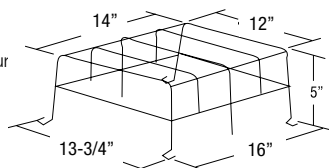


## Wire Guards

### Catalog Number WG1-E

#### Application

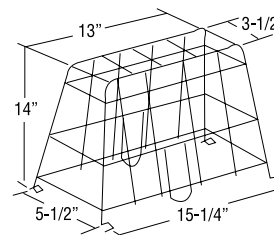
- JS Series (small cabinet)
- PS Series (surface or semi-recessed)
- EF24 or EF24R remote lighting fixture
- Premier™ Battery Unit
- Premier™ Exit Sign (wall mount)



### Catalog Number WG5-E

#### Application

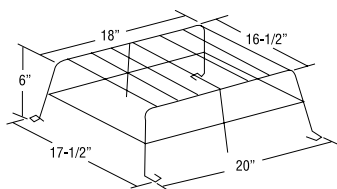
- X10 (end or ceiling mounted) AC and AC/DC or Self-Powered exit with no mounted heads
- ECL & ECLXN Series LED (end or ceiling mounted) AC and AC/DC or Self-Powered
- Preceptor™ Series LED (AC and AC/DC or Self-Powered) (end or ceiling mounted)
- Prestige™ DX Series LED and Thin Die-Cast Series (end or ceiling mount)
- Premier™ Exit Sign (end or ceiling mount)



### Catalog Number WG2-E

#### Application

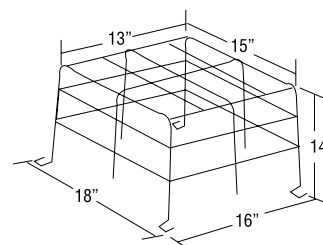
- JS Series (large cabinet)
- All A cabinets
- Premier™ Combo Series (wall mount)



### Catalog Number WG6-E

#### Application

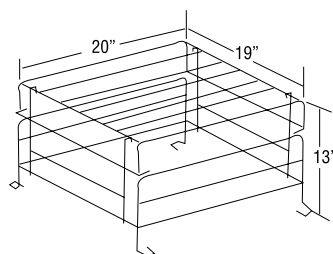
- Single EF22 head
- X10 mini systems (wall mounted) with front mounted EF9 head(s) (wall mounted)
- KS Series with front mounted heads



### Catalog Number WG3-E

#### Application

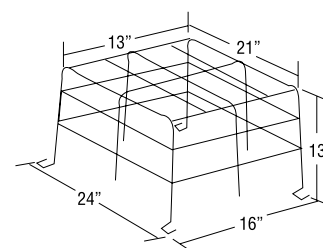
- IL Series
- All B and C cabinets



### Catalog Number WG7-E

#### Application

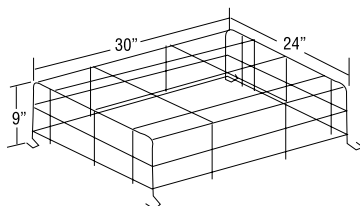
- EF22D heads
- RS Series with cylinder
- EF32 heads



### Catalog Number WG4-E

#### Application

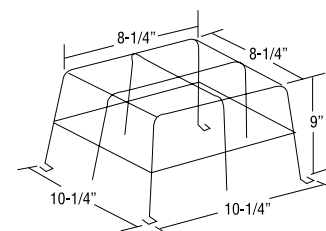
- All D cabinets
- KS Series (not for front mounted heads)



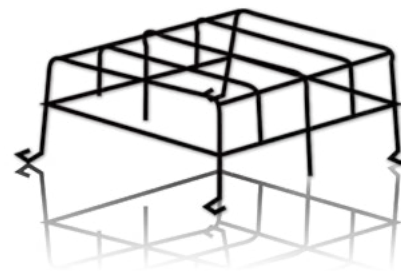
### Catalog Number WG8-E

#### Application

- Single remote EF9, EF11,
- EF16, EF18, EF28, or
- EF32 lighting head



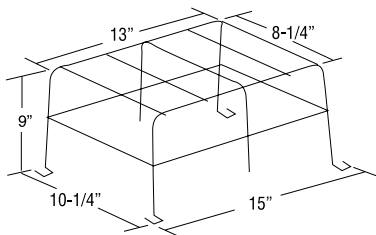
# Wire Guards



## Catalog Number WG9-E

### Application

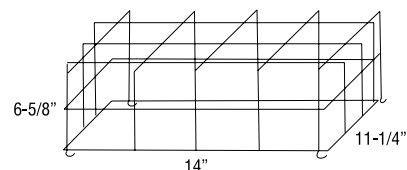
- Double or triple remote EF9, EF11, EF18, EF28 or EF32 lighting heads
- RS Series with EF9 or EF18 heads
- ECS-2 Series



## Catalog Number WG13-E

### Application

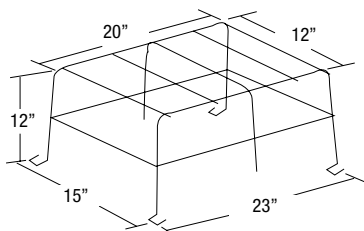
- PRO-2N Series
- Preceptor™ Series Self-Powered (wall mount)



## Catalog Number WG10-E

### Application

- JS Series with front mounted heads

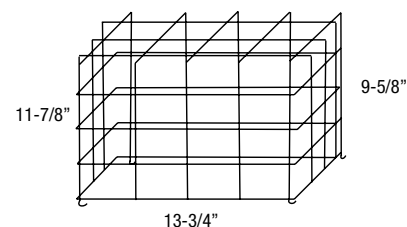


## Catalog Number WG14-E

### Application

#### Exit Signs (Ceiling Mount)

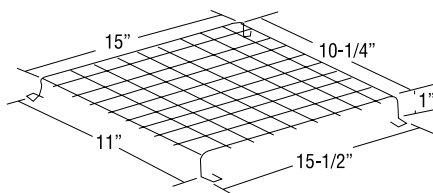
- Prestige™ Floor Proximity Series (6" & 8");
- Preceptor™ Die-Cast Series;
- Prestige™ Thin Die-Cast Series;
- X10 LED Series;
- Premier™ Exit Series;



## Catalog Number WG11-E

### Application

- Fully recessed PS Series
- GS Series
- EF15, EF20, EF21R, EF35 lighting fixtures
- Fully recessed Preceptor™ Series
- Prestige™ Thin Die Cast Exit Sign (wall mounted)

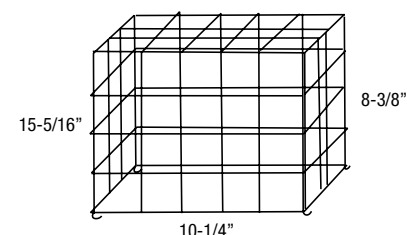


## Catalog Number WG15-E

### Application

#### Exit Signs (Ceiling Mount)

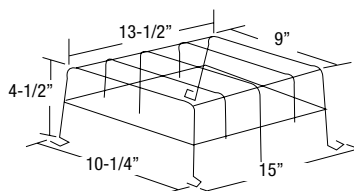
- Prestige™ Floor Proximity Series (6" & 8");
- Preceptor™ Die-Cast Series;
- Prestige™ Thin Die-Cast Series;
- X10 LED Series;
- Premier™ Exit Series;



## Catalog Number WG12-E

### Application

- X10 Series LED (AC and AC/DC or Self-Powered) (wall mount)
- ECL & ECLXN Series LED AC and AC/DC or Self-Powered (wall mount)
- Preceptor™ Series LED (AC and AC/DC or Self-Powered) (wall mount)
- Prestige™ DX Series LED AC and AC/DC or Self-Powered (wall mount)
- Remote EF13, EF14, or EF17 fixtures





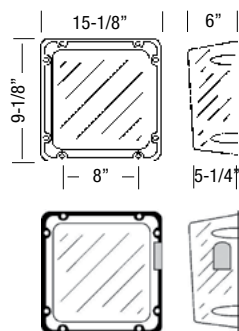
## Accessories

### Catalog Number VRS or VRS-4X

#### Application

- ME Series with top mounted heads
- PS Series all mountings
- X10 LED, (wall mounted) AC and AC/DC or Self-Powered exit with no mounted heads
- ECL Series LED (wall mounted) AC and AC/DC or Self-Powered
- Preceptor™ Series LED, (wall mounted) AC and AC/DC

NEMA-4X

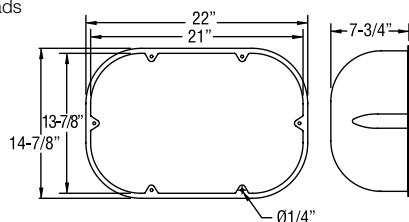


### Catalog Number VRS-BB or VRSBB-4X

#### Application

- JS Series (small cabinet) top or front mounted heads
- ECC & ECM Series (small cabinet)

NEMA-4X



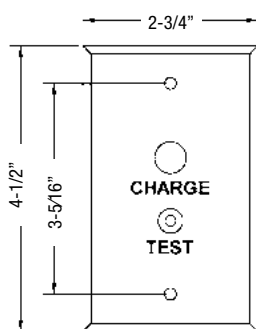
### Remote Test Switch

Make testing your ceiling mounted equipment easier with the remote test switch. Compatible with 120 or 277 VAC circuits, the remote test switch will interrupt the line voltage to your equipment by means of a momentary push button switch. AC on/Charge status indicator lamp assures that power is going to your emergency lighting.

#### How To Order

Metal faceplate, chrome  
Plastic Faceplate plastic, off white

**RTS**  
**RTS-1**



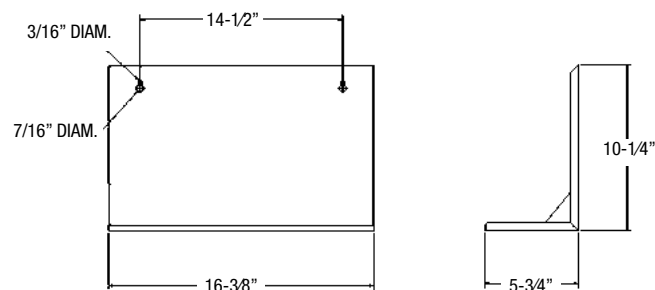
### MP3 Mounting Platform

Constructed of 18 gauge. steel, the MP3 mounting platform will accommodate all our unit equipment in our 'B' cabinet.

