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Redco Digi-Scan UFO Manual

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DIGI-SCAN

UFO

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DIGI-SCAN

Model UFO

Operation and Installation Manual

Release Date 6-1-78

This manual applies directly to
REDCO Model U.F.O. basic Digi-Scan system.

CERTIFICATION

REDCO certifies that this instrument was thoroughly tested and inspected and found to meet the published specifications. Each unit is exposed to a minimum of 48 hours of burn in.

DISCLAIMER

REDCO'S Digi-Scan systems are manufactured as receiving systems only, and to use them for transmission in the United States is in direct violation of the Federal Communications Commission.

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1. INTRODUCTION: REDCO MODEL UFO DIGI-SCAN SYSTEM

1.1 Description:

The REDCO UFO system is designed to expand the receiver capabilities of most 40 channel PLL transceiver systems now in use. The unit is end user programmable to allow the operator to change radios at will. The UFO automatically displays the receiver frequencies with a 5 digit frequency monitor system which is continuous on both scan and step functions. The operating range of the receiver is now increased to a maximum of 28.000 MHz* in 5 KHz steps. This gives the SSB-AM operator a maximum of 1200 channels. This system should be installed by a licensed technician only.

1.2 Identification:

REDCO uses a basic numerical serial number series. Refer to the title page for any change that may affect your unit. All changes will be noted by serial number effectivity for easy reference. The serial number of the Digi-Scan is located on the rear panel.

1.3 Specifications:

Frequency range 25.995 MHz to 28.000 MHz*
in 5 KHz steps

Readout 1/2 inch high, 5 digit, 7 segment LED

Resolution least significant digit = 1 KHz

Power consumption 650 Ma. at 13.8 VDC

Size 1 1/2" x 5 3/4" x 7 1/2"

Scan rate 12 steps/sec.

Operating temperature range 10° to 50°C

Storage temperature range -40° to 75°C

**Frequency range is dependent on the type of radio used.*

2. INSTALLATION INSTRUCTIONS

2.1 For Uniden Radios (New PLL)

This section describes the installation of the UFO to new Uniden radios (MB8719 PLL).

Equipment required for installation:

1. Soldering iron (suggested 25 watts max.)
2. Wire stripper/cutter (26 gauge)
3. Phillips #1 or #2 screwdriver, and equivalent straight slot
4. Needle nose pliers (5" to 7")

Installation:

1. Remove the transceiver and the UFO cases.
2. Locate and identify the MB8719 PLL Chip—normally close to the channel selector in the transceiver.
3. Turn transceiver over and unsolder the PLL Chip and remove it.
4. Locate resistor R207, normally located next to TP9 (see Fig. 1) and cut one lead.

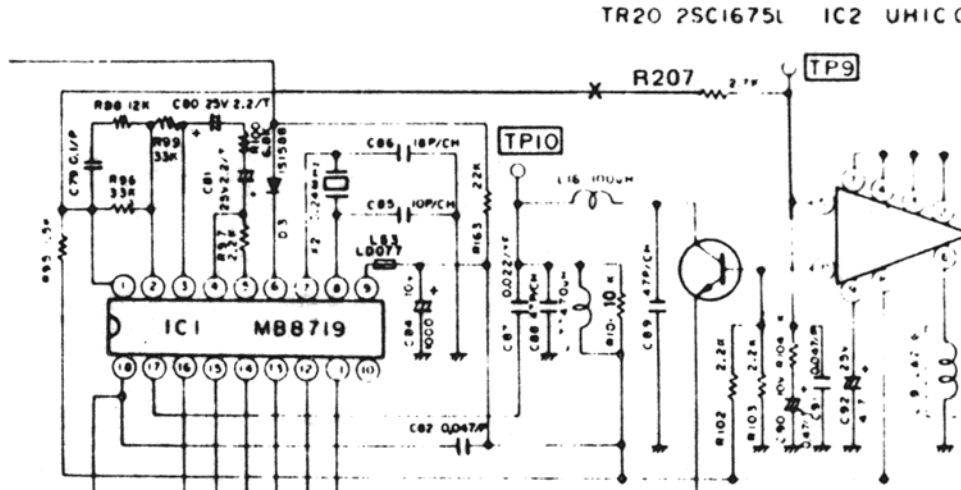


FIG. 1 — CIRCUIT DIAGRAM

5. Locate TP9 (see Fig. 2) and connect the center of coax #2 to this test point.
6. Locate TP10 (see Fig. 2) and connect the center of coax #1 to this test point.

