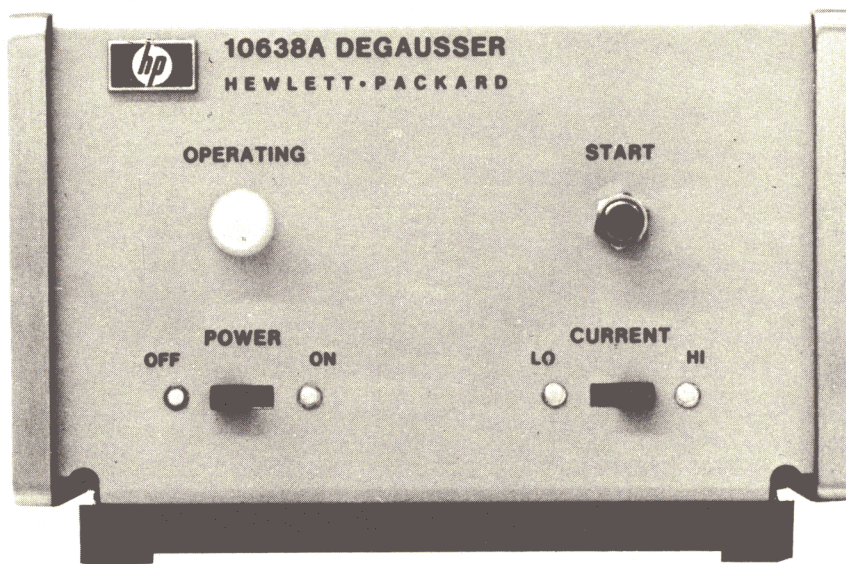


DEGAUSSER

10638A



CERTIFICATION

The Hewlett-Packard Company certifies that this instrument was thoroughly tested and inspected and found to meet its published specifications when it was shipped from the factory. The Hewlett-Packard Company further certifies that its calibration measurements are traceable to the U.S. National Bureau of Standards to the extent allowed by the Bureau's calibration facility.

WARRANTY AND ASSISTANCE

This Hewlett-Packard product is warranted against defects in materials and workmanship. This warranty applies for one year from the date of delivery, or, in the case of certain major components listed in the manual, for the specified period. We will repair or replace products which prove to be defective during the warranty period provided they are returned to Hewlett-Packard. No other warranty is expressed or implied. We are not liable for consequential damages.

Service contracts or customer assistance agreements are available for Hewlett-Packard products that require maintenance and repair on-site.

For any assistance, contact your nearest Hewlett-Packard Sales and Service Office.

**10638A
DEGAUSSER**

Manual Applies to All Serials

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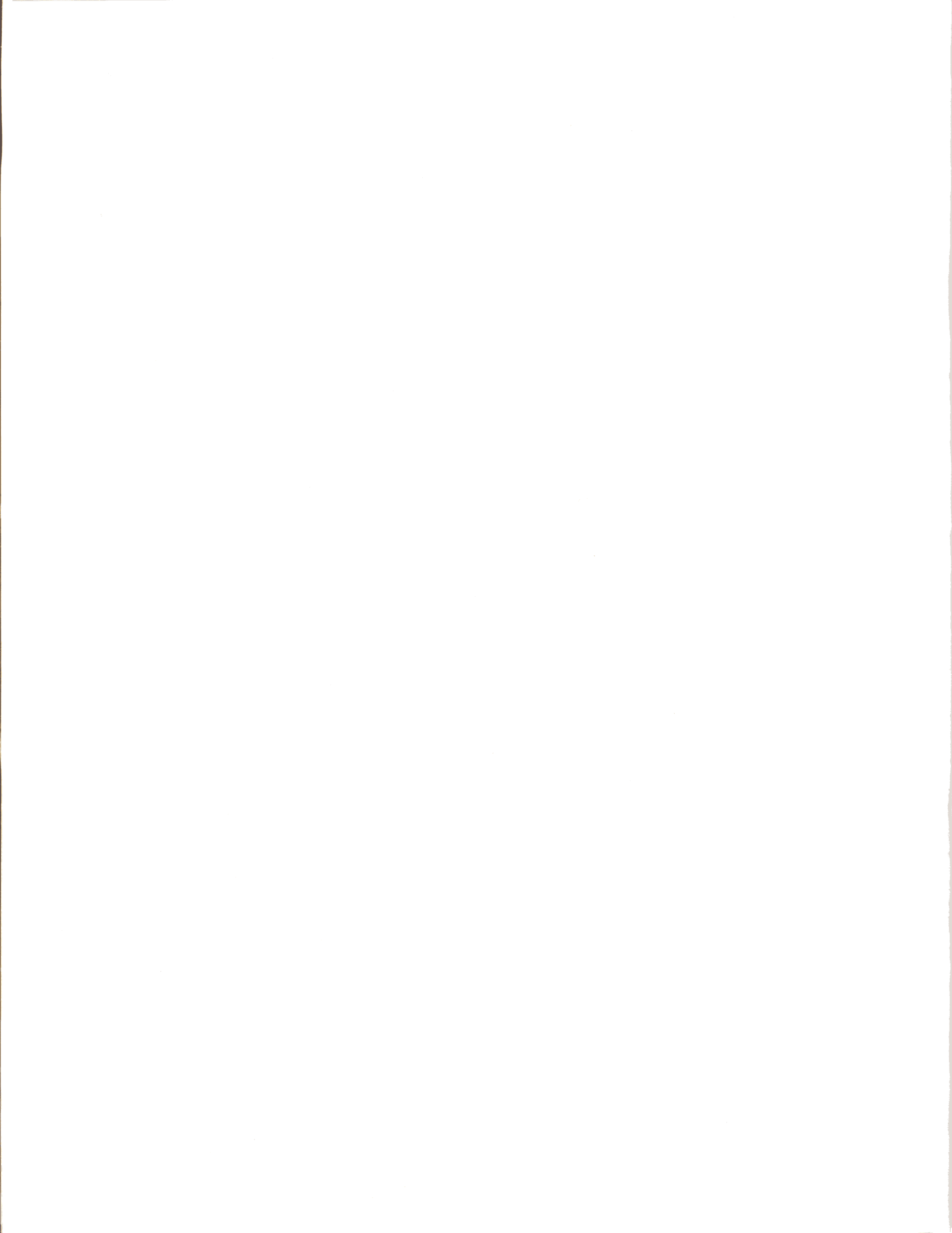


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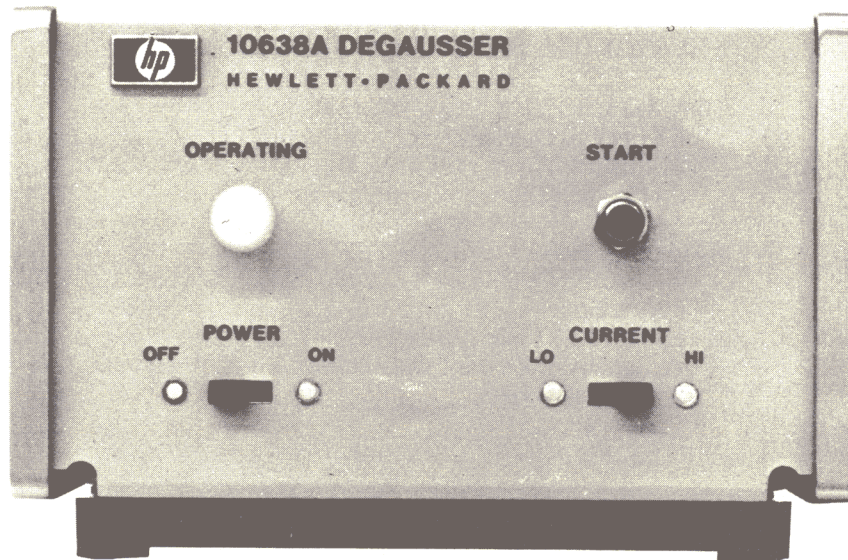
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DEGAUSSER



CABLE



HP 10638A DEGAUSSER
OPERATING AND SERVICE
INFORMATION

1. **GENERAL INFORMATION**

2. Model 10638A Degausser is used with any HP 5061A Cesium Beam Standard which has Option 004 High Performance Tube installed. Degaussing is needed to obtain optimum performance from the Option 004 Beam Tube.

3. The Degausser generates an exponentially decreasing, alternating-current signal. When connected to the 5061A Option 004, this signal passes through a coil which is wound around the beam tube magnetic shield. Any residual magnetism, which could cause small frequency offsets, is removed from the inner shield.

4. **WHEN TO USE THE DEGAUSSER**

5. A 5061A Cesium Standard equipped with an Option 004 High Performance Tube will need degaussing at initial power turn-on, if the improved specifications are to be met. Degaussing of the High Performance Tube is also necessary after the C-FIELD setting is changed.

