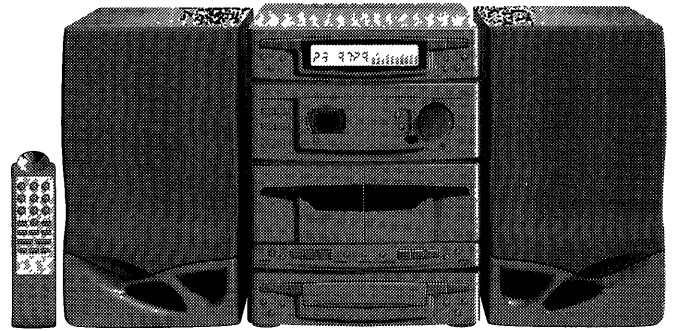


Service
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Service Manual

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SPECIFICATIONS

GENERAL

Mains voltage

Switchable 110-127V / 220-240V for -/21
60Hz

Mains frequency

Mains breakdown protection

10 minutes

Clock Accuracy

< 4 sec/day

Power consumption

180W max

Dimension centre unit

FW46 240 x 309.5 x 273.5mm

FW56 240 x 352.5 x 273mm

TUNER : FM SECTION

Tuning range

87.5MHz - 108MHz

IF frequency

10.7MHz

Aerial input

75Ω coaxial

Sensitivity at 26dB S/N

< 8μV {6.9μV}

Selectivity at 600kHz bandwidth

> 20dB {30dB}

IF rejection

> 50dB {60dB}

Image rejection

> 20dB {25dB}

TUNER : AM SECTION

Tuning range

MW

530kHz - 1710kHz for /21

IF frequency

Sensitivity at 26dB S/N

MW

< 3.6mV/M {3.2mV/M}

Selectivity at 18kHz bandwidth

MW

> 16dB {20dB}

IF rejection

MW

> 24dB {24dB}

Image rejection

MW

> 28dB {28dB}

AMPLIFIER

Output power at 10% distortion

2 x 27W -1dB

Speaker impedance

2 x 6Ω L/R

Frequency response within -3dB

63Hz - 15kHz

Dynamic bass boost

+6dB at 300Hz

Headphone output at 32Ω

25mV

Input sensitivity

Aux/TV

400mV at 47kΩ

MIC

1.5mV at 600Ω for -/21

CASSETTE RECORDER

Number of track

2 x 2 stereo

Tape speed

4.76 cm/sec ± 2%

1.7 x 4.76 cm/sec

Wow and flutter

< 0.4%

Fast-wind time C60

130 sec

Bias system

90kHz ± 5kHz

Recording playback frequency response within -5dB

80Hz - 12.5kHz

Signal to noise ratio

IEC I

> 47dB

IEC II

> 47dB

Dubbing

> 47dB

Dolby Noise Reduction Factor

8.5dB

COMPACT DISC

Frequency response within +2dB/-4dB

20Hz - 20kHz

Signal/Hiss ratio

> 75dB

Distortion at 1kHz

< 0.03%

Channel difference at 1kHz

< 2dB

Channel crosstalk at 1kHz

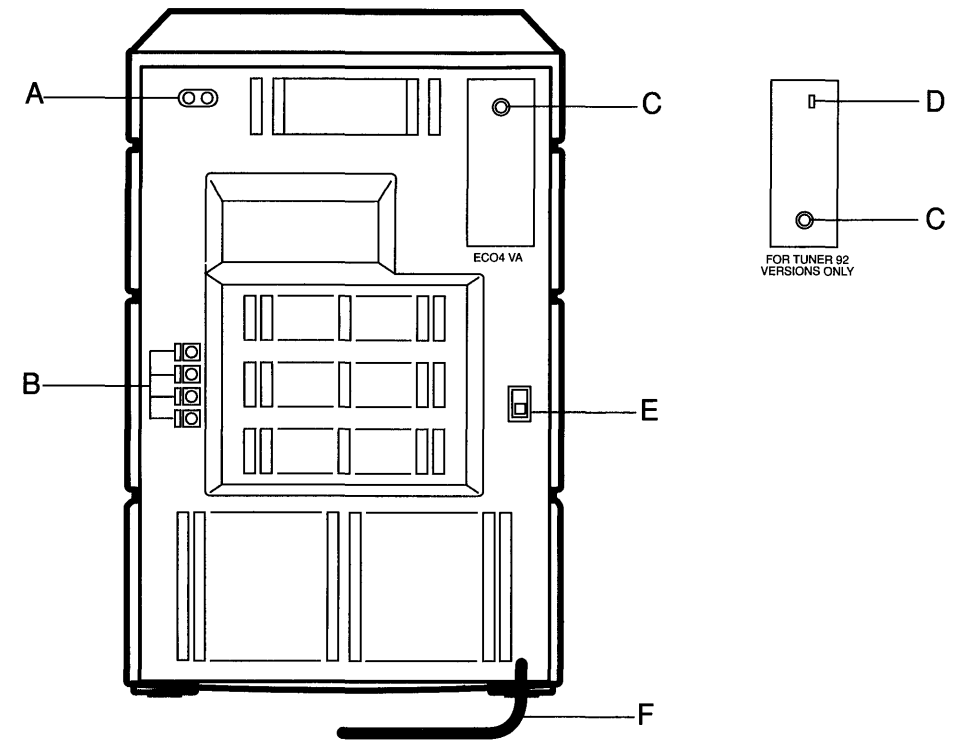
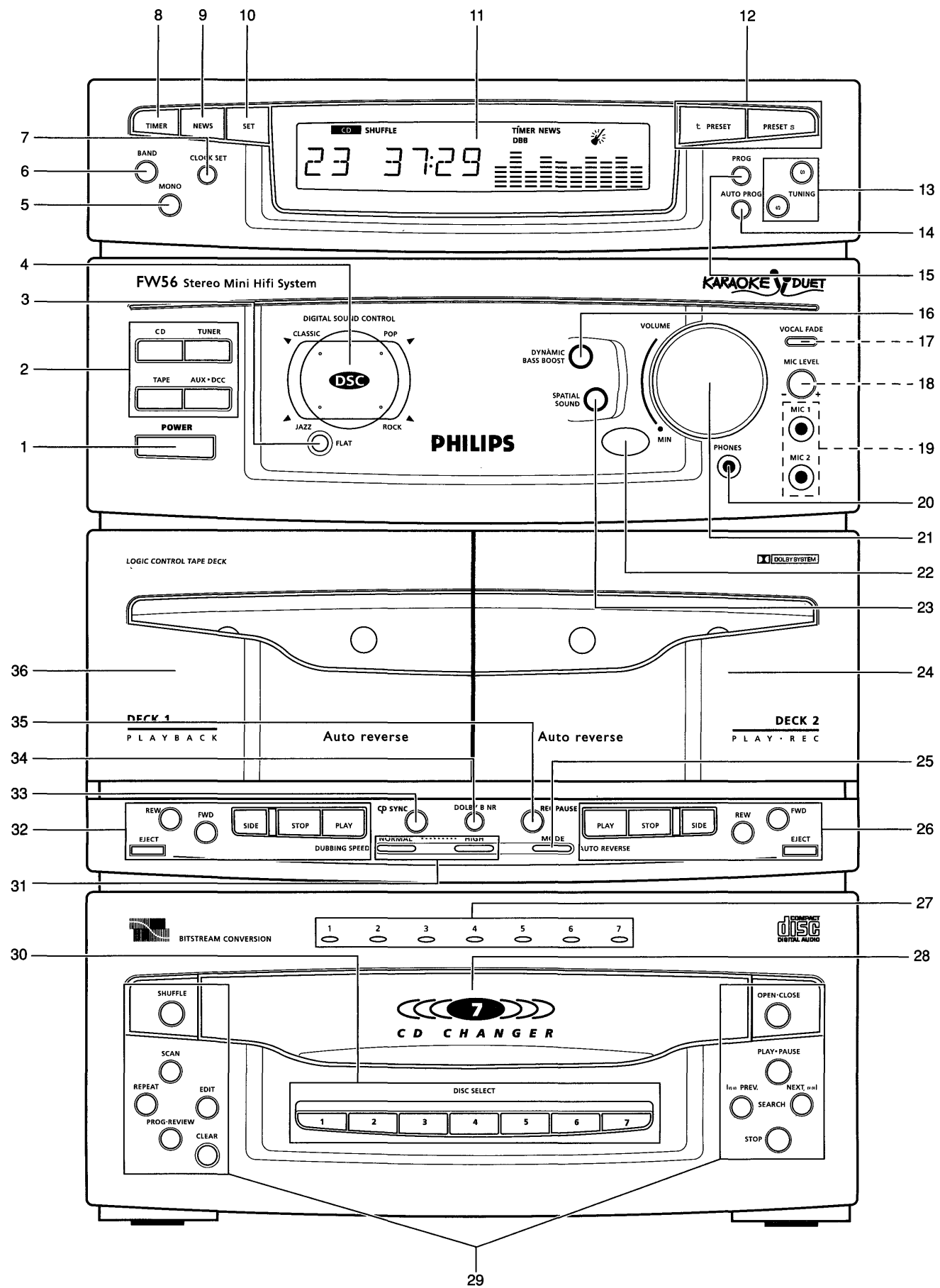
> 60dB

