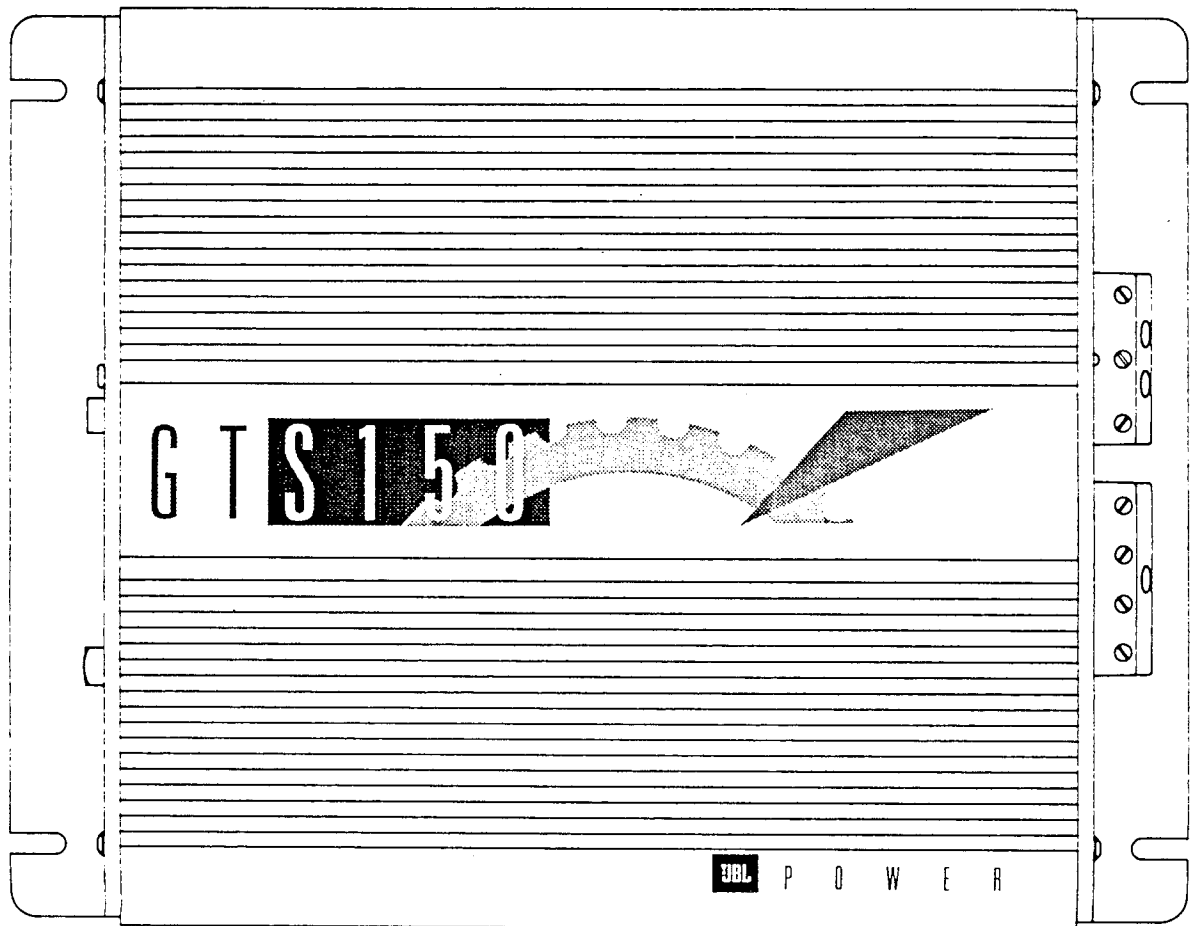
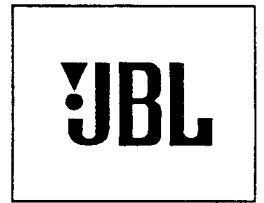


GTS150 2/1 CHANNEL AUTOMOTIVE POWER AMPLIFIER TECHNICAL MANUAL



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JBL GTS150 POWER AMPLIFIER FEATURES

Minimal Negative Feedback

All amplifiers require some form of negative feedback to minimize distortion and stabilize the amplifier. Too much feedback, however, increases the Transient Intermodulation Distortion (T.I.M.), and reduces its musicality. JBL's Minimal Negative Feedback design provides just enough feedback to stabilize the amplifier., remove DC offset, and offer excellent Total Harmonic Distortion (T.H.D.) characteristics.

No Current Limiting

Current Limiting circuitries used in conventional power amplifiers may cause premature clipping and inferior transient response under demanding conditions. The absence of current limiters in the audio sections of JBL power amplifiers ensures low Transient Intermodulation Distortion, excellent transient response, and superb sonic quality.

Quiet Start Circuitry

Special turn on and turn off circuitry have been implemented to prevent amplifier turn on and turn off pops.

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

Provides excellent power output throughout the audio bandwidth. Its' soft clipping characteristics ensure superb transient response and musicality.

Third Order (18dB 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.

Fully Complementary, Discrete Output Circuitry

The use of independent output transistors in the audio and power supply section provide excellent reliability and high current capability for accurate transient response. A fully complementary audio section offers superb sonic performance.

Full Protection Circuitry

All JBL amplifiers are protected against over-temperature, over-current, over-voltage, input overload, and DC offset. These special circuitries protect the amplifier 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 amplifier.

