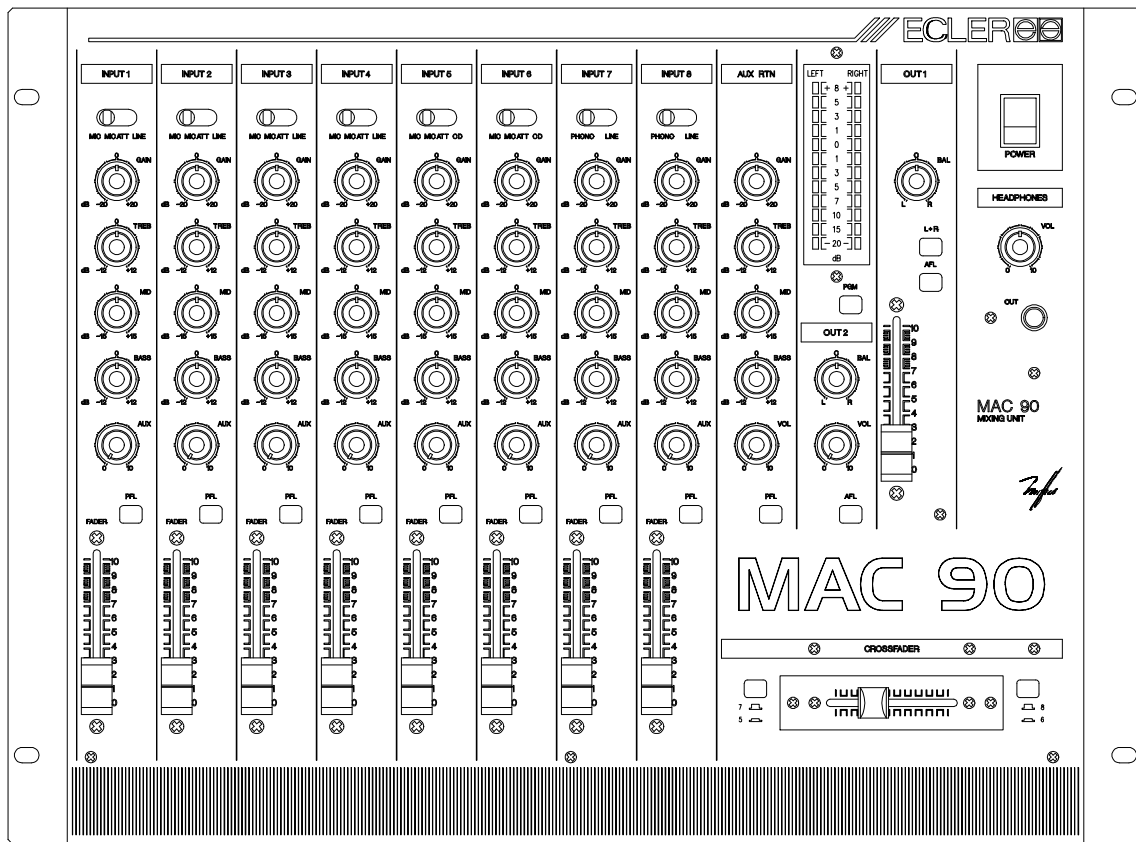


MAC90

SERVICE MANUAL



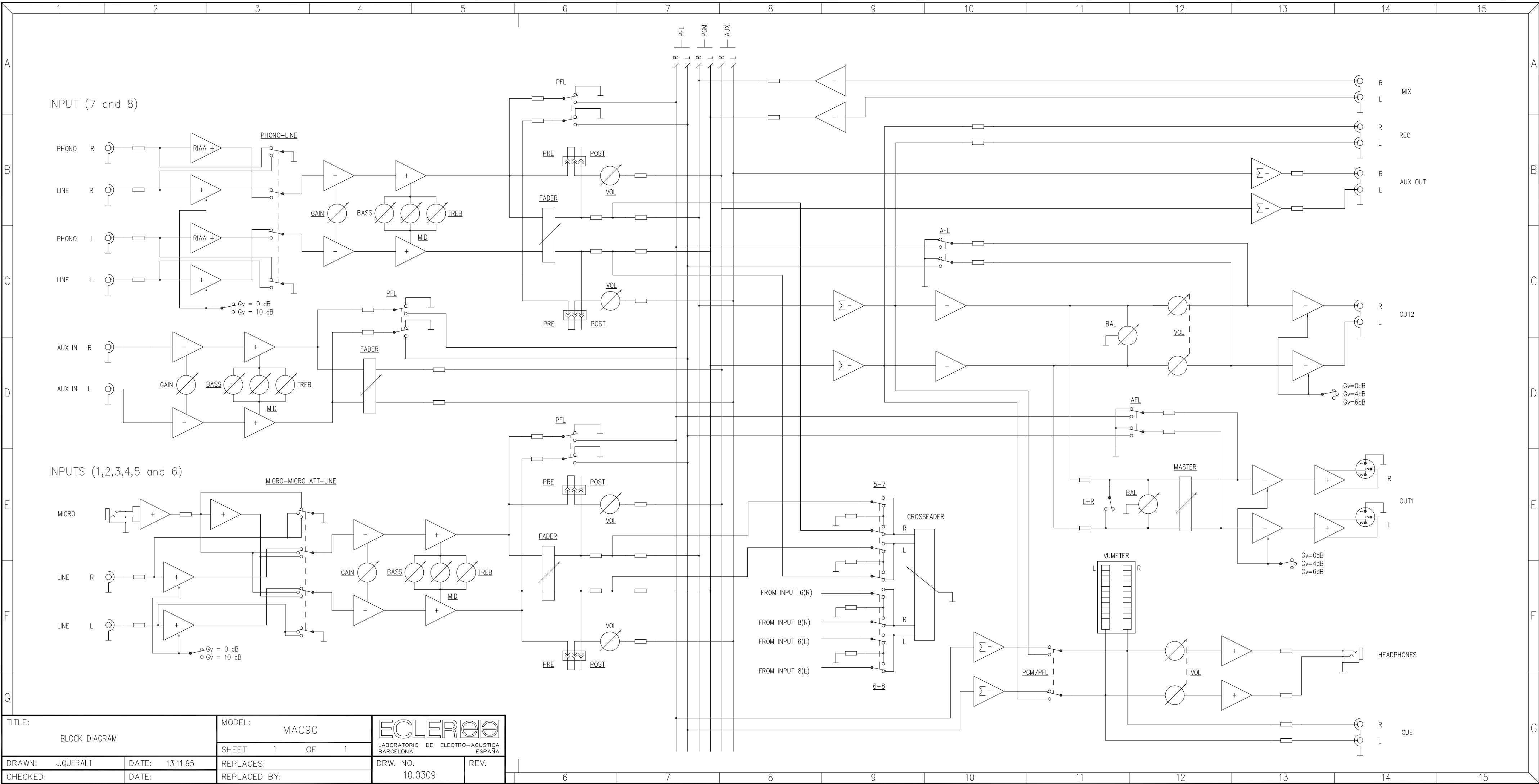
ECLEREO

AUDIO CREATIVE POWER

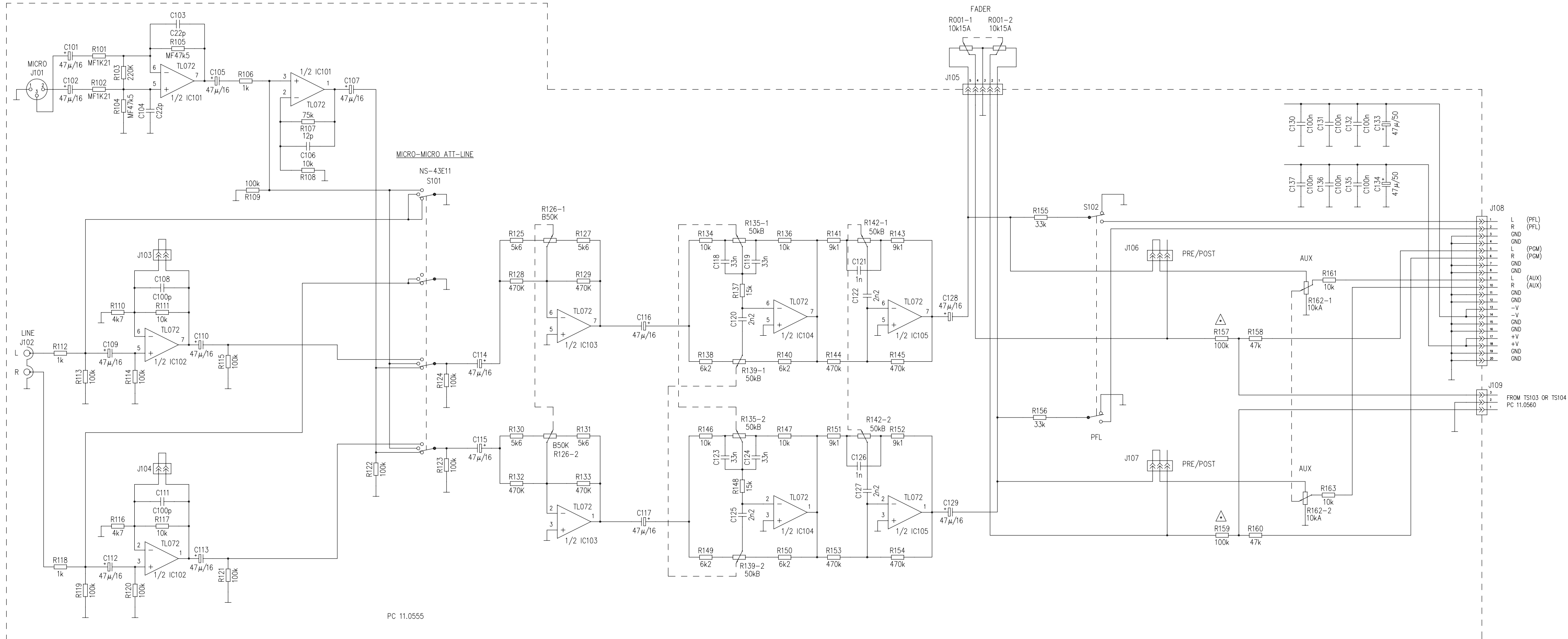
SERVICE MANUAL MAC90

INDEX

- BLOCK DIAGRAM
- SCHEMATICS
- COMPONENTS LOCATION SCHEMA
- TESTING AND QUALITY CONTROL
- TECHNICAL CHARACTERISTICS
- WIRING DIAGRAM
- MECHANICAL DIAGRAM
- PACKING DIAGRAM

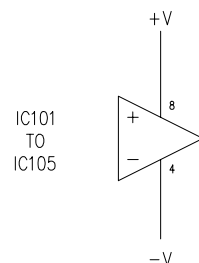


TITLE: BLOCK DIAGRAM		MODEL: MAC90		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACÚSTICA BARCELONA ESPAÑA</div>	
		SHEET 1 OF 1			
DRAWN: J.QUERALT	DATE: 13.11.95	REPLACES:		DRW. NO. 10.0309	REV.
CHECKED:	DATE:	REPLACED BY:			

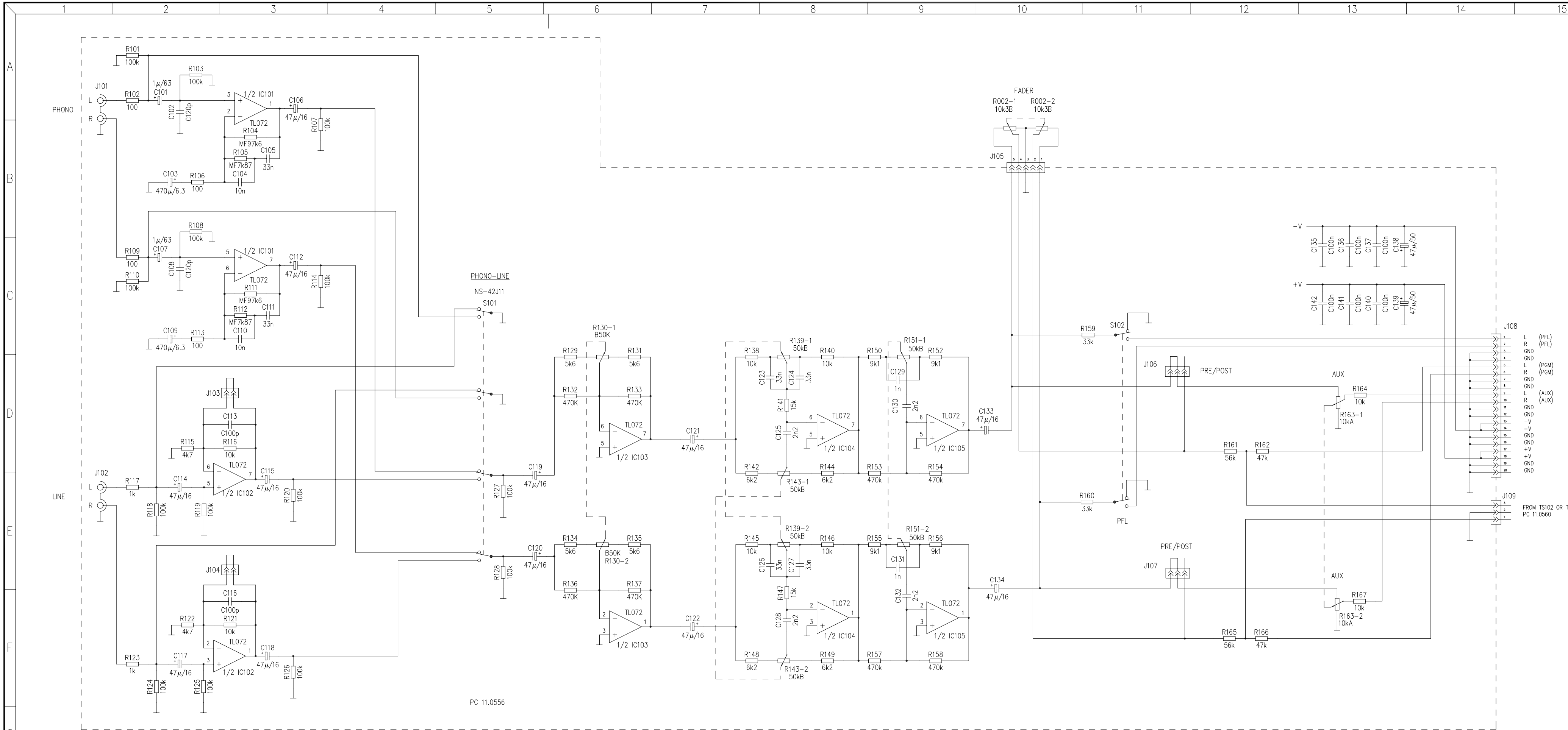


See maintenance section. Note: inputs(5-6) R157=R159=56k
All capacitors 63 V, unless otherwise noted.
Resistors in Ohms, Capacitors in Farads, Inductors in Henries.
All resistors 1/4 W, unless otherwise noted.
See parts list for more information about components.

Special schematic abbreviations:
MF metal film resistor
NF non inflammable resistor
C ceramic capacitor



TITLE: MICRO-LINE INPUT		MODEL: MAC90		<div>ECLEROO</div> <div>LABORATORIO DE ELECTRO-ACÚSTICA BARCELONA ESPAÑA</div>	
DRAWN: J.QUERALT	DATE: 20.10.95	SHEET 1 OF 9	REPLACES:		
CHECKED:	DATE:	REPLACED BY:	DRW. NO. 10.0302	REV.	



TITLE: PHONO-LINE INPUT

DRAWN: J.QUERALT

CHECKED:

MODEL: MAC90

SHEET 2 OF 9

REPLACES:

REPLACED BY:

ECLEROO

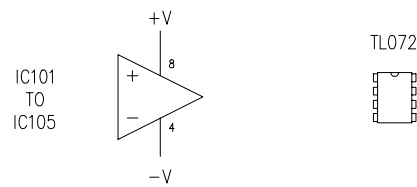
LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA

DRW. NO. 10.0303

REV.

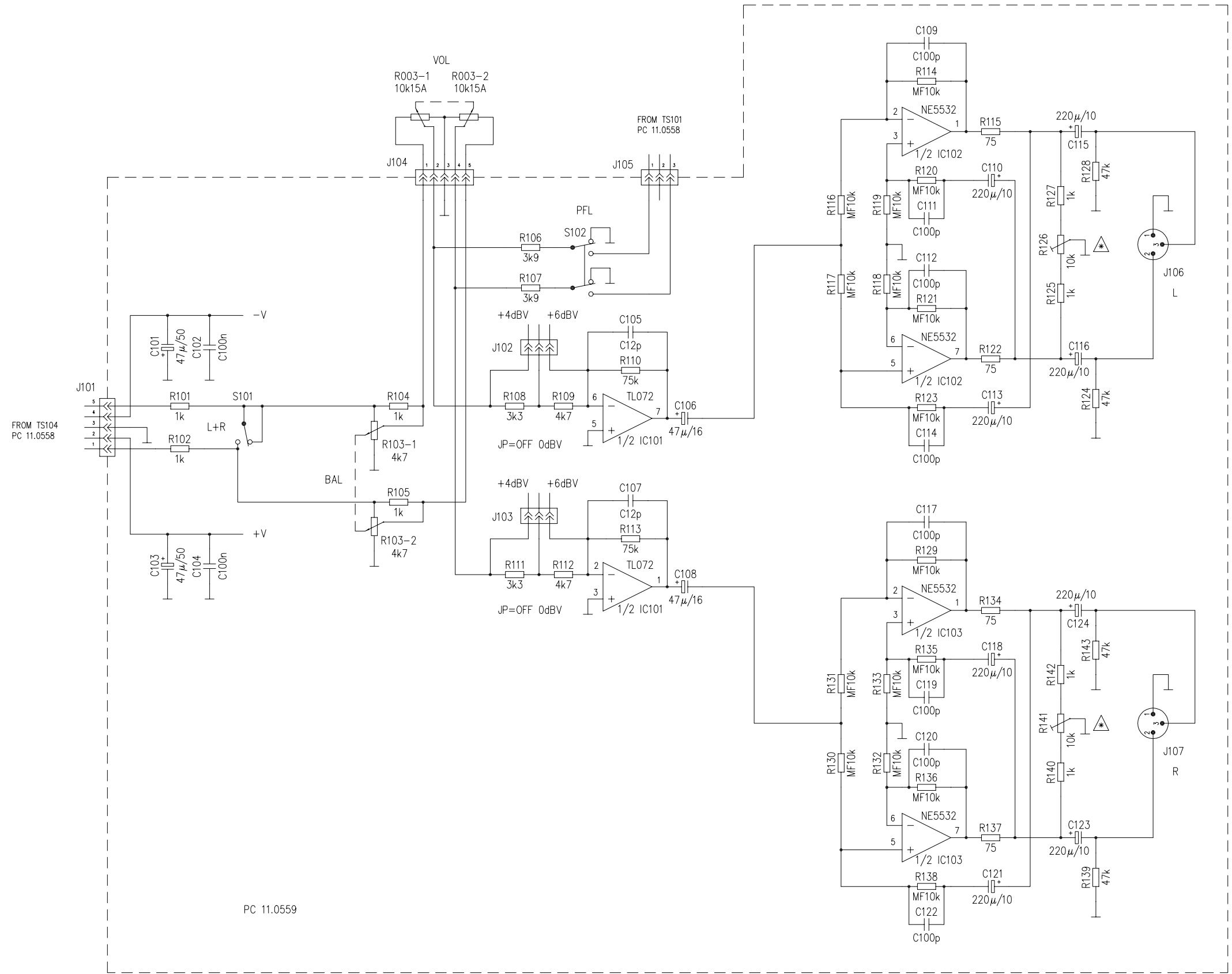
All capacitors 63 V, unless otherwise noted.
Resistors in Ohms. Capacitors in Farads. Inductors in Henries.
All resistors 1/4 W, unless otherwise noted.
See parts list for more information about components.

