

# *Installation Manual*

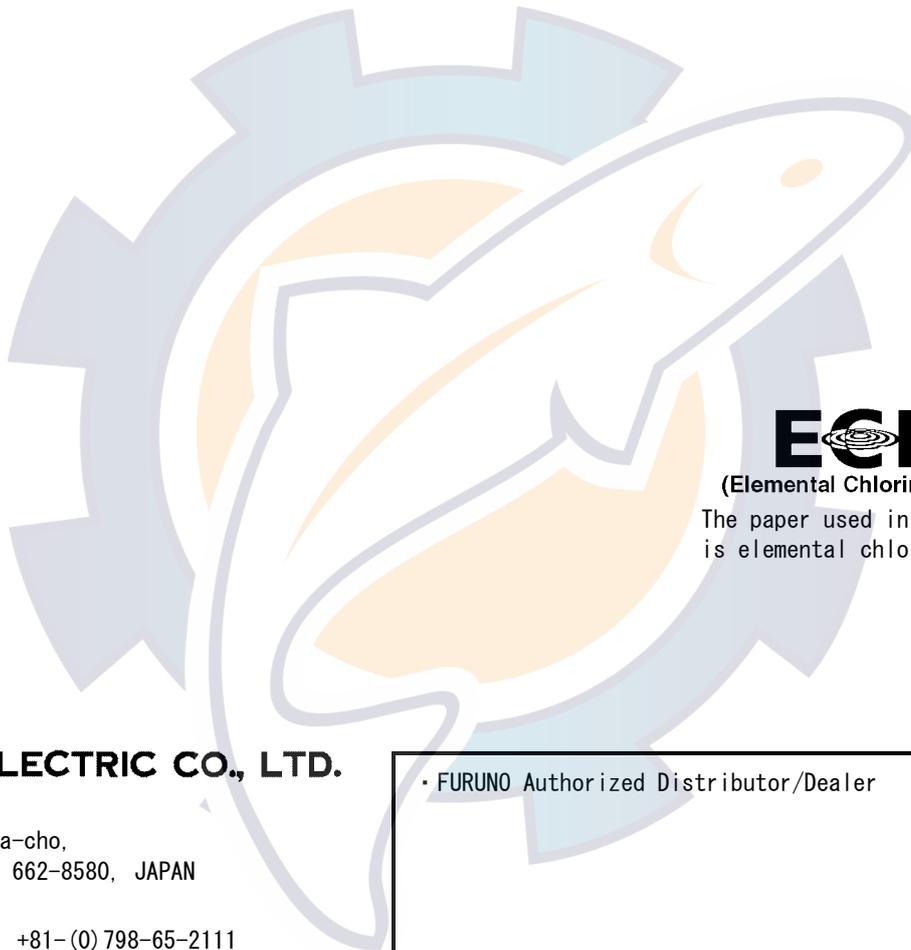
## **COLOR GPS/PLOTTER/SOUNDER**

### **GP-7000F**

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**ECF**

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# 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.

**Organic solvent**

Do not apply paint, anti-corrosive sealant or contact spray to coating or plastic parts of the equipment.

Those items contain organic solvents that can damage coating and plastic parts, especially plastic connectors.

**CAUTION**

Observe the following compass safe distances to prevent interference to a magnetic compass:

	Standard compass	Steering compass
Display unit	0.70 m	0.45 m

**Use the power cable supplied with the installation materials.**

Use of other power cables may cause fire or damage the equipment.

**Use the proper fuse.**

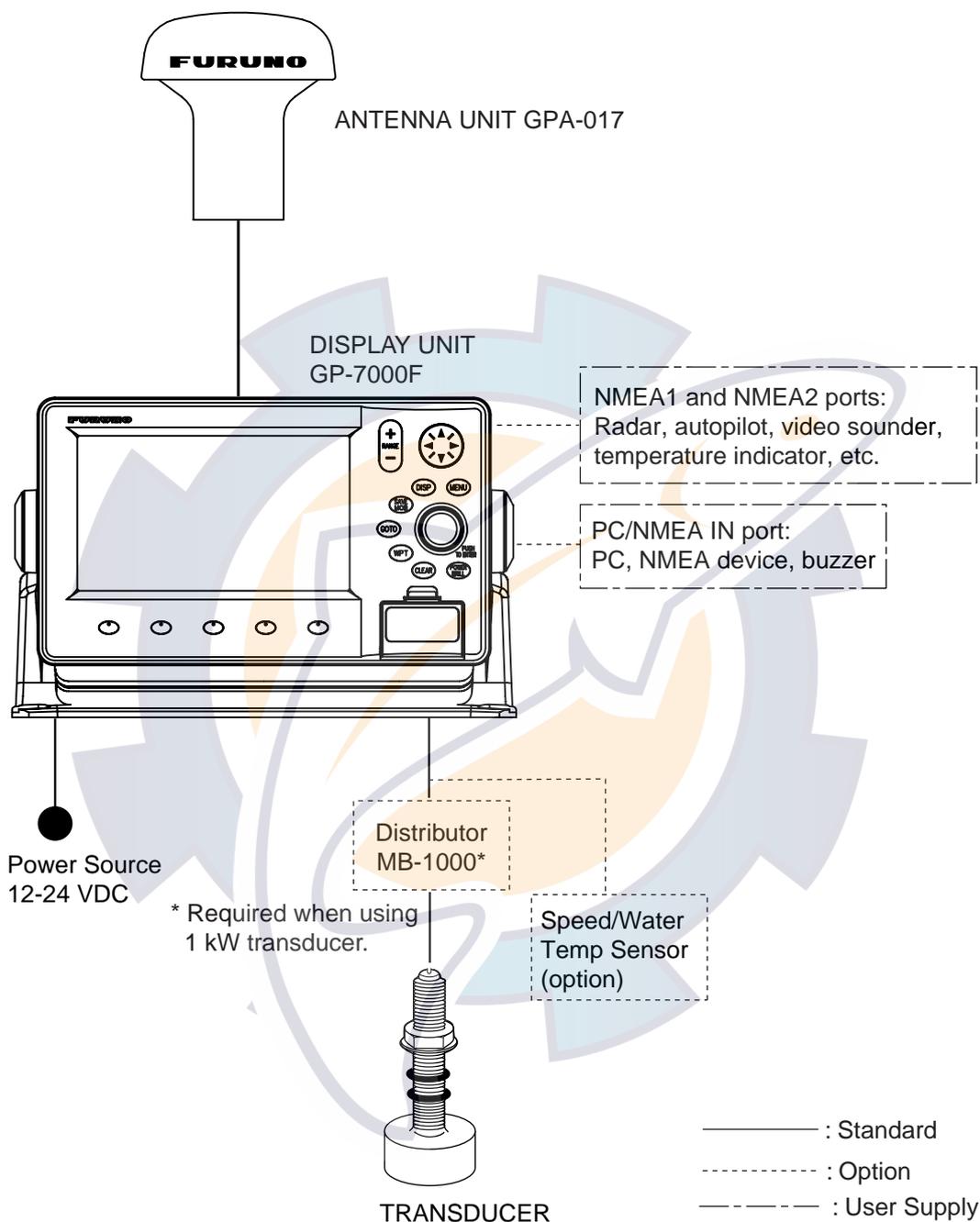
Use of the wrong fuse may damage the equipment.

**Observe the following precautions when handling the transducer cable:**

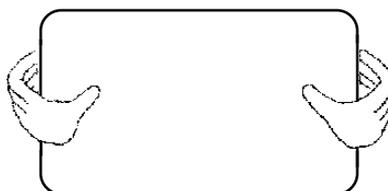
- Keep away from oils.
- Choose a working area where the cable will not be damaged during installation.
- Do not paint the cable.

The sheath of the cable is made of chloroprene (or polyvinyl chloride). Those materials easily deteriorate in the presence of organic solvents (toulene, etc.) found in paints. For that reason keep the cable away from ship's paint house.

# SYSTEM CONFIGURATION



How to remove the hard cover  
Place your thumbs at the center  
of the cover, and then lift the cover  
while pressing it with your thumbs.



# EQUIPMENT LISTS

## Standard supply

Name	Type	Code No.	Qty	Remarks
Display Unit	GP-7000F	-	1	
Antenna Unit	GPA-017	-	1	System also available without antenna (for boats which already have an appropriate antenna)
Installation Materials*	CP14-06400	000-041-183	1	Signal cable and power cable
Accessories*	FP20-01100	000-042-239	1	
Spare Parts*	SP14-03201	004-371-980	1	
Transducer	520-5PSD	000-015-204	Choose one	Also available without transducer (for boats with transducer already installed)
	525-5PWD	000-146-966		
	520-5MSD	000-015-212		
Triducer	525ST-MSD	000-015-263		
	525ST-PWD	000-015-261		

\*: See list at back of this manual.

**Optional equipment**

Name	Type	Code No	Qty
GPS Antenna	GPA-017S	000-040-541	
Antenna Cable Set	CP20-01700	004-372-110	30 m, antenna cable extension
	CP20-01710	004-372-120	50 m, antenna cable extension
Right Angle Antenna Base	No.13-QA330	000-803-239	For mounting antenna unit
L-angle Antenna Base	No.13-QA310	000-803-240	
Antenna Base for Rail Mounting	No.13-RC5160	000-806-114	
Mast Mounting Kit	CP20-01111	004-365-780	For mounting antenna unit on a mast
Cable Assy.	MJ-A6SPF0012-050C	000-154-053-10	6P - 6P, 5 m
	MJ-A6SPF0012-100C	000-154-037-10	6P - 6P, 10 m
	MJ-A6SPF0003-050C	000-154-054-10	6P, 5 m
	MJ-A7SPF0007-050C	000-154-028-10	7P, 5 m
Transducer	50B-6	000-015-042	
	50B-6G	000-015-016	
	200B-5S	000-015-029	
	200B-5	000-015-027	
	50/200-1T	000-015-170	
Inner Hull Kit S	22S0191-2	000-802-598	
Distributor	MB-1000	000-040-809	For 1 kW transducer
Cable Assy.	02S4089	000-133-622	For Distributor MB-1000
	02S4147-0	000-141-082	For sensor
Sensor	ST-02PSB	000-137-987	Speed/water temperature sensor
Sensor	ST-02MSB	000-137-986	

# 1. INSTALLATION

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## 1.1 Display Unit

The display unit may be mounted on a desktop, overhead or flush mounted in a console.

### Mounting considerations

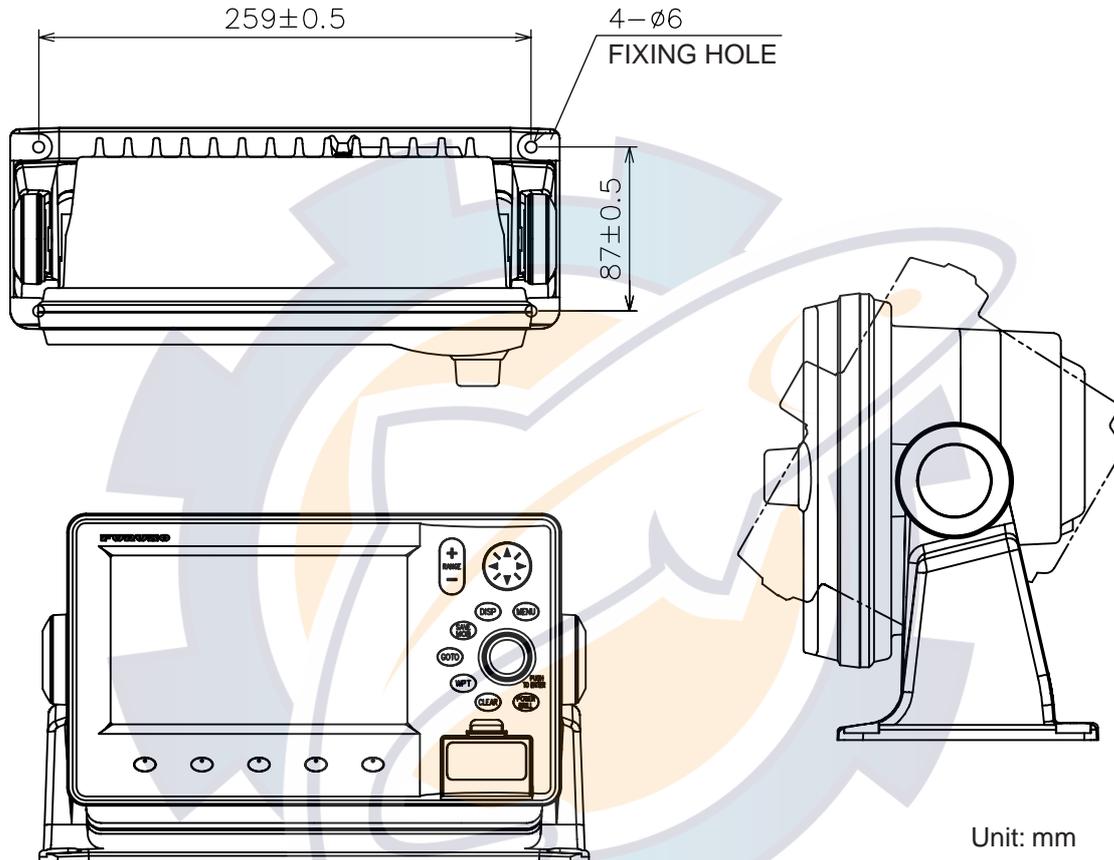
Choose a mounting location for the display unit considering the following points:

- Choose a location where the controls can be easily operated.
- Leave sufficient space around the unit to facilitate checking and maintenance. See the outline drawing at the back of this manual for recommended maintenance space.
- Locate the unit out of direct sunlight because of heat that can build up inside the cabinet.
- The operating temperature range is  $-15^{\circ}\text{C}$  to  $55^{\circ}\text{C}$  ( $5^{\circ}\text{F}$  to  $131^{\circ}\text{F}$ ).
- Locate the unit well away from exhaust gases and other active gases.
- The location should be well ventilated.
- Choose a location where shock and vibration are minimal.
- Be sure the mounting location is strong enough to support the weight of the unit, particularly in overhead mounting. If necessary reinforce the mounting location.
- A magnetic compass will be affected if the display unit is placed too close to the compass. Observe the following compass safe distances to prevent deviation to the compass.  
Standard compass, 0.70 m, Steering compass, 0.45 m.

## Mounting

### Desktop, overhead mounting

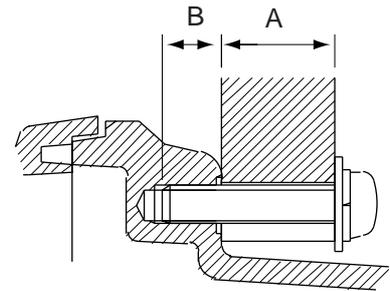
1. Fix the hanger to the mounting location with four self-tapping screws (5x20). See the outline drawing on page D-1 for complete mounting dimensions.
2. Loosely screw the knob bolts into the display unit.
3. Set the display unit to the hanger and tighten the knob bolts.
4. Attach the hard cover to the display unit to protect the LCD.



*Display unit, mounting dimensions for desktop or overhead mounting*

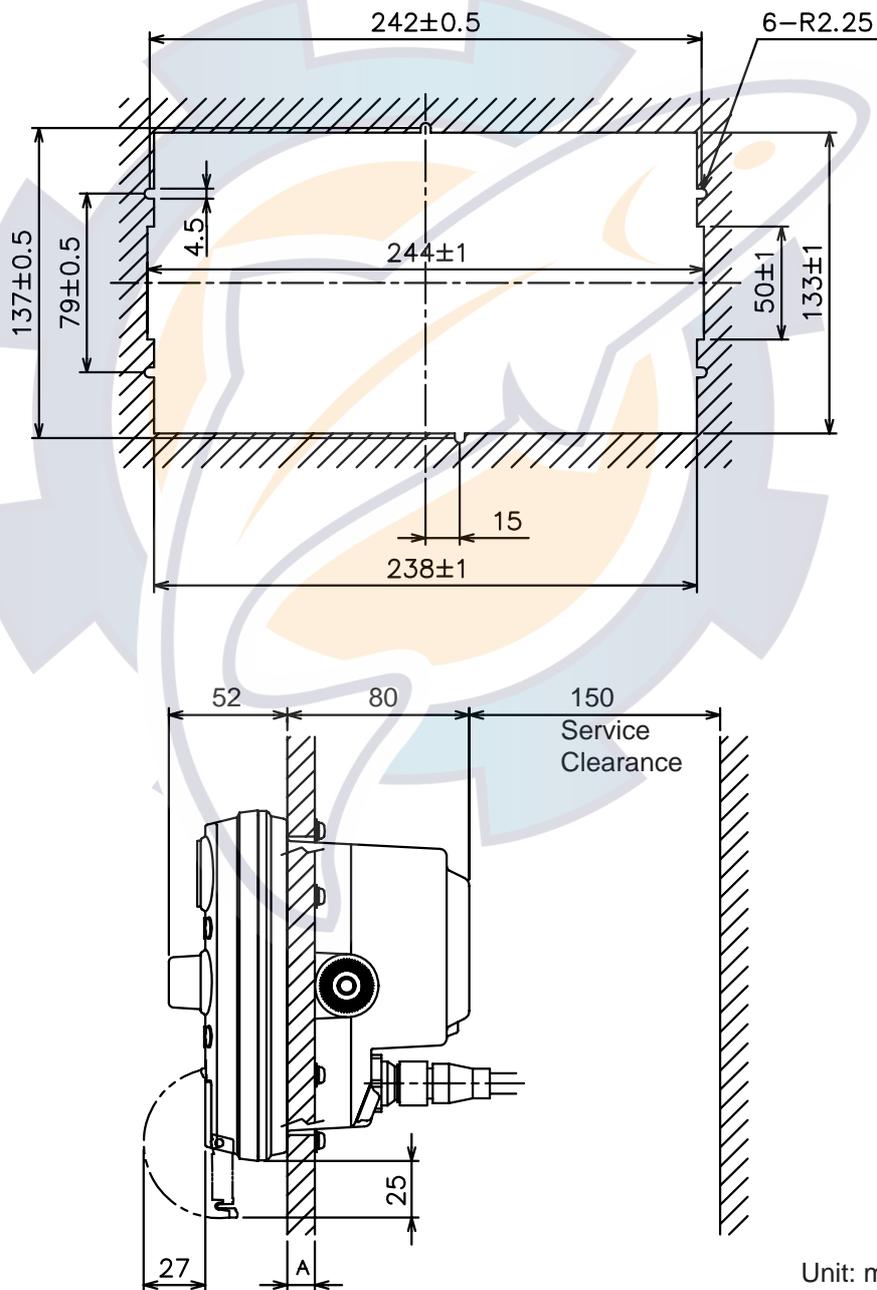
**Flush mounting**

If the thickness of the console is 11-14 mm, use the washer head screws (M4x20) supplied with the installation materials. If it is thicker than those dimensions, the length of the screws should be the thickness of the console plus 7.3 mm ± 1.5 mm. The length of the threaded portion to be inserted to the display unit should not exceed 7 mm ( $B \leq 7$ ).



