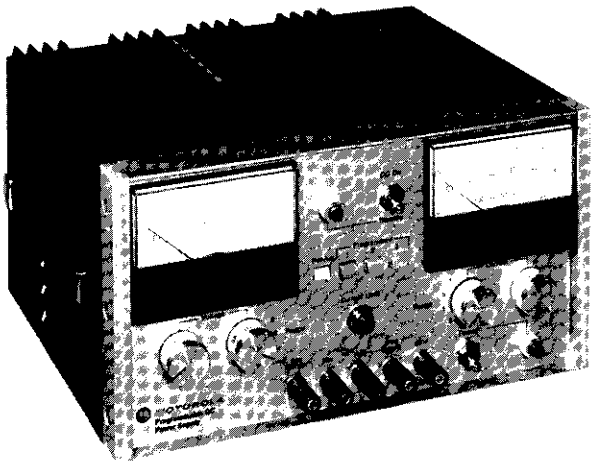
MOTOROLA
test equipment

DC POWER SUPPLY
0-20 V, 0-5A



S-1347 VARIABLE
S-1348 PROGRAMMABLE

68P81069A28-B

DC POWER SUPPLY

0-20 V, 0-5 A
S1347A AND B VARIABLE
S1348A AND B PROGRAMMABLE

CONTENTS

MOTOROLA INC.
Communications Division

service publications
1301 E. Algonquin Road, Schaumburg, IL 60196

68P81069A28-B
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SPECIFICATIONS

		TYPICAL
AC Line Input	Maximum Range: 105-130 V ac or 210-240 V ac; 50-60 Hz Power Consumption: 200 Watts	120 or 240 V ac 60 Hz 180 Watts
DC Output Ranges	Voltage: 0-2 V dc, 0-10 V dc, 0-20 V dc Current: 0-100 mA, 0-500 mA, 0-1.0 A, 0-5.0 A	
DC Load Regulation	Constant Voltage Mode: 0.03% or 2 mV (zero to full load) Constant Current Mode: 0.04% or 2 mA	0.01% 0.02%
Ripple and Noise	Less than 30 mV peak-to-peak under any line or load condition	20 mV
Meters	DC Voltage: Two Scales; 0-10 and 0-20 DC Current: Two scales; 0-1 and 0-5 Accuracy: ±5%	
Temperature Range	Operation: 0° to +50°C Storage: -40° to +75°C	
Physical Characteristics	Size: 11-1/2" (29.5 cm) W x 6-3/4" (17.3 cm) H x 12-1/2" (32 cm) D Weight: 26 lb. (11.8 kg)	

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

1. DESCRIPTION

1.1 GENERAL

The variable and programmable dc power supplies are ruggedized, solid-state, bench-type test equipments ideally suited for servicing a wide variety of electronic equipments. Excellent voltage regulation from no load (receiver in standby) to full load (transmitter keyed-up) conditions, plus adjustable current limiting provide protection for the power supply and the equipment operated from the power supply. The output voltage has an extremely low ripple content. Extensive RF shielding permits reliable operation within the RF environment frequently encountered in the service shop. Remote sensing of the output voltage, directly at the load terminations, compensates for power cable losses. This maintains better accuracy of the voltage/current level to the load equipment.

1.2 MODEL DIFFERENCES

The Model S1347 provides a variable dc output between 0 to 20 V. The Model S1348 provides either the variable dc output, or pushbutton selection of any of three preprogrammed voltages between 0 to 20 V. The A suffix and B suffix models (S1347A or S1347B and S1348A or S1348B) have identical specifications and features. The B suffix denotes a later production version, and includes some internal circuit changes. Service diagrams for both model versions are provided in this manual. Unless otherwise stated, all information in this manual applies to both model versions.

1.3 ACCESSORY POWER CABLES

Two power cables are available as accessory items for use with these power supplies. The TEKA-63 Power Cable has two leads and is used when operating without remote sensing. The SKN6026A Power Cable has four leads and is used for remotely sensing the condition at the equipment load terminations. Both power cables are 36-inches long and are terminated in banana plugs for connection to the power supply, and in alligator clips for connection to the load.

2. PREPARATION OF USE

2.1 EQUIPMENT LOCATION

Select a flat surface for mounting the power supply that is convenient to the AC power source. Allow adequate space around the rear heat sink to permit free airflow for cooling purposes.

2.2 POWER REQUIREMENTS

A nominal 117 V (106-128 V), 50-60 Hz power source is required to operate the power supply. Before connecting power to the power supply, place the POWER switch in the off (down) position. Plug the three-wire power cord into the AC power convenience outlet. Do not use the power supply until you are familliar with the usage of all operator's items and you have read the Operating Instructions provided in this instruction manual.

WARNING

Do not disconnect the third wire ground on the power cord. This could create an electrical shock hazard. If a two-wire to three-wire adapter is used, be sure that the third wire is connected to a good earth ground. Be sure that the power supply GND terminal and all equipment used with the power supply are grounded to same earth grounding point.

2.3 CONVERSION TO OPERATION FROM 220 V AC

Conversion to operation from a nominal 220 V (210-240 V) 50-60 Hz power source is made as follows:

Step 1. Remove the case as detailed in the MAINTENANCE section of this manual.

Step 2. Refer to the appropriate power supply schematic diagram at the rear of this manual for the wiring details of power transformer T1.

Step 3. Connect the two primary windings in series by: (1) removing the red jumper connected between A2 and A4, and (2) removing the red jumper connected to A1 and reconnecting it to A2. Note that the power transformer terminal numbers are stamped below each terminal for ready identification.

Step 4. Replace the 2.5 A line fuse with the 1.25 A fuse supplied with the power supply.

Step 5. Apply the 220 V and 1.25 A decals to the power supply rear chassis.

Step 6. Replace case.

3. DESCRIPTION OF OPERATOR'S ITEMS

The location of operator's items is shown in Figure 1.

Item 1. POWER Switch: On-off switch for the power supply.

Item 2. POWER Indicator Lamp (Red): Lights when POWER switch is on.

Item 3. DC ON/STANDBY Switch:

STANDBY position disconnects the output from all binding posts. This permits adjustment of the power supply output voltage and current limiting levels without interference from the load.

DC ON position connects the output to all binding posts for full operation.

Item 4. DC ON Indicator (Yellow): Lights when the power supply is in the DC ON mode.

Item 5. POS Binding Post: A five-way binding post for the positive (+) dc output voltage.

Item 6. NEG Binding Post: A five-way binding post for the negative (-) dc output voltage.

NOTE

The dc output voltages at the POS and NEG binding posts float with respect to the GND binding post.

Item 7. GND Binding Post: A five-way binding post that is connected to earth (or safety) ground through the power supply chassis and the three-wire ac power cord.

Item 8. POS SENSE Binding Post: A five-way binding post that is used for remotely sensing the positive voltage at the load termination. When using the remote sensing function, both the positive and negative load terminations must be sensed.

Item 9. NEG SENSE Binding Post: A five-way binding post that is used for remotely sensing the negative load termination.

CAUTION

Don't remove the sense straps except as directed in the OPERATING INSTRUCTIONS of this instruction manual.

Item 10. DC VOLTS Meter: Monitors the power supply dc output voltage. The two scales permit reading of three voltage ranges: 0-2 V, 0-10 V, or 0-20 V.

Item 11. VOLTAGE RANGE Selector: Selects one of three dc output voltage ranges: 2 (0-2 V), 10 (0-10 V), or 20 (0-20 V).

Item 12. VOLTAGE Control: Adjusts the output voltage within the range determined by the VOLTAGE RANGE selection.

Item 13. DC AMPERES Meter: Monitors the power supply output current or limiting current. The two scales permit reading of four current ranges: 0-100 mA, 0-500 mA, 0-1 A, or 0-5 A.

Item 14. CURRENT RANGE Selector: Selects one of four output current ranges: .1 (0-100 mA), .5 (0-500 mA), 1 (0-1 A) or 5 (0-5 A).

Item 15. CURRENT Control: Adjusts the load current limiting level within the range determined by the CURRENT RANGE selection.

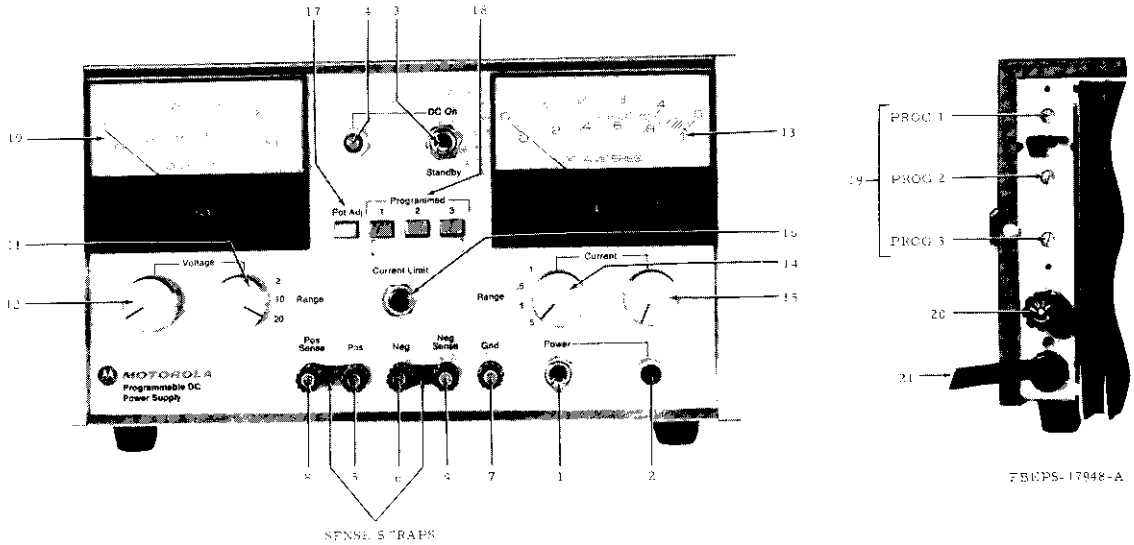


Figure 1. Identification of Operator's Items
Model S1348B Programmable DC Power Supply Shown

Item 16. CURRENT LIMIT Switch: Places an internal short across the POS and NEG binding posts. This switch is used when adjusting the CURRENT control for the desired load current limiting level. The short circuit current is monitored by the DC AMPERES meter.

NOTE

Items 17, 18 and 19 are included only on the Programmable DC Power Supply.

Item 17. POT ADJ Switch: When this switch is depressed (engaged), it permits variable control of the power supply output using the VOLTAGE RANGE selector and the VOLTAGE control. This switch is interlocked with the PROGRAMMED 1-2-3 switches. Only one of these switches may be selected at a time.

Item 18. PROGRAMMED 1-2-3 Switches: These three switches permit selection of one of three preset dc output voltages. Selection of a programmed voltage: (1) switches the DC VOLTS meter to the 0-20 (V) scale, and (2) disables the variable output voltage feature.

Item 19. Programmed Voltage Controls: These three rear-panel mounted controls are used to preset the three programmed output voltages. On some power supplies, these controls are covered by the equipment model number/serial number nameplate to prevent tampering after being preset.

Item 20. FUSE: Use 2.5 A fuse for 105-130 V ac line input and 1.25 A fuse for 210-240 V ac line input.

Item 21. Line Cord: Three-wire line cord which grounds the power supply chassis to earth (or safety) ground.

4. OPERATING INSTRUCTIONS

4.1 INTRODUCTION

4.1.1 It is recommended that the power supply be given an operational checkout before it is used to ensure proper operation, and to familiarize the operator with its use. Follow the instructions given in the OPERATIONAL CHECKOUT section of this instruction manual. In addition, the programmable power supply requires voltage presetting before this feature can be used. Refer to paragraph 4.5 for presetting instructions.

4.1.2 Normally, the power supply is used as a constant voltage source. The output voltage is first set to the desired level and then the current is set to the maximum allowable limit. The power supply delivers any current needed to maintain this set voltage level up to the limiting current level. When the power supply is used as a constant current source, the current is first set to the desired level and then the voltage is set to the maximum allowable limit. The power supply delivers any voltage needed to maintain this set current level up to the limiting voltage.

4.2 OPERATION AS A CONSTANT VOLTAGE SOURCE

Step 1. Place the DC ON/STANDBY switch in the STANDBY position.

Step 2. Verify that the sense straps are firmly connected between the binding posts as shown in Figure 1. Do not allow the sense straps to become disconnected while the power supply is operating in the DC ON mode.

Step 3. Connect the power supply NEG and POS output binding posts to the power terminals on the load equipment.

Step 4. Turn on the power supply with the POWER switch. The red POWER indicator should light.

Step 5. Adjust the output voltage by placing the VOLTAGE RANGE selector in the proper position, and setting the VOLTAGE control for the required output level. The variable controls on the programmable power supply are operational only when the POT ADJ pushbutton is selected (depressed).

