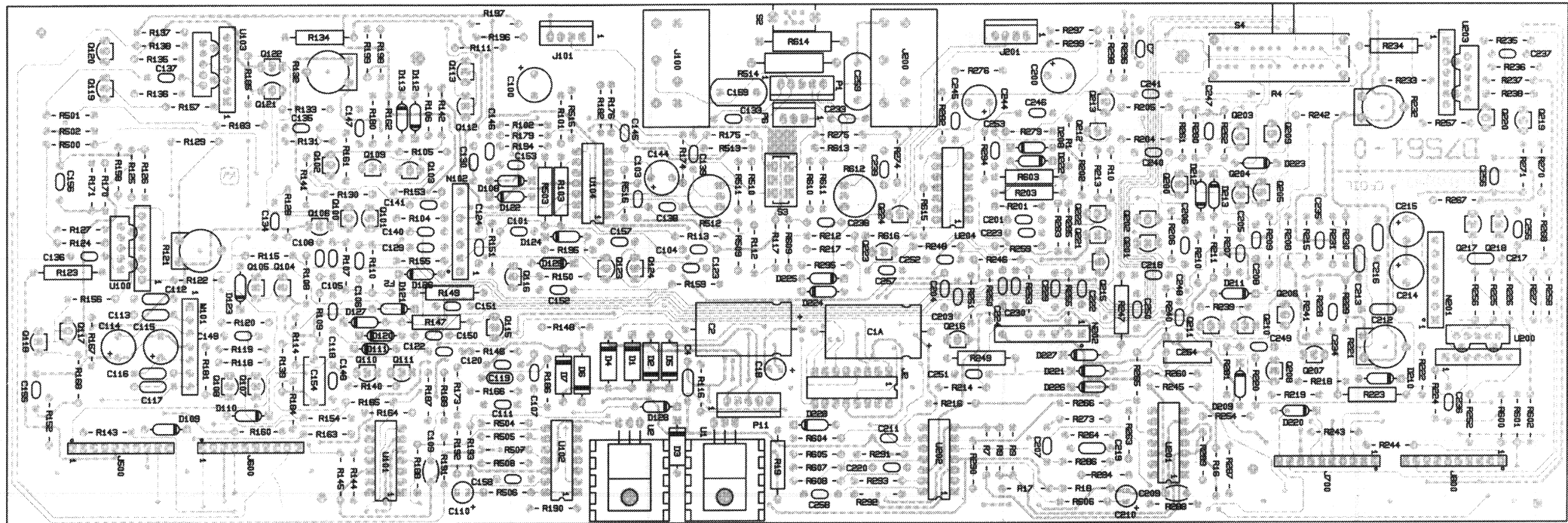
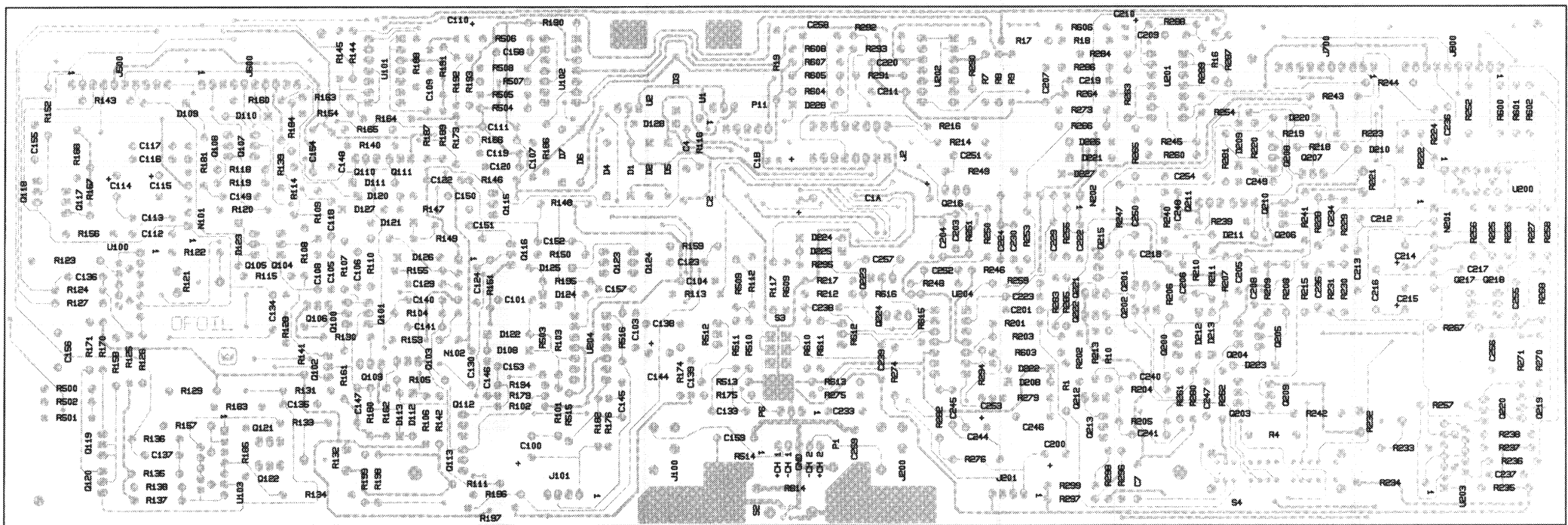


* Darker tracework indicates parts side of module foil layout.
 ** Lighter tracework indicates bottom side of module foil layout.

Fig. 8.1 Control Module (Q42834-4)



Component Side



Foil Side

Fig. 9.5 Main Module (Q42837-7)

5 Specifications

5.1 Performance

Note: 8 ohm loads were used unless specified otherwise.

Frequency Response: 3 Hz to 100 kHz bandwidth. \pm 0.1 dB 20 Hz to 20 kHz at 1 watt.

Signal to Noise Ratio: 120 dB (A-weighted) below rated output at 26 dB gain.

IM Distortion: Less than 0.005% from 760 watts through -10 dB, increasing smoothly to a maximum of 0.025% at -40 dB, measured at 26 dB gain.

Damping Factor: Greater than 20,000 from 10 Hz to 200 Hz. 1,800 at 1 kHz.

5.2 Power

Power Bandwidth:

10 Hz to 25 kHz -1.0 dB.

7 Hz to 27 kHz -1.5 dB.

5 Hz to 28 kHz -2.0 dB.

4 Hz to 30 kHz -3.0 dB.

Output Power:

Note: The following power specifications are for STEREO (two-channel) operation with a THD of 0.02% or less while both channels are driven.

760 watts per channel into 8 ohms.

1,160 watts per channel into 4 ohms.

1,500 watts per channel into 2 ohms.

Load Impedance: Rated for 16, 8, 4, and 2 ohm usage only. Safe with all types of loads, even reactive ones.

Required AC Mains: 50/60 Hz, at 100, 120, 200, 220/230, 240 VAC.) Draws 90 watts or less at idle. With a continuous 1 kHz sinewave output of 760 watts into 8 ohms in STEREO mode, as many as 26 amps are drawn from a 120 VAC source.

It is extremely important to have adequate AC power available to the amplifier. Power amplifiers can not create energy—they must have the required voltage and current to deliver the undistorted rated wattages you expect.

The amp is provided with the correct line cord for the rated line voltage.

5.3 Controls

Enable: A pushbutton located on the front panel to turn the amplifier on and off.

Level: A signal level control with 31 detents for each channel, located on the front panel.

Stereo-Mono: A three-position switch located on the back panel which selects between STEREO, BRIDGE-MONO, and PARALLEL-MONO modes of operation.

Input: A two-position switch located inside the amplifier selects between two input sensitivities. (A voltage gain of 26 dB or a sensitivity of .775 V for full rated output.)

Level / Dynamic Range Meter: A two-position switch located behind the front panel sets the display meter on the front panel as either a dB level meter or a Dynamic Range power meter.

5.4 Indicators

Enable: This amber indicator is on while the amplifier is on to show that the low-voltage power supply is operating.

ODEP: Two amber multifunction indicators which show the reserve energy status of each channel. Normally they are brightly illuminated to show that reserve energy is available. In the rare event there is no energy reserve, they will dim in proportion to ODEP limiting. They remain off if a tripped breaker, blown fuse or thermal shutdown occurs. (In the case of a thermal shutdown, the amplifier will return to normal operation after cooling down to a safe operating temperature.)

IOC: Two yellow indicators which are normally off. In the unlikely event the output waveform differs from that of the input by 0.05% or more, they will flash. In this way, they act as sensitive distortion indicators to provide proof of performance. **Note: It is normal for the Channel 2 IOC indicator to remain in PARALLEL-MONO mode.**

Signal: Two green Signal presence indicators flash in sync with the input signal to show its presence.

Dynamic Range / Level Meter: Two green five-segment meters (one per channel) display either the output dynamic range in dB or the output level in dB. (Your unit comes factory-set to display dynamic range.) As dynamic range meters they show the ratio of the peak to average power of each channel. As output level meters they show how high the output levels are relative to full power.

5.5 Input/Output

Input Connector: Balanced phone jacks on chassis and internal P.I.P. connector. (Balanced 3-pin XLR connectors are provided on P.I.P.-FX which is a standard feature.)

Input Impedance: Nominally 20 K ohms, balanced. Nominally 10 K ohms, unbalanced.

Input Sensitivity: Switchable between .775 V (unbalanced) for rated output or a voltage gain of 26 dB. (See section 4.5, Input Sensitivity Adjustment.)

Output Connector: Color-coded dual binding posts (banana jacks).

DC Output Offset: (Shorted input) ± 10 millivolts.

Output Signal

Stereo: Unbalanced, two-channel.

Bridge-Mono: Balanced, single-channel. Channel 1 controls are active; Channel 2 controls are inactive but not removed from operation.

Parallel-Mono: Unbalanced, single-channel. Channel 1 controls are active; Channel 2 controls are inactive but not removed from operation.

5.6 Protection

If unreasonable operating conditions occur the protection circuitry limits the drive level to protect the output transistor stages, particularly in the case of elevated temperature. Transformer overheating will result in a temporary shutdown of that particular channel. Controlled slew-rate voltage amplifiers protect the unit against RF burnouts. Input overload protection is furnished at the amplifier input to limit current.

Turn On: No dangerous transients. Four second turn-on delay. **Note:** This may be changed by resistor substitution. Contact Amcron Technical Services Department for details.

5.7 Construction

Black splattered-coat steel chassis and black powder-coated front panel for maximum durability. Chassis utilizes specially designed "flow-through" ventilation from front to side panels.

Cooling: Convection cooling with custom heat diffusers and infinitely variable on-demand forced air assistance.

Dimensions: 19 in. standard rack mount (EIA Std. RS-310-B), 7 in. height, 16 in. depth behind mounting surface, 2.75 in. in front of mounting surface.

Weight: 56.5 lbs. Center of gravity is approximately 6 in. behind front mounting surface.

6 Schematic Diagrams

J 0410-1 Display Circuit Schematic
 J 0411-9 Power Supply/Control Circuitry Schematic
 J 0412-7 Main Circuit Schematic

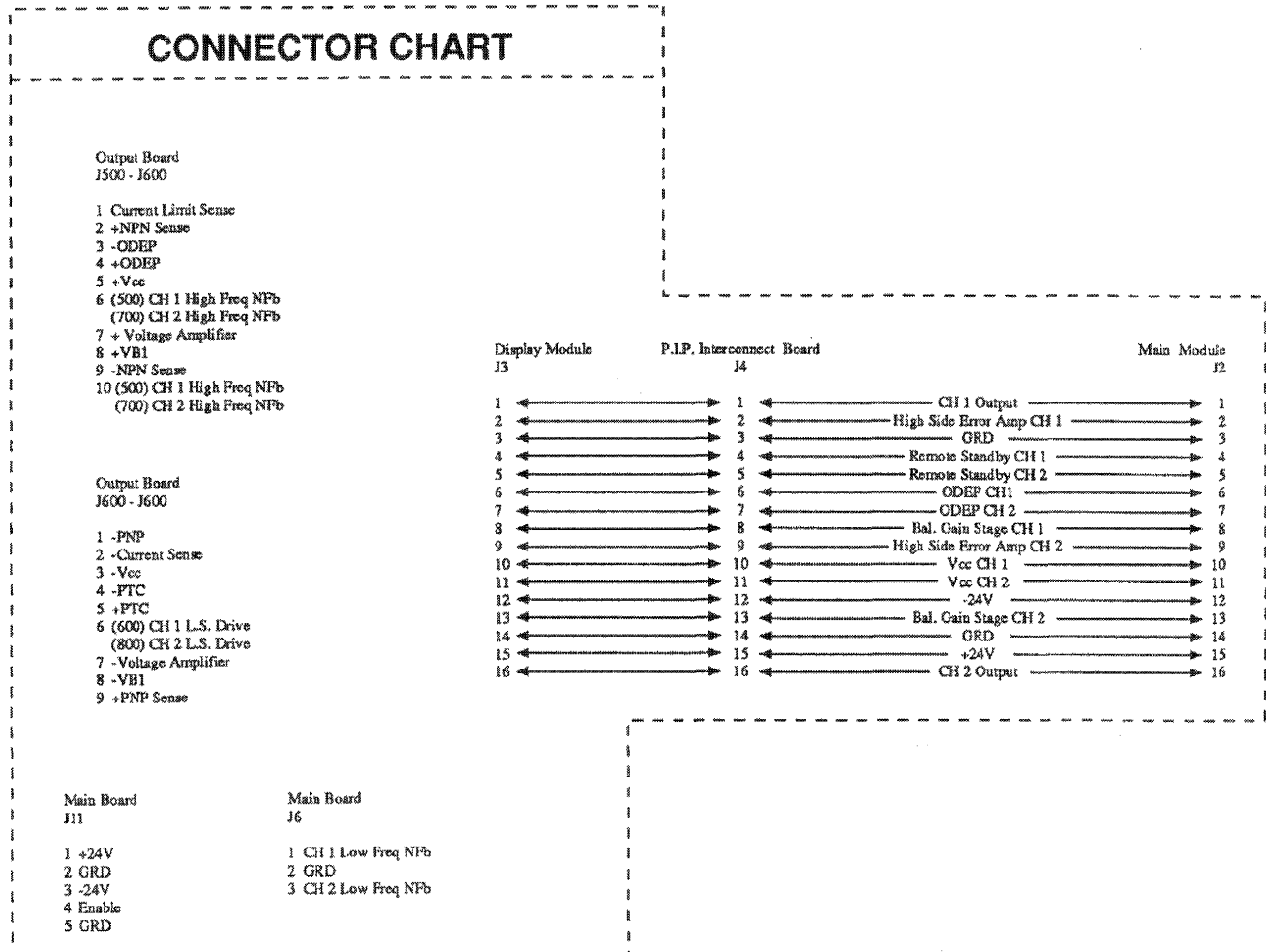


Fig. 6.1 Amplifier Interconnection Chart



PART II

Component Documentation

Parts

General Information

Sections 7 and 8 contain illustrations and parts lists for the Macro Reference power amplifier. This information should be used with the service, repair and adjustment procedure in Section 2.

Most of the mechanical and structural type parts are illustrated and indexed on exploded view drawings. Electrical and electronic parts on these illustrations are also identified by the circuit reference designation next to the illustration. Both the index number and the reference designation are included in the parts list in separate columns. The reference designations correspond to those shown in schematic diagrams.

Electrical and electronic parts located on printed circuit boards are illustrated by schematic symbols on the trace side and by component shape symbols on the component side. Reference designations also appear on these diagrams.

The quantity of each part used in each location is also shown in the parts listing.

