



# COMMUNICATION CONTROL PANEL 1A951

## DUKANE FEATURES

- VOICE CALL-IN AND PRIVACY
- AUDIBLE AND VISIBLE MONITORING
- MICROPHONE AND AUXILIARY INPUTS
- EMERGENCY AND ALL CALL FACILITIES
- 35 WATTS PROGRAM, 4 WATTS INTERCOM
- FULL PROGRAM AND INTERCOM FACILITIES



## GENERAL DESCRIPTION

Model 1A95 1 is a solid state control panel that provides separate amplifiers for the intercom and program functions with provisions for an external booster amplifier if more power is required in the program system.

The Control Panel provides "voice call-in", "privacy", "all call" and "EMERGENCY" functions as

standard features. The "EMERGENCY" feature requires no external emergency microphone. The Control Panel operates on 105-125 volts, 50-60 Hz with 24 vdc available for external use. The Panel is 5-1/4" high, 19" wide and 10-1/2" deep and finished in black and light gray with bright aluminum trim.

## SPECIFICATIONS

### RATED OUTPUT (CONTINUOUS):

Program: 35 watts or external booster amplifier.

Intercom: 4 watts.

### FREQUENCY RESPONSE:

Program: 20 to 20kHz  $\pm$  2 dB (treble control flat).

intercom: Shaped for best voice articulation.

### DISTORTION:

Less than 5%.

### NOISE LEVEL:

Program: Microphone -50dB, Auxiliary -60dB.

### REGULATION:

Less than 2 dB.

### INPUT FACILITIES:

3 low impedance, balanced or single ended microphones.

2 high impedance auxiliary.

1 high impedance bridging.

### SENSITIVITY:

Microphone: 400 microvdc.

Auxiliary: 500 millivolts.

Bridging: 1 volt.

Intercom: 1 millivolt.

### OUTPUT FACILITIES:

Program: 25 vdc balanced line.

Intercom: 25 volts balanced line.

Bridging: 100 millivolts.

### STABILITY:

Intercom & Program: No spurious oscillation from full load to no load with capacitive load from 100pf to 10 $\mu$ f with rated input and driven 6dB above rated input at 100 Hz.

### CONTROLS:

Program selector switch, made selector switch, program volume control, monitor volume control, program-listen-talk switch, power switch.

### METER:

VU Type reads "0" with 10 volts across 25 volt line for program and IC.

### FUSE:

2 amp. SLO-BLO.

### AUXILIARY POWER:

24 VDC available.

### DIMENSIONS:

5-1/4" high, 19" wide, 10-1/2" deep.

### FINISH:

Black and light gray with bright aluminum trim.

### WEIGHT:

23 pounds.

### TERMINATIONS:

Screw terminals and receptacles.

## OPTIONAL EQUIPMENT

438-270 Time Tone Generator

438-246 Supervisory Signal Genemtar

438-273 Repetitive Audible Tone

(Continued on reverse side)

# DUKANE

## External Connections

### COMMUNICATIONS CONTROL PANEL IA951

#### GENERAL DESCRIPTION

The Dukane Model IA951 Communications Control Panel provides microphone and auxiliary inputs, program and intercom amplifiers, monitoring facilities, ALL CALL and EMERGENCY functions, and power control for Compact Communications Centers.

#### GENERAL TERMINAL CONNECTIONS AND FUNCTIONS

Terminal	Connects to	Function
<b>BOOSTER (pair)</b>	<b>PROG terminals on Model 9A14 16</b>  OR <b>Optional external booster amplifier output</b>	<b>Jumpered to PROG terminals, provides 35 Watt program output.</b>  <b>Connected to booster amplifier output, provides booster power for program output.</b>
<b>BRIDGE</b>	<b>High impedance tape input or output</b>	<b>Provides high impedance input or output connection for record, play, and monitor functions.</b>
<b>C</b>	<b>ANN terminal on Model 9A1416</b>	<b>Provides +24 VDC for annunciator Power.</b>
<b>CALL-IN (pair)</b>	<b>Call-in switch at room station, if provided</b>	<b>Provides microphone level input for Voice Call-in.</b>
<b>COM</b>	<b>24 VDC, negative terminal</b>	<b>Ground connection for control functions.</b>
<b>IC (pair)</b>	<b>IC terminal on Model 9A1416</b>	<b>Provides connection for intercom Line,</b>
<b>M</b>	<b>One OFF terminal on Model IA951 through approximately 3300 ohms. (connection is optional)</b>	<b>Meter All-Call or Emergency announcements.</b>
<b>MIC 1, 2, and 3</b>	<b>Lo Z, balanced or single-ended microphone</b>	<b>Microphone input connections.</b>
<b>OFF (pair)</b>	<b>OFF terminals on Model 9A1416</b>	<b>Provides connections for Speaker Selector Panel OFF lines when EMERGENCY, ALL-CALL or time programming are used,</b>



Terminal	Connects to	Function
PHONO	External phono	Phono input connection,
PROG(pair)	<b>BOOSTER terminals on Mdel 9A1416</b> <b>OR</b> <b>Optional external booster amplifier input through appropriate transformer or bridging network.</b>	<b>Jumpered to BOOSTER terminals, provides 35 watt program output.</b>  <b>Connected to booster amplifier input, provides input for booster amplifier.</b>
RCV	<b>Hookswitch for handset, if handset is used</b>  <b>OR</b> <b>SP terminal on Mdel 1A951</b>	<b>Hookswitch breaks connection between RCV and SP when handset is lifted from hookswitch to transfer audio from loudspeaker to handset.</b>  <b>Allows sound to be heard at loudspeaker.</b>
SP	<b>Hookswitch for handset, if handset is used</b>  <b>OR</b> <b>RCV terminal on Mdel 1A951</b>	<b>Hookswitch breaks connection between SP and RCV when handset is lifted from hookswitch to transfer audio from loudspeaker to handset.</b>  <b>Allows sound to be heard at loudspeaker.</b>
SHLD, SHLDS	Cable shields	Provides connections for cable shields.
SS	SS terminals on Mdel 9A1416	+24VDC control line for optional Supervisory Signal and Audible Annunciator, if used.
T	Time control switch on master clock	Provides control for Time Tone option.
TAPE	Tape unit output	Tape unit connection.
TLR	N. 0. contact on Talk-Listen Switch in handset	Actuates Talk-Listen relay when switch is activated to place ground on TLR.
TUNER	Tuner output	Tuner connection.
XM	Through N. C. contact on hookswitch when handset is off hook to handset transmitter.	Provides telephone transmitter connection to IC amplifier when using handset.
RVC, X1, x2, x3, x4, X5, X6, X7	Not wired internally	Provided for possible options.



