

Date: March 19, 1962		TMC SPECIFICATION NO. S 663	A
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COMPILED	CHECKED	TITLE: MODIFICATION OF TMC POWER SUPPLY MODEL PSP - 350	
APPROVED		TMC KIT - 136	

1. PURPOSE

- 1.1 To reduce susceptibility of PAL-350 to transient overloads.
- 1.2 To lower minimum line voltage requirements.

2. UNITS TO WHICH MODIFICATION IS APPLICABLE

- 2.1 Serial #101 through Serial # 312 .

3. REFERENCE

- 3.1 Schematic CK-10360 or PAL-350 Technical Manual Page 8-5 and 8-6.

4. PARTS REQUIRED AND SUPPLIED IN KIT:

ITEM	QUAN.	TMC PT. NO.	SCHEM. SYM. NO.	DESCRIPTION
1	1	RL-116-DC-3C-120	K-104	3 Pole, double throw, 120 volt DC, relay.
2	1	RW-109-38	R-118	25,000 ohm, 10 watt wirewound resistor.
3	1	CE-103-5	C-110	20 MFD, (250) WVDC electrolytic capacitor
4	1	FC-101	None	Capacitor mounting clamp
5	1	SCBP0632BN36	None	6-32 x 2 1/4" machine screw for mounting resistor
6	2	WA-101-3	None	#6 flat fibre insulating washers for mounting resistor.

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7	1	FW06HBN	None	#6 flat washer for mounting resistor
8	1	SCBP0632BN4	None	6-32 x 3/8" machine screw for mounting capacitor
9	4	LWE06MRN	None	#6 Ext. lock washers
10	4	NTH0632BN8	None	6-32 Hex. nut
11	1	MWC18(16)U2	None	2 feet stranded #18 insulated hook-up wire.
12	1	PX-104-6-.047	None	1 foot tubing for resistor and capacitor leads

5. TOOLS REQUIRED

- 5.1
- 1) Long nose pliers
 - 2) Diagonal cutters
 - 3) 60 to 150 watt soldering iron or gun
 - 4) Knife or wire strippers
 - 5) #24 steel drill (140 mils - 9/64 inch diameter)
 - 6) Metal center punch
 - 7) Screw driver
 - 8) Nut driver for #6 hex nut
 - 9) Resin core solder

6. THEORY

6.1 The substitution of a 120 volt DC relay for the 6.3 volt AC relay and the shunting of the relay coil with a capacitor have yielded several advantages. The coil and capacitor form a time delay circuit that absorbs transient power interruptions and prevents the relay from opening for a discrete period of time. In addition, the particular DC relay used in this modification has an inherently greater tolerance for voltage deviation. The fact that the relay is now controlled by a DC current causes the relay to have a steady hold-in force and not tend to make and break. As in the case of an AC relay.

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7. PROCEDURE

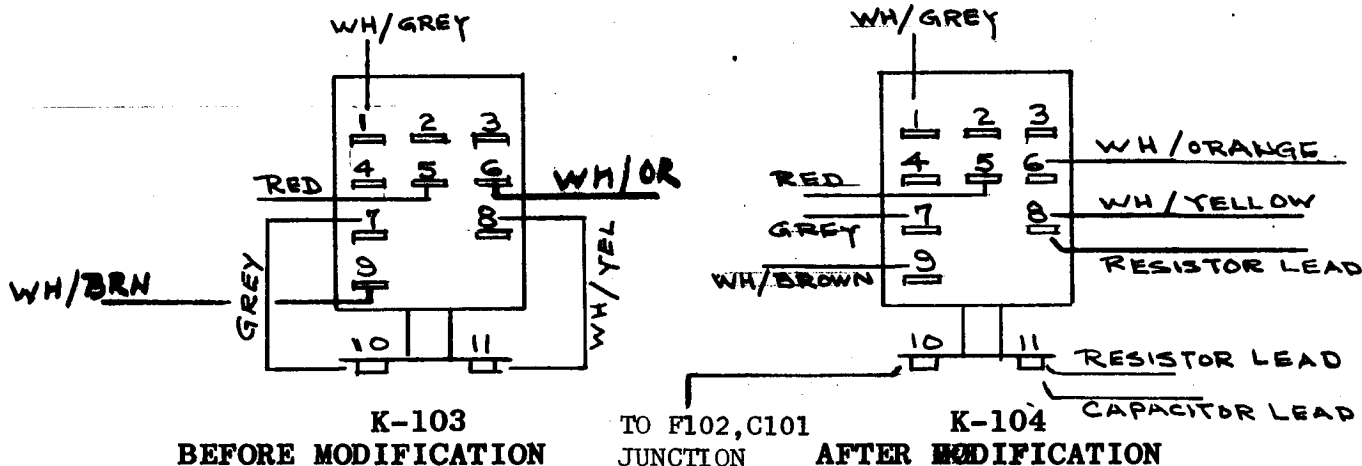
7.1 Remove top and bottom covers of PSP-350, and all tubes from their sockets.