De-emphasis

0 or 15/50 μS (Switched by subcode on the disc)

{ } Values for /22 only

CONNECTIONS & CONTROLS



CONNECTIONS AND CONTROLS

1	Power	1414	27	Disc indicator	
2	Function controls	CD 1421	28	CDC Tray	
		Tuner 1426	29	CDC controls	Shuffle 1450
		Tape 1420			Scan 1451
		Aux-DCC 1410			Repeat 1459
3	Flat	1430			Program/Review 1458
4	Digital Sound Control	Classic 1431			Edit 1454
		Pop 1432			Clear 1455
		Jazz 1433			Stop 1456
		Rock 1434			Play/Pause 1460
5	Mono	1419			Open/Close 1452
6	Band	1425			Next 1461
7	Clock set	1418			Previous 1457
8	Timer	1424	30	Disc select	
9	News	1423	31	Dubbing speed	Normal 1472
10	Set	1422			High 1473
11	LCD display	1401	32	Play Deck controls	Eject 1476
12	Preset up/down	1428, 1429			Wind << 1479
13	Tuning up/down	1412, 1416			Wind >> 1478
14	Auto program	1417			Side 1481
15	Program	1413			Stop 1474
16	Dynamic bass boost	1411			Play 1480
17 *	Vocal fade	1553	33	CD Sync	1475
18 *	Mic level	3673	34	Dolby B NR	1477
19 *	Mic inputs	1551, 1562	35	Record/Pause	1476
20	Headphone socket	1550	36	Cassette compartment 1	
21	Volume	3629	A	Aux-TV input	1552
22	IR sensor	6406	B	Loudspeaker sockets	1304
23	Spatial Sound	1415	C	FM antenna socket	1101 or 1110
24	Cassette compartment 2		D	AM antenna socket	1111
25	Mode	1471	E	Voltage selector	1281
26	Rec/Pb Deck controls	Play 1468	F	Mains cord	
		Stop 1470			
		Side 1469			
		Wind << 1467			
		Wind >> 1466			
		Eject			

* For Karaoke version only

SERVICE TEST PROGRAM 1

Operating sequence	Display shows	Remarks	In case of problems check
Hold "Program" and "Preset Up" button down while Power on to enter Service test program	XX YY-S # This is the main menu	where XX - Type no numeric YY - Master μP version S - Service mode	
Press "Program"	PASS or P Main menu reappears after 2 seconds	Eeprom test	Check IC if Display shows ERR or N
Press "Autoprogram"	NEW or N Main menu reappears after 2 seconds	Eeprom is now reset to default data	
Press "Clock Set"	32K or 32	The Alarm buzzer is turned on An output signal of 4096Hz is available at pin 37 of the main μProcessor	Check X'tal
Press "Clock Set"	8M or 8	The output signal at pin 37 is now 3906 25Hz	Check 8MHz oscillator
Press "Clock Set"	Main menu reappear		
Press "Set Timer/News"	FAST or F NOM or N Main menu reappears after 2 seconds	Pressing "Set Timer/News" key will alternate between Fast and Normal speed In the Fast mode the clock increases at 1 minute per second Leaving the test program now will allow quick customer checks on the clock/timer/alarm function	Ensure the clock is in normal speed before returning to customer
Press "Tuning Up"	U	Volume turns clockwise slowlt until maximum	
Press "Tuning Down"	D	Volume turns anti-clockwise until minimum	
Press "Mono" and followed by any key on the set or Remote control Press "Mono" to return to Main menu	See key test Table 1 and 5		
Press "News"	See Table 2 and Main menu	Pressing the "News" key will scroll through the 4 different displays and the Main menu	
Press "Timer"	AUX TAPE CD TUNER Main menu reappears after 2 seconds	During source switching the set is not muted	
Disrupt the mains supply to exit the Service test program			Ending the Service test by pressing the "Power" key from the Main menu will render * CD error codes to be displayed * Tuner "Program" and "Autoprogram" keys are deactivated

Note XX - Model model (eg 56 for FW56, etc)
YY - Software verstion, counting down from 99

TRADE MODE

Operating sequence	Display shows	Remarks
At the standby mode, hold the "Program" key depressed for 2-3 seconds To exit Trade mode repeat the above procedure or activate the set with the Remote control	Commercial story	The set performs normally except the Commercial story will be displayed after 6 seconds whenever the set is placed into standby mode

TABLE 1. SERVICE REMOTE CONTROL KEY TEST TABLE

Function/Tuner keys	Display	CD keys	Display	Tape keys	Display
Standby	19 RC	CD	09 RC	Tape 1	70 RC
Sleep	28 RC	Previous	66 RC	Tape 2	71 RC
News	15 RC	Next	65 RC	Side	75 RC
DSC	76 RC	Search -	32 RC	Rewind	74 RC
Volume -	78 RC	Pause	27 RC	F Forward	73 RC
Volume +	77 RC	Search +	31 RC	Stop	67 RC
Tuner	20 RC	Stop	59 RC	Play	72 RC
Preset Down	17 RC	Play	26 RC		
Preset Up	18 RC	Disc Up	79 RC		
Tuning Down	06 RC				
Tuning Up	02 RC				

Note "RC" disappears when the key is released

Table 2. Display and Disc indicators

For all versions except /37		
Steps	LCD display	Disc indicator
1		Fully on
2		Red for odd numbers Green for even numbers
3		Green for odd numbers Red for even numbers
4		Fully off
For /37 only		
Steps	LCD display	Disc indicator
1		Fully on
2		Red for odd numbers Green for even numbers
3		Green for odd numbers Red for even numbers
4		Fully off

SERVICE TEST PROGRAM 2

Operating sequence	Display shows	Remarks	In case of problems check
<p>To perform CDC test press "CD" at the Main menu screen Service level 1 is now achieved</p> <p>Press "Next"</p> <p>Press "Prev"</p> <p>Press "Shuffle"</p> <p>Press "Scan"</p> <p>Press "Stop" will exit CDC test and return to Main menu</p>	<p><i>CDC AA</i></p> <p><i>SLED O</i></p> <p><i>SLED I</i></p> <p><i>PLAY</i></p> <p><i>STOP</i></p>	<p>The CDC servo version is display AA = version number</p> <p>The sledge will move outward</p> <p>The sledge will move inward</p> <p>Start the Turntable motor in the play direction</p> <p>Start the Turntable motor in the brake direction</p>	<p>Pressing "Power" key at the Main menu screen will to exit Service test and enter into Service Play mode The set will perform as normal except in the CD mode error codes will be displayed</p> <p>A list of error codes are found in Table 3</p>
<p>Press "Play" - Service level 2</p> <p>Press "Stop"</p>	<p><i>FOC 1</i></p>	<p>Laser is turned on and focus is achieved</p> <p>Return to Service level 1</p>	<p>Check the laser and focus circuits if the display shows <i>FOC 0</i></p>
<p>Press "Play" - Service level 3</p> <p>Press "Stop"</p>	<p><i>DISC</i></p>	<p>Disc motor start to turn</p> <p>Return to Service level 1</p>	
<p>Press "Play"</p> <p>Press "Stop"</p>	<p><i>RDL</i></p>	<p>The Radial servo turns on and music can be heard at the Loudspeakers</p> <p>Return to Service level 1</p>	
<p>To perform Tuner test press "Tuner" at the Main menu screen</p> <p>Use the "Preset Up" and "Preset down" to display the loaded frequencies</p>	<p><i>ZZZ</i></p> <p>See Table 4</p>	<p>Tuner version is display ZZZ = Tuner version</p> <p>Service frequencies are now loaded into the EEROM of the μProcessor</p>	
<p>To end the Service test program disrupt the mains supply</p>			<p>Ending the Service test by pressing the "Power" key from the Main menu will render</p> <ul style="list-style-type: none"> * CD error codes to be displayed * Tuner "Program" and "Autoprogram" keys are deactivated

