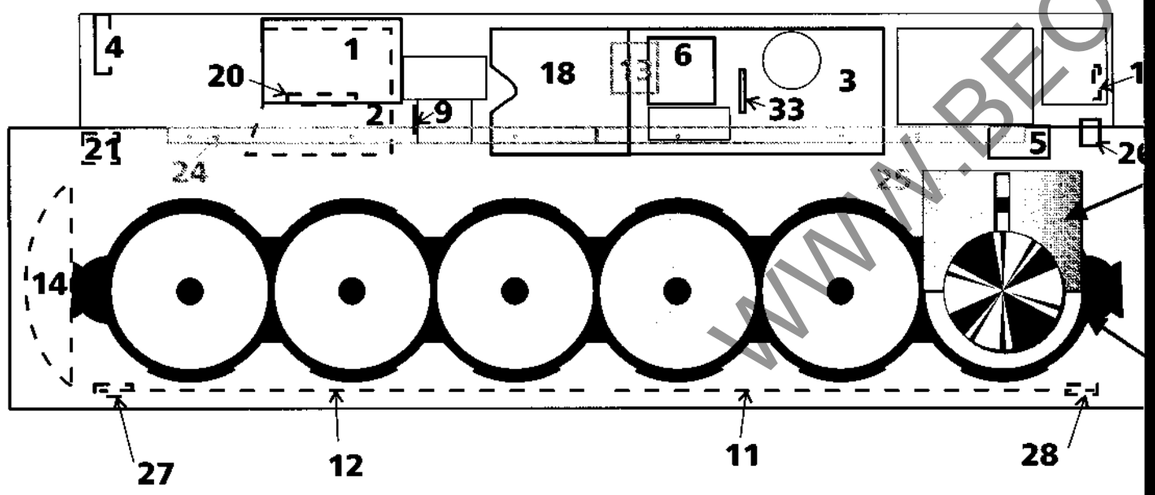


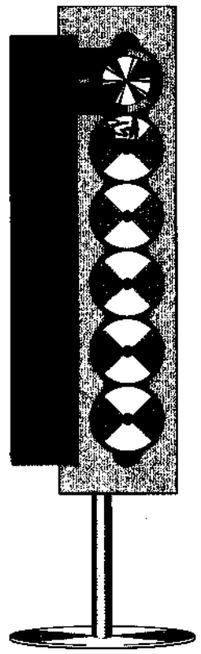
▭ = *placed on the chassis topplate*

Bang&Olufsen

BeoSound 9000

Type 2521, 2522, 2523, 2524, 2525
2526, 2527, 2528, 2529, 2530

BC



SERVICE MANUAL

Circuit Description

3540273 English
3540274 Danish
3540275 German
3540276 French
3540277 Dutch

1 - 1

23 Clamper Position ..... diagr. H
page 2-18

24 Light indication, left ..... diagr. I
page 2-19

25 Light indication, right ..... diagr. I
page 2-19

26 End stop detector ..... diagr. L
page 2-22

27 Safety TX ..... diagr. L
page 2-22

28 Safety RX ..... diagr. L
page 2-22

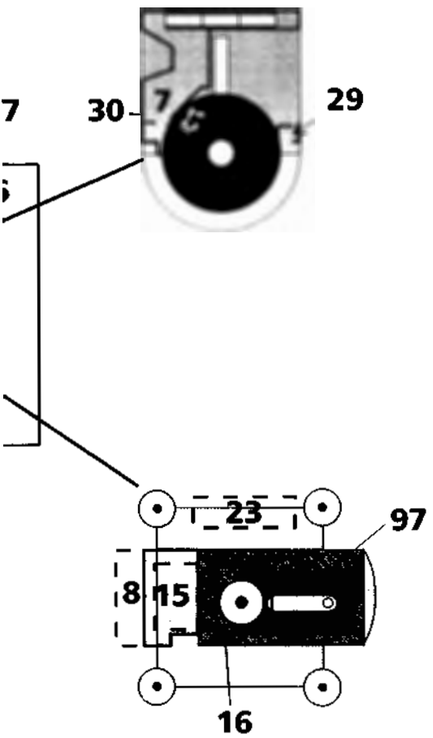
29 Lamp ..... diagr. H
page 2-18

30 IR transmitter, tacho clamper ..... diagr. H
page 2-18

31 IR reciever, tacho clamper ..... diagr. H
page 2-18

33 I²C Booster, Power Switching ..... diagr. I, N
page 2-19, 2-24

97 CD Mechanism ..... diagr. C, D
page 2-13, 2-14



CONTENTS

1 - 2
SPECIFICATION GUIDELINES

SPECIFICATION GUIDELINES FOR SERVICE USE

BeoSound 9000

With FM and AM range	Type 2521 (EU), 2522 (GB), 2523 (USA-CDN), 2524 (J), 2525 (AUS)
With FM and AM range and RDS	Type 2526 (EU), 2527 (GB), 2528 (USA-CDN), 2529 (J), 2530 (AUS)
Operation	Direct keyboard Beo4, BL1000

Mechanical functions

Change from playing CD1 to playing CD6 (Lid closed and known CD's)	< 6.5 sec., typical 4 sec.
Position of CD	typical ±1°

Tuner

Number of Programmes	60
Stereo / Mono selection	Automatic / manual

Tuner, FM section

Range	87.5-108 MHz 76-90 MHz f. type 2524 and 2529
Aerial impedance	75 ohm
Usable sensitivity mono (30dB)	typical 1dBf - 1.12µV
50 dB quieting stereo	≤ 30dB µV
Signal-to-noise UNW mono	≥ 72dB
Signal-to-noise UNW stereo	≥ 67dB
Frequency response	20-15000Hz
Distortion + noise mono	≤ 0.6%
Distortion + noise stereo	≤ 0.6%
Intermodulation stereo	typical 0.1%
Stereo channel separation	typical 40dB
Subcarrier produckt rejection	≥ 50dB

Tuner, AM section

Range	LW 153-279 kHz f. type 2521, 2522, 2525, 2526, 2527, 2530 MW 522-1611 kHz f. type 2521, 2522, 2525, 2526, 2527, 2530 MW 530-1710 kHz f. type 2523, 2528 MW 522-1629 kHz f. type 2524, 2529
Antenna	Loop 18.1µH (Special)
LW sensitivity 20 dB S/N ratio	typical 66dBµV/m (2mV/m)
MW sensitivity 20 dB S/N ratio	typical 60dBµV/m (1mV/m)
Harmonic distortion	typical 0.4 %

CD Player

Number of CD's	6
Disc types	12 cm (5"), 8 cm (3") with adaptor
Frequency range	20-20.000 Hz +/-1 dB
Signal-to-noise ratio A-weighted	typical 101 dB
Dynamic range	≥ 98 dB
Harmonic distortion	≤ 0.1%
Channel separation	≥ 50 dB

1 - 2
SPECIFICATION GUIDELINES

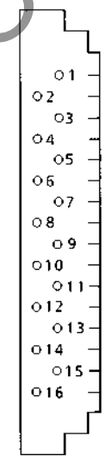
Channel difference	≤ ± 1dB
Converter system	Bitstream

Preamplifier section

Harmonic distortion	≤ 0.1%
Frecurency range ± 1dB	10-20000Hz
Channel separation	≥ 50dB
Source separation	≥ 80dB
Signal-to-noise A-weight	> 90dB
Volume control	≥ 90dB
Bass control	7.0dB± 2dB @ 100Hz
Treble control	7.0dB± 2dB @ 10kHz

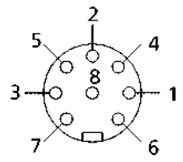
Connections

Master Link



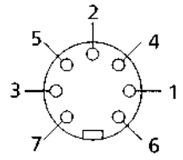
Pin 1	Data-, -0.5 V ±0.2 V in relation to Data+
Pin 2	Data+, +0.5 V ±0.2 V in relation to Data-
Pin 3	ML connect > 3 V
Pin 4-6	+supply voltage, +7 V to +15 V (in stand-by +3 V to +15 V)
Pin 7-10	Not used
Pin 11	-supply voltage, -7 V to -15 V (in stand-by -2 V to -15 V)
Pin 12	+supply voltage, +7 V to +15 V (in stand-by +3 V to +15 V)
Pin 13	Audio L- in/out, 2 V Bal, in relation to Audio L+, Rin 4.4 MΩ, Rout 150 Ω
Pin 14	Audio L+ in/out, 2 V Bal, in relation to Audio L-, Rin 4.4 MΩ, Rout 150 Ω
Pin 15	Audio R- in/out, 2 V Bal, in relation to Audio R+, Rin 4.4 MΩ, Rout 150 Ω
Pin 16	Audio R+ in/out, 2 V Bal, in relation to Audio R-, Rin 4.4 MΩ, Rout 150 Ω
Shield	GND

Power Link



Pin 1	Power up (ON = >2.7 V -1mA)
Pin 2	Signal GND
Pin 3	Audio L out 0 V to 2 V RMS
Pin 4	Speaker ON (ON = >2.7 V -1 mA)
Pin 5	Audio R out 0 V to 2 V RMS
Pin 6	Datalink out (High = >4 V, Low = <0.2 V)
Pin 7	Data GND
Pin 8	PL+ ON

Audio Aux Link



Pin 1	Audio L out 1 V RMS, Rout 1 kΩ
Pin 2	GND
Pin 3	Audio L in 0.25 V RMS to 2 V RMS, Rin 47 kΩ
Pin 4	Audio R out 1 V RMS, Rout 1 kΩ
Pin 5	Audio R in 0.25 V RMS to 2 V RMS, Rin 47 kΩ
Pin 6-7	Audio AUX Data in/out (High = >3.5 V, Low = <0.8 V)

Playing your radio programs

RADIO — Press to turn on the radio

▲ or ▼ — Press to step through your radio programs

● — Press to switch to stand-by

Presetting radio stations

RADIO — Press to turn on the radio

TUNE — Press to start the tuning function

A/M-F/M — Press to select [AM] or [FM], switches from one to the other, check display for an indication of which one you have chosen

then

▲ or ▼ — Press to search for a radio station up or down the frequency band

then

OK — Press to accept the station you have found

PRG — Press to change the displayed program number

then

▲ or ▼ — Press to select for a program number – up or down

then

OK — Press to store your new radio program – [STORED] appears on the display

Fine tuning a radio station

RADIO — Press to turn on the radio program you want to fine tune

TUNE — Press to start the fine tuning function

then

TUNE

▲ or ▼ — Press to fine tune your program towards a higher or lower frequency

then

OK — Press to accept your fine tuned program

then

OK — Press again to store program and program number

Mono/stereo reception

RADIO — Press to turn on the relevant radio program

TUNE — Press to choose [MONO] or [STEREO]

then

TUNE

then

TUNE

then

▲ or ▼ — Press to switch from stereo to mono

OK — Press to store your new tuning on the program number

Clearing presets...

RADIO — Press to turn on the radio

▲ or ▼ — Press to search for program number

CLEAR — Press to clear the program

then

OK — Press to confirm the clearing of the radio program

Naming radio programs

RADIO — Press to turn on the radio program you want to name

NAMING — Press to start the naming function.
The first of the twelve character positions blinks, indicating that you can start "writing" a name

▲ or ▼ — Press to reveal the characters one by one
Press to reveal previously shown characters

then

OK — Press to move to the next character position

then

OK — Press to store the name of the radio station [NAMING OK] will appear on the display

or

RADIO — Press to store the name and exit the naming function
You can press RADIO at any time to store and exit the naming function

To clear a name...

NAMING — Press to access the naming function

then

CLEAR — Press to clear the name

Playing auxiliary sources

A.AUX — Press to select extra equipment

Adjusting sound

VOL ▲ — Press to raise the volume

VOL ▼ — Press to lower the volume

TREBLE — Press to access treble

BASS — Press to access bass

BALANCE — Press to access balance

▲ or ▼ — Press to raise or lower the treble and bass levels; or adjust the balance between the left and the right speaker

LOUDNESS — Press to see the status of the loudness adjustment function – [LOUDNESS ON] or [LOUDNESS OFF]. Press LOUDNESS again to change the setting

OK — Press to accept all sound levels - [SOUND OK?] appears on the display

then

OK — Press to store all sound levels

If you have not stored your sound adjustments...

RESET — Press to reset the sound levels to their previously stored settings

Switching displays, example

RADIO — Press to turn on the radio

OK — Press repeatedly to change the radio display indication

Programming Timers

TIMER — Press to start programming timers

then

▲ or ▼ — Press to choose a source for your Timer or choose a Timer stand-by

then

OK — Press to accept the Timer

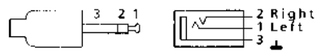
Then program when you want the Timer to start and stop...

▲ or ▼ — Press repeatedly until you have found the exact time for starting a Timer play

then

OK — Press to accept start

Headphones	Ø 3.5 mm, 220 Ω



Digital output CD	AES / EBU

Mains	Cable included

	Type 2521, 2522, 2526, 2527, 230V AC
	Type 2523, 2528, 120V AC
	Type 2524, 2529, 100V AC
	Type 2525, 2530, 240V AC
Power frequency	50-60 Hz
Power consumption Stand.by	typical 1.0W
Power consumption	typical 15W

Dimensions

W x H x D	86.9 x 7 x 30.1 cm
Weight	11.5kg
Finish	Black, aluminium

Optional accessories

Beo4	Type 1624, 1625 (I)
Wall bracket horizontal	Type 2054
Wall bracket vertical	Type 2063
Bracket	Type 2053
Stand	Type 2055
Cable cover	Type 2062
AM loop antenna	8720043
FM antenna	8720048

Subject to change without notice

1 - 5

Repeat the procedure with the ▲ and ▼ buttons and OK to program the exact timer for stopping a Timer

To program a [SINGLE DATE] Timer...

▲ or ▼ — Press to display the date you want to program a Timer for

then

OK — Press to accept the selection

then

OK — Press to store your Timer programming and return to normal source operations

Checking or clearing Timers

CHECK — Press to check your timers

then

▲ or ▼ — Press to see timer programming number, source and program number of individual timer entries

OK — Press repeatedly to display the details of a particular programming

When the display reads [OK ?]

then

▲ or ▼ — Press to display [NEXT ?] to see your next timer programming entry

then

OK — Press to see your next entry – if there are no more entries, [NO MORE], will appear on the display

CLEAR — Press clear while information regarding a timer programming is displayed on the display – [CLEARED] will appear on the display after pressing CLEAR

Setting and using the built-in clock

CLOCK — Press to call up the built-in clock

then

▲ or ▼ — Press to set time, date/month or year...

then

OK — Press to accept the changes and reveal the next display - Repeat this setting procedure for date/month and year...

When you have set or changed the year, the display now reads [CLOCK OK?]

then

OK — Press to store your new setting of the clock

CLOCK — Press to show the clock

CLOCK — Press to see the date and year

To display the clock permanently...

CLOCK — Press when Date and Year is displayed and change the display to time and ON e.g. [14:40 ON] – press again to cancel the permanent showing of the clock e.g. [14:41 OFF].

Option programming Beo4

hold ● while pressing

LIST — Until the Beo4 display reads OPTIONS?

then

GO

LIST — Until the display reads A:OPT

then

0 — Disable the remote control function

or

1 — Enable the remote control function

Option programming BeoLink 1000

SOUND 0 STORE — Disable the remote control function

or

SOUND 1 STORE — Enable the remote control function

Automatic demonstration

The product can be brought into automatic demonstration mode in which it plays back 90 randomly chosen tracks. Each track is played back for 20 seconds.

Load six CD's with at least ten tracks each.

Bring the product into stand-by.

Press: SHIFT 9 1 9 9 6.
The remote control terminal must be in audio mode.
(SHIFT is found under LIST on Beo4)

The automatic demonstration can be stopped by bringing BeoSound 9000 into stand-by, which is done by actuating stand-by on the product.

During the automatic demonstration the sound will be muted. Demute the product if you want sound.

Locking of glass lid

The glass lid can be locked so that it cannot be operated on the product.

Press: SHIFT 9 0 3 6 9.
The remote control terminal must be in audio mode.

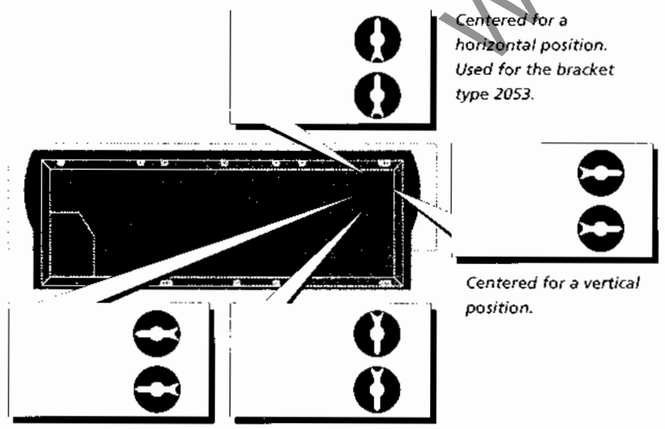
The display reads: LOCK.

The function is stopped by pressing: SHIFT 9 1 9 9 6.
The remote control terminal must be in CD mode.

SHIFT is found under LIST on Beo4

The display reads: UNLOCK.

Centering the CD drive mechanism



Centered for a horizontal position. Used for the bracket type 2053.

Centered for a vertical position.

Centered for a flat or near flat position. This is the factory setup.

Centered for a horizontal position. Used for the bracket type 2054.

Bang & Olufsen

BRIEF OPERATION GUIDE
For more detailed operation see User's guide.

Closeup operation:

Loading CDs

▲ — Press to raise the glass door

▲ or CD — Press to lower the glass door

or

CD — Press to lower the door and start playing

CD playback

CD — Press to play a CD

▲ or ▼ — Press to play the next track on a CD

or

▼ — Press to play the same track again or press twice to play the previous track

PAUSE — Press to pause playback

CD — Press to resume playing

Random

RANDOM — Press to display [RANDOM ON] and cut in the random play function

RANDOM — Press twice to display [RANDOM OFF] and cancel the random play function

● — Press to switch to stand-by

Choosing a sequence of discs

CD — Press to start playback of a CD

SELECT — Press SELECT and [SELECT DISC] will appear on the display

Press the direct CD selection buttons next to the CDs you want to include...

SELECT — Press SELECT to start clearing a sequence and play all six CDs

then

CLEAR — Press to clear the sequence

Programming a series of tracks for one CD

CD — Press to play CD

EDITING — Press to scan the CD [EDITING?] appears on the display

then

OK — Press to start scanning the tracks

▲ — Press to include a track number in the series

or

▼ — Press to exclude a track number from the series

[EDITING OK] appears on the display when you have included or excluded the last track...

then

OK — Press to accept the track series

To clear a track series...

Choose the CD whose track series you want to clear

then

EDITING — Press to access the programming option

then

CLEAR — Press to clear the track series altogether

Playing edited CDs

CD — Press to start playback of a CD

then

EDIT — Press to display [EDIT ON] and start edited playback

EDIT — Press twice to play a CD in full and cancel EDIT – [EDIT OFF] appears on the display

Positioning CDs

Load and adjust a CD manually...

Then press the direct CD selection button next to this CD to move the carriage to the CD ...

then

SELECT — Press to access the positioning function for CDs

then

SELECT

then

OK — Press to store the position for this CD

Repeat this procedure for all the CDs you have loaded...

If you want to clear the positions for a CD, move the carriage to the CD in question...

SELECT — Press to access the positioning function to clear the position

then

SELECT

then

CLEAR — Press to clear the position

Naming CDs

CD — Press to play CD

then

NAMING — Press to access the naming function

then

▲ or ▼ — Press to reveal the characters or numbers one by one

then

OK — Press to move to next character position

then

OK — Press to store the name

CD — Press while you are naming CDs or track series in order to automatically store the name and exit the naming function

To clear a name, follow this procedure...

NAMING — Press to access the naming function

then

CLEAR — Press to clear the name

then

CD — Press to return to normal source operation

Listing CDs

CD — Press to play CD

NAMING — Press to access the naming list [CD LIST] appears briefly, then the name of the current CD appears

then

NAMING

▲ or ▼ — Press to list the names one by one and return to names further up the list

CLEAR — Press to clear a name while the appropriate name is displayed

CD — Press to return to normal source operation

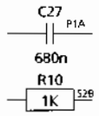
2 - 1
EXPLANATION OF DIAGRAM

EXPLANATION OF DIAGRAM

Type numbers of transistors and ICs are indicated on the diagrams. If the position is followed by an asterisk the spare part number must always be used because the component in question has been specially selected, e.g. IC4*.

Component print and coordinate system

The largest PCBs have component prints and a coordinate system on both the primary and the secondary side.
On the diagrams every component has a coordinate number. This indicates in which coordinate on the PCB the component is situated. The coordinate numbers are written in smaller print types than the position numbers.



= C27 is placed on the primary side in coordinate 1A.

= R10 is placed on the secondary side in coordinate 2B.

Control circuit

In certain control circuits the active mode is indicated by a function term or by an abbreviation. This may be e.g. ST.BY. = low in the stand-by mode or ST.BY. = high in the stand-by mode.

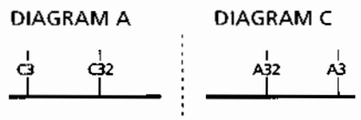
Wiring connections

The wiring connections on the diagrams are assembled in 'bundles'. The individual wires are provided with one of the following codes:

INTERNAL CONNECTION ON ONE DIAGRAM PAGE

Internal connections on a diagram page are indicated by a number.
The bend of the wire indicates in wich direction the other end of the wire is found.

CONNECTION TO ANOTHER DIAGRAM PAGE



A connection to another diagram page is indicated by a number as well as by a letter of the diagram to which the connection leads.

Supply Voltages

All supply voltages in the diagrams are indicated by an arrow and a voltage indication. 7 con. means 7 connections.

Ground symbols

Four different ground symbols are used in the set.


= Ground


= Signal ground


= Signal ground


= Chassis


= Coarse ground

Symbol of safety components

When replacing components with this symbol, components with identical part numbers must be used. The new component must be mounted in the same way as the one replaced.

2 - 1
EXPLANATION OF DIAGRAM

Measuring conditions

All DC voltages have been measured in relation to ground with a voltmeter with an input impedance of 10 Mohms.

The DC voltages are stated in volts (V), e.g. 0.7V.

All oscillograms and AC voltages have been measured in relation to ground with an oscilloscope or a voltmeter with an input resistance of 1Mohm.

AC voltages are stated in millivolts (mV), e.g. 660mV.

Caution

The use of any controls, adjustments or procedures other than those specified herein may result in hazardous radiation exposure.

The black and yellow label on the compact disc player serves as a warning that the apparatus contains a laser system and is classified as a class 1 laser product. The apparatus must be opend by qualified servicemen only.

CD laserdiode

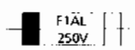
Wavelenght	780 nm ±20 nm, 30°C
Effect	2 mW ±0.1 mW, 30°C

Lithium battery

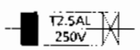
WARNING
Short-circuit and overcharging of some types of lithium batteries may result in a violent explosion.
When replacing the lithium battery in this set, note the following:
Use **only** batteries of the same make and type as mentioned in this service manual (see page 3-9).
Place the battery exactly like the old one.

Explanation of the fuse symboles used in the set

Replace with the same type 1 ampere 250 volts quick acting fuse.

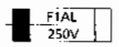


Replace with the same type 2.5 ampere 250 volts slow acting fuse.

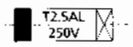


Explanation des symboles de fusible utilisés dans l'appareil

Remplacer par un fusible rapide de même type et de 1 ampères 250 volts.



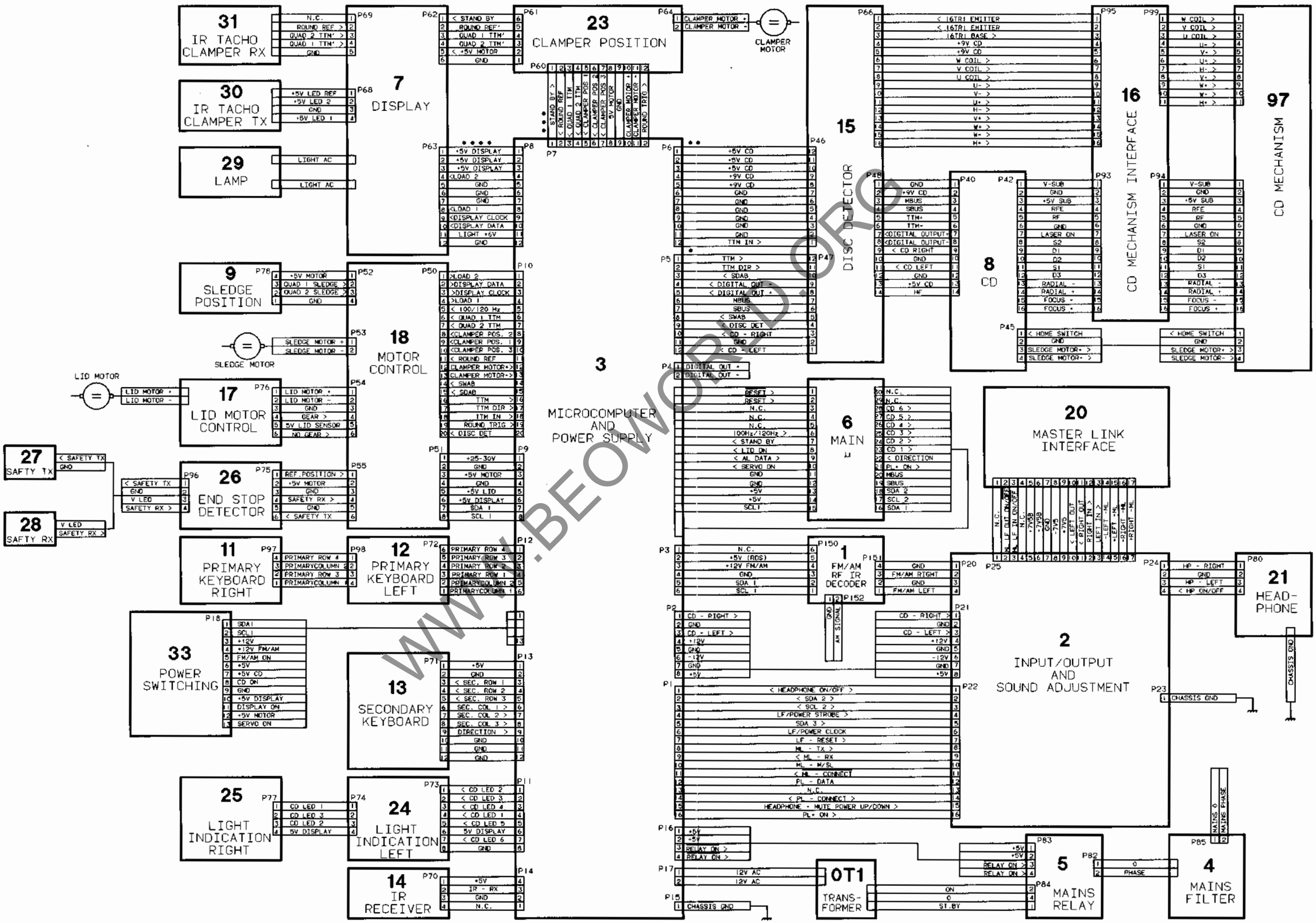
Remplacer par un fusible retardè de même type et de 2.5 ampères 250 volts.