6. **HOW TO USE THE DEGAUSSER**

7. To use the degausser, first perform the 5061A Turn-On Procedure in the 5061A Operating and Service Manual, Paragraph 3-8(a) through step i. When the Cesium Standard has been turned on and has warmed up, use the degausser as follows:

- a. Connect the degausser to the 5061A, rear panel, J18 DEGAUSS connector using the cable supplied. The 5061A CONTINUOUS OPERATION lamp will turn OFF.
- b. Set Degausser CURRENT switch to HI; POWER switch to ON; press START. Degausser OPERATING lamp will flash ON and OFF.
- c. Allow the Degausser to complete one cycle (20 minutes). Leave POWER switch ON.
- d. When the OPERATING lamp stops flashing, do the C-FIELD ADJUSTMENT in Paragraph 3-8(k) of the 5061A Operating and Service Manual. If any interruption occurs during the HI CURRENT degauss cycle, repeat the complete HI CURRENT degauss cycle.
- e. Set degausser CURRENT switch to LO; press START. Degausser OPERATING lamp will flash on and off.
- f. Allow the degausser to complete another cycle (20 minutes).
- g. Recheck the C-FIELD ADJUSTMENT by doing Paragraph 3-8(k) of the 5061A manual. If the required or specified settability ($\pm 1 \times 10^{-13}$ for Option 004) is not achieved, repeat the LO CURRENT degauss cycle until the desired C-FIELD settability is obtained.

NOTE

A frequency offset will exist during the initial portion of the degauss cycle. The 5061A CONTINUOUS OPERATION lamp is held off whenever the degausser is connected to the 5061A.

h. If any interruption occurs during the LO CURRENT degauss cycle, repeat the complete LO CURRENT degauss cycle.

i. Disconnect degausser from the 5061A.

8. **CIRCUIT DESCRIPTION**

9. Three basic circuits make up the 10638A Degausser:

a. 2.4-Second Oscillator (U3).

b. 20-Minute Timer (U2).

c. Exponential Current Generator (U1).

10. **2.4-Second Oscillator**

11. Alternating frequency of the degaussing current is established by a free-running 2.4-second oscillator. This oscillator is comprised of U3 and associated components and drives the 20-Minute Timer and the Current Switching Circuit. The 2.4-second output at U3(6) provides the clock input to 20-Minute Timer U2(10).

12. A second output from U3(6) is applied to Q5 Base. This output turns Q5 on and off at a 2.4-second rate. During the 20-Minute degaussing cycle Q6 is biased on by the Q3 Collector voltage; thus, relay K1 is controlled by Q5 and switched at a 2.4-second rate. The K1 contacts apply the alternating polarity degaussing current to the Option 004 Beam Tube. Diode CR6 is a transient suppressor for the K1 solenoid.

13. **20-Minute Timer**

14. The 20-Minute Timer consists of U2 and associated components. U2 is a 2^N divider wired to divide by 2^9 . It receives the clock pulses from a U3(6) every 2.4 seconds and generates an output 20 minutes after the first pulse. This output generates relay control signals for K1 and K2.

15. At initial power turn-on, timer U2 is reset to zero by a positive voltage drop through R5, R6 applied to U2(11). A positive voltage at R5, R6 junction is applied through CR2, R15 and turns on Q3 which turns off Q4 and opens K2. SCR diode CR1 does not turn on at initial power turn-on because its cathode ground is removed.

16. START switch S1 is pressed to start the timer. This applies a ground to CR1 cathode and allows the positive voltage on CR1 gate element to fire the SCR. S1 also applies a positive voltage through R1 to U2(11) to insure that the timer circuit is reset to zero. If the START switch is pressed during the 20-Minute cycle, U2 is reset to zero. CR1 is not affected since it remains conducting.

17. When S1 is pressed, the low voltage at CR1 anode turns off Q3 which turns on Q4, energizes K2 and grounds CR1 cathode which maintains CR1 on. The 2.4-second clock pulses are accumulated for 20 minutes by U2. At the end of 20 minutes, U2(14) output goes HI and turns Q3 on, Q4 off which opens K2 and turns off CR1.

18. During the 20-minute interval, the 2.4-second pulses energize and de-energize K1 which alternates current through the degaussing coil. When the 20-minute cycle ends, the pulses are blocked off by the low level from Q3 which turns Q6 and Q5 off.

19. **Exponential Current Generator**

20. Exponential Current Generator consists of U1, Q1, Q2 and associated components. This is a chopper-stabilized, operational amplifier (U1) followed by a Darlington-Pair Current-Amplifier (Q1, Q2) to provide the exponential degaussing current.

21. With the START switch pressed, the negative voltage at R7, R8 junction is applied to U1(1). U1 saturates and its output goes maximum positive which turns on Q1 and Q2. Current then flows through R18, CR4 or through the low-impedance degaussing coil, if it is connected.
22. When U1 saturates, C2 charges to about 28V (S2 set to LO). The C2-R9 network sets the RC time constant (100 seconds) for the exponential decay of the degaussing current. Three methods are used to obtain the time-constant:
 - a. C2 is a mylar capacitor (low leakage).
 - b. U1 is a high-input-impedance amplifier.
 - c. C2 and R9 are mounted on teflon posts to minimize board leakage.
23. When switch S1 is pressed and released, C2 discharges at a rate-of-discharge set by C2 and R9. At S1 release, U1(6) output is maximum which causes maximum initial current flow through Q2 (330 mA in HI CURRENT and 13 mA in LO CURRENT). The current path is through R14, the Degausser Coil, when connected, and through Q2, R22 and R21 to the +28Vdc power source. Relay K1 switches current direction through the degausser coil at a 2.4 second rate. As C2 discharges, U1(6) output decreases which causes a decrease in degaussing current through Q2 and the 5061A degaussing coil. The exponentially decreasing current is switched for 20 minutes, then turned off by 20-Minute Timer U2. When the degaussing coil is not connected, current flows through R19, CR4, R18, Q2 and through R22, R21 to +28Vdc.
24. The amount of current flowing is determined by R19 or by R3, R4 when the CURRENT switch is set to HI. In LO CURRENT position, the degaussing current is about 13 mA at the start of the exponential decay.
25. In HI CURRENT position, the degaussing current is about 330 mA at the start of the exponential decay. At degaussing current levels of 10 mA or less, current is provided by U1(6) through R14. Voltage at CR4, R19 junction remains the same for both LO and HI CURRENT.
26. Limiter network R29, CR9, CR10 reduces any voltage transients generated by relay switching.
27. Rear panel MONITOR connector provides a voltage test point to verify correct circuit operation. Normal voltage is >9Vdc at the start of the degaussing cycle and decays to about <2mVdc at the end of the 10-minute degaussing cycle.
28. A zero-output adjustment for U1 is provided. With POWER switch in OFF and C2 shorted, resistor R10 is adjusted for 0 Vdc \pm 10 μ v at the MONITOR output.
29. After POWER switch S3 is set to ON and START switch S1 is pressed and released, OPERATING lamp flashes on at a 2.4-second rate.
30. **MAINTENANCE AND TESTING**
31. Power Connections. Whenever maintenance and testing is required on the HP 10638A, two methods of supplying power are possible:
 - a. First Method:
 1. Use the 5061A Option 004 as a power source. When this method is used, the 5061A top cover must be removed and two wires coming from the High Performance Beam Tube and connected to gold-post pin-connectors labeled DEGAUSS, must be disconnected. A 1/2-ohm resistor must then be connected across these two DEGAUSS connectors.
 2. Connect the degausser to 5061A, Option 004 DEGAUSS connector.

b. Second Method:

1. Remove the degausser top cover. Obtain three power supplies capable of generating +15 Vdc, -15 Vdc and +28Vdc (see Table 1).
2. Connect the +15V to J1(E); the -15V to J1(F); the +28V to J1(A). Connect the power supply ground to the degausser chassis.
3. Connect a .5-Ohm resistor across the WHT, WHT-VIO wires located at the rear of the degausser.

32. Test the 10638A as follows (Use test equipment listed in Table 1):

- a. Remove the degausser top cover and the side cover nearest the MONITOR jacks. Set POWER switch to ON; CURRENT switch to LO. OPERATING lamp should be off and not flashing.

CAUTION

Do not ground the WHT or WHT/VIO wires (degausser current output). Do not connect any test equipment ground to the WHT or WHT/VIO wires UNLESS the test equipment has an isolated or "floating" ground. Damage to Q1 and Q2 will result from improper grounding.

