



# 399B - 4

## Novice Adapter

### instruction sheet

Collins Radio Company, Cedar Rapids, Iowa

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### 1. DESCRIPTION

The 399B-4 Novice Adapter, shown in figure 1, is a crystal-controlled oscillator which is used for frequency control in place of the vfo in 32S series transmitters. Sockets are provided

for four crystals which are selectable by a switch. The frequency range of crystals required is from 2.5 MHz to 2.7 MHz which is the frequency range of the vfo. Installation hardware is supplied and listed in table 1.

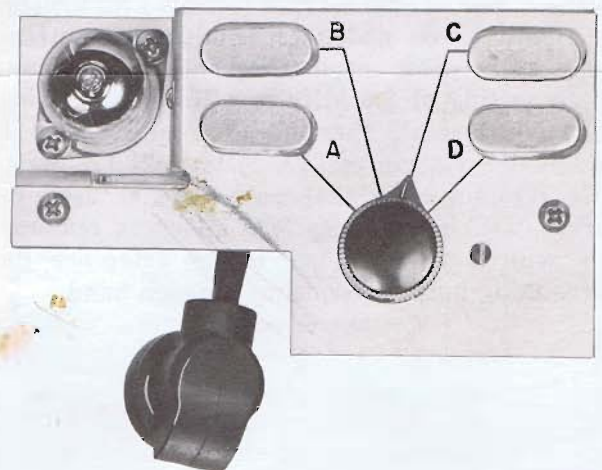
Table 1. Hardware Supplied with 399B-4.

QTY	ITEM	FUNCTION	PART NUMBER
1	Mounting plate	Mount 399B-4 chassis	549-3185-002
2	No 6 hexnut	Hold mounting plate on vfo	313-0053-00
2	No 6 lockwasher	Use with #6 nuts	310-0282-00
2	No 6 flat washer	Use with #6 nuts	310-0055-00
2	4-40 X 1/4-inch screw	Hold 399B-4 to mounting plate	343-0285-00
2	No 4 lockwasher	Use with #4 screws	310-0279-00

### 2. INSTALLATION

To install the 399B-4 in a 32S series transmitter, disconnect power from the transmitter and proceed as follows:

- Remove the mounting plate from the bag of hardware. Place the plate on the back of the vfo mounting bracket so that the tabs containing the captive nuts point toward the front panel and the vfo mounting screws protrude through the holes in the plate.
- Place a number 6 flat washer, a number 6 lockwasher, and a 6-32 nut on each of the two vfo mounting screws and tighten.
- Remove the 6AU6 tube from the transmitter vfo, and install the tube in the 399B-4.
- Place the 399B-4 into position on its mounting bracket so that the lettering reads properly when viewed from the front of the transmitter.
- Place a number 4 lockwasher on each of the two 4-40 X 1/4-inch screws. Install the screws through the holes in the 399B-4



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Figure 1. 399B-4 Novice Adapter, Top View.

chassis into the captive nuts on the mounting plate and tighten.

- f. Plug P301 into the vfo tube socket, and restore power to the transmitter. This completes installation.

### 3. OPERATION

Select four crystals for the desired output frequencies and plug them into appropriate sockets in the 399B-4. Available crystals are listed in the parts list. To calculate the crystal frequency required for the 32S-1 and 32S-2 transmitter output frequencies, subtract from 2700 kHz the normal transmitter dial reading for that output frequency. For example, if the desired output frequency is 3730 kHz, the band switch is set to 3.6 MHz and the dial to 130 kHz. The dial reading, 130 kHz, subtracted from 2700 kHz equals 2570 kHz which is the required crystal frequency. In operation, the dial is used only as an aid to determine required crystal frequencies. The dial setting does not affect output frequency.

To calculate the crystal frequency for the 32S-3 only, subtract the dial reading from 2698.5 kHz.

Each transmitter band-switch setting will provide a different transmitter output frequency with a specific crystal. To calculate the transmitter output frequency on each band, subtract the crystal frequency from 2700 kHz. The resulting kilohertz reading added to the band-switch setting is the transmitter output frequency. For example, with a 2585-kHz crystal the figure to be added to band-switch setting is 115 kHz. The output frequency for a band-switch setting of 3.6 MHz is 3.715 MHz. Using the same crystal, the output frequency for a band-switch setting of 21.0 MHz is 21.115 MHz. It is recommended that each crystal used be marked with the appropriate kilohertz reading. This will serve as a convenient reference for determining output frequency on each band.

#### Caution

The 399B-4 is not recommended for use with any of the 32S-( ) series transmitters in phone operation. There might be some variation from marked frequency on the hf crystals due to manufacturing tolerances (0.001 percent) which will introduce sufficient error into the operating frequency so that netting with other stations may be difficult. However, if used with the 32S-( ) series transmitters in phone operation, subtract the dial reading from 2698.65 kHz for usb, or 2710.35 kHz for lsb, to calculate the crystal frequency.

#### Note

To minimize any possibility of illegal out-of-band operation, it is recommended that crystals be chosen so that transmitter output frequencies are not less than 3 kHz from the edge of a band.