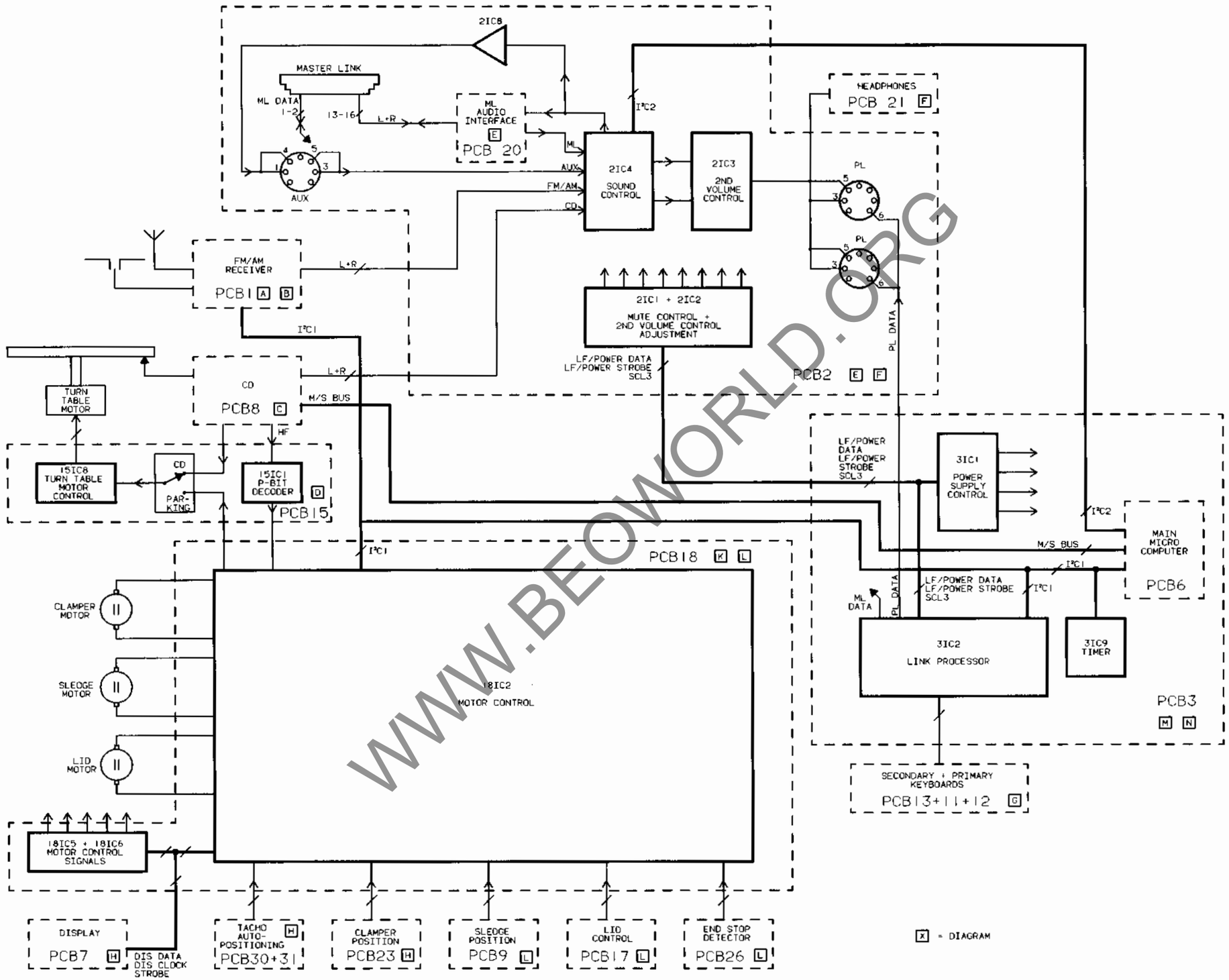
2 - 2
WIRING DIAGRAM

2 - 2

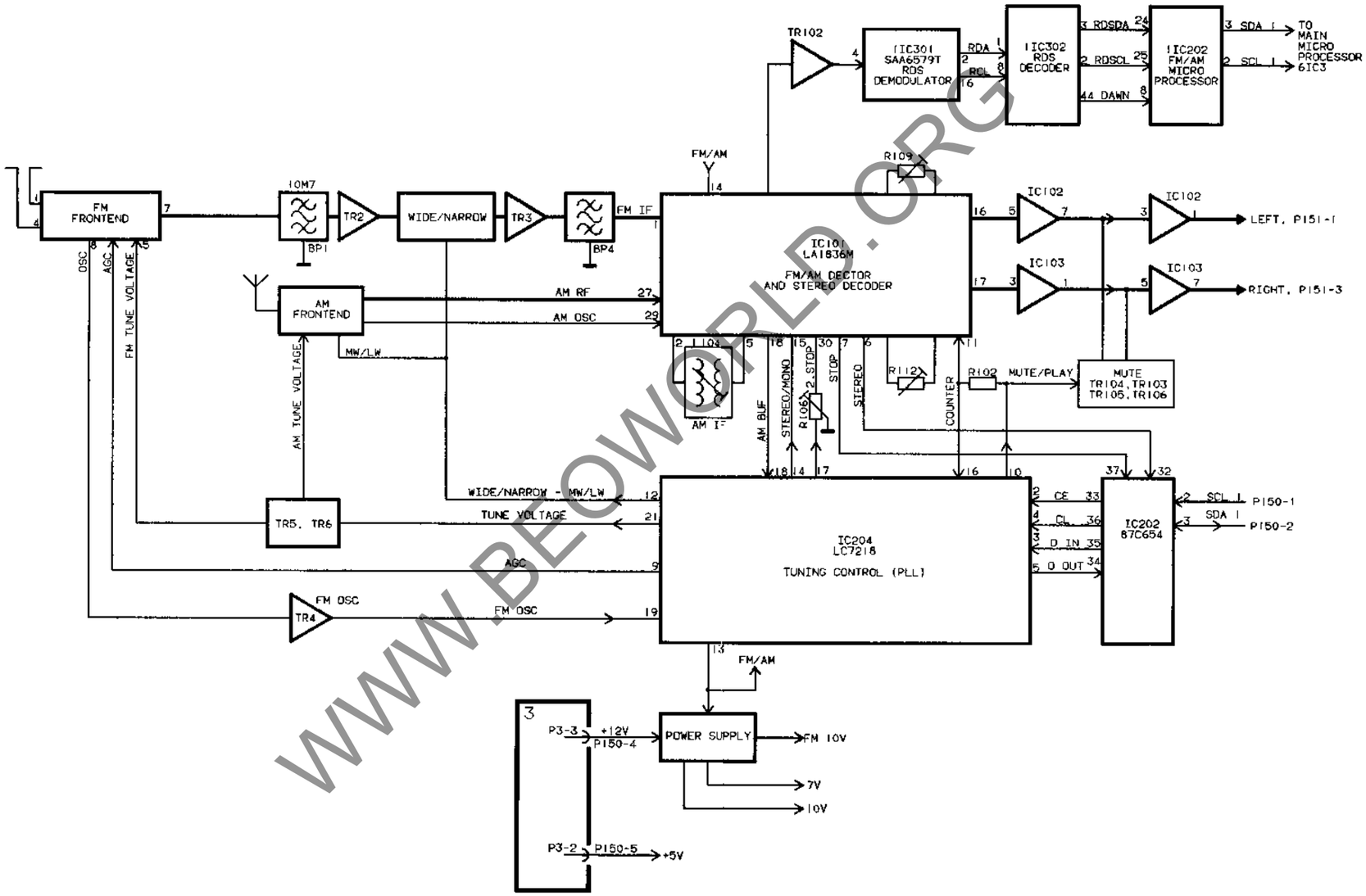
WIRING DIAGRAM



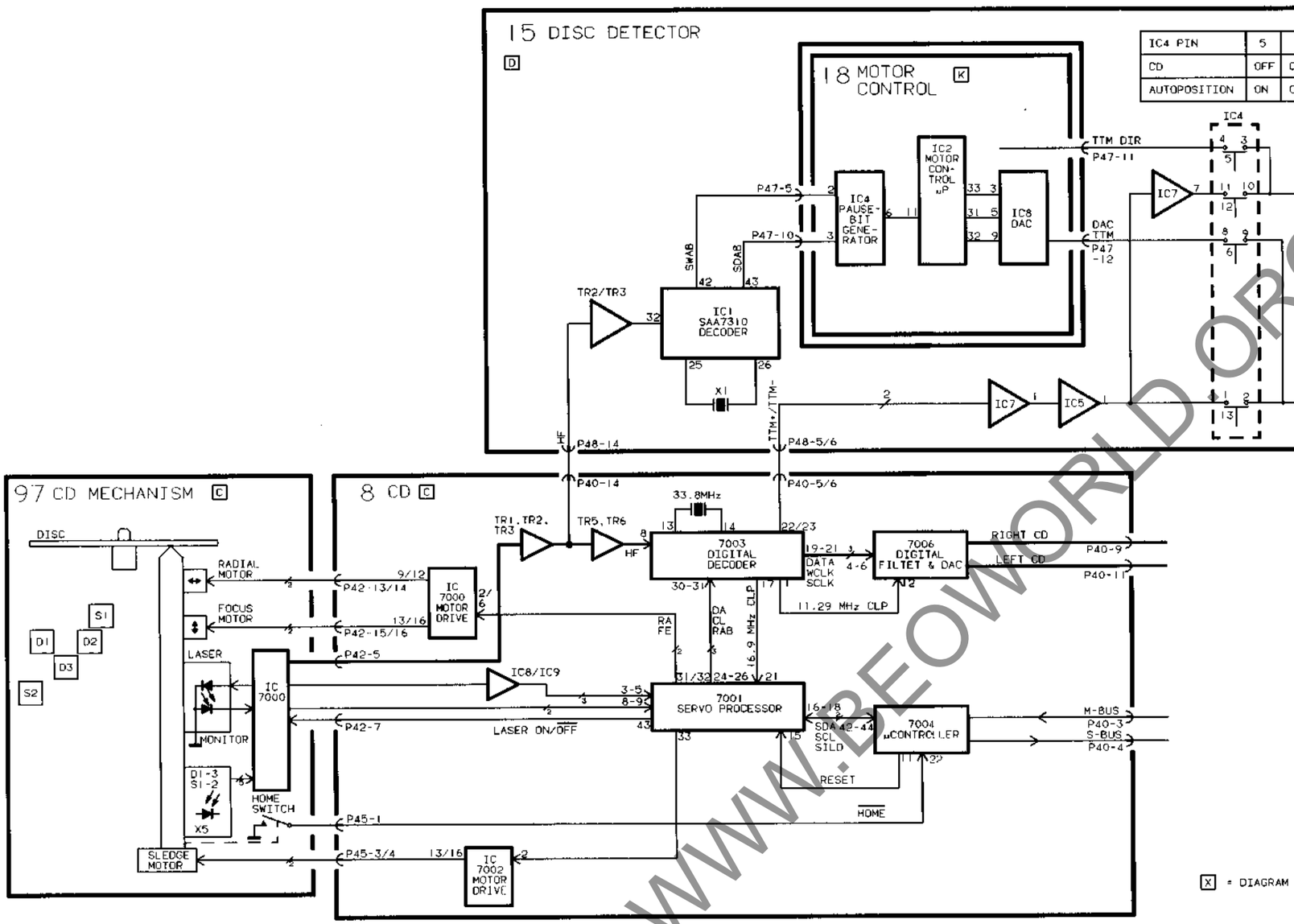
BLOCK DIAGRAM OVERALL



BLOCK DIAGRAM FOR TUNER



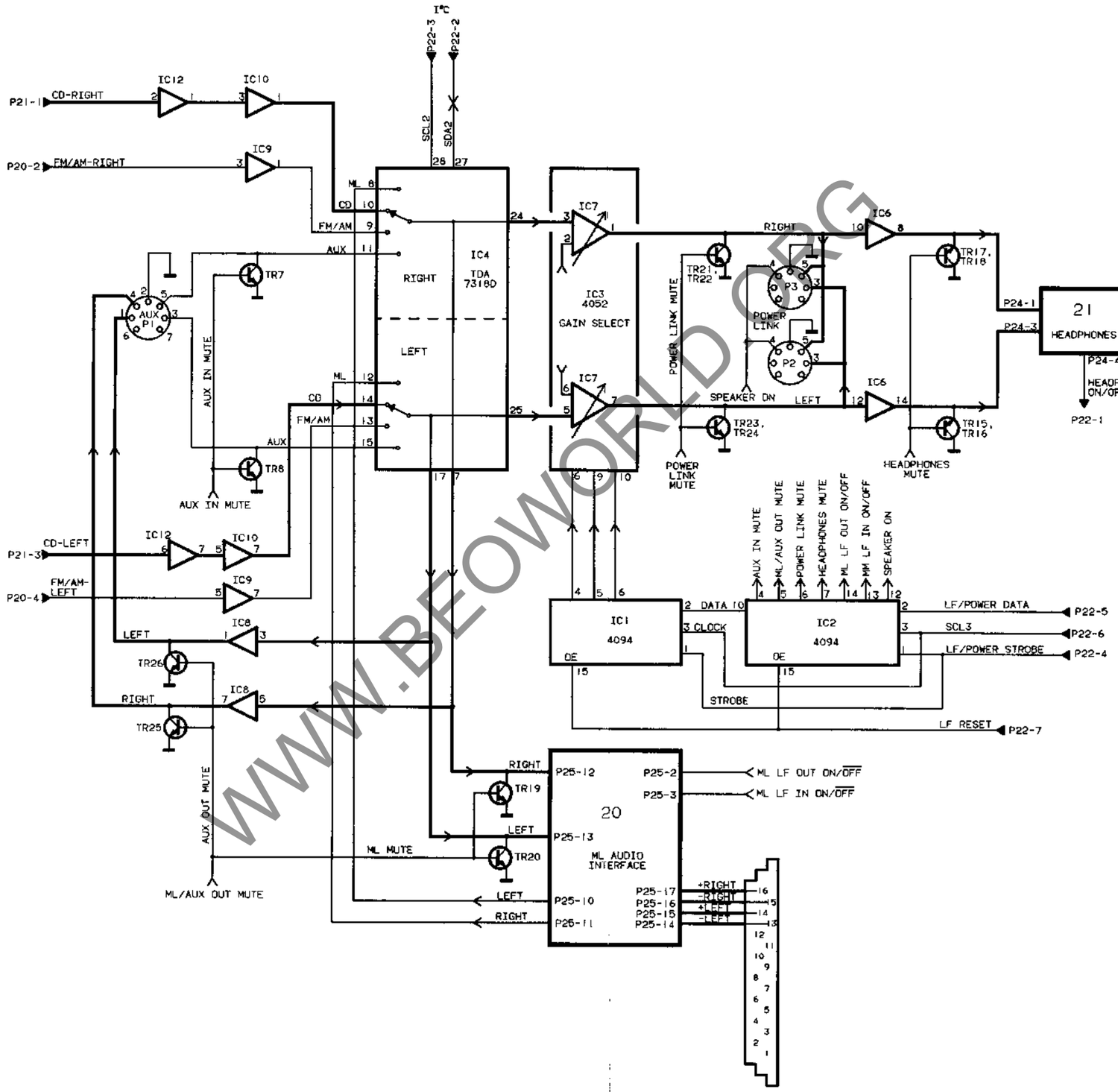
BLOCK DIAGRAM FOR CD



X = DIAGRAM

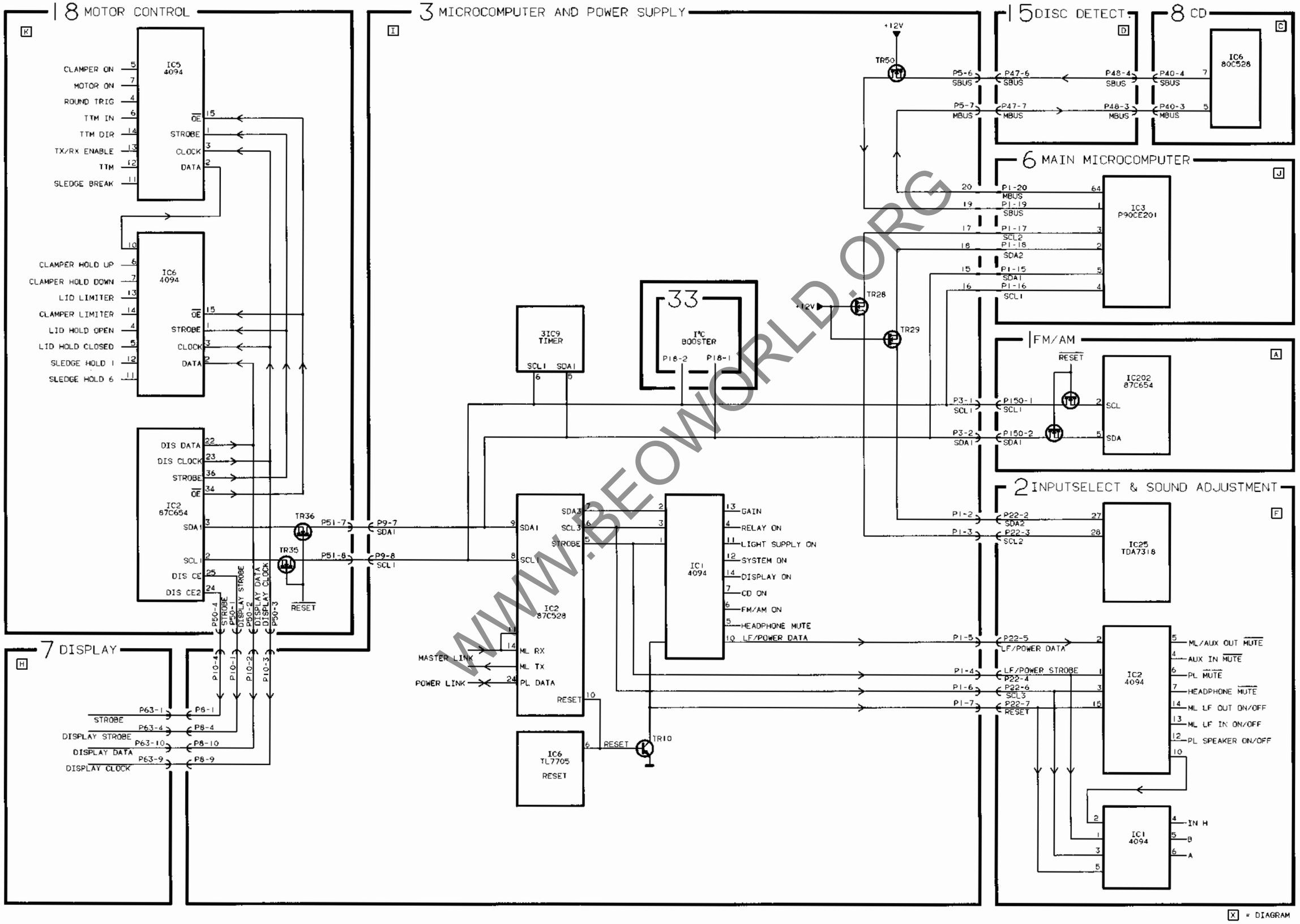
2 - 6
BLOCK DIAGRAM

BLOCK DIAGRAM FOR INPUT/OUTPUT SELECT

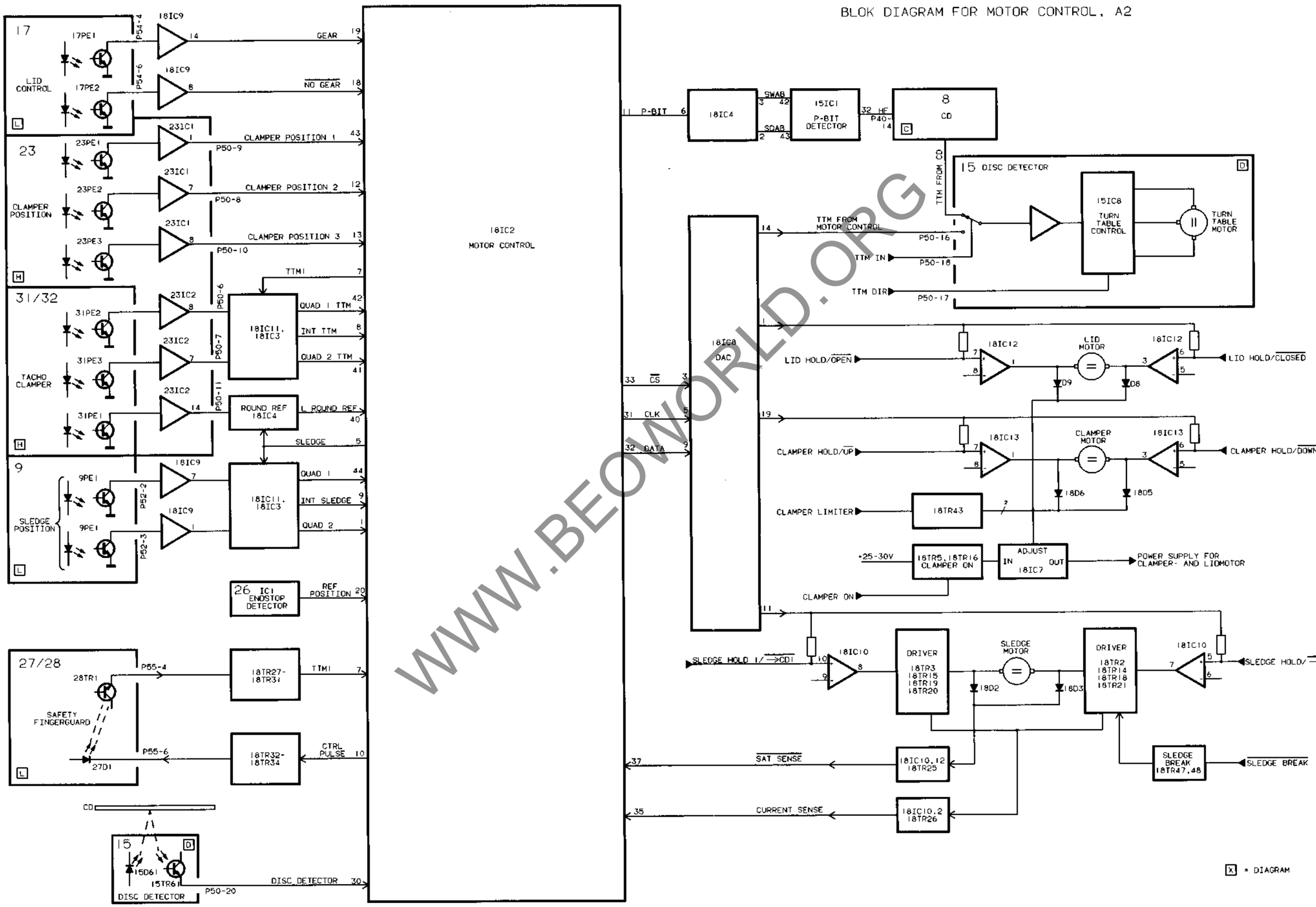


2 - 7
BLOCK DIAGRAM

BLOCK DIAGRAM FOR DATA



BLOCK DIAGRAM FOR MOTOR CONTROL



BLOCK DIAGRAM FOR POWER SUPPLY

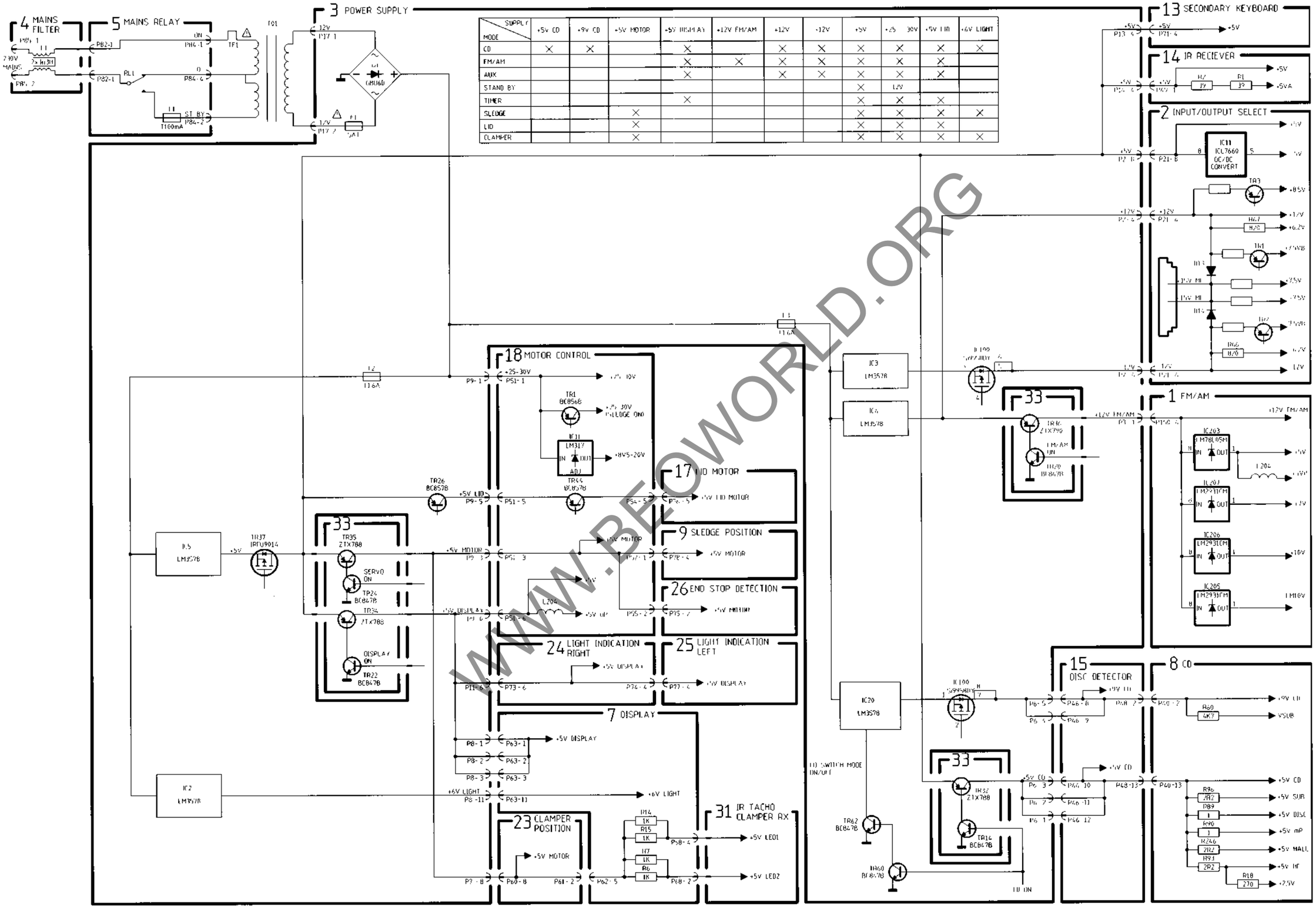


DIAGRAM A FM/AM RECEIVER (Marked on PCB 6142540) (PCB drawings for PCB 1 see page 2-27)

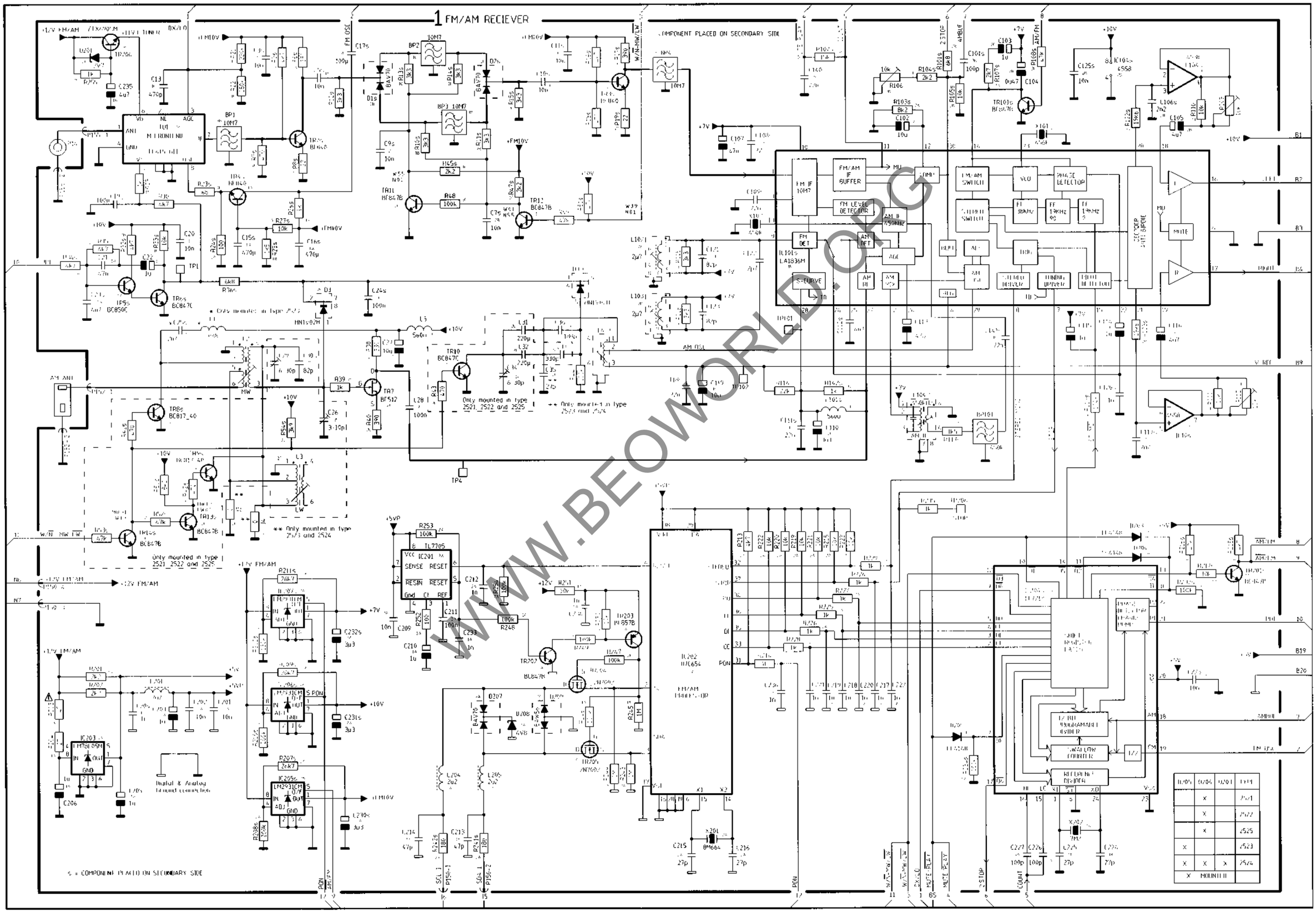


DIAGRAM B FM/AM OUTPUT (Marked on PCB 6142540) (PCB drawings for PCB 1 see page 2-27)

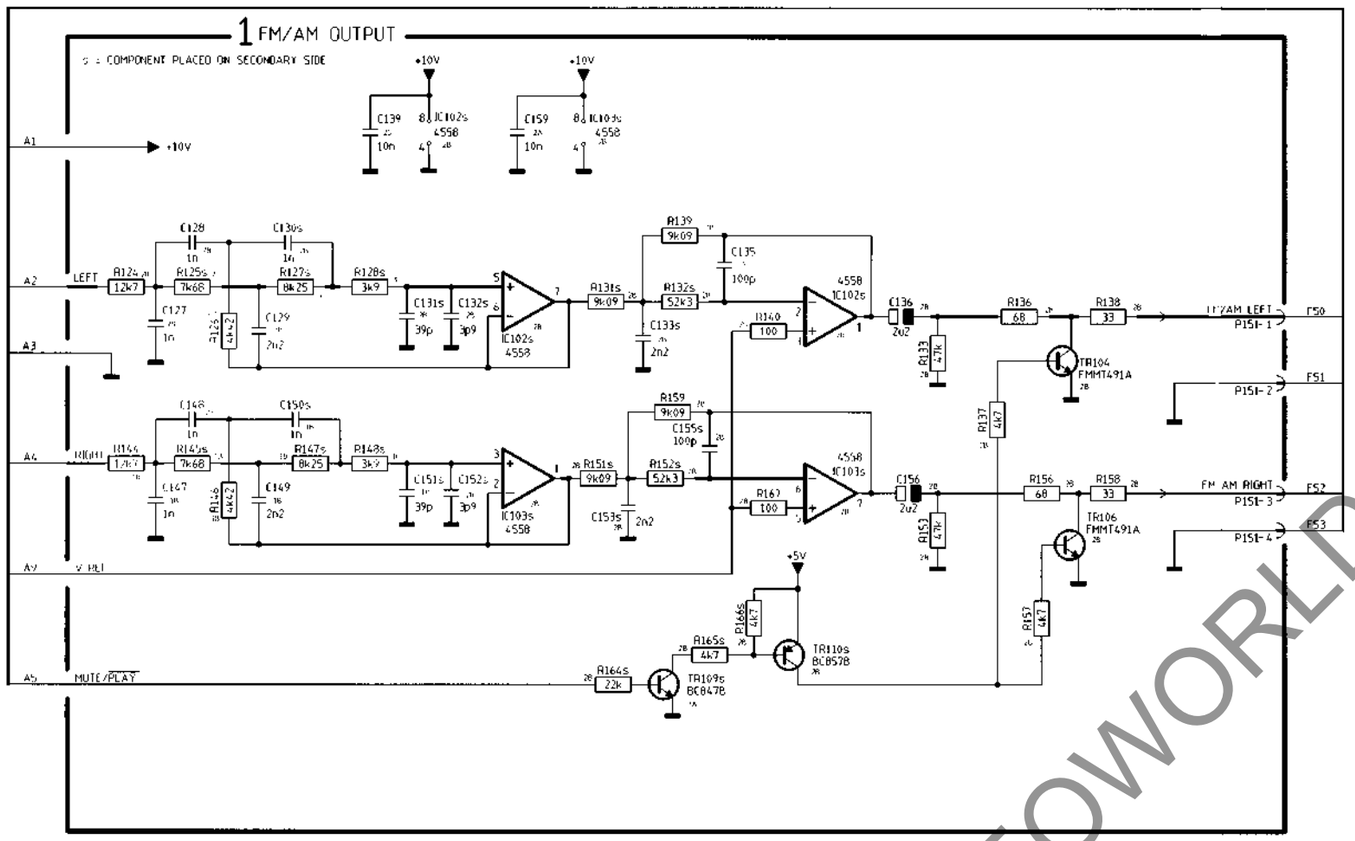
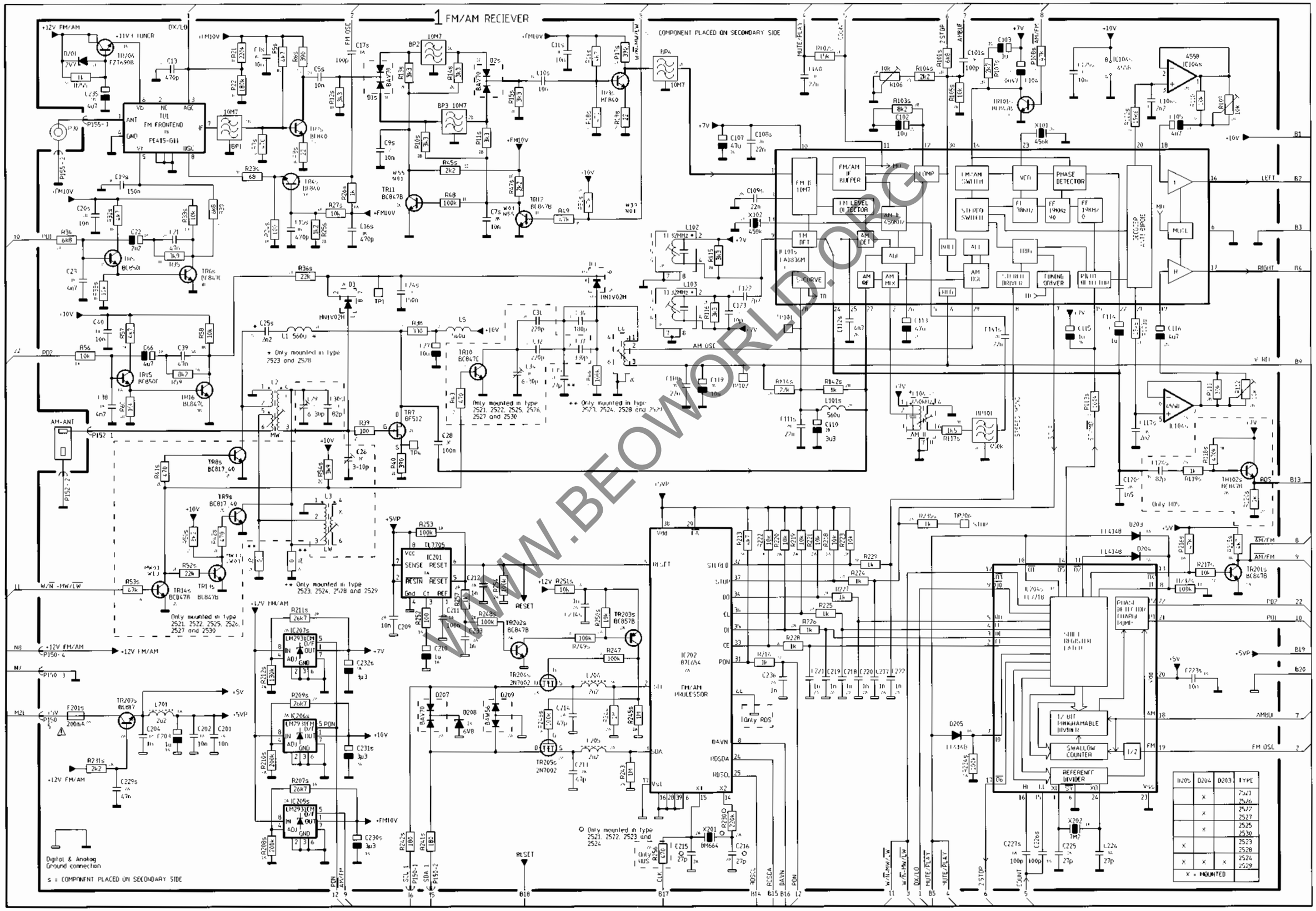


DIAGRAM A **FM/AM RECEIVER, NEW VERSION (Marked on PCB 6142670) (RDS, 8001921)** (PCB drawings for PCB 1 see page 2-28)



2 - 14 DIAGRAM B 2 - 14

DIAGRAM B FM/AM OUTPUT, NEW VERSION (Marked on PCB 6142670) (RDS, 8001921) (PCB drawings for PCB 1 see page 2-28)

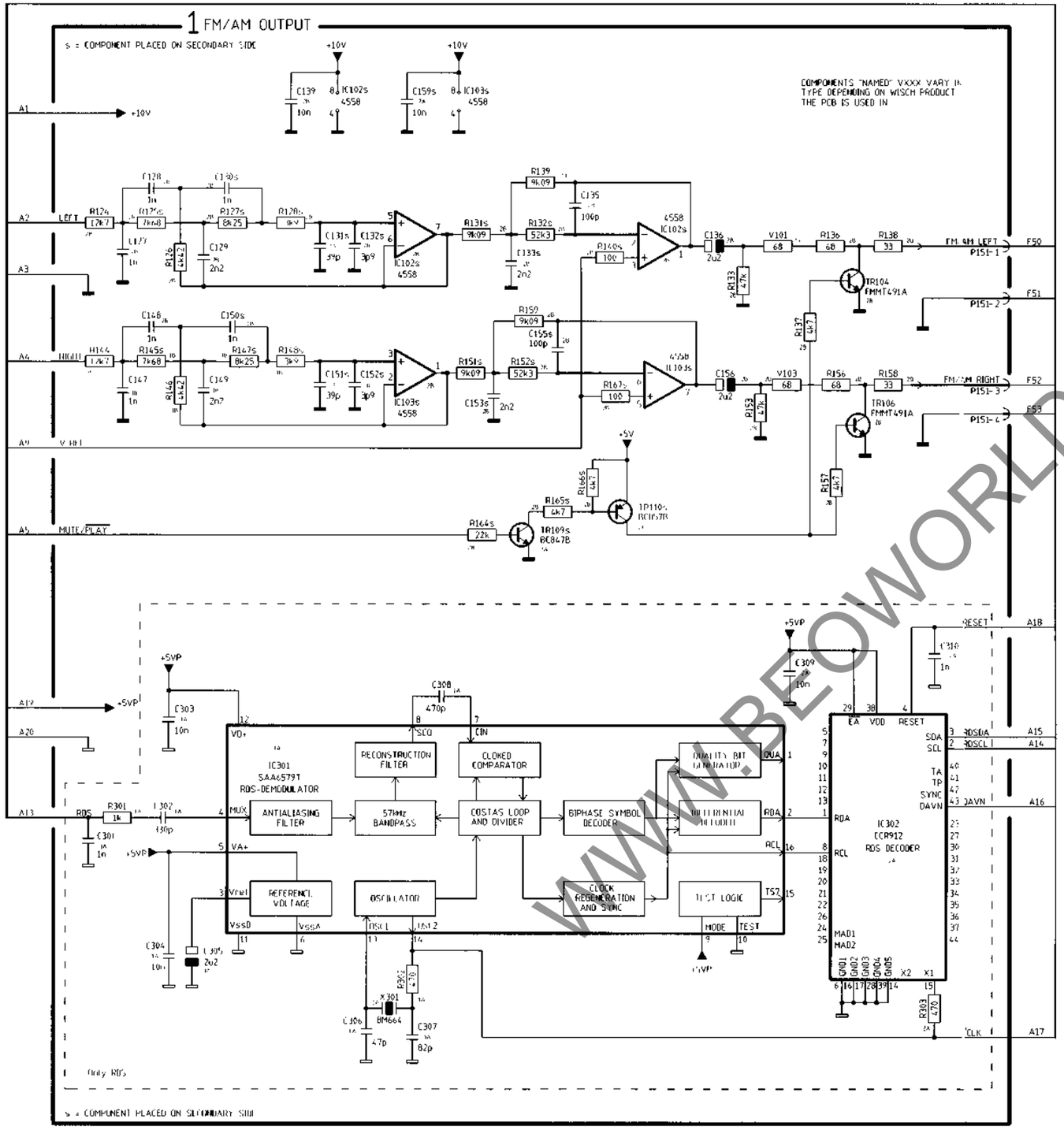


DIAGRAM C **CD SERVO & DECODER** (PCB drawings for PCB 8 see page 2-30)

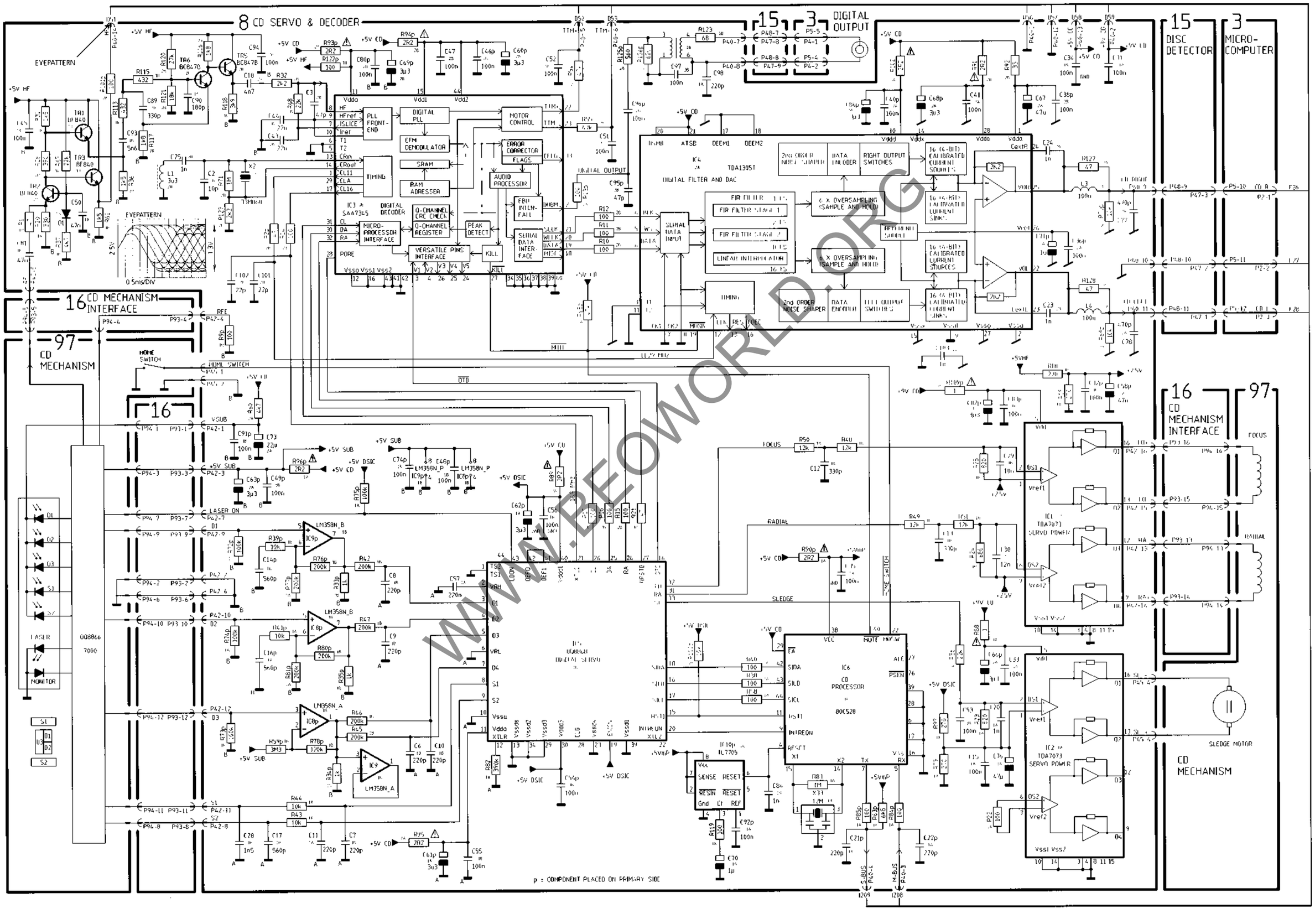


DIAGRAM D DISC DETECTOR (PCB drawings for PCB 15 see page 2-29, for PCB 3 see page 2-35)

