

# IMPORTANT SAFEGUARDS

When using electrical equipment, basic safety precautions should always be followed including the following:

## READ AND FOLLOW ALL SAFETY INSTRUCTIONS

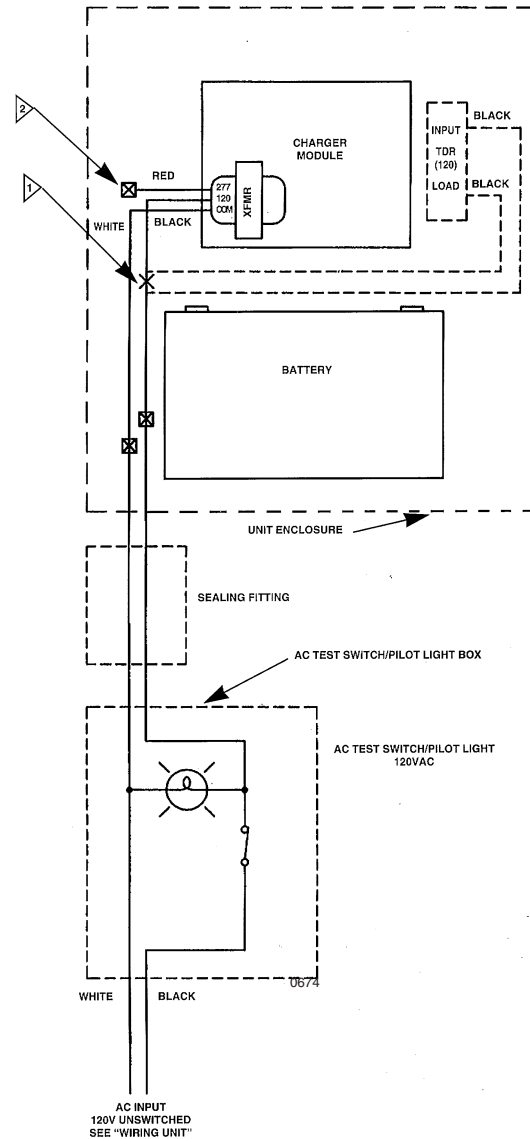
1. Do not use outdoors.
2. Do not mount near gas or electric heaters.
3. Use caution when servicing batteries. Battery acid or in eyes, flush acid with fresh water and contact a physician immediately.
4. Equipment should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.
5. The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
6. Do not use this equipment for other than intended use.
7. Seals must be placed in each conduit within 2 inches of battery enclosure.
8. See seal manufacturer's instructions for details of sealing process.
9. Assembly of all conduit: All conduit fittings must be engaged at least five full threads.
10. Do not push test switch with cover off.
11. Read all instructions provided with individual items.

**Caution:** Lamp and battery replacement must not be done in an explosive atmosphere. Installation and service should only be done by qualified service personnel experienced with hazardous location equipment.

