

MARINE DSC/VHF RADIO TELEPHONE
FOR GMDSS

STR-580D
(Instruction Manual)



SAMYUNG ENC CO., LTD.

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PRECAUTION

It is recommended that USER read this manual carefully before turning power on.

1. TRANSMITTING DISTRESS CALL AND TERMINATION PROCESS

- 1-1 * Press **DISTRESS** for 5 seconds to get ready for distress call.
- * When press **DISTRESS** key, alarm tone sound and 'Call Led' light on.
 - * After release **DISTRESS** key, the distress message will be transmitted.
 - * Do not execute a distress call except in an emergency
 - * When executing a distress, follow the instructions of the captain's or officer in charge.
 - * Do not execute a test distress call that will get local shipping and Rescue Centers inconvenience.
 - * If a distress call is transmitted accidentally, stop transmission immediately and inform local ships and rescue organization that it is an accidental call, using CH16 as instructed in this manual.
- 1-2 * The distress message is transmitted by random intervals of 3.5 to 4.5 minutes thereafter. This process is repeated until a response is received or the process is transmitted by full message.
- * If a distress call is accidentally transmitted, terminate transmission immediately as press **CLR**. Even though **CLR** was pressed, the distress message is transmitted by full message.
 - * Use CH16 to inform local ships and rescue organizations that the transmission was accidental.
- 1-3 When a distress call is received, be sure to inform the ship's captain or officer in charge

2. INITIAL SETTING ON INSTALLATION

Below items need to be set on installation. Please contact head office or our local agents.

2-1 SUPPLY VOLTAGE(18V - 31.2V)

- * VHF main unit(STR-580D)input voltage : DC13.6V
- * VHF power supply unit(SP-160AD)input voltage :DC 18V 31.2V or AC
110V/220V 10%

2-2 ID number

This equipment needs to be set ID number for each one.

(Note : Please refer to 6. How to set MMSI No.)

3. OTHER CONDITION

3-1 For using telephone service by DSC, confirm from the coast station how to report the end of telephone because there is no international standard of its fare system

3-2 The printing paper for DPU-414 printer is the special paper which turns black by thermochemistry reaction. Take the following precautions when using this paper

- Store the paper away from heat, humidity and light
- Dry your hand before handling the paper
- Do not use organic adhesives on the paper
- Do not use adhesives tape on the paper
- Do not leave the paper to remain in contact with polyvinyl chloride film for a long period of time
- Do not leave the paper in contact with freshly copied diazotype or wet process paper
- Do not place the paper to come into contact with organic solvents

BASIC KEY OPERATION

ON/OFF : Turn power on or off

CH16 : To select CH16 by pressing this key

CH70 : To select CH70 by pressing this key

PRI : To select PRIVATE CHANNEL by pressing this key
To input channel number in 3 numbers of figures by using number key

CTRY : To set 3 areas(ITU, USA, CAN) using this key

SCAN : To start SCANNING with the present SCAN mode being indicated. If press again, it will be finished. Can modulate the speed of scanning to use
[FUNC] + [↑] , [FUNC] + [↓] Key
To continue SCAN into next channel pressing [※] key

DUAL : Receive present CHANNEL and CH16 mutually

MEMO : Use this key in case of appointing 'MEMORY SCAN' / 'GROUP SCAN'
channel . To input CHANNEL MODE using [CTRY] , [PRI] KEY.
Channel number is input with 3 number of figure using number key

CALL : To transmit the present DSC message in DSC message edit screen.

25W/1W : Transmitting output is used among 25w or 1w mutually.
When local distance communication made, use 1W.

DIM : Brightness of LCD Indication and KEYBOARD BACK-LIGHT can be adjusted to 4 steps

PRINT : To print out received DSC message

SPEAKER : ON /OFF of speaker

DISTRESS : Press this key to transmit distress call (Caution : Never test!!)

CLR : To cancel DSC call / To stop alarm sound / To go 1 step behind

ENT : To select item and enter the edited value into the system

0 **9** : CHANNEL SELECTION and NUMBER INPUT
PRIVATE CHANNEL is 3 number of figures in case of selecting
CHANNEL, Other channel is 2 number of figures

▲ **▼** : Increase or decrease Setting position, telephone

◀ **▶** number and scan speed 1 step

MENU : Edit DSC message / Response/ Relay/ View, set up the system.

0. DISTRESS CAL EDIT : Edit & transmit DSC distress message.
1. ALL SHIP CAL EDIT : Edit and transmit DSC all-ship-call message.
2. INDIVIDUAL CALL EDIT: Edit and transmit DSC individual call message.
3. AUTO/SEMI CAL EDIT : Edit and transmit message of automatic or
semi-automatic connection to public telephone.
4. DISTRESS RELAY : View and relay the received DSC distress message.
5. GROUP CALL EDIT : Edit and transmit call-message for group-vessel.
6. DISTRESS MSG RELAY : View, relay, edit and transmission on receiving
of distress-message
7. DISTRESS MSG ACKG : Acknowledgement of view and response
on receiving of distress-message
8. OTHER MSG ACKG : Response on other received message
(except distress message)
9. RX DISTR MSG VIEW : View and print out for receiving of distress message
and full transmission message
10. RX OTHER MSG VIEW : View and print out other received message
11. SYSTEM SETTING : Set SELF-ID(its own address), time and date,
auto-acknowledge, scan mode, etc
12. SYSTEM SELF TEST : SELF TEST, view version of program, initialization of
system, etc.
- 13.GEOGRAPHIC

MODE FUNCTION of HAND SET (after press [MODE] key)

- [INT] : Selecting ITU frequency
- [USA] : Selecting USA frequency
- [LGT] : Increase bright of LCD indication and keyboard BACK-LIGHT 1 step to
step to bright direction 4
- [25w] : Selecting transmitting output to 25W
- [1W] : Selecting transmitting output to 1W
- [DIM] : Decrease light of LCD indication and keyboard BACK-LIGHT 1 step to
4 step to dark direction
- [SP.0] : Abbreviate of speaker on
- [SP.X] : Abbreviate of speaker off
- [DIAL] : While SCAN, in case of having received input-signal, quit.
Continue next channel
- [SCAN] : Scan full channel and select monitor function
- [DIAL] : Selecting CH16

INTRODUCTION

1.1 INTRODUCTION

The STR-580D includes DSC/VHF radiotelephone and DSC watchkeeping receiver required by the Global Maritime Distress and Safety System(GMDSS). It is designed to be compact and lightweight for easy installation in any ship of 100 gross tons or more, as well as in conventional ships (all passenger and cargo ships of over 300 gross tons engaged in international navigation).

The STR-580D is equipped with Digital Selective Calling(DSC) functions for distress calls and routine calls, as well as usual voice communication function.

It incorporates all the necessary units for DSC service , such as the DSC unit, CH70 watchkeeping receiver, and power supply.

1.2 FEATURES

1.2.1 The STR-580D VHF radiotelephone meets the ITU Radio Regulations, IMO Performance Standards, and CCIR Recommendations.

1.2.2 The STR-580D VHF radiotelephone covers all channel specified in the ITU Radio Regulations.

1.2.3 The STR-580D VHF radiotelephone can be easily installed in a narrower space because all the necessary units, transmitter/receiver, DSC unit,CH70 DSC Watchkeeping Receiver and power supply are built in a compact body.

1.2.4 The STR-580D VHF radiotelephone incorporates a large graphic LCD with wide angle of visibility. The LCD does not limit the place for installation.

1.2.5 The STR-580D VHF radiotelephone LCD display automatically instructs the operator's needs, when an item is selected from the menu. This makes any operation easy, DSC in particular.

1.2.6 The STR-580D VHF radiotelephone can be used with the DPU-414 dedicated printer or a general purpose printer with CENTRONICS interface. The connected printer automatically prints out the DSC message transmitted or received.A message stored in memory can be manually printed out later on.

1.2.7 The brightness of LCD and keypad backlighting is widely adjustable, and will not disturb a night watch.

- 1.2.8 In addition to the channels specified by Radio Regulations, The STR-580D VHF radiotelephone covers USA channels, Weather channels, and Canadian channels available along the coast of North America. Up to 99 private channel can also be incorporated. (For the contract of Standard type of STR-580D).
- 1.2.9 The STR-580D VHF radiotelephone incorporates memory channels, memory scanning function of all channels or channel group and dual watching functions.
These functions are convenient for watching particular channels.
- 1.2.10 Besides the usual radiotelephone communications, The STR-580D VHF radiotelephone can communicate distress, urgency, safety and routine call to use DSC function. When the coast station offers automatic connection service to public telephone subscribers, the service can be used by inserting the desired telephone number in the DSC message.
- 1.2.11 The STR-580D VHF radiotelephone has an interface for position (latitude/longitude) and time data from a navigation aid such as GPS. When a distress call is transmitted, position data are automatically inserted in the message.
In case of receiving call of sea area, the STR-580D VHF radiotelephone can judge whether self-vessel is or is not in the self sea-area to be based on position data from a navigation aid such as GPS.

2. BASIC CONFIGURATION

2.1 STANDARD LIST

DESCRIPTION	MODEL NO.	QUANTITY	REMARKS
1.VHF radiotelephone (main unit)	STR -580D		With handset
(1) Mother Board	V -405	1	Assembled into STR -580D
(2) RX Board	V -400	1	
(3) DSC Board	V -401	1	
(4) TX Drive	V -402	1	
(5) Power supply	V -404	1	
(6) Cup Board modem	V -406	1	
(7) Front keyboard LCD display	V -407	1	
(8) Power filter	V -408	1	
(9) TX power AMP	V -467	1	
2. Antenna	SAN -150(RX/TX) (3dB)	1 set	With bracket
3. Antenna	SAN -150(DSC WKR) (3dB)	1 set	with bracket
4. Instruction manual		1EA	
5. LCD	DG12232S -2FBLY	1EA	
6. AC/DC Power Supply	SP -580AD	1set	
7. CABLE	VCTF1.25SQ X EC	2EA	
8. CABLE	VCTF1.25SQ X 4C	1EA	

2.2 OPTION

DESCRIPTION	MODEL	REMARK
VHF EMG LIGHT DSC/VHF PRINTER HANDSET ANTENNA CABLE BATTERY CABLE AC POWER CABLE	DC24V / 3W DPU -414 H -36R RG -8UY DPYCS -2C X 14SQ DPYCS -2C X 2.0 SQ	STAND TYPE WITH CABLE

3. SPECIFICATION

3.1 STR-580D MAIN UNIT

- * The STR-580D DSC/VHF radiotelephone has been tested according the IMO Performance Standard for GMDSS. This equipment corresponds to IMO Resolution A-803(19) for Shipborne VHF Radio Installation Capable of Voice Communication and Digital Selective Calling.