TABLE 3. CD ERROR CODES TABLE

Error codes		Error description
E 1002	F	Focus error
E 1008	W	Out of lead-in during reading TOC
E 1010	F	Radial error
E 1011	W	Sledge error
E 1012	F	Fatal sledge error
E 1013	F	Turntable motor error
E 1042	F	Internal stack overflow
E 1050	W	Edit calculation error
E 1070	F	Centering of the tray not finished on time
E 1071	F	Tray closing not finished within time
E 1072	F	Tray has not opened within time
E 1076	W	Desired disc position could not have been reached within time
E 1077	F	Pickup Switch SW1 or SW2 did not open as expected within a certain time
E 1078	F	Pickup Switch SW1 or SW2 did not close as expected within a certain time
E 1079	W	Tray open position not reached within time
E 1080	F	Miscounting of the stocker position occurred, position was correct at position 1

Note F = Fatal error and set stops operation
W = Warning and set continues operation

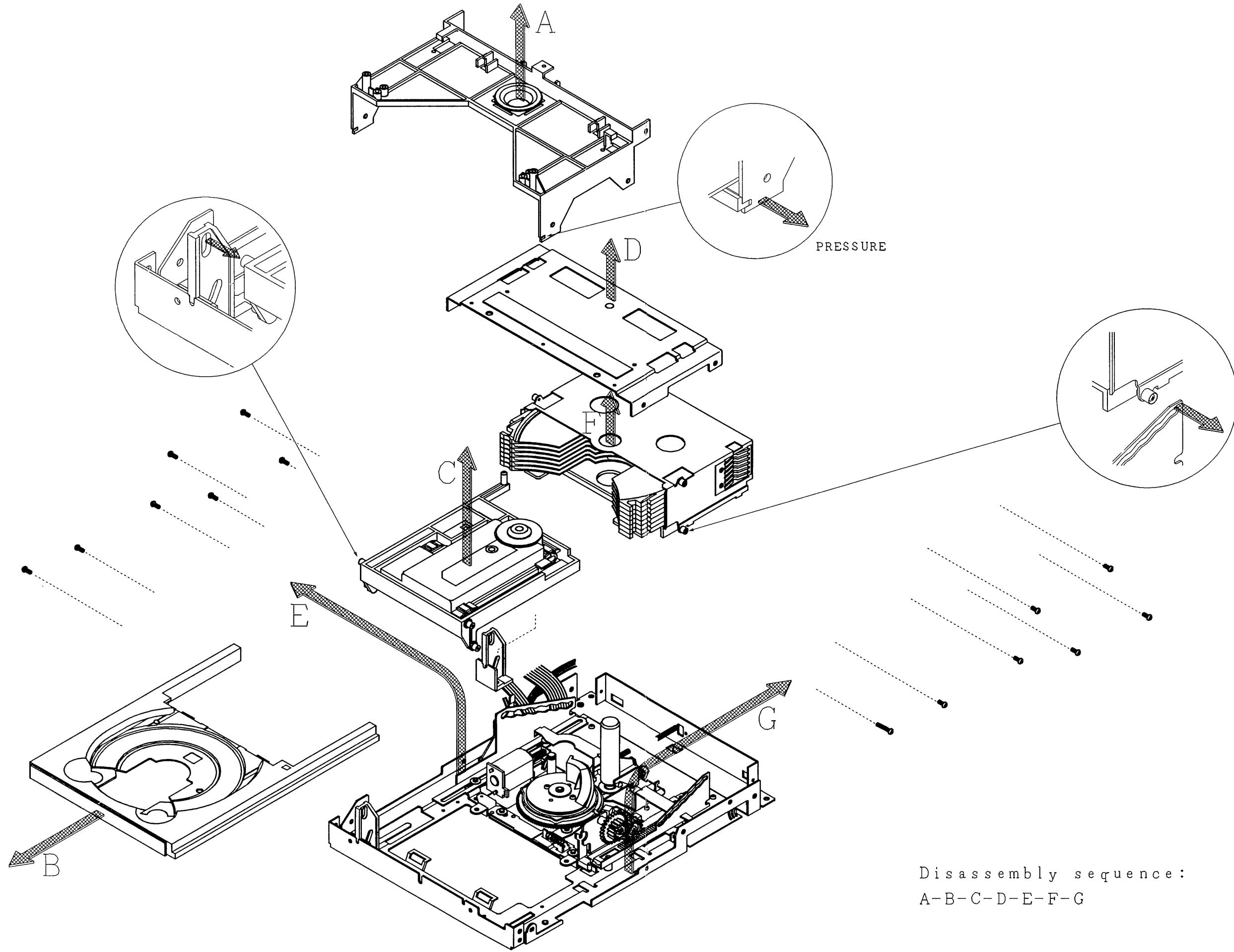
TABLE 4. TUNER SERVICE TEST FREQUENCIES

PRESET	Europe "EUR"	East Eur. "EAS"	USA "USA"	Oversea "OSC"	Japan "JAP"
1	108 00 MHz	108 00 MHz	108 00 MHz	108 00 MHz	90 00 MHz
2	87 50 MHz	65 81 MHz	87 50 MHz	87 50 MHz	76 00 MHz
3	1611 kHz	1611 kHz	1710 kHz	1710 kHz	1629 kHz
4	522 kHz	522 kHz	530 kHz	530 kHz	522 kHz
5	279 kHz	279 kHz	-	-	-
6	153 kHz	153 kHz	-	-	-
7	98 00 MHz	98 00 MHz	98 00 MHz	98 00 MHz	80 00 MHz
8	558 kHz	558 kHz	560 kHz	560 kHz	558 kHz
9	1494kHz	1494kHz	1500kHz	1500kHz	1494kHz
10	549kHz	549kHz	550kHz	550kHz	549kHz