Standard and Special Parts

Many electrical and electronic parts used in the Macro Reference are standard items stocked by and available from electronic supply houses. However, some electronic parts that appear to be standard, are actually special. A part ordered from Crown will assure an acceptable replacement. Structural items, covers and panels are available from Crown only.

Ordering Parts

When ordering parts, be sure to give the amplifier model and serial number and include the part description and Crown Part Number (CPN) from the parts list. Price quotes are available upon request.

Shipment

1. Shipment will be made by UPS or best method unless you specify a preferred method.
2. Shipments are made F.O.B. Elkhart, Indiana only.
3. Established Crown accounts will be freight prepaid and billed unless shipped by truck or air freight.
4. All others will be shipped freight collect.

Terms

1. Normal terms are C.O.D. unless the order is prepaid.
 2. Net 30 days terms apply only to those firms who have an established line of credit with Crown.
 3. If prepaying please add an amount for the freight charge. \$2.00 is average for an order under one pound.
- NOTE: Part prices are subject to change without notice.
4. New parts returned for credit are subject to a 10% restocking charge.
 5. You must receive authorization from the Parts Dept. before returning parts for credit.
 6. We are not a general parts warehouse! Parts are available for servicing Crown products only.

Illustrated Parts Lists

Contained within this section are the illustrated parts lists for the Macro Reference amplifier. Most of the mechanical and structural parts are illustrated and indexed in the main chassis illustration. The electrical and electronic parts in the assembly drawings are also shown in the circuit schematics (Figures 8.1 and 8.2) and are labeled in the parts list with both the schematic component number and the Crown Part Number (CPN).

Electric and electronic parts which are located on printed circuit boards are illustrated by schematic symbols on the trace side of the boards and by their component shape symbol on the component side of the boards. Schematic component numbers also appear on these drawings.

The quantity of each part used in each location is also shown in the parts list.

7 EXPLODED VIEW DRAWINGS

The *Exploded Views* section of this service manual is the compilation of drawings of chassis parts and components found within the Macro Reference amplifier. For schematic drawings see section 6 and for circuit board layouts along with parts lists see section 8.

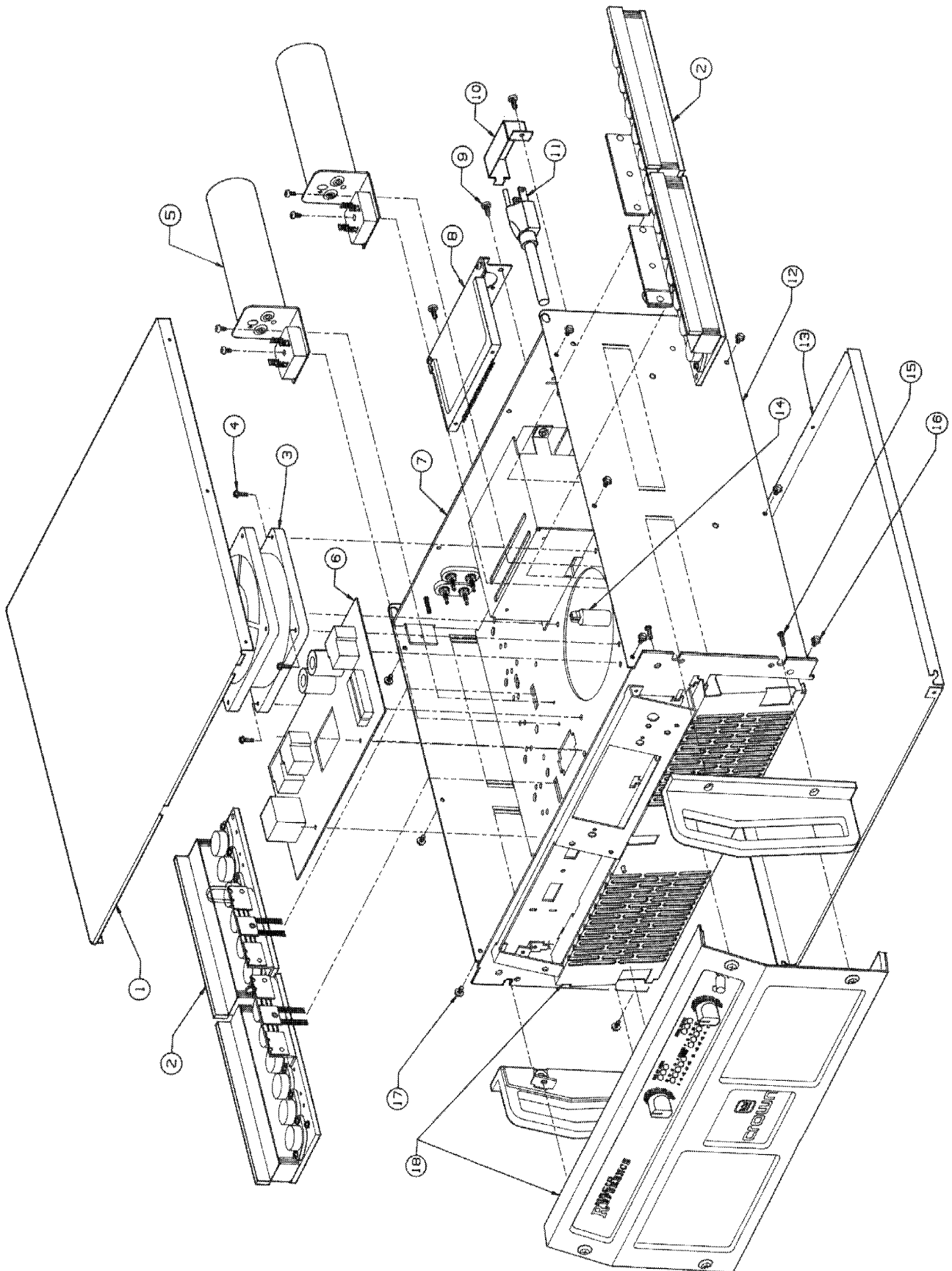


Fig. 7.1 Chassis Assembly (Top)

CHASSIS ASSEMBLY (TOP)

| ITEM# | DESCRIPTION | PART # | QTY | NOTES |
|-------|-----------------------|-----------|-----|---------------|
| 1 | Top Cover | F11705J4 | 1 | |
| 2 | Heatsink Assembly | _____ | 2 | See Page 7-7 |
| 3 | Fan | C 7858-1 | 1 | |
| 4 | 6-32 x .625 Screw | C 7864-9 | 16 | |
| 5 | Capacitor Assembly | _____ | 2 | See Page 7-11 |
| 6 | Control Module | Q42834-4 | 1 | See Page 8-2 |
| 7 | Back Panel Assembly | _____ | 1 | See Page 7-14 |
| 8 | P.I.P. Card Assembly | _____ | 1 | See Page 7-12 |
| 9 | 6-32 x .437 Screw | C 7601-5 | 24 | |
| 10 | Circuit Breaker Cover | F 11624J7 | 1 | |
| 11 | Power Cord | D 7538-8 | 1 | |
| 12 | Chassis | M20752J7 | 1 | |
| 13 | Bottom Cover | F11705J4 | 1 | |
| 14 | .875" Toggle Nut | C 6873-1 | 2 | |
| 15 | 6-32 x .625 Screw | C 7864-9 | 2 | |
| 16 | 6-32 x .437 Screw | C 7601-5 | 6 | |
| 17 | 6-32 x .437 Screw | C 7601-5 | 6 | |
| 18 | Front Panel Assembly | _____ | 1 | See Page 7-9 |

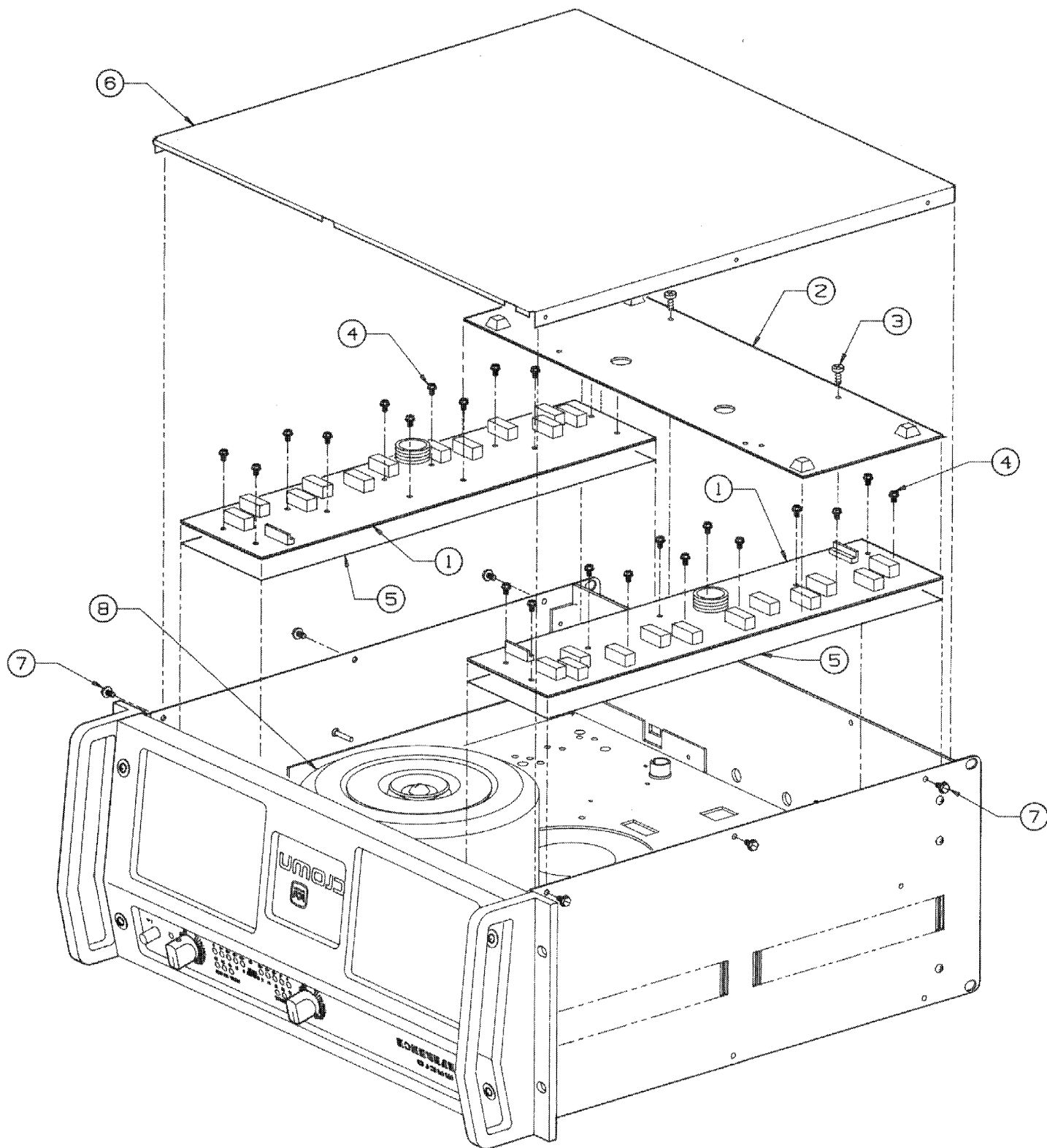


Fig. 7.2 Chassis Assembly (Bottom)

CHASSIS ASSEMBLY (BOTTOM)

| ITEM# | DESCRIPTION | PART # | QTY | NOTES |
|-------|----------------------|----------|-----|---------------|
| 1 | <i>Output Module</i> | ----- | 2 | See Page 8-16 |
| 2 | <i>Main Module</i> | ----- | 1 | See Page 8-22 |
| 3 | 6x32 1.25 | D 6291-5 | 2 | |
| 4 | Torx Screw | D 6315-2 | 24 | |
| 5 | Output Pad | D 7060-3 | 2 | |
| 6 | Bottom Cover | F11705J4 | 1 | |
| 7 | Screw | D 7601-5 | 6 | |
| 8 | Transformer | D 7102-3 | 1 | |

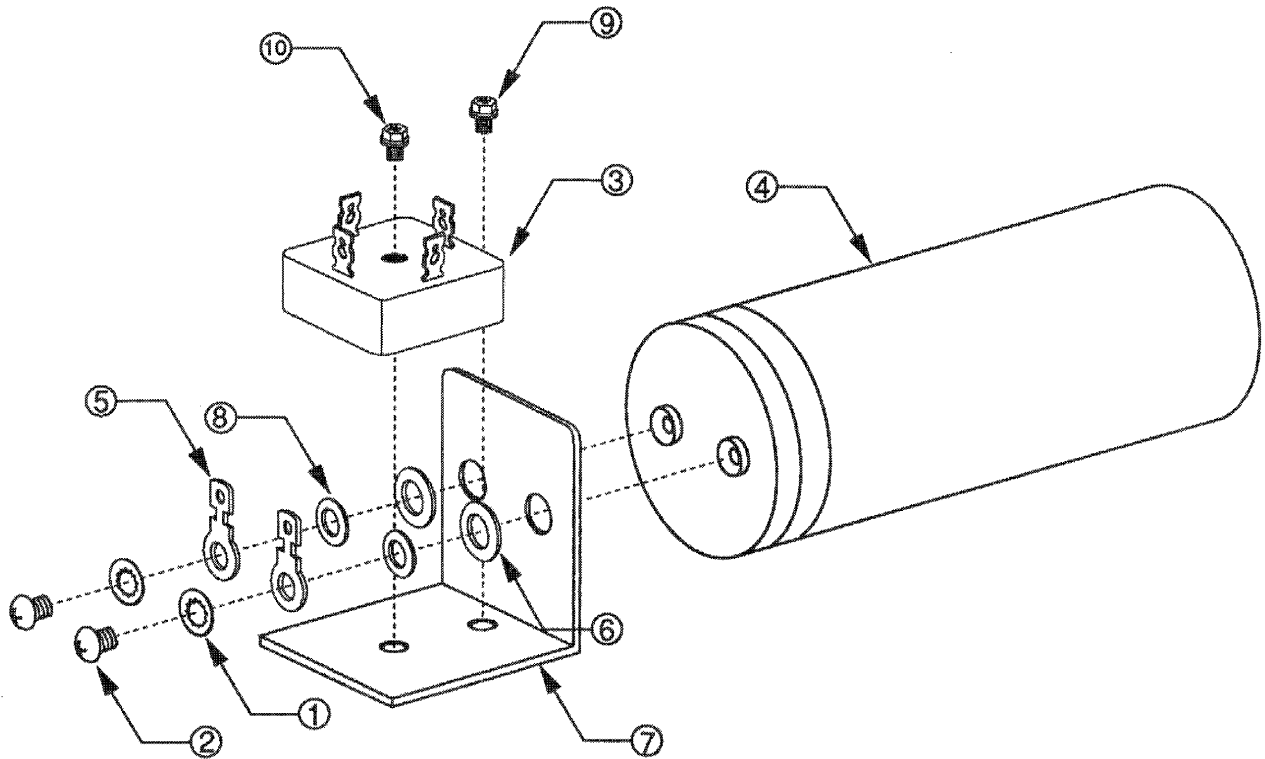


Fig. 7.3 Capacitor Assembly

CAPACITOR ASSEMBLY

| ITEM# | DESCRIPTION | PART # | QTY | NOTES |
|-------|----------------------|----------|-----|-------|
| 1 | Lockwasher | C 6860-8 | 2 | |
| 2 | 10-32 X .37 TRHD | C 4013-6 | 2 | |
| 3 | 35A Bridge Rectifier | C 4305-6 | 1 | |
| 4 | 6300 μ FD 150V | C 7068-7 | 1 | |
| 5 | Solder Lug | D 2934-4 | 2 | |
| 6 | Shoulder Washer | D 6764-1 | 2 | |
| 7 | Capacitor Bracket | F10866-6 | 1 | |
| 8 | Fiber Washer | D 7142-9 | 2 | |
| 9 | .320 Hex Tri-Lob | D 6291-5 | 1 | |
| 10 | 6 x 32 x .75 Hex | C 6964-8 | 1 | |

