

Document 8005
Revision C
June 7, 1996

COOPER Crouse-Hinds

Instruction Manual



Navy Runway Centerline Lights

L-852, Narrow Beam

6.6 Ampere

- *Type V – Inset*
- *Type VI – Base Mounted*
- *Type VII – Deep Can Mounted 10” Dia.*
- *Type VIII – Deep Can Mounted 12” Dia.*

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Crouse-Hinds Division
Crouse-Hinds Airport
Lighting
1200 Kennedy Road
Windsor, CT 06095

For Parts or Technical Service Call (860) 683-4300

**INSTRUCTION MANUAL
L-852 NAVY RUNWAY CENTERLINE LIGHTS**

REVISIONS				
REVISION NUMBER	ISSUE/REISS UE LTR NUMBER	DESCRIPTION	CHKD	APPROVED
A	8394	1)ADDED ALPHA NO. AND TWX NO. TO COVER PAGE 2) ADDED 24" DIM. TO FIG. 1, 3) TYPE VI INSTALLATION IN FIG. 2, DELETED BONDO FROM POTTING NOTE IN FIG. 6.	6/10/80 DCW	
B	A94-381	UPDATED TO LATEST MANUFACTURING HARDWARE CODES, FILTER CODES AND OPTIONS.	11/8/94 PJK	
C		PG. 1, ADDED -NF OPTION; PG.3, ADDED PARA. 1.5; PG. 12 PARA 3.2.1 REVISED TO ADD RECOMMENDATION ABOUT DAMAGED LENS; PG. 12, PARA 3.2.2 REVISED EXPLANATION OF FILM DISC CUTOUT & LAMP MARKINGS; PG. 16, ADDED NOTATION FOR - NF OPTION; PG. 18, ADDED -F TO LAMP P/N'S, ADDED -NF NOTATION, P/N 19899 WAS 19898.	6/7/96	

INSTRUCTION MANUAL
L-852 NAVY RUNWAY CENTERLINE LIGHTS**LIMITED PRODUCT WARRANTY**

THE FOLLOWING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, BUT NOT BY WAY OF LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

Crouse-Hinds Airport Lighting Products warrants to each original Buyer of Products manufactured by the Company that such Products are, at the time of delivery to the Buyer, free of material and workmanship defects, provided that no warranty is made with respect to:

- (a) any Product which has been repaired or altered in such a way, in Company's judgment, as to affect the Product adversely;*
- (b) any Product which has, in Company's judgment, been subject to negligence, accident or improper storage;*
- (c) any Product which has not been operated and maintained in accordance with normal practice and in conformity with recommendations and published specification of Company; and,*
- (d) any Products, component parts or accessories manufactured by others but supplied by Company (any claims should be submitted directly to the manufacturer thereof).*

Crouse-Hinds Airport Lighting Product's obligation under this warranty is limited to use reasonable effects to repair or, at its option, replace, during normal business hours at any authorized service facility of Company, any Products which in its judgment proved not to be as warranted within the applicable warranty period. All costs of transportation of Products claimed not to be as warranted and of repaired or replacement Products to or from such service facility shall be borne by Purchaser. Company may require the return of any Product claimed not to be as warranted to one of its facilities as designed by Company, transportation prepaid by Purchaser, to establish a claim under this warranty. The cost of labor for installing a repaired or replacement product shall be borne by Purchaser. Replacement parts provided under the terms of this warranty are warranted for the remainder of the warranty period of the Products upon which they are installed to the same extent as if such parts were original components thereof. Warranty services provided under the Agreement do not assure uninterrupted operations of Products; Company does not assume any liability for damages caused by any delays involving warranty service. The warranty period for the Products is 24 months from date of shipment or 12 months from date of first use whichever occurs first.

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SAFETY NOTICES

This equipment is normally used or connected to circuits that may employ voltages which are dangerous and may be fatal if accidentally contacted by operating or maintenance personnel. Extreme caution should be exercised when working with this equipment. While practical safety precautions have been incorporated in this equipment, the following rules must be strictly observed:

KEEP AWAY FROM LIVE CIRCUITS

Operating and maintenance personnel must at all times observe all safety regulations. Do not perform maintenance on internal components or re-lamp with power ON.

RESUSCITATION

Maintenance personnel should familiarize themselves with the technique for resuscitation found in widely published manuals of first aid instructions.

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IDENTIFICATION CODES AND PART NUMBERS

FOR

NAVY RUNWAY CENTERLINE LIGHTS

CODE

- L-852 = RUNWAY LIGHT
- L-852N = NARROW BEAM RUNWAY LIGHT
- L-852N-2 = NARROW BI-DIRECTIONAL RUNWAY LIGHT
- TYPE V = SEPARATE INSET MOUNTING BASE
- TYPE VI = DEEP CAN MOUNTED 10" DIA. L-868A
(DEEP CAN IS NOT PART OF LIGHT ASSEMBLY)
- TYPE VIII = DEEP CAN MOUNTED 12" DIA. L-868B
(DEEP CAN IS NOT PART OF LIGHT ASSEMBLY)

<u>LIGHT CODE</u>	<u>TYPE</u>	<u>WATTS</u>	<u>BASIC PART NUMBER</u>
L-852N-2	V	45	18749
L-852N-2	VI	45	20324
L-852N-2	VII 10" L-868A TYPE II	45	20381
L-852N-2	VIII 12" L-868B TYPE II	45	20382

NOTE: TYPE VII AND TYPE VIII ASSEMBLIES HAVE L-823 CONNECTORS, AND ALL BASE RECEPTACLES ARE STAINLESS STEEL.