3.1.1 General Specifications

Transmission frequency range	DUP 156.000-158.000 MHz SIMP 156.000-158.000 MHz (For special contract : 150.225 ~ 162.600 MHz)
Reception frequency range	156,000-162.550 MHz (For special contract : 150.225 ~ 162.600 MHz)
CHANNEL capacity	USA/CNA CHANNEL MAX 57CH, ITU CH:MAX 80 CH PRIVATE CHANNEL MAX 560CH SCAN MEMORY CHANNEL MAX 10CH WEATHER CHANNEL (reception only) 9 ch
Channel spacing	25KHz
Communication modes	Simplex and duplex press to talk (simplex and semi duplex on private channels)
Type of emission	F3E, F2B(G3E, G2B)
Frequency accuracy	Within $10 \cdot 10^{-5}$
Antenna impedance	50ohm
Main controls	Transmitting and stopping distress signals, transmission and reception channels, transmission power setting, dimmer, squelch
Main display item	transmission and reception channels, output power, scan condition, alarm condition, speaker mode, date, time, position, DSC condition etc.
Rated power supply voltage	DC24V (DC18 - 31.2V) AC110V/AC220V 10%(50/60Hz 6%)
Current consumption	DC13.6V 25W TRANSMISSION 6A MAX RECEIVING 1.5A MAX
Temperature range for full performance	0.c - +40.c
Operating temperature range	-15.c - +55.c
Storage temperature range	-25.c - +65.c
Humidity resistance	No abnormality after 4 hours in +55., 95%RH
Vibration resistance	0 - 8.3Hz Full amplitude 3.0mm, 8.3 - 30Hz full amplitude 1 mm No abnormality after vibrating for 90 minutes in each of the three axes

Continuous operating	No abnormality after operation continuously for eight hours
Dimension and weight	216mm(H) 80mm(w) 302mm(D) (excluding projecting parts)

3.1.2 TRANSMITTER UNIT

Antenna output power	25w +20% - 50%, 0.1 - 1w (reduced output)
Oscillation method	Synthesizer method
Modulation method	Frequency modulation
Maximum frequency deviation	within 5KHz
Occupied bandwidth	within 16KHz
Microphone input impedance	600ohm balanced
Standard modulation input	-53dBm
Pre emphasis characteristics	6dB/oct characteristic +dB, -3dB
Overall distortion	10% or less
Signal-to-noise ratio	20dB or more
Spurious emission	2.5 μ V or less
DSC modulation rate	1200baud 30 10^{-6}
DSC modulation method	FSK
DSC modulation index	2 10%
Mark signal frequency (Y)	Within 1300Hz 10Hz
Space signal frequency (Y)	Within 2100 10Hz

3.1.3 RECEIVER UNIT

Receiving system	superheterodyne
1 st 1F	21.4MHz
2 nd 1F	455KHz
Local oscillation frequency	Reception frequency - 21.4MHz
Local oscillation method	Synthesizer method
Sensitivity	2 μ V or less (20dB N/S)
Sensitivity (DSC)	Symbol error rate at 1 μ V is 1 % or less
Squelch sensitivity	1 μ V or less
Selectivity	6dB bandwidth : 12 KHz or more 70dB bandwidth : 25KHz or less
Spurious response	80dB or more (20 dB N/S)
Spurious response(DSC)	Symbol error rate is 1% or less at a wanted signal level of 3dBu and an unwanted signal level of 73dBu
Blocking	90dBu or more (20dBu N/S)
Blocking(DSC)	Symbol error rate is 1% or less at wanted signal level of 3dBu and an unwanted signal level of 68dBu
Intermodulation	70dBu or more (20dB N/S)
Intermodulation	Symbol error rate is 1% or less at wanted signal level of 3dBu and an unwanted signal level of 68dBu

Overall distortion	10% or less
Signal-to-noise ratio	40kB or more
Rated audio output	1 w (8ohm)
De emphasis characteristics	6dB/oct, +1dB, -3dB
Radiation	4000mkW or less
DSC message file	for distress message :20
	for the other messages :20

3.1.4 CH70 Watchkeeping Receiver

Receiving frequency	156.525 MHz (CH70)
Reception mode	F2B(G2B)
Frequency accuracy	Within 10 10 ⁻⁵
Antenna impedance	50 ohm unbalanced
Reception method	Double superheterodyne
1 st 1F	10.7 MHz
2 st 1F	455KHz
Local oscillation frequency	145.825MHz
Local oscillation method	FREQUENCY SYNTHESIZER
Sensitivity	Symbol error rate of 1% or less at 1uv
Selectivity	6 dB bandwidth : 12KHz or less
	70dB bandwidth : 25KHz or less
Spurious response	Symbol error rate of 1% or less at a wanted signal level of 3dBu and unwanted signal level of 73dBu
Blocking	Symbol error rate of 1% or less at a wanted signal level of 3dBu and unwanted signal level of 73dBu
Intermodulation	Symbol error rate of 1% or less at a wanted signal level of 3dBu and unwanted signal level of 68dBu
level of 68dBu	
DE-EMPHASIS	6dB/OCT , +1dB, -3dB
Radiation	4000 uuW or less
Version	V.SY-VDSC-04-SEP.-99

3.2 DPU - 414 PRINTER (OPTION)

Printing system	Thermal serial dot system
Input Interface	Convenient CENTRONIX system
Input DATA	8 Bit parallel input
letter	7 5 dot MATRLX
Printer paper	FH65BU-2 80mm width
Power supply	DC6.5V 3W MAX. supply from SP-580
Weight, measure	165(w) 160(H) 90(D) (m/m) (excluding projecting parts)
Weight	about 1.5Kg

3.3 CHANNEL

3.3.1 ITU CHANNEL (INCLUDING RUS CHANNEL)

CH	TX(MHz)	RX(MHz)	CH	TX(MHz)	RX(MHz)
01	156.050	160.650	60	156.025	160.625
02	156.100	160.700	61	156.075	160.675
03	156.150	160.750	62	156.125	160.725
04	156.200	160.800	63	156.175	160.775
05	156.250	160.850	64	156.225	160.825
06	156.300	156.300	65	156.275	160.875
07	156.350	160.950	66	156.325	160.925
08	156.400	156.400	67	156.375	156.375
09	156.450	156.450	68	156.425	156.425
10	156.500	156.500	69	156.475	156.475
11	156.550	156.550	70*	156.525	156.525
12	156.600	156.600	71	156.575	156.575
13	156.650	156.650	72	156.625	156.625
14	156.700	156.700	73	156.675	156.675
15	156.750	156.750	74	156.725	156.725
16	156.800	156.800	75	-	-
17	156.850	156.850	76	-	-
18	156.900	161.500	77	156.875	156.875
19	156.950	161.550	78	156.925	156.925
20	157.000	161.600	79	156.975	161.525
21	157.050	161.650	80	157.025	161.625
22	157.100	161.700	81	157.075	161.675
23	157.150	161.750	82	157.125	161.725
24	157.200	161.800	83	157.175	161.775
25	157.250	161.850	84	157.225	161.825
26	157.300	161.900	85	157.275	161.875
27	157.350	161.950	86	157.325	161.925
28	157.400	162.000	87	157.375	161.975
29	157.450	157.450	88	157.425	162.025
30	157.500	157.500	89	157.475	157.475
31	157.550	157.550	90	157.525	157.525
32	157.600	157.600	91	157.575	157.575
33	157.650	157.650	92	157.625	157.625
34	157.700	157.700	93	157.675	157.675
35	157.750	157.750	94	157.725	157.725
36	157.800	157.800	95	157.775	157.775
37	157.850	157.850	96	157.825	157.825
38	157.900	157.900	97	157.875	157.875
39	157.950	157.950	98	157.925	157.925
40	158.000	158.000	99	157.975	157.975

* Channel 70 is available only for DSC.

Voice transmissions are prohibited

Transmission power is fixed at 25w

* Channel 75 is the guard band for channel 16.

Transmission on this channel is prohibited

* Channel 76 is available only for NBDP Voice transmission is prohibited.

3.3.2 USA CHANNEL

CH	TX(MHz)	RX(MHz)	CH	TX(MHz)	RX(MHz)
01A	156.050	156.050	60	-	160.625
02A	-	156.100	61	-	160.675
03A	156.150	156.150	62	-	160.725
04A	156.200	156.200	63A	156.175	156.175
05A	156.250	156.250	64	-	160.825
06	156.300	156.300	65A	156.275	156.275
07A	156.350	156.350	66A	156.325	156.325
08	156.400	156.400	67*	156.375	156.375
09	156.450	156.450	68	156.425	156.425
10	156.500	156.500	69	156.475	156.475
11	156.550	156.550	70*	156.525	156.525
12	156.600	156.600	71	156.575	156.575
13*	156.650	156.650	72	156.625	156.625
14	156.700	156.700	73	156.675	156.675
15*	-	156.750	74	156.725	156.725
16A	156.800	156.800	75*	-	-
17*	156.850	156.850	76*	156.825	156.825
18A	156.900	156.900	77*	156.875	156.875
19A	156.950	156.950	78A	156.925	156.925
20	157.000	161.600	79A	156.975	156.975
21A	157.050	157.050	80A	157.025	157.025
22A	157.100	157.100	81A	157.075	157.075
23A	157.150	157.150	82A	157.125	157.125
24	157.200	161.800	83A	157.175	157.175
25	157.250	161.850	84	157.225	161.825
26	157.300	161.900	85	157.275	161.875
27	157.350	161.950	86	157.325	161.925
28	157.400	162.000	87	157.375	161.975
			88A	157.425	157.425

- * Transmitting power of channel 13 and 67 is set to 1 W, but can be converted to 25W using **25/1** key.
- * Transmitting power of channel 17 and 77 is fixed at 1w
- * Ship are prohibited from transmitting on channel 15.
- * Channel 75 is the guard band for channel16,
Therefore, Voice transmission on this channel is prohibited
- * Channel 70 is available only for DSC. Therefore,
Voice transmission on this channel is prohibited.
Transmission power of channel 70 is fixed at 25W
- * Channel 76 is availble for NBDP. Therefore, Voice transmission is prohibited.

3.3.3 CANADA CHANNEL

CH	TX(MHz)	RX(MHz)	CH	TX(MHz)	RX(MHz)
01	156.050	160.650	60C	156.025	156.025
02	156.100	160.700	61C	156.075	156.075
03	156.150	160.750	62C	156.125	156.125
04	156.200	160.800	63	156.175	160.775
05	156.250	160.850	64C	156.225	156.225
06	156.300	156.300	65	156.275	160.875
07	156.350	160.950	66	156.325	160.925
08	156.400	156.400	67	156.375	156.375
09	156.450	156.450	68	156.425	156.425
10	156.500	156.500	69	156.475	156.475
11	156.550	156.550	70*	156.525	156.525
12	156.600	156.600	71	156.575	156.575
13	156.650	156.650	72	156.625	156.625
14	156.700	156.700	73	156.675	156.675
15	156.750	156.750	74	156.725	156.725
16	156.800	156.800	75*	-	-
17	156.850	156.850	76*	156.825	156.825
18	156.900	161.500	77	156.875	156.875
19	156.950	161.550	78	156.925	161.525
20	157.000	161.600	79	156.975	161.575
21	157.050	161.650	80	157.025	161.625
22	157.100	161.700	81	157.075	161.675
23	157.150	161.750	82	157.125	161.725
24	157.200	161.800	83	157.175	161.775
25	157.250	161.850	84	157.225	161.825
26	157.300	161.900	85	157.275	161.875
27	157.350	161.950	86	157.325	161.925
28	157.400	162.000	87	157.375	161.975
			88	157.425	162.025

