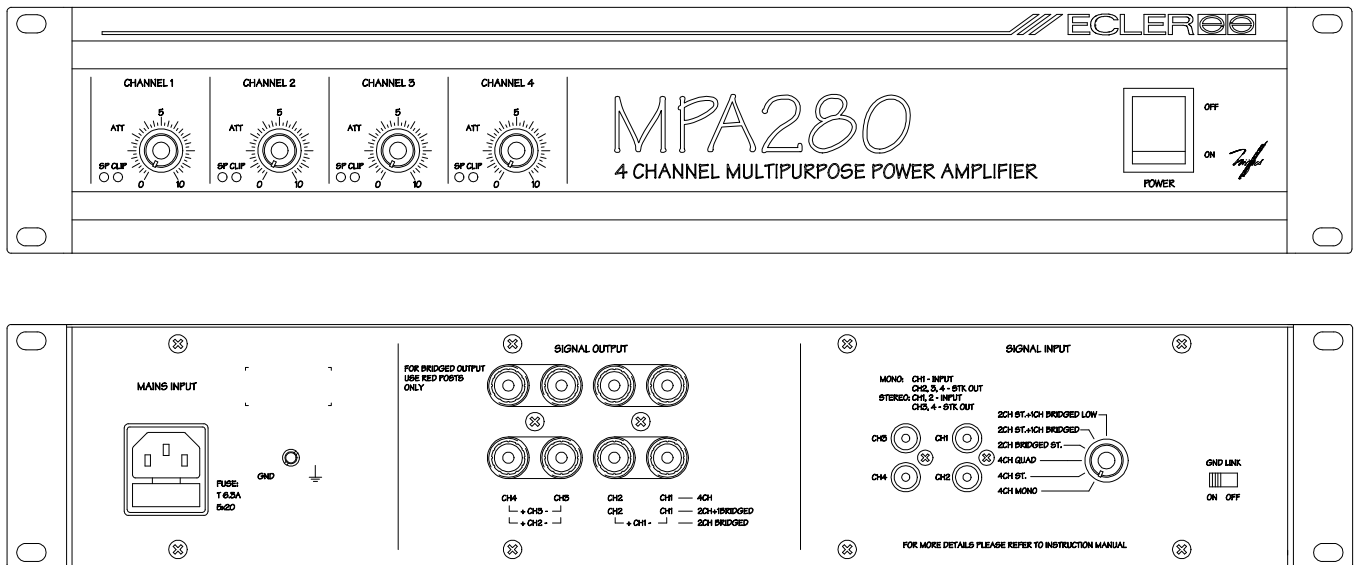


MPA280

SERVICE MANUAL



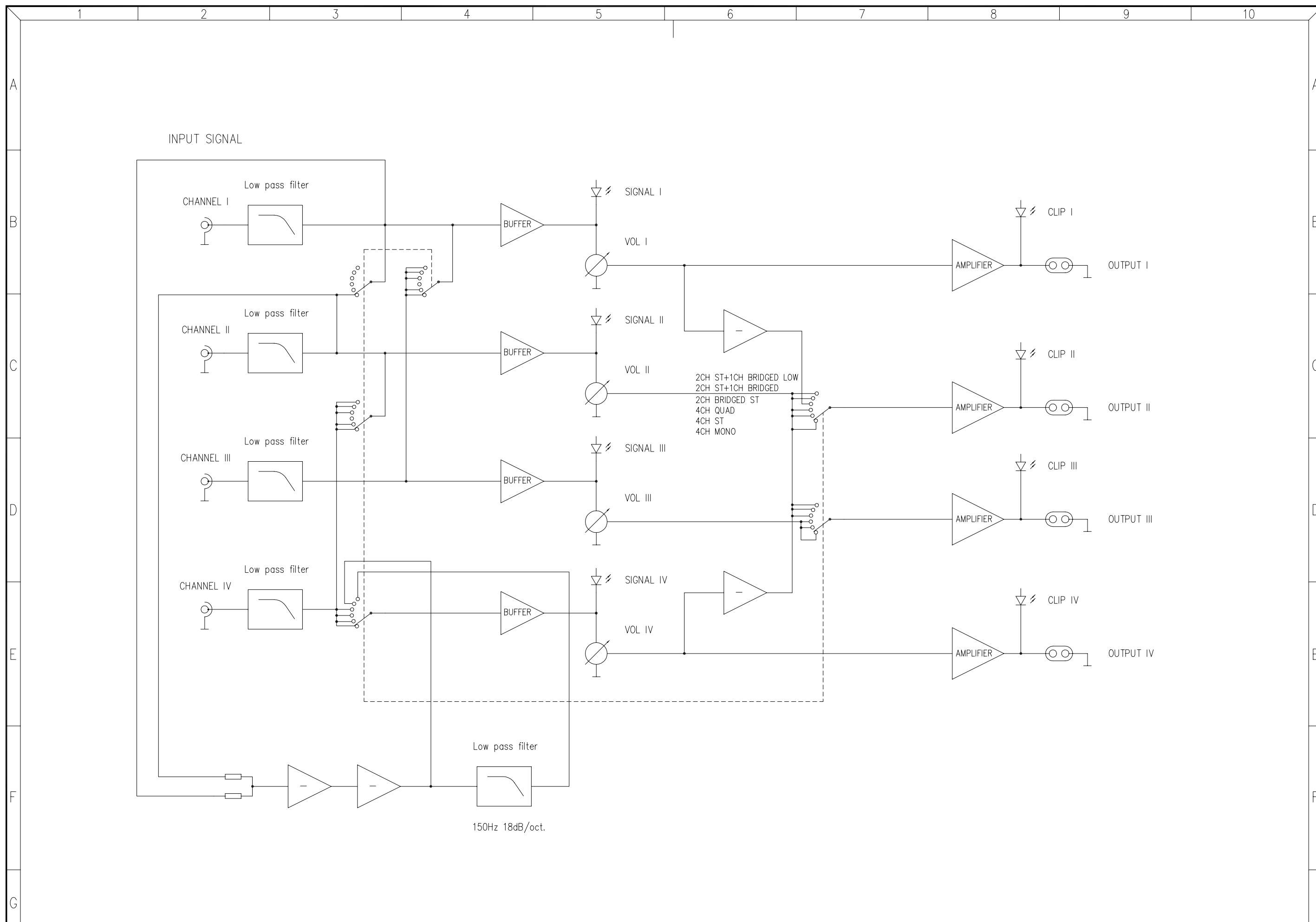
ECLEREE


AUDIO CREATIVE POWER

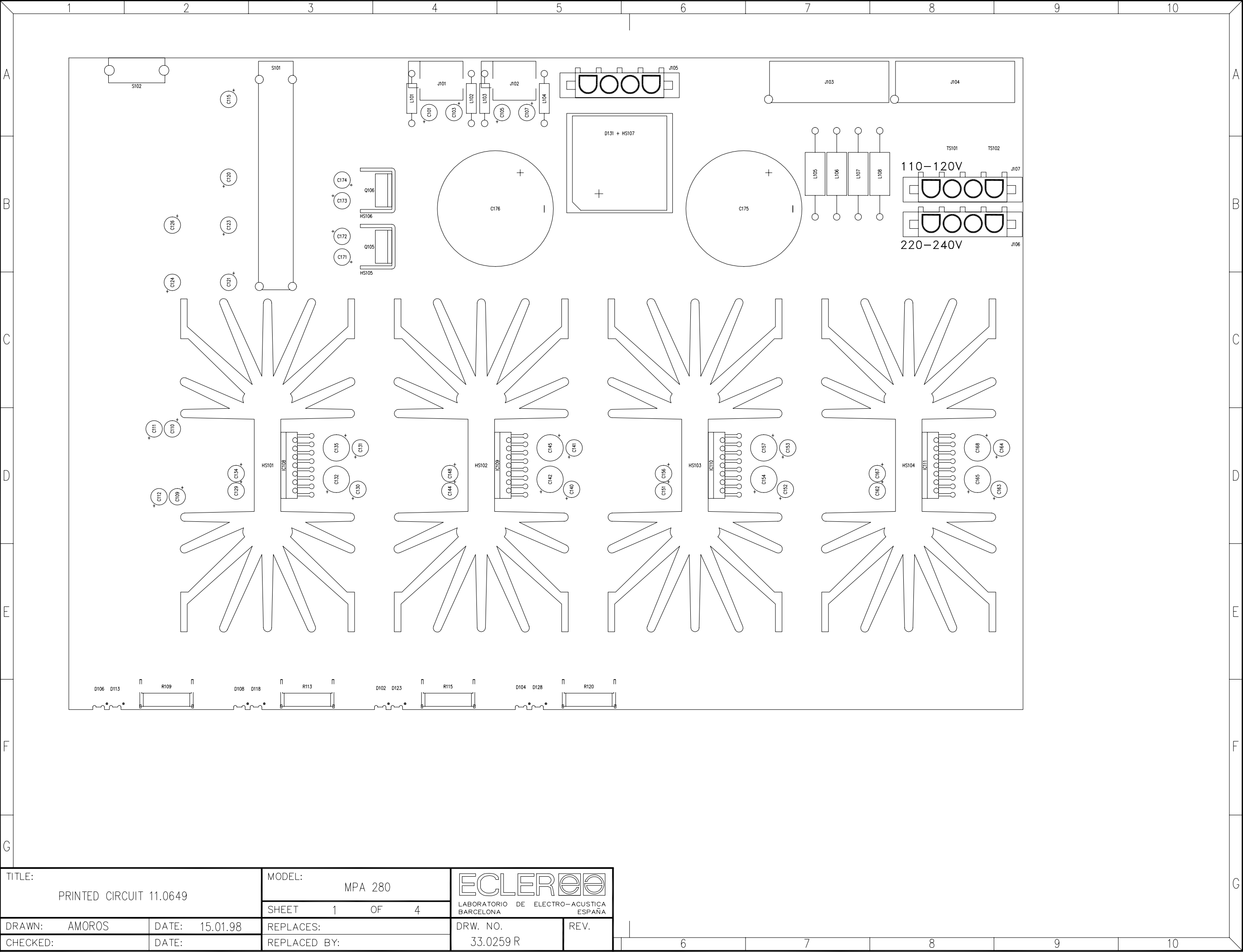
