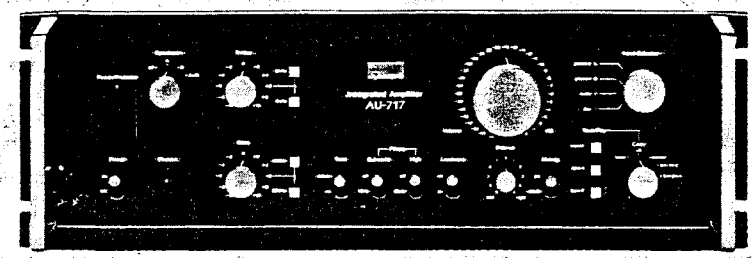
SERVICE MANUAL

INTEGRATED STEREO AMPLIFIER

SANSUI AU-517/717



Sansui

SANSUI ELECTRIC CO., LTD.

SPECIFICATIONS

AU-517

Power output
Min. RMS, both channels driven, from 20 to 20,000 Hz, with no more than 0.025% total harmonic distortion
65 watts per channel into 8 ohms
Load impedance . . . . . 8 ohms
Power bandwidth . . . . . 20 to 20,000 Hz at or below rated min. RMS power output and total harmonic distortion
Total harmonic distortion (POWER AMP IN) . . . . . less than 0.025% at or below rated min. RMS power output
Intermodulation distortion (70 Hz:7 kHz = 4:1 SMPTE method) . . . . . less than 0.025%
Frequency response (at 1 watt) (POWER AMP IN) . . . . . 0 to 200,000 Hz +0 dB –3 dB
RIAA curve deviation (PHONO) +0.2 dB –0.2 dB (20 to 20,000 Hz)
Damping factor . . . . . approximately 60 at 8 ohms load

Input sensitivity and impedance (1 kHz, for rated power output)
PHONO . . . . . 2.5 mV/47 kilohms
(Max. input capability: 320 mV at 1 kHz, less than 0.01% harmonic distortion)
AUX, TAPE . . . . . 150 mV/47 kilohms
Output level (1,000 Hz)
TAPE REC (pin jack) . . . . . 150mV/47 kilohms
PRE OUT . . . . . 1V/47 kilohms
Channel separation (1 kHz, at rated power output)
PHONO . . . . . better than 60 dB
AUX . . . . . better than 65 dB
Hum and noise (short-circuit, A-network)
PHONO . . . . . 78 dB
AUX . . . . . 100 dB
Controls
BASS . . . . . +10 dB (50 Hz)
TREBLE . . . . . +10 dB (15 kHz)
SUBSONIC FILTER . . . . . –3 dB (16 Hz), 6 dB/oct
LOUDNESS (–30 dB) . . . . . 9 dB at 50 Hz
7 dB at 10 kHz

Power requirements
Power voltage 100, 120, 220, 240V (50/60Hz)
120V (Usable 110 – 130V)
60 Hz (for U.S.A. & Canada only)
Power consumption
Maximum consumption . . . . 660 watts
Rated consumption . . . . . 345 watts 420 VA
Dimentions . . . . . 430 mm (16-15/16") W
168 mm (6-5/8") H
389 mm (15-3/8") D
Weight . . . . . 16.5 kg (36.4 lbs) net
18.5 kg (40.8 lbs) packed

* Design and specifications subject to change without notice for improvements.

