

497

Dep 5/22

SERVICE
MANUAL

PM493

4822 725 50878



marantz®

model PM493

Audio / Video Master Amplifier

497

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound.

Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available to our National Marantz Subsidiary or Agent.

ORDERING PARTS:

Parts can be ordered either by mail or by telex. In both cases, correct part number has to be specified. The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature: any order form or telex must be signed otherwise such part order will be considered as null and void.

PARTS ORDERING

Parts may be ordered at the following addresses:

AUSTRIA
HORNYPHON
Vertriebsgesellschaft GmbH
Wienerbergstrasse 1
A 1101 Wien
Austria
Telex: 132.332

BELGIUM
SVD DIVISION MARANTZ
Industrialaan 1
1720 Groot-Bijgaarden
Belgium
Telex: 24466

CHILE
MARANTZ
DIVISION OF PHILIPS S.A.
AV. Santa Maria, 0760
Casilla 2687
Santiago
Telex: 240.239

DENMARK
MARANTZ
DIVISION OF PHILIPS
SERVICE A/S
Prags Boulevard 80
Postbox 1919
DK-2300 København S
Denmark
Telex: 31201

FINLAND
MARANTZ
DIVISION OF OY PHILIPS Ab
Kaivokatu 8
00100 Helsinki
Finland
Telex: 124811

FRANCE
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France
Telex: 611651

GERMANY
MARANTZ GERMANY GmbH
Alexanderstrasse 1
2000 Hamburg
Germany

THE NETHERLANDS
Elpro Marantz
Wint Hontlaan 28
3526 KV Utrecht
The Netherlands
Telex: 4748

NORWAY
MARANTZ
DIVISION OF PHILIPS A/S
Sandstuveien 40
0680 Oslo 6
Norway
Telex: 72640

GREAT BRITAIN
MARANTZ AUDIO U.K. Ltd
Unit 15/16
Saxon Way Industrial Estate
Moor Lane
Harmondsworth UB7 OLW
Great Britain
Telex: 935196

GREECE
SHERTON ELECTRONICS S.A.
P.O.Box 21025
Hippocrates Street 188
Athens 11471
Greece
Telex: 216.795

JAPAN
MARANTZ JAPAN, Inc.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

KUWAIT
AL ALAMIAH ELECTRONICS
Ussama Building
Fahd al Saleem Street
P.O.Box 23781
Safat-Kuwait
Telex: 22694

ITALY
MARANTZ ITALIANA S.P.A.
Via Chiese, 74
20126 Milano
Italy

SAUDI ARABIA
AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia
Telex: 401530

SOUTH AFRICA
MARANTZ
DIVISION OF PHILIPS S.A.
Main Road Martindale
P.O. Box. 58088
Newville 21114
South Africa

SPAIN
PHONO S.A.
Ignacio Iglesias 10
Badalona (Barcelona)
Spain
Telex: 59355

SWEDEN
MARANTZ
DIVISION OF PHILIPS
Försäljning AB
Tegeluddsvägen 1
S-115 84 Stockholm
Sweden
Telex: 14060

SWITZERLAND
MARANTZ
Technischer Service
Duenstrasse 3
3186 Düringen
Switzerland

TURKEY
DOGRUOL Ltd.
I.M.C.
6 Blok N°6310
Unkapani
Istanbul
Turkey
Telex: 22085

MALTA
CACHIA & GALEA
Republic Street, 68D
Valetta
Telex: 1682

PORTUGAL
MARANTZ
Divisao Philips S.A. /ice
Ourense-carnaxide
2795 LinDA-A-VELHA
Telex: 43906

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please, contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

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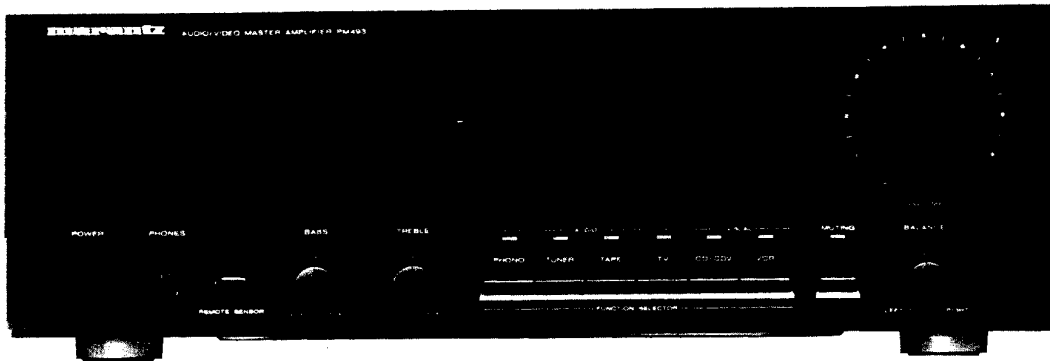
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How to use this service manual

- The "Common parts" which Marantz Japan, Inc. has established are eliminated from this service manual.
- These "Common parts" are applied to all models in the service manuals arranged and issued by MJI.
- To indicate clearly the common parts in the schematic diagram, a line is drawn above or under the Ref. Desig. No. of applicable parts.
- "Common parts" can be supplied from the Marantz service center as ever.
In case of ordering, please establish the parts number of 12 N/C'S following the procedure mentioned in this service manual "How to establish the parts number for common parts".

