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INSTALLATION INSTRUCTIONS: SHUNT-100[®] Weather Resistant Adjustable HF Shunt Inductor

Thank you for your purchase! We appreciate your business and would like to hear from you about your installation – comments, suggestions and photos! Also let us know if you have ideas for new products!

These instructions describe how to install and use the SHUNT-100[®] (“SHUNT”) load inductor on your HF mobile antenna. It will work with ANY HF mobile antenna that requires additional inductance to lower the SWR. No special tools are required: 7/16 inch (11 mm) open ended wrench and socket wrench.. The most recent version of the instructions is on our web site "Downloads" page; the date code at the bottom of each page indicates when the instructions were prepared.

These instructions include **product revisions 1 and 2** (described below).

The purpose of the SHUNT is to increase the impedance of your antenna on the lower bands to reach an acceptable SWR, by adding inductance at the base of your antenna. On the low bands the impedance of HF antennas can be very low, well below the 50 ohms that would result in a 1:1 SWR. On the higher bands, the added inductance of the SHUNT should be “invisible” and not affect the performance of your antenna. An example of real-world SWR measurements using the SHUNT, on my personal mobile antenna system, is posted on our web site "Test Results" page. Without the SHUNT I can not operate 160 and 80m as the SWR is very high. With the SHUNT both bands have a low SWR and I can operate 160-10m without any additional SHUNT adjustments!

You will need one ¼ inch stainless steel bolt to attach the SHUNT to a non REP Design antenna mount or bracket; no additional hardware is needed if mounted to our UHAM, CLAMP and AMB mounts and brackets.

You will need to first adjust the SHUNT on the lowest band (160m or 80m band) your antenna can tune. It may need slight fine tuning on the next lowest band. Once adjusted for the lowest bands, you should not need to re-adjust the SHUNT.

These instructions include the following product revisions, which can be made by the user (but not required) to any earlier SHUNT, as the housing, coil and other parts are the same. They were done to make the SHUNT even easier to mount to “other brand” or custom made antenna mounts – the SHUNT was originally designed to simply bolt onto our UHAM series of mounts but lots of customers are also using it on a variety of other mounts and HF mobile antennas. We can provide the parts for a nominal fee.

- **Revision 1 (began shipping March 2009):** This update enables the user to remove both bolts or rotate the mounting bracket without re-applying weather proofing sealer. Added two EDPM rubber seals in place of non-corrosive RTV sealer on the two 1/4x20 stainless steel bolts (**Figure 2**). The sealer is still used between the rounded cap of the SHUNT and the main body as normally this never has to be disassembled. Also included is a stainless steel finish washer that fits over the rubber seal on the mounting bracket to provide an excellent ground connection around this rubber seal.
- **Revision 2 (began shipping late July 2009):** This update includes the addition of a solder lug for the mounting plate bolt. Previously the coil was wound around this bolt. See **Figure 2**.

If you do not feel that you have the ability to adjust or install the SHUNT, or it does not operate on your antenna system as stated, please contact us if you would like to return the product (within the first two weeks, see Warranty for details). SAFETY FIRST!

Specifications

- * Shunt coil: tin plated 99% pure, solid, copper wire; 7/8 inch outside diameter; 25 turns (tunes as low as 160m band)
- * SHUNT housing: sunlight resistant gray PVC
- * Hardware: 6061 aluminum mounting plate and stainless steel hardware
- * Coil clip: silver plated with screw to tighten onto coil winding that provides the lowest SWR
- * EDPM rubber pads with adhesive backing: under the mounting plate as a weatherproofing seal and between the coil and mounting bolt to prevent the coil from touching the bolt

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(Product REV.1-2)



- * EDPM rubber seals: for both bolts, for weatherproofing in place of RTV sealer.
- * Permatex Ultra Gray RTV Silicon, non-corrosive (“no vinegar odor”): applied to gap between rounded PVC end by the wing nut and main body of the SHUNT
- * Wire from coil clip to wing nut bolt: 14 gauge stranded, insulated wire, tinned with lead alloy solder
- * RoHS Compliance and Hazardous Materials Statement: Please note that the SHUNT is not RoHS compliant due to the lead-based solder on the coil clip wire. We use top quality, Kester, solder that contains lead (60/40 alloy).
California residents: This product contains chemicals (lead) known to the State of California to cause cancer and birth defects (or other reproductive harm).

