

**JERROLD**

a GENERAL INSTRUMENT company

**INSTRUCTION SHEET**

435-694-03

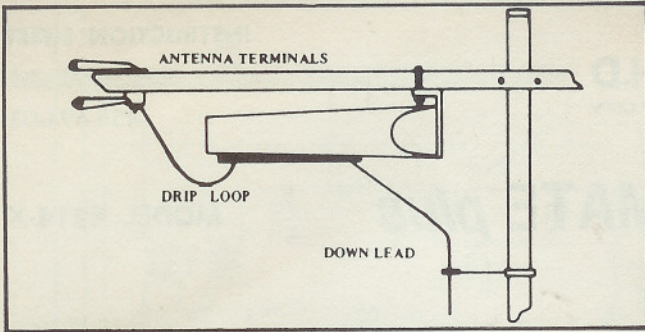
**POWERMATE *plus***<sup>TM</sup>**MODEL 4214-X****DESCRIPTION**

Model 4214-X is a dual output antenna signal amplifier system for improving reception of all VHF-TV channels and FM signals in fringe and semi-fringe areas. The system consists of a solid-state preamplifier Model 214-X and a remote a.c. supply Model 313. The preamplifier has separate low and high band amplifier circuitry, built-in lightning and static surge protection, and a d.c. power supply. The weatherproof plastic housing can be mounted on an antenna mast, boom, or on any flat surface with the hardware supplied in the accessory bag.

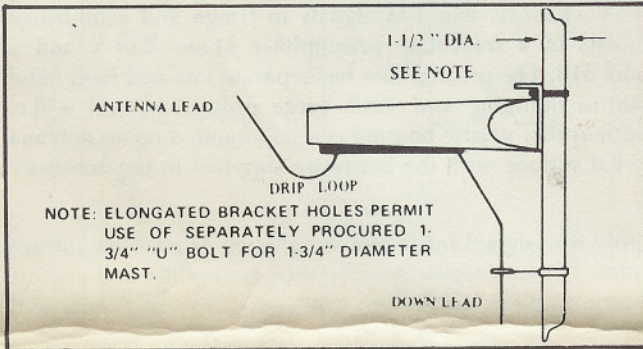
The remote power supply is designed for indoor installation on any flat surface close to a 117 VAC outlet. The unit supplies a.c. to the preamplifier and accepts the RF signals from the preamplifier for feeding one or two TV sets. Input and output terminals are of the screw and crown washer type for 300  $\Omega$  twin-lead.

**SPECIFICATIONS**

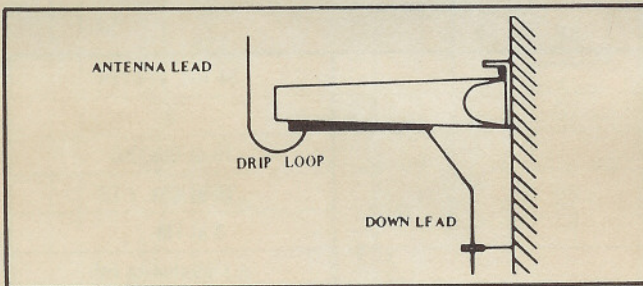
PASSBANDS, in MHz	54-108, 174-216
NUMBER OF OUTPUTS	2
GAIN, in dB (average)	15 at Chs. 2-6
	16 at Chs. 7-13
	3 at FM
FLATNESS, in dB	$\pm 1$ (excluding FM)
NOISE FIGURE, in dB	6.7 at Chs. 2-6
	5.5 at Chs. 7-13
OUTPUT CAPABILITY per channel, each output, in $\mu V$	200,000 for 7 chs.
MAX. RECOMMENDED INPUT, per channel, in $\mu V$	33,600 for 7 chs.
DISTORTION: Cross-Mod. at max. input	0.5% ( $-46$ dB)
FM BAND ATTENUATION, in dB	12 below TV band
ISOLATION BETWEEN OUTPUTS, in dB	6
TERMINAL IMPEDANCE, in $\Omega$	300, all terminals
POWER REQUIREMENTS at 117 V, 60 Hz	25 mA, 3 W
POWER PACK MODEL	313



