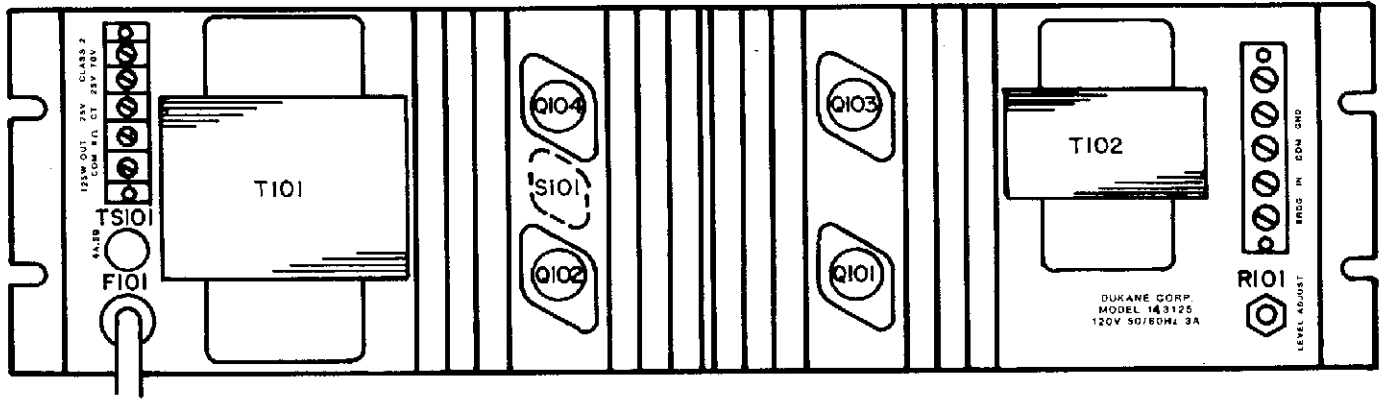


DUKANE

Installation and Service

125 WATT POWER AMPLIFIER

MODEL 1A3125



GENERAL DESCRIPTION

The Dukane 125-Watt Power Amplifier, Model 1A3125, is designed for such applications as General Paging and Institutional Communication Systems. It requires 5-1/4" (13.3 cm) of vertical space in a standard 19" equipment rack on console.

When AC power is applied to the unit, a red LED (front panel) POWER indicator illuminates. The primary AC circuit is protected by a four ampere Slo-Blo fuse. Overheating of the output transistors will cause the temperature-controlled thermostat (fastened to the heatsink) to open the primary power circuit, illuminating a red LED (front panel) captioned THERMAL OVERLOAD. When temperature is reduced, the thermostat closes the AC power circuit, and the thermal overload indicator goes out.

INSTALLATION NOTES

The 125-Watt Power Amplifier provides full rated output with 1 volt input, single-ended.

It is good practice to ground the amplifier chassis to the rack or console metalware which is, in turn, connected to conduit and electrical system ground. To be certain grounding exists between the amplifier and the metalware, place an outside-toothed lockwasher under the head of one of the mounting screws.

Class II wiring is permissible for 25-volt and 70-volt level (speaker line). AC power wiring must be Class I wiring ONLY.

As with any electronic equipment, useful life will be extended by minimizing a units operating temperature. We recommend that any leftover rack space be used to separate the amplifiers from one another. The space may be filled with ventilated panels (order two 560-1232 (1-3/4" panel) or (order two 560-1234 (3-1/2" panel). Do not fill any rack to more than 2/3 of full capacity with amplifiers.

EXTERNAL CONNECTIONS

Make all external connections to screw terminals on the rear of the amplifier. Connect AC power to the amplifier AFTER external connections have been made and checked for short circuits.

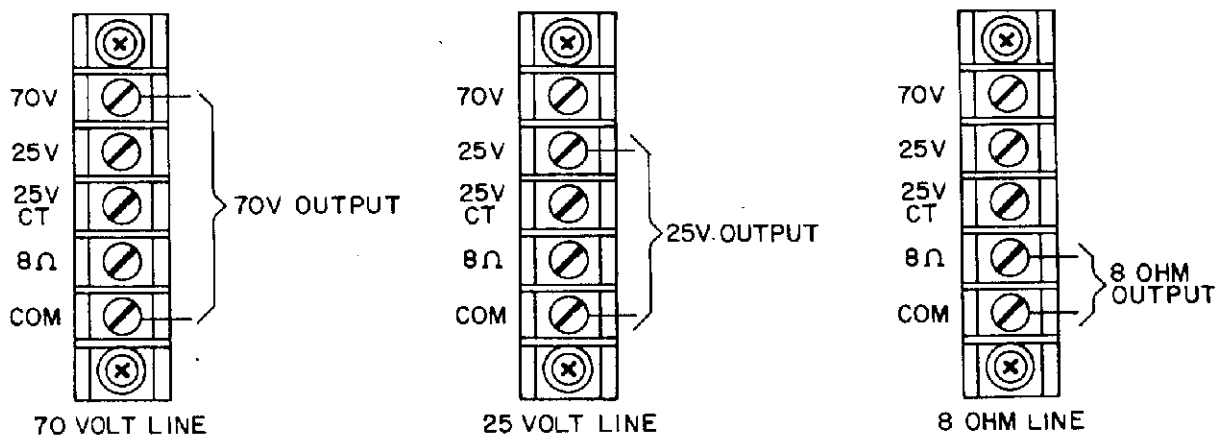
A conventional speaker system of up to 125 watts, including appropriate speaker-to-line matching transformers, can be connected to this amplifier.

