



# EQ152

DUAL 15 BAND  
GRAPHIC EQ

# EQ311

31 BAND  
GRAPHIC EQ

# EQ311D

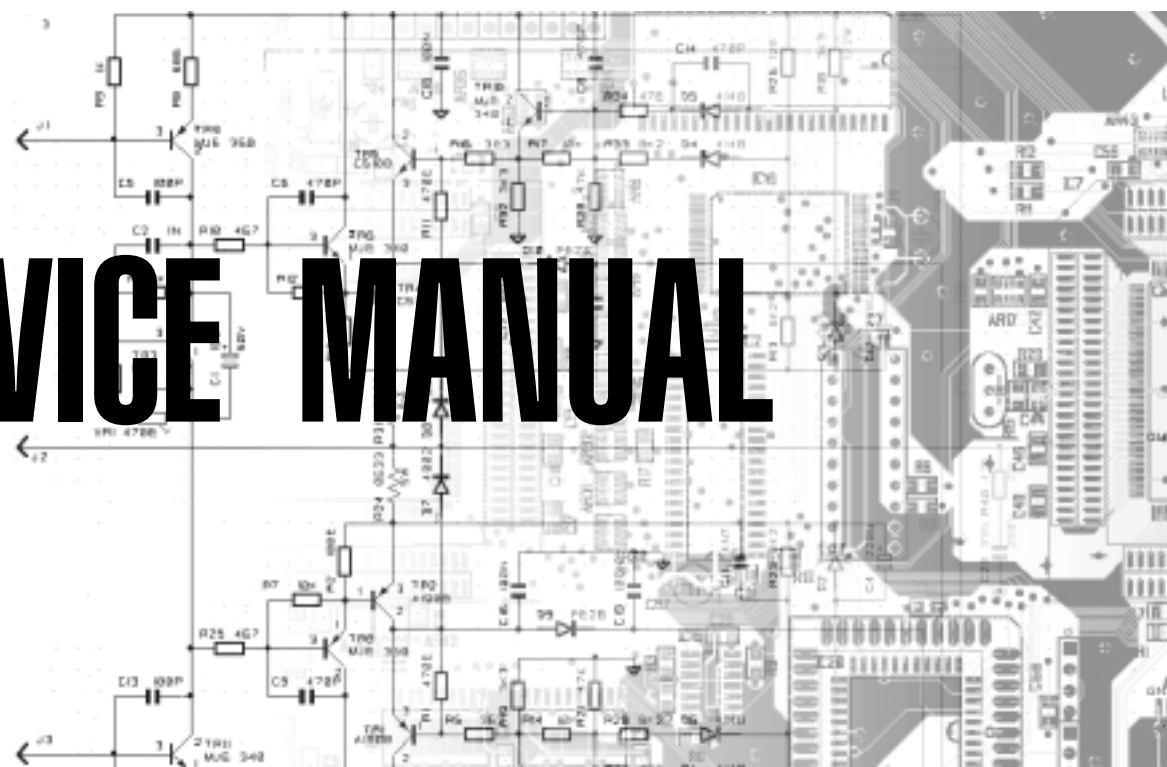
31 BAND  
GRAPHIC EQ

# EQ312

DUAL 31 BAND  
GRAPHIC EQ

# ANALOG SERIES

# SERVICE MANUAL



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## Warnings



### Notice

Service must be carried out by qualified personnel only. Any tampering carried out by unqualified personnel during the guarantee period will forfeit the right to guarantee.

For a correct operation of the instrument, after having switched off, be careful to wait at least 3 seconds before switching on again.

To improve the device's specifications, the schematic diagrams may be subject to change without prior notice.

All components marked by this symbol have special safety characteristics, when replacing any of these components use only manufacturer's specified parts.

The ( $\mu$ ) micro symbol of capacitance value is substituted by U.

The ( $\Omega$ ) omega symbol of resistance value is substituted by E.

The electrolytic capacitors are 25Vdc rated voltage unless otherwise specified.

All resistors are 1/8W unless otherwise specified.

All switches shown in the "OFF" position. All DC voltages measured to ground with a voltmeter 20KOhm/V.

◀ Soldering point.

• Male connector.

