

399B-5 NOVICE ADAPTER

1.1 DESCRIPTION.

The 399B-5 Novice Adapter is a crystal-controlled oscillator which is used in place of the vfo to control the transmit frequency in KWM-2 or KWM-2A Transceivers. Sockets are provided for four crystals which are selectable by a switch on the 399B-5. The receive frequency is controlled at all times by the KWM-2/2A vfo. If desired, the 399B-5 can be used as a dx adapter. A fifth position of the crystal switch in the

399B-5 returns control of the transmitted frequency to the vfo in the KWM-2/2A. Installation hardware is supplied and listed in table I.

NOTE

If the 399B-5 is to be installed in a KWM-2/2A in which a 136B-2 Noise Blanker is installed, the 136B-2 must be reoriented to provide space between the vfo and PA compartment.

TABLE I. HARDWARE FURNISHED WITH 399B-5

QTY	ITEM	FUNCTION	PART NUMBER
1	Mounting plate	Supports 399B-5 at rear of vfo	549-3187-003
2	4-40 x 1/4-inch screw	Holds 399B-5 to mounting plate	343-0285-00
1	4-40 x 7/16-inch screw	Holds 399B-5 to PA compartment	343-0288-00
3	No. 6 flat washer	Use with no. 4 screws	310-0447-00
3	No. 4 lock washer	Use with no. 4 screws	310-0279-00
2	No. 4 flat washer	Use with no. 4 screws	310-0054-00
1	4-40 hex nut	Use with 4-40 x 7/16-inch screw	313-0156-00
2	6-32 hex nut	Holds mounting plate to vfo	313-0053-00
2	No. 6 lock washer	Use with 6-32 nuts	310-0282-00

2.1 INSTALLATION.

To install the 399B-5 in a KWM-2 or KWM-2A Transceiver, disconnect all power to the transceiver, remove the top cover from the PA compartment, and proceed as follows:

a. Remove the mounting plate from the bag of hardware, and place it on the back of the vfo mounting

bracket so that the lip containing the two captive nuts points toward the transceiver front panel. Figure 1 shows the mounting plate in place at the rear of the vfo mounting bracket.

b. Place a number 6 flat washer, a number 6 lock washer, and a 6-32 hex nut on each of the two vfo mounting screws. Align the mounting plate so that the lip containing the captive nuts is level, and tighten the nuts.



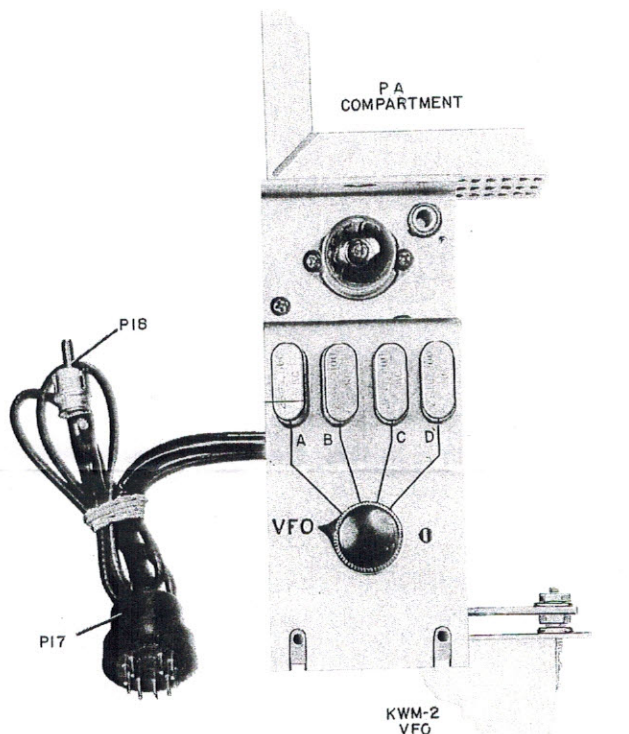


Figure 1. 399B-5 Installed in KWM-2

C487-39-P

c. Remove the molded jumper plug from J17, VFO EXT POWER on the KWM-2/2A chassis, and plug P17 from the 399B-5 into this jack.