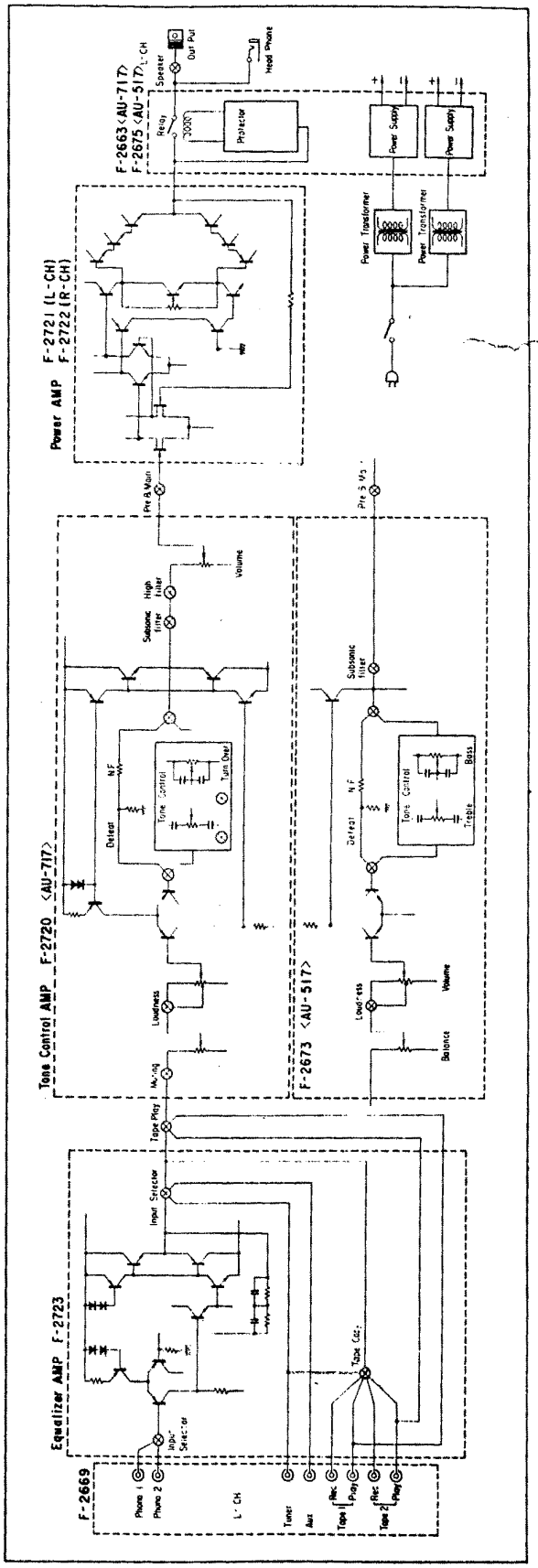
1. SPCIFICATIONS

AU-717

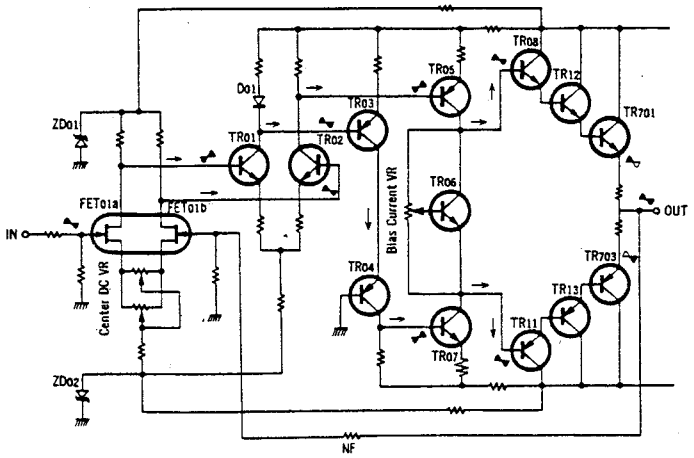
Power output
Min. RMS, both channels driven, from 20 to 20,000 Hz, with no more than 0.025% total harmonic distortion
85 watts per channel into 8 ohms
Load impedance . . . . . 8 ohms
Power bandwidth . . . . . 20 to 20,000 Hz at or below rated min. RMS power output and total harmonic distortion
Total harmonic distortion (POWER AMP IN)
. . . . . less than 0.025% at or below rated min. RMS power output
Intermodulation distortion (70 Hz: 7 kHz = 4:1 SMPTE method)
. . . . . less than 0.025%
Frequency response (at 1 watt) (POWER AMP IN)
. . . . . 0 to 200,000 Hz +0 dB -3 dB
RIAA curve deviation (PHONO) . . . . +0.2 dB –0.2 dB (20 to 20,000 Hz)
Damping factor . . . . . approximately 60 at 8 ohms load

Input sensitivity and impedance (1 kHz, for rated power output)
PHONO . . . . . 2.5 mV/47 kilohms
(Max. input capability; 350 mV at 1 kHz, less than 0.01% total harmonic distortion)
AUX, TAPE . . . . . 150 mV/47 kilohms
Output level (1,000 Hz)
TAPE REC (pin jack) . . . . . 150 mV/47 kilohms
PRE OUT . . . . . 1 V/47 kilohms
Channel separation (1 kHz, at rated power output)
PHONO . . . . . better than 60 dB
AUX . . . . . better than 65 dB
Hum and noise (short-circuit, A-network)
PHONO . . . . . 78 dB
AUX . . . . . 100 dB
Controls
BASS . . . . . ±10 dB (50 Hz)
Tone selector . . . . . 200, 400 Hz
TREBLE . . . . . ±10 dB (15 kHz)
Tone selector . . . . . 3, 6 kHz
SUBSONIC FILTER . . . . . –3 dB (16 Hz), 6 dB/oct
HIGH FILTER . . . . . –3 dB (10 kHz), 6 dB/oct
MUTING . . . . . –20 dB
LOUDNESS (–30 dB) . . . . . 9 dB at 50 Hz
7 dB at 10 kHz
Power requirements
Power voltage . . . . . 100, 120, 220, 240V (50/60 Hz)
120V (Usable 110 – 130V) 60 Hz (for U.S.A. & Canada only)
Power consumption
Maximum consumption . . . . . 735 watts
Rated consumption . . . . . 425 watts 500 VA
Dimentions . . . . . 430 mm (16-15/16") W
168 mm (6-5/8") H
389 mm (15-3/8") D
Weight . . . . . 17.8 kg (39.2 lbs) net
19.8 kg (43.7 lbs) packed

2. BLOCK DIAGRAM



3. ADVANTAGE AND OPERATION OF POWER AMPLIFIER CIRCUITRY SECTION



3-1. Advantage

◇There is neccessity not to decrease the phase response till DC range in order to increase the music signal response of extremely low frequency range. Therefore, this amplifier is employing no capacitors except ones for phase compensation, and has an almost perfect transient characteristics.

◇The first stage FET (2SK97) is a dual FET of even characteristics and has a large Gm and no-leakage current at normal temparature.
To avoid the influence by temperature drift, such as center voltage (0V) deviation, this FET is used as differential amplifier and operates at cross point which is the optimum point of drain current (at about 3mA) against the temperature drift.

◇Transistors, TR05 and TR07, the push-pull pre-driver stage functions as current differential amplifier that the stabilized operation can be obtained. In addition, the collector current of these transistors is enough high to make linearity excellent.

◇Since this Amplifier employs phase advancer circuits [C06, C08, C15, R29, C16 and R30], which have not been frequently used, to compensate the phase characteristics on high frequency range and is also made to have enough current on each stage to increase the through-rate, the performance on high frequency range is conspicuously improved.

◇To avoid the voltage deviation, regulated power supply circuit composed of ZD01, ZD02 is employed.

