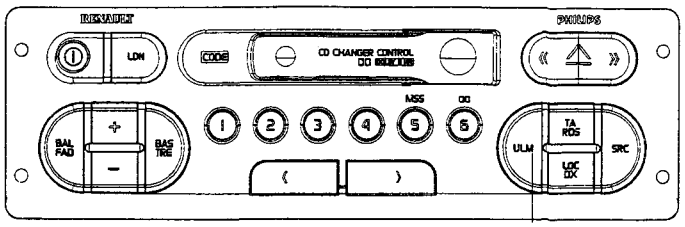
Cassette Car Radio 22DC593/ 62E

22DC594/ 62E/ 62S

Service
Service
Service



For repair information of the Cassette deck see Service Manual No
4822 725 25459 of Auto Cassette Deck SCA*5-4 for DC594/62E/S
4822 725 xxxxx of Auto Cassette Deck P1-18 for DC593/62E

Service Manual

12V

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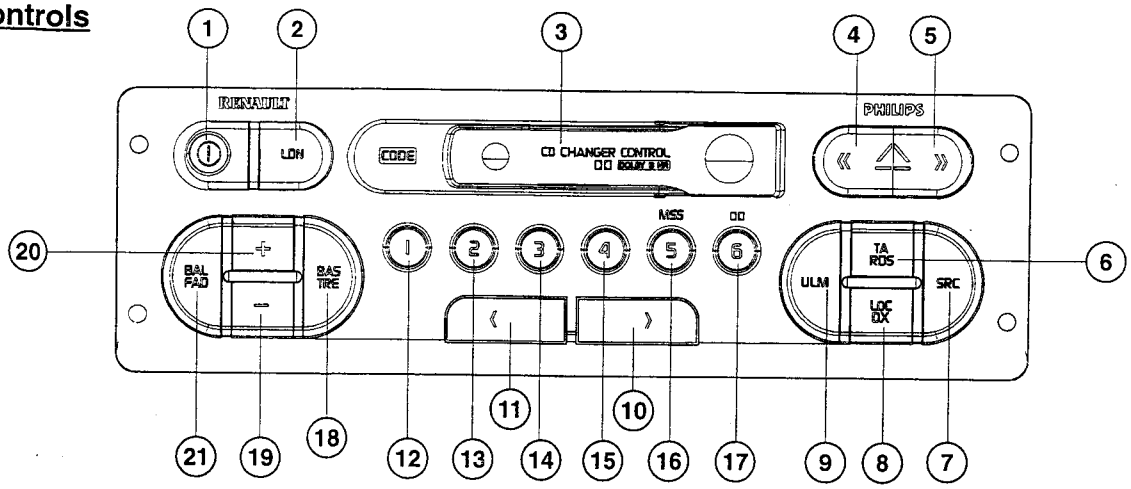
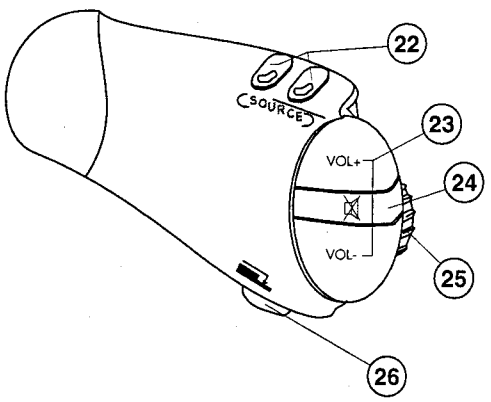
PCS 87 909

Controls



POS	22DC593/62E	22DC594/62S	22DC594/62E
1	On / Off		
2	Loudness		
3	Cassette opening + flap		
4	4 + 5 = ejection	FRW button	
5		FFW Button	
6	Info / Traffic announcement		
7	Source		
8	DX mode / Local mode		
9	Band Select		
10	Search UP		Search UP / Next track
11	Search DOWN		Search DOWN / Previous track
12	Preset 1		Preset 1 / Scan / Disk 1
13	Preset 2		Preset 2 / Scan / Disk 2
14	Preset 3		Preset 3 / Scan/ Disk 3
15	Preset 4		Preset 4 / Scan / Disk 4
16	Preset 5	Preset 5 / MSS	Preset 5 / MSS / Scan / Disk 5
17	Preset 6	Preset 6 / Dolby	Preset 6 / Dolby / Scan / Disk 6
18	Bass / Treble		
19	Vol , Bass, Treble, Balance -	Vol , Bass, Treble, Balance, Fader -	
20	Vol , Bass, Treble, Balance +	Vol , Bass, Treble, Balance, Fader +	
21	Balance	Balance / Fader	

Remote control



22	Change waveband/source	
23	Vol , Bass, Treble, Balance, Fader + and - when corresponding function activated	
24	In code entry mode: SP : Validation digit Sec Code LP : Validation Sec Code	All others modes: Mute / Demute
25	In code entry mode: Selection digits Sec Code	Changing preset / Track selection
26	In code entry mode: SP : Validation digit Sec Code LP : Validation Sec Code	In radio mode: SP : search UP LP : Starts Autostore

SP : Short press LP : Long press (>2s)

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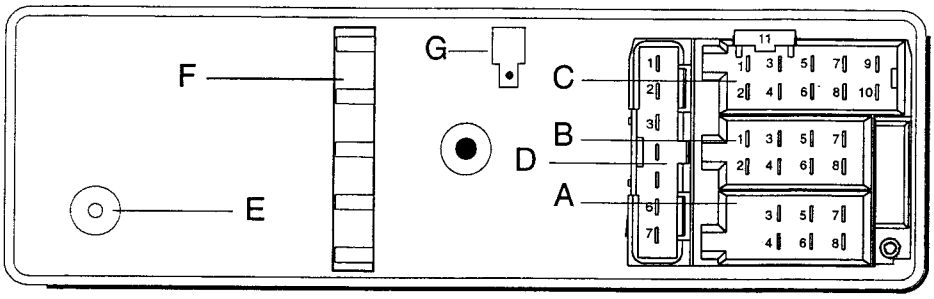
CONNECTIONS



POS	FUNCTION	DC593/62E	DC594/62S	DC594/62E
A1				
A2				
A3	Mute radio (0V)	X	X	X
A4	Plus permanent	X	X	X
A5	+ Antenna	X	X	X
A6	Pilot light	X	X	X
A7	Plus accessories	X	X	X
A8	GND	X	X	X
B1	Rear right +		X	X
B2	Rear right -		X	X
B3	Front right +	X	X	X
B4	Front right -	X	X	X
B5	Front left +	X	X	X
B6	Front left -	X	X	X
B7	Rear left +		X	X
B8	Rear left -		X	X
C1	Screening D2B			X
C2	Bus D2B +			X
C3	Bus D2B -			X
C4	GND supply			X
C5	CD supply (A4)			X
C6				
C7	Info on / off (A5)			X
C8	input right			X
C9	Input left			X
C10	Input ref			X
C11	Screening CD			X
D1	Data I2C	X	X	X
D2	Clock I2C	X	X	X
D3	Mrq I2C	X	X	X
D4				
D5				
D6	+ antenna	X	X	X
D7	GND	X	X	X
E	AERIAL PLUG	X	X	X
F	Fastening cable	X	X	X

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TECHNICAL DATA

GENERAL

Power supply	:14.4V DC
Dimensions	:180x150x51 mm
Security code	: Yes
Remote control	: Yes
Remote display	: Yes

RADIO

LW	: 153-279 KHz
MW	: 531-1602 KHz
FM	: 87.5-108 MHz
IF-AM (1/2)	: 10.7 MHz/450 KHz
IF-FM (1/2)	: 72.2 MHz/10.7 MHz
Sensivity 26dB S/N	: <40 µV (LW)
	: <40 µV (MW)
	: 3.5 µV (FM)
Limitation α-3dB	: 3µV<L<14µV

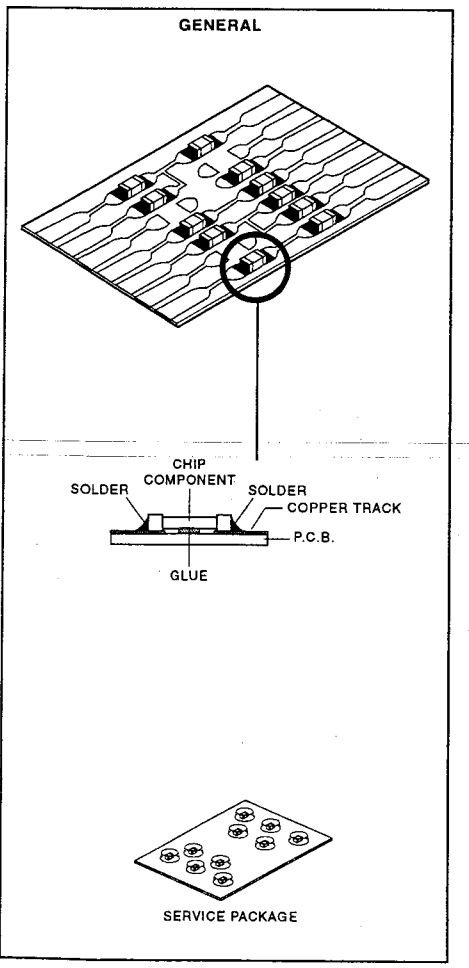
CASSETTE

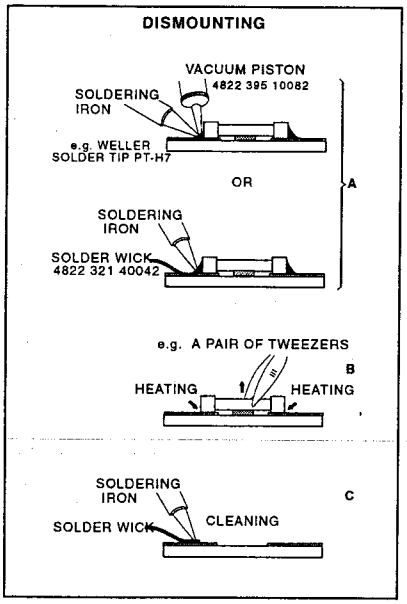
Cassette mechanism	: LCA 5.4 for DC594*
	: P1.18 for DC593
Number of tracks	: 2 or 2x2*
Tape speed	: 4.76 cm/sec
Wow and flutter	: ≤ 0.35%
Crosstalk	: ≥ 30 dB

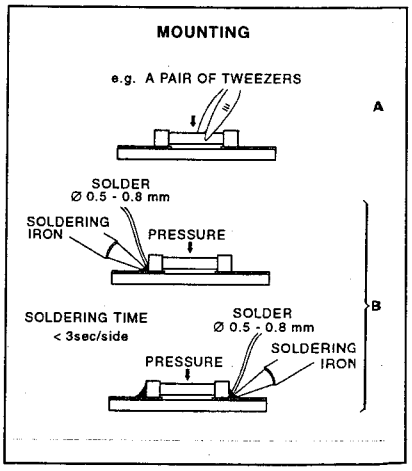
AMPLIFIER

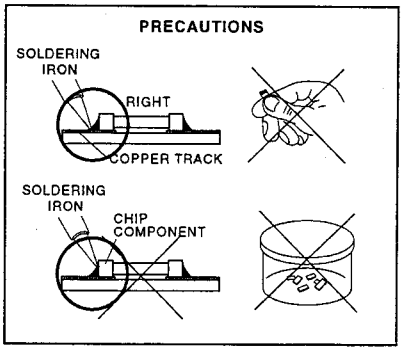
Output power	: 4x15 W / 4 Ω (THD = 10%) DC594
	: 2x6W / 4 Ω (THD = 10%) DC593
Fader control	: >12 dB (DC594 only)
Balance control	: >15 dB
Source separation	: >60 dB
Input sensivity (CD in)	: 150 mV ± 2 dB

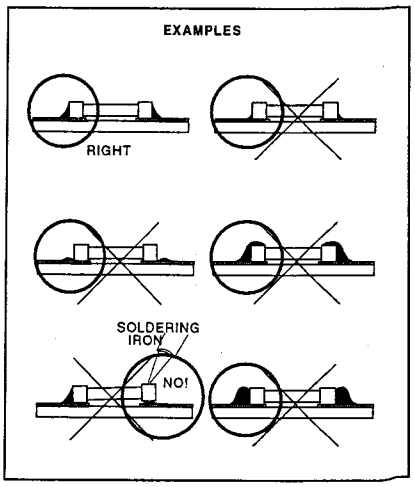
HANDLING CHIP COMPONENTS











2E
2E
2S

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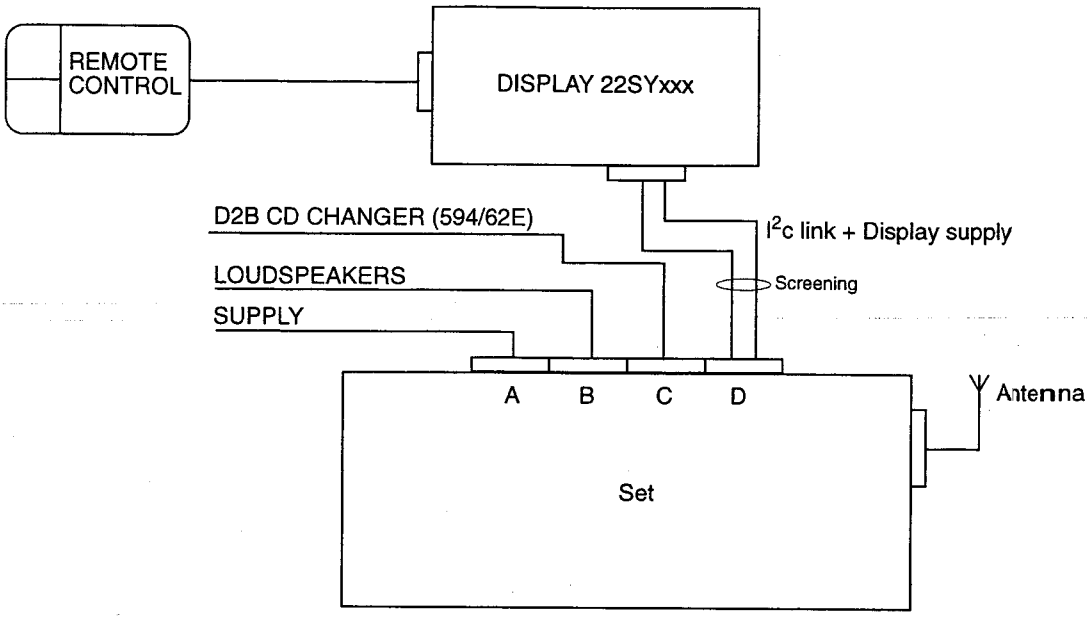
These sets are parts of a system, composed of the following parts:
1)- The set 22DC593/62E, 594/62E or 594/62S.
2)- A remote control + cable.
3)- A remote display 22SY664, 654, or 656.
4)- A cable link between the set (connector D) and the display.

-IN CASE YOU NEED PARTS OF THIS SYSTEM, PLEASE CONTACT LOCALLY RENAULT TO GET INFO ABOUT THESE PARTS.



This set is protected by a security code. **THE CODE CAN ONLY BE ENTERED VIA THE REMOTE CONTROL**

Entering the code:
-) Press the On/Off key to switch on the set. COD and then 0000 will appear on the display.
-) To select the four digits of the code:
  - Adjust the flashing digit with the thumbwheel on the remote control.
  - Press the [24] key or 26] key on the remote control to change the digit.
-) Press the [24] key or [26] key for at leasr 2 seconds to validate the code.
  When the code is activated a bleep will be heard.

Example : you want to enter the code 7637

	Turn the thum-bwheel Press [24] or [26]	Turn the thum-bwheel Press [24] or [26]	Turn the thum-bwheel Press [24] or [26]	Turn the thum-bwheel Press [24] or [26]	Press [24] or [26] for at least 2 seconds
0000	7000	7600	7630	7637	Last heard fre quency

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SYSTEM TESTS

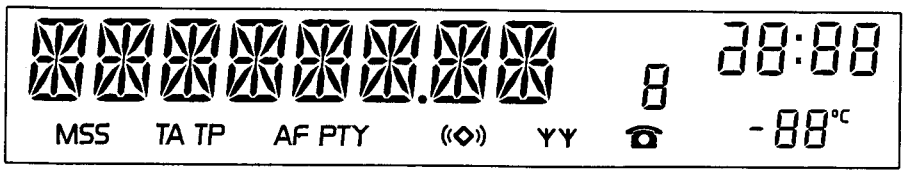
WARNING: this test needs a display 22SY656/62B to be completed

1 - Display connection check

Starting the test: supply the display with the 12V acc without radio connected or radio switched off while <Vol+>sat, <Vol->sat and <SOURCE>sat are pressed together.

If there is no problem, the following test will start.
The display shows 3 different screens:

1



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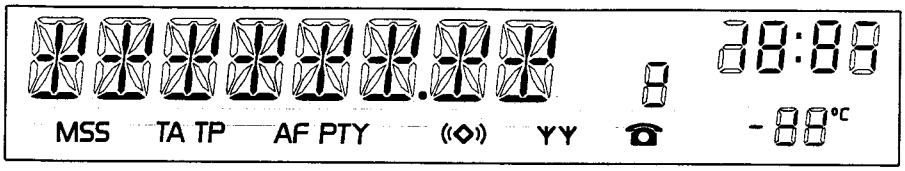

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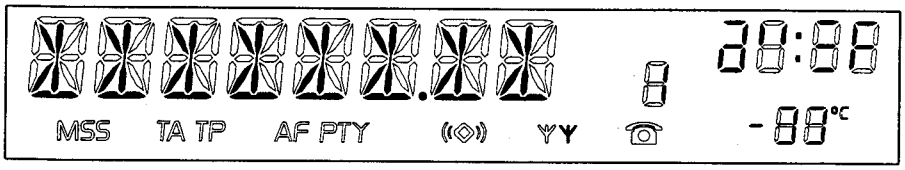

These screens are displayed in sequence each time you press the <26>sat button. It can be aborted by Switching On the set.

2 - Keyboard test

Starting the test: press P3 and ON.

"T" is displayed to request keyboard test. For each key pressed, the number of the pressed key appears, according to the table shown below. When all 17 keys have been pressed, "TEST OK" message is displayed.
This test can be aborted at any time by switching the set OFF.

number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
key	LDN	BAL FAD	+	-	BAS TRE	Pr 1	Pr 2	Pr 3	Pr 4	Pr 5	Pr 6	ULM	TA	DX	SRC	<	>

If all is right, thr display shows "KEYS OK"

3 - Check sum and Running times (Multiples of ten minutes)

At the end of the keyboard test, press P3 to start this test.
The display will show in order, during 5s each :

1) the checksum of the front microprocessor : CSF XXXX (depending on the software release)
2) the checksum of the main microprocessor : CSM XXXX (depending on the software release)
3) the running time in tuner mode : TU ....
4) the running time in cassette mode : TA ....
5) the running time in Cd changer mode CDC ....
6) the running time in Traffic Announcement TR ....
7) the running time in Telephone Call SP ....
8) the total running time TOT ....
9) the running time in nominal mode I^2C NOM ....

These indications are displayed in a loop. To end the test, switch Off the set.

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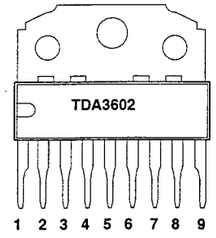
SAA6579T Radio Data System demodulator

SYMBOL	PIN	DESCRIPTION
QUAL	1	quality indication output
RDDA	2	RDS data output
V_{ref}	3	reference voltage output (0.5 V_{DDA})
MPX	4	multiplex input signal
V_{DDA}	5	+5V supply voltage for analog part
V_{SSA}	6	ground for analog part (0V)
CIN	7	subcarrier input to comparator
SCOUT	8	subcarrier output for reconstruction filter
TCTR	9	test control
TEN	10	test enable
V_{SSD}	11	ground for digital part (0V)
V_{DDD}	12	+5V supply voltage for digital part
OSCI	13	oscillator input
OSCO	14	oscillator output
T57	15	57kHz clock signal output
RDCL	16	RDS clock output

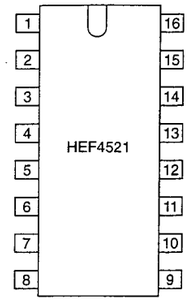
TDA3602 Multiple output voltage regulator

SYMBOL	PIN	DESCRIPTION
V_P	1	positive supply voltage
REG1	2	regulator 1 output
RESET	3	reset output
SCI	4	state control input
HOLD	5	hold output
GND	6	ground
REG3	7	regulator 3 output
V_{bu}	8	back-up
REG2	9	regulator 2 output



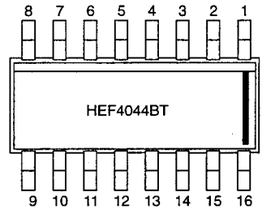
HEF4521BP 24-stage frequency divider

SYMBOL	PIN	DESCRIPTION
O_{24}	1	output 2^{24}
MR	2	asynchronous master reset
$V_{SS'}$	3	
O_2	4	
$V_{DD'}$	5	
I_2	6	
O_1	7	
V_{SS}	8	ground
I_1	9	
O_{18}	10	output 2^{18}
O_{19}	11	output 2^{19}
O_{20}	12	output 2^{20}
O_{21}	13	output 2^{21}
O_{22}	14	output 2^{22}
O_{23}	15	set input 3 (active LOW)
V_{DD}	16	power supply



HEF4044BT Quad R/S latch with 3-state outputs

SYMBOL	PIN	DESCRIPTION
O_3	1	3-state buffered latch output 3
n.c	2	
$\overline{S}_0$	3	set input 0 (active LOW)
$\overline{R}_0$	4	reset input 0 (active LOW)
E0	5	common output enable input
$\overline{R}_1$	6	reset input 1 (active LOW)
$\overline{S}_1$	7	set input 1 (active LOW)
V_{SS}	8	ground
O_1	9	3-state buffered latch output 1
O_2	10	3-state buffered latch output 2
$\overline{S}_2$	11	set input 2 (active LOW)
$\overline{R}_2$	12	reset input 2 (active LOW)
O_0	13	3-state buffered latch output 0
$\overline{R}_3$	14	reset input 3 (active LOW)
$\overline{S}_3$	15	set input 3 (active LOW)
V_{DD}	16	supply



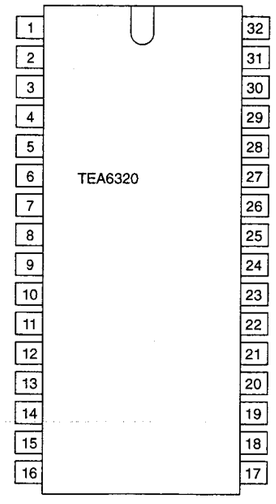
FUNCTION TABLE

inputs			output
E0	$\overline{S}_n$	$\overline{R}_n$	O_n
L	X	X	Z
H	L	H	H
H	X	L	L
H	H	H	latched

