FURUNO

INSTALLATION MANUAL

COLOR LCD SOUNDER

MODEL FCV-582L

FURUNO ELECTRIC CO., LTD.
NISHINOMIYA, JAPAN
**SAFETY INSTRUCTIONS**

**WARNING**

ELECTRICAL SHOCK HAZARD

Do not open the equipment unless totally familiar with electrical circuits and service manual.

Only qualified personnel should work inside the equipment.

Turn off the power at the switchboard before beginning the installation.

Fire or electrical shock can result if the power is left on.

Do not install the equipment where it may get wet from rain or water splash.

Water in the equipment can result in fire, electrical shock or equipment damage.

Be sure no water leaks in at the transducer installation site.

Water leakage can sink the vessel. Also confirm that the transducer will not loosen by ship’s vibration. The installer of the equipment is solely responsible for the proper installation of the equipment. FURUNO will assume no responsibility for any damage associated with improper installation.

Be sure that the power supply is compatible with the voltage rating of the equipment.

Connection of an incorrect power supply can cause fire or equipment damage. The voltage rating of the equipment appears on the label above the power connector.

**CAUTION**

Ground the equipment to prevent electrical shock and mutual interference.

Observe the following compass safe distances to prevent deviation of a magnetic compass:

<table>
<thead>
<tr>
<th>Display unit</th>
<th>Standard</th>
<th>Steering</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.6 m</td>
<td>0.6 m</td>
</tr>
</tbody>
</table>

When handling the transducer cable, keep in mind following points:

- Keep the cable away from oil and fuel.
- Keep the cable away from the place where it may be damaged during the installation.
- Do not paint the cable.

The sheath of the transducer cable is made of chloroprene rubber (or vinyl chloride). Therefore, do not paint the sheath with organic liquid (such as toluene) since it may harm the sheath.
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### Standard Supply

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Type</th>
<th>Code No.</th>
<th>Qty</th>
<th>Remarks</th>
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<tr>
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<td>CV-582L</td>
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<td>1</td>
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<tr>
<td>2</td>
<td>Installation Materials</td>
<td>CP02-06100</td>
<td>000-015-468</td>
<td>1 set</td>
<td>See packing list at end of manual.</td>
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<tr>
<td>3</td>
<td>Spare Parts</td>
<td>SP02-03900</td>
<td>001-389-000</td>
<td>1 set</td>
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<tr>
<td>4</td>
<td>Accessories</td>
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<td>000-015-406</td>
<td>1 set</td>
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<td>5</td>
<td>Transducer</td>
<td>520-5PSD</td>
<td>000-015-125</td>
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<td>Inside-hull</td>
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<tr>
<td></td>
<td></td>
<td>520-5MSD</td>
<td>000-015-127</td>
<td></td>
<td>Inside-hull, w/8 m cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>520-5PWD</td>
<td>000-015-126</td>
<td></td>
<td>Transom mount, w/8 m cable</td>
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</tbody>
</table>

### Optional Supply

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Type</th>
<th>Code No.</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>1</td>
<td>Rectifier</td>
<td>PR-62</td>
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<td></td>
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<tr>
<td>2</td>
<td>Cable Assy.</td>
<td>MJ-A6SPF0012-050</td>
<td>000-134-424</td>
<td>6P-6P, 5 m</td>
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<tr>
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<td></td>
<td>MJ-A6SPF0012-100</td>
<td>000-133-817</td>
<td>6P-6P, 10 m</td>
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<tr>
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<td>000-132-244</td>
<td>6P-4P, 5 m</td>
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<td>MJ-A6SPF0011-100</td>
<td>000-132-336</td>
<td>6P-4P, 10 m</td>
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<tr>
<td>4</td>
<td>Triducer</td>
<td>524ST-MSD</td>
<td>000-015-224</td>
<td>Thru-hull type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>525ST-MSD</td>
<td>000-015-263</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td>520ST-PWD</td>
<td>000-015-128</td>
<td>Transom mount type</td>
</tr>
<tr>
<td></td>
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<td>525ST-PWD</td>
<td>000-015-261</td>
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<td>5</td>
<td>Temperature Sensor</td>
<td>T-02MTB</td>
<td>000-040-026</td>
<td>With 8 m cable, transom mount</td>
</tr>
<tr>
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<td></td>
<td>T-02MSB</td>
<td>000-040-040</td>
<td>Thru-hull type</td>
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<td></td>
<td></td>
<td>T-03MSB</td>
<td>000-040-027</td>
<td>With 8 m cable, thru-hull type</td>
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<tr>
<td>6</td>
<td>ST Sensor</td>
<td>ST-02MSB</td>
<td>000-137-986</td>
<td>Thru-hull type</td>
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<tr>
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<td></td>
<td>ST-02PSB</td>
<td>000-137-987</td>
<td>With 8 m cable, thru-hull type</td>
</tr>
<tr>
<td>7</td>
<td>Inside Hull Kit S</td>
<td>22S0191-0</td>
<td>000-802-598</td>
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<tr>
<td>8</td>
<td>Distributor Kit</td>
<td>MB-1000</td>
<td>000-040-809</td>
<td></td>
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<tr>
<td>9</td>
<td>Transducer</td>
<td>50B-6</td>
<td>000-015-042</td>
<td>Requires Distributor MB-1000.</td>
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<td>50B-6G</td>
<td>000-015-016</td>
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<td>200B-5</td>
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<td>200B-5S</td>
<td>000-015-029</td>
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<tr>
<td>10</td>
<td>Converter Connector</td>
<td>02S4089</td>
<td>000-133-622</td>
<td>8P→10P</td>
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<td>11</td>
<td>Converter Connector</td>
<td>02S4147</td>
<td>000-141-082</td>
<td>Water temperature/Speed sensor</td>
</tr>
<tr>
<td>12</td>
<td>Converter Connector</td>
<td>02S4093</td>
<td>000-134-901</td>
<td>Transducer of AIRMAR CORP.</td>
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<tr>
<td>13</td>
<td>Converter Connector</td>
<td>02S4167</td>
<td>000-142-503</td>
<td>Extends standard transducer cable 10 m.</td>
</tr>
</tbody>
</table>
SYSTEM CONFIGURATION