JBL GTS150 POWER AMPLIFIER SPECIFICATIONS

1. Minimum Power Output into 4 ohms, 2-channel mode, 1% THD:

20 Hz: 50 Watts x 2

1 kHz: 50 Watts x 2

20 kHz: 50 Watts x 2

2. Minimum Power Output into 2 ohms, 2-channel mode, 1% THD:

1 kHz: 75 Watts x 2

3. Minimum Power Output into 4 ohms, 1-channel bridged mode, 1% THD:

1 kHz: 150 Watts x 1

4. Maximum THD at 1 watt into 4 ohms, 2-channel mode:

20 Hz: 0.5% (30 kHz LPF)

1 kHz: 0.3% (400 Hz HPF, 30 kHz LPF)

20 kHz: 0.5% (400 Hz HPF, 30 kHz LPF)

5. Minimum Signal-to-Noise Ratio into 4 ohms, inputs shorted, Gain Controls at Min., 2-channel mode:

90 dBA

6. Input Sensitivity, Gain Control at maximum:

150 mV \pm 25%

7. Minimum Channel Separation, referenced to 50 watts into 4 ohms, 2-channel mode:

1 kHz: 45 dB

8. Gain Control Range, from MIN to MAX, 1 watt, 2-channel mode:

1 kHz: 20 dB \pm 20%

9. Output Level Deviation into 4 ohms, 1 watt, 1 kHz reference, 2-channel mode:

20 Hz: -3 dB or less

1 kHz: 0 dB (reference)

20 kHz: -3 dB or less

10. Current Consumption, 4 ohms, 2-channel mode, 1 kHz signal, 14.4V battery:

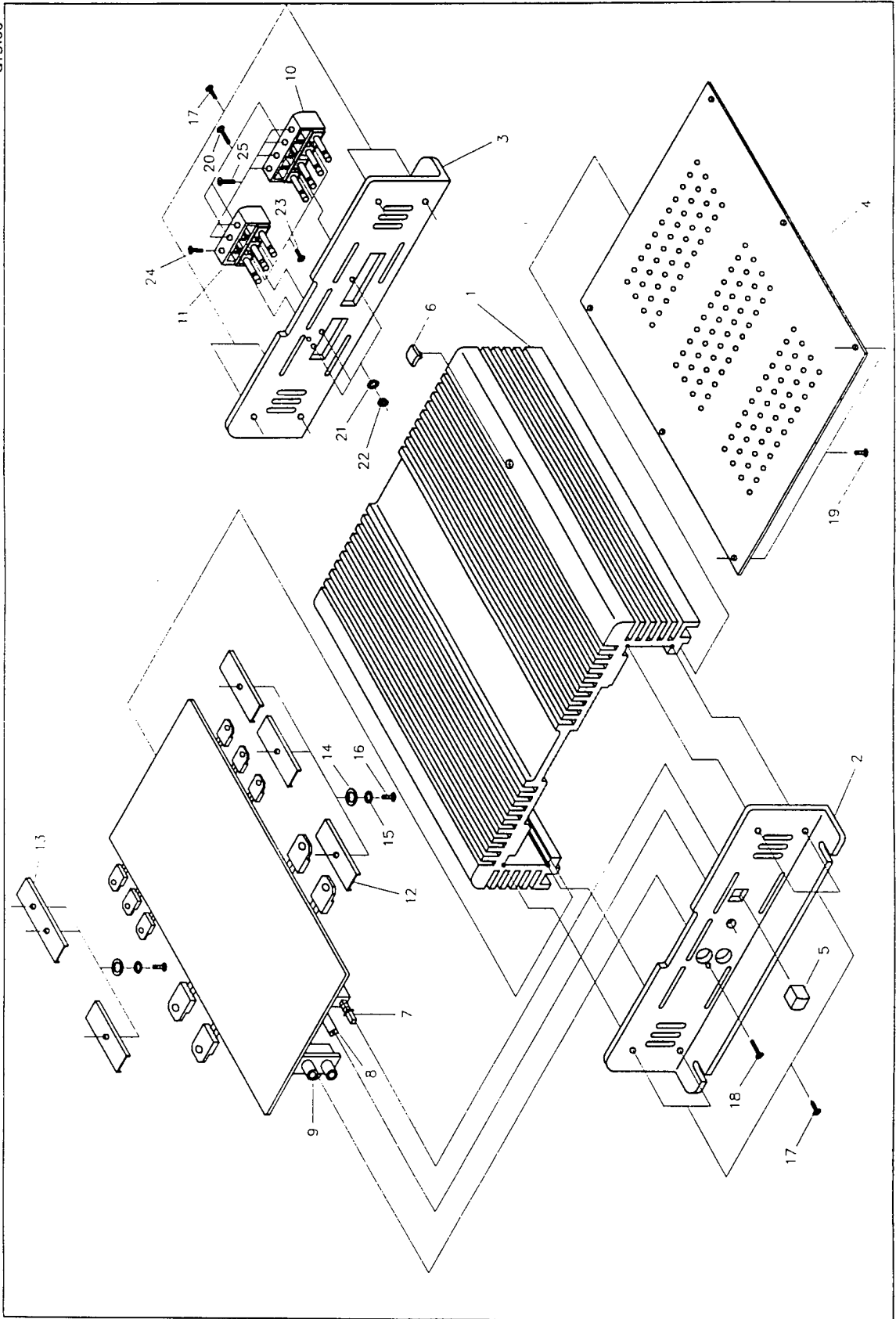
50 Watts x 2: 30 A or less

No Input Signal: 1.5 A or less

GTS150 DISASSEMBLY PROCEDURE

Note: REFER TO EXPLODED VIEW FOR PARTS DESIGNATION.