SERVICE MANUAL MPA280

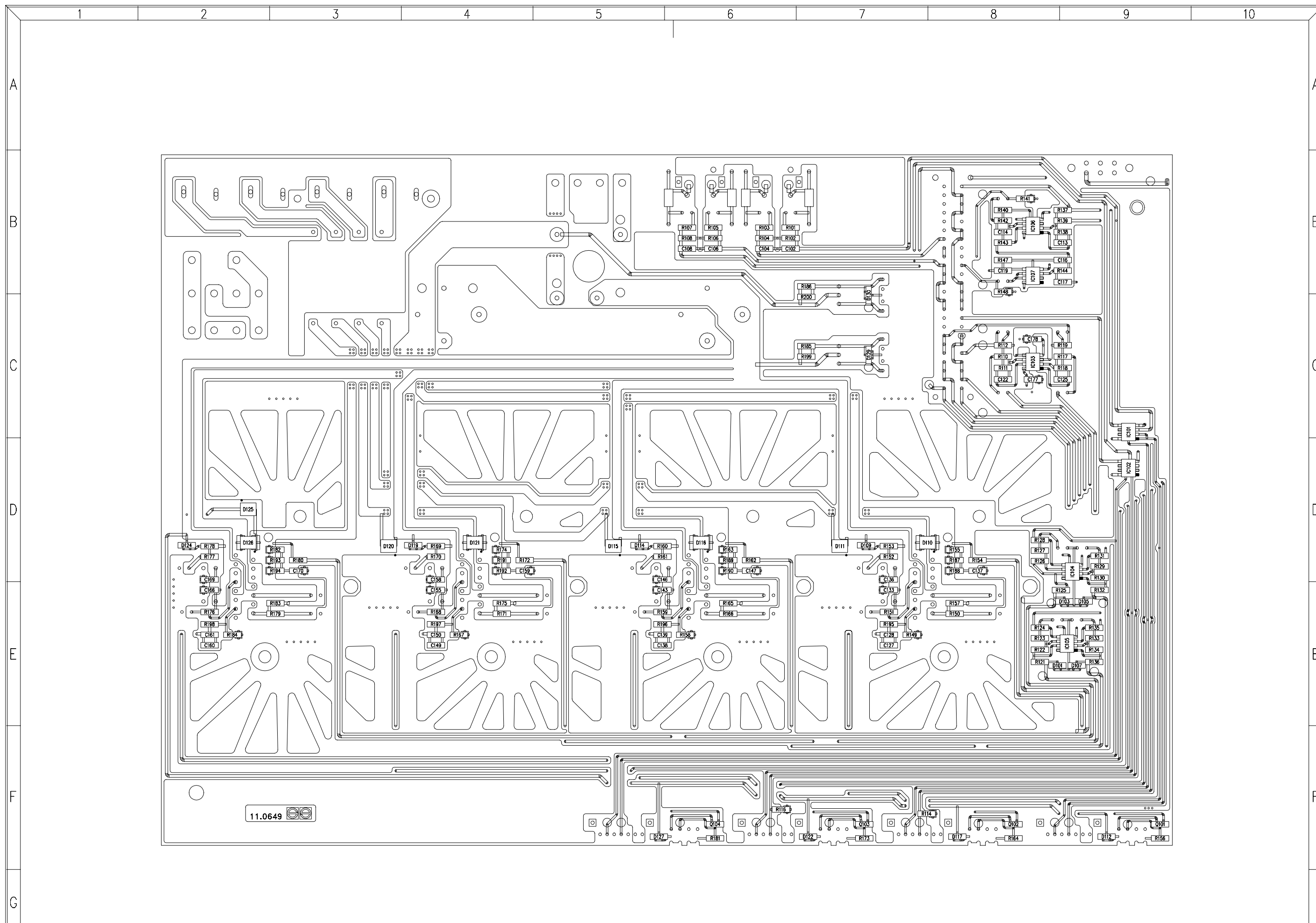
INDEX

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

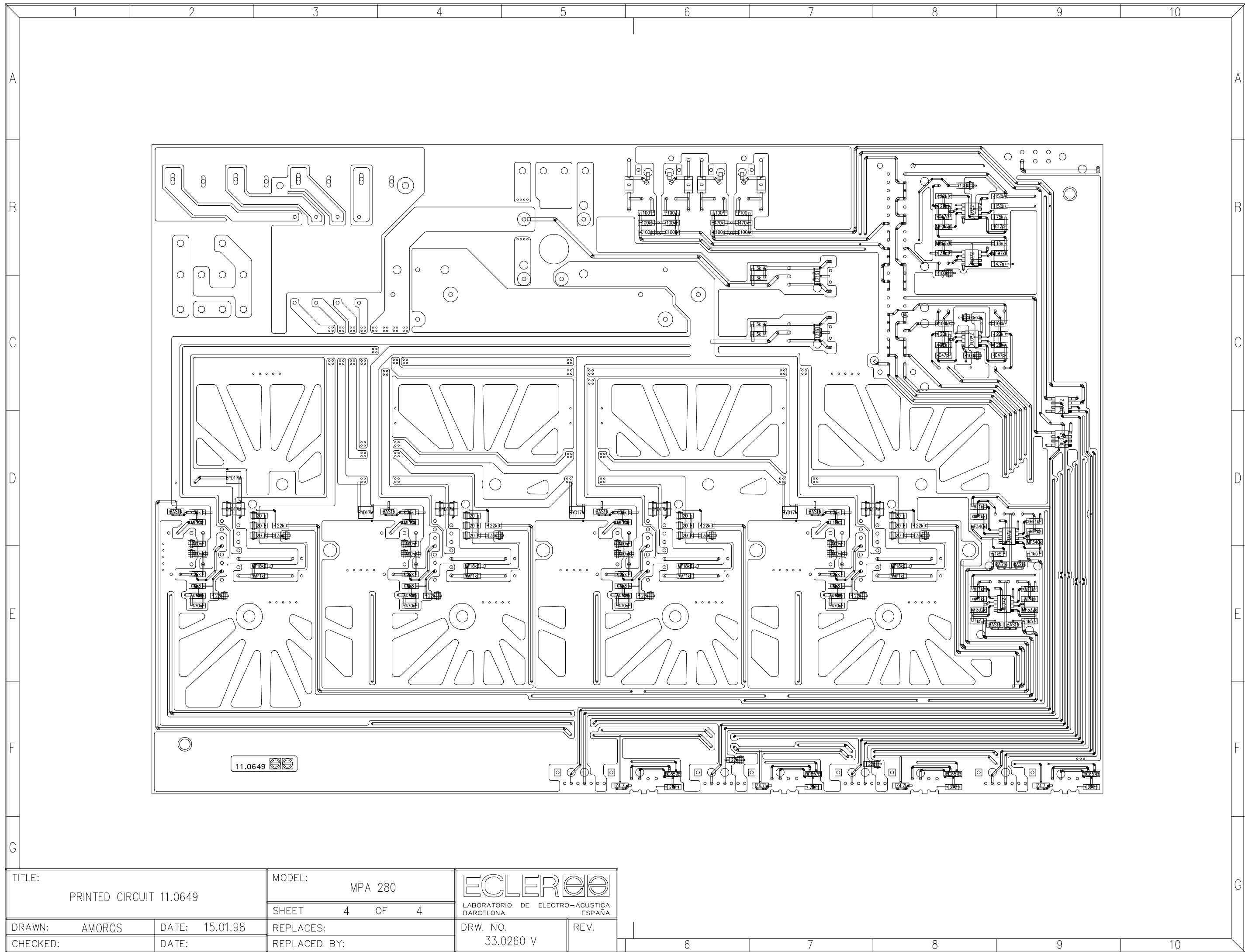


TITLE: BLOCK DIAGRAM		MODEL: MPA 280		 LABORATORIO DE ELECTRO-ACUSTICA ESPAÑA	
		SHEET 1 OF 1			
DRAWN: J.QUERALT	DATE: 12.01.98	REPLACES:		DRW. NO.	REV.
CHECKED:	DATE:	REPLACED BY:		10.0427	





