



Horn Antenna Front Mount Assembly Instructions

MN34-594 Rev E

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1.0 Precautions

!!! Read the entire manual thoroughly before assembling the mount !!!

It is the Customer's responsibility that:

- The installation of this antenna-mount assembly is done in accordance with all laws and regulations of the governing body in which the mount is assembled and used.
- The installation and assembly of the mount is performed in a safe manner and does not cause damage to the vehicle on which the mount is attached.
- All critical vehicle functions are maintained and/or accessible once the mount has been attached to the vehicle. This may include, but is not limited to: access to the oil filter, oil plug, hood latch, and radiator; maintenance access; and bumper clearance.

Any damage to the vehicle or mount is not the liability of the manufacturer or the vendor. Use prudent practices and follow safety precautions when installing and using this mount.

This mount is intended to be used in good weather (antenna cannot get wet) and in daylight only. If the 3 position bumper is used and the antenna support is installed in either the left or right position, the headlight(s) may be blocked, causing an unsafe condition in the case of low ambient light.

2.0 Description and Part Identification

The Vehicle Antenna Mount consists of three major components: The under vehicle bracket (Figure 1), the bumper (Figure 2) and the antenna support(s) (Figure 3).

The under vehicle bracket is intended to be permanently attached to the vehicle and is the primary support for the remainder of the mount assembly. The under vehicle bracket is shown in Figure 1. Please see Appendix A for an attachment example.



Figure 1: Under vehicle bracket.

The bumper is available in two widths: A single width that holds the antenna in the center of the vehicle and a triple width that provides locations for attaching the antenna at the left, center or right of the vehicle.



Figure 2: Bumper (single width shown).



Figure 3: Triple width.

The removable antenna support arm supports the antenna and allows for quick removal of the entire arm and antenna. It engages the bumper by clipping over the top of the bumper. It is then secured with six (6) hand screws.

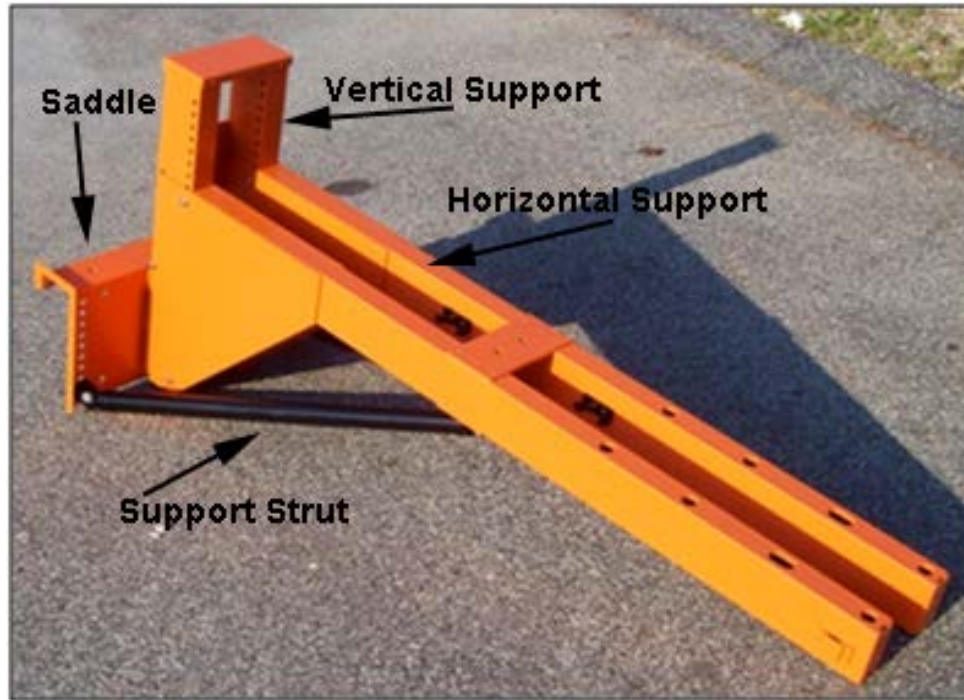


Figure 4: Antenna support arm.

