operating or open circuit current.

Canadian replacement/retrofit ballast kit indicated by **bold type.** Refer to pages 4-9 to 4-10.

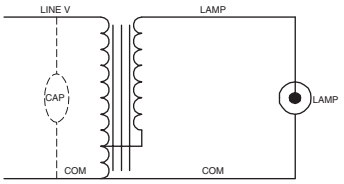


Fig. B

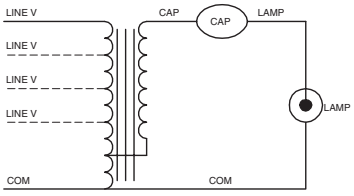


Fig. A

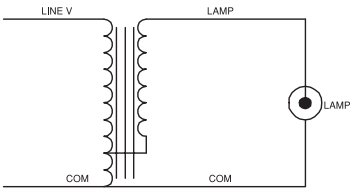


Fig. B1

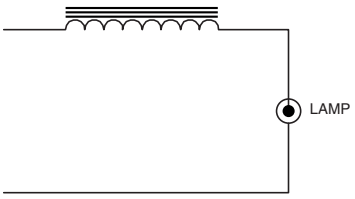


Fig. C1

HID

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Mercury

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	U.L. Bench Top Rise Code 1029 (Pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)		
125 Watt Lamp, ANSI Code H42																		
120/ 240/347	71A29D1	CWA	150	1.3/ .7/.5	255	4/ 2/2	A	1	1.4	2.5	12	280	1.50	2.90	—	—	5.0	B/ B/A
120/ 240/347	**71A29D1-001D**	CWA	150	1.3/ .7/.5	255	4/ 2/2	A	1	1.4	2.5	12	280	1.50	2.90	—	—	5.0	B/ B/A
150 Watt Lamp, Retrofit for 175W Mercury, ANSI Code S63, EZ Lux (GE), Unalux (Osram-Sylvania), Retrolux (Philips)																		
120	71A3301 **71A3301-001**	HX-NPF	200	6.0	240	15	B1	1	1.4	2.5	NOT AVAILABLE						4.5	B
240	71A3325	R-NPF	195	2.7	240	7	C1	9	1.8	3.0	NOT AVAILABLE						3.5	D
175 Watt Lamp, ANSI Code H39																		
120	71A3002	CWA	205	1.9	215	5	A	1	1.6	2.9	17.5	240	1.50	3.75	—	—-	5.0	B
480	71A3042 **71A3042-001D**	CWA	200	.5	240	2	A	1	1.8	2.9	17.5	240	1.50	3.75	—	—-	5.5	A
120/208/ 240/277	71A3092	CWA	205	1.9/1.1/ 1.0/.9	215	5/3/ 3/2	A	1	1.6	2.9	17.5	240	1.50	3.75	—-	—	5.0	B/C/ C/C
120/208/ 240/277	**71A3072-001D**	CWA	205	1.9/1.1/ 1.0/.9	215	5/3/ 3/2	A	1	1.6	2.9	17.5	240	1.50	3.75	—-	—	5.0	B/C/ C/C
120/ 240/347	71A30D2	CWA	200	1.7/ .9/.6	240	5/ 3/2	A	1	1.7	2.9	17.5	240	1.50	3.75	—-	—	5.5	A/ A/A
120/ 240/347	**71A30D2-001D**	CWA	200	1.7/ .9/.6	240	5/ 3/2	A	1	1.7	2.9	17.5	240	1.50	3.75	—-	—	5.5	A/ A/A
120	71A3301 **71A3301-001**	HX-NPF	200	6.0	240	15	B1	1	1.4	2.5	NOT AVAILABLE						4.5	B
240	71A3325	R-NPF	195	2.7	240	7	C1	9	1.8	3.0	NOT AVAILABLE						3.5	D

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001** or **-001D**. Refer to pages 4-5 to 4-8.

Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA circuits, figure is operating current. For HX and R circuits, figure is highest of starting, operating or open circuit current.

Canadian replacement/retrofit ballast kit indicated by **bold type.** Refer to pages 4-9 to 4-10.

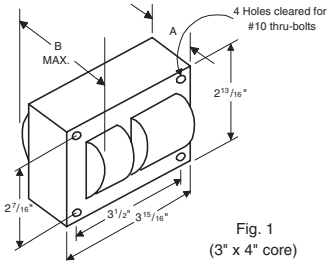


Fig. 1
(3" x 4" core)

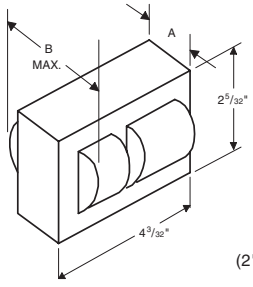


Fig. 6
(2" x 4" core)

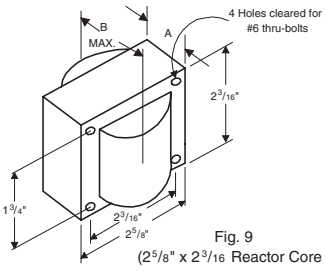
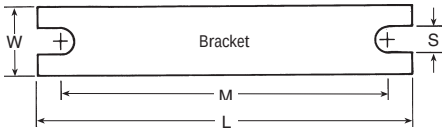


Fig. 9
(2 5/8" x 2 3/16 Reactor Core)



WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1,6	5.1	1.00	4.50	0.25
9	4.0	0.75	3.50	0.28

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Mercury

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	U.L. Bench Top Rise Code 1029 (Pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)		
250 Watt Lamp, ANSI Code H37																		
120	71A3502	CWA	285	2.5	250	8	A	1	2.0	3.2	22.5	280	1.75	3.75	—	—	6.0	D
480	71A3542 **71A3542-001D**	CWA	285	.7	250	2	A	1	2.3	3.4	22.5	280	1.75	3.75	—	—	7.0	D
480/120T	71A3542-T	CWA	285	.7	250	2	A	1	2.3	3.4	22.5	280	1.75	3.75	—	—	7.0	D
120/208/ 240/277	71A3592	CWA	285	2.5/1.4/ 1.3/1.1	250	8/5/ 5/3	A	1	2.5	3.7	22.5	280	1.75	3.75	—	—	7.5	D/D/ D/D
120/208/ 240/277	**71A3572-001D**	CWA	285	2.5/1.4/ 1.3/1.1	250	8/5/ 5/3	A	1	2.5	3.7	22.5	280	1.75	3.75	—	—	7.5	D/D/ D/D
120/ 240/347	71A35D2	CWA	285	2.5/ 1.3/.9	250	8/ 5/3	A	1	2.5	3.7	22.5	280	1.75	3.75	—	—	7.5	D/ D/D
120/ 240/347	**71A35D2-001D**	CWA	285	2.5/ 1.3/.9	250	8/ 5/3	A	1	2.5	3.7	22.5	280	1.75	3.75	—	—	7.5	D/ D/D
120	71A3802	HX-NPF	285	6.9	235	20	B1	5	1.2	2.4	NOT AVAILABLE						6.0	B

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**.
Refer to pages 4-5 to 4-8.

Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA circuits, figure is operating current. For HX and R circuits, figure is highest of starting, operating or open circuit current.

Canadian replacement/retrofit ballast kit indicated by **bold type.**
Refer to pages 4-9 to 4-10.

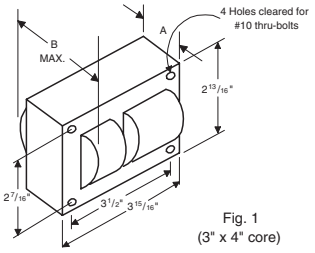


Fig. 1
(3" x 4" core)

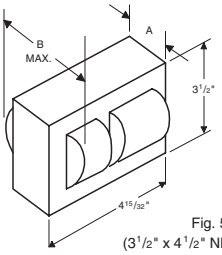


Fig. 5
(3 1/2" x 4 1/2" NEMA Core)

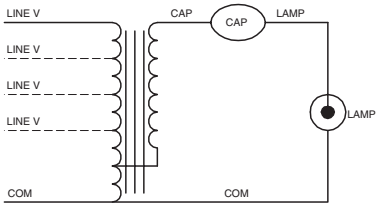


Fig. A

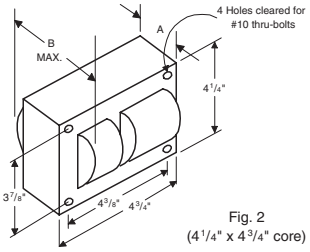
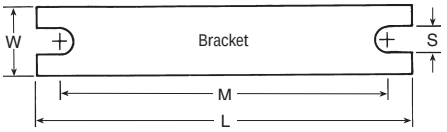


Fig. 2
(4 1/4" x 4 3/4" core)



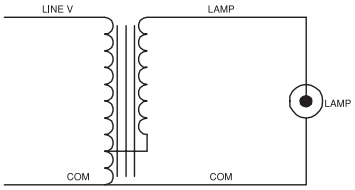


Fig. B1

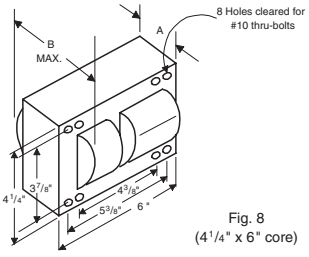


Fig. 8
(4 1/4" x 6" core)

WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1	5.1	1.00	4.50	0.25

HID

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Mercury

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	U.L. Bench Top Rise Code 1029 (Pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)		
400 Watt Lamp, ANSI Code H33																		
480	71A4041 **71A4041-001D**	CWA	454	1.0	245	5	A	2	1.7	3.2	35	240	1.75	5.15	—	—	10.0	D
480/120T	71A4041-T	CWA	454	1.0	245	5	A	2	1.7	3.2	35	240	1.75	5.15	—	—	10.0	D
120/208/ 240/277	71A4091	CWA	454	3.9/2.2/ 2.0/1.7	245	10/8/ 5/5	A	2	1.8	3.3	35	240	1.75	5.15	—	—	10.5	D/C/ C/B
120/208/ 240/277	**71A4071-001D**	CWA	454	3.9/2.2/ 2.0/1.7	245	10/8/ 5/5	A	2	1.8	3.3	35	240	1.75	5.15	—	—	10.5	D/C/ C/B
120/ 240/347	71A40D1	CWA	454	3.9/ 2.0/1.3	245	10/ 5/4	A	2	1.8	3.3	35	240	1.75	5.15	—	—	10.5	A/ A/A
120/ 240/347	**71A40D1-001D**	CWA	454	3.9/ 2.0/1.3	245	10/ 5/4	A	2	1.8	3.3	35	240	1.75	5.15	—	—	10.5	A/ A/A
Two 400 Watt Lamps, ANSI Code H33 (2 Lamps in Series)																		
120	**71A4300-001**	CWI	880	7.5	495	20	D	3	2.9	4.4	16	525	—	—	1.75	3.90	20.3	E
277	**71A4330-001**	CWI	880	3.3	495	10	D	3	2.9	4.4	16	525	—	—	1.75	3.90	20.3	D
480	**71A4340-001**	CWI	880	1.9	495	5	D	3	2.9	4.4	16	525	—	—	1.75	3.90	20.3	E
1000 Watt Lamp, ANSI Code H36																		
Ⓝ 480	**71A5040-001**	CWA	1080	2.3	425	10	A	8	2.9	4.8	24	450	—	—	1.75	3.90	25.0	A
Ⓝ 120/208/ 240/277	71A5090	CWA	1080	9.8/5.6/ 4.9/4.3	425	20/15/ 10/10	A	8	2.9	4.8	24	450	—	—	1.75	3.90	25.0	A/A/ A/A
Ⓝ 120/208/ 240/277	**71A5070-001**	CWA	1075	9.8/5.6/ 4.9/4.3	425	20/15/ 10/10	A	8	2.9	4.8	24	450	—	—	1.75	3.90	25.0	A/A/ A/A

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001** or **-001D**. Refer to pages 4-5 to 4-8.

Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA and CWI circuits, figure is operating current.

Canadian replacement/retrofit ballast kit indicated by **bold type.** Refer to pages 4-9 to 4-10.

Ⓝ UL Class N 200°C

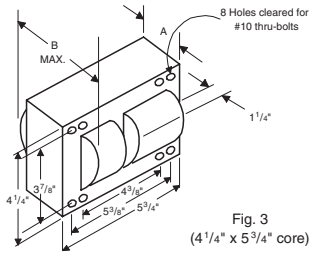


Fig. 3
(4 1/4" x 5 3/4" core)

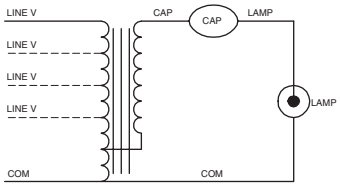


Fig. A

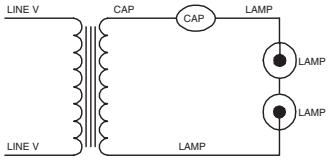
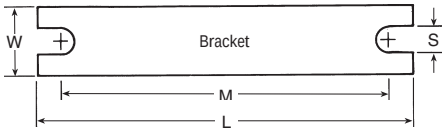


Fig. D



WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
2	6.5	1.25	5.75	0.28
3, 8	7.8	2.75	6.13	0.25

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
35/39 Watt Lamp, ANSI Code M130																				
120	71A5005-P✣	HX-NPF HX-HPF	53	1.5 1.1	230	4 3	F	6	.9	1.8	— 28	— 120	— 1.50	— 2.90	— —	— —	2.0 2.2	LI533-H4	15	A
120/277	71A5081	HX-NPF HX-HPF	56	1.6/.7 .9/.4	230	4/2 3/1	K	1	.8	2.1	— 5	— 280	— 1.25	— 2.90	— —	— —	3.3 3.5	LI533-H4	15	B/A
277	71A5037-P✣	R-NPF R-HPF	48	.7 .6	277	2	G	9	.8	1.9	— 5	— 280	— 1.25	— 2.90	— —	— —	1.6 1.8	LI533-H4	10	A
277	71A5037-BP✣	R-NPF R-HPF	48	.7 .6	277	2	H	9	1.0	2.4	— 5	— 280	— 1.25	— 2.90	— —	— —	1.7 1.9	Integral Ignitor	2	A
277	71A5037-J✣	R-NPF R-HPF	48	.7 .6	277	2	J	11	1.0	3.0	— 5	— 280	— 1.25	— 2.90	— —	— —	1.9 2.0	J-Box with Integral Ignitor	2	A
50 Watt Lamp, ANSI Code M110 or M148																				
120	71A5105-P✣	HX-NPF HX-HPF	69	2.0 1.1	260	5 3	F	6	1.0	1.9	— 28	— 120	— 1.50	— 2.90	— —	— —	2.3	LI533-H4	15	A
120/277	71A5181	HX-HPF	72	1.0/.5	260	3/2	K	1	1.1	2.1	6	280	1.25	2.90	—	—	4.0	LI533-H4	5	C/C
277	71A5137-P✣	R-NPF R-HPF	62	.7 .6	277	2	G	9	1.1	2.2	— 5	— 280	— 1.25	— 2.90	— —	— —	2.0 2.2	LI533-H4	2	A
277	71A5137-BP✣	R-NPF R-HPF	62	.7 .6	277	2	H	9	1.1	2.6	— 5	— 280	— 1.25	— 2.90	— —	— —	2.0 2.2	Integral Ignitor	2	A
277	71A5137-J✣	R-NPF R-HPF	62	.7 .6	277	2	J	11	1.1	3.3	— 5	— 280	— 1.25	— 2.90	— —	— —	2.3 2.5	J-Box with Integral Ignitor	2	C

† Ordering information:

Original equipment ballasts - add proper suffix to catalog number:

- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For HX and R circuits, figure is highest of starting, operating or open circuit current.

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

✣ Includes auto-reset thermal protection

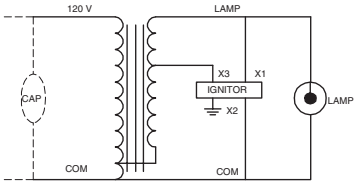


Fig. F

INTEGRAL IGNITOR BALLAST

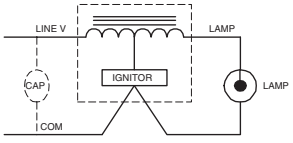


FIG. H

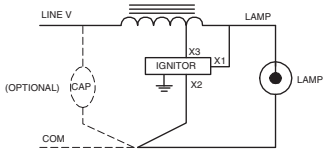


Fig. G

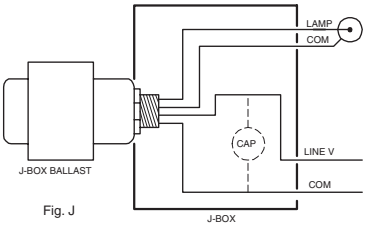


Fig. J

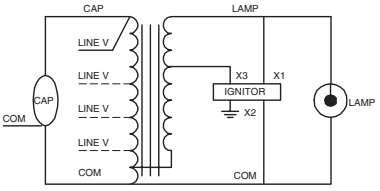


Fig. K

HID

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions Fig	Dimensions A	Dimensions B	Non-PCB Capacitor (Page 4-46 to 4-47) Mfd	Min Volt	Dry Film Dia (in)	Dry Film Ht (in)	Oil Filled Oval (in)	Oil Filled Ht (in)	Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51) Part Number	Max Dist To Lamp (ft)	U.L. Bench Top Rise Code 1029 (pg 4-3)
70 Watt Lamp, ANSI Code M98 (Medium Base) or M143																				
120	71A5205-P✣	HX-NPF HX-PFC	94	2.6 1.4	255	6 4	F	6	1.6	2.7	— 36	— 120	— 1.50	— 3.75	— —	— —	3.5 3.7	LI533-H4	25	B
120/277 127/220	71A5282 71A52H2	HX-HPF	90	1.9/.8 1.9/.9	255	4/2	K	1	1.5	2.8	8	280	1.25	2.90	—	—	5.0	LI533-H4	15	A/A
120/208/ 240/277	71A5292 **71A5292-001D**	HX-HPF	90	1.9/1.0/ .9/.8	255	4/3/ 2/2	K	1	1.5	2.8	8	280	1.25	2.90	—	—	5.0	LI533-H4	15	A/A/ A/A
120/ 277/347	71A52A2	HX-HPF	90	1.9/ .8/.7	255	4/ 2/2	K	1	1.5	2.8	8	280	1.25	2.90	—	—	5.0	LI533-H4	15	A/ A/A
120/ 277/347	**71A52A2-001D**	HX-HPF	90	1.9/ .8/.7	255	4/ 2/2	K	1	1.5	2.8	8	280	1.25	2.90	—	—	5.0	LI533-H4	15	A/ A/A
277	71A5237-P✣	R-NPF R-HPF	85	1.2 .8	277	3 2	G	9	1.6	2.7	— 8	— 280	— 1.25	— 2.90	— —	— —	2.7 2.9	LI533-H4	10	A
277	71A5237-BP✣	R-NPF R-HPF	85	1.2 .8	277	3 2	H	9	1.5	2.9	— 8	— 280	— 1.25	— 2.90	— —	— —	2.7 2.9	Integral Ignitor	2	A
277	71A5237-J✣	R-NPF R-HPF	85	1.2 .8	277	3 2	J	11	1.5	3.5	— 8	— 280	— 1.25	— 2.90	— —	— —	3.0 3.2	J-Box with Integral Ignitor	2	C
70 Watt Lamp, ANSI Code M139 (Philips CDM70/T6, CDM70/TD)																				
120/277	71A5281	HX-HPF	94	1.6/.7	245	4/2	K	1	1.5	2.7	8	280	1.25	2.90	—	—	5.5	LI533-H4	10	A/A
70 Watt Lamp, ANSI Code M85 (OSI Briteline/HQI, GE MQI ARC70/TD, Philips MHN70/TD)																				
120/277 120/347	71A5280 71A52C0	HX-HPF	94	1.6/.7 1.6/.6	245 220	4/2 4/2	K	1	1.5	2.7	8	280	1.25	2.90	—	—	5.5	LI522-H5	30	A/A A/A

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**. Refer to pages 4-5 to 4-8.

Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For HX and R circuits, figure is highest of starting, operating or open circuit current.

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

Canadian replacement/retrofit ballast kit indicated by **bold type.** Refer to pages 4-9 to 4-10.

✣ Includes auto-reset thermal protection

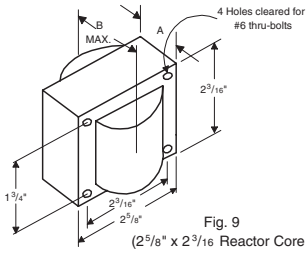


Fig. 9
(2 5/8" x 2 3/16 Reactor Core)

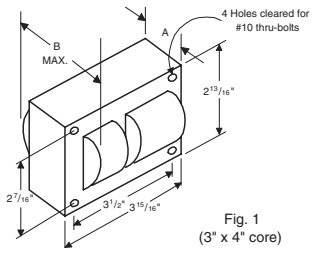
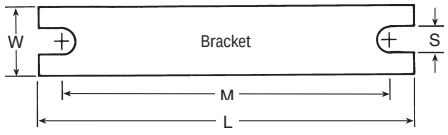


Fig. 1
(3" x 4" core)



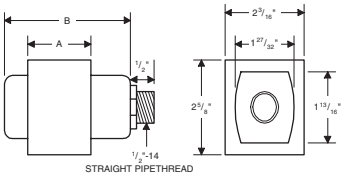


Fig. 11
J-Box Ballast

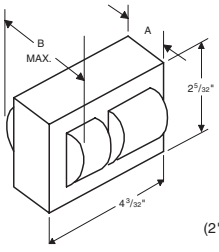


Fig. 6
(2" x 4" core)

WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1, 6	5.1	1.00	4.50	0.25
9	4.0	0.75	3.50	0.28
11	Not Available			

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
100 Watt Lamp, ANSI Code M90 or M140																				
120/277 127/220	71A5380 71A53H0	HX-HPF HX-HPF	129 129	2.6/1.2 2.2/1.3	280 280	6/3 5/3	K K	1 1	1.5 1.7	2.9 2.9	12 12	280 280	1.50 1.50	2.90 2.90	—	—	5.5 5.5	LI533-H4 LI533-H4	20 20	B/B A/B
120/208/ 240/277	71A5390 **71A5390-001D**	HX-HPF	129	2.6/1.5/ 1.3/1.2	280	6/4/ 3/3	K	1	1.5	2.9	12	280	1.50	2.90	—	—	5.5	LI533-H4	20	B/C/ A/A
120/ 277/347	71A53A0	HX-HPF	129	2.6/ 1.2/1.0	280	6/ 3/2	K	1	1.7	2.9	12	280	1.50	2.90	—	—	5.5	LI533-H4	20	B/ B/B
120/ 277/347	**71A53A0-001D**	HX-HPF	129	2.6/ 1.2/1.0	280	6/ 3/2	K	1	1.7	2.9	12	280	1.50	2.90	—	—	5.5	LI533-H4	20	B/ B/B
480/ 120T	71A5340-T	HX-HPF	132	.6	260	2	K	1	1.7	2.9	10	300	1.50	2.90	—	—	5.5	LI533-H4	25	C
120/277	71A5383	CWA	128	1.1/.5	222	3/2	M	1	1.6	2.8	10	300	1.50	2.90	—	—	5.5	LI533-H4	2	C/C
277	71A5337-P✣	R-NPF R-HPF	118	1.3 1.1	277	3	G	9	1.7	2.8	— 10	— 280	— 1.50	— 2.90	— —	— —	3.0 3.2	LI533-H4	2	A
277	71A5337-BP✣	R-NPF R-HPF	118	1.3 1.1	277	3	H	9	1.8	3.1	— 10	— 280	— 1.50	— 2.90	— —	— —	3.0 3.2	Integral Ignitor	2	A
277	71A5337-J✣	R-NPF R-HPF	118	1.3 1.1	277	3	J	11	1.8	3.9	— 10	— 280	— 1.50	— 2.90	— —	— —	3.3 3.5	J-Box with Integral Ignitor	2	C

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**. Refer to pages 4-5 to 4-8.
Original equipment ballasts - add proper suffix to catalog number:
-500D includes core & coil with dry-film capacitor
-510D includes core & coil with welded bracket and dry-film capacitor
-600 core & coil only (no capacitor)
-610 core & coil with welded bracket (no capacitor) (71A5337 only)

• For CWA circuits, figure is operating current. For HX and R circuits, figure is highest of starting, operating or open circuit current.

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

Canadian replacement/retrofit ballast kit indicated by **bold type.** Refer to pages 4-9 to 4-10.

✣ Includes auto-reset thermal protection

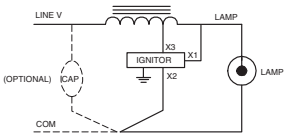


Fig. G

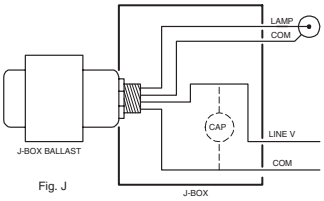


Fig. J

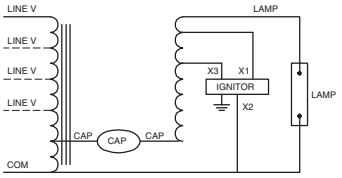


Fig. L

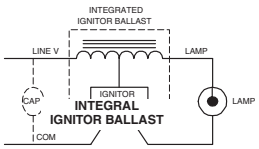


Fig. H

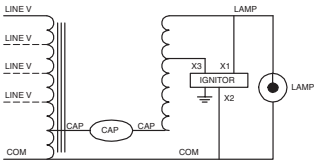


Fig. M

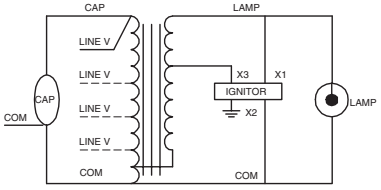


Fig. K

HID

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
150 Watt Lamp, ANSI Code M102 (Medium Base) or M142																				
120/277	71A5482	HX-HPF	185	3.7/1.6	265	10/4	K	1	2.3	3.9	16	280	1.50	3.75	—	—	7.0	LI533-H4	10	C/B
120/208/ 240/277	71A5492	HX-HPF	185	3.7/2.1/ 1.8/1.6	265	10/5/ 5/4	K	1	2.3	3.9	16	280	1.50	3.75	—	—	7.0	LI533-H4	10	C/C/ C/C
120/ 277/347	71A54A2	HX-HPF	185	3.7/ 1.6/1.3	265	10/ 4/3	K	1	2.3	3.9	16	280	1.50	3.75	—	—	7.0	LI533-H4	10	E/ E/E
120/ 277/347	71A54A3	Super CWA	189	1.7/ .8/.7	187	5/2/2	M	1	2.7	4.0	22	240	1.50	3.75	—	—	9.0	LI501-J4	15	C/ B/A
277	71A5437-P✣	Linear Reactor HPF	173	1.5	277	4	G	9	2.5	3.8	14	280	1.50	2.90	—	—	4.2	LI533-H4	2	B
277	71A5437-BP✣	Linear Reactor HPF	173	1.5	277	4	H	9	2.5	4.0	14	280	1.50	2.90	—	—	4.2	Integral Ignitor	2	B
277	71A5437-J✣	Linear Reactor HPF	173	1.5	277	4	J	11	2.5	4.5	14	280	1.50	2.90	—	—	4.5	J-Box with Integral Ignitor	2	B
150 Watt Lamp, ANSI Code M81 (OSI Briteline/HQI, GE MQI ARC150, Philips MHN150/TD)																				
120/277	71A5480	HX-HPF	185	3.6/1.7	240	9/4	K	1	2.5	3.8	16	300	1.50	3.75	—	—	8.5	LI522-H5	20	C/A
120/208/ 240/277	71A5490	HX-HPF	185	3.6/2.1/ 1.8/1.6	240	9/6/ 5/4	K	1	2.5	3.8	16	300	1.50	3.75	—	—	8.5	LI522-H5	20	C/C/ A/A
120/347	71A54C0	HX-HPF	185	3.6/1.30	240	9/4	K	1	2.5	3.8	16	300	1.50	3.75	—	—	8.5	LI522-H5	20	F/E
120/277	71A5486	CWA	189	1.7/.8	187	5/2	L	1	2.7	4.0	22.5	240	1.75	3.75	—	—	9.0	LI523-H5	2	F/E

† Ordering information:
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA circuits, figure is operating current. For HX and Linear Reactor circuits, figure is highest of starting, operating or open circuit current.

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

✣ Includes auto-reset thermal protection

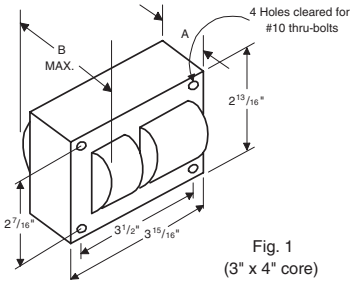
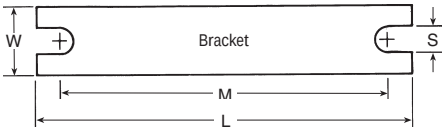


Fig. 1
(3" x 4" core)



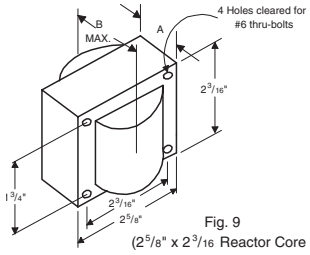


Fig. 9
(2 5/8" x 2 3/16 Reactor Core)

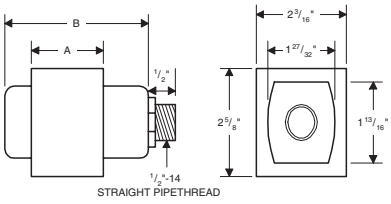


Fig. 11

WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1	5.1	1.00	4.50	0.25
9	4.0	0.75	3.50	0.28
11	Not Available			

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
175 Watt Lamp, ANSI Code M57 or H39; or 150 Watt Lamp, ANSI Code M107																				
120 277	71A5500 71A5530	CWA	210	1.8 .8	305	5 2	A	1	2.5	3.5	10	400	1.50	3.75	—	—	6.8	—	—	C D
480	71A5540 **71A5540-001D**	CWA	210	0.5	305	2	A	1	2.5	4.0	10	400	1.50	3.75	—	—	8.5	—	—	D
480/120T	71A5540-T	CWA	210	0.5	305	2	A	1	2.8	4.0	10	400	1.50	3.75	—	—	8.5	—	—	D
120/277	71A5580	CWA	210	1.8/.8	305	5/2	A	1	2.5	3.9	10	400	1.50	3.75	—	—	6.8	—	—	C/D
127/220	71A55H0	CWA	210	1.8/1.1	305	5/3	A	1	2.5	3.8	10	400	1.50	3.75	—	—	6.8	—	—	B/B
120/208/ 240/277	71A5590	CWA	210	1.8/1.1/ .9/.8	305	5/3/ 3/2	A	1	2.5	3.7	10	400	1.50	3.75	—	—	6.8	—	—	C/D/ D/D
120/208/ 240/277	**71A5570-001D**	CWA	210	1.8/1.1/ .9/.8	305	5/3/ 3/2	A	1	2.5	3.7	10	400	1.50	3.75	—	—	6.8	—	—	C/D/ D/D
120/ 277/347	71A55A0	CWA	210	1.8/ .8/.7	305	5/ 2/2	A	1	2.5	3.7	10	400	1.50	3.75	—	—	7.0	—	—	C/ C/D
120/ 277/347	**71A55A0-001D**	CWA	210	1.8/ .8/.7	305	5/ 2/2	A	1	2.5	3.7	10	400	1.50	3.75	—	—	7.0	—	—	C/ C/D
175 Watt Lamp, ANSI Code M137 (Pulse-Start)																				
120/208/ 240/277	71A5592	Super CWA	208	1.8/1.1/ .9/.8	270	5/3/ 3/2	M	1	2.1	3.4	11.5	345	1.50	3.75	—	—	7.0	LI533-H4	2	C/C/ B/B
New 120/ 277/347	71A55A2	Super CWA	208	1.9/ .8/.7	270	5/ 3/2	M	1	2.2	3.5	11.5	345	1.50	3.75	—	—	7.0	LI533-H4	2	C/ B/B
120 277/120T 347/120T 480/120T	71A5504 71A5534-T 71A55B4-T 71A5544-T	Regulated Lag	220	2.0 0.8 0.7 0.5	310	5 2 2 1	N	3	1.7	3.5	17	400	1.75	3.75	—	—	12.5	LI534-H5	20	A A A A

HID • CORE & COIL METAL HALIDE

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**. Refer to pages 4-5 to 4-8.

Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA and Regulated Lag circuits, figure is operating current.

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

Canadian replacement/retrofit ballast kit indicated by **bold type.** Refer to pages 4-9 to 4-10.

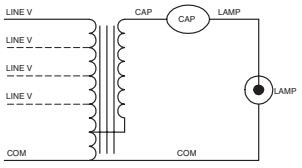


Fig. A

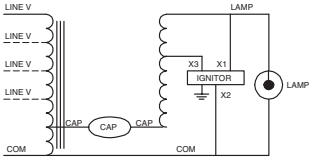


Fig. M

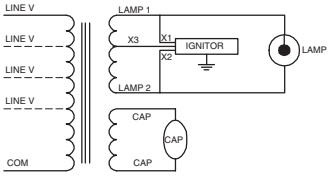


Fig. N

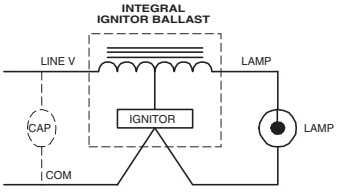


Fig. H

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
200 Watt Lamp, ANSI Code M136 (Pulse-Start)																				
277	71A5637-B **71A5637-001D**	Linear Reactor HPF	218	1.3	277	4	H	10	1.0	3.1	12	280	1.50	2.90	—	—	6.0	Integral Ignitor	2	A
120/208/ 240/277	71A5692 **71A5692-001D**	Super CWA	232	2.0/1.2/ 1.0/.9	240	6/4/ 3/3	M	1	2.5	3.6	15	330	1.50	3.75	—	—	8.0	LI533-H4	2	A/B/ A/A
120/ 277/347	71A56A2	Super CWA	232	2.1/ .9/.7	235	6/ 3/2	M	1	2.5	3.6	15	330	1.50	3.75	—	—	8.0	LI533-H4	2	C/ A/A
480/ 120T	71A5642-T	Super CWA	232	.5	240	2	M	1	2.5	3.6	15	330	1.50	3.75	—	—	8.0	LI533-H4	2	B
277/120T	71A5634-T	Regulated Lag	244	.9	305	3	N	3	2.0	3.7	17	400	1.75	3.75	—	—	8.0	LI534-H5	2	A

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**. 71A5637-001D kits also include welded angle bracket. Refer to pages 4-5 to 4-8.
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-540D** includes core & coil with welded angle bracket and dry-film capacitor (available for 71A5637-B only).
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA and Regulated Lag circuits, Figure is operating current. For Linear Reactor circuits, Figure is highest of starting, operating and open circuit currents

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

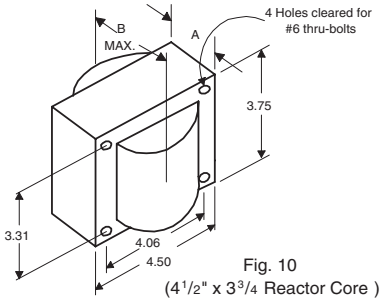
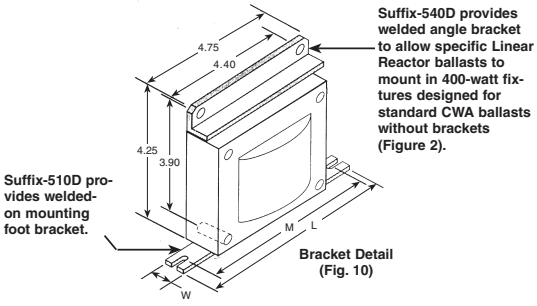


Fig. 10
($4^1/_2$" x $3^3/_4$ Reactor Core)



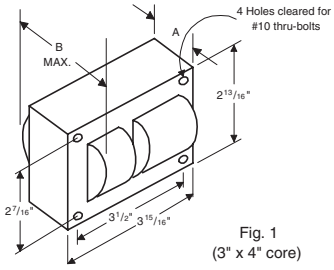


Fig. 1
(3" x 4" core)

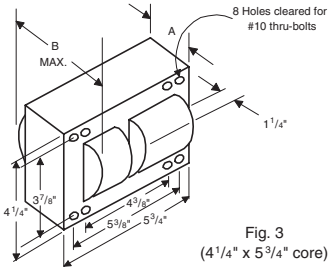
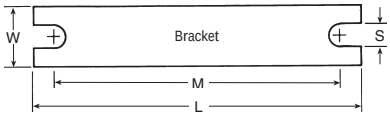


Fig. 3
($4^1/_4$" x $5^3/_4$" core)



WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1	5.1	1.00	4.50	0.25
3	7.8	2.75	6.13	0.25
10	6.5	1.25	5.75	0.28

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions Fig	Dimensions A	Dimensions B	Non-PCB Capacitor (Page 4-46 to 4-47) Mfd	Min Volt	Dry Film Dia (in)	Dry Film Ht (in)	Oil Filled Oval (in)	Oil Filled Ht (in)	Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51) Part Number	Max Dist To Lamp (ft)	U.L. Bench Top Rise Code 1029 (pg 4-3)
250 Watt Lamp, ANSI Code M58 or H37																				
120 277	71A5700 71A5730	CWA	295	2.5 1.1	300 300	8 3	A	2	1.5 1.5	3.0 3.0	15	400	1.75	3.75	—	—	9.0 9.0	—	—	A A
480	71A5740 **71A5740-001D**	CWA	295	.7	315	2	A	2	1.7	3.1	15	400	1.75	3.75	—	—	10.0	—	—	B
480/120T	71A5740-T	CWA	295	.7	315	2	A	2	1.7	3.1	15	400	1.75	3.75	—	—	10.0	—	—	B
120/277	71A5780	CWA	295	2.5/1.1	300	8/3	A	2	1.5	3.0	15	400	1.75	3.75	—	—	9.0	—	—	A/A
127/220	71A57H0	CWA	295	2.6/1.5	300	8/5	A	2	1.5	3.0	15	400	1.75	3.75	—	—	9.0	—	—	A/B
120/208/ 240/277	71A5790	CWA	295	2.5/1.4 1.3/1.1	300	8/5/ 5/3	A	2	1.5	3.0	15	400	1.75	3.75	—	—	9.0	—	—	A/A/ B/A
120/208/ 240/277	**71A5770-001D**	CWA	295	2.5/1.4 1.3/1.1	300	8/5/ 5/3	A	2	1.5	3.0	15	400	1.75	3.75	—	—	9.0	—	—	A/A B/A
120/ 277/347	71A57A0	CWA	295	2.5/ 1.1/.9	315	8/ 3/3	A	2	1.7	3.1	15	400	1.75	3.75	—	—	10.0	—	—	A/ A/A
120/ 277/347	**71A57A0-001D**	CWA	295	2.5/ 1.1/.9	315	8/ 3/3	A	2	1.7	3.1	15	400	1.75	3.75	—	—	10.0	—	—	A/ A/A
120 277	71A5701 ◆ 71A5731 ◆	CWA	294 294	2.6 1.1	300	8 3	A	1	3.0	4.2	15	400	1.75	3.75	—	—	9.0	—	—	C D
480	71A5741 ◆ **71A5741-OO1D**	CWA	298	.7	300	2	A	1	3.0	4.2	15	400	1.75	3.75	—	—	9.0	—	—	H
120/208/ 240/277	71A5791 ◆	CWA	294	2.6/1.5/ 1.3/1.1	300	8/5/ 5/3	A	1	3.0	4.2	15	400	1.75	3.75	—	—	9.0	—	—	C/C/ D/D
120/208/ 240/277	**71A5771-001D** ◆	CWA	294	2.6/1.5/ 1.3/1.1	300	8/5/ 5/3	A	1	3.0	4.2	15	400	1.75	3.75	—	—	9.0	—	—	C/C/ D/D
120/ 208/240	71A57E6	CWI	295	2.6/ 1.5/1.3	310	7/ 4/4	P	2	1.8	3.3	13	425	—	—	1.75	3.75	11.0	—	—	E/ D/D

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**.
Refer to pages 4-5 to 4-8.
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA and CWI circuits, figure is operating current.

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

◆ Special compact 3 x 4 core design. Note Bench Top Rise Codes in last column.

Canadian replacement/retrofit ballast kit indicated by **bold type.** Refer to pages 4-9 to 4-10.

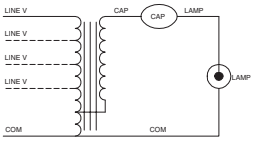


Fig. A

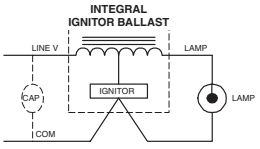


Fig. H

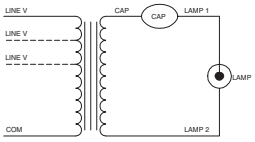


Fig. P

HID

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions Fig	Dimensions A	Dimensions B	Non-PCB Capacitor (Page 4-46 to 4-47) Mfd	Min Volt	Dry Film Dia (in)	Dry Film Ht (in)	Oil Filled Oval (in)	Oil Filled Ht (in)	Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51) Part Number	Max Dist To Lamp (ft)	U.L. Bench Top Rise Code 1029 (pg 4-3)
250 Watt Lamp, ANSI Code M138 (Pulse-Start)																				
277	71A5737-B **71A5737-001D**	Linear Reactor HPF	272	1.5	277	4	H	10	1.3	3.2	14	300	1.50	2.90	—	—	6.5	Integral Ignitor	5	A
120/208/ 240/277	71A5793 **71A5793-001D**	Super CWA	288	2.5/1.4/ 1.3/1.1	265	8/5/ 5/3	M	2	1.3	3.0	18.5	300	1.75	3.75	—	—	9.0	LI533-H4	15	A/A/ A/B
New 120/ 277/347	71A57A3	Super CWA	290	2.5/ 1.1/.9	265	8/ 3/3	M	2	1.4	3.2	18.5	330	1.75	3.75	—	—	9.0	LI533-H4	15	A/ A/A
120 240/120T 277/120T 347/120T 480/120T	71A5704 71A5724-T 71A5734-T 71A57B4-T 71A5744-T	Regulated Lag	298	2.8 1.4 1.2 1.0 .7	305	8 4 3 3 2	N	3	2.5	4.2	16	480	—	—	1.75	3.90	16.0	LI534-H5	20	A A A A A
250 Watt Lamp, ANSI Code M80 (HQI Double Ended and Mogul Base)																				
120/277	71A5880	HX-HPF	290	5.5/2.3	240	6	K	2	2.6	4.3	20	280	1.75	3.75	—	—	14.0	LI522-H5	5	A/A

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**. 71A5737-001D kits also include welded angle bracket. Refer to pages 4-5 to 4-8.

Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

• For CWA and Regulated Lag circuits, figure is operating current. For HX circuits, figure is highest of starting, operating or open circuit currents.

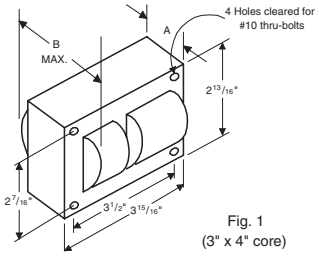


Fig. 1
(3" x 4" core)

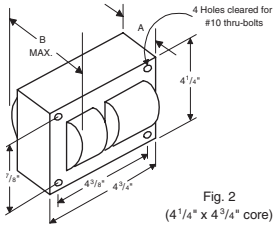


Fig. 2
(4 1/4" x 4 3/4" core)

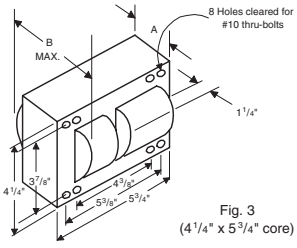


Fig. 3
(4 1/4" x 5 3/4" core)

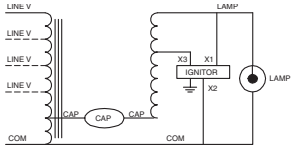


Fig. M

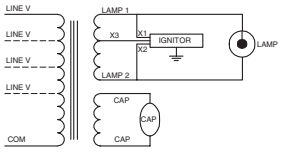


Fig. N

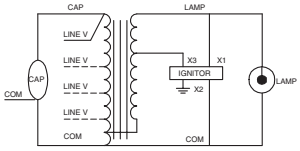


Fig. K

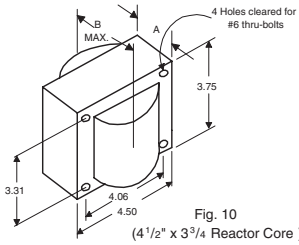
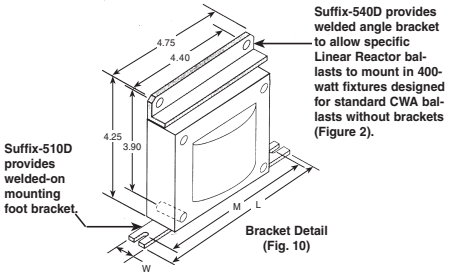
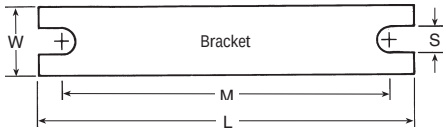


Fig. 10
(4 1/2" x 3 3/4 Reactor Core)





WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1	5.1	1.00	4.50	0.25
2, 10	6.5	1.25	5.75	0.28
3	7.8	2.75	6.13	0.25

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
320 Watt Lamp, ANSI Code M132 (Pulse-Start)																				
277	71A5837-B **71A5837-001D**	Linear Reactor HPF	342	1.9	277	5	H	10	1.7	3.8	17.5	300	1.50	3.75	—	—	9.5	Integral Ignitor	2	A
480/ 120T	71A5842-T	Super CWA	368	.8	270	5	M	2	1.8	3.7	21	345	1.75	3.75	—	—	11.0	LI533-H4	2	D
120/208/ 240/277	71A5892 **71A5892-001D**	Super CWA	368	3.3/1.9/ 1.7/1.4	270	8/6/ 5/3	M	2	1.8	3.7	21	345	1.75	3.75	—	—	11.0	LI533-H4	2	B/B/ B/B
120/ 277/347	71A58A2	Super CWA	368	3.3/ 1.4/1.1	270	8/ 4/3	M	2	1.8	3.7	21	345	1.75	3.75	—	—	11.0	LI533-H4	2	C/ C/C
New 127/220	71A58H2	Super CWA	365	3.0/1.7	270	8/6	M	2	1.8	3.7	21	340	1.75	3.75	—	—	11.0	LI533-H4	2	B/B
350 Watt Lamp, ANSI Code M131 (Pulse-Start)																				
277	71A5937-B **71A5937-001D**	Linear Reactor HPF	375	2.1	277	5	H	10	1.9	4.0	20	300	1.75	3.75	—	—	10.0	Integral Ignitor	2	A
480/ 120T	71A5943-T	Super CWA	400	.9	275	3	M	2	1.8	3.7	22.5	345	1.75	3.75	—	—	11.0	LI533-H4	2	D
120/208/ 240/277	71A5993 **71A5993-001D**	Super CWA	400	3.4/2.0/ 1.7/1.5	270	10/7/ 5/5	M	2	1.8	3.7	22.5	345	1.75	3.75	—	—	11.0	LI533-H4	2	D/C/ C/C
120/ 277/347	71A59A3	Super CWA	400	3.4/ 1.5/1.2	275	10/ 5/3	M	2	1.8	3.7	22.5	345	1.75	3.75	—	—	11.0	LI533-H4	2	D/ C/C

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D.** 71A5837-001D and 71A5937-001D kits also include welded angle bracket. Refer to pages 4-5 to 4-8.
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-540D** includes core & coil with welded angle bracket and dry-film capacitor (Available for 71A5837-B, 71A5937-B only)
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

• For CWA circuits, figure is operating current. For Linear Reactor circuits, figure is highest starting, operating, or open circuit currents.

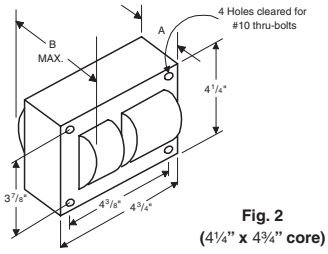


Fig. 2
(4¼" x 4¾" core)

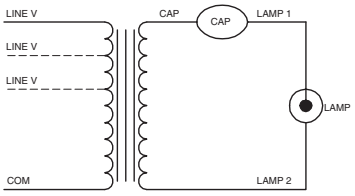


Fig. P

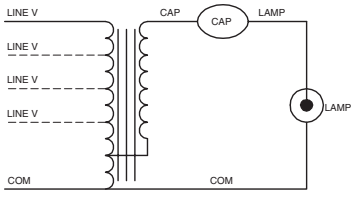


Fig. A

INTEGRAL IGNITOR BALLAST

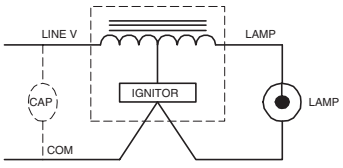


Fig. H

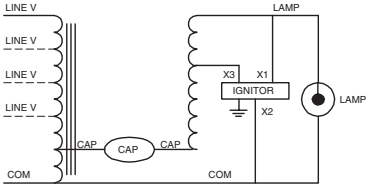


Fig. M

HID

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
400 Watt Lamp, ANSI Code M59 or H33																				
277	71A6037-B **71A6037-001D**	Linear Reactor HPF	425	2.1	277	5	H	10	1.6	3.8	20	300	1.75	3.75	—	—	9.0	Integral Ignitor	2	A
120 277	71A6001 71A6031	CWA	458	4.0 1.7	300	10 5	A	2	2.0 2.0	3.8 3.8	24	400	1.75	5.15	—	—	11.5 11.5	—	—	D E
480	71A6041 **71A6041-001D**	CWA	462	1.0	300	4	A	2	2.2	4.0	24	400	1.75	5.15	—	—	12.0	—	—	E
480/120T	71A6041-T	CWA	462	1.0	300	4	A	2	2.2	4.0	24	400	1.75	5.15	—	—	12.0	—	—	E
120/277	71A6081	CWA	458	4.0/1.7	300	10/5	A	2	2.0	3.9	24	400	1.75	5.15	—	—	11.5	—	—	D/E
127/220	71A60H1	CWA	458	3.9/2.2	300	10/7	A	2	2.0	3.8	24	400	1.75	5.15	—	—	11.5	—	—	D/D
120/208/ 240/277	71A6091	CWA	458	4.0/2.3/ 2.0/1.7	300	10/7/ 5/5	A	2	2.0	3.9	24	400	1.75	5.15	—	—	11.5	—	—	D/E/ D/E
New 120/208/ 240/277/ 480	**71A6051-001D**	CWA	460	4.1/2.3/ 2.0/1.7/ 1.0	300	10/7/ 5/5/ 3	A	2	2.2	4.0	24	400	1.75	5.15	—	—	14.0	—	—	D/C/ D/C/ D
120/208/ 240/277	**71A6071-001D**	CWA	458	4.0/2.3/ 2.0/1.7	300	10/7/ 5/5	A	2	2.2	4.0	24	400	1.75	5.15	—	—	11.5	—	—	D/E/ D/E
120/ 277/347	71A60A1	CWA	460	4.0/ 1.7/1.4	300	10/ 5/4	A	2	2.2	4.0	24	400	1.75	5.15	—	—	12.0	—	—	D/ D/D
120/ 277/347	71A60A1-A*	CWA	460	4.0/ 1.7/1.4	300	10/ 5/4	A	2	2.4	4.0	24	400	1.75	5.15	—	—	12.0	—	—	D/ D/D
120/ 277/347	**71A60A1-001D**	CWA	460	4.0/ 1.7/1.4	300	10/ 5/4	A	2	2.4	4.0	24	400	1.75	5.15	—	—	12.0	—	—	D/ D/D
120/ 208/240	71A60E6	CWI	465	4.2/ 2.5/2.1	320	10/ 7/5	P	2	2.4	4.0	20	425	—	—	1.75	3.90	14.0	—	—	E/ D/D
277/347	71A60F6	CWI	462	1.8/1.4	325	5/3	P	2	2.4	4.0	20	425	—	—	1.75	3.90	14.0	—	—	E/D

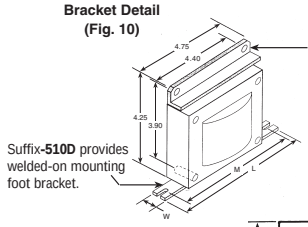
† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001** or **-001D.** 71A6037-001D kit also includes welded angle bracket.Refer to pages 4-5 to 4-8.
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-540D** includes core & coil with welded angle bracket and dry-film capacitor. (Available for 71A6037-B only)
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA and CWI circuits, figure is operating current. For Linear Reactor circuits, figure is highest of starting, operating, or open circuit currents.

Canadian replacement/retrofit ballast kit indicated by **bold type.** Refer to pages 4-9 to 4-10.

* Cat. No. 71A60A1-A includes copper primary/aluminum secondary coils.

Bracket Detail (Fig. 10)



Suffix-**540D** provides welded angle bracket to allow specific Linear Reactor ballasts to mount in 400-watt fixtures designed for standard CWA ballasts without brackets (Figure 2).

Suffix-**510D** provides welded-on mounting foot bracket.

4 Holes cleared for #10 thru-bolts

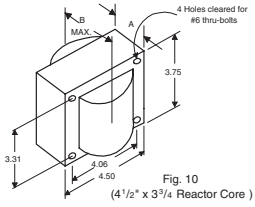
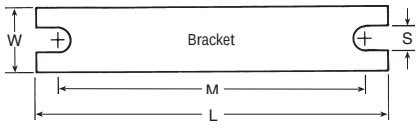


Fig. 10
(4 1/2" x 3 3/4 Reactor Core)



WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
2, 10	6.5	1.25	5.75	0.28

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
400 Watt Lamp, ANSI Code M135 (Pulse-Start)																				
277	71A6137-B **71A6137-001D**	Linear Reactor HPF	425	2.1	277	5	H	10	1.6	3.8	20	300	1.75	3.75	—	—	9.0	Integral Ignitor	2	A
480/ 120T	71A6042-T	Super CWA	452	1.0	270	3	M	2	2.0	3.8	26	330	1.75	3.75	—	—	12.0	LI533-H4	2	D
120/208/ 240/277	71A6092 **71A6092-001D**	Super CWA	452	3.8/2.2/ 1.9/1.7	265	10/7/ 5/5	M	2	1.8	3.7	26	330	1.75	3.75	—	—	11.0	LI533-H4	2	D/C/ D/D
120/ 277/347	71A60A2	Super CWA	450	3.8/ 1.7/1.4	270	10/ 5/4	M	2	1.8	3.7	26	330	1.75	3.75	—	—	11.0	LI533-H4	2	C/ C/C
120/208 240	71A61E6	Super CWI	455	4.2/2.4/ 2.1	265	10/7 5	V	2	2.2	3.8	26	330	1.75	3.75	—	—	13.0	LI533-H4	2	E/C/ C
400 Watt Lamp, ANSI Code M128 or M135 (Pulse-Start)																				
120 277/120T 347/120T 480/120T	71A6004 71A6034-T 71A60B4-T 71A6044-T	Regulated Lag	465	4.0 1.7 1.4 1.0	315	10 5 4 4	N	3	3.8	5.5	21	500	—	—	1.75	4.80	26.0	LI534-H5	10	A A A A
208/ 240/120T	71A60E4-T	Regulated Lag	465	2.3/2.0	315	6/5	N	3	3.8	5.5	21	500	—	—	1.75	4.80	26.0	LI534-H5	10	A/A
450 Watt Lamp, ANSI Code M144 (Pulse-Start)																				
277	71A6337-B	Linear Reactor HPF	480	2.4	277	7	H	10	1.9	4.0	22.5	300	1.75	3.75	—	—	9.5	Integral Ignitor	7	A
480/ 120T	71A6343-T	Super CWA	514	1.1	267	3	M	2	2.4	4.2	26.5	360	1.75	5.15	—	—	14	LI533-H4	5	D
120/208/ 240/277	71A6393	Super CWA	508	4.3/2.5/ 2.2/1.9	257	10/8/ 5/5	M	2	2.3	3.9	26.5	360	1.75	5.15	—	—	13.5	LI533-H4	5	C/C/ C/C
120/ 277/347	71A63A3	Super CWA	505	4.3/ 1.9/1.5	268	10/ 5/4	M	2	2.4	4.2	26.5	360	1.75	5.15	—	—	14	LI533-H4	5	D/ D/D
277/ 120T	71A6334-T	Regulated Lag	530	2.0	310	5	N	3	4.0	5.9	21	525	—	—	1.75	4.80	27	LI534-H5	2	B

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**. 71A6137-001D and 71A6337-001D kits also include welded angle bracket. Refer to pages 4-5 to 4-8.
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-540D** includes core & coil with welded angle bracket and dry-film capacitor. (Available for 71A6137-B, 71A6337-B only)
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** includes core & coil only (no capacitor)
- **-610** includes core & coil with welded bracket (no capacitor)

• For CWA, CWI, and Regulated Lag circuits, figure is operating current. For Linear Reactor circuits, figure is highest of starting,operating, or open circuit currents.