ORDERING INFORMATION

XXXXX - XX - XX

<u>BASIC PART NUMBER:</u>	<u>OPTIONS:</u>
18749	CR=CORROSION
RESISTANT	
20324	OPTICAL HOUSING
20381	65=65W LAMP(45 LAMP STANDARD)
	NF=WITHOUT FILM DISC CUTOUT
	(SEE PAGE 10, PARA 3, 2.2)
20382	
19900 (OPTICAL ASSY)	<u>FILTER COLOR(S)</u> (SEE
PAGE 2)	

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Part Numbers for ordering fixtures are selected as follows:

- 1) The basic part number will be followed by the filter color code.
- 2) Example: (See Color Table Below)

18749-RC = Bi-directional narrow beam inset Runway Light with a red filter on one side and a white beam on the other.

20382-RC = Bi-directional, deep can mounted, 12” diameter, narrow beam runway light with a red filter on one side and a white beam on the other side.

COLOR TABLE

Select basic part number from identification codes on Page 1.

Dash Number	Filter Color
-G	GREEN
-Y	YELLOW
-R	RED
-X	BLAND (NO COLOR)
-C	CLEAR (NO FILTER)

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1.0 GENERAL

- 1.1 The Crouse-Hinds Runway Lights are inset light fixtures designed for installation in runways and any other location where visual guidance of moving aircraft or vehicles is desirable. It is weatherproof and is designed to withstand roll-over loads without damage. Each light fixture consists of a base receptacle and a removable optical assembly. The light fixture is available in four basic styles:
- a. Type V fixtures are designed for direct bonding into the pavement.
 - b. Type VI fixtures mount to a shallow base bonded into the pavement.
 - c. Type VII and Type VIII fixtures are designed for mounting to L-868 deep cans connected to conduit systems.
 - d. Type VII.
- In addition, each type of light is available, with or without colored filters and in bi-directional or unidirectional narrow beam styles. Unidirection is achieved by using a blank filter. Type VI, Type VII and Type VIII light assemblies allow for the use of a special spacer block when pavement resurfacing is necessary.
- 1.2 The base receptacle associated with each type of light consists of a casting, with corrosion resistant plating, containing the wire leads and male contacts for electrically connecting the optical assembly.
- 1.3 The optical assembly (19900) is a self-contained cartridge containing a 6.6 ampere lamp, lenses, color filter receptacles and film disc cutouts for series circuit installations. This assembly is contained in a two piece rectangular box sealed by a special o'ring. The optical assembly fastens to the base receptacle with four flat head screws.
- 1.4 The light assemblies are normally shipped completely assembled ready for installation.
- 1.5 The electrical leads on the bottom of the base receptacle should not be used to lift or handle the light nor should they be used to pull the plug. The correct procedure for inserting or pulling the L-823 plug is to firmly grip the plug to make or break connections. Pulling wires can break waterproof seals and cause electrical leakage.

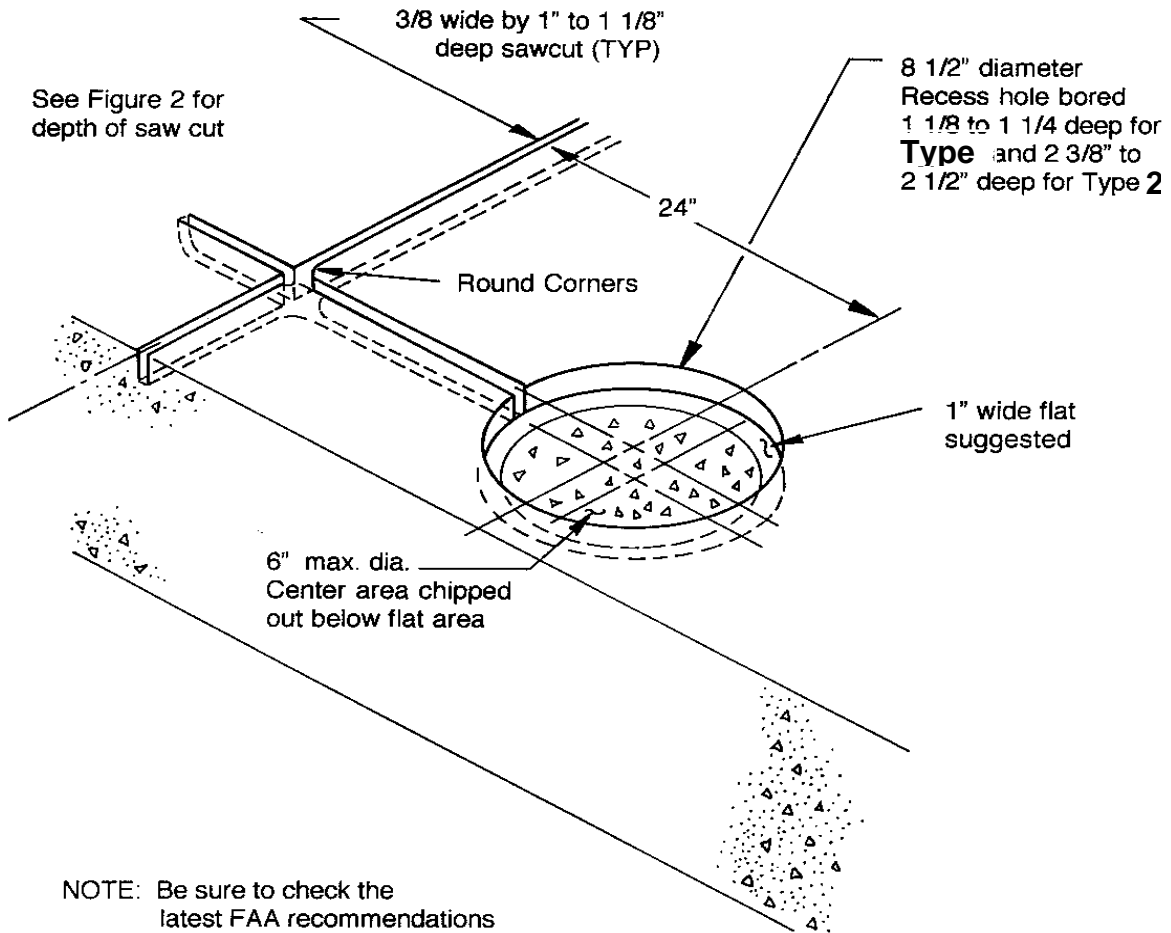
**INSTRUCTION MANUAL
L-852 NAVY RUNWAY CENTERLINE LIGHTS****2.0 INSTALLATION****2.1 Pavement Recess and Wireways**

