

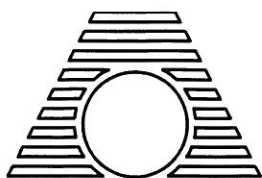


audison

- SERVICE MANUAL -

VR 404/E

VR 404 XR/E



audison

MANUALE DI SERVIZIO
SERVICE MANUAL

BEDIENUNGSANLEITUNG
MANUAL D'ASSISTANCE

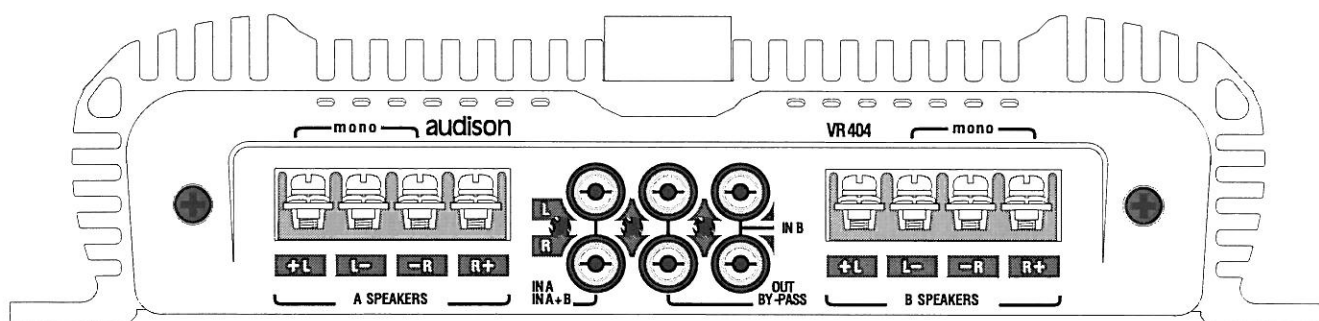
Amplificatore di potenza per auto

Auto Hi Fi Endstufen

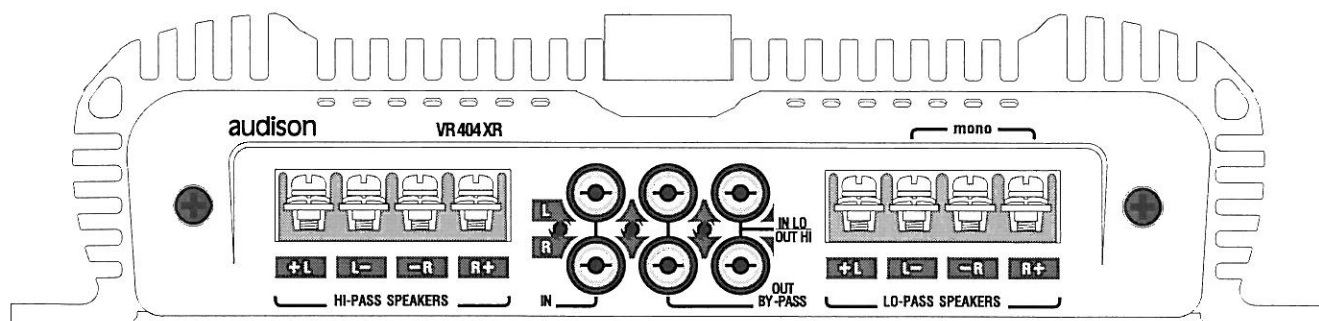
Car power amplifier

Amplificateur de puissance pour l'automobile

VR 404



VR 404 XR



ENGLISH

FEATURES

VR 404, VR 404XR. 4 channels amplifiers with very high acoustic performances. Every functional, acoustic and aesthetical aspect has been carefully taken into consideration by using innovative solutions and high quality components, paying meticulous attention to details and providing accessory functions which allow the maximum practicality. PWM controlled power supply uses MOSFET transistors which allow a significant power capacity without slackening when the battery voltage diminishes. The final stage in the input employs a complementary couple of constant current polarised differentials (through LED diodes) with clearly advantageous results in terms of stability and timbre precision. The power stage is made of a TRIPLE DARLINGTON for the maximum output current linearization, with final transistors able to bear higher currents than those which are normally required by the most demanding use.

VR 404 has four PRE inputs, a BY-PASS output and an AMBIENT EQUALIZER for the acoustic front expansion; the two channels couples can work in MONO and they can be driven by only two PRE inputs.

VR 404XR has also one HI-PASS and one LOW-PASS crossover filters (with a variable "Q" factor) which can be adjusted separately and which can't be excluded, with 12dB/Oct. slope. Because of these features your VR amplifier can give you only the very best emotions in listening to music. **Audison** thank you for rewarding their work which is always aimed at reaching the very best results.

PRECAUTIONS

- In order for this device to function properly it's important that it is installed in a spot where the temperature doesn't fall below 0°C or rise above 55°C.
- It must be installed in a dry and well ventilated spot.
- The power supply voltage is 12 VCC with negative to ground. Make sure that the characteristics of the vehicle electrical system are compatible with this device.
- For safe driving we advise to listen to music at a volume level that won't drown external traffic sounds.

INSTALLATION

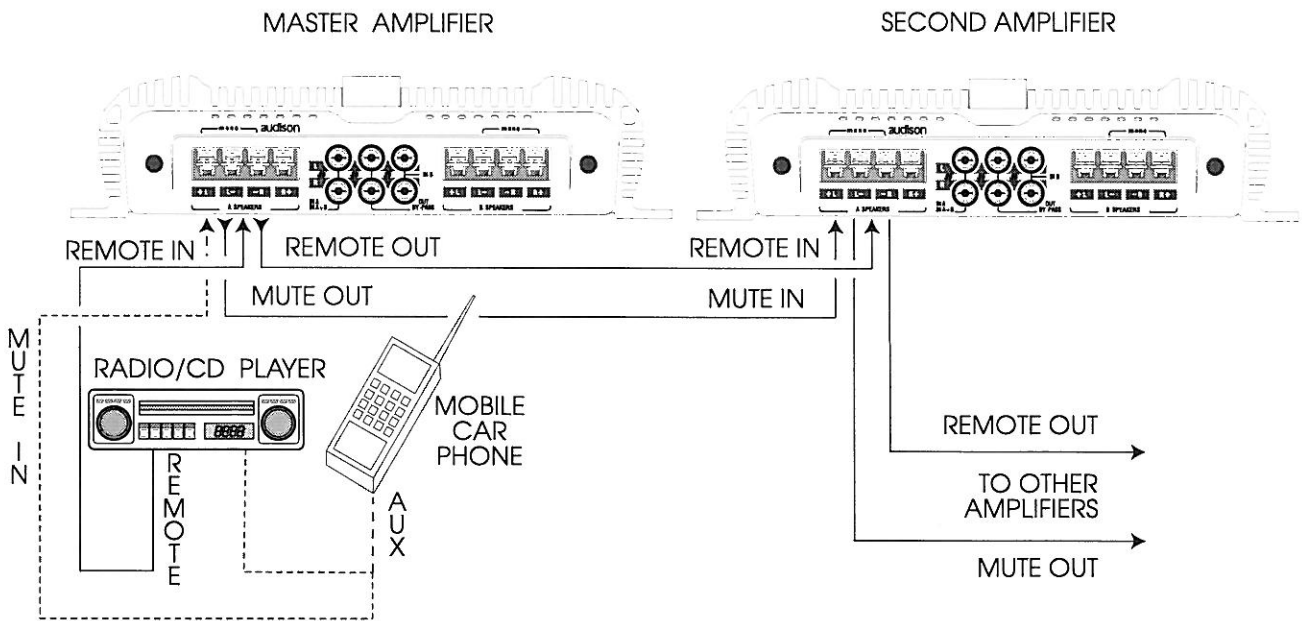
For mounting use 4 self-threading screws and protective plastic rings, provided. For a very good result we suggest to use **audison cable** products to complete your installation. These include: power cables, signal cables, speaker wires, RCA connectors and all accessories needed to complete the wiring.

WARNING

- **INPUTS:** If the radio-cassette player doesn't share the output GND with the chassis, the braided shield of the shielded cable must be connected to the radio-cassette player chassis.
- **OUTPUTS:** Never connect the -R and -L outputs to ground or to each other. If a crossover filter is used be sure that the two channels don't have a common ground.
- **REGULATION:** If you hear distortion phenomena at moderate volume levels, it means that a distorted signal is coming from the radio-cassette player. Turn radio-cassette player volume down until there's no longer any distortion. Then adjust the calibration levels of the amplifier until you hear slight saturation phenomena.

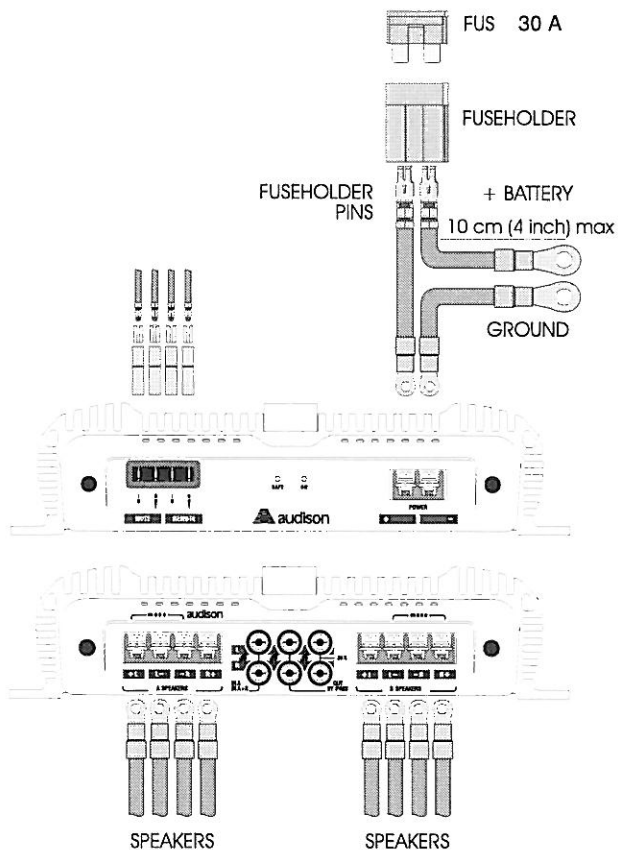
VR 203 - VR 206 - VR 209 - VR 404 - VR 404 XR