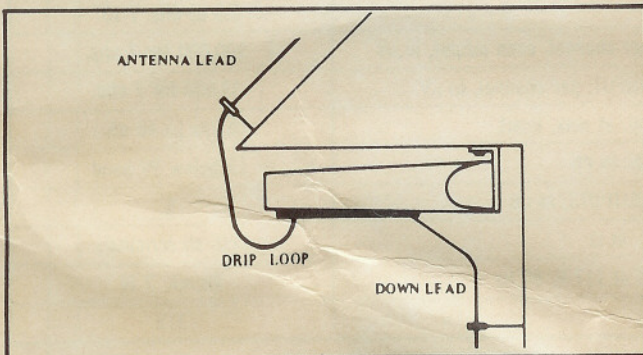
**Fig. 1**  
**Preamplifier**  
**Mounted on**  
**Antenna Boom**



**Fig. 2**  
**Preamplifier**  
**Mounted on**  
**Antenna Mast**



**Fig. 3**  
**Preamplifier**  
**Mounted on**  
**Wall**



**Fig. 4**  
**Preamplifier**  
**Mounted**  
**Under Eaves**



# INSTALLATION

## GENERAL

For maximum benefit from the signal strength available at the antenna and for minimum pickup of undesired signals, mount the preamplifier as near the antenna terminals and keep the jumper between the antenna and the preamplifier as short as practicable.

## MATERIALS AND TOOLS NEEDED

1. Sufficient 300-ohm twin-lead for connecting the antenna to the preamplifier, the preamplifier to the a.c. power supply, and the power supply to the TV or FM receivers.
2. Insulated stand-offs for securing the down-lead.
3. A 7/16" nut-driver or wrench.
4. A screwdriver.
5. A pair of wire cutters.

## BOOM MOUNTING THE PREAMPLIFIER

1. Assemble the top bracket of the preamplifier to the antenna boom as shown in Fig. 1, using the "U" bolt and self-locking hex nuts supplied. Wrench-tighten the hex nuts firmly.
2. Connect a piece of twin-lead to the antenna terminals.
3. Form a drip loop, cut the twin-lead square, and connect it under the crown-washer ANTENNA terminals on the preamplifier.
4. Cut the end of the down-lead square and connect it under the POWER SUPPLY terminals.
5. Run the down-lead to the Model 313 location.

## MAST MOUNTING THE PREAMPLIFIER

1. Assemble the rear bracket of the preamplifier to the antenna mast as shown in Fig. 2, using the "U" bolt and self-locking hex nuts supplied. Wrench-tighten the hex nuts firmly.
2. Proceed as in steps 2 thru 5 under "Boom Mounting the Preamplifier."

## SURFACE MOUNTING THE PREAMPLIFIER

1. The unit can be mounted on a vertical wood surface at least 1/2 inch thick by using the two #10x3/4" wood screws through the holes in the rear bracket. To mount the unit on a horizontal surface, use the screws through the top bracket. See Figs. 3 and 4.
2. On other kinds of surfaces, the unit should be mounted as described for the indoor-mounting power supply; then proceed as in steps 2 through 5 of "Boom Mounting the Preamplifier."



## INSTALLING THE POWER SUPPLY

### **WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

If the unit is mounted on the rear of a receiver, make sure that it does not block the receiver ventilation holes.

