JFP-185BB

SONAR

Installation Reference

640 x 480 (VGA)

JRC Japan Radio Co., Ltd.

JFP-185 Installation Manual

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3	0092660002-03	2015/07/14	Chapter 1
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Document No. Revised Version Norm

When part of the document needs to be revised, the document has advanced revision number. The document No. is indicated at the lower right side on the cover and at the left or right side of the footer region of each page.

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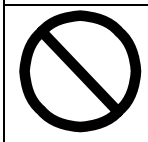
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For Your Safe Operation

Symbol used in this Installation Manual

The following pictograms are used in this manual. The meaning of each symbols shall be well understood and the maintenance and inspection shall be carried out.

Symbol	Meaning
 Warning	**Mark for warning** This symbol denotes that there is a risk of death or serious injury when not dealing with it correctly.
	**Mark for danger of high voltage** This symbol denotes that there is a risk of death or serious injury caused by electric shock when not dealing with it correctly.
 Caution	**Mark for caution** This symbol denotes that there is a risk of slight injury or damage of device when not dealing with it correctly.
	**Mark for prohibition** This symbol denotes prohibition of the specified conduct. Description of the prohibition is displayed near the mark.

Caution items on equipment

	**Be careful of high voltage inside** A high voltage, which may risk your life, is used. This high voltage remains in the circuit after you have powered off switch. To prevent touching the high voltage circuit inadvertently, the hard cover is provided to the high voltage circuit and the high voltage caution label is affixed. Ensure to power off switch for your safety and discharge the electricity remaining in the capacity before starting to check. An engineer authorized by our company should inspect and maintain.
 Warning	**Be sure to power off in the boat** If the power switch is inadvertently powered on during work, you will be electrified. To prevent such accident from occurring, ensure to power off in the boat and the power of equipment. Furthermore, it is safer to hang the caution tag described as [Under Work] near the power switch of equipment.
 Warning	**Be careful of dust** Inhaling dust may cause A respiratory disease. When cleaning the inside of equipment, be careful not to inhale dust. Wearing a safety mask is recommended.

 **Caution**	**Caution on location of equipment** Do not install the equipment where it is excessively damp and suffers from excessive water drops.
 **Caution**	**Measures against static electricity** The static electricity may be generated from the carpet on the floor in the cabin or clothes made of synthetic fiber. The static electricity may destroy the electronic parts on the circuit board. Handle the circuit board, taking the measure of static electricity free.
 **Caution**	**Caution at installation of a transducers** Install the transducer at the location where it is not affected by bubble and noise The bubble and noise seriously degrade the performance of this unit.

Cautions on handling

 **Warning**	Do not disassemble or modify. It may leads to trouble, fire, smoking or electric shock. In case of trouble, contact our dealer or our company.
 **Warning**	In case of smoke or fire, boat power off and the power of this unit. It may cause fire, electric shock or damage.
	**Be cautious of remaining high voltage** A high voltage may remain in the capacitor for several minutes after you have powered off. Before inspecting inside, wait at least 5 minutes after powering off or discharge the remaining electricity in an appropriate manner. Then, start the work.
 **Caution**	The information displayed in this unit is not provided directly for your navigation. For your navigation, be sure to see the specified material.
 **Caution**	Use the specified fuse. If un-specified fuse is used, it may cause a fire, smoke or damage.
 **Caution**	Whenever transmitting, be sure to submerge the transducer in water first. If transmitted without submerging the transducer, it may be damaged.

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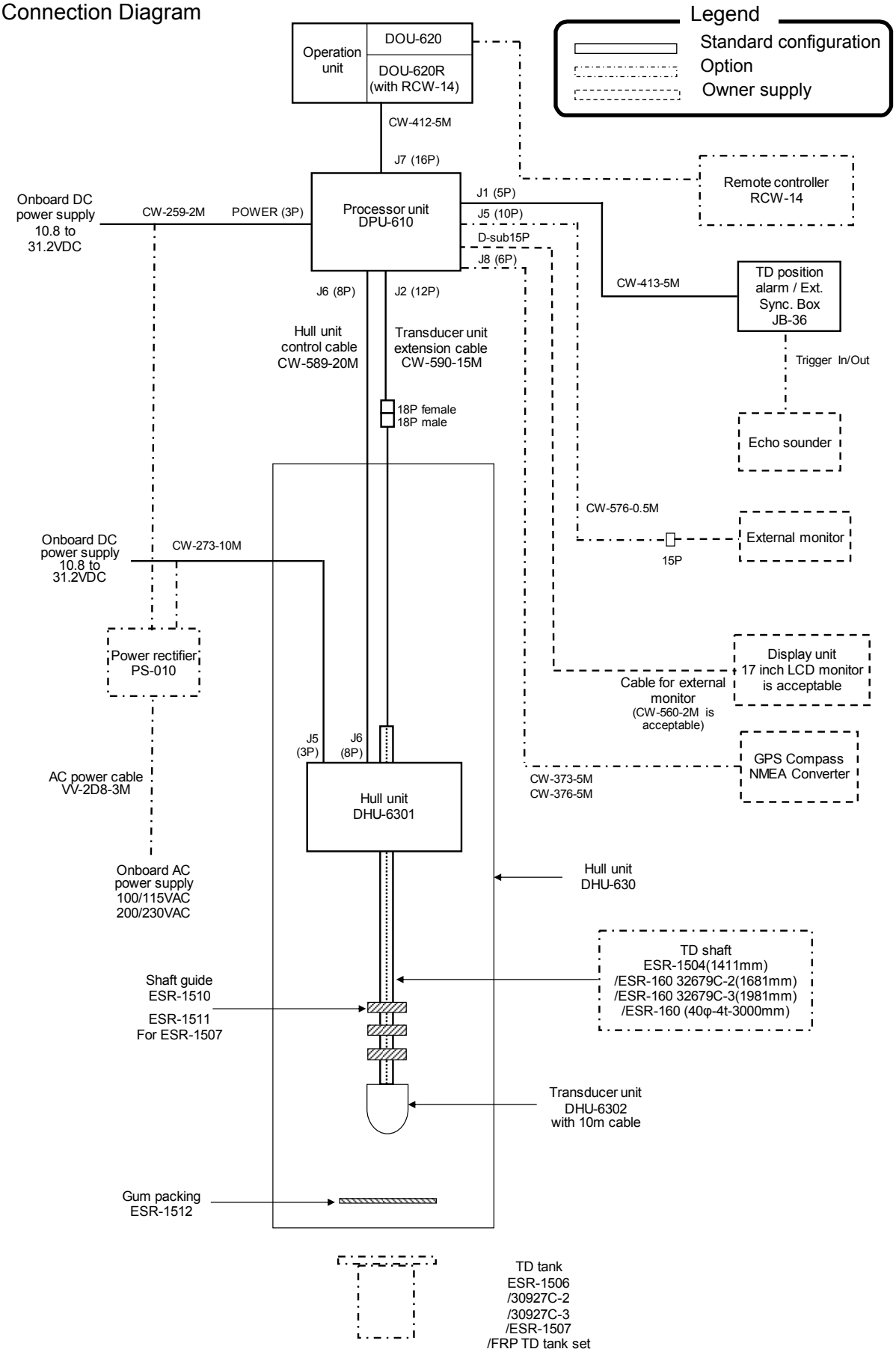
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System Configuration

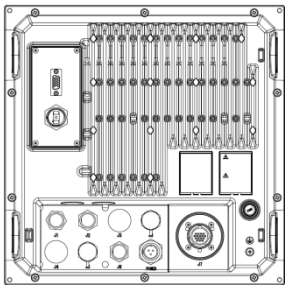
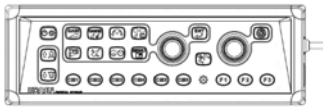
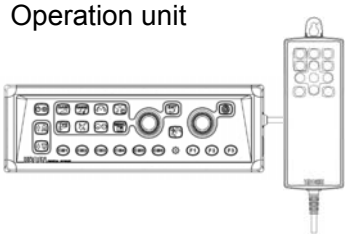
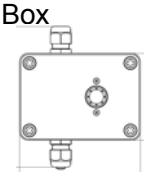
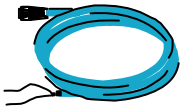
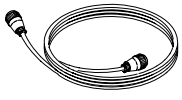
Connection Diagram



Configuration of Equipment

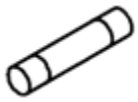
Standard Equipment Configuration List

a. DPU-610 (Processor unit) / DOU-620/620R (Operation unit)

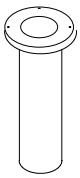
No	Name of item	Type	Remark	Weight/Length	Qty
1	Processor unit 	DPU-610	No display unit VGA output 海外モデルは、ソナトーン仕様なし？ Overseas model, no sonatone specification?	5.1kg	1
2-1	Operation unit 	DOU-620	With mounting bracket and 5m cable Change the operation unit and remote control to Japan asexual specification 操作部、リモコンを日本無性仕様に変更	1.1kg	1
2-2	Operation unit 	DOU-620R	With mounting bracket, 5m cable and Remote controller (RCW-14 with 5m cable)	Operation unit 1.1kg/ Remote controller 0.31kg	1
3	TD position alarm / Ext. Sync. Box 	JB-36	With 5m cable (CW-413-5M /with 5 pin connector and one end plain)	5m	1
4	DC power cable 	CW-259-2M	With 3 pin connector and one end plain	2m	1
5	Hull unit control cable 	CW-589-20M	With 8 pin water resistant connectors at both ends	20m	1
6	Transducer unit extension cable 	CW-590-15M	With a 18 pin connector and a 12 pin water resistant connector	15m	1

Audio plug not described
For domestic use only sonatone specification and use

オーディオプラグ　記載なし
国内向けはソナトーン仕様のみ使用と記載

No	Name of item	Type	Remark	Weight/Length	Qty
7	Connecting Cable	CW-376-5M	With 6 pin water resistant connector and one end plain	5m	1
		CW-576-0.5M	With 10 pin water resistant connector and D-Sub connector	0.5m	1
8	Fuse 	F-7161-10A/N30C-125V Cylinder (ø 6.4x30)	Normal fusion type for main power		3
9	Operation manual	JFP-185.OM.E	English		1
10	Quick Reference	JFP-185.QR.E	English		1
11	Installation manual	JFP-185.IM.E	English		1

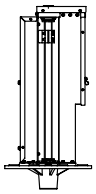
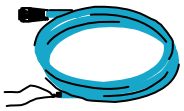
b. TD tank / TD shaft

No.	Name of item	Type	Remark	Weight/ Length	Qty
1	TD tank 	ESR-1506 (PVC) 1230mm 30927C-2 (PVC) 1500mm 30927C-3 (PVC) 1800mm ESR-1507 (FRP) 1500mm	Select according to equipment. *Refer to Option list.	9.0kg 11.0kg 13.0kg 12.0kg	1
2	TD shaft 	ESR-1504 ESR-160_32679C-2 ESR-160_32679C-3 ESR-160_40φ-4t-3000mm	Select according to equipment. *Refer to Option list.	1411mm 1681mm 1981mm 3000mm	1

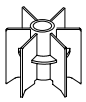
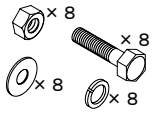
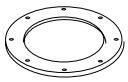
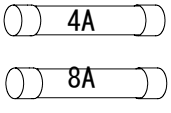
Caution: TD tank and TD shaft are options.

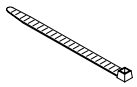
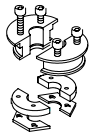
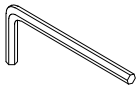
c. DHU-630 (Hull unit)

Package 1

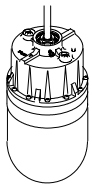
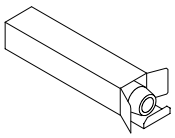
No.	Name of item	Type	Remark	Weight/ Length	Qty
1	Hull unit 	DHU-6301		17.0kg	1
2	DC power cable 	CW-273-10M	With 3 pin connector and one end plain	10m	1

Package 2

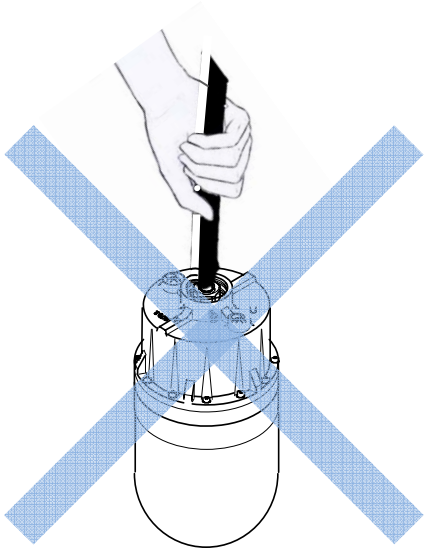
No.	Name of item	Type	Remark	Weight/ Length	Qty
1	Shaft guide 	ESR-1510			3
2	Bolt set 	SUS-M16-55-Assy (M16x55L, 2W16U, SW16U, N16U)			EACH 8
3	Gum packing for flange 	ESR-1512	Gum		1
4	Crank handle 	OB-03			1
5	Grease 			100g	1
6	Fuse 	F-7161-4A F-7161-8A	At input of 12 V At input of 24 V		EACH 3

No.	Name of item	Type	Remark	Weight/ Length	Qty
7	ANP base 	ANP-1			2
8	Binding Band 	AB-100-1000			2
9	Damper 	34924D			1
10	Fixing collar 	32681D			2
11	Shaft cap  1 SET	34378D			1
12	Cap bolt 	CB4 x 10U			4
13	HEX rod wrench 	1.5mm ×1 2.5mm ×1 3.0mm ×1			EACH 1

Package 3

No.	Name of item	Type	Remark	Weight/ Length	Qty
1	Transducer unit 	DHU-6302	With 10m cable (With 18 pin water resistant connector)	9.0kg	1
2	Bath cork 	Bath cork (White) 50g		50g	1

Caution: Don't carry the Transducer unit (DHU-6302) by holding its cable. Such manner may cause breakage of the equipment.



Option List

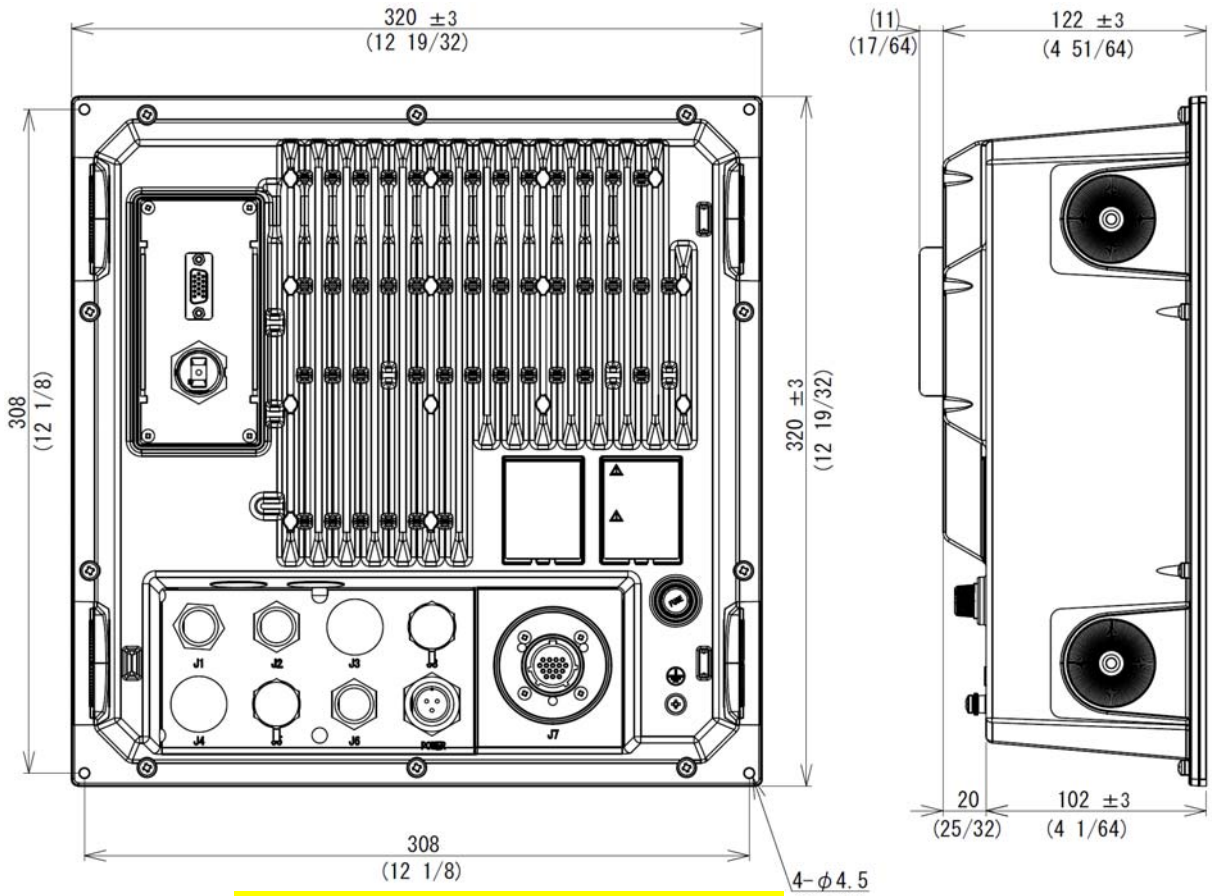
No	Name of item	Type		Remark
1	Remote controller	RCW-14		With 5m cable, (Assembled the connection cable into the Operation unit)
2	TD tank (For *xxxx mm of TD shaft) *TD shaft length	ESR-1506		PVC, 1230mm (For 1411mm of TD shaft)
		30927C-2		PVC, 1500mm (For 1681mm of TD shaft)
		30927C-3		PVC, 1800mm (For 1981mm of TD shaft)
		ESR-1507		FRP, 1500mm
		FRP TD tank set (Including Shaft guide)		ESR-1507(1), ESR-1510(2), ESR-1511(2)
3	Shaft guide	ESR-1510		ESR-1506/1507
		ESR-1511		ESR-1507 (For FRP TD tank)
4	Power rectifier	PS-010		With 2 pieces of 5A fuse
5	AC power cable	VV-2D8-3M		Both ends plain
6	Connecting cable	CW-372-5M	5m	With 5 pin water resistant connector and one end plain
		CW-373-5M	5m	6 pin water resistant connectors at both ends
	Cable for external monitor	CW-560-2M	2m	D-Sub 15 pin connectors at both ends
7	Junction box	JB-35		1 input, 3 outputs with CW-376-5M
8	TD shaft	ESR-1504		1411mm
		32679C-2		ESR-160_1681mm
		32679C-3		ESR-160_1981mm
		40φ-4t-3000mm		ESR-160_3000mm
9	Monitor	17inch LCD Monitor		With power cable and signal cable

外部スピーカー（ソナトーン用）記載なし。

External speaker (for sonatone) Not stated.