**MONITOR, SPEAKER/MICROPHONE**  
 Reproduces program material when PROGRAM LISTEN-TALK switch is in PROGRAM position. Volume is regulated by MONITOR volume control. Functions alternately as a speaker and microphone when PROGRAM LISTEN-TALK switch is operated between LISTEN and TALK position.

**PROGRAM SELECTOR SWITCH**  
 Selects input source to amplifier for program distribution to selected speakers.

**VU METER**  
 Indicates level of program material being amplified by the program amplifier. For average program material, the meter needle should fluctuate between -6 and +1.

**POWER SWITCH**  
 Controls primary power to the panel. When placed to the ON position, the VU meter is illuminated.



**PROGRAM VOLUME CONTROL**  
 Regulates volume of program material to selected speakers. Advance control until VU meter needle fluctuates between -6 to +1 on meter scale.

**MONITOR VOLUME CONTROL**  
 Regulates volume of program material heard from the monitor speaker. Has no effect on outgoing intercom volume.

When using a console microphone, this control should be turned down or off to prevent acoustic feedback or "howling."

**PROGRAM LISTEN-TALK SWITCH**  
 In the PROGRAM position, this switch connects any selected program to the Monitor Speaker. In the LISTEN position the Monitor Speaker reproduces any speech from the selected speaker. In the TALK position, anything spoken into the Monitor Speaker is heard at the selected speaker.

**EMERGENCY SWITCH** - In the EMGY position any announcement into the Monitor Speaker is sent to all speakers. In the ALL position any selected program is sent to all speakers. For normal operation the switch should remain in the NORM position.



# REPAIR PARTS LIST

IA951

PART NUMBER	DESCRIPTION	DUKANE PART NUMBER
C1 - C8	Capacitor, .025 uF, 100-volt ceramic disc	199-1012-253
C9	1000 uF 35 WDC 'lytic	199-2053-108
C10	.047 uF, 200-volt film	199-4046-473
C11, C12	3000 uF 35WDC 'lytic	199-2053-308
C13	0.33 uF, 200-volt film	199-4046-334
C14, C15	.01 uF, 1400-volt ceramic disc	199-9255
C16		
C17	.068 uF, 200-volt film	199-4046-683
C18	0.1 uF, 200-volt film	199-4046-104
C20	100 uF, 50 WDC 'lytic	199-2048-107
C21	, 220 PF, ceramic disc	199-1005-221
CR1, CR2	Diode, silicon, 1N4385; 600 PIV	595-44
CR7, CR8		
CR9, CR10		
CR11		
CR3, CR4	" , silicon, 1N5401; 100 PIV	230-21-00100
CR5, CR6		
F1	Fuse, slow blow, 2 amperes Fuse holder; for F1	320-010-0200 321-10
	Lamp, 28-volt; No. 1829	456-87
J1, J2; J3, J4	Jack double, phono pin	597-112
J5, J6 J7	Connector, double male, 6-pin	210-14-00006
38	Receptacle, AC convenience	597-212
K1, K2	Relay, 4 form C'S, 24VDC	596-126
L1, L2	Inductor, 50 mHy	393-18
M1	Meter, VU	485-2014
P1 - P3	Receptacle, female, 6-pin	597-240-0006
Q1 Q2, Q3	Transistor, NPN; 2N5294 NPN; 2N3055	720-32 720-31
R1 - R8	Resistor, 22 ohms, 1/2 watt	600-0080-220
R9, R10	150 ohms, 1/2 watt	600-0080-151
R11	560,000 ohms, 1/2 watt	600-0080-564
R12	47,000 ohms, 1/2 watt	600-0080-473
R13	variable 100,000 ohms; PROGRAM	601-332
	68,000 ohms, 1/2 watt	600-0080-683
	10,000 ohms; 1/2 watt	600-0080-103
R16, R25	33 ohms, 5 watts; WW	600-1007-330
R17, R22	300 ohms, 5 watts; WW	600-1007-301
R18, R21	4.7 ohms, 4 watt	600-0080-4R7

