

OCEAN ENGINEERING DIVISION
UNITED STATES COAST GUARD
WASHINGTON D.C.

MARCH 1999

SPECIFICATION FOR
SOLAR POWER AIDS TO NAVIGATION
INSTALLATION KIT

SPECIFICATION G-SEC-385C

1. SCOPE

1.1 Purpose. This specification establishes the requirements for assembling and packaging installation kits to be used to install solar power systems on U.S. Coast Guard aids to navigation.

1.2 Government Furnished Equipment (GFE). A Battery Warning Label and Instructions for the Solar Power Aids to Navigation Installation Kit will be furnished for inspection as listed in section H of the solicitation/contract.

1.2 Precedence. Any ambiguity or conflict between the following documents shall be resolved by utilizing the following precedence:

- a. This specification.
- b. Applicable documents.

2.0 APPLICABLE DOCUMENTS.

2.1 U.S. Coast Guard Specifications.

G-SEC-342A Aids to Navigation Bird Springs
Feb 1999

3. REQUIREMENTS.

3.1 General. The Contractor shall provide, assemble and package in accordance with this specification a Solar Power Aids to Navigation Installation Kit containing the following items:

- 3.1.1 4 ea. Bird Springs manufactured in accordance with specification G-SEC-342A.
- 3.1.2 4 ea. Hex-head, 316 stainless steel bolts, 3/8"-16 x 1-1/2 inches (entire shank threaded).
- 3.1.3 8 ea. Hex-head, 316 stainless steel nuts, 3/8"-16.
- 3.1.4 8 ea. Split-ring, 316 stainless steel lock washers, 3/8".
- 3.1.5 6 ea. Terminal lugs, solderless insulated ring tongue type, sized for a 3/8" stud and 12 AWG wire. Material shall be solder tinned copper or tin electroplated copper.
- 3.1.6 2 ea. Terminal lugs, solderless insulated locking fork type, sized for a number 8 stud and 12 AWG wire. Material shall be solder tinned copper, tin electroplated copper or tin electroplated phosphor bronze.
- 3.1.7 2 ea. Terminal lugs, solderless insulated locking fork type, sized for a number 8 stud and 16 AWG wire. Material shall be solder tinned copper, tin electroplated copper or tin electroplated phosphor bronze.
- 3.1.8 1 ea. Black nylon or polyester stuffing tube with neoprene packing gland. The stuffing tube shall consist of four separate pieces: the collar, rigid vinyl washer(s), packing and bushing body. The bushing body shall have a 3/4" NPT threads and the packing sized for a cable 0.125" to 0.25" in diameter. (Tideland Signal Corporation part number 620.1004-05 or equal, phone: 713-681-6101), or (Dorn M19622/3-002 with size 2A neoprene bushing, or equal, phone: 781-662-9300).
- 3.1.9 6 ea. Plastic mounting spacers made from hard, high density black polyethylene, as shown in Figure 1.
- 3.1.10 6 ea. Vandal Resistant Nuts, model VCN-138-6-6061 or equal. Anodized 6061 Aluminum, 3/8"-16 threads. (Simi Fastening Systems, phone: 805-581-2400).

- 3.1.11 3 ea. Black polypropylene or black ultraviolet-stabilized nylon cable ties, length 15 inches.
- 3.1.12 3 ea. Black polypropylene or black ultraviolet-stabilized nylon cable ties, length 8 inches.
- 3.1.13 1 ea. Instructions for Solar Power Aids to Navigation Installation Kit (see GFE).
- 3.1.14 2 ea. Battery Warning Labels (see GFE).

3.2 Parts Substitution. The Contractor may propose to the Contracting Officer, in writing, the substitution of parts equivalent in design, performance, quality, and construction accompanied by data substantiating the claim for equivalency. The Contractor shall allow the Government 30 calendar days after receipt for review and approval of such proposed substitutions prior to installation of the components. No substitutions shall be made without prior written approval from the Contracting Officer.

