JC-120 JC-160 SERVICE NOTES

Applicable to following serial number:

JC-120 380100~779499 *Third Edition*

JC-160 440100~782919

TECHNICAL SPECIFICATIONS

JC-120 : Serial No. 380100 - 471649
JC-160 : Serial No. 440100 - 470549

Rated Output Power	22mV rms/channel	@ 1kHz	
Input Sensitivity	11mV	@ 1kHz	
	4mV	@ 10kHz	
	11mV	@ 100Hz	@ full power
Power Consumption	200VA	@ 1kHz	@ full power
Tone Control Range			
Treble	35dB	@ 10kHz	
Middle	0.8dB	@ 1kHz	
Bass	18dB	@ 100Hz	
Sensitivity Ratio H/L	10dB	@ 1kHz	
Residual Noise	15mV/channel	@ SP	Vol. TC. max.
Chorus Effect Sensitivity	100mV	@ 1kHz	
Line Out Level	100mV	@ 1kHz	

JC-120 : Serial No. 481650 and higher
JC-160 : Serial No. 480550 and higher

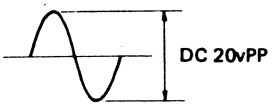
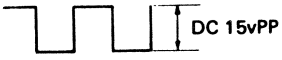
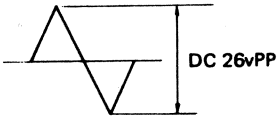
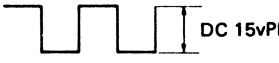
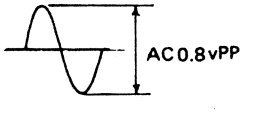
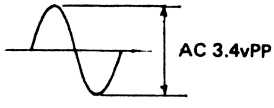
Input Sensitivity	15mV	@ 1kHz	
	6mV	@ 10kHz	
	30mV	@ 100Hz	
Tone Control Range			
Treble	37dB	@ 10kHz	
Middle	0.6dB	@ 1kHz	
Bass	17dB	@ 100Hz	
Sensitivity Ratio H/L	7.8dB	@ 1kHz	
Residual Noise	6mV	@ SP	Vol. TC. max.

* Reffer to WAVEFORM CHART for:

BBD Clock Frequency — Chorus Effect, Vibrato Effect

Clock Modulation Frequency — Chorus Effect, Vibrato Effect

WAVE FORMS

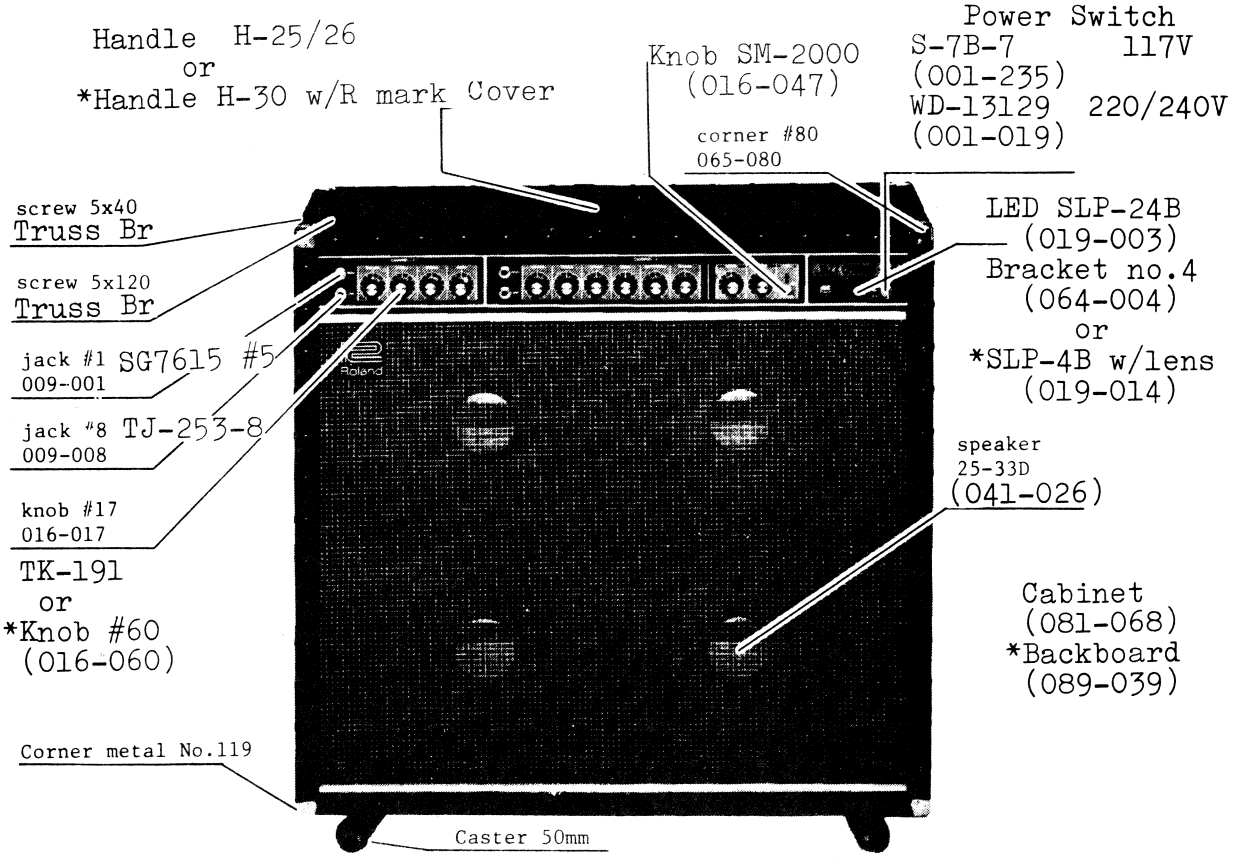
CIRCUIT	WAVEFORM	FREQUENCY	APPLICABLE SERIAL NUMBER
Vibrato OSC		1.9 - 11Hz Q41 base	JC-60 380100 - 471649 JC-120 JC-80 420100 - JC-160 440100 -
Clock OSC (Vibrato)		100k - 166kHz (10u - 6µsec)	JC-60 380100 - 471649 JC-120 JC-80 420100 - 470499 JC-160 440100 - 470549
		28k - 41.6kHz (35.5µ - 24µsec)	JC-60 481650 - 502399 JC-120 481650 - 502499 JC-80 480500 - 500949 JC-160 480550 - 500849
		52k - 71.4kHz	JC-60 512400 - JC-120 512500 - JC-80 510950 - JC-160 510850 -
Chorus OSC		1.24Hz IC 3 output	JC-60 380100 - JC-120 380100 - JC-80 420100 - JC-160 440100 -
Clock OSC (Chorus)		65k - 208kHz (15.4µ - 4.8µsec)	JC-60 380100 - 471649 JC-120 380100 - 471649 JC-80 420100 - 470499 JC-160 440100 - 470549
		26k - 111kHz (39µ - 9µsec)	JC-60 481650 - 502399 JC-120 481650 - 502499 JC-80 480500 - 500949 JC-160 480550 - 500849
		45k - 130kHz	JC-60 512400 - JC-120 512500 - JC-80 510950 - JC-160 510850 -
BBD Output (18dB/oct filtered)		1kHz	JC-60 380100 - 471649 JC-120 380100 - 471649 JC-80 420100 - 470499 JC-160 440100 - 470549
		1kHz	JC-60 481650 - JC-120 481650 - JC-80 480500 - JC-160 480550 -

