

No. : OM-E2323-1A

FURUNO

OPERATOR'S MANUAL

SCANBEAM SOUNDER

MODEL FE - 1280

(Recorder Unit)



FURUNO ELECTRIC CO., LTD.
NISHINOMIYA, JAPAN

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1. A WORD TO FURUNO FE-1280 OWNERS:

Congratulation on your choice of the **FURUNO FE-1280, FCV-10** Scanbeam Sounder! For over 40 years Furuno Electric Company has enjoyed an enviable reputation for quality and reliability throughout the world. This dedication to excellence is furthered by our extensive global network of agents and dealers.

The **FURUNO FE-1280** is designed and constructed to give the user many years of trouble-free operation. However, to obtain optimum performance from this unit, you should carefully read and follow the recommended procedures for installation, operation and maintenance. No machine can perform the utmost of its ability unless it is installed and maintained properly.

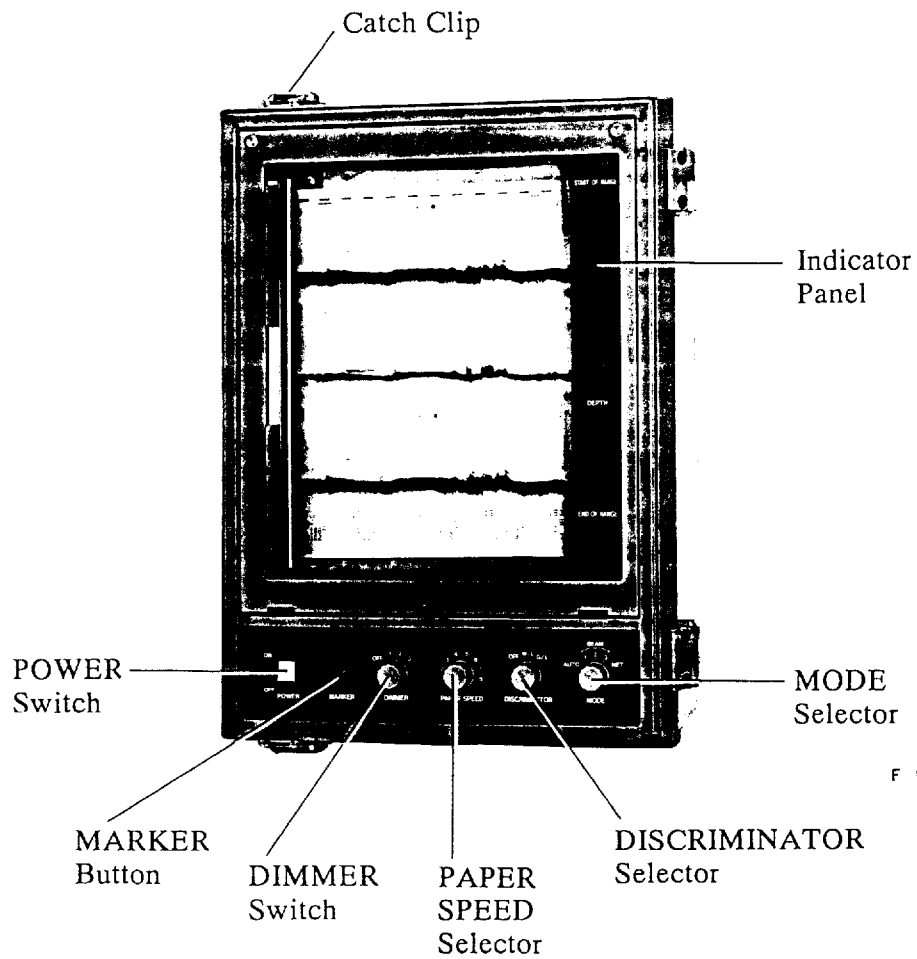
Thank you for considering and purchasing Furuno equipment.

Features

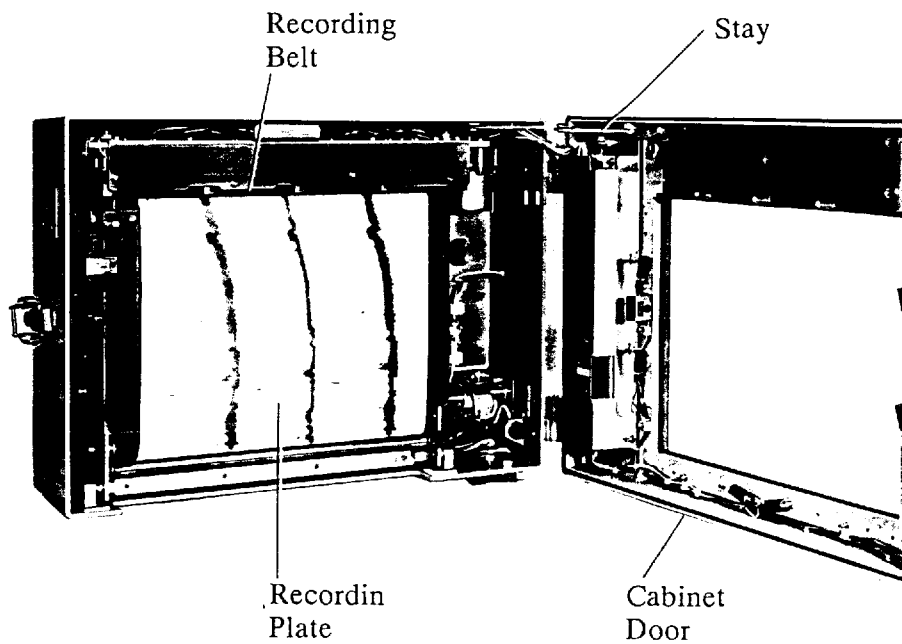
- Advanced signal processing circuit produces wide dynamic range recordings comparable to that of the scanbeam sounder. You'll always have detailed information on fish density and the nature of the bottom.
- Recording belt speed is automatically selected according to the depth range in use, ensuring a proper intensity recording under all conditions.
- The recording belt driving mechanism and recording stylus have sophisticated electronic technology to produce stable recordings.

2. FRONT AND INSIDE VIEWS

Front View



Inside View



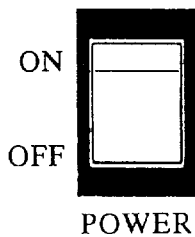
3. OPERATION

The **FE-1280** is a repeater recorder unit for the FCV-10 display unit. It's simple to operate and most major functions can be set on the front panel controls of the FCV-10. Therefore, please read the operator's manual of the FCV-10 before operating the FE-1280.

NOTE: The FE-1280 does not work unless the FCV-10 is turned ON.

Turning Power On/Off

POWER Switch



Turn on the FCV-10 display unit. Then, turn on the FE-1280 to commence recording.

To turn off the unit, press the **POWER** switch.

NOTE: The FE-1280 stops operating when the FCV-10 display unit is turned off.

Drawing Reference Mark On Recording Paper

MARKER Button

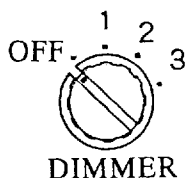


This control marks a straight line and navigation data (navigation equipment required) on the recording paper. It is useful for marking an important echo for later reference and checking for proper contact between recording stylus and recording paper. Each time the control is pressed plotting of ongoing data is suspended and plotting of new data begins.

NOTE: Latitude/longitude data are not plotted unless navigation equipment is connected to the display unit of FCV-10 system.

Adjusting Illumination Recording Paper

DIMMER Switch

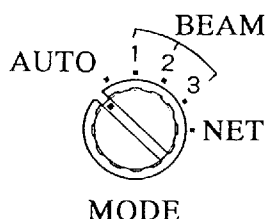


The **DIMMER** switch selects illumination of the recording paper in four steps; **OFF**, 1, 2, 3. The 3-position is the highest brightness.

NOTE: If illumination is insufficient, add lamps into the lamp holders. For further details, see page 6.

Selecting Recording Mode

MODE Selector



The recording mode can be selected by the combination of the **MODE** selector and the display unit presentation mode as shown below.

MODE Switch	DESCRIPTION OF RECORDING MODE
AUTO	Records the same echoes as the display unit.
BEAM 1	Records either port, vertical, starboard direction echoes as selected by the TX DIRection switch of the display unit.
BEAM 2	In addition to the echoes in the direction selected by the TX DIRection switch, the vertical direction echoes are recorded.
BEAM 3	Records all three direction echoes; port, vertical and starboard, irrespective of the TX DIRection setting.
NET	Records the signals selected by the SUB MODE selector of the display unit. (Vertical/Pelagic Exapansion/Bottom Lock Expansion, Vertical/NET UP/NET DN, Vertical//NET DN, Vertical/External Echosounder 1/External Echosounder 2, Vertical/External Echosounder 1 or 2.(*))

*NOTE: * External echosounder 1 or 2 is selected by EXT SEL of the DISPLAY menu in the display unit.*

Selecting Paper Speed

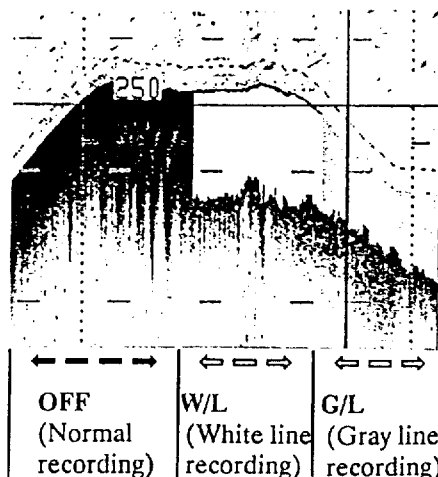
PAPER SPEED Selector

Turn the **PAPER SPEED** selector clockwise to increase the paper advance speed. The speed varies depending on the selected display range. For example, it varies from 7.3 to 22 mm/min. in the shallowest range, and 1.1 to 3.1 mm/min., the deepest range.

Selecting White Line or Gray Line Effect

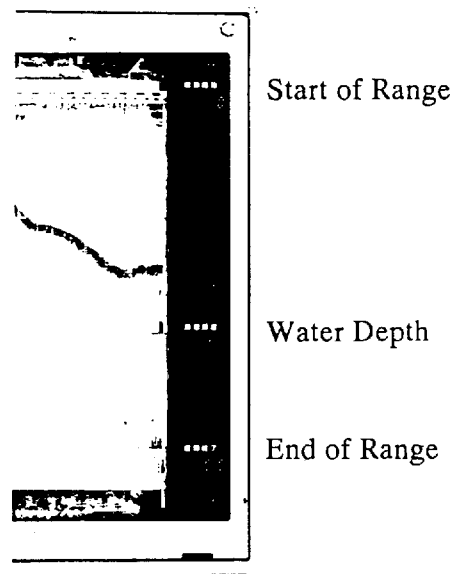
DISCRIMINATOR Selector

This selector identifies fish schools near or in contact with the seabed, by ensuring a white or gray area between seabed and fish echo. Three positions are available: **W/L**(White Line), **G/L**(Gray Line) and **OFF**. Select it according to your preference. Below is an example of recordings for three positions of OFF, W/L, G/L.

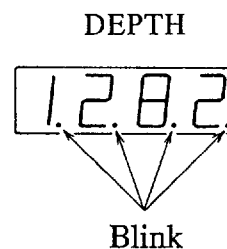


Digital Depth Indicator Panel

Start of Range Indicator	Indicates the start depth of the recording which is set by the SHIFT key on the display unit. To change it press the SHIFT + or - key for the desired depth.
End of Range Indicator	Indicates the end range of the recording. It is set by the RANGE switch and SHIFT + or - key on the display unit.
Water Depth Indicator	Indicates water depth.



NOTE: If there is no depth data because the FCV-10 is not detecting a seabed echo, four decimal points blink while the last depth reading remains displayed. To restore depth data, increase the receiver sensitivity so that a seabed echo is acquired, by adjusting the GAIN, TVG and CLUTTER switches.