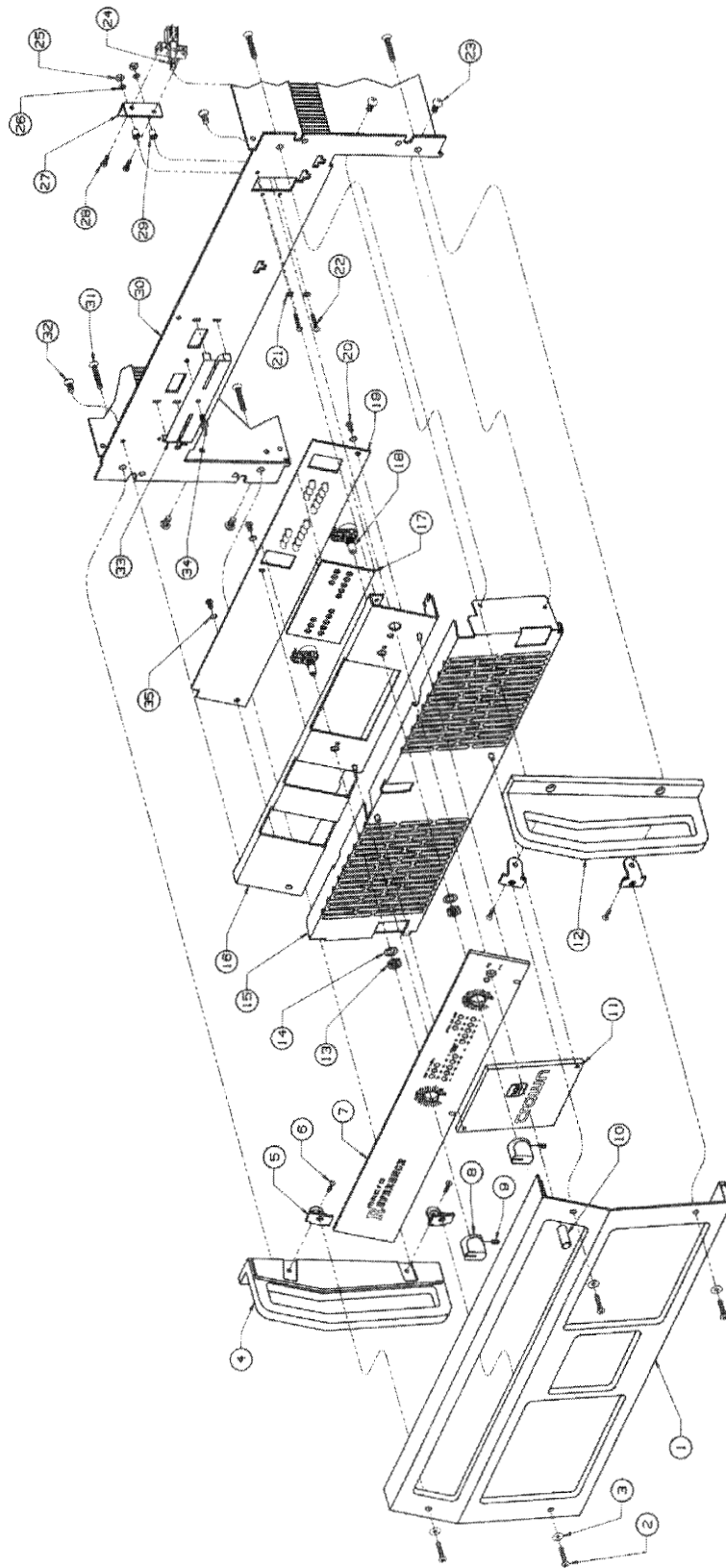


Fig. 7.4 Front Panel Assembly

FRONT PANEL ASSEMBLY

| ITEM# | DESCRIPTION | PART # | QTY | NOTES |
|-------|-------------------------|------------|-----|--------------------------|
| 1 | Front Panel | F11712J0 | 1 | |
| 2 | 8-32X.625 Screw | C 7828-4 | 4 | |
| 3 | Nylon Washer | D 7317-7 | 4 | |
| 4 | MR Left Handle | F11796J3 | 1 | |
| 5 | Handle Mounting Bracket | M20921J8 | 2 | |
| 6 | 8-32 X .25 Fthd Ph | C 2136-7 | 2 | |
| 7 | Front Panel Inset | - D 7430-8 | 1 | |
| 8 | MR Level Control Knob | F11736J9 | 2 | |
| 9 | 6/32 x .18 Slug | C 6005-0 | 2 | |
| 10 | On/Off Pushbutton | F11738J5 | 1 | |
| 11 | Lower Front Panel Inset | - H43122-3 | 1 | |
| 12 | MR Right Handle | F11795J51 | 1 | |
| 13 | Level Control Hardware | | 2 | Comes with Level Control |
| 14 | Level Control Hardware | | 2 | Comes with Level Control |
| 15 | 7" Finger Guard | M20881J4 | 1 | |
| 16 | Display Board Bracket | M20971-4 | 1 | |
| 17 | Display Board Insulator | F11787-3 | 1 | |
| 18 | Level Control (5K ohm) | C 8401-9 | 2 | |
| 19 | Display Module | Q42835-1 | 1 | |
| 20 | 6-32 x .3125 Screw | C 7009-1 | 3 | |
| 21 | Lockwasher | C 1824-9 | 2 | |
| 22 | 4-40 x .62 Screw | C 3334-7 | 2 | |
| 23 | 6-32 x .437 Screw | C 7601-5 | 4 | |
| 24 | On/Off Switch | C 5958-1 | 1 | |
| 25 | 4 x 40 Nut | C 1938-7 | 2 | |
| 26 | Lockwasher | C 1824-9 | 2 | |
| 27 | Power Switch Bracket | F11907-7 | 1 | |
| 28 | 4-40 x .375 Screw | C 5961-5 | 2 | |
| 29 | 6-32 x .625 Screw | C 8094-2 | 2 | |
| 30 | MR Chassis | M20876J4 | 1 | |
| 31 | 8-32 x .5 Screw | C 8238-5 | 4 | |
| 32 | 6-32 x .437 Screw | C 7601-5 | 2 | |
| 33 | Fishpaper Holder | F11787-3 | 1 | |
| 34 | 6-32 x .437 Screw | C 7601-5 | 1 | |
| 35 | Star Washer | C 5594-4 | 3 | |

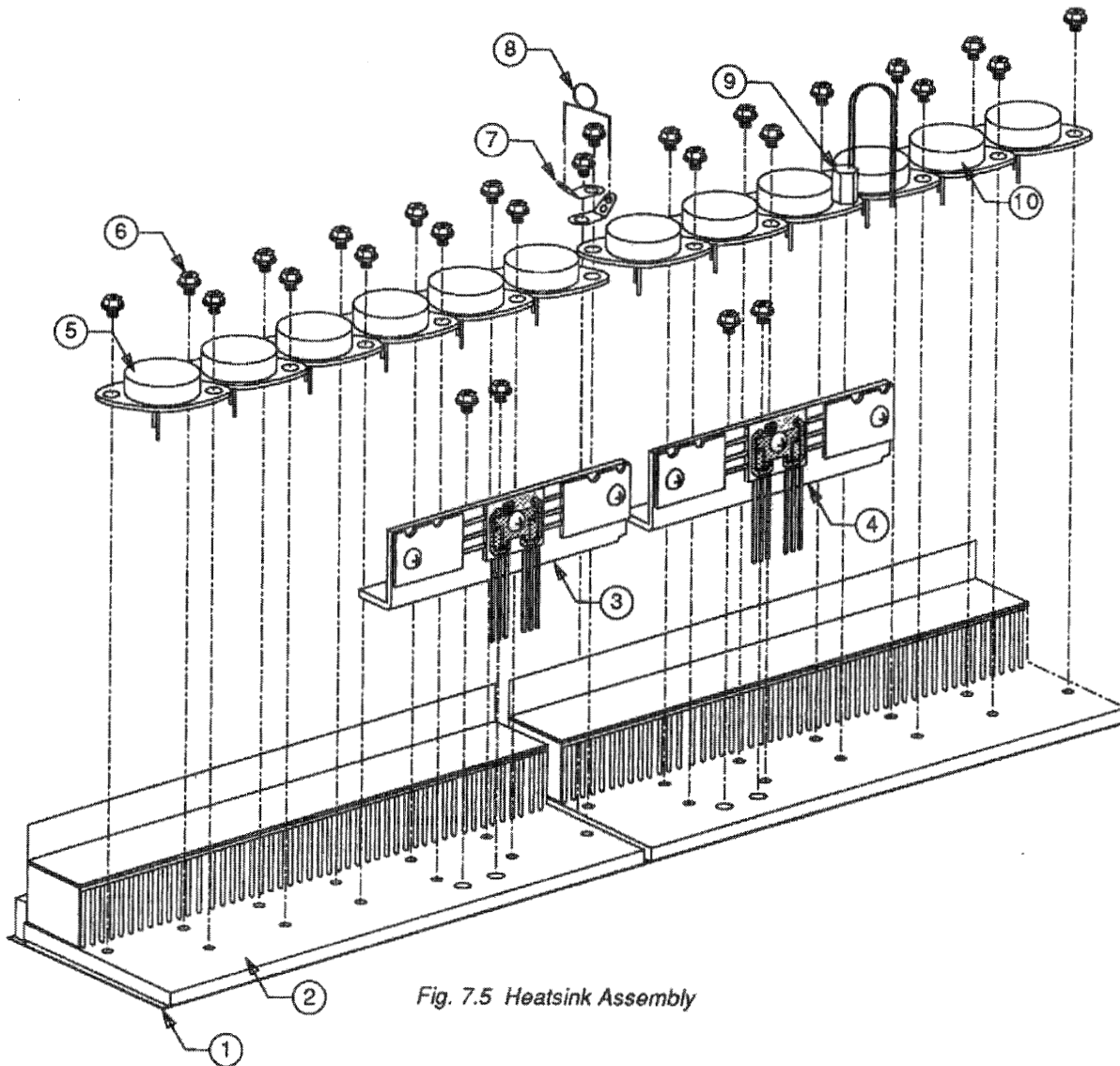


Fig. 7.5 Heatsink Assembly

HEATSINK ASSEMBLY

| ITEM# | DESCRIPTION | PART # | QTY | NOTES |
|-------|---------------------|----------|-----|-------------------------------------------|
| 1 | Silpad | D 6280-8 | | See Page 7-8 See Page 7-8 (MJ15003) |
| 2 | Heatsink | M20538-1 | | |
| 3 | NPN Driver Assembly | M44629-0 | | |
| 4 | PNP Driver Assembly | M44630-8 | | |
| 5 | NPN Output Device | D 6729-4 | | |
| 6 | 6-32 X.235 Torx | D 6315-2 | | |
| 7 | Solder Lug | C 3163-0 | | |
| 8 | .01 MF 500V | C 7697-3 | | |
| 9 | PTC 95° C | D 6591-8 | | |
| 10 | PNP Output Device | C 7065-3 | | |

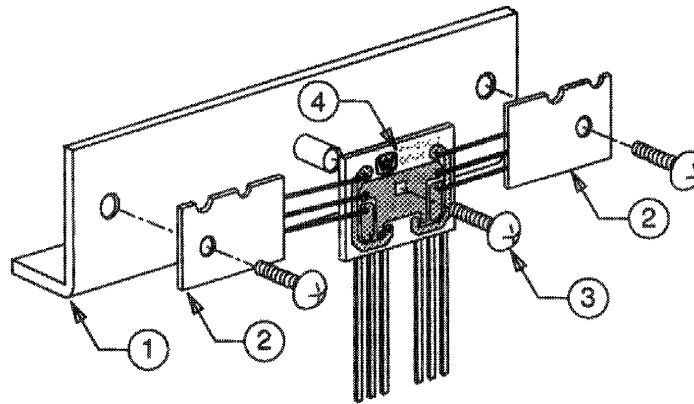


Fig. 7.6 Driver Transistor Assembly

DRIVER TRANSISTOR ASSEMBLY

| ITEM# | DESCRIPTION | PART # | QTY | NOTES |
|-------|----------------------------------------------------------------------------------------------|----------|-----|-------|
| 1 | NPN Driver Assembly | M44629-0 | 1 | |
| 2a | Driver Adapter Plate | M20840-1 | 1 | |
| 3 | 2SC4029 NPN | C 8159-3 | 2 | |
| 4 | 6-32 X .3125 | C 7009-1 | 3 | |
| | Driver Adapter #2 | P10264-3 | 1 | |
| 1 | PNP Driver Assembly | M44630-8 | 1 | |
| 2b | Driver Adapter Plate | M20840-1 | 1 | |
| 3 | 2SA1553 PNP | C 8186-6 | 2 | |
| 4 | 6-32 X .3125 | C 7009-1 | 3 | |
| | Driver Adapter #2 | P10264-3 | 1 | |
| | * Driver assembly is the same for both NPN and PNP stages. Only the transistor types differ. | | | |

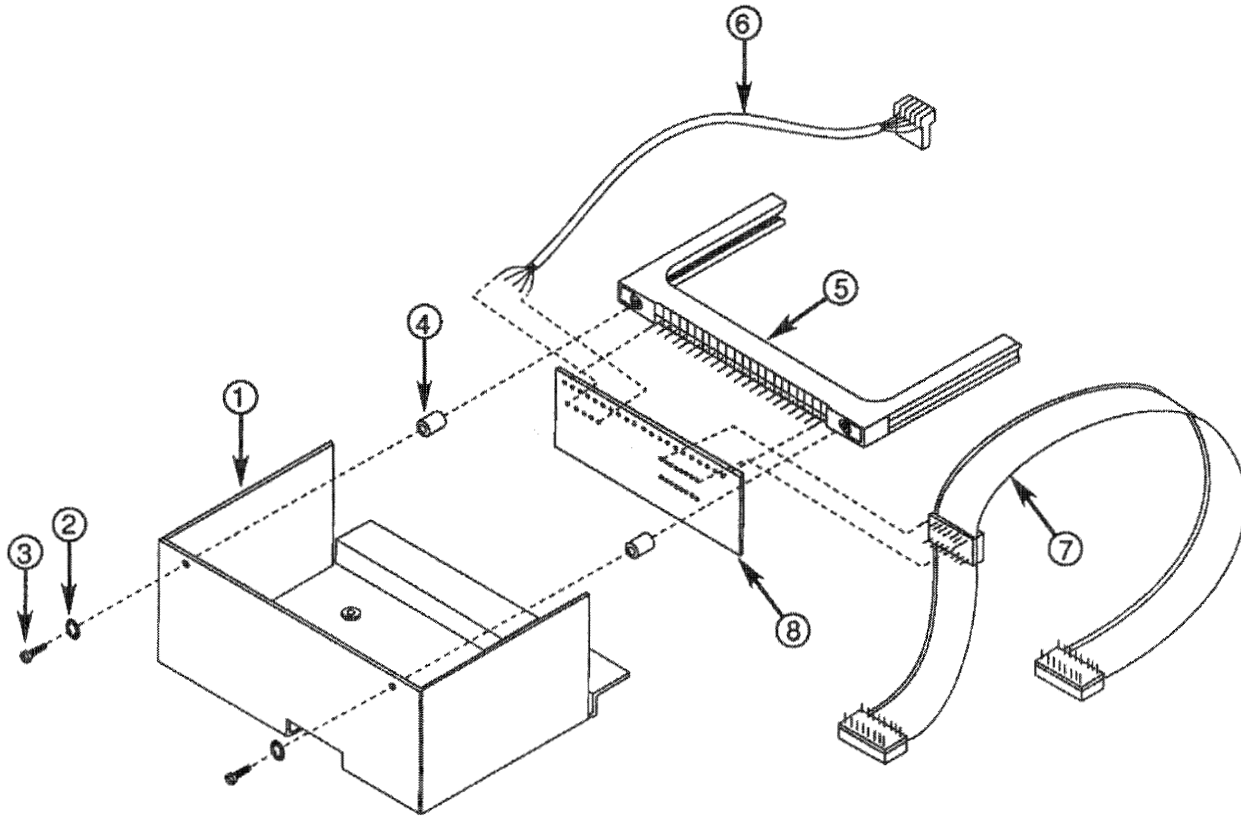


Fig. 7.7 P.I.P. Cage Assembly

P.I.P. CAGE ASSEMBLY

| ITEM# | DESCRIPTION | PART # | QTY | NOTES |
|-------|---------------------------|----------|-----|-------|
| 1 | P.I.P. Card Shield Asm | F10777J3 | 1 | |
| 2 | #4 Int.Star Lock | C 1824-9 | 2 | |
| | Washer | | | |
| 3 | 4-40 X .62 | C 3334-7 | 2 | |
| 4 | .25X.14X.375 RD SPC | C 6431-8 | 2 | |
| 5 | 22 Contact Edge Connector | C 6821-0 | 1 | |
| 6 | P.I.P. Cable Assembly | D 6626-2 | 1 | |
| 7 | P.I.P. Ribbon Conn. | D 6899-5 | 1 | |
| 8 | P.I.P. Brd. Intercon. | P10094B0 | 1 | |