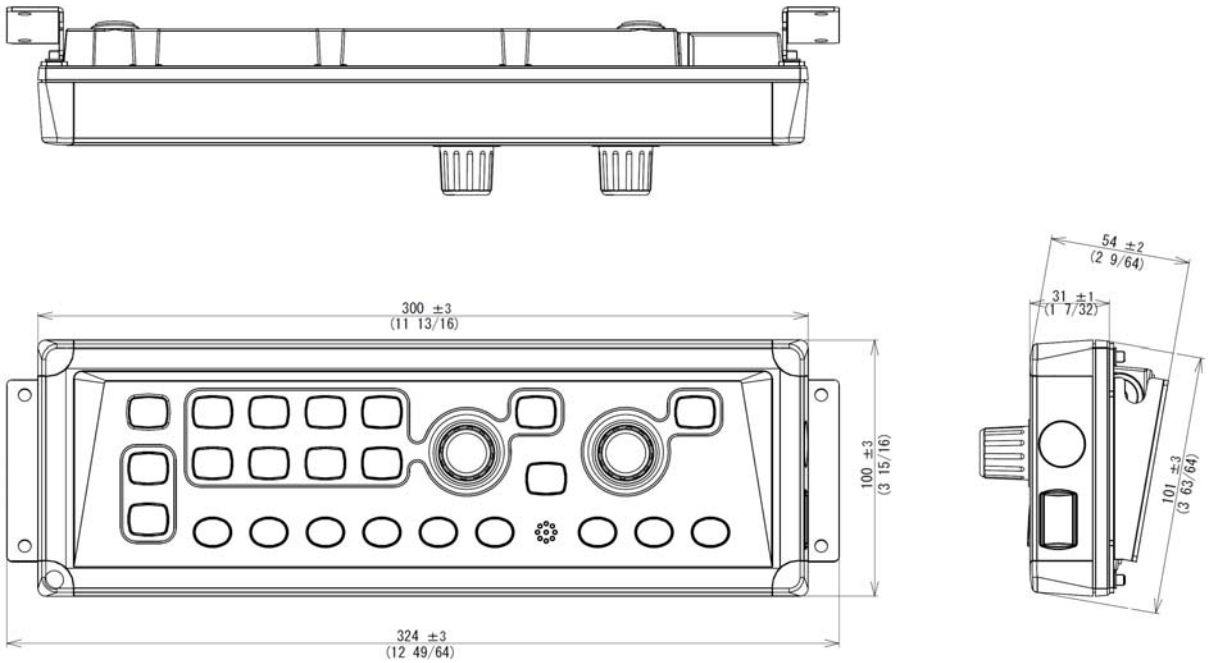
External View

Processor unit (DPU-610)



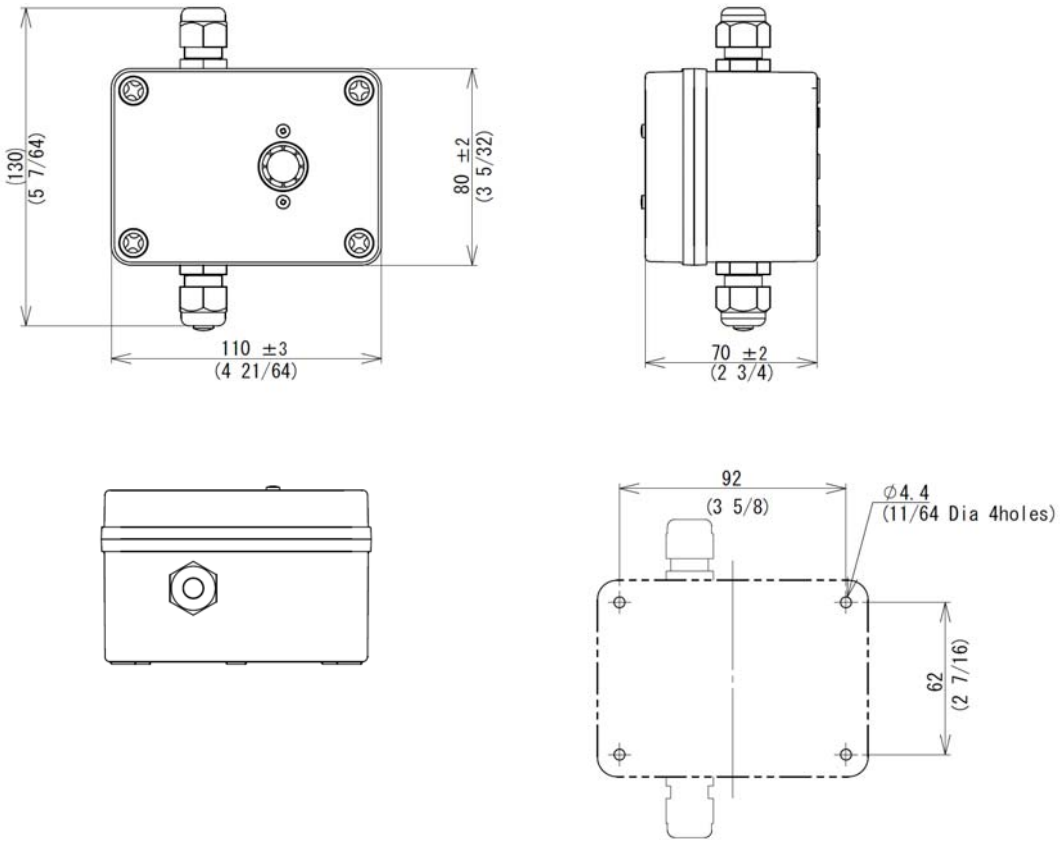
外形図　ソナトーン仕様記載なし

Operation unit (DOU-620)



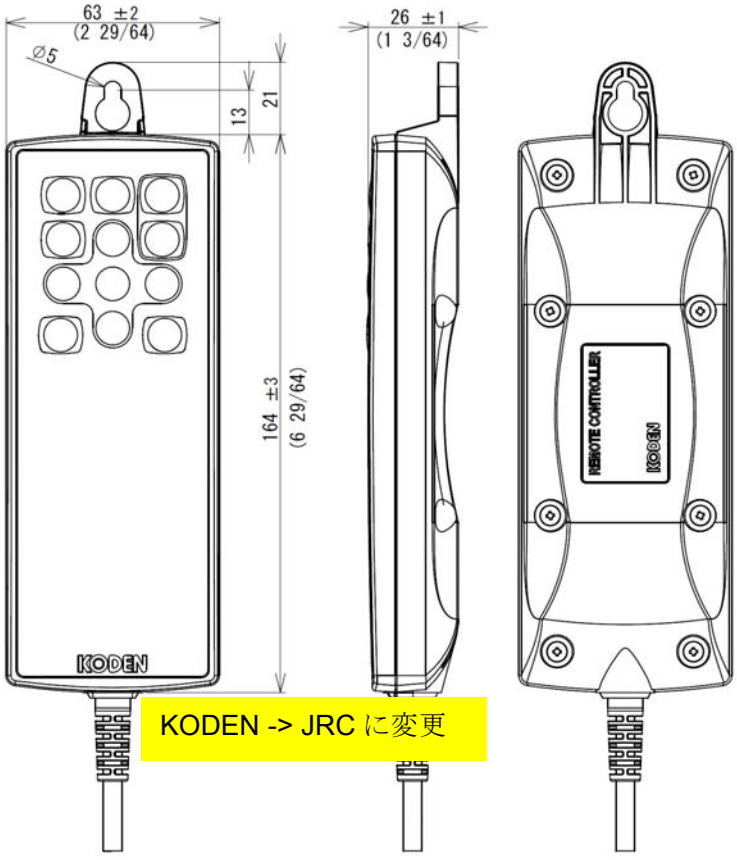
Unit: mm (inch)

TD position alarm / Ext. Sync. Box (JB-36)



Installation dimensions

Remote controller (RCW-14) (optional)

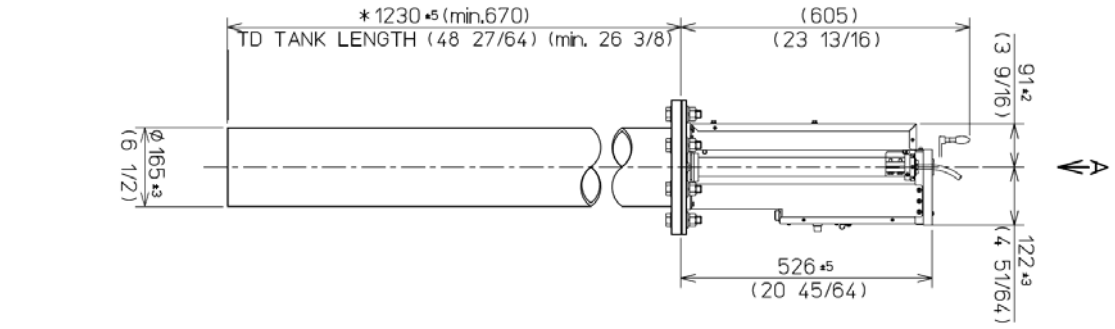


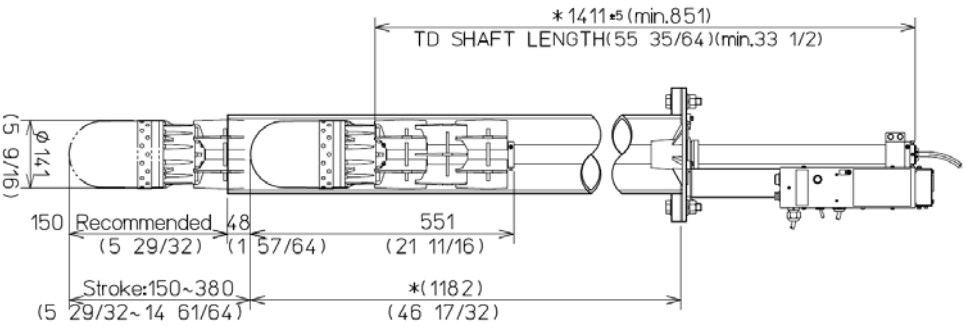
KODEN -> JRC に変更

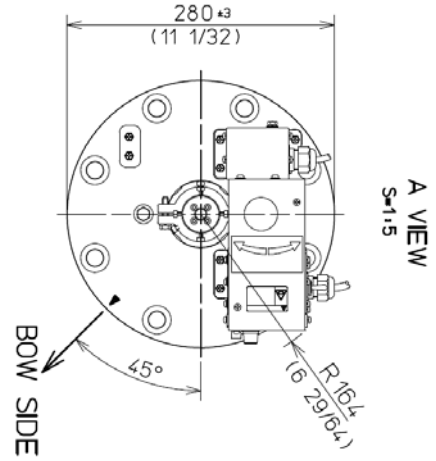
Unit: mm (inch)

Hull unit (DHU-630)

Unit: mm (inch)

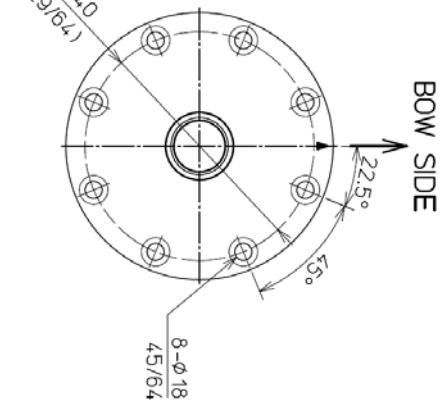






DIMENSIONS OF THE FLANGE

S=1:5



TD shaft length : mm(inch)	TD tank length : mm(inch)	Weight : kg(lb)
*1411 (55 35/64)	*1230 (48 27/64)	41 (91)
1681 (66 3/16)	1500(59 1/16)	44 (97)
1981 (77 63/64)	1800 (70 55/64)	47 (104)

*The seal dimensions show the case of going TD shaft 1,411mm in length specifications

Specification

Model 記載変更できないため修正できず

Item		
Model		KDS-6000BB
Processor unit		DPU-610
Operation unit		DOU-620
Hull unit		DHU-630
Output power (RMS)		1.5 kW
Output frequency		130 to 210 kHz (0.1 kHz step)
Tilt angle		+5° to -90° (1°step)
Point corner		8° to 12°
TD stroke		150 to 380 mm (Recommended value 150 mm)
Display size and type		Any monitor with VGA resolution (Owner supplied)
Display resolution		640 x 480 (VGA)
Basic ranges		10 to 1000 (m), 30 to 3000 (ft), 10 to 600 (fm), 10 to 700 (l.fm) (8 ranges can be set to users choice)
Range units		m, ft, fm, l.fm
Scanning sector angles	Sonar mode	5°step: 5°, 25°, 45°, 85°, 125°, 165°, 205°, 360° 10°step: 10°, 30°, 50°, 90°, 130°, 170°, 210°, 360° 15°step: 15°, 45°, 75°, 105°, 135°, 165°, 225°, 360° 20°step: 20°, 60°, 100°, 140°, 180°, 220°, 260°, 360°
	Bottom scan mode	3°step: 3°, 27°, 45°, 63°, 93°, 117°, 147°, 177° 5°step: 5°, 25°, 45°, 65°, 95°, 115°, 145°, 175°
360° Scanning time (extracts)	Scanning range (m)	20 / 40 / 60 / 80 / 100 / 120 / 160 / 180 / 200 / 240 / 400
	Scanning time (sec.) 5° step	6.3 / 8 / 10 / 11.8 / 14 / 15.8 / 19.5 / 21.8 / 23.5 / 27.5 / 43.3
	Scanning time (sec.) 10° step	3.7 / 4.7 / 5.8 / 6.5 / 7.8 / 8.6 / 10.8 / 11.5 / 12.5 / 14.4 / 22.4
	Scanning time (sec.) 15° step	3.3 / 3.7 / 4.3 / 4.9 / 5.7 / 6.4 / 7.9 / 8.2 / 8.9 / 10.3 / 15.7
	Scanning time (sec.) 20° step	3.3 / 3.4 / 3.8 / 4.2 / 4.8 / 5.2 / 6.4 / 6.6 / 7.3 / 8.1 / 12.2
Bearing center		1 °step
Presentation modes		Sonar, Off-center, Bottom scan, Echo sounder
Off-center		Fore, Back, Left, Right
Target lock		Reverse, Horizontal, Horizontal + vertical, Marker + horizontal, Marker + horizontal + vertical
Presentation colors		16 colors, 8 colors
Functions		TVG, Color rejection, Dynamic range, Compass display, Pulse width, Output Power Control, Noise rejection, A-scope, CM key, Frequency bandwidth, Image correction, Bearing display, TD auto up, etc.
Language		English, Japanese, Korean, Traditional Chines, Vietnamese, Spanish, Thai
Input data format and sentences		NMEA0183 GGA、GLL、HDG、HDM、HDT、RMC、VTG、ZDA
Output data format and sentences		NMEA0183 DBT、DPT、GGA、GLL、MTW、RMC、TLL、VTG、ZDA
NMEA ports		Total 1 : input / output
Power supply	Processor unit	10.8 to 31.2 VDC
	Hull unit	10.8 to 31.2 VDC
Power consumption	Processor unit	70 W or less (24 VDC)
	Hull unit	70 W or less (24 VDC)
Operating temperature		-15 °C to + 55 °C
Water protection		—

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Chapter 1 Installation

1.1 Installation precautions

In order to obtain the maximum performance of the Digital Sonar, this Digital Sonar should be installed by a qualified engineer in charge of installation and maintenance. Installation procedures include the following:

(1) Unpacking of components
(2) Inspection of composition units, spare parts, accessories and installation materials.
(3) Checking of supply voltage and current capacity.
(4) Selection of location for installation.
(5) Installation of Display unit, Processor unit, Operation unit and Hull unit.
(6) Attachment of accessories.
(7) Planning and implementation of cable lying and connection.
(8) Coordination after installation.

1.1.1 Unpacking of components

Unpack the components and check that all the items correspond with the description of the packing list. When a discrepancy or damage has been found, contact the dealer you purchased of our sales company.

1.1.2 Appearance verification of each unit and accessories

Inspect the appearance of each components and accessories and check that no dents or damages exist.

If any dents or damages exist and they are believed to be caused by accident during transportation, contact the transportation and insurance company and consult our sales company or our dealer nearest to you.

1.1.3 Selection of location for installation

In order to obtain the maximum performance of the unit, it is necessary to install in consideration of matters described below:

(1) The Processor unit is not waterproof. Do not set it up in the place where water splashes.
(2) Keep enough space for maintenance for the Processor unit and the Hull unit. Especially, secure enough space at the rear panel where many cables are connected.
(3) The Processor unit, Operation unit and an external monitor shall be set up within the distance the connection cables are not too stretched.
(4) Keep the equipment as far away from wireless transmitter/receivers as possible.

1.1.4 Laying and connection of cables

(1) Keep the cables related with the Hull unit and the power cable as far away from the cables of other electronic equipment as possible.
(2) The cabinet of the display unit and the Processor unit shall be securely grounded to the hull, using the grounding terminal on the rear panel.

Caution **All chassis shall be securely grounded as a means of noise suppression. The – (negative) output is isolated (floating) output.**

(3) If you connect the power cable directly to the battery, interference from the other electronics equipment is expected to be less. (See Fig. 1.1)

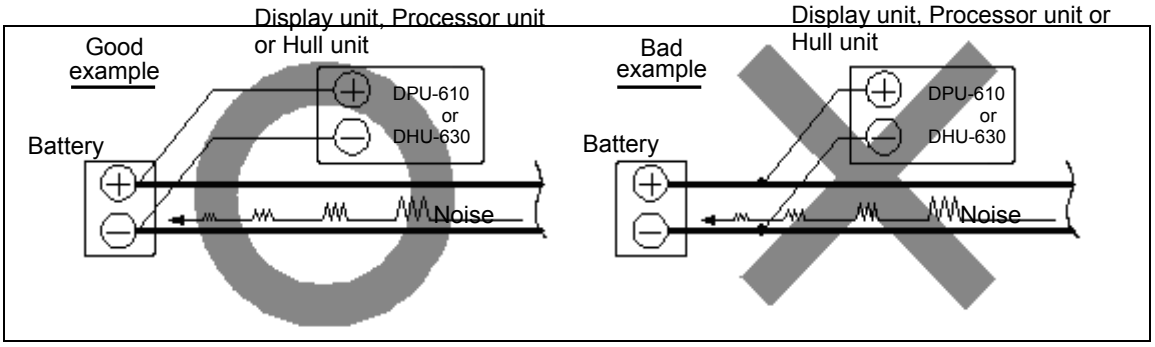


Fig. 1.1 JFP-185 Connection of power line

1.1.5 Confirmation after installation

Be sure to confirm the following points before starting. The confirmation is mandatory to operate the equipment normally:

(1) Is the power voltage in the boat within the appropriate voltage range? Is the current capacity enough?
(Voltage range: 10.8 VDC to 31.2 VDC measured at the power connector.)
(2) Is the electric current capacity sufficient?
(Power consumption: Processor unit (DPU-610)/70W, Hull unit (DHU-630) /70W)
(3) Is the cabling from the Hull unit correct? Is the wiring shorted?

1.2 Installation of JFP-185 Display unit

The display unit should be prepared by customers and should be installed in accordance with the installation manual attached to it. In addition, please be sure to carry out the following:

(1) Decide the location to install the Display unit and keep the space for the maintenance works.
(2) Energizing shall be performed after confirmation of the installation of display unit, and other components, and the completion of power cabling works for them.

1.3 Installation of JFP-185 Processor unit

The Processor unit can be installed on either on table or panel.

Install by the following procedure.

(1) Please determine the place where the Processor unit will be mounted with enough space for the maintenance.
(2) Make 4 holes at the location to be installed (See Fig. 1.2)
(3) Install the Processor unit in the installing location (installation hole) and fix it with 4 tapping screws (4mm) (M4 or pan-head). (Prepare 4mm screws suitable for thickness of installing location.)

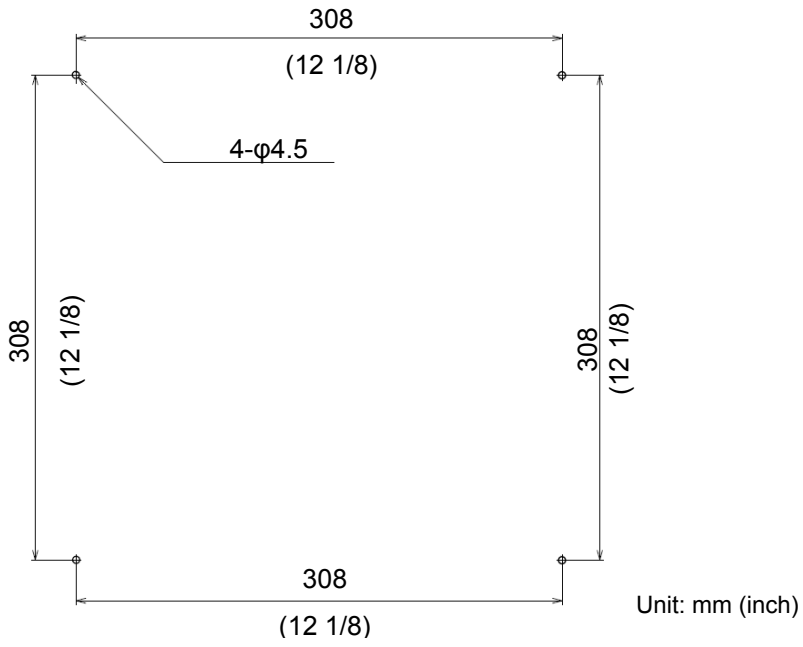


Fig. 1.2 Position of installation hole of Processor unit

1.4 Installation of Operation unit

JFP-185 operation unit can be installed either on desk-top or flush-mounted.

Install by the following procedure.

1.4.1 Desk-top installation of Operation unit

(1) Decide the location to install the Operation unit and keep the space for the maintenance works as shown in Fig. 1.4.
(2) Mark the position where installation plinth is installed (See Fig. 1.3)
(3) Remove 4 plastic corner guard caps of the Operation unit (These can be easily pulled out upwards).
(4) Fix the clamps to the Operation unit with M4 screws (4 mm). Install the corner guard caps removed in step (3).
(5) Confirm that the clamps matches the making position. If not matches, correct the marking position.
(6) Install the clamps in the installing location (4 holes) and fix it with 4 tapping screws (4 mm) (M4 or pan-head). (Prepare 4 mm screws suitable for thickness of installing location.)