3.0 Unpacking and Assembly

Under Vehicle Bracket: No assembly required. See installation section for installation instructions.

Bumper: See installation section for installation instructions.

Note: The required hardware for each component is included in a bag in the box with each component.

Antenna Support

The antenna support consists of 5 major components: The saddle, the vertical support, the horizontal support and left and right support struts. The saddle is the sheet metal bracket. The vertical support is the smaller orange composite structure, the horizontal support is the longer orange composite structure and the left and right struts are the long, round, black components.

- 1** Attach the vertical support to the saddle using (12) M10 x 25 flat head screws. As seen in Figure 6. Tighten all screws securely.

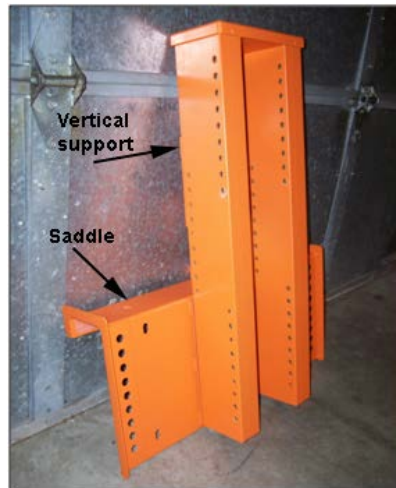


Figure 5: Vertical support to saddle bracket. Figure 6: Vertical support to saddle detail

- 2** Attach the horizontal support to the vertical support at its lowest setting as shown in Figure 7. Use (6) M10 x 75 hex head bolts with lock nuts with washers under both the head of the bolt and the nut. Hand-tighten these bolts at this time.



Figure 7: Horizontal to vertical members.

- 3** Attach each strut between the horizontal arm and the saddle as shown in Figures 8 - 10. Note that one end of each strut has an “L” or an “R”. Match the “L” or “R” with the corresponding letter on the horizontal support as shown in Figure 9. This will ensure that the struts align correctly. Attach the strut to the horizontal arm using (2) M12 x 25 Socket Head Cap Screws and washers.



Figure 8: Strut to horizontal member.



Figure 9: Alignment of struts to horizontal member.

- 4** Attach the strut to the saddle bracket as shown in Figure 10 using M12 x 20 Flat Head Socket Cap Screws with a round rubber vibration damper between the strut and the saddle bracket. The strut should align with the bottom hole in the saddle bracket. Tighten the strut to the horizontal member. Tighten the hex head bolts holding the horizontal member to the vertical member.



Figure 10: Strut to saddle bracket.

5 Snug all bolts.

4.0 Installation and Adjustment

Under Vehicle Bracket

Warning: It is the customer's responsibility to ensure that the under vehicle bracket is installed by qualified personnel. Failure to properly install the bracket can result in permanent damage, adverse vehicle operation, and/or the inability to properly maintain or repair the vehicle which could potentially result in personal injury or death.

Note: Because of the large range of vehicles this mount can be attached to, it is impossible to ensure universal application as shipped. Modification of the universal bracket by qualified personnel may be required to ensure proper attachment and safe operation of the vehicle.

Note: GSSI recommends using a few drops of lubricant such as WD40 on the threads of the various bolts and screws. This will make them easy to insert and prevent binding.

Installation Specifications:

- The bracket must be installed such that it is level when the vehicle is in operation.
- Bottom of the bracket must be between 20 cm and 40 cm (8 to 16 inches) above the ground.
- The front of the bracket must allow the bumper portion to be installed and not obscure any critical vehicle function (lights, directional signals, radiator, etc.) Suggestion: attach the bumper to the under vehicle bracket prior to installing the under vehicle bracket to the vehicle. This will allow checking of all critical operations. There should be a minimum of 2.5 cm (1 inch) of clearance between the bumper portion and any vehicle component.
- All vehicle functions must be preserved, including, but not limited to: Oil drain and filter, steering and suspension component motion and adjustments, all maintenance and repair functions, etc.
- The under vehicle bracket is painted with weldable primer which does not require removal for welding. When the bracket is welded to the vehicle, proper precautions must be taken to not damage the vehicle's electrical components due to welding.
- The under vehicle bracket and vehicle must be protected from corrosion by priming/painting the affected area after installation.
- Perform the remaining installation instructions on flat and level ground.

