

# **Service** *Manual*

## **ELVIS ACTIVE SPEAKER CABINET**

***MODEL: ELVIS10A/ELVIS12A/ELVIS15A/***

***ELVIS12MA/ELVIS12SA/ELVIS15SA***



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Version 1.0

# CONTENTS

1. Warning .....	2
2. Technical Specification & Transistor Packages .....	3
3. Test Procedure & Setting .....	4-6
4. Schematic Diagram .....	7-15
5. Spare Part List .....	16

## 1. WARNING

- ★ Service must be carried out by ALTO qualified personnel only.
- ★ Unqualified service personnel used in the warranty time of the product, produce a falling of the warranty.
- ★ Schematic diagram and part list of the devices may be subject to change without immediate notice.
- ★ When to replace any components, use only original spare parts.
- ★ All the resistors are at 1/8 Watt, all the electrolytic capacitors are at 25V, unless otherwise specified.
- ★ The symbol used for the resistors are R (ohm) and for the capacitors are U (microfarad).

## 2. TECHNICAL SPECIFICATION & TRANSISTOR PACKAGES

	ELVIS10A	ELVIS12A	ELVIS15A	ELVIS12MA
Output Power IHF	150Watt IHF	250Watt IHF	350Watt IHF	250Watt IHF
Output Power RMS	120Watt RMS	180Watt RMS	250Watt RMS	180Watt RMS
Max SPL at 1mt	117.5 dB ( IHF Power )	121 dB ( IHF Power )	123 dB ( IHF Power )	121 dB ( IHF Power )
Input Sensitivity	Line 0dB/0.775V/Mic-10 at -45dB			
Input Impedance	30kOhms Balanced - 15kOhms Unbalanced			
Connectors	Mic on XLR/Line Input on Combo/Line-Mix Output on XLR			
Subsonic Filter	30Hz - 24dB/oct.	30Hz - 24dB/oct.	30Hz - 24dB/oct.	30Hz - 24dB/oct.
Protections	Soft - Start DC voltage protect - compressor			
External Control	Mic Gain - EQ-High-Mid-Low-Volume-Ground Switch			
Power Supply	230Volt/115Volt 50 / 60Hz			
Net Weight lbs/kg	40.12lbs/18.2kg	50.95lbs/23.11kg	62.83lbs/28.5kg	49.54lbs/22.47kg
Gross Weight lbs/kg	46.83lbs/21.24kg	58.89lbs/26.71kg	71.52lbs/32.44kg	56.92lbs/25.82kg
Shipping Volume	4.58CFT	6.03CFT	7.35CFT	6.10CFT

	ELVIS12SA	ELVIS15SA
Output Power IHF	250Watt IHF	350Watt IHF
Output Power RMS	180Watt RMS	250Watt RMS
Max SPL at 1mt	121 dB ( IHF Power )	123 dB ( IHF Power )
Input Sensitivity	Line 0dB/0.775V	
Input Impedance	30kohms-input/600ohms-output	
Connectors	L/Mono-R IN on XLR/L-R OUT on XLR	
Subsonic Filter	Electronic Crossover 125Hz at 24dB/oct.	
Protections	Soft start-DC voltage protect -compressor	
External Control	Volume - Stereo/Mono & Ground Swieth	
Power Supply	230Volt/115Volt 50/60Hz	
Net Weight lbs/kg	60.36lbs/27.38kg	76.68lbs/34.78kg
Gross Weight lbs/kg	67.19lbs/30.48kg	85.72lbs/38.88kg
Shipping Volume	6.15CFT	8.67CFT

### Transistor Packages

#### TO92

**2SC1815, 2SA1015:**

- 1=Emitter
- 2=Collector
- 3=Base

**2N5401, 2N5551:**

- 1=Emitter
- 2=Base
- 3=Collector

#### TO126

**MJE340, MJE350,**

**MJE802:**

- 1=Emitter
- 2=Collector
- 3=Base
- 4=Collector

#### TO220

**MJE15030, MJE15031:**

- 1=Base
- 2=Collector
- 3=Emitter
- 4=Collector

#### TO218

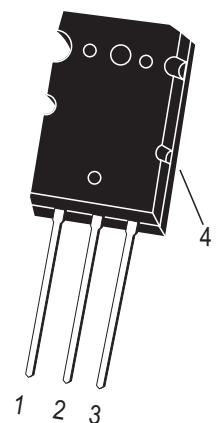
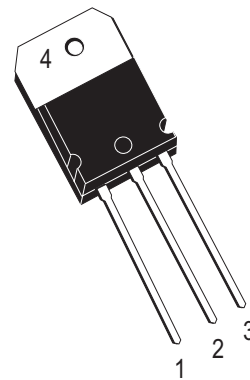
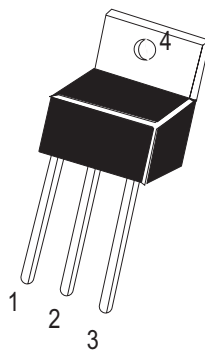
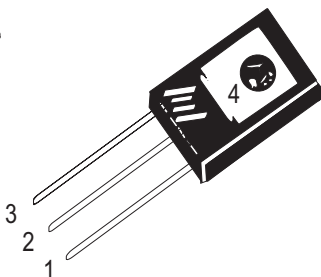
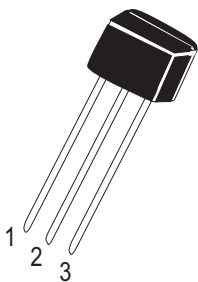
**TIP35C, TIP36C:**

- 1=Base
- 2=Collector
- 3=Emitter
- 4=Collector

#### TO264

**2SC5200, 2SA1943:**

- 1=Base
- 2=Collector
- 3=Emitter
- 4=Collector



### 3. TEST PROCEDURES & SETTING

#### CAUTION

- Before removing or installing the Power amplifier, switch off and disconnect the power cord from the AC mains socket. When you have visible the components, discharge the capacitor before to start the maintenance.
- When you connect the probe to the output of amplifier, insulated the earth of the oscilloscope, to prevent short circuit during the test.
- The Power Amplifier work in Class H and use a dual bipolar rail configuration, one low rail(+/-Vcc1)RMS power and second high rail (+/-Vcc2) IHF power.
- Read the Service Manual before to proceeding to any operation.