STANDARD SUPPLY

12-24 VDC

10P

MJ-A15A3F0013-035-3A
3.5m

MJ-A3SPF
3P

DISPLAY UNIT
CV-582L

Transducer
520-5MSD
520-5PWD
520-5PSD

OPTIONAL SUPPLY

Navigator

6P

6P

Speed/water temperature:
ST-02MSB, ST-02PSB
OR
Water temperature sensor:
T-02MSB, T-02MTB,
T-03MSB

DISTRIBUTOR
MB-1000

50B-6/6G

200B-5/5S

10P

10P

8P

8P

Triducer
524ST-MSD
520ST-PWD

8P

MJ-A15A3F0013-035-3A

8P
**MOUNTING**

### 1.1 Display Unit

**Mounting considerations**

The display unit can be installed on a tabletop or on the overhead. When selecting a mounting location for the display unit keep the following in mind:

- Keep the display unit out of direct sunlight.
- The temperature and humidity should be moderate and stable.
- Locate the unit away from exhaust pipes and vents.
- The mounting location should be well ventilated.
- Mount the unit where shock and vibration are minimal.
- Keep the unit away from electromagnetic field-generating equipment such as motors and generators.
- For maintenance and checking purposes, leave sufficient space at the sides and rear of the unit and leave slack in cables.
- A magnetcompass will be affected if placed too close to the display unit. Observe the following compass safe distances to prevent disturbance to the magnetcompass:

  Standard compass: 0.8 meters
  Steering compass: 0.6 meters

![Figure 1-1 Display unit mounting methods](image)

*Figure 1-1 Display unit mounting methods*
Removing cover

While pressing the center of the cover with your thumbs as illustrated, pull the cover towards you to remove it.

Mounting procedure

Attach blind film to unused knob holes.

Figure 1-2 How to set the display unit to the hanger
1.2 Thru-hull Mount Transducer 520-5PSD, 520-5MSD

Transducer mounting location

This type of mounting provides the best performance of all, since the transducer protrudes from the hull and the effect of air bubbles and turbulence near the hull skin is reduced. When the boat has a keel, the transducer should be at least 30 cm away from it. Typical thru-hull mountings are shown in the figure on the next page.

The performance of this sounder is directly related to the mounting location of the transducer, especially for high-speed cruising. The installation should be planned in advance, keeping the standard cable length (8 m) and the following factors in mind:

• Air bubbles and turbulence caused by movement of the boat seriously degrade the sounding capability of the transducer. The transducer should, therefore, be located in a position where water flow is the smoothest. Noise from the propellers also adversely affects performance and the transducer should not be mounted nearby. The lifting strakes are notorious for creating acoustic noise, and these must be avoided by keeping the transducer inboard of them.

• The transducer must always remain submerged, even when the boat is rolling, pitching or up on a plane at high speed.

• A practical choice would be somewhere between 1/3 and 1/2 of the boat’s length from the stern. For planing hulls, a practical location is generally rather far astern, so that the transducer is always in water regardless of the planing attitude.

Transducer outline drawings

![Transducer outline drawings](image)

*Figure 1-3 Dimensions of transducers 520-5PSD, 520-5MSD*
Acceptable transducer mounting locations

Deep-V hull

- Position 1/2 to 1/3 length of the hull from stern
- 15 to 30 cm off center line (inside first lifting strakes).