Mounting Bumper to the Under Vehicle Bracket

- 1** Insert two (2) M12 x 40 socket-head cap screws in the vertical threaded holes in the bumper. Note: These are adjustment bolts which will be used as an aid to ensure that the horizontal arm is level when in use. Adjust these to protrude from the threaded hole by approximately 6mm (0.25 inches). These will provide leveling adjustment for the entire mount.
- 2** Attach the bumper to the under vehicle bracket using eight (8) M12x50 hex-head bolts (provided). Use lock and flat washers under the head of each bolt. Snug the bolts in the round hole of the bumper, leave the bolts in the slots slightly loose. The adjustment bolts should be resting on the under vehicle bracket. See Figure 11.
- 3** Adjust the adjustment bolt such that the bumper is vertical, tighten the (8) hex head bolts. After the hex head bolts are tight, tighten the adjustment bolt securely. Note: at this time, this is a coarse adjustment. This adjustment will be fine tuned once the antenna is attached (Shown in Figure 11).

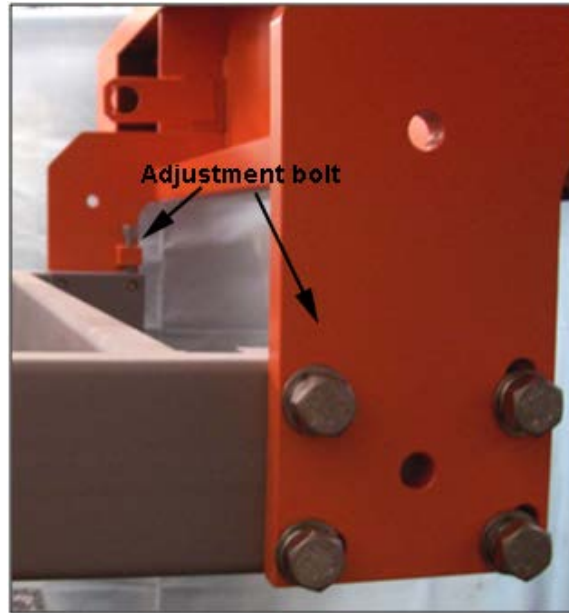


Figure 11: Attachment of bumper to under vehicle bracket.

Antenna Support

Install the assembled antenna support as shown in Figure 12. Place the assembled antenna support on the bumper, align with the tapped mounting holes and install the (6) hand screws. The single position bumper only has a center position. If the three position bumper is used, place the antenna support in the center position.



Figure 12: Mount and antenna installed on bumper.

Adjust Height of Antenna Support

Measure the distance from the ground to the **BOTTOM** of the horizontal arm. Make the measurement near the vertical support (near the vehicle). Move the horizontal arm and the struts into the appropriate holes such that this dimension is 93 cm (36") +/- 2.5 cm (1").

Install Antenna on Antenna Support

- 1** Install (2) antenna mounting bolts, approximately 3 turns in the left and right holes, second from the back of the antenna.
- 2** Put the antenna into position by inserting these bolts through the key hole shaped slots in the antenna support and sliding toward the vehicle. Do not leave the antenna unsupported with only 2 bolts installed.
- 3** Insert the remaining (6) antenna mounting bolts.
- 4** Tighten all 8 antenna mounting bolts by hand.

Adjust Level of Antenna Support

- 1** Loosen the (8) M12 x 50 hex head bolts attaching the bumper to the under vehicle mount. Using the (2) M12 x 40 socket adjusting bolts, adjust the angle of the bumper such that the top of the antenna support arm is level (Figure 11).
- 2** Tighten the (8) M12 x 50 hex head bolts securely.
- 3** Tighten the (2) M12 x 40 socket head 1/8 to 1/4 turn to lock them.

Safety Flasher

A safety flasher is provided to be attached to the flasher bracket on the side of the horizontal arm.



Figure 13: Flasher installed on bracket

Cabling

Be sure to connect the antenna cable in such a way as to avoid interfering with normal vehicle operation.



