

Downloaded by RadioAmateur.EU

# INSTRUCTION MANUAL

Shop YAESU MUSEN CO., LTD.

TOKYO JAPAN.

#### TABLE OF CONTENTS

#### (Page)

GENERAL DESCRIPTION	1
SPECIFICATION	2
CONTROLS AND SWITCHES	4
REAR PANEL CONNECTIONS	6
PREPARATION FOR OPERATION	7
OPERATION	8
BLOCK DIAGRAM 1	4
CIRCUIT DESCRIPTION 1	5
AC POWER SUPPLY 2	24
FREQUENCY COUNTER UNIT 2	26
MAINTENANCE AND ALIGNMENT 2	28
PARTS LIST	37

#### GETTING ACQUAINTED WITH YOUR YAESU FT-301

After you unpack the unit, spend some time with this manual so that you have a good understanding of what each switch, knob and control is for.

It will make your operation easier, possibly keep you from accidentally damaging something, and give you the basic information you need to put the unit to work in the way that will provide you maximum pleasure.

Solid state equipment has enormous reliability. The statisticians have not yet developed life expectancies of many components simply because "end-of-life" cannot be established. Transistors and IC's just keep on going IF THE RATINGS ARE NOT EXCEEDED. If you observe some basic precautions, the FT-301 will provide you with many years of reliable operation.

This manual is revised for the units produced starting with Lot No. 003 and the lots produced subsequently.

Copyright of Yaesu Musen Co., Ltd.

# ALL SOLID STATE HF TRANSCEIVER FT-301



The model FT-301 is a precision built, all solid state, compact high performance transceiver of advanced design providing SSB (USB, LSB selectable), CW, AM and FSK modes of operation covering 160m - 10m bands.

All circuits are fully transistorized with IC's and FET's for increased reliability. Instant operation, immediately after power is turned "on", provides tremendous convenience for mobile operation with minimum power consumption.

The power amplifier employs power transistors with extremely good linearity and large heat dissipation capability. A wide band tuning system, with preset pass band tuning combined with wide band amplifier techniques, eliminates the necessity of final amp tuning for each band change. In addition, the double protection circuit ensures protection of the components from damage due to antenna mismatch or failures.

The well established YAESU RF mu-tuning system is geared with a precision built vernier mechanism which provides bandspread tuning over a 16 kHz segment of the band per turn. The extremely stable VFO, combined with this vernier mechanism, permits precise tuning of the SSB signal. Rejection tuning utilizes an extremely sharp resonance characteristic of a crystal tunable over the entire IF pass band to reject interference.

The active filter in the audio circuit limits audio spectrum sharply within 3 kHz, which improves readability of the signal being received by eliminating interferences.

The noise blanker, with the latest noise detecting circuit, eliminates pulse type noise which has an extremely small amplitude for noise free reception. All features, such as VOX, semi-break-in CW with side tone, 25/100 kHz calibrator, noise blanker, speaker, fast/slow AGC, and clarifier are integral parts of the unit.

The built-in RF speech processor will be operative with installation of an optional crystal filter. It will provide increased talk power improving the intelligibility at the receiving end.

For mobile operation, fixed crystal controlled channels may be preferred. The FT-301 accepts 11 fixed channel crystals easily selectable from the front panel. The FT-301 offers wide versatility when used in conjunction with an external VFO, the FV-301.

Plug-in modules are employed for the main circuit systems permitting an orderly arrangement of the circuit signal flow with excellent isolation. This allows simplified service and alignment, while assuring unsurpassed stability. When operated on DC (13.5V), the transceiver requires no external power supply, as is required for hybrid type HF transceivers. This compact, light weight, yet feature packed transceiver is well suited for base or mobile operation. The AC power supply, FP-301 or FP-301D, is available for base station set-up.

Please read the operating manual carefully before attempting to operate the transceiver as it contains useful information which will assist you in achieving the maximum satisfaction from your YAESU FT-301.

## SPECIFICATIONS

## Downloaded by RadioAmateur.EU

Frequency Range	:	160 m through 10 m (WWV/JJY, CB Receive only)
Emission	:	LSB, USB, CW, AM, FSK
Power Input	:	SSB200 watts PEPCW200 wattsAM, FSK50 watts(Slightly lower on 10 and 160 meter bands)
Carrier Suppression	:	Better than 40 dB
Sideband Suppression	:	Better than 50 dB
Transmitter Frequency Response	:	300 Hz ∼ 2700 Hz −6 dB
Spurious Radiation	:	Less than -40 dB
Distortion Products	:	Better than -31 dB
Frequency Stability	:	Less than 100 Hz drift in any 30 minutes
Antenna Output Impedance	:	50 ohms unbalanced
Sensitivity	:	0.25 µV at S/N 10 dB
Image Ratio	:	$1.9 \sim 21.0 \text{ MHz}$ Better than 60 dB28 MHzBetter than 50 dB
IF Interference	:	Better than -70 dB
Selectivity	:	SSB 2.4 kHz at -6 dB 4.0 kHz at -60 dB
		CW, FSK 0.6 kHz at -6 dB 1.2 kHz at -60 dB
		AM 6 kHz at -6 dB 12 kHz at -60 dB
Audio Output	:	3 watts at 10 % THD
Output Impedance	:	4 ohms
Power Requirement	:	DC 13.5 V negative ground
Power Consumption	:	TX(max)       280 watts (21 A)         RX       12 watts (1.1 A)
Size	:	280(W) x 125(H) x 370(D) mm
Weight	:	9 kgs approx.

#### SEMICONDUCTOR COMPLEMENT

Tra	nsistors:				TA7120P	1	TP4011	1
	2SA564A	1	2SC784R	5	TIL306	3	μPC14305	1
	2SA695D	1	2SC1000GR	2	<b>TIL308</b>	3	μPC14308	1
	2SB529D	1	2SC1383	1				
	2SC372Y	10	2SC1589	1	Diodes:			
	2SC373	8	2SD359D	1	1N60	24	BZ090	1
	2SC536D	2	MPSA13	1	1S1007	12	WZ050	1
	2SC711F	1	S10-12	2	1S1555	40	WZ090	· 7
	2SC735Y	6	S2535	2	10D10	2	WZ110	1
	2SC741	1	BY1-1	1	182209	1	YZ033	1
					182236	1		
Fie	ld Effect Transis	stors:						
	2SK19GR	13	3SK40M	7	Thyristor:	1		
	3SK35Y	1			CW01B	1		
<b>-</b> .						1		
Inte	egrated Circuits:	1			Varistor:			
	34013PC	1	SN7490AN	1	MV5W			
	LD3141	1	SN74160N	1				
	MC1496G	2	SN74560P	1				
	MSL980Y2	1	SN76514N	1				
	MSM5564	1	TA7060P	1				
	SN7400N	3	TA7089M	1				
	SN7404N	2						

FT-301 is supplied complete with cable, connectors, fuse and microphone as shown below.

1

1

٢.

.

#### MODEL CHART FOR YAESU FT-301 SERIES

Model	Power Input	Frequency Readout
FT-301S	20 <b>W</b>	Dial
FT-301SD	20W	Digital
FT-301	200W	Dial
FT-301D	200W	Digital



Figure I



Figure 2 Front Panel Controls & Switches

#### (1) TUNING KNOB

The tuning knob varies receive and transmit frequencies over a continuous 500 kHz segment of a band. It is connected to the VFO through a precision built VFO drive mechanism. This vernier provides 16 kHz per turn allowing precise tuning for SSB signal.

#### (2) MODE

This switch selects the mode of operation: LSB (lower sideband SSB), USB (upper sideband SSB), CW (code operation), AM (amplitude modulation) and FSK (frequency shift keying).

#### (3) REJECT

This control varies resonance frequency of a crystal to reject interference. The control should normally be in the 9 o'clock position to avoid distortion of the received signal which may be caused by a sharp bandwidth.

#### (4) BAND

The eleven-position switch selects the desired band from 160m - 10m bands, plus JJY/WWV. The wave length of each selectable band is shown on the panel.

#### (5) CHANNEL

The channel switch selects any one of the 11 crystal positions used for fixed crystal controlled operation. This switch also selects the VFO for continuous tuning with the main tuning knob.

#### (6) SELECT

The select switch provides selection of the controll-

ing VFO, either internal or external, or a combination for various splits.

INT	The	internal	VFO	controls
	both	receive a	nd tran	smit fre-
	quen	cies.		

- EXT ..... The external VFO controls both receive and transmit frequencies.
- RX-EXT .... The external VFO controls the receive frequency and the internal VFO controls the transmit frequency.
- TX-EXT .... The external VFO controls the transmit frequency and the internal VFO controls the receive frequency.

Whenever the internal VFO is active, the sub dial lights up in red, indicating that the internal VFO is in operation.

#### (7) RF/AF GAIN

The RF gain lever allows manual control of the gain of the receiver RF and IF amplifiers. Clockwise rotation increases the sensitivity of the receiver. The AF gain knob control varies audio output level to the speaker and phone jack.

#### (8) DRIVER/CLAR

The drive lever controls the drive level in transmit. Clockwise rotation increases the transmit power output. The clarifier control varies receive frequency only up to 3 kHz on either side of the dial frequency affecting the transmit frequency. It is particularly useful in "net" operation where several participants may be transmitting slightly off frequency. The clarifier control functions in conjunction with the CLAR switch. When the CLAR switch is turned on, the CLAR indicator will light up, and the CLARIFIER is energized. The CLAR switch should normally be in the "off" position until the initial contact is made. The CLARIFIER control may then be used to zero-in and correct any drift on the received signal. The CLARIFIER control must also be set to "off" while calibrating the dial.

#### (9) **TUNE**

The tune switch peaks the receiver and transmitter circuits by means of a mu-tuning system coupled to a vernier mechanism. It provides continuous permiability tuning throughout the frequency range of the transceiver.

#### (10) VOX GAIN

Selects MOX, PTT and VOX (voice controlled operation) as well as adjusting the sensitivity of VOX operation. The PTT position provides pushto-talk operation. The MOX position provides manual transmit. It must be returned to PTT position for receiver recovery.

# (11) FUNCTION SWITCHES – (AGC, RF PROC, NB MARK, CLAR)

- AGC ...... This switch selects AGC time constant – fast, slow and "off".
- RF PROC . . RF speech processor is placed into the circuit to increase the modulation power with the switch "on" position.
- **NOTE:** An optional crystal filter is required for this operation.

NBInserts the noise blanker into the(NoiseIF circuit to eliminate pulse type

Blanker) noise.

- CLAR.... With the clarifier switch in RX position, the CLARIFIER control varies the receive frequency slightly. With the CLARIFIER switch in TXRX position, both transmit and receive frequencies are varied slightly by the CLARI-FIER control.
- MARK ... The marker oscillator generates signals every 100/25 kHz for calibration of the dial with MARK switch "on".

#### (12) **POWER**

The power switch turns the transceiver "on" and "off".

#### (13) PHONES

The phones jack accepts the headphone plug. The internal or external speaker in the FP-301 (if used) is disabled whenever a headphone is plugged in. Use low impedance (4 ohm) headphones.

#### (14) MIC

The microphone jack has a four-pin connector and is used for microphone input as well as PTT control.

#### (15) CALIB

The CALIB knob shifts display frequency for calibration of the frequency display.

#### (16) CLAR/FIX/VFO

CLAR lights up when the CLAR switch is turned on, indicating the clarifier is in use. VFO lights up indicating tuning dial is in operation. FIX lights up indicating fixed crystal controlled channel is in operation and the VFO is disabled.

#### (17) **METER**

Functions as an "S" meter on receive and reads collector current of the PA on transmit.





Figure 4

**Key Plug Connection** 





#### Downloaded by RadioAmateur.EU

#### (1) POWER

- DC power supply receptacle. For AC operation use FP-301 power supply with built-in speaker. When the transceiver is used together with the FP-301, the speaker in the transceiver is disabled.
- (2) EXT VFO
  - interface for external VFO unit. Supplies power to the FV-301, external VFO unit (if used).

#### AF UNIT -Ó OUT (PB-1437) AMIC IN AM UNIT FSK (PB-1556) KEY 13 5V SP DC POWER CORD 12963 u 0 0 0 J, . . . 0 0 O 0000 $\tilde{\mathbf{0}}$ $(\mathbf{\bar{0}})$ AUDIO OUT PIN1

PIN3

PIN5

PIN6

#### (3) KEY

- key jack for code operation. Keying is through closure of a +5V DC line. If electronic keyers are used, polarity should be checked.

#### (4) ACC

- accessory socket. Provides +13.5V for control of an external relay.

#### (5) ANTENNA

coaxial connection for antenna.

#### (6) PO ADJ

- meter sensitivity adjustment for relative power output reading.

#### (7) **OUT**

- RF output is obtained from the driver stage for final linear amplifier at this jack. This output may also be used for optional equipment such as a 6 or 2 meter transverter.

#### (8) IN

- input jack for a low pass filter. Booster amplifier is connected here.



FSK KEY

Е

RELAY CONTROL (T : 13.5V )



Figure 7

#### PREPARATION FOR OPERATION

#### ANTENNA

٢

, .

The transceiver is designed for use with a resonant antenna having an impedance of 50 ohms resistive. Any of the common antenna systems designed for use on the HF amateur bands may be used as long as its impedance is 50 ohms. If an antenna other than 50 ohms is used, a suitable antenna matching device should be used between the antenna terminal and the transmission line to assure proper matching of the antenna to the transceiver.

In either case, the antenna must be properly adjusted so that SWR becomes less than 1.5. A high SWR will cause reduction in power due to overloading of the power transistors.

The antenna matching is the most critical part of the transceiver installation, especially in mobile operation, as the installation of antenna is often confined. Peak performance of the equipment will largely depend upon how well the antenna is matched to the transceiver.

It is very important that the antenna has a fairly close to 52 ohm non-reactive load. An automatic drive control circuit will work to reduce the drive when the SWR is high.

The power output is decreased as much as 50% when the SWR is 2:1. Refer to the following:

R OUTPUT
00%
80%
50%
20%

#### INSTALLATION

To achieve maximum performance, location of the transceiver installation is very important. Allow adequate space on all sides of the unit to assure proper ventilation around the cabinet.

Avoid installation in the following places:

- (a) Under direct sunlight or near a heating system.
- (b) Humid areas.
- (c) Dusty places.
- (d) Poorly ventilated areas.
- (e) Unstable places.

#### POWER SUPPLY

The transceiver will operate satisfactorily from any 13.5V DC negative ground battery source or equivalent.

For mobile operation, connect the red DC power cable to the positive and the black to the negative side of a battery.

For base station installation, use of the FP-301 AC power supply with built-in speaker is recommended.

#### CAUTION

PERMANENT DAMAGE WILL RESULT IF IM-PROPER SUPPLY VOLTAGE AND POLARITY ARE APPLIED TO THE TRANSCEIVER. WARRANTY DOES NOT COVER THE DAMAGE CAUSED BY IMPROPER SUPPLY VOLTAGE AND POLARITY.

#### INITIAL PREPARATION

Prior to initial operation of the transceiver, be sure to read the operating manual carefully to familiarize yourself with the proper operation of the controls. Simulate operation without connecting the power cable until you become thoroughly familiar with all the functions of the knobs and switches.

Connect a non-reactive dummy load (50 ohms) to the antenna terminal (5). The YP-150 dummy load with power meter is suitable for tune-up practice.

NEVER TRANSMIT WITHOUT HAVING PRO-PER ANTENNA OR DUMMY LOAD CON-NECTED TO THE TRANSCEIVER, OR SERIOUS DAMAGE MAY OCCUR TO THE UNIT.

Connect the microphone furnished with this transceiver or any other low impedance dynamic microphone in the 400-600 ohm range. Refer to Fig. 3 for the microphone plug connection.

For CW operation, insert the plug into the key jack (3) on the rear panel. Refer to Fig. 4 for the key plug connection.

--- 7 ---

#### **Receive Operation**

Connect the power cable supplied to an appropriate power source, such as a car battery or FP-301 AC power supply. Make sure that the power switch of the transceiver is turned off while making the wiring connections. Connect an antenna to (5) using the connector supplied. Do not plug or unplug the power cable while the unit is on, or serious damage may result from transient voltage pulses.

#### Follow the steps below:

(1) Preset the controls and switches as indicated -

POWER OFF
VOX GAIN PTT
MODE DESIRED MODE
REJECT
AGC S
RF PROC OFF
NB OFF
CLAR OFF
DRIVE FULLY CCW POSITION
MARK OFF
AF GAIN FULLY CCW POSITION
RF GAIN FULLY CW POSITION
CLARIFIER 12 O'CLOCK POSITION
DIAL DESIRED OPERATING
FREQUENCY
TUNE DESIRED BAND
SEGMENT
SELECT INT
BAND DESIRED BAND
CHANNEL VFO
NOTE: It is customary to use LSB below

- **NOTE:** It is customary to use LSB below 7 MHz, and USB above 14 MHz.
- (2) Turn the power switch "on" (if the AC power supply FP-301 is used, turn on the power switch of that unit as well).
- (3) The meter will light up and the operating frequency will display in the dial window. As you turn the AF GAIN control clockwise, noise or signal will be heard.
- (4) Adjust the TUNE control to the maximum noise or signal level.

- (5) Turn the dial to the desired signal of frequency.
- (6) Adjust the AF GAIN control to the desired level.
- (7) Readjust the TUNE control after setting the dial for maximum received signal or noise if no signal is present.
- (8) Use the CLARIFIER if the received signal is drifting. This control provides a means of offsetting the receive frequency approximately 3 kHz to either side of the transmitting frequency. The CLAR indicator will light up whenever the clarifier is in use.
- (9) When pulse type noise interferes with reception of the signal, turn the NB (Noise Blanker) on. It will eliminate the noise effectively enabling you to enjoy noise free reception.
- (10) When interference by another signal exists, adjust the REJECT control to tune out interfering signal.

NOTE: 11 meter band is set for receive only.

(11) When a headphone is connected to the PHONE jack, the internal speaker is disabled. Use headphones with 4 - 8 ohm impedance.

# RECEPTION OF JJY/WWV (STANDARD SIGNAL)

Reception of the standard signal requires an optional fixed frequency crystal to receive 5 MHz. The signal is heard with zero beat regardless of the dial setting.

BAND ...... JJY/WWV TUNE ...... 2 OF THE UNIT SCALE MODE ..... LSB



Figure 8 Tunable Rejection Tuning

#### PRESETTING FOR TRANSMIT

It is necessary to preset the transceiver regardless of mode of operation.

(1) Set the controls and switches to the positions indicated.

<b>MODE</b>	CW
<b>RF PROC</b>	OFF
DIAL	DESIRED FREQUENCY
<b>TUNE</b>	DESIRED BAND
	SEGMENT
SELECT	INT
BAND	DESIRED BAND
<b>DRIVE</b>	FULLY CCW
CHANNEL	VFO

- (2) Turn the power switch "on". (If the AC power supply FP-301 is used, turn on the power switch of that unit too).
- (3) By setting the VOX GAIN to the MOX position, the FT-301 will transmit until the switch is returned to the PTT position.
- (4) Rotate the DRIVE control until the meter

indicates 10 amps, then adjust the TUNE control for maximum meter deflection. The meter indicates 15 amps at full input.

- (5) If a dummy load or an antenna with SWR less than 1.5 is used, you may increase the DRIVE control until the maximum power output is attained.
- (6) If the SWR of the load or antenna system is higher than 1.5, the power output automatically decreases to protect the final amplifier transistor.
- (7) With an appropriate load (or antenna) the meter will normally read 15 when the DRIVE is fully clockwise.
- (8) Return the VOX GAIN control to the PTT position.
  - **NOTE**: With the key plugged into the rear key jack, transmitter does not load up unless key is down.

#### **SSB OPERATION**

After completion of presetting the transceiver, follow this procedure to transmit in SSB.

- (1) Connect the mike plug to the MIC jack.
- (2) Place the MODE switch to the USB or LSB position, as desired.
- (3) Turn the DRIVE control fully clockwise.
- (4) Speak into the microphone while pressing the PTT switch on the mike. The meter should indicate  $\frac{1}{3} \frac{1}{2}$  as compared to the CW position.
- (5) If the meter reading does not fall into the specified range, adjust the MIC GAIN control (located inside the cabinet) for proper reading of the meter.
- (6) By releasing the PTT switch, the unit will return to receive mode.
- (7) By turning the RF PROC switch on, the RF speech processor is inserted into the circuit. (The optional crystal filter must be installed). The RF speech processor will increase talk power which is particularly effective in DX contacts. For local contacts, operation without RF speech processor is recommended.

The RF Processor increases talk power to cut through the pile-ups without addition of a linear amplifier.

#### **CW OPERATION**

After completion of presetting the transceiver, follow the procedure to transmit in CW.

Keying is accomplished by closing the DC 5V line to ground. The current that flows in the KEY is around 6mA. Use caution when an Electronic Keyer is used, to be sure polarity reversals or excessive voltages do not cause damage to one or both units.

- Insert a properly wired key plug into the KEY jack on the rear panel.
   See illustration on Page 5.
- (2) Set the MODE switch to CW position.
- (3) Closing the circuit will transmit CW when the VOX GAIN control is placed on the MOX position. The meter reading should be zero when the key is open, and 15 when the key is closed. The receiver will be disabled until the MOX switch is returned to PTT.
- (4) You may monitor the keying. (The monitor circuit is built in the VOX unit).
- (5) Repositioning the VOX GAIN control to the PTT position will return the unit to receive.



Figure 9 **RF Processor "OFF"** 



Figure 10 RF Processor "ON"

#### RECEIVE-TRANSMIT SWITCHING

There are several ways to activate the unit for receive-transmit switching.

#### MOX (MANUAL) OPERATION

 $\mathbf{F}$ 

Setting the VOX GAIN control to MOX or PTT position will transmit or receive respectively. This is convenient for continuous transmit on RTTY, or for transmitter adjustment.

#### PTT (PUSH-TO-TALK) OPERATION

The PTT switch accompanied by microphone is used for keying. Pressing the PTT switch will transmit and releasing will receive. The VOX GAIN control must be set to the PTT position.

# VOX (VOICE CONTROLLED) OPERATION OR CW BREAK-IN

VOX or CW break-in operation is available to the operators as follows:

- (1) For SSB VOX operation, adjust the VOX GAIN control on the front panel until your voice actuates the transmitter while speaking normally into the microphone.
- (2) Set the ANTI TRIP control located inside the cabinet to the minimum point in order to prevent the speaker output from tripping the VOX circuit. Do not use more VOX GAIN or ANTI TRIP gain than necessary.
- (3) Adjust the DELAY control for a suitable release time.
- (4) For CW operation, break-in is available by use of the VOX circuit. As you stop keying, the unit will automatically return to receive, and you can hear the other station between your dots and dashes. Adjust the DELAY control for suitable release/delay time.

#### DIAL CALIBRATION

The dial of the transceiver is designed to indicate the carrier frequencies, therefore, there will be 3 kHz difference between USB and LSB. When calibrating the dial, the CLAR switch must always be set to the "off" position.

#### SSB MODE

- (1) Select the desired mode (USB, LSB), band and frequency.
- (2) Turn the MARK switch on the front panel to "on", which will activate the marker oscillator. The marker frequency is selectable for either 25 kHz or 100 kHz by the switch S601 located on the VOX unit.
- (3) As you turn the dial knob, a beat will be heard every 25 kHz or 100 kHz depending on the position of S601. Set the dial to the 25 kHz or 100 kHz point nearest to the desired frequency.
- (4) Tune the dial knob for a zero beat (lowest pitch frequency). Adjust CALIB control for correct frequency indication in the dial window.

#### **CW OPERATION**

The procedure is similar to that of SSB operation except the calibration points will differ by bands.

(1) All bands except 80 meter band -

Set the MODE to CW

Tune the dial knob for a zero beat. Adjust CALIB control until the display frequency becomes 800 Hz lower.

(2) The 80 meter band -

Tune the dial knob for zero beat. Adjust CALIB control until the displayed frequency shows 800 Hz higher.

(3) If an optional CW filter is installed, the calibration should be taken by reading the maximum S meter deflection instead of zero beat.

#### SELECT SWITCH

The SELECT switch provides selection of a companion FV-301 external VFO, which is very useful in DX work because it provides the operator with split frequency capability.

- INT ..... The internal VFO controls both receive and transmit frequencies of the FT-301.
- EXT ..... The external VFO controls both receive and transmit frequencies of the FT-301.
- RX ..... The external VFO controls the receive frequency of the FT-301 and the internal VFO controls the receive frequency.
- TX ..... The external VFO controls the transmit frequency of the FT-301 and the internal VFO controls the receive frequency.

The FIX indicator will light up when a crystal controlled channel is used.

## CRYSTAL CONTROLLED OPERATION AND CRYSTAL FREQUENCIES

Fixed frequency crystals must be placed in the crystal holders on the FIX UNIT located inside the cabinet in order to operate on a fixed frequency within a band. The crystal sockets correspond to CH-1, CH-2.... CH-11, counting from the one nearest the front panel. The last one, 12th socket, is an auxiliary. When the CHANNEL switch is in the VFO position, the internal VFO is controlling the transceivers, and when the switch is on any other position between 1-11, the corresponding fixed crystal frequency controls the transceiver.

#### CALCULATION OF CRYSTAL FREQUENCIES

The crystal holders accept standard HC-25/U type crystals. All crystal frequencies must fall between 5,000-5,500 kHz.

The correct crystal frequency for any desired operating frequency may be determined by using the following formula:

 $\mathbf{F}_{\mathbf{X}} = \mathbf{F}_{\mathbf{1}} - \mathbf{F}_{\mathbf{0}}$ 

where  $F_{\chi}$ : crystal frequency  $F_0$ : operating frequency

 $F_1$ : constant taken from Table 1

MODE	U S B	LSB	CW•AM FSK
160m	6998.5	7001.5	7000.7
8 0 m	8998.5	9001.5	8999.3
4 0 m	12498.5	12501.5	12500.7
2 0 m	19498.5	19501.5	19500.7
1 5 m	26498.5	26501.5	26500.7
1 0 m A	33498.5	33501.5	33500.7
1 0 m B	33998.5	34001.5	34000.7
1 0 m C	34498.5	34501.5	34500.7
1 0mD	34998.5	35001.5	35000.7
· · ·			

Table 1  $F_1$  (kHz)

Example (1) – To find the proper crystal for 7099 kHz LSB operation -

From Table 1,  $F_1$  for the 40 meter band LSB is 12501.5

Therefore,  $F_{\chi}$  = 12501.5 - 7099 = 5402.5 kHz

Example (2) – Find the crystal frequency for 21420 kHz USB operation -

From the table,  $F_1 = 26498.5$ Therefore,  $F_X = 26498.5 - 21420 = 5078.5$ 

#### CAUTION

The crystal that is intended to operate on a specific frequency will still be active when the band is switched to other bands. For example, with the same crystal (5078.5 kHz) as in example 2, the unit will operate on 7423 kHz LSB or 7420 kHz USB, well above the 40 meter band amateur allocation. Note that these frequencies are completely out of the normal band and should never be operated, unless you are authorized to do so.





If ordering non YAESU fixed crystals from a crystal manufacturer, be sure to specify the crystal correlation information shown below, in addition to the frequency of the crystal.

TYPEHC-25/ULOAD CAPACITANCE30 PFSERIES RESISTANCE25 ohms or lessSTATIC CAPACITANCE7 PF or lessDRIVE LEVEL5 mW

BEFORE BEGINNING ANY PROCEDURE DESCRIBED, READ THE INSTRUCTIONS THROUGH COMPLETELY AND KNOW AND UNDERSTAND IN ADVANCE WHAT IS BEING ACCOMPLISHED. and the former of the

et en partir ( part 202)

 $\frac{1}{2} = \frac{1}{2} \left( \frac{1}{2} + \frac{1$ 



Block Diagram

Figure 12

#### CIRCUIT DESCRIPTION

The block diagram and the circuit description that follows, will provide you with a detailed understanding of this transceiver design. Computer type plug-in modular construction is used throughout the transceiver for RF isolation, service and alignment purposes.

The transceiver consists of a premix type single conversion system with a 9 MHz IF for all modes of operation.

#### RECEIVER

The RF input signal from the antenna is fed to pin 4 of the RF unit (PB-1443) through RL-1 (relay), trap T1401/C1413 in the trimmer unit and T1, the permiability tuned RF input coil.

#### **RF UNIT (PB-1433)**

The incoming signal is amplified by the RF amplifier  $Q_{102}$ , **3SK40M** FET, and then fed to the gate of the mixer  $Q_{103}$ , **3SK40M**, where the input RF signal is heterodyned with a local signal delivered from pre-mix circuit (PB-1439), producing an IF signal of 9 MHz at pin 11, through T102.

The input and output of the RF amplifier are permiability tuned circuits which provide high sensitivity with excellent rejection of unwanted out-ofband signals.

#### FILTER UNIT (PB-1435)

The IF signal received at pin 2 is passed through the monolithic filter **XF-301** which has  $a \pm 10 \text{ kHz}$ 





RF Unit (PB-1433)



Figure 14

Filter Unit (PB-1435B)

bandwidth, providing additional selectivity. enough delay time is designed into the filter circuit to match the timing with the noise blanker output. The noise blanker diode  $D_{301}$ , **1S1007**, is placed

between the two IF amplifiers  $Q_{301}$ , 2SC784R, and  $Q_{302}$ , 2SK19GR. The noise blanker diode  $D_{301}$  functions as ON/OFF switch which is controlled by the noise blanker driver  $Q_{303}$ , 2SC372Y.