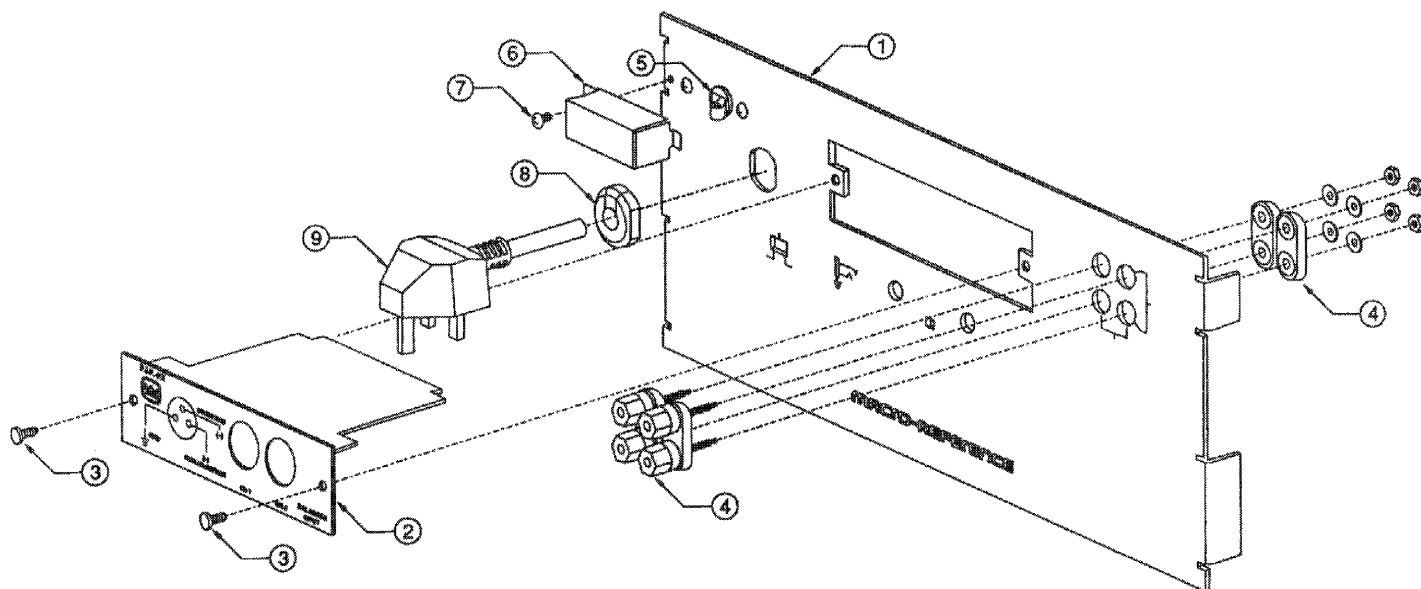


Fig. 7.8 Back Panel Assembly

BACK PANEL ASSEMBLY

| ITEM# | DESCRIPTION | PART # | QTY | NOTES |
|-------|-----------------------|-----------|-----|-------|
| 1 | Back Panel | M20803J8 | 1 | |
| 2 | P.I.P.-FX Card | M44018-6 | 1 | |
| 3 | 6-32 x .437 Screw | C 7601-5 | 2 | |
| 4 | Dual Binding Post | C 8013-2 | 2 | |
| 5 | 30A Circuit Breaker | C 7756-7 | 1 | |
| 6 | Circuit Breaker Cover | F 11624J7 | 1 | |
| 7 | 6-32 x .437 Screw | C 7601-5 | 1 | |
| 8 | Strain Relief | C 7315-2 | 1 | |
| 9 | Power Cord | D 7538-8 | 1 | |

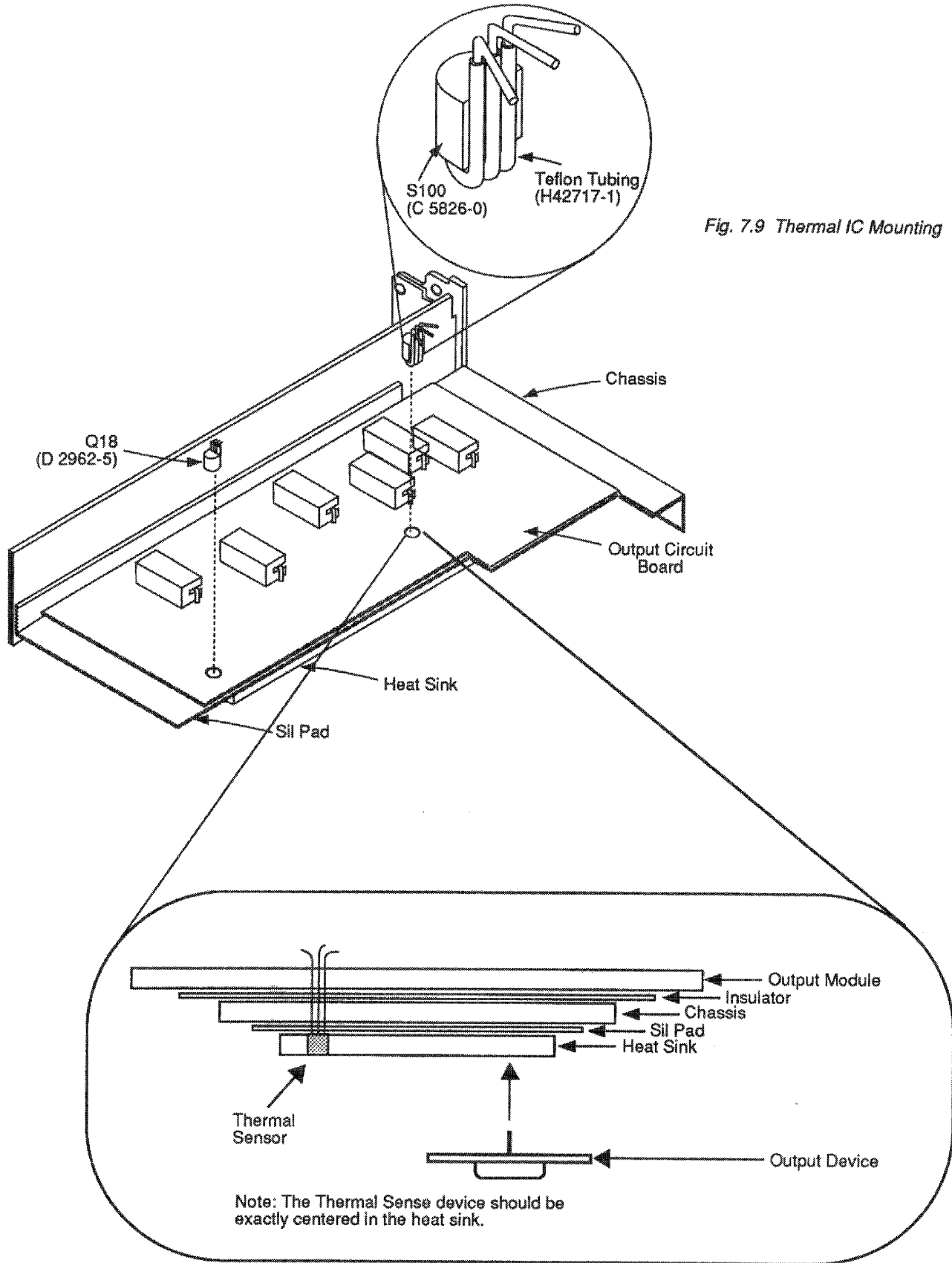


Fig. 7.9 Thermal IC Mounting

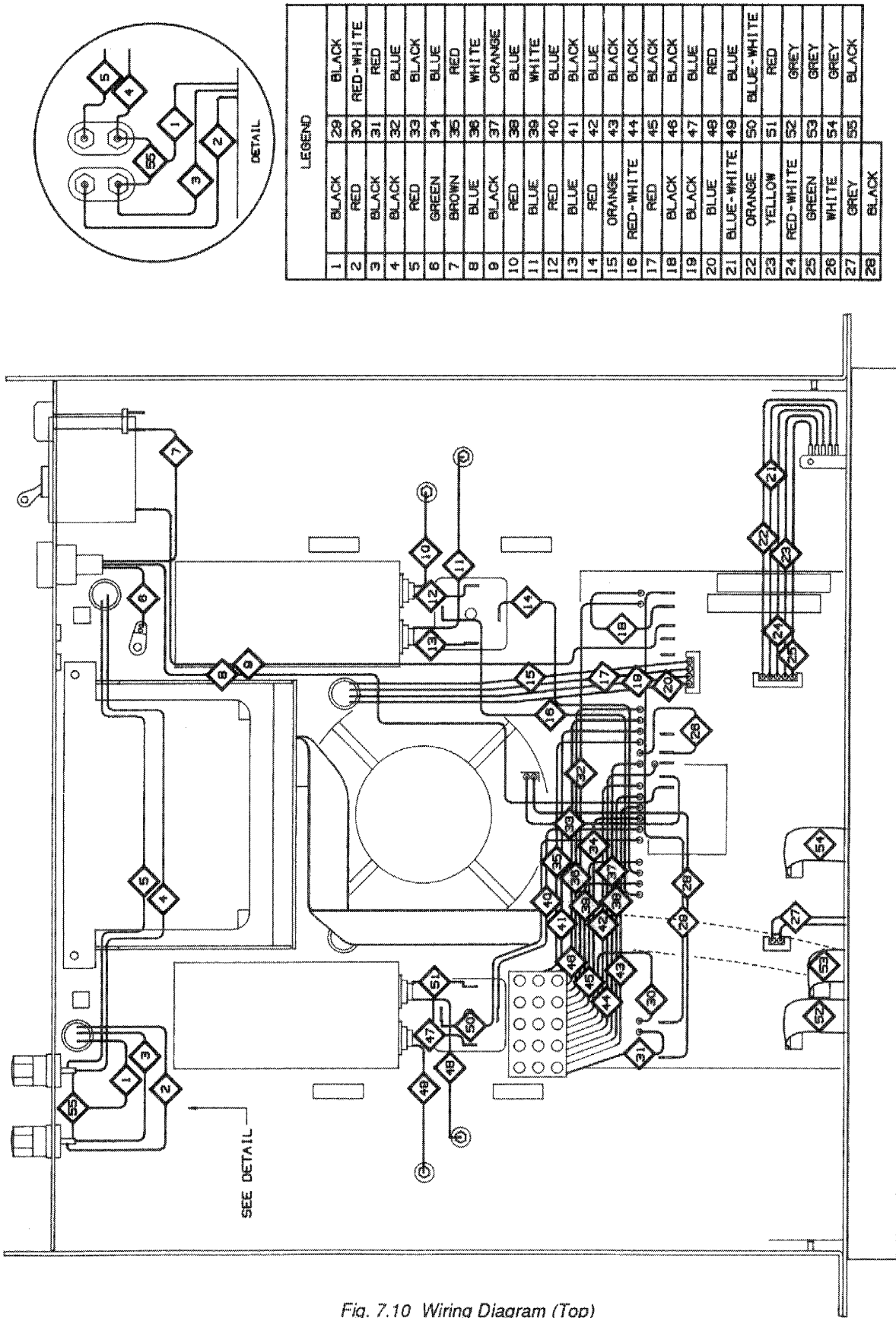


Fig. 7.10 Wiring Diagram (Top)

| LEGEND | |
|--------|-----------|
| 1 | GREY |
| 2 | GREY |
| 3 | GREY |
| 4 | BLACK |
| 5 | RED |
| 6 | GREY |
| 7 | GREY |
| 8 | GREY |
| 9 | BLUE |
| 10 | RED |
| 11 | BLACK |
| 12 | ORANGE |
| 13 | GREY |
| 14 | BLACK |
| 15 | RED |
| 16 | GREY |
| 17 | GREY |
| 18 | BLACK |
| 19 | BLACK |
| 20 | BLACK |
| 21 | BLACK |
| 22 | BLACK |
| 23 | GREY |
| 24 | GREY |
| 25 | GREY |
| 26 | BLACK |
| 27 | RED |
| 28 | GREY |
| 29 | GREY |
| 30 | BLACK |
| 31 | RED-WHITE |
| 32 | RED-WHITE |