1. Remove 6 screws (19) securing bottom plate (4).
2. Remove bottom plate to expose main P.C. board assembly.
3. To remove main P.C. board assembly from chassis/heat sink assembly:
 - a) Remove 1 phillips screw (18) from RCA input jack.
 - c) Remove 4 T-10 torx screws (17) from opposite end of chassis.
 - d) Remove 6 screws (16) that secure heat sink brackets (12, 13) to chassis.
 - e) Main P.C. board will now lift out of chassis. Care should be taken to protect leads of red L.E.D. that extend beyond P.C. board. During reassembly, align the red L.E.D. to the correct position before securing panel.



REV: E MODEL: GTS150 REVISE DATE: SEPT. 9, 1992
 PART NO. REFERENCE NO. CODE DESCRIPTIONS QTY

P.C.B. SECTION

1-10-101	C34, C35, C40, C41, C49	M. CAP	100V+-10%	0.1UF		5
1-10-368	C32, C33, C42		100V+-10%	0.068UF		3
1-10-201	C45, C47, C50		100V+-10%	0.01UF		3
1-10-468	C9, C20		100V+-10%	0.0068UF		2
1-10-447	C52		100V+-10%	0.0047UF		1
1-10-301	C51		100V+-10%	0.001UF		1
1-12-002	C27	E. CAP	50V+-20%	5x11	0.22UF	1
1-12-004	C31		50V+-20%	5x11	0.47UF	1
1-12-110	C1, C2, C4, C12, C13, C15, C23, C24, C25		16V+-20%	5x11	10UF	9
1-12-133	C7, C18, C46		16V+-20%	5x11	33UF	3
1-12-147	C28, C29		16V+-20%	5x11	47UF	2
1-12-210	C30, C48, C53		16V+-20%	6x11	100UF	3
1-12-247	C5, C16		25V+-20%	10x16	470UF	2
1-12-522	C36, C37, C38, C39, C43, C44		35V+-20%	16x30	2200UF 85c	6
1-16-010	C3, C14, C26	C. CAP	50V+-10%	10PF		3
1-16-110	C6, C8, C17, C19		50V+-10%	100PF		4
1-16-125	C10, C11, C21, C22		50V+-10%	250PF		4
1-18-147	R68, R71, R72, R75	RES	1/4W+-5%	PS	47 OHM	4
1-18-215	R76, R77		1/4W+-5%	PS	150 OHM	2
1-18-233	R8, R26, R42, R46		1/4W+-5%	PS	330 OHM	4
1-18-247	R69, R70, R73, R74		1/4W+-5%	PS	470 OHM	4
1-18-275	R41, R45		1/4W+-5%	PS	750 OHM	2
1-18-310	R1, R9, R10, R11, R19, R27, R28, R29, R37, R39, R80		1/4W+-5%	PS	1K OHM	11
1-18-322	R2, R12, R20, R30, R64, R65		1/4W+-5%	PS	2.2K OHM	6
1-18-333	R40		1/4W+-5%	PS	3.3K OHM	1
1-18-347	R49		1/4W+-5%	PS	4.7K OHM	1
1-18-356	R16, R34, R43, R47, R86		1/4W+-5%	PS	5.6K OHM	5
1-18-362	R81		1/4W+-5%	PS	6.2K OHM	1
1-18-368	R84		1/4W+-5%	PS	6.8K OHM	1
1-18-410	R4, R6, R7, R22, R24, R25, R38,		1/4W+-5%	PS	10K OHM	7
1-18-412	R44, R48, R78		1/4W+-5%	PS	12K OHM	3
1-18-418	R56, R60		1/4W+-5%	PS	18K OHM	2
1-18-422	R3, R21		1/4W+-5%	PS	22K OHM	2
1-18-430	R83		1/4W+-5%	PF	30K OHM	1
1-18-433	R57, R79		1/4W+-5%	PS	33K OHM	2
1-18-447	R59, R85		1/4W+-5%	PS	47K OHM	2
1-18-456	R51, R53, R55, R58		1/4W+-5%	PS	56K OHM	4
1-18-468	R50		1/4W+-5%	PS	68K OHM	1
1-18-533	R5, R23		1/4W+-5%	PS	330K OHM	2
1-18-633	R52, R54		1/4W+-5%	PF	3.3M OHM	2
1-19-110	R13, R31, R62, R63, R87		1/2W+-5%	PS	10 OHM	5
1-31-264	R14, R32		1/4W+-1%	METAL FILM	649 OHM	2
1-31-225	R15, R33		1/4W+-1%	METAL FILM	250 OHM	2
1-20-210	R82		1W+-5%	METAL FILM	100 OHM	1
1-20-220	R66		1W+-5%	METAL FILM	200 OHM	1
1-20-230	R61, R67		1W+-5%	METAL FILM	300 OHM	2
1-23-022	R17, R18, R35, R36		5W+-5%	WIRE WOUND	0.22 OHM	4

