

\*\*\*\*\* FTV-650 SIX METER TRANSVERTER \*\*\*\*\*

SPECIFICATIONS

Transmitting

Input frequency range	28 - 30 Mc/s
Input drive	up to 3V RMS
Input impedance	High impedance
Input power to P.A. (S2001/6146)	50W DC
Output frequency range	Two ranges; 50 - 52 Mc/S and 52 - 54 Mc/s
Output impedance	52 - 75 ohms

Receiving converter

Frequency ranges	50 - 52 Mc/s & 52 - 54 Mc/s
Antenna input impedance	50 - 75 ohms
Sensitivity (when used with FRDX-400)	better than 0.5 uV for 10 dB S/N (SSB, CW) " " 1 uV " 10 dB S/N (AM, FM)
Image rejection	better than 50 dB
Output frequency range	28 - 30 Mc/s
Output impedance	50 - 75 ohms unbalanced

FURTHER GENERAL INFORMATION

Power requirements: Transverter has no built-in power supply. As a driver the FLDX-400 or FTDX-400 provides all necessary power requirements.

A separate power supply could be used. The requirements are:

6.3V 3.5A AC; 150V 30ma DC;  
300V 50ma DC; 600V 150ma DC;  
-100V 20ma DC.

Power cables with plug connected for transverter end provided.

Valves used: 2 x 6CB6, 1 x 6AW8A, 1 x 12BY7,  
1 x S2001/6146 (P.A.)

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transmitting drive: Takes low level drive from transmitter or transceiver. Has been designed to work directly from FLDEX-400 or FTDX-400. HT is automatically cut from P.A. of the driving set and transferred to that of the transverter. Could be quite easily adapted for use with almost any type and make of HF SSB equipment which covers the 28 Mc/s band.

Front panel: Panel Meter. Mixer Tune. Grid Tune. 3-position switch: Pwr OFF, 50-52, 52-54 Mc/s. P.A. Plate Tuning. P.A. Loading.

Size: Height,  $6\frac{1}{4}$ " (plus feet); Width, 8"; Depth,  $11\frac{1}{2}$ "

Styling: Similar to latest FLDX-400 & FTDX-400. Etched satin finish aluminium panel. Cabinet, communication grey.

#### TUNING & OPERATING NOTES

Refer to the Japanese language manual for circuit and diagrams.

Having connected the transverter and FLDX-400 together including the two RF cables (drive from TX, and converter to RX), set the controls of the FTV-650 as follows:-

Plate Tuning	53 Mc/s (approx.)
Loading	50 ohms ( " )
Mixer Tune	53 Mc/s ( " )
Grid Tune	53 Mc/s ( " )
Band	52 - 54 Mc/s
Meter Switch	Ic position

Set FLDX-400 and FRDX-400 to USB, and Band Switches to 10A or 10B, and with the other controls in the normal positions for 10 meters. See that TX carrier control is at minimum.

In the operate condition, press the mic. P.T.T. button and observe that standing current on the FTV-650 meter is normal. It should be 20 mA. If not, adjust bias to give that reading.

At all times, do not allow steady current reading Ic on FTV-650 to exceed 50 ma.

If all appears normal, carefully advance the TX carrier control so that FTV-650 meter begins to show increase. Peak tuning of TX, and FTV-650 Mixer Tune and Grid Tune for maximum on meter. Reduce TX

carrier control immediately current goes beyond 50 ma. Some readjustment of TX Grid tuning may or may not be necessary.

Switch to P.O. on FTV-650 and adjust its Plate Tuning to give maximum reading. Check Ic. Repeat this procedure, adjusting Loading Control as well, for best output.

