



# INSTALLATION INSTRUCTIONS

## Junction Box Kit

for Replacement Speed/Temperature Insert

Models: B44V, B66VL, B744V, B744VC, B744VL, B744VLC

07/06/16

17-033-02 rev. 08

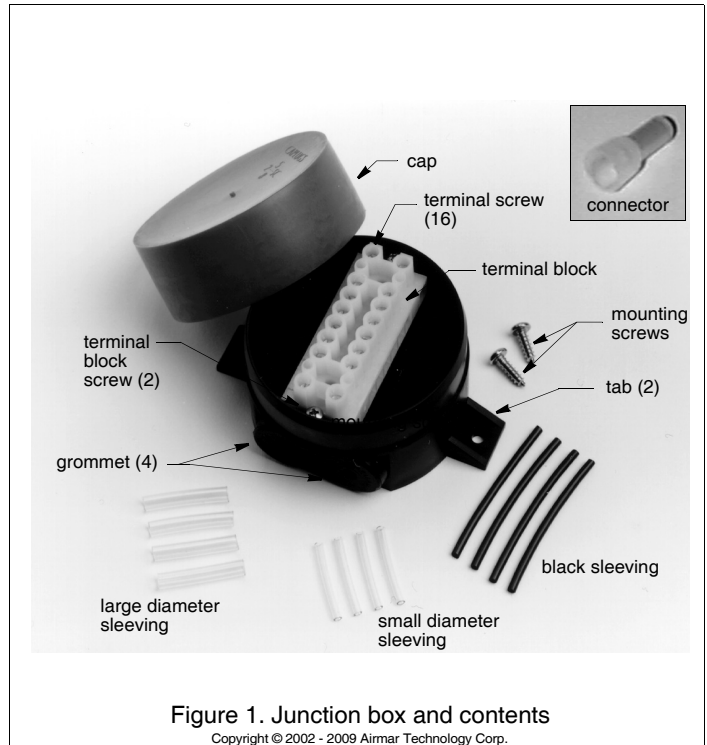
**Follow the precautions below for optimal product performance and to reduce the risk of property damage, personal injury, and/or death.**

**WARNING:** Always wear safety glasses, a dust mask, and ear protection when installing.

### CAUTION: High Voltage Charge

The depth transducer may be storing a high voltage charge. Accidental discharge could destroy the speed sensor.

**IMPORTANT:** Read the instructions completely before proceeding with the installation. These instructions supersede any other instructions in your instrument manual if they differ.



## Applications

- These instructions are for a replacement speed/temperature insert only. Installing a new insert will NOT solve problems with depth sounding or fish finding.
- Determine which instructions to follow, either A or B, by looking at your multisensor. If your multisensor has one cable, follow instructions A on page 2. If your multisensor has two cables—one from the depth transducer and one from the speed/temperature insert—follow instructions B on page 3.
- If these instructions are followed carefully:
  - The connections will not corrode
  - The strain relief grommets will be water resistant and provide excellent cable retention.