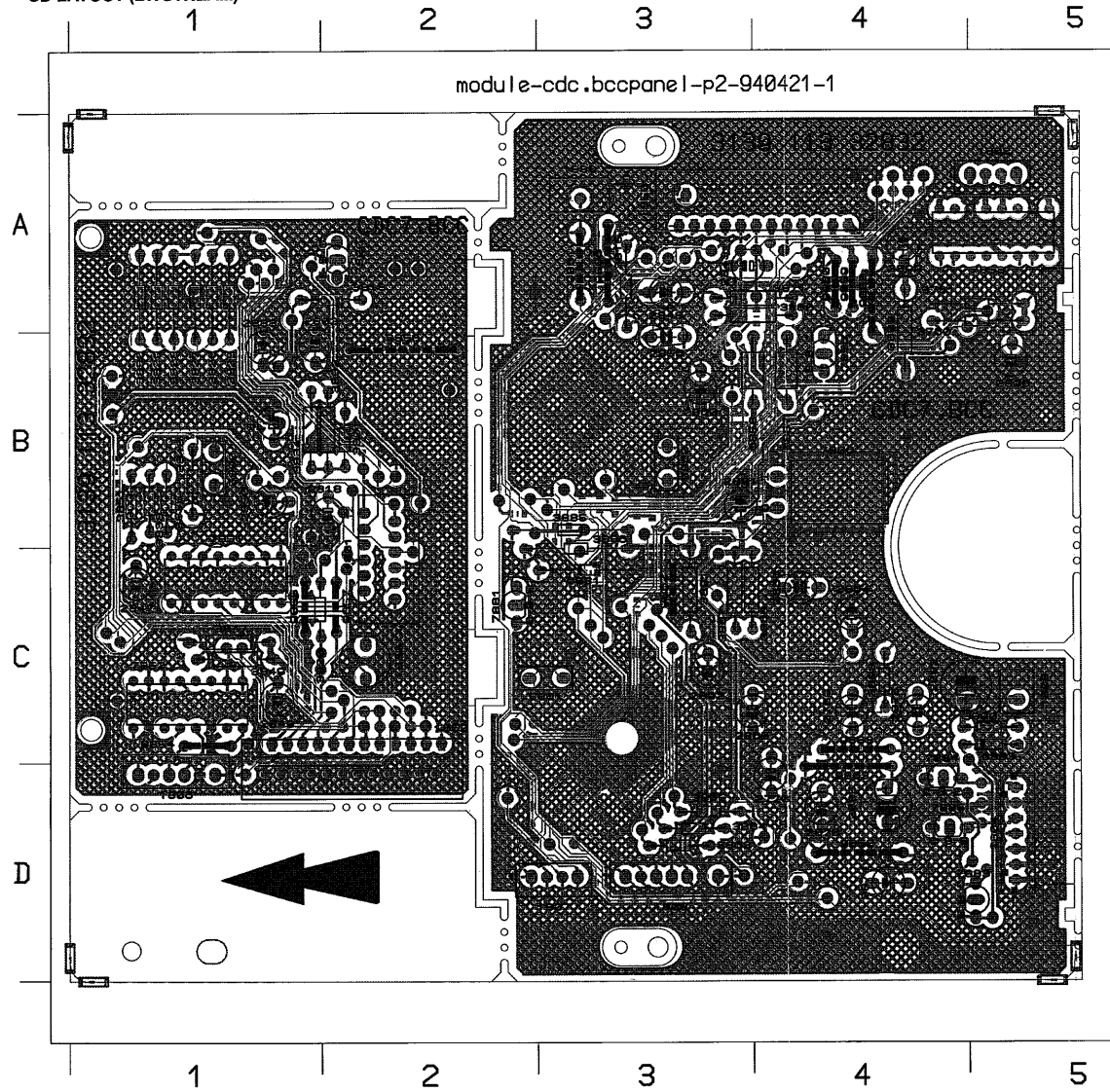
TABLE 5. SERVICE SET KEY TEST TABLE

Timer/News/Tuner keys	Display	CD/Tape Keys	Display	CD Keys	Display
Timer	14	Wind A < <	34	Shuffle	61
News	15	Wind A > >	33	Scan	62
Set	16	Side A	36	Repeat	54
Band	13	Stop A	37	Prog/Review	53
Clock Set	12	Play A	35	Clear	58
Mono	11	CD Sync	38	Edit	57
Preset Down	17	Dolby B NR	40	Stop	59
Preset Up	18	Rec-Pause	39	Play-Pause	55
Prog	01	Normal Speed	43	Open-close	63
Autoprogram	05	High Speed	44	Next	56
Tuning Up	02	Mode	42	Previous	60
Tuning Down	06	Play B	47	Disc 1	49
CD	09	Stop B	41	Disc 2	50
Tuner	20	Side B	48	Disc 3	51
Tape	10	Wind B < <	46	Disc 4	52
Aux-DCC	04	Wind B > >	45	Disc 5	64
Power	08			Disc 6	29
Classic	23			Disc 7	30
Pop	22				
Jazz	21				
Rock	25				
Flat	24				
Dynamic Bass Boost	03				
Spatial Sound	07				

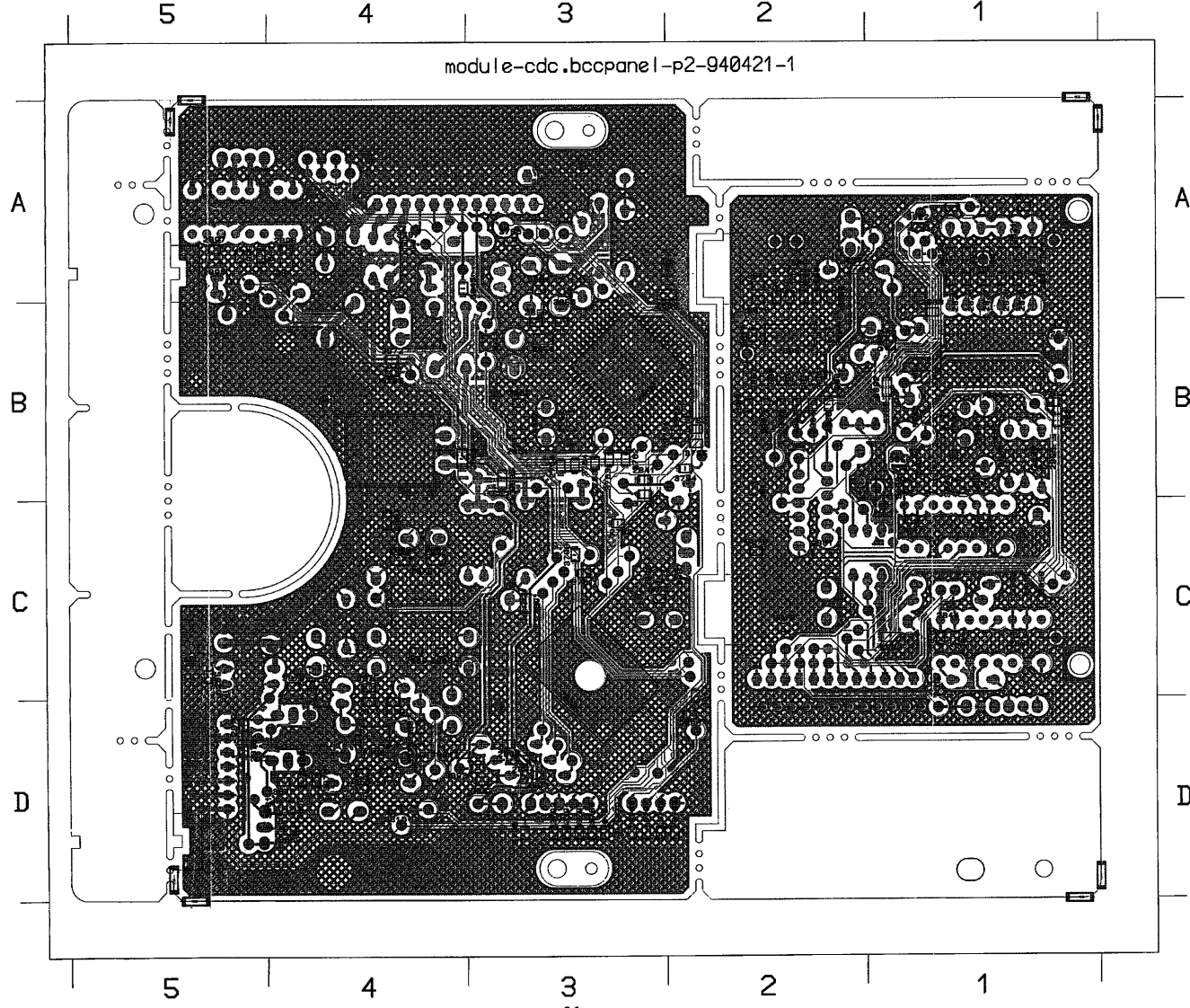
CDC DISASSEMBLY DRAWING



CD LAYOUT (BITSTREAM)

