



Dsp powered & passive loudspeaker systems

titanium

service manual
schematic diagrams

CODE: 270305

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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 (μ) micro symbol of capacitance value is substituted by U.

The (Ω) 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.

↑ Supply voltage.

⏏ Logic supply ground.

• Male connector.

□ Test point.

⏏ Analog supply ground.

⏏ Female connector.

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

⏏ Chassis ground.

⏏ M/F faston connector.

⏏ Earth ground.



ATTENTION Observe precautions when handling electrostatic sensitive devices.



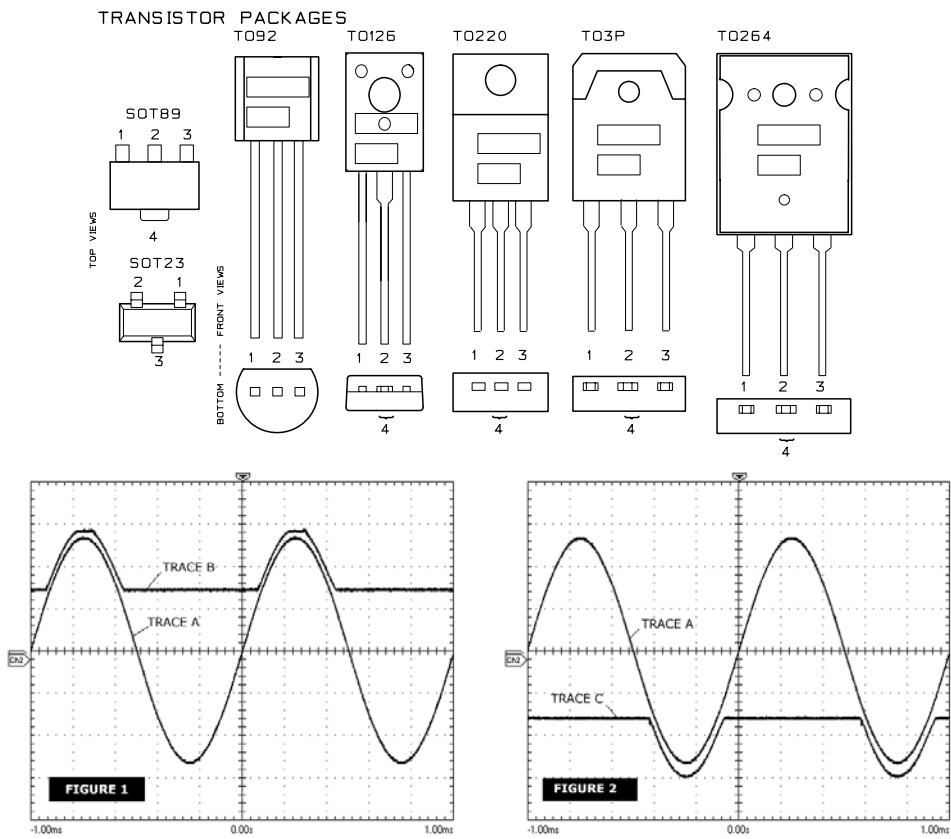
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GENERAL PRECAUTION

- To prevent short circuit during any test, the oscilloscope must be EARTH insulated, this occurs because some test require to connect its probe to the amplifier output, non-compliance may cause damages to oscilloscope inputs circuitry.
- Before removing or installing any modules and connectors, disconnect the amplifier from AC MAINS and measure the DC supply voltages across each of the power supply capacitors. If your measurement on any of the caps is greater than 10Vdc, connect a 100ohm 50W resistor across the applicable caps to discharge them for your safety. Remember to remove the discharge resistor immediately after discharging caps. Do not power up the amplifier with the discharge resistor connected.
- Read these notes entirely before proceeding to any operation. These notes are not comprehensive of all damages that possibly occur, but includes some specifically advices, checks and adjustments relative to this amplified speaker.
- Do not check the amplifier with the speakers connected use the appropriate load resistors only.
- BE CAREFUL increasing the Variac you must not exceed the nominal mains voltage plus its tolerance (see specifications) any upper voltage can be cause of damage.



T5SA amplified subwoofer CHECKING & ADJUSTMENTS

Remarks

- This loudspeaker system is processed by a RED 40bit DSP (Digital Signal Processor), the processor supervise all louspeaker operation such as crossover filters, equalization, phase, delay, peak limiters, long term power protection, LFC low frequency control, anti-feedback, multicomp and noise gate. These functions are recalled with the 16 PRESET encoder on the system panel, which include different settings suitable for the use of the system in different configurations. Follow a brief explapanation of each preset:

PRESET	Description
1) d400	for the use in combination with d400 loudspeaker
2) d400 HOUSE	same as above with MULTICOMP to enhance range below 60Hz
3) 2xT3A + 2xT5SA	for the use in combination with T3A loudspeaker
4) 2xT3A + 1xT5SA	single SUB in combination with two T3A loudspeaker
5) T4A	for the use in combination with T4A loudspeaker
6) T4A HOUSE	same as above with MULTICOMP to enhance range below 60Hz
7) T5A/T6A	for the use in combination with T5A/T6A loudspeaker
8) T5A/T6A HOUSE	same as above with MULTICOMP to enhance range below 60Hz
9) T4MA DRUMFILL	for the use in combination with T4MA monitor as drumfill system
10) T5MA DRUMFILL	for the use in combination with T5MA monitor as drumfill system
11) 80Hz	80Hz 24dB/oct. LR filter for the use with a generic loudspeaker
12) 100Hz	100Hz 24dB/oct. LR filter for the use with a generic loudspeaker
13) 120Hz	120Hz 24dB/oct. LR filter for the use with a generic loudspeaker
14) 140Hz	140Hz 24dB/oct. LR filter for the use with a generic loudspeaker

- 15) 160Hz 160Hz 24dB/oct. LR filter for the use with a generic loudspeaker
- 16) 180Hz 180Hz 24dB/oct. LR filter for the use with a generic loudspeaker

IMPORTANT NOTE

- Shorting the internal jumper between pin 1 and 3 of CN1 located on CPU/DSP Board, the amplifier is set for testing the amplifier module alone with a flat response on each output, without eq, filters, limiters and protections.
- BE SURE THAT IS INSERTED WHEN YOU CHECK THE AMPLIFIER ALONE AND REMOVED WHEN THE SPEAKERS ARE CONNECTED.**
- The amplifier module is designed with a single 500W amplifier operating in class H.

VISUAL CHECK

- Check the speakers for any damaging (cone-breaking, bobbin interruption, unglueing of suspension or further).
- Before proceed to supply the amplifier check visually the internal assembly, if appears an evident damage find the most possible reasons that cause it.
- Check the wiring cables for possible interruptions or shorts.
- If the damage has burnt a printed circuit board don't try to repair it, replace with a new one.

TEST INSTRUMENTS

- Audio Generator
- Dual Trace Oscilloscope
- Digital Multimeter
- Temperature Meter
- 4ohm 500W, 100ohm 50W resistors
- Variac (0÷250Vac)

TECHNICAL SPECIFICATIONS

Power Requirements:	(230Vac±10% 50Hz)	580VA
or	(115Vac±10% 50/60Hz)	580VA
Out Power*:	(4ohm)	500W
Out Voltage**:	(4ohm)	120Vpp
Frequency Response***:	(-10dB)	32Hz ÷ 200Hz
Nominal Input Sensitivity:	(+4dBu)	1.229V _{RMS}
Input Impedance:	(balanced)	30Kohm
	(unbalanced)	15Kohm
Voltage Gain:	(nominal)	31±1dB
IMD:	(SMPTE 60Hz/7KHz 4:1)	<0.1%
THD:	(THD+N)	<0.1%
S/N Ratio:	(unweighted)	>100dB

- Note:
- * measured with the IHF standard method and without limiters.
- ** measured with continuous sinusoidal signal.
- *** acoustic measurement with amplifier and speaker connected.

SETUP

- Connect the Variac between the mains and the amplifier and set it at zero voltage.
- Disconnect the speaker.
- Turn at max (nominal level) the VOLUME potentiometer.
- Insert the jumper between pin1 and pin3 of CN1 (CPU/DSP Board).
- Set the ENCODER rotary switch on preset 'd400'.
- Connect the audio generator to the input and set it to 100Hz -20dBu (75mV_{RMS}) sinusoidal signal.
- Connect the oscilloscope probe CH1 to the LOW OUT, clip to - (S9) and tip to + before RL1 (R20 side RL1), set it to 5V/div. 2mS/div.
- The load resistors are disconnected.
- The procedures that follow must be executed subsequently in the order specified.

SUPPLY CHECK

- Verify with the Multimeter the insulation between the heatsink and all device packages (TR1,2,3,4,5,6,8,9,18,19,24 and IC3,4,5).
- Verify with the Multimeter the PTC resistor value, it must be between 50 and 200ohm.
- Remove the transformer secondary fuses, set the Variac to the nominal mains voltage, check with the Multimeter the AC supply voltages:
 - F1-F2=54±1.5Vac.
 - F3-F4=106±2Vac.
- Re-set the Variac at zero voltage, turn off the amplifier and put the fuses back on its hold-ers.
- Set up the Variac slowly monitoring the oscilloscope screen, starts from 2/3 of nominal mains voltage it should display the sinusoidal signal amplified without distortions and without any DC voltage, if a distortion occur or the protection trips check the amplifier as suggested in the ADVICES section.
- When the Variac ac voltage reaches the nominal voltage verify the DC supplies as follow:
 - TR9 collector pin 3 (+Vcc2) =+70±2Vdc
 - TR18 collector pin 3 (-Vcc2) =-70±2Vdc
 - TR1 collector pin 2 (+Vcc1) =+35±2Vdc
 - TR2 collector pin 2 (-Vcc1) =-35±2Vdc
 - IC5 pin 3 =+15±1Vdc
 - IC4 pin 3 =-15±1Vdc
- If one or more voltages don't correspond, check the rectifiers, capacitors and transformers

disconnecting them from circuitry, refer to schematics.

INITIAL CHECK

- Set both channels of the oscilloscope to 10V/div. 2mS/div.
- Increase the input level to -10dBu (0.245V_{RMS}) sinusoidal signal.
- The channel output signals must be symmetrical respect the GND with an amplitude of about 20V_{PEAK} and without visible distortion or oscillation as shown in Fig.1 Trace A (note: the figure is representative don't refer to its level). If there is a distortion read the section ADVICES.

HIGH RAIL CHECK

- Connect the CH2 probe tip to D8 cathode and set the sensitivity of both channels at 20V/div.
- Increasing the input signal two things should to happen: till the output signal (Positive half-wave) is less than 28V_{PEAK} the voltage on D8 cathode have to remain constant at 36V, when the output signal exceeds 28V_{PEAK} the voltage on D8 cathode will have to follow the output signal with 8V offset (see Fig.1 Trace B).
- Check the negative high rail connecting the probe to D9 anode (see Fig.2 Trace C).
- Increase further the input signal till it reaches about +1dBu (0.870V_{RMS}), the amplifier output have to reach its maximum output before clipping at about 69V_{PEAK} (60V_{PEAK} with load attached for an input signal of about -1dBu).
- Connect the 4ohm 500W load on the output and repeat the INITIAL and HIGH RAIL checks.

PTC TEMPERATURE SENSOR CHECK (LOW AMPLIFIER)

- Heat the PTC sensor with a welder tip, in touch with its body, to verify if this protection works properly reducing the output signal to few volts with time.

BIAS ADJUSTMENT:

- Set the generator level at zero, connect the Multimeter across the R24 resistor, then adjust VR1 trimmer to read 3±0.5mVdc.
- Verify the same voltage across R26.

BANDWIDTH CHECK

- Switch the generator frequency to 50Hz and 5KHz, no level changes respect to 100Hz must be detectable.

ENCODER & SIGNAL/LIMIT CHECK

- Switch off, wait some seconds and then switch on the amplifier, a testing loop will start.
- The SIGNAL/LIMIT led lights green for three sec. and red for another three sec.
- Waiting six sec. the led starts to flash in green colour, rotate the PRESET encoder on 140Hz position, the green led remains lighted for three sec. the CPU/DSP confirms the right encoder reading.
- Waiting another three sec. the led starts again to flash in green colour, rotate the PRESET encoder on 2xT3A + 2xT5SA position, the red led remains lighted for three sec. to confirm the right encoder reading.
- Waiting another three sec. the led starts again to flash in green colour, the check is end.
- If you want to start it again, you have to select T4MA DRUMFILL, the led switch off for three sec. and then it flashes again, the check it is ready start.
- **IMPORTANT: BE SURE TO REMOVE THE CN1 JUMPER BEFORE RECONNECT THE AMPLIFIER AT THE SPEAKER.**

T3A/T4A amplified loudspeaker CHECKING & ADJUSTMENTS

Remarks

- This loudspeaker system is processed by a RED 40bit DSP (Digital Signal Processor), the processor supervise all louspeaker operation such as crossover filters, equalization, phase, delay, peak limiters, long term power protection, LFC low frequency control, anti-feedback, multicomp and noise gate. These functions are recalled with the 16 PRESET encoder on the system panel, which include different settings suitable for the use of the system in different configurations. Follow a brief explapanation of each preset:

PRESET	Description
1) LEM INDOOR	Typical indoor equalization (default preset)
2) LEM OUTDOOR	Typical outdoor equalization (more mids)
3) FLAT	Without equalization
4) ENTERTAIN	Typical entertainer/piano bar equalization
5) MAX LOUD	Typical loudness contour equalization for low level listening
6) CD PLAYER	Typical DJ, DISCO PUB eq for high level listening (with multicomp)
7) WALL MOUNT	Typical wall mount equalization taking in count the 6 dB low boost
8) STAGE MONITOR	Typical stage monitor equalization (without anti-feedback)
9) LEM INDOOR SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
10) LEM OUTDOOR SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
11) FLAT SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
12) ENTERTAIN SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
13) MAX LOUD SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
14) CD PLAYER SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
15) WALL MOUNT SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
16) MIC PLUG & PLAY	Typical voice/mic amplification (with anti-feedback)

IMPORTANT NOTE

- Shorting the internal jumper between pin 1 and 3 of CN1 located on CPU/DSP Board, the amplifier is set for testing the amplifier module alone with a flat response on each output, without eq, filters, limiters and protections.
- BE SURE THAT IS INSERTED WHEN YOU CHECK THE AMPLIFIER ALONE AND REMOVED WHEN THE SPEAKERS ARE CONNECTED.**
- The amplifier module is designed with two amplifiers: a 300W amplifier for the LF speaker builded with discrete devices and operating in class H, and a 100W amplifier for the HF driver builded with integrated device and operating in class AB.

VISUAL CHECK

- Check the speakers for any damaging (cone-breaking, bobbin interruption, unglueing of suspension or further).
- Before proceed to supply the amplifier check visually the internal assembly, if appears an evident damage find the most possible reasons that cause it.
- Check the wiring cables for possible interruptions or shorts.
- If the damage has burnt a printed circuit board don't try to repair it, replace with a new one.

TEST INSTRUMENTS

- Audio Generator
- Dual Trace Oscilloscope
- Digital Multimeter
- Temperature Meter
- 4ohm 500W, 8ohm 150W, 100ohm 50W resistors
- Variac (0÷250Vac)

TECHNICAL SPECIFICATIONS

Power Requirements:	(230Vac±10% 50Hz)	400VA
or	(115Vac±10% 50/60Hz)	400VA
Max Low Out Power*:	(4ohm)	320W
Max High Out Power*:	(8ohm)	80W
Low Out**:	(4ohm)	96Vpp
High Out**:	(8ohm)	64Vpp
Freq. Response T3A***:	(-10dB)	65Hz ÷ 20KHz
Freq. Response T4A***:	(-10dB)	55Hz ÷ 20KHz
Freq. X-Over T3A:	(Low/High)	2.38KHz
Freq. X-Over T4A:	(Low/High)	2.22KHz
Nominal Input Sensitivity:	(+4dBu)	1.229V _{RMS}
Mic Max Input Sensitivity:	(-40dBu)	7.75mV _{RMS}
Input Impedance:	(balanced)	30Kohm
	(unbalanced)	15Kohm
Voltage Gain:	(nominal)	29±1dB
IMD:	(SMPTE 60Hz/7KHz 4:1)	<0.1%
THD:	(THD+N)	<0.1%
S/N Ratio:	(unweighted)	>100dB

Note:
* measured with the IHF standard method and without limiters.
** measured with continuous sinusoidal signal.
*** acoustic measurement with amplifier and speaker connected.

SETUP

- Connect the Variac between the mains and the amplifier and set it at zero voltage.
- Disconnect all the Speakers.
- Turn at centre (nominal level) the VOLUME potentiometer.
- Insert the jumper between pin1 and pin3 of CN1.
- Set the ENCODER rotary switch on preset LEM INDOOR.
- Connect the audio generator to the input and set it to 1000Hz -10dBu (245mV_{RMS}) sinusoidal signal.
- Connect the oscilloscope probe CH1 to the LOW OUT, clip to - (S3) and tip to + before RL1 (R15 side RL1), set it to 5V/div. 200µS/div.
- Connect the oscilloscope probe CH2 to the HIGH OUT, clip to - (S2) and tip to + (S1), set it to 5V/div. 200µS/div.
- The load resistors are disconnected.
- The procedures that follow must be executed subsequently in the order specified.

SUPPLY CHECK

- Verify with the Multimeter the insulation between the heatsink and all device packages (TR1,2,3,4,6,8,14,15,20, IC1,2,3,4).
- Verify with the Multimeter the PTC resistor value, it must be between 50 and 200ohm.
- Remove the transformer secondary fuses, set the Variac to the nominal mains voltage, check with the Multimeter the AC supply voltages:
F1-F2=93±2Vac.
F3-F4=50±1.5Vac.
- Re-set the Variac at zero voltage, turn off the amplifier and put the fuses back on its holders.
- Set up the Variac slowly monitoring the oscilloscope screen, starts from 2/3 of nominal mains voltage it should display the sinusoidal signal amplified without distortions and without any DC voltage, if a distortion occur or the protection trips check the amplifier as suggested in the ADVICES section.

- When the Variac ac voltage reaches the nominal voltage verify the DC supplies as follow:
TR8 collector pin 3 (+Vcc2) =+63±2Vdc
TR14 collector pin 3 (-Vcc2) =-63±2Vdc
TR2 collector pin 2 (+Vcc1) =+32±2Vdc
TR3 collector pin 2 (-Vcc1) =-32±2Vdc
IC4 pin 3 =+15±1Vdc
IC3 pin 3 =-15±1Vdc
- If one or more voltages don't correspond, check the rectifiers, capacitors and transformers disconnecting them from circuitry, refer to schematics.

INITIAL CHECK (LOW AMPLIFIER)

- Set both channels of the oscilloscope to 10V/div. 200µS/div.
- Increase the input level to -6dBu (0.388V_{RMS}) sinusoidal signal.
- The channel output signals must be symmetrical respect the GND with an amplitude of about 25V_{PEAK} and without visible distortion or oscillation as shown in Fig.1 Trace A (note: the figure is representative don't refer to its level). If there is a distortion read the section ADVICES.

HIGH RAIL CHECK (LOW AMPLIFIER)

- Connect the CH2 probe tip to D2 cathode and set the sensitivity of both channels at 20V/div.
- Increasing the input signal two things should to happen: till the output signal (Positive half-wave) is less than 25V_{PEAK} the voltage on D2 cathode have to remain constant at 32V, when the output signal exceeds 25V_{PEAK} the voltage on D2 cathode will have to follow the output signal with 7V offset (see Fig.1 Trace B).
- Check the negative high rail connecting the probe to D3 anode (see Fig.2 Trace C).
- Increase further the input signal till it reaches about +2dBu (0.976V_{RMS}), the amplifier output have to reach its maximum output before clipping at about 60V_{PEAK} (48V_{PEAK} with load attached for an input signal of about +0dBu).
- Connect the 4ohm 500W load on the output and repeat the INITIAL and HIGH RAIL checks.

PTC TEMPERATURE SENSOR CHECK (LOW AMPLIFIER)

- Heat the PTC sensor with a welder tip, in touch with its body, to verify if this protection works properly reducing the output signal to few volts with time.

BIAS ADJUSTMENT (LOW AMPLIFIER):

- Set the generator level at zero, connect the Multimeter across the R13 resistor, then adjust VR1 trimmer to read 5±0.5mVdc.
- Verify the same voltage across R15.

BANDWIDTH CHECK (LOW AMPLIFIER)

- Switch the generator frequency to 100Hz and 10KHz, no level changes respect to 1KHz must be detectable.
- Disconnect the 4ohm load.

AMPLIFIER CHECK (HIGH AMPLIFIER)

- Set up the generator to 1KHz 0dBu (775mV_{RMS}) sinusoidal signal.
- Connect the oscilloscope probe CH2 to the HIGH OUT, clip to - (S2) and tip to + (S1), set it to 10V/div. 200µS/div.
- The channel output signal must be symmetrical without visible distortion and oscillation as shown in fig.1 trace A (note: the figure is representative don't refer to its level). If there is a distortion check IC1 circuitry.
- Increase the input signal, when the input signal reaches about +2dBu (0.976V_{RMS}) the amplifier output reaches its maximum output before clipping at about 30±2V_{PEAK} (27±2V_{PEAK} with load attached and an input signal of about +1dBu).
- Switch the generator frequency to 100Hz and 10KHz, no level changes respect to 1KHz must be detectable.
- Connect the 8ohm 150W load on output and repeat the check.

MIC INPUT CHECK

- Set up the generator to 1KHz -40dBu (7.75mV_{RMS}) sinusoidal signal.
- Rotate full clockwise (max level) the VOLUME potentiometer.
- The CH1 oscilloscope trace attached to LOW output amplifier must be equal to 60±5V_{PEAK} (without load attached).

ENCODER & SIGNAL/LIMIT CHECK

- Switch off, wait some seconds and then switch on the amplifier, a testing loop will start.
- The SIGNAL/LIMIT led lights green for three sec. and red for another three sec.
- Waiting six sec. the led starts to flash in green colour, rotate the PRESET encoder on CD PLAYER SW position, the green led remains lighted for three sec. the CPU/DSP confirms the right encoder reading.
- Waiting another three sec. the led starts again to flash in green colour, rotate the PRESET encoder on FLAT position, the red led remains lighted for three sec. to confirm the right encoder reading.
- Waiting another three sec. the led starts again to flash in green colour, the check is end.
- If you want to start it again, you have to select LEM INDOOR SW, the led switch off for three sec. and then it flashes again, the check it is ready start.
- IMPORTANT: BE SURE TO REMOVE THE CN1 JUMPER BEFORE RECONNECT THE AMPLIFIER AT THE SPEAKER.**

T5A amplified loudspeaker CHECKING & ADJUSTMENTS

Remarks

- This loudspeaker system is processed by a RED 40bit DSP (Digital Signal Processor), the processor supervise all louspeaker operation such as crossover filters, equalization, phase, delay, peak limiters, long term power protection, LFC low frequency control, anti-feedback, multicomp and noise gate. These functions are recalled with the 16 PRESET encoder on the system panel, which include different settings suitable for the use of the system in different configurations. Follow a brief explanation of each preset:

PRESET	Description
1) LEM INDOOR	Typical indoor equalization (default preset)
2) LEM OUTDOOR	Typical outdoor equalization (more mids)
3) FLAT	Without equalization
4) ENTERTAIN	Typical entertainer/piano bar equalization
5) MAX LOUD	Typical loudness contour equalization for low level listening
6) CD PLAYER	Typical DJ, DISCO PUB eq for high level listening (with multicomp)
7) WALL MOUNT	Typical wall mount equalization taking in count the 6 dB low boost
8) STAGE MONITOR	Typical stage monitor equalization (without anti-feedback)
9) LEM INDOOR SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
10) LEM OUTDOOR SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
11) FLAT SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
12) ENTERTAIN SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
13) MAX LOUD SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
14) CD PLAYER SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
15) WALL MOUNT SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
16) MIC PLUG & PLAY	Typical voice/mic amplification (with anti-feedback)

IMPORTANT NOTE

- Shorting the internal jumper between pin 1 and 3 of CN1 located on CPU/DSP Board, the amplifier is set for testing the amplifier module alone with a flat response on each output, without eq, filters, limiters and protections.
- BE SURE THAT IS INSERTED WHEN YOU CHECK THE AMPLIFIER ALONE AND REMOVED WHEN THE SPEAKERS ARE CONNECTED.**
- The amplifier module is designed with two amplifiers: a 500W amplifier for the LF speaker builded with discrete devices and operating in class H, and a 80W amplifier for the HF driver builded with integrated device and operating in class AB.

VISUAL CHECK

- Check the speakers for any damaging (cone-breaking, bobbin interruption, unglueing of suspension or further).
- Before proceed to supply the amplifier check visually the internal assembly, if appears an evident damage find the most possible reasons that cause it.
- Check the wiring cables for possible interruptions or shorts.
- If the damage has burnt a printed circuit board don't try to repair it, replace with a new one.

TEST INSTRUMENTS

- Audio Generator
- Dual Trace Oscilloscope
- Digital Multimeter
- Temperature Meter
- 4ohm 500W, 8ohm 150W, 100ohm 50W resistors
- Variac (0÷250Vac)

TECHNICAL SPECIFICATIONS

Power Requirements:	(230Vac±10% 50Hz)	580VA
or	(115Vac±10% 50/60Hz)	580VA
Max Low Out Power*:	(4ohm)	500W
Max High Out Power*:	(8ohm)	80W
Low Out**:	(4ohm)	120Vpp
High Out**:	(8ohm)	64Vpp
Frequency Response***:	(-10dB)	50Hz ÷ 20KHz
Frequency X-Over:	(Low/High)	1.8KHz
Nominal Input Sensitivity:	(+4dBu)	1.229V _{RMS}
Mic Max Input Sensitivity:	(-40dBu)	7.75mV _{RMS}
Input Impedance:	(balanced)	30Kohm
	(unbalanced)	15Kohm
Voltage Gain:	(nominal)	31±1dB
IMD:	(SMPTE 60Hz/7KHz 4:1)	<0.1%
THD:	(THD+N)	<0.1%
S/N Ratio:	(unweighted)	>100dB

Note:
* measured with the IHF standard method and without limiters.
** measured with continuous sinusoidal signal.
*** acoustic measurement with amplifier and speaker connected.

- SETUP**
- Connect the Variac between the mains and the amplifier and set it at zero voltage.
 - Disconnect all the Speakers.
 - Turn at centre (nominal level) the VOLUME potentiometer.
 - Insert the jumper between pin1 and pin3 of CN1.
 - Set the ENCODER rotary switch on preset LEM INDOOR.
 - Connect the audio generator to the input and set it to 1000Hz -10dBu (245mV_{RMS}) sinu-soidal signal.
 - Connect the oscilloscope probe CH1 to the LOW OUT, clip to - (S9) and tip to + before RL1 (R20 side RL1), set it to 5V/div. 200µS/div.
 - Connect the oscilloscope probe CH2 to the HIGH OUT, clip unconnected and tip to + (S6), set it to 5V/div. 200µS/div.
 - The load resistors are disconnected.
 - The procedures that follow must be executed subsequently in the order specified.

- SUPPLY CHECK**
- Verify with the Multimeter the insulation between the heatsink and all device packages (TR1,2,3,4,5,6,8,9,18,19,24 and IC1,3,4,5).
 - Verify with the Multimeter the PTC resistor value, it must be between 50 and 200ohm.
 - Remove the transformer secondary fuses, set the Variac to the nominal mains voltage, check with the Multimeter the AC supply voltages:
F1-F2=54±1.5Vac.
F3-F4=106±2Vac.
 - Re-set the Variac at zero voltage, turn off the amplifier and put the fuses back on its hold-ers.
 - Set up the Variac slowly monitoring the oscilloscope screen, starts from 2/3 of nominal mains voltage it should display the sinusoidal signal amplified without distortions and without any DC voltage, if a distortion occur or the protection trips check the amplifier as suggested in the ADVICES section.
 - When the Variac ac voltage reaches the nominal voltage verify the DC supplies as follow:
TR9 collector pin 3 (+Vcc2) =+70±2Vdc
TR18 collector pin 3 (-Vcc2) =-70±2Vdc
TR1 collector pin 2 (+Vcc1) =+35±2Vdc
TR2 collector pin 2 (-Vcc1) =-35±2Vdc
IC5 pin 3 =+15±1Vdc
IC4 pin 3 =-15±1Vdc
 - If one or more voltages don’t correspond, check the rectifiers, capacitors and transformers disconnecting them from circuitry, refer to schematics.

- INITIAL CHECK (LOW AMPLIFIER)**
- Set both channels of the oscilloscope to 10V/div. 200µS/div.
 - Increase the input level to -6dBu (0.388V_{RMS}) sinusoidal signal.
 - The channel output signals must be symmetrical respect the GND with an amplitude of about 30V_{PEAK} and without visible distortion or oscillation as shown in Fig.1 Trace A (note: the figure is representative don't refer to its level). If there is a distortion read the section ADVICES.