The output from the source of  $Q_{302}$  is passed through the SSB or CW (option) filter which has been selected by diode switches  $D_{303}-D_{306}$ , **1S1007**, depending on the mode of operation. The filtered out clean IF signal is transferred to the IF unit (PB-1436) through pin 17.

#### **IF UNIT (PB-1436)**

The IF signal from pin 17 of the FILTER UNIT appears at pin 14 of the IF UNIT (PB-1436). The signal is further amplified by  $Q_{401}$ , **3SK40M**, and  $Q_{402}$ , **2SC784R**. The output from  $Q_{402}$  is coupled to a rejection tuning circuit to eliminate the interference, then supplied to the AF unit from pin 5.

A portion of the IF signal is picked up by  $C_{408}$ , 10 PF, and is rectified by  $D_{407}$ , **1S1555** to produce AGC voltage. It is further amplified by the DC amplifier  $Q_{404}$  and  $Q_{405}$ . The DC output voltage is then fed to the gates of  $Q_{102}$ , RF amp, and  $Q_{401}$ , IF amp to control the gain of these stages for AGC purposes. The AGC voltage produced at the emitter of  $Q_{405}$ , 2SC373 is used for S-meter indication.

The RF GAIN control on the front panel varies the AGC voltage, applied to the base of  $Q_{404}$ , 2SC373 providing manual control of the gain of the RF and IF stages.

Also, assembled onto the IF UNIT board is a 6V regulated power supply for the CARRIER, VFO, FIX, and LOCAL circuits.

DC 13.5V is applied to the collector of  $Q_{408}$ , **2SC1383**. The base voltage of  $Q_{408}$ , **2SC1383** being fixed by the zener diode  $D_{409}$ , WZ 090, DC 8.5V is generated from the emitter, which is further stabilized by  $Q_{407}$ , regulator IC TA7089M to produce 6V DC.

 $Q_{406}$  and  $Q_{410}$ , **2SC735Y** are transistor switches. On receive,  $Q_{406}$  conducts to supply 6V to an external receive VFO through pin 8. On transmit,  $Q_{410}$  conducts to supply 6V to an external transmit VFO through pin 16.

#### AM UNIT (CPB-1556)

The signal from IF unit is also fed to AM unit from pin 12 for AM detection. The signal is amplified by  $Q_{2005}$ , **2SK19GR** and applied to a diode detector consisting of  $D_{2006}$  and  $D_{2007}$ , IN60. Detected audio signal is amplified by  $Q_{2006}$ , **2SC372Y** and fed through AUDIO GAIN control to the AF unit.



Figure 15

IF Unit (PB-1436B)



Figure 17

AF Unit (PB-1437)

#### **AF UNIT (PB-1437)**

The 9 MHz IF signal is delivered to pin 2 from PB-1436. A balanced demodulator circuit consisting of  $D_{503} - D_{506}$ , **1S-1007** demodulates the 9 MHz IF signal into audio using the appropriate USB or LSB frequency being applied from  $Q_{501}$ , **2SK19GR**, carrier oscillator and  $Q_{502}$ , **2SC372Y**, buffer amp. The demodulated audio then goes through relay contacts to an active low pass filter,  $Q_{504}$ , **2SC1000GR**. The audio spectrum is shaped by the decay curve so that it has an attenuation slope of -3dB at 2.3 kHz and -6dB at 2.6 kHz.

The filtered audio is amplified by  $Q_{505}$ , **2SC1000GR**, and the signal travels from pin 8 to pin 11 through the AF GAIN control, providing manual audio level control. The audio signal returned to pin 11 is amplfied by  $Q_{506}$ , **2SC711A**,  $Q_{507}$ , **2SA695D**, and

finally by OTL power amplifier  $Q_{508}$ , **2SD359D** and  $Q_{509}$ , **2SB529D** producing a maximum of 3 watts audio output into the speaker.

The carrier oscillator  $Q_{501}$ , **2SK19GR** is followed by a buffer amplifier  $Q_{502}$ , **2SC372Y**. It oscillates either 8998.5 kHz with **X502** or 9001.5 kHz with **X501** depending on the mode of operation. The crystal selection is made by diode switches  $D_{501}$  and  $D_{502}$ , **1S1555**. The carrier is then injected into the balanced demodulator through VR<sub>501</sub>.

The diode  $D_{502}$  conducts to activate the crystal for 8998.5 kHz, used for LSB on 160, 40, 20, 15, 10 and USB on 80 meter band on both transmit and receive – 8998.5 kHz is also used for CW receive on all bands.

The diode  $D_{501}$  conducts to activate the crystal for 9001.5 kHz for USB on 160, 40, 20, 15, 10 and

LSB 80 meter bands.

For CW transmit, the oscillator in the IF UNIT (PB-1436) oscillates at 8999.3 kHz carrier frequency.

#### NB UNIT (PB-1434)

A portion of unfiltered 9 MHz IF is fed to pin 5, and appears at  $Q_{204}$ , **3SK40M**, where the 8545 kHz signal generated by **X201** and  $Q_{207}$ , **2SK19GR** is mixed with the incoming IF signal to produce 455 kHz. The 455 kHz is then amplified by  $Q_{205}$ , **3SK40M**.

When a carrier, or noise free modulated signal is received, the 455 kHz signal with its corresponding strength, is rectified by  $D_{201}$  and  $D_{202}$  to charge  $C_{221}$ . There is no discharge loop for  $C_{221}$ , therefore, signals which exceed the charged voltage established by the reference voltage on  $C_{221}$  will not pass through  $D_{201}$  and  $D_{202}$ , 1N60. Accordingly, there will be no voltage drop across  $R_{226}$ , and  $Q_{206}$ , 3SK40M, will conduct as the gate voltage approaches zero potential. When  $Q_{206}$  conducts, the drain voltage at pin 2 of printed board will drop.

The drain of  $Q_{206}$  is directly connected to the base of  $Q_{303}$ , **2SC372Y** in the FILTER UNIT. As the drain voltage of  $Q_{206}$  drops, the base voltage of  $Q_{303}$  drops, as well, which will turn off  $Q_{304}$ . The collector voltage will then increase and it will produce a forward bias to  $D_{301}$ . As  $D_{301}$  conducts, the signals will pass normally through the circuit.

When pulse type noise, which exceeds the charged reference voltage established by  $C_{221}$  is received,  $D_{201}$  and  $D_{202}$  will permit negative going pulses to turn  $Q_{206}$  off. The drain voltage will rapidly increase as it turns off.

As the drain voltage increases,  $Q_{303}$  will become "on" and the collector voltage will decrease. Accordingly,  $D_{301}$ , **1S 1007** will be biased to block the signal. Whenever pulse type noise is received, it will blank off the signal passage momentarily.



Figure 18 NB Unit (PB-1434)

Audio signals pass through the MIC jack, J8 and go to pin 4 of the AF UNIT through VR<sub>1901</sub>, MIC GAIN control.

#### **AF UNIT (PB-1437)**

From pin 4, the audio signal passes through  $Q_{503}$ , LD3141, is amplified, then is applied through RL501 into a balanced modulator  $D_{503}$  through  $D_{506}$ , 1S1007, where the carrier generated by X<sub>501</sub> or X<sub>502</sub> is modulated by the audio. The output becomes a 9 MHz DSB signal and is fed to the IF UNIT.

AM UNIT (PB-1556)

For AM (amplitude modulation), the microphone signal is fed through a level set potentiometer VR2002 to a microphone amplifier  $Q_{2003}$ , TA7120P which is controlled by  $Q_{2004}$ , 2SC372Y.  $Q_{2004}$  supplies the base voltage to  $Q_{2003}$  when the MODE switch is set to an AM position.

Carrier oscillator,  $Q_{2001}$ , **2SK19GR** generates a crystal controlled carrier frequency of 8999.3 kHz. The carrier and microphone signals are fed to an AM modulator  $Q_{2002}$ , **3SK40M**. The amplitude modulated signal is fed through pin 2 to pin 14 of NB unit and amplified by  $Q_{208}$ , **3SK35Y**.

The carrier frequency is shifted 170 Hz for FSK and the signal is then applied through  $Q_{2002}$  which works as a buffer amplifier to  $Q_{208}$  in the NB unit.

#### IF UNIT (PB-1436)

The 9 MHz DSB signal enters into pin 5 and is amplified by  $Q_{403}$ , **2SK19GR**. It then goes into the FILTER UNIT from pin 14. The function of  $Q_{409}$ , **2SK19GR** is to oscillate 8999.3 kHz carrier for for CW transmit. The carrier is amplified by  $Q_{403}$ , **2SK19GR** and then goes into pin 17 of the FILTER UNIT from pin 14 of the IF UNIT.

#### FILTER UNIT (PB-1435)

In the FILTER UNIT, the DSB signal is converted into SSB by the filter, **XF-303** by removing the unwanted sideband. From pin 6 the SSB signal is fed into pin 12 of the NB UNIT (PB-1434B). The signal is fed to the speech processor circuit which is built into this NB unit.

#### **NB UNIT (PB-1434)**

When the RF PROC switch is "OFF", the SSB signal entered at pin 12 is amplified by  $Q_{201}$ , **2SK19GR** and then is applied to the XF-201 filter which is optional.

When the RF PROC switch is "on", the SSB signal is amplified by  $Q_{202}$ , **2SK19GR** and is further amplified by the limiter IC,  $Q_{203}$ , **TA7060P** where the signals that exceed the clipping level are sliced out.

The clipping level may be adjusted by  $VR_{203}$ ,  $VR_{201}$  and  $VR_{202}$  to adjust the signal level differences caused by the PROCESSOR "on" or "off". This highly clipped SSB signal is then followed by a selective filter **XF-201** to remove RF harmonics and out of band intermodulation products that result from signal clipping.

The filtered out clean signal is amplified by  $Q_{208}$ , **3SK35Y** and fed to pin 1 of the RF UNIT (PB-1433).

#### **RF UNIT (PB-1433)**

The signal from pin 1 is applied to the double balanced mixer  $Q_{101}$ , MC1496G where the SSB signal is heterodyned to the desired RF frequency by injection of the local signal which is supplied from the PRE-MIX UNIT (PB-1439) through P101.

The RF output from  $Q_{101}$  passes through T2, then into the two stage amplifier on board PB-1433,  $Q_{104}$ , 2SC784R and  $Q_{105}$ , 2SC741 to drive the 10W power amplifier, PB-1443.

The transformers T2 and T3 are permiability tuned type which are used for both receive and transmit to provide unsurpassed selectivity in both modes.

In CW operation, the emitter voltage of  $Q_{104}$  and  $Q_{105}$  are controlled by the keying switch transistor  $Q_{106}$ , **2SC735Y**.

A flip-flop circuit consisting of  $Q_{107}$ , **SN7400N**, is employed to shape perfect waveforms for keyclick free CW operation at any speed.

 $Q_{106}$  and  $Q_{107}$  also function as the protection switch when the protection circuit on the LPF UNIT (PB-1445) is activated for any reason, such as excessive SWR, short, etc. The exciter output from pin 17 of the RF UNIT (PB-1433) is amplified by the driver  $Q_{1101}$ , **2SC1589**, to drive the push-pull power amplifier,  $Q_{1102}$  and  $Q_{1103}$  **S10-12**, to produce a nominal power output of 10 watts.

A non-resonant, broad band type power amplifier, utilizing ferrites and the most advanced circuitry is used to eliminate the nuisance tuning process usually required for each band. These techniques also protect the power transistors from erroneous tuning procedures.

The zener diode  $D_{1101}$  **YZ033** sets the bias for  $Q_{1101} - Q_{1103}$  at exactly 3V. The silicon diodes  $D_{1102}$  and  $D_{1103}$ , **10D10** are mounted on the power transistors  $Q_{1102}$  and  $Q_{1103}$  to compensate bias, as well as to protect them from thermal runaway.

The negative feedback circuit delivers a clean signal to the following booster amplifier.



Figure 19 10W Amp Unit (PB-1443)

#### **BOOSTER UNIT (PB-1444)**

The booster unit is built in the heat sink which is attached to the rear panel of the transceiver. The 10 watts signal is fed through an input network to a pair of **S-2535**,  $Q_{1201}$  and  $Q_{1202}$  which are connected in push-pull amplifier configuration.

This circuit is a non-resonant broad band type amplifier covering 160 through 10 meter bands. A part of output energy is feedbacked in negative polarity to the input circuit. This negative feedback circuit improves tremendously the linearity of the amplifier.

 $Q_{1203}$ , **BY1-1** is used to sterilize the bias voltage to the final amplifier. The amplified signal is fed into the two stage low pass filter consisting of  $L_{1205}$ ,  $L_{1206}$ ,  $C_{1214}$ ,  $C_{1215}$  and  $C_{1216}$  to alternate the frequency beyond 35 MHz.

The RF output from the secondary winding of the output transformer is fed into the low pass filter, composed of  $L_{1103}$ ,  $L_{1104}$ ,  $C_{1110}$ ,  $C_{1111}$  and  $C_{1112}$  to eliminate frequencies beyond 35 MHz.



Figure 20 Booster Unit (PB-1444)



Figure 21 LPF Unit (PB-1445)

#### LPF UNIT (PB-1445)

The jacks, J2 and J3, are connected by a jumper wire for the 10 watts model. The band switches,  $S_2 B_1$  and  $S_2 B_2$ , select the proper low pass filter network for the band in use.

The signal passes through  $T_{1301}$ , an output detector, and the antenna relay (RL1) to the antenna terminal, J1.

 $T_{1301}$  detects the forward and reflected waves. The forward wave is rectified by  $D_{1303}$ , **1S 1555**. When the forward power exceeds safety level, it will trigger the thyristor  $D_{1301}$ , **CW01B** which will, in turn, shut down  $Q_{1301}$ , **2SC735Y** and the protection relay  $RL_{1301}$  will be released.

When the relay opens, the voltage on the output side of  $Q_{107}$ , SN7400N on the RF UNIT (PB-1433) becomes low and  $Q_{106}$ , 2SC735Y will turn off. As  $Q_{106}$  turns off, the emitter circuit for  $Q_{104}$ , 2SC784R and  $Q_{105}$ , 2SC741 will become wide open and these transistors will turn off. As a result, no signal will be delivered to the power amplifier.

The forward wave is also rectified by  $D_{1306}$  and  $D_{1307}$ , **1S** 1555 to obtain ALC voltage. The ALC voltage is fed back to the base of  $Q_{208}$ , **3SK35Y** in the NB UNIT to control the gain of that stage. At peak transmission, the ALC voltage will reduce the gain of  $Q_{208}$  to prevent overloading or distortion.

The output of the reflected wave from  $T_{1301}$  is rectified by  $D_{1304}$ , **1S 1555** to obtain ALC voltage. When there is an excessive amount of reflected power due to an antenna mismatch, the reflected wave is rectified by  $D_{1305}$ , **1S 1555** and the voltage is used for ALC to reduce the gain of  $Q_{208}$  which will also reduce the corresponding input level to the power transistors.

#### **BLANKING UNIT (PB-1451)**

While the protection circuit is activated,  $Q_{1301}$  will be off and there will be no voltage drop across the relay coil connected to the emitter. This lack of emitter voltage (0V) is used to activate the BLANK-ING UNIT.

Under normal operating conditions, the output of the bi-stable  $Q_{1901}$ , **TP4011** is in HIGH level which will turn  $Q_{1902}$ , **MPSA13** on allowing current to

flow through the meter lamp for meter illumination.

When the protection circuit is activated, the input to the BLANKING UNIT becomes zero volts. The bi-stable will then oscillate to blink the meter lamp indicating existence of problem and alerting the operator to this fact.

Also on the board are the MIC GAIN control  $VR_{1901}$  and the clarifier zero adjustment pot,  $VR_{1902}$ .



Figure 22 Blanking Unit (PB-1451)

#### VOX UNIT (PB-1438)

#### (1) VOX (Voice Controlled Operation)

A portion of the mike input is delivered to pin 10 of the VOX UNIT. The signal is amplified by  $Q_{601}$  and  $Q_{602}$ , **2SC373**, is then rectified by  $D_{601}$ , 1N60 to produce positive DC at the base of  $Q_{603}$ , **2SC373** causing it to conduct, thus reducing the voltage at pin 6 of  $Q_{604}$ , **SN72560P**. The output at pin 4 will be zero which will then actuate the VOX relay, RL1.

 $Q_{604}$  is a level detector having a hysteresis characteristic and a transistor switch built in.

#### (2) ANTITRIP CIRCUIT

The ANTITRIP circuit provides a bucking voltage to prevent the speaker output from tripping the transceiver into the transmit mode. The receiver audio output is connected through the ANTITRIP potentiometer,  $VR_{601}$ , to the antitrip amplifier,  $Q_{605}$ , **2SC372Y** and rectified by  $D_{602}$ , 1N60 to produce positive DC voltage at the base of  $Q_{606}$ , **2SC373**. When there is no antitrip input  $Q_{606}$  will be off as will  $Q_{607}$ , **2SA564A**. On receive, signal comes into pin 6 of the VOX UNIT and  $Q_{606}$  and  $Q_{607}$  will conduct causing the collector voltage of  $Q_{607}$  to increase, thus maintaining  $Q_{604}$  in an off state on receive mode. This provides the necessary antitrip threshold.

Input signal from the mike will turn  $Q_{603}$  on, discharging  $C_{613}$ , yet the input of  $Q_{604}$  will be kept in HIGH level preventing the transceiver from tripping, thus providing very stable VOX operation.

As the input to the mike stops,  $Q_{603}$  will become off and  $C_{613}$  will be charged according to the time constant set up by VR<sub>602</sub> and R<sub>623</sub>. When the input voltage of  $Q_{604}$  reaches the preset level, the output will become off, thus returning the unit to receive mode.

The VOX GAIN control (VR1) on the front panel provides adjustment for relay sensitivity, and  $VR_{601}$  for antitrip sensitivity. Relay hold time is determined by the delay control,  $VR_{602}$ .

The tone oscillator,  $Q_{609}$ , **2SC373** operates when the MODE switch is in the CW position. It is a phase-shift oscillator operating at approximately 800 Hz.

The tone output is activated by the keying circuit through the emitter of  $Q_{609}$  and coupled to the base of  $Q_{602}$ , **2SC373** for break-in CW operation. The output is also fed to the base of  $Q_{506}$  in the AF UNIT through VR<sub>603</sub> for CW monitoring. The VR<sub>603</sub> adjusts the sidetone level.

#### (3) MARKER CIRCUIT

Located on the VOX UNIT (PB-1438), the crystal marker generator,  $Q_{610}$ , **2SC735Y** generates a basic 1 MHz signal, with its output fed through a buffer amplifier  $Q_{611}$ , **2SC735Y** to a frequency divider  $Q_{612}$ , **34013PC**. The divider output provides either 100 kHz or 25 kHz marker signals as selected by S601 for dial calibration of the FT-301.

The marker signals are then fed to the antenna input from pin 3 of the VOX UNIT'  $TC_{601}$  is used to set the 1 MHz basic oscillator precisely to WWV or JJY.

 $Q_{608}$ , **2SC372Y** is to stabilize the 8.5V DC power supply to the VOX and sidetone generator.

#### VFO UNIT (PB-1440)

A modified Colpitts type oscillator is used to generate a 5.0 MHz to 5.5 MHz signal to produce a stable 500 kHz tuning range. The frequency is varied by  $VC_{801}$  which is geared to a precision built dial tuning mechanism.

The VC<sub>801</sub> consists of two sections. The sub blades compensate the capacitance variation of the main blades caused by temperature changes. Frequency drift is minimized through the use of a temperature compensation circuit utilizing a differential trimmer capacitor,  $TC_{801}$ .



Figure 23

VOX Unit (PB-1438)



Figure 24 VFO Unit (1440)

The varactor diode  $D_{801}$ , **1S 2236** is in series with  $C_{807}$ , and the combination is in parallel with  $VC_{801}$ . By closing the clarifier switch  $S_{1805}$ , a portion of the regulated 6V is applied, shifting the frequency  $\pm 3$  kHz, depending on the setting of clarifier control VR5. The VR<sub>1902</sub> on PB-1451 blanking unit is used to establish the zero set for the clarifier.

The VFO output signal is fed through the amplifier/buffer stage,  $Q_{802}$ , **2SK19GR** and  $Q_{803}$ , 2SC372Y, and the low pass filter to the OUT terminal. From there, the signal goes to the PRE-MIX UNIT.

#### FIX UNIT (PB-1447)

In addition to normal VFO operation, 11 crystals may be used for crystal controlled operation. The selector switch located on the front panel of the transceiver selects the crystal in use. The trimmer capacitors,  $TC_{1501} - TC_{1511}$ , are for fine adjustment of each crystal frequency.

The FIX channel crystal oscillator  $Q_{1501}$ , **2SK19GR** oscillates at the frequency of the crystal selected by the CHANNEL switch. The frequencies of the crystals must fall between 5.0 MHz – 5.5 MHz.

The crystal signal is fed through the amplifier/ buffer stage  $Q_{1502}$ , **2SC372Y** and a low pass filter to the OUT terminal on PB-1447 (FIX UNIT).

## PRE-MIX UNIT (PB-1439) CRYSTAL UNIT (PB-1441) & BPF UNIT (PB-1442)

The FT-301 transceiver utilizes a unique technique of premix to minimize the signal distortion. The VFO signal is premixed with a local crystal oscillator signal and then fed to the mixer stages of the transmitter and receiver.

Crystal oscillator  $Q_{702}$ , **2SC372Y** produces a heterodyne signal selected by the band switch. The signal is fed to the double balanced mixer  $Q_{701}$ , **MC1496G** where the signal is mixed with a signal from the VFO or FIX oscillator to produce the local signal for each band. The local signal is then fed to the wideband buffer amplifier stage  $Q_{705}$ , **2SK19GR**,  $Q_{704}$  and  $Q_{703}$ , **2SC784R** through the bandpass filter unit (PB-1442). The local signal or the premix output is obtained at J701.

For 80 meter, the VFO signal is directly coupled, through the buffer stage, to the transmitter and receiver mixer in the RF unit.

For reception of WWV, a 13.9985 MHz crystal is used for the crystal oscillator  $Q_{702}$ . The 5 MHz standard signal may be heard with zero beat without use of the VFO. The BAND switch must be set to WWV/JJY and the MODE to LSB.



Figure 25 FIX Unit (PB-1447)





The frequency relation of the FT-301 is shown in Table 2.

Band	Frequency	Crystal	Premix out
160m	MHz MHz 1.5~2.0	MHz 16.0	MHz MHz 10.5~11.0
8 0 m	3.5~4.0		5.5~ 5.0
4.0 m	7.0~7.5	21.5	16.0~16.5
2 0 m	14.0~14.5	28.5	23.0~23.5
15 m	21.0~21.5	35.5	30.0~30.5
1 1 m	27.0~27.5	41.5	36.0~36.5
10 m A	28.0~28.5	42.5	37.0~37.5
10mB	28.5~29.0	43.0	37.5~38.0
1 0 m C	29.0~29.5	43.5	38.0~38.5
<b>10</b> mD	29.5~30.0	44.0	38.5~39.0
JJY	5.0	13.9985	13.9985

 Table 2
 VFO: 5.0~5.5MHz
 IF: 9MHz

A study of the block diagram on Page 12 will also prove useful in tracing the various signal paths through the transceiver.



#### AC POWER SUPPLY

The FP-301 AC power supply is designed for base operation of the FT-301 SSB transceiver. However, this high current regulated power supply can also be used for other purposes such as when there is a requirement for a regulated 13.5 volt DC supply from AC power sources.

MODEL	SPECIFICATIONS
FP-301	Output 13.5V DC – Max 25 Amps for FT-301 or FT-301D
FP-301D	Output 13.5V DC – Max 25 Amps for FT-301 or FT-301D with automatic ID and digital clock

#### CIRCUIT DESCRIPTION

The power supply is designed to operate from either 100, 110, 117, 200, 220 or 234 Volts AC, 50 or 60 Hz.

A transformer is energized by two primary windings which can be connected in series for 200, 220 and 234 Volts and in parallel for 100, 110 and 117 Volts operation. A secondary output voltage is rectified by a full wave bridge rectifier consisting of diodes,  $D_1$ ,  $D_2$ ,  $D_3$  and  $D_4$ , 12CD12.

The rectified DC voltage is stabilized by a voltage regulator consisting of  $Q_1$  through  $Q_4$ , 2SD114Y,  $Q_5$ , 2SD235 and  $Q_{101}$ , TA7089M.

The regulator  $Q_{101}$  works as a current limiter to protect the over current failure of the regulator transistors.

The FP-301D has a built-in digital clock and automatic identification circuits. The digital clock displays the time in hours, minutes and seconds and is synchronized to the supply voltage frequency, 50 Hz or 60 Hz. The frequency can be selected by changing the internal windings. The display can be selected for either a 24-hour or 12-hour system with a switch at the front panel.

The call sign for automatic ID will be programmed into an integrated circuit by our authorized dealer at a minimum cost.



Figure 30 FP-301D Circuit Diagram

### FREQUENCY COUNTER UNITS

A frequency counter is incorporated for accurate and easy frequency readout by the display diode.

The frequency readout unit consists of a counter unit, frequency converter unit and a display unit by LED (Light Emitting Diode) to display operating frequency in the dial window.

The counter device utilizes LED to display the lowest digit of 100 Hz, however, the counter unit counts to 10 Hz to avoid the annoyance of flicker of the last digit.

The diode matrix circuit selects MHz display which corresponds to the setting of the BAND switch. The VFO frequency of 5 to 5.5 MHz is connected to 13.0 - 13.5 MHz and the counter counts this frequency.

#### COUNTER MIXER UNIT (PB-1541)

The heterodyne oscillator  $Q_{2202}$ , **2SK19GR** oscillates at 18.5 MHz crystal frequency. A varactor diode,  $D_{2211}$ , **1S2209** is connected in series with a crystal and shifts the crystal frequency to calibrate frequency from front panel. The varactor diode voltage is supplied through the potentiometer marked CA4B. The oscillator output is fed through a buffer amplifier  $Q_{2204}$ , **2SK19GR** to the mixer,  $Q_{2203}$ , **SN76514** where the incoming VFO from pin 5 of printed board is heterodyned to 13.0 – 13.5 MHz signal.

The diode matrix circuit consists of a read memory IC,  $Q_{2201}$ , MSL-980Y2 and diodes  $D_{2201} - D_{2210}$ , 1N60AM for preset counter adding 500 kHz to the VFO frequency and for 7 MHz, 5 MHz, 10 MHz and 20 MHz display.

The diodes are grounded by the BAND switch in order to make BCD input terminal "L". The matrix circuit is so composed that unnecessary BCD code is grounded as BCD input of  $Q_{2101} - Q_{2106}$  are "H" level.

 $Q_{2106}$ , TIL308 is only used to display 1 or 2 for 10 MHz and 20 MHz so that A or B of BCD input terminal is set to "H" through inverter  $Q_{2112}$ , SN7404 for 10 or 20 MHz display.

For 5 MHz JJY or WWV signal, the counter displays 5,000 kHz, regardless of VFO frequency, by closing gate 1 of the counter input.

The clock signal is oscillated by C MOS IC  $Q_{2204}$ , MSM5564 which also contains 18 stages of the binary counter. The 655.36 kHz signal is then divided by the binary counter into a 5 Hz signal which is amplified by a buffer amplifier  $Q_{2205}$ , 2SC373 and is used as a gate signal for counter gate 2.

#### DISPLAY LOGIC UNIT (PB-1542)

The heterodyned 13.0 - 13.5 MHz signal is wave shaped and inverted by  $Q_{2110}$ , SN7404N and then fed to gate 1 of  $Q_{2109}$ , SN7400N. Gate 1 closes when the BAND switch is set to JJY/WWV position but opens for other positions.

Gate 2 is controlled by a 5 Hz gate signal and counts the number of pulses passing through the gate. The output from  $Q_{2109}$  is then fed to  $Q_{2107}$ , **SN7490N** which counts 10 Hz.  $Q_{2107}$  generates a pulse each time it counts 10 pulses.

This pulse is fed to  $Q_{2101}$  which displays a 100 Hz digit. The pulse is also used as a clock pulse for  $Q_{2102}$ ,  $Q_{2103}$  and  $Q_{2108}$  to count 1 kHz, 10 kHz and 100 kHz pulses.

 $Q_{2101} - Q_{2103}$ , **TIL306** contains counter, latch decoder, driver and LED in one package.  $Q_{2108}$ , **SN74160** is used as a preset counter to add 500 kHz for such bands starting from 800 kHz. The BCD code output from  $Q_{2108}$  is fed to  $Q_{2104}$ , **TIL308**. **TIL308** does not contain counter circuit.  $Q_{2112}$ , **SN7404N** is used as inverter. A part of gate pulse is fed to  $Q_{2111}$ , **SN7400N** to generate reset and memory signals.





1isby

#### GENERAL

This transceiver has been carefully aligned and tested at the factory prior to shipment. The reliability of the solid state devices used in the FT-301 should provide years of trouble-free service if the equipment is not abused and proper routine maintenance carried out.

Do not attempt to align the transmitter without having the proper antenna or a dummy load con-

nected to the transceiver. We recommend off the air testing as a courtesy to other operators.

The following alignment procedure requires certain test equipment such as an RF signal generator, an audio oscillator, a sweep generator, an oscilloscope and a VTVM. Without proper test equipment, do not attempt to adjust cores or potentiometers.



