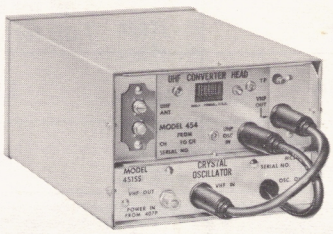
JERROLD®

INSTRUCTION MANUAL

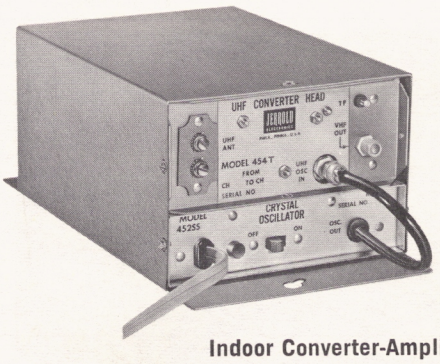
435-412.3

Crystal-Controlled Single-Channel UHF to VHF Converters 500-Series

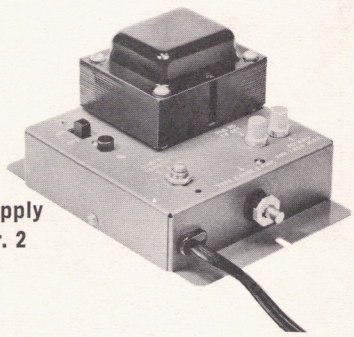
UL-Listed



Outdoor Converter-Amplifier
and Oscillator
Model 504-SS



Indoor Converter-Amplifier
Model 505-ST



Remote Power Supply
Model 407-P Ser. 2

OUTDOOR MODELS 504-SS AND 504-ST

Model 504-SS is designed for metropolitan and suburban strong signal areas; Model 504-ST for medium to deep fringe areas. Both equipments consist of a mast-mounting combined converter and oscillator head, models 454 and 451 respectively, and a remote (indoor) power supply model 407-P Ser. 2. The mast-mounting units are fully shielded in a weatherproof housing.

INDOOR MODELS 505-SS AND 505-ST

Model 505-SS is designed for metropolitan and suburban strong signal areas; Model 505-ST for medium to deep fringe areas. Both equipments consist of a converter and oscillator with built-in power supply, all completely shielded and contained in a single housing. Two converters can be fed from a single uhf antenna by using a Jerrold Model 1594 uhf indoor splitter.

COMMON CHARACTERISTICS—500 SERIES

Converters are supplied factory-tuned for the conversion specified in customer's order. All converter units are cavity-tuned, employing high-Q, temperature-stable cavities and self-locking precision trimmers. All oscillators are precisely crystal-controlled, with crystals ground to a tolerance of ± 0.005%.

Converters are equipped with the type of antenna input terminals specified by the customer; either for 300-ohm or for 75-ohm impedance. Output terminals on both indoor and outdoor converters are for 75-ohm impedance. In installations employing outdoor converters, the coaxial cable between mast-mounted unit and remote power supply, in addition to r-f, also carries the a.c. necessary for powering the converter/oscillator.

In very weak signal areas, except where a strong local station would cause overload, a mast-mounting uhf preamplifier, Jerrold Model UPC-105 or UPM-104, can be used in conjunction with indoor converters.

SPECIFICATIONS

MODEL NO.	504-SS	504-ST	505-ST	505-SS
1. CONVERTERS	454	454-T		454
MOUNTING	Outdoors		Indoors	
INPUT IMPEDANCE	75 ohms or 300 ohms, as specified by user			
OUTPUT IMPEDANCE	75 ohms			
BANDWIDTH	8 MHz, any u.h.f. channel			
MINIMUM FULL GAIN	N.A.	5 dB for v.h.f. hi-band 7 dB for v.h.f. lo-band		N.A.
FLATNESS ACROSS 8 MHz	0.5 dB	1.5 dB		1.5 dB
CONVERSION LOSS	9 dB typical 12 dB max.	none		9 dB typical 12 dB max.
MAX. INPUT at 300 ohms at 75 ohms	0.3 volts 0.15 volts	0.05 volts 0.025 volts		0.03 volts 0.15 volts
2. OSCILLATORS	451-SS		452-SS	
3. POWER SUPPLIES	407-P Ser. 2, remote		built-in	
INPUT	117 Va.c., 60 Hz		117 Va.c., 60 Hz	
OUTPUT	22 to 29 Va.c. to mast-mounted unit, which provides 21 Vd.c. ± 5% to oscillator circuit		12 Vd.c. ± 5% to oscillator circuit	