403-351A



OUTPUT CONNECTIONS

Connect speaker line as shown below.



When this amplifier is used in sound systems that include 25-volt intercom operation, connect the 25-volt center tap to the sound system ground to minimize crosstalk.

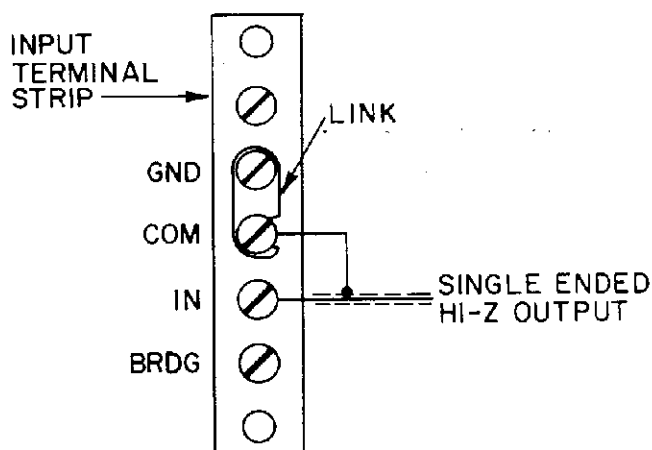
Note: If a 2.5-ohm load is connected from 25V CT (center tap) to "COM", the maximum output is 62 watts.

INPUT LEVEL

Not more than 1 volt rms (sine wave) input is required to obtain full output power. However, it is recommended that, in order to accommodate the complex wave form of program material, the input should be lowered 8 dB for actual amplifier installation and operation. Hook up a voltmeter to either 25 volts or 70 volts output of the amplifier. Turn input level control (R101) to OFF (counterclockwise). Apply 700 Hz to 1 kHz sine wave at 1 volt at input of amplifier. Adjust input level control for a reading of 10 volts on 25-volt output, 28 volts on 70-volt output.

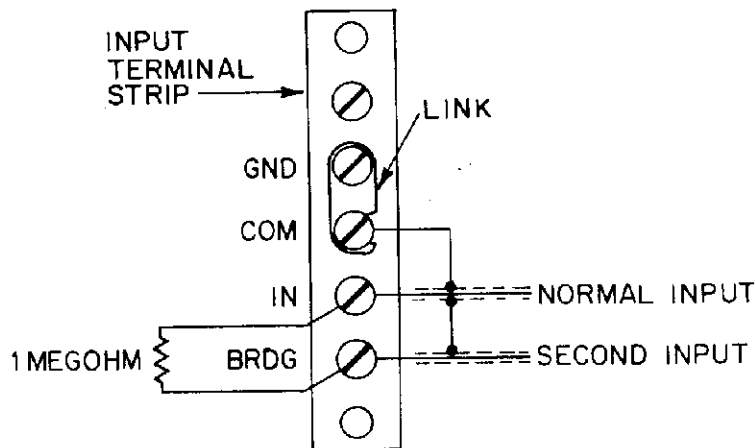
INPUT CONNECTIONS

Input connections are made to screw terminals labeled "IN" and "COM" with shield to "COM" as shown below.



In some instances, to reduce any hum pickup, it may be desirable to disconnect the link between "COM" and "GND" on the input terminal strip.

If there is a second single-ended Hi-Z input to the amplifier, connect the second input to "BRDG" terminal and to shield and add a 1 megohm resistor between "IN" and "BRDG" as shown below. Another application for bridging input would be when it is required to operate multiple amplifiers from a single 600-ohm source.



AC POWER CONNECTIONS

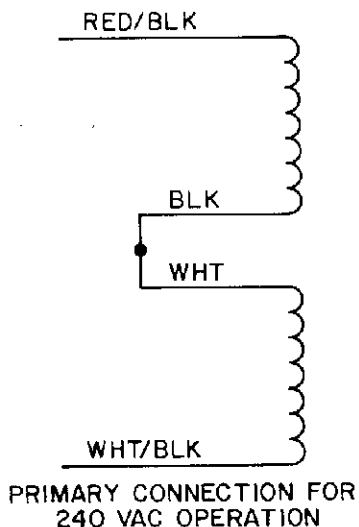
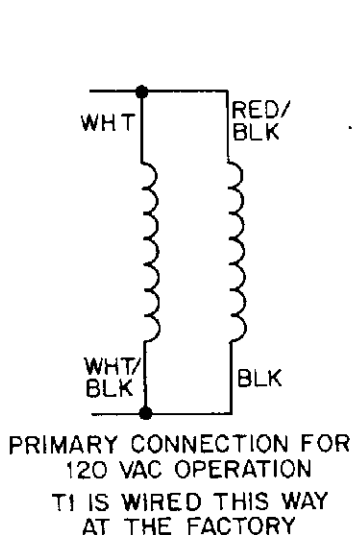
IMPORTANT

Before connecting AC power to this amplifier, **BE CERTAIN** that correct output load (speakers correctly matched to speaker line) and input connections are properly made to terminals of the amplifier.

