

GTX4

4/2 CHANNEL

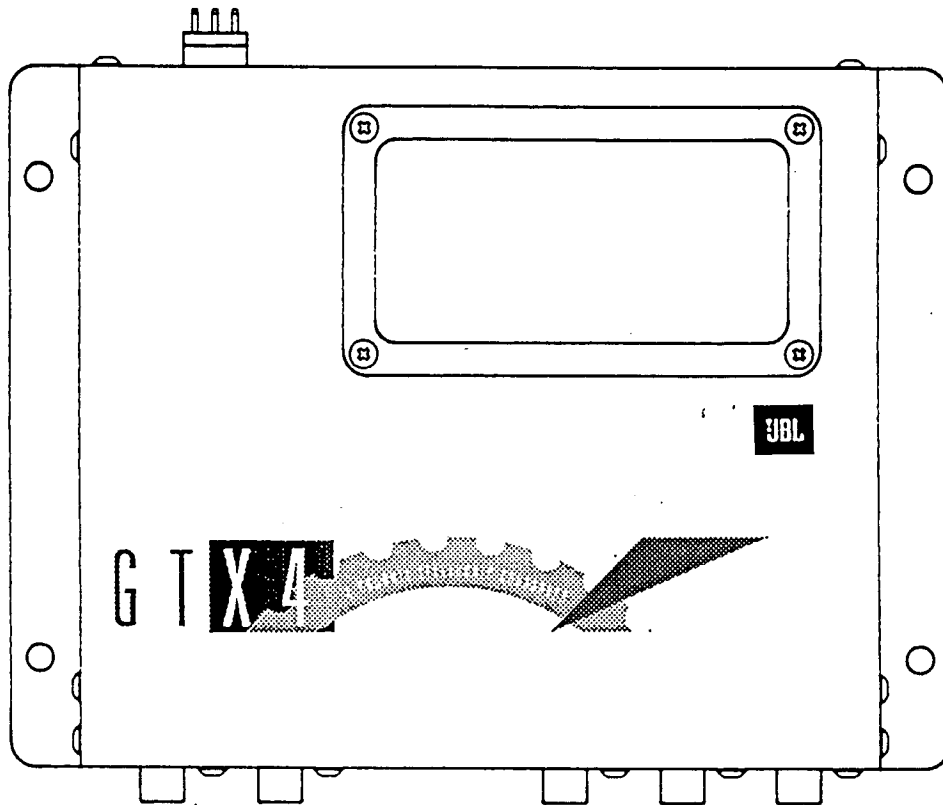
AUTOMOTIVE

ELECTRONIC

CROSSOVER

TECHNICAL MANUAL

JBL



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JBL GTX-4 ELECTRONIC CROSSOVER FEATURES

Non fading, Constant Bass Subwoofer Output

The GTX-4 provides a non-fading, constant bass subwoofer output, along with the high-pass front and rear outputs that can still be faded from the head unit.

4 or 2 Channel Input Configuration

The GTX-4 can be configured to accept front and rear (4 channel) inputs from a head unit featuring front and rear pre-amp outputs. In this setup, the fading capability of the front and rear high-pass outputs will be retained, and the head unit's fader control will remain functional. When switched to a 2 Channel input mode, any head unit with only one pair of pre-amp outputs (right and left) can be used. The signal will be routed to all sections of the crossover.

Crossover Module System

The crossover roll-off frequency can be modified by replacing the plug-in modules inside the electronic crossover. The crossover module concept offers the unique combination of the versatility of changeable crossover frequencies, along with the protection from unauthorized tampering with the delicate adjustments of a well-tuned audio system.

Independent Low Pass and High Pass Crossover Frequency Adjustments

This allows for overlapping or staggering the output frequencies in order to emphasize certain frequencies, eliminate resonances, or fine-tune the bandwidth of operation for a specific speaker. The front and rear high-pass frequencies are also independently set in the GTX-4.

18 db per octave Crossover Slope

18 db per octave filtering optimizes both bandwidth and phase characteristics. All crossover slopes are set to 18 db per octave.

Low Output Stereo / Mono Switch

Allows the use of a mono or single-speaker subwoofer system.

Continuously Adjustable Low Pass Output Level Control

Allows compensation for different speaker efficiencies, amplifier gain, and frequency response shaping.

Pulse Width Modulation (PWM) DC-to-DC Switching Mode Power Supplies

Provides excellent transient response, headroom, and immunity to installation-related noises (such as alternator whine).