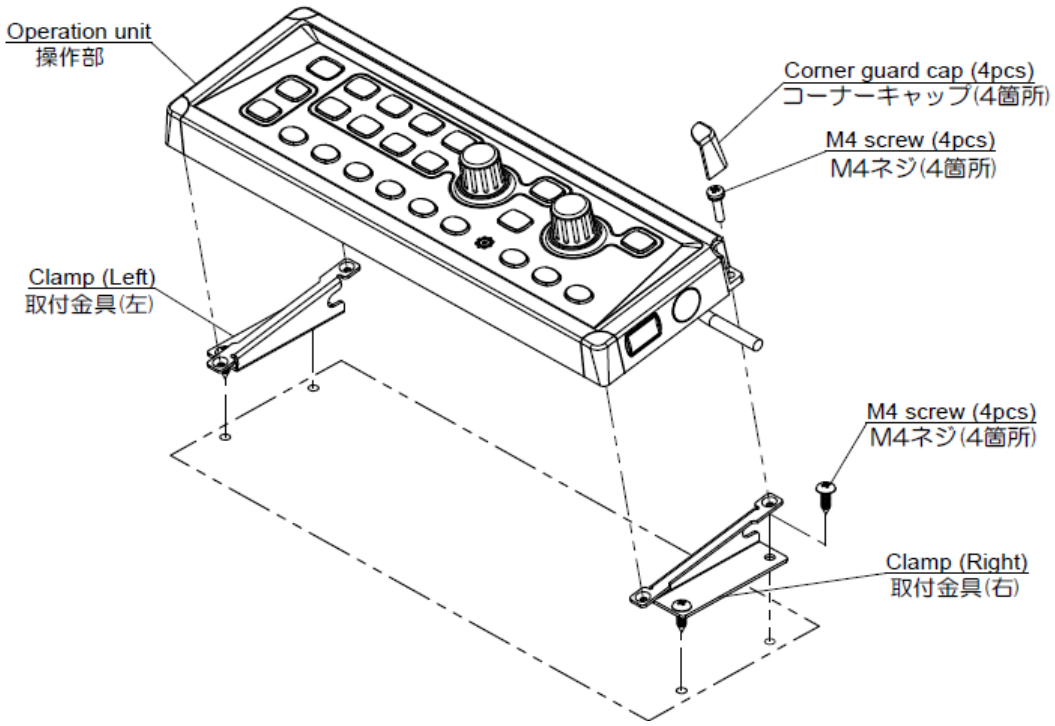
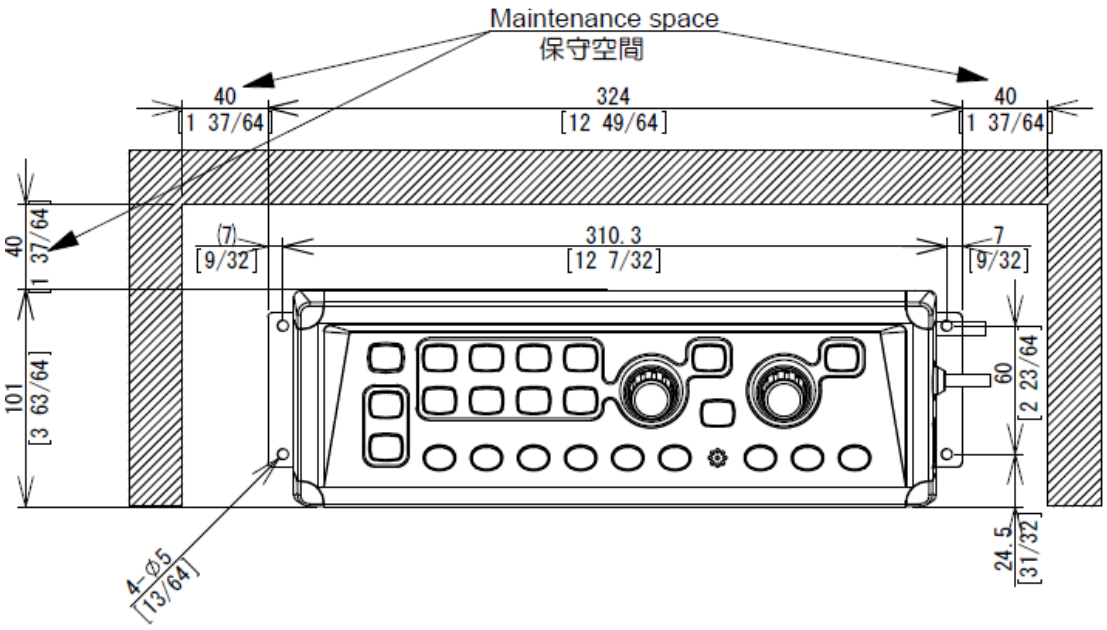


Fig. 1.3 Installation of an Operation unit on the desktop

Caution **On installing on desktop, keep the maintenance space is required as shown below.**



Unit: mm (inch)

Fig. 1.4 Maintenance space of desk-top installation

1.4.2 Flush-mount installation of Operation unit

(1) Make a square hole at the location to be installed (See Fig. 1.6)
(2) Remove 4 plastic corner guard caps of the Operation unit (These can be easily pulled out upwards).
(3) Confirm that the Operation unit matches the mounting hole. If not matches, correct the mounting hole.
(4) Put the Operation unit and connected cable into the mounting hole, and set it to the position in which the Operation unit becomes parallel to the install panel. (Fig. 1.5)
(5) Install the Operation unit in the installing location (Mounting hole) and fix it with 4 tapping screws (4 mm) (M4 or pan-head). (Prepare 4 mm screws suitable for thickness of installing location.)
(6) Install the corner guard caps removed in step (2).

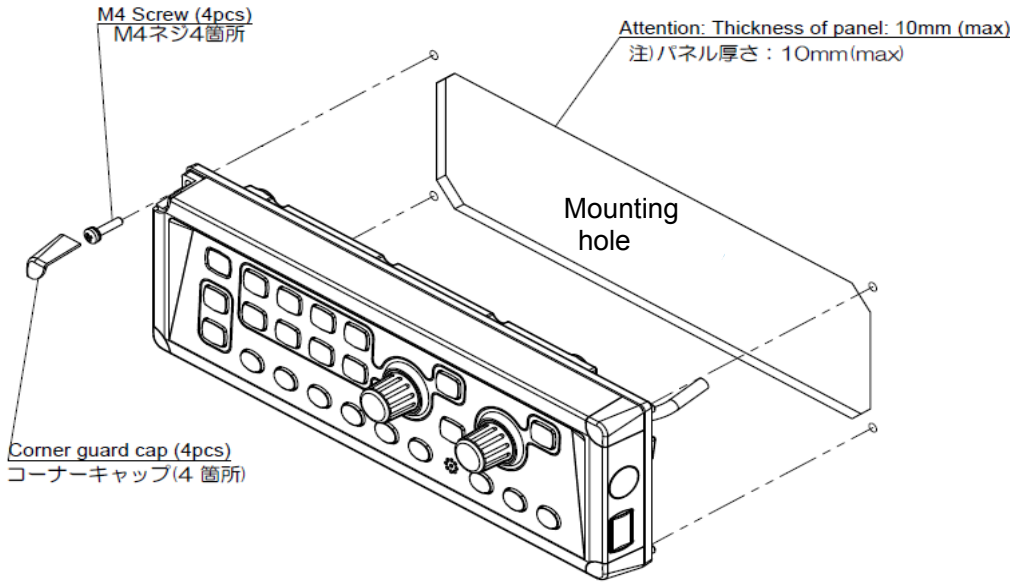


Fig. 1.5 Flush-mount installation of Operation unit

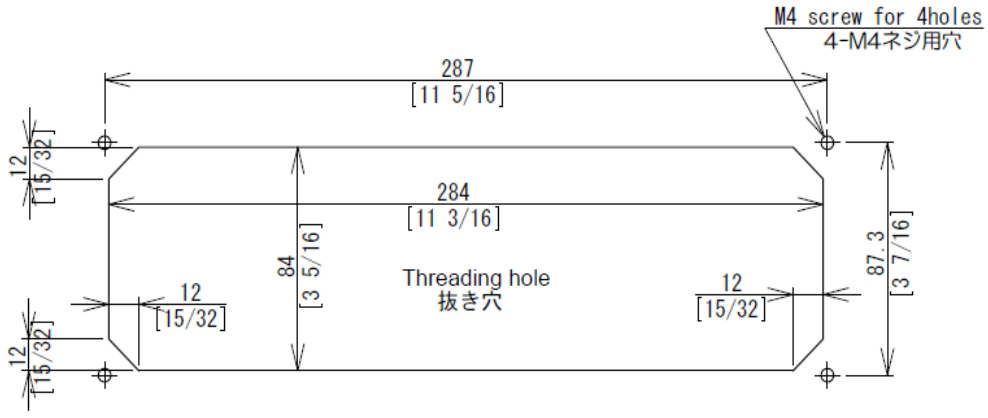


Fig. 1.6 Hole for flush-mount installation of Operation unit

1.4.3 Installation of TD position alarm / Ext. Sync. Box

(1) Install the TD position alarm / Ext. Sync. Box within the hearing range in the vicinity of the Processor unit.
(2) Install it at a place where there is no water drops, and enough maintenance space is available.

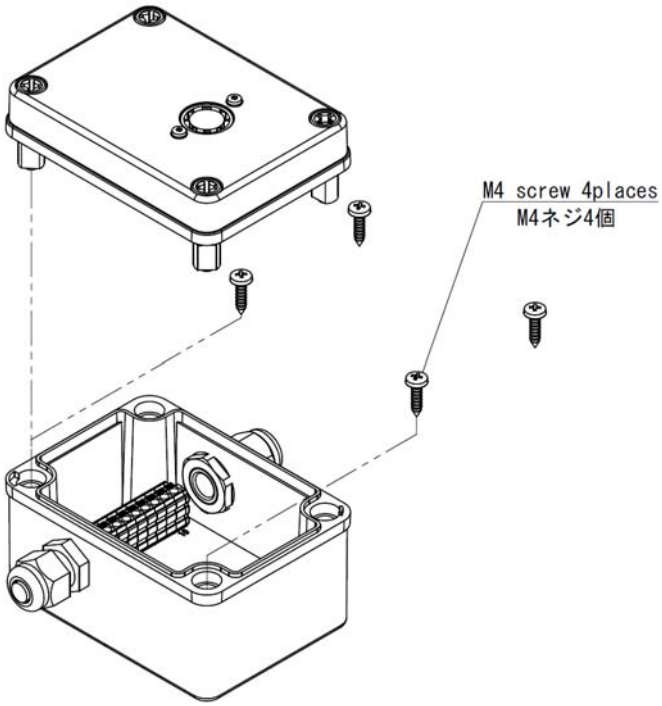


Fig. 1.7 External view of TD position alarm / Ext. Sync. Box

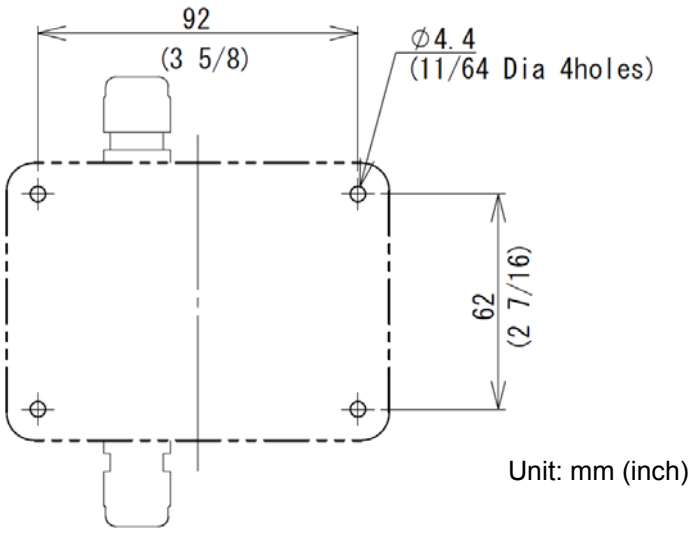


Fig. 1.8 Position of installation hole of TD position alarm / Ext. Sync. Box

1.5 Installation of Hull unit

Caution: Satisfy the following conditions and also instructions of installation manual in deciding the TD tank mounting site.

Fully discuss about the strength with the shipyard and the installer before determining on the position and the method of installation and necessary materials.

1.5.1 Installation location of Hull unit

(1) Select a location the least influenced from air bubbles, interference or noise.

- Install the Hull unit on the keel within the range of 1/3 to 1/2 of the overall length from the bow.
- Alternatively, install the unit so that the center of TD tank positions within 1 m from the center of the keel.
- Install the unit so that the Flange comes above the draft at full load.

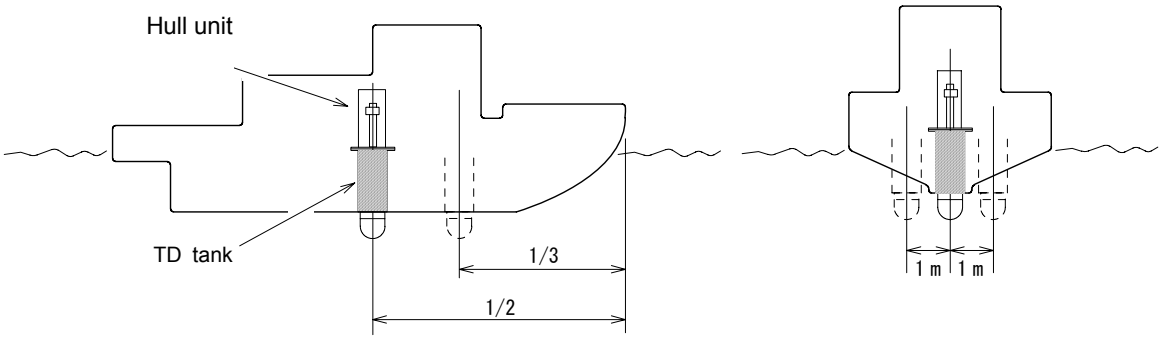


Fig. 1.9 Installation location of Hull unit

※ Be sure there are no obstacles to interfere the ultrasonic beam when the Transducer unit is lowered.

※ Provide sufficient clearance around the TD tank to make maintenance and inspection work.

※ The bow mark (Δ) on the hull unit flange should be installed facing the bow of the vessel. However, if there may be any interference at maintenance or inspection works, install the unit to face 180˚ reverse direction (stern direction).

1.5.2 Maintenance space for TD tank

(1) When installing the TD tank, pay full attention to the safety (strength, waterproofness, etc.) and, at the same time, secure a space for maintenance and inspections.

- Since the Hull unit is not waterproof structure, keep it away from water drops and splashes.
- When JFP-185 is shipped from the factory with a standard, the length of the TD tank and TD shaft are set as follows:
  - ✧ TD tank: 1230 mm (Standard)
  - ✧ TD shaft: 1411 mm (Standard)
- When standard TD tank is installed with shortened length, the TD shaft length should be processed at least

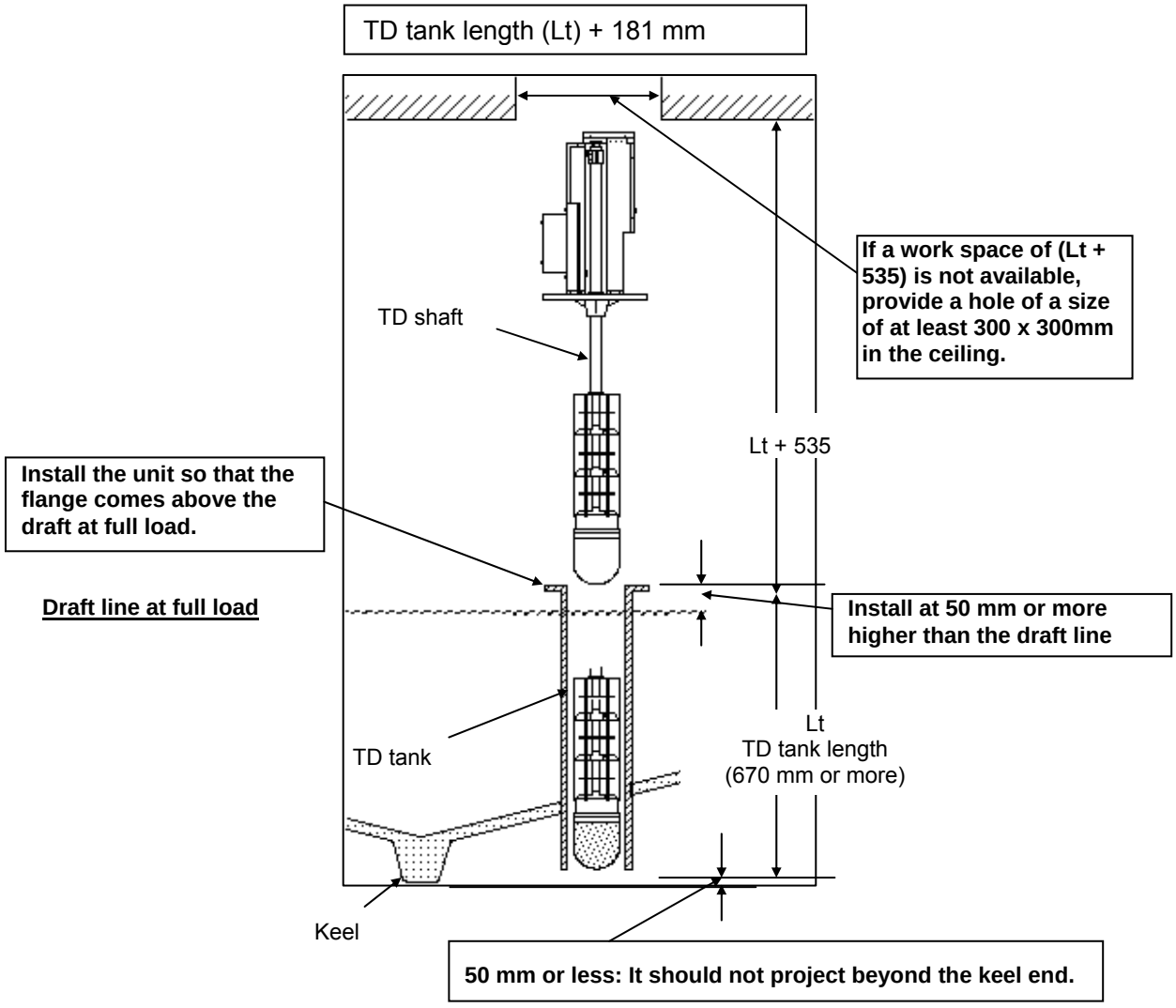
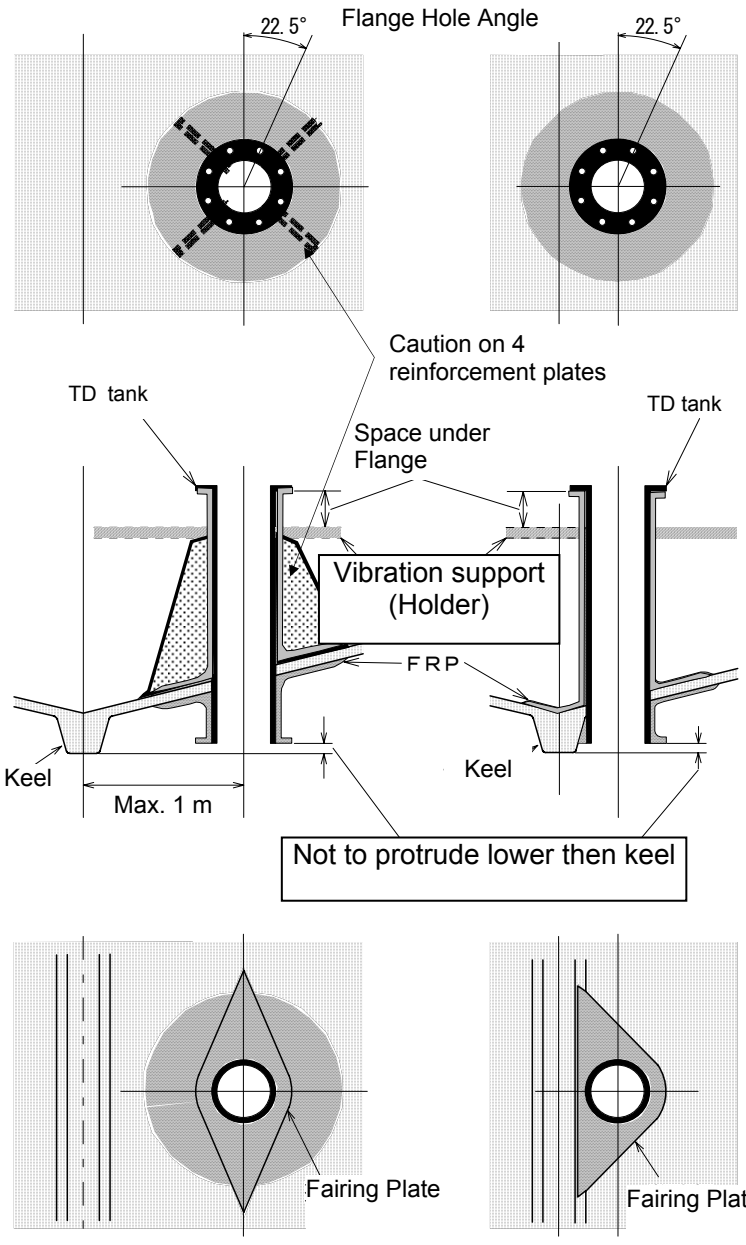


Fig. 1.10 Installation of TD tank

1.5.3 Installation conditions for a TD tank

(1) The TD tank should be installed satisfying the following conditions.

- Install the TD tank on the keel within the range of 1/3 to 1/2 of the overall length from the bow. Alternatively install the unit so that the center of the TD tank positions within 1m from the center of the keel.



- There should be no obstacles right below the flange of the TD tank which may interrupt bolt clamping of the Flange.
- In addition, consider to put 4 pieces of reinforcement plates at 90˚ pitch under the body of the TD tank depending on the circumstances.
- The top end of the TD tank should not project below the keel end.
- The Flange surface of the TD tank should stay level during standard cruise.
- Apply FRP sufficiently to all the necessary sections to prevent leakage of water.
- Make the surrounding of the TD tank projecting out from the bottom in a streamline shape and provide a fairing plate to suppress water resistance and generation of air bubbles to the minimum.
- When necessary, install a Vibration support holder to stop shaking.