Drill recess in pavement as illustrated in Figure 1. The depth of the hole is dependent on which type of light will be installed. Be sure that the recess side walls are perpendicular to the pavement surface; the bottom surface must be flat or slightly concave to ensure the base rests securely and in true position. The recess can best be drilled using a 8 1/2" diameter diamond faced core drill in a sturdy, stable drill rig.

- 2.1.1 The wireways should be sawed, using a 1/4" thick diamond faced saw, as shown in Figure 1. When wireways cross construction joints, the sawcuts should extend 1" below the existing joint for a distance of 6" each side of the joint. Fill to top of pavement with an appropriate joint sealing filler in accordance with item P-605, Type III, of FAA Standard Specifications for the Construction of Airports.
- 2.1.2 Prior to installation of the Type VI mounting base or Type V base receptacle and wires, be sure that all surfaces of the recess and the wireways are clean and dry. If any of these surfaces are damp, it is desirable that they are dried out with a heat lamp or a flame and blown clean with a compressed air blast.
- 2.1.3 It is recommended that the fixture, the recess, and the wireways in the pavement be at a temperature of not less than 50° F (10° C) before starting installation (unless the adhesive compounds used are designed for curing at a lower temperature).
- 2.1.4 Base Receptacle - CAUTION - NEVER HANDLE ANY BASE RECEPTACLE BY THE LEADS AS THIS CAN BREAK THE WATERPROOF SEAL AND CAUSE ELECTRICAL LEAKAGE.

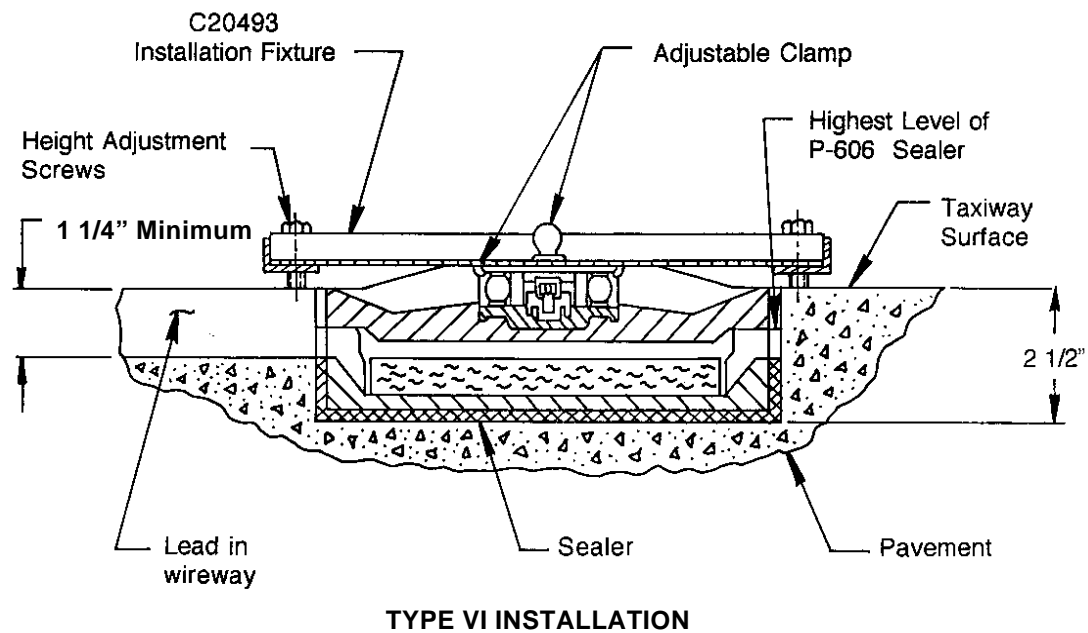
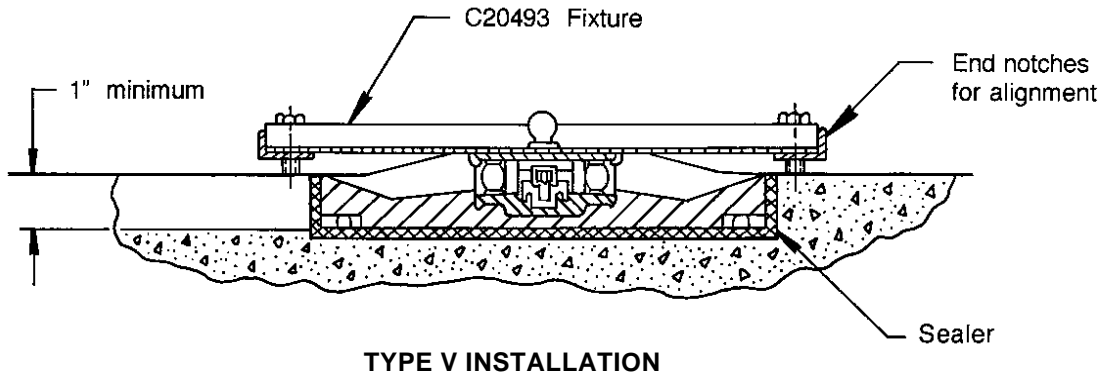
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1. Lights to be centered to the side of longitudinal construction joint when joint is