Low Noise Input Selection

All JBL electronic crossovers are designed with special attention to the capability of their input section not only to reject induced noises such as alternator whine or spark noise, but to provide audiophile-quality signal-to-noise ratio as well.

Third Order (18 db per octave) Capacitive / Inductive Power Supply Input and Output Filtering
For low radio frequency interference (RFI) and excellent immunity to system noises such as alternator whine.

Full Protection Circuitry

JBL electronic crossovers are protected against over-temperature, over-current, over-voltage, and input overload. These special circuitries protect the unit from installation errors and unfriendly environmental conditions. However, none of these protection systems is in the signal path. They cannot interfere with the sonic performance of the crossover.

JBL GTX-4 ELECTRONIC CROSSOVER SPECIFICATIONS

NOTE: ALL INPUTS ARE ALWAYS DRIVEN UNLESS OTHERWISE STATED.

1. Input Voltage for 500mV Output into 10k Ω at the High-Pass Output (1 kHz signal):
500 mV \pm 20%

2. Input Voltage for 500 mV Output into 10k Ω at the Low-Pass Output (Low Output Level at Maximum, 20 Hz signal):
200 mV or less

3. Low-Pass Output Maximum THD at 500 mV Output into 10 k Ω (Low-Pass Level Control at Minimum, 20 Hz Signal, no filters used):
0.2% or lower

4. High-Pass Output Maximum THD at 500 mV Output into 10 k Ω (1 kHz Signal, no filters used):
0.15% or lower

5. Minimum Unclipped Output Voltage (Low Output Level Control at Minimum):
Low-Pass 20 Hz Signal 2 volts or more
High-Pass 1 kHz Signal 2 volts or more

6. Minimum Signal-to-Noise Ratio into 10 k Ohms, Inputs Shorted (Low Output Level Control at Minimum):
90 dBA

7. Minimum Channel Separation, Referenced to 500 mV into 10 k Ω , one Channel Driven, the Other Measured With it's Input Shorted:
1 kHz: 45 dB or Higher

8. Crossover Cutoff Frequency, -3 dB Point (80 Hz Crossover DIP Used for all Sections):

High-Pass (Reference 1 kHz): 80 Hz \pm 20%

Low-Pass (Reference 20 Hz): 80 Hz \pm 20%

NOTE: To check other DIPs, install them in all sections of the unit, use the same reference points (except for DIPs over 500 Hz where the high-pass reference becomes 10 kHz). Check for \pm 20% deviation in crossover frequency at -3 dB.

9. Low-Pass Frequency Response (Using the 80 Hz DIP for all Sections, Reference at 40 Hz):

20 Hz to 40 Hz: \pm 1 dB

10. High-Pass Frequency Response (Using the 80 Hz DIP for all Sections, Reference at 1 kHz):

200 Hz to 20 kHz: \pm 1 dB

11. Current Consumption, all Outputs Terminated Into 10 k Ω Loads, 1 kHz 500 mV Input Signal Applied to all Sections, Low Output Level Control at Maximum, 14.4 v Battery:

1 A or less

GTX-4 DISASSEMBLY PROCEDURE

NOTE: REFER TO EXPLODED VIEW FOR PARTS DESIGNATION.