PLASTIC MOUNTING SPACER

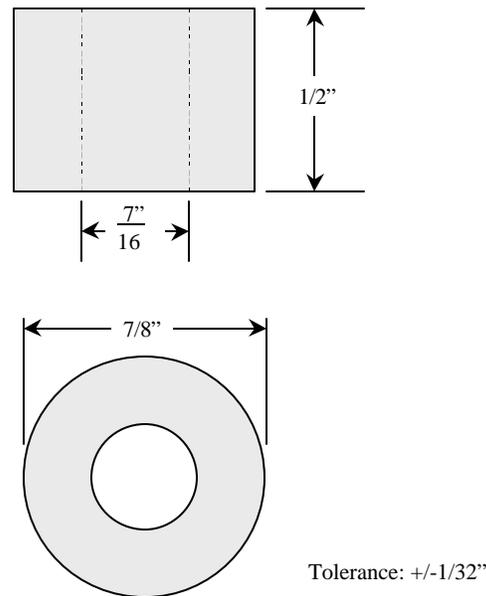


Figure 1

4. QUALITY ASSURANCE PROVISIONS.

4.1 Production Inspection. The Contractor shall conform to the requirements of section H of the Solicitation/Contract.

5. PREPARATION FOR DELIVERY

5.1 Packaging. Each installation kit shall be packaged in box whose exterior dimensions (L + W + H) do not exceed 22 inches. Additional packaging instructions are detailed in section D of the Solicitation/Contract.

5.2 Marking. Marking shall be in accordance with section D of the Solicitation/Contract. The National Stock Number (NSN) is CG-5340-01-176-4179

Specification G-SEC-385C
Solar Power Aids to Navigation Installation Kits

March 1999

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INSTRUCTIONS FOR
SOLAR AIDS TO NAVIGATION INSTALLATION KIT
NSN 5340-01-176-4179

CONTRACT NUMBER: _____

MANUFACTURER'S NAME & ADDRESS

ADDITIONAL INSTRUCTIONS:
COMDTINST M16500.19A
SHORT RANGE AIDS TO NAVIGATION SERVICING GUIDE

KIT CONTENTS

In this Kit		Reordering Info		
ITEM	QTY	NSN/PART NUMBER	UNIT	SOURCE
Bird Springs	4	5360-01-100-3111	25	ELC Baltimore
Bolt, 3/8-16 x 1-1/2", SS	4	5306-00-543-5570	each	ELC Baltimore
Nut, 3/8-16, SS	8	5310-00-989-5956	each	ELC Baltimore
Lock Washer, 3/8", SS	8	5310-00-984-7042	each	ELC Baltimore
Theft Resistant Nuts	6	5310-01-198-8978	50	ELC Baltimore
Plastic Mounting Spacers	4	5365-01-198-9005	25	ELC Baltimore
Stuffing Tube	1	620.1004-05 or 5975-00-808-4064 (Tube) 5330-00-202-2586 (Packing)	each each each	Tideland Signal Corp. 713-681-6101 ELC Baltimore ELC Baltimore
Ring Tongue Lug, 3/8", 12 AWG	6	3M RV10-38Q	25	Allied Electronics 1-800-433-5700
Locking Fork Lug, #8, 16 AWG	2	3M Lfv14-8L	50	Allied Electronics 1-800-433-5700
Locking Fork Lug, #8, 12 AWG	2	3M Lfv10-8Q	25	Allied Electronics 1-800-433-5700
Cable Ties, 15", Black	3	3M 06204	50	Allied Electronics 1-800-433-5700
Cable Ties, 8", Black	3	3M 06202	100	Allied Electronics 1-800-433-5700
Battery Labels	2			Locally Reproduced

Installation Instructions for structure assembly with a 10-watt solar panel

Installation Instructions for structure assembly with a 20-watt or 35-watt solar panel