#### VISUAL INSPECTION

- Before to proceed with maintenance, look the condition of the product, for define the entity of the damage and probably cause.
- Disconnect the power amplifier from the cabinet and look if appears an evident mechanical damage or an assembled circuit burn or break.
- Verify the integrity of acoustical component, disconnect from the passive crossover and measure with a digital multi-meter the resistor of the voice coil of the woofer  $R_{cc}=3.5/6$  ohm and of the driver  $R_{cc}=6$  ohm. If you measure a resistor with less value the voice coil is in short circuit, if you measure open circuit the voice coil is break off.

#### OPTIMUM TEST INSTRUMENT

- FUNCTION GENERATOR
- DUAL-CHANNEL OSCILLOSCOPE
- DIGITAL MULTIMETER
- FAN LOAD RESISTORS 4 OHM/400W
- VARIAC(0-250VAC)

#### POWER MODULE SETUP

- Remove the transformer with your bracket, unscrew the 8 screw M4 without remove the electrical connection.
- Fix the heat sink with PCB amplifier on the chassis with 2 screw, for prevent casual damage.
- Turn full anticlockwise the knob of Main Volume, for prevent the signal noise at the Input of the amplifier.
- Connect the digital multi-meter set in Vcc, across the  $R_{33}=0.22R$  5W, if you have a analog tester set at a correct scale and respect the polarity.
- Set the trimmer VR1 used for the idle current, in full anticlockwise position, for prevent the damage of the amplifier, during the setting.
- Set the VARICAL at 0VAC and connect from the 230VAC mains socket an the power amplifier under test, verify that the socket and the power cord included the earth ground connected.

#### ADJUSTMENT

- Switch ON the power amplifier and increase slowly with the Variac, the AC voltage until 230V.
- See on the digital multi meter and read a value near to 0 mV(Vcc), turn in clockwise the trimmer VR1 until to read 5mV(+/-0.5mV) across the R33, now wait until the temperature rise, in the same time also the voltage rise, turn in anticlockwise the trimmer VR1 until to read again 5mV(+/-0.5mV) across R33, read the same value also on R34 (+/-1mV) and verify the stability of the value, do not risk a thermal drift, repeat the setting procedure.
- When you are sure of the stability of power module, switch OFF the power amplifier disconnect the multi meter, assemble the transformer with bracket on the chassis with at the 8 screw M4.

## MAIN SETUP

- Connect the VARIAC set at 0VAC from the Mains AC voltage and the power amplifier under test and use a power cord with ground connected.
- Turn full anticlockwise the knob of Main Volume.
- Set the EQ filter, Low-Mid-High in central position.
- Connect the Function Generator to the Line Input(Combo) and set at 1kHz/0.775V.
- Connect the Oscilloscope with CH1 probe linked to the Input of the Function Generator and the CH2 probe to the Output of the power amplifier.
- Connect a 4 ohm/400W fan load Resistors with an ON/OFF switch and start in OFF position.

## DC OFFSET

- Switch On the Power Amplifier under test, increase with the VARIAC the AC Voltage slowly and verify in the CH2 the offset stability, reduce the sensitivity from 20V/div at 5V/div and confirm a maximum offset at +/-0.5VDC.
- Switch ON the 4 ohm resistive Load and verify same conditions.

## FREQUENCY RESPONSE

- Open slowly the Main Volume and verify a perfect 1kHz sinusoidal wave, increase the level until to see a symmetrical square wave.

## EQ FILTER

- Set the Function Generator at 10dB (0.245V) and test the EQ control.  
LOW-EQ control at 100Hz with a range of +/-6dB, Max./Min. of the knob.  
MID-EQ control at 2kHz with a range of +/-6dB, Max./Min. of the knob.  
HIGN-EQ control at 10kHz with a range of +/-6dB, Max./Min. of the knob.

## MIC GAIN

- Set the Function Generator at 10dB(0.245V), connect to MIC input and control the frequency response.

## SIG/COMP

- Set the knob of the Main Volume at 1/4, set the CH2 at 5V/div, increase the level at 1kHz and check the SIG/COMP LED colour, when the output is 5V the colour is green. Set the CH2 at 20V/div and increase the level, it must be change from green to red colour, if you increase the input , the output level must keep at same level.

## GROUND LIFT

- Check the ground-lift with a digital multi-meter, the switch remove the electrical ground Of the input connector (Combo and XLR) form the earth ground of the chassis.

