
Service Manual

Model
PH-50

Headphone Amp Distributor

Fostex[®]



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION:

TO PREVENT ELECTRIC SHOCK, MATCH
WIDE BLADE OF PLUG TO WIDE SLOT,
FULLY INSERT.

ATTENTION:

POUR ÉVITER LES CHOCS ÉLECTRIQUES,
INTRODUIRE LA LAME LA PLUS LARGE DE
LA FICHE DANS LA BORNE CORRE-
SPONDANTE DE LA PRISE ET POUSSER
JUSQU' AU FOND.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

“WARNING”

“TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK,
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOIS-
TURE.”

SAFETY INSTRUCTIONS

1. Read instructions - All the safety and operating instructions should be read before the appliance is operated.
2. Retain instructions - The safety and operating instructions should be retained for future reference.
3. Heed warnings - All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow instructions - All operating and use instructions should be followed.
5. Water and Moisture - The appliance should not be used near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
6. Carts and Stands - The appliance should be used only with a cart or stand that is recommended by the manufacturer.
7. Wall or Ceiling Mounting - The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. Ventilation - The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. Heat - The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. Power Sources - The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. Grounding or Polarization - The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.
12. Power Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. Cleaning - The appliance should be cleaned only as recommended by the manufacturer.
14. Nonuse Periods - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
15. Object and Liquid Entry - Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
16. Damage requiring Service - The appliance should be serviced by qualified service personnel when:
 - A. The power supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the enclosure damaged.
17. Servicing - The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.



An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

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NOTES

- * Parts List and circuit diagrams are given in this manual to assist the service technician in maintaining the Model PH-50.
- * The following accessories are supplied with PH-50 as the standard accessories.

Owner's manual	: 8288384000 (for export model)
Owner's manual	: 8288385000 (for domestic model)
- * Following is the packing material for the Model PH-50.

PACKING SIDE A PH-50	: 8228445000
CARTON BOX PH-50	: 8228721000

CAUTION

- ⚠ Parts marked with this sign are safety critical components. They must always be replaced with identical components. Refer to the Fostex Parts List and ensure exact replacement.

1. SPECIFICATIONS

INPUT SECTION

INPUT (Balanced)

Connector	XLR (Hot : Pin 2) / Stereo phone (Hot : tip)
Input level	+4dBu / -10dBV(switchable)
Impedance	10 k Ω or more

INPUT (Unbalanced)

Connector	RCA pin
Input level	-10dBV
Impedance	10 k Ω or more

CHANNEL INPUT

Connector	RCA pin
Input level	-10dBV
Impedance	10 k Ω or more

AUX INPUT

Connector	RCA pin
level	-10dBV
Impedance	10 k Ω or more

OUTPUT SECTION

PHONES 1-5

Connector	Stereo phone
Max. Output Level	500 mW or more (32 Ω load, Distortion 3.0 % or less)
Load Impedance	8 ~ 32 Ω
Frequency Response	30 ~ 20 kHz \pm 2dB (32 Ω load, 1kHz, 200 mW)
S/N	-65dBV or less (DIN AUDIO, OUTPUT VR : MIN) -80dBV or less (IHF-A, OUTPUT VR : MIN)
Distortion	0.1 % or less (32 Ω load, 1kHz, 200 mW)

CASCADE OUT

Connector	RCA pin
Output level	-10dBV \pm 3dB (INPUT VR : CAL)
Frequency Response	30 ~ 20 kHz \pm 1dB
S/N	-85dBV or less (DIN AUDIO, OUTPUT VR : MIN) -90dBV or less (IHF-A, OUTPUT VR : MIN)
Distortion	0.05 % or less (1kHz, -10dBV)
Click Noise (Power on / off)	-20dBV _{p-p} or less (OUTPUT VR : MIN)
Shock Noise	-40dBV _{p-p} or less (Measure noise level when one side of appliance is dropped 3 times from 5 cm height.)
Peak LED Indication	+7dBV \pm 3dB

