

INSTRUCTION MANUAL

RTV 630

Vibrator Power Supply



Morrow Radio Manufacturing Co.
Salem, Oregon

VIBRATOR POWER SUPPLY MODEL RTV-630 INSTRUCTIONS

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1.0 SPECIFICATIONS: The RTV-630 supplies all necessary operating voltages for the MBR-5 or MB-6 Receiver and MB-560, MB-560A or MB-565 Transmitter; for installation in a 12 volt vehicle. Nominal input is 12-14 volts D.C. Nominal outputs are: 600 V. 200 MA No. 1, 275 V. 100 MA No. 2, and Neg. 75 V. Bias No. 3. These "Nominal" voltages occur since the supply is designed to produce 600 volts at 200 MA when installed in a vehicle with a 12 volt electrical system in which the battery terminal voltage is 13.8 volts under charging conditions. The following voltages are normal:

Input terminal voltage 12.2; HV 520 V 200 MA, LV 270 V 100 MA.
Input terminal voltage 13.8; HV 600 V 200 MA, LV 305 V 100 MA.

The bias is regulated at 75 V throughout the above terminal voltages.

1.1 GENERAL: The RTV-630 is a multi-section supply employing **three** independent vibrators and transformers, with four individual rectifying systems. Hermetically sealed 500 MA Silicon rectifiers are used in a full wave voltage doubler circuit for three of these systems. A Selenium rectifier is used in the fourth as a half wave rectifier to supply the negative bias voltage. Output voltage polarity is independent of the polarity of the vehicle electrical system. Two relays are incorporated in the supply to key both the low voltage and high voltage sections. There is no drain from the vehicle electrical system unless one or both of the relays is keyed.

2.0 INSTALLATION: The power supply should be securely bolted to the vehicle, to prevent vibration between the supply and vehicle. The supply should be thoroughly bonded to the vehicle body by removing any paint or oxide at the mounting points and by using star (lock) washers under the mounting bolts. The RTV-630 may be mounted in any position and in any location in the vehicle. The primary lead wire(s) should go directly to the battery or to the battery terminal of the starter solenoid. This lead should be number 8, or possibly heavier if the supply is located some distance from the battery. Use heavy lugs on the ends of the primary wire(s) and make certain that all connections are tight and will not vibrate loose. An intermittent connection will result in welded vibrator contacts and blown fuses. It is advisable to obtain a large (60 amp) cartridge type fuse and holder, and mount it near the battery. This fuse should be placed in series with the "A-HOT" primary lead to the battery, to provide protection against fire should the primary lead insulation wear through.

3.0 CAUTION: The High Voltage developed by this power supply can be **VERY DANGEROUS.** EXERCISE CAUTION WHILE INSTALLING OR TESTING THIS SUPPLY.

4.0 OPERATION: So long as the supply is properly installed and operated within its rating, long and trouble-free service may be expected. A word of warning which applies to any vibrator supply should be noted: A vibrator is a tuned switching device which is used to reverse the primary current in the transformer. When the supply is turned on, the vibrator reed starts from its resting position and begins to vibrate; reaching its operating "swing" or vibrating amplitude after a fraction of a second. During this fraction of a second starting period, one set of vibrator contacts will "make" for a longer period of time than the other, and the transformer primary currents will be unbalanced. If the supply is turned off before the vibrators have stabilized, there may be a large residual magnetism left in the transformer core. The next time the supply is turned on, one of the vibrator contacts may switch current into an already saturated transformer core; the resultant surge of current through the contacts can be large enough to cause them to weld and stick, destroying the vibrator. For this reason, very short transmissions such as "sending C-W with the mike button" are not recommended. In addition, the importance of secure connections in the primary or battery wiring system cannot be over-emphasized.

5.0 MAINTENANCE: Should trouble ever develop in the supply, the following information is included for reference. It should be noted that the two sections of the high voltage portion of the supply are identical, and therefore comparison checks may be used to advantage.