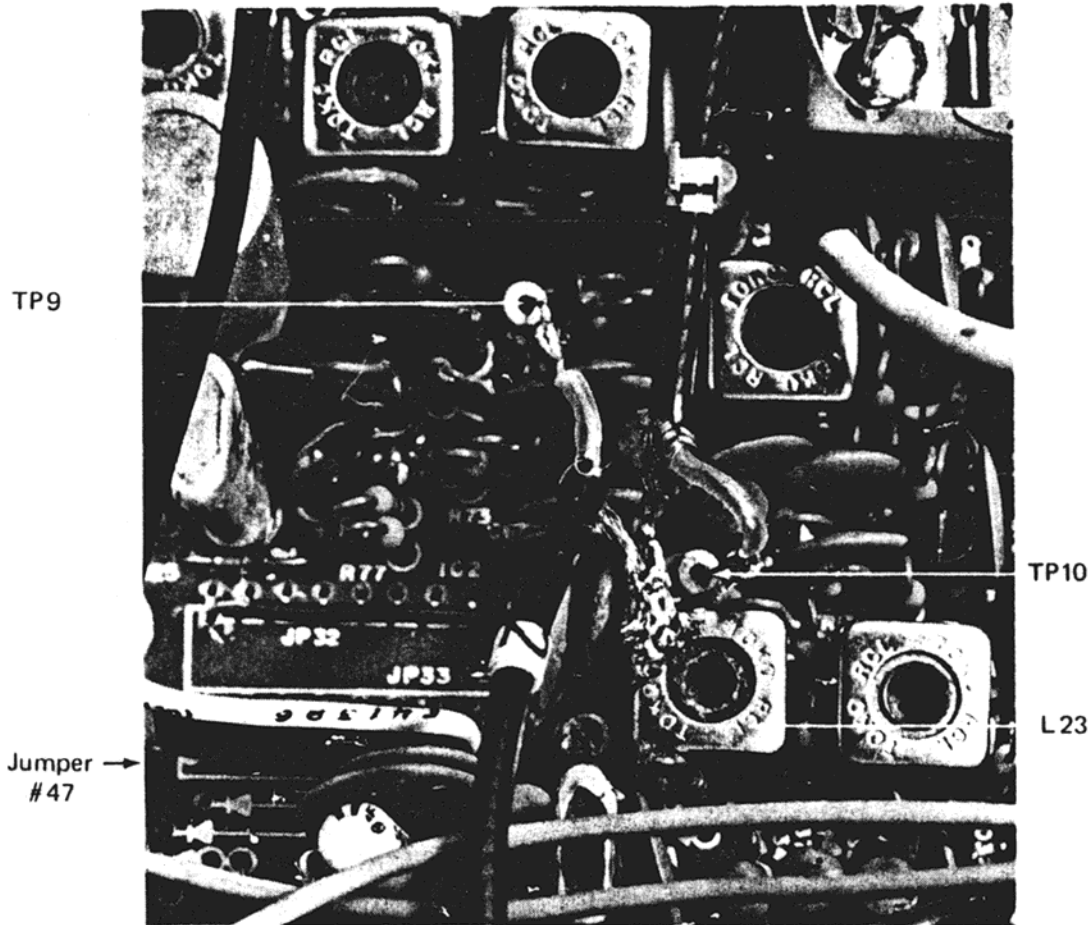


FIG. 2 — LOCATION OF TEST POINTS (MB8719 PLL)

7. Connect the ground shield of both coax cables to ground. (Example: Metal shield of L23 (see Fig. 2).
Caution: Avoid excessive heat.
8. Connect black wire from controller to any good ground point in the radio.
9. Connect the red wire to the 12 volt source in the radio. (Example: to the power switch normally located on the back of the volume control).
10. CUT THE JUMPER WIRE (see Fig. 2, labeled #47), LOCATED BEHIND THE CHANNEL SELECTOR TO COMPLY WITH FCC REGULATIONS.