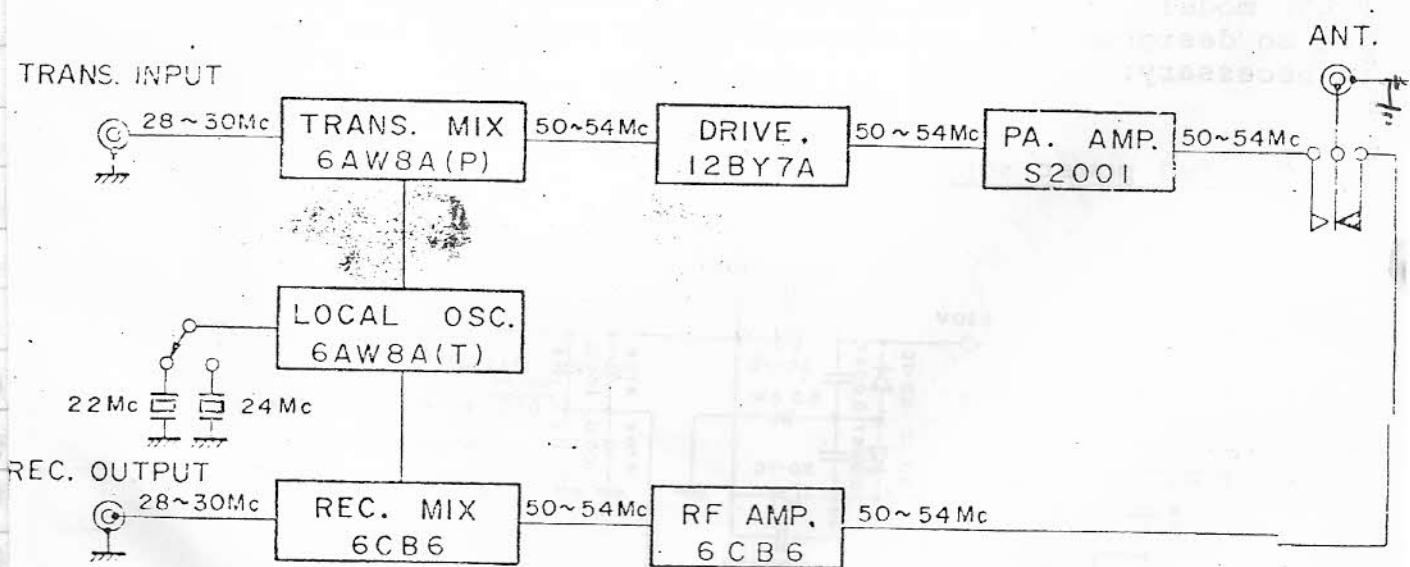
When properly adjusted, the Mixer and Grid Tune settings should not indicate much below 52 Mc/s. If they peak near 50 Mc/s then they are incorrectly adjusted.

For AM operation, Ic should not exceed 50 ma with no speech, and Mic. Gain control should be set so that Ic flickers upward approx. 10 ma.

For SSB operation, the carrier pot. should be turned off and Mic. Gain adjusted so meter kicks up to 80 ma Ic on voice peaks.

If the slide switch is moved to the input position, when operating on SSB, the meter should peak above the green line on voice peaks.

BLOCK DIAGRAM



### POWER PLUG CONNECTION

(1) Blue (large)	(7) White (small)
(2) Brown (large)	(8) Black (large)
(3) Orange	(9) Gray (Small)
(4) Green	(10) Relay ground at receive
(5) Red	(11) Relay ground at transmit
(6) Violet	

Note : Pin 10 and 11 are not wired and may be used to control other equipment such as linear amplifier.

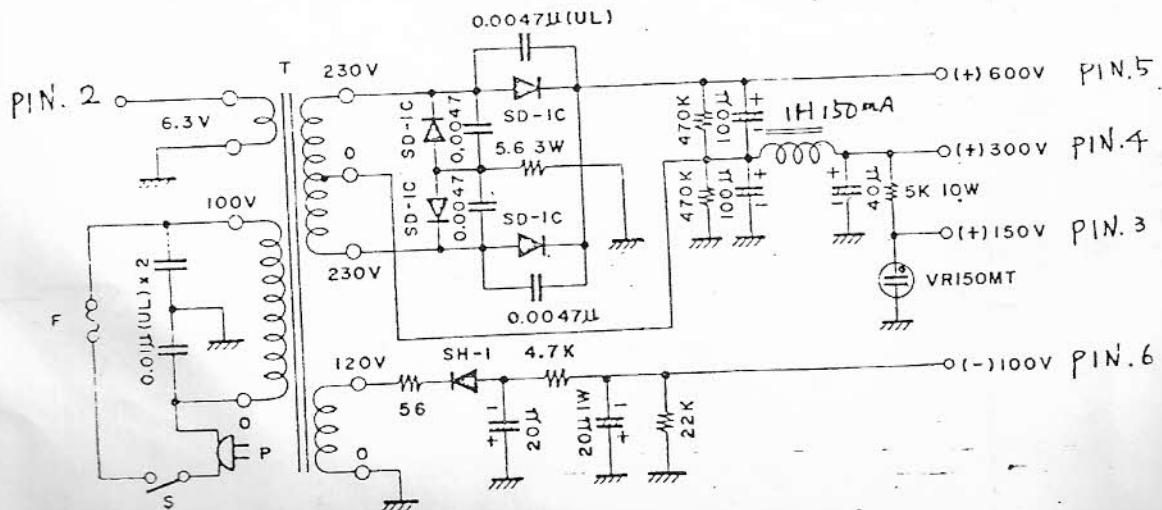
Pin 10 may be used to mute main receiver.