## Before Installing

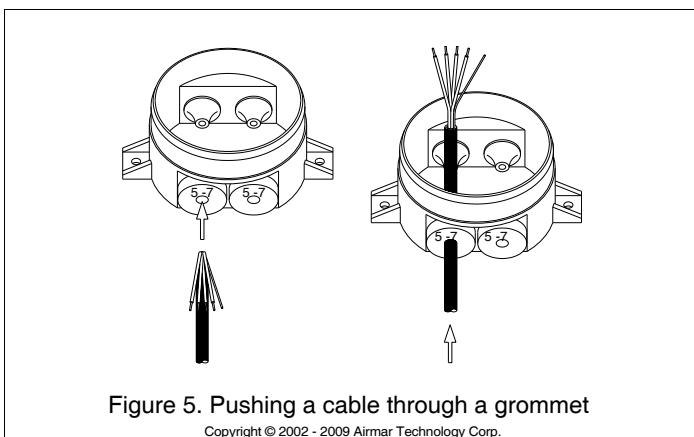
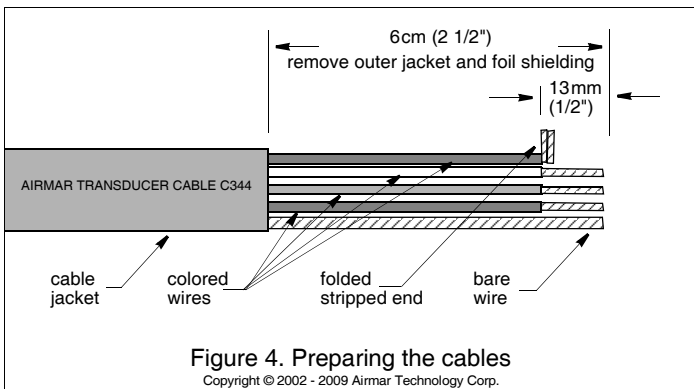
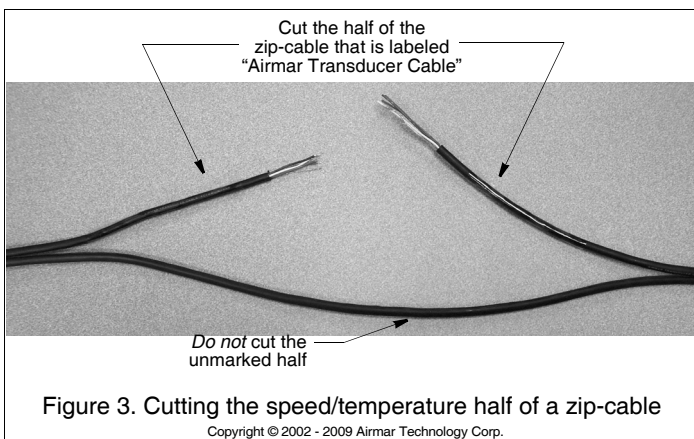
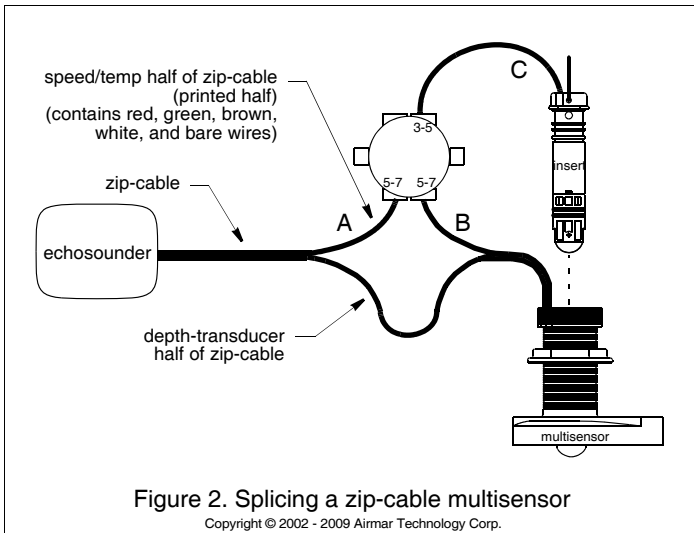
1. Be sure your new speed/temperature insert is the correct replacement. Compare the length of the new insert with the original insert (ignore the cable). If the new insert is more than 3mm (1/8") longer or shorter than the original insert, return it. To obtain the correct insert, see "Replacement Parts" on the back of your multisensor's owner's guide.
2. Check the multisensor's connector at the echosounder for corrosion. If the connector's pins are corroded, clean them. Then test the multisensor to see if the problem has been corrected.
3. Check the speed and temperature functions of the new insert. Connect it to the echosounder and spin the paddlewheel. Check for a reading of several knots. Check for the approximate air temperature. If there is no reading(s), check the connection and repeat the test. If there is still no reading(s) or it is inaccurate, return the product to your place of purchase.