3.3.4 WEATHER CHANNEL

CH	RX(MHz)
1	162.550
2	162.400
3	162.475
4	161.650
5	162.425
6	162.450
7	162.500
8	162.525
9	161.775

4. OPERATION

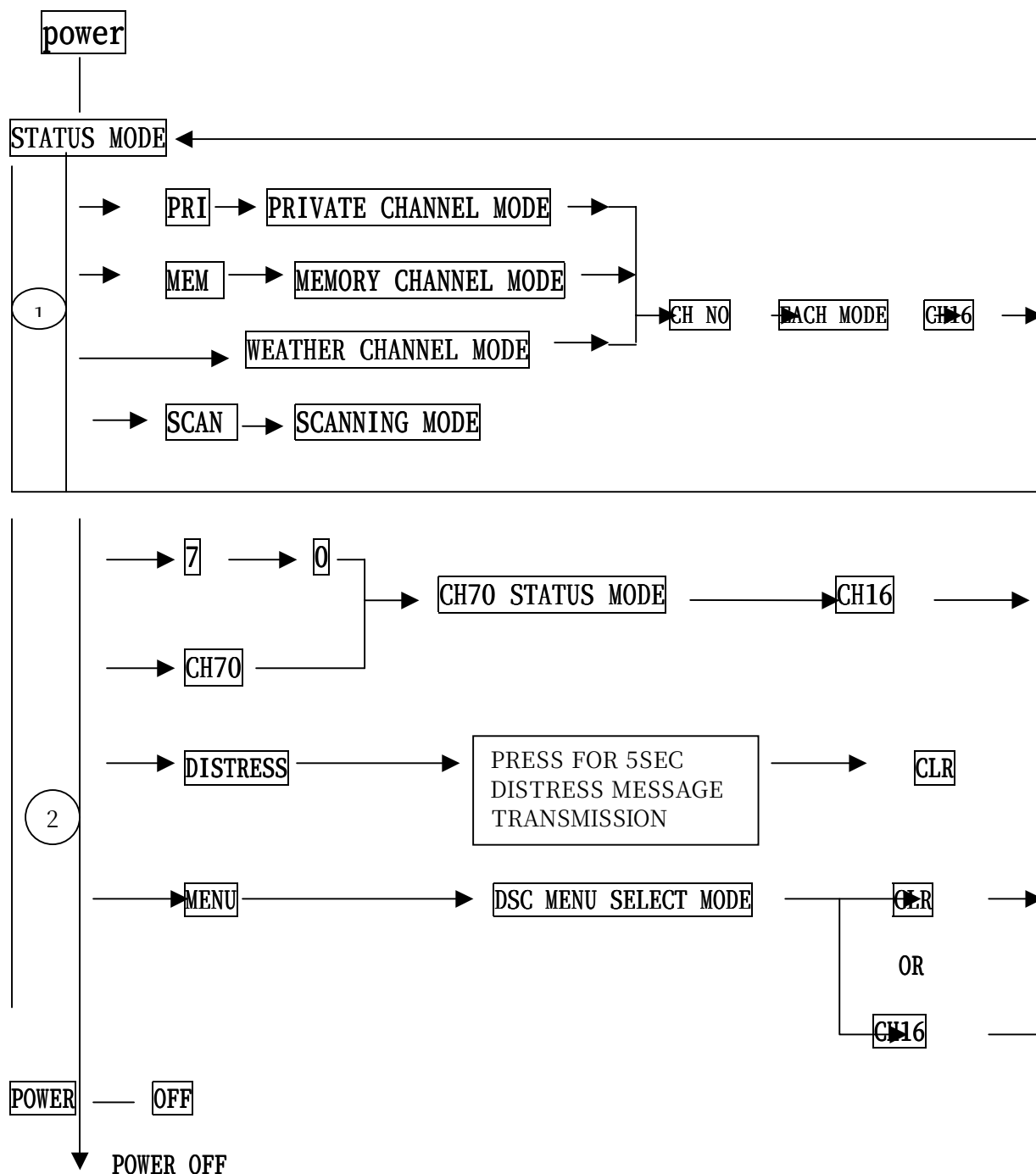
4.1 TURNING THE POWER ON

Press **POWER** on the front panel.

When the power isn't turned, turn on the toggle switch of main unit for power.

4.2 BASIC OPERATING

4.2.1 Flow chart between mode by key operation



POWER ON

STATUS DISPLAY (TELEPHONE MODE)

- PRIVATE CH
- SCAN MEMORY
 - SCAN MEMORY
- WEATHER CH
- SCAN
- MENU

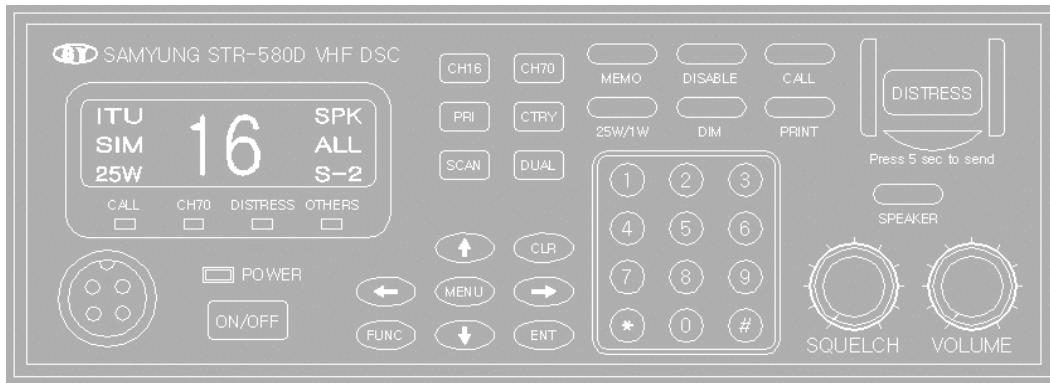
- 0. DISTRESS CAL EDIT
- 1. ALL SHIP CAL EDIT
- 2. INDIVIDL CAL EDIT
- 3. AUT/SEMI CAL EDIT – (FUNC + ENT) TEL NO. REGISTRER
- 4. GEOGRAPH CAL EDIT
- 5. GROUP CALL EDIT
- 6. DISTRESS MSG RELY – (FUNC + ENT) DISTRESS MESG MAKE
- 7. DISTR MSG ACKG
- 8. OTHER MSG ACKG
- 9. RX DISTRESS MSG VIEW – (FUNC + ENT) TX STORE MESSAGE VIEW
- 10. RX OTHER MSG VIEW
- 11. SYSTEM SETTING

- 0. DSC-ID : 000000000
- 1. GRP-ID : 000000000
- 2. DSC-MA : OFF
- 3. DSC-TM : 14:00
- 4. DSC-PO : N35. 05E129.02
- 5. DSC-AK : OFF
- 6. DATE : 1999.06.24
- 7. TIME : 12:00
- 8. SCAN : ALL SCAN
- 9. ALRM : ON

- 12. SYSTEM SELF TEST

- 0, SPAC SIG TX (OFF)
- 1. MARK SIG TX (OFF)
- 2. DOT SIG TX (OFF)
- 3. LOOP BAK SW (OFF)
- 4. DISTRESS KEY TEST
- 5. LINE PRINTER TEST
- 6. PROGRAM VERSION
- 7. DISPLAY DEV TEST
- 8. SYSTEM INIT CLEAR
- 9. ALL SYSTEM TEST
- 10. LOOP BAK DSC TEST
- 11. TX POWER(25W) TEST

4.2.3 Description of keys, knob and lamps



< FUNCTION of THE KEYS >

CH16 Press this key to select CH16

* Switch from other channel or the call mode of DSC mode to telephone mode.

25W/1W key : Switches transmitting power between 25w and 1w

* The clear telephone is available on 1w transmission of duplex when short distance

PRI Used for selection of private channel 01 - 99

- (1) Press this key in the CH16 status mode
- (2) Change Channel mode into "PRI" and the prompt displays for entering of CH No.
- (3) Press channel No. in two digit using the number keys.

DUAL Switches the channel between the currently selected channel and CH16

- (1) Select any other channel but CH 16
- (2) Press this key at current status
- (3) Switches alternatively the channel between the currently selected channel and CH-16
- (4) Dualscan speed is changeable using [FUNC] + [▲] , [FUNC] + [▼]
- (5) It will stop scanning when received a signal during scanning. press [*] KEY, then restart scanning after clear off stop condition.

SPEAKER Turn the speaker on or off

- (1) Handset receiver is always connected regardless of this key.

DIM Brighten or dim LCD backlight

- (1) Adjust brightness of the LCD INDICATION and KEYBOARD BACKLIGHT using this key in 2 steps of brightness
- (2) Whenever this key is pressed , dim-out and dim-up turn alternatively
- (3) It is useful at night

SCAN Start or stop Channel scan

- (1) Press [MENU] key in the CH16 status screen.
- (2) Place cursor on "11. SYSTEM SETTING" using [▲] , [▼] key and press [ENT]
- (3) Place cursor on "8 SCAN : ????????" using [▲] , [▼] key and press [ENT]
then select a scan mode among the ALL SCAN/MEM SCAN/GRP SCAN using [ENT]
- (4) Return CH16 status screen using [CLR] or CH16
- (5) Press [SCAN] . Scan mode at present appears on the screen and scanning starts
- (6) Scanning speed can be adjusted using [FUNC] + [▲] , [FUNC] + [▼]
- (7) If signal is received on the channel during the scan, scanning pauses.
Press the [*] key to continue scanning successively.
- (8) When the [SCAN] key is pressed again, scanning comes to a stop and "_ _ _" appears on scan mode.

ON/OFF Turn the system on or off

- (1) Press(about 1sec) this key to turn on the system.
- (2) Previous CH(Channel) status screen appears on LCD after power on.

CH70 Select CH 70 for DSC mode (voice transmission is prohibited)

CTRY Select the region (ITU, USA or CAN)

DISTRESS Transmits distress message

.(*Never press this key except in an emergency)

- (1) Strip the cover over the [DISTRESS] Key by pulling up
- (2) Press this key for 5sec to 10sec to transmit distress call

DISABLE Disable alarm sound

- (1) Disable audible alarm when receiving DSC calls
- (2) This key is valid only when the CH16 status screen is displayed.

CLR Terminates DSC call / Stops alarm sound / Returns to previous menu

- (1) Stop DSC call transmission
- (2) Stop alarms
- (3) It is also used to return to the previous screen.
- (4) Initialize system memory.

MEMO Register channel for "Memory scan" and "Group scan"

- (1) Press [MEM] key to open "MEMORY CHANNEL EDIT" screen. On this screen, first 0-9 items is for memory scan, next 10-11 items are for group scan. Each item consists of channel mode(ITU, USA, CNA, PRI, WTR) and channel number
- (2) Enter channel mode using [COUNTRY] [PRI] [WX] key and Enter channel number in 3 digit using number keys
- (3) Memory scan is effective when at least two memory channel is selected
- (4) Group scan is effective when two channel (start channel, end channel) is selected.
- (5) Edited memory channel is not erased from memory even though the system turns off.
- (6) To stop editing memory channel and return to CH16, Press [CLR] Key.

MENU Edit, Acknowledge, Relay and View DSC message / Configure system setup

0. DISTRESS CALL EDIT : Edit and transmit DSC distress message
1. ALL SHIP CALL EDIT : Edit and transmit DSC all ship call message
2. INDIVIDUAL CALL EDIT : Edit and transmit DSC individual call message
3. AUT/SEMI CALL EDIT : Edit and transmit message of automatic or semi-automatic connection to public telephone
4. GEOGRAPH CAL EDIT : Edit and transmit call-message based on position
5. GROUP CALL EDIT : Edit and transmit group call message(for group vessel)
6. DISTRESS MSG RELY : View ,relay, edit and transmit distress alarm message
7. DISTRESS MSG ACKG : Transmission of view and response for distress alarm message
8. OTHER MSG ACKG : Reply for other received message (except distress message)
9. RX DISTR MSG VIEW : View and print out received DSC distress message
10. RX OTHER MSG VIEW : View and print out other received DSC message.
11. SYSTEM SETTING : Set self-ID, time and date, auto-acknowledge, scan mode, etc.
12. SYSTEM SELF TEST : Test printer, view version of program , initialization of system etc.

PRINT Print out the received DSC message

- (1) Select "9. RX DISTR MESSAGE VIEW" or "10 RX OTHER MESSAGE VIEW" by using [ENTER] key.
- (2) If there is no received DSC message, it is meaningless to select the item even which cannot be selected.
- (3) Select one among the received DSC message using [◀] [▶] key and [ENTER] key
- (4) When pressed this key on DSC MESSAGE VIEW screen, it can print the received message.