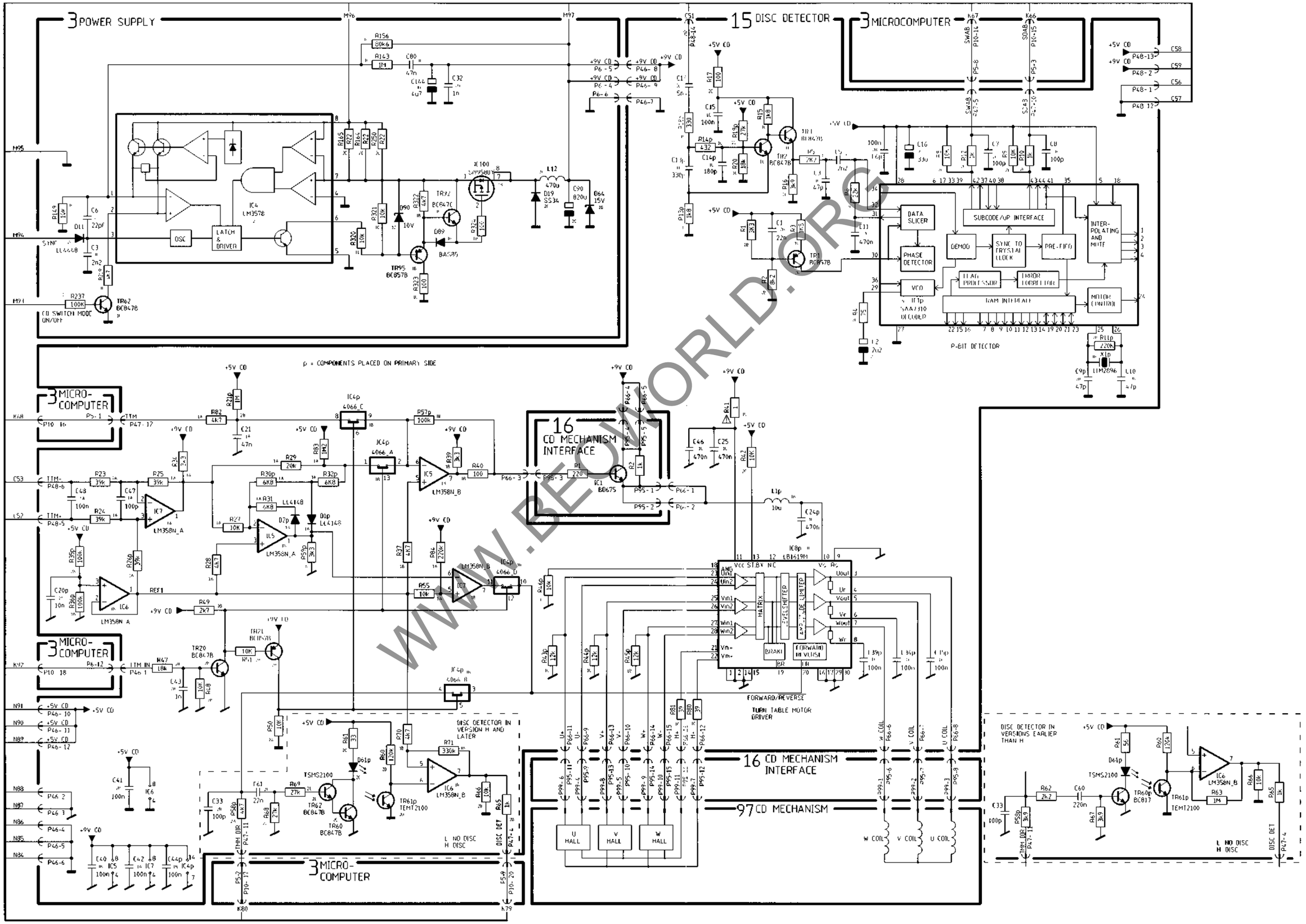
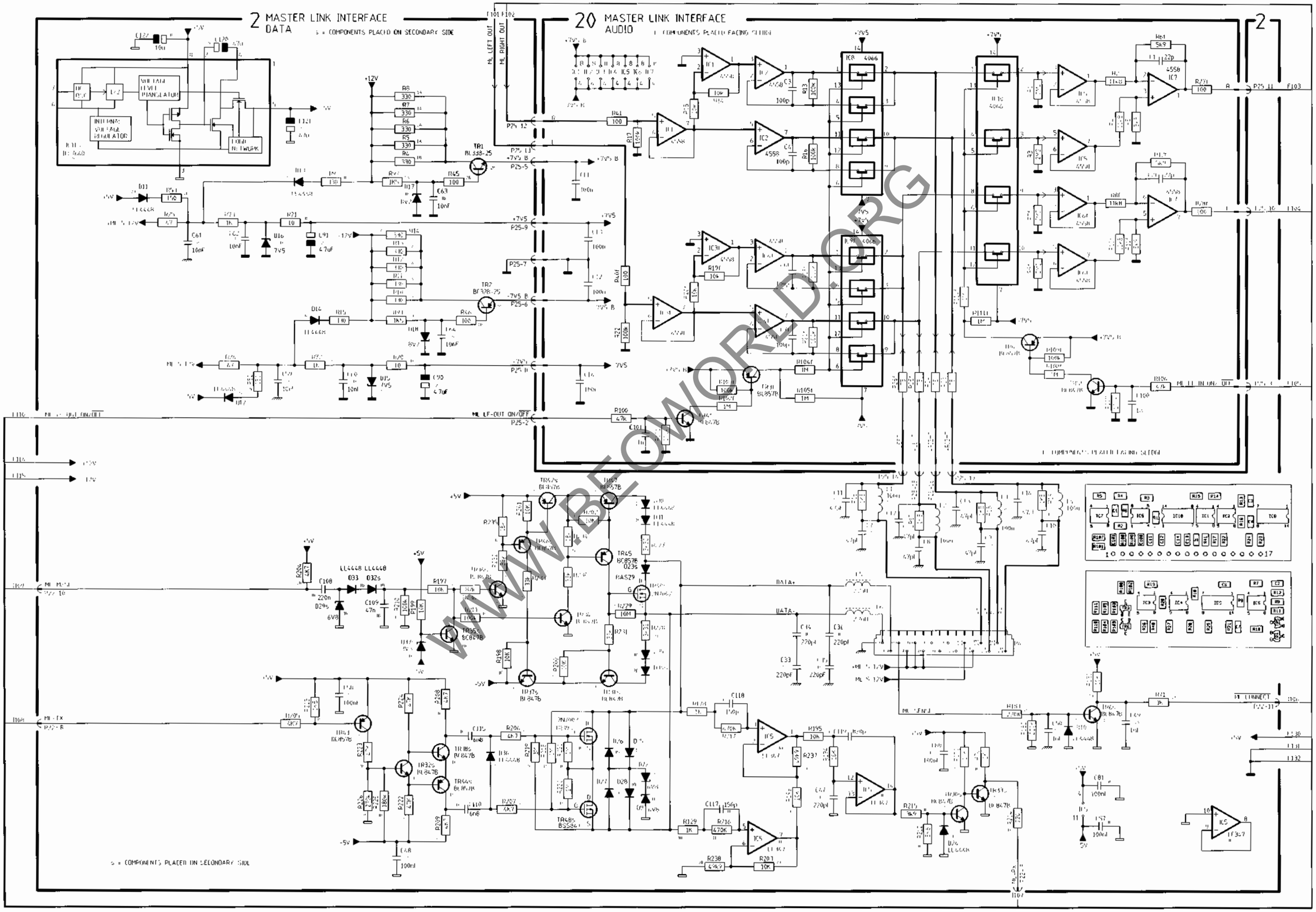
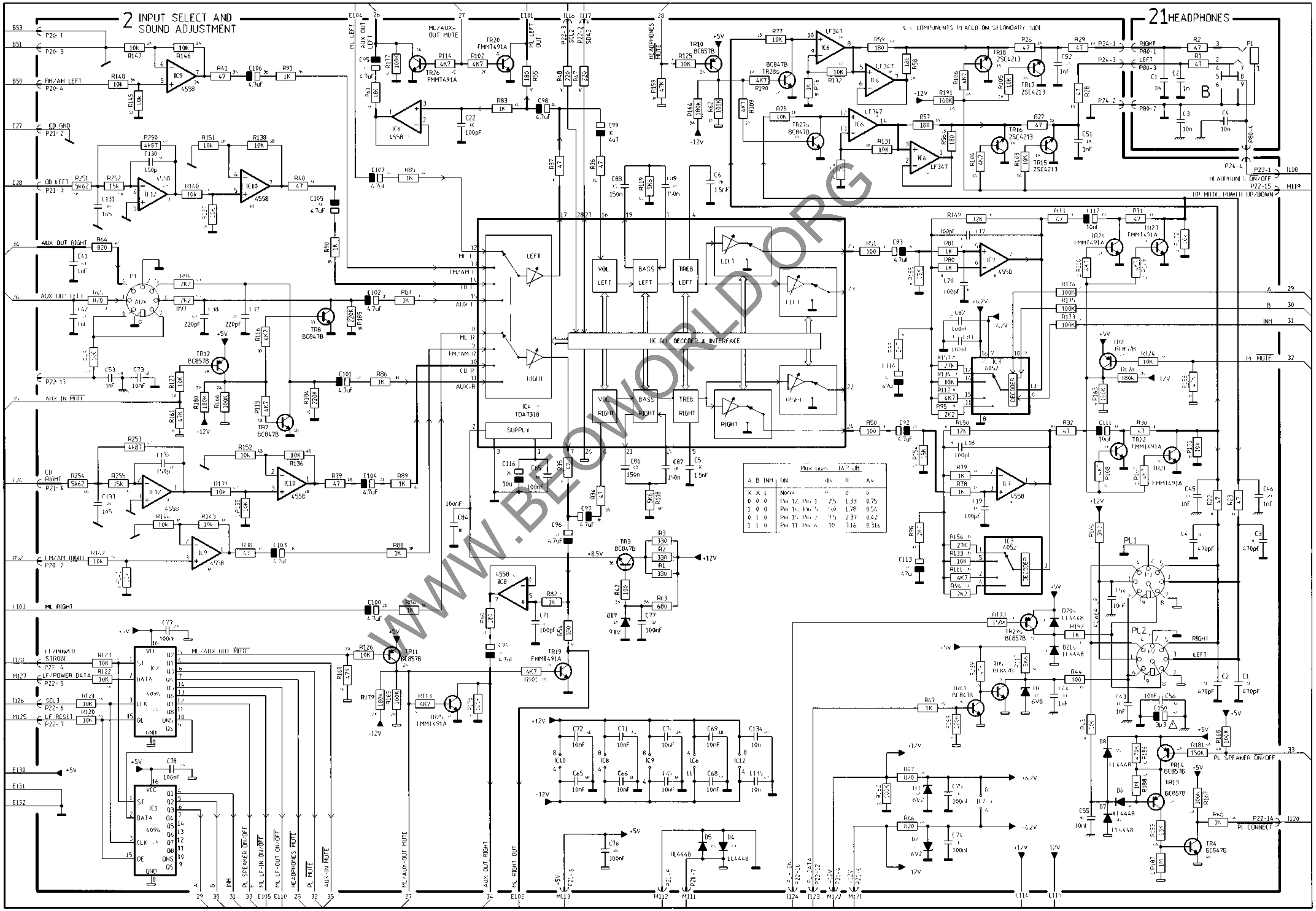


DIAGRAM E MASTERLINK INTERFACE (PCB drawing for PCB 2 see page 2-30)



2 - 18
DIAGRAM F
2 - 18

DIAGRAM F INPUT/OUTPUT SELECT & SOUND ADJUSTMENT (PCB drawings for PCB 2 and PCB 21 see page 2-30)

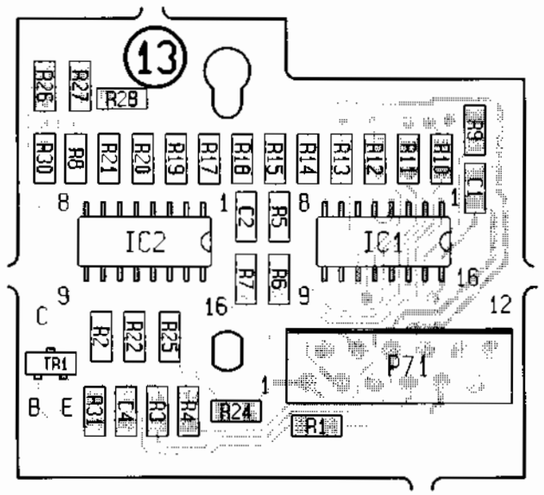


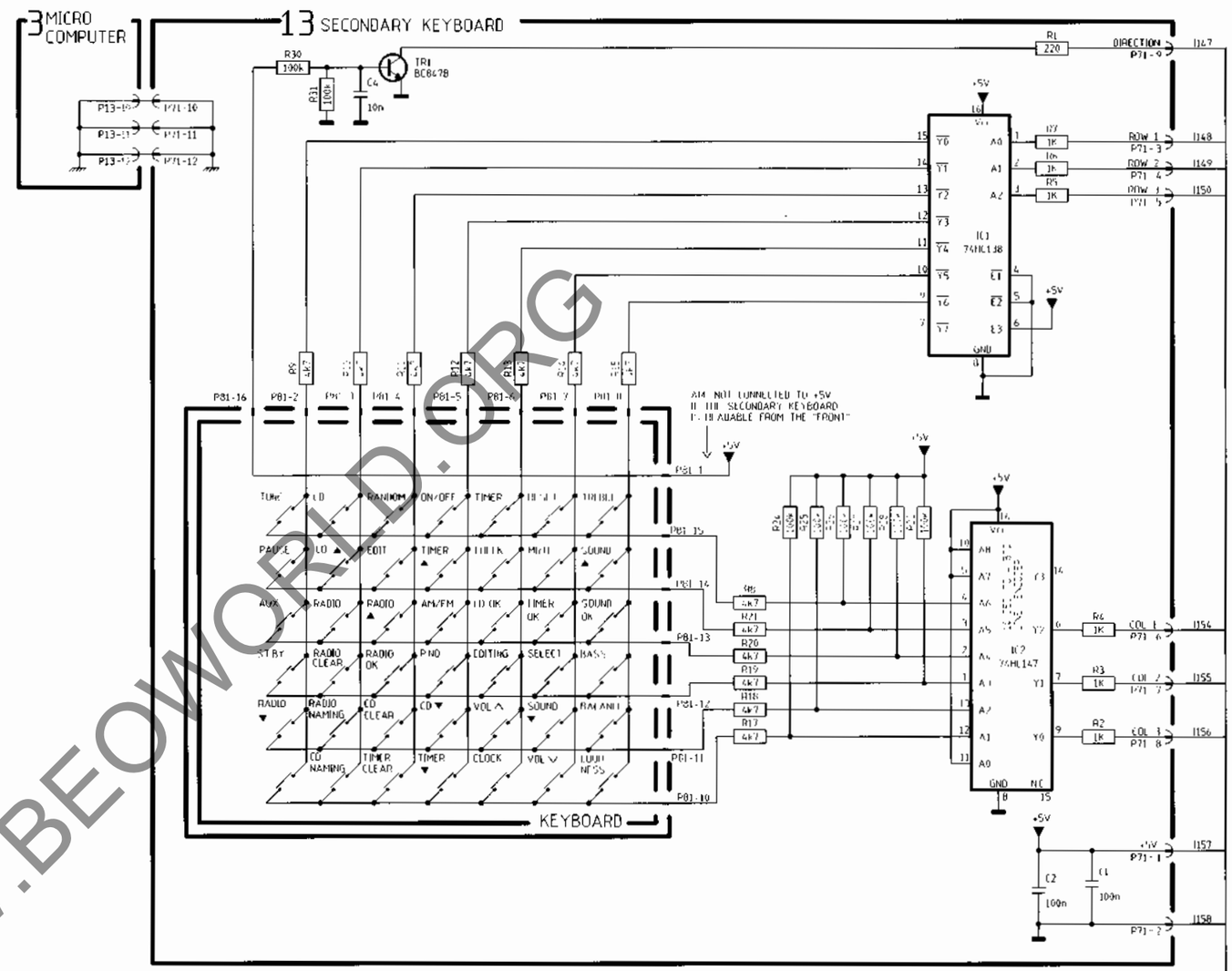
2 - 19
DIAGRAM G

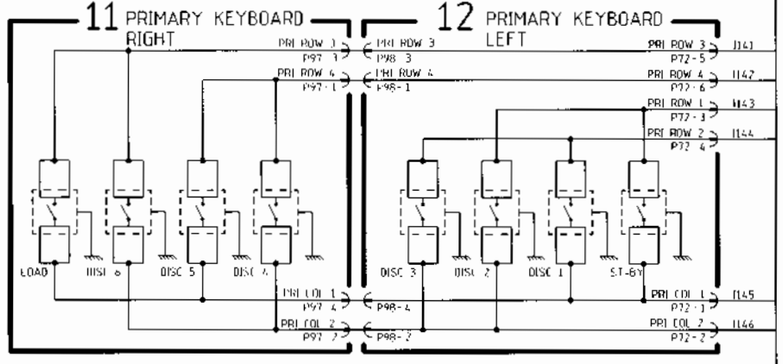
2 - 19
DIAGRAM G

DIAGRAM G KEYBOARDS AND IR RECEIVER (PCB drawing for PCB 14 see page 2-32)

PCB 13, Secondary Keyboard, 2 layer PCB

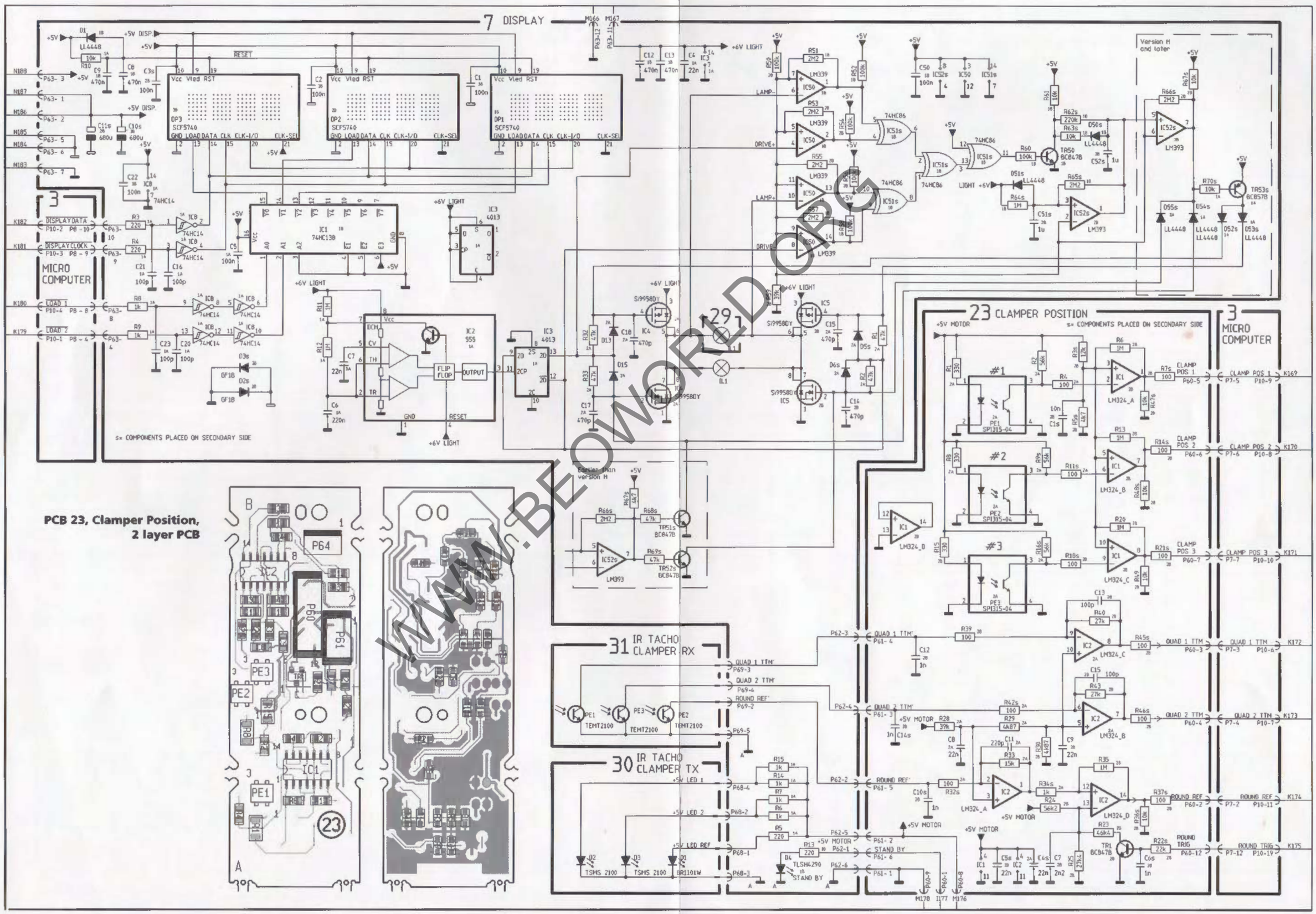






2 - 20
DIAGRAM H

DIAGRAM H DISPLAY AND CLAMPER POSITION (PCB drawings for PCB 7 see page 2-31 and 2-32)



PCB 23, Clamper Position, 2 layer PCB

DIAGRAM I MICROCOMPUTER (PCB drawings for PCB 3 see page 2-35, PCB 24 see page 2-31 and PCB 33 see page 2-26)

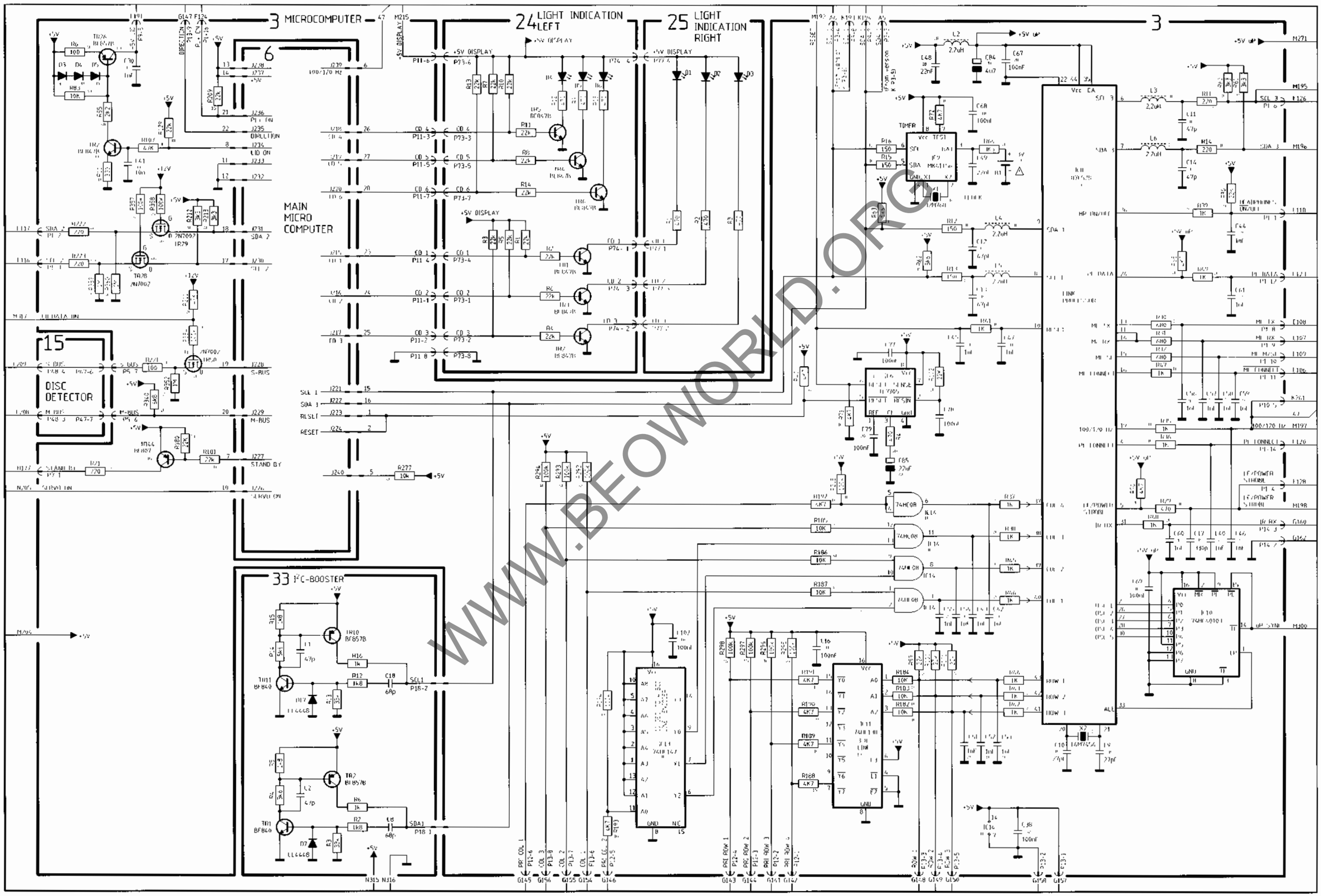
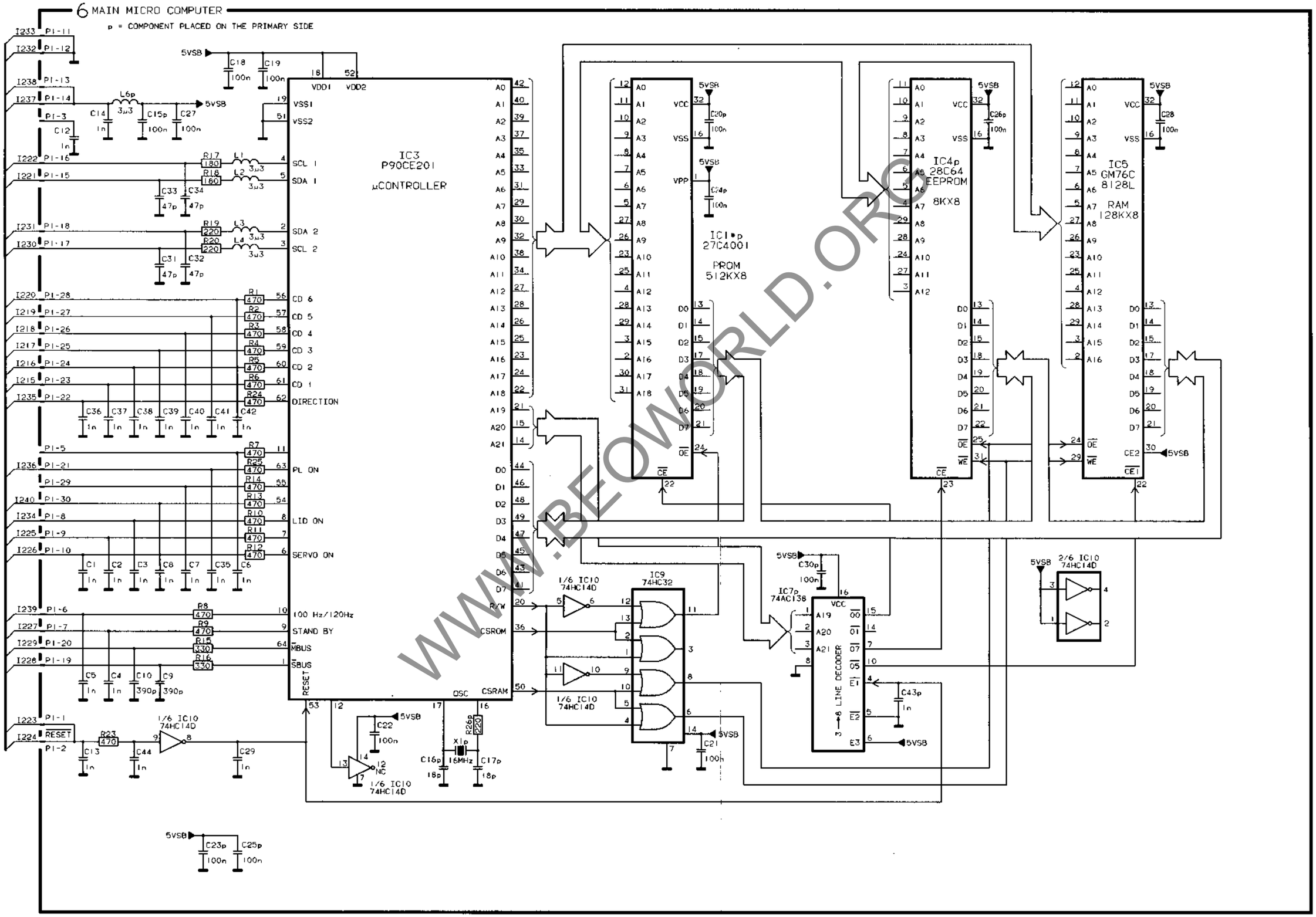


DIAGRAM J MAIN MICRO COMPUTER



2 - 23
DIAGRAM K

DIAGRAM K MOTOR CONTROL (PCB drawings for PCB 18 see page 2-33 and 2-34)

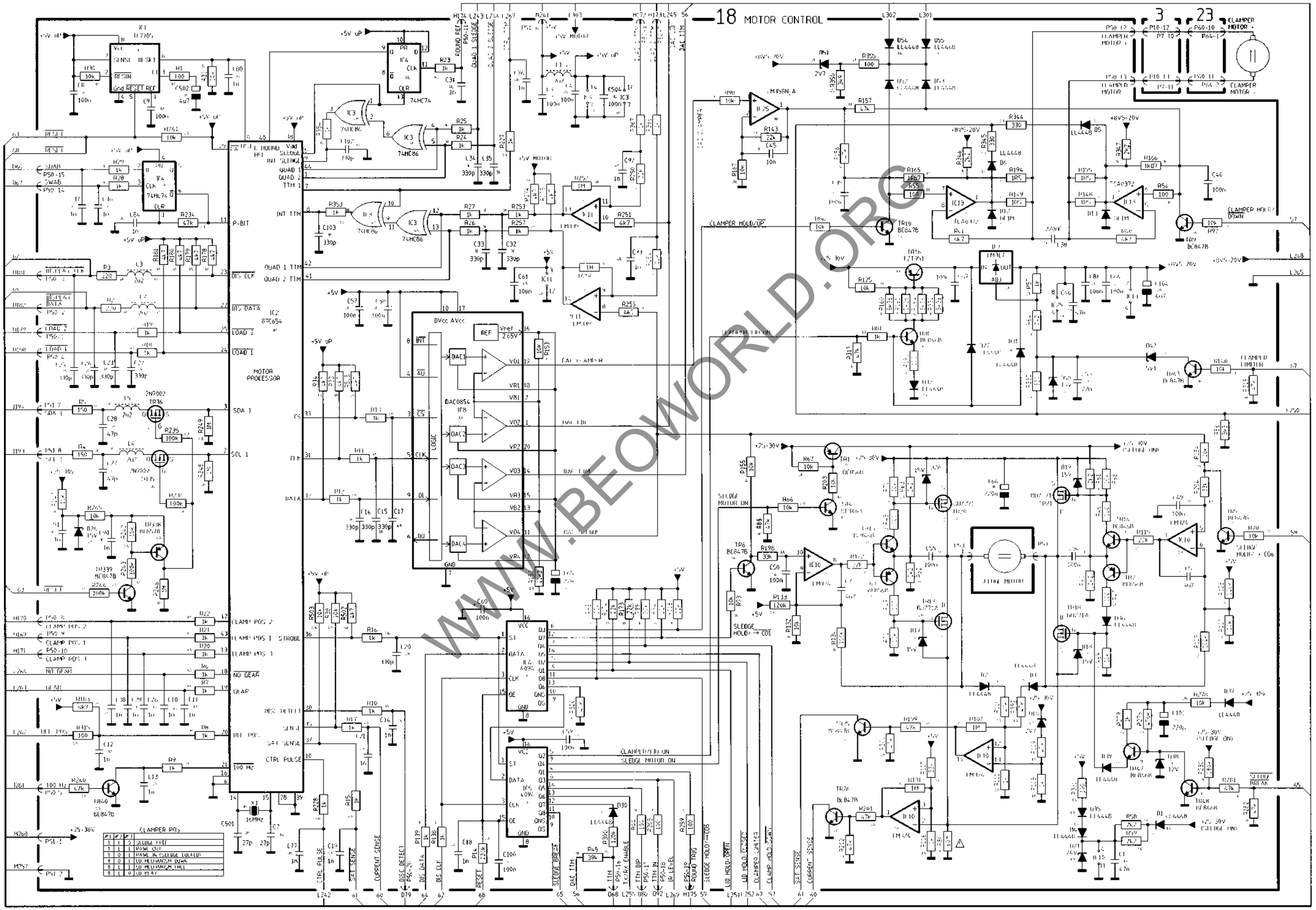
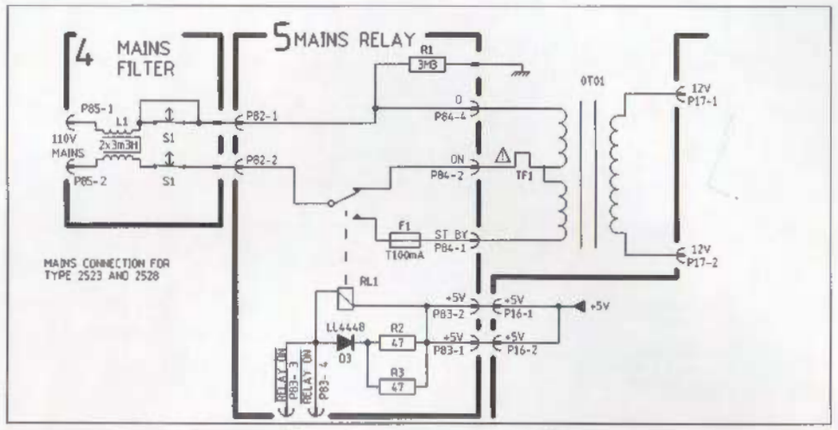
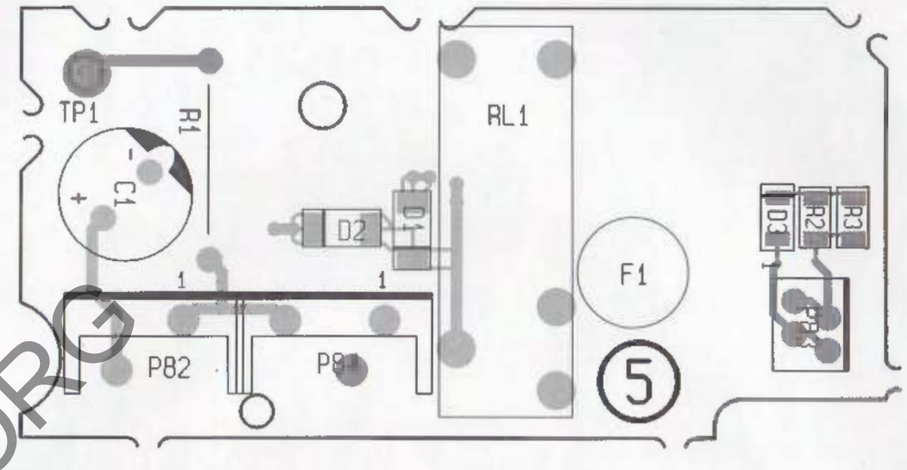