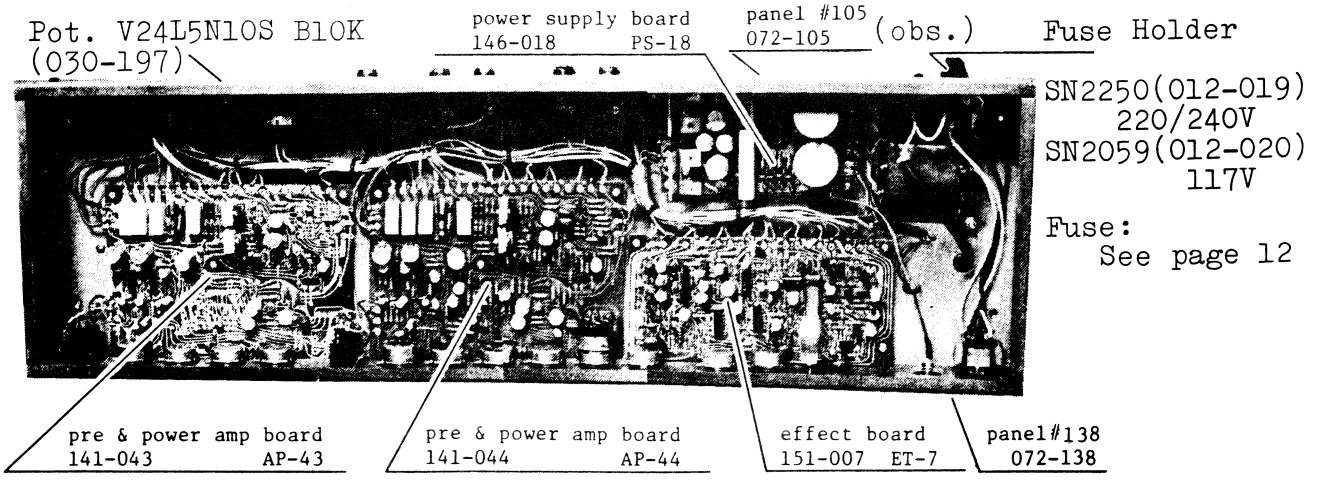
JC-160

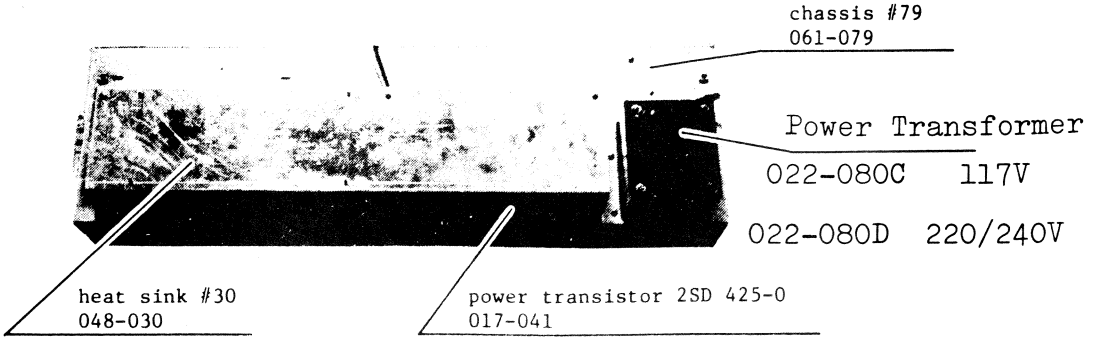
Jacks on front panel
all TJ-253-8 (009-008)

Serial no.631700 and higher

* indicates parts on later prodect
- compatible with predecessor -



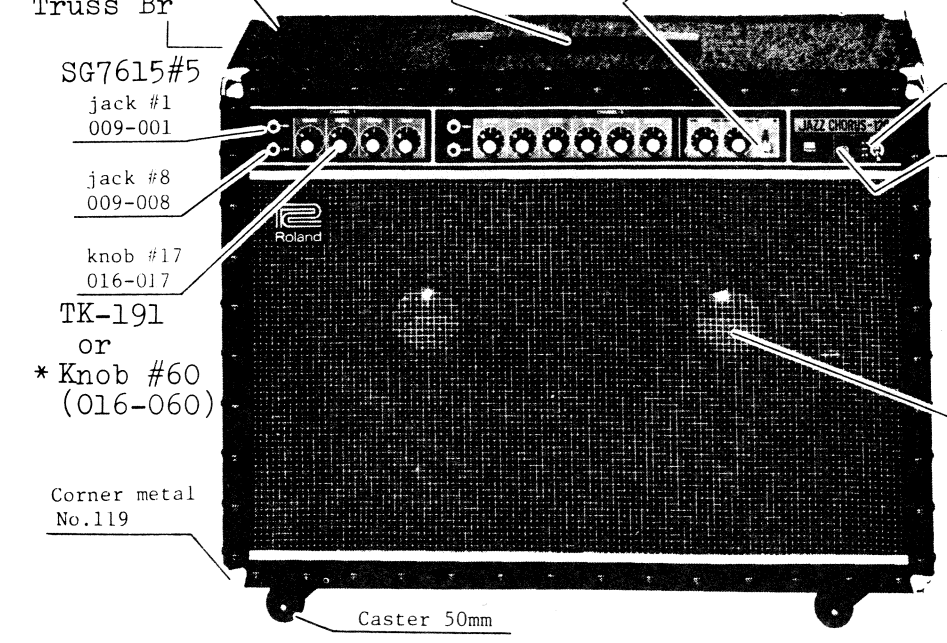


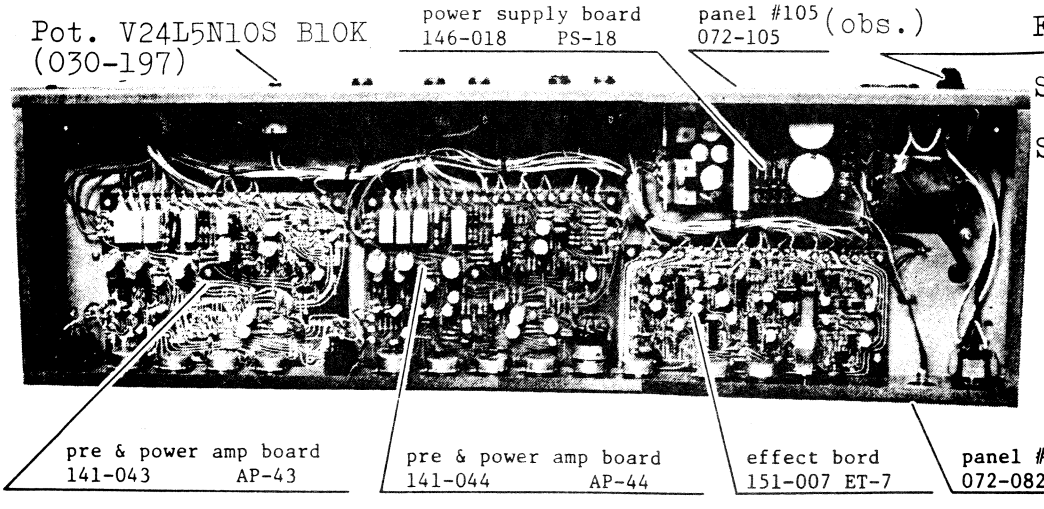


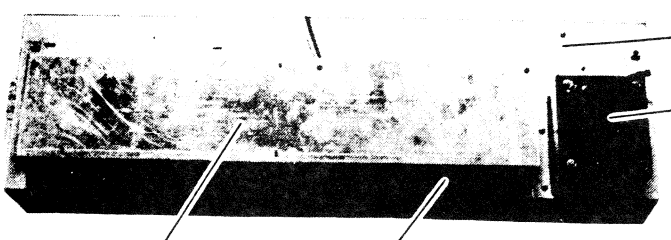
JC-120

Jacks on front panel
all TJ-253-8 (009-008)
Serial no.636050 and higher

* indicates parts on later product
- compatible with predecessor -







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The table below shows the Serial Numbers of the engineering changes that caused PCB alteration.

PCB assembly designations remain unchanged despite of changes in component and pattern layout.

The diagram(s) and PCBs pertaining to particular circuitry are grouped into section under Serial Numbers.

When ordering replacement PCB, the following information is mandatory to obtain correct one:

MODEL
PCB ASSEMBLY NAME with NUMBER on the foil side
SERIAL NUMBER
(Example -- AP-43(052-125) JC-120 SN 380100-410599

Serial number	AP-43 (141-043)				AP-44 (141-044)					ET-7 (151-007)			
	VOL	TRE	BASS	MID	VOL	TRE	BASS	MID	DIS	REV	VIB.S	VIB.D	
JC-120 380100 -- 410599	VR4 100KB	VR1 50KB	VR2 100KA	VR3 5KB	VR10 100KB	VR6 50KB	VR7 100KA	VR8 5KB	VR9 100KB 100KB	VR12 10KB	VR14 250KC	VR13 10KB	Circuit configurations to ET-6 and ET-7 are almost the same, but component identifiers (numbers) are different. Resistors differ in value between two: ET-6 ET-7 R302 - R149 R312 - R159 R318 - R167 R323 - R172 R324 - R165 R325 - R166 R340 - R188 R341
	PCB no. 052-125 foil side				PCB no. 052-125 foil side					ET-6 PCB no. 052-124 foil side			
JC-120 426060 -- 471649 JC-160 440100 -- 470549	VR4 100KB	VR1 50KB	VR2 100KA	VR3 5KB	VR9 100KB	VR5 50KB	VR6 100KA	VR7 5KB	VR8 100KB 100KB w/sw	VR10 10KB	VR12 250KC	VR11 10KB	
	PCB no. 052-125A foil side				PCB no. 052-125A foil side					ET-7 PCB no. 052-124 foil side			
JC-120 481650 -- 502499 JC-160 480550 -- 500849	VR4 100KC 10KC	VR1 50KB	VR3 100KA	VR2 5KB	VR10 100KC 10KC	VR6 50KB	VR8 100KA	VR7 5KB	VR9 100KB 100KC w/sw	VR12 10KB	VR15 250KC	VR14 10KB	Some PCBs have circuit pattern on both sides.
	PCB no. 052-181 foil side (052-188 component side)				PCB no. 052-181 foil side (052-189 component side)					PCB no. 052-182 foil side (052-190 component side)			
JC-120 512500 JC-160 510850	VR4 100KC 10KC	VR1 50KB	VR3 100KA	VR2 5KB	VR10 100KC 10KC	VR6 50KB	VR8 100KA	VR7 5KB	VR9 100KB 100KC w/sw	VR12 10KB	VR15 250KC	VR14 10KB	Use 052-199 as replacement for 052-182A.
	PCB no. 052-181A foil side (052-188A component side)				PCB no. 052-181A foil side (052-189A component side)					PCB no. 052-182A foil side (052-190A component side)			
										052-199 both sides			JC-120 serial NO. 543650 and higher JC-160 serial NO. 541050 and higher