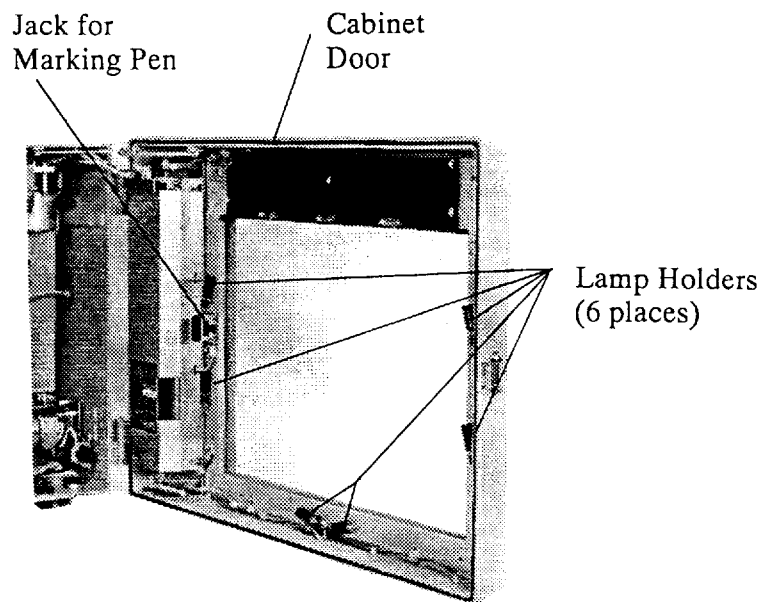


Accessories

Marking Pen	A marking pen is provided to write memos directly on the recording paper. Plug it into the jack and write on the recording just as you would write with an ordinary ballpoint pen.
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Illumination Lamps

Six illumination lamp holders are on the rear of the front panel, and two of them have illumination lamps inserted into them. To increase illumination, add lamps to empty holders.



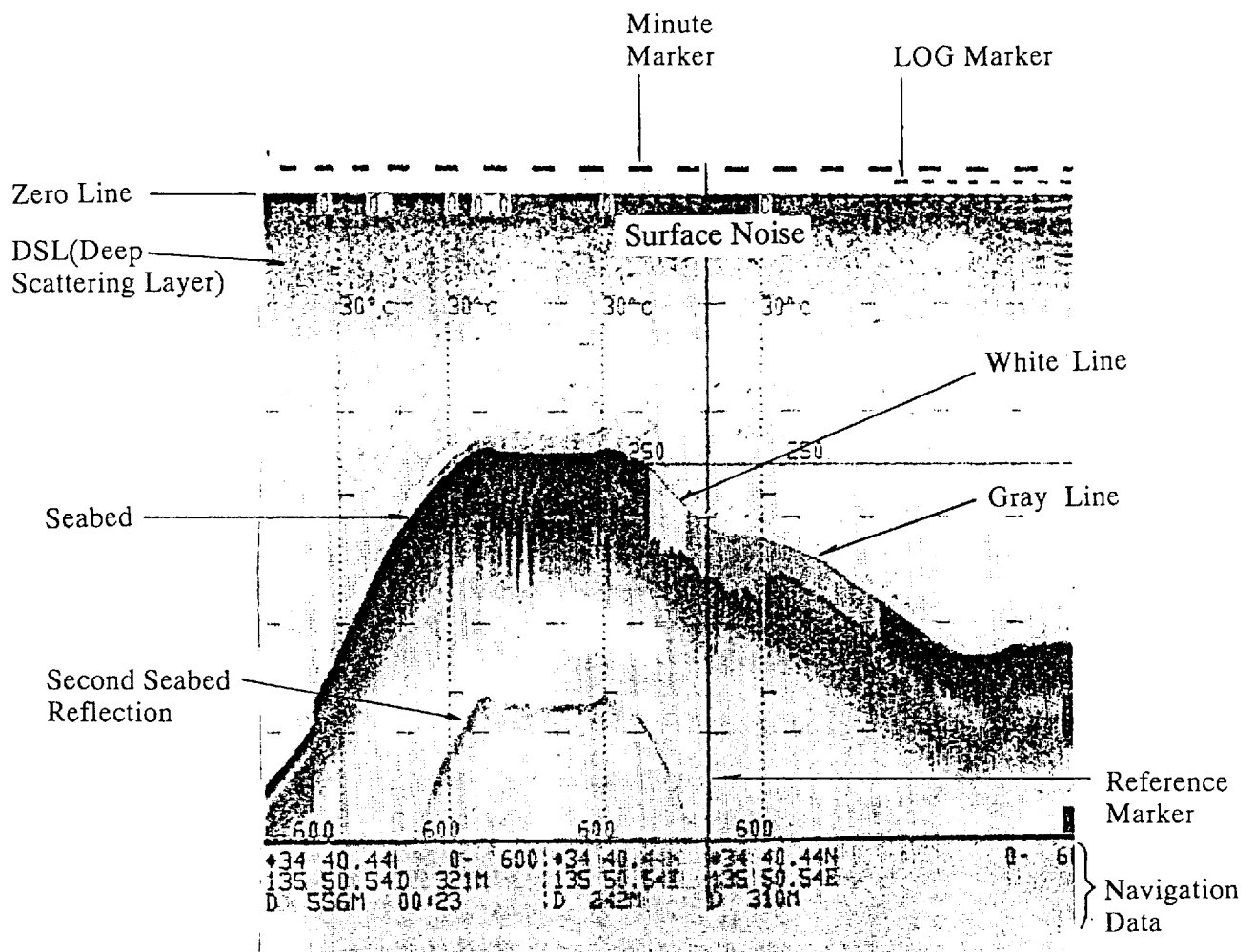
4. OPERATING PROCEDURE

Below is the operating procedure for plotting the recording on the recording paper of the FE-1280.

- Step 1** Load the recording paper referring to page 14. Do not turn on the **POWER** switch without loading the recording paper, or the recording panel may be scratched by the recording stylus.
- Step 2** Turn the **POWER** switch **ON** after turning on the display unit.
- Step 3** Adjust illumination by the **DIMMER** switch.
- Step 4** Select recording mode by the **MODE** selector.
- Step 5** Select paper speed by the **PAPER SPEED** selector.
- Step 6** When you need to discriminate fish echoes from the seabed, operate the **DISCRIMINATOR** selector.

5. INTERPRETING RECORDING

Example of Recording (One Sounding Beam)

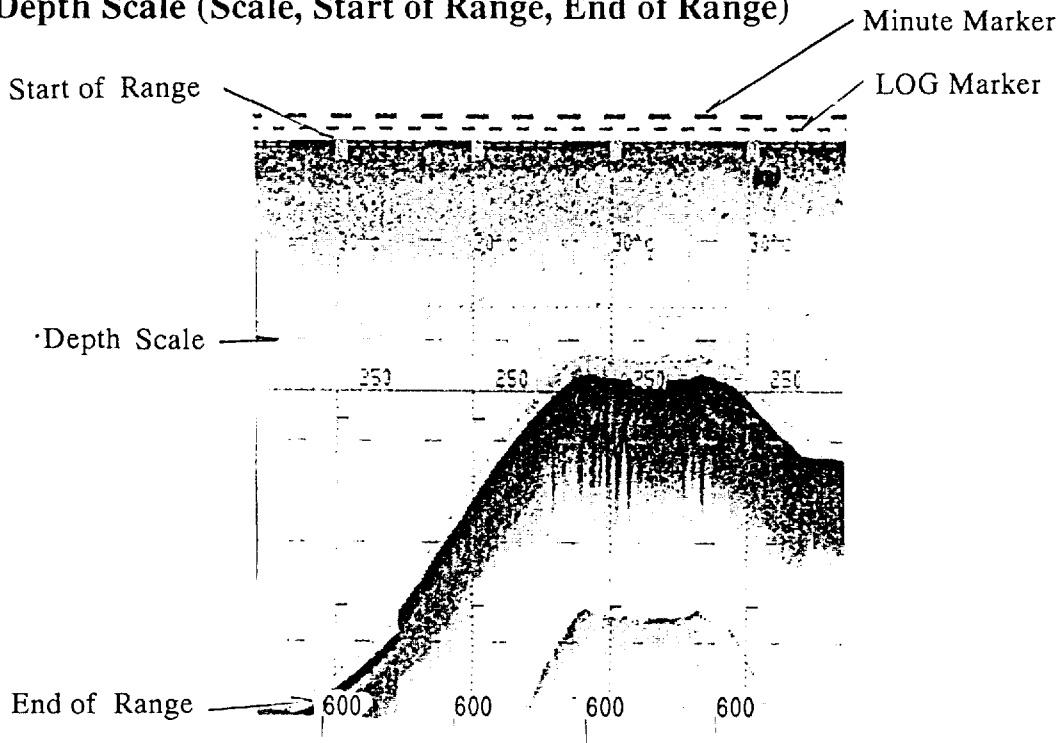


*1 Water temperature scale available with temperature indicator connection.

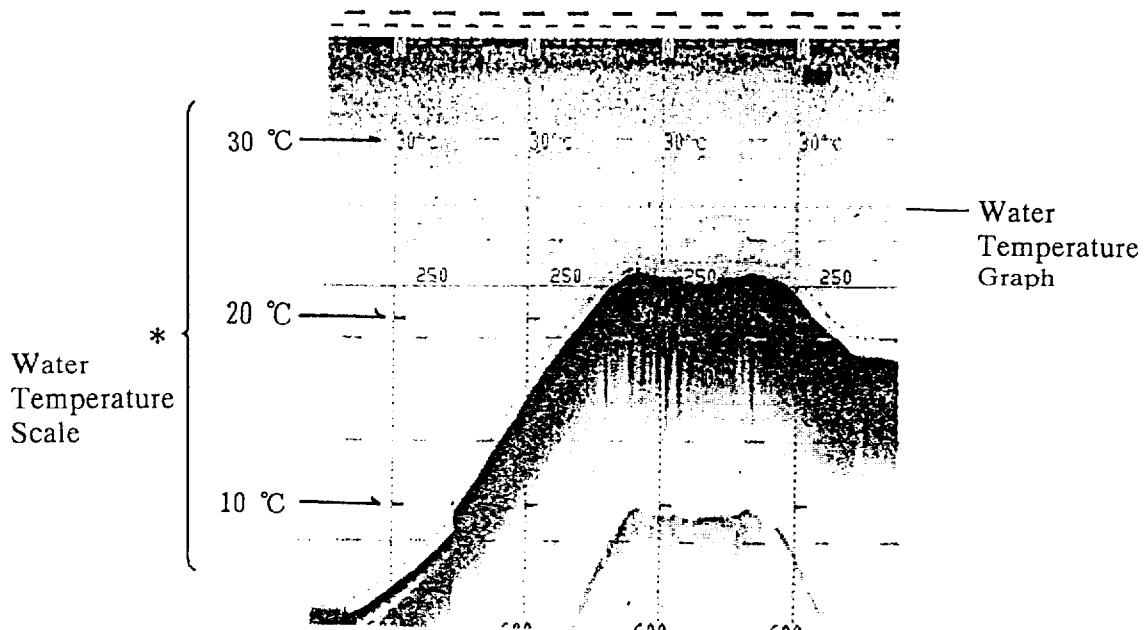
*2 LOG marker indication available by ship's speed input from a speed log or navigation equipment.

Description of Various Markers

- Minute Marker
- Log Marker
- Depth Scale (Scale, Start of Range, End of Range)



- Water Temperature Scale



NOTE: Water temperature scale is plotted when temperature data is fed from a water temperature indicator or a navigation equipment to the display unit.

Description of Navigation Data

Navigation data appears on the bottom of the recording paper.