#### How To Order

Mounting platform  
Mounting platform, gray

**MP3-EG**  
**MP3-GY**



### MP6, MP12, MP24 Mounting Platform

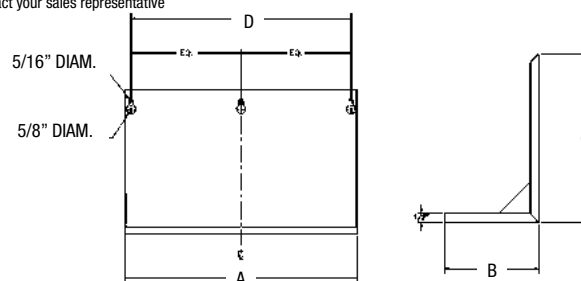
Constructed of 18 gauge. steel, the MP6, MP12, and MP24 mounting platform will accommodate our unit equipment in our 'C', 'D', and 'E' cabinets respectively.

#### How To Order

Mounting platform (off white)  
Mounting platform (off white)  
Mounting platform (off white)  
Optional colors available,  
contact your sales representative

**MP6-EG**  
**MP12**  
**MP24**

Part #	A	B	C	D
MP6	17"	7.75"	12.25"	16"
MP12	27.5"	7.75"	12.25"	16"
MP24	27.5"	11.63"	12.25"	16"



### B1 and B12 Mounting Brackets

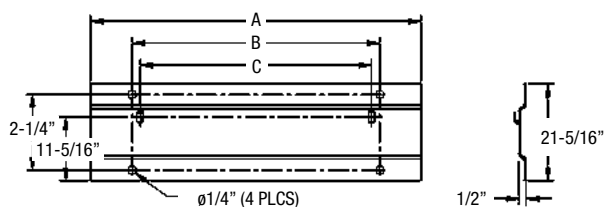
Constructed of 16 gauge. steel, the B1 and B2 mounting bracket will accommodate our unit equipment in our 'A' and 'B' cabinets respectively.

#### How To Order

Mounting bracket (off white)  
Mounting bracket (off white)

**B1**  
**B2**

Part #	A	B	C
B1	10"	7"	7 1/2"
B2	14 1/4"	11 3/4"	12 5/8"



Specify mounting plate designation as a suffix to fixture type model number. Plates ordered separately, specify plate designation and fixture type.



### 230.1238-E & 230.1239-E

- Single, Double or Triple Round
- Thermoplastic Construction
- Off-white or black finish only
- Mount direct to 4" octagonal box

**Dimensions:** 5" diameter - slotted mounting holes  
3 to 3 9/16" mounting center

**Standard:** EF18, EF18D; and EF9, EF9D

Off-White - 230.1238-E

Black - 230.1239-E



### 430.0765-E & 430.0766-E

- Single or double round
- Aluminum construction
- Matte white baked enamel finish
- Black finish optional
- Mount direct to 4" octagonal box

**Dimensions:** 5 1/4" diameter  
3 7/16" mounting center

**Standard:** EF32 and EF32D

Off-White Single - 430.0765-E

Off-White Double - 430.0766-E



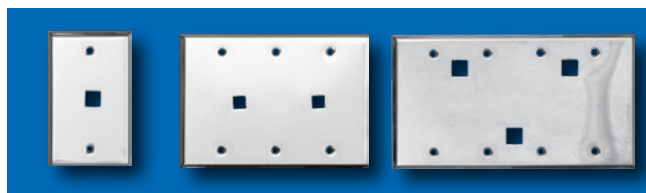
### 450.0129-E, 450.0397-E & 450.0398-E

- Single, double or triple rectangular
- Single, triple or 4-gang steel construction
- Chrome plated finish only
- Mount direct to standard outlet box

**Dimensions:** single - 2 3/4" X 4 1/2" (for 1 fixture)  
3-gang - 6 7/16" X 4 1/2" (for 2 fixtures)  
4-gang - 8 3/8" X 4 1/2" (for 3 fixtures)

**Standard:** EF28, EF28D; EF18T and EF28T

450.0129-E - No Square Hole    450.0397-E - No Square Hole    450.0398-E - No Square Hole  
450.0194-E - 1/2" Square Hole    450.1153-E - 1/2" Square Hole    450.1155-E - 1/2" Square Hole



### 330.7583-E & 330.7584-E

- Single or double round
- Die-cast aluminum construction
- Gasketed weatherproof
- Off-white or black powder paint finish only
- Mount direct to 4" octagonal box

**Dimensions:** 4 1/8" diameter  
3 9/16" mounting center

**Standard:** EF11 and EF11D

Off-White Single    Black Single    Off-White Double    Black Double  
330.7583-E    330.7577-E    330.7584-E    330.7578-E



Gasket - 245.0100-E

### 12804-E & 12805-E

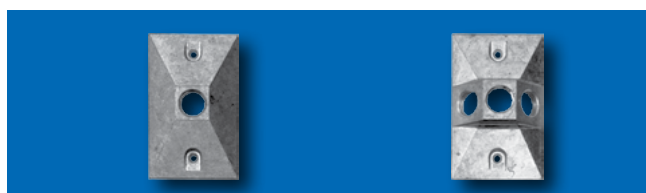
- Single or double rectangular
- Die-cast aluminum construction
- Gasketed weatherproof
- Silver gray enamel finish only
- Mount direct to standard outlet box

**Dimensions:** 4 5/8" X 2 7/8"  
3 1/4" mounting center

**Standard:** Non standard mounting plate

12804-E

12805-E



# Lamp Data

## General Information

All Emergi-Lite® Lighting Fixtures are furnished complete with lamps; however, **all fixtures and unit model numbers must include a lamp designation.** Unless otherwise noted, the standard lamp furnished with each lighting fixture is a 9W High Intensity Incandescent lamp of the designated voltage.

### Example

FIXTURES	PART NUMBER
EF18 (ZD)	LSM 110-2Z (6V-9W)
EF18 (ZF)	12LSM 110-2Z (12V-9W)
EF18 (ZN)	24LSM 110-2Z (24V-9W)

When an alternate lamp is required, refer to the lamp selection charts below.

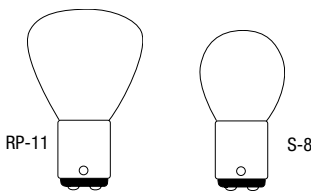
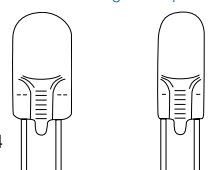
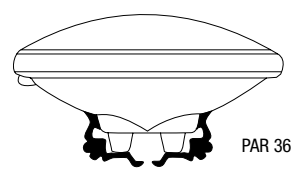
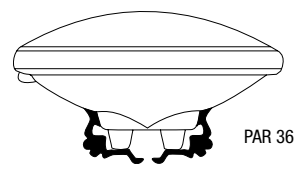
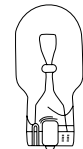
select the lamp type, the voltage and wattage required and add the symbol designation to the catalog number. Not all lighting fixtures and lamp types are compatible, always check individual lighting fixture "How to Order" information.

Example:

A Normally Furnished Lamp: EF18 (ZD)  
(6V-9W Wedge Base Incandescent)

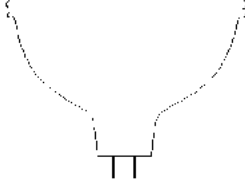

Lighting Head Requiring different Lamp: (6V-25W Sealed Beam Lamp)

Change Catalog Number to: EF18 (UC)

LAMP TYPE	PART NUMBER	LAMP CODE	VOLTAGE (V)	POWER (W)	AVERAGE LUMEN	TOTAL CANDLE POWER (CP)	LAMP #	BULB TYPE
<b>High Intensity Tungsten (HIT) Lamps</b>  RP-11      S-8 Double Contact Bayonet Base	570.0010	IA	6	9	126	10	135	S-8
	570.0020	IM	6	13	188	15	88	S-8
	570.0037	IB	6	18	300	24	1130	S-8
	570.0038	IC	6	25	400	32	1134	RP-11
	570.0011	IE	12	9	126	10	138	S-8
	570.0022	IN	12	13	188	15	94	S-8
	570.0030	IF	12	18	276	22	139	S-8
	570.0031	IG	12	25	400	32	1076	S-8
	570.0058	II	24	9	75	6	304	C-2F
	570.0040	IJ	24	18	250	20	142	S-8
	570.0061	IK	24	25	400	32	1638	S-8
<b>Bi-Pin Halogen Lamps</b>  T-2 3/4      T-2 1/4	580.0012	HA	6	6	113	9	784	T-2 1/4
	580.0013	HB	6	8	163	13	785	T-2 1/4
	580.0017	HC	6	10	200	16	787	T-2 1/4
	580.0011	HD	6	12	240	19	786	T-2 1/4
	580.0022	HE	6	20	400	32	788	T-2 1/4
	580.0014	HF	12	8	163	13	774	T-2 1/4
	580.0015	HG	12	12	276	22	783	T-2 1/4
	580.0016	HH	12	14	300	24	789	T-2 3/4
	580.0027	HI	12	20	314	25	782	T-2 3/4
<b>Sealed Beam Halogen Lamps</b>  PAR 36	550.0022	XA	6	6	107	400	H7556	PAR 36
	550.0036	XB	6	8	155	550	H7551	PAR 36
	550.0037	XC	6	10	190	650	H7552	PAR 36
	550.0019	XD	6	12	225	850	H7553	PAR 36
	550.0021	XE	6	20	380	1,400	H7554	PAR 36
	550.0024	XF	12	8	130	550	H7555	PAR 36
	550.0025	XG	12	12	240	850	H7557	PAR 36
	550.0047	XH	12	37	700	70,000	H7616	PAR 36
	550.0012	XI	12	50	950	2,000	H7614	PAR 36
<b>Sealed Beam Incandescent Lamps</b>  PAR 36	550.0018	UA	6	8	130	400	7613	PAR 36
	550.0030	UI	6	12	180	1,100	4042	PAR 36
	550.0016	UB	6	18	270	1,500	4014	PAR 36
	550.0017	UC	6	25	400	800	4510	PAR 36
	550.0035	UD	6	30	460	5,500	4515	PAR 36
	550.0026	UE	12	12	190	1,110	4044	PAR 36
	550.0027	UF	12	18	210	1,500	4414	PAR 36
	550.0023	UG	12	25	395	400	4446	PAR 36
	550.0034	UH	12	30	430	35,000	4416	PAR 36
<b>High Intensity Incandescent, Wedge Base</b>  T-5	570.0012	ZP	6	5.4	68	5.4	939	T-5
	570.0026	ZL	6	7.2	100	8	927	T-5
	570.0016	ZD	6	9	150	12	908	T-5
	570.0025	ZF	12	9	138	11	915	T-5
	570.0028	ZG	12	12	150	12	912	T-5
	570.0029	ZH	12	18	264	21	921	T-5
	570.0045	ZN	24	9	113	9	EMS2209W	T-5
	570.0046	ZO	24	18	240	19	EMS2218W	T-5