1) Please correctly write the parts number of 12 N/C'S following the rule.

MODEL PM493 AUDIO/VIDEO MASTER AMPLIFIER



1. P.W. BOARDS

As can be seen from the circuit diagram the chassis of Model PM493 consists of the following units. Each unit mounted on a printed circuit board is described within the square enclosed by a bold dotted line on the circuit diagram.

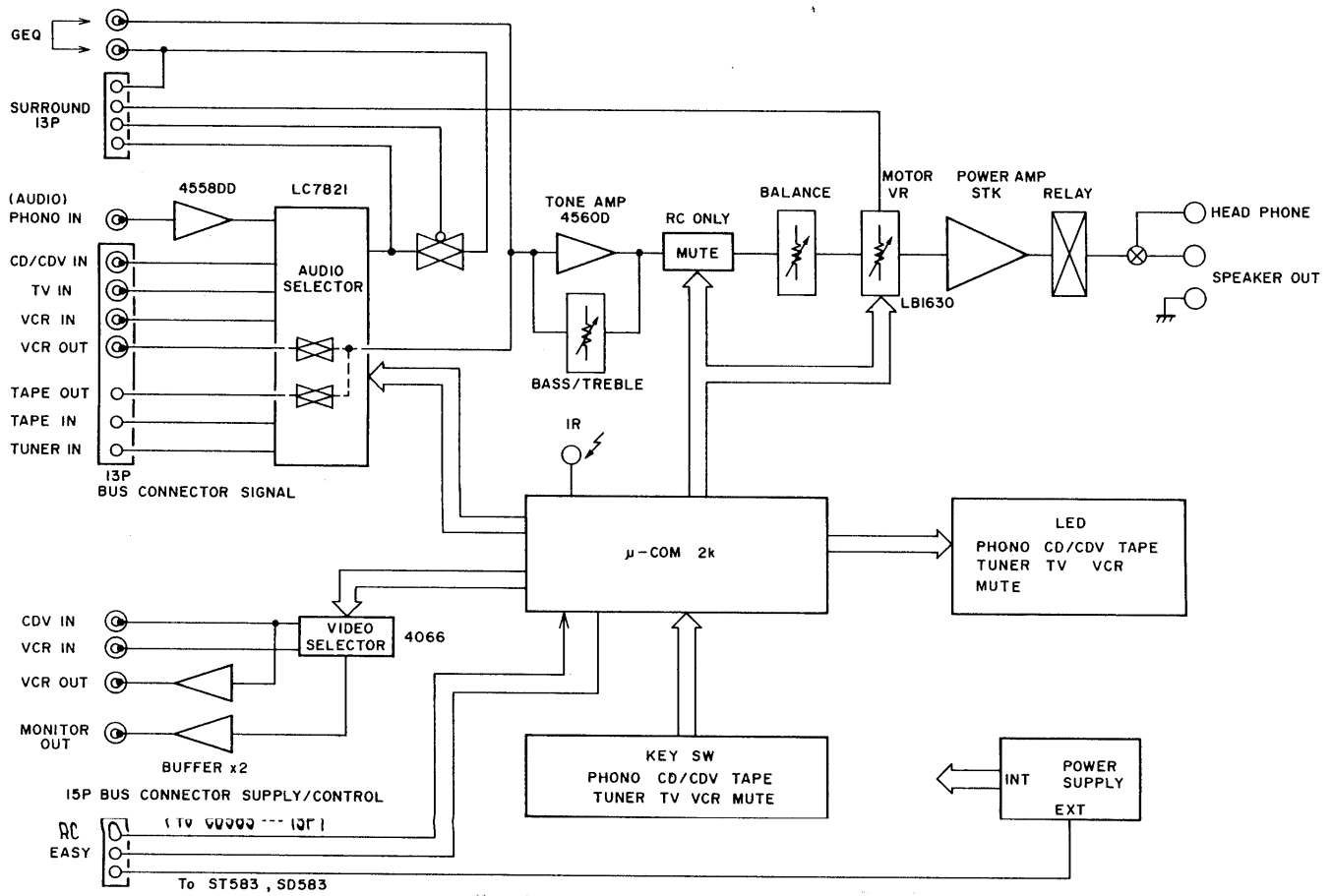
1. Volume mounted on P.W. Board PG04
2. Video Amp mounted on P.W. Board PL04
3. Power Switch mounted on P.W. Board PP04
4. μ -COM mounted on P.W. Board PU04
5. Rear Terminal mounted on P.W. Board PV04
6. Headphone Jack mounted on P.W. Board PW04
7. Volume Knob
 Pointer mounted on P.W. Board PZ04
8. Main Amp mounted on P.W. Board P704

2. TEST EQUIPMENT REQUIRED FOR SERVICING

This table lists the test equipment required for servicing the Model PM493 Audio/Video Master Amplifier.