Step 6. Adjust the limiting current level by depressing (and holding in) the CURRENT LIMIT pushbutton. Then, place the CURRENT RANGE selector in the proper position and set the CURRENT control for the maximum allowable load current, or for 10-15% over the anticipated load demand.

Step 7. Apply power to the load by placing the DC ON/STANDBY switch in the DC ON position. The yellow DC ON indicator should turn on.

NOTE

Further adjustments of the output voltage and current limiting level must be done with the DC ON/STANDBY switch in the STANDBY position. This allows accurate adjustment without interference from the load.

4.3 OPERATION AS A CONSTANT CURRENT SOURCE

Step 1. Place the DC ON/STANDBY switch in the STANDBY position.

Step 2. Verify that the sense straps are firmly connected between the binding posts as shown in Figure 1. Do not allow the sense straps to become disconnected while the power supply is operating in the DC ON mode.

Step 3. Connect the power supply NEG and POS output binding posts to the power terminals on the load equipment.

Step 4. Turn on the power supply with the POWER switch. The red POWER indicator should light.

Step 5. Adjust the output current by depressing (and holding in) the CURRENT LIMIT pushbutton. Then, place the CURRENT RANGE selector in the proper position and set the CURRENT control for the required load current.

Step 6. Adjust the limiting output voltage by placing the VOLTAGE RANGE selector in the proper position, and setting the VOLTAGE control for the maximum allowable output voltage.

Step 7. Apply power to the load by placing the DC ON/STANDBY switch in the DC ON position. The yellow DC ON indicator should turn on.

NOTE

Further adjustments of the output current and voltage limiting level must be done with the DC ON/STANDBY switch in the STANDBY position. This allows accurate adjustment without interference from the load.

4.4 OPERATION WITH REMOTE SENSING

The power supply uses the remote sensing feature to maintain a constant voltage across the load regardless of power cable losses. When using the remote sensing function, both the positive and negative terminations at the load are sensed. This requires a four-wire power cable, such as the Motorola Model SKN6026A. Remove the sense straps connected across the power supply binding posts shown in Figure 1. Connect the four-wire power cable to these same binding posts. Except for using the four-wire power cable, operate the power supply as described in the preceding paragraphs.

CAUTION

Verify that the four-wire cable is firmly connected to the power supply binding posts and to the load terminations. Don't allow the output leads to become disconnected while operating in the DC ON mode, as the sense leads could carry full rated current.

4.5 PROGRAMMED OUTPUT VOLTAGES

To select a PROGRAMMED (preset) voltage, depress the respective 1, 2, or 3 pushbutton. It may be necessary to adjust the preset voltages. Proceed as follows:

Step 1. Remove equipment nameplate if it is covering the programmed voltage controls on the rear chassis. These controls are shown in Figure 1.

Step 2. Depress the PROGRAMMED 1 pushbutton. Adjust voltage control R37 for the desired preset voltage. It is recommended that the PROGRAMMED 1 voltage control be preset to the lowest of the three programmed voltages and that PROGRAMMED 3 to preset to the highest voltage.

NOTE

The range of the three programmed voltage outputs is 0-20 V. These outputs are preset and monitored on the 0-20 scale of the DC VOLTS meter.

Step 3. Depress the PROGRAMMED 2 pushbutton. Adjust voltage control R38 for desired preset voltage.

Step 4. Depress the PROGRAMMED 3 pushbutton. Adjust voltage control R39 for desired preset voltage.

Step 5. Depress the POT ADJ pushbutton to restore the power supply to variable output voltage operation.

5. OPERATIONAL CHECKOUT

5.1 INTRODUCTION

The following procedures enable a technician to thoroughly check out the power supply during the initial installation or after the unit has been repaired. Be sure the sense straps are connected between the POS to POS SENSE and NEG to NEG SENSE binding posts, as shown in Figure 1.

CAUTION

Don't allow the sense straps to become disconnected during the operational checkout. Otherwise, the output voltage could rise and cause damage.

5.2 INITIAL CONTROL AND SWITCH POSITIONS

POWER Switch: Off (down)
DC ON/STANDBY Switch: STANDBY

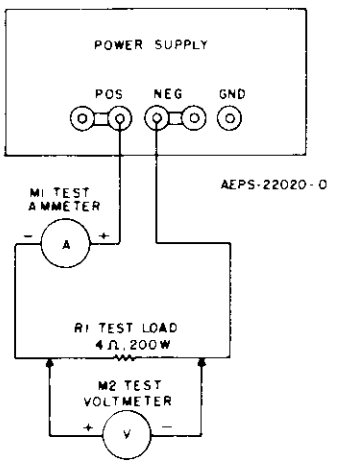


Figure 2. Equipment Setup for Operational Checkout

VOLTAGE Control: Fully counterclockwise
VOLTAGE RANGE Selector: 20
CURRENT Control: Fully clockwise
CURRENT RANGE Selector: .1
POT ADJ Switch: Depressed (programmable models only)

5.3 EQUIPMENT CONNECTIONS

Connect a 0-5 A ammeter, a 0-25 V dc voltmeter and a 4-ohm, 200 W load resistor to the power supply as shown in Figure 2. Connect the ac line cord into a power outlet and turn on the power supply.

5.4 VARIABLE POWER SUPPLY OPERATIONAL CHECKOUT

5.4.1 Voltage Tracking

Step 1. Place the DC ON/STANDBY switch in the DC ON position. The yellow DC ON indicator should turn on.

Step 2. While observing both the power supply DC VOLTS meter and the test voltmeter, rotate the VOLTAGE control clockwise. The voltage indictions on both meters should track together until the maximum 20 V output is reached. Confirm that both meter readings are the same at maximum output. If they are not, the power suply metering circuit may have to be recalibrated. Refer to the MAINTENANCE section of this manual for calibration details. Rotate the VOLTAGE control fully counterclockwise (ccw).

Step 3. Repeat Step 2 and check for proper voltmeter tracking for the other two VOLTAGE RANGES: 10 and 2.

5.4.2 Current Tracking

Step 1. Switch the VOLTAGE RANGE selector to 20. Adjust the VOLTAGE control for 15 V output.

Step 2. Depress the CURRENT LIMIT switch. The two voltage readings should drop to near zero and the power supply DC AMPERES meter should deflect to full scale. Release the CURRENT LIMIT switch.

Step 3. While holding the CURRENT LIMIT switch depressed, rotate the CURRENT control fully ccw, then fullly cw. The DC AMPERES meter should dip to zero, then return to a full scale indication. This action verifies that any current limit level for the .1 A range can be set. Release the CURRENT LIMIT switch. If the current meter does not dip to zero and return to full scale, the power supply metering circuit may have to be recalibrated. Refer to the MAINTENANCE section of this manual for calibration details.

Step 4. Repeat Step 3 and check for proper current meter tracking for the other three CURRENT RANGES: .5, 1 and 5.

5.5 PROGRAMMABLE POWER SUPPLY OPERATIONAL CHECKOUT

5.5.1 Voltage Tracking

Depress the POT ADJ switch. Check for proper voltmeter tracking of the variable boltage output by doing all steps in paragraph 5.4.1.

5.5.2 Current Tracking

Check for proper current meter tracking of the variable voltage output by doing all steps in paragraph 5.4.2. (POT ADJ switch must be depressed.)

5.5.3 Programmable Voltage Tracking

Step 1. Remove equipment nameplate if it is covering the programmed voltage controls on the rear chassis. These controls are shown in Figure 1.

Step 2. Depress the PROGRAMMED 1 pushbutton switch. Rotate PROGRAMMED 1 voltage control R37 through its full range while observing both voltmeters. The voltage readings should vary between zero and full scale (0-20 V).

Step 3. Depress the PROGRAMMED 2 switch. Rotate PROGRAMMED 2 voltage control R38 through its full range while observing both voltmeters. The voltage readings should vary between zero and full scale.

Step 4. Depress the PROGRAMMED 3 switch. Rotate PROGRAMMED 3 voltage control R39 through its full range while observing both voltmeters. The voltage readings should vary between zero and full scale.

Step 5. Place the DC ON/STANDBY switch in the STANDBY position.

6. THEORY OF OPERATION

6.1 INTRODUCTION

These power supplies use a series-pass transistor regulator circuit controlled by the Motorola type MC1566 Integrated Circuit Regulator. The IC regulator provides both voltage and current limiting to obtain a high degree of regulation with minimal ripple content. There are four functional blocks to these power supplies as described in the following paragraphs. See schematic diagrams at the rear of this instruction manual for circuitry.

6.2 POWER SOURCES

Two power sources are used; one for the power supply load, and one for the integrated circuit regulator. The load source provides about 34 V dc at 5 A to series-pass transistors Q1 and Q2. This source is developed

using a full-wave bridge rectifier with capacitive filtering. The integrated circuit regulator source provides a floating output of about 28 V dc at 100 mA. This source is developed using a second full-wave bridge rectifier with capacitive filtering. Since this source is floating, any ground connection made to it will prevent proper operation and may damage the integrated circuit regulator.

6.3 REGULATING CIRCUITRY

6.3.1 Integrated circuit regulator U1 uses two differential amplifiers as operational amplifiers for both voltage and current limiting control. A differential voltage is created at the output of the operational amplifiers by sampling the power supply output, and comparing it with the voltage references determined by the VOLTAGE and CURRENT control settings. When this differential voltage exceeds a certain level, an OR gate is enabled within U1. This OR gate controls the conduction rate of an output amplifier within U1 which subsequently controls the conduction rate of Darlington-connected current drivers Q3 and Q4. This action controls the conduction rate of series-pass transistors Q1 and Q2, regulating the power supply output. To summarize, a change in the load demand is sensed by regulator U1. This causes a corresponding change in the conduction of Q3, Q4 and Q1, Q2 regulating the output.

6.3.2 The OR gate within U1 provides for power supply output regulation by either the voltage sensing or current sensing operational amplifiers. During normal operation, the power supply is used as a constant voltage source. The voltage sensing operational amplifier regulates the output. However, as the load demand increases to the preset limiting value, the current sensing operational amplifier provides an output to the OR gate. This changes the conduction rates of Q3, Q4 and Q1, Q2. The output voltage to the load decreases holding the load current to the preset level. When the power supply is used as a constant current source, the current sensing operational amplifier regulates the output. The power supply delivers any voltage needed to maintain this current up to the preset voltage limit. At this point, the voltage sensing operational amplifier takes over control of the power supply regulation.

6.4 VOLTAGE AND CURRENT REFERENCE CIRCUITS

6.4.1 Regulator U1 includes a reference voltage source to provide a constant + 18.5 V dc to CURRENT control R19. Current RANGE switch S2 determines the voltage developed across CURRENT control R19 by changing the series resistance of the circuit. The current sensing operational amplifier within U1 compares the voltage across R19 with the voltage developed across output sensing resistor R21. When the voltage differential is positive, the current sensing operational amplifier activates.

6.4.2 Regulator U1 also includes a voltage-controlled current source to provide a constant 1 mA for VOLTAGE control R16 through voltage RANGE switch S4A; or to programmed voltage potentiometers R37, R38 and R39 through PROGRAMMED 1-2-3 voltage switch S6. Voltage control R16 determines the current flow through voltage RANGE switch S4 by changing the series resistance of the circuit. The voltage sensing operational amplifier within U1 compares the voltage developed across R16 with the voltage on the POS SENSE line. When the voltage differential exceeds about 15 mV, the voltage sensing operational amplifier activates.

6.5 REMOTE SENSING

6.5.1 The remote sensing function uses feedback voltages from the load terminations to compensate for power cable losses. This maintains better accuracy of the voltage/current level to the load equipment. During operation with remote sensing, a four-wire power cable is used. The sense straps shown in Figure 1 must be removed for proper output sensing. Two power cable wires carry the load, and the other two wires sense the voltages at the load terminations. Since the sense wires draw only a small current, large voltage drops do not impair the excellent regulation of U1.

6.5.2 Diodes CR4 and CR5 provide a difference of about 0.75 V between the output line and its respective sense line. This prevents damage to the load if a sense input "floats" due to a disconnected or broken sense wire. Without CR4 and CR5, the output voltage could rise to maximum. The sensing capability is limited to no greater than a 0.75 V drop from the power supply terminals to the load.

7. MAINTENANCE

7.1 GENERAL

The power supply requires a minimum amount of service. Components used operate well within their capabilities. If service is required, the trouble can be quickly resolved using conventional troubleshooting techniques.

7.2 CASE REMOVAL AND REPLACEMENT

Step 1. Remove the three Phillips head screws holding the case to the rear chassis.

Step 2. Remove the four Phillips head screws holding the case to the bottom chassis.

Step 3. Remove the aluminum rail from each side of the front panel by unscrewing the three Phillips head screws on each rail.