*Figure 1-4 Transducer mounting location on deep-V hull*

High speed V-planing hull

- Within the wetted bottom area
- Deadrise angle within 15°

*Figure 1-5 Transducer mounting location on high speed V-planing hull*

Typical thru-hull mount transducer installations

*Figure 1-6 Typical thru-hull mount transducer installations*
Procedure for installing the thru-hull mount transducer

1. With the boat hauled out of the water, mark the location selected for mounting the transducer on the bottom of the hull.

2. If the hull is not level within 15° in any direction, fairing blocks made out of teak should be used between the transducer and hull, both inside and outside, to keep the transducer face parallel with the water line. Fabricate the fairing block as shown below and make the entire surface as smooth as possible to provide an undisturbed flow of water around the transducer. The fairing block should be smaller than the transducer itself to provide a channel to divert turbulent water around the sides of the transducer rather than over its face.

![Figure 1-7 Construction of fairing block](image)

3. Drill a hole just large enough to pass the threaded stuffing tube of the transducer through the hull, making sure it is drilled vertically.

4. Apply a sufficient amount of high quality caulking compound to the top surface of the transducer, around the threads of the stuffing tube and inside the mounting hole (and fairing blocks if used) to ensure watertight mounting.

5. Mount the transducer and fairing blocks and tighten the locking nuts. Be sure that the transducer is properly oriented and its working face is parallel to the waterline.

Note: Do not over-stress the stuffing tube and locking nuts through excessive tightening, since the wood block will swell when the boat is placed in the water. It is suggested that the nut be tightened lightly at installation and retightened several days after the boat has been launched.
1.3 Transom Mount Transducer 520-5PWD, Optional Transom Mount Triducer 520ST-PWD

This type of mounting is very commonly employed, usually on relatively small I/O or outboard boats. Do not use this method on an inboard motor boat because turbulence is created by the propeller ahead of the transducer.

There are two methods of installation: flush with hull (for flat hulls) and projecting from hull (for deep V-hulls).

![Diagram showing transom mount transducer mounting locations]

**Figure 1-8 Transom mount transducer mounting locations**

**Installing the transom mount transducer flush with hull (for flat hulls)**

A suitable mounting location is at least 50 cm away from the engine and where the water flow is smooth.

1. Drill four pilot holes in the mounting location.
2. Attach the transducer to the bracket with tapping screws (supplied).
3. Adjust the transducer position so the transducer faces right to the seabed.

**Note:** If necessary, to improve water flow and minimize air bubbles staying on the transducer face, incline the transducer about 5° at the rear. This may require a certain amount of experimentation for fine tuning at high cruising speeds.

4. Fill the gap between the wedge front of the transducer and transom with epoxy material to eliminate any air spaces.
Installing the transom mount transducer projecting from hull (for deep-V hulls)

This method is employed on deep-V hulls and provides good performance because the effects of air bubbles are minimal. Install the transducer parallel with water surface; not flush with hull. If the boat is placed on a trailer care must be taken not to damage the transducer when the boat is hauled out of the water and put on the trailer.

Transducer preparation

Before putting the boat in water, wipe the face of the transducer thoroughly with a detergent liquid soap. This will lessen the time necessary for the transducer to have good contact with the water. Otherwise the time required for complete “saturation” will be lengthened and performance will be reduced.

Do not paint the transducer. Performance will be affected.
1.4 Inside-hull Mount Transducer 520-5PSD, 520-5MSD

**Necessary tools**

You will need the following tools:

- Sandpaper (#100)
- Silicone sealant
- Silicone grease

**Remarks on installation**

- Turn off the engine and anchor the boat while installing the equipment.
- Install the transducer in the engine room.

**Selecting the mounting location**

Keep the following points in mind when selecting a mounting location:

- The mounting location should be where the hull is of single-hull thickness and is void of air or flotation materials other than solid fiberglass between the transducer face and the water.
- Do not place the transducer over hull struts or ribs which run under the hull.
- Avoid a location where the rising angle of the hull exceeds 15°, to minimize the effect of the boat’s rolling.
- You will finalize the mounting location through some trial and error. The procedure for this is shown later.

![Figure 1-11 Inside-hull transducer mounting location](image-url)
Attaching the transducer

1. Clean the transducer face to remove any foreign material. Lightly roughen the transducer face with #100 sandpaper. Also, roughen the inside of the hull where the transducer is to be mounted.

2. Warm the silicone sealant to 40°C before usage to soften it. Coat the transducer face and mounting location with silicone sealant.

3. Press the transducer firmly down on the hull and gently twist it back and forth to remove any air which may be trapped in the silicone sealant.