Z = high impedance OFF-state

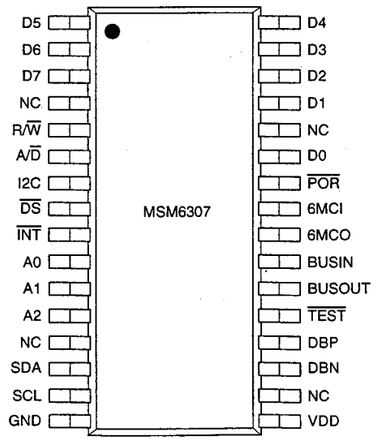
TEA6320 SOFAC (SOund FAder Control circuit)

SYMBOL	PIN	DESCRIPTION	SYMBOL	PIN	DESCRIPTION
SDA	1	serial data input/output	IAR	17	input A right source
GND	2	ground	IBR	18	input B right source
OUTLR	3	output left rear	CAP	19	electronic filtering for supply
OUTLF	4	output left front	ICR	20	input C right source
TL	5	treble control capacitor left channel or input from an external equalizer	V_{ref}	21	reference voltage (0.5Vcc)
B2L	6	bass control capacitor left channel or output to an external equalizer	IDR	22	input D right source
B1L	7	bass control capacitor, left channel	QSR	23	output source selector right channel
IVL	8	input volume I, left control part	ILR	24	input loudness right channel
ILL	9	input loudness, left control part	IVR	25	input volume I, right control part
QSL	10	output source selector, left channel	B1R	26	bass control capacitor, right channel
IDL	11	input D left source	B2R		bass control capacitor right channel or output to an external equalizer
MUTE	12	mute control	TR	28	treble control capacitor right channel or input from an extenal equalizer
ICL	13	input C left source	OUTRF	29	output right front
IMO	14	input mono source	OUTRR	30	output right rear
IBL	15	input B left source	Vcc	31	supply voltage
IAL	16	input A left source	SCL	32	serial clock input



MSM6307GS D^2B IC

SYMBOL	I/O	DESCRIPTION
$\overline{POR}$	I	Power on - reset
R / $\overline{W}$	I	Read / Write selector
$\overline{DS}$	I	Data strobe to access data bus
A / $\overline{D}$	I	Selects address or data on D0 ~ d7
SDA	I/O	I^2C data signal input / output
SCL	I/O	I^2C clock signal input / output
I2C	I	Selects I^2C or parallel interface
$\overline{INT}$	O	Interrupt output
BUSIN	I	D2B input (TTL level)
BUSOUT	O	D2B output (TTL level)
DBN & DBP	I/Os	Differential D2B lines of the internal driver/ receiver, to be terminated with 60Ω
$\overline{TEST}$	I	Selects the test mode for factory purposes
6MCI	I	Clock input 6MHz resonator or X-TAL
6MCO	O	Clock output 6MHz resonator or X-TAL
D0 ~ D7	I/Os	8-bit bi-directional address or data bus
A0 ~ A2	I	Programmables I^2C slave addresses



DIODES

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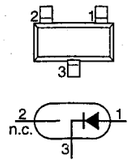

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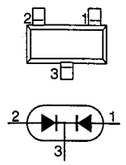

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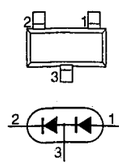
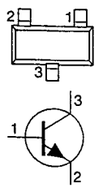


TRANSISTORS

BC847B / BFS19



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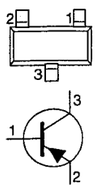

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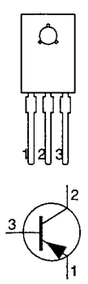

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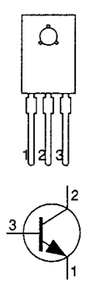

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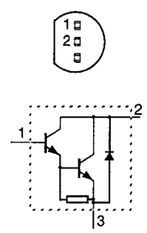

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DC VOLTAGES

All measurements in FM, set tuned, 0dB at output.
All settings in mid position. Values are given for indication only.

IC91 TUNER MODULE

1 = 0.5 V
2 = GND
3 = N.C.
4 = N.C.
5 = N.C.
6 = 4.9 V
7 = 8.3 V
8 = GND
9 = 4.9 V
10 = 4.6 V
11 = 2.9 V
12 = 4.7 V
13 = 4.9 V
14 = 4.8 V
15 = N.C.
16 = 3.6 V
17 = 3.6 V
18 = 0.0 V
19 = N.C.
20 = N.C.

7257 LA2000

1 = 1.8 V
2 = 7.3 V
3 = 2.1 V
4 = N.C.
5 = GND
6 = 5.0 V
7 = N.C.
8 = N.C.
9 = 8.5 V

7350 TDA8579T

1 = 4.8 V
2 = 5.0 V
3 = 4.8 V
4 = 5.2 V
5 = GND
6 = 4.4 V
7 = 4.4 V
8 = 8.5 V

7354 TEA6320

1 = 5.0 V
2 = GND
3 = 3.6 V
4 = 3.9 V
5 = 3.9 V
6 = 3.9 V
7 = 3.9 V
8 = 3.5 V
9 = 3.8 V
10 = 3.7 V
11 = N.C.
12 = 7.6 V
13 = 4.4 V
14 = 3.8 V
15 = 3.9 V
16 = 3.6 V
17 = 3.7 V
18 = 3.9 V
19 = 7.6 V
20 = 4.4 V
21 = 3.9 V
22 = N.C.
23 = 3.7 V
24 = 3.8 V
25 = 3.5 V
26 = 3.9 V
27 = 3.9 V
28 = 3.9 V
29 = 3.9 V
30 = 3.9 V
31 = 7.6 V
32 = 5.0 V

7355 SAA6579T

1 = N.C.
2 = 3.1 V
3 = 2.5 V
4 = 2.5 V
5 = 4.9 V
6 = GND
7 = 2.3 V
8 = 2.5 V
9 = GND
10 = GND
11 = GND
12 = 4.9 V
13 = 4.332 MHz
14 = 4.332 MHz
15 = N.C.
16 = 3.5 V

7356 TL074

1 = 4.2 V
2 = 4.2 V
3 = 4.1 V
4 = 8.2 V
5 = 4.1 V
6 = 4.3 V
7 = 4.2 V
8 = 4.2 V
9 = 4.3 V
10 = 4.1 V
11 = GND
12 = 4.2 V
13 = 4.2 V
14 = 4.2 V

7551 TDA7374

1 = 7.0 V
2 = 7.0 V
3 = 14.4 V
4 = 0.7 V
5 = 0.7 V
6 = 0.7 V
7 = 3.3 V
8 = Earth
9 = GND
10 = 0.0 V
11 =0.7 V
12 =0.7 V
13 = 14.4 V
14 = 7.0 V
15 = 7.0 V

7251 TEA0675T

1 = 4.0 V
2 = 3.4 V
3 = 3.9 V
4 = 3.9 V
5 = 3.9 V
6 = 5.6 V
7 = 4.0 V
8 = 4.0 V
9 = 8.2 V
10 = 3.6 V
11 = 4.0 V
12 = 4.0 V
13 = 4.0 V
14 = GND
15 = N.C.
16 = GND
17 = 4.0 V
18 = 4.0 V
19 = 4.5 V
20 = 3.9 V
21 = 0.6 V
22 = 3.4 V
23 = 3.0 V
24 = 4.0 V

7601 ST24C16

1 = 5.0 V
2 = 5.0 V
3 = 5.0 V
4 = GND
5 = 5.0 V SDA
6 = 5.0 V SCL
7 = GND
8 = 5.0 V

7602 HEF4521

1 = N.C.
2 = GND
3 = GND
4 = 3.5 V
5 = 5.0 V
6 = 3.5 V
7 = 3.5 V.
8 = GND
9 = 2.5 V
10 = 1 Hz ⎍⎍
11 = N.C.
12 = N.C.
13 = N.C.
14 = N.C.
15 = N.C.
16 = 5.0 V

7603 MSM6307GS

1 = 5.0 V
2 = 5.0 V
3 = 5.0 V
4 = N.C.
5 = 5.0 V
6 = 5.0 V
7 = 5.0 V
8 = 5.0 V
9 = 5.0 V
10 = 5.0 V
11 = 5.0 V
12 = 5.0 V
13 = N.C.
14 = 4.9 V SDA
15 = 4.9 V SCL
16 = GND
17 = 5.0 V
18 = N.C.
19 = 2.3 V
20 = 2.3 V
21 = 5.0 V
22 = N.C.
23 = 5.0 V
24 = 5.75 MHz
25 = 5.75 MHz
26 = 4.8 V
27 = 5.0 V
28 = N.C.
29 = 5.0 V
30 = 5.0 V
31 = 5.0 V
32 = 5.0 V

7800 TDA3602

1 = 13.4 V
2 = 8.5 V
3 = N.C.
4 = 0.6 V
5 = 5.0 V
6 = GND
7 = 5.0 V
8 = 13.2 V
9 = 5.0 V

7826 HEF 4044BT

1 = 0.0 V
2 = N.C.
3 = 3.5 V
4 = 4.6 V
5 = 5.0 V
6 = 4.0 V
7 = 5.0 V
8 =GND
9 = 5.0 V
10 = 0.0 V
11 = 4.8 V
12 = 5.0 V
13 = 5.0 V
14 = 5.0 V
15 = 5.0 V
16 = 5.0 V

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Check and Alignment

No alignment is needed for radio part. IC91 tuner is pre-aligned.

For all measurement, please refer to "General Check & Alignment procedures for Car Systems' 4822 725 25456

Dolby alignment:

cassette	adjust	
MTT 150 F = 400 Hz/ 200 nWb	3260 and 3261	AC voltage at pin 1 & 24 of 7251 = 387.5 mV +/- 50mV

Checks:

Supply voltages (set Off)

SET OFF	Voltage	Current + Acc ON	Current + Acc OFF	Pin 14 µP	Pin 69 µP
Acc supply	+14.4V	< 20mA		min 4.8V max 5.2V	max 0.8V
Perm supply	+14.4V	< 3mA	< 3mA		

Supply voltages (set On)

device	µP	µP	µP	TDA3602	TDA3602	EEprom
pin	30 (reset)	14 (supply)	69 (hold)	9 (5V)	2 (8.5V)	8
Voltage	max 0.8V	min 4.8V max 5.2V	min 2.0V max 5.7V	min 4.8V max 5.2V	min 8.2V max 8.8V	min 4.8V max 5.2V

Reference oscillator frequencies

device	MSM 6307	µP	SAA6579T
pin	24 & 25	51 & 52	13 & 14
frequency	6 MHz 0.5%	11.5 MHz 0.5%	4.332 MHz 60 ppm

FM mute:

98 MHz 1mV	output at load resistor R & L = 775 mV = REF
no signal	output should be < -20 dB (REF - 20 dB)

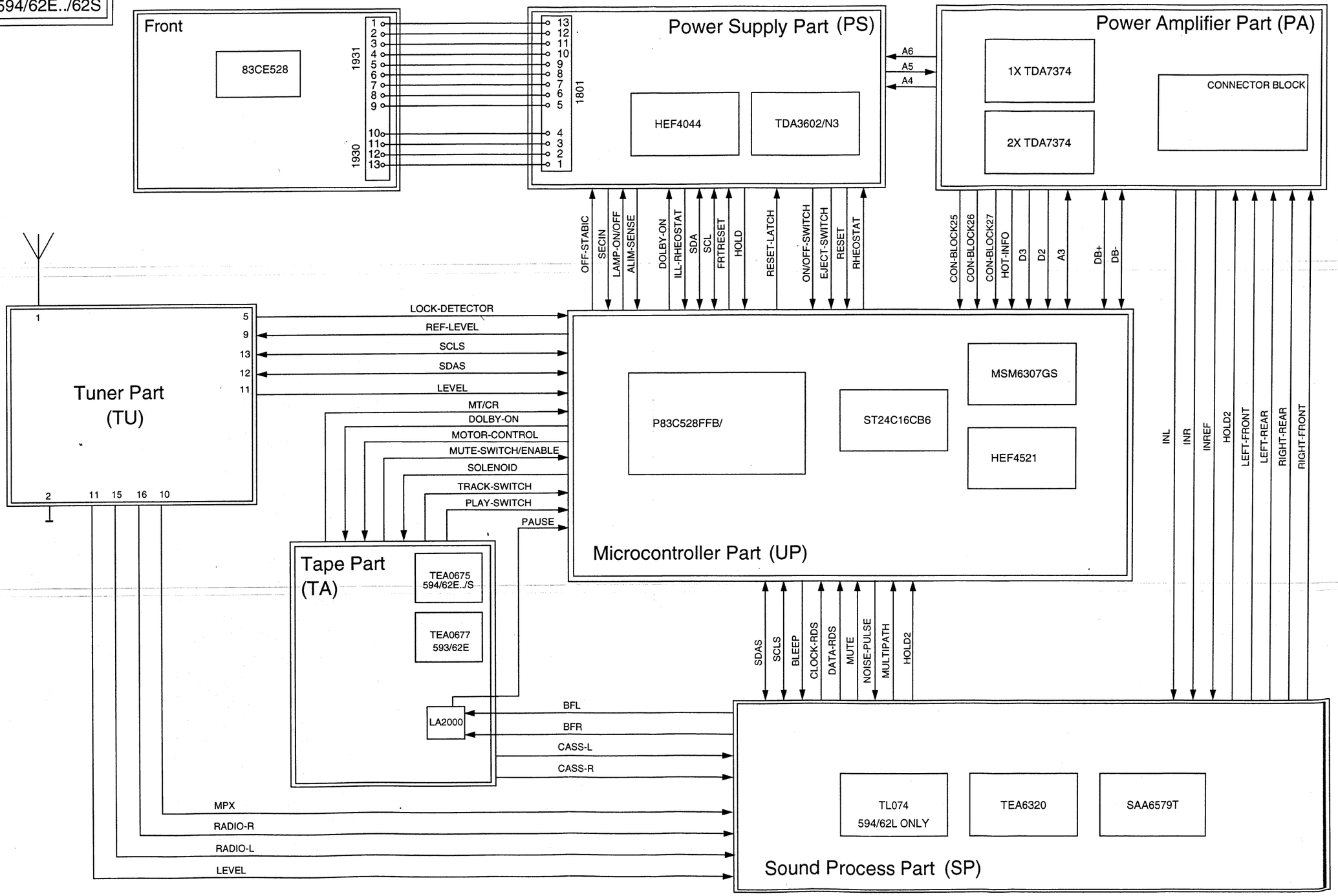
Demodulated FM levels

Input	Output of IC91 (pin 16 & 17)
98 MHz	300 mV ± 50 mV

Limiting point α-3dB

Range	Input	min	nominal	max
87.5 to 108 MHz	1mV 400Hz	3µV	5.5µV	14µV

BLOCK DIAGRAM
22DC593/62E
22DC594/62E../62S



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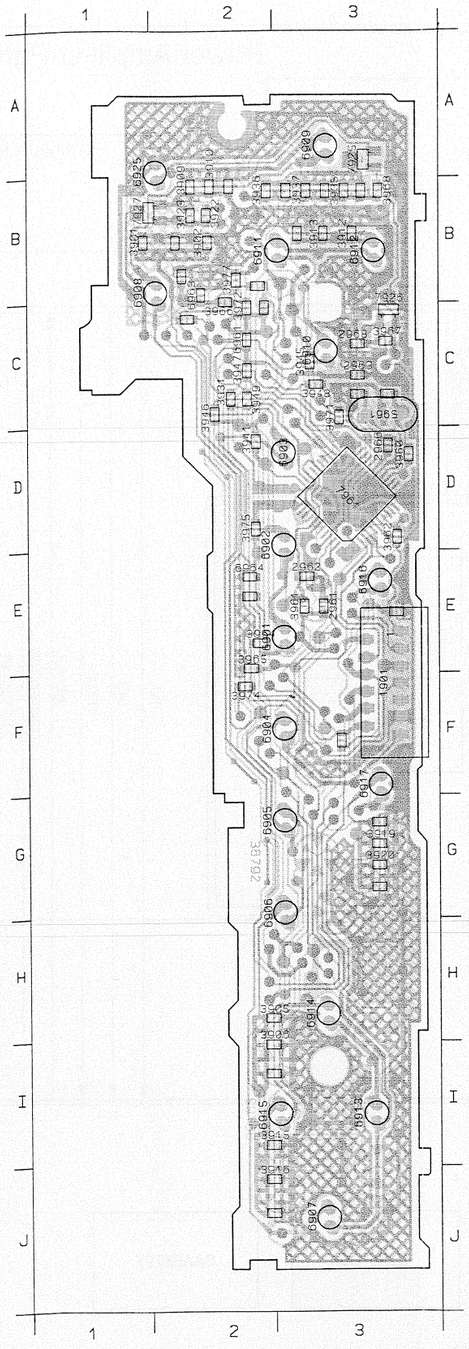
FRONT PWB



1901	F3	6908	B2
2961	E3	6909	A3
2962	E3	6910	C3
2963	C3	6911	B3
2966	D3	6912	B3
2968	C3	6913	I3
3901	B1	6914	H3
3902	B2	6915	I3
3905	H2	6916	E3
3906	H2	6917	F3
3909	B2	6925	A2
3910	A2	6961	C2
3912	B3	6963	B2
3913	B3	6964	E2
3915	I2	7925	A3
3916	J2	7926	C3
3919	G3	7927	B1
3920	G3	7961	D3
3922	B2		
3923	B2		
3931	C2		
3935	B3		
3936	B2		
3937	B3		
3941	D2		
3945	C3		
3946	C2		
3947	C2		
3948	C3		
3949	C2		
3960	D3		
3961	E3		
3962	D3		
3964	E2		
3965	E2		
3966	B2		
3967	C3		
3968	B3		
3971	C3		
3972	C2		
3974	F2		
3975	D2		
3977	B2		
5961	C3		
6901	E3		
6902	D3		
6903	D3		
6904	F3		
6905	G3		
6906	G3		
6907	J3		

22DC593/62E
22DC594/62E../62S

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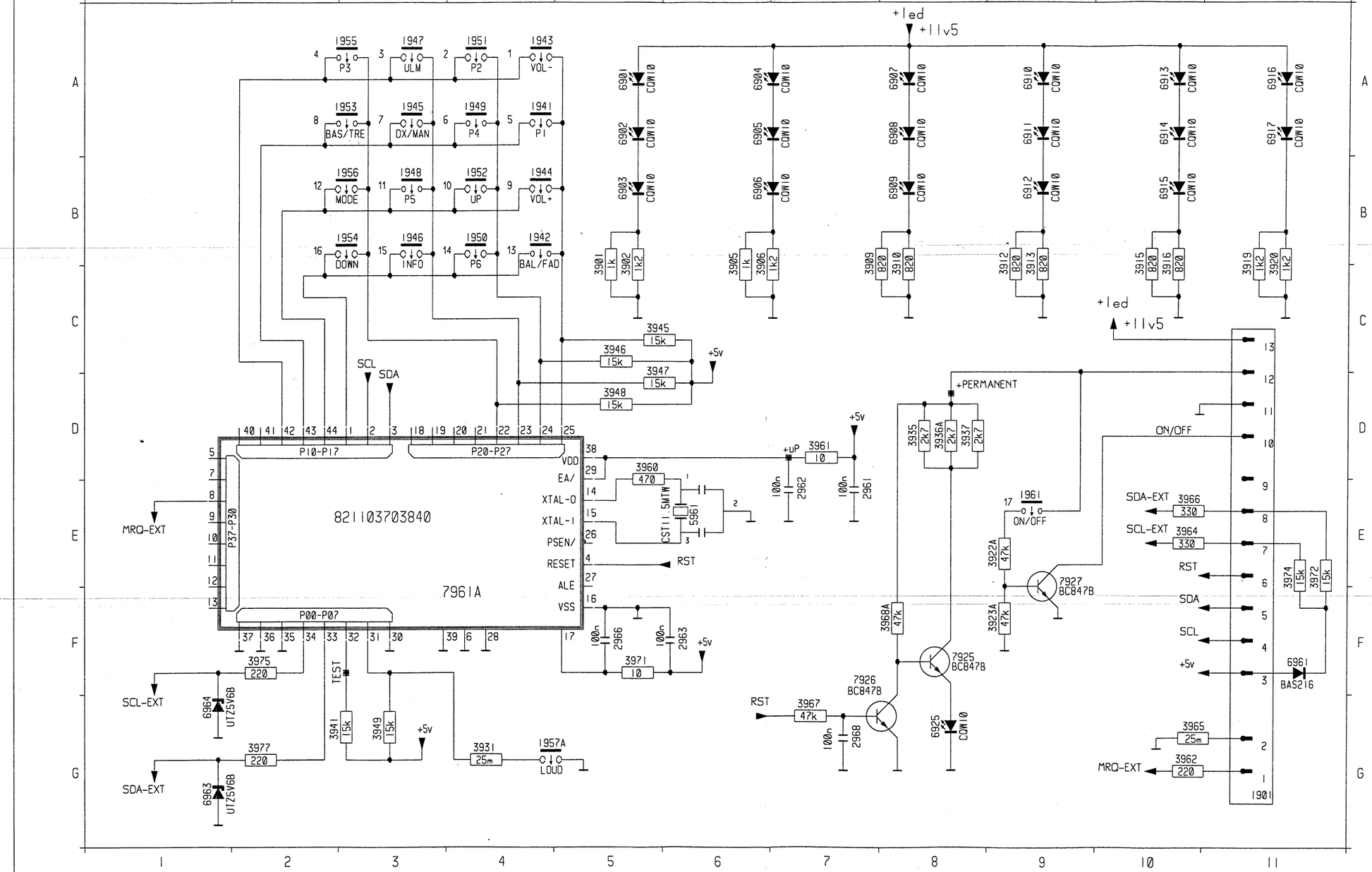
2961	4822 126 13196	100N 10% 25V X7R 0805
2962	4822 126 13196	100N 10% 25V X7R 0805
2963	4822 126 13196	100N 10% 25V X7R 0805
2966	4822 126 13196	100N 10% 25V X7R 0805
2968	4822 126 13196	100N 10% 25V X7R 0805
3901	4822 051 20102	1K00 5% 0,1W
3902	4822 051 20122	1K20 5% 0,1W
3905	4822 051 20102	1K00 5% 0,1W
3906	4822 051 20122	1K20 5% 0,1W
3909	4822 051 20821	820R00 5% 0,1W
3910	4822 051 20821	820R00 5% 0,1W
3912	4822 051 20821	820R00 5% 0,1W
3913	4822 051 20821	820R00 5% 0,1W
3915	4822 051 20821	820R00 5% 0,1W
3916	4822 051 20821	820R00 5% 0,1W
3919	4822 051 20122	1K2 5% RC11 0805
3920	4822 051 20122	1K2 5% RC11 0805
3922	4822 051 20473	47K 5% 0805 RC11
3923	4822 051 20473	47K 5% 0805 RC11
3935	4822 051 20272	2K70 5% 0,1W
3936	4822 051 20272	2K70 5% 0,1W
3937	4822 051 20272	2K70 5% 0,1W
3941	4822 051 20223	22K 5% RC11 0805
3945	4822 051 20153	15K 5% 0805 RC11
3946	4822 051 20153	15K 5% 0805 RC11
3947	4822 051 20153	15K 5% 0805 RC11
3948	4822 051 20153	15K 5% 0805 RC11
3949	4822 051 20153	15K 5% 0805 RC11
3961	4822 051 20109	10R00 5% 0,1W
3962	4822 051 20221	220R 5% 0805 RC11
3964	4822 051 20331	330R 5% RC11 0805
3965	4822 051 20008	CHIP JUMPER MAX 0R05
3967	4822 051 20473	47K 5% RC11 0805
3968	4822 051 20473	47K 5% RC11 0805
3971	4822 051 20221	220R 5% RC11 0805
3972	4822 051 20153	15K 5% RC11 0805
3973	4822 051 20153	15K 5% RC11 0805
3975	4822 051 20221	220R 5% RC11 0805
3977	4822 051 20221	220R 5% RC11 0805