Special schematic abbreviations:
MF metal film resistor
NF non inflammable resistor
C ceramic capacitor

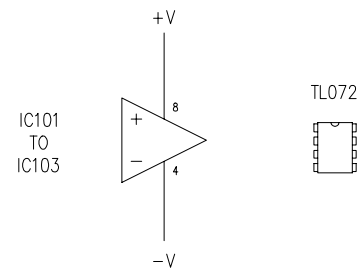


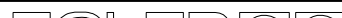
1 2 3 4 5 6 7 8 9 10

A
B
C
D
E
F
G



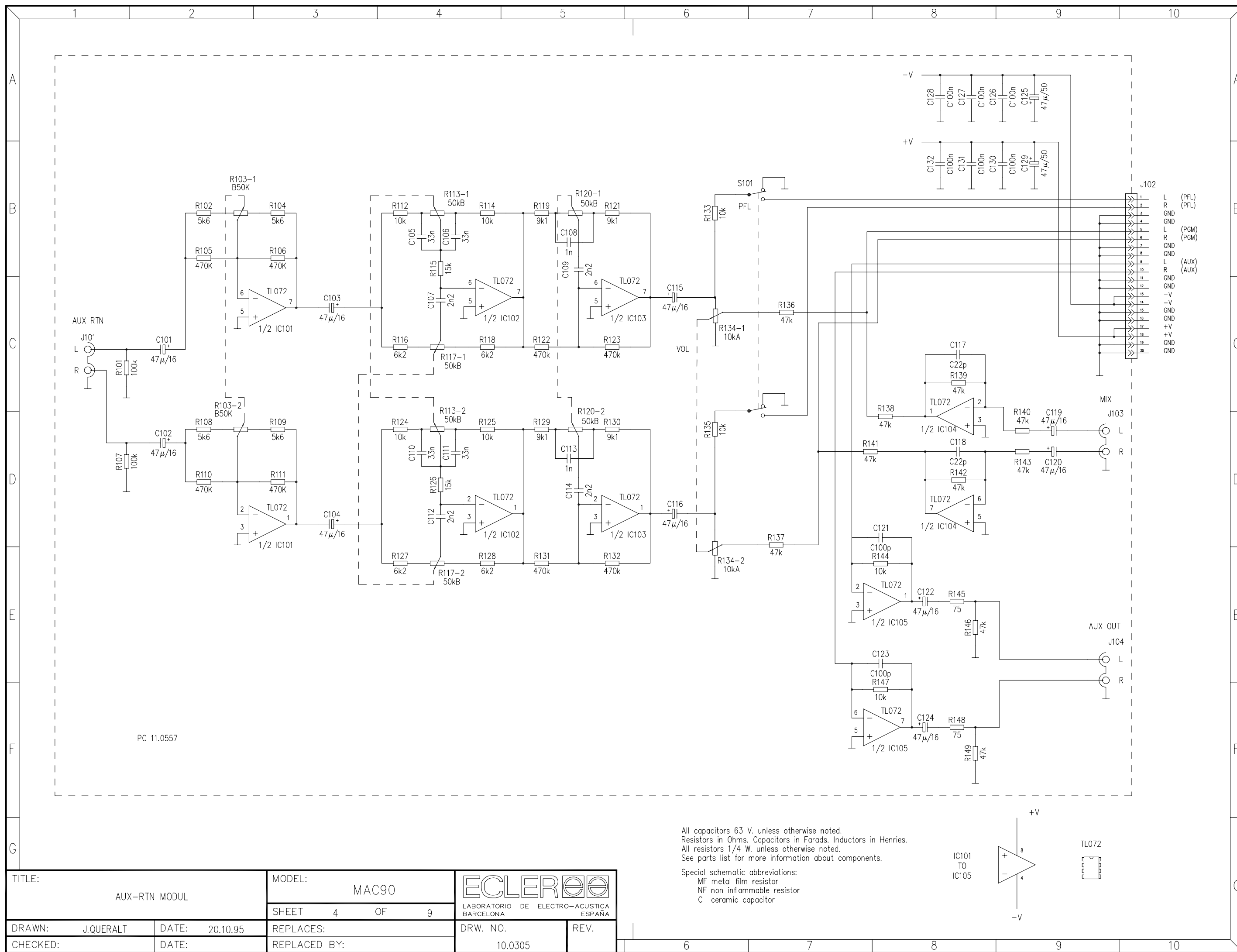
All capacitors 63 V. unless otherwise noted.
Resistors in Ohms. Capacitors in Farads. Inductors in Henries.
All resistors 1/4 W. unless otherwise noted.
See parts list for more information about components.
Special schematic abbreviations:
MF metal film resistor
NF non inflammable resistor
C ceramic capacitor

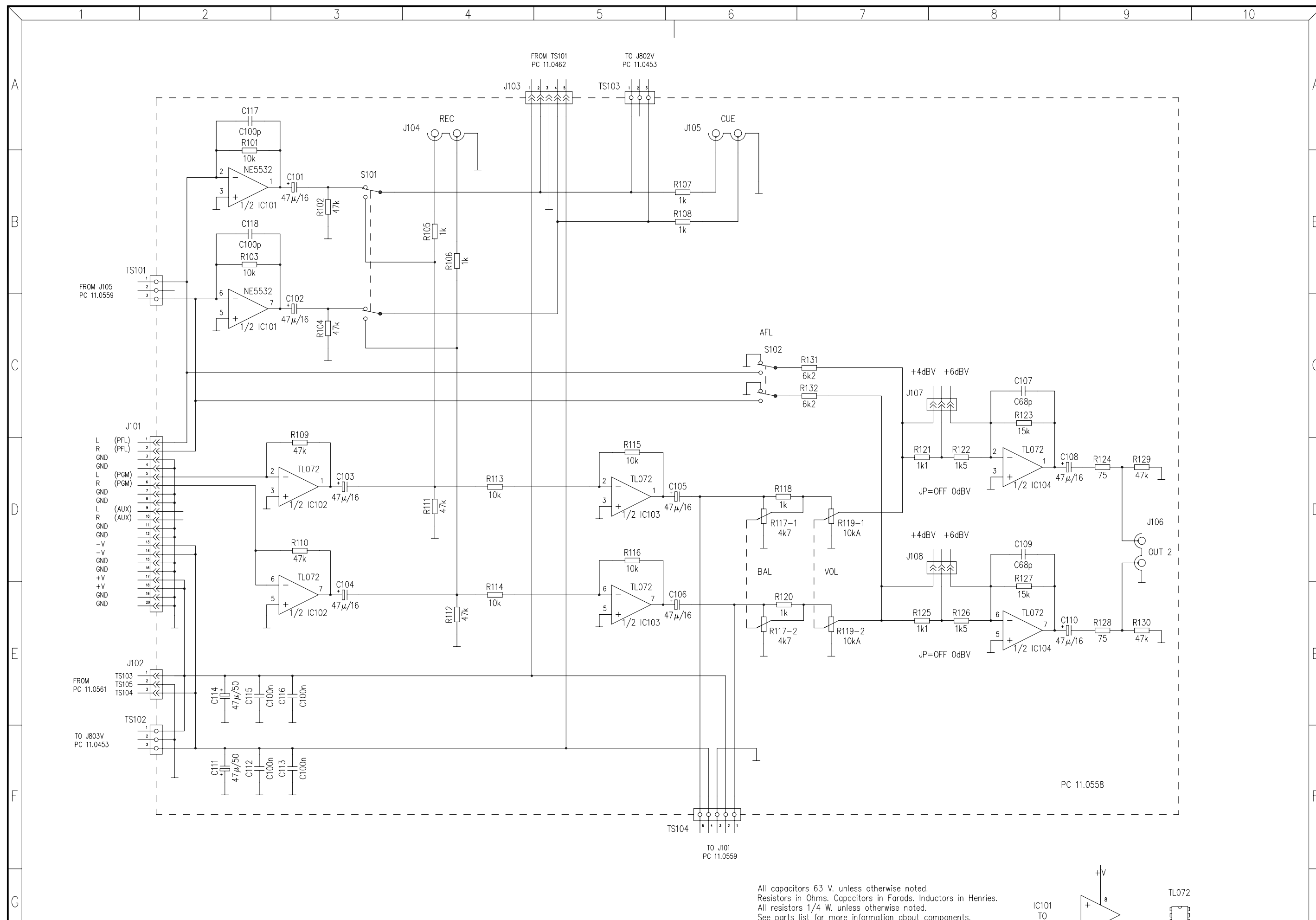


TITLE: OUT1 MODUL		MODEL: MAC90		 LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA	
		SHEET 3 OF 9			
DRAWN: J.QUERALT	DATE: 20.10.95	REPLACES:		DRW. NO.	REV.
CHECKED:	DATE:	REPLACED BY:		10.0304	

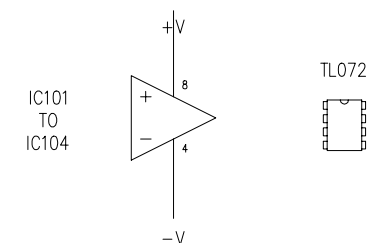
6 7 8 9 10

A
B
C
D
E
F
G

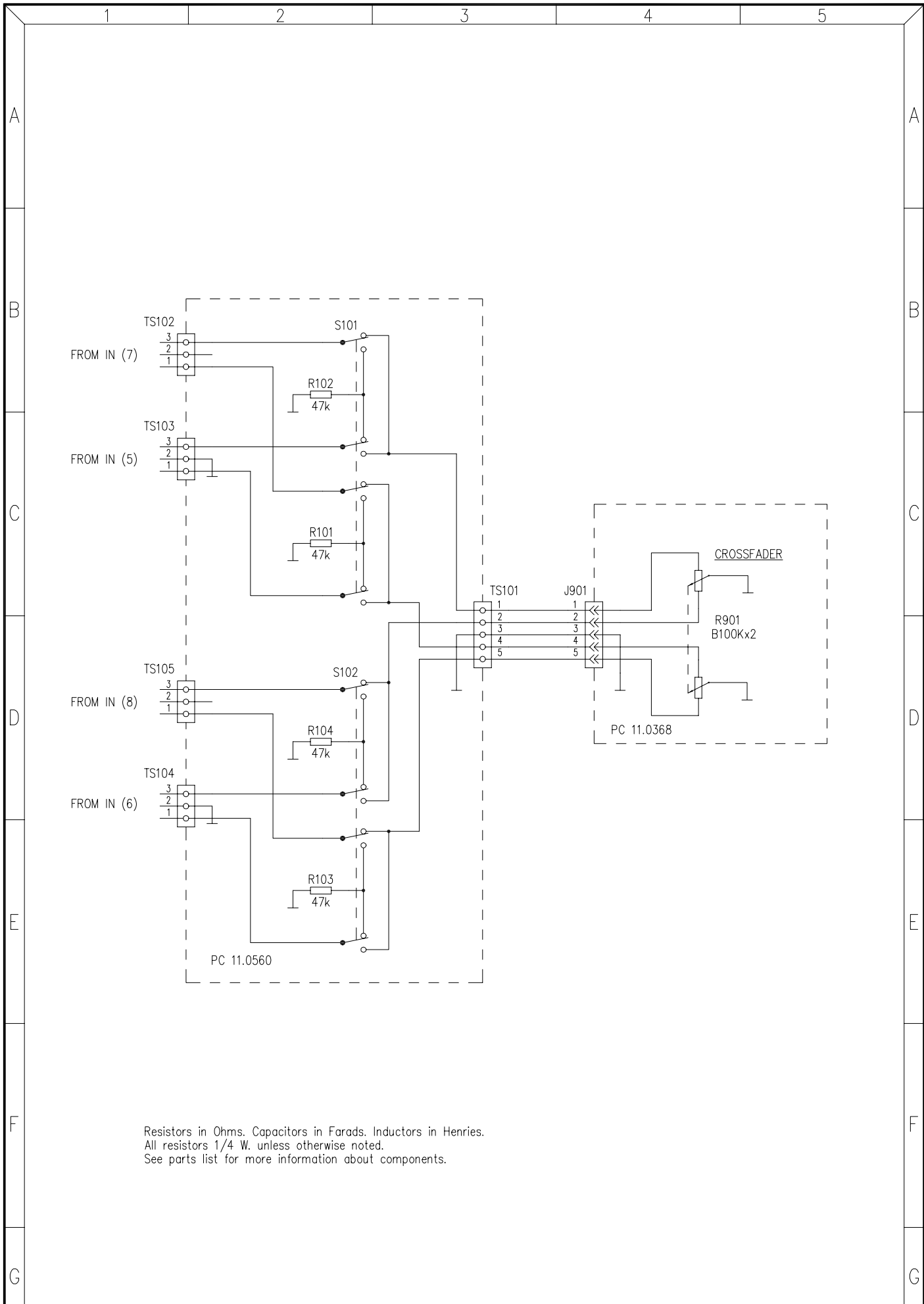




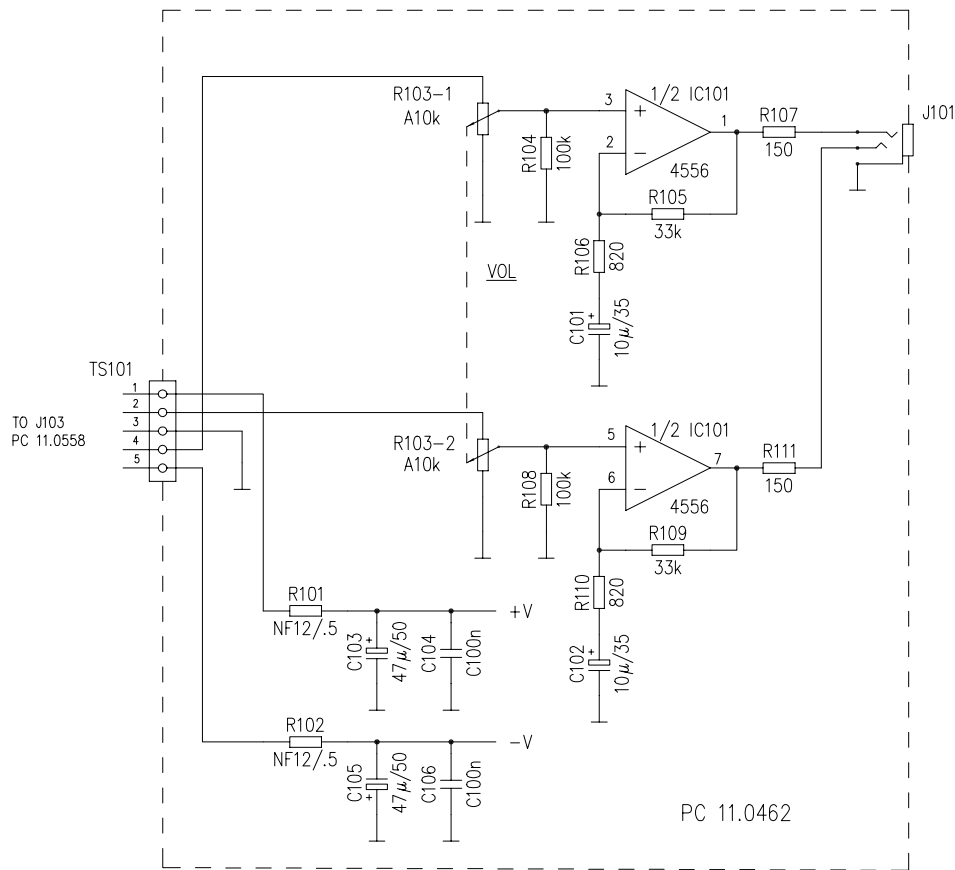
All capacitors 63 V. unless otherwise noted.
Resistors in Ohms. Capacitors in Farads. Inductors in Henries.
All resistors 1/4 W. unless otherwise noted.
See parts list for more information about components.
Special schematic abbreviations:
C ceramic capacitor



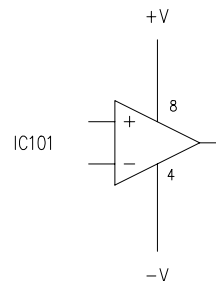
TITLE: OUT2 MODULE		MODEL: MAC90		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA ESPAÑA</div>	
		SHEET 5 OF 9			
DRAWN: J. QUERALT	DATE: 20.10.95	REPLACES:		DRW. NO. 10.0310	REV.
CHECKED:	DATE:	REPLACED BY:			



TITLE: CROSSFADER CIRCUIT		MODEL: MAC90		<div>ECLEREE</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA</div>	
		SHEET 6 OF 9			
DRAWN: J. QUERALT	DATE: 24.10.95	REPLACES:		DRW. NO. 10.0306	REV.
CHECKED:	DATE:	REPLACED BY:			



All capacitors 63 V, unless otherwise noted.
Resistors in Ohms. Capacitors in Farads. Inductors in Henries.
All resistors 1/4 W, unless otherwise noted.
See parts list for more information about components.
Special schematic abbreviations:
NF non inflammable resistor
C ceramic capacitor



TITLE:
HEADPHONES OUTPUT CIRCUIT

MODEL: MAC90

SHEET 7 OF 9

ECLEREO

LABORATORIO DE ELECTRO-ACUSTICA
BARCELONA ESPAÑA

DRAWN: J.QUERALT

DATE: 24.10.95

REPLACES:

DRW. NO.

REV.