Example

● Latitude	34 12.34N	● Time	18:04J
● Longitude	134 08.79E	● Range	0 – 100
● Depth	D 125M	● Water Temperature	+12.3 °C
● Course	TC125°	● Speed	9.0KT
● Date	06/15		

NOTE: Ship's position can be shown in LOP TD's (Line of Position Time Differences by Loran Receiver) instead of latitude/longitude by the INITIAL menu on the FCV-10.

If there is no navigational equipment to the FCV-10.

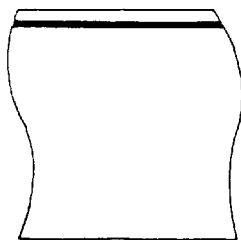
Example

● Range	0 – 100
● Depth	D 125M
● Elapsed Time	04:35

NOTE: Counting of Ship's travelling time begins after turning on the POWER switch or pressing the MARKER button.

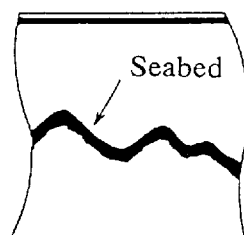
Echograms on the Recording Paper

Zero Line



This line is created by leakage of the transmission pulse, and plotted at the top of the recording paper. Note that it does not show the position of the seabed surface, but of the transducer fitted on the ship's hull bottom. To obtain an exact depth from the sea surface, add ship's draft to the indicated depth.

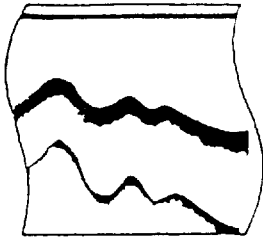
Seabed



It is marked by a comparatively dense black line. Its density and width vary depending on the hardness of the seabed.

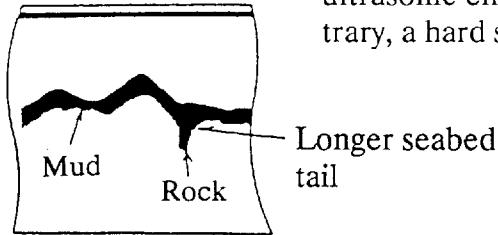
Multiple Reflections

In shallow water, a stiff seabed causes the second and sometimes third echo trace. This is because by the sounding pulse travels between seabed and seasurface twice or more. An unwanted reflection can be rejected when the receiver sensitivity by the GAIN control of the display unit.



Bottom Features

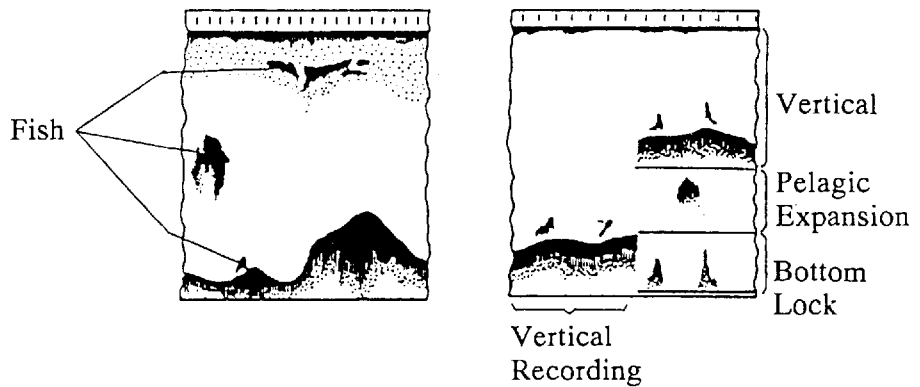
Generally speaking, muddy or soft seabed absorbs most of the pulse's ultrasonic energy. Thus such a seabed is marked faintly. On the contrary, a hard seabed draws a stronger and longer seabed tail.



Fish

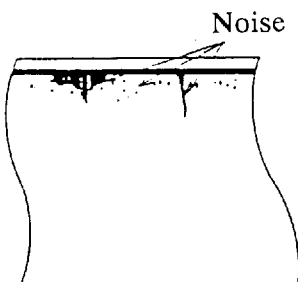
Fish echoes are plotted between the zero line and the first seabed reflection. Note that the zero line is not plotted on the recording paper when the display range is shifted. The figure shows surface fish near the zero line and bottom fish around the seabed contour. Fish in the intermediate depth are called middle fish.

Middle fish can be observed more easily by selecting the BOTTOM LOCK or PELAGIC EXPANSION mode on the FCV-10.

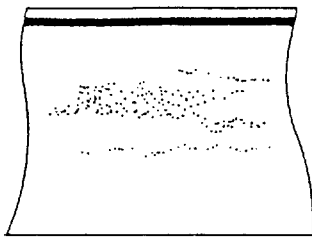


Surface Noise

This noise is caused by airfoam or debris near sea surface when the display unit's sensitivity is increased to detect small fish target. Adjusting the TVG control may help to reduce it.



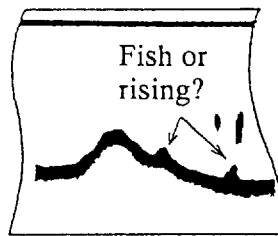
DSL (Deep Scattering Layer)



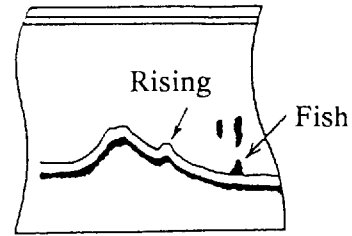
Innumerable minute patches or haze-like trace in a wide area between the zero line and seabed are produced by plankton layer, or DSL. The DSL appears as a single or sometimes multiple layers and may be plotted for a long period of time. Generally the DSL stays near the surface at night and near the bottom by day. The DSL is an indication of good fishing area.

Discrimination of Bottom Fish

The DISCRIMINATION switch discriminates bottom fish from the seabed echoes. Fig.(a) does not show whether two risings from the seabed are fish or not. Fig. (b), with the DISCRIMINATOR switch adjusted, shows clearly that they are a part of the seabed or fish.



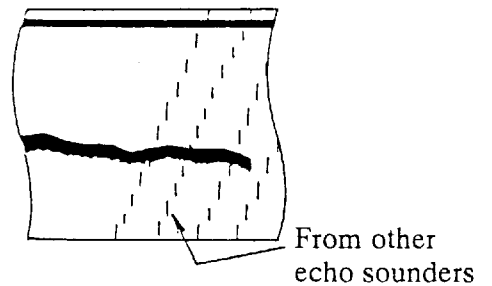
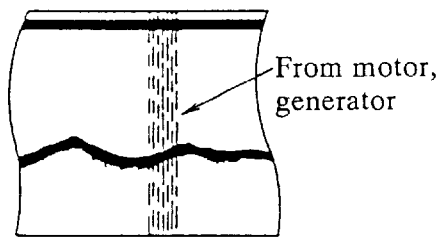
(a)



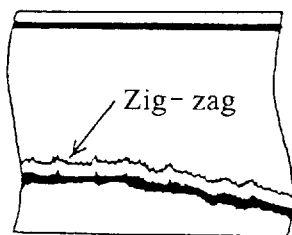
(b)

Interference

Interference may be caused by ship's engine, electric apparatus, or ship's vibration, or other echo sounders on board own ship or approaching boats. If the noise source is in own ship, try to relocate offending devices. For other ship's noise, the interference rejector on the FCV-10 can remove some noises forms.



Pitching and Rolling

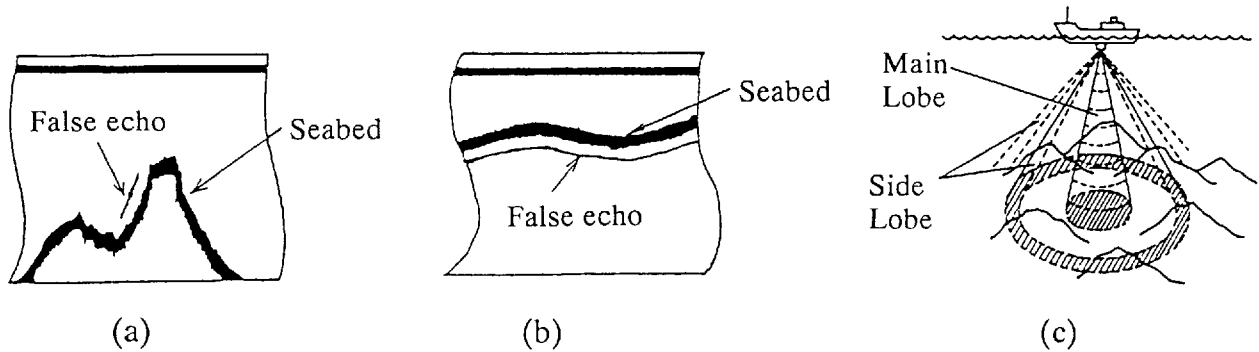


If ship's rolling and pitching is great due to rough sea condition, seabed trace is plotted zigzag like the teeth of a saw. This is caused by the fact that the sounding pulse changes its direction according to ship's rolling and pitching.

NOTE: To stabilize recordings against pitching and rolling, turn ROLL CALIB ON in the TRANSMITTER menu of the display unit.

Sidelobe Reflection

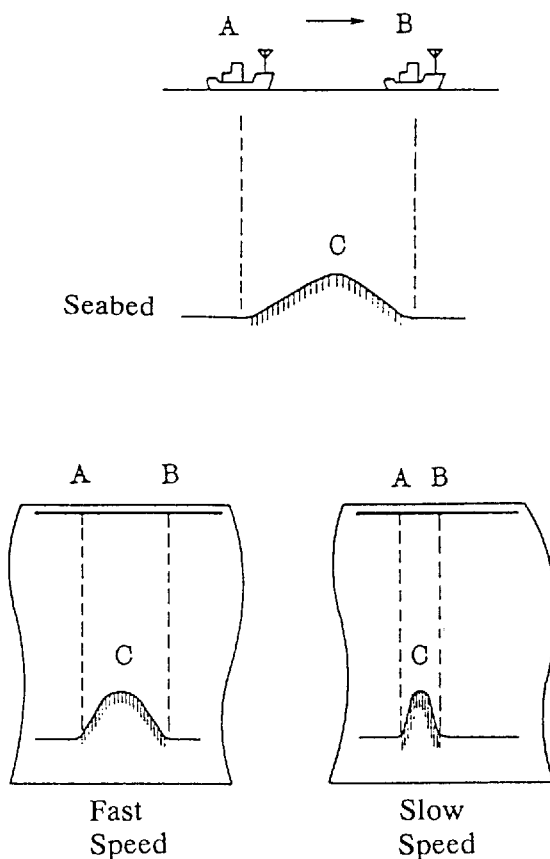
If the seabed inclines suddenly like Fig. (a), weak seabed echo is traced as a false echo. If the seabed is flat like in Fig.(b), this false echo is plotted below the seabed contour. In this case, a sidelobe echo is plotted in parallel to the seabed contour. However, it may be plotted above the seabed contour in some directions of sounding pulse.



Paper Speed Versus Recording

The paper speed is automatically set according to the transmission repetition rate at the selected depth range. In addition, it is varied in eight steps by the PAPER SPEED switch. As ship's speed is increased, the seabed shape changes at the shorter interval. Therefore, a faster paper speed is necessary when the ship's speed goes higher. Otherwise, its recording is reduced too much and detailed observation becomes difficult.

On the other hand, the transmission repetition rate can be changed by the TX PRR in the TRANSMITTER menu of the display unit. If it is set to the LOW position, the paper speed decreases.