1. Remove 8 screws (13) securing top cover (1). There are 3 screws on either side and 2 on the rear panel.

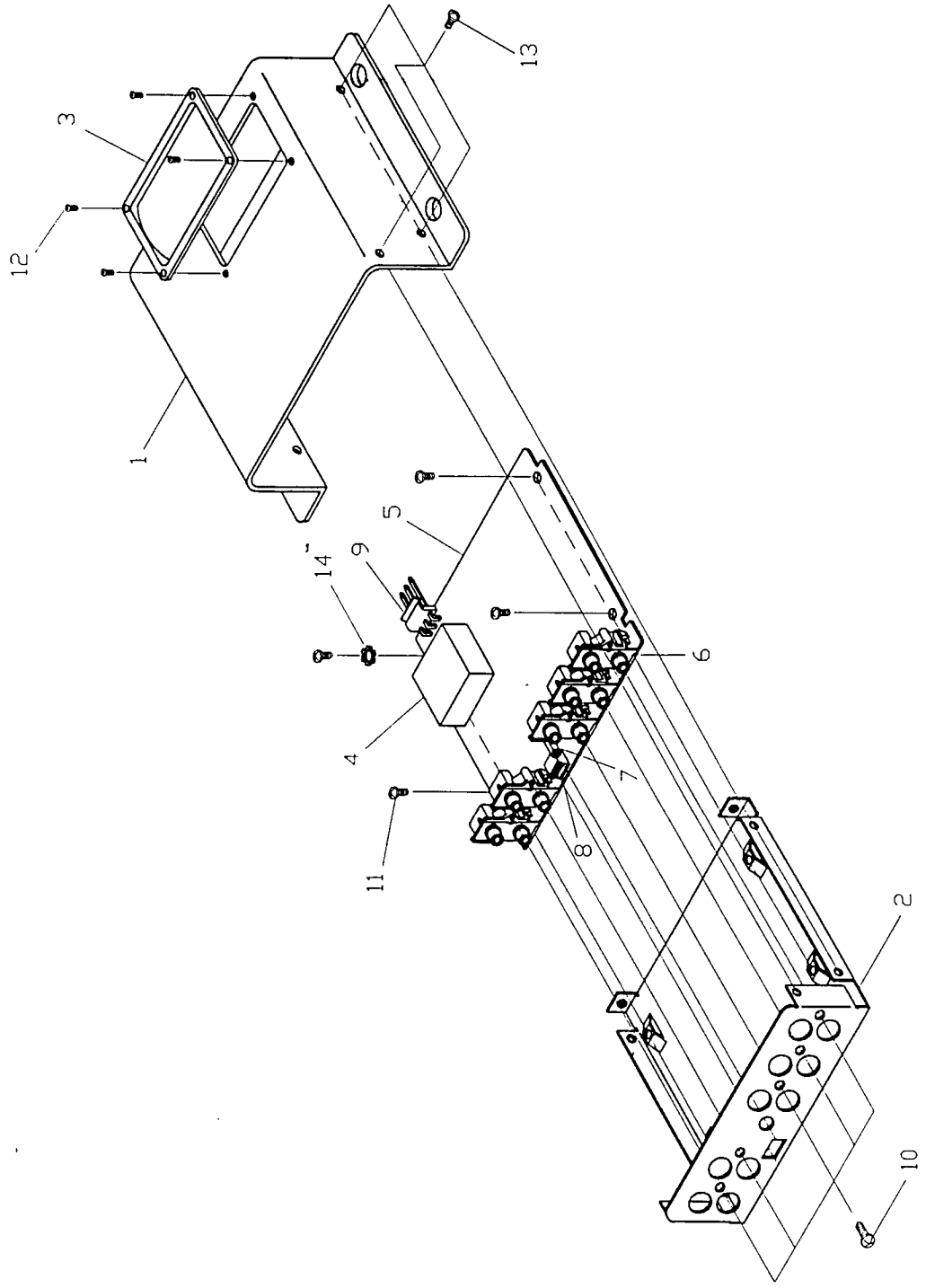
2. Remove top cover (1) by sliding unit away from chassis. Care should be taken to protect Molex connector that extends beyond PC board. During reassembly align the connector to the correct position before sliding on the cover.

3. To remove main PC board assembly from chassis:

a) Remove 1 phillips screw (10) from each of the 5 RCA jack assemblies on the front panel.

b) Remove 4 screws (11) from each corner of the main PC board.

c) The main PC board will now lift out of the chassis.