A: Thickness of console

1. Prepare a cutout in the mounting location using the template provided.
2. Fix the display unit with six washer head screws (M4x20) provided.



Unit: mm

Mounting dimensions for flush mounting

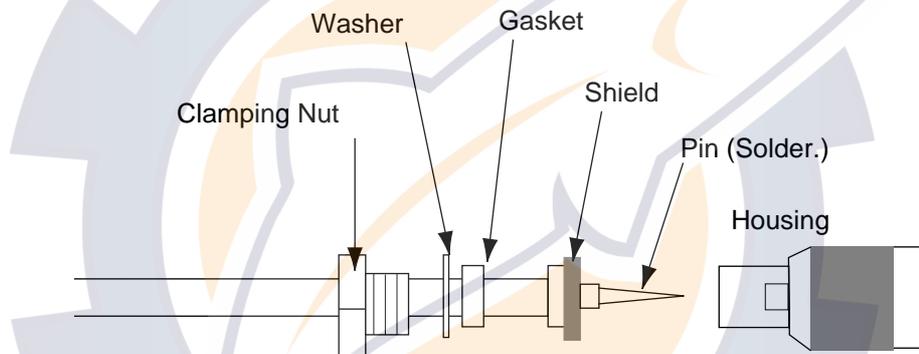
## 1.2 Antenna Unit

Refer to the antenna unit outline drawing at the back of this manual for mounting instructions.

When selecting a mounting location consider the following points:

- Select a location out of the radar and Inmarsat beams. Those beams will obstruct or prevent reception of the GPS satellite signal.
- There should be no interfering object within the line-of-sight to the satellites. Objects within line-of-sight to a satellite, for example, a mast, may block reception or prolong acquisition time.
- Locate the antenna well away from the antenna of a VHF radiotelephone to prevent interference.
- Mount the antenna unit as high as possible. Mounting it this way keeps it free of interfering objects and water spray, which can interrupt reception of GPS satellite signal if the water freezes.

**Note:** If the antenna cable is to be passed through a hole in a bulkhead which is too small to pass the connector, disassemble the connector with radio pincers and a monkey wrench. After passing the cable through the hole assemble the connector as below.



*How to assemble the antenna connector*

## 1.3 Transducer

### Inside-hull mounting

The thru-hull mount transducer (520-5PSD, 520-5MSD) may also be installed inside the hull, following the procedure below.

#### Necessary tools

You will need the following tools:

- Sandpaper (#100)
- Silicone sealant

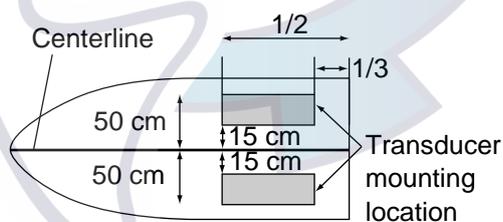
#### Remarks on installation

- Turn off the engine and anchor the boat while installing the equipment.
- Install the transducer in the engine room.
- Do not turn on the echo sounder except if installing the transducer by the inside-hull mounting method. The transducer may become damaged if the power is turned on in other types of installations.

#### Choosing the mounting location

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

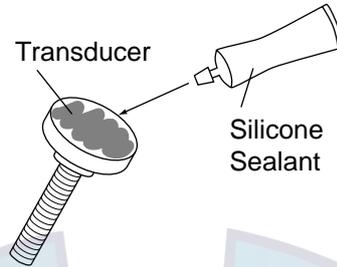
- The mounting location should be where the hull is of single-hull thickness and is void of air or flotation materials other than solid fiberglass between the transducer face and the water.
- Do not place the transducer over hull struts or ribs that run under the hull.
- Avoid a location where the rising angle of the hull exceeds  $15^\circ$ , 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.



*Inside-hull transducer mounting location*

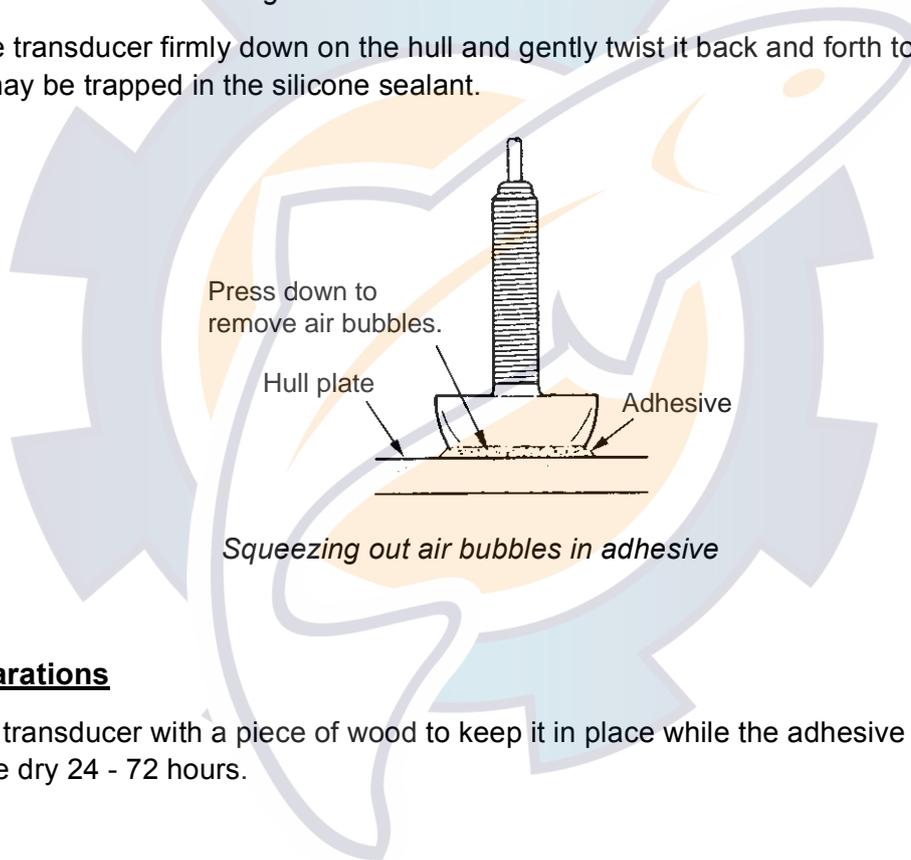
### **Attaching the transducer**

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.



*Coating transducer face with silicone sealant*

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



*Squeezing out air bubbles in adhesive*

### **Final preparations**

Support the transducer with a piece of wood to keep it in place while the adhesive is drying. Let the adhesive dry 24 - 72 hours.

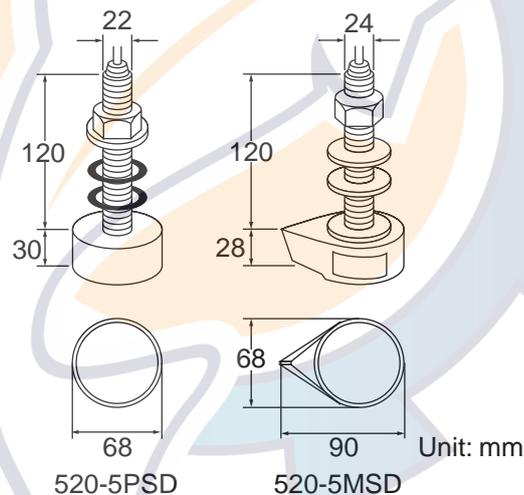
## Thru-hull mounting

### Transducer mounting location

The thru-hull mount transducer (520-5PSD, 520-5MSD) 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 a 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:

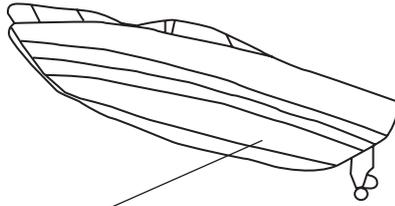
- Air bubbles and turbulence caused by movement of the boat seriously degrade the sounding capability of the transducer. The transducer should, therefore, be located in a position where water flow is the smoothest. Noise from the propellers also adversely affects performance and the transducer should 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.



*Thru-hull mount transducer mounting dimensions (millimeters)*

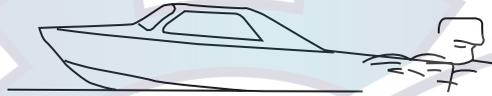
**Acceptable transducer mounting locations**

**DEEP-V HULL**



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

**HIGH SPEED-V HULL**

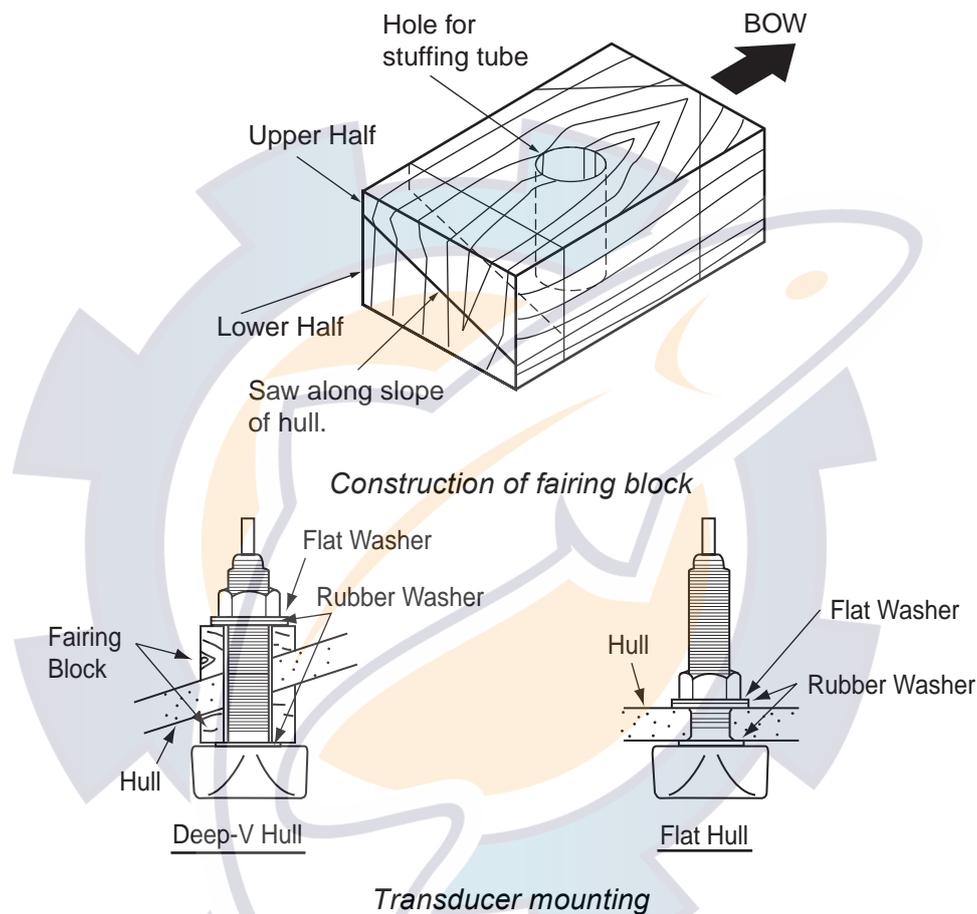


- Within the wetted bottom area
- Deadrise angle within 15°

*Suitable transducer mounting locations*

### Procedure for installing the thru-hull mount transducer

1. With the boat hauled out of the water, mark the location chosen 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.



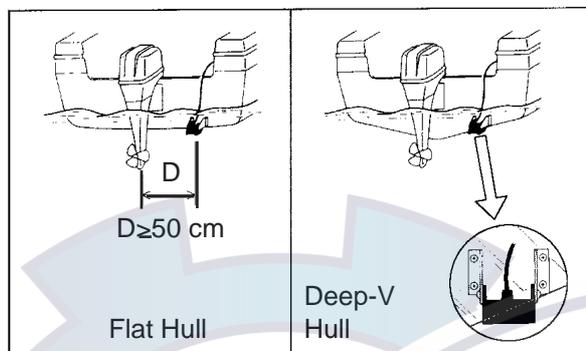
3. Drill a hole just large enough to pass the threaded stuffing tube of the transducer through the hull, making sure it is drilled vertically.
4. Apply a sufficient amount of high quality caulking compound to the top surface of the transducer, around the threads of the stuffing tube and inside the mounting 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.

## Transom mount transducer

The transom mount transducer (525-5PWD) is very commonly employed, usually on relatively small inboard/outboard 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).



*Transom mount transducer mounting locations*

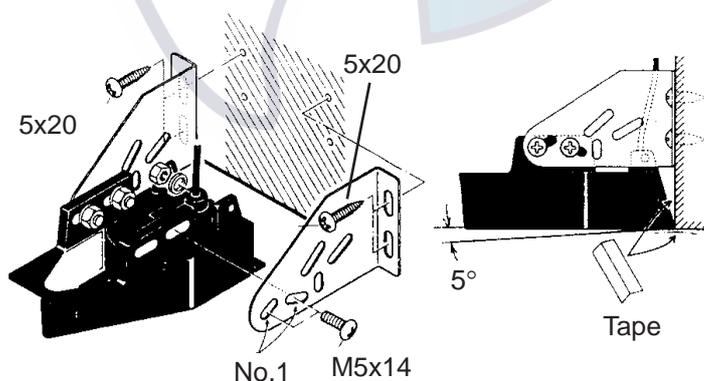
### Installing the transom mount transducer on a flat hull

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 5x20 tapping screws (supplied).
3. Adjust the transducer position so the transducer faces right to the bottom.

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

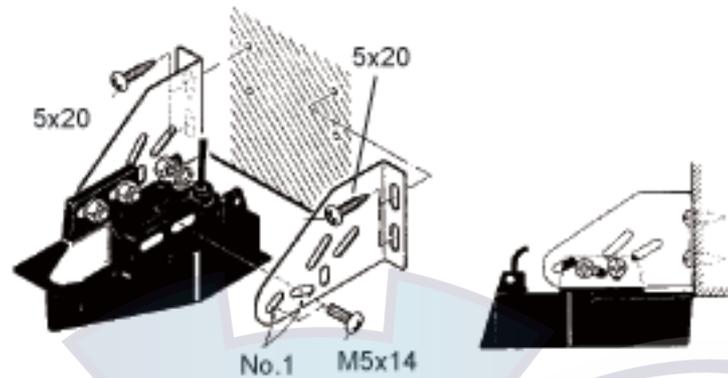
4. Fill the gap between the wedge front of the transducer and transom with epoxy material to eliminate any air spaces.



*Transom mount transducer, mounting flush with hull*

### Installing the transom mount transducer on a deep-V hull

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.



*Transom mount transducer, mounted projecting from hull*

### Transducer preparation

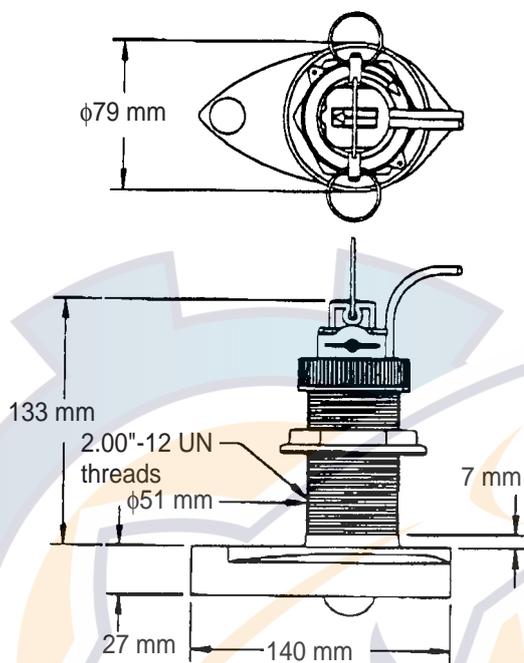
Before putting the boat in water, wipe the face of the transducer thoroughly with a detergent liquid soap. This will lessen the time necessary for the transducer to have good contact with the water. Otherwise the time required for complete "saturation" will be lengthened and performance will be reduced.