DIAGRAM N POWER SWITCHNING

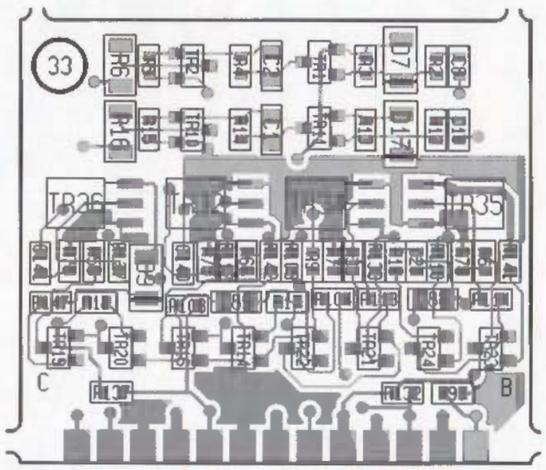


2 - 26

PCB 5, Mains Relay, 4 layer PCB



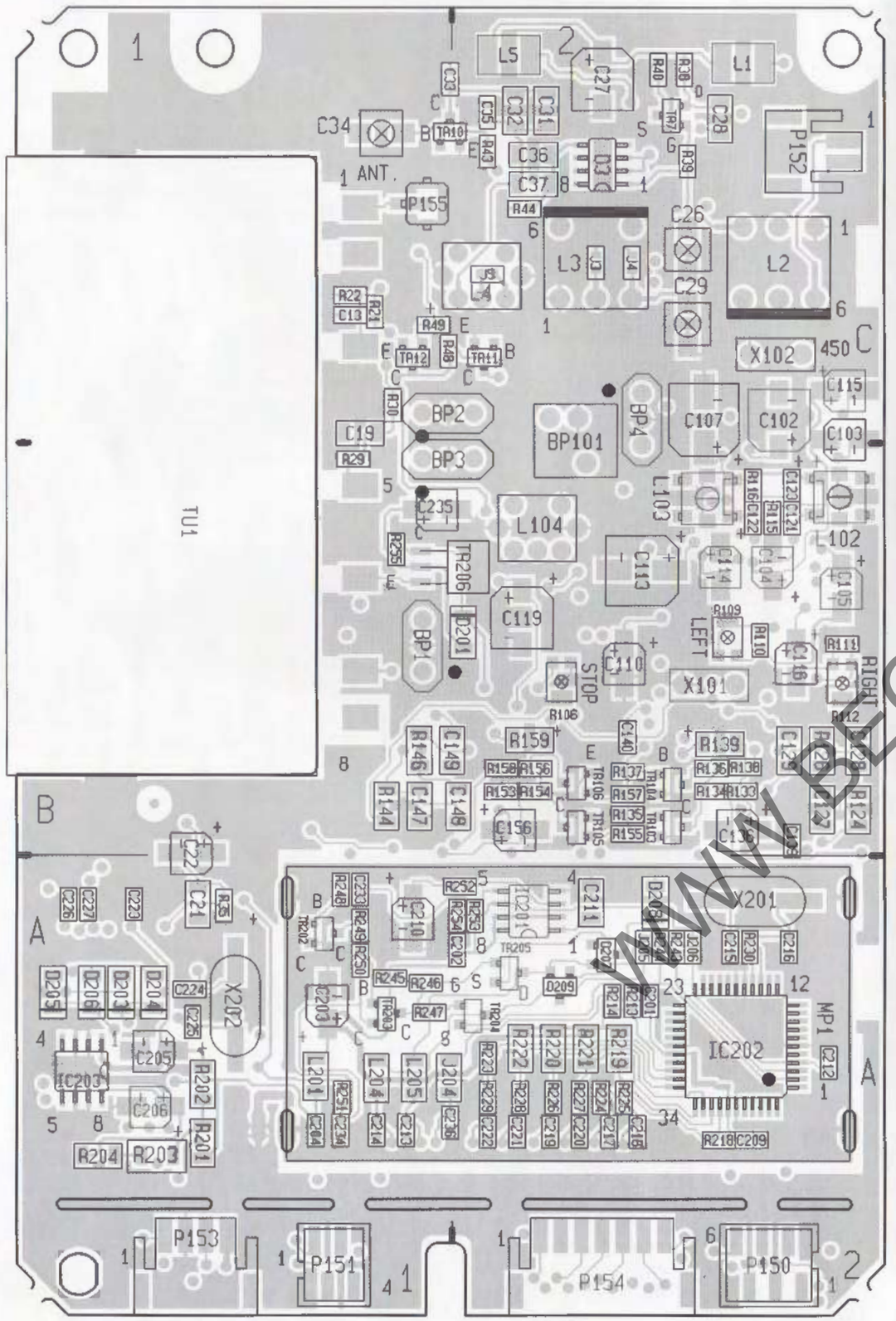
PCB 33, Power Switching, 2 layer PCB



2- 27
PCB DRAWINGS

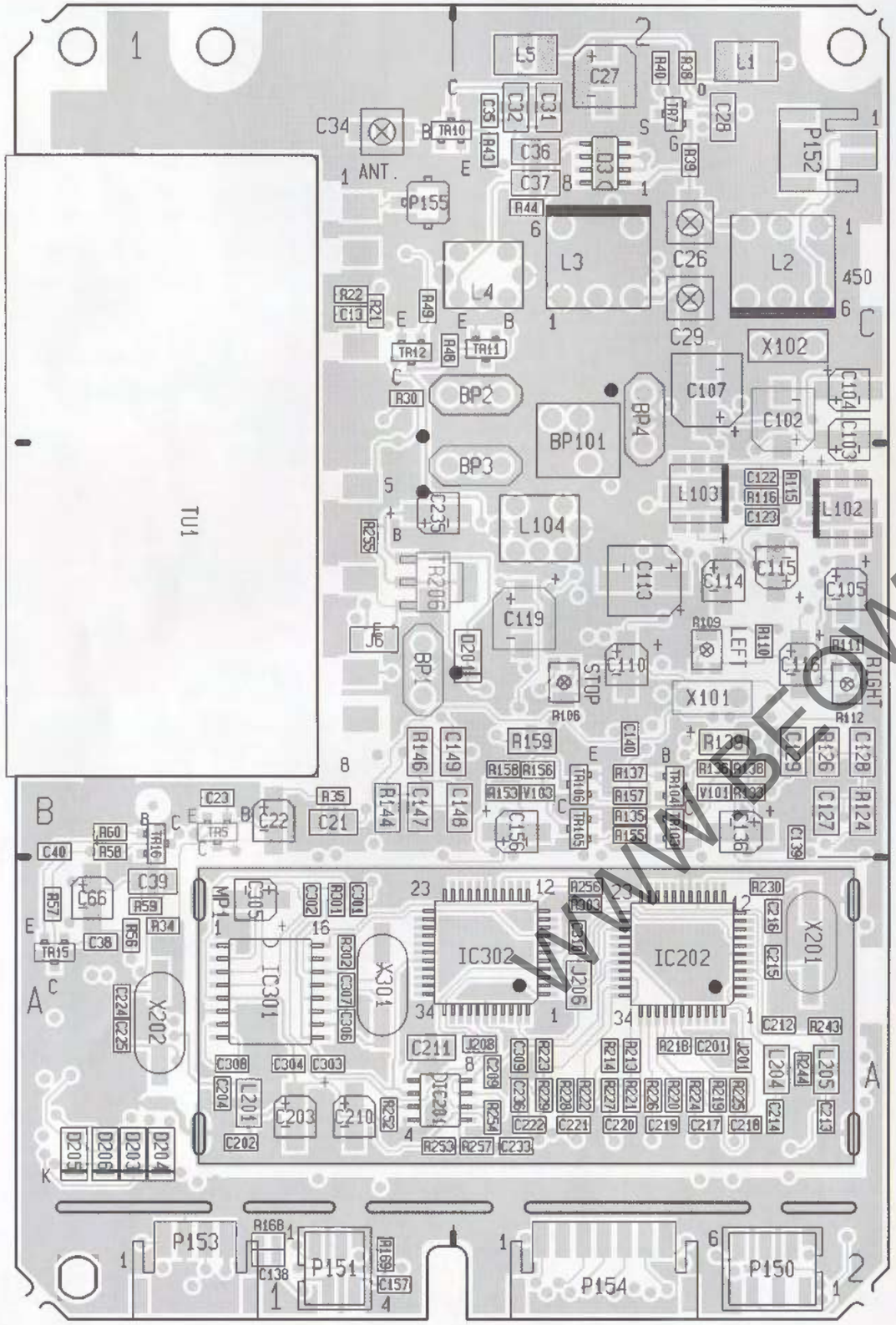
2 - 27
PCB DRAWINGS

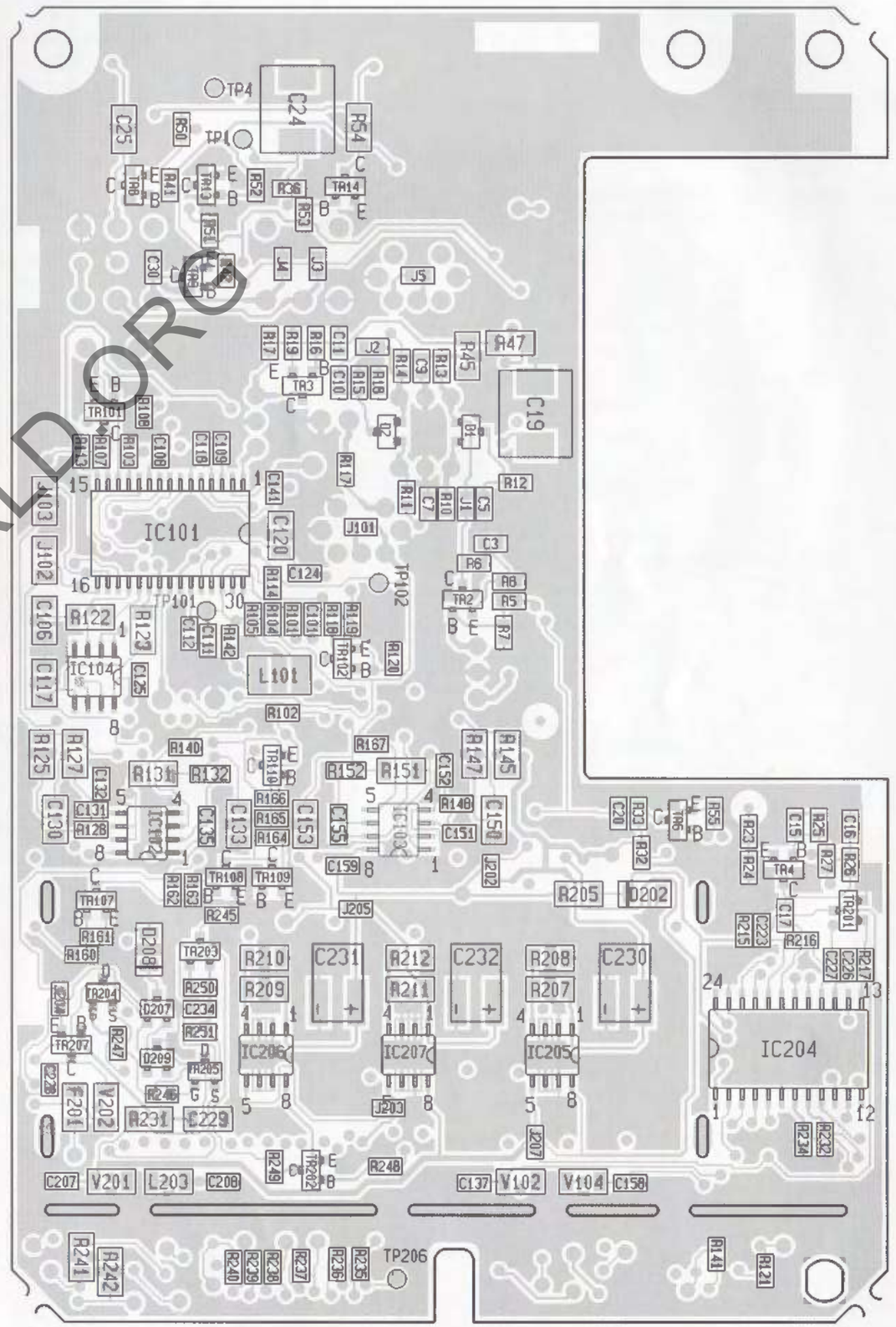
PCB 1, FM/AM, RF IF Decoder (6142540), 4 layer PCB



2 - 28
PCB DRAWINGS
2 - 28

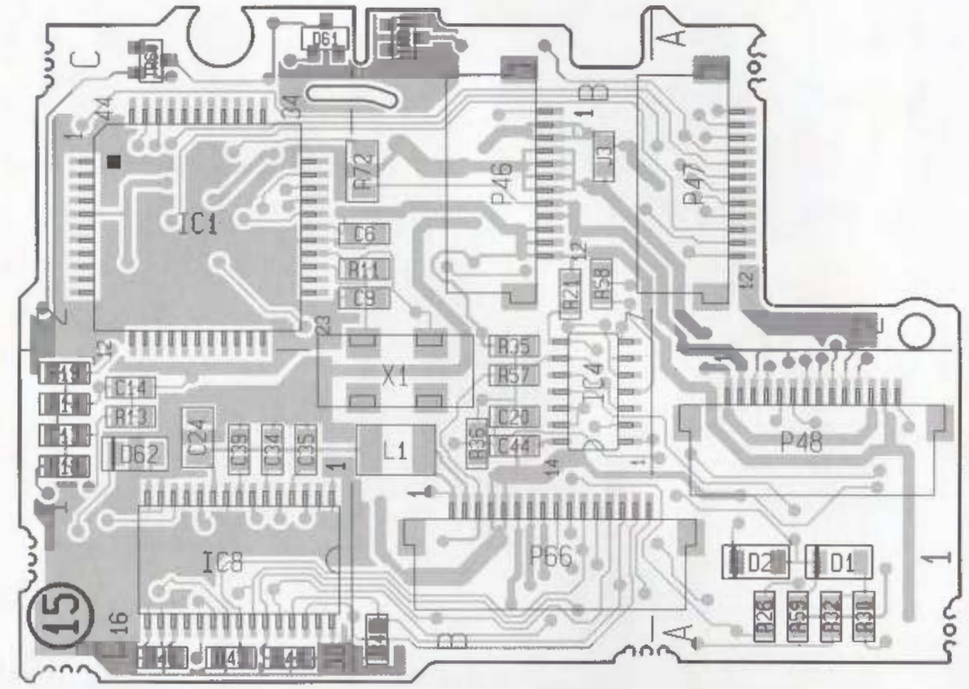
PCB 1, FM/AM, RF IF Decoder, New Version (6142670) (RDS), 4 layer PCB

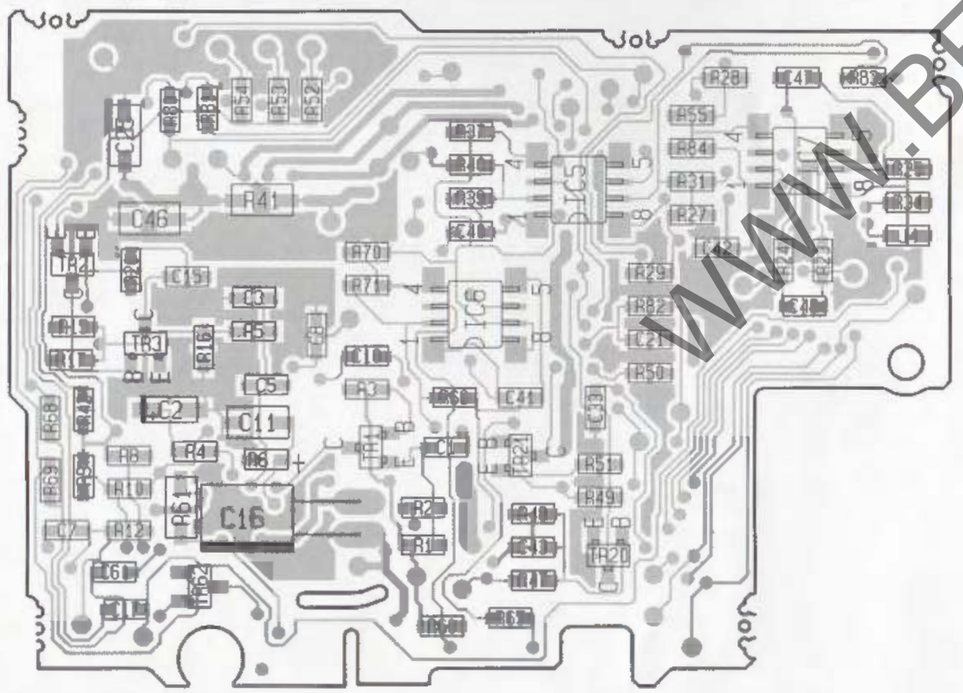




2 - 29

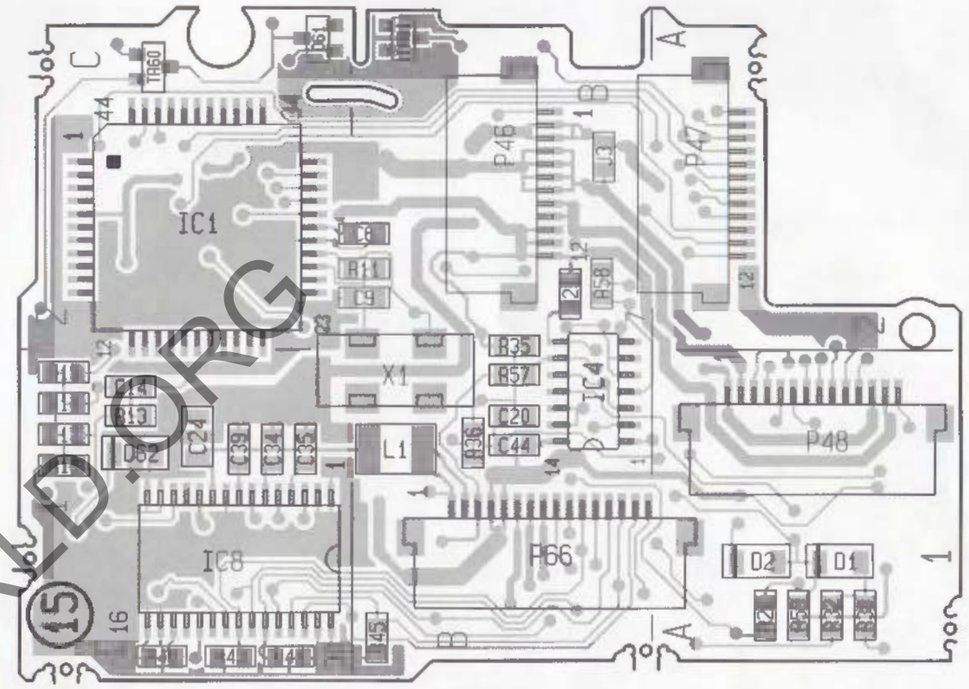
PCB 15, Disc Detector (from version H), 2 layer PCB

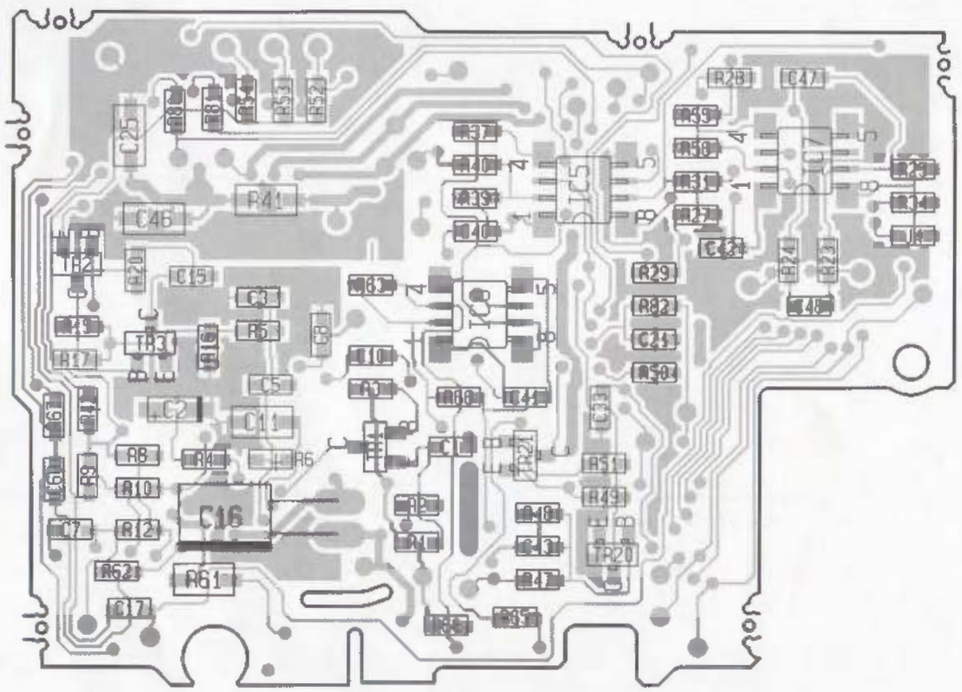




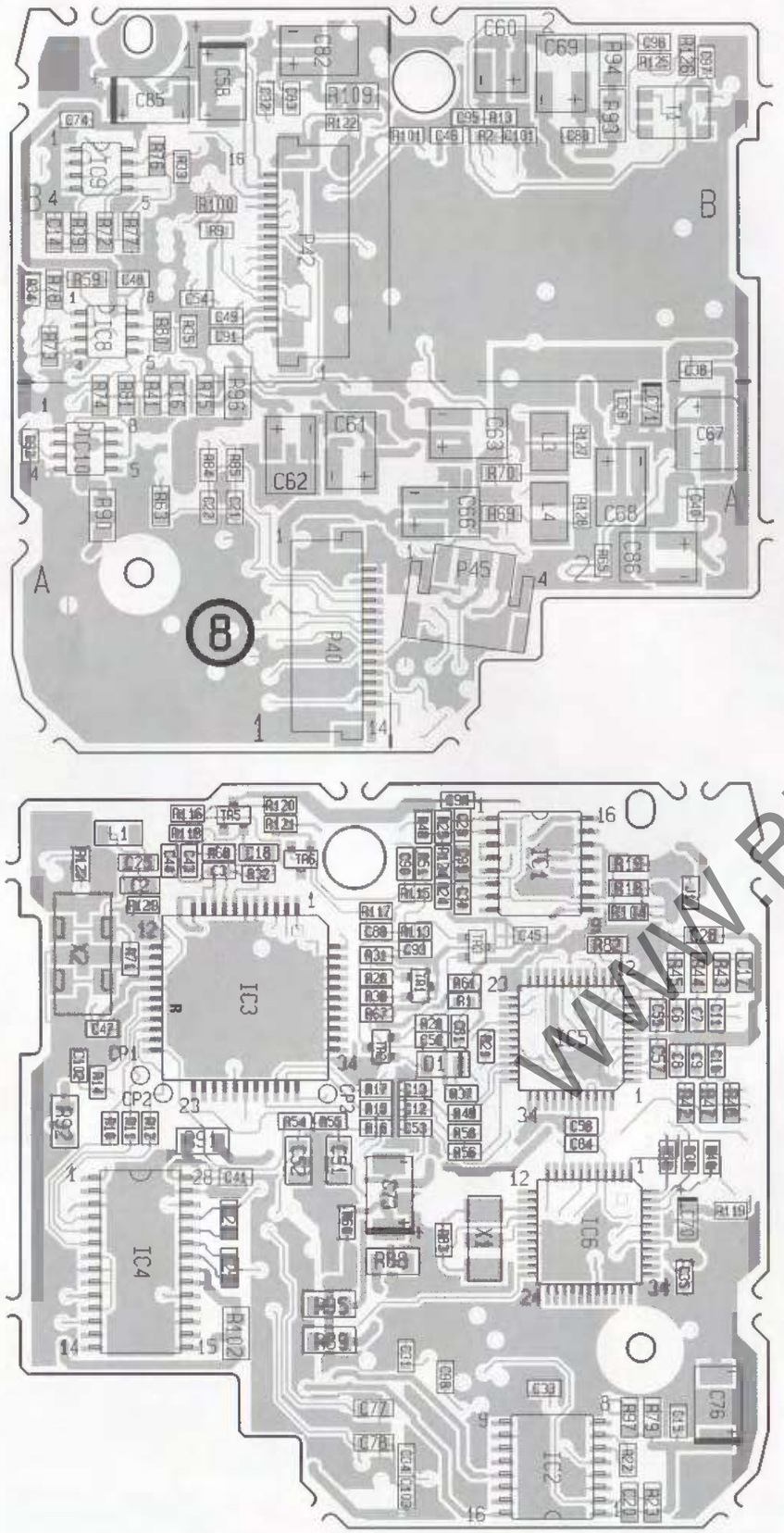
2 - 29

PCB 15, Disc Detector (old version), 2 layer PCB





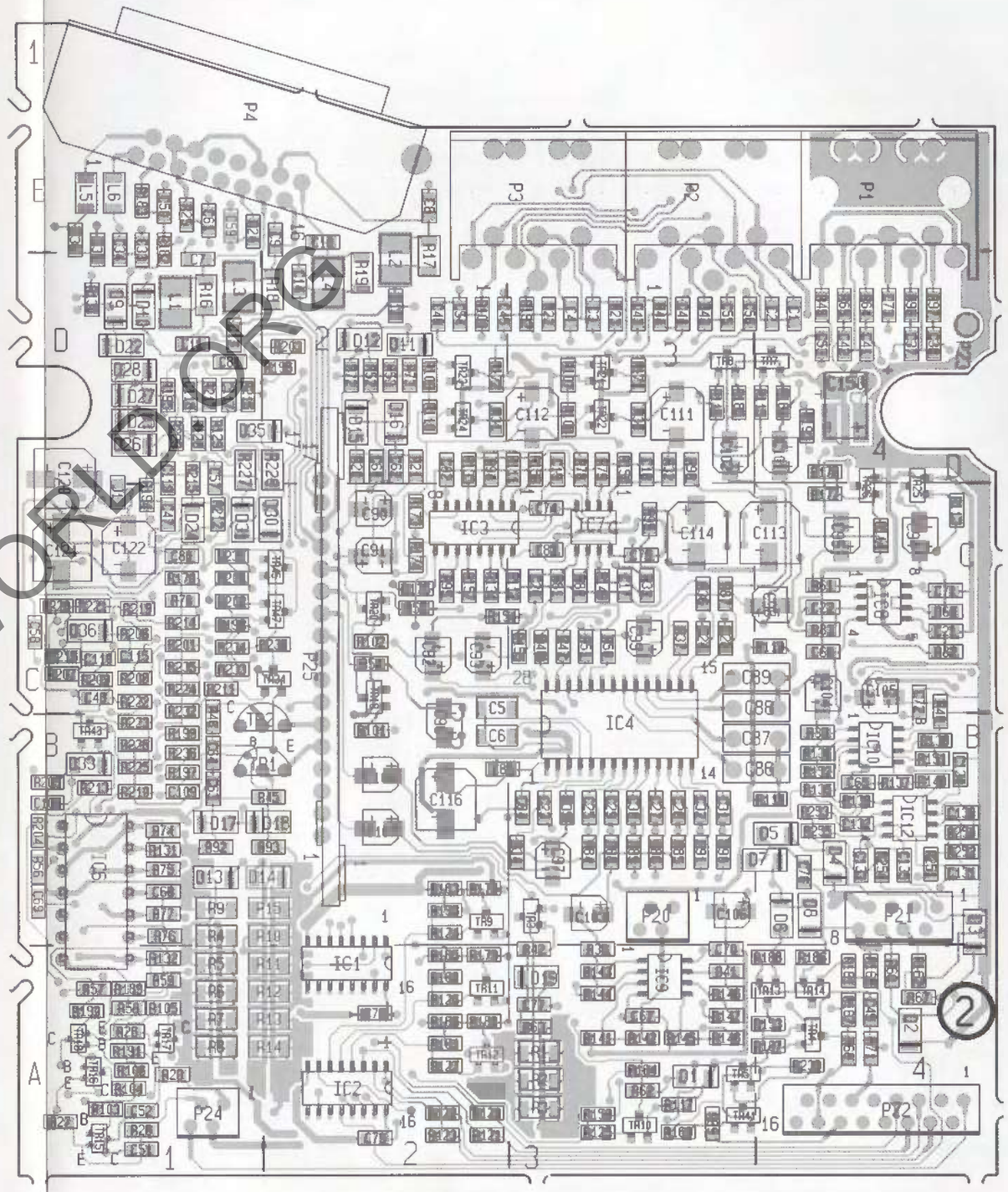
PCB 8, CD, 4 layer PCB



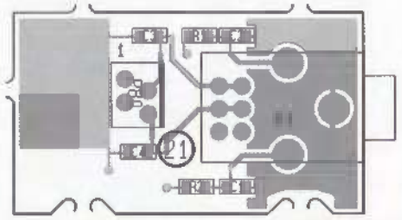
2 - 30
PCB DRAWINGS

2 - 30

PCB 2, Input/Output Select and Sound adjustment and Master Link Interface, 2 layer PCB