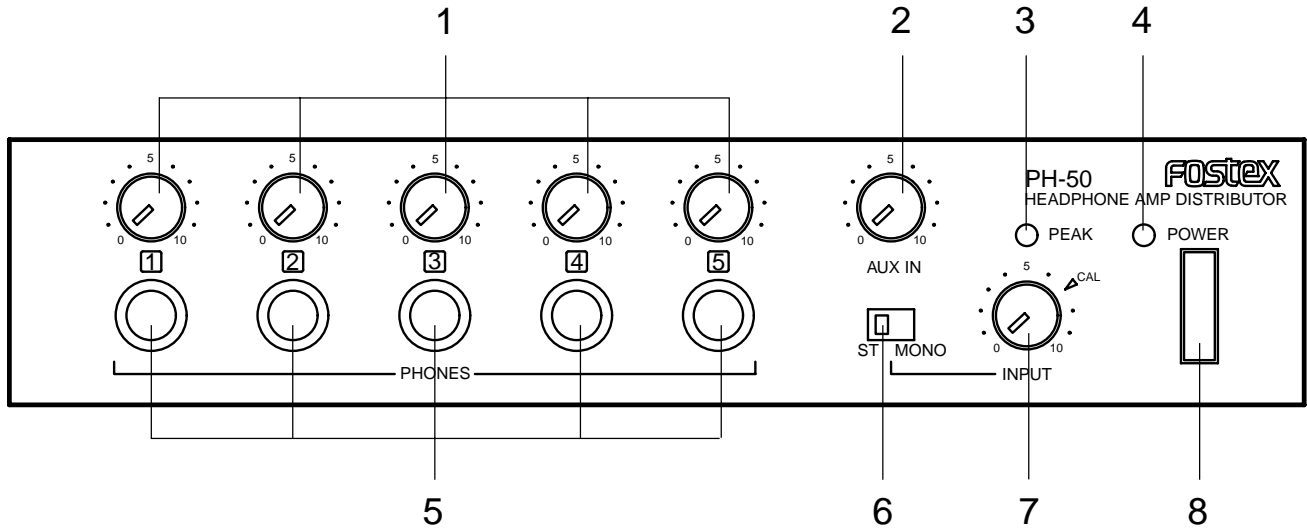
GENERAL

Dimensions	210 (W) \times 200 (D) \times 43 (H) mm
Weight	1.9 kg
Power supply	
JPN	100 VAC, 50/60 Hz
USA/CND	120 VAC, 60 Hz
EUR/UK	230 VAC, 50/60 Hz
Power consumption	8 W

* Specifications and appearance are subject to change without notice for product improvement.

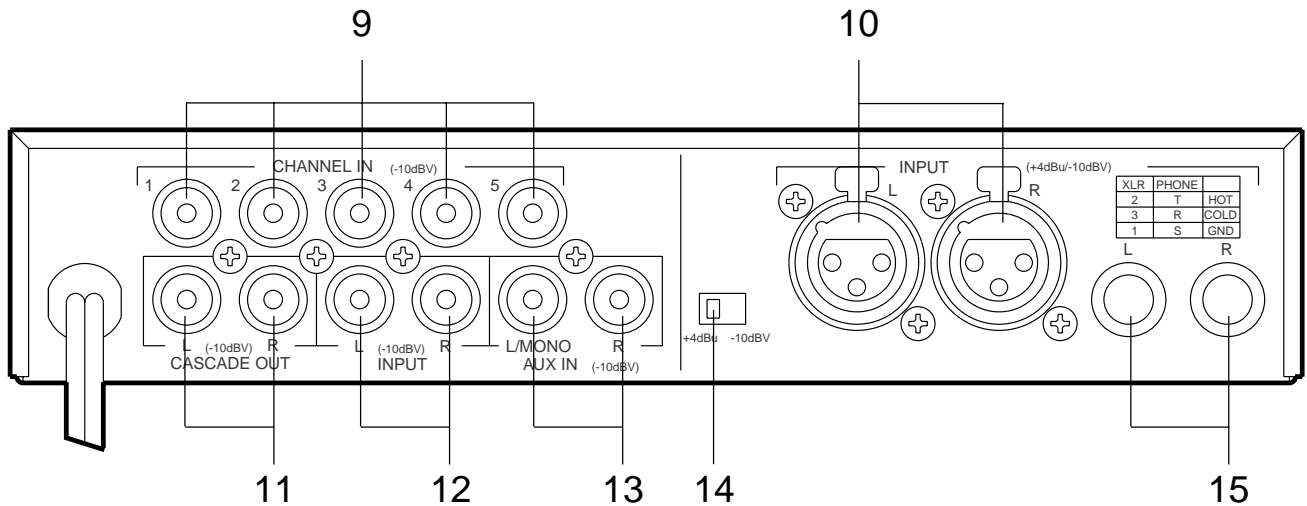
2. CONTROLS, INDICATORS & CONNECTORS

< Front Panel >



- | | |
|---|---|
| 1. Headphone output level control knob [PHONES 1-5] | 5. Headphone jacks [PHONES 1-5] |
| 2. AUX input level control knob [AUX IN] | 6. Input image position selector switch [ST/MONO] |
| 3. Peak LED [PEAK] | 7. Input master level control knob [INPUT] |
| 4. Power LED [POWER] | 8. Power switch [POWER] |