3-2. Operation

The use of differential amplification at first stage dual FET, (FET01, FET02) and connection of the FET to the differential amplifier composed of TR01, TR02, make possible to obtain enough gain and remarkable low distortion.
The output signals of TR01 and TR02 are untiphase.
The output signal of TR02 adds to TR05, on the other hand, the output phase of TR01 is inverted by TR03, then, it becomes input signal of TR04 and TR07 which are cascoded connection.
The output signals at TR05 and TR07 are inphase that the operation of this stage is push-pull drive and current differential amplification. The power amplifier of the final stage is composed of SEPP (Single Ended Push-Pull) symmetry comple mentary in 3-stage darlington connection type.
TR09 and TR10 are composing current limiter circuit to protect power transistor from break-down by overload.

4. ADJUSTMENTS

4-1. Driver Circuit Board Adjnstments (See the picture of top view on page 3.)

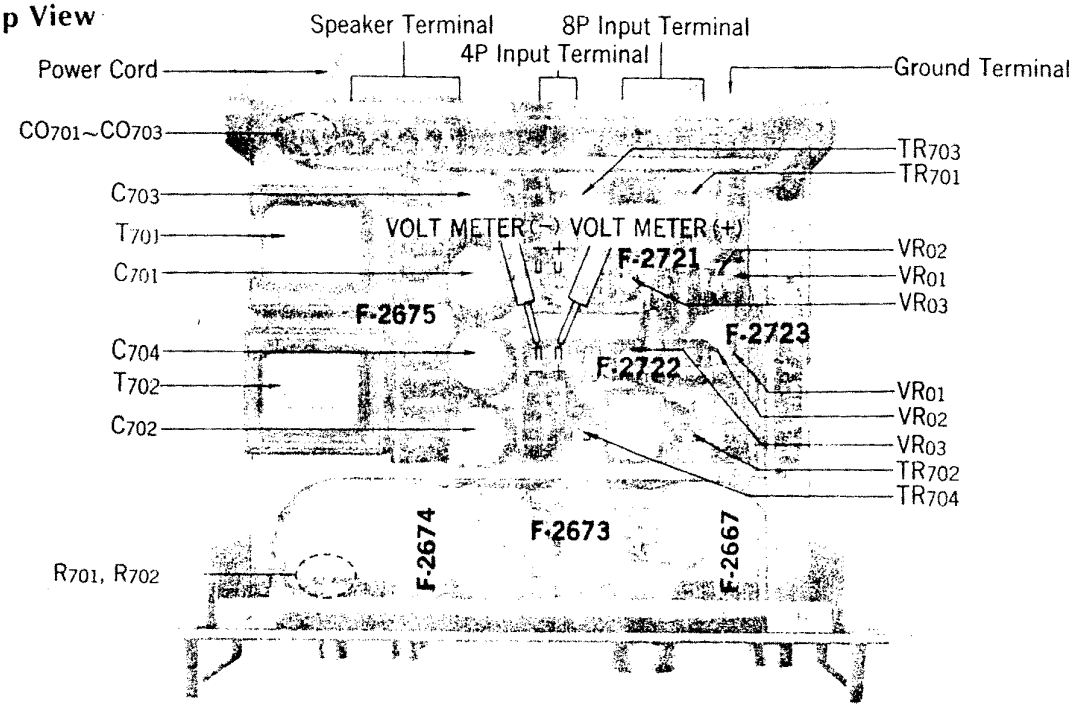
Note: 1. Master Volume.....Minimum
2. Room Temperature.....
3. For adjustment, run the unit for more than 3 minutes after the power is switched on.

STEP	SUBJECT	EQUIPMENT	MEASURE OUTPUT	ADJUST	ADJUST FOR	CONDITION
1.	DC 0V L-CH	DC Volt Meter	Speaker Terminal	F-2721 VR01, VR02	DC 0V±5mV	◦ Set VR01 and VR02 to center position. ◦ Then, for the purpose of proceeding the accurate adjustment, set the voltage to 0 volt by VR01 first and VR02 next.
2.	DC 0V R-CH	Same as above	Same as above	F-2722 VR01, VR02	DC 0V±5mV	
3.	Bias Current L-CH	Same as above	TP Terminal (+) (−) of F-2721	F-2721 VR03	DC 20mV±1mV	◦ By turning VR03 counterclockwise, the bias current is decreased gradually.
4.	Bias Current R-CH	Same as above	TP Terminal (+) (−) of F-2723	F-2722 VR03	DC 20mV±1mV	