Installation and Maintenance Instructions:

Please refer to the figures at the end of these instruction, which help to illustrate the installation process.

(1) Tune your antenna as best as possible BEFORE installing the SHUNT.

BEFORE you install the SHUNT to your antenna you must first set up your antenna so that it will resonate as best as possible on all desired HF bands (160m through 10m, depending on which bands your antenna can tune). Remember that shunts (load inductor coils) only improve the SWR, typically, on 160-40m but should be “invisible” on the higher bands. Resonance means that your antenna will tune at a given frequency, and this can occur at an SWR that is too high for your radio to transmit full power (generally SWR > 2:1). You can tell if your antenna is resonating if you get a fairly sharp null when tuning your antenna up and down on either side of the resonance point. On the lower bands (160, 80 and sometimes 40m) with a mobile installation the impedance is typically very low and by adding inductance (e.g. the SHUNT) to the base of the antenna you can increase the impedance closer to 50 ohms and therefore substantially lower the SWR to an acceptable level. You do not need an SWR of “1:1” for your antenna or radio to work well. With a relatively short coax run on HF frequencies even an SWR of 1.8:1 or less is perfectly acceptable.

Here are some key factors to consider when you tune your antenna, BEFORE connecting any form of impedance adjusting device (the SHUNT, UNUN or any other device). Think of your antenna as a system made up of various components, including your vehicle, and changing one part can affect the entire system:

- Good vehicle ground point and short (12 inch long or so) cable from the vehicle to antenna mount ground. Also run a short ground cable from your radio chassis (typically there is a ground screw) to vehicle ground. We provide some additional grounding suggestions on the UHAM200 (and other) product instructions that you can view or download, on our "Downloads" web page. Grounding is sometimes the most difficult to get right, and differs depending on your vehicle and antenna. You may also need to ground the various parts of your vehicle, such as frame to body, body components, exhaust system, etc.
- Use ferrite bead filters on your coax and antenna motor wires, close to the antenna and on the coax at your radio – Mix 31 type are good at filtering HF frequencies. You may need 3 or more near the antenna. We provide a short white paper on ferrite beads for mobile HF antenna applications, on our web site "Downloads" page.
- If the antenna does not resonate on one or more band(s) try a shorter or longer whip. If you use a capacity hat it should be at least 12 inches above your coil and try removing one or more of the capacity hat loops (lobes). Also try the antenna without any whip above the capacity hat. The whip/capacity hat combination makes a big difference on some bands. Generally, the longer the whip the more efficient the antenna will be, however, it might make the antenna too long to tune on the highest bands (12m, 10m). You might need a long whip on the low band(s) and shorter whip on all other bands.
- Move your antenna closer or farther away from your vehicle - a foot can make a difference.
- If your transmitter power output is low, while your vehicle engine is running, and your SWR is not over 2:1, you may have too much voltage loss on the wires that power your radio. Measure the voltage at the radio when you transmit, and if the voltage is below around 12.5 volts you need either a shorter or larger gauge power cable. If this can not be done then you can use a DC to DC voltage converter that ups the voltage to the 13-14 volt range (the desired voltage for most transceivers).
- Change the length or type of coax. Check your connectors.

(2) Mount the SHUNT to your HF antenna mount.

Once your antenna is working as best as possible, it is time to mount the SHUNT. The SHUNT can be mounted to any brand, or custom-made, antenna mount even though it was originally designed with our UHAM-150 mount in mind. The only requirements are that the aluminum mounting plate on the SHUNT must be bolted directly to your mount ground, and that the antenna end of the SHUNT (wing nut) must be connected to the "hot" part of your antenna by as short a wire as practical (nominally 6 inches or less but not too critical). You can rotate the mounting plate anyway you want - refer to the steps in the "**Maintenance**" section below.

Note that the steps below are included for different types of mounts. Refer to the **Figure 1** for examples.