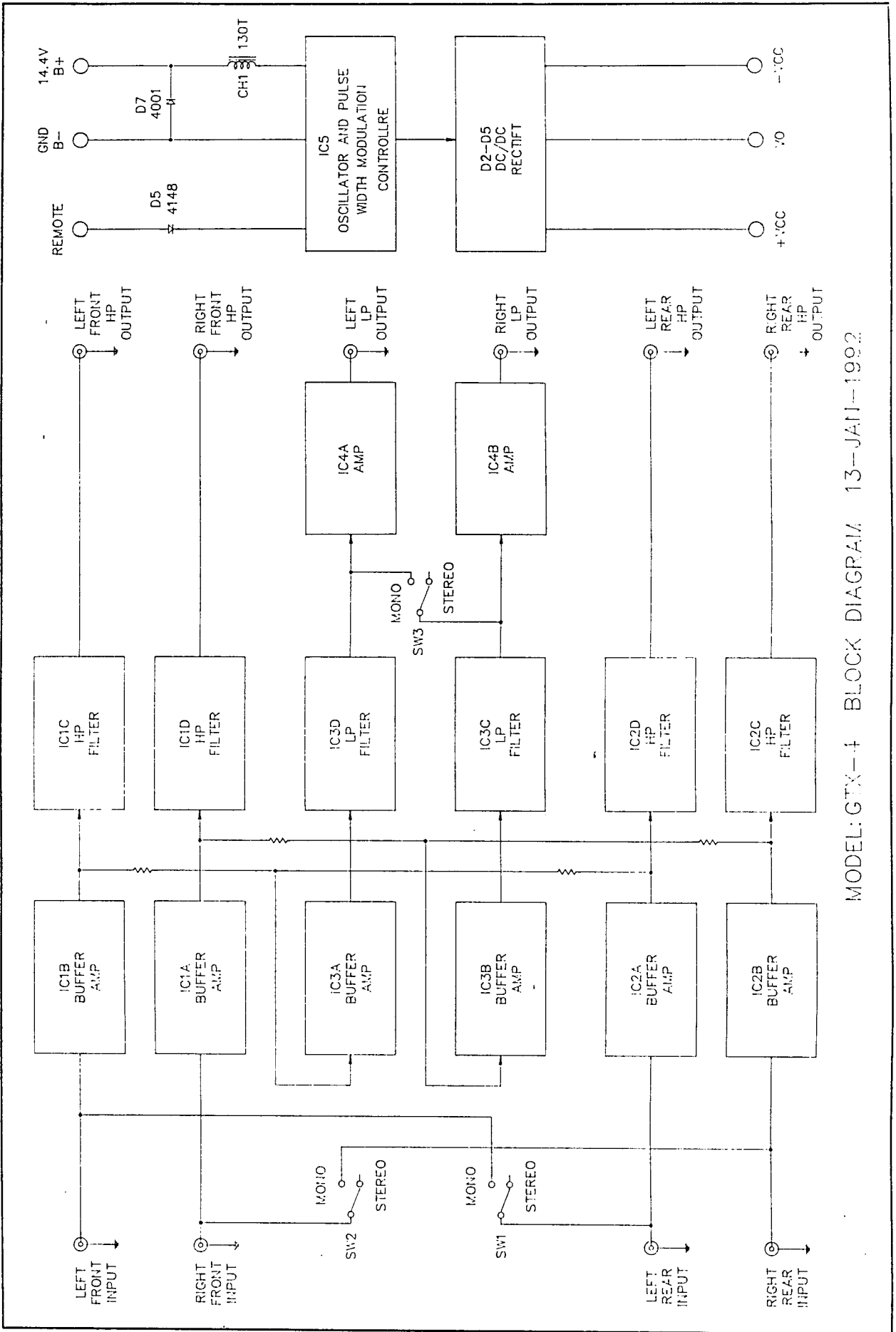
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PART.NO	REFERENCE NO.	CODE	DESCRIPTION	QTY
P.C.B. SECTION				
1-31-421	R 7,15,23,31	RES	1/4W+-1% METAL FILM 21K OHM	4
1-31-427	R 6,14,22,30		1/4W+-1% METAL FILM 27K OHM	4
1-18-110	R 43,44,45		1/4W+-5% PS 10 OHM	3
1-18-222	R 8,16,24,32,37,42		1/4W+-5% PS 220 OHM	6
1-18-310	R 2,10,18,26,47,50		1/4W+-5% PS 1K OHM	6
1-18-316	R 46		1/4W+-5% PS 1K6 OHM	1
1-18-322	R 33,38		1/4W+-5% PS 2K2 OHM	2
1-18-327	R 48		1/4W+-5% PS 2K7 OHM	1
1-18-347	R 57		1/4W+-5% PS 4K7 OHM	1
1-18-362	R 51		1/4W+-5% PS 6K2 OHM	1
1-18-410	R 34,35,39,40,55		1/4W+-5% PS 10K OHM	5
1-18-412	R 53		1/4W+-5% PS 12K OHM	1
1-18-422	R 5,13,21,29,52		1/4W+-5% PS 22K OHM	5
1-18-433	R 1,3,9,11,17,19,25,27		1/4W+-5% PS 33K OHM	8
1-18-447	R 54,56		1/4W+-5% PS 47K OHM	2
1-18-451	R 4,12,20,28		1/4W+-5% PS 51K OHM	4
1-18-462	R 36,41		1/4W+-5% PS 62K OHM	2
1-19-210	R 49,58		1/2W+-5% PS 100 OHM	2
1-10-301	C 1,7,13,C19,46,47	MCAP	1n/50V,+/-10% M	6
1-10-447	C 43		4n7/50V,+/-10% M	1
1-10-201	C 45,48		10n/50V,+/-10% M	2
1-10-101	C C6,12,18,24,29,30,35, 36,37,38,51,53		100n/50V,+/-10% M	12
1-11-315	C 26,32		15n/50V,MINI,+/-10% M	2
1-11-322	C 4,10,16,22		22n/50V,MINI,+/-10% M	4
1-11-382	C 3,9,15,21,25,31		82n/50V,MINI,+/-10% M	6
1-11-122	C 5,11,17,23,27,33		220n/50V,MINI,+/-10% M	6
1-12-010A	C 2,8,14,20,28,34	ECAP	1U/50V,+/-20% E	6
1-12-133	C 44		33U/16V,+/-20% E	1
1-12-133A	C 49,52		33U/35V,+/-20% E	2
1-12-210	C 39,40,41,42,50		100U/16V,+/-20% E	5
1-09-024	IC 1,2,3	IC	BA14741	3
1-09-421	IC 4		BA4560	1
1-09-561	IC 5		494	1
1-05-001	D 7	RECT.	DIODE 1N4001	1
1-05-009	D 2,3,4,5,6		DIODE 1N4148	5
1-06-005	D 8	ZENER	1/2W+-5% 15V	1
1-06-009	D 1		1/2W 1N967A 8V	1
1-03-001	CH 1	CHC	CHOKE COIL 130T DR683	1
1-01-204A	CH 2		XJ-41306-TC TOROID CHOKE COIL	1
1-23-817	RN 1, 2, 3	RES	NETWORK 33KR(4114R-001-333)	3
1-43-100	S 1, 2, 3		SOCKET 14-PIN IC SOCKET 1314-21-1	3