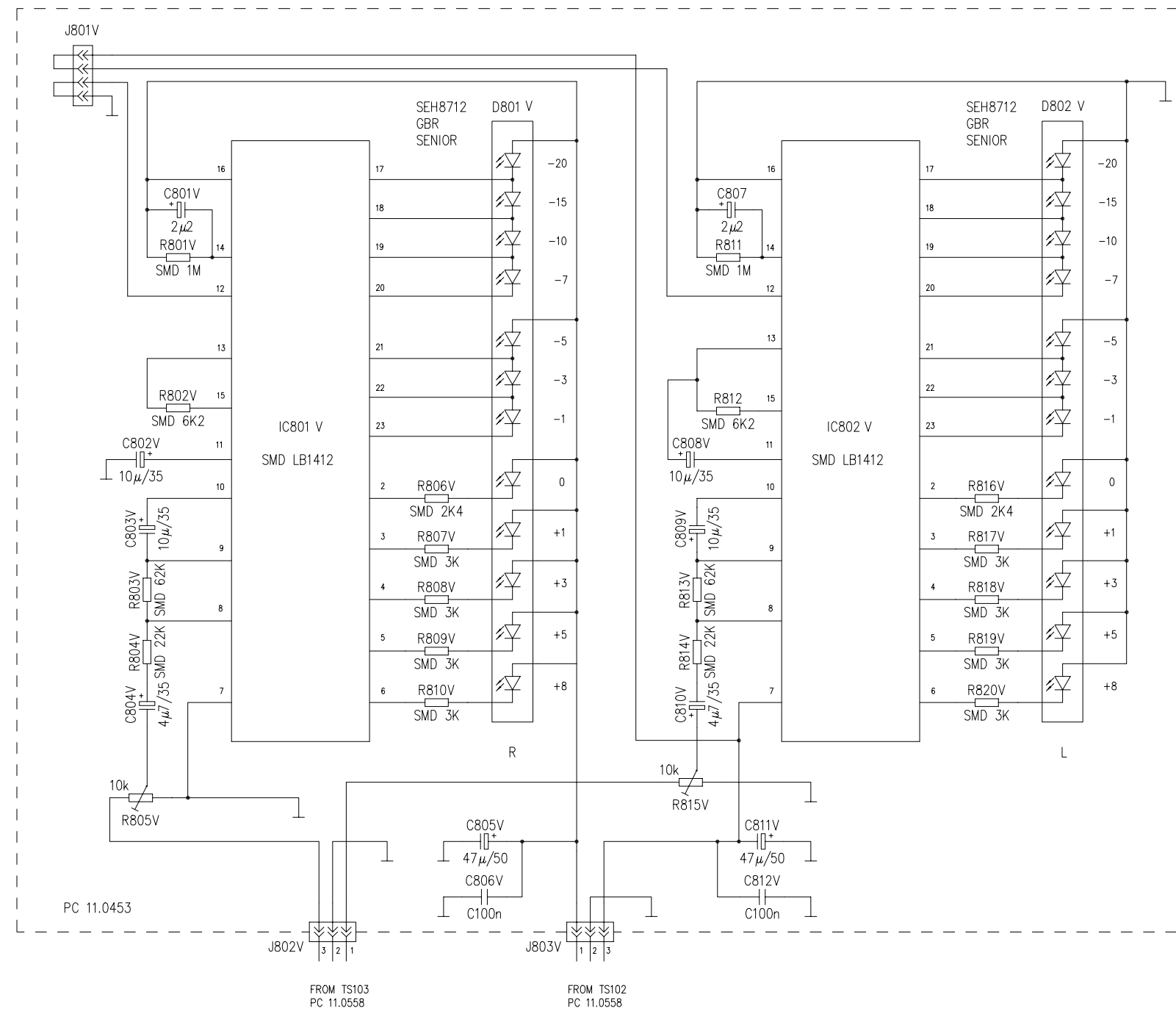
CHECKED:

DATE:


REPLACED BY:

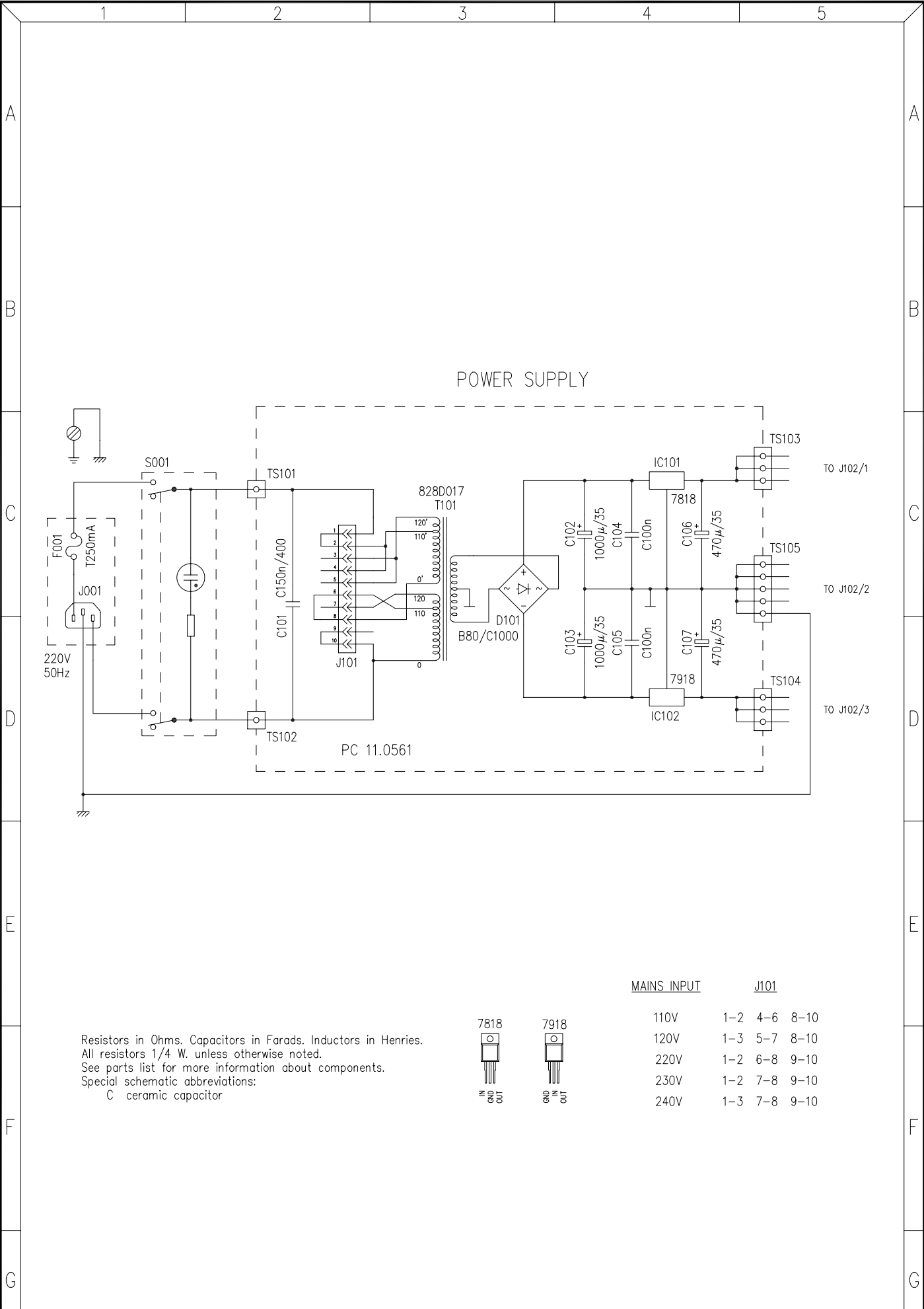
10.0307


VUMETER CIRCUIT

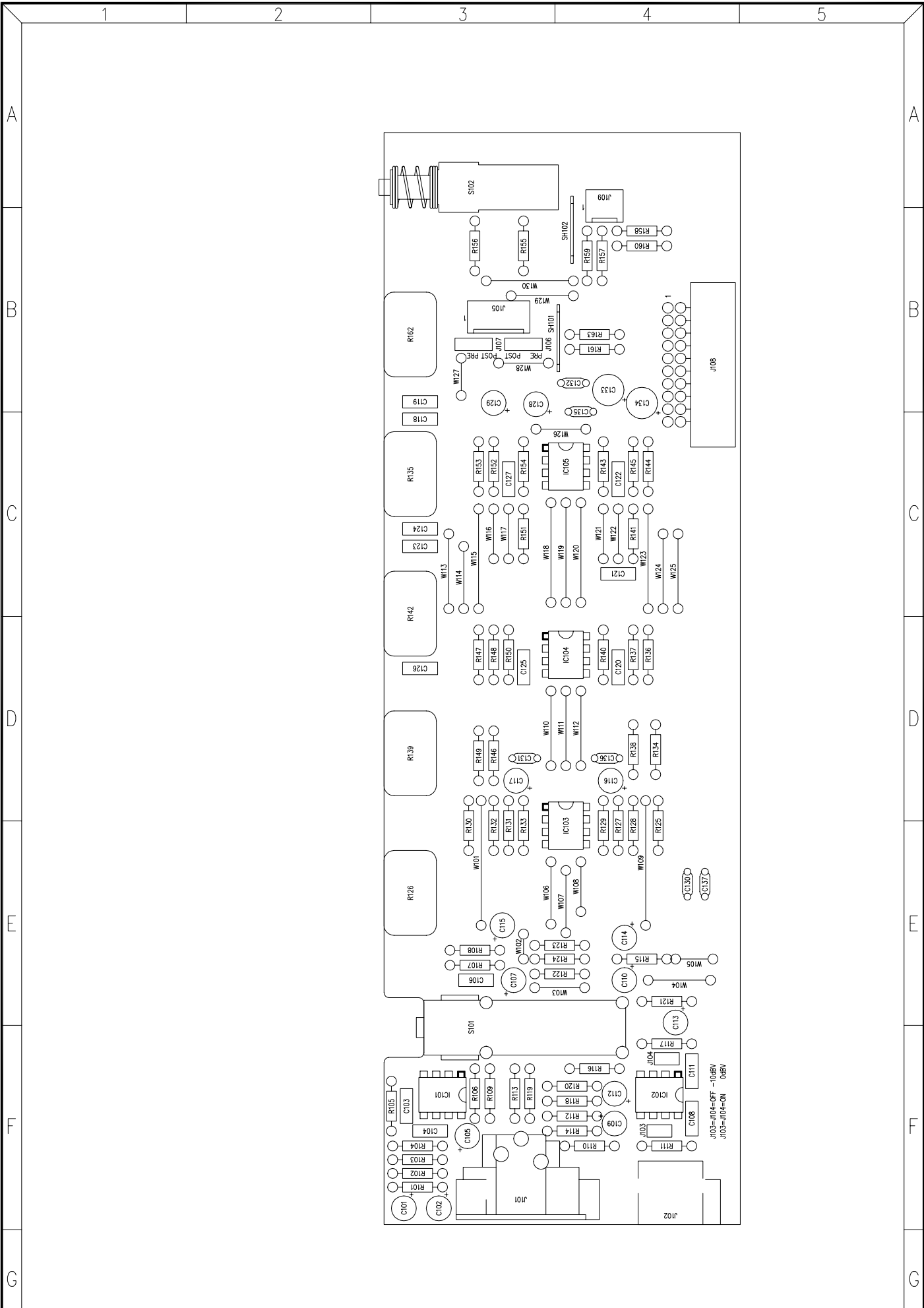


All capacitors 63 V, unless otherwise noted.
Resistors in Ohms. Capacitors in Farads. Inductors in Henries.
All resistors 1/4 W, unless otherwise noted.
See parts list for more information about components.
Special schematic abbreviations:
C ceramic capacitor

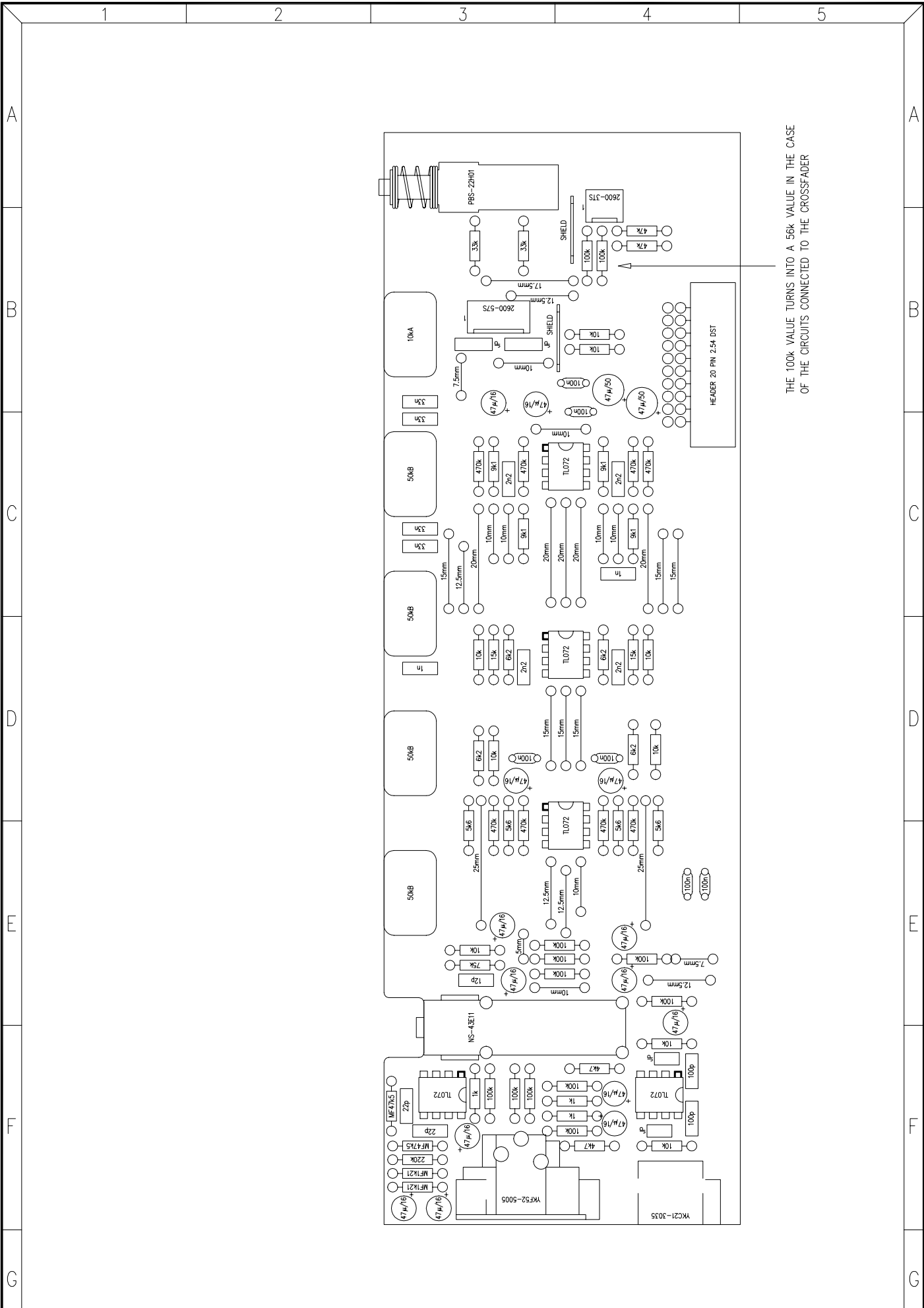
TITLE: VUMETER CIRCUIT		MODEL: STANDARD		 LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA	
		SHEET 8 OF 9			
DRAWN: JOAN QUERALT	DATE: 13.11.95	REPLACES:		DRW. NO. 10.0182	REV.
CHECKED:	DATE:	REPLACED BY:			



TITLE: POWER SUPPLY		MODEL: MAC90	 LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA	
		SHEET 9 OF 9		
DRAWN: J.QUERALT	DATE: 06.06.95	REPLACES:	DRW. NO. 10.0308	REV.
CHECKED:	DATE:	REPLACED BY:		



TITLE: MICRO-LINE INPUT		MODEL: MAC90		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA</div>	
		SHEET 1 OF 9			
DRAWN: AMOROS/QUERALT	DATE: 22.11.95	REPLACES:		DRW. NO. 33.0136R/ T	REV.
CHECKED:	DATE:	REPLACED BY:			



THE 100k VALUE TURNS INTO A 56k VALUE IN THE CASE OF THE CIRCUITS CONNECTED TO THE CROSSFADER

TITLE: MICRO-LINE INPUT		MODEL: MAC90		<div>ECLER</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA</div>	
		SHEET 1 OF 9			
DRAWN: AMOROS/QUERALT		DATE: 22.11.95		REPLACES:	
CHECKED:		DATE:		REPLACED BY:	
				DRW. NO. 33.0136 v/	
				REV.	

PARTS LIST:
MODEL : MAC90
DATE: 221195

MICRO-LINE
DRW. No 33.0136PL
SHEET 1 OF 3 REPLACES:

REV:
REPLACED BY:

REFERENCE	VALUE
11.0555	PRINTED CIRCUIT
C101	47μ/16
C102	47μ/16
C103	22p
C104	22p
C105	47μ/16
C106	12p
C107	47μ/16
C108	100p
C109	47μ/16
C110	47μ/16
C111	100p
C112	47μ/16
C113	47μ/16
C114	47μ/16
C115	47μ/16
C116	47μ/16
C117	47μ/16
C118	33n
C119	33n
C120	2n2
C121	1n
C122	2n2
C123	33n
C124	33n
C125	2n2
C126	1n
C127	2n2
C128	47μ/16
C129	47μ/16
C130	100n
C131	100n
C132	100n
C133	47μ/50
C134	47μ/50
C135	100n
C136	100n
C137	100n
IC101	TL072
IC102	TL072
IC103	TL072
IC104	TL072
IC105	TL072
J101	YKF52-5005
J102	YKC21-3035
J103	JP
J104	JP
J105	2600-57S
J106	JP
J107	JP
J108	HEADER 20 PIN 2.54 D
J109	2600-3TS
R101	MF1k21
R102	MF1k21
R103	220k

PARTS LIST:
MODEL : MAC90
DATE: 221195

MICRO-LINE
DRW. No 33.0136PL
SHEET 2 OF 3 REPLACES:

REV:
REPLACED BY:

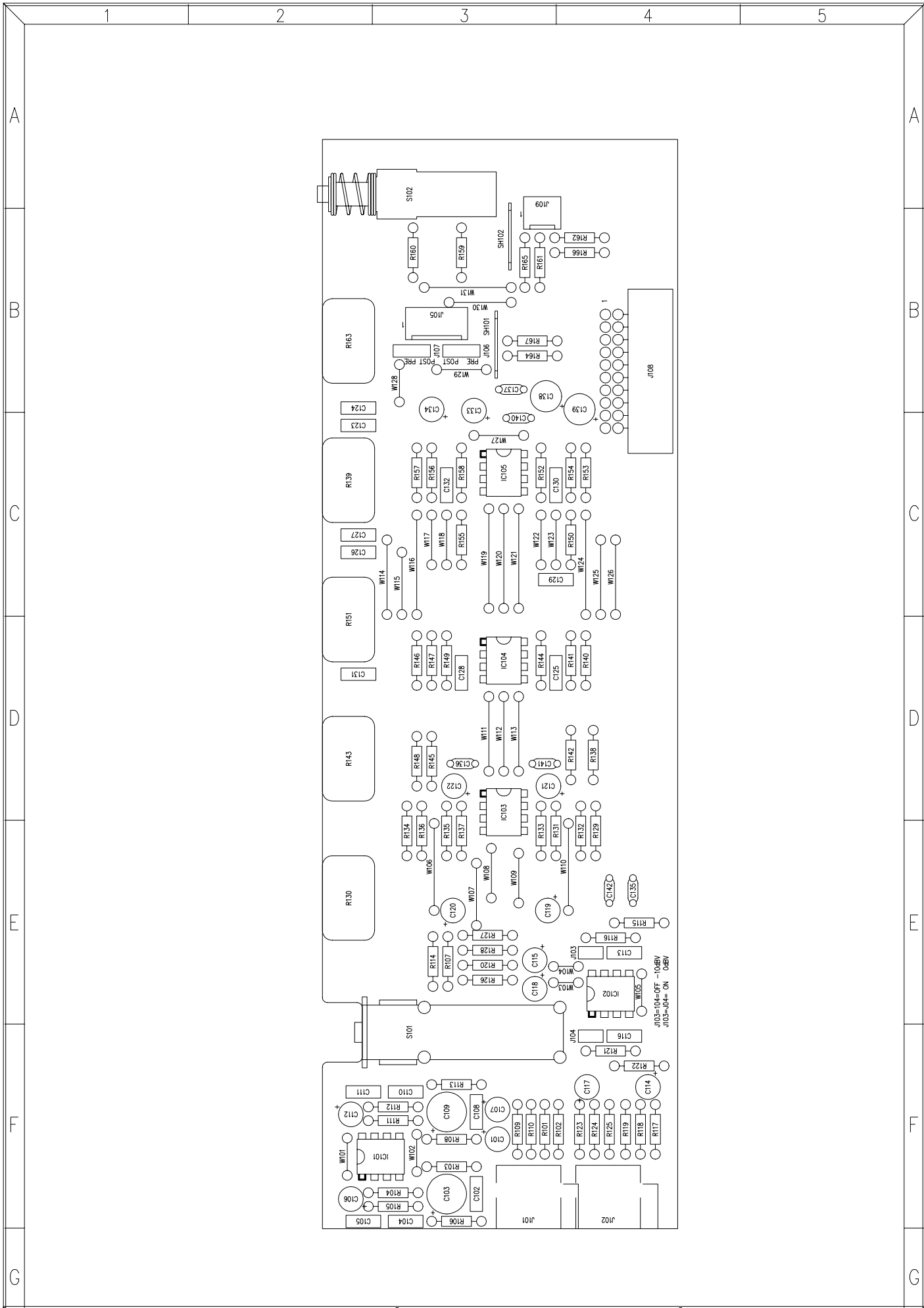
REFERENCE	VALUE
R104	MF47k5
R105	MF47k5
R106	1k
R107	75k
R108	10k
R109	100k
R110	4k7
R111	10k
R112	1k
R113	100k
R114	100k
R115	100k
R116	4k7
R117	10k
R118	1k
R119	100k
R120	100k
R121	100k
R122	100k
R123	100k
R124	100k
R125	5k6
R126	50kB
R127	5k6
R128	470k
R129	470k
R130	5k6
R131	5k6
R132	470k
R133	470k
R134	10k
R135	50kB
R136	10k
R137	15k
R138	6k2
R139	50kB
R140	6k2
R141	9k1
R142	50kB
R143	9k1
R144	470k
R145	470k
R146	10k
R147	10k
R148	15k
R149	6k2
R150	6k2
R151	9k1
R152	9k1
R153	470k
R154	470k
R155	33k
R156	33k
R157	100k
R158	47k

