

## 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 ouput 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 proess 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.