7.2 Remove K-101 and V-107 from their sockets.

7.3 Turn PSP-350 upside down and place on stable workbench with rear of chassis toward you.

7.4 Locate interlock relay K-103 in lower right hand corner of chassis.

7.5 Compare connections on relay terminal strip with Figure 1 and note differences if any.





7.6 Unsolder and remove all leads except the jumpers between pins 7 & 10 (Grey - see Figure 1) and pins 8 & 11 (White with Yellow tracer - see Figure 1) on K-103 using long nose pliers as heat sinks to prevent melting of the wire's insulation.

7.7 Remove K-103 from the chassis by removing the nut and lock-washer on the top of the chassis.

7.8 Locate a point midway between V-107 and K-101 and also on a line parallel to the rear of the chassis from the mounting screw of the socket for K-101 closest to the rear of the chassis. Mark this point with a center punch and drill through with a #24 drill (140 mills - 9/64 inch diameter).

7.9 Remove all metal clips before proceeding.

7.10 Remove the jumper between pins 1 & 8 on the socket of the time delay relay K-101. This may be done by clipping the wire close to pins 1 & 8 with a pair of diagonals.

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7.11 Locate a point midway between V-105 & V-107 and also on a line scribed between the ground lugs of V-105 & V-107 nearest the rear of the chassis. Mark this point with a center punch and drill through with a #24 drill.

7.12 Remove all metal chips.

7.13 Place the new 120 volt 3 pole double throw DC relay K-104 in the same hole with the same orientation as the AC relay K-103 (TMC part #RL-116-AC-3C-00.63) that was previously removed. Do not secure the relay until after all connections to the relay have been completed to facilitate wiring, but be sure to leave sufficient slack in the wires so that the relay may be firmly seated against the chassis.

7.14 Mount the 25,000 ohm wire wound resistor (TMC part #RW-109-38) in the hole drilled in step #8. This should be done by inserting the 6-32 x 2 1/4" screw through the chassis from the top. Insert a #6 flat fibre washer over the end of the screw projecting under the chassis. Thread the resistor over the screw with the lugs pointing toward the relay K-104 and parallel to the rear of the chassis. Place another flat fibre washer, #6 flat metal washer, and #6 lockwasher over the screw. Secure with a 6-32 nut.

7.15 Replace and solder the white wire with grey tracer on pin 1 of relay K-104. (See Figure #1)

7.16 Replace and solder the red wire on pin 5 of relay K-104.

7.17 Replace and solder the white wire with orange tracer on pin 6 of relay K-104.



7.18 Replace and solder the grey wire from pin 8 on T-101 on pin 7 of relay K-104.

7.19 Replace but do not solder the white wire with yellow tracer from pin 4 of K-101 on pin 8 of relay K-104.

7.20 Connect the lead from the 25,000 ohm resistor terminal farthest from the chassis to pin 8 of relay K-104. This lead should be covered with tubing. Solder the connection.

7.21 Reconnect and solder the white wire with brown tracer on pin 9 of relay K-104.

7.22 Connect a short piece (Supplied in kit) of wire from the junction point of F102 and G101 to pin 10 of relay K104 and solder both ends.

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7.23 Connect but do not solder the lead closest to the chassis from the 25,000 ohm resistor to pin 11 of relay K-104. This lead should be covered with tubing.

7.24 Mount the 20 MFD capacitor (C-110, TMC part #CE-103-5) by placing the mounting strap (TMC part #FC-101) around the center of the capacitor and securing to the chassis with a 6-32 x 3/8" machine screw, lock washer and nut in the hole drilled in step #11. The capacitor should be parallel and close to the rear of the chassis with the ground or negative end toward the right hand side of the chassis.

7.26 Connect the positive end of the 20MFD capacitor to pin 11 of relay K-104. This lead should be covered with tubing.

7.28 Connect the negative end of the 20MFD capacitor to the ground lug of V-102 closest to the rear of the chassis. This lead should be covered with tubing. Solder connections from both ends of the capacitor.

7.27 Secure relay K-104 using a #6 lockwasher and 6-32 nut.

7.29 Run a length of insulated wire from pin 8 of the time delay relay K-101 to the end of resistor R-102 (TMC part #RW-109-34) farthest from the chassis. R-102 is located on the extreme right hand side of the chassis about 2 1/2 inches from the rear of the chassis next to V-102. Dress this wire close to the chassis and along R-102 but be sure that the wire is far enough from R-102 to prevent melting of the insulation by the heat radiated from R-102. Resolder the terminals at both ends of this wire.

