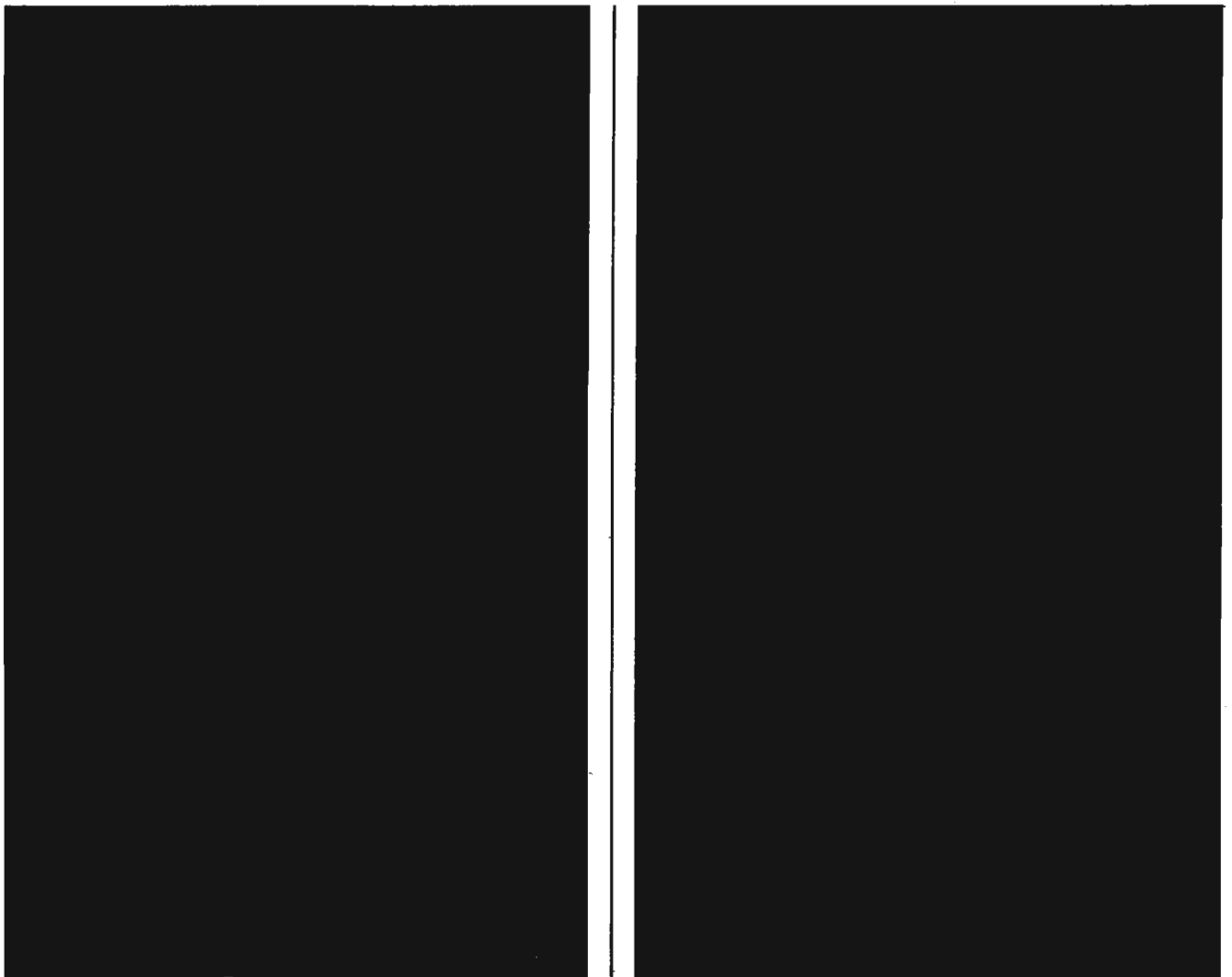


Service Manual
Integrated Stereo Amplifiers

430A/410A



 **SCOTT**[®]
The Name to listen to.

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CAUTION NOTICE

The following safety precautions must be followed to assure continued reliability and safety against fire and shock hazard:

1. Replacement parts used during servicing of this appliance must have identical characteristics as those offered and recommended by H. H. Scott, Inc.
 2. A dielectric test is to be performed on each appliance following the re-assembly and before returning the unit to the customer.
 3. The dielectric test to be performed on H. H. Scott, Inc. electric components serviced in the United States and Canada for use in these countries shall consist of not less than the following: *
 - 1) A dielectric tester designed to supply not less than 1100 volts at 60Hz and employing leakage current indicator(s), is to be used.
 - 2) The tester is to be connected per the instructions enclosed with the instrument, or as follows:
 - a. The tester is connected to the power line receptacle and the power switch is turned on.
 - b. Sufficient time is allowed for the tester supply to stabilize and then the output voltage is adjusted for 1080V.
 - c. Leads of the tester, usually marked GND and HV, are connected between chassis ground and both blades of the male plug of the power cord.
 - d. Switch tester to "test" and observe leakage indicator.
Leakage current must not exceed 0.5mA.
- * Dielectric tests made by service personnel in countries other than USA and Canada must use test equipment and procedures specified by the safety agency serving that country.

SPECIFICATIONS 430A (410A)

Minimum Continuous RMS Output Power per channel, both channels driven into 8 Ohms from 20 Hz – 20 kHz with no more than rated THD
45 watts (30 watts)

Total Harmonic Distortion [78 IHF rated, at 20 Hz – 20 kHz]
0.08% (0.1%)

Intermodulation Distortion [at rated output, 60:7000Hz; 4:1]
0.08% (0.1%)

Frequency Response [at 1 watt output, ± 1 dB]
20 Hz to 20 kHz

Power Bandwidth [at -3 dB]
10 Hz to 30 kHz (15 Hz to 30 kHz)

Damping Factor [at 1 kHz, for 8 Ohm load]
> 40

Input Sensitivity [for rated output]
Phono: 2.5mV
Aux, Tuner: 150mV
Tape 1 and 2: 150mV
Tape 2 DIN Input: 150mV

Maximum Input Voltage
Phono: 150mV
Aux, Tuner: 10V
Tape 1 and 2: 10V
Tape 2 DIN Input: 10V

Signal-to-Noise Ratio [shorted input, IHF A network]
Phono, Ref. 10mV: 85dB
Aux, Tuner: 90dB
Tape 1 and 2: 90dB
Tape 2 DIN input: 90dB

Tone Control Range
Bass (100 Hz): ± 10 dB
Treble (10 kHz): ± 10 dB

Loudness Contour [Volume Control set to -30 dB]
100 Hz: +7dB
10 kHz: +3.5dB

Crosstalk

1kHz: 75dB

Channel Balance [maximum Volume Control]
0.5dB (0.7dB)

RIAA Tolerance [78 RIAA rated, 20 Hz to 20 kHz]
 ± 0.7 dB

Channel Separation [78 IHF rated]

Phono (1 kHz): 60dB (55dB)

Aux, Tuner, Accessory Input, Tape 1 and 2,
Tape 2 DIN Input (1 kHz): 60dB

Tape Recording Output Level [at rated input sensitivity level]

Tape 1 Rec: 150mV

Tape 2 Rec: 150mV

Tape 2 DIN Output: 30mV

AC Power Requirement*

220V 50Hz

Power Consumption

370W (250W)

Dimensions

17-3/4"W, 5-1/4"H, 11-3/4"D (17-3/4", 5-1/4", 8-1/2")

430W, 132H, 300D (430, 132, 217) mm

Net Weight

18.9 lbs (15.5 lbs)

8.5 kg (7.0 kgs)