TITLE: PRINTED CIRCUIT 11.0649		MODEL: MPA 280		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA</div>	
		SHEET 3 OF 4			
DRAWN: AMOROS	DATE: 15.01.98	REPLACES:		DRW. NO.	REV.
CHECKED:	DATE:	REPLACED BY:		33.0260 R	



PARTS LIST:
MODEL: MPA280
DATE: 15.01.98

PRINTED CIRCUIT 11.0649
DRW.Nº 33.0259 and 260PL
SHEET 1 OF 5

REV:
REPLACES:
REPLACED BY:

REFERENCE	VALUE	CODE
C101	22µ/35	FCCE200220
C102	C100p	FCXCN21000
C103	22µ/35	FCCE200220
C104	C100p	FCXCN21000
C105	22µ/35	FCCE200220
C106	C100p	FCXCN21000
C107	22µ/35	FCCE200220
C108	C100p	FCXCN21000
C109	10µ/50	FCCE250100
C110	10µ/50	FCCE250100
C111	10µ/50	FCCE250100
C112	10µ/50	FCCE250100
C113	C12p	FCXCN11200
C114	C47p	FCXCN14700
C115	47µ/16	FCCE100000
C116	18n	FCXCN40180
C117	4.7n	FCXCN40047
C118	Not assembled	
C119	33n	FCXCN40330
C120	47µ/16	FCCE100000
C121	47µ/16	FCCE100000
C122	C47p	FCXCN14700
C123	47µ/16	FCCE100000
C124	47µ/16	FCCE100000
C125	C47p	FCXCN14700
C126	47µ/16	FCCE100000
C127	470n	FCXCN44700
C128	470n	FCXCN44700
C129	22µ/35	FCCE200220
C130	10µ/50	FCCE250100
C131	10µ/50	FCCE250100
C132	22µ/100	FCCE200220
C133	100n	FCXCN41000
C134	22µ/35	FCCE200220
C135	22µ/100	FCCE350220
C136	100n	FCXCN41000
C137	33n	FCXCN40330
C138	470n	FCXCN44700
C139	470n	FCXCN44700
C140	10µ/50	FCCE250100
C141	10µ/50	FCCE250100
C142	22µ/100	FCCE350220
C143	100n	FCXCN41000
C144	22µ/35	FCCE200220
C145	22µ/100	FCCE350220
C146	100n	FCXCN41000
C147	33n	FCXCN40330
C148	22µ/35	FCCE200220
C149	470n	FCXCN44700
C150	470n	FCXCN44700
C151	22µ/35	FCCE200220
C152	10µ/50	FCCE250100
C153	10µ/50	FCCE250100
C154	22µ/100	FCCE350220
C155	100n	FCXCN41000
C156	22µ/35	FCCE200220
C157	22µ/100	FCCE350220
C158	100n	FCXCN41000

PARTS LIST:
MODEL: MPA280
DATE: 15.01.98

PRINTED CIRCUIT 11.0649
DRW.Nº 33.0259 and 260PL
SHEET 2 OF 5

REV:
REPLACES:
REPLACED BY:

REFERENCE	VALUE	CODE
C159	33n	FCXCN40330
C160	470n	FCXCN44700
C161	470n	FCXCN44700
C162	22µ/35	FCCE200220
C163	10µ/50	FCCE200220
C164	10µ/50	FCCE200220
C165	22µ/100	FCCE350220
C166	100n	FCXCN41000
C167	22µ/35	FCCE200220
C168	22µ/100	FCCE350220
C169	100n	FCXCN41000
C170	33n	FCXCN40330
C171	10µ/50	FCCE250100
C172	10µ/50	FCCE250100
C173	10µ/50	FCCE250100
C174	10µ/50	FCCE250100
C175	10000µ/63	FCCE321000
C176	10000µ/63	FCCE321000
C177	100n	FCXCN41000
C178	100n	FCXCN41000
D101	BAS16	FCXDDBAS16
D102	Green led	FCLED300VE
D103	BAS16	FCXDDBAS16
D104	Green led	FCLED300VE
D105	BAS16	FCXDDBAS16
D106	Green led	FCLED300VE
D107	BAS16	FCXDDBAS16
D108	Green led	FCLED300VE
D109	BAS16	FCXDDBAS16
D110	BYD17M	FCXDD40070
D111	BYD17M	FCXDD40070
D112	Z4.7	FCXZ000047
D113	Red led	FCLED300RO
D114	BAS16	FCXDDBAS16
D115	BYD17M	FCXDD40070
D116	BYD17M	FCXDD40070
D117	Z4.7	FCXZ000047
D118	Red led	FCLED300RO
D119	BAS16	FCXDDBAS16
D120	BYD17M	FCXDD40070
D121	BYD17M	FCXDD40070
D122	Z4.7	FCXZ000047
D123	Red led	FCLED300RO
D124	BAS16	FCXDDBAS16
D125	BYD17M	FCXDD40070
D126	BYD17M	FCXDD40070
D127	Z4.7	FCXZ000047
D128	Red led	FCLED300RO
D129	Z16	FCXZ000160
D130	Z16	FCXZ000160
D131	FB3506L	FCREC35065
HS101	SERADHE 1237	FCRAD12370
HS102	SERADHE 1237	FCRAD12370
HS103	SERADHE 1237	FCRAD12370
HS104	SERADHE 1237	FCRAD12370
HS105	HEAD SINK 2906.6	FCRAD29060
HS106	HEAD SINK 2906.6	FCRAD29060
IC101	TL072	FCIC072010

PARTS LIST:
MODEL: MPA280
DATE: 15.01.98

PRINTED CIRCUIT 11.0649
DRW.Nº 33.0259 and 260PL
SHEET 3 OF 5

REV:
REPLACES:
REPLACED BY:

REFERENCE	VALUE	CODE
IC102	TL072	FCIC072010
IC103	TL072	FCIC072010
IC104	TL072	FCIC072010
IC105	TL072	FCIC072010
IC106	TL072	FCIC072010
IC107	TL072	FCIC072010
IC108	TDA7294	FCIC729400
IC109	TDA7294	FCIC729400
IC110	TDA7294	FCIC729400
IC111	TDA7294	FCIC729400
J101	YKC21-3035	FCBASR0600
J102	YKC21-3035	FCBASR0600
J103	YKD31-0496	FCCTJAL100
J104	YKD31-0496	FCCTJAL100
J105	350430-1	FCCTAMP040
J106	350430-1	FCCTAMP040
J107	350430-1	FCCTAMP040
L101	68µH	FCCHK00680
L102	68µH	FCCHK00680
L103	68µH	FCCHK00680
L104	68µH	FCCHK00680
L105	1µH	FCIND00200
L106	1µH	FCIND00200
L107	1µH	FCIND00200
L108	1µH	FCIND00200
Q101	BC857B	FCXTT08570
Q102	BC857B	FCXTT08570
Q103	BC857B	FCXTT08570
Q104	BC857B	FCXTT08570
Q105	MJE15030	FCTR150300
Q106	MJE15031	FCTR150310
R101	100 Ohms	FCXR021000
R102	470k	FCXR054700
R103	100 Ohms	FCXR021000
R104	470k	FCXR054700
R105	100 Ohms	FCXR021000
R106	100k	FCXR051000
R107	100 Ohms	FCXR021000
R108	100k	FCXR051000
R109	10kAx2	FCPR210040
R110	22k	FCXR042200
R111	22k	FCXR042200
R112	100k	FCXR051000
R113	10kAx2	FCPR210040
R114	22k	FCXR042200
R115	10kAx2	FCPR210040
R116	22k	FCXR042200
R117	22k	FCXR042200
R118	22k	FCXR042200
R119	100k	FCXR051000
R120	10kAx2	FCPR210040
R121	1k5	FCXR031500
R122	MF332k	FCXR153320
R123	MF1k	FCXR131000
R124	MF1k	FCXR131000
R125	1k5	FCXR031500
R126	MF340k	FCXR153400
R127	MF1k	FCXR131000

PARTS LIST:
MODEL: MPA280
DATE: 15.01.98

PRINTED CIRCUIT 11.0649
DRW.Nº 33.0259 and 260PL
SHEET 4 OF 5

REV:
REPLACES:
REPLACED BY:

REFERENCE	VALUE	CODE
R128	MF1k	FCXR131000
R129	MF1k	FCXR131000
R130	MF340k	FCXR153400
R131	MF1k	FCXR131000
R132	1k5	FCXR031500
R133	MF1k	FCXR131000
R134	MF332k	FCXR153320
R135	MF1k	FCXR131000
R136	1k5	FCXR031500
R137	150k	FCXR051500
R138	75k	FCXR047500
R139	150k	FCXR051500
R140	22k	FCXR042200
R141	100k	FCXR051000
R142	22k	FCXR042200
R143	MF97k6	FCXR149760
R144	MF97k6	FCXR149760
R145	Not assembled	
R146	Not assembled	
R147	MF36k5	FCXR143650
R148	100k	FCXR051000
R149	22k	FCXR042200
R150	MF1k	FCXR131000
R151	22k	FCXR042200
R152	10k	FCXR041000
R153	33k	FCXR043300
R154	22k	FCXR042200
R155	20 Ohms	FCXR012000
R156	2k2	FCXR032200
R157	MF18k2	FCXR141820
R158	22k	FCXR042200
R159	22k	FCXR042200
R160	33k	FCXR043300
R161	MF10k	FCXR141000
R162	22k	FCXR042200
R163	20 Ohms	FCXR012000
R164	2k2	FCXR032200
R165	MF18k2	FCXR141820
R166	MF1k	FCXR131000
R167	22k	FCXR042200
R168	22k	FCXR042200
R169	33k	FCXR043300
R170	MF10k	FCXR141000
R171	MF1k	FCXR131000
R172	22k	FCXR042200
R173	2k2	FCXR032200
R174	20 Ohms	FCXR012000
R175	MF18k2	FCXR141820
R176	22k	FCXR042200
R177	MF10k	FCXR141000
R178	33k	FCXR043300
R179	MF1k	FCXR131000
R180	22k	FCXR042200
R181	2k2	FCXR032200
R182	20 Ohms	FCXR012000
R183	MF18k2	FCXR141820
R184	22k	FCXR042200
R185	3k	FCXR033000

PARTS LIST:
MODEL: MPA280
DATE: 15.01.98

PRINTED CIRCUIT 11.0649
DRW.N° 33.0259 and 260PL
SHEET 5 OF 5

REV:
REPLACES:
REPLACED BY:

REFERENCE	VALUE	CODE
R186	3k	FCXR033000
R187	20 Ohms	FCXR012000
R188	20 Ohms	FCXR012000
R189	20 Ohms	FCXR012000
R190	20 Ohms	FCXR012000
R191	20 Ohms	FCXR012000
R192	20 Ohms	FCXR012000
R193	20 Ohms	FCXR012000
R194	20 Ohms	FCXR012000
R195	6k8	FCXR036800
R196	6k8	FCXR036800
R197	6k8	FCXR036800
R198	6k8	FCXR036800
R199	3k	FCXR033000
R200	3k	FCXR033000
S101	Dial switch RS003-A066BQ	FCINTR0500
S102	Switch 17128	FCINTD4000

NORMS FOR CHECKING THE MPA POWER AMPLIFIER.

