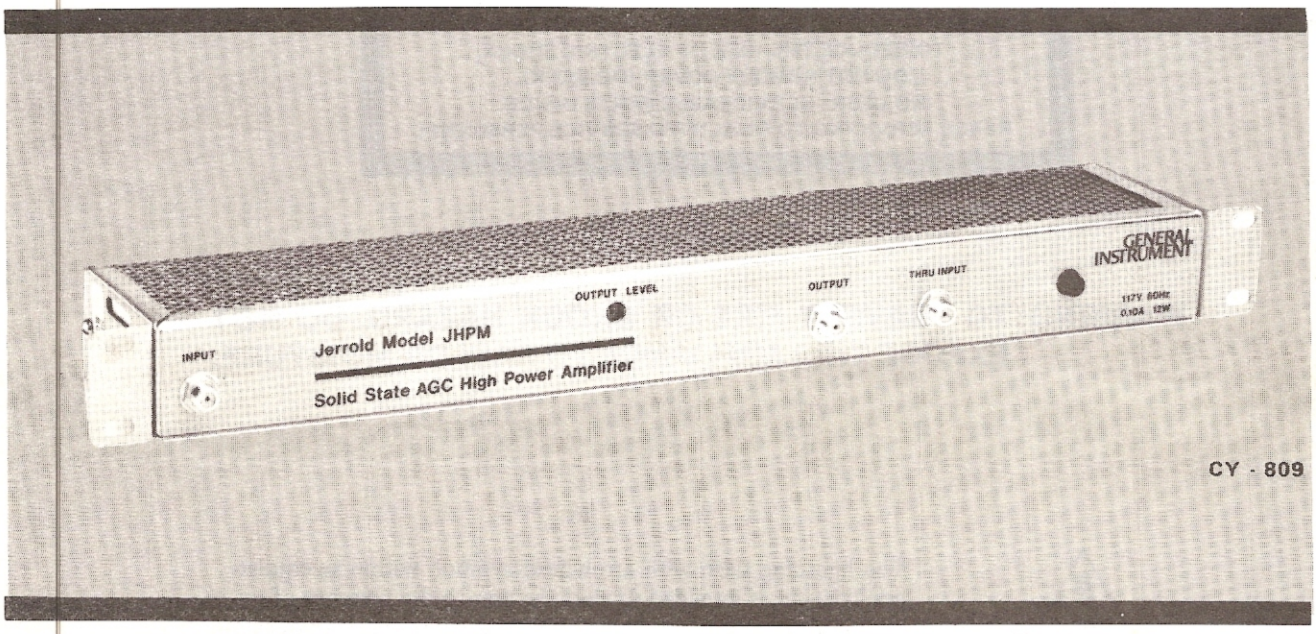
INSTRUCTION SHEET
435-591-12

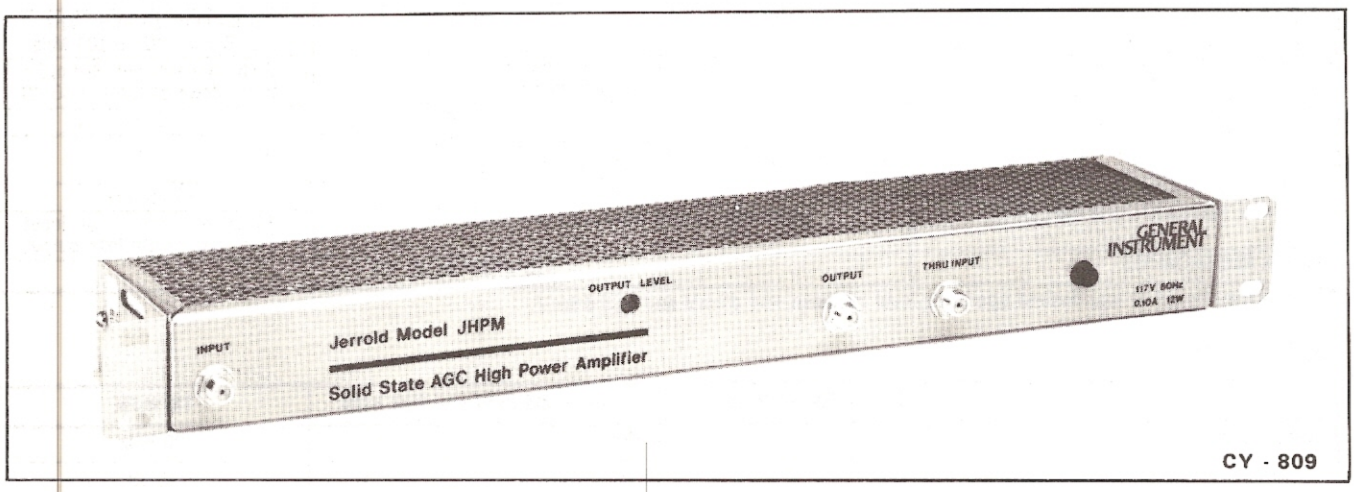
# Jerrold

## VHF SINGLE CHANNEL AMPLIFIERS

### MODELS JHPM-*, THPM-*, JHPMACR-* and THPMACR-*




GENERAL INSTRUMENT




# VHF SINGLE CHANNEL AMPLIFIERS

## MODELS JHPM-*, THPM-*, JHPMACR-* and THPMACR-*

## DESCRIPTION

These units are high-gain, high-output amplifiers for single VHF-TV channels, VHF mid-band channels, or the FM band. They are designed for rack mounting at the head end of TV/FM distribution systems. The FM units have a manual gain control while all other units have automatic gain control circuitry. The VHF single channel units also incorporate mixing circuitry for combining the outputs of units carrying semi-adjacent channels.

Models THPM-FM and JHPM-FM cover the FM band and Models THPM-A thru I cover the VHF mid-band channels, while there are two types of VHF-TV channel amplifiers available: Models JHPM-* have a maximum 2 V output capability, Models THPM-* have a 4 V output.

Models JHPMACR-* and THPMACR-* contain a field-tunable Aural Carrier Reducer (ACR) option which allows adjacent channels to be received and distributed on the same MATV cable without adversely affecting the color subcarrier. The aural carrier level of the lower channel can be reduced from 0 to 10 dB to prevent beat interference with the adjacent visual carrier. The high-Q reducer circuit attenuates the color carrier by only 2 dB at Channel 13 to assure optimum color quality.

All units are shipped with two rack-mounting brackets, the necessary mounting screws, and three F-659 cable connectors.