The UFO is now operational and will control your receiver, but must be programmed to operate properly. Turn to the section describing programming and proceed.

2.2 For Cybernet Radios (PLL 02A)

This section describes the installation of the UFO to ALL Cybernet Radios (PLL 02A).

Equipment required for installation:

1. Soldering iron (suggested 25 watts max.)
2. Wire stripper/cutter (26 gauge)
3. Phillips #1 or #2 screwdriver, and equivalent straight slot
4. Needle nose pliers (5" to 7")

Installation:

1. Remove the transceiver and the UFO cases.
2. Locate and identify the PLL 02A Chip—normally close to the channel selector of the transceiver (*see Fig. 3*).
3. Turn transceiver over and unsolder the PLL chip and remove it. Note where pin 2 was connected.
4. Locate where pin 2 of the PLL 02A chip was connected (*see Fig. 3*) and connect the center of coax #1 to this point.

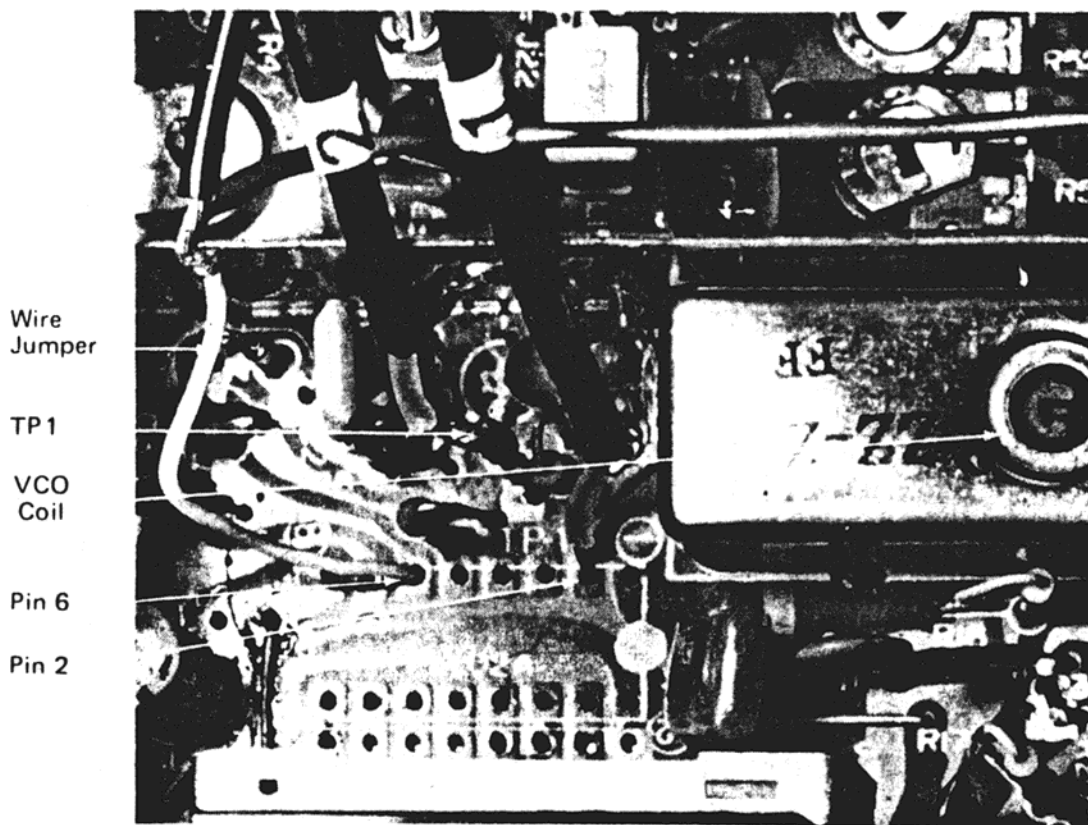


FIG. 3 — LOCATION OF TEST POINTS (PLL 02A)

5. Locate test point #1 (TP1) and connect the center of coax #2 to this point.
6. Connect the ground shield of both coax cables to ground. (Example: see *Fig. 3*). **Caution:** avoid excessive heat.