INSTALLATION

OUTDOOR EQUIPMENT

A. GENERAL

1. The converter unit should be mounted on the antenna mast as close to the antenna terminals as practical.
2. Coaxial cable runs between the mast-mounted unit and the remote power supply should be within the limits charted in Table I for the four voltage ranges selectable by a switch on the power supply, and for the three commonly used types of coaxial cable. The chart is based on the practical limitations imposed upon cable size and length by the r-f attenuation characteristics and a.c. voltage drop in the cables.

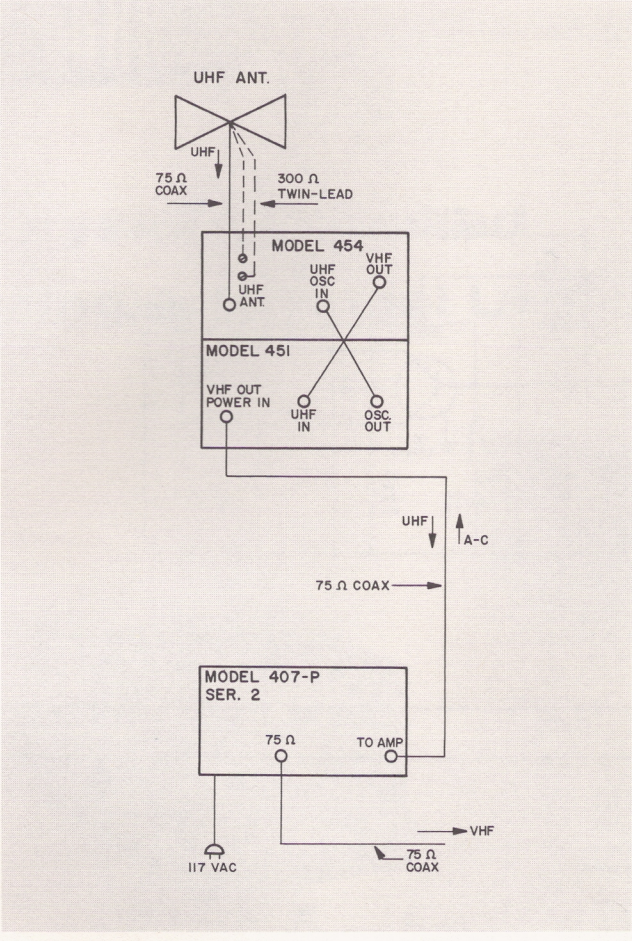
COAXIAL CABLE TYPE	SWITCH POSITION ON 407P							
	1		2		3		4	
	MIN. FT.	MAX. FT.	MIN. FT.	MAX. FT.	MIN. FT.	MAX. FT.	MIN. FT.	MAX. FT.
RG-59/U	25	50	50	80	80	110	110	140
RG-6/U	30	65	65	95	95	135	135	170
RG-11/U	170	300	—	—	—	—	—	—

TABLE 1. POWER SUPPLY SWITCH POSITIONS FOR TYPES AND LENGTHS OF CABLES

3. Jerrold F-59 or F-59A cable connectors for RG-59/U cable are shipped with each package. Where RG-6/U or RG-11/U cable will be used, Jerrold F-56 or AF-101 connectors, respectively, should be procured.
4. Preparation of coaxial cable and installation of coaxial connectors should be done as described in Jerrold Instruction Book 435-344.
5. Accessories shipped with outdoor models:
   - 2 Mast strap and clamp assemblies with thumb screws
   - 3 F-59 or F-59A cable connectors
   - 1 Protective boot
   - 2 Wood Screws

   (1 additional F-59 or F-59A connector and protective boot are shipped with 75-ohm models)

   NOTE: The unit is shipped with 2 jumpers interconnecting the converter and oscillator modules. The unit has been factory-aligned with these jumpers in place; do not remove the UHF OSC jumper.



Block Diagram
Typical Installation of Outdoor Converters

B. INSTALLATION PROCEDURE

1. Mount the converter unit on the antenna mast with the 2 mast strap and clamp assemblies and the 2 thumb screws supplied.

