INSTRUCTION MANUAL

FV-101B

YAESU MUSEN CO., LTD.

TOKYO JAPAN

THEORY OF OPERATION

The FV-101B is designed to cover the 80 through 10 meter amateur bands when operated with the YAESU FT-101B Transceiver. The VFO uses an FET transistor 3SK22G as the VFO oscillator and first buffer, MK-10-E as the crystal oscillator, silicon transistor 2SC372Y as the output amplifier and 2SC735Y as the amplifier stage. Both VFO and crystal oscillators operate between 8,700 KHz and 9,200 KHz. This unit may be operated from 6.3V and 12V DC power sources supplied from the FT-101B Transceiver.

The series-tuned Colpitts oscillator circuit (sometimes called Clapp circuit) is used to provide very low oscillator drift.

The select switch (S1) selects either the VFO or one of four crystals that may be installed in the FV-101B. In VFO position, S1c connects VFO output to output amplifier stage and S1b supplies the DC voltage to VFO printed board PB-1056. DC voltage to the crystal oscillator is disconnected. In all of the crystal positions, DC voltage to the crystal oscillator is supplied through S1b and the VFO circuit is disabled.

INSTALLATION

Power Requirements

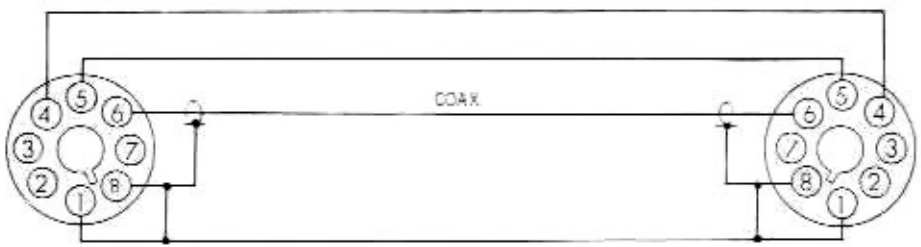
When the FV-101B is operated together with the FT-101, the power is supplied from the transceiver.

12V DC is used for the pilot lamp and the output amplifier. The regulated 6V DC is used for VFO and crystal oscillator.

External Connection

Connect the power cable into the plugs J1(FV-101B) or J13(FT-101B) as indicated.

Power to the FV-101B is then supplied from the transceiver, and VFO output is connected into the circuit.



TEST & ALIGNMENT

Equipment Required

1. FT-101B Transceiver
2. Vacuum tube-volt-ohm meter
3. Suitable alinment tools for capacitors

The VFO lincarity has been aligned in the factory and it is not recommended to align the VFO lincarity.

Temperature Compensating Adjustment

Since practically no heat is generated within the FV-101B cabinet, temperature compensation should not be necessary. In case of extreme ambient temperature change, the temperature compensating capacitor may be adjusted to provide most adequate compensation.

Drift towards a lower dial reading with increasing temperature on 80 meters indicates insufficient compensation and compensating trimmer TC2 should be rotated clockwise to increase compensation. Drift towards a higher dial reading with increasing temperature indicates excessive compensation and TC2 should be rotated counter clockwise to decrease compensation.

OPERATION

The FV-101B External VFO dial presentation is identical to the transceiver. The main dial covers 500 KHz with 25 KHz readout. The tuning knob skirt provides 1 KHz readout. The dial on the skirt of the tuning knob may be adjusted to exact frequency by tuning to a known frequency, such as the 100 KHz marker crystal calibrator in the transceiver.

Turn the tuning knob for zero beat with the 100 KHz marker. Holding the tuning knob firmly to maintain zero beat, rotate the skirt until the zero mark corresponds with the indice mark. The dial will now agree with 100 KHz zero beat frequency.

Select Switch

In the VFO position, the FV-101B operates as a variable frequency oscillator. In the CH1, CH2, CH3 and CH4 positions, the FV-101B operates as a crystal controlled oscillator on one of four frequencies.

Crystals are inserted into sockets on the chassis of the FV-101B which correspond to the SELECT switch. No crystals are supplied with the FV-101B.

Crystal Control Operation

The crystal holders accept standard HC-6U type crystals. All crystal frequencies fall between 8.700 KHz and 9.200 KHz. To permit proper frequency adjustment for SSB operation, a trimmer capacitor has been connected in parallel to each crystal. Adjustment of this trimmer will change the crystal frequency about 1KHz.