REV: E

MODEL: GTS150

REVISE DATE: SEPT. 9, 1992

PART NO.	REFERENCE NO.	CODE	DESCRIPTIONS	QTY
P.C.B. SECTION				
3-59-011B	MAIN PCB	PCB	2033 MAIN P.C.B.	1
1-25-150	LD1		RED LED MRB31D	1
1-27-420	TH1 SW	TH1	THERMAL SWITCH	1
1-28-002	RELAY		RELAY (OMI-SS-224DM)	1
1-01-405A	T3	COIL	EE41 FERRITE CHC, (NKO45)	1
1-01-406B	T1, T2	COIL	T080-26 IRON POWDER CHOKE	2
1-28-202A	T4		BALUN CHOKE COIL	1
1-05-007	D13	RECT.	CTU 21R	1
1-05-008	D14		CTU 21S	1
1-05-006	D12	DIODE	1N5400	1
1-05-001	D7, D8, D9, D11		1N4001	4
1-05-009	D3, D4, D5, D6		1N4148	4
1-06-005	D1, D2, D10	ZENER	1/2W+-5% 15V	3
1-07-200	Q14, Q15, Q16, Q17	FET	IRF540 / MTP36N06E	4
1-08-009	Q4, Q9	P. TR.	TIP 141	2
1-08-010	Q5, Q10		TIP 146	2
1-07-104	Q1, Q6	TRA.	2N 3906	2
1-07-107	Q2, Q7, Q11, Q12		MPS A06	4
1-07-109	Q13		MPS A56	1
1-07-108	Q3, Q8		MPS A13	2
1-09-421	IC1, IC2	IC	BA4560	2
1-09-412	IC3		TA 7317P	1
1-09-561	IC4		GL494	1