Table 1. Recommended Test Equipment

Instrument	Characteristics	Recommended Type
±15 Vdc Power Supply	+15 Vdc @.6 Amp -15 Vdc @.6 Amp	HP 6204B
+28 Vdc Power Supply	+28 Vdc @ 1 Amp	HP 6206B
Oscilloscope	Vertical Response: dc to 50 MHz Sensitivity: .005 V/cm	HP 180A HP 1820A and 1801A
Time Interval Counter	Measure Time Interval from 0 to 1500 Seconds	HP 5300A/HP 5304A
DC Voltmeter	DC Range: 1 Vdc to 30 Vdc 1% accuracy	HP 412A
Strip-Chart Recorder	Chart Speed: 1,2,4, 8 in/hr. Spans: .1, .5, 1 and 5V full scale Input Resistance: 200KΩ/Volt Accuracy: .2% full scale	HP 680
100-Ohm Resistor	100Ω, 1/4W, 5%	
.5-Ohm Resistor	.5Ω Met. Flm. 1/8W, 2%	
Equipment with similar characteristics may be used.		

33. **2.4-Second Oscillator**

- a. Observe U3(6) output amplitude with an oscilloscope. Display should be >12V on positive half-cycle and +12V on negative half-cycle. Disconnect the oscilloscope.
- b. Connect a time-interval counter to U3(6). Set the counter Time Base to 10 msec; Time Interval Mode, Common Trigger, + Slope for A and B inputs; Adjust Trigger Levels for +1Vdc (LEVEL A) and -1Vdc (LEVEL B).
- c. Observe the counter display; reading should be 2.1 to 2.4 seconds.
- d. Set counter Slope B to - (negative). New counter reading should be 45 to 55% of reading in step c.

34. **CR5 Check**

- a. Connect an oscilloscope to CR5 cathode. Display should be a rectangular wave with positive half-cycles 8.6 to 9.5V and negative half-cycles <1.0V. Disconnect the oscilloscope.

35. **20-Minute Timer Check**

- a. Connect a DC voltmeter (such as HP 412A) between U2(11) and chassis ground. Meter reading should be about +10.2Vdc.
- b. Press and hold the degausser START switch; meter reading should be >+9.2 Vdc. Release the START switch; meter reading should be <+1.0Vdc.
- c. The OPERATING lamp should be flashing. Disconnect the DC voltmeter.
- d. Connect a Time-Interval counter to TP1 (U2(7)).
- e. Set the counter for:
 - Time Interval Mode.
 - 10 msec Time Base.
 - Common Triggering.
 - Input A Slope to +.
 - Input B Slope to -.
 - Level A and B to +1Vdc.
- f. Press the counter RESET switch, then the degausser START switch. Counter should display a time interval of 17 to 22 seconds.

NOTE

This measurement may take up to 44 seconds to complete.

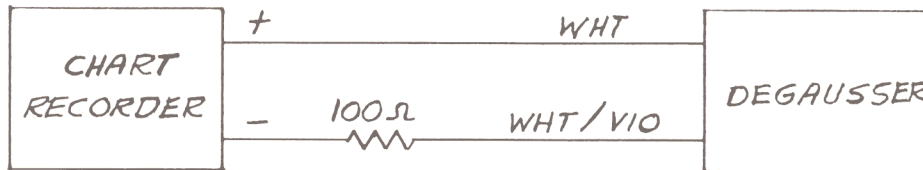
- g. Observe the counter gate-lamp until it goes off then press the degausser START switch. Counter gate-lamp must go off when START is pressed.
 - h. Disconnect the counter.
36. **Exponential Current Generator Zero Adjustments**
- a. Set the degausser POWER switch to OFF.
 - b. Connect a DC voltmeter to degausser MONITOR jacks (observe polarity).
 - c. Connect and leave a shorting wire across C2. When the voltmeter reading is zero volts, adjust degausser R10 for a DC voltmeter reading of <±10 μv.

- d. Remove shorting wire from across C2.
- e. Turn all operating power off; remove all connections from the degausser and reinstall all covers.

37. **Operational Tests**

- a. **HI CURRENT.** (See CAUTION.) Connect operating power to the degausser.
 1. Obtain a strip-chart recorder (such as an HP 680A) and connect a 100-ohm resistor as shown in Figure 1.

Figure 1. HI and LO Current Degauss Test Setup (see CAUTION)



CAUTION

MAKE SURE THE RECORDER INPUT IS FLOATING. IF THREE TERMINALS EXIST ON THE RECORDER, DISCONNECT THE GROUND TERMINAL FROM THE NEGATIVE (-) INPUT TERMINAL.

2. Connect the recorder to the degausser as shown in Figure 1.
3. Connect a DC Voltmeter to the HP 10638A MONITOR jacks. Set the voltmeter range to +30V.
4. Set the recorder RANGE to 1V; speed to 2 div./min. and adjust the recorder controls to center the pen.
5. Turn degausser POWER ON; CURRENT switch HI and momentarily press START.
6. Observe the initial voltage reading on the DC voltmeter; it should be >10Vdc.
7. Observe the initial reading on the recorder; it should be alternating >+120mV to >-120mV.
8. Operate the recorder until voltage readings decrease to <±9mV. (Time required is about 6 minutes).
9. Observe the recording. Voltage increase should decay exponentially with no apparent jumps or oscillations.
10. Leave DC voltmeter and recorder connected.

b. LO CURRENT

1. Set degausser POWER switch to OFF.
2. Connect a time-interval counter input to junction of R5, R6, CR1, CR2. Easiest connection point is CR2 anode.
3. Set counter for:
 - Common Input.
 - Function to Time Interval.
 - Time Base to 1 sec.
 - Level A and B to +5V.
 - Slope A to - (negative).
 - Slope B to + (positive).
- c. Set recorder RANGE to 50mV (Full Scale); press the counter RESET and then degausser START.
- d. Observe the voltmeter for an initial reading of >10V. Observe the recorder for an initial indication of >5mV.
- e. Operate the degausser until the OPERATING lamp stops flashing (about 20 min.). Just prior to the end of this time, check the voltmeter for a reading of <1mV.
- f. Observe the counter display. Time indicated should be 1080 to 1440 seconds (18 to 24 minutes).
- g. Recorder indication during this time should decay exponentially with no apparent jumps or oscillations.