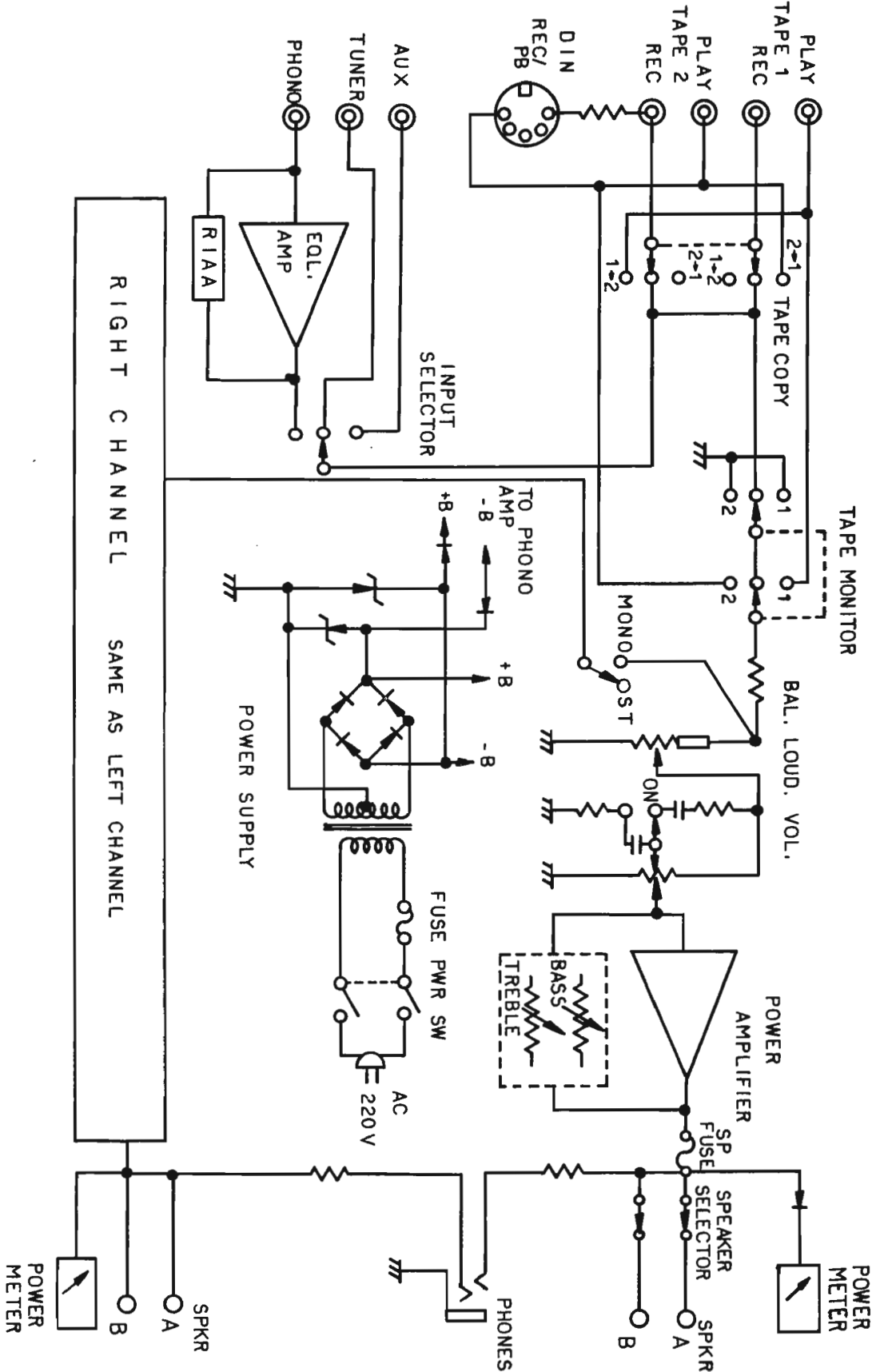
*** AC Power:**

Units for Great Britain: 240V, 50Hz

Units for USA and Canada: 120V, 60Hz

Class 2, double isolation system employed

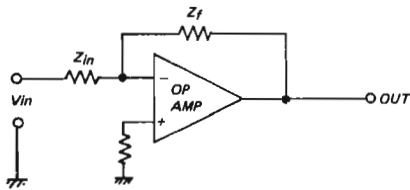
BLOCK DIAGRAM



CIRCUIT DESCRIPTION

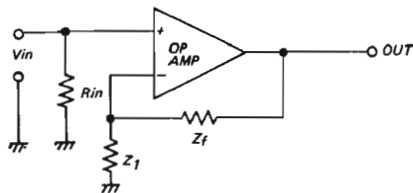
Design Philosophy on 430A and 410A

When using a high gain wide band open loop operational amplifiers, it is possible to design a passive network providing a negative feedback to control the amplifier gain and frequency response. In fact it makes easy the reproduction and repetitivity of the wanted results. We can define the gain of such an amplifier as follows.



$$1) V_o = -V_{in} \cdot \frac{Z_f}{Z_{in}} \quad (\text{Inverting Amp.})$$

$$2) R_{in} = Z_{in}$$



$$3) V_o = V_{in} \cdot 1 + \frac{Z_f}{Z_1} \quad (\text{Non Inverting})$$

$$Z_{inc} \cong R_{in} \parallel \frac{Z_{ino} \cdot G_{openloop}}{G_{closedloop}}$$

Where R_{in} is the input load resistor. Z_{in} is the open loop input impedance multiplied by open loop gain divided by closed loop gain.

Example: If open loop gain is 10,000 (i.e 80dB) and the closed loop gain is 100 (i.e 40dB). For an amplifier having $Z_{ino} = 10K$ ohm, the equivalent $Z_{inc} = R_{in} \parallel 1000K$ ohm.

Phono Equalizer: The phono non inverting amplifier equalizer consists of an operational amplifier with a feedback network to fulfill the RIAA equalizing requirements.

$$Z_f = R_8 \parallel X_{c6} + R_{10} \parallel X_{c8}$$

$$Z_1 = R_{12} + X_{c12}$$

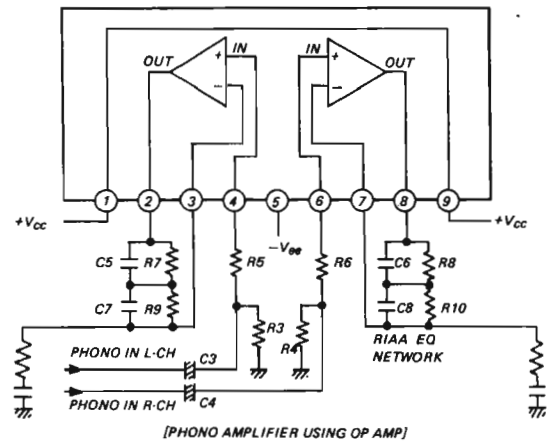
$$\text{where } X_c = \frac{1}{2\pi f \cdot c} = \frac{1}{6.28 f \cdot c}$$

f = frequency

c = capacitance in Farads

R = Resistance in Ohms

The above network provides a gain of 60 at 1kHz and a gain variation as function to the value of Z_f and Z_1 at any given frequency. For example at 100Hz the gain is 265 or +12.9dB referred to 1kHz gain, at 10kHz gain is about 13 or -13.7dB referred to 1kHz gain.



Preamplifier

The preamplifier is an operational amplifier built by discrete components. It is directly coupled to the load (i.e speakers). The high gain open loop is provided by the dual differential amplifiers and the bootstrap capacitor. The complementary output drivers/buffers provide a symmetrical output drive.

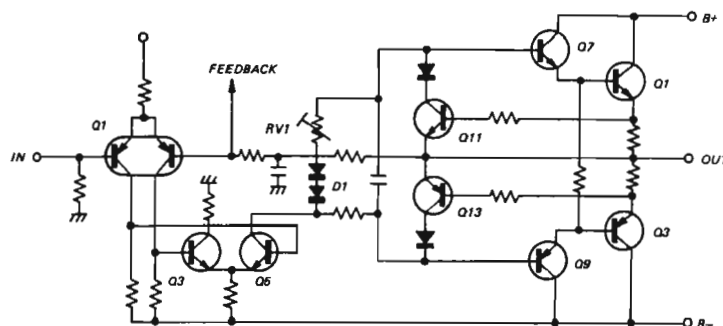
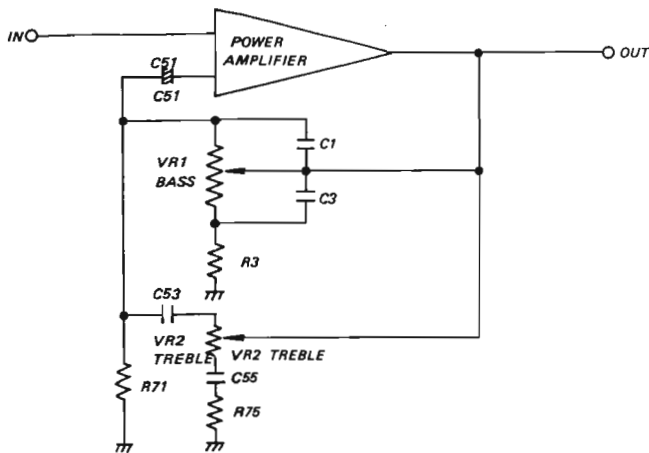
The amplifier is controlled by multiple feedback networks: DC feedback ($R_{93} + R_{95}$) on one channel ($R_{94} + R_{96}$) on the other are directly coupled between output and negative input. The effect of the DC feedback is for longterm stability and unity DC gain. The effect of this feedback is minor at frequencies over 5Hz. The multipole AC feedback network (with the bass and treble potentiometers incorporated) provides a constant gain with no effective gain variations of tone potentiometers. At 100Hz the bass potentiometer allows gain control of ± 10 dB. At 10,000Hz the treble potentiometer allows gain control of ± 10 dB. The amplifier has a current limit network that limits excessive current loading. A fuse is provided to prevent damage to speakers if the amplifier fails.

Tone Control

The tone control is a negative feedback type which uses the power amplifier stage as the active element. That is, the gain of the power amplifier stage is controlled by the tone controls circuitry. At 1kHz, the position of the tone controls has little effect on the gain, as C_{53} impedance is high, removing VR_2 from the circuit, and C_1, C_3 impedance is low, effectively short circuiting VR_1 .

Bass Control: As the frequency decreases below 1kHz, the impedance of C_1 and C_3 increases proportionately. Thus at very low frequencies, the gain is mainly determined by the position of the bass control VR_1 . Rotating VR_1 toward R_3 will boost the low frequencies, while turning it towards C_4 will cut the bass.

Treble Control: At high frequencies, as at 1kHz, VR_1 is effectively short circuited. At these frequencies, however C_{53} and C_{55} impedance decreases, so that VR_2 becomes the main control of the amplifier gain. Rotating VR_2 towards C_{53} cuts the treble response.



Power Amplifier

This circuit is an OCL, pure complementary amplifier. The input stage consists of two differential amplifiers (Q1 and Q3/Q5). The first differential amplifier (Q1) is a matched transistor pair in one package providing excellent common mode rejection and low DC offset. Q5 acts as the voltage amplifier providing voltage swing to nearly full plus and minus supply. Current gain is then provided by the fully complementary Darlington pairs of Q7 and Q1 (Power transistor) for the positive swing, Q9 and Q3 (Power transistor) for the negative swing. The output stage bias is set by the double diode D1 and RV1. As previously described, amplifier gain is set by tone control circuitry. The driver and output stage is protected from short circuit and overload by transistors Q11 and Q13, which short out the driving signal when current through the output transistor reaches an excessive level.

Power Supply

The main power supply consists of a full wave bridge rectifier and two 6800 μ F capacitors. The B+ and B- regulators (zeners, D31 & D32) supply stabilized voltage for the low level circuitry.

Unwanted transients are eliminated by circuitry consisting of Q16 which performs a muting function when the unit is switched ON or OFF.

The base bias of Q16 is given by two different circuits; one normal positive line voltage circuit having a large time constant, and another negative supply voltage circuit having a small time constant (C63/R84). At turn on, the negative voltage is immediately supplied to the base of Q16 because of its smaller time constant, and this makes Q16 cut off. Then C61 is gradually charged up by the normal positive power line voltage and when the charged level is reached to a proper level, the power line switching transistor Q15 is turned on and supplies the power to the differential amplifiers. At turn off, the negative base supply voltage to the Q16 is immediately decreased to zero because of its small time constant, then the base bias is supplied from the positive power line voltage only, and Q16 is turned on immediately, resulting in shorting the Q15 base to the ground and eliminating the supply for the differential amplifiers, stopping amplifier operation immediately.

ADJUSTMENT

Equipment Required

Audio signal generator
DC voltmeter
Speaker load resistors, 8 Ohms, 100W
Digital voltmeter

The following adjustments are the same for both left and right channels.