## INSTALLATION

### Mounting the Units

1. Install a mounting bracket on both ends of each unit using the #8-32 x 3/16" screws supplied. Where the units are to be flush mounted, install the brackets so that the mounting ears are at the front of the unit.

2. The outputs of TV units handling semi-adjacent channels are mixed through the THRU INPUT terminals. Mixing is done from the lower to the higher channels. Where an FM unit is used, it should be connected at the low end of the chain. The outputs of TV units handling adjacent channels are mixed through splitters such as Jerrold Model 1596B or 1597A. See Fig. 1.

3. Mount the units so that the outputs can be conveniently mixed.

## SPECIFICATIONS

**Models JHPM-***

| | JHPM-Low Band | JHPM-High Band | JHPM-FM |
|---|---|---|---|
| BANDWIDTH | 6 MHz | | 20 MHz |
| FULL GAIN (TYPICAL) | 55 dB | | 45 dB |
| FLATNESS (p/v) | 1.5 dB | 2.0 dB | 6 dB max, 88 to 92 MHz<br>2 dB max., 92 to 108 MHz |
| MAXIMUM OUTPUT CAPABILITY* | 66 dBmV for 0.5 sync compression<br>62 dBmV for 920 kHz beat down 50 dB | | 3 ch. in 1 volt out, 3rd order beats down at least —40 dB |
| NOISE FIGURE | 10 dB | 12 dB | 12 dB |
| AGC STIFFNESS | 1.5 dB change at output for 40 dB change at input<br>1 dB change at output for 20 dB change at input | | — |
| OUTPUT LEVEL CONTROL RANGE | 12 dB | | 15 dB min. |
| TERMINAL MATCH AT 75 Ω IMPEDANCE | 14 dB min. return loss/input and output | | 10 dB min. return loss/input<br>9 dB min. return loss/output |
| POWER REQUIREMENTS | 115 V, 60 Hz, 12 W | | |

*Output may be set to any desired operating level between +54 dBmV and +66 dBmV.