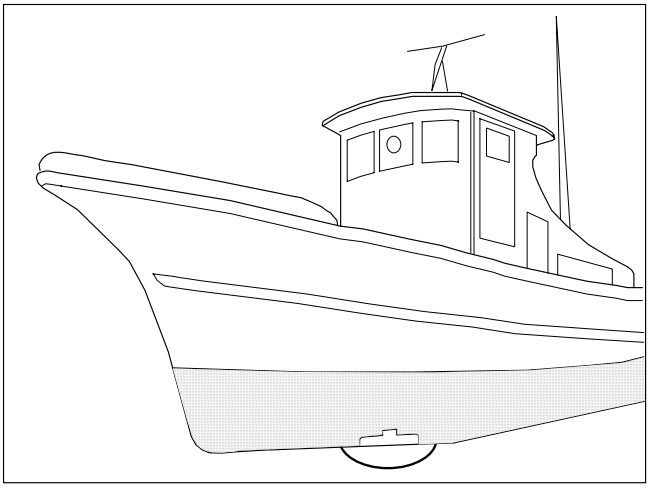
  When doing this, make sure the holder does not interfere bolt clamping of the flange.

Fig. 1.11 Installation of TD tank

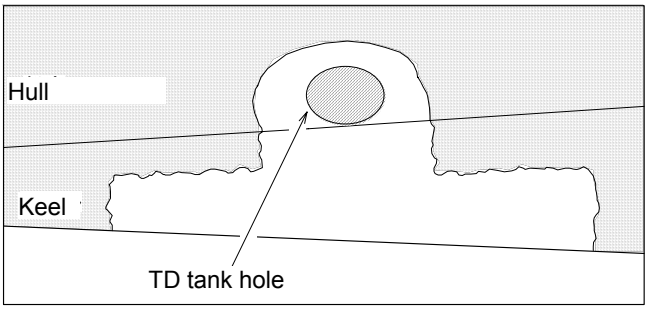
warning

Fully discuss about the strength and waterproofness with the ship owner, persons in charge in the shipyard and the installer before determining on the position and the method of installation and necessary materials.

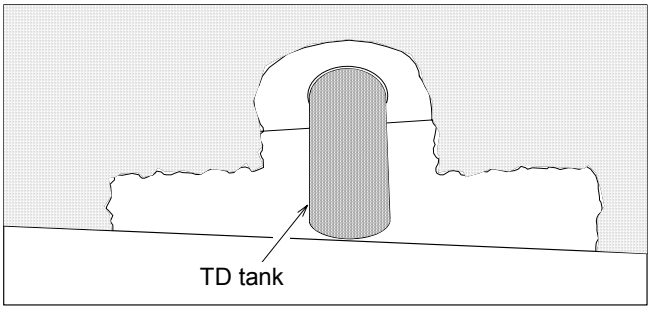
1.5.4 Example of installation of the TD tank



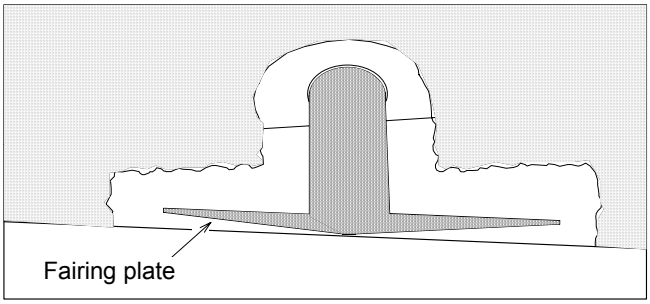
- The position to install the TD tank.
  (Refer to page 1-8)



- Open a hole of the same diameter as of the TD tank along the keel in the bottom.

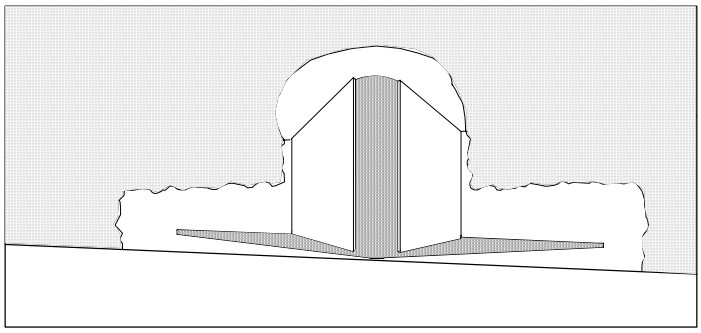


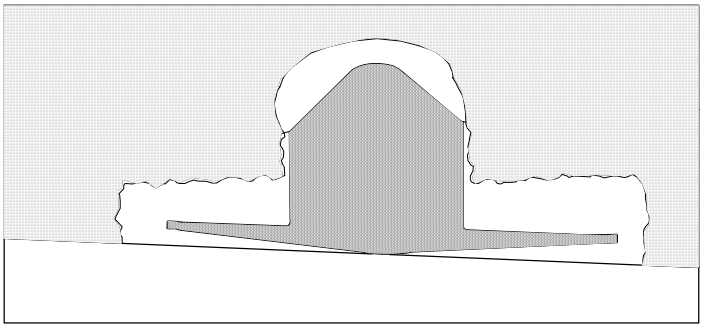
- Install the TD tank into the hole.
  The Flange surface of the TD tank should stay level during standard cruise.



- Make the surrounding of the TD tank projecting out from the bottom in a streamline shape and provide a fairing plate to suppress water resistance and generation of air bubbles to the minimum.

Fig. 1.12 Example of TD tank installation – 1





- Apply FRP sufficiently to all the necessary sections to prevent leakage of water.

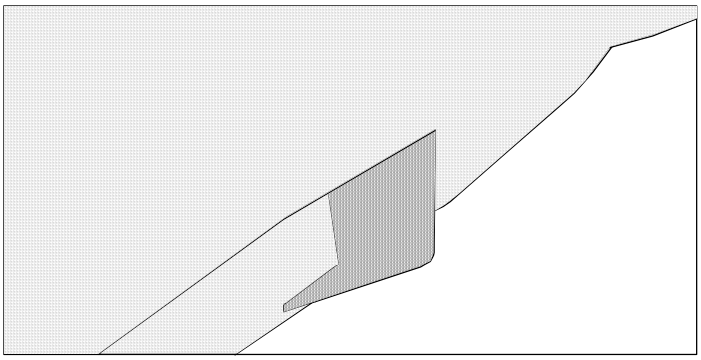


Fig. 1.13 Example of TD tank installation - 2

1.5.5 Assembly of Hull unit

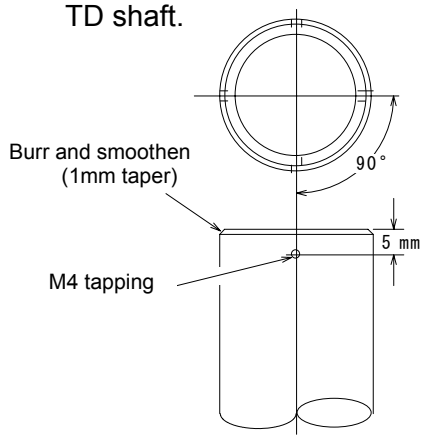
(1) Necessary length of TD shaft

- When the installed TD tank is shorter than the standard length, the TD shaft length should be also shortened.
  - TD tank: 1230 mm (Standard)
  - TD shaft: 1411 mm (Standard)
- When standard TD tank is installed with shortened length, the TD shaft length should be processed at least

Necessary length of TD shaft = TD tank length (Lt) + 181 mm

(2) Processing of TD shaft

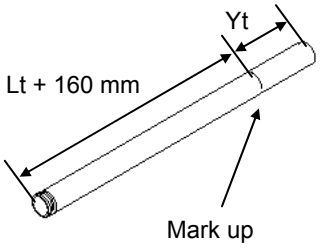
- When the TD tank with a standard length is installed, there is no need to process the TD shaft.



1. Cut the TD shaft to "TD tank length (Lt) + 181 mm".
2. Burr the cutoff portion and finish it with 1 mm taper.
3. Make 4 holes of 3.4 mm diameter at 90° apart around the TD shaft 5 mm down from the cutoff surface, and provide M4 tapping.

Fig. 1.14 Processing of TD shaft

- When the length of a TD tank has been shortened, the TD shaft is cut off as shown above to be used. If there is enough space above the installed location, the TD shaft can be used without cutting off.



Mark up at "Lt+160mm" and align the top end of joint arm at this mark and fasten it.

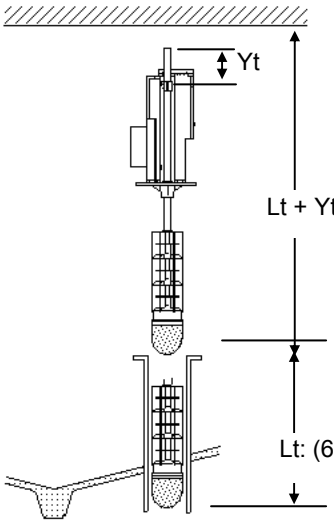
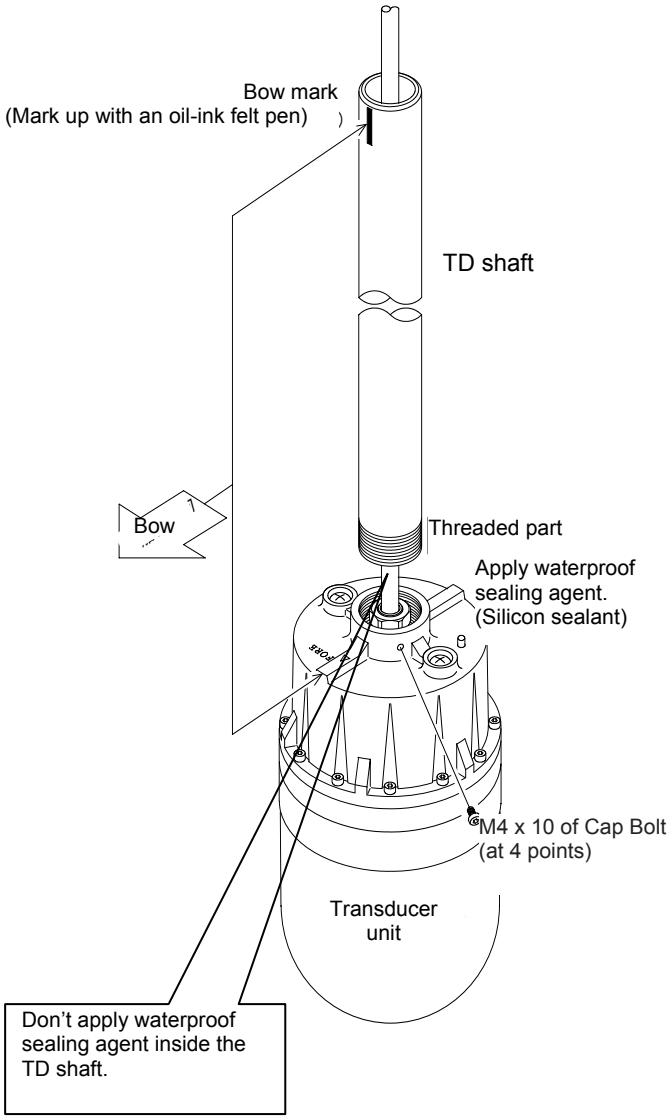


Fig. 1.15 Installation of a TD shaft

(3) Assembling the TD shaft and the Transducer unit

1) Fasten the TD shaft to the Transducer unit. At this time, be sure not to damage the TD shaft thread and not to twist the cable.

- Remove stains and grease fully at the threaded part of the Transducer unit and the TD shaft, and apply the attached waterproof sealer (Bath Cork) to the threaded part only.
- Fasten the TD shaft to the Transducer unit. As there is a packing at the Transducer unit side, fasten as far as the packing will work to the point where no slackness will occur. Be careful that excessive fastening strength causes breaking of the packing. Use the attached 4 pieces of Cap bolt to prevent loose bolt, and cover the Cap bolt with waterproof sealing agent to prevent electric corrosion.
- After fastening of the TD shaft to the Transducer unit, please mark up the Bow mark at the top end of the TD shaft.

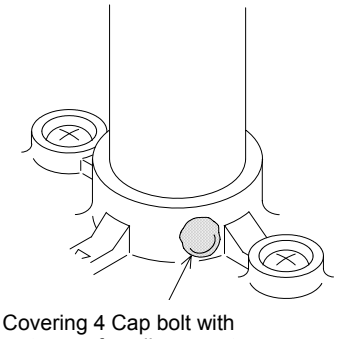


Caution

When the Transducer unit and the TD shaft are assembled or dismantled, be sure to hold on the metal portion of the Transducer unit and turn the TD shaft.
If the Transducer unit is turned to be dismantled, the Transducer unit or cables may be damaged.

Caution

Do not apply or fill up the inside of the TD shaft with waterproof sealing agent. If the cable of the Transducer unit is bonded, there may be damages on the Transducer unit or the cable during dismantling for maintenance works.



Covering 4 Cap bolt with
waterproof sealing agent.
(at 4 point)

Fig. 1.16 Assembling Hull unit - 1

2) Attaching the shaft guides

- Insert the 3 shaft guides over the TD shaft in the direction as shown in the drawing below.
- Insert a Fixing collar and fasten with 2 pieces of attached cap bolts to allow a little movement of the shaft guides.

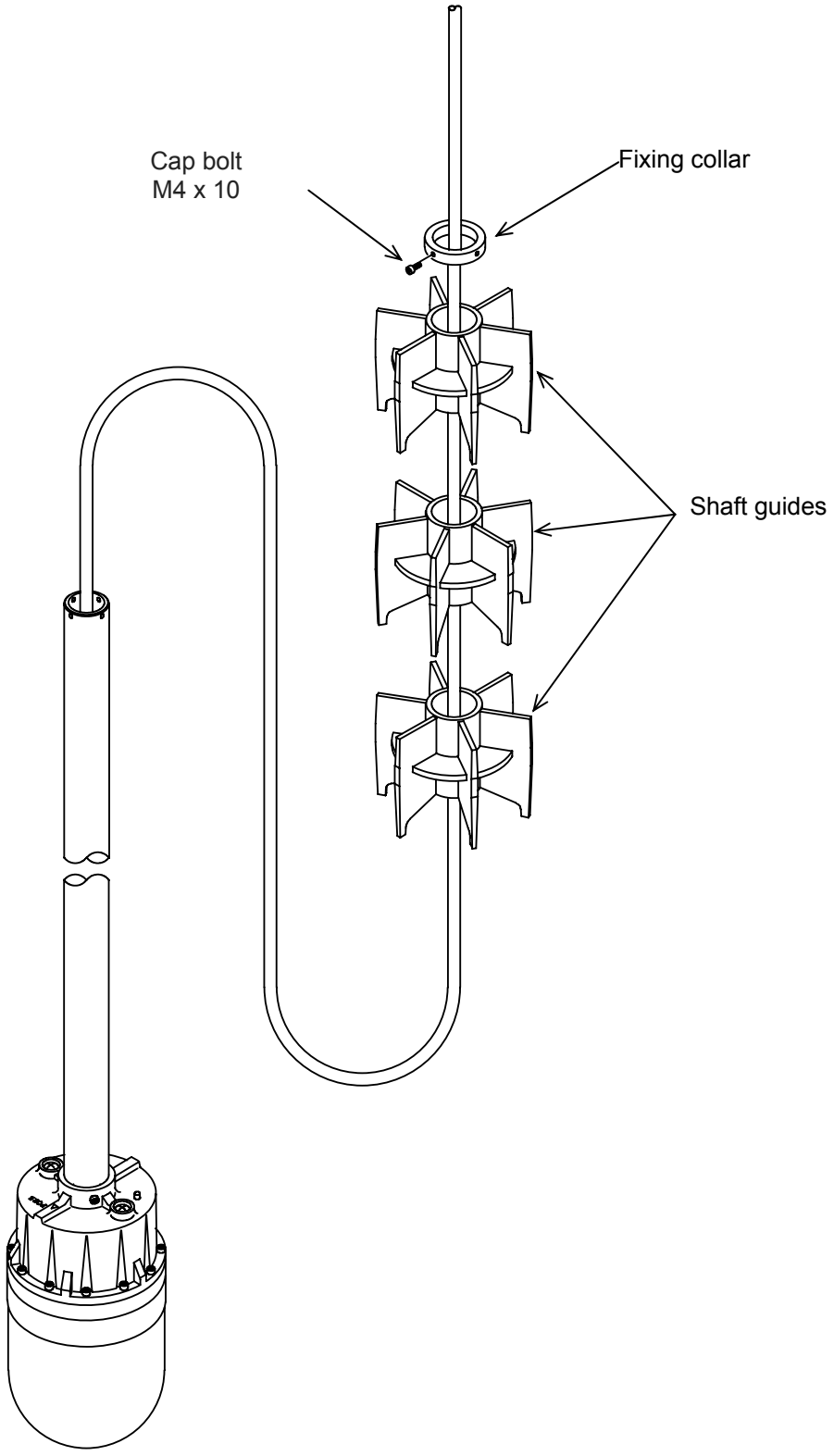


Fig. 1.17 Assembling Hull unit - 2

3) Attaching the Transducer unit to the Hull unit.

- Apply grease to the bearing of the Flange and the inside of the waterproof nut.
- Loosening the waterproof nut and thread the TD shaft through the Flange bearing, and thread the damper. Mount them to the Joint arm matching the bow direction.
- Ensure that the TD shaft end projects 21mm from the Joint arm surface.
  In case of the length of the TD tank other than 1230mm long.
- In the use case of other TD tank, **ensure the lowest part of the Transducer unit is at least 50mm above the lowest part of the TD tank.**
- To prevent slip-out of the TD shaft, fasten the attached Fixing collar using Cap bolt (4pcs).

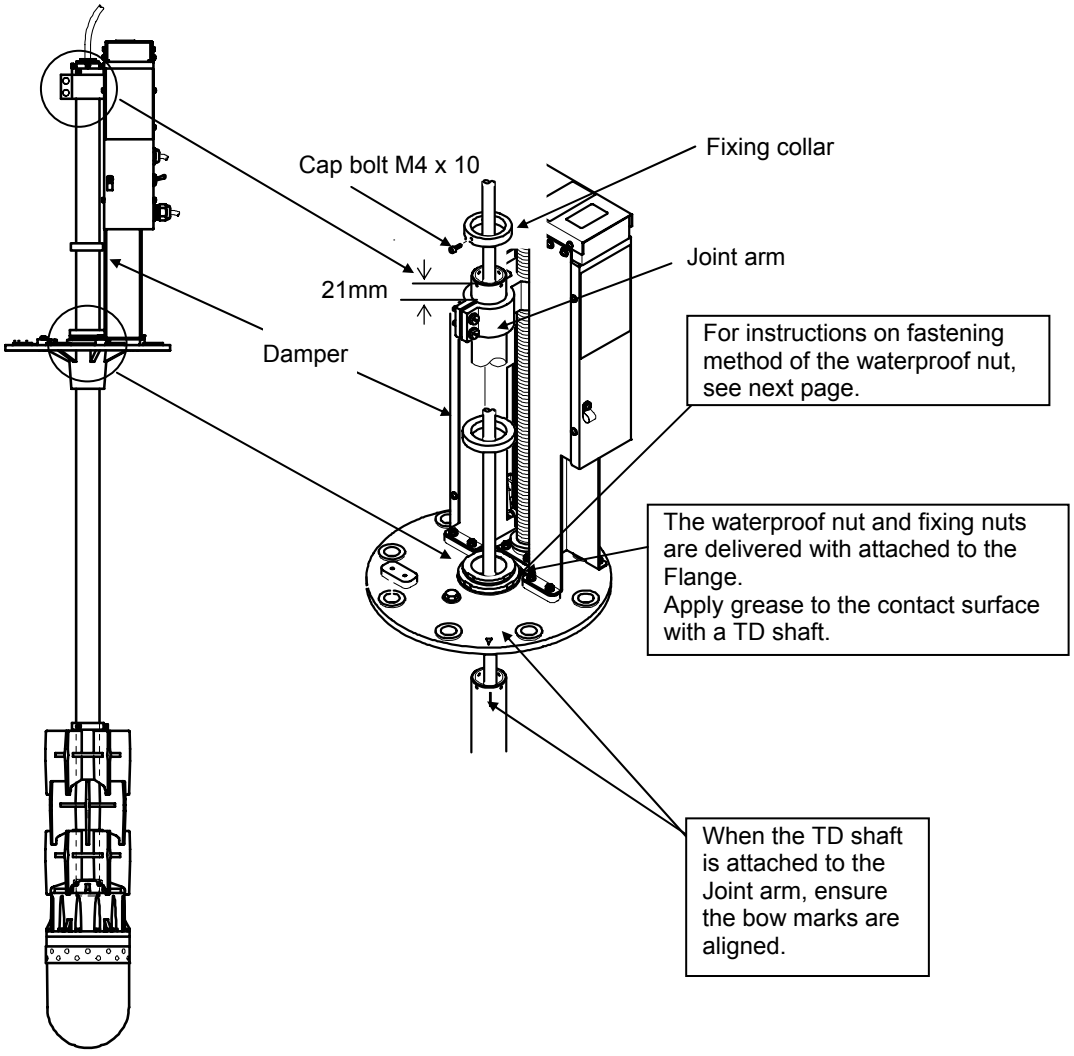


Fig. 1.18 Assembling Hull unit - 3

4) Attaching the shaft cap to the end of the TD shaft

- Insert the shaft cap into the end of the TD shaft, temporarily tighten with the Cap bolt (4 pcs of M4 x 25) attached to the shaft cap first, and then tighten them evenly. Be careful that too strong tightening may break down the cable of the Transducer unit.
  In addition, fix the shaft cap with 4 pieces of attached cap bolts (M4 x 10) to prevent the cap from coming off.

