

AVTECH ELECTROSYSTEMS LTD.

NANOSECOND WAVEFORM ELECTRONICS  
ENGINEERING . MANUFACTURING

□ P.O. BOX 265  
OGDENSBURG  
NEW YORK  
13669  
(315) 472.5270

BOX 5120 STN. "F"  
OTTAWA, ONTARIO  
CANADA K2C 3H4  
(613) 226-5772  
TELEX 053-4591

INSTRUCTIONS

MODEL AVR-4A-PS-PW-LIA-NIM-P PULSE GENERATOR

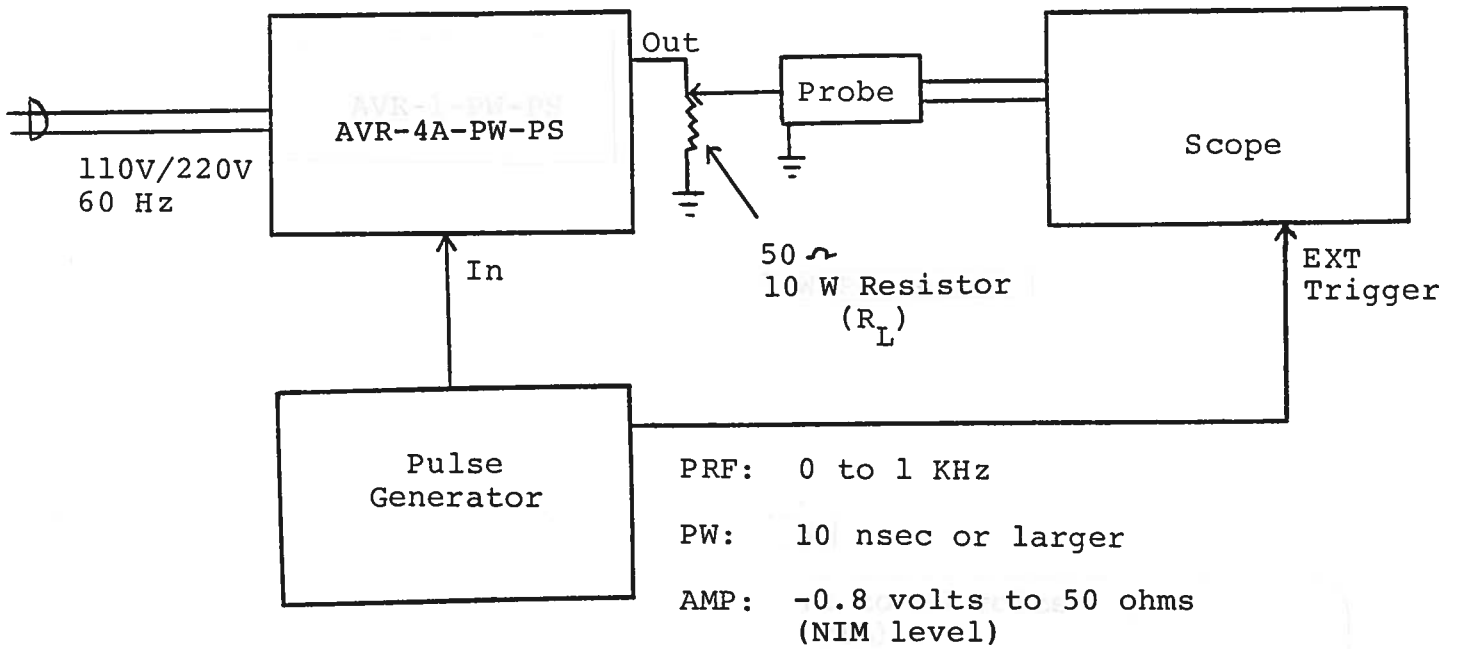
S.N.:

## WARRANTY

Avtech Electrosystems Ltd. warrants products of its manufacture to be free from defects in material and workmanship under conditions of normal use. If, within one year after delivery to the original owner, and after prepaid return by the original owner, this Avtech product is found to be defective, Avtech shall at its option repair or replace said defective item. This warranty does not apply to units which have been disassembled, modified or subjected to conditions exceeding the applicable specifications or ratings. This warranty is the extent of the obligation or liability assumed by Avtech with respect to this product and no other warranty or guarantee is either expressed or implied.

A.