< Rear Panel >

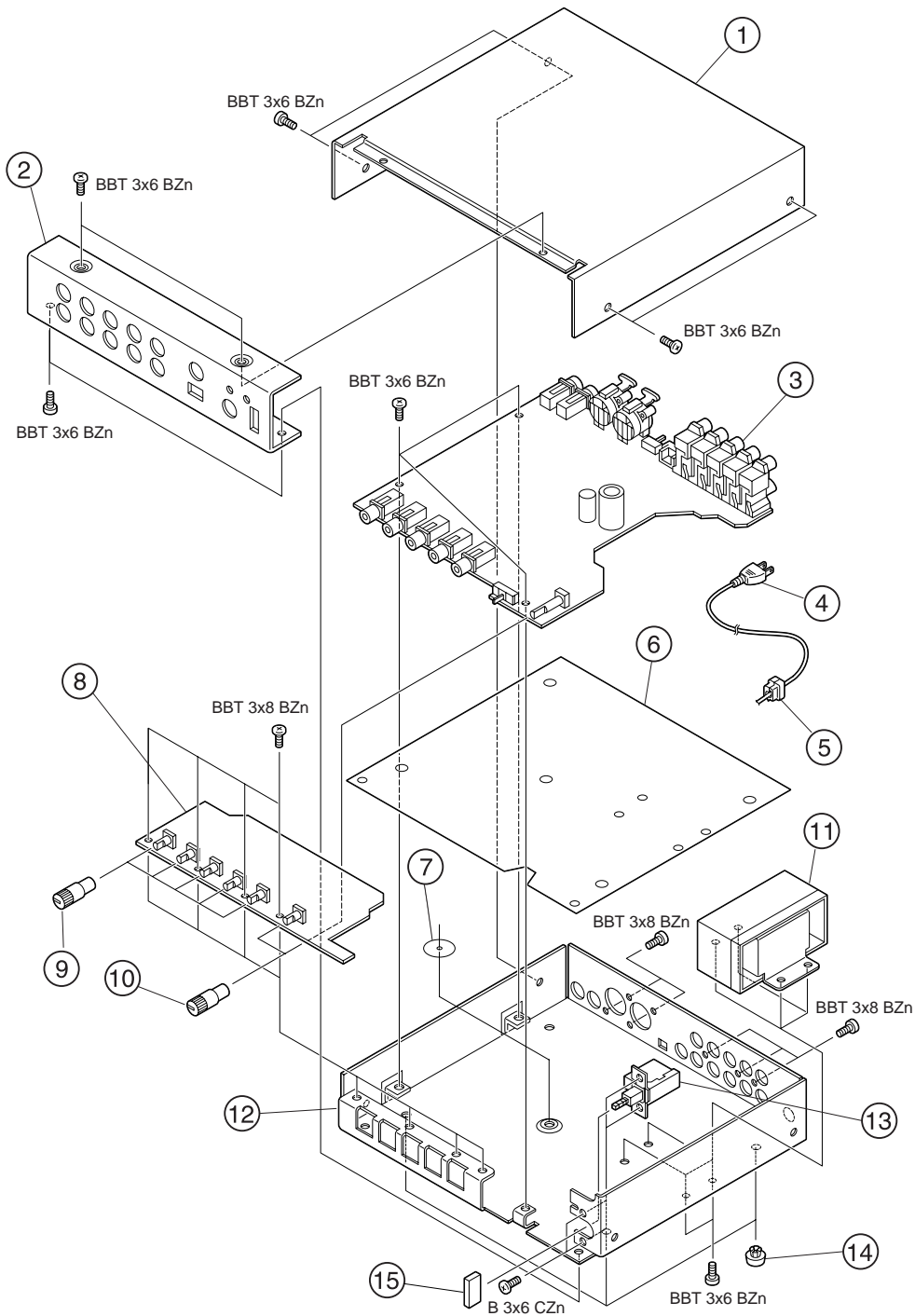


- | | |
|--|---|
| 9. Channel input jacks [CHANNEL IN 1-5] | 13. AUX input jacks [AUX IN] |
| 10. Balanced input connector (XLR) [INPUT] | 14. Balanced input level selector switch [-4dBu/-10dBV] |
| 11. Cascade output jack [CASCADE OUT] | 15. Balanced input connector (Stereo phone) [INPUT] |
| 12. Unbalanced input jack [INPUT] | |

