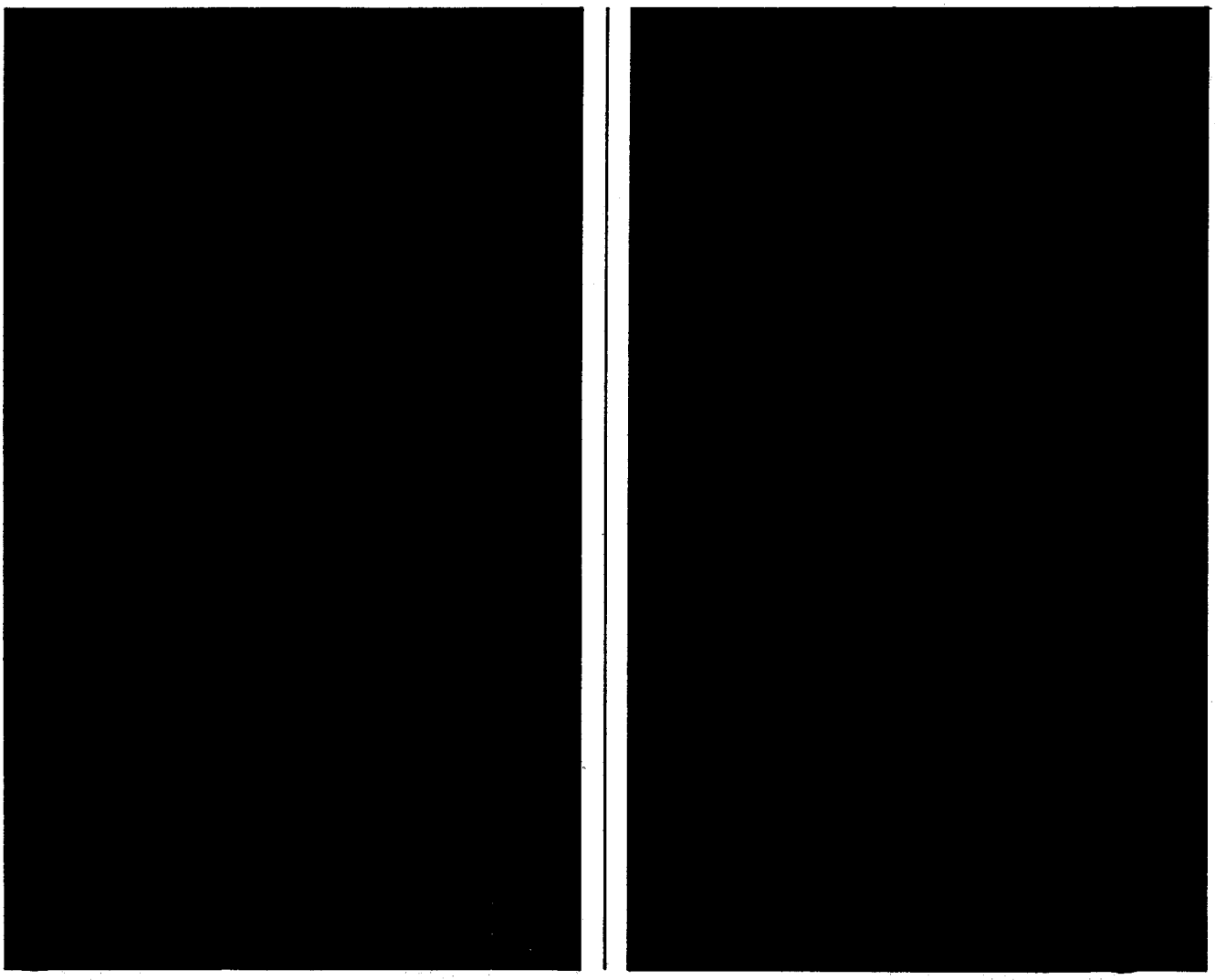
Price $6.00

Service Manual
Integrated Stereo Amplifiers

430A/410A



SCOTT®
The Name to listen to.

CONTENTS

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 custmer.
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 dielectirc 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, ±1dB]
20 Hz to 20 kHz

Power Bandwidth [at −3dB]
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): ±10dB
Treble (10 kHz): ±10dB

Loudness Contour [Volume Control set to −30dB]
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]
±0.7dB

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)

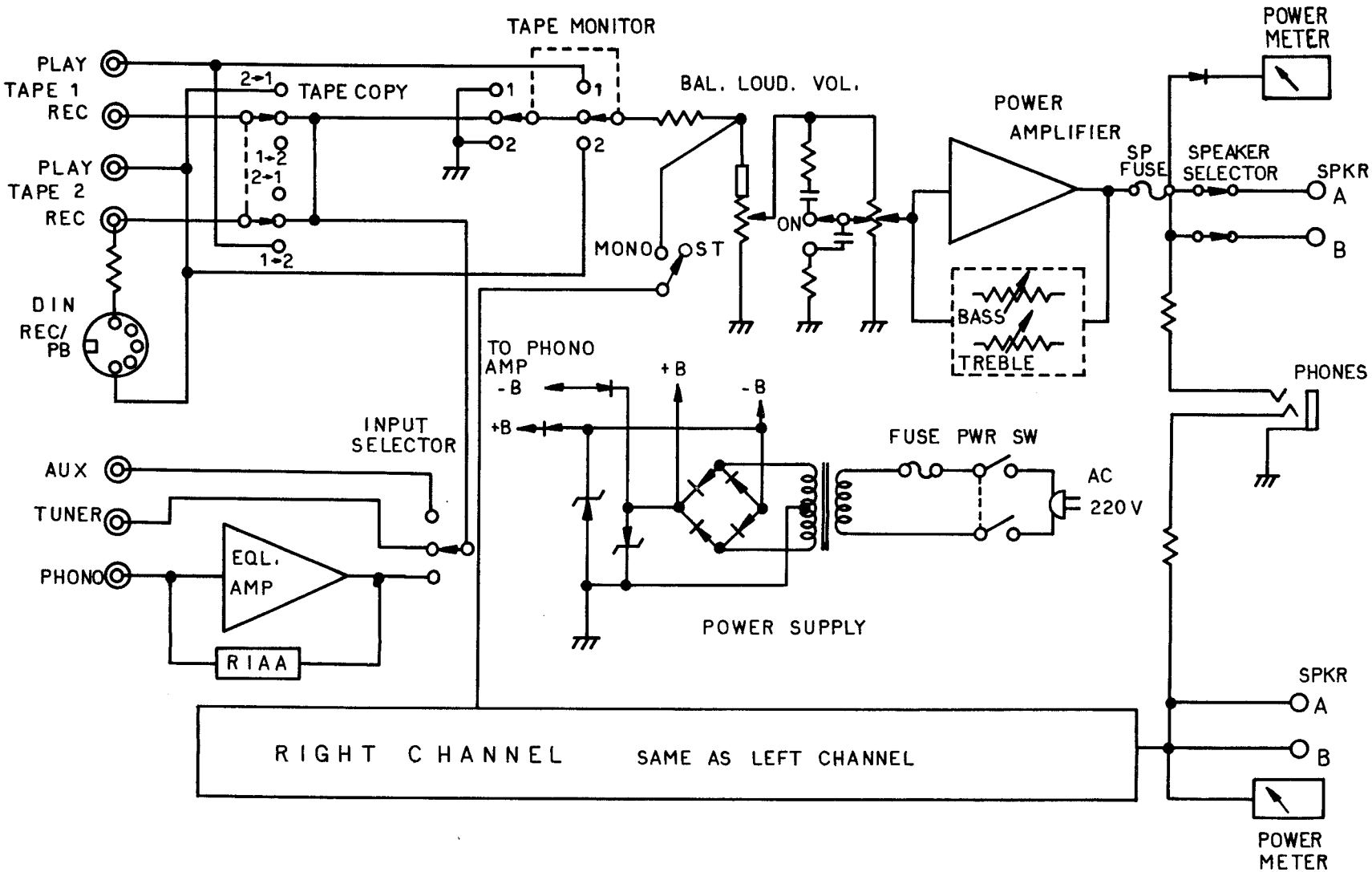
Dimensions
17-3/4"W, 5-1/4"H, 11-3/4"D (17-3/4", 5-1/4", 8-1/2")
430W, 132H, 300D (430, 132, 217) mm