- HIGH RAIL CHECK (LOW AMPLIFIER)**
- Connect the CH2 probe tip to D8 cathode and set the sensitivity of both channels at 20V/ div.
 - Increasing the input signal two things should to happen: till the output signal (Positive half-wave) is less than 28V_{PEAK} the voltage on D8 cathode have to remain constant at 36V, when the output signal exceeds 28V_{PEAK} the voltage on D8 cathode will have to follow the output signal with 8V offset (see Fig.1 Trace B).
 - Check the negative high rail connecting the probe to D9 anode (see Fig.2 Trace C).
 - Increase further the input signal till it reaches about +2dBu (0.976V_{RMS}), the amplifier output have to reach its maximum output before clipping at about 69V_{PEAK} (60V_{PEAK} with load attached for an input signal of about +0dBu).
 - Connect the 4ohm 500W load on the output and repeat the INITIAL and HIGH RAIL checks.

- PTC TEMPERATURE SENSOR CHECK (LOW AMPLIFIER)**
- Heat the PTC sensor with a welder tip, in touch with its body, to verify if this protection works properly reducing the output signal to few volts with time.

- BIAS ADJUSTMENT (LOW AMPLIFIER):**
- Set the generator level at zero, connect the Multimeter across the R24 resistor, then adjust VR1 trimmer to read 5±0.5mVdc.
 - Verify the same voltage across R26.

- BANDWIDTH CHECK (LOW AMPLIFIER)**
- Switch the generator frequency to 100Hz and 10KHz, no level changes respect to 1KHz must be detectable.
 - Disconnect the 4ohm load.

- AMPLIFIER CHECK (HIGH AMPLIFIER)**
- Set up the generator to 1KHz 0dBu (775mV_{RMS}) sinusoidal signal.
 - Connect the oscilloscope probe CH1 to the HIGH OUT, clip to - (S9) and tip to + (S6), set it to 10V/div. 200µS/div., then disconnect CH2 probe.
 - The channel output signal must be symmetrical without visible distortion and oscillation as shown in fig.1 trace A (note: the figure is representative don't refer to its level). If there

- is a distortion check IC1 circuitry.
- Increase the input signal, when the input signal reaches about +2dBu (0.976V_{RMS}) the amplifier output reaches its maximum output before clipping at about 30±2V_{PEAK} (with 8 ohm load only attached has the same value).
 - Switch the generator frequency to 100Hz and 10KHz, no level changes respect to 1KHz must be detectable.
 - Connect the 8ohm 150W load on output and repeat the check.

- MIC INPUT CHECK**
- Set up the generator to 1KHz -40dBu (7.75mV_{RMS}) sinusoidal signal.
 - Rotate full clockwise (max level) the VOLUME potentiometer.
 - The CH1 oscilloscope trace attached to HIGH output amplifier must be equal to 30±2V_{PEAK} (without load attached).

- ENCODER & SIGNAL/LIMIT CHECK**
- Switch off, wait some seconds and then switch on the amplifier, a testing loop will start.
 - The SIGNAL/LIMIT led lights green for three sec. and red for another three sec.
 - Waiting six sec. the led starts to flash in green colour, rotate the PRESET encoder on CD PLAYER SW position, the green led remains lighted for three sec. the CPU/DSP confirms the right encoder reading.
 - Waiting another three sec. the led starts again to flash in green colour, rotate the PRESET encoder on FLAT position, the red led remains lighted for three sec. to confirm the right encoder reading.
 - Waiting another three sec. the led starts again to flash in green colour, the check is end.
 - If you want to start it again, you have to select LEM INDOOR SW, the led switch off for three sec. and then it flashes again, the check it is ready start.
 - **IMPORTANT: BE SURE TO REMOVE THE CN1 JUMPER BEFORE RECONNECT THE AMPLIFIER AT THE SPEAKER.**

T6A amplified loudspeaker CHECKING & ADJUSTMENTS

Remarks

- This loudspeaker system is processed by a RED 40bit DSP (Digital Signal Processor), the processor supervise all louspeaker operation such as crossover filters, equalization, phase, delay, peak limiters, long term power protection, LFC low frequency control, anti-feedback, multicomp and noise gate. These functions are recalled with the 16 PRESET encoder on the system panel, which include different settings suitable for the use of the system in different configurations. Follow a brief explapanation of each preset:

PRESET	Description
1) LEM INDOOR	Typical indoor equalization (default preset)
2) LEM OUTDOOR	Typical outdoor equalization (more mids)
3) FLAT	Without equalization
4) ENTERTAIN	Typical entertainer/piano bar equalization
5) MAX LOUD	Typical loudness contour equalization for low level listening
6) CD PLAYER	Typical DJ, DISCO PUB eq for high level listening (with multicomp)
7) WALL MOUNT	Typical wall mount equalization taking in count the 6 dB low boost
8) STAGE MONITOR	Typical stage monitor equalization (without anti-feedback)
9) LEM INDOOR SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
10) LEM OUTDOOR SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
11) FLAT SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
12) ENTERTAIN SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
13) MAX LOUD SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
14) CD PLAYER SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
15) WALL MOUNT SW	Same as above with 100Hz HP Filter to use it with Sub Woofer
16) MIC PLUG & PLAY	Typical voice/mic amplification (with anti-feedback)

- IMPORTANT NOTE**
- Shorting the internal jumper between pin 1 and 3 of CN1 located on CPU/DSP Board, the amplifier is set for testing the amplifier module alone with a flat response on each output, without eq, filters, limiters and protections.
 - **BE SURE THAT IS INSERTED WHEN YOU CHECK THE AMPLIFIER ALONE AND REMOVED WHEN THE SPEAKERS ARE CONNECTED.**
 - The amplifier module is designed with two amplifiers: a 500W amplifier for the LF speaker builded with discrete devices and operating in class H, and a 150W amplifier for the HF driver builded with integrated device and operating in class AB.

- VISUAL CHECK**
- Check the speakers for any damaging (cone-breaking, bobbin interruption, unglueing of suspension or further).
 - Before proceed to supply the amplifier check visually the internal assembly, if appears an evident damage find the most possible reasons that cause it.
 - Check the wiring cables for possible interruptions or shorts.
 - If the damage has burnt a printed circuit board don’t try to repair it, replace with a new one.

- TEST INSTRUMENTS**
- Audio Generator

- Dual Trace Oscilloscope
- Digital Multimeter
- Temperature Meter
- 4ohm 500W, 16ohm 150W, 100ohm 50W resistors
- Variac (0÷250Vac)

TECHNICAL SPECIFICATIONS		
Power Requirements:	(230Vac±10% 50Hz)	580VA
or	(115Vac±10% 50/60Hz)	580VA
Max Low Out Power*:	(4ohm)	500W
Max Mid/High Out Power*:	(16ohm)	150W
Low Out**:	(4ohm)	120Vpp
Mid/High Out**:	(16ohm)	123Vpp
Frequency Response:	(-10dB)	45Hz ÷ 20KHz
Frequency X-Over:	(Low/Mid)	1.0KHz
	(Mid/High)	2.0KHz
Nominal Input Sensitivity:	(+4dBu)	1.229V _{RMS}
Mic Max Input Sensitivity:	(-40dBu)	7.75mV _{RMS}
Input Impedance:	(balanced)	30Kohm
	(unbalanced)	15Kohm
Voltage Gain:	(nominal)	31±1dB
IMD:	(SMPTE 60Hz/7KHz 4:1)	<0.1%
THD:	(THD+N)	<0.1%
S/N Ratio:	(unweighted)	>100dB
Note:		
* measured with the IHF standard method and without limiters.		
** measured with continuous sinusoidal signal.		
*** acoustic measurement with amplifier and speaker connected.		

- SETUP**
- Connect the Variac between the mains and the amplifier and set it at zero voltage.
 - Disconnect all the Speakers.
 - Turn at centre (nominal level) the VOLUME potentiometer.
 - Insert the jumper between pin1 and pin3 of CN1.
 - Set the ENCODER rotary switch on preset LEM INDOOR.
 - Connect the audio generator to the input and set it to 1000Hz -10dBu (245mV_{RMS}) sinu-soidal signal.
 - Connect the oscilloscope probe CH1 to the LOW OUT, clip to - (S9) and tip to + before RL1 (R20 side RL1), set it to 5V/div. 200µS/div.
 - Connect the oscilloscope probe CH2 to the HIGH OUT, clip unconnected and tip to + (S6), set it to 5V/div. 200µS/div.
 - **VERY IMPORTANT: During the following check the clip of CH2 probe must be never connected to avoid short circuit.**
 - The load resistors are disconnected.
 - The procedures that follow must be executed subsequently in the order specified.

- SUPPLY CHECK**
- Verify with the Multimeter the insulation between the heatsink and all device packages (TR1,2,3,4,5,6,8,9,18,19,24 and IC1,2,3,4,5).
 - Verify with the Multimeter the PTC resistor value, it must be between 50 and 200ohm.
 - Remove the transformer secondary fuses, set the Variac to the nominal mains voltage, check with the Multimeter the AC supply voltages:
F1-F2=54±1.5Vac.
F3-F4=106±2Vac.
 - Re-set the Variac at zero voltage, turn off the amplifier and put the fuses back on its hold-ers.
 - Set up the Variac slowly monitoring the oscilloscope screen, starts from 2/3 of nominal mains voltage it should display the sinusoidal signal amplified without distortions and without any DC voltage, if a distortion occur or the protection trips check the amplifier as suggested in the ADVICES section.
 - When the Variac ac voltage reaches the nominal voltage verify the DC supplies as follow:
TR9 collector pin 3 (+Vcc2) =+70±2Vdc
TR18 collector pin 3 (-Vcc2) =-70±2Vdc
TR1 collector pin 2 (+Vcc1) =+35±2Vdc
TR2 collector pin 2 (-Vcc1) =-35±2Vdc
IC5 pin 3 =+15±1Vdc
IC4 pin 3 =-15±1Vdc

- If one or more voltages don’t correspond, check the rectifiers, capacitors and transformers disconnecting them from circuitry, refer to schematics.

- INITIAL CHECK (LOW AMPLIFIER)**
- Set both channels of the oscilloscope to 10V/div. 200µS/div.
 - Increase the input level to -6dBu (0.388V_{RMS}) sinusoidal signal.
 - The channel output signals must be symmetrical respect the GND with an amplitude of about 30V_{PEAK} and without visible distortion or oscillation as shown in Fig.1 Trace A (note: the figure is representative don't refer to its level). If there is a distortion read the section ADVICES.

- HIGH RAIL CHECK (LOW AMPLIFIER)**
- Connect the CH2 probe tip to D8 cathode and set the sensitivity of both channels at 20V/ div.

- Increasing the input signal two things should to happen: till the output signal (Positive half-wave) is less than 28V_{PEAK} the voltage on D8 cathode have to remain constant at 36V, when the output signal exceeds 28V_{PEAK} the voltage on D8 cathode will have to follow the output signal with 8V offset (see Fig.1 Trace B).
- Check the negative high rail connecting the probe to D9 anode (see Fig.2 Trace C).
- Increase further the input signal till it reaches about +2dBu (0.976V_{RMS}), the amplifier output have to reach its maximum output before clipping at about 69V_{PEAK} (60V_{PEAK} with load attached for an input signal of about +0dBu).
- Connect the 4ohm 500W load on the output and repeat the INITIAL and HIGH RAIL checks.

PTC TEMPERATURE SENSOR CHECK (LOW AMPLIFIER)

- Heat the PTC sensor with a welder tip, in touch with its body, to verify if this protection works properly reducing the output signal to few volts with time.

BIAS ADJUSTMENT (LOW AMPLIFIER):

- Set the generator level at zero, connect the Multimeter across the R24 resistor, then adjust VR1 trimmer to read 5±0.5mVdc.
- Verify the same voltage across R26.

BANDWIDTH CHECK (LOW AMPLIFIER)

- Switch the generator frequency to 100Hz and 10KHz, no level changes respect to 1KHz must be detectable.
- Disconnect the 4ohm load.

AMPLIFIER CHECK (HIGH AMPLIFIER)

- Set up the generator to 1KHz -10dBu (245mV_{RMS}) sinusoidal signal.
- Connect the oscilloscope probe CH1 to the HIGH OUT, clip to - (S8) and tip to + (S6), set it to 10V/div. 200µS/div., then **VERY IMPORTANT you have to disconnect CH2 probe.**
- The channel output signal must be symmetrical without visible distortion and oscillation as shown in fig.1 trace A (note: the figure is representative don't refer to its level). If there is a distortion check IC1 circuitry.
- Increase the input signal, when the input signal reaches about -4dBu (0.489V_{RMS}) the amplifier output reaches its maximum output before clipping at about 70±2V_{PEAK} (62±2V_{PEAK} with 16 ohm load attached).
- Switch the generator frequency to 100Hz and 10KHz, no level changes respect to 1KHz must be detectable.
- Connect the 16ohm 150W load on output and repeat the check.

MIC INPUT CHECK

- Set up the generator to 1KHz -44dBu (4.89mV_{RMS}) sinusoidal signal.
- Rotate full clockwise (max level) the VOLUME potentiometer.
- The CH1 oscilloscope trace attached to HIGH output amplifier must be equal to 70±2V_{PEAK} (without load attached).

ENCODER & SIGNAL/LIMIT CHECK

- Switch off, wait some seconds and then switch on the amplifier, a testing loop will start.
- The SIGNAL/LIMIT led lights green for three sec. and red for another three sec.
- Waiting six sec. the led starts to flash in green colour, rotate the PRESET encoder on CD PLAYER SW position, the green led remains lighted for three sec. the CPU/DSP confirms the right encoder reading.
- Waiting another three sec. the led starts again to flash in green colour, rotate the PRESET encoder on FLAT position, the red led remains lighted for three sec. to confirm the right encoder reading.
- Waiting another three sec. the led starts again to flash in green colour, the check is end.
- If you want to start it again, you have to select LEM INDOOR SW, the led switch off for three sec. and then it flashes again, the check it is ready start.

• **IMPORTANT: BE SURE TO REMOVE THE CN1 JUMPER BEFORE RECONNECT THE AMPLIFIER AT THE SPEAKER.**

T4MA/T5MA amplified monitors CHECKING & ADJUSTMENTS

Remarks

- This loudspeaker system is processed by a RED 40bit DSP (Digital Signal Processor), the processor supervise all louspeaker operation such as crossover filters, equalization, phase, delay, peak limiters, long term power protection, LFC low frequency control, anti-feedback, multicomp and noise gate. These functions are recalled with the 16 PRESET encoder on the system panel, which include different settings suitable for the use of the system in different configurations. Follow a brief explapanation of each preset:

PRESET	Description
1) FULL RANGE	Typical stage monitor equalization flat and full range
2) VOCAL 1	Typical vocal monitor equalization with a 120Hz low cut filter
3) VOCAL 2	Same as above with a 12KHz high cut filter added
4) GUITAR	Equalization optimized for Electric Guitar Players
5) PIANO	Equalization optimized for Electric Piano Players
6) DRUMFILL SW	In combination with T5SA subwoofer for a drumfill system
7) PAIR	Equalization optimized to use a pair of monitor

8) ON STAGE	Optimized to reduce the resonance of some stage floor
9) FULL RANGE AFB	Same as above with anti-feedback
10) VOCAL 1 AFB	Same as above with anti-feedback
11) VOCAL 2 AFB	Same as above with anti-feedback
12) GUITAR AFB	Same as above with anti-feedback
13) PIANO AFB	Same as above with anti-feedback
14) DRUMFILL AFB	Same as above with anti-feedback
15) PAIR AFB	Same as above with anti-feedback
16) DRUMFILL AFB	Same as above with anti-feedback

IMPORTANT NOTE

- Shorting the internal jumper between pin 1 and 3 of CN1 located on CPU/DSP Board, the amplifier is set for testing the amplifier module alone with a flat response on each output, without eq, filters, limiters and protections.
- BE SURE THAT IS INSERTED WHEN YOU CHECK THE AMPLIFIER ALONE AND REMOVED WHEN THE SPEAKERS ARE CONNECTED.**
- The amplifier module is designed with two amplifiers: a 300W amplifier for the LF speaker builded with discrete devices and operating in class H, and a 100W amplifier for the HF driver builded with integrated device and operating in class AB.

VISUAL CHECK

- Check the speakers for any damaging (cone-breaking, bobbin interruption, unglueing of suspension or further).
- Before proceed to supply the amplifier check visually the internal assembly, if appears an evident damage find the most possible reasons that cause it.
- Check the wiring cables for possible interruptions or shorts.
- If the damage has burnt a printed circuit board don't try to repair it, replace with a new one.

TEST INSTRUMENTS

- Audio Generator
- Dual Trace Oscilloscope
- Digital Multimeter
- Temperature Meter
- 4ohm 500W, 8ohm 150W, 100ohm 50W resistors
- Variac (0÷250Vac)

TECHNICAL SPECIFICATIONS

Power Requirements:	(230Vac±10% 50Hz)	400VA
or	(115Vac±10% 50/60Hz)	400VA
Max Low Out Power*:	(4ohm)	320W
Max High Out Power*:	(8ohm)	80W
Low Out**:	(4ohm)	96Vpp
High Out**:	(8ohm)	64Vpp
Freq. Response T4MA***:	(-10dB)	60Hz ÷ 20KHz
Freq. Response T5MA***:	(-10dB)	55Hz ÷ 20KHz
Freq. X-Over T4MA:	(Low/High)	1.74KHz
Freq. X-Over T5MA:	(Low/High)	1.74KHz
Nominal Input Sensitivity:	(+4dBu)	1.229V _{RMS}
Mic Max Input Sensitivity:	(-40dBu)	7.75mV _{RMS}
Input Impedance:	(balanced)	30Kohm
	(unbalanced)	15Kohm
Voltage Gain:	(nominal)	29±1dB
IMD:	(SMPTE 60Hz/7KHz 4:1)	<0.1%
THD:	(THD+N)	<0.1%
S/N Ratio:	(unweighted)	>100dB

Note:

* measured with the IHF standard method and without limiters.

** measured with continuous sinusoidal signal.

*** acoustic measurement with amplifier and speaker connected.

SETUP

- Connect the Variac between the mains and the amplifier and set it at zero voltage.
- Disconnect all the Speakers.
- Turn at centre (nominal level) the VOLUME potentiometer.
- Insert the jumper between pin1 and pin3 of CN1.
- Set the ENCODER rotary switch on preset LEM INDOOR.
- Connect the audio generator to the input and set it to 1000Hz -10dBu (245mV_{RMS}) sinusoidal signal.
- Connect the oscilloscope probe CH1 to the LOW OUT, clip to - (S3) and tip to + before RL1 (R15 side RL1), set it to 5V/div. 200µS/div.
- Connect the oscilloscope probe CH2 to the HIGH OUT, clip to - (S2) and tip to + (S1), set it to 5V/div. 200µS/div.
- The load resistors are disconnected.
- The procedures that follow must be executed subsequently in the order specified.

SUPPLY CHECK

- Verify with the Multimeter the insulation between the heatsink and all device packages (TR1,2,3,4,6,8,14,15,20, IC1,2,3,4).
- Verify with the Multimeter the PTC resistor value, it must be between 50 and 200ohm.
- Remove the transformer secondary fuses, set the Variac to the nominal mains voltage,

check with the Multimeter the AC supply voltages:

F1-F2=93±2Vac.
F3-F4=50±1.5Vac.

- Re-set the Variac at zero voltage, turn off the amplifier and put the fuses back on its holders.
- Set up the Variac slowly monitoring the oscilloscope screen, starts from 2/3 of nominal mains voltage it should display the sinusoidal signal amplified without distortions and without any DC voltage, if a distortion occur or the protection trips check the amplifier as suggested in the ADVICES section.
- When the Variac ac voltage reaches the nominal voltage verify the DC supplies as follow:

TR8 collector pin 3 (+Vcc2)	=+63±2Vdc
TR14 collector pin 3 (-Vcc2)	=-63±2Vdc
TR2 collector pin 2 (+Vcc1)	=+32±2Vdc
TR3 collector pin 2 (-Vcc1)	=-32±2Vdc
IC4 pin 3	=+15±1Vdc
IC3 pin 3	=-15±1Vdc

- If one or more voltages don't correspond, check the rectifiers, capacitors and transformers disconnecting them from circuitry, refer to schematics.

INITIAL CHECK (LOW AMPLIFIER)

- Set both channels of the oscilloscope to 10V/div. 200µS/div.
- Increase the input level to -6dBu (0.388V_{RMS}) sinusoidal signal.
- The channel output signals must be symmetrical respect the GND with an amplitude of about 25V_{PEAK} and without visible distortion or oscillation as shown in Fig.1 Trace A (note: the figure is representative don't refer to its level). If there is a distortion read the section ADVICES.

HIGH RAIL CHECK (LOW AMPLIFIER)

- Connect the CH2 probe tip to D2 cathode and set the sensitivity of both channels at 20V/ div.
- Increasing the input signal two things should to happen: till the output signal (Positive half-wave) is less than 25V_{PEAK} the voltage on D2 cathode have to remain constant at 32V, when the output signal exceeds 25V_{PEAK} the voltage on D2 cathode will have to follow the output signal with 7V offset (see Fig.1 Trace B).
- Check the negative high rail connecting the probe to D3 anode (see Fig.2 Trace C).
- Increase further the input signal till it reaches about +2dBu (0.976V_{RMS}), the amplifier output have to reach its maximum output before clipping at about 60V_{PEAK} (48V_{PEAK} with load attached for an input signal of about +0dBu).
- Connect the 4ohm 500W load on the output and repeat the INITIAL and HIGH RAIL checks.

PTC TEMPERATURE SENSOR CHECK (LOW AMPLIFIER)

- Heat the PTC sensor with a welder tip, in touch with its body, to verify if this protection works properly reducing the output signal to few volts with time.

BIAS ADJUSTMENT (LOW AMPLIFIER):

- Set the generator level at zero, connect the Multimeter across the R13 resistor, then adjust VR1 trimmer to read 5±0.5mVdc.
- Verify the same voltage across R15.

BANDWIDTH CHECK (LOW AMPLIFIER)

- Switch the generator frequency to 100Hz and 10KHz, no level changes respect to 1KHz must be detectable.
- Disconnect the 4ohm load.

AMPLIFIER CHECK (HIGH AMPLIFIER)

- Set up the generator to 1KHz 0dBu (775mV_{RMS}) sinusoidal signal.
- Connect the oscilloscope probe CH2 to the HIGH OUT, clip to - (S2) and tip to + (S1), set it to 10V/div. 200µS/div.
- The channel output signal must be symmetrical without visible distortion and oscillation as shown in fig.1 trace A (note: the figure is representative don't refer to its level). If there is a distortion check IC1 circuitry.
- Increase the input signal, when the input signal reaches about +2dBu (0.976V_{RMS}) the amplifier output reaches its maximum output before clipping at about 30±2V_{PEAK} (27±2V_{PEAK} with load attached and an input signal of about +1dBu).
- Switch the generator frequency to 100Hz and 10KHz, no level changes respect to 1KHz must be detectable.
- Connect the 8ohm 150W load on output and repeat the check.

MIC INPUT CHECK

- Set up the generator to 1KHz -40dBu (7.75mV_{RMS}) sinusoidal signal.
- Rotate full clockwise (max level) the VOLUME potentiometer.
- The CH1 oscilloscope trace attached to LOW output amplifier must be equal to 60±5V_{PEAK} (without load attached).

ENCODER & SIGNAL/LIMIT CHECK

- Switch off, wait some seconds and then switch on the amplifier, a testing loop will start.
- The SIGNAL/LIMIT led lights green for three sec. and red for another three sec.
- Waiting six sec. the led starts to flash in green colour, rotate the PRESET encoder on DRUMFILL AFB position, the green led remains lighted for three sec. the CPU/DSP confirms the right encoder reading.
- Waiting another three sec. the led starts again to flash in green colour, rotate the PRESET

encoder on VOCAL 2 position, the red led remains lighted for three sec. to confirm the right encoder reading.

- Waiting another three sec. the led starts again to flash in green colour, the check is end.
- If you want to start it again, you have to select FULL RANGE AFB, the led switch off for three sec. and then it flashes again, the check it is ready start.
- **IMPORTANT: BE SURE TO REMOVE THE CN1 JUMPER BEFORE RECONNECT THE AMPLIFIER AT THE SPEAKER.**

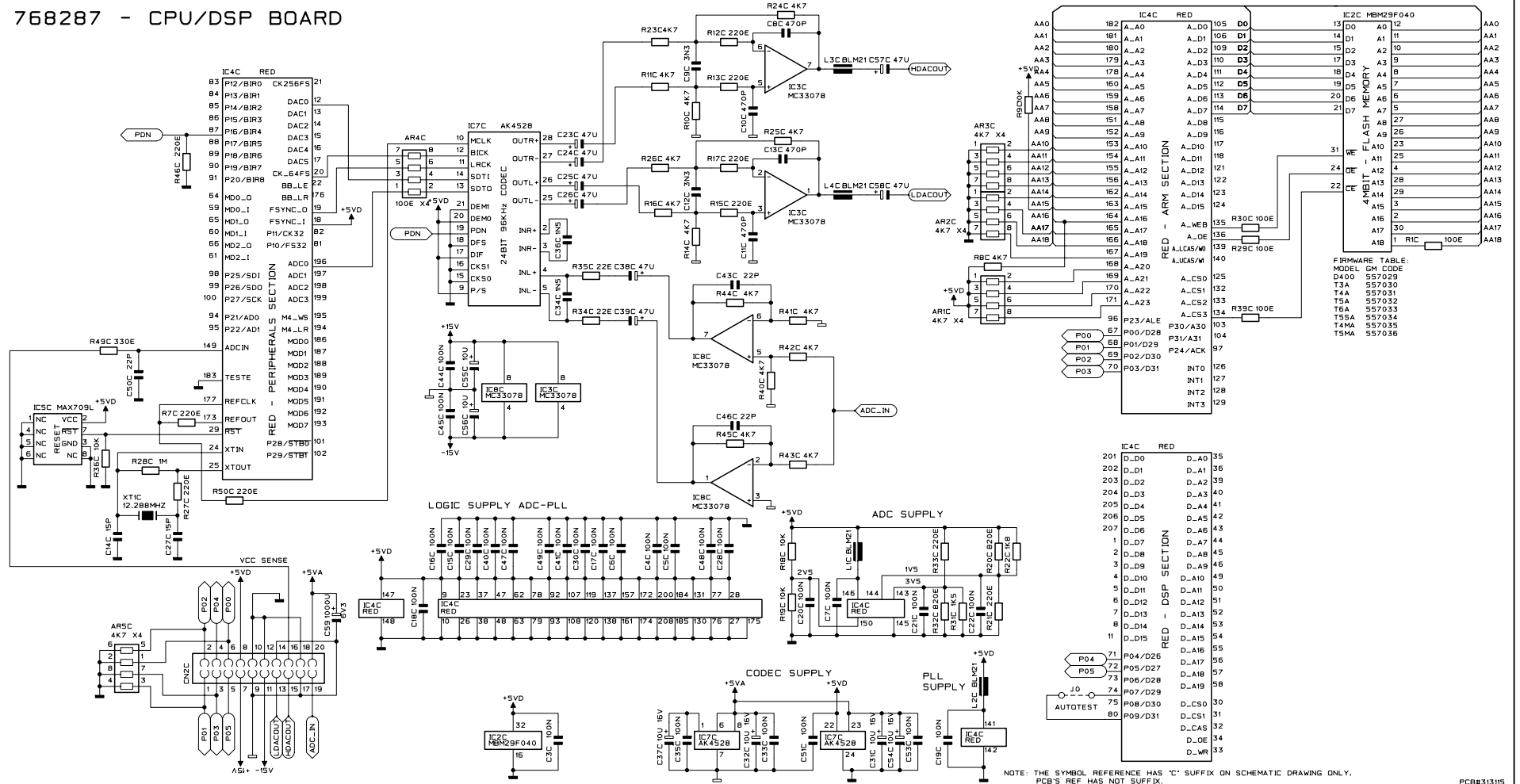
ADVICES

- If the input sinewave appears to be distorted during the negative cycle, you can assume that the problem is located somewhere in the circuitry of the positive rail.
- If the positive cycle appears distorted, you can assume that the problem is in the circuitry of the negative low rail. Refer to the schematics.
- If you have determinate that the problem is a short on a supply rail, you must check the output transistors to determine which transistor devices are bad.
- Use a soldering iron to lift one leg of each emitter pin and measure the emitter-collector resistance on each device.
- Unsolder and lift one leg of each base pin and check the base-collector resistance of each transistor and replace any that measure as a short.
- If all the transistors are OK, unsolder and lift one leg of each diode and check them.
- Check the circuit board for open foil traces.
- Use the Multimeter as Ohm-meter to check the resistors, particularly the base and emitter resistors of damaged transistor.

