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INSTRUCTIONS

MODEL AVO-6D-C PULSE GENERATOR

S.N.:

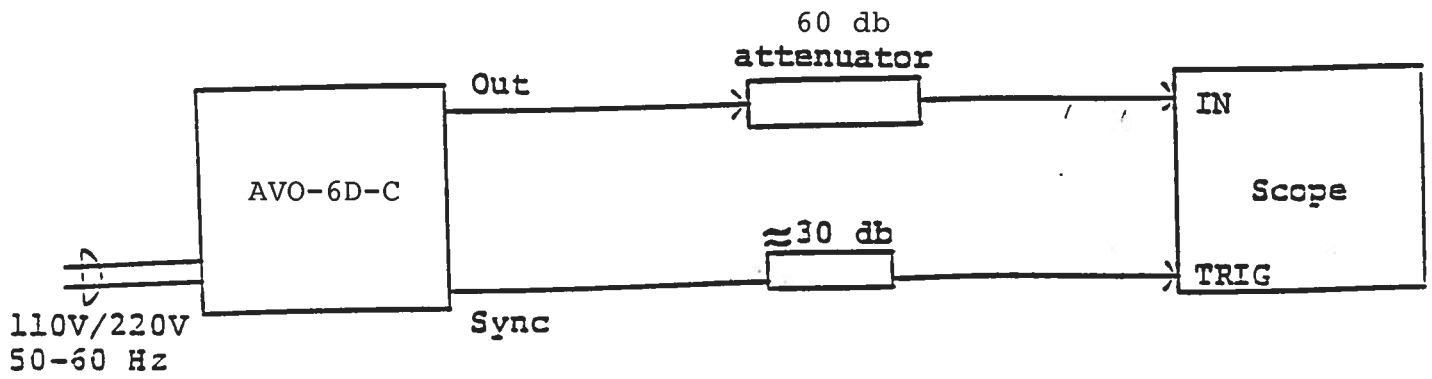
WARRANTY

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.

Fig. 1

PULSE GENERATOR TEST ARRANGEMENT

(AVO-6D-T OUTPUT MODULE REMOVED)



Notes:

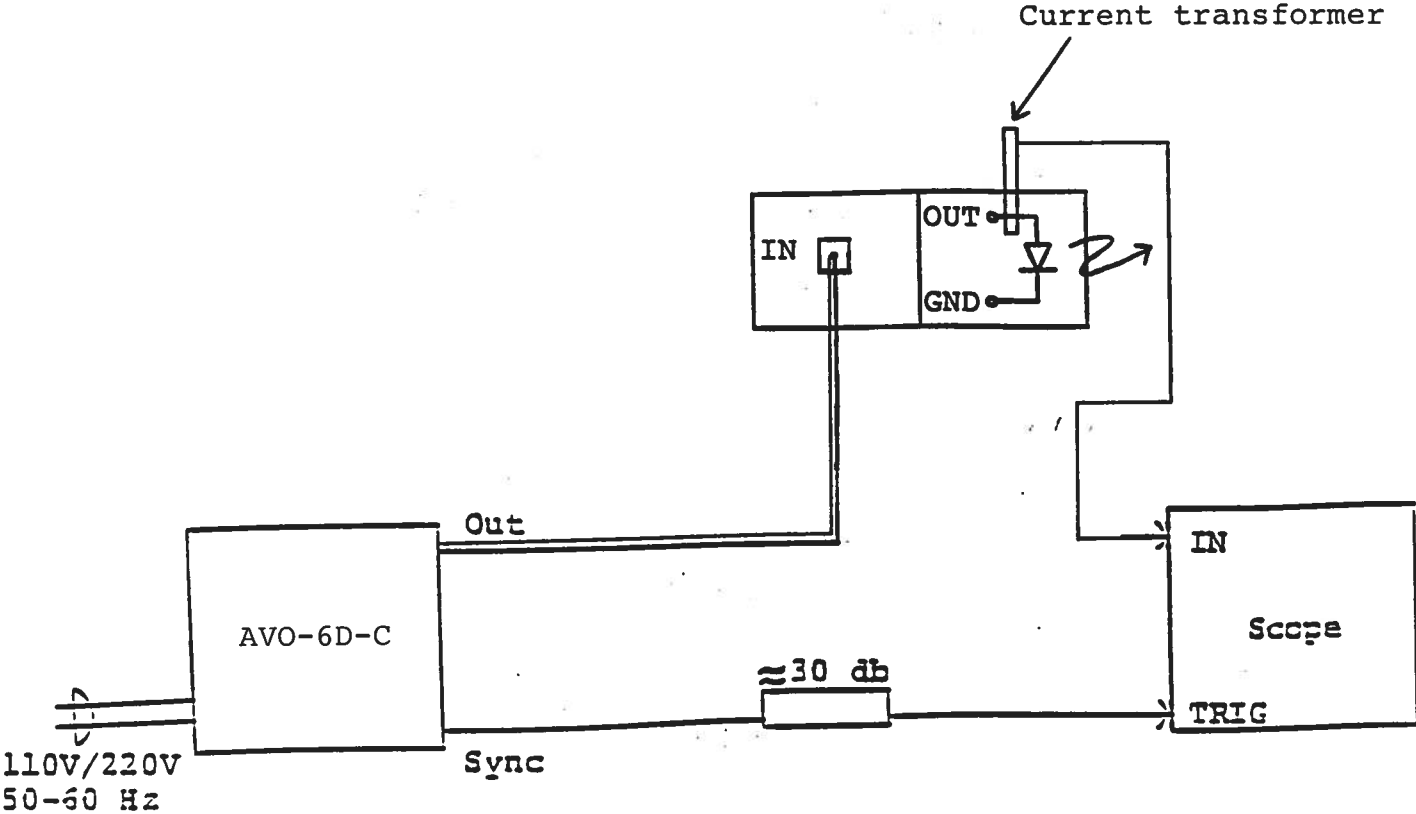
- 1) The bandwidth capability of components and instruments used to display the pulse generator output signal (attenuators, cables, connectors, etc.) should exceed 100 MHz.
- 2) The use of a 60 db attenuator at the scope vertical input channel will insure a peak input signal to the scope of less than one volt (necessary only if sampling scope used). If a high impedance real time scope is used, the pulse generator should be terminated using a shunt 50 Ohm resistor.
- 3) The sync output channel provides TTL level signals. To avoid overdriving the TRIG input channel of some scopes, a 30 db attenuator should be placed at the input to the scope trigger channel. The SYNC output precedes the main output when the front panel LEAD-LAG switch is in the LEAD position. The SYNC output lags the main output when the switch is in the LAG position.
- 4) To obtain a stable output display the PW and PRF controls on the front panel should be set mid range. The front panel TRIG toggle switch should be in the INT position. The DELAY controls and the scope triggering controls are then adjusted to obtain a stable output. The scope may then be used to set the desired PRF by rotating the PRF controls.
- 5) The output pulse width is controlled by means of the front panel PW control.
- 6) The output pulse amplitude is controlled by means of the front panel AMP control.
- 7) To voltage control the output pulse width, set the rear panel switch in the EXT position and apply 0 to +10V between terminal A and ground ($R_{IN} \geq 10K$). (option).
- 8) To voltage control the output amplitude, set the rear panel switch in the EXT position and apply 0 to +10V between terminal A and ground ($R_{IN} \geq 10K$). (option).
- 9) An external clock may be used to control the output PRF of the AVO unit by setting the front panel TRIG toggle switch in the EXT position and applying a 0.2 us (approx.) TTL level pulse to the TRIG BNC connector input. For operation in this mode, the scope time base must also be triggered by the external clock rather than from the SYNC output.

- 10) The unit can be converted from 110 to 220V 50-60 Hz operation by adjusting the voltage selector card in the rear panel fused voltage selector-cable connector assembly.
- 11) For additional assistance, call (613) 226-5772 or Fax (613) 226-2802.