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

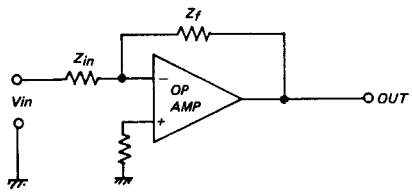


CIRCUIT DESCRIPTION

Design Philosophy on 430A and 410A

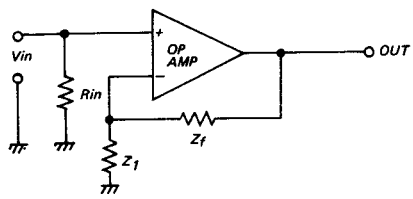
When using a high gain wide band open loop operational amplifiers, it is possible to design a passive network providing a negative feedback to control the amplifier gain and frequency response. In fact it makes easy the reproduction and repititivity of the wanted results.

We can define the gain of such an amplifier as follows.



1) $Vo = -Vin \cdot \frac{Zf}{Zin}$ (Inverting Amp.)

2) $Rin = Zin$



3) $Vo = Vin \cdot 1 + \frac{Zf}{Z1}$ (Non Inverting)

$$Zinc \cong Rin \,//\, \frac{Zino \cdot Gopenloop}{Gclosedloop}$$

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 $Zino$ = 10K ohm, the equivalent $Zinc$ = Rin // 1000K ohm.

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

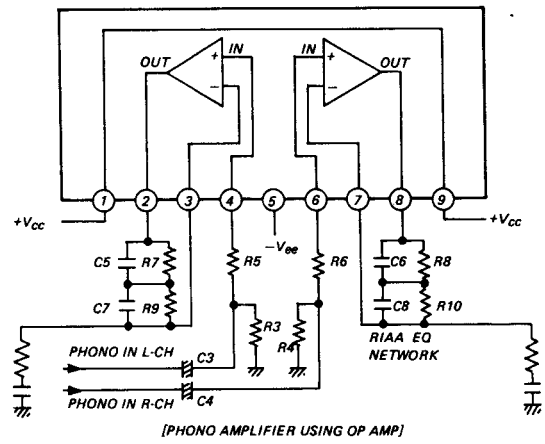
$$Zf = R8 \,//\, Xc6 + R10 \,//\, Xc8$$

$$Z1 = R12 + Xc12$$

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

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.



[PHONO AMPLIFIER USING OP AMP]

Premain Amplifier

The premain amplifier 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 boostrap capacitor. The complementary output drivers/buffers provide a symmetrical output drive.

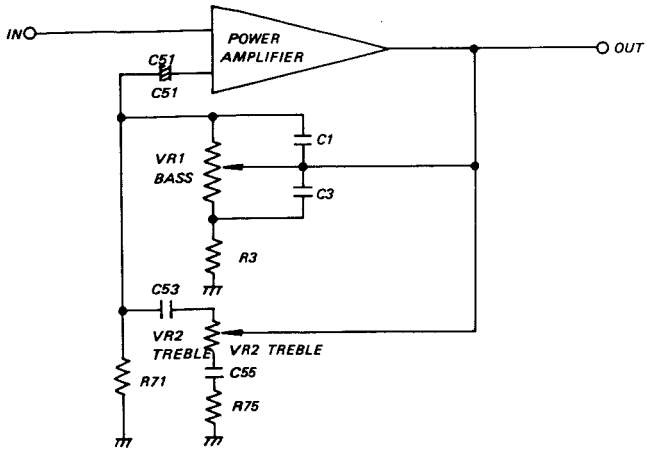
The amplifier is controlled by multiple feedback networks: DC feedback (R93 + R95) on one channel (R94 + R96) on the other are directly coupled between output and negative input. The effect of the DC feedback is for longterm stability and unity DC gain. The effect of this feedback is minor at frequencies 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 ±10dB. At 10,000Hz the treble potentiometer allows gain control of ±10dB. 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 C53 impedance is high, removing VR2 from the circuit, and C1, C3 impedance is low, effectively short circuiting VR1.

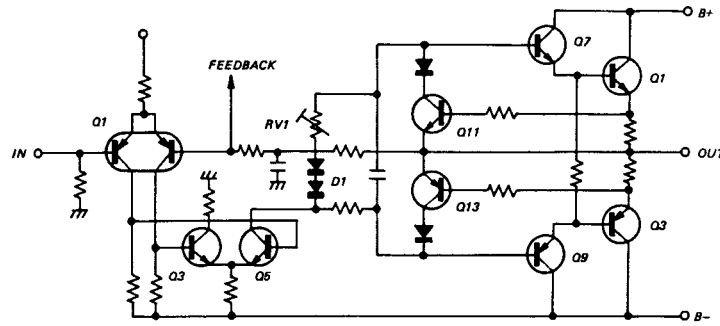
Bass Control: As the frequency decreases below 1kHz, the impedance of C1 and C3 increases proportionately. Thus at very low frequencies, the gain is mainly determined by the position of the bass control VR1. Rotating VR1 toward R3 will boost the low frequencies, while turning it towards C4 will cut the bass.

Treble Control: At high frequencies, as at 1kHz, VR1 is effectively short circuited. At these frequencies, however C53 and C55 impdeance decreases, so that VR2 becomes the the main control of the amplifier gain. Rotating VR2 towards C53 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 6800μF 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, stoping 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 ±25% is acceptable. Readjust if necessary.