2.1. Mounting the SHUNT to a UHAM-150 or UHAM-300 mount (or former UHAM-100 version).

2.1.1. Temporarily remove the following UHAM side brace hardware, so that the SHUNT can be mounted.

2.1.1.1. Remove the outer UHAM "ground end" set screw hardware (this is used to mount the SHUNT): wing nut, lock washer, flat washers down to the "lock nut" that hold the side brace of the UHAM to the main part of the UHAM.

2.1.1.2. Remove the lock nut and flat washer on the ground set screw that holds the UHAM side brace, on the outside of the side brace. The lock nuts can be hard to remove and if the set screw starts to turn with the lock nut, put a 1/8 inch Allen wrench into the "set screw" to keep it from rotating and use a wrench to unscrew the lock nut. If this is hard to do with the wrench, putting the lock nut in a vice and turning the Allen wrench may help to remove the lock nut. Lock nuts work great in keeping hardware from becoming loose but this also makes them harder to remove! This is a standard 1/4x20 stainless steel lock nut.

2.1.2. Slip the SHUNT flat mounting bracket on the ground set screw, directly against the outer side of the UHAM side brace. You can mount the SHUNT with the flat bracket pointing up or down, but on a UHAM mount it may be best to mount the bracket pointing down (refer to **Figure 1**). You can rotate the flat bracket if you want - see **Figure 2**. Be sure that the wing nut on the SHUNT can not contact a ground point on your mount or coax plug (if used).

2.1.2.1. The set screw should be long enough to accommodate the thickness of the SHUNT plate, but you can screw out the set screw a 1/8 inch if you want it to stick out farther, such as for a thick ground cable. To do this you will need to temporarily remove the second lock nut on the other end of the side brace, remove the side brace and loosen the nut on the ground set screw. Now you can unscrew the set screw 1/8 inch. Be sure to replace the hardware in this order, on both set screws: flat washer, nut (tighten before installing side brace), flat washer, side brace, etc.

2.1.3. Over the SHUNT flat bracket, install the parts you removed from the UHAM ground set screw, in this order: flat washer, lock nut (tighten the lock nut securely to hold the SHUNT), two flat washer (your vehicle ground cable goes between these), lock washer and wing nut.

2.1.4. You have now completed mounting the SHUNT to a UHAM-150 or UHAM-300 mount.

2.2. Mounting the SHUNT to a UHAM-200 mount.

The SHUNT mounting plate mounts to the 1/4 inch ground point bolt on the side of the UHAM-200. Simply remove this bolt, place the SHUNT plate over the side hole in the UHAM, place a flat washer and then lock washer, screw on and tighten the bolt. This is the same point that you attach the coax shield to with the solder lug provided with the UHAM, unless you use our optional SHD-SO239 base to which your coax plugs into. See **Figure 1**.

2.3. Mounting the SHUNT to a CLAMP-150, CLAMP-200 or AMB-BKT type antenna bracket.

The SHUNT mounting plate mounts to the 1/4 inch ground point bolt that is provided with all CLAMP-150 mounts and the CLAMP-200 mounts with an AMB-BKT-1 or AMB-BKT-1T "L" bracket. These "AMB" brackets can also be used by themselves, as very sturdy "L" brackets that you bolt to your antenna mounting location. We also have a third bracket, AMB-BKT-2, which is made from two "L" brackets that allows you to rotate your antenna in a manner similar to the CLAMP-150. See **Figure 1**.

- 2.4. **Mounting the SHUNT to another type of antenna mount or bracket** (other than our products). **Figure 1** gives you an idea of how the SHUNT can be mounted but the exact configuration depends on how your mount is set up.
- 2.4.1. The SHUNT flat mounting bracket must be mounted directly to the ground point of your mount near the antenna and to where the coax shield is attached. A ¼ inch hole in the bracket is designed for this purpose. You should use stainless steel hardware to mount this.
- 2.4.2. The SHUNT should also be mounted so that the “antenna side” (wing nut on the SHUNT) is near your antenna coax connection. Be sure that the wing nut on the SHUNT can not contact a ground point on your mount or coax plug (if used).

(3) Connect the SHUNT to your antenna.