†† Each ballast requiring an ignitor iis furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

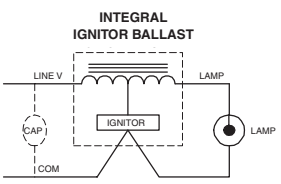


Fig. H

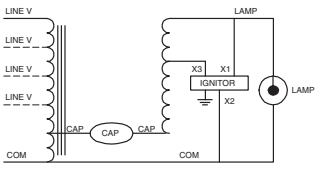


Fig. M

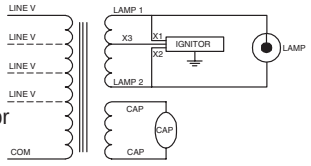


Fig. N

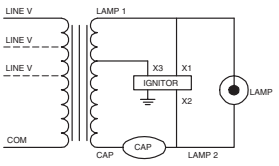


Fig. V

HID

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions Fig	Dimensions A	Dimensions B	Non-PCB Capacitor (Page 4-46 to 4-47) Mfd	Min Volt	Dry Film Dia (in)	Dry Film Ht (in)	Oil Filled Oval (in)	Oil Filled Ht (in)	Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51) Part Number	Max Dist To Lamp (ft)	U.L. Bench Top Rise Code 1029 (pg 4-3)
750 Watt Lamp, ANSI Code M149 (Pulse-Start)																				
Ⓝ 120/ 208/240	71A64E2	Super CWA	812	7.0/ 4.0/3.5	355	20/ 10/10	M	8	2.2	4.3	28.0	400	2.00	5.15	—	—	17.0	LI534-H5	15	A/ A/A
Ⓝ 277/ 347/480	71A64F2	Super CWA	818	3.0/ 2.5/1.7	355	8/ 7/5	M	8	2.3	4.3	28.0	400	2.00	5.15	—	—	17.0	LI534-H5	15	A/ A/A
New Ⓝ 277/ 347/480/ 120T	71A64F2-T	Super CWA	818	3.0/ 2.5/1.7	355	8/ 7/5	M	8	2.3	4.3	28.0	400	2.00	5.15	—	—	17.0	LI534-H5	15	A/ A/A
750 Watt Lamp, Retrofit for 750 Watt HPS, ANSI Code S111 (Pulse-Start)																				
Ⓝ 120/ 208/240	71A86E5	CWA	850	7.2/ 4.1/3.6	235	20/ 10/10	M	8a	3.2	5.3	2 Capacitor Set: [40 280 1.75 5.15 / 35 280 1.75 5.15] Connected in Parallel		—	—			25.0	LI561-H5	5	A/ A/A
Ⓝ 277/ 347/480	71A86F5	CWA	850	3.1/ 2.5/1.8	235	10/ 10/5	M	8a	3.2	5.1			—	—			25.0	LI561-H5	5	A/ A/A
1000 Watt Lamp, ANSI Code M141 (Pulse-Start)																				
Ⓝ 120/208/ 240/277	71A6593	Super CWA	1080	9.0/5.2/ 4.5/3.9	430	20/15/ 10/10	M	8	2.8	4.5	24	480	—	—	1.75	3.90	21.0	LI571-H5★	25	A/A A/A
Ⓝ 347/480/ 120T	71A65F3-T	Super CWA	1075	3.2/2.4	430	8/6	M	8	2.8	4.5	24	440	—	—	1.75	3.90	21.0	LI571-H5★	25	A/A

† Ordering information:
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** includes core & coil only (no capacitor)
- **-610** includes core & coil with welded bracket (no capacitor)

• For CWA circuits, figure is operating current.

★ Equipped with an auto-reset thermal protector to prevent ignitor from overheating in the event of lamp failure.

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

Ⓝ UL Class N 200°C

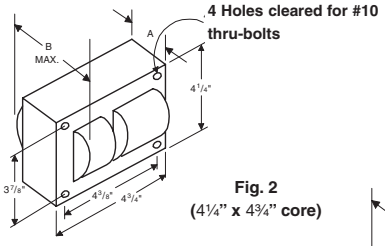


Fig. 2
(4¼" x 4¾" core)

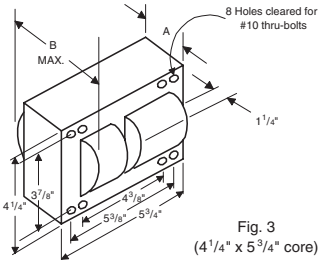


Fig. 3
(4 1/4" x 5 3/4" core)

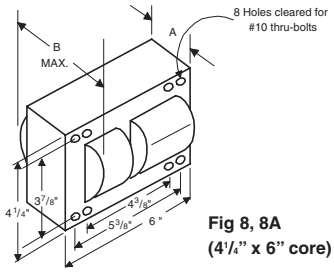


Fig 8, 8A
(4¼" x 6" core)

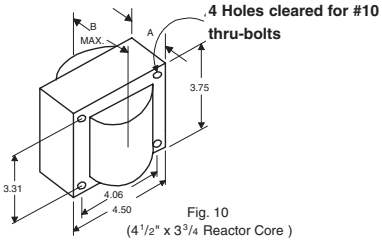
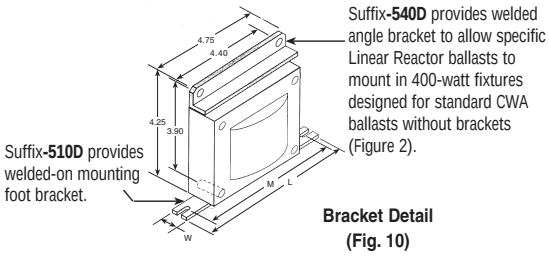
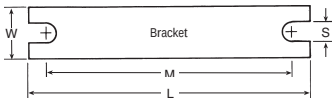


Fig. 10
(4 1/2" x 3 3/4 Reactor Core)



Bracket Detail
(Fig. 10)



WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
2, 10	6.5	1.25	5.75	0.28
3, 8	7.8	2.75	6.13	0.25
8a	7.8	4.50	6.75	0.31

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

	Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions Fig	Dimensions A	Dimensions B	Non-PCB Capacitor (Page 4-46 to 4-47) Mfd	Min Volt	Dry Film Dia (in)	Dry Film Ht (in)	Oil Filled Oval (in)	Oil Filled Ht (in)	Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51) Part Number	Max Dist To Lamp (ft)	U.L. Bench Top Rise Code 1029 (pg 4-3)
1000 Watt Lamp, ANSI Code M47 or H36																					
N	120 220 277	71A6502 71A65J2 71A6532	CWA	1080	9.0 4.9 3.9	430	20 12 10	A	8	2.8	4.5	24	480	—	—	1.75	3.90	21.0	—	—	A A A
N	480	71A6542 **71A6542-001**	CWA	1080	2.2	430	6	A	8	2.8	4.5	24	480	—	—	1.75	3.90	21.0	—	—	A
N	480/120T	71A6542-T	CWA	1080	2.2	430	6	A	8	2.8	4.5	24	480	—	—	1.75	3.90	21.0	—	—	A
N	120/208/ 240/277	71A6592	CWA	1080	9.0/5.2/ 4.5/3.9	430	20/15/ 10/10	A	8	2.8	4.5	24	480	—	—	1.75	3.90	21.0	—	—	A/A/ A/A
N	120/208/ 240/277	**71A6572-001**	CWA	1080	9.0/5.2/ 4.5/3.9	430	20/15/ 10/10	A	8	2.8	4.5	24	480	—	—	1.75	3.90	21.0	—	—	A/A/ A/A
N	120/ 277/347	71A65A2	CWA	1080	9.0/ 3.9/3.2	430	20/ 10/8	A	8	2.8	4.5	24	480	—	—	1.75	3.90	21.0	—	—	A/ A/A
N	120/ 277/347	**71A65A2-001**	CWA	1080	9.0/ 3.9/3.2	430	20/ 10/8	A	8	2.8	4.5	24	480	—	—	1.75	3.90	21.0	—	—	A/ A/A
N	208/240 120T	71A65E6-T	CWI	1080	5.3/4.8	440	15/12	P	8	3.5	5.3	2 Capacitor Set: [40 300 1.75 5.15 40 300 1.75 5.15] Connected in Series				—	—	25.0	—	—	A/A

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001.**
Refer to pages 4-5 to 4-8.

Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

• For CWA and CWI circuits, figure is operating current.

Canadian replacement/retrofit ballast kit indicated by **bold type.**
Refer to pages 4-9 to 4-10.

N UL Class N 200°C

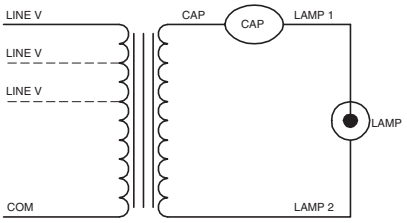


Fig. P

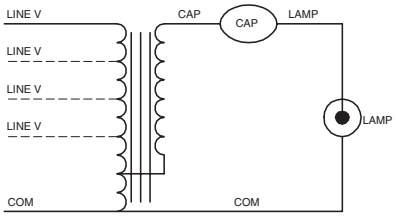


Fig. A

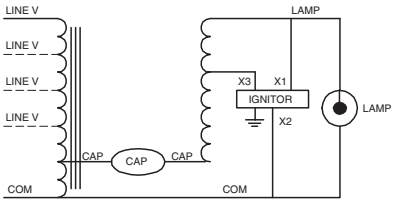


Fig. M

HID

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions Fig	Dimensions A	Dimensions B	Non-PCB Capacitor (Page 4-46 to 4-47) Mfd	Min Volt	Dry Film Dia (in)	Dry Film Ht (in)	Oil Filled Oval (in)	Oil Filled Ht (in)	Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51) Part Number	Max Dist To Lamp (ft)	U.L. Bench Top Rise Code 1029 (pg 4-3)
1500 Watt Lamp, ANSI Code M48																				
120	71A6702		1605	13.5		30														B
(N) 220	71A67J2	CWA	1605	7.4	450	25	A	8a	4.0	6.0	32	525	—	—	2.00	3.90	29.0	—	—	B
277	71A6732		1605	5.9		15														B
(N) 480	71A6742 **71A6742-001**	CWA	1625	3.4	450	10	A	8a	4.2	6.2	32	525	—	—	2.00	3.90	31.0	—	—	A
(N) 120/208/240/277	71A6792	CWA	1605	13.5/7.8/6.8/5.9	450	30/25/20/15	A	8a	4.1	6.1	32	525	—	—	2.00	3.90	30.0	—	—	C/A/A/C
(N) 120/208/240/277	**71A6772-001**	CWA	1605	13.5/7.8/6.8/5.9	450	30/25/20/15	A	8a	4.1	6.1	32	525	—	—	2.00	3.90	30.0	—	—	C/A/A/C
(N) 120/277/347	71A67A2	CWA	1615	13.5/5.9/4.8	450	30/15/15	A	8a	4.1	6.1	32	525	—	—	2.00	3.90	30.0	—	—	C/C/C
(N) 120/277/347	**71A67A2-001**	CWA	1615	13.5/5.9/4.8	450	30/15/15	A	8a	4.1	6.1	32	525	—	—	2.00	3.90	30.0	—	—	C/C/C
1650 Watt Lamp, ANSI Code M112																				
(N) 120/208/240/277	71A6890	CWA	1770	16.0/9.3/8.0/7.0	465	40/25/20/18	A	8a	4.4	6.5	2 Capacitor Set: [17 550 – – 1.75 3.90; 17 550 – – 1.75 3.90] Connected in Parallel						32.0	—	—	D/C C/D
(N) 347/480	71A68F0	CWA	1770	5.5/4.0	465	15/10	A	8a	4.4	6.5							32.0	—	—	E/F
2000 Watt Lamp, ANSI Code M134																				
(N) 208/220	71A69H0	CWA	2140	10.5/10.0	465	30/25	M	8a	4.5	6.0	2 Capacitor Set: [26 540 – – 1.75 5.30; 17 540 – – 1.75 3.90] Connected in Parallel						43.0	LI571-H5★	2	E/E
(N) 240/277	71A69EO			9.0/8.0		25/20														F/F

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001**.
Refer to pages 4-5 to 4-8.

Original equipment ballasts - add proper suffix to catalog number:
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA circuits, figure is operating current.

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

Canadian replacement/retrofit ballast kit indicated by **bold type.** Refer to pages 4-9 to 4-10.

★ Equipped with an auto-reset thermal protector to prevent ignitor from overheating in the event of lamp failure.

(N) UL Class N 200°C

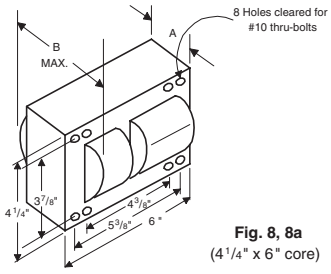
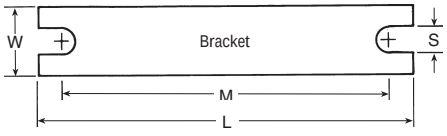


Fig. 8, 8a
(4 1/4" x 6" core)



WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
8	7.8	2.75	6.13	0.25
8a	7.8	4.50	6.75	0.31

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
35 Watt Lamp, ANSI Code S76																				
120	71A7707	R-NPF R-HPF	46	1.4 .8	120	3 2	G	9	.7	1.8	— 14	— 120	— 1.25	— 2.90	— —	— —	1.3 1.5	LI551-H4	2	A
120	71A7707-B	R-NPF R-HPF	46	1.4 .8	120	3 2	H	9	.7	2.2	— 14	— 120	— 1.25	— 2.90	— —	— —	1.3 1.5	Integral Ignitor	2	A
35 Watt Lamp, ANSI Code S99 (White SON-Philips) (Minimum Starting Temperature –20°F or –30°C)																				
120	71A7705	Hybrid Electronic	45	.9	120	3	R	9	.9	1.9	20	120	1.50	2.90	—	—	3.5	6C035 Controller	2	A
120/277 ••	71A7705(120V) + 71A9846(120/277V Auto transformer)	Hybrid Electronic AR	50	.4	120	3/1	S	9 (2pcs)	.9	1.9	20	120	1.50	2.90	—	—	7.0	6C035 Controller	2	A/A

† Ordering information:

Original equipment ballasts - add proper suffix to catalog number:

-500D includes core & coil with dry-film capacitor

-510D includes core & coil with welded bracket and dry-film capacitor

-600 core & coil only (no capacitor)

-610 core & coil with welded bracket (no capacitor)

• For AR, R and Hybrid circuits, figure is highest of starting, operating or open circuit currents.

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

•• 277V operation requires the 120V reactor ballast and controller plus the 120/277V auto-transformer listed. Ballast dimensions shown in table are for the reactor ballast component only. See page 4-52 for auto-transformer specifications and dimensions.

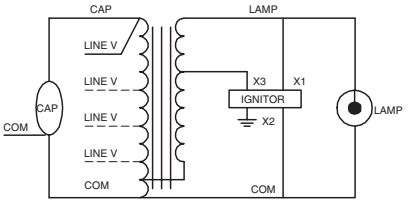


Fig. K

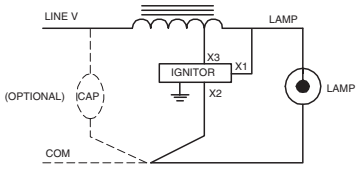


Fig. G

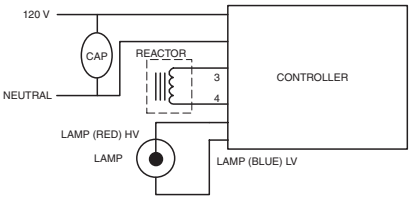


Fig. R

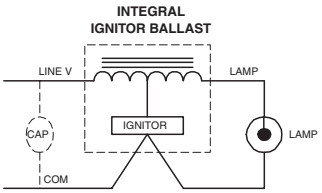


Fig. H

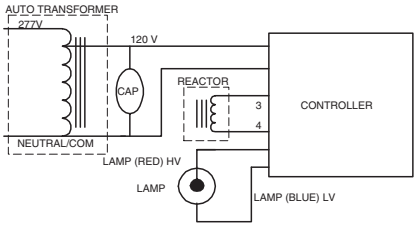


Fig. S

HID

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

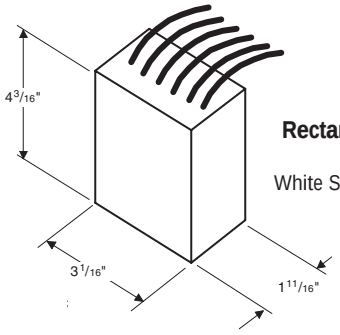
Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
50 Watt Lamp, ANSI Code S68																				
120	71A7807	R-NPF R-HPF	62	1.8 1.0	120	5 3	G	9	1.0	2.3	— 20	— 120	— 1.50	— 2.90	— —	— —	1.8 2.0	LI551-H4	2	A
120	71A7807-B	R-NPF R-HPF	62	1.8 1.0	120	5 3	H	9	1.0	2.7	— 20	— 120	— 1.50	— 2.90	— —	— —	1.8 2.0	Integral Ignitor	2	A
120/277	71A7801 **71A7801-001D**	HX-HPF	66	1.0/.5	125	3/1	K	1	1.0	2.2	5	300	1.25	2.90	—	—	3.5	LI551-H4	2	A/A
50 Watt Lamp, ANSI Code S104 (White SON - Philips) (Minimum Starting Temperature –20°F or –30°C)																				
120	71A7805	Hybrid Electronic	68	1.3	120	3	R	9	1.3	2.3	28	120	1.50	2.90	—	—	4.0	6C050 Controller	2	A
120/277 ••	71A7805(120V) + 71A9847(120/277V Auto transformer)	Hybrid Electronic AR	72	0.6	120	3/1	S	9 (2pcs)	1.3	2.3	28	120	1.50	2.90	—	—	8.0	6C050 Controller	2	A/A

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D.**
Original equipment ballasts - add proper suffix to catalog number:
-500D includes core & coil with dry-film capacitor
-510D includes core & coil with welded bracket and dry-film capacitor
-600 core & coil only (no capacitor)
-610 core & coil with welded bracket (no capacitor)

• For AR, HX, R, and Hybrid circuits, figure is highest of starting, operating or open circuit currents.

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. **Instant Restrike** ignitor also available (71A7807 and 71A7801 only). See pages 4-48 to 4-51 for additional information.

•• 277V operation requires the 120V reactor ballast and controller plus the 120/277V auto-transformer listed. Ballast dimensions shown in table are for the reactor ballast component only. See page 4-52 for auto-transformer specifications and dimensions.



Rectangular Case

White SON Controller

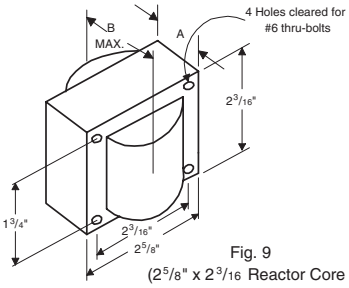


Fig. 9
(2 5/8" x 2 3/16 Reactor Core)

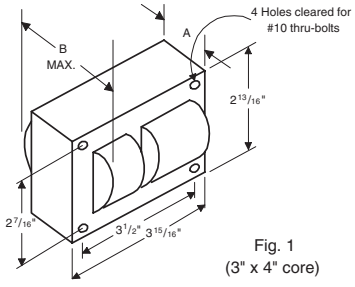
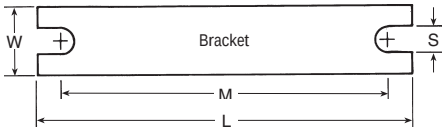


Fig. 1
(3" x 4" core)



WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1	5.1	1.00	4.50	0.25
9	4.0	0.75	3.50	0.28

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

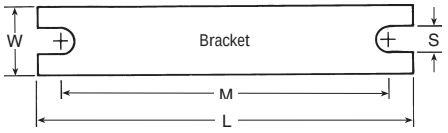
Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
70 Watt Lamp, ANSI Code S62																				
120	71A7907	R-NPF R-HPF	86	2.1 1.3	120	8 3	G	9	1.3	2.5	— 28	— 120	— 1.50	— 2.90	— —	— —	2.0	LI551-H4	2	A
120	71A7907-B	R-NPF R-HPF	86	2.1 1.3	120	8 3	H	9	1.3	2.9	— 28	— 120	— 1.50	— 2.90	— —	— —	2.0	Integral Ignitor	2	A
120/277 220 480	71A7901 71A79J1 71A7941	HX-HPF	91 91 93	1.4/.7 .8 .4	120	5/2 2 2	K	1	1.5 1.5 1.9	2.8 2.8 3.2	7	300	1.25	2.90	—	—	5.5 5.5 6.5	LI551-H4	2	A/A A A
120/208/ 240/277	71A7991	HX-HPF	91	1.4/.9 .8/.7	120	5/3/ 2/2	K	1	1.5	3.1	7	300	1.25	2.90	—	—	5.5	LI551-H4	2	B/C/ B/C
120/208/ 240/277	**71A7971-001D**	HX-HPF	91	1.4/.9 .8/.7	120	5/3/ 2/2	K	1	1.5	3.1	7	300	1.25	2.90	—	—	5.5	LI551-H4	2	B/C/ B/C
120/ 277/347	71A79A1	HX-HPF	93	1.4/ .7/.6	120	5/ 2/2	K	1	1.5	3.1	7	300	1.25	2.90	—	—	5.5	LI551-H4	2	A/ B/A
120/ 277/347	**71A79A1-001D**	HX-HPF	93	1.4/ .7/.6	120	5/ 2/2	K	1	1.5	3.1	7	300	1.25	2.90	—	—	5.5	LI551-H4	2	A/ B/A

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**.
Refer to pages 4-5 to 4-8.
Original equipment ballasts - add proper suffix to catalog number:
-500D includes core & coil with dry-film capacitor
-510D includes core & coil with welded bracket and dry-film capacitor
-600 core & coil only (no capacitor)
-610 core & coil with welded bracket (no capacitor) (71A7907 Only)

• For HX and R circuits, figure is highest of starting, operating or open circuit currents.

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. **Instant Restrike** ignitor also available (excludes 71A7907-B, 71A79J1 and 71A7941).
See pages 4-48 to 4-51 for additional information.

Canadian replacement/retrofit ballast kit indicated by **bold type.**
Refer to pages 4-9 to 4-10.



WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1	5.1	1.00	4.50	0.25
9	4.0	0.75	3.50	0.28

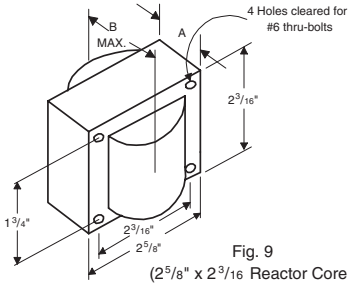


Fig. 9
(2 5/8" x 2 3/16 Reactor Core)

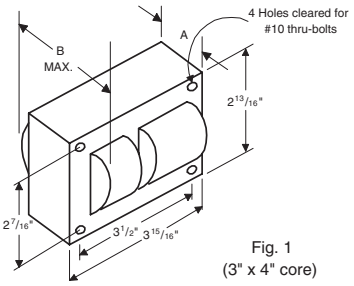


Fig. 1
(3" x 4" core)

HID

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Wt. (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
70 Watt Lamp, ANSI Code S62																				
127/220 120/277	71A79H8 71A7988	CWA	95	.8/.5 .9/.4	105	2/2 3/1	M	1	1.5	2.8	28	170	1.75	3.75	—	—	5.5	LI551-J4	5	A/D A/D
120/ 208/240	71A79E6	CWI	95	.9/ .5/.5	110	3/ 2/2	V	1	1.6	2.9	24	300	1.75	3.75	—	—	5.8	LI551-J4	2	C/ C/D
120/240	71A7950	Regulated Lag	103	.9/.5	125	2.5/1	N	1	2.1	3.3	20	300	1.75	3.75	—	—	6.3	LI551-H4	2	D/B

† Ordering information:
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA, CWI and Regulated Lag circuits, figure is operating current.

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

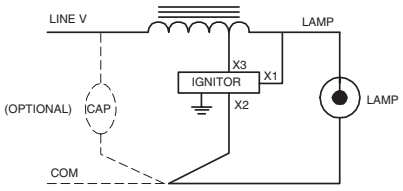


Fig. G

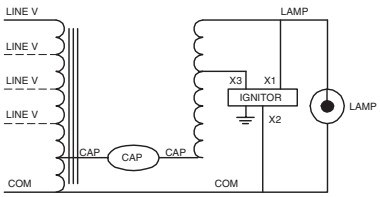


Fig. M

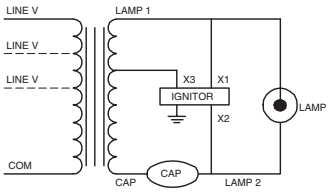


Fig. V

INTEGRAL IGNITOR BALLAST

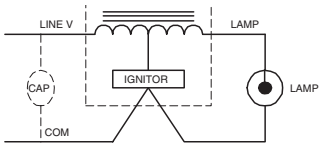


Fig. H

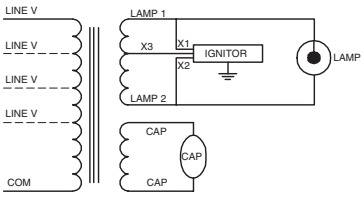


Fig. N

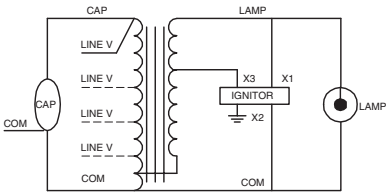


Fig. K

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Wt. (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
100 Watt Lamp, ANSI Code S54																				
120	71A8007	R-NPF R-HPF	115	3.1 1.8	120	10 5	G	9	1.7	3.0	— 36	— 120	— 1.50	— 3.75	— —	— —	2.5 2.8	LI551-H4	2	A
120	71A8007-B	R-NPF R-HPF	115	3.1 1.8	120	10 5	H	9	1.7	3.4	— 36	— 120	— 1.50	— 3.75	— —	— —	2.5 2.8	Integral Ignitor	2	A/A
120/277 220	71A8001 71A80J1	HX-HPF	130	2.2/.9 1.2	120	7/3 3	K	1	2.0	3.3	10	280	1.50	2.90	—	—	7.2	LI551-H4	2	C/C B
480	71A8041 **71A8041-001D**	HX-HPF	130	.6	120	3	K	1	2.3	3.6	10	280	1.50	2.90	—	—	7.5	LI551-H4	2	E
120/208/ 240/277	71A8091	HX-HPF	130	2.2/1.3/ 1.1/.9	120	7/5/ 3/3	K	1	2.0	3.6	10	280	1.50	2.90	—	—	7.2	LI551-H4	2	D/F/ D/D
120/208/ 240/277	**71A8071-001D**	HX-HPF	130	2.2/1.3/ 1.1/.9	120	7/5/ 3/3	K	1	2.0	3.6	10	280	1.50	2.90	—	—	7.2	LI551-H4	2	D/F/ D/D
120/ 277/347	71A80A1	HX-HPF	130	2.2/ .9/.7	120	7/ 3/3	K	1	2.3	3.6	10	280	1.50	2.90	—	—	7.5	LI551-H4	2	C/ C/D
120/ 277/347	**71A80A1-001D**	HX-HPF	130	2.2/ .9/.7	120	7/ 3/3	K	1	2.3	3.6	10	280	1.50	2.90	—	—	7.5	LI551-H4	2	C/ C/D
100 Watt Lamp, ANSI Code S105, (White SON-Philips) (Minimum Starting Temperature –20°F or –30°C)																				
120	71A8005	Hybrid Electronic	120	2.2	120	5	R	9	2.0	3.2	45	120	1.75	3.75	—	—	5.5	6C100 Controller	2	A
120/277 ••	71A8005(120V) + 71A9876(120/277V Auto transformer)	Hybrid Electronic AR	125	1.0	120	5/3	S	9 (2pcs)	2.0	3.2	45	120	1.75	3.75	—	—	9.5	6C100 Controller	2	A/A

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**. Refer to pages 4-5 to 4-8.

Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor) (71A8007 Only)

• For AR, HX, R and Hybrid circuits, figure is highest of starting, operating or open circuit currents.

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. **Instant Restrike** ignitor also available (excludes 71A8005, 71A8007-B, 71A80J1 and 71A8041). See pages 4-48 to 4-51 for additional information.

•• 277V operation requires the 120V reactor ballast and controller plus the 120/277V auto-transformer listed. Ballast dimensions shown in table are for the reactor ballast component only. See page 4-52 for auto-transformer specifications and dimensions.

Canadian replacement/retrofit ballast kit indicated by **bold type.** Refer to pages 4-9 to 4-10.

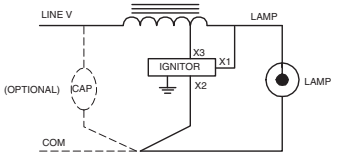


Fig. G

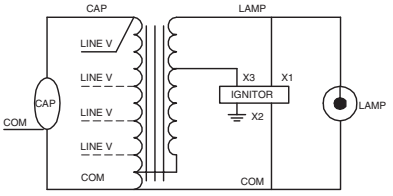


Fig. K

INTEGRAL IGNITOR BALLAST

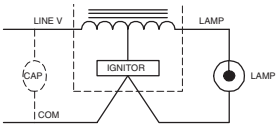
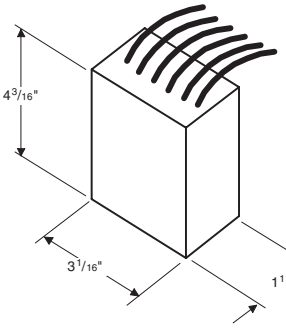


Fig. H



Rectangular Case

White SON Controller

HID

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
100 Watt Lamp, ANSI Code S54																				
120/277 127/220 480/120T	71A8088 71A80H8 71A8048-T	CWA	138	1.2/.5 1.1/.7 .3	115	3/2 3/2 1	M	1	2.0	3.3	34	170	1.75	3.75	—	—	7.5	LI551-J4	5	F/F E/D E
120/ 208/240	71A80E6	CWI	130	1.2/ .7/.6	110	3/ 2/2	V	1	2.1	3.4	35	170	1.75	3.75	—	—	6.8	LI551-J4	2	C/ C/B
120/240 120/277 240/480	71A8050 71A8080 71A8060	Regulated Lag	138	1.2/.6 1.2/.6 .6/.3	120	3/2 3/2 1.5/1	N	2	1.4	3.0	16	330	1.50	3.75	—	—	8.5	LI551-H4	2	A/A A/A A/A

† Ordering information:
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA, CWI and Regulated Lag circuits, figure is operating current.

†† Each ballast requiring an ignitor is furnished standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

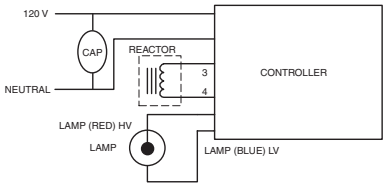


Fig. R

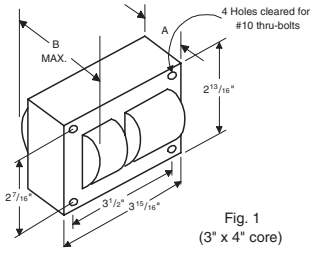


Fig. 1
(3" x 4" core)

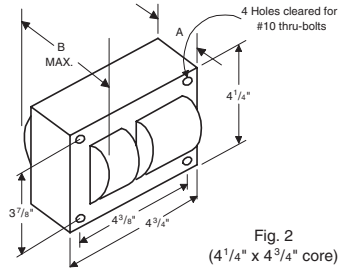


Fig. 2
(4 1/4" x 4 3/4" core)

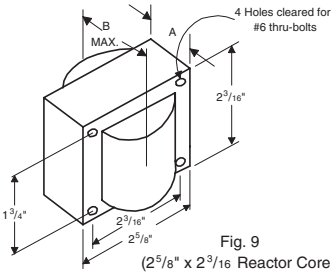


Fig. 9
(2 5/8" x 2 3/16 Reactor Core)

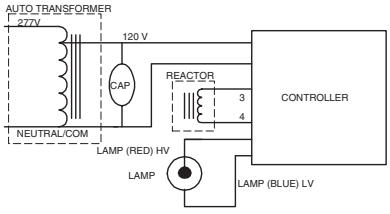


Fig. S

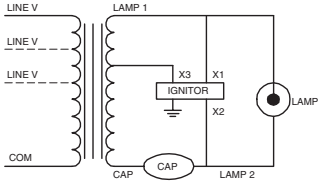
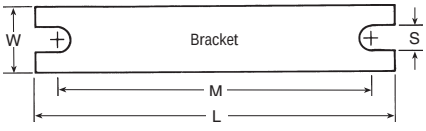


Fig. V



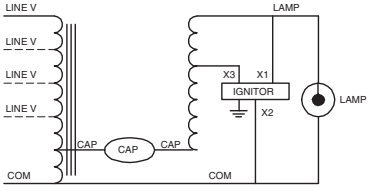


Fig. M

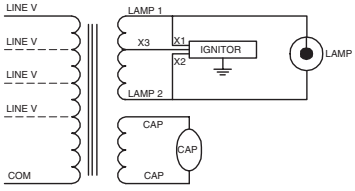


Fig. N

WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1	5.1	1.00	4.50	0.25
2	6.5	1.25	5.75	0.28
9	4.0	0.75	3.50	0.28

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
150 Watt Lamp, ANSI Code S55 (55-Volt Arc Tube)																				
120	71A8107	R-NPF R-HPF	170	4.5 2.4	120	15 8	G	9	2.0	3.3	— 55	— 120	— 1.75	— 3.75	— —	— —	3.5 4.0	LI551-H4	2	A
120	71A8107-B	R-NPF R-HPF	170	4.5 2.4	120	15 8	H	9	2.0	3.6	— 55	— 120	— 1.75	— 3.75	— —	— —	3.5 4.0	Integral Ignitor	2	A
120/277 220 277	71A8102 71A81J2 71A8132	HX-HPF	188	2.8/1.3 1.5 1.3	120	10/4 4 4	K	1	2.6	3.8	14	280	1.50	2.90	—	—	7.5	LI551-H4	2	E/E C D
480	71A8142 **71A8142-001D**	HX-HPF	188	0.7	120	2	K	1	3.0	4.3	14	280	1.50	2.90	—	—	9.0	LI551-H4	2	E
480/120T	71A8142-T	HX-HPF	188	0.7	120	2	K	1	3.0	4.3	14	280	1.50	2.90	—	—	9.0	LI551-H4	2	E
120/208/ 240/277	71A8192	HX-HPF	188	2.8/1.6/ 1.4/1.3	120	10/5/ 5/4	K	1	2.6	3.8	14	280	1.50	2.90	—	—	7.5	LI551-H4	2	E/D/ E/D
120/208/ 240/277	**71A8172-001D**	HX-HPF	188	2.8/1.6/ 1.4/1.3	120	10/5/ 5/5	K	1	2.6	3.8	14	280	1.50	2.90	—	—	7.5	LI551-H4	2	E/D/ E/D
120/ 277/347	71A81A2	HX-HPF	188	2.8/ 1.3/.9	120	10/ 4/3	K	1	2.6	3.8	14	280	1.50	2.90	—	—	7.5	LI551-H4	2	D/ D/D
120/ 277/347	**71A81A2-001D**	HX-HPF	188	2.8/ 1.3/.9	120	10/ 4/3	K	1	2.6	3.8	14	280	1.50	2.90	—	—	7.5	LI551-H4	2	D/ D/D

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**. Refer to pages 4-5 to 4-8.

Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor) (71A8107 Only)

• For HX and R circuits, figure is highest of starting, operating or open circuit currents.

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. **Instant Restrike** ignitor also available (excludes 71A8107-B, 71A81J2, 71A8132 and 71A8142). See pages 4-48 to 4-51 for additional information.

Canadian replacement/retrofit ballast kit indicated by **bold type.** Refer to pages 4-9 to 4-10.

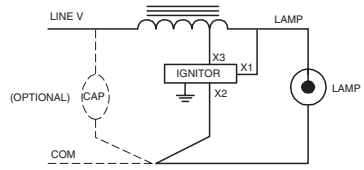


Fig. G

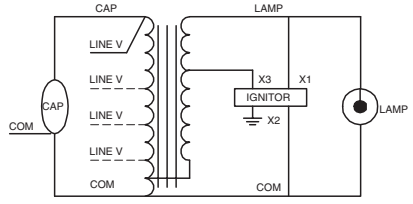


Fig. K

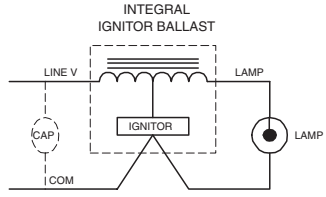


Fig. H

HID

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions Fig	Dimensions A	Dimensions B	Non-PCB Capacitor (Page 4-46 to 4-47) Mfd	Min Volt	Dry Film Dia (in)	Dry Film Ht (in)	Oil Filled Oval (in)	Oil Filled Ht (in)	Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51) Part Number	Max Dist To Lamp (ft)	U.L. Bench Top Rise Code 1029 (pg 4-3)
150 Watt Lamp, ANSI Code S55 (55-Volt Arc Tube)																				
120/277 127/220 480	71A8188 71A81H8 71A8148	CWA	190	1.7/.7 1.6/.9 .5	110	5/3 4/2 1	M	1	2.8 2.8 2.5	4.1 4.1 3.8	55	170	1.75	5.15	—	—	8.5 8.5 8.0	LI551-J4	10	E/D D/C E
120/ 208/240	71A81E6	CWI	190	1.7/ 1.1/.8	105	5/ 3/3	V	1	2.6	4.0	52	240	1.75	5.15	—	—	8.5	LI551-J4	2	E/ E/D
120/240 120/277 240/480	71A8150 71A8180 71A8160	Regulated Lag	196	1.7/.9 1.7/.8 .9/.4	120	5/3 5/2 3/1	N	2	2.0	3.5	16	400	1.75	3.75	—	—	12.0	LI551-H4	2	B/B B/A B/B
150 Watt Lamp, ANSI Code S56 (100-Volt Arc Tube)																				
480	**71A8146-001D**	CWA	188	0.5	180	2	M	1	2.5	3.8	20	280	1.75	3.75	—	—	8.5	LI501-H4	2	B
120/208/ 240/277	71A8196	CWA	188	1.7/1.0 .9/.8	180	5/3/ 3/3	M	1	2.5	4.1	20	280	1.75	3.75	—	—	8.5	LI501-H4	2	E/D/ C/C
120/208/ 240/277	**71A8176-001D**	CWA	188	1.7/1.0 .9/.8	180	5/3/ 3/3	M	1	2.5	4.1	20	280	1.75	3.75	—	—	8.5	LI501-H4	2	E/D/ C/C

400V

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**. Refer to pages 4-5 to 4-8.
Original equipment ballasts - add proper suffix to catalog number:
-500D includes core & coil with dry-film capacitor
-510D includes core & coil with welded bracket and dry-film capacitor
-600 core & coil only (no capacitor)
-610 core & coil with welded bracket (no capacitor)

• For CWA, CWI and Regulated Lag circuits, figure is operating current.

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

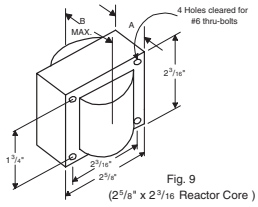


Fig. 9
(2 5/8" x 2 3/16 Reactor Core)

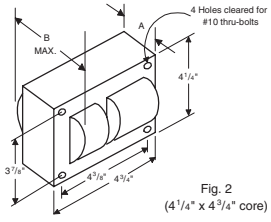


Fig. 2
(4 1/4" x 4 3/4" core)

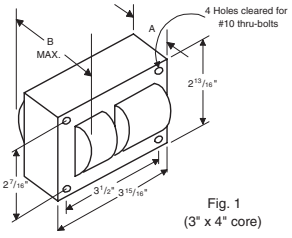
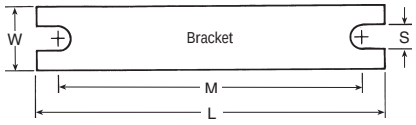


Fig. 1
(3" x 4" core)



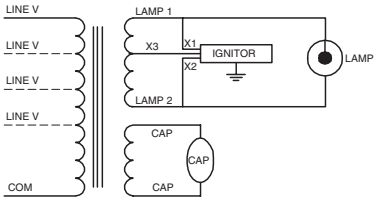


Fig. N

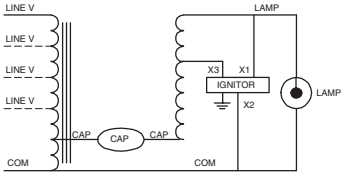


Fig. M

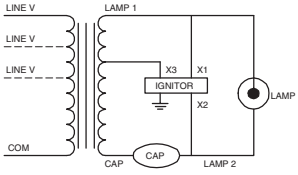


Fig. V

WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1	5.1	1.00	4.50	0.25
2	6.5	1.25	5.75	0.28
9	4.0	0.75	3.50	0.28

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
200 Watt Lamp, ANSI Code S66																				
480	71A8940 **71A8940-001D**	CWA	240	.6	185	2	M	2	1.2	3.0	28	280	1.75	3.75	—	—	8.5	LI501-H4	2	C
120/208/ 240/277	71A8990	CWA	240	2.2/1.3 1.1/1.0	185	6/4/ 3/3	M	2	1.2	3.0	28	280	1.75	3.75	—	—	8.5	LI501-H4	2	E/D/ D/C
120/208/ 240/277	**71A8970-001D**	CWA	240	2.2/1.3 1.1/1.0	185	6/4/ 3/3	M	2	1.2	3.0	28	280	1.75	3.75	—	—	8.5	LI501-H4	2	E/D/ D/C
480	71A8941♦	CWA	250	.6	195	2	M	1	3.0	4.2	24	280	1.75	3.75	—	—	8.5	LI501-H4	2	J
120/208/ 240/277	71A8991♦	CWA	250	2.4/1.4 1.2/1.0	195	8/5/ 5/3	M	1	3.0	4.2	24	280	1.75	3.75	—	—	8.5	LI501-H4	2	H/G/ H/I
120/240	71A8954	Regulated Lag	255	2.2/1.1	225	6/3	N	2	2.3	3.9	18	400	1.75	3.75	—	—	14.0	LI501-H4	2	C
240/480	71A8964	Regulated Lag	255	1.1/.7	225	3/2	N	2	2.3	3.9	18	400	1.75	3.75	—	—	14.0	LI501-H4	2	C

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**.
Refer to pages 4-5 to 4-8.

Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA and Regulated Lag circuits, figure is operating current.

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

◆ Special compact 3 x 4 core design. Note Bench Top Rise Codes in last column.

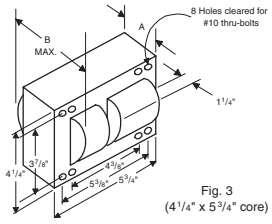


Fig. 3
(4 1/4" x 5 3/4" core)

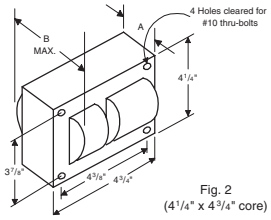


Fig. 2
(4 1/4" x 4 3/4" core)

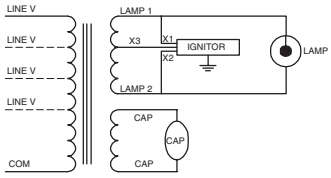


Fig. N

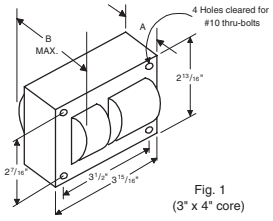
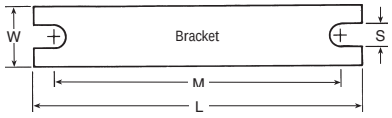


Fig. 1
(3" x 4" core)



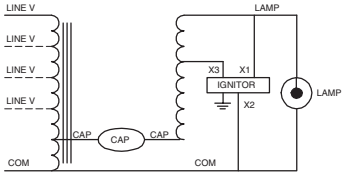


Fig. M

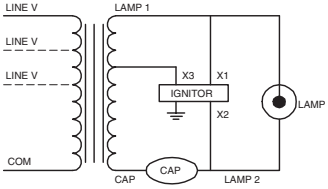


Fig. V

WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1	5.1	1.00	4.50	0.25
2	6.5	1.25	5.75	0.28
3	7.8	2.75	6.13	0.25

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
250 Watt Lamp, ANSI Code S50																				
120 127/220 277	71A8201 71A82H1 71A8231	CWA	295	2.5 2.5/1.5 1.1	185	7 7/4 3	M	2	1.8	3.5	35	240	1.75	3.75	—	—	11.0	LI501-H4	2	A D/C B
480	71A8241 **71A8241-001D**	CWA	310	.7	185	2	M	2	1.8	3.5	35	240	1.75	3.75	—	—	11.0	LI501-H4	2	B
480/120T	71A8241-T	CWA	310	.7	185	2	M	2	1.8	3.5	35	240	1.75	3.75	—	—	11.0	LI501-H4	2	B
120/277	71A8281	CWA	295	2.5/1.1	185	7/3	M	2	1.8	3.5	35	240	1.75	3.75	—	—	11.0	LI501-H4	2	B/B
120/208/ 240/277	71A8291	CWA	295	2.5/1.5/ 1.3/1.1	185	7/4/ 4/3	M	2	1.8	3.5	35	240	1.75	3.75	—	—	11.0	LI501-H4	2	B/A/ B/B
120/208/ 240/277	**71A8271-001D**	CWA	295	2.5/1.5/ 1.3/1.1	185	7/4/ 4/3	M	2	1.8	3.5	35	240	1.75	3.75	—	—	11.0	LI501-H4	2	B/A/ B/B
120/ 277/347	71A82A1	CWA	295	2.7/ 1.2/.9	185	7/ 3/2	M	2	2.0	3.6	35	240	1.75	3.75	—	—	11.5	LI501-H4	2	C/ C/B
120/ 277/347	**71A82A1-001D**	CWA	295	2.7/ 1.2/.9	185	7/ 3/2	M	2	2.0	3.6	35	240	1.75	3.75	—	—	11.5	LI501-H4	2	C/ C/B
120/ 208/240	71A82E6	CWI	300	2.8/ 1.6/1.4	190	8/ 5/5	V	2	1.9	3.8	28	300	1.75	3.75	—	—	11.0	LI501-J4	2	D/ C/C
120/240	71A8250	Regulated Lag	310	2.7/1.4	220	8/4	N	3	2.4	4.0	16	480	—	—	1.75	3.90	18.0	LI501-H4	2	C/C
240/480	71A8260	Regulated Lag	310	1.4/.7	220	4/2	N	3	2.4	4.0	16	480	—	—	1.75	3.90	18.0	LI501-H4	2	C/C
120/277	71A8280	Regulated Lag	310	2.7/1.2	220	8/3	N	3	2.4	4.0	16	480	—	—	1.75	3.90	18.0	LI501-H4	2	C/C

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**.
Refer to pages 4-5 to 4-8.

Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA circuits, figure is operating current.

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

Canadian replacement/retrofit ballast kit indicated by **bold type.**
Refer to pages 4-9 to 4-10.

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
310 Watt Lamp, ANSI Code S67																				
480	71A8341	CWA	365	0.9	175	3	M	2	2.2	3.8	45	280	1.75	5.15	—	—	13.5	LI501-H4	2	D
120/208/ 240/277	71A8391	CWA	365	3.4/1.9/ 1.7/1.4	175	8/5/ 5/5	M	2	2.2	4.1	45	280	1.75	5.15	—	—	13.5	LI501-H4	2	D/C/ D/B
120/208/ 240/277	**71A8371-001D**	CWA	365	3.4/1.9/ 1.7/1.4	175	8/5/ 5/5	M	2	2.2	4.1	45	280	1.75	5.15	—	—	13.8	LI501-H4	2	D/C/ D/B
120/240 240/480	71A8350 71A8360	Regulated Lag	380	3.3/1.7 1.7/.9	210	9/4 4/3	N	3	2.8	4.5	17	525	—	—	1.75	3.90	21.0	LI501-H4	2	C/B C/B

† Ordering information:
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA and Regulated Lag circuits, figure is operating current.

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

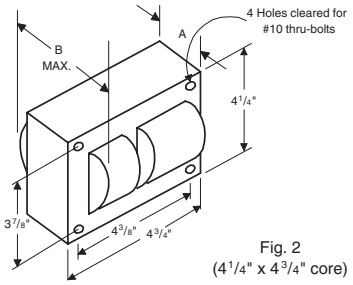


Fig. 2
(4 1/4" x 4 3/4" core)

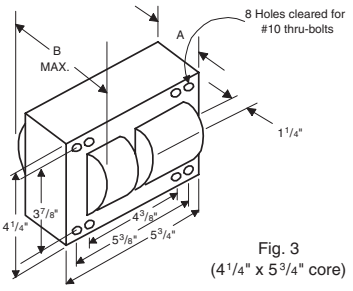


Fig. 3
(4 1/4" x 5 3/4" core)

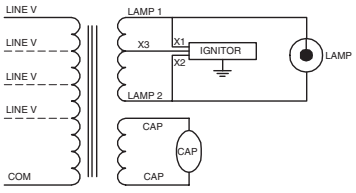


Fig. N

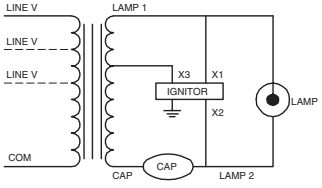


Fig. V

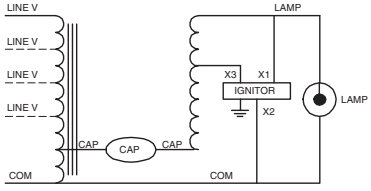
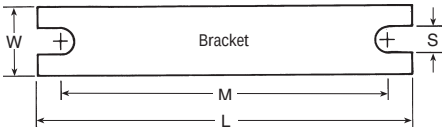


Fig. M



WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
2	6.5	1.25	5.75	0.28
3	7.8	2.75	6.13	0.25

HID

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
400 Watt Lamp, ANSI Code S51																				
120 127/220 277	71A8403 71A84H3 71A8433	CWA	457	3.8 3.7/2.1 1.7	190	10 5 5	M	2	2.3	4.0	55	240	1.75	5.15	—	—	13.5	LI501-H4	2	D D/C D
480	71A8443 **71A8443-001D**	CWA	464	1.0	190	3	M	2	2.6	4.3	55	240	1.75	5.15	—	—	15.0	LI501-H4	2	D
480/120T	71A8443-T	CWA	464	1.0	190	3	M	2	2.6	4.3	55	240	1.75	5.15	—	—	15.0	LI501-H4	2	D
120/208/ 240/277	71A8493	CWA	464	3.8/2.2/ 1.9/1.7	190	10/8/ 5/5	M	2	2.3	4.0	55	240	1.75	5.15	—	—	13.5	LI501-H4	2	D/D/ D/D
120/208/ 240/277	**71A8473-001D**	CWA	464	3.8/2.2/ 1.9/1.7	190	10/8/ 5/5	M	2	2.3	4.0	55	240	1.75	5.15	—	—	13.5	LI501-H4	2	D/D/ D/D
120/ 277/347	71A84A3	CWA	464	3.8/ 1.7/1.3	190	10/ 5/5	M	2	2.3	4.0	55	240	1.75	5.15	—	—	13.5	LI501-H4	2	D/ D/D
120/ 277/347	**71A84A3-001D**	CWA	464	3.8/ 1.7/1.3	190	10/ 5/5	M	2	2.3	4.0	55	240	1.75	5.15	—	—	13.5	LI501-H4	2	D/ D/D
120/ 208/240	71A84E6	CWI	465	4.2/ 2.4/2.1	190	10/ 7/5	V	2	2.7	4.4	48	300	1.75	5.15	—	—	15.5	LI501-J4	2	E/ E/E
480/120T 120/240 120/277 240/480	71A8440-T 71A8450 71A8480 71A8460	Regulated Lag	490	1.1 4.2/2.1 4.2/1.8 2.1/1.1	215	5 10/5 10/5 5/5	N	3	3.6	5.3	24	480	—	—	1.75	3.90	26.0	LI501-H4	2	C D/C D/C D/B

† Ordering information:
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA, CWI and Regulated Lag circuits, figure is operating current.

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
430 Watt Lamp, ANSI Code S145 (SON AGRO-Philips)																				
120/ 208/240	71A85E6	CWI	490	5.2/ 3.0/2.6	200	15/ 10/7	Y	2	2.6	4.1	48	300	1.75	5.15	—	—	15.0	LI501-H4	15	C/ E/D
277/ 347/480	71A85F6	CWI	490	2.3/ 1.8/1.3	200	7/ 5/5	V	2	2.6	4.1	48	300	1.75	5.15	—	—	15.0	LI501-H4	15	F/ C/B
600 Watt Lamp, ANSI Code S106																				
N 120/ 208/240	71A85E5	CWA	670	5.5/ 3.3/2.9	220	15/ 9/8	M	8a	3.2	5.1	64	280	2.00	5.15	—	—	22.5	LI561-H5	2	A/ A/A
N 277/ 347/480	71A85F5	CWA	665	2.5/ 2.0/1.4	230	7/ 5/4	M	8a	3.2	5.1	64	280	2.00	5.15	—	—	23.0	LI561-H5	5	A/ A/A
New N 120/ 208/240	71A85E8	CWI	685	6.2/ 3.5/3.1	240	20/ 9/8	V	8a	3.4	5.3	48	330	2.00	5.15	—	—	26.0	LI561-H5	2	A/ A/A
New N 277/ 347/480	71A85F8	CWI	685	2.6/ 2.1/1.5	238	7/ 6/5	V	8a	3.4	5.3	48	330	2.00	5.15	—	—	26.0	LI561-H5	2	A/ A/A
750 Watt Lamp, ANSI Code S111																				
N 120/ 208/240	71A86E5	CWA	840	6.8/ 4.0/3.5	220	20/ 10/10	M	8a	3.2	5.1	2 Capacitor Set: 40 280 1.75 5.15 / 35 280 1.75 5.15 Connected in Parallel				—	—	22.5	LI561-H5	5	A/ A/A
N 277/ 347/480	71A86F5	CWA	840	3.1/ 2.5/1.8	225	10/ 10/5	M	8a	3.2	5.1					—	—	23.0	LI561-H5	5	A/ A/A

† Ordering information:

Original equipment ballasts - add proper suffix to catalog number:

-500D includes core & coil with dry-film capacitor

-510D includes core & coil with welded bracket and dry-film capacitor

-600 core & coil only (no capacitor)

-610 core & coil with welded bracket (no capacitor)

• For CWA and CWI circuits, figure is operating current.

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

N UL Class N 200°C

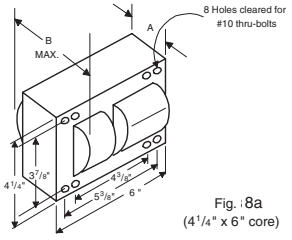


Fig. 8a
(4 1/4" x 6" core)

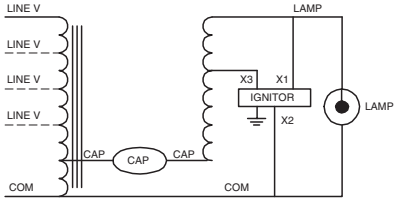


Fig. M

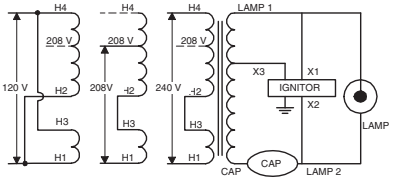


Fig. Y

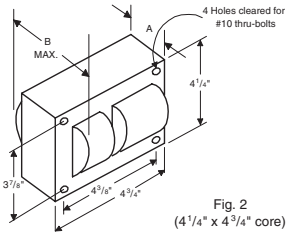


Fig. 2
(4 1/4" x 4 3/4" core)

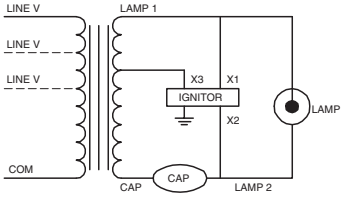
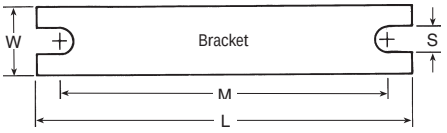


Fig. V



Ballast Dimensions Fig	L	W	M	S
2	6.5	1.25	5.75	0.28
8a	7.8	4.50	6.75	0.31

HID

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

	Input Volts	Catalog† Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
												Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
									Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
	1000 Watt Lamp, ANSI Code S52																				
Ⓝ	120 220 277	71A8703 71A87J3 71A8733	CWA	1100	9.2 5.0 4.0	435	25 15 10	M	8a	3.8	5.8	26	525	—	—	1.75	5.25	28.0	LI571-H5★	2	A A A
Ⓝ	480	71A8743 **71A8743-001**	CWA	1100	2.3	435	6	M	8a	3.9	5.8	26	525	—	—	1.75	5.25	28.0	LI571-H5★	2	A
Ⓝ	120/208/ 240/277	71A8793	CWA	1100	9.5/5.5/ 4.8/4.2	435	25/15/ 10/10	M	8a	3.8	5.8	26	525	—	—	1.75	5.25	28.0	LI571-H5★	2	A/A A/A
Ⓝ	120/208/ 240/277	**71A8773-001**	CWA	1100	9.5/5.5/ 4.8/4.2	435	25/15/ 10/10	M	8a	3.8	5.8	26	525	—	—	1.75	5.25	28.0	LI571-H5★	2	A/A A/A
Ⓝ	120/ 277/347	71A87A3	CWA	1100	9.5/ 4.2/3.3	435	25/ 15/10	M	8a	3.9	5.9	26	525	—	—	1.75	5.25	28.0	LI571-H5★	2	A/ A/A
🍁 Ⓝ	120/ 277/347	**71A87A3-001**	CWA	1100	9.5/ 4.2/3.3	435	25/ 15/10	M	8a	3.9	5.9	26	525	—	—	1.75	5.25	28.0	LI571-H5★	2	A/ A/A

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001**.
Refer to pages 4-5 to 4-8.

Original equipment ballasts - add proper suffix to catalog number:
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA circuits, figure is operating current.

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

★ Equipped with an auto-reset thermal protector to prevent ignitor from overheating in the event of lamp failure.