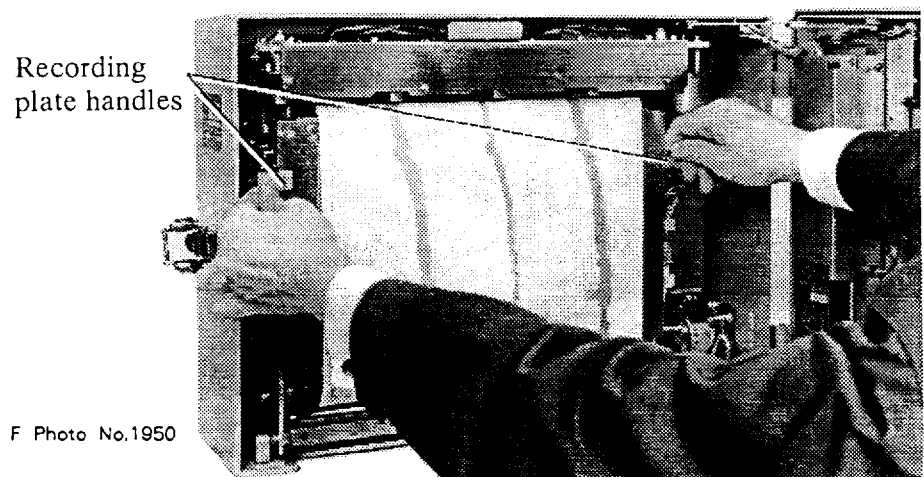


6. LOADING OF RECORDING PAPER

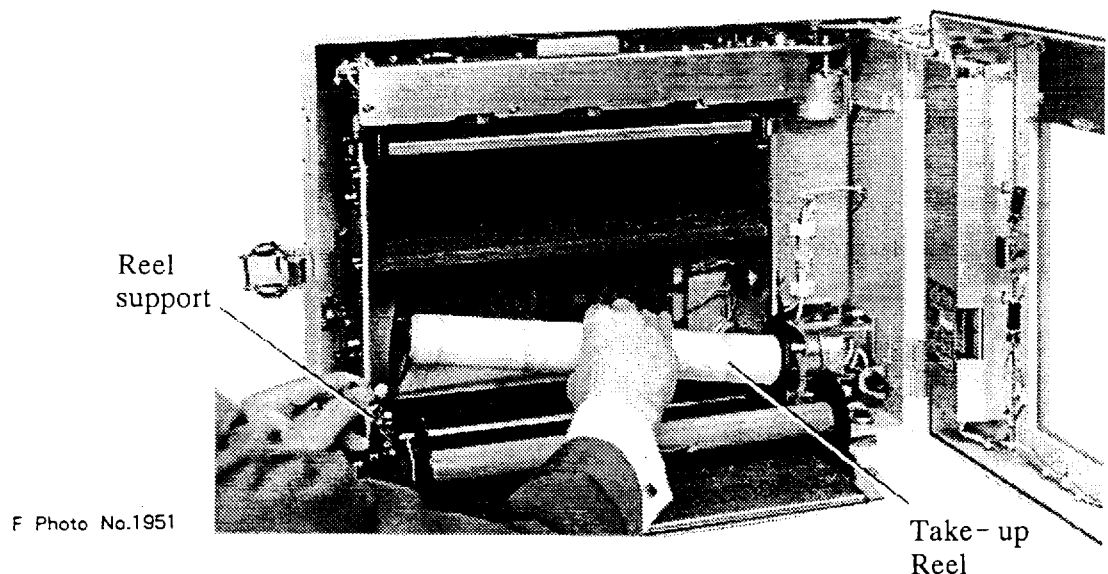
When about 1 meter of the recording paper is left, a red mark appears on it.

CAUTION: The recording stylus will be damaged if the recorder is operated without the recording paper. Always make sure there is recording paper in the unit before operating it.

- 1 Turn the **POWER** switch **OFF**.
- 2 Open the cabinet door of the recorder unit. Insert the attached safety screw into the screw hole to keep the door open.
- 3 Ensure that the recording stylus is not on the recording plate. If it is, rotate the recording stylus until it is not.
- 4 Pull the recording plate handles forward.

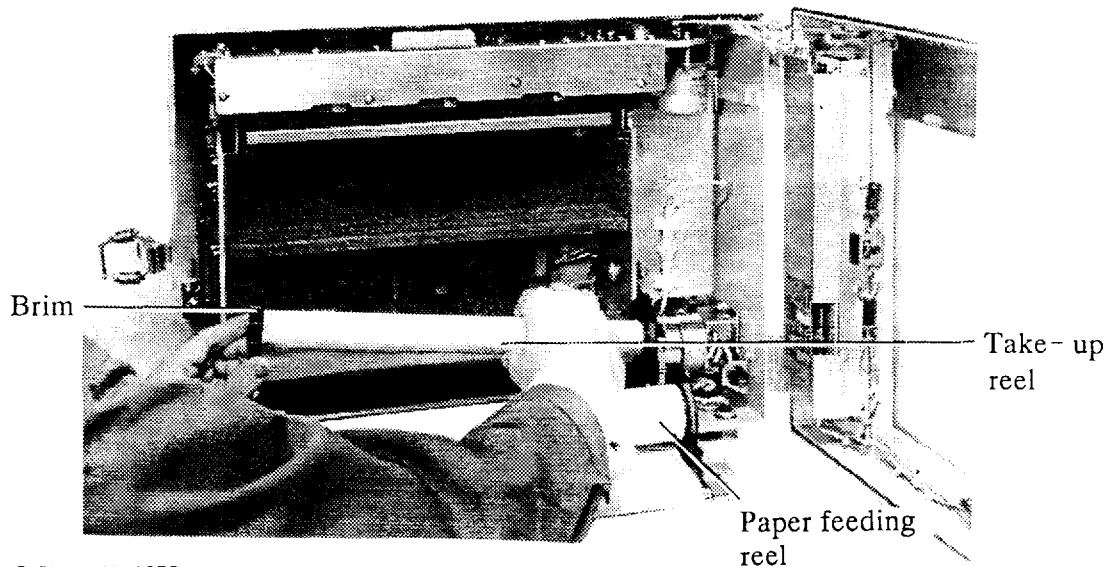


- 5 Remove the paper take-up reel pulling the reel support outward and winding up the remaining of the paper.



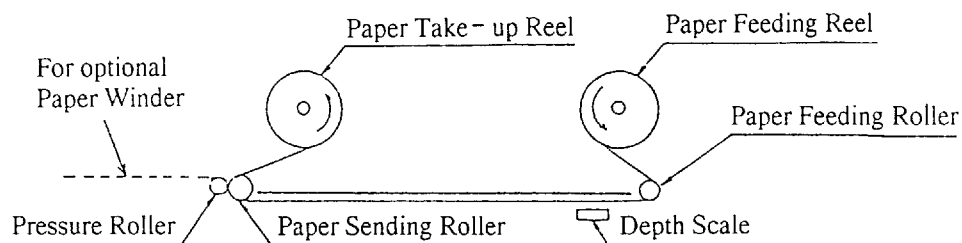
6 Take off the used paper roll.

7 Insert a new paper roll into the paper feeding reel and set it to its reel support.



F Photo No.1952

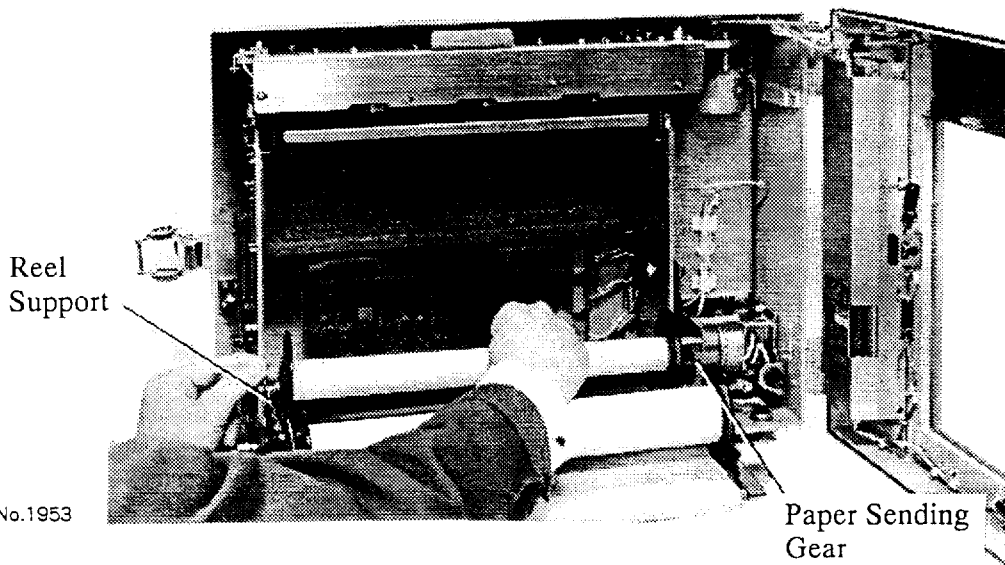
8 Pass the recording paper below the depth scale and between paper sending roller and papper pressure plate as shown in the Fig. below. Insert its end into the take-up reel.



9 Set the take-up reel to its reel support.

10 Reset the recording plate.

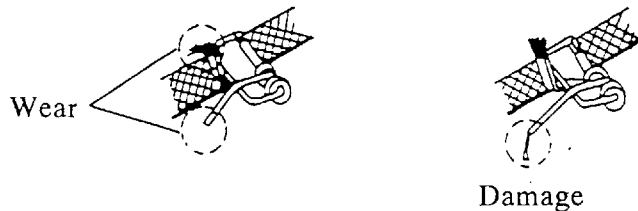
11 Rotate the paper sending gear to remove slack in the paper.



F Photo No.1953

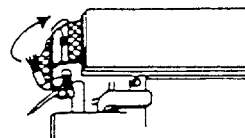
7. REPLACEMENT OF RECORDING STYLUS

A blurred recording is a sign of worn recording collector stylus. Replace them as soon as possible. A replacement recording stylus is supplied as spare parts.

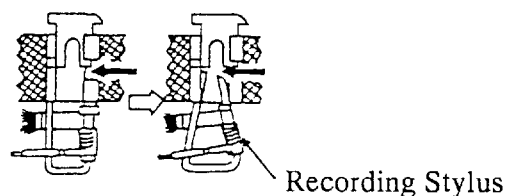


NOTE: Recording stylus lasts about 400 hours with continuous operation at the shallowest range.

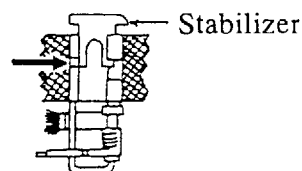
- 1 Rotate the recording belt in the normal rotating direction and stop it at the position shown in the figure.



- 2 Press the the end of the recording stylus in the arrow direction to release the recording stylus. Install a new recording stylus.

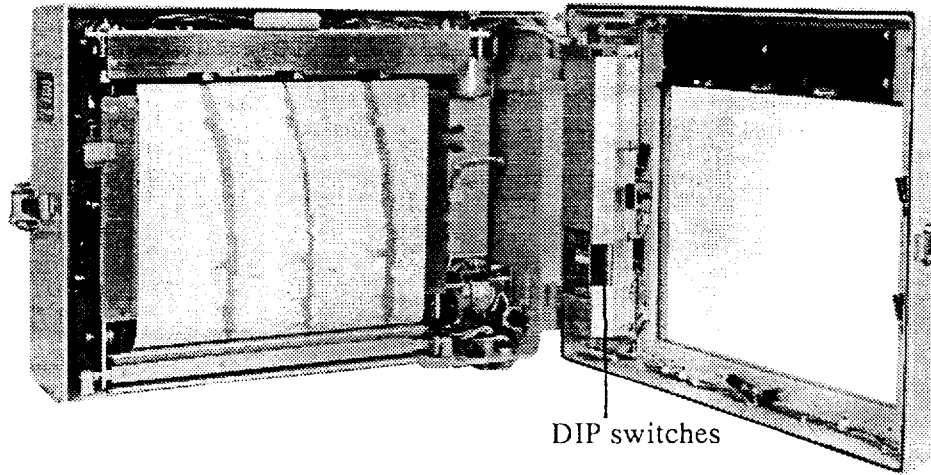


- 3 Press the the stabilizer in the arrow direction by using a small screwdriver, to release the recording stylus. Install a new recording stylus.