# REPAIR PARTS LIST

1A951

LEGEND	DESCRIPTION	DUKANE PART NUMBER
R19, R20	Resistor, 10 ohms, ½ watt	600-0073-0100
R23, R24	" 0.27 ohms, 5 watts; WW	600-1050-R27
R26	" 1.0 ohm 5 watts; WW	600-1007-1R0
R27	" 6800 ohms, ½ watt	600-0080-682
R28	" 470,000 ohms, ½ watt	600-0080-474
R29	" variable, 100,000 ohms, I.C. vol	601-330
R40	" variable, 100,000 ohms, Emer. vol.	601-330
R30	" variable, 600 ohms; MONITOR	601-331
R31, R32	" 4700 ohms, ½ watt	600-0080-472
R33	" 330,000 ohms, ½ watt	600-0080-334
R34	" 750 ohms, 5 watts; WW	600-1007-751
R35	" 680 ohms, 1 watt	600-0116-681
R36	" 47 ohms, ½ watt	600-0080-470
R37	" 220,000 ohms, ½ watt	600-0080-224
R38, R39	" 750 ohms, 1 watt	600-0110-471
R214	" variable, 100,000 ohms, Treble	601-224
S1	Switch, rotary; PROGRAM SELECTOR	680-570
S2	" , lever; PROGRAM LISTEN-TALK	680-571
S3	" , POWER	680-569
s4	" , Rotary; NORM ALL- EMERG	680-623
s5	" , thermostat	702-1
T1	Transformer, AF driver	710-1031
T2	" , AF output	710-2144
T3	" , IC output	710-2145
T4	" , AC power	710-4217
<b><u>MISCELLANEOUS PARTS AND HARDWARE</u></b>		
	Clamp; for AC power cord	191-49
	Cord, 3-wire, AC power	200-204
	Grille	347-264
	Grommet	350-8
	Insulator, mica; for Q2, Q3	395-118
	Jewel, red; for I1	420-45
	Knob	440-264
	Socket; for I1	566-3
	" ; for Q2, Q3	635-99-00042
	" ; for K1, K2	597-259
LS	Speaker, intercom 3-inch; 35 ohms	645-51
	Wafer, capacitor mounting; 1-3/8 inches	748-10607
	Wafer, capacitor mounting; 1-inch	748-9578
	Amplifier Driver PC board, complete	110-1292
	4-Watt I.C. Ampl. PC board, complete	110-1293
	Single Mic Stage PC board, complete	110-1294
	*Time Tone Generator	438-270
	*Supervisory Signal Generator	438-246
	*Repeating Audible Annunicator	438-273

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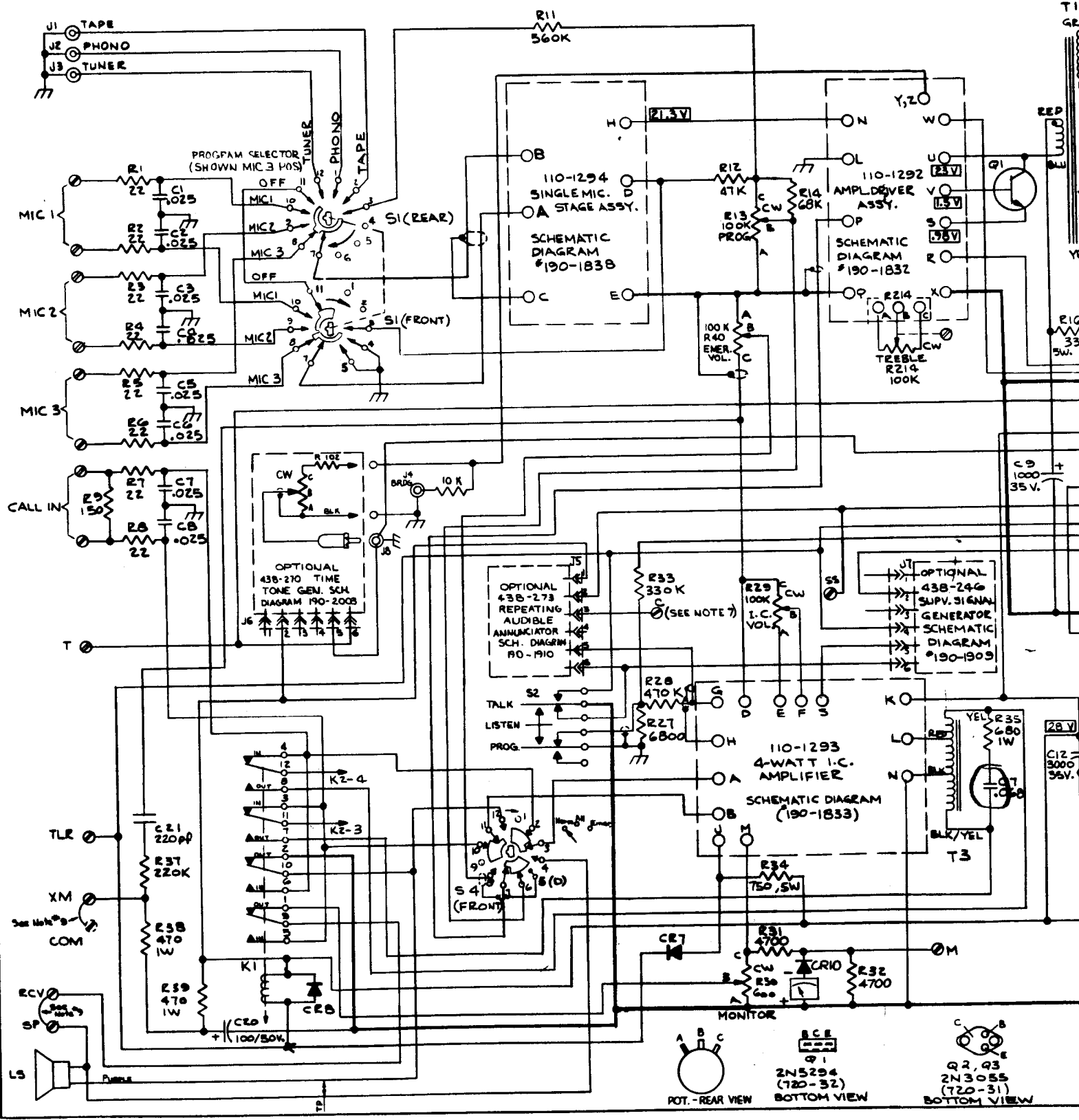
# DUKANE