Figure 1-12 Coating the transducer face with silicone sealant

Figure 1-13 Attaching transducer to hull with silicone sealant
Checking the installation

1. Connect the battery to the display unit as shown on page 15.
2. Turn on the display unit.
3. Operate the MODE control to select LF or HF.
4. Press the GAIN control to select OFF (if it is not already selected).
5. Set the gain to “5” with the GAIN control.
6. Operate the RANGE control to set the range to 30 feet.
7. If the bottom is displayed in red and the depth indication appears the mounting location is suitable. You can leave the transducer in position.

8. If the bottom is not displayed in red, the mounting location is unsuitable. Do the following:
   1) Press the POWER key to turn off the power.
   2) Gently dismount the transducer with a piece of wood.
   3) Reattach the transducer elsewhere as shown in “Attaching the transducer.”
   4) Check the installation again.

Final preparation

Support the transducer with a piece of wood to keep it in place while it is drying. Let the transducer dry 24–72 hours.
1.5 Optional Water Temperature/Speed Sensors

Through-hull mount water temperature/speed sensor ST-02MSB, ST-02PSB

Select a suitable mounting location considering the following:

- Select a mid-boat flat position. The sensor does not have to be installed perfectly perpendicular. The sensor must not be damaged in dry-docking operation.
- Select a place apart from equipment generating heat.
- Select a place in the forward direction viewing from the drain hole, to allow for circulation of cooling water.
- Select a place free from vibration.

1. Dry-dock the boat.
2. Make a hole of approx. 51 mm diameter.
3. Unfasten locknut and remove the sensor section.
4. Apply high-grade sealant to the flange of the sensor.
5. Pass the sensor casing through the hole.
6. Face the notch on the sensor toward boat’s bow and tighten the flange.
7. Set the sensor section to the sensor casing and tighten the locknut.
8. Launch the boat and check for water leakage around the sensor.

Figure 1-15 Water temperature/speed sensor ST-02MSB, ST-02PSB
1.6 Optional Water Temperature Sensors

Transom mount water temperature sensor T-02MTB

- Fix the cable at a convenient location with cable clamp.
- When the cable is led in through the transom board, make a hole of approx. 17 mm diameter to pass the connector. After passing the cable, fill the hole with a sealing compound.

![Diagram](image)

Figure 1-16 How to install transom mount water temperature sensor T-02MTB
Thru-hull mount water temperature sensor
T-02MSB, T-03MSB

- Select a mid-boat flat position. The sensor does not have to be installed perfectly perpendicular. The sensor must not be damaged in dry-docking operation.
- Select a place apart from equipment generating heat.
- Select a place in the forward direction viewing from the drain hole, to allow for circulation of cooling water.
- Select a place free from vibration.

<table>
<thead>
<tr>
<th>Mounting procedure</th>
<th>Mounting procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Drill a hole of 21 mm in diameter in the mounting location.</td>
<td>1. Drill a hole of 25 mm in diameter in the mounting location.</td>
</tr>
<tr>
<td>2. Pass the sensor cable through the hole.</td>
<td>2. Coat holder guide with high quality sealant, and pass gasket, washer and locknut onto holder guide in that order and then tighten the locknut.</td>
</tr>
<tr>
<td>3. Pass gasket, washer and locknut onto cable in that order.</td>
<td>3. Set the sensor holder to the holder guide from inside the boat and then tighten the locknut.</td>
</tr>
<tr>
<td>4. Coat the sensor flange with high quality sealant and then fasten the sensor with the locknut. (Torque: max. 59N·m)</td>
<td>4. Launch the boat to check for water leakage around the sensor.</td>
</tr>
<tr>
<td>5. Launch the boat to check for water leakage around the sensor.</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1-17 Thru-hull mount water temperature sensors
T-02MSB, T-03MSB
1.7 Optional Triducer 524ST-MSD, 525ST-MSD

The triducer is designed for thru-hull mounting.

Mounting considerations

When selecting a mounting location keep the following points in mind:

- Air bubbles and turbulence caused by movement of the boat seriously degrade the sounding capability of the transducer. The transducer should, therefore, be located in a position where water flow is the smoothest. Noise from the propellers also adversely affects performance and the transducer should not be mounted nearby. The lifting strakes are notorious for creating acoustic noise, and these must be avoided by keeping the transducer inboard of them.

- The transducer must always remain submerged, even when the boat is rolling, pitching or up on a plane at high speed.

- A practical choice would be somewhere between 1/3 and 1/2 of the boat’s length from the stern. For planing hulls, a practical location is generally rather far astern, so that the transducer is always in water regardless of the planing attitude.
2.1 Wiring

All wiring are terminated at the rear of the display unit.