Step 4. Grasp the two side handles. Spread the case apart while sliding the case upward out of the chassis

and toward the rear of the power supply. When the case is free of the chassis, lift it out.

Step 5. To replace the case, reverse Steps 1 through 4. Secure the case with *all* screws to maintain proper rf shielding.

7.3 METER ZERO ADJUSTMENT

If the DC VOLTS or DC AMPERES meter does not return to zero when ac power is turned off, the meter may require a mechanical zero adjustment. The adjustment screw is on the meter face. Make the adjustment only when the power supply is in its normal upright operating position, and the ac power is turned off.

7.4 VOLTMETER CALIBRATION

If the DC VOLTS meter does not properly track adjustments of the variable VOLTAGE control, or does not indicate full scale deflection when the variable VOLTAGE control is fully clockwise, recalibrating the metering circuits may resolve the problem. Calibrate the DC VOLTS meter as follows using an accurate voltmeter:

Step 1. Remove case as described in paragraph 7.2.

Step 2. Set up equipment as shown in Figure 3. Test switch S1 is kept open during the calibration procedure. For the programmable dc power supply, depress the POT ADJ pushbutton. Switch the power supply to the DC ON mode of operation.

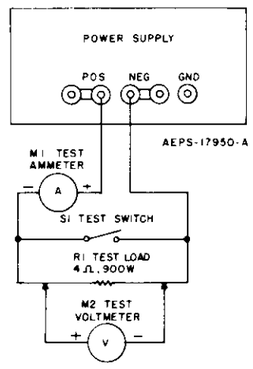


Figure 3. Equipment Setup For Meter Calibration

Step 3. Set VOLTAGE RANGE selector to 2. Adjust VOLTAGE control to indicate 2 V on the test voltmeter.

Step 4. Adjust R29 until power supply meter reads 2 V.

Step 5. Set VOLTAGE RANGE selector to 10. Adjust VOLTAGE control to indicate 10 V on the test voltmeter.

Step 6. Adjust R31 until power supply meter reads 10 V.

Step 7. Set VOLTAGE RANGE selector to 20. Adjust VOLTAGE control to indicate 20 V on the test voltmeter.

Step 8. Adjust R30 until power supply meter reads 20 V.

7.5 AMMETER CALIBRATION

If the DC AMPERES meter does not properly track adjustments of the variable CURRENT control, or does not indicate full scale deflection when the variable CURRENT control is fully clockwise, recalibrating the metering circuits may resolve the problem. Calibrate the DC AMPERES meter as follows using an accurate ammeter:

Step 1. Remove case as described in paragraph 7.2.

Step 2. Set up equipment as shown in Figure 3. For the programmable dc power supply, depress the POT ADJ pushbutton. Switch the power supply to the DC ON mode of operation.

Step 3. Close external test switch.

Step 4. Set CURRENT RANGE selector to .1. Adjust CURRENT control to indicate 100 mA on test ammeter.

Step 5. Adjust R27 until power supply DC AMPERES meter reads 100 mA.

Step 6. Set CURRENT RANGE selector to .5. Adjust CURRENT control to indicate 500 mA on test ammeter.

Step 7. Adjust R28 until power supply DC AMPERES meter reads 500 mA.

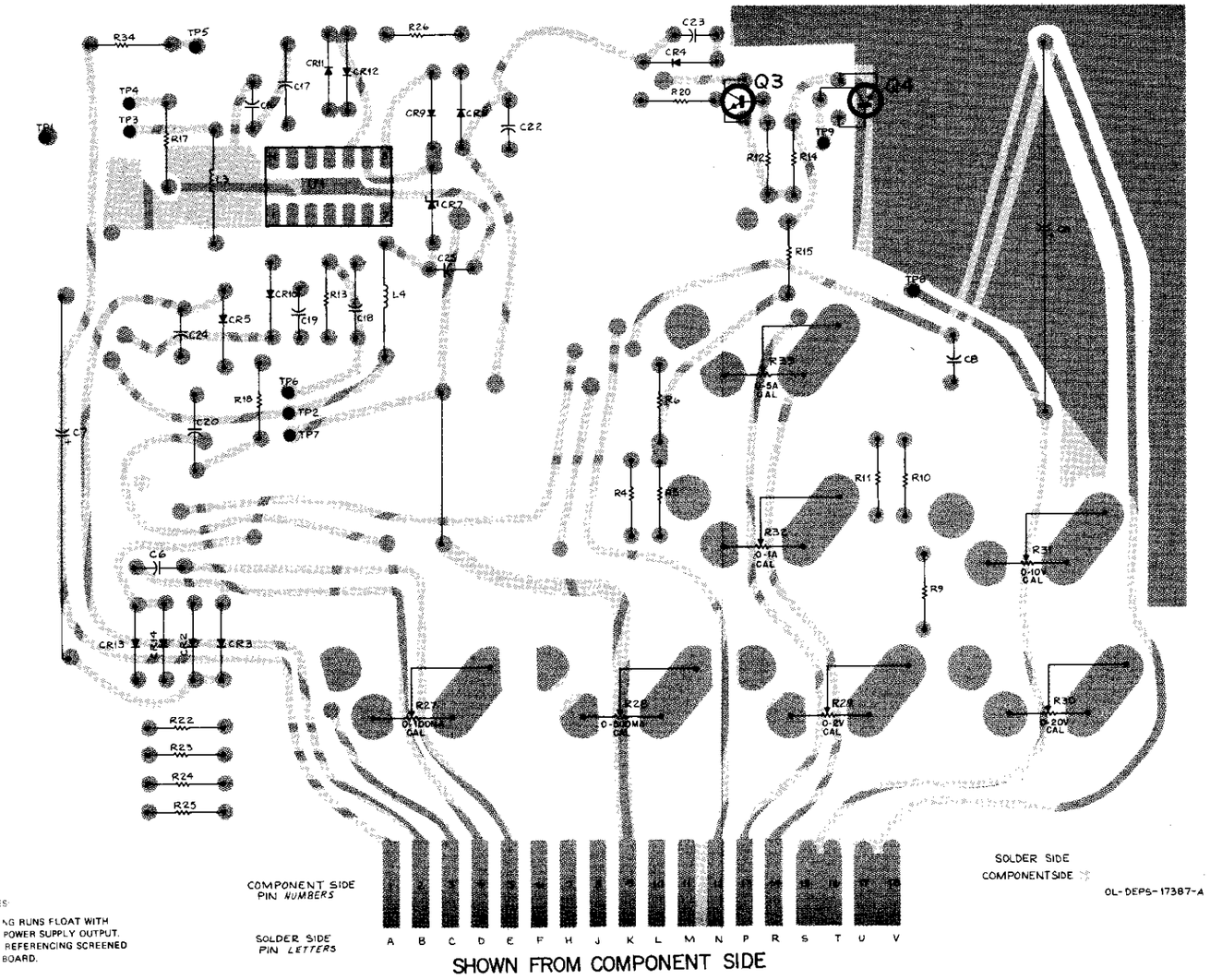
Step 8. Set CURRENT RANGE selector to 1. Adjust CURRENT control to indicate 1 A on test ammeter.

Step 9. Adjust R32 until power supply DC AMPERES meter reads 1 A.

Step 10. Set CURRENT RANGE selector to 5. Adjust CURRENT control to indicate 5 A on test ammeter.

Step 11. Adjust R33 until power supply DC AMPERES meter reads 5 A.

EARLIER VERSION REGULATOR BOARD



ES:
NG RUNS FLOAT WITH
POWER SUPPLY OUTPUT
REFERENCING SCREENED
BOARD.

PARTS LIST

S1347A Variable DC Power Supply
S1348A Programmable DC Power Supply PL-3489-A

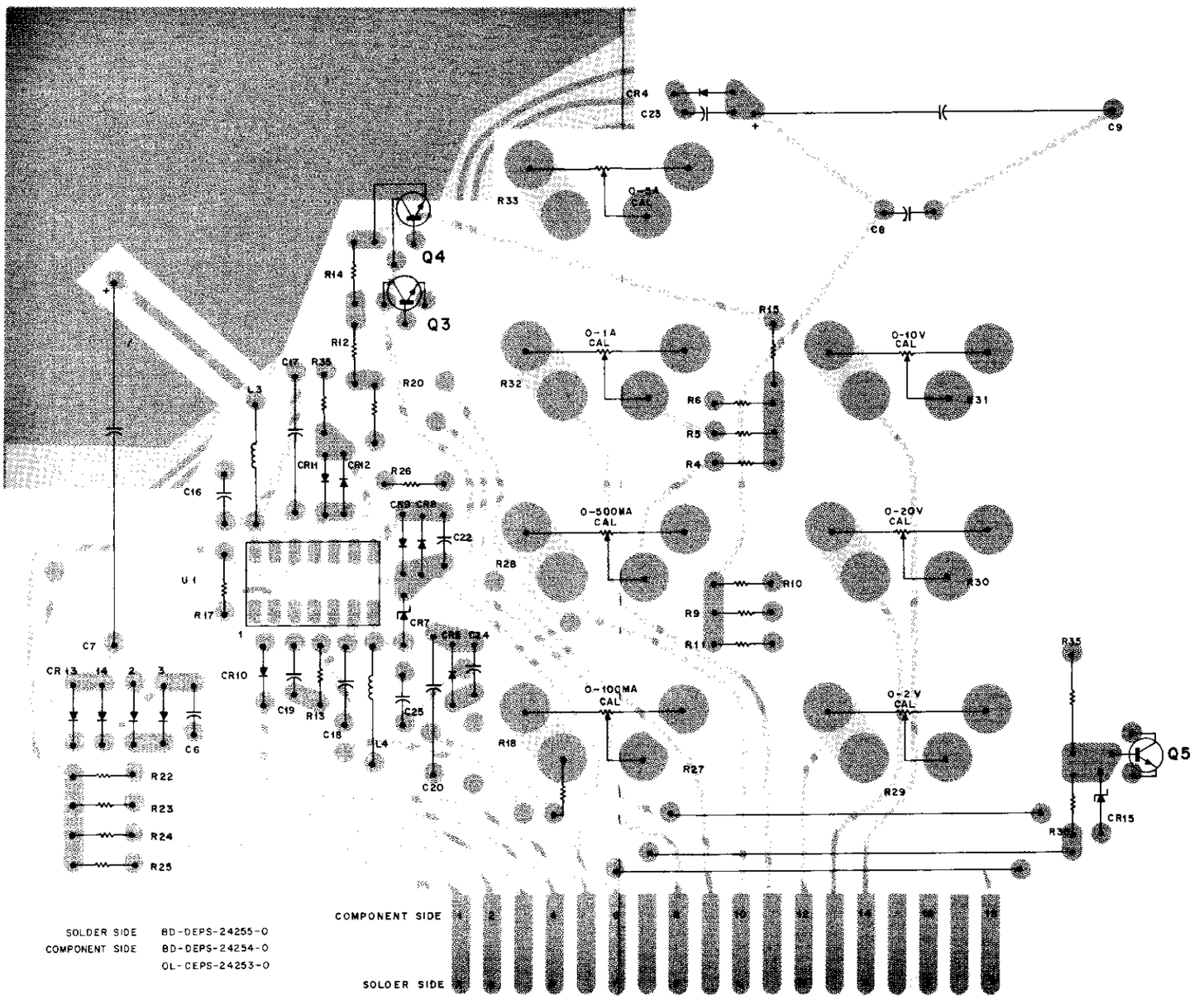
REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		CAPACITOR, fixed:
C1, 2, 12, 13, 14, 15	21-861219	.001 uF; GMV; 500 V; CODED RED (feed-thru)
C3, 4, 21, 26, 27, 28, 29, 30, 31	21-865923	.001 uF ±10%; 500 V
C5	23-82464C01	4000 uF +100-10%; 135 V Does not include: 42-82465C01 CLAMP
C6, 8, 10, 11, 16, 22, 23, 24, 25	21-859601	.001 uF ±20%; 600 V
C7, 9	23-82077C25	500 uF +25-10%; 60 V
C17, 20	8-82905G24	0.1 uF ±10%; 100 V
C18	21-82428B35	.01 uF -80-20%; 500 V
C19	21-840048	240 pF ±5%; 500 V
C32	21-859601	.001 uF ±20%; 600 V (Model S1348 only)
		DIODE: SEE NOTE
CR1	48-83043H76	bridge; type MDA962-6
CR2 thru 5, 8 thru 14	48-82466H13	silicon
CR6	--	NOT USED
CR7	48-83696E14	S1347A, S1347B Zener 8.2 V S1347B, S1348B Zener 8.2 V
CR15	48-82256C36	Zener type; 28 V
		LAMP:
DS1	65-83507K01	neon: 117 V; RED
DS2	65-83508K01	incandescent; 28 V; YEL
		FUSE:
F1	65-129421	2-1/2 A; 250 V (used in 120 V application)
	or65-135678	1-1/4 A; 125 V (used in 220 V application)
		CONNECTOR:
J1	9-84380C01	36-pin; female
J2, 3	46-863925	Binding Post; RED
J4, 5	46-863924	Binding Post; BLK
J6	46-82921K01	Binding Post; GRN
		COIL, RF; choke:
L1, 2, 6, 7	24-84203D82	
L3, 4	24-82592D01	100 uH (coded BLK-BLU)
L5, 8	24-83355K01	
		METER:
M1	72-83379K02	S1347A
	72-80324A42	S1347B; 0-10 mA
M2	72-83379K01	S1348A
	72-80324A41	S1348B; 0-1 mA
		TRANSISTOR, NPN: SEE NOTE
Q1, 2	48-84302A56	2N3772; Does not include: 7-84827F01 HEATSINK 14-965854 INSULATOR, mica 11-490487 COMPOUND
Q3		48-83750G01 for A Models, 48-869721 for B Models
Q4	48-82554F31	2N4922
Q5	48-869763	M9763
		RESISTOR, fixed: ±5%; 1/4 W:
R1	6-127C49	1k ±10%; 2 W
R2, 3	17-82291B24	0.1; 3 W
R4	6-124A09	22
R5	6-124A17	47
R6	6-124A35	270
R6	6-124A35	270
R9	6-124A63	3.9k
R10	6-124A55	1.8k
R11	6-124A38	360
R12	6-124A65	4.7k
R13	6-124A51	1.2k
R14	6-124A41	470
R15, 20	6-124A25	100
R16	18-83358K01	variable; 3-section; consisting of: R16A - 25k R16B - 12.5k R16C - 2.5k
R17		Factory selected value
R18	6-124A33	220
R19	18-83359K02	variable; 1k
R21	17-83737K02	0.68 ±3%; 25 W
R22		Factory selected value
R23	6-124A84	30k
R24	6-124A76	13k
R25	6-124A56	2k
R26, 34	6-124A72	10k
R27	18-83168C12	variable: 1.0 ±20%; 1.5 W
R28	18-83168C14	variable: 10 ±20%; 1.5 W
R29	18-83168C09	variable: 50 ±10%; 3 W
R30	18-83168C01	variable: 500 ±20%; 2 W
R31	18-83168C11	variable; 300 ±20%; 1.5 W
R32	18-83168C15	variable: 30 ±20%; 1.5 W
R33	18-83168C02	variable: 100 ±20%; 3 W
R35	6-126C63	3.9k ±10%; 1 W
R36	6-125C45	680 ±10%; 1/2 W
R37, 38, 39	18-83725K01	variable: 20k (Model S1348 only)
		SWITCH:
S1	40-83378K01	toggle; dpdt
S2	40-83377K02	rotary; 2-pole; 4-position
S3	40-880208	pushbutton; spst
S4	40-83377K01	rotary; 2-pole; 3-position
S5	40-83378K02	toggle; 4-pole; double throw
S6	40-84324C05	pushbutton; 4 section, interlocking, dpdt (Model S1348 only)
		TRANSFORMER:
T1	25-84830F01	power
		INTEGRATED CIRCUIT: SEE NOTE
U1	51-84320A74	type MC1566
		AC LINE CORD:
W1	30-865903	3-conductor; 18 ga.; 8-ft. length; includes molded-on 3-contact male plug
		LAMPHOLDER:
XDS1	9-83506K03	neon
XDS2	9-83506K04	pilot
		FUSEHOLDER:
XF1	9-82083C02	extractor post type
		NON-REFERENCED ITEMS
	1V80770B65	COVER & HANDLE ASSY.
	4-868830	WASHER, shoulder: 4 used
	26B83095K01	METER ENCLOSURE A Models
	26B83095K02	AC LINE ENCLOSURE B Models
	47-83356K01	SHORTING STRAP
	13-82447K01	ESCUTCHEON (Model S1347 only)
	13-82447K02	ESCUTCHEON (Model S1438 only)
	15-83092K01	DC OUTPUT ENCLOSURE
	15-83093K01	COVER, dc output
	7-83724K01	RAIL, mounting
	46-83723K01	GUIDE, circuit board
	33-83410K03	LABEL, 120 volt
	33-83410K01	LABEL, fuse
	37-846782	GROMMET; 2 used
	42-82143C01	CLAMP, cable: 3/16"
	42-82143C02	CLAMP, cable: 1/4"
	7-82561K01	HEATSINK (PC. BD. MOUNT)
	1V80774B02	CONVERSION KIT (for 220 Vac)
	36-84675F03	KNOB, control: 4 used
	31-135272	TERMINAL STRIP
	7-83738K01	BRACKET (Model S1438 only)
	3-488236	SCREW, machine: No. 4-40 x 3/8"; 2 used (Model S1348 only)
	11-84306A55	CEMENT, "Loctite" (as req'd.)