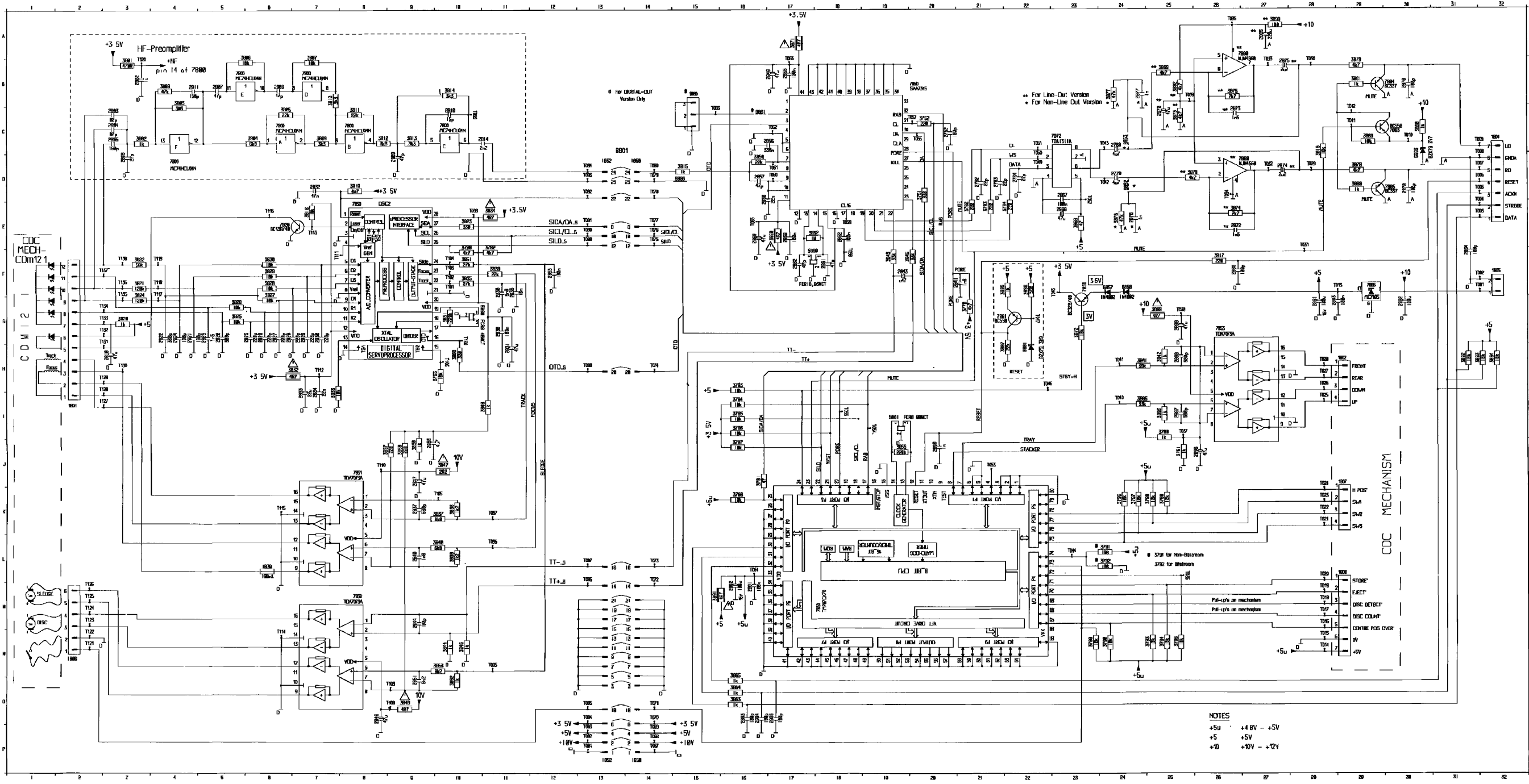


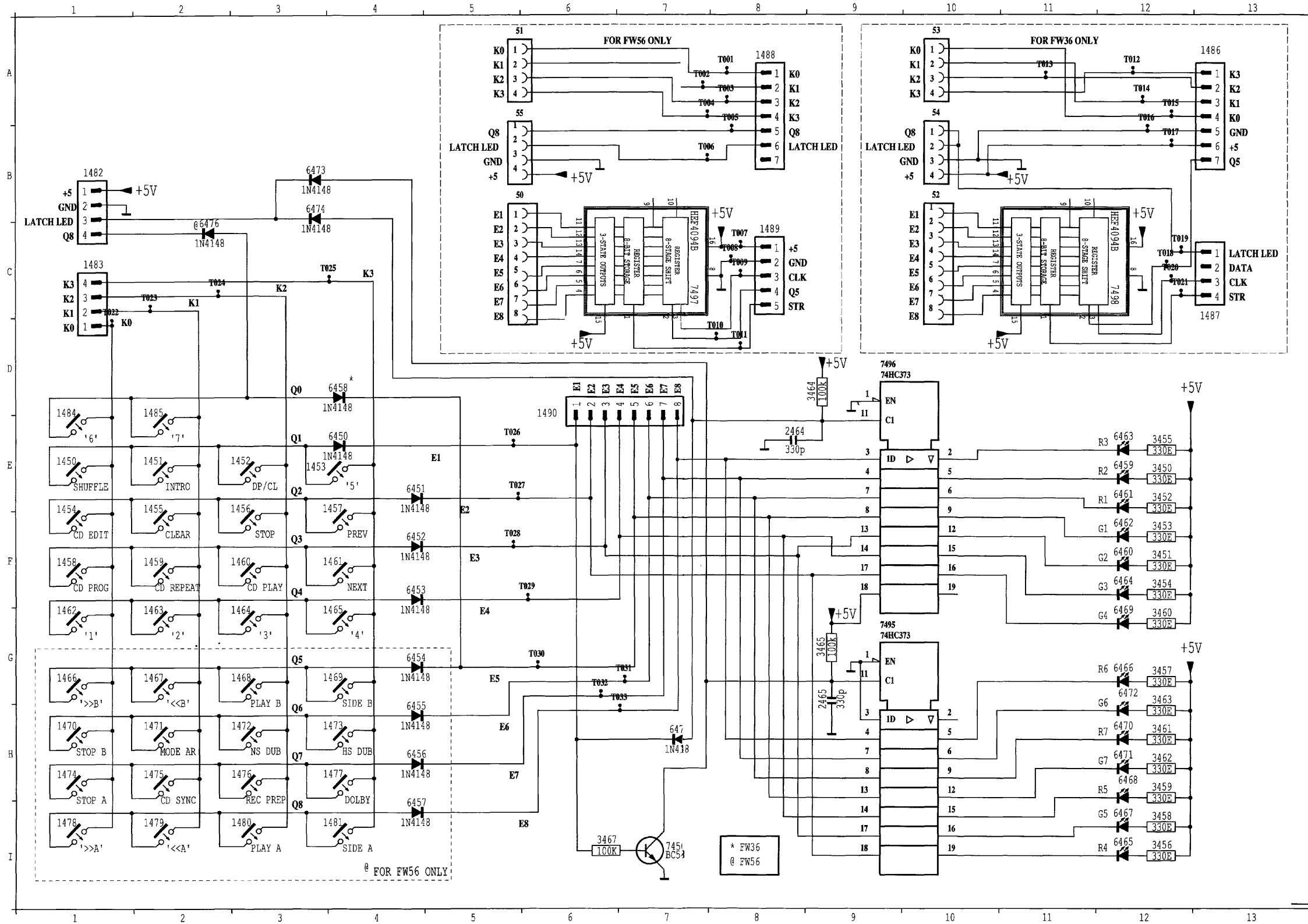
1801	C 2	3884	D 3
1802	A 5	3885	D 3
1804	D 5	3887	C 3
1805	C 5	3888	C 3
1806	D 1	3871	A 4
1807	D 3	3885	B 3
1808	D 3	3886	C 3
1830	C 2	3890	C 5
1850	A 4	3891	C 3
1852	C 2	3898	C 4
1880	A 3	3899	A 4
2769	C 4	5800	B 3
2770	D 4	5801	C 3
2802	B 1	5890	B 1
2818	B 2	6857	B 4
2831	B 1	6858	B 3
2833	B 1	6881	C 3
2843	A 3	6883	C 5
2847	C 1	7820	A 2
2848	A 3	7851	C 1
2849	C 1	7852	C 1
2850	B 1	7853	A 5
2856	B 3	7856	B 4
2860	B 3	7881	C 2
2864	C 4	7883	D 5
2885	C 3	7884	D 4
2886	C 4	7885	D 4
2870	D 4	7888	B 4
2874	D 4	9852	D 4
2875	C 4	9853	C 4
2881	B 3	9854	C 1
2882	C 4	9855	C 1
2885	D 4	9856	B 2
2892	C 3	9857	C 2
2896	B 5	9858	A 4
2899	A 4	9859	A 4
3760	A 5	9880	A 4
3761	A 5	9881	A 3
3801	B 2	9882	C 3
3815	A 3	9883	D 4
3818	A 2	9888	A 3
3820	C 1		
3825	A 1		
3826	A 1		
3827	A 1		
3828	A 1		
3829	A 1		
3830	A 1		
3832	B 2		
3834	B 1		
3835	B 1		
3838	B 1		
3847	C 1		
3848	B 1		
3849	C 1		
3851	B 1		
3880	A 4		
3883	D 3		