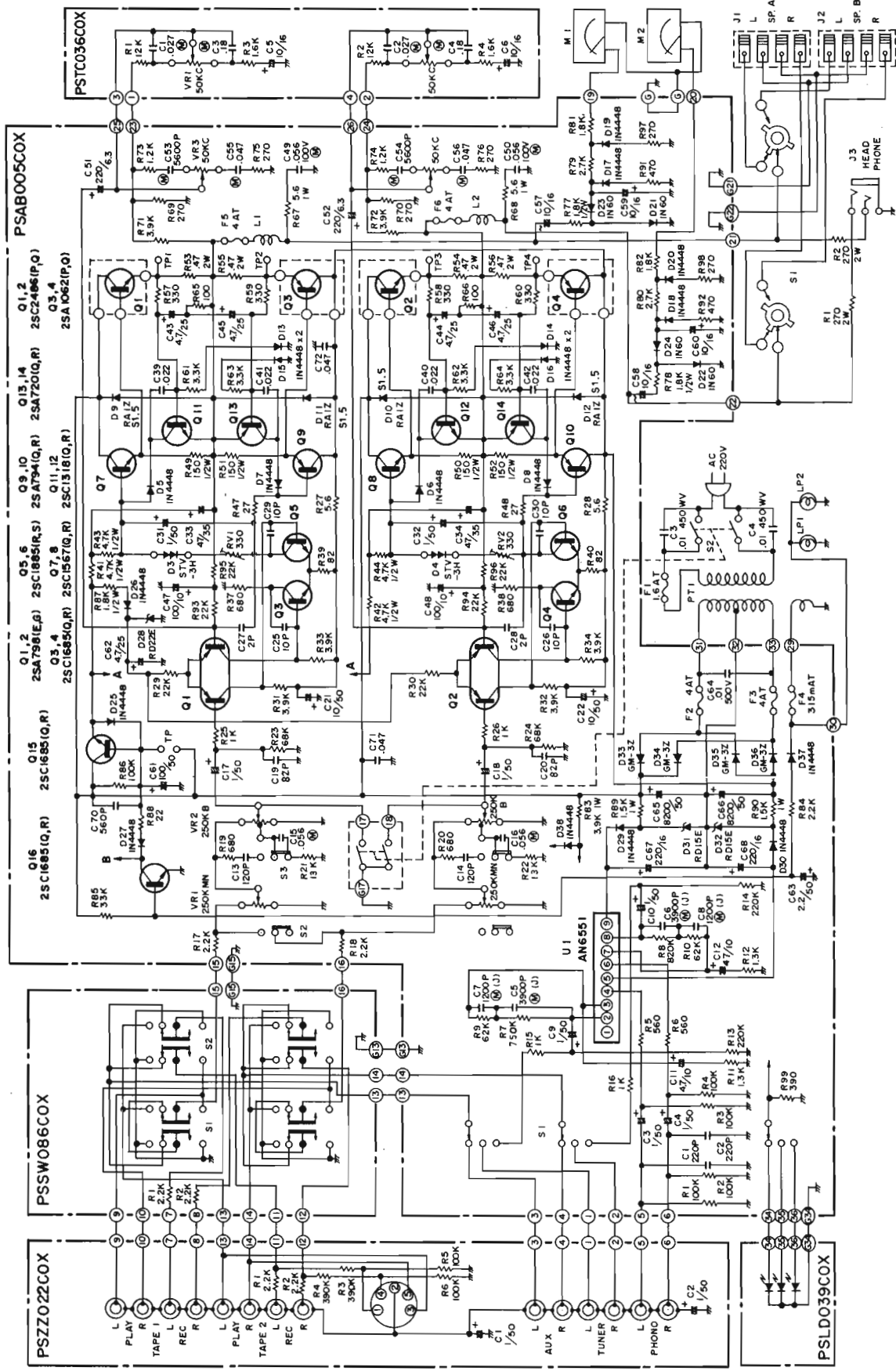
Bias Adjustment

- 1) Connect 8 Ohm resistors to the speaker "A" terminals, and set the Speaker Mode switch to "A" position.
- 2) Turn the Volume control fully counter-clockwise.

- 3) Turn RV1 fully counter-clockwise.
- 4) Set digital voltmeter to most sensitive voltage range. Connect probes across TP1 and TP2 (Voltmeter bias test point, L channel). Turn unit on. Let it idle for 10 seconds. Adjust RV1 for 40mV across the resistors.
- 5) Perform the same procedure for the right channel, except measure voltage across TP 3 and TP4 (Voltmeter bias test point, R channel). Adjustment is made with RV2.
- 6) Leave the amplifier on for about 30 minutes, then recheck measurement. A tolerance of $\pm 25\%$ is acceptable. Readjust if necessary.

SCHEMATIC DIAGRAM: 430A

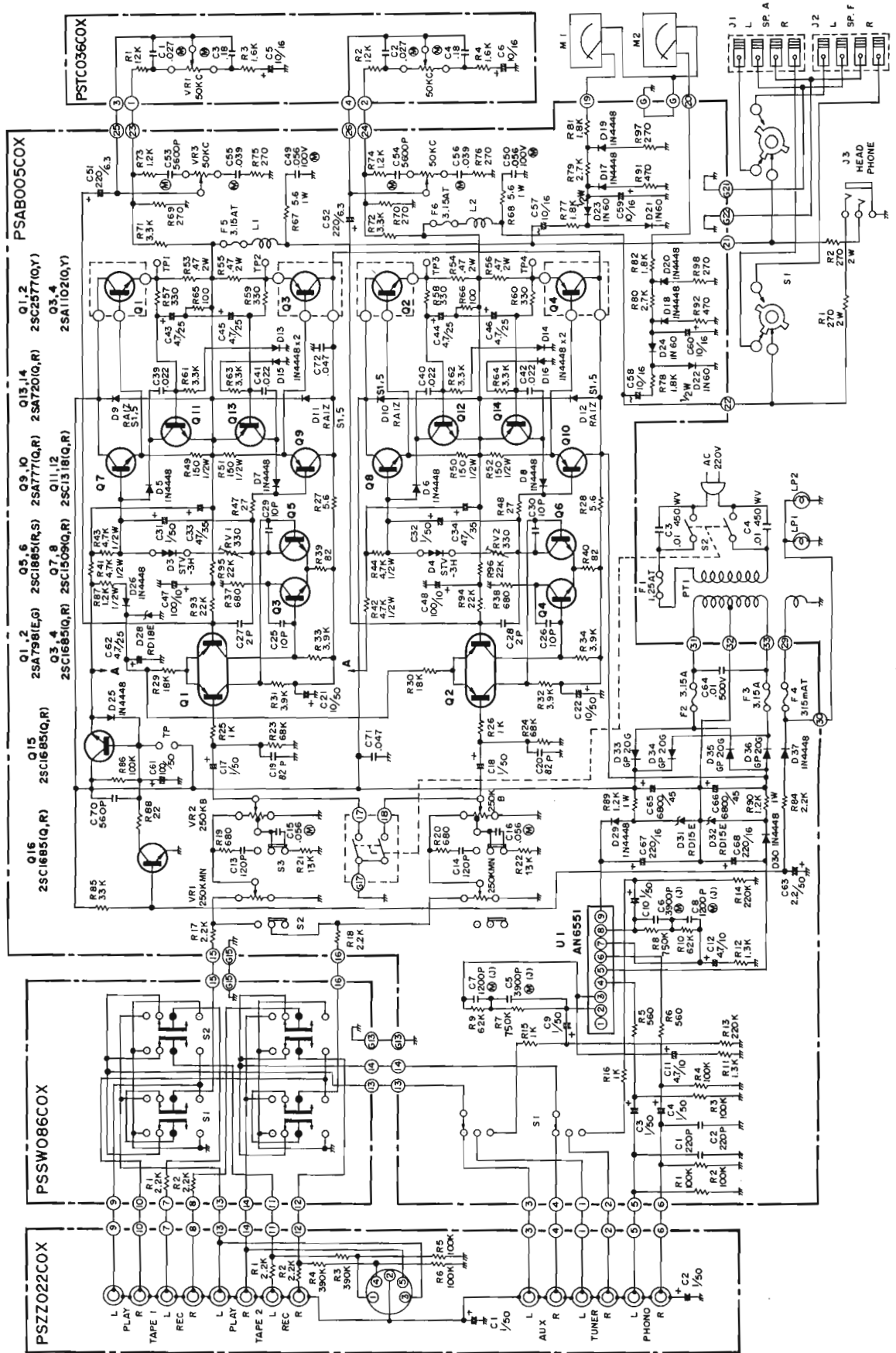
Q1, Q2	2SA798	
Q3, Q4	2SC1685	
Q5, Q6	2SC1885	
Q7, Q8	2SC1567	
Q9, Q10	2SA794	
Q11, Q12	2SC1318	
Q13, Q14	2SA720	
Q15, Q16	2SC1685	
U1	AN6551	
Power Transistors	2SC2486	
Q1, Q2	2SC2486	
Q3, Q4	2SA1062	
Diodes	1N4448, 1N60	
RD22EC, RD15E	RD22EC, RD15E	
STV-3H	STV-3H	
GM-3Z	GM-3Z	
RA1Z	RA1Z	



NOTE: CAPACITOR'S VALUES ARE IN μ F UNLESS OTHERWISE NOTED, P=PICO FARAD.
RESISTOR'S VALUES ARE IN OHM, K=K OHM.