You provide a short wire (nominally 6 inches or less, as short as possible) that connects the SHUNT via the provided wing nut to the hot side of your antenna where the center coax conductor goes, at the base of your antenna. It is best to use standard 14 gauge insulated stranded wire. This wire can be connected to your antenna via a PL-259 plug (as in Figure 1) or a solder lug that is mounted under the antenna mounting bolt at the base of your antenna – whatever method you are using to connect your coax to your antenna. The SHUNT is connected in “parallel” with your coax.

- 3.1. If your coax (center conductor) is connected directly to the bolt that holds the base of the antenna (typically a 3/8x24 bolt), run a wire from this point to the wing nut on the SHUNT. It is best to use solder lugs on both ends, soldered to your wire: ¼ inch lug on SHUNT end and 3/8 (typically) inch lug on the antenna bolt side (some very large antennas may use a 1/2 inch bolt).
- 3.2. If your antenna mount has an SO239 jack (or you use our SHD-SO239 base), install a PL259 “tee” adapter (as in **Figure 1**): the center of the “tee” goes to the jack on your antenna mount, one end of the “tee” goes to your coax and the other end of the “tee” goes to the SHUNT wing nut. Use a single 14 gauge stranded wire, soldered to the center pin of a PL259 plug, with the other end to the wing nut on the SHUNT. It’s best to solder the wire to a solder lug that bolts under the wing nut. Do not use coax between the SHUNT and the “tee” connector – only use a single wire.
- 3.3. The SHUNT is now mounted and connected to your antenna and mount, and ready to be tuned.

(4) Tune the SHUNT to your antenna.

Like any type of load inductor or shunt coil, the SHUNT is designed to lower the SWR of the antenna resonance point on the 160 through 80m (and sometimes also on 40m) bands, where the antenna impedance is too low and therefore the SWR is too high. This assumes that your situation can be solved by adding inductance at the antenna feed point, which is typical of mobile low band HF antennas mounted close to the ground. Be sure to first tune your antenna without the SHUNT, as explained above in **Section 1**. Once tuned to the lowest band, the SHUNT will typically work on all HF bands without the need for retuning or being disconnected, as shunt coils become "invisible" at higher frequencies.

- 4.1. When tuning the SHUNT, use the lowest power setting that your radio SWR meter (or external SWR meter) can use. 10 watts is good for some radios, but others such as the Icom IC7000 require at least 30 watts. If using an amplifier, it should be turned off until our antenna system is fully tuned.
- 4.2. **Before tuning the SHUNT**, you should check the SWR on the lowest frequency that your antenna will tune (lowest frequency on 160 or 80m) with the **SHUNT DISCONNECTED from your antenna**; this is the reference point for tuning the SHUNT below. To disconnect the SHUNT, simply disconnect the wire connected to the wing nut on the SHUNT (be sure the unconnected wire does not short out against a metal part of your mount!).
- Tune your radio to the lowest frequency that your antenna is designed to operate on (160 or 80meters). You want to tune the SHUNT to the **LOWEST band first**, checking the other bands only after the SHUNT is adjusted to the lowest band. Tune your antenna to the resonance point, where the SWR dips at least a little although at too high a value to be usable. Be sure to tune the antenna to the “best” (sharpest) resonance point, in case there may be more than one point that will resonate. Record the SWR value (most radios have a built-in SWR bridge but if not use an SWR bridge AT YOUR RADIO).
 - You can also use an antenna meter to adjust the SHUNT and your antenna, but one is not needed. You should note that the SWR measured AT THE ANTENNA may differ from the SWR measured AT THE RADIO, due



to the effects of the coax - the SWR at the RADIO is the one you want to tune to in the final step. You can tune the SWR at the antenna, such as with an antenna meter, but then check it at the radio before you are done.