BORING DETAILS
FIGURE 1

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NOTE: Installation must be in accordance with this manual and FAA installation requirements. Inspections should be made frequently during the installation.

See design handbook of aviation lighting drawing 20374 sheet 2 and 3 for alternate installation details.

TYPE V and TYPE VI RUNWAY LIGHT INSTALLATION
FIGURE 2

INSTRUCTION MANUAL
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2.2 Type V Light Installation

Attach the C20493 mounting fixture to the top of the optical assembly with the adjustment clamp as shown in Figure 2.

CAUTION - DO NOT TOUCH THE SCREWS WHICH HOLD THE OPTICAL CARTRIDGE IN PLACE.

Train the leads in the wireways cast into the bottom of the base receptacle so that they emerge through the wiring channel that lines up with the runway in the pavement when the light beam is properly oriented. Take care not to damage any wires during this procedure.

- 2.2.1 Place the light assembly and attached fixture upside down beside the recess in the pavement in which it is to be placed. With the leads properly trained in the wireways of the base, completely fill all of the wireways, wiring channels and the recess in the base to the level of the peripheral bearing surface with an approved adhesive compound. It is very important that this be done carefully and completely to eliminate all voids in the channels and around the leads.
- 2.2.2 As soon as the base is properly prepared, coat the bottom and sides of the recess in the pavement with the same compound in sufficient quantity to assure complete filling of all voids around and under the base when the base is placed into the recess.
- 2.2.3 Immediately after preparation of the base and the recess, as detailed above, and before the compound has started to cure, invert the base so that the compound side is down and press it into the recess until the outer periphery of the upper surface of the base is flush with the pavement, making sure that the leads are properly located in the correct wireways.
- 2.2.4 Without delay, orient the base receptacle to assure proper alignment of the light beams by rotating the base while sighting along the C20493 alignment jig. (See Figure 2).
- 2.2.5 After the base has been properly positioned and the adhesive begins to set, carefully remove the alignment fixture. Remove any excess adhesive compound with a putty knife or similar tool. After installation, the light assembly should remain undisturbed for 24 hours to assure proper curing of the adhesive compound.

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- 2.2.6 Connections. Splice the Type V fixture leads to the power cables using squeeze connectors, crimped with the proper tool. Insulate each splice carefully using either heat shrinkable insulating tubing (ScotchTite Heat Reactive Tubing or equal) properly applied or three layers of plastic electrical insulating tape applied with half overlap. Train the leads and power cables carefully so they run along the bottom of the sawed wireways. Small wads of plastic insulating tape may be used to wedge the leads and cables in the bottom of the wireways if necessary.
- 2.2.7 Fill the wireways completely with an approved polyester compound and let cure for at least 24 hours before disturbing.

2.3 Type VI Light Installation

Place the light assembly (mounting base attached) beside the recess in the pavement in which it is to be placed. Attach the C20493 installation fixture to the top of the unit. See Figure 2. Be sure that the four wire clearance holes in the sides of the unit are filled with a substance such as duct-seal or MORTITE to prevent sealer from running into the mounting base.

- 2.3.1 Clean the bottom of the mounting base and sides (approx. 1" up from bottom) with acetone. Cover the bottom with a thick layer of paste type sealer material.
- 2.3.2 Immediately after preparations of the base as detailed above and before the compound has started to cure, invert the unit so that the compound side is down and press it into the recess until the outer edges of the fixture are flush with the surrounding pavement. Leveling screws have been provided if necessary.
- 2.3.3 Without delay, orient the light assembly to assure proper alignment by rotating the fixture while sighting along the "V" notch on both ends of the fixture. A chalk line or surveyors mark should be used for reference.
- 2.3.4 After the paste sealer reaches the initial set, remove the installation fixture and the base receptacle which is held on by four hex head bolts. Place the power lines in the wireways and into the mounting base. Be sure to leave adequate slack in the wire. Be sure to check the latest FAA installation requirements and to have the first few lights inspected before proceeding with the installation. Place temporary plugs in wireways 6 inches back from the cored holes and in the mounting base wire entrances. Fill the voids around the mounting base with P- 606 liquid sealer up to the top of the mounting surface.