SCHEMATIC DIAGRAM: 430A

Q1,Q2	2SA798
Q3,Q4	2SC1685
Q5,Q6	2SC1885
Q7,Q8 Q9,Q10	2SC1567 2SA794
Q11,Q12 Q13,Q14 Q15,Q16	2SC1318 2SA720 2SC1685
U1	AN6551

Power Transistors

Q1,Q2	2SC2486
Q3,Q4	2SA1062

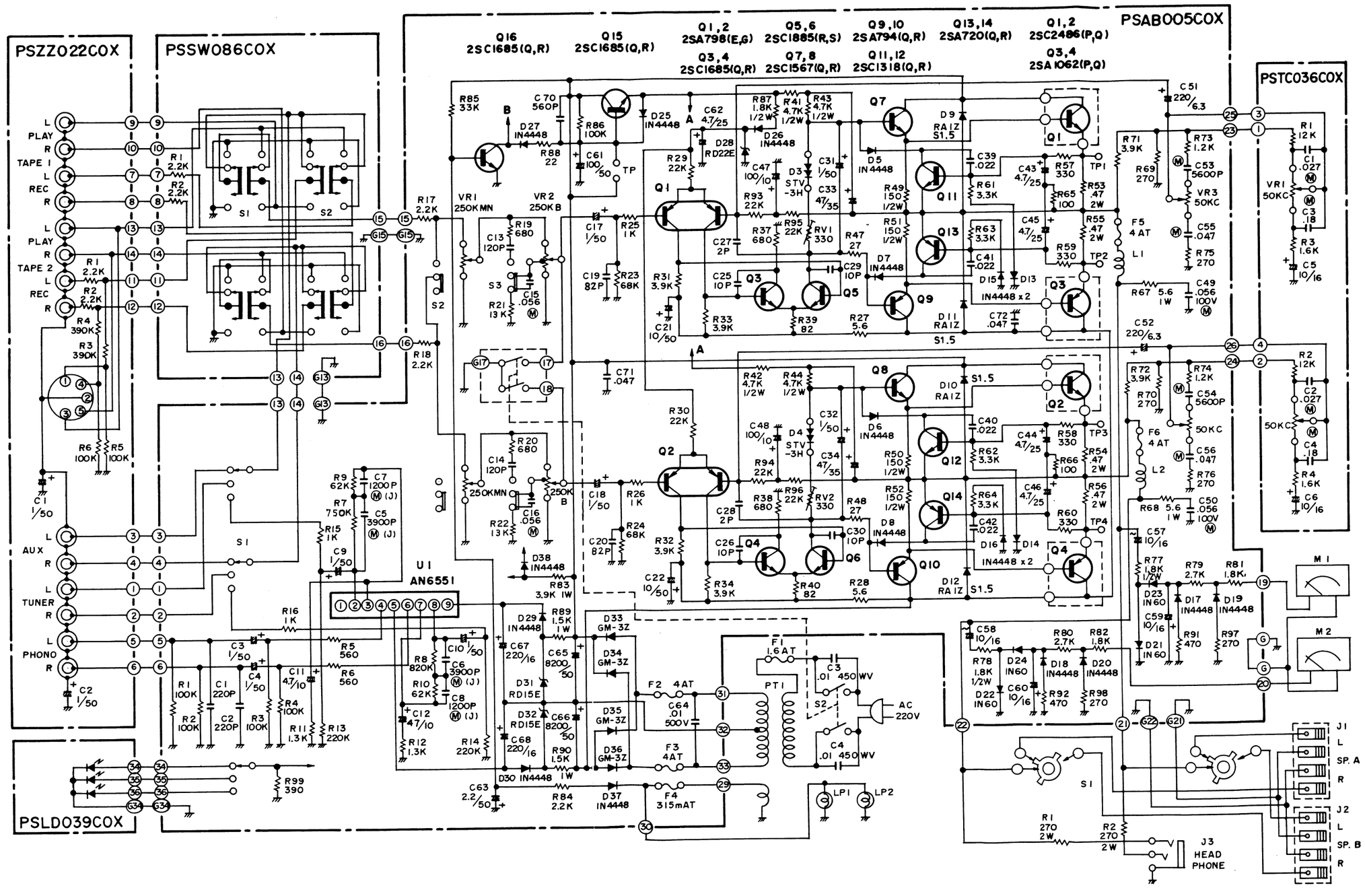
Diodes

1N4448, 1N60
RD22EC,RD15E

STV-3H

GM-3Z

RA1Z



NOTE: CAPACITOR'S VALUES ARE IN μF 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 Q9,Q10	2SC1509 2SA777
Q11,Q12 Q13,Q14 Q15,Q16	2SC1318 2SA720 2SC1685
U1	AN6551