Installation Instructions for buoy assembly with a 10, 20 or 35-watt solar panel

STRUCTURE ASSEMBLY
INSTALLATION OF A 10-WATT SOLAR PANEL

1. Install solar structure mount so that the solar panel faces South (Note: South of the equator the panel should face North).
2. Install battery box, cable and battery in accordance with COMDTINST M16500.19A. Do not connect the battery at this time.
3. Mount lantern to solar structure and level in accordance with COMDTINST M16500.19A. If the solar panel will terminate at the flasher, install the stuffing tube supplied with the kit in an unused cable entrance in the base of the lantern.
4. Install a plastic spacer on the welded bolt protruding from the center of the top plate.
5. Install the solar panel on the stud so that the cable junction box is at the top.
6. Install a theft resistant nut on the welded bolt. DO NOT TIGHTEN.
7. Align the holes in the upper corners of the solar panel with the holes in the top plate on either side of the welded bolt. Place plastic spacers between the plate and solar panel and insert 3/8" x 1-1/2" stainless steel hex bolts (supplied in the kit) through the holes so that the threaded portion is over the solar panel and install a split washer and nut on each. DO NOT TIGHTEN.
8. Attach the "Bottom Brace Support" to the "Support Strip" on the pipe stanchion, as shown in Figure 1. Install a theft resistant nut. DO NOT TIGHTEN.
9. Place a plastic spacer on the "Welded Bolt" at the other end of the bottom brace support. Place the solar panel (bottom middle hole) on the welded bolt. Install a theft resistant nut. DO NOT TIGHTEN.
10. Snug all nuts. DO NOT TWIST OFF THE HEX PORTION OF THE VANDAL NUTS.
11. Check to be sure that the solar panel is not bending or twisting. If so, loosen the nuts, realign the solar panel and brackets and try again.
12. Check the installed angle of the solar panel in accordance with COMDTINST M16500.19A. If incorrect, be sure the proper bottom brace support is installed.
13. Twist off the hex portion of all the vandal resistant nuts and tighten all remaining nuts.
14. Wire the lantern in accordance with COMDTINST M16500.19A and install battery label(s).
15. Install bird springs, if desired, and bend up as shown in Figure 1.