Fig. 2

PULSE GENERATOR TEST ARRANGEMENT

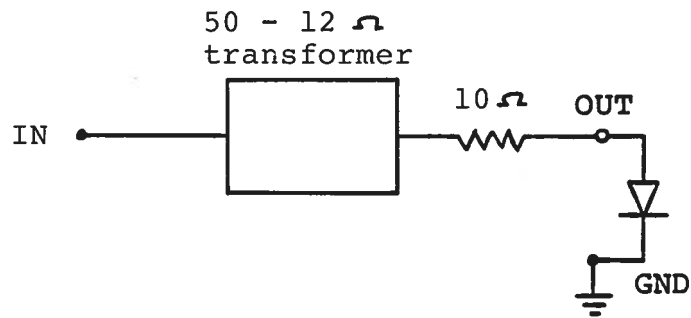
(AVO-6D-T OUTPUT MODULE CONNECTED)



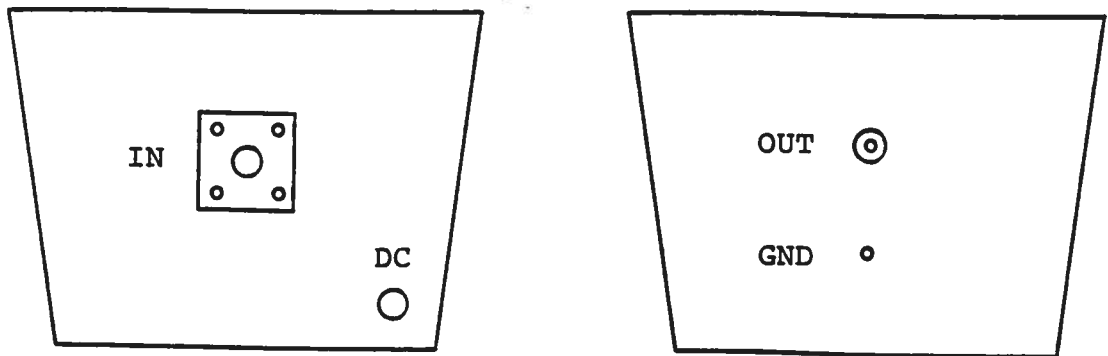
- 1) A general description of the AVO-6D-T module is given in Fig. 3.
- 2) The AVO-6D-T module should be connected to the AVO-6A-C mainframe via the supplied 24" RG174 cable.
- 3) The laser diode is solder-connected between the OUT and GND terminals on the side of the AVO-6D-T module.
- 4) The mainframe provides a voltage pulse of up to 210 Volts to the AVO-6D-T module (to provide a maximum current of 10 Amperes).
- 5) The diode current may be monitored using either a current transformer or by placing a low-value resistor (eg. 0.2 Ohm) between the laser cathode and ground. The potential across the resistor may then be monitored using a voltage probe.