3. EXPLODED VIEW, PCB ASSEMBLY AND PARTS LIST

● PH-50 OVERALL EXPLODED VIEW & PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	8221262000	CASE, COVER, PH-50	8	8274175000	PCB Assy, VR, PH-50
2	8221264000	PANEL, FRONT, PH-50	9	8226198003	ROTARY, KNOB(C), G
3	8274174000	PCB Assy, MAIN, PH-50	10	8226198001	ROTARY, KNOB(A), R
△ 4	8650800000	CORD, AC, USA/CND	△ 11	8242256003	TRANS, POWER, 120V
	8650801000	CORD, AC, EUR		8242256006	TRANS, POWER, 230V~
	8650802000	CORD, AC, UK		8242256010	TRANS, POWER, 100V
	8650803000	CORD, AC, JPN	12	8221263000	CHASSIS, MAIN, PH-50
5	8207000208	BUSHING, SR-4N-4	△ 13	8253014007	SW, WL, PUSH, POWER, SDDL B-SPST
6	8218775001	INSULATION SHEET, PH-50	14	8207000318	PLASTY-FOOT, 3725
7	8228775002	INSULATION SHEET B, PH-50	15	8226228000	BUTTON, PUSH, POWER



● PH-50 Parts List

• MAIN/VR PCBs

ICs			RESISTORS		
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
U101~501	8236035803	IC, μ PC4570HA	R101~501	8240284001	VR, RK09K120A1NA, 5K Ω x 2
U102~502	8236046000	IC, NJM386BD	R110~510	8230138393	HT, CARBON, 1/4W, 39K Ω , 5%
U152~552	8236046000	IC, NJM386BD	R111~511	8230138393	HT, CARBON, 1/4W, 39K Ω , 5%
U601	8236035803	IC, μ PC4570HA	R112~512	8230138104	HT, CARBON, 1/4W, 100K, 5%
U602	8236035803	IC, μ PC4570HA	R113~513	8230138332	HT, CARBON, 1/4W, 3.3K Ω , 5%
U605	8236035803	IC, μ PC4570HA	R114~514	8230138332	HT, CARBON, 1/4W, 3.3K Ω , 5%
U651	8236035803	IC, μ PC4570HA	R115~515	8230138332	HT, CARBON, 1/4W, 3.3K Ω , 5%
U701	8236035803	IC, μ PC4570HA	R116~516	8230138103	HT, CARBON, 1/4W, 10K Ω , 5%
U801	8236032005	IC, REGULATOR, NJM78M12FA	R117~517	8230138100	HT, CARBON, 1/4W, 10 Ω , 5%
U802	8236034705	IC, REGULATOR, 79M12FA	R118~518	8230111568	H, METAL, 5.6 Ω , 5%
TRANSISTORS			R119~519	8230138332	HT, CARBON, 1/4W, 3.3K Ω , 5%
Ref. No.	Part No.	Description	R150~550	8230138393	HT, CARBON, 1/4W, 39K Ω , 5%
Q601	8234108900	TR, 2SD1858, QR, T	R151~551	8230138393	HT, CARBON, 1/4W, 39K Ω , 5%
Q602	8234108900	TR, 2SD1858, QR, T	R152~552	8230138104	HT, CARBON, 1/4W, 100K Ω , 5%
Q603	8234108800	TR, 2SB1237, PQR, T	R153~553	8230138332	HT, CARBON, 1/4W, 3.3K Ω , 5%
Q604	8234108900	TR, 2SD1858, QR, T	R154~554	8230138332	HT, CARBON, 1/4W, 3.3K Ω , 5%
Q801	8234107600	TR, 2SC4549, NEC	R155~555	8230138332	HT, CARBON, 1/4W, 3.3K Ω , 5%
DIODES			R156~556	8230138103	HT, CARBON, 1/4W, 10K Ω , 5%
Ref. No.	Part No.	Description	R157~557	8230138100	HT, CARBON, 1/4W, 10 Ω , 5%
D601	8234106500	OPT, LED, RT3-222HCS	R158~558	8230111568	H, METAL, 5.6 Ω , 5%
D602	8234500700	D, HT, 1SS136	R159~559	8230138332	HT, CARBON, 1/4W, 3.3K Ω , 5%
D603	8234500700	D, HT, 1SS136	R601, 602	8240284001	VR, RK09K120A1NA, 5K Ω x 2
D751	8234500700	D, HT, 1SS136	R610, 650	8230138104	HT, CARBON, 1/4W, 100K Ω , 5%
D752	8234106500	OPT, LED, RT3-222HCS	R611, 651	8230138103	HT, CARBON, 1/4W, 10K Ω , 5%
D753	8234500700	D, HT, 1SS136	R612, 652	8230138103	HT, CARBON, 1/4W, 10K Ω , 5%
D754	8234500700	D, HT, 1SS136	R613, 653	8230138103	HT, CARBON, 1/4W, 10K Ω , 5%
D801	8234108700	D, RB151	R614, 654	8230138103	HT, CARBON, 1/4W, 10K Ω , 5%
D802	8234106500	OPT, LED, RT3-222HCS	R615, 655	8230138104	HT, CARBON, 1/4W, 100K Ω , 5%
			R616, 656	8230138104	HT, CARBON, 1/4W, 100K Ω , 5%
			R617, 657	8230138103	HT, CARBON, 1/4W, 10K Ω , 5%
			R618, 658	8230138103	HT, CARBON, 1/4W, 10K Ω , 5%
			R619, 659	8230138822	HT, CARBON, 1/4W, 8.2K Ω , 5%
			R620, 660	8230138822	HT, CARBON, 1/4W, 8.2K Ω , 5%
			R621, 661	8230138822	HT, CARBON, 1/4W, 8.2K Ω , 5%
			R622, 662	8230138822	HT, CARBON, 1/4W, 8.2K Ω , 5%
			R623, 663	8230138103	HT, CARBON, 1/4W, 10K Ω , 5%
			R624, 664	8230138103	HT, CARBON, 1/4W, 10K Ω , 5%
			R625, 665	8230138102	HT, CARBON, 1/4W, 1K Ω , 5%
			R626, 666	8230138104	HT, CARBON, 1/4W, 100K Ω , 5%
			R627, 667	8230138393	HT, CARBON, 1/4W, 39K Ω , 5%
			R628, 668	8230138393	HT, CARBON, 1/4W, 39K Ω , 5%
			R629, 669	8230138332	HT, CARBON, 1/4W, 3.3K Ω , 5%
			R630, 670	8230138103	HT, CARBON, 1/4W, 10K Ω , 5%
			R631, 671	8230138103	HT, CARBON, 1/4W, 10K Ω , 5%
			R632, 672	8230138393	HT, CARBON, 1/4W, 39K Ω , 5%
			R633, 673	8230138101	HT, CARBON, 1/4W, 100 Ω , 5%