CALL Transmit the edited DSC message

- (1) Press this key to transmit the message edited at DSC-message-edit screen
- (2) The message edited at "DISTRESS CALL EDIT" can be transmitted only using [DISTRESS] key

(3) For example, this is the procedure of individual call

- ① Press {MENU}key on the CH16 status screen
- ② Select the "2 INDIVIDUAL CALL EDIT" by using [▲] [▼] key, {ENTER} key.

The "INDIVIDUAL CALL EDIT" screen appears on LCD.

- Select 'ADDRESS ' and input ID number of station in nine digits for reception.
- Select "CATGRY " and input call content
- Select "TEL_CI " and input wanted communication method
- Select "TEL_C2" (R????T????) and input wanted communication channel
- Select "EOS_CM : ACK ?? " and input response -method(usually " ACK RQ")
- Press [CALL] key to transmit edited message

(4) When received the acknowledgement, view the acknowledgement message and press [press]

ENT To use this key for selecting item and confirming to input the edited value into the system.

- (1) Press this key to select item after locating the cursor to wanted item among DSC menu by using [▲] [▼] key.
- (2) When editing telephone number, press this key to settle the inputted number in the system.
- (3) Above rules are applicable to all other screens.

The same function as [ENT] KEY

* It is a key to clear off inputting standby receiving signal while in scanning.

- (1) If there is a channel to perceive receiving signal while in scanning, it will be suspended and remain as a standby status until receiving signal disappears
- (2) In this time, if pressed [*] key, it will be moved to next channel and keep going on scanning ignoring that channel.
- (3) If there is any channels where received signal is input again, it stops again.

0 - **9** To select CHANNEL and input the number.

- (1) When selected channel, private channel should be input in 3 digit, and other channels should be input in 2 digit.
- (2) For example, to select channel 16, press [1] - - - > [6] in sequence
(No need to input [ENTER] KEY)

↑ ~ **↓** To set POSITION direction, TELEPHONE NUMBER, SCAN SPEED,

← ~ **→** Increase or Decrease CHANNEL NUMBER by one STEP by one step

- (1) In case of inputting position manually, or setting NS/EW direction and calling registered telephone number at telephone connection edit screen.
- (2) To adjust the scan speed in three steps using [FUNC]+[↑], [FUNC]+[↓]KEY.

<<DESCRIPTION OF KNOB AND LAMP>>

- (1) SQUELCH KNOB : To make SQUELCH adjustment using SQL KNOB in controller
- (2) VOLUME KNOB : To adjust speaker volume when speaker is on
- (3) CALL LAMP : Turned it on when transmitting the DSC call message.
- (4) CH70 LAMP : Turned it on when the DSC call channel set at other than channel 70
- (5) DISTRESS LAMP : Turned it on when receiving the DSC distress call
- (6) OTHERS LAMP : Turned it on when receiving the DSC call except distress call
- (7) POWER LAMP : Turned it on when power supply is on

4.2.4 HOW TO OPERATING HAND MIC (For standard contract)

When transmitting, press PTT SWITCH and then communicate.

SIMPLEX communication is transmitted (ON) if press PTT.

SIMPLEX communication is received(OFF) if release PTT.

DUPLEX communication can be received and transmitted if press PTT SWITCH simultaneously

*Note) While protection channel and scanning are in operation, PTT SWITCH does not operate

*Note) Under PTT SWITCH ON (transmitting), The function of KEY BOARD is not operated.

*Note) When required by special contract, hand set is available.



4.2.5 TELEPHONE MODE(Namely : CH16 Screen)

* When input the channel, it should be input in 3 digit(ex:001) at PRI Mode, and for other channel, it should be input in two digit (ex:01).

ITU	16	SPK
SIM		ALL
25W		S-2

ITU	123	SPK
SIM		ALL
25W		S-2

(1) CHANNEL MODE

- * ITUWhere there is ITU CHANNEL selected.
- * USA Where there is USA CHANNEL selected.
- * CNA Where there is CANADA CHANNEL selected.
- * PRI Where there is PRIVATE CHANNEL selected.
- * WTR Where there is WEATHER CHANNEL selected.

(2) TELEPHONE MODE

Be changed by select CHANNEL.

- * SIM SIMPLEX MODE is selected in TELEPHONE MODE.
- * DUP DUPLEX MODE is selected in TELEPHONE MODE.

(3) Transmitting output MODE

When pressed 25W/1W KEY,

- * 25W Output power supply is selected to 25W.
- * 1W Output power supply is selected to 1W.
- * 25W ... Indicating in transmit with 25W.
- * 1W Indicating in transmit with 1W.

(4) SPEAKER MODE

When pressed SPK KEY,

- * SPKStatus being SPEAKER on.
- * ____ Status being SPEAKER off.

(5) SCANNING MODE

When pressed SCAN KEY,

- * ____ SCANNING MODE is OFF.
- * GRP Status in the process of scanning Group CHANNEL.
- * ALL Status in the process of SCANNING ALL CHANNEL.
- * MEM Status in the process of SCANNING MEMORY CHANNEL.

When DUAL KEY is pressed

- * DUL ---- Receiving the current channel and CH16 reciprocately.

(6) SCANNIGN Speed MODE

When pressed FUC+ $\uparrow$ or $\downarrow$ key,
 *To be displayed as S-1, S-2, S-3

4.2.6 REGISTRATION OF SCAN MEMO CHANNEL

(1) When pressed [MEMO]KEY IN TELEPHONE MODE, be displayed registration screen.

-- MEMO SCAN EDT -----[0]					
0.	MEM	0	:	ITU	CH 005
1.	MEM	1	:	USA	CH 019
2.	MEM	2	:		CH
3.	MEM	3	:		CH
4.	MEM	4	:		CH
5.	MEM	5	:		CH
6.	MEM	6	:		CH
7.	MEM	7	:		CH
8.	MEM	8	:		CH
9.	MEM	9	:		CH
10.	MEM	S	:		CH
11.	MEM	E	:		CH

(2) MEM 0--MEM 9 represents MEMO SACN CHANNEL, MEM S and MEM E represents Start or End of GROUP SCAN channel .

(3) Select CHANNEL MODE of ITU,USA,CNA,WTR,PRI by using [CTRY],[PRI]KEY and input

CHANNEL NUMBER by using a numeral key.

- ※ 1. All CHANNEL number have to be input in 3 digit.
- 2. WEATHER CHANNEL(WTR) can be used from 001 through 009 (001~009) only.
- 3. PRI CHANNEL can be used up to 560 only.

4.2.7 SCANNING

- (1) Select one of ALL/SCAN / MEM SACN / GRP SCAN / in chapter 8 of item [11.SYSTEM SETTING] after pressing [MENU ITEM SEL] key in screen (basic: ALL SCAN).

-- SYSTEM SETUP ----- [0]	
6. DATE	: 1999.07.01
7. TIME	: 13:39
8. SCAN	: ALL SCAN

- (2) Return to CH16 screen (Using CLR KEY or CH16 KEY), and press “SCAN” key, then switching to the currently scanned and showing SCAN MODE(ALL/MEM/GRP).
- (3) Indicating the scan speed set presently.
 - If user want to adjust SCAN speed, use [FNC]+[↑] or [FNC]+[↓] KEY.
The higher the figure is, the scan speed will be more faster.
(Changeable by 3 steps with S-1, S-2, S-3)

MOD	19	SPK
ALM		SPD
PWR		DUL

- (4) Where there is any channels which perceives receiving signal while in scan, it will be the status of stoppage in scanning.
At that time, if pressed [*]KEY, it will keep on scanning after shifted the next CHANNEL.
- (5) If pressed [SCAN]KEY once again, indicate “----“ as SCAN mode and terminate scanning completely.

4.3 HOW TO OPERATE AS PER THE PURPOSE

4.3.1 STAND-BY RECEPTION

- (1) When pressed [ON/OFF] KEY, be turn on power to main unit and then “TELEPHONE MODE” be displayed on LCD SCREEN.
- (2) Adjust VOLUME NOB for receiving sound to be comfortable.
- (3) Become the status of stand-by reception for receiving CH16.
- (4) It will stop the receiving noise when turning SQUELCH NOB clock-wise direction.
Set the position of SQUELCH NOB slightly right side from the position to stop such noise.
- (5) For channels other than CH16, select the purposed Channel by using [digit]KEY or [↑]/[↓]KEY.

4.3.2 COMMUNICATION

- (1) In case of calling or responding to the call, holding up the handset and set the purposed Channel. Transmitting output power is 25W unless otherwise designated.
When pressed PTT BUTTON of HANDSET, it indicates the transmit status in LCD Screen by converting into PWR:25W. It is then available to communicate.
- (2) When taken off PTT of HANDSET, it will become receiving status with turning off conversion sign.

4.4 DIGITAL SELECTIVE CALL MODE

4.4.1 TAKE A CAUTION IN KEY OPERATION

Testing a distress call will cause a great disaster to the nearby ships and search and rescue center that should not be done.

Once DSC call is activated, it sounds alarm from speaker and message will be transmitted when taken hands off the switch after 5 ~ 10 seconds.

You may stop mis-transmitter, if press out hand from [DISTRESS] KEY while 5sec. Signal can't be stopped during transmission even if stopping operation executed because signal speed is so fast, therefore careful attention should be made.

4.4.2 TRANSMISSION OF DISTRESS CALL

Distress message will be transmitted when pressing [DISTRESS] KEY for 5sec 10sec. It takes precedence in treating Distress Call over other function, and alert sound be output from speaker. Distress Message will be automatically transmitted following transmit from no-modulation CARRIER.

Message is transmitted 5 times continuously and after then transmitted continuously at an interval between 3.5 min ~ 4.5 min until response comes.

Position data is input automatically when navigation equipment was connected.

(Notice : Said position information will be disregarded after 24 hours from inputting time) If DSC_MA is ON or DSC_MA is off without connecting to GPS and then exceeding the set time, time and position data will be transmitted without message.

POSITION : 999999999
DIST-UTC = 8888

----- In case of no INFORMATION -> TRANSMIT

4.4.3 RECEIVING DISTRESS CALL

1. When receiving DISTRESS CALL by DSC, Distress and Others alert lamp in the Panel will be on. At the same time, alert sound will be output from speaker "bbi~ppo bbi~ppo" Press (CLR) KEY to stop alerting.
2. First 3 (three) messages is displayed in LCD including Distress Calling Message from Transmitting.
3. Received DISTRESS MESSAGE can be automatically stored/recorded up to 20 numbers in the memory component of main unit, so user may identify the next message. Transmitted/Received message by DIGITAL DSC can be output from printer automatically through connecting with printer. Stored receiving message in memory can also be checked.

4.4.4 SCREEN COMPOSITION AND DEFINITION OF TERMINOLOGY

- (1) Visual items in “MENU ITEM SEL” screen is three items at one but the composition of overall display is as follows.

-- MENU ITEM SEL -----[0]
0. DISTRESS CAL EDIT
1. ALL SHIP CAL EDIT
2. INDIVIDL CAL EDIT
3. AUT/SEMI CAL EDIT
4. GEOGRAPH CAL EDIT
5. GROUP CALL EDIT
6. DISTRESS MSG RELY
7. DISTRESS MSG ACKG
8. OTHERS MSG ACKG
9. RX DISTR MSG VIEW
10. RX OTHER MSG VIEW
11. SYSTEM SETTING
12. SYSTEM SELF TEST

- (2) If shifted by [↑]/[↓]KEY at DSC MESSAGE edit Screen, 'No select [X]/select [0]' located in Light-top side is converted. [X] means 'no select' and [0] means 'select' will be available.