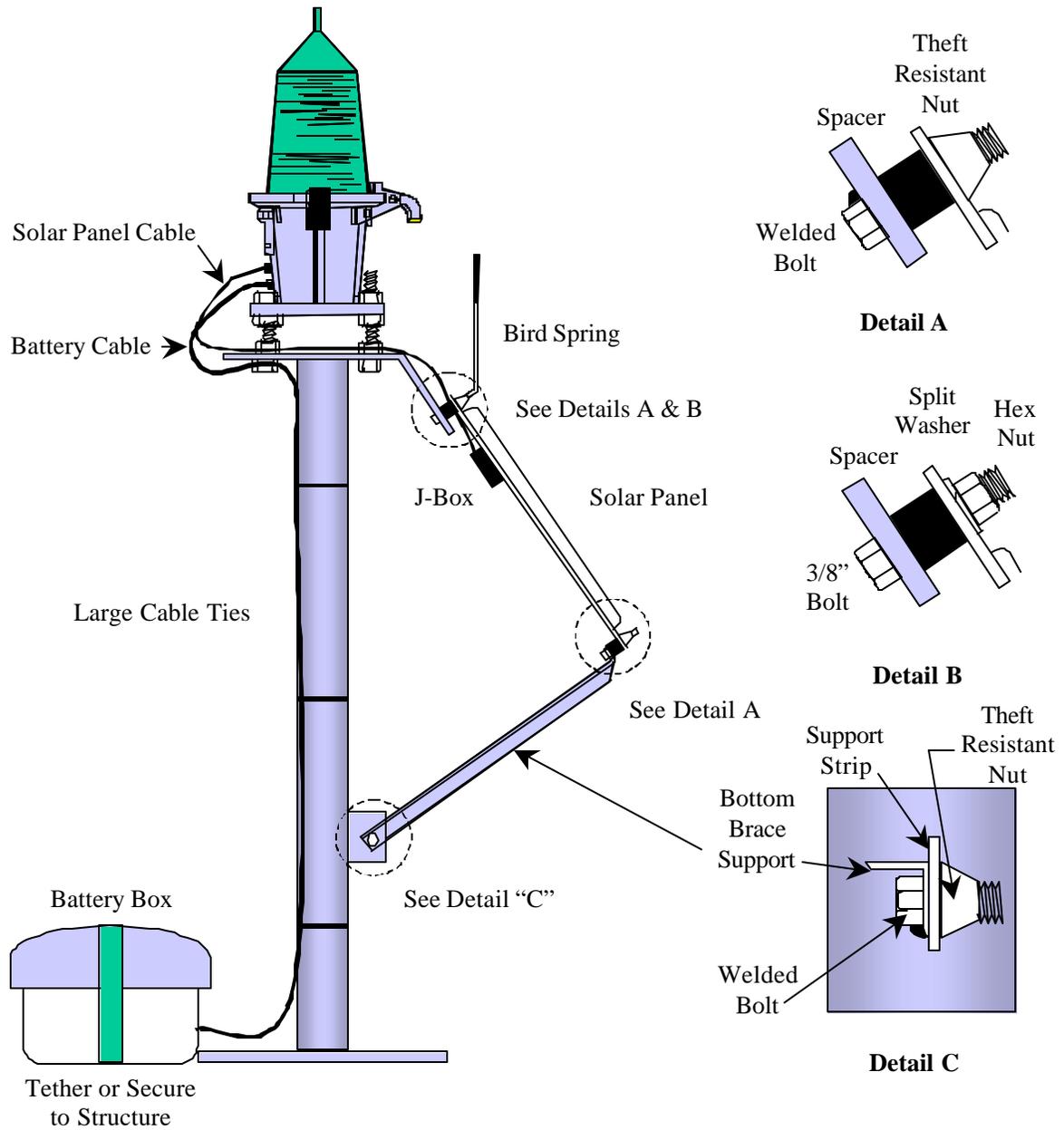


Figure 1.

STRUCTURE ASSEMBLY
INSTALLATION OF 20 AND 35 WATT SOLAR PANELS

1. Install solar structure mount so that the solar panel faces South (Note: South of the equator the panel should face North)
2. Install battery box, cable and battery in accordance with COMDTINST M16500.19A. Do not connect the battery at this time.
3. Mount lantern to solar structure and level in accordance with COMDTINST M16500.19A. If the solar panel will terminate at the flasher, install the stuffing tube supplied with the kit in an unused cable entrance in the base of the lantern.

NOTE: The 20 and 35-watt solar panels do not install directly on the top plate of the structure. An additional steel brace is installed on the top plate to accommodate the larger size of the 20 and 35-watt solar panels.

4. Install the steel brace on the welded bolt of the top plate so that it is centered.
5. Install a 3/8" x 1-1/2" stainless steel bolt, lock washer and nut in each hole on either side of the center welded bolt, through the top plate so that the threaded portion is under the top plate. Tighten securely.
6. Install a plastic spacer on the welded bolt protruding through the center of the steel brace.
7. Install the solar panel on the stud so that the cable junction box is at the top.
8. Install a theft resistant nut on the welded bolt. DO NOT TIGHTEN.
9. Align the holes in the upper corners of the solar panel with the holes in the steel brace. Place plastic spacers between the steel brace and solar panel and insert 3/8" x 1-1/2" stainless steel hex bolts (supplied in the kit) through the holes so that the threaded portion is over the solar panel and install a split washer and nut on each. DO NOT TIGHTEN.
10. Attach the "Bottom Brace Support" to the "Support Strip" on the pipe stanchion, as shown in Figure 2. Install a theft resistant nut. DO NOT TIGHTEN.
11. Place a plastic spacer on the "Welded Bolt" at the other end of the bottom brace support. Place the solar panel (bottom middle hole) on the welded bolt. Install a theft resistant nut. DO NOT TIGHTEN.
12. Snug all nuts. DO NOT TWIST OFF THE HEX PORTION OF THE VANDAL NUTS.
13. Check to be sure that the solar panel is not bending or twisting. If so, loosen the nuts, realign the solar panel and brackets and try again.

14. Check the installed angle of the solar panel in accordance with COMDTINST M16500.19A. If incorrect, be sure the proper bottom brace support is installed.
15. Twist off the hex portion of all the vandal resistant nuts.
16. Wire the lantern in accordance with COMDTINST M16500.19A and install battery label(s).
17. Install bird springs, if desired, and bend up as shown in Figure 2.