Power Transistors

Q1,Q2	2SC2577
Q3,Q4	2SA1102

Diodes

1N4448, 1N60
RD18EC,RD15E

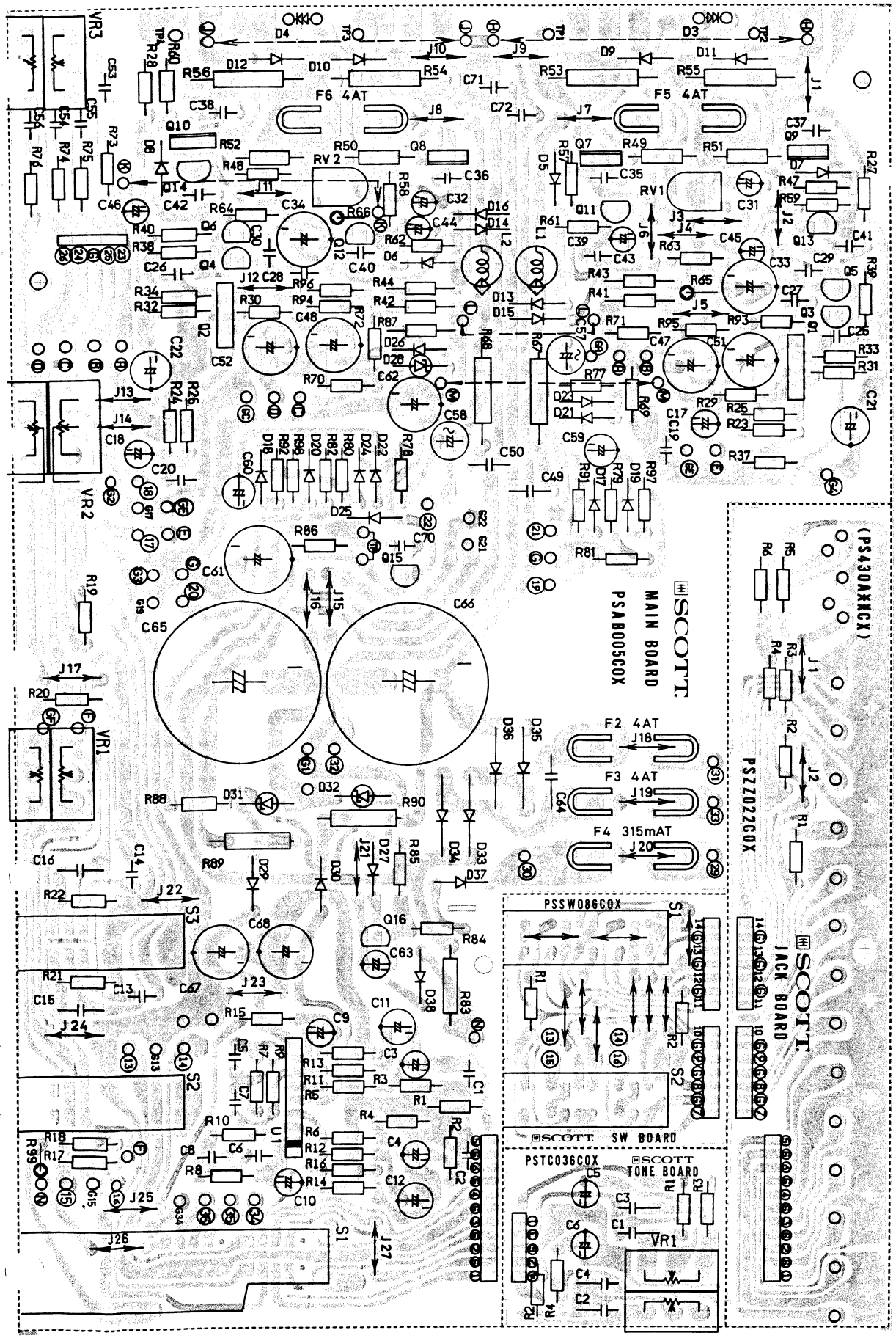
STV-3H

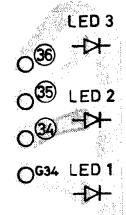
GP20G

RA1Z

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

PARTS LOCATION DIAGRAM: 430A/410A



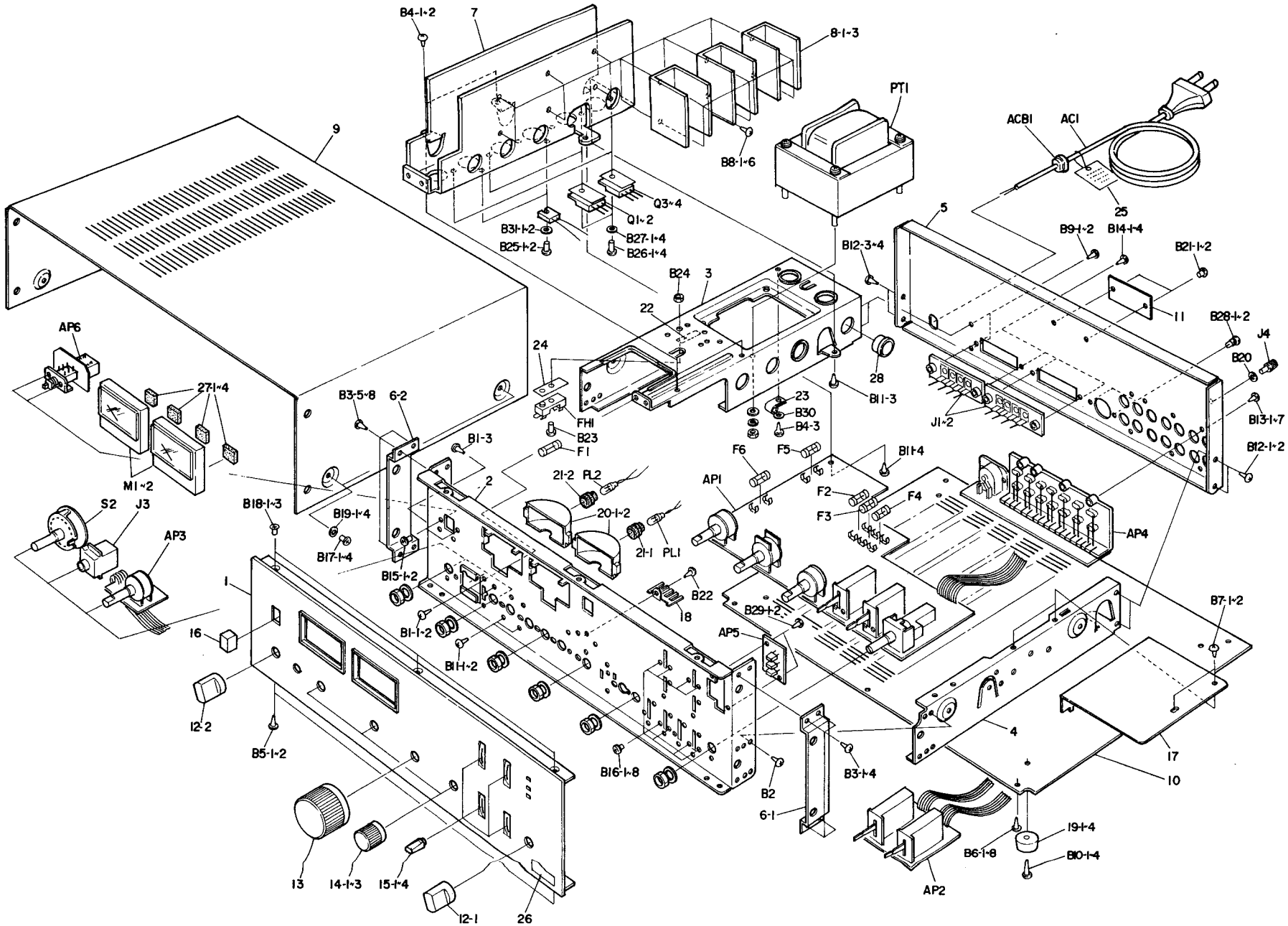


PSSW088COX, Switch PSLD039COX, LED (430A Only)

