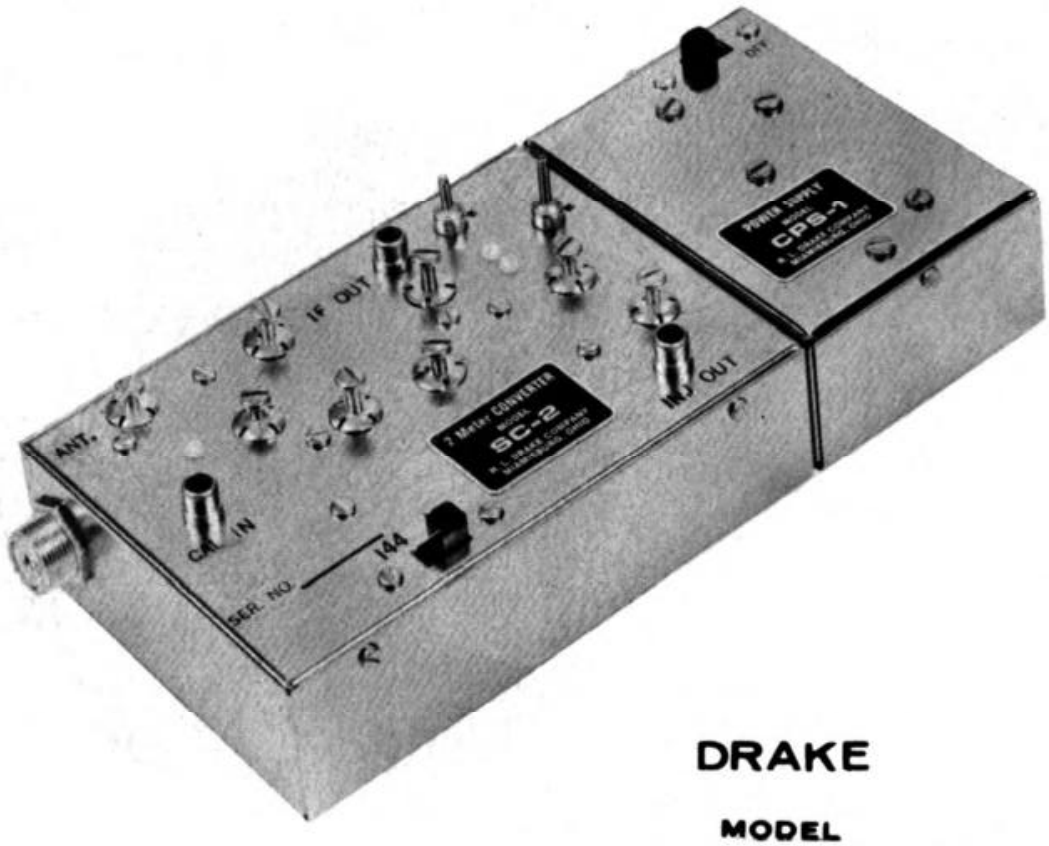
INSTRUCTION MANUAL



DRAKE

MODEL

SC-2

2 Meter Converter

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Form 168

DRAKE MODEL SC-2 CONVERTER

SPECIFICATIONS

Frequency Range	144 - 148 MHz
I.F. Range	14 - 18 MHz
Power	15 - 18 Volts DC at 40 ma
Input Impedance	50 ohms
Output Impedance	50 ohms
Image Rejection	75 dB at 115.5 MHz
I.F. Rejection	75 dB at 14 MHz
Gain	20 dB Typical
Gain Variation	$\pm$ .5 dB between 144.0 and 148.0 MHz
Noise Figure	Typically 2.0 dB
Frequency Tolerance	.001%

SEMICONDUCTOR COMPLEMENT

One TIS88	R.F. Amplifier
One TIS88	Mixer
One 2N3394	Oscillator
One 2N3663	Frequency Tripler
One 1N714	Zener Regulator
One 1N4148	Reverse Polarity Protection

CIRCUIT DESCRIPTION

The SC-2 Converter consists of an unilateralized grounded source FET radio frequency amplifier (Q2), a grounded source FET mixer (Q4), a series resonant 43 MHz crystal-controlled oscillator (Q1), and a frequency tripler (Q3).