## SAVE THESE INSTRUCTIONS

### 120VAC CONNECTION

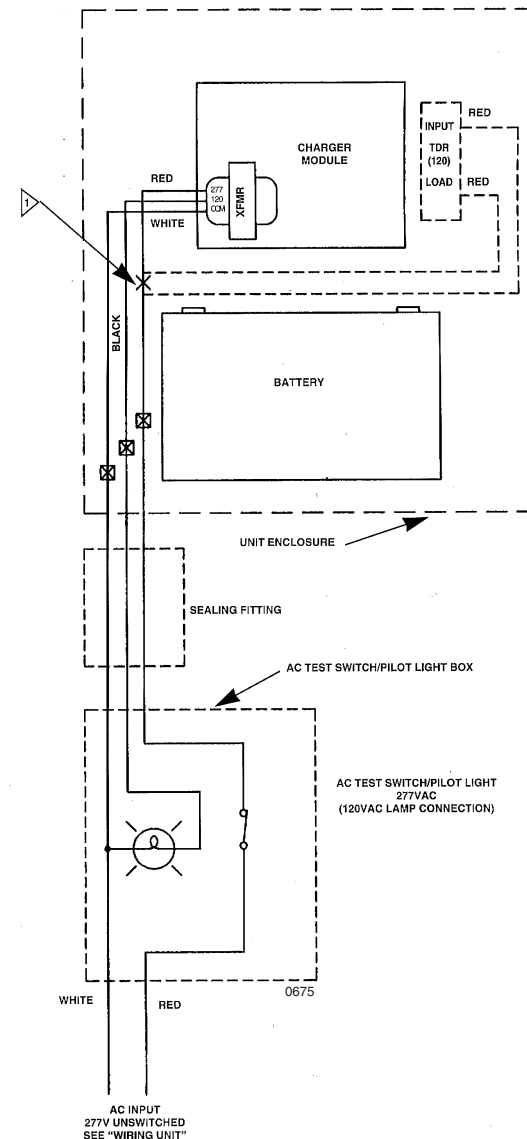
FIG. 5



- NOTE:**
- ▶ 120VAC INPUT IS ROUTED THRU "TDR" WHEN OPTION IS INSTALLED.
  - ▶ CAP UNUSED 277VAC (RED) LEAD OF CHARGER MODULE TRANSFORMER.

### 277VAC CONNECTION

FIG. 6



- NOTE:**
- ▶ 277VAC INPUT IS ROUTED THRU "TDR" WHEN OPTION IS INSTALLED.



## Industrial Series Emergency Lighting Equipment

INSTALLATION • OPERATION • SERVICE

### SPECIFICATIONS

- AC supply voltage:** 120/277VAC ± 10%.
- Power consumption:** 15 watts.
- Battery type:** Pure-Lead maintenance-free battery
- Battery float voltage:** See unit model label
- Discharge duty cycle:** 1½ hours of light to 87½% battery voltage.
- Operating temperature range:** 68°F-86°F
- Charger type:** Solid state—full-wave silicon diode rectification, silicon controlled rectifier output control. Zener diode voltage regulation.
- Transfer means:** Transfer circuit energizes lamps on loss of AC and disconnects lamp when normal power is restored. The circuit disconnects lamps when the battery voltage drops to 70-80% of nominal during prolonged power failure to protect a battery from deep discharge or sulfation.
- Status indication:** Pilot light shows AC is available and reflects charge rate: bright high-charge indication fades to dim glow when battery is fully charged and floating
- Test means:** Push button switch simulates AC failure to test transfer function, battery and lamp readiness and charger response to battery discharge.

Unit is shipped with battery leads disconnected

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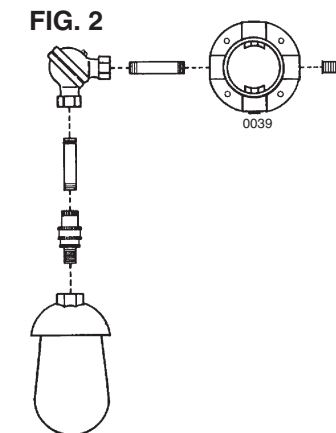
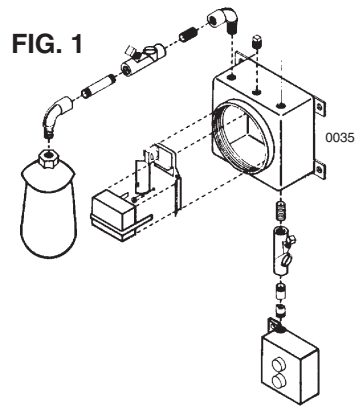


Hubbell Lighting, Inc.

## MOUNTING COMPONENTS

Unit battery enclosure is intended for surface mounting using the holes provided in the four mounting flanges.

- 1) Remove applicable hole plug(s) from top of enclosure for fixture/remote load attachment. AC test switch/pilot light box is intended to attach to conduit opening at bottom of unit enclosure — see Fig. 1.
  - 2) Assemble fixture(s) and AC test switch/pilot light box to the unit enclosure using supplied conduit nipples, elbows and sealing fittings where applicable (remote output conduit not supplied) — see Fig. 1.
- Note:** Fixtures, remote (fused) output and AC test switch/pilot light require sealing fittings in the conduit systems within two (2) inches of the battery enclosure. Also, all conduit connections must have a minimum engagement of five (5) full threads. For remote fixtures (not assembled to unit battery enclosure) — see Fig. 2.
- 3) Run appropriate wiring for fixture(s), remote load (when required) and AC test switch/pilot light to unit enclosure — see “WIRING UNIT.”
  - 4) With completion of conduit system wiring, fill sealing fittings (fiber filler and sealing cement supplied) — see “SEAL INSTRUCTIONS FOR CONDUIT” (Fig. 3).