MUTE AND REMOTE MASTER SLAVE CONNECTION



VR 404 - VR 404 XR

SERVICE CONNECTION

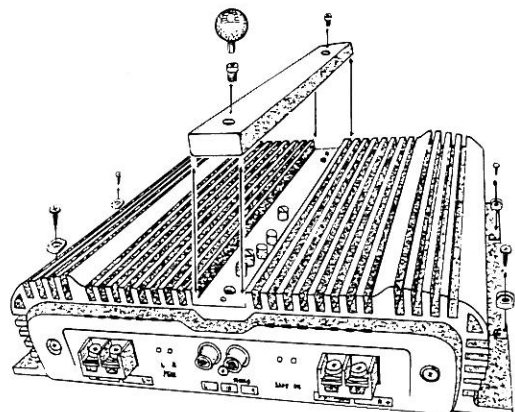


SIZE OF POWER CABLE

4/5 m (13/16feet) length

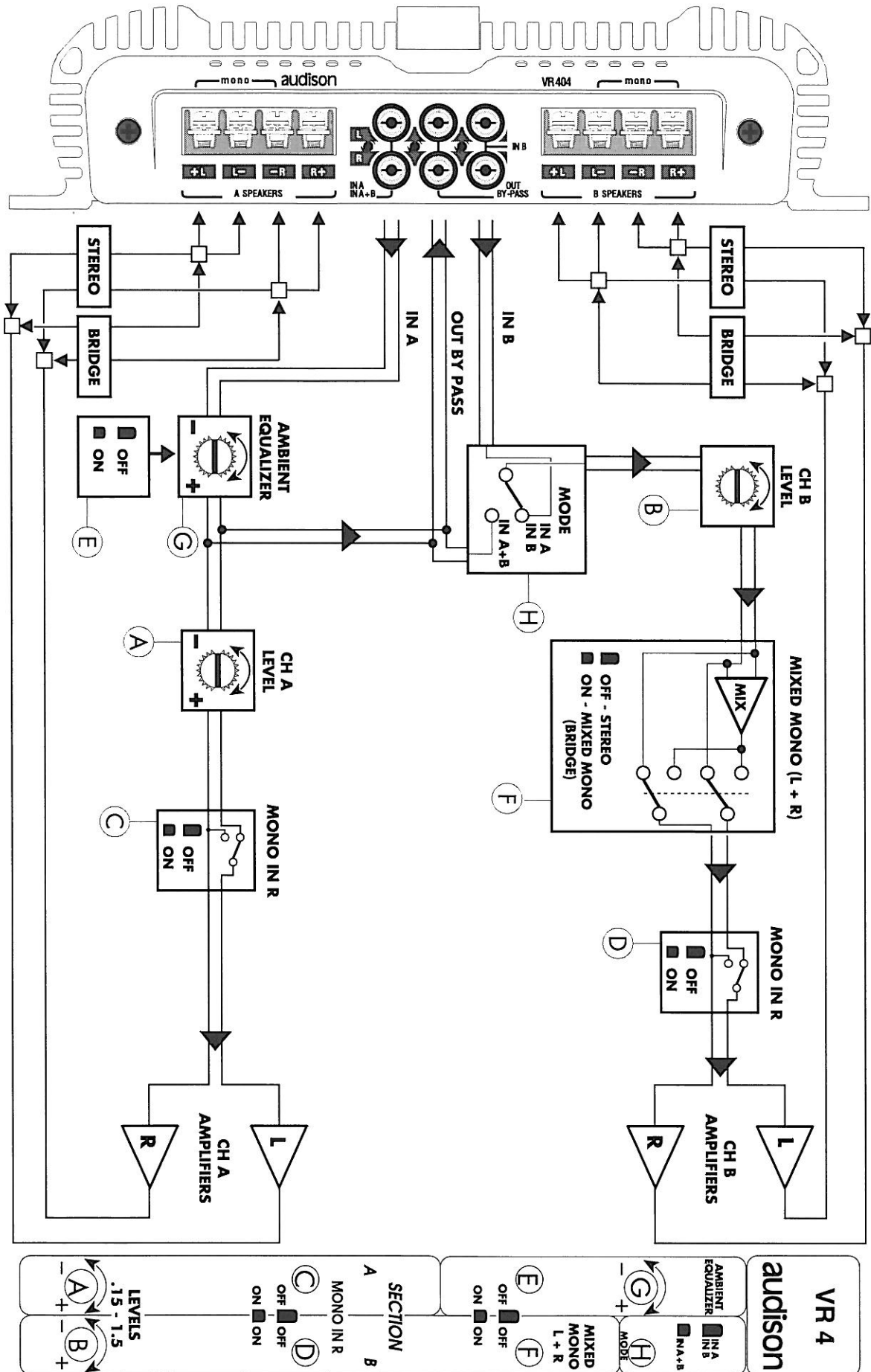
Load	4 Ohm		2 Ohm	
Measure Unit	mm ²	AWG	mm ²	AWG
VR 404 / XR	8	8	16	5

UNIT FIXING



VR 404/E

VR 404 BLOCK DIAGRAM



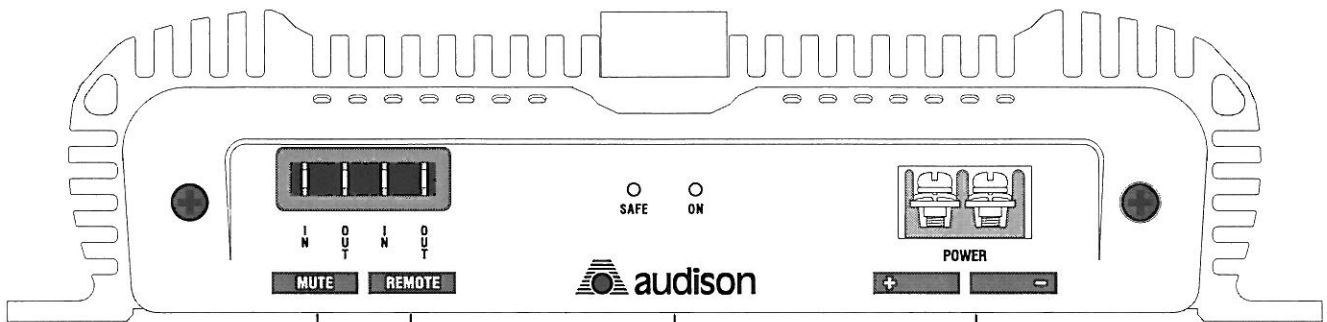
VR 404

TECHNICAL DATA

POWER SUPPLY	11 ÷ 15 VDC
IDLING CURRENT	1 A
MAX ABSORPTION (Nominam Pwr)	27 A
CONT. NOMINAL POWER (Tol. +10%; -5%) 4 ch x 4 Ohms; 0.3% THD; 12 VDC	35 W (RMS)
CONT. POWER (4 ch x 4 Ohms; 13.8 VDC)	45 W (RMS)
CONT. POWER (4 ch x 2 Ohms; 13.8 VDC)	65 W (RMS)
CONT. POWER (2 ch x 4 Ohms; 13.8 VDC) bridge	130 W (RMS)
THD DISTORTION (1 KHz; 90% Nominal Pwr)	0.04 %
BANDWIDTH (-3 dB; Nominal Pwr)	3 Hz ÷ 75 KHz
DAMPING FACTOR (4 Ohms)	140
RISE TIME	4 µS
SIGNAL / NOISE RATIO	102 dBA
INPUT SENSITIVITY	0.3 V ÷ 4 VRMS
INPUT IMPEDANCE	15 KOhms
LOAD IMPEDANCE stereo	8; 4; 2 Ohms
mono	8; 4 Ohms
PREAMPLIFIED BY-PASS OUTPUTS GAIN	0 dB
REMOTE IN	3 ÷ 15 VDC
REMOTE OUT	12 VDC
MUTE IN	3 ÷ 15 VDC
MUTE OUT	12 VDC
CHANNELS NUMBER	2 - 3 - 4
A MONO CHANNELS	SELECTABLE (ON - OFF)
B MONO CHANNELS	SELECTABLE (ON - OFF)
B MIXED MONO L + R CHANNELS	SELECTABLE (ON - OFF)
SINGLE/DUBLE STEREO INPUT	SELECTABLE
SELECTABLE AND ADJUSTABLE AMBIENT EQUALIZER	ON - OFF
DIMENSIONS (WxHxD)	257 x 57 x 260 mm (10.12 x 2.24 x 10.24 inch)