# Lamp Data

## General Information

LAMP TYPE	PART NUMBER	CATALOG SUFFIX	VOLTAGE	WATTS	AVERAGE LUMEN	CENTER-BEAM CANDLE POWER (CBCP)	BEAM ANGLE (DEGREES)	BULB TYPE
MR16 Halogen Lamps 	580.0072	MH	6	5.4	34	73	36	MR16
	580.0074	MI	6	6	40	130	24	MR16
	580.0079	MJ	6	10	77	790	16	MR16
	580.0099	MO	12	10	86	200	36	MR16
	580.0080	MK	12	12	135	320	36	MR16
	580.0064	MG	12	20	270	525	36	MR16
	580.0075	MA	12	20-A	245	600	36	MR16
	580.0068	MW	12	20-H	417	950	36	MR16
	580.0083	MB	12	35	490	3300	24	MR16
	580.0076	MC	12	50	785	2800	24	MR16
	580.0089	MM	12	50-H	1550	5700	24	MR16
	580.0070	MS	24	12	95	280	36	MR16
	580.0077	MD	24	20	240	740	24	MR16
	580.0094	MN	24	20-A	195	890	24	MR16
	580.0084	ME	24	35	460	990	36	MR16
	580.0078	MF	24	50	875	3200	24	MR16
	580.0065	MT	120	20	100	240	36	MR16
	580.0066	MU	120	35	230	520	36	MR16
	580.0067	MV	120	50	460	1100	36	MR16
	580.0097	LA	6	4	130	600	24	MR16
MR16 LED Lamps 	580.0093	LG	12	4	170	440	30	MR16
	580.0104	LI	12	5	340	900	24	MR16
	580.0106	LJ	12	6	540	1800	25	MR16
	580.0098	LL	24	4	200	900	24	MR16
	580.0095	LV	120	4	200	900	24	MR16
LAMP TYPE	PART NUMBER	CATALOG SUFFIX	VOLTAGE	WATTS	AVERAGE LUMEN	TOTAL CANDLE POWER (CP)	LAMP #	BULB TYPE
EXIT Signs, Hazardous Locations Incandescent Lamps	580.0086	XX6	6	15	210	17	JC6V-15W2KG4	Bi-Pin G4
	570.0071	XX12	12	25	220	18	13769	A19
	570.0118	XX24	24	25	220	18	24227-1	A19
	570.0136	AC	120	25	215	17	97478	A19
LAMP TYPE	PART NUMBER	VOLTAGE	WATTS	AVERAGE LUMEN	TOTAL CANDLE POWER (CP)	LAMP #	BASE TYPE	
EXIT Signs, 120VAC Incandescent	570.0013	145	15	150	12	15T6145	Candelabra Screw Base	
	570.0024	120	20	90	7	20T61/2	Intermediate Screw Base	
	570.0035	145	15	150	12	15T6	Intermediate Screw E17	
	595.0010	120	7	330	26	PL7-T4	G23	

Important: Lumen rating and candle power values are only for general reference.

The data was obtained from the manufacturer's catalogs, calculations or third-party laboratory measurements. Actual performance in the field may and will vary.

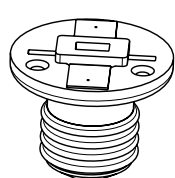
### Explosion-Proof Incandescent Lamps

ITEM P/N	CATALOG SUFFIX	VOLTAGE	WATTS	LUMEN RATING	LAMP #
580.0086	XX6	6	15	225	JC-6V15W
570.0071	XX12	12	25	378	—
570.0118	XX24	24	25	345	—
570.0136	AC	120	25	215	—
540.0180	XX120	120	5	—	Red LED

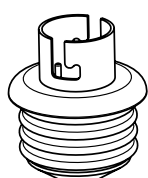
### MSA Incandescent Lamp Adapter

For HIT, DCBB or Bi-Pin Halogen Lamps

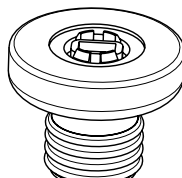
DC lamp plus adapter for medium Edison screw base socket. This device converts any incandescent fixture into an emergency fixture.



MSA Bi-Pin



MSA Double Contact



MSA Wedge Base

### 120 Volt AC Exit Lamps

LAMP TYPE	CATALOG	WATTS	LAMP #	BASE
Incandescent	570.0013	15	15T6145	Candelabra Screw Base
Incandescent	570.0024	20	20T61/2	Intermediate Screw Base
Incandescent	570.0035	15	15T6	Intermediate Screw Base
Fluorescent	595.0010	7	PL7-T4	G23

### How to Order (example)

PRODUCT CODE	LAMP SYMBOL
MSA	HB

Note:

Lumen figures based on information supplied by lamp manufacturers. Lamp drawings shown are for shape comparison only, not actual size.



# Wire Size Guard

## Determining Wire Size

The following information is provided to assist in designing proper emergency lighting systems effectively and economically by using the smallest permissible wire size for load circuits. When remote lighting fixtures and/or exit signs are connected to emergency lighting units, circuit runs must be of sufficient size to maintain a proper operating voltage to all lamps. The National Electrical Code limits voltage to drop to a maximum of 5% of nominal. The table below gives the maximum length or wire run based on systems voltage, wire gauge and total wattage on the run. To determine the maximum length of a wire run not listed, divide the value of the load in watts into the constant listed at the bottom of each row. Example, the maximum wire run for #10 wire on a 12 volt system, with a 54 watt load, is  $3397 \div 54$  or, or 62 feet.

Conversely, to determine the maximum load on a run of known length, divide the length into the constant. Example, a 36 foot run of #12 wire on a 6 volt systems can be loaded to,  $534 \div 36$ , or 14 watts; on #10 wire, 23 watts.

WIRING DISTANCE IN FEET (MAXIMUM VOLTAGE DROP 5%)													
Total watts on wire run	6 volt wire size				12 volt wire size					24 volt wire size			
	#12	#10	#8	#6	#12	#10	#8	#6	#4	#12	#10	#8	#6
6	89	141	225	357	356	566	900	1431	+	1425	+	+	+
8	66	106	168	268	267	424	675	1073	1707	1068	1698	+	+
9	59	94	150	238	237	377	600	954	1517	949	1509	+	+
10	53	84	135	214	213	339	540	859	1366	854	1358	+	+
12	44	70	112	178	178	283	450	715	1138	712	1132	1801	+
16	33	53	84	134	133	212	337	536	853	534	849	1350	+
18	29	47	75	119	118	188	300	477	758	474	754	1200	1909
24	22	35	56	89	89	141	225	357	569	356	566	900	1431
25	21	33	54	85	85	135	216	343	546	341	543	864	1374
27	19	31	50	79	79	125	200	318	505	316	503	800	1272
30	17	28	45	71	71	113	180	286	455	284	452	720	1145
36	14	23	37	59	59	94	150	238	379	237	377	600	954
42	12	20	32	51	50	80	128	204	325	203	323	514	818
45	11	18	30	47	47	75	120	190	303	189	301	480	763
48	11	17	28	44	44	70	112	178	284	178	283	450	715
50	10	16	27	42	42	67	108	171	273	170	271	432	687
75	7	11	18	28	28	45	72	114	182	113	181	288	458
100	5	8	13	21	21	33	54	85	136	85	135	216	343
150	—	5	9	14	14	22	36	57	91	56	90	144	229
200	—	—	6	10	10	16	27	42	68	42	67	108	171
250	—	—	5	8	8	13	21	34	54	34	54	86	137
300	—	—	—	7	7	11	18	28	45	28	45	72	114
400	—	—	—	5	5	8	13	21	34	21	33	54	85
500	—	—	—	—	—	6	10	17	27	17	27	43	68
Constant	534	849	1350	2148	2137	3397	5403	8590	13660	8548	13588	21613	34363

## Longer Wire Runs

The wiring distances give the maximum length of a battery circuit, assuming that the entire load is concentrated at the end of the circuit. If loads are uniformly spaced along the circuit path (equal watts, equal distances), the lengths in the table may be increased, based on number of fixtures on a given circuit, by means of the chart and formula below.

NUMBER OF FIXTURES	2	3	4	5	6	N
Multiply by Feet	1.33	1.5	1.6	1.67	1.71	$2N/(n+1)$

For example, a 36 foot long, 6 volt circuit has (3) 9 watt heads spaced 12 feet apart. According to the wire run table, # 8 wire must be used (at 50 feet for a 5% voltage drop.) but, by multiplying the 31 feet for #10 wire by 1.5, a 46 1/2 foot wire run is acceptable, so #10 wire may be used and still meet the 5% voltage drop limitation.

Note: According to the National Electrical Code, Article 720-Y, the smallest permissible wire size for systems under 50 volts is the #12 wire gauge.

