

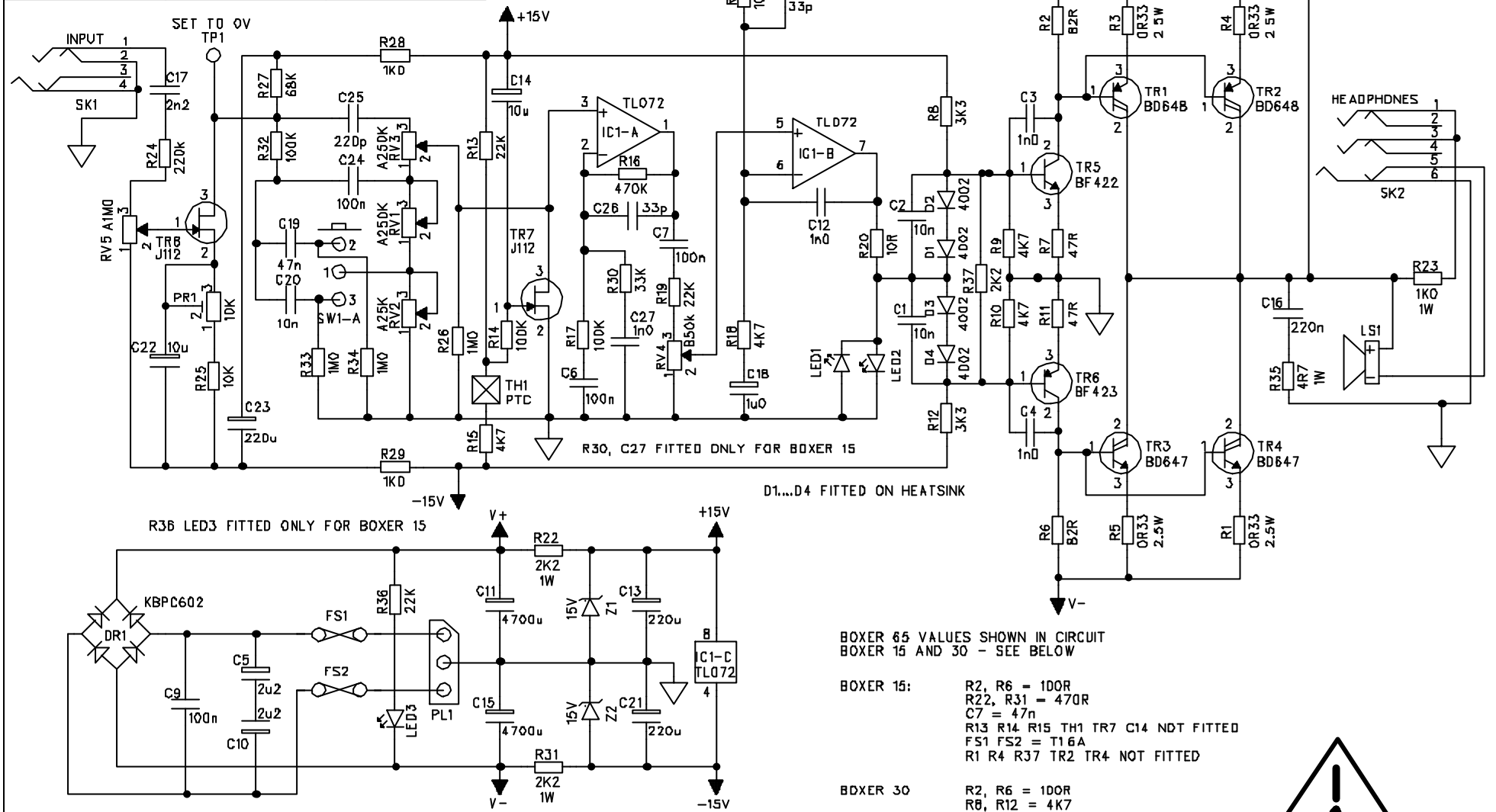
TRACE ELLIOT

SERVICE MANUAL

DATE : December 29, 1999
Product Code: T0170/T0165/T0160
Model Number : Boxer65/30/15

Issued by:
Trace Elliot Limited
Blackwater Trading Estate
The Causeway
Maldon
Essex
England
CM4 4GG

