



TECHNICAL MANUAL

OPERATION AND INSTALLATION INSTRUCTIONS

ANTENNA AS-3772B/U

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RECORD OF CHANGES

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SECTION 1**GENERAL INFORMATION AND SAFETY PRECAUTIONS****1-1. GENERAL SAFETY PRECAUTIONS**

The following general safety precautions are not related to any specific procedures and therefore do not appear elsewhere in this publication. These are recommended precautions that personnel must understand and apply during many phases of operation and maintenance.

WARNING

Keep away from live circuits. Operating personnel must at all times observe all safety regulations, to prevent serious injury or death due to electrical shock.

Do not service or adjust alone. Under no circumstances should any person service or adjust the equipment except in the presence of someone who is capable of rendering aid.

Personnel working with or near high voltages should be familiar with modern methods of resuscitation.

1-2 SPECIFIC WARNINGS

The following specific precautions are related to inspecting and removing the antenna.

WARNING

Ensure that the transmitting equipment is de-energized prior to inspection of the antenna. Make sure the test equipment is properly grounded, to prevent electric shock.

CAUTION

Make sure the antenna is properly supported before removing its mounting hardware.

CAUTION

Do not coat the insulator with any substance; do not paint with lead base paints.

1-3. INTRODUCTION

1-3.1 Purpose. This manual provides general information on the AS-3772B/U, as well as an operational and functional description of the antenna and installation data. Information in this manual will assist in installing and operating the antenna.

1-3.2 Scope. This technical manual is provided to aid in the operation and installation of the antenna.

1-3.3 Applicability. This manual applies to the single whip application of Antenna AS-3772B/U. Where this antenna is used in twin whip application, consult the appropriate antenna group technical manual.

1-4. EQUIPMENT DESCRIPTION

1-4.1 General Description. The antenna, shown in Figure 4-1 is a 35 foot transmitting/receiving whip antenna for general use with HF communications equipment. The antenna has an aluminum radiating element and an integral fibreglass insulator/mounting base.

1-4.2 Capabilities. The antenna provides vertically polarized, omnidirectional azimuth radiation from 2 to 30 MHz when the antenna is operated in either a twin whip and tuner configuration or single whip and tuner configuration. It may be employed for general purpose broadband communications reception from VLF to 30 MHz. The antenna is a two section antenna and is base mounted. The mounting flange is a single integral part made from fibreglass.

1-4.3 Limitations. When used as directed, the antenna has no limitations.

1-5. RELATIONSHIP TO OTHER EQUIPMENT

The AS-3772B/U Antenna interfaces with the HF receiving and transmitting equipment.

1-6. REFERENCE DATA

Table 1-1 lists the reference data for the antenna.

1-7. EQUIPMENT ACCESSORIES, AND DOCUMENTS SUPPLIED

Table 1-2 lists the equipment and documents supplied.

Table 1-1. Reference Data

PARAMETER	SPECIFICATION
NOMENCLATURE	ANTENNA AS-3772B/U
MANUFACTURER	VALCOM MANUFACTURING GROUP, INC. 35736
FREQUENCY RANGE	TRANSMITTING: 2 TO 30 MHZ
IMPEDANCE	VARIES
POLARIZATION	VERTICAL
POWER CAPABILITY	5 KW SINGLE ANTENNA
RADIATION PATTERN	OMNIDIRECTIONAL
TEMPERATURE	OPERATING: -54°C TO +65°C NON OPERATING: -62°C TO +71°C
WIND VELOCITY	115 MPH
HUMIDITY	95%
SHOCK	QUALIFIED TO MEET MIL-S-901C, GRADE A
VIBRATION	QUALIFIED TO MEET MIL-STD-167-1 TYPE I

Table 1-2. Equipment, Accessories and Documents Supplied

QTY	NOMENCLATURE	OVERALL DIMENSIONS (INCHES)				WEIGHT (POUNDS) UNCRATED
		CRATED		UNCRATED		
		HEIGHT	DIA	HEIGHT	DIA	
1	ANTENNA AS-3772B/U	---	---	421	13.00 (BASE)	196
1	TECHNICAL MANUAL FOR AS-3772B/U ANTENNA VTM-91-770					
1	SILCONE SEALANT					
12	MS24693-C140 3/8-16 x 0.75 L FLAT HD SCREW					
1	MIL-A-907E ANTI- SEIZE COMPOUND					

SECTION 2

OPERATION

2-1. INTRODUCTION

This chapter provides operating instructions for the antenna.