![Display unit, rear view](image)

Figure 2-1 Display unit, rear view

**Power cable**

Connect the power cable to the power connector. Connect the leads to the battery (12 or 24 VDC); white to plus(+) terminal and black to minus(-) terminal.

![Connecting the power cable to the battery](image)

Figure 2-2 Connecting the power cable to the battery
Transducer, optional triducer

Connect the transducer cable to the XDR connector.

Ground

Connect the ground wire (KIV 2.0sq. 2 m, supplied) to ship’s ground to prevent interference to the picture. Shorten the ground wire as much as possible. For FRP vessels, install a ground plate that measures about 20 cm by 30 cm on the outside of the hull bottom to provide a ground point.

Caution: Ground the equipment to prevent mutual interference.

Note: Use a “closed” lug to make the ground connection at the display unit. Do not use an “open-type” lug ( ).

Attaching EMI cores

Attach EMI cores to the power cable and transducer cable to prevent noise.

1. Tape the power cable and transducer cable where the EMI core is to be attached, to fix the core.

2. Attach cores where tape is placed on respective cables.

Figure 2-3 How to attach EMI cores
2.2 Optional Sensors

Water temperature sensor

Connect the transducer cable to the XDR connector. Connect the water temperature sensor (option) or water temperature/speed sensor (option) to the XDR connector with the converter connector (Type: 02S4147, Code No.: 000-141-082, option).

**Figure 2-4 Connection of water temperature speed sensor**

Connection of water temperature/speed sensor

**Figure 2-5 Connection of water temperature/speed sensor**
Connect to XDR connector at rear of display unit

Figure 2-6 Connection of transducer, water temperature sensor, water temperature/speed sensor

NMEA data sentences

<table>
<thead>
<tr>
<th>Input/Output</th>
<th>Data Sentence</th>
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</thead>
<tbody>
<tr>
<td>INPUT: L/L, Course, Speed, Waypoint Range/Bearing, Water Temperature, Cross-Track Error</td>
<td>RMA, RMB, RMC, BWC, GLL, MTW, VTG, VHW, XTE</td>
</tr>
<tr>
<td>OUTPUT: Depth, Water Temperature, Speed</td>
<td>Output every 2 sec. DBT (Ver. 1.5) DPT (Ver. 2.0) MTW, VHW</td>
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</tbody>
</table>
2.3 Optional 50 kHz and 200 kHz Transducers

To connect optional transducer 50B-6, 50B-6G, 200B-5 or 200B-5S, the optional Distributor Kit (MB-1000, code no. 000-040-809) is required. Additionally, an 8P-10P converter connector (02S4089, code no. 000-133-622) is required to connect to the display unit. Fasten the cable from the Distributor to the XDR connector on the display unit.

![Diagram of Distributor MB-1000](image)

---

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Code No.</th>
<th>Qty</th>
<th>Remarks</th>
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<tbody>
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<td>Distributor</td>
<td>MB-1000</td>
<td>000-040-805</td>
<td>1</td>
<td>Cable w/8P connector supplied for connection to display unit</td>
</tr>
<tr>
<td>Crimp-on Lug</td>
<td>FV1.25-3 Red</td>
<td>000-538-113</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Cord Lock</td>
<td>NC-1</td>
<td>000-516-650</td>
<td>1</td>
<td>For use with separate transducer</td>
</tr>
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</table>
This chapter shows you how to set up the FCV-582L when external equipment is connected. If a water temperature/speed sensor is installed, you should complete this section with the boat in the water and running, to confirm speed/water temperature readout.

Display the system menus as shown below, and then follow appropriate procedure(s) on the next page. Finish by resetting the power and checking for proper display of data.

### 3.1 External Equipment Setup

**Displaying the system menu 1, system menu 2**

1. Select MENU by operating the MODE control.
2. Press the [▼] key to select GO TO SYSTEM MENU.

3. Press the [+] key at GO TO SYSTEM MENU.

The System menu 1 appears. You can switch between these menus with the [+] and [▼] keys when the MENU field is selected.

4. Follow appropriate procedure(s) on the next page.
Draft setup
1. At the System menu 1 press the [▼] key to select DRAFT.
2. Press the [+] or [–] key to set draft. For example, if the depth readout is 5 feet lower than actual depth, enter +5 feet.

Navigator setup
1. At the System menu 2, press the [▼] key to select NMEA.
2. Press the [+] or [–] key to select NMEA input format of navigator; Ver. 1.5 or Ver. 2.0. (If you are unsure of the version no., try both and select the one which successfully inputs nav data to the sounder.)
3. To display nav data on the sounder displays, press the [▲] key to select NAV DSP.
4. Press the [+] or [–] key to select which nav data to display; L/L (Position), R/B (Range and Bearing to a Waypoint), or CSE (Course).