CAUTION

Be careful not to plug P17 into the noise blanker power jack, J24. Doing so will damage the equipment.

d. Position the 399B-5 on the KWM-2/2A chassis as shown in figure 1.

e. Place a number 4 lock washer and a number 4 flat washer on each of the two 4-40 x 1/4-inch screws, and insert into the captive nuts on top of the mounting plate. Do not tighten at this time.

f. Place a number 4 lock washer and a number 6 flat washer on the 4-40 x 7/16-inch screw supplied. Insert this assembly through the rear hole in the 399B-5 chassis and one of the holes in the side of the PA compartment. Install a 4-40 hex nut and tighten.

g. Tighten the two screws holding the front of the 399B-5 chassis to the mounting plate.

h. Run the coaxial cable from the 399B-5 through the hole in the rear of the KWM-2/2A cabinet, and

plug P18 into the EXT VFO jack on the transceiver chassis.

i. Replace the PA compartment top cover, and restore power to the transceiver. This completes installation.

3.1 OPERATION.

Select four crystals for the desired output frequencies, and plug the crystals into appropriate sockets in the 399B-5. To calculate the crystal frequency required for a specific transmitter output frequency, subtract from 2700 kilocycles the dial reading in kilocycles for that output frequency. For example, if the desired output frequency is 3730 kc, the bandswitch is set to 3.6 mc and the dial to 130 kc. The dial reading, 130 kc, subtracted from 2700 kc equals 2570 kc which is the required crystal frequency.

To calculate the transmitter output frequency on each band for a specific crystal in the 2500- to 2700-kc total range, subtract the crystal frequency from 2700 kc. This gives the dial reading which added to the bandswitch setting gives the transmitter output frequency. For example, the dial reading for a 2585-kc crystal is 115 kc. The transmitter output frequency for a bandswitch setting of 3.6 mc is 3.715 mc. The corresponding output frequency for a bandswitch setting of 21.0 mc is 21.115 mc. If desired, each crystal used can be marked with the appropriate dial reading to be added to the bandswitch setting. This will serve as a convenient reference for determining output frequency on each of the various bands. For operation outside the normal amateur bands, refer to general coverage instructions in the KWM-2/2A Instruction Book.

NOTE

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

To operate, proceed as follows:

a. Select a crystal in the 399B-5 for the desired transmit frequency, and set the KWM-2/2A tuning dial to the corresponding reading as described in the preceding paragraph. The receive frequency then will be approximately the same as the transmit frequency. When using CW, the transmit frequency will be approximately 1.5 kc higher.

b. Tune and load according to the KWM-2/2A Instruction Book, except for novice operation, keep MIC GAIN low so that PA plate current does not exceed 90 ma. This keeps power input within the legal limit for novice licensees.

c. After the transceiver is tuned for a specific crystal frequency, do not peak EXCITER TUNING on received signals. The receiver may be tuned away

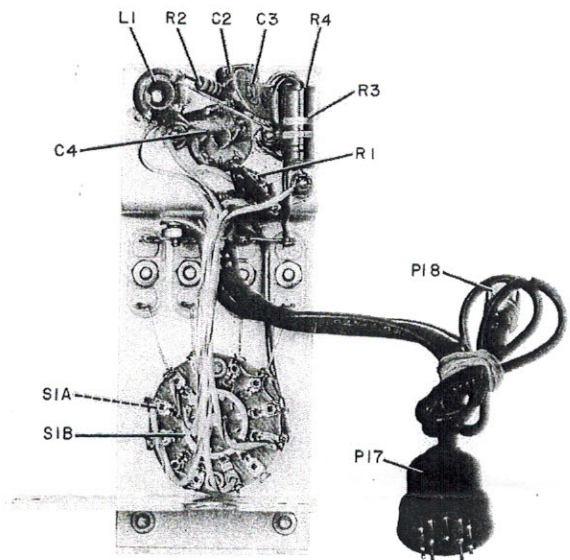
from the transmit frequency at will; however, receiver sensitivity will gradually deteriorate as the frequency separation is increased. In most instances, the usable separation will cover a small portion of a 200-kc band at low frequencies and most of a band at high frequencies.