## Service Information

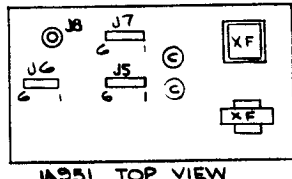
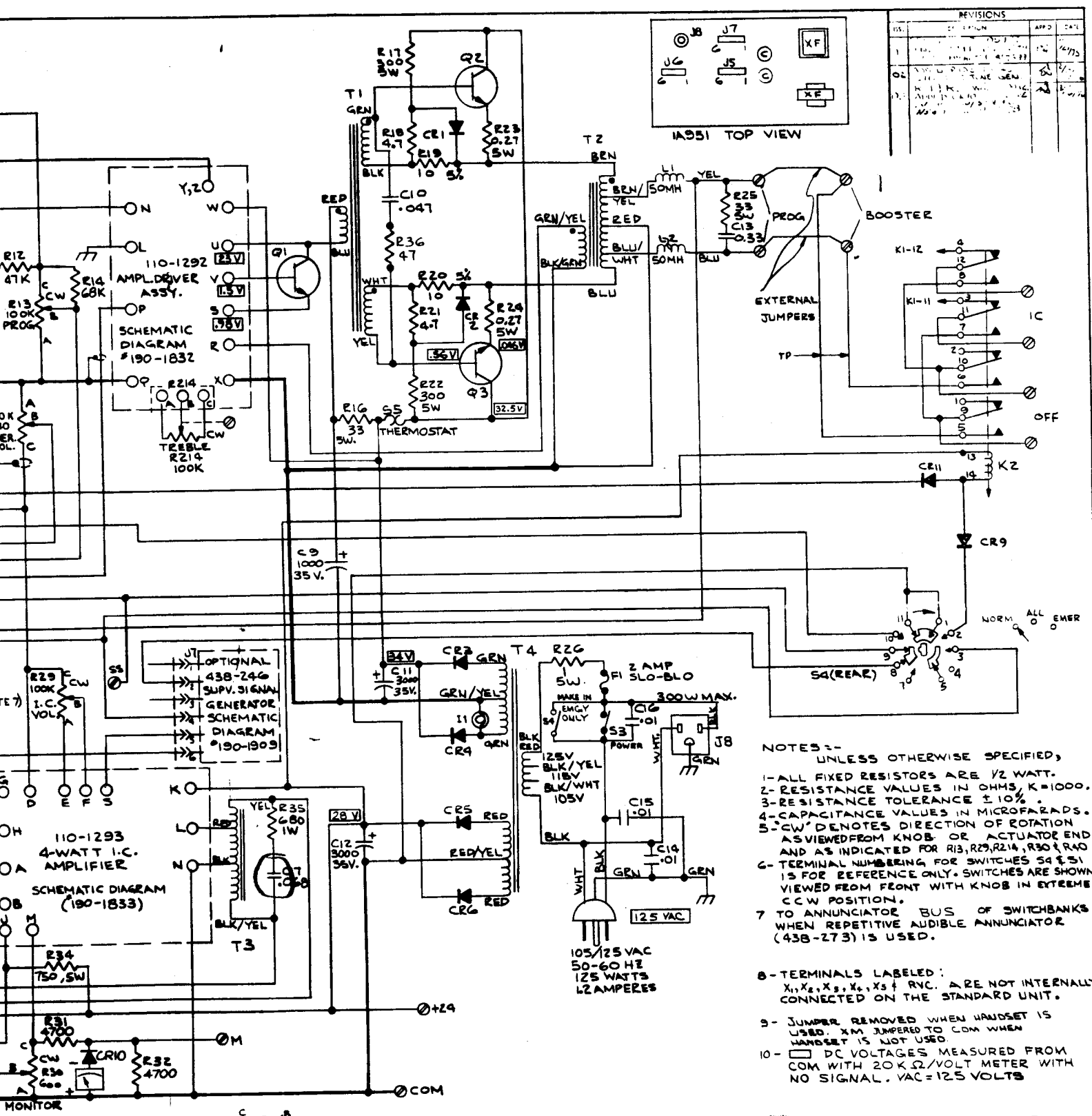
### COMMUNICATION CONTROL PANEL 1A951

Equipment consists of:

UNIT	SERVICE INFORMATION
1A951 Communication Control Panel	404-926.02 190-2002-03
with:	
110-1292 Power Amplifier Driver KB	404-816 190-1832-00
110-1293 4-Watt IC Amplifier KB	404-817.01 190-1 833-01
Revised Repair Parts List	404-817.01
110-1294 Single Mic Stage KB	404-818.01 190-1838-00