PARTS LIST:
MODEL : MAC90
DATE: 221195

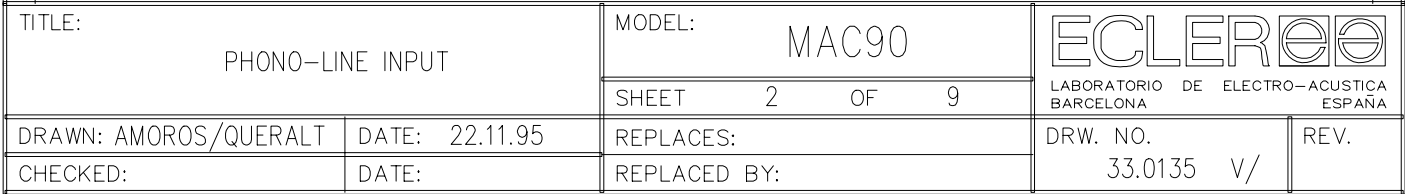
MICRO-LINE
DRW. No 33.0136PL
SHEET 3 OF 3 REPLACES:

REV:
REPLACED BY:

REFERENCE	VALUE
R159	100k
R160	47k
R161	10k
R162	10kA
R163	10k
S101	NS-43E11
S102	PBS-22H01
SH101	SHIELD PL.1759
SH102	SHIELD PL.1759
W101	25mm
W102	5mm
W103	10mm
W104	12.5mm
W105	7.5mm
W106	12.5mm
W107	12.5mm
W108	10mm
W109	25mm
W110	15mm
W111	15mm
W112	15mm
W113	15mm
W114	12.5mm
W115	20mm
W116	10mm
W117	10mm
W118	20mm
W119	20mm
W120	20mm
W121	10mm
W122	10mm
W123	20mm
W124	15mm
W125	15mm
W126	10mm
W127	7.5mm
W128	10mm
W129	12.5mm
W130	17.5mm



TITLE: PHONO-LINE INPUT		MODEL: MAC90		<div>ECLERO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA</div>	
		SHEET 2 OF 9			
DRAWN: AMOROS/QUERALT	DATE: 22.11.95	REPLACES:		DRW. NO.	REV.
CHECKED:	DATE:	REPLACED BY:		33.0135R/	



PARTS LIST:
MODEL : MAC90
DATE: 221195

PHONO-LINE
DRW. No 33.0135PL
SHEET 1 OF 3 REPLACES:

REV:
REPLACED BY:

REFERENCE	VALUE
11.0556	PRINTED CIRCUIT
C101	1 μ /63
C102	120p
C103	470 μ /6.3
C104	10n
C105	33n
C106	47 μ /16
C107	1 μ /63
C108	120p
C109	470 μ /6.3
C110	10n
C111	33n
C112	47 μ /16
C113	100p
C114	47 μ /16
C115	47 μ /16
C116	100p
C117	47 μ /16
C118	47 μ /16
C119	47 μ /16
C120	47 μ /16
C121	47 μ /16
C122	47 μ /16
C123	33n
C124	33n
C125	2n2
C126	33n
C127	33n
C128	2n2
C129	1n
C130	2n2
C131	1n
C132	2n2
C133	47 μ /16
C134	47 μ /16
C135	100n
C136	100n
C137	100n
C138	47 μ /50
C139	47 μ /50
C140	100n
C141	100n
C142	100n
IC101	TL072
IC102	TL072
IC103	TL072
IC104	TL072
IC105	TL072
J101	YKC21-3035
J102	YKC21-3035
J103	JP
J104	JP
J105	2600-5TS
J106	JP
J107	JP

PARTS LIST:
MODEL : MAC90
DATE: 221195

PHONO-LINE
DRW. No 33.0135PL
SHEET 2 OF 3 REPLACES:

REV:
REPLACED BY:

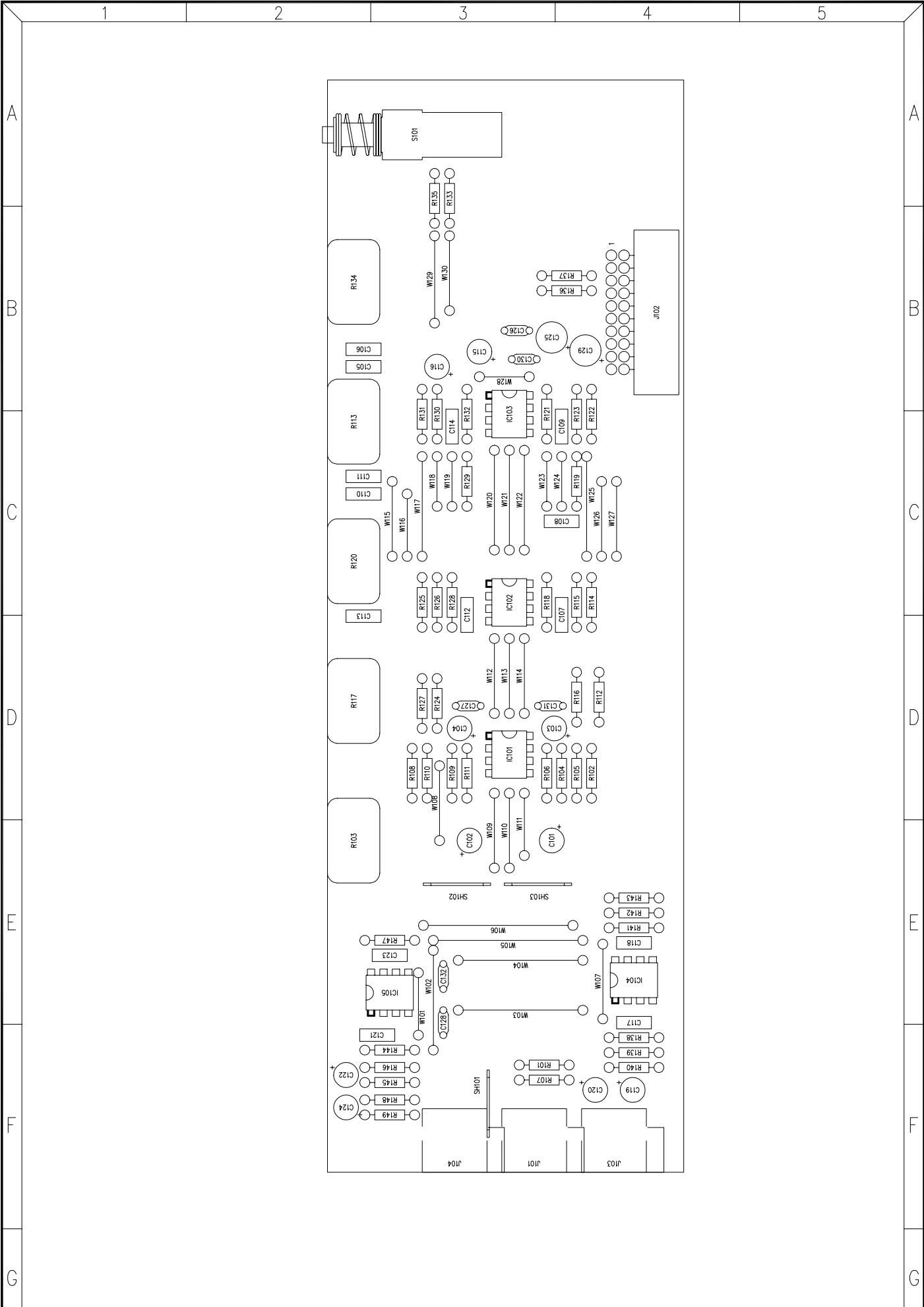
REFERENCE	VALUE
J108	HEADER 20 PIN 2.54 D
J109	2600-3TS
R101	100k
R102	100Ω
R103	100k
R104	MF97k6
R105	MF7k87
R106	100Ω
R107	100k
R108	100k
R109	100Ω
R110	100k
R111	MF97k6
R112	MF7k87
R113	100Ω
R114	100k
R115	4k7
R116	10k
R117	1k
R118	100k
R119	100k
R120	100k
R121	10k
R122	4k7
R123	1k
R124	100k
R125	100k
R126	100k
R127	100k
R128	100k
R129	5k6
R130	50kB
R131	5k6
R132	470k
R133	470k
R134	5k6
R135	5k6
R136	470k
R137	470k
R138	10k
R139	50kB
R140	10k
R141	15k
R142	6k2
R143	50kB
R144	6k2
R145	10k
R146	10k
R147	15k
R148	6k2
R149	6k2
R150	9k1
R151	50kB
R152	9k1
R153	470k

PARTS LIST:
MODEL : MAC90
DATE: 221195

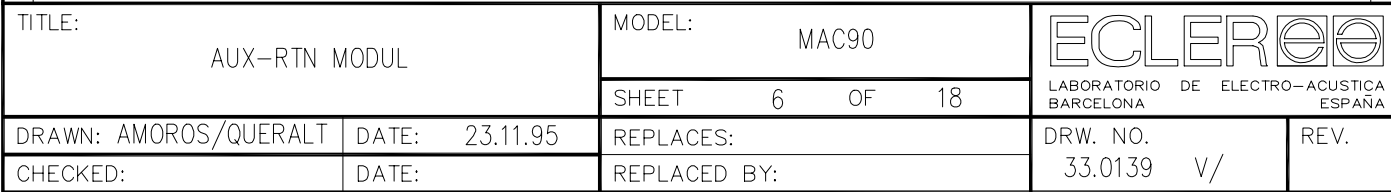
PHONO-LINE
DRW. No 33.0135PL
SHEET 3 OF 3 REPLACES:

REV:
REPLACED BY:

REFERENCE	VALUE
R154	470k
R155	9k1
R156	9k1
R157	470k
R158	470k
R159	33k
R160	33k
R161	56k
R162	47k
R163	10kA
R164	10k
R165	56k
R166	47k
R167	10k
S101	NS-42J11
S102	PBS-22H01
SH101	SHIELD PL.1759
SH102	SHIELD PL.1759
W101	7.5mm
W102	7.5mm
W103	5mm
W104	5mm
W105	7.5mm
W106	17.5mm
W107	12.5mm
W108	10mm
W109	10mm
W110	17.5mm
W111	15mm
W112	15mm
W113	15mm
W114	15mm
W115	12.5mm
W116	20mm
W117	10mm
W118	10mm
W119	20mm
W120	20mm
W121	20mm
W122	10mm
W123	10mm
W124	20mm
W125	15mm
W126	15mm
W127	10mm
W128	7.5mm
W129	10mm
W130	12.5mm
W131	17.5mm



TITLE: AUX-RTN MODUL		MODEL: MAC90		<div>ECLER</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA</div>	
		SHEET 5 OF 18			
DRAWN: AMOROS/QUERALT	DATE: 23.11.95	REPLACES:		DRW. NO.	REV.
CHECKED:	DATE:	REPLACED BY:		33.0139R/	



PARTS LIST:
MODEL : MAC90
DATE: 231195

AUX-RTN MODUL
DRW. No 33.0139PL
SHEET 1 OF 3 REPLACES:

REV:
REPLACED BY:

REFERENCE	VALUE
C101	47μ/16
C102	47μ/16
C103	47μ/16
C104	47μ/16
C105	33n
C106	33n
C107	2n2
C108	1n
C109	2n2
C110	33n
C111	33n
C112	2n2
C113	1n
C114	2n2
C115	47μ/16
C116	47μ/16
C117	22p
C118	22p
C119	47μ/16
C120	47μ/16
C121	100p
C122	47μ/16
C123	100p
C124	47μ/16
C125	47μ/50
C126	100n
C127	100n
C128	100n
C129	47μ/50
C130	100n
C131	100n
C132	100n
SH101	SHIELD PL.1759
SH102	SHIELD PL.1759
SH103	SHIELD PL.1759
IC101	TL072
IC102	TL072
IC103	TL072
IC104	TL072
IC105	TL072
J101	YKC21-3035
J102	HEADER 20 PIN 2.54 D
J103	YKC21-3035
J104	YKC21-3035
R101	100k
R102	5k6
R103	2x50kB
R104	5k6
R105	470k
R106	470k
R107	100k
R108	5k6
R109	5k6
R110	470k
R111	470k

PARTS LIST:
MODEL : MAC90
DATE: 231195

AUX-RTN MODUL
DRW. No 33.0139PL
SHEET 2 OF 3 REPLACES:

REV:
REPLACED BY:

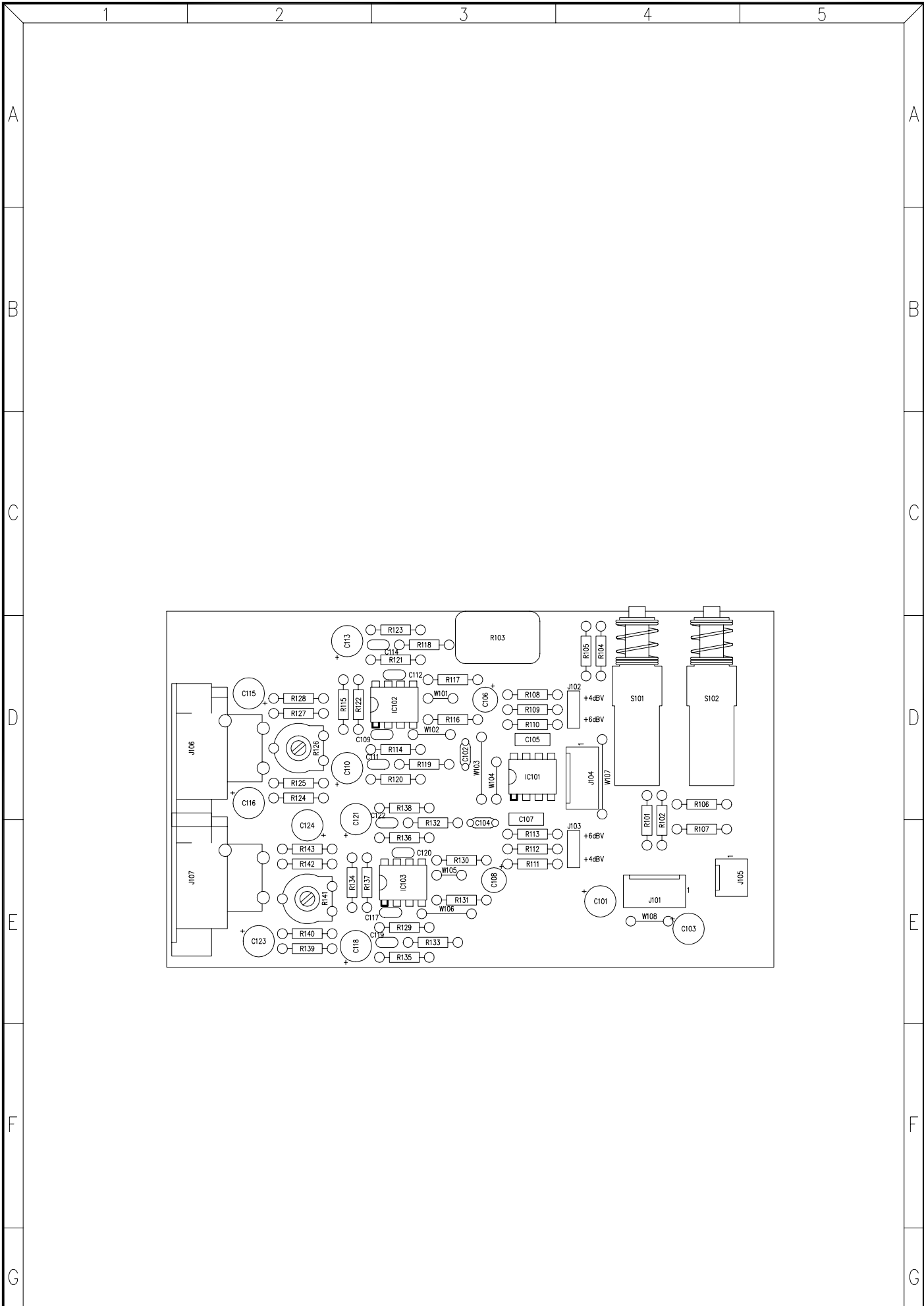
REFERENCE	VALUE
R112	10k
R113	2x50kB
R114	10k
R115	15k
R116	6k2
R117	2x50kB
R118	6k2
R119	9k1
R120	2x50kB
R121	9k1
R122	470k
R123	470k
R124	10k
R125	10k
R126	15k
R127	6k2
R128	6k2
R129	9k1
R130	9k1
R131	470k
R132	470k
R133	10k
R134	2x10kA
R135	10k
R136	47k
R137	47k
R138	47k
R139	47k
R140	47k
R141	47k
R142	47k
R143	47k
R144	10k
R145	75
R146	47k
R147	10k
R148	75
R149	47k
S101	PBS-22H01
W101	12.5mm
W102	20mm
W103	25mm
W104	25mm
W105	30mm
W106	30mm
W107	15mm
W108	15mm
W109	15mm
W110	15mm
W111	12.5mm
W112	15mm
W113	15mm
W114	15mm
W115	15mm
W116	12.5mm


