

# 405X CRYSTAL CONTROLLED EXTERNAL OSCILLATOR

For MARS operation, Net and other fixed channel operations.

**SPECIAL NOTE:** If both Upper and Lower Sideband operation is required on a given frequency channel, it will require two crystals in the 405X. This is because the I.F. carrier frequency moves 3 kc when the transceiver sideband selector control is switched. A corresponding 3 kc shift is required in the 405X in order to stay on the same frequency channel. Thus, if both sidebands are required, it will take two of the five crystal positions in the 405X. Upper and lower sideband on another channel will take up two more positions, leaving one more position available. Information is provided further on in these instructions for calculating crystal frequency. It is very important to remember that two controls must always be switched when changing sidebands. One is the sideband selector switch on the transceiver, and the other is the channel selector on the 405X.

## (B) CALCULATION OF CRYSTAL FREQUENCIES.

1 - For operation between 3200 and 4600 kc, (3.5 mc band):

Lower Sideband (Normal): Channel frequency Plus 5500 kc

Upper Sideband (Opposite): Channel frequency Plus 5503.3 kc

2 - For operation between 6800 and 8000 kc,

Lower Sideband (Normal): Channel frequency Plus 5500 kc

Upper Sideband (Opposite): Channel frequency Plus 5503.3 kc

3 - For operation between 13,800 and 15,000 kc, (14 mc band):

Upper Sideband (Normal): Channel frequency Minus 5500 kc

Lower Sideband (Opposite): Channel frequency Minus 5503.3 kc

4 - For operation between 20,900 and 21,500 kc, (21 mc band):

Upper Sideband, (Normal): Channel frequency Minus 5500 kc

Lower Sideband, (Opposite): Channel frequency Minus 5503.3 kc

## (C) INSTRUCTIONS FOR ORDERING CRYSTALS:

**NOTE:** Swan Electronics does not supply crystals for the 405X oscillator. They must be ordered direct from a crystal manufacturer in the following typical manner:

Name & Address of  
Crystal Manufacturer

Gentlemen:

Please ship the following crystal(s) in the HC-6/U type holder with .093 inch diam. pins:

Quantity      Frequency, plus or minus .0025 per cent, parallel resonance at 20 pf shunt capacity, 25 deg. cent.

..... kc

..... kc

..... (as calculated) ..... kc

..... kc

..... kc

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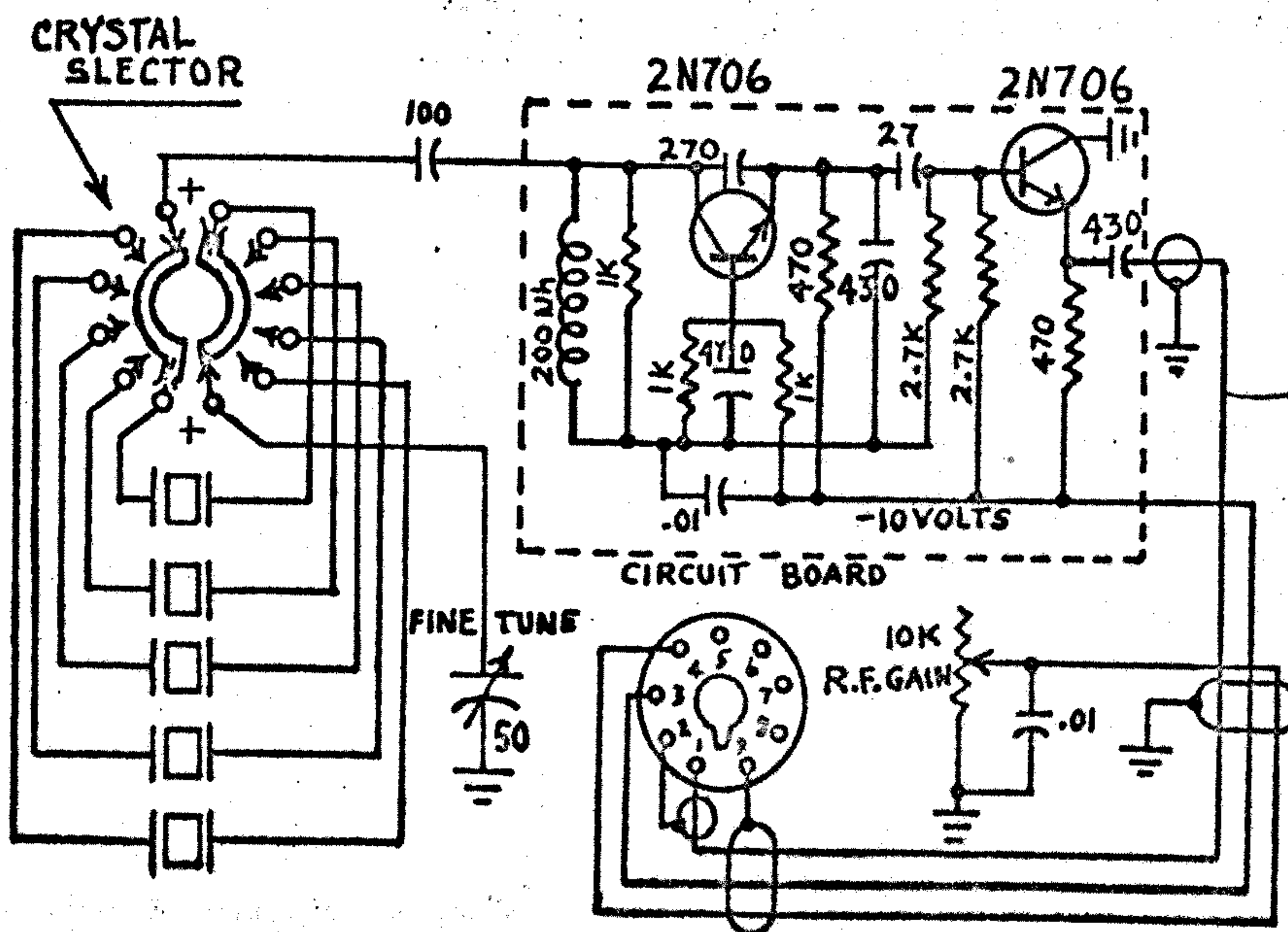


Fig. 7  
Schematic  
Model 405X