ISSUE CHANGE NOTE DATE	ISSUE CHANGE NOTE DATE	ISSUE CHANGE NOTE DATE
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BOXER 65 VALUES SHOWN IN CIRCUIT
BOXER 15 AND 30 - SEE BELOW

BOXER 15: R2, R6 = 100R
R22, R31 = 470R
C7 = 47n
R13 R14 R15 TH1 TR7 C14 NOT FITTED
FS1 FS2 = T1.6A
R1 R4 R37 TR2 TR4 NOT FITTED

BOXER 30 R2, R6 = 100R
R8, R12 = 4K7
R22, R31 = 1K0
FS1 FS2 = T1.6A
R1 R4 R37 TR2 TR4 NOT FITTED



COMPONENTS USED ARE OF AN APPROVED TYPE AND MUST BE REPLACED ACCORDINGLY

TITLE PROJECT DRAWING No ISSUE DATE DRAWN BY

CIRCUIT DIAGRAM BOXER BASS AMPS CD00052 5 29/5/1996 CLIVE BUTTON

TRACE ELLIOT
TRACE ELLIOT LIMITED
MALDON ESSEX CM9 7GG
ENGLAND
TEL (01621) 855266
FAX (01621) 851975

PCB = PC00058

PARTS LIST FOR PC00058 ISSUE 1
BOXER 15 BASS COMBO
Please write 'B15' on the PCB

Description	Part Code	Qty	Where Used
ZERO OHM LINKS	72-RCZERO	23	
ZENER DIODE 15V	72-D-BZY88C15	2	Z1 Z2
RES 1/4W 100K	72-RM100K	4	R32 R21 R30 R17
RES 1/4W 10K	72-RM10K	1	R25
RES 1/4W 10R	72-RM10R	1	R20
RES 1W 1K0	72-RM1K-1WATT	1	R23
RES 1W 470R	72-RM470R-1WATT	2	R22 R31
RES 1/4W 1M0	72-RM1M	3	R24 R33 R34
RES 1/4W 220K	72-RM220K	1	R26
RES 1/4W 22K	72-RM22K	1	R36
RES 1/4W 3K3	72-RM3K3	2	R8 R12
RES 1/4W 470K	72-RM470K	1	R16
RES 1/4W 1K0	72-RM1K	2	R28 R29
RES 1/4W 47K	72-RM47K	1	R19
RES 1/4W 47R	72-RM47R	2	R7 R11
RES 1/4W 4K7	72-RM4K7	3	R9 R10 R18
RES 1W 4R7	72-RM4R7-1WATT	1	R35
RES 1/4W 68K	72-RM68K	1	R27
RES 1/4W 100R	72-RM100R	2	R2 R6
CAP CERAMIC 220p	72-C220P-100VCD	1	C25
CAP CERAMIC 33p	72-C33P-100VC	2	C8 C26
CAP POLY 100n 100V	72-C100N-100VP	3	C6 C9 C24
CAP POLY 10n 100V	72-C10N-100VP	3	C1 C2 C20
CAP POLY 1n0 100V	72-C1N-100VP	3	C3 C4 C12
CAP POLY 220n 100V	72-C220N-100VP	1	C16
CAP POLY 2n2 100V	72-C2N2-100VP	1	C17
CAP POLY 22n 100V	72-C22N-100VP	1	C7
CAP POLY 47n 100V	72-C47N-100VP	1	C19
CAP TANT 1u0 35V	72-C1-35VT	1	C18
CAP RADIAL 10u 63V	72-C10-63VER	2	C22
CAP RADIAL 220u 25V	72-C220-25VER	2	C13 C21
CAP RADIAL 220u 35V	72-C220-35VER	1	C23
CAP RADIAL 2u2 100V	72-C2.2-100VER	2	C5 C10