2. Connect one end of a short piece of 300-ohm u.h.f. line (or coaxial cable for 75-ohm antennas and 75-ohm converters) to the antenna terminals, then form a drip loop and connect the other end to the UHF ANT terminals on the converter.

3. Equip one end of the coaxial down-lead cable with a protective boot and an F-59 or F-59A connector. Attach this cable end to the VHF OUT POWER IN fitting on the oscillator; wrench-tighten the connector not more than 1/6 of a turn.

4. Fill all protective boots, those on the oscillator and VHF jumpers and the one on the coaxial down-lead, with weatherproofing compound.* Where 300-ohm antennas and converters are used, apply weatherproofing compound also to the screw terminals of the antenna and the UHF ANT screw terminals of the converter unit. Where 75-ohm units are used, also fill the protective boot on the antenna fitting and the one on the converter input. Slide each boot all the way over its associated fitting.

5. Observing standard practice for the installation of coaxial cables, run the down-lead to the location chosen for the remote power supply.

6. Mount the power supply with the 2 woodscrews furnished.

7. Equip the end of the coaxial down-lead with an F-59 or F-59A connector and attach it to the TO AMP fitting on the power supply.

8. Equip one end of a piece of coaxial cable with an F-59 or F-59A connector and attach it to the R-F OUTPUT fitting on the power supply.

9. Connect the other end of the coaxial cable to the equipment to be fed.

10. Plug the line cord of the power supply into the 117 Va.c. outlet. Set the power switch on Model 407-P to ON; the pilot lamp should be lighted, indicating that the equipment is now energized.

11. A test point TP is provided on the converter head, permitting measurement of the crystal current with a d-c millivoltmeter; or, a d-c milliammeter of 200 microamperes at 500 ohms (when used as a millivoltmeter) will read 100 mV full scale, and will read 30 mV at 30% scale for 1.0 mA of crystal current. The nominal current for a 454T is 1.0 mA; for a 454 it is 1.5 mA. Units are factory-adjusted for a value assuring optimum performance.

12. Proper a-c voltage at the converter may be checked either at the cable carrying a-c up from the remote power supply by temporarily disconnecting the cable from the VHF OUT fitting on the oscillator, or at the jumper connected to the VHF OUT fitting on the converter by temporarily disconnecting the jumper. Depending upon type and length of cable used, the a-c voltage should read between 22 and 29 volts at the jumper disconnected from the VHF OUT fitting on the converter, with the load off; or between 20 and 29 volts with the load connected.

This completes the installation of outdoor type converter equipment and remote power supply.

*e.g. Dow-Corning Silicone No. 5

INDOOR EQUIPMENT

A. GENERAL

1. The compact indoor Models 505-SS and 505-ST should be mounted conveniently near a 117 Va.c. outlet. Two key-slots in the bottom plate of the housing permit mounting the unit on any flat surface, with the two woodscrews furnished in the accessories bag.

2. Where a 75-ohm antenna is used and a converter with a 75-ohm input terminal has been ordered, two extra coaxial cable fittings and one weatherboot are supplied in the accessories bag for installation of an RG-59/U type down-lead Where RG-6/U or RG-11/U cable will be used, Jerrold F-56 or AF-101 connectors, respectively, should be procured.

3. Where a 300-ohm antenna is available, but where it is desired to use a coaxial down-lead and a converter with 75-ohm input, a Jerrold outdoor matching transformer MTUO-374 should be procured for connection between antenna terminals and coaxial cable.

4. For a 300-ohm down-lead, only high-grade encapsulated uhf type cable should be used.

5. Preparation of coaxial cable and installation of coaxial connectors should be done as described in Jerrold Instruction Book 435-344.

NOTE: The unit is shipped with a jumper inter-connecting the converter and oscillator modules. The unit has been factory-aligned with this jumper in place; do not disconnect the jumper.