◌ Female connector.

⚡ M/F faston connector.

⬆ Supply voltage.

◻ Test point.

◌ Flag joined with one or more flags with the same signal name inscribed.

⬆ Logic supply ground.

⬆ Analog supply ground.

⬆ Chassis ground.

⬆ Earth ground.



### ATTENTION

Observe precautions when handling electrostatic sensitive devices.

## Address



GENERALMUSIC S.p.A. Sales Division: 47842 S.Giovanni in Marignano (RN) ITALY - Via delle Rose, 12

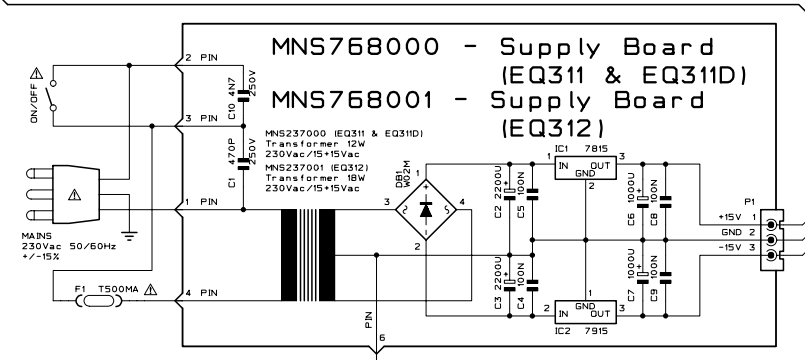
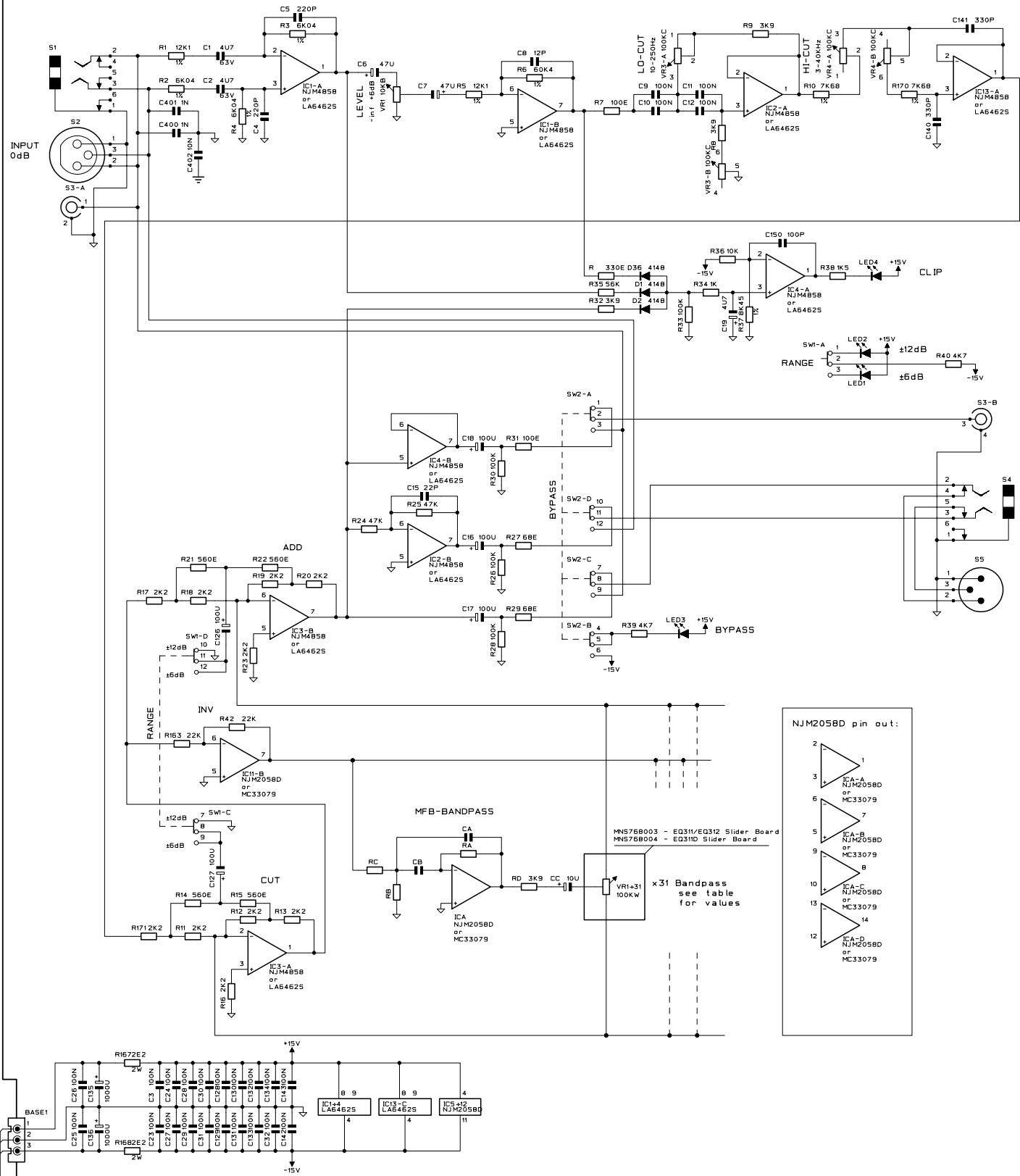