- Connect a charge of 4Ω in each output channel CH1 CH2, CH3 and CH4
- Put the SIGNAL INPUT button on CH4 MONO
- Put a 1 kHz 0dB signal in INPUT CH1
- Check that the 4 signal present and 4 clip led indicators are on.
- Check the movement of the buttons and that each one acts independently on its own respective channel, at the same time check that the clip led indicator goes off when you go down approximately 2dB. Leave them on maximum.
- Check the power of 230V at the mains

$$V_o = 13.6v \quad \text{at} \quad 4\Omega \quad W = 46.24$$

$$V_o = 16.7 \quad \text{at} \quad 8\Omega \quad W = 34.86$$

- Check that the range goes from 20Hz-20kHz.
- Put the button on 4 CH ST.
- Put a signal in through INPUT CH1 and CH2, CH3 and CH4 act as a stack-out.
- Check that there is a signal in each output and that the power is correct.
- Position 4CH QUAD.
- Check that each of the inputs CH1,CH2,CH3 and CH4 are independent and correspond to their respective outputs. Also check that the leds of clip and SP act with their corresponding input.
- Position 2CH BRIDGED ST.
- Put a charge of 8Ω in the red terminal of CH1-CH2 and do the same for CH3-CH4 (see diagram on amp for the correct connection)
- Check that only the buttons of CH1 affect the output formed by CH1-CH2 and the button of CH4 affects the output formed by CH3-CH4. The clips should act with their respective group. The CH2 and CH3 buttons have no effect.

$$V_o = 28.3 \quad 8\Omega \quad W = 100$$

- Position 2 CH ST. + 1 CH BRIDGED
- Charge the CH1 and CH 2 outputs with 4Ω and CH3-CH4 in the red terminals with 8Ω .
- Check that the buttons of CH1 and CH2 affect their respective outputs and that the group CH3-CH4 acts with the CH4 button. The CH3 button has no effect.
- The powers will be the same as in previous cases.

$$\text{STEREO at } 4\Omega \quad V_o = 13.6 \quad W = 46.24$$

$$\text{MONO at } 8\Omega \quad V_o = 28.3 \quad W = 100$$

- Position 2CH ST.+1CH BRIDGED LOW.
- Put signal in INPUT CH1, CH2 of 150 Hz 0dB.
- It should act the same as in the previous case.

$$\text{STEREO at } 4\Omega \quad V_o = 13.6 \quad \text{CH1,CH2}$$

$$\text{MONO at } 8\Omega \quad V_o = 19.6 \quad \text{CH3-CH4}$$

MPA280 QUALITY CONTROL.

We will use a mixer with unbalanced output and a nominal output level of 1V RMS as the signal source for our tests.

Connect the mixer outputs to the power amplifier inputs. Plug the power amplifier to mains (check that its specified voltage matches that of mains) and make sure that SP and the power switch LEDs all light up . Turn up the amplifier output level until the CLIP LEDs light up. Turn the output level back down and plug the loudspeakers.

Check the sound quality (no distortions or noises). Check ATT action (ATT travel, signal cut at their low end, no scratching or clicking noises and correct stereo channel matching for each one). While the power amplifier is working shake it or throw it on a table to make sure the output sound goes on playing correctly. Shortcircuit the power amplifier output and check it goes back to normal operation when you stop shortcircuiting. Repeat the same procedure for the other channel.

TECHNICAL CHARACTERISTICS

Output power

(WRMS, 20Hz-20kHz, 1% THD)

1 Channel 4 Ohm	71W
4 Channels 4Ohm	4x55W
4 Channels 8 Ohm	4x40W
2 Channels 8 Ohm	2x112W

Frequency response @ max output power(-1dB) 12Hz - 200kHz

Harmonic Dist. + Noise @ 1kHz <0.06%

Intermodulation distortion (SMPTE) 50Hz and 7kHz
@ 4:1 ratio, nominal power <0.008%

TIM 100 <0.2%

Signal/noise ratio (20Hz-20kHz)
ref. 1W/4Ω >75dB
ref. nominal power/4Ω >92dB

Damping factor @ 1kHz/8Ω >150

Slew Rate ±10Vμs

Channel crosstalk @ 1kHz >68dB

Input connector RCA
Sensitivity nom/impedance 0dBV(1V)/>25kΩ
SIGNAL PRESENT indicators -40dBV

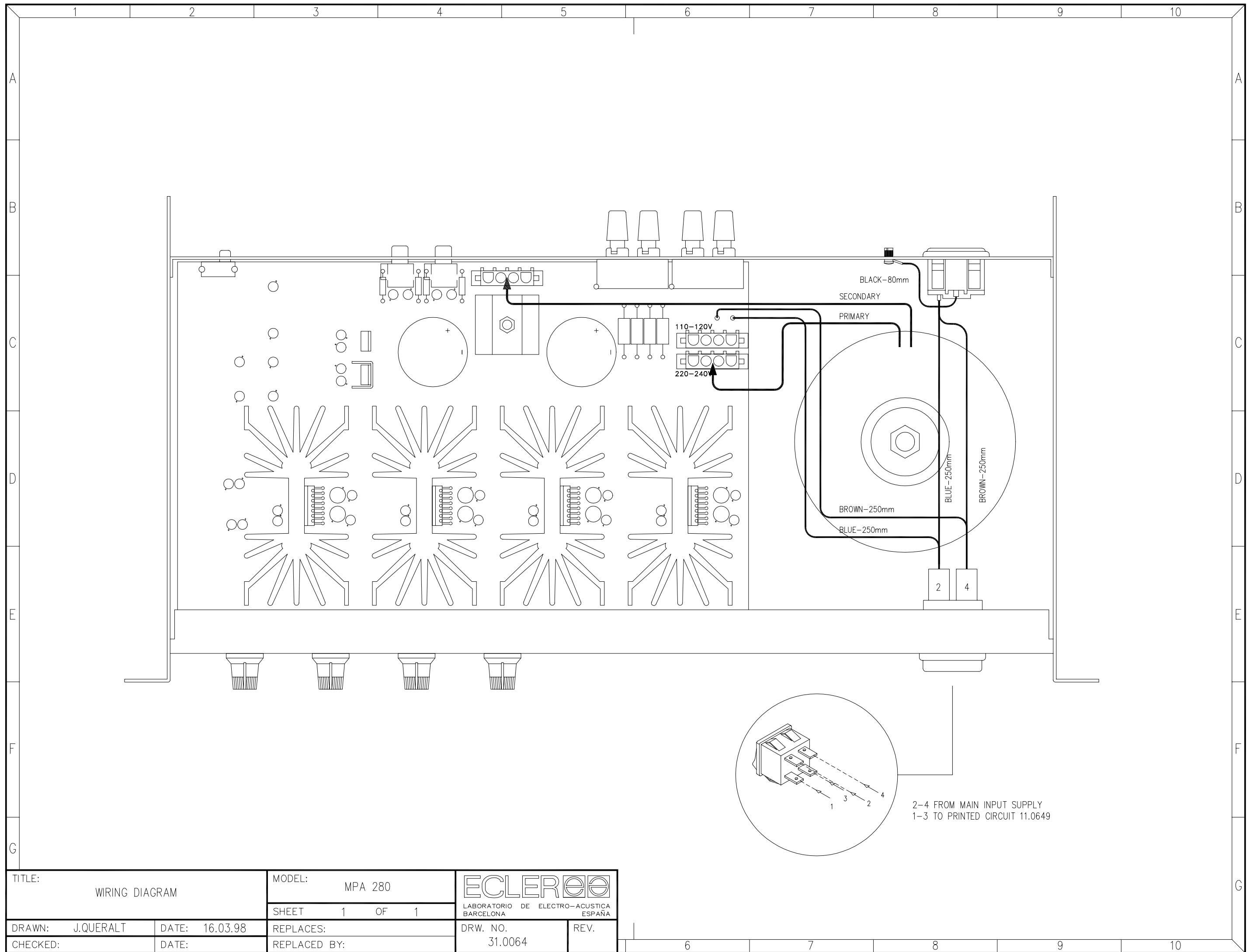
Output connector Screw terminal
CLIP indicators -1.5dB real clip