5961	4822 242 10435	CER RES 12MHZ
6901	4822 130 10417	LED SM LOT670-JK-E9139/40
6902	4822 130 10417	LED SM LOT670-JK-E9139/40
6903	4822 130 10417	LED SM LOT670-JK-E9139/40
6904	4822 130 10417	LED SM LOT670-JK-E9139/40
6905	4822 130 83963	LED LO3360 ORANGE
6906	4822 130 83963	LED LO3360 ORANGE
6907	4822 130 83963	LED LO3360 ORANGE
6908	4822 130 83963	LED LO3360 ORANGE
6909	4822 130 83963	LED LO3360 ORANGE
6910	4822 130 83963	LED LO3360 ORANGE
6911	4822 130 83963	LED LO3360 ORANGE
6912	4822 130 83963	LED LO3360 ORANGE
6913	4822 130 83963	LED LO3360 ORANGE
6914	4822 130 83963	LED LO3360 ORANGE
6915	4822 130 83963	LED LO3360 ORANGE
6916	4822 130 83963	LED LO3360 ORANGE
6917	4822 130 83963	LED LO3360 ORANGE
6925	4822 130 83963	LED LO3360 ORANGE

6961	4822 130 83757	DIODE BAS216
6963	4822 130 10185	DIODE REG SM UDZ5.6B
6964	4822 130 10185	DIODE REG SM UDZ5.6B
7925	4822 130 60511	BC847B
7926	4822 130 60511	BC847B
7927	4822 130 60511	BC847B
7961	4822 209 13611	P83CE528EFB/017



1901	G 11	3967	G 7
1941	A 4	3968	F 8
1942	B 4	3971	F 5
1943	A 4	3972	E 11
1944	B 4	3974	E 11
1945	A 3	3975	F 2
1946	B 3	3977	G 2
1947	A 3	5961	E 6
1948	B 3	6901	A 5
1949	A 4	6902	A 5
1950	B 4	6903	B 5
1951	A 4	6904	A 6
1952	B 4	6905	A 6
1953	A 3	6906	B 6
1954	B 3	6907	A 8
1955	A 3	6908	A 8
1956	B 3	6909	B 8
1957	G 4	6910	A 9
1961	E 9	6911	A 9
2961	E 7	6912	B 9
2962	E 7	6913	A 10
2963	F 6	6914	A 10
2966	F 5	6915	B 10
2968	G 7	6916	A 11
3901	B 5	6917	A 11
3902	B 5	6925	G 8
3905	B 6	6961	F 11
3906	B 6	6963	G 1
3909	B 7	6964	G 1
3910	B 8	7925	F 8
3912	B 9	7926	F 7
3913	B 9	7927	E 9
3915	B 10	7961	F 3
3916	B 10		
3919	B 11		
3920	B 11		
3922	E 9		
3923	F 9		
3931	G 4		
3935	D 8		
3936	D 8		
3937	D 8		
3941	G 2		
3945	C 5		
3946	C 5		
3947	D 5		
3948	D 5		
3949	G 3		
3960	D 5		
3961	D 7		
3962	G 10		
3964	E 10		
3965	G 10		
3966	E 10		

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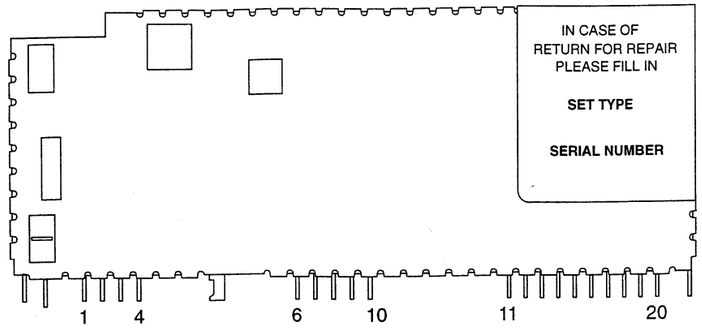
IC91 MODULE

Do not open nor try to repair yourself!

This module is a Service Part as a complete sub-assembly and must be ordered with the normal procedure.



Connections

1	AM/FM Aerial input	11	Multiplex / RDS output signal
2	Ground	12	Unweighted level output
3	Not used	13	I^2C SDA
4	Not used	14	I^2C SCL
		15	Not used
6	Output lock detector	16	Output Left
7	Vcc 8.5V	17	Output Right
8	Ground	18	Ground
9	Vcc 5.0V	19	Not used
10	V reference	20	Not used

Quick reference data:

1) AM part
- -Longwave/Mediumwave 144-1710 KHz
- -Shortwave 5900-6250 KHz
- -AM double super concept
- -AM IF1 10.7MHz
- -AM IF2 450KHz
- -First VCO frequency above input signal frequency
- -Second X-tal oscillator frenquency below IF1
- -Usable sensivity α26dB MW = 14µV typ.

1) FM part
- -FM 87.5 - 108MHz
- -FM double super concept
- -FM IF1 72.2MHz
- -FM IF2 10.7MHz
- -First VCO frequency above input signal frequency
- -Second X-tal oscillator frenquency below IF1
- -Usable sensivity α26dB =2.5µV typ.
- -THD 1mV δf=75KHz = 0.4% typ
- -Signal to noise ratio = 65dB typ
- -Locktime synthetizer <2mSec

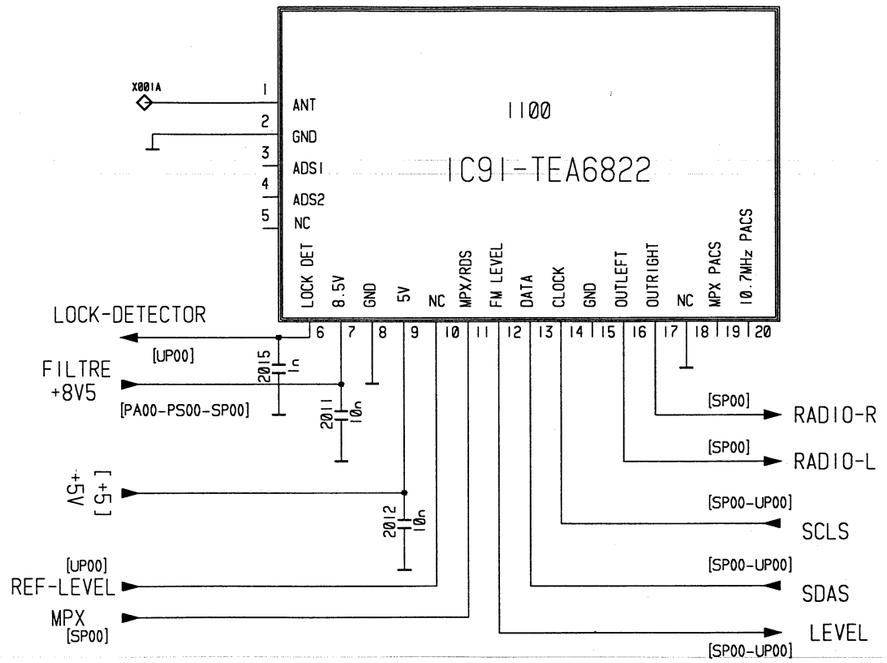
WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

ESD equipment available:

Anti-static table mat large 100X650X1.25mm	4822 466 10953
small 600X650X1.25mm	4822 466 10958
Connection box (1Mohm)	4822 395 10223
Extendible cable (to connect wrist band to connection box)	4822 320 11307
Connecting cable (to connect table mat to connection box)	4822 320 11305
Earth cable (to connect any product to mat or box)	4822 320 11308
Complete kit ESD3 (combining all above products)	4822 310 10671
wristband tester	4822 344 13999

TUNER MODULE



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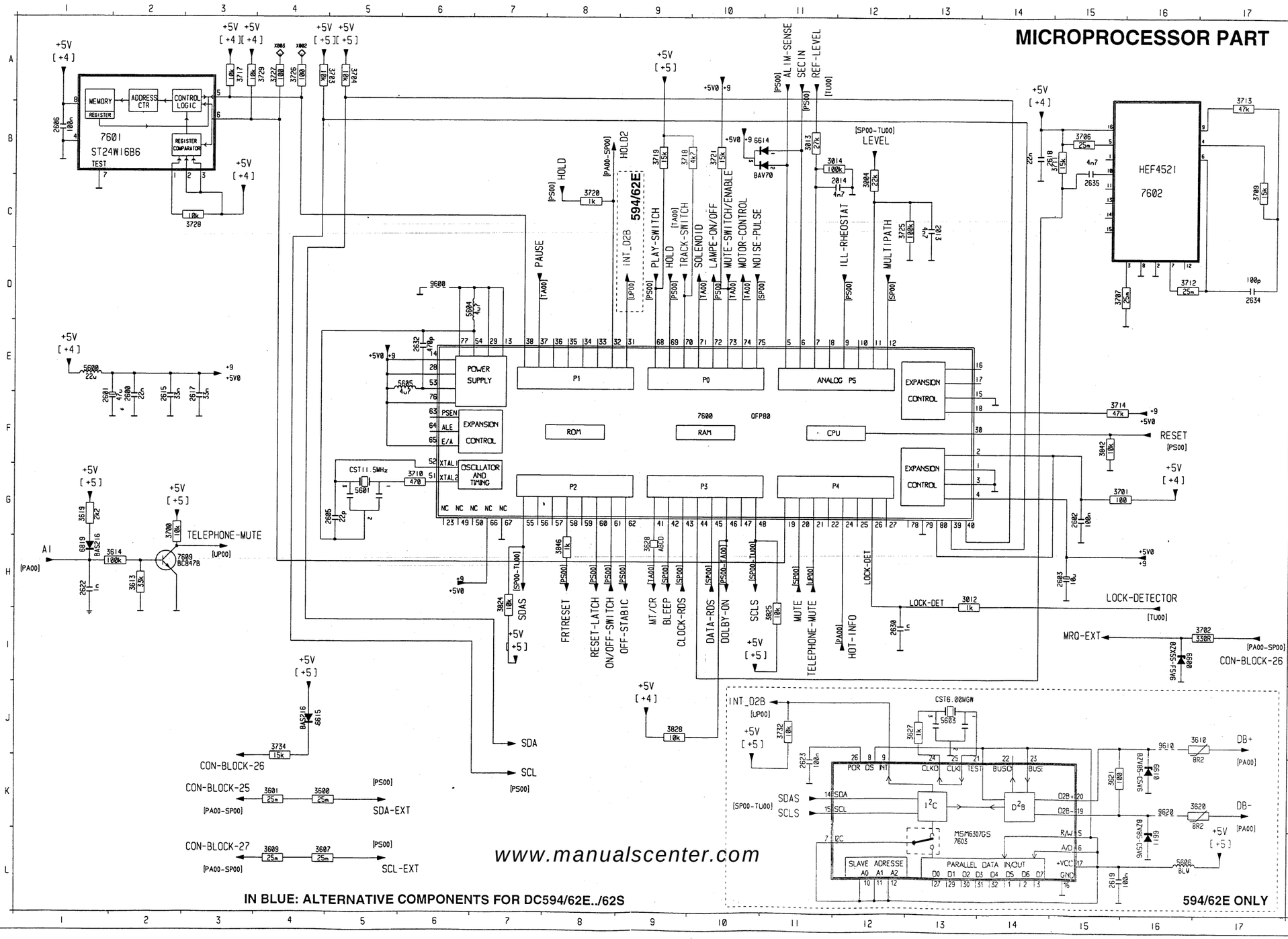
22DC593/62E
22DC594/62E../62S

A3	H1	CLOCK-RDS	H9	FRTRESET	H8	INT_D2B	J11	MT/CR	H9	ON/OFF-SWITCH	H8	SCL	C5	SECIN	D11
ALIM-SENSE	D11	DATA-RDS	H10	HOLD	B8/D9	LAMPE-ON/OFF	D10	MULTIPATH	D12	PAUSE	D7	SCL-EXT	L6	SOLENOID	D10
BLEEP	H9	DB+	J17	HOLD2	B8	LEVEL	B12	MUTE	H11	PLAY-SWITCH	D9	SCLS	H10/K11	TELEPHONE-MUTE	H11
CONN-BLOCK-25	L3	DB-	K17	HOT-INFO	I12	LOCK-DETECTOR	H16	MUTE-SWITCH/ENABLE	D10	REF-LEVEL	A11	SDA	B5	TELEPHONE-MUTE	H3
CONN-BLOCK-26	K3/I17	DOLBY-B/C	H10	ILL-RHEOSTAT	D12	MOTOR-CONTROL	D10	NOISE-PULSE	D10	RESET	F16	SDA-EXT	L6	TRACK-SWITCH	D9
CONN-BLOCK-27	L3	DOLBY-ON	H10	INT_D2B	D9	MRQ-EXT	I15	OFF-STABIC	H9	RESET-LATCH	H8	SDAS	H7/K11		



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	2013	C13	6819	H 1		3621	K15		6600	I16
	2014	C12	7600	F10		3627	J13		6610	K16
	2600	F 2	7601	B 1		3628	H 9		6611	K16
	2601	F 1	7602	C16		3700	G 2		6614	B10
	2602	G15	7603	L13	F	3701	G15		6615	J 4
A	2603	H15	7609	H 2		3702	I17			
	2605	G 5	9600	D 6		3703	A 5			
	2606	B 1	9610	J16		3704	A 5			
	2615	F 2	9620	K16		3706	B15			
	2617	F 3				3707	D15			
	2618	B14			G	3709	C17			
B	2619	L15				3710	G 6			
	2622	H 1				3711	B15			
	2623	J11				3712	D16			
	2630	I12				3713	A17			
	2632	E 6				3714	F15			
	2634	D17			H	3717	A 3			
C	2635	C15				3718	B 9			
	3004	C12				3719	B 9			
	3012	H13				3720	C 8			
	3013	B11				3721	B10			
	3014	B11				3725	C12			
	3600	K 4			I	3726	A 4			
D	3601	K 4				3727	A 4			
	3607	L 4				3728	C 3			
	3609	L 4				3729	A 4			
	3610	J17				3732	J11			
	3613	H 2				3734	K 4			
	3614	H 2			J	3824	H 7			
E	3619	G 1				3825	I11			
	3620	K17				3828	J 9			
	3621	K15				3842	F15			
	3627	J13				3846	H 8			
	3628	H 9				5600	E 1			
	3700	G 2			K	5601	G 5			
F	3701	G15				5603	J13			
	3702	I17				5604	D 6			
	3703	A 5				5605	E 6			
	3704	A 5				5606	L16			
	3706	B15								
	3707	D15								
G	3709	C17								
	3710	G 6								
	3711	B15								
	3712	D16								
	3713	A17								
	3714	F15								
H	3717	A 3								
	3718	B 9								
	3719	B 9								
	3720	C 8								
	3721	B10								
	3725	C12								
I	3726	A 4								
	3727	A 4								
	3728	C 3								
	3729	A 4								
	3732	J11								
	3734	K 4								
J	3824	H 7								
	3825	I11								
	3828	J 9								
	3842	F15								
	3846	H 8								
	5600	E 1								
K	5601	G 5								
	5603	J13								
	5604	D 6								
	5605	E 6								
	5606	L16								

1000 A 8	2269 I 4	2388 H 6	2570 B 4	2804 A 2	3269 C 4	3620 D 7	5570 B 7	6352 H 2	7354 I 6	7309 C 2	9512 B 5	9600 E 2	
1100 G 8	2291 I 4	2394 I 1	2580 D 5	2806 B 3	3509 H 3	3809 B 2	5600 D 3	6600 E 6	7356 F 7	9253 C 4	9513 B 6	9610 E 7	
1250 J 3	2382 I 2	2396 H 3	2583 D 6	2812 B 2	3585 A 4	3820 B 3	5601 F 3	6785 B 7	7550 A 5	9262 C 3	9514 D 6	9620 E 7	
1251 C 4	2383 I 4	2399 H 3	2589 B 5	2823 F 2	3610 D 7	3821 B 3	5603 E 6	6804 C 1	7551 A 7	9380 I 6	9515 G 7	9801 B 3	
1801 B 1	2384 I 5	2406 G 7	2601 D 3	2831 G 2	3615 C 7	3838 B 3	5604 F 2	6815 D 7	7601 G 3	9400 H 7	9516 B 5	9802 G 3	
2259 I 3	2385 G 5	2418 E 7	2603 D 3	2832 D 6	3616 C 6	3862 D 7	5605 F 2	7256 C 5	7602 G 2	9508 C 6	9517 A 4		
2265 H 3	2386 G 6	2555 D 6	2801 A 2	3260 J 4	3617 C 7	5100 G 3	5606 F 6	7257 I 4	7800 A 3	9510 B 5	9519 A 5		
2268 I 4	2387 H 5	2564 B 4	2803 B 3	3261 J 4	3618 C 6	5350 H 7	6252 C 4	7260 C 3	7803 B 3	9511 B 5	9520 B 8		

22DC593/62E
22DC594/62E
22DC594/62S

2011 G 8	2605 F 3	3404 F 8	3734 D 8	
2012 G 8	2606 G 3	3405 F 8	3805 A 3	
2013 E 8	2615 D 3	3406 F 7	3806 D 2	
2014 G 8	2617 E 5	3407 F 7	3807 B 3	
2015 G 8	2618 G 3	3408 F 7	3808 B 2	
2016 A 4	2619 E 5	3409 F 8	3810 B 2	
2250 J 3	2622 B 8	3412 F 7	3811 B 2	
2251 J 2	2623 E 6	3413 G 7	3813 A 3	
2252 I 3	2630 F 5	3422 J 6	3816 B 2	
2253 J 3	2632 F 3	3423 I 5	3817 C 2	
2254 J 4	2634 G 1	3425 G 4	3818 C 2	
2255 I 3	2635 G 2	3426 G 4	3819 B 1	
2266 H 2	2800 A 3	3432 G 4	3822 D 4	
2275 H 2	2802 B 3	3505 G 2	3823 D 3	
2276 J 2	2819 D 2	3507 I 1	3824 G 6	
2280 H 2	2822 D 2	3511 I 2	3825 G 5	
2281 J 2	2827 D 4	3563 B 5	3826 A 3	
2282 J 2	2828 D 3	3564 C 5	3827 E 1	
2283 H 2	2829 A 3	3565 C 5	3828 G 3	
2284 H 2	2837 D 2	3584 B 4	3831 E 6	
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2293 I 5	3013 G 8	3599 H 6	3839 F 2	
2294 I 5	3014 G 8	3600 E 5	3842 F 5	
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2373 H 6	3251 J 3	3604 C 6	3846 E 2	
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2375 I 6	3253 J 4	3607 E 5	3848 B 2	
2376 I 6	3254 J 3	3609 E 5	3849 E 2	
2378 J 6	3255 I 2	3611 B 4	3852 B 3	
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2395 H 4	3262 I 3	3619 D 7	3870 B 2	
2397 H 4	3263 I 1	3621 E 7	3871 C 3	
2398 H 4	3264 I 1	3626 C 5	5400 G 8	
2403 G 7	3266 D 4	3627 E 6	6354 F 8	
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2417 F 8	3277 H 1	3640 A 8	6615 C 7	
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2593 C 6	3401 F 7	3730 E 3		
2600 F 2	3402 F 7	3731 E 2		
2602 D 3	3403 F 7	3732 F 6		