Fig. 3

AVO-6D-T



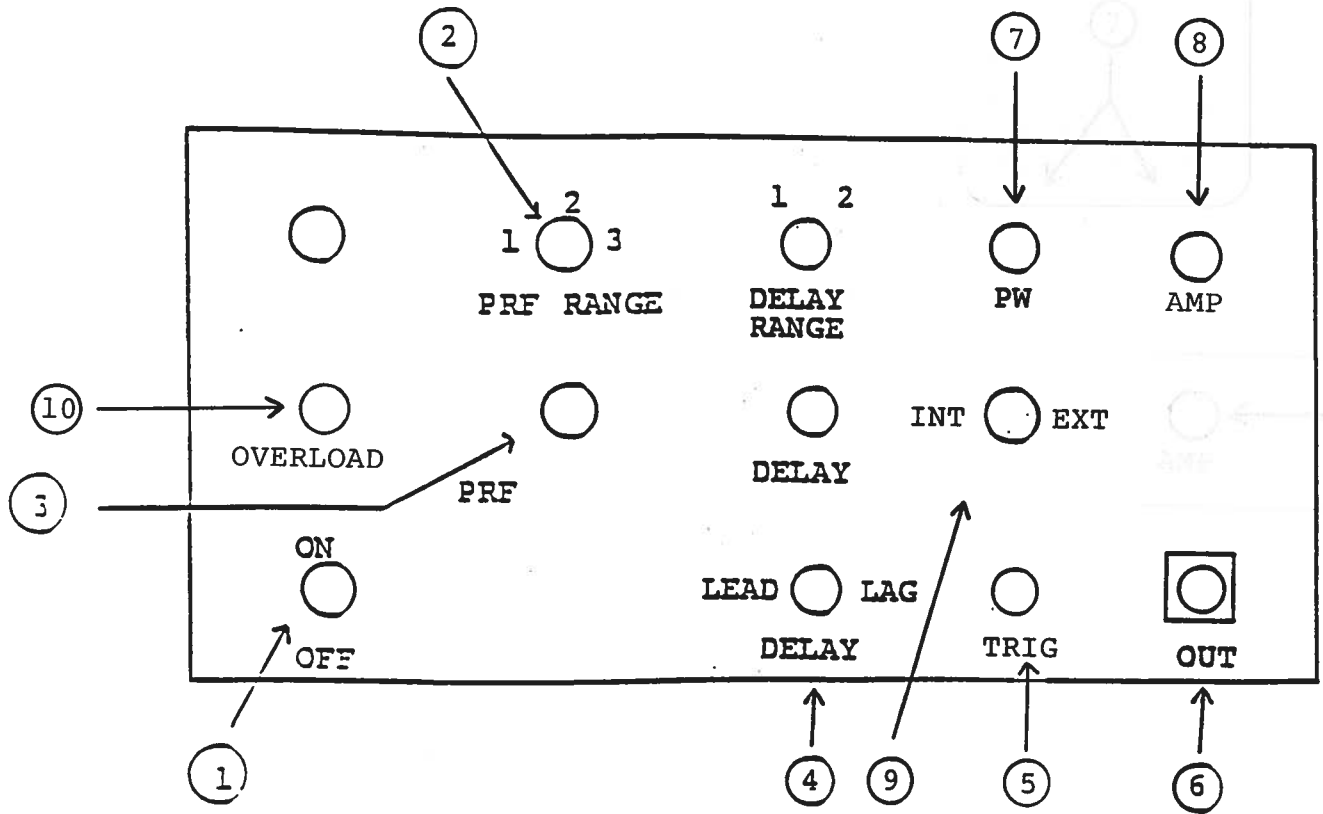
FUNCTIONAL EQUIVALENT CIRCUIT



PACKAGE

Fig. 2

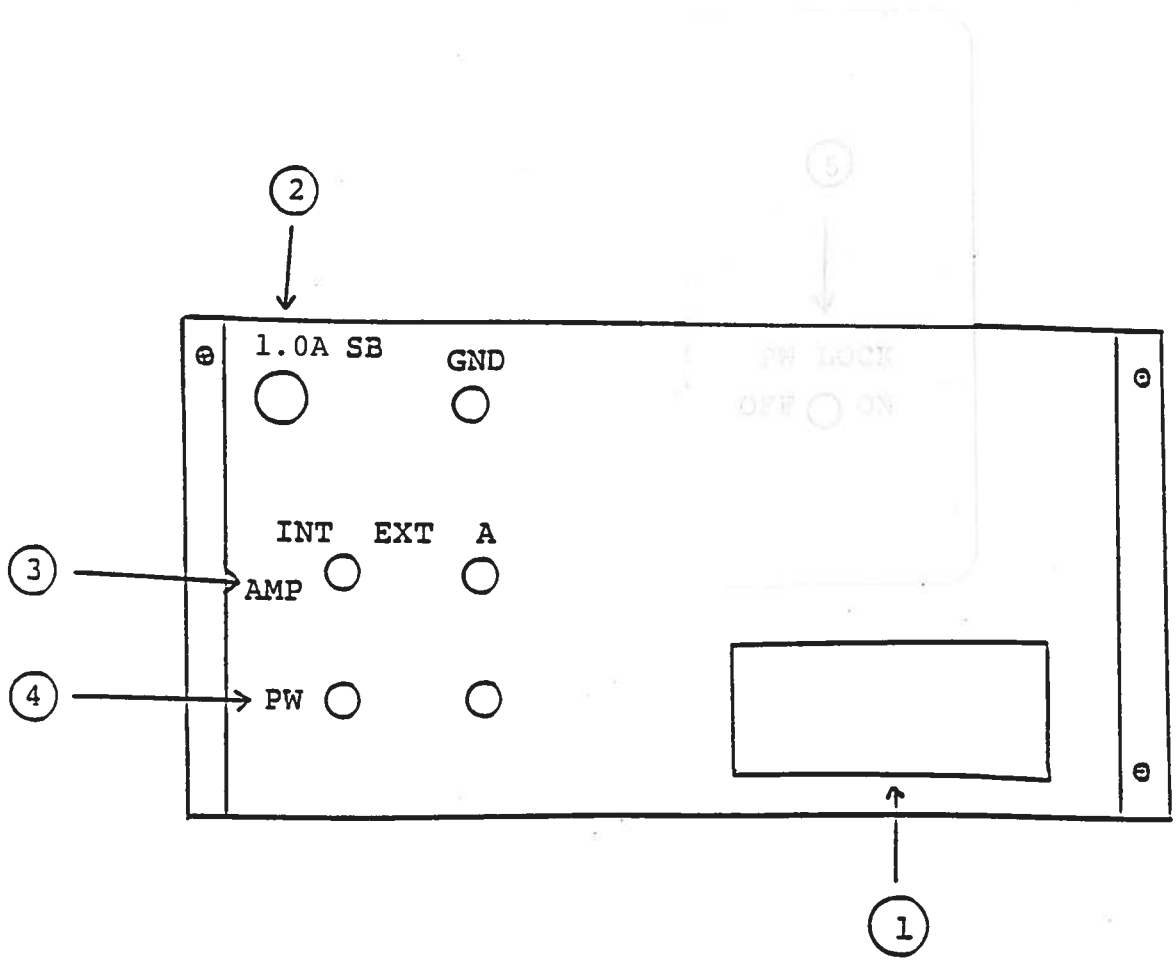
FRONT PANEL CONTROLS



- (1) ON-OFF Switch. Applies basic prime power to all stages.
- (2) PRF Control. Varies PRF from 10 Hz to 10 kHz as follows:
- (3)
- | | | |
|---------|---------|------------|
| Range 1 | 10 Hz | 100 Hz |
| Range 2 | 100 Hz | to 1000 Hz |
| Range 3 | 1000 Hz | to 10 kHz |
- (4) DELAY Control. Controls the relative delay between the reference output pulse provided at the TRIG output (5) and the main output (6). This delay is variable over the range of 0 to about 1.0 us (Range 1) or 1.0 to 5.0 us (Range 2). The TRIG output precedes the main output when the LEAD-LAG switch is in the LEAD position and lags when the switch is in the LAG position.
- (5) TRIG Output. This output is used to trigger the scope time base. The output is a TTL level 100 ns (approx.) pulse capable of driving a fifty Ohm load.
- (6) OUT Connector. SMA connector provides output to AVD-6D-T module (210 Volts to 50 Ohms).
- (7) PW Control. A pot control which varies the output pulse width from 0.1 to 5.0 us.
- (8) AMP Control. A pot control which varies the output pulse amplitude from 0 to 210 V to a 50 Ohm load.
- (9) EXT-INT Control. With this toggle switch in the INT position, the PRF of the AVD unit is controlled via an internal clock which in turn is controlled by the PRF controls. With the toggle switch in the EXT position, the AVD unit requires a 0.2 us TTL level pulse applied at the TRIG input in order to trigger the output stages. In addition, in this mode, the scope time base must be triggered by the external trigger source.