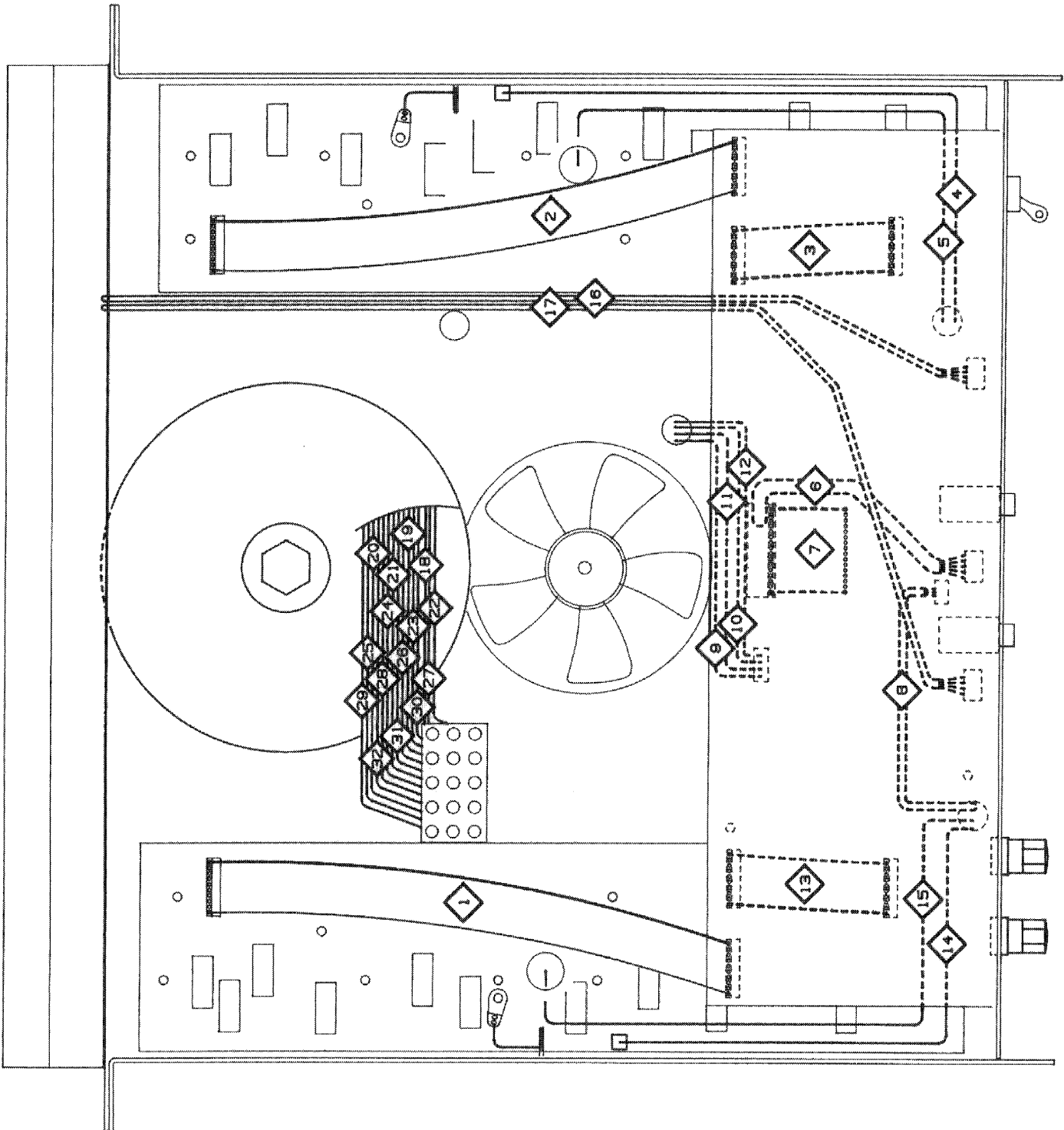
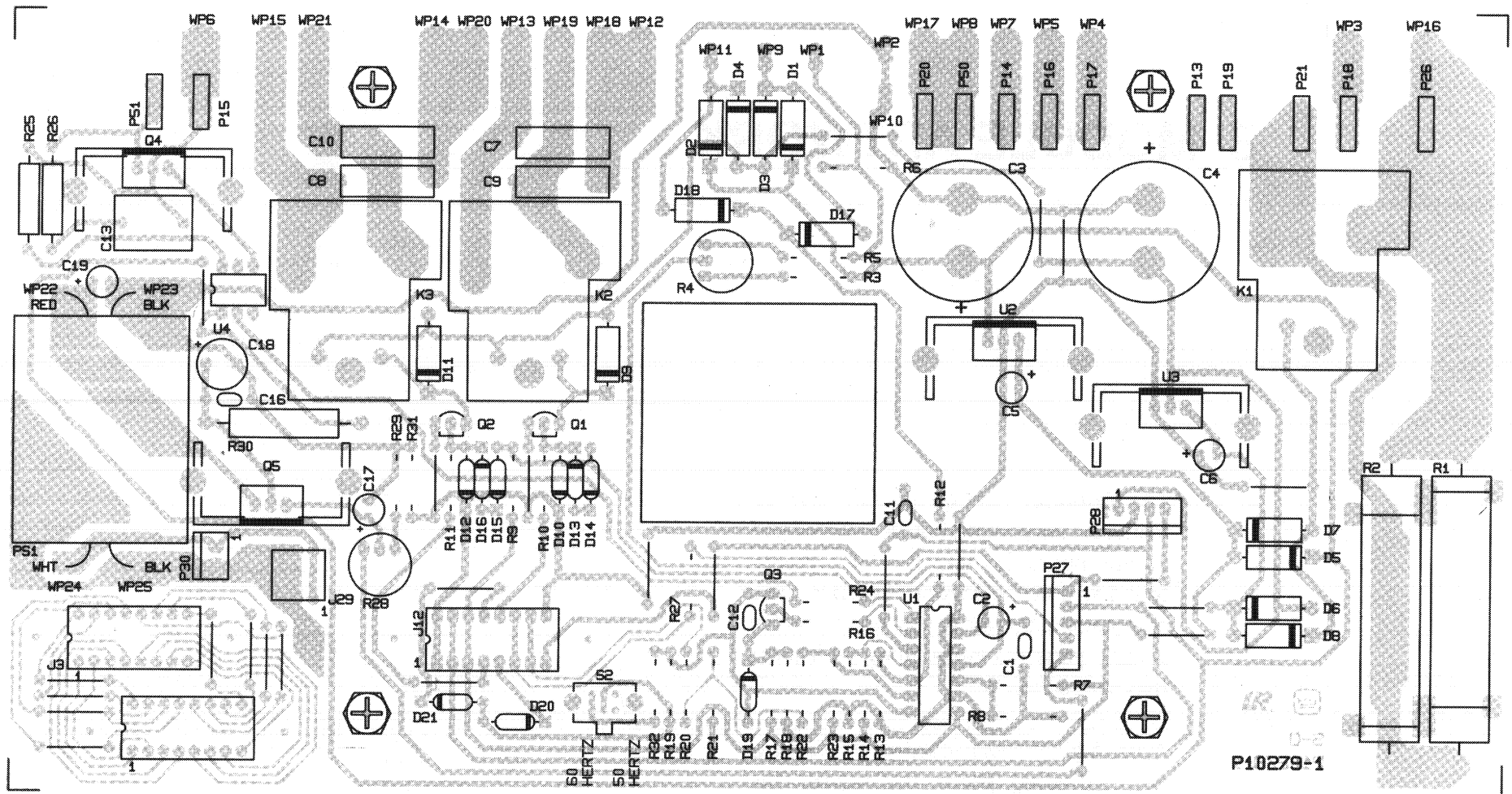


Fig. 7.11 Wiring Diagram (Bottom)

8 MODULE ARTWORK

The *Modules* section of this service manual is the compilation of artwork and circuit board layouts for the module found within the Model amplifier. For schematic diagrams see section 6 and for chassis parts drawings along with parts lists see section 7.

Note: A blank space in the right column of the following parts list means the component is the same as on the module listed immediately to the left!



* Darker tracework indicates parts side of module foil layout.
 ** Lighter tracework indicates bottom side of module foil layout.

Fig. 8.1 Control Module (Q42834-4)

CONTROL MODULE

| Circuit Designation | Q42834-4 | | Description | Part # |
|---------------------|-------------------|----------|-------------|--------|
| | Description | Part # | | |
| Resistors | | | | |
| R1 | 300 Ohm 10W | C 7669-2 | | |
| R2 | 300 Ohm 10W | C 7669-2 | | |
| R3 | 150 K Ohm .25W | C 4216-5 | | |
| R4 | 10 K Ohm Trim Pot | C 3093-9 | | |
| R5 | 150 K Ohm .25W | C 4216-5 | | |
| R6 | 100 K Ohm .25W | C 2883-4 | | |
| R7 | 33. K Ohm .25W | C 4346-0 | | |
| R8 | 100 K Ohm .25W | C 2883-4 | | |
| R9 | 3.9 K Ohm .25W | C 2630-9 | | |
| R10 | 2.2 K Ohm .25W | C 2628-3 | | |
| R11 | 2.2 K Ohm .25W | C 2628-3 | | |
| R12 | 47 K Ohm .25W | C 2880-0 | | |
| R13 | 20 K Ohm .25W | C 5046-5 | | |
| R14 | 47 K Ohm .25W | C 2880-0 | | |
| R15 | 1 K Ohm .25W | C 2627-5 | | |
| R16 | 47 K Ohm .25W | C 2880-0 | | |
| R17 | 3.3 K Ohm .25W | C 2629-1 | | |
| R18 | 12 K Ohm .25W | C 2878-4 | | |
| R19 | 91 K Ohm .25W | C 3621-7 | | |
| R20 | 4.7 K Ohm .25W | C 3939-3 | | |
| R21 | 4.7 K Ohm .25W | C 3939-3 | | |
| R22 | 470 K Ohm .25W | C 4225-6 | | |
| R23 | 470 K Ohm .25W | C 4225-6 | | |

CONTROL MODULE (CONT)

| Circuit Designation | Q42834-4 | | Description | Part # |
|---------------------|------------------|----------|-------------|--------|
| | Description | Part # | | |
| R24 | 2.2 K Ohm .25W | C 2628-3 | | |
| R25 | 180 Ohm .5W | C 1006-3 | | |
| R26 | 36 Ohm .5W | C 2988-1 | | |
| R27 | 3.0 K Ohm .25W | C 3805-6 | | |
| R28 | 5K Ohm Trim Pot | C 3670-4 | | |
| R29 | 4.7 K Ohm .25W | C 3939-3 | | |
| Capacitors | | | | |
| C1 | .1 μ f 50V | C 6130-6 | | |
| C2 | 2.2 μ f 50V | C 5362-6 | | |
| C3 | 1800 μ f 35V | C 7819-3 | | |
| C4 | 1800 μ f 35V | C 7819-3 | | |
| C5 | 2.2 μ f 50V | C 5362-6 | | |
| C6 | 2.2 μ f 50V | C 5362-6 | | |
| C7 | .1 μ f 200V | C 2938-6 | | |
| C8 | .1 μ f 200V | C 2938-6 | | |
| C9 | .1 μ f 200V | C 2938-6 | | |
| C10 | .1 μ f 200V | C 2938-6 | | |
| C11 | .1 μ f 50V | C 6130-6 | | |
| C12 | .1 μ f 50V | C 6130-6 | | |
| C13 | .47 μ f 250V | C 7502-5 | | |
| C16 | .1 μ f 50V | C 6130-6 | | |
| C17 | .01 μ f 100V | C 3161-4 | | |
| C18 | 100 μ f 35V | C 8026-4 | | |

CONTROL MODULE (CONT)

| Circuit Designation | Q42834-4 | | Description | Part # |
|----------------------------|------------------|----------|-------------|--------|
| | Description | Part # | | |
| Transistors | | | | |
| Q1 | 2N4125 PNP | C 3625-8 | | |
| Q2 | 2N4125 PNP | C 3625-8 | | |
| Q3 | 2N4125 PNP | C 3625-8 | | |
| Q4 | MAC218A6 (TRIAC) | C 7662-7 | | |
| Q5 | MJE15028 NPN | C 5890-6 | | |
| Integrated Circuits | | | | |
| U1 | LM339N | C 4345-2 | | |
| U2 | MC7815CT | C 5095-2 | | |
| U3 | MC7915CT | C 5096-0 | | |
| U4 | MOC3011 | C 7665-0 | | |
| Diodes | | | | |
| D1 | 1N4004 | C 2851-1 | | |
| D2 | 1N4004 | C 2851-1 | | |
| D3 | 1N4004 | C 2851-1 | | |
| D4 | 1N4004 | C 2851-1 | | |
| D5 | 1N4004 | C 2851-1 | | |
| D6 | 1N4004 | C 2851-1 | | |
| D7 | 1N4004 | C 2851-1 | | |
| D8 | 1N4004 | C 2851-1 | | |
| D9 | 1N4004 | C 2851-1 | | |
| D10 | 1N4004 | C 2851-1 | | |
| D11 | 1N4004 | C 2851-1 | | |
| D12 | 1N4148 | C 3181-2 | | |

CONTROL MODULE (CONT)

| Circuit Designation | Q42834-4 | | Description | Part # |
|---------------------|-----------------------|----------|-------------|--------|
| | Description | Part # | | |
| D13 | 1N4148 | C 3181-2 | | |
| D14 | 1N4148 | C 3181-2 | | |
| D15 | 1N4148 | C 3181-2 | | |
| D16 | 1N4148 | C 3181-2 | | |
| D17 | 1N4004 | C 2851-1 | | |
| D18 | 1N4004 | C 2851-1 | | |
| D19 | 1N961B 10V Zener | C 3549-0 | | |
| D20 | 1N4148 | C 3181-2 | | |
| D21 | 1N4148 | C 3181-2 | | |
| Misc. | Relay (Cover) | C 7890-4 | | |
| CB1 | Relay 30A | C 7891-2 | | |
| | 6 X 32 Hex Nut | C 1889-2 | | |
| | 14 Pin IC Socket | C 3450-1 | | |
| | 16PIN IC Socket | C 4508-5 | | |
| | #6 INT.Star Washer | C 5594-4 | | |
| | T0220 Heat Sink | C 6510-9 | | |
| | Torque Spreader | C 6541-4 | | |
| | 6-32 X .3125 RDHD | C 7009-1 | | |
| | 4 Pos 1 Center Header | C 7592-6 | | |
| | 5 Pos 1 Center Header | C 7593-4 | | |
| | .25 PC Mount | C 7817-7 | | |
| | Low Noise PWR Supply | C 8333-4 | | |
| | Connector 14-16 Ga | C 7352-5 | | |

CONTROL MODULE (CONT)

| Circuit Designation | Q42834-4 | | Description | Part # |
|---------------------|--------------------------|----------|-------------|--------|
| | Description | Part # | | |
| | Mate-N-Lock | C 7832-6 | | |
| | Mate-N-Lock Socket | C 7833-4 | | |
| | MR Control Bd (Blank) | P10279-1 | | |