Figure 32 FT-301 Top View



Figure 34 FT-301D Top View



Figure 33 FT-301 Bottom View



Figure 35 FT-301D Bottom View

#### AF UNIT

- (1) SSB CARRIER POINT ADJUSTMENT (TC501, TC502)
- (a) Settings:

BAND ..... 20 DIAL ..... 14.25 MHz MODE ..... CW

Tune to transmit at the maximum power.

- (b) Connect the output of an audio oscillator to the microphone input. Set the frequency at 1 kHz and transmit on USB. Adjust the MIC GAIN control for 50 watts RF output to the dummy load.
- (c) Shift the audio frequency to 300 Hz without changing the audio output level or MIC GAIN control.
- (d) Switch between USB and LSB while adjusting  $TC_{501}$  for USB and  $TC_{502}$  for LSB to obtain 12.5 watts output on each sideband. (For the 80 meter band, USB and LSB will reverse but you are on 20 meters now.)
- (e) Return to receive mode. Switch the MODE selector back and forth between USB and LSB to verify that the tone quality of the noise on the two sideband modes sounds alike.



Figure 36 AF Unit (PB-1437)

- (2) CARRIER BALANCE
- (b) Connect a dummy load to the antenna receptacle and the RF probe of a VTVM to the antenna receptacle, J1. Adjust  $TC_{503}$  and  $VR_{501}$  alternately to minimize the VTVM reading.
- (c) If no VTVM is available, use a monitor receiver and adjust  $TC_{503}$  and  $VR_{501}$  for the minimum S meter reading.
- (d) Repeat this procedure until a minimum reading is obtained equally for both sidebands.

#### FILTER UNIT, IF UNIT

IF GAIN (VR<sub>301</sub>), S METER ZERO SET (VR<sub>401</sub>) S METER FULL SCALE SET (VR<sub>402</sub>)

(a) Settings:

BAND	20
DIAL	14.25 MHz
TUNE	20 METER
SELECT	INT
CHANNEL	VFO
RF GAIN	MAX (FULLY CLOCKWISE)

Connect the output to a stable signal generator to the antenna receptacle. Set the signal generator output to 0 dB and frequency to other than 14.25 MHz.

- (b) Set  $VR_{402}$  to a fully clockwise position. Adjust  $VR_{401}$  until the S meter indicates zero.
- (c) Set the generator frequency to 14.25 MHz at 0 dB output. Adjust the TUNE and DIAL for maximum sensitivity, then adjust VR<sub>301</sub> until the S meter again indicates zero.

- (d) Increase the generator output to 80 dB. Adjust  $VR_{402}$  for a full scale indication of the S meter.
- (e) Repeat above procedures as required to achieve correct zero and maximum indications.



Figure 37 Filter Unit (PB-1435)



Figure 38 IF Unit (PB-1436)

#### VOX UNIT

#### (1) ANTITRIP INPUT LEVEL (VR<sub>601</sub>)

- (a) Tune in a signal on SSB and adjust the AF GAIN control to a normal listening level.
- (b) With microphone positioned near the speaker, increase VOX GAIN control until it switches to transmit automatically.



Figure 39 VOX Unit (PB-1438) (Option)

- (c) Set the ANTITRIP control  $VR_{601}$  to the minimum point that will prevent the speaker output from tripping the VOX relay.
- (d) Speak into the microphone normally to see if it activates the relay to transmit mode. If not,  $VR_{601}$  may be turned too far.

#### (2) VOX DELAY TIME (VR<sub>602</sub>)

- (a) Adjust the delay control,  $VR_{602}$ , for suitable release time. Turning clockwise will give a longer delay time and counter-clockwise will give a shorter delay time.
- (b) For a break-in CW operation,  $VR_{602}$  should be adjusted for a suitable delay time as well.

#### (3) CW SIDETONE LEVEL

In CW operation, the sidetone circuit is activated for monitoring and the CW sidetone level may be adjusted with potentiometer  $VR_{603}$ .

#### (4) MARKER GENERATOR FREQUENCY (TC<sub>601</sub>)

(a) Settings:

BAND ..... JJY/WWV TUNE ..... 2 MODE ..... LSB

- (b) Receive WWV with zero beat by adjusting  $TC_{901}$  on the crystal unit.
- (c) Turn the MARKER switch on and zero beat the marker signal against WWV by adjusting  $TC_{601}$ .

#### **RF SPEECH PROCESSOR**

The optional crystal filter  $XF_{201}$  is required to operate with the RF SPEECH processor.

- (1) Level adjustment when the processor is used  $(VR_{202}, VR_{203})$
- (a) Adjust the MIC GAIN control to a proper setting. Refer to blanking unit adjustment on Page 31.
- (b) Apply a 2 mV, 1 kHz signal to the mike input jack.
- (c) Connect a VTVM to pin 11 of the FILTER unit while  $VR_{203}$  is turned fully clockwise.
- (d) Adjust  $VR_{202}$  so that the VTVM reads 40 mV.
- (2) Level adjustment when the processor is "off" (VR<sub>201</sub>)

Turn the RF PROC switch "off" and adjust  $VR_{201}$  so that the VTVM reads 40 mV.





#### **VFO UNIT**

It requires skilled technique and knowledge to align the VFO unit. It is, therefore, recommended to refer all VFO work to qualified personnel should a case develop where a repair is needed on the VFO unit.  $TC_{801}$  .... A split type trimmer capacitor for temperature compensation.

 $TC_{802}$  .... Band setting trimmer capacitor.



Figure 41 VFO Unit

## PREMIX UNIT, CRYSTAL UNIT

The 160 mA, 10 mA, 10 mD and WWV crystals are optional and their corresponding fine frequency setting trimmers have been factory adjusted with the standard crystals.

## PREMIX CRYSTAL OSCILLATOR

 $(T_{701}, TC_{901} - TC_{910})$ 

When optional crystals are installed, no alignment of  $T_{701}$  is required. Should  $T_{701}$  need an adjustment for some reason, all other trimmers ( $TC_{901} - TC_{910}$ ) have to be realigned.

- (a) To align  $T_{701}$ , set the BAND switch to 10D and connect the RF probe of a VTVM to  $TP_{701}$  of the PREMIX unit (junction of  $C_{718}$ and  $C_{704}$ ).
- (b) Peak T<sub>701</sub> for a maximum VTVM reading, and then rotate the core counter clockwise until the VTVM reading indicates 50 mV. (Do not rotate the core more than one full turn.)
- (c) Set the BAND switch to 10C and adjust  $TC_{907}$  for a 50 mV reading.
- (d) Repeat the same procedure as step (c) on  $TC_{906} TC_{901}$  for 10B through 160 meter bands respectively so that the VTVM readings indicate 50 mV. (There is no trimmer capacitor for the 80 meter band.)

— 31 —

(e) Set the BAND switch to JJY/WWV. Preset  $TC_{901}$  to its mid point (at half capacitance) and adjust  $TC_{908}$  for a 100 mV VTVM reading. Set the MODE to LSB and the TUNE to 2 of the unity scale, and then adjust  $TC_{910}$  for a zero beat reception of WWV.

(d)

(e)

Τ3

0.

3



Figure 43 PREMIX Unit (PB-1439)

BPF UNIT (PB-1442)

(1) **BANDPASS FILTER**  $(T_{1001} - T_{1005})$ 

The adjustment of the bandpass filters is critical to the spurious response. It requires a sweep generator and a scope for proper alignment.

- (a) Remove the jumper wire between  $TP_{701}$  and  $TP_{702}$  on the PREMIX unit. ( $TP_{702}$  is not shown on schematic, refer to Fig.43)
- (b) Connect the output of a sweep generator to  $TP_{702}$  and the RF probe of a scope to  $TP_{701}$ .
- (c) Set the VFO SELECT to EXT to disconnect the VFO from the circuit. Apply 30 dB sweep output to  $TP_{702}$ .

- (d) Monitor the wave patterns on the scope by offsetting the balancing pot  $VR_{701}$  on the PREMIX UNIT.
- (e) Adjust  $T_{1001} T_{1005}$  so that the passband characteristics become as flat as possible within the passband range specified.

BAND	<b>BPF PASSBAND</b>
160	10.5 – 11.0 MHz
40	$16.0-16.5\ \mathrm{MHz}$
20	$23.0-23.5\ \mathrm{MHz}$
15	30.0 - 30.5 MHz
10	37.0 – 39.0 MHz

- (f) When completed, re-install the jumper wire between  $TP_{701}$  and  $TP_{702}$ .
- (2) PREMIX BALANCE (VR<sub>701</sub>)
- (a) Set the BAND switch to 10 mD. Connect the RF probe of a VTVM to the pinjack,  $J_{701}$ , and adjust VR<sub>701</sub> for a minimum reading.
- (b) Return the VFO SELECT to INT and make sure that the VTVM reading indicates between 0.7 0.9V.



Figure 44 BPF Unit (PB-1442)

#### FIX UNIT (PB-1447)

The trimmer capacitors  $TC_{1501} - TC_{1511}$  are provided for fine frequency tuning of fixed channel crystals. The 12th socket is for auxiliary and it is not connected to the switch.



Figure 45 Fix Unit (PB-1447)

#### RF UNIT (PB-1433)

#### (1) TRANSMITTER MIXER BALANCE (VR<sub>101</sub>)

- (a) Transmit on the 80 meter band in CW mode with the TUNE set to 6 of the unity scale.
- (b) Adjust  $VR_{101}$  for a minimum power output.

#### (2) **RECEIVER MIXER** $(T_{102})$

Tune the transceiver to the internal marker signal and peak  $T_{102}$  for a maximum S meter indication.

#### (3) 9 MHz TRAP $(T_{101}, T_{1401})$

(a) Set the BAND switch to the 40 meter band and tune the transceivr for maximum sensitivity with the TUNE control.



Figure 46 RF Unit (PB-1433)

- (b) Connect the output of a signal generator set to exactly 9 MHz, and apply enough output so that the S meter indicates S6 – S8.
- (c) Adjust  $T_{101}$  on the RF UNIT and  $T_{1401}$  on the TRIMMER UNIT for a minimum S meter reading.
- (d) Increase the output of the generator and repeat step (c) until the lowest S meter reading is achieved.

#### **BLANKING UNIT**

- (1) SETTING OF MIC VR (VR<sub>1901</sub>)
- (a) Connect the output of an audio generator to the mike input jack and a VTVM to pin 5 of the IF unit. Tune the transceiver to transmit on the 20 meter band in USB.
- (b) Transmit with a signal input of 2 mV at 1 kHz and adjust the MIC GAIN control,  $VR_{1901}$ , for an 80 mV VTVM reading.
- (c) If using a microphone other than the one furnished with the unit, it will be necessary to readjust the MIC GAIN control.

#### (2) CLARIFIER ZERO SETTING (VR<sub>1902</sub>)

- (a) Tune the transceiver to the marker or signal generator on any band.
- (b) Set the clarifier control to its centre (12 o'clock position). With the CLAR switch turned on, tune the dial for zero beat.
- (c) Turn the CLAR switch off and zero beat by adjusting  $VR_{1902}$ .



Figure 47 Blanking Unit (PB-1451)

#### LPF UNIT (PB-1445)

#### (1) BALANCING OF OUTPUT DETECTOR TRANSFORMER (TC<sub>1301</sub>)

- (a) Set the ALC level control, VR<sub>1302</sub> to fully clockwise position. Connect a dummy load to antenna terminal and time the transmitter to full output on CW mode at 80 meter band.
- (b) Peak TC1301 for a maximum power output.



Figure 48 LPF Unit (PB-1445)

- (2) ALC LEVEL  $(VR_{1302})$
- (a) Transmit on the 80 meter band as described above. Slowly advance  $VR_{1302}$  in a counterclockwise direction and set the  $VR_{1302}$  to the point where the power output starts to decrease.
- (b) A care must be taken when adjusting  $VR_{1302}$ as a high SWR due to the antenna mismatch will cause improper setting of  $VR_{1302}$ .

#### (3) **OVERDRIVE PROTECTOR** $(VR_{1301})$

- (a) Transmit on the 20 meter band in CW with 100 watts output.
- (b) Change the MODE switch to USB and while speaking into the microphone normally, rotate  $VR_{1301}$  slowly until the protection circuit activates. This will be indicated by blinking of the S meter lamp.
- (c) Stop transmitting, then return the control counter-clockwise 1/8 of a turn. This point is the proper setting for the overdrive protection circuit. Be sure not to return the control more than specified.

(d) Turn the POWER switch off once to restore a normal condition.

#### **VR UNIT (PB-1448)**

(1) EXCITER, DRIVE LEVEL  $(VR_{1601} - VR_{1606})$ 

(a) Settings:

BAND	160 M
DIAL	500 (on white scale)
TUNE	160 METER
DRIVE	Fully clockwise
MODE	CW
$VR_{1302}$ on the LPF unit	Fully clockwise

- (b) Adjust the TUNE control for a peak output while transmitting. Adjust  $VR_{1601}$  for 100 watts output. It is necessary to retune the TUNE control as you adjust  $VR_{1601}$ .
- (c) Switch the BAND from 80m through 10D and repeat the same procedure as step (b) for the corresponding potentiometers  $VR_{1602} VR_{1606}$  for 100 watts output.



VR Unit (PB-1448) Figure 49

#### AM UNIT (PB-1556) AM Unit (PB-1556)

#### (1) AM CARRIER FREQUENCY $(TC_{2001})$

(a) Connect a frequency counter to pin 2 of multi-connector.
- (b) Set the MODE switch to AM position and key the transmitter.
- (c) Adjust TC<sub>2001</sub> until crystal frequency becomes 8999.3 kHz.

### (2) FSK SHIFT FREQUENCY (TC<sub>2002</sub>)

- (a) Connect a frequency counter to pin 2 of multi-connector.
- (b) Set the MODE switch to FSK position and key the transmitter. Adjust  $TC_{2002}$  until crystal frequency shift is 170 Hz (8999.13 kHz) when pin 3 and pin 6 of accessory socket are connected.

## (3) AM OUTPUT LEVEL (VR<sub>2001</sub>)

Set the BAND switch to 10B, MODE switch to AM and DRIVE control to fully CW position. Key the transmitter and adjust  $VR_{2001}$  for 25 watts output.



Figure 50 AM Unit (PB-1556)



Figure 51

## (4) AM MIC GAIN (VR<sub>2002</sub>)

Observe the transmitted signal on oscilloscope and adjust  $VR_{2002}$  for 100% modulation.

#### **RF TRACKING**

Preselector Coils  $(T_1 - T_3)$  and Trimmer Unit  $(TC_{1401} - TC_{1418})$ 

- (a) Turn the TUNE control fully counterclockwise and make sure that the knob indicates 0 on the unity scale. At 3.5 of the unit scale, the upper ends of the cores and the coil bobbins should line up with each other.
- (b) Set the BAND switch to 10 mD, the VFO to 30 MHz, and the TUNE control to the upper end of 10m segment (9.5 of the unity scale), then adjust  $TC_{1412}$  and  $TC_{1418}$  on the TRIM-MER UNIT for maximum power output.
- (c) After completing step (b), return to receive mode and adjust  $TC_{101}$  on the RF UNIT for maximum sensitivity. Do not change the VFO and TUNE settings once set up in step (b).
- (d) Set the BAND switch to 80m, the VFO to 3.5 MHz, and the TUNE control to the lower end of 80m segment (3 of the unity scale), then adjust  $TC_{1408}$  and  $TC_{1414}$  for the maximum power output. Return to receive mode and adjust  $TC_{1402}$  for maximum sensitivity.



Figure 52 Trimmer Unit (PB-1446)

- (e) Shift the VFO to 4.0 MHz and the TUNE control to the upper end of 80m segment (4.1 of the unity scale), then adjust  $T_2$  and  $T_3$  for maximum power output. Return to receive and adjust  $T_1$  for maximum sensitivity.
- (f) Repeat steps (d) and (e).
- (g) Repeat steps (b) and (c) and readjust  $TC_{1406}$ ,  $TC_{1412}$ ,  $TC_{1418}$  and  $TC_{101}$ .
- (h) Set the BAND switch to 15m, the VFO to 21.0 MHz and the TUNE control to 7.5 of the unity scale. Then adjust  $TC_{1405}$ ,  $TC_{1411}$  and  $TC_{1417}$  for maximum receive and transmit.
- (i) Set the BAND switch to 20m, the VFO to 14.0 MHz and the TUNE control to 6.5 of the unity scale. Then adjust  $TC_{1404}$ ,  $TC_{1410}$  and  $TC_{1416}$  for maximum receive and transmit.
- (j) Set the BAND switch to 40m, the VFO to 7.0 MHz and the TUNE control to 5 of the unity scale. Then adjust  $TC_{1403}$ ,  $TC_{1409}$  and  $TC_{1415}$  for maximum receive and transmit.
- (k) Set the BAND switch to 160m, the VFO to 2.0 MHz and the TUNE control to 3 of the unity scale. Then adjust  $TC_{1401}$ ,  $TC_{1407}$  and  $TC_{1413}$  for maximum receive and transmit.

When completed, replace all shields, covers, etc. removed for access to the various adjustments and test points.



Figure 55 Counter Mixer Unit (PB-1541)



Figure 53 10W Amp Unit (PB-1443)



Figure 54 Booster Unit (PB-1444)



Figure 56 Display · Logic Unit (PB-1542)