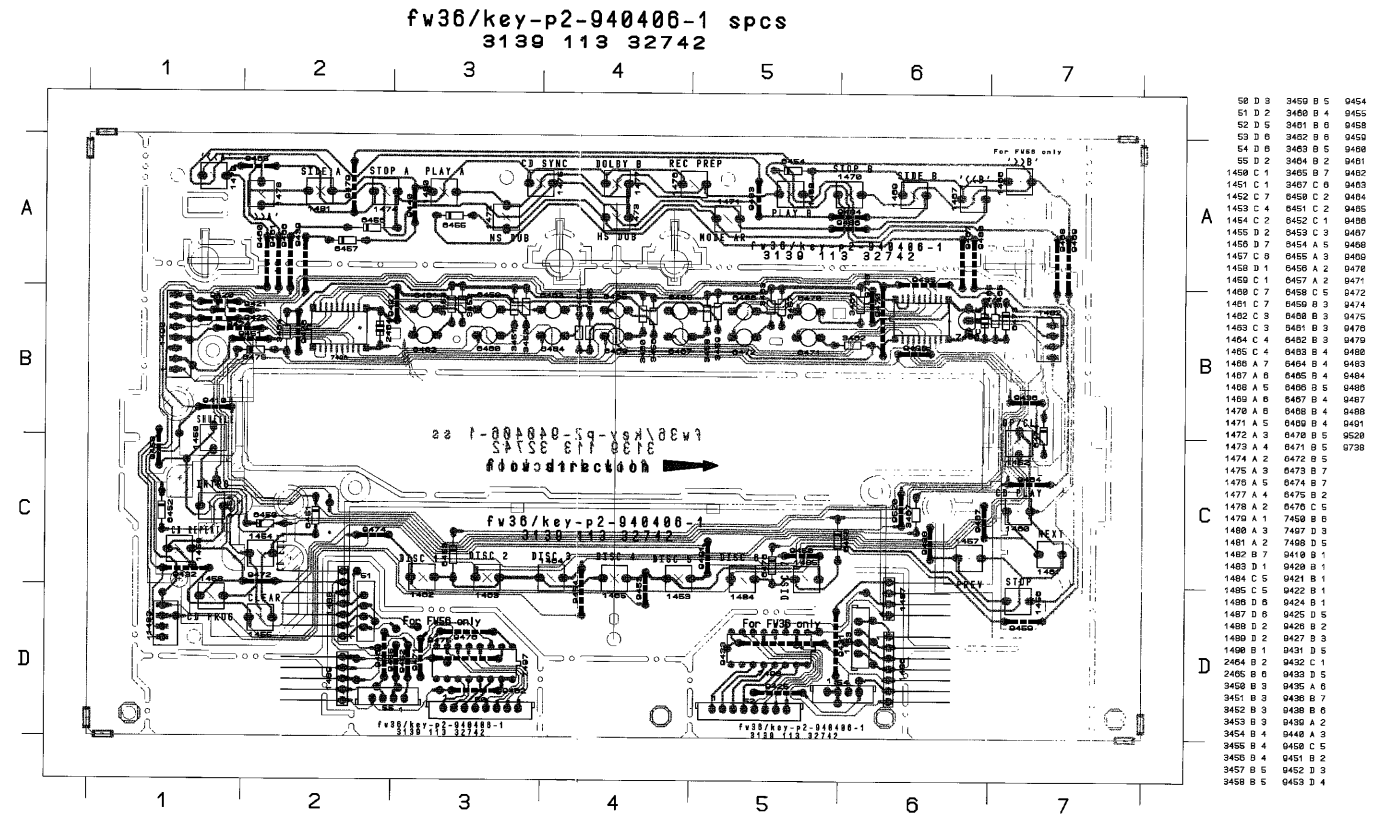
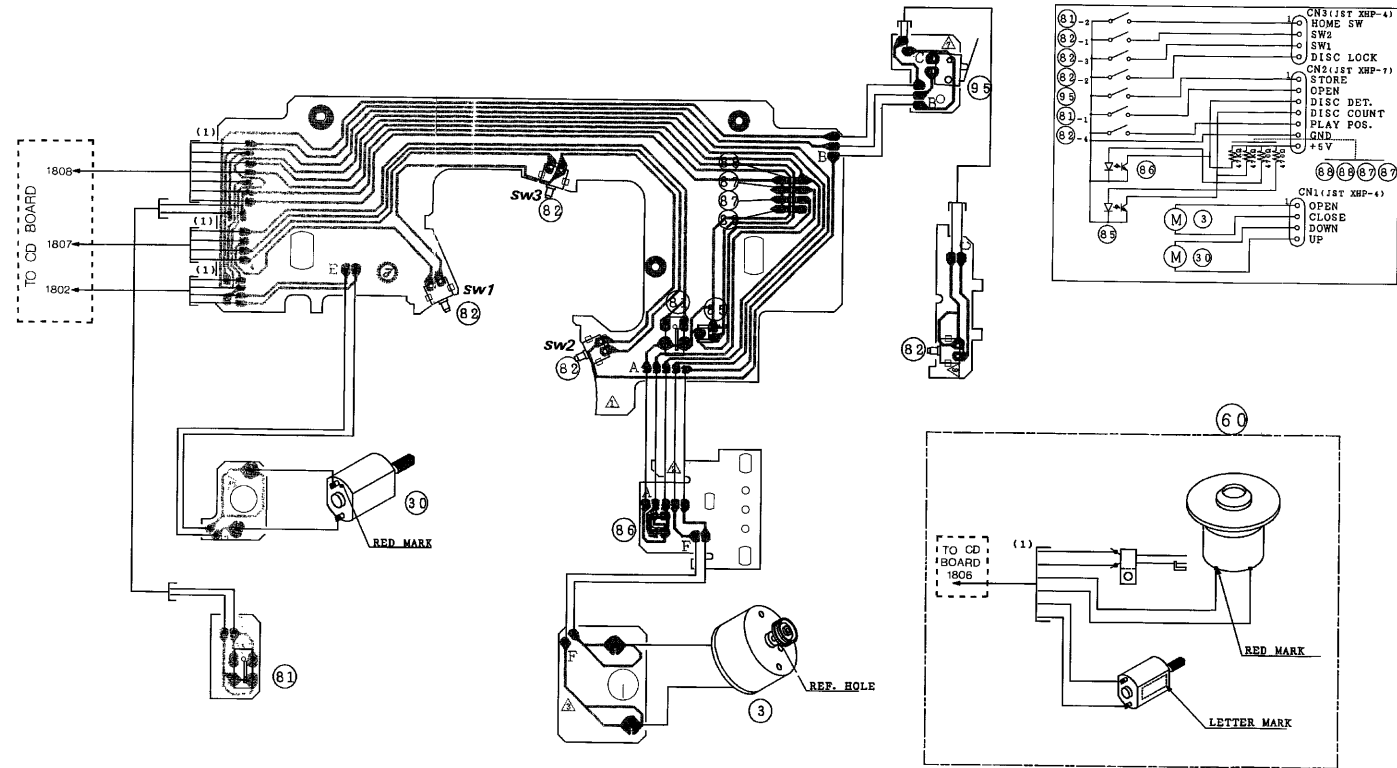
2752	B 2	3789	D 3
2762	C 3	3790	D 3
2763	B 3	3791	D 3
2764	B 3	3793	D 3
2803	B 2	3794	D 3
2804	B 2	3795	D 3
2805	B 2	3796	D 3
2806	B 2	3797	D 3
2807	B 2	3798	D 3
2808	B 2	3799	D 2
2809	A 2	3802	B 2
2810	B 2	3803	B 2
2811	B 2	3804	B 2
2814	B 2	3805	A 2
2820	A 1	3806	B 2
2821	A 1	3807	B 2
2822	A 1	3808	B 2
2823	A 1	3809	A 2
2824	A 1	3810	B 2
2825	A 1	3811	A 2
2826	A 1	3812	A 2
2827	A 1	3813	A 2
2828	A 1	3814	A 2
2829	A 1	3816	D 4
2830	A 1	3817	C 2
2832	B 1	3819	C 2
2834	A 2	3821	A 1
2836	B 1	3822	A 1
2837	C 1	3823	B 1
2838	B 1	3824	A 1
2839	B 1	3831	B 1
2840	C 1	3833	B 1
2841	B 3	3836	B 1
2844	C 1	3837	B 1
2851	C 1	3839	B 1
2852	B 3	3840	B 1
2853	B 1	3841	A 5
2854	C 5	3842	A 4
2855	A 2	3843	B 3
2857	B 3	3844	C 1
2858	B 3	3845	A 4
2859	B 3	3846	C 1
2861	B 3	3850	B 1
2862	B 3	3852	C 1
2863	C 4	3853	C 1
2867	C 4	3855	C 3
2898	C 4	3856	A 3
2899	C 4	3857	B 1
2872	D 4	3858	C 1
2876	D 4	3861	A 3
2877	C 4	3862	B 3
2878	D 5	3866	B 1
2879	D 5	3872	B 4
2883	B 4	3876	D 4
2886	D 2	3877	C 4
2890	C 3	3878	D 4
2891	C 3	3879	C 4
2893	D 3	3880	D 4
2894	D 3	3881	D 4
2895	D 3	3887	C 2
2897	A 5	3889	D 4
2898	A 4	3892	D 3
3751	B 2	3893	D 3
3752	B 2	3894	D 4
3755	B 1	3895	A 5
3762	B 3	3896	A 5
3763	B 3	7830	C 3
3764	B 3	7850	B 1
3770	B 3	7850	B 3
3780	B 1	7870	C 4
3781	C 3	7880	D 4
3782	B 1	9870	C 2
3783	B 4	9880	C 1
3784	B 2	9881	C 2
3785	B 2	9882	B 1
3786	A 3	9883	B 1
3787	A 4	9884	C 4
3788	C 3	9885	B 3

CD CIRCUIT (NON-BITSTREAM)