TEST ARRANGEMENT

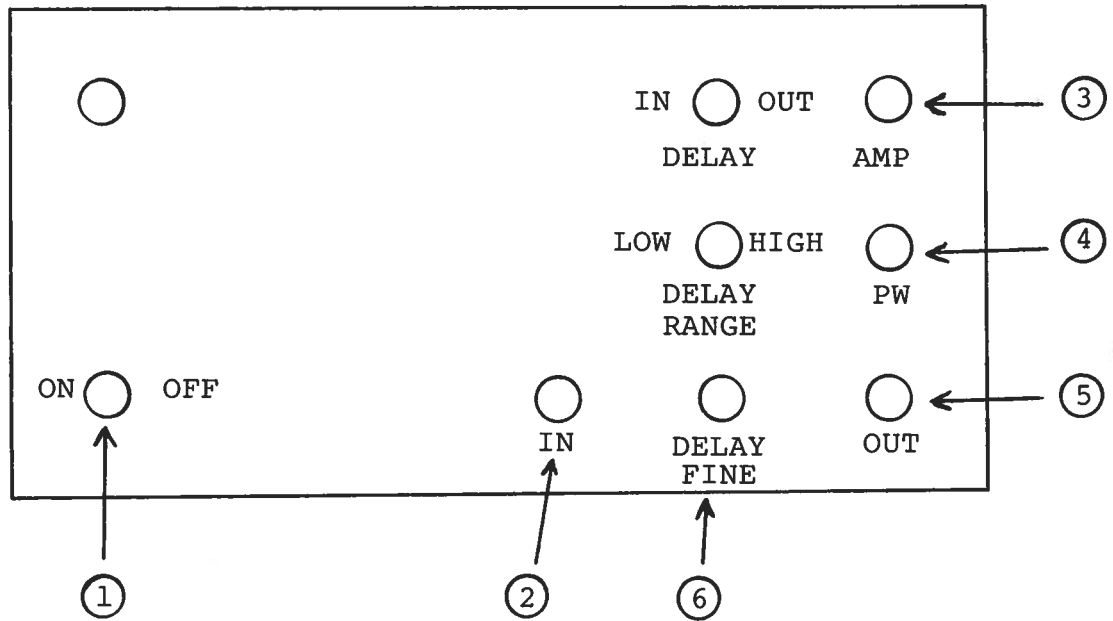


## GENERAL OPERATING INSTRUCTIONS

- 1) The equipment should be connected in the general fashion shown above. Since the AVR unit provides an output pulse rise time as low as 20 nsec a fast oscilloscope (at least 50 MHz and preferably 200 MHz) should be used to display the waveform.
- 2) The output PRF is equal to the input trigger pulse PRF.
- 3) The output pulse width is controlled by the one turn PW control.
- 4) The output amplitude is controlled by the one turn AMP control.
- 5) The propagation delay is controlled by the DELAY, DELAY RANGE and DELAY FINE controls. With the DELAY switch in the OUT position, the delay is fixed at about 40 nsec. With the DELAY switch in the IN position, the delay is variable from about 55 to 700 nsec using the DELAY RANGE switch (LOW, 55 to 100 nsec; HIGH, 100 to 700 nsec) and the one turn DELAY FINE control.
- 6) The maximum PRF or duty cycle must not be exceeded. Under simultaneous conditions of wide pulse width, high PRF and high load current, the bias voltage applied to the output power stage decreases and as a result the attainable output peak voltage decreases to less than 400 volts. Under conditions of severe loading the output stage may be damaged.