VR 404 - 404 XR

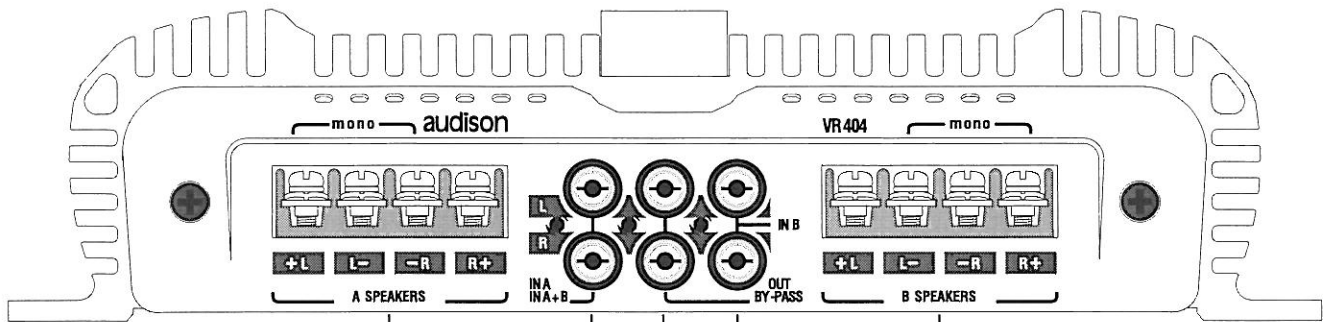
CONNECTIONS AND FUNCTIONS



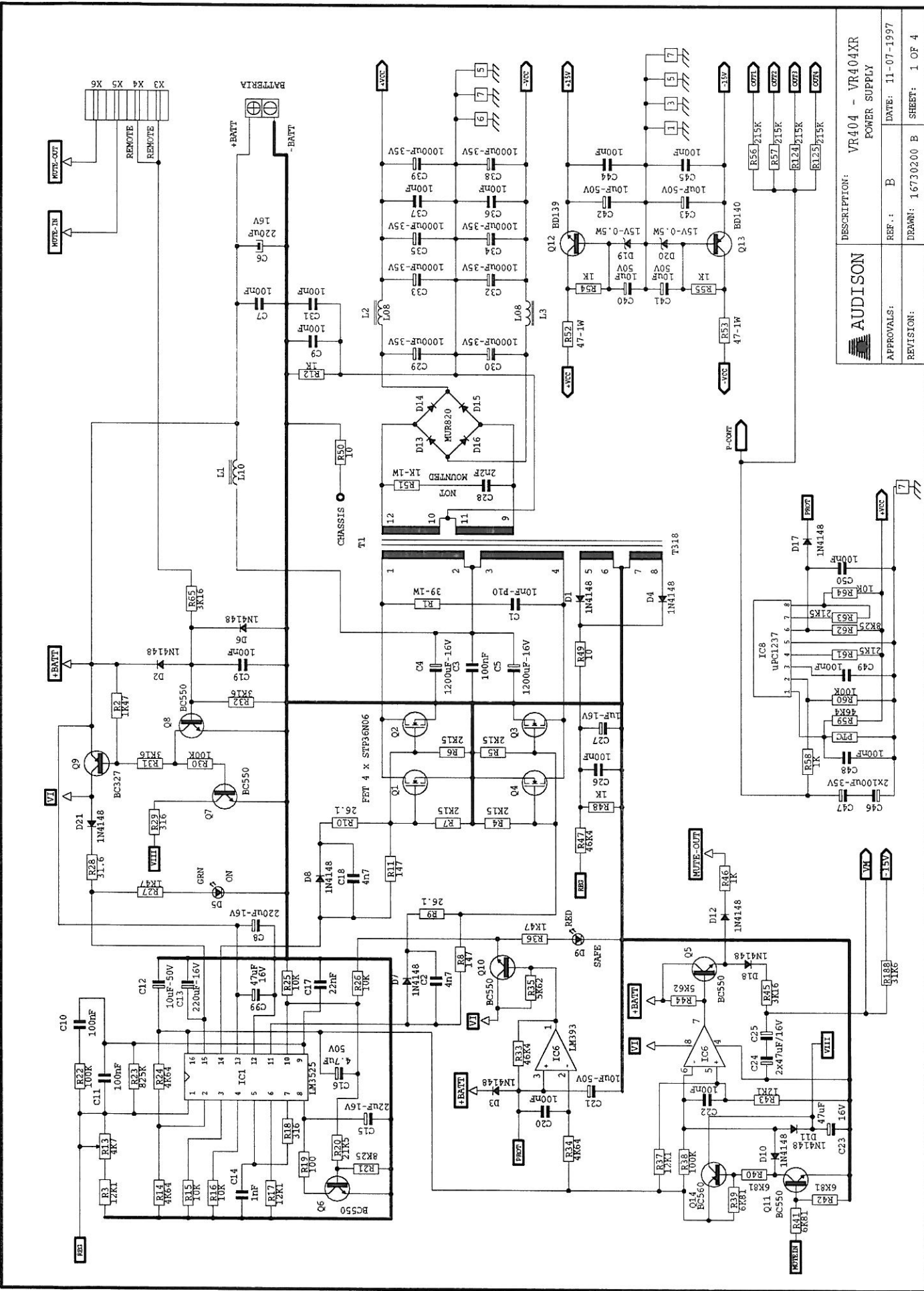
MUTE	REMOTE	INDICATOR LIGHTS	POWER SUPPLY CLAMPS
<p style="text-align: center;">IN</p> <p>Mute control coming from radio/cassette player (or any source provided with output for the amplifier mute). It is especially made to be connected to the mute output of a cellular telephone in order to silence the amplifier for incoming calls, and it allows to reactivate musical reproduction at the end of phone conversation. It can be connected to the MUTE OUT output of a preceding amplifier to allow the simultaneous silencing of all amplifiers connected in cascade. The applied voltage must be between 3 and 15 VDC.</p>	<p style="text-align: center;">IN</p> <p>Turn on control for the amplifier coming from radio/cassette player (or from any sources provided with remote control for amplifiers). The applied voltage must be between 3 and 15 VDC.</p>	<p style="text-align: center;">ON</p> <p>Lit when the amplifier is ON.</p>	<p style="text-align: center;">POWER</p> <p>Input clamps for the amplifier power supply. Connect the battery positive and negative according to the indicated polarities. The applied voltage must be between 11 and 15 VDC.</p>
<p style="text-align: center;">OUT</p> <p>Output for the other amplifiers in the sound system. It must be connected to the MUTE IN of the successive amplifier to allow the simultaneous silencing of all amplifiers connected in cascade. The available voltage on this output is 12 VDC with current equal to 5 mA.</p>	<p style="text-align: center;">OUT</p> <p>Output leading to other amplifiers of the sound system. It has to be connected to the REMOTE IN of successive amplifiers to allow the simultaneous turning on of the whole system. The available voltage on this output is 12 VDC with a current equal to 250 mA.</p>	<p style="text-align: center;">SAFE</p> <p>When lit it indicates the intervention of protection circuits: in case of overheating (temperature exceeding 80° C / 176° F) or output anomalies (presence of continuous current, short circuit or dangerously low load impedance). When protection circuits intervene the amplifier shuts down. Turn the amplifier off. When the problem is corrected turn the amplifier back on.</p>	