***DO NOT paint the transducer. Performance will be affected.***

## Optional triducer

### **525ST-MSD**

The optional triducer 525ST-MSD is designed for thru-hull mounting. For how to install it, see "thru-hull mounting" on page 7.



*Triducer 525ST-MSD*

### **525ST-PWD**

The Transom Mount Transducer or TRIDUCER<sup>®</sup> Multisensor with Integral Release Bracket 525ST-PWD is manufactured by AIRMAR Co. These instructions are included with the sensor.

#### Pre-test for speed and temperature

Connect the sensor to the instrument and spin the paddlewheel. Check for a speed reading and the approximate air temperature. If there is no reading, return the sensor to your place of purchase.

#### Tools and materials needed

- Scissors
- Masking tape
- Safety goggles
- Dust mask
- Electric drill

Drill bit for:

Bracket holes: 4 mm, #23, or 9/64"

Fiberglass hull: chamfer bit (preferred),  
6 mm, or 1/4"

Transom hole: 19 mm or 3/4" (optional)

Cable clamp holes: 3 mm or 1/8"

Screwdrivers

Straight edge

Marine sealant

Pencil

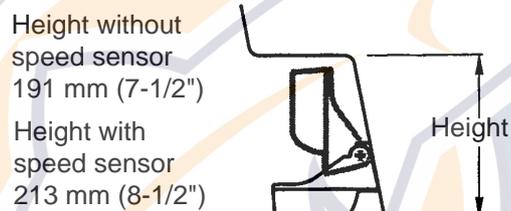
Zip-ties

Water-based antifouling paint (**mandatory in salt water**).

### Mounting location

To ensure the best performance, the sensor must be submerged in aeration-free and turbulence-free water. Mount the sensor close to the centerline of the boat. On slower heavier displacement hulls, positioning it farther from the centerline is acceptable.

Allow adequate space above the bracket for it to release and rotate the sensor upward.

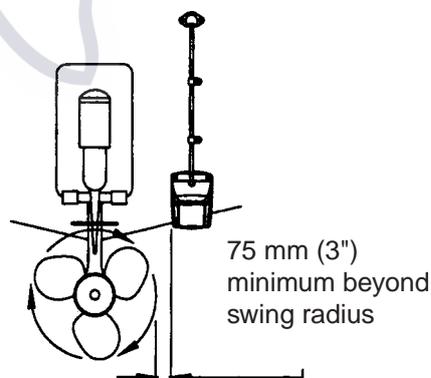


*Height required at mounting location*

**Note 1:** Do not mount the sensor 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).

**Note 2:** Avoid mounting the sensor where the boat may be supported during trailering, launching, hauling, and storage.

**Note 3:** For single drive boat, mount on the starboard side at least 75 mm (3") beyond the swing radius of the propeller.

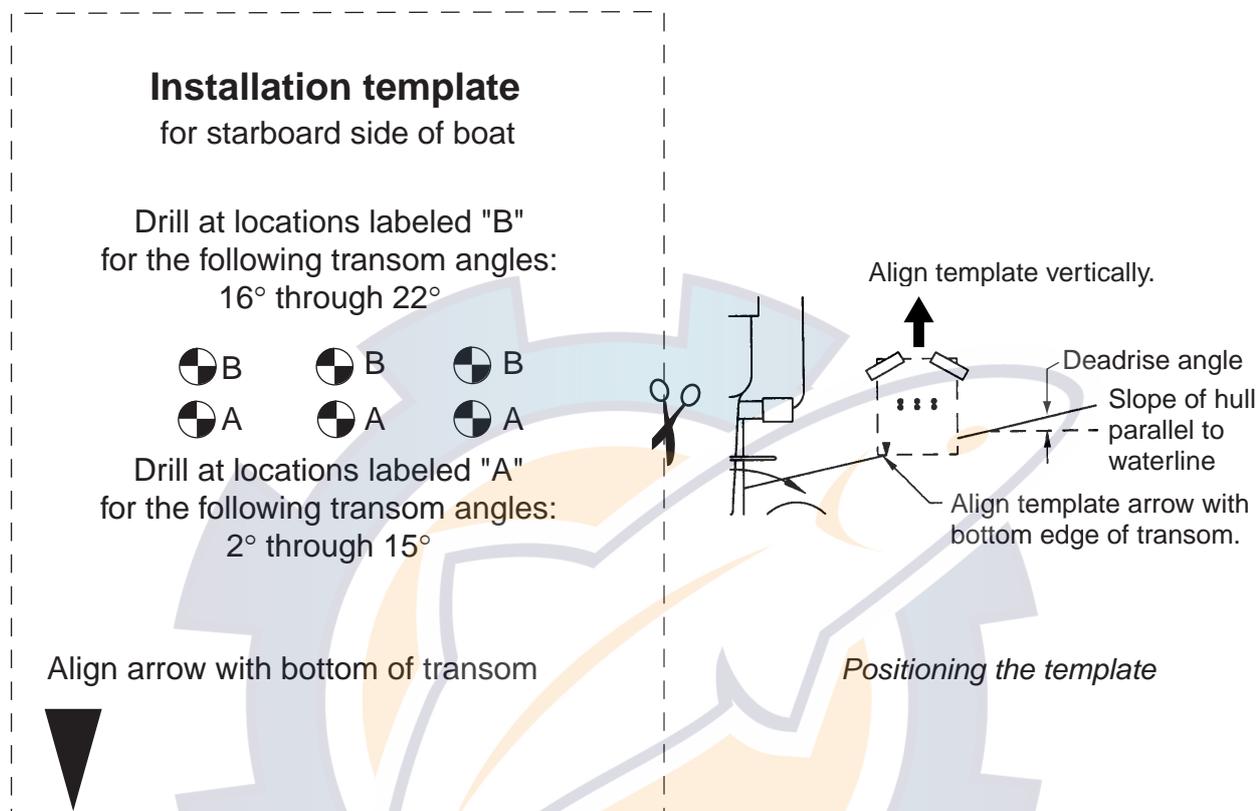


*Mounting location on single drive boat*

**Note 4:** For twin drive boat, mount between the drives.

Installation of bracket

1. Cut out the installation template shown below.
2. At the selected location, position the template, so the arrow at the bottom is aligned with the bottom edge of the transom. Being sure the template is parallel to the waterline, tape it in place.

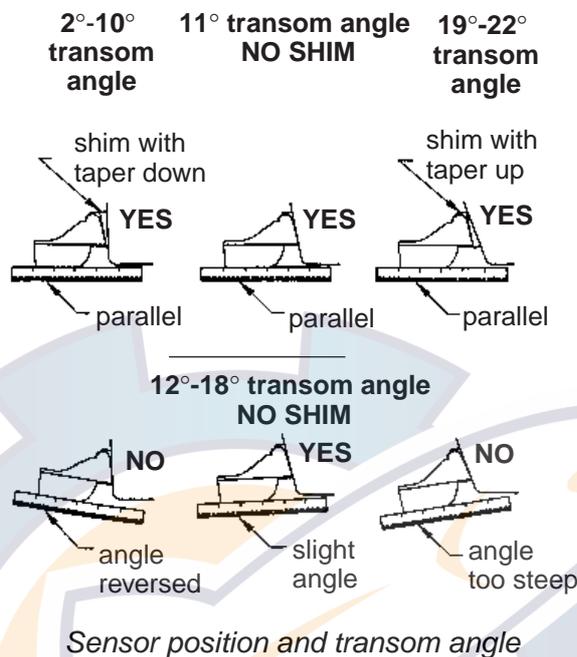


**Warning:** Always wear safety goggles and a dust mask.

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").
4. If you know your transom angle, the bracket is designed for a standard 13° transom angle.  
**11° - 18° angle:** No shim is required. Skip to step 3 in "Adjusting".  
**Other angles:** The shim is required. Skip to step 2 of "Adjusting".  
If you do not know the transom angle, temporarily attach the bracket and sensor to the transom to determine if the plastic shim is needed.
5. Using the two #10 x 1-1/4" self-tapping screws, temporarily screw the bracket to the hull. DO NOT tighten the screws completely at this time. Follow the step 1-4 in "Attaching the Sensor to the Bracket", before proceeding with "Adjusting".

Adjusting

- Using a straight edge, sight the underside of the sensor relative to the underside of the hull. 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.



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

- To adjust the sensor's angle relative to the hull, use the tapered plastic shim provided. If the bracket has been temporarily fastened to the transom, remove it. Key the shim in place on the back of the bracket.

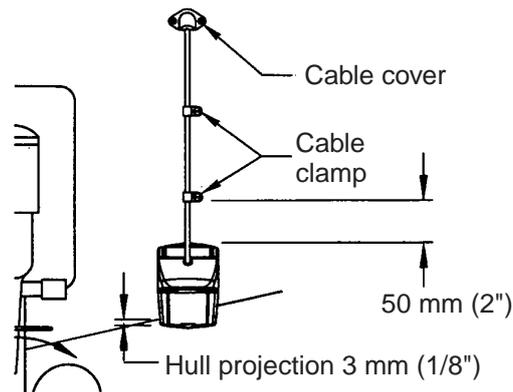
**2° - 10° transom angle (stepped transom and jet boats):** Position the shim with the tapered end down.

**19° - 22° transom angle (small aluminum and fiberglass boats):** Position the shim with the tapered end up.

- If the bracket has been temporarily fastened to the transom, remove it. Apply a marine sealant to the threads of the two #10 x 1-1/4" self tapping screws to prevent water seeping into the transom. Screw the bracket to the hull. Do not tighten the screws completely at this time.
- Repeat step 1 to ensure that the angle of the sensor is correct.

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

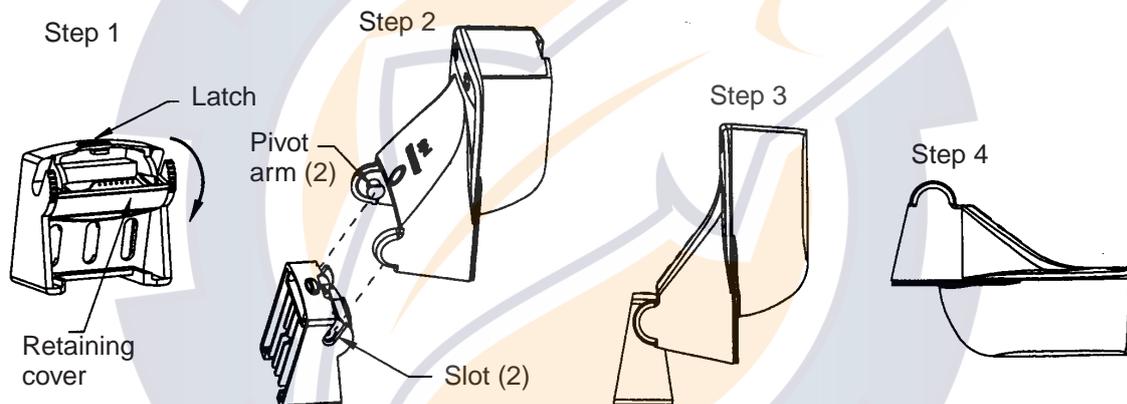
- Using the vertical adjustment space on the bracket slots, slide the sensor up or down to provide a projection of 3 mm (1/8"). Tighten the screws.



*Vertical adjustment and cable routing*

### Attaching the sensor to the bracket

- If the retaining cover near the top of the bracket is closed, open it by depressing the latch and rotating the cover downward.



*Attaching the sensor to the bracket*

- Insert the sensor's pivot arms into the slots near the top of the bracket.
- Maintain pressure until the pivot arms click into place.
- Rotate the sensor downward until the bottom snaps into the bracket.
- Close the retaining cover to prevent the accidental release of the sensor when the boat is underway.

### 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.

Never cut the cable or remote the connector; this will void the warranty. Always wear safety goggles and a dust mask.

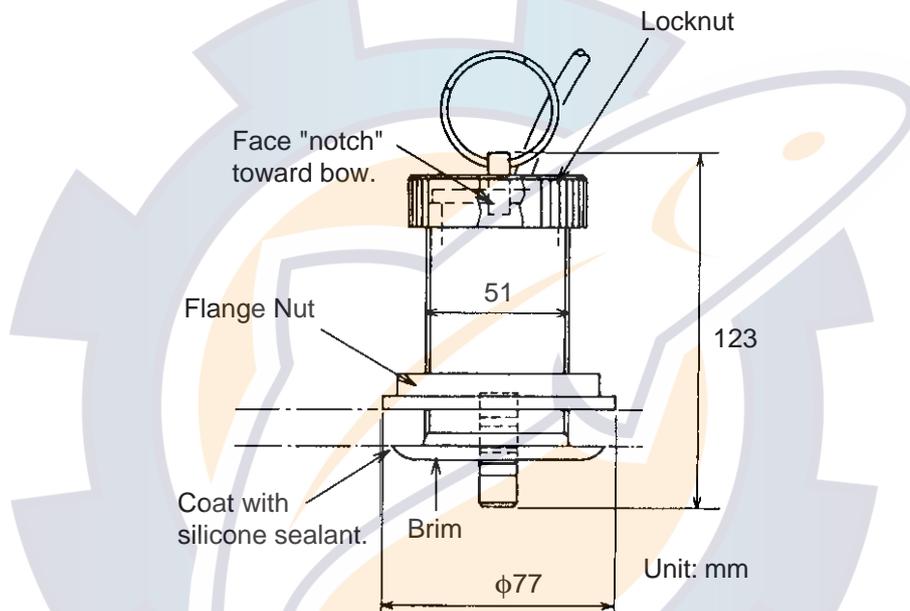
- If a hole must be drilled, choose a location well above the waterline. Check for obstructions such as trim tabs, pumps, or wiring inside the hull. Mark the location with a pencil. Drill a hole through the transom using a 19 mm or 3/4" bit (to accommodate the connector).
- Route the cable over or through the transom.
- 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 transom 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 #6 x 1/2" self-tapping screw 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 "noise" sources. Coil any excess cable and secure it in place with zip-ties to prevent damage.



## 1.4 Optional Speed/Water Temperature Sensor ST-02MSB, ST-02PSB

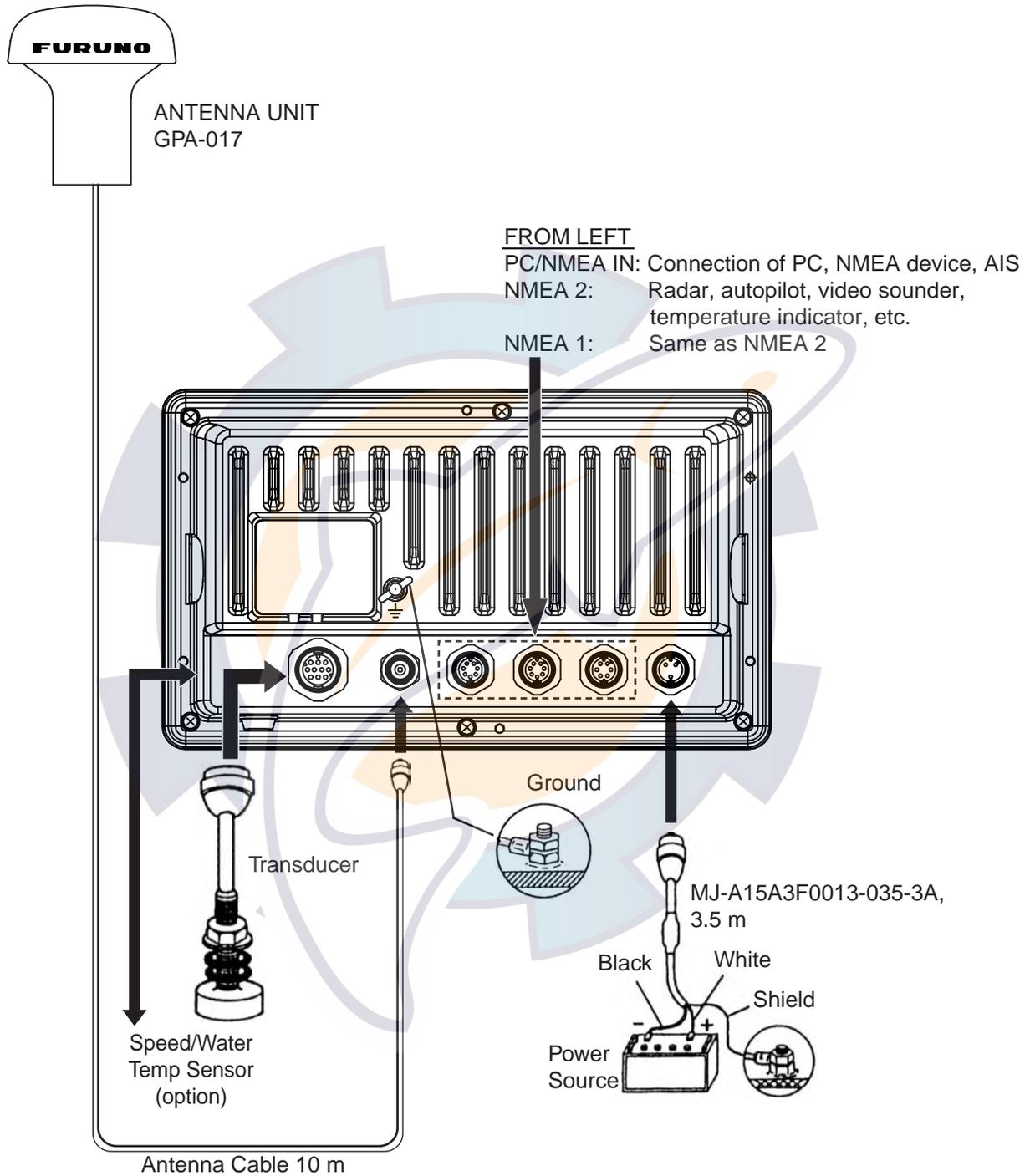
1. Dry-dock the boat.
2. Make a hole of approx. 51 mm diameter in the mounting location.
3. Unfasten locknut and remove the sensor section.
4. Apply high-grade sealant to the flange of the sensor.
5. Pass the sensor casing through the hole.
6. Face the notch on the sensor toward boat's bow and tighten 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.