# PARTS LIST

and the second sec

and the second

★DIGITAL

PB         PRINTED CIRCUIT BOARD         I         KH 002         #           1576(A - Z)         R.JBECT BOARD         SP         SPEAKER			★DIGITAL
ISP6 A ~ Z.)       REJECT BOARD       SP       SPEAKER         Q       IC       1       SA-70         1 *       APC14306 GP       RL       RELAY         2 *       ISIGS       RL       RELAY         00DE       1       RAB       KAP DC12V 104T         1 *       CRYSTAL       S       SWITCH         1 *       IC-18/17 8996 9kHz       # 210027       I       RL         1 *       IC-18/17 8996 9kHz       # 210027       I       RL       SNP-2022         2 *       CABON COMPOSITION       3       ESK-E22CR15       # 002975         3 *       1000       FSN-1836 820       I       # 002975         4 *       1000       FSN-1826 820       I       # 002975         12 *       2 * 2700       PLUG       SNP 5607       I       SNP 5607         13 *       4 760       J.       RECEPTACLE       I       SNP 5607         14 *	MAIN CHASSIS	M	METER
SP         SPEAKER           1 * C         APC14308 GP         1         SA-70           1 *         APC14308 GP         RL         RELAY           2 *         APC14305 GP         RL         RELAY           7.8         DIODE         1         RAB KAP DC12V-164T           7.8         GC IN60FM         RLS         RELAY         Source           1 - 6         SI IS1555         1         RAB         *           2 *         CRYSTAL         Simtoff         N=2022         #002975.           1 IC-18/U 8996.9kHz         # 210027         SWITOH         # 002975.           2 R         RESTOR         213         SKI-F22(RH5         # 002975.           3 *         SOURD         3.30         ESR-F236R20         # 002975.           4 *         1000         S         ESR-F236R20         # 002975.           4 *         1000         S         ESR-F236R20         # 002975.           13 *         4 760         S.4700         P ULG         # 002975.           14 *         *         1560.2         CN1463         * 0.71450           13 *         * 4760         S.4700         P ULG         * 0.71450		1	KH-002 #
Q         IC         I         SA-70           2 ★         #PC14305 GP         RL         RELAY           2 ★         #PC14305 GP         RL         RELAY           0         DIODE         RABE K4P         DC12V-104T           0         DIODE         RABE K4P         DC12V-104T           1         HC18/UE 8996.9kHz         #210027         1         SWTCH           1         HC18/UE 8996.9kHz         #210027         1         SWTCH           2 A         CRYSTAL         SWTCH         #002975.         #002975.           1         HC18/UE 8996.9kHz         #210027         1         SU20276.           2 A         SWTCH         #002975.         #002975.         #002975.           3         CARNON COMPOSITION         3         #SR E22CR13         #002975.           3         A         #300         #SR E22CR13         #002975.           3         #SR E22CR13         #002975.         #002975.           3         #SR E22CR13         #002975.         #002975.           12         *2000         PLUG         SU692.         #144.           12         *2000         FUE         SU692.         #144.	$1576(A \sim Z)$ REJECT BOARD		
1       MCC14305 GP       RL       REL AY         2       MCC14305 GP       1       RAB K4P       DC12V-104T         7.8       Ge       1N60FM       RL5       RELAY SOCKET         16       Si       1S1555       1       RAB         X       CRYSTAL       S       SWITCH         1       HC-18/U 8996.9kH≠       #210027       1       SU2022         R       RESISTOR       2A       #002975/         R       RESISTOR       2A       #002975/         CARBION COMPOSITION       3       KSR-E22CR15       #002976/         3       -       1001       FSR-E124R20       #002975/         4       -       10001       FSR-E124R20       #002975/         4       -       1001       SCARDON COMPOSITION       3       KSR-E22CR15         3       -       163       -       163       SCARDON COMPOSITION       3       KSR-E3280         4       -       1001       SCARDON COMPOSITION       3       KSR-E32800       1.3         12       -       2700       P       PLOC       SCARDON COMPOSITION       3         13       CARDON       1.4       SCARDON </td <td></td> <td>SP</td> <td>SPEAKER</td>		SP	SPEAKER
2*         ∠PC14305 GP         RL         RL         RELAY           D         DODE         I         RAB K4P DC12V-104T           D         Ge 1 N80FM         RLS         RELAY SOCKET           1-6         Si 1S1555         I         RAB         K4P           1         HC-18/UE 8996-94Hz         \$210027         SWTCH         \$102975           R         RESISTOR         \$20027         \$1212         \$102975           R         RESISTOR         \$210021         \$12-2022         \$102975           CARRON COMPOSITION         3         FSR-E22CH15         \$102976           3         -         100         \$12-8022         \$102975           3         -         100         \$12-8022         \$102975           3         -         100         \$12-2022         \$102975           3         -         100         \$12-2022         \$102975           3         -         100         \$12-2022         \$102975           4         -         100         \$14.4         \$102975           3         -         100         \$14.4         \$102975           12         -         77         \$15070		1	SA-70
2*         ∠PC14305 GP         RL         RL         RELAY           D         DODE         I         RAB K4P DC12V-104T           D         Ge 1 N80FM         RLS         RELAY SOCKET           1-6         Si 1S1555         I         RAB         K4P           1         HC-18/UE 8996-94Hz         \$210027         SWTCH         \$102975           R         RESISTOR         \$20027         \$1212         \$102975           R         RESISTOR         \$210021         \$12-2022         \$102975           CARRON COMPOSITION         3         FSR-E22CH15         \$102976           3         -         100         \$12-8022         \$102975           3         -         100         \$12-8022         \$102975           3         -         100         \$12-2022         \$102975           3         -         100         \$12-2022         \$102975           3         -         100         \$12-2022         \$102975           4         -         100         \$14.4         \$102975           3         -         100         \$14.4         \$102975           12         -         77         \$15070	1 * #PC14308 GP	t	
DIODE         1         RAB         K4P         DC12V-104T           7,8         Ge         1N60FM         RLS         RELAY SOCKET           1-6         Si 1S1555         1         RAH           X         CRYSTAL         S         SWITCH           1         HC-18/U 8996.9kHz $\# 210027$ 1         SH-2022           R         RESISTOR         2A $\# 0029757$ $\# 0029757$ R         RESISTOR         2B $\# 0029757$ $\# 0029757$ S         CARBON COMPOSITION         3         RESIR E22CR15 $\# 002981$ 5         GARDON COMPOSITION         3         RESIR E22CR15 $\# 002981$ 4         2         1005         SHE E368120 $\# 002981$ 5         GARDON COMPOSITION         3         SKENE E368120 $\# 002981$ 4         2         14002         SKENE E368120 $\# 002981$ 5         SKENE E368120         1         SKENE E368120 $\# 002981$ 10.15         4         7.68         SKENE E368120 $\# 014455$ 11         *         2.780         SKENE E368120         S			
D         DIODE         RLS         RELAY         SOCKET $1-6$ Si         151555         1         RAB           x         CRYSTAL         S         SWITCH           1         IIC-18/U         \$996.98Hz $\# 210027$ SU-2022           R         RESISTOR         218 $\# 002975.$ CARBON COMPOSITION         3         ESR E22CR15 $\# 002975.$ 3         *         1000         SURCH $\# 002975.$ 4         *         1000         SURCH $\# 002975.$ 4         *         1000         SURCH $\# 002975.$ 4         *         1000         PLUG         SURCH $\# 002975.$ 13         .         .         SURCH         1.4         SURCH         SURCH           10.15         .			
7.8       Ge       INDEVN       RLS       RELAY SOCKET         1-6       Si       1S1555       1       RAB         1       IIC-18/U 8996.95Hz $\ddagger$ 210027       1       SWITCH         1       IIC-18/U 8996.95Hz $\ddagger$ 210027       1       SU*2022         R       RESISTOR       2A $\exists$ 0029753         3 $\checkmark$ 1000       5       FSR-E124R20         4 $\diamond$ 1000       5       FSR-E365R20         4 $\diamond$ 2000       P       PUG6         13 $\diamond$ 4700       1.4       SGM052         14* $\diamond$ 15SC       5       CN-39651*         10.15 $\diamond$ 3.3K0       1       JSO-239         11 $\diamond$ 2.7K0       1       JSO-239         11 $\diamond$ 2.7K0       1       JSO-239         11 $\diamond$ 2.7K0       1       JSO-239         2.3       UG-625       B/U       2.3       UG-625         14       EVK-A24.81       10039       SK00.45       10       QMS-A12M         1       EVK-A24.81       10329       SK0.11 <td></td> <td></td> <td>RAB K412 DC12V-1041</td>			RAB K412 DC12V-1041
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			
x         GRYSTAL         S         SWITCH           1         HC-18/U         896.9kHz         # 210027         1         SP-2022           R         RESISTOR         218         # 0029757         # 0029757           S         L2W         3.30         4         ESR-F22CR15         # 0029767           S         L2W         3.30         4         ESR-F22CR15         # 0029767           3         *         1000         5         ESR-F22CR15         # 0029767           4         *         1000         5         ESR-F22CR15         # 0029767           12         *         2700         P         PLUG         1           13         *         4700         1.4         ESR-F22CR15         5           6.9         *         2.7K0         5         CN-33450         5           11         *         4.7K0         J         RECEPTACLE         1           11         *         2.3         UG-625         B/U         1           14         EVH-82AR         1035         SEMP/SCM9         QMS-AH12M         1           1         EVH-72AR         1058         SEMP/SCM9         QMS-AH12M		RLS	RELAY SOCKET
1         HC-18/U         8996.9kHz         ≢ 210027         1         SP-2022           R         RESISTOR         213         SP-2022         #002975.           3         200         213         SN-E124180         #002961           3         3         3         4         FSR-E124180         #002975.           3         2         1000         5         SSR-E365 R20         4           4         2         1000         5         SSR-E365 R20         4           4         2         2000         P         PLUG           13         2         2700         1.4         SSR-E365 R20           14         2         10000         3         M3115-60-1245         5           10.15         3         3.80         3         4         1.550-239           11         2         4.7K0         1         JSO-239         2.3           VR         POTENTIOMETER         5         C-7         SG-6018           2         EVR-KA2AR         10183         SK0B/510         0         0           1         EVIE-BOAR         2039         SK0A/5K0B         9         QMSS-AB6F           5	1~6 Si 1S1555	1	RAB
1         HC-18/U         8996.9kHz         ≢ 210027         1         SP-2022           R         RESISTOR         213         SP-2022         #002975.           3         200         213         SN-E124180         #002961           3         3         3         4         FSR-E124180         #002975.           3         2         1000         5         SSR-E365 R20         4           4         2         1000         5         SSR-E365 R20         4           4         2         2000         P         PLUG           13         2         2700         1.4         SSR-E365 R20           14         2         10000         3         M3115-60-1245         5           10.15         3         3.80         3         4         1.550-239           11         2         4.7K0         1         JSO-239         2.3           VR         POTENTIOMETER         5         C-7         SG-6018           2         EVR-KA2AR         10183         SK0B/510         0         0           1         EVIE-BOAR         2039         SK0A/5K0B         9         QMSS-AB6F           5		· · · · · · · · · · · · · · · · · · ·	
1         HC-18/U         8996.9kHz         ≢ 210027         1         SP-2022           R         RESISTOR         213         SP-2022         #002975.           3         200         213         SN-E124180         #002961           3         3         3         4         FSR-E124180         #002975.           3         2         1000         5         SSR-E365 R20         4           4         2         1000         5         SSR-E365 R20         4           4         2         2000         P         PLUG           13         2         2700         1.4         SSR-E365 R20           14         2         10000         3         M3115-60-1245         5           10.15         3         3.80         3         4         1.550-239           11         2         4.7K0         1         JSO-239         2.3           VR         POTENTIOMETER         5         C-7         SG-6018           2         EVR-KA2AR         10183         SK0B/510         0         0           1         EVIE-BOAR         2039         SK0A/5K0B         9         QMSS-AB6F           5		5	SWITCH
R         RESISTOR         2A $\# 002975.$ R         CARBON_COMPOSITION         3         ESR-E22CR15 $\# 002981$ 3 $5$ $\frac{1}{2}W$ 3.30         4         ESR-E22CR15 $\# 002981$ 3 $2$ 1000         5         ESR-E22CR15 $\# 002981$ 4 $\circ$ 1000         6         ESR-E22CR15         6.9         2.000           13 $\circ$ 4700         1.4         SQ4052         1         1.50         2.3         1.63 $* M - 31 + 56 - 124 + 56 - 124 + 56 - 56 + 56 + 56 + 56 + 56 + 56 + 56$			
R         RESISTOR         218         # 002981           5 $GARBON COMPOSITION$ 3         ESR-E32CR15         # 0020           3         *         1000         5         ESR-E365R20           4         *         1000         5         ESR-E365R20           12         *         2000         P         PLUG           13         *         4700         1.4         SQ4052           14         *         2000         P         CMR63         -           14         *         1.4         SQ4052         -         -           14         *         1.4         SQ4052         -         -         -           10.15         *         3.3.80         -         -         -         -         -           10.15         *         3.3.80         - <td><u>1 10-16/0 8990.9km</u> #210027</td> <td></td> <td></td>	<u>1 10-16/0 8990.9km</u> #210027		
CARBON CONPOSITION         3         ESR-E22CR15           5         ½W         3.30         4         ESR-E1241200           3         4         1000         5         ESR-E365H20           12         4         2700         P         PUG           13         5         4700         1.4         SQ1052           14         2         1.600         2         CN1463           7.8         2.7K0         5         CN36612           10.15         2.3.8K0         5         CN205239           1         2         4.7K0         J         RECEPTACLE           11         2         2.7K0         1         JSO-239           2.3         UGRS 5K018/SR         9         QMS ABE         MU           4         EVK-A2AR         10.150         Son0478         PL         QMS ABE           2         EVK-A2AR         10.150         GNAJAK0B         I         CN 7017			
5         1/4W         3.30         4         ESR-E124R20           3         *         1000         5         ESR-E365R20           4         *         1000         14*         \$         2700         P           13         *         2700         P         PLUG         \$           14*         *         1KD         2         CN1463         \$           6.9         *         2.7KD         5         CN-3965P         \$           10.15         *         3.3KD         *         \$         CN-3965P           11         *         4.7KD         1         JSO-239         \$           2.3         UG-625         B/U         \$         \$         \$           4         CS-260         \$         \$         \$         \$         \$           2         PVK-A2AR         10833         \$KOBH/5KDH         9         QMS-AH14S         \$           2         FWK-A2AR         10339         \$         \$         \$         \$           4         FWH-R0GR         20.444         10KA2KDH         9         \$         \$           5         FWK-A2AR         10339         \$ </td <td></td> <td></td> <td></td>			
3     *     100     5     ESR-E365H20       12     *     2700     P     PLUG       13     *     4700     1,4     SQ1062       14     *     1K0     2     CN1463       7.8     *     1,5K0     2     CN1463       7.8     *     1,5K0     2     CN1463       10.15     *     3.3K0     *     M=3115-60-124S       10.15     *     3.3K0     CN-3661*       11     *     4.7K0     J     RECEPTACLE       11     *     4.7K10     J     RECEPTACLE       11     *     4.7K10     J     RECEPTACLE       11     *     4.7K20     J     J       2.3     UG-625     B/U     4       4     EVK-A2AR     1035     SK0B/SK019     Q       1     EVK-A2AR     10153     SK0B/SK019     Q       2     EVK-A2AR     10153     SK0B/SK019     Q       5     EVK-A2AR     10153     SK0B/SK019     Q       6     *     EVR-K8AS     11053     SK0B/SK019       6     EVR-K8AS     11053     SK0B/SK019     Q       6     EVR-K8AS     11053     SK0B/SK019	CARBON COMPOSITION	3	ESR-E22CR15
3     *     100     5     ESR-E365H20       12     *     2700     P     PLUG       13     *     4700     1,4     SQ1062       14     *     1K0     2     CN1463       7.8     *     1,5K0     2     CN1463       7.8     *     1,5K0     2     CN1463       10.15     *     3.3K0     *     M=3115-60-124S       10.15     *     3.3K0     CN-3661*       11     *     4.7K0     J     RECEPTACLE       11     *     4.7K10     J     RECEPTACLE       11     *     4.7K10     J     RECEPTACLE       11     *     4.7K20     J     J       2.3     UG-625     B/U     4       4     EVK-A2AR     1035     SK0B/SK019     Q       1     EVK-A2AR     10153     SK0B/SK019     Q       2     EVK-A2AR     10153     SK0B/SK019     Q       5     EVK-A2AR     10153     SK0B/SK019     Q       6     *     EVR-K8AS     11053     SK0B/SK019       6     EVR-K8AS     11053     SK0B/SK019     Q       6     EVR-K8AS     11053     SK0B/SK019	$\frac{1}{2}W$ $3.3\Omega$	4	ESR-E124R20
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		5	
12       *       270Ω       P       PL0G         13       *       470Ω       1.4       SQ4052         14       *       1KΩ       2       CN1463         7.8       *       1.5KΩ       3       M-31-15-60-124 S         6.9       2.7KΩ       5       CN-39651'         10.15       *       3.3KΩ       1       JSO-239         1       *       2.7KΩ       1       JSO-239         11       *       2.7KΩ       1       JSO-239         11       *       2.7KΩ       1       JSO-239         11       *       2.7KΩ       1       JSO-239         2.3       UG-625       B/U       4       CS-76018         4       EVI-BOAR       6055       SG0/B/SKDH       9       QMS-AH2XM         14       EVILBOAR       10653       SK0A/SKDH       9       QMS-AH2XM         15       EVR-KAS       11B53       SK0A/SKDH       1       CS-750         6       EVR-KAS       11B53       SK0A/SKDH       1       CS-250         6       EVR-KAS       11B53       SK0A/SKDH       1       L       SA-1663 (P-2)         <			13671 33001(20
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			
14★       •       1KΩ       2       CN1463         7.8       •       1.5       •       1.3       KΩ       3.★       M.3       1.5       6.9       •       2.7KΩ       5       CN-39651'         10.15       •       3.3 KΩ       1       JSO-239       1       2.3       UG-625       B/U         11       •       4.7KΩ       J       JSO-239       1       2.3       UG-625       B/U         11       •       2.7KΩ       1       JSO-239       1       2.5       CO       1         11       •       2.7KΩ       1       JSO-239       1       1       2.5       B/U       1         11       •       2.7KΩ       1       JSO-239       1       1       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.6       1.5       1.5       1.6       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5<			
7.8 $*$ 1.5 KΩ       3 *       M-31-15-60-124 S         6.9 $*$ 2.7 KΩ       5       CN-39651'         10.15 $*$ 3.3 KΩ       J       RECEPTACLE         11 $*$ 4.7 KΩ       J       RECEPTACLE         11 $*$ 2.3       UC-625 B/U         2,3       UC-625 B/U       2.3       UC-625 B/U         4       CS-260       5       7         VR       POTENTIOMETER       5~7       SG-8018         4       CS-260       5       7         VR       POTENTIOMETER       5~7       SG-8018         2       EVK-A2AR 10339 5KΩB/5KΩB       10       QMS-ABI2M         1       EVK-A2AR 10339 5KΩB/5KΩB       11       CS-250         5       EVK-A2AR 10339 5KΩB/5KΩB       12       CN-163 (1-2)         C       CAPACITOR       13       CN-163 (1-2)         C       CAPACITOR       13       CN-1463 (1-2)         C       CERAMIC DISC       MJ       MULTI JACK         40 $*$ 0.047µF       1~3       BQ15A-30423A         2       FIX       GD-4       2       FIX	13 // 47012		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	7,8 // 1.5ΚΩ	3 \star	M-31-15-60-124S
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			CN-3965P
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		· ···	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		· · · · · · · · · · · · · · · · · · ·	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			
VR       POTENTIOMETER       5 $\sim$ 7       SG-8018         4       EVII-BOAR 05 B52       500Ω13       8       PM-144S         2       EVK-A2AR 10B53       5KΩB/5KΩB       9       QMS-ABGF         5       EVK-A2AR 10339       5KΩA/5KΩB       9       QMS-ABGF         6       *       EVR-A2AR 10339       5KΩA/5KΩB       11       CS-250         6       *       EVR-K8AS 11B53       5KΩB       12       CN-7017         7       CERAMIC DISC       13       CN-1463 (P-2)       C         20       50WV       15PF (CH)       MJ       MULTI JACK         40       *       0.001µF       1~8       3305-018-011         1 ~ 6.30       .31.35 ~ 37       0.01µF       1       1       CLAR         8.9.34.38       0.1µF       1       3       BQ15A-30423A         1 ~ 2       28,43       50W V       0.001µF       DS       INDICATOR         12       -28,43       50W V       0.001µF       DS       INDICATOR         12       -28,43       50W V       0.001µF       T3       Assembly       (PE-1449)         13       250W V       0.047µF       T2       Assembly	<u> </u>		
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		2,3	UG-625 B/U
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		4	CS-260
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	VR POTENTIOMETER	$5 \sim 7$	SG-8018
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$\frac{1}{1} = \frac{E V H - B O G K}{20 A 14} = \frac{10 K V A (S)}{10 K V A (S)}$		
C         CAPACITOR         I3         CN-1463 (P-2)           29 $50WV$ 15 PF (CH)         MJ         MULT1         JACK           40 $\circ$ $0.001\mu^{\rm F}$ I $\sim 8$ $3305-018-011$ I $\sim 8$ 1 $\sim 6, 30$ $31, 35 \sim 37$ $\circ$ $0.047\mu^{\rm F}$ I $\sim 8$ $3305-018-011$ 44.47,48.50,51 $\bullet$ $0.047\mu^{\rm F}$ I $\sim 8$ BQ15A-30423A           8,9.34,38 $0.14^{\rm F}$ I $\sim 3$ BQ15A-30423A           12 $\sim 28,43$ 50WV $0.001\mu^{\rm F}$ DS         INDICATOR           12 $\sim 28,43$ 50WV $0.0047\mu^{\rm F}$ 1         CLAR         RD-4           2         FIX         GD-4         2         FIX         GD-4           33         250WV $0.047\mu^{\rm F}$ T1         Assembly         (PB-1449)           41 *         16WV $100\mu^{\rm F}$ T2         Assembly         (PB-1449)           41 *         16WV $100\mu^{\rm F}$ T2         Assembly         (PB-1449)           41 *         16WV $100\mu^{\rm F}$ T2         Assembly         (PB-1449)			
C       CAPACITOR         CERAMIC DISC         29 $50WV$ $15PF$ (CH)       MJ       MULTI JACK         40 $\circ$ $0.001\mu$ F $1-8$ $3305-018-011$ $1^{-}$ 6, 30, 31, 35 $-37$ $\circ$ $0.047\mu$ F $44.47, 48, 50, 51$ PL       PILOT       LAMP $8.9, 34, 38$ $0.1\mu$ F $1^{-3}$ $BQ15A-30423A$ CERAMIC FEED THRU $12-28, 43$ $50WV$ $0.001\mu$ F       DS       INDICATOR         ISOWV $0.001\mu$ F       DS       INDICATOR         ISOWV $0.0047\mu$ F         ISONV	$6 \star EVR-K8AS 11B53 5K\Omega B$	12	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		13	CN-1463 (P-2)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	C CAPACITOR		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	CERAMIC DISC		· · · · · · · · · · · · · · · · · · ·
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		M 1	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		1.00	5505-018-011
8,9,34,38       0.1 $\mu$ F       1 $\sim$ 3       BQ15A-30423A         CERAMIC FEED THRU         12 $\sim$ 28,43       50WV       0.001 $\mu$ F       DS       INDICATOR         12 $\sim$ 28,43       50WV       0.001 $\mu$ F       DS       INDICATOR         33       250WV       0.047 $\mu$ F       1       CLAR RD-4         33       250WV       0.047 $\mu$ F       COIL SUPPORT         ELECTROLYTIC         T1 Assembly (PB-1449)         41 *       16WV       100 $\mu$ F       T2 Assembly ( $\sim$ )         10,11 $\sim$ 100 $\mu$ F       T3 Assembly ( $\sim$ )         49       25WV       100 $\mu$ F       T3 Assembly ( $\sim$ )         49       25WV       100 $\mu$ F       PB         1       TSN-150×40       40 PF       PB         VC       VARIABLE CAPACITOR       RF UNIT         1,2       RF CHOKE 35 $\mu$ H       20017       Q       IC. FET & TRANSISTOR         1,5 $\sim$ 250 $\mu$ H       101       IC       MC1496G         6 $^{\circ}$ 1mH       107 $^{\circ}$ SN7400N         1,2       RF CHOKE 35 $\mu$ H       101       IC       MC1496G         6 $^{\circ}$			· · ·
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$8, 9, 34, 38$ $0.1 \mu F$	$1 \sim 3$	BQ15A-30423A
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	CERAMIC FEED THRU		• • • • • • • • • • • • • • • • • • • •
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$12 \sim 28.43$ 50 W V 0.001 $\mu$ E	DS	
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	MVLAD		
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$		2	<u>F1X GD-4</u>
ELECTROLYTIC       T1 Assembly (PB-1449)         41 *       16WV       100 $\mu$ F       T2 Assembly (*)         10,11       *       1000 $\mu$ F       T3 Assembly (*)         49       25WV       100 $\mu$ F       T3 Assembly (*)         49       25WV       100 $\mu$ F       T3 Assembly (*)         VC       VARIABLE CAPACITOR       RF UNIT         1       TSN-150×40       40 PF       PB         1433(A~Z)       1433(A~Z)         L       INDUCTOR       1433(A~Z)         1,2       RF CHOKE 35 $\mu$ II       # 220017       Q       IC. FET & TRANSISTOR         4,5       *       250 $\mu$ H       101       IC       MC1496G         6       *       1mH       107       *       SN7400N         102,103       FET 3SK40M       102,103       FET 3SK40M         CH       AF CHOKE       106       Tr 2SC735Y         1       # 50-11       15mH' 0.4A       105       *       2SC784R         T       RF TRANSFORMER       104       *       2SC784R         1~3       # 220015       D       DIODE	$33 250 \text{WV} 0.047 \mu \text{F}$		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	ELECTROLYTIC		T1 Assembly (PB-1449)
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			$T_3$ Assembly ( $\alpha$ )
VC         VARIABLE CAPACITOR         RF UNIT           1         TSN-150×40         40 PF         PB         PRINTED CIRCUIT BOARD           1433(A~Z)         1433(A~Z)         1433(A~Z)         1433(A~Z)           L         INDUCTOR         101         IC         FET & TRANSISTOR           4,5         ^         250µH         101         IC         MC1496G           6         ^         1mH         107         ×         SN7400N           CH         AF CHOKE         106         Tr         2SC735Y           1         # 50-11         15mH'         0.4A         105         2SC741           T         RF TRANSFORMER         104         ×         2SC784R           1~3         # 220015         D         DIODE			
I       TSN-150×40       40 PF       PB       PRINTED CIRCUIT BOARD         1433(A~Z)       1433(A~Z)         L       INDUCTOR       12       RF CHOKE 35µII       # 220017       Q       IC. FET & TRANSISTOR         4,5       ^       250µH       101       IC       MC1496G         6       ^       1mH       107       ^       SN7400N         CH       AF CHOKE       106       Tr       2SC735Y         1       # 50-11       15mH' 0.4A       105       ^       2SC741         104       ~       2SC784R       104       ~       2SC784R         T       RF TRANSFORMER       D       DIODE       D       DIODE	το Δυτικίν ΙΟΟ/4Γ		
I       TSN-150×40       40 PF       PB       PRINTED CIRCUIT BOARD         1433(A~Z)       1433(A~Z)         L       INDUCTOR       12       RF CHOKE 35µII       # 220017       Q       IC. FET & TRANSISTOR         4,5       ^       250µH       101       IC       MC1496G         6       ^       1mH       107       ^       SN7400N         CH       AF CHOKE       106       Tr       2SC735Y         1       # 50-11       15mH' 0.4A       105       ^       2SC741         104       ~       2SC784R       104       ~       2SC784R         T       RF TRANSFORMER       D       DIODE       D       DIODE			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			
L       INDUCTOR $1433(A \sim Z)$ 1,2       RF CHOKE $35\mu$ II # 220017       Q       IC, FET & TRANSISTOR         4,5       *       250 $\mu$ H       101       IC       MC1496G         6       *       1mH       107       *       SN7400N         CH       AF CHOKE       106       Tr       2SC735 Y         1       # 50-11       15mH' 0.4A       105       *       2SC741         T       RF TRANSFORMER       104       *       2SC784R         1~3       # 220015       D       DIODE	$1 \qquad TSN-150 \times 40 \qquad 40 PF$		
L         INDUCTOR           1,2         RF CHOKE 35μI #220017         Q         IC. FET & TRANSISTOR           4,5         *         250μH         101         IC         MC1496G           6         *         1mH         107         *         SN7400N           6         *         1mH         107         *         SN7400N           CH         AF CHOKE         106         Tr         2SC735Y           1         #50-11         15mH'         0.4A         105         *         2SC741           T         RF         TRANSFORMER         104         *         2SC784R           1~3         #220015         D         DIODE         100E		1433( A~	- Z )
1,2       RF_CHOKE       35µl1       # 220017       Q       IC. FET       & TRANSISTOR         4,5       ^       250µH       101       IC       MC1496G         6       ^       1mH       107       ^       SN7400N         6       ^       1mH       107       ^       SN7400N         CH       AF       CHOKE       106       Tr       2SC735Y         1       # 50-11       15mH'       0.4A       105       ^       2SC741         104       ~       2SC784R       104       ~       2SC784R         T       RF       TRANSFORMER       D       DIODE       D	L INDUCTOR		
4,5       *       250µH       101       IC       MC1496G         6       *       1mH       107       *       SN7400N         102,103       FET       3SK40M         CH       AF       CHOKE       106       Tr       2SC735Y         1       # 50-11       15mH'       0.4A       105       *       2SC741         104       *       2SC784R         1~3       # 220015       D       DIODE		Q	IC FET & TRANSISTOR
6         *         1mH         107         *         SN7400N           102,103         FET         3SK40M           CH         AF         CHOKE         106         Tr         2SC735Y           1         # 50-11         15mH'         0.4A         105         *         2SC741           104         *         2SC784R           1~3         # 220015         D         DIODE			
ID2,103         FET         3SK40M           CH         AF         CHOKE         106         Tr         2SC735Y           1         # 50-11         15mH'         0.4A         105         2SC741           104         ~         2SC784R           T         RF         TRANSFORMER         100           1~3         # 220015         D         DIODE			
CH         AF         CHOKE         106         Tr         2SC735 Y           1         # 50-11         15mH'         0.4 A         105         2SC741           104         %         2SC784 R           T         RF         TRANSFORMER         100           1~3         # 220015         D         DIODE	<u>v ″ 1mH</u>		
1     # 50-11     15mH'     0.4A     105     *     2SC741       104     *     2SC784R       T     RF     TRANSFORMER       1~3     # 220015     D     DIODE			
1     # 50-11     15mH'     0.4A     105     *     2SC741       104     *     2SC784R       T     RF     TRANSFORMER       1~3     # 220015     D     DIODE		106	Tr 2SC735Y
IO4         2SC784R           T         RF         TRANSFORMER           1~3         # 220015         D         DIODE	1 # 50-11 15mH' 0.4A	105	
T         RF         TRANSFORMER           1~3         # 220015         D         DIODE			
1~3 # 220015 D DIODE		- ~ ·	
		<b>D</b>	DIODE
$1 101 \sim 109$ C: 101FFF	1 = 5 # 220015		
101~100 51 151555		$101 \sim 108$	Si 1S1555

PB         PRINTED         CRCUIT         BOARD           CABINON FULM         1434/A-Z)         1434/A-Z)           129         5/W         1000         Q         IC & FET           129         2         800         203         K         TA70601'           106, 118         1000         204-206         FET         35K40M           115, 130         2         3000         201-202, 207         25K190/R           100, 112, 133         3         3000         DIODE         35K35Y           100         12, 134, 136         12K0         DIODE         18K0           116         2, 12K0         CRVSTAL         FILTER         18K0           116         2, 2K0         X         CRVSTAL         FILTER         19155           118         3, 13K0         201         HC-187/L 854514/2 $\pm$ 1002           121         2, 4/7         X         CRVSTAL         FILTER         190           104, 105, 109, 135         100K0         204, 207-209, 217, 222 % W         1004           113         3         100K0         204, 207-209, 217, 222 % W         1004           113         4         100K0         204, 207-209, 217, 222 % W	109	Zener WZ050	0			NB UNIT	
R         RESISTOR         14341 A=-2;           I29         Value         100         Q         IC & FET           122 $*$ 820         203         IC         TATOGOIT           106, 118 $*$ 1000         Quication         IC & FET         33K40M           106, 103, 122, 133 $*$ 2000 $*$ 33K35Y           106 $*$ 1000         Diobe $*$ 33K35Y           107 $*$ 3000         Diobe $*$ 33K35Y           108 $*$ 1280 $*$ 35K35Y           108 $*$ 1280 $*$ 181655           108 $*$ 1280 $*$ 181655           108 $*$ 1280 $*$ 181655           104, 105, 109, 135 $*$ 16K0 $201$ $112$ $124$ $124$ $127$ $*$ $2260$ 121, 124, 137, 139 $*$ $33K0$ $R         RESISTOR         11117 104, 105, 108, 109 104, 105, 108, 109 1000, 104, 108, 109, 109, 100, 100, 100, 1$	103	2.60.61 W 2.030	<u> </u>	PB			BOARD
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							
122         *         820         203         10C         TX70661'           115, 130         *         1000         204 - 206         FET         35K40M           115, 130         *         2700         285K1977         25K1977           126         *         2700         *         25K1977           100         *         47001         DIODE         *           101         *         47001         DIODE         *         *           102         *         2860         CRYSTAL FILTER         *         *           121         124.137,139         *         33K0         201         *         *         *           123         *         16K0         XF         CRYSTAL FILTER         *         *         *           124         *         68K0         201         XF=92A         *         *         *           125         *         35K0         201         233 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				Q	IC & FE		
115, 130       *       1500       201, 202, 207       *       25K19(1)         126       *       2700       208, 207       *       35K85Y         100, 103, 122, 133       *       3300       0       35K85Y         100       *       4700       0       DiODE       35K85Y         101       *       1501       201, 202       Ge       1N60FM         101, 122, 131, 134, 136       1K0       203       Si       1S155         108       *       1, 2K0       1S155       1S155         116       *       1, 2K0       1G148545k11/2       ±21002         138       *       4, 7K0       1G21, 224, 137, 139       3, 3K0       R       CRYSTAL       FILTER         123       *       22k0       X       CRYSTAL       FILTER       100							
126         *         3700         208         *         35K35 Y           110         103, 122, 133         *         3300         D         DIODE							
100       100       4700       D       DIODE         107       4700       201, 202       Ge       1N60FM         107       4700       203       Si       1N50FM         108       1,2K0       Si       1N50FM       1855         108       1,2K0       Si       1N50FM       203       Si       1N50FM         127       2       2,2K0       X       CRYSTAL       21202       Ge       1N60FM         121,124,137,139       3,3K0       R       CRYSTAL       FLITER       21002       21202       Ge       1111117       4       1060K0       204,207       209,217,222 GW       1001         123       4       22K0       223,235       5       1001       1001       1001       1001       1001         113       4       150K0       223,235       5       1001       1001       1001       1001       1001         114       4       68K0       CARBON FPLM       1001       204,207       209,217,222 GW       1001       1001         114       4       68K0       CARBON FPLM       1001       223,235       1001       1001       111,230       1001       1001       224					, 207		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		} ~		200	· · ·		<u></u>
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		<i>"</i>		D	DIODE		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		"	820Ω	201,202			1N60FM
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				203		Si	1 S 15 55
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							H. # 910092
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				201	<u>nc-</u> 1	8/U 8545K	HZ # 210023
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				XF	CRYSTAL		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		"					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	119	"		R			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					CARBO	DN FILM	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					209,217,2	$22\frac{1}{4}W$	$100\Omega$
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					·····		1/00
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	114	.,	0001(12				
VR         POTENTIOMETER         205,212,231 $\sim$ 2,245           101         V10K8-1-2         50KΩB         202,206,227 $\sim$ 10K3           C         CAPACITOR         210 $\sim$ 15K3           DIPPED MICA         215 $\sim$ 33K3           135         50WV         100PF         228 $\sim$ 47K3           135         50WV         100PF (CH)         219 $\sim$ 156K3           107         50WV         10PF (CH)         219 $\sim$ 156K3           107         50WV         10PF (CH)         219 $\sim$ 150K3           116 $*$ 15PF ( $~$ )         232 $~$ 1M6           117 $*$ 22PF ( $~$ )         232 $~$ 1M6           122         500WV         0.014F         R_{XF} (FT-301S) $\frac{1}{2}$ W         3300           122         500WV         0.014F         201,203 $^{-}$ 5K01           131         133,138,139         50WV         0.047µF         201,203 $^{-}$ 5K01           121,124,128,130,134,136         1							$\frac{550^{-1}}{1K\Omega}$
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	VR POTE	NTIOMETER			231	"	2.2KΩ
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	101 V	10K8-1-2	<b>50</b> ΚΩΒ	202,206,	227	~	10KΩ
$\begin{array}{c c c c c c c c c c c c c c c c c c c $						"	15ΚΩ
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			100111				
CERAMIC DISC         213,218,220,225,226,229 $\sim$ 100K3           107         50WV         10 PF (CH)         219 $\sim$ 150K3           116 $\sim$ 15 PF ( $\sim$ )         214 $\sim$ 220K1           114, 115 $\sim$ 20 PF ( $\sim$ )         232 $\sim$ 1M4           117 $\sim$ 22 PF ( $\sim$ )         232 $\sim$ 1M4           117 $\sim$ 22 PF ( $\sim$ )         232 $\sim$ 1M4           107 $\sim$ 33 PF ( $\sim$ )         CARBON COMPOSITION         106,125 $\sim$ 100 PF ( $\sim$ )         RxP (FT-301S) $^{1}_{2}$ W         3304           102         103,110-113         50WV         0.01µF         101,103,110-113         50WV         0.01µF         201,203 $\sim$ 5K01           101,203,138,139         202         V10K8-1-2         2K01         210,203 $\sim$ 5K01           102,104,105,108,109         50WV         0.047µF         201,203 $\sim$ 100PF ( $\sim$ 127         16WV         10µF         CERAMIC DISC         210,203 $\sim$ 100PF ( $\sim$ 126	135	50 W V	100171				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	CF	RAMIC DISC			20 225 226 220		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			10PF(CH)		10,220,220,220	······································	<u>150KΩ</u>
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					· · ·		220KΩ
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	114,115	"		232		"	1MΩ
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		"					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							and the second
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				$\underline{\mathbf{R}}_{\mathbf{X}} \in \mathbf{F}\mathbf{T}$	-301S	$\frac{1}{2}W$	<u>330</u> Ω
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							· · · · · · · · · · · · · · · · · · ·
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			0.01µr		POTENTI	OMETER	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							2ΚΩΒ
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			0.047µŀ		. 1011	~	5ΚΩΒ
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$				-,			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		The second se		С			· · · · · · · · · · · · · · · · · · ·
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		16 W V			CERAM		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	126	"	$100\mu F$				
TC       TRIMMER CAPACITOR $217,223$ $270$ PF(*         101       ECV-1ZW $10 \times 32$ $10$ PF $210$ $*$ $560$ PF(SL         101       ECV-1ZW $10 \times 32$ $10$ PF $210$ $*$ $560$ PF(SL         101       ECV-1ZW $10 \times 32$ $10$ PF $210$ $*$ $560$ PF(SL         L       INDUCTOR $216,218 \sim 222,227,228$ $0.01\mu$ F $106$ # 220029 $230,231,234 \sim 236$ $0.047\mu$ F $105,107$ RF       CHOKE $250\mu$ H $232$ $*$ $0.047\mu$ F $101 \sim 104$ $*$ $500\mu$ H $#$ $220028$ $WYLAR$ $0.047\mu$ F $101 \sim R12-4172$ $#$ $220142$ $233$ $50WV$ $0.047\mu$ F $102$ R12-4170 $#$ $220140$ $0.047\mu$ F $0.047\mu$ F $103$ $4:1$ $Balun$ $#$ $220140$ $0.047\mu$ F $0.047\mu$ F $P$ PLUG $T$ TRANSFORMER $0.047\mu$ F $0.047\mu$ F $0.047\mu$ F $0.047\mu$ F $0.047\mu$ F							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			10 PF				560 PF(SL)
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$					,211,212,2	15 %	
105,107       RF       CHOKE       250μH       232       *       0.047μF         101~104       *       500μH       # 220028       *       0.047μF         T       TRANSFORMER       MYLAR       *       *       0.047μF         101       R12-4172       # 220142       233       50WV       0.047μF         102       R12-4170       # 220140       *       *       0.047μF         103       4:1       Balun       # 220016       T       TRANSFORMER         P       PLUG       T       TRANSFORMER       205,206       R12-4097       # 22010	L INDUC	TOR					
101~104       *       500μH       # 220028         T       TRANSFORMER       MYLAR         101       R12-4172       # 220142       233       50WV       0.047μF         102       R12-4170       # 220140       50WV       0.047μF         103       4:1       Balun       # 220016       T       TRANSFORMER         P       PLUG       205,206       R12-4097       # 22010			# 220029		234 - 236		
T     TRANSFORMER     MYLAR       101     R12-4172     # 220142     233     50WV     0.047μF       102     R12-4170     # 220140     50WV     0.047μF       103     4:1 Balun     # 220016     T     TRANSFORMER       P     PLUG     205,206     R12-4097     # 22010				232			0.047 <i>µ</i> F
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	101~104	<u>∥ 500µH</u>	# 220028				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	T TDAN	SEODMED				)	
102       R12-4170       # 220140         103       4:1 Balun       # 220016         P       PLUG       T       TRANSFORMER         205,206       R12-4097       # 22010		· · · · · · · · · · · · · · · · · · ·	± 220142	233	MTLAI		$0.047\mu E$
103       4:1 Balun       # 220016         T       TRANSFORMER         P       PLUG       205,206       R12-4097       # 22010				200			0.041//1
T         TRANSFORMER           P         PLUG         205,206         R12-4097         # 22010							
				Т	TRANSFO	DRMER	
$101$ CN-7017 $201 \sim 204 \ 207 \ 208 \ R12 - 4170 + 220144$					· · · · · · · · · · · · · · · · · · ·		
	101	CN-7017	7	201 - 204	,207,208	R12-4170	# 220140