NOTE: STEPS 7 AND 8 MUST BE PERFORMED TO COMPLY WITH FCC REGULATIONS.
7. Locate where pin 6 of the PLL 02A was connected (see *Fig. 3*).
8. Install a 20-22 GA insulated wire jumper between pin 6 and any convenient ground point.
9. Connect black wire from controller to any good ground point in the radio.
10. Connect the red wire to the 12 volt source in the radio. (Example: to the power switch normally located on the back of the volume control).

The UFO is now operational and will control your receiver, but must be programmed to operate properly. Turn to the section describing programming and proceed.

2.3 For Uniden Radios (858)

This section describes the installation of the UFO to the earlier Uniden radios (PLL 858).

Equipment required for installation:

1. Soldering iron (suggested 25 watts max.)
2. Wire stripper/cutter (26 gauge)
3. Phillips #1 or #2 screwdriver, and equivalent straight slot
4. Needle nose pliers (5" to 7")

Installation:

1. Remove the transceiver and UFO cases.
2. Refer to *Fig. 5* and remove and discard the 3 filter capacitors in the UFO as shown.
3. Locate and identify Pin 11 of the PLL Chip — normally close to the channel selector in the transceiver (See *Fig. 4*). Solder the center of coax #1 to Pin 11 of the D858 PLL Chip. Use caution and avoid excessive heat as it will damage the PLL Chip.
4. Locate and identify R158 15K ohm resistor that connects Pin 2 of D858 and Pin 3. (See *Fig. 4*)