🍁 Canadian replacement/retrofit ballast kit indicated by **bold type.**
Refer to pages 4-9 to 4-10.

Ⓝ UL Class N 200°C

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Low Pressure Sodium

Input Volts	Catalog † Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	U.L. Bench Top Rise Code 1029 (pg 4-3)
								Fig	A	B	Mfd	Min Volt	Dry Film Dia (in)	Dry Film Ht (in)	Oil Filled Oval (in)	Oil Filled Ht (in)		
18 Watt Lamp, ANSI Code L69																		
120	71A0201	HX-NPF HX-PFC	31	1.1 .8	315	3 2	B	1	.7	2.1	— 20	— 120	— 1.50	— 2.90	— —	— —	3.0 3.5	A
120/277	71A0280	HX-NPF HX-PFC	30	.9/.4 1.0/.5	315	3/2 3/2	Q	1	1.0	2.4	— 5	— 250	— 1.25	— 2.90	— —	— —	4.0 4.5	A/A
35 Watt Lamp, ANSI Code L70 or 55 Watt Lamp, ANSI Code L71																		
120/240 208 277 480	71A0450 71A0410 71A0430 71A0440	HX-PFC HX-HPF HX-HPF R-PFC	60 or 80	2.5/1.3 1.4 1.0 .6	480	7/4 4 3 2	Q Q Q C	1	2.3 2.3 2.3 2.0	3.5 3.5 3.5 3.1	14 14 14 3.3	240 240 240 480	1.50 1.50 1.50 —	2.90 2.90 2.90 —	— — — 1.25	— — — 2.90	8.0 8.0 8.0 7.0	B/C A A C
120/ 240/347	71A04D0	HX-PFC	60 or 80	2.5/ 1.3/.9	480	7/ 4/3	Q	1	2.3	3.5	14	240	1.50	2.90	—	—	8.0	A/ A/A
120/ 240/347	**71A04D0-001D**	HX-PFC	60 or 80	2.5/ 1.3/.9	480	7/ 4/3	Q	1	2.3	3.5	14	240	1.50	2.90	—	—	8.0	A/ A/A

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**.
Refer to pages 4-5 to 4-8.
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For HX and R circuits, figure is highest of starting, operating or open circuit current.

Canadian replacement/retrofit ballast kit indicated by **bold type.**
Refer to pages 4-9 to 4-10.

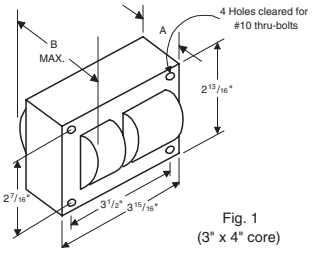


Fig. 1
(3" x 4" core)

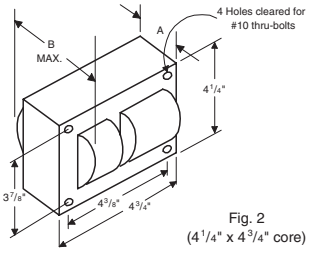


Fig. 2
(4 1/4" x 4 3/4" core)

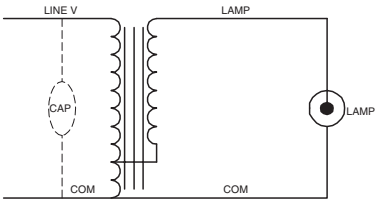


Fig. B

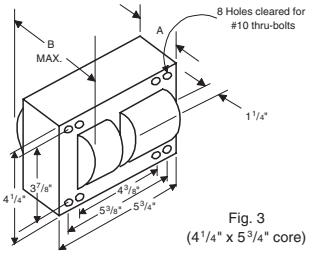
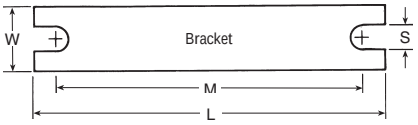


Fig. 3
(4 1/4" x 5 3/4" core)



WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1	5.1	1.00	4.50	0.25
2	6.5	1.25	5.75	0.28
3	7.8	2.75	6.13	0.25

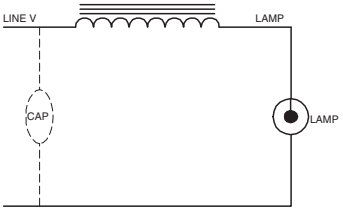


Fig. C

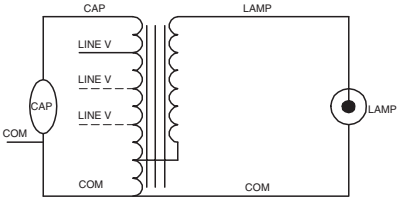


Fig. Q

Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Low Pressure Sodium

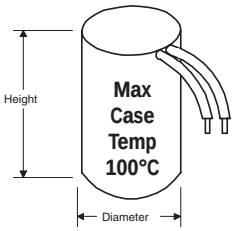
Input Volts	Catalog † Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)		
90 Watt Lamp, ANSI Code L72																		
120/240 208/277 480	71A0550 71A0560 71A0540	HX-PFC HX-HPF R-HPF	125	4.0/2.0 2.3/1.7 .9	500 500 480	8/4 5/3 2	Q Q C	2	1.8	3.3	17.5 17.5 5	280 280 480	1.50 1.50 —	3.75 3.75 —	— — 1.75	— — 2.90	10.0	C/B B/B B
120/ 240/347	71A05D0	HX-PFC	125	4.0/ 2.0/1.4	500	8/ 4/4	Q	2	1.8	3.3	17.5	300	1.50	3.75	—	—	11.0	A/ A/A
🍁 120/ 240/347	**71A05DO-001D**	HX-PFC	125	4.0/ 2.0/1.4	500	8/ 4/4	Q	2	1.8	3.3	17.5	300	1.50	3.75	—	—	11.0	A/ A/A
135 Watt Lamp, ANSI Code L73 **180 Watt Lamp, ANSI Code L74**																		
120/240 208/277 480	71A0750 71A0760 71A0740	HX-HPF HX-HPF HX-HPF	178 or 220	5.2/2.6 3.0/2.3 1.3	685	13/7 8/6 4	Q Q Q	3	2.4	4.0	16	330	1.5	3.75	—	—	16.8	A/A A/A A
120/ 240/347	71A07D0	HX-HPF	178 or 220	5.2/ 2.6/1.8	685	13/ 7/5	Q	3	2.4	4.0	16	330	1.5	3.75	—	—	16.8	B/ A/A
🍁 120/ 240/347	**71A07DO-001D**	HX-HPF	178 or 220	5.2/ 2.6/1.8	685	13/ 7/5	Q	3	2.4	4.0	16	330	1.5	3.75	—	—	16.8	B/ A/A

† Ordering information:
Replacement/retrofit ballast kits indicated by **bold type** with suffix **-001D**.
Refer to pages 4-5 to 4-8.
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

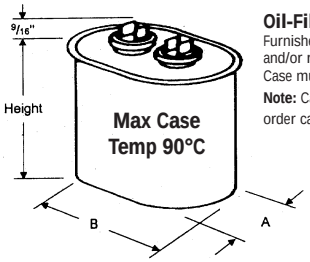
• For HX and R circuits, figure is highest of starting, operating or open circuit current.

🍁 Canadian replacement/retrofit ballast kit indicated by **bold type.**
Refer to pages 4-9 to 4-10.

CAPACITOR SPECIFICATIONS



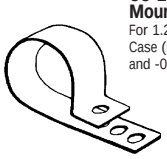
Dry-Film Capacitors Thermal Plastic Case
Dry-film capacitors contain no oil; are furnished with 8" leads and include integral resistor where required.



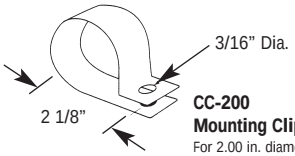
Oil-Filled Capacitor
Furnished with appropriate leads and/or resistors where required. Case must be grounded.
Note: Capacitor boots available, order catalog number CB-100.

Dry-Film Capacitors

Dimensions (in)		
Diameter	Height	
1.25	2.90	
1.50	2.90 or 3.75	As Shown in Tables
1.75	3.75 or 5.15	
2.00	5.15	



CC-175 Mounting Clip
For 1.25 thru 1.75 in. diameter Round Case (Furnished as standard with -001 and -001 D suffix ballasts).



CC-200 Mounting Clip
For 2.00 in. diameter Round Case

Oil-Filled Capacitors

Dimensions (in)			
Oval	A	B	Height
1.25	1.30	2.15	As Shown in Tables
1.50	1.55	2.70	
1.75	1.90	2.90	
2.00	1.95	3.65	

Recommended Capacitors for Bi-level Ballast Operation

Advance Ballast Family	Nominal Lamp Watts	ANSI Code	Lamp Watts at Low Light	Full Light Capacitance Mfd.	Low Light Capacitance Mfd.	Primary Capacitor	Secondary Capacitor	Capacitor Connection
Metal Halide 60 Hz CWA/SuperCWA Ballasts								
71A55_0	175	M57	122	10.0	8.0	10 mfd, 400V (7C100M40-R)	40 mfd, 300V (7C400P30-R)	Series
71A55_2	175 Pulse-Start	M137	102	11.5	8.0	11.5 mfd, 345V (7C115M34)	26.0 mfd, 330V (7C260P33-R)	Series
71A56_2	200 Pulse-Start	M136	102	15.0	9.3	15 mfd, 330V (7C150M33)	24 mfd, 300V (7C240P30)	Series
71A57_1	250	M58	127	15.0	9.0	15 mfd, 400V (7C150P40-R)	22.5 mfd, 300V (7C225P30-R)	Series
71A57_3	250 Pulse-Start	M138	133	18.5	11.5	11.5 mfd, 345V (7C115M34)	7.0 mfd, 330V (7C070L30R)	Parallel
71A58_2	320 Pulse-Start	M132	149	21.0	13.1	21 mfd, 345V (7C210P34-R)	35 mfd, 300V (7C350P30-R)	Series
71A59_3	350 Pulse-Start	M131	163	22.5	14.4	22.5 mfd, 345V (7C225P34)	40 mfd, 300V (7C400 P30-R)	Series
71A60_1	400	M59	192	24.0	15.0	24 mfd, 400V (7C240P40-R)	40 mfd, 300V (7C400P30-R)	Series
71A60_2	400 Pulse-Start	M135	210	26.0	18.5	18.5 mfd, 330V (7C185P33-R)	7.5 mfd, 330V (7C075L33)	Parallel
71A64_2	750 Pulse-Start	M149	380	28.0	18.0	28 mfd, 400V (7C280S40)	52 mfd, 240V (7C520P24)	Series
71A65_2 or 71A65_3	1000 Probe or Pulse-Start	M47 or M141	571	24.0	15.0	24 mfd, 480V (MD2409-100)	40 mfd, 300V (7C400P30-R)	Series
High Pressure Sodium 60 Hz CWA Ballasts								
71A80_8	100	S54	52	34.0	26.0	26.0 mfd, 330V (7C260P33-R)	8.0 mfd, 330V (7C080L30-R)	Parallel
71A81_8	150	S55	66	55.0	40.0	40 mfd, 300V (7C400P30-R)	15 mfd, 330V (7C150M33)	Parallel
71A82_1	250	S50	144	35.0	28.0	28 mfd, 300V (7C280P30-R)	7 mfd, 330V (7C070L33-R)	Parallel
71A84_3	400	S51	189	55.0	40.0	40 mfd, 300V (7C400P30-R)	15 mfd, 330V (7C150M33)	Parallel
71A86_5	750	S111	356	75.0	55.0	35 mfd, 300V (7C350P30-R) in parallel with 20 mfd, 300V (7C200P30-R)	20 mfd, 330V (7C200P33-R)	Parallel
71A87_3	1000	S52	406	26.0	17.7	26 mfd, 525V (MD2602-030)	55 mfd, 240V (7C550P24)	Series

Capacitor Specifications

Mfd.	Voltage	Catalog Number	Dia/ Oval	Height	Ballast family where used
3.3	480	MD0332-174	1.25	2.90	71A0440
5.0	330	7C050L33	1.25	2.90	71A02x0, 5037, 5081, 5137, 78x1 (60 Hz only)
5.0	480	MD0505-174	1.75	2.90	71A0540
6.0	330	7C060L33	1.25	2.90	71A5181, 78R1
7.0	330	7C070L33-R	1.25	2.90	71A1580, 50x7 (50 Hz. only), 79x1 (60 Hz. only)
8.0	330	7C080L33-R	1.25	2.90	71A20x0, 52x0, 52x2 (60 Hz. only), 5237, 5281
8.4	330	7C084L33-R	1.25	2.90	71A79x1 (50 Hz. only)
10.0	330	7C100M33-R	1.50	2.90	71A25x1 (60 Hz only), 5337, 5383, 80x1 (60 Hz only)
10.0	400	7C100M40-R	1.50	3.75	71A55x0 (60 Hz only)
11.5	345	7C115M34	1.50	3.75	71A5592
12.0	330	7C120M33-R	1.50	2.90	71A25x1 (50 Hz only), 29D1, 53x0 (60 Hz only), 5637, 80x1 (50 Hz. only)
12.0	450	MD1204-100	1.75	2.90	71A55x0 (50 Hz. only)
13.0	525	MD1300-100	1.75	3.75	71A57E6
14.0	120	7C140L12	1.25	2.90	71A7707
14.0	330	7C140M33-R	1.50	2.90	71A04x0, 29RO, 52x2 (50 Hz only), 5437, 5737, 81x2 (60 Hz. only)
15.0	330	7C150M33	1.50	3.75	71A56x2
15.0	400	7C150P40-R	1.75	3.75	71A57x0 (60 Hz only), 57x1
16.0	330	7C160M33	1.50	3.75	71A07x0, 54x0, 54x2, 80x0
16.0	400	7C160P40	1.75	3.75	71A81x0
16.0	525	MD1606-000	1.75	3.90	71A57x4, 82x0
16.0	525	MD1606-100	1.75	3.90	71A43x0
17.0	400	7C170P40	1.75	3.75	71A55x4, 5634
17.0	550	MD1701-000	1.75	3.90	71A83x0
17.0	550	MD1701-100	1.75	3.90	71A69x0
17.5	330	7C175M33-R	1.50	3.75	71A05x0, 30x2, 53N0, 5837, 81x2 (50 Hz only)
18.0	400	7C180P40-R	1.75	3.75	71A57x0 (50 Hz only), 89x4
18.5	330	7C185P33-R	1.75	3.75	71A5793
20.0	120	7C200M12	1.50	2.90	71A0201, 7705, 7807
20.0	330	7C200P33-R	1.75	3.75	71A5880, 5937, 6037, 6137, 79xO, 81R6, 8146, 8176, 8196
20.0	450	MD2006-100	1.75	3.90	71A60x6
21.0	345	7C210P34-R	1.75	3.75	71A58X2 (60 Hz only)
21.0	525	MD2100-030	1.75	4.80	71A60x4 (60 Hz only), 6334
22.0	240	7C220M24-R	1.50	3.75	71A54A3
22.5	300	7C225P30-R	1.75	3.75	71A35x2 (60 Hz only), 5486, 6337
22.5	345	7C225P34	1.75	3.75	71A59x3
24.0	300	7C240P30	1.75	3.75	71A79x6, 89 x 1
24.0	400	7C240P40-R	1.75	5.15	71A58x2 (50 Hz only), 60x1 (60 Hz only), 63x2
24.0	480	MD2409-000	1.75	3.90	71A84x0, 65x3 (60 Hz only)
24.0	480	MD2409-100	1.75	3.90	71A50x0, 60N1, 65x2 (60 Hz only)
25.5	400	7C255P40-R	1.75	5.15	71A59x3 (50 Hz only)
26.0	330	7C260P33-R	1.75	3.75	71A60x2 (60 Hz only), 61E6
26.0	540	MD2602-030	1.75	5.30	71A69x0, 87x3 (60 Hz only)
26.0	540	MD2602-100	1.75	5.30	71A60M2, 65x2 (50 Hz only)
26.5	400	7C265P40-R	1.75	5.15	71A63x3 (60 Hz only)
28.0	120	7C280M12	1.50	2.90	71A5005, 5105, 7805, 7907
28.0	300	7C280P30-R	1.75	3.75	71A35R2, 79x8, 82x6, 89x0
28.0	400	7C280S40	2.00	5.15	71A64x2 (60 Hz only)
28.0	580	MD1408-230	1.50	3.90	71A87x3 (50 Hz only, uses two 14mfd-580 volt capacitors in parallel)
30.0	345	7C300S34	2.00	5.15	71A60N2
32.0	525	MD3202-100	2.00	3.90	71A67x2 (60 Hz only)
34.0	240	7C340P24	1.75	3.75	71A80x8
34.0	550	MD1701-200	1.75	3.90	71A68x0 (Uses two 17mfd-550 volt capacitors in parallel)
35.0	240	7C350P24	1.75	3.75	71A54M2, 80x6, 82x1 (60 Hz only)
35.0	300	7C350P30-R	1.75	5.15	71A40x1 (60 Hz only), 86x5
36.0	120	7C360M12	1.50	3.75	71A5205, 8007
36.0	540	MD1802-200	1.75	3.90	71A67R2 (Uses two 18mfd-540 volt capacitors in parallel)
40.0	300	7C400P30-R	1.75	5.15	71A40R1, 65E6, 82x1 (50 Hz only), 86x5
45.0	120	7C450P12	1.75	3.75	71A8005
45.0	300	7C450P30-R	1.75	5.15	71A65M6, 83x1
48.0	300	7C480P30	1.75	5.15	71A84x6, 85x6
48.0	330	7C480S33R	2.00	5.15	71A85x8
52.0	240	7C520P24	1.75	5.15	71A8156, 81E6
55.0	120	7C550P12	1.75	3.75	71A8107
55.0	240	7C550P24	1.75	5.15	71A81x8, 84x3 (60 Hz only)

1. All capacitors contain no PCB's. 2. Capacitors include a discharge resistor where required by UL. 3. MD_ Denotes Oil Filled, 7C_ Denotes Dry Film.

IGNITORS

Ballasts that include an ignitor to start the HID lamp are limited in the distance which they may be mounted remotely from the lamp because the ignitor pulse attenuates as the wire length between the ballast and lamp increases. All Advance Transformer Co. open core & coil ballasts listed in this Atlas include a standard ignitor that provides the proper electrical pulse to start lamps when the ballast is mounted within the lighting fixture. For most of these ballast/ignitor combinations, the maximum ballast-to-lamp distance is listed as 2 feet. For ballast-to-lamp distances greater than the capability of the standard ignitor, a long range ignitor is required.

Use the tables on the following pages to find the proper long range ignitor for various metal halide and high pressure sodium ballasts. Not all ballasts listed in the Atlas have long range ignitor options. It may be necessary to use a ballast employing a different circuit to achieve the needed ballast-to-lamp distance.

Whichever ignitor is used, it must be installed with and adjacent to the core & coil, as the two components work together to deliver the proper pulse to the lamp. Do not install ignitors next to a remote lamp because the electrical pulse will be further attenuated as it first has to travel from the ignitor to the core & coil and then back to the lamp, thus doubling the actual ballast-to-lamp distance.

When ordering ballasts with long range ignitors, indicate such on the purchase order, e.g.:

71A8493-500D except with LI501-J4 L.R. Ignitor

BALLAST-TO-LAMP REMOTE MOUNTING DISTANCES

MERCURY VAPOR AND METAL HALIDE BALLASTS

The distances at which most Mercury Vapor and Metal Halide ballasts can be located from their respective lamps are limited by the ballast-to-lamp wire size. The exceptions being the ballasts for the new, Metal Halide lamps which require an ignitor for starting. The mounting distances for these are limited by the ignitor as shown on the following page.

Use this chart to determine the minimum wire size required for the Mercury and Metal Halide lamps shown:

LAMP			MAXIMUM ONE-WAY LENGTH OF WIRE BETWEEN LAMP AND BALLAST (FEET) (Voltage Drop Limited to 1% of Lamp Voltage)				
Wattage	Mercury	Metal Halide	#10	#12	#14	#16	#18
100	H38	—	750	470	295	185	115
175	H39	M57	425	265	165	105	65
250	H37	M58	300	190	120	75	45
1-400 or 2-400	H33	M59	200	125	75	50	30
700	H35	—	465	290	180	115	70
1000	H36	M47	325	205	125	80	50
1500	—	M48	225	140	85	55	35

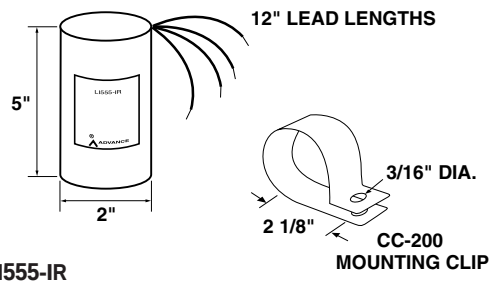
ADVANCE INSTANT RESTRIKE IGNITOR

The Advance Instant Restrike Ignitor enhances the performance of high pressure sodium ballasts for applications in which quick restart is essential. If the lamp extinguished due to a system voltage dip, the ignitor is enabled and pulses to restrike the lamp. Should the lamp extinguish due to high lamp voltage (characteristic at end of lamp life), the ignitor prevents lamp cycling by remaining disabled and not restriking the lamp. The Instant Restrike Ignitor is for use with:

- Advance high reactance or reactor ballasts only.
- Mogul-based high pressure sodium lamps rated 50, 70, 100, or 150 watts (55-volt lamps only).
- 5kv pulse-rated mogul-based lamp sockets.
- Maximum recommended ballast to lamp distance is 2 ft.

For complete details of the Advance Instant Restrike Ignitor, refer to Advance Form No. 1707.

DIMENSIONS

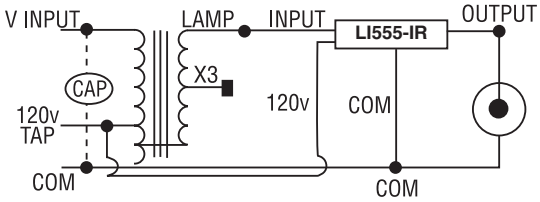


LI555-IR
Instant Restrike Ignitor

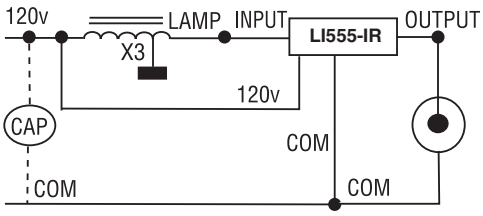
Catalog Number	Description
LI555-IR	Ignitor packed 24 per carton (may order any quantity)
CC-200	Mounting Clip

WIRING DIAGRAMS

HIGH REACTANCE BALLAST



REACTOR BALLAST



ADVANCE, 10275 WEST HIGGINS ROAD, ROSEMONT, IL 60018. TEL: (847) 390-5000, FAX: (847) 390-5109

Ignitor Specifications
(Case Temperature Rating 105° C)

Metal Halide

Metal Halide										
Ballast Data				Standard Ignitor			Long Range Ignitor			
Advance Ballast Family	Lamp Watts	ANSI Code	Ballast Circuit Type	Catalog Number	Max. Dist. (ft.) To Lamp	Case Type	Catalog Number	Min. Dist. (ft) To Lamp	Max. Dist. (ft) To Lamp	Case Type
71A50_5	35	M130	HX	LI533-H4-IC	15	Round				
71A5081	35	M130	HX	LI533-H4-IC	15	Round				
71A5037	35	M130	R	LI533-H4-IC	10	Round				
71A5105	50	M110/148	HX	LI533-H4-IC	15	Round				
71A5181	50	M110/148	HX	LI533-H4-IC	5	Round				
71A5137	50	M110/148	R	LI533-H4-IC	2	Round				
71A5205	70	M98/143	HX	LI533-H4-IC	25	Round				
71A52_2	70	M98/143	HX	LI533-H4-IC	15	Round				
71A5237	70	M98/143	R	LI533-H4-IC	10	Round				
71A52_1	70	M139	HX	LI533-H4-IC	10	Round				
71A53_0	100	M90/140	HX	LI533-H4-IC	20	Round				
71A5383	100	M90/140	CWA	LI533-H4-IC	2	Round				
71A5337	100	M90/140	R	LI533-H4-IC	2	Round				
71A54_2	150	M102/142	HX	LI533-H4-IC	10	Round				
71A5437	150	M102/142	R	LI533-H4-IC	2	Round				
71A55_2	175	M137	SuperCWA	LI533-H4-IC	2	Oval				
71A55_4	175	M137	Reg Lag	LI534-H5-IC	20	Oval				
71A56_2	200	M136	SuperCWA	LI533-H4-IC	2	Round				
71A5634	200	M136	Reg Lag	LI534-H5-IC	2	Oval				
71A57_3	250	M138	SuperCWA	LI533-H4-IC	15	Round				
71A57_4	250	M138	Reg Lag	LI533-H4-IC	20	Oval				
71A58_2	320	M132	SuperCWA	LI533-H4-IC	2	Round				
71A59_3	350	M131	SuperCWA	LI533-H4-IC	2	Round				
71A60_2	400	M135	SuperCWA	LI533-H4-IC	2	Round				
71A61E6	400	M135	SuperCWI	LI533-H4-IC	2	Round				
71A60_4	400	M128/M135	Reg Lag	LI534-H5-IC	10	Oval				
71A63_3	450	M144	Super CWA	LI533-H4-IC	5	Round				
71A6334	450	M144	Reg Lag	LI534-H5-IC	2	Oval				
71A64_2	750	M149	SuperCWA	LI534-H5-IC	2	Oval				
71A65_3	1000	M141	SuperCWA	LI571-H5-IC	25	Oval				
71A52_0	70	M85	HX	LI522-H5-IC*	30	Oval	Not Available			
71A54A3	150	M102/142	SuperCWA	LI501-J4-IC	15	Round	Not Available			
71A54_0	150	M81	HX	LI522-H5-IC*	20	Oval	Not Available			
71A5486	150	M81	CWA	LI523-H5-IC*	2	Oval	Not Available			
71A5880	250	M80	HX	LI522-H5-IC*	5	Oval	Not Available			
71A86_5	750	**	CWA	LI561-H5-IC*	5	Oval	Not Available			
71A69_0	2000	M134	CWA	LI571-H5-IC*	2	Oval	LI571-J5	20	40	Oval

NEW!

XTENZA™

Wide-Range Ignitor

LI533-LR | 0 - 50 ft | Oval

Meets ANSI pulse requirements for all ballast to lamp distances from 0 to 50 ft.

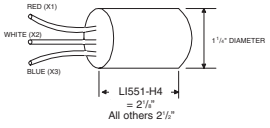
Features 105°C case temperature rating

See Ordering Information Below

* - Case temperature rating is 90°C.

** - Retrofit for S111

Round Case



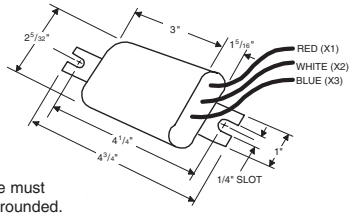
CC-125
MOUNTING CLIP for Round Case (Furnished as standard with -001 suffix ballasts and all -IC suffix replacement ignitors.

XTENZA™ Ordering Information
Order item no. **LI533-LR** (bulk) or **LI533-LR-IC** (individual carton)

XTENZA™ is also available packaged with the ballasts shown at right.

Includes core & coil ballast, capacitor and XTENZA™. Ballasts are available with or without welded mounting bracket. Add appropriate suffix to ballast number.

Oval Case



Case must be grounded.

Lamp Watts	ANSI Code	Ballast Number	No Bracket	With Welded Bracket
35	M130	71A5005	-900DP	-910DP
35	M130	71A5081	-900D	-910D
50	M110/148	71A5105	-900DP	-910DP
50	M110/148	71A5181	-900D	-910D
70	M98/143	71A5205	-900DP	-910DP
70	M98/143	71A5292	-900D	-910D
70	M139	71A5281	-900D	-910D
100	M90/140	71A5383	-900D	-910D
100	M90/140	71A5390	-900D	-910D
150	M102/142	71A5492	-900D	-910D
175	M137	71A5592	-900D	-910D
200	M136	71A5692	-900D	-910D
250	M138	71A5793	-900D	-910D
320	M132	71A5892	-900D	-910D
350	M131	71A5993	-900D	-910D
400	M135	71A6092	-900D	-910D
450	M144	71A6393	-900D	-910D
750	M149	71A64E2	-900D	-910D
1000	M141	71A6593	-900	-910

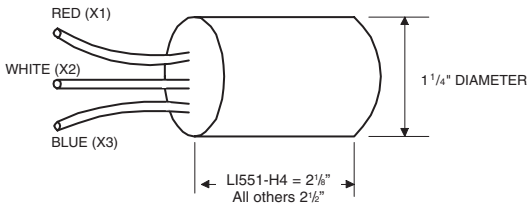
Ignitor Specifications
(Case Temperature Rating 105° C)

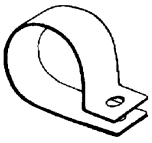
High Pressure Sodium

High Pressure Sodium									
Ballast Data				Standard Ignitor			Long Range Ignitor		
Advance Ballast Family	Lamp Watts	ANSI Code	Ballast Circuit Type	Catalog Number	Max. Dist. (ft.) To Lamp	Case Type	Catalog Number	Max. Dist. (ft.) To Lamp	Case Type
71A7707	35	S76	R	LI551-H4-IC	2	Round	LI551-J4-IC	15	Round
71A77_5	35	S99	Hybrid	6C035-IC*	2	Rect	Not Available		
71A7801	50	S68	HX	LI551-H4-IC	2	Round	LI551-J4-IC	35	Round
71A7807	50	S68	R	LI551-H4-IC	2	Round	LI551-J4-IC	15	Round
71A78_5	50	S104	Hybrid	6C050-IC*	2	Rect.	Not Available		
71A79_0	70	S62	Reg Lag	LI551-H4-IC	2	Round	LI551-J4-IC	20	Round
71A79_1	70	S62	HX	LI551-H4-IC	2	Round	LI551-J4-IC	35	Round
71A79_6	70	S62	CWI	LI551-J4-IC	2	Round	Not Available		
71A79_8	70	S62	CWA	LI551-J4-IC	5	Round	Not Available		
71A7907	70	S62	R	LI551-H4-IC	2	Round	LI551-J4-IC	15	Round
71A80_0	100	S54	Reg Lag	LI551-H4-IC	2	Round	LI551-J4-IC	35	Round
71A80_1	100	S54	HX	LI551-H4-IC	2	Round	LI551-J4-IC	35	Round
71A80_8	100	S54	CWA	LI551-J4-IC	5	Round	Not Available		
71A8007	100	S54	R	LI551-H4-IC	2	Round	LI551-J4-IC	15	Round
71A80_6	100	S54	CWI	LI551-J4-IC	2	Round	Not Available		
71A80_5	100	S105	Hybrid	6C100-IC*	2	Rect.	Not Available		
71A81_0	150	S55	Reg Lag	LI551-H4-IC	2	Round	LI551-J4-IC	40	Round
71A81_2	150	S55	HX	LI551-H4-IC	2	Round	LI551-J4-IC	35	Round
71A81_8	150	S55	CWA	LI551-J4-IC	5	Round	Not Available		
71A8107	150	S55	R	LI551-H4-IC	2	Round	LI551-J4-IC	15	Round
71A8156	150	S55	CWI	LI551-J4-IC	2	Round	Not Available		
71A85_5	150	S55	CWI	LI551-J4-IC	2	Round	Not Available		
71A81_6	150	S56	CWA	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round
71A86_7	150	S56	R	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round

* - Case temperature rating is 80°C only.

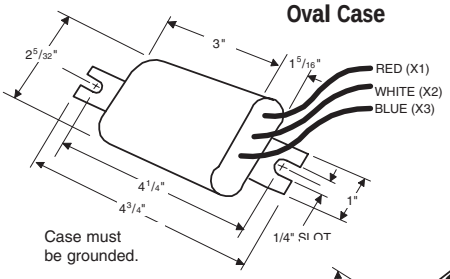
Round Case



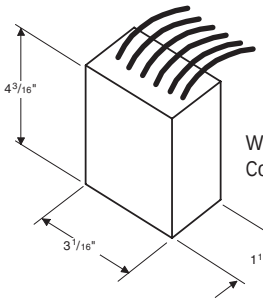


CC-125
MOUNTING CLIP for Round Case (Furnished as standard with -001 suffix ballasts and all -IC suffix replacement ignitors.

Oval Case



Rectangular Case



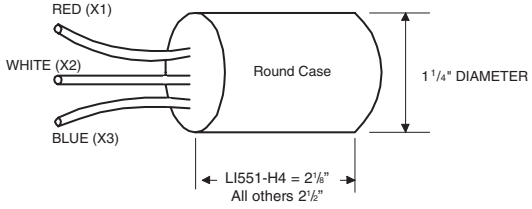
White SON Controller

Ignitor Specifications
(Case Temperature Rating 105° C)

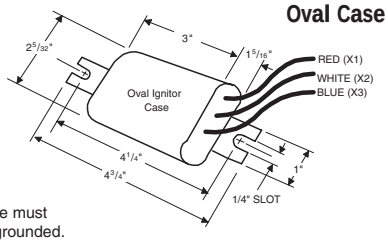
High Pressure Sodium

High Pressure Sodium									
Ballast Data				Standard Ignitor			Long Range Ignitor		
Advance Ballast Family	Lamp Watts	ANSI Code	Ballast Circuit Type	Catalog Number	Max. Dist. (ft.) To Lamp	Case Type	Catalog Number	Max. Dist. (ft.) To Lamp	Case Type
71A89_0	200	S66	CWA	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round
71A89_1	200	S66	CWA	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round
71A89_4	200	S66	Reg Lag	LI501-H4-IC	2	Round	LI501-J4-IC	40	Round
71A89_7	200	S66	R	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round
71A82_0	250	S50	Reg Lag	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round
71A82_1	250	S50	CWA	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round
71A82_6	250	S50	CWI	LI501-J4-IC	2	Round	Not Available		
71A82_7	250	S50	R	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round
71A8392	250	S50	CWA	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round
71A83_0	310	S67	Reg Lag	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round
71A83_1	310	S67	CWA	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round
71A83_7	310	S67	R	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round
71A84_0	400	S51	Reg Lag	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round
71A84_3	400	S51	CWA	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round
71A84_6	400	S51	CWI	LI501-J4-IC	2	Round	Not Available		
71A84_7	400	S51	R	LI501-H4-IC	2	Round	LI501-J4-IC	50	Round
71A85_6	430	n/a	CWI	LI501-H4-IC	15	Round	LI501-J4-IC	35	Round
71A85_5	600	S106	CWA	LI561-H5-IC	5	Oval	Not Available		
71A85_8	600	S106	CWI	LI561-H5-IC	2	Oval	Not Available		
71A86_5	750	S111	CWA	LI561-H5-IC	5	Oval	Not Available		
71A87_3	1000	S52	CWA	LI571-H5-IC	5	Oval	LI571-J5-IC	75	Oval

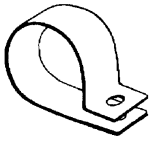
Round Case



Oval Case

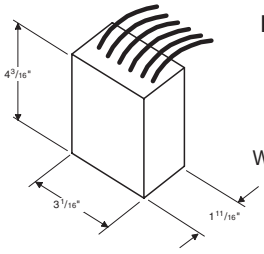


Case must be grounded.



CC-125
MOUNTING CLIP for Round Case (Furnished as standard with -001 suffix ballasts and all -IC suffix replacement ignitors.

Rectangular Case



White SON Controller

Transformers & Autotransformers

Stepdown Transformers and Autotransformers

Lamp Type	Lamp Watts	Input: Output (Volts)	Catalog † Number	Max. Input Current	Max. Watt Input	Max. V.A. Load	Wiring Diagram	Dimensions Fig	Dimensions A	Dimensions B	Weight (lbs)
Stepdown Transformers for 6 and 12 volt Halogen Lighting											
HALOGEN	120	120:6.0	71A9325	1.3	156	120	T-1	1	1.2	2.5	3.8
	50	120:11.5	71A9742 (-J)	.6	50	50	T-1	9 (11)	1.3	2.5(4.5)	2.0(2.3)
	75		71A9743 (-J)	.8	81	75	T-1	9 (11)	1.5	2.8(4.8)	2.5(2.8)
	50/75	277:11.8	71A9833 (-J)	.3/.4	60/86	75	T-1	9 (11)	1.5	2.8(4.8)	2.5(2.8)
Stepdown Autotransformers for 120 volt Incandescent Lighting											
INCANDESCENT	150	277:115	71A9749	.6	150	150	T-2	9	1.5	2.7	2.3
	200		71A9839 (-J)	.8	199	200	T-2	9 (11)	2.2	3.8(5.8)	3.8(4.1)
	300		71A9741 (-J)	1.1	300	300	T-2	9 (11)	2.0	3.5(5.5)	3.5(3.8)
Stepdown & Step-up Autotransformers for use with HID Reactor Ballasts											
HIGH PRESSURE SODIUM	35/50/70	277:120	71A9740	1.1	99	190	T-2	9	1.5	2.8	2.5
	100/150		71A9744	2.1	190	385	T-2	9	2.3	3.5	4.0
	35/50/70	347:120	71A9885	.9	100	190	T-2	9	1.7	3.9	4.5
	100/150	347:120/277	71A9862	1.7	200	395	T-2	9	2.7	3.9	4.5
HPS WHITE SON (See pages 4-30, 4-31 and 4-34)	35	277:120	71A9846 (-J)	.4	50	110	T-2	9 (11)	1.8	3.1(5.1)	3.5(3.8)
	50		71A9847 (-J)	.6	72	155	T-2	9 (11)	2.4	3.8(5.8)	4.0(4.3)
	100		71A9876 (-J)	.9	125	265	T-2	4 (11)	1.8	2.6(4.6)	6.5(6.8)
METAL HALIDE	50	120:277	71A9877	1.6	80	190	T-4	9	1.5	2.8	2.5
	70		71A9900	2.5	85	250	T-4	9	1.9	3.4	3.3
	100		71A9741 (-J)	2.4	125	300	T-4	9 (11)	2.0	3.5(5.5)	3.5(3.8)
	100/150	347:120/277	71A9862 (-J)	1.7	200	395	T-2	9 (11)	2.7	3.9(5.9)	4.5(4.8)

† **Ordering information:**

Add proper suffix to catalog number:

-600 includes core and coil only

-610 includes core and coil with welded bracket

-J (available where shown) includes J-Box cover and auto-reset thermal protection. Refer to Figure 11.

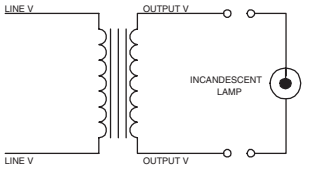


Fig. T-1

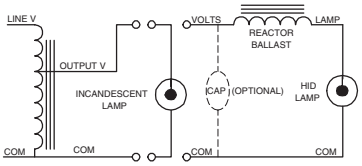


Fig. T-2

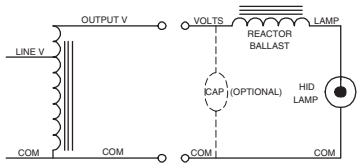


Fig. T-4

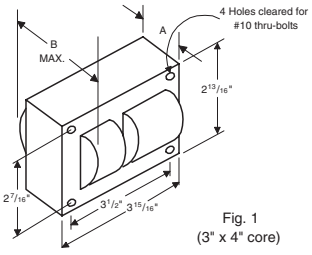


Fig. 1
(3" x 4" core)

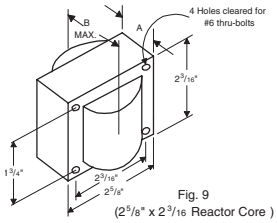


Fig. 9
(2 5/8" x 2 3/16 Reactor Core)

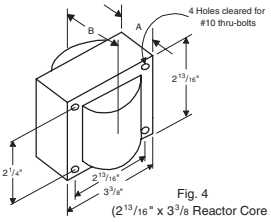


Fig. 4
(2 13/16" x 3 3/8 Reactor Core)

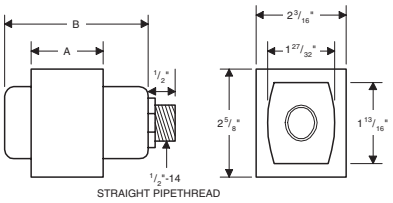
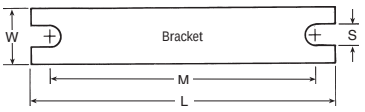


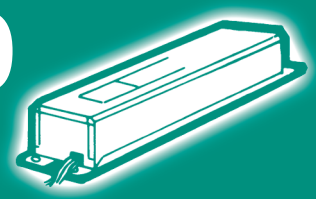
Fig. 11
J-Box Ballast



WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1	5.1	1.00	4.50	0.25
4, 9	4.0	0.75	3.50	0.28

HID



F-Can Ballasts, Indoor, Outdoor Type 1

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Mercury

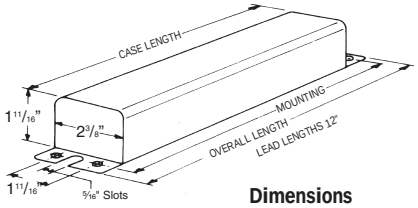
Input Voltage	Catalog Number	Circuit Type	Input Amps			Input Watts	Nom. Open Circuit Voltage	Fuse Rating Amps	Over-all Length	Case Length	Mtg. Dim.	Total Wt. (lbs)	Max. Ballast to Lamp Distance (ft)	Certifications	
			Operating	Starting	Open Circuit									UL	CSA
100 Watt Lamp, ANSI Code H38/H44															SOUND RATING B
120/277	72C2584-NP **72C2584-NP-001** (New)	CWA	1.0/.5	1.0/.5	.7/.3	118	245	3/2	11.75	10.50	11.13	8.5	✪	✓	✓
120/347	72C25C4-NP		1.0/.4	1.0/.4	.4/.2	119	235	3/1				8.5			✓
125 Watt Lamp, ANSI Code H42															SOUND RATING B
120/347	72C29C4-NP	CWA	1.4/.5	1.4/.5	.4/.2	150	245	4/2	11.75	10.50	11.13	8.5	✪		✓
175 Watt Lamp, ANSI Code H39															SOUND RATING B
120/277	72C3084-NP **72C3084-NP-001** (New)	CWA	1.7/.8	1.7/.7	.7/.3	200	245	5/3	11.75	10.50	11.13	10.5	✪	✓	✓
120/347	72C30C4-NP		1.7/.6	1.7/.6	.7/.3			5/2							✓
250 Watt Lamp, ANSI Code H37															SOUND RATING B
120/277	72C3584-NP **72C3584-NP-001** (New)	CWA	2.5/1.1	2.5/1.1	1.1/.5	280	245	7/3	14.30	13.13	13.75	14.5	✪	✓	✓
400 Watt Lamp, ANSI Code H33 (New)															SOUND RATING C
120/277	72C4083-NP **72C4083-NP-001**	CWA	3.9/1.7	3.6/1.6	1.1/.5	450	245	10/5	19.20	18.00	18.63	20.5	✪	✓	✓

† Ordering information:

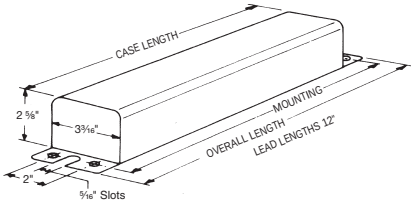
New **Replacement ballasts in individual cartons** indicated by **bold type** with suffix **-001.**

All Advance dual-volt, F-can ballasts include auto-reset thermal protection for both taps.

✪ Ballast to lamp distance is only limited by the size of the conductor between the ballast and the lamp. For proper wire size, see table on page 4-48 of this catalog.



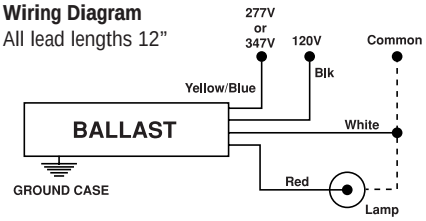
Dimensions
(72C5005-NP)



F-Can Ballast

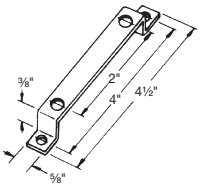
Dimensions
(For all except 72C5005-NP)

Wiring Diagram
All lead lengths 12"

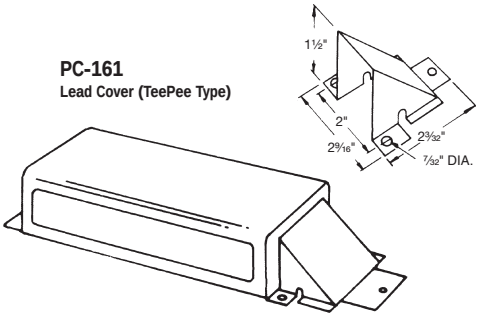


Accessories

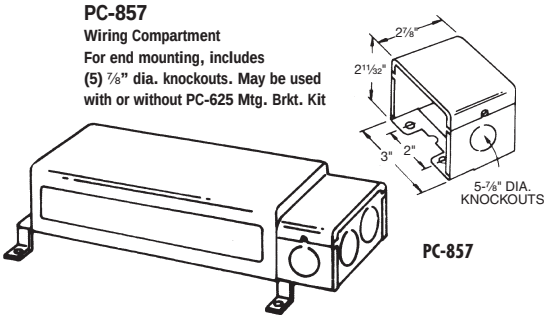
PKG-625
Mounting Bracket Kit
Includes (2) mounting brackets and (4) #10-32 screws with nuts and washers.



PC-161
Lead Cover (TeePee Type)



PC-857
Wiring Compartment
For end mounting, includes (5) 7/8" dia. knockouts. May be used with or without PC-625 Mtg. Brkt. Kit



PC-857

F-Can Ballasts, Indoor, Outdoor Type 1

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Voltage	Catalog Number	Circuit Type	Input Amps: Operating	Input Amps: Starting	Input Amps: Open Circuit	Input Watts	Nom. Open Circuit Voltage	Fuse Rating Amps	Over-all Length	Case Length	Mtg. Dim.	Total Wt. (lbs)	Max. Ballast to Lamp Distance (ft)	Certifications: UL	Certifications: CSA
35/39 Watt Lamp, ANSI Code M130													SOUND RATING B		
120	72C5005-NP 72C5005-NP-BLS*	HX-HPF	.5	.5	.8	49	230	2	8.50	7.31	7.90	4.0	5	✓	✓
120/277	72C5081-NP	HX-HPF	.6/.3	.6/.3	1.0/.4	56	255	3/1	11.75	10.50	11.13	9.0	10	✓	✓
50 Watt Lamp, ANSI Code M110													SOUND RATING B		
120/277	72C5181-NP	HX-HPF	.7/.3	.8/.4	1.2/.5	72	254	3/2	11.75	10.50	11.13	9.0	25	✓	✓
New	**72C5181-NP-001**														✓
120/347	72C51C1-NP		.6/.2	.5/.2	1.6/.6	67	277	4/2					20	20	20
70 Watt Lamp, ANSI Code M85 (Double-ended lamp)													SOUND RATING B		
120/277	72C5280-NP	HX-HPF	.9/.4	1.0/.5	1.7/.8	94	240	5/2	11.75	10.50	11.13	8.5	25	✓	✓
New	**72C5280-NP-001**														
120/347	72C52C0-NP		.8/.3	1.0/.4	1.7/.6								35		✓
70 Watt Lamp, ANSI Code M98													SOUND RATING B		
120/277	72C5282-NP	HX-HPF	.9/.4	1.3/.6	1.6/.8	94	255	4/2	11.75	10.50	11.13	8.5	20	✓	✓
New	**72C5282-NP-001**														
120/347	72C52C2-NP		.9/.3	1.2/.4	1.7/.7			5/2							✓
70 Watt Lamp, ANSI Code M139													SOUND RATING B		
120/277	72C5281-NP	HX-HPF	.9/.4	1.0/.5	1.7/.8	94	240	5/2	11.75	10.50	11.13	8.5	5	✓	✓
100 Watt Lamp, ANSI Code M90/M140													SOUND RATING B		
120/277	72C5381-NP	HX-HPF	1.1/.5	2.2/1.0	2.4/1.1	125	277	6/3	11.75	10.50	11.13	11.0	15	✓	✓
New	**72C5381-NP-001**														
120/347	72C53C1-NP		1.1/.4	2.2/.8	2.4/.9			6/2							✓
150 Watt Lamp, ANSI Code M81 (Double-ended lamp)													SOUND RATING B		
120/277	72C5481-NP	HX-HPF	1.6/.7	1.7/.8	3.7/1.6	180	240	10/4	14.30	13.13	13.75	13.0	10	✓	✓
120/347	72C54C1-NP		1.6/.6	1.7/.6	3.7/1.3										✓
150 Watt Lamp, ANSI Code M102/M142													SOUND RATING B		
120/277	72C5482-NP	HX-HPF	1.6/.7	1.5/.8	3.7/1.6	180	277	10/4	14.30	13.13	13.75	13.0	10	✓	✓
175/150 Watt Lamp, ANSI Code M57 or H39/M107													SOUND RATING B		
120/277	72C5581-NP	CWA	2.0/.9	2.0/.9	1.4/.7	205	300	5/3	11.75	10.50	11.13	14.0	✪	✓	✓
New	**72C5581-NP-001**														
120/347	72C55C1-NP		1.9/.7	1.9/.7	1.7/.5	208		5/2							✓
250 Watt Lamp, ANSI Code M58 or H37													SOUND RATING C		
120/277	72C5782-NP	CWA	2.6/1.1	2.1/.9	2.1/.9	290	300	8/4	16.70	15.50	16.13	16.5	✪	✓	✓
New 120/277	**72C5782-NP-001**														
120/347	72C57C2-NP		2.5/.9	2.0/.7	2.0/.7			7/3	14.30	13.13	13.75	14.0			✓
400 Watt Lamp, ANSI Code M59 or H33													SOUND RATING C		
120/277	72C6082-NP	CWA	3.9/1.7	3.3/1.4	3.9/1.7	460	310	10/5	19.20	18.00	18.63	22.5	✪	✓	✓
New	**72C6082-NP-001**														

All Advance dual-volt, F-can ballasts include auto-reset thermal protection for both taps.

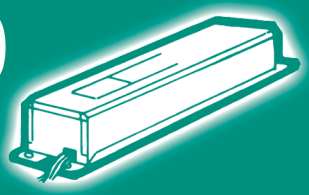
* Ballast with suffix -BLS includes bottom leads with studs.

✪ Ballast to lamp distance is only limited by the size of the conductor between the ballast and the lamp. For proper wire size, see table on page 4-48 of this catalog.

New **Replacement ballasts in individual cartons** indicated by **bold type** with suffix **-001.**

Also see Diagrams on Page 4-53.

HID



F-Can Ballasts, Indoor, Outdoor Type 1

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

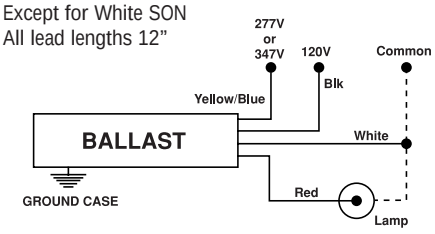
High Pressure Sodium

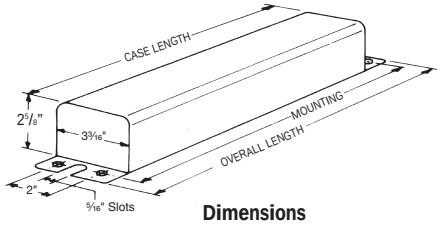
Input Voltage	Catalog Number	Circuit Type	Input Amps			Input Watts	Nom. Open Circuit Voltage	Fuse Rating Amps	Over-all Length	Case Length	Mtg. Dim.	Total Wt. (lbs)	Max. Ballast to Lamp Distance (ft)	Certifications	
			Operating	Starting	Open Circuit									UL	CSA
50 Watt Lamp, ANSI Code S68															**SOUND RATING B**
New 120/277	72C7884-NP	HX-HPF	.7/.3	.7/.4	1.4/.7	65	120	4/2	11.75	10.50	11.13	11.0	15	✓	✓
	72C7884-NP-001														
70 Watt Lamp, ANSI Code S62															**SOUND RATING B**
New 120/277	72C7984-NP	HX-HPF	.9/.4	1.0/.5	1.4/.7	90	120	5/2	11.75	10.50	11.13	10.0	7	✓	✓
	72C7984-NP-001														
120/347	72C79C4-NP		.8/.3	.9/.3	1.4/.5	94		4/2							✓
100 Watt Lamp, ANSI Code S54															**SOUND RATING B**
New 120/277	72C8084-NP	HX-HPF	1.1/.5	1.5/.7	1.9/.8	125	120	6/3	11.75	10.50	11.13	11.0	15	✓	✓
	72C8084-NP-001														
120/347	72C80C4-NP		1.2/.4	1.7/.6	1.7/.6										✓
150 Watt Lamp, ANSI Code S55 (55-Volt Arc Tube)															**SOUND RATING B**
120/277	72C8185-NP	HX-HPF	1.7/.7	2.6/1.2	2.2/1.0	185	120	8/4	14.30	13.13	13.75	14.0	5	✓	✓
120/347	72C81C5-NP		1.7/.6	2.6/.9	2.2/.8										✓
150 Watt Lamp, ANSI Code S56 (100-Volt Arc Tube)															**SOUND RATING B**
120/277	72C8680-NP	CWA	1.7/.7	1.5/.7	1.0/.4	185	186	5/3	14.30	13.13	13.75	14.0	5	✓	✓
35 Watt Lamp, ANSI Code S99 (White SON-Philips) (Minimum starting temperature -30°C or -20°F)															**SOUND RATING B**
120	72C7705-NP	Hybrid Electronic	.4	.6	.9	45	120	3	11.75	10.50	11.13	6.0	2	✓	✓
50 Watt Lamp, ANSI Code S104 (White SON-Philips) (Minimum starting temperature -30°C or -20°F)															**SOUND RATING B**
120	72C7805-NP	Hybrid Electronic	.7	1.0	1.3	68	120	3	11.75	10.50	11.13	6.5	2	✓	✓
100 Watt Lamp, ANSI Code S105 (White SON-Philips) (Minimum starting temperature -30°C or -20°F)															**SOUND RATING B**
120	72C8005-NP	Hybrid Electronic	1.1	2.2	2.0	120	120	5	14.30	13.13	13.75	9.0	2	✓	✓

All Advance dual-volt, F-can ballasts include auto-reset thermal protection for both taps.

New **Replacement ballasts in individual cartons** indicated by **bold type** with suffix **-001.**

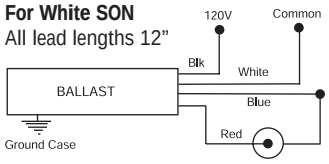
Wiring Diagram
Except for White SON
All lead lengths 12”





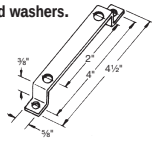
Dimensions

Wiring Diagram For White SON
All lead lengths 12”

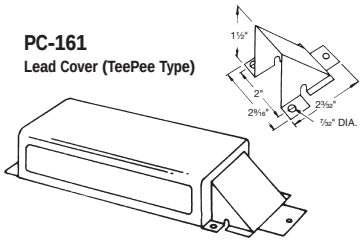


Accessories

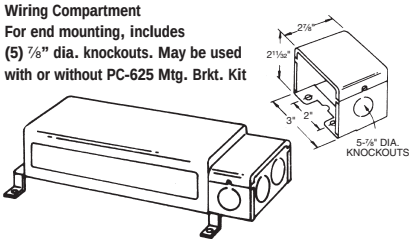
PKG-625
Mounting Bracket Kit
Includes (2) mounting brackets and (4) #10-32 screws with nuts and washers.



PC-161
Lead Cover (TeePee Type)



PC-857
Wiring Compartment
For end mounting, includes (5) ⅞” dia. knockouts. May be used with or without PC-625 Mtg. Brkt. Kit



Encapsulated Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Mercury

Input Volts	Catalog † Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Case Style	Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)
									Mfd	Min Volt	Dry Film		Oil Filled		
											Dia (in)	Ht (in)	Oval (in)	Ht (in)	
100 Watt Lamp, ANSI Code H38															**SOUND RATING A**
120/208/ 240/277	73B2591	CWA	125	1.1/.6/ .6/.5	250	3/2/ 2/2	A	PC709-2	10	280	1.50	2.90	—	—	8.3
175 Watt Lamp, ANSI Code H39															**SOUND RATING A**
120/208/ 240/277	73B3092	CWA	200	1.9/1.1/ 1.0/.9	215	5/3/ 3/2	A	PC709-2	17.5	240	1.50	3.75	—	—	8.3
250 Watt Lamp, ANSI Code H37															**SOUND RATING B**
120/208/ 240/277	73B3592	CWA	285	2.5/1.4/ 1.3/1.1	250	8/5/ 5/3	A	PC709-4	22.5	280	1.75	3.75	—	—	12.0
400 Watt Lamp, ANSI Code H33															**SOUND RATING B**
120/208/ 240/277	73B4091	CWA	454	3.9/2.2/ 2.0/1.7	245	10/8/ 5/5	A	PC767-1	35	240	1.75	5.15	—	—	14.0

† Ordering information:
Original equipment ballasts - add proper suffix to catalog number:
-500D includes core & coil with dry-film capacitor
-600 core & coil only (no capacitor)

• For CWA circuits, figure is operating current.