Table 1-2. Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A1	10638-60001	1	BOARD ASSY:DEGAUSSER	28480	10638-60001
A1C1	0150-0121	3	C:FXD CER 0.1 UF +80-20% 50VDCW	56289	5C50BIS-CML
A1C2	0160-2050	1	C:FXD MY 10 UF 10% 30VDCW	56289	127P1069R354
A1C3	0150-0121		C:FXD CER 0.1 JF +30-20% 50VDCW	56289	5C50BIS-CML
A1C4	0150-0121		C:FXD CER 0.1 JF +30-20% 50VDCW	56289	5C50BIS-CML
A1C5	0170-0018	1	C:FXD MY 1UF 5% 20VDCW	84411	TYPE 621M 10552
A1CR1	1884-0070	1	SWITCH:SC SI PNP	03508	3N81
A1CR2	1901-0040	5	DIODE:SILICON 50 MA 30 WV	07263	FDG1088
A1CR3	1902-0025	3	DIODE,BREAKDOWN:10.0V 5% 400 MW	28480	1902-0025
A1CR4	1901-0036	1	DIODE:SILICON 1000 PIV	28480	1901-0036
A1CR5	1902-3149	1	DIODE BREAKDOWN:9.09V 5%	28480	1902-3149
A1CR6	1901-0025	1	DIODE:SILICON 100MA/1V	07263	FD 2387
A1CR7	1902-0025		DIODE,BREAKDOWN:10.0V 5% 400 MW	28480	1902-0025
A1CR8	1902-0025		DIODE,BREAKDOWN:10.0V 5% 400 MW	28480	1902-0025
A1CR9	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
A1CP10	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
A1CR11	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
A1CR12	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
A1K1	0490-0739	2	RELAY:DPDT 2A	77342	HP11D-24V
A1K2	0490-0739		RELAY:DPDT 2A	77342	HP11D-24V
A1Q1	1854-0039	4	TSTR:SI NPN	80131	2N3053
A1Q3	1854-0023	1	TSTR:SI NPN(SELECTED FROM 2N2484)	28480	1854-0023
A1Q4	1854-0039		TSTR:SI NPN	80131	2N3053
A1Q5	1854-0039		TSTR:SI NPN	80131	2N3053
A1Q6	1854-0039		TSTR:SI NPN	80131	2N3053
A1R1	0757-0948		R:FXD FLM 10K OHM 2% 1/8W	28480	0757-0948
A1R2	0757-0972	2	R:FXD FLM 100K OHM 2% 1/8W	28480	0757-0972
A1R3	0913-0040	4	R:FXD WW 20 OHM 5% 5W	28480	0813-0040
A1R4	0813-0040		R:FXD WW 20 OHM 5% 5W	28480	0813-0040
A1R5	0757-0940	2	R:FXD FLM 4700 OHM 2% 1/8W	28480	0757-0940
A1R6	0757-0941	2	R:FXD FLM 5.1K OHM 2% 1/8W	28480	0757-0941
A1R7	0757-0948		R:FXD FLM 10K OHM 2% 1/8W	28480	0757-0948
A1R8	0757-0924	7	R:FXD MET FLM 1K OHM 2% 1/8W	28480	0757-0924
A1R9	0683-1065	1	R:FXD COMP 10M OHM 5% 1/4W	01121	CR 1065
A1R10	2100-1662	1	R:VAR WW 50K OHM 10% 1W	28480	2100-1662
A1R11	0757-0938	2	R:FXD FLM 3.9K OHM 2% 1/8W	28480	0757-0938
A1R12	0757-0924		R:FXD MET FLM 1K OHM 2% 1/8W	28480	0757-0924
A1R13	0757-0966	2	R:FXD FLM 55K OHM 2% 1/8W	28480	0757-0966
A1R14	0757-0924		R:FXD MET FLM 1K OHM 2% 1/8W	28480	0757-0924
A1R15	0757-0934	1	R:FXD FLM 2.7K OHM 2% 1/8W	28480	0757-0934
A1R16	0757-0948		R:FXD FLM 10K OHM 2% 1/8W	28480	0757-0948
A1R17	0757-0924		R:FXD MET FLM 1K OHM 2% 1/8W	28480	0757-0924
A1R18	0912-0086	1	R:FXD WW 5 OHM 5% 3W	28480	0812-0086
A1R19	0757-0924		R:FXD MET FLM 1K OHM 2% 1/8W	28480	0757-0924
A1R20	0757-0941		R:FXD FLM 5.1K OHM 2% 1/8W	28480	0757-0941
A1R21	0813-0040		R:FXD WW 20 OHM 5% 5W	28480	0813-0040
A1R22	0813-0040		R:FXD WW 20 OHM 5% 5W	28480	0813-0040
A1R23	0757-0924		R:FXD MET FLM 1K OHM 2% 1/8W	28480	0757-0924
A1R24	0683-4705	1	R:FXD COMP 47 OHM 5% 1/4W	01121	CR 4705
A1R25	0757-0972		R:FXD FLM 100K OHM 2% 1/8W	28480	0757-0972
A1R26	0757-0940		R:FXD FLM 4700 OHM 2% 1/8W	28480	0757-0940
A1R27	0757-0932	1	R:FXD MET FLM 2.2K OHM 2% 1/8W	28480	0757-0932
A1R28	0757-0924		R:FXD MET FLM 1K OHM 2% 1/8W	28480	0757-0924
A1R29	0683-2205	1	R:FXD COMP 22 OHM 5% 1/4W	01121	CR 2205
A1R30	0757-0944	1	R:FXD FLM 6.8K OHM 2% 1/8W	28480	0757-0944
A1R31	0757-0938		R:FXD FLM 3.9K OHM 2% 1/8W	28480	0757-0938
A1R32	0683-4745	1	R:FXD COMP 470K OHM 5% 1/4W	01121	CR 4745
A1R33	0757-0948		R:FXD FLM 10K OHM 2% 1/8W	28480	0757-0948
A1R34	0757-0948		R:FXD FLM 10K OHM 2% 1/8W	28480	0757-0948
A1R35	0683-3355	1	R:FXD COMP 3.3 MEGOHM 5% 1/4W	01121	CR 3355
A1P36	0757-0966	1	R:FXD FLM 55K OHM 2% 1/8W	28480	0757-0966
A1U1	1813-0030	1	OPERATIONAL AMPLIFIER	28480	1813-0030
A1U2	1820-0935	1	IC:DIGITAL CMOS 14-BIT BINARY COUNTER	28480	1820-0935
A1U3	1820-0216	1	IC:OP. AMP. AVOL=50K MIN.	28480	1820-0216
DS1	1400-0002	1	CLAMP:CABLE, NYLON	00000	0RD
F1	1450-0094	1	LIGHT:INDICATOR, WHITE LENS	72765	599-130(WHITE)
P1	2110-0007	1	FUSE:CARTRIDGE 1 AMP 250V SLOW BLOW	75915	313001
	1251-1063	1	CONNECTOR:CIRCULAR 7 MALE #16 CONTACT	71468	MS3102A16S-1P
Q2	1854-0420	1	TSTR:SI NPN	28480	1854-0420
S1	3101-0542	1	SWITCH:PUSHBUTTON 3PDT, SUBMINIATURE	09353	P-8321
S2	3101-0070	2	SWITCH:SLIDE	79727	G-126
S3	3101-0070		SWITCH:SLIDE	79727	G-126
W1	10638-60002	1	CABLE ASSY	28480	10638-60002

See introduction to this section for ordering information

Table 1-2. Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
XF1	1400-0084	1	FUSEHOLDER:EXTRACTOR POST TYPE	75915	342014
			MISCELLANEOUS		
	0340-0100	1	INSULATOR:BINDING POST, GRAY	28480	0340-0100
	0340-0733	1	INSULATOR:BINDING POST, BLACK	28480	0340-0733
	0340-0734	1	INSULATOR:BINDING POST, RED	28480	0340-0734
	1200-0081	1	INSULATOR:RUSHING, NYLON	26365	974 307
	1510-0074	1	BINDING POST ASSY:SAFETY RED INSULATOR	28480	1510-0074
	1490-0031	1	STAND:TILT	28480	1490-0031
	1510-0075	1	BINDING POST ASSY:BLACK	28480	1510-0075
	5000-8559	2	COVER:SIDE 3 X 11	28480	5000-8559
	5000-8571	1	COVER:BOTTOM 5 X 11	28480	5000-8571
	5020-0700	3	SPACER:CABINET	28480	5020-0700
	5040-0700	2	HINGE	28480	5040-0700
	5060-0700	2	SIDE CASTING	28480	5060-0700
	5060-0727	2	FOOT ASSY	28480	5060-0727
	10638-00001	1	BRACKET:RIGHT	28480	10638-00001
	10638-00002	1	PANEL:FRONT	28480	10638-00002
	10638-00003	1	PANEL:REAR	28480	10638-00003
	10638-00004	1	BRACKET:LEFT	28480	10638-00004

Table 1-3. Manufacturers Code List

MFR NO.	MANUFACTURER NAME	ADDRESS	ZIP CODE
10638A	MANUFACTURERS CODE LIST		PAGE 1
		AS OF 04/07/73	
00000	U.S.A. COMMON	ANY SUPPLIER OF U.S.A.	
01121	ALLEN BRADLEY CO.	MILWAUKEE, WIS.	53204
03508	G.F. CO. SEMICONDUCTOR PROD. DEPT.	SYRACUSE, N.Y.	13201
07263	FAIRCHILD CAMERA & INST. CORP. SEMICONDUCTOR DIV.	MOUNTAIN VIEW, CALIF.	94040
09353	C & K COMPONENTS INC.	NEWTON, MASS.	02158
26365	GRIES REPRODUCER CORP.	NEW ROCHELLE, N.Y.	10802
28480	HEWLETT-PACKARD CO. CORPORATE HQ	YOUR NEAREST HP OFFICE	
56289	SPRAGUE ELECTRIC CO.	N. ADAMS, MASS.	01247
71468	ITT CANNON ELECT. INC.	LOS ANGELES, CALIF.	90031
72765	DRAKE MFG. CO.	HARWOOD HEIGHTS, ILL.	60656
75915	LITTELFUSE INC.	DES PLAINES, ILL.	60016
77342	AMERICAN MACHINE & FOUNDRY CO. POTTER & BRUMFIELD DIV.	PRINCETON, IND.	47570
79727	CONTINENTAL-AIPT ELECTRONICS CORP.	WARMINSTER, PA.	18974
80131	ELECTRONIC INDUSTRIES ASSOCIATION	WASHINGTON D.C.	20006
84411	TRW CAPACITOR DIV.	OGALLALA, NEBR.	69153