AC power wiring MUST BE CLASS I WIRING ONLY.

The power transformer (T101) in the amplifier has two primary windings for 120 Vac operation. The primaries are wired in parallel as shown below on the left.

For 240 Vac operation, the two primaries in the amplifier must be wired in series as shown below on the right. For 240 Vac operation, the fuse (F101) must be halved in current capacity.



ASSOCIATED EQUIPMENT

Model 3A130 Input Transformer. This is a one-to-one isolation input transformer. Its primary function is to isolate equipment and eliminate ground problems.

Model 3A230 Bridging Transformer. This transformer permits running multiple amplifiers from a single 600-ohm mixer output, providing all the benefits of isolation.

Model 110-1188 Input Transformer Adaptor. This consists of a transformer mounting bracket with a three contact terminal strip, an octal socket for receiving a plug-in input transformer, and a hole for an input level potentiometer shaft. See Installation Instructions #402-236.

560-1232. A pair of 1-3/4" ventilation panels.

560-1234. A pair of 3-1/2" ventilation panels.

SERVICE

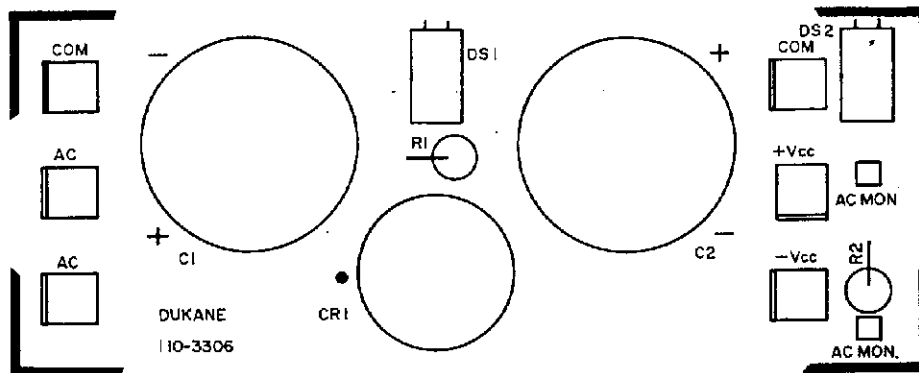
For Service Instruction Diagram see Drawing 400-1833 on Page 11.

**Parts List – Chassis Mounted Components
(Schematic Drawing 190-2928 Issue 04)**

Legend	Description	Dukane Part Number
C101	Capacitor, 4.7 uF, 50 V, Electrolytic	199-2065-475
Q101, 103	Transistor, Power, MJ15022 (720-137 Graded)	720-147 (NPN)
Q102, 104	Transistor, MJ15023 (720-138 Graded)	720-148 (PNP)
R101	Potentiometer, 100 k, SCDR	601-267
T101	Transformer, Power	710-4300
T102	Transformer, Audio	710-2175
MISCELLANEOUS HARDWARE		
F101	Cord, Power	200-620
	Fuse, 4 Amp, 250 V, Slo-Blo	320-010-0400
	Fuse Holder	321-46-00002
TS101	Terminal Strip, 5 Conductor	703-366
TS102	Terminal Barrier	703-578-0005
S101	Thermostat (mounted heat sink)	702-1