PARTS LIST:
MODEL : MAC90
DATE: 231195

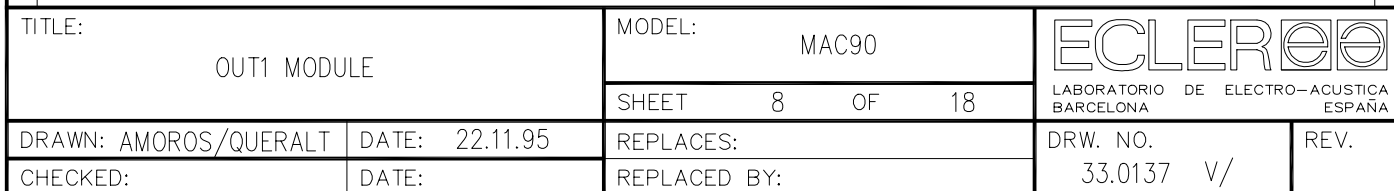
AUX-RTN MODUL
DRW. No 33.0139PL
SHEET 3 OF 3 REPLACES:

REV:
REPLACED BY:

REFERENCE	VALUE
W117	20mm
W118	10mm
W119	10mm
W120	20mm
W121	20mm
W122	20mm
W123	10mm
W124	10mm
W125	20mm
W126	15mm
W127	15mm
W128	10mm
W129	17.5mm
W130	15mm
11.0557	PRINTED CIRCUIT



TITLE: OUT1 MODULE		MODEL: MAC90	 LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA	
		SHEET 7 OF 18		
DRAWN: AMOROS/QUERALT	DATE: 22.11.95	REPLACES:	DRW. NO.	REV.
CHECKED:	DATE:	REPLACED BY:	33.0137R/	



PARTS LIST:
MODEL : MAC90
DATE: 221195

OUT 1 MODULE
DRW. No 33.0137PL
SHEET 1 OF 2 REPLACES:

REV:
REPLACED BY:

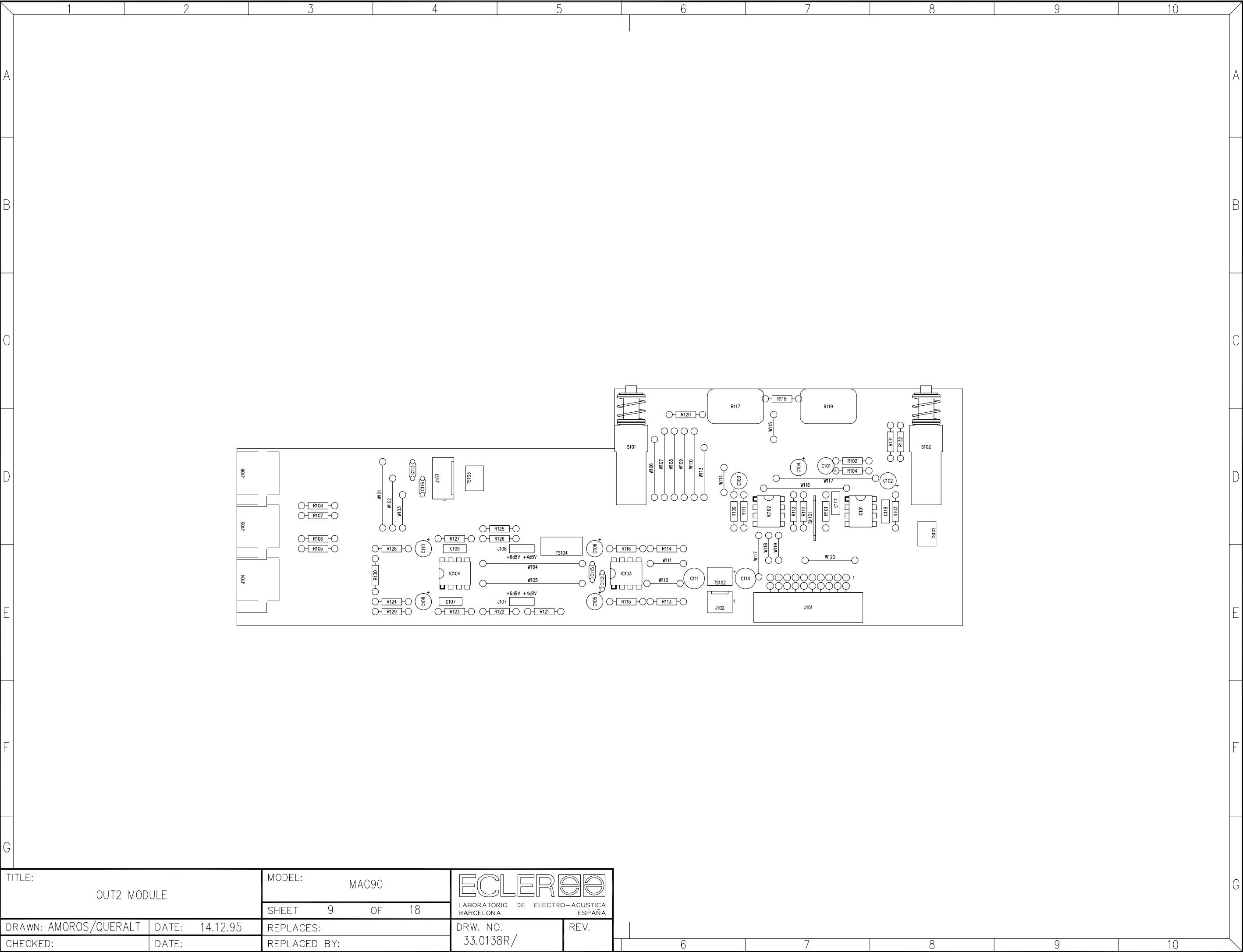
REFERENCE	VALUE
11.0559	PRINTED CIRCUIT
C101	47μ/50
C102	C100n
C103	47μ/50
C104	C100n
C105	12p
C106	47μ/16
C107	12p
C108	47μ/16
C109	100p
C110	220μ/10
C111	100p
C112	100p
C113	220μ/10
C114	100p
C115	220μ/10
C116	220μ/10
C117	100p
C118	220μ/10
C119	100p
C120	100p
C121	220μ/10
C122	100p
C123	220μ/10
C124	220μ/10
IC101	TL072
IC102	NE5532
IC103	NE5532
J101	2600-5TS
J102	JP
J103	JP
J104	2600-5TS
J105	2600-3TS
J106	YKF52-5003
J107	YKF52-5003
R101	1k
R102	1k
R103	2x4k7B
R104	1k
R105	1k
R106	3k9
R107	3k9
R108	3k3
R109	4k7
R110	75k
R111	3k3
R112	4k7
R113	75k
R114	MF10k
R115	75Ω
R116	MF10k
R117	MF10k
R118	MF10k
R119	MF10k
R120	MF10k

PARTS LIST:
MODEL : MAC90
DATE: 221195

OUT 1 MODULE
DRW. No 33.0137PL
SHEET 2 OF 2 REPLACES:

REV:
REPLACED BY:

REFERENCE	VALUE
R121	MF10k
R122	75Ω
R123	MF10k
R124	47k
R125	1k
R126	PT10V 10k
R127	1k
R128	47k
R129	MF10k
R130	MF10k
R131	MF10k
R132	MF10k
R133	MF10k
R134	75Ω
R135	MF10k
R136	MF10k
R137	75Ω
R138	MF10k
R139	47k
R140	1k
R141	PT10V 10k
R142	1k
R143	47k
S101	PBS-22H01
S102	PBS-22H01
W101	5mm
W102	7.5mm
W103	12.5mm
W104	7.5mm
W105	5mm
W106	10mm
W107	15mm
W108	7.5mm



PARTS LIST:
MODEL : MAC90
DATE: 141295

OUT 2 MODULE
DRW. No 33.0138PL
SHEET 1 OF 2 REPLACES:

REV:
REPLACED BY:

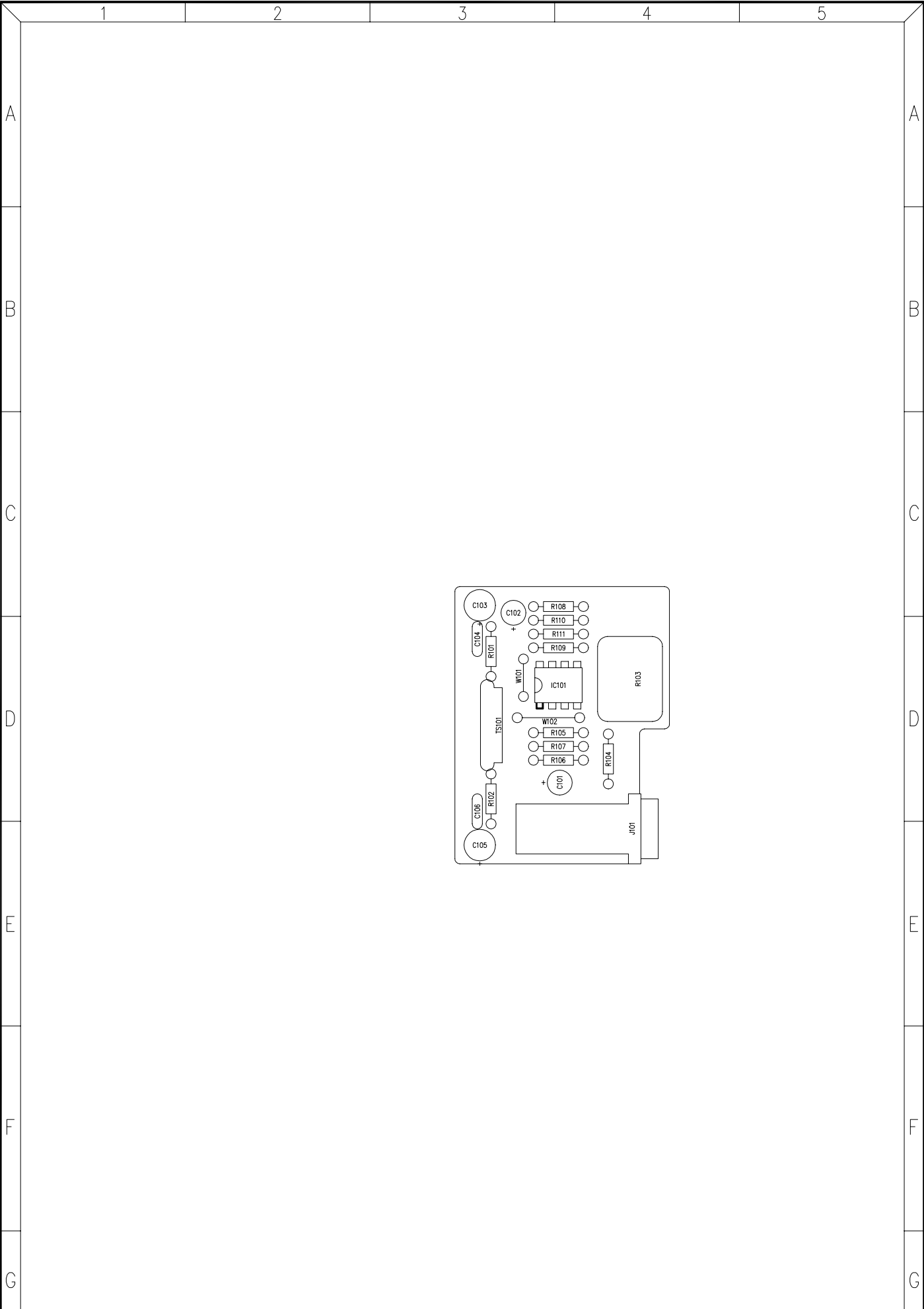
REFERENCE	VALUE
11.0558B	PRINTED CIRCUIT
C101	47μ/16
C102	47μ/16
C103	47μ/16
C104	47μ/16
C105	47μ/16
C106	47μ/16
C107	68p
C108	47μ/16
C109	68p
C110	47μ/16
C111	47μ/50
C112	100n
C113	100n
C114	47μ/50
C115	100n
C116	100n
C117	100p
C118	100p
IC101	NE5532
IC102	TL072
IC103	TL072
IC104	TL072
J101	HEADER 20 PIN 2.54 D
J102	2600-3TS
J103	2600-5TS
J104	YKC21-3035
J105	YKC21-3035
J106	YKC21-3035
J107	JP
J108	JP
R101	10k
R102	47k
R103	10k
R104	47k
R105	1k
R106	1k
R107	1k
R108	1k
R109	47k
R110	47k
R111	47k
R112	47k
R113	10k
R114	10k
R115	10k
R116	10k
R117	2x4k7B
R118	1k
R119	2x10kA
R120	1k
R121	1k1
R122	1k5
R123	15k
R124	75Ω

PARTS LIST:
MODEL : MAC90
DATE: 141295

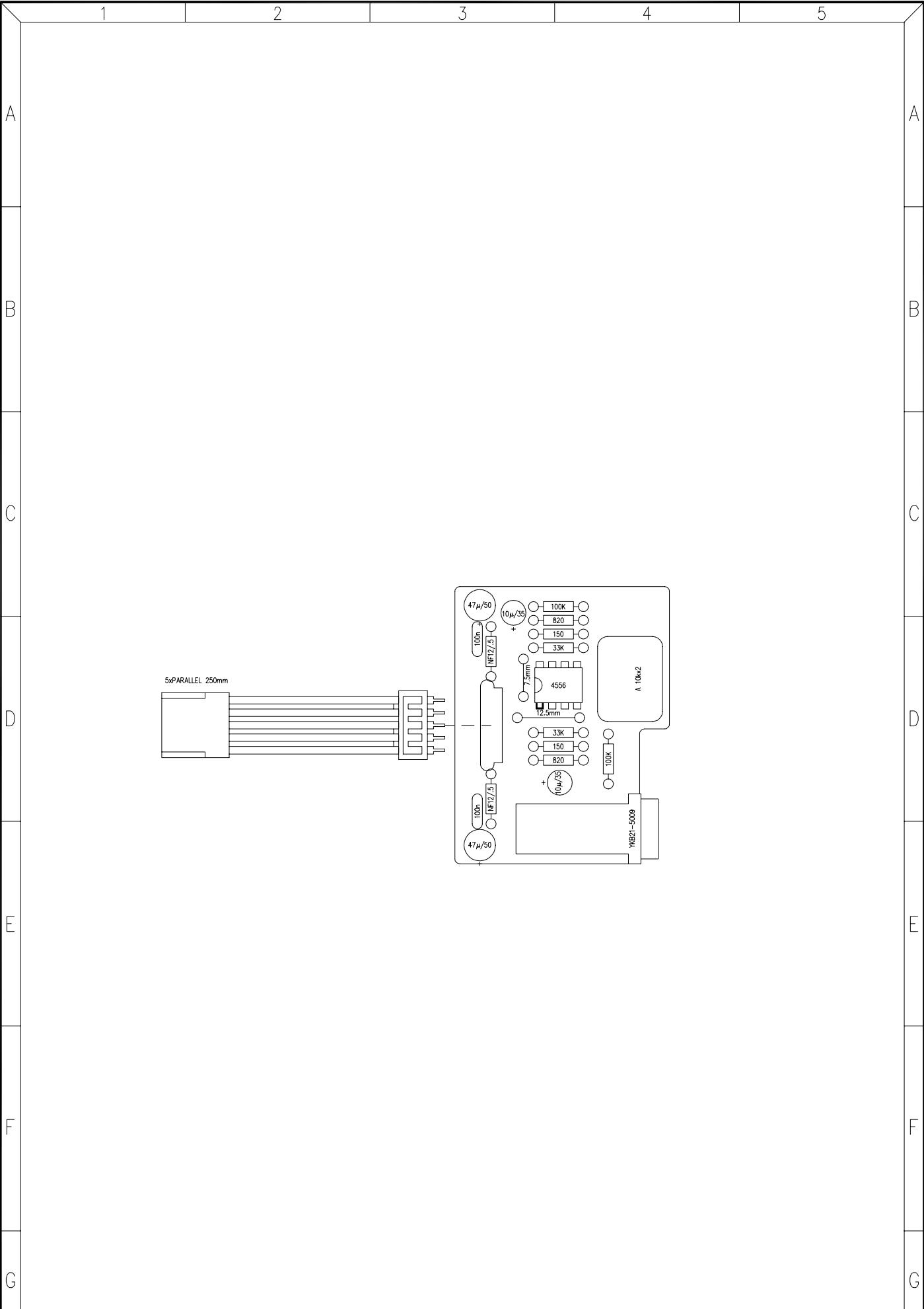
OUT 2 MODULE
DRW. No 33.0138PL
SHEET 2 OF 2 REPLACES:

REV:
REPLACED BY:

REFERENCE	VALUE
R125	1k1
R126	1k5
R127	15k
R128	75Ω
R129	47k
R130	47k
R131	6k2
R132	6k2
S101	PBS-22H01
S102	PBS-22H01
SH101	SHIELD PL.1759
TS101	3xPARALLEL 180mm
TS102	3xPARALLEL 180mm
TS103	3xPARALLEL 90mm
TS104	5xPARALLEL 120mm
W101	20mm
W102	15mm
W103	10mm
W104	30mm
W105	30mm
W106	17.5mm
W107	20mm
W108	20mm
W109	20mm
W110	20mm
W111	10mm
W112	10mm
W113	15mm
W114	7.5mm
W115	7.5mm
W116	25mm
W117	30mm
W117	12.5mm
W118	7.5mm
W119	7.5mm
W120	15mm



TITLE: HEADPHONES CIRCUIT		MODEL: MAC90		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPANA</div>	
		SHEET 11 OF 18			
DRAWN: AMOROS/QUERALT	DATE: 23.11.95	REPLACES:		DRW. NO.	REV.
CHECKED:	DATE:	REPLACED BY:		33.0140R/	



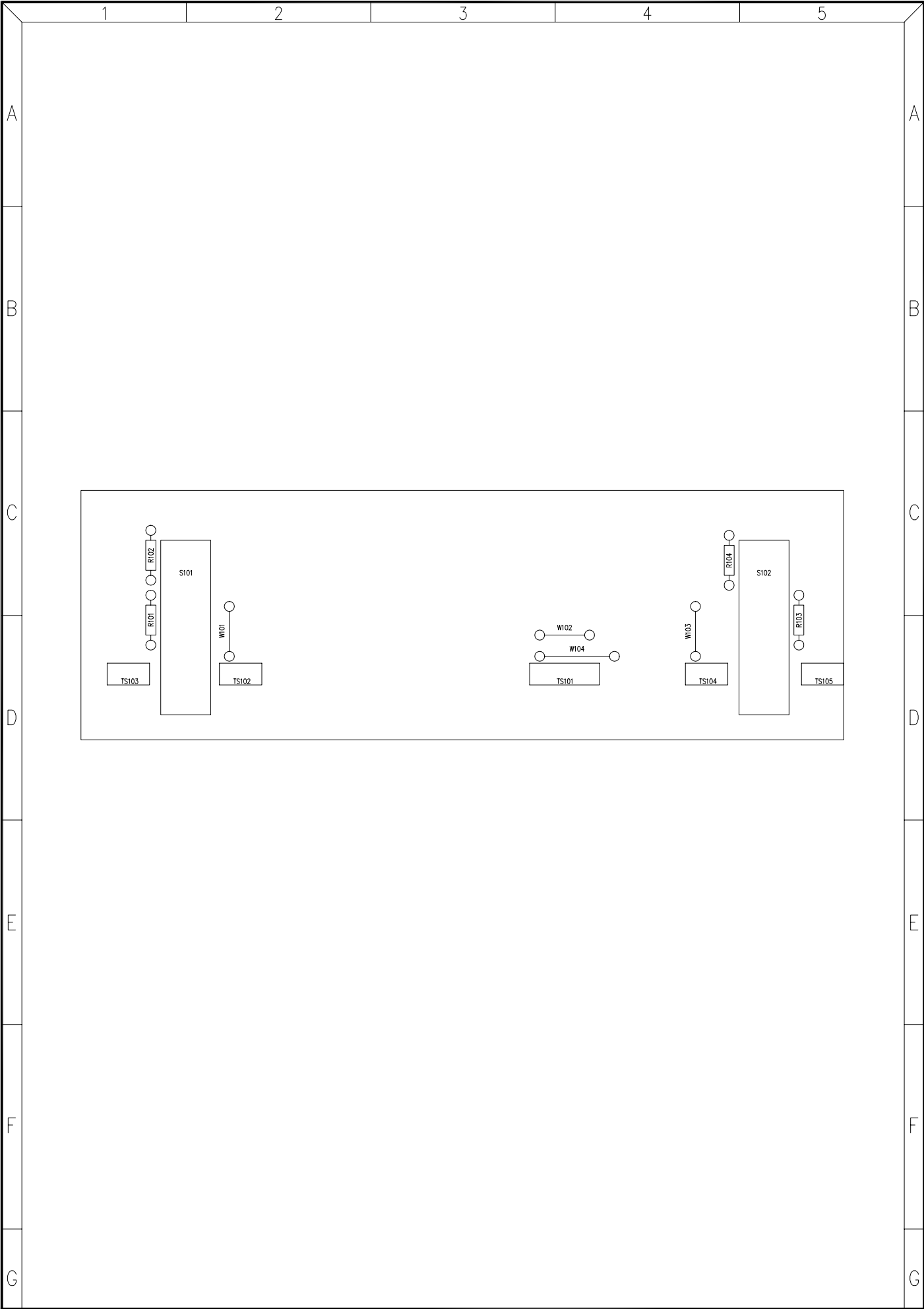
TITLE: HEADPHONES CIRCUIT		MODEL: MAC90		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA DE ELECTRO-ACUSTICA ESPAÑA</div>	
		SHEET 12 OF 18			
DRAWN: AMOROS/QUERALT	DATE: 23.11.95	REPLACES:		DRW. NO.	REV.
CHECKED:	DATE:	REPLACED BY:		33.0140 V/	