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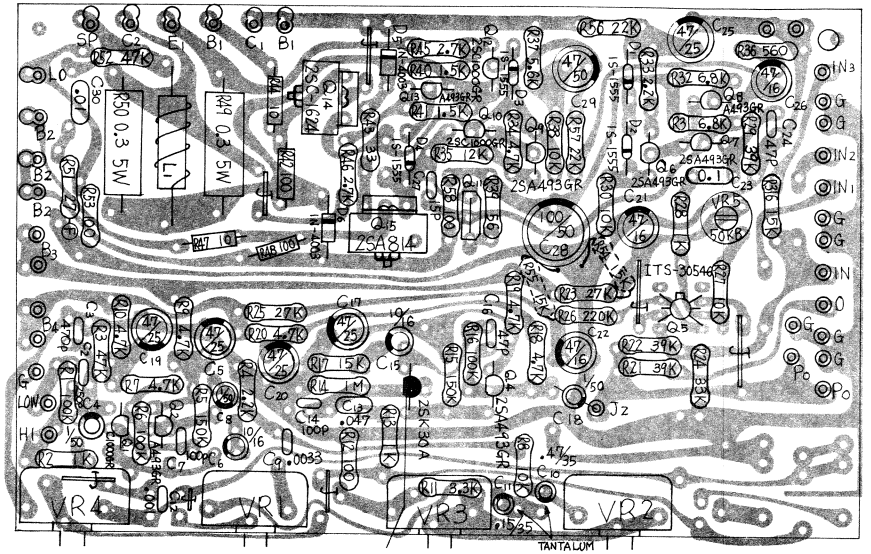


AP-43 (141-043)

left

pattern (052-125)

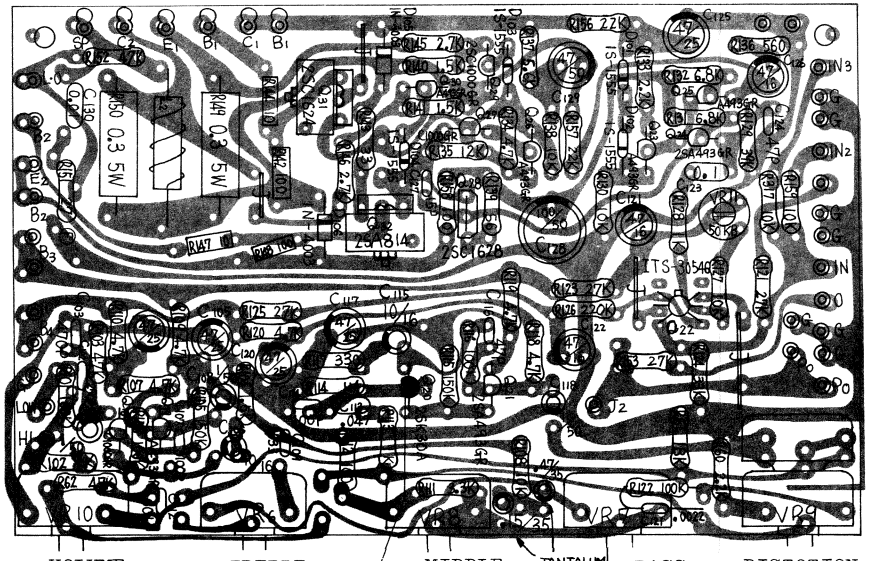
PS-18 (146-018)

right

pattern (052-123)

compatible with PS-18 on page 8

Potentiometers V24L5PHIN20KC type can be substituted by EVCSOAK20 type



AP-44 (141-044)

left

pattern (052-125)

read ITS-30546 as E-412

When ordering PCBs and/or Pots, specify SERIAL and PATTERN NUMBER

VOLUME
V24L5PHIN
20KC(15)
B100K
(030-183)

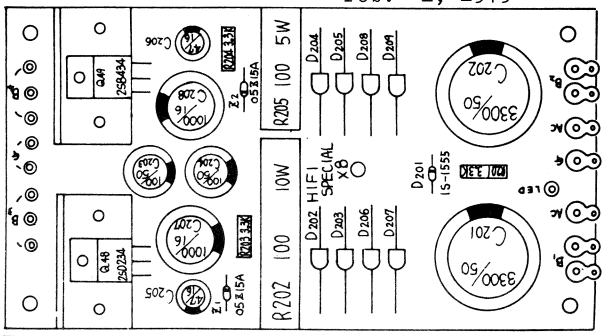
TREBLE
V24L5PHIN
20KC 15
B50K
(030-182)

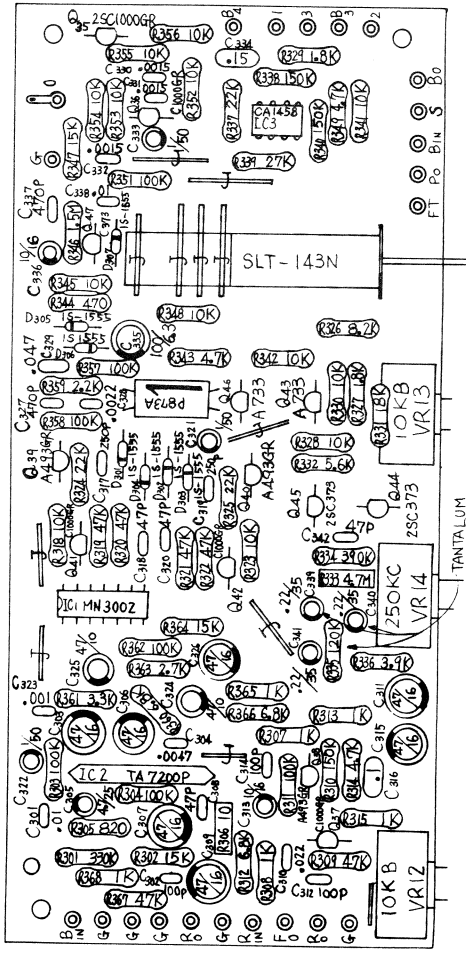
S D G

MIDDLE
V24L5PHIN
20KC 15
B5K
(030-179)

BASS
V24L5PHIN
20KC 15
A100K
(030-174)

DISTOTION
EWFN1AK20
100KB x 2
(029-076)

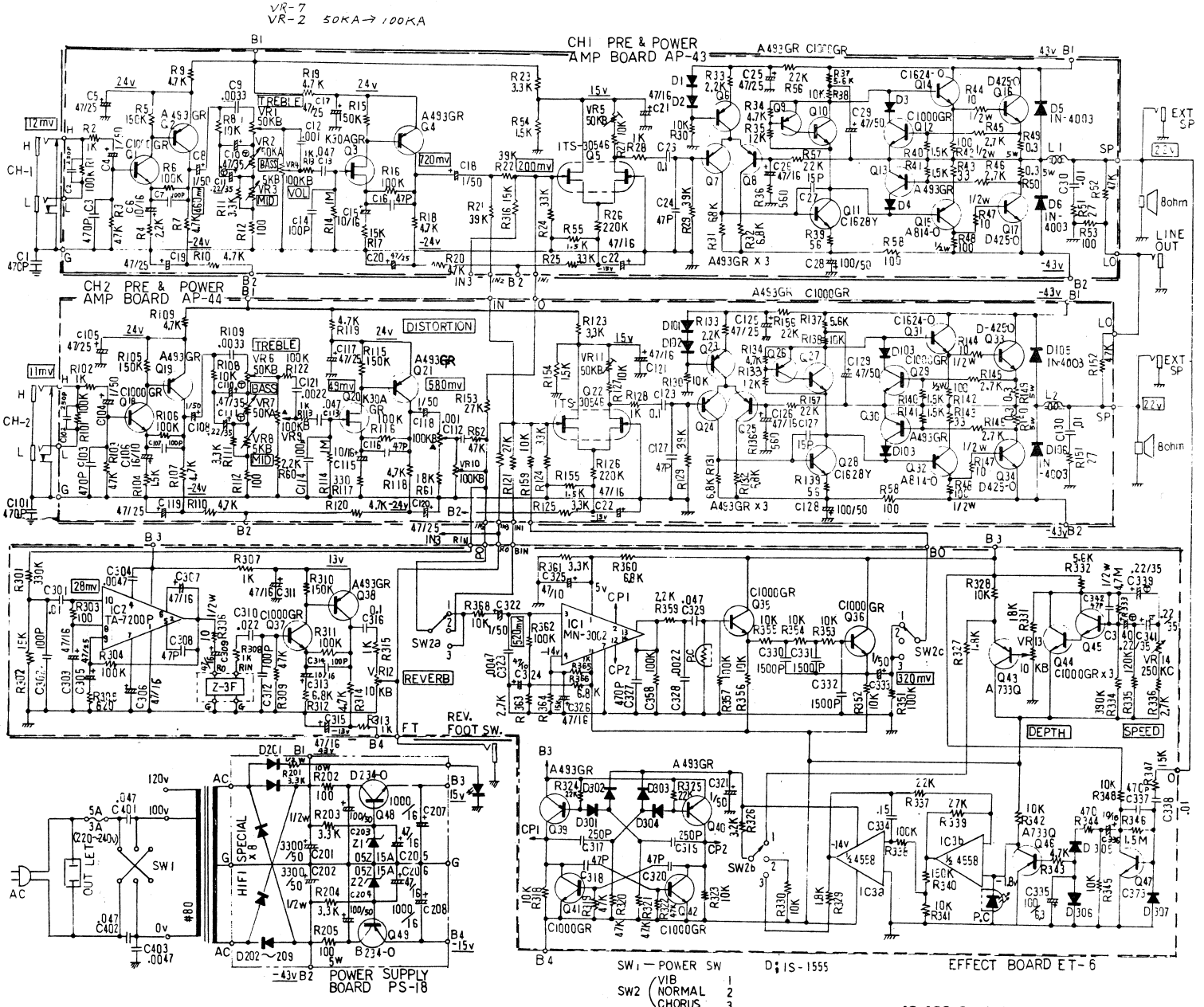




ET-6 (151-006)