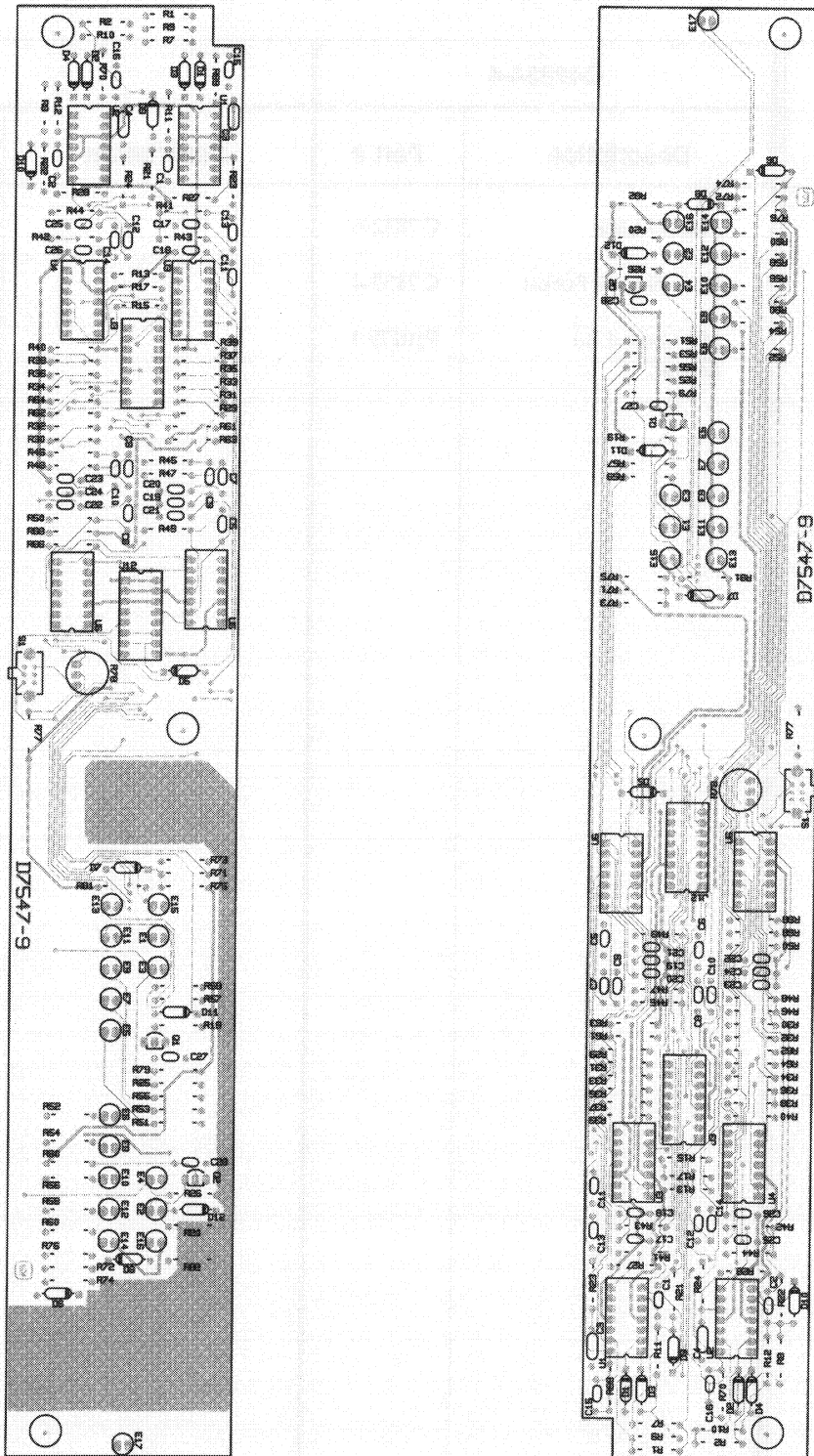


Fig. 8.2 Display Module (Q42835-1)

DISPLAY MODULE

| Circuit Designation | Q42835-1 | | Description | Part # |
|---------------------|--------------------|----------|-------------|--------|
| | Description | Part # | | |
| Resistors | | | | |
| R1 | 100 K Ohm .25W 1% | C 5707-2 | | |
| R2 | 100 K Ohm .25W 1% | C 5707-2 | | |
| R7 | 100 K Ohm .25W 1% | C 5707-2 | | |
| R8 | 100 K Ohm .25W 1% | C 5707-2 | | |
| R9 | 10 K Ohm .25W 1% | C 4859-2 | | |
| R10 | 10 K Ohm .25W 1% | C 4859-2 | | |
| R11 | 4.99K Ohm .25W 1% | C 3686-0 | | |
| R12 | 4.99K Ohm .25W 1% | C 3686-0 | | |
| R13 | 8.25 K Ohm .25W 1% | C 7810-2 | | |
| R15 | 14.3 K Ohm .25W 1% | C 6165-2 | | |
| R17 | 8.25 K Ohm .25W 1% | C 7810-2 | | |
| R19 | 820 Ohm .25W | C 3301-6 | | |
| R20 | 820 Ohm .25W | C 3301-6 | | |
| R21 | 10 K Ohm .25W 1% | C 4859-2 | | |
| R22 | 10 K Ohm .25W 1% | C 4859-2 | | |
| R23 | 1.5 K Ohm .25W | C 2876-8 | | |
| R24 | 1.5 K Ohm .25W | C 2876-8 | | |
| R25 | 820 Ohm .25W | C 3301-6 | | |
| R26 | 820 Ohm .25W | C 3301-6 | | |
| R27 | 1.8 M Ohm .25W | C 4236-3 | | |
| R28 | 1.8 M Ohm .25W | C 4236-3 | | |
| R29 | 6.81 K Ohm .25W 1% | C 6104-1 | | |
| R30 | 6.81 K Ohm .25W 1% | C 6104-1 | | |

DISPLAY MODULE (CONT)

| Circuit Designation | Q42835-1 | | Description | Part # |
|---------------------|--------------------|----------|-------------|--------|
| | Description | Part # | | |
| R31 | 1.69 K Ohm .25W 1% | C 7434-1 | | |
| R32 | 1.69 K Ohm .25W 1% | C 7434-1 | | |
| R33 | 953 Ohm .25W 1% | C 6317-9 | | |
| R34 | 953 Ohm .25W 1% | C 6317-9 | | |
| R35 | 536 Ohm .25W 1% | C 5044A8 | | |
| R36 | 536 Ohm .25W 1% | C 5044A8 | | |
| R37 | 300 Ohm .25W | C 3801-5 | | |
| R38 | 300 Ohm .25W | C 3801-5 | | |
| R39 | 390 Ohm .25W | C 6495-3 | | |
| R40 | 390 Ohm .25W | C 6495-3 | | |
| R41 | 22 K Ohm .25W | C 3302-4 | | |
| R42 | 22 K Ohm .25W | C 3302-4 | | |
| R43 | 22 K Ohm .25W | C 3302-4 | | |
| R44 | 22 K Ohm .25W | C 3302-4 | | |
| R45 | 22 K Ohm .25W | C 3302-4 | | |
| R46 | 22 K Ohm .25W | C 3302-4 | | |
| R47 | 22 K Ohm .25W | C 3302-4 | | |
| R48 | 22 K Ohm .25W | C 3302-4 | | |
| R49 | 22 K Ohm .25W | C 3302-4 | | |
| R50 | 22 K Ohm .25W | C 3302-4 | | |
| R51 | 390 Ohm .25W | C 6495-3 | | |
| R52 | 390 Ohm .25W | C 6495-3 | | |
| R53 | 390 Ohm .25W | C 6495-3 | | |
| R54 | 390 Ohm .25W | C 6495-3 | | |

DISPLAY MODULE (CONT)

| Circuit Designation | Q42835-1 | | Description | Part # |
|---------------------|---------------------|----------|-------------|--------|
| | Description | Part # | | |
| R55 | 390 Ohm .25W | C 6495-3 | | |
| R56 | 390 Ohm .25W | C 6495-3 | | |
| R57 | 390 Ohm .25W | C 6495-3 | | |
| R58 | 390 Ohm .25W | C 6495-3 | | |
| R59 | 390 Ohm .25W | C 6495-3 | | |
| R60 | 390 Ohm .25W | C 6495-3 | | |
| R61 | 1.0 M Ohm .25W | C 3198-6 | | |
| R62 | 1.0 M Ohm .25W | C 3198-6 | | |
| R63 | 3.3 M Ohm .25W | C 4237-1 | | |
| R64 | 3.3 M Ohm .25W | C 4237-1 | | |
| R66 | 47 K Ohm .25W | C 2880-0 | | |
| R68 | 1 K Ohm .25W | C 2627-5 | | |
| R69 | 5.1 M Ohm .25W | C 4126-6 | | |
| R70 | 5.1 M Ohm .25W | C 4126-6 | | |
| R71 | 820 Ohm .25W | C 3301-6 | | |
| R72 | 820 Ohm .25W | C 3301-6 | | |
| R73 | 1.8 K Ohm .25W | C 3807-2 | | |
| R74 | 1.8 K Ohm .25W | C 3807-2 | | |
| R75 | 3.3 K Ohm .25W | C 2629-1 | | |
| R76 | 3.3 K Ohm .25W | C 2629-1 | | |
| R77 | 20 K Ohm .25W | C 5046-5 | | |
| R78 | 5K Ohm Helipot Trim | C 3670-4 | | |
| R79 | 470 K Ohm .25W | C 4225-6 | | |
| R80 | 470 K Ohm .25W | C 4225-6 | | |

DISPLAY MODULE (CONT)

| Circuit Designation | Q42835-1 | | Description | Part # |
|---------------------|----------------|----------|-------------|--------|
| | Description | Part # | | |
| R82 | 1.5 K Ohm .25W | C 2876-8 | | |
| R83 | 1.5 K Ohm .25W | C 2876-8 | | |
| Capacitors | | | | |
| C1 | 27PF 100V | C 6813-7 | | |
| C2 | 27PF 100V | C 6813-7 | | |
| C3 | .47µf 50V | C 6802-0 | | |
| C4 | .47µf 50V | C 6802-0 | | |
| C5 | .1µf 50V | C 6804-6 | | |
| C6 | .1µf 50V | C 6804-6 | | |
| C7 | .1µf 50V | C 6804-6 | | |
| C8 | .1µf 50V | C 6804-6 | | |
| C9 | .1µf 50V | C 6804-6 | | |
| C10 | .1µf 50V | C 6804-6 | | |
| C11 | .1µf 50V | C 6804-6 | | |
| C12 | .1µf 50V | C 6804-6 | | |
| C13 | .1µf 50V | C 6804-6 | | |
| C14 | .1µf 50V | C 6804-6 | | |
| C15 | .47µf 50V | C 6802-0 | | |
| C16 | .47µf 50V | C 6802-0 | | |
| C17 | .001µf 100V | C 6807-9 | | |
| C18 | .001µf 100V | C 6807-9 | | |
| C19 | .001µf 100V | C 6807-9 | | |
| C20 | .001µf 100V | C 6807-9 | | |
| C21 | .001µf 100V | C 6807-9 | | |

DISPLAY MODULE (CONT)

| Circuit Designation | Q42835-1 | | Description | Part # |
|---------------------|-------------------|----------|-------------|--------|
| | Description | Part # | | |
| C22 | .001 μ f 100V | C 6807-9 | | |
| C23 | .001 μ f 100V | C 6807-9 | | |
| C24 | .001 μ f 100V | C 6807-9 | | |
| C25 | .001 μ f 100V | C 6807-9 | | |
| C26 | .001 μ f 100V | C 6807-9 | | |
| C27 | .1 μ f 50V | C 6804-6 | | |
| C28 | .1 μ f 50V | C 6804-6 | | |
| Diodes | | | | |
| D1 | 1N4148 | C 3181-2 | | |
| D2 | 1N4148 | C 3181-2 | | |
| D3 | 1N4148 | C 3181-2 | | |
| D4 | 1N4148 | C 3181-2 | | |
| D5 | 1N4148 | C 3181-2 | | |
| D6 | 1N4148 | C 3181-2 | | |
| D7 | 1N4148 | C 3181-2 | | |
| D8 | 1N4148 | C 3181-2 | | |
| D9 | 1N4148 | C 3181-2 | | |
| D10 | 1N4148 | C 3181-2 | | |
| D11 | 1N4148 | C 3181-2 | | |
| D12 | 1N4148 | C 3181-2 | | |
| LEDs | | | | |
| E1 | Yellow LED | C 4431-0 | | |
| E2 | Yellow LED | C 4431-0 | | |
| E1 | Green LED | C 7863-1 | | |

DISPLAY MODULE (CONT)

| Circuit Designation | Q42835-1 | | Description | Part # |
|----------------------------|-------------|----------|-------------|--------|
| | Description | Part # | | |
| E2 | Green LED | C 7863-1 | | |
| E3 | Green LED | C 7863-1 | | |
| E4 | Green LED | C 7863-1 | | |
| E5 | Green LED | C 7863-1 | | |
| E6 | Green LED | C 7863-1 | | |
| E7 | Green LED | C 7863-1 | | |
| E8 | Green LED | C 7863-1 | | |
| E9 | Green LED | C 7863-1 | | |
| E10 | Green LED | C 7863-1 | | |
| E11 | Green LED | C 7863-1 | | |
| E12 | Green LED | C 7863-1 | | |
| E13 | Green LED | C 7863-1 | | |
| E14 | Green LED | C 7863-1 | | |
| E15 | Green LED | C 7863-1 | | |
| E16 | Green LED | C 7863-1 | | |
| E17 | Amber LED | C 4342-9 | | |
| Integrated Circuits | | | | |
| U1 | MC33079P | C 7558-7 | | |
| U2 | MC33079P | C 7558-7 | | |
| U3 | LM339N | C 4345-2 | | |
| U4 | LM339N | C 4345-2 | | |
| U5 | LM339N | C 4345-2 | | |
| U6 | LM339N | C 4345-2 | | |

DISPLAY MODULE (CONT)

| Circuit Designation | Q42835-1 | | Description | Part # |
|---------------------|---------------------|----------|-------------|--------|
| | Description | Part # | | |
| Misc. | 16Pin Dip Cable | D 6990-2 | | |
| | Display Brd (Blank) | D 7547-9 | | |

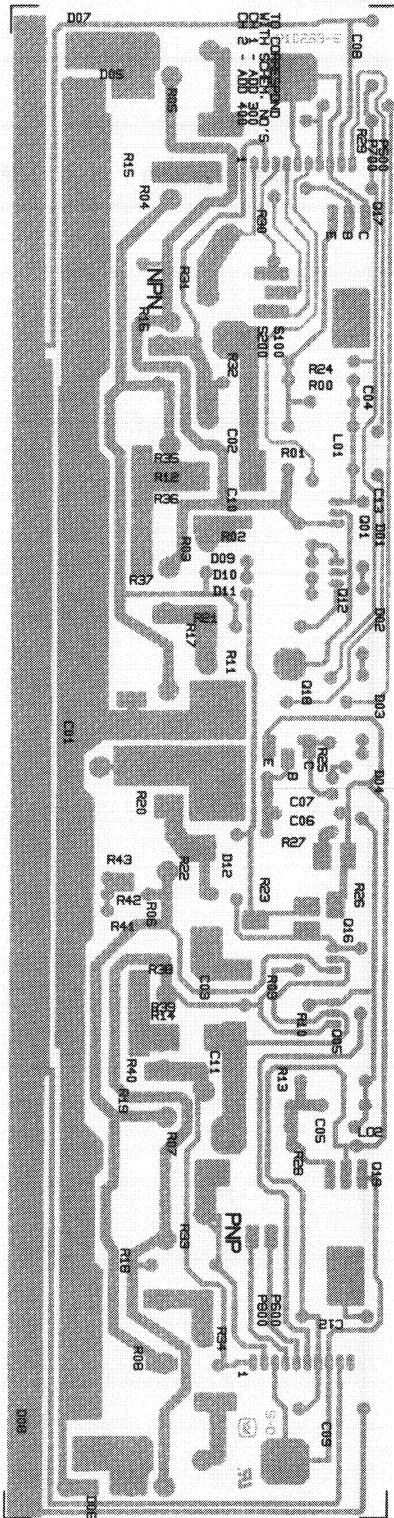


Fig. 8.3 Output Module (Q42822-9)

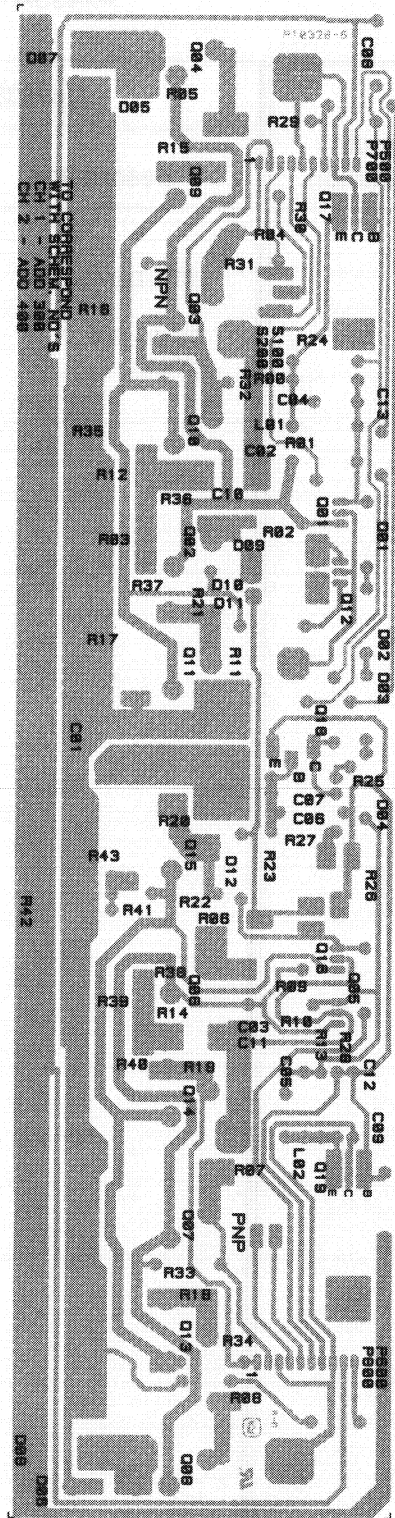


Fig. 8.4 Output Module (Q428941-7)