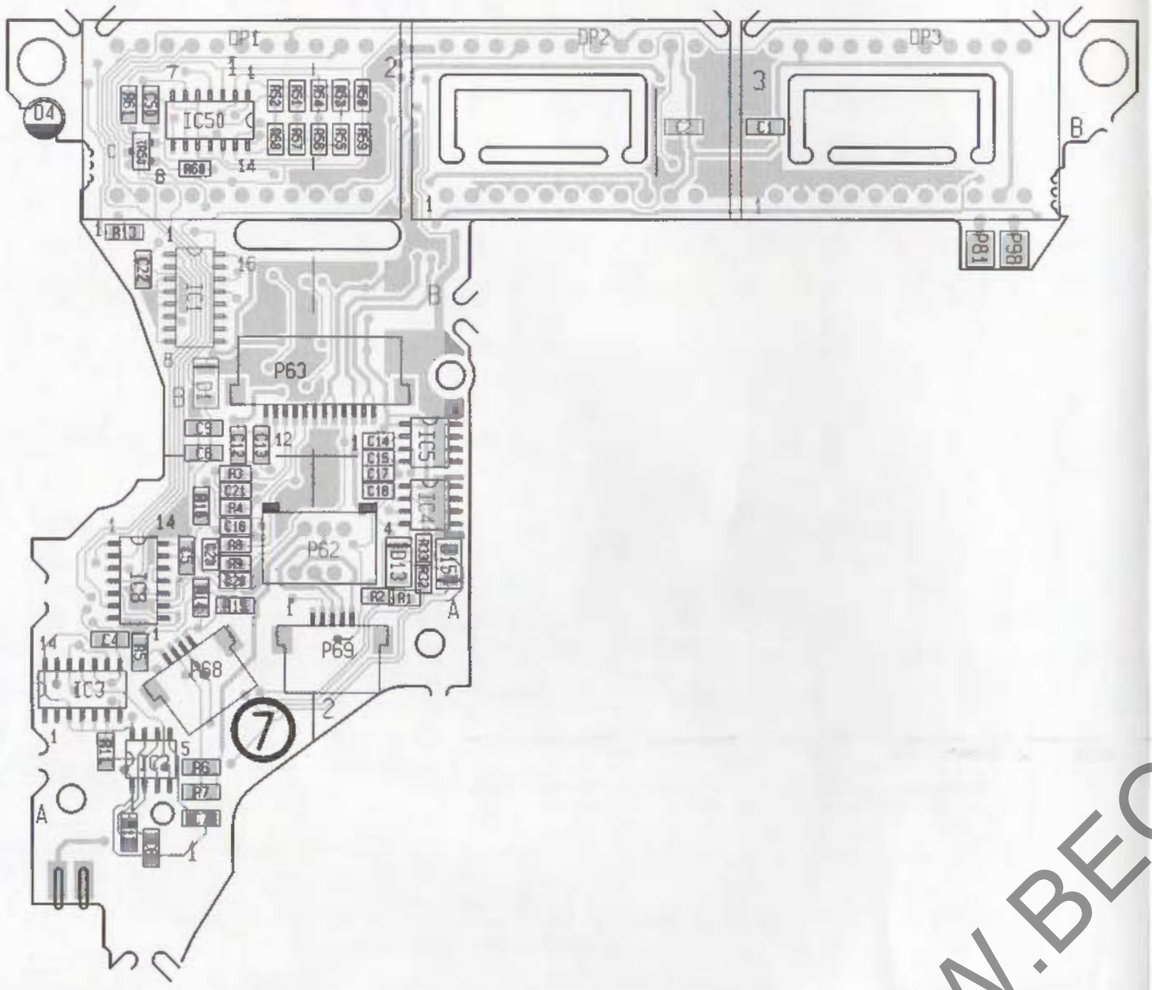


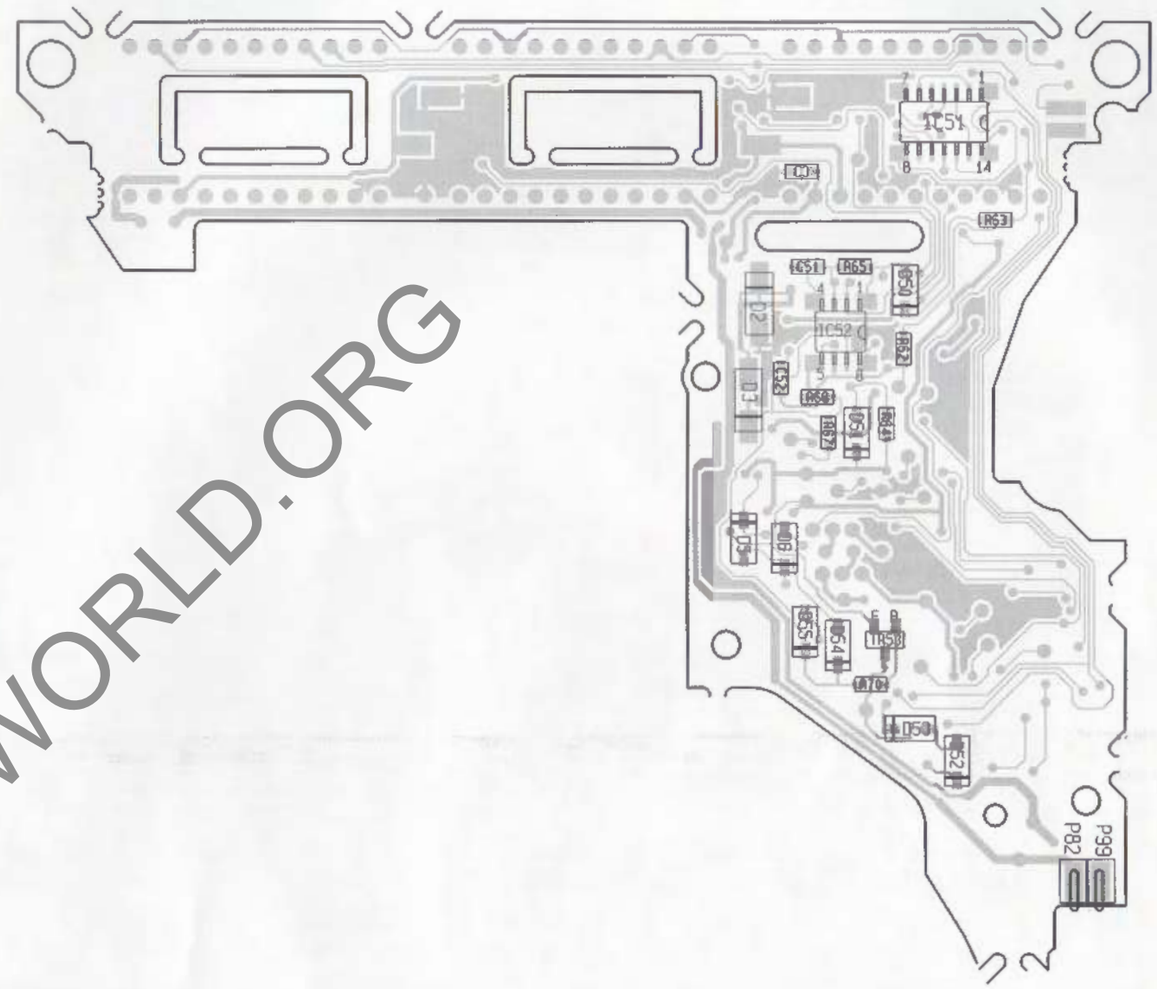
PCB 21, Headphone, 4 layer PCB



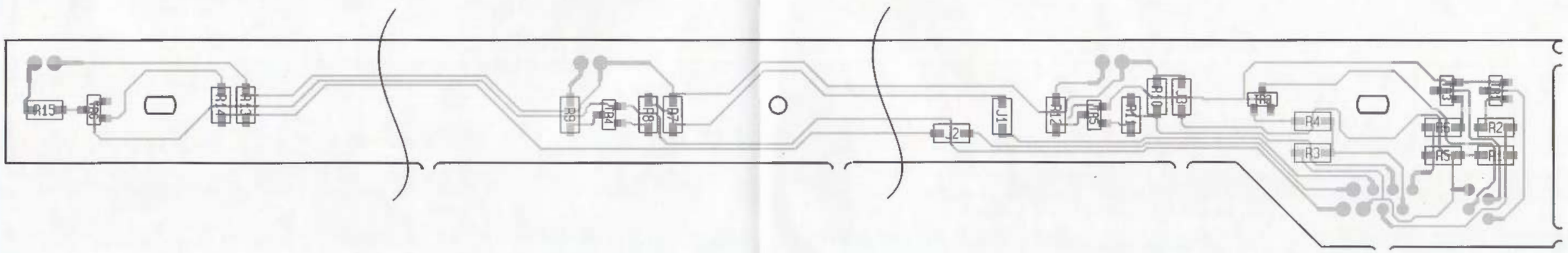
2 - 31
PCB DRAWINGS

PCB 7, Display (from version H), 2 layer PCB





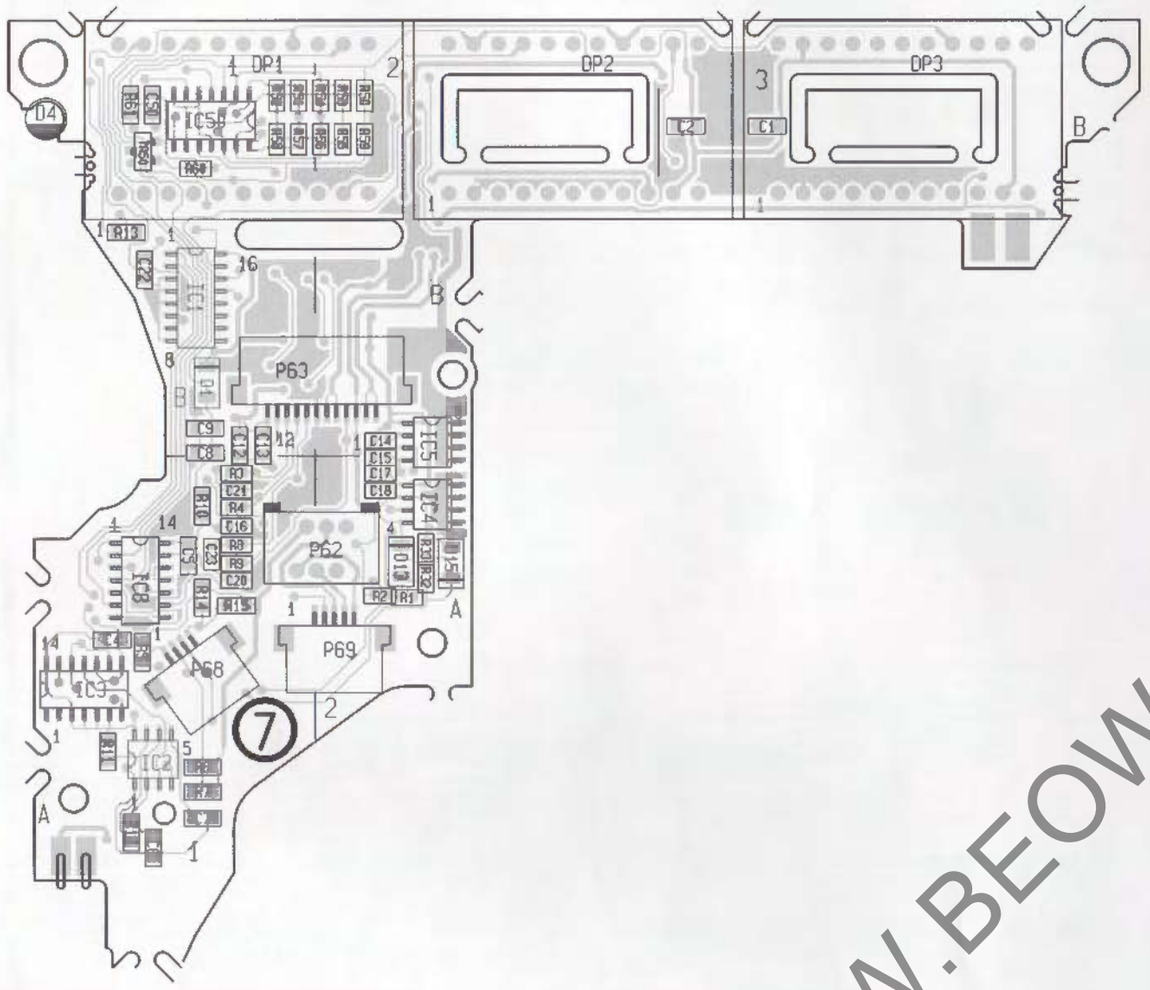
PCB 24, Light indication, left

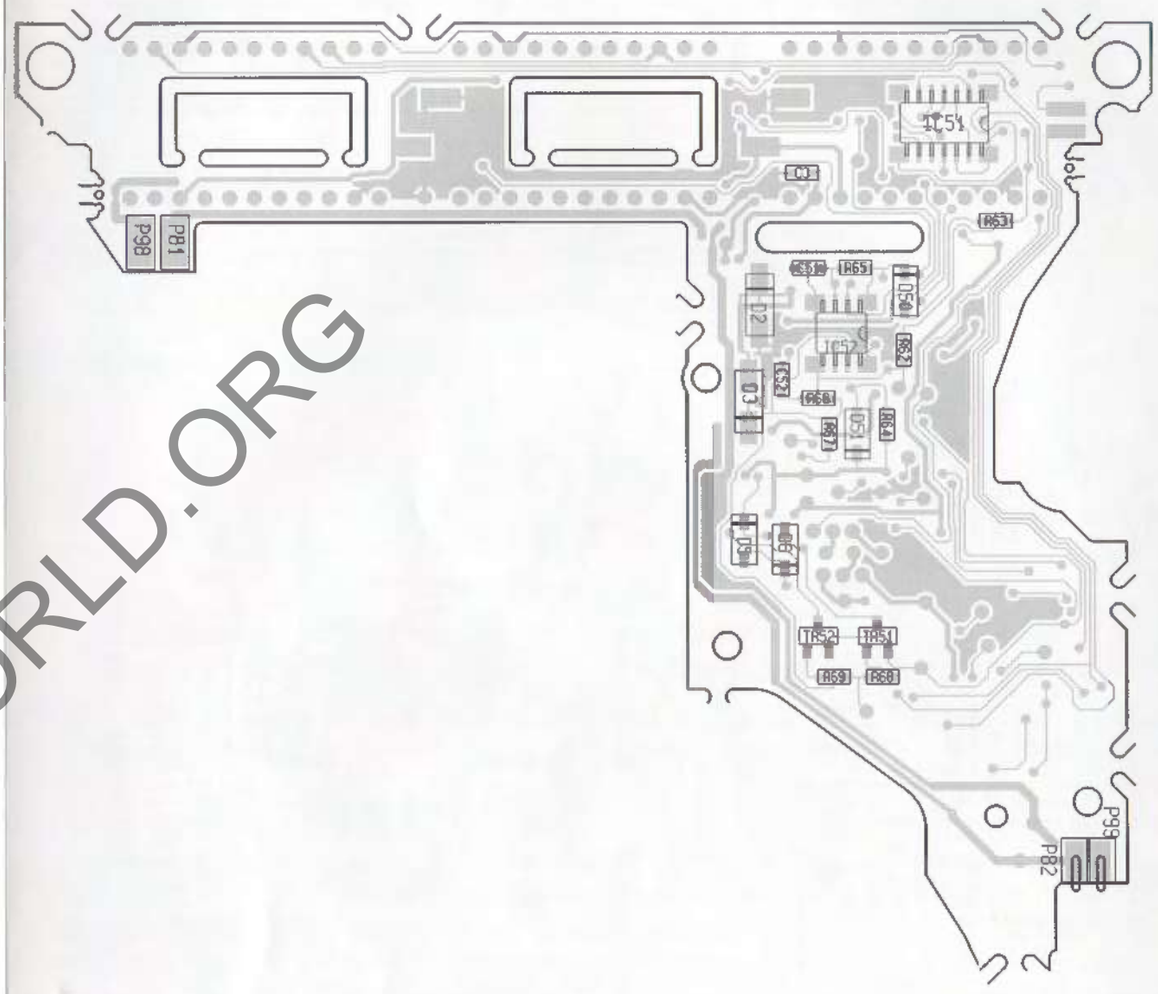


2 - 32
PCB DRAWINGS

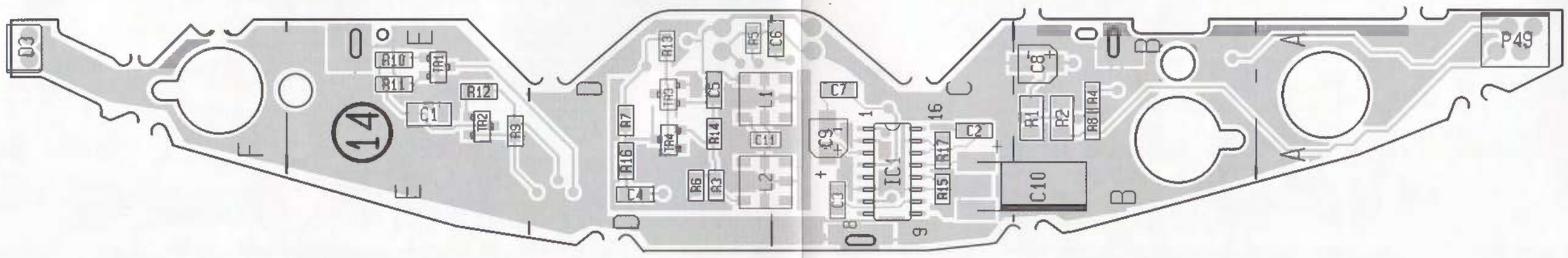
2 - 32

PCB 7, Display (old version), 2 layer PCB





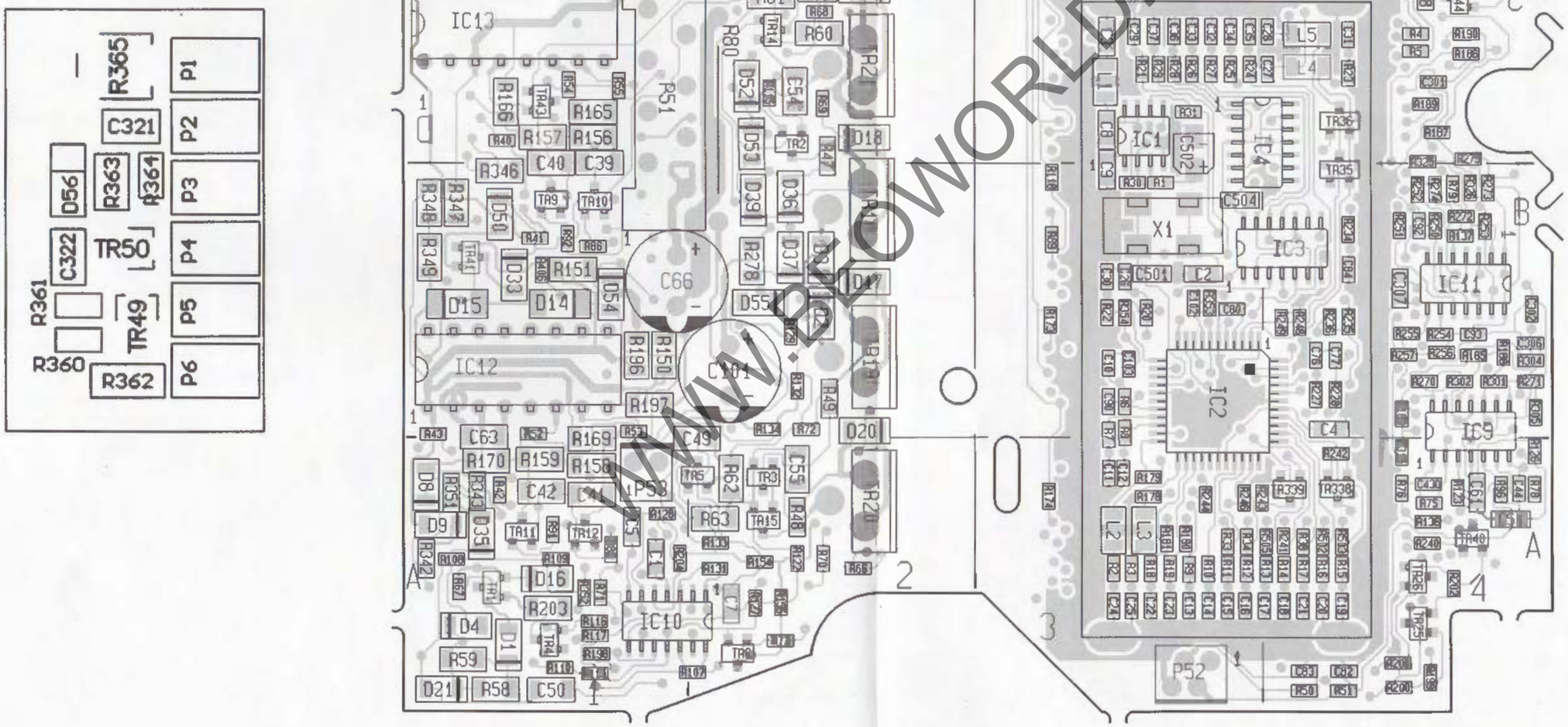
PCB 14, IR Receiver, 4 layer PCB



2 - 33
PCB DRAWINGS

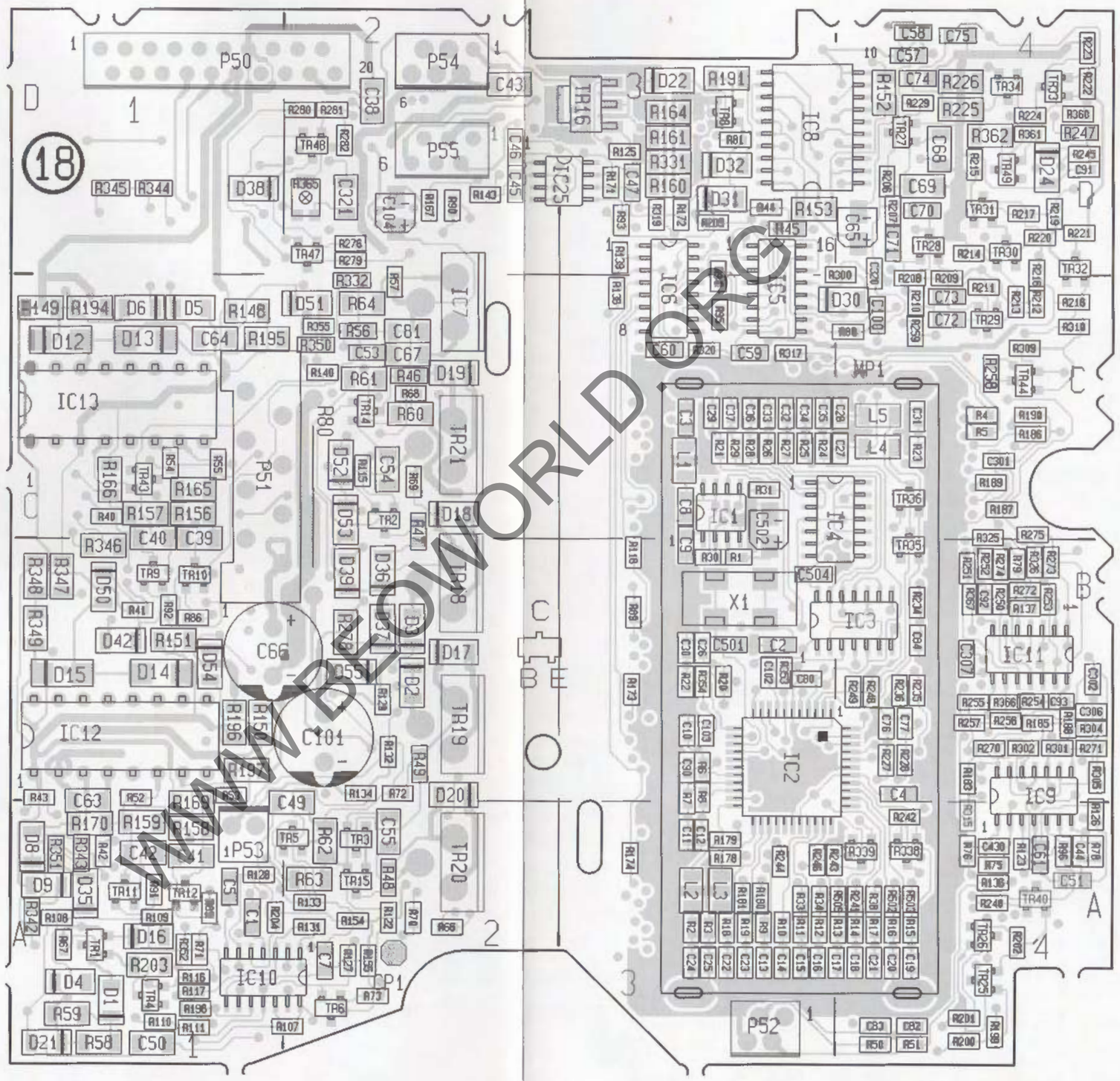
2 - 33
PCB DRAWINGS

PCB 18, Motor Control (old version), 4 layer PCB



2 - 34
PCB DRAWINGS
2 - 34

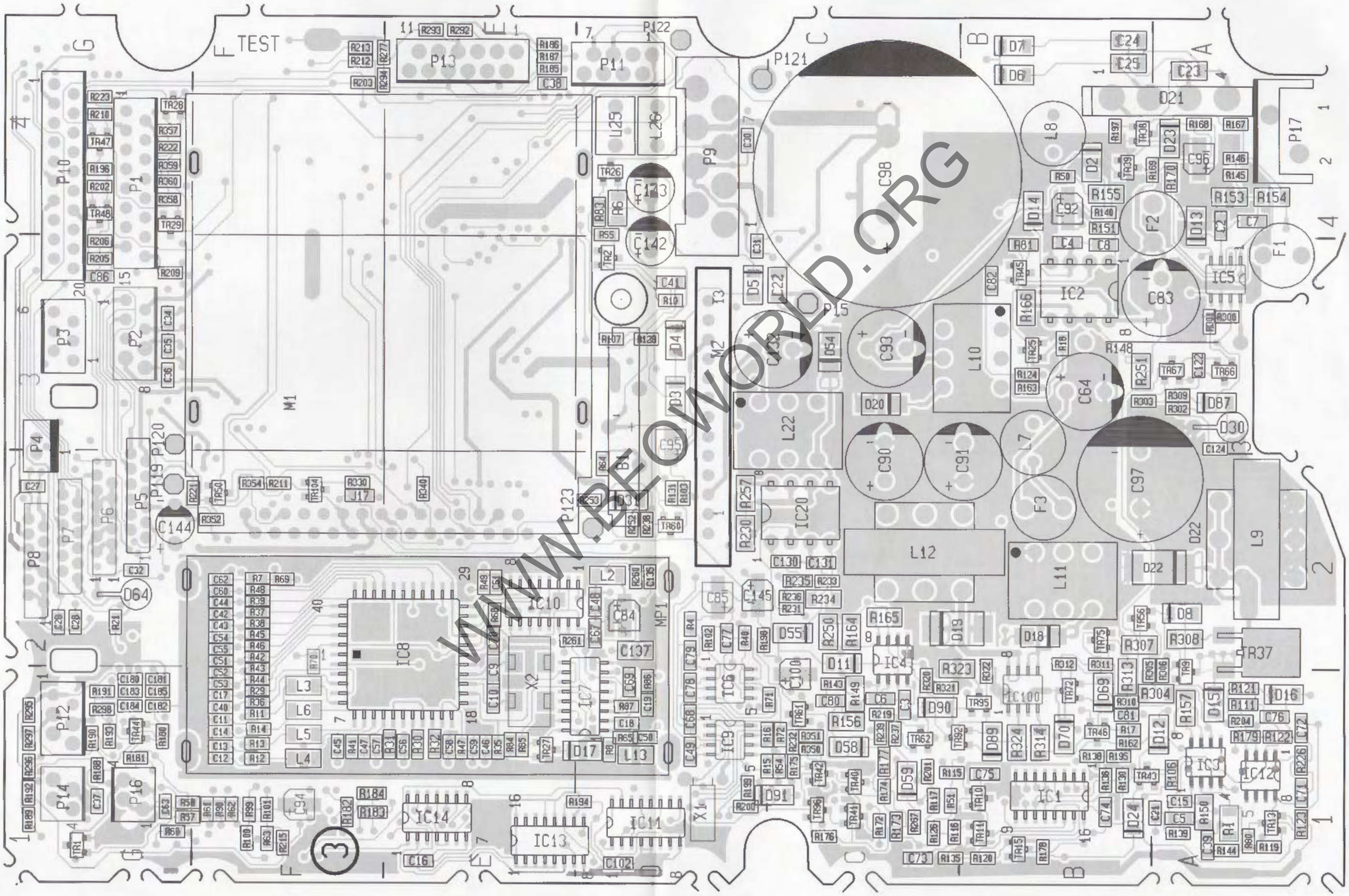
PCB 18, Motor Control (from version L), 4 layer PCB



2 - 35
PCB DRAWINGS

2 - 35
PCB DRAWINGS

PCB 3, Microcomputer and Power Supply, 4 layer PCB



PCB 1, New Version
FM/AM, RF IF Decoder, RDS

8005354, type 2521, 2522, 2525
8005355, type 2523
8005356, type 2524
8005351, type 2526, 2527, 2530
8005352, type 2528
8005353, type 2529

- • *Only in type 2526, 2527, 2528, 2529 and 2530*
- ¤ *Only in type 2521, 2522, 2525, 2526, 2527, 2530*

L1	8021128	560µH, only in type 2523	L5	8020851	Coil 560µH 10%
L2	8020992	Coil 340µH	L101	8021128	Coil 560µH
	8021154	Coil 324µH, only in type 2524	L102-L103	8021127	Coil 10.7MHz
L3	8020993	Coil 2.6mH, only in type 2521, 2522, 2525	L104	8020989	Coil 450kHz
			L201	8020821	Coil 2.2µH 5%
L4	8020994	Coil 106µH	L204-L205	8020821	Coil 2.2µH 5%
	8021148	Coil AM, only in type 2523, 2524			

X101	8030279	Crystal 456kHz	X201	8090206	Crystal 8.664MHz
X102	8030299	Crystal 450kHz	X202	8090209	Crystal 7.2MHz

BP1-BP2	8030251	Cer. filter 10.7MHz	BP4	8030251	Cer. filter 10.7MHz
			BP101	8030248	Cer. filter 450kHz
BP3	8030266	Cer. filter 10.7MHz			

TU1	8050147	Tuner
	8050150	Tuner only for type 2524, 2529

P150-P151	7211124	Socket, 4 pole	P152	7221082	Plug, 2 pole
			P155	7211154	Socket
P150	7211125	Socket, 6 pole			

IC101Δ	8342538	**151**	LA1836M	IC204Δ	8341409	**151**	LC7218M
IC102-IC104Δ	8341022	**138**	4558	IC205-IC207Δ	8342668	**151**	LM2931
IC201Δ	8341747	**138**	TL7705BCD	IC301Δ•	8342568	**151**	SAA6579T
IC202Δ*	8342859	**147**	µP 83C652	IC302Δ•	8342848	**147**	RDS dec. CCR912

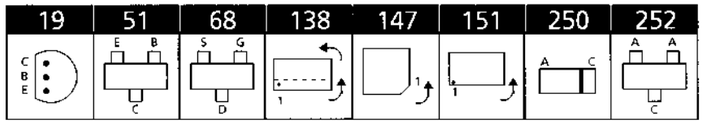
TR2-TR4	8320740	**051**	BF840	TR101	8320755	**051**	BC847B
				TR102•	8320755	**051**	BC847B
TR5	8320950	**051**	BC850C	TR104	8321080	**051**	FMMT491A
TR6	8320936	**051**	BC847C	TR106	8321080	**051**	FMMT491A
TR7	8320611	**051**	BF512	TR109	8320755	**051**	BC847B
TR8-TR9¤	8320752	**051**	BC817-40	TR110	8320811	**051**	BC857B
				TR201	8320755	**051**	BC847B
TR10¤	8320936	**051**	BC847C	TR202	8320755	**051**	BC847B
TR11-TR12	8320755	**051**	BC847B	TR203	8320811	**051**	BC857B
				TR204-	8320856	**068**	2N7002
TR13-TR14¤	8320755	**051**	BC847B	TR205			
				TR206	8321170	**019**	FZT690B
TR15	8320950	**051**	BC850C	TR207	8320752	**051**	BC817-40
TR16	8320936	**051**	BC847C				

D1-D2	8300895	**252**	BAV70	D205	8300482	**250**	LL4148, only in type 2523, 2524, 2528 and 2529
D3	8301007	**151**	HN1V02H				
D201	8300687	**250**	Z2.7V 5%				
D203	8300482	**250**	LL4148, only in type 2423, 2529	D207	8300895	**252**	BAV70
				D208	8300520	**250**	Z6.8V 5%
D204	8300482	**250**	LL4148, only in type 2521, 2522, 2524, 2526, 2527 and 2529	D209	8300894	**252**	BAW 56

R6	5013232	390Ω	1% 1/16W	R34	5013247 6.8kΩ 1% 1/16W
R10-R15	5013243	3.3kΩ	1% 1/16W	R35	5013244 3.9kΩ 1% 1/16W
				R40	5013232 390Ω 1% 1/16W
R17	5013232	390Ω	1% 1/16W	R50	5013248 8.2kΩ 1% 1/16W
R22	5013264	180kΩ	1% 1/16W	R59	5013248 8.2kΩ 1% 1/16W
R23	5013223	68Ω	1% 1/16W	R101	5013247 6.8kΩ 1% 1/16W
R25	5013238	1.2kΩ	1% 1/16W	R102	5013251 15kΩ 1% 1/16W
R30	5013247	6.8kΩ	1% 1/16W	R103	5013248 8.2K¤ 1% 1/16W

→

LIST OF ELECTRICAL PARTS



Resistors not referred to are standard, see page 3-18 and 3-19.
Δ Indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

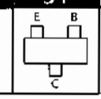
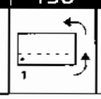
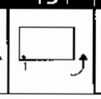
PCB 1, FM/AM, RF IF Decoder
8005293, type 2521, 2522, 2525
8005320, type 2523
8005319, type 2524

IC101Δ	8342538	**151**	LA1836M	IC203Δ	8342620	**151**	LM78L05ACM
IC102-IC104Δ	8341022	**138**	4558	IC204Δ	8341409	**151**	LC7218M
				IC205-IC207Δ	8342668	**151**	LM2931
IC201Δ	8341747	**138**	TL7705BCD				
IC202Δ*	8342712	**147**	83C652				

TR2-TR4	8320740	**051**	BF840	TR101	8320755	**051**	BC847B
				TR104	8321080	**051**	FMMT491A
TR5	8320950	**051**	BC850C	TR106	8321080	**051**	FMMT491A
TR6	8320936	**051**	BC847C	TR109	8320755	**051**	BC847B
TR7	8320611	**051**	BF512	TR110	8320811	**051**	BC857B
TR8-TR9	8320752	**051**	BC817-40, only in type 2521, 2522, 2525	TR201-TR202	8320755	**051**	BC847B
				TR203	8320811	**051**	BC857B
TR10	8320936	**051**	BC847C, only in type 2521, 2522, 2525	TR204	8320856	**068**	2N7002
				TR205			
				TR206	8321095	**019**	ZTX690
TR11-TR12	8320755	**051**	BC847B				
TR13-TR14	8320755	**051**	BC847B, only in type 2521, 2522, 2525				

D1-D2	8300895	**252**	BAV70	D205	8300482	**250**	LL4148, only in type 2523, 2524
D3	8301007	**151**	HN1V02H	D207	8300895	**252**	BAV70
D201	8300687	**250**	Z2.7V 5%	D208	8300520	**250**	Z6.8V 5%
D203	8300482	**250**	LL4148, only in type 2524	D209	8300894	**252**	BAW 56
D204	8300482	**250**	LL4148, only in type 2521, 2522, 2524, 2525				

R6	5013232	390Ω	1% 1/16W	R127	5011996 8.25kΩ 1% 1/8W
R10-R15	5013243	3.3kΩ	1% 1/16W	R128	5013244 3.9kΩ 1% 1/16W
				R131	5011879 9.09kΩ 1% 1/8W
R17	5013232	390Ω	1% 1/16W	R132	5012391 52.3kΩ 1% 1/10W
R22	5013264	180kΩ	1% 1/16W	R138	5013219 33Ω 1% 1/16W
R25	5013239	1.5kΩ	1% 1/16W	R139	5011879 9.09kΩ 1% 1/8W
R36	5013247	6.8kΩ	1% 1/16W	R144	5011752 12.7kΩ 1% 1/8W
R40	5013232	390Ω	1% 1/16W	R145	5011858 7.68kΩ 1% 1/4W
R101	5013247	6.8kΩ	1% 1/16W	R146	5011857 4.42kΩ 1% 1/4W
R102	5013251	15kΩ	1% 1/16W	R147	5011996 8.25kΩ 1% 1/8W
R103	5013248	8.2kΩ	1% 1/16W	R148	5013244 3.9kΩ 1% 1/16W
R106	5370470	Pot. 10kΩ		R151	5011879 9.09kΩ 1% 1/8W
R107	5013242	2.7kΩ	1% 1/16W	R152	5012391 52.3kΩ 1% 1/10W
R109	5370470	Pot. 10kΩ		R158	5013219 33Ω 1% 1/16W
R112	5370470	Pot. 10kΩ		R159	5011879 9.09kΩ 1% 1/8W
R115-R116	5013243	3.3kΩ	1% 1/16W	R203	5024003 47Ω		
				R207	5011595 26.7kΩ 1% 1/8W
R117	5013239	1.5kΩ	1% 1/16W	R208	5011601 200kΩ 1% 1/8W
R122-R123	5023007	19.6kΩ	1% 1/4W	R209	5011595 26.7kΩ 1% 1/8W
				R210	5011601 200kΩ 1% 1/8W
R124	5011752	12.7kΩ	1% 1/8W	R211	5011595 26.7kΩ 1% 1/8W
R125	5011858	7.68kΩ	1% 1/4W	R212	5011880 130kΩ 1% 1/8W
R126	5011857	4.42kΩ	1% 1/4W		

18	51	138	151				
							

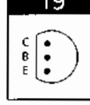
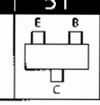
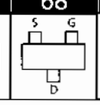
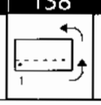
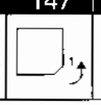
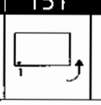
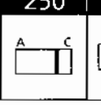
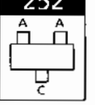
Resistors not referred to are standard, see page 3-18 and 3-19.
Δ Indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

R106	5370470	Pot.10kΩ
R107	5013242	2.7kΩ 1% 1/16W
R109	5370470	Pot. 10kΩ
R112	5370470	Pot. 10kΩ
R115-	5013243	3.3kΩ 1% 1/16W
R116		
R117	5013239	1.5kΩ 1% 1/16W
R122-	5023007	19.6kΩ 1% 1/4W
R123		
R124	5011752	12.7kΩ 1% 1/8W
R125	5011858	7.68kΩ 1% 1/4W
R126	5011857	4.42kΩ 1% 1/4W
R127	5011996	8.25kΩ 1% 1/8W
R128	5013244	3.9kΩ 1% 1/16W
R131	5011879	9.09kΩ 1% 1/8W
R132	5012391	52.3kΩ 1% 1/10W
R136	5013223	68Ω 1% 1/16W
R138	5013219	33Ω 1% 1/16W
R139	5011879	9.09kΩ 1% 1/8W
R144	5011752	12.7kΩ 1% 1/8W
R145	5011858	7.68kΩ 1% 1/4W
R146	5011857	4.42kΩ 1% 1/4W
R147	5011996	8.25kΩ 1% 1/8W
R148	5013244	3.9kΩ 1% 1/16W
R151	5011879	9.09kΩ 1% 1/8W
R152	5012391	52.3kΩ 1% 1/10W
R156	5013223	68Ω 1% 1/16W
R158	5013219	33Ω 1% 1/16W
R159	5011879	9.09kΩ 1% 1/8W
R207	5011595	26.7kΩ 1% 1/8W
R208	5011601	200kΩ 1% 1/8W
R209	5011595	26.7kΩ 1% 1/8W
R210	5011601	200kΩ 1% 1/8W
R211	5011595	26.7kΩ 1% 1/8W
R212	5011880	130kΩ 1% 1/8W

C3	4011122	10nF 10% 50V
C5	4011122	10nF 10% 50V
C7	4011122	10nF 10% 50V
C9-	4011122	10nF 10% 50V
C11		
C13	4001143	470pF 5% 50V
C15-	4001143	470pF 5% 50V
C16		
C17	4001135	100pF 5% 50V
C19	4130633	150nF 5% 63V
C20	4011122	10nF 10% 50V
C21	4010209	47nF 10% 50V
C22	4201292	2.2µF 20% 50V
C23	4011118	4.7nF 10% 50V
C24	4130633	150nF 5% 63V
C25	4010170	2.2nF 10% 50V, only in type 2523,2528
C26	4340040	Trim. 3-10pF
	4340041	Trim. 6-30pF, only in type 2524, 2529
C27	4201163	10µF 20% 35V
C28	4010220	100nF 10% 50V
C29¤	4340041	Trim. 6-30pF
C30¤	4001134	82pF 5% 50V
C31-	4000233	220pF 5% 50V
C32¤		
C34¤	4340041	Trim. 6-30pF
C35¤	4001128	27pF 5% 50V
C36	4000432	180pF 2% 50V
	4001084	560pF 2% 50V, only in type 2528 and 2529
C37¤	4000347	330pF 2% 50V
C38	4011118	4.7nF 10% 50V
C39	4010209	47nF 10% 50V
C40	4011122	10nF 10% 50V
C66	4200916	4.7µF 20% 25V
C101	4001135	100pF 5% 50V
C102	4201163	10µF 20% 35V
C103	4201257	1µF 20% 50V
C104	4201162	0.47µF 20% 50V
C105	4200916	4.7µF 20% 25V
C106	4000431	2.2nF 2% 50V
	4000459	3.3nF 5% 50V, only in type 2523, 2528
C107	4201164	47µF 20% 10V
C108-	4011126	22nF 10% 25V
C109		
C110	4201161	3.3µF 20% 50V
C111	4011126	22nF 10% 25V
C112	4011118	4.7nF 10% 50V
C113	4201164	47µF 20% 10V
C114-	4201257	1µF 20% 50V
C115		
C116	4200916	4.7µF 20% 25V
C117	4000431	2.2nF 2% 50V
	4000459	3.3nF 5% 50V, only in type 2523, 2528
C118	4011126	22nF 10% 25V
C119	4201163	10µF 20% 35V
C120	4000351	1.5nF 5% 50V
C122	4001116	2.7pF 5% 50V
C123	4001123	10pF 50V
C124•	4001134	82pF 5% 50V
C125	4011122	10nF 10% 50V
C127-	4000391	1.0nF 2% 50V
C128		
C129	4000431	2.2nF 2% 50V
C130	4000391	1.0nF 2% 50V
C131	4001130	39pF 5% 50V
C132	4001118	3.9pF 5% 50V
C133	4000431	2.2nF 2% 50V
C135	4000392	100pF 2% 50V
C136	4201292	2.2µF 20% 50V
C138	4011110	1.0nF 10% 50V
C139	4011122	10nF 10% 50V
C140-	4011126	22nF 10% 25V
C141		
C147-	4000391	1.0nF 2% 50V
C148		
C149	4000431	2.2nF 2% 50V

- *Only in type 2526, 2527, 2528, 2529 and 2530*

¤ *Only in type 2521, 2522, 2525, 2526, 2527, 2530*

19	51	68	138	147	151	250	252
							

Resistors not referred to are standard, see page 3-18 and 3-19.
Δ Indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

C3	4011122	10nF 10% 50V
C5	4011122	10nF 10% 50V
C7	4011122	10nF 10% 50V
C9-	4011122	10nF 10% 50V
C11		
C13	4001143	470pF 5% 50V
C15-	4001143	470pF 5% 50V
C16		
C17	4001135	100pF 5% 50V
C19	4010220	100nF 10% 50V
C20	4011122	10nF 10% 50V
C21	4010209	47nF 10% 50V
C22	4201257	1µF 20% 50V
C23	4011118	4.7nF 10% 50V
C24	4010220	100nF 10% 50V
C25	4010170	2.2nF 10% 50V, only in type 2523
C26	4340040	Trim. 3-10pF
	4340041	Trim. 6-30pF, only in type 2524
C27	4201173	10µF 20% 50V
	4010220	100nF 10% 50V, only in type 2523, 2524
C28	4010220	100nF 10% 50V
C29	4340041	Trim. 6-30pF, only in type 2521, 2522, 2525
C30	4001134	82pF 5% 50V, only in type 2521, 2522, 2525
C31-	4000233	220pF 5% 50V, only in type 2521, 2522, 2525
C32		
C33	4001124	12pF 5% 50V, only in type 2521, 2522, 2525
C34	4340040	Trim. 3-10pF, only in type 2521, 2522, 2525
C35	4001128	27pF 5% 50V, only in type 2523, 2524
C36	4000432	180pF 2% 50V
	4001084	560pF 2% 50V, only in type 2523
C37	4000347	330pF 2% 50V, only in type 2521, 2522, 2525
C101	4001135	100pF 5% 50V
C102	4201163	10µF 20% 35V
C103	4201257	1µF 20% 50V
C104	4201162	0.47µF 20% 50V
C105	4200916	4.7µF 20% 25V
C106	4000431	2.2nF 2% 50V
	4000459	3.3nF 5% 50V, only in type 2523
C107	4201164	47µF 20% 10V
C108-	4011126	22nF 10% 25V
C109		
C110	4201161	3.3µF 20% 50V
C111	4011126	22nF 10% 25V
C112	4011118	4.7nF 10% 50V
C113	4201164	47µF 20% 10V
C114-	4201257	1µF 20% 50V
C115		
C116	4200916	4.7µF 20% 25V
C117	4000431	2.2nF 2% 50V
	4000459	3.3nF 5% 50V, only in type 2523
C118	4011126	22nF 10% 25V
C119	4201163	10µF 20% 35V
C120	4011110	1.0nF 10% 50V
C121	4001134	82pF 5% 50V
C122	4001116	2.7pF 5% 50V
C123	4001134	82pF 5% 50V
C125	4011122	10nF 10% 50V
C127-	4000391	1.0nF 2% 50V
C128		
C129	4000431	2.2nF 2% 50V
C130	4000391	1.0nF 2% 50V
C131	4001130	39pF 5% 50V
C132	4001118	3.9pF 5% 50V
C133	4000431	2.2nF 2% 50V
C135	4000392	100pF 2% 50V
C136	4201292	2.2µF 20% 50V
C139	4011122	10nF 10% 50V
C140-	4011126	22nF 10% 25V
C141		
C147-	4000391	1.0nF 2% 50V
C148		
C149	4000431	2.2nF 2% 50V
C150	4000391	1.0nF 2% 50V
C151	4001130	39pF 5% 50V
C152	4001118	3.9pF 5% 50V
C153	4000431	2.2nF 2% 50V
C155	4000392	100pF 2% 50V
C156	4201292	2.2µF 20% 50V
C159	4011122	10nF 10% 50V
C201-	4011122	10nF 10% 50V
C202		
C203	4201257	1µF 20% 50V
C204	4011110	1.0nF 10% 50V
C205-	4201257	1µF 20% 50V
C206		
C209	4011122	10nF 10% 50V
C210	4201257	1µF 20% 50V
C211	4010220	100nF 10% 50V
C212	4011110	1.0nF 10% 50V
C213-	4001131	47pF 5% 50V
C214		
C215-	4001128	27pF 5% 50V
C216		
C217-	4011110	1.0nF 10% 50V
C222		
C223	4011122	10nF 10% 50V
C224-	4001128	27pF 5% 50V
C225		
C226-	4001135	100pF 5% 50V
C227		
C230-	4201416	3.3µF 20% 16V
C232		
C233-	4011110	1.0nF 10% 50V
C234		
C235	4200916	4.7µF 20% 25V
C236	4011110	1.0nF 10% 50V

C150	4000391	1.0nF 2% 50V	C223	4011122	10nF 10% 50V
C151	4001130	39pF 5% 50V	C224-	4001128	27pF 5% 50V
C152	4001118	3.9pF 5% 50V	C225		
C153	4000431	2.2nF 2% 50V	C226-	4001135	100pF 5% 50V
C155	4000392	100pF 2% 50V	C227		
C156	4201292	2.2µF 20% 50V	C229	4010209	47nF 10% 50V
C157	4011110	1.0nF 10% 50V	C230-	4201416	3.3µF 2% 16V
C159	4011122	10nF 10% 50V	C232		
C201-	4011122	10nF 10% 50V	C233-	4011110	1.0nF 10% 50V
C202			C234		
C203	4201257	1µF 20% 50V	C235	4200916	4.7µF 20% 25V
C204	4011110	1.0nF 10% 50V	C236	4011110	1.0nF 10% 50V
C209	4011122	10nF 10% 50V	C301•	4011110	1.0nF 10% 50V
C210	4201257	1µF 20% 50V	C302•	4001141	330pF 5% 50V
C211	4010220	100nF 10% 50V	C303-	4011122	10nF 10% 50V
C212	4011110	1.0nF 10% 50V	C304•		
C213-	4001131	47pF 5% 50V	C305•	4201292	2.2µF 20% 50V
C214			C306•	4001131	47pF 5% 50V
C215-	4001128	27pF 5% 50V, only in	C307•	4001134	82pF 5% 50V
C216		type 2521, 2522,	C308•	4001143	470pF 5%
		2523, 2524 and 2525	C309•	4011122	10nF 10% 50V
C217-	4011110	1.0nF 10% 50V	C310•	4011110	1.0nF 10% 50V
C222					

L1	8021128	Coil 560µH, only in	L5	8021128	Coil 560µH
		type 2523 and 2528	L101	8021128	Coil 560µH
L2¤	8020992	Coil 340µH	L102-	8021161	Coil 11.32MHz
L2	8021154	Coil 324µH, only in type	L103		
		2524 and 2529	L104	8020989	Coil 450kHz
L3¤	8020993	Coil 2.6mH	L201	8020821	Coil 2.2µH 5%
L4	8020994	Coil 106µH	L204-	8020821	Coil 2.2µH 5%
	8021148	Coil AM, only in	L205		
		type 2523, 2524, 2528			
		and 2529			

X101	8030279	Crystal 456kHz	X202	8090209	Crystal 7.2MHz
X102	8030299	Crystal 450kHz	X301•	8090206	Crystal 8.664MHz
X201	8090206	Crystal 8.664MHz, only			
		in type 2521, 2522, 2523,			
		2524 and 2525			

BP1-	8030251	Cer. filter 10.7MHz	BP4	8030251	Cer. filter 10.7MHz
BP2			BP101	8030248	Cer. filter 450kHz
BP3	8030266	Cer. filter 10.7MHz			

F201	6604039	Fuse 200mA F 32V

TU1	8050147	Tuner
	8050150	Tuner, only for type 2524 and 2529

P150	7211125	Socket, 6pole	P152	7221082	Plug, 2 pole
P151	7211124	Socket, 4 pole	P155	7211154	Socket, coax

PCB 2, 8005310
Input/output Select and Sound adjustment

IC1-	8341025	**138** 4094B	IC6Δ	8340205	**151** LF347
IC2Δ			IC7-	8341022	**138** 4558
IC3Δ	8341059	**138** 4052	IC10Δ		
IC4Δ	8342238	**151** TDA7318D	IC11Δ	8342617	**138** ICL7660
IC5Δ	8341231	**151** LF347	IC12Δ	8341022	**138** 4558

TR1	8320512	**018** BC338-25	TR15-	8320941	**051** 2SC4213
TR2	8320523	**018** BC328-25	TR18		
TR3-	8320755	**051** BC847B	TR19-	8321080	**051** FMMT491A
TR8			TR26		
TR9-	8320811	**051** BC857B	TR27-	8320755	**051** BC847B
TR14			TR28		

→

C130	4000414	150pF 5% 50V	C134-	4010271	10nF 10% 50V
C131	4000457	1.5nF 10% 50V	C135		
C132	4000414	150pF 5% 50V	C150	4201359	3.3µF 20% 16V
C133	4000457	1.5nF 10% 50V			

L1-	8020705	Coil 100µH 10%	L5-	8020821	Coil 2.2µH 5%
L4			L6		

P1	7210418	Socket, 7 pole	P21	7211186	Socket, 8 pole
P2-	7210689	Socket, 8 pole	P22	7211170	Socket, 16 pole
P3			P23	7500296	Contact pin, 1 pol
P4	7210904	Socket, 16 pole	P24	7211159	Socket, 4 pole
P20	7211159	Socket, 4 pole			

PCB 3, 8005297
Microcomputer and Power Supply

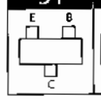
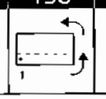
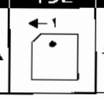
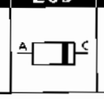
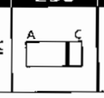
IC1Δ	8341025	**138** 4094	IC10Δ	8342546	**138** 74HC40103
IC2Δ	8341225	**151** LM3578	IC11Δ	8342095	**138** 74HC138
IC3-	8342673	**151** LM3578	IC12Δ	8341812	**138** LM393
IC5Δ			IC13Δ	8342297	**138** 74HC147
IC6Δ	8341747	**138** TL7705BCD	IC14Δ	8342619	**138** 74HC08
IC7Δ	8342547	**138** 74HC4538	IC20Δ	8341225	**151** LM3578
IC8Δ*	8342648	**152** 83C524	IC100Δ	8342797	**138** SI9948DY
IC9Δ	8342397	**138** MK41T56			