MECHANICAL PARTS LIST

REV: E	MODEL: GTX4	REVISE DATE: SEPT. 17, 1992		
PART.NO	REFERENCE NO.	CODE	DESCRIPTION	QTY
CASING SECTION				
3-43-062	1	PANEL	1835B-1 TOP COVER	1
3-43-065	2		1835B-2 BOTTOM COVER	1
3-43-064	3		1835B-4 ACCESS COVER	1
3-43-053	4		1835-3 SHIELD BOX	1
3-43-051B	5	PCB	1835 MAIN P.C.B. D/S	1
1-26-006	6	JACK	B217B 2RCA JACK	5
1-26-104	7	VR	20KAx2 RK14K1220A02A	1
1-27-046	8	SW	DIP SW. 76PSB04 RED 4POS.	1
1835-L	9	CON	MOLEX HEADER CONNECTOR	1
1-33-252	10	S&W	3x8 (2.6) BT NI -RCA JACK	5
1-33-256	11		3x0.5x5 BM NI -PCB	4
1-34-285	12		2.6x0.45x6 FM NI -AC COVER	4
1-33-251	13		3x0.5x5 (2.6) BM NI -COVER	8
1-37-330	14		M3 TEETH WASHER ZNC -PCB	1

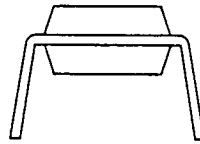
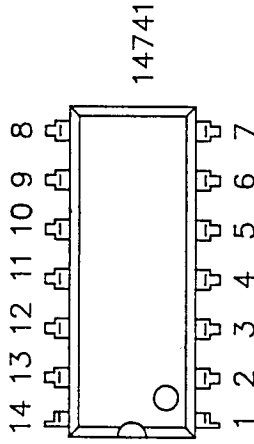
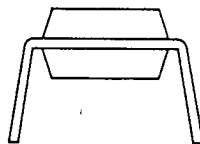
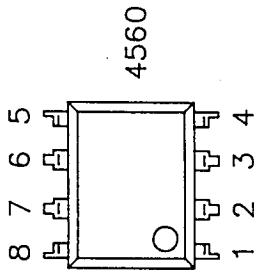
PACKING PARTS LIST