**110-3306 Rectifier Filter Circuit Board
(Schematic Drawing 190-2948 Issue 00)**

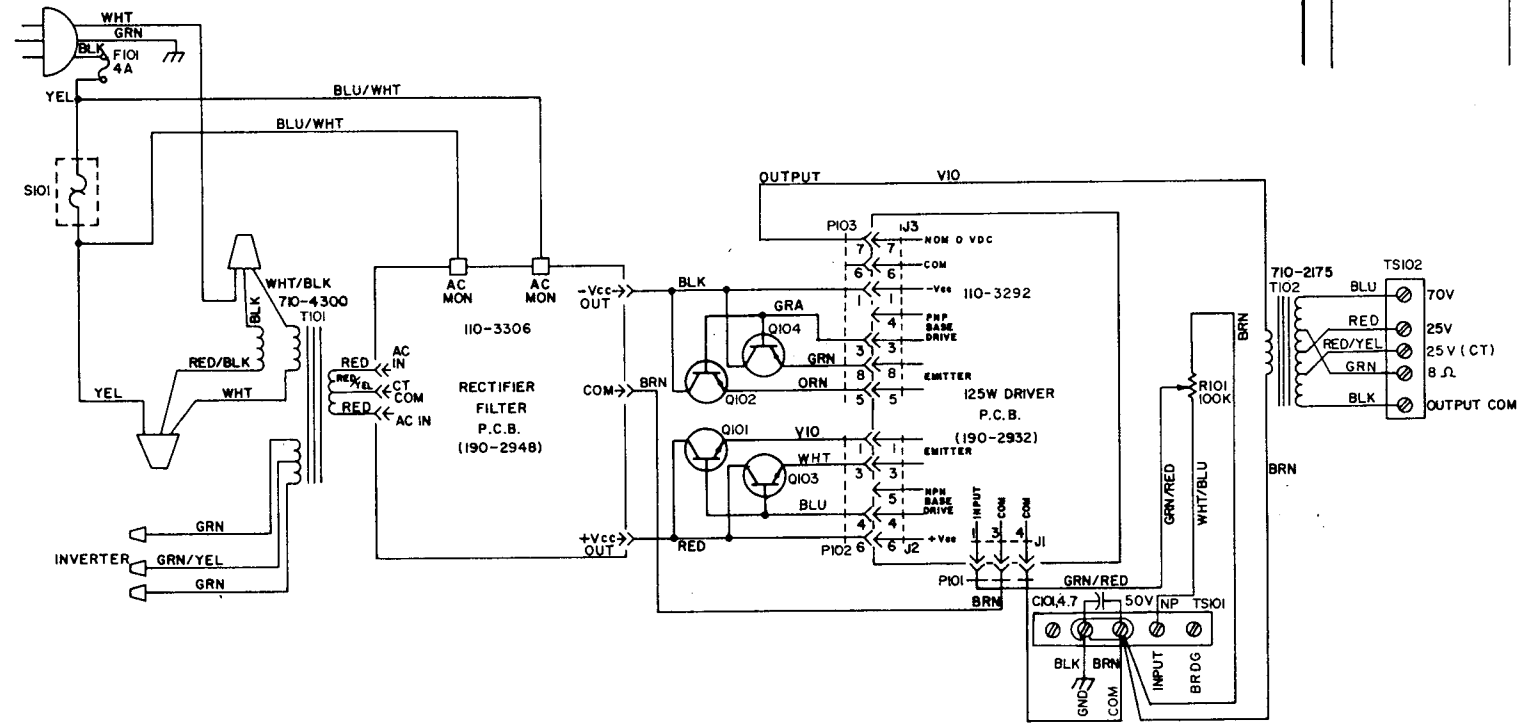
Legend	Description	Dukane Part Number
C1, 2	Capacitor, 6800 uF, 63 V	199-2072-688
CR1	Rectifier	595-74
DS1, 2	Diode, LED, Right Angle Circuit Board	230-8016
R1	Resistor, 4700 Ohms, 1 Watt, 10%	600-0116-472
R2	Resistor, 5600 Ohms, 1 Watt, 10%	600-0116-562



**Component Layout – Rectifier Filter Circuit Board (110-3306)
(662-4574 Issue 01)**

190-2928

REVISIONS			
ISS.	DESCRIPTION	APPD.	DATE
01	REVISED, EO# B2684	JCP	2-4-86
02	110-3306 WAS 110-3198, 190-2948 WAS 190-2878, EOB2839.		3-13-86
03	720-39 WAS 720-38 ADD GRADED TO 2N5880 AND 2N5882, EOB2903.		4-11-86
04	Q102,4 WERE 720-109; Q101,3 WERE 720-39; EO# B3072	SWK	8-4-86



- SYMBOLS:**
- 1. ↑ DENOTES PIGTAIL LEAD
 - 2. □ DENOTES TAPER PIN
 - 3. ▽ DENOTES WIRE NUT
 - 4. ⊕ DENOTES SCREW TERMINAL
 - 5. ↗ DENOTES MALE CONN.
 - 6. ↘ DENOTES FEMALE CONN.