TR1	8320752	**051** BC817-40	TR44	8320971	**051** BC807-40
TR2	8320755	**051** BC847B	TR45-	8320755	**051** BC847B
TR9	8320936	**051** BC847C	TR47		
TR10-	8320755	**051** BC847B	TR48	8320811	**051** BC857B
TR11			TR50	8320856	**068** 2N7002
TR13	8320755	**051** BC847B	TR56	8320811	**051** BC857B
TR15	8320755	**051** BC847B	TR60-	8320755	**051** BC847B
TR25	8320755	**051** BC847B	TR62		
TR26-	8320811	**051** BC857B	TR66-	8320740	**051** BF840
TR27			TR67		
TR28-	8320856	**068** 2N7002	TR72	8320936	**051** BC847C
TR29			TR75	8320811	**051** BC857B
TR37	8321125	**069** IRFR9024	TR92	8320936	**051** BC847C
TR38-	8320755	**051** BC847B	TR95	8320811	**051** BC857B
TR40			TR96	8320755	**051** BC847B
TR42-	8320755	**051** BC847B	TR104	8320755	**051** BC847B
TR43					

D2	8300577	**250** Z3.9V 2%	D23-	8300577	**250** Z3.9V 2%
D3-	8300606	**250** LL4448	D24		
D7			D30	8300154	**250** Z6.8V 5%
D8	8300818	**250** BAS85	D31	8300606	**250** LL4448
D11-	8300606	**250** LL4448	D54	8300914	**256** SS14
D14			D55	8300606	**250** LL4448
D15	8300940	**250** Z10V 2%	D58	8300606	**250** LL4448
D16	8300563	**250** Z5.1V 2%	D59		
D17	8300645	**250** Z3.3V 2%	D64	8300053	**250** Z15V 5%
D18	8300914	**256** SS14	D69	8300818	**250** BAS85
D19	8300922	**260** SS34	D70	8300940	**250** Z10V 2%
D20	8300914	**256** SS14	D89	8300818	**250** BAS85
D21	8300949	GBU8D	D90	8300940	**250** Z10V 2%
D22	8300922	**260** SS34	D91	8300606	**250** LL4448

R1	5011880	130kΩ 1% 1/8W	R148	5012142	60mΩ
R6	5021484	100Ω 1% 1/4W	R149-	5012331	10kΩ 1% 1/10W
R60-	5013243	3.3kΩ 1% 1/16W	R151		
R61			R153	5012382	10kΩ 0.1% 1/4W
R62-	5013246	5.6kΩ 1% 1/16W	R154	5012175	43.2kΩ 1% 1/4W
R63			R155	5021374	42.2kΩ 1% 1/4W
R64	5013243	3.3kΩ 1% 1/16W	R156	5011843	80.6kΩ 1% 1/8W
R106	5012242	47kΩ 1% 1/10W	R157	5021497	0.33Ω 5% 1/4W
R111	5012242	47kΩ 1% 1/10W	R164-	5021542	0.22Ω 5% 1/4W
R121-	5012240	100kΩ 1% 1/10W	R165		
R123			R166	5021497	0.33Ω 5% 1/4W

→

51	138	152	209	250			
							

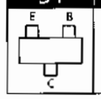
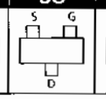
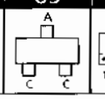
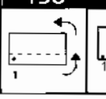
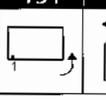
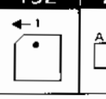
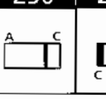
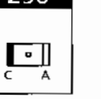
Resistors not referred to are standard, see page 3-18 and 3-19.
Δ Indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

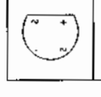
R212-R213	5013243	3.3kΩ 1% 1/16W	R304	5012200	2.2kΩ 1% 1/4W
R230	5021497	0.33Ω 5% 1/4W	R307-R308	5021484	100Ω 1% 1/4W
R234	5012331	10kΩ 1% 1/10W	R313-R314	5021484	100Ω 1% 1/4W
R235	5012392	110kΩ 1% 1/10W	R323-R324	5021484	100Ω 1% 1/4W
R250	5021542	0.22Ω 5% 1/4W	R340	5013247	6.8kΩ 1% 1/16W
R251	5021497	0.33Ω 5% 1/4W			
R257	5021497	0.33Ω 5% 1/4W			

C1	4011110	1.0nF 10% 50V	C72	4010272	22nF -20+80% 50V
C2-C5	4000442	2.2nF 5% 50V	C73	4010321	470nF -20+80% 16V
C6-C8	4000404	22pF 5% 50V	C74	4010274	100nF -20+80% 25V
C9-C10	4000405	27pF 5% 50V	C75	4010314	220nF -20+80% 25V
C11	4001131	47pF 5% 50V	C76	4010271	10nF 10% 50V
C14			C77-C79	4010274	100nF -20+80% 25V
C15	4000408	47pF 5% 50V	C80	4010273	47nF -20+80% 50V
C16	4010274	100nF -20+80% 25V	C81-C82	4010321	470nF -20+80% 16V
C17	4001141	330pF 5% 50V	C83	4201330	220µF 20% 50V
C18	4001139	220pF 5% 50V	C84	4200916	4.7µF 20% 25V
C19	4011110	1.0nF 10% 50V	C85	4200898	22µF 20% 6V3
C21	4000424	1nF 5% 50V	C86	4010314	220nF -20+80% 25V
C22	4010220	100nF 10% 50V	C90-C91	4201331	820µF 20% 25V
C23-C25	4010216	22nF 10% 100V	C92	4200916	4.7µF 20% 25V
C27-C32	4011110	1.0nF 10% 50V	C93	4201331	820µF 20% 25V
C34	4011110	1.0nF 10% 50V	C94-C95	4200916	4.7µF 20% 25V
C37			C96	4200898	22µF 20% 6V3
C38	4010274	100nF -20+80% 25V	C97	4201178	8200µF 20% 10V
C39	4010273	47nF -20+80% 50V	C98	4201179	15000µF 20% 50V
C40	4011110	1.0nF 10% 50V	C100	4200898	22µF 20% 6V3
C41	4010271	10nF 10% 50V	C102	4010274	100nF -20+80% 25V
C42-C47	4011110	1.0nF 10% 50V	C122	4010237	1.0nF 20% 50V
C48	4010274	100nF -20+80% 25V	C130	4000404	22pF 5% 50V
C49	4010272	22nF -20+80% 50V	C131	4000351	1.5nF 5% 50V
C50	4001139	220pF 5% 50V	C132	4201331	820µF 20% 25V
C51-C61	4011110	1.0nF 10% 50V	C135	4011110	1.0nF 10% 50V
C63	4011110	1.0nF 10% 50V	C137	4000289	15nF 10% 50V
C64	4201330	220µF 20% 50V	C142-C143	4201254	33µF 20% 16V
C67-C71	4010274	100nF -20+80% 25V	C144	4200972	4.7µF 20% 10V
			C145	4200916	4.7µF 20% 25V

F1	6600145	Fuse 5AT 250V
	6600137	Fuse 5AT 125V, only in type 2523, 2528
F2-F3	6600065	Fuse 1.6AT 250V
	6600116	Fuse 1.6AT 125V, only in type 2523, 2528

L2-L6	8020821	Coil 2.2µH 5%	L9	8020914	Coil 470µH
L7-L8	8020907	Coil 47µH 10%	L10	8021145	Coil 220µH
			L11	8021146	Coil 1mH
			L12	8020914	Coil 470µH

51	68	69	138	151	152	250	256
							

261							
							

Resistors not referred to are standard, see page 3-18 and 3-19.
Δ Indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

TR29	8320811	**051**	BC857B	TR41	8320755	**051**	BC847B
TR30-TR38	8320755	**051**	BC847B	TR42-TR47	8320811	**051**	BC857B
TR39-TR40	8320856	**068**	2N7002	TR48	8320899	**051**	BSS84

D1	8300520	**250**	Z6.8V 5%	D19	8300762	**250**	Z9.1V 2%
D2-D3	8300644	**250**	Z6.2V 2%	D20-D21	8300606	**250**	LL4448
D4-D8	8300606	**250**	LL4448	D22	8300520	**250**	Z6.8V 5%
D9	8300520	**250**	Z6.8V 5%	D23	8300799	**250**	BAS29
D10-D14	8300606	**250**	LL4448	D24-D28	8300606	**250**	LL4448
D15-D16	8300636	**250**	Z7.5V 5%	D29	8300520	**250**	Z6.8V 5%
D17-D18	8300723	**250**	Z8.2V 2%	D30	8300606	**250**	LL4448
				D36			
				D37	8300607	**250**	Z3.3V 5%

R135-R148	5012331	10kΩ 1% 1/10W	R237-R238	5011599	49.9kΩ 1% 1/8W
R151-R152	5012331	10kΩ 1% 1/10W	R250	5012290	4.87kΩ 1% 1/10W
R227-R228	5021334	3.32kΩ 1% 1/4W	R251	5012297	5.62kΩ 1% 1/10W
			R253	5012290	4.87kΩ 1% 1/10W
			R254	5012297	5.62kΩ 1% 1/10W

C1-C4	4000420	470pF 5% 50V	C57-C58	4010274	100nF -20+80% 25V
C5-C6	4000351	1.5nF 5% 50V	C59-C73	4010271	10nF 10% 50V
C7-C14	4000408	47pF 5% 50V	C74-C85	4010274	100nF -20+80% 25V
C17-C22	4000412	100pF 5% 50V	C86-C89	4130307	150nF 10% 63V
C33-C38	4000416	220pF 5% 50V	C90-C107	4200916	4.7µF 20% 25V
C41-C42	4000424	1nF 5% 50V	C108	4010314	220nF -20+80% 25V
C43-C44	4010237	1.0nF 20% 50V	C109	4010273	47nF -20+80% 50V
C45-C46	4000424	1nF 5% 50V	C110	4010269	6.8nF 10% 50V
C47	4000416	220pF 5% 50V	C111-C112	4201163	10µF 20% 35V
C48	4010274	100nF -20+80% 25V	C113-C114	4201164	47µF 20% 10V
C49-C50	4010237	1.0nF 20% 50V	C115	4010269	6.8nF 10% 50V
C51-C52	4000424	1nF 5% 50V	C116	4201391	10µF 20% 50V
C53	4010237	1.0nF 20% 50V	C117-C118	4000414	150pF 5% 50V
C54-C56	4010271	10nF 10% 50V	C119	4000423	820pF 5% 50V
			C120-C121	4201164	47µF 20% 10V
			C122	4201163	10µF 20% 35V

R109	5024000	1Ω
R113	5013041	432Ω 1% 1/16W
R115	5013041	432Ω 1% 1/16W
R116-R117	5013043	1.8kΩ 1% 1/16W
R118	5013244	3.9kΩ 1% 1/16W
R121	5013252	18kΩ 1% 1/16W
R126	5012376	620Ω 1% 1/10W

C1	4001120	5.6pF 5% 50V
C2	4000400	10pF 5% 50V
C3	4001131	47pF 5% 50V
C6-C11	4001139	220pF 5% 50V
C12-C13	4001141	330pF 5% 50V
C14	4000421	560pF 5% 50V
C15	4011135	100nF -20%+80% 16V
C16-C17	4000421	560pF 5% 50V
C18	4010267	4.7nF 10% 50V
C20	4000424	1nF 5% 50V
C21-C22	4001139	220pF 5% 50V
C23-C25	4000424	1nF 5% 50V
C28	4010261	1.5nF 10% 50V
C29	4011122	10nF 10% 50V
C30	4011123	12nF 10% 25V
C31-C36	4011135	100nF -20%+80% 16V
C38	4011135	100nF -20%+80% 16V
C40-C41	4011135	100nF -20%+80% 16V
C43-C44	4011126	22nF 10% 25V
C45-C49	4011135	100nF -20%+80% 16V
C50	4011130	47nF 10% 16V
C51-C52	4010220	100nF 10% 50V
C53-C56	4011135	100nF -20%+80% 16V
C57	4010314	220nF -20%+80% 25V
C58	4201349	47µF 20% 10V
C60-C63	4201359	3.3µF 20%16V
C66	4201359	3.3µF 20%16V
C67	4201164	47µF 20% 10V
C68-C69	4201359	3.3µF 20%16V
C70-C71	4201348	1µF 10% 16V
C73	4201347	22µF 20% 10V
C74	4011135	100nF -20%+80% 16V
C76	4201349	47µF 20% 10V
C77-C78	4000420	470pF 5% 50V
C80	4011135	100nF -20%+80% 16V
C81	4011130	47nF 10% 16V
C82	4201359	3.3µF 20% 16V
C83	4011135	100nF -20%+80% 16V
C84	4011110	1.0nF 10% 50V
C86	4201359	3.3µF 20% 16V
C89	4001141	330pF 5% 50V
C90	4001138	180pF 5% 50V
C91-C92	4011135	100nF -20%+80% 16V
C93	4011119	5.6nF 10% 50V
C94	4011135	100nF -20%+80% 16V
C95	4001131	47pF 5% 50V
C96-C97	4011135	100nF -20%+80% 16V
C98	4001139	220pF 5% 50V
C101-C102	4001127	22pF 5% 50V
C103	4011110	1.0nF 10% 50V

L1	8020822	Coil 3.3µH 5%
L3-L4	8020705	100µH 10%

T1	8021159	Transformer, 2:1

X1	8030246	Crystal 12MHz
X2	8090157	Crystal 33.868MHz

P40	7210894	Socket, 14 pole
P42	7210895	Socket, 16 pole
P45	7221131	Plug, 4 pole

PCB 9, 8005312
Sledge Position

PE1Δ	8330388	TCVT1300

R1-R2	5011853	158Ω 1% 1/4W

P78	7211159	Socket, 4 pole

L13	8020821	Coil 2.2µH 5%	L25-L26	8020916	47µH 5%
L22	8021146	Coil 1mH			

X1	8090193	Crystal 32.768kHz
X2	8090200	Crystal 14.7456MHz

B1*	8700029	Lithium battery

MP1	3302352	Screen

P1	7211170	Socket, 16 pole	P11	7211186	Socket, 8 pole
P2	7211186	Socket, 8 pole	P12	7211177	Socket, 6 pole
P3	7211177	Socket, 6 pole	P13	7211204	Socket, 12 pole
P4	7220709	Plug, 2 pole	P14	7211159	Socket, 4 pole
P5-	7211123	Socket, 12 pole	P16	7211159	Socket, 4 pole
P8			P17	7221057	Plug, 2/3 pole
P9	7221133	Plug, 8 pole	P122-	7500296	Contact pin, 1 pol
P10	7211061	Socket, 20 pole	P123		

PCB 4, 8005311
Mains filter

L1	8022318	Coil 2X3.3mH

S1	7400433	Mains switch, 2 pole

P85	7221057	Plug, 2/3 pole

PCB 5, 8005298
Mains Relay

D1-D2	8300915	**209** GF1M, not in type 2523, 2528
D3	8300606	**250** LL4448

R2-R3	5011269	47Ω 2%

C1	4200821	1000µF -20+50% 6.3V, not in type 2523, 2528

RL1	7600120	Relay 5V

F1	6600084	Fuse 100mAT 250V
	6600148	Fuse 100mAT 125V, only in type 2523, 2528

P82	7221057	Plug 2/3 pole
P83	7211159	Socket, 4 pole
P84	7221163	Plug 4/3 pole

PCB 6, 8001842
Main microcomputer

IC1Δ*	8342651	**152** 27C040
IC4Δ	8342576	**152** EEPROM 28C64

PCB 7, 8005306
Display

IC1Δ	8342095	**138**	74HC138	IC8Δ	8341277	**138**	74HC14
IC2Δ	8342270	**138**	TIMER 555	IC50Δ	8341857	**138**	LM339
IC3Δ	8340740	**138**	4013	IC51Δ	8340433	**138**	74HC86
IC4-IC5Δ	8342681	**138**	SI9958DY	IC52Δ	8341812	**138**	LM393

TR50-TR52	8320755	**051** BC847B

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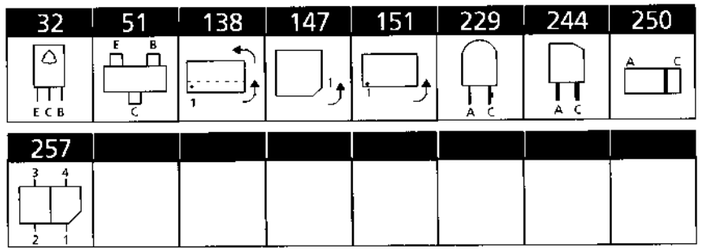


Resistors not referred to are standard, see page 3-18 and 3-19
Δ Indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

PCB 11, 8005295
Main Keyboard, right

S1-S4	7400429	Switch, 1 pol			
P97	7211136	Socket, 4 pole			

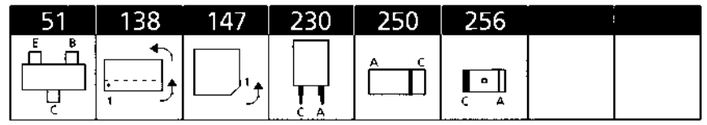
PCB 12, 8005296
Main Keyboard, left

S1-S4	7400429	Switch, 1 pol			
P72	7211177	Socket, 6 pole	P98	7211136	Socket, 4 pole
IC1A	8342095 **151**	74HC138	IC2Δ	8342297 **151**	74HC147
TR1	8320755 **051**	BC847B			
C1-C2	4010316	100nF 10% 25V	C4	4010271	10nF 10% 50V
P71	7211204	Socket, 12 pole			

PCB 13, 8005313
Secondary Keyboard

IC1Δ	8341165 **138**	U2506B			
TR1 TR2	8320755 **051** 8320811 **051**	BC847B BC857B	TR3-TR4	8320740 **051**	BF840
D1-D3	8330145 **244**	880nm Receive			
R5-R6	5013243	3.3kΩ 1% 1/16W			
C1 C2 C3-C5 C6	4000289 4000405 4000420 4010271	15nF 10% 50V 27pF 5% 50V 470pF 5% 50V 10nF 10% 50V	C7 C8-C9 C10 C11	4010274 4200898 4200897 4001141	100nF -20+80% 25V 22µF 20% 6V3 4.7µF 20% 25V 330pF 5% 50V
L1	8020744	Coil 455kHz	L2	8020744	Coil 455kHz
P49	7211159	Socket, 4 pole			

PCB 14, 8005299
IR Receiver



Resistors not referred to are standard, see page 3-18 and 3-19.
Δ Indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

D1	8300606 **250**	LL4448	D13	8300606 **250**	LL4448
D2-	8300907 **256**	GF1B	D15	8300606 **250**	LL4448
D3			D50-	8300606 **250**	LL4448
D4	8330369 **230**	LED RED	D51		
D5-	8300606 **250**	LL4448			
D6					
IL1	8230121	Bulp, 200mA 6.3V			
R59	5013256	39kΩ 1% 1/16W			
C1-	4010274	100nF -20+80% 25V	C14-	4001143	470pF 5% 50V
C3			C15		
C4	4010272	22nF -20+80% 50V	C16	4001135	100pF 5% 50V
C5	4010274	100nF -20+80% 25V	C17-	4001143	470pF 5% 50V
C6	4010314	220nF -20+80% 25V	C18		
C7	4010315	22nF 10% 25V	C20-	4001135	100pF 5% 50V
C8-	4010321	470nF -20+80% 16V	C21		
C9			C22	4010274	100nF -20+80% 25V
C10-	4201326	680µF 20% 10V	C23	4001135	100pF 5% 50V
C11			C50	4010274	100nF -20+80% 25V
C12-	4010321	470nF -20+80% 16V	C51-	4010323	1µF -20+80% 16V
C13			C52		
P62	7211134	Socket, 6 pole	P68	7210889	Socket, 4 pole
P63	7210893	Socket, 12 pole	P69	7211133	Socket, 5 pole

PCB 8, 8005294
CD

IC1Δ	8342495 **138**	TDA7073A	IC6Δ*	8342543 **147**	87C528
IC2Δ	8342495 **138**	TDA7073A	IC8-	8341098 **138**	LM358
IC3Δ	8342496 **147**	SAA7345	IC9Δ		
IC4Δ	8342497 **138**	TDA1305	IC10Δ	8341612 **138**	TL7705
IC5Δ	8342542 **147**	OQ8868			
TR1-TR3	8320740 **051**	BF840	TR5-TR6	8320755 **051**	BC847B
D1	8300482 **250**	LL4148			
R1-R2	5013003	47Ω 1% 1/16W	R72-R75	5012240	100kΩ 1%
R21	5013003	47Ω 1% 1/16W	R76-	5013019	200kΩ 1%
R25	5013236	820Ω 1% 1/16W	R77		
R26	5013232	390Ω 1% 1/16W	R78	5012236	120kΩ 1%
R31	5013239	1.5kΩ 1% 1/16W	R80-	5013019	200kΩ 1%
R36	5013239	1.5kΩ 1% 1/16W	R81		
R42	5013019	200kΩ 1% 1/10W	R88	5024000	1Ω
R45-	5013019	200kΩ 1% 1/10W	R89-	5024001	2.2Ω
R47			R91		
R48	5013250	12kΩ 1% 1/16W	R93-	5024001	2.2Ω
R51			R96		
R61	5013239	1.5kΩ 1% 1/16W	R101	5013042	100Ω 1% 1/16W
			R102	5024001	2.2Ω

R346- R349	5012200	2.2kΩ 1% 1/4W	R362 R365	5021483 5370470	68Ω 1% 1/4W Pot. 10kΩ
C1	4010273	47nF -20+80% 50V	C57- C61	4010274	100nF -20+80% 25V
C2	4000405	27pF 5% 50V	C63-	4010220	100nF 10% 50V
C3-	4010274	100nF -20+80% 25V	C64		
C4			C65	4200898	22µF 20% 6V3
C5-	4010267	4.7nF 10% 50V	C66	4201330	220µF 20% 50V
C7			C67-	4010220	100nF 10% 50V
C8-	4010274	100nF -20+80% 25V	C69		
C9			C70	4000414	150pF 5% 50V
C10-	4011110	1.0nF 10% 50V	C71	4010315	22nF 10% 50V
C14			C72	4000414	150pF 5% 50V
C15-	4001141	330pF 5% 50V	C73	4010315	22nF 10% 50V
C17			C74-	4010274	100nF -20+80% 25V
C18-	4011110	1.0nF 10% 50V	C75		
C19			C76-	4011110	1.0nF 10% 50V
C20	4001141	330pF 5% 50V	C77		
C21	4011110	1.0nF 10% 50V	C80	4011110	1.0nF 10% 50V
C22-	4001141	330pF 5% 50V	C81	4010220	100nF 10% 50V
C25			C82-	4001141	330pF 5% 50V
C26	4011110	1.0nF 10% 50V	C83		
C27-	4001131	47pF 5% 50V	C84	4011110	1.0nF 10% 50V
C28			C90-	4011110	1.0nF 10% 50V
C29-	4011110	1.0nF 10% 50V	C93		
C31			C100	4010274	100nF -20+80% 25V
C32-	4001141	330pF 5% 50V	C101	4200858	220µF 20% 50V
C35			C102-	4001141	330pF 5% 50V
C36-	4011110	1.0nF 10% 50V	C103		
C37			C104	4200916	4.7µF 20% 25V
C38	4000287	220nF -20+80% 25V	C301-	4011110	1.0nF 10% 50V
C39-	4010220	100nF 10% 50V	C302		
C42			C306	4011110	1.0nF 10% 50V
C43	4000287	220nF -20+80% 25V	C307	4010274	100nF -20+80% 25V
C44	4011110	1.0nF 10% 50V	C320	4011110	1.0nF 10% 50V
C45	4010271	10nF 10% 50V	C321	4010220	100nF 10% 50V
C46	4010273	47nF -20+80% 50V	C322	4000287	220nF -20+80% 25V
C47	4010271	10nF 10% 50V	C430	4011110	1.0nF 10% 50V
C49-	4010220	100nF 10% 50V	C501	4000405	27pF 5% 50V
C50			C502	4200916	4.7µF 20% 25V
C51	4010271	10nF 10% 50V	C504	4010274	100nF -20+80% 25V
C53	4010272	22nF -20+80% 50V			
C54-	4010220	100nF 10% 50V			
C55					
L1- L5	8020821	Coil 2.2µH 5%			
X1	8090182	Crystal 16MHz			
MP1	3302352	Screen			
CP1	7530117	Contact pin, 1 pol			
P51	7221133	Plug, 8 pole	P54-	7211177	Socket, 6 pole
P52	7211159	Socket, 4 pole	P55		
P53	7221159	Plug, 2 pole			

PCB 20, 8001736
Master Link Interface

IC1- IC7Δ	8341022	**151** 4558	IC8- IC10Δ	8342019	**151** 4066
TR3	8320811	**051** BC857B	TR6	8320811	**051** BC857B
TR4- TR5	8320755	**051** BC847B			

→

PCB 15, 8005307
Disc Detector

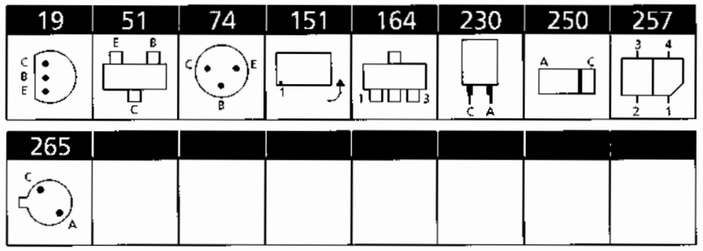
IC1Δ	8342645	**147** SAA7310	IC5- IC7Δ	8341098	**138** LM358
IC4Δ	8342019	**138** 4066	IC8Δ	8342559	**138** LB1619M
TR1	8320811	**051** BC857B	TR21	8320811	**051** BC857B
TR2-	8320755	**051** BC847B	TR60	8320752	**051** BC817-40
TR3			TR61	8330360	**051** TEMT2100GS08
TR20	8320755	**051** BC847B			
D1- D2	8300482	**250** LL4148			
D61	8330359	**229** 950nm Transmit			
R4	5012360	75Ω 1% 1/10W	R27	5012331	10kΩ 1% 1/10W
R5	5012307	2.2kΩ 1% 1/10W	R29	5012366	20kΩ 1% 1/10W
R6	5012298	22kΩ 1% 1/10W	R30-	5012237	6.8kΩ 1% 1/10W
R13	5013045	1.8kΩ 1% 1/10W	R32		
R14	5013046	432Ω 1% 1/10W	R41	5024000	1Ω
R15	5013045	1.8kΩ 1% 1/10W	R57	5012240	100kΩ 1% 1/10W
R16	5012363	3.9kΩ 1% 1/10W	R61	5021500	56Ω 1% 1/4W
R18	5013044	330Ω 1% 1/10W	R82	5012332	4.7kΩ 1% 1/10W
R23- R26	5012239	39kΩ 1% 1/10W			
C1	4010272	22nF -20+80% 50V	C20	4010274	100nF -20+80% 25V
C2	4201362	2.2µF 10% 10V	C21	4010273	47nF -20+80% 50V
C3	4000408	47pF 5% 50V	C24-	4010282	470nF -20+80% 25V
C5	4000442	2.2nF 5% 50V	C25		
C6	4010274	100nF -20+80% 25V	C33	4000412	100pF 5% 50V
C7-	4000412	100pF 5% 50V	C34-	4010274	100nF -20+80% 25V
C8			C35		
C9-	4000408	47pF 5% 50V	C39-	4010274	100nF -20+80% 25V
C10			C42		
C11	4010282	470nF -20+80% 25V	C43	4010237	1.0nF 20% 50V
C13	4000418	330pF 5% 50V	C44	4010274	100nF -20+80% 25V
C14	4000415	180pF 5% 50V	C46	4010282	470nF -20+80% 25V
C15	4010274	100nF -20+80% 25V	C47	4000412	100pF 5% 50V
C16	4201254	33µF 20% 16V	C48	4010274	100nF -20+80% 25V
C17	4010268	5.6nF 10% 50V	C60	4010334	220nF 10% 16V
L1	8021135	Coil 10µH			
X1	8090199	Crystal 11.2896MHz			
P46	7211148	Socket, 12 pole	P48	7211150	Socket, 14 pole
P47			P66	7211071	Socket, 16 pole

PCB 16, 8001877
CD mechanism, interface

TR1	8340282	**032** BD675			
R2	5012154	1KΩ 1% 1/8W			
P93- P94	7211151	Socket, 16 pole	P95 P99	7210815 7211152	Socket, 16 pole Socket, 11 pole

PCB 17, 8005314
Motor Control

PE1Δ	8330361	**257** Optocoupler			
PE2Δ	8330235	**257** Optocoupler			
P76	72112405	Socket, 6 pole			



Resistors not referred to are standard, see page 3-18 and 3-19
Δ Indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

R2	5011841	11.8kΩ 1% 1/8W	R14-	5011557	10kΩ 1% 1/8W
R4	5011841	11.8kΩ 1% 1/8W	R15		
R5-	5011531	5.9kΩ 1% 1/8W	R19-	5011557	10kΩ 1% 1/8W
R6			R20		
R8	5011841	11.8kΩ 1% 1/8W	R23-	5011571	75Ω 1% 1/8W
R10	5011841	11.8kΩ 1% 1/8W	R26		
R11-	5011531	5.9kΩ 1% 1/8W			
R12					

C1-	4000277	22pF 5% 50V	C11-	4010166	100nF -20+80% 50V
C2			C14		
C3-	4000241	100pF 5% 50V	C100-	4000345	1.0nF 5% 50V
C4			C101		
C6-	4000241	100pF 5% 50V			
C7					

PCB 21, 8005301
Headphone

C1-	4010237	1.0nF 20% 50V	C3-	4010271	10nF 10% 50V
C2			C4		

P1	7210510	Jack socket
P80	7211159	Socket, 4 pole

PCB 23, 8005308
Clamper Position

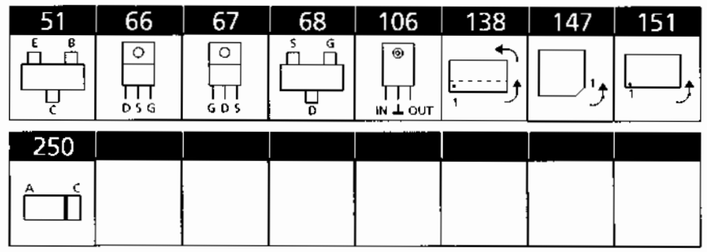
IC1-	8341041	**151**	LM324
IC2Δ			

TR1	8320755	**051**	BC847B

PE1-	8330235	**257**	Optocoupler
PE3Δ			

R23	5012317	46.4 kΩ 1% 1/10W	R28	5012239	39kΩ 1% 1/10W
R24	5012316	56.2kΩ 1% 1/10W	R29-	5012290	4.87kΩ 1% 1/10W
R25	5012350	27.4kΩ 1%1/10W	R30		

C1	4010271	10nF 10% 50V	C10	4010237	1.0nF 20% 50V
C4-	4010274	100nF -20+80% 25V	C11	4000416	220pF 5% 50V
C5			C12	4010237	1.0nF 20% 50V
C6	4010237	1.0nF 20% 50V	C13	4000412	100pF 5% 50V
C7	4010263	2.2nF 10% 50V	C14	4010237	1.0nF 20% 50V
C8-	4010272	22nF -20+80% 50V	C15	4000412	100pF 5% 50V
C9					



Resistors not referred to are standard, see page 3-18 and 3-19
Δ Indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

PCB 18, 8005300
Motor Control

IC1Δ	8341747	**138**	TL7705BCD	IC8Δ	8342552	**138**	DAC 0854
IC2Δ*	8342564	**147**	87C654	IC9-	8341041	**138**	LM324
IC3Δ	8340433	**138**	74HC86	IC10Δ			
IC4Δ	8340571	**138**	74HC74	IC11Δ	8341857	**138**	LM339
IC5-	8341025	**138**	4094	IC12-	8341682	**151**	TCA 0372
IC6Δ				IC13Δ			
IC7Δ	8340244	**106**	LM317	IC25Δ	8341098	**138**	LM358

TR1	8320753	**051**	BC856B	TR25-	8320755	**051**	BC847B
TR3				TR32			
TR4	8320816	**051**	BC846B	TR33	8320811	**051**	BC857B
TR5-	8320755	**051**	BC847B	TR34	8320752	**051**	BC817-40
TR6				TR35-	8320856	**068**	2N7002
TR8	8320816	**051**	BC846B	TR36			
TR9-	8320755	**051**	BC847B	TR40	8320755	**051**	BC847B
TR12				TR43	8320755	**051**	BC847B
TR14-	8320816	**051**	BC846B	TR44	8320811	**051**	BC857B
TR15				TR47-	8320816	**051**	BC846B
TR16	8321176	**051**	FZT951	TR48			
TR18-	8321016	**067**	BUZ71A	TR49	8320971	**051**	BC807-40
TR19				TR338	8320811	**051**	BC857B
TR20-	8321154	**066**	BUZ271	TR339	8320755	**051**	BC847B
TR21							

D1-	8300606	**250**	LL4448	D30-	8300606	**250**	LL4448
D6				D32			
D8-	8300606	**250**	LL4448	D35-	8300606	**250**	LL4448
D9				D37			
D12-	8300915	**250**	GF1M	D38	8300639	**250**	Z12V 2%
D15				D39	8300606	**250**	LL4448
D16	8300687	**250**	Z2.7V 5%	D42	8300563	**250**	Z5.1V 2%
D17-	8300584	**250**	Z15V 5%	D50	8300584	**250**	Z15V 5%
D20				D51	8300687	**250**	Z2.7V 5%
D21	8300772	**250**	Z24V 5%	D52-	8300606	**250**	LL4448
D22	8300606	**250**	LL4448	D56			
D24	8300584	**250**	Z15V 5%				

R45	5012239	39kΩ 1% 1/10W	R165-	5012209	1.87kΩ 1% 1/4W
R58-	5012200	2.2kΩ 1% 1/4W	R166		
R64			R169-	5023000	1.2kΩ 1% 1/4W
R80	5012142	60mΩ	R170		
R148-	5021151	1.5Ω 1% 1/4W	R171	5013256	39kΩ 1% 1/16W
R151			R191	5021484	100Ω 1% 1/4W
R152	5023002	11.3kΩ 1% 1/4W	R194-	5021151	1.5Ω 1% 1/4W
R153	5021225	10kΩ 1% 1/4W	R197		
R156-	5021508	47kΩ 1% 1/4W	R203	5021225	10kΩ 1% 1/4W
R159			R225	5011903	180Ω 1% 1/4W
R160-	5021372	5.36kΩ 1% 1/4W	R226	5011853	158Ω 1% 1/4W
R161			R278	5021225	10kΩ 1% 1/4W
R164	5021372	5.36kΩ 1% 1/4W	R280	5013264	180kΩ 1% 1/16W
			R331	5021372	5.36kΩ 1% 1/4W

Resistors SMD 2% 1/8 W
SMD 5% 1/8 W

Glue dots, approx. 200, part no. 3181932

	5% x1	2% x10	2% x100	2% x1k	2% x10k	2% x100k	5% x1M	5% x10M
1.0	5011623	5011647	5011218	5011227	5011241	5011256	5011267	5011730
1.1	5011624	5011648	5011669	5011681	5011689	5011694	5011707	
1.2	5011625	5011649	5011219	5011682	5011490	5011257	5011708	
1.3	5011626	5011650	5011670	5011683	5011242	5011258	5011709	
1.5	5011627	5011651	5011220	5011228	5011243	5011259	5011710	
1.6	5011628	5011652	5011671	5011684	5011690	5011695	5011711	
1.8	5011629	5011653	5011672	5011229	5011244	5011260	5011712	
2.0	5011630	5011654	5011673	5011685	5011691	5011696	5011713	
2.2	5011216	5011655	5011674	5011230	5011245	5011261	5011714	
2.4	5011634	5011656	5011675	5011686	5011246	5011697	5011715	
2.7	5011635	5011657	5011497	5011231	5011247	5011262	5011716	
3.0	5011731	5011658	5011499	5011500	5011692	5011698	5011717	
3.3	5011217	5011659	5011676	5011232	5011248	5011263	5011718	
3.6	5011636	5011660	5011677	5011687	5011249	5011264	5011719	
3.9	5011637	5011661	5011221	5011233	5011491	5011699	5011720	
4.3	5011638	5011662	5011498	5011688	5011492	5011700	5011721	
4.7	5011639	5011269	5011222	5011234	5011250	5011265	5011722	
5.1	5011640	5011663	5011678	5011235	5011493	5011701	5011723	
5.6	5011641	5011664	5011223	5011236	5011251	5011702	5011724	
6.2	5011642	5011665	5011224	5011237	5011693	5011703	5011725	
6.8	5011643	5011666	5011225	5011238	5011252	5011704	5011726	
7.5	5011644	5011667	5011679	5011239	5011253	5011705	5011727	
8.2	5011645	5011270	5011226	5011240	5011254	5011266	5011728	
9.1	5011646	5011668	5011680	5011489	5011255	5011706	5011729	

Resistors SMD 5% 1/10 W

Glue dots, approx. 200, part no. 3181932

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
0.0	6000072							
1.0		5011920	5011932	5011944	5011956	5011968	5011980	5012275
1.2	5012326	5011921	5011933	5011945	5011957	5011969	5012267	
1.5	5012379	5011922	5011934	5011946	5011958	5011970	5012268	
1.8		5011923	5011935	5011947	5011959	5011971	5011989	
2.2		5011924	5011936	5011948	5011960	5011972	5012220	
2.7		5011925	5011937	5011949	5011961	5011973	5012269	
3.3		5011926	5011938	5011950	5011962	5011974	5012261	
3.9		5011927	5011939	5011951	5011963	5011975	5012270	
4.7		5011928	5011940	5011952	5011964	5011976	5012271	
5.6		5011929	5011941	5011953	5011965	5011977	5012272	
6.8		5011930	5011942	5011954	5011966	5011978	5012273	
8.2		5011931	5011943	5011955	5011967	5011979	5012274	