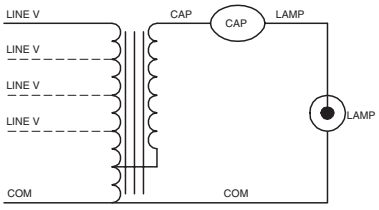


Fig. A

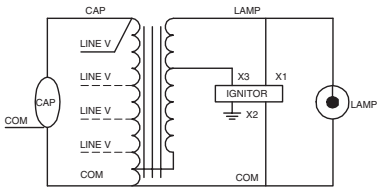


Fig. K

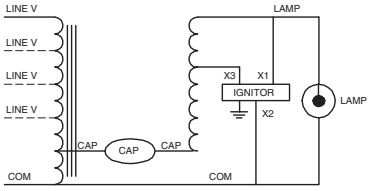
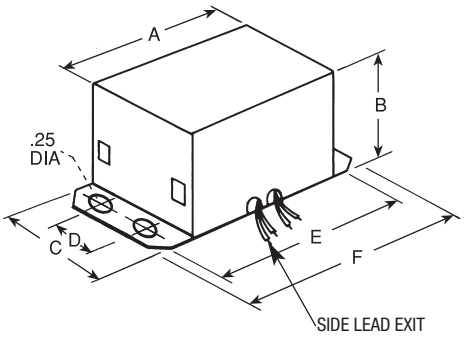


Fig. M



DIMENSIONS

Case Style	Lead Exit	A	B	C	D	E	F
PC709-2	Side	4.6	3.4	3.6	2.0	5.25	6.0
PC709-4	Side	4.6	4.4	3.6	2.0	5.25	6.0
PC767-1	Side	5.4	5.0	3.8	2.0	6.0	6.75
PC767-3	Side	5.4	5.0	4.3	2.0	6.0	6.75

HID

Encapsulated Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog † Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Case Style	Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)	
									Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)
											Dia (in)	Ht (in)	Oval (in)	Ht (in)			
70 Watt Lamp, ANSI Code M98 Medium Base																	SOUND RATING A
120/277	73B5282	HX-HPF	90	1.9/.8	255	4/2	K	PC709-2	8	280	1.50	2.90	—	—	9.0	LI533-H4	15
100 Watt Lamp, ANSI Code M90 or M140																	SOUND RATING A
New 120/277	73B5380	HX-HPF	129	2.6/1.2	280	6/3	K	PC709-4	12	280	1.50	2.90	—	—	10.0	LI533-H4	20
	73B5383	CWA	128	1.1/.5	222	3/2	M	PC709-4	10	300	1.50	2.90	—	—		LI533-H4	2
150 Watt Lamp, ANSI Code M102 (Medium Base) or M142																	SOUND RATING A
120/277	73B5482	HX-HPF	185	3.7/1.6	265	10/4	K	PC709-4	16	280	1.50	3.75	—	—	11.0	LI533-H4	10
175 Watt Lamp, ANSI Code M57 or H39																	SOUND RATING A
400V 120/208/240/277	73B5590	CWA	210	1.8/1.1/.9/.8	305	5/3/3/2	A	PC709-4	10	400	1.50	3.75	—	—	12.0	—	—
120/277/347	73B55A0	CWA	210	1.8/.8/.7	305	5/2/2	A	PC709-4	10	400	1.50	3.75	—	—	12.2	—	—
250 Watt Lamp, ANSI Code M58 or H37																	SOUND RATING B
120/208/240/277	73B5790	CWA	295	2.5/1.4/1.3/1.1	300	8/5/5/3	A	PC767-1	15	400	1.75	3.75	—	—	15.0	—	—
400V 120/277/347	73B57A0	CWA	295	2.5/1.1/.9	315	8/3/3	A	PC767-1	15	400	1.75	3.75	—	—	15.2	—	—
400 Watt Lamp, ANSI Code M59 or H33																	SOUND RATING B
400V 120/208/240/277	73B6091	CWA	458	4.0/2.3/2.0/1.7	300	10/7/5/5	A	PC767-3	24	400	1.75	5.15	—	—	20.0	—	—
120/277/347	73B60A1	CWA	460	4.0/1.7/1.4	300	10/5/4	A	PC767-3	24	400	1.75	5.15	—	—	20.2	—	—

† Ordering information:
Original equipment ballasts - add proper suffix to catalog number:
-500D includes core & coil with dry-film capacitor
-600 core & coil only (no capacitor)

• For CWA circuits, figure is operating current. For HX circuits, figure is highest of starting, operating or open circuit currents.

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

Encapsulated Core & Coil Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

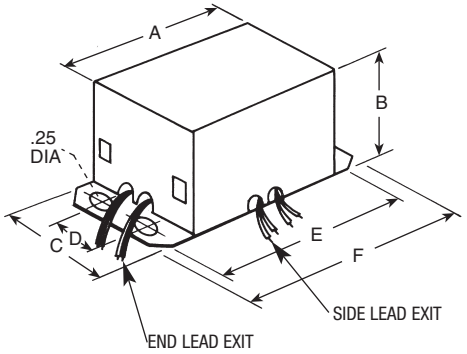
High Pressure Sodium

Input Volts	Catalog † Number	Circuit Type	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Case Style	Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)	
									Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)
											Dia (in)	Ht (in)	Oval (in)	Ht (in)			
250 Watt Lamp, ANSI Code S50																	**SOUND RATING B**
120/277	73B8281	CWA	295	2.5/1.1	187	7/3	M	PC767-3	35	240	1.75	3.75	—	—	15.0	LI501-H4	2
400 Watt Lamp, ANSI Code S51																	**SOUND RATING B**
120/277	73B8483	CWA	460	3.8/1.7	190	10/5	M	PC767-3	55	240	1.75	5.15	—	—	21.0	LI501-H4	2
35 Watt Lamp, ANSI Code S99 (White SON-Philips)																	**SOUND RATING A**
120	73B7705	Hybrid Electronic Reactor	45	.9	120	3	R	PC709-7	20	120	Dry capacitor & controller potted in can				8.0	Internal	2
50 Watt Lamp, ANSI Code S104 (White SON-Philips)																	**SOUND RATING A**
120	73B7805	Hybrid Electronic Reactor	68	1.3	120	3	R	PC709-6	28	120	Dry capacitor & controller potted in can				9.0	Internal	2
100 Watt Lamp, ANSI Code S105 (White SON-Philips)																	**SOUND RATING A**
120	73B8005	Hybrid Electronic Reactor	120	2.2	120	5	R	PC709-6	45	120	Dry capacitor & controller potted in can				9.0	Internal	2

† Ordering information:
Original equipment ballasts - add proper suffix to catalog number:
-500D (All except White SON) includes core & coil with dry-film capacitor
-510 (White SON only) includes core and coil with dry-film capacitor and controller potted in can
-600 (All except White SON) core & coil only (no capacitor)

• For CWA circuits, figure is operating current. For Hybrid Electronic Reactor circuits, figure is highest of starting, operating or open circuit current.

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.



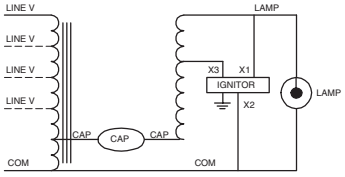


Fig. M

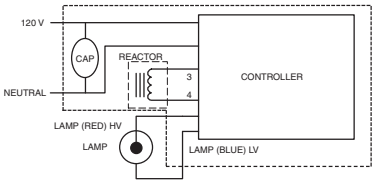


Fig. R

DIMENSIONS

Case Style	Lead Exit	A	B	C	D	E	F
PC709-6	End	4.6	4.4	3.6	2.0	5.25	6.0
PC709-7	End	4.6	3.4	3.6	2.0	5.25	6.0
PC767-3	Side	5.4	5.0	4.3	2.0	6.0	6.75

ADVANCE

ADVANCE, 10275 WEST HIGGINS ROAD, ROSEMONT, IL 60018. TEL: (847) 390-5000, FAX: (847) 390-5109

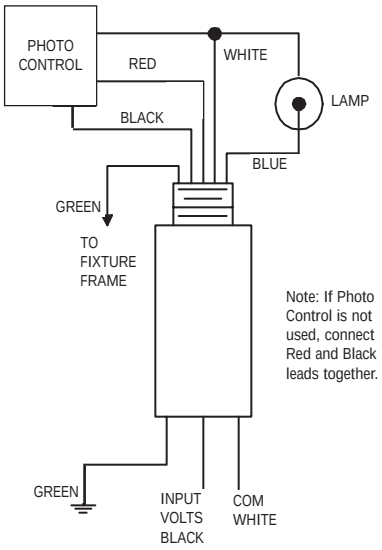
Postline Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Input Volts	Catalog Number† (P=Thermally Protected)	Circuit Type	Watts Input	Max • Input Current	Nom. Open Circuit Voltage	Fuse (amps)	Length (in)	Spring Clip & Support Chain Kit	Weight (lbs)	Certifications	
										UL	CSA
50 Watt Lamp, ANSI Code H46											
120	74P1501-011P	CWA	76	.7	250	2	12.0	PL-2 (Optional)	6.5	✓	✓
120	74P1801-011	HX-NPF	74	2.0	275	5	7.0	PL-1 (Optional)	5.0	✓	✓
75 Watt Lamp, ANSI Code H43											
120	74P2001-011P	CWA	95	.9	240	2	12.0	PL-2 (Optional)	6.5	✓	✓
120	74P2301-011	HX-NPF	92	2.1	250	6	7.0	PL-1 (Optional)	5.0	✓	✓
100 Watt Lamp, ANSI Code H38											
120	74P2503-011P	CWA	122	1.1	250	3	12.0	PL-2 (Included)	6.5	✓	✓
208	74P2513-011P			.7		2				✓	✓
240	74P2523-011P			.6		2				✓	
277	74P2533-011P			.5		2				✓	✓
120	74P2802-011	HX-NPF	120	2.8	245	7	7.0	PL-1 (Included)	5.0	✓	✓
277	74P2832-011	R-NPF		1.4	277	4		PL-1 (Included)		✓	✓

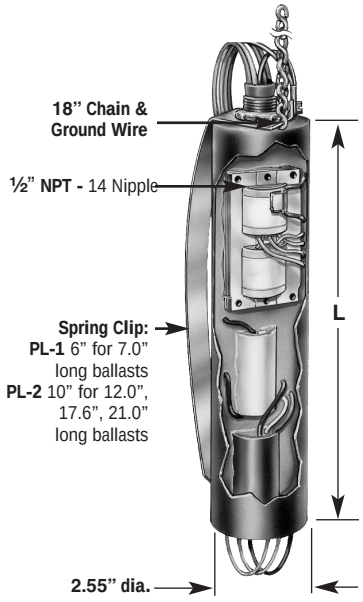
† Ordering information:
Order catalog number indicated. Ballasts rated 100 watts and above include pre-assembled spring clip and support chain kit.
For ballasts rated less than 100 watts, if spring clip and support chain kit is desired, order separately.

• For CWA circuits, figure is operating current. For HX and R circuits, figure is highest of starting, operating or open circuit current.



Postline Wiring Diagram

PL-1 and **PL-2** - **Spring Clip and Support Chain Kits**
Included pre-assembled with all postline ballasts rated 100 watts and above. Support chain lowers ballast 18" down post while 6" or 10" spring clip forces ballast against post's inner wall to assure proper heat dissipation away from ballast's internal components. Also includes factory-connected ground wire to provide for proper grounding of ballast case and fixture housing. Kits include instruction sheet and may be ordered separately to retrofit existing installations.



Postline Ballasts

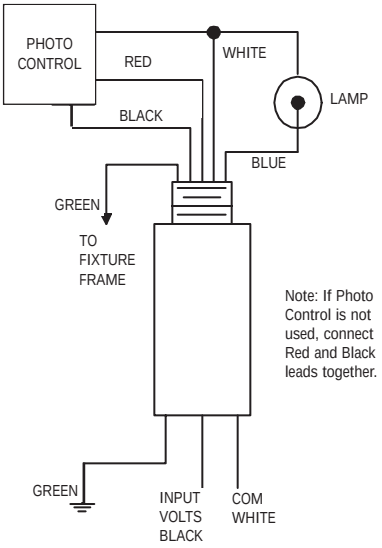
(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Mercury

Input Volts	Catalog Number † (P=Thermally Protected)	Circuit Type	Watts Input	Max • Input Current	Nom. Open Circuit Voltage	Fuse (amps)	Length (in)	Spring Clip & Support Chain Kit	Weight (lbs)	Certifications	
175 Watt Lamp, ANSI Code H39											
120	74P3003-011P	CWA	215	1.8	240	5	12.0	PL-2 (Included)	6.5	✓	✓
208	74P3013-011P			1.1		3				✓	✓
240	74P3023-011P			.9		3				✓	✓
277	74P3033-011P			.9		2				✓	✓
175 Watt Lamp, ANSI Code H39 or 150 Watt Lamp, ANSI Code S63, EZ Lux (GE), Unalux (Osram Sylvania), Econolux (Philips), Retrolux (Philips)											
120	74P3303-011	HX-NPF	210	5.7	245	15	7.0	PL-1 (Included)	5.0	✓	✓
208	74P3313-011		215	2.8	245	7				✓	✓
240	74P3323-011	R-NPF	205	2.7	240	7	7.0	PL-1 (Included)	5.0	✓	
277	74P3333-011		205	2.5	277	7				✓	✓
250 Watt Lamp, ANSI Code H37											
120	74P3503-011P	CWA	300	2.6	250	7	21.0	PL-2 (Included)	11.0	✓	✓
208	74P3513-011P			1.5		4				✓	✓
240	74P3523-011P			1.3		4				✓	
277	74P3533-011P			1.2		3				✓	✓

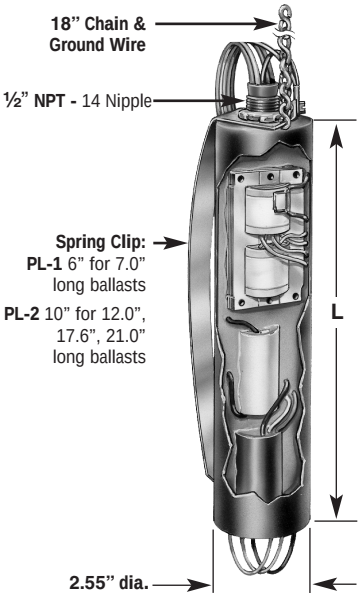
† Ordering information:
Order catalog number indicated. Ballasts rated 100 watts and above include pre-assembled spring clip and support chain kit.

• For CWA circuits, figure is operating current. For HX and R circuits, figure is highest of starting, operating or open circuit current.



Postline Wiring Diagram

PL-1 and **PL-2** - **Spring Clip and Support Chain Kits**
Included pre-assembled with all postline ballasts rated 100 watts and above. Support chain lowers ballast 18" down post while 6" or 10" spring clip forces ballast against post's inner wall to assure proper heat dissipation away from ballast's internal components. Also includes factory-connected ground wire to provide for proper grounding of ballast case and fixture housing. Kits include instruction sheet and may be ordered separately to retrofit existing installations.



Postline Ballasts

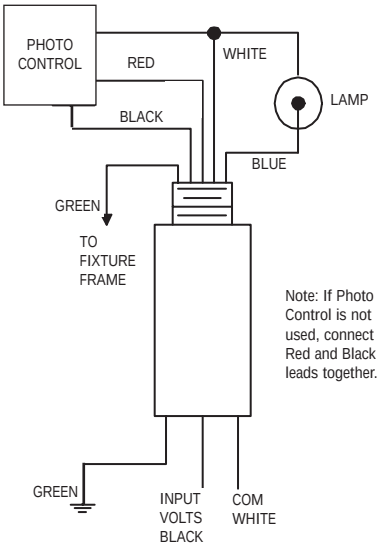
(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog Number † (P=Thermally Protected)	Circuit Type	Watts Input	Max • Input Current	Nom. Open Circuit Voltage	Fuse (amps)	Length (in)	Weight (lbs)	Spring Clip & Support Chain Kit	Max Dist To Lamp (ft)	Certifications UL	Certifications CSA
50 Watt Lamp, ANSI Code M110												
120	74P5103-011 74P5104-011P	HX-NPF HX-PFC	69	1.8 1.1	260	5 3	12.0	6.0	PL-2 (Optional)	20	✓ ✓	✓ ✓

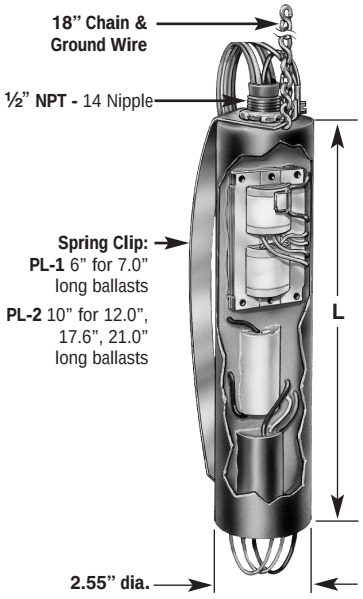
† Ordering information:
Order catalog number indicated. If spring clip and support chain kit is desired, order separately.

• For HX circuit, figure is highest of starting, operating or open circuit current.



Postline Wiring Diagram

PL-1 and **PL-2** - **Spring Clip and Support Chain Kits**
Included pre-assembled with all postline ballasts rated 100 watts and above. Support chain lowers ballast 18" down post while 6" or 10" spring clip forces ballast against post's inner wall to assure proper heat dissipation away from ballast's internal components. Also includes factory-connected ground wire to provide for proper grounding of ballast case and fixture housing. Kits include instruction sheet and may be ordered separately to retrofit existing installations.



Postline Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

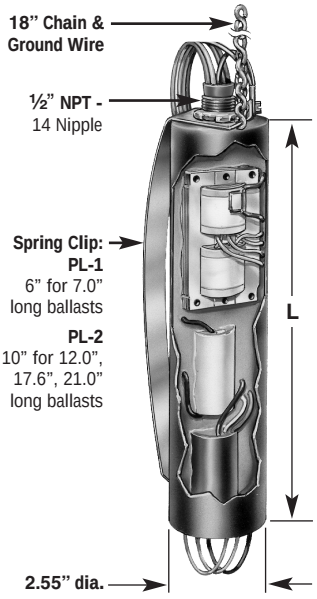
Input Volts	Catalog Number† (P=Thermally Protected)	Circuit Type	Watts Input	Max • Input Current	Nom. Open Circuit Voltage	Fuse (amps)	Length (in)	Weight (lbs)	Spring Clip & Support Chain Kit	Max Dist To Lamp (ft)	Certifications UL	Certifications CSA
35 Watt Lamp, ANSI Code S76												
120	74P7702-011 74P7703-011P	R-NPF R-HPF	43	1.2 .8	120	3 2	7.0	3.0 3.5	PL-1 (Optional)	10	✓ ✓	✓ ✓
50 Watt Lamp, ANSI Code S68												
120	74P7802-011	R-PFC	61	1.8	120	5	7.0	3.5	PL-1 (Optional)	10	✓	✓
120	74P7803-011P	R-HPF	61	1.3	120	4	12.0	4.8	PL-2 (Optional)	10	✓	✓
70 Watt Lamp, ANSI Code S62												
120	74P7902-011	R-NPF	84	2.2	120	6	7.0	3.5	PL-1 (Optional)	10	✓	✓
120	74P7903-011P	R-PFC	84	1.6	120	4	12.0	5.0	PL-2 (Optional)	10	✓	✓
208 240 277	74P7913-011P 74P7923-011P 74P7933-011P	R-HPF	97	.9 .8 .7	208 240 277	2 2 2	17.6	8.5	PL-2* (Included)	10	✓ ✓ ✓	
100 Watt Lamp, ANSI Code S54												
120	74P8002-011 74P8003-011P	R-NPF R-HPF	122	3.1 2.5	120	8 7	12.0 17.6	5.5 7.3	PL-2 (Included)	5	✓ ✓	✓ ✓
208 240 277	74P8013-011P 74P8023-011P 74P8033-011P	R-HPF	136	1.1 1.0 .9	208 240 277	3 3 3	21.0	12.7	PL-2 (Included)	5	✓ ✓ ✓	
150 Watt Lamp, ANSI Code S55 (55-Volt Arc Tube)												
120	74P8103-011 74P8104-011P	R-NPF R-HPF	178	4.6 3.6	120	12 9	12.0 17.6	6.0 7.8	PL-2 (Included)	5	✓ ✓	✓ ✓

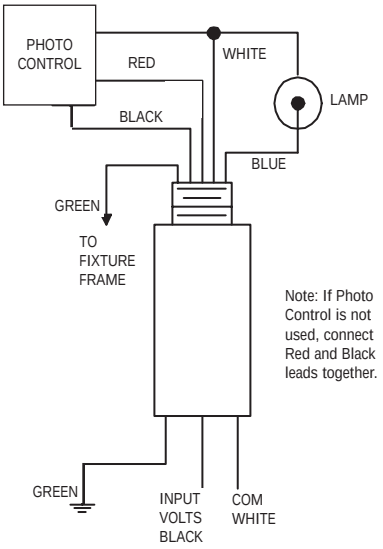
† Ordering information:
Order catalog number indicated. Ballasts rated 100 watts and above include pre-assembled spring clip and support chain kit. For ballasts rated less than 100 watts, if spring clip and support chain kit is desired, order separately.

* 70 watt High Pressure Sodium ballasts with 208, 240, or 277 Volt inputs will always be supplied with the spring clip and chain kit.

• For CWA circuits, figure is operating current. For HX and R circuits, figure is highest of starting, operating or open circuit current.

PL-1 and **PL-2** - **Spring Clip and Support Chain Kits**
Included pre-assembled with all postline ballasts rated 100 watts and above. Support chain lowers ballast 18" down post while 6" or 10" spring clip forces ballast against post's inner wall to assure proper heat dissipation away from ballast's internal components. Also includes factory-connected ground wire to provide for proper grounding of ballast case and fixture housing. Kits include instruction sheet and may be ordered separately to retrofit existing installations.





Postline Wiring Diagram

Mercury

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Input Volts	Catalog Number	Circuit Type (Maximum Ambient Temp.)	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse (amps)	Wiring Dia.	Case Style	Weight (lbs)	Certification UL	Certification CSA
175 Watt Lamp, ANSI Code H39											
120/208/240/277	78E3092-001	CWA (65°C)	200	2.0/1.1 1.0/.9	240	5/3/3/2	IE-2	PC-723	21	✓	✓
250 Watt Lamp, ANSI Code H37											
480	78E3542-001	CWA (65°C)	285	.6	250	3	IE-1	PC-723	21	✓	
400 Watt Lamp, ANSI Code H33											
120/208/240/277	78E4091-001	CWA (65°C)	454	3.9/2.2/2.0/1.7	245	10/8/5/5	IE-2	PC-723	24	✓	
480	78E4041-001			1.0		5	IE-1			✓	

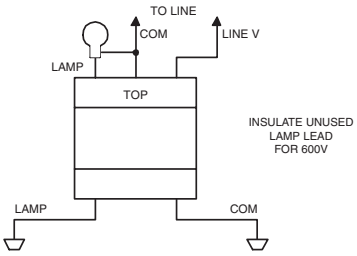


Fig. IE-1

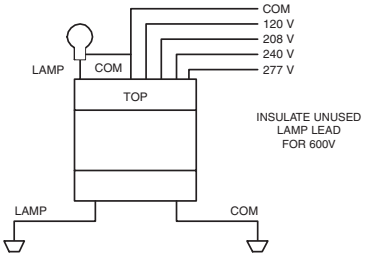


Fig. IE-2

High Pressure Sodium

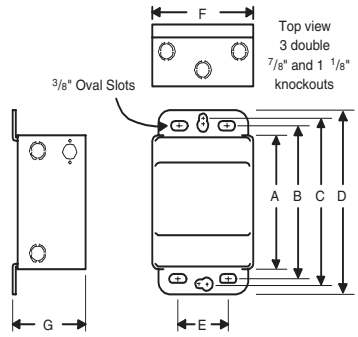
(60 Hz., Minimum Starting Temperature –40°F or –40°C)

Input Volts	Catalog Number	Circuit Type (Maximum Ambient Temp.)	Watts Input	Max• Input Current	Nom Open Circuit Voltage	Fuse (amps)	Wiring Dia.	Case Style	Weight (lbs)	Certification UL	Certification CSA
200 Watt Lamp, ANSI Code S66											
480	78E8940-001	CWA (50°C)	240	0.6	185	3	IE-1	PC-724	31	✓	
250 Watt Lamp, ANSI Code S50											
120/208/240/277	78E8291-001	CWA (50°C)	295	2.5/1.5/1.3/1.1	187	7/4/4/3	IE-2	PC-724	34	✓	✓
400 Watt Lamp, ANSI Code S51											
120/208/240/277	78E8493-001	CWA (40°C)	464	3.8/2.2/1.9/1.7	190	10/8/5/5	IE-2	PC-724	38	✓	✓
480	78E8443-001			1.0		3	IE-1			✓	
1000 Watt Lamp, ANSI Code S52											
120/208/240/277	78E8793-001	CWA (Protected★) (40°C)	1100	9.5/5.5/4.8/4.2	435	25/15/10/10	IE-2	PC-746	60	✓	✓
480	78E8743-001			2.3		6	IE-1			✓	

Note: Ballasts must be mounted at least 12" apart. All indoor enclosed high pressure sodium and pulse-start metal halide lamp ballasts are furnished with an Advance long life ignitor built into the ballast can. Maximum lamp-to-ballast distance is 50 ft. (Except 1000 watt ballasts which are 75 ft). For ballasts not requiring ignitors, see page 4-48 for remote mounting considerations.

- For CWA circuits, figure is operating current.

★ Equipped with an auto-reset thermal protector to prevent ignitor from overheating in the event of lamp failure.



DIMENSIONS

Case Style	A	B	C	D	E	F	G
PC-723	11⅜	12	12¾	13¾	3 5/16	6 9/16	4¾
PC-724	12 1/16	12 11/16	13 7/16	14 7/16	3 5/16	7 11/16	5¾
PC-746	17⅜	18	18¾	19¾	3 5/16	7 11/16	5¾

Indoor Enclosed Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog Number	Circuit Type (Maximum Ambient Temperature)	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse (amps)	Wiring Dia.	Case Style	Weight (lbs)	Certification UL	Certification CSA
175/150 Watt Lamp, ANSI Code M57/M107 or H39											
120/208/ 240/277	78E5590-001	CWA (65°C)	210	1.8/1.1/ 0.9/.8	305	5/3/ 3/2	IE-2	PC-723	22	✓	✓
250 Watt Lamp, ANSI Code M58 or H37											
120/208/ 240/277	78E5790-001	CWA (65°C)	285	2.5/1.5/ 1.3/1.1	310	8/5/ 5/3	IE-2	PC-723	24	✓	✓
400 Watt Lamp, ANSI Code M59 or H33											
120/208/ 240/277	78E6091-001	CWA (55°C)	458	4.0/2.3/ 2.0/1.8	300	10/7/ 5/5	IE-2	PC-724	32	✓	✓
480	78E6041-001		462	1.0		3	IE-1			✓	
400 Watt Lamp, ANSI Code M135 (Pulse-Start)											
New 120/208/ 240/277	78E6092-001	Super CWA (55°C)	452	3.8/2.2/ 1.9/1.7	265	10/7/ 5/5	IE-2	PC-724	32	✓	✓
Two 400 Watt Lamps, ANSI Code M59 or H33											
120/240	78E6351-001	CWA-ILO (40°C)	890	8.4/4.2	330	20/10	IE-3	PC-746	58	✓	
120/277	78E6381-001			8.4/3.6		20/10				✓	
480	78E6341-001			2.1		5				✓	
1000 Watt Lamp, ANSI Code M47 or H36											
120/208/ 240/277	78E6592-WC1 ◇	CWA (55°C)	1080	9.0/5.2/ 4.5/3.9	430	20/15/ 10/10	IE-2	PC-724	42	✓	✓
	78E6592-001									✓	✓
480	78E6542-001			2.3		6	IE-1			✓	
Two 1000 Watt Lamps, ANSI Code M47 or H36 (Minimum starting temperature 50°F)											
480	78E9379-WC1 ◇	LEAD-LAG (40°C)	2100	4.6	480	10	IE-3	PC-724	42	✓	
	78E9379-001									✓	
1500 Watt Lamp, ANSI Code M48											
480	78E6742-001	CWA (50°C)	1625	3.4	450	10	IE-1	PC-746	60	✓	

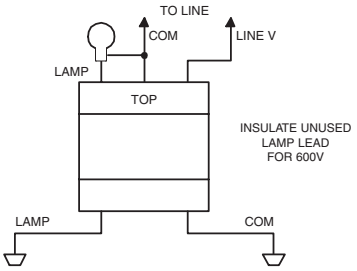


Fig. IE-1

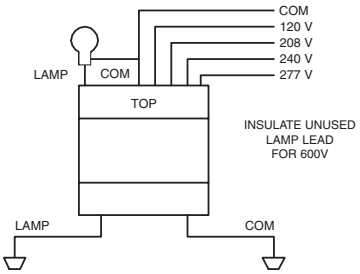


Fig. IE-2

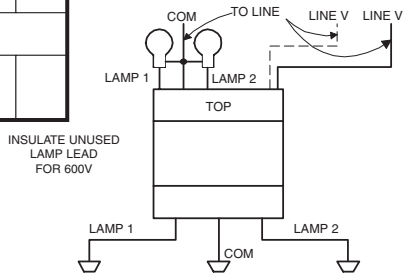
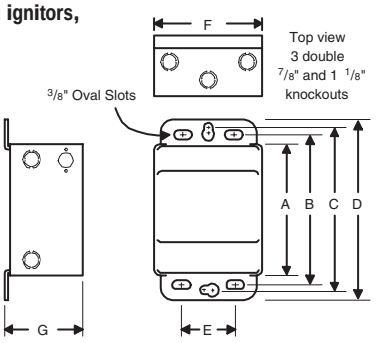


Fig. IE-3

Note: Ballasts must be mounted at least 12" apart.
All indoor enclosed high pressure sodium and pulse-start metal halide lamp ballasts are furnished with an Advance long life ignitor built into the ballast can. Maximum lamp-to-ballast distance is 50 ft. (Except 1000 watt ballasts which are 75 ft). For ballasts not requiring ignitors, see page 4-48 for remote mounting considerations.

- For CWA circuits, figure is operating current. For Lead-Lag circuit, figure is highest of starting, operating or open circuit current.

◇ White can typically used for indoor tennis courts.



DIMENSIONS

Case Style	A	B	C	D	E	F	G
PC-723	11⅜	12	12¾	13¾	3 5/16	6 9/16	4¾
PC-724	12 1/16	12 11/16	13 7/16	14 7/16	3 5/16	7 11/16	5¾
PC-746	17⅜	18	18¾	19¾	3 5/16	7 11/16	5¾

Outdoor Weatherproof Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Input Volts	Catalog Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse (amps)	Wiring Dia.	Height (in)	Weight (lbs)	Certification UL	Certification CSA
100 Watt Lamp, ANSI Code H38 or H44											
120/208/240/277	79W2591-001	CWA	125	1.1/.6/.6/.5	250	3/2/2/2	OW-2	6.6	10	✓	✓
175 Watt Lamp, ANSI Code H39											
120/208/240/277	79W3092-001	CWA	200	2.0/1.1/1.0/0.9	240	5/3/3/2	OW-2	6.6	11	✓	✓
250 Watt Lamp, ANSI Code H37											
120/208/240/277	79W3592-001	CWA	285	2.5/1.5/1.3/1.1	250	8/5/5/3	OW-2	6.6	13	✓	✓
480	79W3542-001			.7		2	OW-1			✓	✓
400 Watt Lamp, ANSI Code H33											
120/208/240/277	79W4091-001	CWA	454	3.9/2.2/2.0/1.7	245	10/8/5/5	OW-2	8.6	18	✓	✓
480	79W4041-001			1.0		5	OW-1			✓	
1000 Watt Lamp, ANSI Code H36											
120/208/240/277	79W5090-001	CWA	1080	9.8/5.6/4.9/4.3	420	20/15/10/10	OW-2	11.3	28	✓	
480	79W5040-001			2.3		10	OW-1			✓	

• For CWA circuits, figure is operating current.

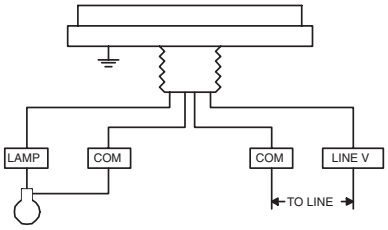


Fig. OW-1

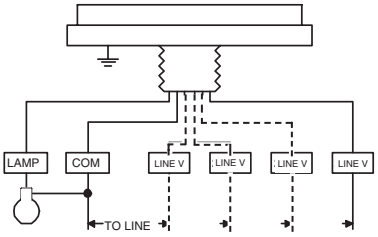
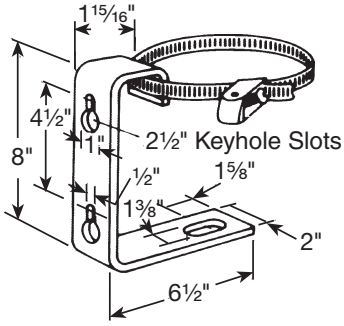
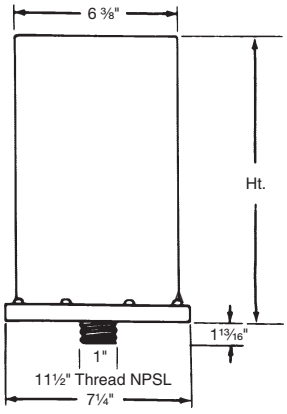


Fig. OW-2



SH-1 Mounting Bracket

Not included with ballast. Available at no charge when ordered with ballast.



Outdoor Weatherproof Ballasts

(60 Hz., Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse (amps)	Wiring Dia.	Height (in)	Weight (lbs)	Certification UL	Certification CSA
175/150 Watt Lamp, ANSI Code M57/M107 or H39											
120/208/240/277	79W5590-001	CWA	210	1.8/1.1/.9/.8	305	5/3/3/2	OW-2	6.6	15	✓	✓
250 Watt Lamp, ANSI Code M58 or H37											
120/208/240/277	79W5790-001	CWA	285	2.5/1.5/1.3/1.1	310	8/5/5/3	OW-2	8.6	18	✓	✓
400 Watt Lamp, ANSI Code M59 or H33											
120/208/240/277	79W6091-001	CWA	458	4.0/2.3/2.0/1.8	300	10/7/5/5	OW-2	8.6	21	✓	✓
480	79W6041-001		462	1.0		4	OW-1			✓	✓
Two 400 Watt Lamps, ANSI Code M59 or H33											
120/240	79W6351-001	CWA (ILO)	890	8.4/4.2	330	25/15	OW-4	13.8	43	✓	✓
480	79W6341-001			2.1		7				✓	✓
1000 Watt Lamp, ANSI Code M47 or H36											
120/208/240/277	79W6592-001	CWA	1080	9.0/5.2/4.5/3.9	430	20/15/10/10	OW-2	11.3	33	✓	✓
480	79W6542-001			2.3		6	OW-1			✓	✓
1500 Watt Lamp, ANSI Code M48											
120/208/240/277	79W6792-001	CWA	1605	13.5/7.8/6.8/5.9	450	30/25/20/15	OW-2	13.8	41	✓	✓
480	79W6742-001		1625	3.4		10	OW-1		40	✓	✓

• For CWA circuits, figure is operating current.

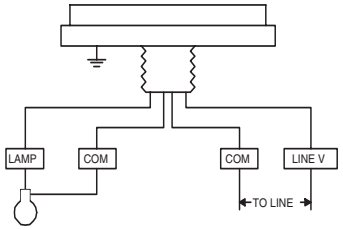


Fig. OW-1

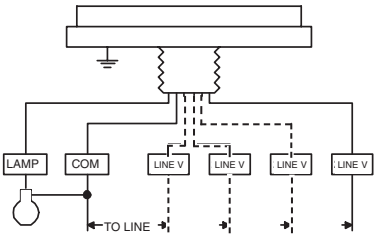


Fig. OW-2

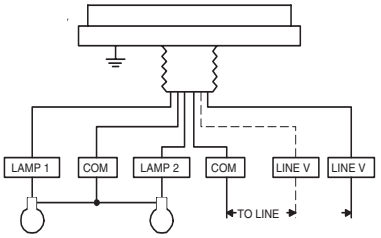
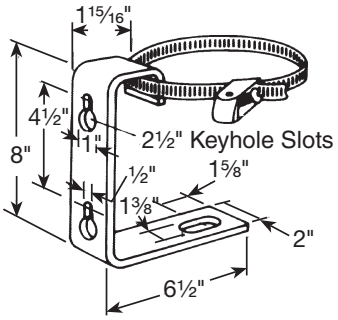
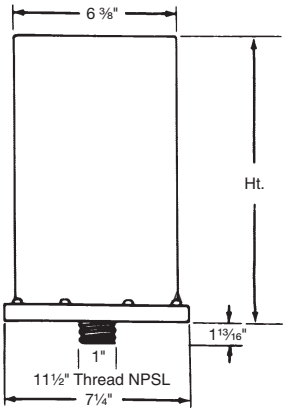


Fig. OW-4



SH-1 Mounting Bracket

Not included with ballast. Available at no charge when ordered with ballast.



Outdoor Weatherproof Ballasts

(60 Hz., Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

Input Volts	Catalog Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse (amps)	Wiring Dia.	Height (in)	Weight (lbs)	Certification UL	Certification CSA
150 Watt Lamp, ANSI Code S55 (55-Volt Arc Tube)											
120/208/ 240/277	79W8192-001	HX-HPF	188	2.8/1.6/ 1.4/1.3	120	10/5/ 5/4	OW-2	8.6	12	✓	✓
150 Watt Lamp, ANSI Code S56 (100-Volt Arc Tube)											
240/480	79W9499-001	CWA	188	.9/.4	180	3/2	OW-2	8.6	12	✓	
480	79W9524-001	HX-HPF	188	0.4	240	2	OW-1	8.6	14	✓	
200 Watt Lamp, ANSI Code S66											
240/480	79W9501-001	CWA	240	1.1/0.6	185	3/2	OW-2	11.3	21	✓	
250 Watt Lamp, ANSI Code S50											
120/208/ 240/277	79W8291-001	CWA	310	2.5/1.5/ 1.3/1.1	187	7/4/ 4/3	OW-2	11.3	14	✓	✓
480	79W8241-001			0.7		2	OW-1		17	✓	
310 Watt Lamp, ANSI Code S67											
240/480	79W9597-001	CWA	365	1.7/.9	175	5/3	OW-2	11.3	17	✓	
400 Watt Lamp, ANSI Code S51											
120/208/ 240/277	79W8493-001	CWA	464	3.8/2.2 1.9/1.7	190	10/8/ 5/5	OW-2	11.3	20	✓	✓
480	79W8443-001			1.0		3	OW-1			✓	✓
1000 Watt Lamp, ANSI Code S52											
120/208/ 240//277	79W8793-001	CWA (Protected) ★	1100	9.5/5.5/ 4.8/4.2	435	25/15/ 10/10	OW-2	13.8	34	✓	✓
480	79W8743-001			2.3		6	OW-1			✓	

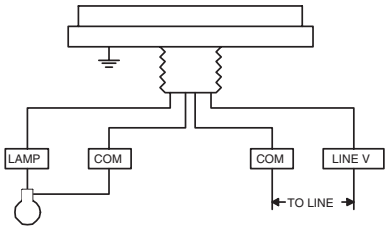


Fig. OW-1

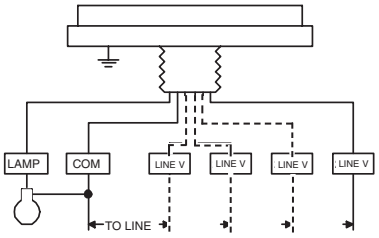
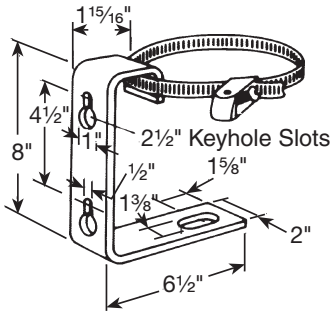


Fig. OW-2

All weatherproof high pressure sodium lamp ballasts are furnished with an Advance long life ignitor built into the ballast can. Maximum lamp-to-ballast distance is 50 ft. (except 79W8192 - distance is 35 ft and 1000 watt ballasts which are 75 ft.)

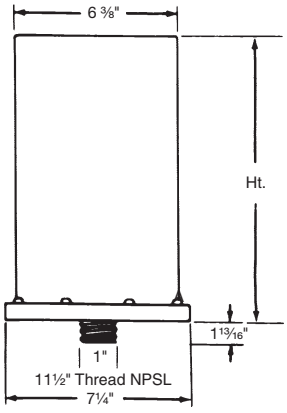
- For CWA circuits, figure is operating current. For HX circuits, figure is highest of starting, operating or open circuit current.

★ Equipped with an auto-reset thermal protector to prevent ignitor from overheating in the event of lamp failure.



SH-1 Mounting Bracket

Not included with ballast. Available at no charge when ordered with ballast.



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Catalog No. Explanation 5-3
Ballast Specifications ..... 5-4 to 5-5

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Press 2 if you know the last name and you will reach the spell by name directory
Press 0 or stay on the line to be connected to the operator

Customer Support/Technical Service
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Press 1 for customer support
Press 2 for technical, application, or warranty information
Press 4 to dial by name

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GENERAL INFORMATION

Introduction

Advance e-VISION™ electronic ballasts are the ideal choice for lighting applications utilizing low wattage Metal Halide lamps, especially those with ceramic arc tube construction. The e-VISION™ ballasts were developed jointly with Philips Lighting Electronics & Gear in Holland, which has almost a decade of experience designing and selling electronic HID ballasts in the European market. As a result the e-VISION™ ballast designs are very robust and reliable. Major features and benefits are listed in the table below:

Key Features	Key Benefits
IntelliVolt • Operates on either 120 or 277 volts, or any voltage in between • 50 or 60 Hz	• Fewer SKUs required in inventory • Broadens the range of applications
Dual-wattage lamp operation (35/50W or 70/100W)	• Only one ballast needed for two different lamp wattages • Fewer SKUs required in inventory • Offers option of bi-level switching (with the higher wattage lamp) for energy savings
Smaller and lighter weight than magnetic HID F-Can ballasts	• Provides fixture manufacturers with greater design flexibility • 2.0" shorter in length, 1.0"less in height, and 7lbs lighter on average than magnetic equivalents
Reduced input watts compared to magnetic systems	• Energy Savings • Up to 20% less input watts (35W systems) • Up to 10% less input watts (100W systems)
Low frequency lamp operation	• Does not create acoustic resonance in the lamp arc tube • Ensures that ballast is compatible with lamps of different manufacturers
Square wave output	Maximizes lamp life by: • Reducing the rate of lamp voltage rise • Operating the lamp with a low crest factor
Lamp EOL detection	• Detects lamp end-of-life (EOL) and safely removes power from the system • Eliminates annoying lamp cycling
Thermally Protected	• Safely shuts system down upon abnormal failure
Excellent line regulation • Lamp wattage will change less than 2% with a +/-10% change in line voltage	Better light quality from: • Excellent lamp color stability over life • Reduction in lamp-to-lamp color differences both initially and during lamp life
Aluminum enclosure and thermal potting material	• Allows ballast to be used in fixtures with high ambient temperatures by transferring heat away from sensitive internal components • Provides resistance against rough handling and dirty environments.
1.0 Ballast Factor	• Lamp produces full light output

APPLICATIONS

Examples of potential applications for the new e-Vision™ electronic ballasts include:

- Retail lighting (downlights, accent lighting, display windows, ect.)
- Institutional lighting (museums, houses of worship)
- Office lighting (conference rooms, offices and foyers)
- Outdoor lighting (building floodlighting, walkway lighting, and landscape lighting)

e-VISION™ Electronic Ballast Catalog Number Explanation

I | MH | – | 100 | – | A | – | BLS

Lead Exit / Mounting Options:

BLS = Bottom Leads with Studs

LF = Leads (side edit) with mounting Feet

Can Material / Size:

A = Metal case with dim. 5.5” L x 3.6” W x 1.5” H

Maximum Lamp Wattage

50 = up to 50W (either 35 or 50W lamp)

100 = up to 100W (either 70 or 100W lamp)

Lamp Type:

MH = Metal Halide

Input Voltage:

I = Intellivolt™ (accepts input of 120 thru 277V, 50/60 Hz nominal)

e-VISION™ Electronic Ballast Specifications

Section 1 - Physical Characteristics

1.0 The electronic ballast shall be furnished with integral, color-coded leads.

Section II - Performance Requirements

2.0 The electronic ballast shall be IntelliVolt™ and operate from a line voltage range of 108-305 volts, 50/60 Hz.

2.1 The electronic ballast input current shall have Total Harmonic Distortion (THD) of less than 15% when operated at nominal line voltage (120V, 277V).

2.2 The electronic ballast shall have a Power Factor greater than 90%.

2.3 The electronic ballast shall have a lamp end-of-life detection and shutdown circuit.

2.4 The electronic ballast shall be Sound Rated A.

2.5 The electronic ballast output frequency to the lamps shall be less than 200 Hz to prevent acoustic resonance inside the lamp arc tube and to minimize visible flicker.

2.6 The electronic ballast shall provide a "Lamp Current Crest Factor" of less than 1.5.

2.7 The electronic ballast shall be thermally protected to shut off when operating temperatures reach unacceptable levels.

Section III - Regulatory Requirements

3.0 The electronic ballast shall meet the requirements of the Federal Communications Commission rules and regulations, Title 47 CFR part 18, for Non-Consumer equipment.

3.1 The electronic ballast shall be Underwriters Laboratories (UL) Listed (Class P) and CSA Certified where applicable.

Section IV - Other

4.0 The electronic ballast shall not contain Polychlorinated Biphenyl (PCB's).

4.1 The electronic ballast shall carry a five-year warranty from the date of manufacture for operation at a case temperature of 75˚C or less. When operated at a case temperature between 76˚C and 85˚C, the warranty shall be 3 years from the date of manufacture.

4.2 The manufacturer shall have a twenty-five year history of producing HID lamp ballasts for the North American market.

4.3 The electronic ballast shall be produced in a factory certified to ISO 9002 Quality System Standards

Installation Notes

1. Red lead must be connected to center terminal of lamp. Do not connect red or blue lead to neutral.
2. Use 4.0 kV pulse rated lampholder.
3 Maximum ballast-to-lamp distance is 5 ft. using typical wiring methods and materials. Additional distance up to 15 ft. may be possible using special, low capacitance wire such as rubber insulated wire rated 10kV or higher. The total capacitance of this output (lamp) wire must be 100 picofarads or less.

How to Measure the Ballast Hot Spot

The maximum case temperature of the ballast should be measured on the right heatsink clip side on the width side of the ballast, which has the two silver heatsink clips. A drawing of the hotspot location is given below:

Lamp Data		Min. Starting Temp. (F/C)	Input Volts	Catalog Number†	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Power Factor	Wiring Diagram
Number	Watts				UL	CSA						
35/39 Watt Lamp, ANSI Code M130												
1	35	-20/-30	120	IMH-50-A-XXX	✓	✓	0.38	45	1.0	15	90	Fig 1a or 2a
			277		✓	✓	0.16	44				
50 Watt Lamp, ANSI Code M110 or M148												
1	50	-20/-30	120	IMH-50-A-XXX	✓	✓	0.47	56	1.0	15	90	Fig 1b or 2b
			277		✓	✓	0.20	55				
70 Watt Lamp, ANSI Code M98 or M143 (Medium Base) 70 Watt Lamp, ANSI Code M139 (Philips T-6, CDM-T, –TD 70)												
1	70	-20/-30	120	IMH-100-A-XXX	✓	✓	0.68	82	1.0	15	90	Fig 1a or 2a
			277		✓	✓	0.30	81				
100 Watt Lamp, ANSI Code M90 or M140												
1	100	-20/-30	120	IMH-100-A-XXX	✓	✓	0.93	112	1.0	15	90	Fig 1b or 2b
			277		✓	✓	0.40	110				

† Ordering information:

Add proper suffix to catalog number:
–LF includes ballast with side exit leads
–BLS includes ballast with bottom exit leads and mounting studs

Enclosure Dimensions, Lead Lengths and Wiring Diagrams

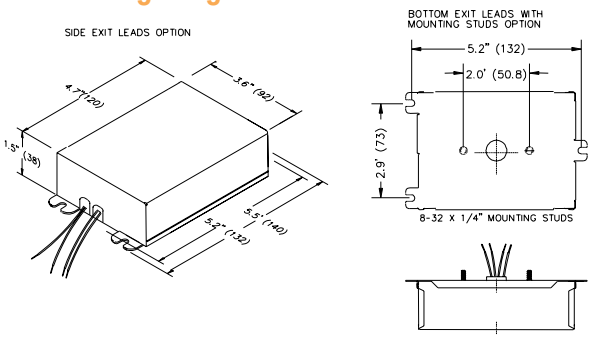


Fig. 1a

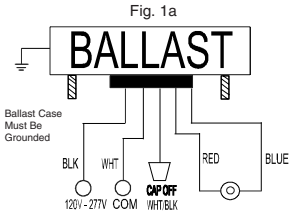


Fig. 2a

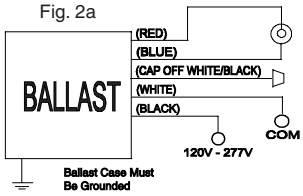


Fig. 1b

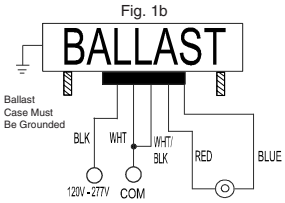
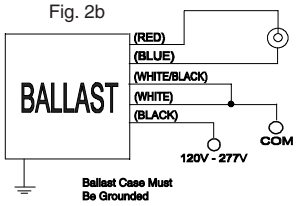


Fig. 2b



Wire Color	Function	Lead Lengths (-LF model)	Lead Lengths (-BLS model)	Strip Length
Black	Input Power	11.0” +/- 1.0”	9.0” +3.0”/-2.0”	0.5”
White	Input Power	11.0” +/- 1.0”	9.0” +3.0”/-2.0”	0.5”
Black/White	Lamp Power Selection	11.0” +/- 1.0”	9.0” +3.0”/-2.0”	0.5”
Red	Lamp	11.0” +/- 1.0”	9.0” +3.0”/-2.0”	0.5”
Blue	Lamp Screwshell	11.0” +/- 1.0”	9.0” +3.0”/-2.0”	0.5”

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Corporate Offices
(800) 322-2086

Press 1 and the four digit extension of the person you want to reach
Press 2 if you know the last name and you will reach the spell by name directory
Press 0 or stay on the line to be connected to the operator

Customer Support/Technical Service
(800) 372-3331 • (+) 1 847 390-5000 (International)

Press 1 for customer support
Press 2 for technical, application, or warranty information
Press 4 to dial by name

Visit our web site at www.advancetransformer.com

International Customer Support / Technical Support phone: (630) 307-3232
International Customer Support fax: (630) 307-3033
International Technical Support fax: (630) 307-3071

ADVANCE offers an extended range of electromagnetic fluorescent ballasts to operate T8, T10, T12 and compact fluorescent lamps. These ballasts are suitable for International markets and range in voltage from 100 through 347V, 50 & 60 Hz.

Supply Voltage and Frequency

Each ballast is designed to operate at the nominal voltage shown on the ADVANCE label. Abnormal deviation from these values will result in damage to either the ballast or lamp or both. It is therefore necessary that the voltage applied to ballasts be maintained within the respective limits shown in the adjoining table.

A ballast subjected to higher than nominal voltages will operate at increased temperatures. This will result in reduced ballast life. Low voltage can cause premature lamp failures as well as unreliable lamp starting.

All ballasts are designed for single frequency operation. Therefore, best results will be obtained when that ballast is used on the frequency shown on the ballast label. Frequency limitations are as follows:

Nominal	Frequency Limits
60HZ	57.5 to 62.5
50HZ	47.5 to 52.5

Prefix Code Letters	Normal Voltage	Applied Voltage Limits	Color Label Identification
N	100	95-105	YELLOW
H	120	112-127	YELLOW
R	120	112-127	YELLOW
L	120	112-127	YELLOW
S	120	112-127	YELLOW
C	200	190-210	GREEN
W	208	199-216	BROWN
X	220	210-230	GREEN
M	220/250	210-230 / 235-260	—
Y	240	225-250	ORANGE
V	277	255-290	RED
G	347	322-365	GRAY
D	480	450-500	BLUE

CERTIFICATIONS

All Advance ballasts unless otherwise indicated bear the seal of Underwriters' Laboratories, Inc. in accordance with UL935 Standard for Fluorescent Ballasts. File No. E14927

NOM Norma Obligatorio Mexicana

Advance ballasts which meet the Canadian Standards Association requirements for Fluorescent Ballasts per CAN/CSA-22.2 No. 74-92 bear the CSA seal. File No. LR7310

Advance fluorescent ballasts are designed and manufactured in accordance with the American National Standards Institute standard for fluorescent ballasts, ANSI C82.1.

Class P Ballasts — Section 410-73(e) of the National Electrical Code (NEC) requires that all indoor fluorescent fixtures shall incorporate ballast protection. Those fixtures employing a simple reactive type ballast are excepted.

The protector is located within the ballast case to prevent physical damage and tampering.

Advance electromagnetic ballasts ordered with ADVAN-guard® Class P ballast protection (TP suffix) are equipped with a thermally actuated automatic reclosing protective device. This revolutionary development was originally designed and introduced by Advance, and today this Class P device is a requirement of the National Electrical Code in all indoor lighting installations.

Starting

The metal of a fluorescent fixture is a starting aid when properly grounded. T12 Fluorescent lamps rated at 40 watts or less used for rapid or trigger start operation must be mounted within 1/2" of a grounded metal surface. T8 Lamps must be mounted within 3/4" of a grounded metal surface. All other lamps must be mounted within 1" of a grounded metal surface.

An important additional factor for proper lamps starting is polarity. The white ballast lead must be connected to the ground of the power supply (neutral) and the black lead to the hot line wire. A reversal of polarity may result in lamp damage or improper lamp starting.

UPGRADING TO HIGHER PERFORMANCE ELECTROMAGNETIC BALLASTS

(See Electromagnetic section at front of catalog)

Current Ballast	ANSI Watts	B.F.	Upgrade Ballast	ANSI Watts	B.F.
HM-140-TP	53W	0.95	R-140-TP	50W	0.95
RQM-2S40-TP	96W	0.95	R-2S40-TP	86W	0.95
VQM-2S40-TP	91W	0.95	V-2S40-TP	86W	0.95
ADM-2E75-S	111W	0.59	R-2E75-S-TP	158W	0.94

T8 and T10

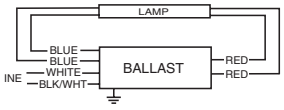
Straight
Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED A

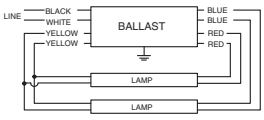
Lamp Data		Min. Starting Temp. (F)	Input Volts	Hz	Catalog Number	Certifications				Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Dim.	Wiring Diagram
Number	Watts					UL	CSA	CE	NOM						
F25T8															
1	25	50	120	60	R-1S32-TP		✓			0.29	33	0.99	<20	T-2	20
2	25	50	120	60	R-2S32-TP		✓			0.51	60	1.00	<20	T-2	21
F32T8															
1	32	50	120	60	R-1S32-TP		✓			0.32	35	0.95	<15	T-2	20
2	32	50	120	60	R-2S32-TP		✓			0.61	71	0.95	<15	T-2	21
F40T10															
1	40	50	220	60	X-140-TP	✓				0.25	54	0.95	<10	T-2	20
			240		YHQM-1P40-TP	✓				0.23	52	0.80	<15	R-5	
2	40	50	220	60	XQM-2S40-TP	✓	✓			0.45	96	0.95	<25	T-2	21
			240		YQM-2S40-TP	✓	✓			0.42	98	0.95	<25		

DIMENSIONS

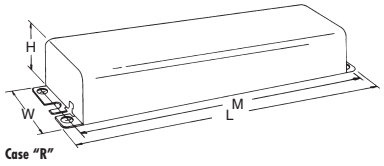
Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-5	9½	2⅜	1 11/16	8 29/32
T-2	9½	2⅜	1½	8 29/32



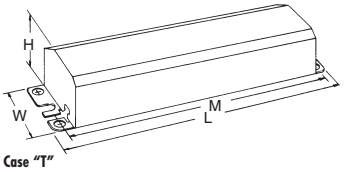
Diag. 20



Diag. 21



Case "R"



Case "T"

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

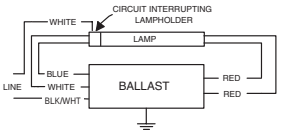
Straight
Rapid Start Lamps

HIGH POWER FACTOR SOUND RATED A

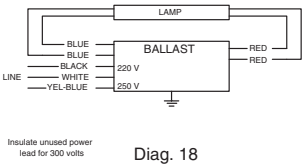
Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Hz	Catalog Number	Certifications UL	Certifications CSA	Certifications CE	Certifications NOM	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Dim.	Wiring Diagram
F30T12															
1	30	50	120	60	RL-140-TP❖✻	✓	✓			0.60	33	0.71	<10	R-4	16
			220 or 250	50	MTM-140-TP	✓				0.24	50	0.88	<20	R-5	18
F40T12 Energy Saver (460mA)															
1	34	60	120	60	HM-140-TP✈	✓	✓			0.39	46	0.89	<10	T-2	20
			220		X-140-TP	✓				0.20	44	0.89	<10		
2	34	60	120	60	HB-234-TP✻	✓	✓			0.78	56	0.68	<15	T-1	21
					R-2C34-TP 🍁	✓	✓			0.61	69	0.85	<25	T-2	
					RQM-2S40-TP✈	✓	✓		✓	0.74	82	0.88	<25		
			220 or 250	50	MTM-2S40-TP	✓				0.39	75	0.83	<30	R-5	76
			220	60	XQM-2S40-TP ●	✓	✓			0.36	78	0.92	<20	T-2	21
			240		YQM-2S40-TP ●	✓	✓			0.35	84	0.92	<25		
			277		VQM-2S40-TP ✈	✓	✓			0.29	78	0.91	<15		
			347		G-2C34-TP 🍁	✓	✓			0.21	69	0.85	<25		
F40T12 (430mA)															
1	40	50	120	60	HM-140-TP ✈	✓	✓			0.45	53	0.95	<10	T-2	20
		0			RC-140-TP		✓			0.39	45	0.78	<15	R-5	
		50			RL-140-TP❖✻	✓	✓			0.53	32	0.63	<15	R-4	16
			220 or 250	50	MTM-140-TP	✓				0.24	51	0.88	<20	R-5	18
			220	60	X-140-TP	✓				0.23	51	0.94	<10	T-2	20
			240		YHQM-1P40-TP	✓				0.21	49	0.78	<15	R-5	
2	40	50	120	60	HB-234-TP✻	✓	✓			0.45	38	0.41	<20	T-1	21
		0			RC-2S40-TP		✓			0.69	82	0.84	<20	R-5	
		50			RQM-2S40-TP ✈	✓	✓		✓	0.84	96	0.95	<25	T-2	
				50	TM-2S40-TP ●					0.75	90	0.91	<20	R-5	
			220 or 250		MTM-2S40-TP	✓				0.42	88	0.90	<25		76
			220	60	XQM-2S40-TP ●	✓	✓			0.43	93	0.97	<25	T-2	21
			240		YQM-2S40-TP ●	✓	✓			0.42	98	0.99	<25		
			277		VQM-2S40-TP ✈	✓	✓			0.33	91	0.96	<20		

✻ Normal Power Factor
✈ **EXPORT ONLY. May not be purchased for sale in the USA**
🍁 Enercan Ballast
❖ Requires Circuit-Interrupting Lamp Holders
● Sound Rated B

See page 6-7 additional wiring diagrams, dimensions, and case drawings.