NOTE:

Replacement diodes, transistors and integrated circuits must be ordered by Motorola part number for optimum performance.

LATER VERSION REGULATOR BOARD

SHOWN FROM COMPONENT SIDE

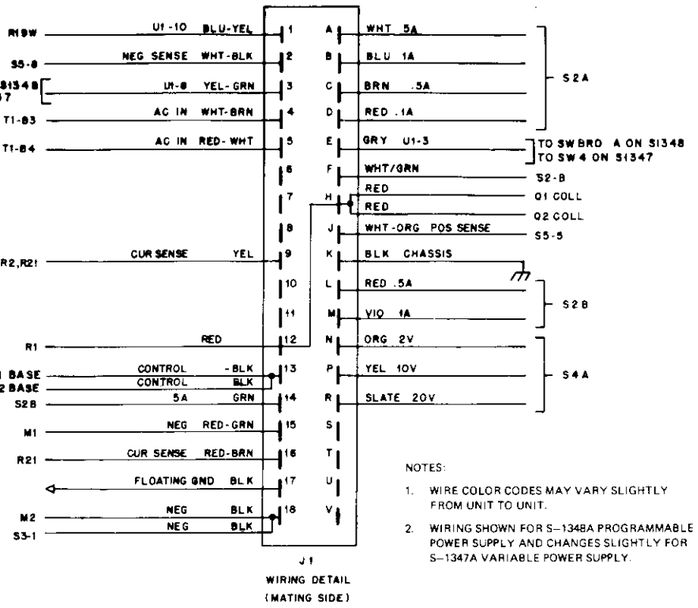


SOLDER SIDE BD-DEPS-24255-O
COMPONENT SIDE BD-DEPS-24254-O
OL-DEPS-24253-O

SERVICING NOT

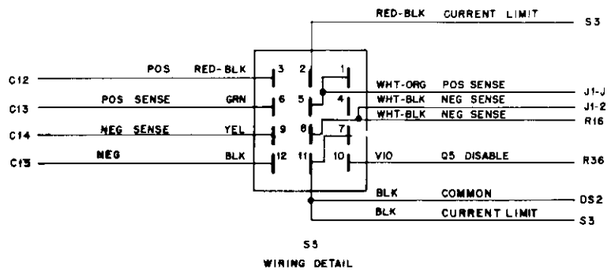
1. MANY PLA
RESPECT T
2. COMPONEN
ON CIRCUIT

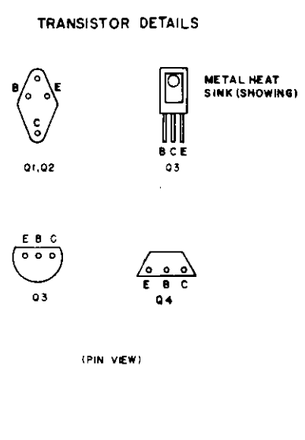
Regulator Board Circuit Board Details
and Parts List
Motorola No. PEPS-24252-O
6/14/77-PH1

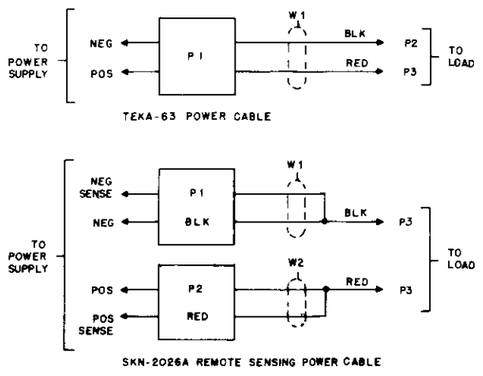


NOTES:

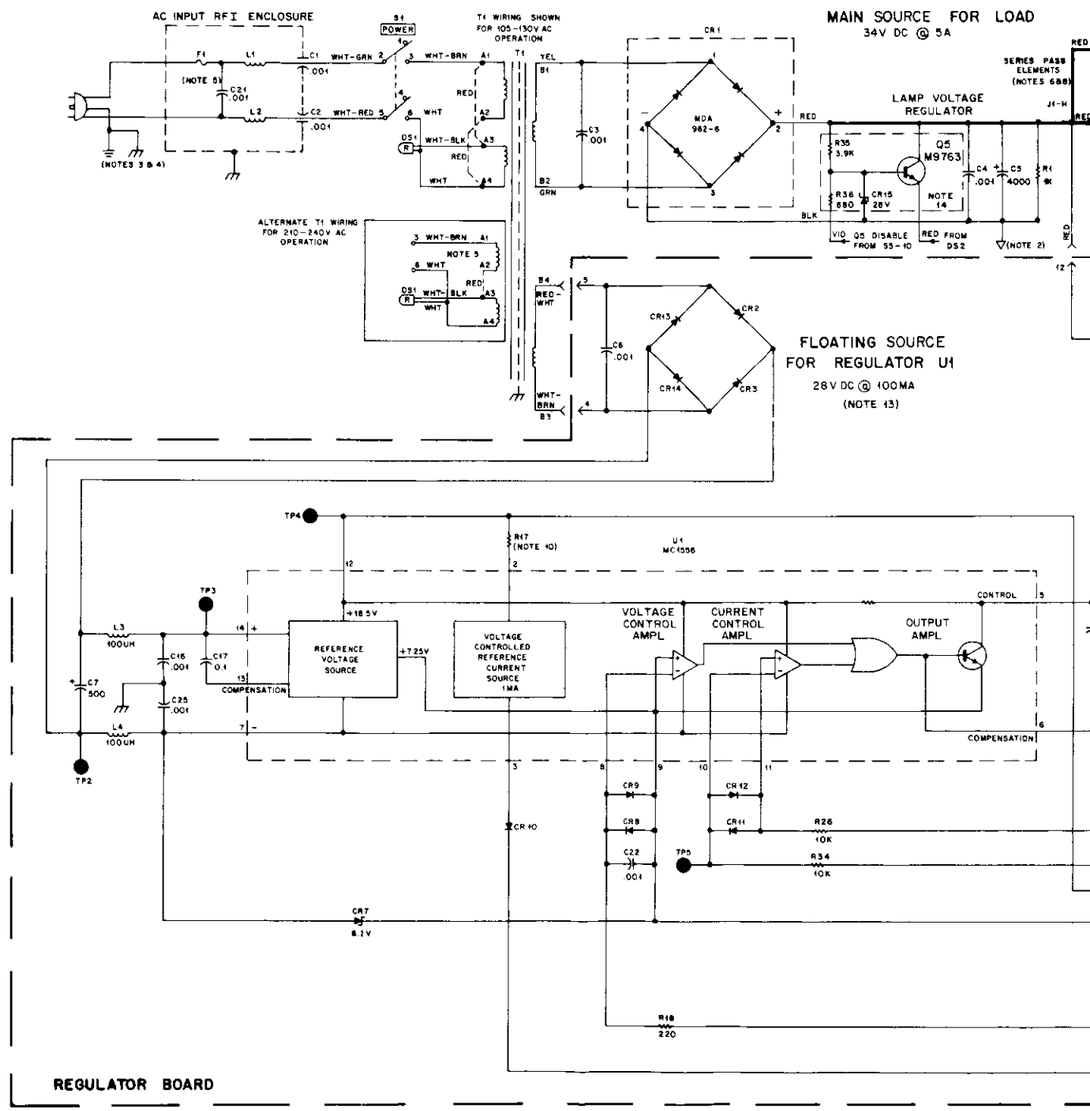
1. WIRE COLOR CODES MAY VARY SLIGHTLY FROM UNIT TO UNIT.
2. WIRING SHOWN FOR S-1348A PROGRAMMABLE POWER SUPPLY AND CHANGES SLIGHTLY FOR S-1347A VARIABLE POWER SUPPLY.