2-2. CONTROLS AND INDICATORS

The antenna contains no controls or indicators.

2-3. OPERATING PROCEDURES

2-3.1 Operator Turn-On. No operator turn-on procedures apply since no power is required to operate the antenna. However, the antenna is coupled to RF equipment (transmitter/receiver) and to associated systems which may require energizing. For operating instructions, consult the appropriate technical manuals.

2-3.2 Modes of Operation. The antenna operated automatically, and no operator intervention is required other than interconnecting various associated equipment with the antenna.

2-3.3 Operation Under Interfering Conditions. No additional or alternate instructions are necessary to operate the antenna under interfering conditions.

2-3.4 Operator Turn-off. Since no power is required to operate the antenna, no operator turn-off is required. However, the specific equipment connected to the antenna may require operator turn-off. Consult the associated technical manuals for turn-off procedures.

2-3.5 Emergency Operation. No additional or alternate steps are necessary to operate the antenna under emergency conditions.

2-3.6 Emergency Turn-off. The antenna requires no emergency turn-off. For emergency turn-off of specific equipment connected to the antenna, consult the associated technical manuals.

SECTION 3

FUNCTIONAL DESCRIPTION

3-1. INTRODUCTION

This chapter provides the functional description of the antenna.

3-2. OVERALL LEVEL

The antenna is a base mounted, high-power antenna which provides omnidirectional coverage for general purpose communications reception and transmission from 2 to 30 MHz when used in either a twin whip and tuner configuration or single whip and tuner configuration.

3-3. MAJOR FUNCTION LEVEL

The antenna consists of an aluminum radiating element and an integral fiberglass insulator/mounting flange. The aluminum radiating element tapers from approximately 8 inches in diameter at the base insulator to 2 inches in diameter at the top. The integral fiberglass insulator/mounting flange isolates the radiating element of the antenna from the ground and physically supports the element. The insulator/mounting flange is constructed of high-strength, laminated epoxy fiberglass materials. When assembled, the overall length of the antenna is approximately 35 feet. The antenna disassembles into 2 sections.

When the antenna is used for transmitting, an antenna coupler is required. When used for receiving, the antenna requires the use of a termination box. For transmitting or receiving, a feedwire assembly is required to connect the antenna to the antenna coupler or termination box.

3-3.1 Feedwire Assembly. The feedwire assembly is provided by installing activity and provides a means of attaching the antenna tuner or termination box to the antenna.

SECTION 4

INSTALLATION

4-1. SITE INFORMATION

Valcom's AS-3772B/U HF Antenna is designed primarily for shipboard installation. The antenna can also be used at shore installations. The antenna should be installed in a non-obstructed environment, clear from any contiguous structures, such as masts, bulkheads, or other metal objects.

4-2. TOOLS AND MATERIALS REQUIRED

15/16" (normally) wrenches for 5/8" hardware for antenna base bolts (not provided).
7/16" wrench for feed-point connector bolts
#4 Phillips screwdriver for joint screws
No other special tools and materials are required for installation.

4-3. UNPACKING AND REPACKING

Table 1-2 gives data on the overall dimensions, volume, and weight of the crated antenna. To unpack, carefully remove the screws holding the cover, and remove the antenna from the container. Save the container to pack the antenna for reshipment. No special handling procedures are required; observed normal precautions when handling the antenna.

4-4. FOUNDATION

The antenna should be installed vertically on a mounting plate that has bolt holes matching those in the antenna base (see figure 4-1).

4-5. INPUT REQUIREMENTS

The antenna has an rf power handling capability of 5 kW when used singularly or 10 kW when used in a twin whip configuration with tuner in the 2 to 30 MHz frequency range.

4-6. INSTALLATION PROCEDURES

After unpacking the antenna, proceed with its installation as follows:

- a. Examine the exterior of the antenna for damage; make sure that neither the top of the lower section or the bottom of the upper section have been damaged. Also check the base for damage.