Item	Use
Distortion Analyzer	Distortion measurements
Audio Oscillator	Sinewave and squarewave signal source
ACVTVM	Voltage measurements (AC)
Oscilloscope	Waveform analysis and trouble shooting and ASO alignment
Circuit Tester	Trouble shooting
DCVTVM	Voltage measurements (DC)
AC Wattmeter	Monitors primary power to amplifier
Line Voltmeter	Monitors potential of primary power to amplifier
Variable Autotransformer (0 to 140V AC, 10A)	Adjust level of primary power to amplifier
Shorting Plug	Shorts amplifier input to eliminate noise pickup

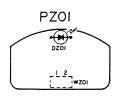
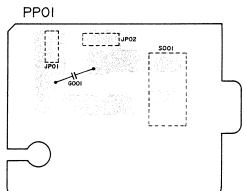
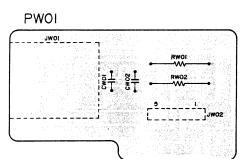
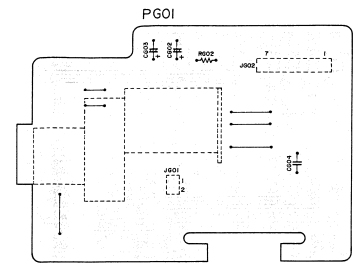
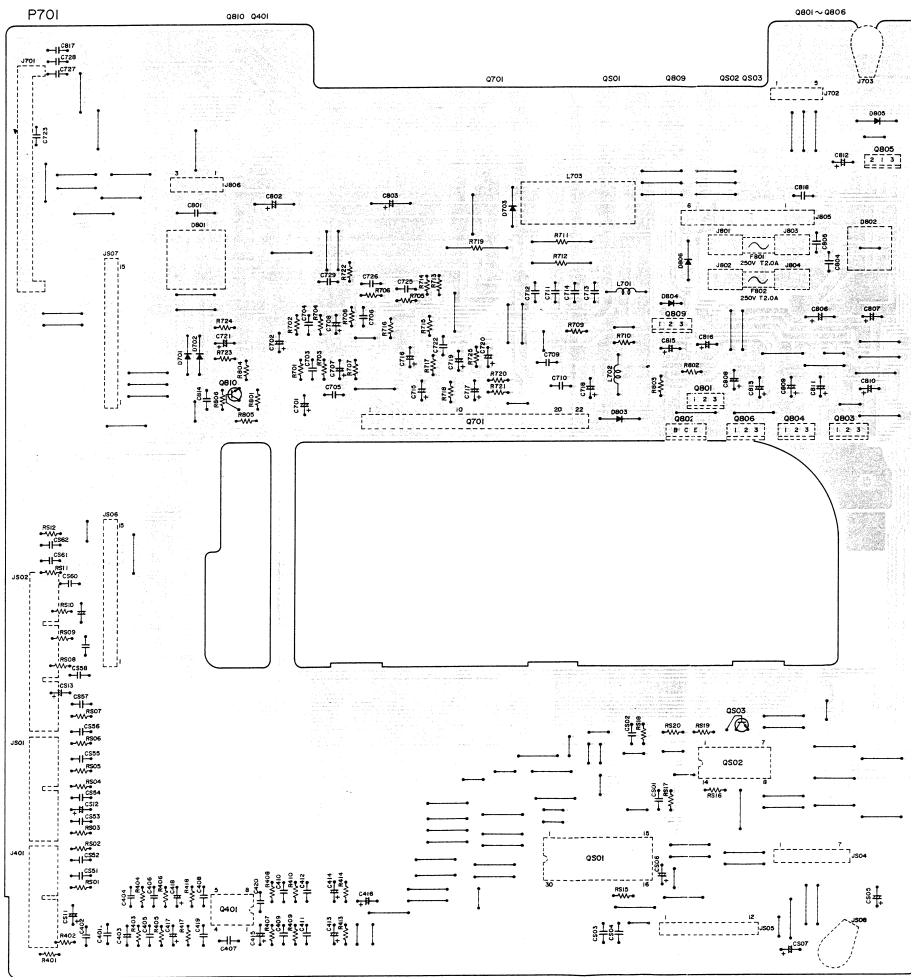
3. BLOCK DIAGRAM