TECHNICAL SPECIFICATIONS

loudspeaker specifications		T200 / T3A		T300 / T4A	T400 / T5A	T500 / T6A	T4MA	T5MA	T5SA
components		1" compression driver with titanium diaphragm					1" coaxial driver		-
		-				8" midrange	-		
		10" woofer	12" neodymium woofer	15" neodymium woofer	15" neodymium woofer	12" woofer	15" woofer	15" neodymium woofer	
power handling (EIA RS-426A)		200W continuous 400W peak	300W continuous 600W peak	400W continuous 800W peak	500W continuous 1000W peak	-			
impedance		8 Ohm	4 / 8 Ohm	4 / 8 Ohm	4 / 8 Ohm	-			
passive crossover		LP: 12dB/ott. @ 5.8kHz HP: 18dB/ott. @ 5.8kHz	LP: 12dB/ott. @ 2.5kHz HP: 18dB/ott. @ 2.5kHz	LP: 12dB/ott. @ 2kHz HP: 18dB/ott. @ 2kHz	LP: 12dB/ott. @ 5.8kHz HP: 6dB/ott. @ 5.8kHz LP: 18dB/ott. @ 800Hz HP: 12dB/ott. @ 800Hz	-			
connections (passive version)		1/2 x SPEAKON					-		
construction		Laminated beech plywood with black scratch-resistant paint - Metal grid - Metal handles and speaker stand adapter							
dimension		357x490x355	400x608x390	456x690x430	456x804x430	506x326x422	586x356x495	466x600x600	
weight (passive / active)		14.5 / 22	17.5 / 25.2	22.5 / 32	28 / 37	26	33.5	43,5	
processor/amplifier specifications		T3A	T4A	T5A	T6A	T4MA	T5MA	T5SA	
output power EIA (1kHz, max THD 1%)		100W high 200W low	100W high 300W low	100W high 400W low	200W high 400W low	50W high 250W low	100W high 350W low	500W	
input sensitivity		+4 dBu (1.229Vrms)							
input impedance		30 kOhm (balanced) - 15 kOhm (unbalanced)							
A/D converters		24 bit							
D/A converters		24 bit dynamic range 100 dB sampling rate 48kHz							
active crossover		type Bessel, Butterworth or Linkwitz-Riley variable from 15.6 Hz to 16 kHz 6, 12, 18 o 24 dB per octave							
eq		25 parametric bands peak, 6dB lo-shelf, 12dB lo-shelf, 6dB hi-shelf, 12dB lo-shelf, notch gain+/-15dB, variable with 0.5dB step bandwidth from 0.05 to 3.00 octave, variable with 0.05 step frequency from 15.6 Hz to 16 kHz							
alignment delay		max delay 200 mm							
plug-in		noise gate, anti-feedback, multiband compressor							
protections		Independent peak limiter on each output Long term power protection on each output LFC - Low Frequency Control							
distortion		<0.02 %							
controls		volume - PRESET select - shield on/off							
connections		1 x COMBO + 1 x XLR-M (link)							2 x XLR-F + 2 x XLR-M
power supply		230Vac ±10% 50Hz or 115Vac ±10% 50/60Hz							
system specifications		T200 / T3A	T300 / T4A	T400 / T5A	T500 / T6A	T4MA	T5MA	T5SA	
SPL MAX continuous		120 dB	123 dB	124 dB	126 dB	122 dB	124 dB	125 dB	
frequency response (-10 dB)		65Hz - 20kHz	55Hz - 20kHz	50Hz - 20kHz	45Hz - 20kHz	60Hz - 20kHz	55Hz - 20kHz	32Hz - 200Hz	
dispersion (HxV)		90° x 65°	100° x 60°	100° x 60°	90° x 65°	80° x 80°	80° x 80°	-	

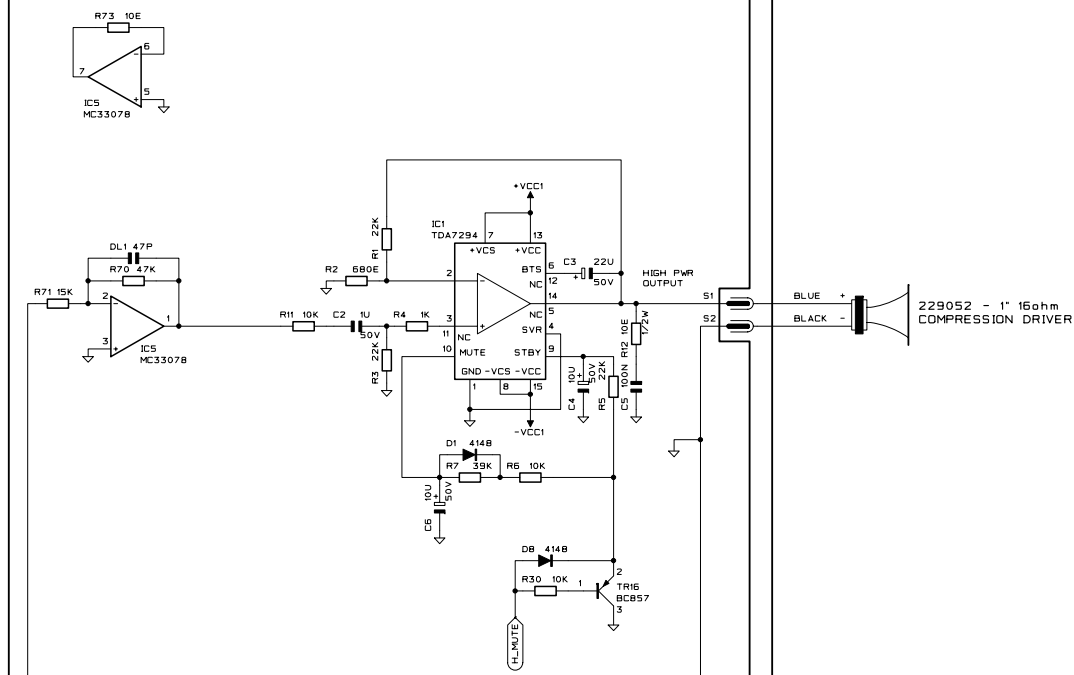
768287 - CPU/DSP BOARD



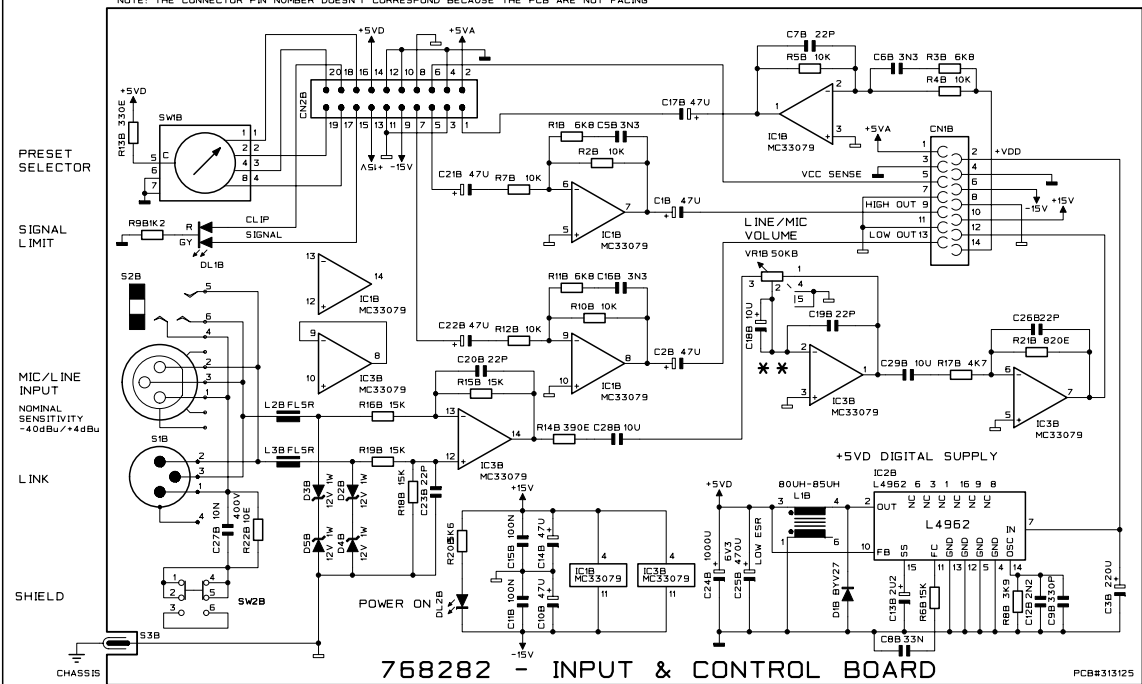
737149 - AMPLIFIER ASSEMBLY 230Vac (EU)
737150 - AMPLIFIER ASSEMBLY 115Vac (US)
(NOTE: ALL BOARDS INCLUDED AND CHECKED)

768278 - AMPLIFIER BOARD

(NOTE: ALL DEVICES MOUNTED ON HEATSINK ARE NOT INCLUDED)

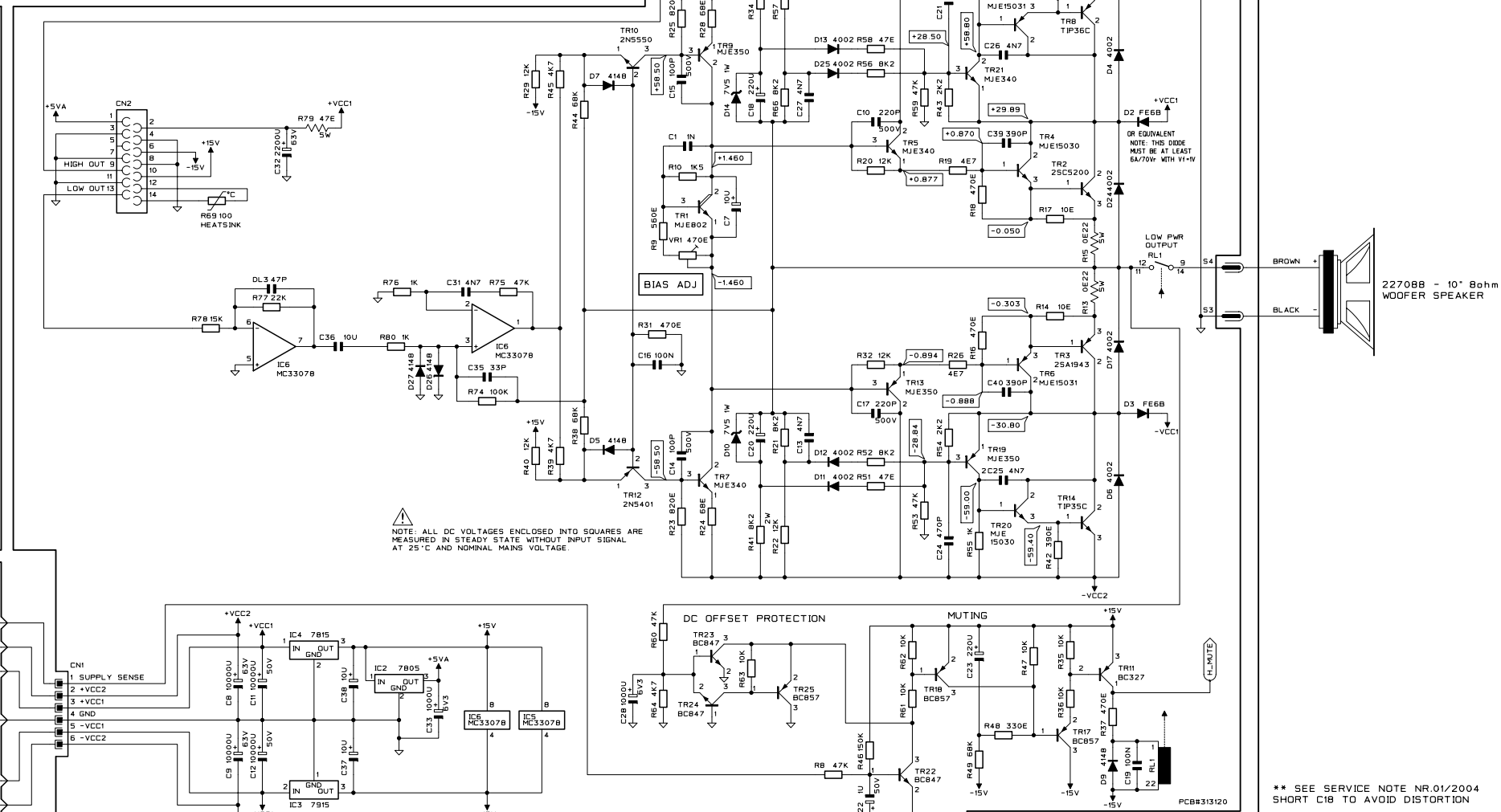



NOTE: THE CONNECTOR PIN NUMBER DOESN'T CORRESPOND BECAUSE THE PCB ARE NOT FACING



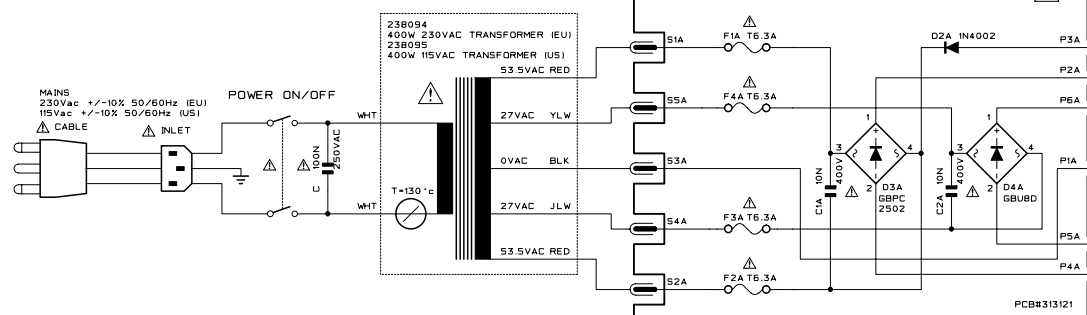
768282 - INPUT & CONTROL BOARD

NOTE: THE SYMBOL REFERENCE HAS 'B' SUFFIX ON SCHEMATIC DRAWING ONLY.
PCB'S REF HAS NOT SUFFIX



 NOTE: ALL DC VOLTAGES ENCLOSED INTO SQUARES ARE MEASURED IN STEADY STATE WITHOUT INPUT SIGNAL AT 25°C AND NOMINAL MAINS VOLTAGE.

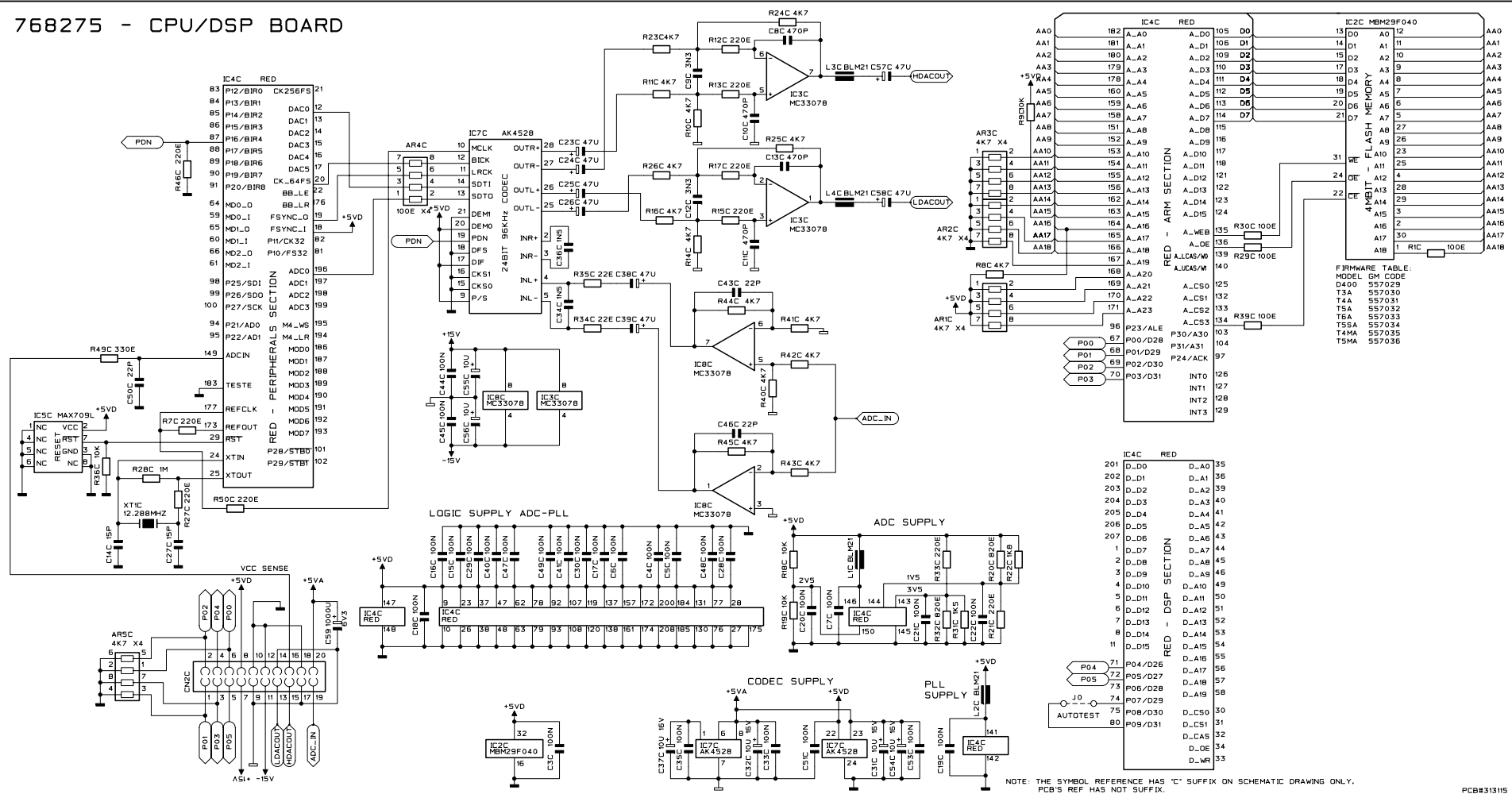
** SEE SERVICE NOTE NR.01/2004
SHORT C18 TO AVOID DISTORTION



NOTE: THE SYMBOL REFERENCE HAS "A" SUFFIX ON SCHEMATIC DRAWING ONLY.
PCB'S REF HAS NOT SUFFIX.

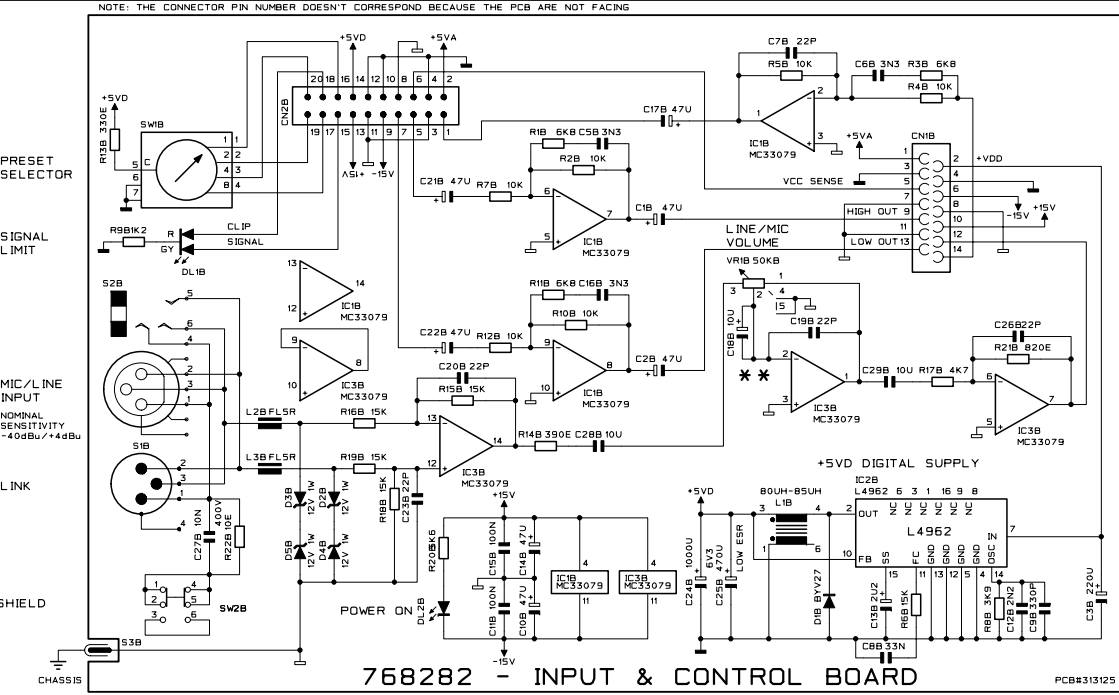
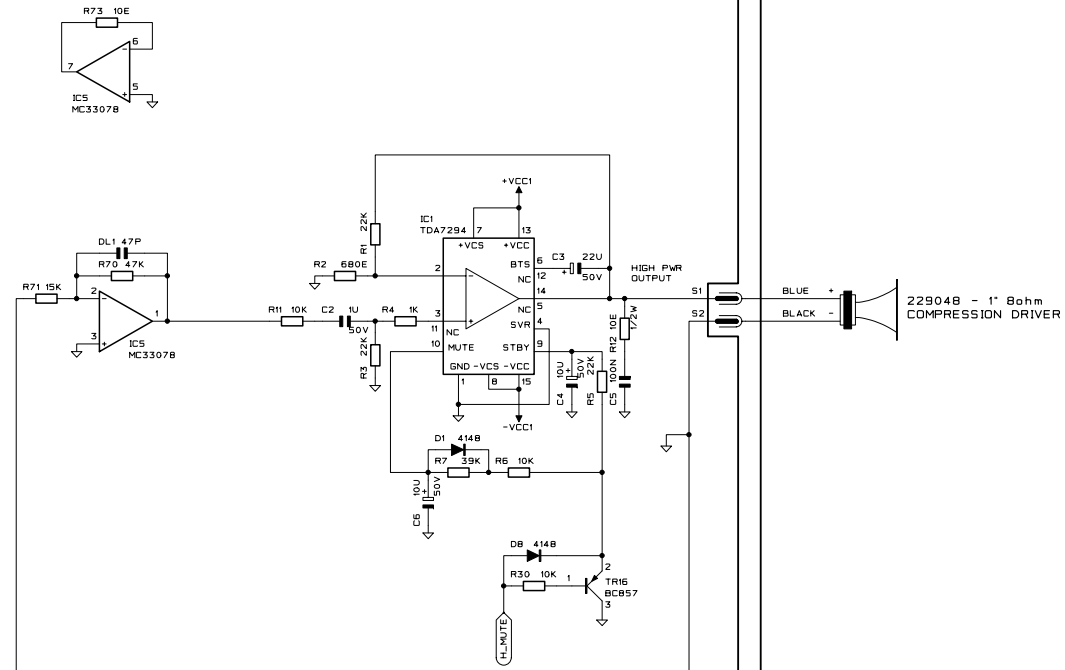
DRW G.BOCCATO	DWG# 550810	PCB# 31315 313120 313121 313125	GENERALMUSIC S.p.A. ITALY
CKD G.RICCI	DATE 11/02/2004	SCHEMATIC DIAGRAM	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC
APP. L.GIBIN	REV: B	T3A DSP POWERED LOUDSPEAKER	

768275 - CPU/DSP BOARD

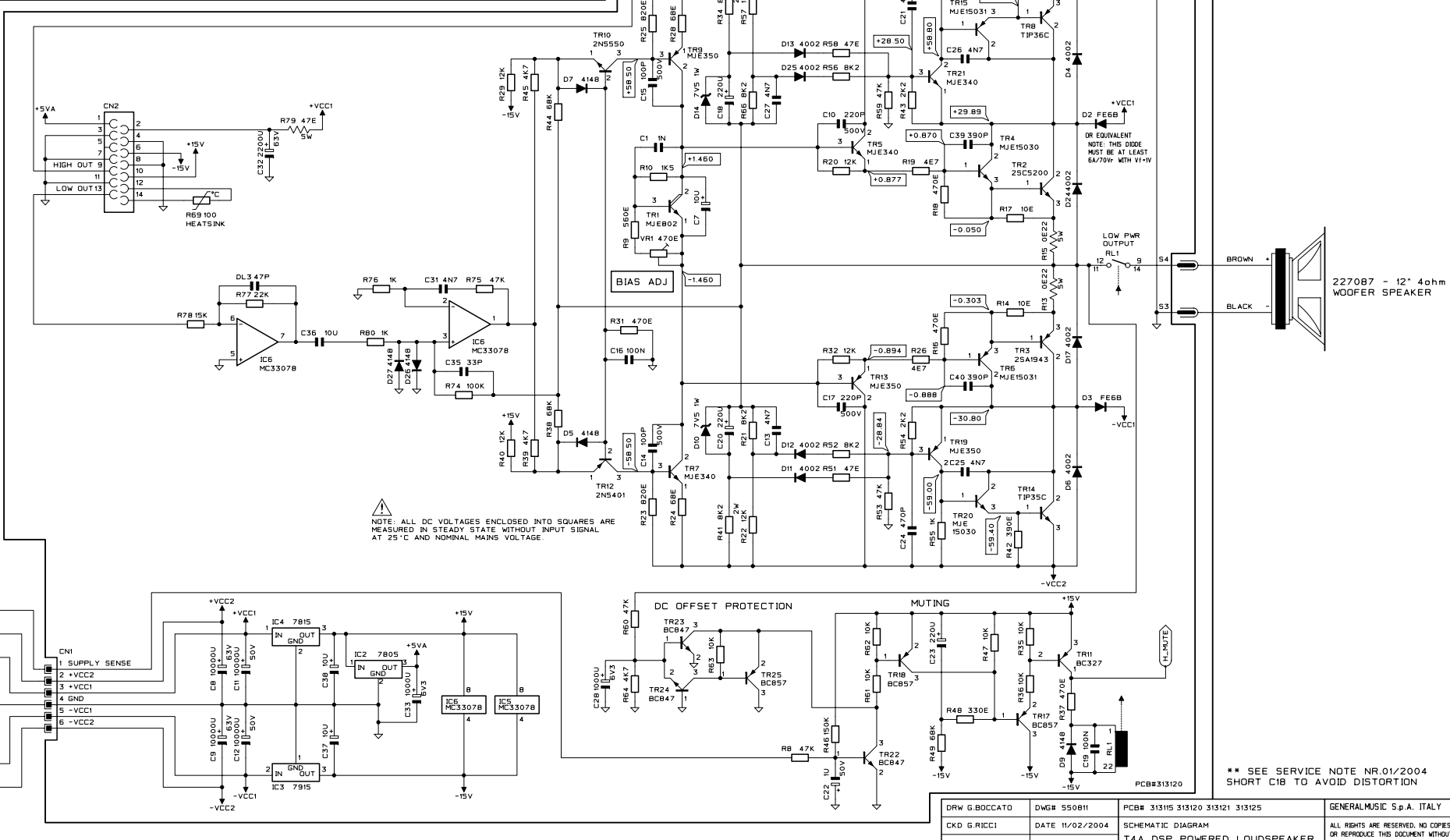
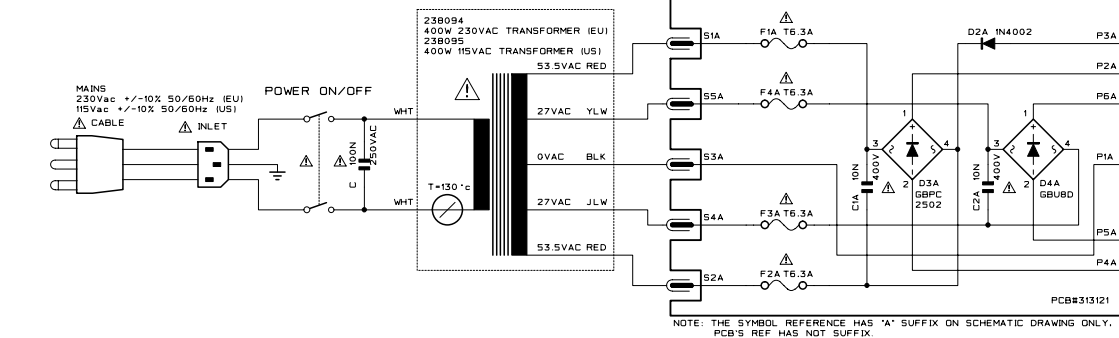