The signal from the antenna is matched into the gate of Q2 via a tuned circuit comprised of L2 and C5. A portion of the drain signal of Q2 is fed back to its gate through C6 for neutralization. C13 is used to adjust the magnitude of the feedback. The bulk of the drain signal of Q2 passes through a bandpass network to the gate of mixer Q4. The local oscillator signal is coupled into the source of Q4.

The difference frequency (14 to 18 MHz) appearing at the drain terminal of Q4 is matched to the 50 ohm output by the bandpass network formed by L10, C30, C33, C34 and L11.

INJECTION

Approximately 200 millivolts of 43 MHz signal is available at the INJ. socket for use with a transmitting mixer. Connection of a load to the INJ. socket may necessitate realignment of L4.
(See Page 4)

CALIBRATION

A signal level of approximately 5 microvolts applied to the CAL. socket is adequate for calibration of the SC-2.

OPERATION

Connect a 2 meter antenna to the ANT. socket of the SC-2, connect the receiver antenna terminals to the IF OUT socket of the SC-2 with RG/58/U coaxial cable, and connect a source of 15 - 18 volts DC to the power plug of the SC-2. The cable between the SC-2 and the receiver should be kept as short as possible, and a short ground strap should connect the two chassis, in order to minimize 14 MHz interference.

Set the slide switch on the SC-2 to 144. 144 MHz signals will be received with the receiver tuned to 14 MHz. Changing the slide switch to 145 position selects an alternate local oscillator crystal, and allows reception of 145 MHz signals with the receiver tuned to 14 MHz.

ALIGNMENT

Alignment of the SC-2 Converter requires precision equipment and a working knowledge of bandpass alignment procedures. The minimum equipment required for satisfactory alignment includes a sweep generator, a sensitive oscilloscope, a signal generator with a calibrated attenuator (such as the Hewlett-Packard 608-D), a marker generator, a video detector, and 50 ohm attenuators to properly terminate the input and output circuits of the converter.

Any attempt at peaking the adjustments on a signal will result in the destruction of the 4 MHz bandpass characteristic.

The converter may be returned to the factory for alignment for a fixed charge of $5.00 plus postage. The factory alignment procedure is available upon request.

Alignment of the local oscillator injection system (L4, C26 and C27) may be accomplished without affecting the bandpass alignment of the converter. These elements are adjusted so that the gain of the converter is the same with the slide switch in either the 144 or 145 position (See Figure 1, Page 6).

ACCESSORIES

Accessories available for use with the SC-2 include a matching power supply (Model CPS-1), a VHF calibrator (Model SCC-1), and a converter mounting console (Model CC-1). The CC-1 has provisions for mounting the CPS-1, the SCC-1, the SC-2, the SC-6 6 meter converter, and a spare position for an extra converter. These accessories are available from your dealer.

OPERATION WITH R-4B AND 2-C RECEIVERS

Table 1, Page 5, gives the combination of receiver crystals, I.F. tuning range, and 2 meter input frequencies for use with the R-4B and 2-C Receivers.

FM INTERFERENCE

The tunable FM trap which consists of L1 and C4 may be used to reject interference from strong FM stations. Adjust C4 for minimum interference.