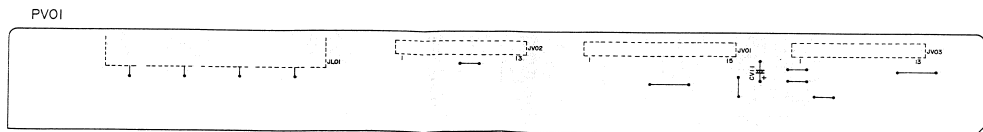
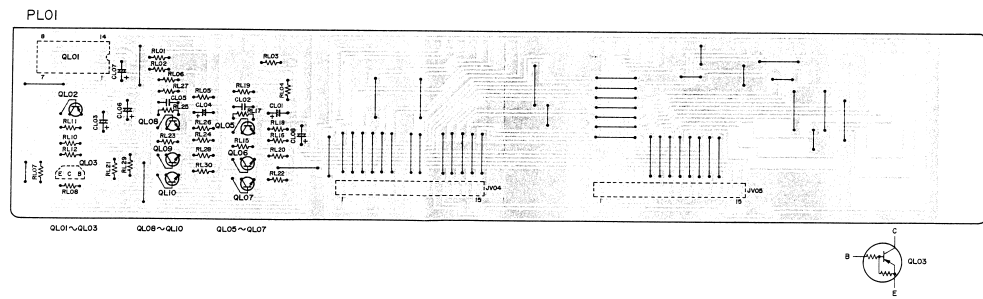
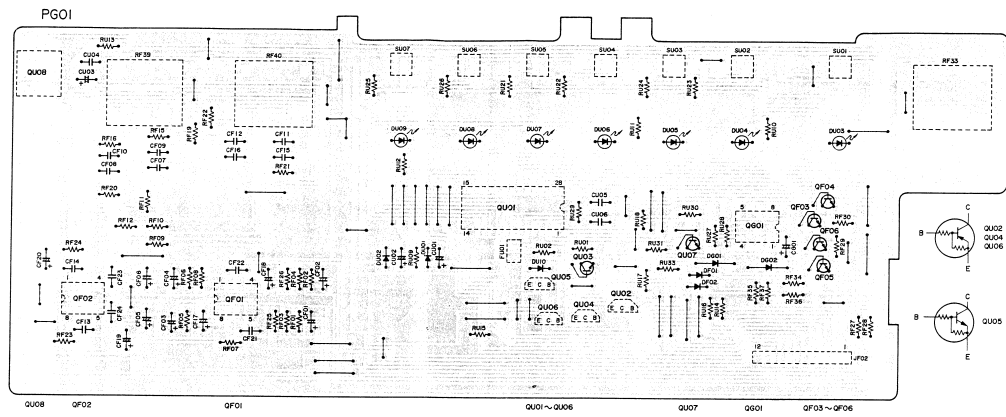


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4. PARTS LOCATIONS (Pattern Side)





REF. DESIG.	PART NO.	DESCRIPTION
001B	4822 443 40756	Front Panel Assembly
009B	4822 413 41496	Knob Assembly, Volume
013B	4822 413 41495	Knob, Bass/Balance
015B	4822 410 26906	Button, Power
018B	4822 530 80511	Retainer, Phone Jack
001D	4822 443 40757	Lid, Top Cover
002D	4822 502 12355	B.T. Screw B3 x 8
003D	4822 502 12355	B.T. Screw B3 x 8
009G	4822 600 70229	Label, Caution
990G	4822 459 10843	Label, Serial No.
005L	4822 502 12499	Fin Neck, B.T Screw B3 x 15
△ F001	4822 253 30201	Fuse T1A 250V
△ J001	4822 256 30233	Jack, Fuse Holder
J031	4822 290 40297	Terminal, GND
J061	4822 265 10094	Jack, 7P
J062	4822 265 10093	Jack, 3P
J091	4822 272 10227	Voltage Selector [E]
△ J093	4822 267 30986	Plug, AC Inlet
△ L001	4822 146 21404	Power Transformer [A, N, T, W]
Y001	4822 264 10109	Shote Plug
Y002	4822 264 10109	Shote Plug
001T	4822 736 20152	User Manual
Z001	4822 218 30467	Unit (K), Remote Commander
Z002	4822 138 10296	Battery, SUM-4
Z003	4822 253 30206	Fuse T2A 250V
Z004	4822 265 10092	Jack, AC Adapter

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

- R***:** (1) GD05 --- 140, Carbon film fixed resistor, $\pm 5\%$, 1/4W
R*:** (2) GD05 --- 160, Carbon film fixed resistor, $\pm 5\%$, 1/6W

① --- Resistance value

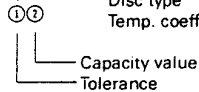
Examples

- ① Resistance value
 0.1 Ω ...001 10 Ω ...100 1k Ω ...102 100k Ω ...104
 0.5 Ω ...005 18 Ω ...180 2.7k Ω ...272 680k Ω ...684
 1 Ω ...010 100 Ω ...101 10k Ω ...103 1Mk Ω ...105
 6.8 Ω ...068 390 Ω ...391 22k Ω ...223 4.7Mk Ω ...475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C*: CERAMIC CAP.**

- (1) DD1 --- 370, Ceramic condenser
 Disc type
 Temp. coeff. P350 ~ N1000, 50V



Examples

- ① Tolerance (Capacity deviation)
 $\pm 0.25\text{pF}$...0
 $\pm 0.5\text{pF}$...1
 $\pm 5\%$...5

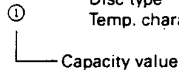
* Tolerance of COMMON PARTS handled here are as follows:

- 0.5pF ~ 5pF... $\pm 0.25\text{pF}$
 6pF ~ 10pF... $\pm 0.5\text{pF}$
 12pF ~ 560pF... $\pm 5\%$

- ② Capacity value
 0.5pF...005 3pF...030 100pF...101
 1pF...010 10pF...100 220pF...221
 1.5pF...015 47pF...470 560pF...561

C*: CERAMIC CAP.**

- (1) DK16 --- 300, High dielectric constant ceramic condenser
 Disc type
 Temp. chara. 2B4, 50V

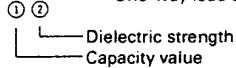


Example

- ② Capacity value
 100pF...101 1000pF...102 10000pF...103
 470pF...471 2200pF...222