# National Electrical Code

## ARTICLE 700 – EMERGENCY SYSTEMS

### I. General

#### 700.1. Scope.

The provisions of this article apply to the electrical safety of the installation, operation, and maintenance of emergency systems consisting of circuits and equipment intended to supply, distribute, and control electricity for illumination or power, or both, to required facilities when the normal electrical supply or system is interrupted.

(FPN No. 1): For further information regarding wiring and installation of emergency systems in health care facilities, see Article 517.

(FPN No. 2): For further information regarding performance and maintenance of emergency systems in health care facilities, see Standard for Health Care Facilities, NFPA 99-1999.

(FPN No. 3): Emergency systems are generally installed in places of assembly where artificial illumination is required for safe exiting and for panic control in buildings subject to occupancy by large numbers of persons, such as hotels, theaters, sports arenas, health care facilities, and similar institutions. Emergency systems may also provide power for such functions as ventilation where essential to maintain life, fire detection and alarm systems, elevators, fire pumps, public safety communications systems, industrial processes where current interruption would produce serious life safety or health hazards, and similar functions.

(FPN No. 4): For specification of locations where emergency lighting is considered essential to life safety, see Life Safety Code, NFPA 101-2000.

(FPN No. 5): For further information regarding performance of emergency and standby power systems, see Standard for Emergency and Standby Power Systems, NFPA 110-1999.

#### 700.2. Definitions

**Emergency Systems.** Those systems legally required and classed as emergency by municipal, state, federal or other codes, or by any governmental agency having jurisdiction. These systems are intended to automatically supply illumination, power or both, to designated areas and equipment in the event of failure of the normal supply or in the event of accident to elements of a system intended to supply, distribute, and control power and illumination essential for safety to human life.

**Informational Note:** Emergency systems are generally installed in places of assembly where artificial illumination is required for safe exiting and for panic control in buildings subject to occupancy by large numbers of persons, such as hotels, theatres, sports, arenas, health care facilities, and similar institutions. Emergency systems may also provide power for such functions as ventilation where essential to maintain life, fire detection and alarm systems, elevators, fire pumps, public safety communications systems, industrial processes where current interruption would produce serious life safety or health hazards, and similar functions.

**Relay automatic Load Control.** A device used to energize switched or normally-off lighting equipment from an emergency supply in the vent of loss of the normal supply, and to de-energize or return the equipment to normal status when the normal supply is restored.

**Informational Note:** For requirements covering automatic load control relays, see ANSI/UL 924, Emergency Lighting and Power Equipment

#### 700.3. Tests and Maintenance.

(A) **Conduct or Witness Test.** The authority having jurisdiction shall conduct or witness a test of the complete system upon installation and periodically afterward.

(B) **Tested Periodically.** Systems shall be tested periodically on a schedule acceptable to the authority having jurisdiction to ensure the systems are maintained in proper operating condition.

(C) **Battery Systems Maintenance.** Where battery systems or unit equipment are involved, including batteries used for starting, control, or ignition in auxiliary engines, the authority having jurisdiction shall require periodic maintenance.

(D) **Written Record.** A written record shall be kept of such tests and maintenance.

(E) **Testing Under Load.** Means for testing all emergency lighting and power systems during maximum anticipated load conditions shall be provided.

**Informational Note:** For requirements covering automatic load control relays, see ANSI/UL 924, Emergency Lighting and Power Equipment.

#### 700.4. Capacity.

(A) **Capacity and Rating.** An emergency system shall have adequate capacity and rating for all loads to be operated simultaneously. The emergency system equipment shall be suitable for the maximum available fault current at its terminals.

(B) **Selective Load Pickup, Load Shedding, and Peak Load Shaving.** The alternate power source shall be permitted to supply emergency, legally required standby, and optional standby system loads where the source has adequate capacity or where automatic selective load pickup and load shedding is provided as needed to ensure adequate power to (1) the emergency circuits; (2) the legally required standby circuits; and (3) the optional standby circuits, in that order of priority. The alternate power source shall be permitted to be used for peak load shaving, provided the above conditions are met.

Peak load shaving operation shall be permitted for satisfying the test requirement of Section 700.3(B), provided all other conditions of Section 700.3 are met. A portable or temporary alternate source shall be available whenever the emergency generator is out of service for major maintenance or repair.

#### 700.5. Transfer Equipment.

(A) **General.** Transfer equipment, including automatic transfer switches, shall be automatic and identified for emergency use and approved by the authority having jurisdiction. Transfer equipment shall be designed and installed to prevent the inadvertent interconnection of normal and emergency sources of supply in any operation of the transfer equipment. Transfer equipment and electric power production systems installed to permit operation in parallel with the normal source shall meet the requirements of article 705.

(B) **Bypass Isolation Switches.** Means shall be permitted to bypass and isolate the transfer equipment. Where bypass isolation switches are used, inadvertent parallel operation shall be avoided.

(C) **Automatic transfer switches** shall be electrically operated and mechanically held.

(D) **Use.** Transfer equipment shall supply only emergency loads.

**700-6. Signals.** Audible and visual signal devices shall be provided, where practicable, for the following purposes described in 700.6(A) through (D).

(A) **Derangement.** To indicate derangement of the emergency source.

(B) **Carrying Load.** To indicate that the battery is carrying load.

(C) **Not Functioning.** To indicate that the battery charger is not functioning.

(D) **Ground Fault.** To indicate a ground fault in solidly grounded wye emergency systems of more than 150 volts to ground and circuit protective devices rated 1000 amperes or more. The sensor for the ground-fault signal devices shall be located at, or ahead of, the main system disconnecting means for the emergency source, and the maximum setting of the signal devices shall be for a ground-fault current of 1200 amperes. Instructions on the course of action to be taken in event of indicated ground fault shall be located at or near the sensor location.

**Informational Note:** For signals for generator sets, see NFPA 110-2010, Standard for Emergency and Standby Power Systems

#### 700.7. Signs.

(A) **Emergency Sources.** A sign shall be placed at the service entrance equipment indicating type and location of on-site emergency power sources.

**Exception:** A sign shall not be required for individual unit equipment as specified in Section 700-12(F).

(B) **Grounding.** Where removal of a grounding or bonding connection in the normal power source equipment interrupts the grounding electrode conductor connection to the alternate power source(s) grounded conductor, a warning sign shall be installed at the normal power source equipment stating:

#### WARNING

SHOCK HAZARD EXISTS IF GROUNDING ELECTRODE CONDUCTOR OR BONDING JUMPER CONNECTION IN THIS EQUIPMENT IS REMOVED WHILE ALTERNATE SOURCE(S) IS ENERGIZED.

### II. Circuit Wiring

#### 700-10. Wiring, Emergency System.

(A) **Identification.** All boxes and enclosures (including transfer switches, generators, and power panels) for emergency circuits shall be permanently marked so they will be readily identified as a component of an emergency circuit or system.

(B) **Wiring.** Wiring of two or more emergency circuits supplied from the same source shall be permitted in the same raceway, cable, box, or cabinet. Wiring from an emergency source distribution overcurrent protection to emergency loads shall be kept entirely independent of all other wiring and equipment, unless otherwise permitted in (1) through (5):

(1) Wiring from the normal power source located in transfer equipment enclosures.

(2) Wiring supplied from two sources in exit or emergency luminaires

(3) Wiring from two sources in a listed load control relay supplying exit or emergency luminaires, or in a common junction box, attached to exit or emergency luminaires

(4) Wiring within a common junction box attached to unit equipment, containing only the branch circuit supplying the unit equipment and the emergency circuit supplied by the unit equipment.

(5) Wiring from an emergency source to supply any combination of emergency, legally required, or optional loads in accordance with (a), (b), (c) and (d):

a. From separate vertical switchboard sections, with or without a common bus, or from individual disconnects mounted in separate enclosures.



# National Electrical Code

- b. The common bus or separate sections of the switchboard or the individual enclosures shall be permitted to be supplied by single or multiple feeders without overcurrent protection at the source. Exception to (5)(b): Overcurrent protection shall be permitted at the source or for the equipment, provided the overcurrent protection complies with the requirements of 700.27.
- c. Legally required and optional standby circuits shall not originate from the same vertical switchboard section, panel board enclosure, or individual disconnect enclosure as emergency circuits.
- d. It shall be permissible to utilize single or multiple feeders to supply distribution equipment between an emergency source and the point where the combination of emergency, legally required, or optional loads are separated.
- (C) **Wiring Design and Location.** Emergency wiring circuits shall be designed and located to minimize the hazards that might cause failure due to flooding, fire, icing, vandalism, and other adverse conditions.
- (D) **Fire Protection.** Emergency systems shall meet the following additional requirements (D) (1) through (D)(3) in assembly occupancies for not less than 1000 persons or in buildings above 23 m (75 ft) in height with any of the following occupancy classes: assembly, educational, residential, detention and correctional, business, and mercantile.

Informational Note: For the definition of Occupancy Classification, see Section 6.1 of NFPA 101-2009, Life Safety Code

**(1) Feeder-circuit wiring** shall meet one of the following conditions:

- (1) Be installed in spaces or areas that are fully protected by an approved automatic fire suppression system.
- (2) Be listed electrical circuit protective system with a minimum 2-hour fire rating. Informational note: UL guide information for electrical circuit protective systems (FHT) contains information on proper installation requirements to maintain the fire rating
- (3) Be protected by a listed thermal barrier system for electrical system components with a minimum 2-hour fire rating.
- (4) Be protected by a listed fire-rated assembly that has a minimum fire rating of 2 hours and contains only emergency wiring circuits
- (5) Be encased in a minimum of 50 mm (2 in) of concrete
- (2) **Feeder-Circuit Equipment.** Equipment for feeder circuits (transfer switches, transformers, panel boards) shall be either located in spaces fully protected by approved automatic fire suppression systems (including sprinklers and carbon dioxide systems) or in spaces with a 2-hour fire resistance rating.