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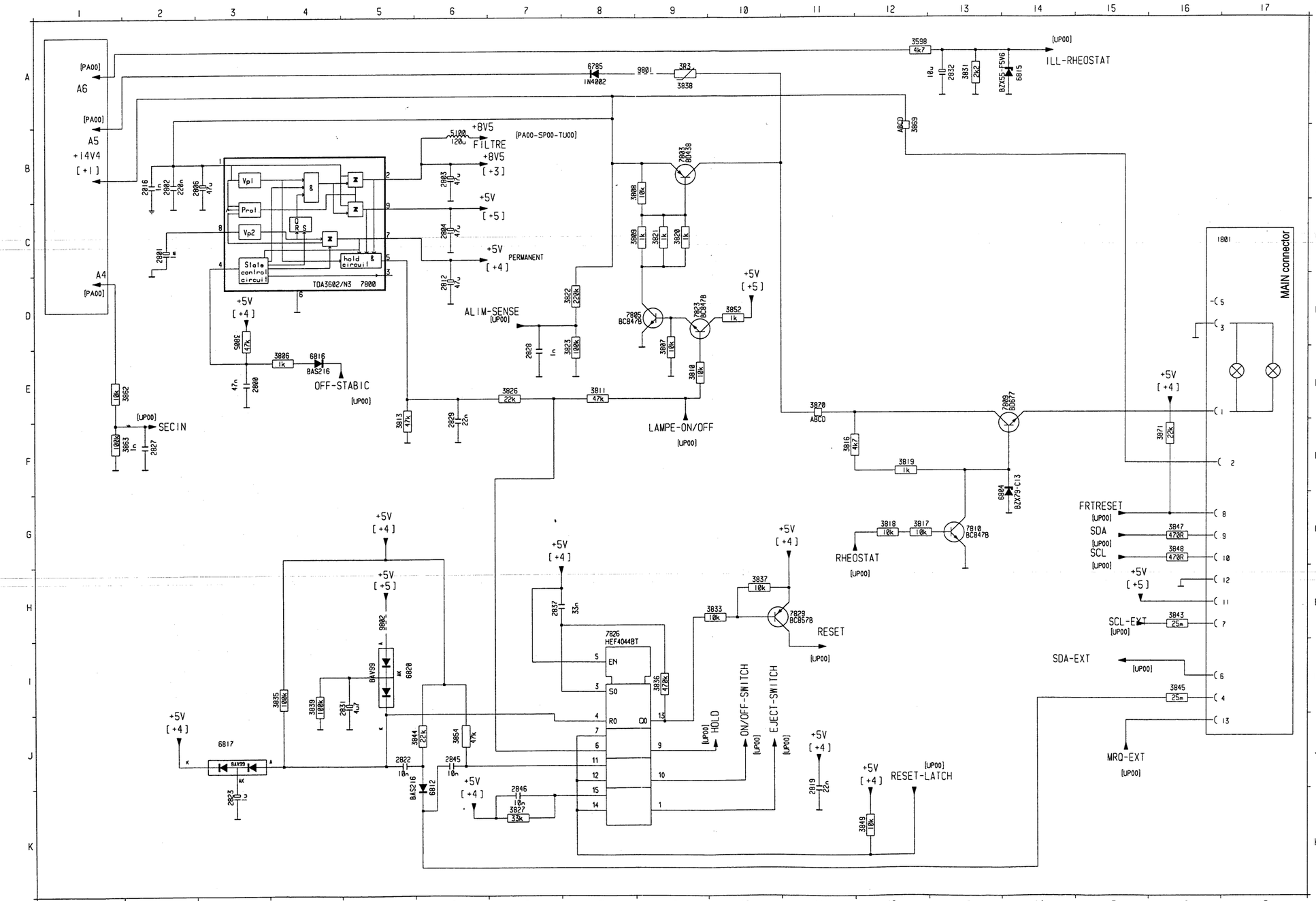
POWER SUPPLY PART
22DC593/62E
22DC594/62E../62S

A4 ..... D1
A5 ..... A1
A6 ..... A1
ALIM-SENSE..... D7
EJECT-SWITCH J10
FILTRE..... B6
FRTRESET..... G15
HOLD J10
ILL-RHEOSTAT..... A14
LAMPE-ON/OFF..... E9
MRQ-EXT..... J15
OFF-STABIC..... E4
ON/OFF-SWITCH J10
RESET..... I11
RESET-LATCH..... J12
RHEOSTAT G11
SCL G15
SCL-EXT H15
SDA G15
SDA-EXT I15
SECIN F2



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2016	B 2	7810	G 13
2800	E 3	7823	D 9
2801	C 2	7826	H 8
2802	B 2	7829	H 11
2803	B 6	9801	A 9
2804	C 6	9802	H 5
2806	B 3		
2812	D 6		
2819	J 11		
2822	J 5		
2823	K 3		
2827	F 2		
2828	E 7		
2829	E 6		
2831	I 5		
2832	A 13		
2837	H 7		
2845	J 6		
2846	K 7		
3598	A 12		
3805	D 3		
3806	E 4		
3807	D 9		
3808	B 9		
3809	C 9		
3810	E 9		
3811	E 8		
3813	E 5		
3816	F 11		
3817	G 12		
3818	G 12		
3819	F 12		
3820	C 9		
3821	C 9		
3822	D 8		
3823	D 8		
3826	E 7		
3827	K 7		
3831	A 13		
3833	H 10		
3835	I 4		
3836	I 9		
3837	H 10		
3838	A 9		
3839	I 4		
3843	H 16		
3844	J 6		
3845	I 16		
3847	G 16		
3848	G 16		
3849	K 12		
3852	D 10		
3854	J 6		
3862	E 1		
3863	F 1		
3869	A 12		
3870	E 11		
3871	F 16		
5100	B 6		
6785	A 8		
6804	G 14		
6812	J 6		
6815	A 14		
6816	E 4		
6817	J 3		
6820	I 5		
7800	D 5		
7803	B 9		
7805	D 9		

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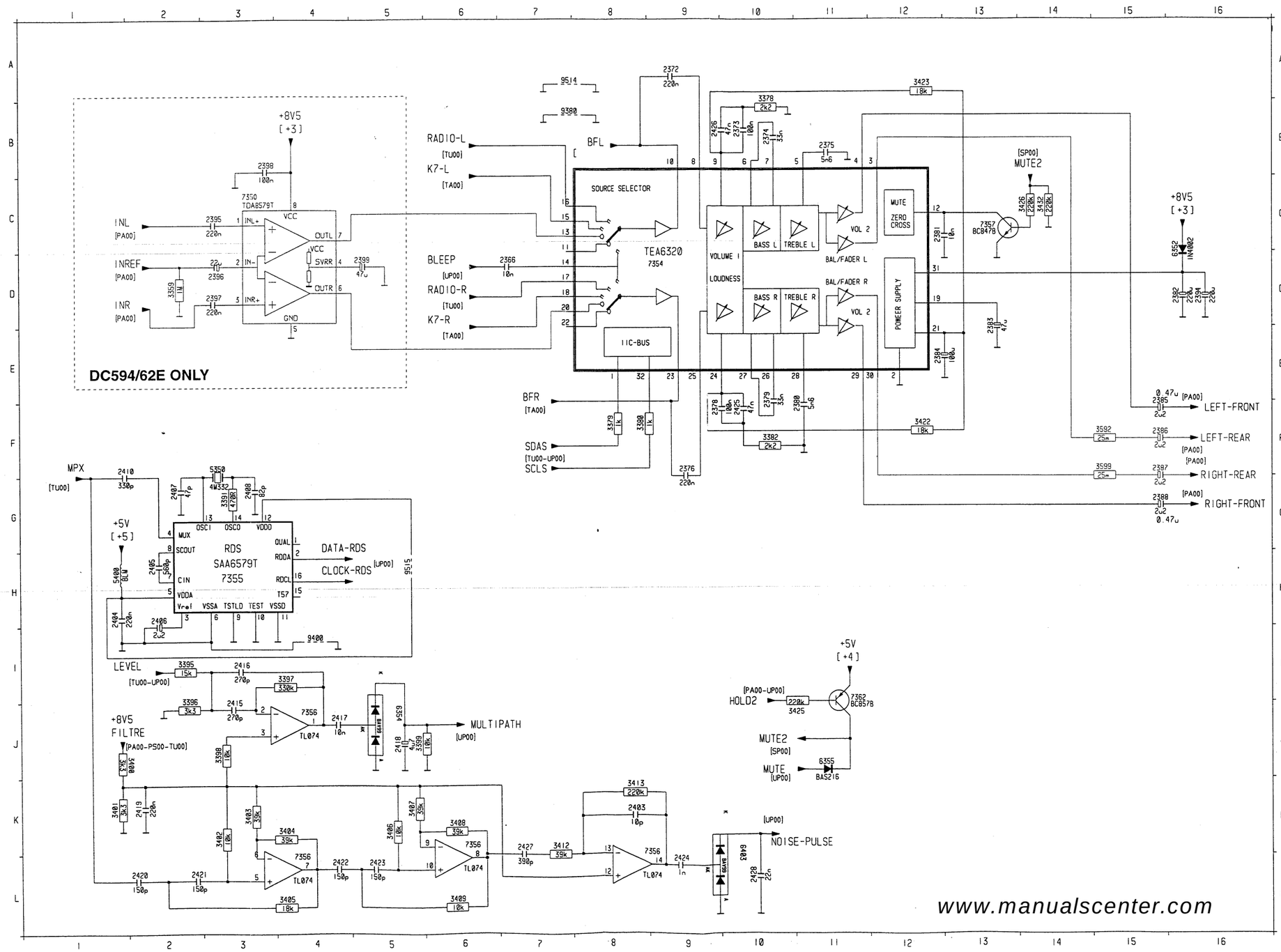
SOUND PROCESSING PART
22DC593/62E
22DC594/62E../62S

BFL.....B7
BFR.....E6
BLEEP.....D5
CASS-L.....C5
CASS-R.....D5
CLOCK-RDS.....H4
DATA-RDS.....H4
HOLD2.....I11
INL.....C1
INR.....D1
INREF.....D1
LEFT-FRONT.....E15
LEFT-REAR.....F15
LEVEL.....I2
MPX.....F1
MULTIPATH.....J6
MUTE.....J12
MUTE2.....J12/C13
NOISE-PULSE.....K10
RADIO-L.....B5
RADIO-R.....D5
RIGHT-FRONT.....F15
RIGHT-REAR.....G15
SCLS.....F6
SDAS.....F6



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2372	A 9	5350	F 3	3379	F 8	3599	F15	6354	J 5
2373	B10	7350	C 3	3380	F 8	3422	A12	6355	J11
2374	B10	7354	D 9	3382	F10	3423	J11	6403	K10
2375	B11	7355	H 3	3391	G 3	3425	J11		
2376	F 9	7356	J 4	3395	I 2	3426	C14		
2378	F 9	7357	L 4	3396	J 2	3432	C14		
2379	E10	7362	L 8	3397	I 4				
2380	F11	7355	C13	3398	J 3				
2381	C12	7356	I11	3399	J 5				
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2387	F15	9400	I 4	3405	L 4				
2388	G15	9514	A 7	3406	K 5				
2394	D16	9515	H 5	3407	K 5				
2395	C 3			3408	K 6				
2396	D 3			3409	L 6				
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2403	K 8			3423	A12				
2404	H 1			3425	J11				
2405	H 2			3426	C14				
2406	H 2			3432	C14				
2407	G 2			3592	F15				
2408	G 3			3599	F15				
2410	F 1			5350	F 3				
2415	J 3								
2416	I 3								
2417	J 4								
2418	J 5								
2419	K 2								
2420	L 2								
2421	L 2								
2422	L 4								
2423	L 5								
2424	L 9								
2425	F10								
2426	B 9								
2427	K 7								
2428	L10								
3359	D 2								

1000 A 8	2269 I 4	2388 H 6	2570 B 4	2804 A 2	3269 C 4	3620 D 7	5570 B 7	6352 H 2	7354 I 6	7809 C 2	9512 B 5	9600 E 2	
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1250 J 3	2382 I 2	2396 H 3	2583 D 6	2812 B 2	3585 A 4	3820 B 3	5601 F 3	6785 B 7	7550 A 5	9262 C 3	9514 D 6	9620 E 7	
1251 C 4	2383 I 4	2399 H 3	2589 B 5	2823 F 2	3610 D 7	3821 B 3	5603 E 6	6804 C 1	7551 A 7	9380 I 6	9515 G 7	9801 B 3	
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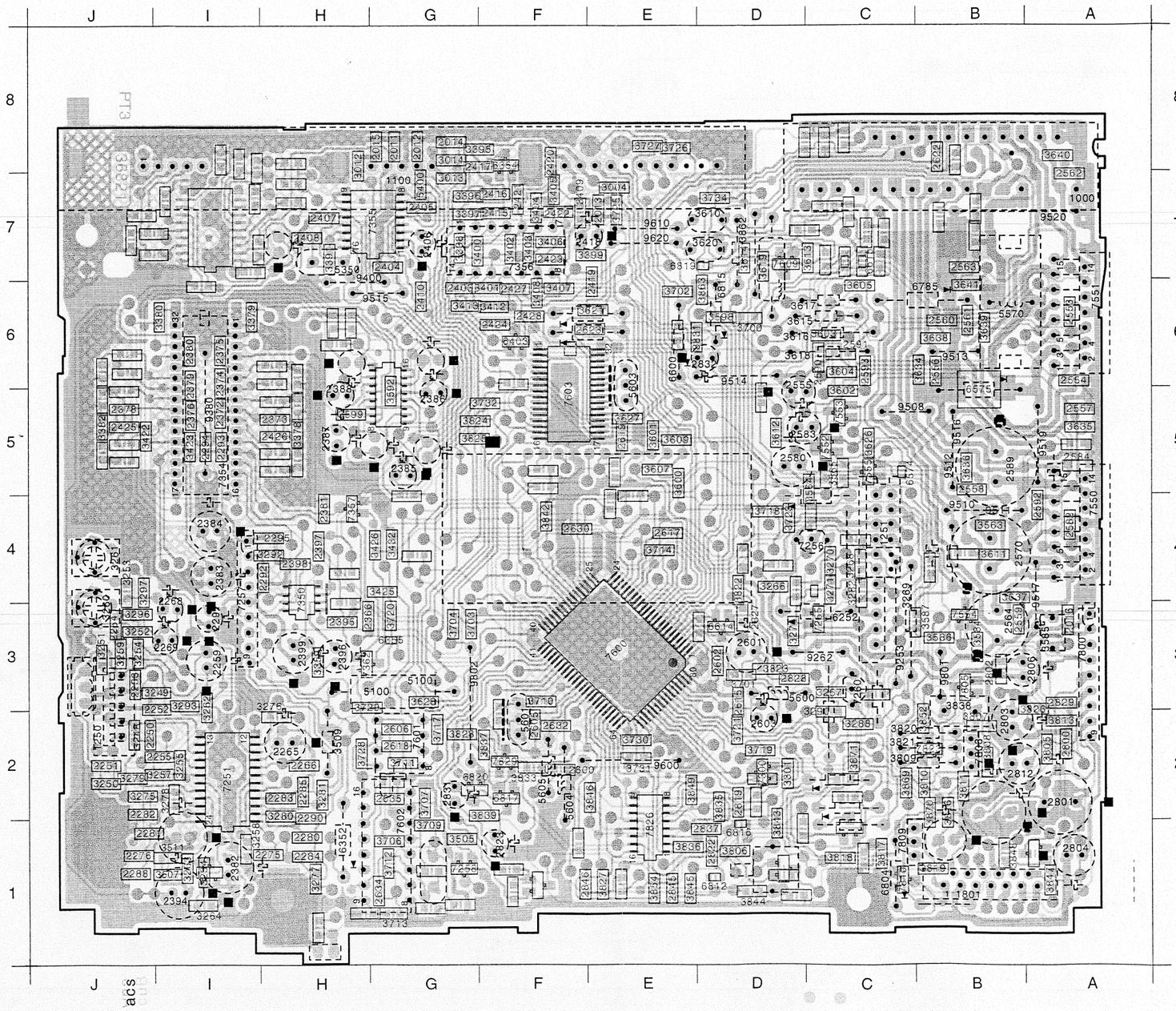
2265 H 3	2386 G 6	2555 D 6	2801 A 2	3260 J 4	3617 C 7	5100 G 3	5606 F 6	7257 I 4	7800 A 3	9510 B 5	9519 A 5		
2268 I 4	2387 H 5	2564 B 4	2803 B 3	3261 J 4	3618 C 6	5350 H 7	6252 C 4	7260 C 3	7803 B 3	9511 B 5	9520 B 8		

22DC593/62E
22DC594/62E
22DC594/62S



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2014 G 8	2617 E 5	3407 F 7	3807 B 3	
2015 G 8	2618 G 3	3408 F 7	3808 B 2	
2016 A 4	2619 E 5	3409 F 8	3810 B 2	
2250 J 3	2622 B 8	3412 F 7	3811 B 2	
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2252 I 3	2630 F 5	3422 J 6	3816 B 2	
2253 J 3	2632 F 3	3423 I 5	3817 C 2	
2254 J 4	2634 G 1	3425 G 4	3818 C 2	
2255 I 3	2635 G 2	3426 G 4	3819 B 1	
2266 H 2	2800 A 3	3432 G 4	3822 D 4	
2275 H 2	2802 B 3	3505 G 2	3823 D 3	
2276 J 2	2819 D 2	3507 I 1	3824 G 6	
2280 H 2	2822 D 2	3511 I 2	3825 G 5	
2281 J 2	2827 D 4	3563 B 5	3826 A 3	
2282 J 2	2828 D 3	3564 C 5	3827 E 1	
2283 H 2	2829 A 3	3565 C 5	3828 G 3	
2284 H 2	2837 D 2	3584 B 4	3831 E 6	
2285 H 2	2845 E 1	3586 B 4	3833 F 2	
2288 J 1	2846 F 1	3587 C 4	3835 D 2	
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2292 H 4	3012 H 8	3598 D 7	3837 F 3	
2293 I 5	3013 G 8	3599 H 6	3839 F 2	
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2398 H 4	3264 I 1	3626 C 5	5400 G 8	
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2558 B 5	3378 H 6	3717 G 3	7553 C 6	
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2591 C 6	3399 E 7	3728 H 3	7826 E 2	
2592 A 5	3400 G 7	3729 H 3	7829 F 2	
2593 C 6	3401 F 7	3730 E 3		
2600 F 2	3402 F 7	3731 E 2		
2602 D 3	3403 F 7	3732 F 6		

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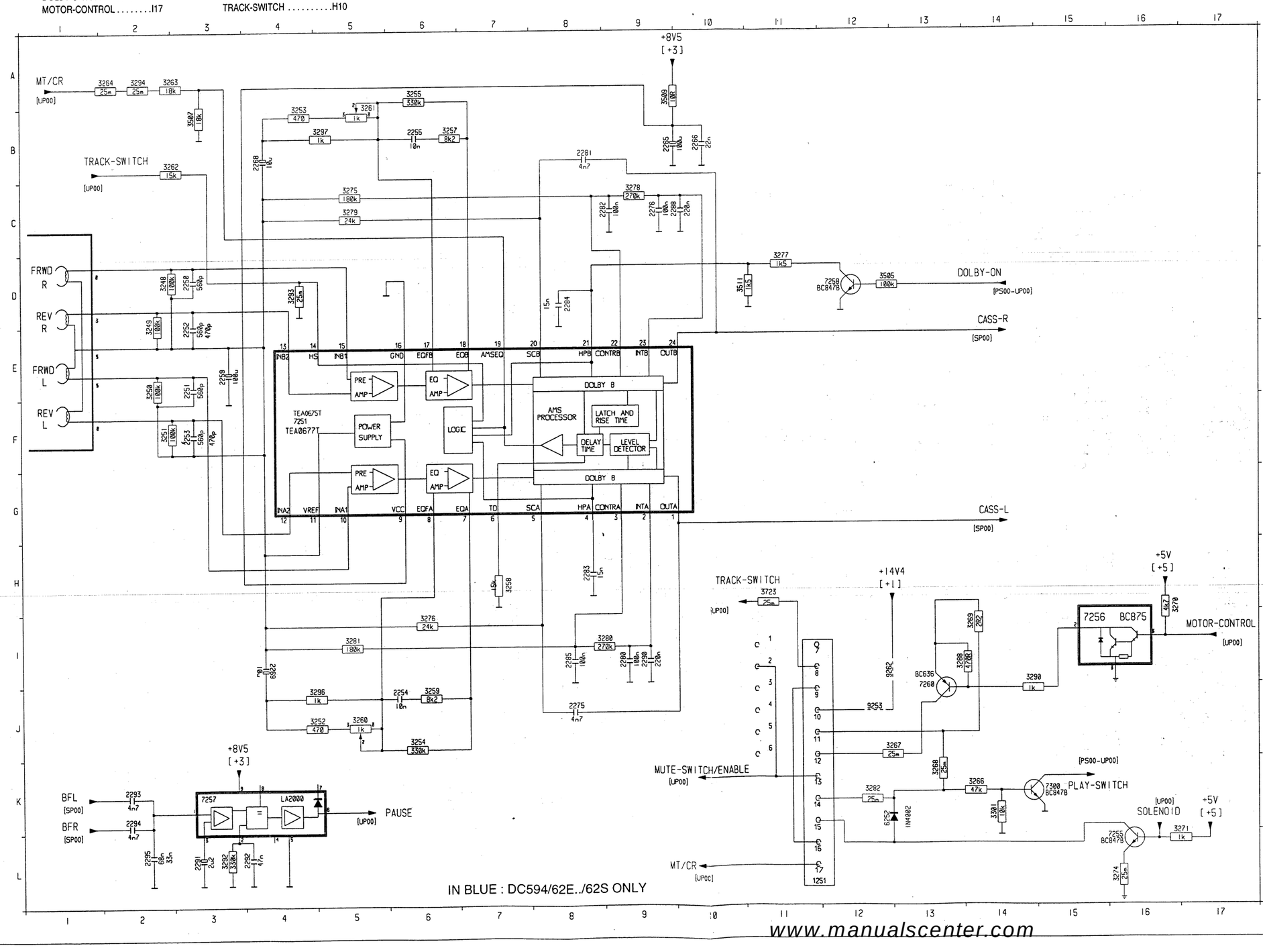
TAPE PART
22DC593/62E
22DC594/62E../62S

BFL	K1
BFR	K1
CASS-L	G17
CASS-R	E17
DOLBY-ON	D15
MOTOR-CONTROL	I17
MT/CR	A1/L10
MUTE-SWITCH/ENABLE	K10
PAUSE	K5
PLAY-SWITCH	J15
SOLENOID	K15
TRACK-SWITCH	H10



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	2252	E 3		7300	K15
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	2254	J 6		9262	112
	2255	B 6			
	2259	E 3			
	2265	B 9			
	2266	B10			
B	2268	B 4			
	2269	I 4			
	2275	J 8			
	2276	C 9			
	2280	I 9			
	2281	B 8			
	2282	C 9			
C	2283	H 8			
	2284	D 8			
	2285	I 8			
	2288	C10			
	2290	I 9			
	2291	L 3			
D	2292	L 4			
	2293	K 2			
	2294	K 2			
	2295	L 2			
	3248	D 2			
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	3250	E 2			
E	3251	F 2			
	3252	J 5			
	3253	B 4			
	3254	J 6			
	3255	A 6			
	3257	B 6			
F	3258	H 7			
	3259	J 6			
	3260	J 5			
	3261	B 5			
	3262	B 3			
	3263	A 3			
	3264	A 2			
G	3266	K14			
	3267	J13			
	3268	K13			
	3269	114			
	3270	H16			
	3271	L17			
H	3274	L16			
	3275	C 5			
	3276	I 6			
	3277	D11			
	3278	C 9			
	3279	C 5			
I	3280	I 9			
	3281	I 5			
	3282	K12			
	3288	113			
	3290	114			
	3292	L 3			
	3293	D 4			
J	3294	A 2			
	3296	J 5			
	3297	B 5			
	3301	K14			
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	3507	B 3			
K	3509	A 9			
	3511	D10			
	3723	H11			
	6252	K12			
	7251	F 4			
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	7256	115			
L					