C*: ELECTROLY CAP. (E), FILM CAP. (F)**

- (1) EA --- 10, Electrolytic condenser
 One-way lead type, Tolerance $\pm 20\%$

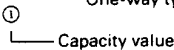


Examples

- ① Capacity value
 0.1 μF ...104 4.7 μF ...475 100 μF ...107
 0.33 μF ...334 10 μF ...106 330 μF ...337
 1 μF ...105 22 μF ...226 1100 μF ...108
 2200 μF ...228

- ② Working voltage
 6.3V...006 25V...025
 10V...010 35V...035
 16V...016 50V...050

- (2) DF15 --- 350, Plastic film condenser
 One-way type, Mylar $\pm 5\%$ 50V



Examples

- ① Capacity value
 0.001 μF (1000pF)...102 0.1 μF ...104
 0.0018 μF ...182 0.56 μF ...564
 0.01 μF ...103 1 μF ...105
 0.015 μF ...153

6. ELECTRICAL PARTS LIST

REF. DESIG.	PART NO.	DESCRIPTION
		PG01-VOLUME CIRCUIT BOARD
RG01	4822 101 30583	Variable Resistor 50K Ω
JG01	4822 267 31035	Jack, 2P
JG02	4822 265 10064	Jack, 7P
		PL01-VIDEO AMP CIRCUIT BOARD
RL01	4822 111 41355	Resistor 75 Ω 1/6W
RL02	4822 111 41355	Resistor 75 Ω 1/6W
QL01	4822 209 83067	IC LC4066
QL02	4822 130 42715	Transistor 2SA608SP, etc.
QL03	4822 130 61227	Transistor DTA114ES, Digital
QL05	4822 130 42298	Transistor 2SC536SP, etc.
QL06	4822 130 42298	Transistor 2SC536SP, etc.
QL07	4822 130 42298	Transistor 2SC536SP, etc.
QL08	4822 130 42298	Transistor 2SC536SP, etc.
QL09	4822 130 42298	Transistor 2SC536SP, etc.
QL10	4822 130 42298	Transistor 2SC536SP, etc.
JL01	4822 266 30303	Terminal, 4P; RCA
		PP01-POWER SWITCH CIRCUIT BOARD
Δ G001	4822 122 33276	Ceramic Cap. 0.01 μF $\pm 20\%$
Δ S001	4822 276 12533	Push Switch, Power
		PU01-U-COM CIRCUIT BOARD
CU04	4822 122 40491	Ceramic Cap. 0.022 μF +80% -20%
RF25	4822 116 52849	Resistor 220 Ω $\pm 5\%$ 1/4W
RF26	4822 116 52849	Resistor 220 Ω $\pm 5\%$ 1/4W
RF33	4822 101 30581	Variable Resistor 100K Ω
RF39	4822 101 30582	Variable Resistor 100K Ω (B)x2
RF40	4822 101 30582	Variable Resistor 100K Ω (B)x2
DF01	4822 130 33305	Diode 1SS176, etc.
DF02	4822 130 33305	Diode 1SS176, etc.
DG01	4822 130 32508	Diode RL103 E, etc.
DG02	4822 130 32508	Diode RL103 E, etc.
DU01	4822 130 33305	Diode 1SS176, etc.
DU02	4822 130 33305	Diode 1SS176, etc.
DU03	4822 130 80325	L.E.D. LT3H8 B
DU04	4822 130 80326	L.E.D. LT3D8 B
DU09	4822 130 33305	Diode 1SS176, etc.
DU10	4822 130 33305	Diode 1SS176, etc.
QF01	4822 209 83631	IC NJM4558DD
QF02	4822 209 83631	IC NJM4558DD
QF03	4822 130 43818	Transistor 2SC2878(A)
QF04	4822 130 43818	Transistor 2SC2878(A)
QF05	4822 130 43818	Transistor 2SC2878(A)
QF06	4822 130 43818	Transistor 2SC2878(A)

REF. DESIG.	PART NO.	DESCRIPTION
QG01	4822 209 73287	IC LB1630
QU01	4822 209 73992	Microprocessor LM6413F
QU02	4822 130 42682	Transistor DTA144ES, Digital
QU03	4822 130 42298	Transistor 2SC536SP, etc.
QU04	4822 130 42682	Transistor DTA144ES, Digital
QU05	4822 130 42594	Transistor DTC144ES, Digital
QU06	4822 130 42682	Transistor DTA144ES, Digital
QU07	4822 130 42298	Transistor 2SC536SP, etc.
QU08	4822 130 10009	Photo Unit
FU01	4822 242 72397	Ceramic Vibrator CSB1000D
SU01	4822 276 12455	Push Switch Tact
SU07		
PV01-REAR TERMINAL CIRCUIT BOARD		
JV01	4822 266 30315	Terminal, 15P
JV02	4822 266 30306	Terminal, 13P
JV03	4822 266 30306	Terminal, 13P
JV04	4822 267 31034	Jack, 15P
JV05	4822 267 31034	Jack, 15P
PW01-HEAD PHONE JACK CIRCUIT BOARD		
RW01	4822 111 50474	Resistor 330Ω ±5% 1W
RW02	4822 111 50474	Resistor 330Ω ±5% 1W
JW01	4822 267 31033	Jack, Headphone
JW02	4822 265 10061	Jack, 5P
JW03	4822 462 71579	Stopper
WW01	4822 323 10054	Jumper Lead, 5P
PZ01-VOLUME KNOB POINTER CIRCUIT BOARD		
DZ01	4822 130 80326	L.E.D. LT3D8B
P701-MAIN AMP CIRCUIT BOARD		
P701-CAPACITORS		
CS03	4822 122 32486	Ceramic 0.01μF +80% -20%
CS04	4822 122 32486	Ceramic 0.01μF +80% -20%
C718	4822 124 41135	Elect 10μF 100V
C723	4822 122 32486	Ceramic 0.01μF +80% -20% [N]
C724	4822 122 32486	Ceramic 0.01μF +80% -20% [N]
C727	4822 122 32486	Ceramic 0.01μF +80% -20%
C728	4822 122 32486	Ceramic 0.01μF +80% -20%
C729	4822 122 40491	Ceramic 0.022μF +80% -20%
△C801	4822 122 30043	Ceramic 0.01μF +80% -20%
C802	4822 124 41603	Elect 4700μF 50V
C803	4822 124 41603	Elect 4700μF 50V
C804	4822 122 32486	Ceramic 0.01μF +80% -20%
C805	4822 122 32486	Ceramic 0.01μF +80% -20%
C814	4822 122 40306	Ceramic 0.047μF +80% -20%
C817	4822 122 32486	Ceramic 0.01μF +80% -20% [N]