VR 404

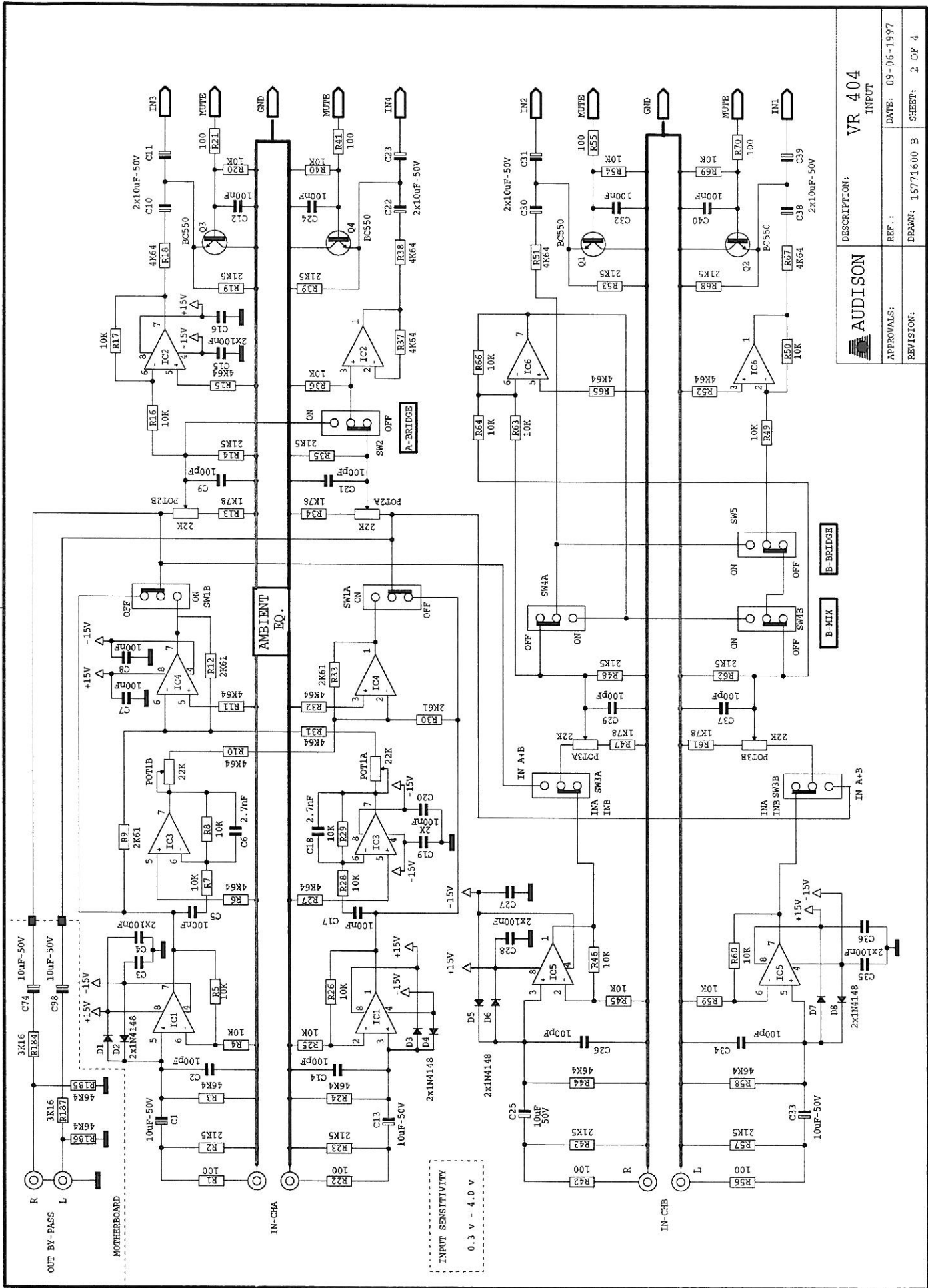
CONNECTIONS AND FUNCTIONS



OUTPUT CLAMPS	GENERAL INPUT	BY-PASS OUTPUTS	B INPUTS	OUTPUT CLAMPS
<p>CH A Left and right power outputs of the A channels. The available signal is subjected to the action of the AMBIENT EQUALIZER, which can be adjusted through special controls put on the upper part of the amplifier.</p>	<p>IN A IN A + B Left and right inputs of the amplifier. It drives directly the two A channels of the amplifier and it can also drive the two B channels when the MODE button (on the upper part) is selected as IN A + B. Connections have to be made from the preamplified output of a source, for example a radio cassette player, a CD player, an electronic crossover or any devices which handle the musical signal at a preamplified stage.</p>	<p>OUT BY-PASS Preamplified B Y - P A S S outputs of the amplifier. The available signal is subjected to the action of the AMBIENT EQUALIZER filter (which can be activated or not) which handles the signal coming from the IN general input. They are for another amplifier, an electronic crossover or any devices which handle the musical signal at a preamplifier stage.</p>	<p>IN B Left and right inputs of the amplifier. They can be activated through the MODE switch (on the upper part of the amplifier) on the IN A -IN B position.</p>	<p>CH B Left and right outputs of the B channels. The available signal is subjected to the action of the AMBIENT EQUALIZER (which can be adjusted through the special controls put on the upper part of the amplifier) when A and B channels are handled by the IN general input in MODE IN A + B configuration. If the B channels are driven only by the B input, these power outputs are deprived of the action of the AMBIENT EQUALIZER filter.</p>
<p>MONO Power outputs (+L and -R). They must be used to connect a mono loudspeaker when the function MONO IN R is activated through the special switch put on the upper part of the amplifier</p>				<p>MONO Power outputs (+L and -R). They have to be used to connect a mono loudspeaker when the MONO IN R function (enabled input: right) or the MIXED MONO L+R one (sum of the channels) is activated through the special switches put on the upper part of the device.</p>



AUDIISON
 DESCRIPTION: VR404 - VR404XR
 POWER SUPPLY
 APPROVALS: REF.: B DATE: 11-07-1997
 REVISION: DRAWN: 16730200 B SHEET: 1 OF 4




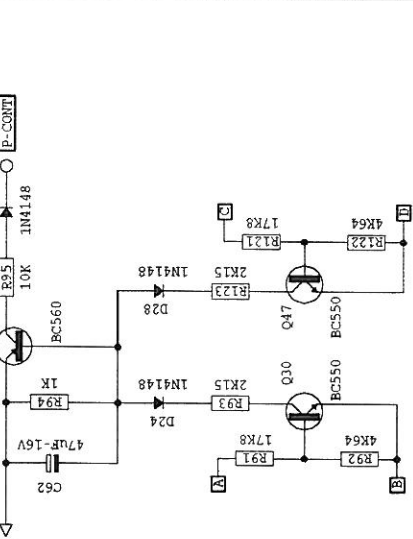
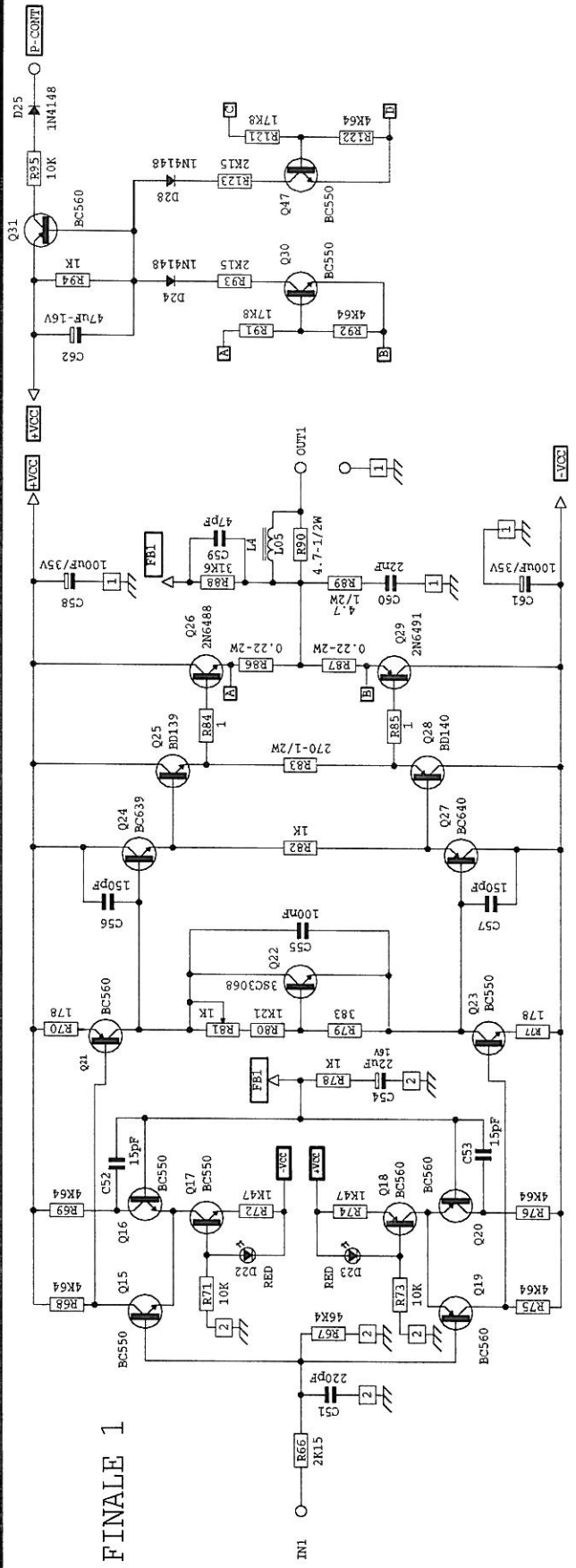
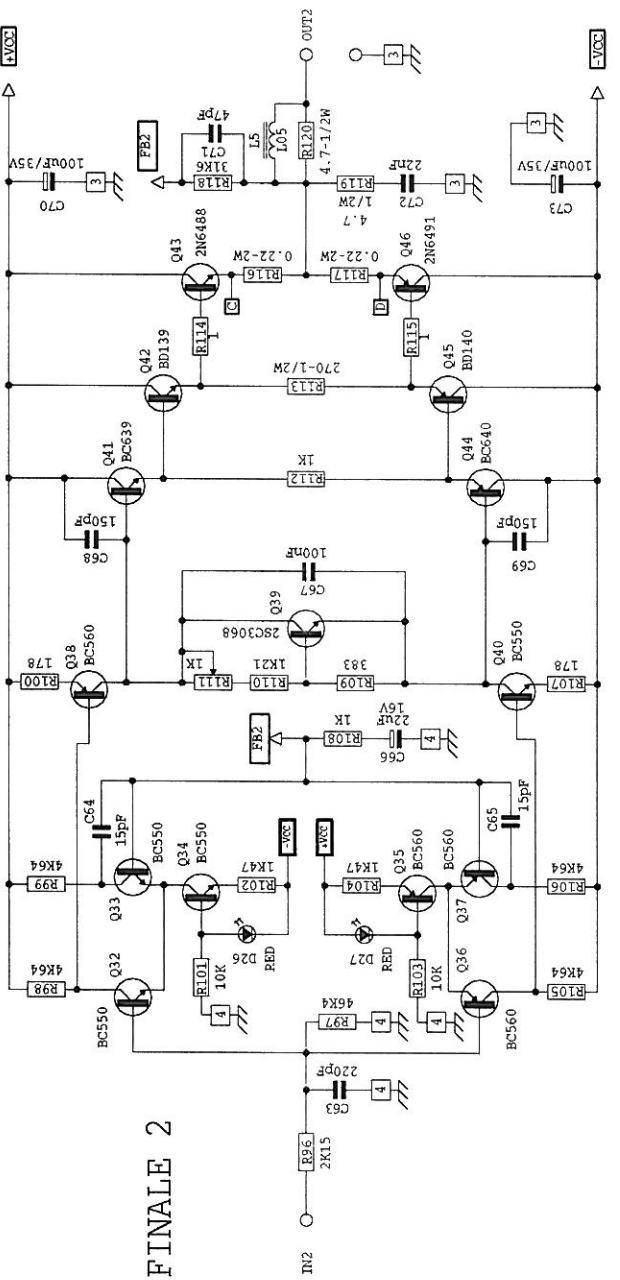
AUDISON