Diag. 16



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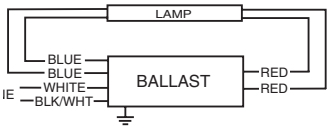

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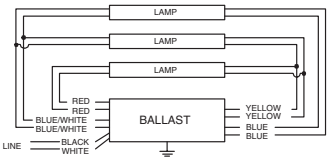


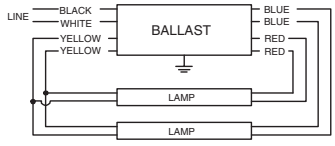
Diag. 30

High Output & Very High Output
Rapid Start Lamps

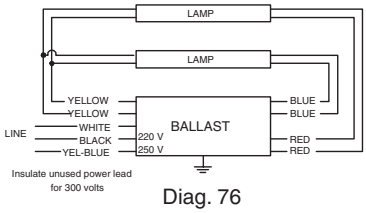
HIGH POWER FACTOR SOUND RATED C

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Hz	Catalog Number	Certifications UL	Certifications CSA	Certifications CE	Certifications NOM	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Dim.	Wiring Diagram
F48T12/HO (800mA)															
2	60	0	220 or 250	50	MT-2S110-TP	✓				0.70	140	0.87	<25	R-9	76
		-20	240	60	YS-2S85-TP	✓	✓			0.60	131	0.84	<25		125
F72T12/HO (800mA)															
2	85	0	220 or 250	50	MT-2S110-TP	✓				1.03	224	0.93	<20	R-9	76
		50	240	60	YS-2S85-TP	✓	✓			0.75	173	0.89	<20		125
		-20		60	YS-2S110-TP	✓				0.88	203	0.99	<15		21
F96T12/HO (800mA)															
2	110	0	220 or 250	50	MT-2S110-TP	✓				1.26	280	0.92	<15	R-9	76
		-20	240	60	YS-2S110-TP	✓				1.10	253	0.97	<15		21
F72T10/VHO (1500mA) F72T12/VHO (1500mA) F72PG17/VHO (1500mA)															
2	168	-20	220	50	MT-2S200-TP ■					1.74	317	0.96	<20	R-14	21
F96T10/VHO (1500mA) F96T12/VHO (1500mA) F96PG17/VHO (1500mA)															
2	215	-20	220	50	MT-2S200-TP ■					1.90	402	0.84	<20	R-14	21

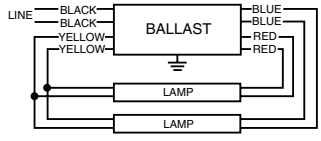
■ Sound Rated D



Diag. 21



Diag. 76

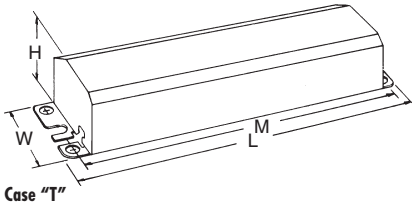


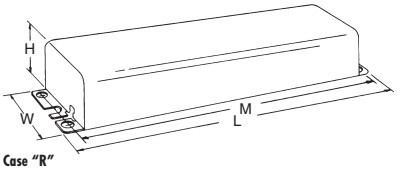
DIAG. 125

DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-4	6½	1 15/16	1⅜	6+
R-5	9½	2⅜	1 11/16	8 29/32
R-9	11¾	3 3/16	2⅝	11 9/64
R-14	19 3/16	3 3/16	2⅝	18⅝
T-1	6½	2⅜	1½	6+
T-2	9½	2⅜	1½	8 29/32

+ Mounting dimensions refer to slots only





Refer to pages 7-34 to 7-42 for lead lengths and shipping data

Slimline

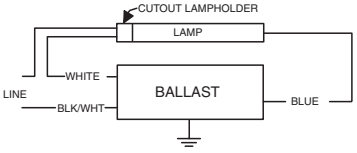
Instant Start Lamps

HIGH POWER FACTOR SOUND RATED C

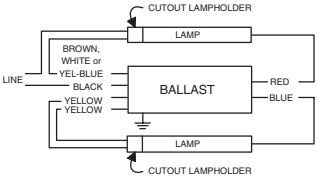
Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (F)	Input Volts	Hz	Catalog Number	Certifications UL	Certifications CSA	Certifications CE	Certifications NOM	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Dim.	Wiring Diagram
F48T12 (425mA)															
2	40	50	120	60	ADM-2E40-S✈✖	✓			✓	0.75	63	0.84	<30	R-6	12
			120		SM-2E40-S-TP	✓	✓		✓	0.82	96	0.90	<30		12
			220		XSM-2E40-S-TP	✓				0.46	99	0.96	<30		36
F60T12 (425mA)															
2	50	0	110	50	TM-2E57-S-TP	✓				0.90	93	0.96	<30	R-8	12
		50	120	60	SM-2E75-S-TP✈	✓	✓		✓	1.10	126	0.98	<30		
			220		XSM-2E75-S-TP	✓				0.60	121	0.95	<25		36
		0	230	50	XT-2E57-S-TP	✓				0.44	94	0.80	<30		
		50	240	60	YSM-2E75-S-TP	✓				0.50	109	0.93	<25		
			277		VSM-2E75-S-TP✈	✓	✓			0.45	112	0.94	<25		
F64T12 (425mA)															
2	52	0	110	50	TM-2E57-S-TP	✓				0.93	97	0.98	<30	R-8	12
		50	120	60	SM-2E75-S-TP✈	✓	✓		✓	1.10	126	0.99	<25		
			220		XSM-2E75-S-TP	✓				0.63	123	0.96	<20		36
		0	230	50	XT-2E57-S-TP	✓				0.45	97	0.76	<30		
		50	240	60	YSM-2E75-S-TP	✓				0.51	114	0.90	<25		
			277		VSM-2E75-S-TP✈	✓	✓			0.45	116	0.95	<25		
F72T12 (425mA)															
1	57	0	120	60	A-175-S✈	✓				0.60	60	0.67	<50	R-5	10
2			110	50	TM-2E57-S-TP	✓				1.00	108	0.94	<30	R-8	12
		50	120	60	ADM-2E75-S✈✖	✓			✓	0.81	85	0.59	<45	R-6	
					SM-2E75-S-TP✈	✓	✓		✓	1.20	130	0.98	<25	R-8	
			220		XSM-2E75-S-TP	✓				0.69	137	0.94	<20		36
		0	230	50	XT-2E57-S-TP	✓				0.49	107	0.77	<30		
		50	240	60	YSM-2E75-S-TP	✓				0.58	130	0.92	<25		
			277		VSM-2E75-S-TP✈	✓	✓			0.50	129	0.93	<25		
F96T12 (425mA)															
1	75	0	120	60	A-175-S✈	✓				0.62	69	0.67	<25	R-5	10
2		50	120		ADM-2E75-S✈	✓			✓	1.05	111	0.59	<40	R-6	12
					SM-2E75-S-TP✈	✓	✓		✓	1.40	170	0.97	<25	R-8	
			220		XSM-2E75-S-TP	✓				0.81	169	0.93	<25		36
			240		YSM-2E75-S-TP	✓				0.67	155	0.92	<30		
			277		VSM-2E75-S-TP✈	✓	✓			0.60	159	0.92	<30		

✈ **EXPORT ONLY. May not be purchased for sale in the USA.**

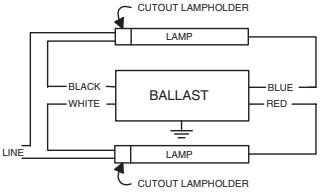
✖ Available with Class P thermal protection. Add suffix **-TP** to catalog number.



Diag. 10



Diag. 36

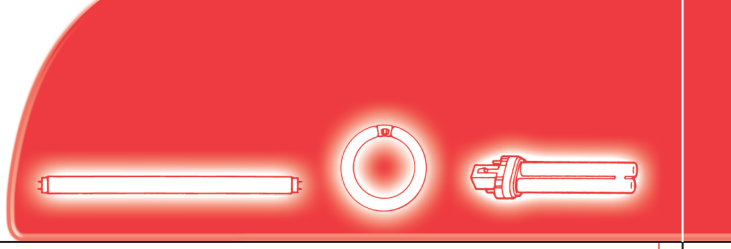


Diag. 12

See Page 6-7 for dimensions and case drawings

Refer to pages 7-34 to 7-42 for lead lengths and shipping data

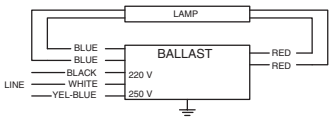
Preheat, Circline & 2-Pin Compact Lamps



HIGH POWER FACTOR SOUND RATED A

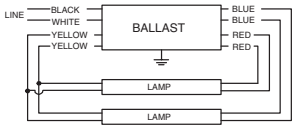
Lamp Data		Min. Starting Temp. (F)	Input Volts	Hz	Catalog Number	Certifications				Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	THD %	Dim.	Wiring Diagram
Number	Watts					UL	CSA	CE	NOM						
F15T8															
1	15	0	220	60	XHM-1P20-TP	✓				0.12	26	0.89	<20	T-2	20
2	15	0	220	60	XM-2SP20-TP	✓				0.28	51	0.82	<20	T-2	21
F14T12															
1	14	0	220	60	XHM-1P20-TP	✓				0.11	22	0.78	<15	T-2	20
2	14	0	220	60	XM-2SP20-TP	✓				0.24	45	0.85	<10	T-2	21
F15T12															
1	15	0	220	60	XHM-1P20-TP	✓				0.11	23	0.86	<15	T-2	20
2	15	0	220	60	XM-2SP20-TP	✓				0.25	44	0.79	<15	T-2	21
F20T12															
1	20	0	220	60	XHM-1P20-TP	✓				0.12	25	0.72	<20	T-2	20
2	20	0	220	60	XM-2SP20-TP	✓				0.27	53	0.86	<20	T-2	21
FC12T9															
1	32	50	120	60	RL-140-TP ❇	✓	✓			0.59	32	0.68	<15	R-4	31
FC16T9															
1	40	50	120	60	RL-140-TP ❇	✓	✓			0.46	29	0.55	<15	R-4	31
1	40	50	220 or 250	50	MTM-140-TP					0.24	51	0.88	<20	R-5	18
PL-S 13W, PLC 13W/USA; F-13 BX, F13DBX 23T4; CF13DS, CF13DD															
1	13	0	220	50	XTH-1B13-TP-W	✓				0.10	21	0.98	<15	R-2	47

❇ Normal Power Factor

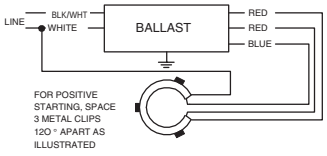


Insulate unused power lead for 300 volts

Diag. 18



Diag. 21

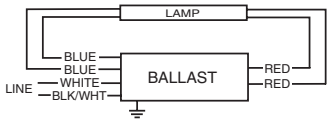


Diag. 31

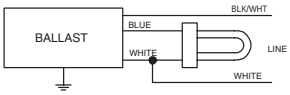
DIMENSIONS

Designation	Length (L) (inches)	Width (W) (inches)	Height (H) (inches)	Mounting (M) (inches)
R-2	4¾	2 7/32	1⅝	4⅜+
R-4	6½	1 15/16	1⅜	6+
R-5	9½	2⅜	1 11/16	8 29/32
R-6	9½	3 7/64	1 25/32	8 29/32
R-8	11¾	3 7/64	1 25/32	11 9/64
T-2	9½	2⅜	1½	8 29/32

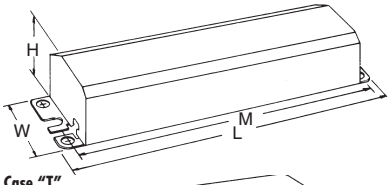
+ Mounting dimensions refer to slots only



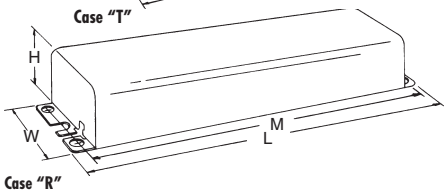
Diag. 20



Diag. 47



Case "T"



Case "R"

International Customer Support / Technical Service phone: (+) 1 847 390-5000
International Customer Support fax: (+) 1 630 307-3033
International Technical Support fax: (+) 1 847 768-7768

Advance Transformer also offers electronic ballasts to operate T-8 and T-4 long twin tube lamps at 220, 230 or 240 volts (50 or 60 Hz). These ballasts are manufactured by Philips Lighting Electronics & Gear in facilities around the world.

ICN BALLASTS

The ICN electronic ballast is a CENTIUM performance ballast featuring universal input capability. It will operate any voltage between 120V and 277V at 50 or 60 Hz, including 220, 230, and 240V. It is designed specifically for ANSI-specification T-8 fluorescent lamps.

Features Include:

- Up to 30% energy savings over conventional magnetic ballasts
- Universal voltage input range including 120V, 220V, 230V, 240V and 277V 50/60 Hz
- Ballasts are UL listed
- Ballasts are provided with integral color leads

ICN Ballast Specifications:

1. Ballast shall operate from a nominal line voltage
2. Ballast shall be instant start
3. Ballast shall operate at a frequency of 20 kHz or higher without visible flicker
4. Power factor shall be >96%
5. Ballast Total Harmonic Distortion (THD) shall be ≤10% for primary lamp application
6. Ballast shall start the lamp at a min. temperature of 0°F (-18°C)
7. Lamp current Crest Factor shall be less than 1.7
8. Ballast shall be sound rated A
9. Ballast shall contain no PCBs
10. Ballast shall carry a 5-year warranty when its case temperature does not exceed 70°C

HF-PERFORMER BALLASTS

The HF-Performer electronic ballast is a premium performance ballast designed specifically for IEC-Specification TLD and long twin tube fluorescent lamps. Full range dimming (100% to 3%) ballasts (HF-Regulator) which operate from a 1-10 VDC control signal are also available for TLD lamps. Contact your local salesperson for more info.

Features Include:

- Programmed Rapid Start design optimizes lamp life under all starting scenarios
- Integrated Circuit-based control technology monitors lamp and ballast conditions to ensure optimum lighting system performance
- Reduced inrush current; Poke-in WAGO lead connectors
- Designed to meet major European national safety and performance standards

HF-Performer Ballast Specifications:

1. Ballast shall operate from a nominal line voltage of 220 thru 240 volts, 50/60 Hz. Ballast shall maintain constant wattage output throughout the operating voltage range
2. Ballast shall be Programmed Rapid Start
3. Ballast Power Factor shall be >96%
4. Ballast Total Harmonic Distortion (THD) shall be ≤15%
5. Ballast shall start the lamp at a min. temperature of 0°F (-15°C)
6. Ballast shall be sound rated A
7. Ballast shall contain no PCB's
8. Ballast shall carry a 2 year warranty when its case temperature does not exceed 60°C
9. Complies with IEC 928 safety regulation
10. Complies with IEC 929 performance regulation
11. Complies with EN 55015 for EMI
12. Approvals: CE, ENEC, VDE, KEMA, SEV, and SEMKO (Inter Nordic)

HF-BASIC BALLASTS

The HF-Basic electronic ballast is a standard performance ballast designed specifically for IEC-Specification TLD fluorescent lamps.

Features Include:

- Instant start design provides greatest operating efficiencies
- Designed to meet major European national safety and performance standards
- Poke-in WAGO lead connectors

HF-Basic Ballast Specifications:

1. Ballast shall operate from a nominal line voltage of 220 thru 240 volts, 50/60 Hz. Ballast shall maintain constant wattage output throughout the operating voltage range
2. Ballast shall be Instant Start
3. Ballast Power Factor shall be >96%
4. Ballast Total Harmonic Distortion THD shall be ≤20%
5. Ballast shall start the lamp at a min. temperature of 0°F (-15°C)
6. Ballast shall be sound rated A
7. Ballast shall contain no PCB's
8. Ballast shall carry a 2 year warranty when its case temperature does not exceed 60°C
9. Complies with IEC 928 safety regulation
10. Complies with IEC 929 performance regulation
11. Complies with EN 55015 for EMI
12. Approvals: CE, ENEC, VDE, KEMA, SEV, and SEMKO (Inter Nordic)

Ordering Requirements (HF-Basic, HF-Performer)

- Minimum order quantity:
  HF-Basic and HF Performer 30 pieces

- Ballast must be ordered in multiples:
  HF-Basic and HF Performer 10 pieces

- Depending upon demand, some units will be kept in stock in Advance's warehouse in Roselle, Illinois, USA
- If not in US stock, delivery will vary (estimated): HF-Basic/HF Performer: 0 to 8 weeks plus ocean or air freight delivery time from Oss, the Netherlands
- For HF units in this catalog only, air freight up to total of fifty (50) pieces will be provided at no additional charge
- Firm quote at time of order

For NOM (Norma Obligatorio Mexicana) approved ballast, please contact your local salesperson.

Instant-Start, Normal Light Output

Parallel

HIGH POWER FACTOR SOUND RATED A

IntelliVolt™/Low Profile

NEW!

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
F17T8, FBO17T8												
1	17	0/-18	120	ICN-1P32-SC	✓	✓	0.16	19	0.93	15	0.96	Fig. B/63
			230		✓	✓	0.08					
			277		✓	✓	0.07					
		0/-18	120	ICN-2P32-SC	✓	✓	0.18	22	1.07	15	0.95	Fig. B/*63
			230		✓	✓	0.10					
			277		✓	✓	0.09					
2	17	0/-18	120	ICN-2P32-SC	✓	✓	0.28	33	0.93	15	0.97	Fig. B/64
			230		✓	✓	0.14					
			277		✓	✓	0.13					
		0/-18	120	ICN-3P32-SC	✓	✓	0.32	38	1.07	15	0.96	Fig. B/*64
			230		✓	✓	0.17					
			277		✓	✓	0.14					
3	17	0/-18	120	ICN-3P32-SC	✓	✓	0.39	48	0.92	15	0.97	Fig. B/65
			230		✓	✓	0.21					
			277		✓	✓	0.17					
		0/-18	120	ICN-4P32-SC	✓	✓	0.45	53	1.04	15	0.97	Fig. B/*65
			230		✓	✓	0.23					
			277		✓	✓	0.20					
4	17	0/-18	120	ICN-4P32-SC	✓	✓	0.54	64	0.93	10	0.98	Fig. B/66
			230		✓	✓	0.28					
			277		✓	✓	0.23					
F25T8, FBO25T8												
1	25	0/-18	120	ICN-1P32-SC	✓	✓	0.22	26	0.91	10	0.98	Fig. B/63
			230		✓	✓	0.11					
			277		✓	✓	0.10					
		0/-18	120	ICN-2P32-SC	✓	✓	0.24	29	1.06	15	0.97	Fig. B/*63
			230		✓	✓	0.13					
			277		✓	✓	0.11					
2	25	0/-18	120	ICN-2P32-SC	✓	✓	0.40	48	0.91	10	0.98	Fig. B/64
			230		✓	✓	0.21					
			277		✓	✓	0.18					
		0/-18	120	ICN-3P32-SC	✓	✓	0.43	51	1.03	15	0.97	Fig. B/*64
			230		✓	✓	0.22					
			277		✓	✓	0.19					
3	25	0/-18	120	ICN-3P32-SC	✓	✓	0.56	67	0.90	10	0.98	Fig. B/65
			230		✓	✓	0.29					
			277		✓	✓	0.24					
		0/-18	120	ICN-4P32-SC	✓	✓	0.62	74	1.01	10	0.99	Fig. B/*65
			230		✓	✓	0.32					
			277		✓	✓	0.27					
4	25	0/-18	120	ICN-4P32-SC	✓	✓	0.74	89	0.91	10	0.99	Fig. B/66
			230		✓	✓	0.39					
			277		✓	✓	0.32					

Instant-Start, Normal Light Output

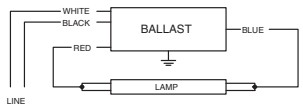
Parallel

HIGH POWER FACTOR SOUND RATED A

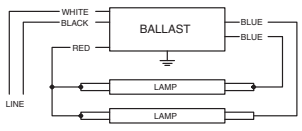
NEW!

IntelliVolt™/Low Profile

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
F32T8, FBO31T8, F32T8/U6												
1	32	0/-18	120	ICN-1P32-SC	✓	✓	0.26	31	0.90	10	0.98	Fig. B/63
			230		✓	✓	0.13					
			277		✓	✓	0.12					
		0/-18	120	ICN-2P32-SC	✓	✓	0.30	36	1.03	15	0.97	Fig. B/*64
			230		✓	✓	0.16					
			277		✓	✓	0.14					
2	32	0/-18	120	ICN-2P32-SC	✓	✓	0.49	59	0.88	10	0.98	Fig. B/64
			230		✓	✓	0.26					
			277		✓	✓	0.22					
		0/-18	120	ICN-3P32-SC	✓	✓	0.54	65	1.01	10	0.98	Fig. B/*65
			230		✓	✓	0.28					
			277		✓	✓	0.24					
3	32	0/-18	120	ICN-3P32-SC	✓	✓	0.71	85	0.88	10	0.99	Fig. B/65
			230		✓	✓	0.37					
			277		✓	✓	0.31					
		0/-18	120	ICN-4P32-SC	✓	✓	0.78	93	1.00	10	0.99	Fig. B/*66
			230		✓	✓	0.40					
			277		✓	✓	0.33					
4	32	0/-18	120	ICN-4P32-SC	✓	✓	0.94	112	0.88	10	0.99	Fig. B/66
			230		✓	✓	0.49					
			277		✓	✓	0.41					
F40T8												
1	40	32/0	120	ICN-2P32-SC	✓	✓	0.35	42	1.00	10	0.98	Fig. B/*64
			230		✓	✓	0.18					
			277		✓	✓	0.15					
2	40	32/0	120	ICN-3P32-SC	✓	✓	0.65	77	1.00	10	0.98	Fig. B/*65
			230		✓	✓	0.33					
			277		✓	✓	0.28					
3	40	32/0	120	ICN-4P32-SC	✓	✓	0.94	112	0.97	10	0.99	Fig. B/*66
			230		✓	✓	0.49					
			277		✓	✓	0.40					

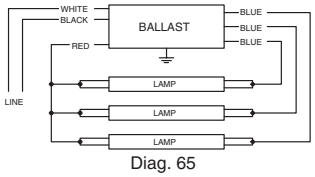


Diag. 63



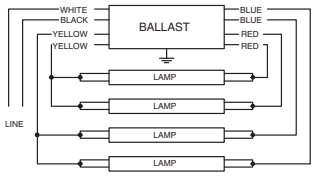
Diag. 64

* For Single Lamp Operation, insulate unused blue lead for 600 volts



Diag. 65

* For Two Lamp Operation, insulate unused blue lead for 600 volts



Diag. 66

* For Three Lamp Operation, insulate unused blue lead for 600 volts

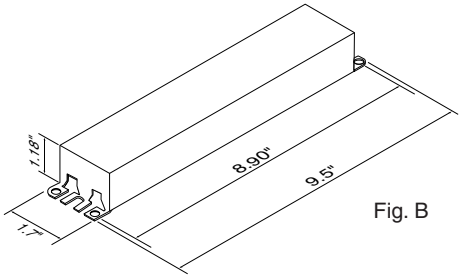


Fig. B

Philips HF-Performer

IEC Specification
(Philips TLD)

Catalog Number	Volts & Frequency	Lamp Type	Min. Start Temp (°F)	Ballast Factor	Input Power (Watts)	B.E.F.	Input Current (Amps)	Power Factor	Max. THD	Max. LCCF	Wire Diagram / Can Fig.
HF-P 118 TLD	220-240 50-60 HZ	(1) TLD 18W	0	0.95	18	4.75	0.08	0.96	15	1.7	95 / A1
HF-P 218 TLD	220-240 50-60 HZ	(2) TLD 18W	0	0.95	38	2.50	0.16	0.96	15	1.7	96 / A2
HF-P 136 TLD	220-240 50-60 HZ	(1) TLD 36W	0	0.95	37	2.57	0.17	0.96	15	1.7	95 / A1
HF-P 236 TLD	220-240 50-60 HZ	(2) TLD 36W	0	0.95	72	1.32	0.33	0.96	15	1.7	96 / A2
HF-P 158 TLD	220-240 50-60 HZ	(1) TLD 58W	0	0.95	56	1.70	0.26	0.96	15	1.7	95 / A1
HF-P 258 TLD	220-240 50-60 HZ	(2) TLD 58W	0	0.95	111	0.86	0.52	0.96	15	1.7	96 / A2

IEC Specification
(Philips PL-L)

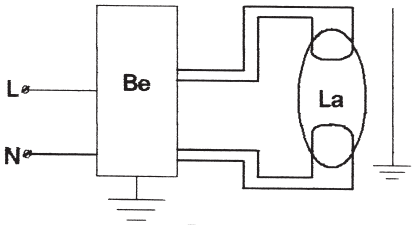
Catalog Number	Volts & Frequency	Lamp Type	Min. Start Temp (°F)	Ballast Factor	Input Power (Watts)	B.E.F.	Input Current (Amps)	Power Factor	Max. THD	Max. LCCF	Wire Diagram / Can Fig.
HF-P 136 PLL	220-240 50-60 HZ	(1) PLL 36W	0	0.95	36	2.64	0.16	0.96	10	1.7	95 / A1
HF-P 236 PLL	220-240 50-60 HZ	(2) PLL 36W	0	0.95	72	1.32	0.31	0.96	10	1.7	96 / A2
HF-P 140 PLL	220-240 50-60 HZ	(1) PLL 40W	0	0.95	45	2.11	0.20	0.96	10	1.7	95 / A1
HF-P 240 PLL	220-240 50-60 HZ	(2) PLL 40W	0	0.95	89	1.07	0.40	0.96	10	1.7	96 / A2
HF-P 155 PLL	220-240 50-60 HZ	(1) PLL 55W	0	0.95	58	1.64	0.25	0.96	10	1.7	95 / A1
HF-P 255 PLL	220-240 50-60 HZ	(2) PLL 55W	0	0.95	116	0.82	0.50	0.96	10	1.7	96 / A2

Instant Start, Normal Light Output
Parallel

Philips HF-Basic

IEC Specification
(Philips TLD)

Catalog Number	Volts & Frequency	Lamp Type	Min. Start Temp (°F)	Ballast Factor	Input Power (Watts)	B.E.F.	Input Current (Amps)	Power Factor	Max. THD	Max. LCCF	Wire Diagram / Can Fig.
HF-B 136 TLD	220-240 50-60 HZ	(1) TLD 36W	0	0.95	36	2.64	0.15	0.96	20	1.7	97 / A3
HF-B 236 TLD	220-240 50-60 HZ	(2) TLD 36W	0	0.95	71	1.34	0.30	0.96	20	1.7	98 / A3
HF-B 158 TLD	220-240 50-60 HZ	(1) TLD 58W	0	0.95	55	1.73	0.25	0.96	20	1.7	97 / A3
HF-B 258 TLD	220-240 50-60 HZ	(2) TLD 58W	0	0.95	108	0.88	0.50	0.96	20	1.7	98 / A3



DIAG. 95

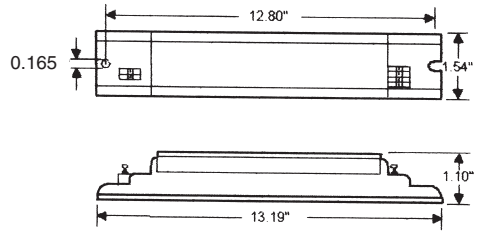
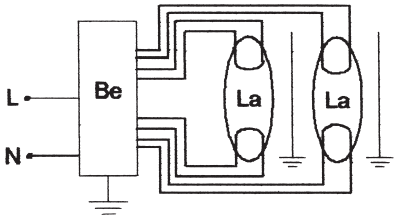


Fig. A1



DIAG. 96

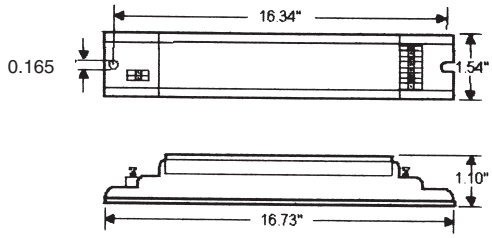
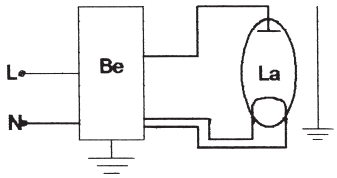


Fig. A2



DIAG. 97

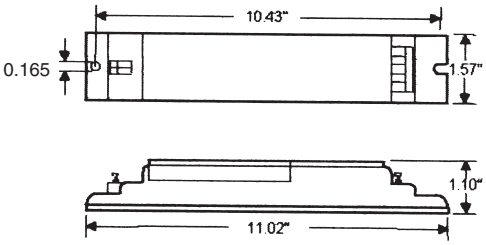
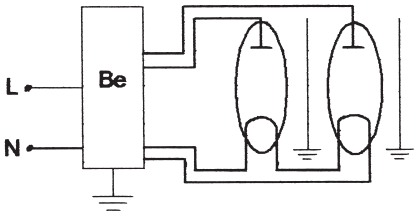


Fig. A3



DIAG. 98

International Customer Support / Technical Service phone: +1 (847) 390-5000
International Customer Support fax: +1 (630) 307-3033
International Technical Support fax: +1 (847) 768-7768

Advance offers an extensive range of High Intensity Discharge ballasts to run ANSI specification (U.S. style) lamps. These ballasts are suitable for International markets and range in voltage from 100 through 415V, 50 & 60 Hz.

ADVANCE® HID Lamp Ballasts are available to operate the wide variety of mercury, metal halide, high pressure sodium and low pressure sodium lamps available in today's marketplace.

Like fluorescent, HID lamps are electric discharge lamps. Light is produced by an arc discharge between two electrodes located at opposite ends of an arc tube within the lamp's outer glass envelope. The ballast is the lamp's power supply; its purpose is to provide proper starting and operating voltage and current to initiate and sustain this arc.

Core & Coil

The basic ballast is the open core & coil which is most often used as a component within a lighting fixture. The core & coil also forms the nucleus of the five other ballast configurations detailed in this section. It consists of either one, two or three copper coils on a core (or "stack") of electrical-grade steel laminations. The coils are assembled to core sections which are then surface-welded together. At Advance Transformer Co. the assembled ballast is vacuum impregnated with a silica-filled polyester varnish to re-enforce the electrical insulation, preclude moisture, inhibit noise, and dissipate heat. Other HID ballast manufacturers apply varnish via a preheat-and-dip process which only puts a thin coat of varnish on the outer surface of the ballast.

Encapsulated Core & Coil

Where quiet performance is required, the standard open core & coil ballasts are encapsulated (potted) in a cube-shaped steel can utilizing Class H (180°C) polyester compound. These ballasts carry a Class A noise rating up through 175 watts and Class B for 250 and 400 watts. As with the open core & coil, the capacitor (and ignitor where included) are mounted separately within the fixture.

Replacements

For capacitors, see pages 4-46 to 4-47

For ignitors, see pages 4-48 to 4-51

Special Voltages

For voltage and frequencies not shown in the charts of the following pages, please contact your Advance Sales Representative.

CERTIFICATIONS

Indicates ballast is listed by Underwriters Laboratories, Inc. in accordance with UL 1029 Standard for HID Ballasts. Each ballast is marked appropriately.

All HID Ballasts are designed and manufactured in accordance with the American National Standards Institute Standard for HID Ballasts, ANSI C82.4.

Norma Obligatorio Mexicana.
(contact your local salesperson for availability)

50 HZ Core & Coil Ballasts
(Minimum Starting Temperature –20°F or –30°C)

Mercury

Input Volts	Catalog † Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	U.L. Bench Top Rise Code 1029 (Pg 4-3)
								Fig	A	B	Mfd	Min Volt	Dry Film Dia (in)	Dry Film Ht (in)	Oil Filled Oval (in)	Oil Filled Ht (in)		
100 Watt Lamp, ANSI Code H38 or H44																		
120/ 220/240	71A25N1	CWA	125	1.2/ .7/.6	240	3/ 2/2	A	1	1.3	2.6	12	280	1.50	2.90	—	—	5.0	B/ B/B
125 Watt Lamp, ANSI Code H42																		
220/240	71A29R0	CWA	150	.7/.7	255	2/2	A	1	1.7	3.0	14	280	1.50	2.90	—	—	6.0	D/D
175 Watt Lamp, ANSI Code H39																		
120/ 220/240	See 175W Metal Halide CWA 71A55NO (page 6-16)																	
250 Watt Lamp, ANSI Code H37																		
220/240	71A35R2	CWA	292	1.4/1.3	260	4/4	A	1	2.4	3.6	28	280	1.75	3.75	—	—	8.00	E/E
400 Watt Lamp, ANSI Code H33																		
220/240	71A40R1	CWA	454	2.2/2.0	245	6/5	A	2	2.1	3.6	40	280	1.75	3.75	—	—	11.0	D/D
1000 Watt Lamp, ANSI Code H36																		
120/ 220/240	See 1000W Metal Halide CWA 71A65N2 (page 6-16)																	

† Ordering information:
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

• For CWA circuits, figure is operating current.

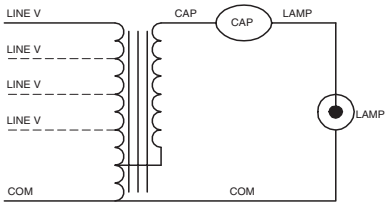


Fig. A

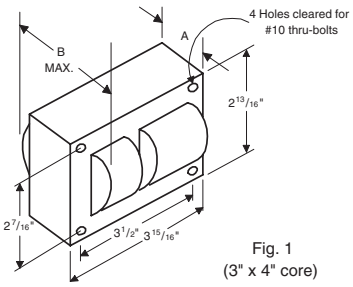


Fig. 1
(3" x 4" core)

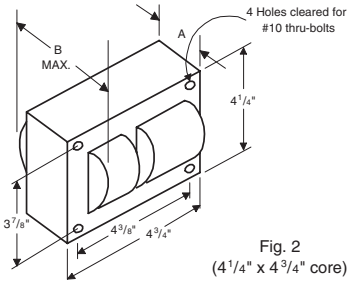
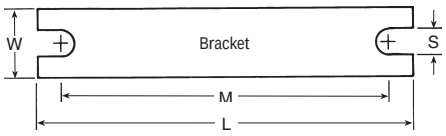


Fig. 2
(4 1/4" x 4 3/4" core)



WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1	5.1	1.00	4.50	0.25
2	6.5	1.25	5.75	0.28

50 HZ Core & Coil Ballasts

(Minimum Starting Temperature –20°F or –30°C)

Metal Halide

Input Volts	Catalog † Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions Fig	Dimensions A	Dimensions B	Non-PCB Capacitor (Page 4-46 to 4-47) Mfd	Min Volt	Dry Film Dia (in)	Dry Film Ht (in)	Oil Filled Oval (in)	Oil Filled Ht (in)	Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51) Part Number	Max Dist To Lamp (ft)	U.L. Bench Top Rise Code 1029 (pg 4-3)
70 Watt Lamp, ANSI Code M98 or M143																				
120/ 220/240	71A52N2	HX-HPF	95	1.7/ 1.0/.9	256	5/ 3/3	K	1	1.5	2.8	14	280	1.5	2.90	—	—	5.0	LI533-H4	15	B/ A/B
100 Watt Lamp, ANSI Code M90 or M140																				
120/ 220/240	71A53N0	HX-HPF	129	2.2/ 1.2/1.1	280	7/ 4	K	1	1.9	3.2	17.5	300	1.75	3.75	—	—	6.0	LI533-H4	15	A/ A
175 Watt Lamp, ANSI Code M57 or H39; or 150 Watt Lamp, ANSI Code M107																				
120/ 220-240	71A55N0	CWA	210	2.0/ 1.0	310	5/ 3	A	1	2.8	4.0	12	450	—	—	1.75	2.90	9.0	—	—	C/ C
250 Watt Lamp, ANSI Code M58 or H37																				
120/ 220-240	71A57N0	CWA	290	2.5/ 1.3	315	7/ 4	A	2	1.9	3.4	18	400	1.75	3.75	—	—	11.5	—	—	D/ A
320 Watt Lamp, ANSI Code M132 (Pulse Start)																				
120/ 220-240	71A58N2	Super CWA	365	3.1/ 1.6	280	10/ 5	M	2	2.1	3.8	24	400	1.75	5.15	—	—	12.5	LI533-H4	2	A/ A
350 Watt Lamp, ANSI Code M131 (Pulse Start)																				
120/ 220-240	71A59N3	Super CWA	394	3.3/ 1.7	280	10/ 5	M	2	2.1	3.8	25.5	400	1.75	5.15	—	—	12.5	LI533-H4	2	C/ C
400 Watt Lamp, ANSI Code M59 or H33																				
120/ 220-240	71A60N1	CWA	462	4.1/ 2.1	320	10/ 6	A	2	2.2	3.7	24	450	—	—	1.75	3.90	14.0	—	—	D/ D
400 Watt Lamp, ANSI Code M135 (Pulse Start)																				
120/ 220-240	71A60N2	Super CWA	454	3.9/ 2.0	270	10/ 5	M	2	2.1	3.8	30	345	1.75	5.15	—	—	12.3	LI533-H4	2	C/ E
1000 Watt Lamp, ANSI Code M47 or H36																				
120/ 220/240	71A65N2	CWA	1090	9.3/ 5.0/4.5	450	24/ 13/13	A	8	3.0	5.0	26	525	—	—	1.75	5.30	23.0	—	—	A/ A/A
1500 Watt Lamp, ANSI Code M48																				
220/240	71A67R2	CWA	1605	7.5/6.9	450	20/20	A	8a	4.4	6.4	2 Capacitor Set: 18 540 — — 1.75 3.90; 18 540 — — 1.75 3.90 — Connected In Parallel						32.0	—	—	A/A

† Ordering information:
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

• For CWA circuits, figure is operating current. For HX circuits, figure is highest of starting, operating or open circuit currents.

N UL Class N 200°C

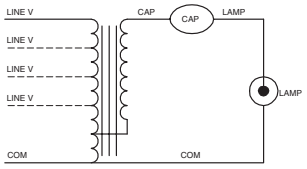


Fig. A

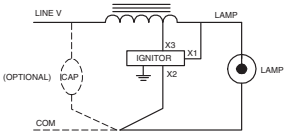


Fig. G

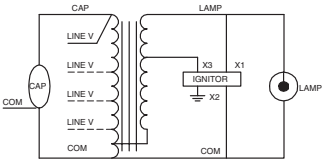


Fig. K

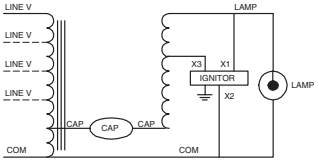


Fig. M

ADVANCE ADVANCE, 10275 WEST HIGGINS ROAD, ROSEMONT, IL 60018. TEL: (847) 390-5000, FAX: (847) 390-5109

HID

50 HZ Core & Coil Ballasts
(Minimum Starting Temperature –40°F or –40°C)

High Pressure Sodium

Input Volts	Catalog † Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions Fig	Dimensions A	Dimensions B	Non-PCB Capacitor (Page 4-46 to 4-47) Mfd	Min Volt	Dry Film Dia (in)	Dry Film Ht (in)	Oil Filled Oval (in)	Oil Filled Ht (in)	Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51) Part Number	Max Dist To Lamp (ft)	U.L. Bench Top Rise Code 1029 (pg 4-3)
50 Watt Lamp, ANSI Code S68																				
220/240	71A78R1	HX-HPF	66	.6/.5	120	2/2	K	1	1.3	2.6	6.0	280	1.25	2.90	—	—	5.0	LI551-H4	2	A/A
70 Watt Lamp, ANSI Code S62																				
120/ 220/240	71A79N1	HX-HPF	94	1.4/ 0.8/.7	125	4/ 2/2	K	1	1.9	3.1	8.4	280	1.25	2.90	—	—	6.0	LI551-H4	2	A/ A/A
100 Watt Lamp, ANSI Code S54																				
120/ 220/240	71A80N1	HX-HPF	130	2.4/ 1.3/1.2	120	6/ 4/4	K	1	2.4	3.7	12	280	1.50	2.90	—	—	8.0	LI551-H4	2	A/ A/A
150 Watt Lamp, ANSI Code S55																				
120/ 220/240	71A81N2	HX-HPF	188	3.0/ 1.7/1.6	120	8/ 5/4	K	1	3.0	4.2	17.5	260	1.50	3.75	—	—	7.5	LI551-H4	2	C/ B/B
150 Watt Lamp, ANSI Code S56																				
220/240	71A81R6	R-HPF	175	1.4/1.5	230	4/4	G	4	2.2	3.7	20	240	1.75	3.75	—	—	6	LI501-H4	2	B/C
250 Watt Lamp, ANSI Code S50																				
120/ 220-240	71A82N1	CWA	300	2.8/ 1.4	190	7/ 4	M	2	2.1	3.7	40	240	1.75	3.75	—	—	12.0	LI501-H4	2	D/ C
400 Watt Lamp, ANSI Code S51																				
120/ 220-240	71A84N3	CWA	465	4.0/ 2.0	190	10/ 6	M	2	2.5	4.1	64	280	2.00	5.15	—	—	15.0	LI501-H4	2	D/ D
1000 Watt Lamp, ANSI Code S52																				
Ⓝ 220/240	71A87R3	CWA	1100	6.0/5.6	435	15/15	M	8a	4.3	6.3	2 Capacitor Set: 14 580 — — 1.50 3.90; 14 580 — — 1.50 3.90 — Connected In Parallel						35.5	LI571-H5★	2	A/A

† Ordering information:
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

• For HX and R circuits, figure is highest of starting, operating or open circuit current. For CWA circuits, figure is operating current.

★ Equipped with an auto-reset thermal protector to prevent ignitor from overheating in the event of lamp failure.

Ⓝ UL Class N 200°C

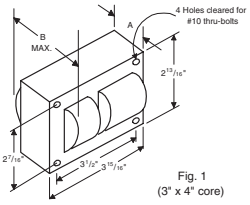


Fig. 1
(3" x 4" core)

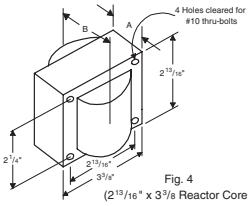
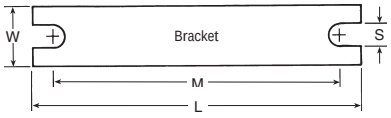


Fig. 4
(2 13/16" x 3 3/8 Reactor Core)



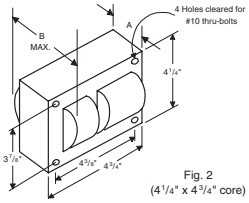


Fig. 2
(4 1/4" x 4 3/4" core)

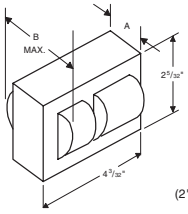


Fig. 6
(2" x 4 " core)

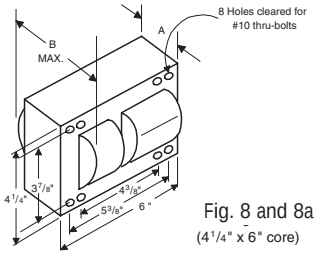


Fig. 8 and 8a
(4 1/4" x 6" core)

WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1	5.1	1.00	4.50	0.25
2	6.5	1.25	5.75	0.28
8	7.8	2.75	6.13	0.25
8a	7.8	4.50	6.75	0.31

100/200V 60 HZ CORE & COIL BALLASTS

For Southern Japan
(Minimum Starting Temperature –20°F or –30°C)

Mercury

Input Volts	Catalog † Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	U.L. Bench Top Rise Code 1029 (Pg 4-3)
								Fig	A	B	Mfd	Min Volt	Dry Film Dia (in)	Dry Film Ht (in)	Oil Filled Oval (in)	Oil Filled Ht (in)		
100 Watt Lamp, ANSI Code H38 or H44																		
100/200	71A25Y1	CWA	120	1.3/.7	250	4/2	A	1	1.1	2.3	10	280	1.90	2.50	—	—	4.0	D/E

Metal Halide

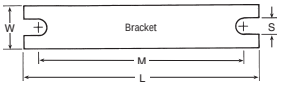
Input Volts	Catalog † Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
								Fig	A	B	Mfd	Min Volt	Dry Film Dia (in)	Dry Film Ht (in)	Oil Filled Oval (in)	Oil Filled Ht (in)		Part Number	Max Dist To Lamp (ft)	
35/39 Watt Lamp, ANSI Code M130																				
New 100	71A50Y5-P	HX-HPF	54	1.1	235	2	K	6	.9	1.8	36	120	1.75	3.75	—	—	3.5	LI533-H4	15	B
70 Watt Lamp, ANSI Code M98 or M143																				
100/200	71A52Y2	HX-HPF	89	2.0/1.0	253	5/3	K	1	1.5	1.7	10	280	1.50	2.90	—	—	4.5	LI533-H4	10	A/A
100 Watt Lamp, ANSI Code M90																				
New 100/200	71A53Y3	CWA	126	1.3/.7	233	3/2	M	1	1.6	1.8	10	300	1.50	2.90	—	—	5.0	LI533-H4	5	B/B
150 Watt Lamp, ANSI Code M102 or M142																				
100/200	71A54Y2	HX-HPF	185	4.4/2.2	240	10/5	K	1	2.5	4.1	16	280	1.50	3.75	—	—	7.5	LI533-H4	10	C/A
175 Watt Lamp, ANSI Code M57 or H39; or 150 Watt Lamp, ANSI Code M107																				
100/200	71A55Y0	CWA	210	2.2/1.1	295	5/3	A	1	2.4	3.5	10	400	1.50	3.75	—	—	7.1	—	—	B/B
250 Watt Lamp, ANSI Code M58 or H37																				
100/200	71A57Y0	CWA	285	3.0/1.5	295	8/4	A	2	1.7	3.1	15	400	1.75	3.75	—	—	10.0	—	—	A/A
320 Watt Lamp, ANSI Code M132 (Pulse-Start)																				
100/200	71A58Y2	Super CWA	368	3.7/1.9	267	10/5	M	2	1.8	3.7	21	345	1.75	3.75	—	—	11.0	LI533-H4	5	B/B
400 Watt Lamp, ANSI Code M59 or H33																				
100/200	71A60Y1	CWA	458	5.0/2.5	295	15/7	A	2	2.1	3.6	24	400	1.75	5.15	—	—	12.0	—	—	C/D
1000 Watt Lamp, ANSI Code M47 or H36																				
N 200	71A65Y6	CWA	1090	5.9	425	15	P	8	3.2	5.0	2 Capacitor Set [40 300 1.75 5.15; 40 300 1.75 5.15] Connected In Series				—	—	23.0	—	—	A

† Ordering information:
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

• For HX circuits, figure is highest of starting, operating or open circuit current. For CWA circuits, figure is operating current.

N UL Class N 200°C



WELDED BRACKET DIMENSIONS

Ballast Dimensions Fig	L	W	M	S
1, 6	5.1	1.00	4.50	0.25
2	6.5	1.25	5.75	0.28
3, 8	7.8	2.75	6.13	0.25

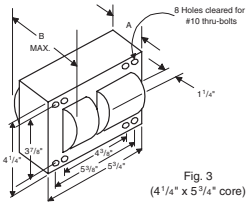


Fig. 3
(4 1/4" x 5 3/4" core)

For Figures 1, 2, 6 and 8 – See Page 6-17

100/200V 50 HZ CORE & COIL BALLASTS

For Northern Japan
(Minimum Starting Temperature –20°F or –30°C)

Mercury

Input Volts	Catalog † Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	U.L. Bench Top Rise Code 1029 (Pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)		
100 Watt Lamp, ANSI Code H38 or H44																		
100/200	71A25M1	CWA	125	1.3/.7	250	4/2	A	1	1.3	2.6	12	300	1.50	2.90	—	—	4.5	A/A

Metal Halide

Input Volts	Catalog † Number	Circuit Type	Watts Input	Max • Input Current	Nom Open Circuit Voltage	Fuse Rating (Amps)	Wiring Dia	Dimensions			Non-PCB Capacitor (Page 4-46 to 4-47)						Total Weight (lbs)	Ignitor †† (Page 4-48 to 4-51)		U.L. Bench Top Rise Code 1029 (pg 4-3)
											Mfd	Min Volt	Dry Film		Oil Filled			Part Number	Max Dist To Lamp (ft)	
								Fig	A	B			Dia (in)	Ht (in)	Oval (in)	Ht (in)				
70 Watt Lamp, ANSI Code M98 or M143																				
100/200	71A52M2	HX-HPF	90	1.9/1.0	258	5/3	K	1	1.5	1.7	14	280	1.50	2.90	—	—	4.5	LI533-H4	5	A/A
100 Watt Lamp, ANSI Code M90																				
100/200	71A53M0	HX-HPF	129	2.9/1.5	280	7/4	K	1	1.9	3.2	20	240	1.75	3.75	—	—	5.8	LI533-H4	15	A/A
150 Watt Lamp, ANSI Code M102 or M142																				
100/200	71A54M2	HX-HPF	185	4.4/2.2	240	10/5	K	1	2.5	4.1	35	240	1.75	3.75	—	—	7.5	LI533-H4	2	D/D
175 Watt Lamp, ANSI Code M57 or H39; or 150 Watt Lamp, ANSI Code M07																				
100/200	71A55M0	CWA	215	2.2/1.1	295	5/3	A	1	3.0	4.2	12	450	—	—	1.75	2.90	9.0	—	—	A/A
250 Watt Lamp, ANSI Code M58 or H37																				
400V 100/200	71A57M0	CWA	292	3.0/1.5	295	8/4	A	2	1.9	3.4	18	400	1.75	3.75	—	—	11.0	—	—	A/A
320 Watt Lamp, ANSI Code M132 (Pulse-Start)																				
400V 100/200	71A58M2	Super CWA	370	3.7/1.9	280	10/5	M	2	2.1	3.9	24	400	1.75	5.15	—	—	12.7	LI533-H4	2	A/B
400 Watt Lamp, ANSI Code M59 or H33																				
100/200	71A60M2	CWA	460	5.0/2.5	295	15/7	A	3	2.4	4.0	26	525	—	—	1.75	5.30	14.0	—	—	C/D
1000 Watt Lamp, ANSI Code M47 or H36																				
Ⓝ 200	71A65M6	CWA	1100	5.8	450	15	P	8	3.6	5.4	2 Capacitor Set [45 300 1.75 5.15; 45 300 1.75 5.15] Connected In Series				—	—	26.0	—	—	A

† Ordering information:
Original equipment ballasts - add proper suffix to catalog number:
- **-500D** includes core & coil with dry-film capacitor
- **-510D** includes core & coil with welded bracket and dry-film capacitor
- **-500** includes core & coil with oil-filled capacitor
- **-510** includes core & coil with welded bracket and oil-filled capacitor
- **-600** core & coil only (no capacitor)
- **-610** core & coil with welded bracket (no capacitor)

†† Each ballast requiring an ignitor is furnished as standard with the **Short Range** ignitor model shown for use within fixtures. If a **Long Range** ignitor is required for remote mounting, specify on order. See pages 4-48 to 4-51 for additional information.

• For HX circuits, figure is highest of starting, operating or open circuit current. For CWA circuits, figure is operating current.

Ⓝ UL Class N 200°C

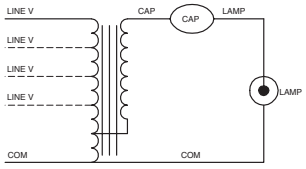


Fig. A

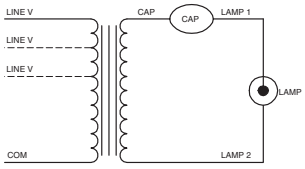


Fig. P

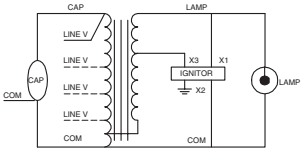


Fig. K

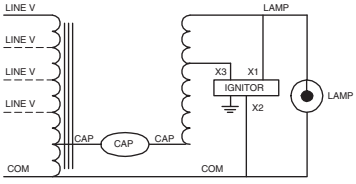


Fig. M

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Corporate Offices
(800) 322-2086

Press 1 for customer support or technical service
Press 2 if you know the extension or last name of the person you wish to reach
Press 0 to be connected to the operator

Customer Support/Technical Service
(800) 372-3331 • (+) 1 847 390-5000 (International)

Press 1 for customer support
Press 2 for technical, application, or warranty information
Press 4 to dial by name

Visit our web site at www.advancetransformer.com

ADVANCE® Lamp Ballast Limited Warranty

Advance Transformer Co. ("Advance"), 10275 W. Higgins Road, Rosemont, Illinois 60018 warrants that its lamp ballasts will be free from defect in material and workmanship from the date of manufacture by Advance for the following time periods.

Electronic (all)	5 Years *
Powrkut and Powrkut Companion	5 Years *
Mark III Energy-Saver & E-PAK 34	3 Years
Standard Magnetic Fluorescent	2 Years
Fluorescent & HID Sign Ballasts	2 Years
High Intensity Discharge (HID)	2 Years

***Effective with manufacturing in January, 1994 (Date stamped 01-94)**

This warranty is conditioned upon proper storage, installation, use and maintenance. This warranty is not applicable to any ballast which is not installed and operated in accordance with the current edition of The National Electric Code (NEC), the Standards for Safety of Underwriters' Laboratory, Inc. (UL), the Standards for the American National Standards Institute (ANSI), and with Advance's instructions and guidelines for the ballast. This warranty is not applicable to any ballast subjected to abnormal stresses and operating conditions.

Advance shall correct any defects, at Advance's option, by either repairing any defective part or parts or by replacing any defective part or parts or by making available a new replacement ballast.

The conditions of any tests concerning any ballast which is claimed to have not performed to this warranty shall be mutually agreed upon in writing and Advance shall be notified of, and may be represented at any such tests. This express limited warranty is extended by Advance only to the original or first end-user purchaser.

Warranty claims are to be made in accordance with Advance's published Warranty Service Program.

NO IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY BEYOND THE AFOREMENTIONED WARRANTY PERIOD. The foregoing warranty is exclusive of all other statutory, written or oral warranties, and no other warranties of any kind, statutory or otherwise, are given or herein expressed. This warranty sets forth Advance's responsibilities regarding the ballast and claimant's exclusive remedy.

LIMITATION OF LIABILITY. Advance will not under any circumstances whether as a result of breach of contract, breach of warranty, tort, strict liability or otherwise be liable for consequential, incidental, special or exemplary damages including but not limited to, loss of profits or revenues, loss of use of ballast or any other goods or associated equipment or damage to any associated equipment, cost of capital, cost of substitute products, facilities of services, down time cost, or claims of claimant's customers.

Advance's liability on any claim of any kind for any loss or damages arising out of, resulting from or concerning any aspect of this agreement of from the product or services furnished hereunder shall not exceed the price of the specific ballast or ballasts which gives rise to the claim.

This warranty gives the claimant specific legal rights. The claimant may also have other rights which vary from state to state.

AC (Alternating Current) - Current which passes from the generator in one direction and then other, alternately.

Ambient sound levels - "Background noise" generated by ballasts and other equipment operating in a building. Low ambient sound levels are desirable for hospitals, libraries and similar applications where high noise levels are unacceptable.

ANSI - (American National Standards Institute) Group that generates product performance standards for many U.S. industries.

Arc - Intense luminous discharge formed by the passage of electric current across a space between electrodes.

Arcing of output leads - Generation of an electrical arc between the output leads of a ballast. May deactivate conventional electronic ballasts.

Asphalt silica sand mixture - A mixture of asphalt with 50 - 60 percent silica sand used to fill the metal cases of electromagnetic and electronic ballasts to dampen sound, protect from moisture, improve heat removal and increase reliability.

Ballast - Device for starting and regulating fluorescent and high intensity discharge lamps.

Ballast efficacy factor - Measure used to compare various lighting systems based upon light output and power input.

Ballast factor - Measure of light output from lamp operated by commercial ballast, as compared to a laboratory standard reference ballast.