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CONNECTIONS AND CONTROLS

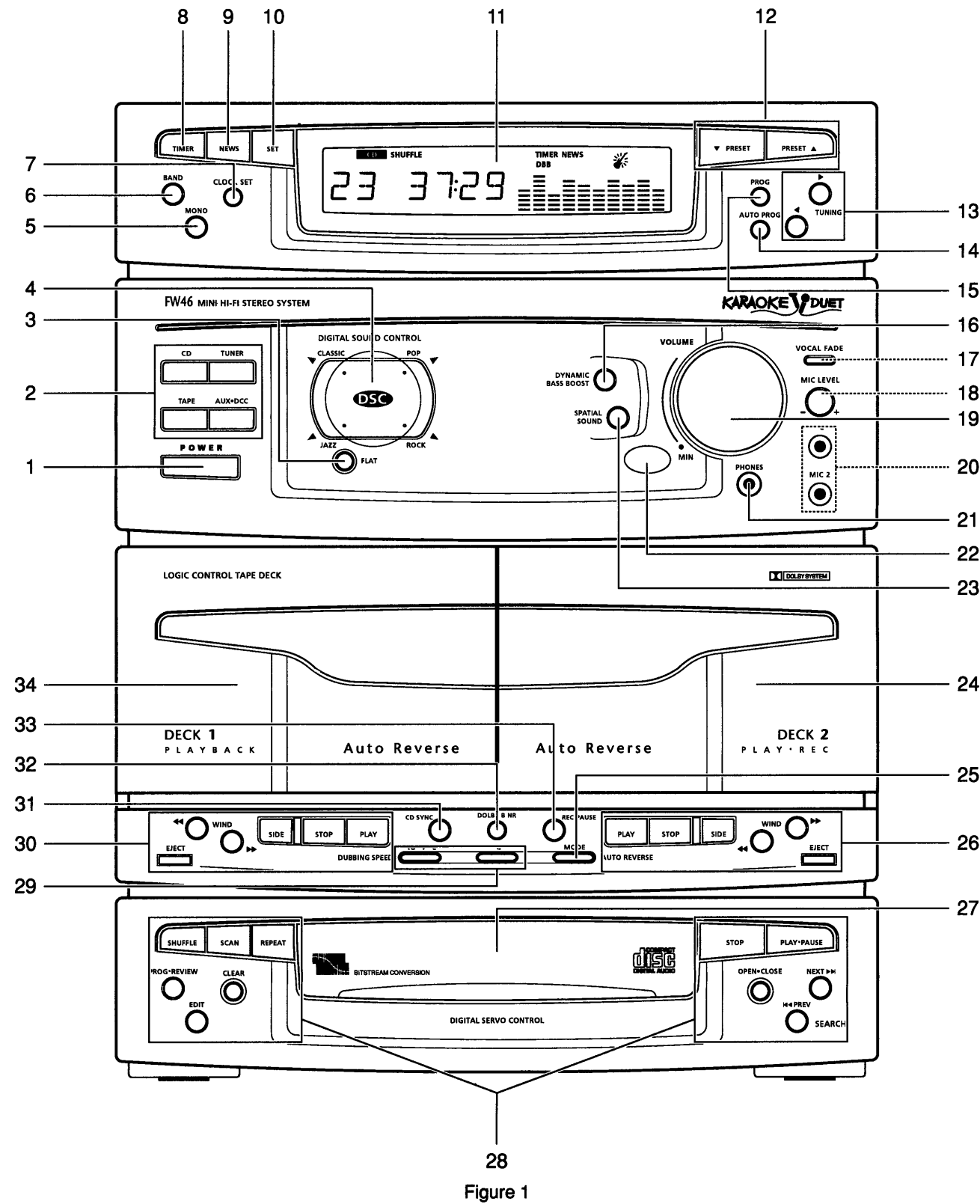


Figure 1

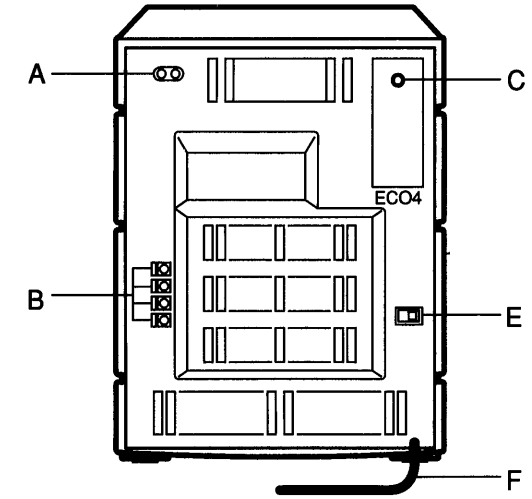


Figure 2

CONNECTIONS AND CONTROLS

1	Power		1414		Wind <<	1467
2	Function controls	CD	1421		Wind >>	1466
		Tuner	1426		Eject	
		Tape	1420	27	CD Tray	
		Aux-DCC	1410	28	CD controls	
3	Flat		1430		Shuffle	1450
4	Digital Sound Control	Classic	1431		Scan	1451
		Pop	1432		Repeat	1459
		Jazz	1433		Program/Review	1458
		Rock	1434		Edit	1454
			1419		Clear	1455
5	Mono		1419		Stop	1456
6	Band		1425		Play/Pause	1460
7	Clock set		1418		Open/Close	1452
8	Timer		1424		Next	1461
9	News		1423		Previous	1457
10	Set		1422	29	Dubbing speed	Normal
			1401		High	1473
11	LCD display		1401		Eject	
12	Preset up/down		1429, 1428	30	Play Deck controls	Wind <<
13	Tuning up/down		1412, 1416		Wind >>	1479
14	Auto program		1417		Side	1481
15	Program		1413		Stop	1474
16	Dynamic bass boost		1411		Play	1480
17 *	Vocal fade		1553			1475
18 *	Mic level		3673	31	CD Sync	1475
19	Volume		3629	32	Dolby B NR	1477
20 *	Mic inputs		1551, 1562	33	Record/Pause	1476
21	Headphone socket		1550	34	Cassette compartment 1	
22	IR sensor		6406	A	Aux-TV input	1552
23	Spatial Sound		1415	B	Loudspeaker sockets	1304
24	Cassette compartment 2			C	FM antenna socket	1101 or 1110
25	Mode		1471	D	AM antenna socket	1111
26	Rec/Pb Deck controls	Play	1468	E	Voltage selector	1281
		Stop	1470	F	Mains cord	
		Side	1469			

* For Karaoke version only

SERVICE TEST PROGRAM 1

Operating sequence	Display shows	Remarks	In case of problems check
Hold "Program" and "Preset Up" button down while Power on to enter Service test program.	XX YY-S # This is the main menu.	where: XX - Type no. numeric YY - Master μP version S - Service mode	
Press "Program"	P Main menu reappears after 2 seconds.	Eeprom test	Check IC if Display shows ERR or N
Press "Autoprogram"	N Main menu reappears after 2 seconds.	Eeprom is now reset to default data.	
Press "Clock Set"	32	The Alarm buzzer is turned on. An output signal of 4096Hz is available at pin 37 of μProcessor.	Check X'tal
Press "Clock Set"	8	The output signal at pin 37 is now 3906.25Hz.	Check 8MHz oscillator
Press "Clock Set"	Main menu reappear.		
Press "Set Timer/News"	F N Main menu reappears after 2 seconds.	Pressing "Set Timer/News" key will alternate between Fast and Normal speed. In the Fast mode the clock increases at 1 minute per second. Leaving the test program now will allow quick customer checks on the clock/timer/alarm function.	Ensure the clock is in normal speed before returning to customer.
Press "Mono" and followed by any key on the set or Remote control. Press "Mono" to return to Main menu	See key test Table 1 and 2.		
Press "Tuning Up"	U	Volume turns clockwise slowly until maximum.	
Press "Tuning Down"	D	Volume turns anti-clockwise until minimum.	
Press "News"	Figure 3-6 and Main menu.	Pressing the "News" key will scroll through the 4 different displays and the Main menu.	