REF. DESIG.	PART NO.	DESCRIPTION
P701-RESISTORS		
R709	4822 116 52858	4.7Ω ±5% ¼W
R710	4822 116 52858	4.7Ω ±5% ¼W
R711	4822 116 60204	4.7Ω ±5% 1W
R712	4822 116 60204	4.7Ω ±5% 1W
△R715	4822 115 90167	100Ω ±2% ¼W, Fuse
△R716	4822 115 90167	100Ω ±2% ¼W, Fuse
R719	4822 116 55263	820Ω ±5% 1/6W
△R802	4822 115 90166	10Ω ±2% ¼W
△R803	4822 115 90166	10Ω ±2% ¼W
P701-SEMICONDUCTORS		
△D701	4822 130 32508	Diode RL103E, etc.
△D702	4822 130 32508	Diode RL103E, etc.
△D703	4822 130 32508	Diode RL103E, etc.
QS01	4822 209 72357	IC LC7821
QS02	4822 209 83804	IC LC4966
QS03	4822 130 42298	Transistor 2SC536SP, etc.
Q401	4822 209 83631	IC NJM4558DD
△Q701	4822 209 73988	IC STK4164
△Q801	4822 209 83317	IC NJM7815
Q802	4822 130 61448	Transistor 2SD1666(R, S)
△Q803	4822 209 83828	IC NJM79M15FA
△Q804	4822 209 73674	IC NJM7806
△Q805	4822 209 72332	IC NJM79M06FA
△Q806	4822 209 70084	IC NJM7812
△Q809	4822 209 73989	IC NJM78L18A
Q810	4822 130 42298	Transistor 2SC536SP, etc.
△D801	4822 130 31007	Diode S4V820
△D802	4822 130 80907	Diode S2V8
△D803	4822 130 32508	Diode RL103E, etc.
D804	4822 130 33305	Diode 1S5176, etc.
△D805	4822 130 32508	Diode RL103E, etc.
△D806	4822 130 32508	Diode RL103E, etc.
P701-MISCELLANEOUS		
△F801	4822 253 30206	Fuse T2A 2
△F802	4822 253 30206	Fuse T2A 250V
JS01	4822 265 30397	Terminal, 4P; RCA
JS02	4822 265 30457	Terminal, 6P; RCA
JS04	4822 265 10064	Jack, 7P
JS08	4822 290 40209	Terminal, Earth
J401	4822 265 30397	Terminal, 4P; RCA
J701	4822 290 60752	Terminal, Speaker
J702	4822 265 10061	Jack, 5P
J703	4822 290 40209	Terminal, Earth
J801	4822 267 30978	Jack, Fuse Clip
J802	4822 267 30978	Jack, Fuse Clip
J803	4822 256 30329	Jack, Fuse Clip
J804	4822 256 30329	Jack, Fuse Clip
J805	4822 265 10118	Plug, 7P
J806	4822 265 20205	Plug, 3P
L701	4822 157 53898	Coil, Chook
L702	4822 157 53898	Coil, Chook
L703	4822 280 20197	Relay

(W01-99)	Assembly and Wiring
(T01-99)	Adjustment
(X01-00)	Correction

NOTE ON SAFETY:

Symbol Δ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol Δ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

7. TECHNICAL SPECIFICATIONS

AUDIO/VIDEO MASTER AMPLIFIER PM493

Power output

T.S.P. (Total System Power, EISA, 6 Ohms)	140 W
DIN 8 ohms	2 × 50 W
T.H.D. (at 1/2 rated output)	0.1%
IM Distortion (at 1/2 rated output)	0.1%
Damping factor	45

Phono input

Signal to noise ratio	75 dB
Sensitivity	4.5 mV/47 kOhms

CD, CDV/TV/Video inputs

Input sensitivity impedance	400 mV/25 kOhms
Signal to noise ratio	90 dB
Frequency response	10 Hz – 50 kHz
Tone characteristic	100 Hz/10 kHz, ± 10 dB
Channel separation	>60 dB at 1 kHz