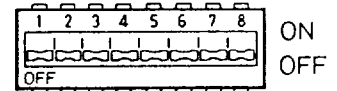
8. CHANGE OF SPECIFICATIONS

You can change the specifications of several items by DIP switches SW1 and SW2 at the rear of the control panel.



f Photo No.1949

DIP switches



DIP switch SW1 Setting

No.	ITEM	ON Position		OFF Position	
#1	STB (Recording Belt)	Stops.		Rotates. (*)	
#2	NC (Not connected)	-----		(*)	
#3	B/L (Bottom level)	Fixed width of area on white line and gray line		White line or gray line area varies with seabed echo strength. (*)	
#4	SCALE TEMP (Temperature scale)	Indicated. (*)		Not indicated.	
#5	PAPER FF (Forward feed)	Paper advances about 10 mm without recording when power is turned on. (*)		Paper starts advancing just after the power is turned on.	
#6	NC (Not connected)	-----		(*)	
	TEST MODE	PNL (Panel)	ROM	D/A (Demo)	D/A (Demo)
#7		ON	OFF	ON	OFF (*)
#8		ON	ON	OFF	OFF (*)

(*) denotes factory setting.

NOTE: This test commences when the POWER switch is turned on while pressing the MARKER button. Details of this test are explained on page 20.

DIP switch SW2 Setting

	BAUD RATE	9600 baud	4800 baud	2400 baud	
#1		ON	OFF (*)	OFF	
#2		OFF	ON (*)	OFF	
#3		OFF	OFF (*)	ON	
#4	NC (Not Connected)	-----			
	REC STEP (Recording Intensity)	1.5	2.0	2.5	3.5 (*)
#5		ON	OFF	ON	OFF (*)
#6		ON	ON	OFF	OFF (*)
	Recording width (mm)	268	272	274	270
#7		ON	ON	OFF	OFF (*)
#8		ON	OFF	ON	OFF (*)

(*) denotes factory settings.

9. SELF CHECK

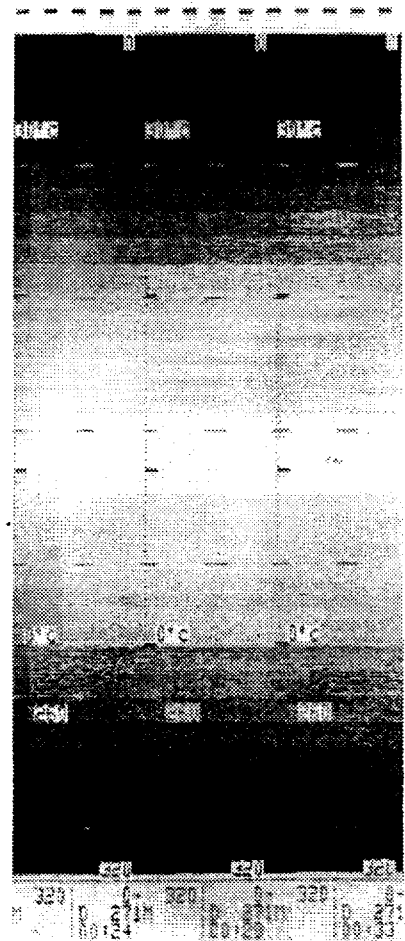
Self Check Diagnosis

The FE-1280 has a self check facility which checks it for proper operation. To start the self check, first set DIP switch S1 as shown in the table below. (See the drawing and photo on page 17 for the location of DIP switch S1.) Then, turn on the **POWER** switch while pressing the **MARKER** button.

DIP Switch SW1 Setting		CHECK ITEM	Refer to
#7	#8		
ON	OFF	Test pattern appears.	page 19.
ON	ON		
OFF	ON	ROM/RAM/LED checks	page 20.
ON	ON	PNL (control panel, DIP switch) check	page 20.

Plotting Test Pattern

The right figure is an example test pattern with the RANGE selector set to the 500 m range. The test pattern is prepared by inputting a test signal to the downward sounding circuit, the relevant signal processor, digital circuit, and recording mechanism for downward sounding.

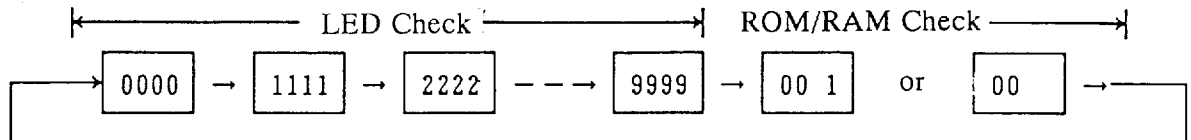


R Photo No. 504

ROM/RAM/LED Check

This check tests the ROM/RAM circuit on the MAIN (02P6091) and the depth indicator LEDs on the display panel for proper operation.

The test sequence of the LED and ROM/RAM checks is as shown below.

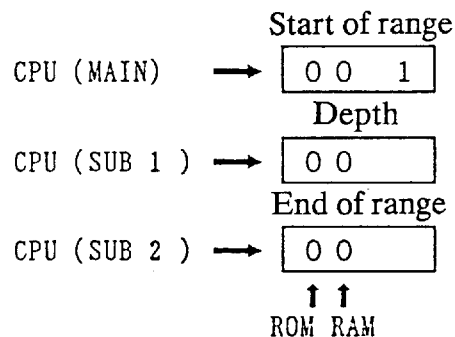


LED Check

It is normal if the LEDs count up from 0000 to 9999.

ROM/RAM Check

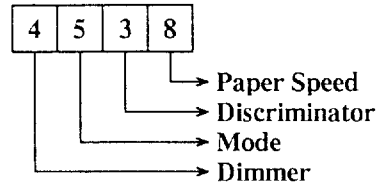
This test checks the three CPUs (MAIN, SUB 1, SUB 2) on the MAIN board. The results are shown by the START OF RANGE, WATER DEPTH and END OF RANGE indicator LED's the righthand LED shows 1 for normal operation, or the first and second LED's show 1 for error.



PNL (Control Panel, DIP Switch) Check

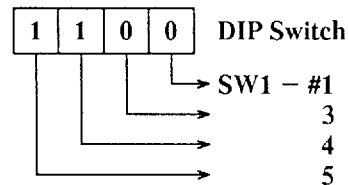
This check tests the control panel switches and DIP switches for proper operation. Operate each switch one by one. If the switch is operating normally, a number appears on the display as shown below.

○ Start of Range Indicator



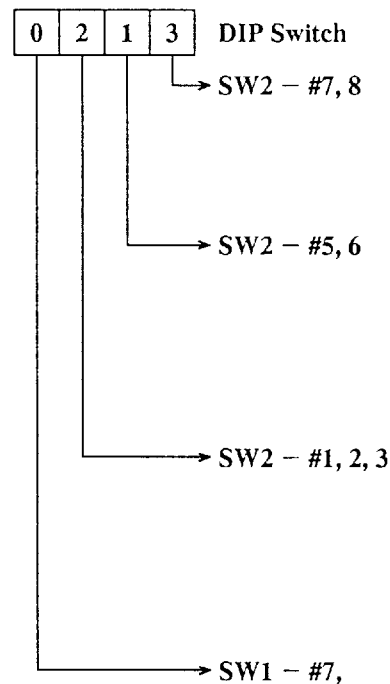
Fully CCW	Fully CW
1 ~ 8	
1 ~ 3	
1 ~ 5	
1 ~ 4	

○ Depth Indicator



ON	OFF	
1	0	Recording belt stops rotation
1	0	W/L or G/L area, 1=Constant 0=Variable
1	0	Water temperature graph
1	0	Forward paper feed

○ End of Range Indicator



#7	#8	Display	Recording Width
OFF	OFF	1	270 mm
OFF	ON	2	272
ON	OFF	3	274
ON	ON	4	268

#5	#6	Display	Recording Step
OFF	OFF	1	3.0 dB
ON	ON	2	2.5
OFF	ON	3	2.0
ON	ON	4	1.5

#1	#2	#3	Display	Baud Rate
OFF	OFF	OFF	1	9600 BPS
ON	×	×	1	9600
OFF	ON	×	2	4800
OFF	OFF	ON	3	2400

#7	#8	Display
OFF	×	0
ON	×	1

10. TROUBLESHOOTING

No power

- 1 Check if the power connector is loose.
- 2 Check that the display unit is turned on.
- 3 The connection cable between the display unit and the recorder unit may be loose.
- 4 Check if the power supply voltage is within 85 and 132 VAC or 180 and 264 VAC.

Recording belt does not rotate.

- 1 Check that the DIP switch SW1 #1 is set to OFF. If it is ON, the recording belt will not rotate. See page 17.

No Recording

- 1 The recording paper may be dried up. Turn the paper feed gear until the dried portion is gone.
- 2 Is the MODE selector to NET? Check that the external echo sounder and the net recorder are working properly.
- 3 Ensure that EXT SEL is properly set on the DISPLAY menu of the display unit.
- 4 Is the decimal point of the DEPTH indicator LED flickering? This occurs when the bottom lock function does not work because seabed return is too weak. Increase the receiver sensitivity by turning the GAIN switch of the display unit until the decimal point lights continuously.
- 5 If recording is not restored by the above methods, turn off the display unit by simultaneously pressing the PWR and OFF keys of the display unit. Then press the PWR key to turn on the display unit again.

MODE selection inoperative

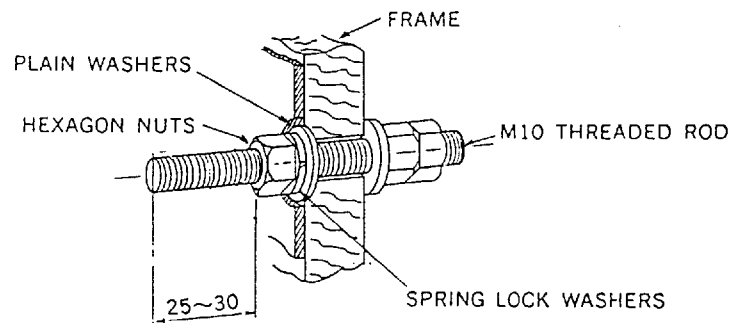
- 1** Turn off the display unit by simultaneously pressing PWR and OFF keys. Then press the PWR key to turn on the display unit again. Note that the recorder unit should be kept on when the FCV-10 is on.