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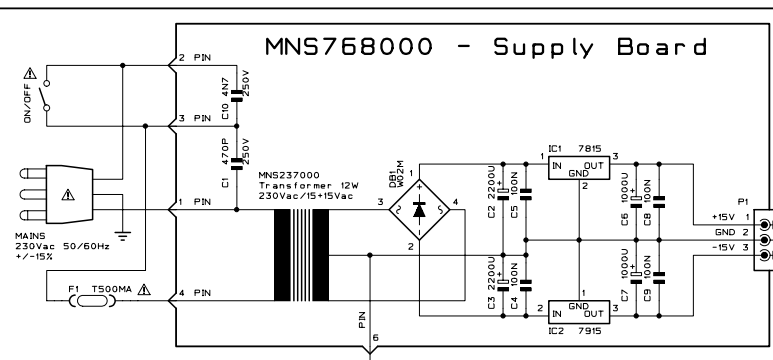
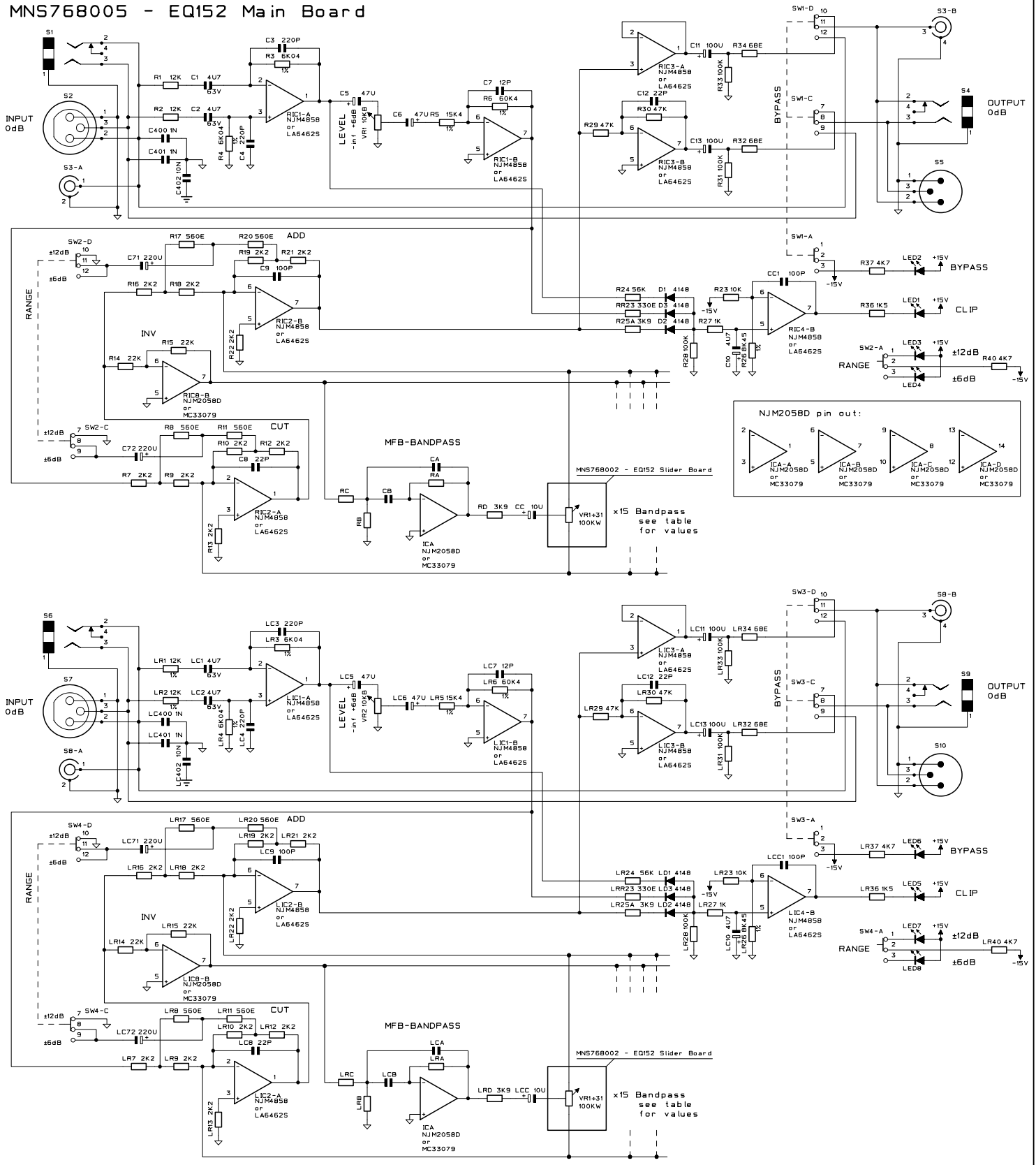
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MNS768006 - EQ311/EQ311D/EQ312 Main Board