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PART.NO	REFERENCE NO.	CODE	DESCRIPTION	QTY
1-29-101	1		FUSE LAMP 1A	1
1-51-154	2	POLE	MOLEX 5195-03 HOUSING SET	1
1-51-152	3	WIRE	BLACK 15FTS W/YF2-4 T'NAL	1
1-51-153	4	T'NAL	BF-2(BLUE) BUTT SPLICE T'NAL	1
1835-6	5	MIS	1835-6 NETWORK BOX	1
1-23-750	5A		NETWORK 47KR(4114R-001-473)	3
1-23-820	5A		NETWORK 22KR(4114R-001-223)	3
1-23-810	5A		NETWORK 10KR(4114R-001-10K)	3
1836-7	6		1836-7 NETWORK BOX PAPER	1
1-36-430	7	S&W	4x19 PA BZ	4
1-37-140	8		M4 FLAT WASHER BZ	4
1-37-240	9		M4 SPRING WASHER BZ	4
GTX4-2	10		GIFT BOX GTX4	1
GTX4-3	11		OWNER'S MANUAL	1
GTC-001	11A		WARRANTY CARD	1
1835-5	12		POLYFOAM 1835-5	1
GTX4-1	13		GTX4 CROSSOVER SET	1



MODEL: GTX-4 BLOCK DIAGRAM 13-JAN-1992

DETAIL OF IC'S



MODEL: GTX-4

TYPICAL AT IC PINS

DC VOLTAGE MEASUREMENT

MEASURING INSTRUMENT: DIGITAL VOLTMETER

POWER SOURCE: DC +14.4V

INPUT: NO INPUT SIGNAL

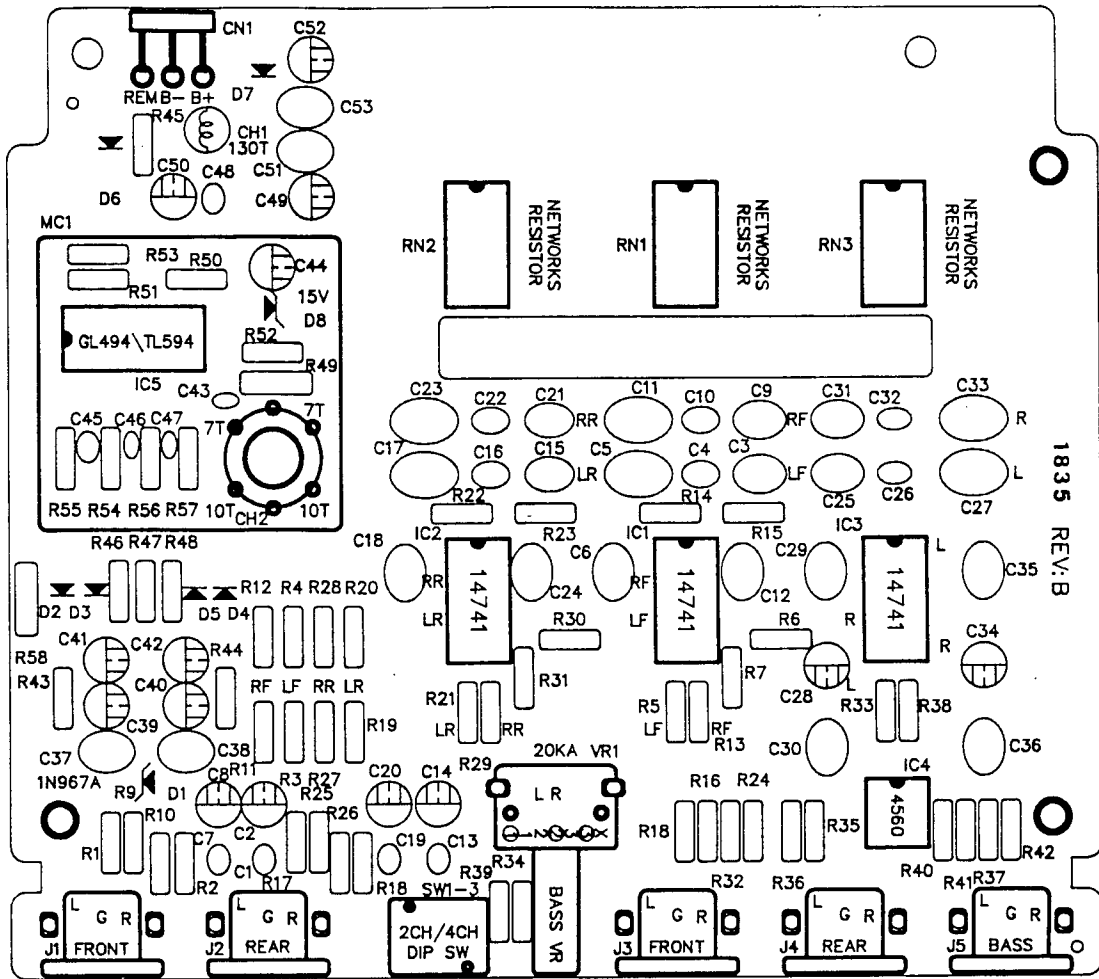
(UNIT: VOLTS)