## SEAL INSTRUCTIONS FOR CONDUIT

Sealing fittings prevent passage of gases, vapors or flames from one portion of a conduit system to another. They also restrict large amounts of ignitable gases or vapors from accumulating to confine explosive pressure.

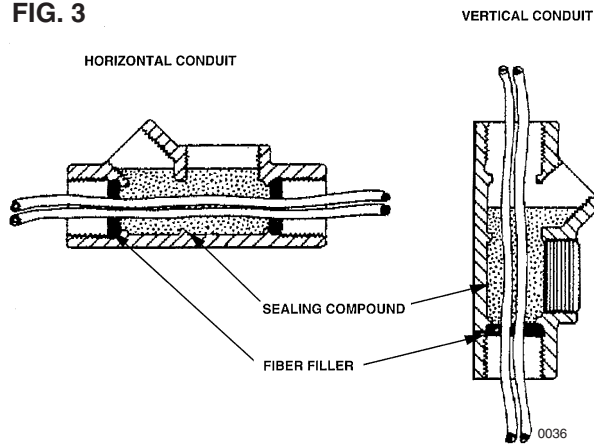
Seals must be placed in each conduit within 2" of battery (unit) enclosure.

Construct a dam in hub being sure the filler is tucked carefully around each conductor. Slightly dampen filler for easier use and to prevent shreds from forming leakage channels. Dams are important. Care and caution must be taken. Conductors should be separated and fiber packed tightly around them.

Mix proper proportion of water with sealing cement. Mix thoroughly in a clean container and pour directly into the sealing unilet. Depth of sealing compound should be equal to the trade size of conduit, having a minimum of 5/8 inch thickness. Close immediately after pouring.

Splices and taps are not to be allowed in sealing fittings.

FIG. 3



## WIRING UNIT

- 1) Provide each unit with a single, unswitched supply (No. 14 AWG wire, min.) from a 120 or 277VAC, 60 Hz branch circuit used for normal lighting in the area to be protected. Make necessary wiring connections at the unit and at the AC test switch/pilot light for either 120 or 277VAC — see fig. 5 or 6.

## Voltage Drop Tables

maximum voltage drop 5%

| 6 volts                 | wire size | watts |     |    |    |    |    |    |    |    |     |
|-------------------------|-----------|-------|-----|----|----|----|----|----|----|----|-----|
|                         |           | 13    | 18  | 25 | 28 | 36 | 44 | 50 | 56 | 70 | 100 |
| wiring distance in feet | #12       | 42    | 30  | 22 | 19 | 15 | 12 | 11 | 9  | 8  | 6   |
|                         | #10       | 65    | 47  | 34 | 30 | 23 | 20 | 17 | 15 | 12 | 9   |
|                         | #8        | 103   | 75  | 54 | 48 | 37 | 30 | 27 | 24 | 19 | 14  |
|                         | #6        | 165   | 120 | 83 | 78 | 60 | 50 | 43 | 39 | 31 | 22  |

| 12 volts                | wire size | watts |     |     |     |     |     |     |     |     |     |
|-------------------------|-----------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                         |           | 13    | 18  | 25  | 28  | 36  | 44  | 50  | 56  | 70  | 100 |
| wiring distance in feet | #12       | 164   | 118 | 85  | 76  | 60  | 47  | 42  | 38  | 30  | 22  |
|                         | #10       | 261   | 188 | 13  | 121 | 94  | 77  | 67  | 64  | 50  | 33  |
|                         | #8        | 415   | 300 | 216 | 193 | 150 | 122 | 108 | 97  | 77  | 54  |
|                         | #6        | 660   | 477 | 358 | 320 | 248 | 200 | 180 | 160 | 127 | 86  |

**Note:** For 120VAC operation be sure to cap unused 277VAC transformer (red) lead.

- 2) Make fixture(s) and/or remote load connections with the blue and yellow output wires of the unit — two sets of non-fused leads for the fixtures, one fused set for the remote load (or third fixture) — see Fig. 4. Do not connect red positive (+) battery lead to the charger module until all other wiring is complete and the branch circuit to which the unit is connected can be energized. Prolonged battery discharge (battery connected without AC supply present) may damage battery — see “PLACING THE UNIT IN SERVICE.”