Video section

Sensitivity	1.0 V/75 Ohms
Output level	1.0V/75 Ohms
Dimension (W × H × D)	360 × 110 × 300 mm
Net weight	5.7 kg

Power supply

N version	220 V AC 50/60 Hz
T version	240 V AC 50/60 Hz
E version	110/120/220/240 V AC 50/60 Hz

“SERVICE INFORMATION IS FOR USE BY QUALIFIED PERSONNEL ONLY — ANY MISADJUSTMENT OR MISALIGNMENT MAY BE TREATED AS A NON-WARRANTY REPAIR BY ANY MARANTZ SERVICE CENTRE —”

Kind of Common Parts

RESISTOR

R*** (1) GD05 140, Carbon film fixed resistor, $\pm 5\%$ 1/4W

R*** (2) GD05 160, Carbon film fixed resistor, $\pm 5\%$ 1/6W

C*** : **CERAMIC CAP.**

(1) DD1 370, Ceramic condenser,
disc type (titan condenser)
Temp. coeff. P350 to N1000 50V

C*** : **CERAMIC CAP.**

(1) DK16 300, High dielectric constant ceramic
condenser, disc type (titan variable)
Temp. chara. 2B4 50V

C*** : **ELECTROLY CAP. ()/FILM CAP. ()**

(1) EA 10, Electrolytic condenser,
one-way lead type, tolerance $\pm 20\%$

(2) DF15 350, Plastic film condenser,
one-way type, Mylar, $\pm 5\%$ 50V

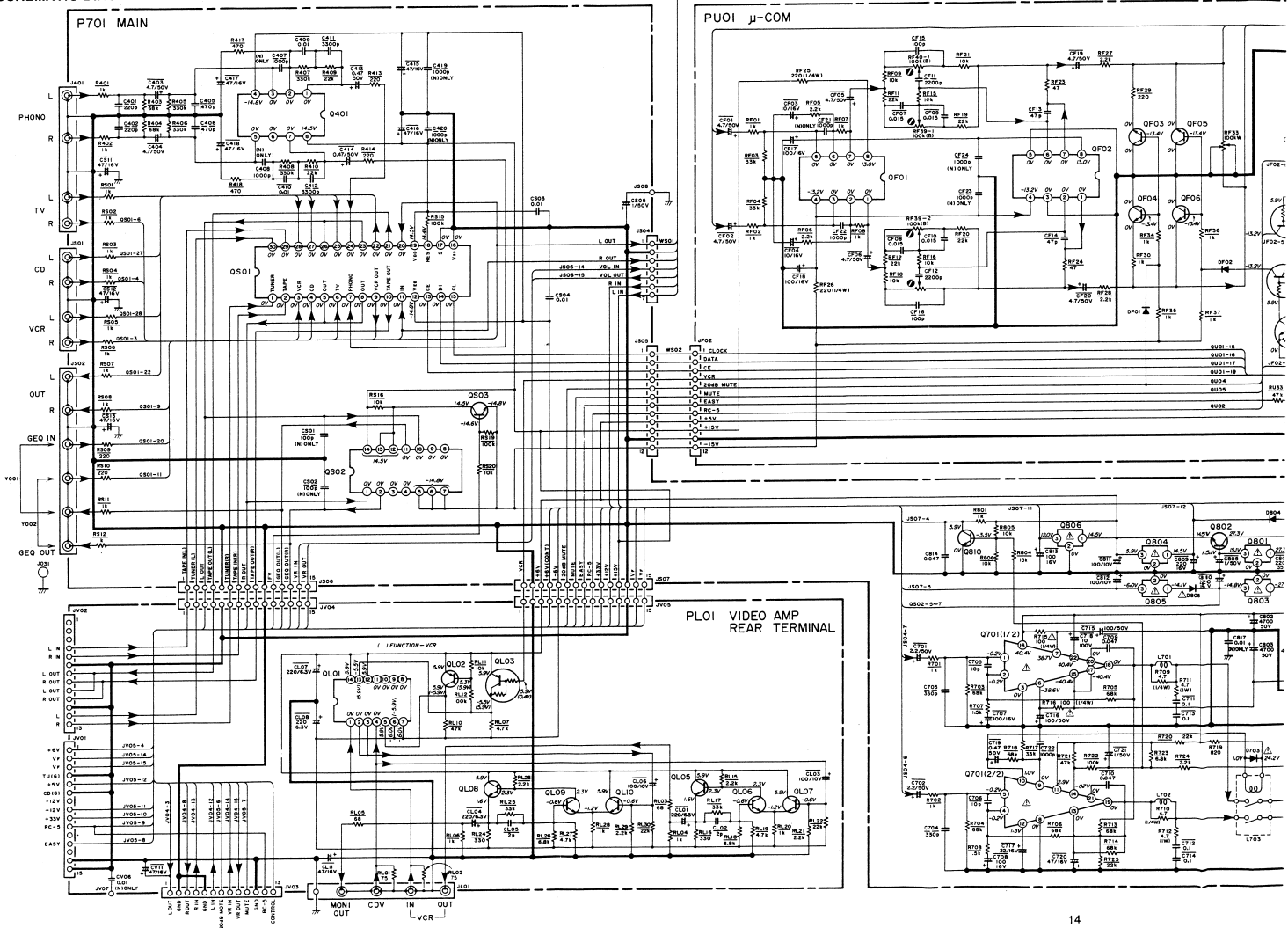
* In case of ordering the common parts, please establish the correct parts number of 10 figures by the procedure "ASSIGNMENT OF COMMON PARTS CODES"

Components and wiring are subject to change for modification without notice.