	144.0	145.0	2 METER BAND (MHz) 146.0		147.0	148.0
CONVERTER SWITCH 144	RECEIVER FREQUENCY (MHz)	14.0-14.5	14.5-15.0	16.0-16.5	16.5-17.0	
	R-4B CRYSTAL (MHz)	25.1*	25.6*	27.1	27.6	
CONVERTER SWITCH 145	RECEIVER FREQUENCY		14.0-14.5	14.5-15.0		16.0-16.5	16.5-17.0
	R-4B CRYSTAL (MHz)		25.1*	25.6**		27.1	27.6

NOTE: *The 25.1 MHz crystal, supplied with the R-4B Receiver, covers 144-144.5 MHz and 145-145.5 MHz.
**The 25.6 MHz crystal along with the 25.1 MHz crystal covers 144 to 146 MHz.
Auxiliary crystals 27.1 and 27.6 MHz, along with the 25.1 and 25.6 MHz crystals will cover the entire 2 meter band.

FOR DRAKE MODEL R-4B RECEIVER

	144.0	145.0	2 METER BAND (MHz) 146.0		147.0	148.0
CONVERTER SWITCH 144	RECEIVER FREQUENCY (MHz)	14.0-14.5	14.5-15.0	16.0-16.5	16.5-17.0	
	2-C CRYSTAL (MHz)	18.0*	18.5*	20.0	20.5	
CONVERTER SWITCH 145	RECEIVER FREQUENCY (MHz)		14.0-14.5	14.5-15.0		16.0-16.5	16.5-17.0
	2-C CRYSTAL (MHz)		18.0*	18.5**		20.0	20.5

NOTE: * The 18.0 MHz crystal, supplied with the 2-C Receiver, covers 144-144.5 MHz and 145-145.5 MHz.
** The 18.5 MHz crystal, along with the 18.0 MHz crystal covers 144 to 146 MHz.
Auxiliary crystals, 20.0 and 20.5 MHz, along with the 18.0 and 18.5 MHz crystals will cover entire 2 meter band.