See introduction to this section for ordering information

Part of Figure 2. Component Locator

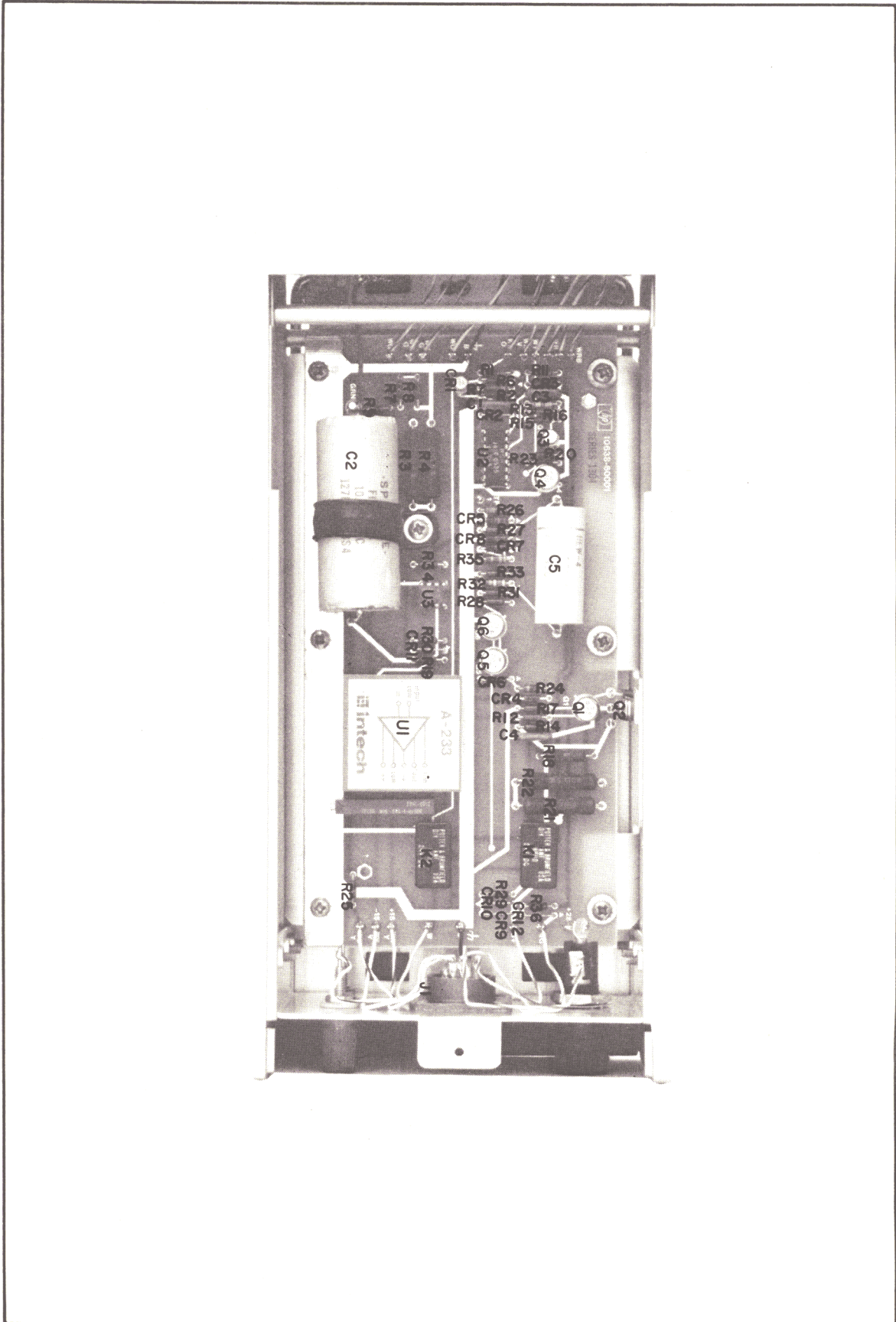
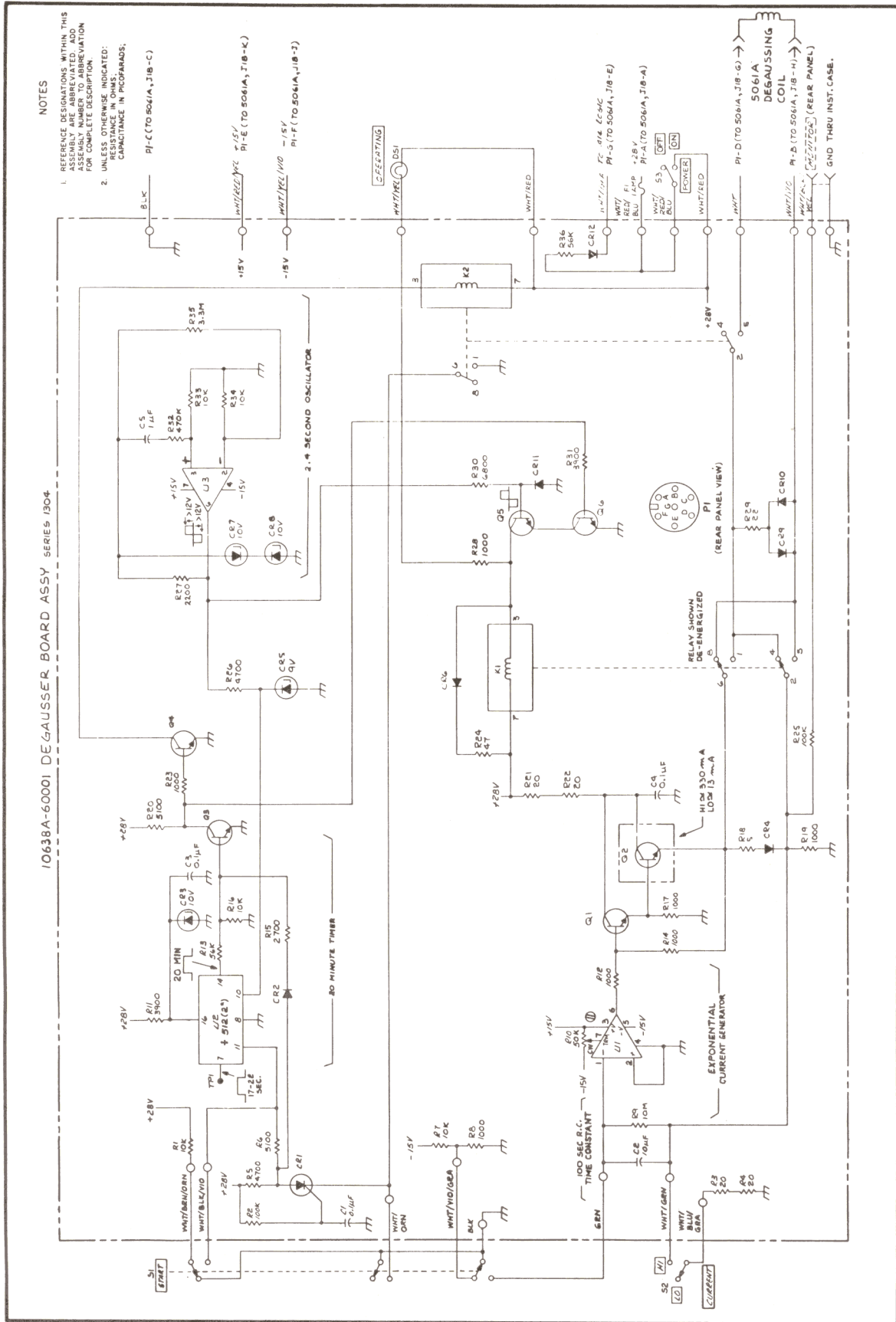


Figure 2. 10638A Diagram



PARTIAL LISTING OF HEWLETT-PACKARD SALES AND SUPPORT OFFICES

United States of America. Please contact the sales office nearest you. The Regional Offices listed below will advise you of the address if you are uncertain.

EAST

Hewlett-Packard Co.
W120 Century Road
PARAMUS, NJ 07652
Tel: (201) 265-5000

WEST

Hewlett-Packard Co.
5400 W. Rosecrans Boulevard
LOS ANGELES, CA 90260
Tel: (213) 970-7500

MIDWEST

Hewlett-Packard Co.
5201 Tollview Drive
ROLLING MEADOWS, IL 60008
Tel: (312) 255-9800

SOUTH

Hewlett-Packard Co.
P.O. Box 105005
2000 South Park Place
ATLANTA, GA 30339
Tel: (404) 955-1500
Telex: 810-766-4890

Europe. If your country is not in the partial listing below, please contact our European Headquarters.

EUROPEAN AREAS NOT LISTED, CONTACT

Hewlett-Packard S.A.
7 Rue du Bois-du-Lan
CH-1217 MEYRIN 2, Switzerland
Tel: (022) 83-81-11
Telex: 27835 hpse
Cable: HEWPACKSA Geneve

DENMARK

Hewlett-Packard A/S
Datavej 52
DK-3460 BIRKEROD
Tel: (02) 81-66-40
Telex: 37409 hpas dk

FINLAND

Hewlett-Packard Oy
Revontulentie 7
SF-02100 ESPOO 10
Tel: (90) 455-0211
Telex: 121563 hewpa sf

FRANCE

Hewlett-Packard France
Zone d'activites de Courtaboeuf
Avenue des Tropiques
Boite Postale 6
F-91401 ORSAY Cédex
Tel: (1) 907-78-25
Telex: 600048F

GERMAN FEDERAL REPUBLIC

Hewlett-Packard GmbH
Vertriebszentrale Frankfurt
Berner Strasse 117
Postfach 560 140
D-6000 FRANKFURT 56
Tel: (0611) 50-04-1
Telex: 04 13249 hpffm d

GREAT BRITAIN

Hewlett-Packard Ltd.
King Street Lane
WINNERSH, Wokingham
Berkshire RG11 5AR
Tel: (0734) 784774
Telex: 847178