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

$$Fx - (Fl + Fc) - Fo$$

Fx − (Fl + Fc) − Fo, where Fx is the crystal frequency. Fo is the designed operating frequency, and the constant (Fl +Fc) is taken from the table.

Frequency Table (Fl + Fc)

Unit : KHz

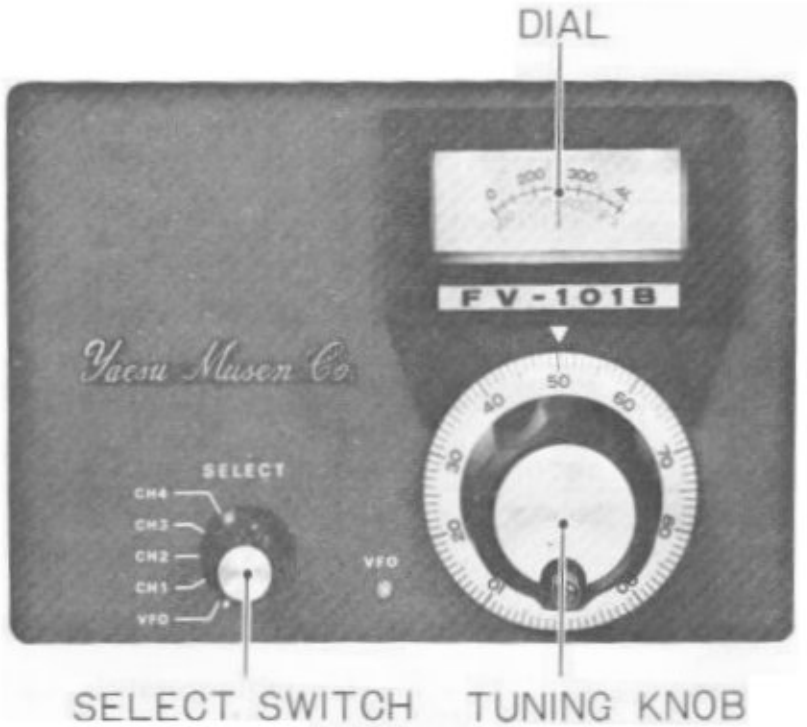
BAND	LSB	USB	AM/CW
80	12701.5	12698.5	12699.3
40	16201.5	16198.5	16199.3
20	23201.5	23198.5	23199.3
15	30201.5	30198.5	30199.3
11	36201.5	36198.5	36199.3
10A	37201.5	37198.5	37199.3
10B	37701.5	37698.5	37699.3
10C	38201.5	38198.5	38199.3
10D	38701.5	38698.5	38699.3

For Example :

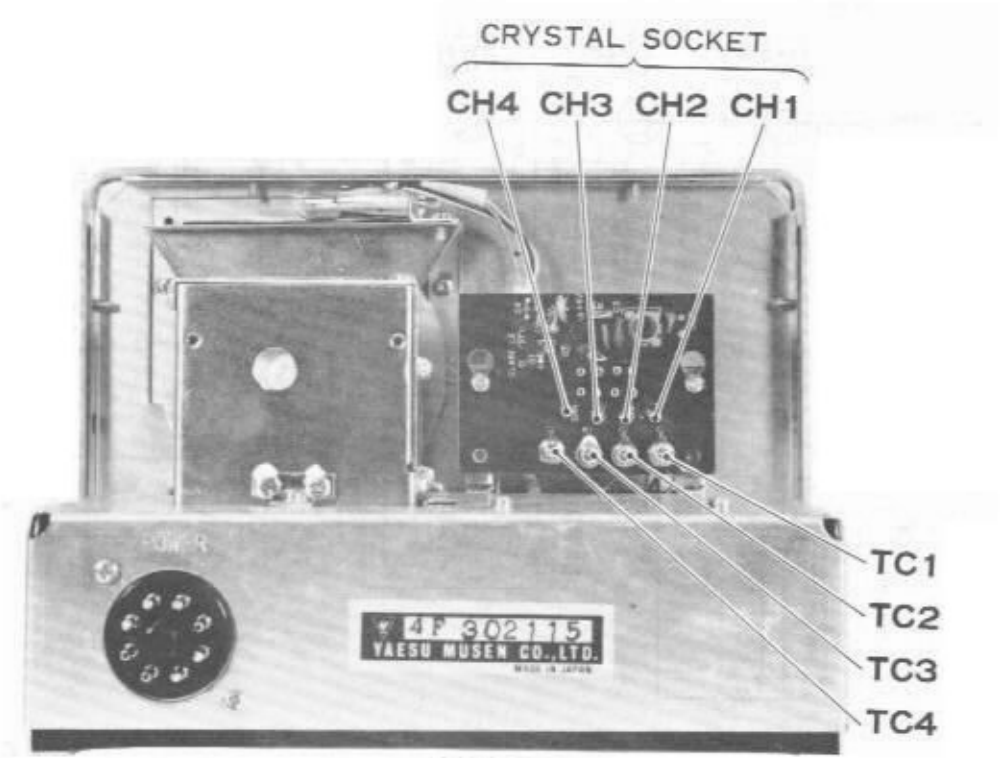
Find the proper crystal for operation at 3900 KHz LSB on the 80 meter band.