4.1 MAINTENANCE.

When the oscillator tube V1 in the 399B-5 is replaced, check the tuning of L1 as follows:

- Connect a suitable dummy load to the KWM-2/2A.
- Set the selector switch in the 399B-5 to VFO and the KWM-2/2A tuning dial to 100.
- Set EMISSION switch to TUNE, and meter switch to GRID.
- Advance MIC GAIN slightly, and peak EXCITER TUNING for maximum grid current indication. Reduce setting of MIC GAIN so that grid current peaks at about 1/3 scale on the meter.
- Peak L1 in the 399B-5 for maximum grid current indication on the meter.

5.1 PARTS LIST.



C487-40-P

Figure 2. 399B-5 Bottom View, Parts Location

399B-5 NOVICE ADAPTER

ITEM	DESCRIPTION	COLLINS PART NUMBER
	399B-5 NOVICE ADAPTER	522-1781-00
C1	CAPACITOR, MICA: 15 uuf $\pm 10\%$, 500 vdcw	912-2760-00
C2	CAPACITOR, MICA: 100 uuf $\pm 10\%$, 500 vdcw	912-2817-00
C3	CAPACITOR, CERAMIC: .02 uf -20% +100%, 500 vdcw	913-2142-00
C4	CAPACITOR, CERAMIC: same as C3	913-2142-00
L1	TRANSFORMER, RADIO FREQUENCY: 260-500 uh; 158 turns tapped 150 turns from start	240-0665-00
O1	KNOB: black phenolic, brass insert for 1/4 in. shaft, 13/32 in. by 1 in. dia, 8-32 setscrew	281-0069-00
P17	CONNECTOR, PLUG, ELECTRICAL: 9 male contacts, for use w/ miniature tube socket; Amphenol part no. 86-897	372-1822-00
P18	PLUG, TIP: phono type; 1 terminal, 1-1/4 in. lg; Switchcraft part no. 3501MC	361-0062-00

ITEM	DESCRIPTION	COLLINS PART NUMBER
R1	RESISTOR, COMPOSITION: .10 megohm $\pm 10\%$, 1/2 w	745-1436-00
R2	RESISTOR, COMPOSITION: 33,000 ohms $\pm 10\%$, 1/2 w	745-1415-00
R3	RESISTOR, COMPOSITION: 15,000 ohms $\pm 10\%$, 2 w	745-5701-00
R4	RESISTOR, COMPOSITION: 33,000 ohms $\pm 10\%$, 2 w	745-5715-00
S1	SWITCH, ROTARY: 2 pole, 5 position, 2 section	259-1593-00
V1	ELECTRON TUBE: type 6AU6	255-0202-00
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 FOR USE IN 399B-5:

COLLINS PART NUMBER	FREQUENCY KC	COLLINS PART NUMBER	FREQUENCY KC	COLLINS PART NUMBER	FREQUENCY KC	COLLINS PART NUMBER	FREQUENCY KC	COLLINS PART NUMBER	FREQUENCY KC
289-2859-00	2500.000	289-2882-00	2523.000	289-2905-00	2546.000	289-2928-00	2569.000	289-2951-00	2592.000
289-2860-00	2501.000	289-2883-00	2524.000	289-2906-00	2547.000	289-2929-00	2570.000	289-2952-00	2593.000
289-2861-00	2502.000	289-2884-00	2525.000	289-2907-00	2548.000	289-2930-00	2571.000	289-2953-00	2594.000
289-2862-00	2503.000	289-2885-00	2526.000	289-2908-00	2549.000	289-2931-00	2572.000	289-2954-00	2595.000
289-2863-00	2504.000	289-2886-00	2527.000	289-2909-00	2550.000	289-2932-00	2573.000	289-2955-00	2596.000
289-2864-00	2505.000	289-2887-00	2528.000	289-2910-00	2551.000	289-2933-00	2574.000	289-2956-00	2597.000
289-2865-00	2506.000	289-2888-00	2529.000	289-2911-00	2552.000	289-2934-00	2575.000	289-2957-00	2598.000
289-2866-00	2507.000	289-2889-00	2530.000	289-2912-00	2553.000	289-2935-00	2576.000	289-2958-00	2599.000
289-2867-00	2508.000	289-2890-00	2531.000	289-2913-00	2554.000	289-2936-00	2577.000	289-2959-00	2600.000
289-2868-00	2509.000	289-2891-00	2532.000	289-2914-00	2555.000	289-2937-00	2578.000	289-2960-00	2601.000
289-2869-00	2510.000	289-2892-00	2533.000	289-2915-00	2556.000	289-2938-00	2579.000	289-2961-00	2602.000
289-2870-00	2511.000	289-2893-00	2534.000	289-2916-00	2557.000	289-2939-00	2580.000	289-2962-00	2603.000
289-2871-00	2512.000	289-2894-00	2535.000	289-2917-00	2558.000	289-2940-00	2581.000	289-2963-00	2604.000
289-2872-00	2513.000	289-2895-00	2536.000	289-2918-00	2559.000	289-2941-00	2582.000	289-2964-00	2605.000
289-2873-00	2514.000	289-2896-00	2537.000	289-2919-00	2560.000	289-2942-00	2583.000	289-2965-00	2606.000
289-2874-00	2515.000	289-2897-00	2538.000	289-2920-00	2561.000	289-2943-00	2584.000	289-2966-00	2607.000
289-2875-00	2516.000	289-2898-00	2539.000	289-2921-00	2562.000	289-2944-00	2585.000	289-2967-00	2608.000
289-2876-00	2517.000	289-2899-00	2540.000	289-2922-00	2563.000	289-2945-00	2586.000	289-2968-00	2609.000
289-2877-00	2518.000	289-2900-00	2541.000	289-2923-00	2564.000	289-2946-00	2587.000	289-2969-00	2610.000
289-2878-00	2519.000	289-2901-00	2542.000	289-2924-00	2565.000	289-2947-00	2588.000	289-2970-00	2611.000
289-2879-00	2520.000	289-2902-00	2543.000	289-2925-00	2566.000	289-2948-00	2589.000	289-2971-00	2612.000
289-2880-00	2521.000	289-2903-00	2544.000	289-2926-00	2567.000	289-2949-00	2590.000	289-2972-00	2613.000
289-2881-00	2522.000	289-2904-00	2545.000	289-2927-00	2568.000	289-2950-00	2591.000	289-2973-00	2614.000

COLLINS PART NUMBER	FREQUENCY KC	COLLINS PART NUMBER	FREQUENCY KC	COLLINS PART NUMBER	FREQUENCY KC	COLLINS PART NUMBER	FREQUENCY KC	COLLINS PART NUMBER	FREQUENCY KC
289-2974-00	2615.000	289-2991-00	2632.000	289-3008-00	2649.000	289-3025-00	2666.000	289-3042-00	2683.000
289-2975-00	2616.000	289-2992-00	2633.000	289-3009-00	2650.000	289-3026-00	2667.000	289-3043-00	2684.000
289-2976-00	2617.000	289-2993-00	2634.000	289-3010-00	2651.000	289-3027-00	2668.000	289-3044-00	2685.000
289-2977-00	2618.000	289-2994-00	2635.000	289-3011-00	2652.000	289-3028-00	2669.000	289-3045-00	2686.000
289-2978-00	2619.000	289-2995-00	2636.000	289-3012-00	2653.000	289-3029-00	2670.000	289-3046-00	2687.000
289-2979-00	2620.000	289-2996-00	2637.000	289-3013-00	2654.000	289-3030-00	2671.000	289-3047-00	2688.000
289-2980-00	2621.000	289-2997-00	2638.000	289-3014-00	2655.000	289-3031-00	2672.000	289-3048-00	2689.000
289-2981-00	2622.000	289-2998-00	2639.000	289-3015-00	2656.000	289-3032-00	2673.000	289-3049-00	2690.000
289-2982-00	2623.000	289-2999-00	2640.000	289-3016-00	2657.000	289-3033-00	2674.000	289-3050-00	2691.000
289-2983-00	2624.000	289-3000-00	2641.000	289-3017-00	2658.000	289-3034-00	2675.000	289-3051-00	2692.000
289-2984-00	2625.000	289-3001-00	2642.000	289-3018-00	2659.000	289-3035-00	2676.000	289-3052-00	2693.000
289-2985-00	2626.000	289-3002-00	2643.000	289-3019-00	2660.000	289-3036-00	2677.000	289-3053-00	2694.000
289-2986-00	2627.000	289-3003-00	2644.000	289-3020-00	2661.000	289-3037-00	2678.000	289-3054-00	2695.000
289-2987-00	2628.000	289-3004-00	2645.000	289-3021-00	2662.000	289-3038-00	2679.000	289-3055-00	2696.000
289-2988-00	2629.000	289-3005-00	2646.000	289-3022-00	2663.000	289-3039-00	2680.000	289-3056-00	2697.000
289-2989-00	2630.000	289-3006-00	2647.000	289-3023-00	2664.000	289-3040-00	2681.000	289-3057-00	2698.000
289-2990-00	2631.000	289-3007-00	2648.000	289-3024-00	2665.000	289-3041-00	2682.000	289-3058-00	2699.000
								289-3059-00	2700.000