	407 IC TA7089M
	407 IC I MOOM
201 <u>RF_CHOKE</u> 22µH	$\frac{401}{403,409} - \frac{7131}{2} \frac{3514401}{2} \frac{3514401}{2}$
	403,405 Tr $2SC373$
FILTER UNIT	404,400 406,410 2SC735Y
	402 <u>/ 2SC784R</u>
$\begin{array}{c c} PB & PRINTED CIRCUIT BOARD \\ \hline 1435(A \sim Z) & \hline \end{array}$	408 / 2SC1383
Q FET & TRANSISTOR	D DIODE
302 FET 2SK19GR	403 <u>Ge</u> <u>1S1007</u>
$\frac{302}{303} \qquad \qquad \overline{\mathrm{Tr}} = \frac{2\mathrm{SC}372\mathrm{Y}}{2\mathrm{SC}372\mathrm{Y}}$	401,405~408,410 Si 1S1555
301 <u>* 2SC784</u> R	402 Zener <u>BZ090</u>
	404,409 <u> </u>
D DIODE	
<u>301,303~306,310</u> <u>Ge</u> <u>1S1007</u>	X         CRYSTAL           401         HC-18/U8999.3kHz
$\frac{302,307}{302,307} \qquad \frac{\text{Si}}{\text{Si}} \frac{1\text{S1555}}{100000000000000000000000000000000$	
308 Zener WZ110	R RESISTOR
XF CRYSTAL FILTER	$\frac{1}{CARBON} - \frac{1}{FILM} - \frac{1}{CARBON}$
XF         CRYSTAL         FILTER           301         9M-20A	$407,411,427$ $\frac{1}{4}W$ $4.7\Omega$
$\frac{301}{302} \qquad \qquad \frac{9M^220R}{CW} (OPTION) = -$	$\frac{1}{423} \qquad \qquad$
$\begin{array}{c} 302 \\ \hline 303 \\ \hline \end{array} \qquad \begin{array}{c} \hline OW \\ \hline AH \\ \hline SF - 90B \\ \hline OPTION \\ \hline \end{array}$	124 // //512
$\frac{303}{304} = \frac{1111}{\text{SSB} \text{XF-92A}}$	$\frac{424}{415}$ / $100\Omega$
	$\frac{405,436}{410} - \frac{2}{220\Omega} - \frac{150\Omega}{220\Omega}$
R RESISTOR	410
CARBON FILM	430,435
$303$ $\frac{1}{4}W$ $56\Omega$	411
$304, 312, 315, 316, 323 $ $(100\Omega)$ $306, 308$ $(300\Omega)$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
500,500	$\frac{408}{437}$ 2.2K $\Omega$
303,321	437 418 2.7KΩ
505,511	418 431 <sup>″</sup> <u>3.3KΩ</u>
313, 320, 021, 022, 020	408.413.416 4.7ΚΩ
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	412,426,434 // 10K12
$\frac{307,310}{302}$ $\frac{39K\Omega}{2}$	$\frac{1}{421}$ $24$ K $\Omega$
	409 <i><sup>γ</sup></i> 33KΩ
CARBON COMPOSITION	401,403,419,432 <sup>α</sup> 100KΩ
$\frac{1}{2}$ W 56 $\Omega$	420 // 120KΩ 404 // 150KΩ
	404
	402 // 390K12
$\frac{VR}{201} \frac{POTENTIOMETER}{V10K8-1-2} 500\Omega B$	
<u>301</u> <u>V10K8-1-2</u> <u>500Ω</u> B	VR POTENTIOMETER
·	401,402 V10K8-1-2 1KΩB
	$\frac{401,102}{403} = \frac{5K\Omega B}{2}$
CCAPACITOR	
302 50WV 33PF(CH)	C CAPACITOR
302 <u>307</u> <u>307</u> <u>307</u> <u>307</u>	CERAMIC DISC
$\frac{307}{301,303,305,308} \sim 311  \% \qquad \qquad 0.01\mu F$	
$313 \sim 317.321 \sim 323.325$	$\frac{414}{2} \qquad \frac{18 PF(\ast)}{20 PF(\ast)}$
304, 312, 318, 319, 324	
326	421
ELECTROLYTIC	
$306 \qquad 16WV \qquad 10\mu F$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
	403,400,407,409 412 0.01/1
	$\frac{410,424,429,431,435}{404,405,413,415,419} \qquad \qquad 0.047\mu\text{F}$
$\begin{array}{c c} L & \text{INDUCTOR} \\ \hline 301 & RF & CHOKE \\ \end{array} $	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
	MYLAR
T TRANSFORMER	426,427 50WV 0.022µF
301,303,304 R12-4170 # 220140	418
$\frac{301,000,001}{302} \qquad R12-4171 \qquad \# 220141$	
	$\frac{10\mu F}{10\mu F}$
	102,102
IF UNIT	$\frac{425}{2}$ // $\frac{100\mu F}{2}$
PB PRINTED CIRCUIT BOARD	TC TRIMMER CAPACITOR
$\underline{1436(A \sim Z)}$	$\frac{10}{401,402} \xrightarrow{\text{FCV}-1ZW} 20 \times 40 \qquad 20 \text{PF}$
Q IC, FET & TRANSISTOR	
Q IC, FET & TRANSISTOR	

ł

5

L	INDUCTOR		505,506	50 W V	39PF(CH)
403	RF CHOKE	22 <i>µ</i> H	518	<u> </u>	$\frac{-391\text{F}(CH)}{100\text{PF}(\%)}$
401,402	"	1 mH	507,508		150PF( % )
			501,502,511	513,515	$0.01\mu\mathrm{F}$
T	TRANSFORMER		503,504,514,	543	0.047µF
401	R12-4171	# 220141			
402	R12-4170	# 220140		IYLAR	
			538,539	50 W V	0.0022µF
			526	//	0.0047µF
PB	AF UNIT	BOARD	528	<i>"</i>	0.022µF
1437(A~		BUARD	525,541,545		0.047µF
140/(11			544	<u> </u>	0.1µF
Q	IC, FET & TRANS	ISTOR	1.	LECTROLYTIC	
503		LD3141		532,534 16WV	1µF
501	FET	2SK19GR	523	///////////////////////////////////////	$\frac{1}{2.2\mu}$ F
507	Гг	2SA695D	531	"	4.7µF
509	″	2SB529D	527	"	22µF
502	"	2SC372Y	520~522,533	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	33µF
506	"	2SC711F	534,542	16WV	100µF
504,505	· · · · · · · · · · · · · · · · · · ·	2SC1000GR	537,540	*	220µF
508	"	2SD359D			
L					
D	DIODE	101007	TC TRIN	MER CAPACITOR	
$-\frac{503-506}{501,502}$		1S1007	501,502	ECV-1ZW 20×40	
501,502, 508	,507 Si	1S1555	503	$ECV-1ZW = 50 \times 40$	50 PF
$\frac{508}{509,510}$		MV-5W WZ090	· · · · · · · · · · · · · · · · · · ·	0700	
505,510	Zener	W Z 090			
x —	CRYSTAL		504	RF CHOKE	22 <i>µ</i> H
501	HC-18/U	9001.5kHz	$506 \\ 501 \sim 503,505$	<i>11</i>	250µH
502	// // // // // // // // // // // // //	8998.5kHz	$501 \sim 503, 505$		<u>1mH</u>
		0550.58112	T TRA	NSFORMER	
R	RESISTOR		501	R12-4171	# 220141
	CARBON FILM				# 220141
533	14 W	$10\Omega$	RL REL	ΑΥ	
530	"	$22\Omega$	501	G2E 12V D	$\mathbf{C}$
522	"	$56\Omega$			
512		$100\Omega$			
505,508,		$150\Omega$		VOX UNIT	
534	//	180Ω		ITED CIRCUIT BOA	RD
539,540		220Ω	$1438(A \sim Z)$	· · ·	
535	<i>*</i> 3,509,523,541 <i>*</i>	<u>270Ω</u>			
$501 \sim 503$ 517,519,	5,509,523,541 %	470Ω		TRANSISTOR	
517,519, 526,528	<u>, 542</u>	<u>1KΩ</u>	604	ICSN725	
525		<u>1.5KΩ</u> 2.2KΩ	612		MC-14013CP)
524,538		<u>2.2KΩ</u> 3.3KΩ	607	<u>Tr</u> 2SA564	
506,507,		<u>- 3.3K42</u> 4.7KΩ	605,608 $601 \sim 603,606$ ,	<u> </u>	
518,532	/	<u>4.7 KΩ</u> 10KΩ	610,611	609 <u>* 2SC373</u> * 2SC739	
521	////	<u>15KΩ</u>	JIV, UI1	25073	) 1
527	17	47KΩ	D DIOD	E	
520		56KΩ	601 - 603,606	Ge 1N60FI	<u>M</u>
504,529,	531 "	100ΚΩ	604,605	Zener WZ090	
515	11	390KΩ	<u>,</u>		
			X CRY	STAL	
	WIRE WOUND		601	HC-13/UW 10	0kHz
536,537	$\frac{1}{2}W$	0.22Ω			
				STOR	
	DOTENTICO			ARBON FILM	
VR 501	POTENTIOMETER		633,637	1⁄4 W	100Ω
501	V10K8-1-2	500ΩB	603, 613, 621, 63		470Ω
	CARACITOR		606,607,611,614,6		1ΚΩ
С	CAPACITOR DIPPED MICA		605	<i>"</i>	2.2KΩ
	50W V	000 013	629	<i>4</i>	<u>3.9KΩ</u>
530 536		330PF	618,620,624~6	020,635 0	4.7KΩ
530,536	<u>50W</u> V				
530,536			612	"	5.6KΩ
	CERAMIC DISC		612 604,610,615,61	<i>«</i> 16,631 <i>«</i>	<u>10KΩ</u>
530,536 516 509		10 PF(CH) 20 PF(~~)	612	<i>«</i> 16,631 <i>«</i>	

608,630,	$\frac{1}{4}W$	47K	$\Omega$ 714		1 /	
601				20	<u>1⁄4 W</u>	4709
623,632	"	100KG				5600
			705~1	707		8200
- <u></u>	CARBON COMPOS	SITION	712			1KS 1.2KS
634	1⁄2 W	1805			"	
VR	DOTENTION		710,71	11,713,718	"	
603	POTENTIOMETER V10K8-1-2		701		"	15KG
601	<u>viors-1-2</u>	<u>10KΩ</u>		9	"	100KG
$-\frac{30}{602}$		50KΩE				
		1ΜΩΕ				
C	CAPACITOR			POTEN	TIOMETER	
	DIPPED MICA		701		V10K8-1-2	50KΩE
628	50WV			CADAC		
629	11	2000 PF			PED MICA	
			702	1)1111	$\frac{110}{50WV}$	
	CERAMIC DISC					<u>39</u> PF
632	50WV	15 PF(CH)		CER	AMIC DISC	· · · · · · · · · · · · · · · · · · ·
631		33 PF( * )			50WV	8PF(CH)
634,635 627		<b>39</b> PF( % )		7,709,712-71	4 %	0.01µF
$\frac{627}{614,636}$		82 PF( * )	717,71	9		0.01/*1
014,030	″	0.047µF	701,70	8,710,711,	715 🛷	0.047µF
	MYLAR					
605,618	50WV	0.001µF		INDUCT		
$\frac{612,626}{612,626}$		0.01µF	703	1	RF CHOKE	250 <i>µ</i> H
621-623	"	$0.01\mu F$ 0.022 $\mu F$	701,702	<u> </u>	"	1mH
606,608	"	0.047µF	+ <u> </u>	TDANCE	001	
		0.011/1	701	TRAINSF	ORMER	
·	TANTALUM		- 101	·		# 220017
613	50WV	2.2µF	J	JACK		
	00 W V					
602,609	%	10µF	701	JACK	503056	
	"				SQ3056	
602,609	/ ELECTROLYTIC	10µF				
602,609 601,607,6	ELECTROLYTIC 11,619 16WV	10µF	701	FERRITI	SQ3056 E <b>BEADS</b> A-RI 3×3-1	
602,609 601,607,6 625	<i>×</i> ELECTROLYTIC 11,619 16WV	10µF 1µF 2.2µF	701	FERRITI	E BEADS	
602,609 601,607,6 625 624	<i>*</i> ELECTROLYTIC 11,619 16WV	<u>10µF</u> <u>1µF</u> <u>2.2µF</u> <u>4.7µF</u>	701	FERRITI	E BEADS A-RI 3×3-1	
602,609 601,607,6 625 624	<i>×</i> ELECTROLYTIC 11,619 16WV	10μF <u>1μF</u> <u>2.2μF</u> <u>4.7μF</u> 10μF	701 FB	FERRITE 4	E BEADS A-RI 3×3-1	
$ \begin{array}{r} 602,609\\ \hline 601,607,6\\ 625\\ \hline 624\\ \hline 604,610,6\\ \hline 603\\ \hline 615\\ \end{array} $	ELECTROLYTIC       11,619     16WV       ~     ~       16,617,620     ~	<u>10µF</u> <u>1µF</u> <u>2.2µF</u> <u>4.7µF</u> <u>10µF</u> <u>22µF</u>	701 FB	FERRITE 4	E BEADS A-RI 3×3-1	
$     \begin{array}{r}       602,609 \\       \hline       601,607,6 \\       625 \\       624 \\       604,610,6 \\       \hline       603 \\       \end{array} $	ELECTROLYTIC       11,619     16WV       %       16,617,620	10μF <u>1μF</u> <u>2.2μF</u> <u>4.7μF</u> <u>10μF</u> <u>22μF</u> <u>47μF</u>	701 FB	FERRITE 4	E BEADS A-RI 3×3-1	
$ \begin{array}{r} 602,609\\ \hline 601,607,6\\ 625\\ \hline 624\\ \hline 604,610,6\\ \hline 603\\ \hline 615\\ \end{array} $	ELECTROLYTIC       11,619     16WV       //     //       16,617,620     //       //     //	<u>10µF</u> <u>1µF</u> <u>2.2µF</u> <u>4.7µF</u> <u>10µF</u> <u>22µF</u>	701 FB PB 1440(A-	FERRITE 4 PRINTEC	E BEADS A-RI 3×3-1 VFO UNIT CIRCUIT	BOARD
$ \begin{array}{r} 602,609\\ \hline 601,607,6\\ \hline 625\\ \hline 624\\ \hline 604,610,6\\ \hline 603\\ \hline 615\\ \hline 630\\ \hline \hline \end{array} $	* ELECTROLYTIC 11,619 16WV * 16,617,620 * * *	10μF 1μF 2.2μF 4.7μF 10μF 22μF 47μF 100μF	701 FB PB 1440(A	FERRITE 4 PRINTEC	E BEADS A-RI 3×3-1 VFO UNIT CIRCUIT	BOARD
602,609 601,607,6 625 624 604,610,6 603 615 630 TC T	* ELECTROLYTIC 11,619 16WV * 16,617,620 * * * *	10μF 1μF 2.2μF 4.7μF 10μF 22μF 47μF 100μF	701 FB PB 1440(A- Q 802	FERRITE 4 PRINTEC Z) FET &	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET	BOARD DR 2SK19GR
$ \begin{array}{r} 602,609\\ \hline 601,607,6\\ \hline 625\\ \hline 624\\ \hline 604,610,6\\ \hline 603\\ \hline 615\\ \hline 630\\ \hline \hline \end{array} $	* ELECTROLYTIC 11,619 16WV * 16,617,620 * * *	10μF 1μF 2.2μF 4.7μF 10μF 22μF 47μF 100μF	701 FB PB 1440(A	FERRITE 4 PRINTEC Z) FET &	E BEADS A-RI 3×3-1 VFO UNIT CIRCUIT	BOARD
602,609 601,607,6 625 624 604,610,6 603 615 630 TC T 601	* ELECTROLYTIC 11,619 16WV * 16,617,620 * * * * * * * * * * * * * *	10μF 1μF 2.2μF 4.7μF 10μF 22μF 47μF 100μF	701 FB PB 1440(A- Q 802	FERRITE 4 PRINTEC Z) FET &	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET	BOARD DR 2SK19GR
$ \begin{array}{c} 602,609\\ \hline 601,607,6\\ \hline 625\\ \hline 624\\ \hline 604,610,6\\ \hline 603\\ \hline 615\\ \hline 630\\ \hline \hline TC T\\ \hline 601\\ \hline \hline 1000 \hline \hline 1000 \hline$	* ELECTROLYTIC 11,619 16WV * 16,617,620 * * * * * * * * * * * * * *	<u>10µF</u> <u>1µF</u> <u>2.2µF</u> <u>4.7µF</u> <u>10µF</u> <u>22µF</u> <u>47µF</u> <u>100µF</u> <u>8</u> 40 50 PF	701 FB PB 1440(A Q 802 801,803	FERRITE 4 PRINTEC Z) FET &	E BEADS A-RI 3×3-1 VFO UNIT CIRCUIT TRANSISTO FET Tr	BOARD DR 2SK19GR 2SC372Y
602,609 601,607,6 625 624 604,610,6 603 615 630 TC T 601	* ELECTROLYTIC 11,619 16WV * 16,617,620 * * * * * * * * * * * * * *	10μF 1μF 2.2μF 4.7μF 10μF 22μF 47μF 100μF	701 FB PB 1440(A Q 802 801,803 D 801	FERRITE 4 PRINTEC Z) FET &	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET	BOARD DR 2SK19GR 2SC372Y
602,609 601,607,6 625 624 604,610,6 603 615 630 TC T 601 L IN 601,602	* ELECTROLYTIC 11,619 16WV * 16,617,620 * * * * * * * * * * * * * *	<u>10µF</u> <u>1µF</u> <u>2.2µF</u> <u>4.7µF</u> <u>10µF</u> <u>22µF</u> <u>47µF</u> <u>100µF</u> <u>8</u> 40 50 PF	701 FB PB 1440(A Q 802 801,803 D	FERRITE 4 PRINTEC Z) FET & DIODE RESISTO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor	BOARD DR 2SK19GR 2SC372Y
602,609 601,607,6 625 624 604,610,6 603 615 630 TC T 601 L IM 601,602 SW S	*       ELECTROLYTIC       11,619     16WV       *       16,617,620       *	<u>10µF</u> <u>1µF</u> <u>2.2µF</u> <u>4.7µF</u> <u>10µF</u> <u>22µF</u> <u>47µF</u> <u>100µF</u> <u>8</u> 40 50 PF	701 FB PB 1440(A- Q 802 801,803 D 801 R	FERRITE 4 PRINTEC Z) FET & DIODE RESISTO	E BEADS A-RI 3×3-1 VFO UNIT CIRCUIT TRANSISTO FET Tr Varactor PR ON FILM	BOARD DR 2SK19GR 2SC372Y
602,609 601,607,6 625 624 604,610,6 603 615 630 TC T 601 L IN 601,602	* ELECTROLYTIC 11,619 16WV * 16,617,620 * * * * * * * * * * * * * *	<u>10µF</u> <u>1µF</u> <u>2.2µF</u> <u>4.7µF</u> <u>10µF</u> <u>22µF</u> <u>47µF</u> <u>100µF</u> <u>8</u> 40 50 PF	701 FB PB 1440(A Q 802 801,803 D 801 R 809,811	FERRITE 4 PRINTEC Z) FET & DIODE RESISTO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor	BOARD DR 2SK19GR 2SC372Y
602,609 601,607,6 625 624 604,610,6 603 615 630 TC T 601 L IM 601,602 SW S	*       ELECTROLYTIC       11,619     16WV       *       16,617,620       *	<u>10µF</u> <u>1µF</u> <u>2.2µF</u> <u>4.7µF</u> <u>10µF</u> <u>22µF</u> <u>47µF</u> <u>100µF</u> <u>8</u> 40 50 PF	701 FB 1440(A Q 802 801,803 D 801 R 809,811 807	FERRITE 4 PRINTEC Z) FET & DIODE RESISTO	E BEADS A-RI 3×3-1 VFO UNIT CIRCUIT TRANSISTO FET Tr Varactor PR ON FILM	BOARD DR 2SK19GR 2SC372 Y 1S2236 100Ω 470Ω
602,609 601,607,6 625 624 604,610,67 603 615 630 TC T 601 L IN 601,602 SW S 601	*         ELECTROLYTIC         11,619       16WV         *         *         16,617,620         *	10μF <u>1μF</u> <u>2.2μF</u> <u>4.7μF</u> <u>10μF</u> <u>22μF</u> <u>47μF</u> <u>100μF</u> <u>8</u> <u>40 50 PF</u>	701 <b>FB</b> <b>PB</b> 1440(A <b>Q</b> 802 801,803 <b>D</b> 801 <b>R</b> 809,811 807 805,808	FERRITE 4 PRINTEC Z) FET & DIODE RESISTO	E BEADS A-RI 3×3-1 VFO UNIT CIRCUIT TRANSISTO FET Tr Varactor PR ON FILM ½W ~	BOARD DR 2SK19GR 2SC372 Y 1S2236 100Ω 470Ω 2.2KΩ
602,609 601,607,6 625 624 604,610,67 603 615 630 TC T 601 L IN 601,602 SW S 601 PB P	*         ELECTROLYTIC         11,619       16WV         *         *         16,617,620         *	10μF <u>1μF</u> <u>2.2μF</u> <u>4.7μF</u> <u>10μF</u> <u>22μF</u> <u>47μF</u> <u>100μF</u> <u>8</u> <u>40 50 PF</u>	701 FB PB 1440(A Q 802 801,803 D 801 R 809,811 807 805,808 802	FERRITE 4 PRINTEC Z) FET & DIODE RESISTO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor Varactor Varactor	BOARD DR 2SK19GR 2SC372 Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ
602,609 601,607,6 625 624 604,610,67 603 615 630 TC T 601 L IN 601,602 SW S 601	*         ELECTROLYTIC         11,619       16WV         *         *         16,617,620         *	10μF <u>1μF</u> <u>2.2μF</u> <u>4.7μF</u> <u>10μF</u> <u>22μF</u> <u>47μF</u> <u>100μF</u> <u>8</u> <u>40 50 PF</u>	701 FB PB 1440(A Q 802 801,803 D 801 R 809,811 807 805,808 802 801	FERRITE 4 PRINTEC Z) FET & DIODE RESISTO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor PR ON FILM ¼W ~ ~ ~	BOARD DR 2SK19GR 2SC372Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ 10KΩ
602,609 601,607,6 625 624 604,610,67 603 615 630 TC T 601 L IN 601,602 SW S 601 PB P 1439(A~Z	*         ELECTROLYTIC         11,619       16WV         *         *         16,617,620         *	10μF 1μF 2.2μF 4.7μF 10μF 22μF 47μF 100μF 8 40 50 PF 4mH	701 FB PB 1440(A Q 802 801,803 D 801 R 809,811 807 805,808 802 801 803	FERRITE 4 PRINTEC Z) FET & DIODE RESISTO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor PR ON FILM ¼W ~ ~ ~ ~	BOARD DR 2SK19GR 2SC372Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ 10KΩ 18KΩ
602,609 601,607,6 625 624 604,610,67 603 615 630 TC T 601 L IN 601,602 SW S 601 PB P 1439(A~7) Q IC	ELECTROLYTIC 11,619 16WV 16,617,620 TRIMMER CAPACITOR ECV-1ZW 50× NDUCTOR RF CHOKE WITCH SS-12-04 PREMIX UNIT RINTED CIRCUIT BO ) 2. FET & TRANSIST	10µF <u>1µF</u> <u>2.2µF</u> <u>4.7µF</u> <u>10µF</u> <u>22µF</u> <u>47µF</u> <u>100µF</u> <u>8</u> <u>40 50PF</u> <u>4mH</u> <u>ARD</u>	701 FB PB 1440(A Q 802 801,803 D 801 R 809,811 807 805,808 802 801	FERRITE 4 PRINTEC Z) FET & DIODE RESISTO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor PR ON FILM ¼W ~ ~ ~	BOARD DR 2SK19GR 2SC372 Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ 10KΩ 18KΩ 22KΩ
602,609 601,607,6 625 624 604,610,67 603 615 630 TC T 601 L IN 601,602 SW S 601 PB P 1439(A~Z Q IC 701	#         ELECTROLYTIC         11,619       16WV         # <td< td=""><td>10µF <u>1µF</u> <u>2.2µF</u> <u>4.7µF</u> <u>10µF</u> <u>22µF</u> <u>47µF</u> <u>100µF</u> <u>8</u> <u>40 50 PF</u> <u>4mH</u> <u>ARD</u> <u>OR</u> <u>1496G</u></td><td>701 FB PB 1440(A Q 802 801,803 D 801 R 809,811 807 805,808 802 801 803 804</td><td>FERRITE 4 PRINTEC Z) FET &amp; DIODE RESISTO</td><td>E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor Varactor</td><td>BOARD DR 2SK19GR 2SC372Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ 10KΩ 18KΩ</td></td<>	10µF <u>1µF</u> <u>2.2µF</u> <u>4.7µF</u> <u>10µF</u> <u>22µF</u> <u>47µF</u> <u>100µF</u> <u>8</u> <u>40 50 PF</u> <u>4mH</u> <u>ARD</u> <u>OR</u> <u>1496G</u>	701 FB PB 1440(A Q 802 801,803 D 801 R 809,811 807 805,808 802 801 803 804	FERRITE 4 PRINTEC Z) FET & DIODE RESISTO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor Varactor	BOARD DR 2SK19GR 2SC372Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ 10KΩ 18KΩ
602,609 601,607,6 625 624 604,610,67 603 615 630 TC T 601 L IN 601,602 SW S 601 PB P 1439(A~Z Q IC 701 705	#         ELECTROLYTIC         11,619       16WV         # <td< td=""><td>10µF 1µF 2.2µF 4.7µF 10µF 22µF 47µF 100µF 8 40 50PF 4mH 0R 4mH</td><td>701 FB PB 1440(A Q 802 801,803 D 801 801 807 805,808 802 801 803 804 806,810</td><td>FERRITE 4 PRINTEC Z) FET &amp; DIODE RESISTO</td><td>E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor Varactor</td><td>BOARD DR 2SK19GR 2SC372 Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ 10KΩ 18KΩ 22KΩ</td></td<>	10µF 1µF 2.2µF 4.7µF 10µF 22µF 47µF 100µF 8 40 50PF 4mH 0R 4mH	701 FB PB 1440(A Q 802 801,803 D 801 801 807 805,808 802 801 803 804 806,810	FERRITE 4 PRINTEC Z) FET & DIODE RESISTO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor Varactor	BOARD DR 2SK19GR 2SC372 Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ 10KΩ 18KΩ 22KΩ
602,609 601,607,6 625 624 604,610,67 603 615 630 TC T 601 L IN 601,602 SW S 601 PB P 1439(A~Z Q IC 701 705 702	*         ELECTROLYTIC         11,619       16WV         *         *         16,617,620         *	10µF 1µF 2.2µF 4.7µF 10µF 22µF 47µF 100µF 8 40 50 PF 4mH 0R 4mH 0R 1496G 19GR 372 Y	701 FB PB 1440(A Q 802 801,803 D 801 R 809,811 807 805,808 802 801 803 804	FERRITE 4 PRINTEC Z) FET & DIODE RESISTO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor PR ON FILM ½4W ~ ~ ~ ~ ~ ~	BOARD DR 2SK19GR 2SC372 Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ 10KΩ 18KΩ 22KΩ
602,609 601,607,6 625 624 604,610,67 603 615 630 TC T 601 L IN 601,602 SW S 601 PB P 1439(A~Z Q IC 701 705	*         ELECTROLYTIC         11,619       16WV         *         *         16,617,620         *	10µF 1µF 2.2µF 4.7µF 10µF 22µF 47µF 100µF 8 40 50PF 4mH 0R 4mH	701 FB PB 1440(A Q 802 801,803 D 801 801 807 805,808 802 801 803 804 806,810 C	FERRITE 4 PRINTEL 2/) FET & DIODE RESISTO CARBO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor PR ON FILM ½4W ~ ~ ~ ~ ~ ~	BOARD DR 2SK19GR 2SC372 Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ 10KΩ 18KΩ 22KΩ
602,609 601,607,6 625 624 604,610,67 603 615 630 TC T 601 L IN 601,602 SW S 601 PB P 1439(A~7) Q IC 701 705 702 703,704	*         ELECTROLYTIC         11,619       16WV         *         *         16,617,620         *	10µF 1µF 2.2µF 4.7µF 10µF 22µF 47µF 100µF 8 40 50 PF 4mH 0R 4mH 0R 1496G 19GR 372 Y	701 FB PB 1440(A Q 802 801,803 D 801 801 807 805,808 802 801 803 804 806,810 C 826	FERRITE 4 PRINTEL 2/) FET & DIODE RESISTO CARBO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSIST FET Tr Varactor PR ON FILM ½W % % % % % % % % % % % % % % % % % %	BOARD DR 2SK19GR 2SC372 Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ 10KΩ 18KΩ 22KΩ 100KΩ
602,609 601,607,6 625 624 604,610,67 603 615 630 TC T 601 L IN 601,602 SW S 601 PB P 1439(A~7) Q IC 701 705 702 703,704	*         ELECTROLYTIC         11,619       16WV         *         *         16,617,620         *	10µF         1µF         2.2µF         4.7µF         10µF         22µF         47µF         100µF         22µF         47µF         100µF         20µF         47µF         100µF         20µF         40 50 PF         4mH         000000000000000000000000000000000000	701 FB PB 1440(A Q 802 801,803 D 801 R 809,811 807 805,808 802 801 803 804 806,810 C 826 807	FERRITE 4 PRINTEC 7) FET & DIODE RESISTO CARBO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSIST FET Tr Varactor PR ON FILM ½4W % % % % % % % % % % % % % % % % % % %	BOARD DR 2SK19GR 2SC372 Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ 10KΩ 18KΩ 22KΩ 100KΩ 100KΩ
602,609 601,607,6 625 624 604,610,67 603 615 630 TC T 601 L IN 601,602 SW S 601 PB PI 1439(A~Z) Q IC 701 705 702 703,704 R RE	<pre></pre>	10µF         1µF         2.2µF         4.7µF         10µF         22µF         47µF         100µF         22µF         47µF         100µF         2         47µF         100µF         2         4mH         0         50 PF         4mH         0         0R         19GR         372 Y         784 R	701 FB PB 1440(A Q 802 801,803 D 801 R 809,811 807 805,808 802 801 803 804 806,810 C 826 807 808,814,	FERRITE 4 PRINTEC 7) FET & DIODE RESISTO CARBO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor PR ON FILM ½4W % % % % % % % % % % % % % % % % % % %	BOARD DR 2SK19GR 2SC372 Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ 10KΩ 18KΩ 22KΩ 100KΩ
602,609 601,607,6 625 624 604,610,67 603 615 630 TC T 601 L IN 601,602 SW S 601 PB PI 1439(A~7 Q IC 701 705 702 703,704 R RE 709	*         ELECTROLYTIC         11,619       16WV         *         *         16,617,620         *	10μF         1μF         2.2μF         4.7μF         10μF         22μF         47μF         100μF         22μF         47μF         100μF         20μF         47μF         100μF         20μF         47μF         100μF         0         0         4mH         0         0         0         0         0         0         0         0         0         0         10         0         10	701 FB PB 1440(A Q 802 801,803 D 801 R 809,811 807 805,808 802 801 803 804 806,810 C 826 807 808,814, 811	FERRITE 4 PRINTEC Z) FET & DIODE RESISTO CARBO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor R ON FILM ½W % % % % % % % % % % % % % % % % % %	BOARD DR 2SK19GR 2SC372Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ 10KΩ 18KΩ 10KΩ 22KΩ 100KΩ 
602,609 601,607,6 625 624 604,610,67 603 615 630 TC T 601 L IN 601,602 SW S 601 PB PI 1439(A~7 Q IC 701 705 702 703,704 R RE	*         ELECTROLYTIC         11,619       16WV         *         *         16,617,620         *	10µF         1µF         2.2µF         4.7µF         10µF         22µF         47µF         100µF         22µF         47µF         100µF         2         47µF         100µF         2         4mH         0         50 PF         4mH         0         0R         19GR         372 Y         784 R	701 FB PB 1440(A Q 802 801,803 D 801 R 809,811 807 805,808 802 801 803 804 806,810 C 826 807 808,814,	FERRITE 4 PRINTEC Z) FET & DIODE RESISTO CARBO	E BEADS A-RI 3×3-1 VFO UNIT D CIRCUIT TRANSISTO FET Tr Varactor PR ON FILM ½W % % % % % % % % % % % % % % % % % %	BOARD DR 2SK19GR 2SC372 Y 1S2236 100Ω 470Ω 2.2KΩ 3.3KΩ 10KΩ 18KΩ 22KΩ 100KΩ 100KΩ 22FF 8PF 33PF