*Speed/water temperature sensor ST-02MSB, ST-02PSB*

## 2. WIRING

The figure below shows the basic wiring scheme.



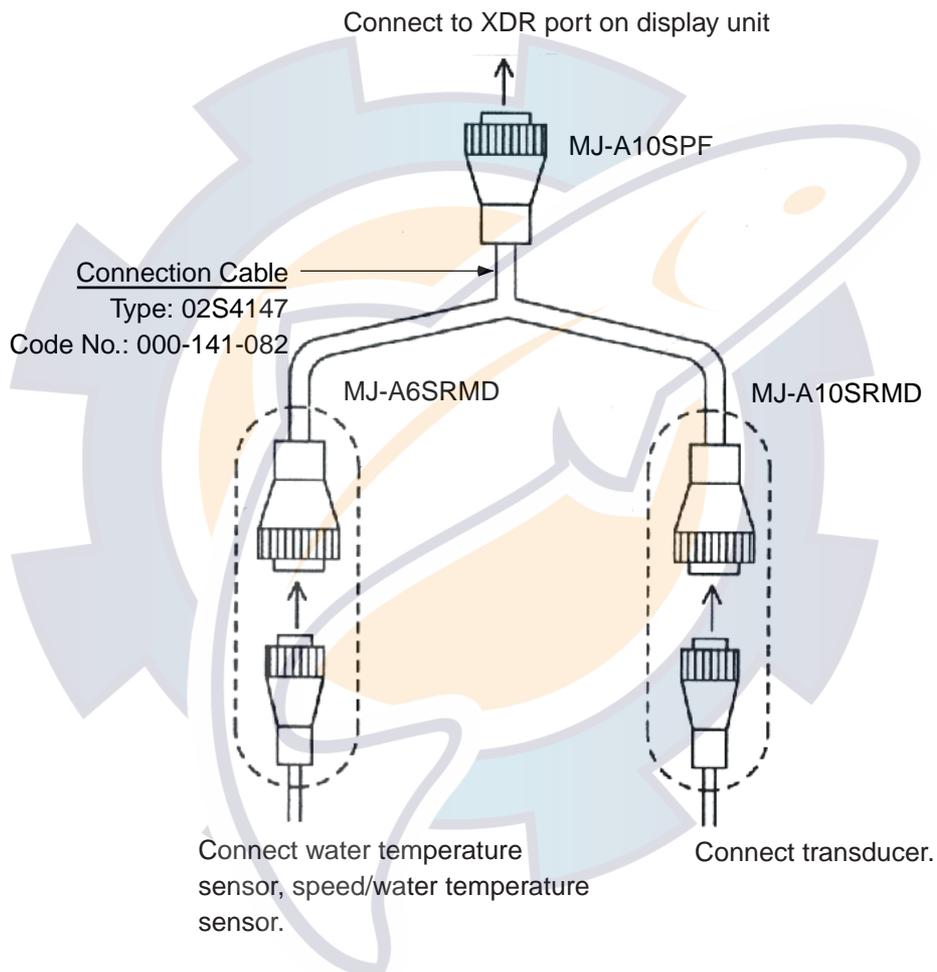
Display unit, rear view

## Power source

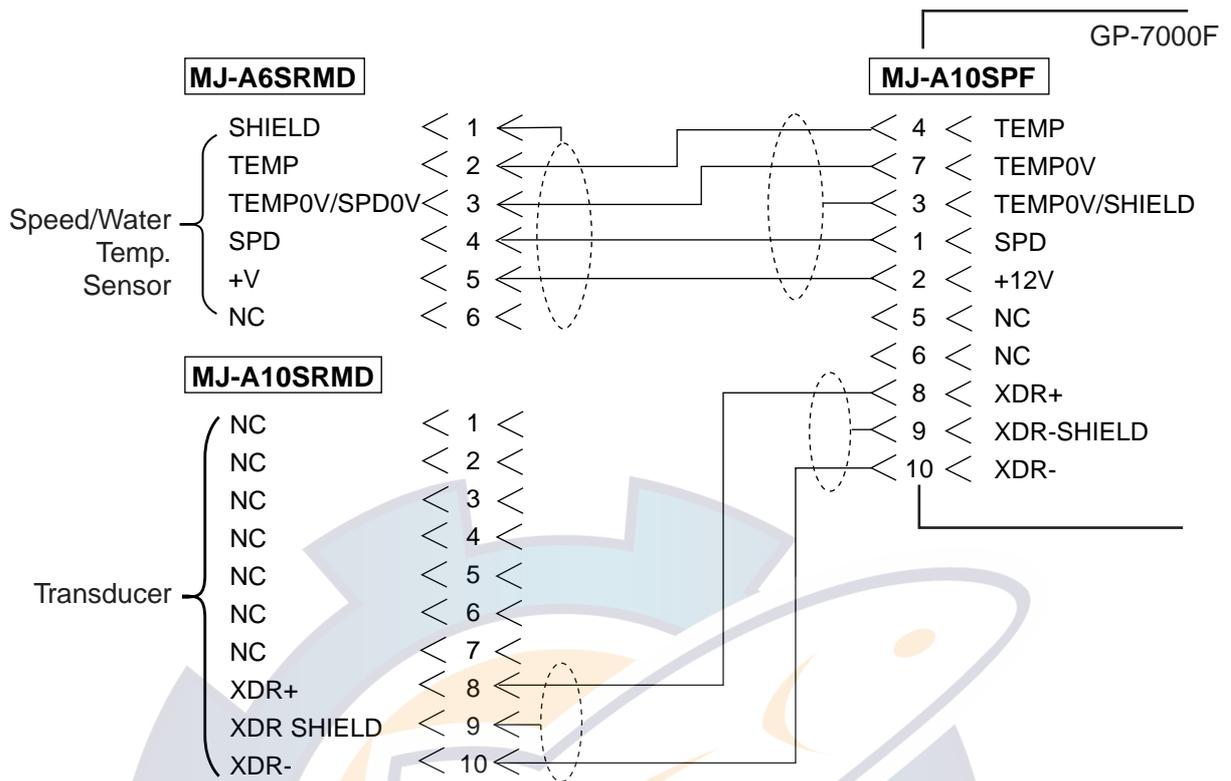
The power source is a 12-24 VDC battery. Be sure the power cable is tightly fastened to the power source and the polarity (plus and minus) is correct. Connect the white lead to the positive terminal (+) and the black lead to the negative terminal (-).

## Transducer

Connect the transducer to XDR port on the rear of the display unit. If the optional speed/water temperature sensor is connected, connect the transducer with the optional cable 02S4147 (Code No. 000-141-082).



*How to connect transducer and sensor with optional cable 02S4147*



Wiring for connection of speed/water temperature sensor with cable 02S4147

## Ground

Connect the ground wire to the boat's grounding bus. If the unit is not grounded, noise may result. If noise is a problem on an FRP vessel, fasten a ground plate of 20 cm x 30 cm to the outside of the ship's hull and connect the ground wire there.

Use a closed-type lug (  ) for the connection on the display unit. Do not use an open-type lug (  ).

## Antenna cable

### Types of antenna cables

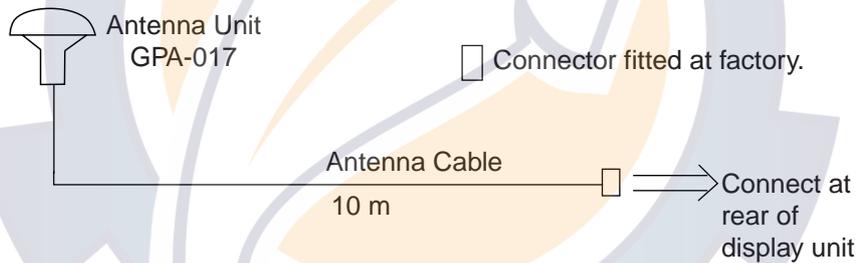
If a longer length of antenna cable is required, use the optional antenna cable set, which is available in 30 and 50 m lengths.

#### Antenna cable set

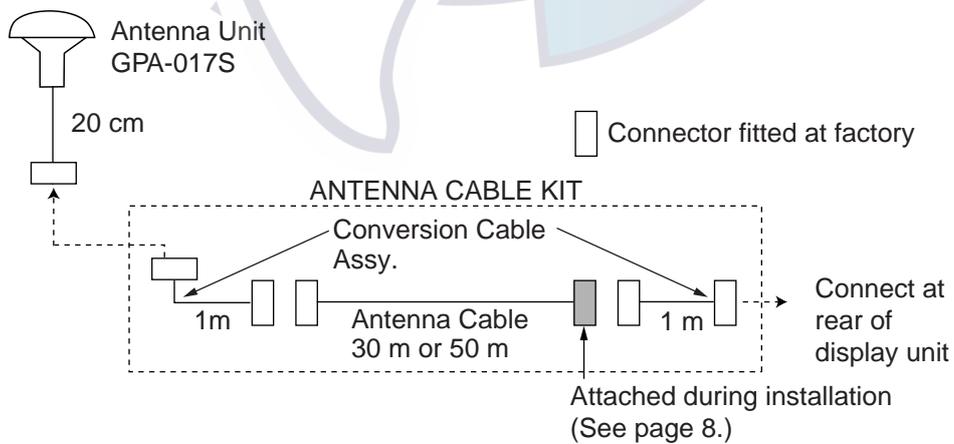
Antenna cable set	Code no.	Contents
CP20-01700	004-372-110	1) Converter cable assy. NJ-T-3DX-1, Code No. 000-123 2) Vinyl tape NO.360 Code No. 000-835-215 3) Connector N-P-8DFB-CF, Code No. 000-156-918-10 4) Self-bonding tape U-tape, Code No. 000-165-833-10 5) Antenna cable assy. 8D-FB-CV*30m*, Code No. 000-117-547
CP20-01710	004-372-120	Items 1) - 4) above plus: Antenna Cable Assy. 8D-FB-CV*50m*, Code No. 000-117-549

### Connecting the antenna cable

If you are using the antenna cable set, a coaxial connector is fitted at one end of the cable as shown below.



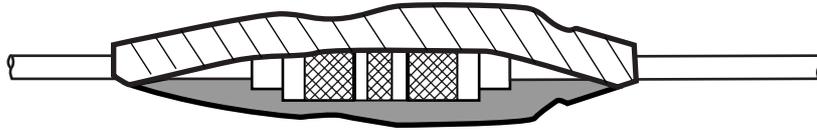
Connection of standard antenna cable (TNC-PS3D-15)



Connection of extension cable (CP20-01700, CP20-01710)

**Waterproofing the connector**

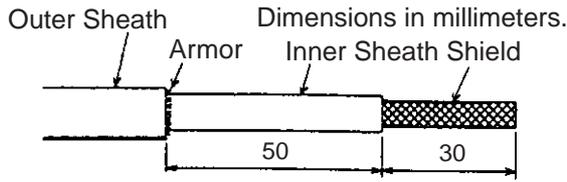
If you are using the extension cable, connect the cable and then wrap the connector with self-vulcanizing tape and then vinyl tape to waterproof it. Bind ends of vinyl tape with cable ties (local supply) to prevent unraveling.



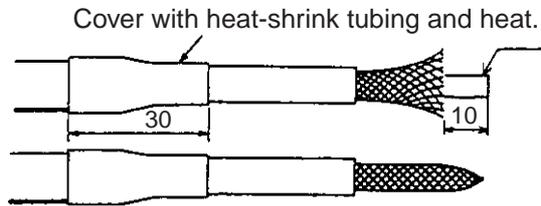
*How to waterproof the connector*



**How to attach N-P-8DFB connector (for extension cable kit)**

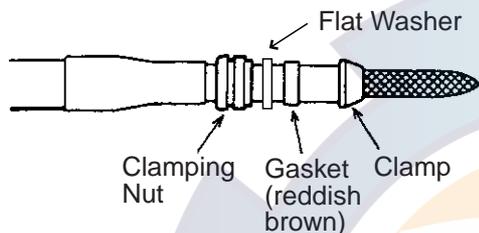


Remove outer sheath and armor by the dimensions shown left.  
Expose inner sheath and shield by the dimensions shown left.

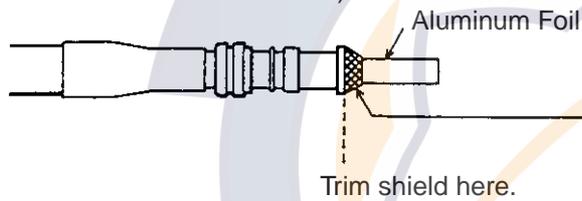


Cut off insulator and core by 10 mm.

Twist shield end.



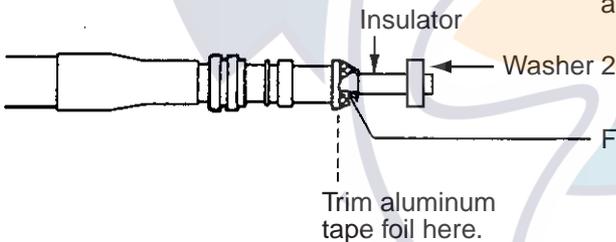
Slip on clamping nut, flat washer, gasket and clamp as shown left.



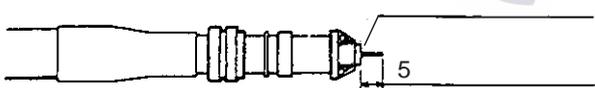
Fold back shield over clamp and trim.



Cut aluminum foil at four places, 90° from one another.

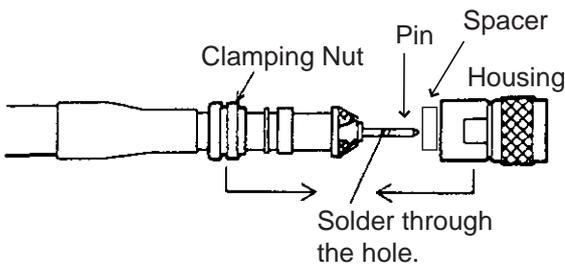


Fold back aluminum foil onto shield and trim.



Remove insulator up to edge of washer 2.

Expose the core by 5 mm.



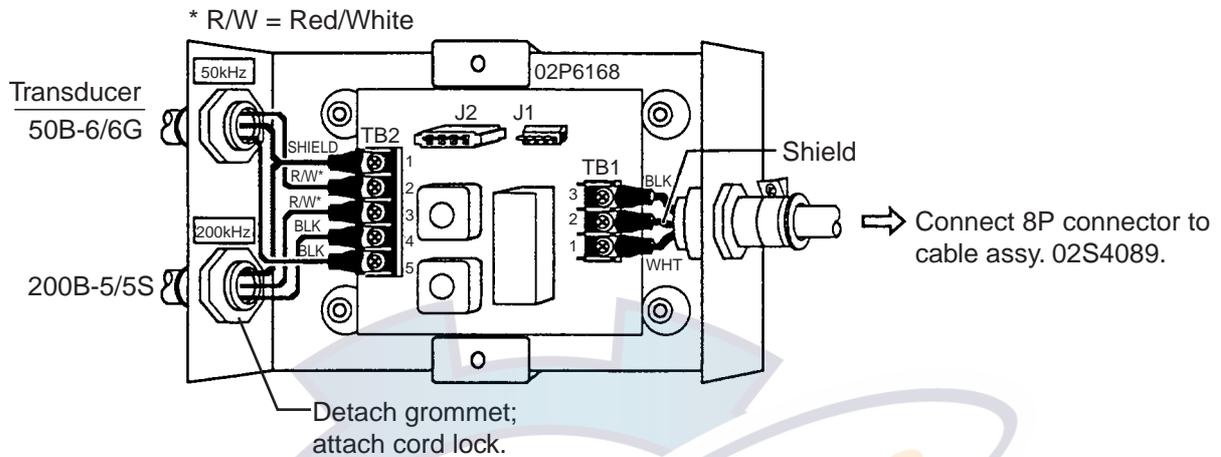
Slip the pin onto the conductor. Solder them together through the hole on the pin.

Insert the spacer and housing. Screw the clamping nut into the housing. (Tighten by turning the clamping nut. Do not tighten by turning the housing.)