### Power supply

In the FTV-650 Transverter, the power supply is not built-in. Therefore, an external power supply is required when this unit is to be used with other manufacturer's equipment.

YAESU models, FL-DX-400, FT-DX-400, FT-400S, FT-200 and FL-50B are so designed that no external power supply by the transverter is necessary.

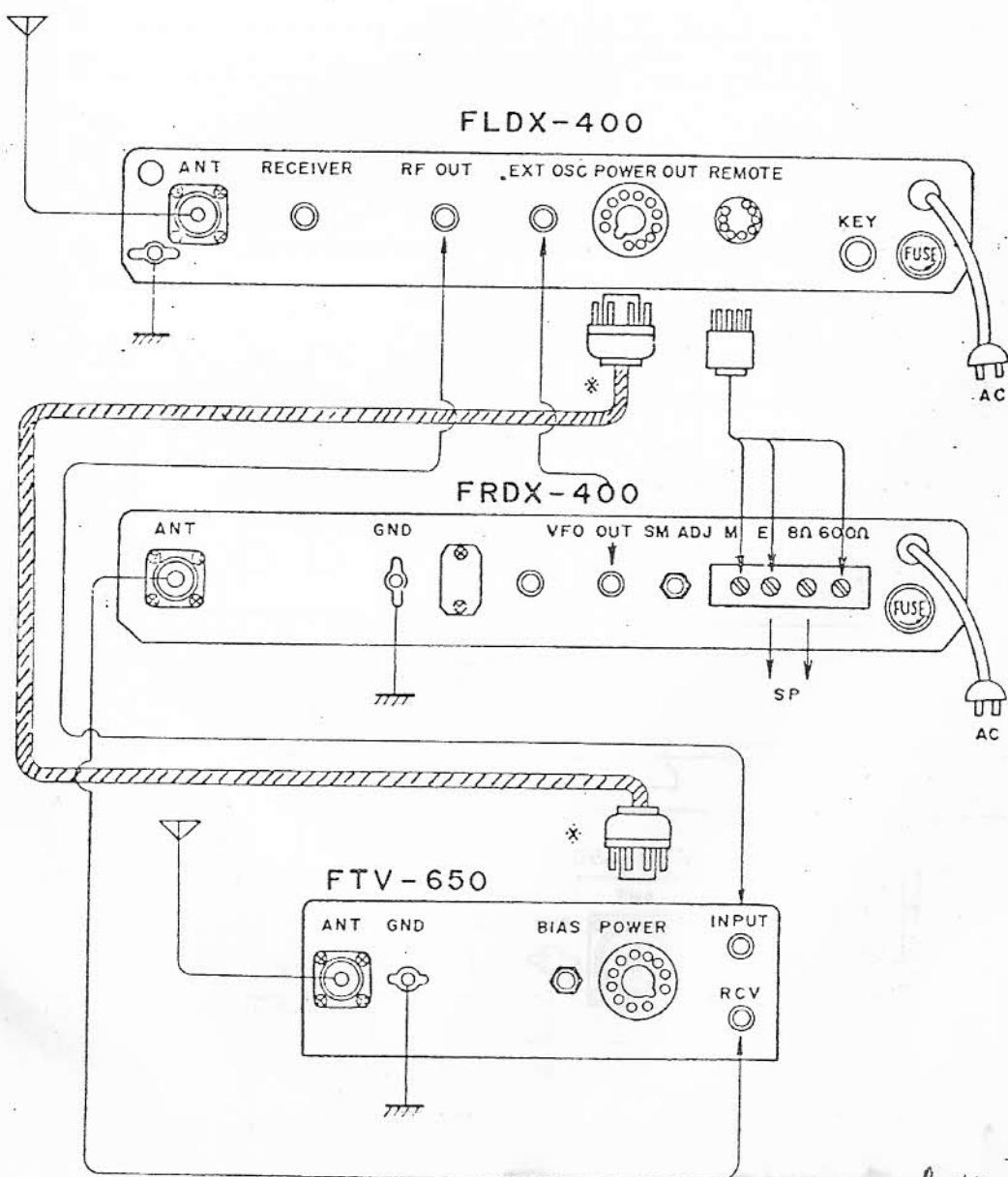
### Recommended power supply



Pin 1	No connection	Pin 7	To ALC circuit of TX
Pin 2	AC 6.3V 3.5A	Pin 8	Ground
Pin 3	DC 150V 30mA	Pin 9	Relay
Pin 4	DC 300V 50mA	Pin 10	To mute terminal of RX
Pin 5	DC 600V 150mA	Pin 11	No connection

INTER CONNECTION DIAGRAM

(1) FL-DX-400 Transmitter



FTV-650

FL-DX-400

FL-DX-400 (older model)