## SUPPLY TEST

- ELVIS 10

TRANSFORMER-Primary 230VAC/50Hz; ... VA-... A

Secondary low rail ...V-0-...VAC; high rail ...V-0-...VAC

DC SUPPLIES: +VDC2 on Q5 - TIP36C-emitter pin3 value+.....V

+VDC1 on D9 - UF50 anodo value+.....V

U7 pin3 value+15V

U6 pin3 value -15V

-VDC1 on D8 - UF50 anodo value -.....V

-VDC2 on Q7 -TIP35C-emitter pin3 value -.....V

- ELVIS 12

TRANSFORMER-Primary 230VAC/50Hz; 210 VA-4.7A

Secondary low rail 20V-0-20VAC; high rail 38V-0-38VAC

DC SUPPLIES: +VDC2 on Q5 - TIP36C-emitter pin3 value+58V

+VDC1 on D9 - UF50 anodo value+30V

U7 pin3 value+15V

U6 pin3 value -15V

-VDC1 on D8 - UF50 anodo value -30V

-VDC2 on Q7 -TIP35C-emitter pin3 value -58V

- ELVIS 15

TRANSFORMER-Primary 230VAC/50Hz; ... VA-...A

Secondary low rail ...V-0-...VAC; high rail ...V-0-...VAC

DC SUPPLIES: +VDC2 on Q5 - TIP36C-emitter pin3 value+.....V

+VDC1 on D9 - UF50 anodo value+.....V

U7 pin3 value+15V

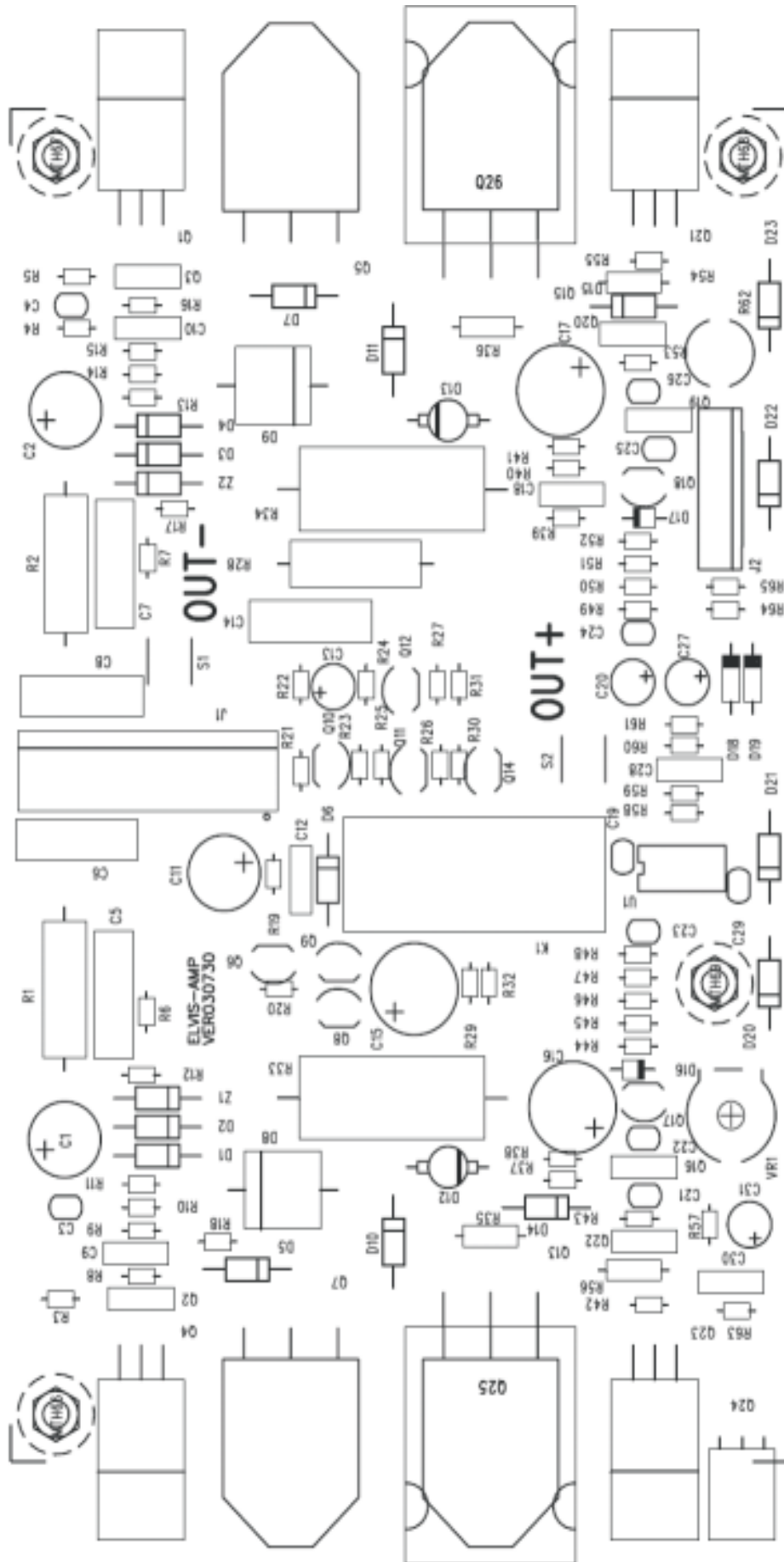
U6 pin3 value -15V