*How to attach N-P-8DFB connector*

### Optional transducer

The optional Distributor MB-1000 is required to connect the optional transducers 50B-6, 50B-6G, 200B-5S, 200B-5S, 50/200-IT. The optional cable assy 02S4089 (Code No. 000-133-622, 1 m) is required to connect the Distributor.



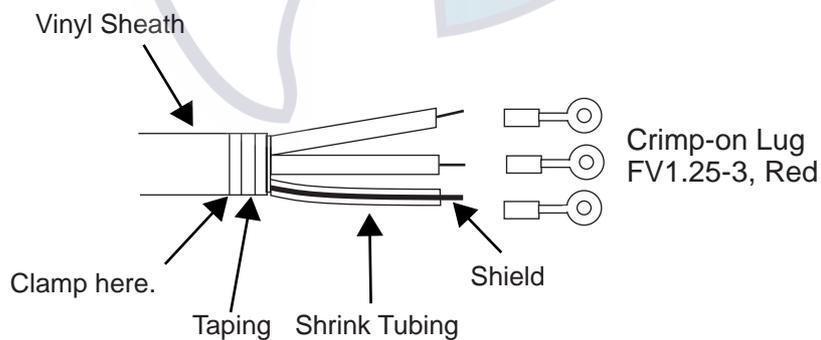
Distributor MB-1000, cover removed

Distributor MB-1000 (Code No.: 000-040-809)

Part	Type	Code No.	Qty	Remarks
Distributor	MB-1000	000-040-805	1	
Crimp-on Lug	FV1.25-3, red	000-538-113	6	
Cord Lock	NC-1	000-516-650	1	Used to connect two transducers

### Fabricating the transducer cable

Fabricate the transducer cable as below and connect it to the Distributor, referring to the interconnection diagram.



How to fabricate the transducer cable

### 3. ADJUSTMENTS

This chapter shows you how to adjust your unit, from the menu. When choosing item or option from the menu, you may use the [ENTER] knob or the CursorPad (⊗). For sake of brevity the descriptions contained herein use the [ENTER] knob.

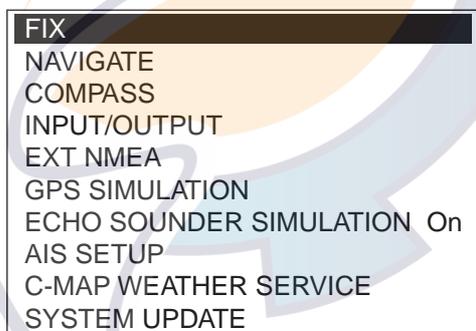
#### 3.1 Choosing Position Data Source

1. Press the [MENU] key to show the menu bar.



*Menu bar*

2. Rotate the [ENTER] knob to choose ADVANCED from the menu bar and then push the [ENTER] knob.



*ADVANCED menu*

3. Rotate the [ENTER] knob to choose INPUT/OUTPUT and then push the [ENTER] knob.

INTERNAL GPS SETUP		
NMEA 1 INPUT	NMEA-0183	4800-N81-N
NMEA 1 OUTPUT		
NMEA 2 INPUT	NMEA-0183	4800-N81-N
NMEA 2 OUTPUT		
RS232/NMEA 3 INPUT	NMEA-0183	4800-N81-N
RS232C 3 OUTPUT		
INPUT 3 MODE	RS232C	
WPL/RTE FORMAT	Standard	
EXTERNAL EVENT	Off	
C-LINK	Off	
DEPTH SOURCE	Sounder	
TEMP SOURCE	NMEA	
STW SOURCE	NMEA	

*INPUT/OUTPUT menu*

4. Rotate the [ENTER] knob to choose INTERNAL GPS SETUP and then push the [ENTER] knob.

RESTART GPS	
INTERNAL GPS	On
DIFF CORR SOURCE	WAAS
WAAS SEARCH	Auto

*INTERNAL GPS SETUP menu*

5. Rotate the [ENTER] knob to choose INTERNAL GPS and then push the [ENTER] knob.



6. Rotate the [ENTER] knob to choose Off or On and then push the [ENTER] knob.

Off: Use external navigator

On: Use internal GPS navigator

7. Press the [MENU] key to close all open windows and erase the menu bar.

### 3.2 Choosing Port I/O Format

1. Press the [MENU] key to show the menu bar.
2. Rotate the [ENTER] knob to choose ADVANCED from the menu bar and then push the [ENTER] knob.
3. Rotate the [ENTER] knob to choose INPUT/OUTPUT and then push the [ENTER] knob.
4. Rotate the [ENTER] knob to choose appropriate INPUT or OUTPUT item and then push the [ENTER] knob.

NMEA-0183 1200-N81-N
<b>NMEA-0183 4800-N81-N</b>
NMEA-0183 4800-N82-N
NMEA-0183 9600-N81-N
NMEA-0183 9600-O81-N
C-COM
AIS 38400
Disabled

NMEA1/NMEA 2/  
RS232/NMEA 3 Input\*

GLL	On
VTG	On
BWR	Off
DBT	Off
DPT	Off
MTW	Off
VHW	Off
WCV	Off
APA	Off
APB	On
HDG	Off
BOD	Off
XTE	Off
RMA	Off
RMB	On
RMC	On
GGA	Off
HSC	Off
AAM	Off
GTD	Off
MWV	Off
ZDA	Off
WPL	On
RTE	On
TLL OUT	On

NMEA1/NMEA2/RS232 Output

*NMEA 1 INPUT, NMEA 1 OUTPUT menus*

<b>RS232C</b>
NMEA

(Choose format for  
PC/NMEA IN port)

INPUT 3 MODE\*

\*: For AIS, set as below.  
RS232/NMEA 3 INPUT: "AIS 38400"  
INPUT 3 MODE: "RS232C"

5. Do one of the following depending on item selected.

#### Input

- 1) Rotate the [ENTER] knob to choose appropriate option and then push the [ENTER] knob. Below is the meaning of the NMEA options. "C-COM" is for connection of a GSM modem. For details about the GSM modem, see its owner's manual.

**NMEA-0183 4800-N81-N**  
①                      ②                      ③④⑤                      ⑥

- ① Data format
- ② Baud rate: 1200, 4800, 9600(bps)
- ③ Parity: N (No parity) or O (Odd parity)
- ④ Character length (8)
- ⑤ Stop bit: 1 or 2
- ⑥ X-On/Off (non)

*Description of NMEA options*

- 2) Press ◀ to close the window.

**Output**

1) Rotate the [ENTER] knob to choose appropriate option and then push the [ENTER] knob.



2) Rotate the [ENTER] knob to choose Off or On as appropriate and then push the [ENTER] knob followed by ◀.

6. Repeat step 5 to set up other ports.

7. Press the [MENU] key to close all open windows and erase the menu bar.

**I/O format**

	Port	I/O format	Data sentence	Remarks
Input	NMEA 1, NMEA 2	IEC-61162-1, NMEA-0183 Ver. 1.5/2.0/3.0	See table below.	
	PC/NMEA IN	RS232, and IEC and NMEA above	For NMEA IN, see table below.	
Output	NMEA 1, NMEA 2	IEC-61162-1, NMEA-0183 Ver. 1.5/2.0/3.0	GLL, VTG, BWR, DBT, DPT, MTW, VHW, WCV, APA, APB, HDG, BOD, XTE, RMA, RMB, RMC, GGA, HSC, WPL, RTE, TLL OUT, AAM, GTD, MWV, ZDA	BWR: Rhumb line
	PC/NMEA IN	RS232		

**Input data, sentence priority**

Data	Sentence priority order	Remarks
Speed thru water	VHW	
True heading	HDT, HDG, HDM	
Magnetic heading	HDT, HDG, HDM	
Target position	TLL	
Radiotelephone target position	DSC, DSE	
Waypoint data	RMB	
Depth	DPT, DBT	
Water temperature	MTW	
Wind current, speed	MWV	

### 3.3 Echo Sounder Settings

#### Setting transducer model, output power

The GP-7000F is preset to use a 600 W transducer (520-5PSD, 525-5PWD, 520-5MSD). For a 1 kW transducer, follow the procedure below. Note that the optional Distributor MB-1000 and cable assy. 02S4089 are necessary in order to use a 1 kW transducer.

Output Power	Transducer
600 W	520-5PSD, 525-5PWD, 520-5MSD
1 kW	50B-6, 50B-6G, 200B-5, 200B-5S, 50/200-IT

1. Use the [DISP] key to choose an echo sounder display.
2. Press the [MENU] key to show the menu bar.
3. Rotate the [ENTER] knob to choose SOUNDER from the menu bar and then push the [ENTER] knob.

AUTO MODE PRESET	FISH
DISPLAY MODE	NORMAL
FREQUENCY	50 KHz
PICTURE ADVANCE	1/1
TEMPERATURE GRAPH	On
ZOOM MARKER	On
A-SCOPE	Off
SOUNDER SETUP	
SENSOR SETUP	

*ECHO SOUNDER SYSTEM SETUP menu*

4. Rotate the [ENTER] knob to choose SOUNDER SETUP and then push the [ENTER] knob.

TRANSMISSION	On
TRANSMISSION POWER	High
TRANSDUCER	600W
50 KHz TVG	00
200 KHz TVG	00
50 KHz ECHO OFFSET	+000
200 KHz ECHO OFFSET	+000
50 KHz BOTTOM LEVEL	+000
200 KHz BOTTOM LEVEL	+000
SMOOTHING	SM2
DEPTH INFORMATION	Large
PLAYBACK SOUNDER IMAGE	Off
ECHO SOUNDER SIMULATION	Off

*SOUNDER SETUP menu*

5. Rotate the [ENTER] knob to choose TRANSDUCER and then push the [ENTER] knob.

600W
1KW

6. Rotate the [ENTER] knob to choose 1KW and then push the [ENTER] knob.
7. Press the [MENU] key to close all open windows and erase the menu bar.

## Calibrating speed/water temperature sensor, setting draft

The optional speed/water temperature sensor may be calibrated as below to compensate for error. If you require depth from the sea surface (rather than the transducer), set it with "DRAFT SETUP."

For either sensor calibration or draft setting, enter a minus value if the actual value is lower than the sensor data, or a plus value if the actual value is higher than the sensor data. For example, if the actual speed is 11.0 kt and the speed data output by the sensor is 10.0 kt, enter +10(%).

1. Use the [DISP] key to choose an echo sounder display.
2. Press the [MENU] key.
3. Rotate the [ENTER] knob to choose SOUNDER from the menu bar and then push the [ENTER] knob.

AUTO MODE PRESET	FISH
DISPLAY MODE	NORMAL
FREQUENCY	50 KHz
PICTURE ADVANCE	1/1
TEMPERATURE GRAPH	On
ZOOM MARKER	On
A-SCOPE	Off
SOUNDER SETUP	
SENSOR SETUP	

*ECHO SOUNDER menu*

4. Rotate the [ENTER] knob to choose SENSOR SETUP and then push the [ENTER] knob.

<b>DRAFT</b>	<b>+000.0 Ft</b>
SPEED CALIBRATION	+00 %
TEMP CALIBRATION	+00.00°F
ACOUSTIC SPEED CALIBRATION	+00 m/s

*SENSOR SETUP menu*

5. Rotate the [ENTER] knob to choose DRAFT, SPEED CALIBRATION, TEMP CALIBRATION or ACOUSTIC SPEED CALIBRATION as appropriate.

**DRAFT:** Enter ship's draft to get depth from sea surface (instead of transducer).

**SPEED CALIBRATION:** Find correct speed from known source and enter offset to correct on-screen speed indication.

**TEMP CALIBRATION:** Find correct water temperature from known source and enter offset to correct on-screen water temperature indication.

**ACOUSTIC SPEED CALIBRATION:** Water temperature or salinity content can affect the depth measurement. Find correct acoustic speed from known source and enter offset to correct on-screen depth indication.

6. Push the [ENTER] knob. The cursor is selecting the plus sign (or minus sign). If it is necessary to switch from plus to minus or vice versa, rotate the [ENTER] knob to choose plus or minus and then push the [ENTER] knob. If not necessary, go to step 7. (Choose minus if the actual value is lower than the value output by the sensor, or choose plus if the actual value is higher than the value output by the sensor.)
7. Push the [ENTER] knob.

8. Rotate the [ENTER] knob to set digit and push the [ENTER] knob. To clear a line of data, press the [CLR FLD] soft key (one of the keys below the screen).

**Setting range**

Draft setup: -20 - +39.9 (ft)

Speed calibration: -50 - +50 (%)

Temp calibration: -50 - +5 (°F)

Acoustic speed calibration: -50 - +50 (ms)

9. Set other digits as you did in step 8.
10. Press the [SAVE] soft key (one of the keys below the screen).
11. If necessary, follow steps 5-11 to set other items.
12. Press the [MENU] key to close all open windows and erase the menu bar.

### 3.4 Choosing Data Source(s)

Choose the source of depth, water temperature and speed data as follows:

1. Press the [MENU] key to show the menu bar.
2. Rotate the [ENTER] knob to choose ADVANCED on the menu bar and then push the [ENTER] knob.
3. Rotate the [ENTER] knob to choose INPUT/OUTPUT and then push the [ENTER] knob.
4. Rotate the [ENTER] knob to choose DEPTH SOURCE, TEMP SOURCE or STW SOURCE (speed) depending on your system configuration and then push the [ENTER] knob.



5. Rotate the [ENTER] knob to choose NMEA or Sounder as appropriate and then push the [ENTER] knob. Choose Sounder if you wish to use sounder-generated depth, water temperature or speed data. (Optional water temperature/speed sensor required to use Sounder-generated water temperature/speed data.)
6. Press ◀ to close the window.
7. If applicable, repeat steps 4 thru 6 to choose other data sources.
8. Press the [MENU] key to close all open windows and erase the menu bar.

**Note:** The following data sentences are required to display respective data. Depth: DPT (Ver. 2.0) or DBT (Ver. 1.5), Temperature: MTW, and STW (Speed Thru Water): VTG, RMC or RMA.

## 3.5 Calibrating NMEA Depth, Speed and Water Temperature Data

NMEA speed, depth and water temperature data may be corrected from the GP-7000F if they cannot be done from the equipment that outputs the data. Enter a minus value if the actual value is lower than the NMEA data, or a plus value if the actual value is higher than the NMEA data. For example, if the actual water temperature is 20° and the water temperature data output by the sensor is 17°, enter +3(°).

1. Press the [MENU] key to show the menu bar.
2. Rotate the [ENTER] knob to choose ADVANCED from the menu bar and then push the [ENTER] knob.
3. Rotate the [ENTER] knob to choose EXT NMEA and then push the [ENTER] knob.

<b>DRAFT SETUP</b>	<b>+00.0 Ft</b>
SPEED CALIBRATION	+00 %
TEMP CALIBRATION	+00.00°F

*EXT NMEA menu*

4. Rotate the [ENTER] knob to choose appropriate item.
 

**DRAFT SETUP:** Enter ship's draft to get NMEA depth from sea surface (instead of transducer). To get depth from hull bottom, measure distance between bottom of transducer and hull bottom and enter that value with a minus.

**SPEED CALIBRATION:** Find correct speed from known source and enter offset to correct NMEA speed indication.

**TEMP CALIBRATION:** Find correct water temperature from known source and enter offset to correct NMEA water temperature indication.
5. Push the [ENTER] knob. The cursor is selecting the plus sign (or minus sign). If it is necessary to switch from plus to minus or vice versa, rotate the [ENTER] knob to choose plus or minus and then push the [ENTER] knob. If not necessary, go to step 6.
6. Push the [ENTER] knob, rotate the [ENTER] knob to set digit and then push the [ENTER] knob. To clear a line of data, press the [CLR FLD] soft key, which is the third key from the left of the keys below the screen.
 

**Setting range**

Draft setup: -20 - +39.9 (ft)

Speed calibration: -50 - +50 (%)

Temp calibration: -50 - +50 (°F)
7. Set other digits as you did in step 6.
8. Press the [SAVE] soft key, which is the fourth key from the left of the keys below the screen.
9. If necessary, repeat step 4-8 to choose and set another calibration item.
10. Press the [MENU] key to close all open windows and erase the menu bar.

## 3.6 Waypoint, Route Format

You may transfer waypoint and route data to another GP-7000 series unit or a PC in Standard or Furuno format, via the NMEA1 port, NMEA2 port or PC NMEA IN port.

1. Press the [MENU] key to show the menu bar.
2. Rotate the [ENTER] knob to choose ADVANCED from the menu bar and then push the [ENTER] knob.
3. Rotate the [ENTER] knob to choose INPUT/OUTPUT and then push the [ENTER] knob.
4. Rotate the [ENTER] knob to choose WPL/RTE FORMAT and then push the [ENTER] knob.



5. Choose Furuno or Standard as appropriate and then push the [ENTER] knob.
  - Standard:** NMEA format WPL and RTE sentences are output when "SEND" is executed to transfer waypoint list or route list.
  - Furuno:** Furuno format WPL and RTE sentences are output when "SEND" is executed to transfer waypoint list or route list. Waypoint color, shape and comment data are sent.
6. Press the [MENU] key to close the menu.

## 3.7 External Event Format

If the equipment is equipped with an external event switch you may choose what mark is inscribed on the screen when the switch is pressed. For connection of an external event switch, see the interconnection diagram.