GREECE

Kostas Karayannis
8 Omirou Street
ATHENS 133
Tel: 32-30-303, 32-37-371
Telex: 21 59 62 RKAR GR
"Plaiso"
G. Gerados
24 Stournara Street
ATHENS
Tel: 36-11-160
Telex: 21 9492

ITALY

Hewlett-Packard Italiana S.p.A.
Via G. Di Vittorio 9
I-20063 CERNUSCO SUL NAVLIGLIO
Tel: (2) 903691
Telex: 334632

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Hewlett-Packard Nederland B.V.
Van Heuven Goedhartlaan 121
NL 1181KK AMSTELVEEN
P.O. Box 667
NL 1080 AR AMSTELVEEN
Tel: (20) 47-20-21
Telex: 13 216

NORWAY

Hewlett-Packard Norge A/S
Oestendalen 18
P.O. Box 34
N-1345 OESTERAAS
Tel: (02) 17-11-80
Telex: 16621 hpnas n

SPAIN

Hewlett-Packard Española S.A.
Calle Jerez 3
E-MADRID 16
Tel: 458-2600
Telex: 23515 hpe

SWEDEN

Hewlett-Packard Sverige AB
Enighetsvägen 3, Fack
P.O. Box 20502
S-16120 BROMMA
Tel: (08) 730-0550
Telex: (854) 10721 MESSAGES
Cable: MEASUREMENTS
STOCKHOLM

In Other Countries. If your country is not in the partial listing given below, the address of the nearest office can be obtained from whichever of these three sources is most convenient to you: (1) The closest of the offices listed below. (2) European Headquarters listed above. (3) U.S. Headquarters listed below.

ARGENTINA

Hewlett-Packard Argentina S.A.
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Martinez 1640 BUENOS AIRES
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Telex: 122443 AR CIGY
Cable: HEWPACKARG

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Melbourne, Victoria Office
Hewlett-Packard Australia Pty Ltd.
31-41 Joseph Street
BLACKBURN, Victoria 3130
Tel: 89-6351
Telex: 31-024
Cable: HEWPACK Melbourne

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Ltda.
Alameda Rio Negro, 750
ALPHAVILLE 06400 Barueri SP
Tel: 421-1311
Telex: 011 23602 HPBR-BR
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Hewlett-Packard (Canada) Ltd.
6877 Goreway Drive
MISSISSAUGA, Ontario L4V 1M8
Tel: (416) 678-9430
Telex: 610-492-4246

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Hewlett-Packard Hong Kong, Ltd.
G.P.O. Box 795
5th Floor, Sun Hung Kai Centre
30 Harbour Road
HONG KONG
Tel: 5-8323211
Telex: 66678 HEWPA HX
Cable: HP ASIA LTD Hong Kong

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Yokogawa-Hewlett-Packard Ltd.
29-21 Takaido-Higashi 3-chome
Suginami-ku TOKYO 168
Tel: (03) 331-6111
Telex: 232-2024 YHPTOK

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Hewlett-Packard Mexicana, S.A. de
C.V.
Avenida Periferico Sur No. 6501
Tepepan, Xochimilco
MEXICO CITY 23, D.F.
Tel: (905) 676-4600
Telex: 017-74-507

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Hewlett-Packard Singapore (Pty.)
Ltd.
P.O. Box 58 Alexandra Post Office
SINGAPORE, 9115
6th Floor, Inchcape House
450-452 Alexandra Road
SINGAPORE 0511
Tel: 631788
Telex: HPSGSO RS 34209
Cable: HEWPACK, Singapore

SOUTH AFRICA

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Private Bag Wendywood
SANDTON 2144
Tel: 802-5111, 802-5125
Telex: 89-84782
Cable: HEWPACK Johannesburg

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Hewlett-Packard Far East Ltd.
Taiwan Branch
5th Floor
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TAIPEI
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Cable: HEWPACK Taipei

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Hewlett-Packard de Venezuela C.A.
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3A Transversal Los Ruices Norte
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CARACAS 1071
Tel: 239-4133, 239-4777,
239-4244
Telex: 25146 HEWPACK
Cable: HEWPACK Caracas

U.S. Headquarters: Hewlett-Packard Company, 1507 Page Mill Road, Palo Alto, California 94304, U.S.A.
Telephone: (415) 857-1501 • Telex: 910-373-1267 • Cable: HEWPACK





HEWLETT
PACKARD



HP PART NUMBER: 10638-90002

PRINTED IN USA

PLEASE NOTE

This instrument incorporates a new method for tracking changes to its circuit boards. Starting July 1, 1988, all circuit boards will be labeled with a unique serial number. The SERIAL number will replace the previously used SERIES number, even though there may have been no change to the circuit board. Thus, if changes were made after July 1, 1988, they will be documented in this change sheet using the new circuit board SERIAL number. Changes made before that time are documented with the SERIES number.

Therefore, Circuit changes described in this change sheet may reference either the older SERIES number or the new SERIAL number. Using both numbers enables this change sheet to support both older and newer products. To determine which changes apply to your instrument, find the instrument's serial number prefix located on the rear panel, and make the manual changes indicated in this change sheet for that serial number prefix. For example, if the serial number is 2804A12345, make changes to the manual indicated for serial prefix 2804.



```

* * * * * MANUAL IDENTIFICATION * * * * *
*
* * * * * MANUAL UPDATING COVERAGE * * * * *
*
* This supplement adapts your manual
* to instruments with serial numbers
* prefixed through 1904.
*
* * * * *
*
* Instrument:      Model 10638A
*                  DEGAUSSER
*                  Operating/Service Manual*
*
* Manual Part No:  10638-90002
* Manual Microfiche: 10638-90004
* Manual Print Date: SEPT 1973
* * * * *

```

ABOUT THIS SUPPLEMENT

The information in this supplement is provided to correct manual errors and to update the manual to instruments containing changes after the manual print date.

Change and correction information in this supplement is itemized by page numbers corresponding to the original manual pages. The pages in this supplement are organized in numerical order by manual page number.

HOW TO USE THIS SUPPLEMENT

Insert this title page in front of the title page in your manual.

Perform all changes specified for "All Serials", and all changes through the Series Prefix of your instrument or board.

Insert any complete replacement pages provided into your manual in the proper location.

If your manual has been updated according to the last edition of this supplement, you need only perform those changes pertaining to the new series prefix. See List of Effective Pages on the reverse side of this page. New information affecting "All Serials" will be indicated by a "#" in front of the page number.

LIST OF EFFECTIVE PAGES

* SERIAL PREFIX OR *
* SERIAL NUMBER PAGES *

All Serials	5, 7, 8
1640A	2, 8, 10, 11
1740A	9
1744A	8
1904A	9
1904A00396 and above	8

SERIAL PREFIX OR
SERIES NUMBER

CHANGES

PAGE 2.

1640A

Paragraph 15:
>Add "and R38" after "R6" in second line.

Paragraph 16:
>Change to" "START switch S1 is pressed to start the timer. This applies a ground to CR1 cathode through Q7. Transistor Q7, resistor R39, and capacitor C6 form a nominal 3.5-second delay circuit to keep CR1 cathode ungrounded; if U1(6) goes negative, when degausser cable is connected. This allows circuits to stabilize before START switch has any effect. During this delay, Q7 is biased off. S1 also applies a positive voltage through R1 to U2(1) to insure that the timer circuit is reset to zero. If the START switch is pressed during the 20-minute cycle, U2 is reset to zero. CR1 is not affected since it continues to conduct."

Paragraph 20:
>Add the following: "Feedback from U1(6), through CR13, to U1(1) prevents U1(6) from remaining in negative saturation at initial power-up. Capacitor C7 in parallel with CR13 and resistor R40 prevent circuit oscillation.

PAGE 5.

All Serials

33. 2.4-Second Oscillator:
>Change step c to read "Observe the counter display; reading should be 2.0 to 2.8 seconds."

35. 20-Minute Timer Check:
>Change second sentence in Step a to read "Meter reading should be from +2.6V dc to +3.2V dc."

PAGE 7.

All Serials

b. LO CURRENT:
>Add step "4. Set Degausser POWER switch to ON."