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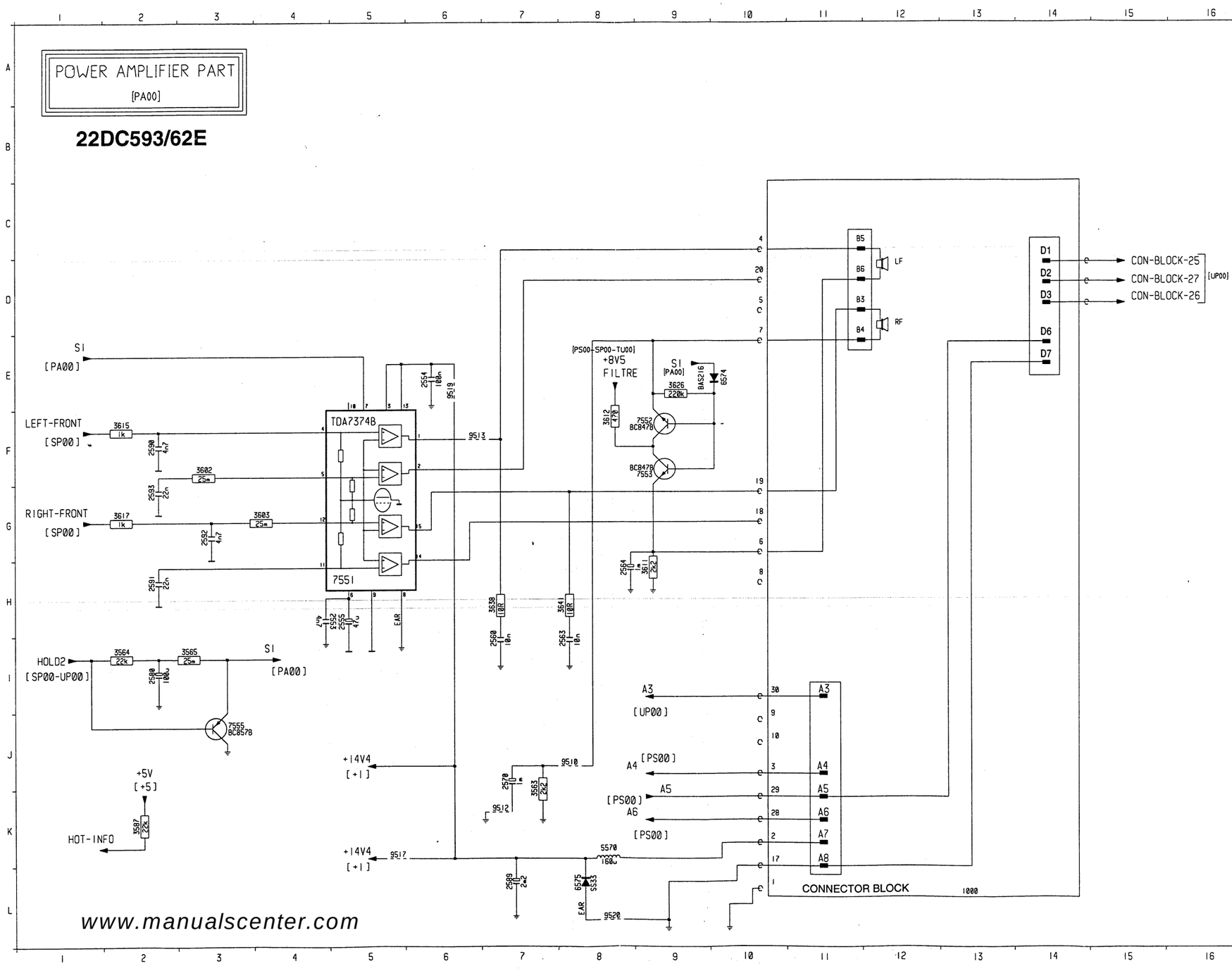
POWER AMPLIFIER PART

[PA00]

22DC593/62E



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	2554	E 6
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	2564	H 8
	2570	J 7
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B	2589	L 7
	2590	F 2
	2591	H 2
	2592	G 3
	2593	G 2
	3563	J 7
C	3564	I 2
	3565	I 3
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	3611	H 9
	3612	F 8
D	3615	F 2
	3617	G 2
	3626	E 9
	3638	H 7
	3641	H 8
	5570	K 8
E	6574	E10
	6575	L 8
	7551	H 5
	7552	F 9
	7553	F 9
	7555	J 3
F	9510	J 8
	9512	K 7
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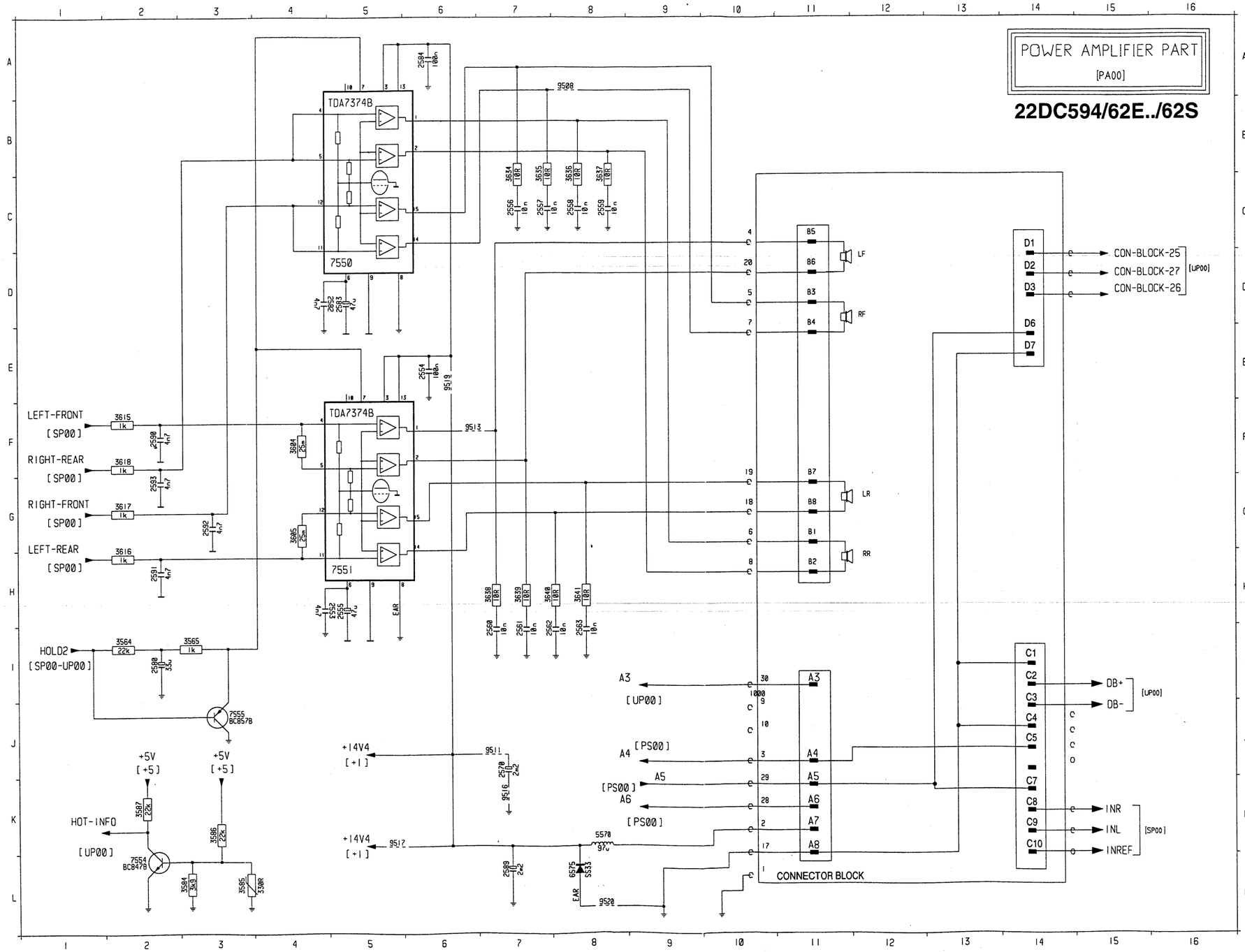
POWER AMPLIFIER PART

[PA00]

22DC594/62E../62S



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	2558	C 8
	2559	C 8
	2560	I 7
	2561	I 7
B		
	2562	I 7
	2563	I 8
	2570	J 7
	2580	I 2
	2582	D 5
C	2583	D 5
	2584	A 6
	2589	L 7
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	2591	H 2
	2592	G 3
D	2593	G 2
	3564	I 2
	3565	I 3
	3584	L 3
	3585	L 3
	3586	K 3
E	3587	K 2
	3604	F 4
	3605	G 4
	3615	F 2
	3616	H 2
	3617	G 2
F	3618	F 2
	3634	B 7
	3635	B 7
	3636	B 8
	3637	B 8
	3638	H 7
	3639	H 7
G		
	3640	H 7
	3641	H 8
	5570	K 8
	6575	L 8
	7550	D 5
H	7551	H 5
	7554	L 2
	7555	J 3
	9508	A 8
	9511	J 7
	9513	F 6
I	9516	K 7
	9517	K 5
	9519	E 6
	9520	L 8

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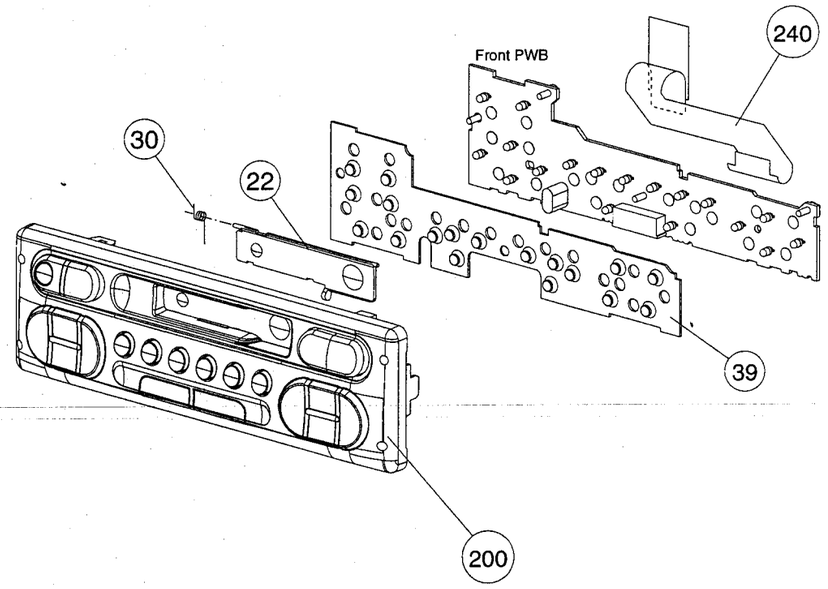
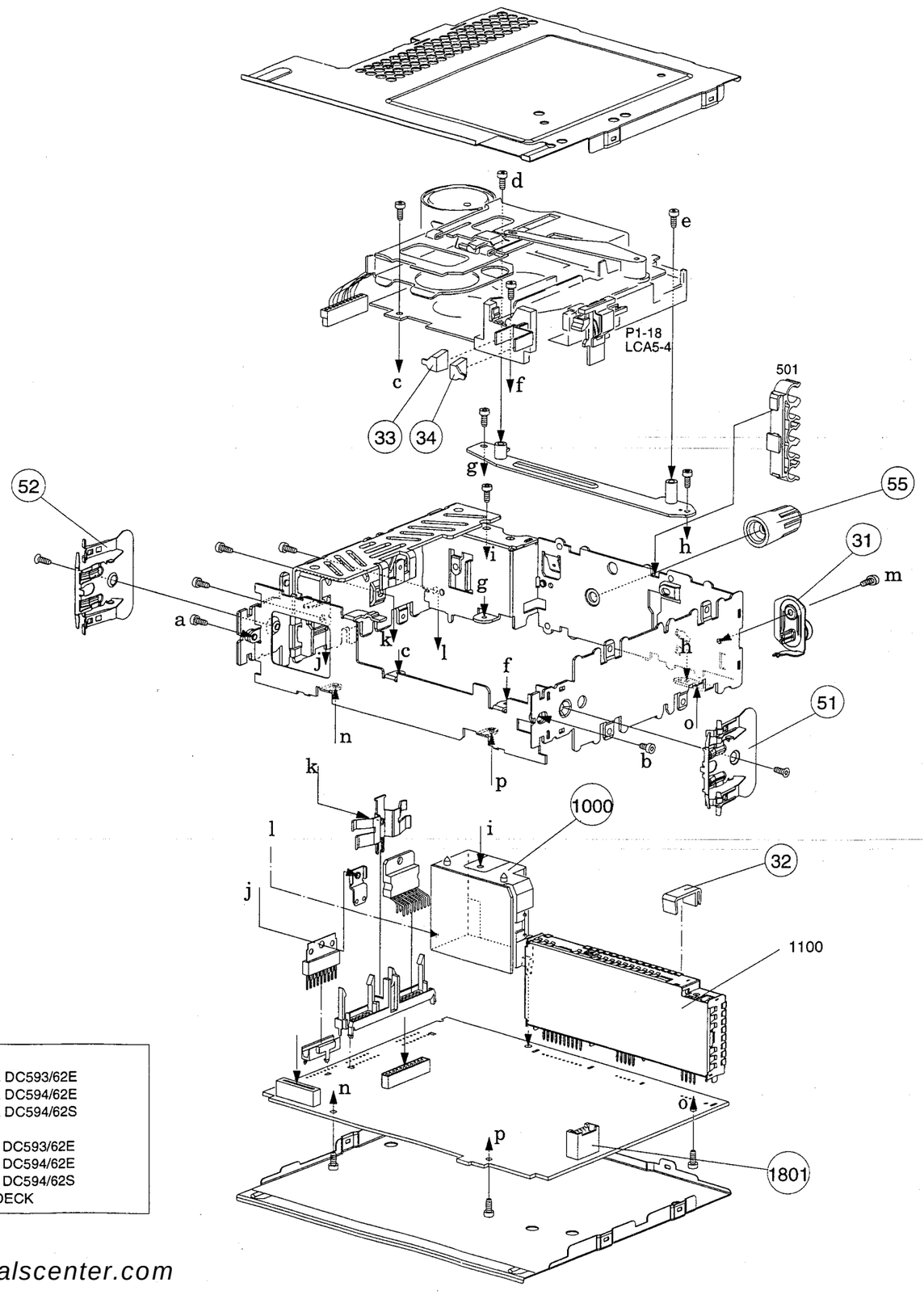
22DC594/62E../62S
22DC593/62E





22	4822 443 10388	FLAP CASSETTE FOR DC594/62E	55	4822 532 12177	SPACER
22	4822 443 10389	FLAP CASSETTE FOR DC594/62S	200	4822 459 04265	PLATE ORNAMENTAL DC593/62E
22	4822 443 10417	FLAP CASSETTE FOR DC593/62E	200	4822 459 04246	PLATE ORNAMENTAL DC594/62E
30	4822 492 42231	FLAP SPRING	200	4822 459 04247	PLATE ORNAMENTAL DC594/62S
31	4822 26731702	AERIAL BUSH ASSY	240	4822 320 11527	FLEX FOIL
32	4822 404 21276	HOOK IC91	1000	4822 265 10663	CONNECTOR BLOCK DC593/62E
33 - 34	4822 402 10412	BRACKET BUTTONS DECK	1000	4822 265 10613	CONNECTOR BLOCK DC594/62E
39	4822 410 10605	KEYPAD	1000	4822 265 10321	CONNECTOR BLOCK DC594/62S
51 - 52	4822 492 72124	MOUNTING SPRING	1801	4822 265 41348	CONNECTOR HEAD DECK

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Miscellaneous		
1100	4822 210 10705	MODULE TUNER IC91
⊣⊢		
2011	5322 122 34098	10nF 10% X7R 63V
2012	5322 122 34098	10nF 10% X7R 63V
2013	5322 126 10223	4,7nF 10% X7R 63V
2014	5322 126 10223	4,7nF 10% X7R 63V
2015	5322 122 34123	1nF 10% X7R 50V
2016	5322 122 34123	1nF 10% X7R 50V
2250	5322 116 80853	560pF 5% 50V NP0 0805
2251	5322 116 80853	560pF 5% 50V NP0 0805
2252*	5322 116 80853	560pF 5% 50V NP0 0805
2252*	5322 122 32268	470pF 5% 50V NP0 0805
2253*	5322 116 80853	560pF 5% 50V NP0 0805
2253*	5322 122 32268	470pF 5% 50V NP0 0805
2254	5322 122 34098	10nF 10% X7R 63V
2255	5322 122 34098	10nF 10% X7R 63V
2259	4822 124 80453	100µF 20% 10V
2265	4822 124 80453	100µF 20% 10V
2266	5322 122 32654	22nF 10% X7R 63V
2268	4822 124 41017	10µF 16V
2269	4822 124 41017	10µF 16V
2275	5322 126 10223	4,7nF 10% X7R 63V
2276	4822 126 13196	100nF 10% X7R 25V
2280	4822 126 13196	100nF 10% X7R 25V
2281	5322 126 10223	4,7nF 10% X7R 63V
2282	4822 126 13196	100nF 10% X7R 25V
2283	4822 126 13188	15nF 5% X7R 63V
2284	4822 126 13188	15nF 5% X7R 63V
2285	4822 126 13196	100nF 10% X7R 25V
2288	4822 126 13849	220nF 10% 16V X7R 0805
2290	4822 126 13849	220nF 10% 16V X7R 0805
2291	4822 124 23504	2.2µF 20% 50V
2292	4822 126 13343	47nF 10% X7R 25V
2293	5322 126 10223	4,7nF 10% X7R 63V
2294	5322 126 10223	4,7nF 10% X7R 63V
2295*	4822 122 33342	33nF 10% X7R 50V 0805
2295*	4822 126 13392	68nF 10% X7R 0805
2366	5322 122 34098	10nF 10% X7R 63V
2372	4822 126 13849	220nF 10% 16V X7R 0805
2373	4822 126 13196	100nF 10% X7R 25V
2374	4822 122 33342	33nF 10% X7R 63V
2375	4822 122 32646	5,6nF 10% X7R 50V
2376	4822 126 13849	220nF 10% 16V X7R 0805
2378	4822 126 13196	100nF 10% X7R 25V
2379	4822 122 33342	33nF 10% X7R 63V
2380	4822 122 32646	5,6nF 10% X7R 50V
2381	5322 122 34098	10nF 10% X7R 63V
2382	4822 124 23582	220µF 10V
2383	4822 124 22646	47µF 20% 16V
2384	4822 124 80453	100µF 20% 10V
2385*	4822 124 40999	470nF 20% 50V
2385*	4822 124 23504	2,2µF 20% 50V
2386	4822 124 23504	2,2µF 20% 50V
2387	4822 124 23504	2,2µF 20% 50V
2388*	4822 124 40999	470nF 20% 50V
2388*	4822 124 23504	2,2µF 20% 50V
2394	4822 124 23582	220µF 10V
2395	4822 126 13849	220nF 10% 16V X7R 0805

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2396	4822 124 23279	22µF 20% 16V
2397	4822 126 13849	220nF 10% 16V X7R 0805
2398	4822 126 13196	100nF 10% X7R 25V
2399	4822 124 22646	47µF 20% 16V
2403	5322 122 32448	10pF 5% 50V
2404	4822 126 13849	220nF 10% 16V X7R 0805
2405	5322 116 80853	560pF 5% NP0 63V
2406	4822 124 23504	2.2µF 20% 50V
2407	5322 122 32452	47pF 5% NP0 63V
2408	4822 122 33515	82pF 5% NP0 63V
2410	5322 122 31863	330pF 5% NP0 50V
2415	4822 122 33216	270pF 50V NP0 0805
2416	4822 122 33216	270pF 50V NP0 0805
2417	5322 122 34098	10nF 10% X7R 63V
2418	4822 124 80765	4.7µF 20% 35V
2419	4822 126 13849	220nF 10% 16V X7R 0805
2420	5322 122 33538	150pF 2% NP0 63V
2421	5322 122 33538	150pF 2% NP0 63V
2422	5322 122 33538	150pF 2% NP0 63V
2423	5322 122 33538	150pF 2% NP0 63V
2424	5322 122 34123	1nF 10% X7R 50V
2425	4822 126 13343	47nF 10% X7R 25V
2426	4822 126 13343	47nF 10% X7R 25V
2427	4822 122 32636	390pF 5% SL 50V
2428	5322 122 32654	22nF10% X7R 63V
2553	5322 126 10223	4,7nF 10% X7R 63V
2554	4822 122 33496	100nF 10% X7R 63V
2555	5322 124 41938	47µF 6V3
2556	5322 122 34098	10nF 10% X7R 0805
2557	5322 122 34098	10nF 10% X7R 0805
2558	5322 122 34098	10nF 10% X7R 0805
2559	5322 122 34098	10nF 10% X7R 0805
2560	5322 122 34098	10nF 10% X7R 0805
2561	5322 122 34098	10nF 10% X7R 0805
2562	5322 122 34098	10nF 10% X7R 0805
2563	5322 122 34098	10nF 10% X7R 0805
2564	4822 124 80766	1000uF 20% 25V
2570*	4822 124 80766	1000uF 20% 25V
2570*	4822 124 80769	2200µF 20% 16V
2580*	4822 124 80453	100µF 20% 10V
2580*	4822 124 23281	33µF 20% 16V
2582	5322 126 10223	4nF7 10% 50V X7R 0805
2583	5322 124 41938	47µF 20% 6V3
2584	4822 122 33496	100nF 10% 50V X7R 1206
2589	4822 124 80769	2200µF 20% 16V
2590	5322 126 10223	4,7nF 10% X7R 63V
2591*	5322 122 32654	22nF 10% X7R 63V
2591*	5322 126 10223	4,7nF 10% X7R 63V
2592	5322 126 10223	4,7nF 10% X7R 63V
2593*	5322 122 32654	22nF 10% X7R 63V
2593*	5322 126 10223	4,7nF 10% X7R 63V
2600	5322 122 32654	22nF 10% X7R 63V
2601	4822 124 22646	47µF 20% 16V
2602	4822 126 13196	100nF 10% X7R 25V
2603	4822 124 41017	10µF 16V
2605	5322 122 32658	22pF 5% 50V
2606	4822 126 13196	100nF 10% X7R 25V
2615	4822 122 33342	33nF 10% X7R 63V
2617	4822 122 33342	33nF 10% X7R 63V
2618	5322 122 32654	22nF 10% X7R 63V