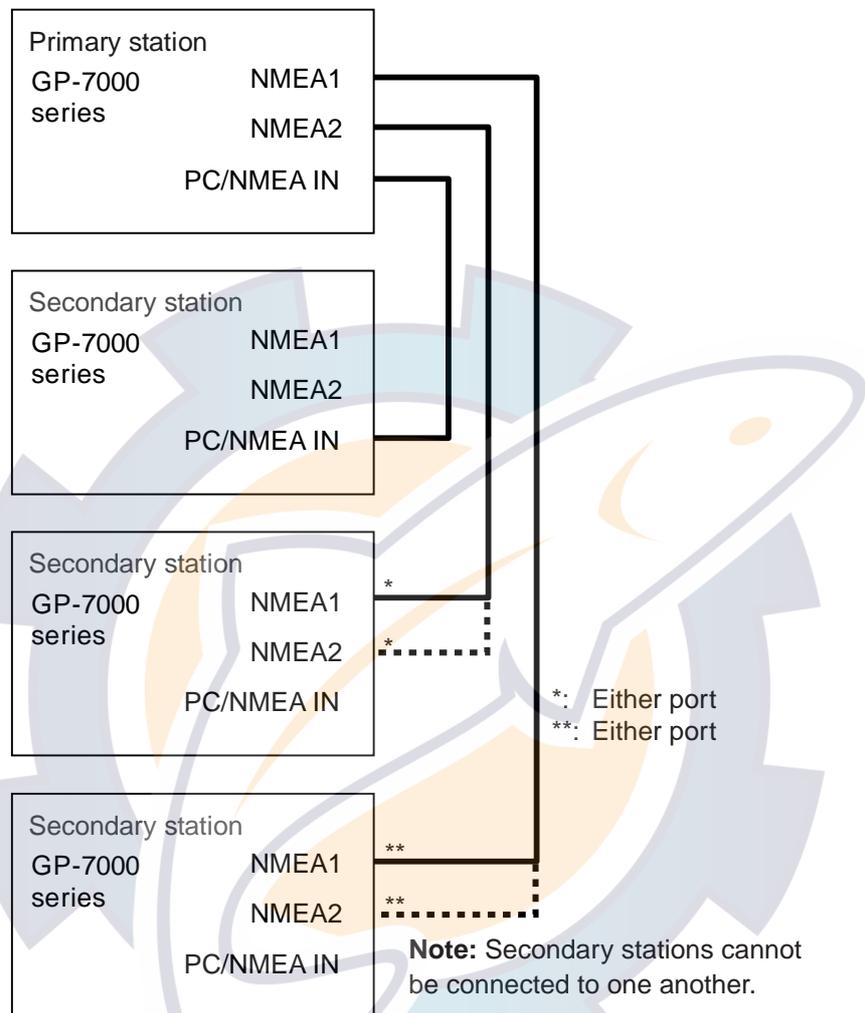
1. Press the [MENU] key to show the menu bar.
2. Rotate the [ENTER] knob to choose ADVANCED from the menu bar and then push the [ENTER] knob.
3. Rotate the [ENTER] knob to choose INPUT/OUTPUT and then push the [ENTER] knob.
4. Rotate the [ENTER] knob to choose EXTERNAL EVENT and then push the [ENTER] knob.



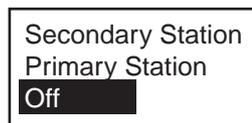
5. Choose Off, WPT or MOB as appropriate and then push the [ENTER] knob.
  - Off:** No event switch is connected.
  - WPT:** Waypoint is registered at ship's position if the cursor is not displayed, or at cursor position if the cursor is displayed.
  - MOB:** MOB is registered at ship's position.
6. Press the [MENU] key to close the menu.

### 3.8 Primary, Secondary Unit (C-link)

The C-link feature, available when several GP-7000 series units are interconnected via NMEA ports or PC/NMEA IN ports (see the illustration below), lets you duplicate on secondary stations the destination set at the primary station. With this feature active destination may only be set from the primary station.



1. Press the [MENU] key to show the menu bar.
2. Rotate the [ENTER] knob to choose ADVANCED from the menu bar and then push the [ENTER] knob.
3. Rotate the [ENTER] knob to choose INPUT/OUTPUT and then push the [ENTER] knob.
4. Rotate the [ENTER] knob to choose C-LINK and then push the [ENTER] knob.



5. Choose Off, Secondary Station, Primary Station as appropriate and then push the [ENTER] knob.
6. Press the [MENU] key to close the menu.

# PACKING LIST GP-7000/F-E-C-017, GP-7000/F-E-N-017

14CR-X-9851-12

1/1

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
<b>ユニット</b>			
空中線部		GPA-017	1
ANTENNA UNIT		000-041-403-00	
指示器		GP-7000-E-C	1
DISPLAY UNIT		000-041-184-00 **	
<b>予備品 SPARE PARTS SP14-03201</b>			
ヒューズ		FGBO-A 125V 3A PBF	1
FUSE		FGBO-A 3A AC125V	
		000-155-850-10	
		000-549-063-00	
<b>付属品 ACCESSORIES FP20-01100</b>			
フィルターナー			1
FILTER CLEANER			
<b>工事材料 INSTALLATION MATERIALS CP14-06400</b>			
Fマウントボス		14-074-1032-0	1
FLUSH MOUNTING SPONGE		100-323-890-00	
+		M4X20 SUS304	6
WASHER HEAD SCREW		M4X20 SUS304	
		000-162-652-10	
		000-804-742-00	
+		5X20 SUS304	4
SELF-TAPPING SCREW		5X20 SUS304	
		000-162-608-10	
		000-802-081-00	

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.

(略図の寸法は、参考値です。DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ケーブル組品MJ		MJ-A6SPF0003-050C	1
SIGNAL CABLE ASSEMBLY		000-154-054-10	
ケーブル組品MJ		MJ-A15A3F0013-035-3A	1
POWER CABLE		000-145-880-00	
<b>図書 DOCUMENT</b>			
装備要領書		IM*-44290-*	1
INSTALLATION MANUAL		000-149-136-1* **	
操作要領書(英)		OS*-44290-*	1
OPERATOR'S GUIDE		000-149-135-1* **	
取扱説明書		OM*-44290-*	1
OPERATOR'S MANUAL		000-149-134-1* **	
フラッシュマウント型紙		E42-00401-*	1
TEMPLATE		000-149-985-1*	

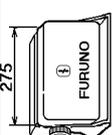
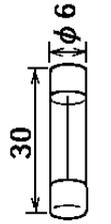
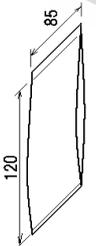
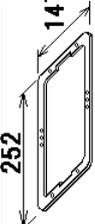
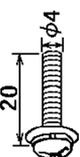
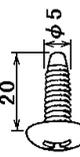
型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。なお、品質は変わりません。

TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

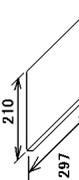
# PACKING LIST GP-7000/F-E-C, GP-7000/F-E-N

14CR-X-9852-13

1/1

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
<b>ユニット</b>			
指示器		GP-7000-E-C	1
DISPLAY UNIT		000-041-184-00 **	
<b>予備品</b>	<b>SPARE PARTS</b>	<b>SP14-03201</b>	
ヒューズ		FGBO-A 125V 3A PBF	1
FUSE		FGBO-A 3A AC125V	
		000-155-850-10	
		000-549-063-00	
<b>付属品</b>	<b>ACCESSORIES</b>	<b>FP20-01100</b>	
フィルターナー		02-155-1082-1	1
FILTER CLEANER		100-332-651-10	
<b>工事材料</b>	<b>INSTALLATION MATERIALS</b>	<b>CP14-06400</b>	
Fマウントホルダ		14-074-1032-0	1
FLUSH MOUNTING SPONGE		100-323-890-00	
ナット		M4X20 SUS304	6
WASHER HEAD SCREW		M4X20 SUS304	
		000-162-652-10	
		000-804-742-00	
ナット		5X20 SUS304	4
SELF-TAPPING SCREW		5X20 SUS304	
		000-162-608-10	
		000-802-081-00	
ケーブル組品MJ		MJ-A6SPF0003-050C	1
SIGNAL CABLE ASSEMBLY		000-154-054-10	

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.

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ケーブル組品MJ		MJ-A15A3F0013-035-3A	1
POWER CABLE		000-145-880-00	
<b>図書</b>	<b>DOCUMENT</b>		
装備要領書		IM*-44290-*	1
INSTALLATION MANUAL		000-149-136-1* **	
操作要領書(英)		OS*-44290-*	1
OPERATOR'S GUIDE		000-149-135-1* **	
取扱説明書		OM*-44290-*	1
OPERATOR'S MANUAL		000-149-134-1* **	
フラッシュマウント型紙		E42-00401-*	1
TEMPLATE		000-149-985-1*	

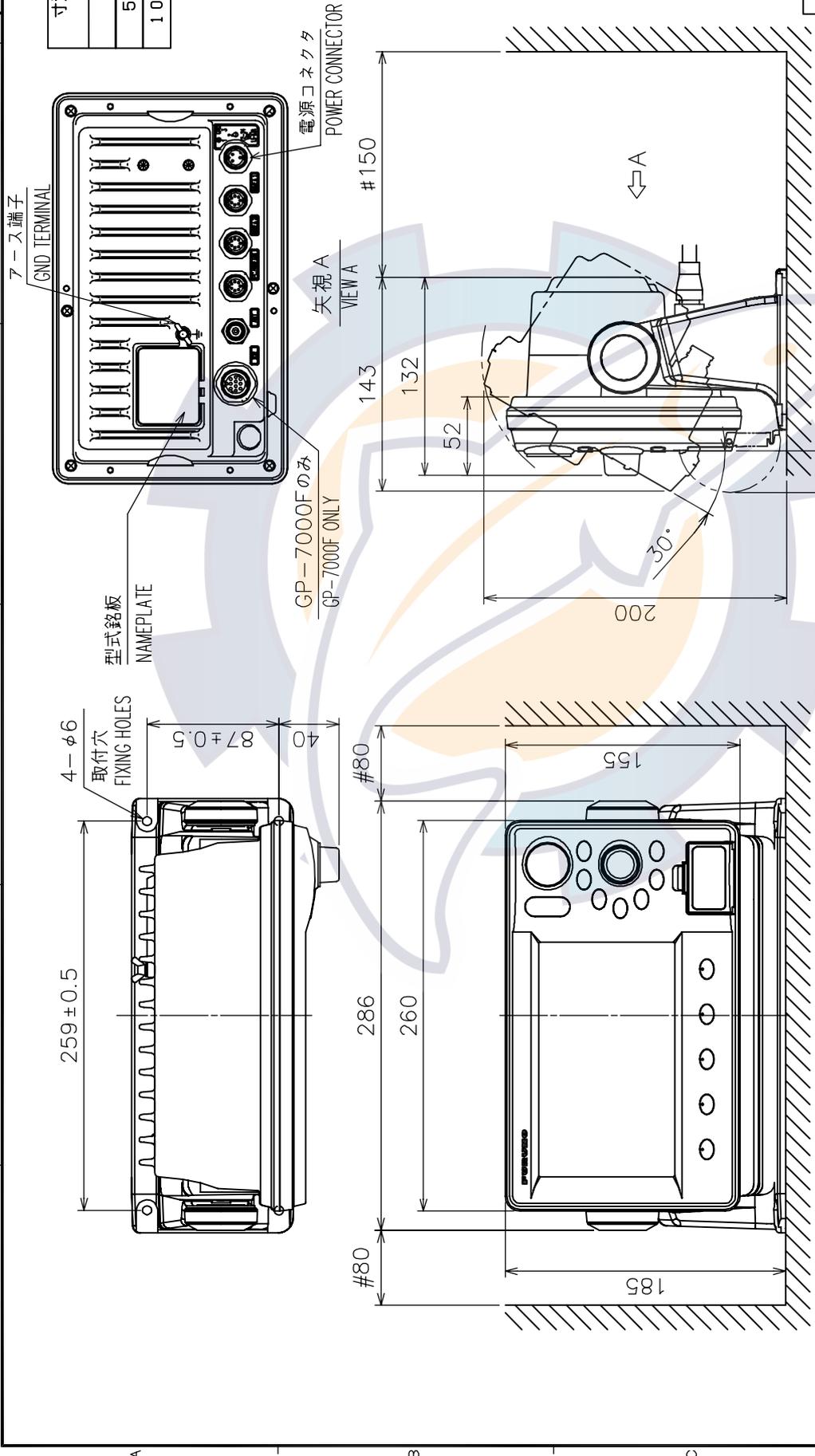
型式/コード番号が2段の場合、下段より上段に代わる通渡期品であり、どちらかが入っています。なお、品質は変わりません。  
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

表1 TABLE 1

寸法区分 (mm) DIMENSIONS	公差 (mm) TOLERANCE
L ≤ 50	± 1.5
50 < L ≤ 100	± 2.5
100 < L ≤ 500	± 3

表2 TABLE 2

機種名 MODEL NAME	質量 MASS
GP-7000	2.5Kg
GP-7000-N	2.6Kg



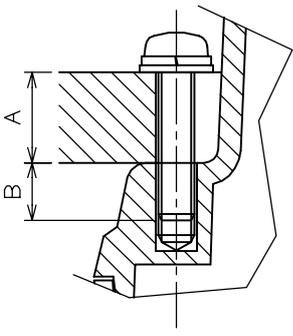
- 注記
- 1) 装備ケーブルはサービス時、指示部を前方に十分引き出せるよう余裕を持たせること。
  - 2) 取付用ネジはトラスタッピングネジ呼び径5 x 2.0を使用すること。
  - 3) 指定外の寸法公差は表1による。
  - 4) #印寸法は最小サービス空間寸法とする。
- NOTE
1. LEAVE ENOUGH SLACK IN CABLING SO UNIT CAN BE DRAWN FORWARD WITHOUT DISCONNECTING CABLING.
  2. USE SELF-TAPPING SCREWS 5X2.0 FOR FIXING THE UNIT.
  3. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
  4. # MINIMUM SERVICE CLEARANCE.

DRAWN	Jul 12, '05	E. MIYOSHI	TITLE	GP-7000/F
CHECKED		TAKAHASHI, T	名称	指示器 (卓上装備)
APPROVED		Y. Hatai	外寸図	
SCALE	1/4	MASS TABLE ±1.0% #2.0mm kg	NAME	DISPLAY UNIT (DESKTOP MOUNT)
DWG No.	C4429-G02-C	REF No.	14-074-100G-3	OUTLINE DRAWING

**FURUNO**

表 1 TABLE 1

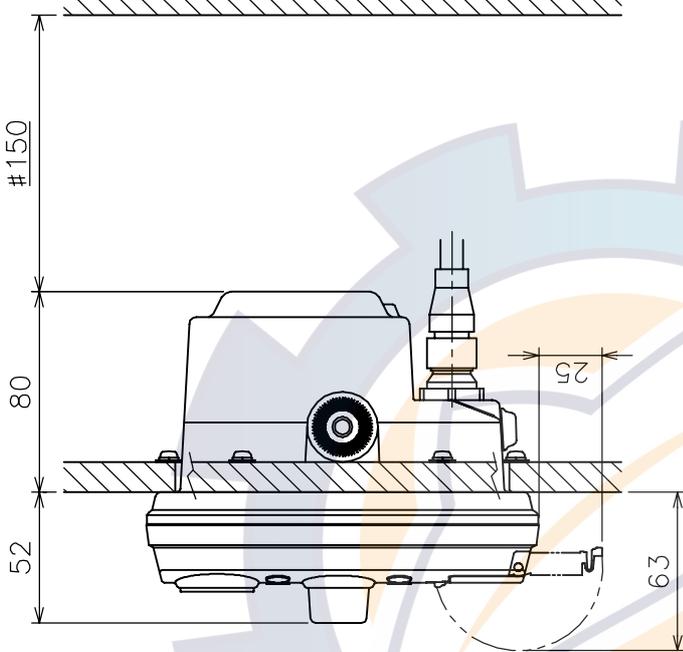
寸法区分 (mm) DIMENSIONS	公差 (mm) TOLERANCE
L ≤ 50	± 1.5
50 < L ≤ 100	± 2.5
100 < L ≤ 500	± 3



取付ネジ部断面 (尺度 1 / 1)  
DETAIL FOR FIXING (SCALE: 1/1)

