

# INSTALLATION INSTRUCTIONS JUNCTION BOX THRU-HULL TRIDUCER® INSERT REPLACEMENTS

*For your convenience, your new junction box enables you to splice your replacement insert into your existing transducer cabling and easily re-route your cable from the transducer to your echosounder. The junction box has been successfully subjected to accelerated salt fog testing. If all directions are followed closely, its connections will not corrode. And its strain relief grommets ensure water resistance and cable retention.*

4/91/#17-033

## BEFORE INSTALLING YOUR JUNCTION BOX. . .

1. Check the transducer connector at your echosounder for corrosion. If the connector's pins are corroded, clean them. Then test your transducer to see if the problem has been corrected. If you determine you still need to replace your speed/temperature insert, proceed with the following instructions.
2. Be sure the length of the replacement insert you are installing is correct. Compare your new insert with your old insert or plug to ensure that they are the same length. See Figure 1.

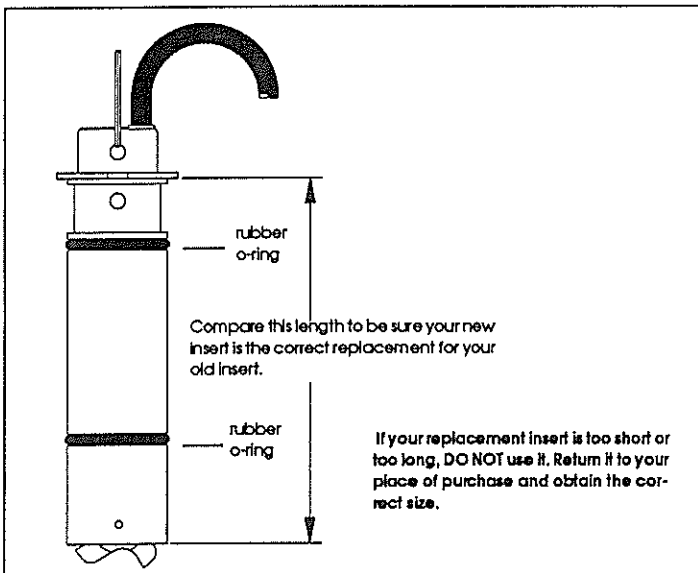
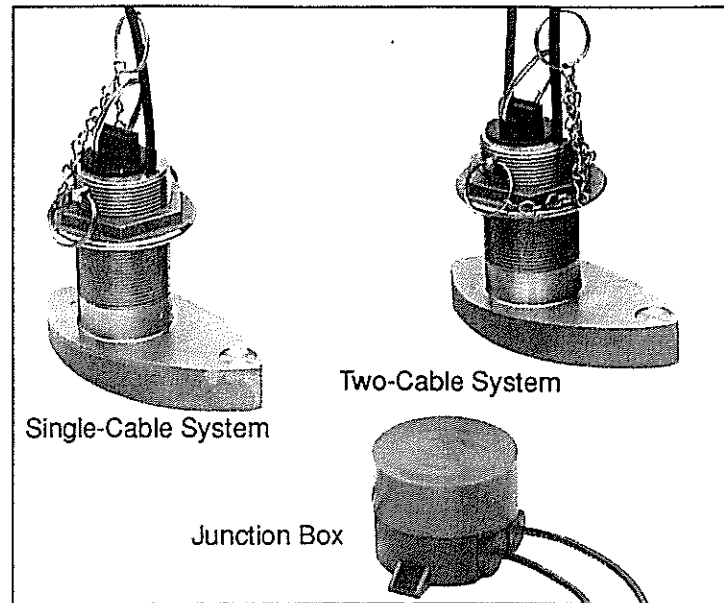


FIGURE 1. CHECKING NEW INSERT SIZE

3. Determine whether your transducer uses a single or a two-cable system. Simply look at the photo above and at the top of your transducer. If your transducer has one cable only, carefully follow the directions for single-cable systems beginning on this page. If it has two cables—one coming from the transducer and one coming from the insert—skip the directions below and go directly to "INSTALLING THE JUNCTION BOX WITH A TWO-CABLE TRANSDUCER SYSTEM" ON PAGE 4.