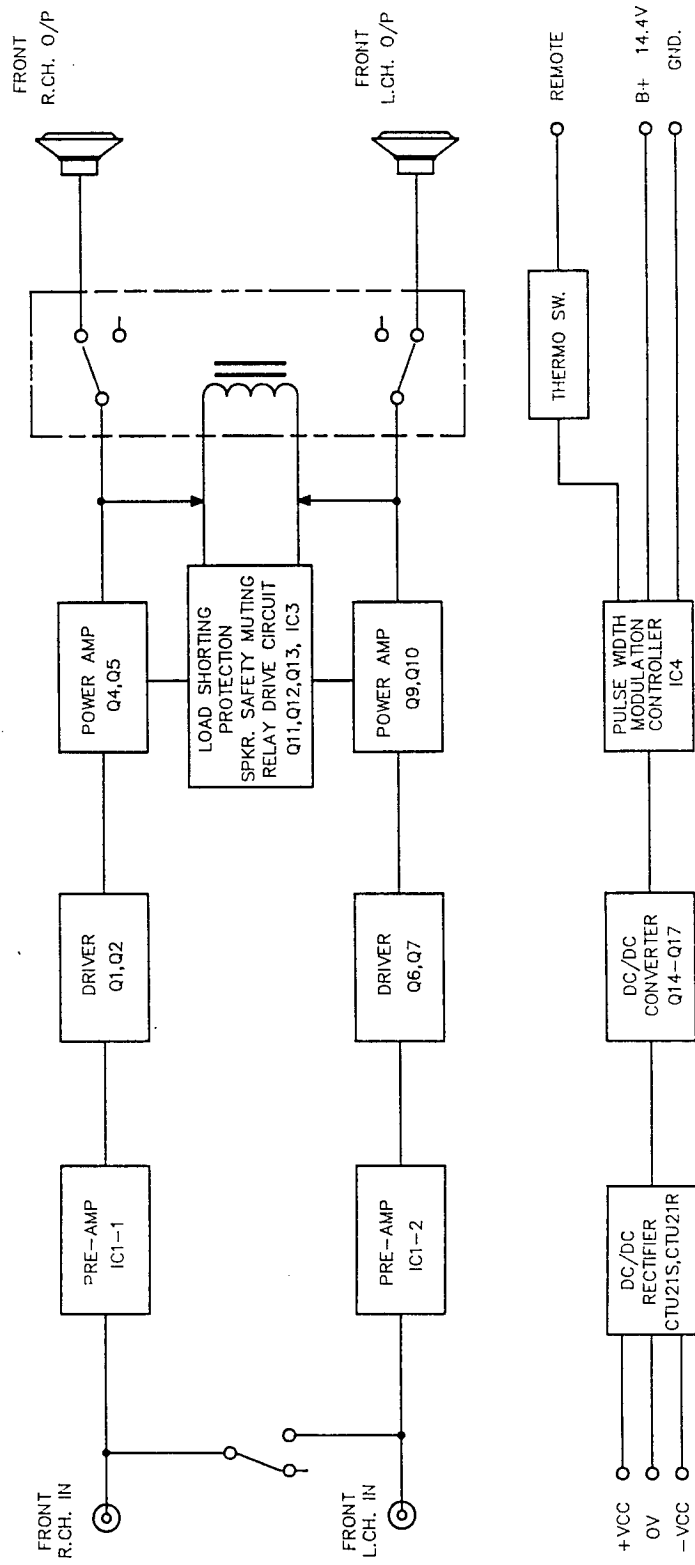
MECHANICAL PARTS LIST

REV: E	MODEL: GTS150	REVISE DATE: SEPT. 9, 1992		
PART NO.	REFERENCE NO.	CODE	DESCRIPTIONS	QTY
3-62-004	1	PANEL	2033B-4 TOP COVER HEAT SINK	1
3-62-001	2		2033B-1 FRONT PANEL	1
3-62-002	3		2033B-2 REAR PANEL	1
3-62-003	4		2033B-3 BOTTOM COVER	1
3-61-008	5		2018B-8 SWITCH KNOB	1
3-61-009	6		2018B-9 BADGE	1
1-27-150	7	P.SW	2P2T EX13EQ13	1
1-26-016	8	F.VR.	V.RES. 20Kx2 (RK1241210)	1
1-43-012	9	JACK	B217A 2RCA JACK(R/W) GOLD-P.	1
3-61-005A	10	CON	SPEAKER TERMINAL ASSEMBLY	1
3-61-025A	11		POWER TERMINAL ASSEMBLY	1
1-47-112	12	BKT.	PA-100 TRANSISTOR BKT.	4
1-67-011	13		1536-11 TRANSISTOR BKT.	1
1-37-130	14	S&W	M3 FLAT WASHER ZNC BKT.	6
1-37-230	15		M3 SPRING WASHER ZNC BKT.	6
1-35-314	16		3X14 TTB PH ZNC BKT	6
1-35-307	17		TORX T10 TTB-BTN 3X10 TIN	8
1-35-308	18		TTB-PH 3X10 TIN RCA	1
1-35-305	19		MSB 3X6 FOR COVER	6
1-35-381	20		PAN HEAD MACHINE SCREW 3x20	3
1-37-230	21		M3 SPRING WASHER ZNC BKT.	3
1-37-030	22		M3 NUT FOR TERMINAL	2
1-33-206	23		PAN HEAD TAPPING SCREW 2x6	4
3-24-009	24		M3X9 NI BM FOR TERMINAL	1
3-24-009	25		M3X9 NI BM FOR TERMINAL	6

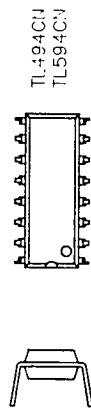
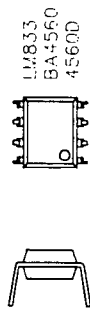
PACKING PARTS LIST

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PART NO.	REFERENCE NO.	CODE	DESCRIPTIONS	QTY
GTS150-1	26		GTS150 SET	1
GTS150-2	27		GIFT BOX	1
2033-P1	28		INNER BOX (BIG)	1
2033-P2	29,30		INNER BOX (SMALL)	2
1-29-107	30-1		FUSE 20A	1
1-36-120	30-2		PAN HEAD TAPPING SCREW 10x5/8	4
1-37-150	30-3		PLAIN WASHER M5	4
1-37-250	30-4		SPRING WASHER M5	4
1-50-037A	30-5		GTS150 F/WIRE SET + 20A F/SET	1
1-50-028	30-6		WIRE, BLACK 610mm (5+15)	1
GTS150-3	31-1		OWNER'S MANUAL	1
GTC-001	31-2		WARRANTY CARD	1

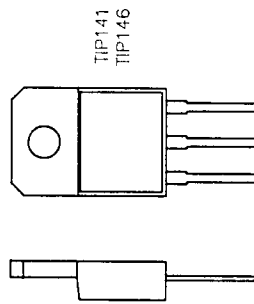
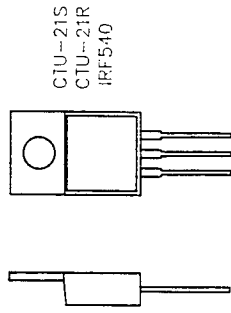
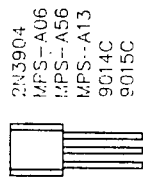
GTS150 BLOCK DIAGRAM



DETAIL OF IC'S



DETAIL OF TRANSISTORS



GTS-150

MEASUREMENT REQUIRED

TYPICAL AT IC PINS

MEASUREMENT METER: DIGITAL MULTI METER

POWER SOURCE: DC +14.4V

INPUT: NO SIGNAL INPUT

PIN NO.	1	2	3	4	5	6	7	8
IC1	0V	0V	0V	-15V	0V	0V	0V	+15V
IC2	0V	0V	0V	-15V	0V	0V	0V	+15V

PIN NO.	1	2	3	4	5	6	7	8	9
IC3	0V	-0.4V	-0.4V	-0.4V	-0.72V	+0.9V	-0.03V	+1.35V	+2.9V

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC4	0V	2.3V	0.07V	0.03V	1.5V	3.5V	0V	14.3V	5.4V	5.4V	14.3V	13.6V	4.9V	4.9V	3.8V	2.3V

TYPICAL AT TRANSISTOR PINS

TRANSISTORS (UNIT: VOLTS)