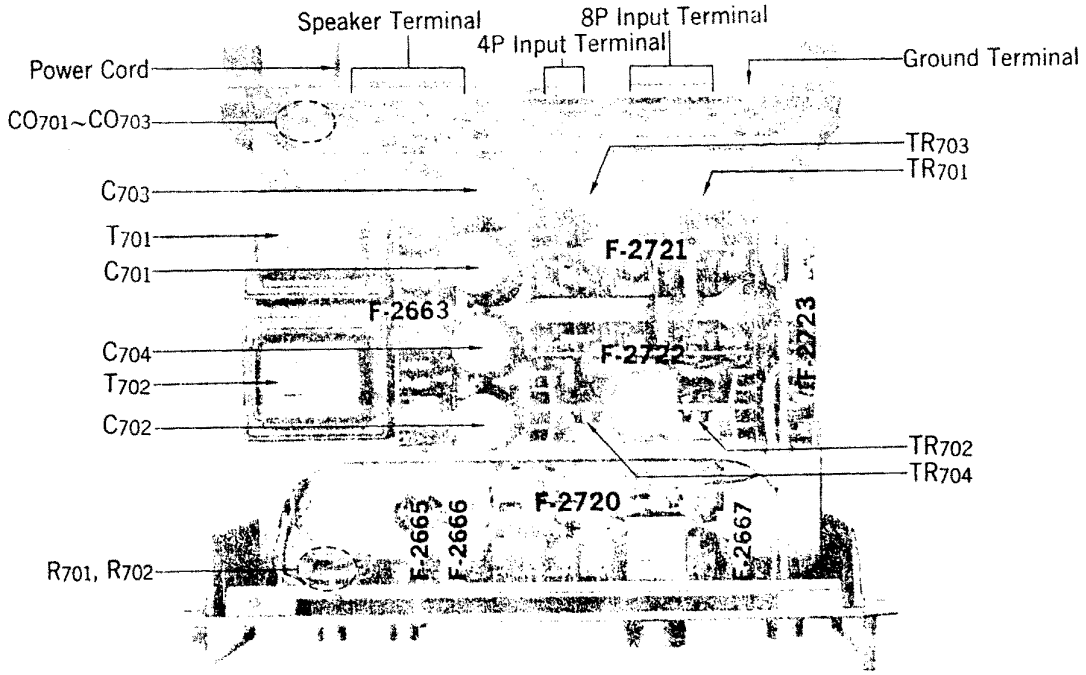
5. OTHER PARTS

5-1. Top View

〈AU-517〉



〈AU-717〉



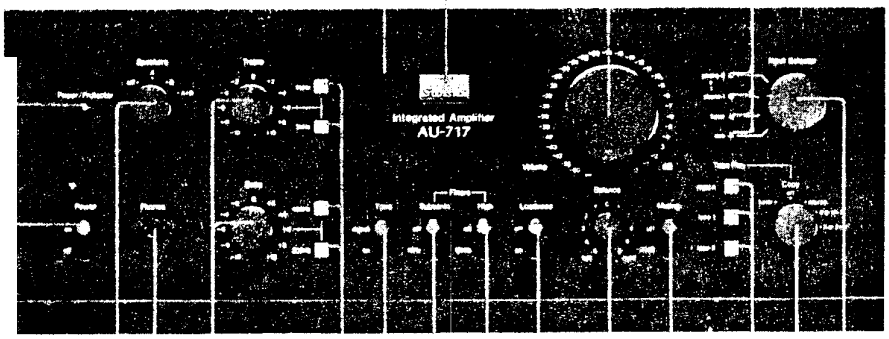
Parts List <AU-517/717>

Parts No.	Stock No.	Description
C[illegible]	0A5[illegible]01	0.01μF 150V M.C.
C707-714	0602109	1.0μF 100V M.C.
R701, 702	0202221	220Ω 2W N.I.R.
CO703-703	2450060	AC Outlet XX
	5066280	AC Outlet EU, BS
	2290190	Speaker Terminal
	3800010	Power Cord XX
	3800190	Power Cord EU
	3800320	Power Cord BS
	2300060	Power Fuse Holder XX
	2300090	Power Fuse Holder EU, BS
	2410091	Voltage Selector Plug XX
	2410830	Voltage Selector Socket XX

Parts No.	Stock No.	Description
	2411240	Voltage Selector SW EU, BS
	2230052	Ground Terminal
AU-517 Only		
TR701, 702	0306450-2	2SC1403A R, O, Y } Transistor
TR703, 704	0300830-2	2SA745A R, O, Y }
C701-704	0559518	12000μF 63V E.C.
T701, 702	4002590	Power Transformer XX
	4002594	Power Transformer EU, BS
	4002592	Power Transformer UL, CSA
F701	0432270	3.5A 125V } Power Fuse XX
	0432500	7A 125V }
	0435140	2.5A Power Fuse EU, BS

Parts No.	Stock No.	Description
AU-717 Only		
TR701, 702	0305840-2	2SC1116 R, O, Y } Transistor
TR703, 704	0300520-2	2SA747 R, O, Y }
C701-704	0559520	15000μF 63V E.C.
T701, 702	4002580	Power Transformer XX
	4002584	Power Transformer EU, BS
	4002582	Power Transformer UL, CSA
F701	0432290	5A 125V } Power Fuse XX
	0434060	10A 250V }
	0435150	3.15A Power Fuse EU, BS

5-2. Front View <AU-717>



Parts List <AU-517/717>

Parts No.	Stock No.	Description
1	5318850	N-7 Type Knob
	1015170, 1	250kΩ (MN) × 2 Balance Volume L=25 P=5
2	5318840	K-7 Type Knob
	1015230, 1	100kΩ (C) × 2 Treble, Bass Volume L=25 P=7
3	5318840	K-7 Type Knob
	1101780, 1	Rotary Switch, Speakers
4	5318840	K-7 Type Knob
	1190410	Rotary Switch, Tape Copy
5	5318830	I-7 Type Knob
	1190410	Rotary Switch, Input Selector
8	5326611	Lever Switch Knob
	1171150	Lever Switch, Tone Defeat
9	5326611	Lever Switch Knob
	1171630	Lever Switch, Power
	1171610	Lever Switch, Power EU, BS

Parts No.	Stock No.	Description
10	5326620	Push Switch Knob
	5286721	Knob Guide
	1131400	Push Switch, Tape Play
11	2430290	Head Phone Jack
12	5006670	Bonnet
13	5336600	Sansui Badge
14	0319110	Light Emitted Diode
	5507070	Leg
AU-517 Only		
6	5326611	Lever Switch Knob
	1171120	Lever Switch, Loudnes
7	5326611	Lever Switch Knob
	1171120	Lever Switch, Subsonic Filter
15	5318860	H-7 Type Knob
	1090250	150kΩ × 2 Volume L=25 P=7
19	7007580	Front Panel Ass'y
20	5058740	Bottom Plate