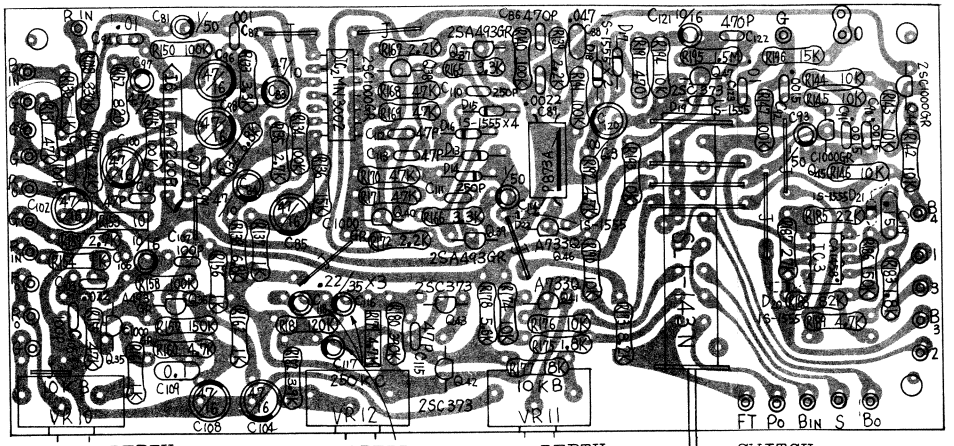
pattern (052-124)

SLT-143N (001-082)



JC-120 Serial No. 380100~410599

ET-7 (151-007) pattern 052-124



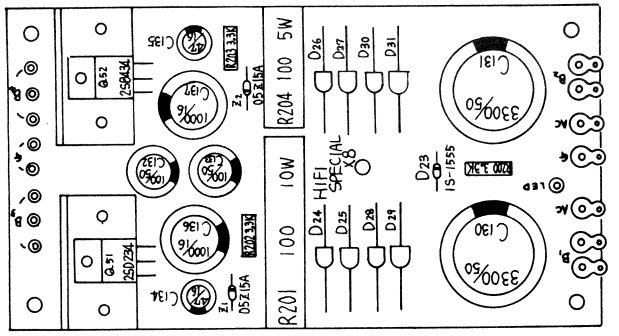
REVERB DEPTH
V24L5PHIN20KC
15B10K(030-180)

VIB. SPEED
V24L5PHIN20KC
C250K(030-193)

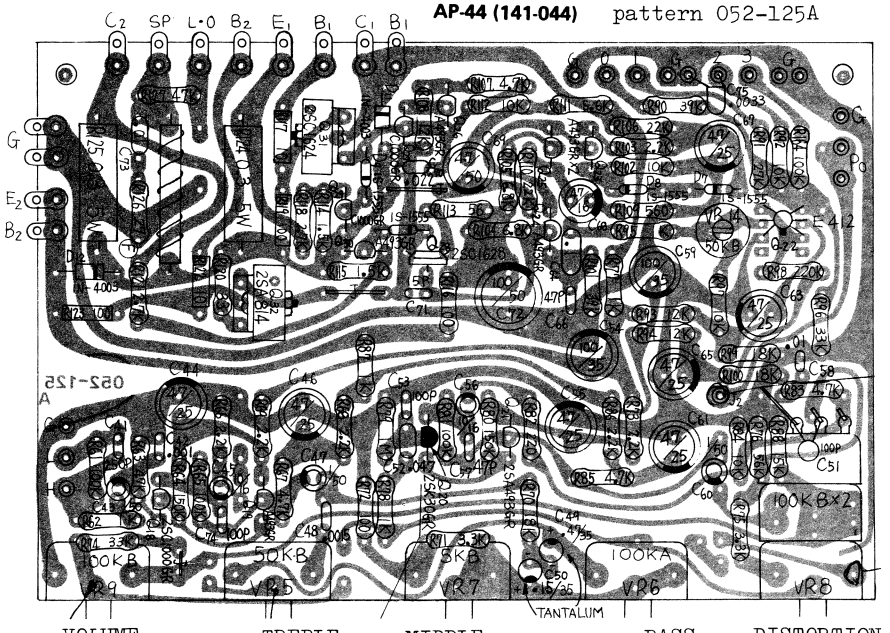
VIB. DEPTH
V24L5PHIN20KC
15 B10K(030-180)

SWITCH
SLT-143N
(001-082)

PS-18 (146-018) pattern 052-123 same, as on p6



AP-44 (141-044) pattern 052-125A



VOLUME
V24L5PHIN20KC
15 B100K
(030-183)

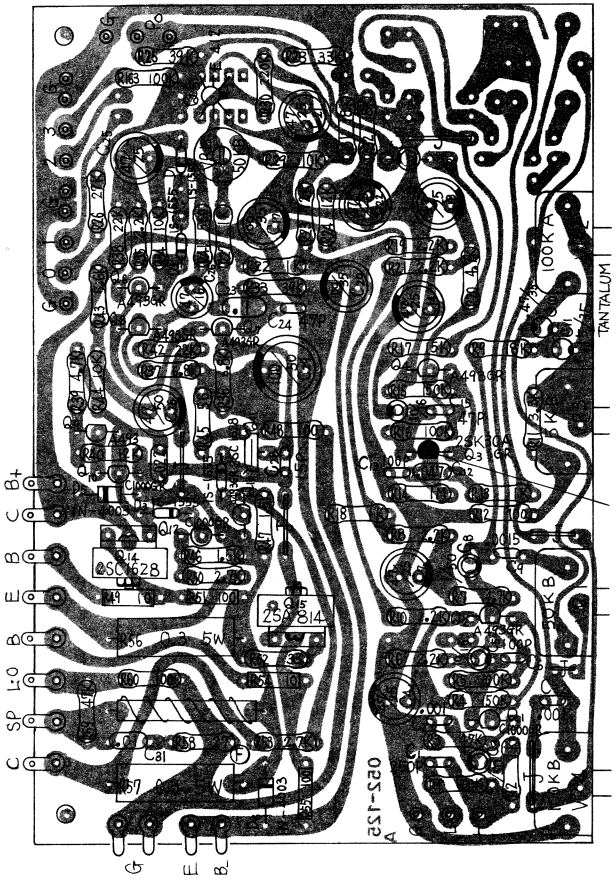
TREBLE
V24L5PHIN
20KC15B50K
(030-182)

MIDDLE
V24L5PHIN
20KC15B5K
(030-179)

BASS
V24L5PHIN
20KC15A100K
(030-174)

DISTORTION
EWFN0LK20
100KB x 2

AP-43 (141-043)
pattern
052-125A



BASS
V24L5PHIN
20KC15A100K
(030-174)

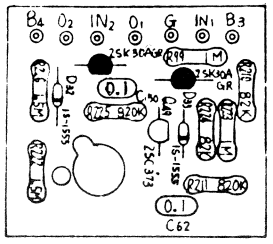
MIDDLE
V24L5PHIN
20KC15B5K
(030-179)

TREBLE
V24L5PHIN
20KC B50K
(030-182)

VOLUME
V24L5PHIN
20KC 15
B100K
(030-183)