## MATERIALS NEEDED

crimping pliers  
wire strippers  
Phillips head screwdriver  
cutting pliers  
petroleum jelly  
soldering iron (optional,  
but recommended)

## MATERIALS PROVIDED

junction box  
four 1" (25 mm) large-diameter clear sleeves  
four 2" (50 mm) black, small-diameter sleeves  
four 1" (25 mm) clear, small-diameter sleeves  
two #6 x 1/2" (13 mm) screws  
insulated crimp connectors  
red cap

## INSTALLING THE JUNCTION BOX WITH A SINGLE-CABLE TRANS- DUCER SYSTEM

### MOUNTING THE JUNCTION BOX

1. Remove the junction box red cap and set aside connectors and sleeves found inside.
2. Select a convenient, DRY mounting location for your junction box--no more than nine feet from your transducer, with easy access to the cable ports for splicing. Mark the location of the mounting holes.
3. Drill two 1/8" (3 mm) holes approximately 3/8" (10 mm) deep. DO NOT screw the junction box into place yet.

### SPlicing AND STRIPPING REPLACEMENT INSERT WIRES

1. Near the location of your junction box, cut through the cable of the defective transducer at a point that allows the cable to be spliced where the box is to be mounted.
2. Using a small Phillips head screwdriver, puncture the centers of the two grommets marked 5' - 7' and one grommet marked 3' - 5' on the junction box. DO NOT puncture grommets you will not be using.
3. Push approximately 8" (200 mm) of the two spliced cable ends through the 5'-7' punctured grommets.

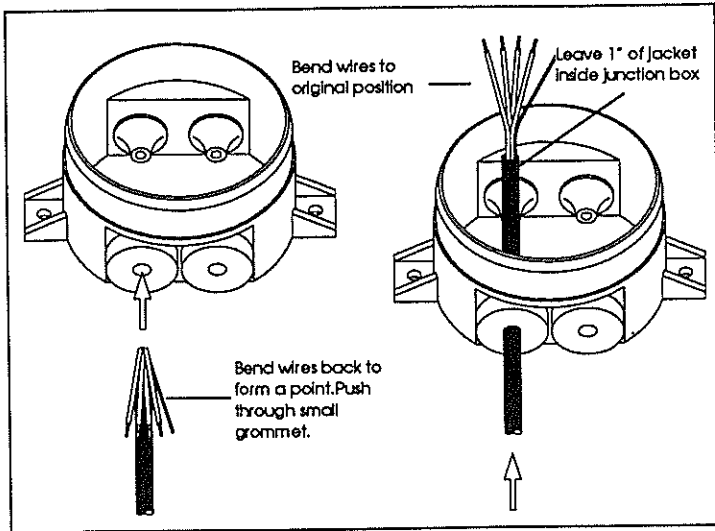


FIGURE 2. PUSHING NEW INSERT CABLE THROUGH GROMMET

4. Bend the pre-stripped wires of the new replacement insert cable back against the cable jacket, as shown in Figure 2. Push the cable through the 3'-5' punctured grommet until all wires are inside the junction box.
5. Bend the wires back to their original position. Then pull the cable back out of the junction box leaving 1" (25 mm) of the jacket inside the junction box.

### MAKING THE CONNECTIONS

1. WITHOUT CUTTING INTO OUTER BARE WIRE STRANDS (system ground), carefully remove 2-1/2" (64 mm) of cable jacket and outer foil from the two ends of the existing cable you cut in Step #1 above. See Figure 3.  
Note: If you accidentally cut the strands of the outer bare, strip back another 2 1/2" (64mm).

**WARNING: Severing strands of the outer bare will harm the speed function of your transducer because it is the ground return.**

2. Separate the inner shielded pair(s) from the other wires on both ends of the existing cable. On BOTH ends of the shielded pairs, remove all but 1" (25 mm) of the mylar wrap and inner foil shield.
3. Locate the green, red, brown, white, and outer bare wires on the cable end coming from the bronze transducer. Clip these wires off as close to the outer jacket as possible. DO NOT clip these wires off the end leading to your sounder.