- (3) **Generator Control Wiring.** Control conductors installed between the transfer equipment and the emergency generator shall be kept entirely independent of all other wiring and shall meet the conditions of 700.10(D)(1)

## III. Sources of Power

**700.12. General Requirements.** Current supply shall be such that, in the event of failure of the normal supply to, or within, the building or group of buildings concerned, emergency lighting, emergency power, or both will be available within the time required for the application but not to exceed 10 seconds. The supply system for emergency purposes, in addition to the normal services to the building and meeting the general requirements of this section, shall be one or more of the types of systems described in 700.12(A) through (D) below. Unit equipment in accordance with Section 700.12(E) shall satisfy the applicable requirements of this article. In selecting an emergency source of power, consideration shall be given to the occupancy and the type of service to be rendered, whether of minimum duration, as for evacuation of a theater, or longer duration, as for supplying emergency power and lighting due to an indefinite period of current failure from trouble either inside or outside the building.

Equipment shall be designed and located to minimize the hazards that might cause complete failure due to flooding, fires, icing, and vandalism.

Equipment for sources of power as described in Sections 700.12(A) through (E) where located within assembly occupancies for greater than 1000 persons or in buildings above 23 m (75 ft) in height with any of the following occupancy classes: assembly, educational, residential, detention and correctional, business, and mercantile, shall be installed either in spaces fully protected by approved automatic fire suppression systems (sprinklers, carbon dioxide systems, and so forth), or in spaces with a 1-hour fire rating.

Informational note No. 1: For definition of Occupancy Classification, see Section 6.1 of NFPA 101-2009, Life Safety Code.

Informational note No. 2: Assignment of degree of reliability of the recognized emergency supply system depends on the careful evaluation of the variables at each particular installation. For further information, see ANSI/IEEE 493-2007, Recommended Practice for the Design of Reliable Industrial and Commercial Power Systems.

**(A) Storage Battery.**

Storage batteries used as source of power for emergency systems shall be of suitable rating and capacity to supply and maintain the total load for a period of 1 1/2 hours minimum, without the voltage applied to the load falling below 87 1/2 percent of normal.

Batteries, whether of the acid or alkali type, shall be designed and constructed to meet the requirements of emergency service and shall be compatible with the charger for that particular installation.

For a sealed battery, the container shall not be required to be transparent. However, for the lead acid battery that requires water additions, transparent or translucent jars shall be furnished.

Automotive-type batteries shall not be used.

An automatic battery charging means shall be provided.

**(B) Generator Set.**

- (1) **Prime Mover-Driven.** For a generator set driven by a prime mover acceptable to the authority having jurisdiction and sized in accordance with Section 700-5. Means shall be provided for automatically starting the prime mover on failure of the normal service and for automatic transfer and operation of all required electrical circuits. A time-delay feature permitting a 15-minute setting shall be provided to avoid retransfer in case of short-time reestablishment of the normal source.
- (2) **Internal Combustion Engines as Prime Movers.** Where internal combustion engines are used as the prime mover an on-site fuel supply shall be provided with an on-premise fuel supply sufficient for not less than 2 hours full-demand operation of the system. Where power is needed for the operation of the fuel transfer pumps to deliver fuel to a generator set dry tank, this pump shall be connected to the emergency power system.
- (3) **Dual Supplies.** Prime movers shall not be solely dependent upon a public utility gas system for their fuel supply or municipal water supply for their cooling systems. Means shall be provided for automatically transferring from one fuel supply to another where dual fuel supplies are used.

**Exception:** Where acceptable to the authority having jurisdiction, the use of other than on-site fuels shall be permitted where there is a low probability of a simultaneous failure of both the off-site fuel delivery system and power from the outside electrical utility company.

- (4) Where a storage battery is used for control or signal power, or as the means of starting the prime mover, it shall be suitable for the purpose and shall be equipped with an automatic charging means independent of the generator set. Where the battery charger is required for the operation of the generator set, it shall be connected to the emergency system. Where power is required for the operation of dampers used to ventilate the generator set, the dampers shall be connected to the emergency system.
- (5) **Auxiliary Power Supply.** Generator sets that require more than 10 seconds to develop power shall be permitted is an auxiliary power supply energizes the emergency system until the generator can pick up the load.
- (6) **Outdoor Generator Sets.** Where an outdoor housed generator set is equipped with a readily accessible disconnecting means located within sight of the building or structure supplied, an additional disconnecting means shall not be required where ungrounded conductors serve or pass through the building or structure. The disconnecting means shall meet the requirements of 225.36.

**Exception:** For installations under single management where conditions of maintenance and supervision ensure that only qualified persons will monitor and service the installation and where documented safe switching procedures are established and maintained for disconnection, the generator set disconnecting means shall not be required to be located within sight of the building of structure served.

- (C) **Uninterruptible Power Supplies.** Uninterruptible power supplies used to provide power for emergency systems shall comply with the applicable provisions of Sections 700-12(A) and (B).
- (D) **Separate Service.** Where acceptable to the authority having jurisdiction as suitable for use as an emergency source of power, an additional service shall be permitted. This service shall be in accordance with the applicable provisions of Article 230 and following additional requirements.
  - (1) Separate service drop or service lateral
  - (2) Service conductors sufficiently remote electrically and physically from any other service conductors to minimize the possibility of simultaneous interruption of supply
- (E) **Fuel Cell System.** Fuel Cell Systems used as a source of power for emergency systems shall be of suitable rating and capacity to supply and maintain the total load for not less than 2 hours of full demand operation.

Installation of a fuel cell system shall meet the requirements of Parts II through VIII of Article 692. Where a single fuel cell system serves as the normal supply for the building or group of buildings concerned, it shall not serve as the sole source of power for the emergency standby system.

- (F) **Unit Equipment.** Individual unit equipment for emergency illumination shall consist of the following:

- (1) A rechargeable battery
- (2) A battery charging means
- (3) Provisions for one or more lamps mounted on the equipment, or shall be permitted to have terminals for remote lamps, or both and

# National Electrical Code

- (4) A relaying device arranged to energize the lamps automatically upon failure of the supply to the unit equipment.

The batteries shall be of suitable rating and capacity to supply and maintain at not less than 87 1/2 percent of the nominal battery voltage for the total lamp load associated with the unit for a period of at least 1 1/2 hours, or the unit equipment shall supply and maintain not less than 60 percent of the initial emergency illumination for a period of at least 1 1/2 hours. Storage batteries, whether of the acid or alkali type, shall be designed and constructed to meet the requirements of emergency service.

Unit equipment shall be permanently fixed in place (i.e., not portable) and shall have all wiring to each unit installed in accordance with the requirements of any of the wiring methods in Chapter 3.

Flexible cord and plug connection shall be permitted, provided that the cord does not exceed 3 ft (900 mm) in length. The branch circuit feeding the unit equipment shall be the same branch circuit as that serving the normal lighting in the area and connected ahead of any local switches. The branch circuit that feeds unit equipment shall be clearly identified at the distribution panel. Emergency luminaire's (illumination fixtures) that obtain power from a unit equipment and are not part of the unit equipment shall be wired to the unit equipment as required by Section 700-10 and by one of the wiring methods of Chapter 3.

**Exception No. 1:** In a separate and uninterrupted area supplied by a minimum of three normal lighting circuits, a separate branch circuit for unit equipment shall be permitted if it originates from the same panelboard as that of the normal lighting circuits and is provided with a lock-on feature.

**Exception No. 2:** Remote heads providing lighting for the exterior of an exit door shall be permitted to be supplied by the unit equipment serving the area immediately inside the exit door.

## IV. Emergency System Circuits for Lighting and Power

**700.15. Loads on Emergency Branch Circuits.** No appliances and no lamps, other than those specified as required for emergency use, shall be supplied by emergency lighting circuits.

**700.16. Emergency illumination.** Emergency illumination shall include all required means of egress lighting, illuminated exit signs, and all other lights specified as necessary to provide required illumination.

Emergency lighting systems shall be designed and installed so that the failure of any individual lighting element, such as the burning out of a light bulb, cannot leave in total darkness any space that requires emergency illumination.

Where high-intensity discharge lighting such as high- and low-pressure sodium mercury vapor, and metal halide is used as the sole source of normal illumination, the emergency lighting system shall be required to operate until normal illumination has been restored.

**Exception:** Where alternative means that ensure the emergency lighting illumination level is maintained shall be permitted.

**700.17. Branch Circuits for Emergency Lighting.** Branch circuits that supply emergency lighting shall be installed to provide service from a source complying with Section 700-12 when the normal supply for lighting is interrupted. Such installations shall provide either one of the following:

- (1) An emergency lighting supply, independent of the normal lighting supply, with provisions for automatically transferring the emergency lights upon the event of failure of the normal lighting branch circuit
- (2) Two or more branch circuits supplied from separate and complete systems with independent power sources. One of the two power sources and systems shall be part of the emergency system and the other shall be permitted to be part of the normal power source and system. Each system shall provide sufficient power for emergency lighting purposes.

Unless both systems are used for regular lighting purposes and are both kept lighted, means shall be provided for automatically energizing either system upon failure of the other. Either or both systems shall be permitted to be a part of the general lighting of the protected occupancy if circuits supplying lights for emergency illumination are installed in accordance with other sections of this article.

**700.18. Circuits for Emergency Power.** For branch circuits that supply equipment classed as emergency, there shall be an emergency supply source to which the load will be transferred automatically upon the failure of the normal supply.

## V. Control—Emergency Lighting Circuits

**700.20. Switch Requirements.** The switch or switches installed in emergency lighting circuits shall be arranged so that only authorized persons will have control of emergency lighting.

**Exception No. 1:** Where two or more single-throw switches are connected in parallel to control a single circuit, at least one of these switches shall be accessible only to authorized persons.

**Exception No. 2:** Additional switches that act only to put emergency lights into operation but not disconnect them shall be permissible.

Switches connected in series or 3- and 4-way switches shall not be used.

**700.21. Switch Location.** All manual switches for controlling emergency circuits shall be in locations convenient to authorized persons responsible for their actuation. In facilities covered by Articles 518 and 520, a switch for controlling emergency lighting systems shall be located in the lobby or at a place conveniently accessible thereto. In no case shall a control switch for emergency lighting be placed in a motion-picture projection booth or on a stage or platform.

**Exception:** Where multiple switches are provided, one such switch shall be permitted in such locations where arranged so that it can energize the circuit only, but cannot deenergize the circuit.