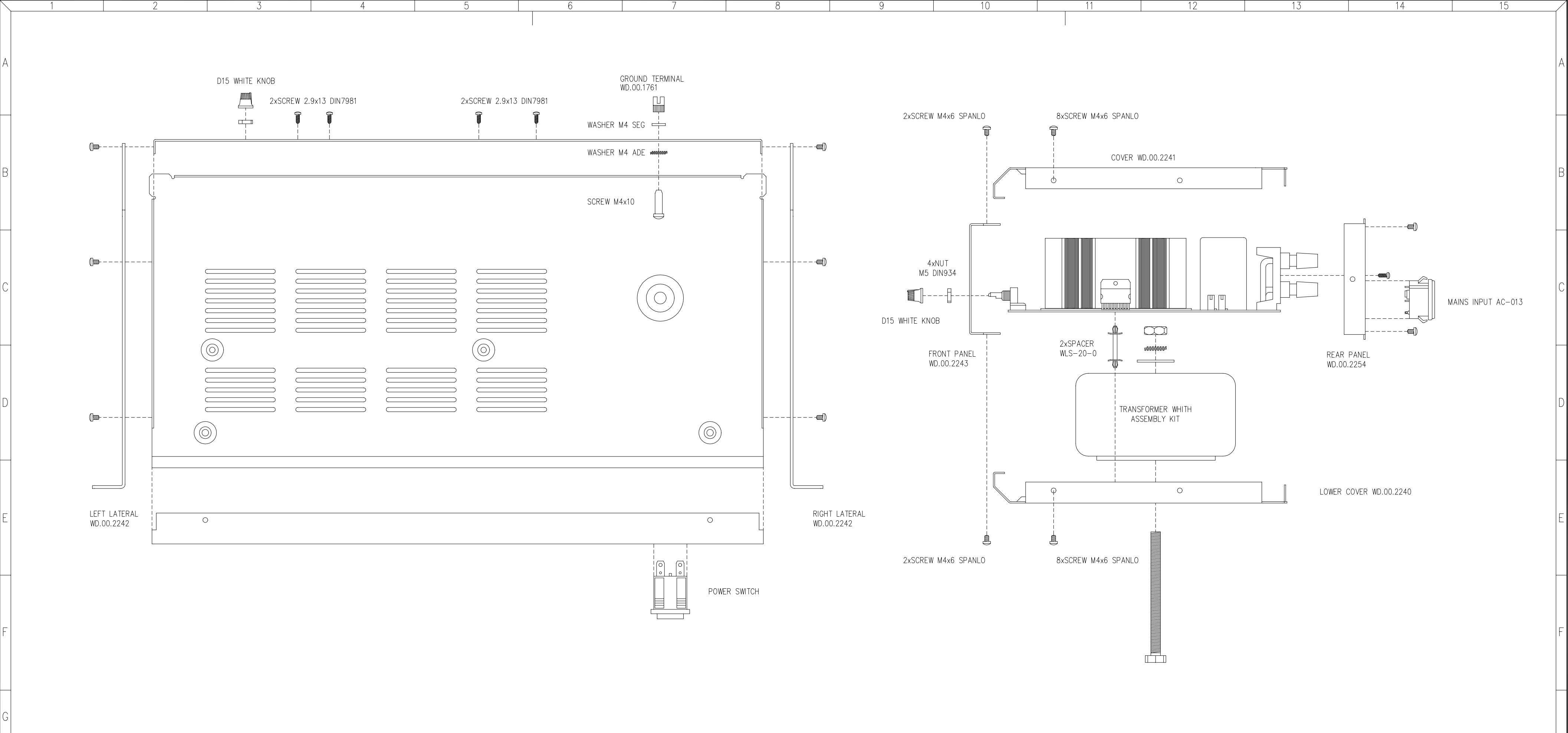
Mains Depending on your country.
See characteristics in the back of the unit.