- 4.3. Now RECONNECT the SHUNT (reconnect wire to the SHUNT wing nut), with your antenna still resonated on the lowest band, as per the previous step.
- 4.4. Open the side panel of the SHUNT by removing the two stainless steel screws. **YOU ARE NOW READY TO TUNE THE SHUNT.**
- 4.5. Loosen the coil clip screw (Figure 5) just enough so that you can just slip the clip on and off the coil wire turns without having to be retightened yet fits slightly snug over the coil wire.
- 4.6. FOR THE FIRST COIL CLIP SETTING:
 - For 80m slide the clip on a coil turn near the left middle of the coil (turn #5-10 or so from the GROUND end that is fastened to the mounting plate bolt).
 - For 160m first try turn 17 or so as the starting point.
 - **NOTE: It is best to fasten the coil clip on the SIDE of the coil near the inside of the PVC housing so that the panel does not push the clip and coil which can detune the SHUNT (Figure 4).**
- 4.7. Transmit to check your SWR at the first coil clip setting and note if it has changed from the reference point reading with the SHUNT antenna wire disconnected. **EACH TIME you change the coil clip setting you should retune your antenna slightly up and down to check the SWR at the resonance point (dip in SWR).**
- 4.8. Move the coil clip to the NEXT COIL TURN AWAY FROM the ground end of the coil (towards the wing nut). Repeat the SWR reading. **If the SWR is going down, you are going in the right direction.** RETUNE your antenna up and down to tune it to resonance (lowest SWR dip). If the SWR is increasing, put the coil clip on a coil winding in the opposite direction.
- 4.9. Continue until you reach the lowest SWR reading. You should be able to tune to an SWR close to 1:1 but if not anything below around 1.5:1 is perfectly acceptable. Even 1.8:1 can work fine. Note this SWR reading.
- 4.10. Once you have reached the lowest SWR on the lowest frequency our antenna is designed for, tune across this band, retuning your antenna up and down. You should have a low SWR across the entire low band although of course you will need to retune your antenna as it can only cover a short portion of each low band at any one position.
- 4.11. Next tune to the next higher band (if first tuned on 160 go to 80m, if first tuned on 80m go to 40m). Check the SWR across this next band. If the SWR is acceptable do not change the SHUNT setting. If the SWR is too high, try compressing or spreading the SHUNT coils to fine tune the setting, or moving the coil clip to a winding to either side. If you readjust the SHUNT, test it again on the lowest band. Refine the SHUNT tuning on the two lowest bands. Note the SWR readings.
- 4.12. Once the two lowest bands have the best SWR setting, test the SHUNT on all other HF bands, through 10m if desired. If a band has a high SWR, disconnect the SHUNT/antenna wire from the ANTENNA side and note if the SWR changes at all. In most installations any type of load inductor will be “invisible” on the higher bands. If this is not the case, try changing your capacity hat, whip setup and other suggestions mention in **Section 1** above. Tuning a mobile HF antenna, especially the more efficient ones, is a trial and error process and you must adjust the entire system for it to work properly across all HF bands (ground, load inductance, whip/cap hat). Yes, this does take some patience but in the end will be a lot of fun, and you will probably learn something that will make tuning the next antenna a bit easier!
- 4.13. Once you have tuned the SHUNT and checked all bands, be sure that the clip is positioned on the side of the coil, as shown in **Figure 4**. You can fine tune the SHUNT by moving the coil turns closer together or farther apart.
- 4.14. Reinstall the access panel with the 2 screws and recheck your SWR. If it changes you may have pushed on the coil clip with the panel, which can detune the SHUNT. You can fine tune this by pulling the turns closer or



farther apart or try tapping an adjacent coil turn. Once adjusted you will not have to readjust the SHUNT again with the panel installed. It make take one or two trials to get the SHUNT tuned with the door closed.

4.15. Once you have the SHUNT working on all desired bands, you're done! HAPPY DX!

(5) Maintenance.

We provide replacement parts for our products - just contact us if you need something.

The SHUNT requires little maintenance and is designed for permanent installation outside, winter and summer. Occasionally whip it down or lightly spray water on it to remove road dirt or winter road de-icing salt.

Be sure that the mounting plate connection to your mount ground does not corrode or build up oxidation, as this can produce electrical resistance between the SHUNT and ground, causing your antenna system to not work properly. Occasionally, remove the mounting bolt and clean the area around this area, using fine steel wool to remove oxidation and to clean the metal parts that connect the SHUNT to your antenna mount ground. Whip clean with paper toweling. You can use a light machine oil, anti-seize grease or WD-40 to help weather proof the connection between the mounting plate and your mount ground.