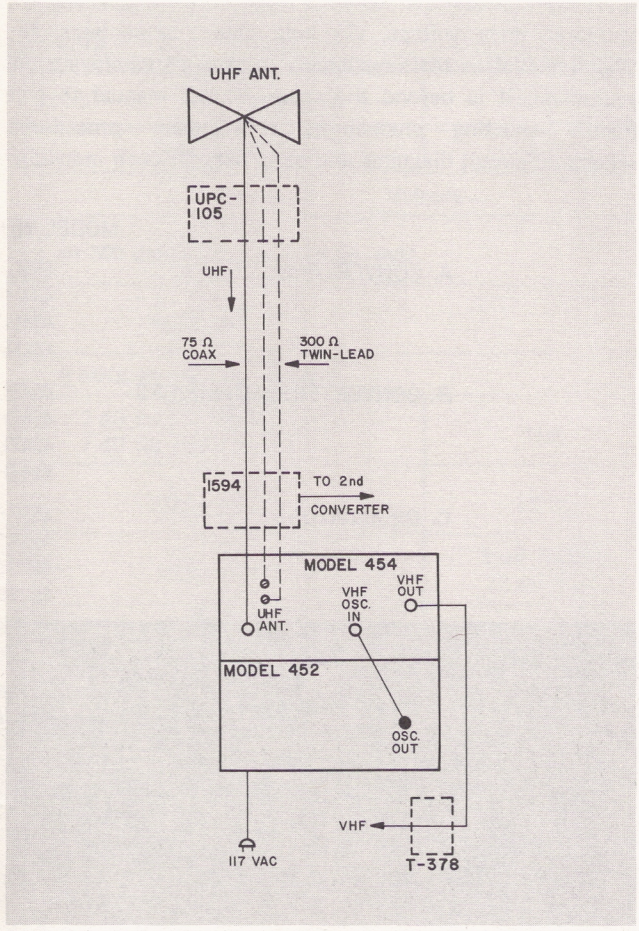
B. INSTALLATION PROCEDURE

1. Prepare the down-lead and connect it to the antenna terminals. Where coaxial cable is used, fill the protective boot with weatherproofing compound and slide it all the way over the connection. Where 300-ohm down-lead is used, apply weatherproofing compound to the antenna terminals.

2. Form a drip loop on the down-lead and, observing standard installation practice, run the lead to the location chosen for the converter.

3. Mount the converter with the 2 woodscrews supplied.

4. Connect the down-lead to the UHF ANT terminals on the converter. Where coaxial cable and connector is used, hand-tighten the connector and then wrench-tighten it not more than 1/6 of a turn.



Block Diagram
Typical Installation of Indoor Converters

5. For connection of the converter to the equipment to be fed, prepare an appropriate length of RG-59/U cable, and equip each end with an F-59 or F-59A connector.

6. Attach one end of this cable to the VHF-OUT terminal on the converter head.

7. Attach the other end of the cable to the equipment to be fed.

8. Hand-tighten and then wrench-tighten both connectors not more than 1/6 of a turn.

9. Set the power switch on the crystal oscillator module to ON. The equipment is now energized.

10. The TP test point on the converter unit has the same function as explained under par. B12 for the outdoor models.

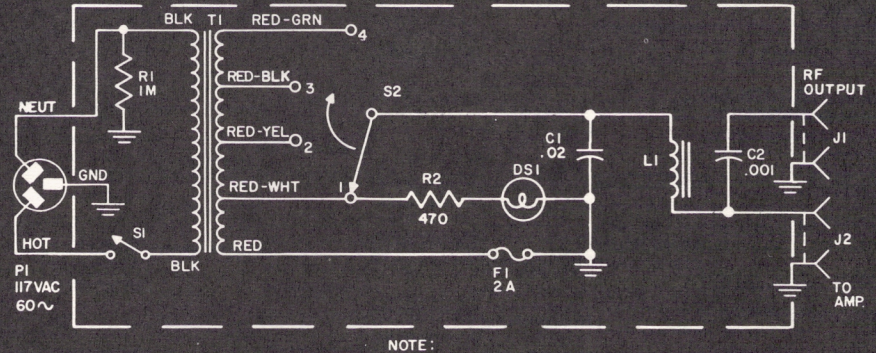
This completes the installation of indoor type converters.

MAINTENANCE

Apart from routine maintenance tests, such as checking the oscillator drive voltage, checking cable connections and other installation tests customary in systems employing uhf equipment, it is beyond the scope of this manual to give trouble shooting procedures, re-alignment procedures, schematic circuit diagrams and parts lists for each individual module. A typical circuit diagram each is given for a converter, a converter/amplifier, an oscillator (all standard 300-ohm antenna input) and for Model 407-P Ser. 2 power supply. However, to facilitate trouble shooting in the field, Jerrold will readily supply upon request any one of the schematic circuit diagrams, accompanied by the relevant parts list.