CAPACITORS

ALU = Electrolytic

CER = Ceramic type

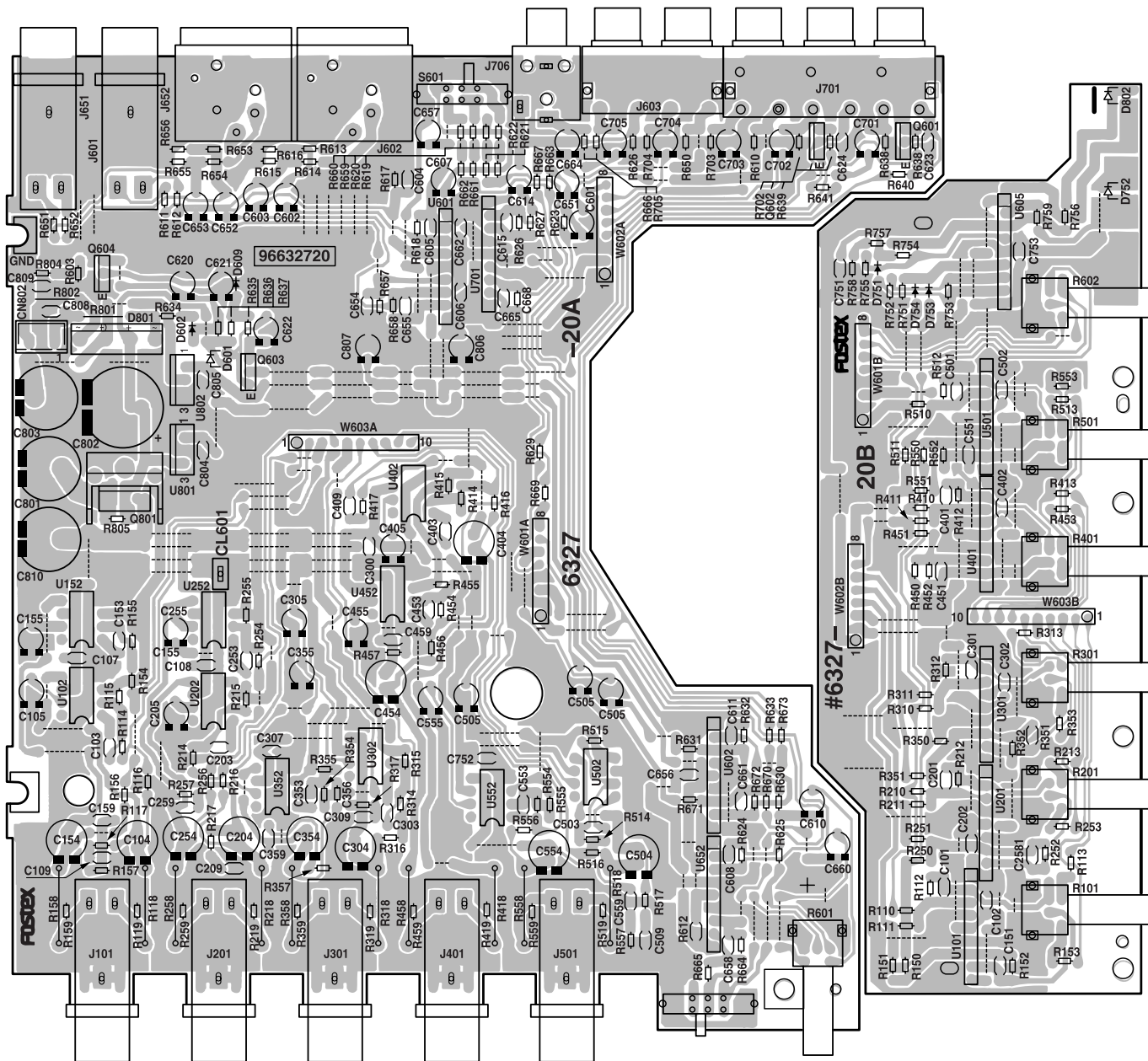
PES = Mylar type

Ref. No.	Part No.	Description
C101~501	8232050100	CER, 50V, 10PF, +-.5PF, SL
C102~502	8232804104	CER, 25V, 0.1μF, +80-20%, YF
C103~503	8232901102	PES, 50V, 0.001μF, 5%, AMZV
C104~504	8232143337	ALU, 16V, 330μF, 20%, SME-VB
C105~505	8232142476	ALU, 10V, 47μF, 20%, SME-VB
C107	8232804104	CER, 25V, 0.1μF, +80-20%, YF
C108	8232804104	CER, 25V, 0.1μF, +80-20%, YF
C109~509	8232901473	PES, 50V, 0.047μF, 5%, AMZV
C151~551	8232050100	CER, 50V, 10PF, +-.5PF, SL
C153~553	8232901102	PES, 50V, 0.001μF, 5%, AMZV
C154~554	8232143337	ALU, 16V, 330μF, 20%, SME-VB
C155~555	8232142476	ALU, 10V, 47μF, 20%, SME-VB
C159~559	8232901473	PES, 50V, 0.047μF, 5%, AMZV
C307	8232804104	CER, 25V, 0.1μF, +80-20%, YF
C308	8232804104	CER, 25V, 0.1μF, +80-20%, YF
C601, 651	8232144226	ALU, 25V, 22μF, 20%, SME-VB
C602, 652	8232144226	ALU, 25V, 22μF, 20%, SME-VB
C603, 653	8232144226	ALU, 25V, 22μF, 20%, SME-VB
C604, 654	8232050101	CER, 50V, 100PF, 5%, SL
C605, 655	8232050101	CER, 50V, 100PF, 5%, SL