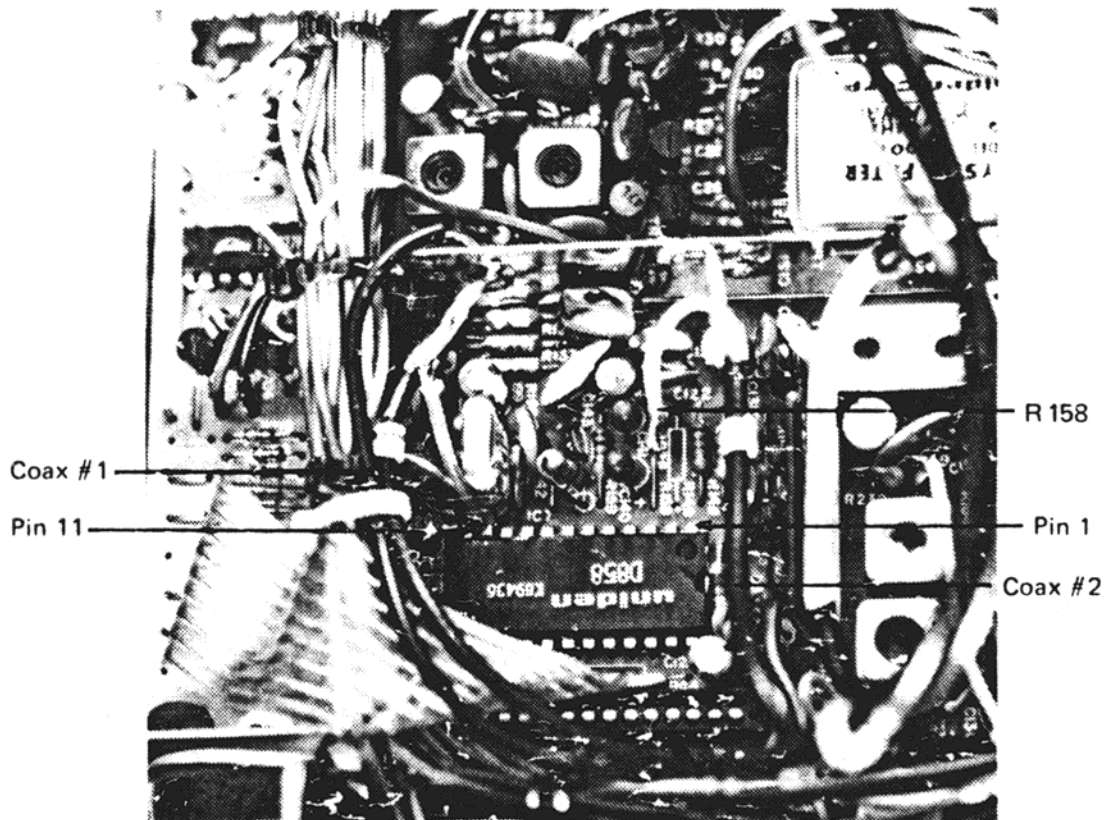


FIG. 4 — LOCATION OF TEST POINTS (D858)

5. Remove the one side of R158 that is connected to Pin 2 of the D858 PLL Chip and install the center of coax #2 to this lead of R158 as per Fig. 4.
6. Connect the ground shields of both coaxes to ground. (Example: see Fig. 4). **Caution:** Avoid excessive lead length.
7. Locate and identify C126, a 1 mfd capacitor, and install a 20-22 gauge jumper wire across it's leads to remove it from the circuit. (Foil #160 to ground)
8. Connect the black wire from the UFO to any good ground point in the radio.
9. Connect the 12 volt red wire to the foil marked #184 located near the transmit-receive relay which is operational on receive only.

The UFO is now operational and will control your receiver, but must be programmed to operate properly. Turn to the section describing programming and proceed.

2.4 For Radios of Other Manufacture

This section describes the possibility of installing the UFO to radios of other manufacturers.

Requirements for compatibility (reference only):

1. The UFO system requires a VCO frequency of no less than 30 MHz to give the desired frequency range.
2. The down mixer circuit of the receiver should not exceed 4 MHz.

If the two conditions above are met, the UFO system should work on the receiver. The frequency range will be determined by the various circuits; i.e. bandwidth, sensitivity, etc. If the installer has any questions regarding the installation, please contact the factory.

3. PROGRAMMING

This section describes the programming of the UFO to various types of radios currently in use. **Note: The UFO is pre-programmed at the factory for Uniden Radios with the MB8719 Chip and an 11.1125 crystal and requires no additional programming.**

3.1 Orientation

1. Position the UFO with the cover removed (*as in Fig. 5*).
2. Locate the 14 programming blocks (*see Fig. 5*) and remove the white programming pins.
3. The 14 program blocks should now look like Figure 5 with the pins removed.
4. Look at the application list and find which code your radio requires. Note: If your radio is not listed then turn to the section describing the installation of radios of other manufacture.
5. After locating the proper code for your radio, install the program pins as shown in the program section that corresponds to your radio code. Note: Reference sample 1 program on Fig. 5 for correct pin installation.

After the programming is complete, turn to the Performance Section and see if the programming is correct.

3.2 Programming:

This section describes the operation of the programming pins in the UFO, thus allowing the advanced radio technician to adapt the UFO to radios not on the programming chart.

Equipment required: Frequency counter 40 MHz or better with high impedance test probe (Example: REDCO RFC-50) and a schematic of the radio under test.

1. Function of the programming pins #1-#14.

Step 1 - Refer to the program chart. Locate and identify the blocks labeled Block I, and Block II, etc.

Step 2 - These blocks function as follows:

Block I controls the display 5 of the center on frequency 27.155.

Block II controls the display 1 of the center on frequency 27.155.

Block III controls the display 7 of the center on frequency 27.155.

Block IV controls only the up down count sequence and normally is pre-set.

2. Installation:

Step 1 - Install the UFO using the manufacturer's schematic and leave the pre-programmed code intact.

Step 2 - Connect the test probe of the frequency counter to the output of VCO at the manufacturer's recommended test point.

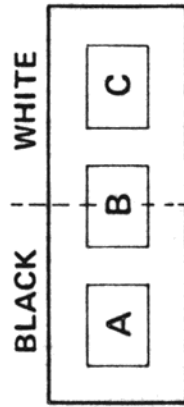
Step 3 - Apply power and note error between the counter and the UFO. (Note: When programmed correctly, the UFO and the counter will read the same only in KHz, i.e. 27.155).