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2.3.4 Continued

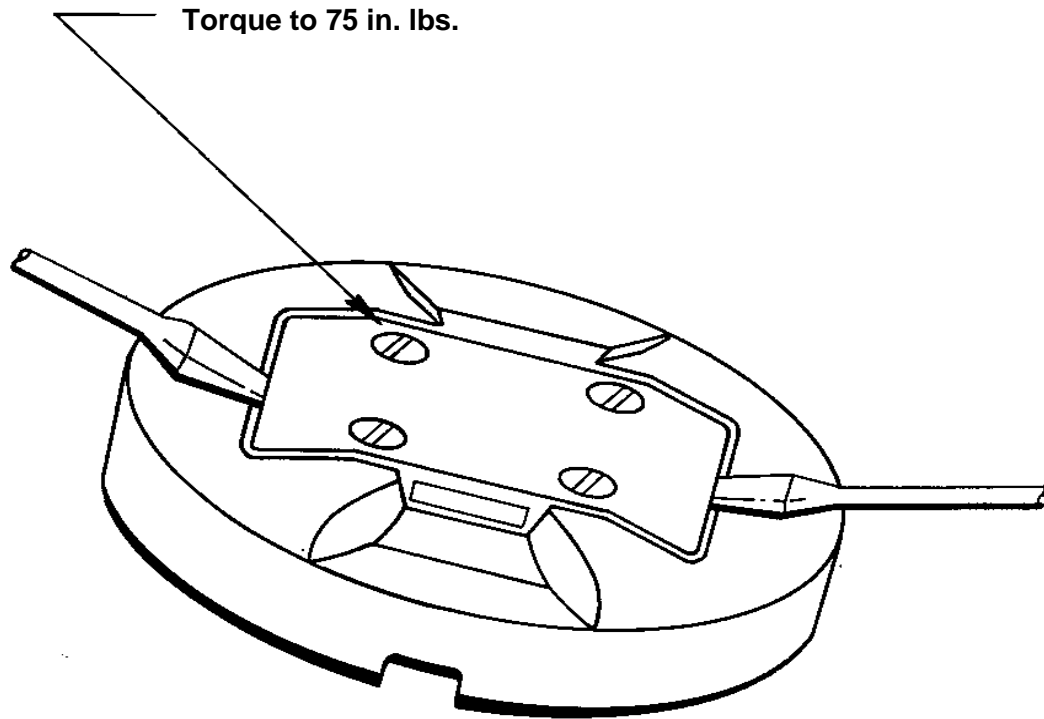
CAUTION: Be sure that the mounting flange is clean and free of sealer and that the bolt holes are clean before putting the light back on. Dirt in these areas will shorten the service life of the unit.

- 2.3.5 The light assembly is now ready for installation. Splice the No. 10 AWG wire to the light assembly leads with suitable pre-insulated connectors. Make the crimp splices with a tool that requires a complete crimp before releasing. Whenever possible, the splice should be made so that it will be in the wireway adjacent to the light fixture so that only the #12 fixture wire will be exposed.
- 2.3.6 After the wire splices are made, finish pouring the liquid sealer into the 6 inches of wireways near the fixture. Be sure to make a good dam to prevent sealer from flowing into the mounting base.
- 2.3.7 Be sure the closed cell foam is in the mounting base. Coil the leads in the mounting base in order to prevent them from being crushed and to allow the base receptacle to be placed securely on the mounting base.
- 2.3.8 Secure the light assembly by applying a drop of LOCTITE 242 to each of the four 3/8" bolts, being sure to torque them to 225 inch pounds. Be sure not to disturb the screws in the optical assembly as this will void the warranty on the unit.

2.4 Type VII and Type VIII Light Installation

Connect the L-823 connector to the transformer in the deep can. Apply LOCTITE 242 to the bolts and secure the light assembly to the can. Torque the bolts to 180 inch pounds.

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NOTE: Read paragraph 3.1 carefully. Be sure to remove all dirt from the cavity and screw holes in the base receptacle. Many maintenance departments use a vacuum cleaner. Be sure to put a small layer of silicone grease on 18448 sleeve before returning the optical assembly to the base.

REMOVING THE OPTICAL ASSEMBLY
FIGURE 3

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3.0 MAINTENANCE

The preferred method of maintaining these lights is to periodically and systematically replace the Optical Assembly with a spare Optical Assembly and return the replaced assembly to the maintenance shop for renovation. As an alternative, the Optical Assembly can be serviced in the field, but it is recommended that field servicing be limited to cleaning the lenses and contacts as described in the paragraphs below.

3.1 Optical Assembly Replacement

Remove the optical assembly from the base receptacle by loosening the four slotted flat head screws and gently lift the optical assembly out using screw-drivers in the slots provided (see Figure 3). After the optical assembly is out, the following procedure should be followed:

- a) Clean the base receptacle cavity with a vacuum cleaner or compressed air blast. Spray the cavity with silicone release compound.
- b) Check the contacts for corrosion or pitting. If acceptable, gently tighten the contacts with a small screw driver to ensure proper seating. Wipe the contacts with a clean, dry cloth.
- c) Apply a light coating (1/32" thick) of silicone grease to the grommet which surrounds the female contacts in the bottom of the optical assembly.
- d) Press the optical assembly back into the base receptacle being careful not to cock the unit as it goes in. Cocking the unit may distort the female contact and cause contact problems.
- e) Apply one drop of LOCTITE 242 to the engaging threads at the end of each flathead screw. Insert the four screws and torque to 75 inch pounds.

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3.2 Repairing and Relamping the Optical Assembly

3.2.1 Cleaning Lenses. Clean the outer surfaces of the lenses with a detergent solution.

If the lens surface is coated with a substance impervious to the detergent, a suitable solvent should be sparingly applied with a wad of cotton or a patch of cloth on the end of a suitable wood splint. After the solvent has acted, the remaining solvent and softened coating should be removed with a clean piece of cotton or cloth. If a solvent is used, care should be taken to avoid excessive contact between the solvent and the gaskets, and the light window should be subjected to a gentle air blast to evaporate or remove all remaining solvent. Close

examination of the lenses will allow for easy fixture identification. If a lens is broken, shows signs of leakage, or is badly pitted, it must be replaced. It is suggested that badly damaged units be returned to Crouse-Hinds for refurbishment. Positioning of the lens requires special fixturing to assure photometric requirements will be maintained. Contact Crouse-Hinds Sales for terms and delivery.