11. INSTALLATION

Fixing

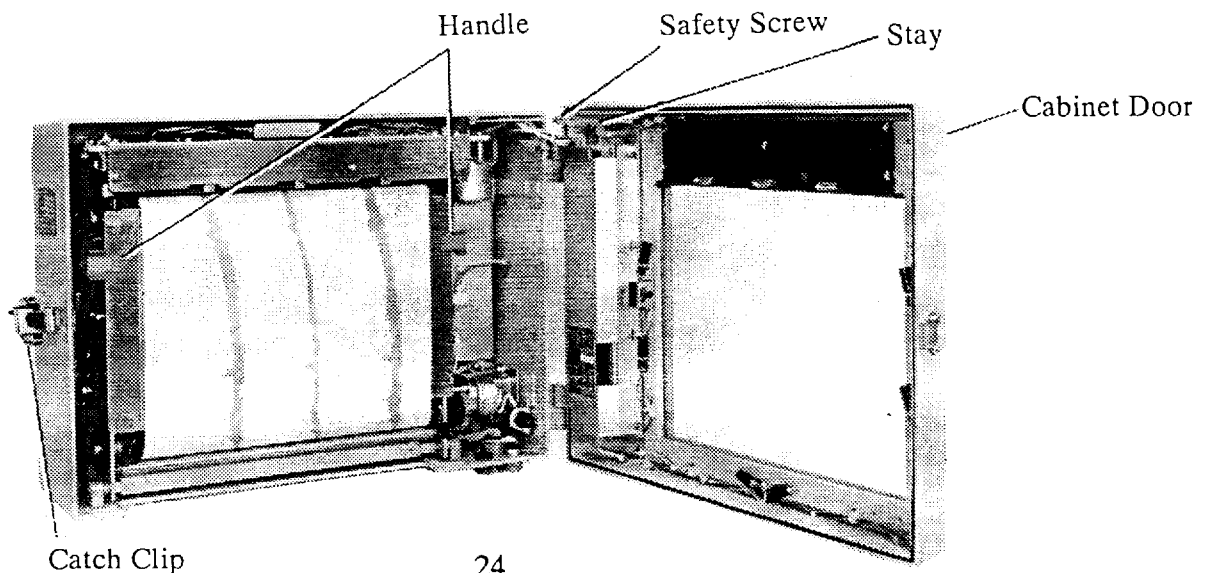
The FE-1280 is designed for bulkhead mounting

- 1 Take out the mounting template for the recorder unit from the shipping carton.
- 2 Decide the mounting location of the recorder unit, allowing for service space, referring to the outline drawings on pages 31 and 32.
- 3 Using the mounting template, drill four fixing holes in the mounting location. Fix four threaded rods, nuts and washers to the mounting location as shown below.

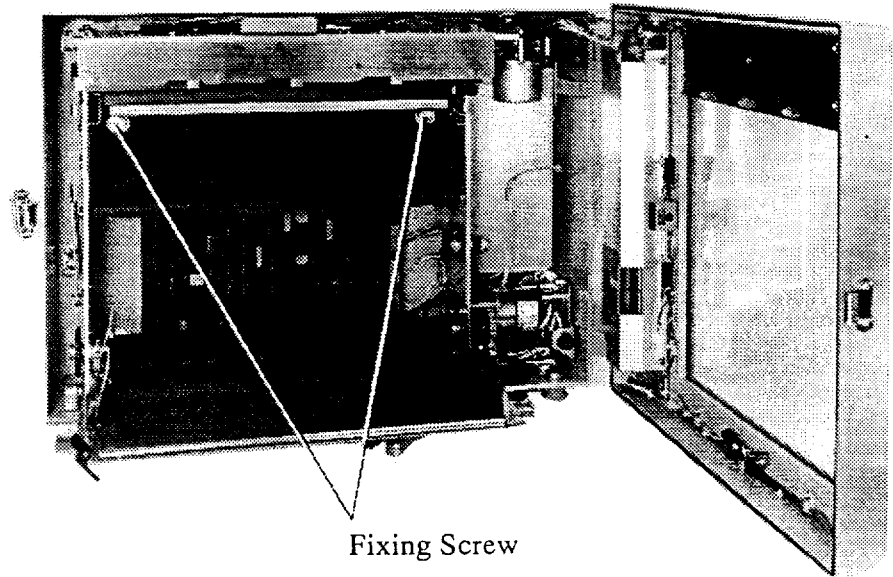


Preparation for Mounting

- 1 Remove the recorder unit and place it on a desk.
- 2 Open the cabinet door by unlocking the catch.
- 3 Lock the stay of the cabinet door by putting the (supplied) M3 screw into its hole. Ensure that the recording stylus is not on the recording plate. If it is on, rotate the recording belt until it goes under the recording plate.



4 Loosen two fixing screws for the recording mechanism.



5 Close the recording plate.

6 Remove the stay lock screw and lock the recorder unit with the catch.

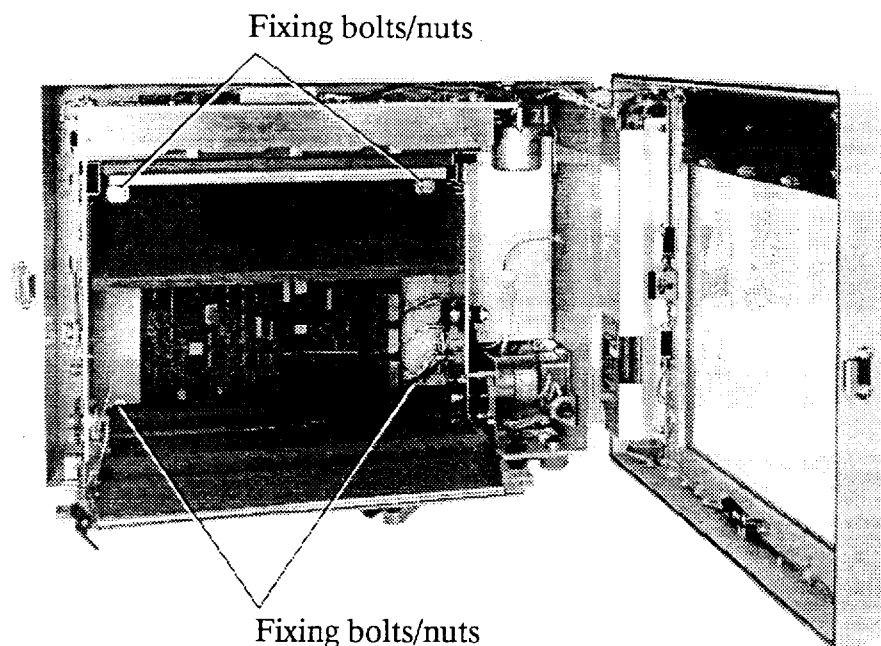
Mounting

1 Lift the recorder unit, with door closed, and mate the fixing holes with the fixing bolts of the recorder unit.

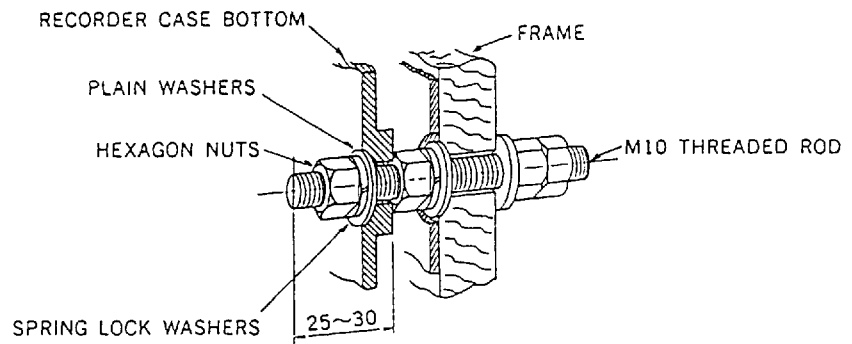
2 While keeping the recorder unit pressed to the wall, unlock the catch of the recorder unit to open the door.

3 Open the recorder mechanism by pulling its handle.

4 You should now see the four fixing rods. Fix either of the upper bolts temporarily. See photo below.



5 Fix the remaining three bolts using flat washers, spring washers, and nuts and wrench supplied.



6 Permanently fix the first bolt.

7 Close the recording mechanism and lock its fixing screws tightly.

8 Close the recorder door.

12. SPECIFICATIONS

1. Recording System	Belt straight line
2. Recording Paper	Moist paper, PW-3015, 320 mm(W) x 15 m long
3. Recording Intensity	16 steps depending on the strength of echo
4. Recording Mode	1) Vertical sounding 2) Slant port sounding 3) Slant starboard sounding 4) Autoscan sounding 5) Bottom-locked expansion 6) Pelagic expansion 7) Monitoring external net recorder (Upward and/or downward sounding) 8) Monitoring external transceivers (ETR-2B/3B) sounding signal <i>NOTE: External echo sounder may be selected by the DISPLAY menu of the display unit.</i>
5. Range	Same as the range set by the display unit.
6. Paper Speed	Automitically selected on the operating range and fine tuning in 8 steps.
7. Markers	Reference marker, Minute marker, Log marker, Depth scale, Expansion marker, Water temperature scale
8. Digital Data	1) Start range, End range, Water depth, Elapsed time 2) Ship's position in latitude and longitude, Month/day, Ship's heading, Water temperature (digital readout and graph), Ship's speed. For these data, navigation equipment, water temperature indicator and speed log are required.
9. Power Supply	85 thru 132 VAC or 180 thru 264 VAC, 60 VA, 50/60 Hz, 1 ϕ
10. Dimensions and Weight	372 (W) x 432 (H) x 465 (D) mm, 21 kg
11. Color	2.5G7/2 or N5.0/N6.0 Newtone

COMPLETE SET

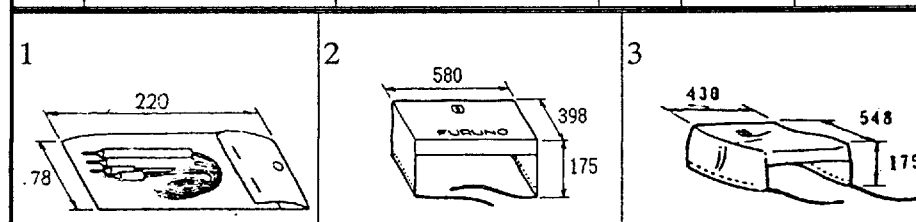
No.	Description	Type	Qty	Code Number	Remarks
1	Recorder Unit	FE-1280	1		Vertical feed or Horizontal feed
7	Spare Parts		1 set		See table below
8	Installation Materials		1 set		See table below
9	Accessories		1 set		See table below

Option

No.	Description	Type	Code Number	Remarks
1	Paper Winder	WI-31	000-014-589	
2	Depth Scale			

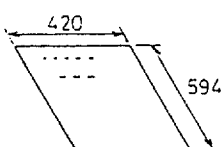
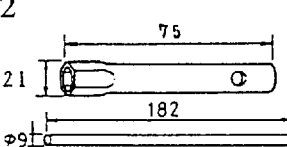
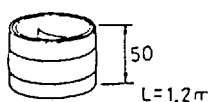
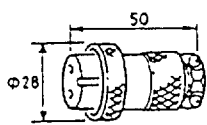
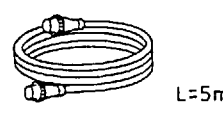
Accessories

No.	Description	Type	Qty	Sketch	Code Number	Remarks
1	Marking Pen		1	1	000-621-563	
2	Vinyl Cover	02-084-1162	1	2	000-801-910	Vertical feed type
3	Vinyl Cover	02-084-1161	1	3	000-801-909	Horizontal feed type