Power consumption @ max. out. power/4Ω 450VA

Dimensions	Front panel	482.6x88mm
	Chassis	440x88x246mm

Weight 7.5kg





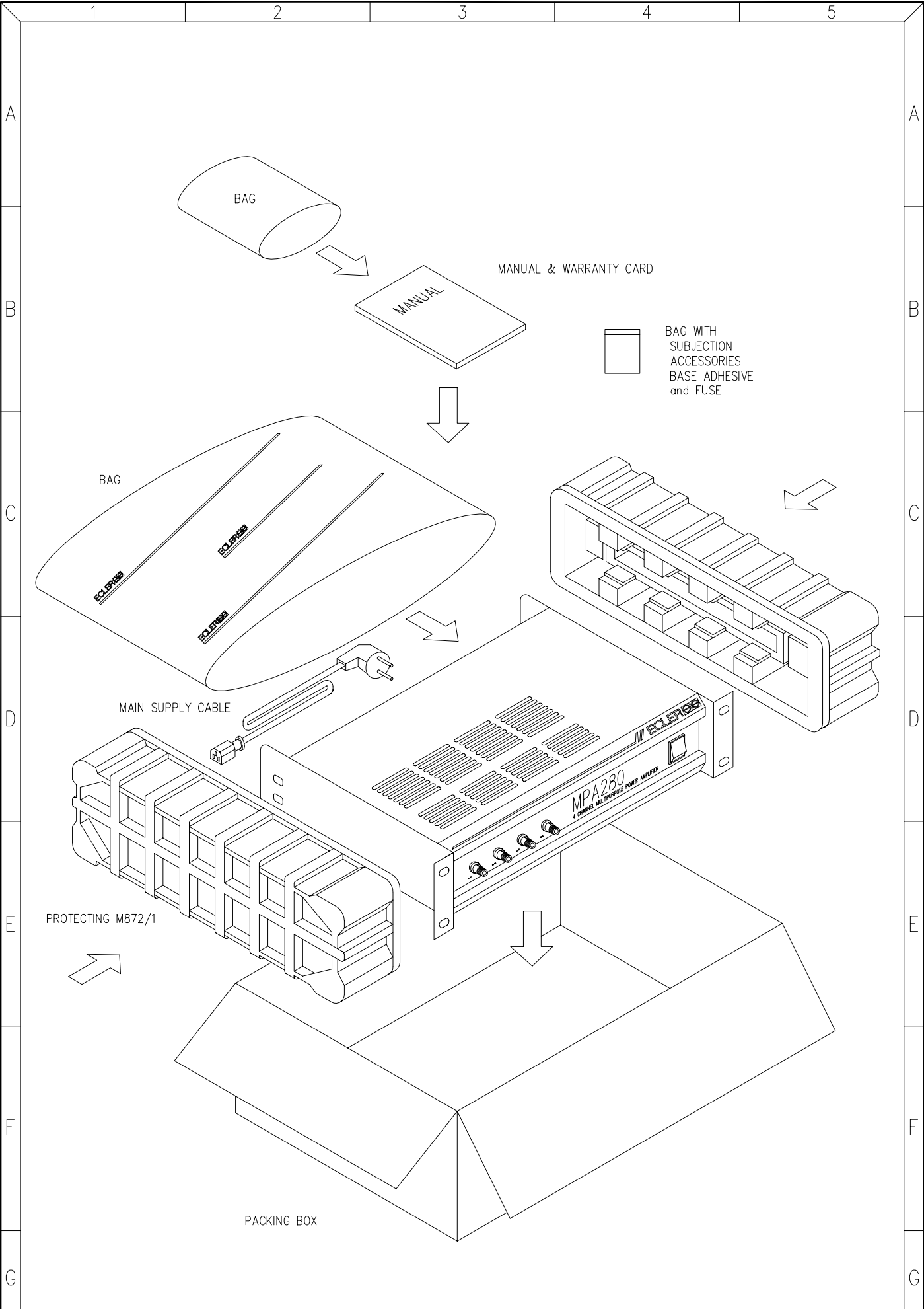
TITLE: MECHANICAL DIAGRAM		MODEL: MPA 280		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACÚSTICA BARCELONA ESPAÑA</div>	
		SHEET 1 OF 1			
DRAWN: J.QUERALT	DATE: 17.03.98	REPLACES:		DRW. NO.	REV.
CHECKED:	DATE:	REPLACED BY:		30.0085	

PARTS LIST:
MODEL: MPA280
DATE: 17.03.98

MECHANICAL DIAGRAM
DRW.N° 30.0085
SHEET 1 OF 1

REV:
REPLACES:
REPLACED BY:

QUANTITY	VALUE	CODE
1	FRONT PANEL WD.00.2243	FCMECMPA30
1	LOWER COVER WD.00.2240	FCMECMPA20
1	REAR PANEL WD.00.2254	FCMECMPA60
1	COVER WD.00.2241	FCMECMPA50
1	LEFT LATERAL WD.00.2242	FCMECMPA40
1	RIGHT LATERAL WD.00.2242	FCMECMPA40
5	WHITE CONTROL KNOB D15	FCBOT15BL3
4	NUT M5 DIN934	FCTUE00500
1	GROUND TERMINAL WD.00.1761	FCBOR00300
1	WASHER M4 SEG	FCARS40000
1	TRANSFORMER WASHER	FCMECARTR0
1	WASHER M4 ADE	FCARDE0300
1	MAINS INPUT AC-13	FCBASRE300
1	TRANSFORMER WHITH ASSEMBLY KIT	FCTFTMPA00
2	SPACER WLS-20-0	FCSEPWLS20
1	POWER SWITCH	FCINTRED25
4	SCREW 2.9x13 DIN7981	FCT4002913
1	SCREW M4x10 DIN 7985	FCT7004010
22	SCREW M4x6 SPANLO DIN 7985	FCT7504006
1	ASSEMBLED PRINTED CIRCUIT 11.0649	



TITLE: PACKING DIAGRAM		MODEL: MPA 280		<div>ECLEREO</div> <div>LABORATORIO DE ELECTRO-ACUSTICA BARCELONA ESPAÑA</div>	
		SHEET 1 OF 1			
DRAWN: J.QUERALT	DATE: 18.05.98	REPLACES:		DRW. NO.	REV.
CHECKED:	DATE:	REPLACED BY:		32.0030	

PARTS LIST:
MODEL: MPA280
DATE: 18.05.98

PACKING DIAGRAM
DRW.N° 32.0030PL
SHEET 1 OF 1

REV:
REPLACES:
REPLACED BY:

QUANTITY	VALUE	CODE
4	METAL WASHER 5x11.5x0.8	FCARN50000
4	WASHER AT 5x11.5x3.5 ABS	FCARAT3000
1	PACKING BOX MPA280	FCCAJP8800
1	FUSE T 6.3A	FCFUS50180
4	BASE ADHESIVE	FCPIE11255
2	PROTECTING M872/1	FCCANT0075
1	BAG FOR MANUAL 120x180mm	FCBOL00200
1	PLASTIC BAG 43x60cm	FCBOLS0100
1	PLASTIC BAG 60x80mm	FCBOL00100
1	MANUAL MPA280	FCMANMPA00
1	WARRANTY CARD	FCTARJG000
1	MAIN SUPPLY CABLE STANDARD	FCCONX0400