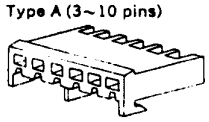
Parts No.	Stock No.	Description
AU-717 Only		
6	5326611	Lever Switch Knob
	1171130	Lever Switch, Loudnes
7	5326611	Lever Switch Knob
	1171130	Lever Switch, Subsonic Filter
15	5318860	H-7 Type Knob
	1090280	150kΩ × 2 5kΩ × 2 Volume L=25 P=9
16	5326611	Lever Switch Knob
	1171120	Lever Switch, Muting
17	5326611	Lever Switch Knob
	1171130	Lever Switch, High Filter
18	5326620	Push Switch Knob
	5286721	Knob Guide
	1131400	Push Switch, Turn Over
19	7007570	Front Panel Ass'y
20	5058730	Bottom Plate
21	0319110	Light Emitted Diode

● Figures

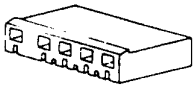
Connectors & Pin Ass'y

Connectors

Type A (3~10 pins)



Type B (2~6 pins)

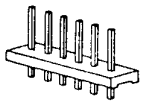


	Stock No.
2 Pins	2420450
3 Pins	2420460
3 Pins(RED)	2420650
4 Pins	2420470
5 Pins	2420480
6 Pins	2420490

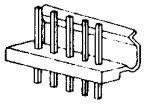
NOTE: Since stock number of famale connectors (type B) with wires are not shown in each parts list of Complete circuit board, please refer to the above parts list when ordering the connector.

Pin Ass'y

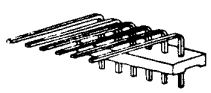
Type A (3~10 pins)



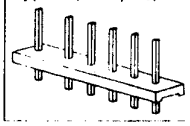
Type B (3~10 pins)



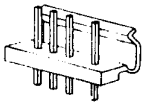
Type C (3~10 pins)



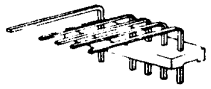
Type D (2~6 pins)



Type E (2~6 pins)



Type F (2~6 pins)



Abbreviations

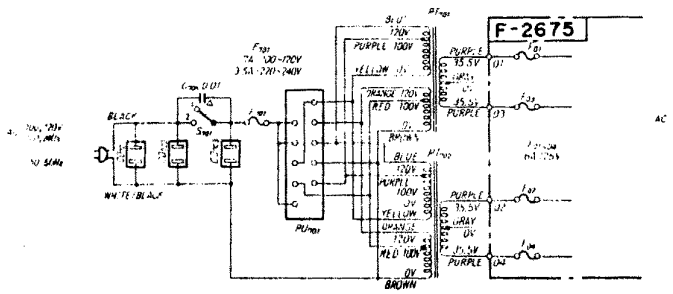
C.R.	:	Carbon Resistor	E.C.	:	Electrolytic Capacitor
S.R.	:	Solid Resistor	BP.E.C.	:	Bi-Polar Electrolytic Capacitor
Ce.R.	:	Cement Resistor			
M.R.	:	Metal Film Resistor	C.C.	:	Ceramic Capacitor
			MI.C.	:	Mica Capacitor
F.R.	:	Fusing Resistor	O.C.	:	Oil Capacitor
N.I.R.	:	Non-Inflammable Resistor	P.C.	:	Polystyrene Capacitor
			T.C.	:	Tantalum Capacitor
M.C.	:	Mylar Capacitor			

7. SCHEMATIC DIAGRAM

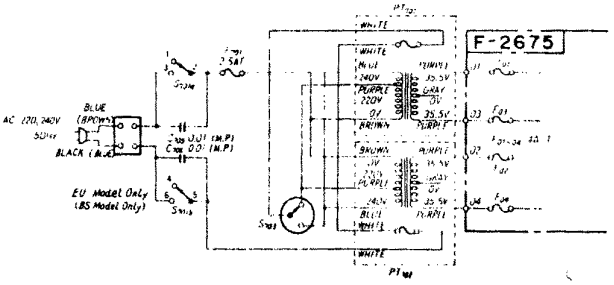
7-1. AU-517 Power Supply Section

XX EU. BS Model Only

* La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
* Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten
* Design and specifications subject to change without notice for improvement



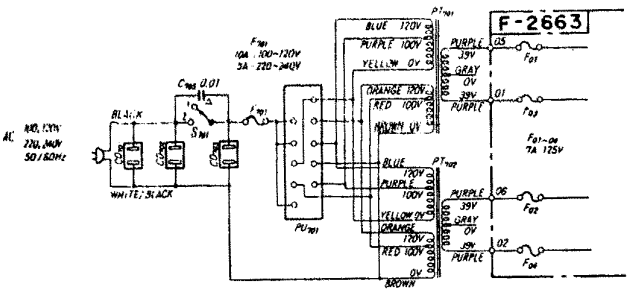
XX Model Only



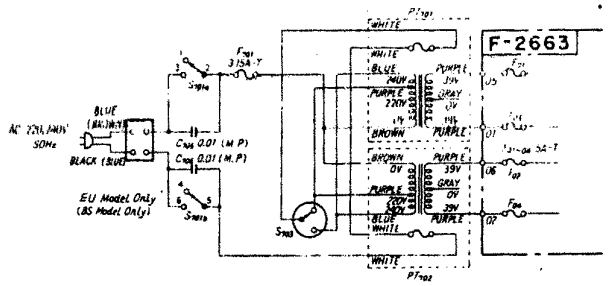
EU. BS Model Only

7-2. AU-717 Power Supply Section

XX EU. BS Model Only



XX Model Only



EU. BS Model Only

NOTE:

AS to U.L., C.S.A., B.S., ES and XX marked in the Parts Lists, note the followings:

U.L., C.S.A. . . . . Approved parts used in the unit which is applicable to the U.S. and Canada under safety standard.