Ballast Noise "Hum" - Sound made by operating Core & Coil assemblies in both electromagnetic and electronic ballasts, generated by the vibration of laminations in the electromagnetic field that transforms the voltage and current used by discharge lamps. The sound made by high frequency electronic ballasts is lower and any noise made by models with electronic power factor correction circuits is inaudible.

Ballast losses - Power which is supplied to the ballast but is not converted into light energy.

Ballast performance factors - Measurements that allow the comparison of various ballasts in terms of their power efficiency and ability to produce light. Include Power Factor, Ballast Factor and Ballast Efficacy Factor.

Bottom exit - A configuration with leads or a wire-trap on the bottom or base of the ballast. This type of configuration is usually used when the ballast is mounted onto a junction box plate.

Burn-in test - Test performed on electronic products that simulates conditions encountered in actual operation.

Canadian Standards Association (CSA) - Association that generates product performance and safety standards for many Canadian industries.

Canadian Energy Standards - Indicates that ballast complies with Canadian Energy Standards and meets the requirements of CAN/CSA-C654-M91.

Capacitor - Device in ballast that stores electrical energy.

Circle E - Designates a ballast meets or exceeds the requirements of Public Law 100-357 establishing standards of efficiency.

"Class A" silica sand mixture - A plastic compound used to "pot" (fill) cases of electromagnetic ballasts, protecting the Core & Coil and other components from moisture, as well as to dampen sound and to remove heat.

Class P thermal protector - A switch that disconnects ballast if interval temperatures rise to levels > 105°C.

Coil - Windings of copper or aluminum wire surrounding core in ballast.

Conformal coating - Material which surrounds and adheres to components and protects them.

Core - Component of electromagnetic ballast that is surrounded by the coil. Core is comprised of steel laminations or solid ferrite material.

Core & Coil ballast - Another term for electromagnetic ballast.

Crest factor - Ratio of peak lamp current to RMS lamp current.

Current Limiting - Functional component grouping in electromagnetic and electronic ballasts that controls ballast output to provide the necessary voltage to start the lamp and regulate current from the ballast to the lamp.

Decibel (dB) - Unit of sound measurement.

Discharge lamp - A light producing device that depends on an electric arc, rather than a filament, to create illumination.

Efficacy - Lumen output per unit of power supplied to ballast.

Electrical testing laboratory - Independent

Electrode - Metal filament that emits electrons in a fluorescent lamp.

Electromagnetic ballast - A low frequency (50 - 60 Hz.) ballast that uses a "Core & Coil" assembly to transform electrical energy (voltage and current) to start and operate fluorescent and high-intensity discharge (HID) lamps.

Electronic ballast - A ballast that, with the aid of electronic components converts 60 Hz. input voltage and current to high frequency (20 kHz - 60 kHz.) to operate fluorescent and high-intensity discharge (HID) lamps.

Electronic component - A device or part employed in an electronic circuit to obtain some desired electronic action. Also the lowest replaceable unit in an electronic circuit.

Electronic IC ballast - An electronic ballast incorporating an integrated circuit (IC) that vastly increases the flexibility and versatility of the ballast.

EMI (Electromagnetic Interference) - Electrical interference with radio communications as defined by the Federal Communications Commissions (FCC)

ETL - Independent electrical testing laboratory, which performs ballast testing.

Excessive neutral current - Current overload created in the neutral wire of 4-wire, three phase Wye systems by load unbalance or "third harmonic".

FCC (Federal Communications Commission) Regulations - Legally enforceable U.S. government standards for EMI and RFI that must be met by highly frequency electronic devices used in this country for Class A (industrial) or Class B (residential) applications.

Filament - Coated coil of special wire that emits electrons or light when heated.

Filament voltage - Voltage applied to heat the lamp filament coil.

Filter - Functional grouping that limits interference feedback into the power source and protects internal ballast components.

Fluorescent lamp - Gas filled lamp in which light is produced by the interaction of an arc with phosphors lining the lamp's glass tube.

Fluorescent lighting circuit - Path through which electric current flows to operate fluorescent or high intensity discharge (HID) lamps. There are four types of fluorescent lighting circuits in use today: preheat, instant start, programmed start and rapid start.

Foot candles - Measure of light level on a surface which is being illuminated.

4-wire Wye - Most popular electrical wiring system for building in use today.

Frequency - Rate of alteration in an AC Current. Expressed in cycles per second or Hertz (Hz).

Functional group - Assembly of electronic components designed to accomplish a given task in the electronic ballast, such as EMI filtering, or power factor control.

Harmonic distortion - A measurement of the magnitude of voltage and current harmonics as compared with the amplitude of the fundamental frequency.

Harmonics - Refers to components of the overall frequency, an integral multiple of the fundamental sine-wave frequency.

Hertz (Hz) - Current or voltage cycles per second.

High efficiency electromagnetic ballast - Ballast with Core & Coils made so that ballast losses are lower than those in a standard ballast.

High-frequency operation - In this book, refers to the operation of electronic ballasts as frequencies between 25 and 60 KiloHertz (KHz) - 25,000 to 60,000 cycles per second.

High power factor ballast - A ballast that requires less line current than low power factor ballast. A ballast in which the power factor is greater than 0.9.

IEEE (Institute of electrical and Electronics Engineers) - Organization of engineers that establishes standards for electrical and electronics industries.

Illuminating Engineering Society (IES) - Group of professional lighting engineers and designers.

Incandescent lamp - Lamp in which light is produced by a filament heated by an electric current.

Incompatible lamps - Lamps not designed for use with a specific ballast.

Initial lumens - Lumen level of a fluorescent lamp after it has been operating 100 hours.

Input voltage - Voltage, provided by a power line or power supply, which the ballast uses to provide a proper level to power fluorescent lamps.

Instant-start - An electromagnetic or electronic lighting circuit without lamp filament heating that produces instant light.

Integrated circuit - Circuit of transistors, resistors and capacitors constructed on a single semi-conductor chip, all interconnected to perform a given function.

Internal fuse - A device that disconnects ballast to prevent damage in the power distribution system.

Kilohertz (KHz) - One thousand Hertz (cycles per second).

Laminations - Layers of thin steel making up the "core" of a Core & Coil assembly.

Lamp filament - See "Electrode"

Lamp flicker - Rapid visible light change occurring in fluorescent lighting systems. It is virtually indistinguishable in lamps operated by electronic ballasts because of their high operating frequency.

Lamp watts - Power used to operate lamp

Lead-lag slimline ballasts - Ballast that operate fluorescent lamps independently of one another. Can start lamps at 0°F.

Line-interrupt - A brief stoppage in the flow of current supplied by the electrical distribution system.

Low power factor ballast - Ballast that requires about twice the line current of high power factor ballast. Fewer fixtures can be installed in the circuit, increasing installed cost.

Lumens - Measurement of light emitted by a lighted lamp.

Lumens per watt - Units of light produced per unit of power.

Mean lumens - Average light produced when lamp has been operating about 40 percent of rated life.

Metal cases - Case design used in both magnetic and electronic ballasts. These ballasts are grounded once they are mounted to the fixture. They meet all safety codes, some of which do not allow plastic in open plenum areas.

National Electric Code - A nationally accepted electrical installation code to reduce the risk of fire, developed by the National Fire Protection Association.

National energy standards for fluorescent ballasts - A federal law enacted in 1988 that sets energy standards for ballasts consistent throughout the United States. ADVANCE electronic ballasts comply with the standards set by this law.

Non-PCB capacitor - Capacitor used in ballasts to help provide power factor correction. Contains no polychlorinated biphenyls. Meets the 1978 EPA requirements.

Normal Power Factor - Ballasts with a power factor of less than .90 and that do not incorporate any means of Power Factor Correction.

Optimum light levels - Sufficient light to provide good visibility.

Oscillator - Functional component grouping in electronic ballasts that converts the line frequency into a high frequency.

Parallel Lamp Operation - Refers to ballasts that employ multiple output current paths from a single ballast to allow lamps to operate independent of one another, allowing other lamps operated by the ballast to remain lit should companion lamp(s) fail.

PCB (Polychlorinated Biphenyls) - Chemical pollutant used in capacitors outlawed by the EPA in 1978.

Phosphor - Material, lining the interior of a fluorescent lamp, which emits light.

Potting - Silica filled asphalt material used to completely surround and cover components of electromagnetic and some electronic ballasts to conduct heat, protect components and dampen sound vibrations.

Power factor - Measurement of the relationship between the AC source voltage and current which determines the current required by a ballast. High power factor ballasts require less AC current to

do an optimum lighting job than would be required by an equivalent low power factor ballast.

Power Factor Corrected - Ballasts that incorporate a means of Power Factor Correction but whose power factor is less than 90% and greater than 50%.

Power supply - Source of electric current available for use in operating lamps.

Pre-conditioner - Grouping of electronic components in electronic IC ballasts that provides power factor correction, low line current harmonics, programmed start and regulation for input voltage variation.

Preheat lamp - A fluorescent lamp in which the filament must be heated before the arc is created.

Programmed-start - An electronic lighting circuit similar to rapid-start that provides precise heating of the lamp filaments and tightly controlling the pre-heat duration before applying starting voltage to ignite the lamp.

Quality assurance - Term used in modern industry to describe procedures applied to design and manufacturing operations in order to obtain products of the highest possible quality. Formerly called "Quality Control".

Rapid Start - Lamp starting method in which lamp filaments are heated while open circuit voltage (OCV) is applied to facilitate lamp ignition.

Rapid start lamps - Fluorescent lamps that glow immediately when turned on, and reach full brightness in about 2 seconds.

Rectifier - Functional grouping in circuit of electronic ballast that converts 60 Hz AC power supply indo DC (direct current).

Reference Ballast (standard reactor) - Laboratory device used to provide ANSI specified measurements of initial and mean lamp lumens.

RFI - (Radio Frequency Interference) - Form of electromagnetic interference.

Series-sequence slimline ballasts - Ballasts that operate with lamps starting in sequence.

Sine wave - A mathematical function used to represent voltage and current.

Slimline, instant start circuit - Circuit that produces light instantly in slimine, instant start fluorescent lamps.

Slimline lamp - Fluorescent lamp, which has single pin contacts that fit easily into push-pull, sockets.

Solid state ballast - Ballast in which solid-state circuity and high frequency magnetics replace standard Core & Coil components used in electromagnetic ballasts.

Standard alternating current frequency in the United States - 60 Hertz (Hz), or 60 cycles per second.

Standard reactor - See reference ballast.

Third harmonic - Third multiple of the fundamental frequency that will add in the neutral wire of a three phase, 4 wire, Wye system and may cause over-heating of the neutral wire should it exceed 33 1/3 percent.

Three phase current - Current delivered through three wires with each wire serving as the return for the other two.

Total Harmonic Distortion(THD) - The combined effect of Harmonic Distortion on the AC waveform produced by a ballast or other device. Excessive levels of THD can create large currents on the neutral line of a four-wire Wye three phase system.

Two-Pin Compact Fluorescent Lamps - Type of lamps that have the glow bottle starter built into the base of the lamp. Traditionally 2-pin lamps are designed to work with electromagnetic ballasts.

UL (Underwriters' Laboratories, Inc.) - Laboratory that sets safety standards for building materials, electrical appliances and other products.

U tube fluorescent lamp - Fluorescent lamp formed in the shape of a letter "U".

Voltage sag - Drop in voltage levels of electrical distribution system which interferes with the operation of electrical and electronic equipment. Commonly called "Brownout". Results when demand for electricity exceeds capacity of the distribution system.

Watts of power - Measurement of electrical ability to do work.

120-277V HIGH FREQUENCY ELECTRONIC BALLASTS

LAMP		Standard (<20% THD*)				Centium (<10% THD*)		
		Instant Start		Rapid Start		Instant Start		Rapid Start
Type	No	120	277	120	277	120	277	120
F21T5	1					RCN-132-MC	VCN-132-MC	
	2					RCN-2M32-MC	VCN-2M32-MC	
F28T5	1					RCN-132-MC	VCN-132-MC	
	2					RCN-2M32-MC	VCN-2M32-MC	
F54T5/HO	1							
	2							
F17T8	1	REL-1P32-SC	VEL-1P32-SC			RCN-1P32-SC	VCN-1P32-SC	
		REL-2P17-RH-TP	VEL-2P17-RH-TP			ICN-1P32-SC		
	2	REL-2P32-SC	VEL-2P32-SC			RCN-2P32-SC	VCN-2P32-SC	
		REL-2P17-RH-TP	VEL-2P17-RH-TP			ICN-2P32-SC		
	3	REL-3P32-SC	VEL-3P32-SC			RCN-3P32-SC	VCN-3P32-SC	
						ICN-3P32-SC		
	4	REL-4P32-SC	VEL-4P32-SC			RCN-4P32-SC	VCN-4P32-SC	
						ICN-4P32-SC		
F25T8	1	REL-1P32-SC	VEL-1P32-SC			RCN-1P32-SC	VCN-1P32-SC	
						RCN-132-MC	VCN-132-MC	
						ICN-1P32-SC		
	2	REL-2P32-SC	VEL-2P32-SC			RCN-2P32-SC	VCN-2P32-SC	
						RCN-2M32-SC	VCN-2M32-SC	
						ICN-2P32-SC		
	3	REL-3P32-SC	VEL-3P32-SC			RCN-3P32-SC	VCN-3P32-SC	
						ICN-3P32-SC		
	4	REL-4P32-SC	VEL-4P32-SC			RCN-4P32-SC	VCN-4P32-SC	
						ICN-4P32-SC		
F32T8	1	REL-1P32-SC	VEL-1P32-SC			RCN-1P32-SC	VCN-1P32-SC	
						RCN-132-MC	VCN-132-MC	
						ICN-1P32-SC		
	2	REL-2P32-SC	VEL-2P32-SC			RCN-2P32-SC	VCN-2P32-SC	
						RCN-2M32-SC	VCN-2M32-SC	
						ICN-2P32-SC		
	3	REL-3P32-SC	VEL-3P32-SC			RCN-3P32-SC	VCN-3P32-SC	
						ICN-3P32-SC		
	4	REL-4P32-SC	VEL-4P32-SC			RCN-4P32-SC	VCN-4P32-SC	
						ICN-4P32-SC		
F40T8	1					ICN-2P32-SC		
	2	REL-3P32-SC	VEL-3P32-SC			RCN-3P32-SC	VCN-3P32-SC	
						ICN-3P32-SC		
	3	REL-4P32-SC	VEL-4P32-SC			RCN-4P32-SC	VCN-4P32-SC	
						ICN-4P32-SC		
F96T8	1	REL-2P59-S-RH-TP	VEL-2P59-S-RH-TP			RCN-2P59	VCN-2P59	
	2	REL-2P59-S-RH-TP	VEL-2P59-S-RH-TP			RCN-2P59	VCN-2P59	
F48T8/H0	2							
F60T8/H0	2							
F72T8/H0	2			REL-2S86	VEL-2S86			
F96T8/H0	2			REL-2S86	VEL-2S86			
F40T10	1			REL-1S40-RH-TP	VEL-1S40-RH-TP			
	2			REL-2S40-RH-TP	VEL-2S40-RH-TP			RCN-2S40
	3			REL-3S40-RH-TP	VEL-3S40-RH-TP			
F25T12	1			REL-1S40-SC	VEL-1S40-SC			
	2			REL-2S40-SC	VEL-2S40-SC			
F30T12	1			REL-1S40-SC	VEL-1S40-SC			
				REL-1S40-RH-TP	VEL-1S40-RH-TP			
	2			REL-2S40-SC	VEL-2S40-SC			RCN-2S40
				REL-2S40-RH-TP	VEL-2S40-RH-TP			
	3			REL-3S40-RH-TP	VEL-3S40-RH-TP			

120-277V HIGH FREQUENCY ELECTRONIC BALLASTS

Centium (<10% THD*)			Mark V		Mark VII Dimmable		Mark X Dimmable	
Rapid Start	Programmed Start		Programmed Start		Programmed Start		Programmed Start	
277	120	277	120	277	120	277	120	277
	RCN-1S28	VCN-1S28						
	RCN-2S28	VCN-2S28						
	RCN-1S28	VCN-1S28						
	RCN-2S28	VCN-2S28						
	ICN-2S54-SC							
	RCN-1S32-SC	VCN-1S32-SC	RIC-1S32	VIC-1S32				
	RCN-2S32-SC	VCN-2S32-SC	RIC-2S32	VIC-2S32				
	RCN-3S32-SC	VCN-3S32-SC	RIC-3S32	VIC-3S32				
	RCN-4S32-SC	VCN-4S32-SC						
	RCN-1S32-SC	VCN-1S32-SC	RIC-1S32	VIC-1S32	RZT-132	VZT-132	REZ-132	VEZ-132
	RCN-2S32-SC	VCN-2S32-SC	RIC-2S32	VIC-2S32	RZT-2S32	VZT-2S32	REZ-2S32	VEZ-2S32
	RCN-3S32-SC	VCN-3S32-SC	RIC-3S32	VIC-3S32	RZT-3S32	VZT-3S32	REZ-3S32	VEZ-3S32
	RCN-4S32-SC	VCN-4S32-SC						
	RCN-1S32-SC	VCN-1S32-SC	RIC-1S32	VIC-1S32	RZT-132	VZT-132	REZ-132	VEZ-132
	RCN-2S32-SC	VCN-2S32-SC	RIC-2S32	VIC-2S32	RZT-2S32	VZT-2S32	REZ-2S32	VEZ-2S32
	RCN-3S32-SC	VCN-3S32-SC	RIC-3S32	VIC-3S32	RZT-3S32	VZT-3S32	REZ-3S32	VEZ-3S32
	RCN-4S32-SC	VCN-4S32-SC						
	RCN-2S86	VCN-2S86						
	RCN-2S86	VCN-2S86						
	RCN-2S86	VCN-2S86						
	RCN-2S86	VCN-2S86						
VCN-2S40								
VCN-2S40								

120-277V HIGH FREQUENCY ELECTRONIC BALLASTS

LAMP		Standard (<20% THD*)				Centium (<10% THD*)		
		Instant Start		Rapid Start		Instant Start		Rapid Start
Type	No	120	277	120	277	120	277	120
F30T12/ES	1			REL-1S40-SC	VEL-1S40-SC			
				REL-1S40-RH-TP	VEL-1S40-RH-TP			
	2			REL-2S40-SC	VEL-2S40-SC			RCN-2S40
				VEL-2S40-RH-TP	VEL-2S40-RH-TP			
	3			REL-3S40-RH-TP	VEL-3S40-RH-TP			
F40T12	1			REL-1S40-SC	VEL-1S40-SC			
				REL-1S40-RH-TP	VEL-1S40-RH-TP			
	2			REL-2S40-SC	VEL-2S40-SC			RCN-2S40
				REL-2S40-RH-TP	VEL-2S40-RH-TP			
	3			REL-3S40-RH-TP	VEL-3S40-RH-TP			
F40T12/ES	1			REL-1S40-SC	VEL-1S40-SC			
				REL-1S40-RH-TP	VEL-1S40-RH-TP			
	2			REL-2S40-SC	VEL-2S40-SC			RCN-2S40
				REL-2S40-RH-TP	VEL-2S40-RH-TP			
	3			REL-3S40-RH-TP	VEL-3S40-RH-TP			
F42T12	1	REL-2P50-SC	VEL-2P50-SC					
	2	REL-2P50-SC	VEL-2P50-SC					
F48T12	1	REL-2P50-SC	VEL-2P50-SC					
	2	REL-2P50-SC	VEL-2P50-SC					
F60T12	1	REL-2P50-SC	VEL-2P50-SC					
	2	REL-2P50-SC	VEL-2P50-SC					
F72T12	1	REL-2P60-S	VEL-2P75-S					
		REL-2P50-SC	VEL-2P50-SC					
	2	REL-2P60-S	VEL-2P75-S					
		REL-2P50-SC	VEL-2P50-SC					
F96T12	1	REL-2P60-S	VEL-2P75-S					
	2	REL-2P60-S	VEL-2P75-S					
F96T12/ES	1	REL-2P60-S	VEL-2P75-S					
	2	REL-2P60-S	VEL-2P75-S					
F48T12/HO	2			REL-2S110	VEL-2S110			
F60T12/HO	2			REL-2S110	VEL-2S110			
F72T12/HO	2			REL-2S110	VEL-2S110			
F96T12/HO	1			REL-2S110	VEL-2S110			
	2			REL-2S110	VEL-2S110			
F96T12/HO/ES	2			REL-2S110	VEL-2S110			

* Primary lamp application
Consult index pages for specification table page #s

120-277V HIGH FREQUENCY ELECTRONIC BALLASTS

Centium (<10% THD*)			Mark V		Mark VII Dimmable		Mark X Dimmable	
Rapid Start	Programmed Start		Programmed Start		Programmed Start		Programmed Start	
277	120	277	120	277	120	277	120	277
VCN-2S40								
VCN-2S40								
VCN-2S40								

* Primary lamp application
Consult index pages for specification table page #s

120-277V HIGH FREQUENCY ELECTRONIC BALLASTS

LAMP		Standard (<20% THD*)				Centium (<10% THD*)		
		Instant Start		Rapid Start		Instant Start		Rapid Start
Type	No	120	277	120	277	120	277	120
LOW LIGHT OUTPUT								
F17T8	1	REL-1P32-LW-SC	VEL-1P32-LW-SC					
	2	REL-2P32-LW-SC	VEL-2P32-LW-SC					
	3	REL-3P32-LW-SC	VEL-3P32-LW-SC					
	4	REL-4P32-LW-SC	VEL-4P32-LW-SC					
F25T8	1	REL-1P32-LW-SC	VEL-1P32-LW-SC					
	2	REL-2P32-LW-SC	VEL-2P32-LW-SC			RCN-2P32-LW	VCN-2P32-LW	
	3	REL-3P32-LW-SC	VEL-3P32-LW-SC			RCN-3P32-LW	VCN-3P32-LW	
	4	REL-4P32-LW-SC	VEL-4P32-LW-SC			RCN-4P32-LW	VCN-4P32-LW	
F32T8	1	REL-1P32-LW-SC	VEL-1P32-LW-SC					
	2	REL-2P32-LW-SC	VEL-2P32-LW-SC			RCN-2P32-LW	VCN-2P32-LW	
		REL-2P32-LW-RH-TP	VEL-2P32-LW-RH-TP					
	3	REL-3P32-LW-SC	VEL-3P32-LW-SC			RCN-3P32-LW	VCN-3P32-LW	
		REL-3P32-LW-RH-TP	VEL-3P32-LW-RH-TP					
	4	REL-4P32-LW-SC	VEL-4P32-LW-SC			RCN-4P32-LW	VCN-4P32-LW	
		REL-4P32-LW-RH-TP	VEL-4P32-LW-RH-TP					
F40T8	1	REL-2P32-LW-SC	VEL-2P32-LW-SC					
	2	REL-3P32-LW-SC	VEL-3P32-LW-SC					
	3	REL-4P32-LW-SC	VEL-4P32-LW-SC					
HIGH LIGHT OUTPUT								
F17T8	1	REL-1P32-HL-SC	VEL-1P32-HL-SC					
	2	REL-2P32-HL-SC	VEL-2P32-HL-SC					
	3	REL-3P32-HL-SC	VEL-3P32-HL-SC					
F25T8	1	REL-1P32-HL-SC	VEL-1P32-HL-SC					
	2	REL-2P32-HL-SC	VEL-2P32-HL-SC					
	3	REL-3P32-HL-SC	VEL-3P32-HL-SC					
F32T8	1	REL-1P32-HL-SC	VEL-1P32-HL-SC					
	2	REL-2P32-HL-SC	VEL-2P32-HL-SC					
		REL-2P32-HL-RH-TP	VEL-2P32-HL-RH-TP					
	3	REL-3P32-HL-SC	VEL-3P32-HL-SC					
		REL-3P32-HL	VEL-3P32-HL					
F40T8	1	REL-1P32-HL-SC	VEL-1P32-HL-SC					
		REL-2P32-HL-SC	VEL-2P32-HL-SC					
	2	REL-3P32-HL-SC	VEL-3P32-HL-SC					
F96T8	2	REL-2P59-HL	VEL-2P59-HL					

* Primary lamp application
Consult index pages for specification table page #s

ADVANCE, 10275 WEST HIGGINS ROAD, ROSEMONT, IL 60018. TEL: (847) 390-5000, FAX: (847) 390-5109

120-277V HIGH FREQUENCY ELECTRONIC BALLASTS

Centium (<10% THD*)			Mark V		Mark VII Dimmable		Mark X Dimmable	
Rapid Start	Programmed Start		Programmed Start		Programmed Start		Programmed Start	
277	120	277	120	277	120	277	120	277
LOW LIGHT OUTPUT								
HIGH LIGHT OUTPUT								

* Primary lamp application
Consult index pages for specification table page #s

120-277V HIGH FREQUENCY ELECTRONIC BALLASTS

COMPACT FLUORESCENT (Triple, Quad, 2D, T5 Circline and Long Twin Tube)

LAMP			Standard (<20% THD*)			
			Instant Start		Rapid Start	
Type		No	120	277	120	277
CFL Quad and Triple	CFQ13W/G24q (13W CFL Quad)	1				
		2				
	CFQ18W/G24q (18W CFL Quad)	1				
		2				
	CFM18W/GX24q (18W CFL Triple)	1				
		2				
	CFQ26W/G24q (26W CFL Quad)	1				
		2				
	CFM26W/GX24q (26W CFL Triple)	1				
		2				
	CFM32W/GX24q (32W CFL Triple)	1				
		2				
	CFM42W/GX24q (42W CFL Triple)	1				
		2				
2D	CFS10W/GR10q (10W 2D)	1				
		2				
	CFS16W/GR10q (16W 2D)	1				
		2				
	CFS21W/GR10q (21W 2D)	1				
		2				
	CFS28W/GR10q (28W 2D)	1				
		2				
	CFS38W/GR10q (32W 2D)	1				
		2				
T5 Circline	FC9T5 (22W T5 Circline)	1				
	FC12T5 (40W T5 Circline)	1				
	FC9T5 + FC12T5 (22W + 40W T5 Circline)	1+1				
Long Twin Tube / TT5	FT24W/2G11 (24/27W TT5)	2				
	FT36W/2G11 (36W TT5)	1	REL-1TTS39	VEL-1TTS39		
		2	REL-2TTS39	VEL-2TTS39		
	FT40W/2G11 (40W TT5)	1	REL-1TTS40	VEL-1TTS40	RCN-1TTP40-SC	VCN-1TTP40-SC
		2	REL-2TTS40	VEL-2TTS40	RCN-2TTP40-SC	VCN-2TTP40-SC
		3			RCN-3TTP40-SC	VCN-3TTP40-SC
	FT50W/2G11 (50W TT5)	1	REL-1TTS50	VEL-1TTS50		
		2	REL-2TTS50	VEL-2TTS50		
	FT55W/2G11 (55W TT5)	1	REL-1TTS50	VEL-1TTS50		
		2	REL-2TTS50	VEL-2TTS50		

* Primary lamp application
** XX-XX = See page 2-25
Consult index pages for specification table page #s

120-277V HIGH FREQUENCY ELECTRONIC BALLASTS

COMPACT FLUORESCENT (Triple, Quad, 2D, T5 Circline and Long Twin Tube)

SMARTMATE™**		MARK VII Dimmable**		MARK X Dimmable	
Programmed Start		Programmed Start		Programmed Start	
120	277	120	277	120	277
ICF-2S13-XX-XX					
ICF-2S13-XX-XX					
ICF-2S18-XX-XX					
ICF-2S18-XX-XX					
ICF-2S18-XX-XX					
ICF-2S18-XX-XX					
ICF-2S26-XX-XX		IZT-1T42-M2-XX		REZ-1T32	VEZ-1T32
ICF-2S26-XX-XX		IZT-2Q26-M2-XX		REZ-2Q26	VEZ-2Q26
ICF-2S42-XX-XX					
ICF-2S26-XX-XX		IZT-1T42-M2-XX		REZ-1T32	VEZ-1T32
ICF-2S26-XX-XX		IZT-2Q26-M2-XX		REZ-2Q26	VEZ-2Q26
ICF-2S42-XX-XX					
ICF-2S26-XX-XX		IZT-1T42-M2-XX		REZ-1T32	VEZ-1T32
ICF-2S42-XX-XX		IZT-2T42-M3-XX			
ICF-2S26-XX-XX		IZT-1T42-M2-XX		REZ-1T42	VEZ-1T42
ICF-2S42-XX-XX		IZT-2T42-M3-XX			
ICF-2S13-XX-XX					
ICF-2S13-XX-XX					
ICF-2S13-XX-XX					
ICF-2S18-XX-XX					
ICF-2S18-XX-XX					
ICF-2S18-XX-XX					
ICF-2S26-XX-XX					
ICF-2S26-XX-XX					
ICF-2S42-XX-XX					
ICF-2S26-XX-XX					
ICF-2S42-XX-XX					
ICF-2S26-XX-XX					
ICF-2S26-XX-XX					
ICF-2S42-XX-XX					
ICF-2S26-XX-XX					
ICF-2S42-XX-XX					
		RZT-1TTS40	VZT-1TTS40	REZ-1TTS40	VEZ-1TTS40
ICF-2S42-XX-XX		RZT-2TTS40	VZT-2TTS40	REZ-2TTS40	VEZ-2TTS40

* Primary lamp application
** XX-XX = See page 2-25
Consult index pages for specification table page #s

347 V0LT HIGH FREQUENCY ELECTRONIC BALLASTS
LINEAR FLUORESENT LAMPS (T5, T8, T10 AND T12)

		Standard (<20% THD)*		Centium (<10% THD)*	
LAMP		Instant Start	Rapid Start	Instant Start	Rapid Start
Type	No	347		347	
F17T8	2	GEL-2P32-SC			
F25T8	1	GEL-2P32-SC			GCN-1S32
	2	GEL-2P32-SC			GCN-2S32
	3				GCN-3S32
F32T8	1	GEL-2P32-SC			GCN-1S32
	2	GEL-2P32-SC	GEL-2S32-RH-TP	GCN-2P32	GCN-2S32
	3	GEL-3P32-RH-TP			GCN-3S32
	4	GEL-4P32-RH-TP			
F96T8	1	GEL-2P59			
	2	GEL-2P59			
F40T12	2		GEL-2S40-RH-TP		
LOW LIGHT OUTPUT					
F32T8	2	GEL-2P32-LW-RH-TP			
	4	GEL-4P32-LW-RH-TP			

* Primary lamp application
Consult index pages for specification table page #s

LINEAR LAMP-TO-BALLAST DETAILS OF CHART HEADINGS

NUMBER OF LAMPS	LAMP TYPE	CIRCUIT VOLTS	NOMINAL LAMP WATTS	MIN AMB START TEMP (ºF)	CATALOG NUMBER (ALL CLASS P)	BALLAST TYPE	INPUT WATTS (ANSI)	LINE CURRENT AMPS	BALLAST FACTOR (AVG)	BALLAST EFFICACY FACTOR (BEF)	MAX HARM DIST (%THD)

Number of Lamps
Number of lamps ballast will operate.

Lamp Type
As shown in lamp manufacturers catalogs for linear lamps. Corresponding "U" lamps may also be operated unless indicated otherwise in notes column.

Circuit Volts
Input circuit voltage

Nominal Lamp Watts
As shown in lamp manufacturers catalogs for linear lamps. Nominal lamp watts for corresponding "U" tubes may vary slightly by lamp manufacturer.

Minimum Ambient Starting Temperature
Minimum ambient temperature required for proper lamp starting.

Catalog Number
Advance Ballast

Ballast Type
Advance ballast design/construction:

Magnetic	Centium
Mark III	Mark V®
PowrKut®	Mark VII® *0-10V*
Electronic	Mark X® *Powerline*
E-Pak 34	

Input Watts
As tested to requirements of ANSI C82 specifications

Line Current
As tested to the requirements of ANSI C82 specifications

Ballast Factor
The ratio of light output produced by lamps operated by a commercial ballast compared to the light produced by the same lamps operated by a standard laboratory reference ballast. A ballast may have a different B.F. when operating lamps of different wattages (i.e. standard vs. energy saving).

Ballast Efficacy Factor
The ratio of Ballast Factor to the Watts Input at the ballast

Total Harmonic Distortion
The measurement of the magnitude of the input current harmonics compared with the amplitude of the fundamental frequency circuit.

CERTIFICATIONS	CATALOG NUMBER (ALL CLASS P)	NOTES	LAMP OPERATION	BALLAST CIRCUIT	SOUND RATING	DIMENSIONS	WIRING DIAGRAM w/PAGE NO.

Certifications

UL Underwriters Laboratories, Inc. Listed Class P for Indoor or Type 1 Outdoor applications

CSA Canadian Standards Association Certification for ballasts sold in Canada

E Ballast complies with National Energy Conservation Amendments (NAECA) of 1988 to Energy Policy and Conservation Act (EPCA) or 1987

CSA-E Canadian Standards Association verification of ballast meeting energy efficiency requirements

Catalog Number For reference

Notes
Supplementary application/ installation information and electrical data

Lamp Operation Lamp starting method

Rapid-Start ballast provides low voltage to heat lamp filaments then higher, starting voltage to start lamps. Filament voltage is maintained during operation (except with PowrKut design which automatically cuts-off filament voltage after ignition).

Instant-Start ballast applies high starting voltage to produce light immediately.

Program Rapid Start ballast precisely heats the lamp electrodes with virtually no glow current before applying arc voltage. This starting method provides longer lamp life than standard Rapid Start methods for both normal or frequent switching applications.

Programmed Start ballast use a custom integrated circuit (IC) which monitors lamp and ballast conditions to ensure optimal lighting system performance. This starting method provides maximum lamp life for both normal or frequent switching applications.

Ballast Circuit
Method of multiple lamp operation:

Series Operation
indicates lamps start in sequence dependent upon each other to provide light. If one lamp becomes inoperative, other will not operate properly

Parallel Operation
indicates lamps operate independently of each other. When one becomes inoperative, it will not affect operation of others.

Series Parallel
Applicable for 3 or 4-lamp ballasts. Indicates two branch circuits in parallel; within each branch, lamp(s) start in sequence. A minimum ofone lamp will maintain light output in the event that one lamp fails.

– (dash) indicates ballast operates only a single lamp

Sound Rating
Based on measurements of average ambient sound levels during conditions of normal occupancy

Dimensions and Wiring Diagram
See Page No. for dimensional data & wiring diagrams

To Contact the Advance Specification Group member assigned to your area, please call (847) 390-5340

NUMBER OF LAMPS	LAMP TYPE	CIRCUIT VOLTS	NOMINAL LAMP WATTS	MIN AMB START TEMP (°F)	CATALOG NUMBER (ALL CLASS P)	BALLAST TYPE	INPUT WATTS (ANSI)	LINE CURRENT AMPS	BALLAST FACTOR (AVG)	BALLAST EFFICACY FACTOR (BEF)	MAX HARM DIST (%THD)
1	F32T8	120	32	50	R-1P32-TP	Mark III	35	.32	.95	2.71	15
					RK-132-TP	PowrKut Companion	34	.31	.85	2.50	20
				0	REL-1P32-SC	Electronic	32	.28	.92	2.88	20
					REL-1P32-HL-SC	Electronic High Light	42	.35	1.2	2.86	20
					REL-1P32-LW-SC	Electronic Low Watt	29	.24	.75	2.59	20
					REL-2P32-SC	Electronic	38	.33	1.10	2.89	25
					RCN-1P32-SC	Centium Electronic	32	.28	.88	2.75	10
					RIC-132	Mark V Electronic	33	.28	.88	2.67	10
				32	RCN-1S32-SC	Centium Electronic	34	.29	.90	2.64	10
		277	32	50	V-1P32-TP	Mark III	41	.16	.98	2.39	15
					VK-132-TP	PowrKut Companion	34	.13	.85	2.50	20
				0	VEL-1P32-SC	Electronic	32	.12	.92	2.88	20
					VEL-1P32-HL-SC	Electronic Low Watt	42	.16	1.2	2.86	20
					VEL-1P32-LW-SC	Electronic Low Watt	29	.11	.75	2.59	20
					VEL-2P32-SC	Electronic	38	.14	1.10	2.89	25
					VCN-1P32-SC	Centium Electronic	32	.12	.88	2.75	10
					VIC-132	Mark V Electronic	33	.12	.88	2.67	10
				32	VCN-1S32-SC	Centium Electronic	34	.13	.90	2.64	10
		347	32	50	G-1S32-TP	Mark III	41	.12	.98	2.39	15
					GK-132-TP	PowrKut Companion	36	.11	.86	2.39	20
				50	GEL-2P32-SC	Electronic	38	.11	1.10	2.89	25
					GCN-1S32	Centium Electronic	34	.10	.87	2.56	10
2	F32T8	120	32	50	R-2P32-TP	Mark III	71	.61	.99	1.39	10
					RK-2S32-TP	PowrKut	62	.58	.87	1.40	15
				0	REL-2P32-SC	Electronic	58	.49	.88	1.52	20
					REL-2P32-HL-RH-TP	Electronic High Light	76	.64	1.15	1.51	20
					REL-2P32-HL-SC	Electronic High Light	49	.41	1.41	2.88	20
					REL-2P32-LW-RH-TP	Electronic Low Watt	51	.43	.75	1.47	20
					REL-2P32-LW-SC	Electronic Low Watt	33	0.3	.93	2.82	20
				0	REL-3P32-SC	Electronic	71	.62	1.10	1.55	25
					RCN-2P32-SC	Centium Electronic	59	.51	.88	1.50	10
					RCN-2P32-LW	Centium Low Watt	50	.43	.78	1.56	10
				50	RCN-2S32-LW	Centium Low Watt	54	.46	.75	1.39	10
				0	RIC-2S32	Mark V Electronic	64	.54	.88	1.38	10
				32	RCN-2S32-SC	Centium Electronic	63	.53	.88	1.40	10
		240	32	50	YK-2S32-TP	PowrKut	63	.29	.87	1.38	15
		277	32	50	V-2P32-TP	Mark III	76	.29	.95	1.25	10
					VK-2S32-TP	PowrKut	62	.24	.87	1.40	15
				0	VEL-2P32-SC	Electronic	58	.21	.88	1.52	20
					VEL-2P32-HL-RH-TP	Electronic High Light	76	.28	1.15	1.51	20
					VEL-2P32-HL-SC	Electronic High Light	49	.18	1.41	2.88	20
					VEL-2P32-LW-RH-TP	Electronic Low Watt	51	.18	.75	1.47	20
					VEL-2P32-LW-SC	Electronic Low Watt	33	.13	.93	2.82	20
				0	VEL-3P32-SC	Electronic	71	.27	1.10	1.55	25

(Continued on next page)

1. Both lamps or single red lamp may be remotely mounted from ballast (20 ft. max. lead length). Blue lamp must be mounted in fixture containing ballast when single red lamp is remotely mounted.
2. Maximum remote mounting distance 20 ft. (any lamp combination).

See Page 7-13 for detailed explanation of chart headings and listings

CERTIFICATIONS			CATALOG NUMBER (ALL CLASS P)	NOTES	LAMP OPERATION	BALLAST CIRCUIT	SOUND RATING	DIMENSIONS	WIRING DIAGRAM w/PAGE NO.
●	●		R-1P32-TP		RS	—	A	T-2	20/1-5
●	●		RK-132-TP		RS	—	A	T-2	20/2-4
●	●		REL-1P32-SC	2	IS	—	A	T-4	63/2-28
●	●		REL-1P32-HL-SC		IS	—	A	T-4	63/2-32
●	●		REL-1P32-LW-SC		IS	—	A	T-4	63/2-30
●	●	●	REL-2P32-SC	2	IS	—	A	T-4	68/2-28
●	●		RCN-1P32-SC	2	IS	—	A	T-4	63/2-46
●	●		RIC-132	2	PS	—	A	T-2	20/2-55
●	●		RCN-1S32-SC	2	PS	—	A	T-4	20/2-51
●	●		V-1P32-TP		RS	—	A	T-2	20/1-5
●	●		VK-132-TP		RS	—	A	T-2	20/2-4
●	●		VEL-1P32-SC	2	IS	—	A	T-2	63/2-28
●	●		VEL-1P32-HL-SC		IS	—	A	T-4	63/2-32
●	●		VEL-1P32-LW-SC		IS	—	A	T-4	63/2-30
●	●	●	VEL-2P32-SC	2	IS	—	A	T-2	68/2-28
●	●		VCN-1P32-SC	2	IS	—	A	T-4	63/2-46
●	●		VIC-132	2	PS	—	A	T-2	20/2-55
●	●		VCN-1S32-SC	2	PS	—	A	T-4	20/2-51
	●		G-1S32-TP		RS	—	A	T-2	20/1-5
	●		GK-132-TP		RS	—	A	T-2	20/2-4
	●	●	GEL-2P32-SC	2	IS	Par.	A	T-2	68/2-28
●	●	●	GCN-1S32		RS	—	A	T-2	20/2-52
●	●	●	R-2P32-TP		RS	Ser.	A	T-2	21/1-5
●	●	●	RK-2S32-TP		RS	Ser.	A	T-2	21/2-4
●	●	●	REL-2P32-SC	2	IS	Par.	A	T-4	64/2-28
●	●		REL-2P32-HL-RH-TP	2	IS	Par.	A	T-2	64/2-33
●	●		REL-2P32-HL-SC		IS	—	A	T-4	64/2-32
●	●		REL-2P32-LW-RH-TP	2	IS	Par.	A	T-2	64/2-31
●	●		REL-2P32-LW-SC		IS	—	A	T-4	64/2-30
●	●		REL-3P32-SC	2	IS	Par.	A	T-2	70/2-28
●	●	●	RCN-2P32-SC	2	IS	Par.	A	T-4	64/2-46
●	●		RCN-2P32-LW	2	IS	Par.	A	T-2	64/2-47
●			RCN-2S32-LW	1	RS	Ser.	A	T-2	21/2-49
●	●	●	RIC-2S32	1	PS	Ser.	A	T-2	21/2-55
●	●		RCN-2S32-SC	2	PS	Ser.	A	T-4	21/2-51
	●		YK-2S32-TP		RS	Ser.	A	T-2	21/2-4
●	●	●	V-2P32-TP		RS	Ser.	A	T-2	21/1-5
●	●	●	VK-2S32-TP		RS	Ser.	A	T-2	21/2-4
●	●	●	VEL-2P32-SC	2	IS	Par.	A	T-4	64/2-28
●	●		VEL-2P32-HL-RH-TP	2	IS	Par.	A	T-2	64/2-33
●	●		VEL-2P32-HL-SC		IS	—	A	T-4	64/2-32
●	●		VEL-2P32-LW-RH-TP	2	IS	Par.	A	T-2	64/2-31
●	●		VEL-2P32-LW-SC		IS	—	A	T-4	64/2-30
●	●		VEL-3P32-SC	2	IS	Par.	A	T-2	70/2-28

NUMBER OF LAMPS	LAMP TYPE	CIRCUIT VOLTS	NOMINAL LAMP WATTS	MIN AMB START TEMP (°F)	CATALOG NUMBER (ALL CLASS P)	BALLAST TYPE	INPUT WATTS (ANSI)	LINE CURRENT AMPS	BALLAST FACTOR (AVG)	BALLAST EFFICACY FACTOR (BEF)	MAX HARM DIST (%THD)
2	F32T8	277	32	0	VCN-2P32-SC	Centium Electronic	59	.21	.88	1.50	10
					VCN-2P32-LW	Centium Low Watt	50	.18	.78	1.56	10
				50	VCN-2S32-LW	Centium Low Watt	54	.20	.75	1.39	10
				0	VIC-2S32	Mark V Electronic	64	.24	.88	1.38	10
				32	VCN-2S32-SC	Centium Electronic	63	.23	.88	1.40	10
		347	32	50	G-2S32-TP	Mark III	77	.23	.98	1.27	15
					GK-2S32-TP	PowrKut	63	.20	.89	1.41	15
				0	GEL-2P32-SC	Electronic	59	.17	.87	1.47	20
					GEL-2P32-LW-RH-TP	Electronic	52	.15	.75	1.44	20
				50	GEL-2S32-RH-TP	Electronic	62	.18	.87	1.42	20
				50	GCN-2S32	Centium Electronic	63	.18	.90	1.43	10
3	F32T8	120	32	0	REL-3P32-SC	Electronic	85	.71	.88	1.02	20
					REL-3P32-HL-SC	Electronic High Light	87	.73	1.32	1.52	20
				0	REL-3P32-LW-RH-TP	Electronic Low Watt	76	.63	.75	0.99	20
					REL-3P32-LW-SC	Electronic Low Watt	76	.64	.75	0.87	20
				0	REL-4P32-SC	Electronic	90	.77	.95	1.06	20
					RCN-3P32-SC	Centium Electronic	85	.71	.88	1.05	10
					RIC-3S32	Mark V Electronic	93	.79	.88	.95	10
				32	RCN-3S32-SC	Centium Electronic	91	.78	.88	.97	10
		277	32	0	VEL-3P32-SC	Electronic	85	.31	.88	1.02	20
					VEL-3P32-HL-SC	Electronic High Light	87	.32	1.32	1.52	20
				0	VEL-3P32-LW-RH-TP	Electronic Low Watt	76	.27	.75	0.99	20
					VEL-3P32-LW-SC	Electronic Low Watt	76	.27	.75	9.87	20
				0	VEL-4P32-SC	Electronic Low Watt	90	.34	.95	1.06	20
					VCN-3P32-SC	Centium Electronic	85	.31	.88	1.05	10
					VCN-3P32-LW	Centium Low Watt	75	.28	.79	1.05	10
					VIC-3S32	Mark V Electronic	93	.34	.88	.95	10
				32	VCN-3S32-SC	Centium Electronic	91	.34	.88	.97	10
		347	32	0	GEL-3P32-RH-TP	Electronic	90	.26	.97	1.08	20
				50	GCN-3S32	Centium Electronic	94	.28	.92	.98	10
4	F32T8	120	32	0	REL-4P32-SC	Electronic	112	.94	.88	0.76	20
					REL-4P32-LW-RH-TP	Electronic Low Watt	98	.83	.75	0.77	20
					REL-4P32-LW-SC	Electronic Low Watt	98	.82	.75	7.65	20
					RCN-4P32-SC	Centium Electronic	112	.94	.88	0.79	10
					RCN-4P32-LW	Centium Low Watt	99	.84	.76	0.77	10
				32	RCN-4S32-SC	Centium Electronic	121	1.03	.88	0.73	10
		277	32	0	VEL-4P32-SC	Electronic	112	.41	.85	0.76	20
					VEL-4P32-LW-RH-TP	Electronic Low Watt	98	.36	.75	0.77	20
					VEL-4P32-LW-SC	Electronic Low Watt	98	.36	.75	7.65	20
					VCN-4P32-SC	Centium Electronic	112	.41	.88	0.79	10
					VCN-4P32-LW	Centium Low Watt	99	.36	.76	0.77	10
				32	VCN-4S32-SC	Centium Electronic	121	.45	.88	0.73	10
		347	32	0	GEL-4P32-RH-TP	Electronic	112	.31	.85	0.76	20
					GEL-4P32-LW-RH-TP	Electronic	98	.29	.75	0.77	20

1. Both lamps or single red lamp may be remotely mounted from ballast (20 ft. max. lead length). Blue lamp must be mounted in fixture containing ballast when single red lamp is remotely mounted.

2. Maximum remote mounting distance 20 ft. (any lamp combination).

See Page 7-13 for detailed explanation of chart headings and listings

CERTIFICATIONS			CATALOG NUMBER (ALL CLASS P)	NOTES	LAMP OPERATION	BALLAST CIRCUIT	SOUND RATING	DIMENSIONS	WIRING DIAGRAM w/PAGE NO.
●	●	●	VCN-2P32-SC	2	IS	Par.	A	T-4	64/2-46
●			VCN-2P32-LW	2	IS	Par.	A	T-2	64/2-47
●			VCN-2S32-LW	1	RS	Ser.	A	T-2	21/2-49
●	●	●	VIC-2S32	1	PS	Ser.	A	T-2	21/2-55
●	●		VCN-2S32-SC	2	PS	Ser.	A	T-4	21/2-51
	●	●	G-2S32-TP		RS	Ser.	A	T-2	21/1-5
	●	●	GK-2S32-TP		RS	Ser.	A	T-2	21/2-4
	●		GEL-2P32-SC	2	IS	Par.	A	T-2	64/2-29
	●		GEL-2P32-LW-RH-TP		IS	Par.	A	T-4	64/2-31
	●		GEL-2S32-RH-TP	1	RS	Ser.	A	T-2	21/2-36
●	●		GCN-2S32	2	RS	Ser.	A	T-2	21/2-52
●	●		REL-3P32-SC	2	IS	Par.	A	T-4	65/2-28
●	●		REL-3P32-HL-SC		IS	_	A	T-4	65/2-32
●	●		REL-3P32-LW-RH-TP	2	IS	Par.	A	T-2	65/2-31
●	●		REL-3P32-LW-SC		IS	_	A	T-4	65/2-30
●	●		REL-4P32-SC	2	IS	Par.	A	T-4	66/2-28
●	●		RCN-3P32-SC	2	IS	Par.	A	T-4	65/2-28
●	●	●	RIC-3S32	3	PS	Ser.	A	T-2	30/2-55
●	●		RCN-3S32-SC	2	PS	Ser.-Par.	A	T-4	30/2-51
●	●		VEL-3P32-SC	2	IS	Par.	A	T-4	65/2-28
●	●		VEL-3P32-HL-SC		IS	–	A	T-4	65/2-32
●	●		VEL-3P32-LW-RH-TP	2	IS	Par.	A	T-2	65/2-31
●	●		VEL-3P32-LW-SC		IS	–	A	T-4	65/2-30
●	●		VEL-4P32-SC	2	IS	Par.	A	T-4	66/2-28
●	●		VCN-3P32-SC	2	IS	Par.	A	T-4	65/2-46
●			VCN-3P32-LW	2	IS	Par.	A	T-2	65/2-47
●	●	●	VIC-3S32	3	PS	Ser.	A	T-2	30/2-55
●	●		VCN-3S32-SC	2	PS	Ser.-Par.	A	T-4	30/2-51
	●		GEL-3P32-RH-TP	2	IS	Par.	A	T-2	65/2-28
●	●		GCN-3S32		RS	Ser.	A	T-2	30/2-52
●	●		REL-4P32-SC	2	IS	Par.	A	T-2	66/2-28
●	●		REL-4P32-LW-RH-TP	2	IS	Par.	A	T-2	66/2-31
●	●		REL-4P32-LW-SC		IS	–	A	T-4	66/2-30
●	●		RCN-4P32-SC	2	IS	Par.	A	T-4	66/2-46
●	●		RCN-4P32-LW	2	IS	Par.	A	T-2	66/2-47
●	●		RCN-4S32-SC	2	PS	Ser.-Par.	A	T-4	66/2-51
●	●		VEL-4P32-SC		IS	Par.	A	T-2	66/2-29
●	●		VEL-4P32-LW-RH-TP	2	IS	Par.	A	T-2	66/2-31
●	●		VEL-4P32-LW-SC		IS	–	A	T-4	66/2-30
●	●		VCN-4P32-SC	2	IS	Par.	A	T-4	66/2-46
●	●		VCN-4P32-LW	2	IS	Par.	A	T-2	66/2-47
●			VCN-4S32-SC		PS	Ser.	A	T-4	31/2-51
	●		GEL-4P32-RH-TP	2	IS	Par.	A	T-2	66/2-28
	●		GEL-4P32-LW-RH-TP		IS	Par.	A	T-4	66/2-31

T10 and 12 F40T10 - F40T12 Rapid Start Lamp – 420mA • 430mA • 460mA

NUMBER OF LAMPS	LAMP TYPE	CIRCUIT VOLTS	NOMINAL LAMP WATTS	MIN AMB START TEMP (°F)	CATALOG NUMBER (ALL CLASS P)	BALLAST TYPE	INPUT WATTS (ANSI)	LINE CURRENT AMPS	BALLAST FACTOR (AVG)	BALLAST EFFICACY FACTOR (BEF)	MAX HARM DIST (%THD)
1 1	F40T10 F40T12*	120	34 40	60 50	**R-140-TP**	Mark III	43 50	.38 .43	.88 .95	2.05 1.90	15
			34 40	60 50	**REL-1S40-RH-TP**	Electronic	31 38	.27 .33	.90 .90	2.90 2.37	20
			40	0	**RC-1P40-TP**	Magnetic	45	.39	.78	1.73	20
		220	34 40	60 50	**X-140-TP**	Magnetic	44 51	.20 .23	.89 .94	2.02 1.84	10
		240	40	50	**YHQM-1P40-TP**	Magnetic	49	.21	.78	1.59	15
		277	34 40	60 50	**V-140-TP**	Mark III	43 50	.16 .19	.88 .95	2.05 1.90	10
			34 40	60 50	**VEL-1S40-RH-TP**	Electronic	31 38	.12 .14	.90 .90	2.90 2.37	20
			40	0	**VC-1P40-TP**	Magnetic	46	.17	.80	1.74	20
		347	34 40	60 50	**G-140-TP**	Mark III	43 50	.13 .15	.88 .95	2.05 1.90	15
1	F40T12 (U Shape)	120	40	50	**R-1U40-TP**	Mark III	52	.44	.98	1.88	25
		277	40	50	**V-1U40-TP**	Mark III	49	.18	.98	2.00	25

* Electrical data incorporated in chart based on operation of this lamp. Data for other lamp will vary somewhat.

2. Maximum remote mounting distance 20 ft. (any lamp combination).

For detailed explanation of chart headings and listings, see page 7-13.

T10 and 12 F40T10 - F40T12 Rapid Start Lamp – 420mA • 430mA • 460mA CONTINUED

CERTIFICATIONS				CATALOG NUMBER (ALL CLASS P)	NOTES	LAMP OPERATION	BALLAST CIRCUIT	SOUND RATING	DIMENSIONS	WIRING DIAGRAM w/PAGE NO.
UL	CSA	E	CSA E							
●	●	●	●	R-140-TP		RS	–	A	T-2	20/1-9
●	●	●	●	REL-1S40-RH-TP	2	RS	–	A	T-2	20/2-37
●	●			RC-1P40-TP		RS	–	A	R-5	20/1-9
●				X-140-TP		RS	–	A	T-2	20/1-9
●				YHQM-1P40-TP		RS	–	A	R-5	20/1-9
●	●	●	●	V-140-TP		RS	–	A	T-2	20/1-9
●	●	●	●	VEL-1S40-RH-TP	2	RS	–	A	T-2	20/2-37
●	●			VC-1P40-TP		RS	–	A	R-5	20/1-9
	●		●	G-140-TP		RS	–	A	T-2	20/1-9
●	●	●		R-1U40-TP		RS	–	A	T-2	114/1-11
●		●		V-1U40-TP		RS	–	A	T-2	114/1-11

T10 and 12 F40T10 - F40T12 Rapid Start Lamp – 420mA • 430mA • 460mA

NUMBER OF LAMPS	LAMP TYPE	CIRCUIT VOLTS	NOMINAL LAMP WATTS	MIN AMB START TEMP (°F)	CATALOG NUMBER (ALL CLASS P)	BALLAST TYPE	INPUT WATTS (ANSI)	LINE CURRENT AMPS	BALLAST FACTOR (AVG)	BALLAST EFFICACY FACTOR (BEF)	MAX HARM DIST (%THD)
2 2	F40T10 F40T12*	120	34	60	**RM-2S35-TP**	Magnetic Low Watt	52	.46	.64	1.23	20
			34 40	60 50	**R-2S40-TP**	Mark III	72 86	.63 .73	.88 .95	1.22 1.10	15
			34 40	60 50	**R-2S34-TP**	E-PAK 34 Magnetic	68 79	.57 .67	.87 .86	1.28 1.09	15
			34 40	60 50	**RK-2S34-TP**	PowrKut	60 68	.52 .57	.82 .82	1.37 1.21	20
			34 40	60 50	**RK-2S40-TP**	PowrKut Mark IV	66 80	.57 .69	.88 .95	1.33 1.19	15
			34 40	60 50	**REL-2S40-RH-TP**	Electronic	60 72	.51 .61	.87 .87	1.45 1.21	20
			34 40	60 50	**RCN-2S40**	Centium Electronic	62 72	.52 .61	.87 .87	1.40 1.21	10
			40	0	**RC-2SP40-TP**	Magnetic	82	.69	.84	1.02	20
		220	40	50	**XQM-2S40-TP**	Magnetic	93	.43	.97	1.04	20
		240	40	50	**YQM-2S40-TP**	Magnetic	98	.42	.99	1.01	25
		277	34 40	60 50	**V-2S40-TP**	Mark III	72 86	.27 .32	.88 .95	1.22 1.10	20
			34 40	60 50	**V-2S34-TP**	E-PAK 34 Magnetic	68 79	.25 .30	.87 .86	1.28 1.09	15
			34 40	60 50	**VK-2S34-TP**	PowrKut	60 68	.23 .25	.82 .82	1.37 1.21	20
			34 40	60 50	**VK-2S40-TP**	PowrKut Mark IV	66 80	.26 .31	.88 .95	1.33 1.19	20
			34 40	60 50	**VEL-2S40-RH-TP**	Electronic	60 72	.22 .27	.87 .87	1.45 1.21	20
			34 40	60 50	**VCN-2S40**	Centium Electronic	62 72	.23 .27	.87 .87	1.40 1.21	10
			40	0	**VC-2SP40-TP**	Magnetic	90	.33	.87	1.04	20
		347	34 40	60 50	**G-2S40-TP**	Mark III	72 86	.22 .27	.88 .95	1.22 1.10	20
			34 40	60 50	**GEL-2S40-RH-TP**	Electronic	60 72	.18 .21	.87 .87	1.45 1.21	20

* Electrical Data incorporated in chart based on operation of this lamp. Data for other lamp will vary somewhat.

1. Both lamps or single red lamp may be remotely mounted from ballast (20 ft. max. lead length). Blue lamp must be mounted in fixture containing ballast when single red lamp is remotely mounted.