DESCRIPTION: VR 404 INPUT

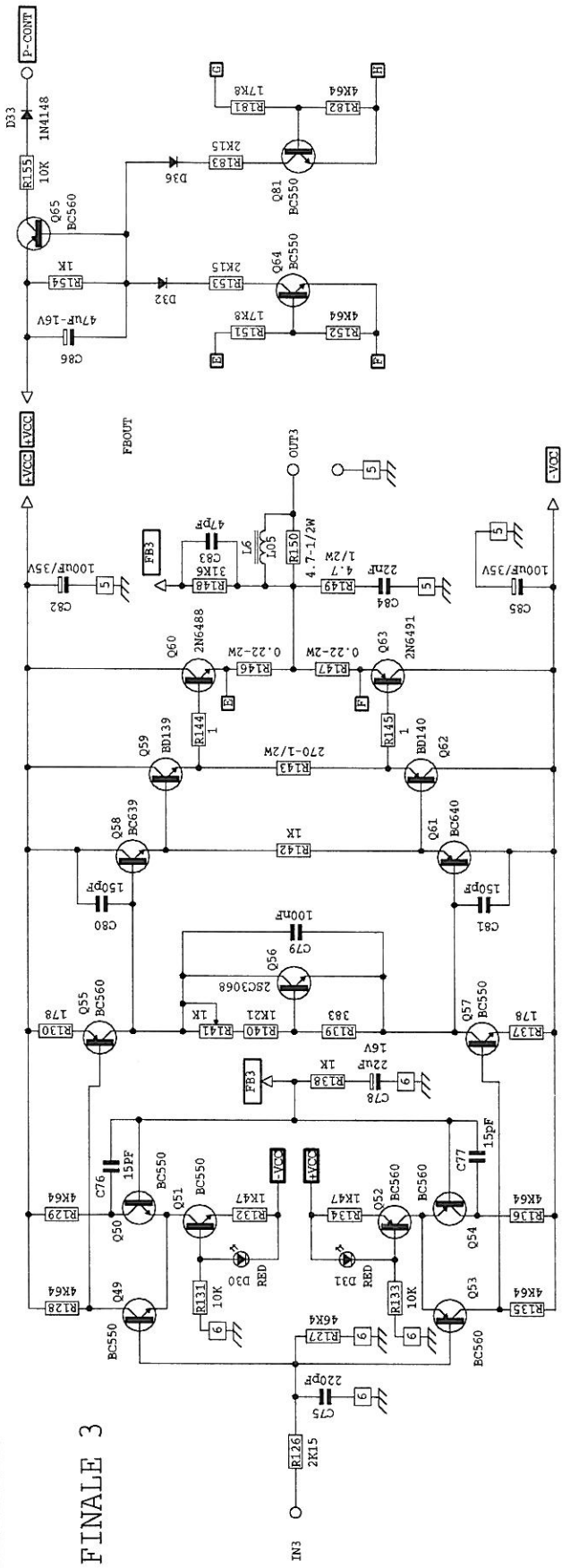
APPROVALS: REF.: DATE: 09-06-1997

REVISION: DRAWN: 16771600 B SHEET: 2 OF 4

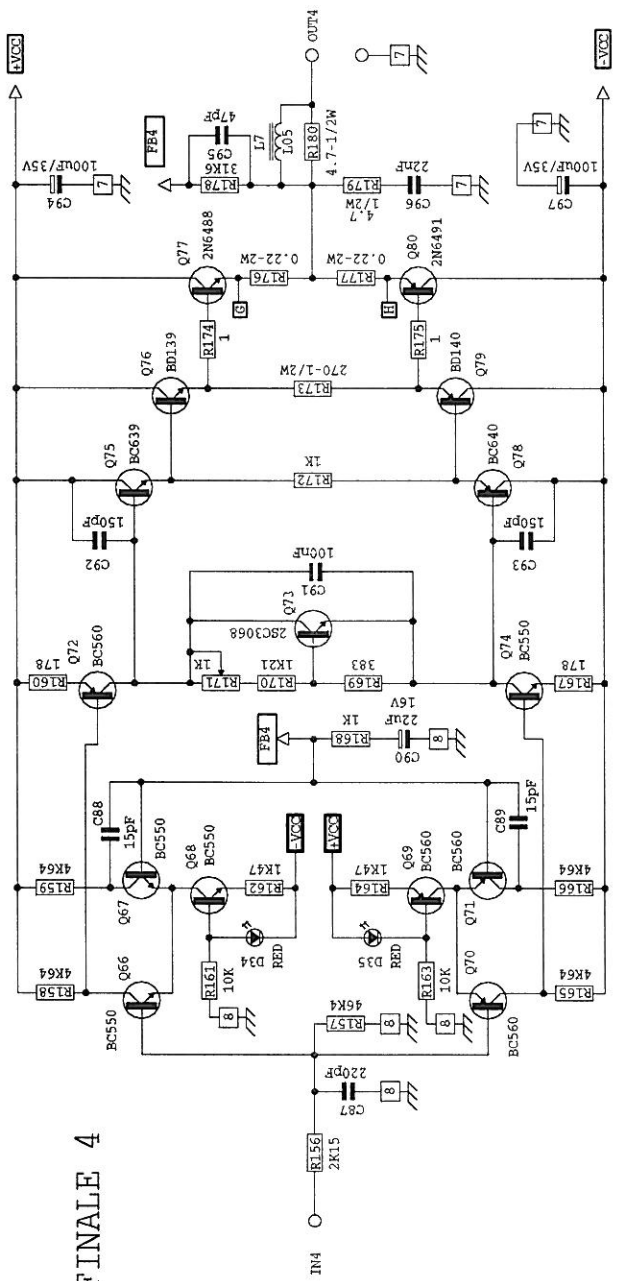
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		FINAL I 1-2
APPROVALS:	REF.:	B
REVISION:	DRAWN:	16730200 B
		SHEET: 3 OF 4



FINALE 3



FINALE 4



	DESCRIPTION:	VR404 - VR404XR
		FINALI 3-4
APPROVALS:	REF.:	B
REVISION:	DATE:	09-06-1997
	DRAWN:	16730200 B
	SHEET:	4 OF 4

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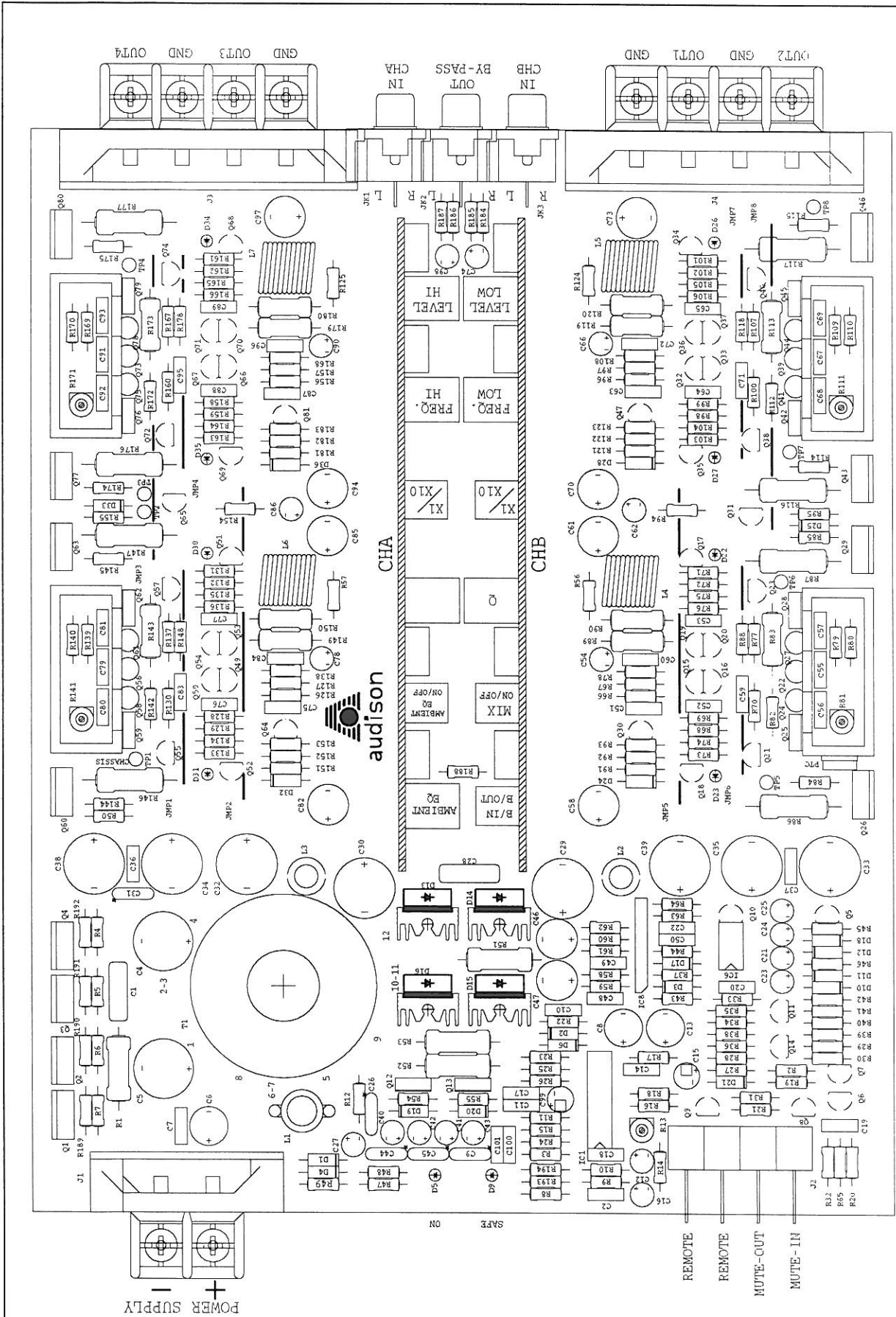
DESCRIPTION: MOTHER BOARD
 VR404 and VR404XR