Speed data setup
1. At the System menu 2, press the [▼] key to select SPD SEL.
2. Press the [+] or [–] key to select source of speed data; OWN (speed sensor) or NMEA.
3. For speed sensor-equipped sets, you may offset the speed readout if it is wrong. Run the boat at various speeds and watch the speed readout at the bottom of the screen. If it is unreasonably wrong, press the [▼] key to select SPD ADJ.
4. Press the [+] or [+] key to correct speed readout. For example, if the readout is 10% higher than actual speed, enter -10.

Water temperature data setup
1. At the System menu 2, press the [▼] key to select TMP SEL.
2. Press the [+] or [–] key to select source of water temperature data; OWN (water temperature sensor) or NMEA.
3. For water temperature sensor-equipped sets, you may offset the water temperature readout if it is wrong. Watch the water temperature readout at the bottom of the screen. If it is unreasonably wrong, press the [▼] key to select TMP ADJ.
4. Press the [+] or [–] key to correct water temperature readout. For example, if the readout is 2° higher than actual temperature, enter -2°.
5. To display a water temperature graph (shows present water temperature), press the [▲] key to select MENU and press the [–] key to select 1. The System menu 1 appears.
6. Press the [▼] key to select TEMP GRAPH.
7. Press the [+] key to select ON.
Confirming indications

1. Reset the power.

2. Confirm that appropriate data appears on the display.

![Figure 3-2 Location of speed, water temperature and nav data indications](image)
APPENDIX
TRIDUCER 525ST-PWC/PWD

This appendix provides a copy of the installation instructions for AIRMAR triducer. If you lose the original supplied with the triducer, use this appendix.

INSTALLATION INSTRUCTIONS
Transom Mount Transducer or TRIDUCER® Multisensor with Integral Release Bracket
Model P66
U.S. Patents: 4,555,938; 4,644,787; 5,606,253; Des. 334,335
Canadian Patent 1,233,341

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

CAUTION: NEVER USE SOLVENTS
Cleaners, fuel, paint, sealants, and other products may contain strong solvents, such as acetone, which attack many plastics greatly reducing their strength.

Applications
• Not recommended for boats with large or twin screw inboard engine(s)
• Good operation up to 44 kn (50 MPH)
• Vertically orients sound beam on hull with deadrise angle up to 30°
• Adjusts to transom angles from 2° - 22°
• Bracket protects sensor from frontal impact only

Tools and Materials
Scissors
Masking tape
Safety goggles
Dust mask
Electric drill
Drill bits:
  Bracket holes          4 mm, #23, or 9/64”
  Fiberglass hull      chamfer, countersink, 6 mm, or 1/4”
  Transom hole (optional)  20 mm or 13/16”
  Cable clamp holes      3 mm or 1/8”
Marine sealant
Screwdrivers
Straight edge
Pencil
Zip-ties
Water-based antifouling paint (mandatory in salt water)

Record the information found on the cable tag for future reference.
Part No. Date Frequency kHz

Pretest Speed and Temperature Functions
Connect the multisensor to the instrument and spin the paddlewheel. Check for a speed reading (and the approximate air temperature if applicable). If there is no reading or it is inaccurate, return the instrument to your place of purchase.

Mounting Location
To ensure the best performance, the sensor must be in contact with aeration-free and turbulence-free water. Mount the sensor on the transom as close to the centerline (keel) of the boat as possible. On slower heavier displacement hulls, positioning it farther from the centerline is acceptable.

Headroom – Allow adequate space above the bracket for it to release and rotate the sensor upward (see Figure1).

Caution: Do not mount in an area of turbulence or bubbles:
Near water intake or discharge openings;
Behind strakes, struts, fittings, or hull irregularities;
Behind eroding paint (an indication of turbulence).

Caution: Avoid mounting the sensor where the boat may be supported during trailering, launching, hauling, or storage.

• Single drive boat – Mount on the starboard side at least 75 mm (3”) beyond the swing radius of the propeller (see Figure2).
• Twin drive boat – Mount the sensor between the drives.

Figure1. Stepped hull - headroom required at mounting location
Figure2. Mounting location on single drive boat
Installation

Hole Drilling
1. Cut out the template (see Figure 3).
2. At the selected location on the starboard side of the hull, position the template, so the arrow at the bottom is aligned with the bottom edge of the transom (see Figure 4). Being sure the template is parallel to the waterline, tape it in place.
Warning: Always wear safety goggles and a dust mask.
3. Using a 4 mm, #23, or 9/64" bit, drill three holes 22 mm (7/8") deep at the locations indicated. To prevent drilling too deeply, wrap masking tape around the bit 22 mm (7/8") from the point.