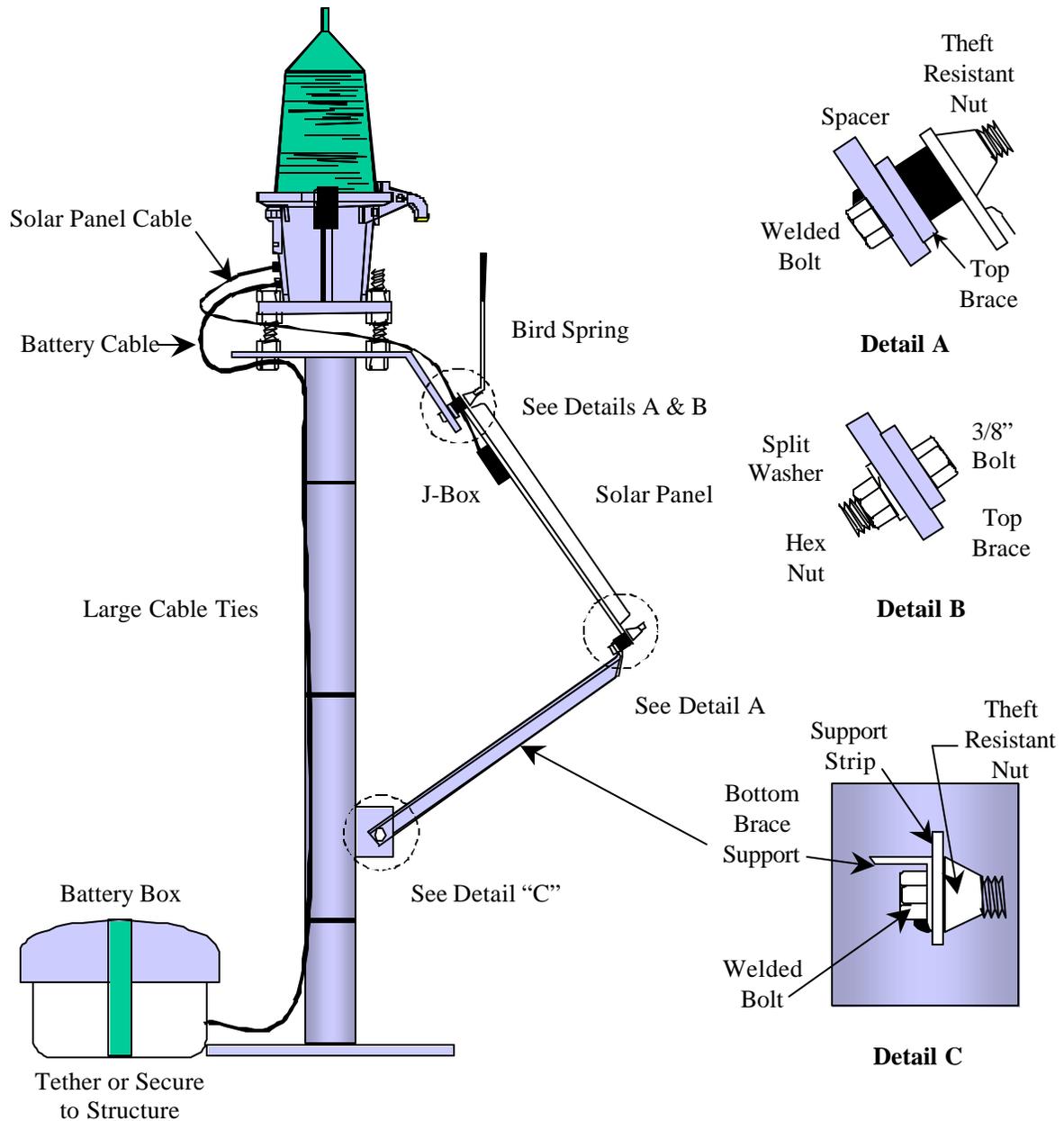


Figure 2.

BUOY ASSEMBLY
INSTALLATION OF 10, 20 AND 35 WATT SOLAR PANELS

1. Outfit a 155mm lantern with the appropriate signal hardware, as detailed in COMDTINST M16500.19A.
2. Install the appropriate (10, 20, 35 watt or universal) Solar Panel Frame to the buoy between the lantern and the lantern base plate using 1/2" x 2" stainless steel bolts, split lock washers and nuts.
3. Place the solar panel in the Solar Panel Frame. Install plastic spacers on each corner between the solar panel and frame. Install 3/8" x 1-1/2" stainless steel bolts through the solar panel and frame (so the threaded portion is up), as shown in Figure 3. Secure with a split lock washer and nut. Tighten all fasteners. Note: theft resistant nuts can be used however their effectiveness is reduced without a welded bolt.
4. Install a bird spring on each exposed mounting bolt or a solar panel pyramid if bird deterrents are necessary.
5. Route the solar panel cable to the nearest support rod and secure with short cable ties.
6. Wire the lantern in accordance with COMDTINST M16500.19A.