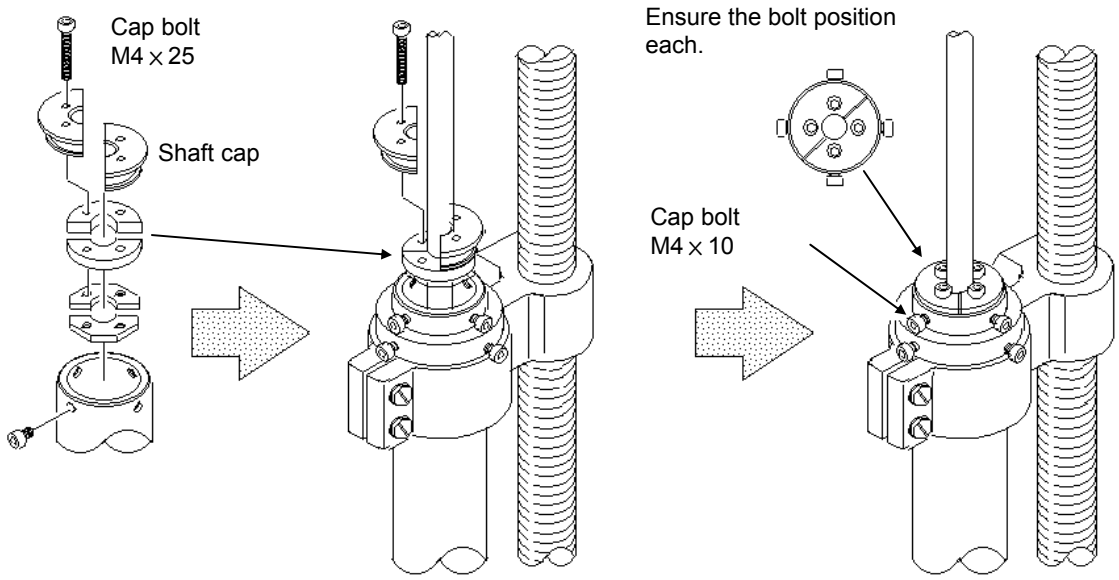


Fig. 1.19 Assembling Hull unit – 4

5) How to tighten Waterproof nut and Lock nut

- Lift up the Lock nut as shown in the left side figure below.
  Tighten the Waterproof nut firmly by hand into the Flange opening.
  Turn the waterproof nut 180˚ by striking a flathead screwdriver and a hammer. At this time, not to over tighten the waterproof nut.
- The Lock nut is used to prevent slip-out of the waterproof nut.
- Apply a flathead screwdriver at a groove provided on the fixing nut and strike the flathead screwdriver' head by a hammer, and turn the nut clockwise to fasten fast.

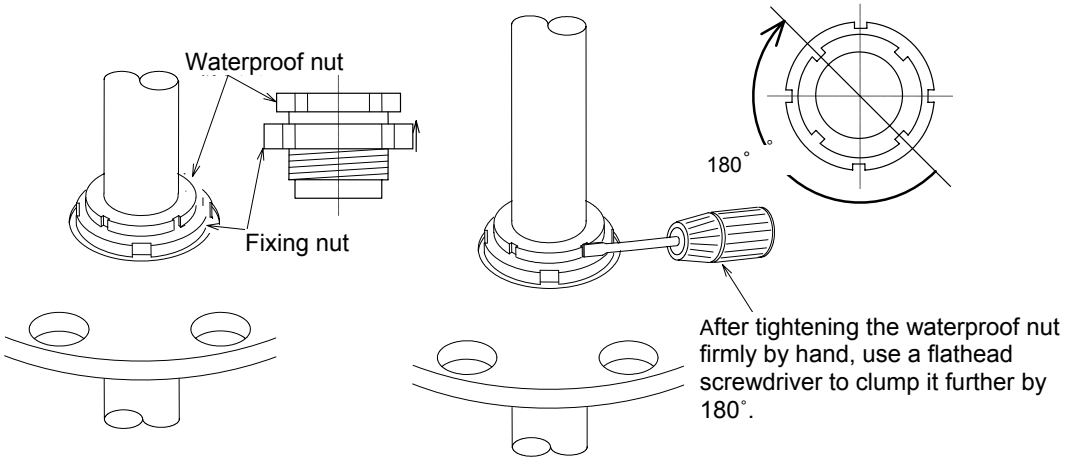


Fig. 1.20 Assembling Hull unit – 5

6) Hull unit and TD tank attachment

- Insert a Flange GUM packing for a flange between the Hull unit and the TD tank, fasten the Hull unit to the TD tank with 8 pcs of attached Hexagon bolts (M16 x 55) . When clamping bolts for fitting the Hull unit to the TD tank, make tentative clamp and try to move the Transducer unit up and down for several times to confirm the alignment when making the final clamping evenly at the position of smooth vertical movement.

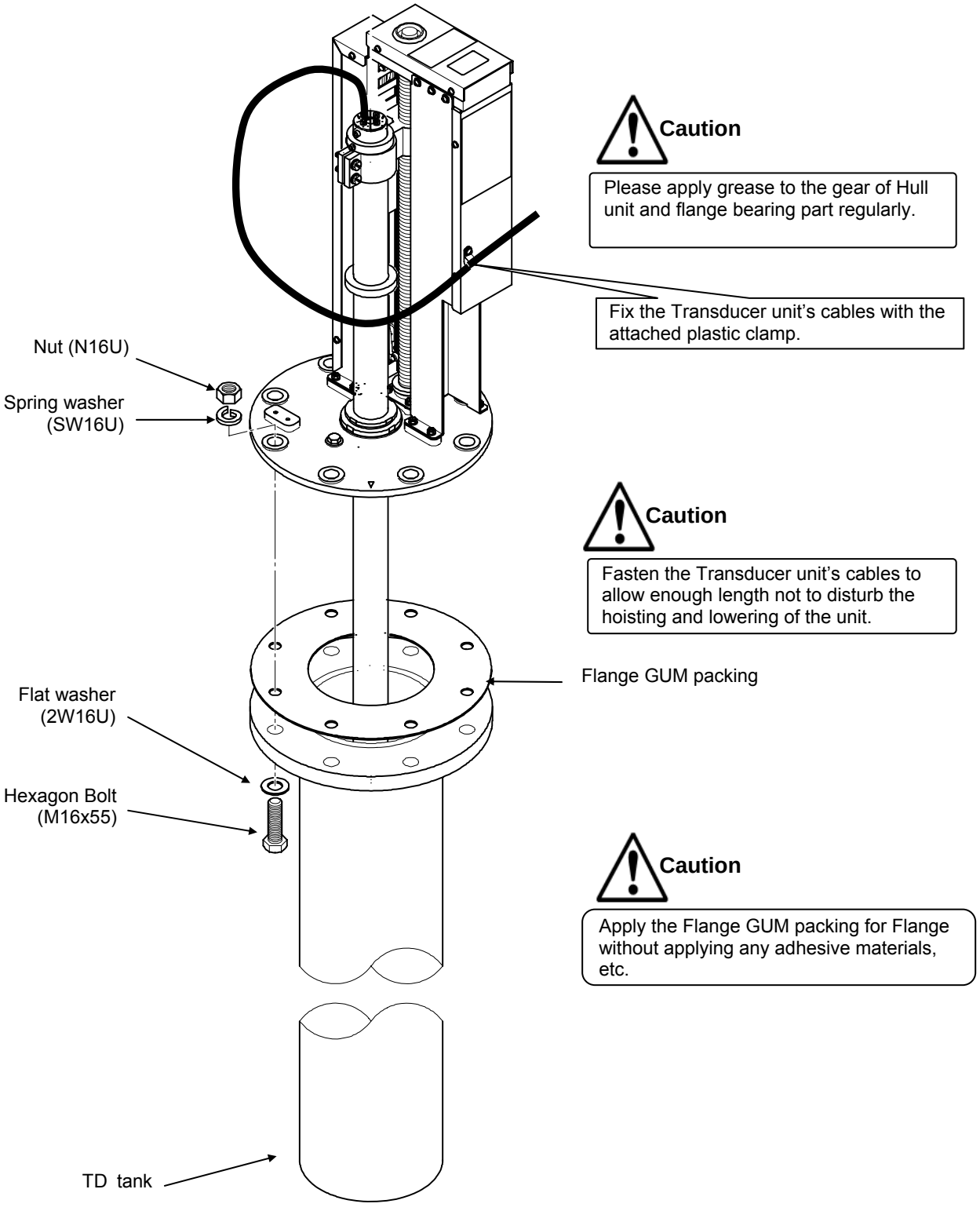


Fig. 1.21 Assembling Hull unit – 6

(4) Adjustment of hoisting and lowering stroke

- By adjustment of the lower limit switch as shown below, the hoisting and lowering stroke of the Transducer unit can be changed from min. 150 mm to max. 380 mm.
- To lower the Transducer unit to an approximate position, please adjust the unit with this lower limit switch.
- When the limit switch is raised, please fix the wires by ANP base and the binding bands attached so as to prevent the wires from touching with the hoist gears.

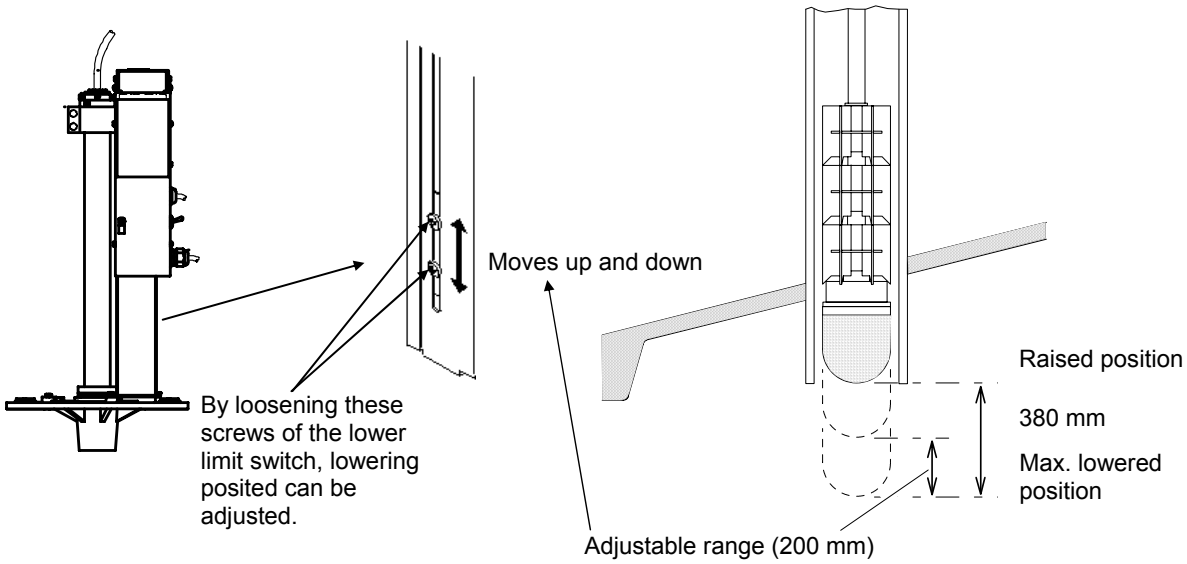


Fig. 1.22 Adjustment of hoisting and lowering stroke

(5) Manual hoisting and lowering of a Transducer unit

- When the Transducer unit cannot be hoisted due to a trouble occurrence, it can hoist the Transducer unit by use of the attached crank handle after taking off the rubber cap.
- When the crank handle is used, press on the Operation unit to be lowered the transducer unit. After that please turn the hoist switch OFF and keep pressing on the Operation unit for more than 3 seconds.
- After a specified period (approx. 60 minutes), the electromagnetic brake works and handle operation becomes heavy.
- When the power source cannot be supplied to the Hull unit due to a trouble in inboard power source;
  1) For the sake of safety, please disconnect the control cable connector of the Hull unit (CW-589-20M) or remove the main fuse of the Hull unit.
  2) Open the upper cover by removing the two fixing screws with a Phillips-head screwdriver.
  3) Take off the gear indicated by an arrow shown in the figure below.

  You can move the Transducer unit up and down easily with the attached crank handle by performing the above procedures.
  * After completion, return to the original state following the above procedures in reverse order.

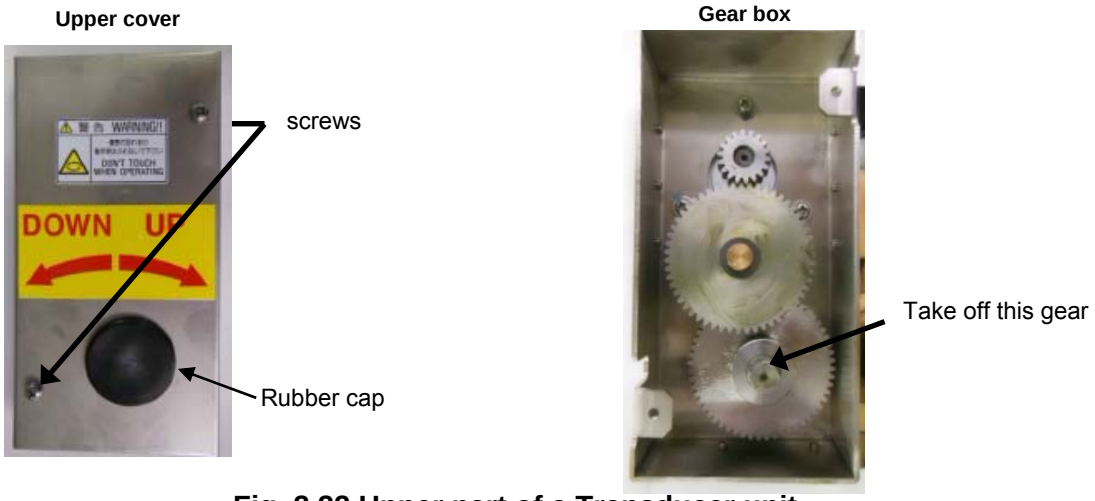


Fig. 2.22 Upper part of a Transducer unit

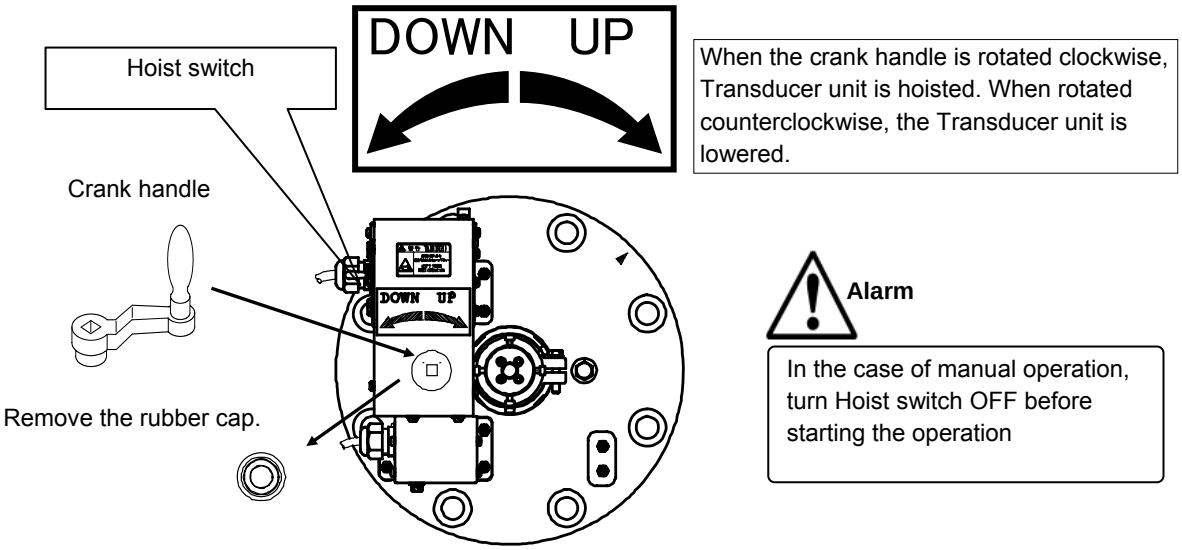


Fig. 2.23 Operation of a crank handle

To prevent electric corrosion, connect a wire between the flange and the ship's ground.

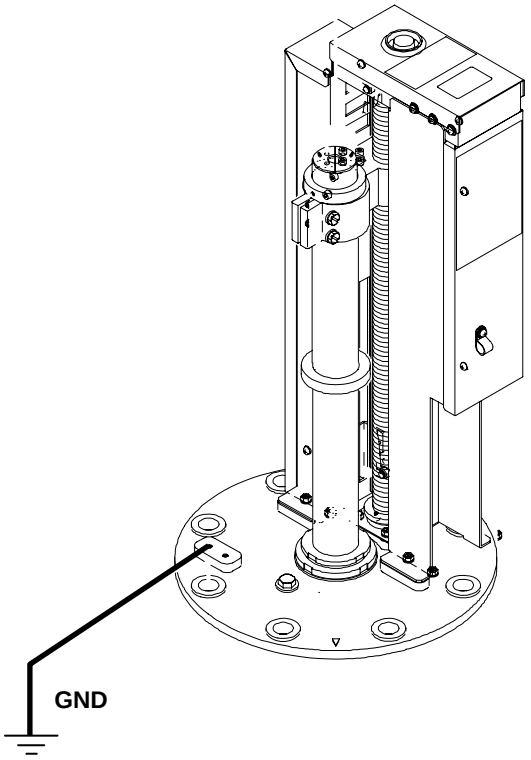


Fig. 1.25 Connection of a wire between the flange and the ship's ground

warning

∗ After completion of the installation, please confirm that the voltage between the Flange and the ship's ground does not exceed 0.65V.
When the voltage is high, connect with a thicker power cable to reduce the voltage under the specified value. If the voltage remains high, the Transducer unit may be damaged due to electric corrosion.

1.6 Wiring

1.6.1 Connection of cables to Processor unit

Connect the power cable and cables from the Hull unit to the connectors on the Processor unit.