**Models THPM-***

| | THPM-Low Band | THPM-Mid Band and High Band | THPM-FM |
|---|---|---|---|
| BANDWIDTH | 6 MHz | | 20 MHz |
| MINIMUM FULL GAIN | 55 dB | | 45 dB |
| FLATNESS (p/v) | 1.0 dB | 1.7 dB | 6 dB, 88 to 92 MHz<br>1 dB, 92 to 108 MHz |
| MAXIMUM OUTPUT CAPABILITY* | 72 dBmV for 0.5 dB sync compression<br>68 dBmV for 920 kHz beat down 50 dB | | 3 ch. in 1 volt out, 3rd order beats down at least —40 dB |
| NOISE FIGURE | 10 dB | 12 dB | 12 dB |
| AGC STIFFNESS | 1.5 dB change at output for 30 dB change at input<br>1 dB change at output for 20 dB change at input | | — |
| OUTPUT LEVEL CONTROL RANGE | 12 dB | | 15 dB min. |
| TERMINAL MATCH AT 75 Ω IMPEDANCE | 14 dB min. return loss/input and output | | 10 dB min. return loss/input<br>9 dB min. return loss/output |
| POWER REQUIREMENTS | 115 V, 60 Hz, 12 W | | |

*Output may be set to any desired operating level between +60 dBmV and +72 dBmV.

**Models JHPMACR-* and THPMACR-***

| | JHPM-Low Band | JHPM-High Band | THPM-Low Band | THPM-High Band | THPM-Midband |
|---|---|---|---|---|---|
| AURAL CARRIER REDUCER | 10 dB Down* | 10 dB Down* | 10 dB Down* | 10 dB Down* | 10 dB Down* |
| COLOR SUBCARRIER | 1.5 dB Down* | 2.5 dB Down* | 1.5 dB Down* | 2.5 dB Down* | 2 dB Down* |

*Referenced to Picture Carrier.

### Connecting the Antenna

1. Slip a WB-659 weatherboot over one end of a length of Jerrold Coloraxial cable and install an F-659 connector on the cable end as described in Instruction Sheet 435-650, packed in the accessory bag.
2. Connect the cable to the antenna terminal. Coat the connection with a film of silicone weatherproofing compound and slide the weatherboot over the connection.
3. Run the cable to the amplifier location. Cut the cable and install an F-659 connector.
4. Perform steps 1 thru 3 for each unit to be installed.

### Measuring Input Levels

1. Measure and record the signal levels at the end of each antenna cable with a field strength meter such as Jerrold Model 727. These measurements should be made at intervals over at least one 24-hour period so that average signal levels can be calculated. After the system is installed, additional measurements may be taken at three-month intervals over a year to determine seasonal changes in signal levels.

2. The input signal levels required depend primarily upon the output levels dictated by system design. The input levels should be high enough to allow for sufficient reserve gain, but low enough to avoid overloading the amplifiers.

3. A Model DSS-* mast-mounting, single-channel preamplifier is recommended wherever input levels are too low. Model PDA-* in-line pads (available in 1, 3, 6, 10, and 20 dB ratings) may be employed in the antenna line where the levels are too high.

### Connecting the Input and Output

1. Connect each antenna lead to the INPUT terminal of the associated unit.

2. The outputs of TV units handling semi-adjacent channels are mixed through the THRU INPUT terminals. Mixing is done from the lower to the higher channels. Where an FM unit is used it is connected at the low end of the chain.

3. The outputs of TV units handling adjacent channels are combined through mixers such as Jerrold Model 1596B (two units) or 1597A (up to four units). See Fig. 1.

4. Make the necessary output connections through jumpers made from Coloraxial cable and F-659 connectors. Unused THRU INPUT terminals should be terminated with TR-75 terminating resistors.