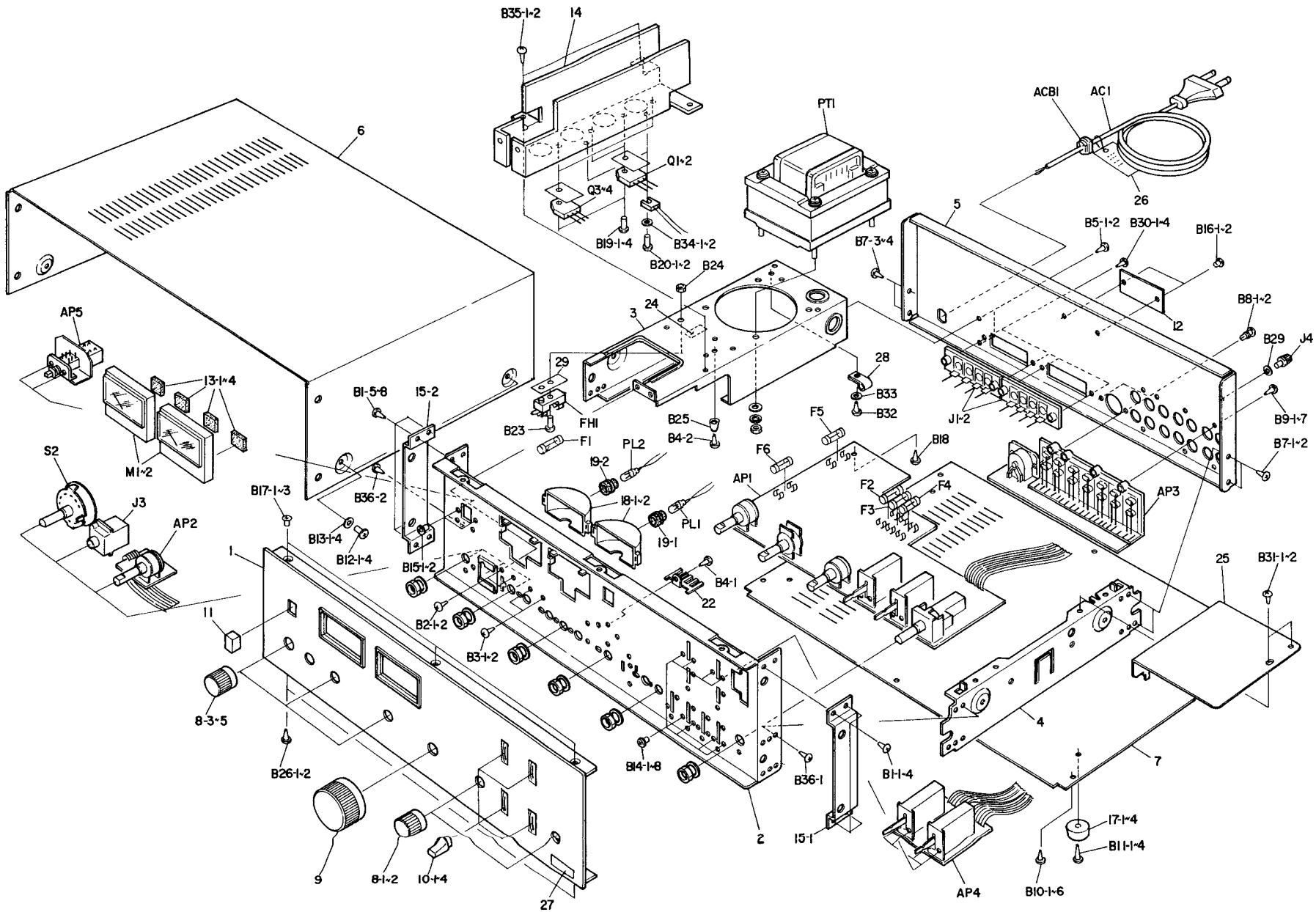
PSSW086COX, Switch PSZZ022COX, Jacks

PSAB005COX, Main P.C. Board PSTC036COX, Tone

EXPLODED VIEW: 430A



EXPLODED VIEW: 410A



REPLACEMENT PARTS LIST: 430A

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	ELEC. ELEMENTS	AAB38AESCL1	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
1		ACAC035EFA		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	1MFD 50V	C1	C2			2
6		CNST103MAN		OIL PAPER CAP.		C3	C4			2
7		G430A*E802		WIRES KIT						1
8		QTA1062XAN		TRANSISTOR	2SA1062 P.Q-RANK	Q3	Q4			2
9		QTC2486XAN		TRANSISTOR	2SC2486 P.Q-RANK	Q1	Q2			2
10		RG2ANJ2718		M-OXIDE FILM R.	2W 270 OHM 5%	R1	R2			2
11		SRJ2041077		ROTARY SWITCH		S2				1
12		TPB83S001Y		PWR.TRANSFORMER		PT1				1
13		VM270NB004		BUSHING		ACB1				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		ZFBQ16201A		FUSE		F1				1
20		ZFBQ32101A		FUSE		F4				1
21		ZFBQ40203A		FUSE		F2	F3	F5	F6	4
22		ZMD2050K01		METER 78A7OR		M1	M2			2
23		ZPA148103U		LAMP		LP1	LP2			2

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	MECH. ELEMENTS	AAB38AESCL2	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
1		AM430A**01		ESCUTCHEON ASSY		1				1
2		BNHCL30NBN		NUT	M3, BS-NI, THIN-TYPE	B24				1
3		BRP3055QNB		PAN HEAD RIVET		B28-1	B28-2			2
4		BRU2455XAJ		THIN HD RIVET	2.4 X 5.5 ALMINUM	B21-1	B21-2			2
5		BSPB3009NN		BIND HEAD SCREW	(+)BIT, M3 X 8 S-NI	B25-1	B25-2			2
6		BSPB5010NB		BIND HEAD SCREW	(+)BIT, M5 X 10 S-BLACK	B17-1	B17-2	B17-3	B17-4	4
7		BSPC3006NZ		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		BSPC3010NZ		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		BTPW3008BB		BRAS. TAP SCREW	(+)BIT, M3 X 8 S-BLACK	B9-1	B9-2			2
18		BTPW3008BJ		BRAS. TAP SCREW		B22				1
19		BTPW3008BZ		BRAS. TAP SCREW	(+)BIT, M3 X 8 S-ZNCR	B1-1~3	B4-1~3	B5-1~2	B2	29
20						B29-1	B29-2	B3-1~8	B6-1	

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	MECH. ELEMENTS	AAB38AESCL2	

ITEM	REMARKS	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						B6-6	B6-7	B6-8	B7-1	
3						B7-2				
4		BTPW3010AZ		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		BTPW3010BZ		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		BWM50C08SB		FLAT L. WASHER	FLAT LARGE, 5 M/M S-BLACK	B19-1	B19-2	B19-3	B19-4	4
12		MB972SE067		REAR PANEL		5				1
13		MB972SL007		FRONT PANEL		2				1
14		MC371SZ002		BRACKET		6-1	6-2			2
15		MC865SL002		CHASSIS		3				1
16		ML331SS001		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		MU852SL003		SIDE BRACKET R		4				1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	MECH. ELEMENTS	AAB38AESCL2	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
1		MU875A0001		HEAT SINK		7				1
2		MU897SX021		COVER		9				1
3		MVL635GF01		SER.NO. PLATE		11				1
4		VB532AW001		LAMP HOUSE		20-1	20-2			2
5		VF177FB001		BUSHING		28				1
6		VM165RX003		HOLDER		21-1	21-2			2
7		VM280EB001		FOOT		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		VS227RB001		SHEET		27-1	27-2	27-3	27-4	4
11		VS325VN001		BARRIER		24				1
12		VS417NN003		CLAMPER.		23				1
13		VVL311GE54		FUSE LABEL		22				1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	ESCUTCHEON ASSY	AM430A**01	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
1		ME97EAA104		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.
	P.W.BOARD ASSY.	APSAB005ED	