**700.22. Exterior Lights.** Those lights on the exterior of a building that are not required for illumination when there is sufficient daylight shall be permitted to be controlled by an automatic light-actuated device.

**700.23. Dimmer Systems.** A dimmer system containing more than one dimmer and listed for use in emergency systems shall be permitted to be used as a control device for energizing emergency lighting circuits. Upon failure of normal power, the dimmer system shall be permitted to selectively energize only those branch circuits required to provide minimum emergency illumination. All branch circuits supplied by the dimmer system cabinet shall comply with the wiring methods of Article 700.

**700.24 Automatic Load Control Relay.** If an emergency lighting load is automatically energized upon loss of the normal supply, a listed automatic load control relay shall be permitted to energize the load. The load control relay shall not be used to transfer equipment.

## VI. Overcurrent Protection

**700-25. Accessibility.** The branch-circuit overcurrent devices in emergency circuits shall be accessible to authorized persons only.

(FPN): Fuses and circuit breakers for emergency circuit overcurrent protection where coordinated to ensure selective clearing of fault currents, increase overall reliability of the system.

**700-26. Ground-Fault Protection of Equipment.** The alternate source for emergency systems shall not be required to have ground-fault protection of equipment with automatic disconnecting means. ground-fault indication of the emergency source shall be provided in accordance with Section 700.6(D).

**700-27. Coordination.** Emergency system(s) overcurrent devices shall be selectively coordinated with all supply side overcurrent protective devices.

**Exception:** Selective coordination shall not be required between two overcurrent devices located in series if no loads are connected in parallel with the downstream device.

National Electrical Code® 2011

National Electrical Code® is a registered trademark of the National Fire Protection Association

# Life Safety Code

## 7.8 Illumination of Means of Egress.

### 7.8.1 General.

7.8.1.1\* Illumination of means of egress shall be provided in accordance with Section 7.8 for every building and structure where required in Chapters 11 through 43. For the purposes of this requirement, exit access shall include only designated stairs, aisles, corridors, ramps, escalators, and passageways leading to an exit. For the purposes of this requirement, exit discharge shall include only designated stairs, aisles, corridors, ramps, escalators, walkways, and exit passageways leading to a public way.

7.8.1.2 Illumination of means of egress shall be continuous during the time that the conditions of occupancy require that the means of egress be available for use, unless otherwise provided in 7.8.1.2.2.

7.8.1.2.1 Artificial lighting shall be employed at such locations and for such periods of time as are necessary to maintain the illumination to the minimum criteria values herein specified.

7.8.1.2.2 Unless prohibited by Chapters 11 through 43, automatic, motion sensor–type lighting switches shall be permitted within the means of egress, provided that the switch controllers comply with all of the following:

- (1) The switch controllers are listed.
- (2) The switch controllers are equipped for fail-safe operation, tested and evaluated for this purpose.
- (3) The illumination timers are set for a minimum 15-minute duration, and the duration.
- (4) The motion sensor is activated by any occupant movement in the area served by the lighting units.
- (5) The switch controller is activated by activation of the building fire alarm system, if provided.

7.8.1.2.3\* Energy-saving sensors, switches, timers, or controllers shall be approved and shall not compromise the continuity of illumination of the means of egress required by 7.8.1.2.

7.8.1.3\* The floors and other walking surfaces within an exit and within the portions of the exit access and exit discharge designated in 7.8.1.1 shall be illuminated as follows:

- (1) During conditions of stair use, the minimum illumination for new stairs shall be at least 10 ft-candle (108 lux), measured at the walking surfaces.
- (2) The minimum illumination for floors and walking surfaces, other than new stairs during conditions of stair use, shall be to values of at least 1 ft-candle (10.8 lux), measured at the floor.
- (3) In assembly occupancies, the illumination of the walking surfaces of exit access shall be at least 0.2 ft-candle (2.2 lux) during periods of performances or projections involving directed light.
- (4)\*The minimum illumination requirements shall not apply where operations or processes require low lighting levels.

7.8.1.4\* Required illumination shall be arranged so that the failure of any single lighting unit does not result in an illumination level of less than 0.2 ft-candle (2.2 lux) in any designated area.

7.8.1.5 The equipment or units installed to meet the requirements of Section 7.10 also shall be permitted to serve the function of illumination of means of egress, provided that all requirements of Section 7.8 for such illumination are met.

### 7.8.2 Sources of Illumination.

7.8.2.1\* Illumination of means of egress shall be from a source considered reliable by the authority having jurisdiction.

7.8.2.2 Battery-operated electric lights and other types of portable lamps or lanterns shall not be used for primary illumination of means of egress. Battery-operated electric lights shall be permitted to be used as an emergency source to the extent permitted under Section 7.9.

## 7.9 Emergency Lighting.

### 7.9.1 General.

7.9.1.1\* Emergency lighting facilities for means of egress shall be provided in accordance with Section 7.9 for the following:

- (1) Buildings or structures where required in Chapters 11 through 43
- (2) Underground and limited access structures as addressed in Section 11.7
- (3) High-rise buildings as required by other sections of this Code

(4) Doors equipped with delayed-egress locks

(5) Stair shafts and vestibules of smoke proof enclosures, for which the following also apply:

- (a) The stair shaft and vestibule shall be permitted to include a standby generator that is installed for the smoke proof enclosure mechanical ventilation equipment.
- (b) The standby generator shall be permitted to be used for the stair shaft and vestibule emergency lighting power supply.
- (6) New access-controlled egress doors in accordance with 7.2.1.6.2.

7.9.1.2 For the purposes of 7.9.1.1, exit access shall include only designated stairs, aisles, corridors, ramps, escalators, and passageways leading to an exit. For the purposes of 7.9.1.1, exit discharge shall include only designated stairs, ramps, aisles, walkways, and escalators leading to a public way.

7.9.1.3 Where maintenance of illumination depends on changing from one energy source to another, a delay of not more than 10 seconds shall be permitted.

### 7.9.2 Performance of System.

7.9.2.1\* Emergency illumination shall be provided for a minimum of 1 1/2 hours in the event of failure of normal lighting. Emergency lighting facilities shall be arranged to provide initial illumination that is not less than an average of 1 ft-candle (10.8 lux) and, at any point, not less than 0.1 ft-candle (1.1 lux), measured along the path of egress at floor level. Illumination levels shall be permitted to decline to not less than an average of 0.6 ft-candle (6.5 lux) and, at any point, not less than 0.06 ft-candle (0.65 lux) at the end of 1 1/2 hours. A maximum-to-minimum illumination uniformity ratio of 40 to 1 shall not be exceeded.

7.9.2.2 New emergency power systems for emergency lighting shall be at least Type 10, Class 1.5, Level 1, in accordance with NFPA110, Standard for Emergency and Standby Power Systems.

7.9.2.3\* The emergency lighting system shall be arranged to provide the required illumination automatically in the event of any interruption of normal lighting due to any of the following:

- (1) Failure of a public utility or other outside electrical power supply
- (2) Opening of a circuit breaker or fuse
- (3) Manual act(s), including accidental opening of a switch controlling normal lighting facilities

7.9.2.4 Emergency generators providing power to emergency lighting systems shall be installed, tested, and maintained in accordance with NFPA 110, Standard for Emergency and Standby Power Systems. Stored electrical energy systems, where required in this Code, other than battery systems for emergency luminaires

in accordance with 7.9.2.5, shall be installed and tested in accordance with NFPA 111, Standard on Stored Electrical Energy Emergency and Standby Power Systems.

7.9.2.5 Unit equipment and battery systems for emergency luminaires shall be listed to ANSI/UL 924, Standard for Emergency Lighting and Power Equipment.

7.9.2.6\* Existing battery-operated emergency lights shall use only reliable types of rechargeable batteries provided with suitable facilities for maintaining them in properly charged condition. Batteries used in such lights or units shall be approved for their intended use and shall comply with NFPA 70, National Electrical Code.

7.9.2.7 The emergency lighting system shall be either continuously in operation or shall be capable of repeated automatic operation without manual intervention.

### 7.9.3 Periodic Testing of Emergency Lighting Equipment.

7.9.3.1 Required emergency lighting systems shall be tested in accordance with one of the three options offered by 7.9.3.1.1, 7.9.3.1.2, or 7.9.3.1.3.

7.9.3.1.1 Testing of required emergency lighting systems shall be permitted to be conducted as follows:

- (1) Functional testing shall be conducted monthly, with a minimum of 3 weeks and a maximum of 5 weeks between tests, for not less than 30 seconds, except as otherwise permitted by 7.9.3.1.1(2).
- (2)\* The test interval shall be permitted to be extended beyond 30 days with the approval of the authority having jurisdiction.
- (3) Functional testing shall be conducted annually for a minimum of 1 1/2 hours if the emergency lighting system is battery powered.
- (4) The emergency lighting equipment shall be fully operational for the duration of the tests required by 7.9.3.1.1(1) and (3).
- (5) Written records of visual inspections and tests shall be kept by the owner for inspection by the authority having jurisdiction.

# Life Safety Code

7.9.3.1.2 Testing of required emergency lighting systems shall be permitted to be conducted as follows:

- (1) Self-testing/self-diagnostic battery-operated emergency lighting equipment shall be provided.
- (2) Not less than once every 30 days, self-testing/self-diagnostic battery-operated emergency lighting equipment shall automatically perform a test with a duration of a minimum of 30 seconds and a diagnostic routine.
- (3) Self-testing/self-diagnostic battery-operated emergency lighting equipment shall indicate failures by a status indicator.
- (4) A visual inspection shall be performed at intervals not exceeding 30 days.
- (5) Functional testing shall be conducted annually for a minimum of 1-1/2 hours.
- (6) Self-testing/self-diagnostic battery-operated emergency lighting equipment shall be fully operational for the duration of the 11/2-hour test.
- (7) Written records of visual inspections and tests shall be kept by the owner for inspection by the authority having jurisdiction.