1. For mounting on wood surfaces at least  $\frac{1}{2}$  inch thick, use the two #6x $\frac{1}{2}$ " type AB screws supplied with the unit.
2. For mounting on other surfaces, including plasterboard, attach a wood panel to the surface as described in para. 3 below, then mount the unit to the panel with two #6x $\frac{1}{2}$ " type AB screws supplied with the unit.
3. Wood panel to be  $\frac{1}{2}$  inch thick plywood or equal, at least 4 $\frac{1}{2}$ "x18", attached to the surface at a minimum of two points at least 8" apart to:
  - a. Studs: use #10x1 $\frac{1}{2}$ " round head wood screws with flat washers;
  - b. Hollow Cement Blocks: use  $\frac{1}{4}$ "x3 $\frac{1}{2}$ " butterfly bolts with flat washers;
  - c. Other Masonry: use  $\frac{1}{4}$ "x1 $\frac{1}{2}$ " expansion bolts with flat washers.
4. Cut the down-lead square at the Model 313 location and connect the lead under the ANTENNA terminals.
5. If one receiver is to be connected, connect a length of twin-lead between the SET 1 terminals and the receiver.
6. If a second receiver is to be connected, connect a second twin-lead between the SET 2 terminals and the second receiver.

## SERVICING

For the benefit of qualified service personnel, replacement parts lists and schematic circuit diagrams are given here.

### LIMITED WARRANTY

Jerrold equipment is warranted for 90 days against original factory imperfections in material and workmanship.

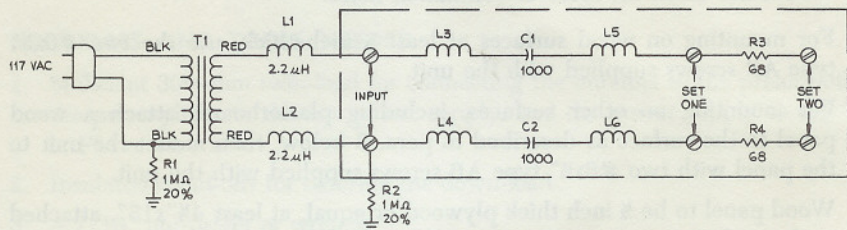
In the event that service is required during this period, preferably return the defective unit to the Jerrold dealer from whom it was purchased. Alternatively, pack the complete defective unit carefully, enclose a letter stating the reasons the unit is believed to be defective, and return it directly to Jerrold Electronics Corp., Factory Parts and Service Dept., 1322 Atlantic St., North Kansas City, Mo. 64116, pre-paying transportation charges. The unit will be repaired or replaced at no charge. Such service or repairs as may be necessary as the result of abuse or accident are not included in the warranty.

In the event that service is required after the warranty period, the unit may be returned to Jerrold at the above address where it will be repaired or replaced at the established service charge.

All data subject to change without notice.

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**NOTES:**

1. UNLESS OTHERWISE SPECIFIED:

(a) ALL CAPACITANCES IN PF.

(b) ALL RESISTANCES IN OHMS,  $\pm 10\%$ , 1/2 W.