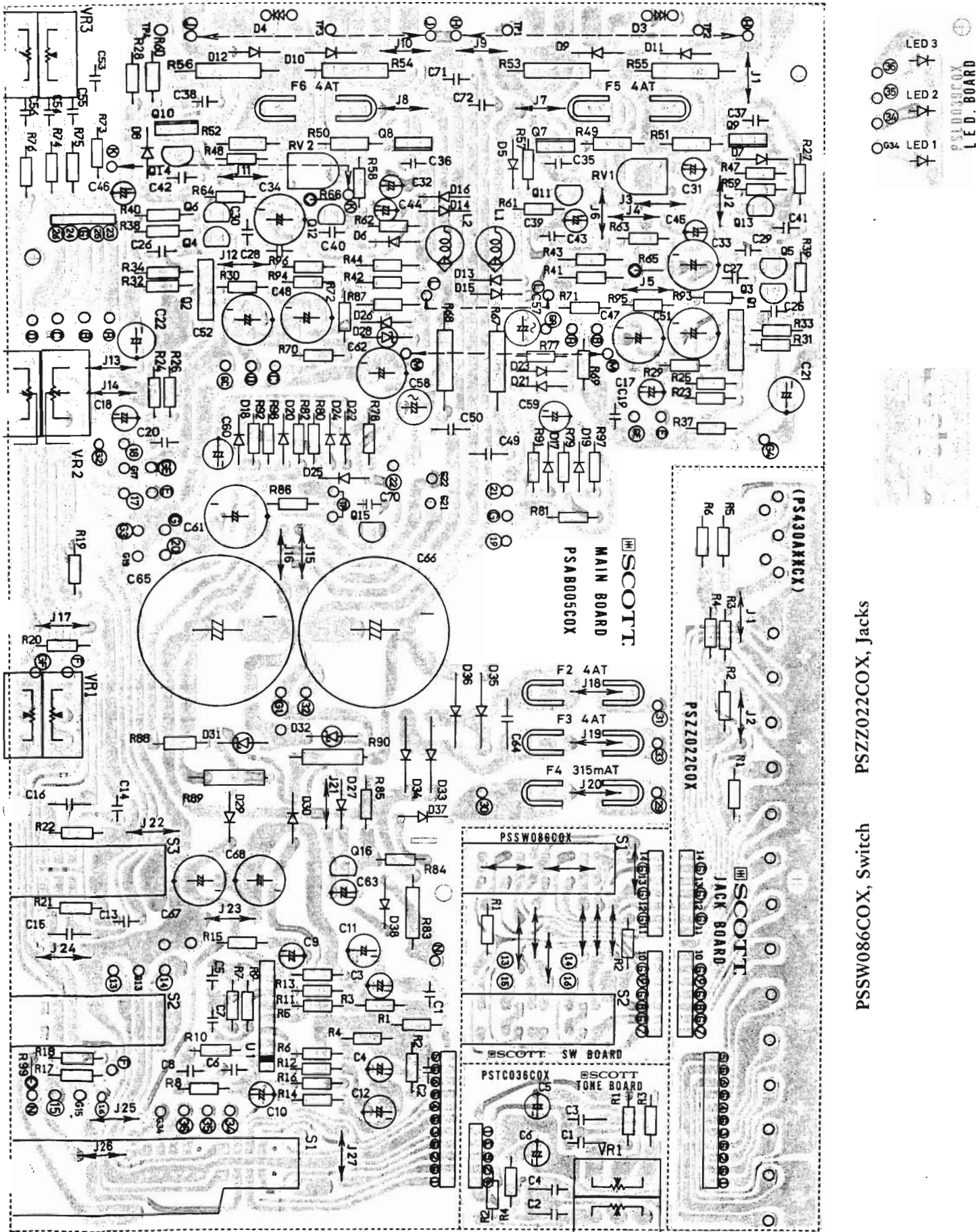
SCHEMATIC DIAGRAM: 410A

Q1,Q2	2SA798	
Q3,Q4	2SC1685	
Q5,Q6	2SC1885	
Q7,Q8	2SC1509	
Q9,Q10	2SA777	
Q11,Q12	2SC1318	
Q13,Q14	2SA720	
Q15,Q16	2SC1685	
U1	AN6551	
Power Transistors		
Q1,Q2	2SC2577	
Q3,Q4	2SA1102	
Diodes		
1N4448, 1N60		
RD18EC, RD15E		
STV-3H		
GP20G		
RA1Z		



NOTE: CAPACITOR'S VALUES ARE IN pF UNLESS OTHERWISE NOTED, P=PICO FARAD.
RESISTOR'S VALUES ARE IN OHM, K=K OHM.

PARTS LOCATION DIAGRAM: 430A/410A



PSAB005COX, Main P.C. Board

PSTC036COX, Tone

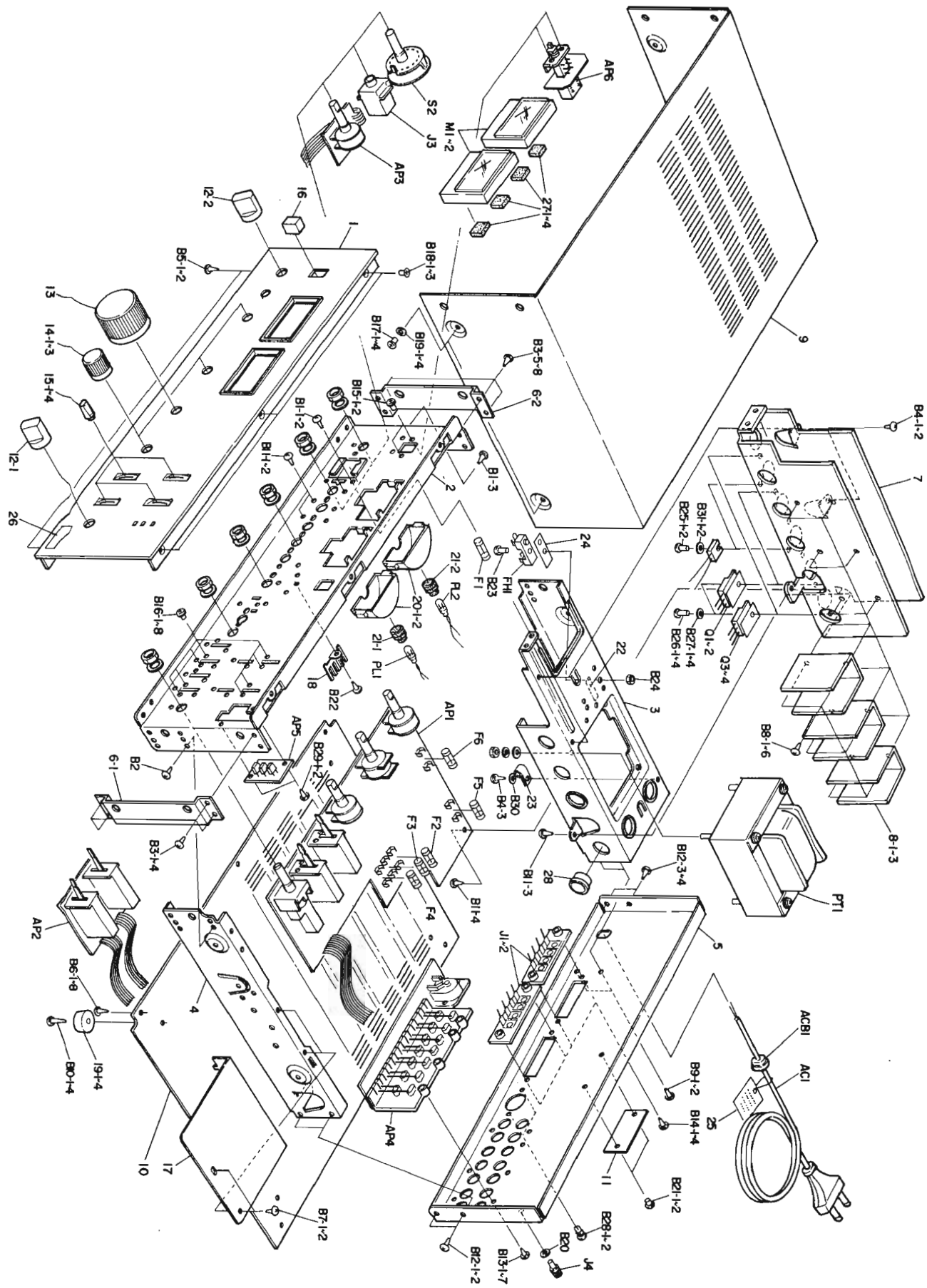
PSLD039COX, LED (430A Only)

PSSW088COX, Switch

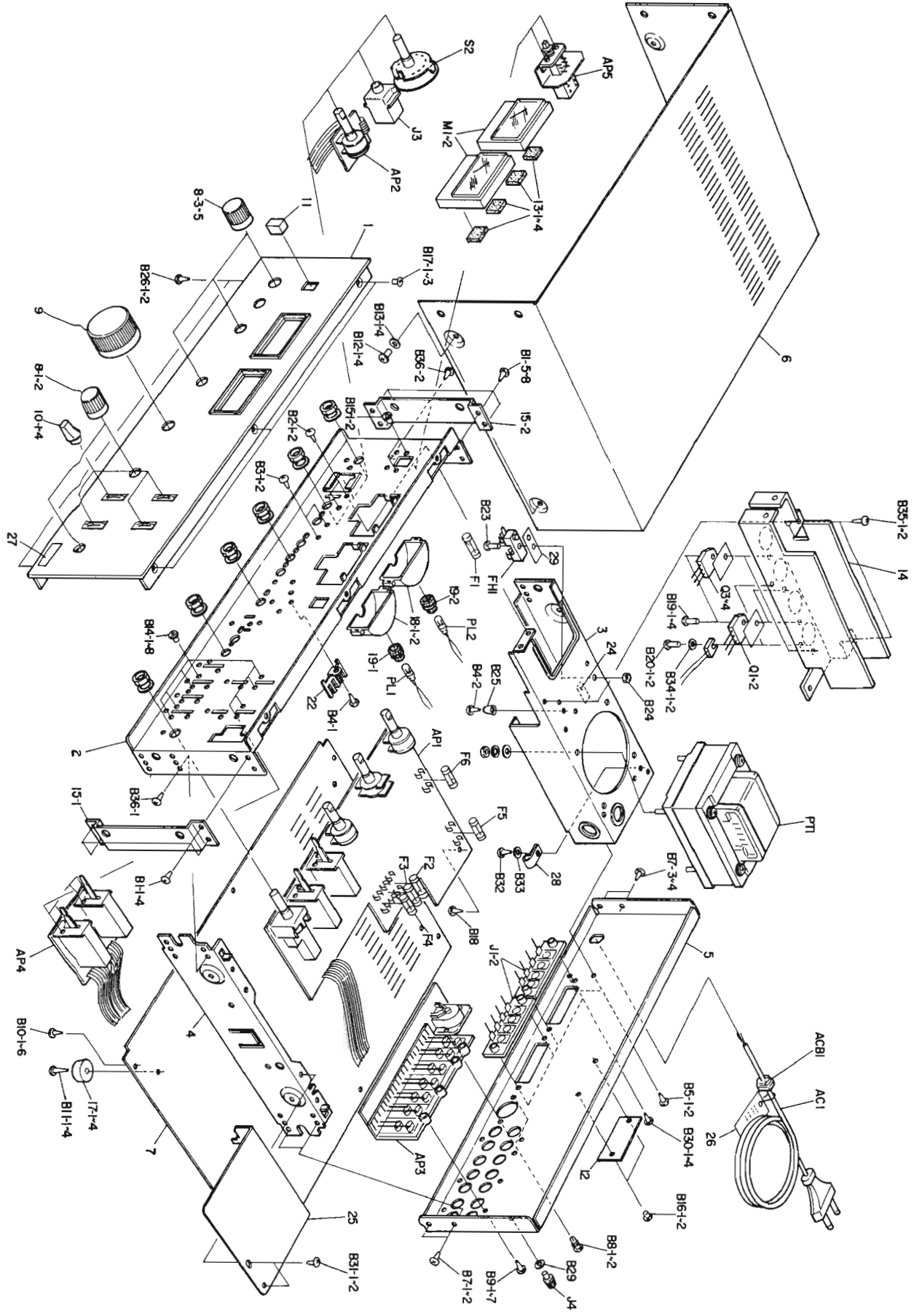
PSZ2022COX, Jacks

PSSW086COX, Switch

EXPLODED VIEW: 430A



EXPLODED VIEW: 410A



REPLACEMENT PARTS LIST: 430A

EXPLODED ASSEMBLY	PART NAME		STOCK NO.	REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
	ELFC. ELEMENTS	AAR38AESC11							Q1	Q2	Q3	Q4	
1		ACAC035FFA		AC CORD ASSY					AC1				1
2		APSLD039AA		P.W.BOARD ASSY.									1
3		APSSW088AA		P.W.BOARD ASSY.									1
4		APS430A*E1		P.W.BOARD ASSY.									1
5		CEAG010ALX		ELYT. CAPACITOR			LMFD 50V		C1	C2			2
6		CNST103MAN		OIL PAPER CAP.					C3	C4			2
7		G430A*E402		WIRES KIT									1
8		QTA1062XAN		TRANSISTOR			2SA1062 P.Q-RANK		Q3	Q4			2
9		QTC2486XAN		TRANSISTOR			2SC2486 P.O-RANK		Q1	Q2			2
10		RG2ANJ2718		M-OXIDE FILM R.			2W 270 OHM 5%		R1	R2			2
11		SR2204107T		ROTARY SWITCH					S2				1
12		TPB83S001Y		PWR. TRANSFORMER					PT1				1
13		VM270NB004		BUSHING					ACR1				1
14		VX432VL002		C-COVER					ZZ1	ZZ2			2
15		YHF1P2001Z		FUSE HOLDER					FH1				1
16		YJS03S016Z		PHONE JACK					J3				1
17		YTD01S002U		TERMINAL					J4				1
18		YTS04S007U		TERMINAL					J1	J2			2
19		ZFRQ16201A		FUSE					F1				1
20		ZFBQ32101A		FUSE					F4				1
21		ZFRQ40203A		FUSE					F2	F3	F5	F6	4
22		ZMD2050K01		METER 78ATOR					M1	M2			2
23		ZPA148103U		LAMP					LP1	LP2			2