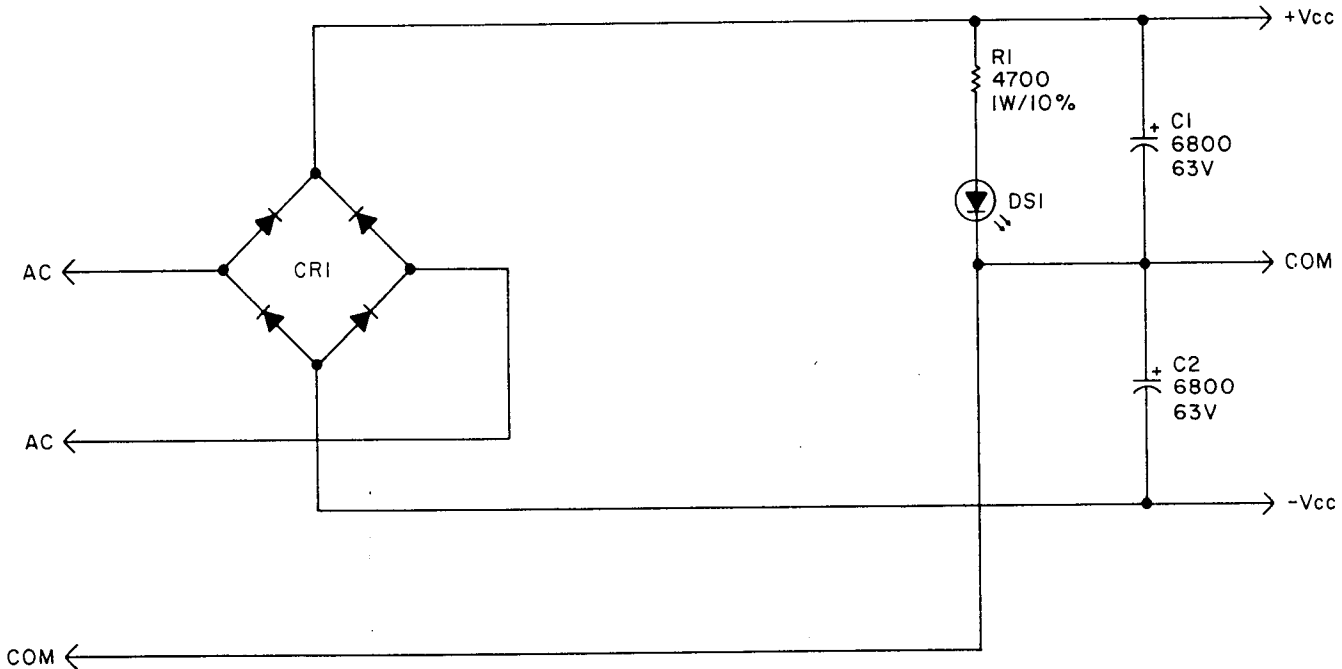
Q102,104 = 720-148
MJ15023-GRADED

Q101,103 = 720-147
MJ15022-GRADED

- NOTES:**
- 1. Q101,2,3,4 MUST ALL BE OF THE SAME GAIN GROUP. WHEN REPLACEMENT IS REQUIRED, BE SURE TO REPLACE ONLY WITH THE SAME GAIN GROUP AS OTHER OUTPUT TRANSISTORS.

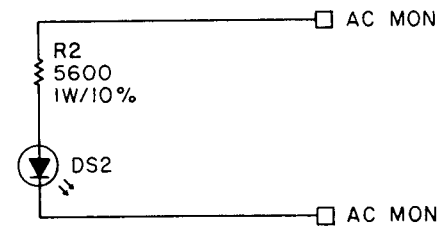
UNLESS OTHERWISE SPECIFIED:			DIMENSIONS ARE IN INCHES		FRACTIONS: $\frac{\quad}{\quad}$	2 PLACE DECIMAL: $\quad\quad$	3 PLACE DECIMAL: $\quad\quad\quad$	ANGLES: \quad	
REQ.	NEXT ASSY	FIRST USED	DUKANE ST CHARLES, ILLINOIS 60174			SCHEMATIC DIAGRAM-		SCALE: $\frac{\quad}{\quad}$ EOB2674	DATE DRAWN: 12-17-85
APPLICATION						125WATT GEN. PAGING AMP		DRAWN LLD	APPD.
					CHECKED: BWS	ENGR. BWE	SHEET 1 OF 1	REV.	

REVISIONS			
ISS.	DESCRIPTION	APP'D	DATE



NOTES:
 UNLESS OTHERWISE SPECIFIED:
 1. RESISTANCE VALUES IN OHMS,
 CAPACITANCE VALUE IN MICROFARADS.

SYMBOLS:
 1. DENOTES MALE CONN.
 2. DENOTES TAPER PIN.



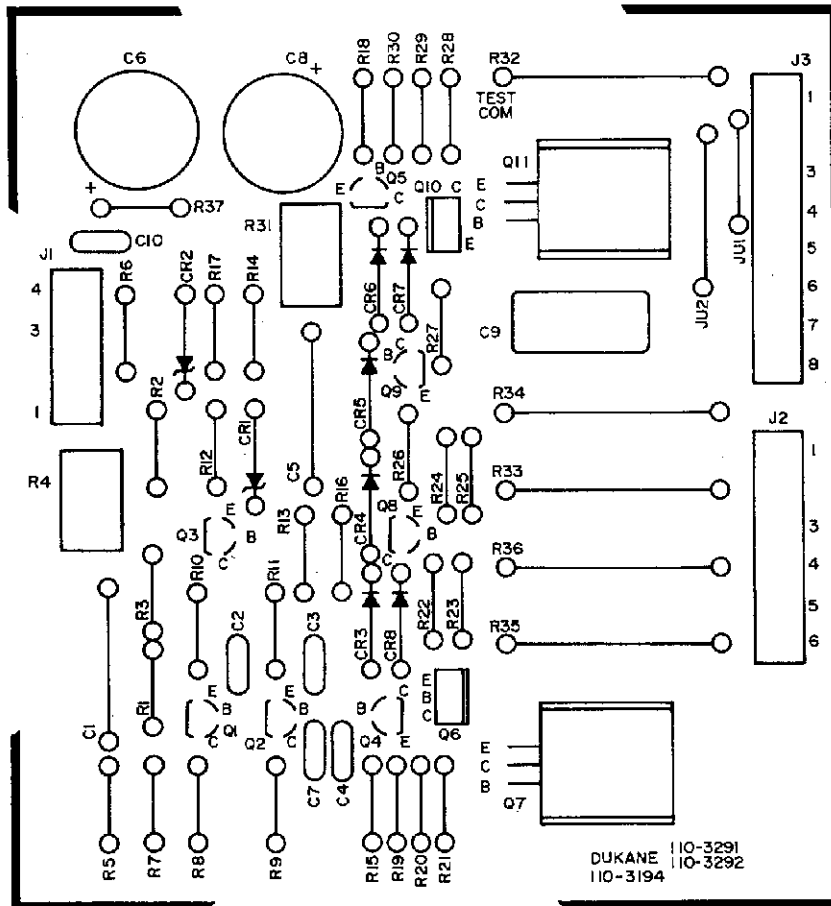
MATERIAL _____ FINISH _____

UNLESS OTHERWISE SPECIFIED			DIMENSIONS ARE IN INCHES	FRACTIONS: $\frac{\circ}{\circ}$	2 PLACE DECIMAL: \pm	3 PLACE DECIMAL: \pm	ANGLES \pm
REQ.	NEXT ASSY	FIRST USED	DUKANE CORPORATION ST. CHARLES, ILLINOIS U.S.A.		SCALE $\frac{1}{1}$	E082838	DATE DRAWN 3-14-86
APPLICATION					SCHEMATIC DIAGRAM RECTIFIER FILTER PCB 110-3306	DRAWN MED	APP'D <i>[Signature]</i>
				CHECKED BWS	ENGR. <i>[Signature]</i>	SHEET	OF
						ISS.	MASTER