	MODEL NUMBER	CIRCUIT DIAGRAM NUMBER
A. CONVERTERS	454L	861-519
	454H	861-518
	454L-75	861-516
	454H-75	861-517
B. CONVERTERS/AMPLIFIERS	454TL	861-528
	454TH	861-529
	454TL-75	861-530
	454TH-75	861-531
C. OSCILLATORS	451SSM/SSH	861-559
	451SSL	861-560
	452SSM/SSH	861-691
	452SSL	861-690

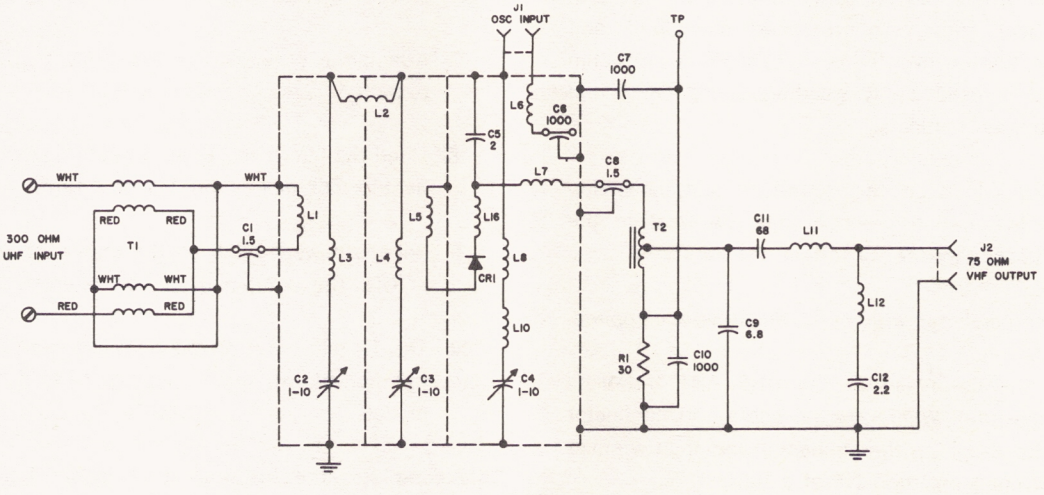
SCHEMATIC
REMOTE POWER SUPPLY
MODEL 407P SERIES 2



NOTE:
1. ALL RESISTORS ARE IN OHMS, 20% 1/2W.
2. ALL CAPACITORS ARE IN μF.

B863-004-A

SCHEMATIC
UHF CONVERTER
MODEL 454H



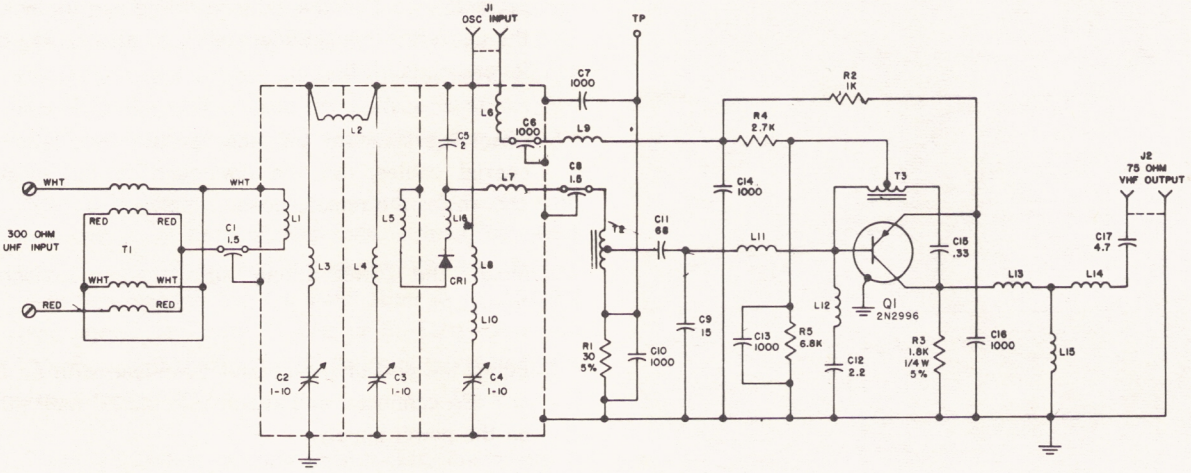
1. ALL RESISTOR VALUES GIVEN IN OHMS, 5%, 1/2 WATT, UNLESS OTHERWISE SPECIFIED.
2. ALL CAPACITOR VALUES GIVEN IN PF, UNLESS OTHERWISE SPECIFIED.