PIN NO.	E	B	C
Q1, Q6	-0.7V	-1.3V	-28V
Q2, Q7	-28V	-28V	-0.65V
Q3, Q8	-0.65V	0.4V	0.65V
Q13	28V	28V	-0.03V

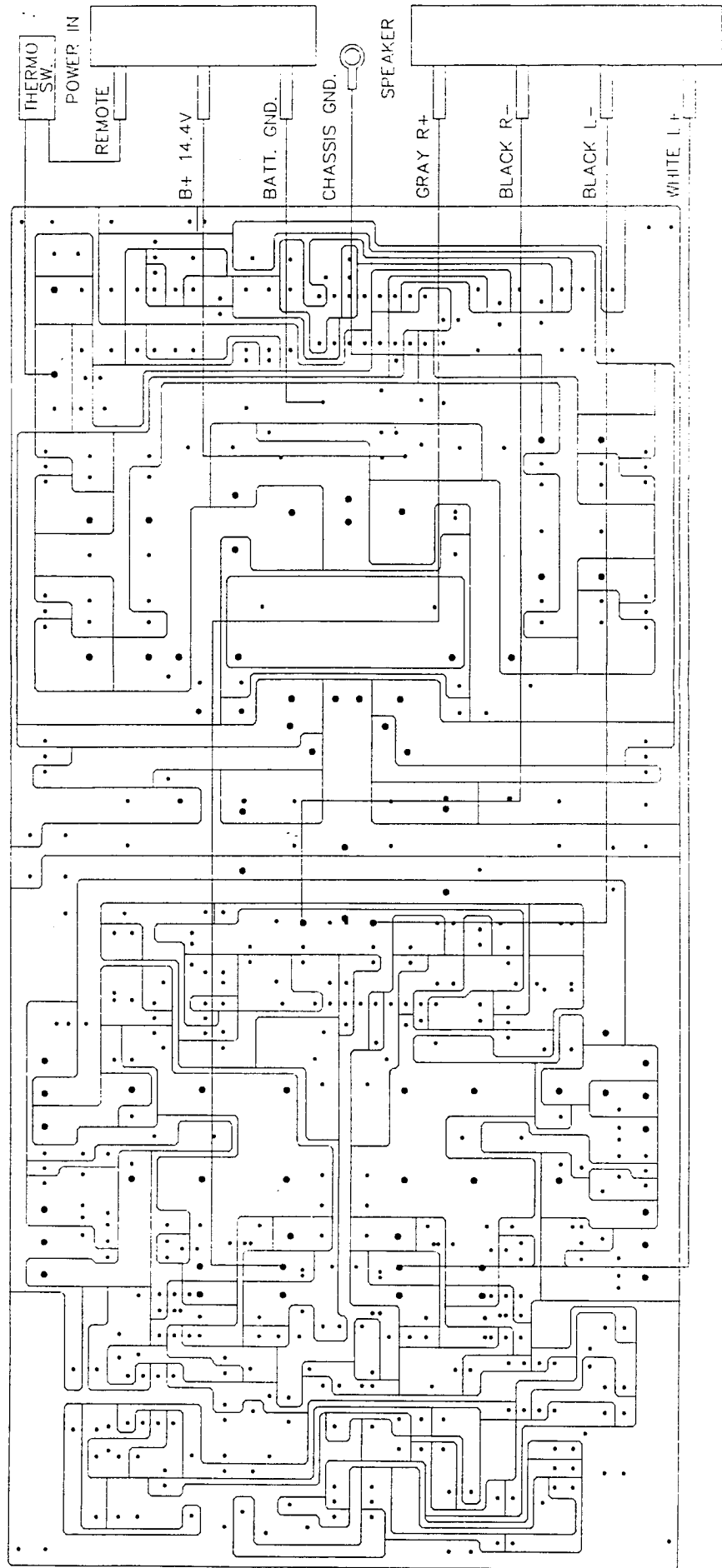
TRANSISTORS (UNIT: VOLTS)