Installation Materials

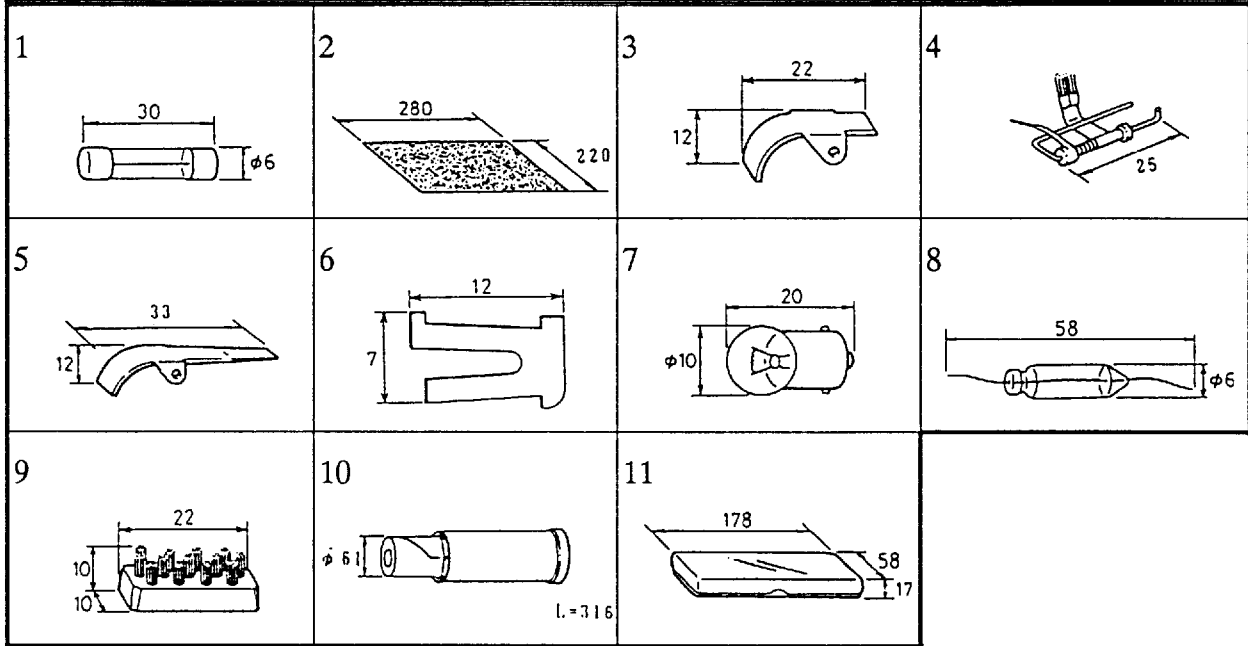
No.	Description	Type	Qty	Sketch	Code Number	Remarks
1	Template	02-084-1151-1	1	1	100-115-031	
2	Wrench	02-011-4101	1	2	201-141-010	
3	Copper Strap	WEA-1004-0	1	3	500-310-040	
4	Connector	NCS-252-P	1	4	000-506-501	
5	Signal Cable Assy.	S02-16-5(10-10P)	1	5	002-134-650	
6	Signal Cable Assy.	S02-15-5(24-24P)	1	5	002-134-660	

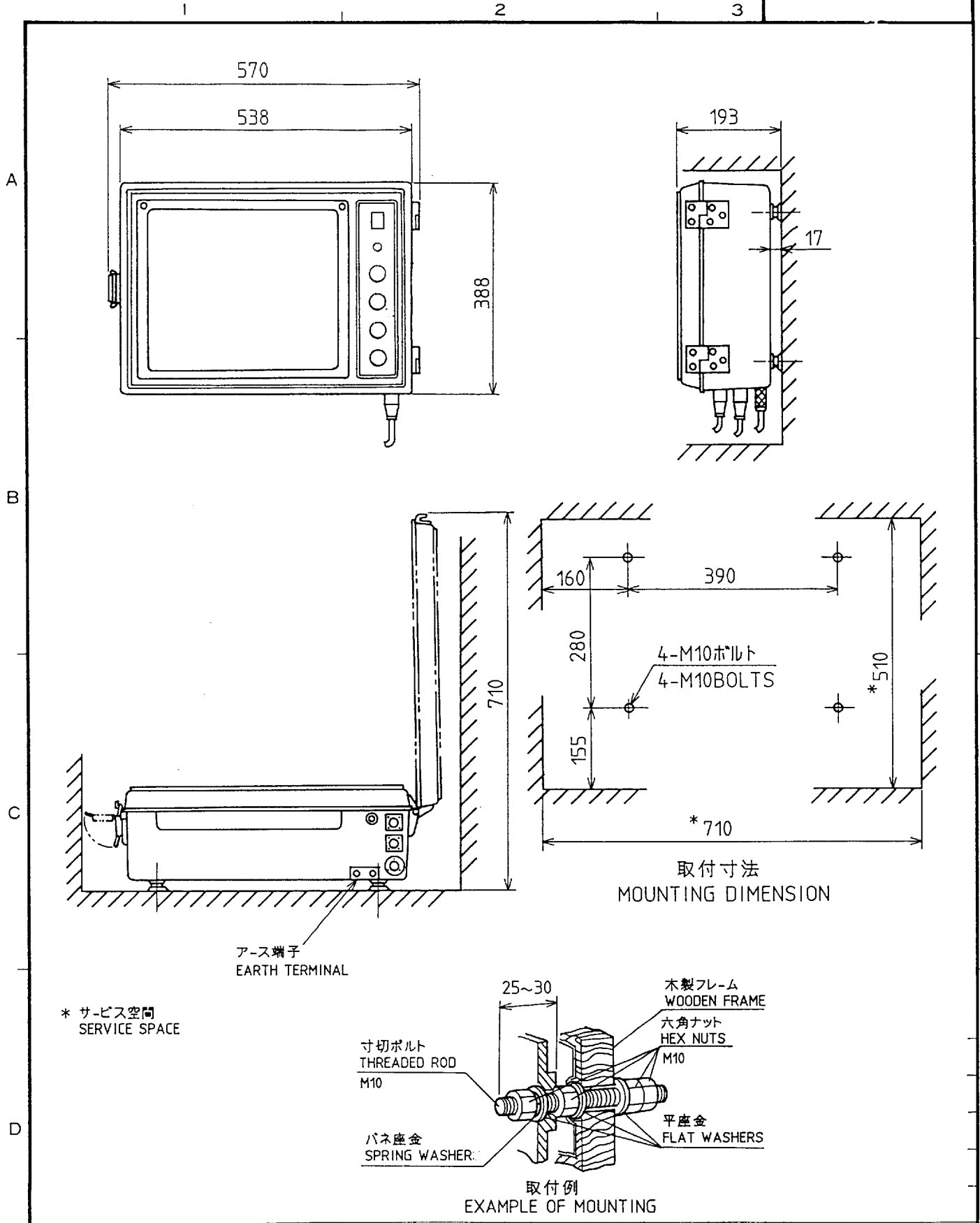
1		2		3		4	
5							

Spare Parts

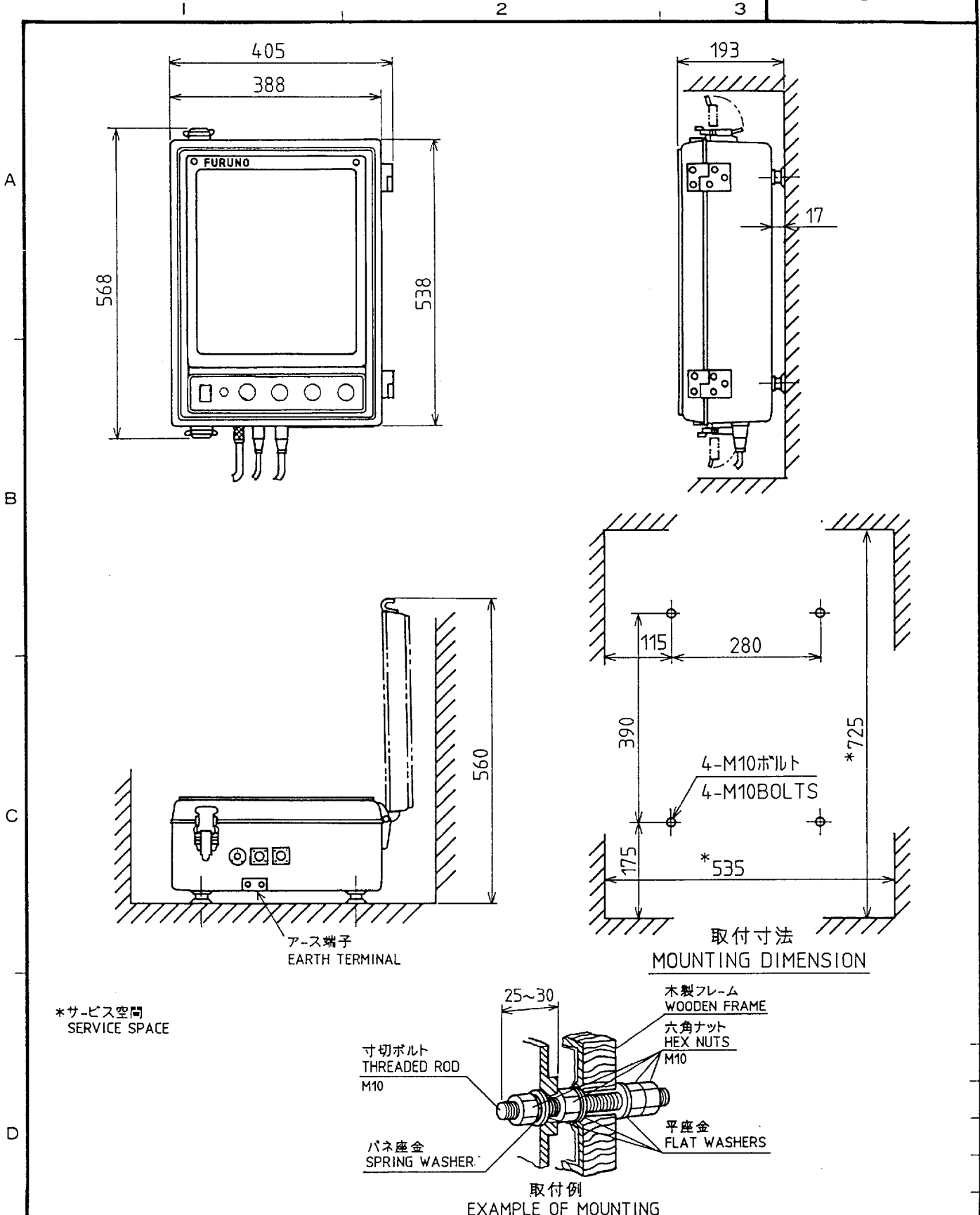
No.	Description	Type	Qty	Fig.	Code Number	Remarks
1	Fuse	FGBO 3A, 125VAC	2	1	000-549-063	For 100/110/115 VAC ship's mains
		FGBO, 2A, 250VAC	2	1	000-549-020	For 220/230VAC ship's mains
2	Sandpaper	#400 220x280	1	2	000-802-013	
3	Stylus Guide	02-084-1637	1	3	100-116-030	
4	Recording Stylus	02-084-1650-2	2	4	100-116-062	
5	Stylus Guide	02-011-2395-2	1	5	201-123-952	
6	Stabilizer	02-084-1531	3	6	100-127-520	

7	Lamp	BA9SG10 6V 2W	6	7	000-540-018	
8	Lamp	T6.2 C-8AX	2	8	000-119-609	
9	Brush	02-011-2401	2	9	201-124-010	
10	Recording Paper	PW-3015	3	10	000-878-412	
11	Spare Parts Box	For F-710	1	11	000-831-610	