ITEM	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		CCGB100D0T		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		ELYT. CAPACITOR	220MFD 6.3V	C51 C52	2
6		CEAD100NLX		ELYT. CAPACITOR		C57 C58	2
7		CEAD221ALX		ELYT. CAPACITOR	220MFD 16V	C67 C68	2
8		CEAE470ALX		ELYT. CAPACITOR	47MFD 25V	C62	1
9		CEAF470ALX		ELYT. CAPACITOR	47MFD 35V	C33 C34	2
10		CEAG101ALX		ELYT. CAPACITOR	100MFD 50V	C61	1
11		CEQ1G82202		ELYT. CAPACITOR		C65 C66	2
12		CEVC101ALX		ELYT. CAPACITOR		C47 C48	2
13		CEVC470ALX		ELYT. CAPACITOR		C11 C12	2
14		CEVD100ALX		ELYT. CAPACITOR		C59 C60	2
15		CEVE4R7ALX		ELYT. CAPACITOR		C43 C44 C45 C46	4
16		CEVG010ALX		ELYT. CAPACITOR		C10 C17 C18 C3	8
17						C31 C32 C4 C9	
18		CEVG100ALX		ELYT. CAPACITOR		C21 C22	2
19		CEVG2R2ALX		ELYT. CAPACITOR		C63	1
20		CKDE103PEM		CERAMIC CAP.	0.01MFD 500V -0, +100% E	C64	1
21		CKFB223ZFT		CERAMIC CAP.	0.022MFD 50V -20, +80% F	C39 C40 C41 C42	4
22		CKFB473ZFT		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.
	P.W.BOARD ASSY.	APSAB005ED	

ITEM	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		LA3LE1024A		CHOKE 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		QDG1N60XXT		GERMANIUM DIODE	NO-RANK	D21 D22 D23 D24	4
13		QDSGM3ZXXD		SILICON DIODE	GM32 NO-RANK	D33 D34 D35 D36	4
14		QDSN4448XZ		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	RD15EC(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		I.C.		U1	1
23		QTA0720XBN		TRANSISTOR	2SA720 Q,R-RANK	Q13 Q14	2

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	P.W.BOARD ASSY.	APSA8005ED	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				Q'TY USED
1		QTA0794XAN		TRANSISTOR		Q10	Q9			2
2		QTA0798XEE		TRANSISTOR	2SA798 E,G-RANK BREAK VOLTAGE=70V	Q1	Q2			2
3		QTC1318XDN		TRANSISTOR	2SC1318 Q,R-RANK	Q11	Q12			2
4		QTC1567XAN		TRANSISTOR		Q7	Q8			2
5		QTC1685XAN		TRANSISTOR	2SC1685 Q,R-RANK	Q15	Q16	Q3	Q4	4
6		QTC1885XAN		TRANSISTOR	2SC1885 R,S-RANK	Q5	Q6			2
7		QVESTV3HXD		VARISTOR	STV-3H Q,Y-RANK (VF:1.60V-1.74V)	D3	D4			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		RD25PJ332X		CARBON FILM R.	0.25W 3.3K OHM 5%	R61	R62	R63	R64	4

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	P.W.BOARD ASSY.	APSA8005ED	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				Q'TY 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		RD25TJ5R6X		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	P66			2
16		RD25VJ391X		CARBON FILM R.	0.25W 390 OHM 5%	R99				1
17		RF02SKR47B		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.
	P.W.BOARD ASSY.	APSA8005ED	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	Q'TY USED
1		RPJNB33102		SEMI-FIXED VR.		RV1 RV2	2
2		RVQA254B05		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		WSG916JJJJ		SHIELDED WIRE		NO6	1
9		WTG014EFXX		SOLID WIRE		NO10	1
10		WTG510EFXX		SOLID WIRE		NO11	1
11		WTG608EFXX		SOLID WIRE		NO12	1
12		WTG710EFXX		SOLID WIRE		NO13	1
13		WTG815EFXX		SOLID WIRE		NO14	1
14		WTH013ELXX		SOLID WIRE		NO16 NO17	2
15		WTH024ELXX		SOLID WIRE		NO18	1
16		WTJ018EMXX		SOLID WIRE		NO15	1
17		WTM909EFXX		SOLID WIRE		NO9	1
18		WTM910EFXX		SOLID WIRE		NO8	1
19		WWF217JXJJ		SHIELDED WIRE		NO1	1
20		WWF413JXJJ		SHIELDED WIRE		NO2	1
21		WWF518JXJJ		SHIELDED WIRE		NO3	1
22		WWF618JXJJ		SHIELDED WIRE		NO4	1
23		YHE0P0001Z		FUSE HOLDER		FH2-1 FH2-2 FH3-1 FH3-2	10

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	P.W.BOARD ASSY.	APSLD039AA	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	Q'TY USED
1		PSLD039C0X		PRINTED.W.BOARD			1
2		QLRLN217RN		L.E.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.
	P.W.BOARD ASSY.	APSSW086BA	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	Q'TY USED
1		MW401CX006		SHOT JAMPER			9
2		PSSW086C0X		PRINTED W.BOARD			1
3		RD25PJ222X		CARBON FILM R.	0.25W 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.
	P.W.BOARD ASSY.	APSSW088AA	

ITEM	REMARKS	PART CODE	PART. STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	QTY USED
1		MS545S5002		SHIELD		SL1	1
2		PSSW088C0X		PRINTED W.BOARD			1
3		SP01AA5094		PUSH SWITCH		S1	1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	PRINTED MATTERS	AAB38AESCL3	

ITEM	REMARKS	PART CODE	PART. STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	QTY USED
1		KT430A*ECX		OWNER'S MANUAL			1
2		KW0021238X		WARRANTY CARD			1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	P.W.BOARD ASSY.	APSTC036AD	

ITEM	REMARKS	PART CODE	PART. STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	QTY USED
1		CEVD100ALX		ELYT. CAPACITOR		C5 C6	2
2		CQMB184KEH		MYLAR CAPACITOR	0.18MFD 50V -10, +10%	C3 C4	2
3		CQMB273KTH		MYLAR CAPACITOR	0.027MFD 50V -10, +10%	C1 C2	2
4		PSTC036C0X		PRINTED W.BOARD			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		RV0A503N02		VR.		VR1	1
8		ZZZ0000122		PC.JOINT		JU4	1
9							
10							

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	P.W.BOARD ASSY.	APSZZ022BA	

ITEM	REMARKS	PART CODE	PART. STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	QTY USED
1		MW401CX006		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		YJD055011Z		5P DIN JACK		J4	1
7		YJP045016U		4P-PIN JACK		J1 J2	2
8		YJP065007U		6P.PIN JACK		J3	1
9							
10							

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	P.W.BOARD ASSY.	APS430A*E1	

ITEM	REMARKS	PART CODE	PART. STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	QTY USED
1		APSA8005ED		P.W.BOARD ASSY.			1
2		APSSW086BA		P.W.BOARD ASSY.			1
3		APSTC036AD		P.W.BOARD ASSY.			1
4		APSZZ022BA		P.W.BOARD ASSY.			1
5							
6							
7							
8							
9							
10							