737145 - AMPLIFIER ASSEMBLY 230Vac (EU)
737146 - AMPLIFIER ASSEMBLY 115Vac (US)
(NOTE: ALL BOARDS INCLUDED AND CHECKED)

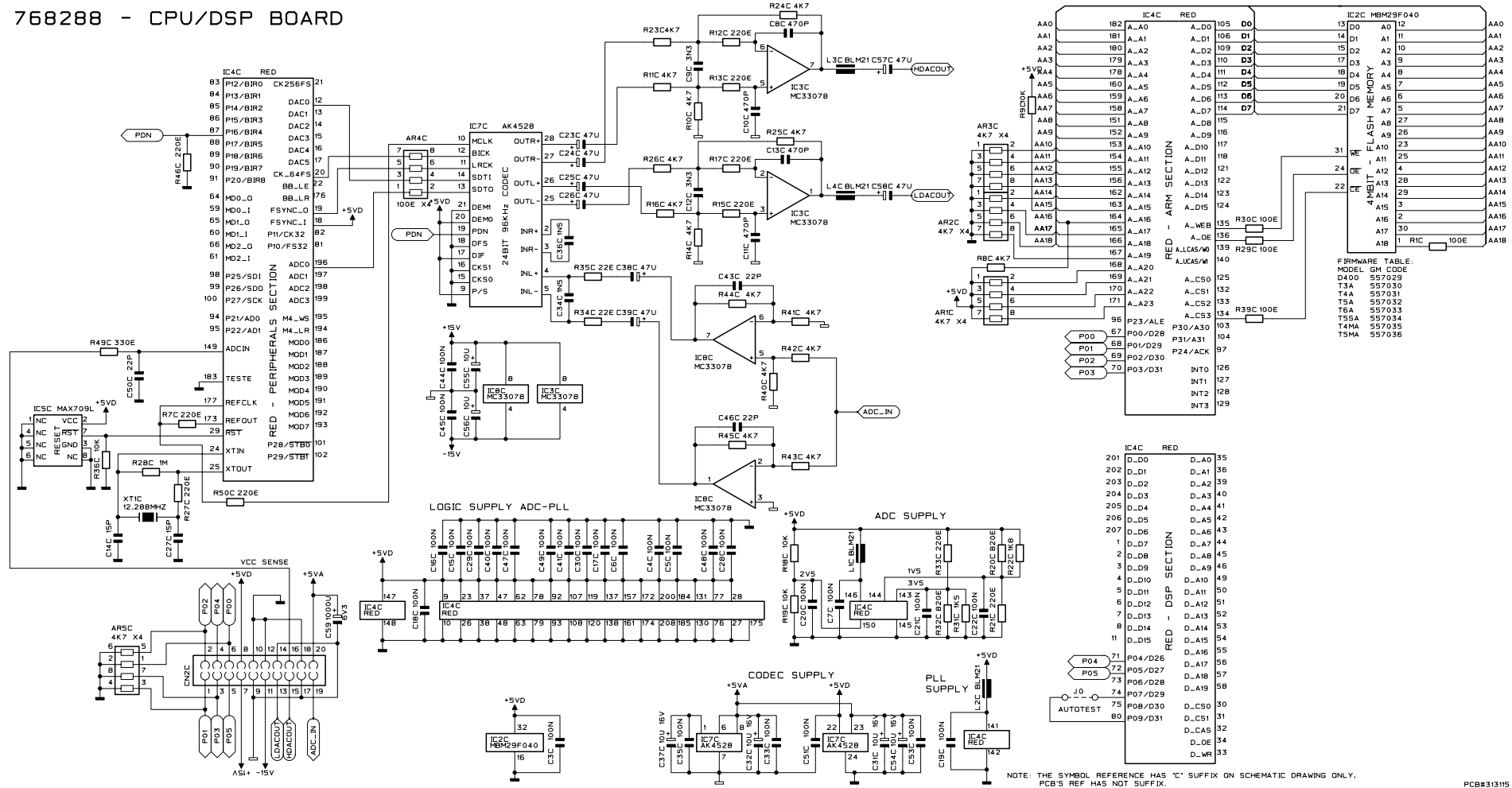
768278 - AMPLIFIER BOARD
(NOTE: ALL DEVICES MOUNTED ON HEATSINK ARE NOT INCLUDED)



768283 - FUSES BOARD



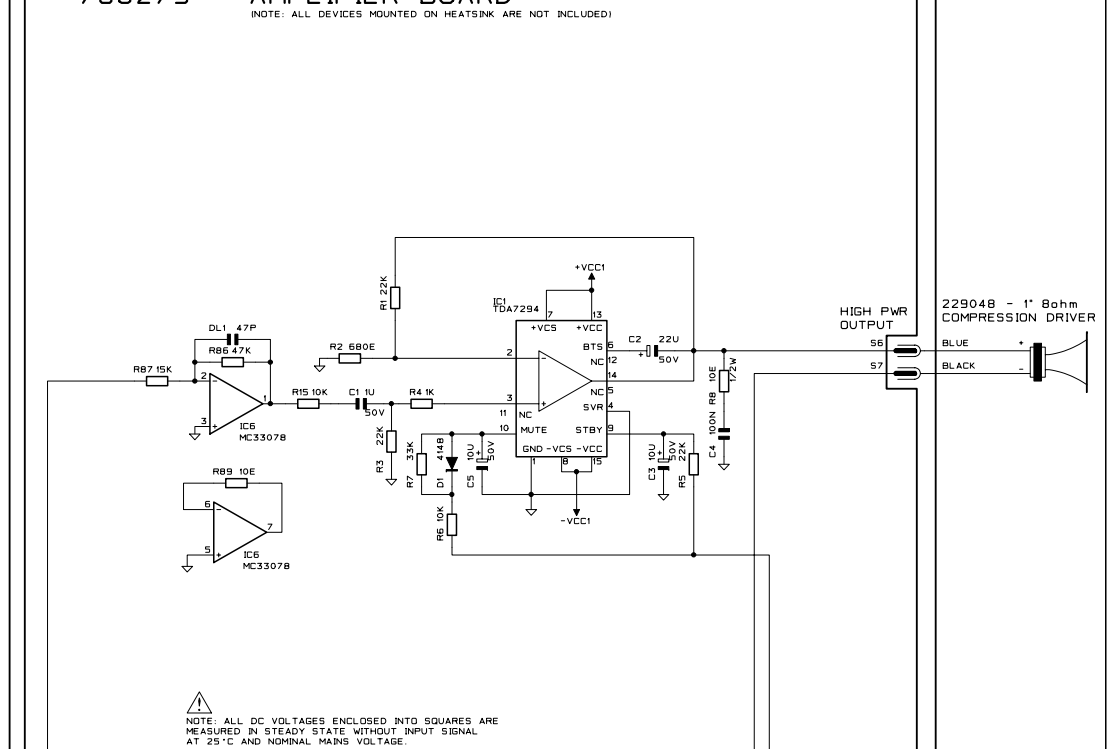
768288 - CPU/DSP BOARD



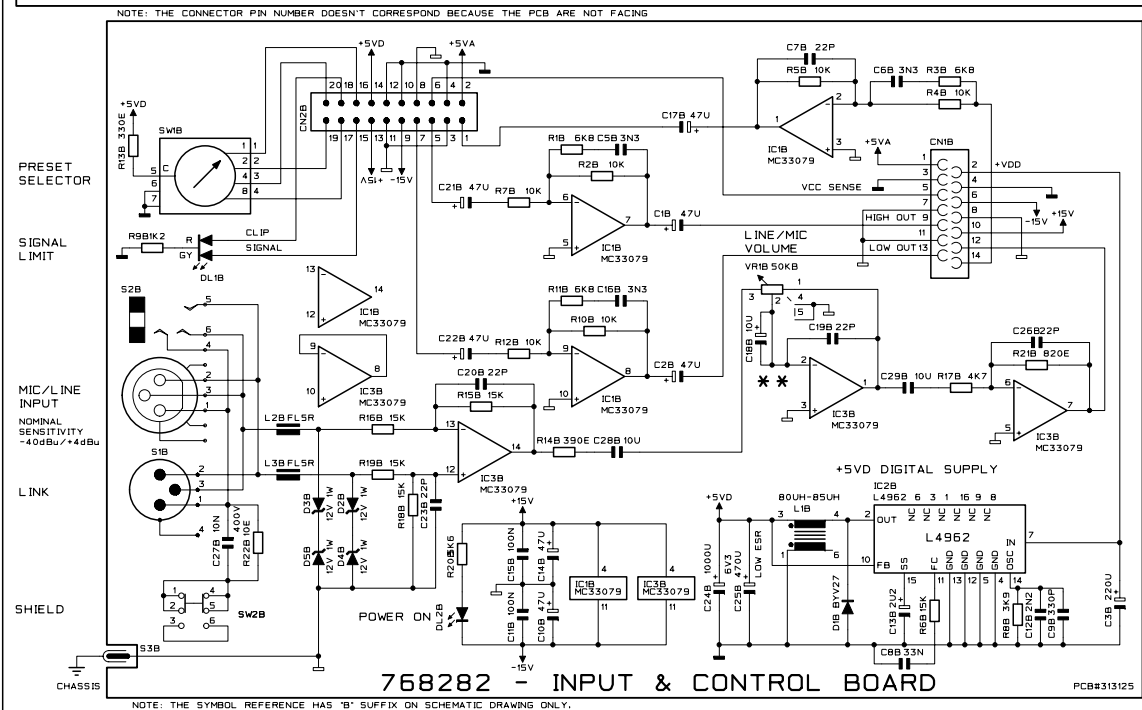
737151 - AMPLIFIER ASSEMBLY 230Vac (EU)
737152 - AMPLIFIER ASSEMBLY 115Vac (US)
(NOTE: ALL BOARDS INCLUDED AND CHECKED)

768279 - AMPLIFIER BOARD

(NOTE: ALL DEVICES MOUNTED ON HEATSINK ARE NOT INCLUDED)

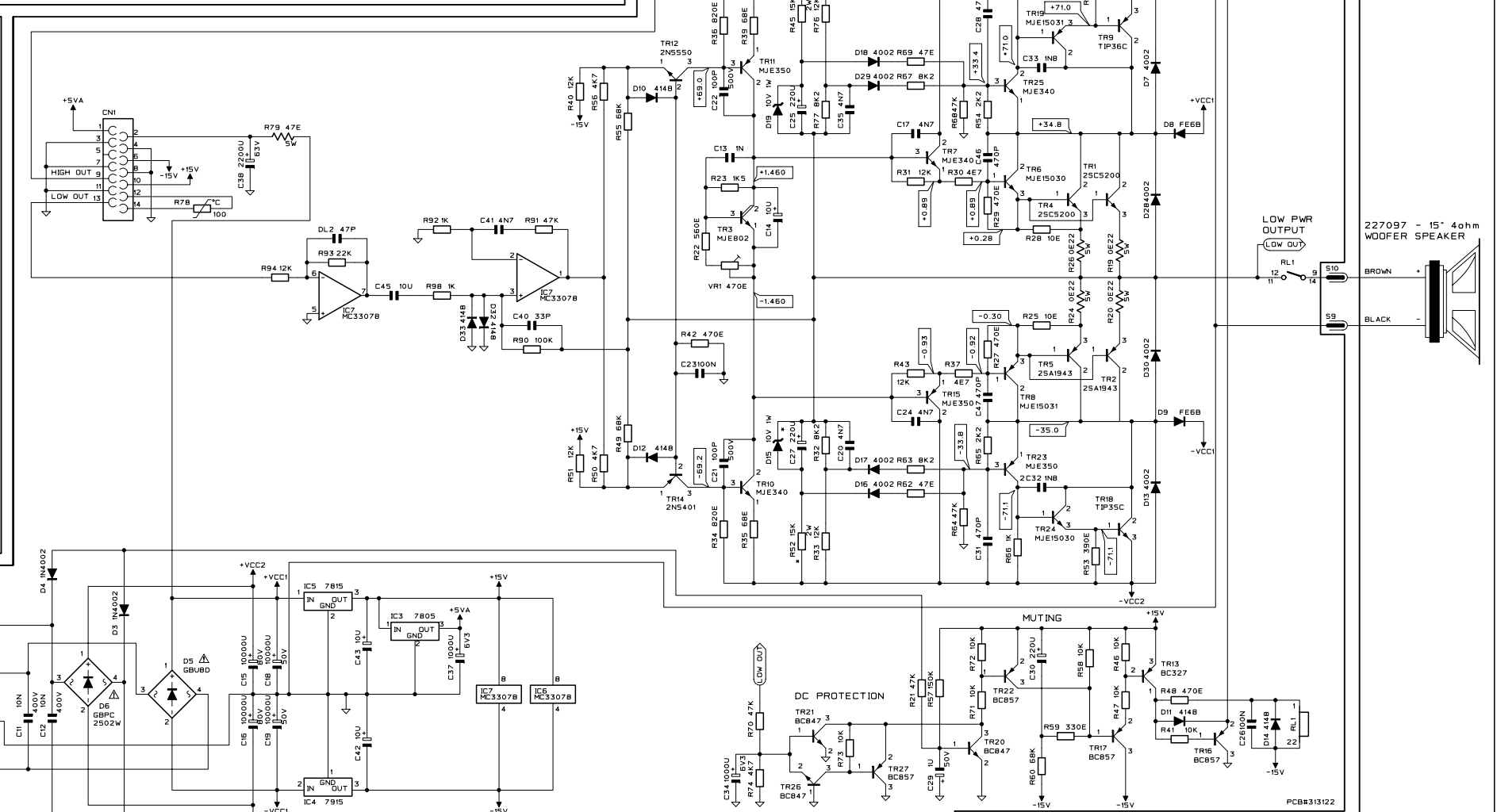


NOTE: ALL DC VOLTAGES ENCLOSED INTO SQUARES ARE MEASURED IN STEADY STATE WITHOUT INPUT SIGNAL AT 25°C AND NOMINAL MAINS VOLTAGE.



768282 - INPUT & CONTROL BOARD

NOTE: THE SYMBOL REFERENCE HAS 'B' SUFFIX ON SCHEMATIC DRAWING ONLY.
PCB'S REF HAS NOT SUFFIX



LOW PWR
OUTPUT

LOW OUT

RL1

12 11 14

510 BROWN +

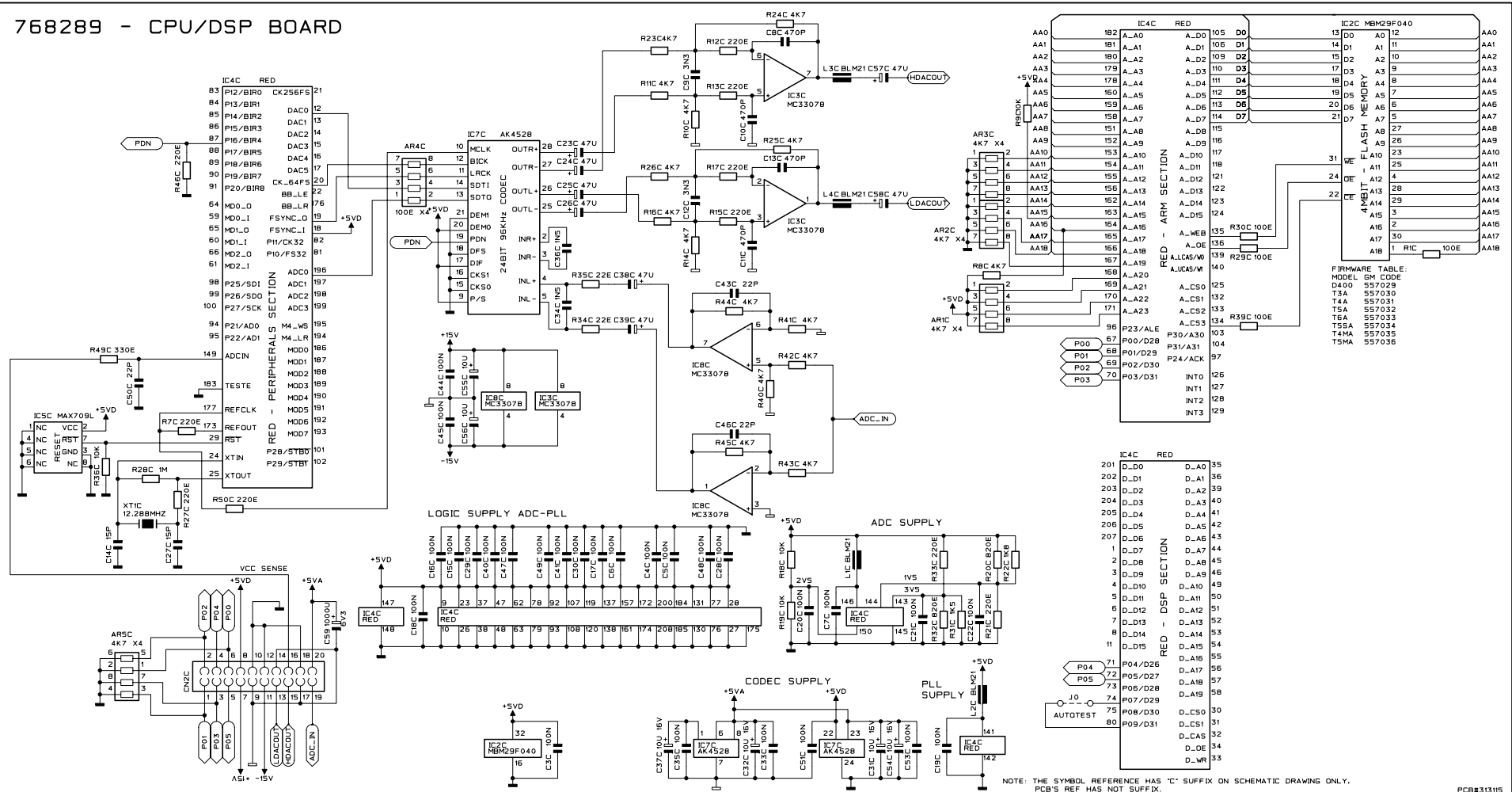
59 BLACK -

227097 - 15" 4ohm
WOOFER SPEAKER

** SEE SERVICE NOTE NR.01/2004
SHORT C18 TO AVOID DISTORTION

DRW G.BOCCATO	DWG# 550812	PCB# 3131S 31312 31315	GENERALMUSIC S.p.A. ITALY
CKD G.RICCI	DATE 02/03/2005	SCHEMATIC DIAGRAM	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCTION OF THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC
APP. I. GIRON	REV. R	TSA DSP POWERED LOUDSPEAKER	

768289 - CPU/DSP BOARD

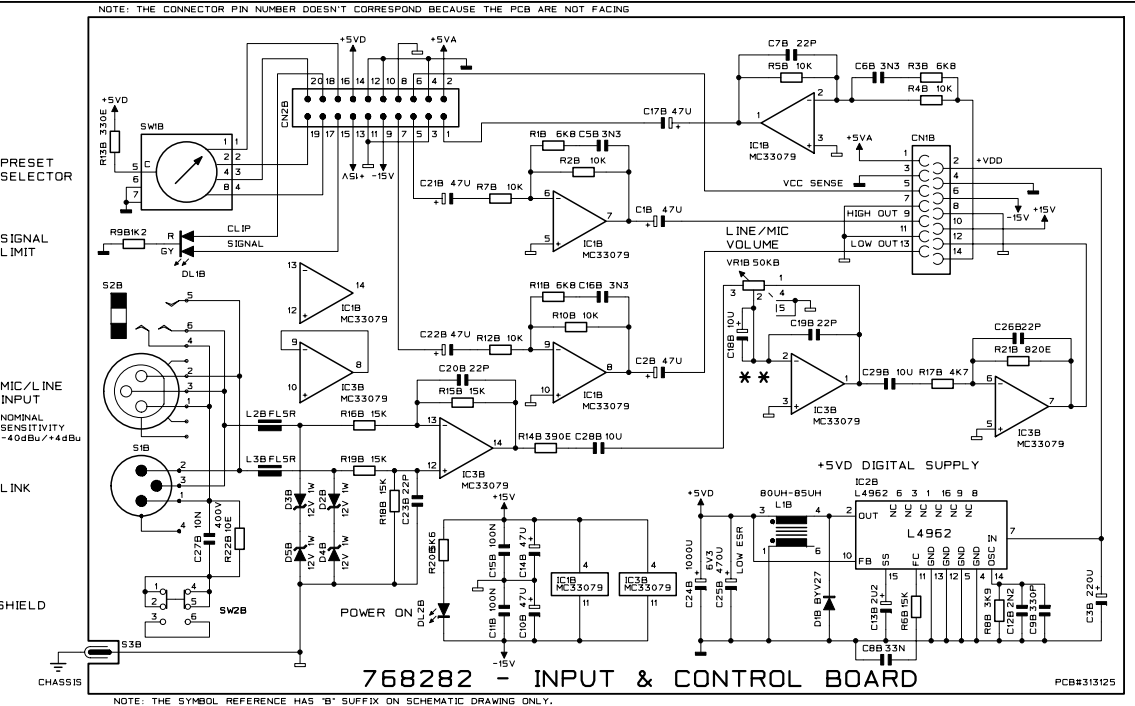
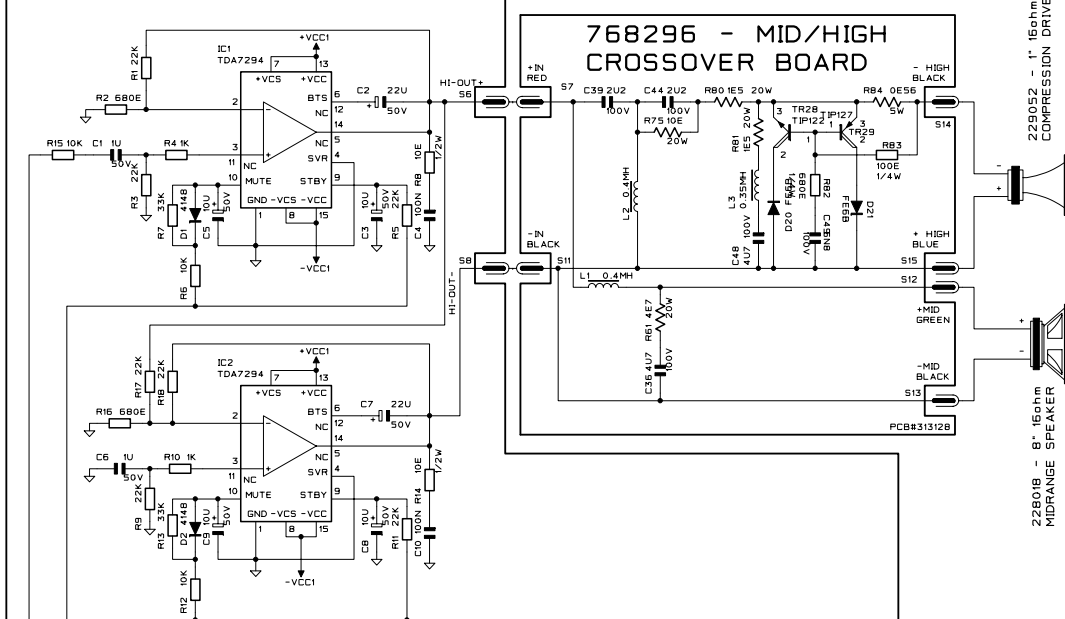


737153 - AMPLIFIER ASSEMBLY 230Vac (EU) 737154 - AMPLIFIER ASSEMBLY 115Vac (US)

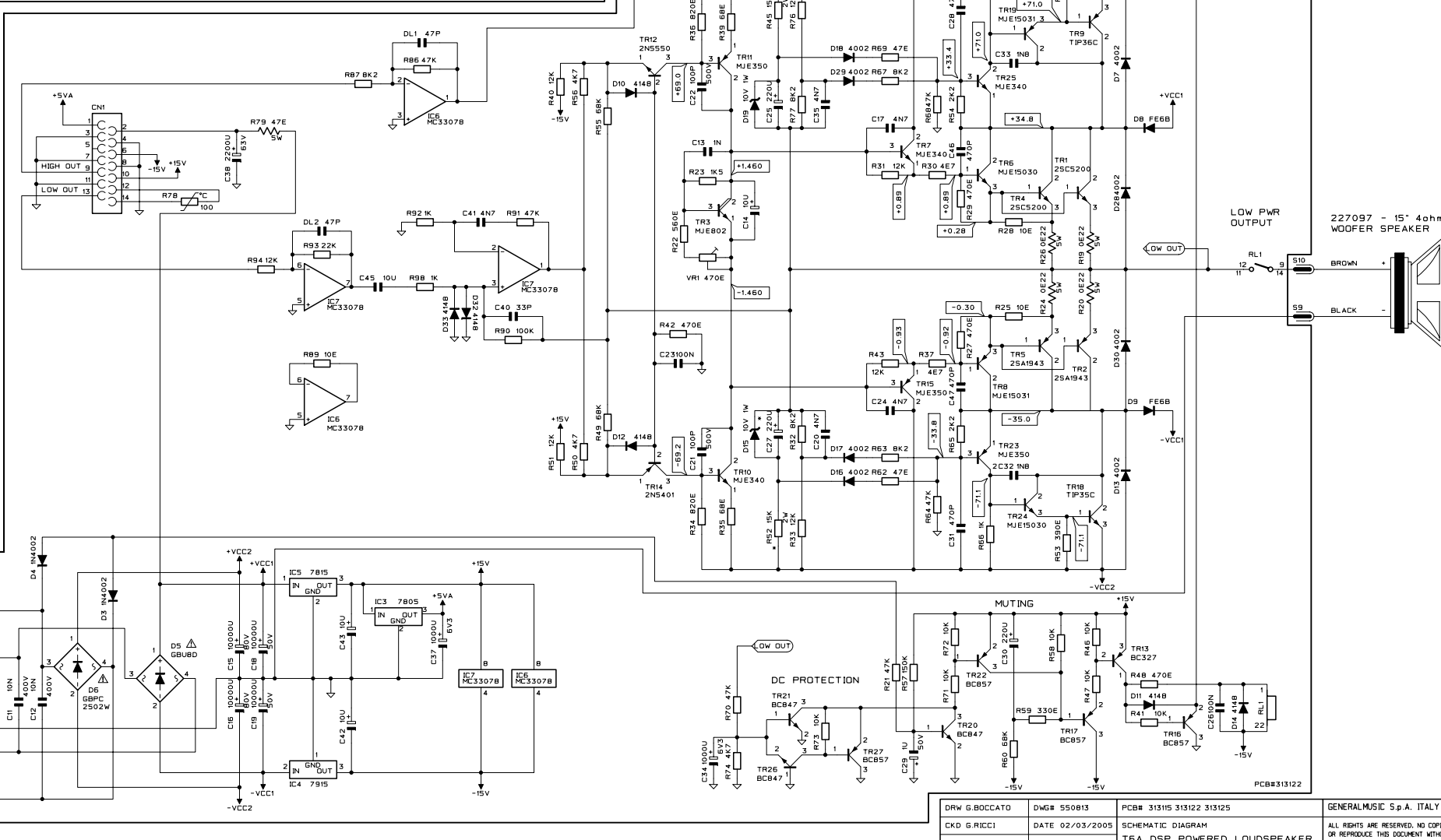
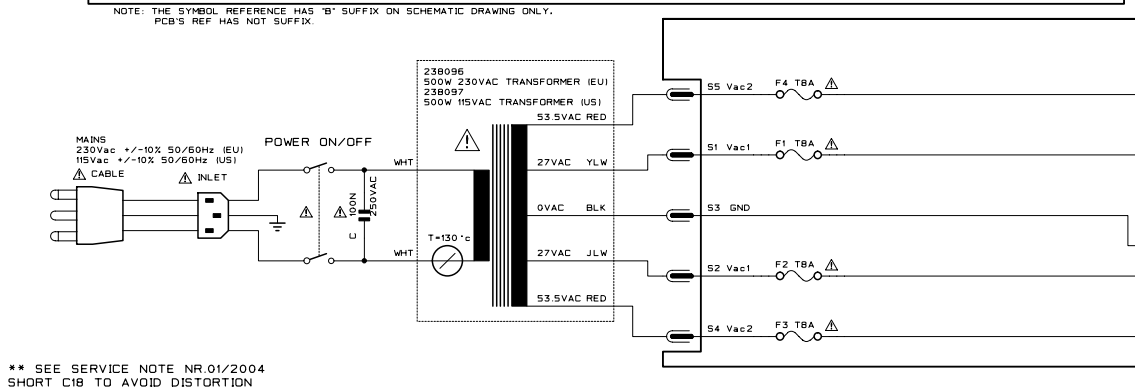
(NOTE: ALL BOARDS INCLUDED AND CHECKED, EXCEPT 768296)