Re-program the pins of the UFO so that both of the frequencies correspond. (Note: There may be some interaction between these blocks).

3. Summary:

Although difficult, the programming sequence cannot harm either the radio or UFO. The above chapter is for reference only and if you require further assistance, please contact your local REDCO distributor or the factory.

**SAMPLE #1
PROGRAMMING BLOCK**



BLACK:
If the Program calls for BLACK
the white program pin connects
points A & B.

WHITE:
If the Program calls for WHITE
the white program pin connects
points B & C.

Remove for
858 only

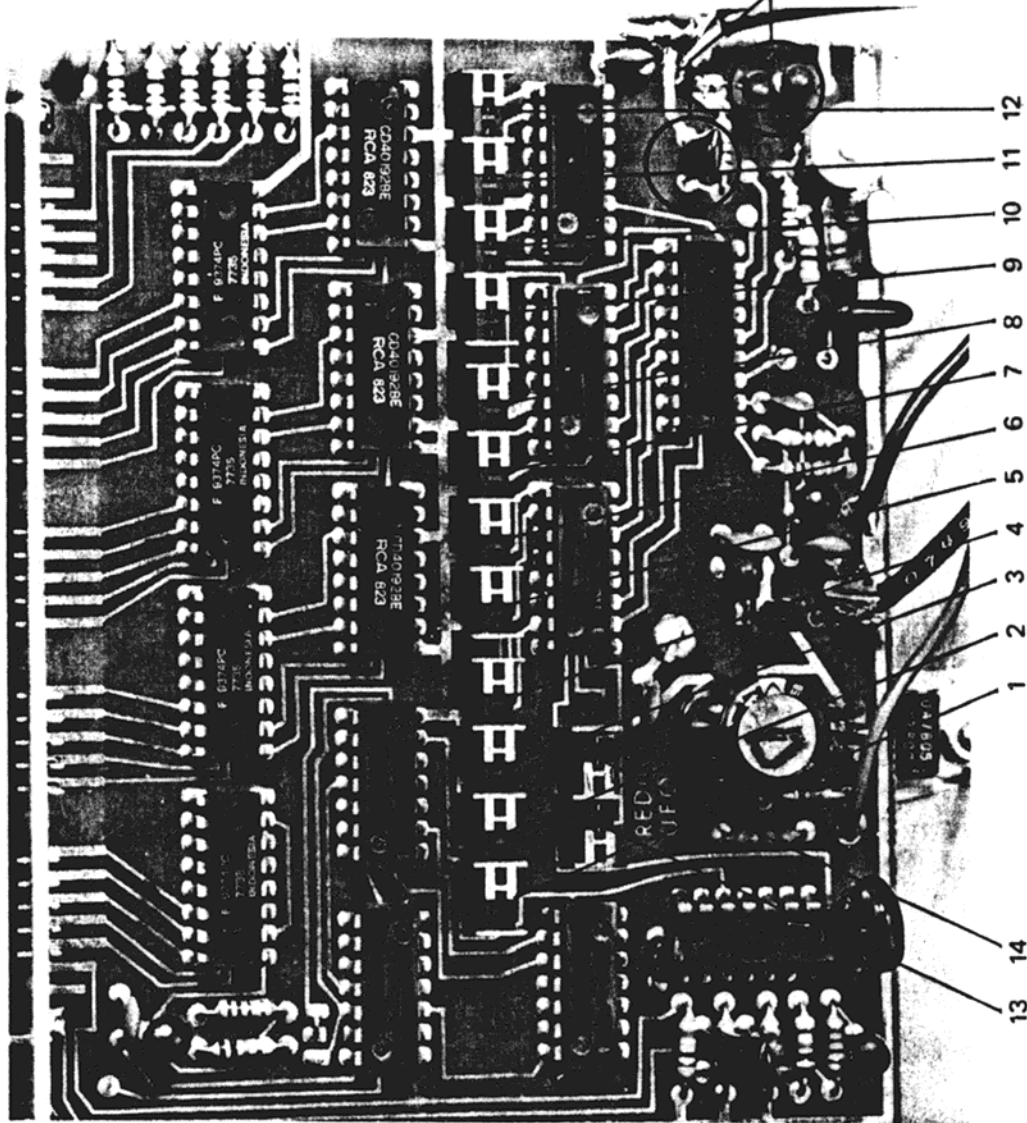


FIG. 5 — UFO PROGRAMMING PINS

3.3 Applications List:

The following list will help you determine the Program Code for your radio.