410A

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	ELEC. ELEMENTS	AAB37AESCL1	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	QTY USED
1		AC4CQ35EEA		AC CORD ASSY		AC1	1
2		APSSW088AA		P.W.BOARD ASSY.			1
3		APS410A*E1		P.W.BOARD ASSY.			1
4		CEAG010ALX		ELYT. CAPACITOR	1MFD 50V	C1 C2	2
5		CNST103MAN		OIL PAPER CAP.		C3 C4	2
6		G410A*EA01		WIRES KIT			1
7		QTA1102XAD		TRANSISTOR		Q3 Q4	2
8		QTC2577XAD		TRANSISTOR		Q1 Q2	2
9		RG2ANJ271B		M-OXIDE FILM R.	2W 270 OHM 5%	R1 R2	2
10		SR0204109T		ROTARY SWITCH		S2	1
11		TPB83S002Y		PWR.TRANSFORMER		PT1	1
12		VM270NR004		BUSHING		ACB1	1
13		VX432VL002		C-COVER		ZZ1 ZZ2	2
14		YHF1P2001Z		FUSE HOLDER		FH1	1
15		YJS03S016Z		PHONE JACK		J3	1
16		YTD01S002U		TERMINAL		J4	1
17		YTS04S007U		TERMINAL		J1 J2	2
18		ZFBQ1320LA		FUSE		F1	1
19		ZFBQ3210LA		FUSE		F4	1
20		ZFBQ3220LA		FUSE		F2 F3 F5 F6	4
21		ZMD2050K01		METER 78A70R		M1 M2	2
22		ZPA148103U		LAMP		LP1 LP2	2

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO
	MECH. ELEMENTS	AAB37AESCL2	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	QTY USED
1		AM410A**01		ESCUTCHEON ASSY		1	1
2		BNHCL30NSN		NUT	M3, S-NI, THIN-TYPE	B24	1
3		BRP30550NB		PAN HEAD RIVET		B8-1 B8-2	2
4		BRU2455XAJ		THIN HD RIVET	2.4 X 5.5 ALMINUM	B16-1 B16-2	2
5		BSPB3008NN		BIND HEAD SCREW	(+)BIT, M3 X 8 S-NI	B20-1 B20-2	2
6		BSPB3010NN		BIND HEAD SCREW	(+)BIT, M3 X 10 S-NI	B19-1 B19-2 B19-3 B19-4	4
7		BSPC3006NZ		CEMS SCREW	(+)BIT, M3 X 6 S-ZNCR	B14-1 B14-2 B14-3 B14-4	10
8						B14-5 B14-6 B14-7 B14-8	
9						B15-1 B15-2	
10		BSPP3010NP		PAN HEAD SCREW	(+)BIT, M3 X 10 PLASTIC	B23	1
11		BTPB5010TB		BIND HD SCREW		B12-1 B12-2 B12-3 B12-4	4
12		BTPL3008BB		NAIL TAP SCREW	(+)BIT, M3 X 8 S-BLACK	B7-1 B7-2 B7-3 B7-4	4
13		BTPP3008AB		PAN TAP SCREW	(+)BIT, M3 X 8 S-BLACK	B30-1 B30-2 B30-3 B30-4	11
14						B9-1 B9-2 B9-3 B9-4	
15						B9-5 B9-6 B9-7	
16		BTPS3008TZ		FLAT TAP SCREW	(+)BIT, M3 X 8 S-ZNCR (TAP TITE)	B17-1 B17-2 B17-3	3
17		BTPW3006BZ		BRAS. TAP SCREW	(+)BIT, M3 X 6 S-ZNCR	B36-1 B36-2	2
18		BTPW3008AZ		BRAS. TAP SCREW	(+)BIT, M3 X 8 S-ZNCR	B18 B3-1 B3-2	3
19		BTPW3008BB		BRAS. TAP SCREW	(+)BIT, M3 X 8 S-BLACK	B5-1 B5-2	2
20		BTPW3008BJ		BRAS. TAP SCREW		B4-1 B4-2	2
21		BTPW3008BZ		BRAS. TAP SCREW	(+)BIT, M3 X 8 S-ZNCR	B1-1~8 B10-1~4	23

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	MECH. ELEMENTS	AAB37AESCL2	

ITEM	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		BTPW3012BZ		BRAS. TAP SCREW	(+)BIT, M3 X 12 S-ZNCR	B11-1	B11-2	B11-3	B11-4	4
5		BWM30A08SN		FLAT L. WASHER	FLAT LARGE, 3 M/M S-NI	B29	B33			2
6		BWM30705SN		FLAT L. WASHER	FLAT LARGE, 3 M/M S-NI	B34-1	B34-2			2
7		BWM50C08SB		FLAT L. WASHER	FLAT LARGE, 5 M/M S-BLACK	B13-1	B13-2	B13-3	B13-4	4
8		BWT30602BN		GND. WASHER	3 M/M BS-NI	B25				1
9		MB972SE070		REAR PANEL		5				1
10		MB972SL007		FRONT PANEL		2				1
11		MC371SZ002		BRACKET		15-1	15-2			2
12		ML331SS001		TERMINAL		22				1
13		ML765SL003		SHIELD		25				1
14		MN276XA020		KNOB		8-1	8-2	8-3	8-4	5
15						8-5				
16		MN386XA024		KNOB		9				1
17		MS976SL001		BOTTOM PLATE		7				1
18		MU752SL001		SIDE.PLATE		4				1
19		MU764AD001		HEAT SINK		14				1
20		MU765SL001		CHASSIS		3				1
21		MU897SX022		COVER		6				1
22		MVL635GE01		SER.NO. PLATE		12				1
23		VB532AW001		LAMP HOUSE		18-1	18-2			2

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	MECH. ELEMENTS	AAB37AESCL2	

ITEM	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		VM280EB001		FOOT		17-1	17-2	17-3	17-4	4
3		VN220SX001		POW KNOB		11				1
4		VN360SX001		KNOB		10-1	10-2	10-3	10-4	4
5		VS227RB001		SHEET		13-1	13-2	13-3	13-4	4
6		VS325VN001		BARRIER		29				1
7		VS417NN003		CLAMPER.		28				1
8		VVL311GE60		LABEL		24				1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	ESCUTCHEON ASSY	AM410A**01	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
1		ME97EAA105		ESCUTCHEON		1-A				1
2		VK132SX004		BUSH LEVER		1-B-1	1-B-2			2
3		VK132SX007		BUSH		1-F-1	1-F-2			2
4		VK133SX001		BUSH 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	AAB37AESCL3	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				QTY USED
1		KT410AE*CX		OWNER'S MANUAL						1
2		KW0001238X		WARRANTY CARD						1
3										