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2619	4822 126 13196	100nF 10% X7R 25V
2622	5322 122 34123	1nF 10% X7R 50V
2623	4822 126 13196	100nF 10% X7R 25V
2630	5322 122 34123	1nF 10% X7R 50V
2632	5322 122 32268	470pF 10% 50V
2634	5322 122 32531	100pF 5% NP0 50V
2635	5322 126 10223	4,7nF 10% X7R 63V
2800	4822 126 13343	47nF 10% X7R 25V
2801	4822 124 80766	1000µF 20% 25V
2802	4822 126 13849	220nF 10% 16V X7R 0805
2803	4822 124 22646	47µF 20% 16V
2804	4822 124 22646	47µF 20% 16V
2806	4822 124 11562	47µF 20% 35V
2812	4822 124 22646	47µF 20% 16V
2819	5322 122 32654	22nF10% X7R 63V
2822	5322 122 34098	10nF 10% X7R 63V
2823	4822 124 23282	1µF 20% 50V
2827	5322 122 34123	1nF 10% X7R 50V
2828	5322 122 34123	1nF 10% X7R 50V
2829	5322 122 32654	22nF 10% X7R 63V
2831	4822 124 80765	4.7µF 20% 35V
2832	4822 124 41017	10µF 16V
2837	4822 122 33342	33nF 10% X7R 63V
2845	5322 122 34098	10nF 10% X7R 63V
2846	5322 122 34098	10nF 10% X7R 63V
⊣▭⊢		
3004	4822 051 20223	22KΩ 5% RC11 0805
3012	4822 051 20102	1KΩ 5% 0,1W
3013	4822 051 20273	27KΩ 5% RC11 0805
3014	4822 051 20104	100KΩ 5% 0,1W
3248	4822 051 20104	100KΩ 5% 0,1W
3249	4822 051 20104	100KΩ 5% 0,1W
3250	4822 051 20104	100KΩ 5% 0,1W
3251	4822 051 20104	100KΩ 5% 0,1W
3252	4822 051 20471	470Ω 5% 0,1W
3253	4822 051 20471	470Ω 5% 0,1W
3254	4822 051 20334	330KΩ 5% 0,1W
3255	4822 051 20334	330KΩ 5% 0,1W
3257	4822 051 20822	8K20 5% 0,1W
3258	4822 051 20153	15KΩ 5% 0,1W
3259	4822 051 20822	8K20 5% 0,1W
3260	4822 100 11681	CAR LIN 1K
3261	4822 100 11681	CAR LIN 1K
3262	4822 051 20153	15K 5% 0805
3263	4822 051 20183	18KΩ 5% 0,1W
3264	4822 051 20008	CHIP JUMPER MAX 0R05
3266	4822 051 20473	47KΩ 5% 0805 RC11
3267	4822 051 20008	CHIP JUMPER MAX 0R05
3268	4822 051 20008	CHIP JUMPER MAX 0R05
3269	4822 117 10179	2,2Ω 5% SFR16
3270	4822 051 20472	4K70 5% 0,1W
3271	4822 051 20102	1KΩ 5% 0,1W
3274	4822 051 20008	CHIP JUMPER MAX 0R05
3275	4822 051 20184	180KΩ 5% 0,1W
3276	4822 117 10507	24K 1% 0.1W
3277	4822 117 11139	1K5 1% 0,1W
3278	4822 051 20274	270KΩ 5% 0,1W
3279	4822 117 10507	24KΩ 1% 0.1W
3280	4822 051 20274	270KΩ 5% 0,1W

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3281	4822 051 20184	180KΩ 5% 0,1W
3282	4822 051 20008	CHIP JUMPER MAX 0R05
3288	4822 051 20471	470Ω 5% 0,1W
3290	4822 051 20102	1KΩ 5% 0,1W
3292	4822 051 20334	330KΩ 5% 0,1W
3293	4822 051 20008	CHIP JUMPER MAX 0R05
3294	4822 051 20008	CHIP JUMPER MAX 0R05
3296	4822 051 20102	1KΩ 5% 0,1W
3297	4822 051 20102	1KΩ 5% 0,1W
3301	4822 117 10833	10KΩ 5% 0805 RC11
3359	4822 051 20105	1MΩ 5% RC11 0805
3378	4822 117 11449	2K2 1% 0,1W
3379	4822 051 20102	1KΩ 5% 0,1W
3380	4822 051 20102	1KΩ 5% 0,1W
3382	4822 117 11449	2K2 1% 0,1W
3391	4822 051 20471	470Ω 5% 0,1W
3395	4822 051 20153	15KΩ 5% RC11 0805
3396	4822 051 20332	3K3 5% RC11 0805
3397	4822 051 20334	330KΩ 5% RC11 0805
3398	4822 117 10833	10KΩ 1% 0,1W
3399	4822 117 10833	10KΩ 1% 0,1W
3400	4822 051 20332	3K30 5% 0,1W
3401	4822 051 20332	3K30 5% 0,1W
3402	4822 117 10833	10KΩ 1% 0,1W
3403	4822 051 20393	39KΩ 5% 0,1W
3404	4822 051 20393	39KΩ 5% 0,1W
3405	4822 051 20183	18KΩ 5% 0,1W
3406	4822 117 10833	10KΩ 1% 0,1W
3407	4822 051 20393	39KΩ 5% 0,1W
3408	4822 051 20393	39KΩ 5% 0,1W
3409	4822 117 10833	10KΩ 1% 0,1W
3412	4822 051 20393	39KΩ 5% 0,1W
3413	4822 051 20224	220KΩ 5% 0,1W
3422	4822 051 20183	18KΩ 5% RC11 0805
3423	4822 051 20183	18KΩ 5% RC11 0805
3425	4822 051 20224	220KΩ 5% 0,1W
3426	4822 051 20224	220KΩ 5% 0,1W
3432	4822 051 20224	220KΩ 5% 0,1W
3505	4822 051 20104	100KΩ 5% 0,1W
3507	4822 051 20183	18KΩ 5% 0,1W
3509	4822 116 52176	10Ω 5% 0,5W
3511	4822 051 20102	1KΩ 5% RC11 0805
3563	4822 051 20222	2K2 5% 0,1W
3564	4822 051 20223	22KΩ 5% 0,1W
3565*	4822 051 20008	0Ω JUMP. (0805)
3565*	4822 051 20102	1KΩ 5% RC11 0805
3584	4822 051 20392	3K9 5% 0,1W
3585	4822 116 40254	330Ω
3586	4822 051 20223	22KΩ 5% 0,1W
3587	4822 051 20223	22KΩ 5% 0,1W
3592	4822 051 20008	0Ω JUMP. (0805)
3598	4822 051 20472	4K70 5% 0,1W
3599	4822 051 20008	0Ω JUMP. (0805)
3600	4822 051 20008	0Ω JUMP. (0805)
3601	4822 051 20008	0Ω JUMP. (0805)
3602	4822 051 20008	0Ω JUMP. (0805)
3603	4822 051 20008	0Ω JUMP. (0805)
3604	4822 051 20008	0Ω JUMP. (0805)
3605	4822 051 20008	0Ω JUMP. (0805)
3607	4822 051 20008	0Ω JUMP. (0805)

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3609	4822 051 20008	0Ω JUMP. (0805)
3610	4822 116 40221	R PTC 8Ω2
3611	4822 051 20222	2K2 5% 0,1W
3612	4822 051 20471	470Ω 5% 0,1W
3613	4822 051 20333	33KΩ 5% 0,1W
3614	4822 051 20104	100KΩ 5% 0,1W
3615	4822 116 83863	1KΩ 5% 0,5W
3616	4822 116 83863	1KΩ 5% 0,5W
3617	4822 116 83863	1KΩ 5% 0,5W
3618	4822 116 83863	1KΩ 5% 0,5W
3619	4822 117 11449	2K2 1% 0,1W
3620	4822 116 40221	R PTC 8Ω2
3621	4822 051 20101	100Ω 5% 0,1W
3626	4822 051 20224	220KΩ 5% 0,1W
3627	4822 051 20102	1KΩ 5% 0,1W
3628	4822 051 20008	0Ω JUMP. (0805)
3634	4822 051 20109	10Ω 5% 0805 B/T
3635	4822 051 20109	10Ω 5% 0805 B/T
3636	4822 051 20109	10Ω 5% 0805 B/T
3637	4822 051 20109	10Ω 5% 0805 B/T
3638	4822 051 20109	10Ω 5% 0805 B/T
3639	4822 051 20109	10Ω 5% 0805 B/T
3640	4822 051 20109	10Ω 5% 0805 B/T
3641	4822 051 20109	10Ω 5% 0805 B/T
3700	4822 117 10833	10KΩ 1% 0,1W
3701	4822 051 20101	100Ω 5% 0,1W
3702	4822 051 20331	330Ω 5% RC11 0805^M
3703	4822 117 10833	10KΩ 1% 0,1W
3704	4822 117 10833	10KΩ 1% 0,1W
3706	4822 051 20008	0Ω JUMP. (0805)
3707	4822 051 20008	0Ω JUMP. (0805)
3709	4822 051 20153	15KΩ 5% 0,1W
3710	4822 051 20471	470Ω 5% 0,1W
3711	4822 051 20153	15KΩ 5% 0,1W
3712	4822 051 20008	0Ω JUMP. (0805)
3713	4822 051 20473	47KΩ 5% 0,1W
3714	4822 051 20473	47KΩ 5% 0,1W
3717	4822 117 10833	10KΩ 1% 0,1W
3718	4822 051 20472	4K70 5% 0,1W
3719	4822 051 20153	15KΩ 5% 0805 RC11
3720	4822 051 20102	1KΩ 5% 0,1W
3721	4822 051 20153	15KΩ 5% 0,1W
3723	4822 051 20008	0R05 JUMPER 0805
3725	4822 051 20104	100KΩ 5% 0,1W
3726	4822 051 20101	100Ω 5% 0,1W
3727	4822 051 20101	100Ω 5% 0,1W
3728	4822 117 10833	10KΩ 1% 0,1W
3729	4822 117 10833	10KΩ 1% 0,1W
3730	4822 051 20153	15KΩ 5% 0,1W
3731	4822 051 20473	47KΩ 5% 0,1W
3732	4822 051 20102	1KΩ 5% 0,1W
3734	4822 051 20153	15KΩ 5% RC11 0805
3805	4822 051 20473	47KΩ 5% 0,1W
3806	4822 051 20102	1KΩ 5% 0,1W
3807	4822 117 10833	10KΩ 1% 0,1W
3808	4822 117 10833	10KΩ 1% 0,1W
3809	4822 116 83863	1KΩ 5% 0,5W
3810	4822 117 10833	10KΩ 1% 0,1W
3811	4822 051 20473	47KΩ 5% 0,1W
3813	4822 051 20473	47KΩ 5% 0,1W

3816	4822 051 20472	4K70 5% 0,1W
3817	4822 117 10833	10KΩ 1% 0,1W
3818	4822 117 10833	10KΩ 1% 0,1W
3819	4822 051 20102	1KΩ 5% 0,1W
3820	4822 116 83863	1KΩ 5% 0,5W
3821	4822 116 83863	1KΩ 5% 0,5W
3822	4822 051 20224	220KΩ 5% 0,1W
3823	4822 051 20104	100KΩ 5% 0,1W
3824	4822 117 10833	10KΩ 1% 0,1W
3825	4822 117 10833	10KΩ 1% 0,1W
3826	4822 051 20223	22KΩ 5% 0,1W
3827	4822 051 20333	33KΩ 5% 0,1W
3828	4822 117 10833	10KΩ 1% 0,1W
3831	4822 117 11449	2K2 1% 0,1W
3833	4822 117 10833	10KΩ 1% 0,1W
3835	4822 051 20104	100KΩ 5% 0,1W
3836	4822 051 20474	470KΩ 5% 0,1W
3837	4822 117 10833	10KΩ 1% 0,1W
3838	4822 116 40267	3R3 25% 20V
3839	4822 051 20104	100KΩ 5% 0,1W
3842	4822 117 10833	10KΩ 1% 0,1W
3843	4822 051 20008	0R05 JUMPER 0805
3844	4822 051 20223	22KΩ 5% 0805 RC11
3845	4822 051 20008	CHIP JUMPER MAX 0R05
3846	4822 051 20102	1KΩ 5% 0,1W
3847	4822 051 20471	470Ω 5% 0,1W
3848	4822 051 20471	470Ω 5% 0,1W
3849	4822 117 10833	10K 1% 0,1W
3852	4822 051 20102	1KΩ 5% 0,1W
3854	4822 051 20473	47KΩ 5% 0,1W
3860	4822 051 20104	100KΩ 5% 0,1W
3862	4822 116 83864	10K 5% CFB R-20
3863	4822 051 20104	100KΩ 5% 0,1W
3869	4822 051 20008	0Ω JUMP. (0805)
3870	4822 051 20008	0Ω JUMP. (0805)
3871	4822 051 20223	22K 5% RC11 0805

5100	4822 157 71433	120µH 10% LAL05TB121K
5350	4822 242 80259	LN-G38-311 (4,332MHZ)
5400	4822 157 71206	BLM21A10PT
5570*	4822 157 70935	97µH 10A
5570*	4822 157 70839	160µH 5A
5600	4822 157 52983	22µH 10%
5601	4822 242 81959	CST11.5MTW
5603	4822 242 81002	CST6.00MGW
5604	4822 157 60122	LAL02 4,7µH 5%
5605	4822 157 60122	LAL02 4,7µH 5%
5606	4822 157 71206	IND SM 100MHz 600R

6252	5322 130 30684	DIODE 1N4002 GPE
6352	5322 130 30684	DIODE 1N4002 GPE
6354	5322 130 34337	BAV99
6355	4822 130 83757	DIODE BA216
6403	5322 130 34337	BAV99
6574	4822 130 83757	DIODE BA216
6575	4822 130 10488	SM DIO SG
6600	4822 130 34173	ZENER BZX55-F5V6
6614	5322 130 34331	BAV70

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6615	4822 130 83757	DIODE BAS216
6785	5322 130 30684	1N4002GPE
6804	4822 130 34195	BZX79-C13
6610	4822 130 32904	BZV85-C5V6
6611	4822 130 32904	BZV85-C5V6
6812	4822 130 83757	DIODE BAS216
6815	4822 130 34173	BZX55-F5V6
6816	4822 130 83757	DIODE BAS216
6817	5322 130 34337	BAV99
6818	5322 130 34331	BAV70
6819	4822 130 83757	DIODE BAS216
6820	5322 130 34337	BAV99

7251*	4822 209 33237	TEA9677T/V1
7251*	4822 209 32744	TEA0675T/V1
7255	4822 130 60511	BC847B
7256	5322 130 61677	BC875
7257	4822 209 83159	LA2000
7258	4822 130 60511	BC847B
7260	4822 130 44283	BC636
7300	4822 130 60511	SM TRANS BC847B
7350	4822 209 33985	TDA8579T/N1
7354	4822 209 32745	TEA6320/V1
7355	4822 209 31981	SAA6579T/V1
7356	4822 209 32742	TL074IN
7357	4822 130 60511	BC847B
7362	5322 130 60508	BC857B
7550	4822 209 90404	TDA7374B POWER IC
7551	4822 209 31132	TDA7374V TILL FD01
7551	4822 209 90404	TDA7374B FROM FD02
7552	4822 130 60511	BC847B
7553	4822 130 60511	BC847B
7554	4822 130 60511	BC847B
7555	5322 130 60508	BC857B
7600	4822 209 13705	P83CE558EFB/ 82
7602	5322 209 10468	HEF4521BP
7603	4822 209 32743	MSM6307GS-VK
7609	4822 130 60511	BC847B
7800	4822 209 33029	TDA3602/N3
7803	4822 130 40995	BD438(141Y)
7805	4822 130 60511	BC847B
7809	4822 130 41484	BD677(142Y)
7810	4822 130 60511	BC847B
7823	4822 130 60511	BC847B
7826	4822 209 12628	HEF4044BT
7829	5322 130 60508	BC857B

Items with *: Alternative components. See schematic diagrams

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Service
Service
Service

Service Manual

12 V

TECHNICAL DATA

Operating voltage	: 9 - 16V (nom. 13.2V)
Tape speed	: 4.76cm/sec ± 0.5%
Wow & flutter	: ≤ 0.35% RMS (+10 - +45°C)
Crosstalk (track 2-3)	: < -40dB
Fast wind time	: ≤ 115secs (C-60)
Number of tracks	: 2x2
Channel separation (Tracks 1-2/3-4)	: > 35dB

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PHILIPS

GENERAL

The LCA2.4 has the following features:

- Dolby
- "Key-Off" standby
- Automatic Music sensor System
- Metal / Ferro tape selector switch

MAINTENANCE

The cassette mechanism requires periodic cleaning, as well as periodic lubrication of the principal points.

1. Cleaning with alcohol or spirit

- Playback head (pos.332).
- Pressure rollers & capstans (pos.17, 57 and 58).
- Belt (pos.207) & pulley (pos.39).

To clean head, pressure roller and capstan, it is also possible to use drop-in cassette SBC114 (4822 389 20035).

2. Lubrication

Refer to the 'Lubrication Overview' on page 5.

ADJUSTMENTS AND CHECKS

Equipment required:
- Universal test cassette SBC419 (4822 397 30069)
- Universal test cassette SBC420 (4822 397 30071)
- Friction test cassette 811/CTM (4822 395 30054)
- Spring scale 50-500g (4822 395 80028)
- Puller for clutch (4822 395 60039)
- Wow & flutter meter
- AC millivoltmeters
- Spring scale 50-500 g

1. Pressure roller pressure

The pressure on the capstans should be 210 - 370 grammes (2.1 - 3.7N).
This pressure is measured as follows (NOR and REV):

- Select Play mode.
- Push the pressure roller back at the shown point by means of the spring scale.
- At the point where pressure roller and capstan just disengage the spring scale should be read.
- If the pressure is incorrect, replace spring 19.

2. Friction clutch (Reel assy)

- Insert friction test cassette 811/CTM (NOR and REV).
- Play take-up torque should be 35 - 75g/cm.
- Fast wind torque should be 40 - 150g/cm.
- If the torque is not correct, replace reel assy.

3. Wow & flutter/tape speed (Fig. G)

This check is carried out on a complete car radio; proceed as follows:
- Connect the wow & flutter meter to the LS outputs.
- Insert test cassette SBC419 (or SBC420) and play the 3150Hz signal.
- The wow & flutter value should be ≤ 0.35%.
- Tape speed should be 4.76cm/sec. ± 0.5%.
- The tape speed can be adjusted with screw "S".

In case of an excessive wow & flutter value, check following parts for correct functioning:
- motor 320
- pressure (pinch) rollers 17
- belt 207
- friction clutches (reel assy's)
- flywheels 57 and 58
- pulley 39

4. Azimuth (Figs. G, H)

This check is carried out on a complete car radio; proceed as follows:
- Apply a 4Ω load to both loudspeaker outputs.
- Connect an AC millivoltmeter across both loudspeaker outputs.
- Play the 10kHz signal of test cassette SBC419 or SBC420.
- Adjust screw 'A' for the average of the max. output voltages.
- The maximum allowed difference between both channels is 4 dB.
- Switch over to 'reverse play'.
- If the value measured differs from the previously measured value, bearing 49 in the front flywheel ("reverse") should be displaced.

5. Flywheels 57, 58

Refer to Fig. J.

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DISASSEMBLY INSTRUCTIONS

Notes:
In a few places parts are locked by synthetic bosses. To be able to dismantle these parts, the bosses have to be bent, displaced etc.
Gearwheels 33 and 34 and pressure rollers 17 are attached to the spindles by means of a snap connection. These parts can be disassembled carefully with a screwdriver.
If gearwheel 33 (or 34) has to be replaced, the corresponding bracket 12 (or 13) should ALSO be replaced.

Belt 207, Fly wheels 57 & 58, Cog wheel assy 12 & 33
See figure A.

Pressure roller 17, Head assy 332
See figure B.

Head bracket 298
See figure C.

Clutch 6
See figure D.

Cog wheels 30, 31, 34
See figure E.

Reel base assy
See figure F.