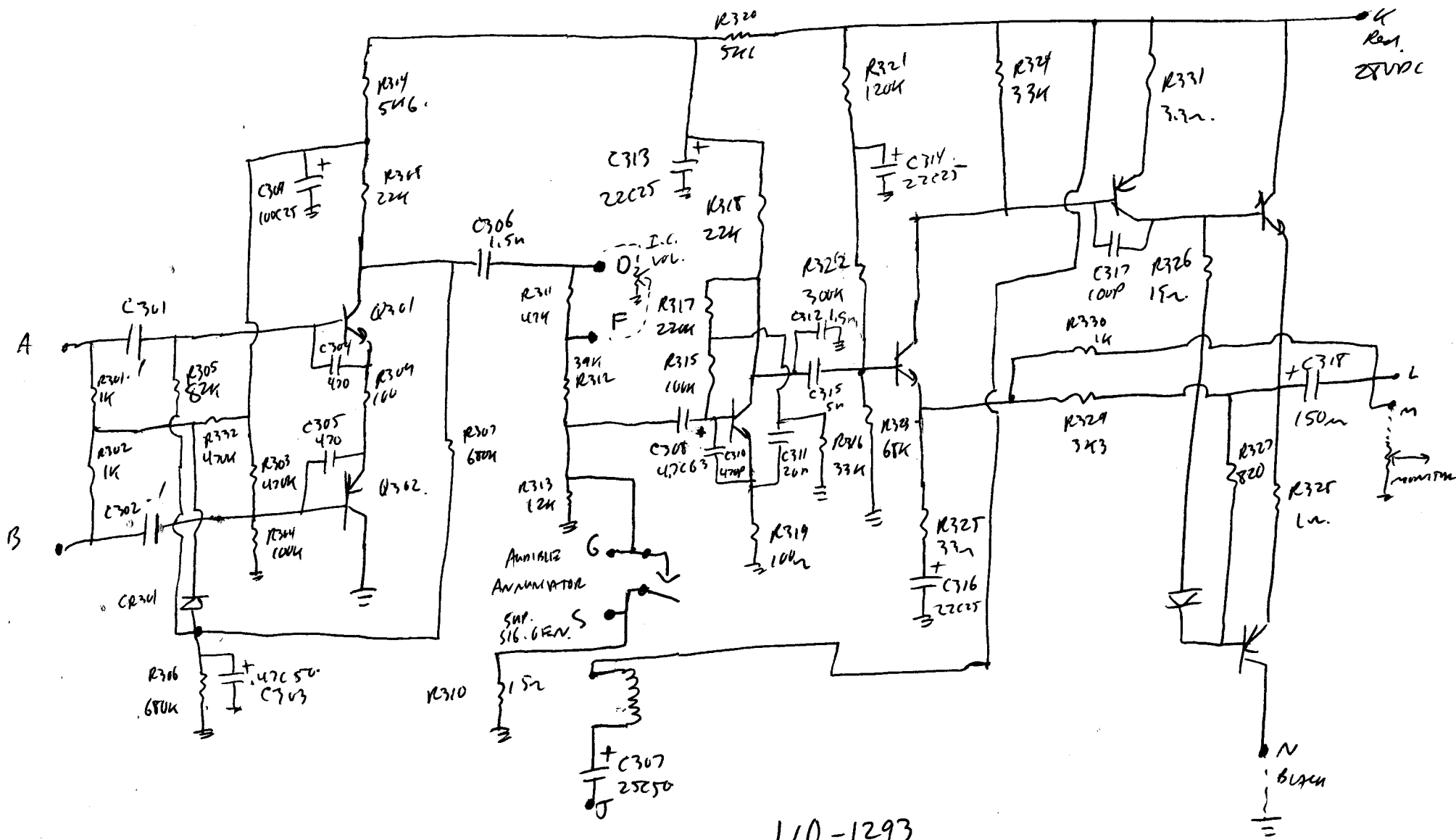


REVISIONS			
REV.	DESCRIPTION	APP'D	DATE
1	REVISED TO INCLUDE...		6/7/75
2	REVISED TO INCLUDE...		8/1/75
3	REVISED TO INCLUDE...		8/1/75

- NOTES:-  
UNLESS OTHERWISE SPECIFIED;
- ALL FIXED RESISTORS ARE 1/2 WATT.
  - RESISTANCE VALUES IN OHMS, K=1000.
  - RESISTANCE TOLERANCE ± 10%.
  - CAPACITANCE VALUES IN MICROFARADS.
  - "CW" DENOTES DIRECTION OF ROTATION AS VIEWED FROM KNOB OR ACTUATOR END AND AS INDICATED FOR R13, R29, R214, R30 & R40.
  - TERMINAL NUMBERING FOR SWITCHES S4 & S1 IS FOR REFERENCE ONLY. SWITCHES ARE SHOWN VIEWED FROM FRONT WITH KNOB IN EXTREME CCW POSITION.
  - TO ANNUNCIATOR BUS OF SWITCHBANKS WHEN REPETITIVE AUDIBLE ANNUNCIATOR (438-273) IS USED.
  - TERMINALS LABELED:  
X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>, X<sub>5</sub> + RVC. ARE NOT INTERNALLY CONNECTED ON THE STANDARD UNIT.
  - JUMPER REMOVED WHEN HANDSET IS USED. XM JUMPED TO COM WHEN HANDSET IS NOT USED.
  - DC VOLTAGES MEASURED FROM COM WITH 20KΩ/VOLT METER WITH NO SIGNAL. VAC=125 VOLTS