TELETYPE POST N4784

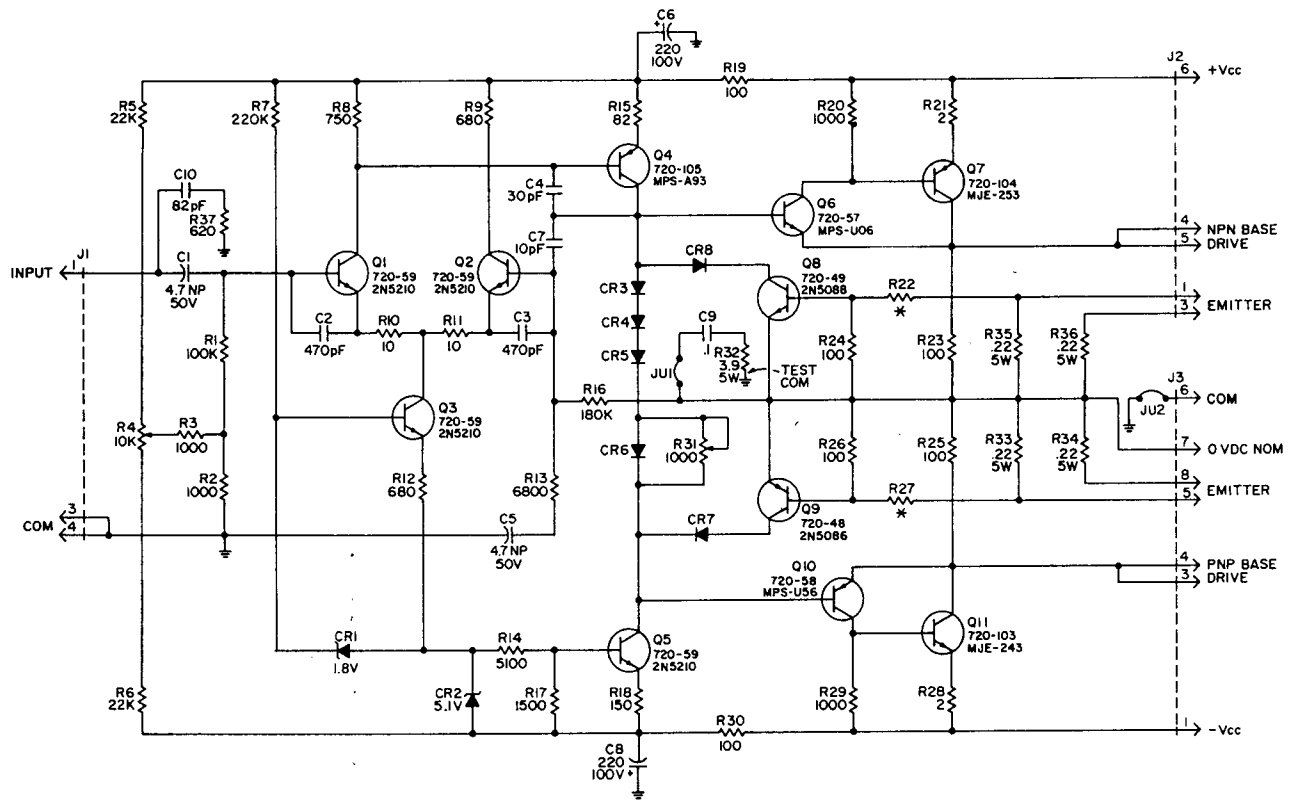
Parts List — 125-Watt Driver Circuit Board (110-3292)
(Schematic Drawing 190-2932 Issue 05)