PARTS LIST:
MODEL : MAC90
DATE: 231195

HEADPHONES CIRCUIT
DRW. No 33.0140PL
SHEET 1 OF 1 REPLACES:

REV:
REPLACED BY:

REFERENCE	VALUE
11.0577	PRINTED CIRCUIT
C101	10 μ /35
C102	10 μ /35
C103	47 μ /50
C104	100n
C105	47 μ /50
C106	100n
IC101	4556
J101	YKB21-5009
R101	NF12 Ω /.5
R102	NF12 Ω /.5
R103	A 10kx2
R104	100K
R105	33K
R106	820 Ω
R107	150 Ω
R108	100K
R109	33K
R110	820 Ω
R111	150 Ω
TS101	5xPARALLEL 250mm
W101	7.5mm
W102	12.5mm



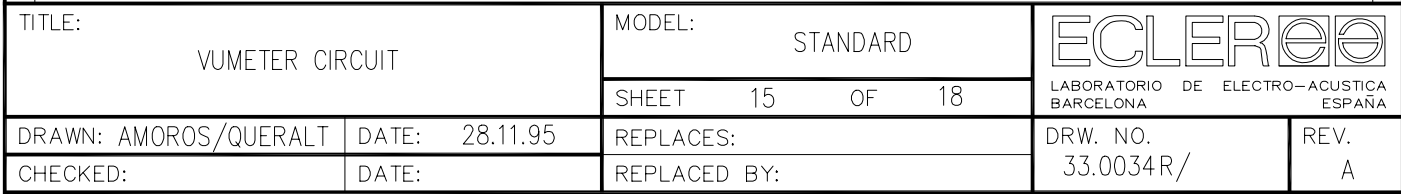
TITLE: CROSSFADER CIRCUIT		MODEL: MAC90		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPANA</div>	
		SHEET 13 OF 18			
DRAWN: AMOROS/QUERALT	DATE: 23.11.95	REPLACES:		DRW. NO.	REV.
CHECKED:	DATE:	REPLACED BY:		33.0141R/	

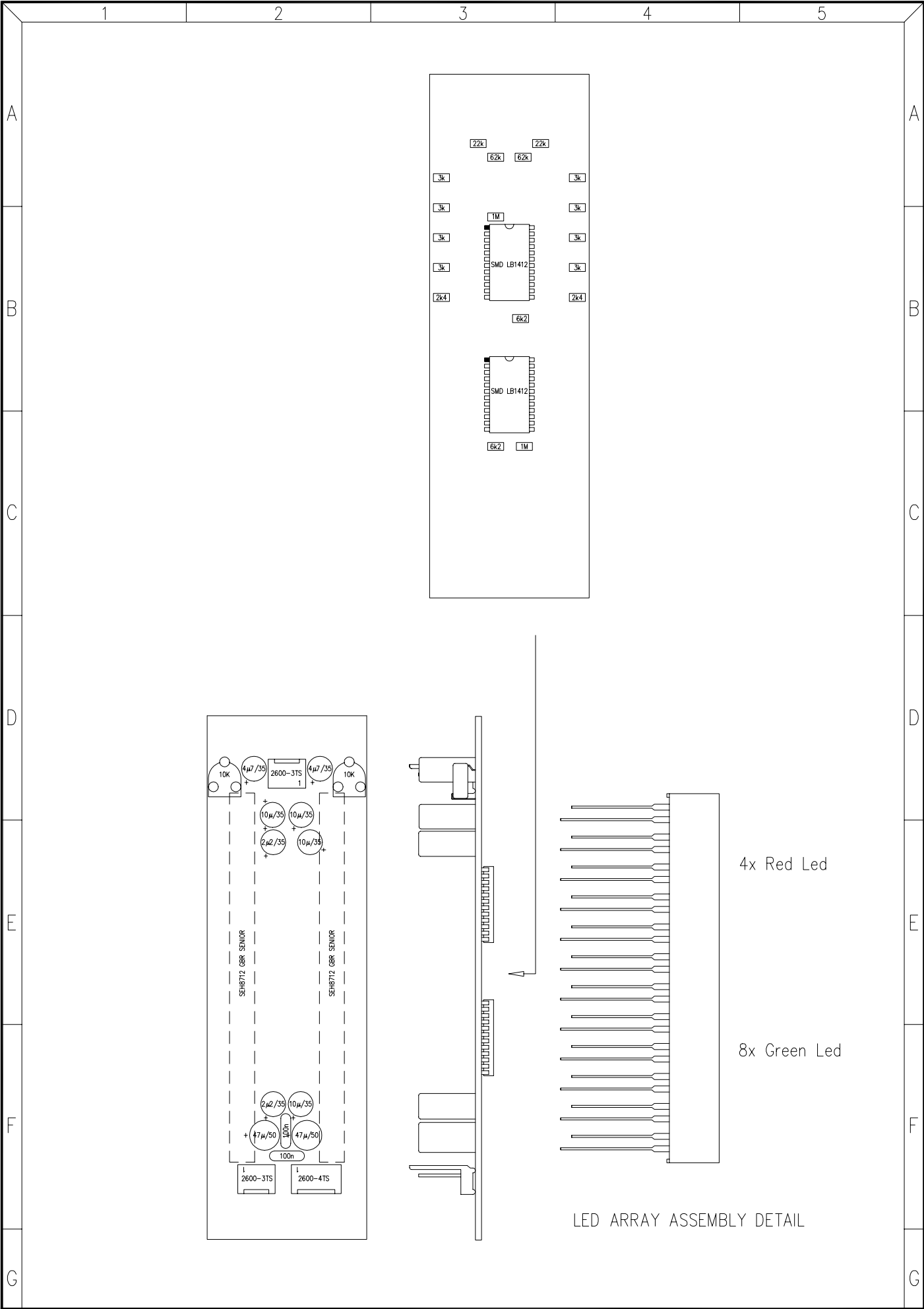
PARTS LIST:
MODEL : MAC90
DATE: 231195

CROSSFADER CIRCUIT
DRW. No 33.0141PL
SHEET 1 OF 1 REPLACES:

REV:
REPLACED BY:

REFERENCE	VALUE
R101	47K
R102	47K
R103	47K
R104	47K
S101	PBS-42H01
S102	PBS-42H01
TS101	5xPARALLEL 120mm
TS102	3xPARALLEL 250mm
TS103	3xPARALLEL 250mm
TS104	3xPARALLEL 330mm
TS105	3xPARALLEL 330mm
W101	10mm
W102	10mm
W103	10mm
W104	15mm
11.0560	PRINTED CIRCUIT





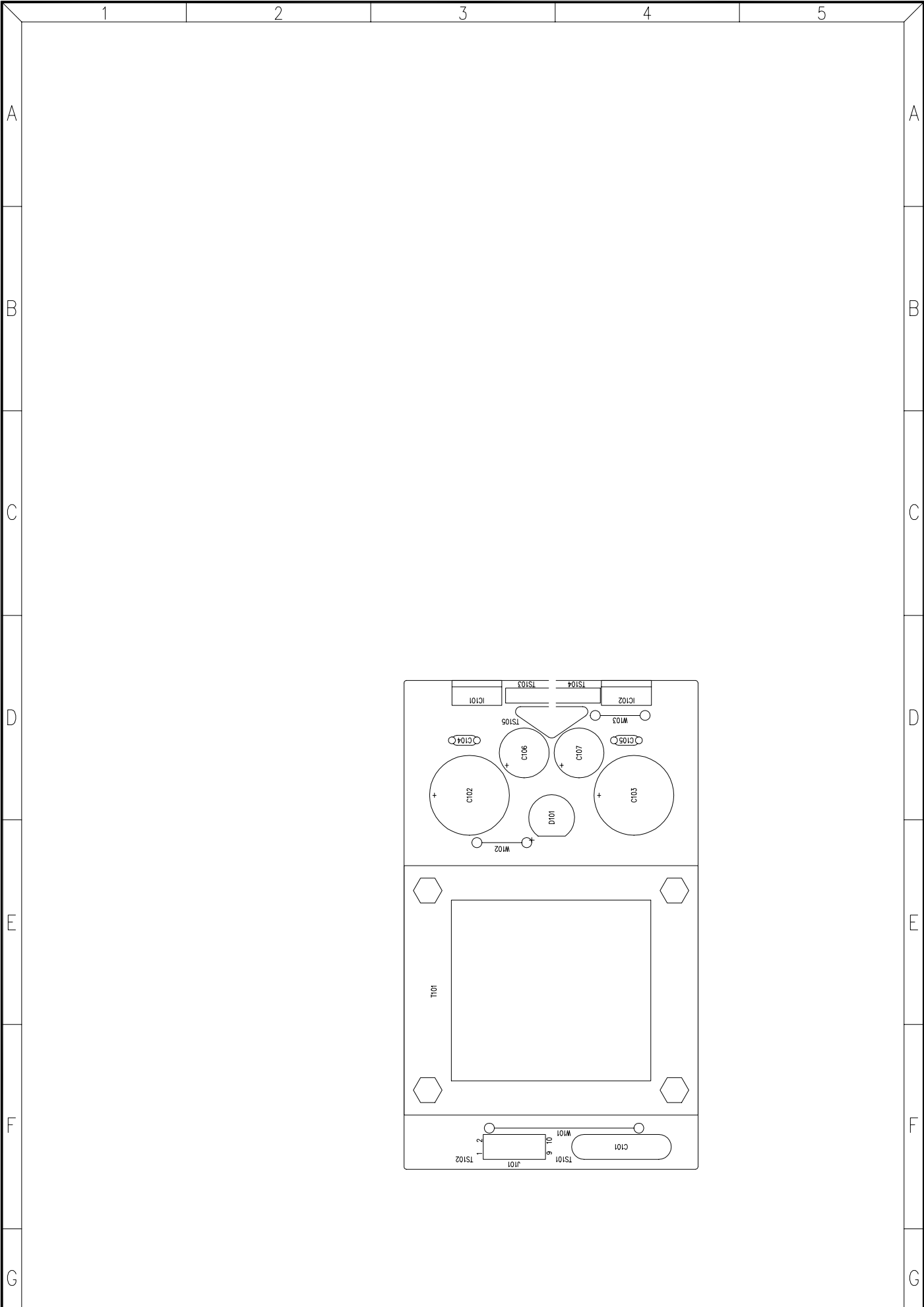
TITLE: VUMETER CIRCUIT		MODEL: STANDARD	<div>ECLEERO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA</div>	
DRAWN: AMOROS/QUERALT		SHEET 16 OF 18		
CHECKED:	DATE:	REPLACES:	DRW. NO. 33.0034	REV. A
	DATE:	REPLACED BY:	V/	

PARTS LIST:
MODEL : STANDARD
DATE: 281195

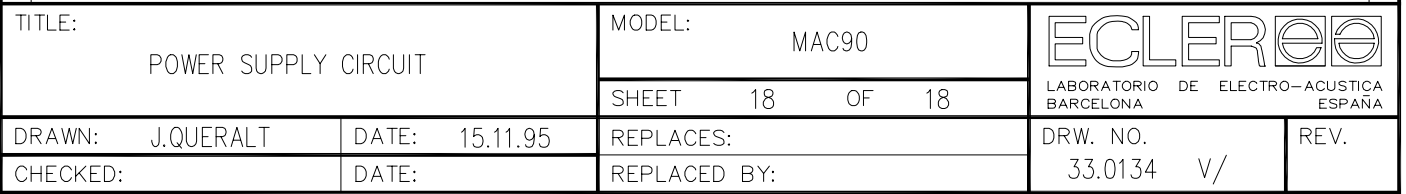
VU-METER CIRCUIT
DRW. No 33.0034PL
SHEET 1 OF 1 REPLACES:

REV:
REPLACED BY:

REFERENCE	VALUE
11.0453B	PRINTED CIRCUIT
C801V	2 μ 2/35
C802V	10 μ /35
C803V	10 μ /35
C804V	4 μ 7/35
C805V	47 μ /50
C806V	100n
C807V	2 μ 2/35
C808V	10 μ /35
C809V	10 μ /35
C810V	4 μ 7/35
C811V	47 μ /50
C812V	100n
IC801V	SMD LB1412
IC802V	SMD LB1412
J801V	2600-4TS
J802V	2600-3TS
J803V	2600-3TS
R801V	SMD 1M
R802V	SMD 6k2
R803V	SMD 62k
R804V	SMD 22k
R805V	SMD 10K
R806V	SMD 2k4
R807V	SMD 3k
R808V	SMD 3k
R809V	SMD 3k
R810V	SMD 3k
R811V	SMD 1M
R812V	SMD 6k2
R813V	SMD 62k
R814V	SMD 22k
R815V	SMD 10K
R816V	SMD 2k4
R817V	SMD 3k
R818V	SMD 3k
R819V	SMD 3k
R820V	SMD 3k



TITLE: POWER SUPPLY CIRCUIT		MODEL: MAC90		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPANA</div>	
		SHEET 17 OF 18			
DRAWN: J.QUERALT	DATE: 15.11.95	REPLACES:		DRW. NO. 33.0134 R/	REV.
CHECKED:	DATE:	REPLACED BY:			



PARTS LIST:
MODEL : MAC90
DATE: 151195

POWER SUPPLY CIRCUIT
DRW. No 33.0134PL
SHEET 1 OF 1 REPLACES:

REV:
REPLACED BY:

REFERENCE	VALUE
11.0561	PRINTED CIRCUIT
C101	100n400V
C102	1000μ/35
C103	1000μ/35
C104	100n
C105	100n
C106	470μ/25
C107	470μ/25
D101	B80/C1000
J101	10xJP
T101	828D017
TS101	BROWN/160mm/FAST 4.8
TS102	BLUE/160mm/FAST 4.8
TS103/104/105	YELLOW/BROWN/BLACK/270mm
TS105	BLACK/300mm
W101	30mm
W102	10mm
W103	10mm

VERIFICATION OF THE ASSEMBLED MAC90 MIXER

Input sensitivities:

CD	0dB (Switchable to -10dB)
LINE	-10dB (Switchable to 0dB)
PHONO	-40dB
MICRO	-50dB
MICRO ATT	-30dB
MIX	-10dB
RTN	-10dB

Output levels:

REC	-10dB
CUE	-10dB
OUT1	0dB/4dB/6dB (Switchable)
OUT2	0dB/4dB/6dB (Switchable)
HEADPHONES	+17dB (600 Ω)
TOLERANCE	± 1 dB

Position of the controls:

Tone control	center position
Balance	center position
Crossfader	center position
Gain control	center position
Auxiliary VOL	maximum
Volumes and faders	maximum
Switches	LINE and CD
Push-buttons	unpushed

Connect the mixer to the mains. Turn on the mains switch and check that it shines.

Feed a -10dB/1KHz signal to LINE INPUT1 and measure at the REC output. Check the fader travel and the output level (-10dB). Push the PFL and verify that a 0dB level is shown on the VU-meter. If not so, make sure there is not any malfunction and readjust the level. Check that the peak level is hold.

Verify the tone controls:

Bass	100Hz	± 12 dB
Treble	10KHz	± 12 dB
Mid	1.8KHz	± 15 dB

Verify the gain control:

± 20 dB gain from 20Hz to 20KHz

Check the correct correspondence between input and output channels, the linearity at 100Hz and 10KHz and that the input switch stops the signal. Verify the AUX RTN output level (0dB). Check that the corresponding volume travel, input and output channel correspondence and the PRE-POST assignment are correct.

Repeat the process for the remaining LINE-CD inputs not forgetting that the input sensitivity can be selected by a mini-jumper (-10dB, 0dB) and that INPUT5 to INPUT8 are affected by the cross-fader.

Check the cross-fader and make sure that the selection switches correctly assign its function. Keep measuring on the REC output. Verify the two PHONO inputs. Check the input selector, the correspondence between channels and the RIAA weighting: +2dB at 100Hz and -24dB at 10KHz.

Verify the six MICRO inputs (BALANCED). Check that the CMRR is good ($>60\text{dB}$), the linearity and that on MICRO ATT position the signal falls by 20dB .

Check the RTN input, tone, gain volume and PFL on the VU-meter.

Check the CUE output level (-10dB). Push the PGM button and verify that there exists signal on the output (-10dB) and depends on the volume level. Unpush PGM.

Feed the input signal to MIX and measure on OUT1.

Check the VOL travel, the balance, the AFL on the VU-meter, the correspondence between input and output channels, the L+R and the linearity at 100Hz and 10KHz . Change the measure to OUT2 and check the VOL2 potentiometer, the balance, the PGM and the AFL on the VU-meter and the linearity at 100Hz and 10KHz .

Connect a 600Ω loaded jack on the headphones socket and measure the volume, the correspondence between channels and the linearity at 100Hz and 10KHz .