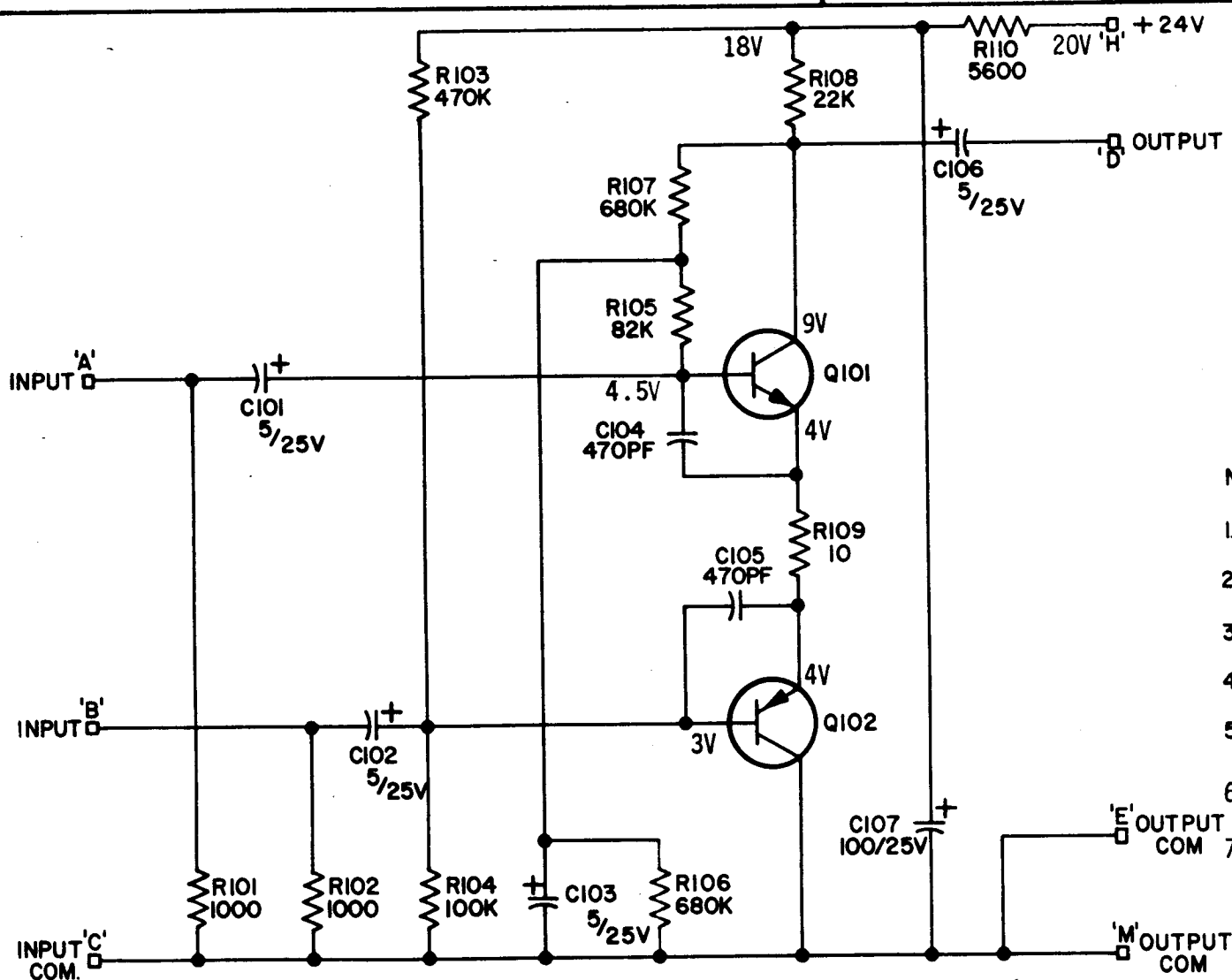
MATERIAL		FINISH		SCALE		DATE		REV.	
UNLESS OTHERWISE SPECIFIED		DIMENSIONS ARE IN INCHES		FRACTIONS		2 PLACE DECIMALS		3 PLACE DECIMALS	
NO.		NEXT ASSY		USED ON		APPLICATION		<b>DUKANE</b> SCHEMATIC DIAGRAM COMMUNICATION CONTROL PANEL MODEL 1A551	
DRAWN: <i>[Signature]</i>		CHECKED: <i>[Signature]</i>		ENGR: <i>[Signature]</i>		DATE: 6-7-74		NO. 190-2002 03	






110-1293

PCB



REVISIONS			
ISS.	DESCRIPTION	APP'D	DATE

- NOTES:  
UNLESS OTHERWISE SPECIFIED:
1. ALL FIXED RESISTORS ARE 1/2 WATT.
  2. TOLERANCES ON ALL FIXED RESISTOR  $\pm 10\%$ .
  3. RESISTANCE VALUES IN OHMS. K=1000 OHMS
  4. CAPACITANCE VALUES IN MICROFARADS.
  5.  $\square$ -DENOTES TAPER PINS ON P.C. BOARD.
  6. VOLTAGE MEASURED WITH 20,000 $\Omega$ /V VOM; MAY VARY  $\pm 10\%$
  7. DC VOLTAGE MEASURED WITH NO SIGNAL APPLIED.


 Q101=720-49 (2N508B)  
 Q102=720-48 (2N5086)