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BELT 207, FLY WHEELS 57 & 58, COG WHEEL ASSY 12,33

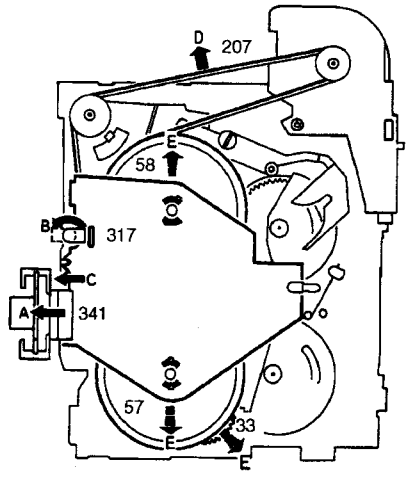

Fig. A

PRESSURE ROLLER 17, HEAD 332

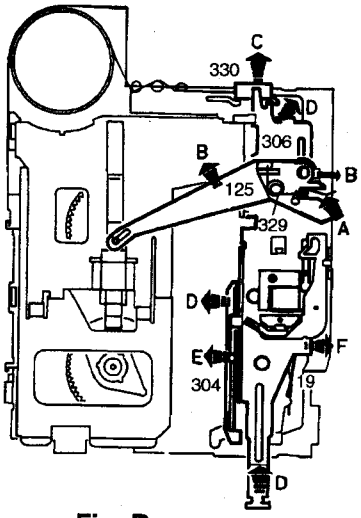

Fig. B

HEAD BRACKET 298

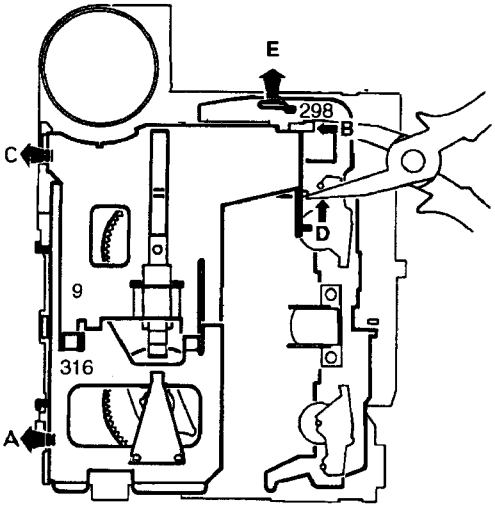

Fig. C

CLUTCH 6

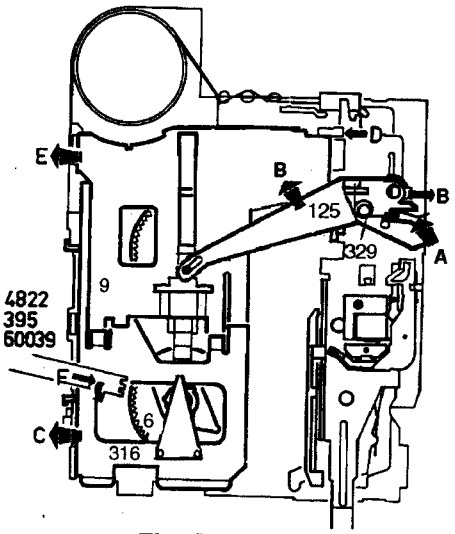

Fig. D

COG WHEELS 30, 31, 34

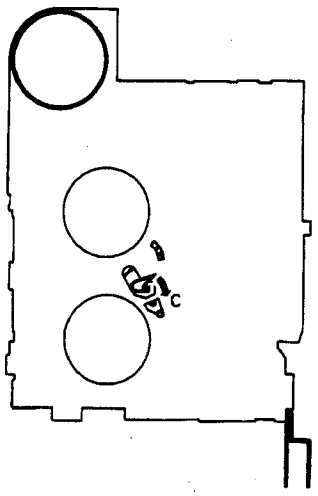

Fig. E

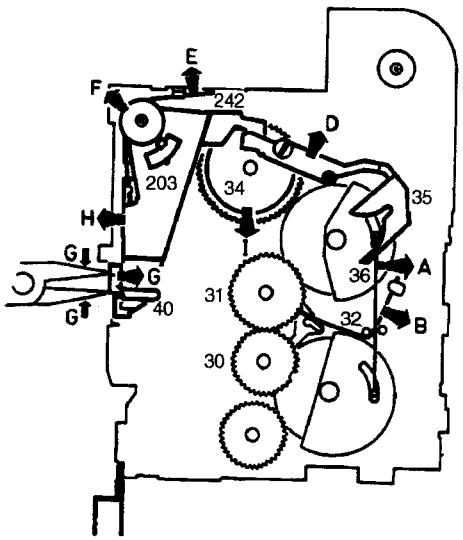

Fig. F

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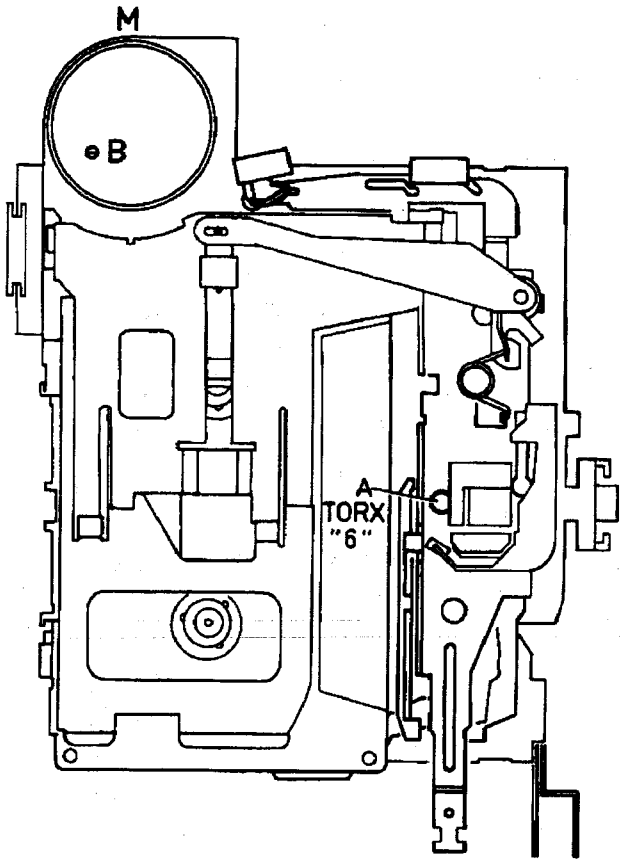

Fig. G

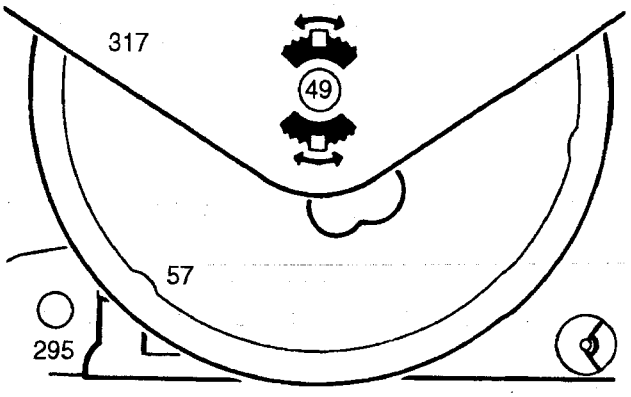

Fig. H

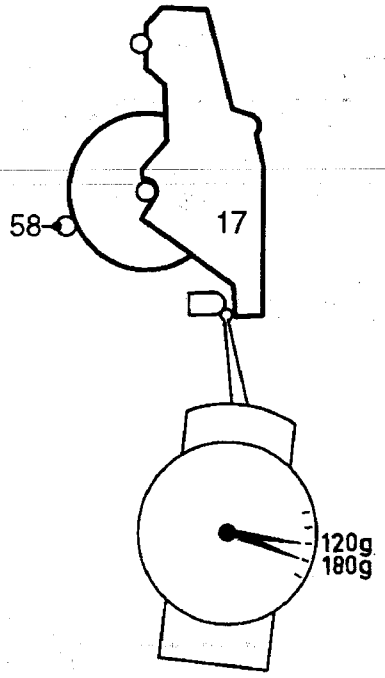

Fig. I

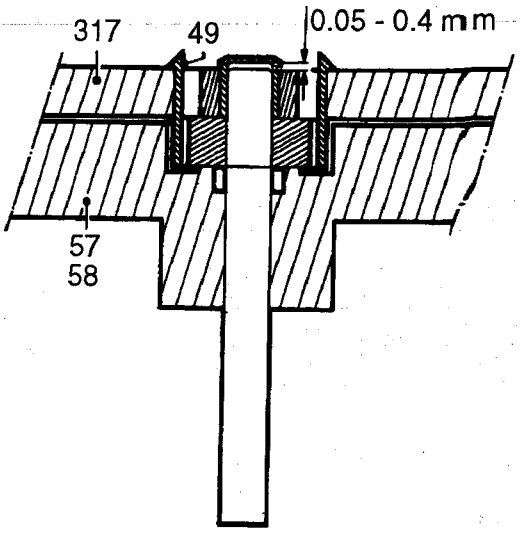

Fig. J

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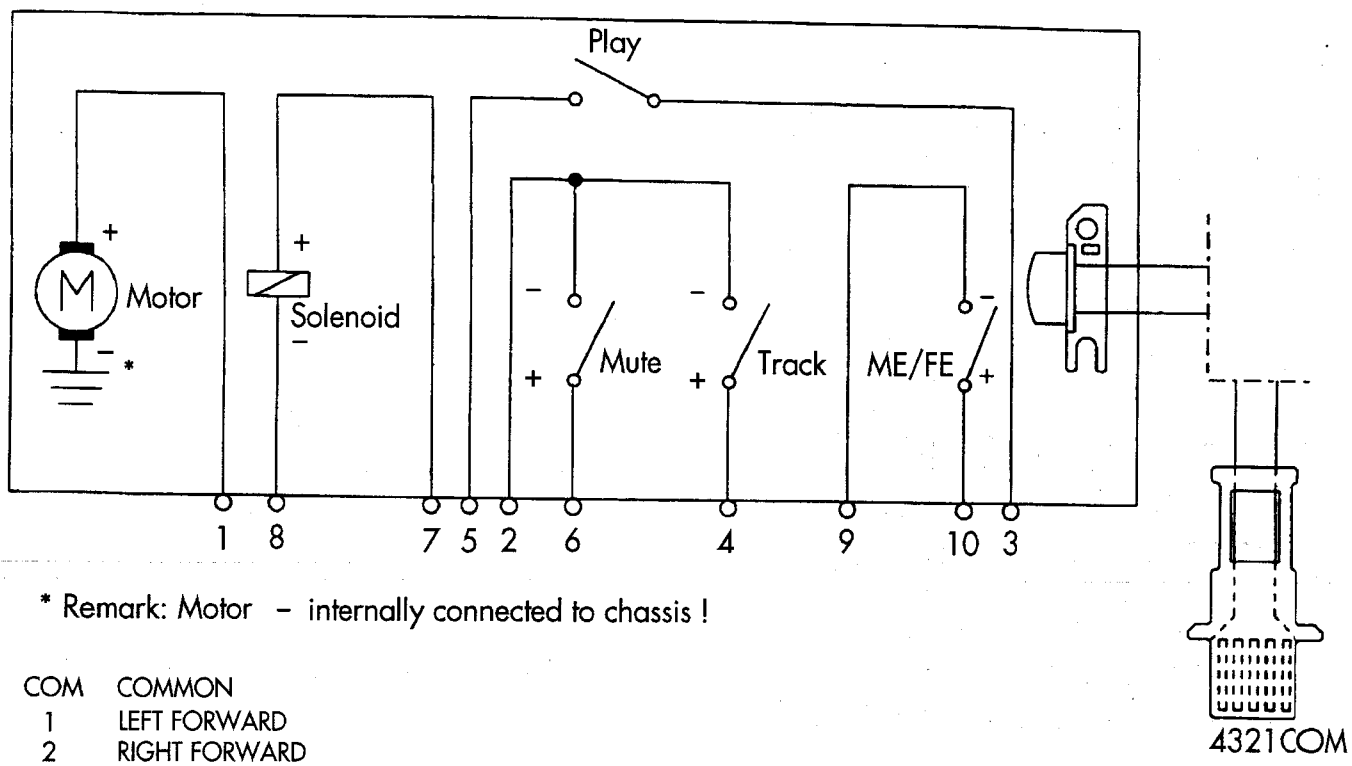
CONNECTIONS



* Remark: Motor – internally connected to chassis !

COM	COMMON
1	LEFT FORWARD
2	RIGHT FORWARD
3	RIGHT REVERSE
4	LEFT REVERSE

Fig. K

Fig. N

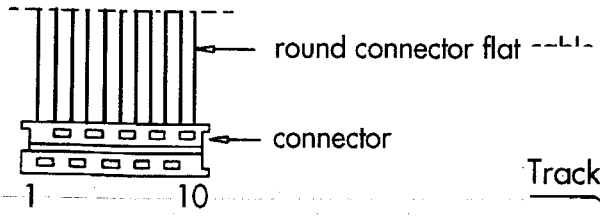


Fig. L

wire	colour	function
1	red	Motor+
2	brown	COMMON
3	orange	+14V
4	yellow	Track SW
5	green	Play SW
6	blue	Mute SW
7	violet	+ Solenoid
8	grey	– Solenoid
9	white	– ME/FE
10	black	+ ME/FE

Fig. O

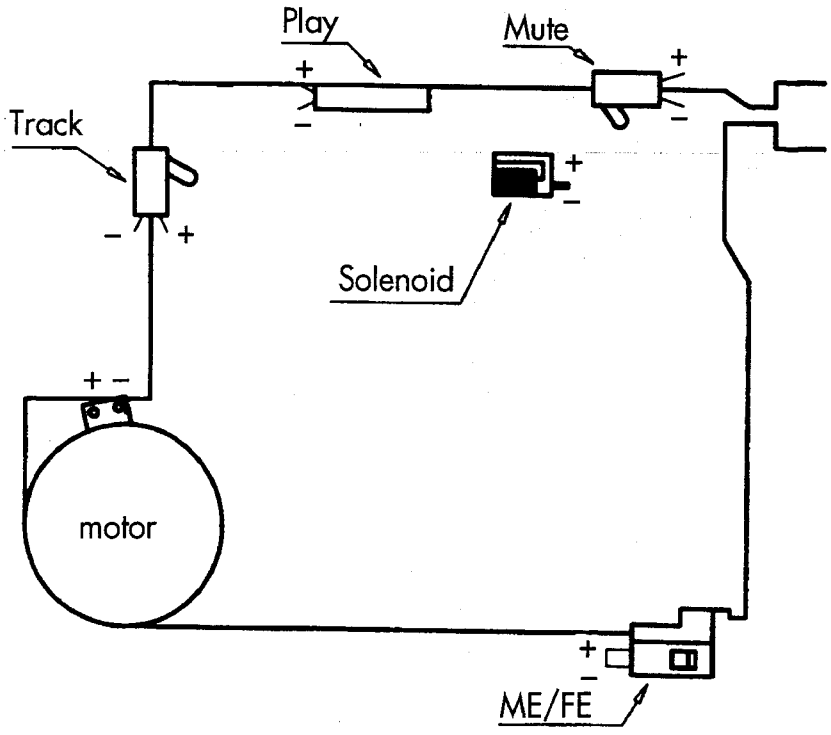


Fig. M

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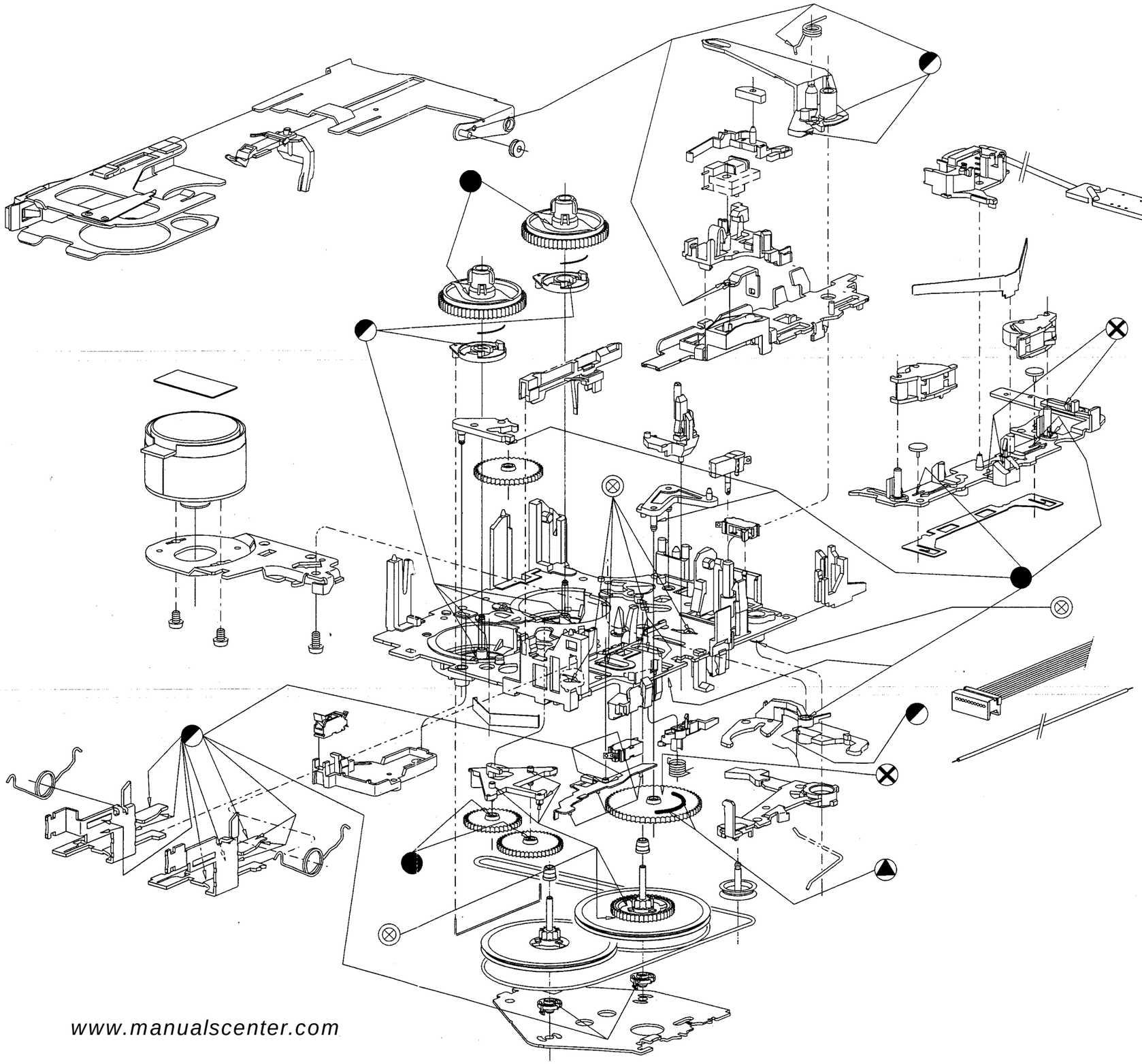
LUBRICATION OVERVIEW



- Contact Oel PDP 65
- Grease Topas L30
- Grease SM 30 TF
- Grease Gleitmo 585 K
- Grease 4

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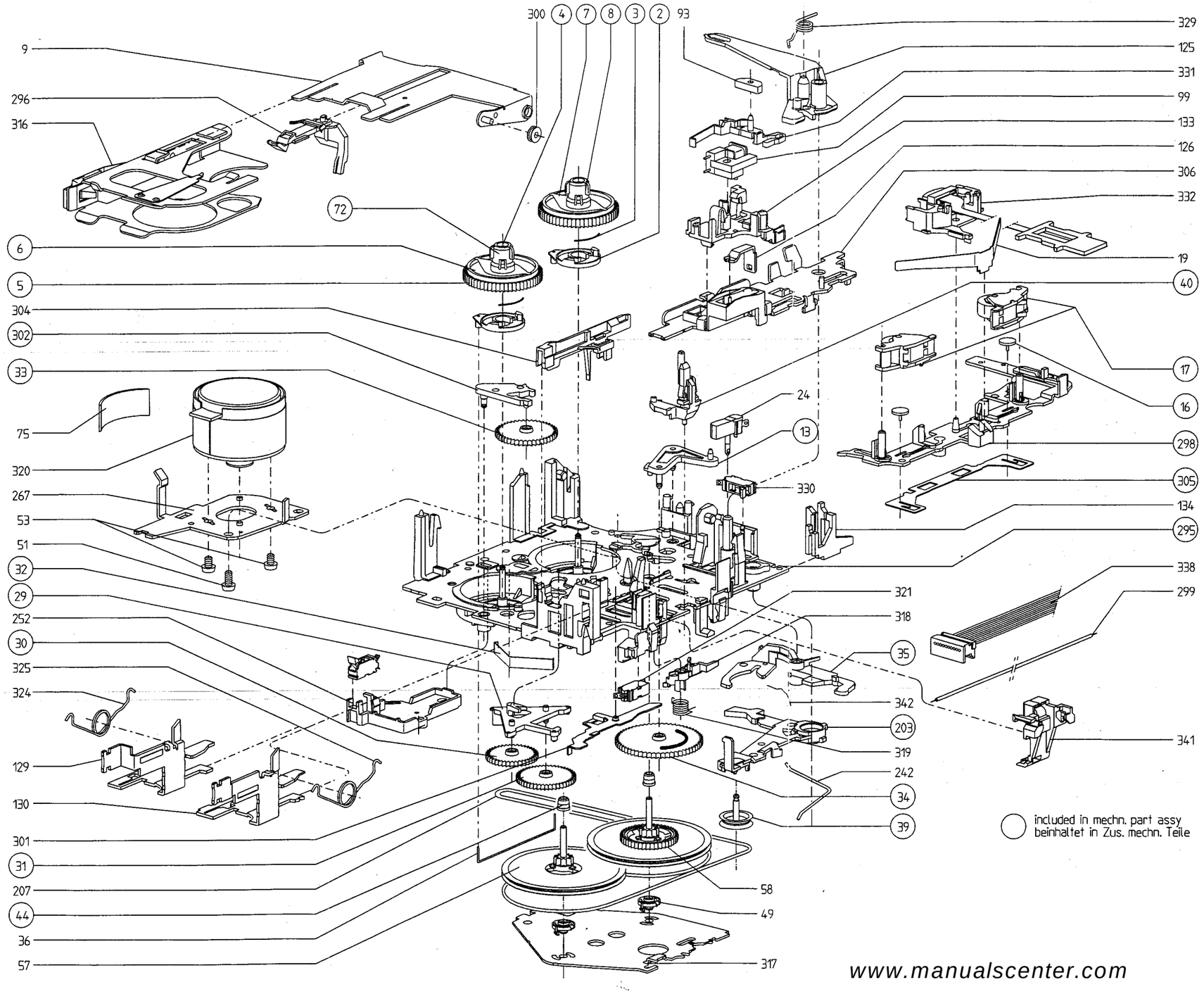
EXPLODED VIEW



PARTS LISTS

2/3	4822 466 70527	Disc assy
4/5/6/7/8	4822 466 70526	Coupling felt assy white
4/5/6/7/72	4822 528 10898	Coupling felt assy black
9	4822 466 81479	Cassette lift
16	4822 528 80983	Fixation
17	4822 403 40157	Pressure roller assy
24	4822 276 13081	Play switch
29/30/31	4822 522 20327	Gear assy
32	4822 492 71468	Leaf spring
35	4822 403 52031	Gear arm
36	4822 492 90076	Lever
39	4822 528 81144	Pulley
40	4822 403 10225	Holder
44	4822 520 30406	Bush bearing
49	4822 520 30407	Excentric
53	4822 502 12548	Special screw
54/207	4822 358 30405	Driving belt
58	4822 528 81517	Fly wheel assy
93	4822 281 60165	Anchor plate
99	4822 281 50113	Solenoid magnet
125	4822 403 71287	Lever eject
126	4822 403 71286	Lever blocking
133	4822 466 83076	Plate solenoid II
203	4822 404 21169	Arm
296	4822 256 92317	Holder cassette
298	4822 403 71282	Head support bracket
304	4822 462 30632	Band conductor
306	4822 403 71283	Push button rod
318	4822 403 71284	Latch
319	4822 492 42774	Spring latch
320	4822 361 21764	Motor MSI-5 CCW
321	4822 276 13617	Switch mute
330	4822 276 13616	Switch track
331	4822 403 71285	Lever solenoid
332	4822 249 30227	Magnetic head
	4822 691 10438	Deck LCA2.4 complete

Lubrication greases/oils

4822 390 10107	Isoflex PDP 65, 30ML
4822 390 20128	Isoflex TOPAS L 30
4822 390 20116	Grease 004, 100G CAN
4822 390 20128	Isoflex TOPAS L 30

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Car cassette deck LCA 5.2
LCA 5.4

Service
Service
Service

Supplement

ServiceManual

12 V

This supplement should be used together with the LCA 2.4 Service Manual with service code: 4822 725 23523.

4728

This supplement contains: technical data, general information, connector and switch overviews, exploded views and partslists for both the LCA 5.2 and LCA 5.4 tape decks.
For all parts not mentioned here, refer to the LCA 2.4 Service Manual.