- (10) AVD-6 units with a serial number higher than 5600 are protected by an automatic overload protective circuit which controls the front panel overload light. If the unit is overloaded (by operating at an exceedingly high duty cycle or by operating into a short circuit), the protective circuit will turn the output of the instrument OFF and turn the indicator light ON. The light will stay ON (i.e. output OFF) for about 5 seconds after which the instrument will attempt to turn ON (i.e. light OFF) for about 1 second. If the overload condition persists, the instrument will turn OFF again (i.e. light ON) for another 5 seconds. If the overload condition has been removed, the instrument will turn on and resume normal operation. Overload conditions may be removed by:
- 1) Reducing PRF (i.e. switch to a lower range)
 - 2) Reducing pulse width (i.e. switch to a lower range)
 - 3) Removing output load short circuit (if any)

Fig. 4

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 (0.25 A SB).
- (2) 1.0A SB. Fuse which protects the output stage if the output duty cycle rating is exceeded.
- (3) EA. To voltage control the output amplitude, set the switch in the EXT position and apply 0 to +10 volts between terminal A and ground ($R_{IN} \geq 10K$). (option).
- (4) EW. To voltage control the output pulse width, set the switch in the EXT position and apply 0 to +10 volts between terminal A and ground ($R_{IN} \geq 10K$). (option).

SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AVD-6D-C consists of the following basic modules:

- 1) AVD-6D-PG pulse generator module
- 2) AVD-CL2 clock module
- 3) +24V power supply board
- 4) AVD-6D-PS-PW pulse width control-power supply module
- 5) AVD-6D-T output module

The modules are interconnected as shown in Fig. 5. The clock module controls the output PRF and the relative delay between the main output and the SYNC outputs. The PG pulse generator modules generate the output pulse. In the event of an instrument malfunction, it is most likely that the rear panel 1.0A SB fuse or some of the output switching elements (SL4T) 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. NOTE: First turn off the prime power. The elements may be removed from their sockets by means of a needle nosed pliers. The SL4T 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 SL4T switching elements, take care to insure that the short lead (of the three leads) is adjacent to the black dot on the chassis. If the switching elements are not defective, then the four Phillips screws on the back panel should be removed. The top cover may then be slid off and operation of the clock and power supply modules should be checked. The clock module is functioning properly if:

- a) 0.1 us TTL level outputs are observed at pins 2 and 3.
- b) The PRF of the outputs can be varied over the range of 10 Hz to 100 kHz using the PRF controls.
- c) The relative delay between the pin 2 and 3 outputs can be varied by at least 5 us by the DELAY controls.

The sealed clock module must be returned to Avtech for repair or replacement if the above conditions are not observed. The power supply board generates +24V DC to power the other modules. If the voltage is less than +24V, turn off the prime power and unsolder the lead from the 7824 regulator chip on the power supply board. Solder a 100 ohm 5 watt resistor to the 7824 output to ground and turn on the prime power. A voltage of +24 volts should be read. If the voltage is less then the power supply board is defective and should be repaired or replaced.

Schroff

10.27.92

Edition A

-EW

SYSTEM DESCRIPTION AND REPAIR PROCEDURE

-EA

The 800-AB-C consists of the following basic modules:

- 1) 400-AB-PC pulse generator module
- 2) 400-AB-CL clock module
- 3) 400-AB-PB power supply board
- 4) 400-AB-FC-FW pulse width control power supply module
- 5) 400-AB-1 output module

The modules are interconnected as shown in Fig. 2. The clock module controls the output PWF and the relative delay between the main output and the DLY output. The PWF pulse generator module generates the output pulse. In the event of an internal malfunction, it is most likely that the rear panel 1.5A 25 fuse on some of the output switching elements (SWAT) may have failed due to an output short circuit condition or to a high duty cycle condition. The switching elements may be replaced by removing the cover plate on the bottom side of the rear panel. The rear panel is held in place by the power screws. The elements may be removed from their sockets by means of a small screwdriver. The PWF is a selected VMDC power element in a 10 100 package and may be checked on a curve tracer. If defective replacement units should be ordered directly from Avtech. When replacing the SWAT switching element, take care to insure that the short lead of the element is attached to the track on the chassis. If the switching element is not defective, then the four Phillips screws on the rear panel should be removed. The top cover and chassis side left and operation of the clock and power supply modules should be checked. The clock module is a switching regulator.

- 2) The PWF level output is checked at pins 2 and 3.
- 3) The PWF of the output can be varied over the range of 10 to 100 PWF using the PWF control.
- 4) The relative delay between the pin 2 and 3 outputs can be varied by at least 5 ns by the DLYV control.

The rated clock module must be returned to Avtech for repair or replacement if the above conditions are not observed. The power supply board generates 25V DC to power the other modules. If the voltage is less than 25V, turn off the power and check the load from the X825 regulator chip on the power supply board. A 100 ohm 5 watt resistor on the X825 output is ground and is on the power supply board. A voltage of 25V volts should be built up the voltage is less than the power supply board voltage, and should be checked or replaced.