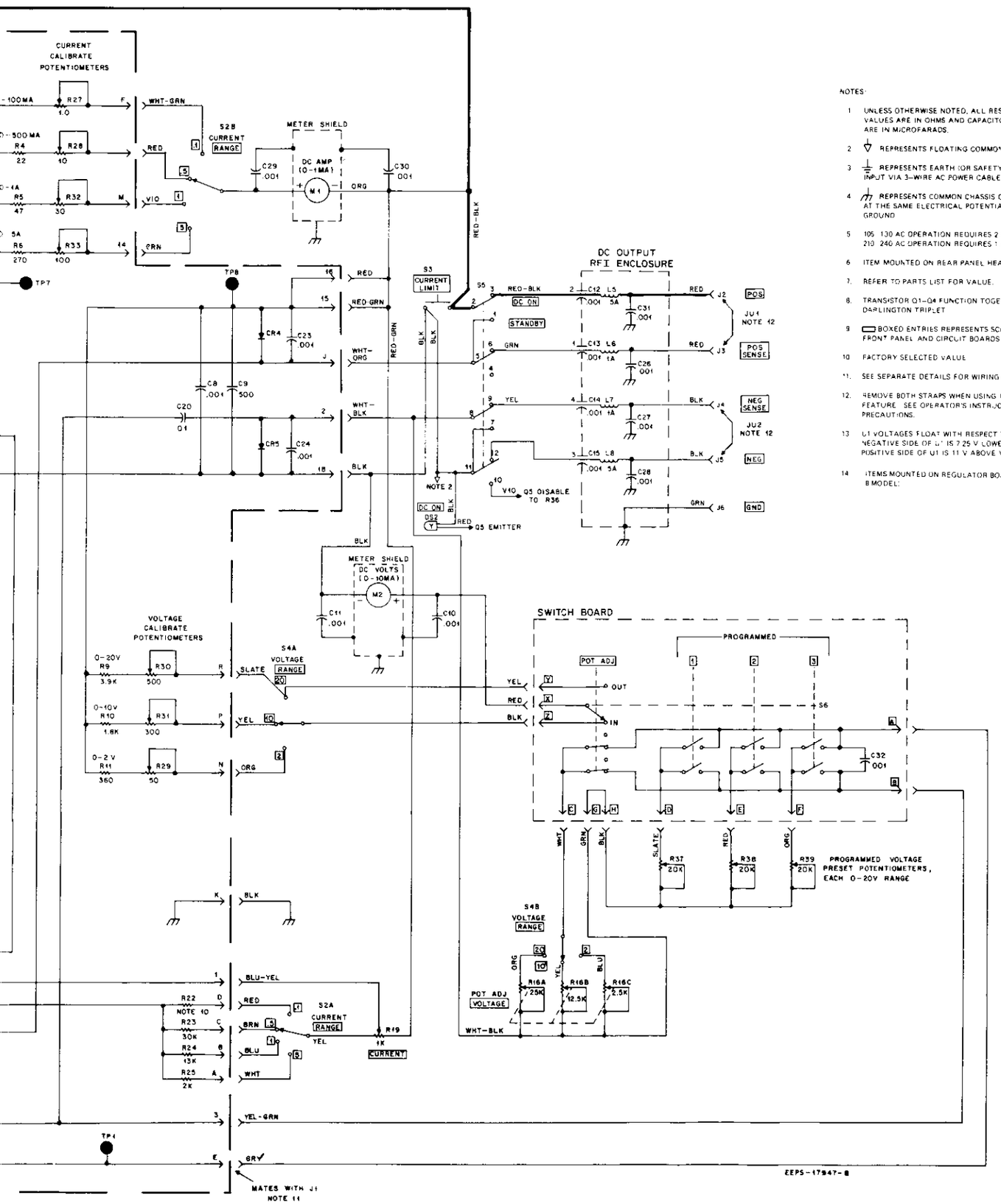






CEPS-22021-0

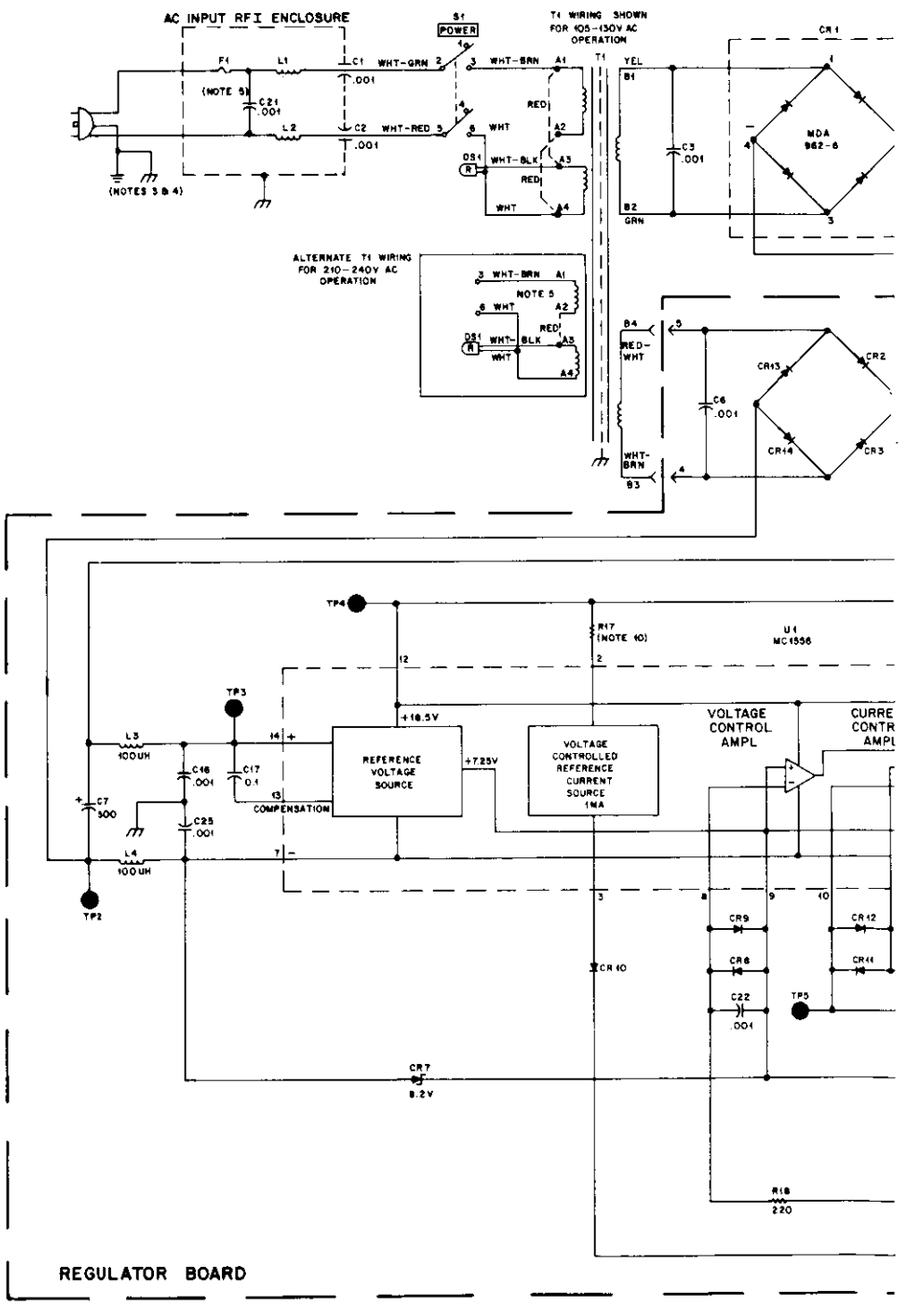




NOTES:

1. UNLESS OTHERWISE NOTED, ALL RESISTOR VALUES ARE IN OHMS AND CAPACITOR VALUES ARE IN MICROFARADS.
2. ▽ REPRESENTS FLOATING COMMON RETURN
3. ⏚ REPRESENTS EARTH (OR SAFETY) GROUND INPUT VIA 3-WIRE AC POWER CABLE
4. ⏚ REPRESENTS COMMON CHASSIS CONNECTIONS AT THE SAME ELECTRICAL POTENTIAL AS EARTH GROUND
5. 105-130 AC OPERATION REQUIRES 2.5 A FUSE. 210-240 AC OPERATION REQUIRES 1.25 A FUSE
6. ITEM MOUNTED ON REAR PANEL HEAT SINK
7. REFER TO PARTS LIST FOR VALUE.
8. TRANSISTOR Q1-Q4 FUNCTION TOGETHER AS A DARLINGTON TRIPLET
9. ▭ BOXED ENTRIES REPRESENTS SCREENING ON FRONT PANEL AND CIRCUIT BOARDS
10. FACTORY SELECTED VALUE
11. SEE SEPARATE DETAILS FOR WIRING OF J1 AND S5
12. REMOVE BOTH STRAPS WHEN USING REMOTE SENSING FEATURE. SEE OPERATOR'S INSTRUCTIONS FOR USER PRECAUTIONS.
13. U1 VOLTAGES FLOAT WITH RESPECT TO CHASSIS GROUND. NEGATIVE SIDE OF U1 IS 7.25 V LOWER THAN V OUT. POSITIVE SIDE OF U1 IS 11 V ABOVE V OUT.
14. ITEMS MOUNTED ON REGULATOR BOARD IN B MODEL.

Models S1348A and S1348B
Programmable DC Power Supply
Schematic Diagram
Motorola No. EEPS-17947-B
6/14/77-PHI



Models S1347A and S1347B
Variable DC Power Supply
Schematic Diagram
Motorola No. EEPS-17384-B
6/14/77- PHI

MOTOROLA
ACCESSORIES AND
AFTERMARKET Division

S1347 and S1348 power supply SMR stuffer sheet for manual # 6881069A28

The load current regulation specification is adjusted to the match the sales literature value.

The correct sales literature load current regulation spec is 0.4% or 2. mA.

MOTOROLA INC.

instruction manual revision

supersedes smr-3410

general

This revision outlines changes that have occurred since the printing of your instruction manual. Use this information to correct your manual.

instruction manual affected:

68P81069A28-B DC Power Supply 0-20 V, 0-5A

revision details:

1. These revisions reflect engineering refinements made to improve the performance of the Power Supplies. The changes are reflected in the attached schematic diagrams.

2. The following additional information is provided to describe the effects of the engineering refinements made to the above equipment.

2.1 Additional Output Capacitance

Capacitors C35 and C36 were added to provide additional capacitance across the output terminals. These capacitors will retain a charge when the power supply is switched to STANDBY and they will hold the charge until they are discharged through the load or through R34.

2.2 Effects of High Peak Current

Some loads used with either of these power supplies draw peak currents which are much higher than their average or dc value. Because of the excellent ac regulation afforded by these power supplies, they will provide the required ac component through the regulator circuit even if a large storage capacitor is used. However, if the instantaneous peak current demand is higher than the current limiting setting of the CURRENT control, the output voltage will be limited during the cut-off portion of the cycle. Even though the output voltage returns to its original value during the remainder of the cycle, because the power supply voltmeter responds to the average value it will indicate a drop in voltage. This effect cannot be avoided if the instantaneous peak load current is greater than five amperes.

2.3 Precautions When Using Remote Sensing

Any regulator circuit, with good ac regulation, is analogous to an audio amplifier with a large inverse feedback; that is, it will oscillate at any frequency at which the feedback phase shift is 180-degrees. When using long sensing leads the series impedance could be sufficient to cause oscillations, especially if the remote load is terminated by a high-quality capacitor. If no capacitor is used and the load has a high ac current component the regulator input may be overloaded.