-VDC1 on D8 - UF50 anodo value -.....V

-VDC2 on Q7 -TIP35C-emitter pin3 value -.....V

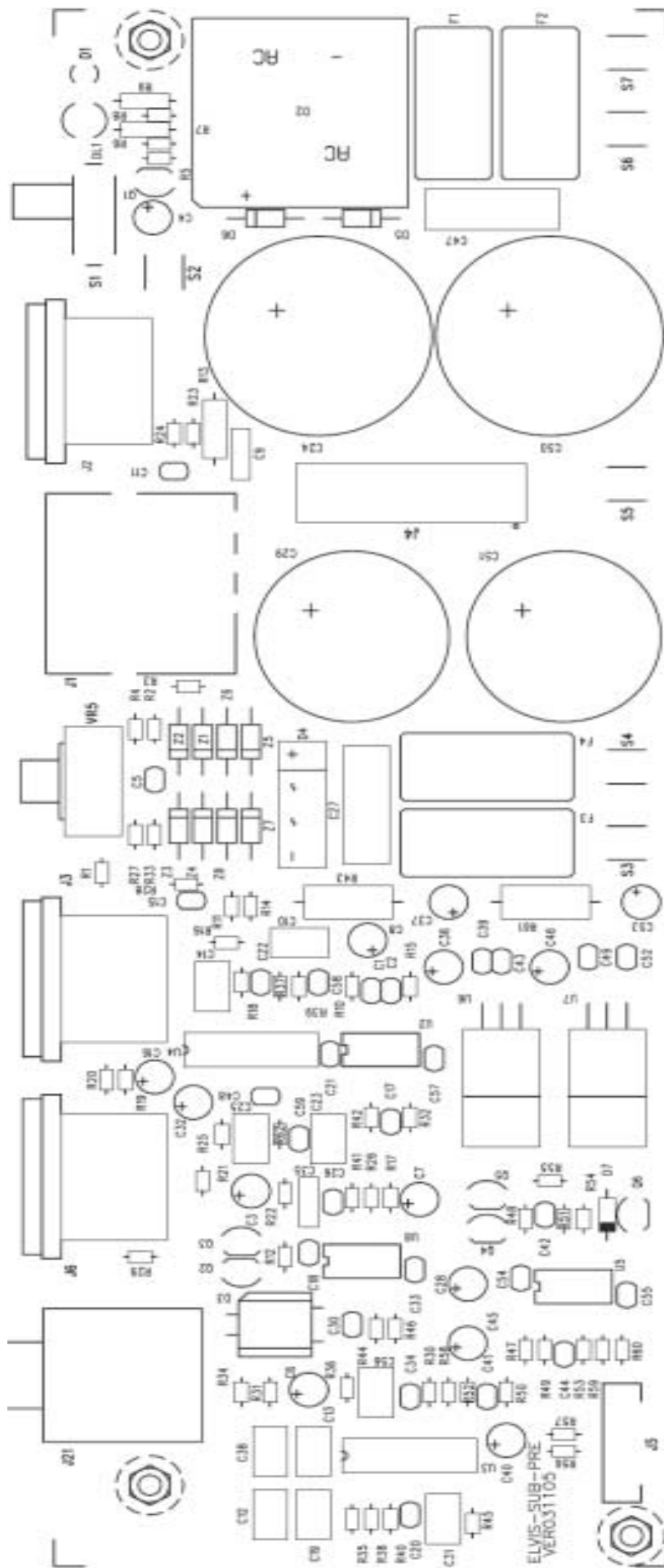
# 4. SCHEMATIC DIAGRAM & CIRCUIT BOARD

## ELVIS10A/12A/12MA/15A/12SA POWER CIRCUIT BOARD

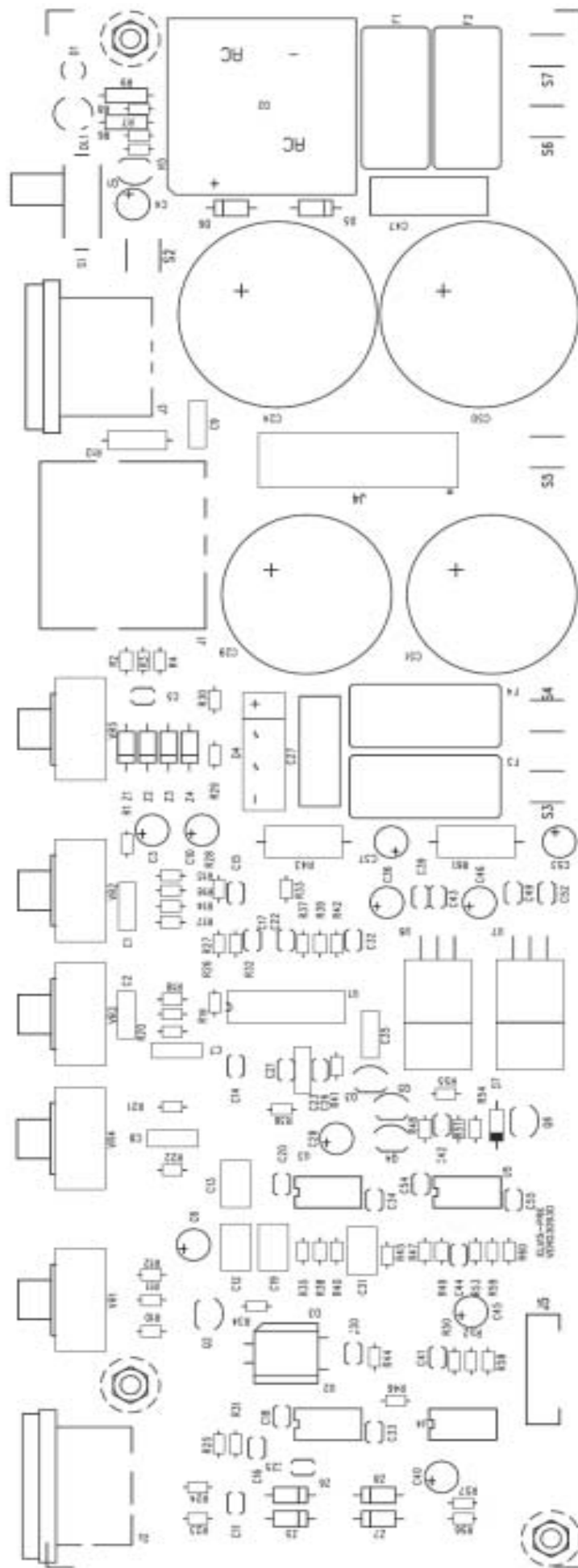


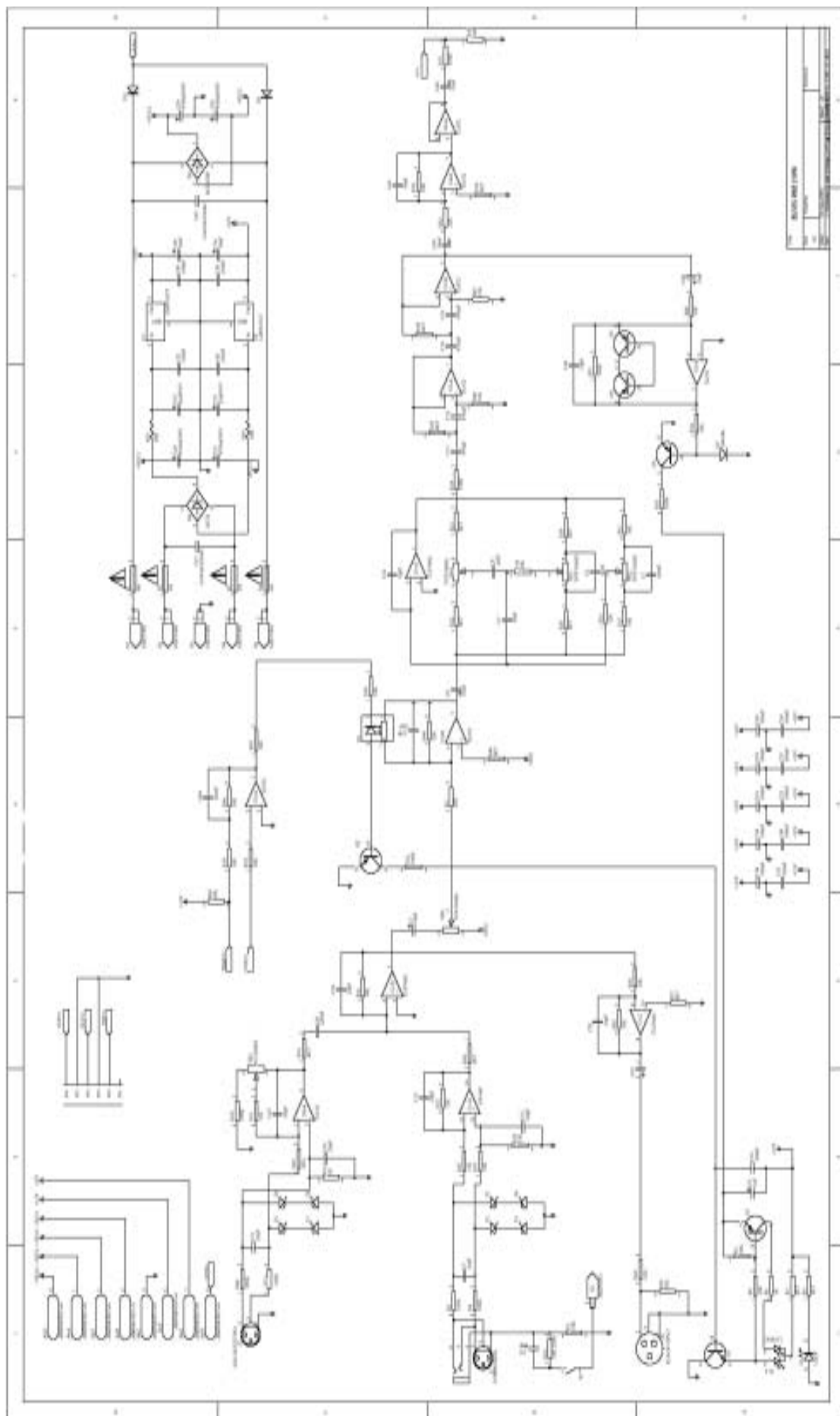


ELVIS12SA/15SA PREAMPLIFIER CIRCUIT BOARD SUBWOOFER

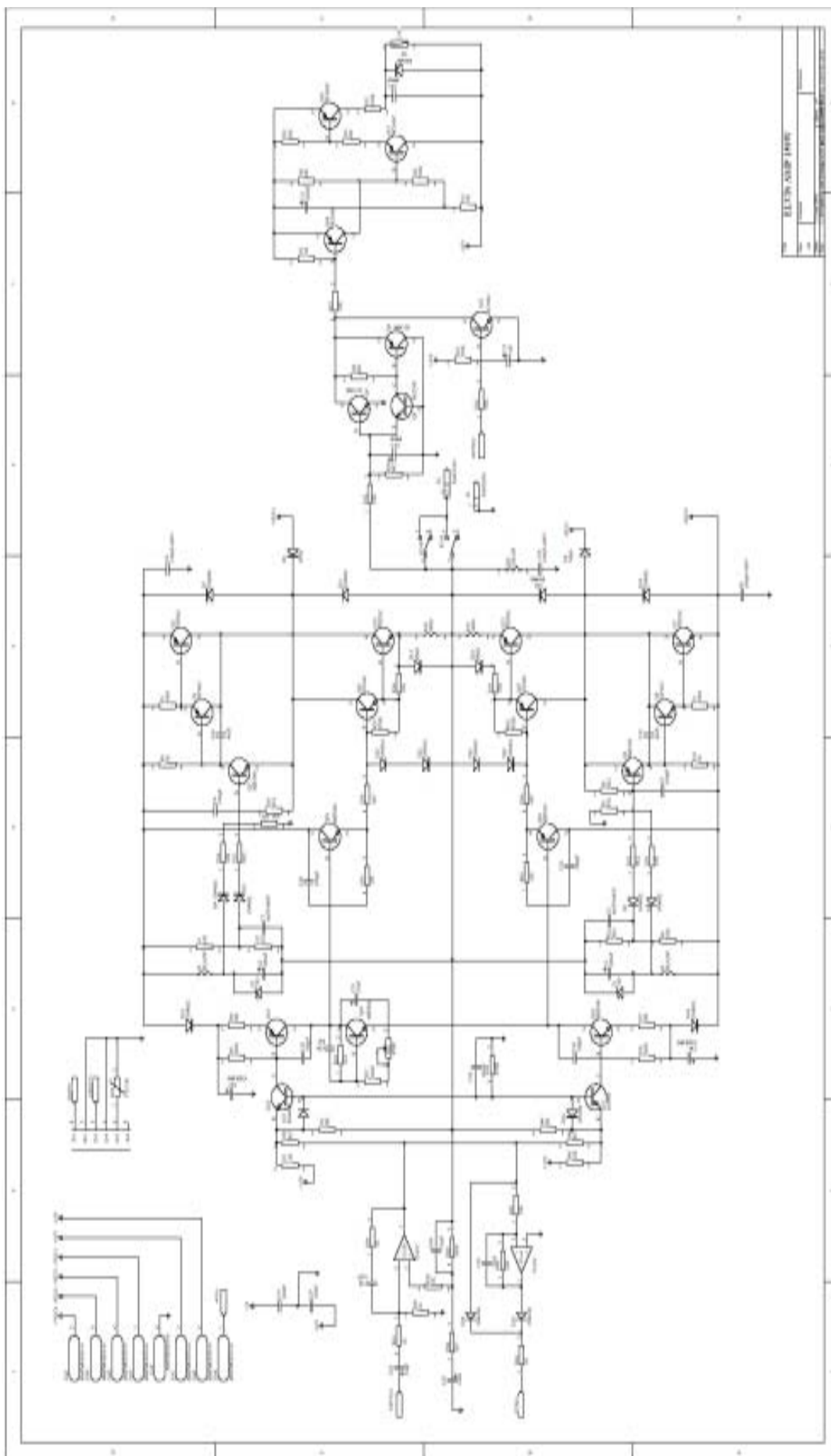


ELVIS10A/12A/15A PREAMPLIFIER CIRCUIT BOARD FULL RANGE

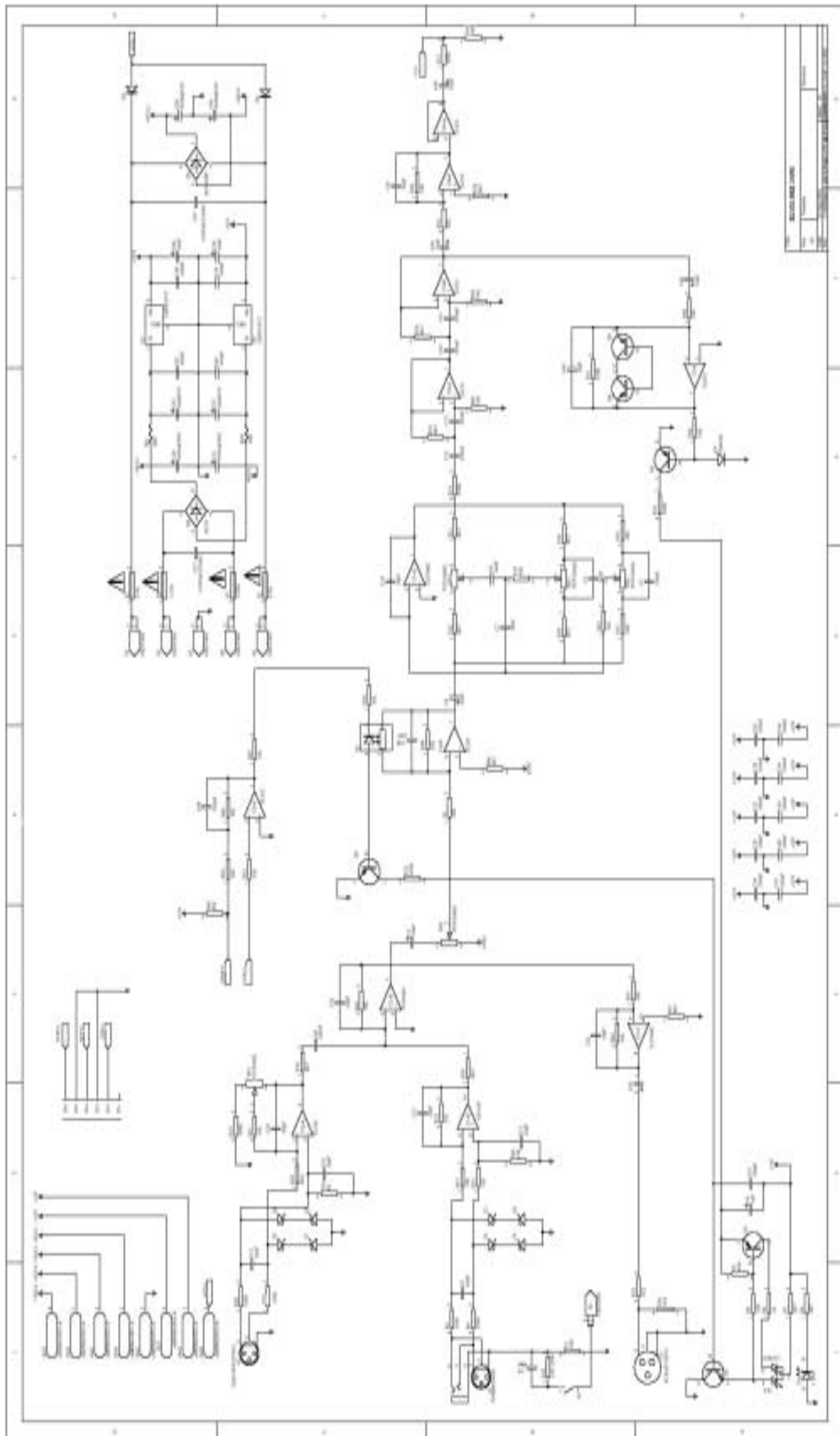




