

NARCO  
UGR-2/2A GLIDESLOPE RECEIVER  
GENERAL INDEX

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\*CHANGES MADE BY THESE BULLETINS DIRECTLY AFFECT THIS MANUAL.  
ATP HAS NOT INCORPORATED THESE CHANGES INTO THE MANUAL.

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**MODIFICATION INSTRUCTIONS  
for  
UGR 2, 50 KHz KIT**

**KIT NO. 03502-0501**

**PURPOSE:** The NARCO UGR 2A is a slight modification of the UGR 2 Airborne ILS Glide Slope Receiver. It contains an additional 20 channels for a total of 40 Glide Slope channels. Primarily, the changes to the UGR 2 are the addition of a 2nd LFO Assembly and a shift of the intermediate frequency from 7.35 MHz to 7.50 MHz.

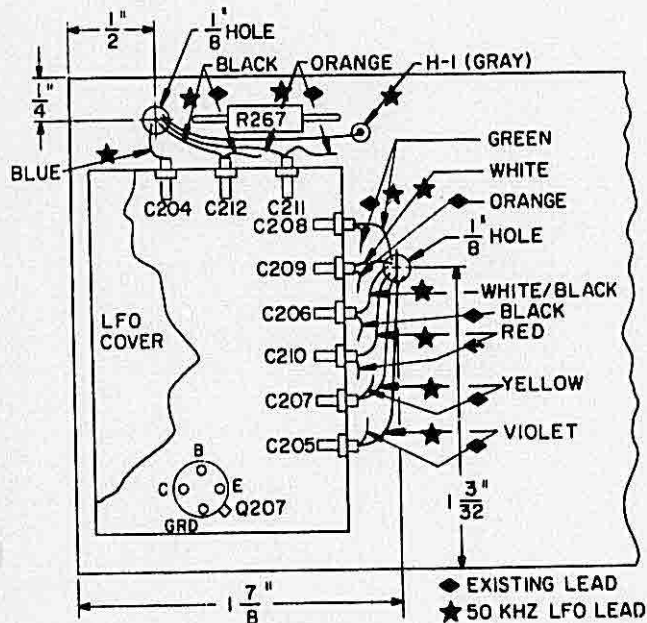
In operation, either the old or new Low Frequency Oscillator is used. The oscillator which is activated is determined by a control wire from the NAV/COM radio to which the UGR 2A is slaved.

**PARTS SUPPLIED**

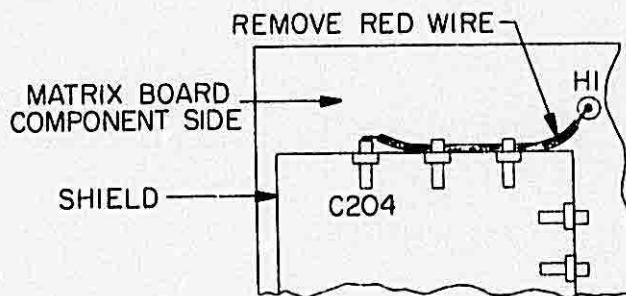
Narco Part No.	Description
01166-0101	50 KHz LFO Assembly
04429-0001	LABEL, UGR 2A
22041-0004 (C519)	Capacitor, Variable, Trimmer, 5-18pf
11485-0009 (L118)	Choke, RF, 47 $\mu$ h $\pm$ 10%
11485-0001 (L506)	Choke, RF, 0.1 $\mu$ h $\pm$ 10%
03502-0670	Modification Inst. UGR 2,50 KHz Kit

**ASSEMBLY PROCEDURE**

1. Remove UGR 2 from case.
2. Drill two  $\frac{1}{8}$ " holes in the matrix board at the points indicated in Figure 1. Use caution so as to avoid drilling thru track or wires.
3. Remove the red wire between C204 and the matrix board. (See Figure 2)