PRESET 10K	72-PRESET-10K	1	PR1
TRANSISTOR BF422	72-TBF422	1	TR5
TRANSISTOR BF423	72-TBF423	1	TR6
PCB TAB 6.3mm	72-CRIMP-PCB-TAB	1	GND
PCB TEST PIN	72-PIN-TERM	1	TP1
OP AMP TL072	72-IC-TL072	1	IC1
JFET J112	72-FET-J-112	1	TR8
LED 5mm RED	72-LED-RED	3	LED1 LED2 LED3
SWITCH F2UEE	72-SW-F2UEE	1	SW1
PUSH BUTTON	71-CAP-SWT-S6	1	fit onto SW1
RES 1R 2.5W W/W	72-RWW1R-2.5W	2	R3 R5
POT 16mm A1M	72-POT-A1M	1	RV4
POT 16mm A250K	73-POT-A250K	2	RV1 RV3
POT 16mm A25K	73-POT-A25K	1	RV2
FUSE HOLDER 1.25"	72-FUS-HLD-PCB-2	2	FS1 FS2
FUSE 1.25" T1.6A	72-FUS-1.6AT-2	2	FS1 FS2
RECTIFIER KBPC602	73-BRIDGE-2	1	DR1
JACK SOCKET MONO	73-SKT-JCKBNBS	1	SK1
JACK SOCKET STEREO	73-SKT-JCKBBBS	1	SK2
CAP 4700u 35V	73-CAP-470035V	2	C11 C15
DIODE 1N4002	72-D-1N4002	4	D1 D2 D3 D4 coat in compound, fit to h/sink on spacers
3.2mm SPACERS	71-SPA-PCB-3.2MM	8	for fixing D1 to D4
TRANSISTOR BD647	72-TBD647	1	TR3
TRANSISTOR BD648	72-TBD648	1	TR1
TO220 INSULATING KITS	72-MOS-PAD-TO220	2	TR1 TR3
SPEAKER WIRE FIG '8'	72-WIR-LSP-4	0.5m	solder into LS1
4.8mm CRIMPS	72-CRIMP-FASTON	2	fit to speaker wire
WIRE 16/02mm	green in the centre white on the outsides	0.2m	solder into PL1
2.8mm CRIMPS	72-CRIMP-FASTON3	3	fit to 3 wires
BOXER HEATSINK	E13-HS-BOXER65	1	
BOXER PCB	73-PCB-PC00058	1	
FIXINGS:	71-SCR-M3X12PP	2	
	71-WAS-M3NYL	2	
	71-NUT-M3ZINC	2	
PCB LABOUR	35-LAB-PCB		10 minutes?
TEST LABOUR	35-LAB-TEST		5 minutes?

PARTS LIST FOR PC00058 ISSUE 1
BOXER 30 BASS COMBO
Please write 'B30' on the PCB

Description	Part Code	Qty	Where Used
ZERO OHM LINKS	72-RCZERO	23	
	72-RCZERO	2	FIT TO R24 R25
ZENER DIODE 15V	72-D-BZY88C15	2	Z1 Z2
RES 1/4W 100K	72-RM100K	5	R32 R14 R21 R30 R17
RES 1/4W 10R	72-RM10R	1	R20
RES 1W 1K0	72-RM1K-1WATT	3	R22 R23 R31
RES 1/4W 1M0	72-RM1M	2	R33 R34
RES 1/4W 22K	72-RM22K	1	R13
RES 1/4W 470K	72-RM470K	2	R16 R26
RES 1/4W 1K0	72-RM1K	2	R28 R29
RES 1/4W 47K	72-RM47K	1	R19
RES 1/4W 47R	72-RM47R	2	R7 R11
RES 1/4W 4K7	72-RM4K7	6	R8 R9 R10 R12 R15 R18
RES 1W 4R7	72-RM4R7-1WATT	1	R35
RES 1/4W 15K	72-RM15K	1	R27
RES 1/4W 100R	72-RM100R	2	R2 R6
CAP CERAMIC 220p	72-C220P-100VCD	1	C25
CAP CERAMIC 33p	72-C33P-100VC	2	C8 C26
CAP POLY 100n 100V	72-C100N-100VP	3	C6 C9 C24
CAP POLY 10n 100V	72-C10N-100VP	3	C1 C2 C20
CAP POLY 1n0 100V	72-C1N-100VP	3	C3 C4 C12
CAP POLY 220n 100V	72-C220N-100VP	1	C16
CAP POLY 22n 100V	72-C22N-100VP	1	C17
CAP POLY 47n 100V	72-C47N-100VP	2	C7 C19
CAP TANT 1u0 35V	72-C1-35VT	1	C18
CAP RADIAL 10u 63V	72-C10-63VER	2	C22 C14
CAP RADIAL 2u2 100V	72-C2.2-100VER	2	C5 C10
CAP RADIAL 220u 35V	72-C220-35VER	1	C23
CAP RADIAL 220u 25V	72-C220-25VER	2	C13 C21
PRESET 10K	72-PRESET-10K	1	PR1
TRANSISTOR BF422	72-TBF422	1	TR5