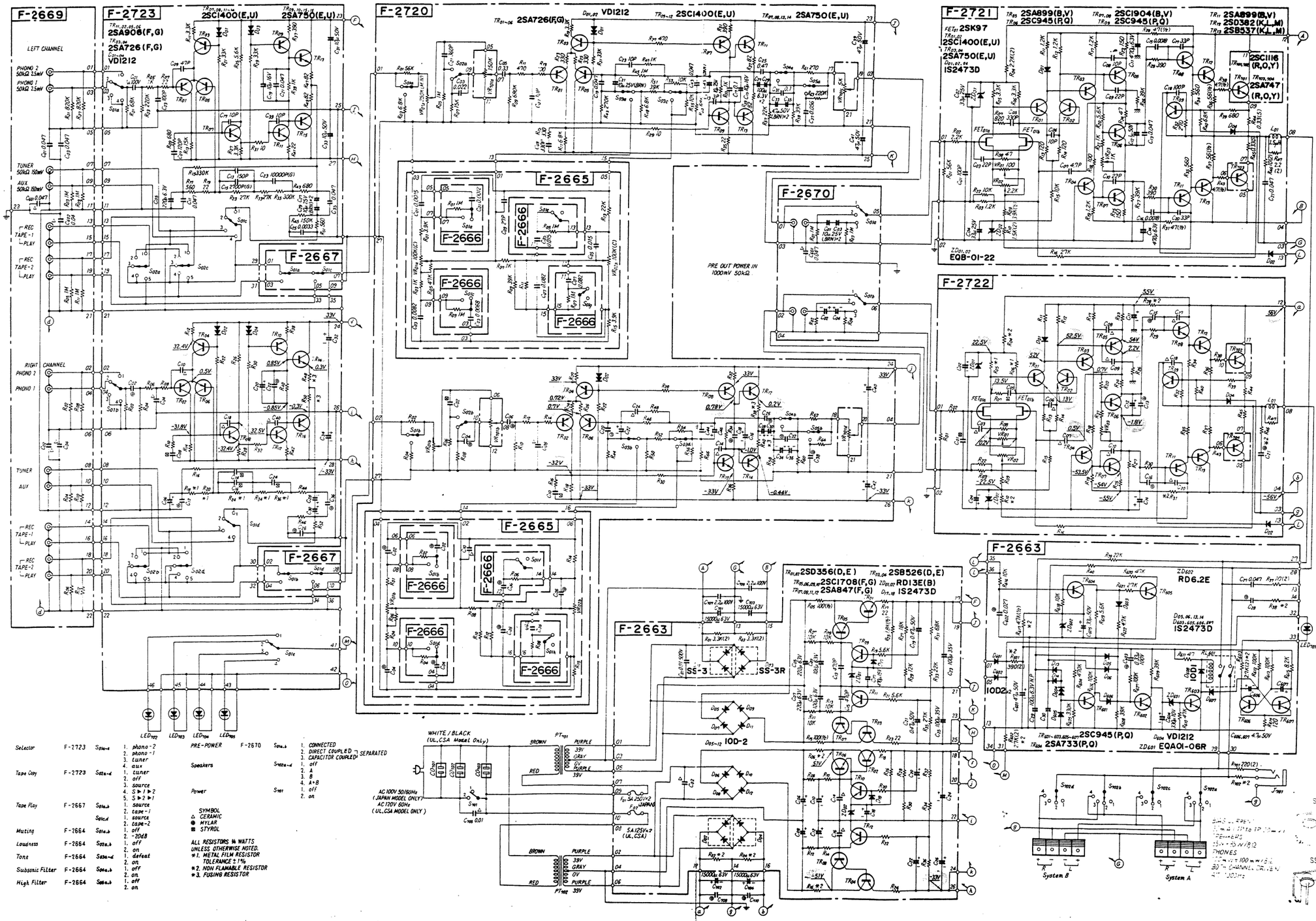
B.S. . . . . Approved parts used in the unit which is applicable to British under safety reguirement.

E.U. . . . . Approved parts used in the unit which is applicable to Sweeden, Denmark, Norway, Finland, West Germany, and Switzerland under safety reguirement.

XX . . . . . Parts used in the unit which is applicable to other countries excepting mentioned above.

※ In parts lists, parts with no above mark in of "Description" are all the same as XX marked parts.

7-4. AU-717



Selector	F-2723	S01a-d	1. phono-2 2. phono-1 3. tuner 4. aux	PRE-POWER	F-2670	S04a,b	1. CONNECTED 2. DIRECT COUPLED ┐ SEPARATED 3. CAPACITOR COUPLED┘
Tape Copy	F-2723	S02a-d	1. tuner 2. off 3. source 4. S►1 ►2 5. S►2 ►1	Speakers		S05a-d	1. off 2. A 3. B 4. A+B
Tape Play	F-2667	S03a,b	1. source 2. tape-1	Power		S06	1. off 2. on
		S04c,d	1. source 2. tape-2				
Muting	F-2664	S05a,b	1. off 2. -20dB				
Loudness	F-2664	S05c,d	1. off 2. on				
Tone	F-2664	S06a-d	1. defeat 2. on				
Subsonic Filter	F-2664	S07a,b	1. off 2. on				
High Filter	F-2664	S08a,b	1. off 2. on				