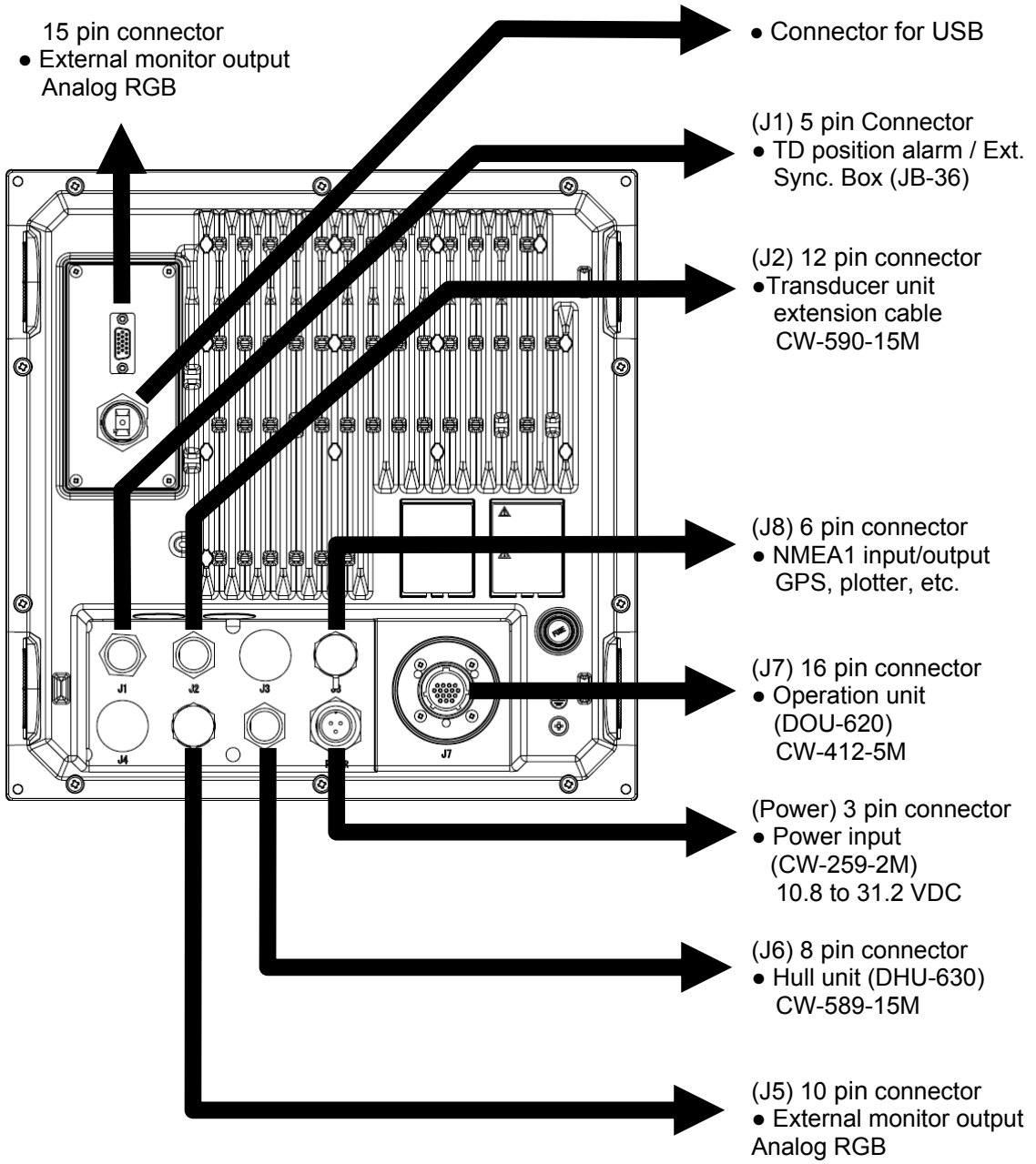
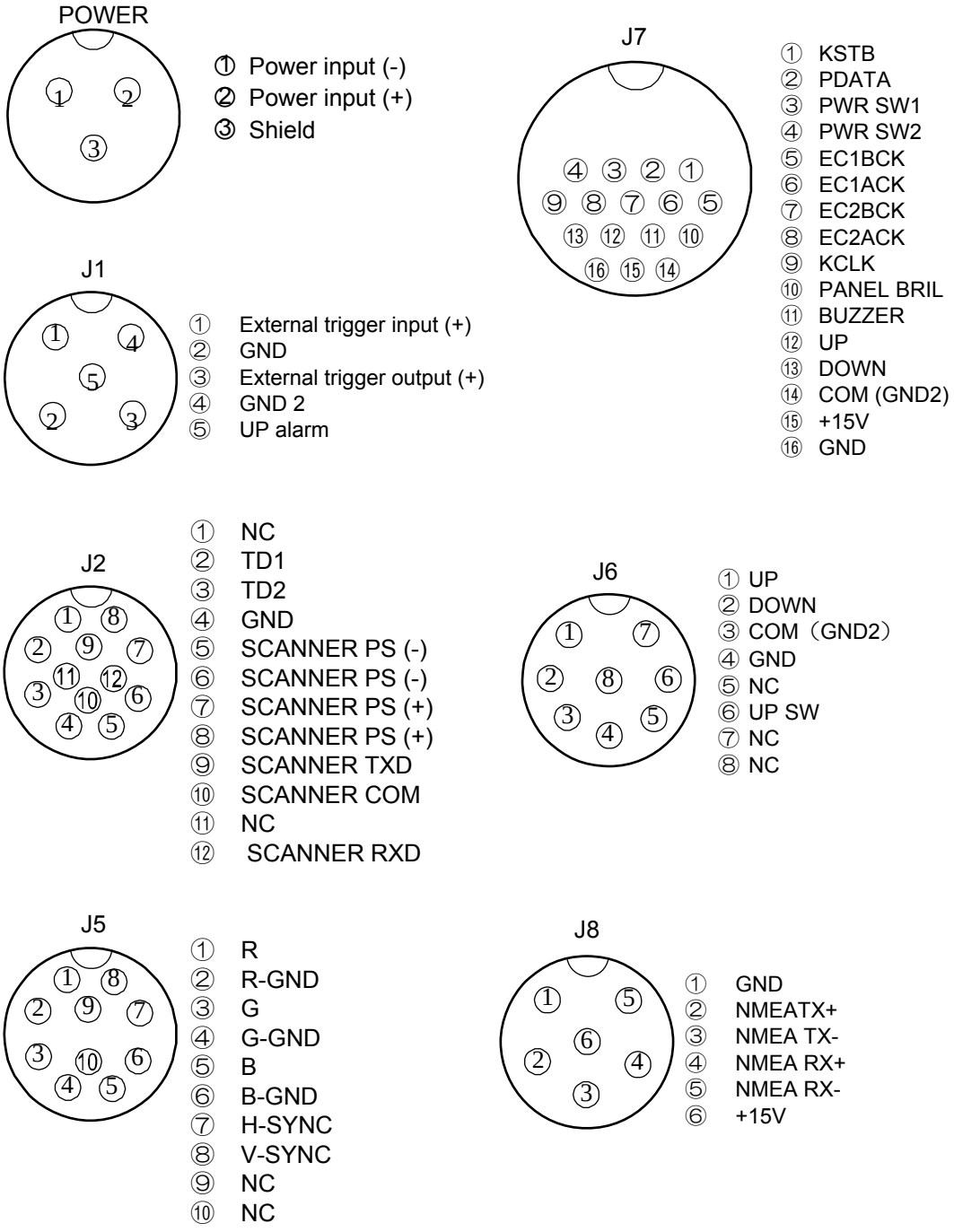


Fig. 1.26 Cable Connections

Pin assignment of rear connectors

Pin assignment viewed from the rear of Processor unit (DPU-610).



Caution: Please be careful that each wire would not contact the ship's hull ground.

Fig. 1.27 Pin Assignment of rear connectors - 1

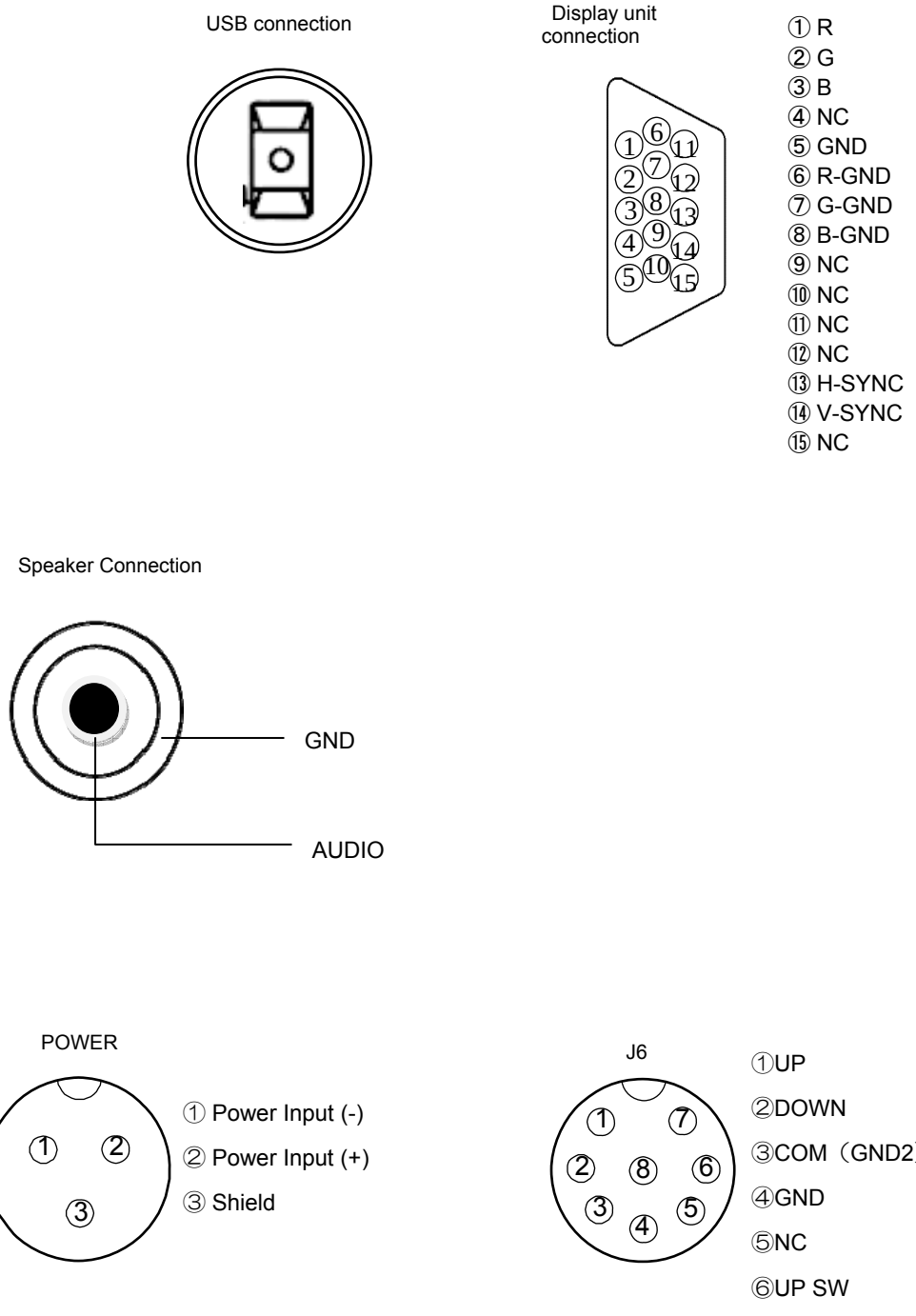


Fig. 1.28 Pin Assignment of rear connectors - 2

Connection of power cable (CW-259-2M)

Connect the power cable to the [POWER] connector at the rear of the Processor unit (DPU-610).

Connection of DC power cable (CW-259-2M)

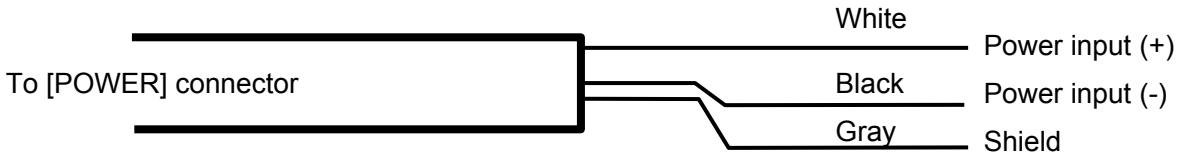


Fig. 1.29 Connection of a DC power cable

Caution: Confirm the main switch-board off before connecting power cable.

Connection of Hull unit (DHU-630)

In the case of connection of Hull unit:

Be sure to confirm the following points after completion of installation of Display unit, Processor unit, Operation unit, TD position alarm / Ext. Sync. Box and Hull unit.

warning

※ DC power range for this equipment is as follows:
Display unit (Owner supply): Depends on the instruction manual for the unit
Processor unit (DPU-610): 10.8 to 31.2 V
Hull unit (DHU-630): 10.8 to 31.2 V

Connect to the specified power source. If un-specified power source is used, it may cause a damage, fire or electric shock.

※ Use the specified power cables. If un-specified power cable is used, it may cause heat generation or fire.
After completion of connection, please confirm that a voltage between the Flange of the Hull unit and the ship's ground does not exceed 0.65V.
When the voltage is high, connect with a thicker power cable to reduce the voltage under the specified value.
If the voltage remains high, Transducer unit may be damaged due to electric corrosion.

※ Be sure to plug and unplug the cables by holding the connector part with hands after turning off the power source. If the cables are plugged or unplugged by holding it directly with hands, the cables may be damaged and may lead to fire or electric shock. Do not do this practice on any terms.

※ Run the cables not to touch the rotary obstacles or disturb the operation, and are not bended, twisted or pulled by force, and no heavy objects are put on them. Be careful such a cabling may lead to injury, heat generation or fire cause.

Connection of a Hull unit (DHU-6301)

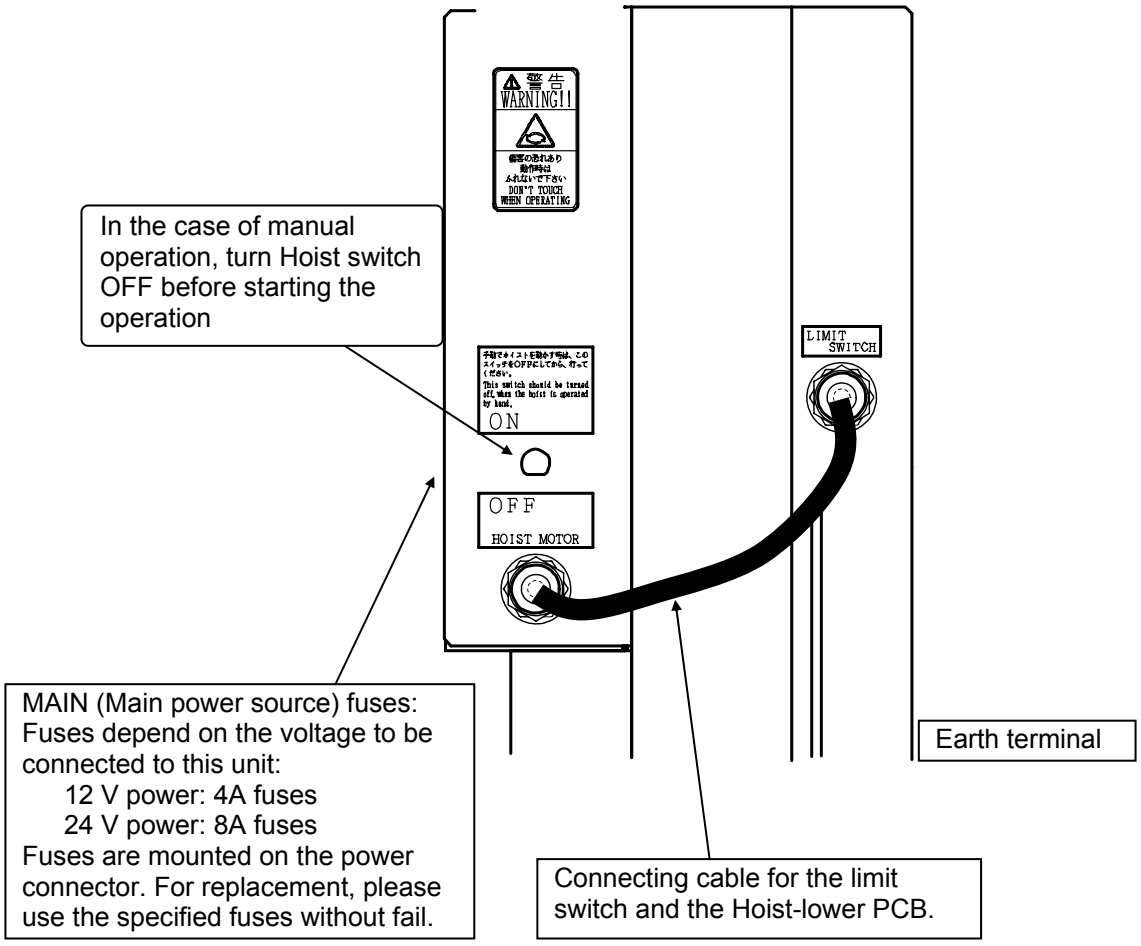
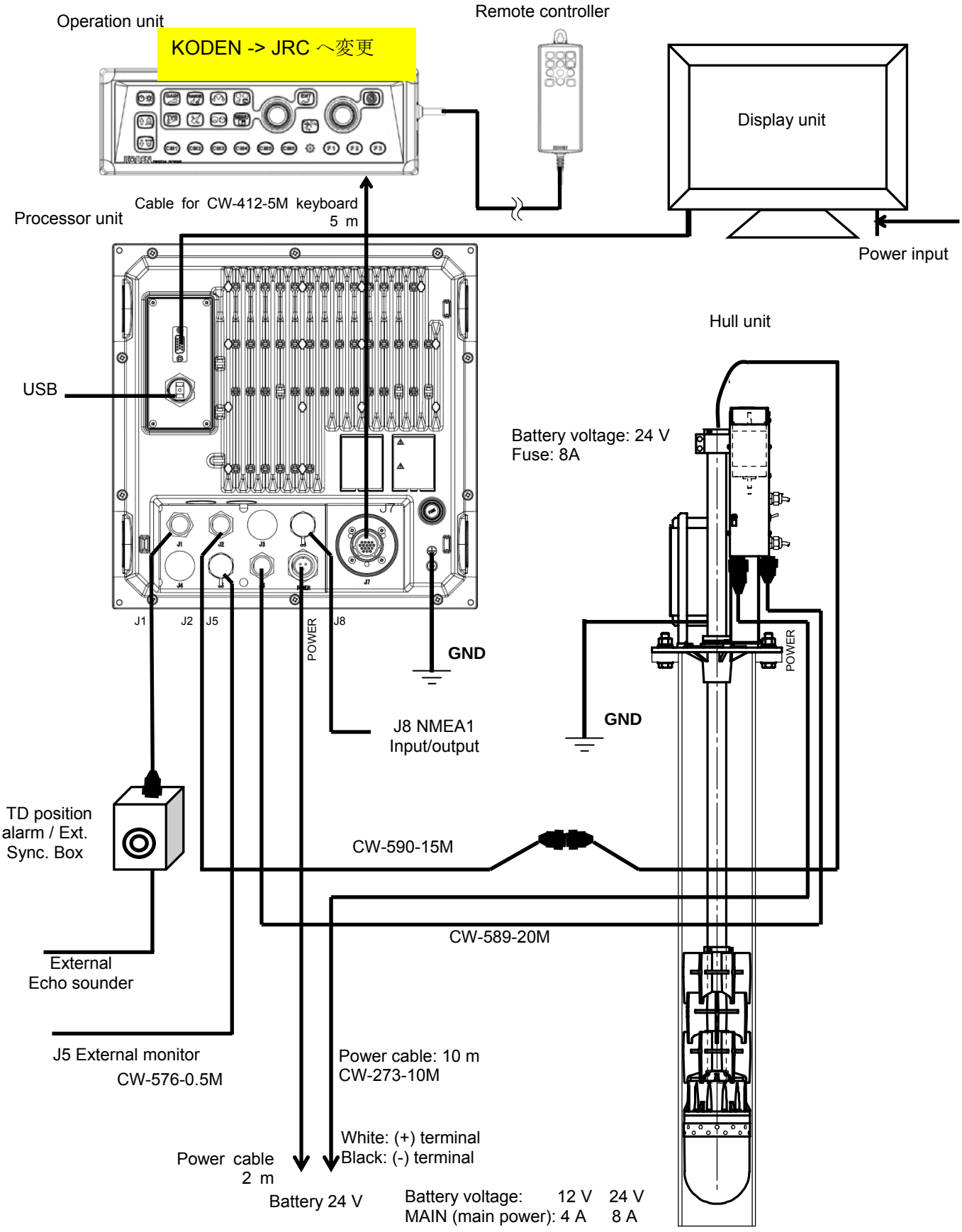


Fig. 1.30 Connection of Hull unit

General connection



※ The cable lengths include the pull in (max. 60 cm) to each unit.

Fig.1.31 JFP-185 general connection

Connection of TD position alarm / Ext. Sync. Box (JB-36)

For the TD position alarm / Ext. Sync. Box (JB-36), the equipped buzzer sounds for alarming when the Transducer unit remains as projected at the time of power OFF of the Processor unit.

Connection table of TD position alarm / Ext. Sync. Box (JB-36)

TD position alarm / Ext. Sync. Box (JB-36)			**Cable**		**Processor unit (DPU-610)**		
Terminal No. and name of signal			Color of cable	Name of cable	Connector No.	Pin No.	Name of signal
J1 (C50-800*)	1	TRIG.IN	Trigger signal from external echo sounder	External echo sounder			
	2	GND	—				
	3	TRIG.OUT	Trigger output to external echo sounder				
	4	GND2	Black	CW-413-5M	J1	4	GND2
	5	UP ALARM	Orange			5	UP ALARM
	6	BUZZ-	Black	Buzzer			
	7	BUZZ+	Red				
	8	TRIG.OUT	Red	CW-413-5M	J1	3	TRIG.OUT
	9	GND	Brown or White + Brown			2	GND
	10	TRIG.IN	Blue			1	EXT.TRIG

* Subject to version change

※ Terminals from 4 to 10 have been connected at shipping from factory.

(1) Connection to the TD position alarm / Ext. Sync. Box (JB-36) and J1 of the Processor unit (DPU-610).

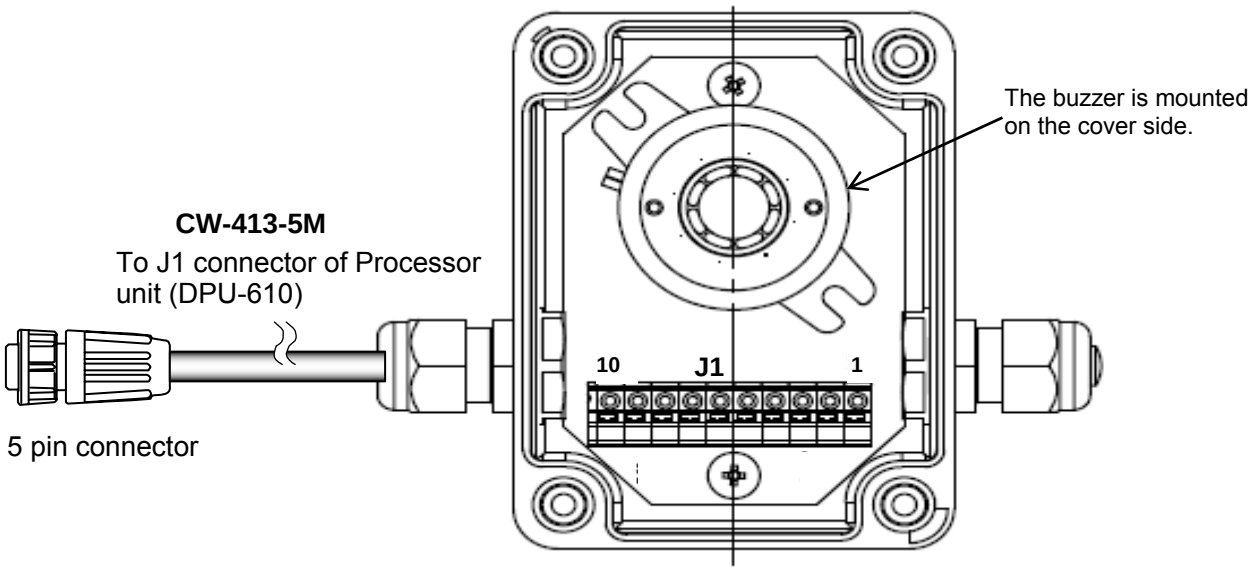


Fig. 1.32 Connection of JFP-185 – TD position alarm / Ext. Sync. Box

(2) Connection to external echo sounder and the TD position alarm / Ext. Sync. Box (JB-36)

It is likely to observe mutual interference when the transmit frequency of an external echo sounder and JFP-185 is the same or close. Interference can be decreased by synchronizing the JFP-185 transmission with the trigger of the external echo sounder. Refer to the following for the connection.