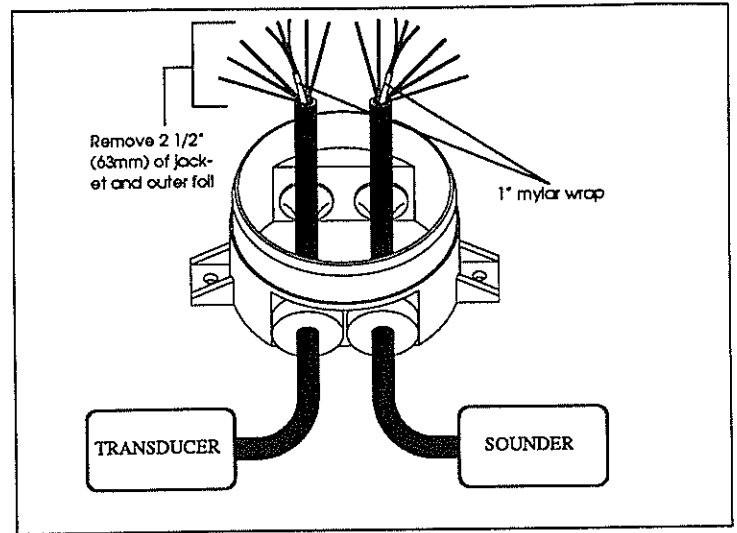


FIGURE 3. REMOVING THE CABLE JACKET AND MYLAR WRAP

4. Strip 1/2" (13mm) off the tips of the blue and black wires on the shielded pairs of the cable leading from your transducer. To discharge the ceramic depth element of your transducer, "short" the blue and the black wires by either temporarily twisting or touching them together.
5. Strip 1/2" (13 mm) of insulation from all remaining unstripped wires on all cables inside the junction box. Twist strands of each wire tightly together to eliminate loose or frayed ends.
6. Pull all cables back through the grommets leaving 1" (13 mm) of the jacket inside the junction box.
7. Position a 1" (25 mm) clear, large-diameter sleeve over the mylar and foil shield of each shielded pair. Slide the sleeve back to the cable jacket. See Figure 4.
8. Position a 1" (25 mm) clear, small-diameter sleeve over each bare wire of the shielded pair(s) on both ends of the cable to be spliced. Slip the sleeve back to the larger sleeve so that only the tips of the bares are exposed. See Figure 4.
9. Position a 2" (50 mm) small-diameter black sleeve over the outer bare wire on the end of the cable running to your sounder and on the bare wire in the new insert. Slip the sleeves back to the cable jacket so that 1/2" (13 mm) of the bare wire tips are exposed. See Figure 4.

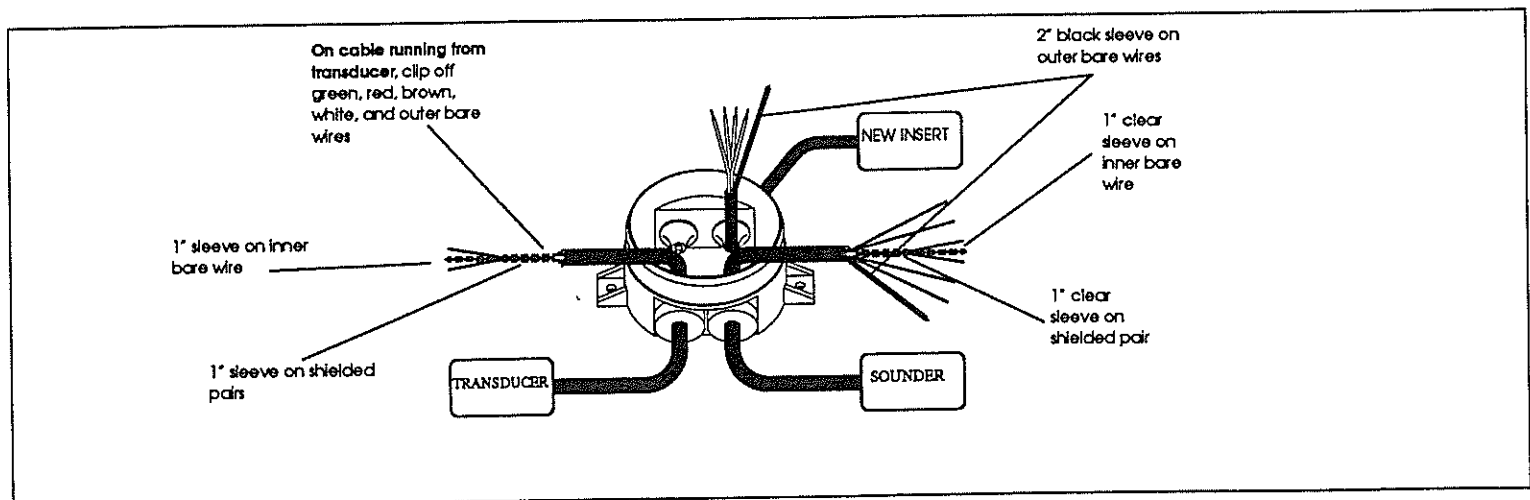
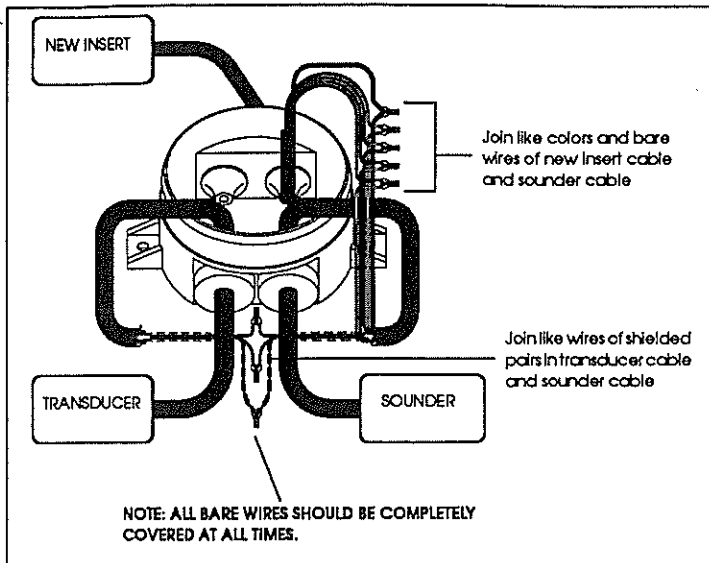