D861-518-0

SCHEMATIC

UHF CONVERTER

MODEL 454TH



1. ALL RESISTOR VALUES GIVEN IN OHMS, 10%, 1/2 WATT, UNLESS OTHERWISE SPECIFIED.
2. ALL CAPACITOR VALUES GIVEN IN PF, UNLESS OTHERWISE SPECIFIED.

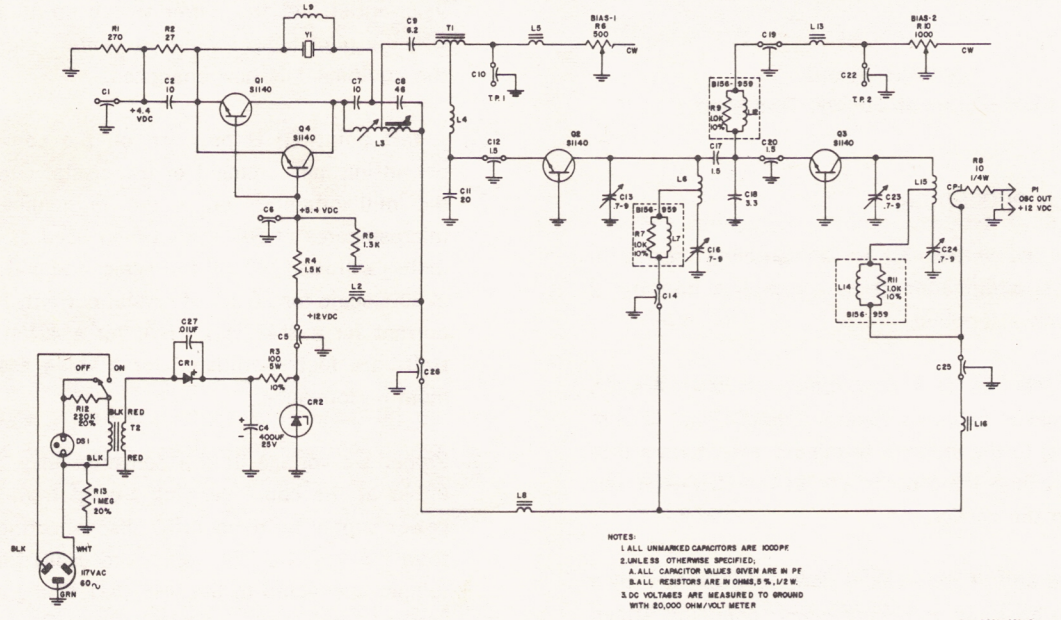
D861-529-A

SCHEMATIC

CRYSTAL OSCILLATOR

MODEL 452 SSM 434 TO 536 MCS

MODEL 452 SSH 542 TO 630 MCS



NOTES:
1. ALL UNMARKED CAPACITORS ARE 1000PF
2. UNLESS OTHERWISE SPECIFIED,
   A. ALL CAPACITOR VALUES GIVEN ARE IN PF
   B. ALL RESISTORS ARE IN OHMS, 5%, 1/2 W.
3. DC VOLTAGES ARE MEASURED TO GROUND WITH 20,000 OHM/VOLT METER

D861-691-0

All data subject to change without notice.

WARRANTY

Each unit of Jerrold Equipment is warranted for 90 days against original factory imperfections in material and workmanship.

In the event any unit of equipment should fail in service during this period, pack the complete defective unit carefully, attach a letter stating the reasons the unit was believed to be defective, and return it to our Service Department, Jerrold Electronics Corp., 15th Street and Lehigh Avenue, Phila., Pa. 19132, prepaying transportation charges. It shall 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 of any service breakdowns after the warranty period, this unit may be returned for repairs at a nominal charge.