768280 - AMPLIFIER BOARD

(NOTE: ALL DEVICES MOUNTED ON HEATSINK ARE NOT INCLUDED)



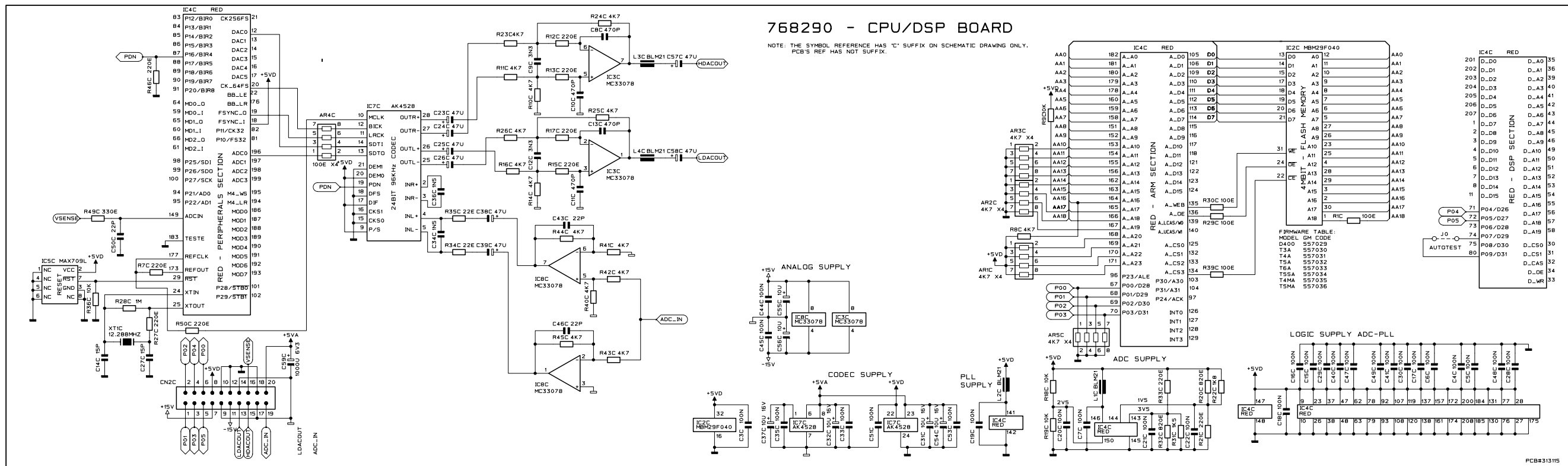
768282 - INPUT & CONTROL BOARD



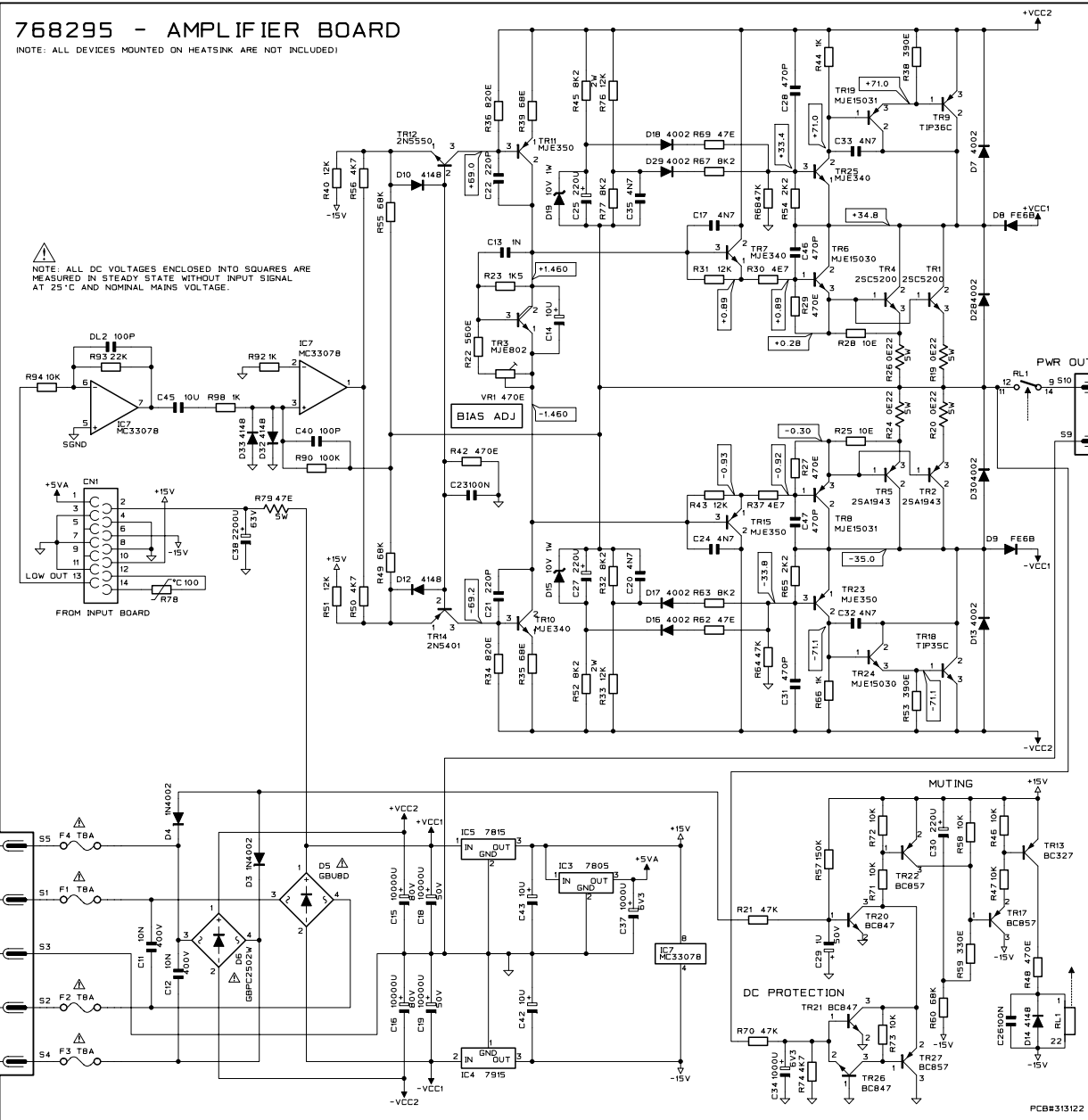
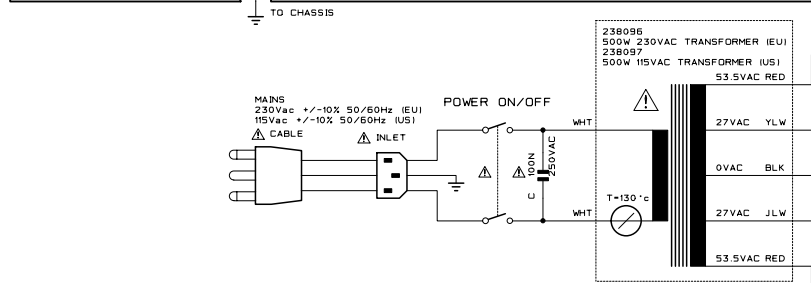
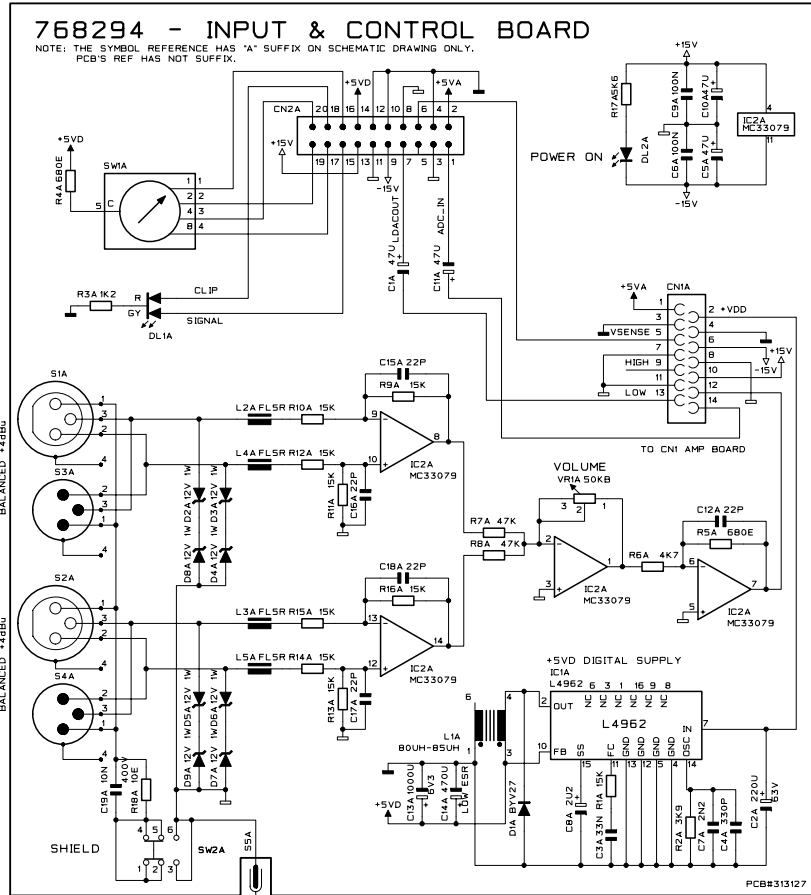
** SEE SERVICE NOTE NR.01/2004
SHORT C18 TO AVOID DISTORTION

DRW G.BOCATO DWG# 550813 PCB# 31315 31312 313125
CKD G.RICCI DATE 02/03/2005 SCHEMATIC DIAGRAM
APP. L.GBIN REV: B T6A DSP POWERED LOUDSPEAKER

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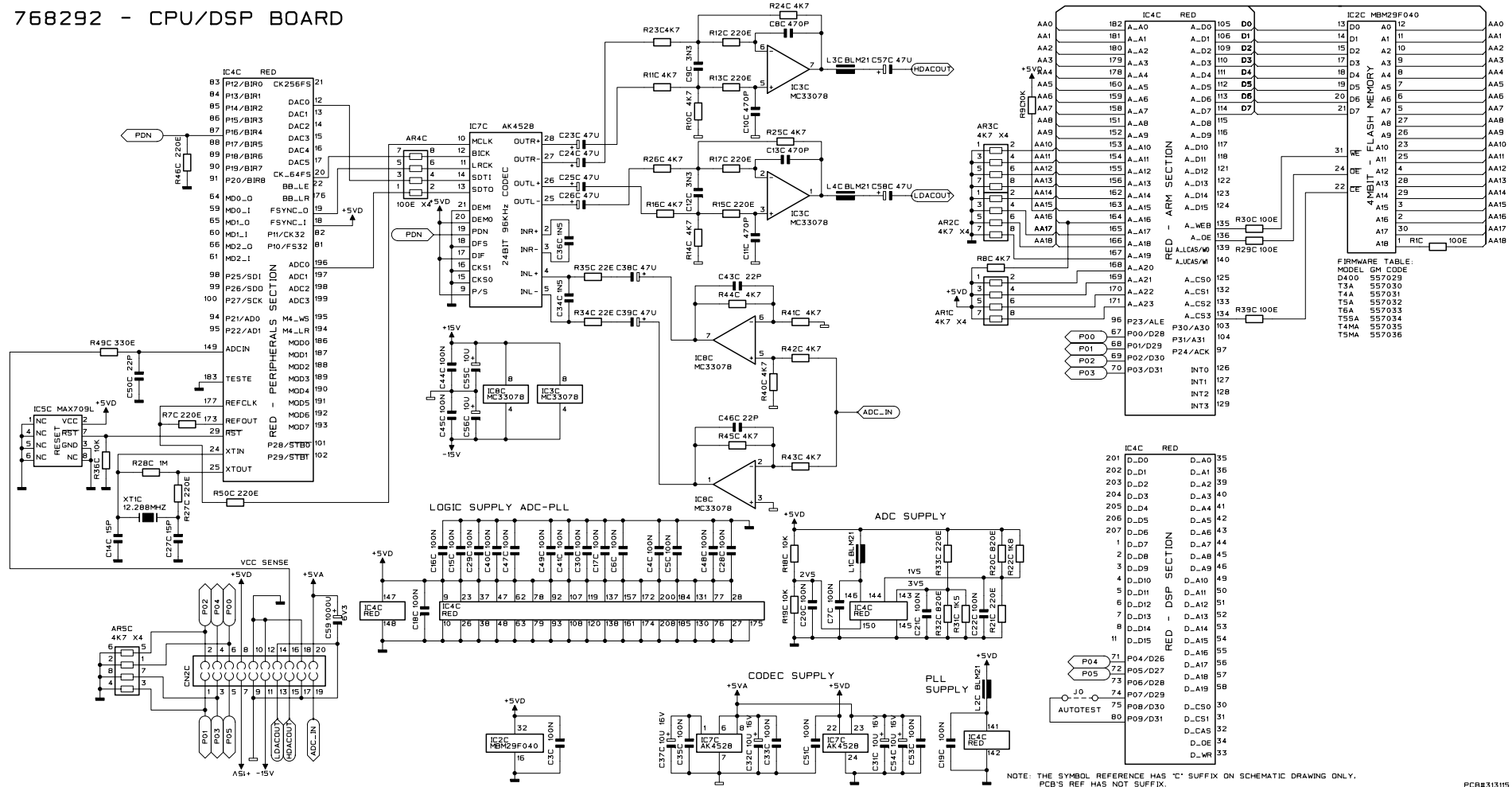
NOTE: THE CONNECTOR PIN NUMBER DOESN'T CORRESPOND BECAUSE THE PCB ARE NOT FACING



737155 - AMPLIFIER ASSEMBLY 230V_{ac} (EU)
737156 - AMPLIFIER ASSEMBLY 115V_{ac} (US)
WHOLE AMPLIFIER WITH BOARDS COMPLETELY ASSEMBLED AND CHECKED

DRW G. BOCCATO	DWG# 550810	PCB# 313115, 313127, 313127	GENERAL MUSIC S.p.A. ITALY
CKD G. RICCI	DATE 21/07/03	SCHEMATIC DIAGRAM	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERAL MUSIC.
APP. N. ZAVATTA	REV. A	TSSA POWER AMPLIFIER ASS'Y	

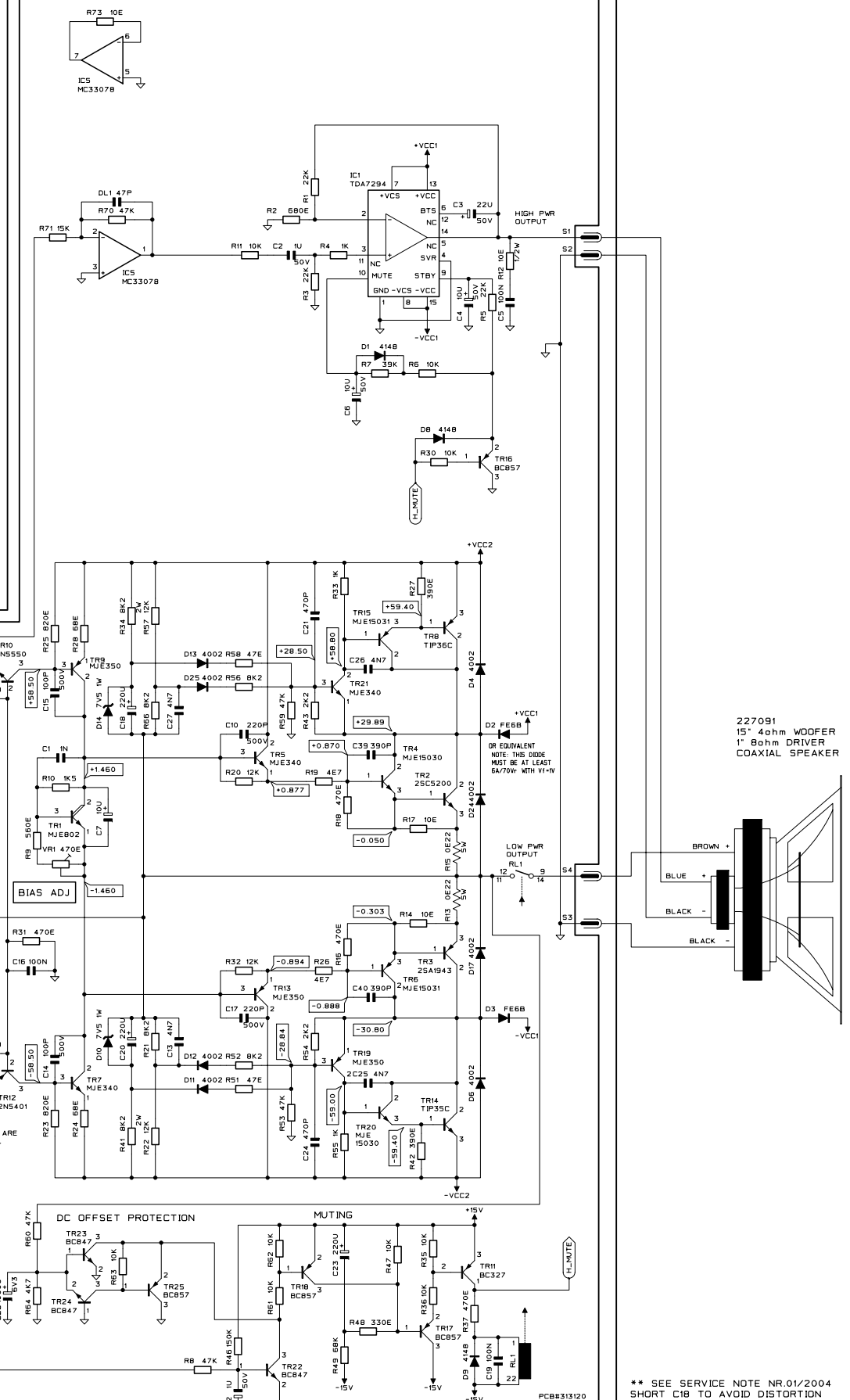
768292 - CPU/DSP BOARD



737159 - AMPLIFIER ASSEMBLY 230Vac (EU)
737160 - AMPLIFIER ASSEMBLY 115Vac (US)
(NOTE: ALL BOARDS INCLUDED AND CHECKED)

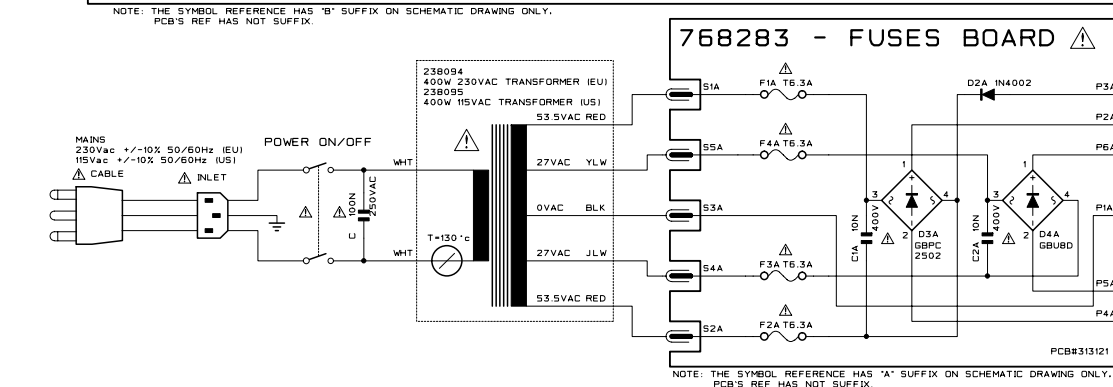
768278 - AMPLIFIER BOARD

(NOTE: ALL DEVICES MOUNTED ON HEATSINK ARE NOT INCLUDED)

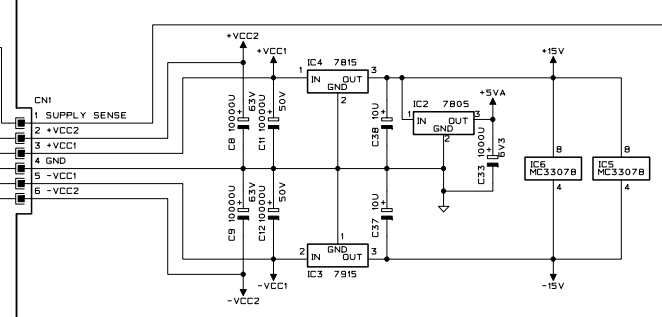


** SEE SERVICE NOTE NR.01/2004
SHORT C18 TO AVOID DISTORTION

768293 - INPUT & CONTROL BOARD



768283 - FUSES BOARD ⚠



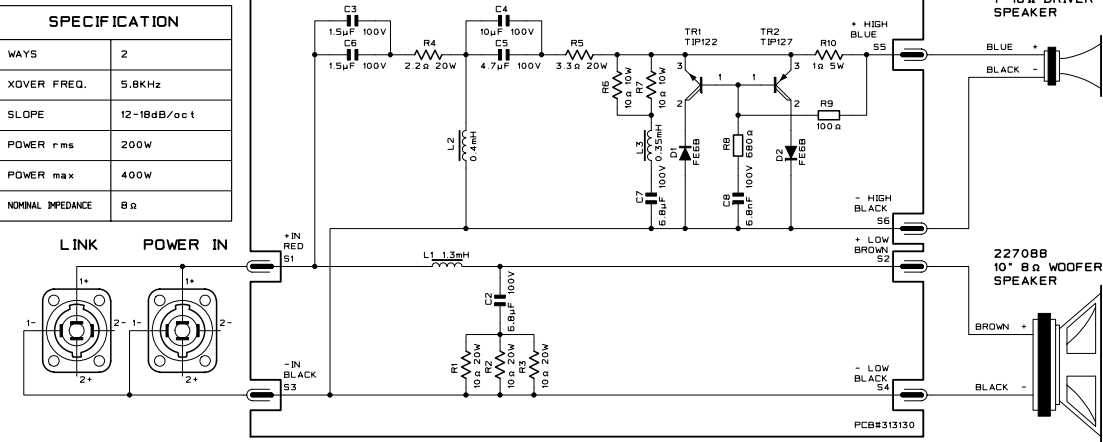
NOTE: THE SYMBOL REFERENCE HAS "A" SUFFIX ON SCHEMATIC DRAWING ONLY.
PCB'S REF HAS NOT SUFFIX.

DRW G.BOCCATO	DWG# 550816	PCB# 31315 31320 31321 31325	GENERALMUSIC S.p.A. ITALY
EKD G.RICCI	DATE 03/03/2005	SCHEMATIC DIAGRAM	ALL RIGHTS ARE RESERVED. NO COPY OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC
APP. L.GIBIN	REV: B	T5MA DSP POWERED LOUDSPEAKER	