7.29 Check all connections for good solder joints and possibility of shorts.

7.30 Shake out all loose wire clippings, solder, drill chips, etc.

7.32 Replace K-101 and V-107 in their sockets together with their shields.

7.32 Replace all tubes in their appropriate sockets also replace the top and bottom covers and after turning on allow at least 15 minutes in the STAND-BY position before turning high voltage on. This allows the mercury in the rectifiers to vaporize before high voltage is applied.

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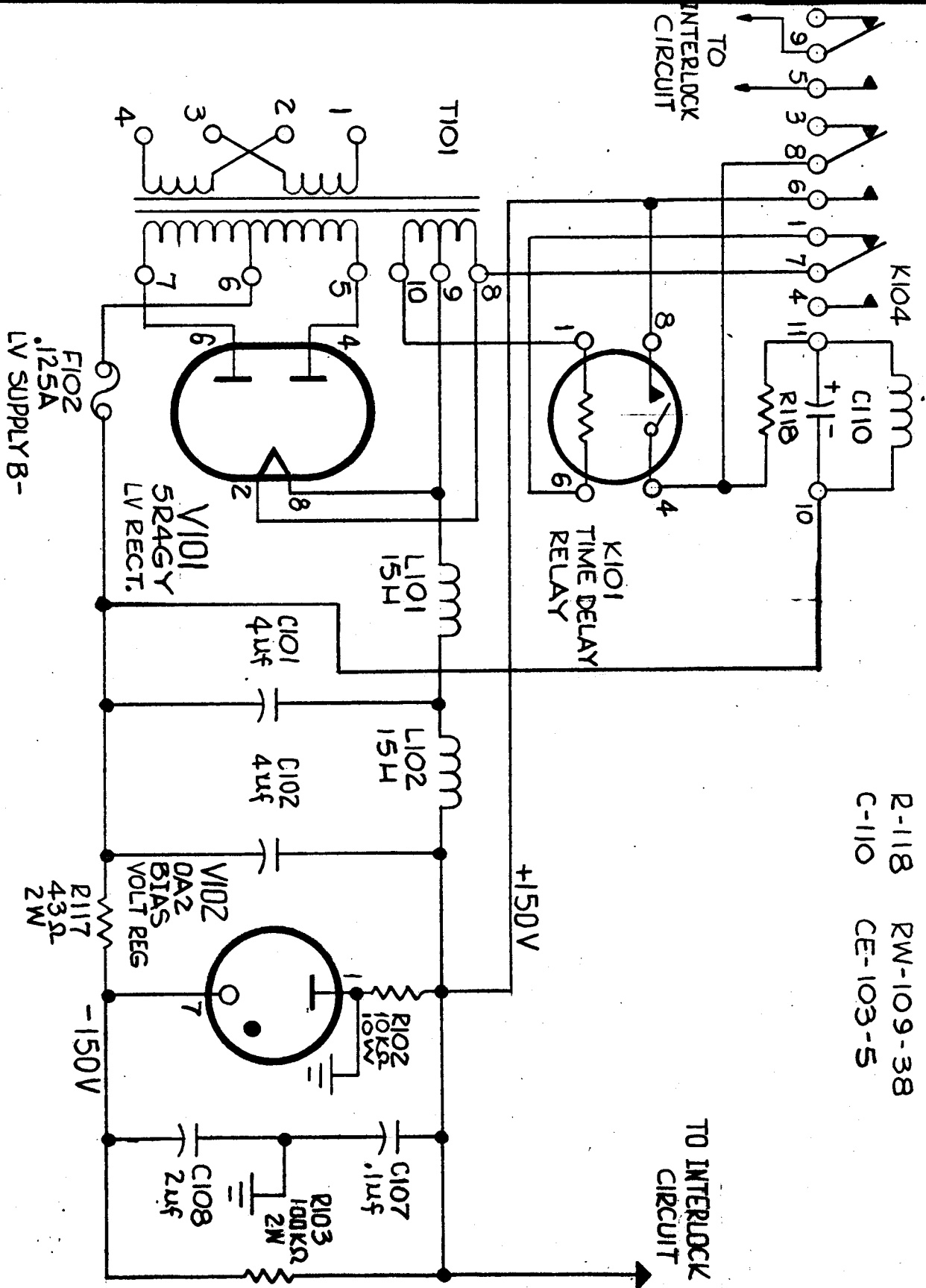
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APPLICABLE CIRCUIT AFTER MODIFICATION
FIGURE 3

- K-104 RL-116-DC-3C-120
- R-118 RW-109-38
- C-110 CE-103-5