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	P.W.BOARD ASSY.	APSAB005GD	

ITEM	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		CCGB100D0T		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		CEAB221A1X		ELYT. CAPACITOR	220MFD 6.3V	C51	C52			2
6		CEAD100N1X		ELYT. CAPACITOR		C57	C58			2
7		CEAD221A1X		ELYT. CAPACITOR	220MFD 16V	C67	C68			2
8		CEAE470A1X		ELYT. CAPACITOR	47MFD 25V	C62				1
9		CEAF470A1X		ELYT. CAPACITOR	47MFD 35V	C33	C34			2
10		CEAG101A1X		ELYT. CAPACITOR	100MFD 50V	C61				1
11		CEQ1U68201		ELYT. CAP		C65	C66			2
12		CEVC101A1X		ELYT. CAPACITOR		C47	C48			2
13		CEVC470A1X		ELYT. CAPACITOR		C11	C12			2
14		CEVD1004A1X		ELYT. CAPACITOR		C59	C60			2
15		CEVE4R7A1X		ELYT. CAPACITOR		C43	C44	C45	C46	4
16		CEVG010A1X		ELYT. CAPACITOR		C10	C17	C18	C3	8
17						C31	C32	C4	C9	
18		CEVG100A1X		ELYT. CAPACITOR		C21	C22			2
19		CEVG2R2A1X		ELYT. CAPACITOR		C63				1
20		CKDE103PEM		CERAMIC CAP.	0.01MFD 500V -0, +100% 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.
	P.W.BOARD ASSY.	APSAB005GD	

ITEM	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		LA3LE1024A		CHOKE COIL		L1	L2			2
8		MW201BS001		TERMINAL						21
9		MW401CX006		SHOT JAMPER						24
10		PSAB005C0X		PRINTED W.BOARD						1
11		PS430A**CX		PRINTED W.BOARD						1
12		QDG1N60XXT		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	RD15E(C) VZ=14.7-16.5 C-RANK	D31	D32			2
21		QDZRD18ECA		ZENER DIODE	RD18EC VZ=18-20.3 C-RANK	D28				1
22		QQM06551BN		I.C.		U1				1
23		QTA0720XBN		TRANSISTOR	2SA720 Q,R-RANK	Q13	Q14			2

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	P.W.BOARD ASSY.	AP5AB005GD	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				Q'TY USED
1		QTA0777XAN		TRANSISTOR	2SA777 R,O-RANK	Q10	Q9			2
2		QTA0798XEE		TRANSISTOR	2SA798 F,G-RANK BREAK VOLTAGE=70V	Q1	Q2			2
3		QTC1318XDN		TRANSISTOR	2SC1318 Q,R-RANK	Q11	Q12			2
4		QTC1509XBN		TRANSISTOR	2SC1509 Q,R-RANK	Q7	Q8			2
5		QTC1685XAN		TRANSISTOR	2SC1685 Q,R-RANK	Q15	Q16	Q3	Q4	4
6		QTC1885XAN		TRANSISTOR	2SC1885 R,S-RANK	Q5	Q6			2
7		QVESTV3HXD		VARISTOR	STV-3H Q,Y-RANK (VF:1.60V-1.74V)	D3	D4			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.
	P.W.BOARD ASSY.	AP5AB005GD	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				Q'TY USED
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		RGHARJ122B		M-OXIDE FILM R.		R87				1
21		RG1ARJ122B		M-OXIDE FILM R.		R89	R90			2
22		RPJNB33102		SEMI-FIXED VR.		RV1	RV2			2
23		RVOA254R05		VR.		VR2				1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	P.W.BOARD ASSY.	APSSW086BA	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				Q'TY USED
1		MW401CX006		SHOT JAMPER						9
2		PSSW086C0X		PRINTED W.BOARD						1
3		RD25PJ222X		CARBON FILM R.	0.25W 2.2K OHM 5%	R1	R2			2
4		SL0403077N		LEVER SWITCH		S1	S2			2

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	P.W.BOARD ASSY.	APSSW088AA	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				Q'TY USED
1		MS545SS002		SHIELD		SL1				1
2		PSSW088C0X		PRINTED W.BOARD						1
3		SP01AA5C9A		PUSH SWITCH		S1				1

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	P.W.BOARD ASSY.	APSTC036AD	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				Q'TY USED
1		CEVD100ALX		ELYT. CAPACITOR		C5	C6			2
2		CQMB184KFH		MYLAR CAPACITOR	0.18MFD 50V -10, +10%	C3	C4			2
3		CQMB273KTH		MYLAR CAPACITOR	0.027MFD 50V -10, +10%	C1	C2			2
4		PSTC036C0X		PRINTED W.BOARD						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		RVQA503N02		VR.		VR1				1
8		ZZZ0000122		PC.JOINT		JU4				1
9										
10										

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	P.W.BOARD ASSY.	APSA8005GD	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.				Q'TY USED
1		RVQA254X04		VR.		VR1				1
2		RVQA503N02		VR.		VR3				1
3		RX1ARJ5R6B		M-OXIDE FILM R.		R67	R68			2
4		SH020304ZB		SLIDE.ROTARY SW		S1				1
5		SL020226ZN		LEVER SWITCH		S2	S3			2
6		VVL211GE55		LABEL						4
7		WSG916JJJJ		SHIELDED WIRE		NO6				1
8		WTG014EFXX		SOLID WIRE		NO10				1
9		WTG510EFXX		SOLID WIRE		NO11				1
10		WTG608EFXX		SOLID WIRE		NO12				1
11		WTG710EFXX		SOLID WIRE		NO13				1
12		WTH013ELXX		SOLID WIRE		NO16	NO17			2
13		WTH024ELXX		SOLID WIRE		NO18				1
14		WTJ018EMXX		SOLID WIRE		NO15				1
15		WTM909EFXX		SOLID WIRE		NO9				1
16		WTM910EFXX		SOLID WIRE		NO8				1
17		WWF217JXJJ		SHIELDED WIRE		NO1				1
18		WWF413JXJJ		SHIELDED WIRE		NO2				1
19		WWF518JXJJ		SHIELDED WIRE		NO3				1
20		WWF618JXJJ		SHIELDED WIRE		NO4				1
21		YHF0P0001Z		FUSE HOLDER		FH2-1	FH2-2	FH3-1	FH3-2	10
22						FH4-1	FH4-2	FH5-1	FH5-2	
23						FH6-1	FH6-2			

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	P.W.BOARD ASSY.	APSZZ0228A	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	QTY USED
1		MW401CX006		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.
	P.W.BOARD ASSY.	APS410A*E1	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	QTY USED
1		APSAB005GD		P.W.BOARD ASSY.			1
2		APSSW086BA		P.W.BOARD ASSY.			1
3		APSTC036AD		P.W.BOARD ASSY.			1
4		APSZZ022BA		P.W.BOARD ASSY.			1
5							
6							
7							
8							
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12							

EXPLODED ASSEMBLY	PART NAME	PART CODE	STOCK NO.
	P.W.BOARD ASSY.	APSZZ0228A	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	QTY USED
1		MW401CX006		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.
	P.W.BOARD ASSY.	APS410A*E1	

ITEM	REMARKS	PART CODE	PART, STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	QTY USED
1		APSAB005GD		P.W.BOARD ASSY.			1
2		APSSW086BA		P.W.BOARD ASSY.			1
3		APSTC036AD		P.W.BOARD ASSY.			1
4		APSZZ022BA		P.W.BOARD ASSY.			1
5							
6							
7							
8							
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10							
11							
12							

SCOTT.
The Name to listen to.

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