MANUAL CHANGES MODEL 10638A (10638-90002)

SERIAL PREFIX OR
SERIES NUMBER

CHANGES

PAGES 8/9, Table 1-2. Degausser Board Assembly Replaceable Parts (10638-60001):

# All Serials	>Change S2 and S3 from 3101-0070 to 3101-1541 SWITCH-SLIDE DPDT MINTR 1A 125VAC SLDR LUG.
1640A	>Change A1C1 quantity to 6. >Add A1C6, C8, and C9; 0150-0121 CAPACITOR-FXD CER 0.1UF +80-20% 50 VDCW; 56289;5C50BIS-CML. >Add A1C7; 0160-0168, Qty 1, CAPACITOR-FXD POLYE 0.1UF 10% 200 VDCW; 56289;292P10492. >Add A1CR13, CR14; 1901-0579, Qty 2, DIODE-SILICON SWITCHING 40V 20MA 300 NS DO-7; 28480; 1901-0579. >Change A1R2 quantity to 3. >Change A1R6 from 0757-0972 (5100 ohms) to 0757-0962, RESISTOR-FXD FLM 39K OHM 2% 1/8W; 28480;0757-0962. >Change A1R8 quantity to 8. >Change A1R15 from 0757-0934 (2700 ohms) to 0757-0972 RESISTOR-FXD FLM 100K OHM 2% 1/8W; 28480;0757-0972. >Change A1R20 quantity to 2. >Add A1R37; 0757-0965, QTY 1, RESISTOR-FXD MET FLM 51K OHM 2% 1/8W; 28480- 0757-0965. >Add A1R38; 0757-0941, QTY 1, RESISTOR-FXD FLM 5100 OHM 2% 1/8W; 28480-0757-0941. >Add A1R39; 0683-5655, QTY 1, RESISTOR-FXD COMP 5.6M OHM 5% 1/4W; 01121- CB5655. >Add A1R40; 0757-0924; RESISTOR-FXD MET FLM 1000 OHM 2% 1/8W; 28480; 0757-0924. >Add A1Q7; 1855-0062, Qty 1, TRANSISTOR J-FET N-CHAN S1; 28480;1855-0062.
1740A	>Change A1U3 from 1820-0216 (LM741) to 1820-0477; IC OP AMP; 0340F; LM301AN.
1744A	>Change A1C2 from 0160-2050 (10UF Mylar) to 0160-4669; CAPACITOR-FXD 10UF 10% 200VDCW POLYPROPYLENE; 28480; 0160-4669.
1904A	>Change XF1 from 1400-0084 to the following: XF1 2100-0564 FUSEHOLDER BODY EXTR-POST BAYONET CU 12A 250V; 28480; 2110-0564. XF1 2100-0565 FUSEHOLDER CAP BAYONET; 28480; 2110-0565. XF1 2100-0569 FUSEHOLDER-MTG NUT HEX PLASTIC; 28480; 2110-0569.
1904A00396 and above	>Change A1 (10638-60001) board assembly series number to 2636. >Change A1Q7 from 1855-0062 to 1855-0235; TRANSISTOR J-FET N-CHAN D-MODE; 04713; 1855-0235.

MANUAL CHANGES MODEL 10638A (10638-90002)

SERIAL PREFIX OR
SERIES NUMBER

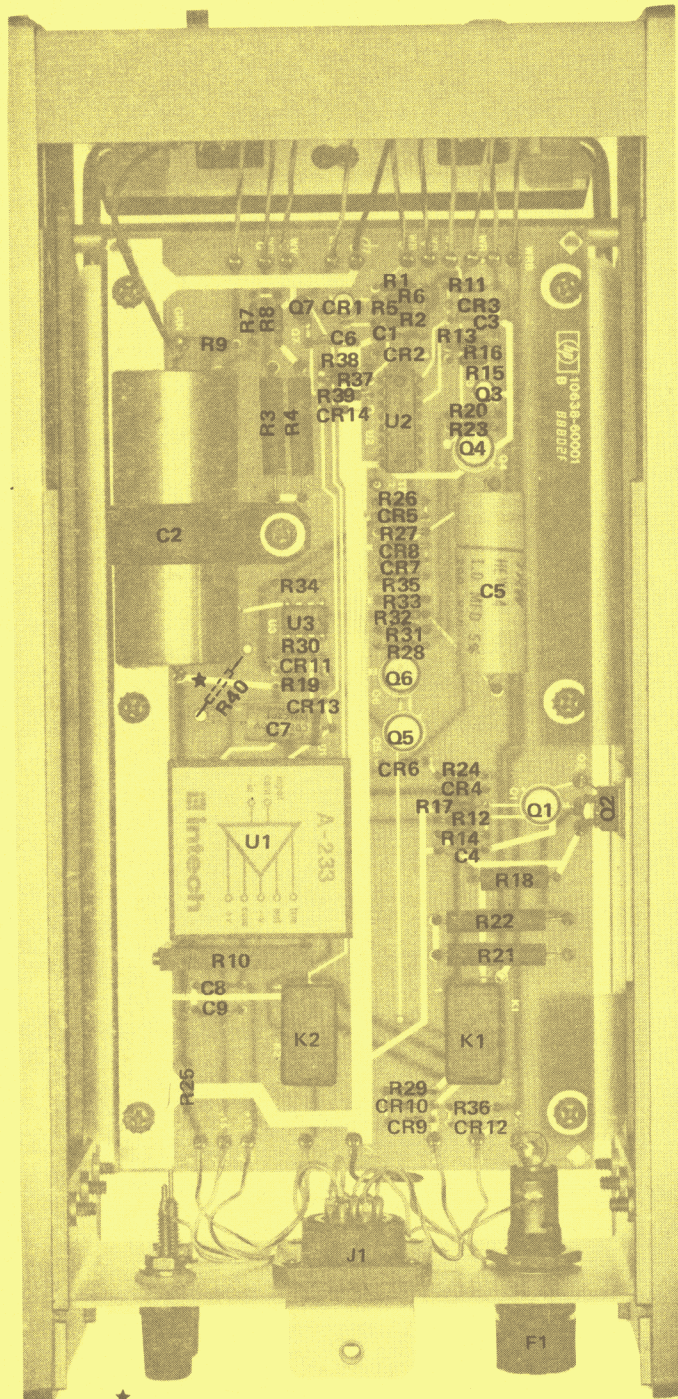
CHANGES

PAGE 10, Part of Figure 2. Component Locator:

1640A >Replace component locator with Serial Prefix 1640A
 component locator supplied in these manual changes.

PAGE 11, Figure 2. 10638A Schematic Diagram:

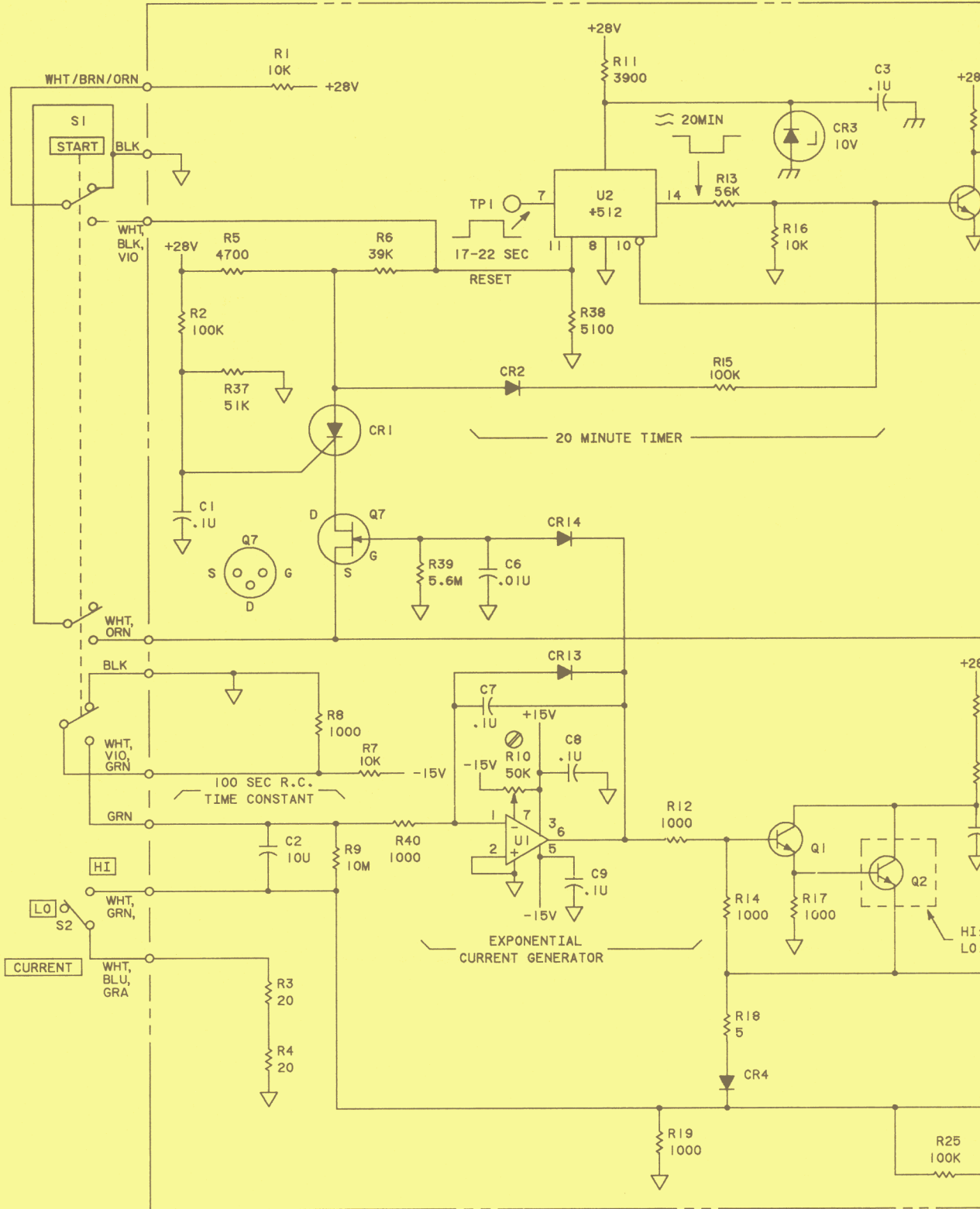
1640A >Replace schematic diagram with Serial Prefix 1640A
 schematic diagram supplied in these manual changes.