5.1 TRANSFORMERS: The winding resistances are as follows: Transformer 120-130 (LV): Pri. 0.25 ohm each half; Sec. (red) 24 ohm, Sec. (green) 140 ohm. Transformer 120-131 (HV): Pri. 0.2 ohm each half; Sec. 15 ohm.

5.2 RECTIFIERS: Manufacturers of silicon rectifiers recommend that an ohmmeter NOT be used to measure the forward and back resistance of the rectifiers since the nonlinear resistance of these units may lead to erroneous conclusions. An ohmmeter may be used in trouble shooting, however, to locate a definitely faulty rectifier because the indicated front-to-back resistance ratio will approach unity.

5.3 VIBRATORS: In many respects, a vibrator is similar to a fuse, its destruction usually indicates that something is wrong elsewhere in the circuit. Unlike the fuse, however, the vibrator is usually blamed as the faulty circuit element and is replaced without further investigation. The proper use of an oscilloscope and sufficient knowledge to interpret the waveforms obtained are practically a necessity in evaluating vibrator performance. Oscilloscopes are becoming quite common, and idealized presentations of the important waveforms can often be found in the literature supplied to radio dealers by vibrator manufacturers. The Fourth Edition of the Radiotron Designers Handbook also contains a very useful chapter on vibrator power supplies. If vibrator replacement becomes necessary, we recommend the exact type supplied in the new equipment.

RTV-630 PARTS LIST

C1,2,3,4	0.01 μ f disc 500V	281-306
C5	0.005 μ f disc 1.6KV	281-304
C6	0.5 μ f paper 100V	281-611
C7,8,9	0.06 μ f paper 1000V	281-616
C10,11,12,13-150	μ f 150V	281-702
C14,15	60 μ f 350V	281-701
C16,17	40 μ f 150V	283-118
C18	8 μ f 450V	283-114
C19	20 μ f 150V	283-112
CH- 9 Hy	90 MA choke	120-055
F1	7.5 Amp Fuse	159-013
F2,3	15 Amp Fuse	159-015
J8	8-pin socket 77 MIP8	136-025
OA3	75 volt VR tube	154-001
R1,2,3,4,5,6-	270 ohm $\frac{1}{2}$ W	302-271
R7,8,9	27 ohm 2 W	306-270
R10	47 ohm $\frac{1}{2}$ W	302-470
R11	5K ohm 1W	
RFC1,2,3	Hash Filter	108-079
RY1	12V DC Relay SPST	148-003
RY2	12 V DC Relay	148-001
SD	Sil. Diode 1N1169	106-005
SR	Sel. Rect. 65 MA	106-001
T1	Transf. Vib.	120-130
T2,3	Transf. Vib.	120-131
VIB1	CD G8301	120-201
VIB2,3	CD G8000	120-203

RTV-630 CABLE DIAGRAM & CONNECTOR FUNCTIONS

J8 POWER SUPPLY END

J6 TRANSMITTER END

- 1 Ground
- 2 HV+600 V out
- 3 6V DC for Ant. Ry.
- 4 LV Ry. Coil in
- 5 HV Ry. Keying
- 6 Bias-75 V out
- 7 LV +274 V out
- 8 LV Ry. Keying