If you need to tighten, rotate or remove the mounting bracket, you can access the bolt under the coil as follows:

- Mark where your coil clip is fastened to the coil (to help minimize having to retune the SHUNT).
- Note the order in which hardware is installed (**Figure 2**). Be sure to *reinstall the "finish washer" over the rubber seal*, as this provides a ground path around the rubber seal!
- Remove the coil clip.
- Push up on the end of the coil nearest the wing nut up; you will see the rubber pad that insulates the coil from the bolt (**Figure 5**).
- Remove the rubber pad (sticky back adhesive) from the bolt head. ***Be sure to replace it when done!***
- You can now unscrew the bolt and remove the mounting plate. Use a 7/16 inch or 11 mm open ended wrench to hold the bolt head that is under the coil.
- When reinstalling the mounting plate be sure that the rubber pad (weather proofing gasket) is centered on the round part of the PVC housing.
- Reinstall the insulating pad between the coil and bolt head.

If you should ever need to tighten the wing nut bolt, this can be done as follows:

- Undo the coil clip (mark where it is attached to make retuning easier).
- Pull the wing nut and rounded PVC end straight out (it does not unscrew but is simply press fit into the main housing). It is snug fit but is removable - you may want to hold the wing nut in a vise while pulling on the SHUNT body.
- You can now access the bolt head for tightening with a 7/16 inch (11 mm) socket wrench. Be sure that you do not "cut" the wire that is under this bolt.
- Before sliding the rounded PVC end back onto the PVC housing put a little non corrosive sealer around this part and slip it back into the PVC housing. Alternatively, you could use electrical tape around this PVC joint to weather proof it, instead of the sealer. You can use a rubber hammer (CAREFULLY) on the wing nut bolt to fully seat the round PVC into the PVC housing.

Warranty Summary:

All products include a **two (2) week "return for any reason"** and **six (6) month manufacturing defects limited warranty**. If you should need to return your product please contact us **IN ADVANCE** to obtain a return authorization number. **Please refer to the complete warranty terms that are enclosed with your order; this is also available on our web site "Warranty" page.**

Product Illustrations & Installation Examples

Figure 1: Photos of the SHUNT on some of our UHAM, CLAMP and AMB mounts and brackets (the CLAMP200 photo shows an AMB-BKT-1 "L" bracket). These also provide examples for mounting the SHUNT on other types of mounts. The SHUNT bolts to our products with the hardware that comes with those products.





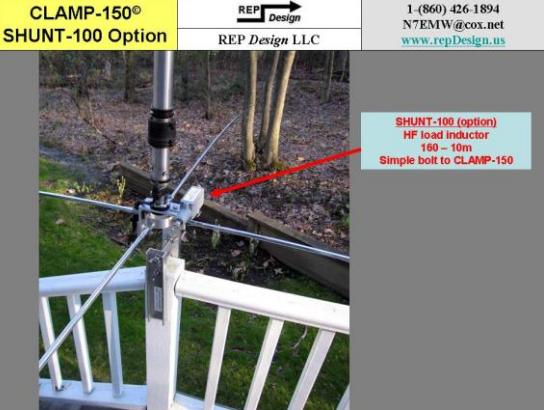
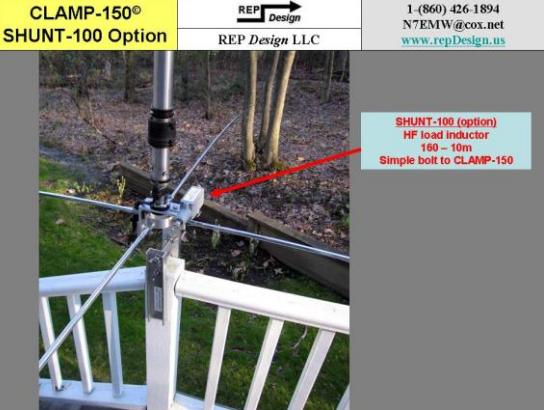