C606, 656	8232804104	CER, 25V, 0.1μF, +80-20%, YF
C607, 657	8232144226	ALU, 25V, 22μF, 20%, SME-VB
C608, 658	8232050100	CER, 50V, 10PF, +-.5PF, SL
C610, 660	8232144226	ALU, 25V, 22μF, 20%, SME-VB
C611, 661	8232050100	CER, 50V, 10PF, +-.5PF, SL
C612, 662	8232804104	CER, 25V, 0.1μF, +80-20%, YF
C614, 664	8232144226	ALU, 25V, 22μF, 20%, SME-VB
C615, 665	8232050100	CER, 50V, 10PF, +-.5PF, SL
C617, 667	8232144226	ALU, 25V, 22μF, 20%, SME-VB
C620	8232153225	ALU, 50V, 2.2μF, 20%, BP, SME-VB
C621	8232146225	ALU, 50V, 2.2μF, 20%, SME-VB
C622	8232146225	ALU, 50V, 2.2μF, 20%, SME-VB
C701~705	8232144226	ALU, 25V, 22μF, 20%, SME-VB
C751~753	8232804104	CER, 25V, 0.1μF, +80-20%, YF
C801	8232096108	ALU, 25V, 1000μF, 20%, SME-VB
C802	8232096338	ALU, 25V, 3300μF, 20%, SME
C803	8232096108	ALU, 25V, 1000μF, 20%, SME-VB
C804	8232804104	CER, 25V, 0.1μF, +80-20%, YF
C805	8232804104	CER, 25V, 0.1μF, +80-20%, YF
C806	8232144226	ALU, 25V, 22μF, 20%, SME-VB
C807	8232144226	ALU, 25V, 22μF, 20%, SME-VB
C808	8232901473	PES, 50V, 0.047μF, 5%, AMZV
C809	8232901473	PES, 50V, 0.047μF, 5%, AMZV
C810	8232096108	ALU, 25V, 1000μF, 20%, SME-VB