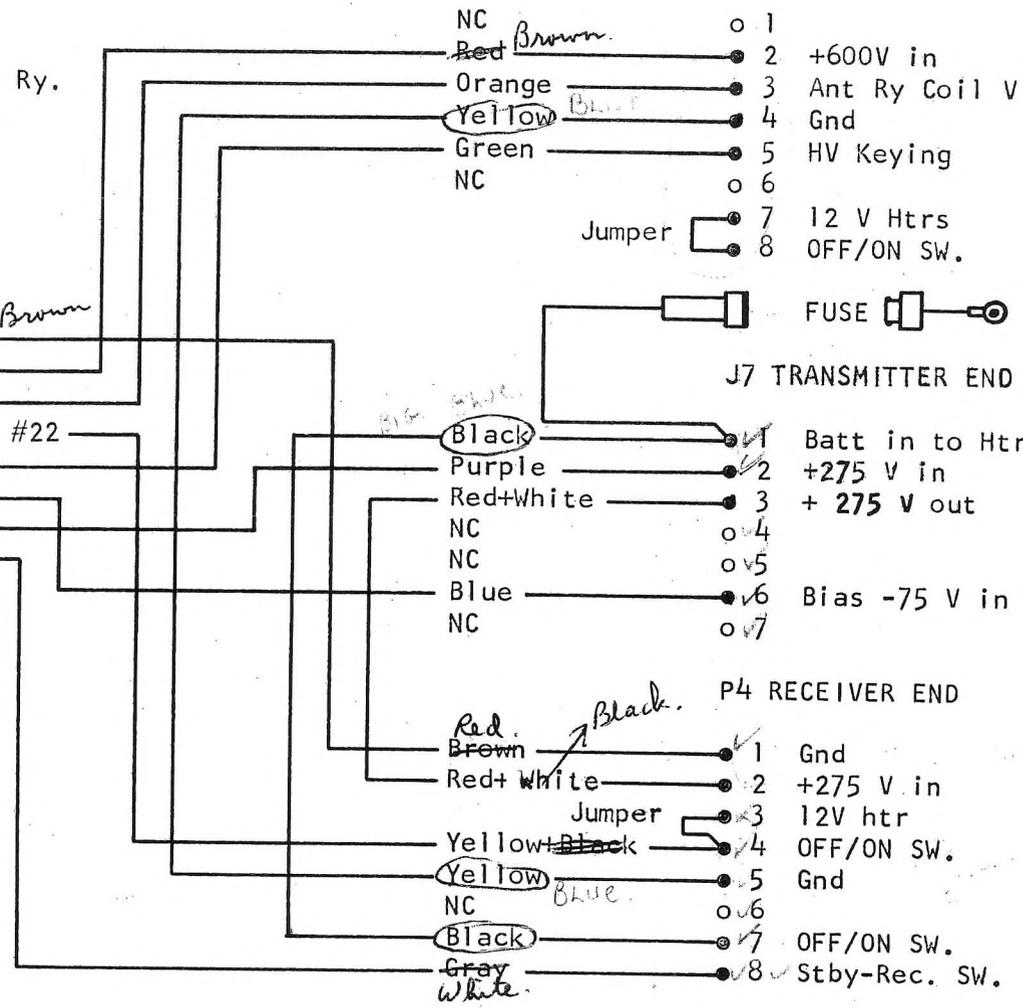
- NC
- Red *Brown*
- Orange
- Yellow *Blue*
- Green
- NC
- Jumper
- o 1
- 2 +600V in
- 3 Ant Ry Coil V
- 4 Gnd
- 5 HV Keying
- o 6
- 7 12 V Htrs
- 8 OFF/ON SW.

- ✓ 1 o — Brown #16 *Red Brown*
- ✓ 2 o — Red Hv #22
- ✓ 3 o — Orange #22
- ✓ 4 o — Yellow+Black #22
- ✓ 5 o — Green #22
- ✓ 6 o — Blue #22
- Black 7 o — Purple #22
- White 8 o — Gray #22