OP-36 (149-036)
pattern 052-180

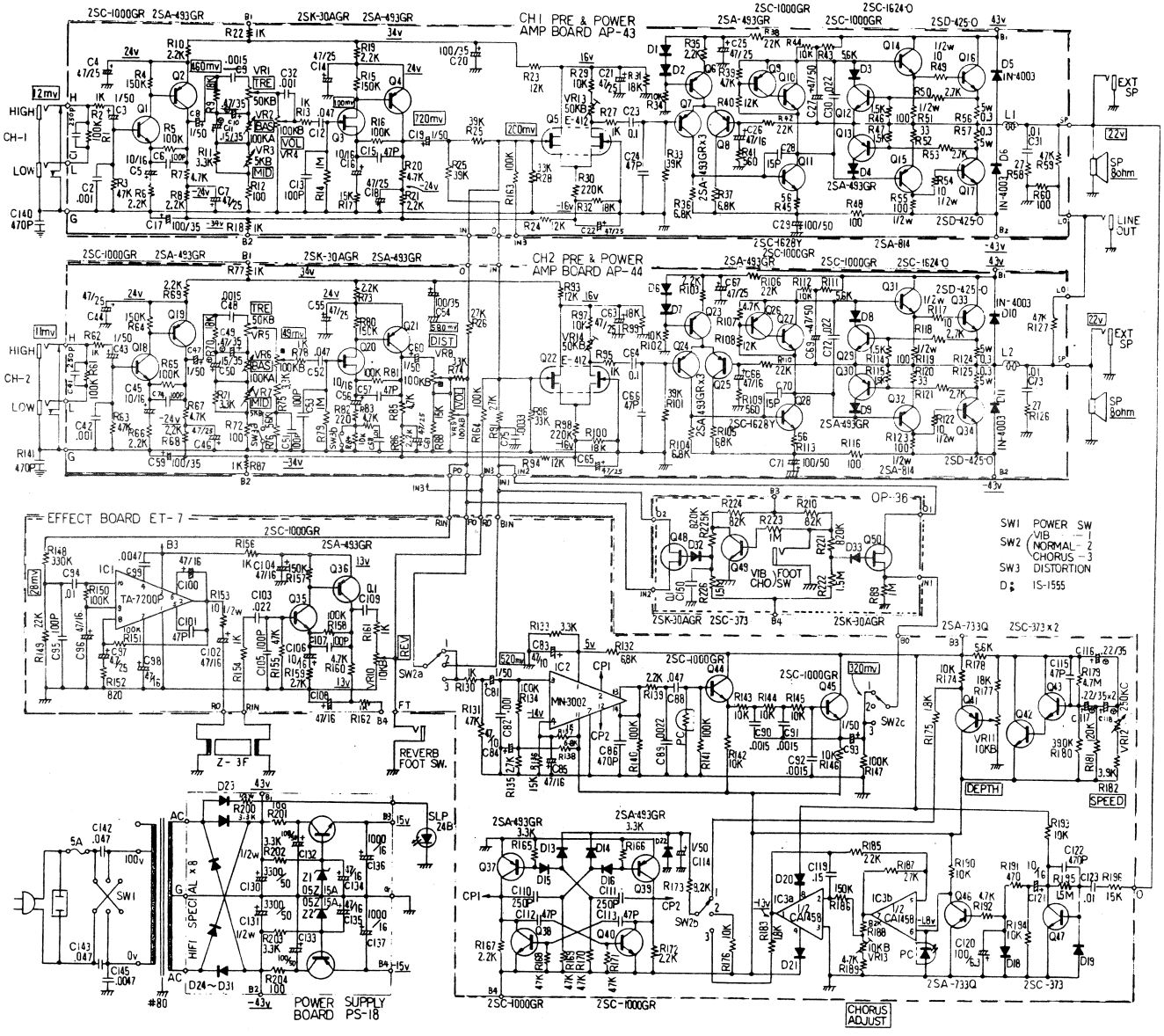
Mounted on product bearing the serial number in this page



Potentiometers V24L5PHIN type can be substituted by EVCSOA type.

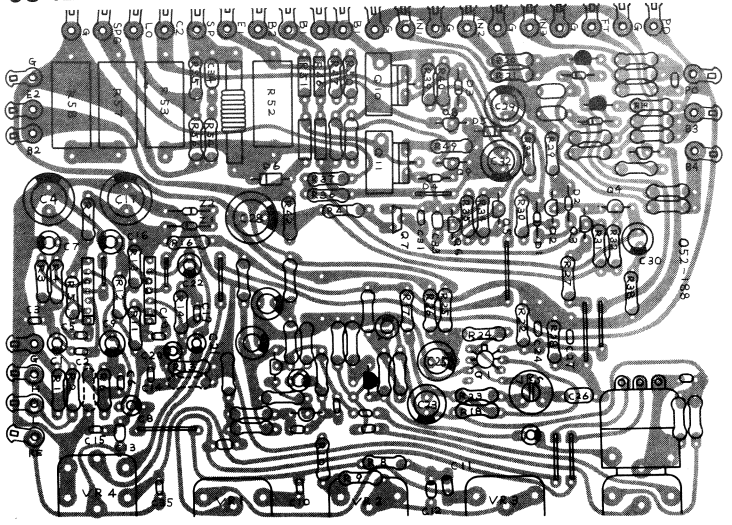
IMPORTANT

When ordering PCB or POT., specify SERIAL and PATTERN NUMBERS.



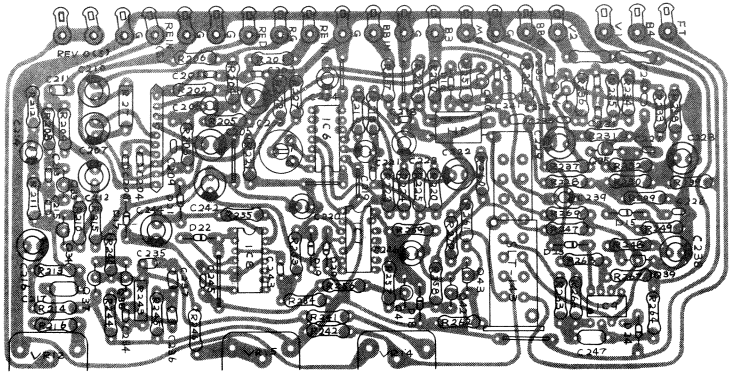
JC-120 serial no.420600 - 471649
JC-160 serial no.440100 - 470549

JC-120 JC-160



AP-43 (141-043)

052-188 (parts side)
052-181 (pattern side)



REVERB DEPTH
V24L5PHIN20KC
15B10K(030-180)

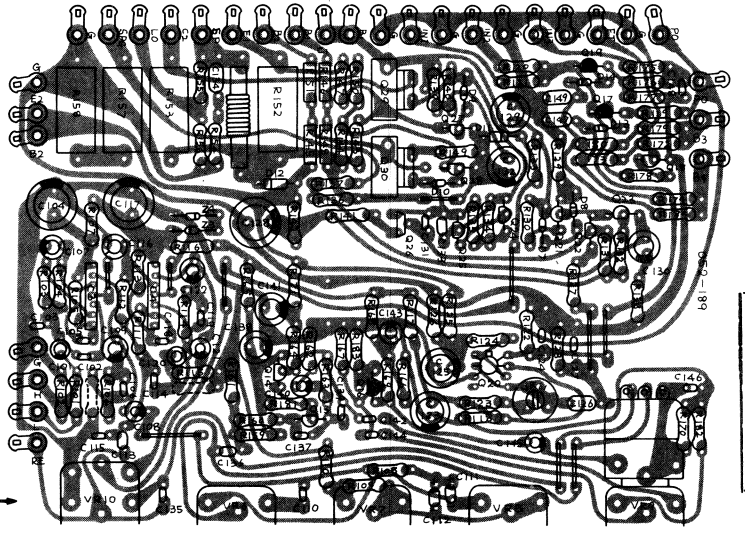
VIB SPEED
V24L5PHIN20KC
C250K(030-193)

VIB DEPTH
V24L5PHIN20KC
15B10K(030-180)

SWITCH
SLT-143N
(001-082)

ET-7 (151-007)

052-190 (parts side)
052-182 (pattern side)



AP-44 (141-044)

052-189 (parts side)

052-181 (pattern side)

PS-18 (146-018)

See page 13

IMPORTANT
Always give the SERIAL and PATTERN NUMBER as well as PART NUMBER when ordering PCB.

Potentiometers of V24L5PHIN type: can be substituted by EVCSOA type.

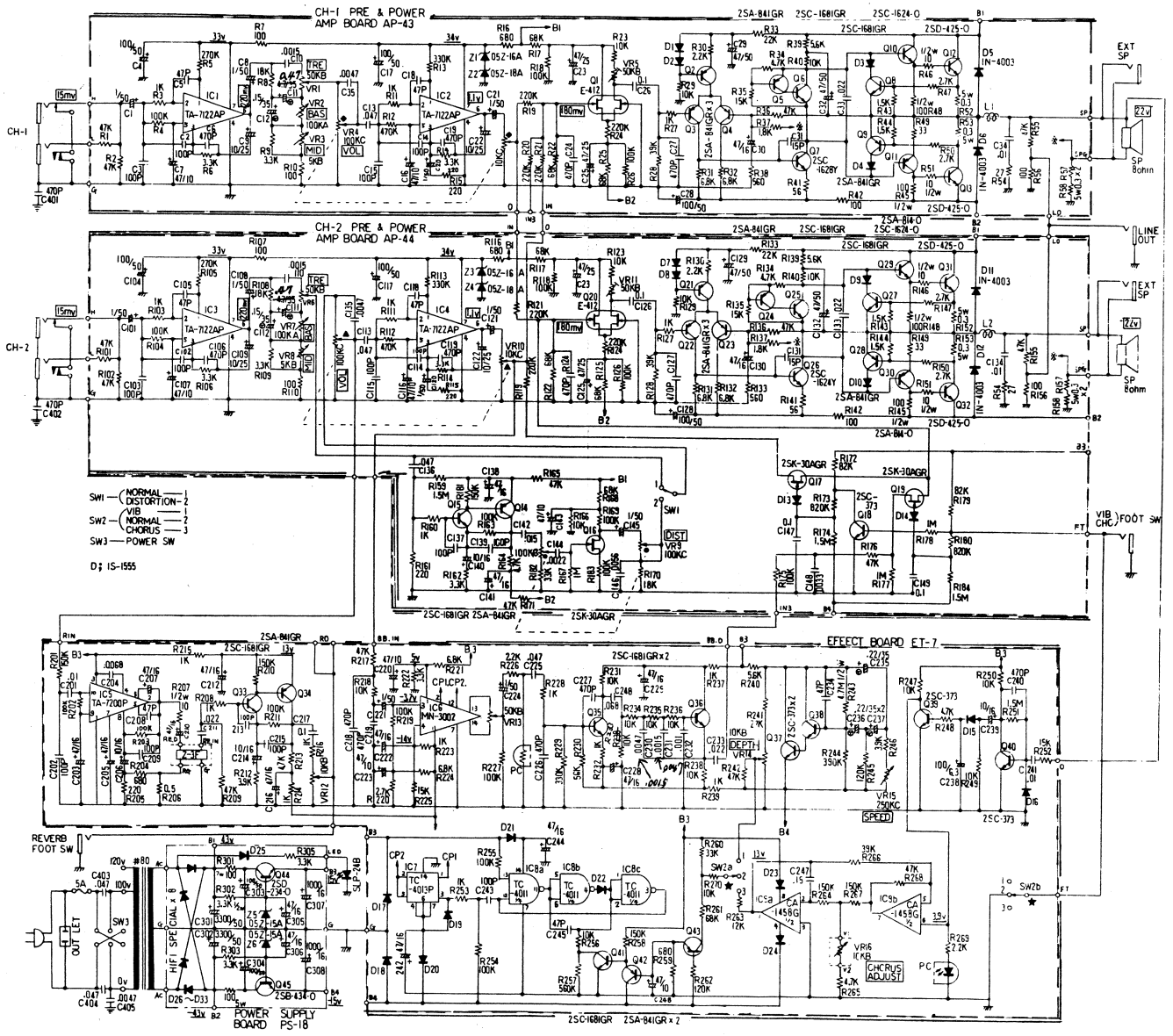
VOLUME
V24L5G3PHIN
20KC
100KC+10KC
(030-196)