OUTPUT MODULE

| Circuit Designation | Q42822-9 | | Q42941-6 | |
|---------------------|--------------|----------|-------------|--------|
| | Description | Part # | Description | Part # |
| Resistors | | | | |
| R300 R400 | 68 Ohm .25W | C 6079-5 | | |
| R301 R401 | 100 Ohm .25W | C 2872-7 | | |
| R302 R402 | 5.6 Ohm .5W | C 7778-1 | | |
| R303 R403 | .2 Ohm 5W | C 6486-2 | | |
| R304 R404 | .2 Ohm 5W | C 6486-2 | | |
| R305 R405 | .2 Ohm 5W | C 6486-2 | | |
| R306 R406 | .2 Ohm 5W | C 6486-2 | | |
| R307 R407 | .2 Ohm 5W | C 6486-2 | | |
| R308 R408 | .2 Ohm 5W | C 6486-2 | | |
| R309 R409 | 22 Ohm .25W | C 7779-9 | | |
| R310 R410 | 100 Ohm .25W | C 2872-7 | | |
| R311 R411 | 2.7 Ohm 10W | C 5862-5 | | |
| R312 R412 | 2.7 Ohm 1W | C 1001-4 | | |
| R313 R413 | 68 Ohm .25W | C 6079-5 | | |
| R314 R414 | 2.7 Ohm 1W | C 1001-4 | | |

OUTPUT MODULE (CONT)

| Circuit Designation | Q42822-9 | | Q42941-6 | |
|---------------------|---------------------|----------|-------------|--------|
| | Description | Part # | Description | Part # |
| R315 R415 | .2 Ohm 5W | C 6486-2 | | |
| R316 R416 | .2 Ohm 5W | C 6486-2 | | |
| R317 R417 | .2 Ohm 5W | C 6486-2 | | |
| R318 R418 | .2 Ohm 5W | C 6486-2 | | |
| R319 R419 | .2 Ohm 5W | C 6486-2 | | |
| R320 R420 | .2 Ohm 5W | C 6486-2 | | |
| R321 R421 | 5.6 Ohm .5W | C 7778-1 | | |
| R322 R422 | 22 Ohm .25W | C 7779-9 | | |
| R323 R423 | 250 Ohm Lin Trimpot | C 6844-2 | | |
| R324 R424 | 13 K Ohm .25W | C 4300-7 | | |
| R325 R425 | 2.2 K Ohm .25W | C 2628-3 | | |
| R326 R426 | 250 Ohm Lin Trimpot | C 6844-2 | | |
| R327 R427 | 390 Ohm .25W | C 6495-3 | | |
| R328 R428 | 13 K Ohm .25W | C 4300-7 | | |
| R329 R429 | 51 Ohm .25W | C 6402-9 | | |
| R330 R430 | 102 Ohm .25W 1% | C 6626-3 | | |

OUTPUT MODULE (CONT)

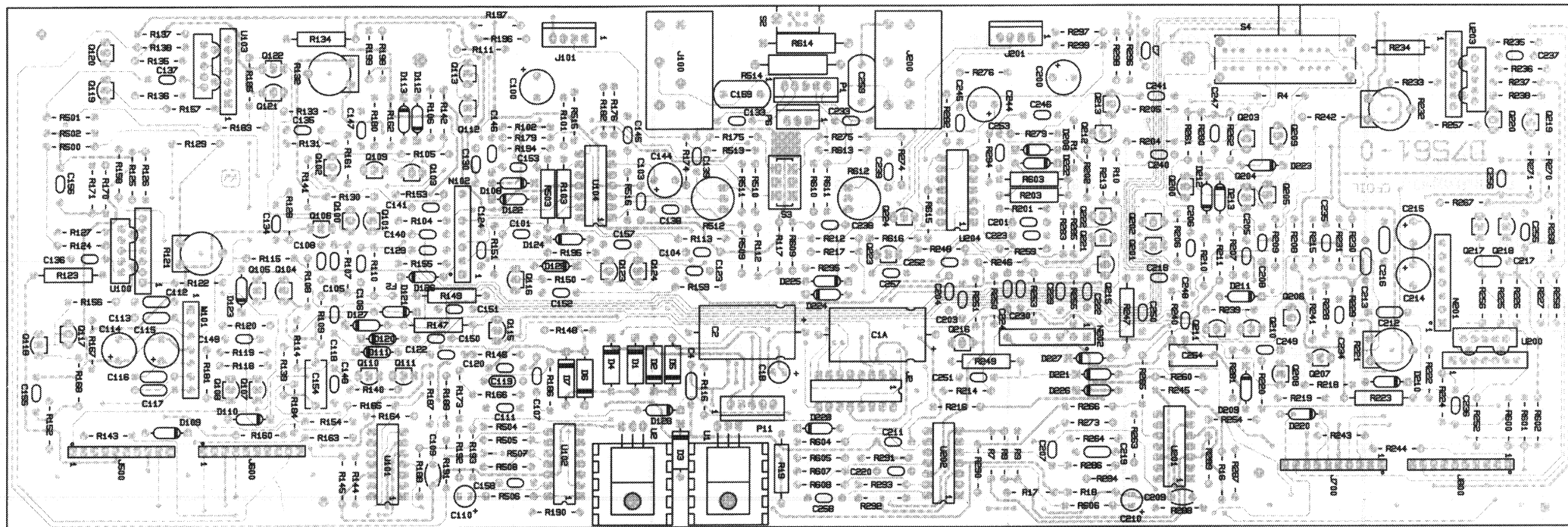
| Circuit Designation | Q42822-9 | | Q42941-6 | |
|---------------------|--------------------|----------|-------------|--------|
| | Description | Part # | Description | Part # |
| Capacitors | | | | |
| C301 C401 | .047 μ f 200V | C 3978-1 | | |
| C302 C402 | .1 μ f 200V | C 2938-6 | | |
| C303 C403 | .1 μ f 200V | C 2938-6 | | |
| C304 C404 | .0022 μ f 100V | C 3285-1 | | |
| C305 C405 | .0027 μ f 200V | C 3481-6 | | |
| C306 C406 | .01 μ f 100V | C 6806-1 | | |
| C307 C407 | .001 μ f 100V | C 6807-9 | | |
| C308 C408 | 180pF 100V | C 6810-3 | | |
| C312 C412 | 470pF 100V | C 6808-7 | | |
| C313 C413 | .47 μ f 250V | C 7502-5 | | |
| Inductors | | | | |
| L300 L400 | 2.5 μ H Coil | D 7407-6 | | |
| L301 L401 | .470 μ H | C 3510-2 | | |
| L302 L402 | .470 μ H | C 3510-2 | | |
| Diodes | | | | |
| D301 D401 | 1N4004 | C 2851-1 | | |

OUTPUT MODULE (CONT)

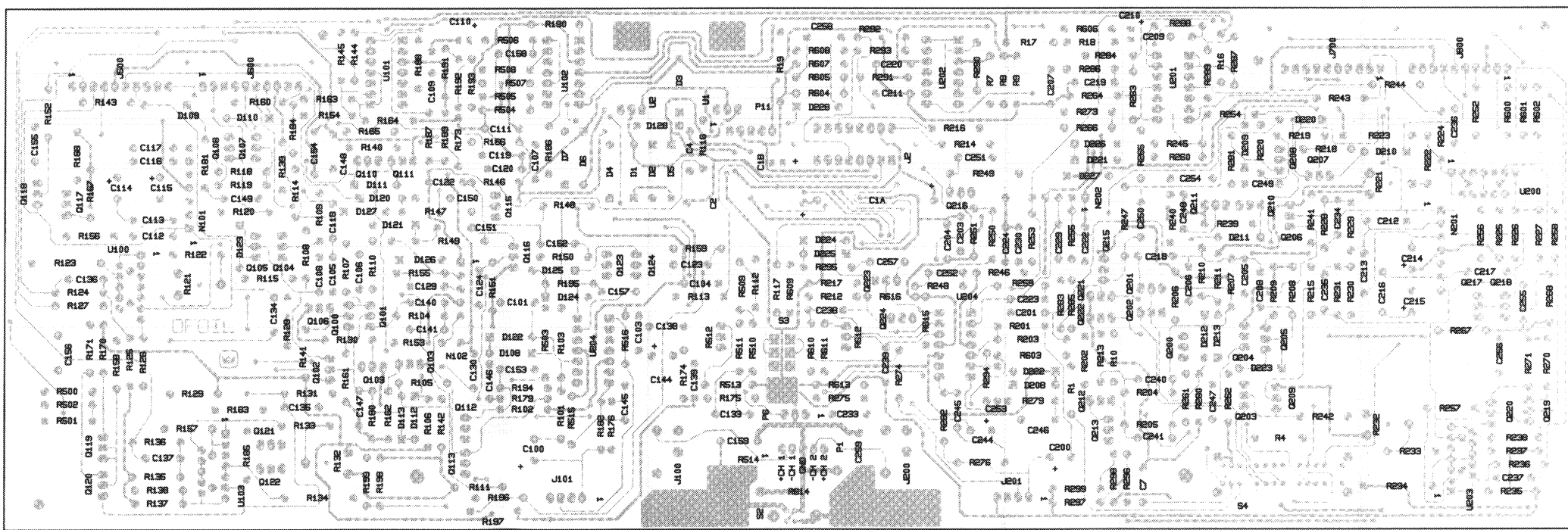
| Circuit Designation | Q42822-9 | | Q42941-6 | |
|---------------------|----------------|---------------------|-------------|--------|
| | Description | Part # | Description | Part # |
| D302 D402 | 1N4004 | C 2851-1 | | |
| D303 D403 | 1N4004 | C 2851-1 | | |
| D304 D404 | 1N4004 | C 2851-1 | | |
| D305 D405 | MR822 Pwr Rect | C 8383-9 | | |
| D306 D406 | MR822 Pwr Rect | C 8383-9 | | |
| D307 D407 | MR822 Pwr Rect | C 8383-9 | | |
| D308 D408 | 1N4004 | C 2851-1 | | |
| D309 D409 | 1N4004 | C 2851-1 | | |
| D310 D410 | 1N4004 | C 2851-1 | | |
| D311 D411 | 1N4004 | C 2851-1 | | |
| Transistors | | | | |
| Q317 Q417 | MPS-U10 NPN | C 7271-7 | | |
| Q318 Q418 | MPS8097 NPN | D 2962-5 | C 8813-5 | |
| Q319 Q419 | MPSU60 PNP | C 7318-6 | | |

OUTPUT MODULE (CONT)

| Circuit Designation | Q42822-9 | | Q42941-6 | |
|---------------------|-----------------------|----------|-------------|----------|
| | Description | Part # | Description | Part # |
| Misc. | 0 Ohm Jumper | C 5868-2 | | |
| | 10P HDR | C 7057-0 | | |
| | Output Brd (Blank) | P10263-5 | | P10328-6 |



Component Side



Foil Side

Fig. 9.5 Main Module (Q42837-7)

MAIN MODULE

| Circuit Designation | Q42837-7 | | Description | Part # |
|---------------------|---------------|----------|-------------|--------|
| | Description | Part # | | |
| Resistors | | | | |
| R2 | 10 K Ohm 1% | C 8260-9 | | |
| R4 | 10.5K Ohm 1% | C 4497-1 | | |
| R7 | 43 K Ohm | C 4167-0 | | |
| R8 | 75 K Ohm | C 5702-3 | | |
| R9 | 3.3K Ohm | C 2629-1 | | |
| R16 | 3.3K Ohm | C 2629-1 | | |
| R17 | 75 K Ohm | C 5702-3 | | |
| R18 | 43 K Ohm | C 4167-0 | | |
| R10 | N/A | | | |
| R19 | 2.7 Ohm .5W | C 2857-8 | | |
| R101 R201 | 1.02 K Ohm 1% | C 6086-0 | | |
| R102 R202 | 510 Ohm | C 4226-4 | | |
| R103 R203 | 20.5 K Ohm 1% | C 8416-7 | | |
| R104 R204 | 2.7K Ohm | C 5168-7 | | |
| R105 R205 | 2.7K Ohm | C 5168-7 | | |
| R106 R206 | 12K Ohm | C 2878-4 | | |
| R107 R207 | 68 K Ohm | C 3620-9 | | |
| R108 R208 | 820 K Ohm | C 3301-6 | | |
| R109 R209 | 68 K Ohm | C 6079-5 | | |

MAIN MODULE (CONT)

| Circuit Designation | Q42837-7 | | Description | Part # |
|---------------------|-------------------|----------|-------------|--------|
| | Description | Part # | | |
| R110 R210 | 68 K Ohm | C 3620-9 | | |
| R111 R211 | 12K Ohm | C 2878-4 | | |
| R112 R212 | 51 K Ohm | C 2881-8 | | |
| R113 R213 | 4.7K Ohm | C 3939-3 | | |
| R114 R214 | 4.7K Ohm | C 3939-3 | | |
| R115 R215 | 510 K Ohm | C 4226-4 | | |
| R116 R216 | 3.3 M Ohm | C 4237-1 | | |
| R117 R217 | 47 K Ohm | C 2880-0 | | |
| R118 R218 | 270 Ohm .25W | C 7780-7 | | |
| R119 R219 | 634 Ohm ..25W | C 6298-1 | | |
| R120 R220 | 270 Ohm ..25W | C 7780-7 | | |
| R121 R221 | 100K Ohm Trim Pot | C 5062-2 | | |
| R122 R222 | 270 K Ohm | C 2885-9 | | |
| R123 R223 | 20 K Ohm | C 5057-2 | | |
| R124 R224 | 6.8K Ohm | C 5166-1 | | |
| R125 R225 | 100 Ohm | C 7782-3 | | |

MAIN MODULE (CONT)

| Circuit Designation | Q42837-7 | | Description | Part # |
|---------------------|-------------------|----------|-------------|--------|
| | Description | Part # | | |
| R126 R226 | 100 Ohm | C 7782-3 | | |
| R127 R227 | 6.8K Ohm | C 5166-1 | | |
| R128 R228 | 10 K Ohm | C 2631-7 | | |
| R129 R229 | 100 K Ohm | C 2883-4 | | |
| R130 R230 | 100 K Ohm | C 2883-4 | | |
| R131 R231 | 10 K Ohm | C 2631-7 | | |
| R132 R232 | 100K Ohm Trim Pot | C 5062-2 | | |
| R133 R233 | 270 K Ohm | C 2885-9 | | |
| R134 R234 | 20 K Ohm | C 5057-2 | | |
| R135 R235 | 100 Ohm | C 2872-7 | | |
| R136 R236 | 6.8K Ohm | C 5166-1 | | |
| R137 R237 | 100 Ohm | C 7782-3 | | |
| R138 R238 | 6.8K Ohm | C 5166-1 | | |
| R139 R239 | 820 Ohm | C 3301-6 | | |
| R140 R240 | 68 Ohm | C 6079-5 | | |
| R141 R241 | 150 K Ohm | C 4216-5 | | |