T200 8 Ω

SPECIFICATION	
WAYS	2
XOVER FREQ.	5.8KHz
SLOPE	12-18dB/oct
POWER rms	200W
POWER max	400W
NOMINAL IMPEDANCE	8 Ω

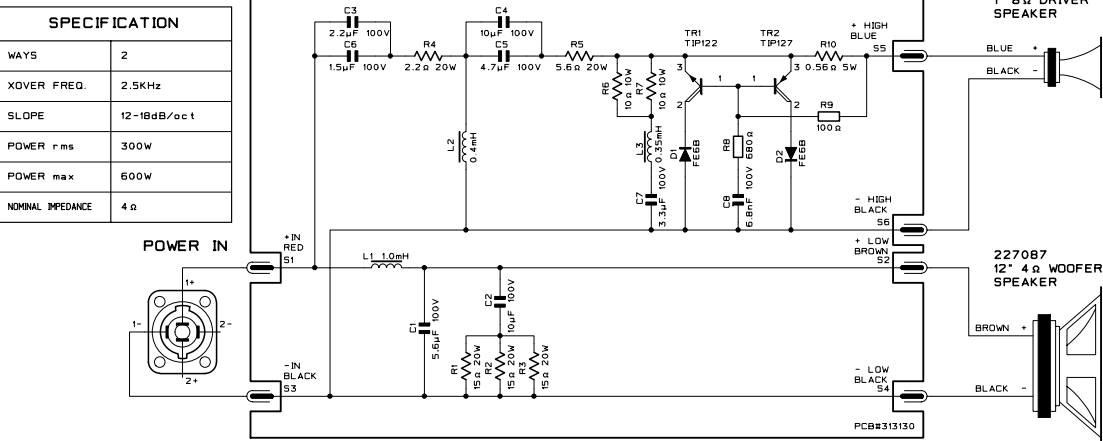
768298 T200 CROSSOVER FILTER BOARD



T300 4 Ω

SPECIFICATION	
WAYS	2
XOVER FREQ.	2.5KHz
SLOPE	12-18dB/oct
POWER rms	300W
POWER max	600W
NOMINAL IMPEDANCE	4 Ω

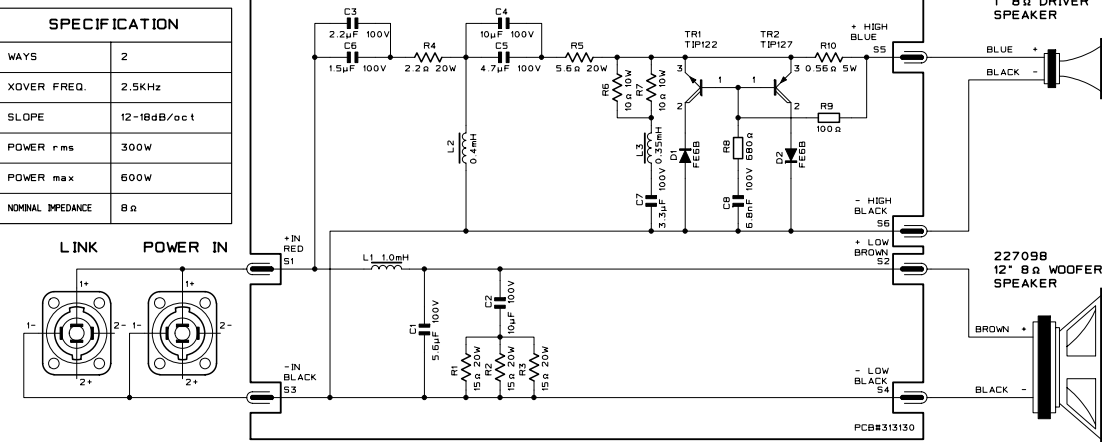
768299 T300 CROSSOVER FILTER BOARD



T300 8 Ω

SPECIFICATION	
WAYS	2
XOVER FREQ.	2.5KHz
SLOPE	12-18dB/oct
POWER rms	300W
POWER max	600W
NOMINAL IMPEDANCE	8 Ω

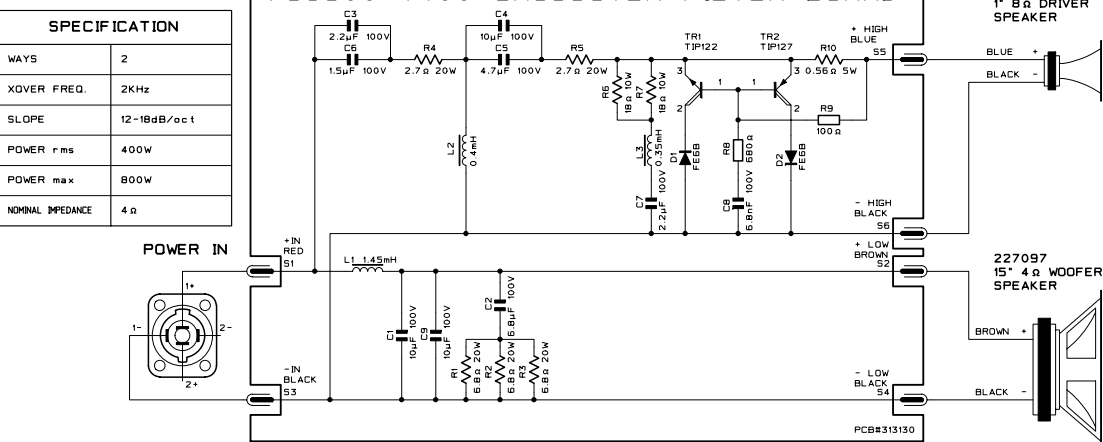
768299 T300 CROSSOVER FILTER BOARD



T400 4 Ω

SPECIFICATION	
WAYS	2
XOVER FREQ.	2KHz
SLOPE	12-18dB/oct
POWER rms	400W
POWER max	800W
NOMINAL IMPEDANCE	4 Ω

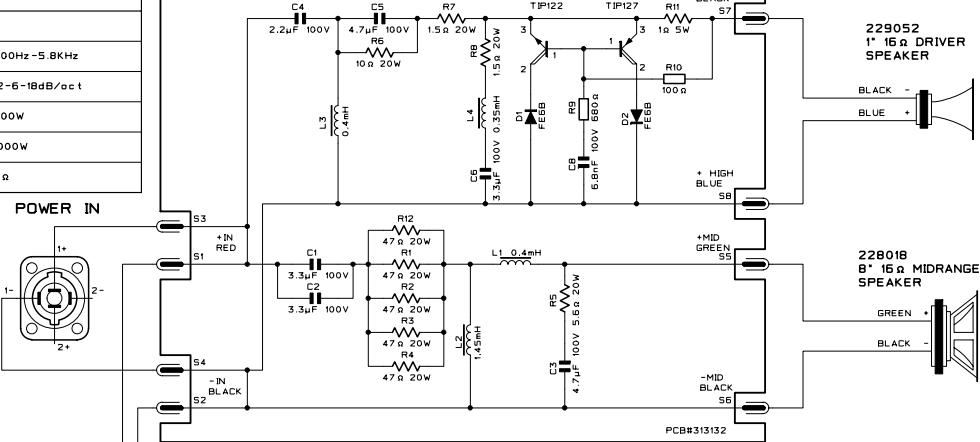
768300 T400 CROSSOVER FILTER BOARD



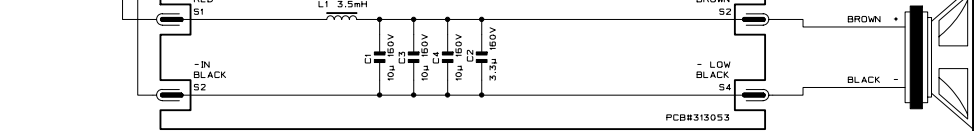
T500 4 Ω

SPECIFICATION	
WAYS	3
XOVER FREQ.	800Hz-5.8KHz
SLOPE	12-6-18dB/oct
POWER rms	500W
POWER max	1000W
NOMINAL IMPEDANCE	4 Ω

768303 T500 MID/HIGH CROSSOVER FILTER BOARD



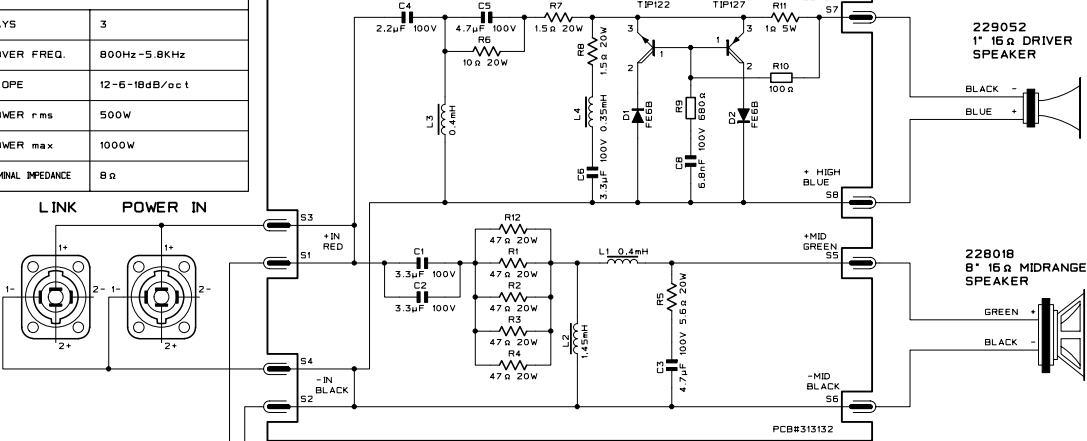
768301 T500 LOW CROSSOVER FILTER BOARD



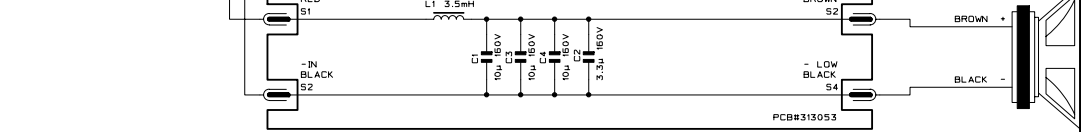
T500 8 Ω

SPECIFICATION	
WAYS	3
XOVER FREQ.	800Hz-5.8KHz
SLOPE	12-6-18dB/oct
POWER rms	500W
POWER max	1000W
NOMINAL IMPEDANCE	8 Ω

768303 T500 MID/HIGH CROSSOVER FILTER BOARD



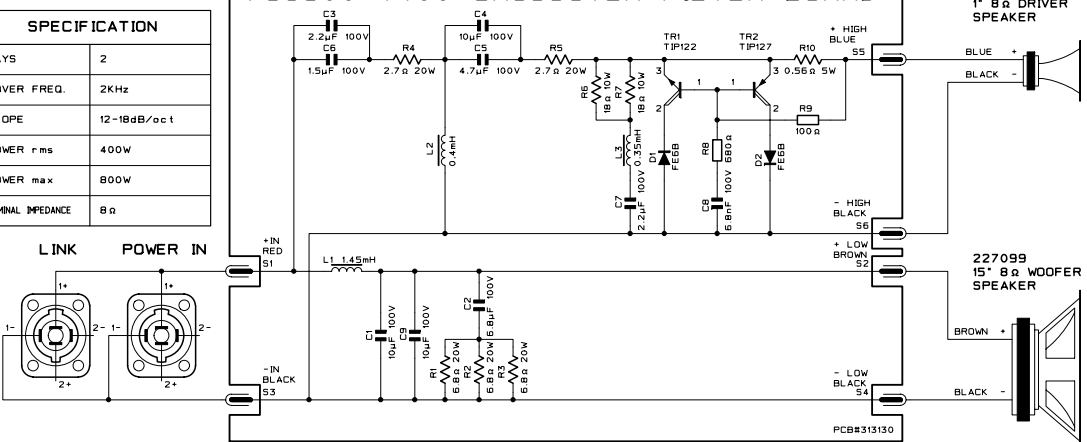
768301 T500 LOW CROSSOVER FILTER BOARD

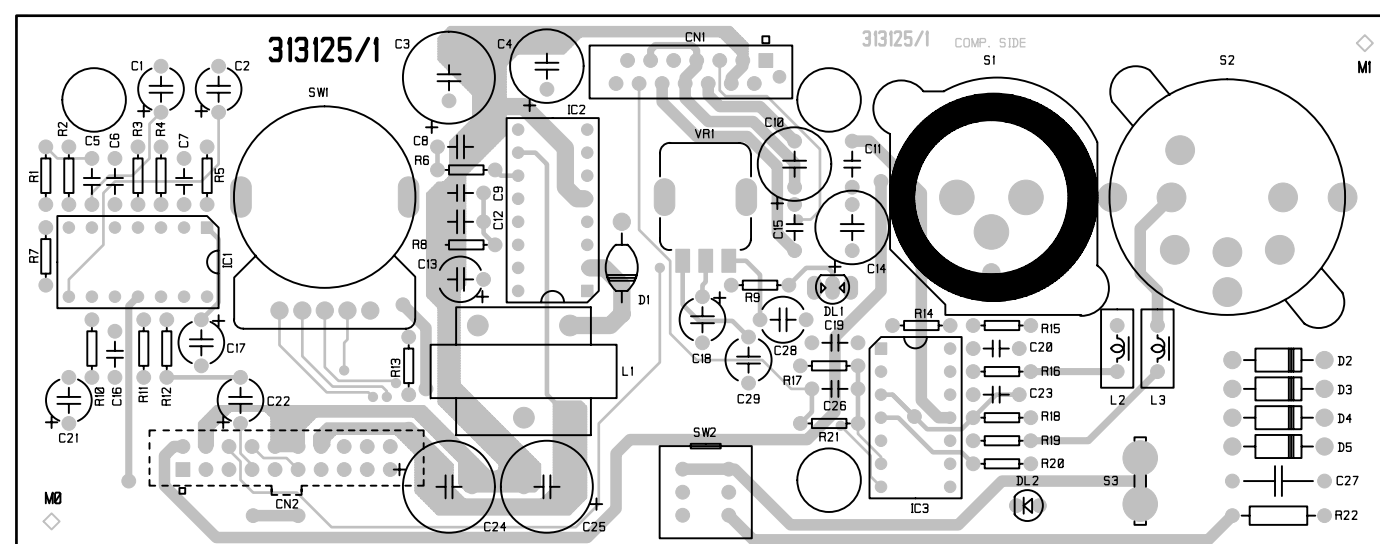
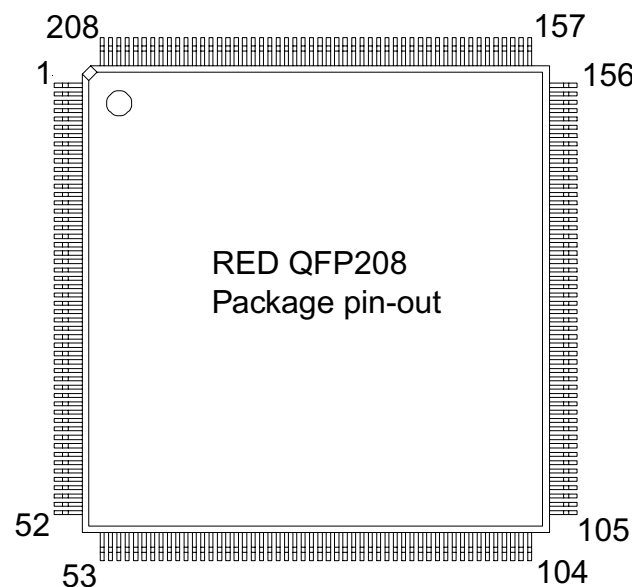
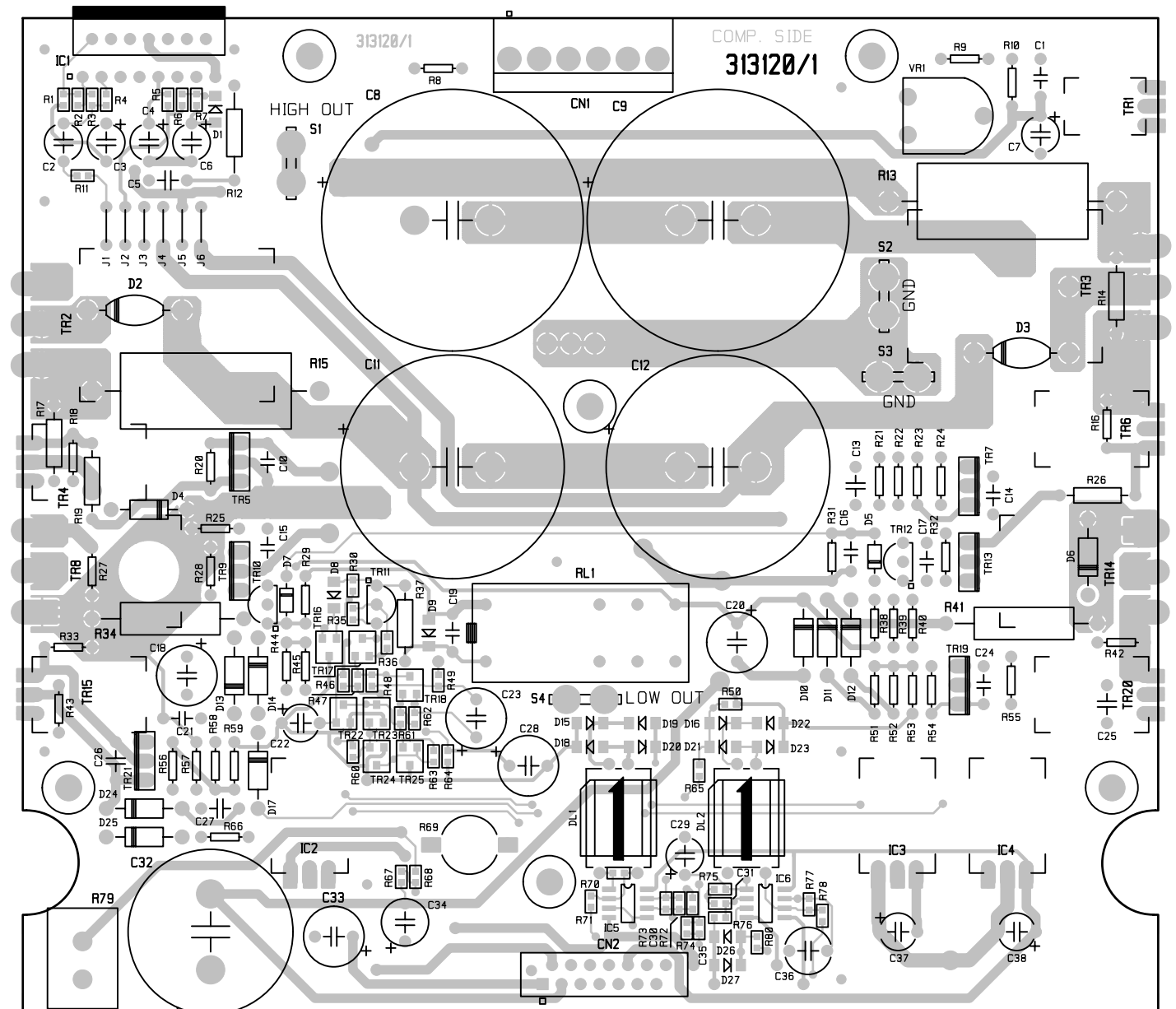
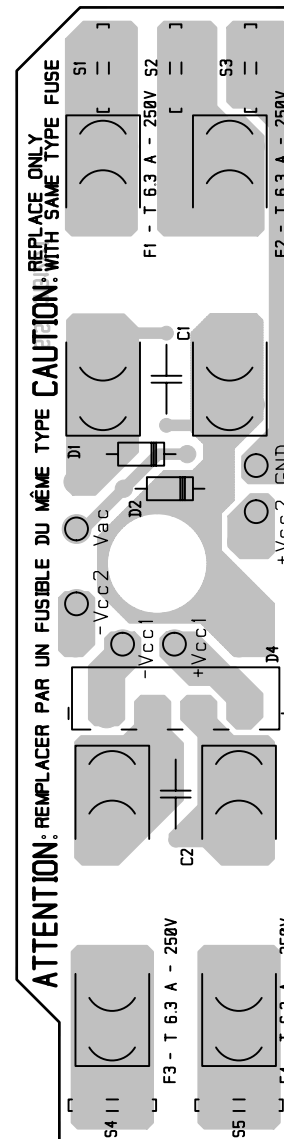
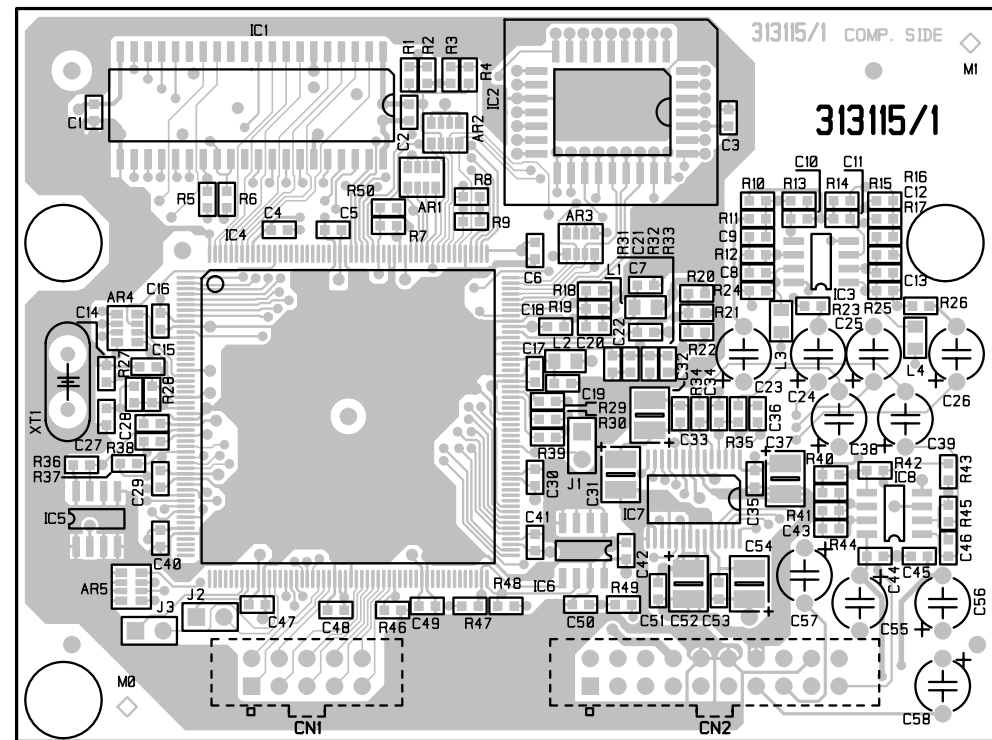


T400 8 Ω

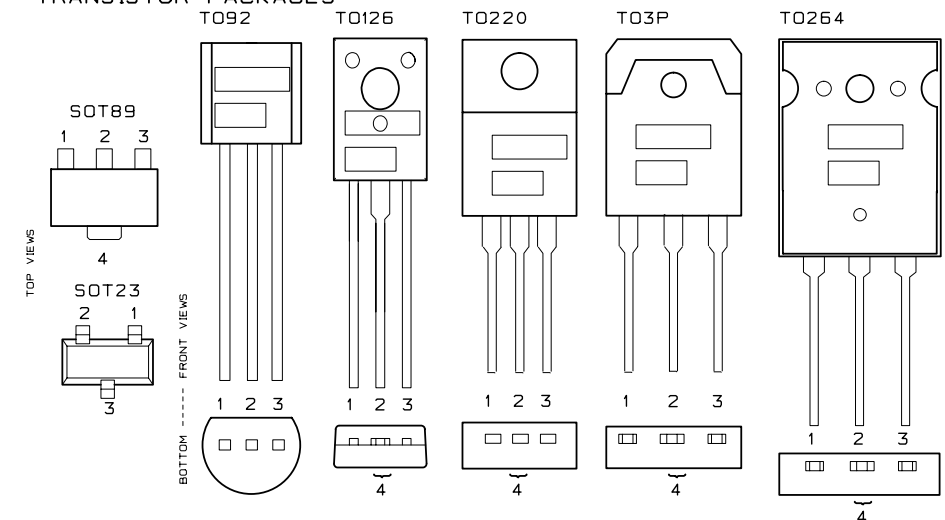
SPECIFICATION	
WAYS	2
XOVER FREQ.	2KHz
SLOPE	12-18dB/oct
POWER rms	400W
POWER max	800W
NOMINAL IMPEDANCE	8 Ω

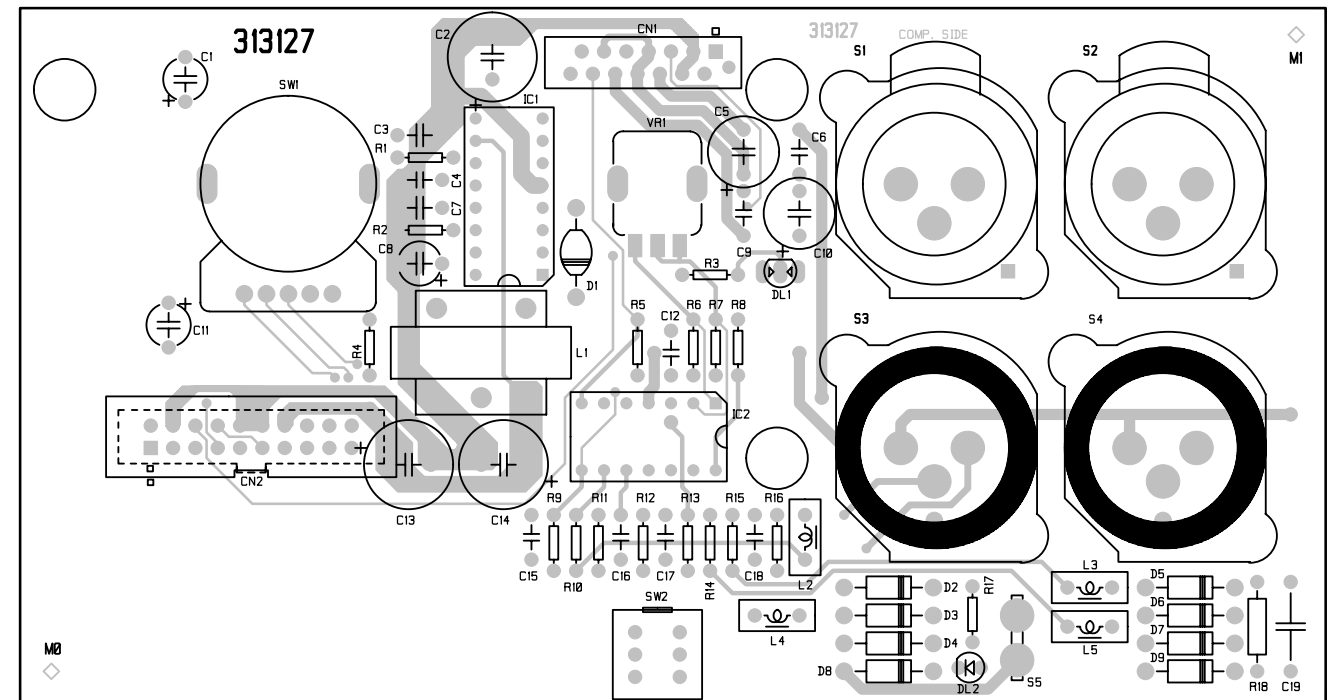
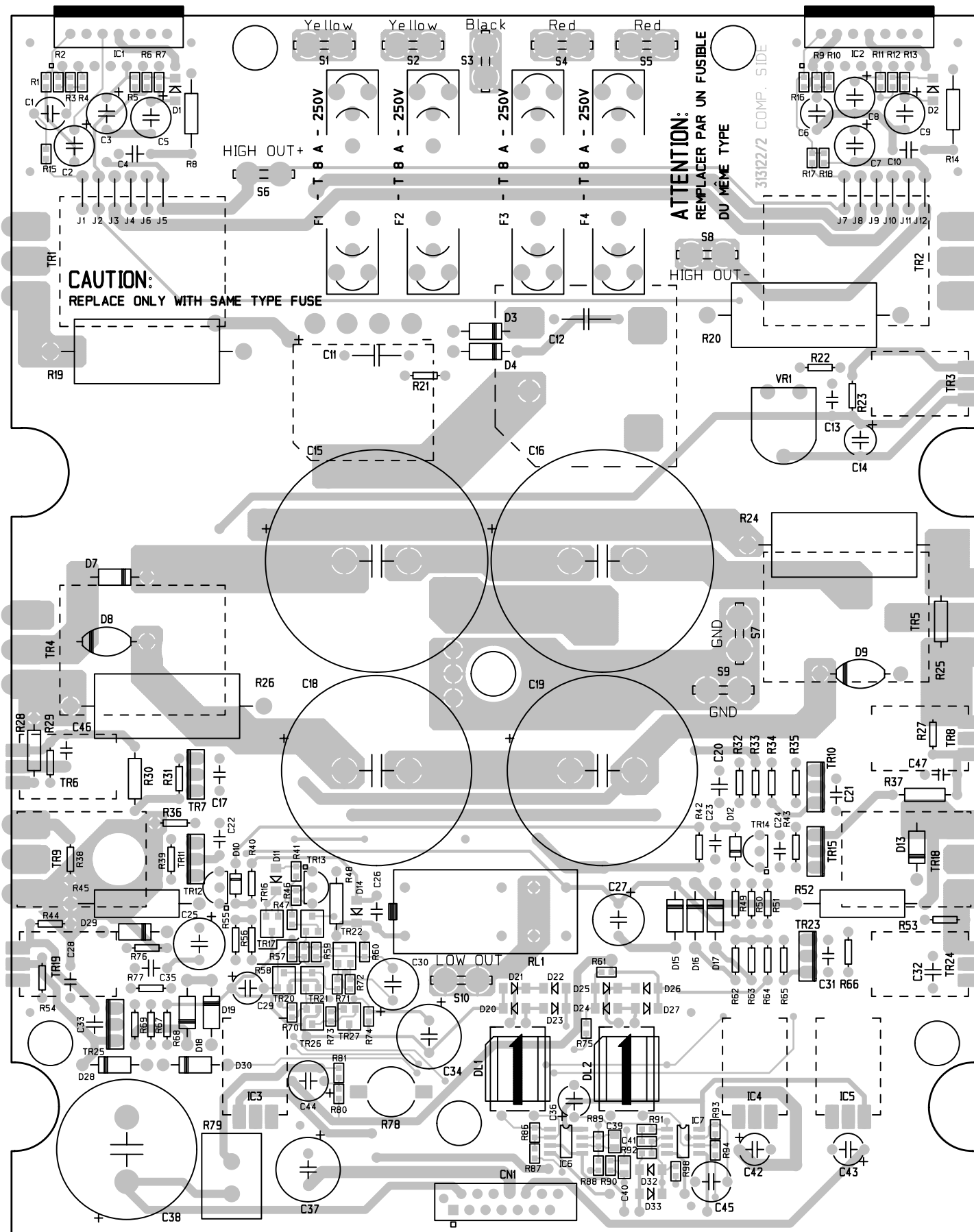
768300 T400 CROSSOVER FILTER BOARD



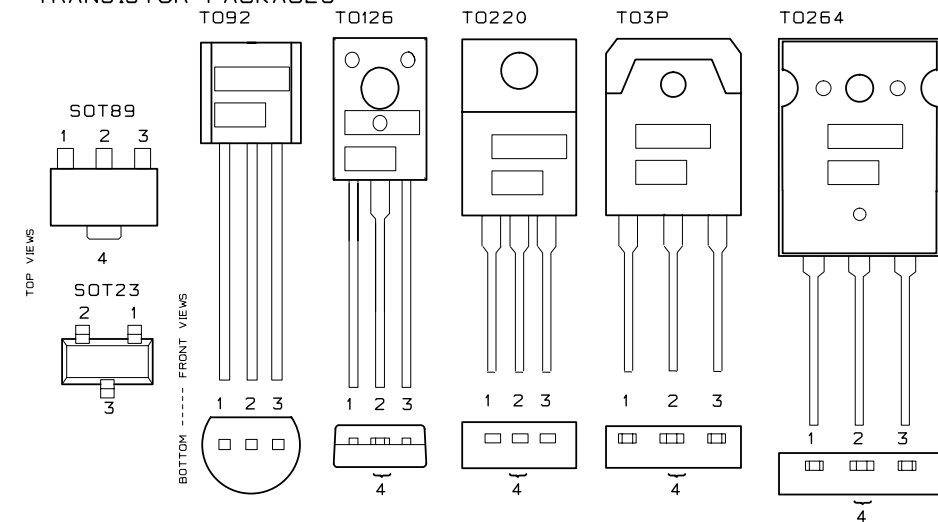


TRANSISTOR PACKAGES





TRANSISTOR PACKAGES



Spare Part List	
Legend	
EU	= Europe version 230V
US	= United State version 115V
Code	Description

Optional Accessories

950978	SC31 Aluminium Telescopic Stand (for T3A/T4A/T5A/T6A SAT - T5SA SUB)
950199	SC30 Aluminium Telescopic Stand (for SAT standalone)
951451	SC41 Wall Mount Support D400/X300 T4A/T300
951452	SC42 Wall Mount Support T3A/T200

Titanium Active

T3A

Accessories

277398	T3A Owner’s Manual (Italian-English)
130297	Mains Cable 10A (EU)
130283	Mains Cable 10A (US)

Cabinet Assembly

841336	65cm Brown/Black 1.50mm² Faston/Faston Dual Wire
841333	65cm Blue/Black 0.75mm² Faston/Faston Dual Wire
667769	Speaker Grid
227088	10” 8ohm Woofer Speaker
210272	Speaker Filler (400gr/m² 30x50x4cm)
210217	Black Sealer (specify mt)
210215	Adhesive Rubber Foam 10x1.9mm (Specify mt)
180836	“LEM DSP POWERED” Adhesive Plate
180830	“T3A” Adhesive Label
120341	WL4x20tt Black Screw
120124	M5x30tc Black Screw
727650	HF Horn and Driver Assembly
347421	* Horn
229052	* 1” 16ohm Compression Driver
229053	** 1” 16ohm Diaphragm for 229052 Driver
210289	* Adhesive Gasket for Horn
717093	Speaker Cabinet Assembly
657291	* Reflex Duct
430099	* Wooden Cabinet
347420	* Rubber Foot
177783	* Black Metallic Flange
177328	* 220x160mm Metal Handle
120666	* M8 4-tips Lock Nut
120664	* M6 4-tips Lock Nut
120662	* M5 4-tips Lock Nut
120341	* WL4x20tt Black Screw
120336	* WL4x25tt Black Screw
120141	* M8x30tsp Black Screw
120111	* M6x25tsp Black Screw