4. Operates standard F40T12 lamps at Ballast Factor .65 with 63 Input Watts.

For detailed explanation of chart headings and listings, see page 7-13

T10 and 12 F40T10 - F40T12 Rapid Start Lamp – 420mA • 430mA • 460mA CONTINUED

CERTIFICATIONS				CATALOG NUMBER (ALL CLASS P)	NOTES	LAMP OPERATION	BALLAST CIRCUIT	SOUND RATING	DIMENSIONS	WIRING DIAGRAM w/PAGE NO.
UL	CSA	E	CSA E							
●	●			**RM-2S35-TP**	4	RS	Ser.	A	T-2	21/1-9
●	●	●	●	**R-2S40-TP**		RS	Ser.	A	T-2	21/1-9
●	●	●	●	**R-2S34-TP**		RS	Ser.	A	T-2	21/1-9
●	●	●	●	**RK-2S34-TP**		RS	Ser.	A	T-2	21/2-5
●	●	●	●	**RK-2S40-TP**		RS	Ser.	A	T-2	21/2-5
●	●	●	●	**REL-2S40-RH-TP**	1	RS	Ser.	A	T-2	21/2-37
●	●	●		**RCN-2S40**	1	RS	Ser.	A	T-2	21/2-53
●	●			**RC-2SP40-TP**		RS	Ser.	B	R-5	21/1-10
●	●			**XQM-2S40-TP**		RS	Ser.	B	T-2	21/1-9
●	●			**YQM-2S40-TP**		RS	Ser.	B	T-2	21/1-9
●	●	●	●	**V-2S40-TP**		RS	Ser.	A	T-2	21/1-9
●	●	●	●	**V-2S34-TP**		RS	Ser.	A	T-2	21/1-9
●	●	●	●	**VK-2S34-TP**		RS	Ser.	A	T-2	21/2-5
●	●	●	●	**VK-2S40-TP**		RS	Ser.	A	T-2	21/2-5
●	●	●	●	**VEL-2S40-RH-TP**	1	RS	Ser.	A	T-2	21/2-37
●	●	●		**VCN-2S40**	1	RS	Ser.	A	T-2	21/2-53
●	●			**VC-2SP40-TP**		RS	Ser.	B	R-5	21/1-10
	●			**G-2S40-TP**		RS	Ser.	A	T-2	21/1-9
	●			**GEL-2S40-RH-TP**	1	RS	Ser.	A	T-2	21/2-37

T10 and 12 F40T10 - F40T12 Rapid Start Lamp – 420mA • 430mA • 460mA

NUMBER OF LAMPS	LAMP TYPE	CIRCUIT VOLTS	NOMINAL LAMP WATTS	MIN AMB START TEMP (ºF)	CATALOG NUMBER (ALL CLASS P)	BALLAST TYPE	INPUT WATTS (ANSI)	LINE CURRENT AMPS	BALLAST FACTOR (AVG)	BALLAST EFFICACY FACTOR (BEF)	MAX HARM DIST (%THD)
3 3	F40T10 F40T12*	120	34	60	**R-3S34-TP**	E-PAK 34 Magnetic	103	.88	.88	0.85	20
			34 40	60 50	**REL-3S40-RH-TP**	Electronic	91 107	.77 .91	.87 .87	0.96 0.81	20
		277	34	60	**V-3S34-TP**	E-PAK 34 Magnetic	103	.37	.88	0.85	20
			34 40	60 50	**VEL-3S40-RH-TP**	Electronic	91 107	.33 .39	.87	0.96 0.81	20
4 4	F40T10 F40T12*	120	34 40	60 50	**R-4S40-A-TP-AC**	Mark III Sure Connect	144 172	1.26 1.46	.88 .95	0.61 0.55	20

* Electrical Data incorporated in chart based on operation of this lamp. Data for other lamp will vary somewhat.

3. Lamps may not be remotely mounted from fixture containing ballast.

For detailed explanation of chart headings and listings, see page 7-13

T10 and 12 F40T10 - F40T12 Rapid Start Lamp – 420mA • 430mA • 460mA CONTINUED

CERTIFICATIONS				CATALOG NUMBER (ALL CLASS P)	NOTES	LAMP OPERATION	BALLAST CIRCUIT	SOUND RATING	DIMENSIONS	WIRING DIAGRAM w/PAGE NO.
UL	CSA	E	CSA E							
●	●			**R-3S34-TP**		RS	Ser.	A	T-2	30/1-9
●	●			**REL-3S40-RH-TP**	3	RS	Ser.	A	T-2	30/2-37
●	●			**V-3S34-TP**		RS	Ser.	A	T-2	30/1-9
●	●			**VEL-3S40-RH-TP**	3	RS	Ser.	A	T-2	30/2-37
●	●	●	●	**R-4S40-A-TP-AC**		RS	Ser.	A	D-2	25/1-9

MASTER SPEC. and CSI FORMAT

BALLAST SPECIFICATION FOR LIGHTING

SECTION I - FIXED LIGHT OUTPUT ELECTRONIC (FLUORESCENT)

- INSTANT START
- RAPID START
- PROGRAMMED RAPID START

SECTION II - CONTROLLABLE LIGHT OUTPUT ELECTRONIC (FLUORESCENT)

- ELECTRONIC DIMMING
- BI-LEVEL SWITCHING

SECTION III - FIXED LIGHT OUTPUT ELECTRONIC COMPACT (FLUORESCENT)

SECTION IV - HID (INCLUDING METAL HALIDE, HIGH PRESSURE SODIUM, LOW PRESSURE SODUIM AND MERCURY VAPOR).

SECTION V - ELECTRONIC HID (METAL HALIDE)

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SECTION I – Fixed Light Output Electronic (Fluorescent)

Ballast Specification for Electronic Fluorescent

INSTANT START

INCLUDING: Low Watt, High Light Output, and Reduced Harmonics

Performance Requirements:

1. 1-4 Lamp Parallel Circuit Ballasts shall have Independent Lamp Operation (ILO), allowing remaining lamp(s) to maintain full light output if one or more lamps fail.
2. Ballasts shall operate from 60 Hz input source of 120, 277 Volts, and sustained variations of ± 10% (Voltage & Frequency) with no damage to the ballasts. Intellivolt(models shall operate from a line voltage range of 108-305 volts, 50/60 Hz.
3. Ballasts shall be a high frequency electronic type and operate lamps at a frequency above 42kHz to avoid interference with Infrared devices.
4. Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.7 or less in accordance with lamp manufacturer recommendations.
5. All ballast shall comply with ANSI C82.11 where applicable.
6. Ballasts shall tolerate operation of up to 70°C case temperature without damage.
7. Ballasts shall comply with FCC Part 18 Non-Consumer Equipment, Class A for EMI (Conducted) and (Radiated).
8. Ballasts shall provide transient immunity as recommended by ANSI C62.41
9. Ballasts shall operate lamps with no visible flicker (<3% flicker index).
10. Ballasts shall tolerate sustained open circuit and short circuit output conditions without damage.
11. Normal Light Output Ballast shall have a minimum Ballast Factor of 0.85 for primary lamp applications per ANSI C82.11
12. Ballast Factor for Low Watt models shall be 0.75 minimum.
13. Ballast factor for High Light Output shall be 1.2 for primary lamp applications.
14. Input current Total Harmonic Distortion (THD) shall not exceed 20% (for Standard models) and shall not exceed 10% (for Centium® models) for the primary lamp applications.
15. Ballasts shall have a Power Factor greater than .98 for primary lamp applications.
16. Ballast shall have a Class A+ sound rating.
17. Lamps may be remote or tandem mounted up to a maximum of 20 ft. overall lead length between ballasts and lamps. Consult factory for specific details.
18. Ballast shall be provided with integral leads, color coded to ANSI standard C82.11

Regulatory and Other Requirements

1. The ballasts shall not contain any PCB's (Polychlorinated Biphenyl).
2. Ballast shall be manufactured in an ISO 9002 Certified Facility
3. The manufacturer shall provide written warranty against defects in material or workmanship, including replacement, for five years from date of manufacture.
4. Manufacturer shall have been manufacturing electronic ballasts for at least ten years.
5. Ballasts shall provide instant starting sequence consistent with ANSI standard C82.11.
6. Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor, and CSA certified where applicable.
7. Ballast shall be physically interchangeable with standard core & coil magnetic ballast (when applicable).
8. Ballast shall have a metal enclosure for optimum thermal performance.
9. **Ballast must be Advance Transformer Part # _____or approved equal)**

SECTION I – Fixed Light Output Electronic (Fluorescent)

Ballast Specification for Electronic Fluorescent

PROGRAM RAPID START AND RAPID START

INCLUDING: Reduced Harmonics

Performance Requirements:

1. Ballasts (1-4 lamp) shall operate as a series or a series parallel circuit.
2. Ballasts shall operate from 50/60 Hz input source of 120, 277 Volts, and sustained variations of ± 10% (Voltage & Frequency) with no damage to the ballasts.
3. Ballasts shall be a high frequency electronic type and operate lamps at a frequency above 42kHz to avoid interference with Infrared devices.
4. Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.7 or less in accordance with lamp manufacturer recommendation.
5. All ballasts shall comply with ANSI C82.11 where applicable.
6. Ballasts shall tolerate operation of up to 70°C case temperature without damage.
7. Ballasts shall comply with FCC Part 18 Non-Consumer Equipment, Class A for EMI (Conducted) and (Radiated).
8. Ballasts shall provide transient immunity as recommended by ANSI C62.41.
9. Ballasts shall operate lamps with no visible flicker (<3% flicker index).
10. Ballasts shall tolerate sustained open circuit and short circuit output conditions without damage.
11. Ballast shall have a minimum Ballast factor of 0.85 for primary lamp applications, per ANSI C82.11.
12. Input current Total Harmonic Distortion (THD) shall not exceed 20% (for Standard models) and shall not exceed 10% (for Centium® models) for the primary lamp applications.
13. Ballast shall have a power factor greater than 0.98 for primary lamp applications.
14. Ballast shall have a Class A+ sound rating.
15. Ballast shall be provided with integral leads, color coded to ANSI standard C82.11

Regulatory and other Requirements

1. Ballasts shall not contain any PCB's (Polychlorinated Biphenyl).
2. Ballast shall be manufactured in an ISO 9002 Certified Facility
3. The manufacturer shall provide written warranty against defects in material or workmanship, including replacement, for five years from date of manufacture.
4. Manufacturer shall have been manufacturing electronic ballasts for at least ten years.
5. Ballasts shall provide rapid starting sequence consistent with ANSI standard C82.11-1993.
6. Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor, CSA Certified where applicable.
7. Ballast shall be physically interchangeable with standard core & coil magnetic ballast (when applicable).
8. Ballast shall have a metal enclosure for optimum thermal performance.
9. **Ballast must be Advance Transformer Part # _____or approved equal)**

SECTION I – Fixed Light Output Electronic (Fluorescent)

Ballast Specification for Electronic Fluorescent

PROGRAMMED RAPID START

Performance Requirements:

1. Ballasts (1-4 lamp) shall operate as a series or series parallel circuit.
2. Ballasts shall operate from 60 Hz input source of 120, 277 Volts, and sustained variations of ± 10% (Voltage & Frequency) with no damage to the ballasts. Intellivolt(models shall operate from a line voltage range of 108-305 volts, 50/60 Hz.
3. Ballasts shall be a high frequency electronic type and operate lamps at a frequency above 42kHz to avoid interference with Infrared devices.
4. Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.7 or less in accordance with lamp manufacturer recommendation.
5. All ballasts shall comply with ANSI C82.11 where applicable.
6. Ballasts shall tolerate operation of up to 70°C case temperature without damage.
7. Ballasts shall comply with FCC Part 18 Non-Consumer Equipment, Class A for EMI (Conducted) and (Radiated).
8. Ballasts shall provide transient immunity as recommended by ANSI C62.41.
9. Ballasts shall operate lamps with no visible flicker (<3% flicker index).
10. Ballasts shall tolerate sustained open circuit and short circuit output conditions without damage.
11. Ballast factor for T8 lamps shall be a minimum of 0.85 for primary lamp applications. Ballast factor for T5 and T5HO shall be 1.00 for primary lamp, per ANSI C82.11.
12. Input current Total Harmonic Distortion (THD) shall not exceed 20% (for Standard models) and shall not exceed 10% (for Centium® models) for the primary lamp applications.
13. Ballast shall have a power factor greater than 0.98 for primary lamp applications.
14. Ballast shall have a Class A+ sound rating.
15. Ballast shall have a minimum starting temperature of 0°(F) for T5HO and T8 lamps and -20°(F for T8HO).

Regulatory and other Requirements

1. Ballasts shall not contain any PCB's (Polychlorinated Biphenyl).
2. Ballast shall be manufactured in an ISO 9002 Certified Facility
3. The manufacturer shall provide written warranty against defects in material or workmanship, including replacement, for five years from date of manufacture.
4. Manufacturer shall have been manufacturing electronic ballasts for at least ten years.
5. Ballasts shall provide rapid starting sequence consistent with ANSI standard C82.11-1993.
6. Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor, CSA Certified where applicable.
7. Ballast shall be physically interchangeable with standard core & coil magnetic ballast (when applicable).
8. Ballasts for T5HO shall have a maximum height of 1.00"
9. Ballasts for T5 and T5HO shall be provided with poke-in wire trap connectors.
10. Ballasts for T5 and T5HO shall have an end-of-lamp-life detection and shutdown circuit with an auto restart feature to eliminate the need to reset power after lamp replacement.
11. Ballast shall have a metal enclosure for optimum thermal performance.
12. **Ballast must be Advance Transformer Part # _____(or approved equal).**

SECTION II – Controllable Light Output Electronic (Fluorescent)

Ballast Specification for Controllable Light Output Electronic Fluorescent

ELECTRONIC DIMMING

INCLUDING: Continuous Line Voltage and Low Voltage (0-10) operated systems for linear and compact fluorescent lamps.

Performance Requirements:

1. Ballast shall be Programmed Rapid Start.
2. Ballasts shall operate from 50/60Hz input source of 120, 277 Volts, and sustained variations of ± 10% (Voltage & Frequency) with no damage to the ballasts.
3. Ballasts shall be a high frequency electronic type, and operate lamps above 42 kHz to avoid interference with infrared devices.
4. Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.6 or less (throughout dimming range) in accordance with lamp manufacturer recommendation.
5. All ballast shall comply with ANSI C82.11 where applicable.
6. Ballasts shall tolerate operation of 70°C case temperature without damage.
7. Ballasts shall comply with FCC Part 18 Non-Consumer Equipment, Class A for EMI (Conducted and Radiated).
8. Ballasts shall provide transient immunity as recommended by ANSI C62.41
9. Ballasts shall operate lamps with no visible flicker (<3% flicker index).
10. Ballasts shall tolerate sustained open circuit and short circuit output conditions without damage.
11. Low Voltage Control dimming ballasts (0-10 volt) shall control lamp light output from a ballast factor range of .88 - .05 (100% to 5% of relative light output).
12. Powerline Control dimming ballasts shall control lamp light output from a ballast factor range of 1.0 - .05 (100% to 5% of relative light output).
13. Input current Total Harmonic Distortion shall not exceed 10% for the primary lamp.
14. Ballasts shall have a power factor > 98% at full light output, and > 90% throughout dimming range.
15. Ballast shall have a Class A+ sound rating.
16. Ballast shall have an end of lamp life detection and shutdown circuit that meets ANSI/IEC standards for T4 & T5 models.
17. Ballast shall ignite the lamps at any light output setting selected without first having to go to full light output.

Regulatory and Other Requirements

1. The ballast shall not contain PCBs (Polychlorinated Biphenyl).
2. Ballast shall be manufactured in an ISO 9002 Certified Facility.
3. The manufacturer shall provide written warranty against defects in material or workmanship including replacement, for five years from date of manufacture.
4. Manufacturer shall have been manufacturing electronic ballasts for at least ten years.
5. Ballasts shall provide programmed rapid starting sequence consistent with ANSI standard C82.11.
6. Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor, and CSA certified where applicable.
7. Continuous dimming ballasts must be operated with Advance compatible controls.
8. **Ballast must be Advance Transformer Part # _____ (or approved equal).**

SECTION II – Controllable Light Output Electronic (Fluorescent)

Ballast Specification for Controllable Light Output Electronic Fluorescent

BI-LEVEL SWITCHING

Performance Requirements:

1. Ballasts shall operate as an Instant Start Parallel Circuit, allowing remaining lamp(s) to maintain full light output if one or more lamps fail.
2. Electronic BI-level ballasts shall utilize one standard wall switch.
3. BI-level lighting shall be wired by one ballast for four or three lamp operation.
4. BI-level lighting shall have a default setting of 4 lamp operation or three lamp operation (depending on application). BI-level shall be wired and able to toggle between 2 and 4 lamp operation and 2 and 3 lamp operation (depending on application).
5. BI-level lighting shall reset back to default setting if power is in off position for duration longer than 3 seconds.
6. Ballasts shall operate from 60 Hz input source of 120, 277 Volts, and sustained variations of ± 10% (Voltage & Frequency) with no damage to the ballasts.
7. Ballasts shall be a high frequency electronic type and operate lamps at a frequency above 42kHz to avoid interference with Infrared devices.
8. Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.7 or less in accordance with lamp manufacturer recommendations.
9. All ballast shall comply with ANSI C82.11 where applicable.
10. Ballasts shall tolerate operation of up to 70°C case temperature without damage.
11. Ballasts shall comply with FCC Part 18 Non-Consumer Equipment, Class A for EMI (Conducted) and (Radiated).
12. Ballasts shall provide transient immunity as recommended by ANSI C62.41
13. Ballasts shall operate lamps with no visible flicker (<3% flicker index).
14. Ballasts shall tolerate sustained open circuit and short circuit output conditions without damage.
15. Ballast shall have a minimum Ballast Factor of 0.85 for primary lamp applications per ANSI C82.11
16. Input current Total Harmonic Distortion (THD) shall not exceed 20% for the primary lamp applications.
17. Ballasts shall have a Power Factor greater than .98 for primary lamp applications.
18. Ballast shall have a Class A+ sound rating.
19. Lamps may be remote or tandem mounted up to a maximum of 20 ft. overall lead length between ballasts and lamps.
20. Ballast shall be provided with integral leads, color coded to ANSI standard C82.11

Regulatory and Other Requirements

10. The ballasts shall not contain any PCB's (Polychlorinated Biphenyl).
11. Ballast shall be manufactured in an ISO 9002 Certified Facility
12. The manufacturer shall provide written warranty against defects in material or workmanship, including replacement, for five years from date of manufacture.
13. Manufacturer shall have been manufacturing electronic ballasts for at least ten years.
14. Ballasts shall provide instant starting sequence consistent with ANSI standard C82.11.
15. Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor, and CSA certified where applicable.
16. Ballast shall be physically interchangeable with standard core & coil magnetic ballast (when applicable).
17. Ballast shall have a metal enclosure for optimum thermal performance.
18. **Ballast must be Advance Transformer Part # _____or approved equal)**

SECTION III – Fixed Light Output Electronic Compact (Fluorescent)

Ballast Specification for Fixed Light Output

ELECTRONIC COMPACT (FLUORESCENT)

Performance Requirements:

1. Ballast shall be Programmed Rapid Start.
2. Ballasts shall operate from 50/60 Hz input source of 108 through 305 Volts, and sustained variations of ± 10% (Voltage & Frequency) with no damage to the ballasts.
3. Ballasts shall be a high frequency electronic type, and operate lamps at a frequency above 42 kHz to minimize interference with infrared control systems.
4. Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.7 or less in accordance with lamp manufacturer recommendation.
5. All ballast shall comply with ANSI C82.11 where applicable.
6. Ballasts shall comply with FCC Part 18 Non-Consumer Equipment, Class A for EMI (Conducted and Radiated).
7. Ballasts shall provide transient immunity as recommended by ANSI C62.41.
8. Ballasts shall operate lamps with no visible flicker (<3% flicker index).
9. Ballasts shall tolerate sustained open and short circuit output conditions without damage.
10. Ballast shall have a minimum Ballast factor of 0.93 for 13 watt through 42 watt T4 & T5 compact fluorescent lamps.
11. Input current Total Harmonic Distortion shall not exceed 10% for the primary lamp.
12. Ballasts shall have a Power Factor greater than .96.
13. Ballast shall have a Class A+ sound rating.
14. Ballast shall incorporate lamp shutdown circuitry for end of lamp life protection
15. Ballast shall allow for re-lamping without the need to cycle power
16. Ballast shall have a minimum starting temperature of 0° Fahrenheit.
17. Ballast shall be available in a hybrid can or all metal can construction to meet all plenum requirements and to eliminate the need for extra grounding wires.
18. Ballast shall be furnished with poke-in wire trap connectors, color-coded to ANSI C82.11 where applicable.

Regulatory and Other Requirements

1. The ballasts shall not have any PCB's (Polychlorinated Biphenyl).
2. Ballast shall be manufactured in an ISO 9002 Certified Facility.
3. The manufacturer shall provide written warranty against defects in material or workmanship including replacement.
4. Ballasts shall carry a five year warranty when operated at a maximum of 75°C case temperature.
5. Ballasts shall carry a three year warranty when operated at a maximum of 85°C case temperature
6. Manufacturer shall have been manufacturing electronic ballasts for at least ten years.
7. Ballasts shall provide programmed rapid starting sequence consistent with ANSI standard C82.11.
8. Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor, and CSA certified where applicable.
9. **Ballast must be Advance Transformer Part # _____or approved equal)**

SECTION IV – HID

Ballast Specification for HID Ballasts

HID

INCLUDING: Metal Halide, High Pressure Sodium, Low Pressure Sodium & Mercury Vapor

Performance Requirements:

1. Ballasts shall be designed in accordance with all applicable ANSI specifications including ANSI C82.4.
2. The Core & Coil ballast shall be designed with class "H" (180°C) or higher insulation system and vacuum-pressure impregnated with a silica-filled polyester resin.
3. All coils shall be precision wound.
4. Core & Coil ballasts shall be designed to operate for 60,000 hours of continuous operation at their maximum rated temperature.
5. Core & Coil ballasts and starter combinations shall be designed to provide a reliable lamp starting down to -40°C for High Pressure Sodium and -30°C for Metal Halide at nominal line voltage of plus or minus 10%.
6. All HID ballast shall have a nominal ballast factor of 1.0
7. All HID ballasts shall contain no exposed live parts.

Regulatory and Other Requirements

1. Ballast shall be manufactured in an ISO 9002 and ISO 14001 Certified Facility.
2. Manufacturer shall provide written warranty against defects in workmanship, including replacement, for two years from date of manufacture.
3. Manufacturer shall have been manufacturing HID ballasts for at least ten years.
4. All HID ballasts shall be UL component recognized.
5. All HID ballasts shall be CSA certified.
6. Ballast must be Advance Transformer (or approved equal).

CAPACITORS for HID

1. All capacitors will be provided with a self-contained internal bleeder resistor where required according to UL1029.
2. Oil-filled capacitors will be housed in aluminum or corrosion-resistant steel cans and contain .25" quick disconnect terminals.
3. Oil filled capacitors shall have a 90°C max case temperature rating.
4. Dry film capacitors shall have a 100°C max. case temperature rating.
5. All dry film capacitors shall be manufactured by the ballast manufacturer.
6. All capacitors rated 400V or less shall be dry film type.
7. All dry film capacitors shall have no exposed live parts.

IGNITORS for HID

1. All ignitors will be polyester resin-filled with either a plastic or aluminum external housing.
2. The ignitor shall be so designed to provide six months of lamp open circuit operation without failure.
3. All ignitors shall have a case rating temperature of 105°C.
4. All ignitors shall be designed to withstand 10,000 hours of continuous pulsing.
5. All ignitors shall have no exposed live parts.

HID RETROFIT KITS

1. All HID kits shall be precision wound to insure proper insulation.
2. All HID kits shall be pre-wired with ignitors.
3. HID core and coil shall be interchangeable with prior ballast or include mounting bracket to adapt ballast to intended fixture.
4. All HID kits shall be supplied with pre-insulated input voltage leads.
5. All HID kits are to be UL and CSA recognized following the guidelines found in UL 1029 and CAN/CSA-22.2 No. 74-92 (part 2 and 3).
8. The core & coil shall be designed with class "H" (180°C) or higher insulation system and vacuum-pressure impregnated with a silica-filled polyester resin.
9. All capacitors rated 400V or less shall be dry film type rated 100(C.
10. There are to be no exposed live parts on the core & coil, ignitor, or dry capacitor.
11. Must meet all ANSI Specifications for the specified lamp.
12. Kit must include installation instructions and a 1-800# for field assistance.
13. **Ballast must be Advance Transformer Part # _____ (or approved equal).**

SECTION V – Electronic HID (Metal Halide)

Ballast Specification for Electronic Metal Halide

HID

Performance Requirements:

1. The Electronic ballasts shall operate from 50/60 Hz input source of 108 through 305 Volts
2. Ballasts shall operate lamps at a frequency of less than 200Hz to minimize acoustic resonance inside the lamp arc tube and to minimize lamp flicker.
3. Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.5 or less in accordance with lamp manufacturer recommendation.
4. Ballast shall tolerate operation of up to 85°C case temperature without damage.
5. Ballasts shall comply with FCC Title 47 CFR part 18 Non-Consumer Equipment.
6. Ballast shall have a minimum Ballast factor of 1.0
7. Input current Total Harmonic Distortion shall not exceed 15% for the primary lamp.
8. Ballasts shall have a Power Factor greater than .90
9. Ballast shall have a Class A sound rating.
10. Ballast shall be thermally protected and incorporate lamp shutdown circuitry for end of lamp life protection.
11. Ballast shall operate in ambient temperatures as low as -20° Fahrenheit.

Regulatory and Other Requirements

1. The ballasts shall not have any PCB's (Polychlorinated Biphenyl).
2. Ballast shall be manufactured in an ISO 9002 Certified Facility.
3. The manufacturer shall provide written warranty against defects in material or workmanship including replacement.
4. Ballasts shall carry a five year warranty when operated at a maximum of 75°C case temperature. Ballast shall carry a three year warranty when operated between 76°C and 85°C.
5. Manufacturer shall have been manufacturing HID ballasts for at least twenty five years and electronic ballasts for a minimum of ten years.
6. Ballasts shall be Underwriters Laboratory listed (Class P) and CSA certified where applicable.
7. **Ballast must be Advance Transformer Part # _____ (or approved equal).**

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CATALOG NUMBER TO PAGE NUMBER LEAD LENGTHS AND SHIPPING DATA

Catalog Number	See Page No.	Lead Lengths for ballasts purchased in bulk or mid-pack cartons Tolerance: +2", -1"												Shipping Data		
		Black	White	Blue	Red	Yellow	Blue/ White	Black/ White	Yellow/ Blue	Brown	Red/ White	Orange	Orange/ Black	Units Std. Ctn.	Weight Std. Ctn. (lbs)	Avail IC* Ctn.
A-175-S	6-6	10	71	47										10	40	
ADM-2E40-S	6-6	41	41	23	23									10	58	
ADM-2E75-S	6-6	70	70	46	46									10	58	
ASB-0412-BL-TP	1-42	18	18	33	33	51								1	12	✔
ASB-0620-24-BL-TP	1-42	24	24	75	46	75	46			46				1	12	✔
ASB-1224-24-BL-TP	1-42	24	24	74	32	70	52			78				1	14	✔
ASB-1240-46-BL-TP	1-42	24	24	50	80	70	50			50		50	50	1	21	✔
ASB-2040-24-BL-TP	1-42	24	24	80	80	72	54			72				1	21	✔
ASB-2448-46-BL-TP	1-42	24	24	50	50	70	50			50		50	50	1	21	✔
DIM-140-H-TP	1-39		35	35	20			20	20					10	37	
DIM-240-H-TP	1-39	18	34	34	20	20	34		18					10	63	✔
G-140-TP	1-7 to 1-11		22	35	23			22						10	34	
G-1S32-TP	1-5, 1-6		18	35	23			18						10	35	
G-2C34-TP	6-4	22	22	26	26	38								10	37	
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G-2S40-TP	1-7 to 1-11	20	20	24	24	38								10	34	
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GCN-1S32	2-52	25L	25L	31R	37L									10	24	
GCN-2S32	2-52	22L	26R	26R	36L									10	24	
GCN-3S32	2-52	22L	22L	26R	36L	26L	36L							10	24	
GEL-2P32-LW-RH-TP	2-31	25L	25L	31R	37L									10	24	
GEL-2P32-SC	2-28, 2-29	25L	25L	31R	37L									20	32	✔
GEL-2P59	2-35	25L	25L	31R	37L									10	24	✔
GEL-2S32-RH-TP	2-36	22L	22L	26R	26R	36L								10	24	
GEL-2S40-RH-TP	2-37, 2-38	22L	22L	26R	26R	36L								10	24	✔
GEL-3P32-RH-TP	2-28, 2-29	25L	25L	31R	37L									10	24	✔
GEL-4P32-LW-RH-TP	2-31	25L	25L	31R	31R	39L								10	24	✔
GEL-4P32-RH-TP	2-28, 2-29	25L	25L	31R	31R	39L								10	24	✔
GK-132-TP	2-4		18	35	23			18						10	38	
GK-2S32-TP	2-4	22	22	26	26	36								10	38	
H-1B13-TP-BLS	1-34		7	7				7						35	32	
H-1B13-TP-W	1-34		15	15				15						54	54	✔
H-1B9-TP-BLS	1-33		7	7				7						35	28	
H-1B9-TP-W	1-33		15	15				15						54	44	✔
H-1Q18-TP-BLS	1-35, 1-36		7	7				7						20	48	
H-1Q18-TP-W	1-35, 1-36		15	15				15						20	48	✔
H-1Q22-TP-BLS	1-35		7	7				7						27	35	
H-1Q22-TP-W	1-35		15	15				15						54	70	
H-1Q26-TP-BLS	1-35, 1-36		7	7				7						20	46	
H-1Q26-TP-W	1-35, 1-36		15	15				15						20	46	✔
H-1Q28-TP-BLS	1-35		7	7				7						27	38	
H-1Q28-TP-W	1-35		15	15				15						54	76	
H-2B13-TP-BLS	1-34	7	7	7										20	36	
H-2B13-TP-W	1-34	15	15	15										20	36	
H-2B9-TP-BLS	1-33	7	7	7										20	32	
H-2B9-TP-W	1-33	15	15	15										20	32	
H-2Q18-TP-BLS	1-35	7	7	7										12	48	
H-2Q18-TP-W	1-35	15	15	15										10	40	
H-2Q26-TP-BLS	1-35	7	7	7										12	48	
H-2Q26-TP-W	1-35	15	15	15										10	40	
HB-234-TP	6-4	20	20	25	25	43								20	54	
HF-B 136 TLD	6-13	No Leads - Poke In Connectors														
HF-B 158 TLD	6-13	No Leads - Poke In Connectors														

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REFERENCE MATERIALS

CATALOG NUMBER TO PAGE NUMBER LEAD LENGTHS AND SHIPPING DATA

Catalog Number	See Page No.	Lead Lengths for ballasts purchased in bulk or mid-pack cartons Tolerance: +2", -1"												Shipping Data		
		Black	White	Blue	Red	Yellow	Blue/ White	Black/ White	Yellow/ Blue	Brown	Red/ White	Orange	Orange/ Black	Units Std. Ctn.	Weight Std. Ctn. (lbs)	Avail IC* Ctn.
HF-B 236 TLD	6-13	No Leads - Poke In Connectors														
HF-B 258 TLD	6-13	No Leads - Poke In Connectors														
HF-P 118 TLD	6-12	No Leads - Poke In Connectors														
HF-P 136 PLL	6-12															
HF-P 136 TLD	6-12															
HF-P 140 PLL	6-12															
HF-P 155 PLL	6-12															
HF-P 158 TLD	6-12															
HF-P 218 TLD	6-12															
HF-P 236 PLL	6-12															
HF-P 236 TLD	6-12															
HF-P 240 PLL	6-12															
HF-P 255 PLL	6-12															
HF-P 258 TLD	6-12															
HM-140-TP	6-4		22	35	23			22						10	34	
HM-1P20-TP	1-27, 1-28		8	10	10			8						10	32	✔
HM-1P30-TP	1-8		18	26	17			18						10	34	✔
HM-2SP20-TP	1-27, 1-28	10	10	13	13	16								10	34	✔
ICF-2S13-H1-LD	2-22, 2-23	No Leads - Poke in Connectors												10	4.0	✔
ICF-2S13-M1-BS	2-22, 2-23	No Leads - Poke in Connectors														
ICF-2S13-M1-LS	2-22, 2-23	No Leads - Poke in Connectors														
ICF-2S18-H1-LD	2-22, 2-23	No Leads - Poke in Connectors												10	4.0	✔
ICF-2S18-M1-BS	2-22, 2-23	No Leads - Poke in Connectors														
ICF-2S18-M1-LS	2-22, 2-23	No Leads - Poke in Connectors														
ICF-2S26-H1-LD	2-22 to 2-24	No Leads - Poke in Connectors												10	4.0	✔
ICF-2S26-M1-BS	2-22 to 2-24	No Leads - Poke in Connectors														
ICF-2S26-M1-LS	2-22 to 2-24	No Leads - Poke in Connectors														
ICF-2S42-M2-LD	2-22 to 2-24	No Leads - Poke in Connectors												10	7.5	✔
ICF-2S42-M2-LS	2-22 to 2-24	No Leads - Poke in Connectors												10	7.5	
ICN-1P32-SC	2-48, 2-49, 6-10, 6-11		25L	31R	37L			25L						20	32	✔
ICN-2P32-SC	2-48, 2-49, 6-10, 6-11	25L	25L	31R	37L									20	32	✔
ICN-2S54	2-43	No Leads - Poke in Connectors												12	12	✔
ICN-3P32-SC	2-48, 2-49, 6-10, 6-11	25L	25L	31R	37L									20	32	✔
ICN-4P32-SC	2-48, 2-49, 6-10, 6-11	25L	25L	31R	31R	35L										✔
IZT-1T42-M2-BS, -LD & -LS	3-5	No Leads - Poke in Connectors												10	7.5	
IZT-2Q26-M2-BS, -LD & -LS	3-5	No Leads - Poke in Connectors												10	7.5	
IZT-2T42-M3-BS, -LD & -LS	3-5	No Leads - Poke in Connectors														
L-120F	1-25, 1-26	(2)10												70	63	✔
L-140F-TP	1-25, 1-26, 1-29, 1-36		43	27				14						20	42	✔
L-1B13-TP-BLS	1-34			7				7						35	32	
L-1B13-TP-W	1-34			15				15						70	70	
L-1B9-TP-BLS	1-33			7				7						35	28	
L-1B9-TP-W	1-33			15				15						70	56	✔
L-1BC13-TP-BLS	1-34			7				7						27	41	
L-1BC13-TP-W	1-34			15				15						54	82	
L-1Q13-TP-W	1-24, 1-34		15	15				15						20	42	✔
L-1Q18-TP-BLS	1-35, 1-36		7	7				7						20	40	
L-1Q18-TP-W	1-35, 1-36		15	15				15						20	40	✔
L-1Q26-TP-BLS	1-35, 1-36		7	7				7						20	40	
L-1Q26-TP-W	1-35, 1-36		15	15				15						20	40	✔
L-220F	1-25, 1-26	10		12										20	36	✔
LC-13-TP	1-31	17		14										50	35	
LC-14-20-C	1-25, 1-26	14,17												50	35	✔
LC-14-20-C-TP	1-29	17		14										50	35	

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LC-25	1-26	7,22												50	35	✔
LC-25-TP	1-32	7		22										50	35	✔
LC-4-9-C	1-24	(2)10												50	30	✔
LC-4-9-C-TP	1-31	10		10										50	30	
LO-13-22	1-25, 1-26	(2)15												72	43	
LO-13-22-TP	1-29, 1-31, 1-32	15		15										72	43	
LO-1Q22	1-32	(2)15												72	43	
LO-1Q28-TP	1-32	15		15										20	26	✔
LOS-1Q28	1-32	(2)15												72	58	
LPL-5-9	1-24	(2)9												135	41	
LPL-5-9-TP	1-31	9		9										120	36	
LPL-7-9	1-24	(2)9												150	45	
LQ-106F-TP	1-27		10	10	10			10						20	40	✔
LQ-206F-TP	1-27	10	10	10	10	10								20	40	✔
LS-113-TP	1-24		15	15				15						20	28	✔
LSX-113-TP	1-24			15			15	15			15			36	36	
LSX-213-TP	1-24	15		15			15				15			36	43	✔
LX-140F-TP	1-25, 1-26, 1-29, 1-36		26	26			26	10			26			20	40	
MT-2S110-TP	6-5	18	18	46	46	70			18					4	62	
MT-2S200-TP	6-5	74	74	74	74	74								2	30	
MTM-140-TP	6-4,6-7	18	18	35	23				28					10	40	
MTM-2S40-TP	6-4	18	18	24	24	36			18					10	42	
R-140-TP	1-7, 1-9, 1-10		22	35	23			22						10	36	✔
R-1BP27-TP	1-38		12	12	12			12						10	37	
R-1BP39-TP	1-38		12	12	12			12						10	37	✔
R-1BP40-TP	1-38		18	28	28			18						10	37	✔
R-1P32-TP	1-5, 1-6		18	36	23			18						10	37	✔
R-1P817-TP	1-5, 1-6, 1-38		18	17	17			18						10	37	✔
R-1P825-TP	1-5, 1-6		18	17	17			18						10	37	
R-1P840-TP	1-5		18	44	28			18						10	37	
R-1S32-TP	6-3		18	35	23			18						10	37	
R-1U40-TP	1-11		18	35	23			18						10	37	✔
R-2BP27-TP	1-38	12	12	24	24	24								10	37	
R-2BS39-TP	1-38	12	12	24	24	24								10	37	✔
R-2BS40-TP	1-38	20	20	24	24	36								10	37	✔
R-2C34-TP	6-4	22	22	26	26	38								10	36	
R-2E60-S-TP	1-23	70	70	46	46									6	50	✔
R-2E75-S-TP	1-22, 1-23	70	70	46	46									6	50	✔
R-2P32-TP	1-5, 1-6	20	20	24	24	36								10	37	✔
R-2P817-TP	1-5, 1-6, 1-38	10	10	14	14	26								10	37	✔
R-2P825-TP	1-5, 1-6	12	12	20	20	32								10	37	✔
R-2P840-TP	1-5	20	20	28	28	44								10	37	✔
R-2Q18-4P-TP-BLS	1-37	7	7	7	7	7								12	42	
R-2Q18-4P-TP-W	1-37	15	15	15	15	15								10	35	
R-2Q26-4P-TP-BLS	1-37	7	7	7	7	7								12	42	
R-2Q26-4P-TP-W	1-37	15	15	15	15	15								10	35	
R-2S110-TP	1-16, 1-17	22	22	46	46	70								6	71	✔
R-2S32-TP	6-3	20	20	24	24	38								10	37	
R-2S34-TP	1-9, 1-10, 1-11	22	22	26	26	36								10	36	✔
R-2S40-TP	1-7, 1-9, 1-10, 1-11	22	22	26	26	36								10	36	✔
R-265-TP	1-12	18	18	33	33	51								6	71	✔
R-2S86-TP	1-12	22	22	46	46	70								6	71	✔
R-2SP30-TP	1-8	18	18	17	17	26								10	37	✔

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R-3S34-TP	1-9	20	20	24	36	24	36							10	37	✔
R-4S40-A-TP-AC	1-9, 1-10	No Leads – Leaderless												1	7	✔
RC-140-TP	6-4		18	35	23			18						10	40	
RC-160-TP	1-13, 1-14		18	32	20			18						4	56	✔
RC-1P40-TP	1-7, 1-8, 1-10		18	35	23			18						10	40	✔
RC-2S102-FO	1-41	6.5	6.5	6.5	6.5	6.5								1	17	✔
RC-2S102-TP	1-18, 1-19	18	18	43	43	19								4	46	✔
RC-2S110-FO	1-40	6.5	6.5	6.5	6.5	6.5								1	17	✔
RC-2S200-TP	1-18, 1-19	22	22	44	44	68								4	60	✔
RC-2S40-TP	6-4	15	15	23	23	38								10	42	
RC-2S85-FO	1-40	6.5	6.5	6.5	6.5	6.5								1	18	✔
RC-2S85-TP	1-13 to 1-17	18	18	33	33	51								6	60	✔
RC-2SP40-TP	1-7, 1-8, 1-10, 1-11	18	18	24	24	36								10	42	✔
RC-2SP830-TP	1-27	18	18	24	24	36								10	38	
RC-3S150-TP	1-18	18	18	30	30	30	39							2	39	✔
RC-3S200-TP	1-18, 1-19	22	22	42	42	42	42							2	42	
RC-4S60-TP	1-13, 1-14, 1-16	24	24	46	46	46	46			46				6	70	✔
RC-4S85-TP	1-14 to 1-17	24	24	74	32	70	52			78				4	56	
RCN-132-MC	2-45		25L	31R	37L			25L						20	14	
RCN-1P32-SC	2-46		25L	31R	37L			25L						20	32	
RCN-1S28	2-44	No Leads - Poke In Connectors												10	8	
RCN-1S32-SC	2-51	22L	22L	36L	26L									20	32	✔
RCN-1TTP40-SC	2-42		25L	30R	30R			25L						20	32	✔
RCN-2M32-MC	2-45		25L	31R	37L			25L						20	14	
RCN-2P32-LW	2-47	25L	25L	31R	37L									10	24	
RCN-2P32-SC	2-46	25L	25L	31R	37L									10	24	✔
RCN-2P59	2-50	22L	22L	46R	70L									10	24	✔
RCN-2S28	2-44	No Leads - Poke In Connectors												10	8	
RCN-2S32-SC	2-51	22L	22L	26R	26R	36L								20	32	✔
RCN-2S40	2-53	22L	22L	26R	26R	36L								10	24	✔
RCN-2S86	2-54	22L	22L	46R	46R	70L								6	27	
RCN-2TTP40-SC	2-42	25L	25L	30R	30R									20	14	✔
RCN-3P32-LW	2-47	25L	25L	31R	37L									10	24	✔
RCN-3P32-SC	2-46	25L	25L	31R	37L									10	24	✔
RCN-3S32-SC	2-51	22L	22L	46R	36R	36L	36R							20	32	✔
RCN-3TTP40-SC	2-42	25L	25L	30R	30R									20	14	
RCN-4P32-LW	2-47	25L	25L	31R	31R	39L								10	24	✔
RCN-4P32-SC	2-46	25L	25L	31R	31R	39L								20	32	✔
RCN-4S32-SC	2-51	22L	22L	36R	36R	46L	36R			26L				20	32	✔
REL-1P32-HL-SC	2-32		25L	31R	37L			25L						20	32	✔
REL-1P32-LW-SC	2-30		25L	31R	37L			25L						20	32	✔
REL-1P32-SC	2-28, 2-29		25L	31R	37R			25L						20	32	✔
REL-1S40-RH-TP	2-37, 2-38		22L	36L	26R			22L						10	24	✔
REL-1S40-SC	2-39		22L	36L	26R			22L						20	32	✔
REL-1TTS39	2-21		12L	24R	24R			12L						10	24	✔
REL-1TTS40	2-21		12L	24R	24R			12L						10	24	✔
REL-1TTS50	2-27		12L	24R	24R			12L						10	24	✔
REL-2P17-RH-TP	2-28	22L	22L	24R	24L									10	24	✔
REL-2P32-HL-RH-TP	2-33	25L	25L	31R	37L									10	24	✔

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REL-2P32-HL-SC	2-32	25L	25L	31R	37L									20	32	
REL-2P32-LW-RH-TP	2-31	25L	25L	31R	37L									20	32	✔
REL-2P32-LW-SC	2-30	25L	25L	31R	37L									20	32	✔
REL-2P32-SC	2-28, 2-29	25L	25L	31R	37L									6	27	✔
REL-2P50-SC	2-40	25L	25L	31R	37L									20	32	
REL-2P59-HL	2-35	22L	22L	46R	70L									10	24	
REL-2P59-S-RH-TP	2-35	22L	22L	46R	70L									10	24	✔
REL-2P60-S	2-40	22L	22L	46R	70L									6	27	✔
REL-2S110	2-41	22L	22L	46R	46R	70L								6	27	✔
REL-2S40-RH-TP	2-37	22L	22L	26R	26R	36L								10	24	✔
REL-2S40-SC	2-39	22L	22L	26R	26R	36L								20	32	
REL-2S86	2-36	22L	22L	46R	46R	70L								6	27	✔
REL-2TTS39	2-27	12L	12L	24R	24R	24L								10	24	✔
REL-2TTS40	2-27	12L	12L	24R	24R	24L								10	24	✔
REL-2TTS50	2-27	12L	12L	24R	24R	24L								10	24	✔
REL-3P32-HL	2-33	25L	25L	31R	37L									10	24	
REL-3P32-HL-SC	2-32	25L	25L	31R	37L									20	32	
REL-3P32-LW-RH-TP	2-31	25L	25L	31R	37L									20	32	✔
REL-3P32-LW-SC	2-30	25L	25L	31R	37L									20	32	✔
REL-3P32-SC	2-28, 2-29	25L	25L	31R	37L									10	24	✔
REL-3S40-RH-TP	2-37, 2-38	22L	22L	26R	36L	26R	36L							10	24	✔
REL-4P32-2LS	2-34	25L	25L	31R	31R	39L	36L							10	24	✔
REL-4P32-LW-RH-TP	2-31	25L	25L	31R	31R	39L								20	32	✔
REL-4P32-LW-SC	2-30	25L	25L	31R	31R	39L								20	32	✔
REL-4P32-SC	2-28, 2-29	25L	25L	31R	31R	39L								10	24	✔
REZ-132	3-7		22L	46R	26R			22L						10	15	✔
REZ-1T32	3-9		7B	7B	7B			7B						10	15	
REZ-1T42	3-9		7B	7B	7B			7B						10	15	
REZ-1TTS40	3-8		12L	24R	24R			12L						10	24	
REZ-2Q26	3-9	7B	7B	7B	7B	7B								10	15	
REZ-2S32	3-7	22L	22L	46R	26R	46R								10	15	✔
REZ-2TTS40	3-8	12L	12L	24R	24R	24L								10	24	
REZ-3S32	3-7	22L	22L	26R	46R	26R	46R							10	15	✔
REZ-C1200-A	3-9															
REZ-C500-I	3-9															
RIC-132	2-55		22L	46R	26R			22L						10	24	✔
RIC-2S32	2-55	22L	22L	26R	26R	46R								10	24	
RIC-3S32	2-55	22L	(22L	26R	46R	26R	46R							10	24	✔
RIF-1	1-39	6	(2) 6		6									54	49	✔
RK-132-TP	2-4		18	35	23			18						10	35	✔
RK-2S32-TP	2-4	22	22	26	26	36								10	38	✔
RK-2S34-TP	2-5	22	22	26	26	36								10	38	✔
RK-2S40-TP	2-5	22	22	26	26	36								10	38	✔
RL-140-TP	1-8, 1-10, 1-30, 6-4, 6-7		36	36	25			10						20	42	✔
RL-2SP20-TP	1-27, 1-28	15	15	15	15	18								20	50	✔
RL-3SP20-TP	1-27, 1-28	12	12	15	15	18			18					10	40	✔
RLCS-140-TP-W	1-30		10/11	11	11			10						10	21	✔
RLQ-120-TP	1-27, 1-28		18	18	12			10						20	42	✔
RLQS-122-TP-W	1-30		13/11	11	11			13						10	22	✔

*Ballasts packed in individual cartons (IC) have shorter leads, typically 12 inches.

**Also includes 36" violet & grey control leads

REFERENCE MATERIALS

CATALOG NUMBER TO PAGE NUMBER LEAD LENGTHS AND SHIPPING DATA

Catalog Number	See Page No.	Lead Lengths for ballasts purchased in bulk or mid-pack cartons Tolerance: +2", -1"												Shipping Data		
		Black	White	Blue	Red	Yellow	Blue/ White	Black/ White	Yellow/ Blue	Brown	Red/ White	Orange	Orange/ Black	Units Std. Ctn.	Weight Std. Ctn. (lbs)	Avail IC* Ctn.
RM-2S35-TP	1-9 to 1-11	22	22	26	26	36								10	34	✔
RM-2SP30-TP	1-8	18	18	17	17	26								10	37	✔
RMS-22-32-TP-W	1-30	15	15	10	10	10								20	52	✔
RMS-32-40-TP-W	1-30	10	10	10	10	10								20	52	✔
RQM-2S40-TP	6-4	22	22	26	26	36								10	35	
RS-110-TP	1-16, 1-17		22	70	46			22						6	60	✔
RS-22-32-TP-W	1-30	15	15	10	10	10								20	52	✔
RS-2S100-TP	1-16	18	18	33	33	51								6	71	
RS-2S110-TP	1-17	22	22	46	46	70								6	61	✔
RS-2S200-FO	1-41	6.5	6.5	6.5	6.5	6.5								1	20	✔
RS-2S200-TP	1-18, 1-19	22	22	44	44	68								4	60	✔
RS-2S60-TP	1-13 to 1-15	18	18	20	20	32								6	45	✔
RS-32-40-TP-W	1-30	10	10	10	10	10								20	52	✔
RSC-2S155-TP	1-18, 1-19	18	18	46	46	48								2	37	✔
RSM-175-S-TP	1-22, 1-23		70	46				19						10	62	✔
RZT-132**	3-3		22L	46R	26R			22L						10	15	
RZT-1TTS40**	3-4		12L	24R	24R			12L						10	15	
RZT-2S32**	3-3	22L	22L	26R	26R	46R								10	15	
RZT-2TTS40	3-4	12L	12L	24R	24R	24L								10	15	
RZT-3S32**	3-3	22L	22L	26R	46R	26R	46R							10	15	
S-251-S-TP	1-20	10	68	44	44									4	48	✔
S-275-S-TP	1-22, 1-23	10	68	44	44									4	56	✔
SI-240-S-TP	1-21	10	32	20	20									4	42	✔
SM-125-S-TP	1-20		30	20				10						10	37	✔
SM-140-S-TP	1-21		34	22				10						6	42	✔
SM-151-S-TP	1-20		68	44				10						6	54	✔
SM-225-S-TP	1-20	10	29	19	19									6	46	✔
SM-2E40-S-TP	1-21, 6-6	41	41	23	23									10	58	✔
SM-2E57-S-TP	6-6	55	55	36	36									6	46	
SM-2E75-S-TP	6-6	70	70	46	46	36								6	46	
TM-2E57-S-TP	6-6	55	55	36	36									10	40	
TM-2S40-TP	6-4	22	22	26	26	36								6	46	
V-140-TP	1-7, 1-9, 1-10		22	35	23			22						10	40	✔
V-1BP27-TP	1-38		12	12	12			12						10	37	
V-1BP39-TP	1-38		12	12	12			12						10	37	
V-1BP40-TP	1-38		18	28	28			18						10	37	✔
V-1P32-TP	1-5		18	36	23			18						10	37	✔
V-1P817-TP	1-5, 1-6, 1-38		18	17	17			18						10	37	
V-1P825-TP	1-5, 1-6		18	17	17			18						10	37	
V-1P840-TP	1-5		18	44	28			18						10	37	
V-1U40-TP	1-11		18	35	23			18						10	37	✔
V-2BP27-TP	1-38	12	12	24	24	24								10	37	
V-2BS39-TP	1-38	12	12	24	24	24								10	37	
V-2BS40-TP	1-38	20	20	24	24	36								10	37	✔
V-2E60-S-TP	1-23	19	70	46	46	70								6	50	✔
V-2E75-S-TP	1-22, 1-23	19	70	46	46	70								6	50	✔
V-2P32-TP	1-5, 1-6	20	20	24	24	36								10	37	✔
V-2P817-TP	1-5, 1-6, 1-38	10	10	14	14	26								10	37	
V-2P825-TP	1-5, 1-6	12	12	20	20	32								10	37	
V-2P840-TP	1-5	20	20	28	28	44								10	37	

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CATALOG NUMBER TO PAGE NUMBER LEAD LENGTHS AND SHIPPING DATA

Catalog Number	See Page No.	Lead Lengths for ballasts purchased in bulk or mid-pack cartons Tolerance: +2", -1"												Shipping Data		
		Black	White	Blue	Red	Yellow	Blue/ White	Black/ White	Yellow/ Blue	Brown	Red/ White	Orange	Orange/ Black	Units Std. Ctn.	Weight Std. Ctn. (lbs)	Avail IC* Ctn.
V-2Q18-4P-TP-BLS	1-37	7	7	7	7	7								12	42	
V-2Q18-4P-TP-W	1-37	15	15	15	15	15								10	35	
V-2Q26-4P-TP-BLS	1-37	7	7	7	7	7								12	42	
V-2Q26-4P-TP-W	1-37	15	15	15	15	15								10	35	
V-2S110-TP	1-16, 1-17	22	22	46	46	70								6	71	✔
V-2S34-TP	1-9 to 1-11	22	22	26	26	36								10	36	✔
V-2S40-TP	1-7, 1-9 to 1-11	22	22	26	26	36								10	36	✔
V-S286-TP	1-12	22	22	46	46	70								6	71	✔
V-2SP30-TP	1-8	18	18	17	17	26								10	37	✔
V-3S34-TP	1-9	20	20	24	36	24	36							10	37	✔
VC-160-TP	1-13, 1-14		18	32	20			18						4	56	✔
VC-1P40-TP	1-7, 1-8, 1-10		18	35	23			18						10	40	✔
VC-2S102-FO	1-41	6.5	6.5	6.5	6.5	6.5								1	17	✔
VC-2S102-TP	1-18,1-19	18	18	43	43	19								4	48	✔
VC-2S110-FO	1-40	6.5	6.5	6.5	6.5	6.5								1	17	✔
VC-2S200-TP	1-18, 1-19	22	22	44	44	68								4	60	✔
VC-2S85-TP	1-13 to 1-17	22	22	47	47	70								6	60	✔
VC-2SP40-TP	1-7, 1-18, 1-10, 1-11	18	18	24	24	36								10	42	✔
VCN-132-MC	2-45		25L	31R	37L			25L						20	14	
VCN-1P32-SC	2-46		25L	31R	37L			25L						20	32	✔
VCN-1S28	2-44	No Leads - Poke In Connectors												10	8	
VCN-1S32-SC	2-51		22L	36L	26R			22L						20	32	
VCN-1TTP40-SC	2-42		25L	30R	30R			22L						20	32	✔
VCN-2M32-MC	2-45	25L	25L	31R	37L									20	32	
VCN-2P32-LW	2-47	25L	25L	31R	37L									20	14	✔
VCN-2P32-SC	2-46	25L	25L	31R	37L									10	24	✔
VCN-2P59	2-50	22L	22L	46R	70L									10	24	✔
VCN-2S28	2-44	No Leads - Poke In Connectors												10	8	
VCN-2S32-SC	2-51	22L	22L	26R	26R	36L								20	32	✔
VCN-2S40	2-53	22L	22L	26R	26R	36L								10	24	✔
VCN-2S86	2-54	22L	22L	46R	46R	70L								6	27	✔
VCN-2TTP40-SC	2-42	25L	25L	30R	30R									20	32	
VCN-3P32-LW	2-47	25L	25L	31R	37L									10	24	
VCN-3P32-SC	2-47	25L	25L	31R	37L									20	32	✔
VCN-3S32-SC	2-51	22L	22L	46R	36R	36L	36R							20	32	✔
VCN-3TTP40-SC	2-42	25L	25L	30R	30R									20	32	✔
VCN-4P32-LW	2-47	25L	25L	31R	31R	39L								10	24	✔
VCN-4P32-SC	2-46	25L	25L	31R	31R	39L								20	32	✔
VCN-4S32-SC	2-51	22L	22L	36R	36R	46L	36R							20	32	
VEL-1P32-HL-SC	2-32		25L	31R	37L		25L							20	32	
VEL-1P32-LW-SC	2-30		25L	31R	37L		25L							20	32	✔
VEL-1P32-SC	2-28, 2-29		25L	31R	37L			25L						20	32	
VEL-1S40-RH-TP	2-37, 2-38		22L	36L	26R			22L						10	24	✔
VEL-1S40-SC	2-39		22L	36L	26R			22L						20	32	
VEL-1TTS39	2-27		12L	24R	24R			12L						10	24	✔
VEL-1TTS40	2-27		12L	24R	24R			12L						10	24	✔
VEL-1TTS50	2-27		12L	24R	24R			12L						10	24	✔
VEL-2P17-RH-TP	2-28	22L	22L	24R	24L									10	24	✔
VEL-2P32-HL-RH-TP	2-33	25L	25L	31R	37L									10	24	✔
VEL-2P32-HL-SC	2-32	25L	25L	31R	37L									20	32	
VEL-2P32-LW-RH-TP	2-31	25L	25L	31R	37L									10	24	✔
VEL-2P32-LW-SC	2-30	25L	25L	31R	37L									20	32	✔
VEL-2P32-SC	2-28, 2-29	25L	25L	31R	37L									20	32	✔