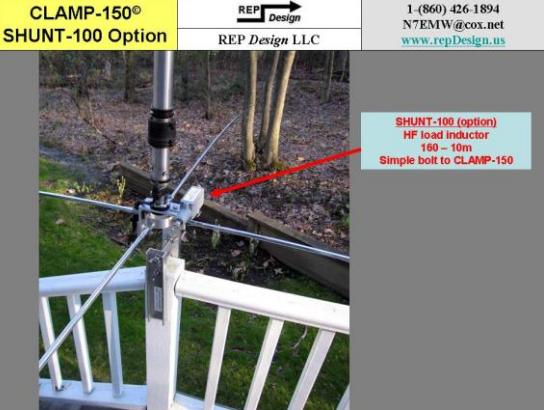

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|  <p>SHUNT-150 mounted to UHAM-100 or UHAM-150 Mount</p> <p>SHUNT mounts to the 1/4x20 stainless steel ground bolt on the UHAM-100 or UHAM-150 mounts – this is the GROUND SIDE of the SHUNT</p> <p>SHUNT antenna connection to the hot side of your antenna, via PL259 plug and "tee" (shown) or wire soldered to lug bolted to antenna mounting bolt.</p> | <table border="1"> <tr> <td>UHAM-200 Options</td> <td>  </td> <td> 1-(860) 426-1894 N7EMW@cox.net www.repDesign.us </td> </tr> <tr> <td></td> <td> Antenna Base Quick Disconnect Hi-Q Antennas, stainless steel NOT required unless you want a quick removal </td> <td></td> </tr> <tr> <td></td> <td> Antenna Base Insulator Hi-Q Antennas -1- for "SHD-SQ239" (shown) -2- for coax solder lugs, for top & bottom (not shown) </td> <td></td> </tr> <tr> <td></td> <td> "SHD-SQ239" Coax Connector our own product, custom-made, stainless steel removable 3/8x24 stud </td> <td></td> </tr> <tr> <td></td> <td> SHUNT-100 HF load inductor our own product, weather proof quick adjustment silver-plated coil clip 14 gauge tin plated solid copper coil aluminum and stainless steel hardware "gaskets seal out the road salt" </td> <td></td> </tr> </table> | UHAM-200 Options |  | 1-(860) 426-1894 N7EMW@cox.net www.repDesign.us | | Antenna Base Quick Disconnect Hi-Q Antennas, stainless steel NOT required unless you want a quick removal | | | Antenna Base Insulator Hi-Q Antennas -1- for "SHD-SQ239" (shown) -2- for coax solder lugs, for top & bottom (not shown) | | | "SHD-SQ239" Coax Connector our own product, custom-made, stainless steel removable 3/8x24 stud | | | SHUNT-100 HF load inductor our own product, weather proof quick adjustment silver-plated coil clip 14 gauge tin plated solid copper coil aluminum and stainless steel hardware "gaskets seal out the road salt" | | | | | | | |
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| | "SHD-SQ239" Coax Connector our own product, custom-made, stainless steel removable 3/8x24 stud | | | | | | | | | | | | | | | | | | | | | |
| | SHUNT-100 HF load inductor our own product, weather proof quick adjustment silver-plated coil clip 14 gauge tin plated solid copper coil aluminum and stainless steel hardware "gaskets seal out the road salt" | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <td>CLAMP-150[®] SHUNT-100 Option</td> <td>  </td> <td> 1-(860) 426-1894 N7EMW@cox.net www.repDesign.us </td> </tr> <tr> <td></td> <td> SHUNT-100 (option) HF load inductor 160 – 10m Simple bolt to CLAMP-150 </td> <td></td> </tr> </table> | CLAMP-150[®] SHUNT-100 Option |  | 1-(860) 426-1894 N7EMW@cox.net www.repDesign.us | | SHUNT-100 (option) HF load inductor 160 – 10m Simple bolt to CLAMP-150 | | <table border="1"> <tr> <td>CLAMP-200 "Horizontal" Options</td> <td>  </td> <td> 1-(860) 426-1894 N7EMW@cox.net www.repDesign.us </td> </tr> <tr> <td></td> <td> Horizontal Adapter Bracket With Various Options Horizontal CLAMP-200 </td> <td></td> </tr> <tr> <td></td> <td> Antenna: HI Q 51160RT, 160-10m (5" coil) Counterpoise; four 10-12 ft. telescoping whips </td> <td></td> </tr> <tr> <td></td> <td> SHUNT-100 HF Load Inductor </td> <td></td> </tr> <tr> <td></td> <td> AMB-HMA-1 Horizontal Adapter AMB-Gnd-1 Counterpoise Ring AMB-Bkt-1 "L" Antenna Bracket (AMB-Bkt-1T: super HD, not shown) </td> <td></td> </tr> </table> | CLAMP-200 "Horizontal" Options |  | 1-(860) 426-1894 N7EMW@cox.net www.repDesign.us | | Horizontal Adapter Bracket With Various Options Horizontal CLAMP-200 | | | Antenna: HI Q 51160RT, 160-10m (5" coil) Counterpoise; four 10-12 ft. telescoping whips | | | SHUNT-100 HF Load Inductor | | | AMB-HMA-1 Horizontal Adapter AMB-Gnd-1 Counterpoise Ring AMB-Bkt-1 "L" Antenna Bracket (AMB-Bkt-1T: super HD, not shown) | |
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Figure 2: Diagram of the SHUNT shows the two product revisions and instructions for updating previous SHUNT's (updating not required). The diagram shows the SHUNT mounted to our UHAM150 as one mounting example. The photo illustrates the Revision 1 update.