PIN NO.	E	B	C
Q11	-0.03V	-0.03V	28V
Q12	-0.04V	0.04V	28V
Q4, Q9	-0.64V	0.65V	28V
Q5, Q10	-0.04V	0.65V	-28V

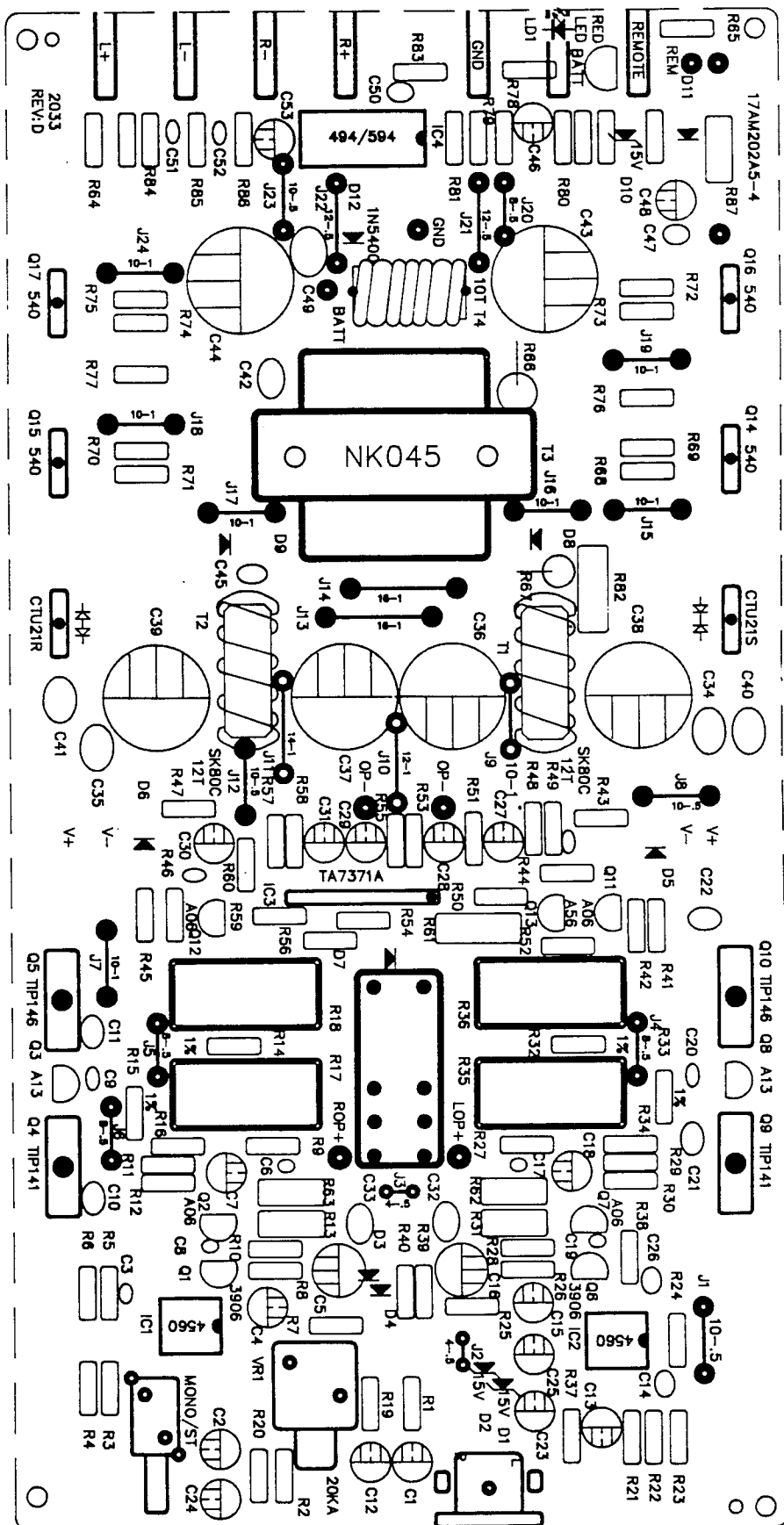
TRANSISTORS (UNIT: VOLTS)

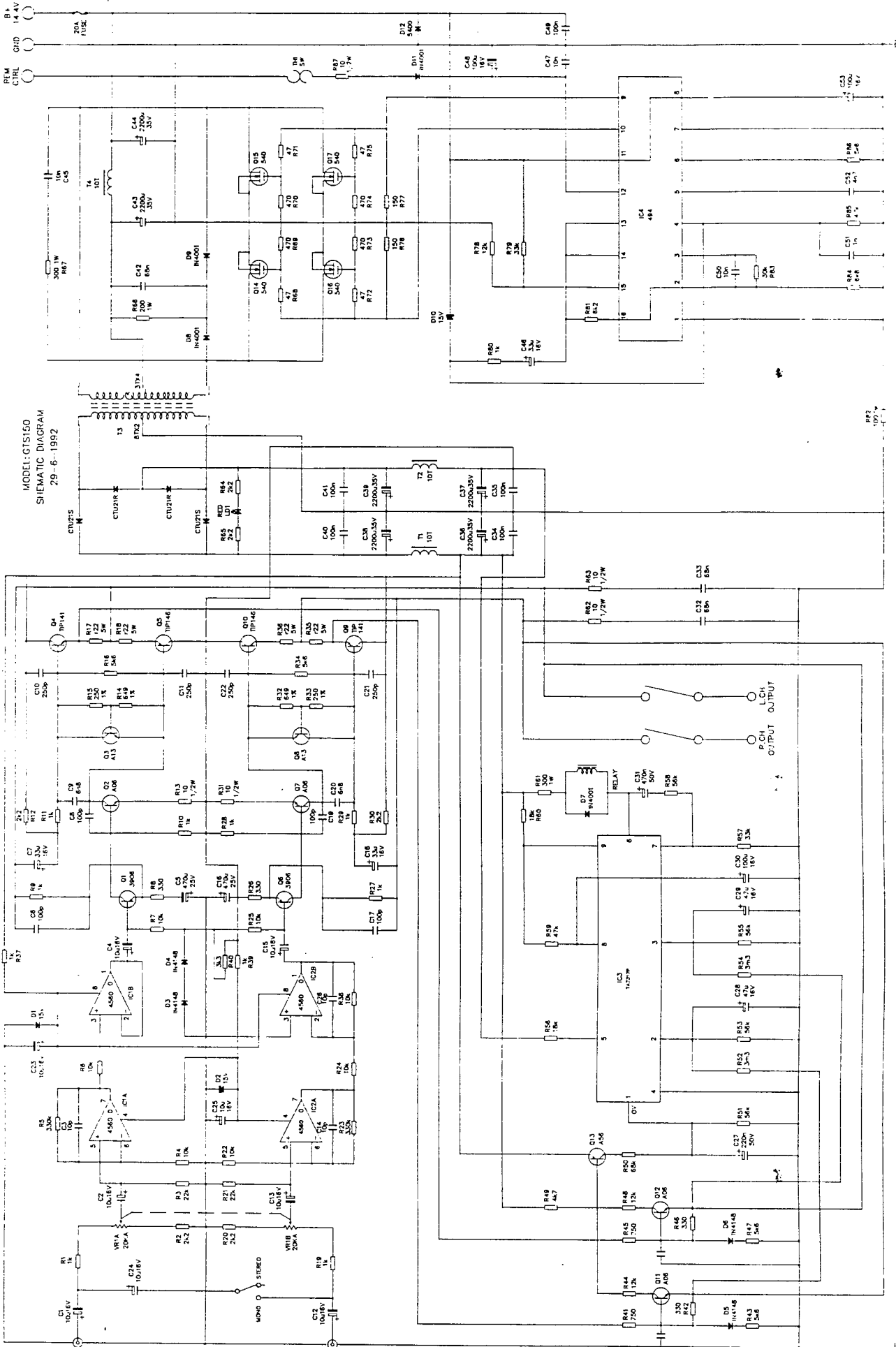
PIN NO.	G	D	S
Q14, Q15	4.9V	14.4V	0V
Q16, Q17	4.9V	14.4V	0V