IA950
APPLICATION

**DuKANE**  
 Corporation  
ESTABLISHED 1923  
 ST. CHARLES, ILLINOIS U.S.A.

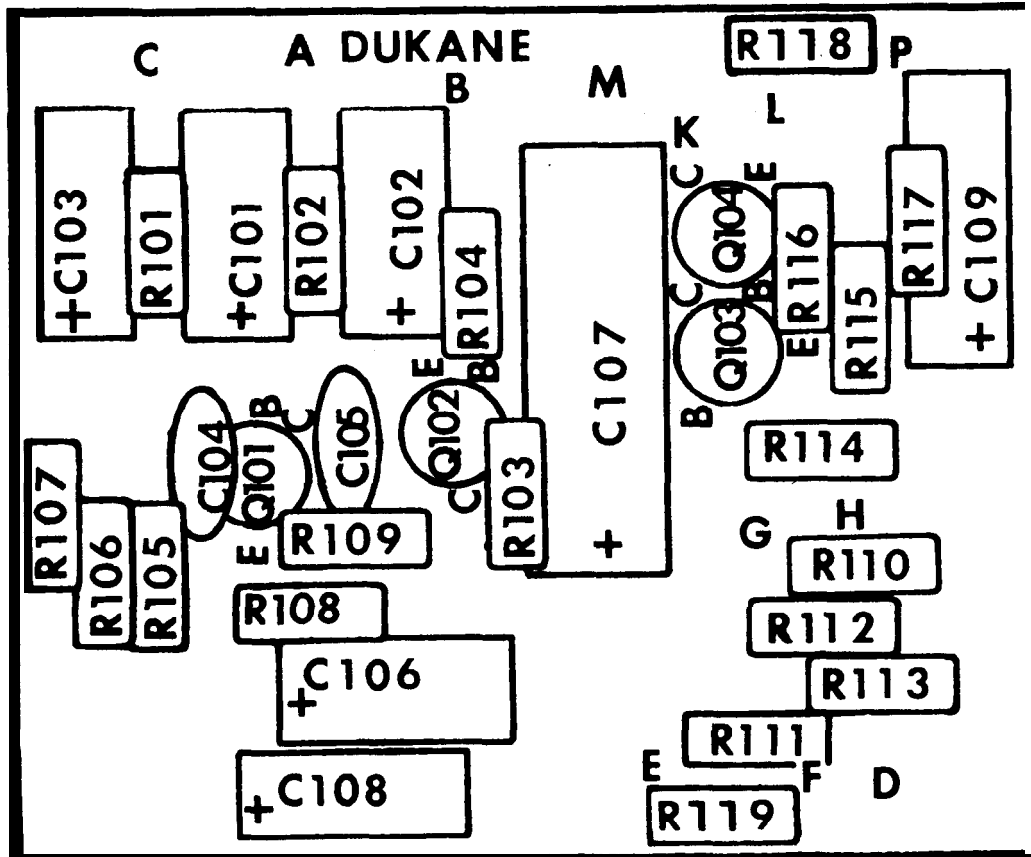
SCHEMATIC DIAGRAM  
 SINGLE MIC STAGE ASSY.  
 110-1294

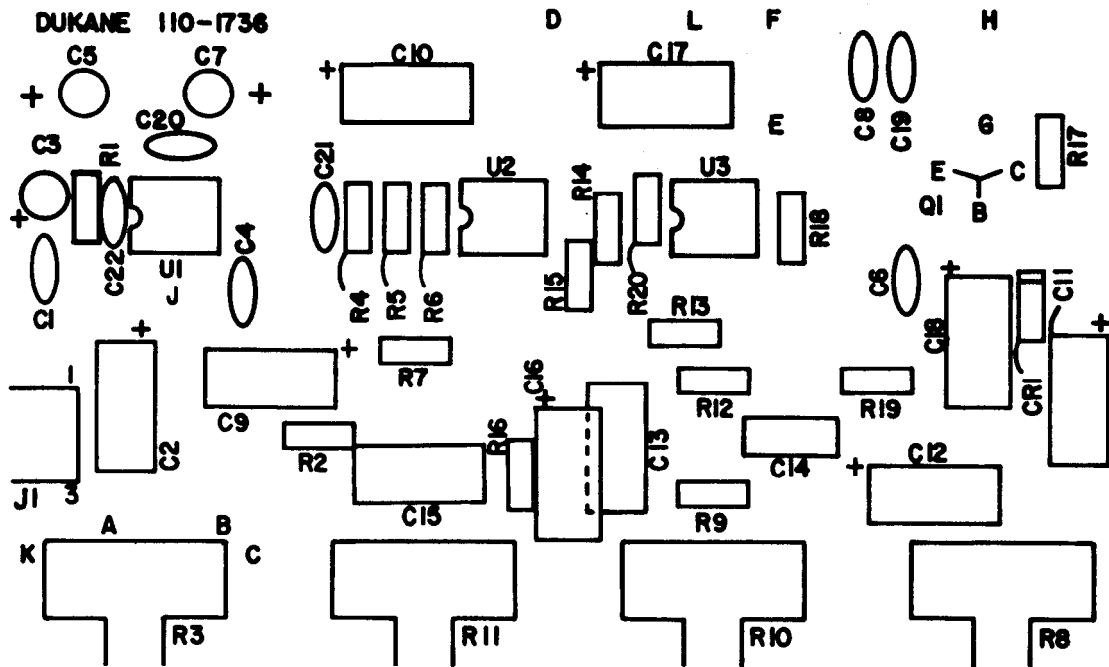
SCALE	
DRAWN <i>BW</i>	APP'D
CHECKED	ENGR. <i>DLK</i>

DATE DRAWN	6-28-72
NO. 190-1838	00
SHEET	OF
ISS.	

190-1838 | 110-1294

LEGEND	DESCRIPTION	DUKANE PART NUMBER
C101, C102, C103, C106	Capacitor, 5 $\mu$ F, 25 WVDC electrolytic	199-2021-505
C104, C105	" , 470 pF, 1000-volt ceramic disc	199-1014-471
C107	" , 1000 $\mu$ F, 25 WVDC electrolytic	199-2021-107
Q101	Transistor, NPN; 2N5088	720-49
Q102	" , PNP; 2N5086	720-48
R101, R102	Resistor, 1000 ohms, 1/2 watt	600-0080-102
R103	" , 470,000 ohms, 1/2 watt	600-0080-474
R104	" , 100,000 ohms, 1/2 watt	600-0080-104
R105	" , 82,000 ohms, 1/2 watt	600-0080-823
R106, R107	" , 680,000 ohms, 1/2 watt	600-0080-684
R108	" , 22,000 ohms, 1/2 watt	600-0080-223
R109	" , 10 ohms, 1/2 watt	600-0080-100
R110	" , 5600 ohms, 1/2 watt	600-0080-562