Figure 14: Control cable secured in cable clips

A bulkhead connector is provided for mounting on the bumper.

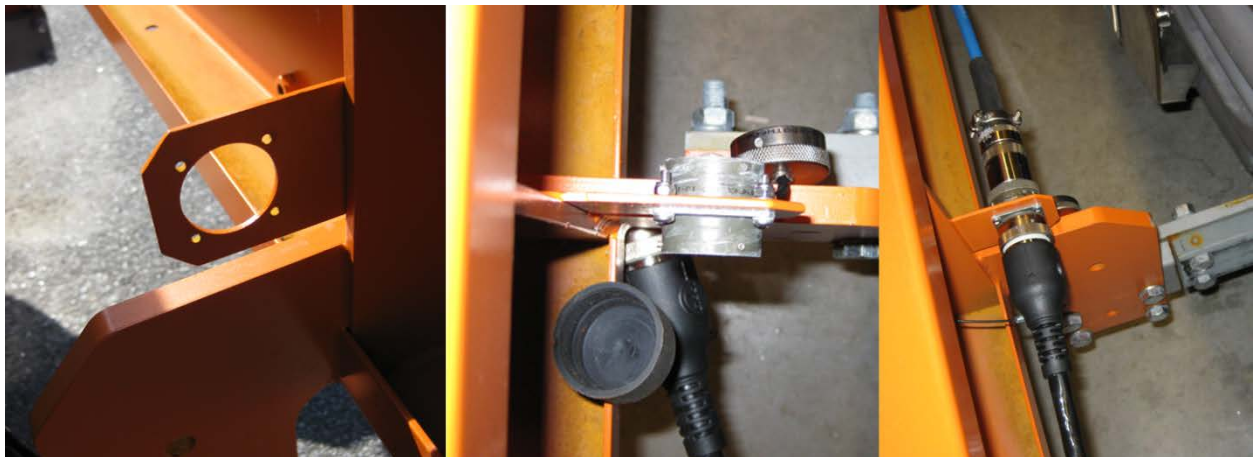


Figure 15: Bulkhead cable connector installation.

5.0 Final Check

- 1** Remove antenna support from bumper
- 2** Tighten all bolts holding the bumper onto the under vehicle mount.
- 3** Tighten the (12) M10 x 25 flat head screws holding the vertical support onto the saddle (antenna support)
- 4** Tighten the (6) M10 x 75 hex head bolts holding the horizontal support onto the vertical support (antenna support)
- 5** Tighten the screws on both ends of the struts.

6.0 Use

Attachment

To attach the antenna support/antenna assembly, engage the antenna support to the bumper as shown in Figure 11. Note lift the front of the antenna support slightly to allow the support to engage the bumper smoothly. Slide the antenna support until the slots in the support line up with the desired holes in the bumper. Install the hand screws and tighten securely. Connect the electronic cable to the connector mounted on the bumper.

Caution: Check the hand screws frequently during use and tighten as required.



Figure 16: Engaging antenna support to bumper.

Removal:

Reverse the steps in attachment.

7.0 Parts List

Under Vehicle Bracket Kit

Under vehicle bracket

Bumper Kit

Bumper

(2) M12 x 40 Socket Head Cap Screw

(8) M12 x 50 Hex Head Cap Screw

(8) M12 lock washer

(8) M12 flat washer

Horizontal Arm Kit

Saddle Bracket

Vertical member

Horizontal member

Left strut

Right strut

(12) M10 x 25 Flat Head Cap Screw

(2) Rubber spacers

(2) M12 x 20 Flat Head Cap Screw

(2) M12 x 25 Socket Head Cap Screw

(2) M12 Washer

(6) M10 x 75 Hex Head Bolt

(12) M10 washer

(6) M10 locknut

(2) Electronic Flasher

(6) Antenna Mounting Bolt (Hand use only)

Bulkhead connector

Protective cap

(4) M3 x 12 Phillips Pan Head Screw

(4) M3 locknut

Appendix A

Below are some photos showing the Under Vehicle Bracket attachment to the GSSI survey vehicle. Note that it is securely welded to the vehicle's frame and that it is well clear of any steering components.



Figure 17: Vehicle frame weld points