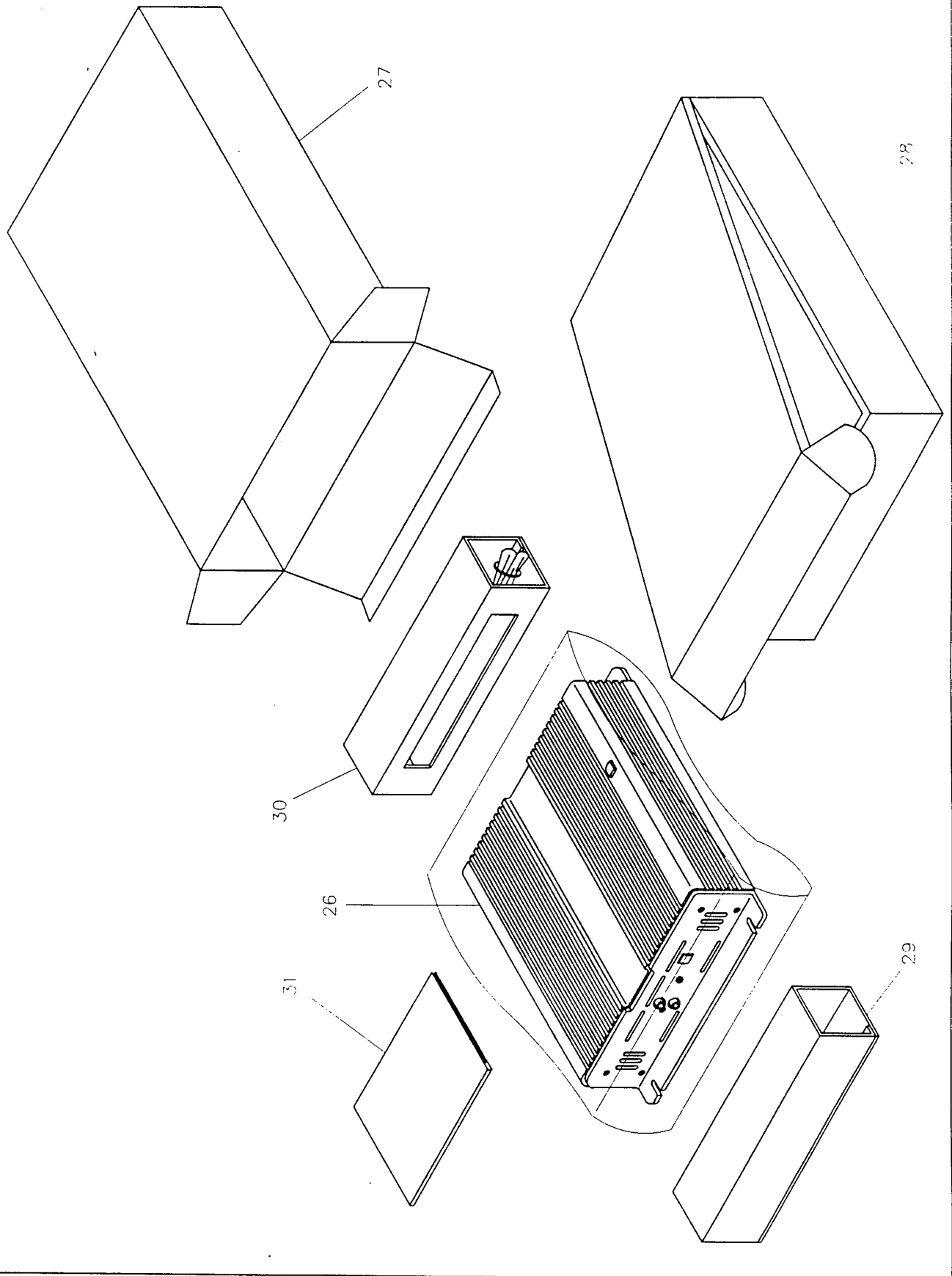
GTS150 WIRING DIAGRAM



GTS150 PC BOARD LAYOUT







GTS150 WIRING DIAGRAM