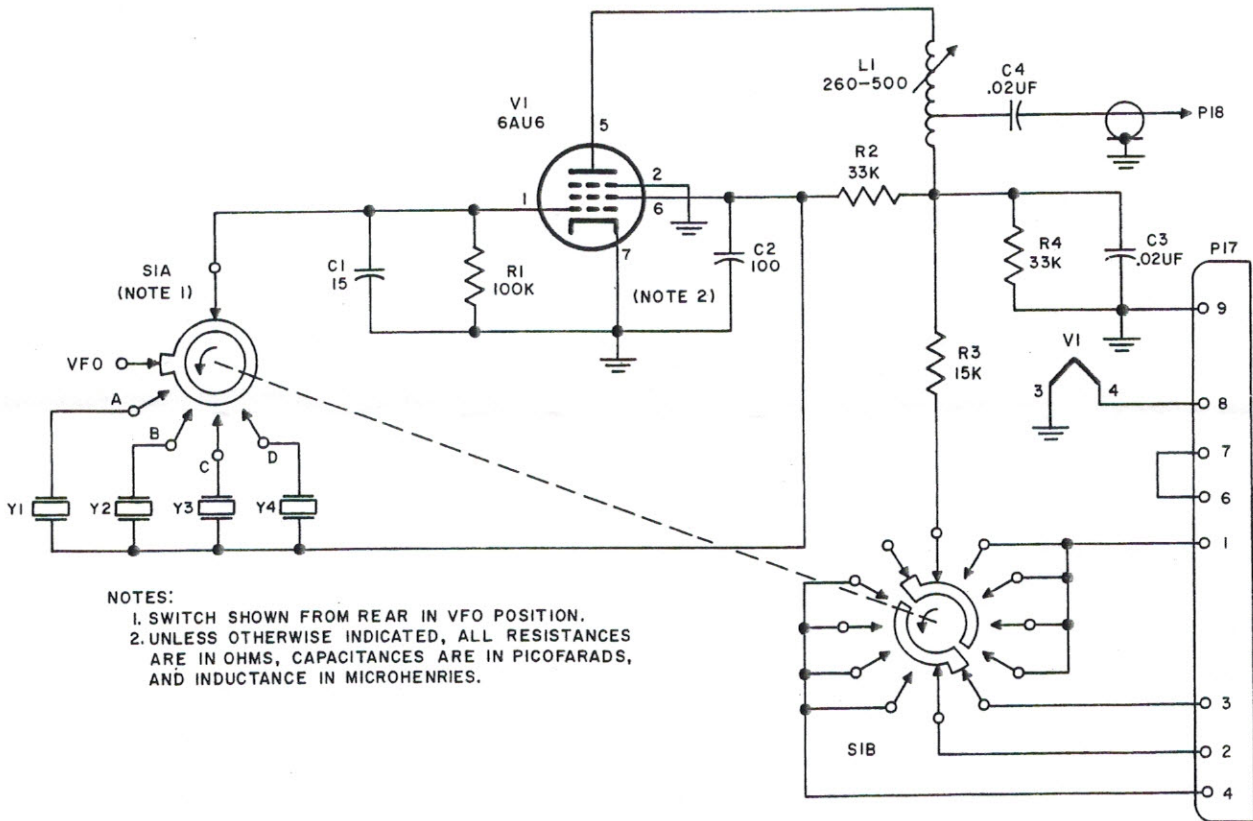


Figure 3. 399B-5 Schematic Diagram

C487-38-4