TREBLE
V24L5PHIN
20KC15B50K
(030-182)

MIDDLE
V24L5PHIN
20KC15 B5K
(030-179)

BASS
V24L5PHIN
20KC15A100K
(030-174)

DISTORTION
EWFN0HK20,836 (029-060) or V24L5GPHISB9ME 20KC C100K + B100K



Primary voltage:
117, 220, 240V
see next page

JC-120 serial NO.481650 – 502499
JC-160 serial NO.480550 – 500849

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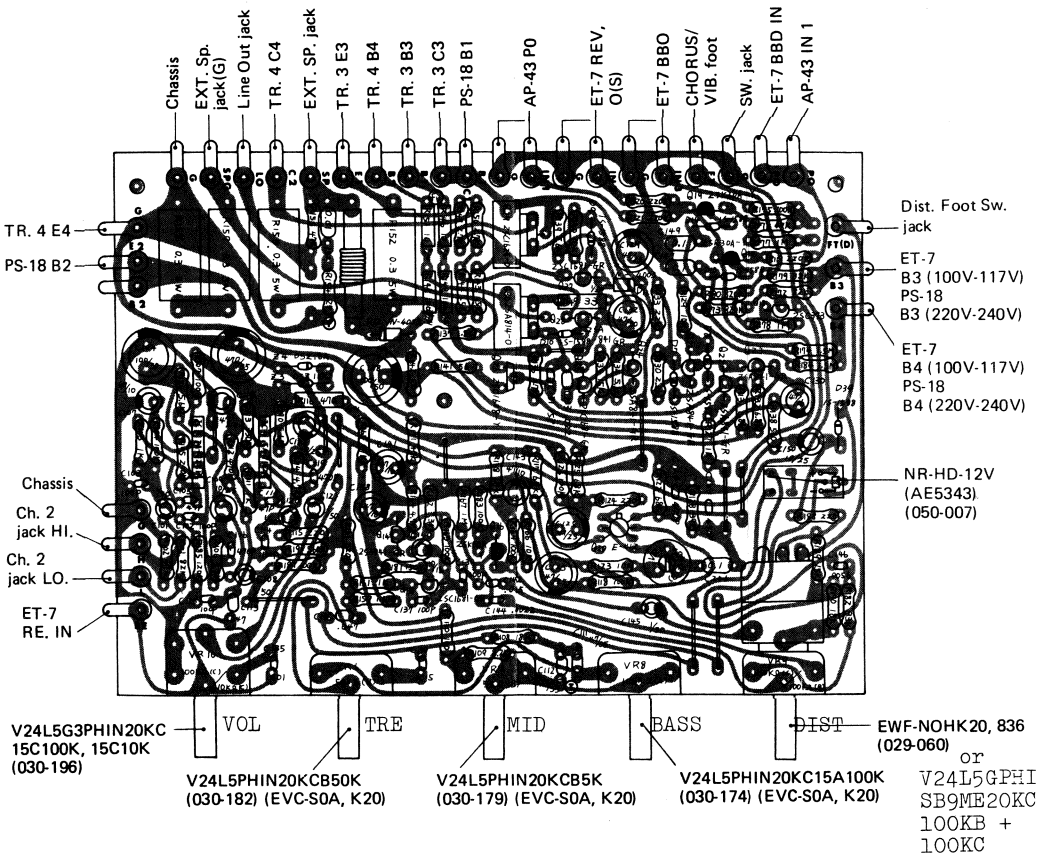
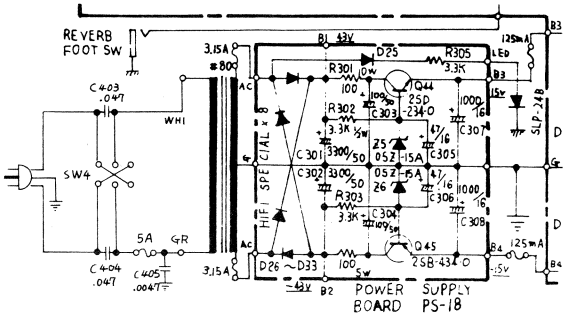
JC-120 serial No. 512500 and higher (up to 779499)
JC-160 serial No. 510850 and higher (up to 782919)

AP-44 (141-044) PCB 052-189A (parts side) 052-181A (pattern side)

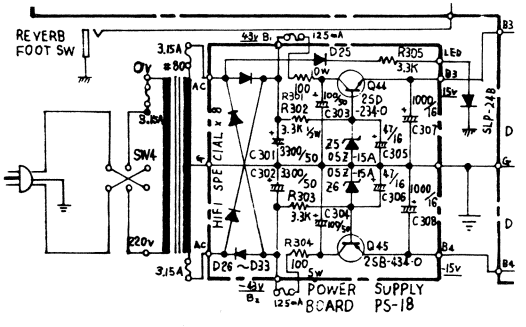


Since PCB designation is same but circuit pattern layout is different from those on the other pages, PCB order contains pattern number on the foil side is indispensable information to obtain adequate one to replace.



117V

FUSES:
5A - MGC (008-009)
125mAT - CEE (008-057)
3.15AT - CEE (008-072)



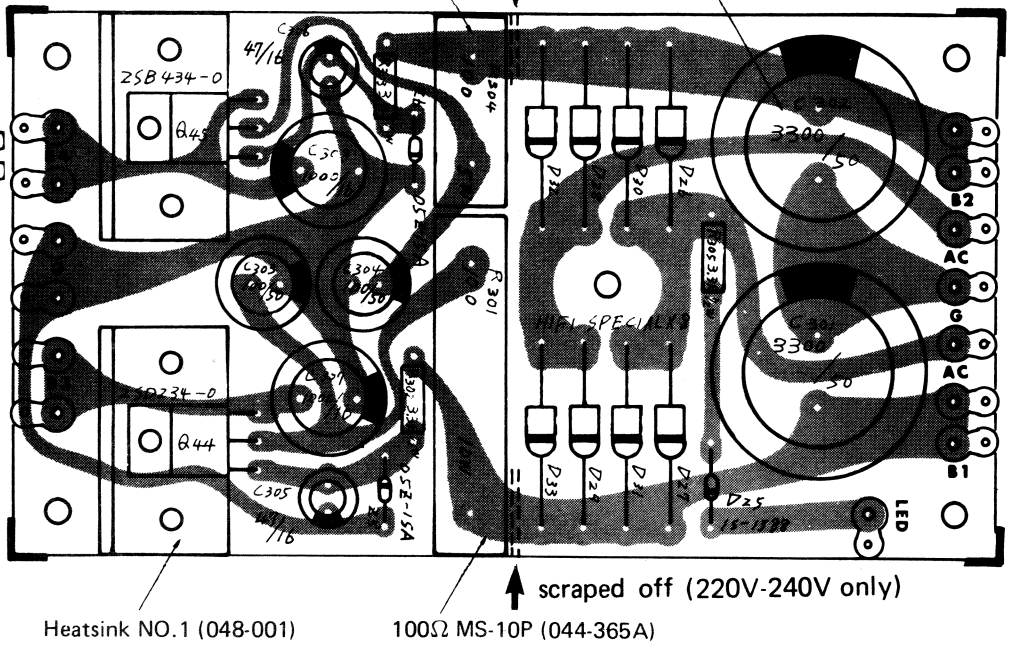
220V ~ 240V

PS-18 (146-018)