## Tools & Materials

- Safety glasses
- Dust mask
- Ear protection
- Pencil
- Drill
- Drill bit: 3mm or 1/8"
- Screwdrivers: Phillips and blade
- Box-cutter knife (zip-cable installation)
- Cutting pliers
- Masking tape
- Marker
- Wire strippers
- Alcohol
- Crimping pliers (nine or ten-wire cables)
- Anti-fouling paint (water-based) (**mandatory in salt water**)
- Silicone lubricant or petroleum jelly

## Mounting Location

1. Remove the red cap from the junction box and set the contents aside (see Figure 1).
2. Select a convenient *dry* mounting location along the multisensor's cable route.
3. Position the junction box so the grommets are easily accessible to the cable. Mark the location of the mounting holes.
4. At the marked location, drill two 3mm or 1/8" holes approximately 10mm (3/8") deep. *Do not fasten the junction box in place at this time.*



## Preparing the Cables

### A. One Cable (Zip-cable) Multisensor

**CAUTION:** Do not cut the depth-transducer half of the zip-cable.

**CAUTION:** Do not puncture unused grommets.

1. Disconnect the multisensor from the echosounder.
2. On the junction box, use a small Phillips screwdriver to puncture the center of both grommets marked 5-7 and one grommet marked 3-5 (see Figure 2).
3. The multisensor's cable is actually two separate cables joined together. This type of cable is called zip-cable. Near the mounting location of the junction box, separate the two halves of the zip-cable. Carefully cut them apart with a box-cutter knife for a distance of 0.5m (18"). Start at the junction box location and move toward the sounder. **Cut only the insulation between the halves. DO NOT cut into the cables and expose the wires inside.**
4. After you have separated the zip-cable, notice that one of the halves is printed with the words "Airmar Transducer Cable" (see Figure 3). The printed half of the zip-cable contains the speed and temperature functions. **Cut only the speed/temperature half of the cable near the junction box.** The wires inside will be red and green. **DO NOT cut the depth-transducer half of the cable.**

**NOTE:** If the wires inside the cut-half of the cable are blue, black, and orange, you have cut the depth-transducer side by mistake. Now cut the speed/temp half of the zip-cable. Because the depth-transducer cable has been cut, you will need to splice it back together (see Figure 9). Puncture the center of the remaining 3-5 grommet. Prepare the cut ends of the depth-transducer cable (see Figure 10). If you have a nine or ten wire cable, use crimping pliers and the crimp connectors supplied. Also use silicone lubricant or petroleum jelly to ease sliding through the grommets.

5. Label the cables as follows with tape and a marker (see Figure 2).
  - Cable A—cable to echosounder
  - Cable B—cable to multisensor
  - Cable C—new speed/temp insert cable
6. Cables A and B—Strip 6cm (2-1/2") of the outer jacket and foil shield from the cut ends (see Figure 4).
7. Cable A—Strip 13mm (1/2") of insulation from the end of each colored wire.
8. Cable B—Only the *bare* wire will be used. Cut-off all the colored wires.
9. Bend the stripped wires of each cable back against its cable jacket (see Figure 5). Apply alcohol to the cut end of each cable jacket to ease sliding. (Do not use any other lubricant to ease sliding. It will interfere with sealing the grommets.) Push about 20cm (8") of each cable through the appropriate grommet until all the wires are inside the junction box (see Figure 2). Bend the wires back to their original position (see Figure 5).
10. Slide a black sleeve over each bare wire and position it against the cable jacket. For ease in holding the sleeves in place and connecting to the terminals, fold the stripped ends of each wire in half. Twist the ends and bend them 90° (see Figure 4).
11. Go to "Connecting & Testing" on page 3 and follow the instructions.