- **9**\_

820, 824, 825       1002 (40m)         CERAMIC T. C         1003 (20m)         801       50WV       4 PF       UJ       1006 (11m)         805 $\diamond$ 91PF       UJ       1006 (11m)         803 $\diamond$ 201PF       NP       UJ         804 $\diamond$ 201PF       NP       UJ         805 $\diamond$ 201PF       NP       UJ         806 $\diamond$ 201PF       NP       UJ         803 $\diamond$ 201PF       NP       UJ         804       BS240DS114       1443(A~Z)       TC         TC       TRIMMER CAPACITOR       Q       TRANSISTOR         801       TSN 170C       1101       28C1589         802       TSN 150C       1102,1103       S10-12         L       INDUCTOR       D       DIODE       DIODE         801       Oscillator Coil $\#$ 220030       1102,1103       S1       10110         803, 806 $\checkmark$ 250/41       RESISTOR       N       S0       S10-12         901       CN-3561       1107,1108 $\sim$ 1109       1100 $\checkmark$	$\begin{array}{c} \pm 220018 \\ \pm 220019 \\ \pm 220020 \\ \pm 220021 \\ \pm 220022 \\ \pm 220043 \\ \end{array}$
820, 824, 825       1002 $(40m)$ CERAMIC T. C       1004 $(20m)$ 801       50WV       4 PF       UJ       1005 $(15m)$ 803       *       9 PF       UJ       1006 $(11m)$ 803       *       20 PF       NPC       1006 $(11m)$ 804, 806       *       20 PF       NPC       1004 $(MPC UNIT)$ VC       VARIABLE CAPACITOR       PB       PRINTED CIRCUIT BOARD         801       BS240DS114       1443 (A~Z)       2SC1589         802       TSN 170C       1101       2SC1589         802       TSN 150C       1102,1103       S10-12         L       INDUCTOR       D       DIODE         801       Oscillator Coil       # 220030       1102,1103       S1       10110         804, 805       R CHOKE       1.8/H       1101       Zener       YZ33         801       CN-3965S       1103       *       1101       4         802       *       ImH       R ESISTOR       1109       *         901       CN-3965S       1103       *       1102       *       1100	$\begin{array}{c} \pm 220019 \\ \pm 220020 \\ \pm 220021 \\ \pm 220022 \\ \pm 220043 \\ \end{array}$
CERAMIC T. C         1003         (20m)           801 $50WV$ 4 PF         UJ         1005         (10m)           805 $^{\circ}$ 9 PF         UJ         1006         (11m)           803 $^{\circ}$ 20 PF         UJ         1006         (11m)           803 $^{\circ}$ 20 PF         UJ         1004         (11m)           803 $^{\circ}$ 20 PF         UJ         1004         (11m)           803 $^{\circ}$ 20 PF         UJ         1006         (11m)           804,806 $^{\circ}$ 20 PF         VI         IOW AMP UNIT           VC         VARIABLE CAPACITOR         PB         PRINTED CIRCUIT BOARD           801         TSN 170C         1101         2SC1589           802         TSN 150C         1102,1103         Si         10D10           804,805         RF CHOKE         1.8/H         1101         Zencr         YZ33           803,806 $^{\circ}$ 1ml         R         RESISTOR         CARBON COMPOSITION           J         RECEPTACLE         1107         142W         1109         1100 $^{\prime}$ <tr< td=""><td><math display="block">\begin{array}{c} \# 220020 \\ \# 220021 \\ \# 220022 \\ \# 220043 \\ \end{array}</math></td></tr<>	$\begin{array}{c} \# 220020 \\ \# 220021 \\ \# 220022 \\ \# 220043 \\ \end{array}$
CERAMIC T. C         1004         (15m)           801         50WV         4PF         UJ         1005         (10m)           805 $\circ$ 9PF         UJ         1006         (11m)           803 $\circ$ 20PF         UJ         804,806 $\circ$ 20PF         UJ           804,806 $\circ$ 20PF         UJ         804,806 $\circ$ 20PF         UJ           801         BS240DS114         1443(A~Z)         10W         AMP UNIT         BOARD           801         BS240DS114         1443(A~Z)         100         2SC1589           802         TSN 170C         1101         2SC1589           802         TSN 150C         1102,1103         Si         10010           804,805         RF CHOKE         1.8µH         1101         Zener         YZ33           803,806 $\diamond$ 250µH         CARBON COMPOSITION         1           J         RECEPTACLE         1103 $\diamond$ 1001 $a$ 801         CN-3561         1107,1108 $\diamond$ 1100 $a$ 802         CN-3965S         1100 $\phi$	$\begin{array}{c} \# 220021 \\ \# 220022 \\ \# 220043 \\ \\ \# 220043 \\ \\ \\ \hline \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $
801         50WV         4PF         UJ         1005         (10m)           805         ~         9PF         UJ         1006         (11m)           803         ~         20PF         UJ         803         804,806         804,806         804,806         804,805         RCUT         BOARD         804,805         RECENTACLE         1101         25C1589           801         TSN 170C         1101         1102,1103         S10-12         S10-12           L         INDUCTOR         D         D         DODE         801         803,806         250,411         803         802         7333         803         804         802         CARBON COMPOSITION         101         Zener         YZ33           802         CN-3361         1107,1108         %         1100,111         8         802         200-11         8         8         1102         9         1104         2W         2W         2W         1100	$\begin{array}{c} \# 220022 \\ \# 220043 \\ \hline \\ \# 220043 \\ \hline \\ \\ \\ \# 220043 \\ \hline \\ \\ \\ \# 220043 \\ \hline \\ \\ \\ \\ \# 220043 \\ \hline \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $
805         *         91Pr         UJ         1006         (11m)           803         *         201Pr         UJ         10W         AMP         UNIT           804,806         *         201Pr         VC         VARIABLE         CAPACITOR         PB         PRINTED         CIRCUIT         BOARD           801         BS240DS114         1443(A~Z)         1443(A~Z)         100         2SC1589           802         TSN         170C         1101         2SC1589           802         TSN         150C         1102,1103         Si         10D10           804,805         RF         CHOKE         1.8µH         1101         Zener         YZ33           803,806         *         220030         1102,1103         Si         10D10           804,805         RF         CHOKE         1.8µH         1101         Zener         YZ33           803,806         *         220041          CARBON COMPOSITION         J         RECEPTACLE         1105         ½W           801         CN-3561         1107,1108         *         1100         *         1100         *           802         CN-3965S         1100         * <td># 220043 # 220043 </td>	# 220043 # 220043 
803         *         20PF         UJ           804,806         *         20PF         100           804,806         *         20PF         100           801         BS240DS114         1443(A~Z)           TC         TRIMMER CAPACITOR         Q         TRANSISTOR           801         TSN 170C         1101         2SC1589           802         TSN 150C         1102,1103         S10-12           L         INDUCTOR         D         DIODE           801         Oscillator Coil         #22003         1102,1103         Si           803         806         *         250µH         100         Zener           803         806         *         250µH         CARBON COMPOSITION           J         RECEPTACLE         1105         ½W           801         CN-3561         1103         *           102         CN-3965S         1103         *           101         #         200         *         1100           Y         CRYSTAL UNIT         1104         2W         *           Y         CRYSTAL         1102         *         1104           901         (160m) <td>4.7Ω 15Ω 22Ω 39Ω 100Ω 180Ω 330Ω 820Ω</td>	4.7Ω 15Ω 22Ω 39Ω 100Ω 180Ω 330Ω 820Ω
804,806 $*$ 20PF NPO         VC       VARIABLE CAPACITOR       PB       PRINTED CIRCUIT BOARD         801       BS240DS114       1443(A~Z)         TC       TRIMMER CAPACITOR       Q       TRANSISTOR         801       TSN 170C       1101       2SC1589         802       TSN 150C       1102,1103       S10-12         L       INDUCTOR       D       DIODE         801       Oscillator Coil       # 220030       1102,1103       Si       10D10         804,805       RF CHOKE       1.84H       1101       Zener       YZ33         802 $*$ Imll       R       RESISTOR         J       RECEPTACLE       1105 $\frac{1}{2}W$ 801       CN-3561       1107,1108 $*$ 802       CN-3561       1103 $*$ 1109 $*$ 1110 $*$ 901       CNS561       1102 $*$ 1109 $*$ 1102 $*$ 901       GREVSTAL       1106 $*$ 1109 $*$ 1102 $*$ 901       160m)       HC-25/U <td< td=""><td><math display="block"> \begin{array}{r}15\Omega\\22\Omega\\39\Omega\\100\Omega\\180\Omega\\330\Omega\\820\Omega\end{array} </math></td></td<>	$ \begin{array}{r}15\Omega\\22\Omega\\39\Omega\\100\Omega\\180\Omega\\330\Omega\\820\Omega\end{array} $
VC         VARIABLE CAPACITOR         PB         PRINTED CIRCUIT BOARD           801         BS240DS114         1443(A~Z)           TC         TRIMMER CAPACITOR         Q         TRANSISTOR           801         TSN 170C         1101         2SC1589           802         TSN 150C         1102,1103         Si         10D10           L         INDUCTOR         D         DiODE         DiODE           801         Oscillator Coil         # 220030         1102,1103         Si         10D10           804,805         RF         CHOKE         1.8µH         1101         Zener         YZ33           802 $^{\circ}$ 1mll         R         RESISTOR         CARBON COMPOSITION           J         RECEPTACLE         1105 $\frac{1}{2}W$ $\frac{1}{2}W$ $\frac{1}{2}W$ 801         CN-3561         1107,1108 $^{\circ}$ $\frac{1}{100}$ $\frac{1}{2}W$ 802         CN-3965S         1103 $^{\circ}$ $\frac{1}{100}$ $\frac{1}{2}W$ 802         CN-3965S         1106 $^{\circ}$ $\frac{1}{100}$ $\frac{1}{2}W$ X         CRYSTAL         1106 $^{\circ}$ $\frac{1}{10$	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
VC         VARIABLE CAPACITOR         PB         PRINTED CIRCUIT BOARD           801         BS240DS114         1443 (A~Z)           TC         TRIMMER CAPACITOR         Q         TRANSISTOR           801         TSN 170C         1101         2SC1589           802         TSN 150C         1102,1103         S10-12           L         INDUCTOR         D         DioDE           801         Oscillator Coil         # 220030         1102,1103         Si         10D10           804.805         RF         CHOKE         1.8µH         1101         Zener         YZ33           803,806 $^{\circ}$ 1mll         RESISTOR         CARBON COMPOSITION           J         RECEPTACLE         1105 $\frac{1}{2}$ W         1100 $^{\circ}$ 801         CN-3561         1107,1108 $^{\circ}$ 1100 $^{\circ}$ 1109 $^{\circ}$ 1103 $^{\circ}$ 1101 $^{\circ}$ W           802         CN-3965S         1103 $^{\circ}$ 1102 $^{\circ}$ 4141(A~Z)         1104         2W         2W         1104         2W           X         CRYSTAL         110	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
801         BS240DS114 $1443(A \sim Z)$ TC         TRIMMER CAPACITOR         Q         TRANSISTOR           801         TSN 170C         1101         2SC1589           802         TSN 150C         1102,1103         S10-12           L         INDUCTOR         D         DIODE           801         Öscillator Coil $\#$ 220030         1102,1103         Si         10D10           804,805         RF CHOKE         1.8/41         1101         Zener         YZ33           803,806 $^{\circ}$ 250/41         802         CARBON COMPOSITION           J         RECEPTACLE         1105 $\frac{1}{2W}$ 1109 $^{\circ}$ 801         CN-3561         1107,1108 $^{\circ}$ 1109 $^{\circ}$ 802         CN-3965S         1103 $^{\circ}$ 1109 $^{\circ}$ 1109 $^{\circ}$ 1100 $^{\circ}$ $^{\circ}$ 1104         2W           X         CRYSTAL         1104         2W $^{\circ}$ 1104         2W $^{\circ}$ 901<(160m)	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
TC         TRIMMER         CAPACITOR         Q         TRANSISTOR           801         TSN 170C         1101         2SC1589           802         TSN 150C         1102,1103         S10-12           L         INDUCTOR         D         DIODE           801         Oscillator Coil         # 220030         1102,1103         Si         1010           804,805         RF CHOKE         1.8/4H         1101         Zener         YZ33           803,806         ~         250/4H         RESISTOR         CARBON COMPOSITION           J         RECEPTACLE         1105         1/2W         4/2W           801         CN-3561         1107,1108         ~         1109         ~           802         CN-3965S         1102         ~         1100         ~           1109         ~         1100         ~         1109         ~           1441(A~Z)         1106         ~         1104         2W         2W         X           CRYSTAL         901         160m         #C25/U         16.0MHz         DIPPED         MICA           902         40m         *         21.5MHz         C         CAPACITOR	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
801         TSN 170C         1101         2SC1589           802         TSN 150C         1102,1103         S10-12           L         INDUCTOR         D         DIODE           801         Oscillator Coil         # 220030         1102,1103         Si         10110           804,805         RF         CHOKE         1.8#H         1101         Zener         YZ33           803,806         ~         250#H         CARBON COMPOSITION         J         RECEPTACLE         1105         ½W           801         CN-3561         1107,1108         ~	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
801         TSN 170C         1101         2SC1589           802         TSN 150C         1102,1103         S10-12           L         INDUCTOR         D         DIODE           801         Oscillator Coil         # 220030         1102,1103         Si         10110           804,805         RF CHOKE         1.8µH         1101         Zener         YZ33           803,806         ~         250µH         Zener         YZ33           802         ~         1mH         R         RESISTOR           J         RECEPTACLE         1105         ½W           801         CN-3561         1107,1108         ~           802         CN-3965S         1103         ~           1100         ~         1110,1111         ~           PB         PRINTED CIRCUIT BOARD         1102         ~           1104         2W         X         CAPACITOR           901         160m)         HC-25/U         16.0MHz           902         (40m)         28.5MHz         DIPPED MICA           903         20m)         28.5MHz         DIPPED MICA           904         15mHz         CAPACITOR         906 (10mA)	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
802       TSN 150C       1102,1103       S10-12         L       INDUCTOR       D       DIODE         801       Oscillator Coil $\ddagger$ 220030       1102,1103       Si       10110         804,805       RF CHOKE       1.84H       1101       Zener       YZ33         803,806 $\uparrow$ 2504H       Resistor       CARBON COMPOSITION         J       RECEPTACLE       1105 $^{1}_{2}$ W         801       CN-3561       1107,1108 $\uparrow$ 802       CN-3965S       1103 $\uparrow$ 802       CN-3965S       1103 $\uparrow$ 904       1100 $\land$ $\land$ 905       CRYSTAL       1106 $\land$ 904 $160m$ $HC-25/U$ 16.0MHz       DIPPED MICA         903 $20m$ $\land$ 28.5MHz       DIPPED MICA         904 $15m$ $\land$ 35.5MHz       DIPPED MICA         905 $(10mA)$ $\land$ 43.5MHz       CERAMIC DISC         906 $(10mB)$ $\land$ 43.5MHz       CERAMIC DISC         909 $(WWV/JY)$ 13998.5kHz       1105 $\checkmark$	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
801         Oscillator Coil         # 220030         1102,1103         Si         10110           804,805         RF CHOKE         1.8//H         1101         Zener         YZ33           802         ~         250//H         1101         Zener         YZ33           802         ~         1mll         R         RESISTOR           J         RECEPTACLE         1105         ½W           801         CN-3561         1107,1108         ~           802         CN-3965S         1103         ~           1109         ~         1100         ~           1109         ~         1100         ~           1109         ~         1100         ~           1109         ~         1100         ~           1109         ~         1100         ~           1104         2W         1104         2W           X         CRYSTAL         1106         ~           901         160m)         HC-25/U         16.0MHz         100           902         40m)         ~         21.5MHz         DIPPED MICA           904         15m)         ~         35.5MHz         1110,1112 <td><math display="block"> \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} </math></td>	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
801         Oscillator Coil         # 220030         1102,1103         Si         10110           804,805         RF CHOKE         1.8//H         1101         Zener         YZ33           802         ~         250//H         1101         Zener         YZ33           802         ~         1mll         R         RESISTOR           J         RECEPTACLE         1105         ½W           801         CN-3561         1107,1108         ~           802         CN-3965S         1103         ~           1109         ~         1100         ~           1109         ~         1100         ~           1109         ~         1100         ~           1109         ~         1100         ~           1109         ~         1100         ~           1104         2W         1104         2W           X         CRYSTAL         1106         ~           901         160m)         HC-25/U         16.0MHz         100           902         40m)         ~         21.5MHz         DIPPED MICA           904         15m)         ~         35.5MHz         1110,1112 <td><math display="block"> \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} </math></td>	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
804,805         RF         CHOKE         1.8µH         1101         Zener         YZ33           803,806         ~         250µH         CARBON         COMPOSITION           302         ~         1mH         R         RESISTOR           302         ~         1mH         R         RESISTOR           J         RECEPTACLE         1105         ½W           801         CN-3561         1107,1108         ~           802         CN-3965S         1103         ~           1109         ~         1100         ~           802         CN-3965S         1103         ~           1109         ~         1100         ~           901         CRYSTAL UNIT         1101         ~           1441(A~Z)         1102         ~         ~           901         160m)         HC-25/U         16.0MHz         907           902         (40m)         ~         21.5MHz         DIPPED         MICA           903         (20m)         ~         35.5MHz         DIPPED         MICA           904         15m)         ~         35.5MHz         DIPPED         MICA           905	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
803,806         *         250µH           802         *         1mH         R         RESISTOR           J         RECEPTACLE         1105         ½W           801         CN-3561         1107,1108         *           802         CN-3965S         1103         *           1109         *         1110,1111         *           PB         PRINTED CIRCUIT BOARD         1102         *           1104         2W         *         1104           X         CRYSTAL         1106         *           901         (160m)         HC-25/U         16.0MHz         1104           902         40m)         *         21.5MHz         DIPPED         MICA           903         (20m)         *         28.5MHz         DIPPED         MICA           904         15m)         *         35.5MHz         1110,1112         500WV           905         10mA)         *         42.5MHz         1111         *           906         10mB)         *         43.0MHz         1109         500WV         000WV           908         (10mD)         *         43.0MHz         1109         500WV         0	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
802         *         1mll         R         RESISTOR           J         RECEPTACLE         1105         CARBON COMPOSITION           J         RECEPTACLE         1105         ½W           801         CN-3561         1107,1108         *           802         CN-3965S         1103         *           1109         *         1109         *           1100         *         1100         *           PB         PRINTED CIRCUIT BOARD         1102         *           1441(A~Z)         1106         *         1104           2W         X         CRYSTAL         1104         2W           901<(160m)	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
801       CN-3561       1107,1108       *         802       CN-3965 S       1103       *         1109       *       1110,1111       *         PB       PRINTED CIRCUIT BOARD       1102       *         1441(A~Z)       1106       *         901       (160m)       HC-25/U       16.0MHz         902       (40m)       *       21.5MHz       DIPPED MICA         903       (20m)       *       28.5MHz       DIPPED MICA         904<(15m)	$ \begin{array}{r} 15\Omega \\ 22\Omega \\ 39\Omega \\ 100\Omega \\ 180\Omega \\ 330\Omega \\ 820\Omega \\ \end{array} $
802       CN-3965S       1103       *         1109       *         1109       *         1109       *         1109       *         1109       *         1100       *         1101       *         PB PRINTED CIRCUIT BOARD       1102       *         1441(A~Z)       1106       *       *         901       (160m)       HC-25/U       16.0MHz       *         902       (40m)       *       21.5MHz       C       CAPACITOR         903       (20m)       *       28.5MHz       DIIPPED MICA         904       (15m)       *       35.5MHz       1110,1112       500WV         905       (10mA)       *       42.5MHz       1111       *         906       10mB)       *       43.0MHz       CERAMIC DISC         908       10mD)       *       44.0MHz       1109       500WV       600WV         909       (WWV/JJY)       *       13998.5kHz       1105       *       *	$ \begin{array}{r} 22\Omega\\ 39\Omega\\ 100\Omega\\ 180\Omega\\ 330\Omega\\ 820\Omega \end{array} $
III09         *           III09         *           III0,IIII         *           PB         PRINTED CIRCUIT BOARD         1102           I441(A~Z)         1106         *           901         (160m)         HC-25/U         16.0MHz           902         (40m)         *         21.5MHz           903         (20m)         *         28.5MHz           904         (15m)         *         35.5MHz           905         (10mA)         *         42.5MHz           906         10mB)         *         43.0MHz           907         10mC)         *         43.5MHz         CERAMIC DISC           908         10mD)         *         44.0MHz         1109         500WV           909         (WWV/JJY)         *         13998.5kHz         1105         *	$     39\Omega     100\Omega     180\Omega     330\Omega     820\Omega $
CRYSTAL UNIT         1110,1111         *           PB         PRINTED CIRCUIT BOARD         1102         *           1441(A~Z)         1106         *           901         (160m)         HC-25/U         16.0MHz           902         (40m)         *         21.5MHz           903         (20m)         *         28.5MHz           904         (15m)         *         35.5MHz           905         (10mA)         *         42.5MHz           906         10mB)         *         43.0MHz           907         10mC)         *         43.5MHz         CERAMIC DISC           908         10mD)         *         44.0MHz         1109         500WV           909         (WWV/JJY)         *         13998.5kHz         1105         *	100Ω 180Ω 330Ω 820Ω
CRYSTAL UNIT         1101         *           PB         PRINTED CIRCUIT BOARD         1102         *           1441(A~Z)         1106         *           Y         CRYSTAL         1104         2W           X         CRYSTAL         1104         2W           901         (160m)         HC-25/U         16.0MHz         *           902         (40m)         *         21.5MHz         C         CAPACITOR           903         (20m)         *         28.5MHz         DIPPED         MICA           904         (15m)         *         35.5MHz         1110,1112         500WV           905         (10mA)         *         42.5MHz         1111         *           906         10mB)         *         43.0MHz         1109         500WV           908         (10mD)         *         44.0MHz         1109         500WV         0           909         (WWV/JJY)         *         13998.5kHz         1105         *         *	180Ω 330Ω 820Ω
PB         PRINTED CIRCUIT BOARD         1102         *           1441(A~Z)         1106         *           104         2W           X         CRYSTAL         1104         2W           901         (160m)         HC-25/U         16.0MHz         *           902         (40m)         *         21.5MHz         C         CAPACITOR           903         (20m)         *         28.5MHz         DIPPED MICA           904         (15m)         *         35.5MHz         1110,1112         500WV           905         (10mA)         *         42.5MHz         1111         *           906         (10mB)         *         43.0MHz         1109         500WV           908         (10mD)         *         44.0MHz         1109         500WV         0000VV	330Ω 820Ω
1441(A~Z)       1106       *         1104       2W         X       CRYSTAL       1104       2W         901       (160m)       HC-25/U       16.0MHz       1104       2W         902       (40m)       *       21.5MHz       C       CAPACITOR         903       (20m)       *       28.5MHz       DIPPED       MICA         904       (15m)       *       35.5MHz       1110,1112       500WV         905       (10mA)       *       42.5MHz       1111       *         906       (10mB)       *       43.0MHz       1111       *         907       (10mC)       *       43.5MHz       CERAMIC DISC         908       (10mD)       *       44.0MHz       1109       500WV         909       (WWV/JJY)       *       13998.5kHz       1105       *	$820\Omega$
X         CRYSTAL         1104         2W           901         (160m)         HC-25/U         16.0MHz            902         (40m)         *         21.5MHz         C         CAPACITOR           903         (20m)         *         28.5MHz         DIPPED         MICA           904         (15m)         *         35.5MHz         1110,1112         500WV           905         (10mA)         *         42.5MHz         1111         *           906         (10mB)         *         43.0MHz             907         (10mC)         *         43.5MHz         CERAMIC DISC           908         (10mD)         *         44.0MHz         1109         500WV           909         (WWV/JJY)         *         13998.5kHz         1105         *	
X         CRYSTAL           901         (160m)         HC-25/U         16.0MHz           902         (40m)         21.5MHz         C         CAPACITOR           903         (20m)         28.5MHz         DIPPED         MICA           904         (15m)         35.5MHz         1110,1112         500WV           905         (10mA)         42.5MHz         1111         *           906         (10mB)         43.0MHz         CERAMIC DISC           907         (10mC)         44.0MHz         1109         500WV           909         (WWV/JJY)         13998.5kHz         1105         *	82Ω
902       (40m)       *       21.5MHz       C       CAPACITOR         903       (20m)       *       28.5MHz       DIPPED       MICA         904       (15m)       *       35.5MHz       1110,1112       500WV         905       (10mA)       *       42.5MHz       1111       *         906       (10mB)       *       43.0MHz           907       (10mC)       *       43.5MHz       CERAMIC DISC         908       (10mD)       *       44.0MHz       1109       500WV         909       (WWV/JJY)       *       13998.5kHz       1105       *	0
902       (40m)       *       21.5MHz       C       CAPACITOR         903       (20m)       *       28.5MHz       DIPPED MICA         904       (15m)       *       35.5MHz       1110,1112       500WV         905       (10mA)       *       42.5MHz       1111       *         906       (10mB)       *       43.0MHz           907       (10mC)       *       43.5MHz       CERAMIC DISC         908       (10mD)       *       44.0MHz       1109       500WV         909       (WWV/JJY)       *       13998.5kHz       1105       *	
903       (20m)       *       28.5MHz       DIPPED MICA         904       (15m)       *       35.5MHz       1110,1112       500WV         905       (10mA)       *       42.5MHz       1111       *         906       (10mB)       *       43.0MHz           907       (10mC)       *       43.5MHz       CERAMIC DISC         908       (10mD)       *       44.0MHz       1109       500WV         909       (WWV/JJY)       *       13998.5kHz       1105       *	
904       (15m)       *       35.5MHz       1110,1112       500WV         905       (10mA)       *       42.5MHz       1111       *         906       (10mB)       *       43.0MHz        *         907       (10mC)       *       43.5MHz       CERAMIC DISC         908       (10mD)       *       44.0MHz       1109       500WV         909       (WWV/JJY)       *       13998.5kHz       1105       *	
906         (10mB)         *         43.0MHz           907         (10mC)         *         43.5MHz         CERAMIC DISC           908         (10mD)         *         44.0MHz         1109         500WV           909         (WWV/JJY)         *         13998.5kHz         1105         *         6	75 PF
907         (10mC)         #         43.5MHz         CERAMIC DISC           908         (10mD)         #         44.0MHz         1109         500WV           909         (WWV/JJY)         #         13998.5kHz         1105         #	150PF
908         (10ml))         %         44.0MHz         1109         500WV           909         (WWV/JJY)         %         13998.5kHz         1105         %	
908         (10mL))         *         44.0MHz         1109         500WV           909         (WWV/JJY)         *         13998.5kHz         1105         *         6	
909 (WWV/JJY) <b>* 13998.5kHz 1105 *</b>	0.001µF
910 (11m) <b>41.5MHz</b> 1101,1108 <b>*</b>	0.007 HF
	0.01µF
1102,~1104,1113,1114 //	0.047µF
XS CRYSTAL SOCKET	
901 S-20 MYLAR	
902 S-19 1115,1116 50WV	0.2µF
	•
C CAPACITOR ELECTROLYTIC	
DIPPED MICA 1117 50WV	$1\mu$
904 50WV 220PF 1106,1107 16WV	33 <i>µ</i> F
CERAMIC DISC L INDUCTOR	
	# 220031
	# 220032
901 / 150 PF( ~ ) 1103,1104 Lowpass Coil	# 220033
TC TRIMMER CAPACITOR T TRANSFORMER	
	# 220023
905~907,910 ECV-1ZW 20×32 2012F 1102 ±	# 220024
BPF UNIT 100W AMP UNIT	
PB PRINTED CIRCUIT BOARD PB PRINTED CIRCUIT BOARD	
1442( $A \sim Z$ ) 1444( $A \sim Z$ )	
R RESISTOR Q TRANSISTOR	
$\frac{1001,1007,1008}{14W} \frac{10K\Omega}{1201,1202} S-2535$	
10074 1006 10170 1000	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	