Amplifier Assembly

737149	T3A Amplifier Assembly (EU)
737150	T3A Amplifier Assembly (US)
SKK347015	* 21mm Gray Knob
SKK347014	* 14mm Black Knob
SKK347013	* 10x5.5mm h=17.5mm Black Button Actuator
SKK177009	* Heatsink Support
SKK090014	* 2SA1943 TO264 Pnp Transistor
SKK090013	* 2SC5200 TO264 Npn Transistor
841325	* 14 Wires 5cm Flat Cable
768287	* CPU/DSP Board (Pcb#313115)
SKK177008	** 34.4x34.4mm Heatsink
557030	** M29F040 PLCC 4Mbit Flash Mem. with <T3A> Firmware
250524	** 25x25mm Thermoconductor Adhesive
231000	** BLM21A102STP Smd EMI Coil For Signal
142001	** 32Pin PLCC SMD Socket
106003	** MAX709 Power Monitor With Reset
106001	** MC33078P SOIC Dual Low Noise Op. Amp.
105008	** RED208 Risc Cpu and Dsp
103071	** AK4528VF VSOP 24Bit 96KHz Audio Codec
010742	** 12,288MHz Quartz
768283	* Fuses Board (Pcb#313121)
080606	** GBU8D 8A Rectifier Diodes Bridge
080156	** 1N4002 1A 100V Rectifier Diode
020250	** 10n 400V 10% MKT Polyester Capacitor
768282	* Input & Controls Board (Pcb#313125)
SKK074009	** 50KB Vert Rotary Potentiometer with Cclick
230523	** 80-85uH Switching Dual Coil
141206	** Vert Male XLR Socket (NC3MAV Neutrik)
141192	** Hor Female XLR-Jack Socket (NCJ6FI-V Neutrik)
140531	** 2 Pole Vert Latching Push Switch (h=18mm)
110264	** 16 Position Hex/Binary Encoder
100943	** MC33079 Quad LN Op Amp
100901	** L4962 5-40V 1.5A Switching Regulator

080743	** 3mm Wide Diffused Green Led
080742	** 3mm Wide Diffused Red-Grn Led
080272	** 12V 1W 5% Zener Diode
080170	** BYV27 2A 100V Fast Recovery Diode
030950	** 470u 25V 20% Low Esr Vert Electrolytic Capacitor
768278	* Amplifier Board (Pcb#313120)
	(without devices mounted on heatsink)
141102	** 6 Contacts Vert Male Connector
141015	** 14 Contacts Vert Female Connector
130398	** AWG24 6 Wires 2.5mm Flat Cable
120857	** 6.3mm Vertical Male Faston for Pcb
110316	** Relay 24V / 1 Switch no 16A 250V
106001	** MC33078P SOIC Dual Low Noise Op. Amp.
100965	** TDA7294 70W Audio Amplifier with Mute
091001	** BC857B/C TO236 Smd Pnp Transistor (9BB/C-3F/G)
091000	** BC847B/C TO236 Smd Npn Transistor (8BB/C-1F/G)
090917	** MJE350 TO126 Pnp Transistor
090916	** MJE340 TO126 Npn Transistor
090201	** 2N5401 TO92 Pnp Transistor
090200	** 2N5550 TO92 Npn Transistor
090153	** BC327 TO92 Pnp Transistor
081000	** PMLL4148 Smd 100mA 75V Signal Diode
080245	** 7V5 1W 5% Zener Diode
080171	** FE6B 6A 100V Fast Recovery Diode
080156	** 1N4002 1A 100V Rectifier Diode
080103	** 1N4148 100mA 75V Signal Diode
060591	** 8K2 2W 10% Resistor
060339	** 47E 5W 10% Wire Resistor
060051	** 0E22 5W 5% Wire Resistor
055012	** 10E 1/16w 5% Smd Resistor 0603
052022	** 68E 1/8w 5% Resistor
052020	** 47E 1/8w 5% Resistor
050131	** 10E 1/4W 5% Resistor
050091	** 4E7 1/4W 5% Resistor
040134	** 10E 1/2W 5% Resistor
030883	** 10000u 63V 20% Snap-In Electrolytic Capacitor
030882	** 10000u 50V 20% Snap-In Electrolytic Capacitor
340186	* Adhesive Cable Fixing
340154	* TO3P/TO218 Mica Washer
340079	* TO220 Mica Washer
340078	* TO220 Insulated Bush
238094	* 230V 400W Toroidal Transformer (EU)
238095	* 115V 400W Toroidal Transformer (US)
110614	* 3 Terminal Universal Mains Inlet 10A Faston=6.3mm
110291	* 16A 250Vac Bipolar Power Switch
110018	* T6.3A Fuse 5x20mm (EU)
110037	* T6.3A Fuse 6.3x32mm (US)
100060	* 7815 +15V 1A Voltage Regulator
100059	* 7805 +5V 1A Voltage Regulator
100049	* 7915 -15V 1A Voltage Regulator
090920	* MJE802 TO126 Npn Darl Transistor
090919	* MJE15031 TO220 Pnp Transistor
090918	* MJE15030 TO220 Npn Transistor
090863	* TIP36C TO218 Pnp Transistor
090862	* TIP35C TO218 Npn Transistor
080821	* Ptc 100° PTH9L04BD222TS2F330 Murata
080609	* GBPC2502W 25A 200V Rectifier Diode Bridge
020491	* 100nF 10% 250Vac Polyester Capacitor

T4A

Accessories

277399	T4A Owner's Manual (Italian-English)
130297	Mains Cable 10A (EU)
130283	Mains Cable 10A (US)

Cabinet Assembly

841336	65cm Brown/Black 1.50mm² Faston/Faston Dual Wire
841333	65cm Blue/Black 0.75mm² Faston/Faston Dual Wire
667770	Speaker Grid
227087	12” 4ohm Woofer Speaker
210273	Speaker Filler (400gr/m² 50x50x4cm)
210272	Speaker Filler (400gr/m² 30x50x4cm)
210217	Black Sealer (specify mt)
210215	Adhesive Rubber Foam 10x1.9mm (Specify mt)
180836	“LEM DSP POWERED” Adhesive Plate
180831	“T4A” Adhesive Label
120341	WL4x20tt Black Screw
120124	M5x30tc Black Screw
727651	HF Horn and Driver Assembly
347422	* Horn
229048	* 1” 8ohm Compression Driver
229051	** 1” 8ohm Diaphragm for 229048 Driver
210290	* Adhesive Gasket for Horn
717094	Speaker Cabinet Assembly
657290	* Reflex Duct
430100	* Wooden Cabinet

347420	* Rubber Foot
177783	* Black Metallic Flange
177328	* 220x160mm Metal Handle
120666	* M8 4-tips Lock Nut
120664	* M6 4-tips Lock Nut
120662	* M5 4-tips Lock Nut
120341	* WL4x20tt Black Screw
120336	* WL4x25tt Black Screw
120141	* M8x30tsp Black Screw
120111	* M6x25tsp Black Screw

Amplifier Assembly

737145	T4A Amplifier Assembly (EU)
737146	T4A Amplifier Assembly (US)
SKK347015	* 21mm Gray Knob
SKK347014	* 14mm Black Knob
SKK347013	* 10x5.5mm h=17.5mm Black Button Actuator
SKK177009	* Heatsink Support
SKK090014	* 2SA1943 TO264 Pnp Transistor
SKK090013	* 2SC5200 TO264 Npn Transistor
841325	* 14 Wires 5cm Flat Cable
768283	* Fuses Board (Pcb#313121)
080606	** GBU8D 8A Rectifier Diodes Bridge
080156	** 1N4002 1A 100V Rectifier Diode
020250	** 10n 400V 10% MKT Polyester Capacitor
768282	* Input & Controls Board (Pcb#313125)
SKK074009	** 50KB Vert Rotary Potentiometer with Cclick
230523	** 80-85uH Switching Dual Coil
141206	** Vert Male XLR Socket (NC3MAV Neutrik)
141192	** Hor Female XLR-Jack Socket (NCJ6FI-V Neutrik)
140531	** 2 Pole Vert Latching Push Switch (h=18mm)
110264	** 16 Position Hex/Binary Encoder
100943	** MC33079 Quad LN Op Amp
100901	** L4962 5-40V 1.5A Switching Regulator
080743	** 3mm Wide Diffused Green Led
080742	** 3mm Wide Diffused Red-Grn Led
080272	** 12V 1W 5% Zener Diode
080170	** BYV27 2A 100V Fast Recovery Diode
030950	** 470u 25V 20% Low Esr Vert Electrolytic Capacitor
768278	* Amplifier Board (Pcb#313120)
	(without devices mounted on heatsink)
141102	** 6 Contacts Vert Male Connector
141015	** 14 Contacts Vert Female Connector
130398	** AWG24 6 Wires 2.5mm Flat Cable
120857	** 6.3mm Vertical Male Faston for Pcb
110316	** Relay 24V / 1 Switch no 16A 250V
106001	** MC33078P SOIC Dual Low Noise Op. Amp.
100965	** TDA7294 70W Audio Amplifier with Mute
091001	** BC857B/C TO236 Smd Pnp Transistor (9BB/C-3F/G)
091000	** BC847B/C TO236 Smd Npn Transistor (8BB/C-1F/G)
090917	** MJE350 TO126 Pnp Transistor
090916	** MJE340 TO126 Npn Transistor
090201	** 2N5401 TO92 Pnp Transistor
090200	** 2N5550 TO92 Npn Transistor
090153	** BC327 TO92 Pnp Transistor
081000	** PMLL4148 Smd 100mA 75V Signal Diode
080245	** 7V5 1W 5% Zener Diode
080171	** FE6B 6A 100V Fast Recovery Diode
080156	** 1N4002 1A 100V Rectifier Diode
080103	** 1N4148 100mA 75V Signal Diode
060591	** 8K2 2W 10% Resistor
060339	** 47E 5W 10% Wire Resistor
060051	** 0E22 5W 5% Wire Resistor
055012	** 10E 1/16w 5% Smd Resistor 0603
052022	** 68E 1/8w 5% Resistor
052020	** 47E 1/8w 5% Resistor
050351	** 680E 1/4W 5% Resistor
050131	** 10E 1/4W 5% Resistor
050091	** 4E7 1/4W 5% Resistor
040134	** 10E 1/2W 5% Resistor
030883	** 10000u 63V 20% Snap-In Electrolytic Capacitor
030882	** 10000u 50V 20% Snap-In Electrolytic Capacitor
768275	* CPU/DSP Board (Pcb#313115)
SKK177008	** 34.4x34.4mm Heatsink
557031	** M29F040 PLCC 4Mbit Flash Mem. with <T4A> Firmware
250524	** 25x25mm Thermoconductor Adhesive
231000	** BLM21A102STP Smd EMI Coil For Signal
142001	** 32Pin PLCC SMD Socket
140963	** 20 Contacts Vert Female Connector Din41651
140890	** 40 Contacts Hor Male Single-Strip (specify cont.s)
106003	** MAX709 Power Monitor With Reset
106001	** MC33078P SOIC Dual Low Noise Op. Amp.
105008	** RED208 Risc Cpu and Dsp
103071	** AK4528VF VSOP 24Bit 96KHz Audio Codec
010742	** 12,288MHz Quartz
768282	* Input & Controls Board (Pcb#313125)
SKK074009	** 50KB Vert Rotary Potentiometer with Cclick
230523	** 80-85uH Switching Dual Coil
141206	** Vert Male XLR Socket (NC3MAV Neutrik)
141192	** Hor Female XLR-Jack Socket (NCJ6FI-V Neutrik)

340078	* TO220 Insulated Bush
238094	* 230V 400W Toroidal Transformer (EU)
238095	* 115V 400W Toroidal Transformer (US)
110614	* 3 Terminal Universal Mains Inlet 10A Faston=6.3mm
110291	* 16A 250Vac Bipolar Power Switch
110018	* T6.3A Fuse 5x20mm (EU)
110037	* T6.3A Fuse 6.3x32mm (US)
100060	* 7815 +15V 1A Voltage Regulator
100059	* 7805 +5V 1A Voltage Regulator
100049	* 7915 -15V 1A Voltage Regulator
090920	* MJE802 TO126 Npn Darl Transistor
090919	* MJE15031 TO220 Pnp Transistor
090918	* MJE15030 TO220 Npn Transistor
090863	* TIP36C TO218 Pnp Transistor
090862	* TIP35C TO218 Npn Transistor
080821	* Ptc 100° PTH9L04BD222TS2F330 Murata
080609	* GBPC2502W 25A 200V Rectifier Diode Bridge
020491	* 100nF 10% 250Vac Polyester Capacitor

T5A

Accessories

277400	T5A Owner’s Manual (Italian-English)
130297	Mains Cable 10A (EU)
130283	Mains Cable 10A (US)

Cabinet Assembly

841332	80cm Blue/Black 0.75mm² Faston/Faston Dual Wire
841179	80cm Brown/Black 1.50mm² Faston/Faston Dual Wire
667771	Speaker Grid
227097	15” 4ohm Woofer Speaker
210272	Speaker Filler (400gr/m² 30x50x4cm)
210218	Adhesive Rubber Foam 20x20x50mm
210217	Black Sealer (specify mt)
210215	Adhesive Rubber Foam 10x1.9mm (Specify mt)
180836	“LEM DSP POWERED” Adhesive Plate
120154	M4x16tt Black Screw
120124	M5x30tc Black Screw
727651	HF Horn and Driver Assembly
347422	* Horn
229048	* 1” 8ohm Compression Driver
229051	** 1” 8ohm Diaphragm for 229048 Driver
210290	* Adhesive Gasket for Horn
717095	Speaker Cabinet Assembly
657290	* Reflex Duct
430101	* Wooden Cabinet
347420	* Rubber Foot
210054	* 1x5mm Adhesive Spik (specify mt)
177783	* Black Metallic Flange
177782	* Black Metallic Handle
120664	* M6 4-tips Lock Nut
120662	* M5 4-tips Lock Nut
120661	* M4 4-tips Lock Nut
120341	* WL4x20tt Black Screw
120336	* WL4x25tt Black Screw
120111	* M6x25tsp Black Screw

Amplifier Assembly

737151	T5A Amplifier Assembly (EU)
737152	T5A Amplifier Assembly (US)
SKK347015	* 21mm Gray Knob
SKK347014	* 14mm Black Knob
SKK347013	* 10x5.5mm h=17.5mm Black Button Actuator
SKK177009	* Heatsink Support
SKK090014	* 2SA1943 TO264 Pnp Transistor
SKK090013	* 2SC5200 TO264 Npn Transistor
841325	* 14 Wires 5cm Flat Cable
841280	* Single 15cm AWG18 White Faston/Faston Wire
841005	* 7.5cm Yel/Yrn Faston/Faston AWG18 Wire
768288	* CPU/DSP Board (Pcb#313115)
SKK177008	** 34.4x34.4mm Heatsink
557032	** M29F040 PLCC 4Mbit Flash Mem. with <T5A> Firmware
250524	** 25x25mm Thermoconductor Adhesive
231000	** BLM21A102STP Smd EMI Coil For Signal
142001	** 32Pin PLCC SMD Socket
140963	** 20 Contacts Vert Female Connector Din41651
140890	** 40 Contacts Hor Male Single-Strip (specify cont.s)
106003	** MAX709 Power Monitor With Reset
106001	** MC33078P SOIC Dual Low Noise Op. Amp.
105008	** RED208 Risc Cpu and Dsp
103071	** AK4528VF VSOP 24Bit 96KHz Audio Codec
010742	** 12,288MHz Quartz
768282	* Input & Controls Board (Pcb#313125)
SKK074009	** 50KB Vert Rotary Potentiometer with Cclick
230523	** 80-85uH Switching Dual Coil
141206	** Vert Male XLR Socket (NC3MAV Neutrik)
141192	** Hor Female XLR-Jack Socket (NCJ6FI-V Neutrik)

140531	**	2 Pole Vert Latching Push Switch (h=18mm)
110264	**	16 Position Hex/Binary Encoder
100943	**	MC33079 Quad LN Op Amp
100901	**	L4962 5-40V 1.5A Switching Regulator
080743	**	3mm Wide Diffused Green Led
080742	**	3mm Wide Diffused Red-Grn Led
080272	**	12V 1W 5% Zener Diode
080170	**	BYV27 2A 100V Fast Recovery Diode
030950	**	470u 25V 20% Low Esr Vert Electrolytic Capacitor
768279	*	Amplifier Board (Pcb#313122) (without devices mounted on heatsink)

110316	**	Relay 24V / 1 Switch no 16A 250V
106001	**	MC33078P SOIC Dual Low Noise Op. Amp.
100965	**	TDA7294 70W Audio Amplifier with Mute
091001	**	BC857B/C TO236 Smd Pnp Transistor (9BB/C-3F/G)
091000	**	BC847B/C TO236 Smd Npn Transistor (8BB/C-1F/G)
090917	**	MJE350 TO126 Pnp Transistor
090916	**	MJE340 TO126 Npn Transistor
090201	**	2N5401 TO92 Pnp Transistor
090200	**	2N5550 TO92 Npn Transistor
090153	**	BC327 TO92 Pnp Transistor
081000	**	PMLL4148 Smd 100mA 75V Signal Diode
080261	**	10V 1W 5% Zener Diode
080171	**	FE6B 6A 100V Fast Recovery Diode
080156	**	1N4002 1A 100V Rectifier Diode
080103	**	1N4148 100mA 75V Signal Diode
060621	**	15K 2W 10% Resistor
060339	**	47E 5W 10% Wire Resistor
060051	**	0E22 5W 5% Wire Resistor
050131	**	10E 1/4W 5% Resistor
050091	**	4E7 1/4W 5% Resistor
040134	**	10E 1/2W 5% Resistor
340186	*	Adhesive Cable Fixing
340154	*	TO3P/TO218 Mica Washer
340079	*	TO220 Mica Washer
340078	*	TO220 Insulated Bush
238096	*	230V 580W Toroidal Transformer (EU)
238097	*	115V 580W Toroidal Transformer (US)
110614	*	3 Terminal Universal Mains Inlet 10A Faston=6.3mm
110291	*	16A 250Vac Bipolar Power Switch
110023	*	T8A Fuse 5x20mm (EU)
110022	*	T8A Fuse 6.3x32mm (US)
100060	*	7815 +15V 1A Voltage Regulator
100059	*	7805 +5V 1A Voltage Regulator
100049	*	7915 -15V 1A Voltage Regulator
090920	*	MJE802 TO126 Npn Darl Transistor
090919	*	MJE15031 TO220 Pnp Transistor
090918	*	MJE15030 TO220 Npn Transistor
090863	*	TIP36C TO218 Pnp Transistor
090862	*	TIP35C TO218 Npn Transistor
080821	*	Ptc 100° PTH9L04BD222TS2F330 Murata
080609	*	GBPC2502W 25A 200V Rectifier Diode Bridge
080606	*	GBU8D 8A Rectifier Diodes Bridge
020491	*	100nF 10% 250Vac Polyester Capacitor

T6A	
Accessories	
277401	T6A Owner's Manual (Italian-English)
130297	Mains Cable 10A (EU)
130283	Mains Cable 10A (US)

277401	T6A Owner's Manual (Italian-English)
130297	Mains Cable 10A (EU)
130283	Mains Cable 10A (US)
Cabinet Assembly	
841336	65cm Brown/Black 1.50mm² Faston/Faston Dual Wire
841335	60cm Red/Black 1.50mm² Faston/Faston Dual Wire
841334	60cm Green/Black 0.75mm² Faston/Faston Dual Wire
841332	80cm Blue/Black 0.75mm² Faston/Faston Dual Wire
768296	T6A Mid/High Crossover Board (Pcb#313128) (this part is replaced entirely only)
667772	Speaker Grid
228018	8" 16ohm Midrange Speaker
227097	15" 4ohm Woofer Speaker
210272	Speaker Filler (400gr/m² 30x50x4cm)
210218	Adhesive Rubber Foam 20x20x50mm
210217	Black Sealer (specify mt)
210215	Adhesive Rubber Foam 10x1.9mm (Specify mt)
180836	"LEM DSP POWERED" Adhesive Plate
120154	M4x16tt Black Screw
120124	M5x30tc Black Screw
120063	M4x20tc Black Screw
727650	HF Horn and Driver Assembly
347421	* Horn
229052	* 1" 16ohm Compression Driver
229053	** 1" 16ohm Diaphragm for 229052 Driver
210289	* Adhesive Gasket for Horn
717096	Speaker Cabinet Assembly
657290	* Reflex Duct

430102	*	Wooden Cabinet
347420	*	Rubber Foot
210054	*	1x5mm Adhesive Spik (specify mt)
177783	*	Black Metallic Flange
177782	*	Black Metallic Handle
120664	*	M6 4-tips Lock Nut
120662	*	M5 4-tips Lock Nut
120661	*	M4 4-tips Lock Nut
120341	*	WL4x20tt Black Screw
120336	*	WL4x25tt Black Screw
120111	*	M6x25tsp Black Screw

Amplifier Assembly	
737153	T6A Amplifier Assembly (EU)
737154	T6A Amplifier Assembly (US)
SKK347015	* 21mm Gray Knob
SKK347014	* 14mm Black Knob
SKK347013	* 10x5.5mm h=17.5mm Black Button Actuator
SKK177009	* Heatsink Support
SKK090014	* 2SA1943 TO264 Pnp Transistor
SKK090013	* 2SC5200 TO264 Npn Transistor
841325	* 14 Wires 5cm Flat Cable
841280	* Single 15cm AWG18 White Faston/Faston Wire
841005	* 7.5cm Yel/Grn Faston/Faston AWG18 Wire
768289	* CPU/DSP Board (Pcb#313115)
SKK177008	** 34.4x34.4mm Heatsink
557033	** M29F040 PLCC 4Mbit Flash Mem. with <T6A> Firmware
250524	** 25x25mm Thermoconductor Adhesive
231000	** BLM21A102STP Smd EMI Coil For Signal
142001	** 32Pin PLCC SMD Socket
140963	** 20 Contacts Vert Female Connector Din41651
140890	** 40 Contacts Hor Male Single-Strip (specify cont.s)
106003	** MAX709 Power Monitor With Reset
106001	** MC33078P SOIC Dual Low Noise Op. Amp.
105008	** RED208 Risc Cpu and Dsp
103071	** AK4528VF VSOP 24Bit 96KHz Audio Codec
010742	** 12,288MHz Quartz
768282	* Input & Controls Board (Pcb#313125)
SKK074009	** 50KB Vert Rotary Potentiometer with Cclick
230523	** 80-85uH Switching Dual Coil
141206	** Vert Male XLR Socket (NC3MAV Neutrik)
141192	** Hor Female XLR-Jack Socket (NCJ6FI-V Neutrik)
140531	** 2 Pole Vert Latching Push Switch (h=18mm)
110264	** 16 Position Hex/Binary Encoder
100943	** MC33079 Quad LN Op Amp
100901	** L4962 5-40V 1.5A Switching Regulator
080743	** 3mm Wide Diffused Green Led
080742	** 3mm Wide Diffused Red-Grn Led
080272	** 12V 1W 5% Zener Diode
080170	** BYV27 2A 100V Fast Recovery Diode
030950	** 470u 25V 20% Low Esr Vert Electrolytic Capacitor
768280	* Amplifier Board (Pcb#313122) (without devices mounted on heatsink)

110316	**	Relay 24V / 1 Switch no 16A 250V
106001	**	MC33078P SOIC Dual Low Noise Op. Amp.
100965	**	TDA7294 70W Audio Amplifier with Mute
091001	**	BC857B/C TO236 Smd Pnp Transistor (9BB/C-3F/G)
091000	**	BC847B/C TO236 Smd Npn Transistor (8BB/C-1F/G)
090917	**	MJE350 TO126 Pnp Transistor
090916	**	MJE340 TO126 Npn Transistor
090201	**	2N5401 TO92 Pnp Transistor
090200	**	2N5550 TO92 Npn Transistor
090153	**	BC327 TO92 Pnp Transistor
081000	**	PMLL4148 Smd 100mA 75V Signal Diode
080261	**	10V 1W 5% Zener Diode
080171	**	FE6B 6A 100V Fast Recovery Diode
080156	**	1N4002 1A 100V Rectifier Diode
080103	**	1N4148 100mA 75V Signal Diode
060620	**	15K 1W 5% Resistor
060339	**	47E 5W 10% Wire Resistor
060051	**	0E22 5W 5% Wire Resistor
055012	**	10E 1/16w 5% Smd Resistor 0603
052022	**	68E 1/8w 5% Resistor
052020	**	47E 1/8w 5% Resistor
050131	**	10E 1/4W 5% Resistor
050091	**	4E7 1/4W 5% Resistor
040134	**	10E 1/2W 5% Resistor
030883	**	10000u 63V 20% Snap-In Electrolytic Capacitor
030882	**	10000u 50V 20% Snap-In Electrolytic Capacitor
340154	*	TO3P/TO218 Mica Washer
340079	*	TO220 Mica Washer
340078	*	TO220 Insulated Bush
238096	*	230V 580W Toroidal Transformer (EU)
238097	*	115V 580W Toroidal Transformer (US)
110614	*	3 Terminal Universal Mains Inlet 10A Faston=6.3mm
110291	*	16A 250Vac Bipolar Power Switch
110023	*	T8A Fuse 5x20mm (EU)

110022	*	T8A Fuse 6.3x32mm (US)
100060	*	7815 +15V 1A Voltage Regulator
100059	*	7805 +5V 1A Voltage Regulator
100049	*	7915 -15V 1A Voltage Regulator
090920	*	MJE802 TO126 Npn Darl Transistor
090919	*	MJE15031 TO220 Pnp Transistor
090918	*	MJE15030 TO220 Npn Transistor
090863	*	TIP36C TO218 Pnp Transistor
090862	*	TIP35C TO218 Npn Transistor
080821	*	Ptc 100° PTH9L04BD222TS2F330 Murata
080609	*	GBPC2502W 25A 200V Rectifier Diode Bridge
080606	*	GBU8D 8A Rectifier Diodes Bridge
020491	*	100nF 10% 250Vac Polyester Capacitor

T5SA	
Accessories	
277402	T5SA Owner's Manual (Italian-English)
130297	Mains Cable 10A (EU)
130283	Mains Cable 10A (US)

Assembly	
841358	80cm Brown/Black 1.50mm² Faston/Unsheath Dual Wire
717097	Speaker Cabinet Assembly
667773	Speaker Grid
227089	15" 4ohm Woofer Speaker
227114	Reconing Kit for 227089 15" Speaker Woofer
210274	Speaker Filler (400gr/m² 100x50x4cm)
210273	Speaker Filler (400gr/m² 50x50x4cm)
180836	"LEM DSP POWERED" Adhesive Plate
120154	M4x16tt Black Screw
120124	M5x30tc Black Screw

Amplifier Assembly	
737155	T5SA Amplifier Assembly (EU)
737156	T5SA Amplifier Assembly (US)
SKK347015	* 21mm Gray Knob
SKK347014	* 14mm Black Knob
SKK347013	* 10x5.5mm h=17.5mm Black Button Actuator
SKK177009	* Heatsink Support
SKK090014	* 2SA1943 TO264 Pnp Transistor
SKK090013	* 2SC5200 TO264 Npn Transistor
841325	* 14 Wires 5cm Flat Cable
841280	* Single 15cm AWG18 White Faston/Faston Wire
841005	* 7.5cm Yel/Grn Faston/Faston AWG18 Wire
768295	* Amplifier Board (Pcb#313122) (without devices mounted on heatsink)
110316	** Relay 24V / 1 Switch no 16A 250V
106001	** MC33078P SOIC Dual Low Noise Op. Amp.
091001	** BC857B/C TO236 Smd Pnp Transistor (9BB/C-3F/G)
091000	** BC847B/C TO236 Smd Npn Transistor (8BB/C-1F/G)
090917	** MJE350 TO126 Pnp Transistor
090916	** MJE340 TO126 Npn Transistor
090201	** 2N5401 TO92 Pnp Transistor
090200	** 2N5550 TO92 Npn Transistor
090153	** BC327 TO92 Pnp Transistor
081000	** PMLL4148 Smd 100mA 75V Signal Diode
080606	** GBU8D 8A Rectifier Diodes Bridge
080245	** 7V5 1W 5% Zener Diode
080171	** FE6B 6A 100V Fast Recovery Diode
080156	** 1N4002 1A 100V Rectifier Diode
080103	** 1N4148 100mA 75V Signal Diode
060591	** 8K2 2W 10% Resistor
060339	** 47E 5W 10% Wire Resistor
060051	** 0E22 5W 5% Wire Resistor
050131	** 10E 1/4W 5% Resistor
050091	** 4E7 1/4W 5% Resistor
768294	* Input & Controls Board (Pcb#313127)
SKK074010	** 50KB Vert Rotary Potentiometer
230523	** 80-85uH Switching Dual Coil
141206	** Vert Male XLR Socket (NC3MAV Neutrik)
141188	** Vert Female XLR Socket (NC3FAV2-0 Neutrik)
140531	** 2 Pole Vert Latching Push Switch (h=18mm)
110264	** 16 Position Hex/Binary Encoder
100943	** MC33079 Quad LN Op Amp
100901	** L4962 5-40V 1.5A Switching Regulator
080743	** 3mm Wide Diffused Green Led
080742	** 3mm Wide Diffused Red-Grn Led
080272	** 12V 1W 5% Zener Diode
080170	** BYV27 2A 100V Fast Recovery Diode
030950	** 470u 25V 20% Low Esr Vert Electrolytic Capacitor
768290	* CPU/DSP Board (Pcb#313115)
SKK177008	** 34.4x34.4mm Heatsink
557034	** M29F040 PLCC 4Mbit Flash Mem. with <T5SA> Firmware
250524	** 25x25mm Thermoconductor Adhesive
142001	** 32Pin PLCC SMD Socket
140890	** 40 Contacts Hor Male Single-Strip (specify cont.s)