-- INDV CALL EDT -----[X]
FORMAT : INDIVIDL
ADDRES : 123456789
CATGRY : ROUTINE

-- INDV CALL EDT -----[0]
FORMAT : INDIVIDL
ADDRES : 123456789
CATGRY : ROUTINE

- (3) Item to select : Move by [↑]/[↓]KEY at display and press [ENT]KEY, that means 'select current item'.
- (4) CAL_CH : Setting except CH70 is possible. because of not DSC, use CH70 normally.

- (5) Change of [N OF D],[TEL_CM],[CATGRY],[TEL_C1],[TEL_C2] by [ENT]KEY is listed right side of screen. When selecting one of them, the selected item will be input.

-- INDV CALL EDT -----[0]	
FORMAT : I	ROUTINE
ADDRES : 1	SHIPS BUSI
CATGRY : R	SAFETY
	URGENCY
	DISTRESS

- (6) The way how to input position (latitude/longitude) is to press [ENT]KEY at the wanted item which is standby status. When latitude input is completed, cursor moves to the longitude input and remain as standby status for inputting.

- Decimal point is already displayed.
- Change of latitude (N/S) by [↑]/[↓]KEY at the appropriate position.
- Change of longitude (E/W) by [⇒]/[⇐]KEY at the appropriate position.
- latitude and longitude is canceled by pressing [CLR] KEY after CANCEL, cursor goes ahead.

(EX) LATITUDE 35.41 : 3 → 5 → 4 → 1

LONGITUDE 139.34 : 1 → 3 → 9 → 3 → 4

-- DIST CALL EDT -----[0]	
SIP_ID : 11111111	
N OF D : UNSIGN DIT	
POSITION : N__._E__._	

- (7) Like '01/03' figure is displayed at received message RELAY, ACKNOWLEDGE and VIEW Screen at Right top side of screen, that means number of received message is 3 in total and current confirming message is the first one.

That can be checked by [⇒]/[⇐]KEY.

- If there is no received message, this item is not selected.

-- OTHR VIEW ----- 01/03 [X]	
FORMAT : INDIVIDL	
ADDRES : 123456789	
CATGRY : SAFETY	

4.4.5 EDIT DISTRESS MESSAGE AND CALL

(1) Select [0.DISTRESS CAL EDIT] on [MENU ITEM SEL] screen.

-- MENU ITEM SEL -----[0]
0. DISTRESS CAL EDIT
1. ALL SHIP CAL EDIT
2. INDIVIDL CAL EDIT

-- DIST CALL EDT -----[X]
FORMAT : DISTRESS
SIP-ID : 11111111
N OF D : UNSIGN DST

(2) Select 'N OF D' item (Nature Of Distress) and insert the desired contents.

-- DIST CALL EDT -----[0]	
FORMAT : D	FIRE
SIP_ID : 1	FLOOD
N OF D : U	COLLISION
	GROUND
	LIST
	SINK
	ADRFT
	UNSIGN DST
	ABANDON
	PIRACY
	MAN OVERBOD

(3) Select 'POSITION' item (distress Position) and input the position of latitude and longitude.

When GPS device is connected, this item is input automatically

When '2.DSC-MA:ON' of [MENU ITEM SEL] -> [11.SYSTEM SETTING] is set

the coordinates (position) of '4.POS:N??.?E???.??' is set automatically.

-- DIST CALL EDT -----[0]
SIP_ID : 11111111
N OF D : UNSIGN DIT
POSITION : N__._E__._

(4) Select 'TIME_U' item (Time_UTC) and input the distress time by 24 hours.

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(1) Select [1.ALL SHIP CAL EDIT] item on [MENU ITEM SEL] screen.

-- MENU ITEM SEL -----[0]
0. DISTRESS CAL EDIT
1. ALL SHIP CAL EDIT
2. INDIVIDL CAL EDIT

-- ALLS CALL EDT -----[X]
FORMAT : ALL SHIP
CATGRY : SAFETY
SIP_ID : 11111111

(2) Select 'CATGRY' item (Category) and input the desired contents.

-- ALLS CALL EDT -----[0]
FORMAT : A SAFETY
CATGRY : S URGENCY
SIP_ID : 1 DISTRESS

(3) Select 'TEL_C1' item(Tele-Command 1) and input the desired contents.

-- ALLS CALL EDT -----[0]
CATGRY : S G3E SIM TEL
SIP_ID : 1 G3E DUP TEL
TEL_C1 : G POLLING
UNABLE COMP
DATA MODEM
J3E TEL
H3E TEL
F1B/J2B FEC
F1B/J2B ARQ
F1B/J2B REC
F1B/J2B TTY
A1A RECORD
SHIP POSON

(4) Select 'TEL_C2' item (Tele-Command 2) and input the desired contents.

-- ALLS CALL EDT -----[01]	
SIP_ID : 1	RE18 SIP/PL
TEL_C1 : G	MEDICAL TRN
TEL_C2 : N	TEL PUB OFS
	NO INFOMATN

(5) Select 'MSG' item (Message 2), and after selecting type of Message2 (EX:V.H.F CHAN), input in accordance with an appropriate standards.
(Note!!: Don't set the channel such as CH70, CH75, CH76 for special usage.)

-- ALLS CALL EDT -----[01]	
TEL_C1 : G	V.H.F CHAN
TEL_C2 : N	MF/HF CHAN
MSG : R__	MF/HF FREQ
	SHIP COORD

-- ALLS CALL EDT -----[01]	
TEL_C1 : G3E SIM TEL	
TEL_C2 : NO INFOMATN	
MSG : R__T__	VHF

(6) Completed MESSAGE edit, press [CALL]KEY then the MESSAGE is transmitted one time.

4.4.7 EDIT INDIVIDUAL / GEOGRAPH / GROUP MESSAGE AND CALL

- (1) Select one among [2.INDIVIDL CAL EDIT] / [4.GEOGRAPH CAL EDIT]
/ [5. GROUP CALL EDIT] on the [MENU ITEM SEL] screen.

-- MENU ITEM SEL -----[0]
0. DISTRESS CAL EDIT
1. ALL SHIP CAL EDIT
2. INDIVIDL CAL EDIT

-- INDV CALL EDT -----[X]
FORMAT : INDIVIDL
ADDRES : 000000000
CATGRY : ROUTINE

- (2) [INDIVIDL] : Select 'ADDRES' item, and input the ID number of responding station in call.

Initial setting is 000000000.

ex) 4→8→3→1→9→2→6→5→7

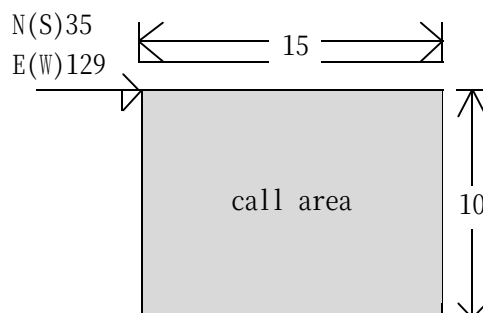
-- INDV CALL EDT -----[0]
FORMAT : INDIVIDL
ADDRES : _____
CATGRY : ROUTINE

- [GEOGRAPH] : Select 'PTY_ID' item, and input the value of sea area positioned responding station.

Initial value is N00E000X00Y00.

ex) [3]→[5]→[1]→[2]→[9]→[1]→[5]→[1]→[0]

-- GRPH CALL EDT -----[0]
FORMAT : GEOGRAPH
PTY_ID : N__E__Y__X__
CATGRY : ROUTINE



[GROUP] : Select 'GRP_ID' item(responding station GROUP ID) and input GROUP ID
Initial value is 000000000.

(4) Select 'CATGRY' item(Category) and input the desired contents.

-- INDV CALL EDT -----[01]	
FORMAT : I	ROUTINE
ADDRES : 1	SHIPS BUSI
CATGRY : R	SAFETY
	URGENCY
	DISTRESS

(5) Select 'TEL_C1' item(Tele-Command 1) and then input desired contents.

-- INDV CALL EDT -----[01]	
CATGRY : R	G3E SIM TEL
SIP_ID : 1	G3E DUP TEL
TEL_C1 : G	POLLING
	UNABLE COMP
	DATA MODEM
	J3E TEL
	H3E TEL
	F1B/J2B FEC
	F1B/J2B ARQ
	F1B/J2B REC
	F1B/J2B TTY
	A1A RECORD
	SHIP POSON
	A1A KEY
	F1C/F2C/F3C
	NO INFOMATN

(6) Select 'TEL_C2' item(Tele-Command 2) and then input desirable contents.

-- INDV CALL EDT -----[0]	
SIP_ID : 1	RE18 SIP/PL
TEL_C1 : G	MEDICAL TRN
TEL_C2 : N	TEL PUB OFS
	NO INFOMATN

(7) Select 'MSG' item(Message 2), after selecting the type of Message2 (ex:V.H.F CHAN) according to an appropriate standard. Don't set special using CHANNEL CH70, CH75, CH76.

-- INDV CALL EDT -----[0]	
TEL_C1 : G	V.H.F CHAN
TEL_C2 : N	MF/HF CHAN
MSG : R__	MF/HF FREQ
	SHIP COORD

-- INDV CALL EDT -----[0]	
TEL_C1 : G3E SIM TEL	
TEL_C2 : NO INFOMATN	
MSG : R__T__	VHF

(8) Select 'EOS_CM' item(End of Sequence Command) and input desired contents.
This is for [2.INDIVIDL CAL EDIT] item only.

-- INDV CALL EDT -----[0]	
MSG : R006	ACK RQ
TIME_U : G	ACK BQ
EOS_CM : A	EOS

(9) After editing MESSAGE, press [CALL]KEY, then MESSAGE is transmitted once.
After MESSAGE is transmitted, when edit MESSAGE again, press [↑]/[↓] KEY
and then can be return to edit MODE.

4.4.8 EDIT AIR COMMUNICATION NETWORK(AUTO -SemiAuto) MESSAGE AND CALL

(1) Select [3.AUT/SEMI CAL EDIT] on the [MENU ITEM SEL] screen.

-- MENU ITEM SEL -----[0]
1. ALL SHIP CAL EDIT
2. INDIVIDL CAL EDIT
3. AUT/SEMI CAL EDIT

-- AUTO CALL EDT -----[X]
FORMAT : AUTO-SEMI
ADDRES : 000000000
CATGRY : ROUTINE

(2) Input calling (responding) station ID after selecting 'ADDRES' item(responding station ID number).

Initial value is 000000000.

ex) 4→8→3→1→9→2→6→5→7

-- AUTO CALL EDT -----[0]
FORMAT : INDIVIDL
ADDRES : _____
CATGRY : ROUTINE

(3) Input the desired contents after selecting 'TEL_C1' item(Tele-Command 1).

-- AUTO CALL EDT -----[0]	
CATGRY : R	G3E SIM TEL
SIP_ID : 1	G3E DUP TEL
TEL_C1 : G	UNABLE COMP
	END OF CALL
	DATA MODEM
	SHIP POSON
	F1C/F2C/F3C

(4) Select 'TEL_C2' item(Tele-Command 2) and input the desired contents.

-- AUTO CALL EDT -----[0]	
SIP_ID : 1	RE18 SIP/PL
TEL_C1 : G	MEDICAL TRN
TEL_C2 : N	TEL PUB OFS
	NO INFOMATN

(5) Select 'WRK_CH' item(Working Channel) and input VHF CHANNEL in 4 digit.
ex) [0]→[0]→[1]→[9]

-- AUTO CALL EDT -----[0]	
TEL_C1 : INDIVIDL	
TEL_C2 : NO INFOMATN	
WRK_CH : ____	

(6) Select 'TEL' item (Telephone Number) after input telephone address of air communication network, press [ENT]KEY to make sure.