7.9.3.1.3 Testing of required emergency lighting systems shall be permitted to be conducted as follows:

- (1) Computer-based, self-testing/self-diagnostic battery-operated emergency lighting equipment shall be provided.
- (2) Not less than once every 30 days, emergency lighting equipment shall automatically perform a test with a duration of a minimum of 30 seconds and a diagnostic routine.
- (3) The emergency lighting equipment shall automatically perform annually a test for a minimum of 11/2 hours.
- (4) The emergency lighting equipment shall be fully operational for the duration of the tests required by 7.9.3.1.3(2) and (3).
- (5) The computer-based system shall be capable of providing a report of the history of tests and failures at all times.

## 7.10 Marking of Means of Egress.

### 7.10.1 General.

7.10.1.1 **Where Required.** Means of egress shall be marked in accordance with Section 7.10 where required in Chapters 11 through 43.

### 7.10.1.2 Exits.

7.10.1.2.1\* Exits, other than main exterior exit doors that obviously and clearly are identifiable as exits, shall be marked by an approved sign that is readily visible from any direction of exit access.

### 7.10.1.2.2\*

Horizontal components of the egress path within an exit enclosure shall be marked by approved exit or directional exit signs where the continuation of the egress path is not obvious.

7.10.1.3 **Exit Door Tactile Signage.** Tactile signage shall be provided to meet all of the following criteria, unless otherwise provided in 7.10.1.4:

- (1) Tactile signage shall be located at each exit door requiring an exit sign.
- (2) Tactile signage shall read as follows: EXIT.
- (3) Tactile signage shall comply with ICC/ANSI A117.1, American National Standard for Accessible and Usable Buildings and Facilities.

7.10.1.4 **Existing Exemption.** The requirements of 7.10.1.3 shall not apply to existing buildings, provided that the occupancy classification does not change.

### 7.10.1.5 Exit Access.

7.10.1.5.1 Access to exits shall be marked by approved, readily visible signs in all cases where the exit or way to reach the exit is not readily apparent to the occupants.

7.10.1.5.2\* New sign placement shall be such that no point in an exit access corridor is in excess of the rated viewing distance or 100 ft (30 m), whichever is less, from the nearest sign.

7.10.1.6\* **Floor Proximity Exit Signs.** Where floor proximity exit signs are required in Chapters 11 through 43, such signs shall comply with 7.10.3, 7.10.4, 7.10.5, and 7.10.6 for externally illuminated signs and 7.10.7 for internally illuminated signs. Such signs shall be located near the floor level in addition to those signs required for doors or corridors. The bottom of the sign shall be not less than 6 in. (150 mm), but not more than 18 in. (455 mm), above the floor. For exit doors, the sign shall be mounted on the door or adjacent to the door, with the nearest edge of the sign within 4 in. (100 mm) of the door frame.

7.10.1.7\* **Floor Proximity Egress Path Marking.** Where floor proximity egress path marking is required in Chapters 11

through 43, an approved floor proximity egress path marking system that is internally illuminated shall be installed within 18 in. (455 mm) of the floor. Floor proximity egress path marking systems shall be listed in accordance with ANSI/UL 1994, Standard for Luminous Egress Path Marking Systems. The system shall provide a visible delineation of the path of travel along the designated exit access and shall be essentially continuous, except as interrupted by doorways, hallways, corridors, or other such architectural features. The system shall operate continuously or at any time the building fire alarm system is activated. The activation, duration, and continuity of operation of the system shall be in accordance with 7.9.2. The system shall be maintained in accordance with the product manufacturing listing.

7.10.1.8\* **Visibility.** Every sign required in Section 7.10 shall be located and of such size, distinctive color, and design that it is readily visible and shall provide contrast with decorations, interior finish, or other signs. No decorations, furnishings, or equipment that impairs visibility of a sign shall be permitted. No brightly illuminated sign (for other than exit purposes), display, or object in or near the line of vision of the required exit sign that could detract attention from the exit sign shall be permitted.

7.10.1.9 **Mounting Location.** The bottom of new egress markings shall be located at a vertical distance of not more than 6 ft 8 in. (2030 mm) above the top edge of the egress opening intended for designation by that marking. Egress markings shall be located at a horizontal distance of not more than the required width of the egress opening, as measured from the edge of the egress opening intended for designation by that marking to the nearest edge of the marking.

### 7.10.2 Directional Signs.

7.10.2.1\* A sign complying with 7.10.3, with a directional indicator showing the direction of travel, shall be placed in every location where the direction of travel to reach the nearest exit is not apparent.



# Life Safety Code

**7.10.2.2** Directional exit signs shall be provided within horizontal components of the egress path within exit enclosures as required by 7.10.1.2.2.

## 7.10.3\* Sign Legend.

7.10.3.1 Signs required by 7.10.1 and 7.10.2 shall read as follows in plainly legible letters, or other appropriate wording shall be used:

## EXIT

7.10.3.2\* Where approved by the authority having jurisdiction, pictograms in compliance with NFPA 170, Standard for Fire Safety and Emergency Symbols, shall be permitted.

**7.10.4\* Power Source.** Where emergency lighting facilities are required by the applicable provisions of Chapters 11 through 43 for individual occupancies, the signs, other than approved self-luminous signs and listed photoluminescent signs in accordance with 7.10.7.2, shall be illuminated by the emergency lighting facilities. The level of illumination of the signs shall be in accordance with 7.10.6.3 or 7.10.7 for the required emergency lighting duration as specified in 7.9.2.1. However, the level of illumination shall be permitted to decline to 60 percent at the end of the emergency lighting duration.

## 7.10.5 Illumination of Signs.

**7.10.5.1\* General.** Every sign required by 7.10.1.2, 7.10.1.5, or 7.10.8.1, other than where operations or processes require low lighting levels, shall be suitably illuminated by a reliable light source. Externally and internally illuminated signs shall be legible in both the normal and emergency lighting mode.

## 7.10.5.2\* Continuous Illumination.

**7.10.5.2.1** Every sign required to be illuminated by 7.10.6.3, 7.10.7, and 7.10.8.1 shall be continuously illuminated as required under the provisions of Section 7.8, unless otherwise provided in 7.10.5.2.2.

**7.10.5.2.2\*** Illumination for signs shall be permitted to flash on and off upon activation of the fire alarm system.

## 7.10.6 Externally Illuminated Signs.

### 7.10.6.1\* Size of Signs.

**7.10.6.1.1** Externally illuminated signs required by 7.10.1 and 7.10.2, other than approved existing signs, unless otherwise provided in 7.10.6.1.2, shall read EXIT or shall use other appropriate wording in plainly legible letters sized as follows:

- (1) For new signs, the letters shall be not less than 6 in. (150 mm) high, with the principal strokes of letters not less than 3/4 in. (19 mm) wide.
- (2) For existing signs, the required wording shall be permitted to be in plainly legible letters not less than 4 in. (100 mm) high.
- (3) The word EXIT shall be in letters of a width not less than 2 in. (51 mm), except the letter I, and the minimum spacing between letters shall be not less than 3/8 in. (9.5 mm).
- (4) Sign legend elements larger than the minimum established in 7.10.6.1.1(1) through (3) shall use letter widths, strokes, and spacing in proportion to their height.

**7.10.6.1.2** The requirements of 7.10.6.1.1 shall not apply to marking required by 7.10.1.3 and 7.10.1.7.

## 7.10.6.2\* Size and Location of Directional Indicator.

**7.10.6.2.1** Directional indicators, unless otherwise provided in 7.10.6.2.2, shall comply with all of the following:

- (1) The directional indicator shall be located outside of the EXIT legend, not less than 3/8 in. (9.5 mm) from any letter.
- (2) The directional indicator shall be of a chevron type, as shown in Figure 7.10.6.2.1.
- (3) The directional indicator shall be identifiable as a directional indicator at a distance of 40 ft (12 m).
- (4) A directional indicator larger than the minimum established for compliance with 7.10.6.2.1(3) shall be proportionately increased in height, width, and stroke.
- (5) The directional indicator shall be located at the end of the sign for the direction indicated.



### 7.10.6.2.1 Chevron Type Indicator.

**7.10.6.2.2** The requirements of 7.10.6.2.1 shall not apply to approved existing signs.

**7.10.6.3\* Level of Illumination.** Externally illuminated signs shall be illuminated by not less than 5 ft-candles (54 lux) at the illuminated surface and shall have a contrast ratio of not less than 0.5.

## 7.10.7 Internally Illuminated Signs.

**7.10.7.1 Listing.** Internally illuminated signs shall be listed in accordance with ANSI/UL 924, Standard for Emergency Lighting and Power Equipment, unless they meet one of the following criteria:

- (1) They are approved existing signs.
- (2) They are existing signs having the required wording in legible letters not less than 4 in. (100 mm) high.
- (3) They are signs that are in accordance with 7.10.1.3 and 7.10.1.6.

**7.10.7.2\* Photoluminescent Signs.** The face of a photoluminescent sign shall be continually illuminated while the building is occupied. The illumination levels on the face of the photoluminescent sign shall be in accordance with its listing. The charging illumination shall be a reliable light source, as determined by the authority having jurisdiction. The charging light source, shall be of a type specified in the product markings.

## 7.10.8 Special Signs.

### 7.10.8.1 Sign Illumination.

**7.10.8.1.1** Where required by other provisions of this Code, special signs shall be illuminated in accordance with 7.10.5, 7.10.6.3, and 7.10.7.

**7.10.8.1.2** Where emergency lighting facilities are required by the applicable provisions of Chapters 11 through 43, the required illumination of special signs shall additionally be provided under emergency lighting conditions.

**7.10.8.2 Characters.** Special signs, where required by other provisions of this Code, shall comply with the visual character requirements of ICC/ANSI A117.1, American National Standard for Accessible and Usable Buildings and Facilities.

### 7.10.8.3\* No Exit.

**7.10.8.3.1** Any door, passage, or stairway that is neither an exit nor a way of exit access and that is located or arranged so that it is likely to be mistaken for an exit shall be identified by a sign that reads as follows:

## NO EXIT

**7.10.8.3.2** The NO EXIT sign shall have the word NO in letters 2 in. (51 mm) high, with a stroke width of 3/8 in. (9.5 mm), and the word EXIT in letters 1 in. (25 mm) high, with the word EXIT below the word NO, unless such sign is an approved existing sign.