pattern
052-123A

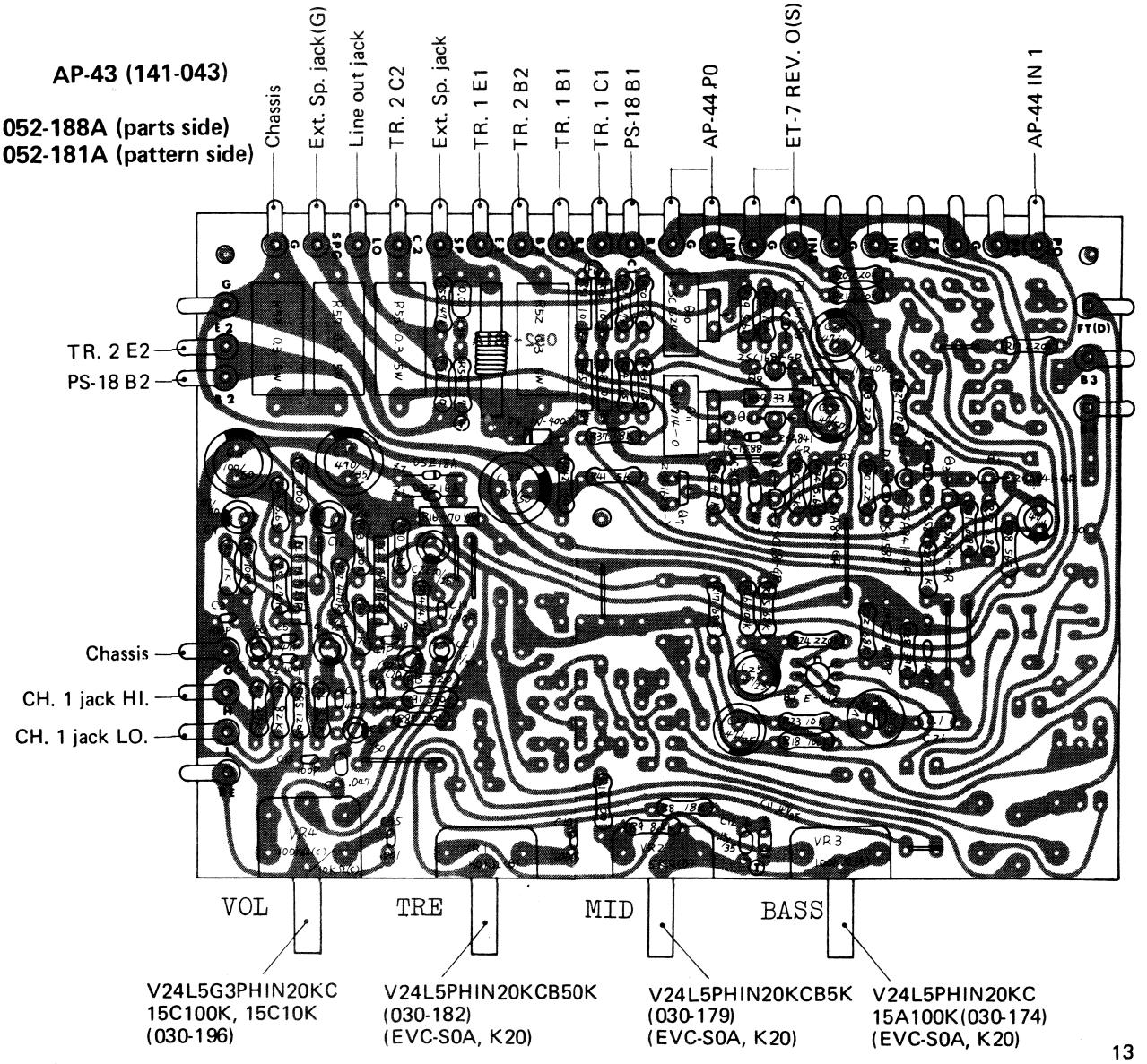
JC-120 serial NO.481650
JC-160 serial NO.480550

and higher

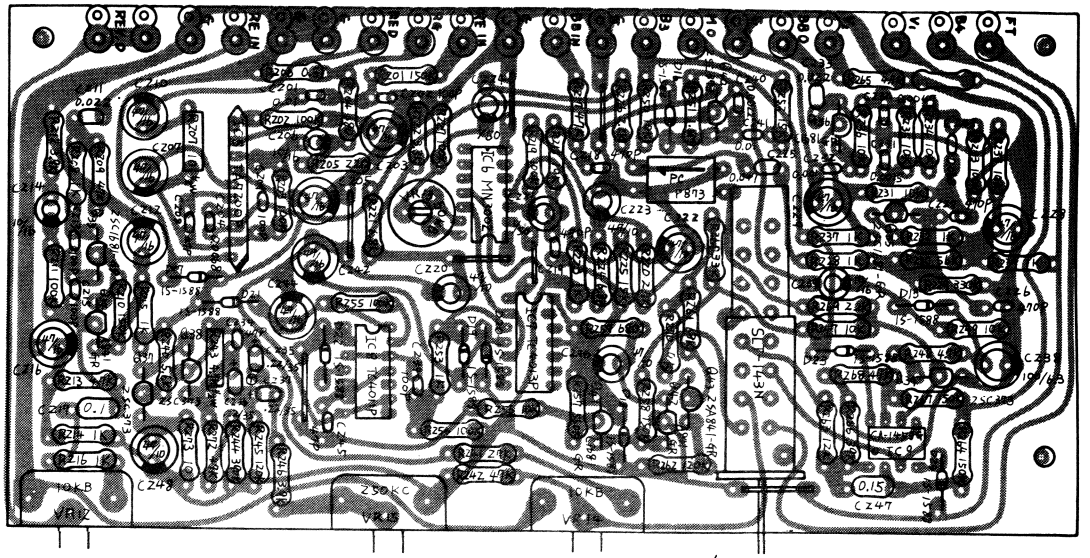


AP-43 (141-043)

052-188A (parts side)
052-181A (pattern side)

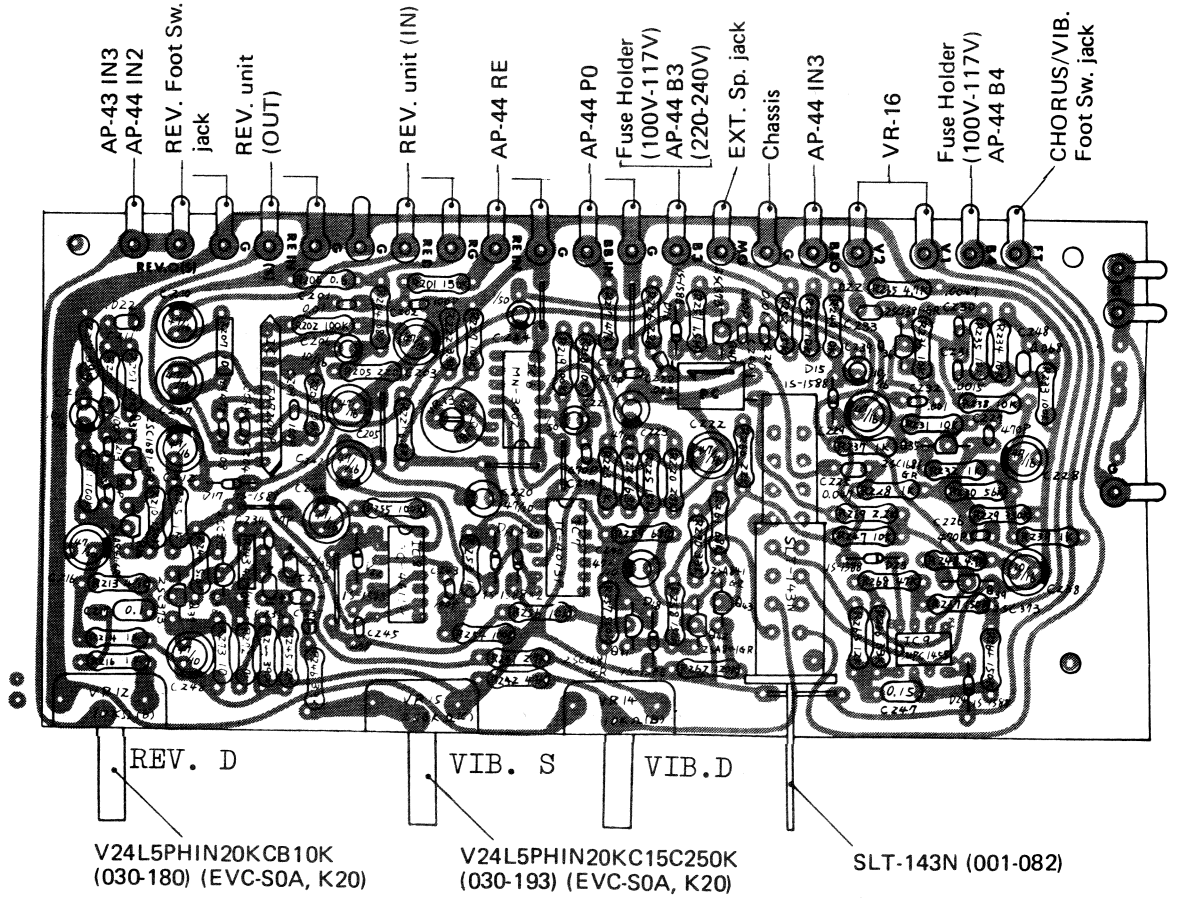


ET-7 **052-190A (parts side)** **JC-120** **Serial number 512500 to 533649**
052-182A (pattern side) **JC-160** **Serial number 510850 to 531049**



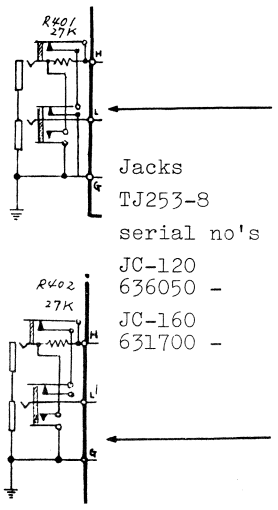
The difference between ET-6 of JC-60/80 and ET-7 is only capacitance of C211 (ET-7 - .022, ET-6 - .0056).
Two ET-7s (above, below) are interchangeable.
Shown below is better recommended for replacement.