-- AUTO CALL EDT -----[0]	
TEL_C2 : NO INFOMATN	
WRK_CH : 0019	
TEL : _____	

If telephone number is already registered at telephone directory in other way, press [⇒] KEY on “TEL” where reversed pole is placed to call telephone directory, and select the registered telephone number.

===== [* HOW TO REGISTER TO TELEPHONE DIRECTORY] =====

Placed cursor to “3 AUT/SEMI CALL EDIT” at “DSC MENU”, and press [FUC] + [ENT] key, then ‘Telephone registration’ screen will be shown, where registered telephone number can be used by calling when air communication network telephone number is input.

-- TEL NO REGIST ----- [0]	
0 :	
1 :	82514165555
2 :	
3 :	
4 :	
:	
:	
11 :	
12 :	

- (7) After completing message edit, press [call]key then MESSAGE is transmitted once
 After transmitting message, if next message is planned to be edited again.
 It can be returned to edit mode by pressing [↑]/[↓]KEY.

4.4.9 RELAYING A DISTRESS CALL

- (1) Select [6.DISTRESS MSG RELY] at [MENU ITEM SEL] screen.
- If there is no received distress message, this item will not be selected.
 - In case that near ship distress is witnessed, and wanting to edit distress call relaying message, press [FNC]+[ENT]KEY at [6.DISTRESS MSG RELY]

-- DIST RELY ----- 01/01 [0]	
FORMAT :	ALL SHIP
ADDRES :	_____
CATGRY :	DISTRESS

- (2) After message is edited, press [CALL] KEY, then MESSAGE is transmitted once.

4.4.10 Acknowledgment of Distress Call (Normally response by Coast Station)

- Select [7.DISTRESS MSG ACKG] item at [MENU ITEM SEL] screen.
- It is impossible to edit message this item, and possible to response only by [CALL]KEY).
 - DISTRESS response to individual call is possible only once within 5 min.

-- DIST ACKG ----- 01/03 [X] FORMAT : INDIVIDL ADDRES : 123456789 CATGRY : DISTRESS
--

4.4.11 Acknowledgment of Other Calls

- Select [8.OTHERS MSG ACKG] at [MENU ITEM SEL] display.
- Message edit is impossible and only response by [CALL]KEY is possible.

-- OTHR ACKG ----- 01/03 [X] FORMAT : INDIVIDL ADDRES : 123456789 CATGRY : SAFETY
--

4.4.12 View received Distress Call Messages

Select [9.RX DISTR MSG VIEW] at [MENU ITEM SEL] display.

-- DIST VIEW ----- 01/03 [X] FORMAT : INDIVIDL ADDRES : 123456789 CATGRY : DISTRESS
--

4.4.13 View received Other Call Message

Select [10.RX OTHER MSG VIEW] at [MENU ITEM SEL] display.

-- OTHR VIEW ----- 01/03 [X] FORMAT : INDIVIDL ADDRES : 123456789 CATGRY : SAFETY
--

4.4.14 In case Receiving DSC Message

- (1) An Alarm sounds, received MESSAGE 3 line is indicated at screen.
 - (2) Press the [CLR]KEY. The alarm stops. The screen returns to the initial Status mode.
 - (3) If message is received continuously more than 2 times, press [CLR]KEY more than 2 times
 - (4) To view the received message again, select the 'RX OTHER MESSAGE VIEW' or 'RX DISTR MESG VIEW'.
- ※ In case of connecting with printer, When be received message, it is printed automatically.

-- INDVDL CALL REC----- [01] FORMAT : INDIVIDL ADDRES : 123456789 CATGRY : SAFETY

4.4.15 Setting Automatic Acknowledgment

When received DSC Call, auto acknowledgment should be made if following conditions are fulfilled with, and when work channel is designated, it should be on the standby status in accordance with the designated work channel and communication methods.

※ AUTO ACK CONDITION

- 1.Auto acknowledgement is set ON.
(Nomally AUTO ACKNOWLEDGMENT is set to OFF in delivery condition)
- 2.The unit status is not editing DSC MESSAGE and MENU.
- 3.The content of message both in FORMAT and in CATEGORY should not be DISTRESS.
- 4.The telecommand of the message received is not "DISTRESS ACK" or "DISTRESS RELAY".
- 5.The combination between Radio method of selected "TELECOMMAND" in the message received and WORK CHANNEL designated as WORK CH must be exact.
(Ex : It is wrong combination when if "Telecommand : G3E SIMP TEL" as simplex and "Work CH:25 as duplex channel" is combined)
6. The content of END OF SEQUENCE in Received MESSAGE should be ACK RQ.
7. There should have not received ERROR (ECC ERROR),and WING-SIDE switch should be OFF

4.4.16 SYSTEM INITIAL SETTING

Select [11.SYSTEM SETTING] at [MENU ITEM SEL] screen.

-- SYSTEM SETUP ----- [0]	
0.	DSC-ID : 11111111
1.	GRP-ID : 01111111
2.	GPS-AL : ON/OFF
3.	DSC-TM : 12:30
4.	POS : N35.05E129.02
5.	DSC-AK : OFF
6.	DATE : 1999.07.01
7.	TIME : 13:39
8.	SCAN : ALL SCAN
9.	ALRM : ON
10.	OPER : SIMPLEX

- 0.DSC-ID : Input call sign of own station.
 1.GRP-ID : Input call sign of group.
 2.GPS-AL : ON : When couldn't received new data information during for
 over 4 hours on received GPS Signal, be jingle alarm.
 OFF : the apposite function of above written meaning.
- 3.DSC-TM : Input present time manually.
 4.POS : Set the present position of the station manually.
 5.DSC-AK : Set the ON/OFF of automatic acknowledgment.
 6.DATE : Set the present data (date in the equipment)
 7.TIME : Set the present time (time in the equipment)
 8.SCAN : Set the SCAN MODE.
 9.ALRM : Set ON/OFF.
 10.OPER : SIMPLEX

※ Caution: In case 3,4 item being input, and 2 item is ON, while transmitted DSC MESSAGE, 6,7 item is disregarded only item 3, 4 of time/position will be transmitted.

4.4.17 SYSTEM SELF TEST

Select [12.SYSTEM SELF TEST] on [MENU ITEM SEL] screen.

-- SYS SELF TEST ----- [01]
0. SPAC SIG TX (OFF)
1. MARK SIG TX (OFF)
2. DOT SIG TX (OFF)
3. LOOP BAK SW (OFF)
4. DISTRESS KEY TEST
5. LINE PRINTER TEST
6. PROGRAM VERSION
7. DISPLAY DEV TEST
8. SYSTEM INIT CLEAR
9. ALL SYSTEM TEST
10. LOOP BAK DSC TEST

0. SPAC SIG TX : ON , DSC SPAC signal is transmitted continuously.
1. MARK SIG TX : ON , DSC MARK signal is transmitted continuously.
2. DOT SIG TX : ON , DSC DOT signal is transmitted continuously.
3. LOOP BACK SW: ON , connect inside MODEM input and output.
4. DISTRESS KEY TEST: Same with [DSTRESS]KEY ON without DSC message
5. LINE PRINTER TEST:
Print out 'ABCDEFGHIJKLMNOPQRSTUVWXYZ-abcdefghijklmnopqrstuvwxyz
-1234567890()[]+-=?/','.,;:*#' at connected PRINTER (DPU-414)
6. PROGRAM VERSION: Display program version of CPU1 and CPU2
7. DISPLAY DEVTEST:'ABCDEFGHIJKLMNOPQRSTUVWXYZ' is displayed
LED flickering
8. SYSTEM INITIAL CLEAR: '(*)--(PWR)--OFF-ON-->'message appears
After pressing [*]KEY and POWER OFF, ON again and then SYSTEM is cleared.
9. ALL SYSTEM TEST :
 - 0) SELF ID..0000000000 → Display DSC ID of own station
 - 1) GROUP ID...0000000000 → Display GROUP ID
 - 2) CPU1 VER.....XXXX → Display MAIN CPU ROM PROGRAM VERSION
 - 3) CPU2 PROGRAM VER..XX → Display PIC PROGRAM VER
 - 4) BACKUP MEMORY.....OK → Checked/display the condition
of BACKUP MEMORY
 - 5) PRINTER CONNECT.....OK → Checked/display connect or not of
PRINTER
 - 6) DSC MNU(GPS).....OK → Not GPS input, display manual input

switching staus

- 7) POWER IN(14.0V).....OK →Checked/display power of inside equipment
 - 8) RF LOOP BACK ...OK → Tested DSC RF, and display its abnormality
 - 9) WKR PLL TESTING.....OK → Checked PLL of watching keeping receiver
 - 10) PLL...RX(00)TX(00) → Display/checked RX/TX PLL.(when connected printer, Checked all contents of each part of channels
 - 11) GPS DATA IN.....OK → Checked the input of GPS DATA
10. LOOP BACK DSC TEST : After executing DSC LOOP BACK TEST at RF level, display result.
- 11.TX POWR(25W) TEST : Check /display transmitting output -0-/-X-

4.5 DPU-414 PRINTER

4.5.1 Note while in operation

- (1) The printing paper used in the DPU-414 printer is a special paper which turns black by the thermochemistry reaction. Take the following precaution when used the paper, otherwise it would be discoloration or decolorization.
 - Keep the paper away from heat, humidity and light
 - Dry your hand before handling the paper.
 - Don't rub the paper with any hard objects.
 - Do not use organic adhesive on the paper(however, water-based starch adhesives or compound adhesive will not cause any problems)
 - Do not use adhesive tape on the paper.(however,double-sided tape may be used on the front/rear side of the paper)
 - Do not allow the paper to remain in contact with polyvinyl chloride film for a long period of time.
 - Do not leave the paper in contact with freshly copied diazo type or wet process paper
 - Do not allow the paper to come into contact with organic solvents.
- (2) Note on using the DPU-414 printer
 - Do not attempt to print when there is no paper in the printer.
 - Do not turn the power switch off while printing. Only turn off the printer after it has finished printing and the head has returned to its home position
 - The DPU-414 has the self-test function.

4.5.2 Description of front panel

- (1) POWER switch
Switch up to turn the power on, then printer head go and one, the printer paper is fed by one column. Meanwhile, the power switch of connected STR-580D equipment has to turn on.
- (2) FEED switch
Feed the printer paper out by force. When pressed it one time, the printer paper is fed by one column. On pressing this key, the printer paper is fed continuously.
- (3) CUTTER

Use for cutting the printer paper.

- (4) The way out of paper
The printer paper is ejected through it
- (5) PAPER COVER
Store up the printer inside this paper cover

4.5.3 Basic operation

Turn on the STR-580D main unit. Switch on the printer.

And this unit can print out the transmitted and received DSC message and DATA from STR-580D main unit.

4.5.4 How to store the paper roll

- (1) Cut the printer paper horizontally.
If there is the wrinkle on the paper, it may cause the paper jam.

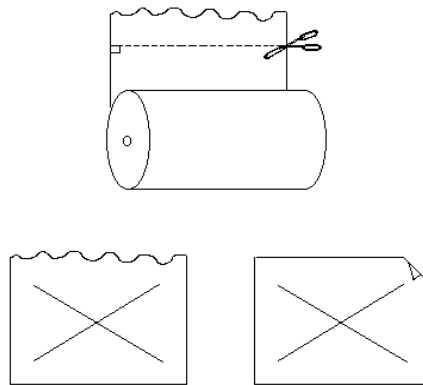


Figure 4.5.2 Paper handling of the printer paper

- (2) Switch off the printer
- (3) Open the paper cover and pull out the center shaft
- (4) Insert the center shaft in the center of the paper roll and put the end of the paper into the way-in of paper.
- (5) Switch of the printer and press the FEED key until the paper is hauled
- (6) Store up the center shaft and the paper gets out of the way-out
- (7) Press FEED key until the end of paper gets out of the way-out
- (8) Close the paper cover and put it down to shut.