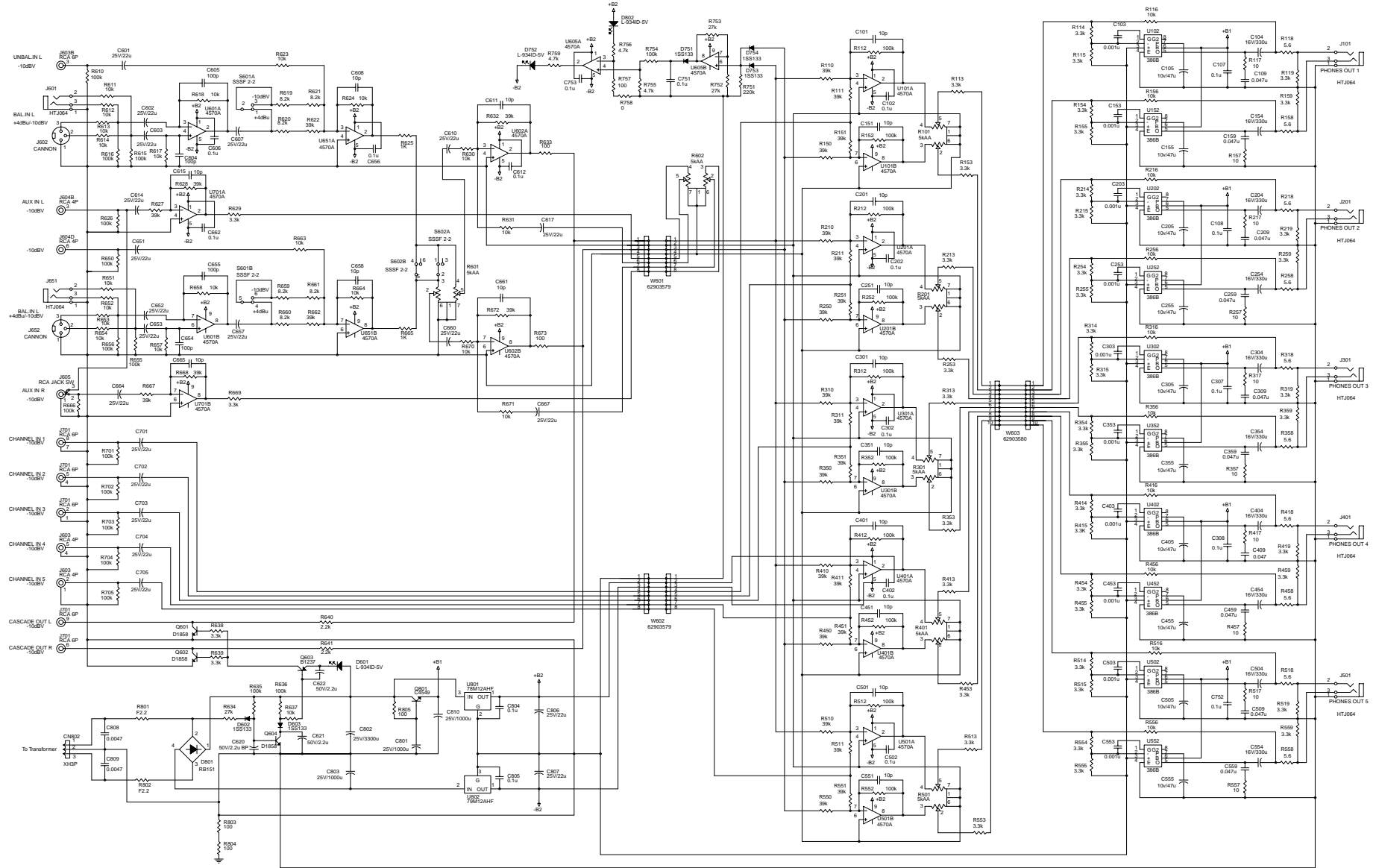
MISCELLANEOUS

Ref. No.	Part No.	Description
CN803	8745503003	CONN, XH 3P (87003048)
J101~601	8245337000	CONN, PHONE JACK, STEREO
J602	8245268002	CONN, PL, JACK, XLR31, NC3FAH2
J603	8245311004	CONN, RCA, 4P, YKC21-3084
J651	8245337000	CONN, PHONE JACK, STEREO
J652	8245268002	CONN, PL, JACK, XLR31, NC3FAH2
J701	8245311006	CONN, RCA, 6P, YKC21-3154
J706	8245311001	CONN, RCA, 1P, YKB11-0273