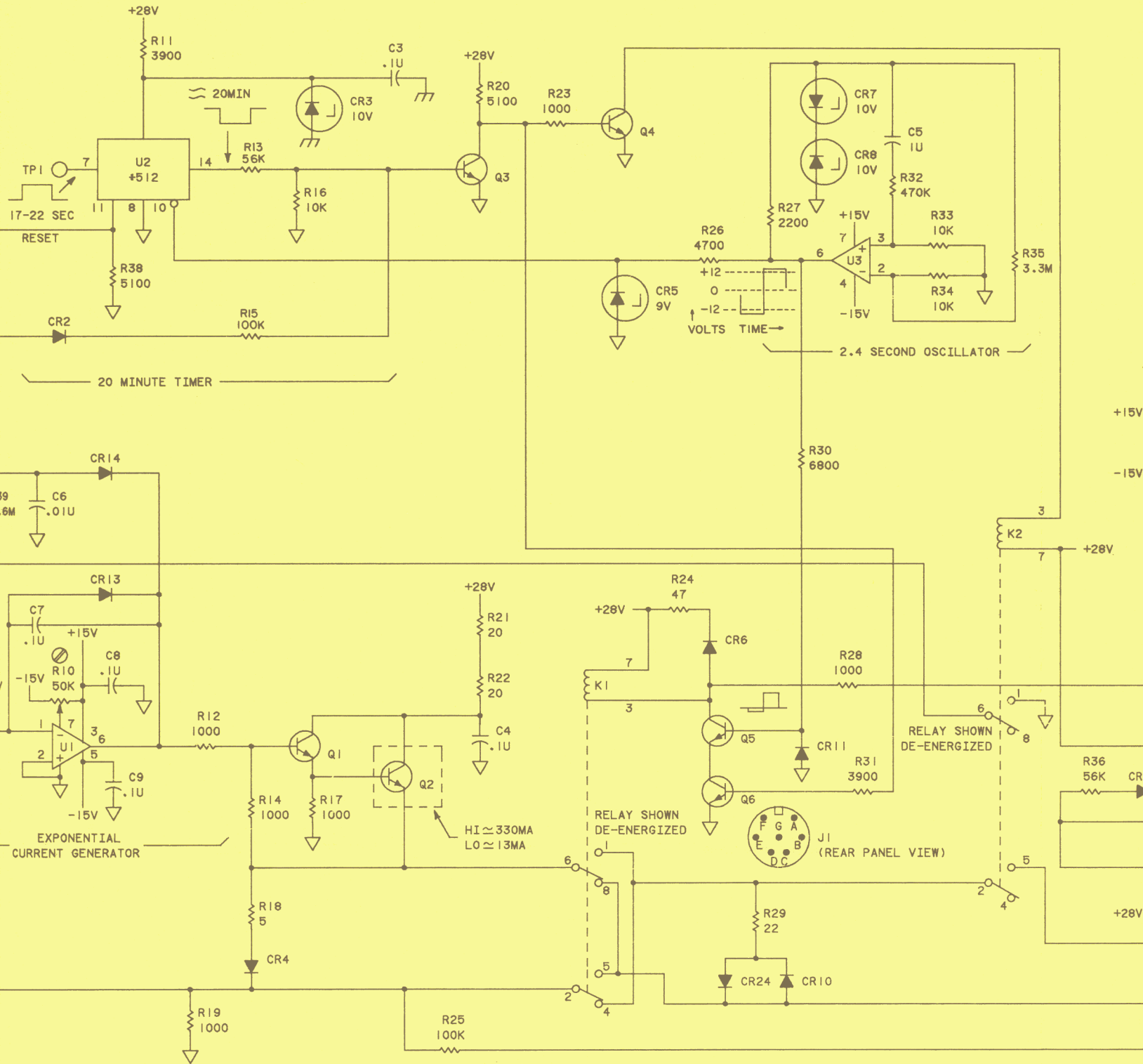


* R40 ON OPPOSITE SIDE

10638A Serial Prefix 1640A Component Locator

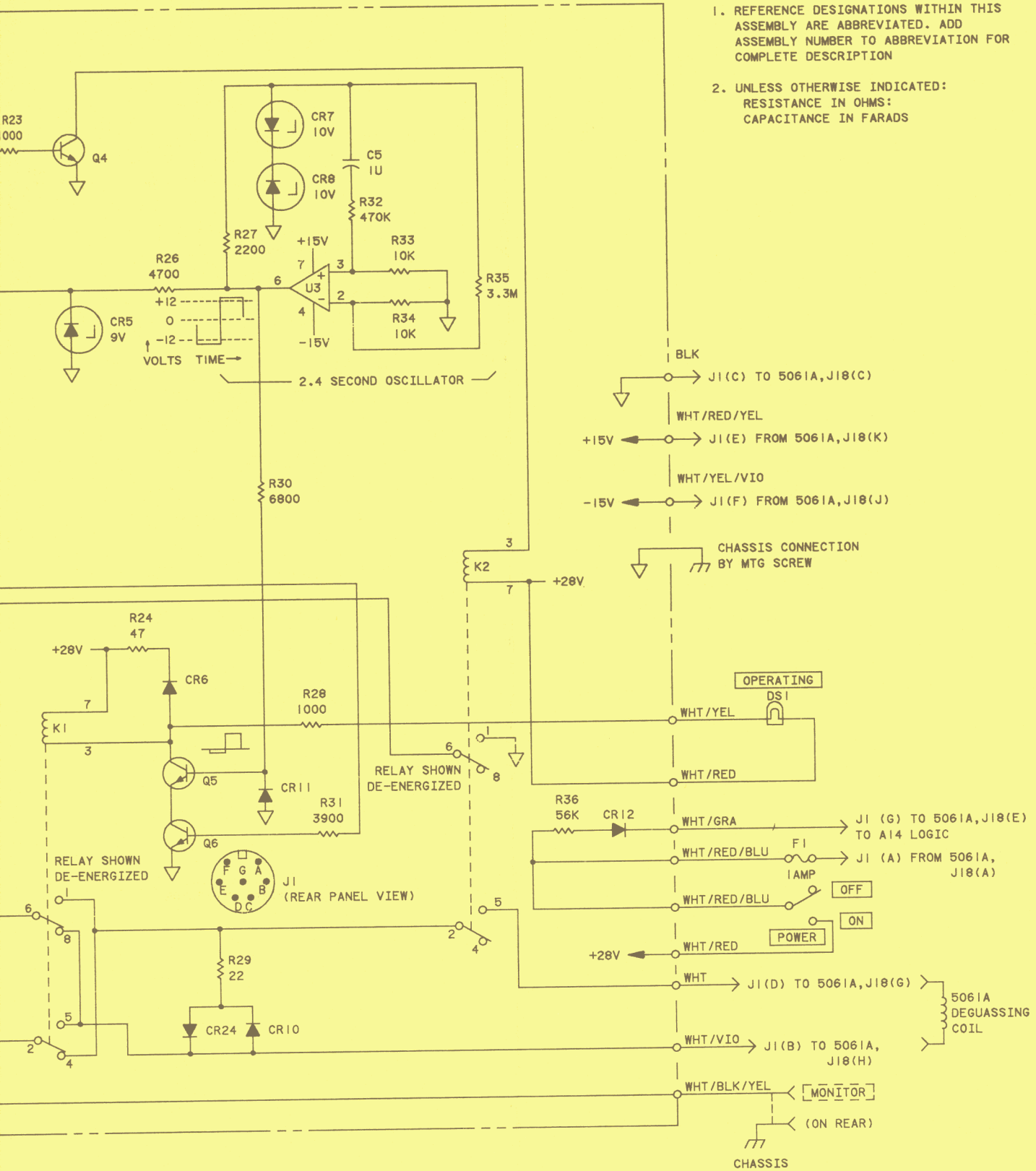
10638-60001 DEGAUSSER BOARD ASSY (SERIES 1640 AND 1740)





NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN FARADS



10638A Serial Prefix 1640A Schematic Diagram