From the table find the constant (Fl + Fc) for LSB operation on this band. The constant is 12701.5, therefore, Fx − 12701.5 − 3900

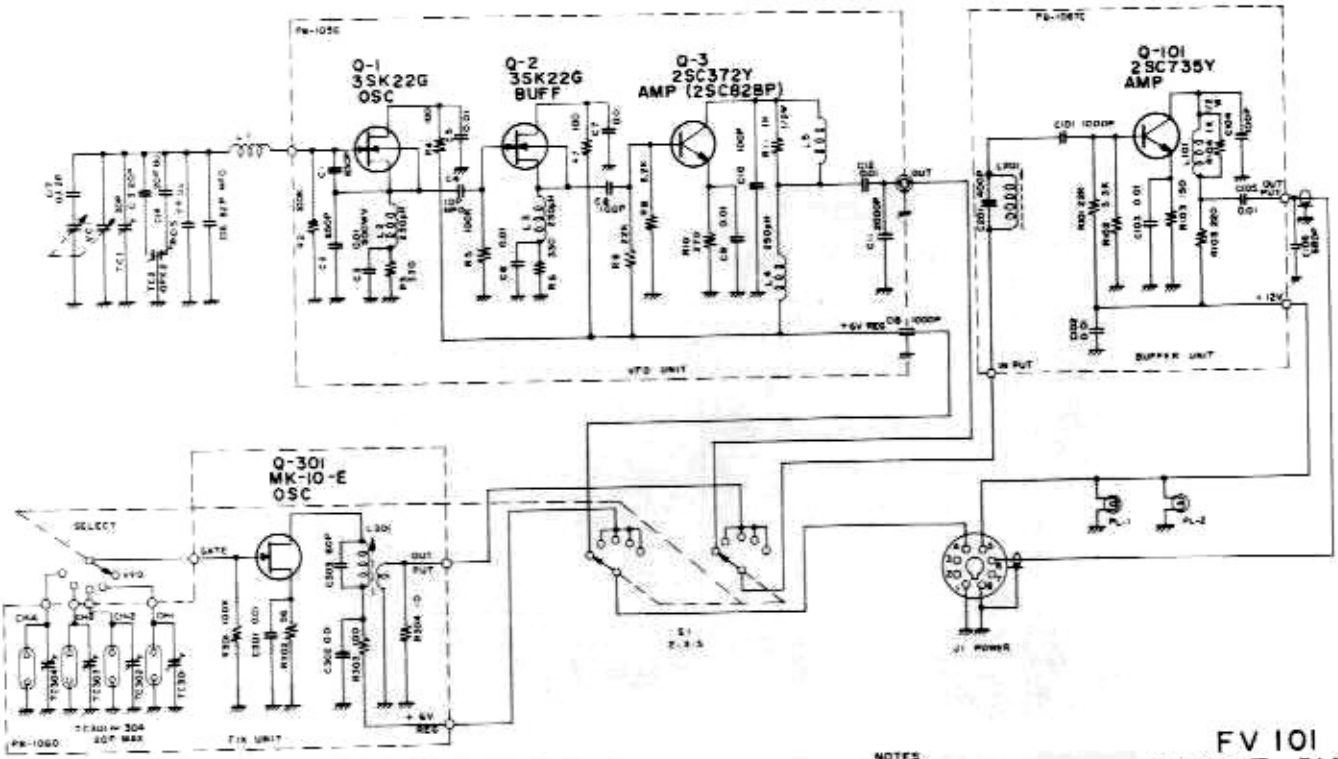
Fx − 8801.5 KHz.