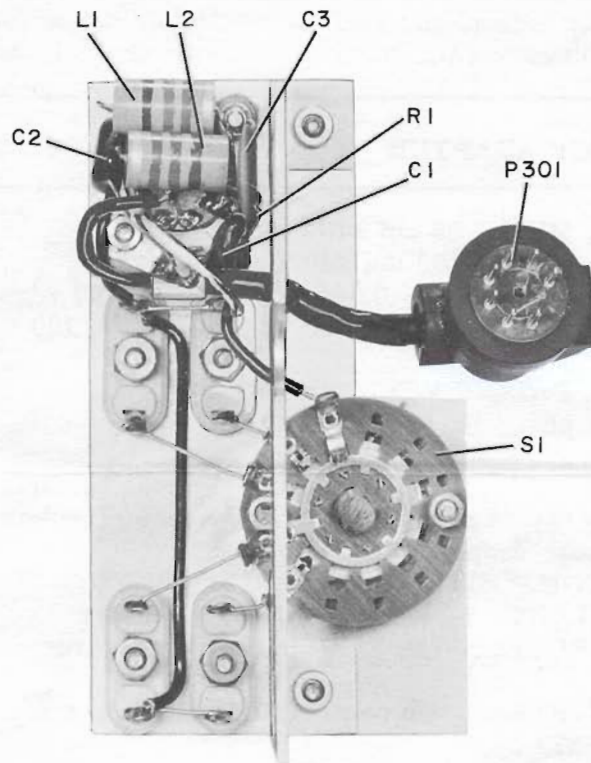
To operate, proceed as follows:

- a. Set receiver and transmitter band switches to the desired band, select a crystal in the 399B-4 for the desired transmit frequency, and set the receiver tuning to the transmit frequency.
- b. Tune and load the transmitter according to its instruction book except keep MIC GAIN low so that pa plate current does not exceed 90 mA. This keeps power input within the legal limit of 75 watts for novice licensees.

#### Note

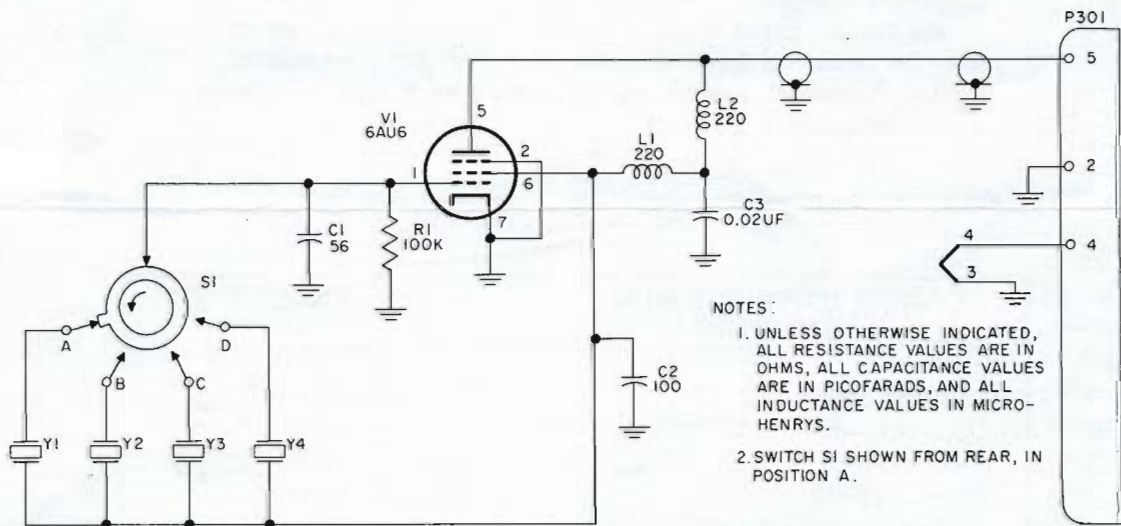
Do not connect receiver and transmitter for transceive operation, since this would result in the transmitter frequency being controlled by the receiver vfo.





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Figure 2. 399B-4 Bottom View, Parts Location.



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Figure 3. 399B-4 Schematic Diagram.

## 4. PARTS LIST

ITEM	DESCRIPTION	COLLINS PART NUMBER
399B-4 NOVICE ADAPTER		522-1780-00
C1	CAPACITOR, MICA: 56 uuf $\pm 10\%$ , 500 vdcw	912-2799-00
C2	CAPACITOR, MICA: 100 uuf $\pm 10\%$ , 500 vdcw	912-2817-00
C3	CAPACITOR, CERAMIC: .02 uf $-20\%$ $+100\%$ , 500 vdcw	913-2142-00
L1	COIL, RADIO FREQUENCY: 220 uh inductance, 100 ma current	240-0198-00
L2	COIL, RADIO FREQUENCY: same as L2	240-0198-00
O1	KNOB: black phenolic, brass insert for 1/4 in. shaft, 13/32 in. by 1 in. dia; 8-32 setscrew	281-0069-00
P301	CONNECTOR, PLUG, ELECTRICAL: 7 male contacts, w/ molded-in strain relief post & side opening rubber plug cap, 5 amp; Amphenol part no 86-894	372-5112-00
R1	RESISTOR, COMPOSITION: .1 megohm $\pm 10\%$ , 1/2 w	745-1436-00
S1	SWITCH, ROTARY: 1 pole, 4 position, 1 section	259-1555-00
XV1	SOCKET, ELECTRON TUBE: 7 contact miniature tube socket	220-1152-00
XY1	SOCKET, CRYSTAL: two contact, 0.486 in c to c; Eby part no 8879	292-0082-00
XY2 thru XY4	SOCKET, CRYSTAL: same as XY1	292-0082-00

Crystals available from Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa. (Other crystals may be ordered from crystal manufacturer -- specify CR18/U holder, operating capacity 32 pF and frequency on antiresonant mode.)

## CRYSTALS AVAILABLE FOR USE IN 399B-4

COLLINS PART NUMBER	FREQUENCY (kHz)
289-2879-00	2520
289-2889-00	2530
289-2899-00	2540
289-2919-00	2560
289-2929-00	2570
289-2939-00	2580