TRANSISTOR BF423	72-TBF423	1	TR6
PCB TAB 6.3mm	72-CRIMP-PCB-TAB	1	GND
PCB TEST PIN	72-PIN-TERM	1	TP1
OP AMP TL072	72-IC-TL072	1	IC1
JFET J112	72-FET-J-112	2	TR7 TR8
LED 5mm RED	72-LED-RED	2	LED1 LED2
SWITCH F2UEE	72-SW-F2UEE	1	SW1
PUSH BUTTON	71-CAP-SWT-S6	1	fit onto SW1
RES 1R 2.5W W/W	72-RWW1R-2.5W	2	R3 R5
POT 16mm A1M	72-POT-A1M	1	RV4
POT 16mm A250K	73-POT-A250K	2	RV1 RV3
POT 16mm A25K	73-POT-A25K	1	RV2
FUSE HOLDER 1.25"	72-FUS-HLD-PCB-2	2	FS1 FS2
FUSE 1.25" T1.6A	72-FUS-1.6AT-2	2	FS1 FS2
RECTIFIER KBPC602	73-BRIDGE-2	1	DR1
JACK SOCKET MONO	73-SKT-JCKBNBS	1	SK1
JACK SOCKET STEREO	73-SKT-JCKBBBS	1	SK2
CAP 4700u 35V	73-CAP-470035V	2	C11 C15
DIODE 1N4002	72-D-1N4002	4	D1 D2 D3 D4 coat in compound, fit to h/sink on spacers
3.2mm SPACERS	71-SPA-PCB-3.2MM	8	for fixing D1 to D4
TRANSISTOR BD647	72-TBD647	1	TR3
TRANSISTOR BD648	72-TBD648	1	TR1
TO220 INSULATING KITS	72-MOS-PAD-TO220	2	TR1 TR3
THERMISTOR PTC	72-THERMISTOR-3	1	TH1
SPEAKER WIRE FIG '8'	72-WIR-LSP-4	0.5m	solder into LS1
4.8mm CRIMPS	72-CRIMP-FASTON	2	fit to speaker wire
WIRE 16/02mm	green in the centre white on the outsides	0.2m	solder into PL1
2.8mm CRIMPS	72-CRIMP-FASTON3	3	fit to 3 wires
BOXER HEATSINK	E13-HS-BOXER65	1	
BOXER PCB	73-PCB-PC00058	1	
FIXINGS:	71-SCR-M3X12PP	3	
	71-WAS-M3NYL	3	
	71-NUT-M3ZINC	3	
PCB LABOUR	35-LAB-PCB		10 minutes?
TEST LABOUR	35-LAB-TEST		5 minutes?