PIN NO. IC NO.	1	2	3	4	5	6	7	8
IC4	0V	0V	0V	-8V	0V	0V	0V	8V

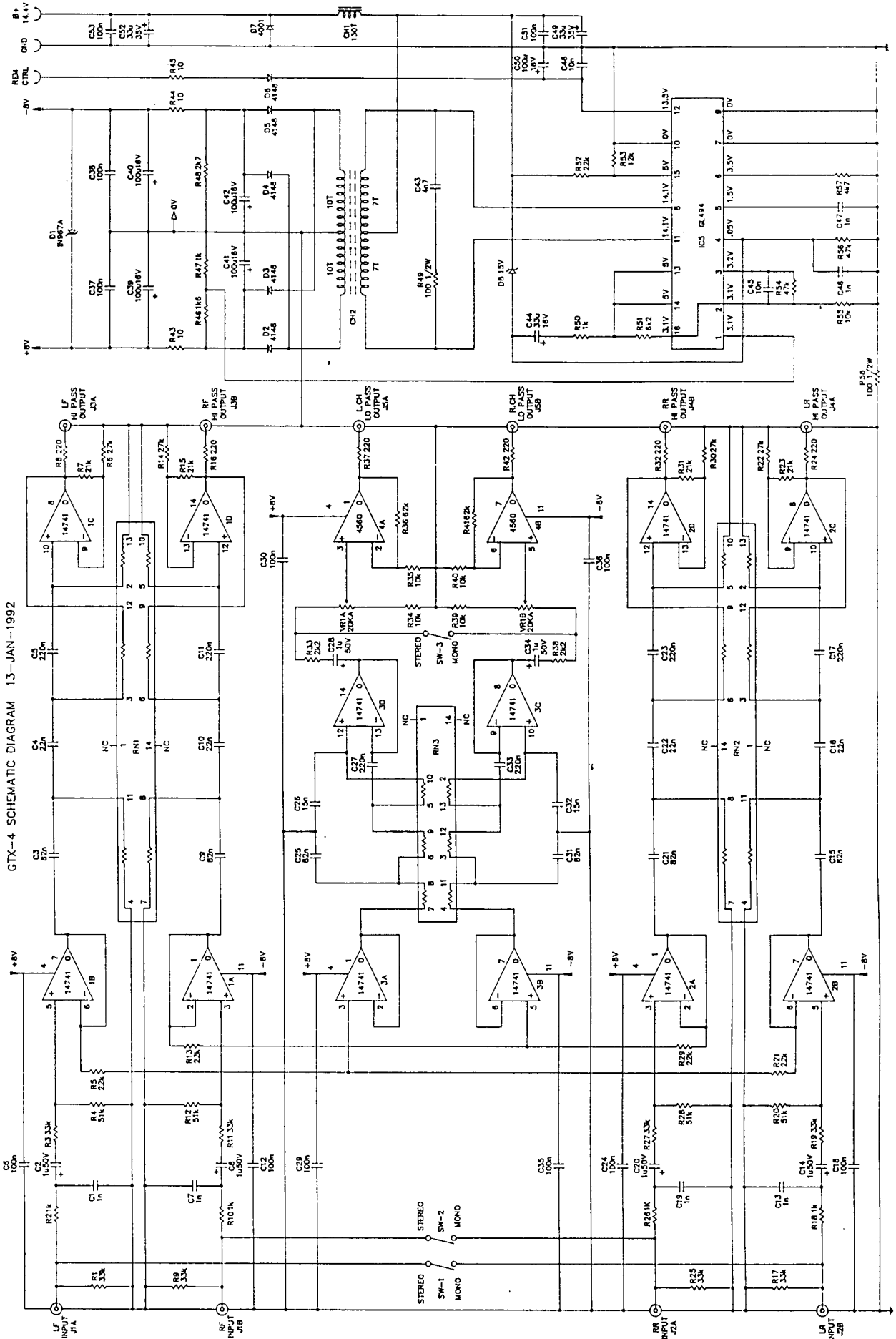
PIN NO. IC NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
IC1-IC3	0V	0V	0V	8V	0V	0V	0V	0V	0V	0V	-8V	0V	0V	0V