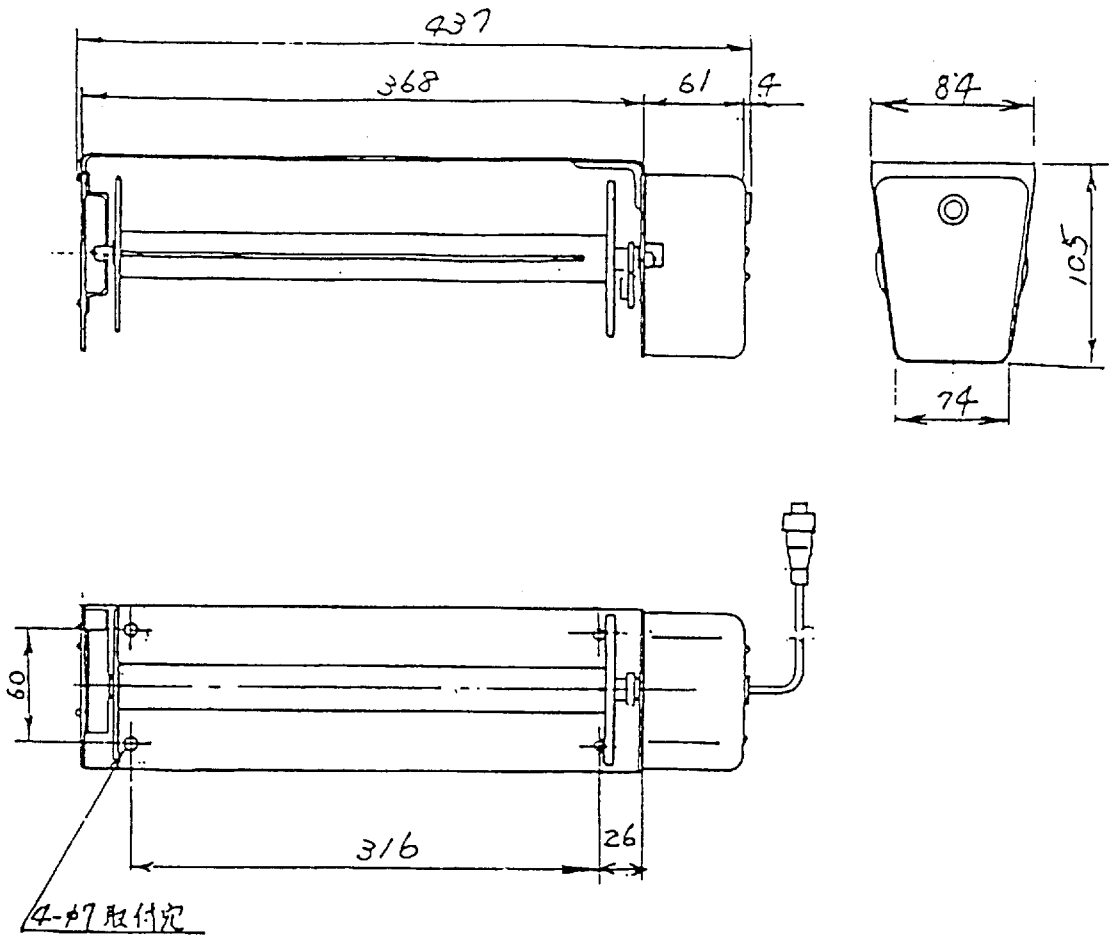


品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG.NO.	摘要 REMARKS
承認 APPROVED	MAY. 28. '90 T. NAKANO	三角法 THIRD ANGLE PROJECTION	名称 TITLE	FE-1280	記録器外寸図 (縦送り型) RECORDER UNIT (VER FEED TYPE)
検図 CHECKED	MAY. 28 '90 M. USUDA	尺度 SCALE	1/10		
製図 DRAWN	MAY 21, '90 T. KODAI	重量 WEIGHT	22 kg	図番 DWG.NO.	C 2 3 2 3 - G 0 5 - B



品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG.NO.	摘要 REMARKS
承認 APPROVED	MAY. 28. '90 T. NAKANO	三角法 THIRD ANGLE PROJECTION			名称 TITLE FE-1280 記録器外寸図(横送り型) RECORDER UNIT (HOR FEED TYPE)
検 CHECKED	MAY. 28. '90 M. USUIWA	尺 SCALE	1/10		
製 DRAWN	MAY 21, '90 T. KOUBI	重量 WEIGHT	22 kg	図番 DWG.NO.	C 2 3 2 3 - G 0 6 - B

A
B
C
D



品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG.NO.	備考 REMARKS
承認 APPROVED	MAY. 28. '90 T. NAKAJO	三角法 THIRD ANGLE PROJECTION		名称 TITLE	
検 CHECKED	MAY. 28. '90 M. USUDA	尺 SCALE	1/4	WI-31	外部巻取装置外寸図 PAPER WINDER
製 DRAWN	MAY 21, '90 T. KADA	重 WEIGHT	1.6 kg	図番 DWG.NO.	C 2 3 2 6 - G 0 3 - A

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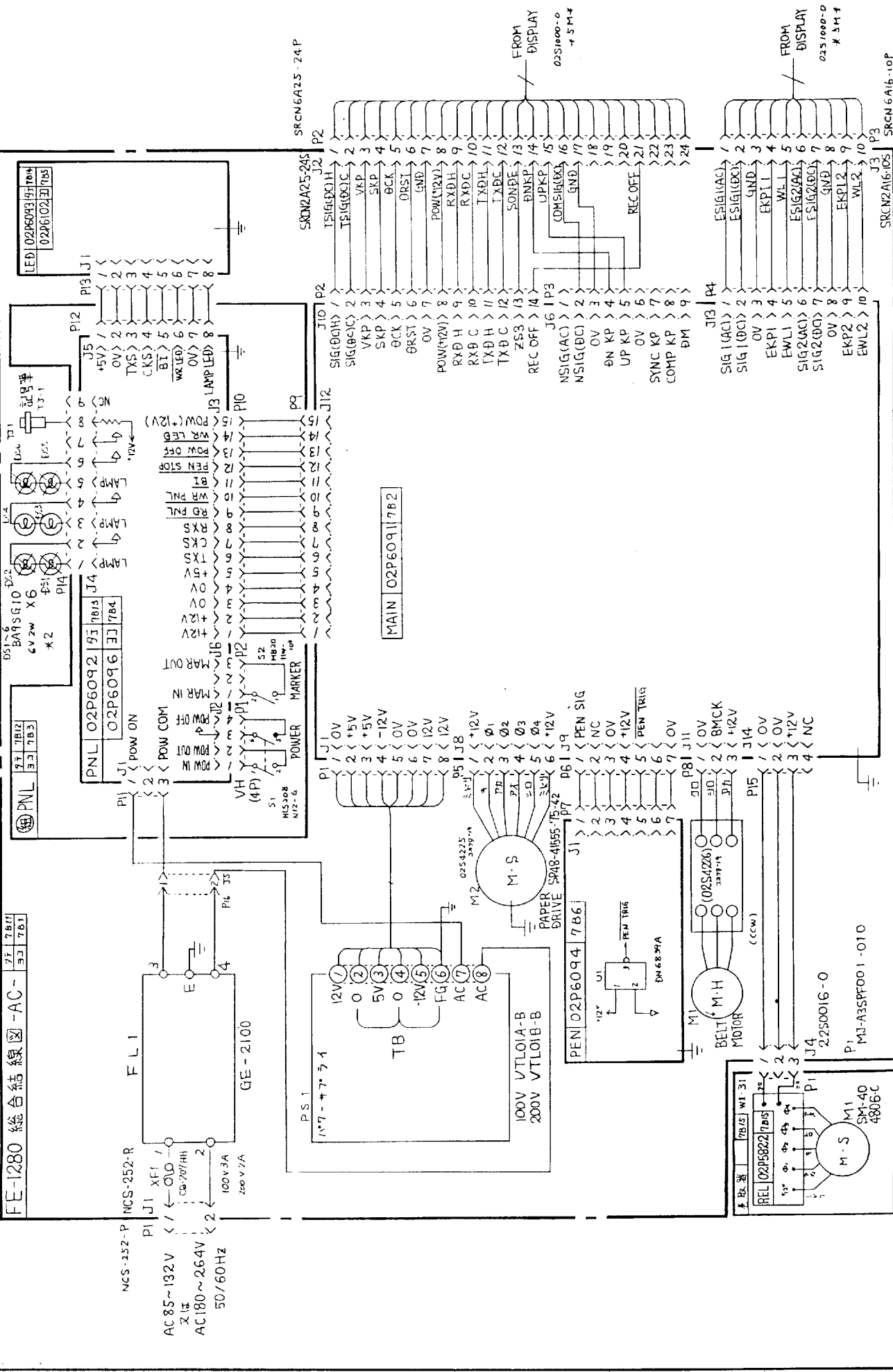
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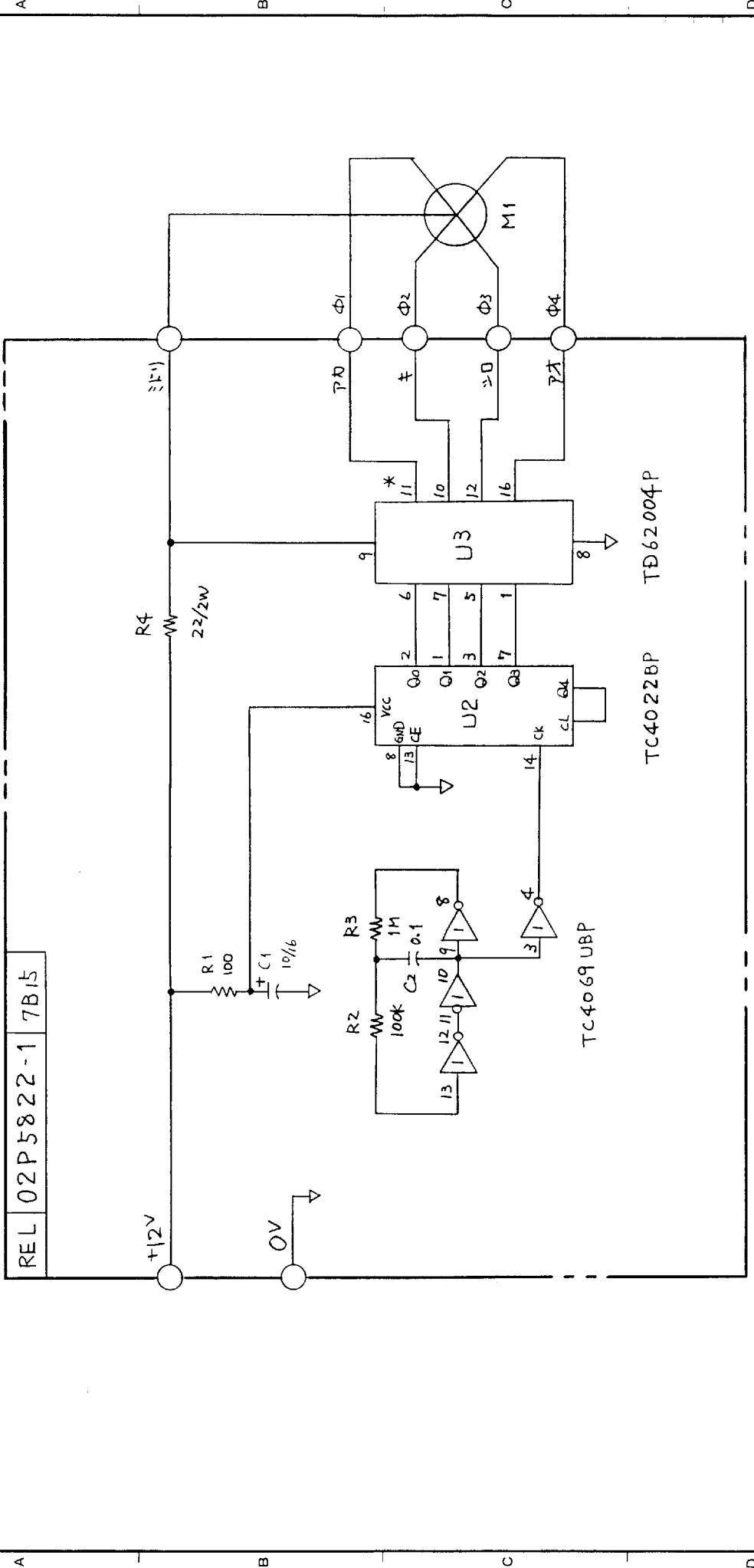
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承認	検図	製図	名称
APPROVED	CHECKED	DRAWN	TITLE
			FE-1280
			図番 DWG NO
			C 2323-K15-A
			総合回路図 OVERALL SCHEMATIC



REL 02P5822-1 7B15

TC4022BP TD62004P

TC4069UBP

承認 APPROVED	MAF-28-90 T. WAKANO	名称 TITLE	紙巻取装置 PAPER WINDER
検 CHECKED	Hayashi H. OSUHA		
製 DRAWN	Yoshida Y. KURODA	番 DWG. NO.	C 2 3 2 3 - K 2 2 - A