2. L3, 4, 5 & G ARE FORMED FROM C1 & C2 LEADS.

SCHMATIC  
POWER SUPPLY  
MODEL 313

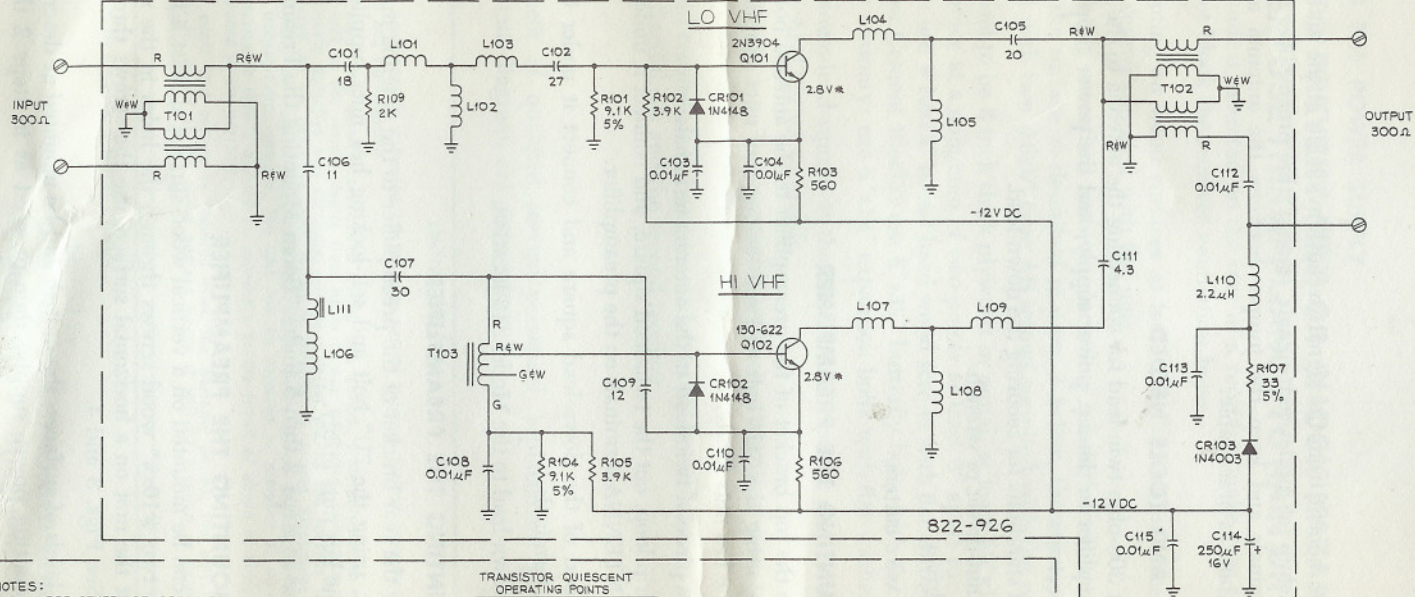
C863-711 REV 0

## REPLACEMENT PARTS LISTS

### MODEL 214X

#### DRAWING No. D863-731

Schematic Designation	Part No.	Schematic Designation	Part No.
<b>CAPACITORS</b>		<b>TRANSFORMERS</b>	
C101	124-079	T101	C144-366-01
C102	124-120	T102	B144-401-00
C103, 104, 108, 110, 112, 113, 115	124-076	<b>TRANSISTORS</b>	
C105	124-119	Q101	130-226
C106	124-048	Q102	130-622
C107	124-121	<b>MODEL 313</b>	
C109	124-102	<b>DRAWING No. C863-711</b>	
C111	124-078	<b>Schematic Designation</b>	<b>Part No.</b>
C114	127-059	<b>CAPACITORS</b>	
<b>DIODES</b>		C1, 2	S123-115
CR101, 102	137-824	<b>RESISTORS</b>	
CR103	137-788	R1, 2	112-743-95
<b>RESISTORS</b>		R3, 4	112-215-95
R101, 104	112-987-95	<b>TRANSFORMER</b>	
R102, 105, 108	111-027-95	T1	C141-318
R103, 106	112-945-95		
R107	112-995-95		
R109	112-930-04		



SCHMATIC  
VHF PREAMPLIFIER  
MODEL 214X

NOTES:

- UNLESS OTHERWISE SPECIFIED:  
A. ALL RESISTANCES ARE IN OHMS,  $\pm 10\%$ ,  $1/4W$ .  
B. ALL CAPACITANCES ARE IN  $\mu F$ .
- VOLTAGES MARKED WITH AN ASTERISK ARE MEASURED WITH REFERENCE TO THE NEGATIVE BUS; OTHER VOLTAGES ARE REFERRED TO GROUND, ALL MEASURED WITH A  $20K\Omega/VOLT$  METER.

TRANSISTOR QUIESCENT  
OPERATING POINTS

DESIGNATION	Q101	Q102
V <sub>ce</sub> VOLTS	9.2	9.2
I <sub>c</sub> mA	5	5
P <sub>d</sub> mW	46	46
BASING	C	C
BOTTOM VIEW		