## B. Two-cable Multisensor

**CAUTION:** Do not cut the depth-transducer cable.

**CAUTION:** Do not puncture unused grommets.

1. Disconnect the multisensor from the echosounder.
2. On the junction box, use a small Phillips screwdriver to puncture the center of both 5-7 grommets only (see Figure 6).
3. Near the marked location for the junction box, cut the cable leading to the speed/temp insert ONLY. *Do not cut the depth transducer cable.*
4. Strip 6cm (2-1/2") of the outer jacket and foil shield from the cable ends (see Figure 4).
5. Strip 13mm (1/2") of insulation from the end of each colored wire.
6. Bend the stripped wires of each cable back against its cable jacket (see Figure 5). Apply alcohol to the cut end of each cable jacket to ease sliding. (Do not use any other lubricant to ease sliding. It will interfere with sealing the grommets.) Push about 20cm (8") of each cable through a grommet until all the wires are inside the junction box (see Figure 6). Bend the wires back to their original position (see Figure 5).
7. Slide a black sleeve over each bare wire and position it against the cable jacket. For ease in holding the sleeves in place and connecting to the terminals, fold the stripped ends of each wire in half. Twist the ends and bend them 90° (see Figure 4).

## Connecting & Testing

**CAUTION:** Make certain there are no bare wires, frayed strands, or loose ends to cause shorting.

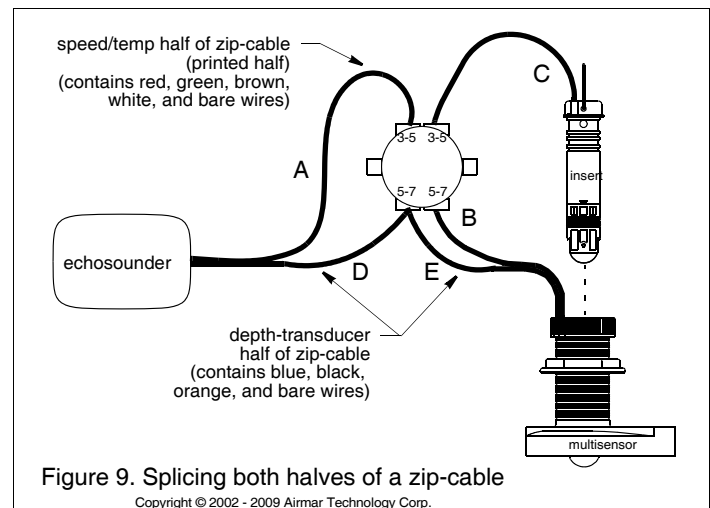
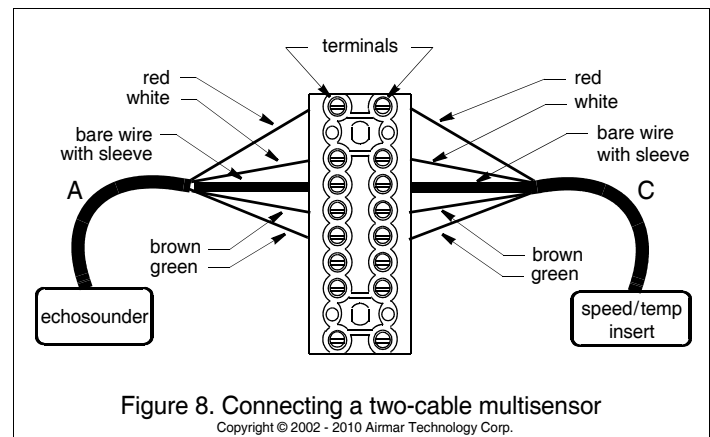
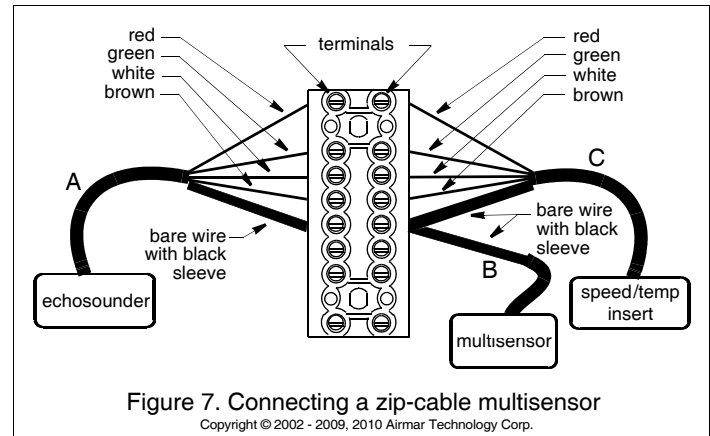
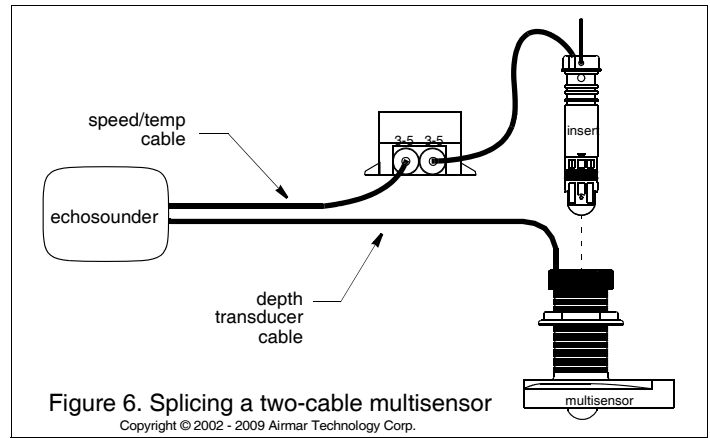
**CAUTION: Zip-cable multisensor**—If the depth-transducer half of the cable (with the blue, black, orange, and bare wires) has been cut, re-connect it **FIRST** before connecting the new speed/temp insert (see Figure 11 on page 4).