Fiberglass hull – Minimize surface cracking by chamfering the gelcoat. If a chamfer bit or countersink bit is not available, start drilling with a 6 mm or 1/4" bit to a depth of 1 mm (1/16”).

Plastic Shim
- **Standard transom** (13° transom angle) – The bracket is designed for a standard 13° transom angle. The shim is not needed for this installation. Skip to “Mounting the Bracket”.
- **Stepped transom and jet boats** (3° transom angle) – Use the shim with the tapered end down.
- **Small aluminum and fiberglass boats** (20° transom angle) – Use the shim with the tapered end up.
- If you are unsure about using the shim, do one of the following:
  - Measure the transom angle of your boat using a digital level or bubble level and protractor. Then follow the instructions above for your transom angle.
  - Experiment with the shim. Follow the instructions: “Mounting the Bracket”, “Attaching the Sensor to the Bracket”, and “Checking the Sensor Angle and Projection”.

Mounting the Bracket
1. Apply marine sealant to the threads of the three, #10 x 1-3/4", self-tapping screws to prevent water seepage into the transom (see Figure 5). Screw the bracket (and shim if needed) to the hull. Do not tighten the screws.
2. Using the vertical adjustment space on the bracket slots, slide the bracket up or down until the distance between the bottom left corner and the bottom of the transom equals 41 mm (1-5/8”). Tighten the screws.
Stepped Hull Installation Only

If there is insufficient headroom under the step for the multisensor to fully release, remove the cover before proceeding (see Figure 1, maximum headroom). This is necessary to access the bracket screws at a later time.

1. Remove the two screws that hold the speed sensor onto the transducer housing (see Figure 6).
2. The paddlewheel assembly is a loose slip fit. Carefully, slide the speed sensor upward while keeping the paddlewheel assembly inside (see Figure 13).
3. Insert a blade screwdriver between the cover and the transducer housing (see Figure 7). Pry each side apart, in turn.
4. Lift the cover up and off.

Attaching the Sensor to the Bracket

Caution: The retaining cover must be closed and latched to prevent the sensor from coming off the bracket when the boat is underway.

1. If the retaining cover is closed, open it by depressing the latch and rotating the cover downward (see Figure 8).
2. Insert the sensor’s pivot posts into the slots in the top of the bracket (see Figure 9). Push down until the posts click into place.
3. Rotate the sensor downward until it snaps onto the bracket.
4. Close the retaining cover by rotating it upward until it latches.

Checking the Sensor Angle and Projection

Caution: Do not position the bow of the sensor lower than the stern because aeration will occur.

Caution: Do not position the sensor farther into the water than necessary to avoid increasing drag, spray and water noise, and reducing boat speed.

1. Using a straight edge, sight the underside of the sensor relative to the underside of the hull (see Figure 10). The stern of the sensor should be 1-3 mm (1/16 – 1/8”) below the bow of the sensor or parallel to the bottom of the hull.
2. Check that the bottom left corner of the sensor projections 3 mm (1/8”) below the bottom of the hull (see Figure 11).
3. If the sensor needs adjustment, release it upward (see “Releasing the Sensor” below). Adjust the bracket. Tighten the screws.

Releasing the Sensor

Do one of the following (see Figure 12):
• Using the palm of your hand, give a sharp upward blow to the underside of the transducer housing. Do not hit the speed sensor.
• Insert a blade screwdriver between the transducer housing and the bottom of the bracket (either side). Push up on the screwdriver while lifting up on the sensor.

Attaching the Cover & Blank or Speed Sensor (some installations)

1. Spread the sides of the cover horizontally (see Figure 7).
2. Slide the cover up and over the mounting ears.
3. Push the cover down until it sits flush on the transducer.
4. Squeeze the sides of the cover until the tabs snap into the slots.
5. Insert the side rails of the speed sensor or blank into the channels on the back of the transducer housing (see Figure 6). Slide it downward. Fasten the speed sensor or blank in place with the two, #6 x 5/8”, self-tapping screws.

Testing on the Water

1. Become familiar with your echosounder’s performance at a speed of 4 kn (5 MPH).
2. Gradually increase the boat speed and observe the gradual decline in performance due to turbulent water flowing over the transducer’s active surface.
3. If the degradation is sudden (not gradual), identify the boat speed at which the onset occurred. Return the boat to this speed, then gradually increase speed while making moderate turns in both directions.

4. If the performance improves while turning, the transducer’s position probably needs adjustment. It is probably in aerated water. Move the transducer farther down into the water in increments of 3 mm (1/8”). If the performance does not improve satisfactorily, move the sensor closer to the centerline of the boat. Full unused screw holes with marine sealant.

High-speed operation (above 40 MPH) may require less projection in the water to improve performance and reduce the chance that water pressure will cause the bracket to release.