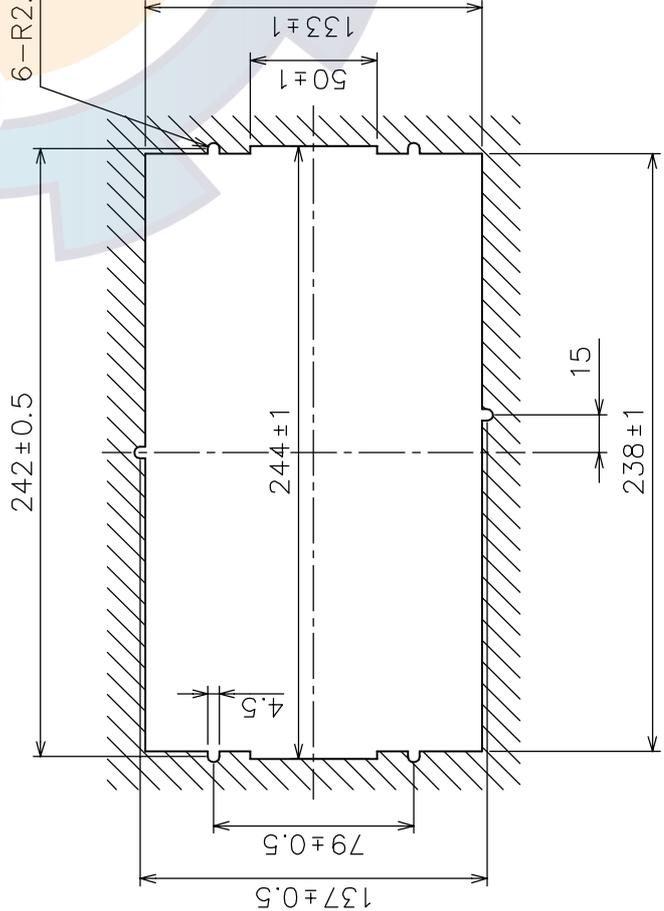
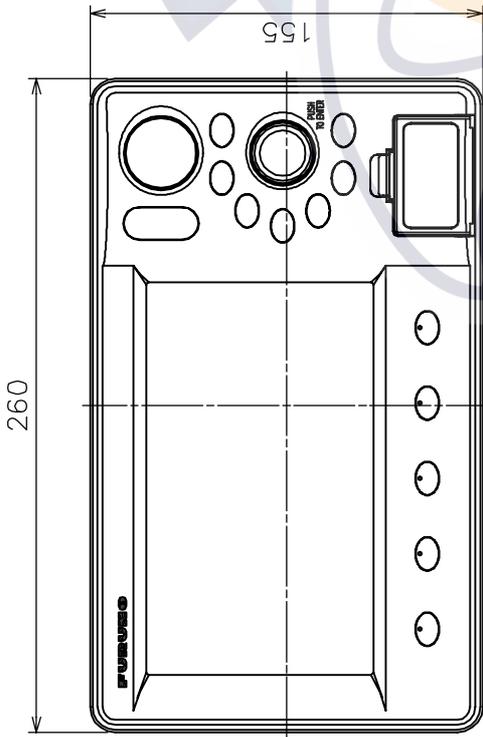
表 2 TABLE 2

機種名 MODEL NAME	質量 MASS
GP-7000 GP-7000-N	2.2Kg
GP-7000F GP-7000F-N	2.3Kg



- 注 記
- 1) 装着ケーブルはサービスタ時、指示部を前方に十分引き出せるよう余裕を持たせること。
  - 2) 取付用ネジは、セムスネジB M4X2.0を使用のこと。  
壁の厚さ(A)は最小1.1 最大1.4とする。  
上記以外の壁に装着する場合、使用するネジの長さは(A+7.3) ± 1.5とする。(セムスネジBを使用)  
筐体にはネジ部を7mm以上入れないこと。(B=MAX. 7)
  - 3) 指定外寸法公差は、表1による。
  - 4) #印寸法は最小サービスタ空固とする。

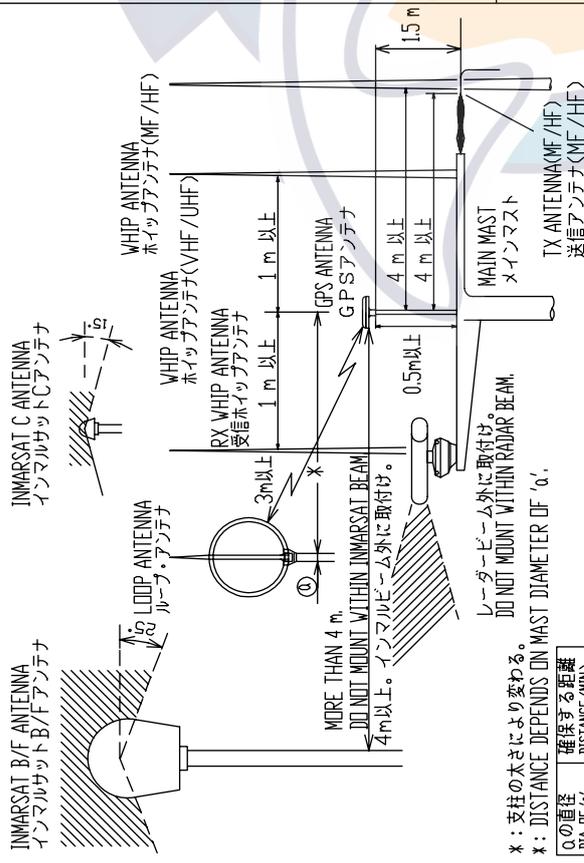
- NOTE
1. LEAVE ENOUGH SLACK IN CABLEING SO UNIT CAN BE DRAWN FORWARD WITHOUT DISCONNECTING CABLING.
  2. FOR FIXING, USE M4X2.0 SCREWS WHERE THICKNESS (A) OF PANEL IS 1.1-1.4 MM.  
FOR THICKER PANEL, LENGTH OF SCREW SHALL BE (A+7.3) ± 1.5.  
THE MAX. LENGTH OF (B) SHALL BE 7 mm.
  3. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
  4. #: MINIMUM SERVICE CLEARANCE.



DRAWN	July 12, '05	E. MIYOSHI	TITLE	GP-7000/F
CHECKED		TAKAHASHI, T	名称	指示器 (埋込装飾)
APPROVED		Y. Hatai	外寸図	
SCALE	1/3	質量 表2 ±10% 数/個 Kg	NAME	DISPLAY UNIT (FLUSH MOUNT)
DWG No.	C4429-G01-C		REF No.	14-074-110G-3
				OUTLINE DRAWING

**取付位置**  
MOUNTING LOCATION

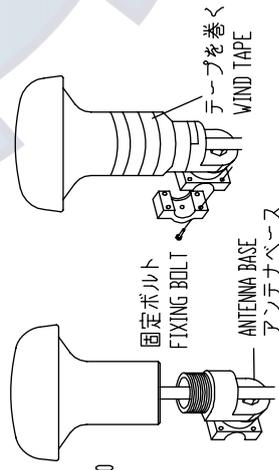
他の機器のアンテナから下の図の距離以上離す。  
THIS FIGURE SHOWS THE SEPARATION DISTANCES FROM OTHER ANTENNAS TO AVOID MUTUAL INTERFERENCE.



**B) スタンションやバルビットにつけると**

レール用アンテナベース No.13-RC5160  
(取付可能レール直径:  $\phi 19 \sim \phi 32$ )  
(コード番号: 000-806-114)

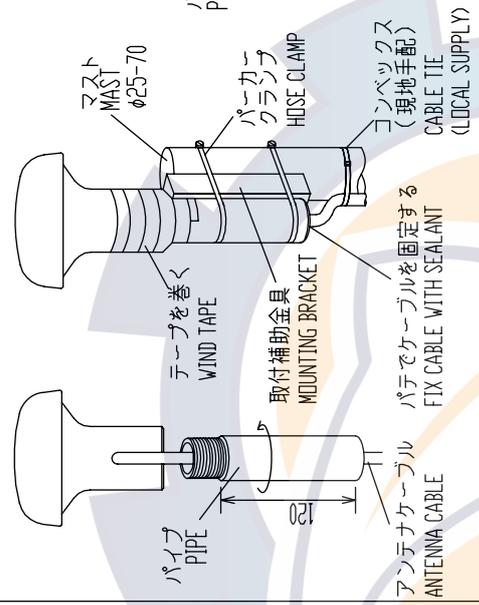
**HANDRAIL MOUNTING**  
USE HANDRAIL MOUNTING BASE No.13-RC5160  
(CODE No.000-806-114, OPTION)  
THE DIAMETER OF THE HANDRAIL MAY BE FROM  $\phi 19$ mm TO  $\phi 32$ mm.



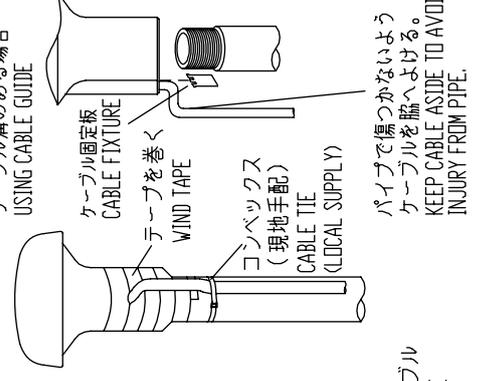
- 注記 1) パイプやアンテナベースはアンテナユニットにねじ込んだ後に固定する。  
2) アンテナを固定するときはパイプ(アンテナベース)をアンテナにねじ込むこと。アンテナ側をねじるとコネクタ部やケーブルに無理がかかり、故障の原因となる。
- NOTE 1. FASTEN PIPE(ANTENNA BASE) TO ANTENNA UNIT FIRST THEN FIX THEM TO MAST OR HANDRAIL.  
2. WHEN FIXING ANTENNA, TURN PIPE OR ANTENNA BASE, NOT THE ANTENNA. TURNING THE ANTENNA MAY TWIST THE CABLE AND PLACE STRESS ON CONNECTOR.

**A) マストへの取付け**  
MAST MOUNTING

パイプ 取付金具 CP20-01111(工事材料)でマストに固定する。  
USE MAST MOUNTING KIT CP20-01111.



b)パイプのみを使うとき  
USE A PIPE ONLY.

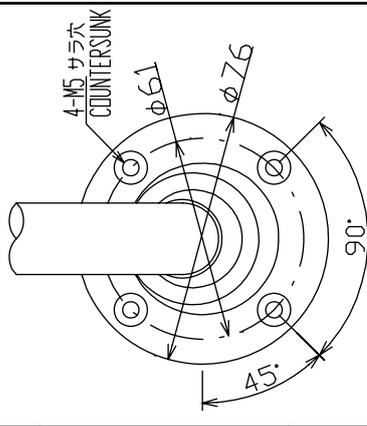


**C) 取付ける場所が傾斜しているとき**  
ANTENNA BASE MOUNTING

オプションのアンテナベースを使う。  
USE OPTIONAL ANTENNA BASE.

傾斜 INCLINATION	取付角度 MOUNTING ANGLE	傾斜角 ANTENNA BASE ANGLE	コード番号 CODE No.
-5° - 33°	33°	0°	直型アンテナベース RIGHT ANGLE ANTENNA BASE No.13-0A330 000-803-239
32° - 65°	65°	0°	L型アンテナベース L-TYPE ANTENNA BASE No.13-0A320 000-803-240
65° - 98°	98°	0°	

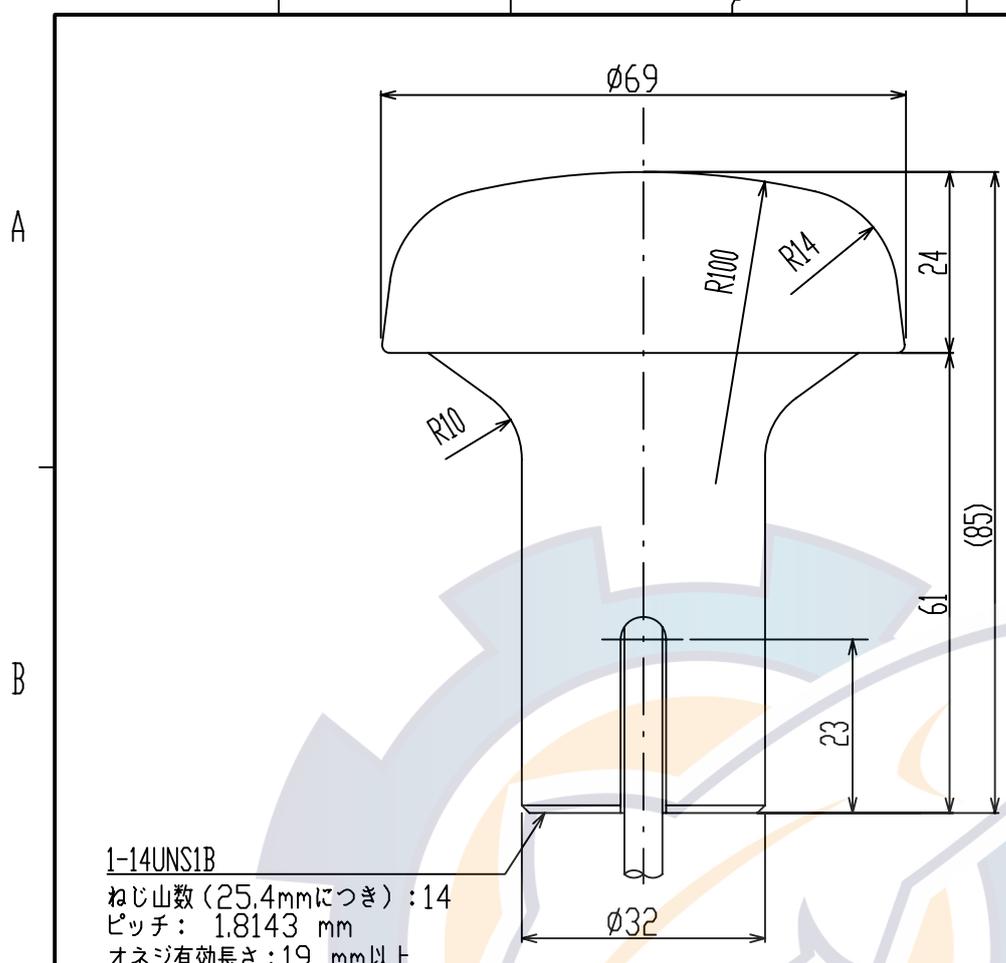
**アンテナベース基部**  
MOUNTING DIMENSIONS OF ANTENNA BASE.



DRAWN	Dec_14_'05	E.MIYOSHI	TITLE	GPA series
CHECKED		TAKAHASHI.T	名称	空中線部
APPROVED		Y. Hatai		装備要領図
SCALE		MASS	NAME	ANTENNA UNIT
DWG.No.		C4384-Y01-E		INSTALLATION PROCEDURE

表1 TABLE 1

寸法区分(mm) DIMENSION	公差(mm) TOLERANCE
L ≤ 50	±1.5
50 < L ≤ 100	±2.5
100 < L ≤ 500	±3



1-14UNS1B  
 ねじ山数 (25.4mmにつき) : 14  
 ピッチ: 1.8143 mm  
 オネジ有効長さ: 19 mm以上  
 オネジ有効径: 24.17mm  
 THREAD PER 25.4mm (1 INCH): 14  
 PITCH: 1.8143 mm  
 THREAD LENGTH: 19 mm OR MORE  
 PITCH DIAMETER: 24.17mm

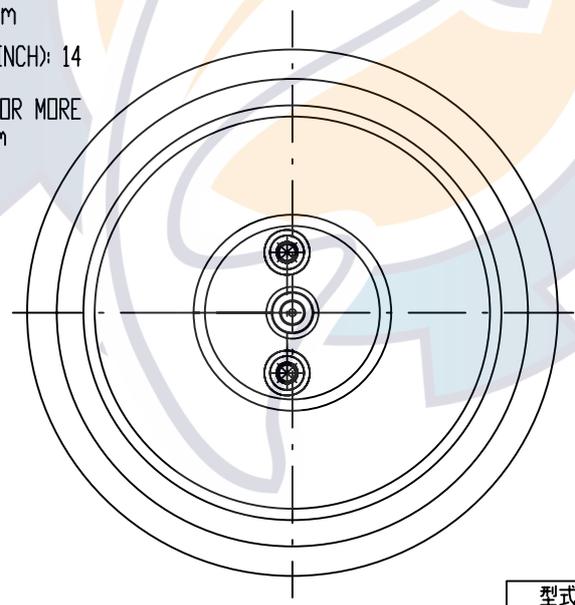


表2 TABLE 2

型式 TYPE	ケーブル長(m) CABLE LENGTH	プラグ PLUG	質量(kg±10%) MASS
GPA-017	10	TNC-P-3	0.6
GPA-017S	0.2	TNC-J-3	0.15

注記  
 指定外の寸法公差は表1による。

NOTE  
 TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.