DRW G. BOCCATO	DWG# 550654	PCB# M241Y0022H02/H21	GENERALMUSIC S.p.A. ITALY
CKD G. BOCCATO	DATE 10-11-2000	SCHMATIC DIAGRAM	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
APP. R. FALCONI	REV. A	EQ311-EQ311D-EQ312	

MNS768005 - EQ152 Main Board



DRW G. BOCCATO	DWG# 550655	PCB# M241Y0022H01/H02	GENERALMUSIC S.p.A. ITALY
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APP. R. FALCONI	REV. A	EQ152	

MFB Components Values for 31-Band Equalizer

Band	CA ref	CB ref	CA/B value	RA ref	RA value	RB ref	RB value	RC ref	RC value	ICA ref	RD ref	CC ref
20Hz	C34	C33	100N	R45	682K	R44	9K53	R43	349K	IC5-C	R46	C35
25Hz	C37	C36	100N	R49	549K	R48	7K50	R47	274K	IC5-D	R50	C38
31.5Hz	C40	C39	100N	R53	442K	R52	6K04	R51	221K	IC6-C	R54	C41
40Hz	C43	C42	100N	R57	349K	R56	4K75	R55	174K	IC6-D	R58	C44
50Hz	C46	C45	100N	R61	274K	R60	3K74	R59	130K	IC6-A	R62	C47
63Hz	C49	C48	100N	R65	221K	R64	3K01	R63	110K	IC6-B	R66	C50
80Hz	C52	C51	100N	R69	174K	R68	2K37	R67	86K6	IC5-A	R70	C53
100Hz	C55	C54	100N	R73	137K	R72	1K91	R71	68K1	IC5-B	R74	C56
125Hz	C58	C57	100N	R77	110K	R76	1K5	R75	64K9	IC7-C	R78	C59
160Hz	C61	C60	100N	R81	86K6	R80	1K1	R79	43K2	IC7-D	R82	C62
200Hz	C64	C63	100N	R85	68K1	R84	953E	R83	34K0	IC8-C	R86	C65
250Hz	C67	C66	10N	R89	549K	R88	7K50	R87	274K	IC8-D	R90	C68
315Hz	C70	C69	10N	R93	442K	R92	6K04	R91	221K	IC8-A	R94	C71
400Hz	C73	C72	10N	R97	349K	R96	4K75	R95	174K	IC8-B	R98	C74
500Hz	C76	C75	10N	R101	274K	R100	3K74	R99	130K	IC7-A	R102	C77
630Hz	C79	C78	10N	R105	221K	R104	3K01	R103	110K	IC7-B	R106	C80
800Hz	C82	C81	10N	R109	174K	R108	2K37	R107	86K6	IC9-C	R110	C83
1KHz	C85	C84	10N	R113	137K	R112	1K91	R111	68K1	IC9-D	R114	C86
1.25KHz	C88	C87	10N	R117	110K	R116	1K5	R115	64K9	IC10-C	R118	C89
1.6KHz	C91	C90	10N	R121	86K6	R120	1K1	R119	43K2	IC10-D	R122	C92
2KHz	C94	C93	10N	R125	68K1	R124	953E	R123	34K0	IC10-A	R126	C95