EXPLODED ASSEMBLY	PART NAME		STOCK NO.	REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED	
	MECH. ELEMENTS	AAR38AESC12							B24	B28-1	B28-2	B21-1		B21-2
1		AM430A**01		ESCUTCHEON ASSY					1					1
2		BNHCL30NBN		NUT			M3, BS-NI, THIN-TYPE		B24					1
3		BRP30550NB		PAN HEAD RIVET					B28-1	B28-2				2
4		BRU2455XAJ		THIN HD RIVET			2.4 X 5.5 ALUMINUM		B21-1	B21-2				2
5		BSPB3009NN		BIND HEAD SCREW			(+)BIT, M3 X 8 S-NI		B25-1	B25-2				2
6		BSPR5010NB		BIND HEAD SCREW			(+)BIT, M5 X 10 S-BLACK		B17-1	B17-2	B17-3	B17-4		4
7		BSPC3006N7		CEMS SCREW			(+)BIT, M3 X 6 S-ZNCR		B15-1	B15-2	B16-1	B16-2		10
8									B16-3	B16-4	B16-5	B16-6		
9									B16-7	B16-8				
10		BSPC3010N7		CEMS SCREW			(+)BIT, M3 X 10 S-ZNCR		B26-1	B26-2	B26-3	B26-4		4
11		BSPP3010NP		PAN HEAD SCREW			(+)BIT, M3 X 10 PLASTIC		B23					1
12		BTPL3008BB		NAIL TAP SCREW			(+)BIT, M3 X 8 S-BLACK		B12-1	B12-2	B12-3	B12-4		4
13		BTPP3008AB		PAN TAP SCREW			(+)BIT, M3 X 8 S-BLACK		B13-1	B13-2	B13-3	B13-4		11
14									B13-5	B13-6	B13-7	B14-1		
15									B14-2	B14-3	B14-4			
16		BTPS3008TZ		FLAT TAP SCREW			(+)BIT, M3 X 8 S-ZNCR (TAP TITE)		B18-1	B18-2	B18-3			3
17		BTPW3008RB		BRAS. TAP SCREW			(+)BIT, M3 X 8 S-BLACK		B9-1	B9-2				2
18		BTPW3008RJ		BRAS. TAP SCREW					B22					1
19		BTPW3008RZ		BRAS. TAP SCREW			(+)BIT, M3 X 8 S-ZNCR		B1-1~3	B4-1~3	B5-1~2	B2		25
20									B29-1	B29-2	B3-1~8	B6-1		

EXPLODED ASSEMBLY		PART NAME	PART CODE	STOCK NO.						
REMARKS		MECH. ELEMENTS	AA838AFSL2							
I	N	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
1						B6-2	B6-3	B6-4	B6-5	
2						B6-5	B6-7	B6-8	B7-1	
3						B7-2				
4		BTPW3010A2		BRAS. TAP SCREW	(+)BIT, M3 X 10 S-ZNCR	B11-1	B11-2	B11-3	B11-4	10
5						B8-1	B8-2	B8-3	B8-4	
6						B8-5	B8-6			
7		BTPW3010B2		BRAS. TAP SCREW	(+)BIT, M3 X 10 S-ZNCR	B10-1	B10-2	B10-3	B10-4	4
8		BWM30A08SN		FLAT L. WASHER	FLAT LARGE, 3 M/M S-NI	B20	B30			2
9		BWM30705SN		FLAT L. WASHER	FLAT LARGE, 3 M/M S-NI	B27-1	B27-2	B27-3	B27-4	6
10						B31-1	B31-2			
11		BWM50C085B		FLAT L. WASHER	FLAT LARGE, 5 M/M S-BLACK	B19-1	B19-2	B19-3	B19-4	4
12		MB972SE67		REAR PANEL		5				1
13		MB972SL007		FRONT PANEL		2				1
14		MC371S2002		BRACKET		6-1	6-2			2
15		MC865SL002		CHASSIS		3				1
16		ML331S001		TERMINAL		18				1
17		ML765SL002		SHIELD		17				1
18		MN276XA020		KNOB		14-1	14-2	14-3		3
19		MN376AA019		KNOB RS		12-1	12-2			2
20		MN386XA024		KNOB		13				1
21		MS986SL004		BOTTOM PLATE		10				1
22		MU653AX001		HEAT SINK		8-1	8-2	8-3		3
23		MUR52SL003		SIDE BRACKET R		4				1

EXPLODED ASSEMBLY		PART NAME	PART CODE	STOCK NO.						
REMARKS		MECH. ELEMENTS	AA838AFSL2							
I	N	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
1		MJB7540001		HEAT SINK		7				1
2		MUB97SX021		COVER		9				1
3		MVL635GF01		SER.NO. PLATE		11				1
4		VB5324W001		LAMP HOUSE		20-1	20-2			2
5		VF177FR001		BUSHING		28				1
6		VM165RX003		HOLDER		21-1	21-2			2
7		VM280FR001		EQOT		19-1	19-2	19-3	19-4	4
8		VN220SX001		POW KNOB		16				1
9		VN360SX001		KNOB		15-1	15-2	15-3	15-4	4
10		VS227R0001		SHFFT		27-1	27-2	27-3	27-4	4
11		VS325VN001		BARRIER		24				1
12		VS417NN003		CLAMPER.		23				1
13		VVL311GF54		FUSE LABEL		22				1

EXPLODED ASSEMBLY		PART NAME	PART CODE	STOCK NO.						
REMARKS		MECH. ELEMENTS	AM430A**01							
I	N	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
1		ME97FAA104		ESCUTCHEON		1A				1
2		VK132SX004		BUSH LEVER		1C-1	1C-2			2
3		VK132SX007		BUSH		1D-1	1D-2			2
4		VK133SX001		BUSH POWER		1E				1
5		VK165SX004		METER FRAME		18-1	18-2			2
6										
7										

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.									
1	REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS			SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
1		CCFB121K0T		CERAMIC CAP.	120PF	50V	-10, +10% SL	C13	C14			2
2		CCFB221K0T		CERAMIC CAP.	220PF	50V	-10, +10% SL	C1	C2			2
3		CCGB10000T		CERAMIC CAP.	SL 10PF	50V	-0.5, +0.5PF	C25	C26	C29	C30	4
4		CCGB820K0T		CERAMIC CAP.	82PF	50V	-10, +10% SL	C19	C20			2
5		CEAB221ALX		FLYT. CAPACITOR	220MFD	6.3V		C51	C52			2
6		CEAD100NLX		FLYT. CAPACITOR				C57	C58			2
7		CEAD221ALX		FLYT. CAPACITOR	220MFD	16V		C67	C68			2
8		CEAE470ALX		FLYT. CAPACITOR	47MFD	25V		C62				1
9		CEAF470ALX		FLYT. CAPACITOR	47MFD	35V		C33	C34			2
10		CEAG101ALX		FLYT. CAPACITOR	100MFD	50V		C61				1
11		CEQ108220Z		FLYT. CAPACITOR				C65	C66			2
12		CEVC101ALX		FLYT. CAPACITOR				C47	C48			2
13		CEVC470ALX		FLYT. CAPACITOR				C11	C12			2
14		CEVD100ALX		FLYT. CAPACITOR				C59	C60			2
15		CEVE4R7ALX		FLYT. CAPACITOR				C43	C44	C45	C46	4
16		CEVG010ALX		FLYT. CAPACITOR				C10	C17	C18	C3	8
17								C31	C32	C4	C9	
18		CEVG100ALX		FLYT. CAPACITOR				C21	C22			2
19		CEVG2R2ALX		FLYT. CAPACITOR				C63				1
20		CKDF103PEM		CERAMIC CAP.	0.01MFD	500V	-0, +10% E	C64				1
21		CKFR223ZFT		CERAMIC CAP.	0.022MFD	50V	-20, +80% F	C39	C40	C41	C42	4
22		CKFR473ZFT		CERAMIC CAP.	0.047MFD	50V	-20, +80% F	C71	C72			2
23		CKGR561KBT		CERAMIC CAP.	560PF	50V	-10, +10% B	C70				1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.									
1	REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS			SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
1		CQMB122JEH		MYLAR CAPACITOR	1200PF	50V	-5, +5%	C7	C8			2
2		CQMB392JEH		MYLAR CAPACITOR	3900PF	50V	-5, +5%	C5	C6			2
3		CQMB473KTH		MYLAR CAPACITOR	0.047MFD	50V	-10, +10%	C55	C56			2
4		CQMB562KTH		MYLAR CAPACITOR	5600PF	50V	-10, +10%	C53	C54			2
5		CQMB563KTH		MYLAR CAPACITOR	0.056MFD	50V	-10, +10%	C15	C16			2
6		CQMC563KEH		MYLAR CAPACITOR				C49	C50			2
7		LA31E1024A		CHOKO COIL				L1	L2			2
8		MW201BS001		TERMINAL								25
9		MW401CX006		SHOT JAMPER								24
10		PSAB005C0X		PRINTED W. BOARD								1
11		PS430A**CX		PRINTED W. BOARD								1
12		QDGIN60XXT		GERMANIUM DIODE	NO-RANK			D21	D22	D23	D24	4
13		QDSGM3ZXXD		SILICON DIODE	GM32	NO-RANK		D33	D34	D35	D36	4
14		QDSN448XZ		SILICON DIODE	1N4448	VRM=100V	NO-RANK	D13	D14	D15	D16	19
15								D17	D18	D19	D20	
16								D25	D26	D27	D29	
17								D30	D37	D38	D5	
18								D6	D7	D8		
19		QDSRA1ZXXD		SILICON DIODE	RA1Z	NO-RANK		D10	D11	D12	D9	4
20		QDZRD15ECA		ZENER DIODE	RD15E(C)	VZ=14.7-16.5	C-RANK	D31	D32			2
21		QDZRD22ECA		ZENER DIODE	RD22EC	VZ=22-24.5	C-RANK	D28				1
22		QQM06551BN		J.C.				U1				1
23		QT40720XBM		TRANSISTOR	ZSA720	Q,R-RANK		D13	D14			2