106003	**	MAX709 Power Monitor With Reset
106001	**	MC33078P SOIC Dual Low Noise Op. Amp.
105008	**	RED208 Risc Cpu and Dsp
103071	**	AK4528VF VSOP 24Bit 96KHz Audio Codec
010742	**	12,288MHz Quartz
340154	*	TO3P/TO218 Mica Washer
340079	*	TO220 Mica Washer
340078	*	TO220 Insulated Bush
238096	*	230V 580W Toroidal Transformer (EU)
238097	*	115V 580W Toroidal Transformer (US)
120587	*	M6 Black Nut
120582	*	M3 Black Nut
120130	*	M6x70te Black Screw
120063	*	M4x20tc Black Screw
110614	*	3 Terminal Universal Mains Inlet 10A Faston=6.3mm
110291	*	16A 250Vac Bipolar Power Switch
110023	*	T8A Fuse 5x20mm (EU)
110022	*	T8A Fuse 6.3x32mm (US)
100060	*	7815 +15V 1A Voltage Regulator
100059	*	7805 +5V 1A Voltage Regulator
100049	*	7915 -15V 1A Voltage Regulator
090920	*	MJE802 TO126 Npn Darl Transistor
090919	*	MJE15031 TO220 Pnp Transistor
090918	*	MJE15030 TO220 Npn Transistor
090863	*	TIP36C TO218 Pnp Transistor
090862	*	TIP35C TO218 Npn Transistor
080821	*	Ptc 100° PTH9L04BD222TS2F330 Murata
080609	*	GBPC2502W 25A 200V Rectifier Diode Bridge
020491	*	100nF 10% 250Vac Polyester Capacitor

T4MA	
Accessories	
277403	T4MA Owner's Manual (Italian-English)
130297	Mains Cable 10A (EU)
130283	Mains Cable 10A (US)

Cabinet Assembly	
841350	65cm Brown/Black 1.50mm² Faston/Unsheath Dual Wire
841349	65cm Blue/Black 0.75mm² Faston/Unsheath Dual Wire
667774	Speaker Grid
227090	12” 4ohm Woofer - 1” 8ohm Driver - Coaxial Speaker
227109	Reconing Kit for 227090 12” 4ohm Woofer
229058	1” 8ohm Diaphragm for 227090 Compression Driver
210272	Speaker Filler (400gr/m² 30x50x4cm)
210217	Black Sealer (specify mt)
210215	Adhesive Rubber Foam 10x1.9mm (Specify mt)
180836	“LEM DSP POWERED” Adhesive Plate
180832	“T4MA” Adhesive Label
120124	M5x30tc Black Screw
120107	M5x25tsp Black Screw
717098	Speaker Cabinet Assembly
430104	* Wooden Cabinet
347420	* Rubber Foot
177328	* 220x160mm Metal Handle
120662	* M5 4-tips Lock Nut
120341	* WL4x20tt Black Screw
120336	* WL4x25tt Black Screw

Amplifier Assembly	
737157	T4MA Amplifier Assembly (EU)
737158	T4MA Amplifier Assembly (US)
SKK090014	* 2SA1943 TO264 Pnp Transistor
SKK090013	* 2SC5200 TO264 Npn Transistor
841339	* 14 Wires 45cm Flat Cable
768283	* Fuses Board (Pcb#313121)
080606	** GBU8D 8A Rectifier Diodes Bridge
080156	** 1N4002 1A 100V Rectifier Diode
020250	** 10n 400V 10% MKT Polyester Capacitor
768278	* Amplifier Board (Pcb#313120) (without devices mounted on heatsink)
110316	** Relay 24V / 1 Switch no 16A 250V
106001	** MC33078P SOIC Dual Low Noise Op. Amp.
100965	** TDA7294 70W Audio Amplifier with Mute
091001	** BC857B/C TO236 Smd Pnp Transistor (9BB/C-3F/G)
091000	** BC847B/C TO236 Smd Npn Transistor (8BB/C-1F/G)
090917	** MJE350 TO126 Pnp Transistor
090916	** MJE340 TO126 Npn Transistor
090201	** 2N5401 TO92 Pnp Transistor
090200	** 2N5550 TO92 Npn Transistor
090153	** BC327 TO92 Pnp Transistor
081000	** PMLL4148 Smd 100mA 75V Signal Diode
080245	** 7V5 1W 5% Zener Diode
080171	** FE6B 6A 100V Fast Recovery Diode
080156	** 1N4002 1A 100V Rectifier Diode
080103	** 1N4148 100mA 75V Signal Diode
070106	** 470E 20% Horizontal Linear Trimmer

060591	**	8K2	2W	10%	Resistor
060339	**	47E	5W	10%	Wire Resistor
060051	**	0E22	5W	5%	Wire Resistor
055012	**	10E	1/16w	5%	Smd Resistor 0603
052022	**	68E	1/8w	5%	Resistor
052020	**	47E	1/8w	5%	Resistor
050131	**	10E	1/4W	5%	Resistor
050091	**	4E7	1/4W	5%	Resistor
040134	**	10E	1/2W	5%	Resistor
030883	**	10000u	63V	20%	Snap-In Electrolytic Capacitor
030882	**	10000u	50V	20%	Snap-In Electrolytic Capacitor
727652	*	Input & Controls Assembly			
SKK347015	**	21mm Gray Knob			
SKK347014	**	14mm Black Knob			
SKK347013	**	10x5.5mm h=17.5mm Black Button Actuator			
SKK177009	**	Heatsink Support			
768293	**	Input & Controls Board (Pcb#313125)			
SKK074010	***	50KB Vert Rotary Potentiometer			
230523	***	80-85uH Switching Dual Coil			
141206	***	Vert Male XLR Socket (NC3MAV Neutrik)			
141192	***	Hor Female XLR-Jack Socket (NCJ6FI-V Neutrik)			
140531	***	2 Pole Vert Latching Push Switch (h=18mm)			
110264	***	16 Position Hex/Binary Encoder			
100943	***	MC33079 Quad LN Op Amp			
100901	***	L4962 5-40V 1.5A Switching Regulator			
080743	***	3mm Wide Diffused Green Led			
080742	***	3mm Wide Diffused Red-Grn Led			
080272	***	12V 1W 5% Zener Diode			
080170	***	BYV27 2A 100V Fast Recovery Diode			
030950	***	470u 25V 20% Low Esr Vert Electrolytic Capacitor			
768291	**	CPU/DSP Board (Pcb#313115)			
SKK177008	***	34.4x34.4mm Heatsink			
557035	***	M29F040 PLCC 4Mbit Flash Mem. with <T4MA> Firmware			
250524	***	25x25mm Thermoconductor Adhesive			
142001	***	32Pin PLCC SMD Socket			
106003	***	MAX709 Power Monitor With Reset			
106001	***	MC33078P SOIC Dual Low Noise Op. Amp.			
105008	***	RED208 Risc Cpu and Dsp			
103071	***	AK4528VF VSOP 24Bit 96KHz Audio Codec			
010742	***	12,288MHz Quartz			
210215	**	Adhesive Rubber Foam 10x1.9mm (Specify mt)			
110614	**	3 Terminal Universal Mains Inlet 10A Faston=6.3mm			
110291	**	16A 250Vac Bipolar Power Switch			
340154	*	TO3P/TO218 Mica Washer			
340079	*	TO220 Mica Washer			
340078	*	TO220 Insulated Bush			
238094	*	230V 400W Toroidal Transformer (EU)			
238095	*	115V 400W Toroidal Transformer (US)			
210216	*	Adhesive Rubber Foam 20x5mm (Specify mt)			
210215	*	Adhesive Rubber Foam 10x1.9mm (Specify mt)			
110018	*	T6.3A Fuse 5x20mm (EU)			
110037	*	T6.3A Fuse 6.3x32mm (US)			
100060	*	7815 +15V 1A Voltage Regulator			
100059	*	7805 +5V 1A Voltage Regulator			
100049	*	7915 -15V 1A Voltage Regulator			
090920	*	MJE802 TO126 Npn Darl Transistor			
090919	*	MJE15031 TO220 Pnp Transistor			
090918	*	MJE15030 TO220 Npn Transistor			
090863	*	TIP36C TO218 Pnp Transistor			
090862	*	TIP35C TO218 Npn Transistor			
080821	*	Ptc 100° PTH9L04BD222TS2F330 Murata			
080609	*	GBPC2502W 25A 200V Rectifier Diode Bridge			
020491	*	100nF 10% 250Vac Polyester Capacitor			

T5MA	
Accessories	
277409	T5MA Owner's Manual (Italian-English)
130297	Mains Cable 10A (EU)
130283	Mains Cable 10A (US)
Cabinet Assembly	
841350	65cm Brown/Black 1.50mm² Faston/Unsheatth Dual Wire
841349	65cm Blue/Black 0.75mm² Faston/Unsheatth Dual Wire
667775	Speaker Grid
227091	15” 4ohm Woofer - 1” 8ohm Driver - Coaxial Speaker
227110	Reconing Kit for 227091 15” 4ohm Woofer
229059	1” 8ohm Diaphgram for 227091 Compression Driver
210272	Speaker Filler (400gr/m² 30x50x4cm)
210217	Black Sealer (specify mt)
210215	Adhesive Rubber Foam 10x1.9mm (Specify mt)
180836	“LEM DSP POWERED” Adhesive Plate
180833	“T5MA” Adhesive Label
120124	M5x30tc Black Screw
120107	M5x25tsp Black Screw
717099	Speaker Cabinet Assembly
430105	* Wooden Cabinet

347420	*	Rubber Foot
177328	*	220x160mm Metal Handle
120662	*	M5 4-tips Lock Nut
120341	*	WL4x20tt Black Screw
120336	*	WL4x25tt Black Screw

Amplifier Assembly	
737159	T5MA Amplifier Assembly (EU)
737160	T5MA Amplifier Assembly (US)
SKK090014	* 2SA1943 TO264 Pnp Transistor
SKK090013	* 2SC5200 TO264 Npn Transistor
841339	* 14 Wires 45cm Flat Cable
768283	* Fuses Board (Pcb#313121)
080606	** GBU8D 8A Rectifier Diodes Bridge
080156	** 1N4002 1A 100V Rectifier Diode
020250	** 10n 400V 10% MKT Polyester Capacitor
768278	* Amplifier Board (Pcb#313120) (without devices mounted on heatsink)
110316	** Relay 24V / 1 Switch no 16A 250V
106001	** MC33078P SOIC Dual Low Noise Op. Amp.
100965	** TDA7294 70W Audio Amplifier with Mute
091001	** BC857B/C TO236 Smd Pnp Transistor (9BB/C-3F/G)
091000	** BC847B/C TO236 Smd Npn Transistor (8BB/C-1F/G)
090917	** MJE350 TO126 Pnp Transistor
090916	** MJE340 TO126 Npn Transistor
090201	** 2N5401 TO92 Pnp Transistor
090200	** 2N5550 TO92 Npn Transistor
090153	** BC327 TO92 Pnp Transistor
081000	** PMLL4148 Smd 100mA 75V Signal Diode
080245	** 7V5 1W 5% Zener Diode
080171	** FE6B 6A 100V Fast Recovery Diode
080156	** 1N4002 1A 100V Rectifier Diode
080103	** 1N4148 100mA 75V Signal Diode
070106	** 470E 20% Horizontal Linear Trimmer
060591	** 8K2 2W 10% Resistor
060339	** 47E 5W 10% Wire Resistor
060051	** 0E22 5W 5% Wire Resistor
055012	** 10E 1/16w 5% Smd Resistor 0603
052022	** 68E 1/8w 5% Resistor
052020	** 47E 1/8w 5% Resistor
050131	** 10E 1/4W 5% Resistor
050091	** 4E7 1/4W 5% Resistor
040134	** 10E 1/2W 5% Resistor
030883	** 10000u 63V 20% Snap-In Electrolytic Capacitor
030882	** 10000u 50V 20% Snap-In Electrolytic Capacitor
727653	* Input & Controls Assembly
SKK347015	** 21mm Gray Knob
SKK347014	** 14mm Black Knob
SKK347013	** 10x5.5mm h=17.5mm Black Button Actuator
SKK177009	** Heatsink Support
768293	** Input & Controls Board (Pcb#313125)
SKK074010	*** 50KB Vert Rotary Potentiometer
230523	*** 80-85uH Switching Dual Coil
141206	*** Vert Male XLR Socket (NC3MAV Neutrik)
141192	*** Hor Female XLR-Jack Socket (NCJ6FI-V Neutrik)
141015	*** 14 Contacts Vert Female Connector
140851	*** 20 Contacts Vert Male Connector Din41651
140531	*** 2 Pole Vert Latching Push Switch (h=18mm)
110264	*** 16 Position Hex/Binary Encoder
100943	*** MC33079 Quad LN Op Amp
100901	*** L4962 5-40V 1.5A Switching Regulator
080743	*** 3mm Wide Diffused Green Led
080742	*** 3mm Wide Diffused Red-Grn Led
080272	*** 12V 1W 5% Zener Diode
080170	*** BYV27 2A 100V Fast Recovery Diode
030950	*** 470u 25V 20% Low Esr Vert Electrolytic Capacitor
768292	** CPU/DSP Board (Pcb#313115)
SKK177008	*** 34.4x34.4mm Heatsink
557036	*** M29F040 PLCC 4Mbit Flash Mem. with <T5MA> Firmware
250524	*** 25x25mm Thermoconductor Adhesive
142001	*** 32Pin PLCC SMD Socket
106003	*** MAX709 Power Monitor With Reset
106001	*** MC33078P SOIC Dual Low Noise Op. Amp.
105008	*** RED208 Risc Cpu and Dsp
103071	*** AK4528VF VSOP 24Bit 96KHz Audio Codec
010742	*** 12,288MHz Quartz
210215	** Adhesive Rubber Foam 10x1.9mm (Specify mt)
110614	** 3 Terminal Universal Mains Inlet 10A Faston=6.3mm
110291	** 16A 250Vac Bipolar Power Switch
340154	* TO3P/TO218 Mica Washer
340079	* TO220 Mica Washer
340078	* TO220 Insulated Bush
238094	* 230V 400W Toroidal Transformer (EU)
238095	* 115V 400W Toroidal Transformer (US)
210216	* Adhesive Rubber Foam 20x5mm (Specify mt)
210215	* Adhesive Rubber Foam 10x1.9mm (Specify mt)
110018	* T6.3A Fuse 5x20mm (EU)

110037	*	T6.3A Fuse 6.3x32mm (US)
100060	*	7815 +15V 1A Voltage Regulator
100059	*	7805 +5V 1A Voltage Regulator
100049	*	7915 -15V 1A Voltage Regulator
090920	*	MJE802 TO126 Npn Darl Transistor
090919	*	MJE15031 TO220 Pnp Transistor
090918	*	MJE15030 TO220 Npn Transistor
090863	*	TIP36C TO218 Pnp Transistor
090862	*	TIP35C TO218 Npn Transistor
080821	*	Ptc 100° PTH9L04BD222TS2F330 Murata
080609	*	GBPC2502W 25A 200V Rectifier Diode Bridge
020491	*	100nF 10% 250Vac Polyester Capacitor

Titanium Passive	
T200 8ohm	

Accessories	
951133	15mt 2 Conductors Speakon-Speakon Power Cable
277404	Titanium Passive Owner's Manual (Italian-English)

Cabinet Assembly	
667769	Speaker Grid
227088	10” 8ohm Woofer Speaker
210272	Speaker Filler (400gr/m² 30x50x4cm)
210217	Black Sealer (specify mt)
210215	Adhesive Rubber Foam 10x1.9mm (Specify mt)
180847	“T200” Adhesive Label
180822	“LEM” Logo Adhesive Plate
120124	M5x30tc Black Screw
841338	40cm Blue/Black 0.75mm² Faston/Faston Dual Wire
841337	40cm Brown/Black 1.50mm² Faston/Faston Dual Wire
768298	T200 Crossover Filter Board (Pcb#313130) (this part is replaced entirely only)
727658	Input Panel Assembly
778178	* Dual Speakon Cables Assembly
141200	** Speakon Socket (NL4MP Neutrik)
727650	HF Horn and Driver Assembly
347421	* Horn
229052	* 1” 16ohm Compression Driver
229053	** 1” 16ohm Diaphgram for 229052 Driver
210289	* Adhesive Gasket for Horn
717101	Speaker Cabinet Assembly
657291	* Reflex Duct
430107	* Wooden Cabinet
347420	* Rubber Foot
177783	* Black Metallic Flange
177328	* 220x160mm Metal Handle
120666	* M8 4-tips Lock Nut
120664	* M6 4-tips Lock Nut
120662	* M5 4-tips Lock Nut
120341	* WL4x20tt Black Screw
120336	* WL4x25tt Black Screw
120141	* M8x30tsp Black Screw
120111	* M6x25tsp Black Screw

T300 4ohm	
Accessories	
951133	15mt 2 Conductors Speakon-Speakon Power Cable
277404	Titanium Passive Owner's Manual (Italian-English)

Cabinet Assembly	
667770	Speaker Grid
227087	12” 4ohm Woofer Speaker
210272	Speaker Filler (400gr/m² 30x50x4cm)
210217	Black Sealer (specify mt)
210215	Adhesive Rubber Foam 10x1.9mm (Specify mt)
180848	“T300” Adhesive Label
180822	“LEM” Logo Adhesive Plate
120124	M5x30tc Black Screw
841338	40cm Blue/Black 0.75mm² Faston/Faston Dual Wire
841337	40cm Brown/Black 1.50mm² Faston/Faston Dual Wire
768299	T300 Crossover Filter Board (Pcb#313130) (this part is replaced entirely only)
727657	Input Panel Assembly
778165	* Single Speakon Cables Assembly
141200	** Speakon Socket (NL4MP Neutrik)
727651	HF Horn and Driver Assembly
347422	* Horn
229048	* 1” 8ohm Compression Driver
229051	** 1” 8ohm Diaphgram for 229048 Driver
210290	* Adhesive Gasket for Horn
717102	Speaker Cabinet Assembly
657239	* 63x35mm Black Tube
430108	* Wooden Cabinet
347420	* Rubber Foot

177783	*	Black Metallic Flange
177328	*	220x160mm Metal Handle
120666	*	M8 4-tips Lock Nut
120664	*	M6 4-tips Lock Nut
120662	*	M5 4-tips Lock Nut
120341	*	WL4x20tt Black Screw
120336	*	WL4x25tt Black Screw
120141	*	M8x30tsp Black Screw
120111	*	M6x25tsp Black Screw

T300 8ohm	
Accessories	
951133	15mt 2 Conductors Speakon-Speakon Power Cable
277404	Titanium Passive Owner's Manual (Italian-English)

Cabinet Assembly	
667770	Speaker Grid
227098	12” 8ohm Woofer Speaker
210272	Speaker Filler (400gr/m² 30x50x4cm)
210217	Black Sealer (specify mt)
210215	Adhesive Rubber Foam 10x1.9mm (Specify mt)
180848	“T300” Adhesive Label
180822	“LEM” Logo Adhesive Plate
120124	M5x30tc Black Screw
841338	40cm Blue/Black 0.75mm² Faston/Faston Dual Wire
841337	40cm Brown/Black 1.50mm² Faston/Faston Dual Wire
768299	T300 Crossover Filter Board (Pcb#313130) (this part is replaced entirely only)
727658	Input Panel Assembly
778178	* Dual Speakon Cables Assembly
141200	** Speakon Socket (NL4MP Neutrik)
727651	HF Horn and Driver Assembly
347422	* Horn
229048	* 1” 8ohm Compression Driver
229051	** 1” 8ohm Diaphgram for 229048 Driver
210290	* Adhesive Gasket for Horn
717102	Speaker Cabinet Assembly
657239	* 63x35mm Black Tube
430108	* Wooden Cabinet
347420	* Rubber Foot
177783	* Black Metallic Flange
177328	* 220x160mm Metal Handle
120666	* M8 4-tips Lock Nut
120664	* M6 4-tips Lock Nut
120662	* M5 4-tips Lock Nut
120341	* WL4x20tt Black Screw
120336	* WL4x25tt Black Screw
120141	* M8x30tsp Black Screw
120111	* M6x25tsp Black Screw

T400 4ohm	
Accessories	
951133	15mt 2 Conductors Speakon-Speakon Power Cable
277404	Titanium Passive Owner's Manual (Italian-English)

Cabinet Assembly	
667771	Speaker Grid
227097	15” 4ohm Woofer Speaker
210272	Speaker Filler (400gr/m² 30x50x4cm)
210218	Adhesive Rubber Foam 20x20x50mm
210217	Black Sealer (specify mt)
210215	Adhesive Rubber Foam 10x1.9mm (Specify mt)
180849	“T400” Adhesive Label
180822	“LEM” Logo Adhesive Plate
120124	M5x30tc Black Screw
841336	65cm Brown/Black 1.50mm² Faston/Faston Dual Wire
841332	80cm Blue/Black 0.75mm² Faston/Faston Dual Wire
768300	T400 Crossover Filter Board (Pcb#313130) (this part is replaced entirely only)
727657	Input Panel Assembly
778165	* Single Speakon Cables Assembly
141200	** Speakon Socket

120662	*	M5 4-tips Lock Nut
120341	*	WL4x20tt Black Screw
120336	*	WL4x25tt Black Screw
120111	*	M6x25tsp Black Screw

T400 8ohm

Accessories

951133	15mt 2 Conductors Speakon-Speakon Power Cable
277404	Titanium Passive Owner’s Manual (Italian-English)

Cabinet Assembly

667771	Speaker Grid
227099	15” 8ohm Woofer Speaker
210272	Speaker Filler (400gr/m² 30x50x4cm)
210218	Adhesive Rubber Foam 20x20x50mm
210217	Black Sealer (specify mt)
210215	Adhesive Rubber Foam 10x1.9mm (Specify mt)
180849	”T400” Adhesive Label
180822	”LEM” Logo Adhesive Plate
120124	M5x30tc Black Screw
841336	65cm Brown/Black 1.50mm² Faston/Faston Dual Wire
841332	80cm Blue/Black 0.75mm² Faston/Faston Dual Wire
768300	T400 Crossover Filter Board (Pcb#313130)
	(this part is replaced entirely only)
727658	Input Panel Assembly
778178	* Dual Speakon Cables Assembly
141200	** Speakon Socket (NL4MP Neutrik)
727651	HF Horn and Driver Assembly
347422	* Horn
229048	* 1” 8ohm Compression Driver
229051	** 1” 8ohm Diaphragm for 229048 Driver
210290	* Adhesive Gasket for Horn
717103	Speaker Cabinet Assembly
657290	* Reflex Duct
430109	* Wooden Cabinet
347420	* Rubber Foot
210054	* 1x5mm Adhesive Spik (specify mt)
177783	* Black Metallic Flange
177782	* Black Metallic Handle
120664	* M6 4-tips Lock Nut
120662	* M5 4-tips Lock Nut
120341	* WL4x20tt Black Screw
120336	* WL4x25tt Black Screw
120111	* M6x25tsp Black Screw

T500 4ohm

Accessories

951133	15mt 2 Conductors Speakon-Speakon Power Cable
277404	Titanium Passive Owner’s Manual (Italian-English)

Cabinet Assembly

667772	Speaker Grid
228018	8” 16ohm Midrange Speaker
227097	15” 4ohm Woofer Speaker
210272	Speaker Filler (400gr/m² 30x50x4cm)
210218	Adhesive Rubber Foam 20x20x50mm
210217	Black Sealer (specify mt)
210215	Adhesive Rubber Foam 10x1.9mm (Specify mt)
180850	”T500” Adhesive Label
180822	”LEM” Logo Adhesive Plate
120124	M5x30tc Black Screw
120063	M4x20tc Black Screw
841359	40cm Red/Black 1.50mm² Faston/Faston Dual Wire
841336	65cm Brown/Black 1.50mm² Faston/Faston Dual Wire
841334	60cm Green/Black 0.75mm² Faston/Faston Dual Wire
841332	80cm Blue/Black 0.75mm² Faston/Faston Dual Wire
768303	T500 Mid/High Crossover Filter Board (Pcb#313132)
	(this part is replaced entirely only)
768301	T500 Low Crossover Filter Board (Pcb#313053)
	(this part is replaced entirely only)
727657	Input Panel Assembly
778165	* Single Speakon Cables Assembly
141200	** Speakon Socket (NL4MP Neutrik)
727650	HF Horn and Driver Assembly
347421	* Horn
229052	* 1” 16ohm Compression Driver
229053	** 1” 16ohm Diaphragm for 229052 Driver
210289	* Adhesive Gasket for Horn
717104	Speaker Cabinet Assembly
657290	* Reflex Duct
430110	* Wooden Cabinet
347420	* Rubber Foot
210054	* 1x5mm Adhesive Spik (specify mt)
177783	* Black Metallic Flange
177782	* Black Metallic Handle

120664	*	M6 4-tips Lock Nut
120662	*	M5 4-tips Lock Nut
120661	*	M4 4-tips Lock Nut
120341	*	WL4x20tt Black Screw
120336	*	WL4x25tt Black Screw
120111	*	M6x25tsp Black Screw

T500 8ohm

Accessories

951133	15mt 2 Conductors Speakon-Speakon Power Cable
277404	Titanium Passive Owner’s Manual (Italian-English)

Cabinet Assembly

667772	Speaker Grid
228018	8” 16ohm Midrange Speaker
227099	15” 8ohm Woofer Speaker
210272	Speaker Filler (400gr/m² 30x50x4cm)
210218	Adhesive Rubber Foam 20x20x50mm
210217	Black Sealer (specify mt)
210215	Adhesive Rubber Foam 10x1.9mm (Specify mt)
180850	”T500” Adhesive Label
180822	”LEM” Logo Adhesive Plate
120124	M5x30tc Black Screw
120063	M4x20tc Black Screw
841359	40cm Red/Black 1.50mm² Faston/Faston Dual Wire
841336	65cm Brown/Black 1.50mm² Faston/Faston Dual Wire
841334	60cm Green/Black 0.75mm² Faston/Faston Dual Wire
841332	80cm Blue/Black 0.75mm² Faston/Faston Dual Wire
768303	T500 Mid/High Crossover Filter Board (Pcb#313132)
	(this part is replaced entirely only)
768301	T500 Low Crossover Filter Board (Pcb#313053)
	(this part is replaced entirely only)
727658	Input Panel Assembly
778178	* Dual Speakon Cables Assembly
141200	** Speakon Socket (NL4MP Neutrik)
727650	HF Horn and Driver Assembly
347421	* Horn
229052	* 1” 16ohm Compression Driver
229053	** 1” 16ohm Diaphragm for 229052 Driver
210289	* Adhesive Gasket for Horn
717104	Speaker Cabinet Assembly
657290	* Reflex Duct
430110	* Wooden Cabinet
347420	* Rubber Foot
210054	* 1x5mm Adhesive Spik (specify mt)
177783	* Black Metallic Flange
177782	* Black Metallic Handle
120664	* M6 4-tips Lock Nut
120662	* M5 4-tips Lock Nut
120661	* M4 4-tips Lock Nut
120341	* WL4x20tt Black Screw
120336	* WL4x25tt Black Screw
120111	* M6x25tsp Black Screw

Note:

- All dimensions are in mm unless otherwise specified.
- The screw description is defined as follows:

type of screw + diameter + X + length + type of head

where type of screw is one of these:

M = Metric thread

B = Self-tapping screw for metal

WL = Self-tapping screw for wood

and type of head is one of these:

tc = cylinder Phillips head

ts = flared Phillips head

tt = rounded Phillips head

te = hexagonal nut head

tsp = flat flared Phillips head

tce = cylinder Allen hexagonal head

tspe = flat flared Allen hexagonal head
- The washer description is defined as follow:

hole diameter + X + external diameter + X + thick
- 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.