5. Description of components

5.1 GENERAL

STR-580D, DSC/VHF Radio telephone equipment with DSC(Digital Selective Call) function, general voice communication as well as distress communication and normal communication using DSC. Because the watch keeping receiver(CH70)for DSC is built in STR-580D, it ensure 100% reception of DSC distress alert signals. And received signal of DSC is put in FSK MODEM for DSC regardless of main channel STR-580D. Can receive distress and general communication at CH70.

5.2 MAIN UNIT OF STR -580D

5.2.1 V -400 Receiver

It consists of a Receiver and a CH70 Watch Keeping Receiver

1) Receiver

It is composed of a High frequency Amp.circuit, a 1ST MIXER and an intermediate frequency circuit.

(1) High Frequency Amp Circuit

Signal from the antenna are put to the Mixer through the double turned circuit. The double turned circuit is controlled and supplied with fine turning dtg shift input corresponding to the received signal by CPU so that the receiving sensibility can be the beat on the receiving frequency.

(2) 1st MIXER

Signal is received from High frequency Amp at RF of 1st MIXER, Signal is made from receiving VCO by way of BUFFER AMP and then will be sent to crystal FILTER of the next stage.

(3) Intermediate Frequency Circuit

1st IF signal is amplified by TR after through the crystal filter and put to IC for IF. The IC consists of a 2nd local oscillator, a 2nd Mixer, Limiter Amp., and Demodulator. 1st IF signal is mixed with 2nd Local frequency and converted to 2nd IF signal of 455KHz. The 2nd signal is put to demodulate circuit through the Ceramic filter and the Limiter Amp and demodulated. The demodulated ouput signal is amplified and put to control part.

2) V-401 CH70 Watchkeeping Frequency

It is composed of a High Frequency Amp.Circuit,1st Mixer and an Intermediate Frequency.

(1) High Frequency Amp.Circuit

Signals from the antenna are put to Mixer through the double turned circuit.

(2) 1st MIXER

Signal is received from High frequency Amp at RF of 1st MIXER, Signal is made from receiving VCO by way of BUFFER AMP and then will be sent to crystal FILTER of the next stage.

(3) Intermediate Frequency Circuit

1st IF signal is amplified after through the crystal filter and put to IC for IF. The IC consists of a 2nd local oscillator, a 2nd Mixer, Limiter Amp and Demodulator. 1st IF signal is mixed with 2nd Local frequency and converted to 2nd IF signal of 455KHz. The 2nd signal is put to the demodulate circuit through the Ceramic filter and the Limiter Amp. and demodulated. The demodulated output signal is amplified and put to control part.

3) AF Circuit

It puts voice signal from the Receiver to panel speakers, handset receivers of the STR-580D main unit and STR-580D remote controller and handset receiver and speaker of the Wing. It also puts signals from handset receivers of the main unit, the remote controller and the wing to the Transmitter.

5.2.2 V-406 Control part

The control part is made up of CPU circuit and AF circuit. Device is controlled by the dual CPU,V-25 and PIC16C74A.

(1) CPU circuit

CPU(V-25) controls the radio telephone and DSC functions.

CPU circuit is composed of CPUs, ROM, RAM, EEPROM, RTC and Gate Array.

(2) DSC Receiving

DSC signal(AFSK modulated signal) received by the DSC watchkeeping receiver or the main receiver is demodulated by MODEM. The demodulated signal is read and transmitted by CPU(V-25).CPU automatically commands the suitable process to devices according to data. Also, Because DSC watchkeeping receiver is built, when Main receiver communicates with CHANNEL except CH70,can receive CH70 all the time.

(3) DSC transmitting When the **DISTRESS** key is pressed, CPU(V-25) read it.

According to the key operation, CPU (V-25) makes the DSC message and puts it to the transmitter after modulating to the AFSK signal by MODEM IC.

5.2.3 V -404 Power supply part

The Power supply part consists of a filter to decrease noise and a DC-DC Converter through the filter. It is converted to 14V and provided to PCB Transmission part.

5.2.4 V -402 Transmit Part

1) Output part

(1) Modulating part

AF signal from the microphone is put to the Low Pass Filter of IC through the Control part. It attenuated not for interference with other channels. The power is put to VCO for transmission and modulated.

(2) APC circuit

Transmitting output voltage of Power Amp end flows to IC-U6/A and then keep transmitting output LEVEL of Power Amp.part

2) PLL Frequency SYNTHESIZER part

The PLL IC is Frequency Synthesizer Part consists of a VCO, a PLL IC and a Loop Filter.

(1) VCO

Transmission Part has its VCO to oscillate Transmit Frequency. VCO output for transmission Power Amp.Circuit and to the PLL IC as well.

VCO oscillating frequency is controlled by control voltage from the Phase Detector of PLL IC.

(2) PLL IC

The PLL IC is composed of three prescalers of R Counter.N counter and A Counter, a phase detector and lock detector.

R Counter divides reference frequency of XU1 to comparative frequency.

N Counter divides again divided VCO output frequency by the prescaler.

A Counter divides frequencies undivided by the N Counter. It divides frequencies from 0 to 1/63.

Those counters are controlled by dividing data corresponding to VCO output frequency received from the CPU of the Control part and make the VCO oscillated with required frequency.

Lock Detector output is a signal to indicate PLL is unlocked. While PLL is unlocked. Transmission Output is a signal to indicate PLL is unlocked.

While PLL is unlocked. Transmission Output becomes off. With this systematic function. it is effective control signal not to transmit by wrong frequency. The Phase Detector outputs the frequency difference between

comparative frequency and VCO. The output is put to the loop filter.

5.2.5 V -467 POWER AMP.part

1) Power Amp.circuit

Modulated signal output that sent from transmitting part is amplified DRIVER at Q1(C2053) of power amp.part. Power is amplified at U1(M57710) and by way of Spurious restrained circuit, send to transmitting antenna. send to APC control circuit and keep setting output.

5.3 DPU -414 PRINTER

8-bit parallel input data of from the STR-580D is converted to 7 5 matrix character code on the interface. The converted data is sent the printer to be printed out.

6. INSTALLATION

6.1 Dismantling package and checking overall parts

Be careful to make sure, while dismantling the box package, that the goods are same as the ordered one.

Especially, check if external damage of goods occurred during delivery. If suitable care for such an external damage could not be made on the spot, immediately inform the fact to the authorized distributor of SAMYUNG.

6.2 Selection of installation place.

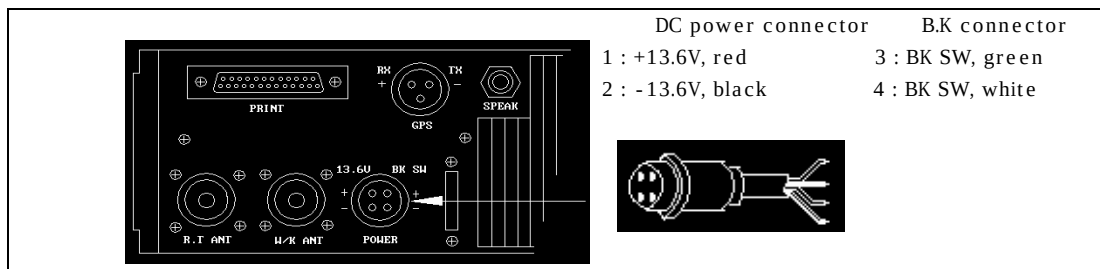
Select Installation place with following precautions.

1. Select a spacious place to have a unit well operated, well maintained and well ventilated.
2. Install the unit where it doesn't touch rain or sea water directly.
Dry area is the recommendable area for installing electronics equipment.
3. Avoid the place where sun shines directly and heating things.
4. Avoid the place where the vibration is felt.
5. Install the unit where there is less interference with other electronic devices.

6.3 Power unit connection

1. 4P connector placed in rear side of main unit is for power supply which can be connected to power supplier as the way of 1 → (+), 2 → (-).
2. Connector for power supply is used along with BK signal output, connect it after checking the connector pin number.
3. How to use B.K connector (option)

When used VHF band equipment over 2 numbers, or turned the speaker ON/OFF by using B.K. Box, please use number 3 and 4 of B.K. control terminal.

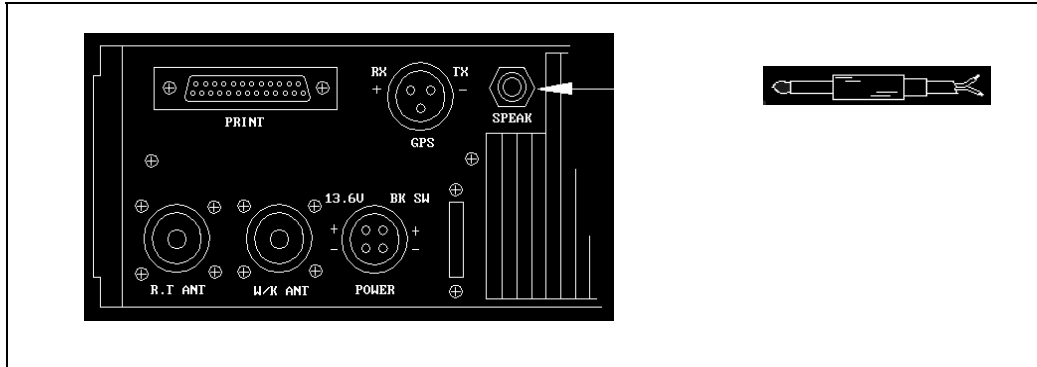


6.4 Connecting of external speaker

This equipment must use manufacture's type speaker, if user wants to use other speaker, please use a speaker with over 8Ω Impedance and over 5W output power.

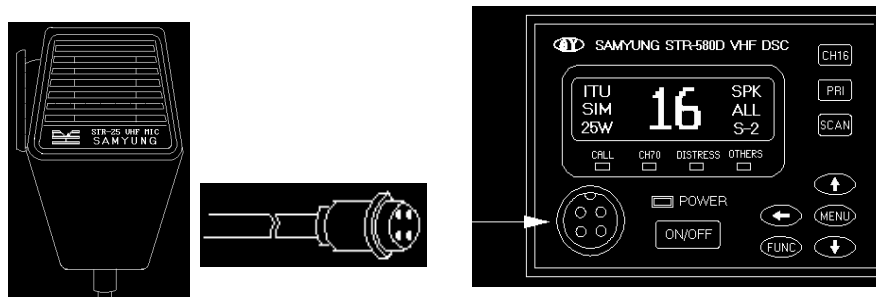
1P connector on the rear side of main unit is Speaker connector .

(Note : For special contract, internal speaker will be available according to user specification)



6.5 HAND MIC Connection

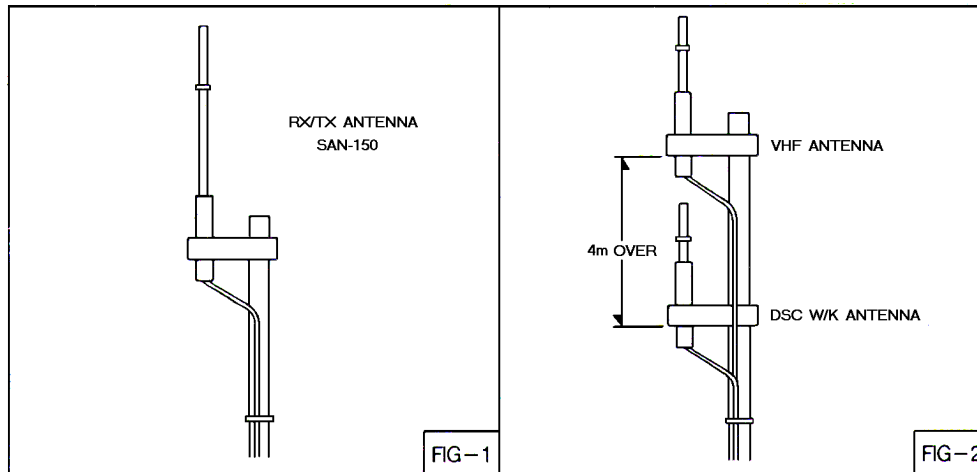
4P Connector on the front panel of main unit is HAND MIC connector, please connect it with HAND MIC connector as following picture.



