

Pulse Driver Board Checkout

Board Serial Number: #8

Disconnect: High Voltage Transformer and Blower.

Apply Line Voltage.

Verify the green LED illuminates.

OK

15 Pulses Per Second (PPS)

Log the stable line-voltage range:

Low Line Voltage Limit	High Line Voltage Limit
76 VAC	141 VAC

12 PPS

Log the stable line-voltage range:

Low Line Voltage Limit	High Line Voltage Limit
91 VAC	152 VAC

10 PPS

Log the stable line-voltage range for 10 PPS operation (Design Goal 90 VAC to 140 VAC):

Low Line Voltage Limit	High Line Voltage Limit
88 VAC	146 VAC

Log timing trim capacitor values:

C3: .0068uF, C4: .012uF, C22: .01uF (located on rotary switch)

Log Ringback Delay Time:

Ringback Delay:

1.4 Milliseconds.

Ringback Delay Low Line Voltage Stability Limit:

10 PPS	12 PPS	15 PPS
89 VAC	92 VAC	79 VAC

Reconnect: High Voltage Transformer and Blower

Power Cycle Timing and Control Checkout

Turn on power. Wait 15 seconds. View Applicator Coil peak current on the Oscilloscope.

Watch the pulse train; log the duration of pulsing:

Pulse Train duration:

4.4 Seconds

Use a Stopwatch to time four consecutive power cycles:

Four Cycles:

63 Seconds

Cycle Time:

15.75 Seconds

Verify Red LED illuminates when the blower goes to full power.

OK

Verify Yellow LED illuminates when high voltage comes on.

OK

Airflow Failure Detection Test

Disconnect the blower. Energize the unit. Wait 30 seconds. Verify the pulse never activates. OK

Verify the yellow LED on the Power Cycle Timer board never illuminates. OK

Reattach blower power.

High Voltage Indicator Checkout:

Activate pulsing:

Verify Incandescent lamp on high voltage transformer illuminates. OK

Verify Neon Lamp illuminates on Switch Assembly. OK

Verify Neon Lamps illuminate on Cap Bank Bleeder Board. OK

High Voltage Pulse Checkout:**15 PPS Test Data**

Line Voltage:	103 VAC	115 VAC	127 VAC
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Transformer Primary Current:	5.7A	7A	10A
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Positive Pulse Measurement:

Peak Applicator Coil Current:	950A	1,064A	1,178A
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Peak Capacitor Voltage:	2,075V	2,300V	2,565V
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Negative Pulse Measurement:

Peak Applicator Coil Current:	-766A	-868A	-958A
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Peak Capacitor Voltage:	-1,690V	-1,895V	-2,095V
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12 PPS Test Data

Line Voltage:	103 VAC	115 VAC	127 VAC
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Transformer Primary Current:	4.7A	6.2A	9.3A
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Positive Pulse Measurement:

Peak Applicator Coil Current:	998A	1112A	1232A
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Peak Capacitor Voltage:	2,150V	2,415V	2,665V
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Negative Pulse Measurement:

Peak Applicator Coil Current:	-808A	-906A	-1,006A
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Peak Capacitor Voltage:	-1,765V	-1,975V	-2,190V
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10 PPS Test Data

Line Voltage:	103 VAC	115 VAC	120VAC	127 VAC
Transformer Primary Current:	4.1A	7.7A	7A	8.8A
Positive Pulse Measurement:				
Peak Applicator Coil Current:	1,034A	1,152A	1,206A	1,274A
Peak Capacitor Voltage:	2,240V	2,500V	2,610V	2,760V
SCR midpoint voltage:			1,278V	1,354V
Post Ringback Overshoot Voltage			2,655V	2,785V
Negative Pulse Measurement:				
Peak Applicator Coil Current:	-844A	-947A	-988A	-1,034A
Peak Capacitor Voltage:	-1,842V	-2,055V		-2,265V
SCR negative midpoint voltage:			-1,090V	-1,148
SCR negative overshoot excursion:			-3,050V	-3,230
SCR midpoint negative overshoot excursion:			-1,556V	-1,638V

One Minute Primary Hipot Test

Check that there is no continuity from the prime power neutral terminal to the driver deck chassis. Connect a jumper from the capacitor high voltage terminal to the prime power neutral terminal. Use a high voltage divider and oscilloscope to view the driver deck chassis, with respect to earth ground. Verify the system operates satisfactorily for one minute, and that the driver deck chassis shows ~5KV peak to peak (with 127 volts primary line voltage applied).

Hipot Test: OK

Remove Jumper.

System Data

Capacitor Value: 17 Microfarads

Pulse Width: 104 Microseconds (measured at baseline)

Applicator Coil: 35 Turns

115 VAC	Pulse Energy	Ampere Turns	Peak Radiated Power
10 PPS	53 Joules	40,329 AT	2.88 MW
12 PPS	50 Joules	38,920 AT	2.69 MW
15 PPS	45 Joules	37,240 AT	2.45 MW