3.2.2 Relamping

The lamp assembly also contains a film disc cutout, which allows their use in series circuits where multiple fixtures are powered from a single isolation transformer or for shorting the secondary of the isolation transformer preventing the isolation transformer operating in an open secondary condition. Be advised most lamp monitoring systems require an open secondary (use “-NF” (no film disc cutout) lamps) on the isolation transformer to detect lamp outs. The wattage notation is etched on all replacement lamp assemblies on the ferrule at one end and the lamp part number and whether it contains a film disc cutout (“-F”) or no film disc cutout (“-NF”) on the other ferrule. Replacement of the lamp can be accomplished by opening the optical box and removing the two screws which hold the lamps to the contact studs. Replace the lamp over the two studs being sure to replace the lock washers under the two screws. When closing the optical box, be sure the o’ring is lubricated with silicone grease and properly positioned in the o’ring groove. Replace the four small flat head screws in the bottom of the optical assembly. Be sure to use LOCTITE 242 on the four screws.

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3.2.3 Contact Replacement

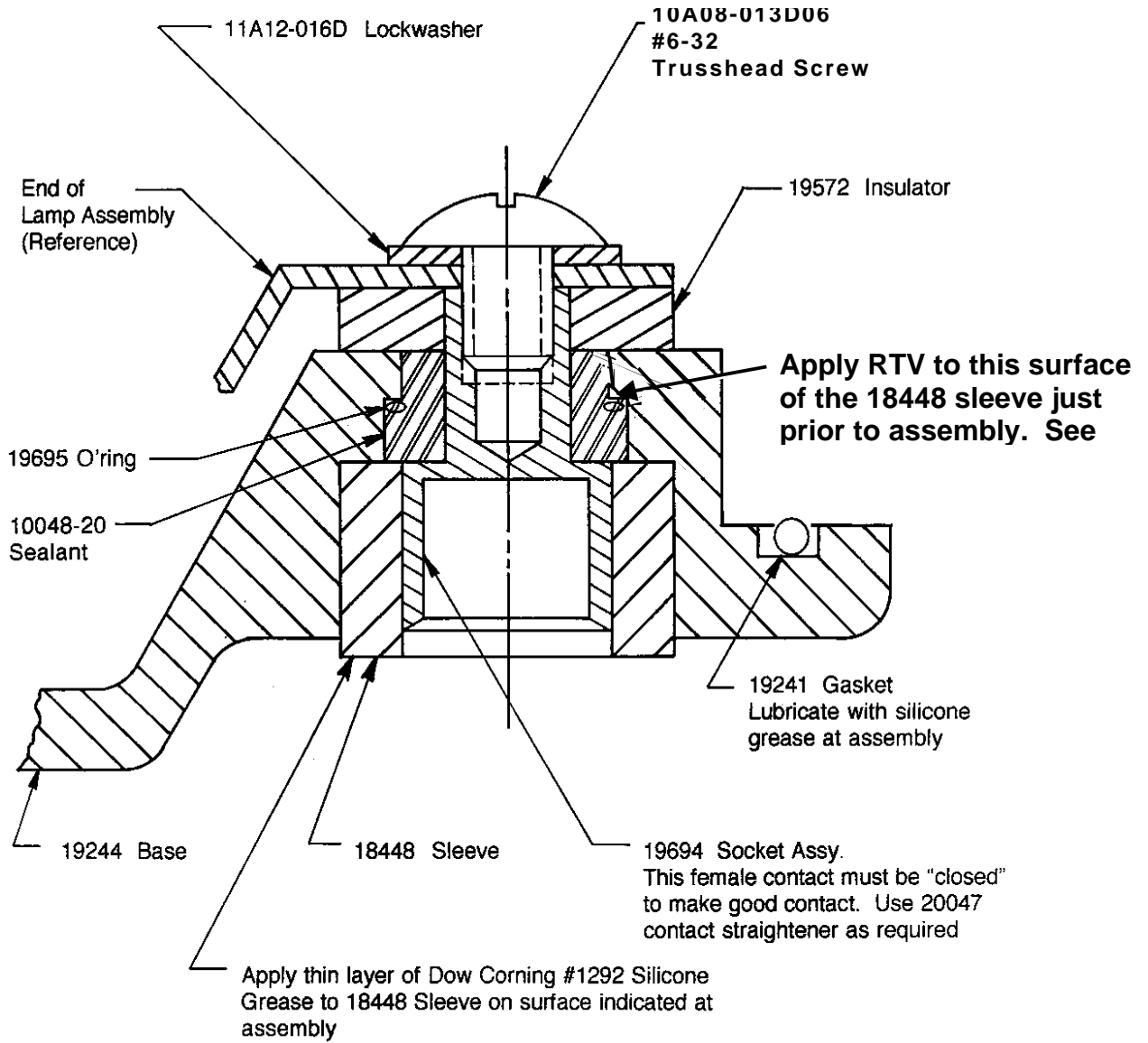
If the female contacts are severely bent or otherwise damaged, they must be replaced. This is accomplished as follows: (see figure 4)

- a) Force the old contact out.
- b) Clean the aluminum base with a solvent such as alcohol or ketone.
- c) Place the small o'ring on the contact assembly as shown and apply a light coat of FS1292 grease to the o'ring. Insert the contact assembly into the aluminum base so that the hex head fits firmly in the hex receptacle. Place an insulator (see Figure 4) over the stud.
- d) Put a lamp assembly on the studs, as discussed in paragraph 3.2.2, and lock the contact tightly into place by gently tightening the screws which holds the lamp in place.
- e) Apply a thin bead of RTV 116, with a 30 cc syringe to the P/N 18448 sleeve as shown in Figure 4. Insert the sleeve into the base, making sure it seats properly. Allow the RTV to cure completely before energizing. RTV 106 may be substituted for RTV 116 in this application.