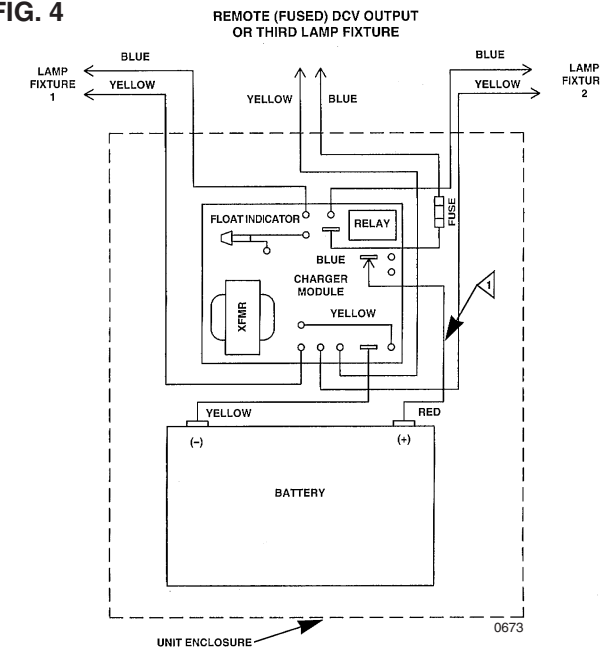
## PLACING THE UNIT IN SERVICE

- 1) Energize the AC circuit to which the unit is connected. The “AC ON” light (AC test switch/pilot light) should light. Connect the red positive (+) battery lead to the charger module — see Fig. 4. Close cover.
- 2) Depress test switch. The unit should transfer to “emergency” operation, energizing the fixture(s) and/or the remote load. Release the test switch to re-transfer unit to normal AC operation, allowing the battery to charge.

**Note:** Temporarily de-energizing and re-energizing the AC supply to the unit will achieve the same results.

## FIXTURE AND BATTERY CONNECTIONS

FIG. 4



**NOTE:** POSITIVE (RED) BATTERY LEAD NOT CONNECTED TO CHARGER MODULE AT TIME OF SHIPMENT. CONTRACTOR TO MAKE CONNECTION AT TIME OF INSTALLATION. SEE “PLACING UNIT IN SERVICE.”

## CONDITIONING CYCLES

Once a year, if power failures have been infrequent or of short duration, perform a full battery conditioning cycle. De-energize the AC circuit to which the unit is connected and let the emergency light(s) operate until they are shut off by the low-voltage disconnect feature of the transfer circuit. Then restore AC power. This puts the battery through a discharge/recharge cycle over its full intended range, and also provides a rigorous test of over-all unit operation.

## CHECKING FLOAT CHARGE VOLTAGE

Float charge voltage is factory set. Consult manufacturer for specifications. Be sure AC supply is within  $\pm 10\%$  of its nominal value and that the unit has operated for 24 hours. With AC “on,” connect an accurate DC voltmeter to the battery terminations. The reading should correspond to the factory specifications.

## ROUTINE CARE

The batteries used in these models are sealed and require no maintenance, but will benefit from certain operation procedures. During routine standby operation, charger output fluctuates only slightly in floating the battery at its full-charge voltage. But, after an AC failure and subsequent battery discharge, charger output increases greatly to recharge the battery as quickly as cell temperature-rise and gas-cycling considerations permit. This vigorous charging action also agitates the electrolyte and tends to reverse physical and chemical changes that can slowly occur in a battery that stands for long periods without cycling. It follows that if power failures are infrequent, occasional deliberate cycling may extend battery life.

## REPLACING A BATTERY

A battery has reached the end of its useful life if it cannot perform according to its rated discharge duty cycle despite normal charger operation and capacity does not increase after repeated battery conditioning cycles.

A battery should also be replaced if it shows any sign of electrolyte leakage, indicating a failure of a pressure seal. In such a case, check float charge voltage after the first 24 hours of charger operation with the new battery to be sure that high float voltage was not the cause of the original seal failure. If float voltage is found to be high, replace the charge module as well.

When replacing the battery, doublecheck for correct polarity. See Fig. 4.

## TAKING A UNIT OUT OF SERVICE

If a unit is to be deliberately taken out of service for an extended period, the battery lead should be disconnected from the charger/transfer module and insulated so that the battery will go into storage in a fully charged condition.

**Note:** Provided the battery is fully charged it can be stored up to 6 months without damage.