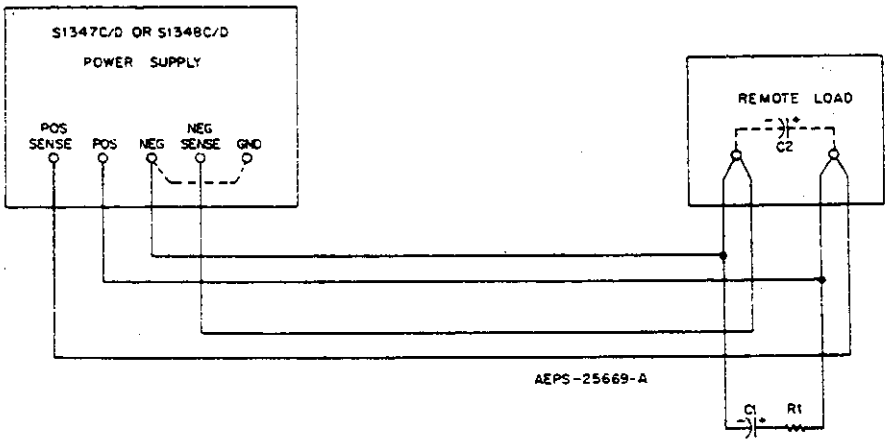


Figure 1. Capacitor Connection for Remote Sensing

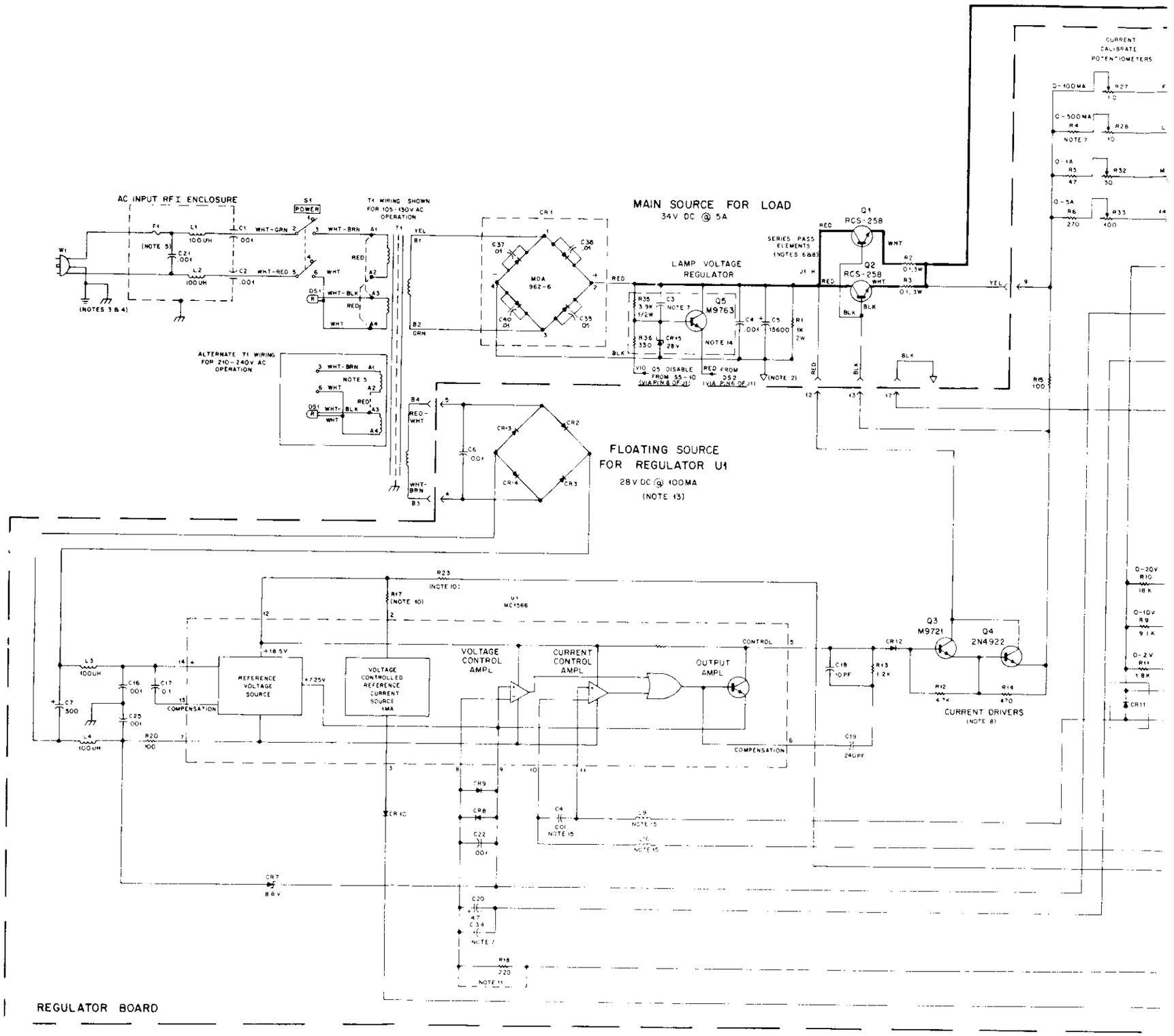
One way to overcome the problem caused by the lack of a capacitor is shown in Figure 1. C1 should be at least 5000 uF, and at least 10 times greater than C2 (if C2 exists, possibly as an internal capacitor in the remote load under test). R1 should be between 0.1 and 0.3 ohm and should be capable of dissipating the entire load ripple current. The remote leads should be no longer than necessary and of adequate current carrying capacity.

3. Attachments

S-1347C/D Variable DC Power Supply Schematic Diagram. EEPS-25667-A

S1348C/D Programmable DC Power Supply Schematic Diagram. EEPS-25668-A

Regulator Board Circuit Board Details and Parts List PEPS-25671-A


AC INPUT RFI ENCLOSURE
(NOTES 3 & 4)
T1 WIRING SHOWN FOR 105-130V AC OPERATION
ALTERNATE T1 WIRING FOR 210-240V AC OPERATION
MAIN SOURCE FOR LOAD
34V DC @ 5A
LAMP VOLTAGE REGULATOR
SERIES PASS ELEMENTS (NOTES 6&8)
Q1 RCS-258
Q2 RCS-258
Q5 M9763
CURRENT CALIBRATE POTENTIOMETERS
0-100MA
0-500MA
0-1A
0-5A
FLOATING SOURCE FOR REGULATOR U1
28V DC @ 100MA
(NOTE 13)
U1 MC1566
REFERENCE VOLTAGE SOURCE
+7.25V
VOLTAGE CONTROLLED REFERENCE CURRENT SOURCE 1MA
VOLTAGE CONTROL AMPL
CURRENT CONTROL AMPL
OUTPUT AMPL
CURRENT DRIVERS
(NOTE 8)
Q3 M9721
Q4 2N4922
REGULATOR BOARD

ESCRIPTION

, fixed: ±5%; 1/4 W:
W
and S1348C)
and S1348D)

1/2 W

-section; consisting

6k
K
elected value
C and S1348C)
k
25 W

elected value

0 ±20%; 1.5 W
00, ±20%; 2 W
2k, ±20%; 1.5 W
8K, ±20%; 1.5 W
80 ±20%; 1.5 W
00 ±20%; 3 W

; 1/2 W

2k (S1348C and S1348D)
and S1348D)

ole; 4-position
spst
ole; 3-position
ole; double throw
4 section, inter-
dt (S1348C and S1348D)

MER:

ED CIRCUIT:
C)
66

ORD:
r; 18 ga.; 8-ft.
udes molded-on 3-
le plug

DER:

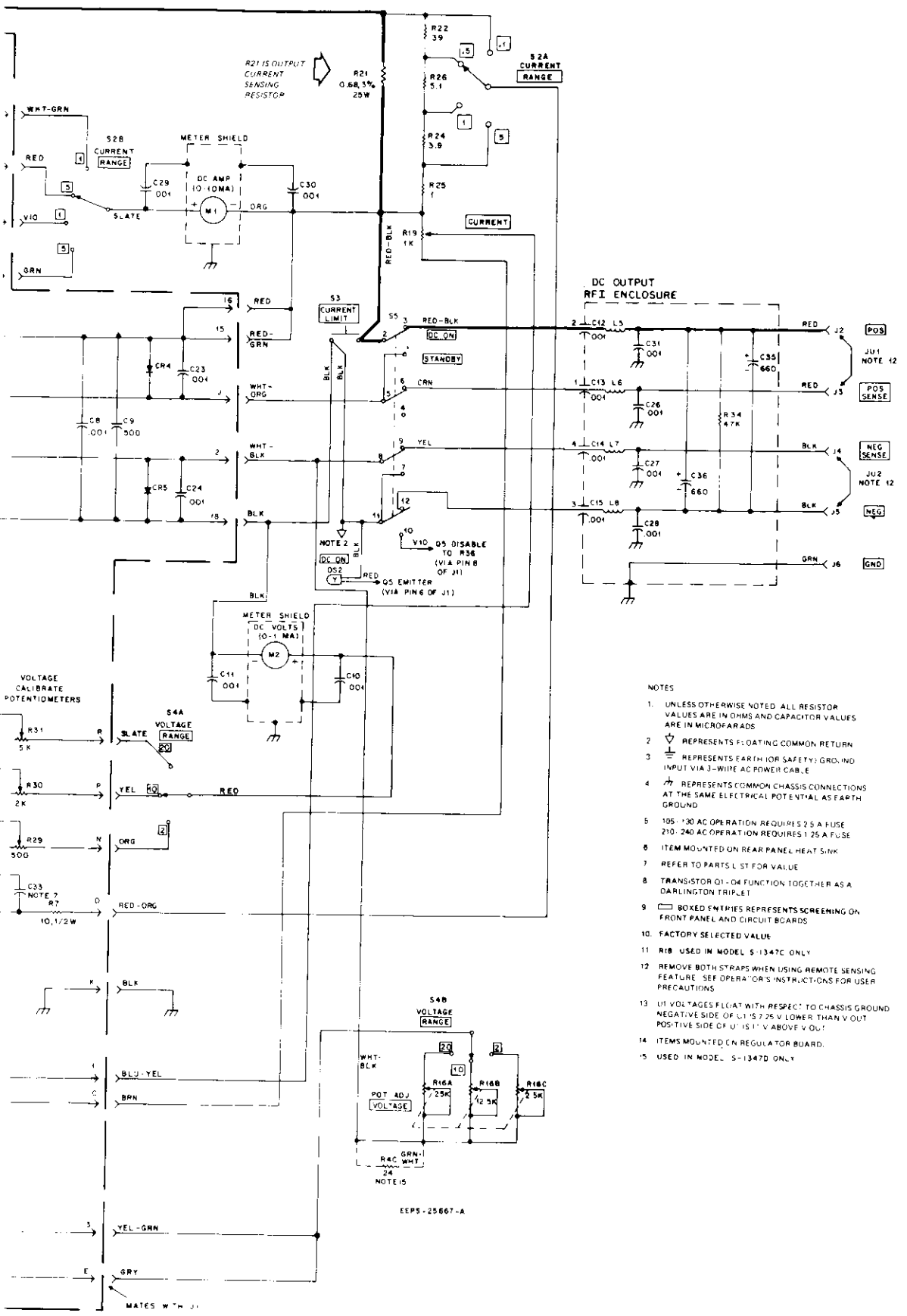
DER:
ost type

S

ANDLE ASSY.
houlder; 4 used
CLOSURE A Models
CLOSURE B Models
STRAP
ON (Model S1347 only)
ON (Model S1438 only)
T ENCLOSURE
output
nting
cuit board
0 volt
e

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
NON-REFERENCED ITEMS		
	37-846782	GROMMET; 2 used
	42-82143C01	CLAMP, cable; 3 1/8"
	42-82143C02	CLAMP, cable; 1 1/4"
	7-82561K01	HEATSINK (PC. BD. MOUNT)
	1-80774B02	CONVERSION KIT (for 220 V ac)
	36-84675F03	KNOB, control; 4 used
	31-135272	TERMINAL STRIP
	7-83738K01	BRACKET (Model S1438 only)
	3-488236	SCREW, machine; No. 4-40 x 3/8"; 2 used (Model S1348 only)
	11-84306A55	CEMENT, "Loctite" (as req'd.)
	42-80330A69	CLIP, hold-down (circuit board)

NOTE:
Replacement diodes, transistors and integrated circuits must be ordered by Motorola part number for optimum performance.



NOTES

1. UNLESS OTHERWISE NOTED, ALL RESISTOR VALUES ARE IN OHMS AND CAPACITOR VALUES ARE IN MICROFARADS.
2. ▽ REPRESENTS FLOATING COMMON RETURN.
3. ⏚ REPRESENTS EARTH (OR SAFETY) GROUND INPUT VIA 3-WIRE AC POWER CABLE.
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5. 105-130 AC OPERATION REQUIRES 2.5 A FUSE. 210-240 AC OPERATION REQUIRES 1.25 A FUSE.
6. ITEM MOUNTED ON REAR PANEL HEAT SINK.
7. REFER TO PARTS LIST FOR VALUE.
8. TRANSISTOR Q1-Q4 FUNCTION TOGETHER AS A DARLINGTON TRIPLET.
9. ▭ BOXED ENTRIES REPRESENTS SCREENING ON FRONT PANEL AND CIRCUIT BOARDS.
10. FACTORY SELECTED VALUE.
11. R18 USED IN MODEL S-1347C ONLY.
12. REMOVE BOTH STRAPS WHEN USING REMOTE SENSING FEATURE. SEE OPERATOR'S INSTRUCTIONS FOR USER PRECAUTIONS.
13. U1 VOLTAGES FLOAT WITH RESPECT TO CHASSIS GROUND. NEGATIVE SIDE OF U1 IS 7.25 V LOWER THAN V OUT. POSITIVE SIDE OF U1 IS 17 V ABOVE V OUT.
14. ITEMS MOUNTED ON REGULATOR BOARD.
15. USED IN MODEL S-1347D ONLY.