6.6 ANTENNA INSTALLATION

TX/RX of this STR-580D has built-in ANTENNA DUPLEXER, so it is very simple to install Antenna according to following picture and instruction to have a better quality of communication.

1. BASIC DIAGRAM OF ANTENNA INSTALLATION



* The most efficient way to install the Antenna is that 2 or more antennas are installed vertically aparting from 4 m each other on the same antenna support which is widely prevailing standard method.

2. Cautions for Antenna Installation

When used STR-580D as DUPLEX method, a distance of transmitter frequency and receiver frequency is 4.6MHz, but it sometimes suppressed the receiving sensitivity of other transmitter or it may decrease the reachable distance while in long distance communication, or it may be sometimes impossible to achieve a duplex communication. Therefore special attention should be paid to the installation as following points.

- * Please install the antenna as high as possible.
- * Install the antenna 2m in vertical distance and over 6m in horizontal distance.
- * A antenna must be installed far away from other transmitting Antenna. Keep it from other V.H.F antenna at least over 4 m.
- * It must be installed to ensure itself against reasonable vibration and storm. Connection points should be treated with water proof tape to prevent from water leakage.
- * It is recommendable to segregate the copper cable by using steel pole in case many antennas being installed. Alternatively, it must be cabling apart from over 30 cm each.

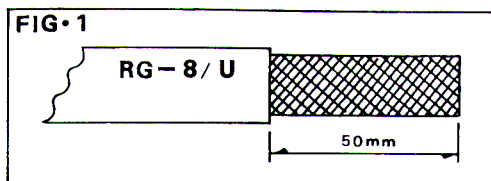
3. Connecting Method of COAXIAL CABLE (FEEDER)

FEEDER LINE for using antenna should be of RG-8/U or RG-10/U cable. After installed, connection points at the bottom of antenna should be finished with BAND CLIP or TAPE according to "BASIC DIAGRAM OF ANTENNA INSTALLATION". In order to get the best quality of communication during DUPLEX Communication, in case many antennas being installed, it is recommended to segregate the copper cable each other by using steel pole and to connect FEEDER LINE directly onto the main unit. If it's impossible, TX/RX FEEDER LINE have to be kept at least over 30cm from other FEEDER LINE by using BAND CLIP perfectly, for doing this, the connecting loss surely become to be improved. Therefore this way of installation must be observed.

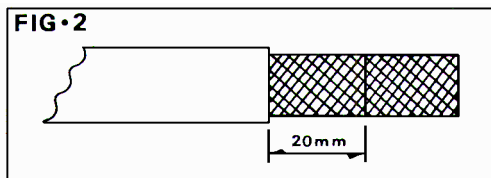
- * FEEDER LINE must be installed at the place to ensure itself against reasonable vibration and to facilitate repair and maintenance.
- * FEEDER LINE should not be connected at near the steam pipe or other heating devices, because FEEDER LINE is made of polyechilen insulation material, so it is weak against heat.
- * Do installing perfectly by paying attention to waterproof for all cable connection holes

4. ANTENNA CABLE & CONNECTOR CONNECTING METHOD

In case connector connecting method being incorrect, it will adversely affect to either decrease transmission output power, or to decrease receiving sensitivity. There have been so many claims from clients in terms of wrong installation of Antenna cable and connector connecting. Therefore following instruction should be carefully paid attention while installation.

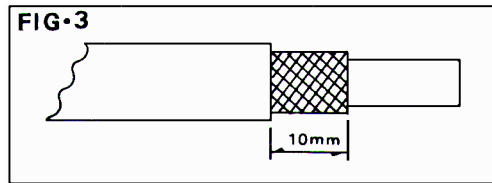


- ① Peel off the end of outside vinyl cable about 50m/m as Fig-1.

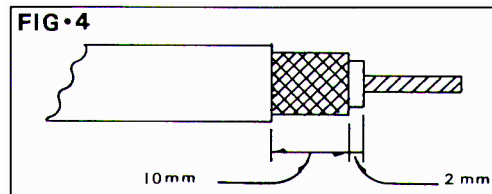


- ② Soldering Pb thinly on shield line about 20 m/m as Fig-2.

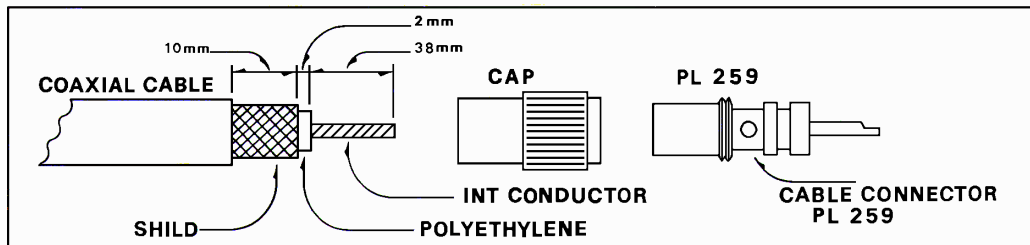
* Please use 80W solder.



- ③ Peel off the soldered shield line by knife just leaving 10 m/m. Be careful not to damage polyethylene insulator.



- ④ Peel off polyethylene insulation by knife just leaving about 2m/m as Fig-4.



- ⑤ Insert CAP part after separating cable connector (PL259).
 ⑥ Insert connector tightly until the part of cable with Pb is seen through connector hole with suitable tool if the case may be.
 ⑦ Test shortcircuit and insulation between external shield line and inside conductor by using TESTER.

6.7 TOTAL CABLE CONNECTION

Please install total cable at the convenient place according to INSTALLATION DRAWING.

1. While cabling in DC, please use manufacturer's cable or cable for sufficient current capacity.
2. Check strength and tightness of connector for Tx/Rx Antenna and power supply connector to ensure against vibration.

7. MAINTENANCE & OPERATION

7.1. OVERVIEW

Please check and maintain the equipment daily to keep all functions worked properly.
In case there having bad maintenance, it will adversely affect function of the unit.

7.2. USING TESTER

The equipment is manufactured in accordance with International radio telephone Rule. Therefore maintenance and adjustment of the equipment should have to be made by authorized test center with approved tester. USER is recommended to keep following testers for proper maintenance and adjustment to be executed daily.

1. Multi-testor for checking accurate resistance (ohm) and voltage, current.
2. TEST PROBE that can change from high-frequency signal to direct-current.
3. High-frequency transit power supply that can check travelling wave up to 150MHz band with Max 25W.
4. 150MHz band max 25W, Dummy load of 50Ω
5. Frequency counter that can check 160MHz band
6. OSILOSCOPE that can check 160MHz band
7. Other testers

7.3. Daily Check and Maintenance

1. AIR ANTENNA

When interface happened (receiving sensitivity decrease, duplex communication interface) during installation or using, it has to check whether the air antenna is defective for the first time.

- A. Check if air antenna control vertical bearings correctly.
- B. Check if metal things is placed around air antenna.
- C. If it is O.K, check if connection condition and insulation of air antenna and connecting parts between transmitter receiver is OK.
- D. check if Travelling wave and reflection frequency after connection made is correct and high-frequency power supply to transmitter receiver and coaxial cable is correct.

And also check if condition of air antenna, connector, coaxial cable is correct. If standing wave(VSWR) becomes over 2:1 after product standing wave, and if less than 2:1 after product standing wave, then it's O.K.

2. POWER

Check power supply circuit even though volume & squelch control do not have any sound and indication at the front panel after connecting power transmitter receiver.

- A. Check if the fuse blows after opening fuse holder at the rear of transmitter receiver. (Fuse : 10A)
- B. Is it correct power supply connecting condition at rear of the transmitter receiver. (Fuse must have been blown in case of power polarity supply showing opposite)
- C. Check power supply voltage at the power supply connector.
If 13.6V is (13 ~ 14V), it's correct. It has to be maintained if it is over or less, there must have something wrong in power supply equipment (POWER SUPPLY or BATTERY)

3. Transmitter

Even though hand set is OK, when transmitter switch on hand set can't work during operating, check the connecting condition with following procedure.

- A. Check Air antenna & Power. In case channel select being incorrect or select not permitted channel, the unit cannot receive.
- B. Check V-402 PCB or V-403 PCB of inside of equipment, if this part is not good, have to change V-402 PCB or V-403 PCB.

4. Receiver

After checking if switch is selected correctly for the first time, check as follows ;

- A. Check connection of speaker after checking air antenna or power.
- B. Check V-400 PCB or V-401 PCB of inside of equipment, if this part is not good, have to change V-400 PCB or V-401 PCB.

5. DSC Receiver

After checking if switch is selected correctly for the first time, check as follows ;

- A. Check air antenna connection for DSC.
- B. Check V-401 PCB or V-406 PCB of inside of equipment, if this part is not good, have to change V-401 PCB or V-406 PCB.

6. SWITCH and DISPLAY

According to manual, check to confirm error using or setting value and in case of no error, check as follows

A. Check V-407 PCB of equipment

In case of error, replace by spare.

B. Check connector and cable connected to V-406 PCB or V-407 of equipment.

In case of error, replace by spare

7.4. Operating of Controller

In case of changing controllers except Power supply, it requires micro-measuring instrument and excellent technique. It is recommended for user to ask manufacture.

7.5. Caution

1. In case of checking transmitter unit, please connect dummy load
2. In case of separating each PCB, pay attention to static electronic
3. In case of modulating, use tools for modulation
4. In case of checking or modulating, when measuring instrument contacts to the questioned circuit, user should match signal of the circuit and PROBE of measuring instrument.
5. In case of checking or modulating, pay attention to the difference when measuring instrument connected into each circuit.
6. It is recommended to use the authorized A/S agent or manufacturer, SAMYUNG ENC CO., LTD for proper repair.

8. HOW TO SET MMSI NO.

8 -1. How to enter ID

- 1) **MANU** → **▼** → **11. SYSTEM SETTING** → **ENT**
- 2) Select **0.DSC ID** by Direction button (**▼**),
Press **FUNC** + **DISABL** at once.
- 3) **ENT** ID : Press depot vessel's ID (9 figures) which is permitted Then do not press **ENT**.
Will be shown on the display as follows :
e.g ID : **1 2 3 4 5 6 7 8 9**
- 4) Select **1. GRP ID** by direction button **▼**
Press **FUNC** + **DISABL** at once. And then Press **ENT**.
Enter the group ID (9 figures) as follows :
e.g ID : **0 0 0 0 0 0 0 0 0**
- 5) Setup **5. DSC AK : ON** by direction button (**▼**).
Press **ENT** for conversion of "ON/OFF "

8 -2. How to Connect GPS DATA

- 1) The type of RS232 & NEMA0183
\$GPGLL, \$GPGGA, \$GPRMC
- 2) The Connection terminals are as follows ;
RX(Input) GND TX(Output)
- 3) How to checkup to enter GPS DATA
 - ① Select **0. DISTRESS CAL EDIT** by **▼** on the **MENU**
 - ② And then press **ENT**.
 - ③ Be displayed "EDIT "
 - ④ Checkup on the "POSITION "by direction button (**▼**).

9. CIRCUIT DIAGRAM & INSTALLATION DIAGRAM