S601	8253467000	SW, SS010-P022MAM-PA9
S602	8253467000	SW, SS010-P022MAM-PA9
W601	8277473001	CORD, SCN-SCN, 8P x 200
W602	8277473001	CORD, SCN-SCN, 8P x 200
W603	8277473002	CORD, SCN-SCN, 10P x 200
	8207012800	HEATSINK, PC1115-25

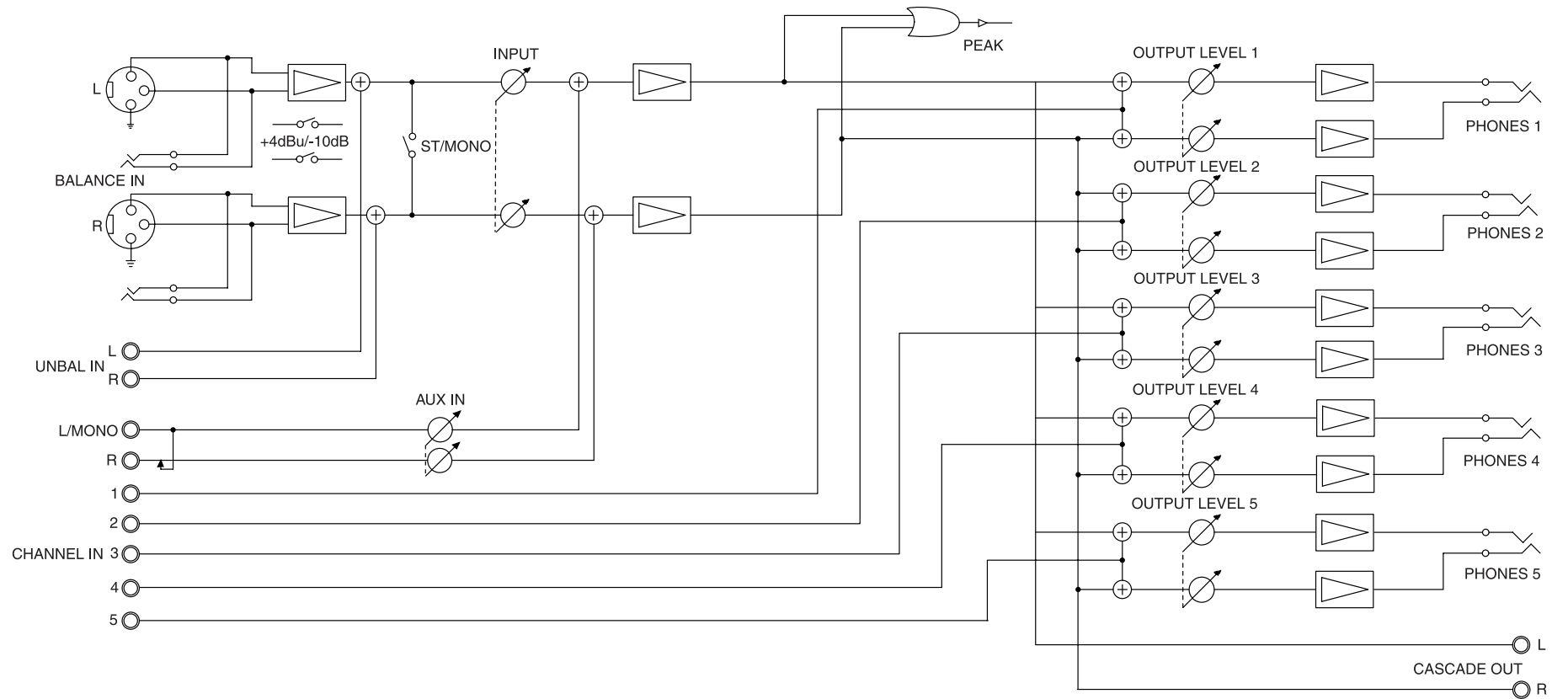
● PH-50 PCB PATTERN DRAWING



4. CIRCUIT & BLOCK DIAGRAMS



● BLOCK DIAGRAM



Fostex[®]

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