Legend	Description	Dukane Part Number
C1, 5	Capacitor, 4.7 uF, 50 V, NP, Electrolytic	199-9319
C2, 3	Capacitor, 470 pF, Disc, Ceramic	199-1009-471
C4	Capacitor, 30 pF, Disc, Ceramic	199-1013-300
C6, 8	Capacitor, 220 uF, 100 V, Electrolytic	199-2073-227
C7	Capacitor, 10 pF, Disc, Ceramic	199-1013-100
C9	Capacitor, .1 uF, 200 V, PS Film	199-4046-104
C10	Capacitor, 82 pF, Block, Ceramic	199-1022-820
CR1	Diode, Zener, 3.3 V	230-19-003R3
CR2	Diode, Zener, 5.1 V	230-19-005R1
CR3-8	Rectifier, Silicon	595-44
Q1-3, 5	Transistor, 2N5210	720-59
Q4	Transistor, MPS-A93	720-105
Q6	Transistor, MPS-U06	720-57
Q7	Transistor, MJE-253	720-104
Q8	Transistor, 2N5088	720-49
Q9	Transistor, 2N5086	720-48
Q10	Transistor, MPS-U56	720-58
Q11	Transistor, MJE-243	720-103
R1	Resistor, 100 k Ohms, 1/4 Watt, 5%	600-0039-104
R2, 3, 20, 29	Resistor, 1000 Ohms, 1/4 Watt, 5%	600-0039-102
R4	Potentiometer, 10 k Ohms, Lin. Vert. Circuit Board	601-1003-103
R5, 6	Resistor, 22 k Ohms, 1/4 Watt, 5%	600-0039-223
R7	Resistor, 220 k Ohms, 1/4 Watt, 5%	600-0039-224
R8	Resistor, 750 Ohms, 1/4 Watt, 5%	600-0039-751
R9, 12	Resistor, 680 Ohms, 1/4 Watt, 5%	600-0039-681
R10, 11	Resistor, 10 Ohms, 1/4 Watt, 5%	600-0039-100
R13	Resistor, 6800 Ohms, 1/4 Watt, 5%	600-0039-682
R14	Resistor, 5100 Ohms, 1/4 Watt, 5%	600-0039-512
R15	Resistor, 82 Ohms, 1/4 Watt, 5%	600-0039-820
R16	Resistor, 180 k Ohms, 1/4 Watt, 5%	600-0039-184
R17	Resistor, 1500 Ohms, 1/4 Watt, 5%	600-0039-152
R18	Resistor, 150 Ohms, 1/4 Watt, 5%	600-0039-151
R19, 23-26, 30	Resistor, 100 Ohms, 1/4 Watt, 5%	600-0039-101
R21, 28	Resistor, 2 Ohms, 1/4 Watt, 5%	600-0039-2R0
R22, 27	Resistor, 82 Ohms, 1/4 Watt, 5%	600-0039-820
R31	Potentiometer, 1000 Ohms, Lin. Vert. Circuit Board	601-1003-102
R32	Resistor, 3.9 Ohms, 5 Watts, 5%	600-1050-3R9
R33-36	Resistor, .22 Ohms, 5 Watts, 5%	600-1050-R22
R37	Resistor, 620 Ohms	600-0039-681



Component Layout - 125 - Watt Driver Circuit Board (110-3292)
(622-4565 Issue 02).

REVISIONS			
ISS.	DESCRIPTION	APP'D	DATE
01	R6 WAS 22K OHMS, R16 WAS 100K OHMS, J3-6 WAS TO-7 AND WAS 0VDC NOM, J2-6 WAS +45V MAX, 60 WATT AMP RES (NOTE 2) WAS 110 OHMS, 600-0039-111.	<i>JEL</i>	2-12-85
02	R16 WAS SELECT RESISTOR; REMOVED R16 REMARKS FROM NOTE 2; EO#B2779	<i>MS</i>	2-21-85
03	R6 WAS 27K, CRI WAS 3.3V, C1 & C5 WERE 10uF, C6 & C8 WERE 50V, EOB2937	<i>CAK</i>	4-30-85
04	ADD R37 & C10; EO#B3118 R7 WAS 68K.	<i>CAK</i>	6-15-85
05	C10 WAS 220PF, EOB3216.	<i>CAK</i>	10-10-85



DESIG.	LAST USED	NOT USED
RES	R37	
CAP	C10	
DIODE	CR8	
XTSR	Q11	
CONN	J3	
JUMPER	JU2	

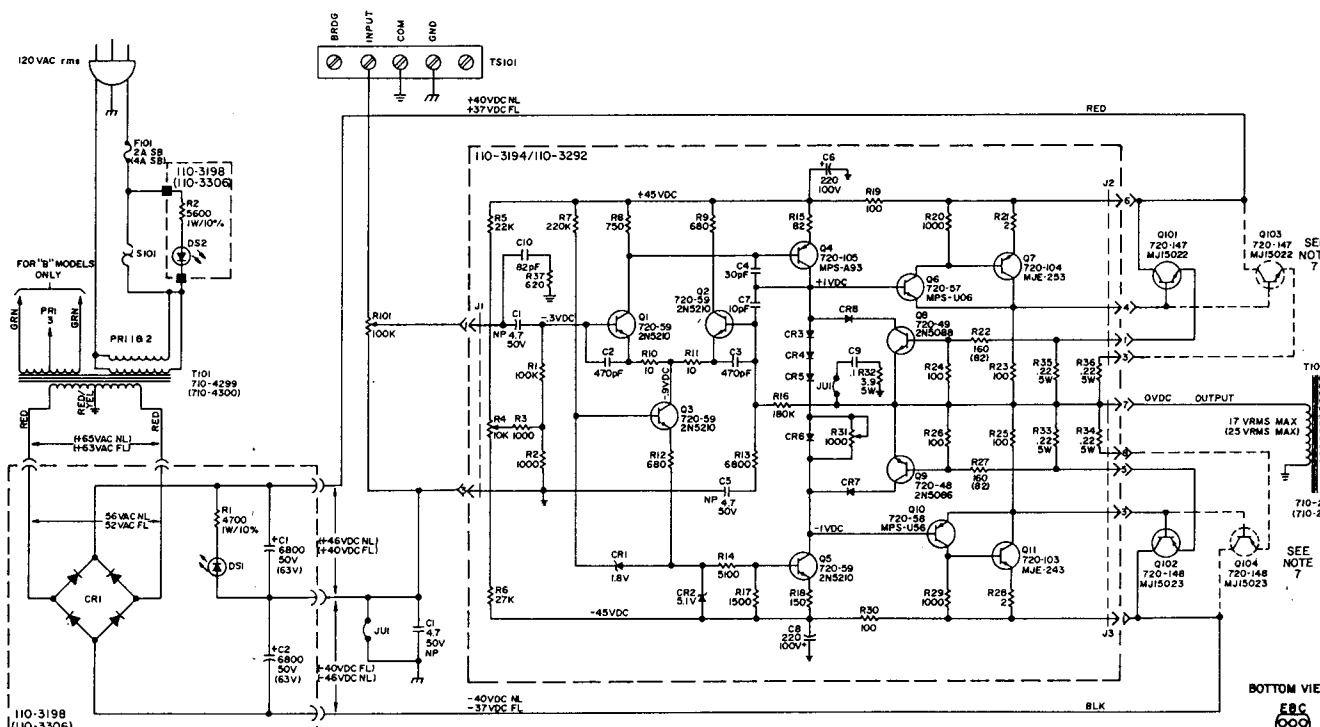
NOTES:
 UNLESS OTHERWISE SPECIFIED-
 1. RESISTANCE IS IN OHMS, 1/4W, ± 5%. CAPACITANCE IS IN MICROFARADS.
 *2. R22, 27 VALUE FOR 60W AMP IS 160 OHMS, 600-0039-161. (110-3291)
 R22, 27 VALUE FOR 125W AMP IS 82 OHMS, 600-0039-820. (110-3292)
 3. CONNECTORS J1 thru J3 HAVE PIN 2 REMOVED FOR POLARIZATION.
 SYMBOLS:
 1. ← DENOTES MALE CONN.