3.2.4 Gaskets

There are two types of gaskets which must periodically be replaced. They are the o'ring, molded into a rectangular pattern, and the grommets around the female contacts. These grommets must be in good condition at all times. If there are any signs of leakage or other deterioration, the gaskets must be replaced.

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REPLACEMENT OF CONTACTS
FIGURE 4

**INSTRUCTION MANUAL
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The silicone greases recommended herein should meet MIL-S-8660. The following product is recommended.

- a) Dow Corning No. 1292 Silicone Grease

3.2.6 Silicone Release Compound

The silicone release compound is a common item generally used with dies and molds.

3.3 Cleanliness and Workmanship

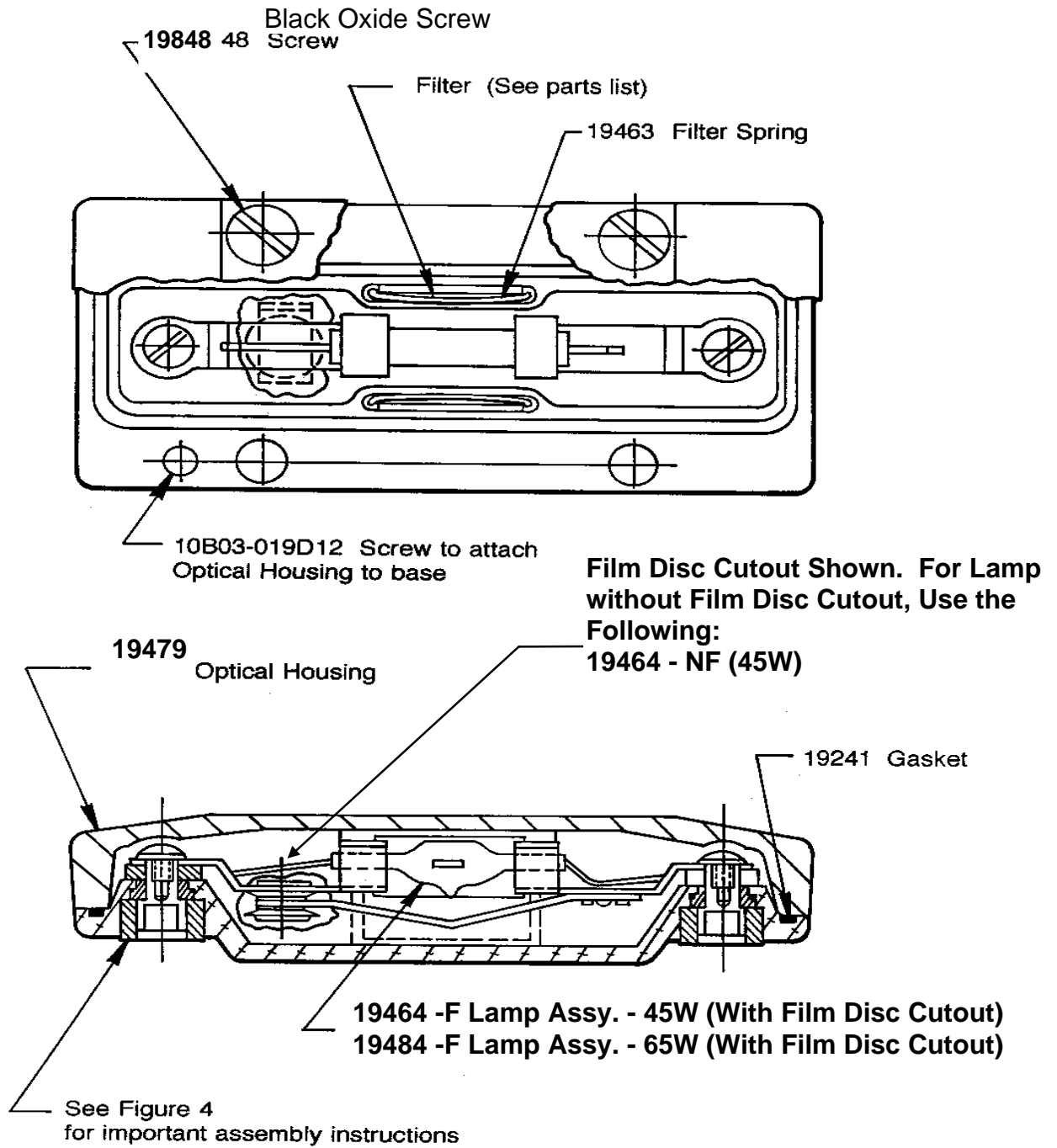
Service life depends upon the entire light assembly being waterproof and free of dirt on all mating and sealing surfaces. Those in charge of servicing should read this manual carefully and develop schedules and procedures in accordance with recommended practice. If unusual conditions arise, contact the Crouse-Hinds Field Service Department for recommendations.