REVISION: C

DATE: 23-09-1997

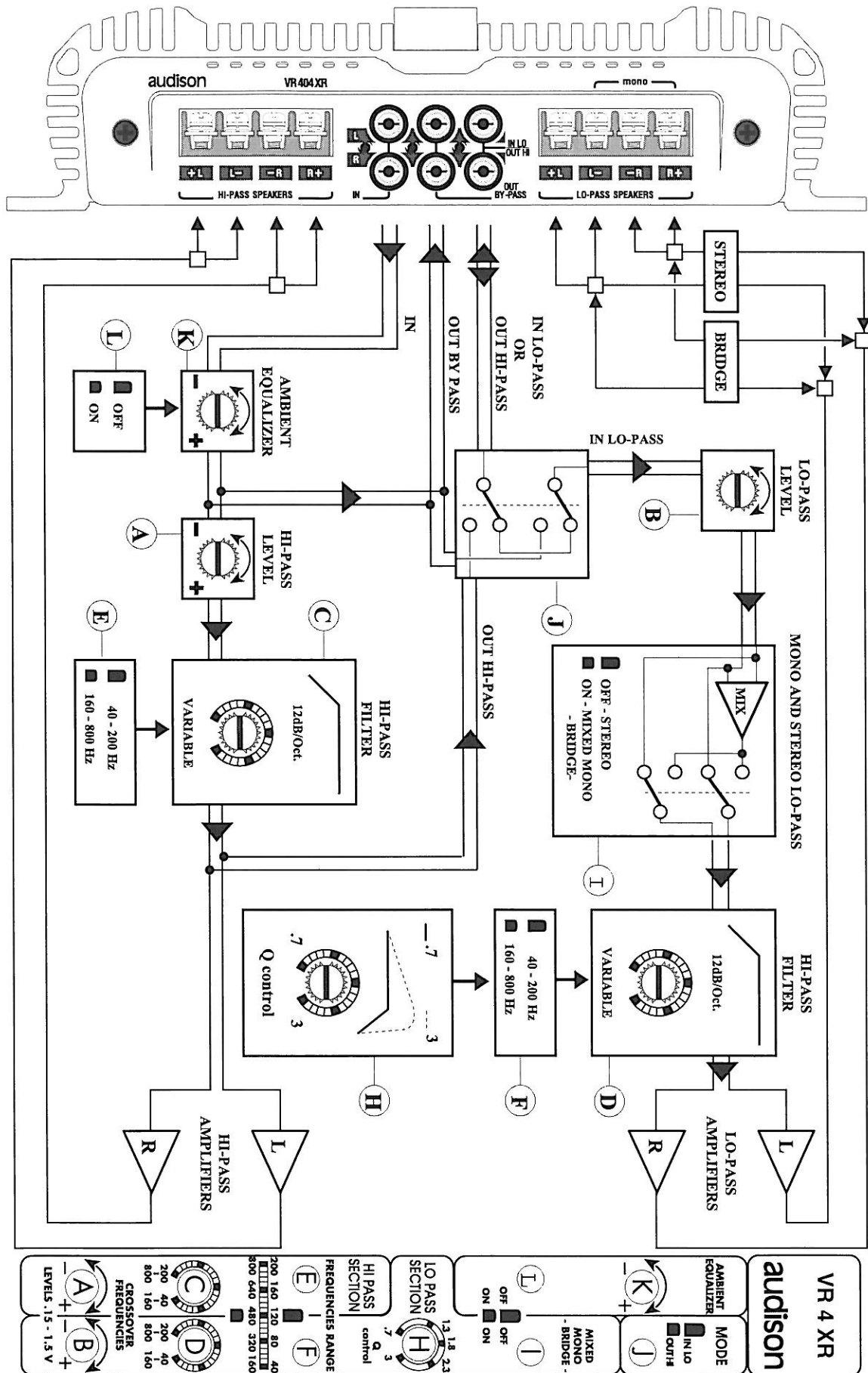
DRAWN: 16730200 C

SHEET: 1 OF 1



VR 404 XR/E

VR 404 XR BLOCK DIAGRAM



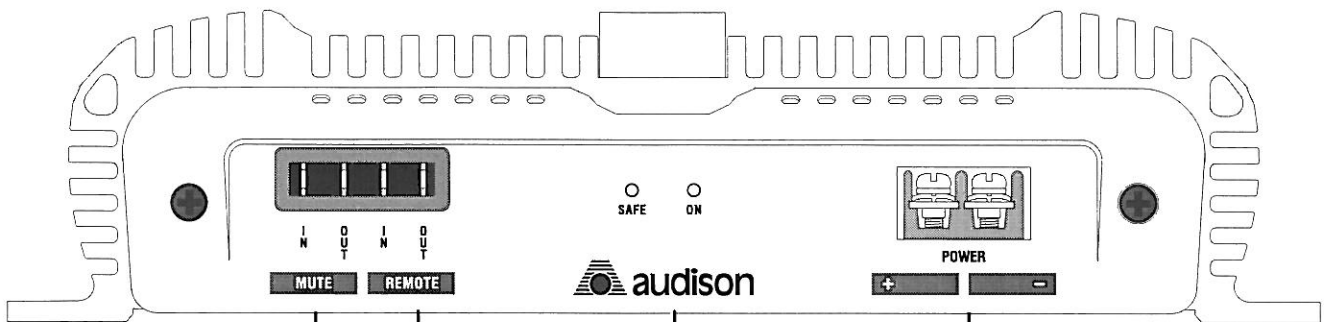
VR 404 XR

TECHNICAL DATA

POWER SUPPLY	11 ÷ 15 VDC
IDLING CURRENT	1 A
MAX ABSORPTION (Nominal Pwr)	27 A
CONT. NOMINAL POWER (Tol. +10%; -5%) 4 ch x 4 Ohms; 0.3 % THD; 12 VDC	35 W (RMS)
CONT. POWER (4 ch x 4 Ohms; 13.8 VDC)	45 W (RMS)
CONT. POWER (4 ch x 2 Ohms; 13.8 VDC)	65 W (RMS)
CONT. POWER (2 ch x 4 Ohms; 13.8 VDC) Bridge	130 W (RMS)
THD DISTORTION (1 KHz; 90% Nominal Pwr)	0.04 %
DAMPING FACTOR (4 Ohms)	140
RISE TIME	4 µS
SIGNAL / NOISE RATIO	102 dBA
INPUT SENSITIVITY	0.3 V ÷ 4 VRMS
INPUT IMPEDANCE	15 KOhms
LOAD IMPEDANCE stereo	8; 4; 2 Ohms
mono	8; 4 Ohms
REMOTE IN	3 ÷ 15 VDC
REMOTE OUT	12 VDC
MUTE IN	3 ÷ 15 VDC
MUTE OUT	12 VDC
CROSSOVER FREQUENCIES 1 st BAND	45 Hz - 200 Hz
2 nd BAND	160 Hz - 800 Hz
FILTERS SLOPE	12 dB/Oct. Butterworth
PREAMPLIFIED HI-PASS OUTPUTS GAIN	12 dB
PREAMPLIFIED BY-PASS OUTPUTS GAIN	0 dB
Q FILTER LO-PASS CONTROL	0.7 - 3
MIXED MONO LO-PASS (bridge)	SELECTABLE (ON - OFF)
SINGLE/DUBLE STEREO INPUT	SELECTABLE
SELECTABLE AND ADJUSTABLE AMBIENT EQUALIZER	ON - OFF
SIZE (WxHxD)	257 x 57 x 260 mm (10.12 x 2.24 x 10.24 inch)

VR 404 - VR 404 XR

CONNECTIONS AND FUNCTIONS



MUTE

IN

Mute control coming from radio/cassette player (or any source provided with output for the amplifier mute).

It is especially made to be connected to the mute output of a cellular telephone in order to silence the amplifier for incoming calls, and it allows to reactivate musical reproduction at the end of phone conversation. It can be connected to the MUTE OUT output of a preceding amplifier to allow the simultaneous silencing of all amplifiers connected in cascade. The applied voltage must be between 3 and 15 VDC.

OUT

Output for the other amplifiers in sound system.

It must be connected to the MUTE IN of the successive amplifier to allow the simultaneous silencing of all amplifiers connected in cascade. The available voltage on this output is 12 VDC with current equal to 5 mA.

REMOTE

IN

Turn on control for the amplifier coming from radio/cassette player (or from any source provided with remote control for amplifiers).

The applied voltage must be between 3 and 15 VDC.

OUT

Output leading to other amplifiers of the sound system.

It has to be connected to the REMOTE IN of successive amplifiers to allow the simultaneous turning on of the whole system.

The available voltage on this output is 12 VDC with a current equal to 250 mA.

INDICATORS LIGHTS

ON

Lit when amplifier is ON.

SAFE

When lit it indicates the intervention of protection circuits: in case of overheating (temperature exceeding 80° C / 176° F) or output anomalies (presence of continuous current, short circuit, or dangerously low load impedance). When protection circuits intervene the amplifier shuts down. Turn the amplifier off. When the problem is corrected turn the amplifier back on.

POWER SUPPLY CLAMPS

POWER

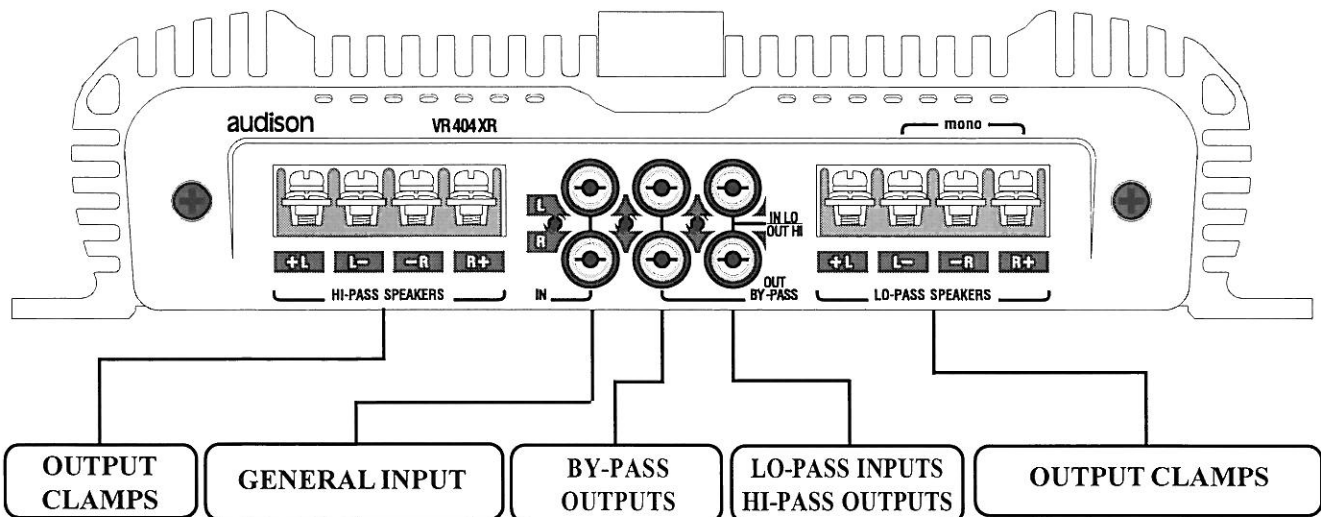
Input clamps for the amplifier power supply.

Connect the battery positive and negative according to the indicated polarities.

The applied voltage must be between 11 and 15 VDC.

VR 404 XR

CONNECTIONS AND FUNCTIONS



HI-PASS SPEAKERS
Left and right HI-PASS power outputs. The available signal is subjected to the action of the HI-PASS filter (which can't be excluded) and of the AMBIENT EQUALIZER filter. The cut off frequency can be adjusted in two rangers from 40 Hz to 800 Hz through special controls put on the upper part of the amplifier.