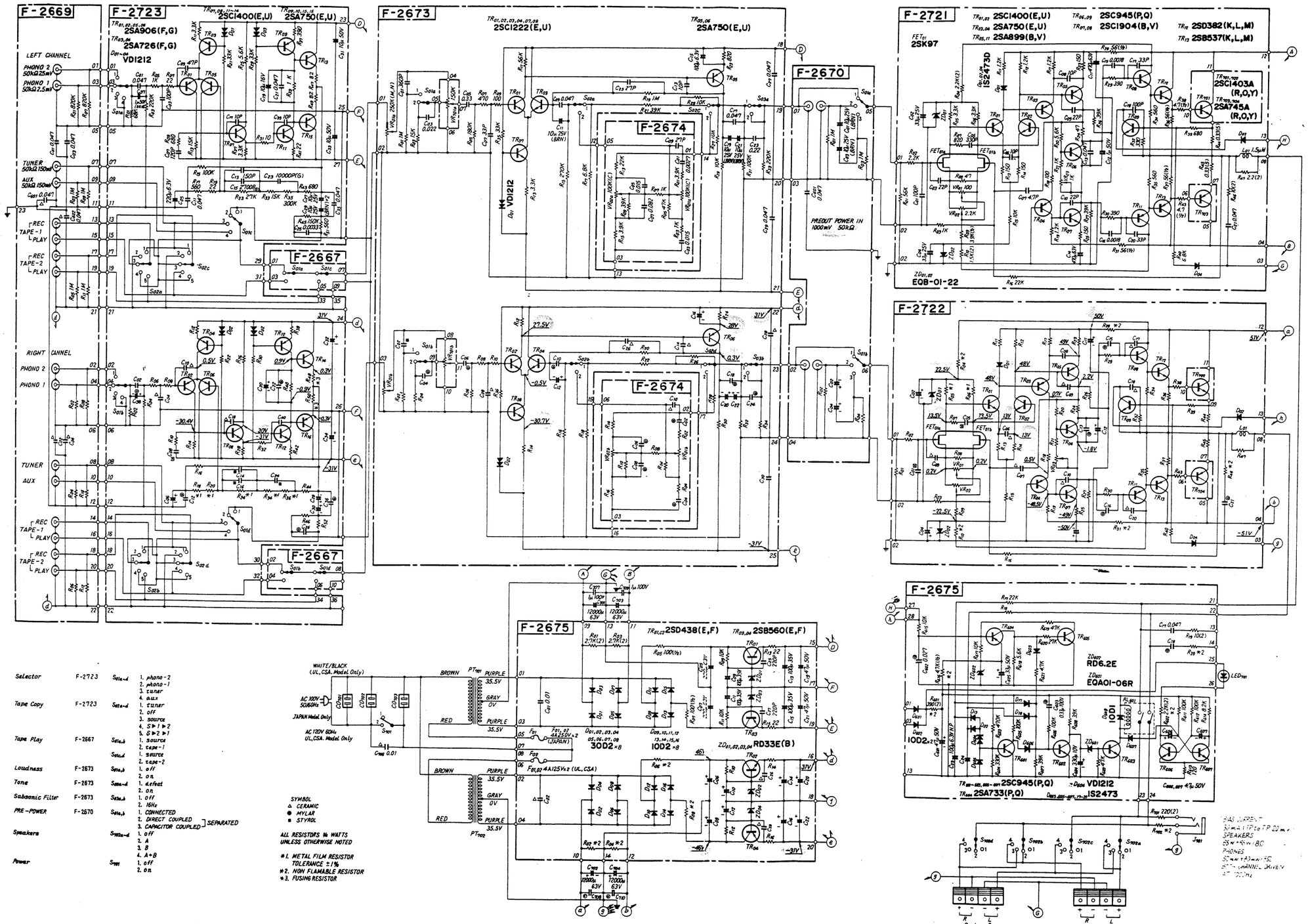
SYMBOL
△ CERAMIC
● MYLAR
■ STYROL

ALL RESISTORS ¼ WATTS UNLESS OTHERWISE NOTED.
*1. METAL FILM RESISTOR TOLERANCE ±1%
*2. NON FLAMABLE RESISTOR
*3. FUSING RESISTOR

2SA733
2SA750
2SC945
2SC1213
2SC1383
2SA726
2SA847
2SA906
2SC1708
2SB526
2SD356
2SB537
2SD382
2SA747
2SC116
2SA899
2SC1904
2SK97
10D-1
10D-2
VD1212
IS2473D
EQA01-06R
EQB01-22
RD6.2E
RD13E
SS-3
SS-3R