4.0 UNIDIRECTIONAL LIGHTING

Any of the standard bi-directional runway lights may be made unidirectional by using the following method:

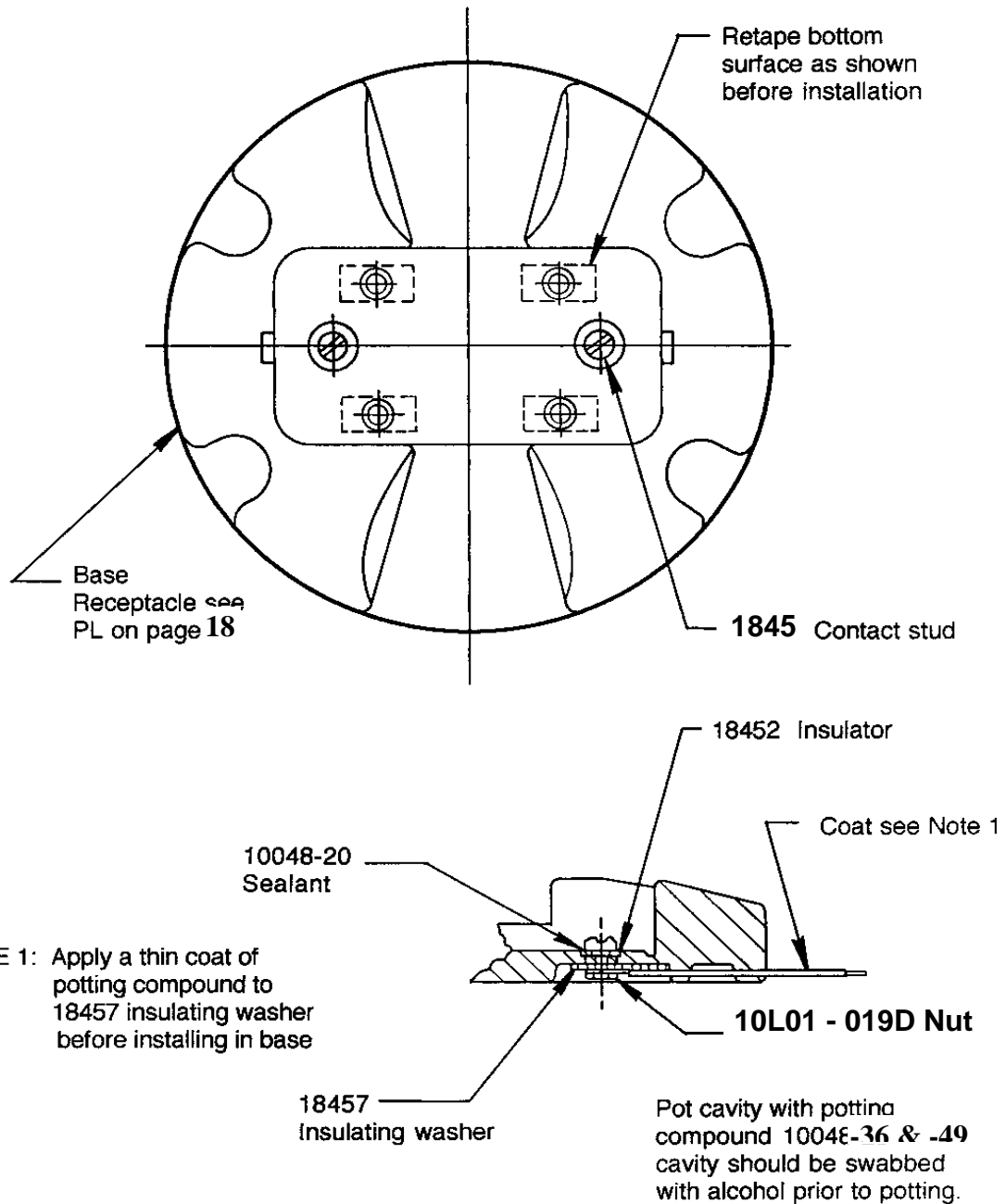
- a) Insert a special blank (Crouse-Hinds P/N 19317) into the slot where the colored filter glass would normally be located.

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1990 OPTICAL ASSEMBLY
FIGURE 5

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INSTALLATION DETAILS
FIGURE 6

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PARTS LIST

See identification codes in front of this manual for complete assembly numbers. The numbers on this list refer to Figures 4, 5, 6.

PART NUMBER	NUMBER PER UNIT	DESCRIPTION
18448	2	*WATERPROOF SLEEVE
20654-G	AS REQ'D	GREEN FILTER
20654-Y	AS REQ'D	YELLOW FILTER
20654-R	AS REQ'D	RED FILTER
19317	AS REQ'D	BLANK
19241	1	*GASKET
19244	1	OPTICAL BASE
19463	AS REQ'D	FILTER SPRING
19464-F**	1	*LAMP ASSY 45W
19848	4	SCREW-FLAT HEAD
19572	2	INSULATOR
19694	2	SOCKET ASSY
19695	2	O'RING
19899	1	*HOUSING-OPTICAL
10B03-019D12	4	SCREW #10-32 X 3/8 LG.
10A08-013D06	2	SCREW #6-32 X 3/16 LG.
11A12-016D	2	LOCKWASHER #8
18781	1	BASE RECEPTACLE - TYPE V
20328	1	BASE RECEPTACLE - TYPE VI
20357	1	BASE RECEPTACLE - TYPE VII
20363	1	BASE RECEPTACLE - TYPE VIII
18453	2	CONTACT STUD
19484-F**	AS REQ'D	*LAMP ASSY 65W

Note: If Base Receptacles are to be extensively refitted, contact Crouse-Hinds for detailed instructions.

*Recommended for initial spares, at least 20 units or 5% of the total installation.

**Add -NF to end of part number for lamp without film disc cutout.