Cable Routing
Route the sensor cable over the transom, through a drain hole, or through a new hole drilled in the transom above the waterline.

Caution: Never cut the cable or remove the connector; this will void the warranty.

Warning: Always wear safety goggles and a dust mask.

1. If a hole must be drilled through the transom, choose a location well above the waterline (see Figure11). Check for obstructions such as trim tabs, pumps, or wiring inside the hull. Mark the location with a pencil. Drill a hole using the appropriate size bit to accommodate the connector.

2. Route the cable over or through the transom.

3. On the outside of the hull secure the cable against the transom using the cable clamps. Position a cable clamp 50 mm (2”) above the bracket and mark the mounting hole with a pencil.

4. Position the second cable clamp halfway between the first clamp and the cable hole. Mark this mounting hole.

5. If a hole has been drilled in the transom, open the appropriate slot in the cable cover. Position the cover over the cable where it enters the hull. Mark the two mounting holes.

6. At each of the marked locations, use a 3 mm or 1/8” bit to drill a hole 10 mm (3/8”) deep. To prevent drilling too deeply, wrap masking tape around the bit 10 mm (3/8”) from the point.

7. Apply marine sealant to the threads of the #8 x 1/2” self-tapping screws to prevent water from seeping into the transom. If you have drilled a hole through the transom, apply marine sealant to the space around the cable where it passes through the transom.

8. Position the two cable clamps and fasten them in place. If used, push the cable cover over the cable and screw it in place.

9. Route the cable to the instrument being careful not to tear the cable jacket when passing it through the bulkhead(s) and other parts of the boat. To reduce electrical interference, separate the sensor cable from other electrical wiring and the engine(s). Coil any excess cable and secure it in place with zip-ties to prevent damage.

10. Refer to your echosounder owner’s manual to connect the sensor to the instrument.

Antifouling Paint
Marine growth can accumulate rapidly on the sensor’s surface reducing performance within weeks. Surfaces exposed to salt water that do not interlock, must be coated with antifouling paint. Use water-based antifouling paint only. Never use ketone based paint, since ketones can attack many types of plastic possibly causing damage to the transducer. Apply paint every 6 months or at the beginning of each boating season.

Checking for Leaks
Warning: When the boat is placed in the water, immediately check for leaks around the screws and any holes drilled in the hull. Never install a sensor and leave the boat in the water unattended for several days.

Maintenance, Repair, & Parts
Cleaning
Clean the sensor with a soft cloth and mild household detergent. If fouling occurs, use a stiff brush or putty knife to remove the growth being careful to avoid scratching the bottom of the transducer. In severe cases, wet sand the sensor (and paddlewheel) with fine grade wet/dry paper.

Servicing the Speed Sensor
If the paddlewheel becomes fouled or inoperable, it can be cleaned. Remove the two screws from the speed sensor (see Figure13). Slide it upward to remove it from the transducer housing. Grasp the two retaining bars and pull to access the shaft. After cleaning, slide the paddlewheel onto the shaft. Orient the short side of the paddlewheel blade as shown on the side view. It must be oriented correctly to measure the boat’s speed. Fit the shaft into the holes marked “B” in the retaining bars. Note: There is a left retaining bar marked with an L and a right retaining bar marked with an R. Slide the assembly into the speed sensor housing. Note: The interior of the housing is marked with a corresponding L and R. Re-attach the speed sensor.

Parts
Replace broken or worn parts immediately. The water-lubricated paddlewheel bearings have a life of up to 5 years on low-speed boats (less than 10 kn (11 MPH)) and 2 years on high-speed vessels. Some depth/temperature units can be upgraded by adding a speed sensor. Purchase parts from your marine dealer or instrument manufacturer.

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<td>33-473-01</td>
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<td>Paddlewheel Kit</td>
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Sensor Replacement
The information needed to order a replacement sensor is printed on the cable tag. Do not remove this tag. When ordering, specify the part number, date, and frequency in kHz.
### PACKING LIST

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1. コード番号末尾の[**]は、選択品の代表型式/コードを表します。
   CODE NUMBER ENDED BY "**" INDICATES THE NUMBER OF TYPICAL MATERIAL.
NOTE
1. # RECOMMENDED SERVICE CLEARANCE.
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
3. USE TAPPING SCREWS 5x20 FOR FIXING THE UNIT.

注記
1) 印寸法は最小サービス空間寸法とする。
2) 指定外の寸法公差は表1による。
3) 取付用ネジはトラッシピンネジ呼び径5×20を使用のこと。
注記
* 1）現地手配
* 2）工場にて取付済み
* 3）オプション
* 4）変換ケーブル組品が必要。
* 5）どちらか一方のみ。
* 6）両端コネクタ付ケーブル。

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