Model S-1347C/D Variable DC Power Supply Schematic Diagram Motorola No. EEPS-25667-A

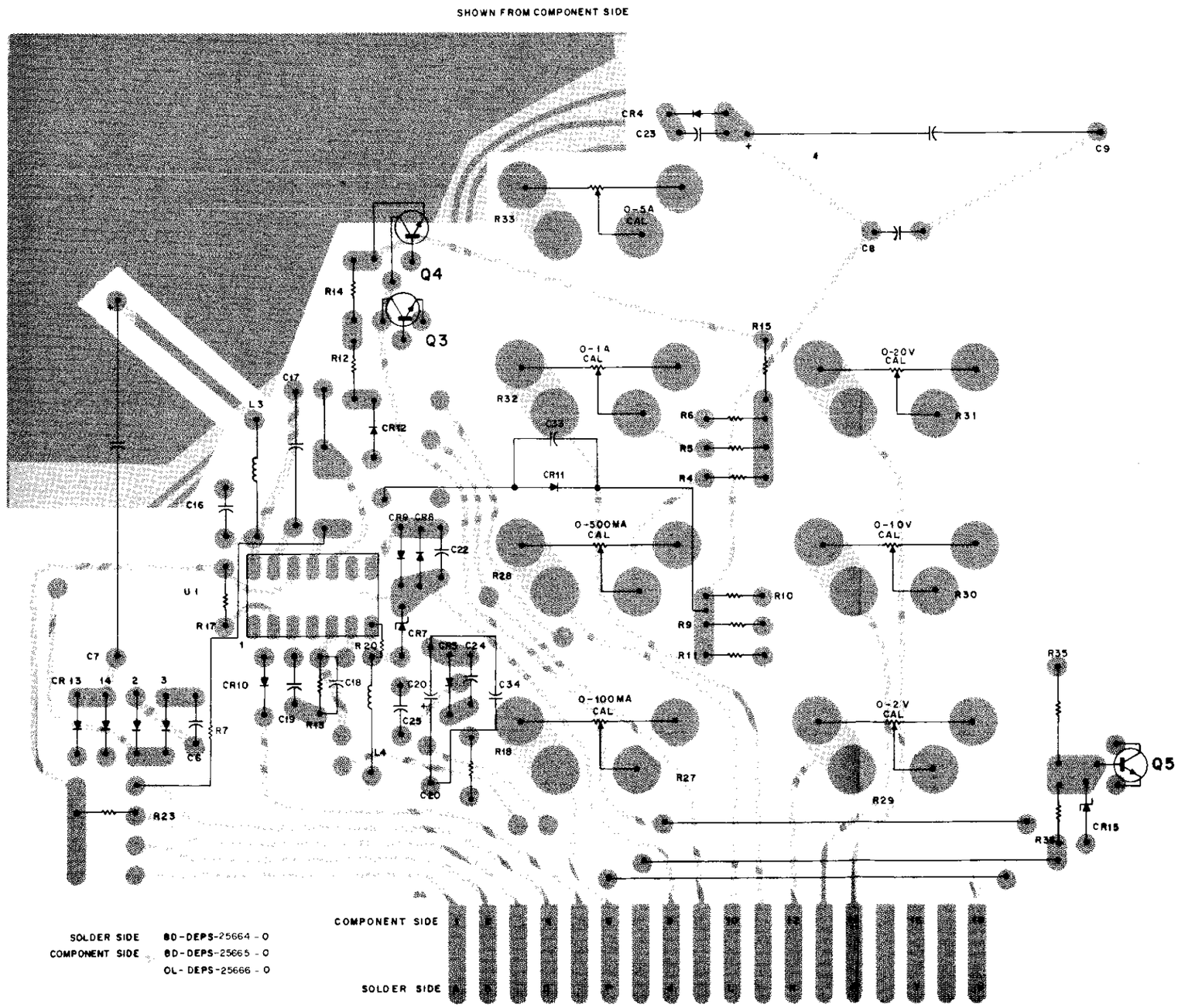
PARTS LIST

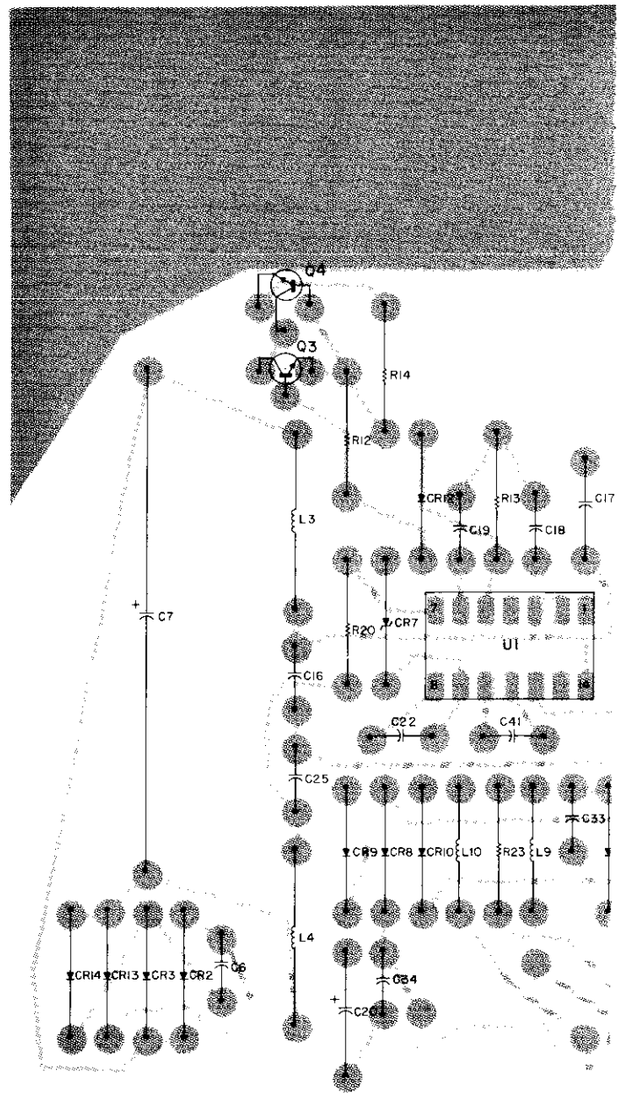
S1347C and S1347D Variable DC Power Supply
S1348C and S1348D Programmable DC Power Supply PL-5867-A

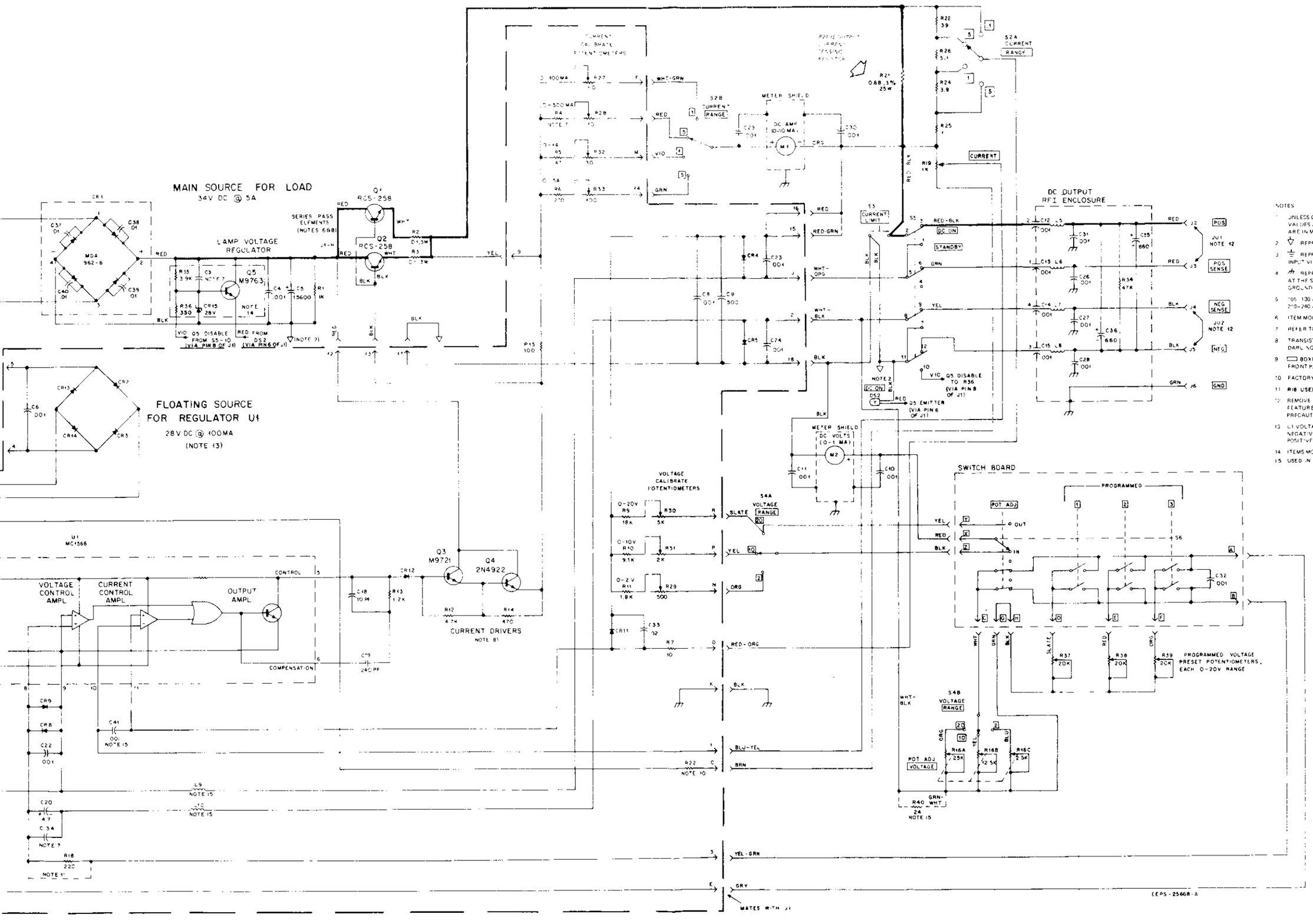
REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		CAPACITOR, fixed:
C1, 2, 12, 13, 14, 15	21-861219	.001 uF; GMV; 00 V CODED RED (feed-thru)
C3	21-82482B11	.01 uF, 100 V (S1347C and S1348C)
	or 21-859601	.001 uF ±20%; 600 V (S1347D and S1348D)
C4, 10, 11, 21, 26, 27, 28, 29, 30, 31	21-865923	.001 uF ±10%; 500 V
C5	23-80320A26	15600 uF +75-10%; 50 V
C6, 8, 16, 22, 23, 24, 25	21-859601	.001 uF ±20%; 600 V
C7, 9	23-82077C25	500 uF +25-10%; 60 V
C17	8-82096J18	0.1 uF ±10%; 100 V
C18	21-859934	10 pF ±5%
C19	21-840048	240 pF ±5%; 500 V
C20	23-84762H02	4.7 uF, 35 V
C32	21-859601	.001 uF ±20%; 600 V (S1348 only)
C33	21-401029	.02 uF, 600 V (S1347C and S1348C)
	or 21-859601	.001 uF ±20%; 600 V (S1347D and S1348D)
C34	21-82482B11	.01 uF, 100 V (S1347C and S1348C)
	or 21-859601	.001 uF ±20%; 600 V (S1347D and S1348D)
C35, 36	23-83210A22	660 uF, 25 V
C37, 38, 39, 40	21-82428B62	.01 uF +80-20%; 200 V
C41	21-859601	.001 uF ±20%; 600 V (S1347D and S1348D)
		DIODE: (SEE NOTE)
CR1	48-83043H76	bridge; type MDA962-6
CR2 thru 5, 8 thru 14	48-82466H13	silicon
CR6	--	NOT USED
CR7	48-82256C56	Zener type; 8.8 V
CR15	48-82256C36	Zener type; 28 V
		LAMP:
DS1	65-83507K01	neon; 117 V; RED
DS2	65-83508K01	incandescent; 28 V; YEL
		FUSE:
F1	65-129421	2-1/2 A; 250 V (used in 120 V application)
	or65-135678	1-1/4 A; 125 V (used in 220 V application)
		CONNECTOR:
J1	9-84380C01	36-pin; female
J2, 3	46-863925	Binding Post; RED
J4, 5	48-863924	Binding Post; BLK
J6	46-82921K01	Binding Post; GRN
		COIL, RF; choke:
L1, 2	24-84203D82	
L3, 4	24-82592D01	100 uH (coded BLK-BLU)
L5, 6, 7, 8	76-84069B01	ferrite bead
L9, 10	24-83961B02	5-turns on ferrite bead (S1347D and S1348D)
		METER:
M1	72-80324A42	0-10 mA (S1347C and S1347D)
M2	72-80324A41	0-1 mA (S1348C and S1348D)
		TRANSISTOR, NPN; SEE NOTE
Q1, 2	48-869913	RCS258; does not include: 7-84827F01 HEATSINK 14-965854 INSULATOR, mica 11-490487 COMPOUND
Q3	48-869721	M9721
Q4	48-82554F31	2N4922
Q5	48-869763	M9763