1. Insert the stripped end of a colored wire from the echosounder cable A into the first square opening in the side of the terminal block (see Figure 7 or 8). Tighten the terminal screw until the wire is held firmly. Connect each wire in turn including the bare wire.
2. Connect each matching colored wire and bare wire from the new speed/temp insert (cable C) to the corresponding terminal.

**Zip-cable multisensor**—Twist the bare wire from cable B and the bare wire from cable C together. Connect the twisted pair of bare wires to the terminal (see Figure 7). This shields the depth transducer from acoustic noise.

3. Visually inspect all the wires. Make certain the sleeving completely covers any bare wire(s). There should be no frayed strands or loose ends to cause shorting. If any bare wire is visible, shorten the stripped end and reconnect it to the terminal.
4. Connect the cable to the echosounder and turn it ON.
5. Check for the approximate air temperature.
6. Spin the new paddlewheel and look for a speed reading.

**NOTE:** If the new insert does not work properly, the wiring may be incorrect. Return to step 1 and recheck your wiring.



## Closing & Mounting

1. Apply alcohol to each cable jacket inside the junction box to ease sliding. Grasp each cable from outside the box and pull until only 25mm (1") of the cable *jacket* is left inside. This will invert the grommets to seal the junction box.
2. Arrange the wires neatly inside the junction box.
3. Place the terminal block inside the junction box. Secure the ends with the terminal block screws provided (see Figure 1).
4. Close the box using the red cap. Expel the excess air inside the junction box by placing a thumb on the center of the red cap and applying pressure for 30 seconds.
5. Screw the junction box to the selected mounting surface using the two #6 x 1/2" (13mm) screws provided.

## Anti-fouling Paint

Aquatic growth can accumulate rapidly on the speed/temp insert reducing its performance within weeks. Surfaces exposed to salt water must be coated with anti-fouling paint. Use **water-based anti-fouling paint only**. Never use ketone based paint since ketones can attack many types of plastic. Paint the following surfaces:

- Exposed end of the insert
- Outside wall of the insert below the lower O-ring
- Paddlewheel cavity
- Paddlewheel