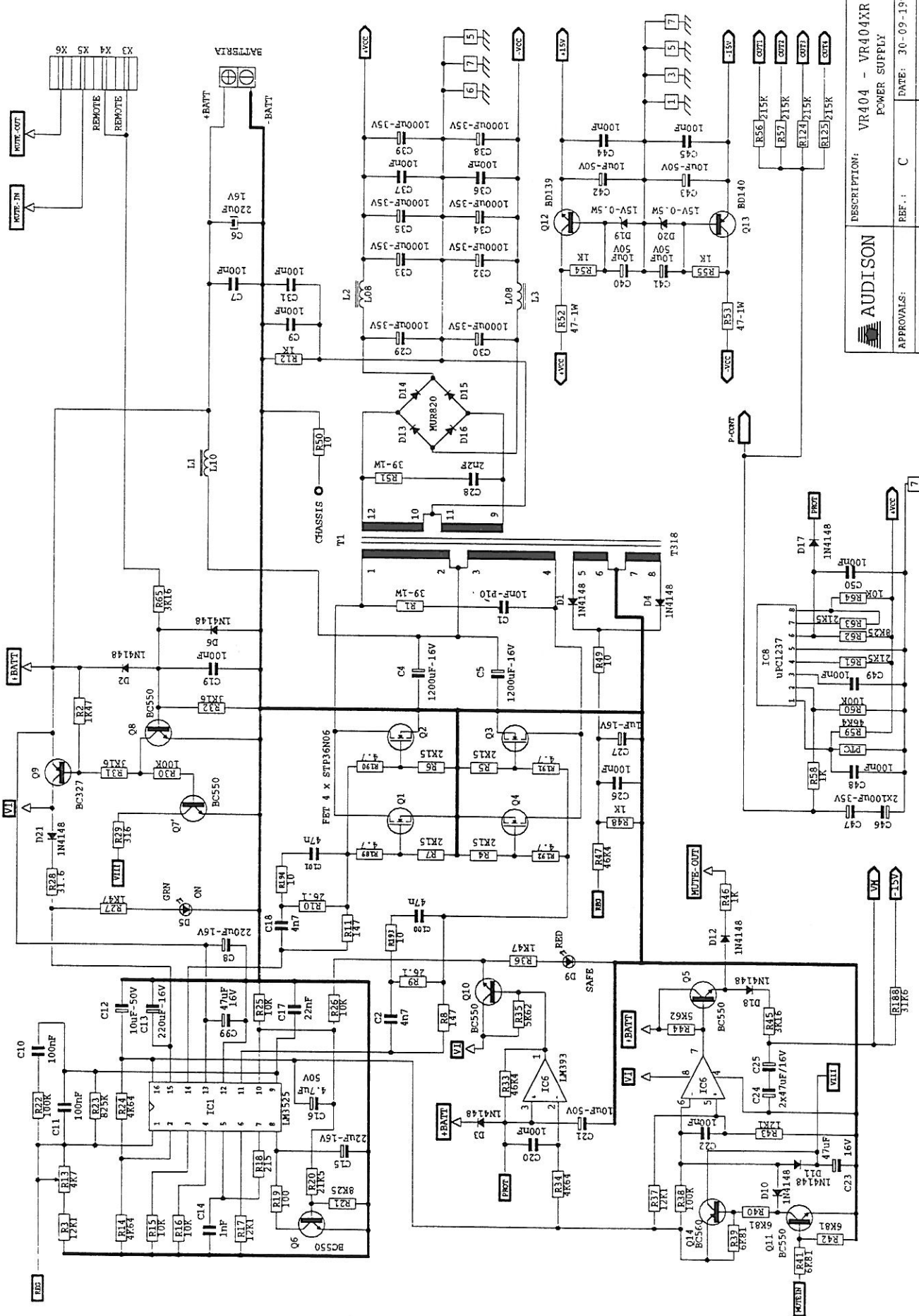
IN
Left and right inputs of the amplifier. It drives directly the two HI-PASS channels of the amplifier and it can also drive the two LO-PASS channels when the MODE button (on the upper part) is selected as OUT HI. In this case the HI-PASS preamplified output is available; it is called IN LO - OUT HI.
Connections have to be made from the preamplified output of a source, for example a radio cassette player, a CD player, an electronic crossover or any devices which handle the musical signal at a preamplified stage.

OUT BY-PASS
Preamplified BY-PASS outputs of the amplifier. The available signal is subjected to the action of the AMBIENT EQUALIZER filter (which can be activated or not) which handles the signal coming from the IN general input. They are for another amplifier, an electronic crossover or any devices which handle the musical signal at a preamplifier stage.

IN LO OUT HI
R C A connectors which can be used as signal input or output. They can be selected through the special function handled by the MODE switch. Input to drive the LO-PASS section of the device, in this case the MODE switch has to be put on IN LO position.
HI-PASS output, in this case the MODE switch has to be put on OUT HI position; the four channels of the amplifier are driver by the IN input.

LO-PASS SPEAKERS
Left and right LO-PASS power outputs. The available signal is subjected to the action of the LO-PASS filter (which can't be excluded) includes the adjustment of the Q factor. This varies from 0,7 (cut slope of the butterworth LO-PASS filter) to 3 (it increases the signal by the set crossover frequency). The cut-off frequency can be adjusted in two ranger from 40 Hz to 800 Hz and it is activated.

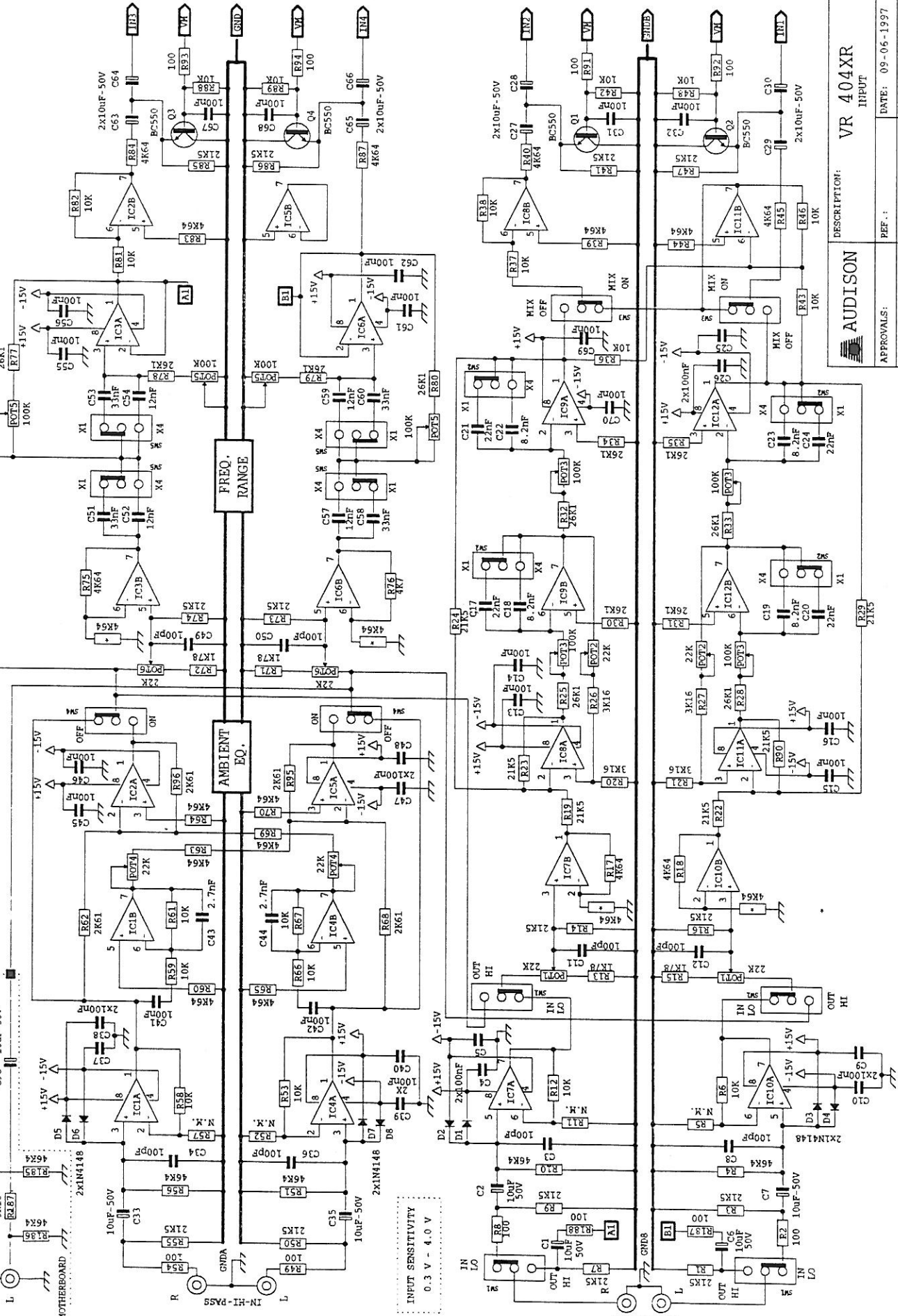
MONO
Power outputs (+L and -R). They have to be used to connect a mono subwoofer when the MIXED MONO BRIDGE (sum of the channels) is actived through the special switches put on the upper part of the device.