MATERIAL		FINISH		UNLESS OTHERWISE SPECIFIED:		DIMENSIONS ARE IN INCHES		FRACTIONS: -		3 PLACE DECIMAL: -		3 PLACE DECIMAL: -		ANGLES: -	
110-3292		110-3291		DUKANE		ST CHARLES, ILLINOIS 60174		SCHEMATIC DIAGRAM		SCALE -# EOB2666		DATE DRAWN 12-3-85		NO. 190-2932	
REQ.	NEXT ASSY	FIRST USED	APPLICATION		60/125W DRIVER PCB		110-3194		DRAWN LAF	APP'D <i>MS</i>	CHECKED <i>MS</i>	ENGR. <i>MS</i>	SHEET	OF	ISS.

REVISIONS			
ISS.	DESCRIPTION	APP'D	DATE
01	CIO WAS 220pF; EO # B3190		10/16/86

G
F
E
D
C
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A

G
F
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NOTES:

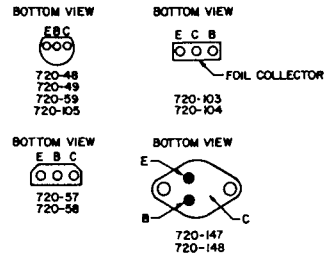
1. ALL DC VOLTAGES WITH RESPECT TO COMMON.
2. ALL AC VOLTAGES ARE rms READINGS.
3. ALL DC VOLTAGES NOT OTHERWISE SPECIFIED ARE UNDER NO LOAD CONDITIONS.
4. OUTPUT DEVICE BETAS MUST BE MATCHED.
5. FOR WIRING DIAGRAMS, SEE 190-2926 190-2928
6. ALL VOLTAGES AND RESISTANCES IN PARENTHESIS ARE FOR THE 1A3125 MODEL.
7. Q103, 104 ARE USED ONLY FOR 1A3125 MODEL.

DRIVER ALIGNMENT: 110-3194/110-3292

- STEP 1: R4 MUST BE ADJUSTED FOR 0 VOLTS NOMINAL ON OUTPUT OF DRIVER, WITH OUTPUT DEVICES DISCONNECTED.
- STEP 2: R31 MUST BE ADJUSTED FOR .5 VOLTS ON THE COLLECTOR OF Q7 AND -.5 VOLTS ON THE COLLECTOR OF Q11.
NOTE: R31 CANNOT BE SET UNTIL R4 IS SET.
- STEP 3: RE-CONNECT OUTPUT DEVICES, AND CHECK AMP OPERATION.

TAP	RATED LOAD	
70.7V	40A	1A3125
25V	5A	
31.6V	8A	

TAP	RATED LOAD	
70.7V	80A	1A3060
25V	10A	
21.9V	8A	



MATERIAL			FINISH		
UNLESS OTHERWISE SPECIFIED:	DIMENSIONS ARE IN INCHES	FRACTIONS: 1/16	3 PLACE DECIMAL: .	3 PLACE DECIMAL: .	ANGLES: °
NO.	NEXT ASSY	FIRST USED	DUKANE		
APPLICATION			ST CHARLES, ILLINOIS 60174		
			SERVICE INSTR. DIAGRAM		
			GENERAL PAGING AMP 60W-125W		
			1A3060-1A3125		
			SCALE: 1/8"	DATE DRAWN: 4-22-86	
			DRAWN: LAF	APP'D: [Signature]	NO. 400-1833
			CHECKED: [Signature]	ENGR: [Signature]	SHEET OF []