MAC90 - QUALITY CONTROL

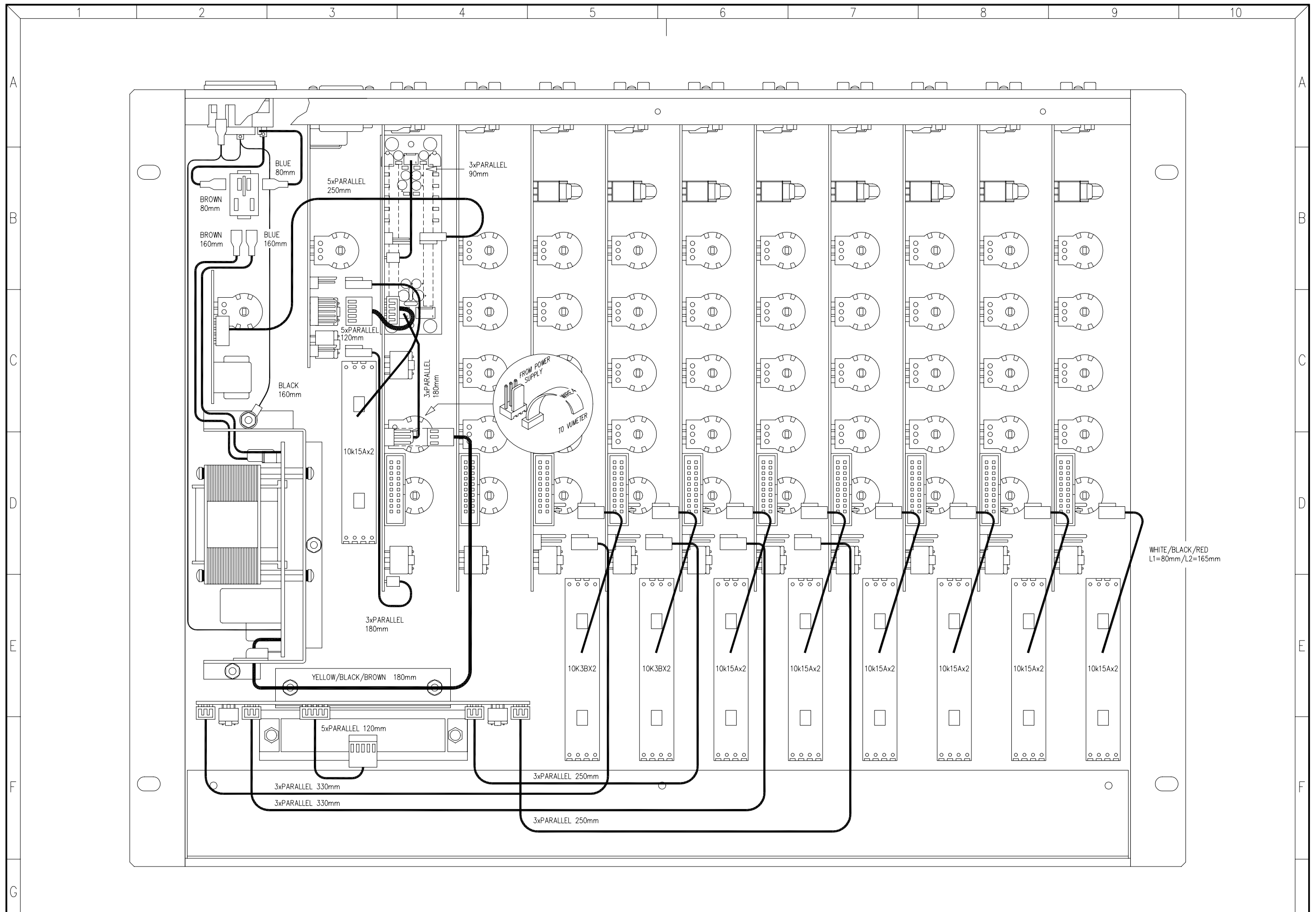
Have a look at mechanical parts to detect any possible surface scratches, verify that all of the screws are well-tightened and scratchless. Also, look at the general mixer overview.

Perform a background noise test for all inputs and outputs, drop the device over the table and make sure you do not listen to any additional noise over the background's due to contact failure.

Verify all inputs and outputs while you play some music, checking all controls (tones, levels, etc...) for good operation. Make sure there is an overall good sound quality (free of distortions and noises).

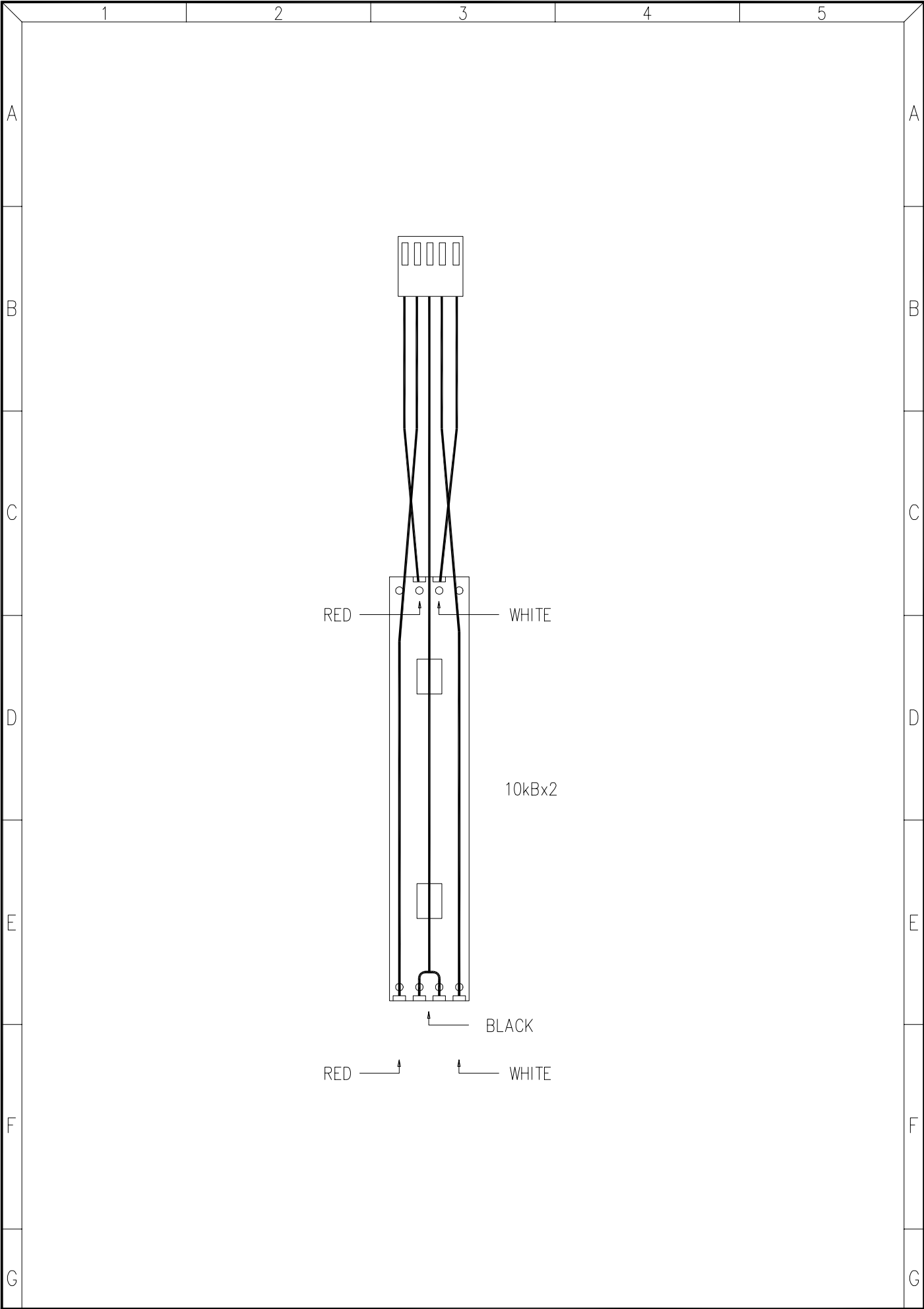
TECHNICAL CHARACTERISTICS MAC90

Inputs	Sensitivity nom(*)/Impedance	PHONO	-40dBV/47kΩ
		LINE	-10(0)dBV*/47KΩ
		CD	0(-10)dBV*/47KΩ
		MIC (UNBAL)	-50dBV/2.2kΩ
		MIC (UNBAL ATT)	-30dBV/2.2kΩ
		MIC (BAL)	-50dBV/2.2kΩ
		MIC (BAL ATT)	-30dBV/2.2kΩ
		MIX	-10dBV/47kΩ
		AUX RTN	-10dBV/22kΩ
Outputs Level/Minimum Load		OUT1 (BAL)	0dBV(1V)/+4dBV(1.6V)/ +6dBV(2V)*/600Ω
		OUT2	0dBV(1V)/+4dBV(1.6V)/ +6dBV(2V)*/2.2kΩ
		REC	-10dBV/10kΩ
		CUE	-10dBV/10kΩ
		AUX	0dBV/2.2kΩ
		HEADPHONES	140mW/600Ω
(*) Internally switchable			
Frequency Response		PHONO	RIAA ±0.5dB
		LINE/CD/AUX RTN	15Hz-45kHz +0/-1dB
		MICRO	20Hz-25kHz +0/-1dB
Harmonic Distortion		PHONO	<0.03%
		LINE/CD/AUX RTN	<0.02%
		MICRO	<0.2%
CMRR		MICRO	>70dB @ 1kHz
Signal/Noise ratio		PHONO	>80dB
		LINE/CD	>85dB
		MICRO	>75dB
		AUX RTN	>85dB
Tone control		BASS	100Hz ±12dB
		MID	1.8kHz ±15dB
		TREBLE	10kHz ±12dB
Power Requirements		110,120,220,230,240 ~ (*) 50/60Hz	
Power Consumption		24VA	
(*) Internally selectable			
Dimensions		Panel	482.6x355mm
		Depth	81.5mm
Weight		6.7kg	

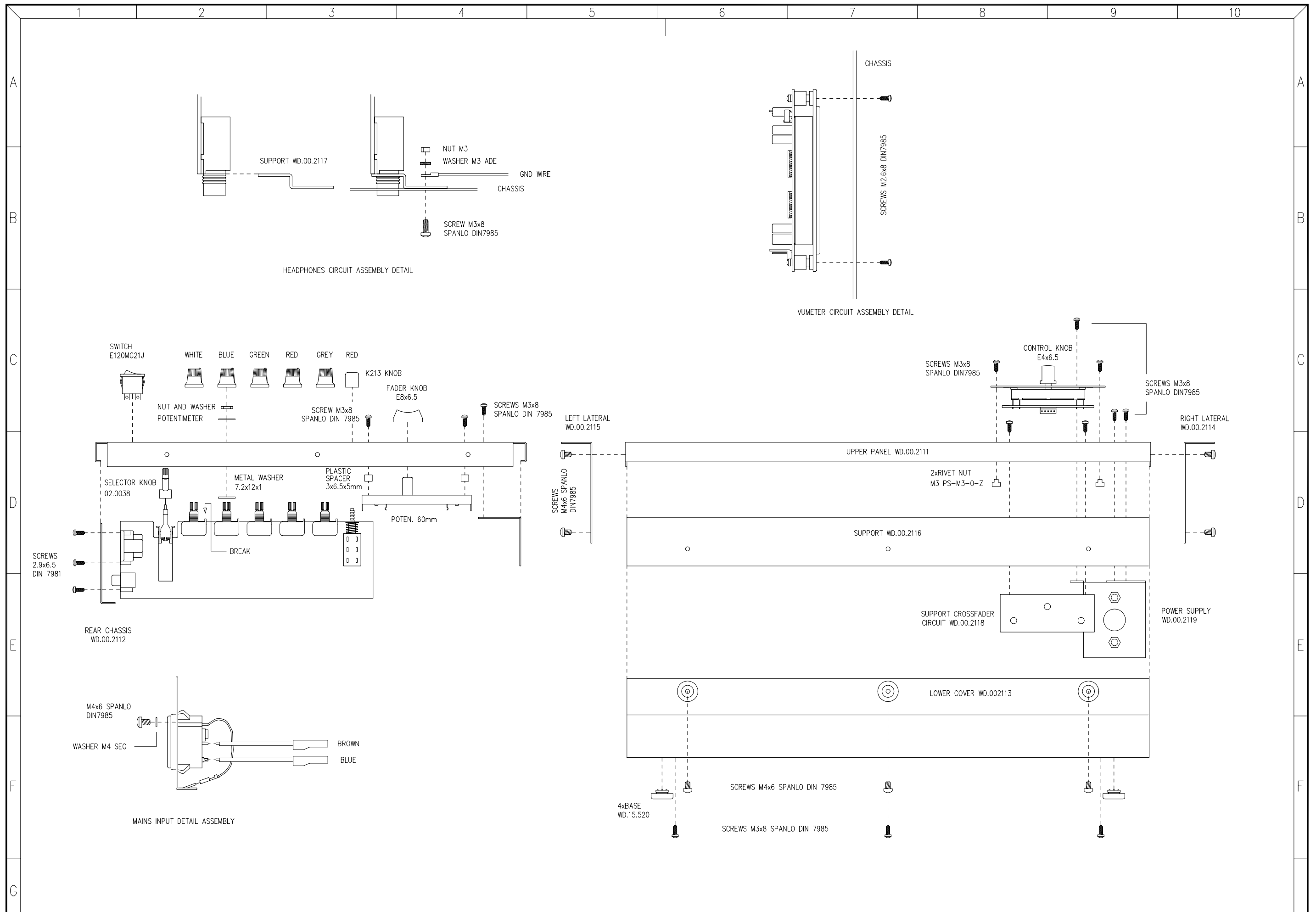


TITLE: WIRING DIAGRAM		MODEL: MAC90		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA</div>	
		SHEET 2 OF 2			
DRAWN: J.QUERALT	DATE: 04.12.95	REPLACES:		DRW. NO.	REV.
CHECKED:	DATE:	REPLACED BY:		31.0033	

6	7	8	9	10
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TITLE: POTENTIOMETER WIRING DIAGRAM		MODEL: MAC90		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA</div>	
		SHEET 1 OF 2			
DRAWN: J.QUERALT	DATE: 29.11.95	REPLACES:		DRW. NO. 31.0048	REV.
CHECKED:	DATE:	REPLACED BY:			



TITLE: MECHANICAL DIAGRAM		MODEL: MAC90		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA ESPAÑA</div>	
		SHEET 5 OF 5			
DRAWN: J.QUERALT	DATE: 12.12.95	REPLACES:		DRW. NO. 30.0052	REV.
CHECKED:	DATE:	REPLACED BY:			

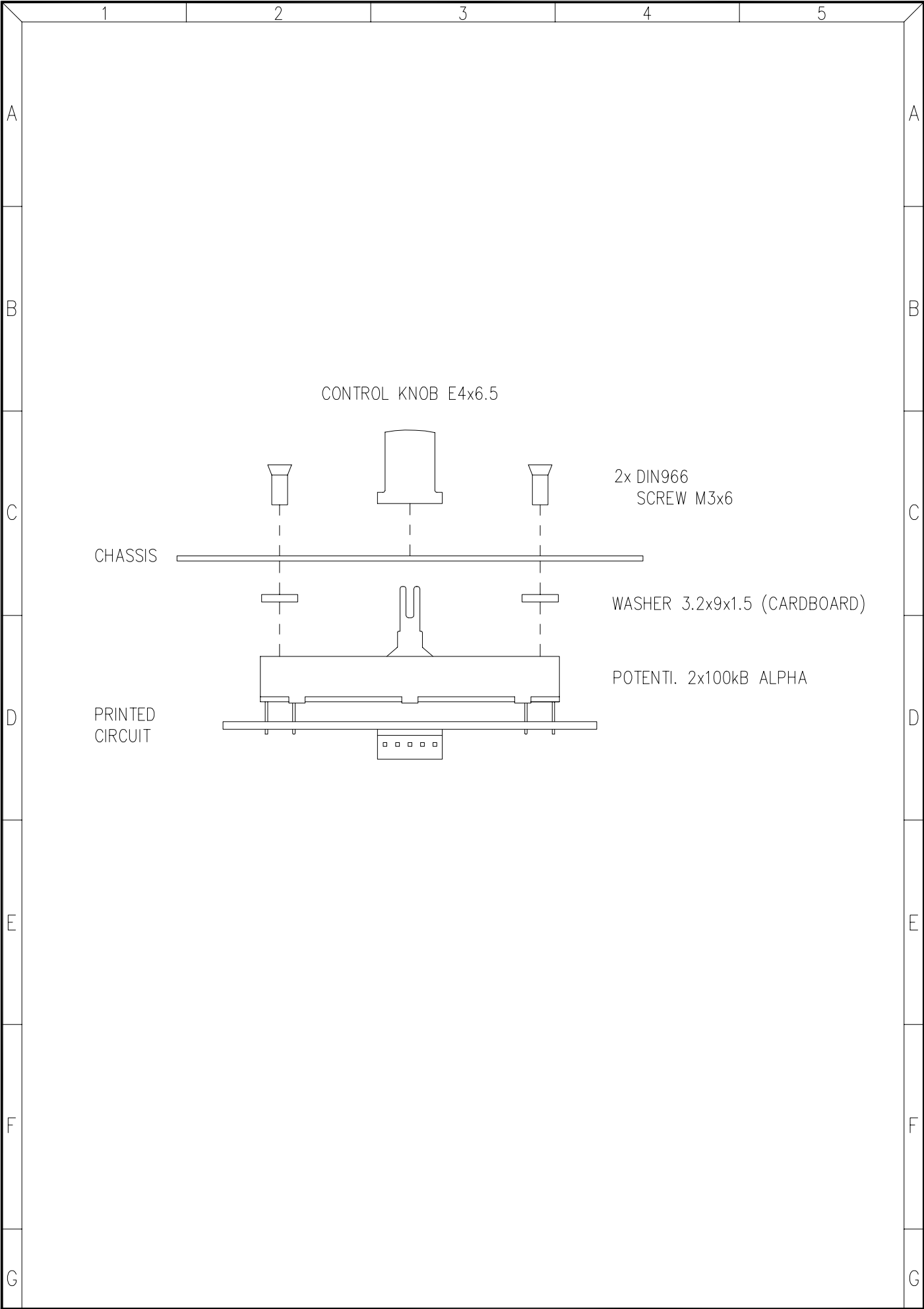
PARTS LIST:
MODEL : MAC90
DATE: 121295

MECHANICAL DIAGRAM
DRW. No 30.0052PL
SHEET 1 OF 1 REPLACES:

REV:
REPLACED BY:

QUANTITY VALUE

4 BASE WD.15.520
9 BLUE CONTROL KNOB D15
9 FADER KNOB E8x6.5
9 GREEN CONTROL KNOB D15
8 GREY CONTROL KNOB D15
1 LEFT LATERAL WD.00.2115
1 LOWER COVER WD.00.2113
1 MAIN SUPPLY INPUT AC-013
1 METAL WASHER SEG M4
18 PLASTIC SPACER 3x6.5x5mm
9 POTENTIOMETER 60mm 10kBx2
1 REAR CHASSIS WD.00.2112
9 RED CONTROL KNOB D15
9 RED K213 KNOB
1 RIGHT LATERAL WD.00.2114
2 RIVET NUT M3-PS-0-Z
32 SCREW 2.9x6.5 DIN7981
2 SCREW M2.6x8 DIN7985
32 SCREW M3x8 SPANLO DIN7985
9 SCREW M4x6 SPANLO DIN7985
1 SCREW M4x6 SPANLO DIN7985 (WHITE)
8 SELECTOR KNOB 02.0038
1 SUPPORT ANGLE WD.00.2116
1 SUPPORT CROSSFADER CIRCUIT WD.00.2118
1 SUPPORT JACK WD.00.2117
1 SWITCH E 120MG21J
1 UPPER PANEL WD.00.2111
11 WHITE CONTROL KNOB D15
5 WHITE K213 KNOB
2 YELLOW CONTROL KNOB D15
1 YELLOW K213 KNOB
1 NUT M3 DIN934
1 METAL WASHER M3 ADE