| | |
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| <p>Instructions for Attaching New Updated Parts (all other SHUNT parts are the same)</p> <p>SHUNT Body & Mtg. Plate</p>  <p>SHUNT-100: Product Update (REV. 1 & 2) Drawing Updated: 8/15/2009 www.repDesign.us</p> <p>Rev. 1 New Parts</p> <p>SHUNT Wing Nut End</p> <p>stick-on rubber insulator (keeps coil from touching bolt head)</p> <p>1" dia. flat washer under end of coil</p> <p>rubber seal + SS finish washer (provides good ground between bolt and flat mounting plate) / flat washer / lock washer / nut (1/4x20)</p> <p>rubber gasket (when bolt is tight corners will curl-normal)</p> <p>REVISION 1: Added seals so caulk does not have to be reapplied if the mounting plate is rotated for attaching to various types of antenna mounts, or the wing nut hardware is disassembled.</p> <ul style="list-style-type: none"> NEW parts for flat mounting plate bolt (rubber seal & stainless steel finish washer, this washer ensures good ground around the rubber seal); use 7/16" (or 11 mm) wrench on the bolt head under the coil – undo coil clip, lift up end of coil & pull off stick-on rubber insulator first, can stick back on when done to insulate coil from bolt head. NEW parts for wing nut bolt (rubber seal & flat washer), the wing nut rounded PVC part pulls straight away from the SHUNT body (press fit) after you undo the coil clip; put 7/16" socket wrench inside curved PVC end after pulled off SHUNT body and loosen the lock nut. <p>REVISION 2: Added solder lug on the ground end of the coil; this fits under the mounting plate bolt head.</p> <p>ANY PREVIOUS SHUNT VERSION can easily be updated to include these revisions, but are not required.</p> | <p>SHUNT-100: Product Update (REV 20090317) www.repDesign.us</p>  <p>NEW: Stainless steel "finish" washer covers EDPM seal & provides excellent electrical connection from coil to mounting plate (ground)</p> <p>RTV Sealer (as before)</p> <p>NEW: 2 EDPM rubber seals (formerly used non-corrosive RTV sealer) enables disassembly or rotating mounting bracket without re-applying sealer</p> |
|---|---|

Figure 3: Access panel removed with view of coil and coil clip. The coil tap shown is the approx. 160m band setting which will also work on 80m; for antennas that only tune as low as 80m use a position "to the left". The aluminum mounting plate is the coil ground side and is to be mounted directly to your antenna mount ground. The wing nut on the right side is for connecting a single wire (#14 gauge stranded, insulated wire) to the hot side of your antenna, in parallel with your coax.



Figures 4: Recommended coil clip position on the side of the coil against the inside of the housing to minimize detuning when you install the cover - can press slightly on the coil clip and slightly detune the setting. Minor readjustment may be needed - check with the panel attached and push coils closer or farther apart, or use an adjacent coil tap position, if you need to adjust for this. Once adjusted so the SWR is good with the panel installed, it will not need readjustment unless you change the antenna mounting position on your vehicle.



Figure 5: View of rubber pad under coil, to access the mounting plate bolt head. Not visible is the new solder lug (Revision 2) that is under the rubber pad and soldered to the ground side of the coil.