EXPLODED ASSEMBLY		PART NAME	PART CODE	STOCK NO.						
REMARKS		PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
1		QT40794XAN		TRANSISTOR		Q10	Q9			2
2		QT40798XEE		TRANSISTOR	25A798 F.G-RANK BREAK VOLTAGE=70V	Q1	Q2			2
3		QTC1318XDN		TRANSISTOR	25C1318 Q.R-RANK	Q11	Q12			2
4		QTC1567XAN		TRANSISTOR		Q7	Q8			2
5		QTC1685XAN		TRANSISTOR	25C1685 Q.R-RANK	Q15	Q16	Q3	Q4	4
6		QTC1885XAN		TRANSISTOR	25C1885 R.S-RANK	Q5	Q6			2
7		QVESTV4MXD		VARISTOR	STV-3H O.Y-RANK (VF:1.60V-1.74V)	Q3	Q4			2
8		RD25PJ102X		CARBON FILM R.	0.25W 1K OHM 5%	R15	R16	R25	R26	4
9		RD25PJ104X		CARBON FILM R.	0.25W 100K OHM 5%	R1	R2	R3	R4	5
10						R86				
11		RD25PJ122X		CARBON FILM R.	0.25W 1.2K OHM 5%	R73	R74			2
12		RD25PJ132X		CARBON FILM R.	0.25W 1.3K OHM 5%	R11	R12			2
13		RD25PJ133X		CARBON FILM R.	0.25W 13K OHM 5%	R21	R22			2
14		RD25PJ182X		CARBON FILM R.	0.25W 1.8K OHM 5%	R81	R82			2
15		RD25PJ220X		CARBON FILM R.	0.25W 22 OHM 5%	R88				1
16		RD25PJ222X		CARBON FILM R.	0.25W 2.2K OHM 5%	R17	R18	R84		3
17		RD25PJ223X		CARBON FILM R.	0.25W 22K OHM 5%	R29	R30	R93	R94	6
18						R95	R96			
19		RD25PJ224X		CARBON FILM R.	0.25W 220K OHM 5%	R13	R14			2
20		RD25PJ271X		CARBON FILM R.	0.25W 270 OHM 5%	R69	R70	R75	R76	6
21						R97	R98			
22		RD25PJ272X		CARBON FILM R.	0.25W 2.7K OHM 5%	R79	R80			2
23		RD25PJ322X		CARBON FILM R.	0.25W 3.2K OHM 5%	R61	R62	R63	R64	4

EXPLODED ASSEMBLY		PART NAME	PART CODE	STOCK NO.						
REMARKS		PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
1		RD25PJ333X		CARBON FILM R.	0.25W 33K OHM 5%	R85				1
2		RD25PJ392X		CARBON FILM R.	0.25W 3.9K OHM 5%	R31	R32	R33	R34	6
3						R71	R72			
4		RD25PJ471X		CARBON FILM R.	0.25W 470 OHM 5%	R91	R92			2
5		RD25PJ561X		CARBON FILM R.	0.25W 560 OHM 5%	R5	R6			2
6		RD25PJ623X		CARBON FILM R.	0.25W 62K OHM 5%	R10	R9			2
7		RD25PJ681X		CARBON FILM R.	0.25W 680 OHM 5%	R19	R20			2
8		RD25PJ683X		CARBON FILM R.	0.25W 68K OHM 5%	R23	R24			2
9		RD25PJ754X		CARBON FILM R.	0.25W 750K OHM 5%	R7	R8			2
10		RD25TJ270X		CARBON FILM R.	0.25W 27 OHM 5%	R47	R48			2
11		RD25TJ331X		CARBON FILM R.	0.25W 330 OHM 5%	R57	R58	R59	R60	4
12		RD25TJ586X		CARBON FILM R.	0.25W 5.6 OHM 5%	R27	R28			2
13		RD25TJ681X		CARBON FILM R.	0.25W 680 OHM 5%	R37	R38			2
14		RD25TJ820X		CARBON FILM R.	0.25W 82 OHM 5%	R39	R40			2
15		RD25VJ101X		CARBON FILM R.	0.25W 100 OHM 5%	R65	R66			2
16		RD25VJ391X		CARBON FILM R.	0.25W 390 OHM 5%	R99				1
17		RF025KR47B		WIRE WOUND R.	2W 0.47 OHM 10%	R53	R54	R55	R56	4
18		RGHANJ151B		M-OXIDE FILM R.	1/2W 150 OHM 5%	R49	R50	R51	R52	4
19		RGHANJ182B		M-OXIDE FILM R.	1/2W 1.8K OHM 5%	R77	R78			2
20		RGHANJ472B		M-OXIDE FILM R.	1/2W 4.7K OHM 5%	R41	R42	R43	R44	4
21		RGHARJ182B		M-OXIDE FILM R.		R87				1
22		RG1ARJ152B		M-OXIDE FILM R.		R89	R90			2
23		RG1ARJ392B		M-OXIDE FILM R.		R83				1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.								
1/4	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED	
		P.W. BOARD ASSY.	AP5AR005ED								
1		RPJNR33102		SEMI-FIXED VR.		RV1	RV2				2
2		RVQA254R05		VR.		VR2					1
3		RVQA254X04		VR.		VR1					1
4		RVQA503N02		VR.		VR3					1
5		RX1ARJ5R6B		M-OXIDE FILM R.		R67	R68				2
6		SH040305ZB		SLIDE, ROTARY SW		S1					1
7		SL020226ZN		LEVER SWITCH		S2	S3				2
8		W5G916JJJJ		SHIELDED WIRE		NO6					1
9		WTG014EFFX		SOLID WIRE		NO10					1
10		WTG510EFFX		SOLID WIRE		NO11					1
11		WTG608EFFX		SOLID WIRE		NO12					1
12		WTG710EFFX		SOLID WIRE		NO13					1
13		WTG815EFFX		SOLID WIRE		NO14					1
14		WTH013FLXX		SOLID WIRE		NO16	NO17				2
15		WTH024FLXX		SOLID WIRE		NO18					1
16		WTJ018EMXX		SOLID WIRE		NO15					1
17		WTM909EFFX		SOLID WIRE		NO9					1
18		WTM910EFFX		SOLID WIRE		NO8					1
19		WWF217JXJJ		SHIELDED WIRE		NO1					1
20		WWF413JXJJ		SHIELDED WIRE		NO2					1
21		WWF518JXJJ		SHIELDED WIRE		NO3					1
22		WWF619JXJJ		SHIELDED WIRE		NO4					1
23		YHF0P0001Z		FUSE HOLDER		FH2-1	FH2-2	FH3-1	FH3-2		10

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.								
1/4	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED	
		P.W. BOARD ASSY.	AP5LD039AA								
1		P5LD039COX		PRINTED W. BOARD							1
2		QLRLV217RN		L.F.D.	LN217RP RED	LED1	LED2	LED3			3
3		WTG017BKXX		SOLID WIRE		NO1					1
4		WTG117BKXX		SOLID WIRE		NO2					1
5		WTG217BKXX		SOLID WIRE		NO3					1
6		WTG317BKXX		SOLID WIRE		NO4					1
7											
8											
9											
10											

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.								
1/4	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED	
		P.W. BOARD ASSY.	AP5SW086BA								
1		MW401CX006		SHOT JAMPER							9
2		P5SW086COX		PRINTED W. BOARD							1
3		RD25PJ222X		CARBON FILM R.	0.25k 2.2K OHM 5%	R1	R2				2
4		SL0403077N		LEVER SWITCH		S1	S2				2
5											
6											
7											
8											
9											
10											

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.			QTY USED
REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	
1	M55455S007		SHIELD		SL1	1
2	P55W088C0X		PRINTED W.B.OARD			1
3	SP01AAS09A		PUSH SWITCH		S1	1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.			QTY USED
REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	
1	KT430A*FCX		OWNER'S MANUAL			1
2	KW000123BX		WARRANTY CARD			1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.			QTY USED
REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	
1	CFVD100ALX		FLYT. CAPACITOR		C5 C6	2
2	CQMB184KEH		MYLAR CAPACITOR	0.18MFD 50V -10, +10%	C3 C4	2
3	CQMA273KTH		MYLAR CAPACITOR	0.027MFD 50V -10, +10%	C1 C2	2
4	PSTC036C0X		PRINTED W.B.OARD			1
5	RD25PJ123X		CARBON FILM R.	0.25W 12K OHM 5%	R1 R2	2
6	RD25PJ162X		CARBON FILM R.	0.25W 1.6K OHM 5%	R3 R4	2
7	RVA503V02		VR.		VR1	1
8	Z7200C0127		PC JOINT		JU4	1
9						
10						

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.			QTY USED
REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	
1	MW401CX006		SHOT JAMPER			2
2	P5A7022C0X		PRINTED W.B.OARD			1
3	RD25PJ104X		CARBON FILM R.	0.25W 100K OHM 5%	R5 R6	2
4	RD25PJ222X		CARBON FILM R.	0.25W 2.2K OHM 5%	R1 R2	2
5	RD25PJ394X		CARBON FILM R.	0.25W 390K OHM 5%	R3 R4	2
6	YJD05S011Z		5P DIN JACK		J4	1
7	YJP06S016U		4P-PIN JACK		J1 J2	2
8	YJP06S007U		6P-PIN JACK		J3	1
9						
10						

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.			QTY USED
REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	
1	APSAB005ED		P.W.B.OARD ASSY.			1
2	AP55W086RA		P.W.B.OARD ASSY.			1
3	APSTC036AD		P.W.B.OARD ASSY.			1
4	APSZ2022RA		P.W.B.OARD ASSY.			1
5						
6						
7						
8						
9						
10						