FIGURE 4. POSITIONING SLEEVES CORRECTLY



**FIGURE 5. MAKING THE CONNECTIONS**

10. Join like-color wires of the shielded pairs on the transducer cable and the sounder cable by soldering or tightly twisting the wires together. See Figure 5.
11. Dip twisted ends into petroleum jelly or silicone grease for extra corrosion protection. Then slip the supplied insulated connectors over each pair of twisted wires. Bare wires should NOT be visible outside the crimp section of the connector. If they are, you need to trim the tips and replace the connectors. Then crimp each joint tightly over the crimp head using pliers.
12. To connect your new speed/temperature insert, join like-color wires of the new insert's pre-stripped cable to those on the existing cable leading to your sounder. Join the insert bare to the outer bare on the cable leading to the sounder. Repeat Step #11 above for these connections.
13. Visually inspect all wires to ensure that a short circuit does not exist between inner and outer bare wires.

**WARNING:** *Allowing inner and outer bare wires to touch in the completed splice creates a ground loop that may degrade your instrument's performance.*

14. Turn on your instrument. It should read the air temperature. Then test-spin your new paddlewheel. Depending on how fast you spin the paddlewheel, a speed should register on your display.

NOTE: If your new insert does not work properly...

1. Your wiring may be incorrect. Go back to Step #1 and recheck your wiring.
2. Your new insert may be defective. Return it immediately.

### COMPLETING THE PROCESS

1. Neatly place the crimped wires inside the junction box.
2. Cover the junction box with the red cap provided.
3. Release excess air inside the box by placing your thumb on the center of the red cap and pressing for 30 seconds.
4. Secure the box to the mounting surface you've chosen using the two #6 x 1/2" (13 mm) screws provided.
5. Locate the rubber o-rings at the top and bottom of your new insert. See Figure 1. Lubricate each of them liberally with petroleum jelly or other suitable grease. Remove your defective insert; then fit the new speed/temperature unit into your transducer housing. Secure with bar, chain, and metal rings.
6. If desired, save your defective insert for parts. The paddlewheel, shaft, and/or o-rings may be reuseable.

## INSTALLING THE JUNCTION BOX WITH A TWO-CABLE TRANSDUCER SYSTEM

[See back page]

# INSTALLING THE JUNCTION BOX WITH A TWO-CABLE TRANSDUCER SYSTEM

## MOUNTING THE JUNCTION BOX

1. Select a convenient, DRY mounting location for your junction box--no more than nine feet from your transducer, with easy access to the cable ports for splicing. Mark the location of the mounting holes.
2. Drill two 1/8" (3 mm) holes approximately 3/8" (10 mm) deep. DO NOT screw the junction box into place yet.

## SPlicing AND STRIPPING FOR REPLACEMENT INSERT

1. Cut through the cable leading to the defective speed/temperature insert near the location of your junction box at a point that allows the cable to be spliced where the box is to be mounted. See Figure 6.
2. Using a small Phillips head screwdriver, puncture the centers of the two 3' - 5' grommets on the junction box. DO NOT puncture grommets you will not be using.
3. Push approximately 8" (200 mm) of the cable leading to your display through one of the 3' - 5' punctured grommets.
4. Bend the pre-stripped wires of the new insert cable back against the cable jacket and insert in junction box, as shown in Figure 2.