Program Code 1

PRESIDENT

Washington (old)
Grant (old)
Adams
Madison
All AM models

COBRA

138 XLR
139 XLR
All AM models

TEABERRY

Stalker 101
Stalker 102
All AM's with 858 chip

COURIER

Centurion 40
Gladiator 40
Spartan 40

ROBYN

510-D
520-D
All AM models

REALISTIC

TRC-449
TRC-455
TRC-457
TRC-458
All AM's with 858 chip

Program Code 2

MIDLAND

78-976
78-999
78-892
All AM's with 02A chip

COLT - Most models

RCA - Most models

G.E. - Most models

HY-GAIN - Most models

LAFAYETTE - Most models

GEMTRONICS - Most models

Program Code 5

Fits new President Grant, Cobra 148 GTL and any other new Uniden radio with 8719 chip and 11.3258 crystal.

Program Code 6

Fits new Uniden radios with 8719 chip and 11.1125 crystal.

PRESIDENT

McKinley
Washington (new)

COBRA

140 GTL
142 GTL

MIDLAND

78-900

This list is to be used as a reference only. If your radio is not listed above and you need more information, please contact your local REDCO distributor or the factory.

4. CONTROLS AND OPERATION

This section covers the various controls and basic description of their operation.

Scan Switch: A momentary toggle switch which controls the scan function. Push the scan switch down or up and hold for fast changes in frequency (12 steps/sec.).

Step Switch: A momentary toggle switch which controls the frequency selection by one step (5 KHz) at a time. Push the step switch up or down and release for each frequency change desired.

Displays: Consists of 5 individual .50" 7 segment LEDs.

Power: Power is applied from the radio. The system will automatically center at 27.155 (CH. 16) when the receiver is turned on.

5. PERFORMANCE TEST

Equipment required: Frequency counter 40 MHz or better with high impedance test probe (Example: REDCO RFC-50) and a schematic of the radio under test.

1. Turn the radio on. The UFO will automatically center at 27.155 (CH. 16).
2. Momentarily push the step switch up or down and check for 5 KHz frequency range.
3. Push the scan switch down. The unit should stop the scan at 25.995 MHz.
4. Push the scan switch up. The unit should stop the scan at 28.000 MHz.
5. Connect the test probe of the frequency counter to the output of VCO at the manufacturer's recommended test point.
6. The counter should read the same as the UFO on the last 3 digits, i.e. 27.155 KHz.
7. If the frequencies are the same, re-install the covers of both the radio and the UFO.
8. If the frequencies are not the same, then turn to the programming section and correct.

NOTE: Some adjustment of the VCO circuits may be necessary to achieve the desired frequency range.

6. MAINTENANCE

6.1 Cleaning unit:

1. Use a non-ketone-base cleaner and a soft cloth to remove residue from front panel.
2. Do not allow moisture or liquids to run into vents as damage may occur.

7. LIMITED 6 MONTH WARRANTY PARTS & LABOR

REDCO warrants this product to be free from defects in material and workmanship for a period of six months from date of original sale to the ultimate user. **REDCO** will repair free of charge any **REDCO** product which in the judgment of **REDCO** has proven to be defective within the six month period when said product is returned at customer expense to **REDCO** or one of **REDCO's** Authorized Warranty Stations. This warranty does not cover any expenses incurred in the removal and re-installation of this product.

This warranty does not apply to any **REDCO** product damaged by accident, misuse, abuse, improper line voltage, fire, flood, lightning, or other acts of God, or by being altered or repaired by anyone other than **REDCO** or one of its Authorized Warranty Stations. This warranty does not cover marred cabinets, or any other accessory used in connection with the product or damage due to a defect in the product.

This warranty is in lieu of all other warranties expressed or implied including any implied warranty of merchantability, and no person is authorized to assume for **REDCO** any other liability in connection with the sale of the product.