2.5KHz	C97	C96	1N	R129	549K	R128	7K50	R127	274K	IC10-B	R130	C98
3.15KHz	C100	C99	1N	R133	442K	R132	6K04	R131	221K	IC9-A	R134	C101
4KHz	C103	C102	1N	R137	349K	R136	4K75	R135	174K	IC9-B	R138	C104
5KHz	C106	C105	1N	R141	274K	R140	3K74	R139	130K	IC11-C	R142	C107
6.3KHz	C109	C108	1N	R145	221K	R144	3K01	R143	110K	IC11-D	R146	C110
8KHz	C112	C111	1N	R149	174K	R148	2K37	R147	86K6	IC12-C	R150	C113
10KHz	C115	C114	1N	R153	137K	R152	1K91	R151	68K1	IC12-D	R154	C116
12.5KHz	C118	C117	1N	R157	110K	R156	1K5	R155	64K9	IC12-A	R158	C119
16KHz	C121	C120	1N	R106	86K6	R160	1K1	R159	43K2	IC12-B	R162	C122
20KHz	C124	C123	1N	R165	68K1	R164	953E	R163	34K0	IC11-A	R166	C125

MFB Components Values for 15-Band Equalizer

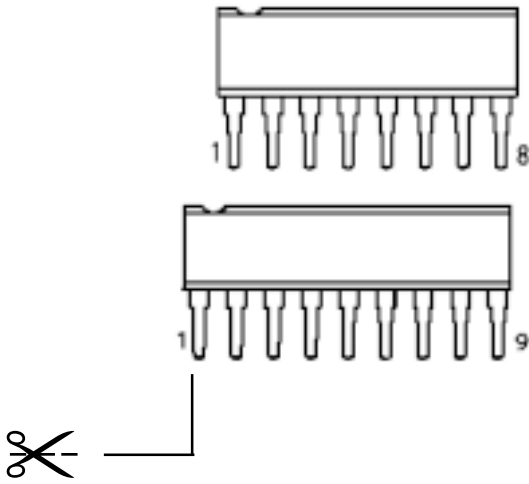
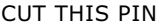
Band	CA ref	CB ref	CA/B value	RA ref	RA value	RB ref	RB value	RC ref	RC value	ICA ref	RD ref	CC ref
25Hz	C16	C15	100N	R40	274K	R39	16K9	R38	137K	IC5-C	R41	C17
40Hz	C19	C18	100N	R44	174K	R43	10K5	R42	86K6	IC5-D	R45	C20
63Hz	C22	C21	100N	R48	110K	R47	6K65	R46	54K9	IC5-A	R49	C23
100Hz	C25	C24	100N	R52	74K1	R51	4K22	R50	34K0	IC5-B	R53	C26
160Hz	C28	C27	100N	R56	43K2	R55	2K61	R54	21K5	IC6-C	R57	C29
250Hz	C31	C30	10N	R60	274K	R59	16K5	R58	137K	IC6-D	R61	C32
400Hz	C34	C33	10N	R64	174K	R63	10K5	R62	86K6	IC6-A	R65	C35
630Hz	C37	C36	10N	R68	110K	R67	6K65	R66	53K6	IC6-B	R69	C38
1KHz	C40	C39	10N	R72	74K1	R71	4K12	R70	34K0	IC7-C	R73	C41
1.6KHz	C43	C42	10N	R76	43K2	R75	2K61	R74	21K5	IC7-D	R77	C44
2.5KHz	C46	C45	1N	R80	274K	R79	16K5	R78	133K	IC6-A	R81	C47
4KHz	C49	C48	1N	R84	174K	R83	10K5	R82	84K5	IC6-B	R85	C50
6.3KHz	C52	C51	1N	R88	110K	R87	6K49	R86	53K6	IC8-C	R89	C53
10KHz	C55	C54	1N	R92	74K1	R91	4K12	R90	34K0	IC8-D	R93	C56
16KHz	C58	C57	1N	R96	43K2	R95	2K61	R94	21K0	IC8-A	R97	C59