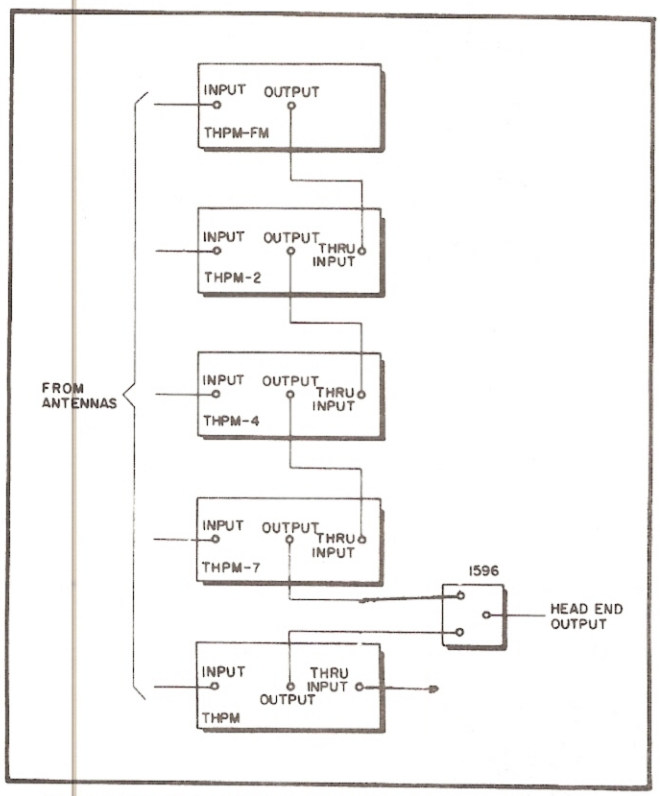



**Fig. 1 Typical THPM-* Head End, Block Diagram**

### Setting the Output Levels

1. Connect a field strength meter at the output terminal of the head end.

2. Tune the meter to each channel carried by the system and adjust the associated OUTPUT LEVEL control to obtain the desired output level. This completes installation of the amplifiers.

### Setting the Aural Carrier Reducer Control

1. The ACR circuitry consists of a tunable narrow-band trap which is used to reduce the level of the aural carrier. The trap should always be tuned to the high side of the aural carrier or deterioration of the color will occur.

2. The ACR trap is factory-tuned to a frequency just above the aural carrier. The control, located on the front panel and marked AURAL CARRIER REDUCER, is adjusted as follows:

   a. With the amplifier operating as normal, turn the ACR control clockwise until the desired aural carrier level reduction is obtained.

   b. If attenuation of the aural carrier begins to decrease as the control is turned clockwise, the control is turned too far. Back off on the control setting until the desired aural carrier level is obtained.

## MAINTENANCE

### General

Maintenance should be carried out only by qualified technicians equipped with the proper test equipment. Replacement parts listed and schematic diagrams are included to aid the technician.

## FIELD ALIGNMENT OF THE AGC

The following procedure should be performed where the AGC circuit alignment of a unit is suspect.

1. Unplug the unit, then disconnect the cable from the THRU INPUT terminal and terminate the vacated terminal with a TR-75.

2. Apply power to the unit and connect a signal level meter to the OUTPUT terminal tuned to the appropriate picture carrier frequency.

3. Set the OUTPUT LEVEL control approximately to the center of its mechanical range.

4. Make certain that the input signal level is at least +25 dBmV and not greater than +40 dBmV.

5. Adjust trimmer C301 (for channel 2 through 6 units) or C361 (for channel A through I and channel 7 through 13 units), accessible through a hole on the rear of the unit, for a null indication on the meter. Under certain conditions you may note two null tuning positions on this adjustment. If so, adjust to the one that produces the deepest null; this insures proper tuning to the picture carrier instead of the sound carrier. AGC tuning is now complete.

6. Unplug the unit, then disconnect the TR-75 and reconnect the cable to the THRU INPUT. If necessary, readjust the input level to the level specified by system design and apply power to the unit. Adjust the OUTPUT LEVEL control to obtain the desired output level.

## REPLACEMENT PARTS LISTS

**INPUT BANDPASS FILTER**
**ALL CH2 THRU CH6 MODELS**

| SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS | JERROLD PART No. |
|---|---|
| CAPACITORS | |
| C101 | 123-115 |
| C102, 104, 106 | 128-610-00 |
| C103, 105 | 128-611-00 |
| DIODES | |
| CR101, 102 | 137-824 |

**INPUT BANDPASS FILTER**
**ALL MID-BAND AND CH7 THRU CH13 MODELS**

| SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS | JERROLD PART No. |
|---|---|
| CAPACITORS | |
| C161 | 123-115 |
| C162, 165, 168 | 128-612-00 |
| C163, 169 | 124-115 |
| C164, 167 | B215-289-00 |
| C166 | 124-119 |
| C170, 171 | |
| THPM-7/13 (factory option) | 124-157 |
| DIODES | |
| CR161, 162 | 137-824 |