MAIN MODULE (CONT)

| Circuit Designation | Q42837-7 | | Description | Part # |
|---------------------|--------------|----------|-------------|--------|
| | Description | Part # | | |
| R142 R242 | 150 K Ohm | C 4216-5 | | |
| R143 R243 | 100 K Ohm | C 2883-4 | | |
| R144 R244 | 100 K Ohm | C 2883-4 | | |
| R145 R245 | 3.3 K Ohm | C 4237-1 | | |
| R146 R246 | 10 K Ohm | C 2631-7 | | |
| R147 R247 | 200 Ohm .5W | C 7781-5 | | |
| R148 R248 | 2.7K Ohm | C 5168-7 | | |
| R149 R249 | 200 Ohm .5W | C 7781-5 | | |
| R150 R250 | 2.7K Ohm | C 5168-7 | | |
| R151 R251 | 10 K Ohm | C 2631-7 | | |
| R152 R252 | 12K Ohm | C 2878-4 | | |
| R153 R253 | Ø Ohm JMPR | C 5868-2 | | |
| R154 R254 | 121 K Ohm 1% | C 8261-7 | | |
| R155 R255 | 47 K Ohm | C 2880-0 | | |
| R156 R256 | 1.3K Ohm | C 3144-0 | | |
| R157 R257 | 1.3K Ohm | C 3144-0 | | |

MAIN MODULE (CONT)

| Circuit Designation | Q42837-7 | | Description | Part # |
|---------------------|---------------|----------|-------------|--------|
| | Description | Part # | | |
| R158 R258 | 9.1K Ohm | C 5878-1 | | |
| R159 R259 | 1 K Ohm | C 2627-5 | | |
| R160 R260 | 10 K Ohm 1% | C 4859-2 | | |
| R161 R261 | 47 Ohm | C 2528-5 | | |
| R162 R262 | 47 Ohm | C 2528-5 | | |
| R163 R263 | 121 K Ohm 1% | C 8261-7 | | |
| R164 R264 | 10 K Ohm 1% | C 4859-2 | | |
| R165 R265 | 121 K Ohm 1% | C 8261-7 | | |
| R166 R266 | 3.3 M Ohm | C 4237-1 | | |
| R167 R267 | 1K Ohm 1% | C 4850-1 | | |
| R168 R268 | 953 Ohm 1% | C 6317-9 | | |
| R170 R270 | 1K Ohm 1% | C 4850-1 | | |
| R171 R271 | 953 Ohm 1% | C 6317-9 | | |
| R173 R273 | 10 K Ohm 1% | C 4859-2 | | |
| R174 R274 | 24.9 K Ohm 1% | C 7155-2 | | |
| R175 R275 | 6.19 K Ohm 1% | C 3688-6 | | |

MAIN MODULE (CONT)

| Circuit Designation | Q42837-7 | | Description | Part # |
|---------------------|----------------|----------|-------------|--------|
| | Description | Part # | | |
| R176 R276 | 24.9 K Ohm 1% | C 7155-2 | | |
| R179 R279 | 1.3 K Ohm | C 3144-0 | | |
| R180 R280 | 470 Ohm | C 2626-7 | | |
| R181 R281 | 270 Ohm | C 2885-9 | | |
| R182 R282 | 22 Ohm | C 4479-9 | | |
| R183 R283 | 2.4K Ohm | C 3616-7 | | |
| R184 R284 | 470 K Ohm | C 4225-6 | | |
| R185 R285 | 2.4K Ohm | C 3616-7 | | |
| R186 R286 | 2.7 M Ohm .25W | C 2634-1 | | |
| R187 R287 | 36 K Ohm | C 4865-9 | | |
| R188 R288 | 36 K Ohm | C 4865-9 | | |
| R189 R289 | 27 K Ohm | C 5165-3 | | |
| R190 R290 | 2 M Ohm | C 3199-4 | | |
| R191 R291 | 33K Ohm | C 4346-0 | | |
| R192 R292 | 10 K Ohm | C 2631-7 | | |
| R193 R293 | 10 K Ohm | C 2631-7 | | |

MAIN MODULE (CONT)

| Circuit Designation | Q42837-7 | | Description | Part # |
|---------------------|---------------|----------|-------------|--------|
| | Description | Part # | | |
| R194 R294 | 20 K Ohm | C 5046-5 | | |
| R195 R295 | 47 Ohm | C 2528-5 | | |
| R196 R296 | 4.7 K Ohm | C 3939-3 | | |
| R197 R297 | 10 K Ohm | C 2631-7 | | |
| R198 R298 | 4.7 K Ohm | C 3939-3 | | |
| R199 R299 | 10 K Ohm | C 2631-7 | | |
| R500 R600 | 100 K Ohm | C 4216-5 | | |
| R501 R601 | 100 K Ohm | C 4216-5 | | |
| R502 R602 | 100 K Ohm | C 4216-5 | | |
| R503 R603 | 47 Ohm | C 2528-5 | | |
| R504 R604 | 470 K Ohm | C 4225-6 | | |
| R505 R605 | 470 K Ohm | C 4225-6 | | |
| R506 R606 | 1.5 K Ohm | C 2876-8 | | |
| R507 R607 | 470 Ohm | C 2626-7 | | |
| R508 R608 | 1 M Ohm | C 3198-6 | | |
| R509 R609 | 4.99 K Ohm 1% | C 3686-0 | | |

MAIN MODULE (CONT)

| Circuit Designation | Q42837-7 | | Description | Part # |
|--------------------------|--------------------|----------|-------------|--------|
| | Description | Part # | | |
| R510 R610 | 4.99 K Ohm 1% | C 3686-0 | | |
| R511 R611 | 4.99 K Ohm 1% | C 3686-0 | | |
| R512 R612 | 100 Ohm CMR Adjust | C 6173-6 | | |
| R513 R613 | 4.99 K Ohm 1% | C 3686-0 | | |
| R514 R614 | 24 Ohm 5W | C 7340-0 | | |
| Resistor Networks | | | | |
| N101 N201 | Resistor Network | D 6081-0 | | |
| N102 N202 | Resistor Network | D 6082-8 | | |
| Capacitors | | | | |
| C1 | 1000 μ f 35V | C 4303-1 | | |
| C2 | 470 μ f 35V | C 3913-8 | | |
| C6 | .01 μ f 100V | C 6806-1 | | |
| C100 C200 | 100 μ f 16V NP | C 4148-0 | | |
| C101 C201 | 47pf MICA | C 6812-9 | | |
| C103 C203 | .022 μ f 100V | C 6805-3 | | |
| C104 C204 | .022 μ f 100V | C 6805-3 | | |
| C105 C205 | 47pf 100V | C 6812-9 | | |

MAIN MODULE (CONT)

| Circuit Designation | Q42837-7 | | Description | Part # |
|---------------------|----------------|----------|-------------|--------|
| | Description | Part # | | |
| C106 C206 | 47pf 100V | C 6812-9 | | |
| C107 C207 | .1µf 50V | C 6804-6 | | |
| C108 C208 | 12pf 100V | C 6814-5 | | |
| C109 C209 | .002µf 100V | C 7613-0 | | |
| C110 C210 | 2.2µf 50V | C 5362-6 | | |
| C111 C211 | .1µf 50V | C 6804-6 | | |
| C112 C212 | .12µf 50V | C 6803-8 | | |
| C113 C213 | .47µf 50V | C 6802-0 | | |
| C114 C214 | 100µf 16V VERT | C 3729-8 | | |
| C115 C215 | 100µf 16V VERT | C 3729-8 | | |
| C116 C216 | .47µf 50V | C 6802-0 | | |
| C117 C217 | .12µf 50V | C 6803-8 | | |
| C118 C218 | 12pf 100V | C 6814-5 | | |
| C119 C219 | .47µf 50V | C 6802-0 | | |
| C120 C220 | .1µf 50V | C 6804-6 | | |
| C122 C222 | 100pf 100V | C 6811-1 | | |

MAIN MODULE (CONT)

| Circuit Designation | Q42837-7 | | Description | Part # |
|---------------------|-------------|----------|-------------|--------|
| | Description | Part # | | |
| C123 C223 | 180 pf 100V | C 6810-3 | | |
| C124 C224 | 47pf 100V | C 6812-9 | | |
| C129 C229 | 47pf 100V | C 6812-9 | | |
| C130 C230 | 27pf 100V | C 6813-7 | | |
| C133 C233 | 12pf 100V | C 6814-5 | | |
| C134 C234 | .022μf 100V | C 6805-3 | | |
| C135 C235 | .022μf 100V | C 6805-3 | | |
| C136 C236 | 470pf 100V | C 6808-7 | | |
| C137 C237 | 470pf 100V | C 6808-7 | | |
| C138 C238 | 27 pf 100V | C 6813-7 | | |
| C139 C239 | 27 pf 100V | C 6813-7 | | |
| C140 C240 | 47pf 100V | C 6812-9 | | |
| C141 C241 | 47pf 100V | C 6812-9 | | |
| C144 C244 | 100μf 16V | C 4148-0 | | |
| C145 C245 | 47 pf 100V | C 6812-9 | | |
| C146 C246 | 47 pf 100V | C 6812-9 | | |

MAIN MODULE (CONT)

| Circuit Designation | Q42837-7 | | Description | Part # |
|----------------------------|-------------------|----------|-------------|--------|
| | Description | Part # | | |
| C147 C247 | .01 μ f 50V | C 6804-6 | | |
| C148 C248 | 180pf 100V | C 6810-3 | | |
| C149 C249 | 470pf 100V | C 6808-7 | | |
| C150 C250 | .022 μ f 100V | C 6805-3 | | |
| C151 C251 | .01 μ f 100V | C 6806-1 | | |
| C152 C252 | 220pf 100V | C 6809-5 | | |
| C153 C254 | .1 μ f 250V | C 5243-8 | | |
| C154 C255 | .1 μ f 50V | C 6804-6 | | |
| C156 C256 | .1 μ f 250V | C 5243-8 | | |
| C157 C257 | 27 pf 250V | C 6813-7 | | |
| C158 C258 | .01 μ f 50V | C 6804-6 | | |
| C159 C259 | .1 μ f 100V | C 7706-2 | | |
| Integrated Circuits | | | | |
| U2 | MC7815CT | C 5095-2 | | |
| U2 | MC7915CT | C 5096-0 | | |
| U100 U200 | UPA75HA | C 6911-9 | | |
| U101 U201 | LM339N | C 4345-2 | | |

MAIN MODULE (CONT)

| Circuit Designation | Q42837-7 | | Description | Part # |
|---------------------|-------------|----------|-------------|--------|
| | Description | Part # | | |
| U102 U202 | LM339N | C 4345-2 | | |
| U1203 U203 | UPA76HA | C 6910-1 | | |
| U104 U204 | MC34084P | C 6900-2 | | |
| Transistors | | | | |
| Q100 Q200 | 2N3859A | D 2961-7 | | |
| Q101 Q201 | MPSA93 PNP | C 3578-9 | | |
| Q102 Q202 | MPSA43/A42 | C 3810-6 | | |
| Q103 Q203 | PN4250A | C 3786-8 | | |
| Q104 Q204 | 2N4125 PNP | C 3625-8 | | |
| Q105 Q205 | MPSA93 PNP | C 3578-9 | | |
| Q106 Q206 | 2N4125 PNP | C 3625-8 | | |
| Q107 Q207 | PN4250A | C 3786-8 | | |
| Q108 Q208 | 2N3859A | D 2961-7 | | |
| Q109 Q209 | 2N3859A | D 2961-7 | | |
| Q110 Q210 | MPSA43/A42 | C 3810-6 | | |
| Q111 Q211 | 2N3859A | D 2961-7 | | |

MAIN MODULE (CONT)

| Circuit Designation | Q42837-7 | | Description | Part # |
|---------------------|---------------------|----------|-------------|--------|
| | Description | Part # | | |
| Q112 Q212 | 2N4125 PNP | C 3625-8 | | |
| Q113 Q213 | 2N4125 PNP | C 3625-8 | | |
| Q115 Q215 | MPS8097 (ALTMPSA18) | D 2962-5 | | |
| Q116 Q216 | PN4250A | C 3786-8 | | |
| Q117 Q217 | 2N3859A | D 2961-7 | | |
| Q118 Q218 | 2N3859A | D 2961-7 | | |
| Q119 Q219 | 2N4125 PNP | C 3625-8 | | |
| Q120 Q220 | 2N4125 PNP | C 3625-8 | | |
| Q121 Q221 | 2N4123 | C 7458-0 | | |
| Q122 Q222 | 2N4123 | C 7458-0 | | |
| Diodes | | | | |
| D1 | 1N4004 | C 2851-1 | | |
| D2 | 1N4004 | C 2851-1 | | |
| D3 | 1N4004 | C 2851-1 | | |
| D4 | 1N4004 | C 2851-1 | | |
| D5 | 1N4004 | C 2851-1 | | |
| D6 | 1N4004 | C 2851-1 | | |
| D7 | 1N4004 | C 2851-1 | | |
| D9 | 1N3070 | C 5061-4 | | |

MAIN MODULE (CONT)

| Circuit Designation | Q42837-7 | | Description | Part # |
|---------------------|-------------|----------|-------------|--------|
| | Description | Part # | | |
| D108 D208 | 1N4148 | C 3181-2 | | |
| D109 D209 | 1N4148 | C 3181-2 | | |
| D110 D210 | 1N4148 | C 3181-2 | | |
| D111 D211 | 1N3070 | C 5061-4 | | |
| D112 D212 | 1N4148 | C 3181-2 | | |
| D113 D213 | 1N4148 | C 3181-2 | | |
| D120 D220 | 1N4148 | C 3181-2 | | |
| D121 D221 | 1N4148 | C 3181-2 | | |
| D122 D222 | 1N4148 | C 3181-2 | | |
| D123 D223 | 1N3070 | C 5061-4 | | |
| D124 D224 | 1N4148 | C 3181-2 | | |
| D125 D225 | 1N4148 | C 3181-2 | | |
| D126 D226 | 1N3070 | C 5061-4 | | |
| D127 D227 | 1N3070 | C 5061-4 | | |
| D128 D228 | 1N4148 | C 3181-2 | | |

MAIN MODULE (CONT)

| Circuit Designation | Q42837-7 | | Description | Part # |
|---------------------|---------------------|----------|-------------|--------|
| | Description | Part # | | |
| MISC. | 6X32 Hex Nut | C 1889-2 | | |
| | 6-32 X .50 RDHD | C 2176-3 | | |
| | IC Socket, 14Pin | C 3450-1 | | |
| | IC Socket, 16Pin | C 4508-5 | | |
| | TO220 Heat Sink | C 5341-0 | | |
| | #6 INT. Star Washer | C 5594-4 | | |
| S2 | Ground Lift Switch | C 7363-2 | | |
| S3 | Sensitivity Switch | C 7363-2 | | |
| S4 | Dual/Mono Switch | C 6781-6 | | |
| | 3POS .Header | C 7526-4 | | |
| | 10" Ribbon Cable | D 6619-7 | | |
| | 6" Ribbon Cable | D 6620-5 | | |
| | Circuit Board | D 7561-0 | | |
| | .25 Phone Jack | C 6777-4 | | |
| | Phone Jack Cover | C 6778-2 | | |