Fig. 2

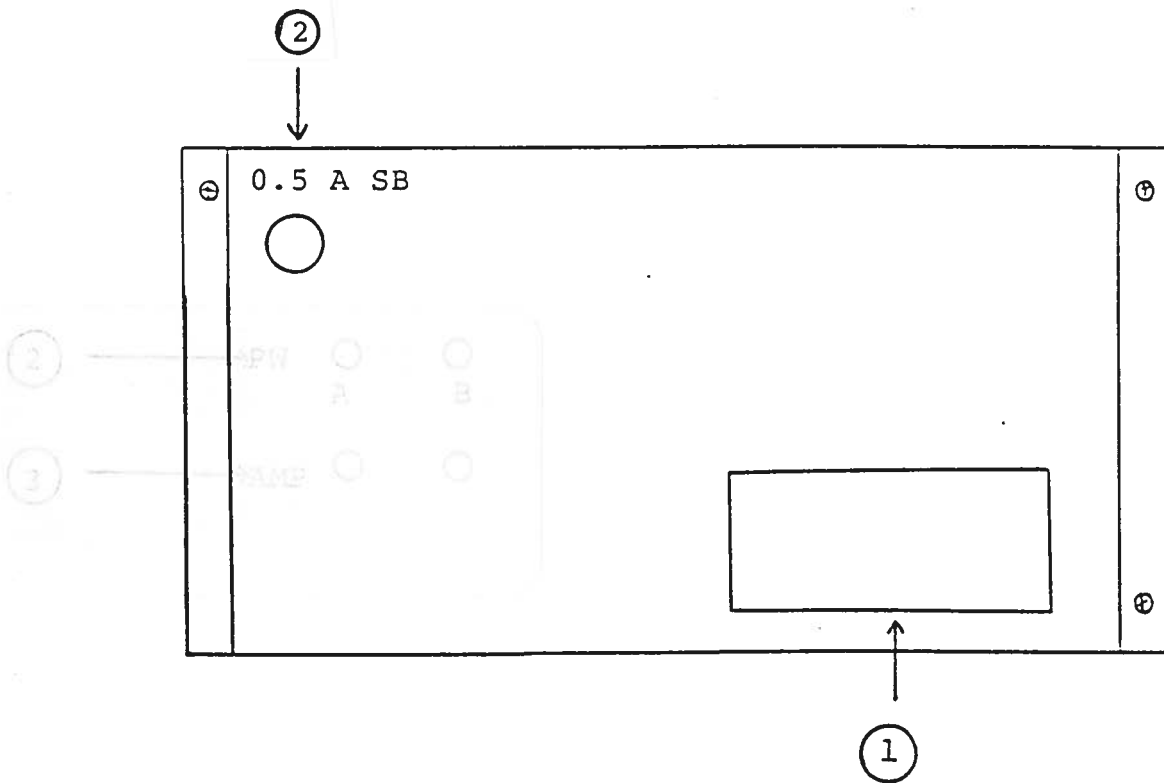
FRONT PANEL CONTROLS



- (1) ON-OFF Switch. Applies basic prime power to all stages.
- (2) INPUT. The external trigger signal is applied at this input.
- (3) AMP Control. A one turn control which varies the output pulse amplitude from 0 to 400 V.
- (4) PW Control. A one turn control which varies the positive output pulse width from 0.1 usec to 5 usec.
- (5) OUT Connector. BNC connector provides output to a fifty ohm load.
- (6) DELAY, DELAY RANGE, DELAY FINE. With the DELAY switch in the OUT position, the delay is fixed at about 40 nsec. With the DELAY switch in the IN position, the delay is variable from about 55 to 700 nsec using the DELAY RANGE switch (LOW, 55 to 100 nsec; HIGH, 100 to 700 nsec) and the one turn DELAY FINE control.