**BAND REJECT FILTER AND POWER SUPPLY**
**ALL MODELS EXCEPT THPM-A THRU I AND THPM-7 THRU 13**

| SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS | JERROLD PART No. |
|---|---|
| CAPACITORS | |
| C401, 402 | 123-115 |
| C403 | |
| JHPM-2 thru 13 | 127-071 |
| THPM-2 thru 6 | |
| SHPM-2 thru 13 | S127-151 |
| C404 | |
| JHPM-2 thru 13 | 127-062 |
| THPM-2 thru 6 | |
| SHPM-2 thru 13 | S127-151 |
| C405 | |
| JHPM-2 thru 6 | 124-083-00 |
| THPM-2 thru 6 | |
| SHPM-2 thru 6 | |
| JHPM-7 thru 13 | 124-052 |
| SHPM-7 thru 13 | |
| C406 | 128-610-00 |
| C407 | |
| JHPM-2 thru 6 | 124-082-00 |
| THPM-2 thru 6 | |
| SHPM-2 thru 6 | |
| JHPM-7 thru 13 | 128-098 |
| SHPM-7 thru 13 | |
| C408 | 128-611-00 |
| C409 | 128-612-00 |
| DIODES | |
| CR401, 402 | 137-686 |
| CR403 | |
| SHPM-2 thru 13 | S137-789 |
| RESISTORS | |
| R402 | |
| JHPM-2 thru 13 | 112-193 |
| THPM-2 thru 6 | 112-163 |
| SHPM-2 thru 13 | 112-341 |
| R403 | |
| SHPM-2 thru 13 | 112-341 |
| R404 | |
| SHPM-2 thru 13 | 112-998 |
| R405 | |
| SHPM-2 thru 13 | S118-255 |
| R406 | |
| SHPM-2 thru 13 | 112-966 |
| TRANSISTORS | |
| Q401 | |
| SHPM-2 thru 13 | 130-166 |
| Q402 | |
| SHPM-2 thru 13 | 130-282 |
| TRANSFORMERS | |
| T1 | C141-264-01 |
| T1 | |
| SHPM-2 thru 13 | C141-306 |

All data subject to change without notice.

## AMPLIFIER—ALL MODELS

| SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS | JERROLD PART No. |
|---|---|
| CAPACITORS | |
| C201 thru 210, and 211 thru 226 | 124-076 |
| C211 | 124-119 |
| C227 | 127-267 |
| C228 | 125-375 |
| C229, 230 | 124-137 |
| C231 SHPM-7/13 only | 127-062 |
| DIODES | |
| CR201 | 137-824 |
| CR202 | 137-840 |
| RESISTORS | |
| R201, 203 | 111-625 |
| R202 | 111-654 |
| R204, R209, R215 | 111-663 |
| R205, 211, 218 | 112-936-95 |
| R206, 212 | 112-918-95 |
| R207, 213, 224 | 111-622 |
| R208, 214 | 112-921-04 |
| R221 | 111-656 |
| R210 | 111-664 |
| R216 | 111-657 |
| R217 | 111-686 |
| R218 | 111-682 |
| R219 | 111-629 |
| R220 | 111-660 |
| R222 | 111-677 |
| R223 | 111-685 |
| R225 | 111-437 |
| R226 | |
| SHPM-2/6 | 112-329 |
| SHPM-7/13 | 112-338 |
| JHPM and THPM | 111-664 |
| R227 | |
| SHPM | 111-646 |
| JHPM and SHPM | 111-653 |
| R228 | |
| JHPM | 112-076 |
| THPM and SHPM | 111-628 |
| R229 | |
| THPM-A thru 1, and 7 thru 13 | 111-416 |
| THPM (all others) | 111-410 |
| JHPM | 112-203 |
| SHPM | 112-140 |
| R230 | 111-628 |
| R231 | 111-661 |
| R232 | 111-655 |
| R233 | 111-658 |
| R234 | 111-681 |
| R235 | 111-646 |
| R236 | 111-703 |
| R237 | 111-689 |
| R238 | |
| JHPM and SHPM | S815-426-02 |
| THPM-FM, JHPM-FM | S815-426-00 |
| THPM-2 thru 13, and A thru I | S815-426-01 |
| R239 | 111-728 |
| R240 | |
| THPM-FM | 111-656 |
| All Others | 111-665 |
| R241 | |
| JHPM-2 thru 6 and THPM-2 thru 6, A thru I | 111-696 |
| JHPM -7 thru 13 and THPM-7 thru 13 | 112-990-04 |
| R242 | |
| SHPM-7/13 | 112-188 |
| THPM | 111-017 |

## AMPLIFIER—ALL MODELS (Continued)

| SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS | JERROLD PART No. |
|---|---|
| TRANSISTORS | |
| Q201, 202 | 130-601-00 |
| Q203 | S130-152-00 |
| Q204 | |
| JHPM | S130-256-01 |
| All Others | 130-240 |
| Q205 | |
| JHPM | S130-256-01 |
| THPM, JHPM-FM | S130-261-25 |
| SHPM-2/6 | 130-285 |
| SHPM-7/13 | 130-296 |
| Q206, 208 | 130-226 |
| Q207 | 130-227 |