$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	R	RESISTOR			1301	1302	V10K8-1-2		102/01
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		CARBO	V COMPOS	ITION	1301	,1302	<u>v10K8-1-2</u>		<u>10ΚΩΒ</u>
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					С	CAF	PACITOR		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1203,120	5		15Ω				·	
METALIC FILM         1312, 1314         500WV         100           1206, 1207 $\frac{5}{2}$ W         3907         1315, 1317 $\frac{9}{2}$ 156           1201 $5W$ 330         1316, 1318, 1320 $\frac{9}{2}$ 300           1201 $5W$ 330         1316, 1318, 1320 $\frac{9}{2}$ 000           1202 $2W$ 560         1324, 1323 $\frac{6}{2}$ 000           1208 $10W$ 250         1324, 1326 $\frac{9}{2}$ 100           1208 $10W$ 250         1322, 1326 $\frac{9}{2}$ 1000           1201         EVW-RLAB 01411         1007         1300         ECV-12W         100 × 32         10           1204         28 $\frac{9}{2}$ $\frac{9}{2}$ 1301         1300         ECV-12W         108 × 32         10           1204 $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ 1301         1300         ECV-12W         108 × 32         10           1202 $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$					1306			· · · · · · · · · · · · · · · · · · ·	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					1312,	1314			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1000 100	<u> </u>				1317			150 PF
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		<i>(</i>							180PF
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$					,				300 PF
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$-\frac{1201}{-}$	······································	<u>5 W</u>	33Ω					620 PF
1208       10W       250       1325        1200         VR       POTENTIOMETER <td></td> <td>CEMEN</td> <td><u>r                                    </u></td> <td></td> <td></td> <td>1326</td> <td></td> <td></td> <td>1000 PF</td>		CEMEN	<u>r                                    </u>			1326			1000 PF
VR         POTENTIOMETER         CERAMIC DISC         200           1201         EVW-RIAB 01P11         100         1305-1305-1307-131150W V         0.03           C         CAPACITOR         TC         TRIMMER CAPACITOR         1327,1328         0.03           1214         1216         500W V         75 PP         1301-1303         RF CHOKC         1           1215         *         1501P         1301-1303         RF CHOKC         1         1200         2         20036           1201         *         1301-1303         RF CHOKC         1         1         1200         20036         1         1300-1303         RF CHOKC         1         1         220036         1         1         1200-1203         1         1200-1303         RF CHOKC         1 <td>1208</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1200 PF</td>	1208								1200 PF
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1200		10 W	2511	1325				2000 PF
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		POTENTIO	METER	· · · · · · · · · · · · · · · · · · ·			ILDAMIC DIO		
Image: constraint of the second system is the second system i				01811 100	1301-	1205 19	$\frac{1211}{207}$	<u></u>	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $							507~~ 1511 50 W V	/	0.01µF
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$					,	1526			
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	С	CAPACITO	२		ŤC		MMER CARAC		·
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			MICA				ECV-1ZW	$\frac{10 \times 32}{10 \times 32}$	- 10PF
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		5 5	500 W V		+			10/134	<u> </u>
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$			"		Т <u>с</u> —	IND	JCTOR		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				150PF	1301~				1mH
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					1304,	1305			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					1306,	1307			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1204,1205	,1207,1208	<i>"</i>	1000 PF			( <u>40m</u> )		
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	···						( 80 m)		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1017 1010				1312,	1313	(160m)		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$-\frac{1217}{1218}, \frac{1218}{1218}$	1000							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1210,1213	,1220	<i>"</i>	<u>0.1µ</u> F					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					1301	<u>C</u>	M Coupler	# 220027	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1919								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $						REL			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					1301		<u>UPM-12012</u>	H	·
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	12.0		25111	<u>470µ</u>					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $									
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	L 1	NDUCTOR			PB	PRIN	TRIMMER U		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				# 220034		$\overline{A} \sim \overline{Z}$	TED CIRCOI	BUARD	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					<u> </u>				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				# 220033	R	RES	ISTOR		
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	1203,1204								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					1401				10ΚΩ
1202       # 220026       DIPPED MICA         P       PLUG       1406,1410,1413       50WV       3501         2,3       UG-88       1401,1405,1409 $^{*}$ 3901         1201       QMS-AB6M       CERAMIC DISC         PB       PRINTED CIRCUIT BOARD       1403,1407,1411 $^{*}$ 1000PF(C         1445(A-Z)       TC       TRIMMER CAPACITOR         Q       TRANSISTOR       1412       ECV-1ZW 20×32       201         1301       2SC735Y       1404~1406,1410,1411ECV-1ZW 50×32       501         D       DIODE       1412       ECV-1ZW 20×32       201         1301       Thyristor CW01B       1414,1415       1302~1307       Si       151555       1401,1407,1413       B-7P       4201         R       RESISTOR       T       TRANSFORMER       T       TRANSFORMER       2201         1302 $^{*}$ 14W       82Ω       1401       R12-4435       # 2201         1303 $^{*}$ 10KΩ       T       TRANSFORMER       EIX INIT         1303 $^{*}$ 10KΩ       T       TRANSFORMER       2201         1303 $^{*}$ 10KΩ       T       TRANSFORME		RANSFORM	MER						<u> </u>
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				# 220025	С	CAP	ACITOR		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1202								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					1406,1				350 PF
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		PLUG			1402				390 PF
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					1401, 1	405,140	9		1000 PF
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1201		$\underline{QMS-AI}$	B6M					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	·								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	<u> </u>								0PF(CH)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	PB C			ABD	1403,1	407,141	1		
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		CINIED C	IRCOIL BO						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1110 11 /								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	л Т О	RANSISTO	R			TRIM			
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $				$\frac{1}{3}$		1400 1	ECV-12	$20 \times 32$	20PF
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			2		$-\frac{1404}{1416}$	$\frac{1400,14}{1410}$	10,1411ECV-12	$2 \le 50 \times 32$	50 PF
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	D D	IODE							
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			Chyristor CV	V01B			5,1409 B-2P-Y		100 PF
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$									
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			<u> </u>		1401,1	407,1413	<u> </u>		420 PF
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	R R	ESISTOR							
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			FILM		T	TPAN			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$								5	# 2201.42
	1302		· · · · · · · · · · · · · · · · · · ·		<u> </u>		112-443	<u>J</u>	# 220143
	1303		"			· · · · · · · · · · · · · · · · · · ·			
							FIX UNIT		
VR POTENTIOMETER PB PRINTED CIRCUIT BOARD	VR P	OTENTIOM	ETER		PB	PRIN		BOAPD	

ł

ś

$1447(\Lambda \sim 7)$	BLANKING UNIT
1447(A~Z)	PB PRINTED CIRCUIT BOARD
Q FET & TRANSISTOR	$\frac{1}{1451(A \sim Z)} = \frac{1}{1451(A \sim Z)} = \frac{1}$
1501 FET 2SK19GR	
1502 Tr 2SC372Y	Q ID & TRANSISTOR
	1901         IC         TP4011(MC14011)           1902         Tr.         MPSA13
X CRYSTAL	1902 Tr. MPSA13
1501~1511 HC-25/U (OPTION)	
	D DIODE
XS CRYSTAL SOCKET	1901 Si 1S1555
1501 S-14-12P	
	R RESISTOR
R RESISTOR	CARBON PILM
CARBON FILM	
$     \begin{array}{ccccccccccccccccccccccccccccccccc$	
	1500
1501,1503 // 100ΚΩ	
	1903         "         100 KΩ           1901         "         1ΜΩ
	1901 1902 <sup>*</sup> 2ΜΩ
C CAPACITOR DIPPED MICA	
DIPPED MICA           1508,1510         50WV         470PF	
1508,1510 50WV 47017 1509 % 820PF	VR POTENTIOMETER
	$\frac{1901}{1901} \frac{\overline{SR} - 19R(D)}{\overline{SR} - 19R(D)} = \frac{470\Omega B}{200}$
CERAMIC DISC	1902 SR-19R 470ΩB
1504 50WV 10PF(CH)	
$\frac{1504}{1511} \sim 1521$ % $\frac{1011}{15} (311)$	C CAPACITOR
1504         30000           1511~1521         %           1505         %	MYLAR
1501 / 150PF( / )	1901 50WV 0.1μF
1501 1502	
$\frac{1502}{1503,1506,1507} \ensuremath{\e$	
	RL RELAY
TC TRIMMER CAPACITOR	1901 G2E 12V DC
1501~1511 ECV-1ZW 50×32 50PF	
L INDUCTOR	AM UNIT
1503,1504 RF CHOKE 1.8µH	PB PRINTED CIRCUIT BOARD
1503,1504         RF         CHOKE         1.8μΗ           1501         *         22μΗ	AM UNIT PB PRINTED CIRCUIT BOARD 1556(A~Z)
1503,1504 RF CHOKE 1.8µH	PB PRINTED CIRCUIT BOARD 1556(A~Z)
1503,1504         RF         CHOKE         1.8μH           1501         γ         22μH	PB       PRINTED CIRCUIT BOARD         1556(A~Z)         Q       IC. FET & TRANSISTOR
1503,1504         RF_CHOKE         1.8µH           1501         *         22µH           1502         *         1mH	PBPRINTED CIRCUITBOARD $1556(A \sim Z)$ $\Box$ QIC. FET & TRANSISTOR2003IC
1503,1504         RF_CHOKE         1.8µH           1501         *         22µH           1502         *         1mH	PB         PRINTED CIRCUIT         BOARD           1556(A~Z)
1503,1504         RF_CHOKE         1.8µH           1501         *         22µH           1502         *         1mH           VR_UNIT         PB         PRINTED_CIRCUIT_BOARD	PB         PRINTED CIRCUIT         BOARD           1556(A~Z)
1503,1504         RF_CHOKE         1.8µH           1501         *         22µH           1502         *         1mH	PB         PRINTED CIRCUIT         BOARD           1556(A~Z)
1503,1504         RF_CHOKE         1.8µH           1501         *         22µH           1502         *         1mH           VR_UNIT           PB         PRINTED_CIRCUIT_BOARD           1448(A~Z)	PB         PRINTED CIRCUIT         BOARD           1556(A~Z)
1503,1504     RF_CHOKE     1.8µIt       1501     *     22µIt       1502     *     1mIt	PB         PRINTED CIRCUIT         BOARD           1556(A~Z)
1503,1504         RF_CHOKE         1.8µH           1501         *         22µH           1502         *         1mH           VR_UNIT           PB         PRINTED_CIRCUIT_BOARD           1448(A~Z)	PB         PRINTED CIRCUIT         BOARD           1556(A~Z)
1503,1504     RF_CHOKE     1.8µIt       1501     *     22µIt       1502     *     1mIt       VR_UNIT       PB     PRINTED_CIRCUIT_BOARD       1448(A~Z)	PB         PRINTED CIRCUIT         BOARD           1556(A~Z)
1503,1504         RF_CHOKE         1.8µII           1501         *         22µII           1502         *         1mII           VR_UNIT         PB         PRINTED CIRCUIT BOARD           1448(A~Z)         -         -           D         DIODE         WZ090           1601         Zener         WZ090	PB         PRINTED CIRCUIT         BOARD           1556(A~Z)
1503,1504         RF_CHOKE         1.8µIt           1501         *         22µit           1502         *         1mIt           VR_UNIT         PB         PRINTED CIRCUIT BOARD	PB         PRINTED CIRCUIT         BOARD           1556(A~Z)
1503,1504         RF_CHOKE         1.8μΗ           1501         *         22μΗ           1502         *         1mH           VR_UNIT           PB         PRINTED CIRCUIT BOARD           1448(A~Z)	PB         PRINTED         CIRCUIT         BOARD           1556(A~Z)
1503,1504         RF_CHOKE         1.8µIt           1501         *         22µit           1502         *         1mIt           VR_UNIT         PB         PRINTED CIRCUIT BOARD	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC, FET & TRANSISTOR           2003         IC         TA712013           2001,2005         FET         2SK19GR           2002         23SK40M         2SC372 Y           D         DIODE         2001~2003,2005         Si           2001~2003,2005         Si         1S1555           2008~2010         Zener         WZ090           X         CRYSTAL         X
1503,1504     RF_CHOKE     1.8μH       1501     *     22μH       1502     *     1mH       VR_UNIT       PB     PRINTED CIRCUIT BOARD       1448(A~Z)     -       D     DIODE       1601     Zener       WZ090     -       R     RESISTOR       CARBON_FILM     -       1602     *     470Ω	PB         PRINTED         CIRCUIT         BOARD           1556(A~Z)
1503,1504         RF_CHOKE         1.8μH           1501         *         22μH           1502         *         1mH           VR_UNIT           PB         PRINTED CIRCUIT BOARD           1448(A~Z)	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC, FET & TRANSISTOR           2003         IC         TA712013           2001,2005         FET         2SK19GR           2002         23SK40M         2SC372 Y           D         DIODE         2001~2003,2005         Si           2001~2003,2005         Si         1S1555           2008~2010         Zener         WZ090           X         CRYSTAL         X
1503,1504     RF_CHOKE     1.8μH       1501     *     22μH       1502     *     1mH       VR_UNIT       PB     PRINTED CIRCUIT BOARD       1448(A~Z)     -       D     DIODE       1601     Zener       WZ090     -       R     RESISTOR       CARBON_FILM     -       1602     *     470Ω	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC, FET & TRANSISTOR           2003         IC         TA712019           2001,2005         FET         2SK19GR           2002         2SK40M         2SC372 Y           D         DIODE         2001~2003,2005         Si           2004         Zener         WZ090           X         CRYSTAL         2001         HC-18/U         8999.3kHz         # 210015
1503,1504         RF_CHOKE         1.8μH           1501         *         22μH           1502         *         1mH           VR_UNIT           PB         PRINTED CIRCUIT BOARD           1448(A~Z)	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC. FET & TRANSISTOR           2003         IC         TA71201 <sup>2</sup> 2001,2005         FET         2SK19GR           2002         *         3SK40M           2004,2006         Tr.         2SC372Y           D         DIODE         2006,2007           2004         Ge         1N60FM           2008~2010         Zener         WZ090           X         CRYSTAL         2001           2001         HC-18/U         8999.3kHz         # 210015           R         RESISTOR         CARBON FILM         2009.000
1503,1504         RF_CHOKE         1.8μH           1501         *         22μH           1502         *         1mH           VR_UNIT           PB         PRINTED CIRCUIT BOARD           1448(A~Z)	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC. FET & TRANSISTOR           2003         IC         TA712012           2001,2005         FET         25K19GR           2002         *         35K40M           2004,2006         Tr.         25C372 Y           D         DIODE         2006,2007           2008~2010         Zener         WZ090           X         CRYSTAL         2001           2001         HC-18/U         8999.3kHz         # 210015           R         RESISTOR         CARBON FILM         2008,2014         14W           2003,2025         *         150Ω
1503,1504     RF_CHOKE     1.8μH       1501     *     22μH       1502     *     1mH       1502     *     1mH       1502     *     1mH       D     DIODE       1601     Zener     WZ090       R     RESISTOR       CARBON_FILM     1601       1602     *       VR     POTENTIOMETER       1601~1606     SR19R       47KΩB	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC. FET & TRANSISTOR           2003         IC         TA712012           2001,2005         FET         25K19GR           2002 $^{\circ}$ 35K40M           2004,2006         Tr.         25C372 Y           D         DIODE         2006,2007           2008~2010         Z008~2010         Z008~2010           2004         Zener         WZ090           X         CRYSTAL         Z001           2001         HC-18/U         8999.3kHz $\sharp$ 210015           R         RESISTOR         ZARBON FILM         2003,2025         150Ω           2003,2025 $^{\circ}$ 150Ω         2016 $^{2}$
1503,1504     RF_CHOKE     1.8µH       1501     *     22µH       1502     *     1mH       1502     *     1mH       1502     *     1mH       D     DIODE       1601     Zener     WZ090       R     RESISTOR       CARBON_FILM     1601       1602     *       VR     POTENTIOMETER       1601~1606     SR19R       47KΩ	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC. FET & TRANSISTOR           2003         IC         TA71201?           2001,2005         FET         2SK19GR           2002 $^{\circ}$ 3SK40M           2004,2006         Tr.         2SC372 Y           D         DIODE         2006,2007         Ge           2008~2010         Z008~2010         Zener         WZ090           X         CRYSTAL         Z001         HC-18/U         8999.3kHz $\#$ 210015           R         RESISTOR         CARBON FILM         2003,2025         150Ω           2016 $^{\circ}$ 470Ω         2002,2019,2022         1KΩ
1503,1504       RF_CHOKE       1.8μH         1501       *       22μH         1502       *       1mH         1502       *       1mH         VR_UNIT       PB       PRINTED CIRCUIT BOARD         1448(A~Z)       1601       Zener         D       DIODE       CARBON FILM         1601       Zener       WZ090         R       RESISTOR	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC. FET & TRANSISTOR           2003         IC         TA712012           2001,2005         FET         2SK19GR           2002 $^{\circ}$ 3SK40M           2004,2006         Tr.         2SC372 Y           D         DIODE         2006,2007         Ge           2008~2010         2004         Zener         WZ090           X         CRYSTAL         2001         HC-18/U         8999.3kHz $\#$ 210015           R         RESISTOR         CARBON FILM         2003,2025         150Ω           2016 $^{\circ}$ 470Ω         2002,2019,2022         1KΩ           2007 $^{\circ}$ 1.2KΩ         2007         1.2KΩ
1503,1504       RF_CHOKE       1.8μH         1501       *       22μH         1502       *       1mH         1502       *       1mH         VR_UNIT       PB       PRINTED CIRCUIT BOARD         1448(A~Z)       1601       Zener         D       DIODE       CARBON FILM         1601       Zener       WZ090         R       RESISTOR	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC. FET & TRANSISTOR           2003         IC         TA712012           2001,2005         FET         25K19GR           2002 $^{\prime\prime}$ 35K40M           2004,2006         Tr.         25C372 Y           D         DIODE         2006,2007         Ge           2004         Zener         WZ090           2004         Zener         WZ090           X         CRYSTAL         2001           2001         HC-18/U         8999.3kHz $\#$ 210015           R         RESISTOR         2003,2025 $^{\prime\prime}$ 150Ω           2003,2025 $^{\prime\prime}$ 150Ω         2016 $^{\prime\prime}$ 2002,2019,2022 $^{\prime\prime}$ 150Ω         2016 $^{\prime\prime}$
1503,1504       RF_CHOKE       1.8µH         1501 $^{\prime\prime}$ 22µH         1502 $^{\prime\prime}$ 1mH         VR_UNIT         PB       PRINTED CIRCUIT BOARD         1448(A~Z)       1601       Zener         WZ090       R       RESISTOR         CARBON_FILM       1601       ¼W         1601       ¼W       470Ω         1602 $^{\prime\prime}$ 47KΩ         VR       POTENTIOMETER       1601~1606         SW UNIT       PB       PRINTED CIRCUIT BOARD         1450(A~Z)       1450(A~Z)       1450(A~Z)	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC. FET & TRANSISTOR           2003         IC         TA712012           2001,2005         FET         25K19GR           2002 $^{\prime\prime}$ 35K40M           2004,2006         Tr.         25C372 Y           D         DIODE         2006,2007         Ge           2004         Zener         WZ090           2004         Zener         WZ090           X         CRYSTAL         2001           2001         HC-18/U         8999.3kHz $\#$ 210015           R         RESISTOR         150Ω           2003,2025 $^{\prime\prime}$ 150Ω           2006         2016 $^{\prime\prime}$ 100Ω           2002,2019,2022         1 KΩ         2007         1.2KΩ           2006,2027 $^{\prime\prime}$ 2.2KΩ         2.009,2017,2021,2024
1503,1504         RF_CHOKE         1.8µH           1501 $\sim$ 22µH           1502 $\sim$ 1mH           1502 $\sim$ 1mH           VR_UNIT           PB         PRINTED_CIRCUIT_BOARD           1448(A~Z)         1601         Zener           WZ090         R         RESISTOR           CARBON_FILM         470Ω           1602 $\sim$ 47KΩ           VR <potentiometer< td="">         1601 ~ 1606         SR19R         47KΩB           SW UNIT           PB         PRINTED_CIRCUIT_BOARD         1450(A~Z)           C CAPACITOR           TANTALUM         35WV         0.47μF</potentiometer<>	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC. FET & TRANSISTOR           2003         IC         TA712012           2001,2005         FET         25K19GR           2002 $^{\circ}$ 35K40M           2004,2006         Tr.         25C372 Y           D         DIODE         2006,2007         Ge           2001~2003,2005         Si         1S1555           2008~2010         Zener         WZ090           X         CRYSTAL         2001           2001         HC-18/U         8999.3kHz $\#$ 210015           R         RESISTOR         2003,2025 $^{\circ}$ 150Ω           2016 $^{\circ}$ 470Ω         2002,2019,2022         1KΩ           2007 $^{\circ}$ 1.2KΩ         2026,2027         2.2KΩ           2009,2017,2021,2024 $^{\circ}$ 3.3KΩ         2004,2006,2011 $^{\circ}$
1503,1504       RF_CHOKE       1.8μH         1501       *       22μH         1502       *       1mH         1502       *       1mH         1502       *       1mH         VR_UNIT       PB       PRINTED CIRCUIT BOARD         1448(A~Z)       1601       Zener         D       DIODE       1601         1601       Zener       WZ090         R       RESISTOR	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC. FET & TRANSISTOR           2003         IC         TA712012           2001,2005         FET         25K19GR           2002 $^{\circ}$ 35K40M           2004,2006         Tr.         25C372 Y           D         DIODE         2006,2007         Ge           2004         Zener         WZ090           2004         Zener         WZ090           X         CRYSTAL         2001           2001         HC-18/U         8999.3kHz $\#$ 210015           R         RESISTOR         CARBON         FILM           2003,2025 $^{\circ}$ 150Ω           2016 $^{\circ}$ 150Ω           2007 $^{\circ}$ 1.2KΩ           2007 $^{\circ}$ 1.2KΩ           2004,2019,2022 $^{\circ}$ 1.2KΩ           2007 $^{\circ}$ 1.2KΩ           2004,2007,2021,2024 $^{\circ}$ 3.3KΩ           2004,2006,2011 $^{\circ}$ 4.7KΩ
1503,1504         RF         CHOKE         1.8μH           1501 $^{\circ}$ 22μH           1502 $^{\circ}$ 1mH           1502 $^{\circ}$ 1mH           VR UNIT           PB         PRINTED         CIRCUIT         BOARD           1448(A~Z)         1448(A~Z)         1601         Zener         WZ090           R         RESISTOR         CARBON         FILM         470Ω           1601         ½W         470Ω           1602 $^{\circ}$ 47KΩ           VR <potentiometer< td="">         1601~1606         SR19R         47KΩB           SW UNIT           PB         PRINTED         CIRCUIT         BOARD           1450(A~Z)         -         -         -           C         CAPACITOR           TANTALUM         35WV         0.47μF</potentiometer<>	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC. FET & TRANSISTOR           2003         IC         TA71201 <sup>2</sup> 2001,2005         FET         25K19GR           2002 $^{\circ}$ 35K40M           2004,2006         Tr.         25C372 Y           D         DIODE         2006,2007         Ge           2004         Zener         WZ090           2005         Si         1S1555           2008~2010         Zener         WZ090           X         CRYSTAL         Zener           2001         HC-18/U         8999.3kHz $\#$ 210015           R         RESISTOR         CARBON         FILM           2008,2014         ¼W         100Ω           2003,2025 $^{\circ}$ 150Ω           2016 $^{\circ}$ 470Ω           2002,2019,2022         1KΩ         2007           2026,2027 $^{\circ}$ 2.2KΩ           2009,2017,2021,2024         3.3KΩ         2004,2006,2011           2023 $^{\circ}$ 5.6KΩ           2010 $^{\circ}$ 10KΩ
1503,1504       RF       CHOKE       1.8μH         1501 $^{\circ}$ 22μH         1502 $^{\circ}$ 1mH         1502 $^{\circ}$ 1mH         VR UNIT         PB       PRINTED       CIRCUIT         D       DIODE       1601       Zener         I601       Zener       WZ090         R       RESISTOR       47KΩ         VR       POTENTIOMETER       47KΩ         1602 $^{\circ}$ 47KΩ         VR       POTENTIOMETER       5819R       47KΩB         SW UNIT         PB       PRINTED       CIRCUIT       BOARD         1450(A~Z)       -       -       -         C       CAPACITOR         TANTALUM       35WV       0.47μF         1801       35WV       0.47μF         1802 $^{\circ}$ 1.5μF	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC. FET & TRANSISTOR           2003         IC         TA71201 <sup>2</sup> 2001,2005         FET         25K19GR           2002 $^{\circ}$ 35K40M           2004,2006         Tr.         25C372 Y           D         DIODE         2006,2007         Ge           2004         Zener         WZ090           X         CRYSTAL         2001           2001         HC-18/U         8999.3kHz         \$
1503,1504       RF_CHOKE       1.8µH         1501 $^{\prime\prime}$ 22µH         1502 $^{\prime\prime}$ 1mH         Implies the second s	PB         PRINTED CIRCUIT BOARD           1556 (A~Z)           Q         IC. FET & TRANSISTOR           2003         IC         TA7120P           2001,2005         FET         25K19GR           2002 $^{\prime\prime}$ 35K40M           2004,2006         Tr.         25C372Y           D         DIODE         2006,2007         Ge         1N60FM           2004,2003,2005         Si         1S1555         2008~2010           2004         Zener         WZ090         VZ090           X         CRYSTAL         2001         HC-18/U         8999.3kHz $\#$ 210015           R         RESISTOR         CARBON FILM         2002,2019,2022         150Ω           2016 $^{\prime\prime}$ 12KΩ         2007, 201,2022         1KΩ           2007 $^{\prime}$ 1.2KΩ         2009,2017,2021,2024         3.3KΩ           2009,2017,2021,2024 $^{\prime}$ 3.3KΩ         2004,2006,2011         4.7KΩ           2010 $^{\prime}$ 10KΩ         2018         5.6KΩ           2010 $^{\prime}$ 15KΩ         2009,2020         22KΩ
1503,1504       RF       CHOKE       1.8μH         1501 $^{\circ}$ 22μH         1502 $^{\circ}$ 1mH         Implies the second se	PB         PRINTED CIRCUIT BOARD           1556(A~Z)           Q         IC. FET & TRANSISTOR           2003         IC         TA71201 <sup>3</sup> 2001,2005         FET         25K19GR           2002         *         35K40M           2004,2006         Tr.         25C372 Y           D         DIODE         2006,2007         Ge         1N60FM           2001~2003,2005         Si         1S1555         2008~2010           2004         Zener         WZ090         X           X         CRYSTAL         2001         HC-18/U         8999.3kHz         # 210015           R         RESISTOR         CARBON         FILM         2008,2014         14W         100Ω           2003,2025         ~         150Ω         2016         470Ω           2002,2019,2022         ~         1KΩ         2007         2.2KΩ           2007         ~         1.2KΩ         2004, 2006,2011         4.7KΩ           2004,2006,2011         ~         3.3KΩ         2004,2006,2011         4.7KΩ           2010         ~         1.0KΩ         2010         2016         2.2KΩ