Fig. 3

BACK PANEL CONTROLS

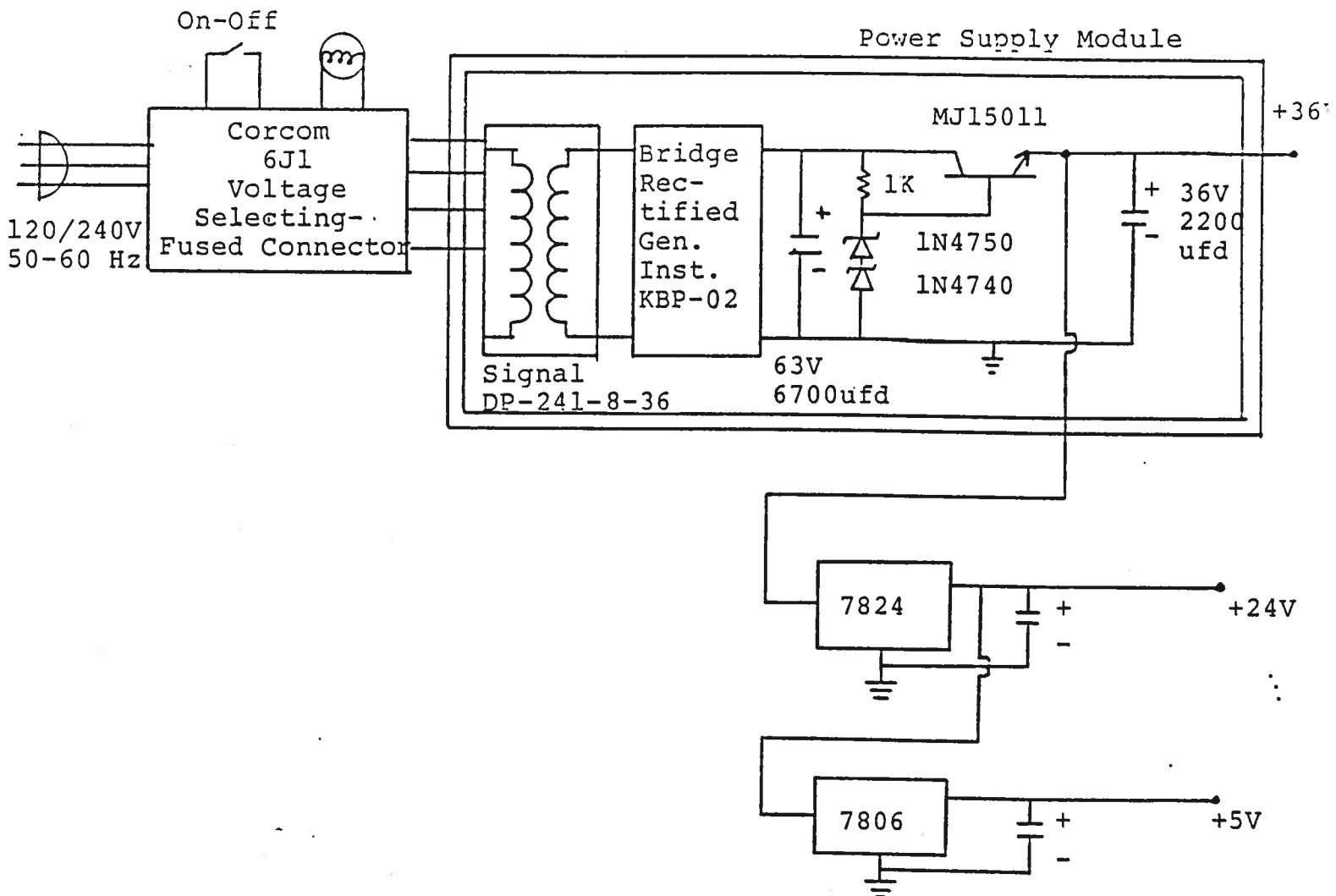


- (1) FUSED CONNECTOR, VOLTAGE SELECTOR. The detachable power cord is connected at this point. In addition, the removable cord is adjusted to select the desired input operating voltage. The unit also contains the main power fuse (0.5 A SB).
- (2) 0.5 A SB. Protects output stage against overload condition.