## INPUT BANDPASS FILTER MODELS THPM-FM, JHPM-FM

| SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS | JERROLD PART No. |
|---|---|
| CAPACITORS | |
| C132, 134, 136 | 124-139 |
| C133, 137 | 124-105 |
| C135 | 124-125 |

## OUTPUT BANDPASS FILTER MODELS THPM-FM, JHPM-FM

| SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS | JERROLD PART No. |
|---|---|
| CAPACITORS | |
| C331, 333 | 124-176 |
| C332 | 124-139 |

## BAND REJECT FILTER AND POWER SUPPLY MODEL THPM-A THRU I AND THPM-7 THRU 13

| SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS | JERROLD PART No. |
|---|---|
| CAPACITORS | |
| C461, 462 | 123-115 |
| C463 | 127-071 |
| C464 | 127-062 |
| C465 | 124-039 |
| C466 | 128-610-00 |
| C467 | |
| THPM-G thru I | 122-057 |
| THPM-7 thru 13 | 122-098 |
| C468 | 128-611-00 |
| C469 | 128-612 |
| C470 THPM-A/F | 124-039 |
| DIODES | |
| CR461, 462 | 137-686 |
| RESISTORS | |
| R461 | 112-743 |
| R462 | 112-163 |
| TRANSFORMER | |
| T1 | C141-264-01 |

## VIDEO CARRIER PICKOFF AND OUTPUT BANDPASS FILTER ALL CH2 THRU CH6 MODELS

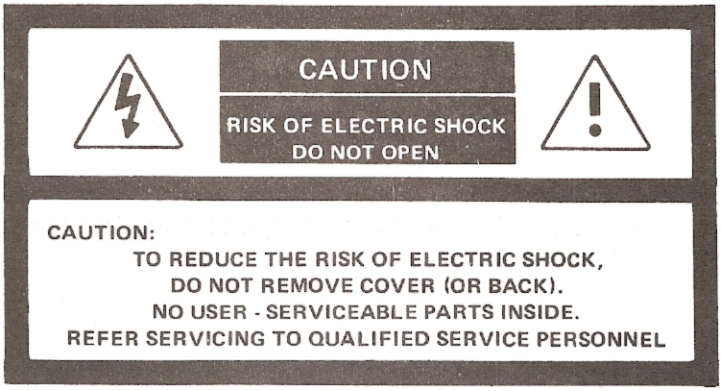
| SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS | JERROLD PART No. |
|---|---|
| CAPACITORS | |
| C301 | 128-570 |
| C302 | |
| Ch. 2 | 124-125 |
| Ch. 3, 4 | 124-121 |
| Ch. 5, 6 | 124-135 |
| C303 | |
| Ch. 2, 3, 4 | 122-091 |
| Ch. 5, 6 | 122-101 |
| C304, 306 | 128-610-00 |
| C305 | 128-611-00 |
| DIODES | |
| CR301 | 137-824 |

## VIDEO CARRIER PICKOFF AND OUTPUT BANDPASS FILTER ALL MID-BAND AND CH7 THRU CH13 MODELS

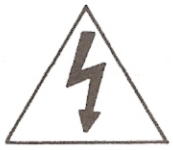
| SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS | JERROLD PART No. |
|---|---|
| CAPACITORS | |
| C361 | |
| CH7 thru 13 Models | 128-574 |
| CH-A thru I Models | 128-570 |
| C362 | |
| CH7 thru 13 Models | 122 103 |
| CH-A thru I Models | 122-090 |
| C363, 366 | 124-115 |
| C364, 367 | 128-612-00 |
| C365 | B215-289-00 |
| C368 | 124-053 |
| C369 | |
| THPM-7/13 (factory option) | 124-157 |
| C369 (JHPM), C730 (THPM) | 122-055-00 |
| DIODES | |
| THPM-7/13 | 137-840 |
| All Others | 137-824 |

## POWER SUPPLY—THPM-FM, JHPM-FM

| SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS | JERROLD PART No. |
|---|---|
| C401, 402 | 123-115 |
| C403 | 127-071 |
| C404 | 127-062 |
| CR401, 402 | 137-686 |
| R401 | 112-743 |
| R402 | 112-172 |
| T1 | C141-264-01 |




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



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.