TECHNICAL DATA

Operating voltage	: 9 - 16V (nom. 13.2V)
Tape speed	: 4.76cm/sec ± 0.5%
Wow & Flutter	: ≤ 0.35% RMS (+10 - +45°C)
Crosstalk (track 2-3)	: < -40dB
Fast wind time	: ≤ 115sec (C-60)
Number of tracks	: 2x2
Channel separation (Tracks 1-2/3-4)	: > 35dB

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PHILIPS

GENERAL

The differences between the LCA 2.4 and **LCA 5.2** are:
- capstan motor at left side instead of rear
- no "Key-Off" standby
- no Automatic Music sensor system
- no Metal / Ferro tape selector switch
- interface connector
- changed position of wind buttons

The differences between the LCA 2.4 and **LCA 5.4** are:
- capstan motor at left side instead of rear
- interface connector
- changed position of wind buttons

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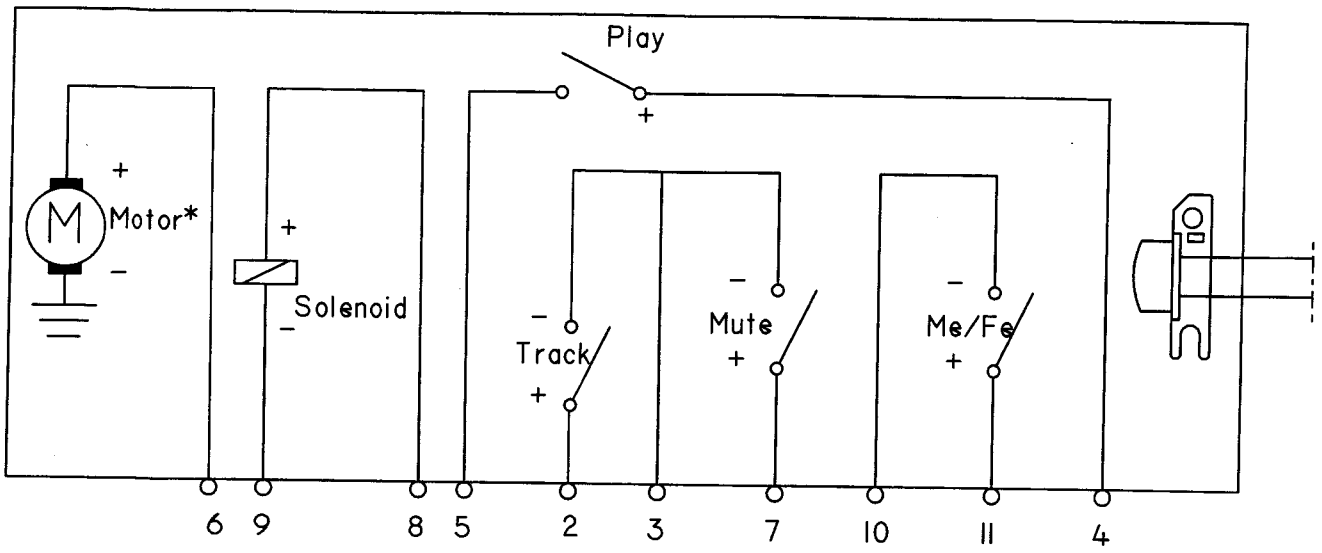
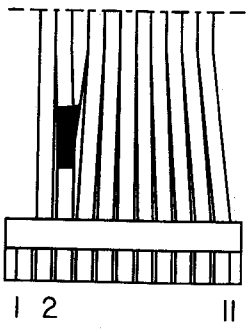
LCA 5.4 CONNECTOR AND SWITCH OVERVIEW

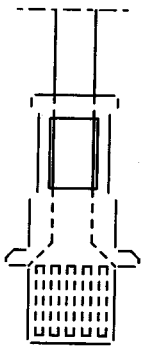


*Remark: Motor – internally connected to chassis!

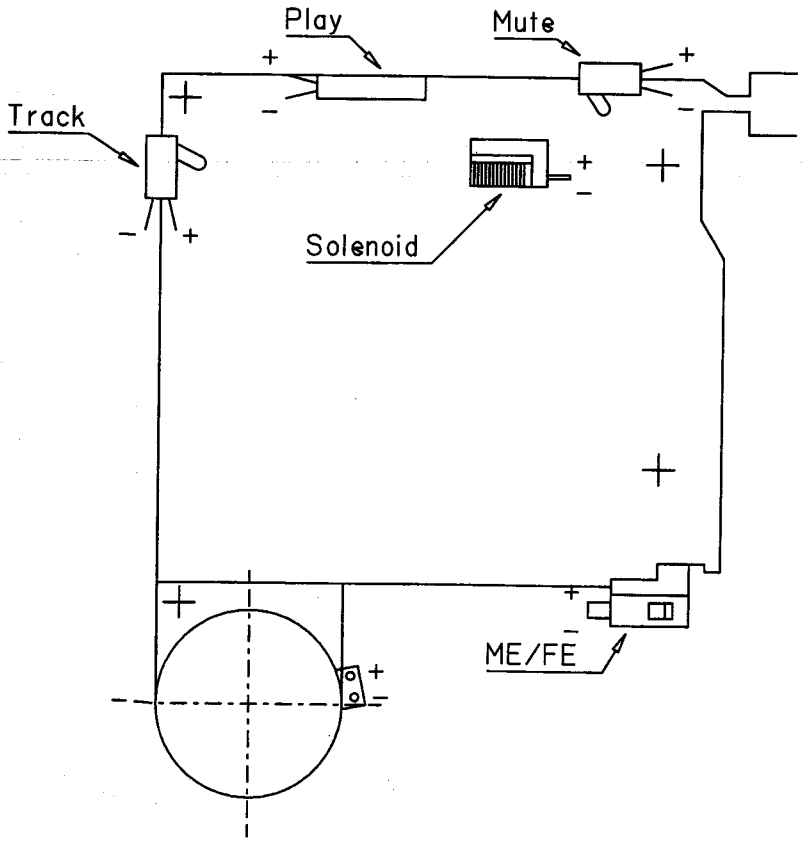


← round conductor flat cable

← connector



COM	common
1	left forward
2	right forward
3	right reverse
4	left reverse



	colour	function
1	--	---
2	black	+Track Sw
3	red brown	COMMON
4	orange	+14V
5	yellow	Play Sw
6	green	Motor
7	blue	Mute SW
8	violet	+ Solenoid
9	grey	- Solenoid
10	white	- Me/Fe
11	black	+ Me/Fe

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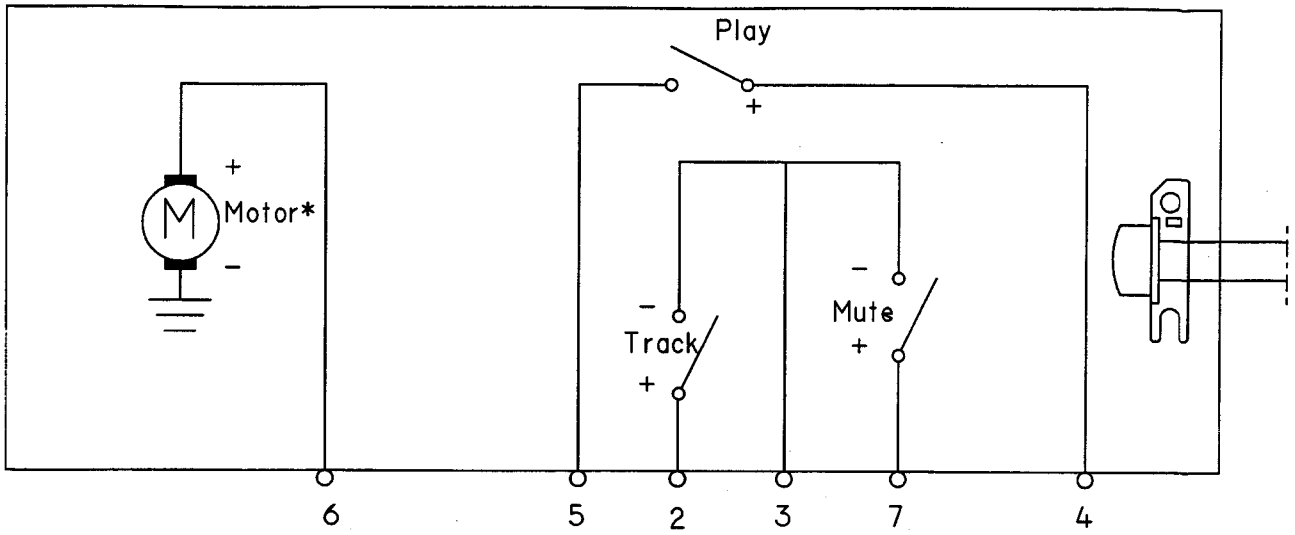
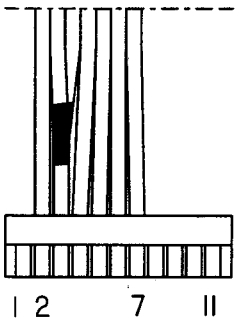
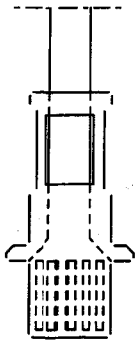
LCA 5.2 CONNECTOR AND SWITCH OVERVIEW

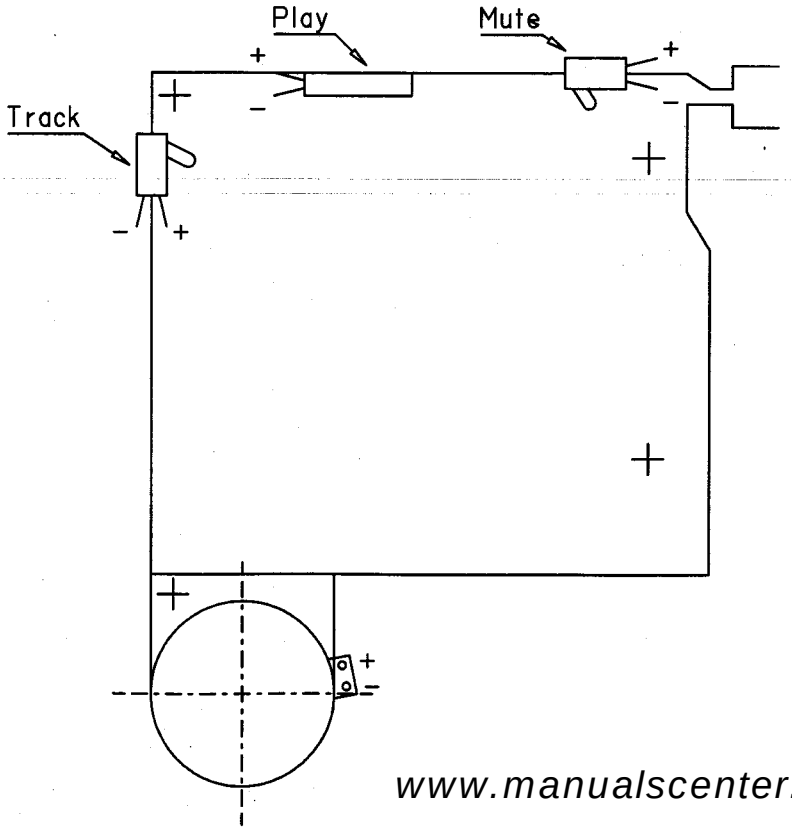


*Remark: Motor – internally connected to chassis!





COM	common
1	left forward
2	right forward
3	right reverse
4	left reverse



	colour	function
1	--	---
2	black	+Track Sw
3	red brown	COMMON
4	orange	+14 V
5	yellow	Play Sw
6	green	Motor
7	blue	Mute SW
8	--	---
9	--	---
10	--	---
11	--	---

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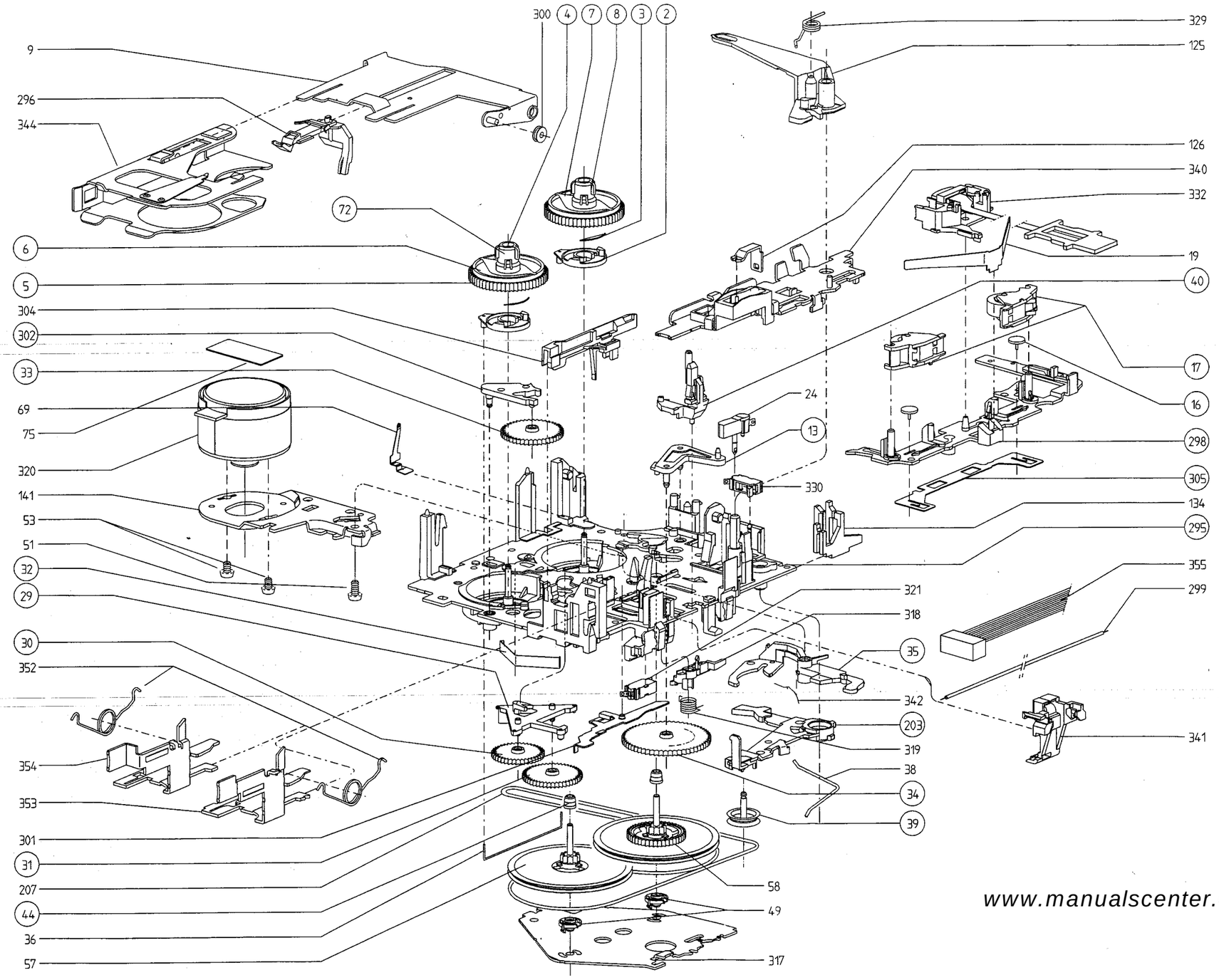
LCA 5.2 EXPLODED VIEW



PARTS LIST LCA5.2

2/3	4822 466 70527	Disc assy
4/5/6/7/8	4822 466 70526	Coupling felt assy white
4/5/6/7/72	4822 528 10898	Coupling felt assy black
9	4822 466 81479	Cassette lift
16	4822 528 80983	Fixation
17	4822 403 40157	Pressure roller assy
24	4822 276 13081	Play switch
29/30/31	4822 522 20327	Gear assy
32	4822 492 71468	Leaf spring
35	4822 403 52031	Gear arm
36	4822 492 90076	Lever
39	4822 528 81144	Pulley
40	4822 403 10225	Holder
44	4822 520 30406	Bush bearing
49	4822 520 30407	Excentric
53	4822 502 12548	Special screw
57	4822 528 80985	Flywheel assy
58	4822 528 81517	Flywheel assy
125	4822 403 71287	Lever eject
126	4822 403 71286	Lever blocking
203	4822 404 21169	Arm
207	4822 358 31136	Driving belt
296	4822 256 92317	Holder cassette
298	4822 403 71282	Head support bracket
300	4822 528 10942	Lift roller
301	4822 466 10758	Plate logic
304	4822 462 30632	Band conductor
305	4822 466 10759	Control plate
318	4822 403 71284	Latch
319	4822 492 42774	Spring latch
320	4822 361 21764	Motor MSI-5 CCW
321	4822 276 13617	Switch mute
330	4822 276 13616	Switch track
332	4822 249 30227	Magnetic head
340	4822 402 10106	Push button rod
344	4822 256 10151	Cassette carrier assy
	4822 691 10466	Deck LCA5.2 complete

Lubrication greases/oils

4822 390 10107	Isoflex PDP 65, 30ML
4822 390 10133	Grease 55K
4822 390 10134	Grease L30TF
4822 390 20116	Grease 004, 100G CAN
4822 390 20128	Isoflex TOPAS L 30

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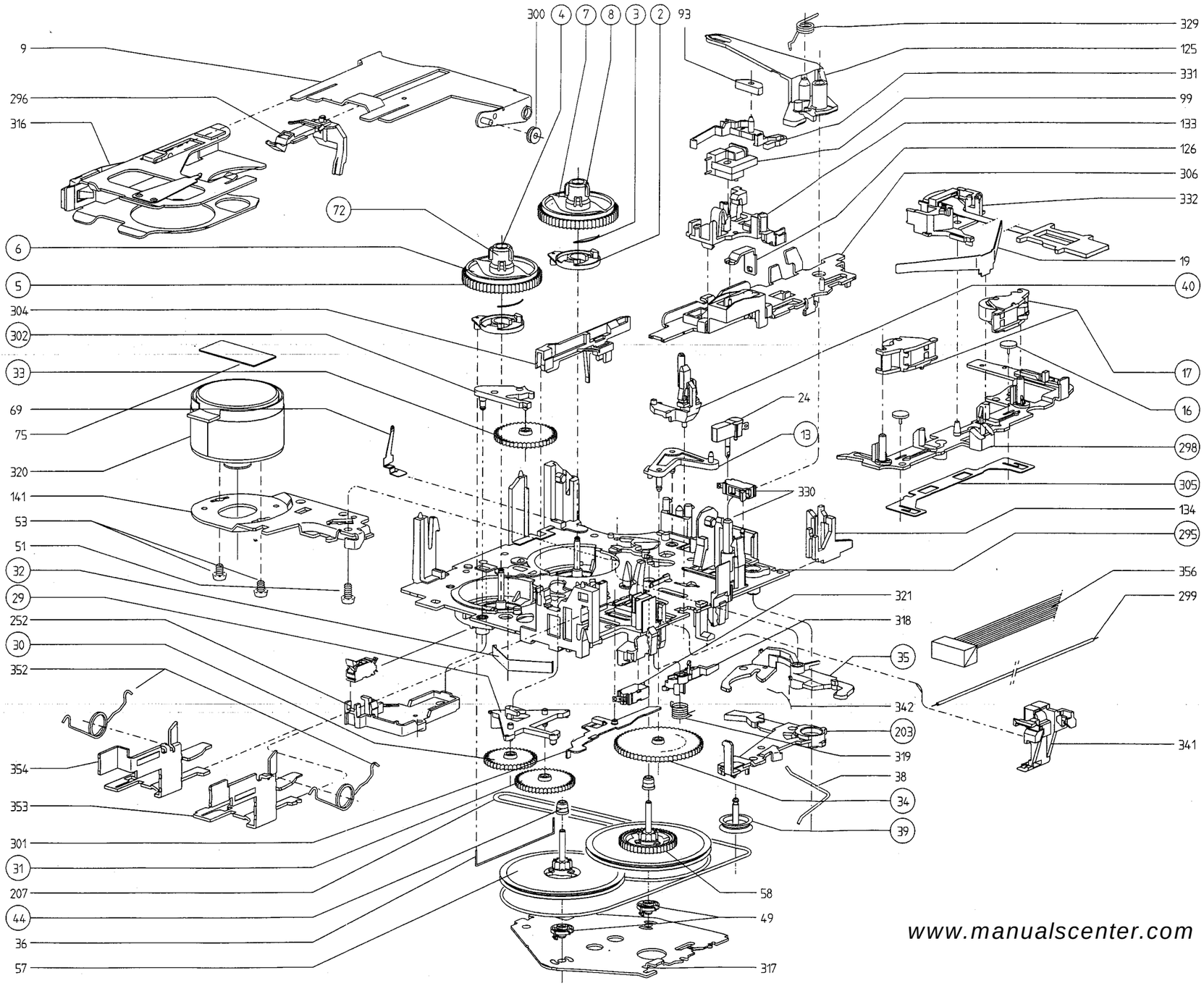
LCA 5.4 EXPLODED VIEW



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PARTS LIST LCA5.4

2/3	4822 466 70527	Disc assy
4/5/6/7/8	4822 466 70526	Coupling felt assy white
4/5/6/7/72	4822 528 10898	Coupling felt assy black
9	4822 466 81479	Cassette lift
16	4822 528 80983	Fixation
17	4822 403 40157	Pressure roller assy
24	4822 276 13081	Play switch
29/30/31	4822 522 20327	Gear assy
32	4822 492 71468	Leaf spring
35	4822 403 52031	Gear arm
36	4822 492 90076	Lever
39	4822 528 81144	Pulley
40	4822 403 10225	Holder
44	4822 520 30406	Bush bearing
49	4822 520 30407	Excentric
53	4822 502 12548	Special screw
57	4822 528 80985	Flywheel assy
58	4822 528 81517	Flywheel assy
93	4822 281 60165	Anchor plate
99	4822 281 50113	Solenoid magnet
125	4822 403 71287	Lever eject
126	4822 403 71286	Lever blocking
133	4822 466 83076	Plate solenoid II
203	4822 404 21169	Arm
207	4822 358 31136	Driving belt
296	4822 256 92317	Holder cassette
298	4822 403 71282	Head support bracket
300	4822 528 10942	Lift roller
301	4822 466 10758	Plate logic
304	4822 462 30632	Band conductor
305	4822 466 10759	Control plate
306	4822 403 71283	Push button rod
318	4822 403 71284	Latch
319	4822 492 42774	Spring latch
320	4822 361 21764	Motor MSI-5 CCW
321	4822 276 13617	Switch mute
330	4822 276 13616	Switch track/ME-FE
331	4822 403 71285	Lever solenoid
332	4822 249 30227	Magnetic head
344	4822 256 10151	Cassette carrier assy
	4822 691 10467	Deck LCA5.4 complete

Lubrication greases/oils

4822 390 10107	Isoflex PDP 65, 30ML
4822 390 10133	Grease 585K
4822 390 10134	Grease L30TF
4822 390 20116	Grease 004, 100G CAN
4822 390 20128	Isoflex TOPAS L 30

PCS 81 641