ET-7 (151-007) PCB-(less parts 052-199) **JC-120 serial NO. 543650 and** (up to 779499)
JC-160 serial NO. 541050 and (up to 782919)



Feb. 1, 1979

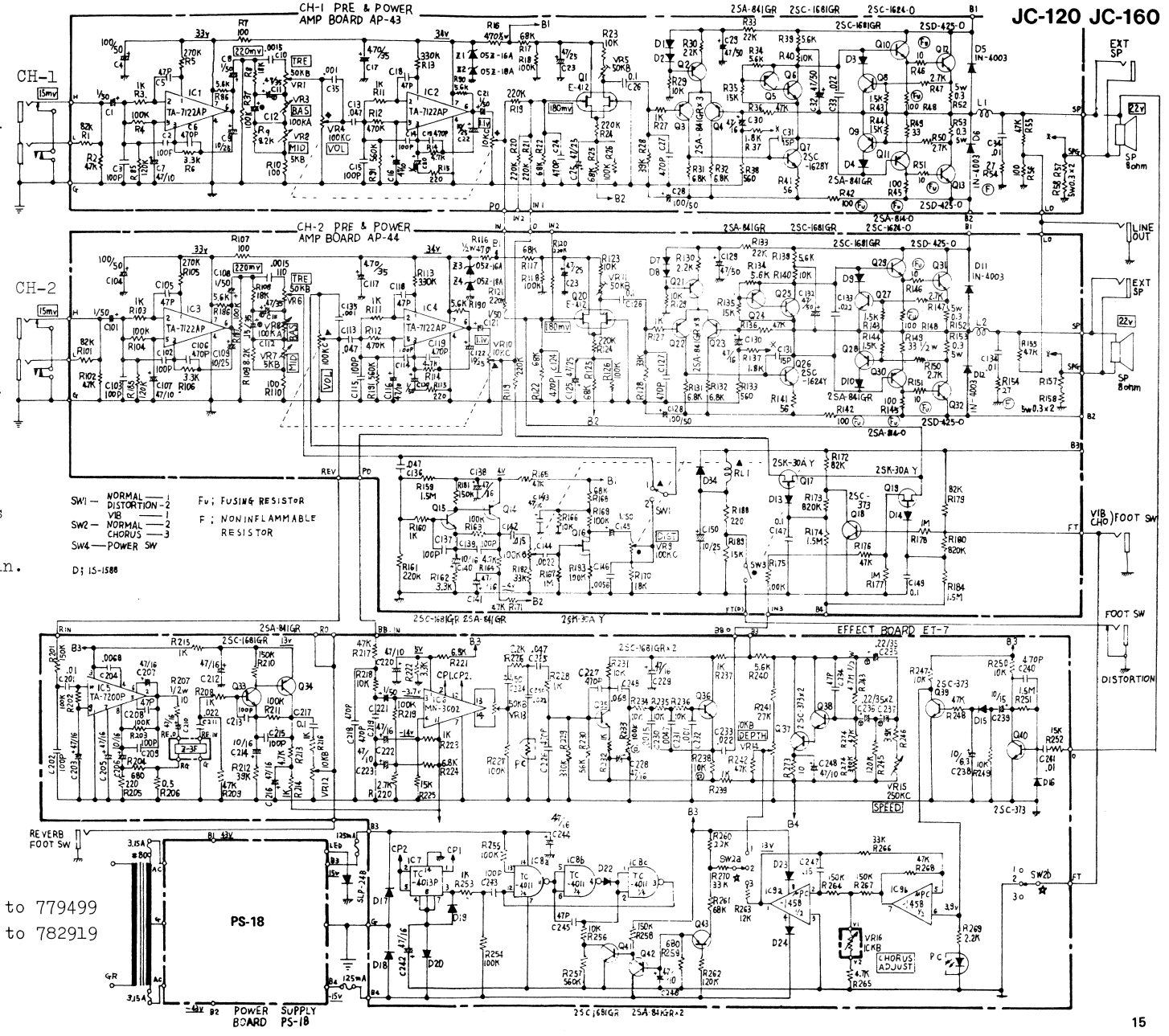
JC-120 JC-160



Jacks
TJ253-8
serial no's
JC-120
636050 -
JC-160
631700 -

NOTE:

In above jack cicuits
H input is grounded
when L input pluged in.



JC-120 serial No. 512500 to 779499
JC-160 serial No. 510850 to 782919

PARTS LIST

081-058	Cabinet no.58	JC-120 (complete)
089-038	Backboard no.38	JC-120
089-039	Backboard no.39	JC-160
081-068	Cabinet no.68	JC-160 (complete)
	*Handle H-30 & Handle Covers can be substitutive for H-25/26 *Caster 50mm dia. swible *Corner Metal (protector) no.119 *Included in cabinet assy	
072-082	Panel no.82 front	JC-120
072-138	Panel no.138 front	JC-160
072-105	Panel no.105 rear	obsolete by adoption of backboard no.38/39
131-068	Vinyl Cover no.68	JC-120
131-073	Vinyl Cover no.73	JC-160
041-019	Speaker 30-103D	JC-120
041-026	Speaker 25-33D	JC-160
016-060	Knob no.60 or 016-019 TK-191	
016-047	Knob SM-2000	lever switch
022-080C	Power Transformer no.80C	117V
022-080D	Power Transformer no.80D	220/240V
022-020	Choke Coil LB-2.5mH	
040-001	Reverb Unit Z-3F	
053-211	Reverb Cord Assy no.211 450mm lengths	
052-212	Reverb Cord Assy no.212 650mm lengths	
009-001	Jack SG7615 #5	two for INPUT
009-008	Jack TJ-253-8 (for all INPUTs JC-120 636050 JC-160 631700 and higher)	INPUT
001-019	Switch WD13129	power 220/240V
001-235	Switch S-7B-7	power 117V
001-082	Switch SLT-143N	lever
050-007	Relay NR-HD-12V (AE5343) Serial no. JC-120 512500 JC-160 510850 and higher	
061-079	Chassis no.79	
048-030	Heat Sink no.30 output	
048-001	Heat Sink no.1 DC supply	
048-018	Heat Sink SB-A driver	
120-001	Sleeve Nut no.1 3 x 10mm	
120-007	Sleeve Nut no.7 3 x 52mm	
065-121	Transistor Cover Z2-104P-00	117V only
012-001	Transistor Socket TS-005	

TRANSISTORS

017-041	2SD425-0	
017-010	2SD234-0	
017-022	2SB434-0	
017-062	2SC1681-GR	
017-069	2SA841-GR	
017-028	2SC1628-Y	
017-029	2SC1624-0	
017-030	2SA814-0	
017-011	2SC373	
017-014	2SK30A-Y	FET
017-036	E-412 (ITS-30546)	dual FET

ICs

020-028	TA7200P	
020-040	TC4011P	
020-041	TC4013P	
020-060	TA7122AP	
020-062	μPC1458	
020-030	MN3002	BBD

DIODES

018-019	GP-25 (Hi-Fi special)	
018-022	1N4003	
018-059	1S1588	
018-025	05Z-15A	zener
018-026	05Z-16A	zener
018-055	05Z-18A	zener

LEDs PHOTOCELL

019-006	P873-G35-380 red rank	
019-003	LED SLP-24B	
062-004	Bracket no.4 (lens, mate to SLP-24B)	
	or	
019-014	LED SLP-4B w/lens	
052-307	SLP-4B mounting PCB	

RESISTORS

044-132	ERC-12GK	3.3K-ohm	½w
044-108	ERC-12GK	33-ohm	½w
044-122	ERC-12GK	470-ohm	½w
044-102	ERC-12GK	10-ohm	½w
044-398 *	ERD-12FJ	27-ohm	½w
	* noninflammable		

Wire Wound

044-253	MS-5	0.3-ohm	5w
044-283A	MS-5P	100-ohm	5w
044-365A	MS-10P	100-ohm	10w

Fusing

008-118	FN-1	10-ohm	¼w
008-130	FN-1	100-ohm	¼w

POTENTIOMETERS

030-197	V24L5N10S B10K 10KB	
028-006	EVTR4A00B54	50KB
	or SR19R	50KB

CAPACITORS

032-177	ECET50R3300S	3300μF	50V
032-092	0.15μF	35V	tantalum
032-095	0.47μF	35V	tantalum
032-093	0.22μF	35V	tantalum
035-103	0.01μF	200V	polyester

FUSE HOLDERS FUSES

012-020	Holder SN2059 prim.	117V
012-019	Holder SN2250 prim.	220/240V
012-022	Holder TF758W sec.	117V
012-018	Holder XN1153 sec.	220/240V
008-009	Fuse MGC 5A prim.	117V
008-057	Fuse CEE 125mAT sec.	
008-072	Fuse CEE 3.15AT sec. (prim. 220/240V)	

* Resistors of ¼w, mylar capacitors, and small electro's are omitted.
* PCBs and Potentiometers: reffer to PCB layouts.

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