Resistors SMD 5% 1/16 W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0	5013201	5013213	5013225	5013237	5013249	5013261	5013273	5013285
1.2	5013202	5013214	5013226			5013262	5013274	
1.5	5013203	5013215	5013227			5013263		
1.8	5013204	5013216	5013228	5013240			5013276	
2.2	5013205	5013217	5013229	5013241	5013253	5013265	5013277	
2.7	5013206	5013218			5013254	5013266	5013278	
3.3	5013207		5013231		5013255	5013267	5013279	
3.9	5013208	5013220				5013268	5013280	
4.7	5013209	5013221	5013233	5013245	5013257	5013269	5013281	
5.6	5013210	5013222	5013234		5013258	5013270	5013282	
6.8	5013211	5013223	5013235		5013259	5013271	5013283	
8.2	5013212	5013224			5013260	5013272	5013284	

P60 7211123 Socket, 12 pole
P61 7221167 Plug, 6 pole
P64 7220709 Plug, 2 pole

PCB 24, 8005304
Light indication, left

TR1-TR6 8320755 **051** BC847B

D4-D6 8330387 **230** LED, red

PCB 25, 8005305
Light indication, right

D1 8330387 **230** LED, red
D3

PCB 26, 8005315
End stop detector

IC1Δ 8342715 **164** A3141ELT

C1 4010274 100nF -20+80% 25V
C2 4010323 1µF -20+80% 16V

P75 7211177 Socket, 6 pole
P96 7211159 Socket, 4 pole

PCB 27, 8005302
Safety TX

D1 8330362 **265** TSTA7100

PCB 28, 8005303
Safety RX

TR1 8330363 **074** BPW77
TR2 8320755 **051** BC847B

C4 4010323 1µF -20+80% 16V

PCB 29, 8005309
Lamp

IL1 8230121 Bulp, 200mA 6.3V

PCB 30, 8001865
IR transmitter, tacho clamper

PCB 31, 8001866
IR receiver, tacho clamper

PCB 33, 8001907
I²C Booster, Power Switching

TR1	8320740 **051**	BF840	TR19-TR24	8320755 **051**	BC847B
TR2	8320811 **051**	BC857B			
TR10	8320811 **051**	BC857B	TR32	8321131 **019**	ZTX788
TR11	8320740 **051**	BF840	TR34-TR35	8321131 **019**	ZTX788
TR14	8320755 **051**	BC847B			
TR16	8320755 **051**	BC847B	TR36	8321096 **019**	ZTX790
D7	8300606 **250**	LL4448	D17	8300606 **250**	LL4448
D9	8300606 **250**	LL4448			
R4	5013246 5.6kΩ 1% 1/16W		R133	5013264 180kΩ 1% 1/16W	
R14	5013246 5.6kΩ 1% 1/16W		R142	5013264 180kΩ 1% 1/16W	
C1	4000408 47pF 5% 50V		C20	4011122 10nF 10% 50V	
C2	4000408 47pF 5% 50V		C88	4010323 1µF -20+80% 16V	
C8	4001133 68pF 5% 50V		C89	4010323 1µF -20+80% 16V	
C18	4001133 68pF 5% 50V		C141	4011137 330nF -20%+80% 16V	

Standard resistors

Resistors 5% 1/2 W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0		5011000	5011013	5011028	5011044	5010313	5011069	5011083
1.2	5011406	5011001	5011014	5011030	5011045	5011058	5010421	
1.5	5010727	5011002	5011015	5011031	5011046	5011059	5011071	
1.8	5010857	5010787	5011016	5011033			5011072	
2.2	5011335	5010708	5010815	5011034	5011048	5011061	5011074	
2.7	5011612	5010803	5011018	5010055	5011049	5011062	5011075	
3.3	5012147	5011007	5011019	5011037		5011063	5010381	
3.9		5010782	5011021	5010700	5011051		5010392	
4.7	5010765	5011009	5011022	5010035		5011065	5011078	
5.6		5011010	5011023	5011041		5011066		
6.8	5010874	5011011	5011024	5011042	5010810	5011067	5011080	
8.2		5011012	5011026	5011043	5010038	5011068	5011081	

Resistors 5% 1/4 W

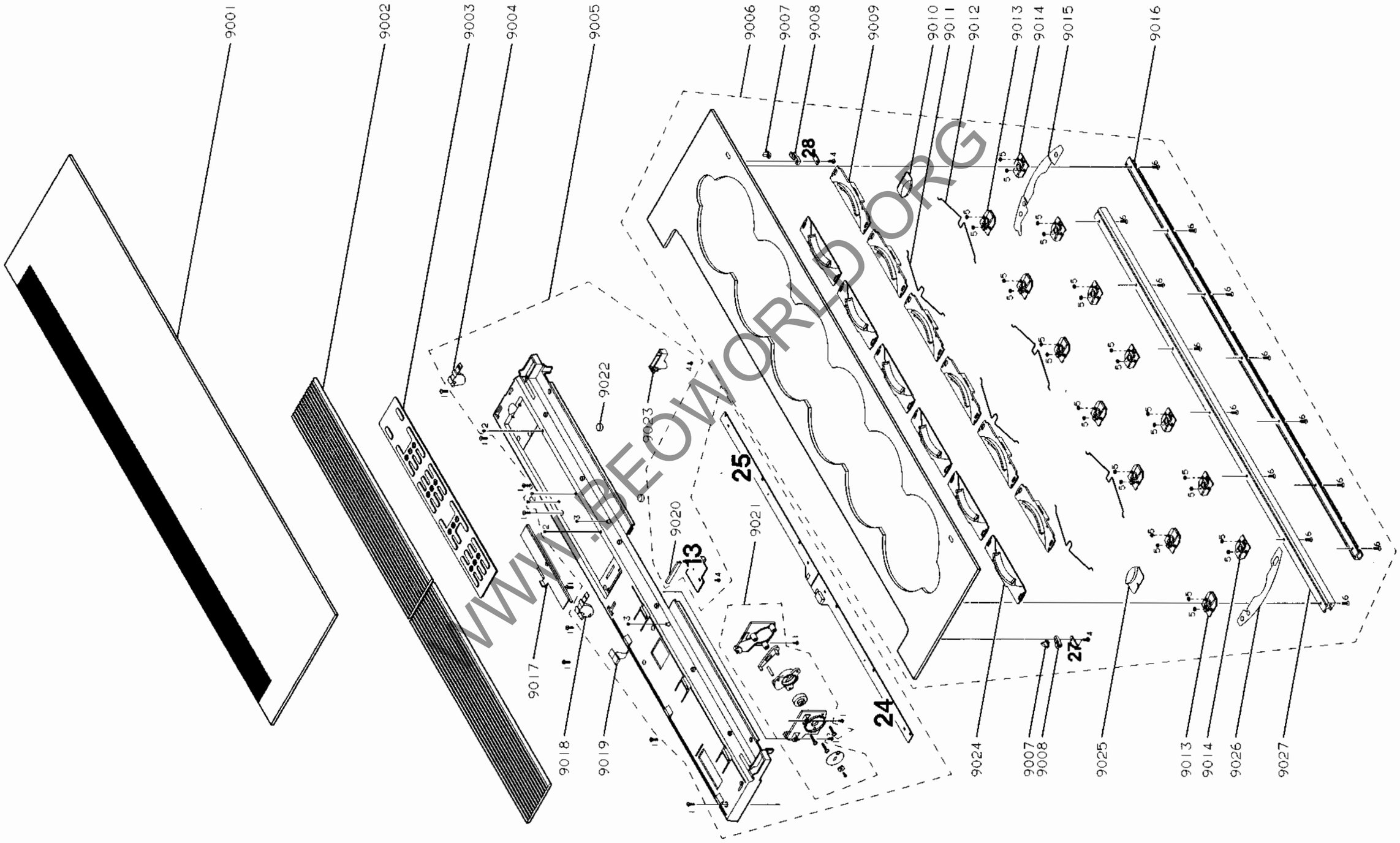
	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0	5010592	5010506	5010065	5010040	5010059	5010049	5010054	5010638
1.2		5010595	5010128	5010153	5010046	5010047	5010665	
1.5	5011348	5010468	5010057	5010247	5010053	5010063	5010093	
1.8		5010822	5010362	5010066	5010135	5010072	5010791	
2.2	5010682	5010448	5010092	5010064	5010079	5010120	5010245	
2.7	5010925	5010403	5010000	5010298	5010141	5010083	5010431	
3.3	5011860	5010253	5010044	5010076	5010075	5010117	5010848	
3.9	5011377	5010622	5010070	5010069	5010060	5010073	5010714	
4.7	5010888	5010411	5010058	5010048	5010045	5010077	5011513	
5.6	5010706	5010151	5010067	5010041	5010061	5010071	5010658	
6.8	5010874	5010039	5010144	5010052	5010062	5010074		
8.2	5010880	5010056	5010068	5010154	5010091	5010505		

Resistors 5% 1/8 W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0		5011464	5011357	5010816	5010935	5011440	5011459	5020875
1.2		5011351	5011084	5011442	5011338	5011341	5011175	
1.5		5011463	5011443	5011178	5011364	5011398	5011460	
1.8			5011350	5011361	5011344	5011468		
2.2	5011032	5011376	5010886	5011353	5010833	5011369	5011342	
2.7		5011471	5011355	5011362	5011366	5011370	5011478	
3.3		5011519	5011337	5010827	5011346	5011371	5011462	
3.9		5011438	5011883	5011157	5011457	5011372	5020876	
4.7		5011038	5011441	5011363	5010937	5011343	5011611	
5.6		5011412	5011358	5010885	5011166	5011340		
6.8		5011356	5011336	5010839	5011367	5011458		
8.2		5011466	5011354	5011339	5011368	5011373		

4 - 1
LIST OF MECHANICAL PARTS

EXPL. VIEW, TOP



4 - 2
LIST OF MECHANICAL PARTS
4 - 2

LIST OF MECHANICAL PARTS
TOP

13 modul	8005313	Secondary Keyboard
24 modul	8005304	Light indication, left
25 modul	8005305	Light indication, right
27 modul	8005302	Safety TX
28 modul	8005303	Safety RX

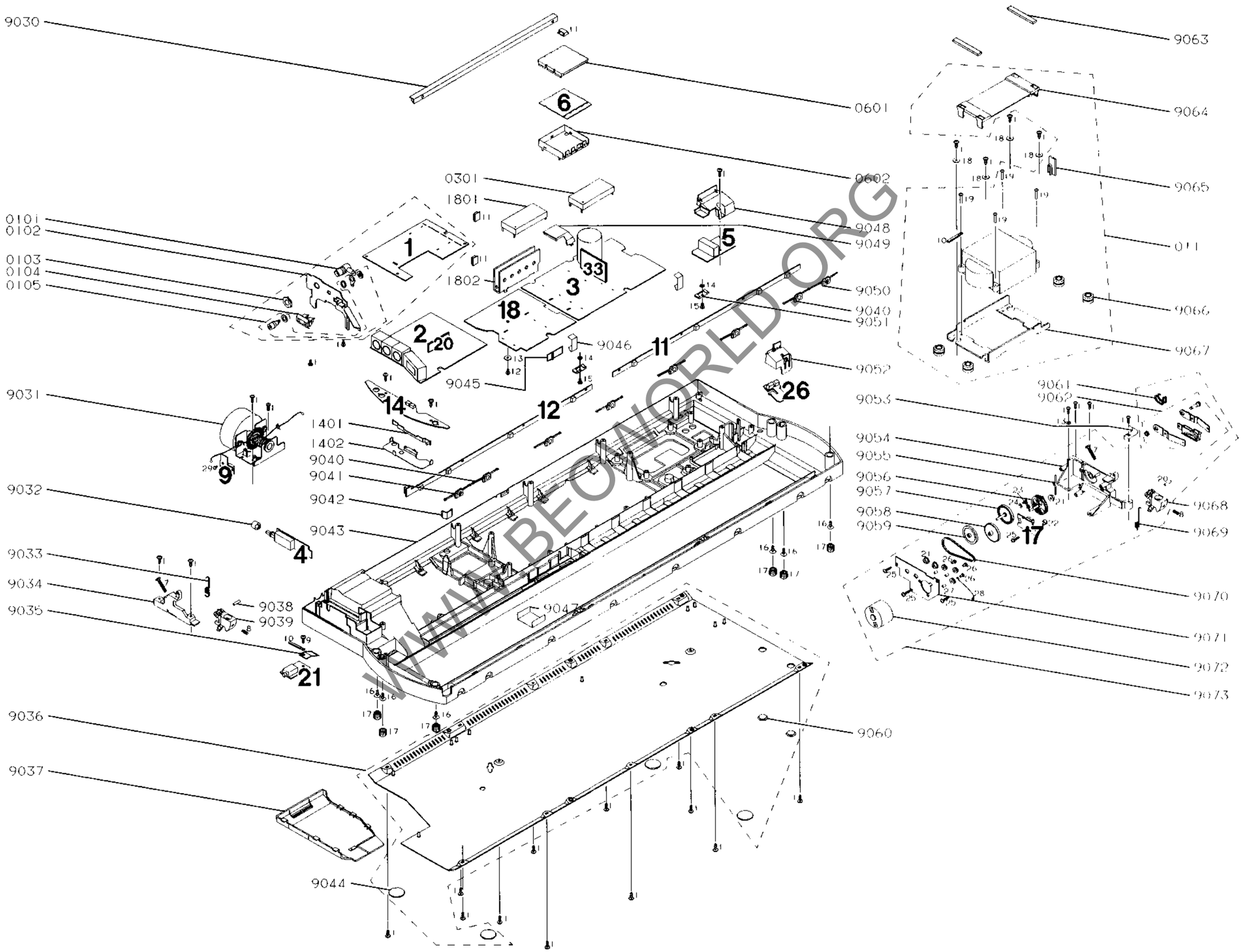
9001	3162485	Glass lid
9002	3160059	Cover
9003	3169064	Secondary keyboard
9004	3030123	Hinge f. glass lid, right
9005	3114446	Chassis top plate, complete
9006	3458925	Top plate, complete
9007	3375163	Lens
9008	2622510	Holder f. lens
9009	3151325	Disc holder, front
9010	3322176	Window, right
9011	2810283	Spring f. disc holder, rear
9012	2810282	Spring f. disc holder, front
9013	3031528	Holder f. springs, rear
9014	3031527	Holder f. springs, front
9015	3947582	Tape
9016	2569447	Guide rail, front
9017	3160063	Cover for chassis top plate
9018	3030124	Hinge f. Cover
9019	2816288	Spring, chassis connection
9020	3333021	Contact rubber
9021	3114445	Damper f. cover
9022	3356064	Magnet
9023	3031533	Holder f. hinge
9024	3151324	Disc holder rear
9025	3322175	Window, left
9026	3947581	Tape
9027	2569448	Guide rail, rear

Survey of screws

1	2013137	Screw 3 x 10
2	3103328	Damper
3	3341104	Damper
4	2038111	Screw 3 x 8
5	2732129	O ring
6	2054005	Screw 3 x 8

4 - 3
LIST OF MECHANICAL PARTS

EXPL. VIEW, CHASSIS



4 - 4 LIST OF MECHANICAL PARTS

4 - 4

CHASSIS

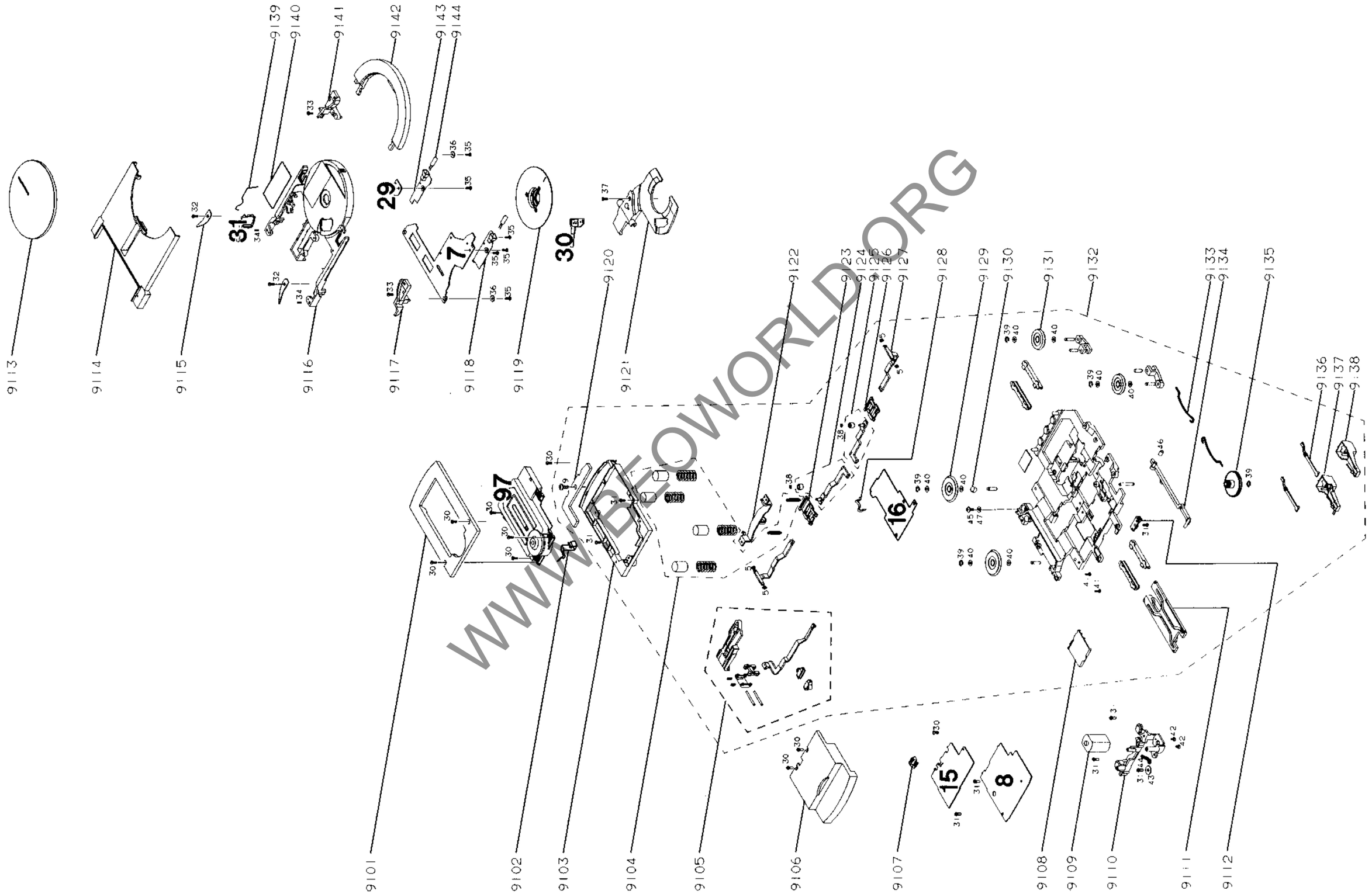
1 modul	8005293	FM/AM RF IF old version f. type 2521, 2522, 2525
	8005319	FM/AM RF IF old version f. type 2523
	8005320	FM/AM RF IF old version f. type 2524
	8005351	FM/AM RF IF new version RDS f. type 2526, 2527, 2530
	8005352	FM/AM RF IF new version RDS f. type 2528
	8005353	FM/AM RF IF new version RDS f. type 2529
	8005354	New version without RDS f. type 2521, 2522, 2525
	8005355	New version without RDS f. type 2523
	8005356	New version without RDS f. type 2524
0101	6270671	FM socket
0102	2530545	Holder f. PCB 1
0103	2380170	Nut f. FM socket
0104	6276977	AM socket
0105	7219095	Socket f. digital output
2 modul	8005310	Input/output select and sound adjustment
3 modul	8005297	Microcomputer and power supply
0301	3302352	Shield
5 modul	8005298	Mains relay
6 modul	8001842	Main microcomputer
11 modul	8005295	Main Keyboard right
12 modul	8005296	Main Keyboard left
14 modul	8005299	IR Reciever
1401	3302560	Shield, plastic
1402	3302555	Shield
17 modul	8005314	Lid motor
18 modul	8005300	Motor control
1801	3302352	Shield
1802	3358312	Heat sink
20 modul	8001736	ML Interface
26 modul	8005315	End stop detector
33 modul	8001907	Power supply switch
9030	3300145	Shield
9031	8400213	Sledge motor complete w. wire
9032	2776517	Button, on/off
9033	2810292	Spring f. glass lid, left
9034	3031338	Fitting f. hinge, glass lid
9035	2815045	Spring, chassis connection
9036	3454845	Rear panel
9037	3162436	Cover
9038	2830161	Axle
9039	3131407	Hinge f. glass lid, left
9040	2776487	Button, select
9041	2776493	Button, stand by
9042	3322158	IR window
9043	3114426	Chassis
9044	3103326	Foot
9045	3151395	Holder f. ribbon cables
9046	2816290	Spring, chassis connection
9047	3302589	Shield f. ribbon cables
9048	3160058	Cover f. PCB 5
9049	3302561	Cover f. ribbon cables
9050	2776494	Button, load
9051	3151322	Holder f. screw
9052	3162505	Cover f. PCB 26
9053	2815049	Spring, chassis connection
9054	3131385	Fitting f. gearbox
9055	2810285	Spring f. gear
9056	2700107	Gearwheel with print f. tacho
9057	2700138	Gearwheel, metal
9058	2700137	Gearwheel, plastic
9059	2700136	Gearwheel f. rubber belt
9060	3341088	Plastic plug
9061	2510181	Holder
9062	2815051	Plate spring, complete
9063	3947350	Foam tape
9064	3302568	Cover for transformer
9065	3302562	Shield f. wire
9066	2938277	Bush
9067	3124131	Fittings
9068	3131384	Hinge f. glass lid, right
9069	2810291	Spring f. glass lid, right
9070	2732120	Rubber belt
9071	3162433	Fitting f. gearbox
9072	8400214	Gear motor
9073	2755051	Gearbox, complete
0T1	8013548	Transformer f. type 2524, 2529
	8013549	Transformer f. type 2523, 2528
	8013550	Transformer f. type 2525, 2530
	8013551	Transformer f. type 2521, 2522, 2526, 2527

Survey of screws etc.

1	2013137	Screw 3 x 10	18	2622490	Washer 3.2 x 10 x 1
7	2058018	Screw 4 x 25	19	2039064	Screw 3 x 12
8	2072115	Pointed screw 4 x 8	20	2830161	Axle 3 x 13.8
9	2011050	Screw 3 x 8	21	2905140	Slide bearing bushing
10	7530119	Solder tag	22	3151388	Holder f. optocoupler
11	2515059	Holder f. wire	23	2390002	Washer ø3.2
12	2038137	Screw 3 x 6	24	2620020	Washer 3.2 x 7 x 0.25
13	2625002	Washer ø3.2	25	2011055	Screw 3 x 10
14	2390106	Lock washer M3	26	2036061	Screw 2.6 x 6.5
15	2058006	Screw 3 x 5	27	2930074	Bush 2.6 x 3.2 x 4.8
16	2058007	Screw 3 x 10	28	6032961	GND wire
17	3341110	Plug	29	2038117	Screw 3 x 4

4 - 5
LIST OF MECHANICAL PARTS

EXPL. VIEW, SLEDGE



4 - 4 LIST OF MECHANICAL PARTS

CHASSIS

1 modul	8005293	FM/AM RF IF old version f. type 2521, 2522, 2525
	8005319	FM/AM RF IF old version f. type 2523
	8005320	FM/AM RF IF old version f. type 2524
	8005351	FM/AM RF IF new version RDS f. type 2526, 2527, 2530
	8005352	FM/AM RF IF new version RDS f. type 2528
	8005353	FM/AM RF IF new version RDS f. type 2529
	8005354	New version without RDS f. type 2521, 2522, 2525
	8005355	New version without RDS f. type 2523
	8005356	New version without RDS f. type 2524
0101	6270671	FM socket
0102	2530545	Holder f. PCB 1
0103	2380170	Nut f. FM socket
0104	6276977	AM socket
0105	7219095	Socket f. digital output
2 modul	8005310	Input/output select and sound adjustment
3 modul	8005297	Microcomputer and power supply
0301	3302352	Shield
5 modul	8005298	Mains relay
6 modul	8001842	Main microcomputer
11 modul	8005295	Main Keyboard right
12 modul	8005296	Main Keyboard left
14 modul	8005299	IR Reciever
1401	3302560	Shield, plastic
1402	3302555	Shield
17 modul	8005314	Lid motor
18 modul	8005300	Motor control
1801	3302352	Shield
1802	3358312	Heat sink
20 modul	8001736	ML Interface
26 modul	8005315	End stop detector
33 modul	8001907	Power supply switch
9030	3300145	Shield
9031	8400213	Sledge motor complete w. wire
9032	2776517	Button, on/off
9033	2810292	Spring f. glass lid, left
9034	3031338	Fitting f. hinge, glass lid
9035	2815045	Spring, chassis connection
9036	3454845	Rear panel
9037	3162436	Cover
9038	2830161	Axle
9039	3131407	Hinge f. glass lid, left
9040	2776487	Button, select
9041	2776493	Button, stand by
9042	3322158	IR window
9043	3114426	Chassis
9044	3103326	Foot
9045	3151395	Holder f. ribbon cables
9046	2816290	Spring, chassis connection
9047	3302589	Shield f. ribbon cables
9048	3160058	Cover f. PCB 5
9049	3302561	Cover f. ribbon cables
9050	2776494	Button, load
9051	3151322	Holder f. screw
9052	3162505	Cover f. PCB 26
9053	2815049	Spring, chassis connection
9054	3131385	Fitting f. gearbox
9055	2810285	Spring f. gear
9056	2700107	Gearwheel with print f. tacho
9057	2700138	Gearwheel, metal
9058	2700137	Gearwheel, plastic
9059	2700136	Gearwheel f. rubber belt
9060	3341088	Plastic plug
9061	2510181	Holder
9062	2815051	Plate spring, complete
9063	3947350	Foam tape
9064	3302568	Cover for transformer
9065	3302562	Shield f. wire
9066	2938277	Bush
9067	3124131	Fittings
9068	3131384	Hinge f. glass lid, right
9069	2810291	Spring f. glass lid, right
9070	2732120	Rubber belt
9071	3162433	Fitting f. gearbox
9072	8400214	Gear motor
9073	2755051	Gearbox, complete
0T1	8013548	Transformer f. type 2524, 2529
	8013549	Transformer f. type 2523, 2528
	8013550	Transformer f. type 2525, 2530
	8013551	Transformer f. type 2521, 2522, 2526, 2527

Survey of screws etc.

1	2013137	Screw 3 x 10	18	2622490	Washer 3.2 x 10 x 1
7	2058018	Screw 4 x 25	19	2039064	Screw 3 x 12
8	2072115	Pointed screw 4 x 8	20	2830161	Axle 3 x 13.8
9	2011050	Screw 3 x 8	21	2905140	Slide bearing bushing
10	7530119	Solder tag	22	3151388	Holder f. optocoupler
11	2515059	Holder f. wire	23	2390002	Washer ø3.2
12	2038137	Screw 3 x 6	24	2620020	Washer 3.2 x 7 x 0.25
13	2625002	Washer ø3.2	25	2011055	Screw 3 x 10
14	2390106	Lock washer M3	26	2036061	Screw 2.6 x 6.5
15	2058006	Screw 3 x 5	27	2930074	Bush 2.6 x 3.2 x 4.8
16	2058007	Screw 3 x 10	28	6032961	GND wire
17	3341110	Plug	29	2038117	Screw 3 x 4

SLEDGE

7 modul	8005306	Display
8 modul	8005294	CD
15 modul	8005307	Disc detector
16 modul	8001877	CD mechanism interface
29 modul	8005309	Lamp
30 modul	8001865	IR transmitter, tacho clamper
31 modul	8001866	IR reciever, tacho clamper
97	8420208	CD mechanism WARNING! Static electricity may destroy the component
9101	3458908	Cover f. CD mechanism
9102	2815050	Spring, chassis connection
9103	3114427	Chassis f. CD mechanism
9104	2810293	Springs f. CD mechanism complete
9105	2854204	Clamper arm
9106	3458910	Cover f. CD PCB
9107	3151392	Holder f. diode
9108	3014114	Holder
9109	8400212	Clamper motor
9110	3151333	Holder f. springs
9111	3014120	Guide f. clamping
9112	3031534	Holder f. rocker arm
9113	3162462	Cover f. CD clamper
9114	3162477	Top plate for CD mechanism
9115	2810281	Flat spring
9116	3114431	Clamper
9117	2570088	Clamper holder, left
9118	3358331	Heat sink, left
9119	3151354	Holder, clamper
9120	3342058	Counterbalance
9121	2854207	Clamper arm
9122	2854198	Arm f. pull springs
9123	3014112	Holder f. arms, rear
9124	2854203	Arm f. pawl, rear
9125	2854202	Arm f. pawl, front
9126	3014111	Holder f. arms, front
9127	2854206	Arm f. release of CD
9128	2816000	Spring
9129	3032030	Sledge wheel, rear
9130	3356065	Magnet f. endstop detector
9131	3032031	Sledge wheel, front
9132	3114447	Sledge complete
9133	2810280	Spring f. sledge wheel
9134	2854196	Rocker arm
9135	2700105	Gearwheel
9136	2854205	Adjustment arm f. pull spring
9137	3131399	House f. adjustment arm, rear
9138	3131401	House f. adjustment arm, front
9139	2816289	Spring, chassis connection
9140	3181048	Lable, laser
9141	2570084	Clamper holder, right
9142	3370164	Lens f. light
9143	3358332	Heat sink, right
9144	8230121	Bulb

4 - 6 LIST OF MECHANICAL PARTS

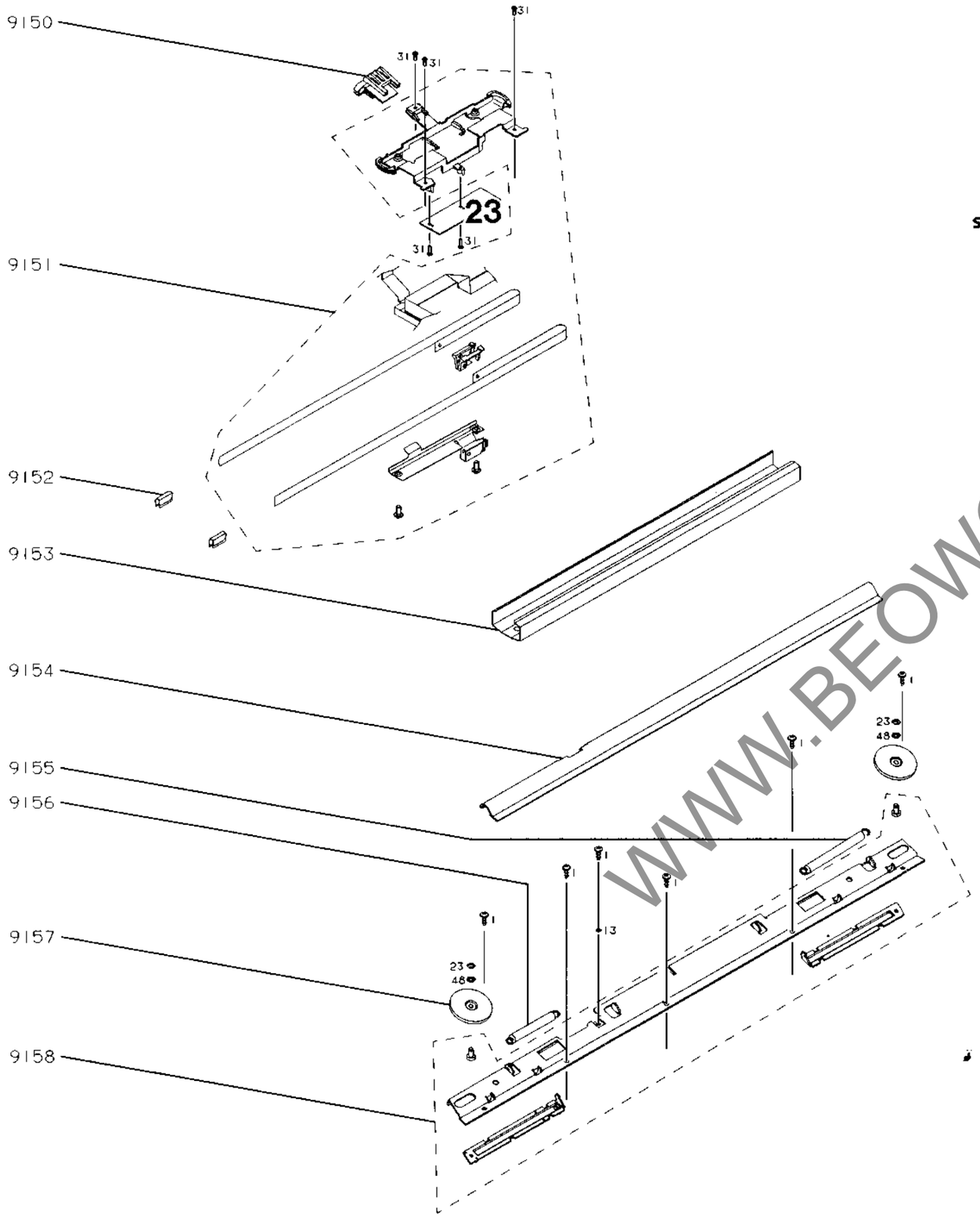
Survey of screws etc.

5	2732129	O ring
30	2011032	Screw 2.5 x 6
31	2058013	Screw 2.5 x 6
32	2058011	Screw 3 x 5
33	2058015	Screw 2.5 x 10
34	2072116	Pointed screw 3 x 4
35	2054003	Screw 2.2 x 4.5
36	2620113	Washer 7 x 2.5 x 0.8
37	2052004	Screw 2.2 x 5
38	2622110	Washer ø2.2
39	2390001	Washer ø2.3
40	2620020	Washer ø3.2 x 7 x 0.25
41	2011043	Screw 2.2 x 6
42	2058008	Screw 2 x 2
43	2622041	Washer ø3.2
44	7530087	Solder tag
45	2036036	Screw 2.5 x 4
46	3333022	Damper f. rocker arm
47	2622379	Washer ø3.2

4 - 7
LIST OF MECHANICAL PARTS

4 - 7
LIST OF MECHANICAL PARTS

EXPL. VIEW, GUIDE F. WIRE AND RIBBON CABLES



RIBBON CABLES

23 modul	8005308	Clamper position

9150	2510178	Holder
9151	3015185	Ribbon cables complete
9152	2514076	Clips
9153	3014121	Guide f. ribbon cables
9154	2560284	Cover
9155	2810277	Spring f. wire, right
9156	2810278	Spring f. wire, left
9157	3032029	Wheel f. wire
9158	3031535	Fittings f. wire

Survey of screws ect.

1	2013137	Screw 3 x 10
13	2625002	Washer ø3.2
23	2390002	Washer ø3.2
31	2058013	Screw 2.5 x 6
48	2622499	Washer 4.2 x 7 x 0.5

4 - 8 LIST OF MECHANICAL PARTS

Survey of wire bundles

PCB	Description	Connections From	To	Use Part no.
1	FM/AM RF IR Decoder	1P150	3P3	6277158
		1P151	2P20	6277158
		1P152	AM socket	6276977
		1P155	FM socket	6270671
2	Input/output and sound adjustment	2P20	1P151	6277158
		2P21	3P2	6277158
		2P22	3P1	6277158
		2P23	ground	6277170
		2P24	21P80	6277158
		2P25	ML interface	not available
3	Microcomputer and power supply	3P1	2P22	6277158
		3P2	2P21	6277158
		3P3	1P150	6277158
		3P4		6277155
		3P5	15P47	3015185
		3P6	15P46	3015185
		3P7	23P60	3015185
		3P8	7P63	3015185
		3P9	18P51	6277155
		3P10	18P50	6277155
		3P11	24P73	6277153
		3P12	12P72	6277156
		3P13	13P71	6277153
		3P14	14P70	6277156
		3P15	ground	6277170
		3P16	5P83	6277157
		3P17	0T1	6277157
			main up	not available
			33P18	not available
4	Mains filter	4P85		not available
		4	5P82	6276975
5	Mains relay	5P82	4P	6276975
		5P83	3P16	6277157
		5P84	0T1	6277157
6	Main UP			not available
7	Display	7P62	23P61	6277171
		7P63	3P8	3015185
		7P68	module 30	not available
		7P69	module 31	not available
			module 29	not available
8	CD Servo/decoder	8P40	15P48	6277159
		8P42	16P93	6277159
		8P45	97	not available
9	Sledge position	9P78	18P52	6277154
11	Primary keyboard, right	11P97	12P98	6277156
12	Primary keyboard, left	12P72	3P12	6277156
		12P98	11P97	6277156
13	Secondary keyboard	13P71	3P13	not available
14	IR receiver	14P70	3P14	6277156
15	Disc detector	15P46	3P6	3015185
		15P47	3P5	3015185
		15P48	8P40	6277159
		15P66	16P95	6277159
16	CD interface	16P93	8P42	6277159
		16P94	97	not available
		16P95	15P66	6277159
		16P99	97	not available
17	Lid motor control	17P76	18P54	6277154
18	Motor control	18P50	3P10	6277155
		18P51	3P9	6277155
		18P52	9P78	6277154
		18P53	sledge motor	not available
		18P54	17P76	6277154
		18P55	26P75	6277154
20	Master link interface	20	2P25	not available
21	Headphone	21P80	2P24	6277158
23	Clamper position	23P60	3P7	3015185
		23P61	7P62	6277171
		23P64	cl. motor	6277171
24	Light indication left	24P73	3P11	6277153
		24P74	25P77	6277153
25	Light indication right	25P77	24P74	6277153
26	End stop detector	26P75	18P55	6277154
		26P96	27 and 28	6277154
27	Safety TX	27	26P96	6277154
28	Safety RX	28	26P96	6277154
29	Lamp	29	7	not available
30	IR tacho clamper TX	30	7	not available
31	IR tacho clamper RX	31	7	not available
33	Power switching	33	3	not available
97	CD mechanism	97	8P45	not available
		97	16P94	not available
		97	16P99	not available
0T1	Trafo	0T1	3P17	6277157
		0T1	5P84	6277157
	Ground wires			6277170

Parts not shown

3392228 Outer carton
2777037 Holder f. handle
2777038 Handle
3397920 Foam packing
3946038 Foil
3392468 Insert f. clamper
3397983 Insert f. cover
6100273 Mains cable, type 2521, 2526
6100329 Mains cable, type 2522, 2527
6100307 Mains cable, type 2523, 2528
6100331 Mains cable, type 2524, 2529
6100332 Mains cable, type 2525, 2530
8720047 AM antenna
8720048 FM antenna

Owners manual

3501727 Danish
3501728 Swedish
3501729 Finnish
3501730 English, EU
3501731 German
3501732 Dutch
3501733 French
3501734 Italian
3501735 Spanish
3501736 English, US
3501737 French, CDN

Setting-up guide

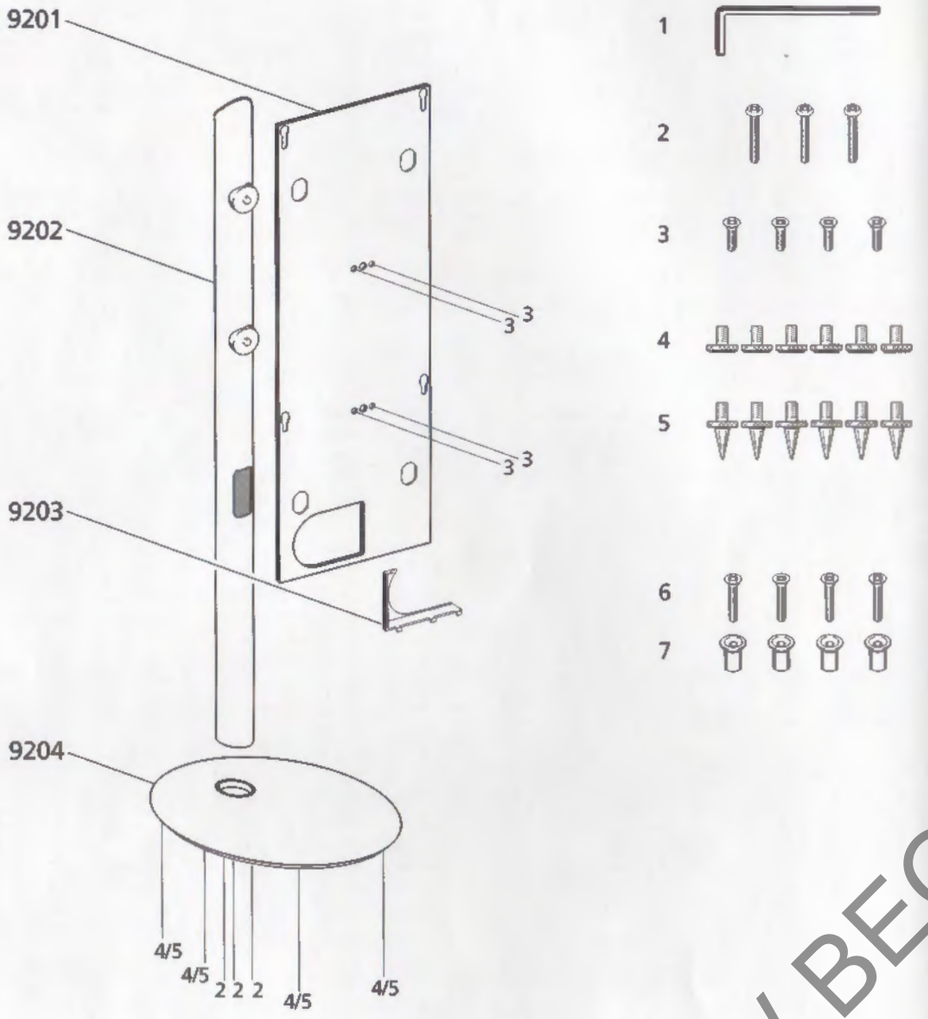
3505617 Danish
3505618 Swedish
3505619 Finnish
3505620 English, EU
3505621 German
3505622 Dutch
3505623 French
3505624 Italian
3505625 Spanish
3505626 English, US
3505627 French, CDN

Product Information

3507000 English
3507001 Danish
3507002 German
3507003 French

4 - 9
LIST OF MECHANICAL PARTS

STAND 2055



9201	3452683	Back plate
9202	2569450	Tube
9203	3162463	Cover
9204	2752050	Bottom

Survey of screws ets.