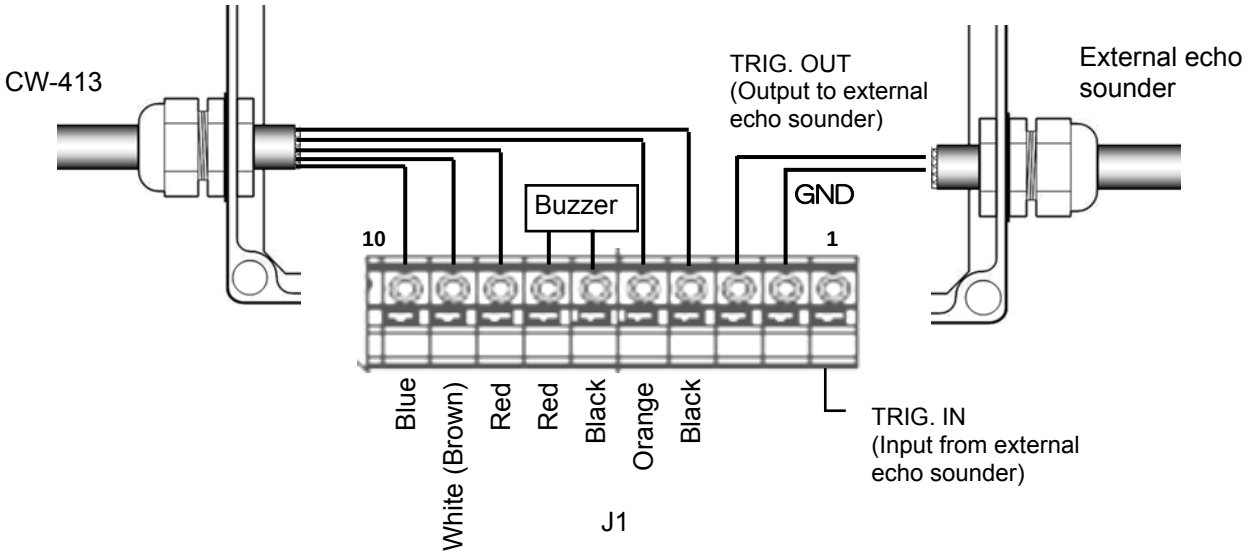
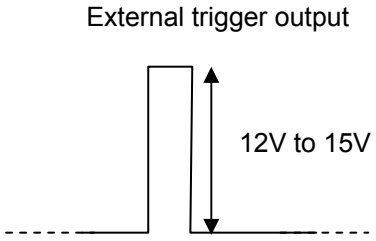


Fig. 1.33 Connection of an external echo sounder (JB-36)



Caution: Wind the insulation tape around the un-used lead wire for core-wired not to contact each other.

Connection of Display unit [Owner supply]

When installing Display unit (VGA monitor, analog RGB input), connected it via external monitor cable (owner Supply) to the connector on the Display unit.

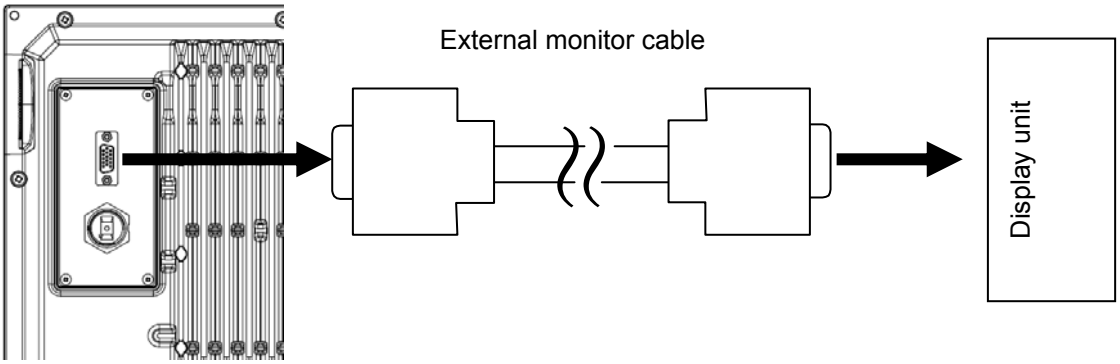


Fig. 1.34 Connection of Display unit

Connection of External monitor (J5) [Owner supply]

When installing an external monitor (VGA monitor, analog RGB input), connect it via CCCW-576-0.5M to J J5 connector. Refer to the illustration below for the wiring.

Structure of CW-576-0.5M

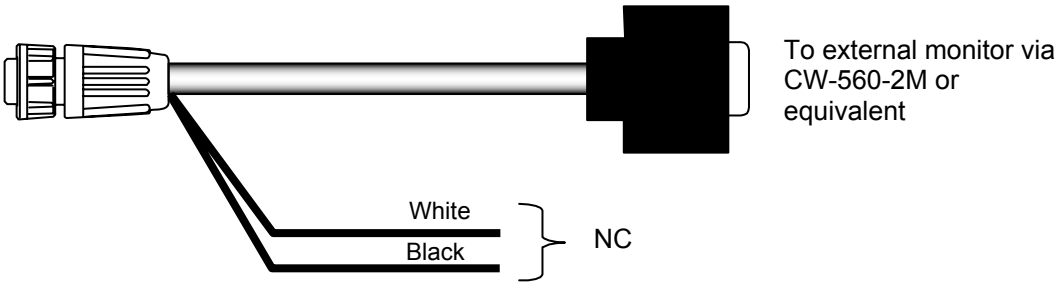


Fig 1.35 Connection of External monitor

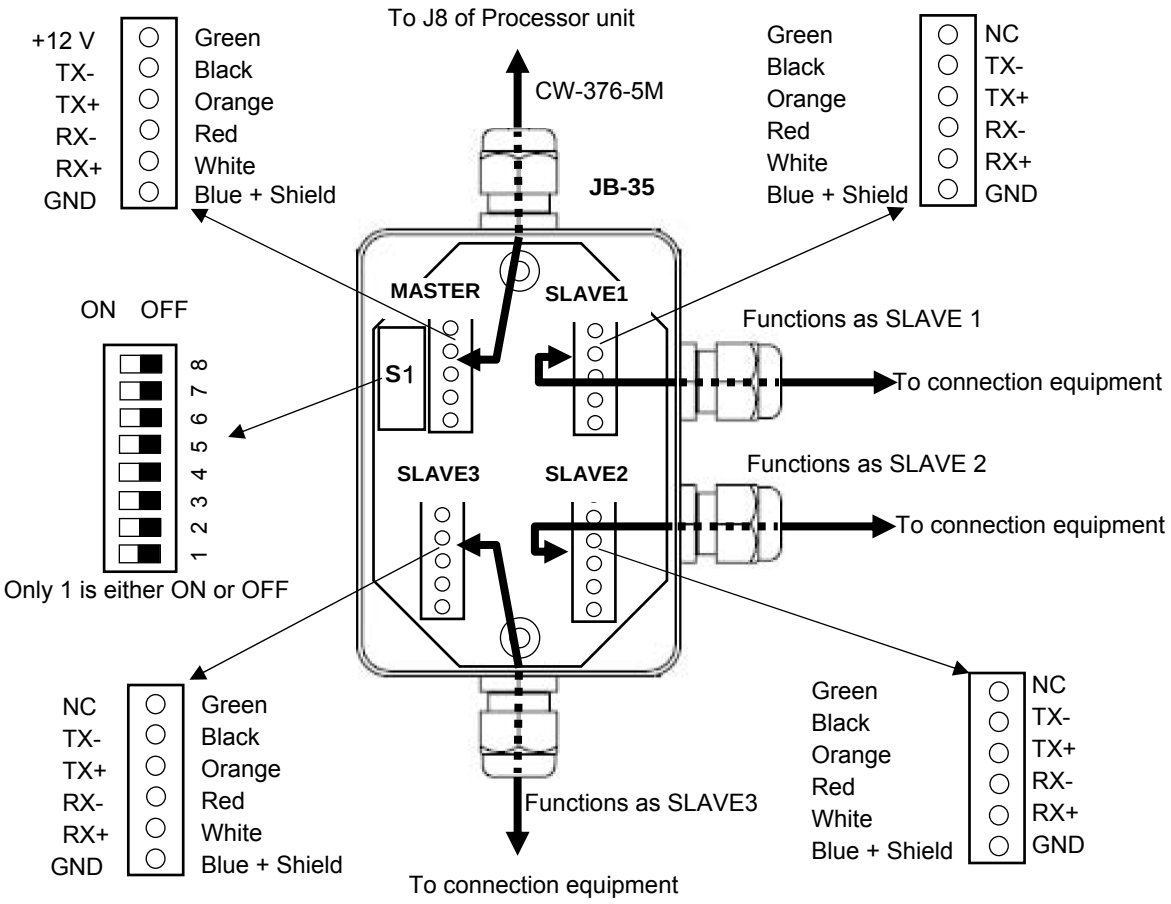
Connection with navigation equipment (J8)

The NMEA data can be output from JFP-185 to an external navigation equipment, and the NMEA data can be input from an external navigation equipment to JFP-185. Refer to the following for the connection.

Connector	Pin	Remarks
L8	①	GND
	②	NMEA TX+
	③	NMEA TX-
	④	NMEA RX+
	⑤	NMEA RX-
	⑥	+15V

Connection with Junction box JB-35

To extend the ports, connect the Junction box JB-35 to the data connectors as shown in the figure below.
Set the DIP switch (S1) as shown in the figure below.
Wire the cables with the CW-376-5M (option) as shown in the following color chart.



Connection of USB memory (Owner supply)

A USB memory can be connected to the Processor unit.
Pullout the USB connector cap at the rear panel of the Processor unit and insert a USB Memory.
Put the cover firmly when a USB Memory is not connected. Without the cap, the Processor unit may cause failure.

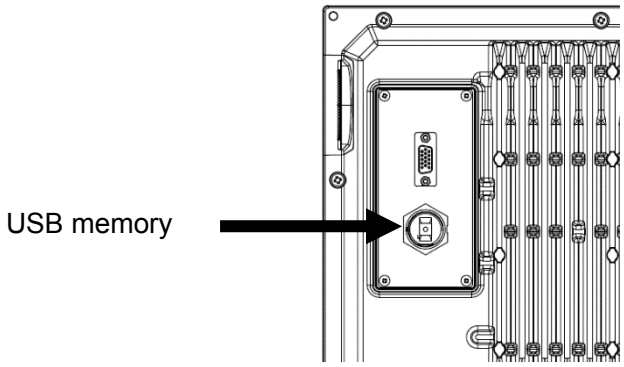


Fig 1.36 Connection of USB memory

Caution: Connect / Disconnect the USB memory after turning power supply OFF.

Caution: The liquid ingress protection grade of the Processor unit is no protection (IPX0), so waterproof property is not guaranteed.

NMEA output setting to external equipment

Setup of baud rate of NMEA1 (J8)

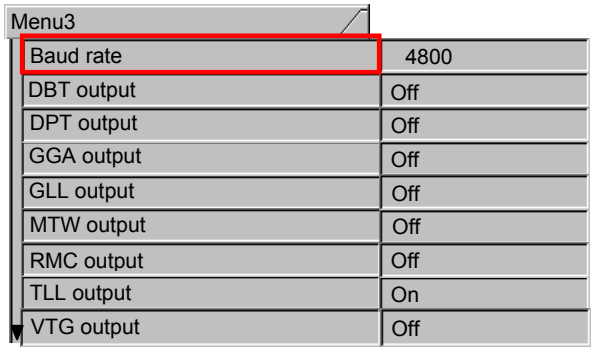
This is to set the baud rate of NMEA1 (J8).

The baud rate should match the externally connected equipment.

1. Press 

to be displayed [Menu3].

2. Turn  (knob/left) to select [Baud rate].



3. Press (knob/left) or 

to move setting value box.



4. Turn  (knob/left) to select the setting value from [4800], [9600], [19200] or [38400].

5. Press  to close the menu.

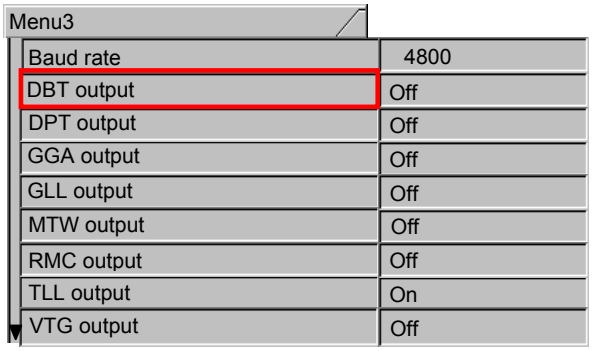
Selection of NMEA Output

The output of NMEA sentence can be set to On/Off.

1. Press 

to be displayed [Menu3].

2. Turn  (knob/left) to select [Optional output].



3. Press (knob/left) or 

to move setting value box.



4. Turn  (knob/left) to select the setting value from [On] or [Off].

[On]: Enable the output

[Off]: Disable the output

5. To set other output, repeat the steps 2 to 4.

6. Press  to close the menu.

1.7 List of input/output sentences

1.7.1 Input sentences

The Sentences of GGA, GLL, HDG, HDM, HDT, RMC, VTG and ZDA can be received.
Possible input formats are: NMEA0183 Ver. 1.5, Ver. 2.0 and Ver. 3.0.

Information	Priority Order of sentences	Information	Priority Order of sentences
Latitude, Longitude	GGA>RMC>GLL	Date	ZDA>RMC
Heading	HDT>HDG>HDM>VTG>RMC	Time	ZDA>GGA
Speed	VTG>RMC		

1.7.2 Output sentences

The sentences of DBT, DPT, GGA, GLL, MTW, RMC, TLL, VTG and ZDA can be transmitted.
The output format is NMEA0183 Ver. 2.0. However, the DBT output is in Ver. 1.5.

Sentence	Information	Sentence	Information
DBT	Water depth	RMC	Latitude / Longitude, Course, Ground Speed, Date
DPT	Water depth from the Transducer unit	TLL	Target position
GGA	Latitude / Longitude, Time	VTG	Course, Ground Speed
GLL	Latitude / Longitude	ZDA	Date, time
MTW	Water temperature		

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Chapter 2 Adjustment

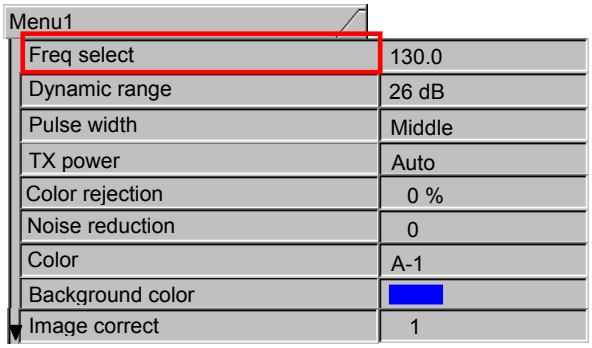
2.1 Setup of frequency of Transducer unit

On JFP-185, the frequencies can be set in a range of 130 to 210 kHz.

2.1.1 Setting of frequency

1. Press MENU to be displayed [Menu1].

2. Turn (knob/left) to select [Freq select].



3. Press (knob/left) or ENT to move setting value box.

The setting value will be displayed in red color box.

4. Turn (knob/left) to select frequency.



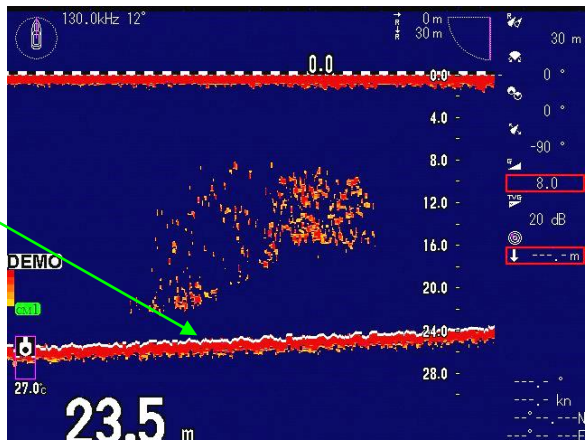
5. Press to close the menu.

2.2 Setting of gain of Transducer unit

Gain (TD)

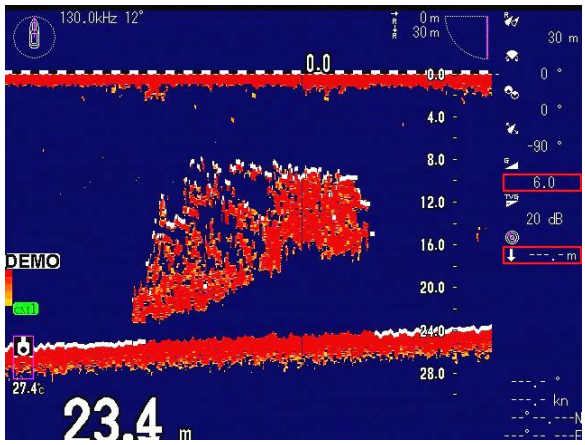
When the bottom cannot be detected or when the bottom is of mud pool or seaweed, [Gain (TD)] shall be turned up. When transfer to fish schools, etc. frequently occurs, [Gain (TD)] shall be turned down.

Adjustment shall be made under conditions where the white line is displayed. To display the white line, select [White line] in [Menu2].



At appropriate Gain (TD), the white line is displayed on the sea bottom.

White line should have the same thickness as the (darkest) color for the strongest signal.



When sensitivity (TD) has increased too much, the white line also moves to fish school.

1. Press MENU to be displayed [Menu1].

2. Turn (knob/left) to select [GAIN (TD)].

Menu1	
Dynamic range	26 dB
Pulse width	Middle
TX power	Auto
Color rejection	0 %
Noise reduction	0
Color	A-1
Background color	
Image correct	1
Gain (TD)	0

3. Press (knob/left) or ENT to move setting value box.

The setting value will be displayed in red color box.

Gain (TD)	0

4. Turn (knob/left) to select [GAIN (TD) setting value].

5. Press to close the menu.

2.3 Setup of TX power

The output power of the ultrasonic sound wave may be selected.

2.3.1 Display of TX power menu

1. Press MENU to be displayed [Menu1]

2. Turn (knob/left) to select [TX power]

Menu1	
Freq select	130.0
Dynamic range	26 dB
Pulse width	Middle
TX power	Auto
Color rejection	0 %
Noise reduction	0
Color	A-1
Background color	
Image correct	1

3. Press (knob/left) or ENT to move setting value box.

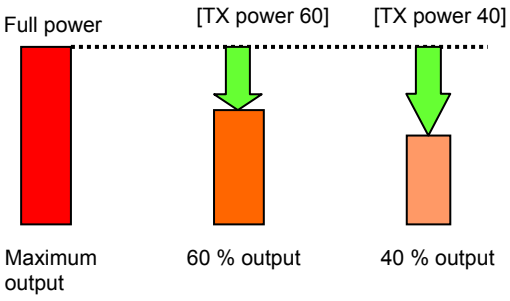
TX power	Auto

4. Turn (knob/left) to select the setting value from [Auto] or [20] to [100]. In crowded fishing areas, this function may be used to reduce power and avoid interference to other fishing boat's sonars and echo sounders.

[100] indicates the maximum power and then gradually reduced by moving from [90] → [80] → [70] → → → [20] that is the minimum power.

5. Press to close the menu.

* For instance, when the value of [TX power] is 60, actual output is 60% from the original output power.



2.4 Train correct

The bow direction (0°) can be corrected by the use of the bearing center function.

Move to Sonar mode and set the bearing center by pressing at which the bow direction (0°) to be set.

1. Press MENU to be displayed [Menu2].

2. Turn (knob/left) to select [Train correct].

Menu2	
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0
Train correct	0.00
Ext synchronized	Off
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	1

3. Press (knob/left) or ENT to move setting value box.

Train correct	0.00

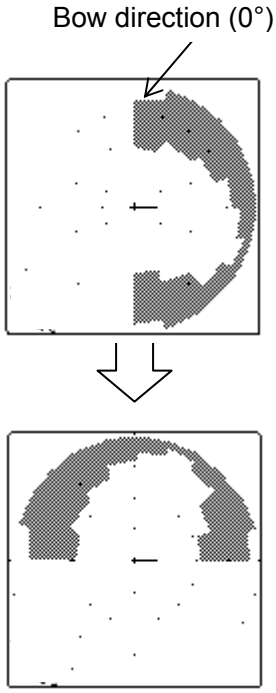
4. Turn (knob/left) to select the setting value from [-180.00] to [180.00].