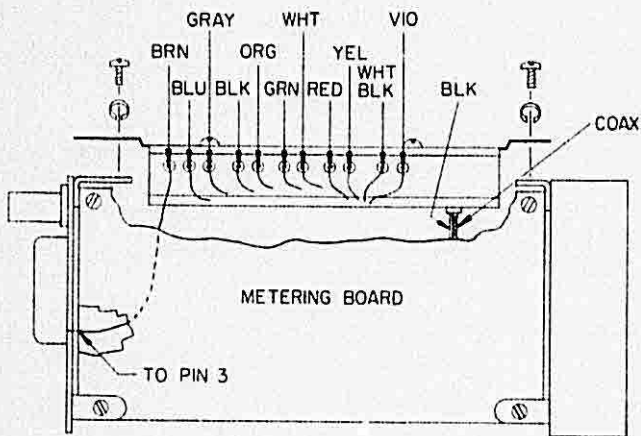
**FIGURE 1**



**FIGURE 2**

## MODIFICATION INSTRUCTIONS — 03502-0670

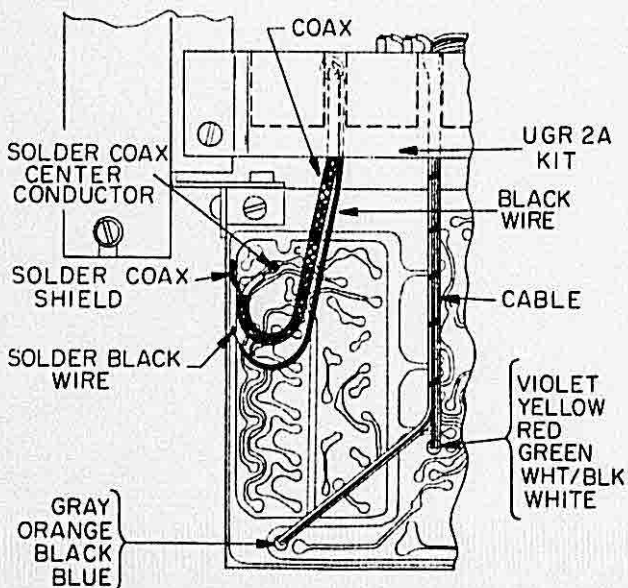
4. Install the new assembly, P/N 01166-0101, into the UGR 2 that is being modified. (See Figure 3)



**FIGURE 3**

5. Feed the ten wires thru the holes in the matrix board and connect them to the feedthru capacitors and H-1 as shown in Figure 1.
6. Connect the coaxial cable center conductor to Q207's collector and solder the shield and the black wire to ground. (See Figure 4)

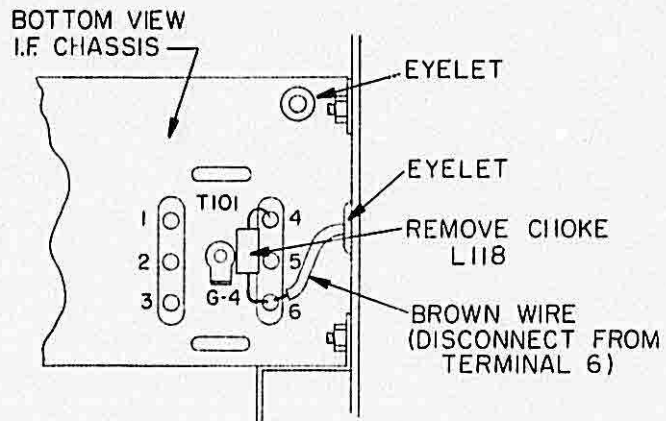
**CAUTION:** Route shield to avoid shorting to track!



**FIGURE 4**

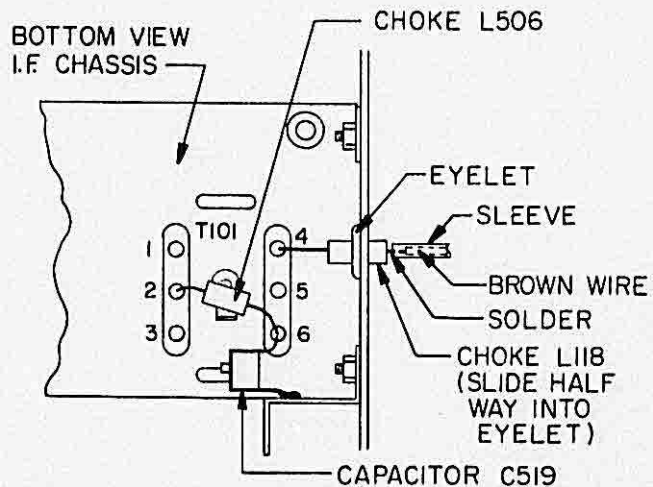
7. Solder the BROWN wire to Pin 3 of the rear connector. (See Figure 3)