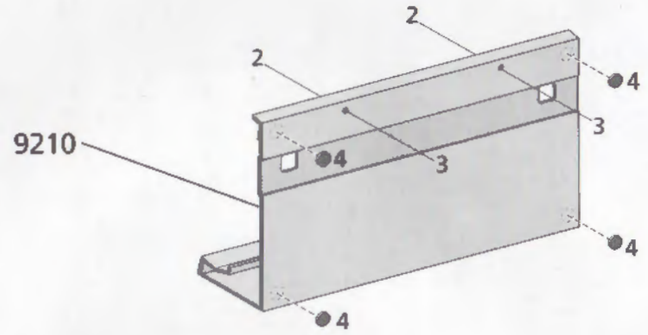
1	3040023	Allen key
2	2058009	Allen screw 4 x 25
3	2058010	Screw 4 x 12
4	3103392	Foot, "Soft"
5	3103390	Foot, "Spike" adjustable
6	2058012	Screw 4 x 20
7	2930135	Bushing

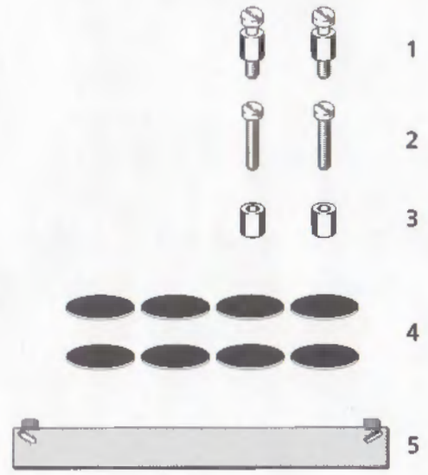
Parts not shown

	3040037	Red adjustment key
	3390550	Bag with parts
	3397971	Foam, 1 piece
	3392442	Wrapper
	3502950	Setting-up guide

4 - 9
LIST OF MECHANICAL PARTS

BRACKET 2053





9210	2569423	Bracket

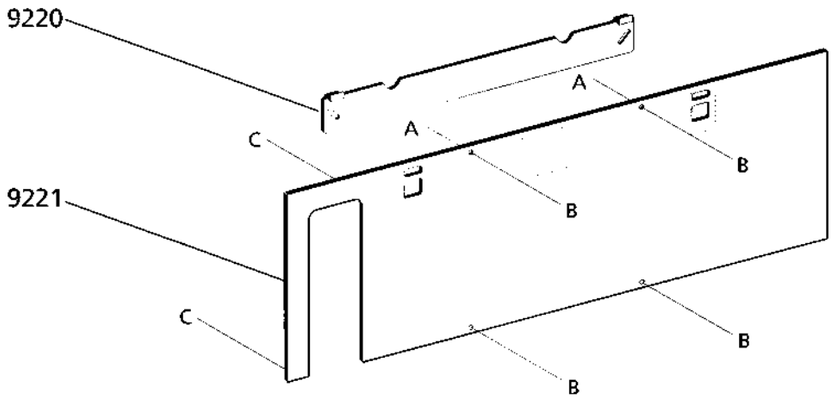
Survey of screws etc.

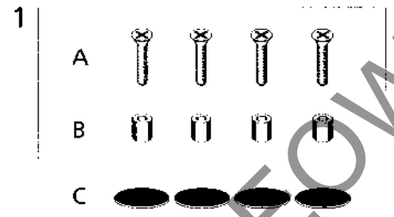
1	2930133	Adjustment bushing
2	2042211	Screw 4 x 12
3	2930132	Bushing
4	3103326	Foot, 1 piece
5	2569438	Wall profile

Parts not shown

	3103372	Foot, set incl. screws
	3040037	Red adjustment key
	3390455	Bag with parts
	3392440	Outer carton
	3397970	Foam packing
	3502941	Setting-up guide
	3504533	Setting-up guide

BRACKET 2054





9220	2569470	Wall profile
9221	3452692	Rear plate

Survey of screws etc.

1	3390533	Bag with parts

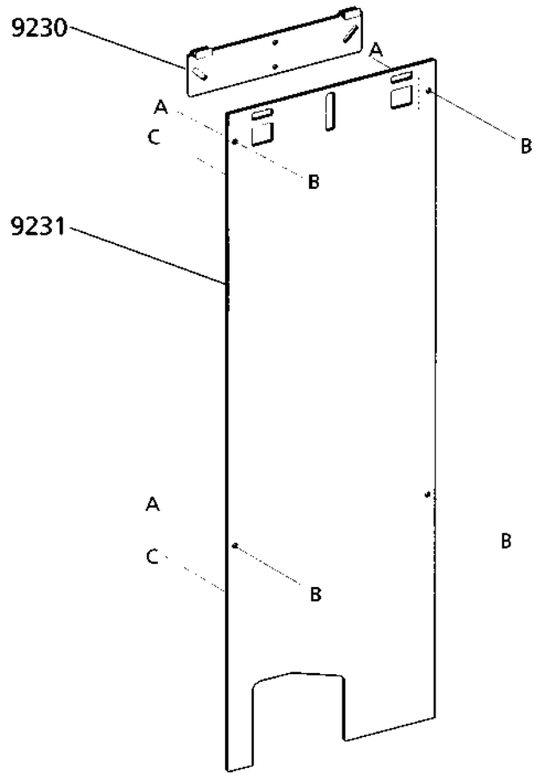
Parts not shown

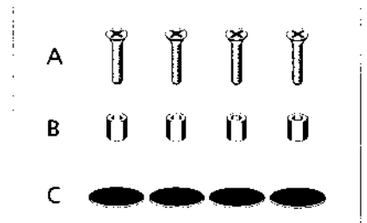
3392518	Packing, complete
3502942	Setting-up guide

CABLE COVER 2062

2569440	Profile
3031545	Bracket
3392517	Packing, complete

BRACKET 2063





9230	2569471	Wall profile
9231	3452693	Rear plate

Survey of screws etc.

1	3390533	Bag with parts

Parts not shown

3392518	Packing, complete
3502984	Setting-up guide

5 - 1
ADJUSTMENT

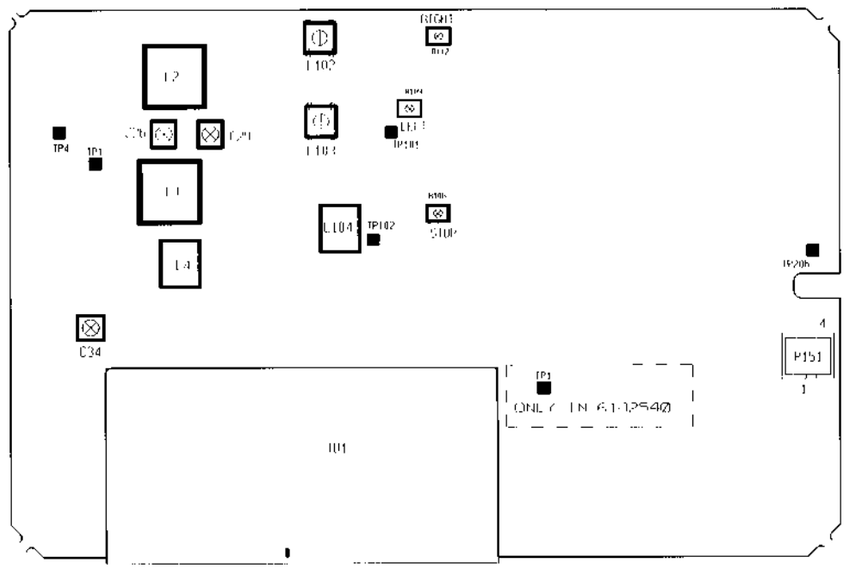
Adjustment

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (type 5221, 2522, 2523, 2525, 2526, 2527, 2528, 2530)			108MHz	check	Tuner pin 5	7...9V
			87.5MHz	check	Tuner pin 5	1.3...2V
FM 76 - 90MHz (type 2524, 2529)			90MHz	check	Tuner pin 5	7...9V
			76MHz	check	Tuner pin 5	1.3...2V
LW/MW 153 - 279kHz (type 5221, 2522, 2525, 2526, 2527, 2530)			153kHz	check	TP1	1V ± 0.3V
			279kHz	1L4	TP1	8.5V ±0.1V
			522kHz	check	TP1	1.25 ±0.3V
			1611kHz	1C34	TP1	8.5V ±0.1V
MW 522 - 1611kHz (type 2524, 2529)			522kHz	check	TP1	1 ±0.3V
			1629kHz	1L4	TP1	8.5V ±0.1V
MW 530-1710kHz (type 2523, 2528)			530kHz	check	TP1	1 ±0.3V
			1710kHz	1L4	TP1	8.5V ±0.1V
FM DETECTOR Before adjustment, carry out manual offset adjustment see page 5-3 (english), 5-19 (deutsch), 5-36 (french)						
FM 87.5 - 108MHz (type 2521, 2522, 2523, 2525, 2526, 2527, 2528, 2530)	98MHz 1mV mod = 1kHz stereo	FM antenna	98MHz	1L102	TP101-TP102*	0V ± 50mV
				1L103	P151-1	minimum distortion
FM 76 - 90MHz (type 2524, 2529)	83MHz 1mV mod = 1kHz stereo	FM antenna	83 MHz	1L102	TP101-TP102*	0V ± 50mV
				1L103	P151-1	minimum distortion
LF OUTPUT						
FM 87.5 - 108MHz (type 2521, 2522, 2523, 2525, 2526, 2527, 2528, 2530)	98MHz 1 mV mod = 1kHz Δ f 75kHz	FM antenna	98MHz	1R109/ 1R112	P151-1/ P151-3	$1V_{RMS}$ ± 50mV
FM 76 - 90MHz (type 2524, 2529)	83MHz 1mV mod = 1kHz Δ f 75kHz	FM antenna	83MHz	1R109/ 1R112	P151-1/ P151-3	$1V_{RMS}$ ± 50mV
SEARCH SENSITIVITY						
FM 87.5 - 108MHz (type 2521, 2522, 2523, 2525, 2526, 2527, 2528, 2530)	98MHz 15µV	FM antenna	98MHz	1R106	TP206	Switches just from high to low
FM 76 - 90MHz (type 2524, 2529)	83MHz 15µV	FM antenna	83MHz	1R106	TP206	Switches just from high to low

AM-RF Før justering foretages kontrol/justering af afstemningsspænding (varicap aligment)						
AM mod = 1kHz 30% AM (type 5221, 2522, 2525, 2526, 2527, 2530)	155kHz	AM antenna**	155kHz	1L3	TP 4	maximum amplitude
	270kHz	AM antenna**	270kHz	1C29	TP 4	maximum amplitude
	558kHz	AM antenna**	558kHz	1L2	TP 4	maximum amplitude
	1494kHz	AM antenna**	1494kHz	1C26	TP 4	maximum amplitude
AM mod = 1kHz 30% AM (type 2524, 2529)	558kHz	AM antenna**	558kHz	1L2	TP 4	maximum amplitude
	1494kHz	AM antenna**	1494kHz	1C26	TP 4	maximum amplitude
AM mod = 1kHz 30% AM (type 2523, 2528)	560kHz	AM antenna**	560kHz	1L2	TP 4	maximum amplitude
	1600kHz	AM antenna**	1600kHz	1C26	TP 4	maximum amplitude
AM-IF						
AM	1494kHz Δ f = 10kHz fmod = as low as posible	TP 4 via 100nF	1494kHz	1L104	P151-1	symmetrical and max. height

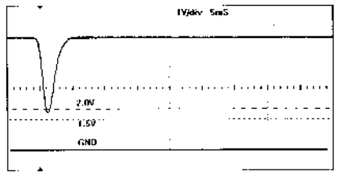
* Measurement between TP101 and TP102
** Input via inductive coupling

Repeat



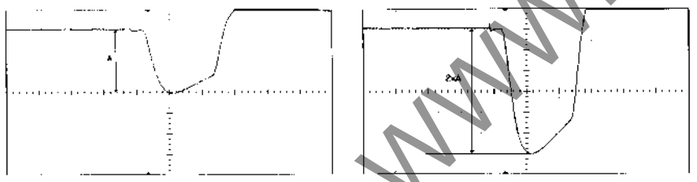
Adjustment of sensitivity of finger protection system.

1. Instal the glass lid, and close the lid. (Important!)
2. Switch off the product.
3. Connect an ohmmeter between ground and the middle pin on 18R365, and adjust to minimum value. In some products 18R365 is located on a small PCB placed on top of PCB18.
4. Connect an oscilloscope to CP1. If 18R365 is installed on the small extra PCB the oscilloscope must be connected to the lead coming out of 18IC12.
5. Switch on the product.
6. Select CD6. The sledge will now try to move but it must stop.
7. Adjust by means of 18R365 until the pulse is between 1.5 and 2V.



After approx. 30 seconds the pulses will disappear.

8. Switch off the product, and then short-circuit CP1 to ground which is the chassis of the cooling plate.
9. Connect an oscilloscope (set to position AC) to the middle pin on 18R365.
10. Switch on the product.
11. Select CD6. The sledge will now try to move but it must stop.



12. Then measure the pulse height.
13. Now adjust by means of 18R365 until the pulse has twice the amplitude measured under point 12 above.
14. Switch off the product. Remove the short-circuiting lead between CP1 and ground.
15. Switch the product back on, and select CD6. The sledge will now move quickly to the CD6 position.
16. Then select CD1 and check with a finger that the sledge is able to stop.
17. Open the glass lid.

18. Select CD6, and the sledge will now move slowly towards the CD6 position.

19. Then select CD1 and check with a finger that the sledge is able to stop.

Mechanical adjustments

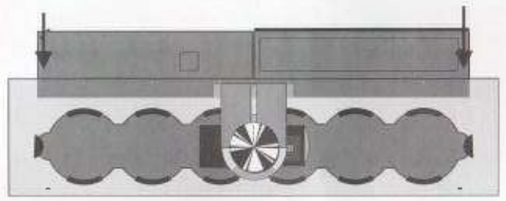
Adjustment of CD mechanism

See Brief Operation Guide, page 1-5.

Adjustment of lid

Remove the left aluminium plate (see point 2 under dismantling for further information, if necessary) and open the lid covering the secondary keyboard.

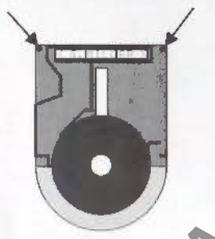
Adjust the lid until it is parallel with the top plate (15 mm).



Adjustment of clamper arm

Remove the top plate for the clamper arm (see point 7 under dismantling for further information, if necessary).

Adjust the clamper until it is parallel with the top plate.



Manual offset adjustment

If EEPROM 6IC4 has been replaced or the detector circuit has been repaired, the following offset adjustment has to be made.

To be able to make a correct adjustment the offset adjustment first has to be "reset". This is done by bringing the product into test mode - see page 5-6.

No aerial signal may be connected to the product.

Select radio as source

press 02

press 0 0 0 0

The display reads:

TM 02 ERROR

Instal a 12 Kohm resistor between TP102 and TP103

The product must have been switched on for at least 2 minutes before the adjustment is made.

Make the adjustment in test mode - see page 5-6

Connect an aerial signal

press 02

The display reads:

FREQ?

Enter the frequency of a known station (4 digits), e.g. 98.5MHz = 0985

The product will now carry out an offset adjustment.

The display reads:

MAN. OFFSET

If there is an error, the display will read:

TM 02 ERROR

Remove the resistor that was installed between TP102 and TP103 when the adjustment has been completed.

Adjust the FM detector - see page 5-1.

TEST MODE 03
(TM = SHIFT 90258)
Display of status of offset

enter 03

OFFSET X

If no offset adjustment has been carried out, the display will read:

TM 03 ERROR

Adjustment of autopositioning

See TESTMODE 73 on page 5-13

IIC ERR

IIC ERR is the component on the I²C bus which has last caused an error in the communication

98 = The 3IC2 Link processor

102 = The 1IC202 FM/AM processor

104 = The 18IC2 Motor processor

136 = 2IC4 Sound control

208 = 3IC9 Clock

CD ERROR

CD ERROR is the last CD error occurred

2 = Focus error; it has not been possible to find focus.

3 = Radial error

4 = Motor error; the CD has not reached the correct speed.

5 = PLL error; the CD is not running at the correct speed.

6 = Step error on the sledge motor.

7 = Subcode error; it has not been possible to read the subcode.

8 = TOC error; it is not possible to read lead-in.

20 = Communication error on the M/S bus.

22 = Communication error on the M/S bus, check sum error.

23 = Communication error on the M/S bus, buffer full.

37 = Communication error on the M/S bus, unknown command.

SER ERROR

SER ERROR is the last error occurred on the M/S bus

1 = S/W communication error.

2 = S/W communication error.

3 = Communication error; check the bus and the components connected to it.

4 = Communication error; check the bus and the components connected to it.

5 = Communication error; check the bus and the components connected to it.

6 = Communication error; check the bus and the components connected to it.

7 = S/W communication error.

TEST MODES

Because of the high complexity of BeoSound 9000 it is important to use the built-in test and service functions in connection with servicing the product.

A good approach to finding the error is Test mode 27 in which a number of different error reports can be seen.

Remember always to execute TEST MODES 71 + 73, see page 5-13, after a repair.

Option 0-1

Since BeoSound 9000 is in option 0 if PL speakers are not connected, the option has to be changed to 1 - see the Brief operation guide for further information, if necessary.

Option 1 can be obtained by short-circuiting pins 2 and 4 in one of the Power Link sockets.

Test and service functions can be selected by means of Beo4 or BL1000.

To gain access to these functions, the product has to be brought into test mode, and that is done by bringing the product into stand-by and then pressing:

SHIFT 9 0 2 5 8, the remote control terminal must be in audio mode

(SHIFT is found under LIST. If the Beo4 display does not read "SHIFT", add this feature to the list in the following way:
Press •, keep the key depressed and press LIST. Now release both keys.
Press LIST until the Beo4 display reads "ADD?" press "GO", press "LIST" until the display reads "SHIFT". Press GO to add "SHIFT" to the list, and press EXIT to abandon the set-up function.)

The display reads:

TESTMODE ON

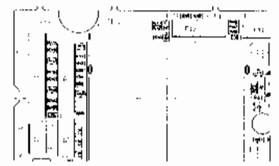
Test mode is abandoned by disconnecting the mains voltage or by bringing the product into stand-by.

The display reads:

TESTMODE OFF

In some error situations BeoSound 9000 goes into stand-by. It is possible to bring the product into a condition in which this stand-by is ignored.

This condition is activated by connecting mains voltage while the point TEST is shorted to ground.



THIS MEANS THAT THERE IS A RISK OF THE SLEDGE GETTING OUT OF CONTROL. CONSEQUENTLY, THIS CONDITION SHOULD BE USED ONLY WHEN NECESSARY.

When the product is in this condition the test mode is also activated.

The condition is abandoned by disconnecting the mains voltage.

SLG ERROR

SLG ERROR is the last sledge error occurred

13 = The IR beam in the finger protection system has been broken while the sledge was moving.

30 = A counter error has been registered on the signal from the sledge tacho. It is registered at 18IC2 pins 1, 44, 5 and 9.

31 = Microprocessor 18IC2 cannot register pulses from 9PE1.

32 = Microprocessor 18IC2 cannot register the signal REF. POS from the end stop detector at pin 20.
This error also occurs if the tacho system is not working.

33 = The clamper cannot go to the desired position. The reason may be that it is blocked or that there is an error on PCB 23, clamper position, or that the motor driver is defective.

38 = 18IC2 pin 35 registers that the sledge uses too much current. The reason may be that the sledge is blocked or that the sledge control is defective.

40 = 18IC2 pin 37 registers that the sledge uses too much current. The reason may be that the sledge is blocked or that the sledge control is defective.

41 = The sledge is blocked, or the power supply to the sledge control may be too low.

42 = The finger protection circuit is out of operation. Use test mode 71 during troubleshooting.

PLT ERROR

PLT ERROR is the last lid error occurred

17 = Position error; the lid may be blocked, the lid motor may be defective, or the optocouplers 17PE1 and 17PE2 may be defective.

37 = (Occurs during test mode 71 only.) Position error; the lid may be blocked, the motor may be defective, or the optocouplers 17PE1 and 17PE2 may be defective.

APS ERROR

APS ERROR is the last autopositioning error occurred

10 = P bit has not been detected. If a CD-I Ready disc for example has been played back at some point or if there is an error in the detection circuit. The error has been detected at pin 11 of 18IC2.

11 = Too many P bits have been detected. May be caused by scratches in the disc.

12 = Information that the turntable tacho has been adjusted. Data in EEPROM has been lost.

14 = An error has occurred in connection with scanning of the turntable motor position. The position is not stored in the EEPROM. Optocoupler/tacho may be defective.

15 = It has taken more than 5 seconds to carry out autopositioning. The turntable motor driver may be defective.

18 = It has not been possible to make a correct adjustment of the autopositioning circuit. The optocoupler circuit may be defective.

WRONG SRC/TM

Having selected test mode, select CD before using test modes associated with CD and select radio before using test modes associated with radio.

If you select a test mode that is not valid, e.g. a CD test while CD has not been selected, the display will read:

WRONG SRC/TM

TEST MODE 27
(TM = SHIFT 90258)
Error detection:

In test mode it is possible to display the last error occurred in connection with Master Link, I²C bus, CD, M/S bus, sledge, lid, autopositioning and power supply. The individual errors are displayed by pressing GO (BL1000 PLAY).

enter 27

The error registration is reset by stepping through the displayed errors until the display reads:

CLEAR ERRS?

press GO (BL1000 PLAY)

Display:

ERRS CLEARED

If you do not wish to delete the errors, press STOP instead

Error code 99 indicates that it has not been possible to read the error code in the EPROM.

ML ERROR

ML ERROR is the last error occurred on Master Link

8 = Link is kept low.

It is impossible to transmit on Master Link because it is pulled low. The error may occur if there is an error in the Master Link driver circuit, or because a short circuit has occurred on the Master Link.

16 = Link is kept high.

It is impossible to transmit on Master Link because it is pulled high. The error may occur either because the pull-up resistance in the system has become too low or as a result of an error in the data receiver circuit.

32 = Address configuration is not possible.

Disconnect all products from the Master Link system and reconnect them one by one until the error shows up.

TEST MODE 63
(TM = SHIFT 90258)
Start of CD turntable motor

(Before executing this test, carry out test mode 61 with CD; otherwise the turntable motor will run in the reverse direction.)

enter 63

The display reads:

TURNTBL ON

Must be completed with test mode 64.

TEST MODE 64
(TM = SHIFT 90258)
Stop of CD turntable motor

enter 64

The display reads:

TURNTBL OFF

The CD stops in a random position (not in autoposition).

TEST MODE 65
(TM = SHIFT 90258)
Laser arm towards extreme outside position

enter 65

The display reads:

LIGHTPEN OUT

Must be completed with test mode 66.

TEST MODE 66
(TM = SHIFT 90258)
Laser arm is moved towards the centre

enter 66

The display reads:

LIGHTPEN IN

TEST MODE 67
(TM = SHIFT 90258)
Starting the CD

enter 67

The display reads:

CD PLAY

TEST MODE 68
(TM = SHIFT 90258)
Stopping the CD

enter 68

The display reads:

CD STOP

19 = The signal ROUND REF from PCB 31 IR tacho clamper RX is missing.

34 = A counter error has occurred in connection with an adjustment (test mode 73). Check the signals QUAD 1 TTM and QUAD 2 TTM from PCB 31 IR tacho clamper RX.

35 = (Occurs during test mode 73 only.) It has not been possible to carry out a correct adjustment of the autopositioning circuit. The optocoupler/tacho circuit may be defective.

36 = (Occurs during test mode 73 only.) The signal ROUND REF from PCB 31 IR tacho clamper RX is missing.

39 = The disc detector is not operating. Carry out test mode 71 to test the circuit.

PWR ERROR

PWR ERROR is the last power error occurred.

20 = Mains drop-out while the sledge was moving.

TEST MODE 28
(TM = SHIFT 90258)
Check of EEPROM, 6IC4

enter 28

If the EEPROM is OK, the display will read MEMORY +++

If there is an error in the EEPROM, the display will read MEMORY ++-

TEST MODE 31
(TM = SHIFT 90258)
Deletion of all programming

The function can only be carried out if no errors are registered in the product. See "Error detection", page 5-7, for further information, if necessary.

enter 31

Set the product to the following values:

Option:	1
Volume:	32
Balance:	0
Bass:	0
Treble:	0
Loudness:	OFF
Radio programmes:	deleted.
CD library:	deleted.
Timer programming:	deleted.

When the function has been completed, the display will read:

DEFAULTS SET

TEST MODE 20
(TM = SHIFT 90258)
Display test:

enter 20

The display reads: HHHHHHHHHHHH
IIIIIIIIIIII
############

Switching among the various displays is achieved by pressing GO (BL1000 PLAY).

TEST MODE 22
(TM = SHIFT 90258)
Test of primary and secondary keyboards:

enter 22

When activating the various functions on the primary and secondary keyboards, the applicable function is described on the display.

End the test by pressing STOP on Beo4/BL1000.

TEST MODE 26
(TM = SHIFT 90258)
Test of mains frequency:

In connection with troubleshooting in the power-supply unit the 100/120Hz circuit can be tested.

enter 26

When 100/120Hz is detected, the display will read:

FREQUENCY OK

If other frequencies are detected, the display will read:

TM 26 ERROR

TEST MODE 72
(TM = SHIFT 90258)
Release of sledge (test of clamper function)

The product must be in CD mode.

enter 72

The display reads:

RELEASE SLG

When test mode 72 has been used the mains voltage to the product has to be disconnected to ensure correct calibration.

CD TEST MODE

In connection with the test mode the CD has reduced operation.

To gain access to the CD test modes CD must be chosen as source.

Discs do not have to be loaded into the product.

TEST MODE 61
(TM = SHIFT 90258)
Focus on

enter 61

The display reads:

CD FOCUS ON

The laser switches on, and focus is searched each time 61 is entered.

The light pen can be seen when test mode 65 is executed.

Must be completed with test mode 62.

TEST MODE 62
(TM = SHIFT 90258)
Focus off

enter 62

The display reads:

CD FOCUS OFF

The laser switches off.

TEST MODE 71
(TM = SHIFT 90258)
Test/adjustment of sledge functions

CD's must be loaded in positions 6, 5, 4, 3 and 2. There must be no CD in position 1, the position closest to the LOAD button.

The CD must be stopped when the test is activated.

The lid is closed.

enter 71

The following sequence is executed:

1. End stop is found, the sledge runs slowly.
   This tests the following: sledge tacho, sledge motor, calibration end stop switch.
2. Lid opens and closes.
   This tests the following: optocoupler for glass lid.
3. Test of finger protection circuit.
   This test can be executed without the lid being installed.
4. The sledge runs the longest possible distance slowly once, then quickly twice. This tests the sledge tacho for phase errors between quad 1 and quad 2 (the finger protection circuit is cut out during the test). When the sledge is running it must run "properly".
5. The lid opens.
6. Autocalibration of CD positions.
   This tests the following: Calibration, disc detector, sledge motor, sledge tacho, clamper motor, clamper optocoupler, and jaws.
   The clamper is noise-optimized during the autocalibration.
7. The sledge runs to the original position, i.e. the sledge position prior to activation of sledge test.

If the test is o.k., the display will read:

OK 71

If an error has occurred, the error code in question will be displayed. Switching among the various error codes is carried out by pressing GO (BL1000 PLAY), see error detection on page 5-7.

TEST MODE 73
(TM = SHIFT 90258)
Adjustment of autopositioning

The sledge must be placed in a position in which a CD is loaded.

The CD must be stopped.

Test mode 71 must have been executed.

There must be a cover on the clamper when autopositioning is executed.

enter 73

If the test is o.k., the display will read:

APS ADJUSTED

If an error has occurred, the applicable error code can be seen under test mode 27. Switching among the various error codes is carried out by pressing GO (BL1000 PLAY), see error detection on page 5-7.

USA only: Remember to carry out the special adjustment procedure - use the intermediate PCB you have received.

REPAIR TIPS

Voltage to sledge motor

Disconnect the voltage supply to the sledge motor while servicing (lift 18P53).

Master Link DATA receiver/ transmitter

Testing the circuit 2TR43, 2TR32, 2TR38, 2TR44, 2TR39, 2TR48, 2IC5, 2TR30, 2TR33.

- lift 2P22
- connect a square-wave generator 10kHz 0-5V to P22-8 (transmit)
- measure P22-9 (receive) with an oscilloscope. The signal shall be the same as the one transmitted at P22-8, only here it is delayed by 10-15µS.

In order to prevent that products which are interconnected via the Master Link socket destroy the data communication in the event of an error occurring in the data interface, the data interface circuit has been designed in such a way that certain components may be defective without this hampering the function.

For example, the diodes installed in connection with Data- and Data+ are protection diodes which have to protect against static electricity.

Consequently, in connection with a repair it may be necessary to replace/ check several components.

If 2TR39 is defective, replace both 2TR39 and 2TR48 and check the diodes 2D9, 2D22, 2D25, 2D26, 2D27 and 2D28.

If 2TR48 is defective, replace both 2TR48 and 2TR39 and check the diodes 2D9, 2D22, 2D25, 2D26, 2D27 and 2D28.

If one of the diodes 2D9, 2D22, 2D25, 2D26, 2D27 or 2D28 is defective, replace all the diodes and check 2TR39 and 2TR48.

Repair of autopositioning

TM 73 (see page 5-13) is used in connection with repair of autopositioning. The circuit can be measured each time the test is run. Use a storage oscilloscope, if necessary.

Only the signals SWAB and SDAB can be measured during lead-in, i.e. during ordinary play-back of a CD.

Autopositioning errors of less than 5 degrees may occur in rare cases.

WHY DOES THE PRODUCT NOT WORK

If the product does not work, the reason may be one of the following:

When the glass lid is not installed the sledge may stop during movement. That is because the IR beam in the finger protection system transmits at reduced power when the lid is closed.

A lid acknowledgment must be given for the product to operate. The lid may be subject to an adjustment error so than no acknowledgment is received.

If there is not 100/120Hz at pin 19 of 3IC2, the product will not operate.

If the finger protection beam is broken, the sledge cannot move.

If end stops have not been detected, the product will not operate.

SERVICE INFORMATION

TEST MODE 23
(TM = SHIFT 90258)
Display of SW versions:

enter 23

The product contains five microprocessors. The individual SW versions are displayed by pressing GO (BL1000 PLAY).

APP	x.x	(4IC4)
LINK	x.x	(3IC2)
MOTOR	x.x	(18IC2)
TUNER	x.x	(1IC202)
CD	x.x	(8IC6)

The SW version can be displayed only after tuner/CD has been selected as source. If that source has not been selected the display may read:

TUNER X.X

Select the source. Then select test mode 23 again, and the SW version can be displayed.

TEST MODE 24
(TM = SHIFT 90258)
Display of operation counters:

enter 24

The product contains 7 counters:

STANDBY
RADIO
CD
RANDOM
A.AUX
ML
ON-OFF

The individual timers are selected by pressing PLAY.

The values are used in connection with error message feedback. If the figures are preceded by a +, that too has to be included in the feedback.

Times are x 10 hours.

On/off is the actual number x 10.

TEST MODE 04
(TM = SHIFT 90258)
Display of tuner variant

enter 04

The display shows the tuner actually installed.

SERVICE

TEST MODE 21
(TM = SHIFT 90258)
Opening of ML output: (used if no ML product is connected during service)

The signal is taken from the AUX socket and output at ML

enter 21

The display reads:

ML OUT OPEN

CD

In connection with repair of the CD the following tips may be useful:

THE PHOTO DIODES AND THE LASER ARE MORE SENSITIVE TO STATIC ELECTRICITY THAN THE MOS IC'S. OMISSION TO TAKE THIS INTO CONSIDERATION DURING SERVICING MAY REDUCE THEIR LIVES DRAMATICALLY. SO BE SURE THAT THE WORK SITE IS PROTECTED AGAINST STATIC ELECTRICITY.

The product may not be connected to the mains while the CD mechanism or PCB8 are removed.

Focus can be checked by placing a CD over the light pen. The light pen will now "follow" the CD (up/down).

In normal operation the CD will first search for Focus, and when that has been found it will start the turntable motor, i.e. if the motor cannot start, the reason may be that focus has not been found.

The CD can run without clamper and disc detector. In test mode select CD as source. Move the sledge to position 1, disconnect the voltage supply to the sledge motor while servicing the CD (lift 18P53), load a CD, press CD, and the CD can now be played back.

By using one of the flat cables provided at the back of the service manual the display can be engaged by connecting 7P63 and 3P8.

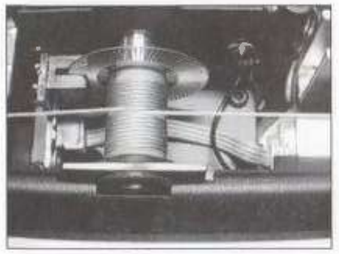
In connection with test modes the CD has reduced operation.

If the clamper arm is not installed, no tacho pulses will come from the autopositioning system, and the turntable motor may therefore run in the reverse direction.

SLEDGE

In connection with repair of the sledge function the following tips may be useful:

The wire for the sledge must be placed correctly; otherwise periodic errors may occur.



GLASS LID

The glass lid may be "pulled" out of mesh. The product has been designed in that way in order to allow the customer to remove his CD's without switching on the power supply to the product.

MISCELLANEOUS

When replacing the top, the number label must be transferred to the new top.

TEST MODE 25
(TM = SHIFT 90258)
Opening of ML input: (used if no ML product is connected during service)

The signal is taken from the ML socket and output at PL and AUX.

enter 25

The display reads:

ML IN OPEN

REPLACEMENT OF COMPONENTS

Replacement of the EEPROM, 6IC4

The programming carried out by the customer will be lost when 6IC4 is replaced.

REMEMBER to carry out test modes 71 and 73 (see page 5-13).

Replacement of PCB3 and/or PCB6

When PCB3 and/or PCB 6 are replaced, the EEPROM, 6IC4, must be transferred to the new module, because that is where the customer's CD library, for example, is stored.

Replacement of 7DP1, 7DP2 or 7DP3

When display 7DP1, 7DP2 or 7DP3 is replaced, all 3 displays must be replaced to ensure a uniform light intensity.

Replacement of 29IL1 and 7IL1

When 29IL1 or 7IL1 is replaced, both light bulbs must be replaced.

Replacement of Light indicator (PCB's 24 and 25)

When either Light indicator PCB's is replaced, it MUST be fixed again with double-sided adhesive tape.

Replacement of PCB18, PCB27, PCB28 and the mechanical parts of the finger protection system.

Remember to carry out adjustment of the sensitivity of the finger protection system (see page 5-4).