TITLE: CROSSFADER POTENTIOMETER ASSEMBLY		MODEL: MAC90		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACÚSTICA BARCELONA ESPAÑA</div>	
		SHEET 1 OF 5			
DRAWN: J.QUERALT	DATE: 12.12.95	REPLACES:		DRW. NO. 30.0051	REV.
CHECKED:	DATE:	REPLACED BY:			

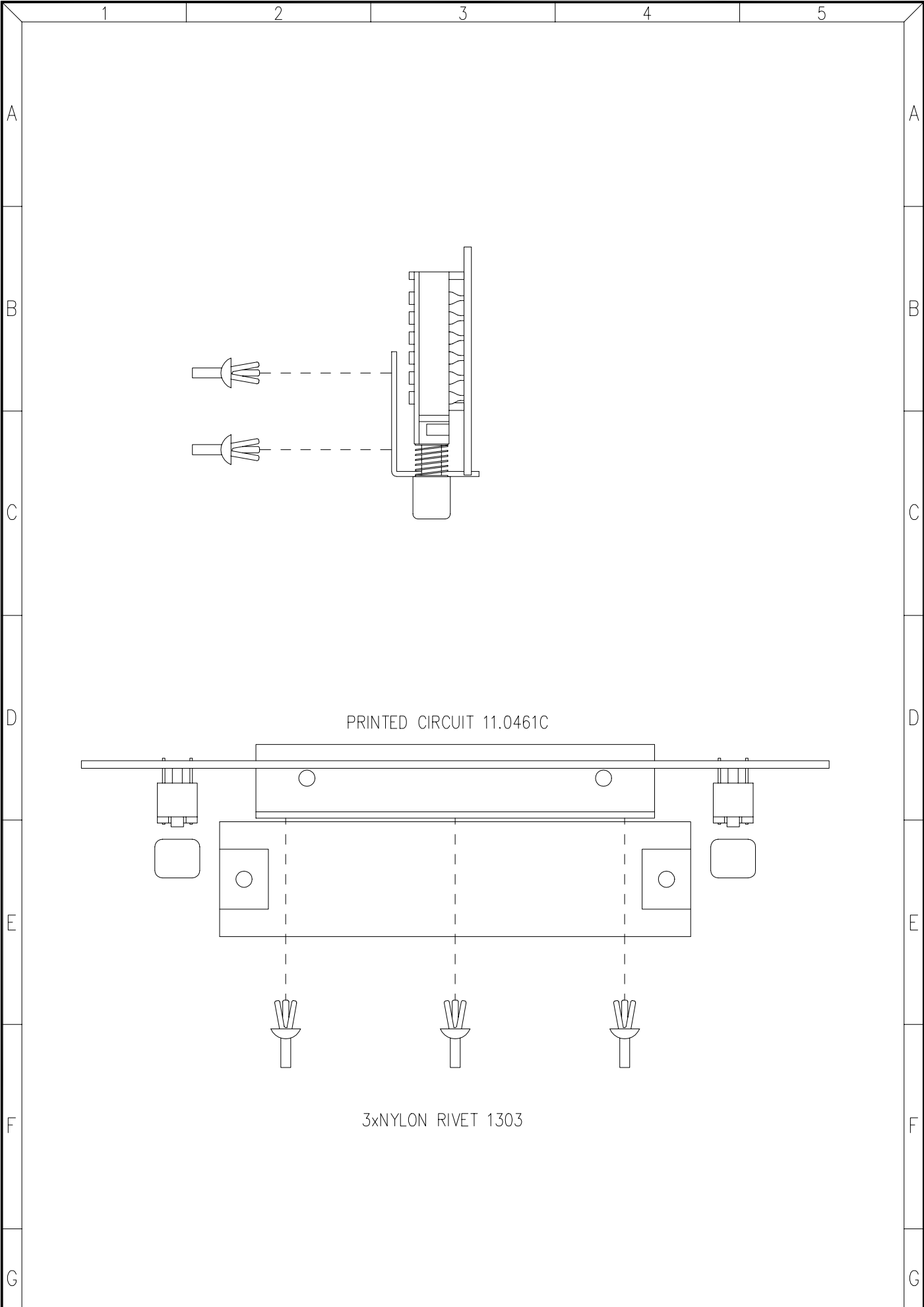
PARTS LIST:
MODEL : MAC90
DATE: 121295

CROSSFADER POTENTIOMETER ASSEMBLY
DRW. No 30.0051PL
SHEET 1 OF 1 REPLACES:

REV:
REPLACED BY:

QUANTITY VALUE

2 SCREW M3x6 DIN966
2 CARDBOARD WASHER 3.2x9x1.5
1 CROSSFADER CHASSIS WD.00.1673
1 CONTROL KNOB E4x6.5
1 ASSEMBLED PRINTED CIRCUIT 11.0368



TITLE: CROSSFADER PRINTED CIRCUIT ASSEMBLY		MODEL: MAC90		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA</div>	
		SHEET 2 OF 5			
DRAWN: J.QUERALT	DATE: 12.12.95	REPLACES:		DRW. NO. 30.0050	REV.
CHECKED:	DATE:	REPLACED BY:			

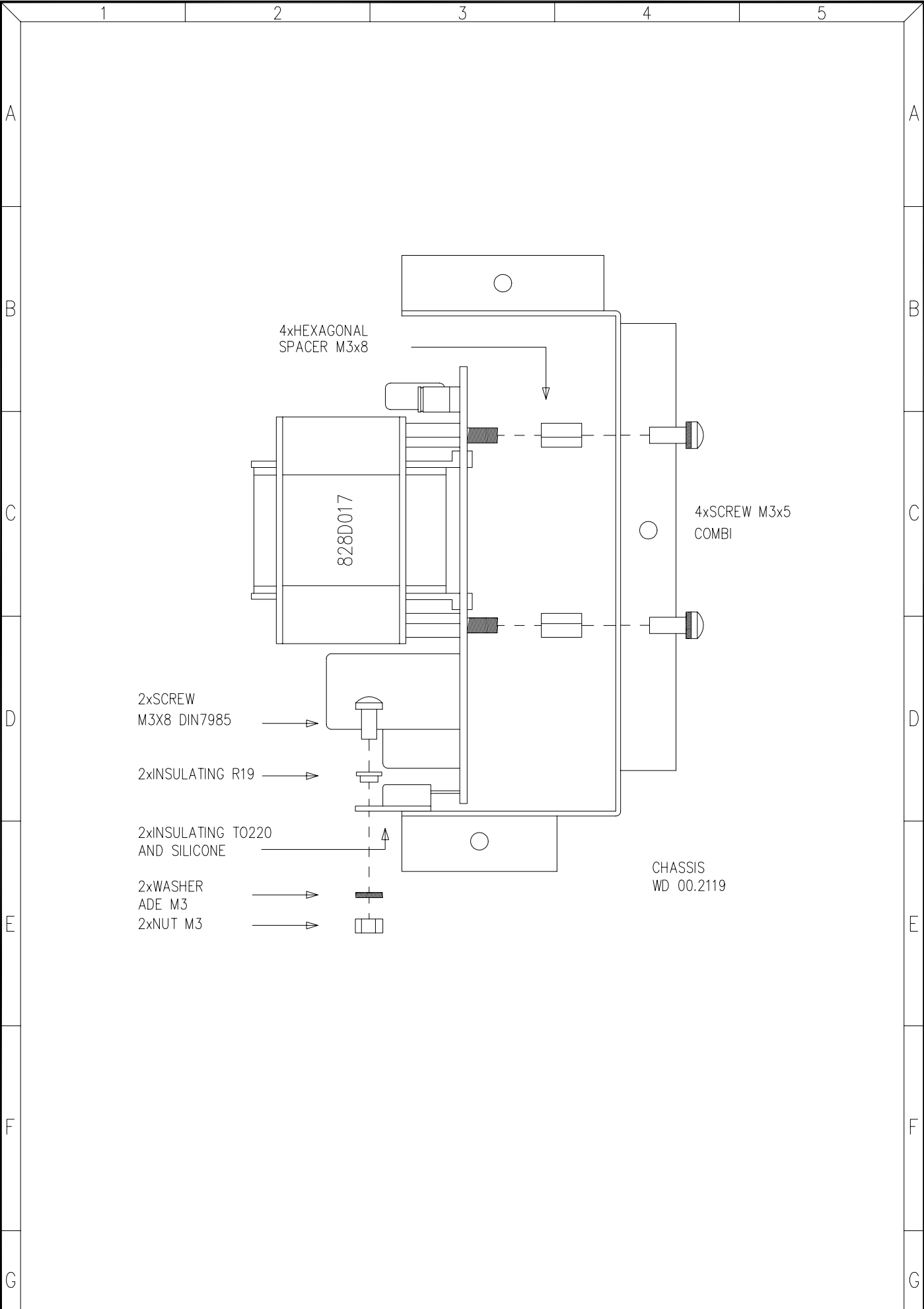
PARTS LIST:
MODEL : MAC90
DATE: 121295

CROSSFADER PRINTED CIRCUIT ASSEMBLY
DRW. No 30.0050PL
SHEET 1 OF 1 REPLACES:

REV:
REPLACED BY:

QUANTITY VALUE

- 3 NYLON RIVET 1303
- 1 ASSEMBLED PRINTED CIRCUIT 11.0461C



TITLE: POWER CIRCUIT ASSEMBLY DETAIL		MODEL: MAC90		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA</div>	
		SHEET 3 OF 5			
DRAWN: J.QUERALT	DATE: 12.12.95	REPLACES:		DRW. NO.	REV.
CHECKED:	DATE:	REPLACED BY:		30.0049	

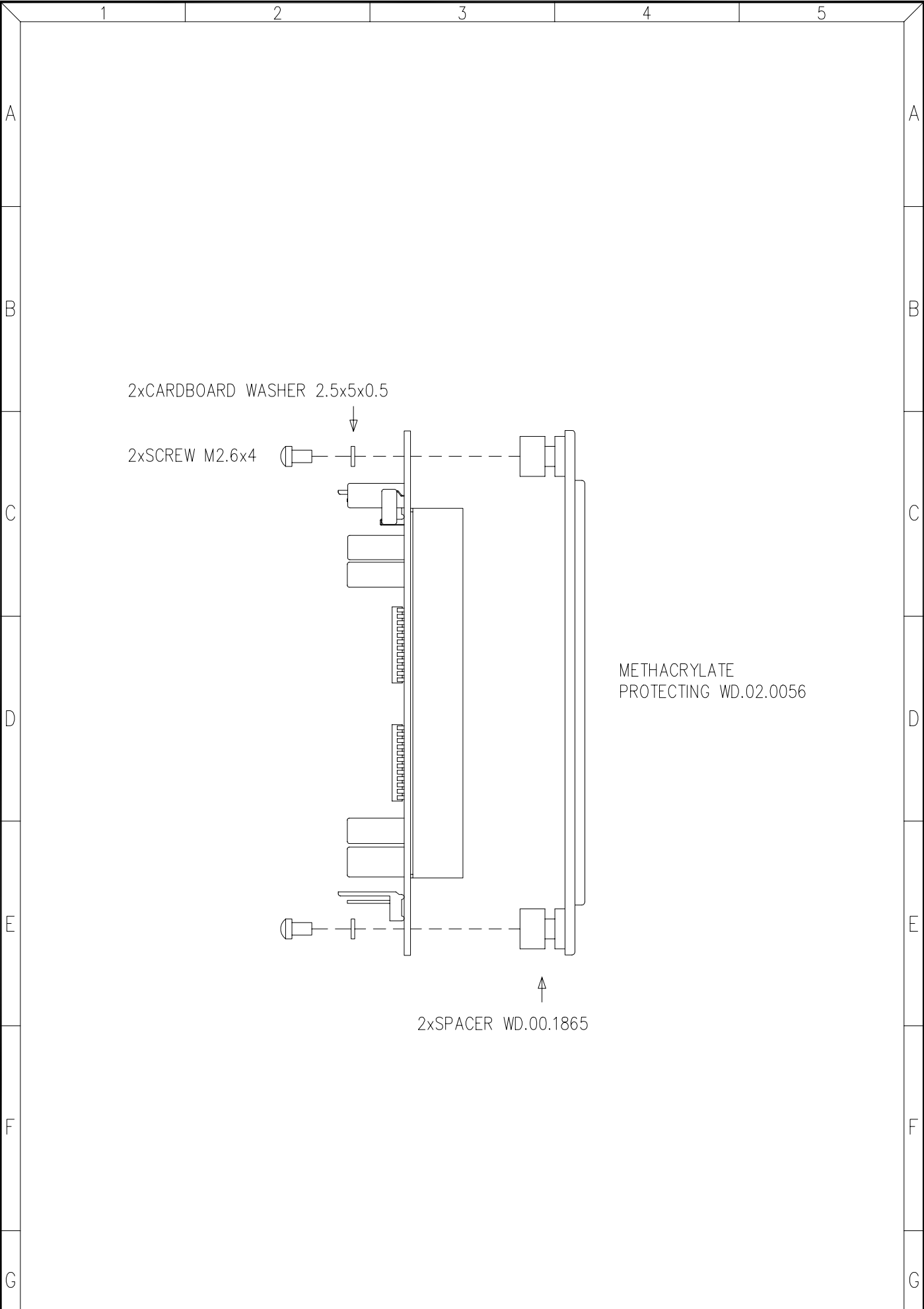
PARTS LIST:
MODEL : MAC90
DATE: 121295

POWER CIRCUIT ASSEMBLY DETAIL
DRW. No 30.0049PL
SHEET 1 OF 1 REPLACES:

REV:
REPLACED BY:

QUANTITY VALUE

1 CHASSIS WD.00.2119
4 HEXAGONAL SPACER M3x8
4 SCREW M3x5 COMBI
2 SCREW M3x8 DIN7985
2 INSULATING R19
2 INSULATING TO220
2 METAL WASHER ADE M3
2 NUT M3 DIN934
1 ASSEMBLED PRINTED CIRCUIT 11.0561



TITLE: VUMETER CIRCUIT ASSEMBLY DETAIL		MODEL: STANDARD		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPANA</div>	
		SHEET 4 OF 5			
DRAWN: J.QUERALT	DATE: 12.12.95	REPLACES:		DRW. NO. 30.0012	REV.
CHECKED:	DATE:	REPLACED BY:			

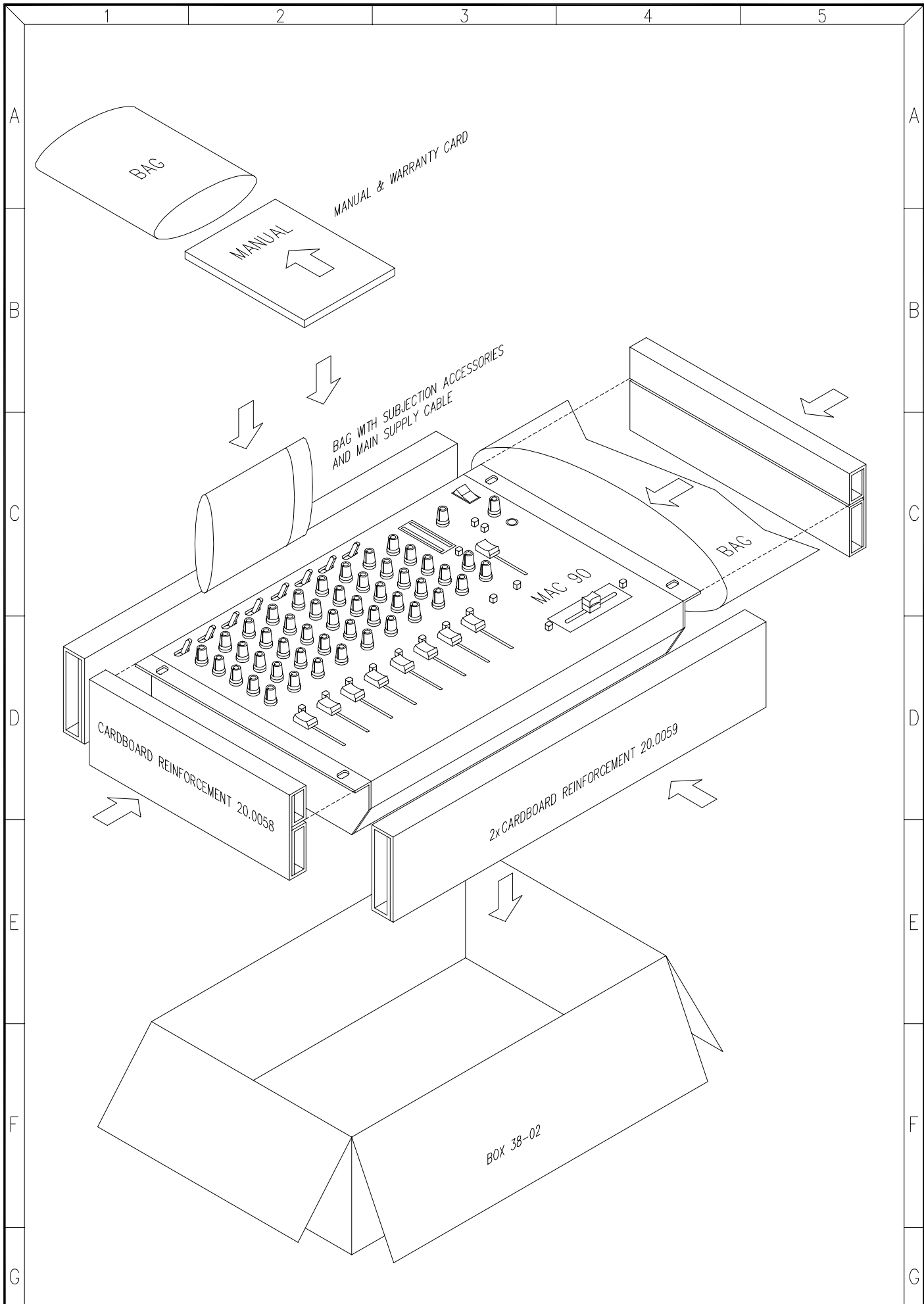
PARTS LIST:
MODEL : STANDARD
DATE: 121295

VUMETER CIRCUIT ASSEMBLY
DRW. No 30.0012PL
SHEET 1 OF 1 REPLACES:

REV:
REPLACED BY:

QUANTITY VALUE

1 METHACRYLATE PROTECTING WD.02.0056
2 CARDBOARD WASHER 2.5x5x0.5
2 SCREW M2.6x4 DIN7985
2 SPACER WD.00.1865



TITLE: PACKING DIAGRAM		MODEL: MAC90		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA</div>	
		SHEET 1 OF 1			
DRAWN: J.QUERALT	DATE: 130896	REPLACES:		DRW. NO. 32.0019	REV.
CHECKED:	DATE:	REPLACED BY:			

PARTS LIST:
MODEL : MAC90
DATE: 130896

PACKING DIAGRAM
DRW. No 32.0019PL
SHEET 1 OF 1 REPLACES:

REV:
REPLACED BY:

QUANTITY VALUE

4 METAL WASHER 5x11.5x0.8
4 WASHER AT 5x11.5x3.5 ABS BLACK
1 BOX PAM 38-02
2 CARDBOARD REINFORCEMENT 20.0058
2 CARDBOARD REINFORCEMENT 20.0059
1 BAG FOR MANUAL 21.5x5x32.5
1 PLASTIC BAG 75x65cm
1 PLASTIC BAG 60x80mm
1 MANUAL MAC90
1 WARRANTY CARD
1 MAIN SUPPLY CABLE 3x0.75mm² STANDARD