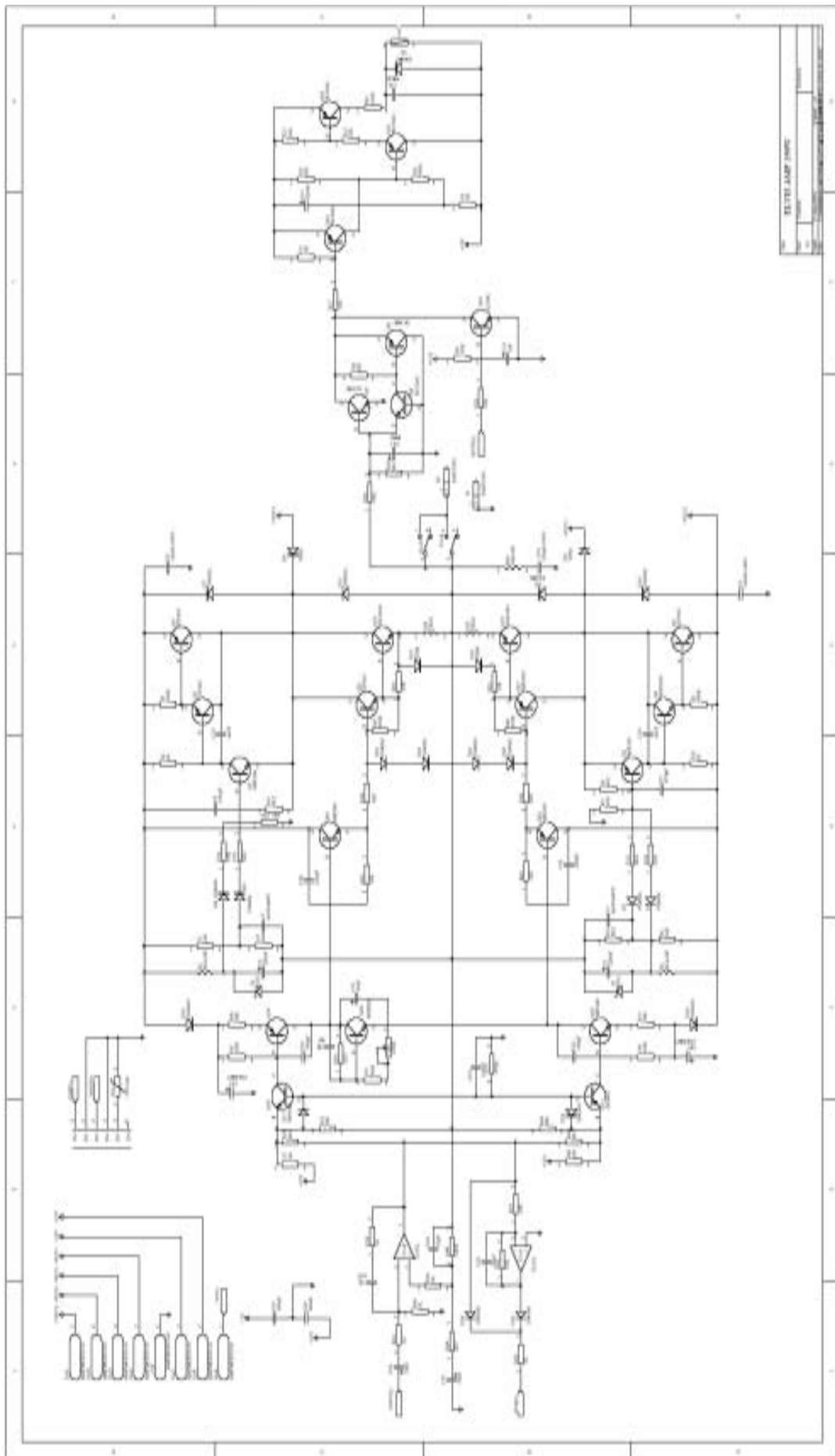
ELVIS AMP 150W

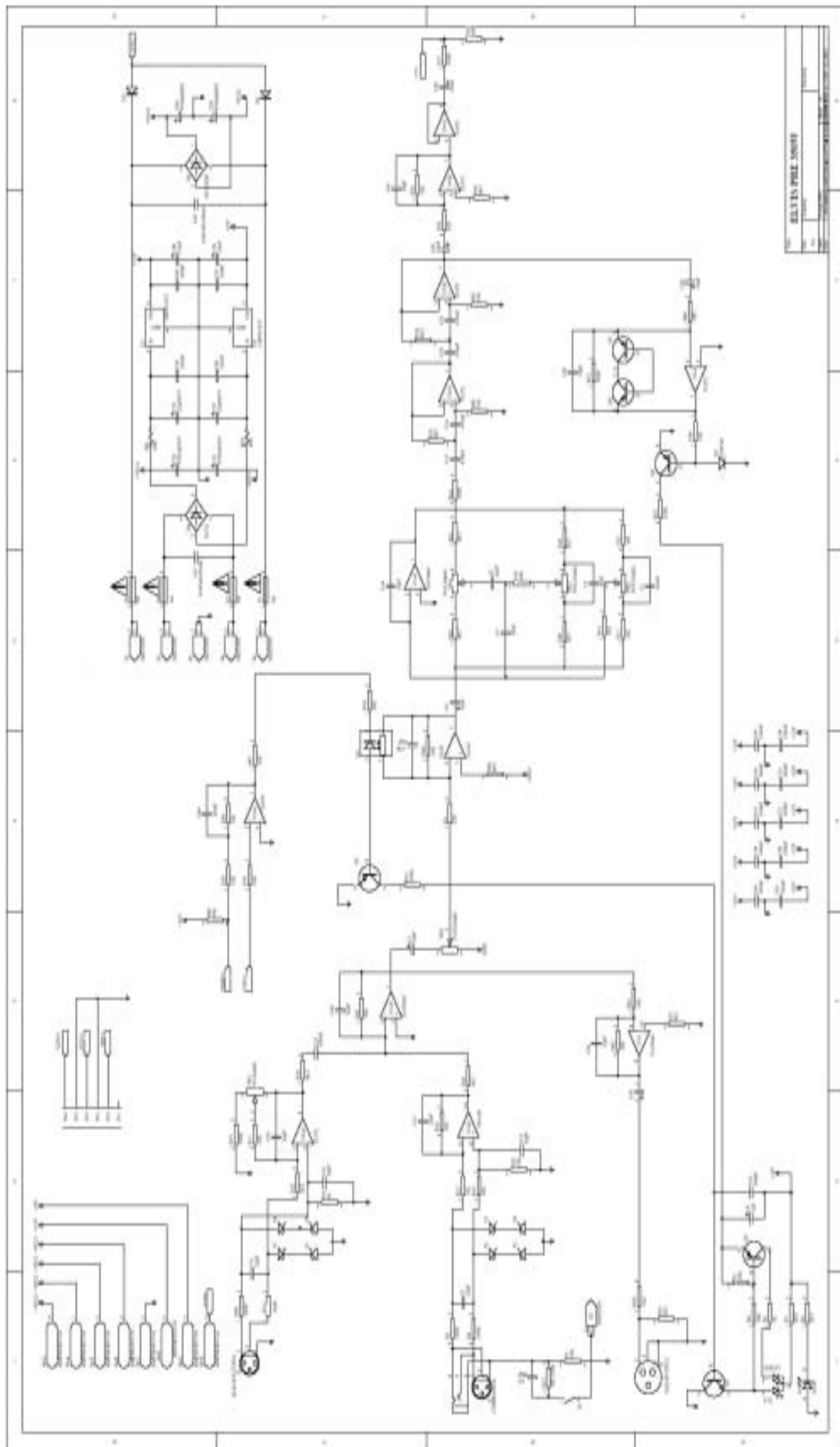


ELVIS PRE 250W



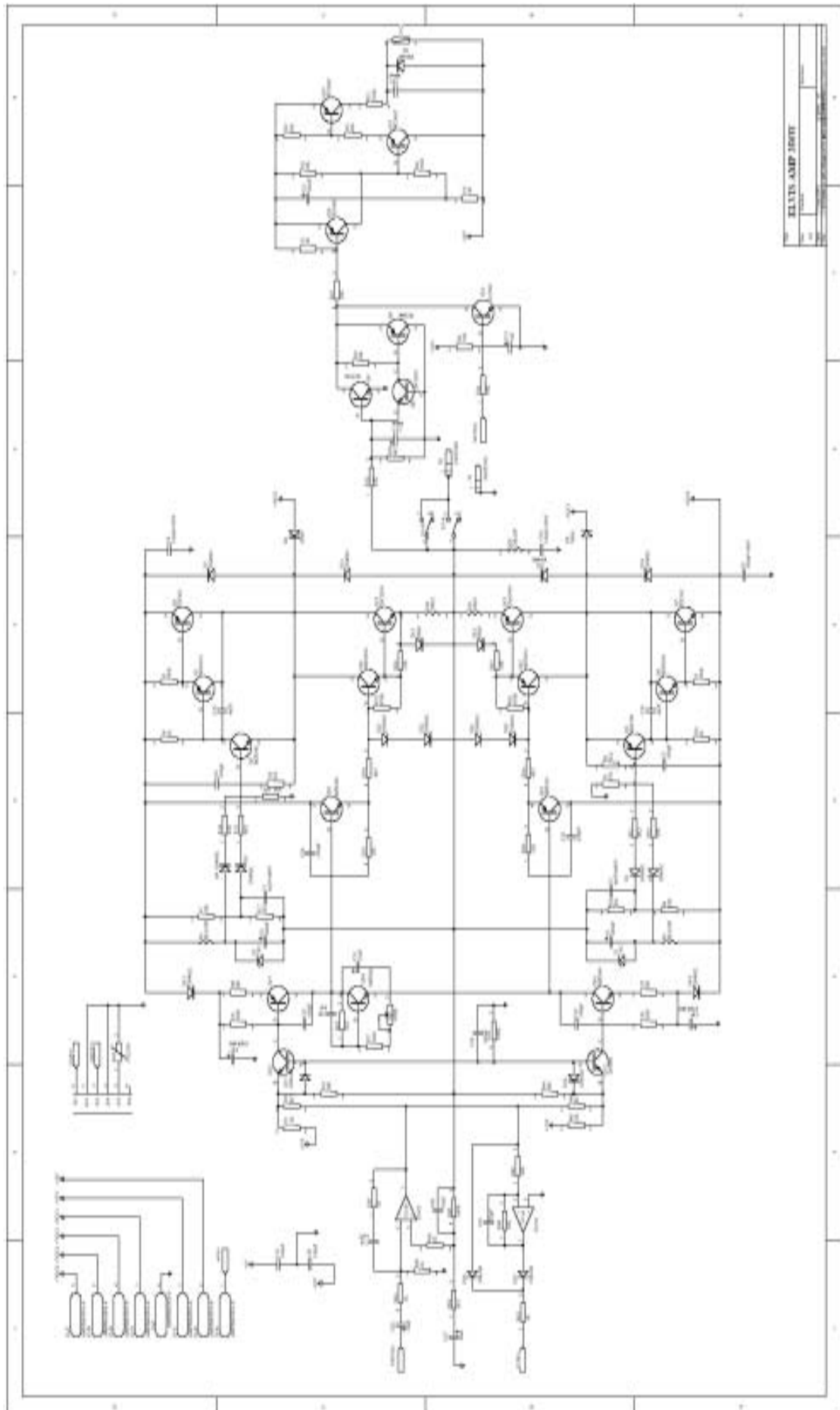
ELVIS AMP 250W







ELVIS AMP 350W





## 5. SPARE PART LIST

### ELVIS 10-ALTO

Item	Part NO	Description	Specification	Quantity	Remark
1	HK03073	K-speaker - bass	10" 80W 6ohm ELVIS 10	1	
2	HG00081	Tweeter head	PA-D597 P-AUDIO 8ohm	1	
3	MG00350	Black-plated screw - T head $\varphi$ 10	M5*30	4	