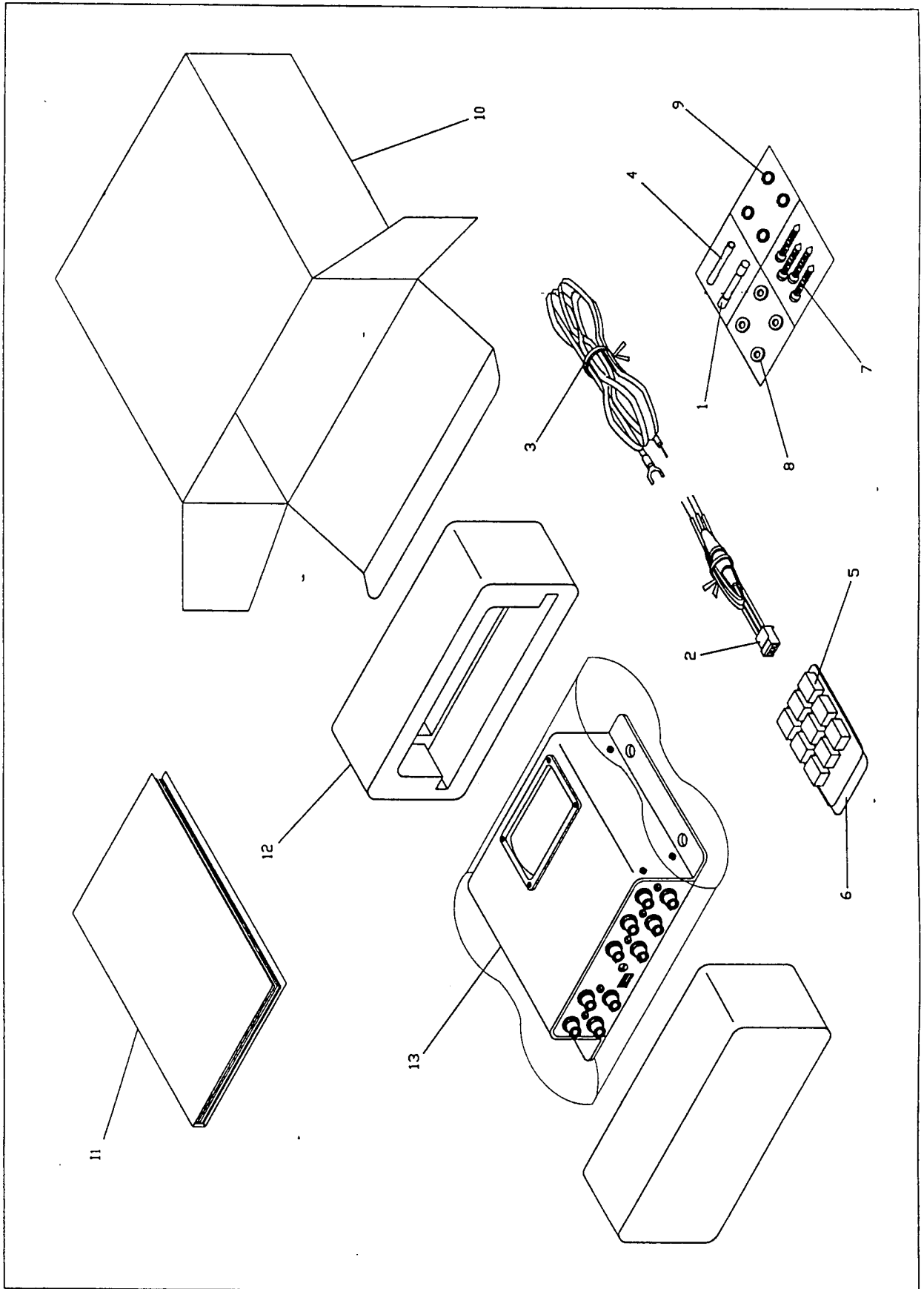
PIN NO. IC NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC5	3.1V	3.1V	3.2V	.05V	1.5V	3.5V	0V	14.1V	0V	0V	14.1V	13.5V	5V	5V	5V	3.1V

GTX-4 PC BOARD LAYOUT



GTX-4 SCHEMATIC DIAGRAM 13-JAN-1992





GTX 4 WIRING DIAGRAM