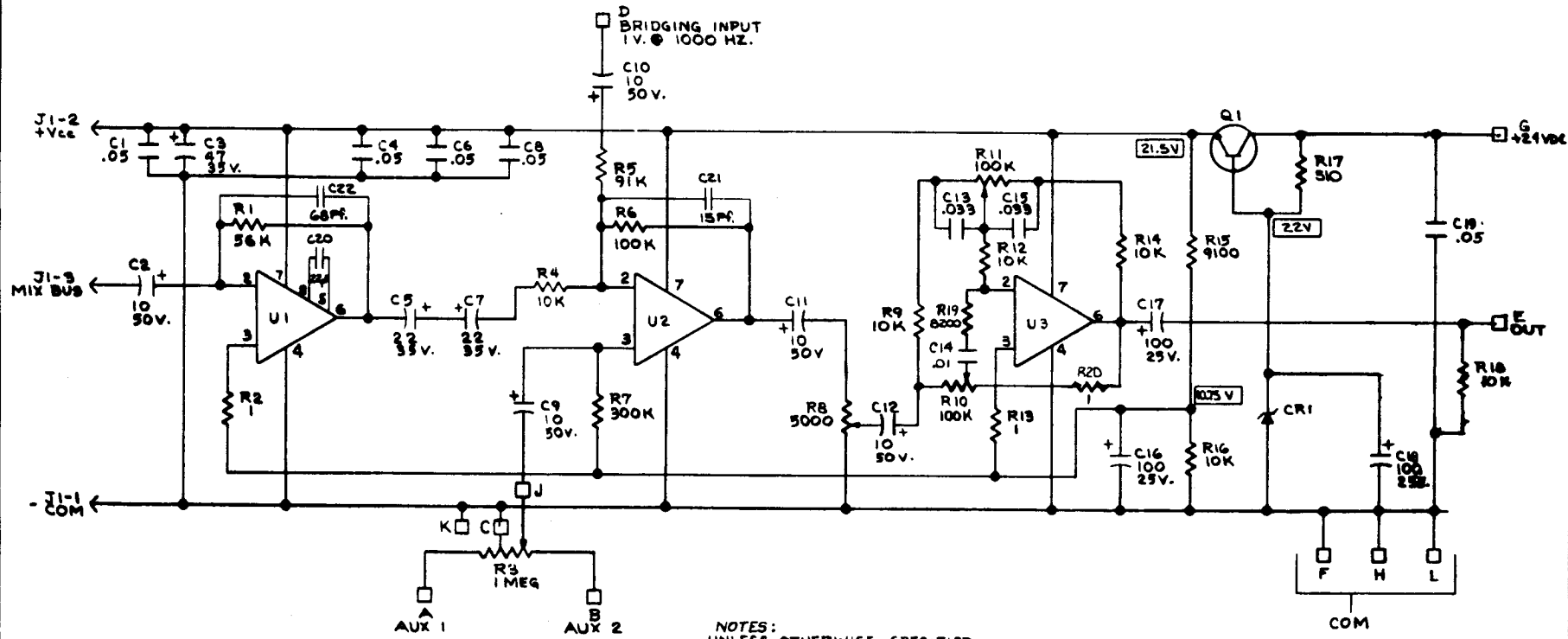




REPAIR PARTS LIST FOR 110-1736 PCB

LEGEND	DESCRIPTION	D'JKANE PART NO.
C1, C4, C6, CB, C19	Capacitor, .05uF/50WVDC, Disc, cer	199-101 I-503
C2, C9, C10, C11, C12	Capacitor, 10uF/50WVDC, Lytic	199-2048-I 06
C3	Capacitor, 47uF/35WVDC, Tant	199-2036-476
C5 c7	Capacitor, 22uF/35WVDC, Tant	199-2036-226
C13, C15	Capacitor, .033uF/100WVDC, Mylar	1 00-4007333
C14	Capacitor, .01 uF/100WVDC, Mylar	100-4007-103
C16, C17, C18	Capacitor, 100uF/25WVDC, Lytic	199-2021-107
C20	Capacitor, 22pF, Disc, cer	199-1013-220
c21	Capacitor, 15pF, Disc, cer	199-1005-150
c22	Capacitor, 68pF/100OV, Disc, cer	199-1013-680
CR1	Diode, Zener 22.0V	230-19-00022
Q1	Transistor, 2N3053	720-37
R1	Resistor, 56K ohm, 1/2 Watt, 5%	600-0073-563
R2 R13, R20	Resistor, 1 ohm, 1/2 Watt, 5%	600-0073-1 RO
R3	Resistor, Variable, 1 Meg ohm	601-343
R4, R9, R12, R14, R16, R18	Resistor, 10K ohm, 1/2 Watt, 5%	600-0073-103
R5	Resistor, 91 K ohm, 1/2 Watt, 5%	600-0073-913
R6	Resistor, 100K ohm, 1/2 Watt, 5%	600-0073-104
R7	Resistor, 300K ohm, 1/2 Watt, 5%	600-0073-304
R8	Resistor, Variable, 5000 ohm, 20%	601-377
R10, R11	Resistor, Variable, 100K ohm	601-341
R15	Resistor, 9100 ohm, 1/2 Watt, 5%	600-0073-912
R17	Resistor, 510 ohm, 1/2 Watt, 5%	600-0073-511
R19.	Resistor, 8200 ohm, 1/2 Watt, 5%	600-0073-822
U1	Integrated Circuit, NE5534AN	408-36
u2, u3	Integrated Circuit, MC1 741SCP1	408-18

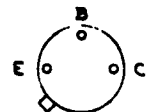
REVISIONS			
REV.	DESCRIPTION	APPD	DATE
01	ADDED TAPER PINS K 4 L	AW	7-27
02	ADDED C20, U1 WAS 408-18	AW	7-28
03	ADDED C21, C22; R19 BROWN WAS 2000 Ω	AW	11-28-69



- NOTES:  
 UNLESS OTHERWISE SPECIFIED,  
 1. ALL RESISTORS ARE 1/2 WATT.  
 2. TOLERANCE ON FIXED RESISTORS ± 5%.  
 3. RESISTANCE VALUES IN OHMS;  
 K=1000 MEG = 1,000,000.  
 4. CAPACITANCE VALUES IN MICROFARADS.  
 5. → DENOTES MALE CONTACT FINGER ON P.I.  
 6. □ DENOTES TAPER PIN.



TOP VIEW



BOTTOM VIEW

U2, U3 408-18 (MC1745CP1)  
 U1 408-36 (NE5534AN)  
 Q1 720-37 (2N3053)

404-1038

1A729		MATERIAL		FINISH	
1A731		UNLESS OTHERWISE SPECIFIED:		DIMENSIONS ARE IN INCHES	
2A68		FRACTIONS: 2		2 PLACE DECIMAL: 2	
2A69		3 PLACE DECIMAL: 2		ANGLES: 2	
NO.	NEXT ASSY	USED ON	DUKANE		SCHEMATIC DIAGRAM
APPLICATION			ST CHARLES ILLINOIS 60174		110-1736
SCALE		DATE DRAWN		8-9-77	
DRAWN		APPD		NO. 190-2235	
CHECKED		ENGR.		SHRT 1 OF 1	