	1/ 14/	<u>56</u> KΩ	P	PIN PL	UG		
2012	<u>1⁄4 W</u>	<u>100KΩ</u>	2101		M-31-15-60-1	1412	
2001,2005							
					$\frac{KE}{N_{16}} = \frac{KE}{N_{16}} $		
VR POTENTI	OMETER		2101 - 2	0063	316-AG37D		
2001,2002 VI	10K8-1 -2	$5K\overline{\Omega}B$					
				COUNT	TER MIXER	UNIT *	
C CAPACIT			PB	PRINTE	D CIRCUIT	BOARD	
CERAL	MIC DISC	$\overline{27}\overline{PF(CH)}$	1541 (A				
2002	50WV	$\frac{21}{33} \overline{\mathrm{PF}}(-\sqrt{2})$					
2006 2013,2014,2019,202	28 ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	<u>100 PF(_</u> %_)	Q	IC, FE	T & TRANS	MSL980	Y-2
2013,2014,2015,201	11	<u>120 PF( * )</u>	2201		<u>nc</u>	MS0	
2004 2005		150PF( % )	$-\frac{2204}{2203}$			SN76514	
2003,2007,2008,2010,20	012 *	$0.01 \mu F$	$\frac{2203}{2202}$		<u>FET</u>	2SK19G	R
2020, 2021			$-\frac{2202}{2205}$			2SC373	
2001,2022,2023,20	<u>29</u>	0.047 <i>µ</i> F					
	<u></u>		D	DIODE			
MYLA	$\frac{R}{50WV}$	0.0047µŀ	$2201 \sim 2$	2210	$\frac{Ge}{V}$	$\frac{1N60AM}{1S2200}$	
$\frac{2027}{2011}$		$-\frac{0.0011}{0.1\mu}$	2211		<u>Varactor</u>	1 S2209	
<u>F</u> LĒĒ	TROLYTIC		$-\frac{x}{2201}$ -	CRYSTA	$\overline{HC}$ -18/U1	8.5MHz	# 210024
2011,2024-2026	16WV	$\frac{1}{10\mu}$	$-\frac{2201}{2202}$ -		$-\frac{110}{HC} - \frac{10}{14} / \overline{W} - \frac{10}{65}$	5.36 kHz	#210025
2015		$\frac{10\mu F}{22\mu F}$	_ 44.04				
2017		$\frac{22\mu\Gamma}{100\mu\Gamma}$	R	RESIS	TOR		
2016,2018					RBON COMP	<u>osition</u>	$-\overline{1K\Omega}$
TC TRIMME	R CAPACITO	 DR	2205		$\overline{1/8W}$		11/75
2001,2002	$\overline{CV-1ZW} 20 \times$	40 $201$ F			DOX FILM		
				CAI	$\overline{\text{RBON}} \overline{\overline{\text{FILM}}}_{\frac{1}{\sqrt{4}W}}$		$\overline{100\Omega}$
			2202,2	2203	$\frac{\gamma_4}{2}$		$-\frac{180\Omega}{1}$
			0001		11		
	RE CHOKE	22 <i>µ</i> H	2201				$\overline{2}20\overline{\Omega}$
2002	RE CHOKE	250µn + 220100	$-\frac{2201}{2207}$				
2002 I 2001	RF CHOKE	<u>1mH</u>	2201				$\overline{2}20\overline{\Omega}$
$-\frac{2002}{2001}$	<u>RF_CHOKE</u>	250µn + 220100	$ \begin{array}{r} 2201 \\ -2207 \\ -2206 \\ \end{array} $				220Ω 22KΩ
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	XF         CHOKE	<u>1mH</u>	$-\frac{2201}{2207}$			00B14	220Ω 22KΩ
2002 1 2001 2003 2004 2004 2015 2015 2015 2015 2015 2015 2015 2015	RF_CHOKE		$ \begin{array}{c} 2201 \\ 2207 \\ \hline 2206 \\ \hline \hline$	POTE	NTIOMETER EVIL-S3AA	00B14	220Ω 22KΩ
2002 1 2001 2003 2004 2004 2015 2015 2015 2015 2015 2015 2015 2015	RF_CHOKE		$ \begin{array}{c} 2201 \\ 2207 \\ \hline 2206 \\ \hline \hline$		NTIOMETER EVIS3AA	001314	220Ω 22KΩ 10KΩΒ
2002 1 2001 2003 2004 2004 2015 2015 2015 2015 2015 2015 2015 2015	RF_CHOKE		$     \begin{array}{c}             2201 \\             \overline{2207} \\             2206 \\             \overline{} \\              \overline{} \\             \overline{} \\             \phantom$		NTIOMETER EVL-S3AA CITOR	001314	220Ω 22KΩ
2002 2001 2003 2004 DISPL PB PRINTE 1542(A~Z)	RF_CHOKE		$     \begin{array}{c}             2201 \\             \overline{2207} \\             2206 \\             \overline{} \\              \overline{} \\             \overline{} \\             \phantom$	POTE CAPA 1)11 2217	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV	001314	220Ω 22KΩ 10KΩΒ
2002   2001   2003   2004   PB PRINTE 1542(A~Z)   Q IC	RF_CHOKE	2502AT # 220100 1mH 4mH JNIT * BOARD	$     \begin{array}{c}             2201 \\             \overline{2207} \\             2206 \\             \overline{} \\              \overline{} \\             \overline{} \\             \phantom$	POTE CAPA 1)11 2217	NTIOMETER EVL-S3AA CITOR	<u>00B14</u>	220Ω 22KΩ 10KΩΒ 51PF
2002         1           2001         2003           2004         2004           PB         PRINTE           1542(A~Z)         2004           Q         IC           2101~2103         2003	RF_CHOKE	<u></u>	$     \begin{array}{c}             2201 \\             \overline{2207} \\             2206 \\             \overline{} \\              \overline{} \\             \overline{} \\             \phantom$	POTE CAPA 1)11 2217	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV	00B14	220Ω 22KΩ 10KΩΒ 51PF
$\begin{array}{c c} \hline 2002 \\ \hline 2001 \\ \hline 2003 \\ \hline 2004 \\ \hline \\ $	RF_CHOKE	<u></u>	$\begin{array}{c} 2201 \\ \hline 2207 \\ \hline 2206 \\ \hline $	POTE CAPA 1)11 2217	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV CRAMIC DIS	00B14	<u>220Ω</u> 22KΩ <u>10KΩB</u> <u>51PF</u> <u>1PF(CH)</u> 15PF( ~)
$\begin{array}{c c} \hline 2002 \\ \hline 2001 \\ \hline 2003 \\ \hline 2004 \\ \hline \\ $	RF_CHOKE	<u></u>	2201 2207 2206 VR 2201 C 2216, 2202 2203 2203	POTE CAPA 1)11 2217	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV CRAMIC DIS		220Ω 22KΩ 10KΩB 51PF 1PF(CH) 15PF(~~) 22PF(~~)
$\begin{array}{c c} \hline 2002 \\ \hline 2001 \\ \hline 2003 \\ \hline 2004 \\ \hline \\ $	RF_CHOKE	2500AT       # 220100         1mH       4mH         4mH	$\begin{array}{c} 2201 \\ \hline 2207 \\ \hline 2206 \\ \hline $	POTE CAPA 1)11 2217	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV CRAMIC DIS	00B14	220Ω       22KΩ       10KΩB       51PF       1PF(CH)       15PF(       22PF(       35PF(
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	RF_CHOKE	2500AT # 220100         1mH         4mH         4mH         5000000000000000000000000000000000000	$\begin{array}{c} 2201 \\ \hline 2207 \\ \hline 2206 \\ \hline $	POTE CAPA 1)11 2217	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV CRAMIC DIS	00B14	220Ω         22KΩ         10KΩB         51PF         1PF(CH)         15PF( ◊)         22PF( ◊)         56PF( ◊)         56PF( ◊)
$\begin{array}{c c} \hline 2002 \\ \hline 2001 \\ \hline 2003 \\ \hline 2004 \\ \hline \\ $	RF_CHOKE	2500AT       # 220100         1mH       4mH         4mH	$\begin{array}{c} 2201 \\ \hline 2207 \\ \hline 2206 \\ \hline \nabla R \\ \hline 2201 \\ \hline C \\ \hline 2216 \\ \hline 2202 \\ \hline 2202 \\ \hline 2203 \\ \hline 2208 \\ \hline 2204 \\ \hline 2204 \\ \hline 2205 \\ \hline 2206 \\ \hline 2206 \\ \hline \end{array}$	POTEI 2217 CI:	NTIOMETER EVL-S3AA OITOR PPED MICA 50WV CRAMIC DIS 50WV		220Ω         22KΩ         10KΩB         51PF         1PF(CH)         15PF(         2PF(         56PF(         68PF(         00PF(SL)         01µF
2002         1           2001         2003           2004         01SPL           2004         01SPL           PB         PRINTE           1542(A~Z)         0           Q         IC           2101~2103         2104~2106           2109,2111         2110,2112           2107         2108           D         DIODE		230,4A # 220100 1mH 4mH 3mH BOARD TIL306 TIL308 SN7400N SN7400N SN7404N SN7490AN SN74160N	2201 2207 2206 VR 2201 C 2216, 2202 2203 2203 2208 2204 2204 2205 2206 2201,	POTE    )]] 2217CF CF	*         NTIOMETER         EVL-S3AA         CITOR         PED_MICA         50WV         SOWV         * </td <td></td> <td>220Ω       22KΩ       10KΩB       51PF       15PF(CH)       15PF(       22PF(       56PF(       56PF(       68PF(       00PF(SL)</td>		220Ω       22KΩ       10KΩB       51PF       15PF(CH)       15PF(       22PF(       56PF(       56PF(       68PF(       00PF(SL)
2002         1           2001         2003           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2101         2103           2107         2108           2007         2108	RF_CHOKE	2500AT       # 220100         1mH       4mH         4mH	2201 2207 2206 VR 2201 C 2216, 2202 2203 2203 2208 2204 2204 2205 2206 2201,	POTEI DII 2217 CE 2207,2213 2207,2213	NTIOMETER EVIS3AA PPED_MICA 50WV CRAMIC_DIS 50WV % % % %		$     \frac{220\Omega}{22K\Omega}     22K\Omega     10K\OmegaB          \frac{10K\OmegaB}{51PF(CH)}     \frac{1PF(CH)}{50PF(CH)}     \frac{22PF(CH)}{56PF(CH)}     \frac{56PF(CH)}{56PF(CH)}     \frac{56PF(CH)}     \frac{56PF(CH)}{56PF(CH)}     56PF(C$
$\begin{array}{c c} \hline 2002 \\ \hline 2001 \\ \hline 2003 \\ \hline 2004 \\ \hline \end{array} \\ \hline \end{array} \\ \hline \begin{array}{c} \hline \\ \hline $		230,4A # 220100 1mH 4mH 3mH BOARD TIL306 TIL308 SN7400N SN7400N SN7404N SN7490AN SN74160N	2201 2207 2206 VR 2201 C 2216, 2202 2203 2203 2208 2204 2204 2205 2206 2201, 2209,	POTE DI 2217 CF 2207,2213 2212,224	*           NTIOMETER           EVL-S3AA           CITOR           PPD MICA           50WV           SOWV           *           -2215           *           -2215           *           EXAMIC EEI	00B14	$     \frac{220\Omega}{22 K\Omega}     22 K\Omega     22 K\Omega     10 K\Omega B     51 PF     51 PF     2 PF(CH)     50 PF(C)     50 PF(C)     50 PF(C)     50 PF(C)     00 PF(SL)     01 \mu F     047 \mu F     3000000000000000000000000000000000$
2002         1           2001         2003           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           2004         2004           Q         IC           2107         2106           2107         2108           D         DIODE           2101 ~ 2104         2104		1mH         4mH         4mH         JNIT ★         BOARD         TIL306         TIL308         SN7400N         SN7400N         SN7400AN         SN7400AN         SN74160N         1N60AM	2201 2207 2206 VR 2201 C 2216, 2202 2203 2203 2208 2204 2204 2205 2206 2201, 2209,	POTE DI 2217 CF 2207,2213 2212,224	NTIOMETER EVIS3AA PPED_MICA 50WV CRAMIC_DIS 50WV % % % %	00B14	$     \frac{220\Omega}{22 K\Omega}     22 K\Omega     22 K\Omega     10 K\Omega B     51 PF     51 PF     2 PF(CH)     50 PF(C)     50 PF(C)     50 PF(C)     50 PF(C)     00 PF(SL)     01 \mu F     047 \mu F     3000000000000000000000000000000000$
$\begin{array}{c c} \hline 2002 \\ \hline 2001 \\ \hline 2003 \\ \hline 2004 \\ \hline \\ $	AY LOGIC U AY LOGIC U CIRCUIT Ge Ge TOR BON COMPO	1mH         4mH         4mH         JNIT *         BOARD         TIL306         TIL308         SN7400N         SN7400N         SN7400N         SN7400N         SN7400N         SN7400N         SN7400N         SN7400N         SN7400N         SN74160N         0S1TION         220Ω	$\begin{array}{c} 2201 \\ \hline 2207 \\ \hline 2206 \\ \hline $	POTE CAPA 1)11 2217 CI: 2217 2217 CI: 2212,2213 2212,2240	NTIOMETER EVIS3AA PED MICA 50WV CRAMIC DIS 50WV % % % % % % % % % % % % % % % % % % %	00B14 C 1 0.0.0 C 2) TRHU 102WE	$     \frac{220\Omega}{22 K\Omega}     22 K\Omega     22 K\Omega     10 K\Omega B     51 PF     51 PF     2 PF(CH)     50 PF(C)     50 PF(C)     50 PF(C)     50 PF(C)     00 PF(SL)     01 \mu F     047 \mu F     3000000000000000000000000000000000$
$\begin{array}{c c} \hline 2002 \\ \hline 2001 \\ \hline 2003 \\ \hline 2004 \\ \hline \\ $		22004       # 220100         1mH       4mH         4mH       4mH         JNIT *       8         BOARD       5         TIL 306       7         TIL 308       5         SN7400N       5         SN7404N       5         SN7400AN       5         SN74160N       1         DSITION       220Ω         1KΩ	2201 2207 2206 VR 2201 C 2216, 2202 2203 2203 2208 2204 2204 2205 2204 2204 2205 2204 2209; 2209; 2209; 2201	POTE DII 2217 CF 2207,2213 2207,2213 2212,224 C1 ~2240 TRIM	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV XRAMIC DIS 50WV % % % % % % % % % % % % % % % % % % %	00B14 C C 1 0.0 C C 0.0 C C C C C C C C C C C C C C	
$\begin{array}{c c} \hline 2002 \\ \hline 2001 \\ \hline 2003 \\ \hline 2004 \\ \hline \\ $	AY LOGIC U AY LOGIC U CIRCUIT Ge Ge TOR BON COMPO 1/8 W	1mH         4mH         4mH         JNIT *         BOARD         TIL306         TIL308         SN7400N         SN7400N         SN7400N         SN7400N         SN7400N         SN7400N         SN7400N         SN7400N         SN7400N         SN74160N         0S1TION         220Ω	2201 2207 2206 VR 2201 C 2216, 2202 2203 2203 2208 2204 2204 2205 2204 2204 2205 2204 2209; 2209; 2209; 2201	POTE DII 2217 CF 2207,2213 2207,2213 2212,224 C1 ~2240 TRIM	NTIOMETER EVIS3AA PED MICA 50WV CRAMIC DIS 50WV % % % % % % % % % % % % % % % % % % %	00B14 C C 1 0.0 C C 0.0 C C C C C C C C C C C C C C	$     \frac{220\Omega}{22 K\Omega}     22 K\Omega     22 K\Omega     10 K\Omega B     51 PF     51 PF     2 PF(CH)     50 PF(C)     50 PF(C)     50 PF(C)     50 PF(C)     00 PF(SL)     01 \mu F     047 \mu F     3000000000000000000000000000000000$
$\begin{array}{c c} \hline 2002 \\ \hline 2001 \\ \hline 2003 \\ \hline 2004 \\ \hline \\ $	AY LOGIC U AY LOGIC U CIRCUIT Ge Ge TOR BON COMPO 1/8 W	1mH         4mH         4mH         JNIT *         BOARD         TIL306         TIL308         SN7400N         SN74160N         DSITION         220Ω         1KΩ	2201 2207 2206 VR 2201 C 2201 2203 2203 2203 2203 2204 2204 2205 2204 2204 2205 2204 2205 2204 2209 2201 2209	POTE DII 2217 CE 2207,2213 2207,2213 2212,224 CI ~2240 TRIM	NTIOMETER EVL-S3AA PED MICA 50WV CRAMIC DIS 50WV 2000 2000 2000 2000 2000 2000 2000 2	00B14 C C 1 0.0 C C 0.0 C C C C C C C C C C C C C C	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	AY LOGIC U AY LOGIC U D CIRCUIT Ge Ge TOR BON COMPO Jaw ~	1mH         4mH         4mH         JNIT *         BOARD         TIL306         TIL308         SN7400N         SN74160N         DSITION         220Ω         1KΩ	2201 2207 2206 VR 2201 C 2216, 2202 2203 2203 2204 2204 2204 2204 2204 2204 2204 2205 2206 2201, 2209; 2218 C C 2218 C C C C C C C C C C C C C	POTE DII 2217 CF 2217 CF 2212,224 CI 22240 TRIM	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV XRAMIC DIS 50WV % % % % % % % % % % % % % % % % % % %	00B14	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	AY LOGIC U AY LOGIC U D CIRCUIT Ge Ge TOR BON COMPO JaW 	2500AT # 220100         1mH         4mH         4mH         5000000000000000000000000000000000000	2201 2207 2206 VR 2201 C 2201 2203 2203 2203 2203 2204 2204 2205 2204 2204 2205 2204 2205 2204 2205 2204 2209 2201 2209 2201 2201 2203	POTE DII 2217 CE 2207,2213 2207,2213 2212,224 CI 2240 TRIM	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV XRAMIC DIS 50WV % % % % % % % % % % % % % % % % % % %	00B14 C C 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
$\begin{array}{c c} \hline 2002 \\ \hline 2001 \\ \hline 2003 \\ \hline 2004 \\ \hline \\ $	AY LOGIC U AY LOGIC U CIRCUIT Ge Ge TOR BON COMPO JaW 	2500 H # 220100         1mH         4mH         4mH         500 RD         11.306         TH.308         SN7400N         SN7400N         SN7400 AN         SN7400 AN         SN74160N         1N60 AM         22000         1KΩ         10KΩ         20011	2201 2207 2206 VR 2201 C 2216, 2202 2203 2203 2203 2203 2204 2204 2204 2204 2204 2204 2204 2204 2205 2204 2204 2203 2208 2204 2209; C C C C C C C C C C C C C	POTE DII 2217 CE 2217 CE 2212,224 CE 2212,224 CE 2240 TRIM	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV XRAMIC DIS 50WV % % % % % % % % % % % % % % % % % % %	00B14 C C 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	$     \begin{array}{r}         \overline{220\Omega} \\             22K\Omega \\             22K\Omega \\             \overline{22K\Omega} \\             \overline{10K\OmegaB} \\             \overline{51PF} \\             \overline{51PF}$
$\begin{array}{c c} \hline 2002 & 1 \\ \hline 2001 \\ \hline 2003 \\ \hline 2004 \\ \hline \\ $	AY LOGIC U AY LOGIC U D CIRCUIT Ge Ge TOR BON COMPO JaW 	2500AT # 220100         1mH         4mH         4mH         5000000000000000000000000000000000000	2201 2207 2206 VR 2201 C 2201 2201 2202 2203 2203 2203 2203 2203 2203 2203 2204 2204 2201 2201 2201 2209 2201 2209 2201 2209 2201 2201 2202 2203 2204 2201 2205 2201 2203 2203 2203 2203 2203 2203 2203 2203 2203 2203 2203 2203 2203 2203 2203 2203 2204 2201 2203 2203 2203 2204 2201 2203 2203 2204 2201 2203 2201 2203 2203 2204 2201 2203 2204 2201 2203 2203 2204 2201 2203 2203 2203 2203 2204 2201 2209 2201 2209 2201 2203 2203 2203 2203 2203 2203 2203 2204 2201 2203 2203 2203 2203 2203 2204 2201 2203	POTE DIII 2217 CF 2217 CF 2212,224 CF 2212,224 CT 2240 TRIM	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV XRAMIC DIS 50WV % % % % % % % % % % % % % % % % % % %	00B14 C C 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	$     \begin{array}{r}             \overline{220\Omega} \\             22K\Omega \\             22K\Omega \\             \overline{22K\Omega} \\             \overline{22K\Omega} \\             \overline{10K\OmegaB} \\             \overline{51PF} \\             5$
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	AY LOGIC U AY LOGIC U D CIRCUIT Ge Ge Ge TOR BON COMP( J&W A CITOR PED MICA 50WV A	2500 H # 220100         1mH         4mH         4mH         500 RD         11.306         TH.308         SN7400N         SN7400N         SN7400 AN         SN7400 AN         SN74160N         1N60 AM         22000         1KΩ         10KΩ         20011         33011	2201 2207 2206 VR 2201 C 2216, 2202 2203 2203 2203 2203 2204 2204 2204 2204 2204 2204 2204 2204 2205 2204 2204 2203 2208 2204 2209; C C C C C C C C C C C C C	POTE DI 2217 CF 2217 CF 2217 2212 2213 2212 2213 CT CT 2240 TRIM	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV CRAMIC DIS 50WV % % % % % % % % % % % % % % % % % % %	00B14 C C 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	$     \begin{array}{r}         \overline{220\Omega} \\             22K\Omega \\             22K\Omega \\             \overline{22K\Omega} \\             \overline{10K\OmegaB} \\             \overline{51PF} \\             \overline{51PF}$
$\begin{array}{c c} \hline 2002 \\ \hline 2001 \\ \hline 2003 \\ \hline 2004 \\ \hline \\ \hline 2004 \\ \hline \\ \hline \\ \hline \\ \\ $	AY LOGIC U AY LOGIC U D CIRCUIT Ge Ge TOR BON COMPO JaW ~ CITOR PED MICA 50WV ~ RAMIC DISC	2500 H # 220100         1mH         4mH         4mH         500 RD         11.306         TIL.306         TIL.308         SN7400N         SN7400N         SN7400AN         SN7400AN         SN7400AN         SN7400AN         SN74160N         0SITION         220Ω         1KΩ         10KΩ         2001'H         3301'H	2201 2207 2206 VR 2201 C 2201 2203 2203 2203 2203 2204 2204 2204 2205 2204 2204 2205 2204 2205 2204 2205 2204 2209 2204 2209 2201 2203 2204 2204 2205 2204 2204 2205 2204 2204 2205 2204 2205 2204 2204 2205 2204 2205 2204 2205 2204 2205 2204 2205 2204 2205 2204 2205 2204 2205 2204 2205 2204 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2207 2208 2207 2208 2204 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2007 2207 2007 2207 207	POTEI CAPA 1)11 2217 CF 2217,2213 2212,224 C1 ~2240 TRIM INDU	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV CRAMIC DIS 50WV % % % % % % % % % % % % % % % % % % %	00B14 C C 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	AY LOGIC U AY LOGIC U D CIRCUIT Ge Ge Ge TOR BON COMP( J&W A CITOR PED MICA 50WV A	2500 H # 220100         1mH         4mH         4mH         500 RD         11.306         TH.308         SN7400N         SN7400N         SN7400 AN         SN7400 AN         SN74160N         1N60 AM         22000         1KΩ         10KΩ         20011         33011	2201 2207 2206 VR 2201 C 2201 2203 2203 2203 2203 2204 2204 2204 2205 2204 2204 2205 2204 2205 2204 2205 2204 2209 2204 2209 2201 2203 2204 2204 2205 2204 2204 2205 2204 2204 2205 2204 2205 2204 2204 2205 2204 2205 2204 2205 2204 2205 2204 2205 2204 2205 2204 2205 2204 2205 2204 2205 2204 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2207 2208 2207 2208 2204 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2208 2207 2007 2207 2007 2207 207	POTE DII 2217 CE 2217 CE 2212,224 CE 22240 TRIM INDU	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV CRAMIC DIS 50WV % % % % % % % % % % % % % % % % % % %	00B14 C C 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	AY LOGIC U AY LOGIC U D CIRCUIT Ge Ge TOR BON COMPO J&W ~ CITOR PED MICA 50WV ~ RAMIC DISC 50WV	250μ1 # 220100         1mH         4mH         4mH         JNIT *         BOARD         TIL306         TIL308         SN7400N         SN7400N         SN7400N         SN7400N         SN7400N         SN7400N         SN7400N         SN7400N         SN74160N         0S1T10N         220Ω         1KΩ         10KΩ         2001 <sup>1</sup> 1         3301 <sup>2</sup> 1         0.047μ1	2201 2207 2206 VR 2201 C 2201 C 2201 2202 2203 2203 2204 2204 2205 2204 2204 2205 2206 2201 2203 2204 2205 2206 2201 2203 2204 2205 2204 2205 2206 2201 2203 2204 2205 2206 2201 2202 2203 2204 2205 2206 2201 2202 2203 2204 2205 2206 2201 2202 2203 2204 2205 2206 2201 2203 2204 2205 2206 2201 2201 2202 2203 2204 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2206 2201 2207 2208 2206 2201 2206 2201 2201 2202 2203 2208 2204 2201 2202 2203 2208 2204 2205 2206 2201 2207 2208 2208 2204 2207 2208 2208 2208 2209 2208 2208 2208 2208 2209 2208 2208 2209 2208 2208 2209 2208 2208 2208 2209 2208 2208 2209 2208 2208 2208 2208 2209 2208 2208 2209 2208 2208 2209 2208 2201 2209 2208 2201 2209 2201 2201 2201 2202 2203 2201 2201 2202 2203 2204 2201 2202 2203 2204 2201 2202 2203 2204 2201 2202 2203 2204 2201 2202 2203 2204 2202 2203 2204 2204 2201 2202 2204 2202 2202 2203 2204 2204 2202 2202 2202 2202 2202 2202 2202 2204	POTEI CAPA 1)11 2217 CF 2217,2213 2212,224 C1 ~2240 TRIM INDU	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV RAMIC DIS 50WV 2RAMIC DIS 50WV 2RAMIC FEI 800 200 200 200 200 200 200 200 200 200	00B14	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	AY LOGIC U AY LOGIC U D CIRCUIT Ge Ge TOR BON COMPO JaW ~ CITOR PED MICA 50WV ~ RAMIC DISC	2500 H # 220100         1mH         4mH         4mH         500 RD         11.306         TIL.306         TIL.308         SN7400N         SN7400N         SN7400AN         SN7400AN         SN7400AN         SN7400AN         SN74160N         0SITION         220Ω         1KΩ         10KΩ         2001'H         3301'H	2201 2207 2206 VR 2201 C 2201 C 2201 2202 2203 2203 2204 2204 2205 2204 2204 2205 2206 2201 2203 2204 2205 2206 2201 2203 2204 2205 2204 2205 2206 2201 2203 2204 2205 2206 2201 2202 2203 2204 2205 2206 2201 2202 2203 2204 2205 2206 2201 2202 2203 2204 2205 2206 2201 2203 2204 2205 2206 2201 2201 2202 2203 2204 2205 2206 2201 2205 2206 2201 2205 2206 2201 2205 2206 2201 2206 2201 2207 2208 2206 2201 2206 2201 2201 2202 2203 2208 2204 2201 2202 2203 2208 2204 2205 2206 2201 2207 2208 2208 2204 2207 2208 2208 2208 2209 2208 2208 2208 2208 2209 2208 2208 2209 2208 2208 2209 2208 2208 2208 2209 2208 2208 2209 2208 2208 2208 2208 2209 2208 2208 2209 2208 2208 2209 2208 2201 2209 2208 2201 2209 2201 2201 2201 2202 2203 2201 2201 2202 2203 2204 2201 2202 2203 2204 2201 2202 2203 2204 2201 2202 2203 2204 2201 2202 2203 2204 2202 2203 2204 2204 2201 2202 2204 2202 2202 2203 2204 2204 2202 2202 2202 2202 2202 2202 2202 2204	POTEI CAPA 1)11 2217 CI: 2217,2213 2212,224 CI 2240 TRIM INDU INDU INDU PIN	NTIOMETER EVL-S3AA CITOR PPED MICA 50WV CRAMIC DIS 50WV % % % % % % % % % % % % % % % % % % %	00B14	

2202	2202 M-31-15-60-114 P			M-31-15-60-114P CARBON COMPOSITION						
		·	2301,23	302	1⁄8 W		10KΩ			
	LED UNIT		PL	LAMP	••••••••••••••••••••••••••••••••••••••					
PB	PRINTED CIRCUIT BOARD		2301~2	2303	BQ041-32404A	12 V	40mA			
1471( A	~Z)									
D	DIODE			l	AMP BOARD B					
2401	LED TLR-108		PB	PRINT	ED CIRCUIT BO	DARD				
			1646 ( A	$\sim Z)$						
R	RESISTOR									
	CARBON FILM		Q	TRAN	SISTOR					
2401	14 W	$470\Omega$	2501		2	SC536D				
	<b>ا</b> ۲ <sup>1</sup>									
			R	RESIS	STOR	÷				
	LAMP BOARD A *			CA	RBON COMPOSI	TIOÑ				
PB	PRINTED CIRCUIT BOARD		2501		1%W		10KΩ			
1565 ( A	~Z)									
			PL	LAMP	)					
Q	TRANSISTOR		2501,25	502	BQ041-32404A	12V	40mA			
2301,2	<b>302 2</b> SC <b>536</b> D									
R	RESISTOR									





Downloaded by RadioAmateur.EU

+13.8 V TX

+64. REG.



m Q203



Processor FILLY XF9ZA Filter v.o. 1: jun 1 toPin 2

3

Downloaded by RadioAmateur.EU