## Service Note

When you order a spare part code 100957 you will receive from GM a NJM2043L or M5220L or LA6462S operational amplifier IC types, all these IC are equivalent with the original mounted IC type NJM4558L, but only the last one (LA6462S) have a little difference: it has 9 pins instead of 8; to make it pin compatible with the other types you must cut the first pin, the following figure explain how you do it:

## IC TYPES

NJM2043L  
M5220L  
NJM4558L



## Spare Part List

Code	Description
<b>Accessories</b>	
277344	Owner's Manual (English-Italian)

## Assembly

130294	Mains Cable
347200	Cord Lock
110117	Fuse Holder 5x20mm for Panel
110017	T500mA Fuse 5x20mm (EU)
MNS110000	Mains Switch with Led
MNS667001	Controls Panel EQ311
MNS667002	Controls Panel EQ312
MNS667003	Controls Panel EQ311D
MNS667000	Controls Panel EQ152
MNS347000	Potentiometer Knob

## Supply Board

<b>MNS768000</b>	<b>Supply Board</b>
<b>MNS768001</b>	<b>Supply Board (EQ312 Only)</b>
MNS237000	* Transformer 12W 230Vac/15+15Vac
MNS237001	* Transformer 18W 230Vac/15+15Vac (EQ312 Only)
080168	* W02M 1.5A Rectifier Diodes Bridge
030806	* 2200u 35V 20% Vert Electrolytic Capacitor
030721	* 1000u 25V 20% Vert Electrolytic Capacitor
100060	* 7815 +15V 1A Voltage Regulator
100049	* 7915 -15V 1A Voltage Regulator

## Slider Board

MNS768003	EQ311/EQ312 Slider Board	
MNS768004	EQ311D Slider Board	
MNS768002	EQ152 Single Channel Slider Board	
MNS072000	*	100KW 30mm Slider Potentiometer with Center
MNS072001	*	100KW 60mm Slider Potentiometer with Center

## Main Board

<b>MNS768006</b>	<b>EQ311/312/311D Main Board</b>
<b>MNS768005</b>	<b>EQ152 Main Board</b>
MNS110001	* Dual 4sw 2pos Horizontal Slider Switch
MNS074000	* 10KB Rotary Potentiometer
MNS075000	* 2x10KC Rotary Potentiometer
080705	* Led 3mm 60deg Diffused Red
080706	* Led 3mm 60deg Diffused Green
080710	* Led 3mm 60deg Diffused Yel
100943	* MC33079 Quad LN Op Amp (NJM2058D equivalent)
100957	* LA6462S or M5220L SIP8 Dual LN Op. Amp. (NJM4558L eq.)
080103	* 1N4148 100mA 75V Signal Diode
140228	* Jack Horizontal S-F Socket
MNS140000	* Dual RCA Socket
MNS140001	* Quad RCA Socket
MNS141000	* XLR Female Socket
MNS141001	* XLR Male Socket

**Note:**

Each spare part is single quantity unless otherwise specified

Asterisk prefix explanation:

Omitted = First level spare part.

One asterisk = Second level, part of previous listed first level part.

Two asterisk = Third level, part of previous listed second level part.

Three asterisk = .....

Any request for not above mentioned part must encompass specific description including:

- 1) Model name,
- 2) Section name,
- 3) Module code,
- 4) Reference name,
- 5) Quantity number.