1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

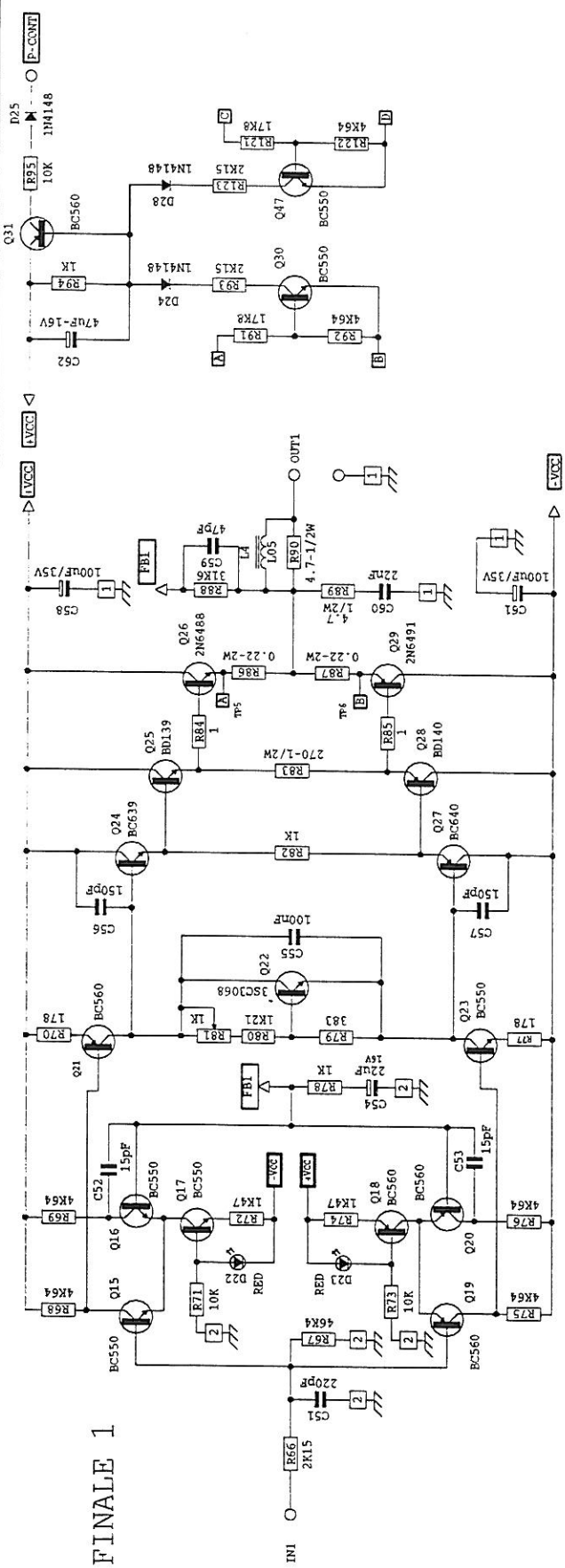
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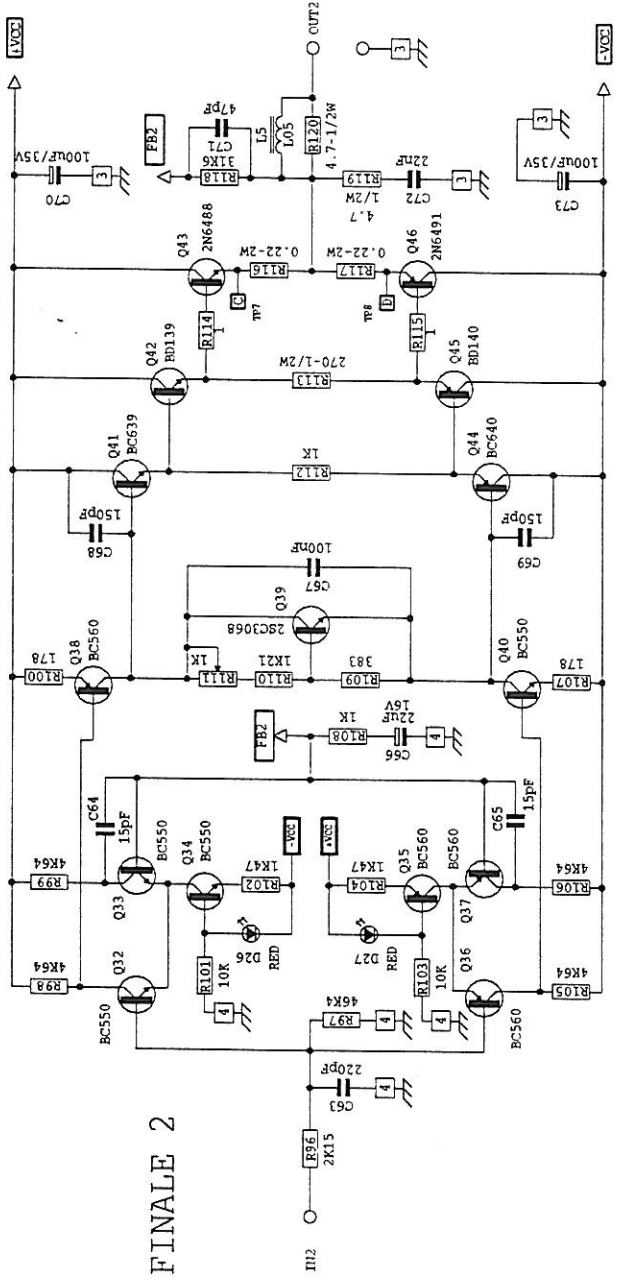


DESCRIPTION: VR 404XR INPUT
APPROVALS: REF.: DATE: 09-06-1997
REVISION: DRAWN: 16771500 D SHEET: 2 OF 4

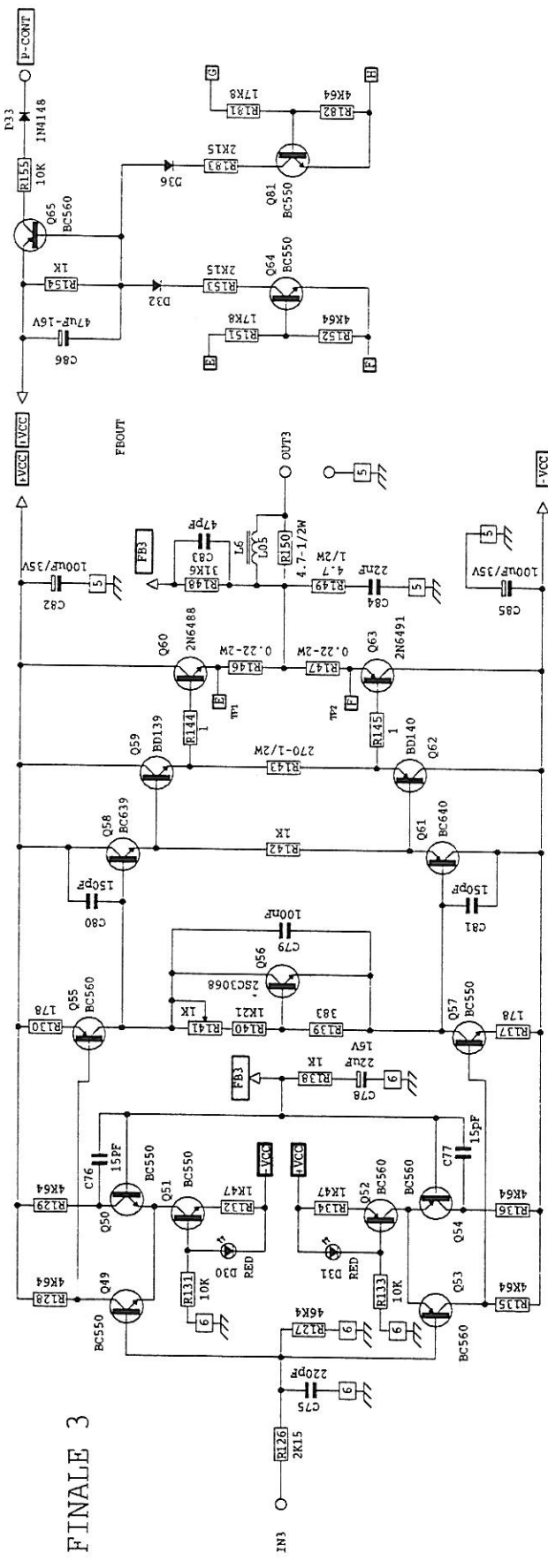
FINALE 1



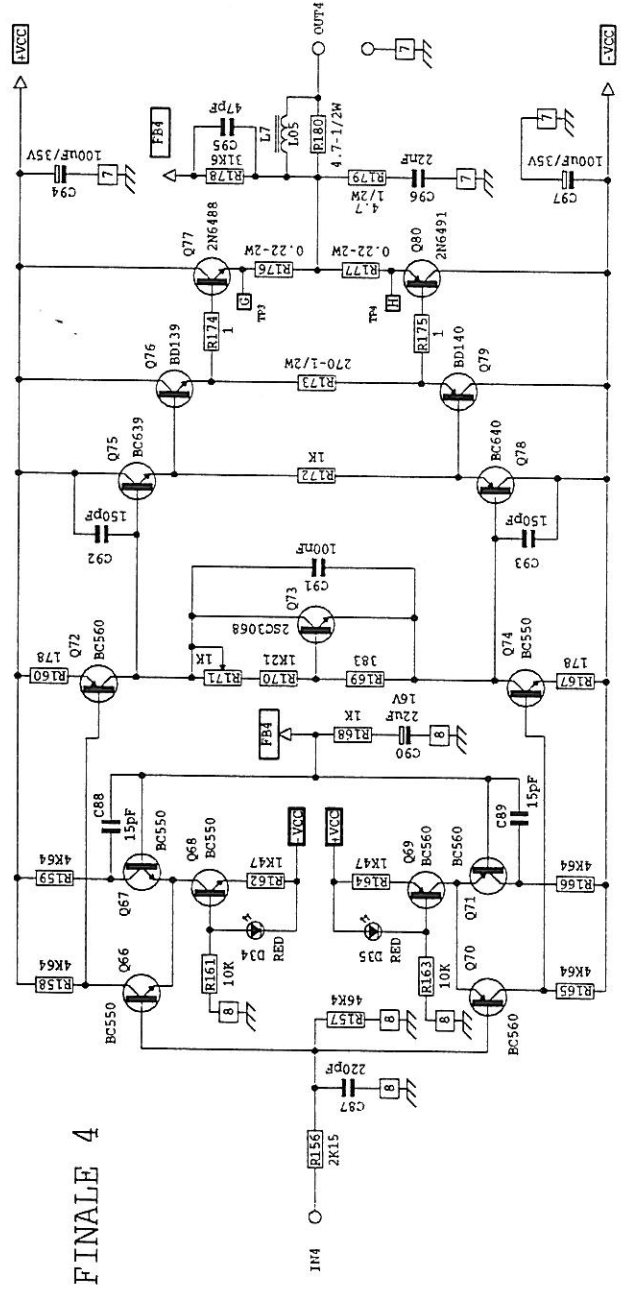
FINALE 2



FINALE 3



FINALE 4



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DESCRIPTION: MOTHER BOARD
 VR404 and VR404XR

REVISION: C

DATE: 23-09-1937

DRAWN: 16730200 C

SHEET: 1 OF 1