JERROLD ELECTRONICS CORPORATION
DISTRIBUTOR SALES DIVISION
Philadelphia, Pa. 19105

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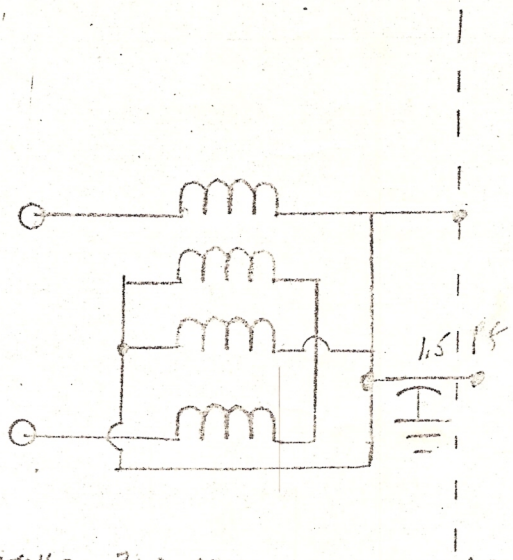
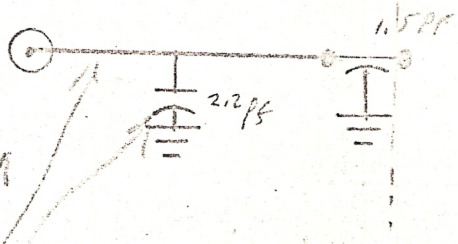
NOTE: YOU CAN REPLACE A 401A-10 to A 401A-11



REMOVE 300 OHM CONNECTING BLOCK & DIPOLE TRANSFORMER UP TO FEED THRU CAPACITOR.



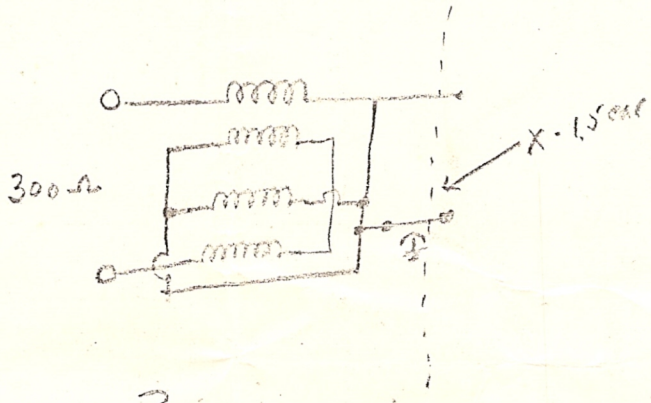
REPLACE WITH F-61 S' BRACKET

STRETCH WIRE FURNISHED, BETWEEN F-61 AND FEED THRU CAP.

PLACE 2.2 PF CAPACITOR DIRECTLY IN CENTER OF WIRE.

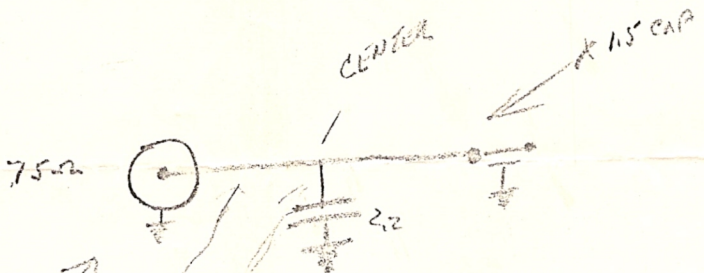
NO.	REVISIONS	DATE
DATE	DRAWN	CHECKED
SCALE	TRACED	APPROVED
REF. NO.	DWG. NO.	
TITLE	MODIFICATION OF 904ST 300 TO 75 OHM	

JERROLD ELECTRONICS CORP.
PHILADELPHIA, PA.



300 OHM VERSION

1 REMOVE 300 Ω CONNECTING BLOCK & BIFILAR TRANSFORMER UP TO FEED THRU CAPACITOR.



REPLACE WITH F-61 & BRACKET

STRETCH WIRE FURNISHED BETWEEN F-61 & FEED THRU CAP

PLACE 2.2 mfd CAPACITOR DIRECTLY IN CENTER.

NO.	REVISIONS	DATE

DATE	DRAWN	CHECKED
SCALE	TRACED	APPROVED
REF. NO.	DWG. NO.	
TITLE - MODIFICATION OF SENSE FROM 300 TO 75 OHMS INPUT.		

JERROLD ELECTRONICS CORP.
PHILADELPHIA, PA.