DRAWN Mar. 27 '07 T.YAMASAKI	TITLE GPA-017/017S
CHECKED Mar. 27 '07 T.TAKENO	名称 空中線部
APPROVED Mar. 27 '07 R.Esumi	外寸図
SCALE 1/1 MASS TABLE 2 表2参照	NAME ANTENNA UNIT
DWG.No. C4384-G04- L	OUTLINE DRAWING

寸法区分(mm) DIMENSION	公差(mm) TOLERANCE
$L \leq 50$	$\pm 1.5$
$50 < L \leq 100$	$\pm 2.5$

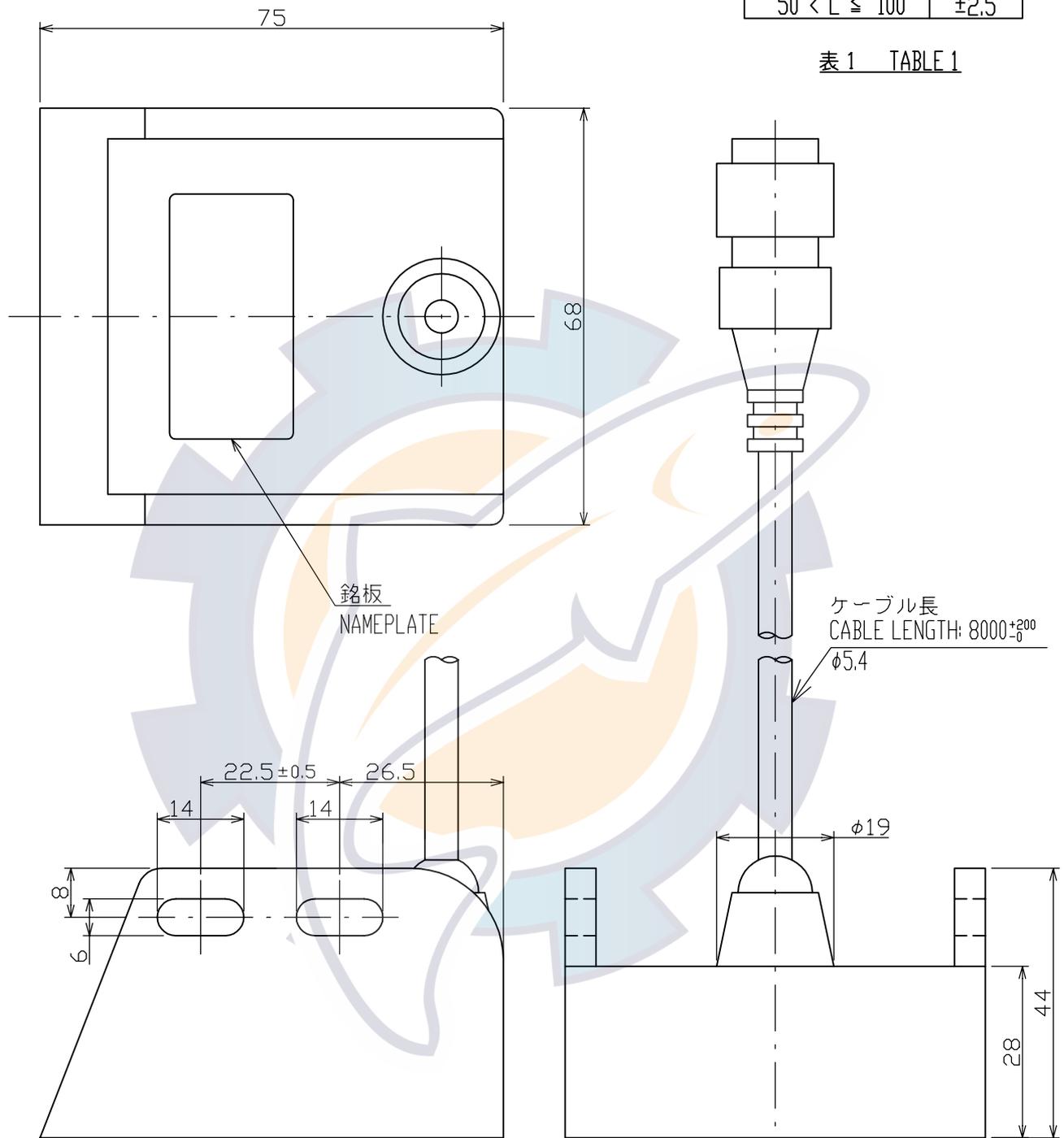
表1 TABLE 1

A

B

C

D



注記

1) 指定なき寸法公差は表1による。

NOTE

1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.

DRAWN Feb. 14 '03 T.YAMASAKI	TITLE 525-5PWD
CHECKED Feb. 17 '03 Y.KIMURA	名称 送受波器
APPROVED Feb. 17, '03 Y. Kimura	外寸図
SCALE 1/1	NAME TRANSDUCER
MASS 0.6 ±10% kg	OUTLINE DRAWING
DWG No. C2003-G23-A	

A  
B  
C  
D

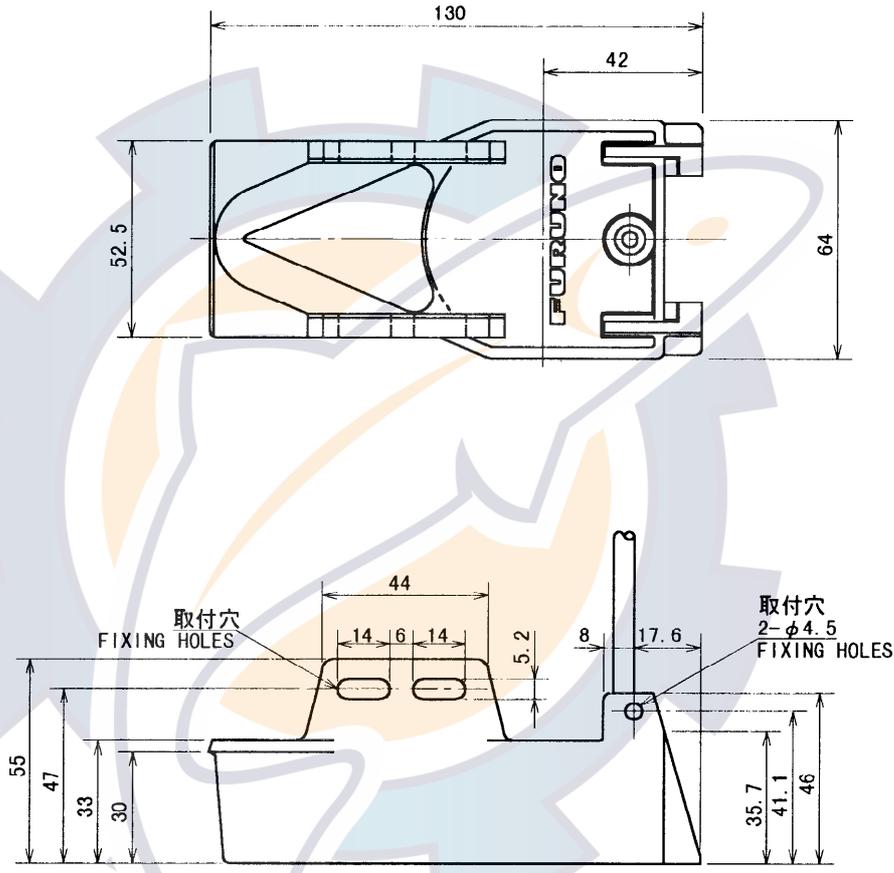


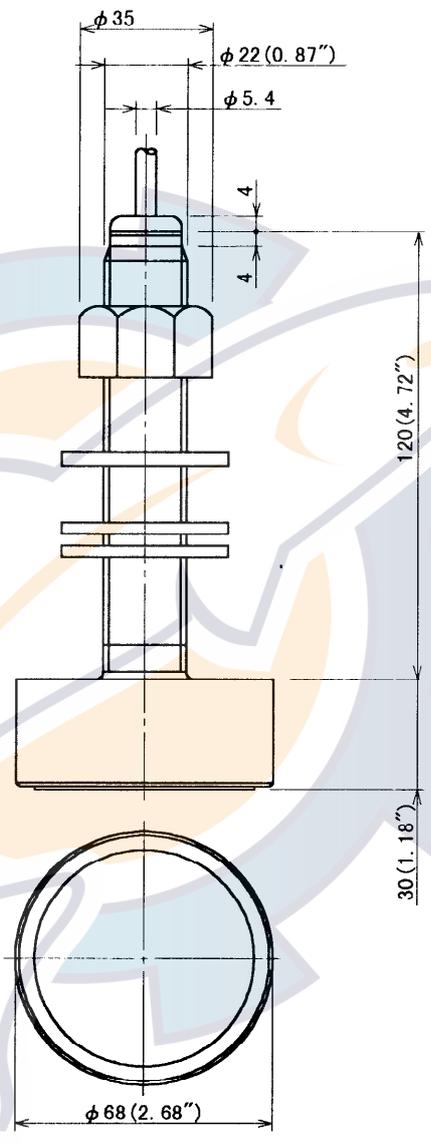
表 1 TABLE 1

型式	TYPE	コネクタ PLUG
520-5WC		8P
520-5PWD		10P

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
0 < L ≤ 50	±1.5
50 < L ≤ 100	±2.5
100 < L ≤ 500	±3

DRAWN <i>July 4 '00 T. TAMASAKI</i>		TITLE 520-5PWD/5PWC	
CHECKED <i>July 5 '00 T. Kuroki</i>		名称 送受波器	
APPROVED <i>July 5 '00 T. Kuroki</i>		外寸図	
SCALE 1/2	MASS ±10% - kg	NAME TRANSDUCER	
DWG. No. C2003-G18- B		OUTLINE DRAWING	

A  
B  
C  
D



型式	TYPE	コネクタ	PLUG
520-5PSC		8P	
520-5PSD		10P	

DRAWN <i>July 4 '00 (YAMASAKI)</i>		TITLE 520-5PSC/5PSD
CHECKED <i>July 5 '00 Y. Kina</i>		名称 送受波器
APPROVED <i>July 5 '00 Y. Kina</i>		外寸図
SCALE 1/2	MASS 3.4 kg	NAME TRANSDUCER
DWG. No. C2003-G13- C	質量はケーブル重さを含まず MASS W/O CABLE	OUTLINE DRAWING

2

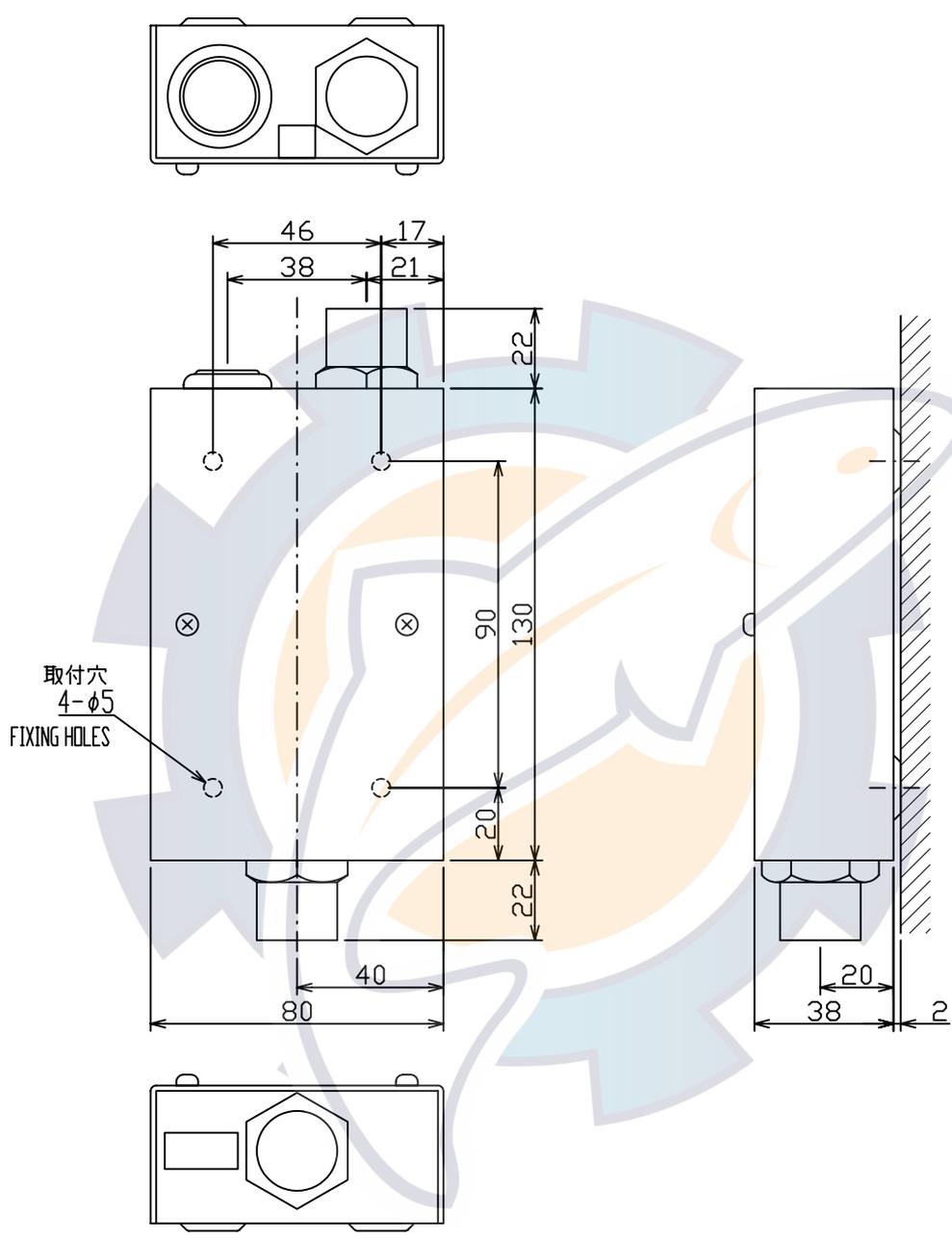
3

A

B

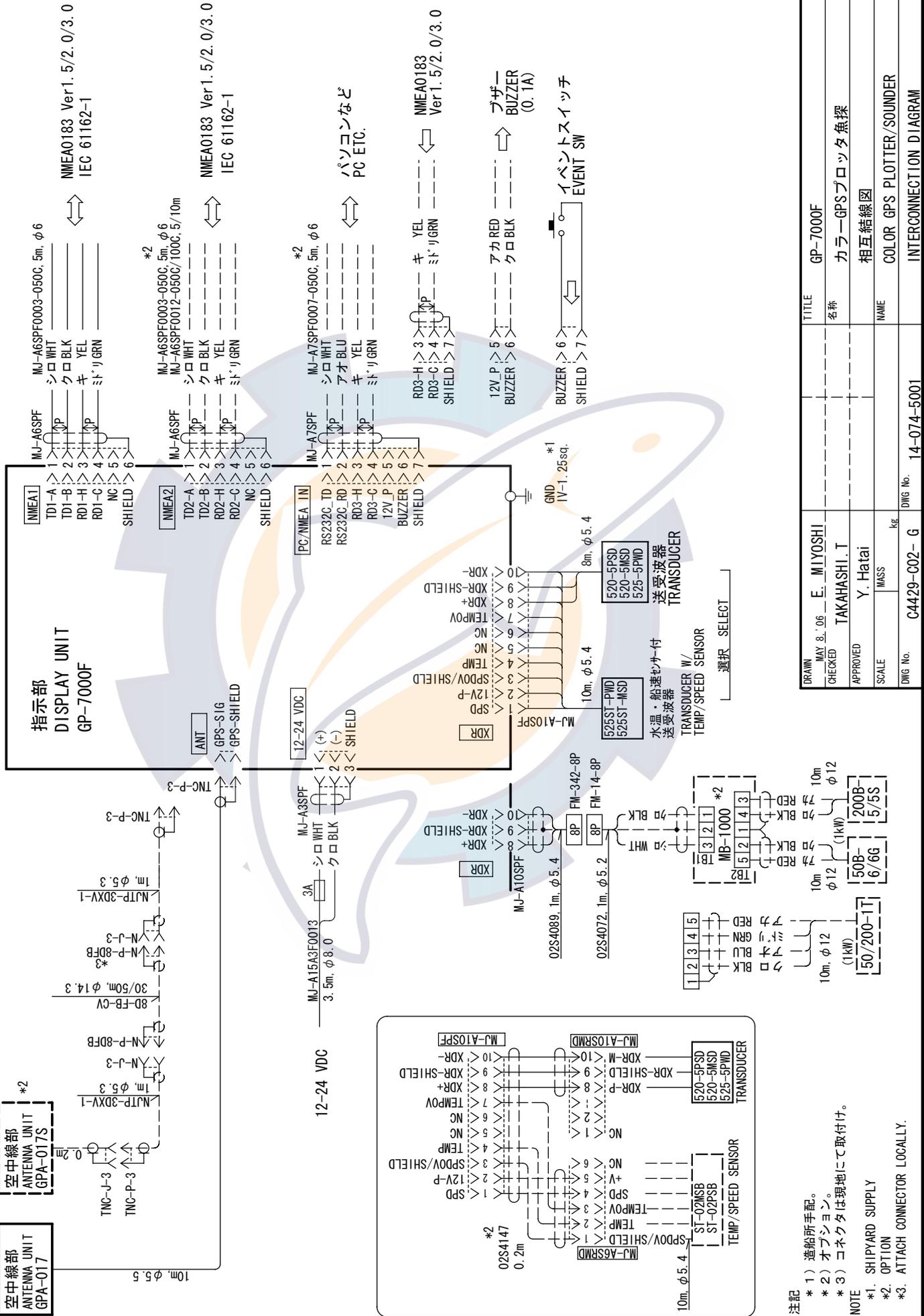
C

D



DRAWN	Feb. 28 '05	T.YAMASAKI	TITLE	MB-1000
CHECKED	Feb. 28 '05	T.MATSUGUCHI	名称	分配箱
APPROVED	Mar. 03 '05	T.Matsuguchi		外寸図
SCALE	1/2	MASS ±10%	NAME	DISTRIBUTION BOX
DWG.No.	C2337-G09- B			OUTLINE DRAWING

2 3 4



注記  
 \* 1) 造船所手配。  
 \* 2) オプション。  
 \* 3) コネクタは現地にて取付け。  
 NOTE  
 \*1. SHIPYARD SUPPLY  
 \*2. OPTION  
 \*3. ATTACH CONNECTOR LOCALLY.

DRAWN	MAX. 8.06	E. MIYOSHI	TITLE	GP-7000F
CHECKED		TAKAHASHI, T	名称	カラ-GPSプロッタ魚探
APPROVED		Y. Hatai		相互結線図
SCALE		1/25	NAME	COLOR GPS PLOTTER/SOUNDER
			DWG No.	14-074-5001
				INTERCONNECTION DIAGRAM