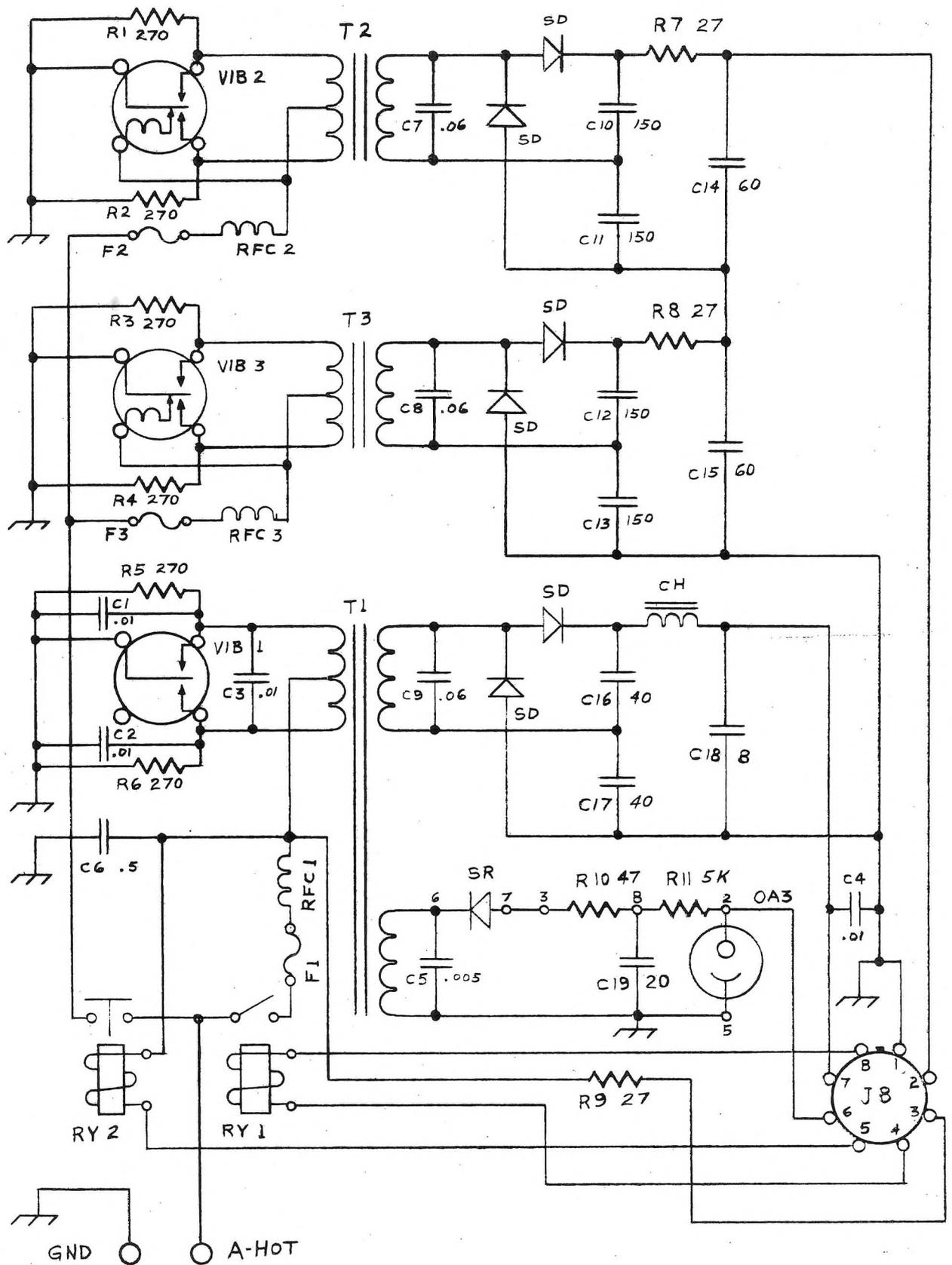
- o 1
- 2 +600V in
- 3 Ant Ry Coil V
- 4 Gnd
- 5 HV Keying
- o 6
- 7 12 V Htrs
- 8 OFF/ON SW.
- FUSE
- J7 TRANSMITTER END
- 1 Batt in to Htr
- 2 +275 V in
- 3 + 275 V out
- o 4
- o 5
- 6 Bias -75 V in
- o 7

Part Number 010-020
 12 volt use only

- Red *Black*
- Brown
- Red+White
- Jumper
- Yellow+Black
- Yellow *Blue*
- NC
- Black
- Gray
- White
- o 1 Gnd
- 2 +275 V in
- 3 12V htr
- 4 OFF/ON SW.
- 5 Gnd
- o 6
- 7 OFF/ON SW.
- 8 Stby-Rec. SW.



VIBRATOR POWER SUPPLY MODEL RTV-630 SCHEMATIC



MRS5