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CATALOG NUMBER TO PAGE NUMBER LEAD LENGTHS AND SHIPPING DATA

Catalog Number	See Page No.	Lead Lengths for ballasts purchased in bulk or mid-pack cartons Tolerance: +2", -1"												Shipping Data		
		Black	White	Blue	Red	Yellow	Blue/ White	Black/ White	Yellow/ Blue	Brown	Red/ White	Orange	Orange/ Black	Units Std. Ctn.	Weight Std. Ctn. (lbs)	Avail IC* Ctn.
VEL-2P50-SC	2-40	25L	25L	31R	37L									20	32	✔
VEL-2P59-HL	2-35	22L	22L	46R	70L									6	27	
VEL-2P59-S-RH-TP	2-35	22L	22L	46R	70L									10	24	✔
VEL-2P75-S	2-40	22L	22L	46R	70L									6	27	✔
VEL-2S110	2-41	22L	22L	46R	46R	70L								6	27	✔
VEL-2S40-RH-TP	2-37, 2-38	22L	22L	26R	26R	36L								10	24	✔
VEL-2S40-SC	2-39	22L	22L	26R	26R	36L								20	32	
VEL-2S86	2-36	22L	22L	46R	46R	70L								6	27	✔
VEL-2TTS39	2-27	12L	12L	24R	24R	24L								10	24	✔
VEL-2TTS40	2-27	12L	12L	24R	24R	24L								10	24	✔
VEL-2TTS50	2-27	12L	12L	24R	24R	24L								10	24	✔
VEL-3P32-HL	2-33	25L	25L	31R	37L									10	24	
VEL-3P32-HL-SC	2-32	25L	25L	31R	37L									20	32	
VEL-3P32-LW-RH-TP	2-31	25L	25L	31R	37L									10	24	✔
VEL-3P32-LW-SC	2-30	25L	25L	31R	37L									20	32	✔
VEL-3P32-SC	2-28, 2-29	25L	25L	31R	37L									20	32	
VEL-3S40-RH-TP	2-37, 2-38	22L	22L	26R	36L	26R	36L							10	24	✔
VEL-4P32-2LS	2-34	25L	25L	31R	31R	39L								10	24	✔
VEL-4P32-LW-RH-TP	2-31	25L	25L	31R	31R	39L								10	24	✔
VEL-4P32-LW-SC	2-30	25L	25L	31R	31R	39L								20	32	✔
VEL-4P32-SC	2-28, 2-29	25L	25L	31R	31R	39L								20	32	✔
VEZ-132	3-7		22L	46R	26R			22L						10	15	✔
VEZ-1T32	3-9		7B	7B	7B			7B						10	15	
VEZ-1T42	3-9		7B	7B	7B			7B						10	15	
VEZ-1TTS40	3-8		12L	24R	24R			12L						10	24	
VEZ-2Q26	3-9	7B	7B	7B	7B	7B								10	15	
VEZ-2S32	3-7	22L	22L	26R	46R	46R								10	15	✔
VEZ-2TTS40	3-8	12L	12L	24R	24R	24L								10	24	
VEZ-3S32	3-7	22L	22L	26R	46R	26R	46R							10	15	✔
VEZ-C1200-A	3-9															
VEZ-C500-I	3-9															
VH-1B13-TP-BLS	1-34		7	7				7						27	40	
VH-1B13-TP-W	1-34		15	15				15						54	80	✔
VH-1B9-TP-BLS	1-33		7	7				7						27	30	
VH-1B9-TP-W	1-33		15	15				15						54	60	✔
VH-1Q18-TP-BLS	1-35		7	7				7						27	40	
VH-1Q18-TP-W	1-35		15	15				15						54	80	
VH-1Q26-TP-BLS	1-35		7	7				7						27	40	
VH-1Q26-TP-W	1-35		15	15				15						54	80	✔
VH-2B13-TP-BLS	1-34	7	7	7										27	40	
VH-2B13-TP-W	1-34	15	15	15										54	80	
VH-2B9-TP-BLS	1-33	7	7	7										27	32	
VH-2B9-TP-W	1-33	15	15	15										54	64	
VH-2Q18-TP-BLS	1-35	7		7	7									12	40	
VH-2Q18-TP-W	1-35	15		15	15									10	33	
VH-1Q26-TP-W	1-35	15		15	15									10	36	
VH-2Q26-TP-BLS	1-35	7		7	7									12	43	
VHM-1P20-TP	1-27, 1-28		8	10	10			8						10	32	
VIC-132	2-55		22L	46R	26R			22L						10	24	✔
VIC-2S32	2-55	22L	22L	26R	26R	46R								10	24	✔
VIC-3S32	2-55	22L	22L	26R	46R	26R	46R							10	24	✔
VK-132-TP	2-4		18	35	23			18						10	35	✔
VK-2S32-TP	2-4	22	22	26	26	36								10	38	✔

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CATALOG NUMBER TO PAGE NUMBER LEAD LENGTHS AND SHIPPING DATA

Catalog Number	See Page No.	Lead Lengths for ballasts purchased in bulk or mid-pack cartons Tolerance: +2", -1"												Shipping Data		
		Black	White	Blue	Red	Yellow	Blue/ White	Black/ White	Yellow/ Blue	Brown	Red/ White	Orange	Orange/ Black	Units Std. Ctn.	Weight Std. Ctn. (lbs)	Avail IC* Ctn.
VK-2S34-TP	2-5	22	22	26	26	36								10	38	✔
VK-2S40-TP	2-5	22	22	26	26	36								10	38	✔
VL-1B13-TP-BLS	1-34			7				7						27	38	
VL-1B13-TP-W	1-34			15				15						54	76	✔
VL-1B9-TP-BLS	1-33			7				7						27	32	
VL-1B9-TP-W	1-33			15				15						54	64	✔
VL-1Q18-TP-BLS	1-35			7				7						27	38	
VL-1Q18-TP-W	1-35			15				15						54	76	
VL-1Q26-TP-BLS	1-35			7				7						27	43	
VL-1Q26-TP-W	1-35			15				15						54	86	
VLO-13-TP	1-31, 1-32	15		15										72	72	✔
VLO-2S13-TP	1-31	14		7										20	26	
VLQ-106F-TP	1-27		10	10	10			10						20	40	✔
VM-1P30-TP	1-8		18	26	17			18						10	34	✔
VM-2SP20-TP	1-27, 1-28	10	10	13	13	16								10	34	✔
VM-2SP30-TP	1-8	18	18	17	17	26								10	37	✔
VQM-2S40-TP	6-4	22	22	26	26	36								10	35	
VS-110-TP	1-16, 1-17		22	70	46			22						6	60	✔
VS-2S110-TP	1-16, 1-17	22	22	46	46	70								6	61	✔
VS-2S200-FO	1-41	6.5	6.5	6.5	6.5	6.5								1	20	✔
VS-2S200-TP	1-18, 1-19	22	22	44	44	68								4	60	✔
VS-2S60-TP	1-13 to 1-15	18	18	20	20	32								6	46	✔
VSH-275-S-TP	1-22, 1-23	10	68	44	44									4	54	✔
VSM-175-S-TP	1-22, 1-23		70	48				10						10	62	✔
VSM-2E40-S-TP	1-21	25	35	23	23	35								10	58	✔
VSM-2E75-S-TP	6-6	19	70	46	46	70								6	46	
VZT-132**	3-3		22L	46R	26R			22L						10	15	
VZT-1TTS40**	3-4		12L	24R	24R			12L						10	15	
VZT-2S32**	3-3	22L	22L	26R	26R	46R								10	15	
VZT-2TTS40**	3-4	12L	12L	24R	24R	24L								10	15	
VZT-3S32**	3-3	22L	22L	26R	46R	26R	46R							10	15	
X-140-TP	1-7, 1-9, 1-10, 6-3, 6-4		22	35	23			22						10	36	
XHM-1P20-TP	6-7		8	10	10			8						10	32	
XM-2SP20-TP	6-7	10	10	13	13	16								10	34	
XQM-2S40-TP	1-7, 1-9, 1-10, 6-3, 6-4	22	22	26	26	36								10	35	
XSM-2E40-S-TP	6-6	10	35	35	33	35								10	58	
XSM-2E75-S-TP	6-6	19	70	46	46	70								6	50	
XT-2E57-S-TP	6-6	55	55	36	36	55								6	48	
XTH-1B13-TP-W	6-7	15	15	15										54	80	
YHQM-1P40-TP	1-7, 1-8, 1-10, 6-3, 6-4		18	35	23			18						10	37	
YK-2S32-TP	2-4	22	22	26	26	36								10	38	
YQM-2S40-TP	1-7,1-9 to 1-11,6-3,6-4	18	18	24	24	36								10	35	✔
YS-2S110-TP	1-16, 1-17, 6-5	22	22	46	46	70								4	51	
YS-2S85-TP	1-13 to 1-17, 6-5	(2)22		47	47	70								4	54	
YSM-2E75-S-TP	1-22, 1-23, 6-6	19	70	46	46	70								6	50	

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RIC-2S40-TP	RCN-2S40	2-53
RIC-3S32-TP	RIC-3S32	2-55
RIC-3S40-TP	REL-3S40-RH-TP	2-37, 2-38
VCN-1P32	VCN-1P32-SC	2-46
VCN-2P32	VCN-2P32-SC	2-46
VCN-2P54-SC	ICN-2S54	2-43
VCN-2S32-LW	VCN-2P32-LW	2-47
VCN-3P32	VCN-3P32-SC	2-46
VCN-4P32	VCN-4P32-SC	2-46
VDC-132-TP	VZT-1S32	3-3
VDC-140-TP	....	....
VDC-2BS40-TP	VZT-2TTS40	3-4
VDC-2S32-TP	VZT-2S32	3-3
VDC-2S40-TP	....	....
VDC-3S32-TP	VZT-3S32	3-3
VDC-3S40-TP	....	....
VEL-175-S-TP	VEL-2P75-S	2-40
VEL-1P32-RH-TP	VEL-1P32-SC	2-28, 2-29
VEL-1S32-RH-TP	VCN-1S32-SC	2-51
*VEL-1S40-RH-TP	VEL-1S40-SC	2-39
VEL-1S40-TP	VEL-1S40-SC	2-39
VEL-1T32	ICN-2S26-H1-LD	2-22 to 2-24
VEL-1T42	ICN-2S26-H1-LD	2-22 to 2-24
VEL-2E75-S-TP	VEL-2P75-S	2-40
*VEL-2P32-HL-RH-TP	VEL-2P32-HL-SC	2-32
*VEL-2P32-LW-RH-TP	VEL-2P32-LW-SC	2-30
VEL-2P32-RH-TP	VEL-2P32-SC	2-28, 2-29
VEL-2Q18	ICN-2S18-H1-LD	2-23, 2-24
VEL-2Q26	ICN-2S26-H1-LD	2-22 to 2-24
VEL-2S32-LW-RH-TP	VEL-2P32-LW-SC	2-30
VEL-2S32-RH-TP	VCN-2S32-SC	2-51
*VEL-2S40-RH-TP	VEL-2S40-SC	2-39
VEL-2S40-TP	VEL-2S40-SC	2-39
*VEL-3P32-HL	VEL-3P32-HL-SC	2-32
*VEL-3P32-LW-RH-TP	VEL-3P32-LW-SC	2-30
VEL-3P32-RH-TP	VEL-3P32-SC	2-28, 2-29
VEL-3P32-TP	VEL-3P32-SC	2-28, 2-29
VEL-3S32-LW-RH-TP	VEL-3P32-LW-SC	2-30
VEL-3S32-RH-TP	VCN-3S32-SC	2-51
VEL-3S40-TP	VEL-3S40-RH-TP	2-37, 2-38
*VEL-4P32-LW-RH-TP	VEL-4P32-LW-SC	2-30
VEL-4P32-RH-TP	VEL-4P32-SC	2-28, 2-29
VEL-4P32-TP	VEL-4P32-SC	2-28, 2-29
VIC-132-TP	VIC-132	2-55
VIC-140-TP	VEL-1S40-RH-TP	2-37, 2-38
VIC-2S32-TP	VIC-2S32	2-55
VIC-2S40-TP	VCN-2S40	2-53
VIC-3S32-TP	VIC-3S32	2-55
VIC-3S40-TP	VEL-3S40-RH-TP	2-37, 2-38

Low Frequency Electronic

Discontinued Catalog Number	Suggested Replacement Catalog Number	Page No.
GK-2S110-TP	....	....
**RK-134-TP	....	....
RK-2S110-TP	....	....
**RK-3S34-TP	....	....
**VK-134-TP	....	....
VK-2S110-TP	....	....
**VK-3S34-TP	....	....

* These ballasts will be phased out during 2001 and their replacements will be available accordingly.
** Availability limited to existing stocks.

Note: In some cases, replacement may have different dimensions, specifications, starting method, lamps supported or wiring configurations. Technical specifications of the replacement should be evaluated for intended application.

DISCONTINUED CATALOG NUMBER TO REPLACEMENT NUMBER

Obsolete Catalog Numbers	Replacement Catalog Number	Page No.	Alternate Quadri-volt 120/208/240/277V
71A0401-791	....	....	....
71A1500	71A1580	4-12	....
71A1510	....	....	....
71A1530	71A1580	4-12	....
71A1540	....	....	....
71A15R0	....	....	....
71A1810	....	....	....
71A1820	....	....	....
71A1830	71A1580(CWA)**	4-12	....
71A2020	....	....	....
71A20R0	....	....	....
71A2300	71A2303	4-12	....
71A2310	....	....	....
71A2320	....	....	....
71A2330	71A2030(CWA)**	4-12	....
71A2340	....	....	....
71A2500	71A2501	4-12	71A2571/91
71A2502	71A2501	4-12	71A2571/91
71A2510	71A2571/91	4-12	71A2571/91
71A2512	71A2571/91	4-12	71A2571/91
71A2520	....	....	71A2571/91
71A2522	....	....	71A2571/91
71A2530	71A2571/91	4-12	71A2571/91
71A2531	71A2571/91	4-12	71A2571/91
71A2532	71A2571/91	4-12	71A2571/91
71A2540	71A2541	4-12	....
71A2542	71A2541	4-12	....
71A2551	....	....	71A2571/91
71A2561	....	....	71A2571/91
71A25D1 (120/240/347V)	71A25A1 (120/277/347V)	4-12	71A2571/91
71A25J1	....	....	....
71A25R1	71A25N1	6-15	....
71A2801	71A2800	4-12	....
71A2803	71A2800	4-12	....
71A2810	....	....	71A2571/91(CWA)**
71A2820	....	....	71A2571/91(CWA)**
71A2840	71A2541(CWA)**	4-12	....
71A29G0	....	....	....
71A3000	71A3002	4-13	71A3072/92
71A3001	71A3002	4-13	71A3072/92
71A3010	....	....	71A3072/92
71A3011	....	....	71A3072/92
71A3012	....	....	71A3072/92
71A3020	....	....	71A3072/92
71A3021	....	....	71A3072/92
71A3022	....	....	71A3072/92
71A3030	71A3072/92	4-13	71A3072/92
71A3031	71A3072/92	4-13	71A3072/92
71A3032	71A3072/92	4-13	71A3072/92
71A3040	71A3042	4-13	....
71A3041	71A3042	4-13	....
71A3052	....	....	71A3072/92

Obsolete Catalog Numbers	Replacement Catalog Number	Page No.	Alternate Quadri-volt 120/208/240/277V
71A3062	....	....	71A3072/92
71A30J2	....	....	....
71A3140	71A3042	4-13	....
71A3150	....	....	71A3072/92
71A3320	....	....	71A3072/92(CWA)**
71A3330	71A3032(CWA)**	4-13	71A3072/92(CWA)**
71A3340	71A3042(CWA)**	4-13	....
71A3500	71A3502	4-14	71A3572/92
71A3501	71A3502	4-14	71A3572/92
71A3510	....	....	71A3572/92
71A3520	....	....	71A3572/92
71A3521	....	....	71A3572/92
71A3522	....	....	71A3572/92
71A3530	....	....	71A3572/92
71A3531	....	....	71A3572/92
71A3532	....	....	71A3572/92
71A3540	71A3542	4-14	....
71A3541	71A3542	4-14	....
71A3552	71A3572/92	4-14	71A3572/92
71A3562	71A3572/92	4-14	71A3572/92
71A35J2	....	....	....
71A3640	71A3542	4-14	....
71A3650	....	....	71A3572/92
71A3800	71A3502(CWA)**	4-14	71A3572/92(CWA)**
71A3810	....	....	71A3572/92(CWA)**
71A3820	....	....	71A3572/92(CWA)**
71A3825-791	....	....	....
71A3830	....	....	71A3572/92(CWA)**
71A3840	71A3542(CWA)**	4-14	....
71A4000	....	....	71A4071/91
71A4001	....	....	71A4071/91
71A4020	....	....	71A4071/91
71A4021	....	....	71A4071/91
71A4030	....	....	71A4071/91
71A4031	....	....	71A4071/91
71A4040	71A4041	4-15	....
71A4051	71A4071/91	4-15	71A4071/91
71A4061	71A4071/91	4-15	71A4071/91
71A40J1	....	....	....
71A4142	71A4041	4-15	71A4071/91
71A4152	....	....	71A4071/91
71A4310	....	....	....
71A4320	....	....	....
71A4401	....	....	71A4071/91(CWA)**
71A4411	....	....	71A4071/91(CWA)**
71A4421	....	....	71A4071/91(CWA)**
71A4431	....	....	71A4071/91(CWA)**
71A4441	71A4041(CWA)**	4-15	71A4071/91(CWA)**
71A5000	....	....	71A5070/90
71A5005	71A5005-P	4-16	....
71A5030*	....	....	71A5070/90
71A5037	71A5037-P	4-16	....
71A5037-B	71A5037-BP	4-16	....

Obsolete Catalog Numbers	Replacement Catalog Number	Page No.	Alternate Quadri-volt 120/208/240/277V
71A5050	....	....	71A5070/90
71A5060	....	....	71A5070/90
71A5102	....	....	71A5070/90
71A5105	71A5105-P	4-16	....
71A5122	....	....	71A5070/90
71A5137	71A5137-P	4-16	....
71A5137-B	71A5137-BP	4-16	....
71A5142	71A5040	4-15	....
71A5205	71A5205-P	4-17	....
71A5227 (Reactor)	....	....	71A5292 (3x4 Core)
71A5228	....	....	....
71A5229 (Reactor)	....	....	71A5292 (3x4 Core)
71A5237	71A5237-P	4-17	....
71A5237-B	71A5237-BP	4-17	....
71A5288	....	....	....
71A5289 (Reactor + Transformer)	....	....	71A5292 (3x4 Core)
71A52C2	71A52A2	4-17	71A5292 (3x4 Core)
71A5337	71A5337-P	4-18	....
71A5337-B	71A5337-BP	4-18	....
71A5338	....	....	....
71A5386	....	....	....
71A5387 (Reactor + Transformer)	....	....	71A5390 (3x4 Core)
71A5388	....	....	....
71A53C0	71A53A0	4-18	71A5390 (3x4 Core)
71A5427 (Reactor)	....	....	71A5490 (3x4 Core)
71A5428 (Reactor)	....	....	71A5490 (3x4 Core)
71A5429 (Reactor)	....	....	71A5492 (3x4 Core)
71A5437	71A5437-P	4-19	....
71A5437-B	71A5437-BP	4-19	....
71A5488 (Reactor + Autotransformer)	....	....	71A5490 (3x4 Core)
71A5489 (Reactor + Autotransformer)	....	....	71A5492 (3x4 Core)
71A5510	71A5570/90	4-20	71A5570/90
71A5520	71A5570/90	4-20	71A5570/90
71A5550	71A5570/90	4-20	71A5570/90
71A5560	71A5570/90	4-20	71A5570/90
71A5593	71A5592	4-20	71A5592
71A55B0	71A55A0	4-20	....
71A55D0 (120/240/347V)	71A55A0 (120/277/347V)	4-20	71A5570/90
71A55G0	71A55H0	4-20	....
71A55J0	71A55H0	4-20	....
71A55R0	71A55N0	6-16	....
71A5693	71A5692 (3x4 Core)	4-21	71A5692 (3x4 Core)
71A5710	71A5770/90	4-22	71A5770/90
71A5711	71A5771/91	4-22	71A5771/91
71A5720	71A5770/90	4-22	71A5770/90
71A5721	71A5771/91	4-22	71A5771/91
71A5750	....	....	71A5770/90
71A5760	....	....	71A5770/90

* Availability limited to existing stocks.

** The CWA ballasts offered as replacements are furnished with a capacitor which must be used in the ballast circuit as shown in the wiring diagram in this Atlas. The original ballast circuit in the lighting fixture may have been low or normal power factor, and therefore, no capacitor was used. If the CWA ballast with its capacitor does not fit in the fixture, contact Advance for assistance.

Advance Replacement ballasts shown are functionally equivalent to listed obsolete ballasts. Dimensional differences can exist.

Suffix "T" ballast catalog numbers indicate ballast is equipped with 120V output tap. Standard practice is to use 120V tap on quadri-volt ballast, where quadri-volt ballasts are available.

Where no replacement ballast is shown, ballast has been discontinued and inventories are exhausted.

Consult nearest Advance sales office for assistance.

DISCONTINUED CATALOG NUMBER TO REPLACEMENT NUMBER

Obsolete Catalog Numbers	Replacement Catalog Number	Page No.	Alternate Quadri-volt 120/208/240/277V
71A5792	....	....	....
71A57D0 (120/240/347V)	71A57A0 (120/277/347V)	4-22	71A5770/90
71A57J0	71A55H0	4-20	....
71A57R0	71A57N0	6-16	....
71A5843-T	71A5842-T	4-24	....
71A5893	71A5892	4-24	71A5892
71A58A3	71A58A2	4-24	....
71A58N3	71A58N2	6-16	....
71A5942-T	71A5943-T	4-24	....
71A5992	71A5993	4-24	71A5993
71A59A2	71A59A3	4-24	....
71A59N2	71A59N3	6-16	....
71A6000	71A6001	4-25	71A6071/91
71A6010	71A6071/91	4-25	71A6071/91
71A6011	71A6071/91	4-25	71A6071/91
71A6020	71A6021	4-25	71A6071/91
71A6021	71A6071/91	4-25	71A6071/91
71A6030	71A6031	4-25	71A6071/91
71A6040	71A6041	4-25	71A6071/91
71A6043-T	71A6042-T	4-26	....
71A6061	71A6071/91	4-25	71A6071/91
71A6084(120/277V)	71A6004(120V)	4-26	71A6034(277V)
71A6093	71A6092	4-26	71A6092
71A60A3	71A60A2	4-26	....
71A60B1	71A60A1 (120/277/347V)	4-25	....
71A60D1 (129/240/347V)	71A60A1 (120/277/347V)	4-25	71A6071/91
71A60J1	71A60H1	4-25	....
71A60N3	71A60N2	6-16	....
71A60R1	71A60N1	6-16	....
71A6300 (Series)	71A6382(ILO)	4-6	....
71A6310 (Series)	....	....	....
71A6320 (Series)	....	....	....
71A6330 (Series)	71A6382-001D(ILO)	4-6	....
71A6340 (Series)	71A6382-001D(ILO)	4-6	....
71A6342	71A6342-001D	4-6	....
71A6352 (120/240V)	71A6382-001D(120V)	4-6	....
71A6382	71A6382-001D	4-6	....
71A63J2	....	....	....
71A6500	71A6502	4-28	71A6572/92
71A6501	71A6502	4-28	71A6572/92
71A6510	71A6572/92	4-28	71A6572/92
71A6511	71A6572/92	4-28	71A6572/92
71A6512	71A6572/92	4-28	71A6572/92
71A6520	71A6572/92	4-28	71A6572/92
71A6521	71A6572/92	4-28	71A6572/92
71A6522	71A6572/92	4-28	71A6572/92
71A6530	71A6532	4-28	71A6572/92
71A6531	71A6532	4-28	71A6572/92
71A6540	71A6542	4-28	....
71A6541	71A6542	4-28	....

Obsolete Catalog Numbers	Replacement Catalog Number	Page No.	Alternate Quadri-volt 120/208/240/277V
71A6551	71A6572/92	4-28	71A6572/92
71A6561	71A6572/92	4-28	71A6572/92
71A6571	71A6572	4-28	71A6572/92
71A6591	71A6592	4-28	71A6572/92
71A65B2	71A65A2 (120/277/347V)	4-28	....
71A65D2 (120/240/347V)	71A65A2	4-28	....
71A65E3 (120/208/240V)	71A6593 (120/208/277V)	4-27	71A6593
71A65F3 (277/347/480V)	71A65F3-T (347/480V/120T)	4-27	....
71A65R2	71A65N2	6-16	....
71A6700	71A6702	4-29	71A6772/92
71A6701	71A6702	4-29	71A6772/92
71A6710	71A6772/92	4-29	71A6772/92
71A6711	71A6772/92	4-29	71A6772/92
71A6712	71A6772/92	4-29	71A6772/92
71A6720	71A6722/92	4-29	71A6772/92
71A6721	71A6722/92	4-29	71A6772/92
71A6722	71A6722/92	4-29	71A6772/92
71A6730	71A6732	4-29	71A6772/92
71A6731	71A6732	4-29	71A6772/92
71A6740	71A6742	4-29	....
71A6771	71A6772	4-29	71A6772/92
71A6791	71A6792	4-29	71A6772/92
71A67D2 (120/240/347V)	71A67A2 (120/277/347V)	4-29	71A6772/92
71A68J0	....	....	....
71A7900	71A7950	4-33	....
71A7910*	....	....	....
71A7920	71A7950	4-33	....
71A7956	71A79E6 (120/208/240V)	4-33	....
71A7960(240/480V)	71A7950(120/240V)	4-33	71A7940*(480V)
71A79D1 (120/240/347V)	71A79A1 (120/277/347)	4-32	71A7971/91
71A8000	71A8050/80	4-35	....
71A8030	71A8080	4-35	....
71A8056	71A80E6 (120/277/347)	4-35	....
71A8060(240/480V)	....	....	71A8040(480V)
71A80D1 (120/240/347V)	71A80A1 (120/277/347V)	4-34	71A8071/91
71A80R1	71A79N1, 71A80N1	6-17	....
71A8106*	....	....	71A8176/96
71A8111	....	....	71A8176/96
71A8116*	....	....	71A8176/96
71A8130	71A8180	4-37	....
71A8131	71A8176/96	4-37	71A8176/96
71A8136	71A8176/96	4-37	71A8176/96
71A8141	....	....	....
71A8151	....	....	71A8176/96

Obsolete Catalog Numbers	Replacement Catalog Number	Page No.	Alternate Quadri-volt 120/208/240/277V
71A8156	71A81E6 (120/208/240V)	4-37	....
71A81D2 (120/240/347V)	71A81A2 (120/277/347V)	4-36	71A8172/92
71A81R2	71A81N2	6-17	....
71A8211	71A8271/91	4-39	71A8271/91
71A8221	71A8271/91	4-39	71A8271/91
71A8230	71A8280	4-39	....
71A8250(120/240V)	....	....	71A8220(240V)
71A8256	71A82E6 (120/208/240V)	4-39	....
71A8260(240/480V)	....	....	71A8240(480V)
71A8294 (120/208/240/277V)	71A8280(120/277V) 71A8210(208V)	4-39	71A8220(240V)
71A82B1	71A82A1 (120/277/347V)	4-39	....
71A82D1 (120/240/347V)	71A82A1 (120/277/347V)	4-39	71A8271/91
71A82R1	71A82N1	6-17	....
71A8311	....	....	71A8371/91
71A8321	....	....	71A8371/91
71A8331	....	....	71A8371/91
71A8401	71A8403	4-43	71A8473/93
71A8402	71A8403	4-43	71A8473/93
71A8411	71A8473/93	4-41	71A8473/93
71A8412	71A8473/93	4-41	71A8473/93
71A8413	71A8473/93	4-41	71A8473/93
71A8420	71A8450	4-41	....
71A8421	71A8473/93	4-41	71A8473/93
71A8422	71A8473/93	4-41	71A8473/93
71A8423	71A8473/93	4-41	71A8473/93
71A8430	71A8480	4-41	....
71A8431	71A8433	4-41	71A8473/93
71A8432	71A8433	4-41	71A8473/93
71A8441	71A8443	4-41	....
71A8442	71A8443	4-41	....
71A8456	71A84E6 (120/208/240V)	4-41	....
71A8471	....	....	71A8473/93
71A8472	....	....	71A8473/93
71A8482	....	....	71A8473/93
71A8484	71A8480	4-41	....
71A8491	....	....	71A8473/93
71A8492	....	....	71A8473/93
71A84D3 (120/240/347V)	71A84A3 (120/277/347V)	4-41	71A8473/93
71A84R2	71A84N3	6-17	....
71A8540	71A85F5	4-42	....
71A8590 (120/208/240/277V)	71A85E5 (120/208/240V)	4-42	71A85F5 (277/347/480)
71A85A3	....	....	....
71A8741	71A8743	4-43	....
71A8771	71A8773/93	4-43	71A8773/93

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DISCONTINUED CATALOG NUMBER TO REPLACEMENT NUMBER

Obsolete Catalog Numbers	Replacement Catalog Number	Page No.	Alternate Quadri-volt 120/208/240/277V
71A8791	71A8773/93	4-43	71A8773/93
71A87D3 (120/240/347V)	71A87A3 (120/277/347V)	4-43	71A8773/93
71A8900	....	....	71A8970/90
71A8930	....	....	71A8970/90
71A8931	....	....	71A8991
71A8984(120/277V)	71A8954(120V)	4-38	71A8970/90 (CWA)
71A9068	....	....	71A4071/91
71A9073	....	....	71A5070/90
71A9074	71A5040	4-15	....
71A9082	....	....	71A4071/91
71A9114	....	....	....
71A9115	71A40R1	6-15	....
71A9116	71A65N2	6-16	....
71A9124	....	....	71A4071/91
71A9127	....	....	71A5070/90
71A9135	....	....	71A3072/92
71A9136	....	....	71A3072/92
71A9137	....	....	71A3072/92
71A9138	71A3072/92	4-13	71A3072/92
71A9139	71A3042	4-13	....
71A9189	71A0550	4-45	....
71A9192	71A0450	4-44	....
71A9209	71A5580	4-20	71A5570/90
71A9212	71A6382-001D	4-6	....
71A9240	....	....	71A3572/92
71A9242	....	....	71A5570/90
71A9243	71A5540	4-20	....
71A9263	....	....	71A3572/92
71A9278	71A25N1	6-15	....
71A9279	71A35R2	6-15	....
71A9280	71A55N0	6-16	71A9281
71A9282	71A65N2	6-16	....
71A9301	71A0740	4-45	....
71A9302	....	....	71A6071/91
71A9303	....	....	71A6071/91
71A9305	....	....	71A6572/92
71A9306	....	....	71A4071/91
71A9312	....	....	71A4071/91
71A9313	....	....	71A4071/91
71A9314	....	....	71A4071/91
71A9315	....	....	71A4071/91
71A9316	71A4041	4-15	....
71A9317	71A0750	4-45	....
71A9318	71A0760	4-45	....
71A9319	....	....	71A4071/91
71A9326	71A0740	4-45	....
71A9327	71A0440	4-44	....
71A9328	71A0540	4-45	....
71A9331	....	....	71A2571/91
71A9332	....	....	71A2571/91
71A9334	....	....	71A3572/92
71A9335	....	....	....

Obsolete Catalog Numbers	Replacement Catalog Number	Page No.	Alternate Quadri-volt 120/208/240/277V
71A9341	71A0560	4-45	....
71A9352	71A3002(CWA)**	4-13	71A3072/92
71A9355	71A0760	4-45	....
71A9356	71A0560	4-45	....
71A9357	71A0410	4-44	....
71A9359	71A0430	4-44	....
71A9366	71A4041(CWA)**	4-15	....
71A9377*	....	....	....
71A9378*	....	....	....
71A9416	71A3592	4-14	71A3572/92
71A9417	71A3072	4-13	71A3572/92
71A9418	71A3092	4-13	71A3572/92
71A9424	71A65A2	4-28	....
71A9426	71A57N0	6-16	....
71A9429	71A82N1	6-17	....
71A9430	71A84N3	6-17	....
71A9432(240/480V)	71A4041(480V)	4-15	71A4071/91(240V)
71A9437(240/480V)	71A5040(480V)	4-15	71A5070/90(240V)
71A9441	71A87R3	6-17	....
71A9445	71A0450	4-44	....
71A9446	....	....	....
71A9449	....	....	....
71A9451	71A82H1	4-39	....
71A9452	71A84H3	4-41	....
71A9462	71A81R6	6-17	....
71A9465	71A67R2	6-16	....
71A9467	71A0201	4-44	....
71A9468	71A4071/91	4-15	71A4071/91
71A9469	71A4091	4-15	71A4071/91
71A9470	....	....	....
71A9471	....	....	....
71A9473	71A25N1	6-15	....
71A9474	71A29R0	6-15	....
71A9475	....	....	....
71A9476	71A35R2	6-15	....
71A9477	71A40R1	6-15	....
71A9478	71A65N2	6-16	....
71A9479	71A55N0	6-16	....
71A9480	71A57N0	6-16	....
71A9481	71A60N1	6-16	....
71A9482	71A65N2	6-16	....
71A9483	71A67R2	6-16	....
71A9484	71A79N1	6-17	....
71A9485	71A80N1	6-17	....
71A9486	71A81N2	6-17	....
71A9487	71A81R6	6-17	....
71A9489	71A82N1	6-17	....
71A9491	71A84N3	6-17	....
71A9492	70A87R3	6-17	....
71A9494	71A78R1	6-17	....
71A9502(240/480V)	71A8241(480V)	4-39	71A8271/91(240V)
71A9519	....	....	....
71A9520	71A3542(CWA)**	4-14	....

Obsolete Catalog Numbers	Replacement Catalog Number	Page No.	Alternate Quadri-volt 120/208/240/277V
71A9521	71A4041(CWA)**	4-15	....
71A9522	71A7941	4-32	....
71A9523	71A8041	4-34	....
71A9524	....	....	....
71A9525	....	....	....
71A9526	71A0740	4-45	....
71A9530		....	71A4071/91
71A9532	....	....	....
71A9533	....	....	....
71A9534	....	....	....
71A9545	71A8107	4-36	....
71A9546	71A8007	4-34	....
71A9547	71A7907	4-32	....
71A9590	....	....	71A8176/96
71A9597	....	....	....
71A9646	71A0280	4-44	....
71A9696	....	....	....
71A9720	71A60H1	4-25	....
71A9722	71A55H0	4-20	....
71A9733	....	....	....
71A9734	71A79J1	4-32	....
71A9735	71A80J1	4-34	....
71A9737	71A87J3	4-43	....
71A9740-2T	....	....	....
71A9744-2T	....	....	....
71A9748*	....	....	....
71A9761	71A65J2	4-28	....
71A9775	....	....	....
71A9784	71A57H0	4-22	....
71A9787	71A63J2	....	....
71A9789	71A80J1	4-34	....
71A9791	....	....	....
71A980(120/277V)	71A7950(120/240V)	4-33	71A7930(277V)
71A9808*	....	....	....
71A9814	....	....	....
72C9156	72C4083-N-P	4-53	....
72C9159	72C4083-N-P	4-53	....
72C9160	72C3584-N-P	4-53	....
72C9163	72C3584-N-P	4-53	....
72C9164	72C3084-N-P	4-53	....
72C9167	72C3084-N-P	4-53	....
72C9168	72C2584-N-P	4-53	....
72C9171	72C2584-N-P	4-53	....
72C9221	72C2584-N-P	4-53	....
72C9222	72C3084-N-P	4-53	....
72C9223	72C3584-N-P	4-53	....
72C9224	72C4083-N-P	4-53	....
72E5005-NP	IMH50ALF	5-5	....
72E5005-NP-BLS	IMH50ABLS	5-5	....
73B5580	73B5590	4-57	73B5590
73B5780	73B5790	4-57	73B5790

* Availability limited to existing stocks.

** The CWA ballasts offered as replacements are furnished with a capacitor which must be used in the ballast circuit as shown in the wiring diagram in this Atlas. The original ballast circuit in the lighting fixture may have been low or normal power factor, and therefore, no capacitor was used. If the CWA ballast with its capacitor does not fit in the fixture, contact Advance for assistance.

Advance Replacement ballasts shown are functionally equivalent to listed obsolete ballasts. Dimensional differences can exist.

Suffix "T" ballast catalog numbers indicate ballast is equipped with 120V output tap. Standard practice is to use 120V tap on quadri-volt ballast, where quadri-volt ballasts are available.

Where no replacement ballast is shown, ballast has been discontinued and inventories are exhausted. Consult nearest Advance sales office for assistance.

DISCONTINUED CATALOG NUMBER TO REPLACEMENT NUMBER

Obsolete Catalog Numbers	Replacement Catalog Number	Page No.	Alternate Quadri-volt 120/208/240/277V
73B6081	73B6091	4-57	73B6091
74P1831-011	....	....	....
74P2321-011	....	....	....
78E4300 (Series)	78E6381 (ILO)	4-64	....
78E4310 (Series)	....	....	....
78E4320 (ILO)	78E6351(ILO)	4-64	....
78E4330 (Series)	78E6381(ILO)	4-64	....
78E4340 (Series)	78E6341(ILO)	4-64	....
78E5040-001	78E6542-001	4-66	....
78E5090-001	78E6592-001	4-66	....
78E6300 (Series)	78E6381(ILO)	4-64	....
78E6310 (Series)	....	....	....
78E6320 (Series)	78E6351(ILO)	4-64	....
78E6330 (Series)	78E6381(ILO)	4-64	....
78E6340 (Series)	78E6341(ILO)	4-64	....
78E6351*	....	....	....
78E8391	....	....	....
78E8492	78E8493	4-63	....
79W3140	....	....	....
79W3150	79W3092	4-65	....
79W3640	79W3542	4-65	....
79W3650	79W3592	4-65	....
79W4300 (Series)	79W6351(ILO)	4-66	....
79W4320 (Series)	79W6351(ILO)	4-66	....
79W4330 (Series)	....	....	....
79W4340 (Series)	79W6341(ILO)	4-66	....
79W6300 (Series)	79W6351(ILO)	4-66	....
79W6310 (Series)	....	....	....
79W6320 (Series)	79W6351(ILO)	4-66	....
79W6330 (Series)	....	....	....
79W6340 (Series)	79W6341(ILO)	4-66	....
79W6381*	....	....	....
79W6541	79W6542	4-66	....
79W6591	79W6592	4-66	....
79W8463(240/480V)	79W8443(480V)	4-67	79W8493(240V)
79W8492	79W8493	4-67	....
79W9256	79W6351	4-66	....
79W9499*	....	....	....
79W9500(240/480V)	79W8192(240V)	4-67	....
79W9501*	....	....	....
79W9502(240/480V)	79W8241(480V)	4-67	79W8291(240V)
79W9503(240/480V)	79W8443(480V)	4-67	79W8493(240V)

Obsolete Catalog Numbers	Replacement Catalog Number	Page No.	Alternate Quadri-volt 120/208/240/277V
IGNITORS			
LI500	LI501-H4	4-51	....
LI501-A	LI501-H4	4-51	....
LI501-B5	LI501-H4	4-51	....
LI501-E	LI501-J4	4-51	....
LI505-H4 (Cut-off)	LI501-H4 (Std.)	4-51	....
LI520-H5	LI522-H5	4-49	....
LI521-H5	LI522-H5	4-49	....
LI525-H6 (Cut-off)	LI522-H5 (Std.)	4-49	....
LI530-H5	LI533-H4	4-49	....
LI531-H5	LI533-H4	4-49	....
LI532-H4	LI533-H4	4-49	....
LI533-H4A	LI533-H4	4-49	....
LI540-H4	Consult Factory for Availability		
LI550	LI551-H4	4-50	....
LI551-B5	LI551-H4	4-50	....
LI551-RS	LI555-IR	4-48	....
LI555-H4 (Cut-off)	LI551-H4 (Std.)	4-50	....
LI560-H5	LI561-H5	157	....
LI570	LI571-H5	157	....

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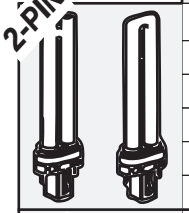
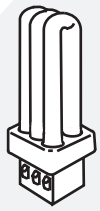
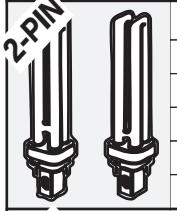
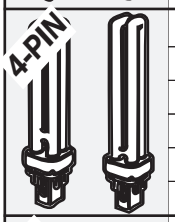
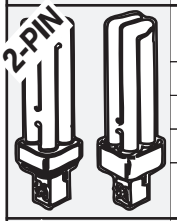
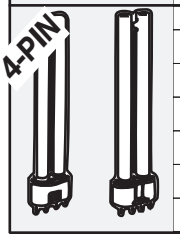
Lamp Description		Ballast Type							
		Core & Coil			Encapsulated Page Number	F-Can Page Number	Postline Page Number	Indoor Enclosed Page Number	Outdoor Weatherproof Page Number
Watts	ANSI Code	Replacement Page Number	OEM Page Number	50 Hz Page Number					
Mercury									
50	H46	4-5	4-12	....	....	....	4-61	....	....
75	H43	....	4-12	....	....	....	4-61	....	....
100	H38/H44	4-5	4-12	6-15	4-56	4-55	4-61	....	4-65
125	H42	4-9	4-13	6-15	....	4-55	....	....	....
175	H39	4-5, 4-6	4-13, 4-20	6-15, 6-16	4-56, 4-57	4-55	4-62	4-65, 4-66	4-65
250	H37	4-5, 4-6	4-14, 4-22	6-15, 6-16	4-56, 4-57	4-54, 4-55	4-62	4-65, 4-66	4-65, 4-66
400	H33	4-5, 4-6	4-15, 4-25	6-15	4-56, 4-57	4-54, 4-55	....	4-65, 4-66	4-65
1000	H36	4-5, 4-6	4-15, 4-28	6-15, 6-16	....	....	....	4-66	4-65, 4-66
Metal Halide									
35/39	M130	....	4-16	....	....	4-54	....	....	....
50	M110	....	4-16	....	....	4-54	4-63	....	....
70	M98	4-6 & 4-9	4-17	6-16	4-57	4-54	....	....	....
70	M85	....	4-17	....	....	4-54	....	....	....
70	M143	....	4-17	....	....	....	....	....	....
70	M139	....	4-17	....	....	....	....	....	....
100	M90	4-6 & 4-9	4-18	6-16	4-57	4-54	....	....	....
100	M140	....	4-18	....	....	....	....	....	....
150	M102	....	4-19	....	4-57	4-54	....	....	....
150	M107	4-6 & 4-9	4-20	....	....	4-54	....	4-66	4-66
150	M81	....	4-19	....	....	4-54	....	....	....
150	M142	....	4-19	....	....	....	....	....	....
175	M57	4-5 & 4-6	4-20	6-16	4-57	4-54	....	4-66	4-66
175 (Pulse-Start)	M137	....	4-20	....	....	....	....	....	....
200 (Pulse-Start)	M136	4-6	4-21	....	....	....	....	....	....
250	M58	4-6	4-22	6-16	4-57	4-54	....	4-66	4-66
250	M80	....	4-23	....	....	....	....	....	....
250 (Pulse-Start)	M138	....	4-23	....	....	....	....	....	....
320 (Pulse-Start)	M132	....	4-24	....	....	....	....	....	....
350 (Pulse-Start)	M131	4-6	4-24	6-16	....	....	....	....	....
2-400	M59	4-6	4-25	....	4-57	....	....	4-66	4-66
400 (Pulse-Start)	M128	....	4-26	....	....	....	....	....	....
400 (Pulse-Start)	M135	4-6	4-26	6-16	....	....	....	....	....
450 (Pulse-Start)	M144	....	4-26	....	....	....	....	....	....
750 (Pulse-Start)	M149	....	4-27	....	....	....	....	....	....
1000 (Pulse-Start)	M141	....	4-27	....	....	....	....	....	....
1000	M47	4-6	4-28	6-16	....	....	....	4-66	4-66
1500	M48	4-6	4-29	6-16	....	....	....	4-66	4-66
1650	M112	....	4-29	....	....	....	....	....	....
2000	M134	....	4-29	....	....	....	....	....	....
High Pressure Sodium									
35	S76	....	4-30	....	....	....	4-62	....	....
35 (White SON)	S99	....	4-30	....	4-58	4-54	....	....	....
50	S68	4-7	4-31	6-17	....	4-56	4-62	....	....
50 (White SON)	S104	....	4-31	....	4-58	4-54	....	....	....
70	S62	4-7 & 4-8	4-32 & 4-33	6-17	....	4-56	4-62	....	....
100	S54	4-7 & 4-8	4-34 & 4-35	6-17	....	4-56	4-62	....	....
100 (White SON)	S105	....	4-34	....	4-58	4-56	....	....	....
150 (55 Volt)	S55	4-7 & 4-8	4-36 & 4-37	6-17	....	4-56	4-62	....	4-67
150 (100 Volt)	S56	4-7	4-37	6-17	....	4-56	....	....	4-67
200	S66	4-7	4-38	....	....	....	....	4-65	4-67
250	S50	4-7 & 4-8	4-39 & 4-40	6-17	4-58	....	....	4-65	4-67
310	S67	4-7	4-40	....	....	....	....	4-65	4-67
400	S51	4-8	4-41	6-17	4-58	....	....	4-65	4-67
430	S51	4-7	4-42	....	4-58	....	....	4-65	4-67
600	S106	....	4-42	....	....	....	....	....	....
750	S111	....	4-42	....	....	....	....	....	....
1000	S52	4-7 & 4-8	4-43	6-17	....	....	....	4-65	4-67
Low Pressure Sodium									
18	L69	....	4-44	....	....	....	....	....	....
35	L70	4-10	4-44	....	....	....	....	....	....
55	L71	4-10	4-44	....	....	....	....	....	....
90	L72	4-10	4-45	....	....	....	....	....	....
135	L73	4-10	4-45	....	....	....	....	....	....
180	L74	4-10	4-45	....	....	....	....	....	....

Lamp Description Type	Ballast Type				
	Electromagnetic			Electronic	
	Standard Page Number	Plastic Sign Page Number	Weatherproof Page Number	Low Frequency Page Number	High Frequency Page Number
2D Preheat 2-Pin	1-36				
CF13DD	1-31 & 1-34				
CF9DD	1-31 & 1-33				
DULUX-D 10, 13	1-34				
CF18DD	1-35				
CF26DD	1-35				
DULUX-L 18	1-38				
DULUX-L 24, 36, 40	1-38				
CF13DS	1-31 & 1-34				
CF5, 7, 9DS	1-31 & 1-33				
CF 18, 26DT	1-35				
CFM18W/G24q					
CFM26W, 32W, 42W/GX24q					3-5, 3-9
CFQ13W/G24q	1-35				
CFQ18W/G24q	1-35				
CFQ26W/G24q	1-35				3-5, 3-9
F10 DBXT4	1-34				
F13 BX	1-31 & 1-34				
F13 DBX23T4	1-31 & 1-34				
F13 DBX-T4	1-34				
F13T5	1-24				
F14T12	1-26 & 1-28				
F14T8	1-25				
F15T12	1-26 & 1-28				
F15T8	1-25 & 1-27				
F16 2D	1-36				
CFS38W/GR10Q (F38 2D/4P)	1-35				
CFS10W/GR10q (F10 2D/4P)	1-35				
CFS16W/GR10q (F16 2D/4P)	1-35				
CFS21W/GR10q (F21 2D/4P)	1-36				
CFS28W/GR10q (F28 2D/4P	1-36				
F17T8	1-5				2-46, 2-51 & 2-55
F18 BX	1-32 & 1-38				
F18 DBXT4	1-35				
F18 TBX	1-35				
F18T8	1-25				
F19T8	1-25				
F20T12	1-26 & 1-28				
F21T5					2-44
F24T12	1-20 & 1-21				
F24T12/HO	1-13	1-40	1-40		
F25T12	1-26				
F25T8	1-5			2-4	2-28, 2-30, 2-32, 2-34, 2-45, 2-46, 2-51, 2-52; 3-3, 3-7
F26 DBXT4	1-32 & 1-35				
F26 TBX	1-35				
F27 BX/RS	1-38				
F28T5					2-41
F30T12 & Energy Saver	1-8 & 1-26			2-5	2-39 & 2-53
F30T8	1-25 & 1-27				
F32T8	1-5			2-4	2-4, 2-29 to 34, 2-36, 2-45 to 47, 2-51, 2-52, 2-55; 3-3, 3-7
F36T12	1-20 & 1-21				
F36T12/HO	1-13	1-40	1-40		
F39 BX/RS	1-38				

Lamp Description Type	Ballast Type				
	Electromagnetic			Electronic	
	Standard Page Number	Plastic Sign Page Number	Weatherproof Page Number	Low Frequency Page Number	High Frequency Page Number
F40 BX/RS	1-38				
F40T10	1-7			2-5	2-37 & 2-53
F40T12 Energy Saver	1-9			2-5	2-39 & 2-53
F40T12/IS	1-20 & 1-21				
F40T12	1-10, 1-26 & 1-39			2-5	2-39 & 2-53
F40T12/U & Energy Saver	1-11 & 1-39			2-5	2-39 & 2-53
F40T17/IS	1-21				
F40T8	1-5				2-46 & 2-49
F42T12	1-20 & 1-21				
F42T12/HO	1-13	1-40	1-40		
F42T6					
F48PG17	1-18				
F48T8/HO	1-12				
F48T12 & Energy Saver	1-21				
F48T12/HO	1-14	1-42	1-40		2-41
F48T12/VHO	1-18		1-41		
F4T5	1-24 & 1-27				
F5 BX	1-31 & 1-33				
F54T5/HO					2-43
F60T12	1-22				
F60T8/HO	1-12				
F60T12/HO	1-15	1-42	1-40		2-41
F60T12/VHO	1-18		1-41		
F64T12	1-22				
F64T12/HO	1-15	1-42	1-40		
F64T6	1-20				
F6T5	1-24 & 1-27				
F7 BX	1-31 & 1-33				
F72PG17	1-18		1-41		
F72T12	1-22				2-41
F72T12/HO	1-16	1-42	1-40		2-41
F72T12/VHO	1-18		1-41		
F72T8(200MA)	1-20				
F72T8/HO	1-20				2-54
F84T12	1-22				
F84T12/HO	1-16	1-42			
F8T5	1-24 & 1-27				
F9 BX	1-31 & 1-33				
F9 DBX23T4	1-31 & 1-33				
F90T17					
F96PG17 & Energy Saver	1-19		1-41		
F96T12 & Energy Saver	1-23				2-41
F96T12/HO & Energy Saver	1-17	1-42	1-40		2-41
F96T12/VHO & Energy Saver	1-19		1-41		
F96T8(200MA)	1-18				
F96T8(265MA)					2-35 & 2-50
F96T8/HO	1-12				2-36 & 2-54
FBO16T8	1-6				2-36 & 2-46
FBO24T8	1-6				2-32, 2-34, 2-47, 2-48, 2-51, 2-52,2-55
F32T8/U	1-6			2-4	2-55
FC12T9	1-29 & 1-30				

Lamp Description Type	Ballast Type				
	Electromagnetic			Electronic	
	Standard Page Number	Plastic Sign Page Number	Weatherproof Page Number	Low Frequency Page Number	High Frequency Page Number
FC16T9	1-29 & 1-30				
FC6T9	1-29 & 1-30				
FC8T9	1-29 & 1-30				
FDL-22, 28	1-32 & 1-35				
FT36W/2G11	1-38				2-27
FT40W/2G11/RS	1-38				2-27, 3-4, 3-8
FT50W/2G11/RS					2-27
PL-C 10W, 13W	1-36				
PL-C 13W/USA	1-31 & 1-34				
PL-C 18W	1-35				
PL-C 26W	1-32 & 1-35				
PL-C-22W, 28W	1-32 & 1-35				
PL-L 18	1-32				
PL-L 24, 36, 40	1-38				2-27
PL-S 13W	1-31 & 1-34				
PL-S 5W, 7W, 9W	1-31 & 1-33				
F13T8	1-25 & 1-27				
F42T6	1-20				

	ANSI Lamp Designation	NEMA Lamp Designation	PHILIPS	GE	OSRAM/ SYLVANIA	OSRAM	SYLVANIA	Built-In Starter	Page No.
2-PIN 									
	5W/4T4/T/G23/PH	CFT5W/G23	PL-S 5W	F5 BX	CF 5DS	DULUX-S 5	F5TT	YES	1-31, 1-33
	7W/5T4/T/G23/PH	CFT7W/G23	PL-S 7W	F7 BX	CF 7DS	DULUX-S 7	F7TT	YES	1-31, 1-33
	9W/6T4/T/G23/PH	CFT9W/G23	PL-S 9W	F9 BX	CF 9DS	DULUX-S 9	F9TT	YES	1-31, 1-33
	13W/7T4/T/GX23/PH	CFT13W/GX23	PL-S 13W	F13 BX	CF 13DS	DULUX-S 13	F13TT	YES	1-33, 1-34
2&4-PIN 	13W/4.5T4/M/GX24d-1	CFM13W/GX24d	—	F13TBX	—	—	—	YES	—
	18W/5T4/M/GX24d-2	CFM18W/GX24d	—	F18TBX	CF18DT	—	—	YES	1-35
	26W/5.5T4/M/GX24d-3	CFM26W/GX24d	—	F26TBX	CF26DT	—	—	YES	1-35
	13W/4T4/M/GX24q-1	CFM13W/GX24q	—	F13TBX/4P	CF13DT/E	—	—	NO	—
	18W/4.5T4/M/GX24q-2	CFM18W/GX24q	PL-T18W	F18TBX/4P	CF18DT/E	—	—	NO	—
	26W/5T4/M/GX24q-3	CFM26W/GX24q	PL-T26W	F26TBX/4P	CF26DT/E	—	—	NO	2-22, 3-5
	32W/5.5T4/M/GX24q-3	CFM32W/GX24q	PL-T32W	F32TBX/4P	CF32DT/E	—	—	NO	2-22, 3-5
	42W/6.5T4/M/GX24q-4	CFM42W/GX24q	PL-T42W	F42QBX/4q	CF42DT/E	—	—		2-22, 3-5
2-PIN 	9W/4T4/Q/G23-2/PH	CFQ9W/G23	—	F9 DBX23 T4	CF 9DD	DOUBLE DULUX 9	F9DTT	YES	1-31, 1-33
	13W/5T4/Q/GX23-2/PH	CFQ13W/GX23	PL-C 13W/USA	F13 DBX23 T4	CF 13DD	DOUBLE DULUX 13	F13DTT	YES	1-31, 1-33
	10W/5T4/Q/G24d-1/PH	CFQ10W/G24d	PL-C 10W	F10 DBX T4	—	DULUX-D 10	—	YES	1-34
	13W/6T4/Q/G24d-1/PH	CFQ13W/G24d	PL-C 13W	F13 DBX T4	—	DULUX-D 13	—	YES	1-34
	18W/7T4/Q/G24d-2/PH	CFQ18W/G24d	PL-C 18W	F18 DBX T4	CF 18DD	DULUX-D 18	F18DTT	YES	1-35
	26W/8T4/Q/G24d-3/PH	CFQ 26W/G24d	PL-C 26W	F26 DBX T4	CF 26DD	DULUX-D 26	F26DTT	YES	1-32, 1-35
4-PIN 									
	10W/5T4/Q/G24q-1/	CFQ10W/G24q	PL-C 10W/4P	F10 DBX/4P	CF 10DD/E	DULUX-D/E 10	—	NO	—
	13W/6T4/Q/G24q-1/	CFQ13W/G24q	PL-C 13W/4P	F13 DBX/4P	CF 13DD/E	DULUX-D/E 13	—	NO	—
	18W/7T4/Q/G24q-2/	CFQ18W/G24q	PL-C 18W/4P	F18 DBX/4P	CF 18DD/E	DULUX-D/E 18	—	NO	1-37, 2-22
	26W/8T4/Q/G24q-3/	CFQ26W/G24q	PL-C 26W/4P	F26 DBX/4P	CF 26DD/E	DULUX-D/E 26	—	NO	1-37,2-22,3-5
2&4-PIN	10W/3.5T4/S/GR10Q/PH	CFS10W/GR10q	—	F10 2D/4P	—	—	—	NO	—
	16W/5.5T4/S/GR8/PH	CFS16W/GR8	—	F16 2D	—	—	—	YES	1-36
	16W/5.5T4/S/GR10Q/PH	CFS16W/GR10q	—	F16 2D/4P	—	—	—	NO	—
	21W/5.5T4/S/GR10Q/PH	CFS21W/GR10q	—	F21 2D/4P	—	—	—	NO	1-36
	28W/8T6/S/GR8/PH	CFS28W/GR8	—	F28 2D	—	—	—	YES	1-36
	28W/8T6/S/GR10Q/PH	CFS28W/GR10q	—	F28 2D/4P	—	—	—	NO	1-36
	38W/8T6/S/GR10Q/PH	CFS38W/GR10q	—	F38 2D/4P	—	—	—	NO	—
2-PIN 							PANASONIC		
	15W/5T5/Q/GX32d-1/PH	CFQ15W/GX32d	PL-C 15MM/16W	—	—	—	FDL-16	NO	—
	20W/6T5/Q/GX32d-2/PH	CFQ20W/GX32d	PL-C 15MM/22W	—	—	—	FDL-22	NO	1-32, 1-35
	27W/7T5/Q/GX32d-3/PH	CFQ27W/GX32d	PL-C 15MM/28W	—	—	—	FDL-28	NO	1-32, 1-35
4-PIN 									
	18-20W/9T5/T/2G11/PH-RS	FT18W/2G11	PL-L 18	F18 BX	FT 18DL	DULUX-L 18/9”	—	NO	1-32
	18W/10T5/T/2G11/RS	FT18W/2G11/RS	—	F18 BX/RS	FT 18DL/RS	DULUX-L 18/10.5”	—	NO	1-38
	24-27W/13T5/T/2G11/PH-RS	FT24W/2G11	PL-L 24	F27 BX/RS	FT 24DL	DULUX-L 24	—	NO	1-38
	36-39W/16T5/T/2G11/PH-RS	FT36W/2G11	PL-L 36	F39 BX/RS	FT 36DL	DULUX-L 36	—	NO	1-38, 3-4
	40W/22T5/T/2G11/RS	FT40W/2G11/RS	PL-L 40	F40 BX/RS	FT 40DL/RS	DULUX-L 40	—	NO	1-38, 3-4
	50-55W/27T5/T/2G11/PH-RS	FT50W/2G11/RS	PL-L 50	F50 BX/RS	FT 55DL/RS	—	—	NO	2-27