PARTS LIST FOR PC00058 ISSUE 1
BOXER 65 BASS COMBO
Please write 'B65' on the PCB

Description	Part Code	Qty	Where Used
ZERO OHM LINKS	72-RCZERO	23	
	72-RCZERO	2	R24 R25
ZENER DIODE 15V	72-D-BZY88C15	2	Z1 Z2
RES 1/4W 100K	72-RM100K	5	R32 R14 R21 R30 R17
RES 1/4W 10R	72-RM10R	1	R20
RES 1W 1K0	72-RM1K-1WATT	1	R23
RES 1/4W 1M0	72-RM1M	2	R33 R34
RES 1/4W 22K	72-RM22K	1	R13
RES 1W 2K2	72-RM2K2-1WATT	2	R22 R31
RES 1/4W 3K3	72-RM3K3	2	R8 R12
RES 1/4W 470K	72-RM470K	2	R16 R26
RES 1/4W 1K0	72-RM1K	2	R28 R29
RES 1/4W 47K	72-RM47K	1	R19
RES 1/4W 47R	72-RM47R	2	R7 R11
RES 1/4W 4K7	72-RM4K7	4	R9 R10 R15 R18
RES 1W 4R7	72-RM4R7-1WATT	1	R35
RES 1/4W 15K	72-RM15K	1	R27
RES 1/4W 82R	72-RM82R	2	R2 R6
CAP CERAMIC 220p	72-C220P-100VCD	1	C25
CAP CERAMIC 33p	72-C33P-100VC	2	C8 C26
CAP POLY 100n 100V	72-C100N-100VP	3	C6 C9 C24
CAP POLY 10n 100V	72-C10N-100VP	3	C1 C2 C20
CAP POLY 1n0 100V	72-C1N-100VP	3	C3 C4 C12
CAP POLY 220n 100V	72-C220N-100VP	1	C16
CAP POLY 22n 100V	72-C22N-100VP	1	C17
CAP POLY 47n 100V	72-C47N-100VP	2	C7 C19
CAP TANT 1u0 35V	72-C1-35VT	1	C18
CAP RADIAL 10u 63V	72-C10-63VER	2	C22 C14
CAP RADIAL 2u2 100V	72-C2.2-100VER	2	C5 C10
CAP RADIAL 220u 25V	72-C220-25VER	3	C13 C21
CAP RADIAL 220u 35V	72-C220-35VER	1	C23
PRESET 10K	72-PRESET-10K	1	PR1

TRANSISTOR BF422	72-TBF422	1	TR5
TRANSISTOR BF423	72-TBF423	1	TR6
PCB TAB 6.3mm	72-CRIMP-PCB-TAB	1	GND
PCB TEST PIN	72-PIN-TERM	1	TP1
OP AMP TL072	72-IC-TL072	1	IC1
JFET J112	72-FET-J-112	2	TR7 TR8
LED 5mm RED	72-LED-RED	2	LED1 LED2
SWITCH F2UEE	72-SW-F2UEE	1	SW1
PUSH BUTTON	71-CAP-SWT-S6	1	fit onto SW1
RES 1R0 2.5W W/W	72-RWW1R-2.5W	4	R1 R3 R4 R5
POT 16mm A1M	72-POT-A1M	1	RV4
POT 16mm A250K	73-POT-A250K	2	RV1 RV3
POT 16mm A25K	73-POT-A25K	1	RV2
FUSE HOLDER 1.25"	72-FUS-HLD-PCB-2	2	FS1 FS2
FUSE 1.25" T2A	72-FUS-2AT-2	2	FS1 FS2
RECTIFIER KBPC602	73-BRIDGE-2	1	DR1
JACK SOCKET MONO	73-SKT-JCKBNBS	1	SK1
JACK SOCKET STEREO	73-SKT-JCKBBBS	1	SK2
CAP 4700u 63V	73-CAP-470063B	2	C11 C15
DIODE 1N4002	72-D-1N4002	4	D1 D2 D3 D4 coat in compound, fit to h/sink on spacers
3.2mm SPACERS	71-SPA-PCB-3.2MM	8	for fixing D1 to D4
TRANSISTOR BD647	72-TBD647	2	TR3 TR4
TRANSISTOR BD648	72-TBD648	2	TR1 TR2
TO220 INSULATING KITS	72-MOS-PAD-TO220	4	TR1....TR4
THERMISTOR PTC	72-THERMISTOR-3	1	TH1
SPEAKER WIRE FIG '8'	72-WIR-LSP-4	0.5m	solder into LS1
4.8mm CRIMPS	72-CRIMP-FASTON	2	fit to speaker wire
WIRE 16/02mm	green in the centre white on the outsides	0.2m	solder into PL1
2.8mm CRIMPS	72-CRIMP-FASTON3	3	fit to 3 wires
BOXER HEATSINK	E13-HS-BOXER65	1	
BOXER PCB	73-PCB-PC00058	1	
FIXINGS:	71-SCR-M3X12PP	5	
	71-WAS-M3NYL	5	
	71-NUT-M3ZINC	5	
PCB LABOUR	35-LAB-PCB		10 minutes?
TEST LABOUR	35-LAB-TEST		5 minutes?