- b. Before assembling the two sections together, the sleeve at top of the bottom section must be coated with a thin layer of electrically conducting nickel-based anti-seize compound MIL-A-907E (supplied). A small dab of anti-seize in each of the eight threaded holes will assist with installing the screws later.
- c. Place the bottom section of the antenna on two saw horses. After applying the anti-seize compound to the mating sleeve, carefully slide the antenna top section over the sleeve making sure the arrows on each section are aligned.
- d. Ensure the eight holes are in line between the two sections. Install the eight countersink flat head screws to the two sections. It is recommended to install all eight screws 3 or 4 turns before tightening any of them.
- e. Begin tightening the screws one by one. A minimum torque of 10-20 in-lbs is required to install the screws. If less than this torque is used, the thread-locking inserts may be damaged and need to be replaced. Contact the factory for assistance. A final torque between 55-75 in-lbs is acceptable for the screws, providing the screw head sits flush or slightly below the antenna surface. After installation, seal the screw heads using the RTV sealant.
- f. Carefully lift the antenna to its mounting platform. Align the mounting holes of the base flange with the mounting holes in the platform.
- g. Secure the antenna to its mounting plate with using eight 5/8-11 hex head cap screws (not provided), along with two flat-washers, a split-lock-washer and a nut. Bolt length will need to be determined by the installing activity. A final torque between 90-100 ft-lbs is acceptable for the bolts.
- h. Connect the system feedline to the antenna at any one or all of the three feedpoints as required.

4-7. INSTALLATION CHECKOUT

Checkout of the antenna after installation can only be accomplished by operating the receiving and transmitting equipment that is used with the antenna.

Note: If replacing an existing antenna with a new antenna, it is recommended that new mounting hardware be used.