4	NB03009	Inner carton (no printed)	ELVIS 10" speaker	1	
5	NB03010	Outer carton (included six inner cartons)	ELVIS 10" speaker	1 /6	
6	NB03011	Partition	ELVIS 10" speaker	1	

### ELVIS 12-ALTO

Item	Part NO	Description	Specification	Quantity	Remark
1	HK03075	K-speaker - bass	12" 110W 6ohm ELVIS 12	1	
2	HG00081	Tweeter head	PA-D597 P-AUDIO 8ohm	1	
3	MG00350	Black-plated screw - T head $\varphi$ 10	M5*30	4	
4	NB03012	Inner carton (no printed)	ELVIS 12" speaker	1	
5	NB03013	Outer carton (included four inner cartons)	ELVIS 12" speaker	1 /4	
6	Nb03014	Partition	ELVIS 12" speaker	1	

### ELVIS 15-ALTO

Item	Part NO	Description	Specification	Quantity	Remark
1	HK03077	K-speaker - bass	15" 150W 6ohm ELVIS 15	1	
2	HG00081	Tweeter head	PA-D597 P-AUDIO 8ohm	1	
3	MG00350	Black-plated screw - T head $\varphi$ 10	M5*30	4	
4	NB03015	Inner carton (no printed)	ELVIS 15" speaker	1	
5	NB03016	Outer carton (included two inner cartons)	ELVIS 15" speaker	1 /2	
6	NB03017	Partition	ELVIS 15" speaker	1	