REFERENCE SYMBOL	MOTOROLA PART NO.	DE
		RESISTOR
R1	6-127C49	1k ±10%;
R2, 3	17-82291B24	0.1; 3 W
R4	6-124A09	22 (S1347
	or 6-124A10	24 (S1347
R5	6-124A17	47
R6	6124A35	270
R7	6-125C01	10; ±10%;
R9	6-124A72	9.1k
R10	6-124A79	18k
R11	6-124A55	1.8k
R12	6-124A65	4.7k
R13	6-124A51	1.2k
R14	6-124A41	470
R15, 20	6-124A25	100
R16	18-83358K02	variable; of: R16A-25k R16B-12. R16C-2.5
R17		Factory s
R18	6-124A33	220 (S134
R19	18-83359K02	variable;
R21	17-83737K02	0.68 ±3%
R22	6-124E15	3.9
R23		Factory s
R24	6-124B59	3.9
R25	6-125B70	1, 1/2 W
R26	6-124B62	5.1
R27, 28	18-83168C14	variable;
R29	18-83168C01	variable;
R30	18-83168C05	variable;
R31	18-83168C02	variable;
R32	18-83168C15	variable;
R33	18-83168C02	variable;
R34	6-129C89	47k, ±10%
R35	6-125E63	3.9k ±10%
R36	6-124A37	330
R37, 38, 39	18-83725K01	variable;
R40	6-124A10	24 (S1347
		SWITCH:
S1	40-83378K01	toggle; dp
S2	40-83377K02	rotary; 2-
S3	40-80310A46	pushbutton
S4	40-83377K01	rotary; 2-
S5	40-83378K02	toggle; 4-p
S6	40-84324C05	pushbutton locking, d
		TRANSFO
T1	25-84830F01	power
		INTEGRA (SEE NOT
U1	51-84320A74	type MC15
		AC LINE
W1	30-82494J03	3-conduct length; inc contact ma
		LAMPHOL
XDS1	9-83506K01	neon
XDS2	9-83506K02	pilot
		FUSEHOL
XF1	9-82083C01	extractor
	NON-REFERENCED ITEM	
	1-80770B65	COVER &
	4-868830	WASHER,
	26-83095K01	METER EN
	26-83095K02	METER EN
	47-83356K01	SHORTING
	13-82447K01	ESCUTCHE
	13-82447K02	ESCUTCHE
	15-83092K01	DC OUTPU
	15-83093K01	COVER, d
	7-83724K01	RAIL, mou
	46-83723K01	GUIDE, ci
	33-83410K03	LABEL, I

MODELS S-1347C and S-1348C



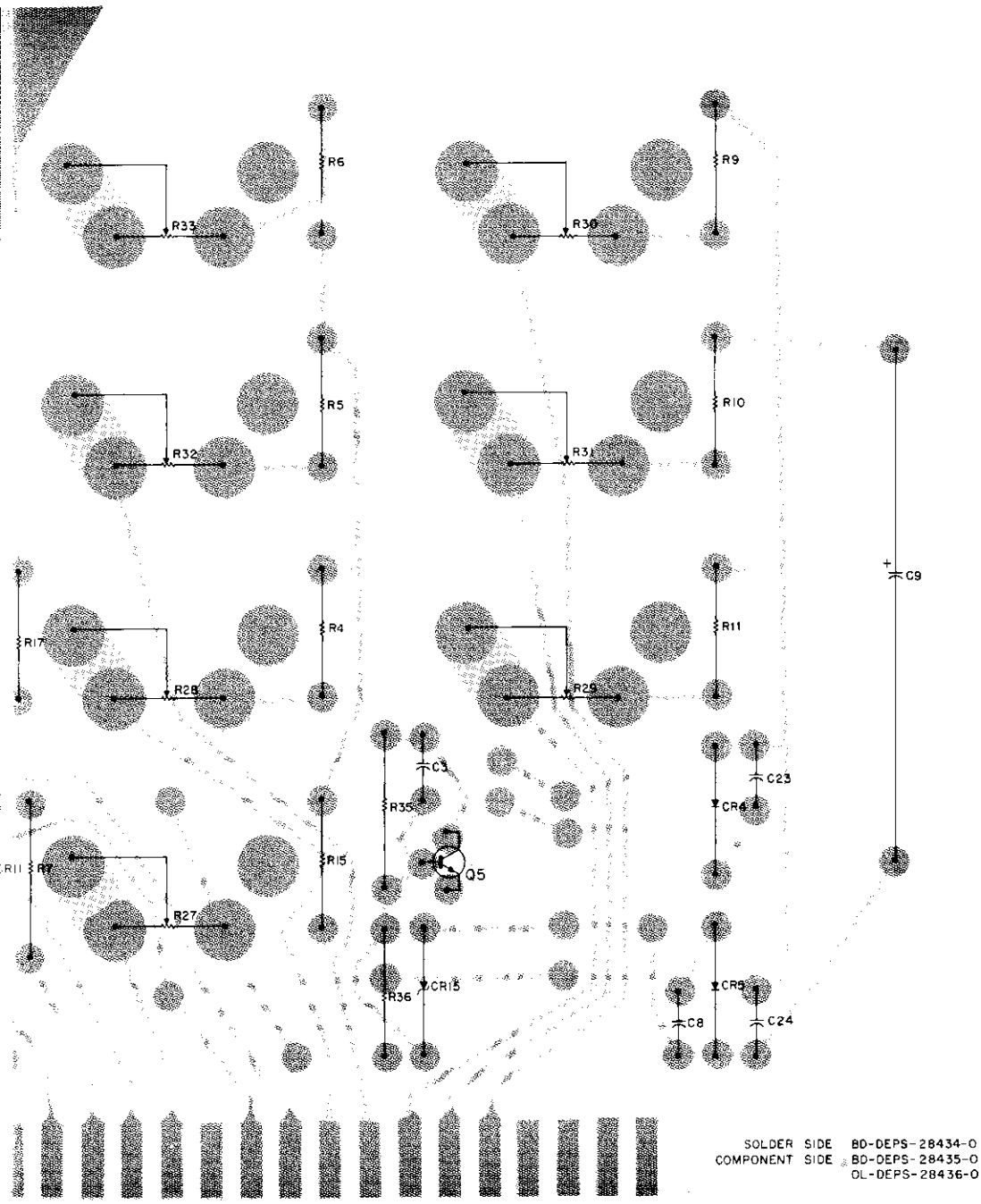




NOTES

1. UNLESS OTHERWISE NOTED, ALL RESISTOR VALUES ARE IN OHMS AND CAPACITOR VALUES ARE IN MICROFARADS.
2. ▽ REPRESENTS FLOATING COMMON RETURN.
3. ⏚ REPRESENTS EARTH (OR SAFETY) GROUND INPUT VIA 3-WIRE AC POWER CABLE.
4. ⏚ REPRESENTS COMMON CHASSIS CONNECTIONS AT THE SAME ELECTRICAL POTENTIAL AS EARTH GROUND.
5. *105-130 AC OPERATION REQUIRES 2.5 A FUSE 210-240 AC OPERATION REQUIRES 1.25 A FUSE
6. ITEM MOUNTED ON REAR PANEL HEAT SINK.
7. REFER TO PARTS LIST FOR VALUE.
8. TRANSISTOR Q1-Q4 FUNCTION TOGETHER AS A DARLINGTON TRIPLET.
9. ▭ BOXED ENTRIES REPRESENTS SCREENING ON FRONT PANEL AND CIRCUIT BOARDS.
10. FACTORY SELECTED VALUE.
11. R18 USED IN MODEL 5134B ONLY.
12. REMOVE BOTH STRAPS WHEN USING REMOTE SENSING FEATURE. SEE OPERATOR'S INSTRUCTIONS FOR USER PRECAUTIONS.
13. U1 VOLTAGES FLOAT WITH RESPECT TO CHASSIS GROUND. NEGATIVE SIDE OF U1 IS 7.25 V LOWER THAN V OUT. POSITIVE SIDE OF U1 IS 11 V ABOVE V OUT.
14. ITEMS MOUNTED ON REGULATOR BOARD IN B MODEL.
15. USED IN MODEL 5134B ONLY.

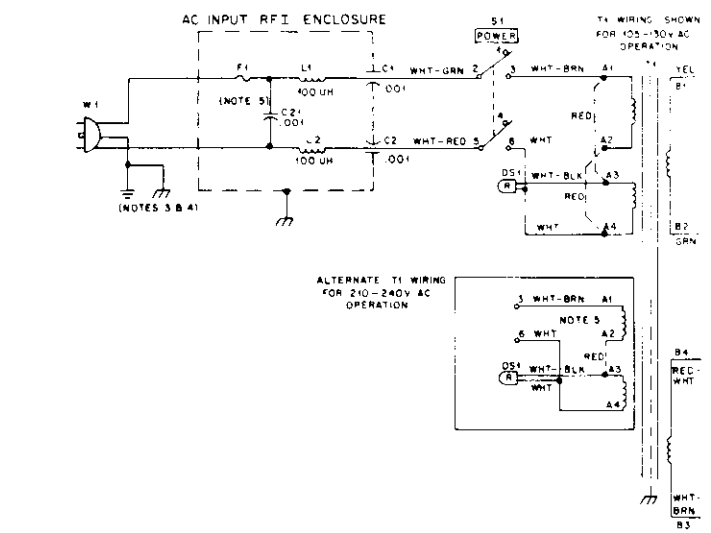
ODELS S-1347D and S-1348D

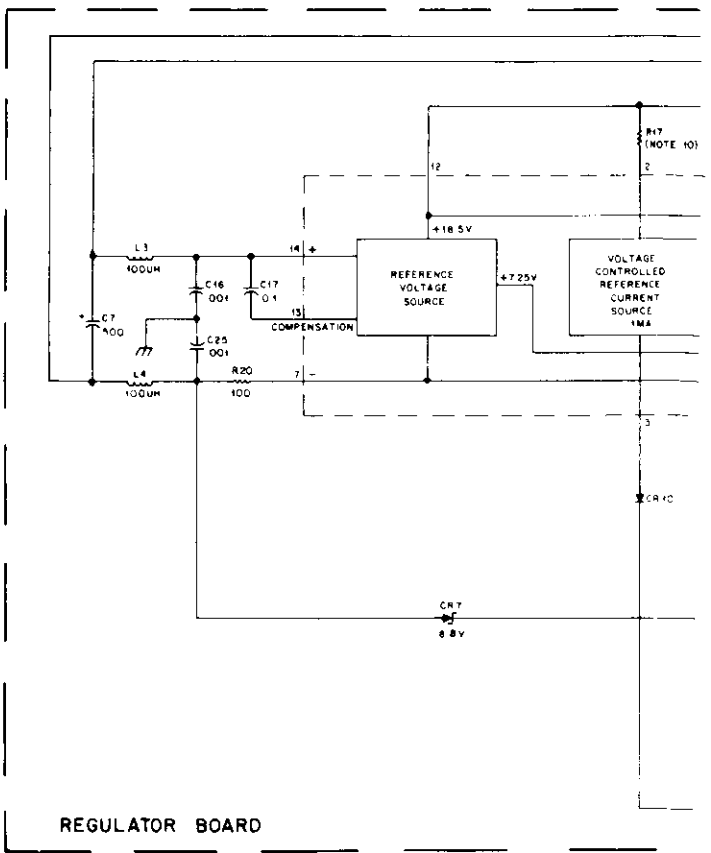


SOLDER SIDE BD-DEPS-28434-O
COMPONENT SIDE BD-DEPS-28435-O
OL-DEPS-28436-O

SHOWN FROM COMPONENT SIDE

Regulator Board, Circuit Board Details and Parts List
Motorola No. PEPS-25671-A
3/20/79- PHL





Model S-1348C/D Programmable DC Power Supply Schematic Diagram Motorola No. EEPS-25668-A 3/20/79- PH1

MOTOROLA INC.

10-2-86
SMR #5170

INSTRUCTION MANUAL REVISION

GENERAL: This revision outlines changes that have occured since the printing of your instruction manual. Use this information to correct your manual.

MANUAL AFFECTED: 68P81069A28-B DC power supply 0-20V, 0-5A

REVISION DETAILS: In SMR-3673A under the Parts List, the description for the Fuse should read as follows:

		FUSE
F1	65-129421	2-1/2A; 250V (used in 120V application)
	OR	
	65-135678	1-1/4A; 250V (used in 220V application)

DC POWER SUPPLY

68P81069A28-B