FOR DRAKE MODEL 2-C RECEIVER

TABLE I

FREQUENCY READOUT CHART

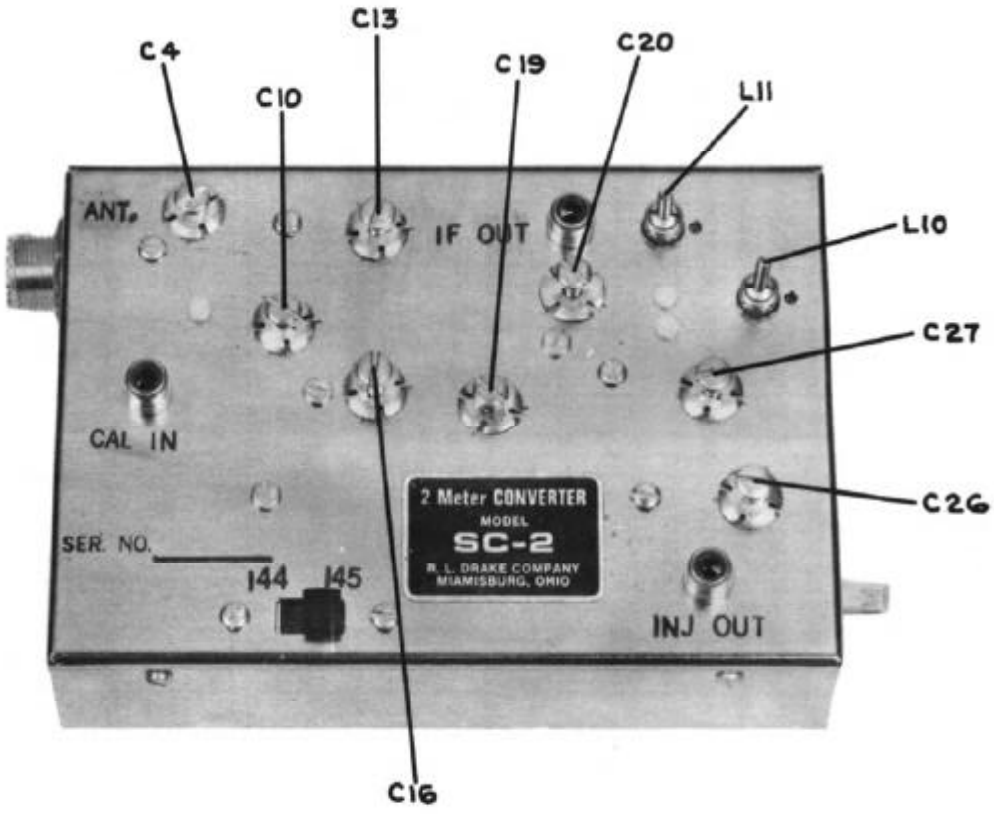
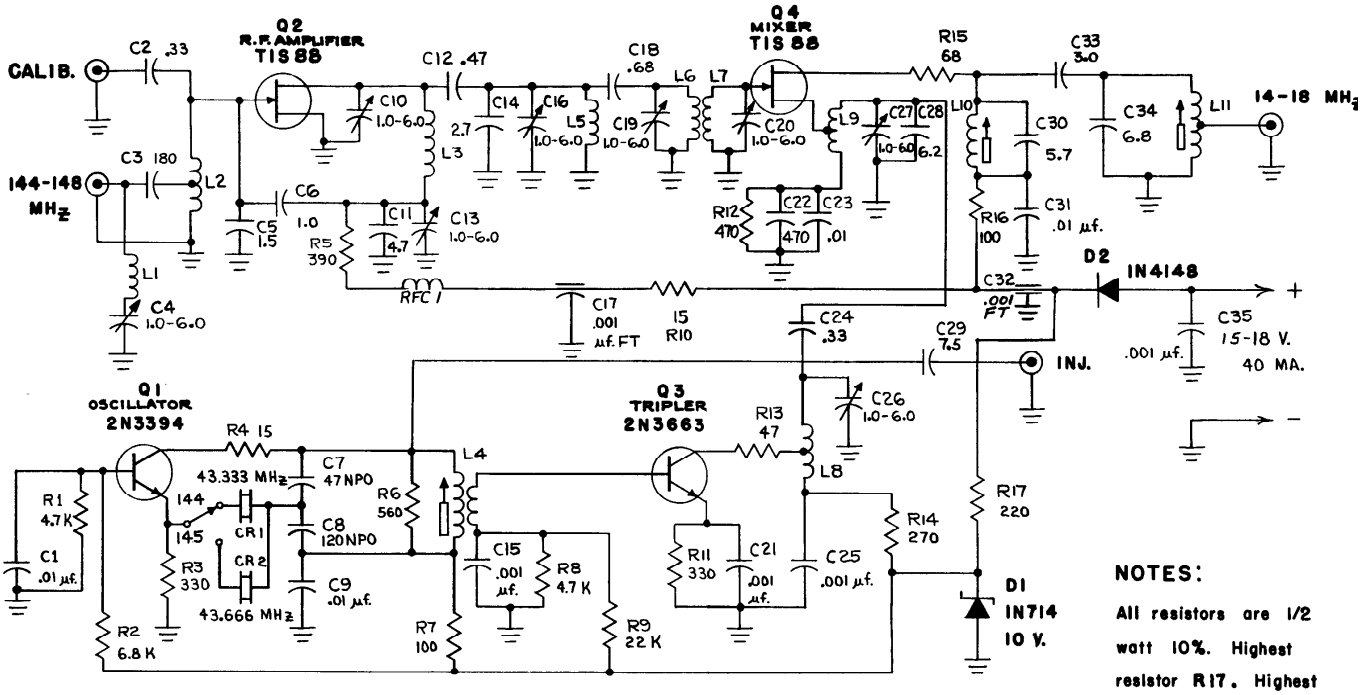


FIGURE 1

TUNING CONTROLS



SCHEMATIC DIAGRAM MODEL SC-2 CONVERTER

NOTES:

All resistors are 1/2 watt 10%. Highest resistor R17. Highest capacitor C35. All capacitors are in pf unless otherwise noted.