410A

EXPLODED ASSEMBLY	PART NAME		PART CODE		STOCK NO.		REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
	ELFC.	ELEMENTS	AA	B37AE	CL1											
1		ACAC035EEA							AC CORD ASSY			AC1				
2		APSSWD88AA							P.W. BOARD ASSY.							
3		APS410A*E1							P.W. BOARD ASSY.							
4		CEAG010ALX							FLYT. CAPACITOR	1MFD 50V	C1	C2				
5		CNST103MAN							OIL PAPER CAP.		C3	C4				
6		G410A*EA01							WIRES KIT							
7		QTA1102XAD							TRANSISTOR		Q3	Q4				
8		QTC2577XAD							TRANSISTOR		Q1	Q2				
9		RG2ANJ271B							M-OXIDE FILM R.	2W 270 OHM 5%	R1	R2				
10		SR0204109T							ROTARY SWITCH		S2					
11		TPAB3S002Y							PWR. TRANSFORMER		PT1					
12		VM270NR004							BUSHING		ACB1					
13		VX432VL002							C-COVER		ZZ1	ZZ2				
14		YHF1P2001Z							FUSE HOLDER		FH1					
15		YJS03S016Z							PHONE JACK		J3					
16		YTD01S002U							TERMINAL		J4					
17		YTS04S007U							TERMINAL		J1	J2				
18		ZFBQ13201A							FUSE		F1					
19		ZFBQ32101A							FUSE		F4					
20		ZFBQ32201A							FUSE		F2	F3	F5	F6		
21		ZMD2050K01							METER 78A70R		M1	M2				
22		ZPA148103U							LAMP		LP1	LP2				

EXPLODED ASSEMBLY	PART NAME		PART CODE		STOCK NO.		REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
	MECH.	ELEMENTS	AA	B37AE	CL2											
1		AM410A**01							ESCUTCHEON ASSY			1				
2		RNHCL30NSN							NUT	M3, S-NI, THIN-TYPE	B24					
3		RRP30550NR							PAN HEAD RIVET		B8-1	B8-2				
4		RRU2455XAJ							THIN HD RIVET	2.4 X 5.5 ALUMINUM	B16-1	B16-2				
5		RSPB300RNN							RIND HEAD SCREW	(+) BIT, M3 X 8 S-NI	B20-1	B20-2				
6		RSPR3010NN							RIND HEAD SCREW	(+) BIT, M3 X 10 S-NI	B19-1	B19-2	B19-3	B19-4		
7		RSPC3006NZ							CEMS SCREW	(+) BIT, M3 X 6 S-ZNCR	B14-1	B14-2	B14-3	B14-4		
8											B14-5	B14-6	B14-7	B14-8		
9											B15-1	B15-2				
10		RSPD3010NP							PAN HEAD SCREW	(+) BIT, M3 X 10 PLASTIC	B23					
11		RTPR5010TR							RIND HD SCREW		B12-1	B12-2	B12-3	B12-4		
12		RTPL300RBR							NAIL TAP SCREW	(+) BIT, M3 X 8 S-BLACK	B7-1	B7-2	B7-3	B7-4		
13		RTPP300RAB							PAN TAP SCREW	(+) BIT, M3 X 8 S-BLACK	B30-1	B30-2	B30-3	B30-4		
14											B9-1	B9-2	B9-3	B9-4		
15											B9-5	B9-6	B9-7			
16		RTPS300RTZ							FLAT TAP SCREW	(+) BIT, M3 X 8 S-ZNCR (TAP TITE)	B17-1	B17-2	B17-3			
17		RTPW3006BZ							BRAS. TAP SCREW	(+) BIT, M3 X 6 S-ZNCR	B36-1	B36-2				
18		RTPW300RAZ							BRAS. TAP SCREW	(+) BIT, M3 X 8 S-ZNCR	B18	B3-1	B3-2			
19		RTPW300RBR							BRAS. TAP SCREW	(+) BIT, M3 X 8 S-BLACK	B5-1	B5-2				
20		RTPW300RBJ							BRAS. TAP SCREW		B4-1	B4-2				
21		RTPW300RBZ							BRAS. TAP SCREW	(+) BIT, M3 X 8 S-ZNCR	B1-1-8		B10-1-4			

EXPLODED ASSEMBLY		PART NAME		PART CODE		STOCK NO.					
MECH. ELEMENTS		AAR37AE5CL2									
LINE	REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED	
1						B10-5	B10-6	B2-1	B2-2		
2						B26-1	B26-2	B31-1	B31-2		
3						B32	B35-1	B35-2			
4		ATPW3012BZ		RRAS, TAP SCREW	(+)BIT, M3 X 12 S-ZNCR	B11-1	B11-2	B11-3	B11-4		4
5		RWM30A0RSN		FLAT L. WASHER	FLAT LARGE, 3 M/M S-NI	B29	B33				2
6		RWM3070FSN		FLAT L. WASHER	FLAT LARGE, 3 M/M S-VI	B34-1	B34-2				2
7		RWM50C0RSA		FLAT L. WASHER	FLAT LARGE, 5 M/M S-BLACK	B13-1	B13-2	B13-3	B13-4		4
8		RWT30602BN		GND. WASHER	3 M/M RS-NI	B25					1
9		MB972SF070		REAR PANEL		5					1
10		MB972SL007		FRONT PANEL		2					1
11		MC371S2002		BRACKET		15-1	15-2				2
12		ML331SS001		TERMINAL		22					1
13		ML765SL003		SHIELD		25					1
14		MN276XAD20		KNOB		B-1	B-2	B-3	B-4		5
15						B-5					
16		MY386XA024		KNOB		9					1
17		MS976SL001		BOTTOM PLATE		7					1
18		MU752SL001		SIDE PLATE		4					1
19		MU764AM01		HEAT SINK		14					1
20		MU765SL001		CHASSIS		3					1
21		MUB97SX022		COVER		6					1
22		MVL635GF01		SER. NO. PLATE		12					1
23		VA532AW001		LAMP HOUSE		18-1	18-2				2

EXPLODED ASSEMBLY		PART NAME		PART CODE		STOCK NO.					
MECH. ELEMENTS		AAR37AE5CL2									
LINE	REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED	
1		VM165RX003		HOLDER		19-1	19-2				2
2		VM280FR001		FOOT		17-1	17-2	17-3	17-4		4
3		VN220SX001		POW KNOB		11					1
4		VN260SX001		KNOB		10-1	10-2	10-3	10-4		4
5		VS227R001		SHFFT		13-1	13-2	13-3	13-4		4
6		VS325VN001		BARrier		29					1
7		VS417NN003		CLAMPER		28					1
8		VVL311GF60		LABEL		24					1

EXPLODED ASSEMBLY		PART NAME		PART CODE		STOCK NO.					
FSCUTCHEFN ASSY		AM410A**01									
LINE	REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED	
1		ME97FAA105		FSCUTCHEFN		1-A					1
2		VK132SX004		RUSH LEVER		1-B-1	1-B-2				2
3		VK132SX007		RUSH		1-E-1	1-E-2				2
4		VK133SX001		RUSH POWER		1-C					1
5		VK165SX004		METER FRAME		1-D-1	1-D-2				2

EXPLODED ASSEMBLY		PART NAME		PART CODE		STOCK NO.					
PRINTED MATTERS		AAR37AE5CL3									
LINE	REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED	
1		KT410AF0X		OWNER'S MANUAL							1
2		KW000123RX		WARRANTY CARD							1
3											

EXPLODED ASSEMBLY	PART NAME		PART CODE	STOCK NO.	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	QTY USED
	P. W. BOARD ASSY.	AP5A8005GD									
1		CCFR121KOT						CERAMIC CAP.	120PF 50V -10, +10% SL	C13 C14	2
2		CCFB221KOT						CERAMIC CAP.	220PF 50V -10, +10% SL	C1 C2	2
3		CCGB100DOT						CERAMIC CAP.	SL 10PF 50V -0.5, +0.5PF	C25 C26 C29 C30	4
4		CCGB820KOT						CERAMIC CAP.	82PF 50V -10, +10% SL	C19 C20	2
5		CEAR221ALX						FLYT. CAPACITOR	220MFD 6.3V	C51 C52	2
6		CEAD100NLX						FLYT. CAPACITOR		C57 C58	2
7		CEAD221ALX						FLYT. CAPACITOR	220MFD 16V	C67 C68	2
8		CEAE470ALX						FLYT. CAPACITOR	47MFD 25V	C62	1
9		CEAF470ALX						FLYT. CAPACITOR	47MFD 35V	C33 C34	2
10		CEAG101ALX						FLYT. CAPACITOR	100MFD 50V	C61	1
11		CEQIU6820I						FLYT. CAP		C65 C66	2
12		CEVC101ALX						FLYT. CAPACITOR		C47 C48	2
13		CEVC470ALX						FLYT. CAPACITOR		C11 C12	2
14		CEVD100ALX						FLYT. CAPACITOR		C59 C60	2
15		CEVE4R7ALX						FLYT. CAPACITOR		C43 C44 C45 C46	4
16		CEVG010ALX						FLYT. CAPACITOR		C10 C17 C18 C3	8
17										C31 C32 C4 C9	
18		CEVG100ALX						FLYT. CAPACITOR		C21 C22	2
19		CEVG2R2ALX						FLYT. CAPACITOR		C63	1
20		CKDE103PEM						CERAMIC CAP.	0.01MFD 500V -0, +10% F	C64	1
21		CKFB2237FT						CERAMIC CAP.	0.022MFD 50V -20, +80% F	C39 C40 C41 C42	4
22		CKFB4737FT						CERAMIC CAP.	0.047MFD 50V -20, +80% F	C71 C72	2
23		CKGB561KBT						CERAMIC CAP.	560PF 50V -10, +10% B	C70	1

EXPLODED ASSEMBLY	PART NAME		PART CODE	STOCK NO.	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	QTY USED
	P. W. BOARD ASSY.	AP5A8005GD									
1		CQMB122JEH						MYLAR CAPACITOR	1200PF 50V -5, +5%	C7 C8	2
2		CQMR392JFH						MYLAR CAPACITOR	3900PF 50V -5, +5%	C5 C6	2
3		CQMR473KTH						MYLAR CAPACITOR	0.047MFD 50V -10, +10%	C55 C56	2
4		CQMB562KTH						MYLAR CAPACITOR	5600PF 50V -10, +10%	C53 C54	2
5		CQMB563KTH						MYLAR CAPACITOR	0.056MFD 50V -10, +10%	C15 C16	2
6		CQMC563KEH						MYLAR CAPACITOR		C49 C50	2
7		LA3LF1024A						CHOKE COIL		L1 L2	2
8		MW201BS001						TERMINAL			21
9		MW401CX006						SHOT JAMPER			24
10		PSA8005COX						PRINTED W. BOARD			1
11		PS430A**CX						PRINTED W. BOARD			1
12		QDG1N50XXT						GERMANIUM DIODE	NO-RANK	D21 D22 D23 D24	4
13		QDSGP20GXG						SILICON DIODE		D33 D34 D35 D36	4
14		QDSN4448XZ						SILICON DIODE	1N4448 VRM=100V NO-RANK	D13 D14 D15 D16	17
15										D17 D18 D19 D20	
16										D25 D26 D29 D30	
17										D37 D5 D6 D7	
18										D8	
19		QDSRA1ZXXD						SILICON DIODE	RA1Z NO-RANK	D10 D11 D12 D9	4
20		QDZRD15FCA						ZENER DIODE	RD15FC VZ=14.7-16.5 G-RANK	D31 D32	2
21		QDZRD18ECA						ZENER DIODE	RD18FC VZ=18-20.3 C-RANK	D28	1
22		QQM06551BN						I.C.		U1	1
23		QT40720XBN						TRANSISTOR	ZSA720 Q, R-RANK	Q13 Q14	2