1 2 3 4 5

7-3. AU-517



2SA733
2SA750
2SD280
2SC945
2SC1222
2SC1400
2SD433

2SA726
2SA647
2SA906
2SC1708

2SB537
2SD382

2SA899
2SC1904

2SA745A
2SC1403A

2SK97

10D1
10D2

VD1212

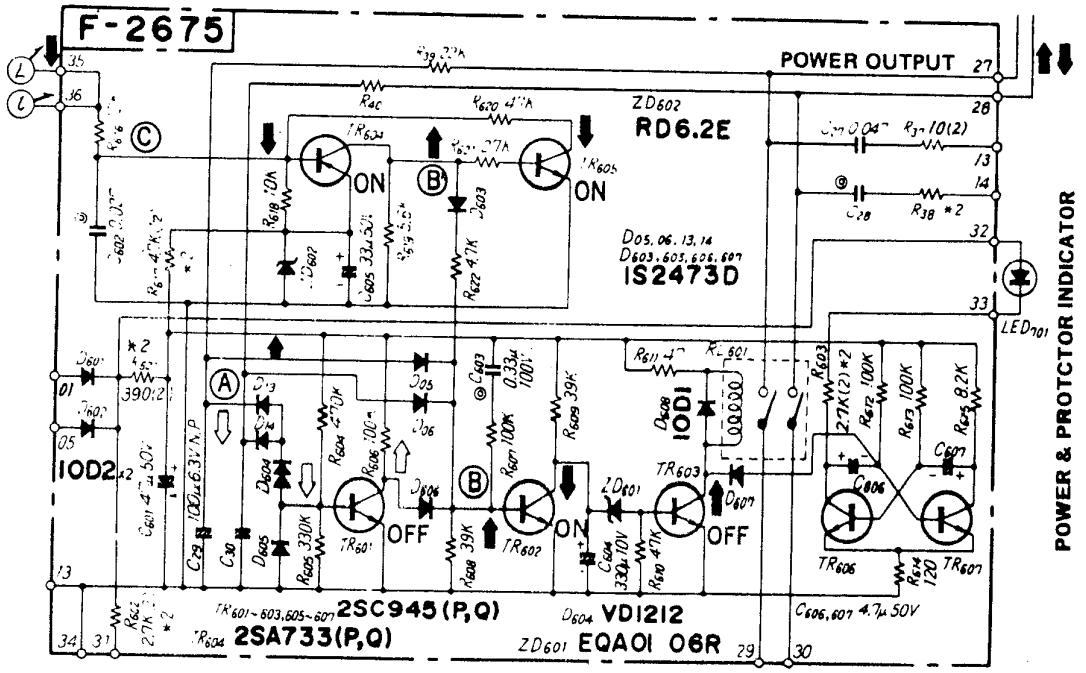
IS2473D

EQA01-06R
EQB01-22
RD6.2E
RD13E

30D2

8. OPERATION OF PROTECTOR CIRCUIT

This protector circuit contains two functions at abnormal condition; a speaker protector circuit against DC voltage appearing at output, and speaker protector circuit against over-current.



A. Speaker Protection Circuit against DC voltage appearing at output Ⓐ

1. When an abnormal negative voltage appears at output Ⓐ, TR601 turns off, TR602 turns on and TR603 turns off so that the relay, RL601, keeps off in order to protect loudspeakers from break-down.
2. While the relay, RL601, keeps OFF, zero voltage(center voltage) controlling TR607 through D607 will increase, resultly the LED701 as protector indicator, starts flickering.
3. When abnormal positive voltage appears at output Ⓐ, the voltage is supplied to TR602 directly, and the operation of the protector circuit is same as above mentioned 1.

B. Speaker Protection Circuit against abnormal over-current

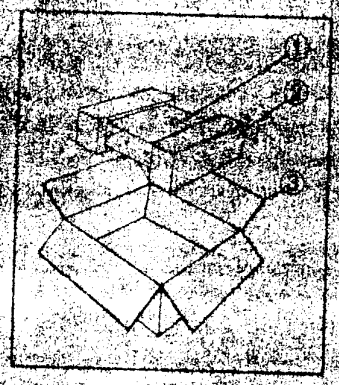
1. At the moment when abnormal excessive current flows into power transistors, a transistor (TR09) detecting excessive over-current, on power stage becomes ON.
2. Then, DC voltage at Ⓒ decreases, resulfly TR604 turns on, and positive certain voltage appears at Ⓑ'.
3. As mentioned above, when TR602 turns on, the relay, RL601, keeps OFF; a certain positive voltage at Ⓑ' turns on TR605 too, resultly collector voltage of TR605 decreases and its collector voltage keeps a certain voltage at Ⓒ simultaneously.
4. By keeping a certain DC voltage at Ⓒ., the LED701 as protector indicator continues flikering, even though all circuits work completely.

C. Operation of astable multivibrator

1. When control-(bias) voltage is not supplied to the base of TR607 in abnormal condition, TR606 and TR607, on astable multivibrator repeat turning (switching) on and off alternately each other by charging and discharging of capacitors, C606 & C607, resultly, the LED701 as protector indicator continues flikering.
2. When the relay, RL601 is turned on, base voltage of TR607 becomes zero volt through D607 and TR606 becomes ON, resultly LED701 as power indicator lights up.

9. PACKING LIST

Parts No.	Stock No.	Description
1	9116670	Vinyl Cover
2	9028020	Styrofoam Packing (L)
	9028030	Styrofoam Packing (R)
3	90097[illegible]	Carton Case (AU-717)
	90097[illegible]	Carton Case (AU-517)



10. ACCESSORY PARTS LIST

Stock No.	Description
9202560	Operating Instructions (AU-517)
9202560	Operating Instructions (AU-717)
9[illegible]2083	Hexagon Wrench (1.5mm)
9116580	Vinyl Bag For Wrench
9237540	Schematic Diagram (AU-517)
9237550	Schematic Diagram (AU-717)
9396340	Rack Mounting Adaptor (each)
9[illegible]4100	Rear Stand (each)

THE QUALITY OF THIS PAGE IS THE BEST THAT IS AVAILABLE

MEMO

Sansui

SANSUI ELECTRONICS CORPORATION: 55-11 Queens Blvd. Woodside, N.Y. 11377 U.S.A.
333 West Alondra Blvd. Gardena, California 90247 U.S.A.
3036 Koapaka St. Honolulu, Hawaii 96819 U.S.A.
SANSUI AUDIO EUROPE N.V.: North Trade Bldg (9th floor) Noorderlaan 133-Bus 1,2030 Antwerp, Belgium
SANSUI AUDIO EUROPE S.A.: Arabella center, 6 Frankfurt AM Main, Lyoner Strasse 44-48, West Germany
SANSUI ELECTRIC COMPANY LTD.: 14-1, Izumi 2-chome, Suginamiku, Tokyo 168 Japan PHONE: (03) 323-1111/TELEX:232-2076

SM082

Printed in Japan (671330M)