8. Clip out L118 from the UGR 2 and discard it. (See Figure 5) DO NOT CUT BROWN WIRE.



**FIGURE 5**

9. Cut one end of the new L118, P/N 11485-0009, (.47  $\mu$ h) to 3/16" from the body. Disconnect the brown wire from terminal 6 of T101. Slip a small piece of plastic sleeving onto the brown wire. Solder the 3/16" choke lead to the brown wire. Slip the sleeving over the joint. Carefully push the brown wire along with the sleeving and the choke into the eyelet until just half of the choke can be seen. (See Figure 6) Attach the exposed end of L118 to terminal 4 of T101. Dress the choke so that it comes straight out of the eyelet to T101.



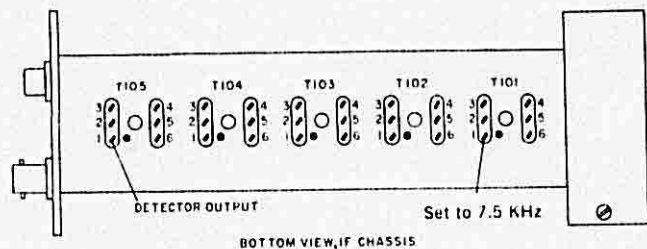
**FIGURE 6**

10. Connect L506, P/N 11485-0001 (0.1 $\mu$ h) between T101, Pin 2 and T101, Pin 6. (See Figure 6)
11. Connect C519, P/N 22041-0004 (5-18pf) between T101, Pin 6 and the ground as shown. (See Figure 6).

## ALIGNMENT PROCEDURE

It is necessary to realign the intermediate frequency from 7.35 MHz to 7.5 MHz. This is accomplished as follows:

Refer to Figure 7.



SI-07212

FIGURE 7

1. Connect AC VTVM and oscilloscope to Terminal 1 of T105.
2. Connect the RF signal generator to the base of Q103 at Terminal 1 of T101 through a .01 mfd capacitor with a 47 ohm resistor to ground on the generator side of the capacitor. Set the generator to 7.5 MHz modulated 30% by 1000 Hz. Set the input voltage to 13.75 or 27.5 volts per cable wiring.
3. Tune T102, T103, and T104 for maximum output, keeping the generator output set for approximately 0.1 volts AC detector output.
4. Tune T105 for maximum output.
5. Connect 100 ohm resistors between Terminals 5 and 6 of T102, T103, and T104. Tune the secondary slugs (slugs away from the chassis) of T104, T103, and T102 on outer peaks for maximum detector output. The generator output should be set to keep the detector level at approximately .05 volts AC. A very high signal input may be required initially to align the IF.
6. Tune T105 for maximum output using the peak having the slug closer to the chassis.
7. Remove the 100 ohm resistors and connect them between Terminals 1 and 2 of T102, T103, T104. Tune the primaries (slug nearest chassis) on outer peaks for maximum detector output.

8. Remove the 100 ohm resistors.
9. Check gain.  $8\mu\text{v}$  maximum should produce 0.1 volts AC detector output.
  - 9a. Set the channel selector to 110.70 MHz (330.20 MHz).
  - 9b. Connect a VTVM to T105, pin 1.
  - 9c. Set VTVM to measure positive DC volts.
  - 9d. With no signal applied to the UGR 2A, adjust C519 for minimum DC voltage.
10. Install the new UGR 2A label (P/N 04429-0001) over the present label.
11. Check that all hardware that was removed has been replaced and secure.

## PERFORMANCE TEST

The test set-up used to check the UGR 2 should be modified to include a grounding provision for Pin 3 of the rear connector. In all 100 KHz Localizer channels, Pin 3 is not grounded. In all 50 KHz positions, Pin 3 is grounded. After these modifications have been made to the UGR 2 set-up, performance testing may proceed as given in Section 5-9 of the Maintenance Manual.

Table 1 of this instruction gives the Localizer/Glide Slope Paired Channels.

Table 2 of this instruction gives information showing the LFO, Localizer & HFO frequencies over the complete Glide Slope frequency band and is given as a trouble-shooting aid.