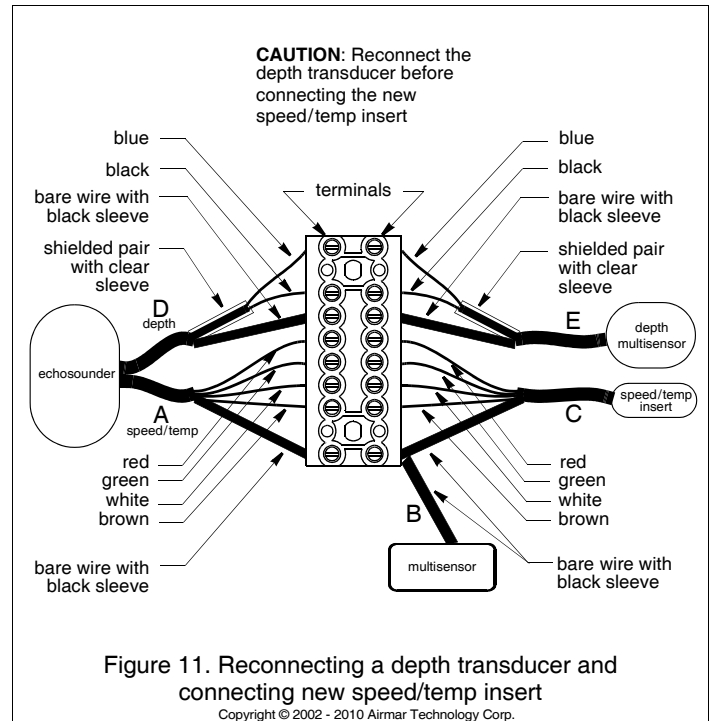
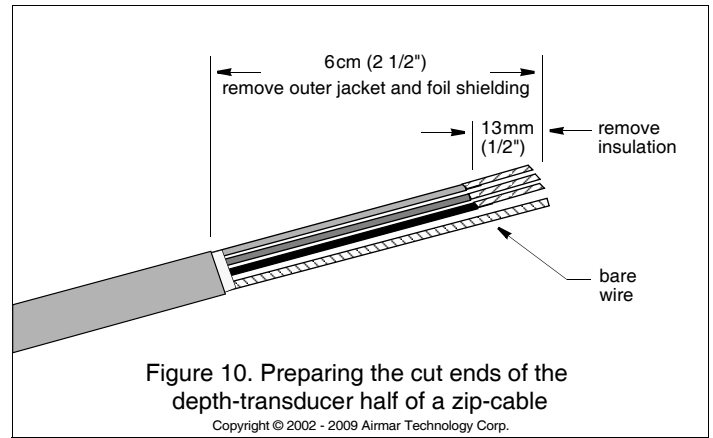
## Installing the Speed Temperature Insert

**WARNING:** Different speed/temperature inserts are attached to the multisensor in different ways. See your multisensor's owner's guide for more details.

**WARNING:** O-ring must be intact and well lubricated to make a watertight seal.

**WARNING:** Always attach the safety wire to prevent the insert from backing out in the unlikely event that the cap nut and/or insert nut fails or is screwed on incorrectly.

1. Check the O-rings on the new insert (replace if necessary) and lubricate them with silicone lubricant or petroleum jelly.
2. Remove the failed speed/temperature insert from the housing. If desired, save it for replacement parts. The paddlewheel and shaft may be usable.
3. Slide the new insert into the valve assembly with the arrows on the top pointing forward until it is fully seated.
  - **Insert nut**—Use a twisting motion until the keys fit into the notches. (The insert fits one way only.) Screw the insert nut in place and **hand-tighten only**. Do not over tighten.
  - **Safety chain or Strap assembly**—Reattach the safety chain/strap assembly to the cable. Slide the retaining pin through the holes and secure it with the safety ring(s).
4. Reattach the safety wire.



## Parts

Obtain parts from your instrument manufacturer or marine dealer.

Gemeco  
(USA)

Tel: 803-693-0777  
Fax: 803-693-0477  
email: sales@gemeco.com

Airmar EMEA  
(Europe, Middle East, Africa)

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