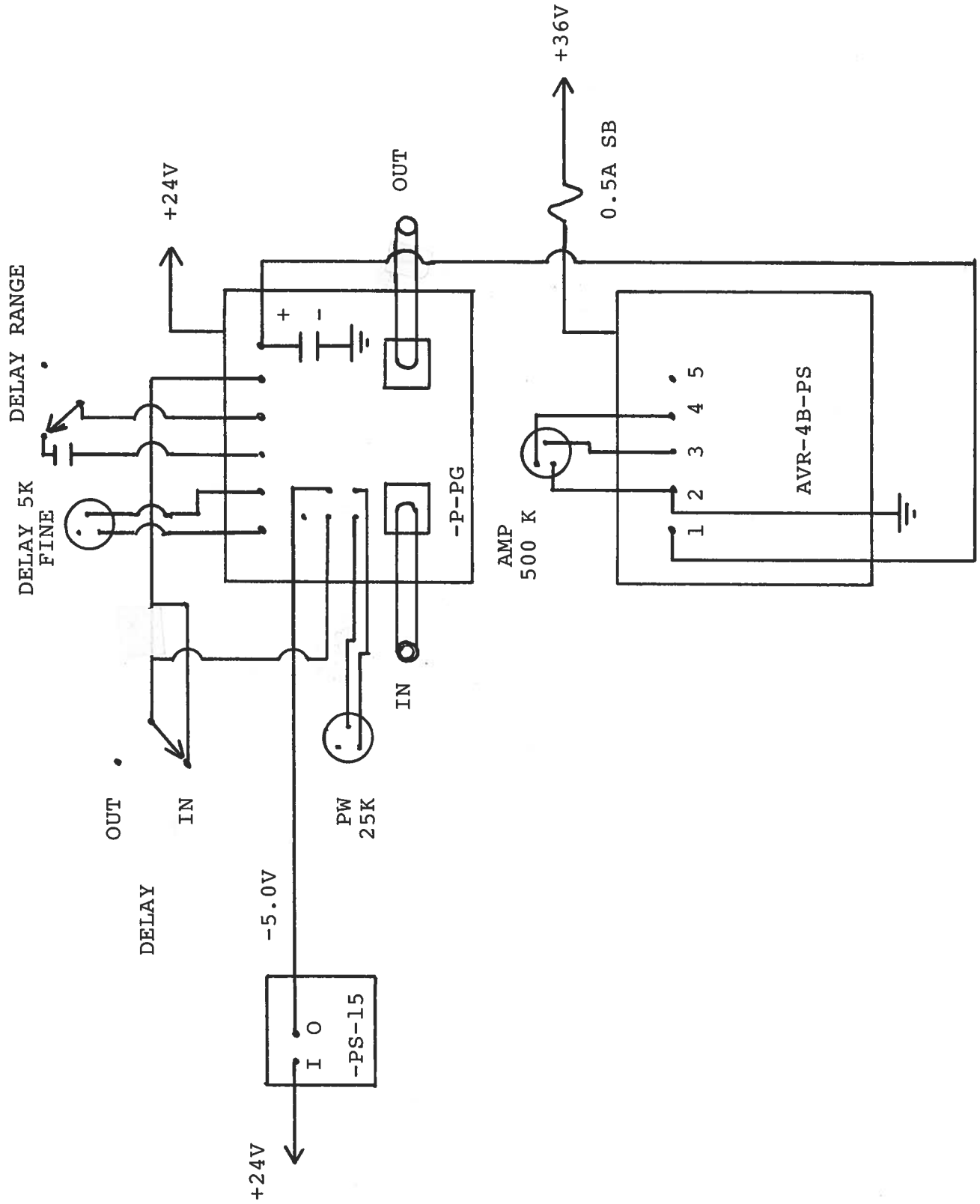


Fig. 4a

POWER SUPPLY



AVR-4B-PS-PW-P-NIM-LIA BLOCK DIAGRAM



## SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AVR-4A-PW-PS-LIA-NIM consists of the following basic modules:

- 1) AVR-4A-PG-LIA-NIM pulse generator module
- 2) +36V, +24V, +5.8V power supply boards
- 3) AVR-4A-PS power supply module
- 4) AVR-4A-PS-15 power supply module

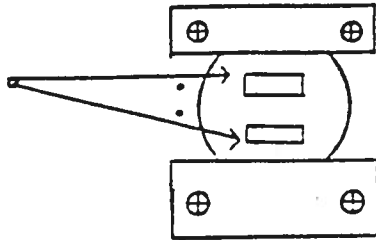
The modules are interconnected as shown in Fig. 4.

In the event of an instrument malfunction, it is most likely that the 0.5A SB fuse or the main power fuse on the rear panel has blown. Replace if necessary. If the unit still does not function, it is most likely that some of the output switching elements (SL18T) may have failed due to an output short circuit condition or to a high duty cycle condition. The switching elements may be accessed by removing the cover plate on the bottom side of the instrument. The cover plate is removed by removing the two 2-56 Phillips screws. NOTE: First turn off the prime power. CAUTION: Briefly ground the SL18T tabs to discharge the 400 volts power supply potential. The elements may be removed from their sockets by means of a needle nosed pliers after removing the four counter sunk 2-56 Phillips screws which attach the small aluminum heat sinks to the body of the instrument. The SL18T is a selected VMOS power transistor in a TO 220 packages and may be checked on a curve tracer. If defective, replacement units should be ordered directly from Avtech. When replacing the SL18T switching elements, take care to insure that the short lead (of the three leads) is adjacent to the back of the chassis. (See following Fig.). The SL18T elements are electrically isolated from the small aluminum heat sinks but are bonded to the heat sinks using WAKEFIELD TYPE 155 HEAT SINK ADHESIVE.

SL18T HEAT SINKING

BACK

155  
HEAT SINK  
ADHESIVE\*



SHORT LEAD →

Schroff

09.13.88

11