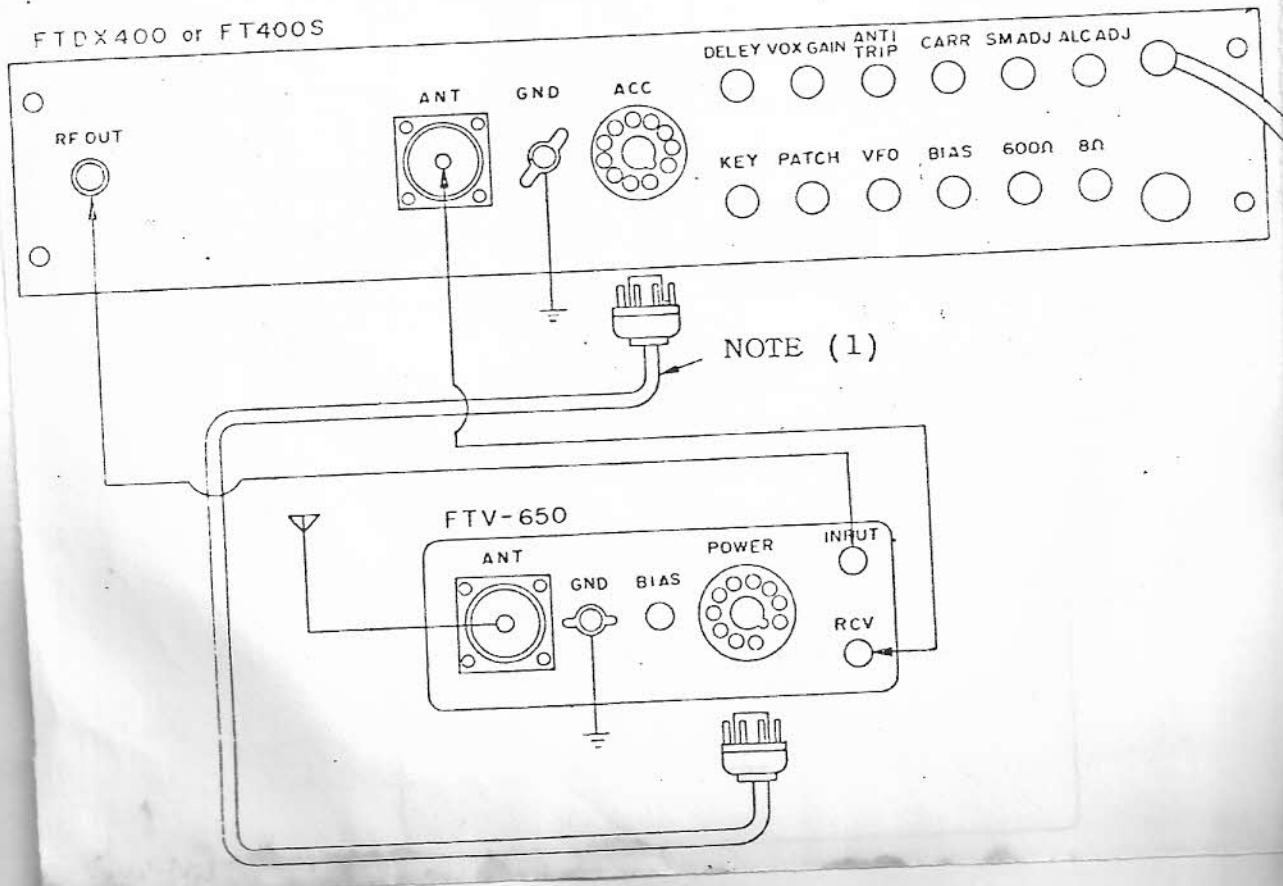
Power plug

Power socket

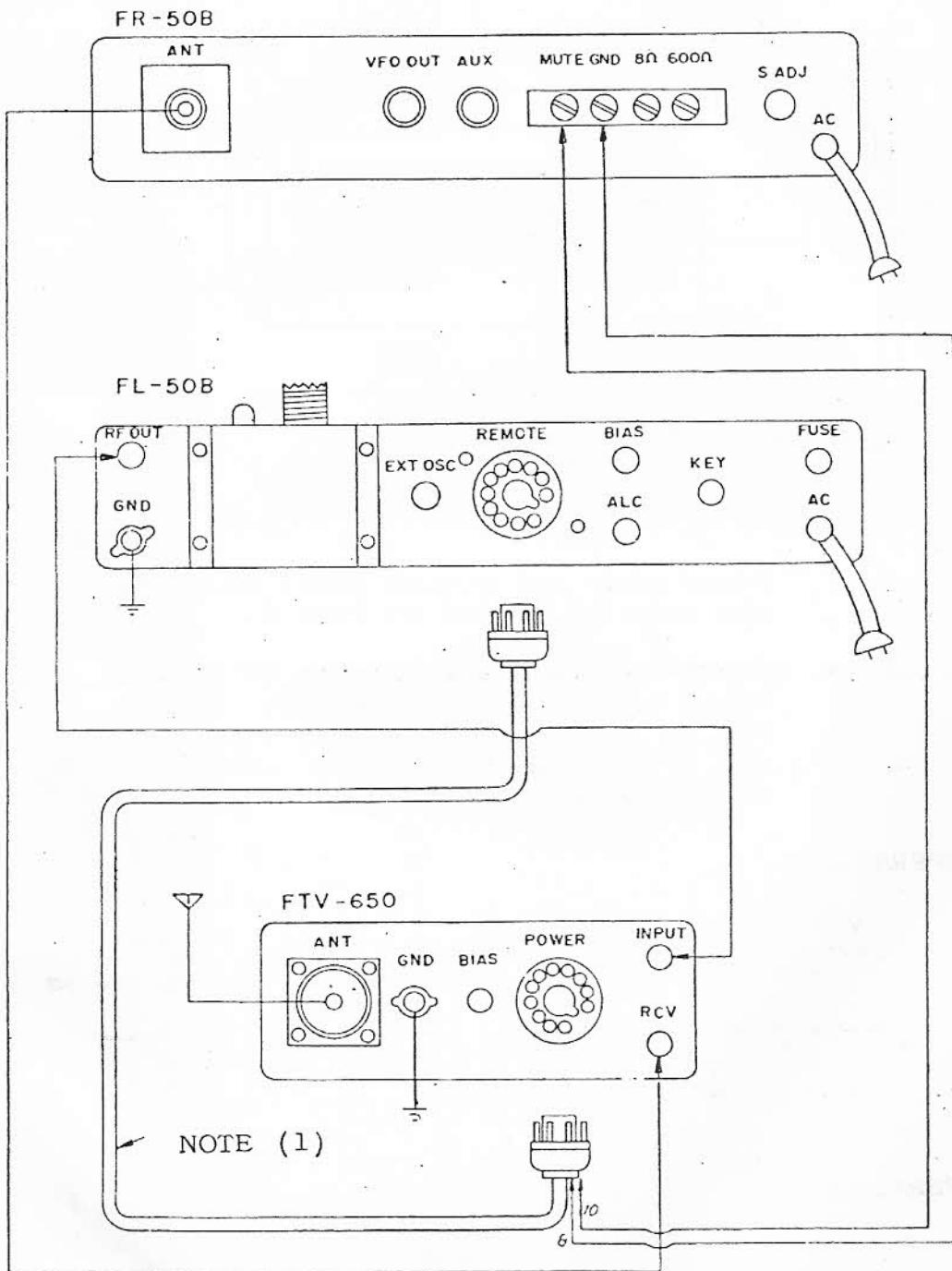
Power socket

1. Blue .....	1 .....	1
2. Brown .....	2 .....	2
3. Orange .....	3 .....	3
4. Green .....	4 .....	4
5. Red .....	5 .....	5
6. Violet .....	6 .....	6
7. White .....	7 .....	7
8. Black .....	8 .....	8
9. Gray .....	9 .....	6 (remote so
10. Not used	10 Not used	
11. " "	11 " "	