5. Press to close the menu.

Example: How to correct the bow direction (90° setting)

1. Turn (knob/left) to select the value of [90.00].

2. Press to close the menu.



The display is turned by 90° counterclockwise.

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Chapter 3 Maintenance

3.1 Inspection

The daily maintenance and inspection extend the life of equipment. To keep the equipment always in the best conditions, implement the periodical inspection shown in the table below.

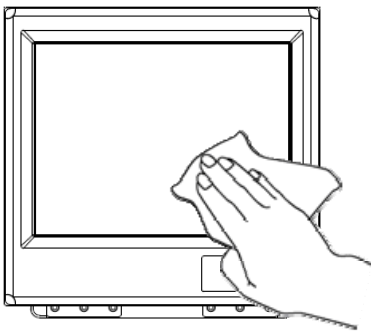
Item	Inspection item
Connectors at the rear of the Display unit, Hull unit and Processor unit	Check the looseness
Wiring of cables	Check the wiring of cables connecting the equipment and the damage of cable
Grounding of Display unit, Hull unit and Processor unit.	Scrape the rust off the ground terminal and keep good contact.

3.2 Cleaning

3.2.1 Monitor / Processor units

Contamination on the screen may cause faint images. For cleaning the screen, wipe it with soft and clean cloth dipped in diluted neutral detergent. Pay full attention as the screen gets scratched easily. No solvent such as thinner shall be used.

Caution	**The display screen has a special coating. Do not use a solvent such as paint thinner, acetone, alcohol, and benzene, etc. Strong rubbing may cause scratch.**



Example of Monitor unit: Owner supply

For cleaning the chassis, do not use solvent such as thinner or alcohol. Painting on the surface and characters at the operation unit may be dissolved. After wiping with soft and clean cloth dipped with diluted neutral detergent, wipe away with dry soft and clean cloth.

3.2.2 Hull unit

As for the inspection of the TD tank and the TD shaft, inspect the appearance and the hoisting and lowering operation. When the mooring period becomes long, shells and oil may adhere to the inside of the TD tank. Pay attention that some adherence may cause abnormal operation.

3.3 Fuse replacement



Use the specified fuse. If you use a fuse other than specified one, it may cause a serious accident.

Fuse blows out when such as a trouble occurs inside at too high input voltage or over current. The fuse is located on the back panel of the Processor unit and Hull unit. Please replace with the fuse listed in the list of standard components.

3.4 Diagnostics of troubles

In this section, simple procedures to find out troubles are mentioned to locate the troubles on boat.

3.4.1 Necessary information for requesting repair

Please inform of the following points:

(1) Name of ship, and telephone number, if a satellite communication system is equipped.

(2) Failed equipment name and type name

(3) Equipment serial number

(4) “Version number. of system software” displayed on “Title screen”

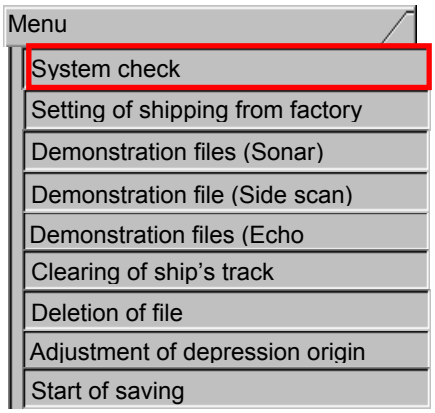
(5) Next calling port and name of sales agent, telephone number, Fax number, e-mail address, etc.

(6) Details of failure (as much as possible) and failure diagnostics results on board, as well as operation conducted, in particular, until the failure or when the failure occurred.

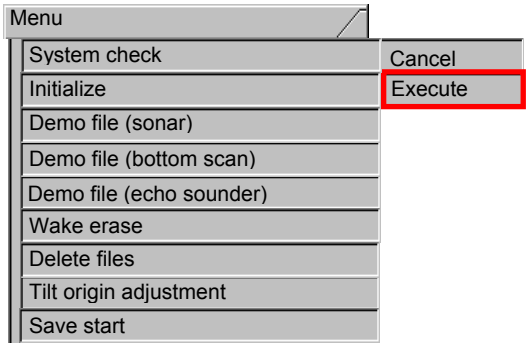
3.4.2 System check

The system can be checked by maintenance menu.

1. Press MENU for a while to display the maintenance menu.



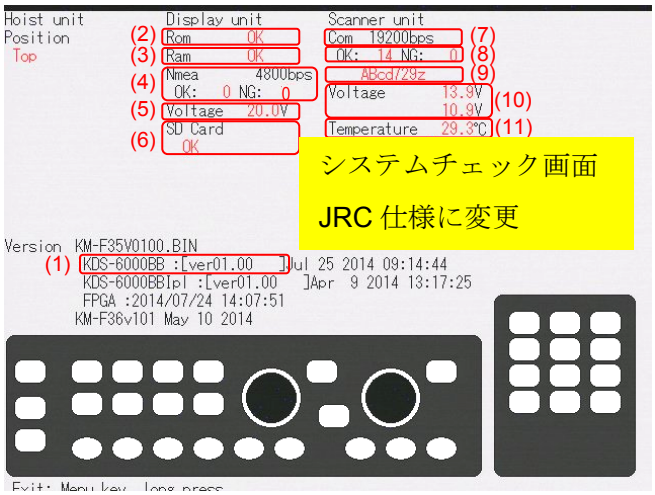
2. Turn (knob/left) to select [System cheek].
3. Press or ENT
4. Turn and select [Execute] to conduct system check or [Cancel] not to conduct system check.



5. Press or ENT to confirm.

When [Cancel] is selected, the screen returns to the maintenance menu.

When [Execution] is selected, the system check screen is displayed.



The system condition is displayed as shown in the figure above.

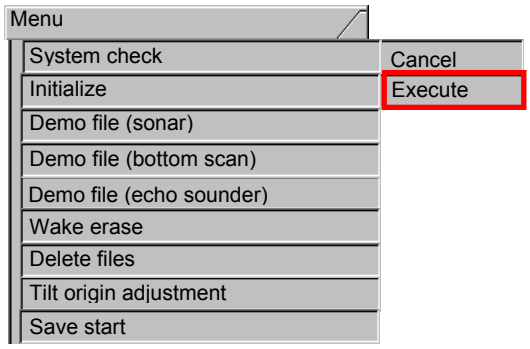
(1) JFP-185: [ver.**.**]
Program version
(2) ROM check
(3) RAM check
(4) NMEA I/O output: Loop check
(5) Voltage check: 10.8 to 31.2 V
(6) SD card check
(7) Baud rate of Transducer unit
(8) Communication state of Processor unit:
At normal: Count of number of OK
At abnormal: Count number of NG
(9) Receiving data
(10) Confirmation of voltage (Transducer unit)
Upper: High, Lower: the value of 15.5V or higher is indicated.
(11) Water temperature: ± 2˚C
Value of temperature
(12) Origin (Condition of origin detection)
At normal: OK
At abnormal: NG

6. Press MENU for a while to display the maintenance menu.

3.4.3 Setting at factory

This is the setting to return the various settings to the state at shipping from the factory.

1. Press MENU for a while to display the maintenance menu.
2. Turn (knob/left) to select [Setting at shipping from factory].
3. Press or ENT .
4. Turn and select [Execute] to initialize or [Cancel] not to initialize.
5. Press or ENT to confirm.



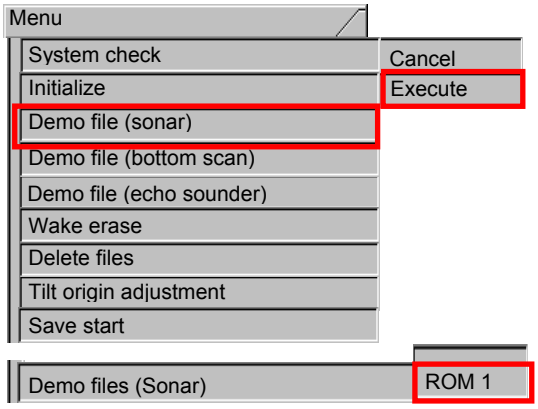
When [Cancel] is selected, the screen returns to the maintenance menu.

When [Execute] is selected, initialization is conducted and a message of “Executed” is displayed to return to the maintenance menu.

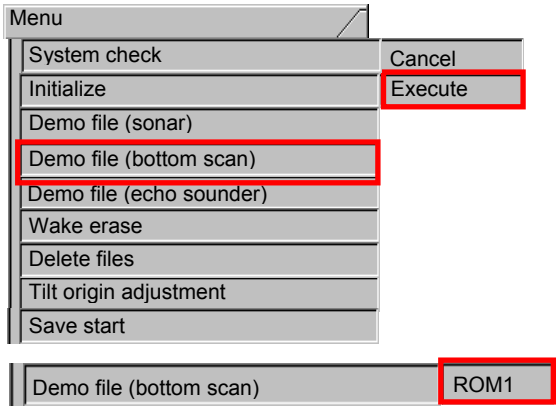
3.4.4 Other maintenance menu

Other maintenance menus are as follows:

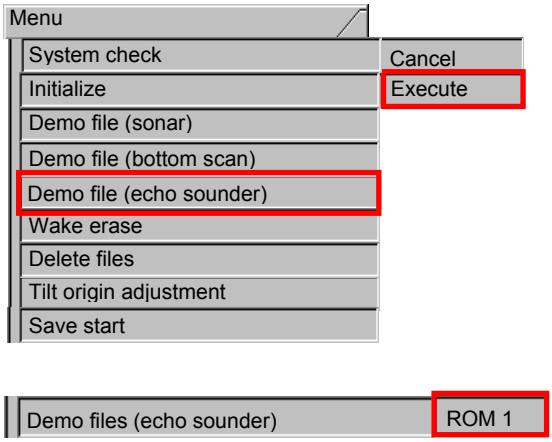
1. Demo files (Sonar)



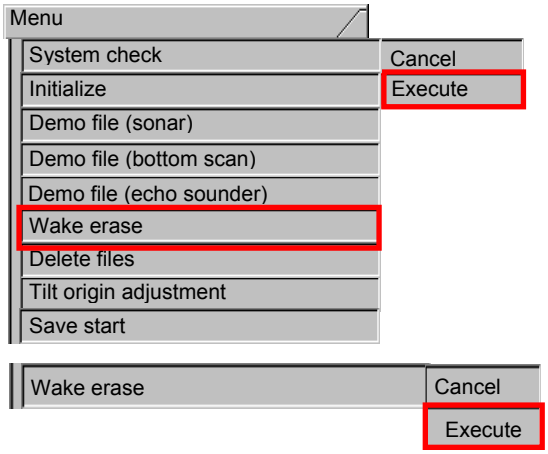
2. Demo file (bottom scan)



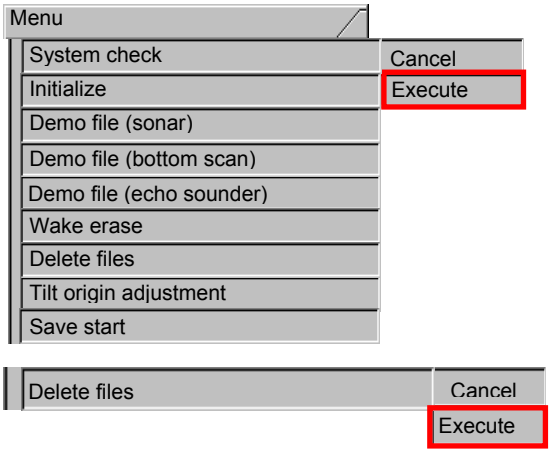
3. Demo files (Echo sounder)



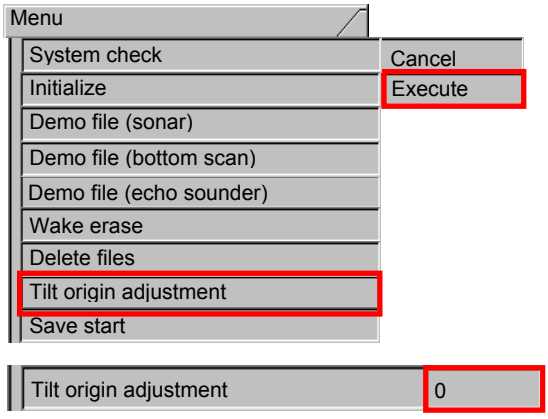
4. Wake erase



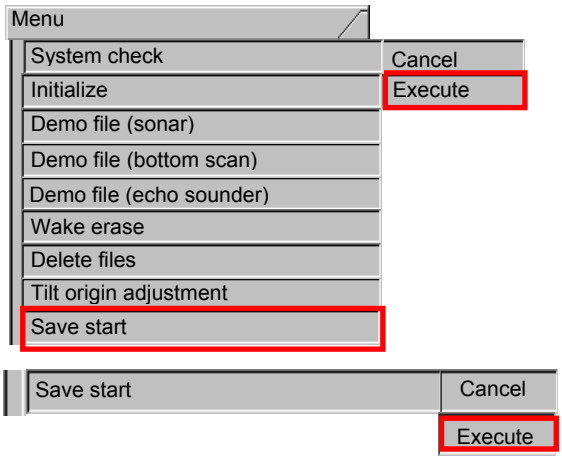
5. Delete files



6. Tilt origin adjustment



7. Save start



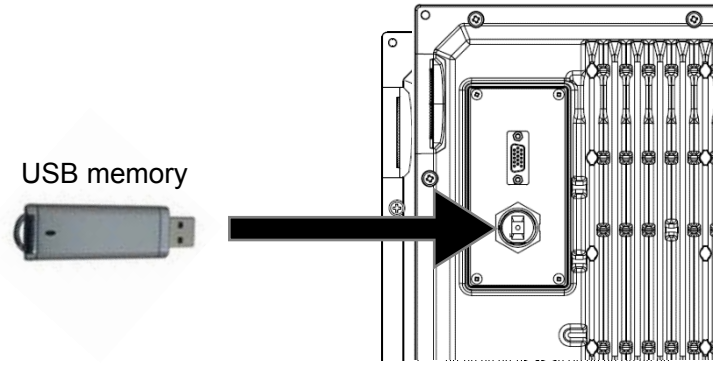
3.4.5 Update of programs

The updating of programs can be performed (Please consult with the selling agent).

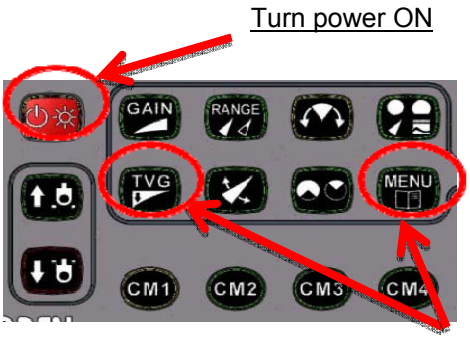
The items to be prepared:

- Software: F35 VXXXX.bin
- Media: USB memory

1. Store the F35VXXXX.bin file into the route directory of the USB memory.
2. Insert the USB memory into the USB connector provided on the back panel of JFP-185 Processor unit (DPU-610).
   (Do not use a USB Hub because it may lead to failures.)

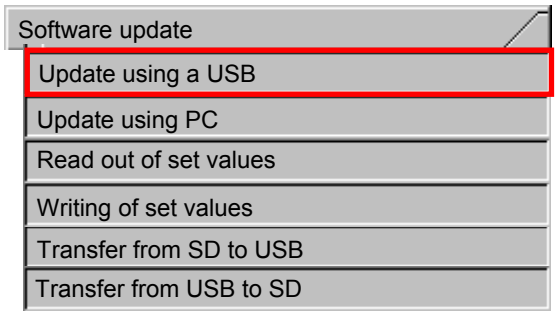


3. Turn power ON with [MENU] and [TVG] keys pressed simultaneously.

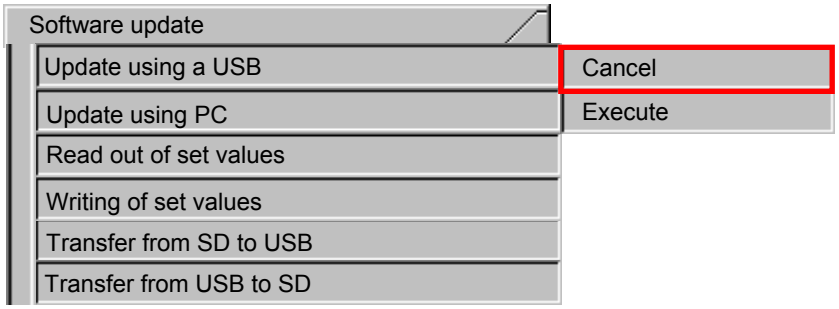


with [MENU] and [TVG] keys pressed simultaneously.

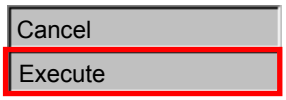
4. The following menu appears:



5. Select [Update using USB] and press ENT.
6. The following screen is displayed.



7. Select [Execute] and press ENT.



8. The flowing screen is displayed and the effective software in the USB memory is searched.



* When software in the USB is searched again, please press GAIN key.

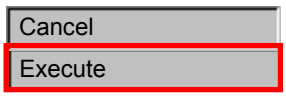
9. If a file is found, the selected item is displayed.



10. Select the file to be updated and press ENT.



11. Select [Execute] and press ENT.



Update starts. Please wait for a while.



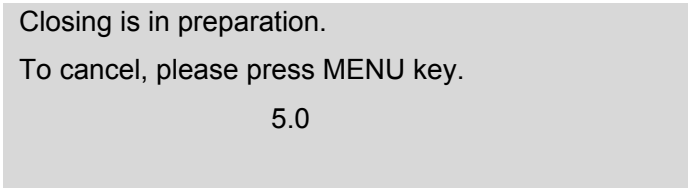
12. When update is successful, the following display appears.



Press  for a while to switch OFF the power.

※ Power OFF can be cancelled by  .

When the power is OFF, the following screen is displayed:



13. When closing failed, the following screen appears:



After the above screen has been displayed, try again the update without switching off the power.

※ When USB memory is changed, press GAIN key to search the software. Repeat the steps of Items 8 to 13.

When the update is completed, press  for a while to turn OFF the power.

Caution: After confirmation of the power OFF, pull out the USB memory from the connector.

14. For other functions

Update by PC	Using PC and COM port, software update is performed.
Read-out of setting values	The set values of JFP-185 is read into a USB. They are stored in the file named " F35SET00.SAV".
Write-in of setting values	The set values stored by "Read-out of the set values" are reflected in JFP-185 main body. The files of F35XXXXX.SAV are searched through USB route folder. Plural files can be selected by renaming of F35SET00.SAV files. XXXXX is arbitrary alphabets or numerical figures.
Transfer from SD to USB	The files in particular folders of the internal SD are downloaded to a USB. Particular folders (¥DEMO, ¥SYSTEM)
Transfer from USB to SD	The files in particular folders of the USB are uploaded into the internal SD. Particular folders (¥DEMO, ¥SYSTEM)

3.5 If you suspect a trouble

Symptom	Possible cause of failure	Measure
Power is on, but nothing is displayed.	・Fuse is melted down. ・Power voltage is outside of the specified range (10.8 to 31.2 VDC). ・The connection between a power cable and battery is faulty.	・Replace the fuses. (Refer to “3.3 Fuse replacement”) ・Use power source within the specified range. ・Check the connection between the power supply cable and the battery.
Starting up, but nothing is displayed.	・The connections to a monitor unit, Processor unit and Hull unit are faulty. ・The LCD on a monitor unit is faulty.	・Check the connections to the monitor unit, Processor unit and Hull unit. ・Please report to the selling agent or a sales office.
Interference and noise are severe.	・The Transducer unit system is faulty. ・Interference from echo sounders on other ships	・Check the installation of the Transducer unit, etc. (Refer to “1.5 Installation of Hull unit”) ・Implement interference elimination.
Displays of water temperature and ship’s speed are abnormal or they are not displayed.	・The connections at connectors of a Transducer unit are faulty. ・The input sources of water temperature and ship’s speed are abnormal.	・Check the connection to the connector of the Transducer unit. ・Check the input source.
Display of the present position and the course Is abnormal or they are not displayed.	・The connection between this equipment and the navigation equipment is faulty.	・Check the connection between this equipment and the navigation equipment.

アスベストは使用しておりません
Not use the asbestos

CODE No.

For further information,contact:

JRC *Japan Radio Co., Ltd.*
Since 1915

URL http://www.jrc.co.jp
Marine Service Department
Telephone : +81-3-3492-1305
Facsimile : +81-3-3779-1420
e-mail : tmsc@jrc.co.jp
SEATTLE Branch
Telephone : +1-206-654-5644
Facsimile : +1-206-654-7030
e-mail : marineservice@jrcamerica.com

ALPHATRON
Alphatron Marine BV

URL http://www.alphatronmarine.com
Rotterdam (Head office)
Alphatron Marine B.V.
Telephone : +31 (0)10- 453 4000
Facsimile : +31 (0)10- 452 9214
e-mail : service@alphatronmarine.com
Singapore Branch
Alphatron Marine Systems Pte Ltd
Telephone : +65 6863 0335
Facsimile : +65 6863 3305
e-mail : service@alphatronmarinesystems.com

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