DIAL
FV-101B
Yaesu Musen Co
SELECT
CH4
CH3
CH2
CH1
VFO
VFO
SELECT SWITCH
TUNING KNOB

FRONT VIEW


CRYSTAL SOCKET
CH4 CH3 CH2 CH1
TC1
TC2
TC3
TC4
4F 302115
YAESU MUSEN CO.,LTD.

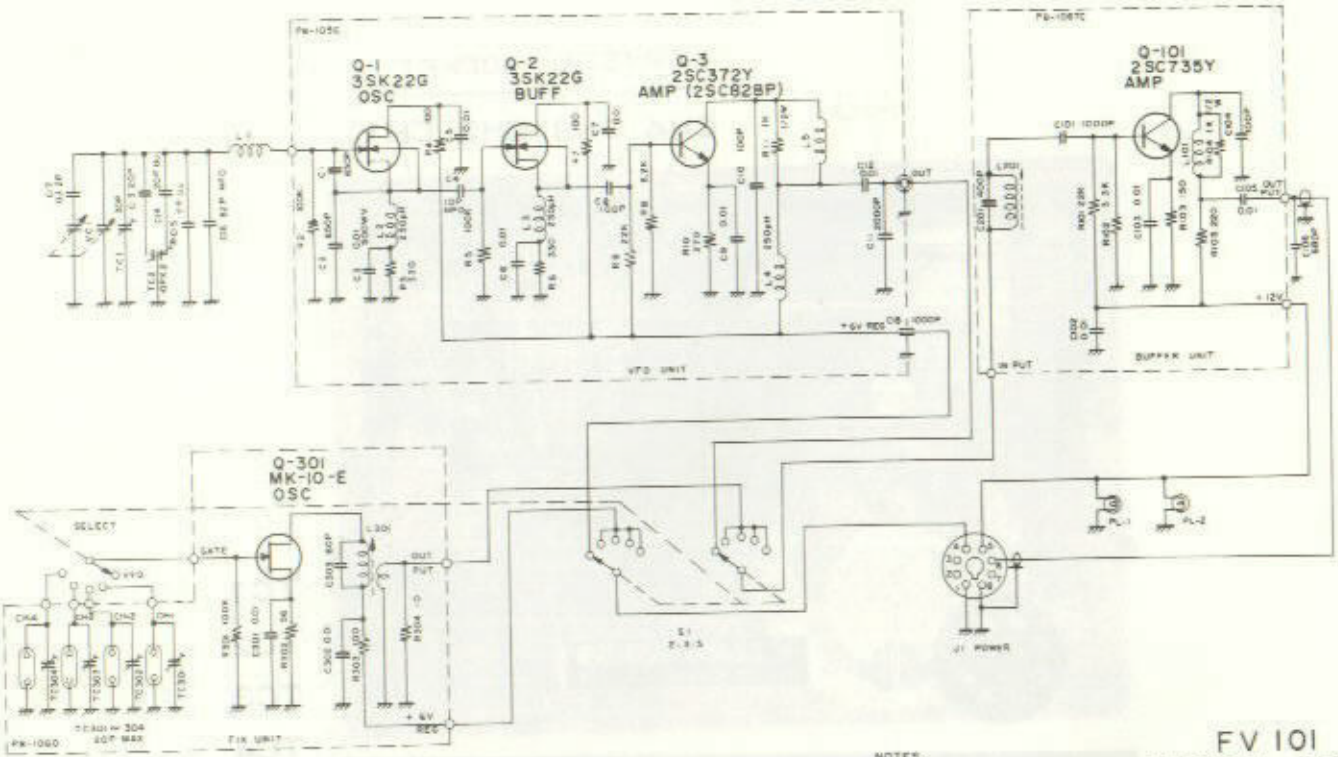
REAR VIEW



FV 101
CIRCUIT DIAGRAM

NOTES

1. ALL RESISTORS IN OHM 1/4W ± 10% UNLESS OTHERWISE NOTED.
2. ALL CAPACITORS IN μF UNLESS OTHERWISE NOTED.
3. ± VALUE IS NOMINAL.



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