EXPLODED ASSEMBLY	PART NAME		PART CODE		STOCK NO.		REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
	P.W.H06RD	ASSY.	AP5AR005GD													
1								QTA0777XAN		TRANSISTOR	25A777 R,0-RANK	Q10	Q9			2
2								QTA0798YEF		TRANSISTOR	25A798 F,G-RANK BREAK VOLTAGE=70V	Q1	Q2			2
3								QTC1318YDN		TRANSISTOR	25C1318 Q,R-RANK	Q11	Q12			2
4								QTC1505XBN		TRANSISTOR	25C1509 Q,R-RANK	Q7	Q8			2
5								QTC1695XAN		TRANSISTOR	25C1685 Q,R-RANK	Q15	Q16	Q3	Q4	4
6								QTC1885XAN		TRANSISTOR	25C1885 R,S-PANK	Q5	Q6			2
7								QVF5TV3HXD		VARIABLE	STV-3H 0,Y-RANK (VF:1.60V-1.74V)	Q3	Q4			2
8								RD25PJ102X		CARBON FILM R.	0.25W 1K OHM 5%	R15	R16	R25	R26	4
9								RD25PJ104X		CARBON FILM R.	0.25W 100K OHM 5%	R1	R2	R3	R4	5
10												R86				
11								RD25PJ122X		CARBON FILM R.	0.25W 1.2K OHM 5%	R73	R74			2
12								RD25PJ132X		CARBON FILM R.	0.25W 1.3K OHM 5%	R11	R12			2
13								RD25PJ133X		CARBON FILM R.	0.25W 13K OHM 5%	R21	R22			2
14								RD25PJ182X		CARBON FILM R.	0.25W 1.8K OHM 5%	R81	R82			2
15								RD25PJ183X		CARBON FILM R.	0.25W 18K OHM 5%	R29	R30			2
16								RD25PJ220X		CARBON FILM R.	0.25W 22 OHM 5%	R88				1
17								RD25PJ222X		CARBON FILM R.	0.25W 2.2K OHM 5%	R17	R18	R84		3
18								RD25PJ223X		CARBON FILM R.	0.25W 22K OHM 5%	R93	R94	R95	R96	4
19								RD25PJ224X		CARBON FILM R.	0.25W 220K OHM 5%	R13	R14			2
20								RD25PJ271X		CARBON FILM R.	0.25W 270 OHM 5%	R69	R70	R75	R76	6
21												R97	R98			
22								RD25PJ272X		CARBON FILM R.	0.25W 2.7K OHM 5%	R79	R80			2
23								RD25PJ332X		CARBON FILM R.	0.25W 3.3K OHM 5%	R61	R62	R63	R64	6

EXPLODED ASSEMBLY	PART NAME		PART CODE		STOCK NO.		REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
	P.W.R04RD	ASSY.	AP5AR005GD													
1												R71	R72			
2								RD25PJ333X		CARBON FILM R.	0.25W 33K OHM 5%	R85				1
3								RD25PJ392X		CARBON FILM R.	0.25W 3.9K OHM 5%	R31	R32	R33	R34	4
4								RD25PJ471X		CARBON FILM R.	0.25W 470 OHM 5%	R91	R92			2
5								RD25PJ561X		CARBON FILM R.	0.25W 560 OHM 5%	R5	R6			2
6								RD25PJ623X		CARBON FILM R.	0.25W 62K OHM 5%	R10	R9			2
7								RD25PJ681X		CARBON FILM R.	0.25W 680 OHM 5%	R19	R20			2
8								RD25PJ683X		CARBON FILM R.	0.25W 68K OHM 5%	R23	R24			2
9								RD25PJ754X		CARBON FILM R.	0.25W 750K OHM 5%	R7	R8			2
10								RD25TJ270X		CARBON FILM R.	0.25W 27 OHM 5%	R47	R48			2
11								RD25TJ331X		CARBON FILM R.	0.25W 330 OHM 5%	R57	R58	R59	R60	4
12								RD25TJ5P6X		CARBON FILM R.	0.25W 5.6 OHM 5%	R27	R28			2
13								RD25TJ681X		CARBON FILM R.	0.25W 680 OHM 5%	R37	R38			2
14								RD25TJ820X		CARBON FILM R.	0.25W 82 OHM 5%	R39	R40			2
15								RD25VJ101X		CARBON FILM R.	0.25W 100 OHM 5%	R65	R66			2
16								RF02SKR47B		WIRE WOUND R.	2W 0.47 OHM 10%	R53	R54	R55	R56	4
17								RGHANJ151B		M-OXIDE FILM R.	1/2W 150 OHM 5%	R49	R50	R51	R52	4
18								RGHANJ182B		M-OXIDE FILM R.	1/2W 1.8K OHM 5%	R77	R78			2
19								RGHANJ472B		M-OXIDE FILM R.	1/2W 4.7K OHM 5%	R41	R42	R43	R44	4
20								RGHANJ122B		M-OXIDE FILM R.		R87				1
21								RG1ARJ122B		M-OXIDE FILM R.		R89	R90			2
22								RPJNB33102		SEMI-FIXED VR.		RV1	RV2			2
23								RV08254805		VR.		VR2				1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.				
REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.		QTY USED
	MW401CX006		SHOT JAMPER				5
	PSSW086C0X		PRINTED W. BOARD				1
	RD25PJ222X		CARBON FILM R.	0.25W 2.2K OHM 5%	R1	R2	2
	SI040307ZN		LEVER SWITCH		S1	S2	2

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.				
REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.		QTY USED
	MS5455S002		SHIELD		S1		1
	PSSW086C0X		PRINTED W. BOARD				1
	SP01A4509A		PUSH SWITCH		S1		1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.				
REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.		QTY USED
	CFVD1C00ALX		FLYT. CAPACITOR		C5	C6	2
	CQMB1R4YFH		MYLAR CAPACITOR	0.18MFD 50V -10, +10%	C3	C4	2
	CQMB273KTH		MYLAR CAPACITOR	0.027MFD 50V -10, +10%	C1	C2	2
	PSTC036C0X		PRINTED W. BOARD				1
	RD25PJ123X		CARBON FILM R.	0.25W 12K OHM 5%	R1	R2	2
	RD25PJ162X		CARBON FILM R.	0.25W 1.6K OHM 5%	R3	R4	2
	RVQA503N02		VR.		VR1		1
	ZZ70000122		PC JOINT		JU4		1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.						
REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.		QTY USED		
	RVQA254X04		VR.		VR1		1		
	RVQA503N02		VR.		VR3		1		
	RX1ARJ596A		M-OXIDE FILM R.		R57	R68	2		
	SH0203042B		SLIDE, ROTARY SW		S1		1		
	SI0202262N		LEVER SWITCH		S2	S3	2		
	VVL211GE55		LABEL				4		
	W5G916JJJJ		SHIELDED WIRE		NO6		1		
	WTG014EFXX		SOLID WIRE		NO10		1		
	WTG510EFXX		SOLID WIRE		NO11		1		
	WTG608EFXX		SOLID WIRE		NO12		1		
	WTG710FFXX		SOLID WIRE		NO13		1		
	WTH013FLXX		SOLID WIRE		NO16	NO17	2		
	WTH024ELXX		SOLID WIRE		NO18		1		
	WTJ018FMXX		SOLID WIRE		NO15		1		
	WTM909EFXX		SOLID WIRE		NO9		1		
	WTM910FFXX		SOLID WIRE		NO8		1		
	WWF217JXJJ		SHIELDED WIRE		NO1		1		
	WWF413JXJJ		SHIELDED WIRE		NO2		1		
	WWF518JXJJ		SHIELDED WIRE		NO3		1		
	WWF618JXJJ		SHIELDED WIRE		NO4		1		
	YHF0P0001Z		FUSE HOLDER		FH2-1	FH2-2	FH3-1	FH3-2	10
					FH4-1	FH4-2	FH5-1	FH5-2	
					FH6-1	FH6-2			

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.					QTY USED
REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.			
1	MW4DLCX006		SHOT JAMPER					2
2	PSAZ022C0X		PRINTED W. BOARD					1
3	RD25PJ104X		CARBON FILM R.	0.25W 100K OHM 5%	R5	R6		2
4	RD25PJ222X		CARBON FILM R.	0.25W 2.2K OHM 5%	R1	R2		2
5	RD25PJ394X		CARBON FILM R.	0.25W 390K OHM 5%	R3	R4		2
6	YJD05S011Z		5P DIN JACK		J4			1
7	YJP04S016U		4P-PIN JACK		J1	J2		2
8	YJP06S007U		6P-PIN JACK		J3			1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.					QTY USED
REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.			
1	APSA8005GD		P.W. BOARD ASSY.					1
2	APSSW086RA		P.W. BOARD ASSY.					1
3	APSTC036AD		P.W. BOARD ASSY.					1
4	APSZ022BA		P.W. BOARD ASSY.					1
5								
6								
7								
8								
9								
10								
11								
12								

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.					QTY USED
REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.			
1	MW4DLCX006		SHOT JAMPER					2
2	PSAZ022C0X		PRINTED W. BOARD					1
3	RD25PJ104X		CARBON FILM R.	0.25W 100K OHM 5%	R5	R6		2
4	RD25PJ222X		CARBON FILM R.	0.25W 2.2K OHM 5%	R1	R2		2
5	RD25PJ394X		CARBON FILM R.	0.25W 390K OHM 5%	R3	R4		2
6	YJD05S011Z		5P DIN JACK		J4			1
7	YJP04S016U		4P-PIN JACK		J1	J2		2
8	YJP06S007U		6P-PIN JACK		J3			1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.					QTY USED
REMARKS	PART CODE	PART STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.			
1	APSA8005GD		P.W. BOARD ASSY.					1
2	APSSW086RA		P.W. BOARD ASSY.					1
3	APSTC036AD		P.W. BOARD ASSY.					1
4	APSZ022BA		P.W. BOARD ASSY.					1
5								
6								
7								
8								
9								
10								
11								
12								

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