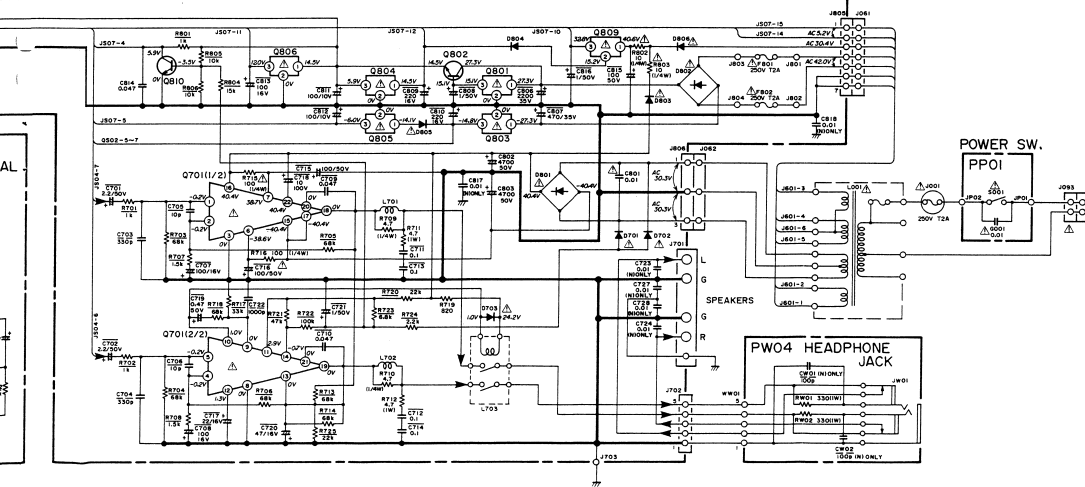
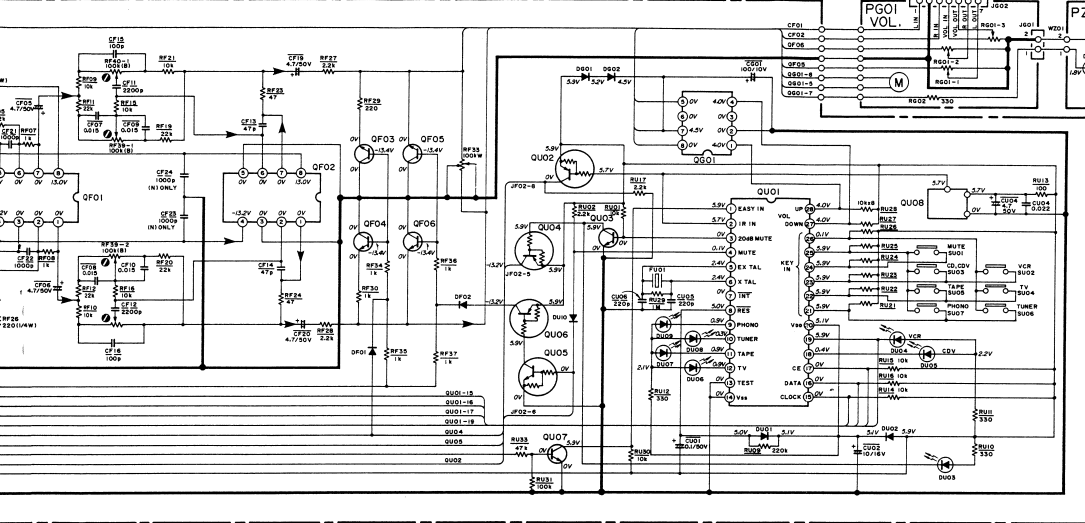
NOTE ON SAFETY:

Symbol \triangle Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol \triangle . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

8. SCHEMATIC DIAGRAM



Model PM493



- Q401, QF01, QF02
NJM4558DD
- Q701
STK4164 II
- Q801
54VB
- Q802
NJM7815
- Q803
2SD1666 (R,S)
- Q804
ISS176, etc.
- Q805
NJM79M15FA
- DU03
LT3H88 (YEL)
- Q806
NJM7806
- DU04~DU09, DU10
LT3088 (RED)
- Q807
DTC144ES
- Q808
DTA144ES
- Q809
NJM78L18A
- Q810, QLO5~QLO10
QSO3, QU03, QU07
2SC536SP, etc.
- QF03~QF06
2SC2878
- QGO1
LB1630
- QLO1
LC4066, etc.
- QLO2
2SA608SP, etc.
- QLO3
DTA114ES
- QSO1
NJM7806, NJM7812
NJM7815, NJM78L18A
NJM7915FA, NJM79M06FA
- LC7821
- QSO2
LC4966
- QU01
LM6413F
- QU02, QU04, QU06
DTA144ES
- QU05
DTC144ES
- QU08
PAS-C1604