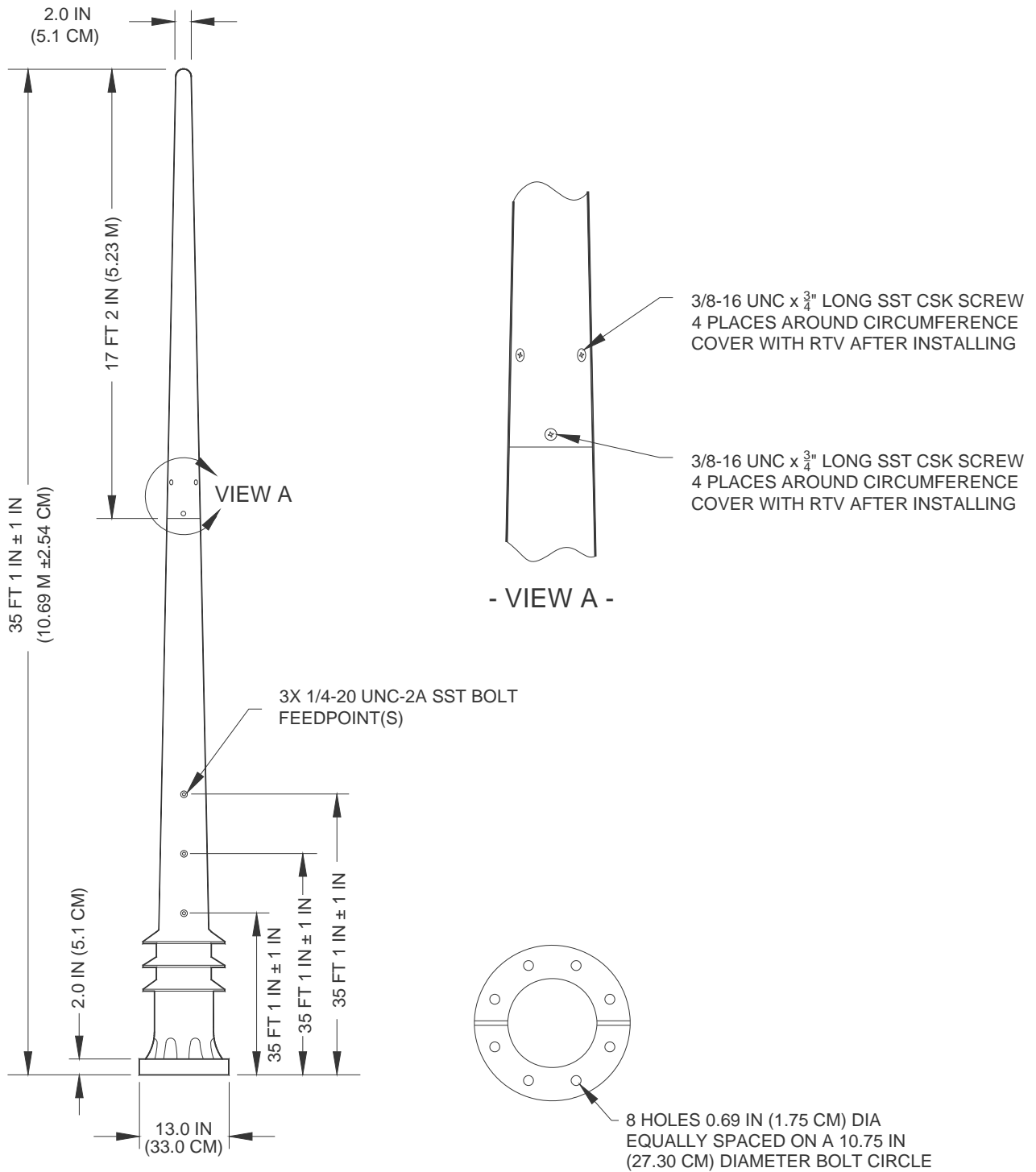


Figure 4-1 Outline Drawing

SECTION 5

MAINTENANCE

5-1. SCHEDULED MAINTENANCE

The antenna is virtually maintenance free. The external finish is a silicone alkyd paint. The minimum finish life before showing signs of deterioration should be at least six years under normal climate conditions.

When used in salt-water environments, it is recommended to wash the antenna base with fresh water to remove any build-up of dried salt residue. This must be performed on a monthly basis, when exposed to sea-spray.

Use a small wire brush to clear any debris from the drain groove found in the bottom of the antenna base.

All threaded hardware, including the base mounting bolts, the countersunk screws at the joint and the input power connector should be inspected for signs of damage and to ensure proper tightness (suggested torque settings can be found on pages 8 and 9). In most cases a quick visual inspection is all that is required. This must be performed on a monthly basis or whenever practical.

5-2. CORRECTIVE MAINTENANCE

5-2.1 General Repairs

Generally, no corrective maintenance is possible or required. If one section is severely damaged, it must be replaced by a new section. Workshops having experience in handling epoxy fibreglass composite structures and/or aluminum construction may attempt the repair of minor surface damage if practicable.

NOTE

DO NOT USE LEAD BASE PAINT TO TOUCH-UP OR REPAINT THE ANTENNA. USE ONLY EPOXY BASE PAINT.

5-2.2 Cosmetic Repairs

The antenna has been designed to meet and tested to pass Naval Shock and Vibration requirements (MIL-S-901 and MIL-STD-167 respectively). Under and beyond normal expected environmental stresses onboard ships, this antenna will not suffer mechanical or electrical failure. However, over the life of the antenna a seam may become visible just above the top drip shield. This may appear to be a “crack” in the antenna. However, this is only a surface crack in the paint layers and the filler material. This location is where the aluminum radiator meets the fiberglass base and since these materials have different coefficients of expansion, under high mechanical stress(es), the paint may crack under the normal flexural movement of the materials. An example can be seen in the below photograph.

IT IS IMPORTANT TO NOTE IN NO WAY WHATSOEVER IS THIS CRACK RELATED TO A MECHANICAL FAILURE OF THE ANTENNA.

Should this occur, repairing is not considered to be necessary. Otherwise, to restore the antenna’s cosmetic appearance, it can be refinished as follows:

- use a small scraper to remove all the loose paint flakes;
- lightly sand the area down;
- re-coat with a durable ship-board grade paint;
- if excessive filler material has fallen out, the groove can be filled back in with a quality acrylic or silicone sealant after painting.



SECTION 6**QUICK REFERENCE DATA****6-1 GENERAL**

Manufacturer's contact information can be found in Section 6-2.

6-2 MANUFACTURER'S ADDRESS

Postal address: Valcom Manufacturing Group, Inc P.O. Box 603 Guelph, Ontario Canada N1H 6L3	Shipping address: Valcom Manufacturing Group, Inc 175 Southgate Drive Guelph, Ontario Canada N1G 3M5
Or directly at: Phone : (519) 824 - 3220 Fax : (519) 824 - 3411 e-mail : enquiries@valcom-guelph.com Internet : www.valcommfg.ca	