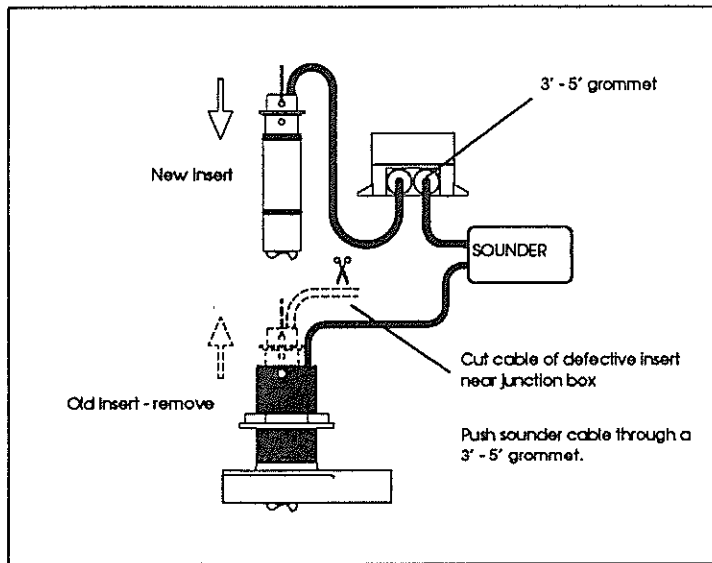


FIGURE 6. SPlicing CABLE IN TWO CABLE SYSTEM TO JOIN PRE-STRIPPED INSERT WIRES

## MAKING THE CONNECTIONS

1. WITHOUT CUTTING INTO THE OUTER BARE WIRE STRANDS, carefully remove 2 1/2" (64 mm) of cable jacket and foil from the cable running to your sounder.

**WARNING:** Severing strands of the outer bare will harm the speed function of your transducer because it is the ground return.

2. Strip 1/2" (13 mm) of insulation from the tip of the green, red, brown, white, and bare wires on the cable running to your sounder. Twist exposed strands tightly together to eliminate loose or frayed ends. See Figure 7.
3. Put a 2" (50 mm) black sleeve over the bare wire on both the new cable and the existing cable. Slide the sleeve back to the cable jacket so that only the tips of the bares are exposed. See Figure 7.
4. Join like-color wires (green to green, brown to brown, bare to bare, etc.) of the new insert and the cable running to your sounder by soldering or tightly twisting the wires together.
5. Dip twisted ends into petroleum jelly or silicone grease for extra corrosion protection. Then slip the insulated connectors provided over each pair of twisted wires. Bare wires should NOT be visible after attaching connectors. If they are, you will need to trim the tips and reapply the connectors. Crimp each connector tightly over the crimp head using pliers.
6. Turn on your instrument. It should read the air temperature. Then test-spin your new paddlewheel. Depending on how fast you spin the paddlewheel, a speed should register on your display.

NOTE: If your new insert does not work properly...

1. Your wiring may be incorrect. Go back to Step #1 and recheck your wiring.
2. Your new insert may be defective. Return it immediately.

## COMPLETING THE PROCESS

Follow directions under COMPLETING THE PROCESS for "INSTALLING THE JUNCTION BOX WITH A SINGLE-CABLE TRANSDUCER SYSTEM" on page 3.

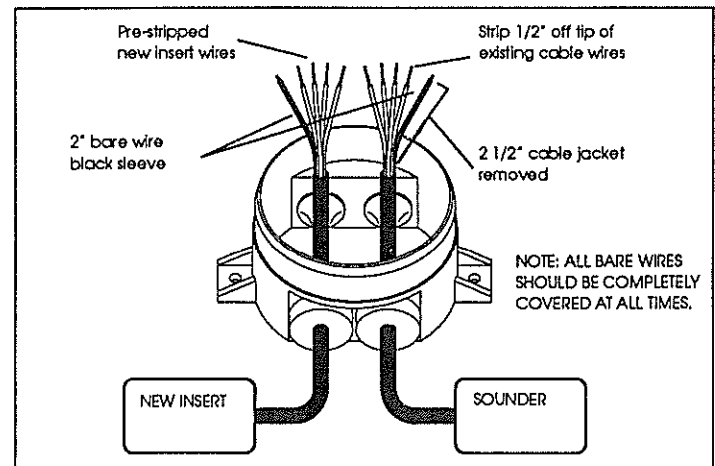


FIGURE 7. LOCATING WIRES IN TWO CABLE SYSTEM