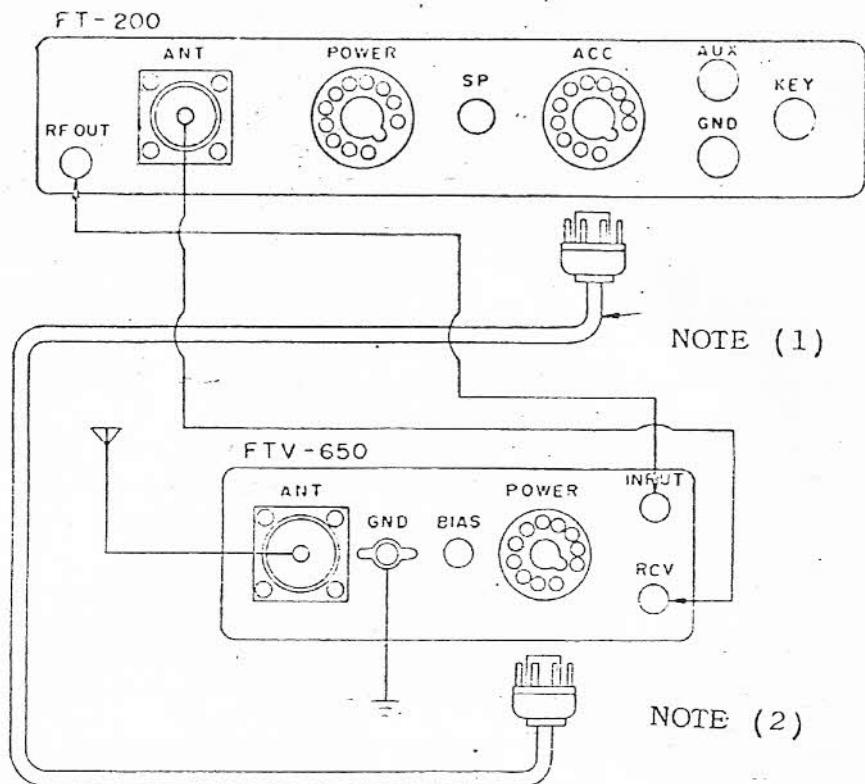
(2) FT-DX-400, FTDX560 FT-400S Transceivers



(3) FL-50B Transmitter



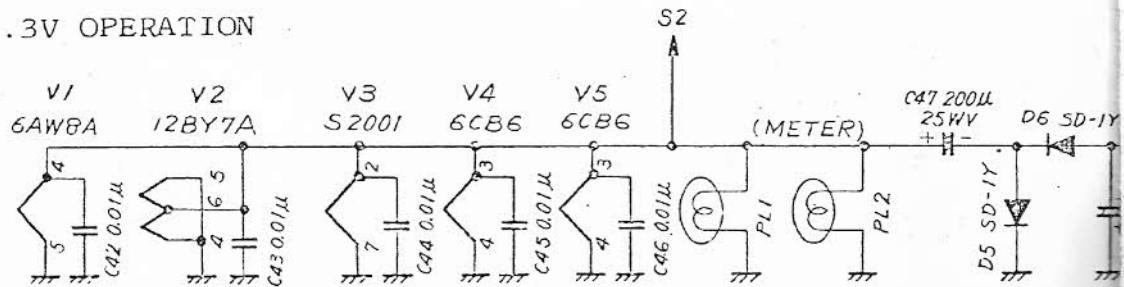
(A) FT-200 Transceiver



Note 1. Power plug and socket shall be wired the same as FL-400 on Page 6.

Note 2. Pin 10 of accessory socket of FT-200 shall be jumpered to ground. As the FT-200 is designed for 12V operator, the FTV-650 heater wiring shall be modified as follows:

6.3V OPERATION



12V OPERATION