**7.10.8.4 Elevator Signs.** Elevators that are a part of a means of egress (see 7.2.13.1) shall have both of the following signs with a minimum letter height of 5/8 in. (16 mm) posted in every elevator lobby:

- (1) \*Signs that indicate that the elevator can be used for egress, including any restrictions on use
- (2) \*Signs that indicate the operational status of elevators

**7.10.8.5\* Evacuation Diagram.** Where a posted floor evacuation diagram is required in Chapters 11 through 43, floor evacuation diagrams reflecting the actual floor arrangement and exit locations shall be posted and oriented in a location and manner acceptable to the authority having jurisdiction.

## 7.10.9 Testing and Maintenance.

**7.10.9.1 Inspection.** Exit signs shall be visually inspected for operation of the illumination sources at intervals not to exceed 30 days or shall be periodically monitored in accordance with 7.9.3.1.3.

**7.10.9.2 Testing.** Exit signs connected to, or provided with, a battery-operated emergency illumination source, where required in 7.10.4, shall be tested and maintained in accordance with 7.9.3.

## Limited Warranty

- 1.0 **EMERGI-LITE®** 6, 12 and 24 volt Emergency Lighting Unit Equipment (excluding lamps and fuses) are fully warranted to be free of defects in material and workmanship under normal use for a period of three years from date of installation (see Paragraph 2.0).
- 1.1 **EMERGI-LITE®** 6, 12 and 24 volt Unit Equipment Batteries are warranted as follows (Warrant below includes the 3-year full warranty on entire unit as called out in Paragraph 1.0).
- 1.2 **EMERGI-LITE®** volt Emergency Lighting Unit Equipment (excluding lamps, and fuses) is fully warranted to be free of defects in material and workmanship under normal use for a period of one year from date of installation (see Paragraph 2.0).

BATTERY TYPE	LIFE EXPECTANCY	SHELF LIFE*	FULL WARRANTY	PRO RATA WARRANTY
Sealed Lead-Calcium	8 years	6 months	3 years	3 years
Sealed Lead-Calcium (Immobilized Electrolyte)	12 years	6 months	5 years	5 years
Sealed Long Life Lead	12 years	6 months	5 years	5 years
Sealed Nickel-Cadmium	15 years	1 year	5 years	7 years
Refillable Lead-Calcium	15 years	6 months	3 years	8 years
Refillable Nickel-Cadmium	15 years	2 years	5 years	7 years

**\*Maximum Storage life. Must Be Recharged If Not Placed in Service Or Battery Warranty Void**

- 2.0 The full warranty period begins on the date of installation or 90 days from date of shipment, whichever date is earlier.
- 2.1 Should a defect appear in the equipment or batteries listed in Paragraphs 1.0, 1.1 or 1.2 above within the specified full warranty period, Emergi-Lite® will repair or replace equipment without charge (see Paragraph 3.3). Such repair or replacement shall be the purchaser's exclusive remedy.
- 2.2 The Pro Rata Warranty Period for batteries begins on the date the full warranty period ends.
- 2.3 A battery determined to be defective during the Pro Rata Warranty Period shall be repaired or replaced at a cost equal to the net price in effect at the time, reduced by the percentage obtained in multiplying 10% by the number of full years remaining in the total warranty period. Such repair or replacement at this adjusted price shall be the purchaser's exclusive remedy.
- 3.0 All warranties are subject to proper installation and maintenance in accordance with the instructions supplied.
- 3.1 Any material deemed defective must be returned, freight prepaid, to the factory for evaluation (see Paragraph 5.0-5.3). Any changes in circuitry or components by other than authorized Emergi-Lite® personnel or its service companies will void the warranty.
- 3.2 All warranties are limited to the repair and/or replacement of parts or equipment, which, upon examination at our plant, are determined to be defective and in our judgement are subject to repair or replacement under warranty. Replacement of lamps and fuses is not included in the warranty.
- 3.3 If new replacement parts are shipped before defective goods are received for evaluation, the replacement parts will be invoiced at the net price in effect at that time. These charges will be credited if, upon receipt and evaluation of goods, a defect is determined. Only replacement parts will be shipped under these circumstances, if field replacement is possible. **EMERGI-LITE® FACTORY ONLY RESERVES THE RIGHT TO SHIP NEW UNIT EQUIPMENT FOR REPLACEMENT PURPOSES.** Units returned after installation cannot be restored to 100% saleable condition.
- 4.0 In no event shall Emergi-Lite® be liable for backcharges of any kind, including, without limitation, labor charges for field repair or late penalties.
- 4.1 This warranty does not cover damages caused by improper maintenance of installation or damage due to installation in areas with other than normal temperatures and environmental conditions per application specifications. Emergi-Lite® assumes no responsibility for any damage to people, property, apparatus or otherwise resulting from improper installation or maintenance of its Emergency Lighting Unit Equipment.
- 4.2 This warranty does not cover damages caused by abuse, fire or Act of God.
- 4.3 In no event shall Emergi-Lite® be liable for incidental or consequential damages.
- 4.4 The foregoing warranty is in lieu of all other warranties, expressed or implied, or merchantability, fitness for a particular purpose or any other thing. Except as stated in this warranty, Emergi-Lite® shall not be liable for any defects in, or breach of any contract relating to, the quality of performance of Emergi-Lite® Equipment under any theory of law including, without limitation, contract, negligence, strict liability or misrepresentation.
- 4.5 Emergi-Lite® warranty coverage shall not apply to any equipment of another manufacturer used in conjunction with Emergi-Lite® Equipment.
- 4.6 Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This written warranty gives you specific legal rights and you may also have other rights which vary from state to state.
- 5.0 No returned defective materials will be accepted without a Returned Goods Authorization issued in writing by an authorized Emergi-Lite® employee.
- 5.1 Purchaser is responsible for secure packing of returned materials to provide best possible assurance against damage in shipment.
- 5.2 Defective batteries of any kind must not be returned to Emergi-Lite's® factory without strict adherence to special instructions for handling and shipping. **WARNING** Never ship a refillable wet battery in any type of emergency lighting equipment. Failure to adhere to this policy will void warranty.
- 5.3 Defective goods returned to the factory must be shipped prepaid. **COLLECT RETURNED SHIPMENT WILL BE REFUSED.** Freight charges to return repaired equipment or ship replacement equipment to the purchaser to be paid by Emergi-Lite®. Factory will return repaired goods via same shipping method as received.

**FAILURE TO COMPLY WITH ANY OF THE STIPULATIONS SET FORTH WILL VOID THE WARRANTY. ANY EXCEPTIONS TO THE FOREGOING WARRANTY MUST BE REQUESTED AND ACCEPTED IN WRITING PRIOR TO SHIPMENT. Emergi-lite® EQUIPMENT NOT LISTED IN PARAGRAPHS 1.0, 1.1 OR 1.2 IS WARRANTED AS DESCRIBED ON ITS INDIVIDUAL DATA SHEET WITH THE STIPULATIONS AS STATED IN PARAGRAPHS 2.0-5.3.**



# Product Index

Series	Page	Series	Page	Series	Page
(negative)TS	71	EF17	92	MP12	144
12804-E	145	EF18	86	MP24	144
12805-E	145	EF21R	93	MP3	144
12HZM	59	EF23	88	MP6	144
12ILS	65	EF24	89	MRT	15, 81
12JAC	37	EF24-2	89	MRT	81
12JAM	37	EF28	90	P	48, 50
12JCC	36	EF32	91	P2C1	48
12JCM	36	EF35	95	P2C2	48
12JSC	39	EF39	98	PDN	48
12JSE	39	EF39	98	PE	46, 47
12JSM	39	EF39D	98	PEN	46, 47
12K	66	EF39D	98	PES	46, 47
12KS	68-69	EF41	99	PNEX	48
12LC	41	EF41D	99	PNEXRF	48
12LSC	43	EF9	84	PR	30, 31
12LSE	40	EFEP	72	PREM	32
12LSM	43	EFR2	20	PRO	33
12PR	30	EFR8R	83	PS	16
12PS	16	EFXP	73	PU	48
12RSC	17	EL-2MRS	110	PXN	48
12RSE	17	EL-2MRS-LA	110	RSC	17
12RSM	17	EL-2SQ	108	RSE	17
12SV	55	ELX400	105	RSM	17
12TSC	19	ELXN400	112	RT	14
12TSE	19	EXC	70-71	RTG	14
12TSM	19	FPDL	116	RTS	144
1EXC	71	FPS	117	RTS-1	144
230.1238-E	145	GS	107	SLX	74
230.1239-E	145	GS	107	SV	55
24ILS	65	ILC	64, 65	SVX	56
24KS	66, 67	ILS	64, 65	SVX12N	57
24LC	41	JAC	37	SVX24N	57
24LSC	42, 43	JAM	37	SVXH	61
24LSE	40	JCC	36	SVXHZ	62
24LSM	42, 43	JCM	36	SVXN	56
24TSC	18, 19	JSC	39	SVXNHZ	62
24TSE	18, 19	JSE	39	TSC	19
24TSM	18, 19	JSM	39	TSE	19
330.7583-E	145	K	69	TSM	19
330.7584-E	145	KS	65, 67	TX	102
430.0765-E	145	LS	43	TXN	102
430.0766-E	145	LC	41	VRS	144
450.0129-E	145	LEDP	49	VRS-4X	144
450.0397-E	145	LEDPXN	49	VRS-BB	144
450.0398-E	145	LED-RX	113	VRSBB-4X	144
6HZM24	59	LL	27	WG10-E	143
B1	144	LSC	42, 43	WG11-E	143
B12	144	LSE	42, 43	WG12-E	143
DLM-2	106	LSM	42, 43	WG13-E	143
DX	25	LSNX	24	WG1-E	142
DXN	25	LUX	13	WG2-E	142
EC	34, 35	LUXL	13	WG3-E	142
ECX	34	LUXN	13	WG4-E	142
EF10	85	LUXN2	13	WG5-E	142
EF11	96	LX	22, 23, 24	WG6-E	142
EF13	92	LXN	23	WG7-E	142
EF14	86			WG8-E	142
EF15	93			WG9-E	143
EF150	82				