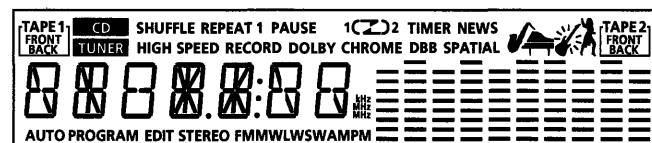


Figure 3

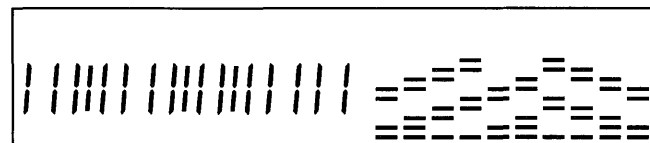


Figure 4



Figure 5

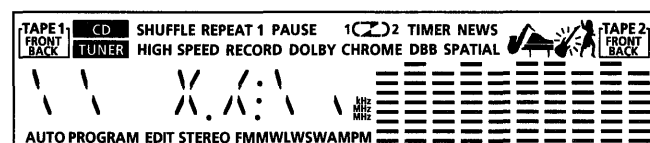


Figure 6

Press "Timer"	AUX TAPE CD TUNER Main menu reappears after 2 seconds.	During source switching the set is not muted.	
Disrupt the mains supply to exit the Service test program.			Ending the Service test by pressing the "Power" key will render: * CD error codes to be displayed. * Tuner "Program" and "Autoprogram" keys non functioning.

Note: XX - Model model (eg 46 for FW46, etc.)
YY - Software version, counting down from 99

SERVICE TEST PROGRAM 2

Operating sequence	Display shows	Remarks	In case of problems check
To perform CD test press "CD" at the Main menu screen. Press "Stop" - Service pos 0	CD AA S	The CD servo version is display. AA = version number During this test the sledge will move outward.	Press "Power" key at the Main menu screen to exit Service test. Enter CD mode and the set perform as normal except error codes will be displayed A list of error codes are found in Table 4.
Press "Next" - Service pos 1	F	Focus is switched on.	
Press "Next" - Service pos 2	D	Disc motor is switched on.	
Press "Next" - Service pos 3	R	Radial is switched on.	
Pressing "Previous" will bring the set to the previous service pos.			
To perform Tuner test press "Tuner" at the Main menu screen. Use the "Preset Up" and "Preset down" to display the loaded frequencies.	ZZZ See Table 3.	Tuner version is display. ZZZ = Tuner version Service frequencies are now loaded into the EEROM of the μProcessor.	
To end the Service test program disrupt the mains supply.			Ending the Service test by pressing the "Power" key will render: * CD error codes to be displayed. * Tuner "Program" and "Autoprogram" keys non functioning

TABLE 1. SERVICE KEY TEST TABLE

Timer/News/Tuner/ Function keys	Display	CD/Tape Keys	Display	CD keys	Display
Timer	14	Wind A <<	34	Shuffle	61
News	15	Wind A >>	33	Scan	62
Set	16	Side A	36	Repeat	54
Band	13	Stop A	37	Prog-Review	53
Clock Set	12	Play A	35	Clear	58
Mono	11	CD Sync	38	Edit	57
Preset Down	17	Dolby B NR	40	Stop	59
Preset Up	18	Rec-Pause	39	Play-Pause	55
Prog	01	Normal Speed	43	Open-Close	63
Autoprogram	05	High Speed	44	Next	56
Tuning Up	02	Mode	42	Previous	60
Tuning Down	06	Play B	47		
CD	09	Stop B	41		
Tuner	20	Side B	48		
Tape	10	Wind B <<	46		
Aux-DCC	04	Wind B >>	45		
Power	08				
Classic	23				
Pop	22				
Jazz	21				
Rock	25				
Flat	24				
Dynamic Bass Boost	03				
Spatial Sound	07				

TABLE 2. SERVICE REMOTE CONTROL KEY TEST TABLE

Function/Tuner keys	Display	CD keys	Display	Tape keys	Display
Standby		CD	09	Tape 1	50
Sleep	28	Previous	30	Tape 2	51
News	15	Next	29	Side	67
DSC	68	Search -	32	Rewind	66
Volume -	70	Pause	27	F. Forward	65
Volume +	69	Search +	31	Stop	64
Tuner	20	Stop	59	Play	52
Preset Down	17	Play	26		
Preset Up	18				
Tuning Down	06				
Tuning Up	02				

TABLE 3. TUNER SERVICE TEST FREQUENCIES

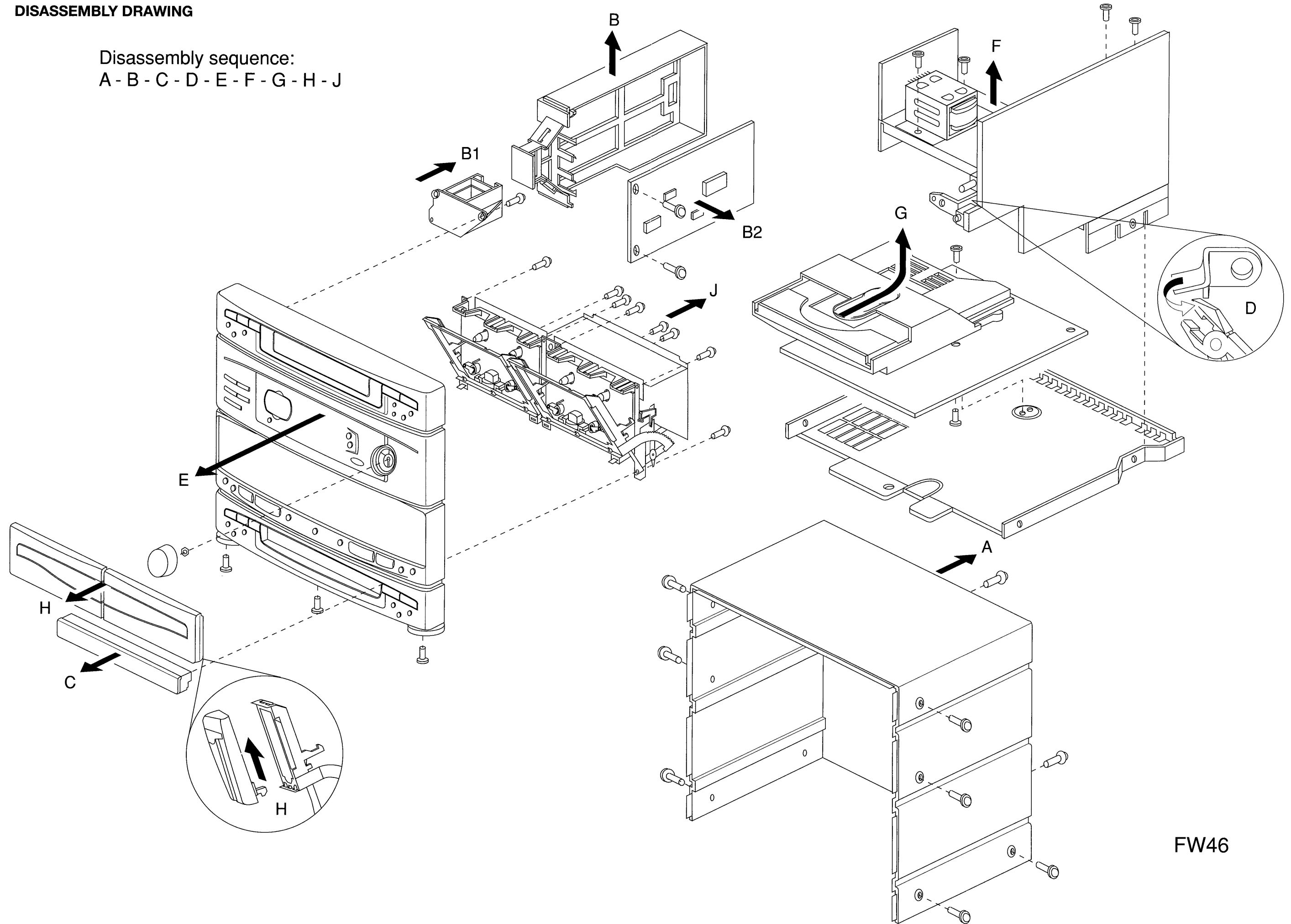
PRESET	Europe "EUR"	East Eur. "EAS"	USA "USA"	Oversea "OSC"	Japan "JAP"
1	108.00 MHz	108.00 MHz	108.00 MHz	108.00 MHz	90.00 MHz
2	87.50 MHz	65.81 MHz	87.50 MHz	87.50 MHz	76.00 MHz
3	1611 kHz	1611 kHz	1710 kHz	1710 kHz	1629 kHz
4	522 kHz	522 kHz	530 kHz	530 kHz	522 kHz
5	279 kHz	279 kHz	-	-	-
6	153 kHz	153 kHz	-	-	-
7	98.00 MHz	98.00 MHz	98.00 MHz	98.00 MHz	80.00 MHz
8	558 kHz	558 kHz	560 kHz	560 kHz	558 kHz
9	1494kHz	1494kHz	1500kHz	1500kHz	1494kHz
10	549kHz	549kHz	550kHz	550kHz	549kHz

TABLE 4. CD ERROR CODES TABLE

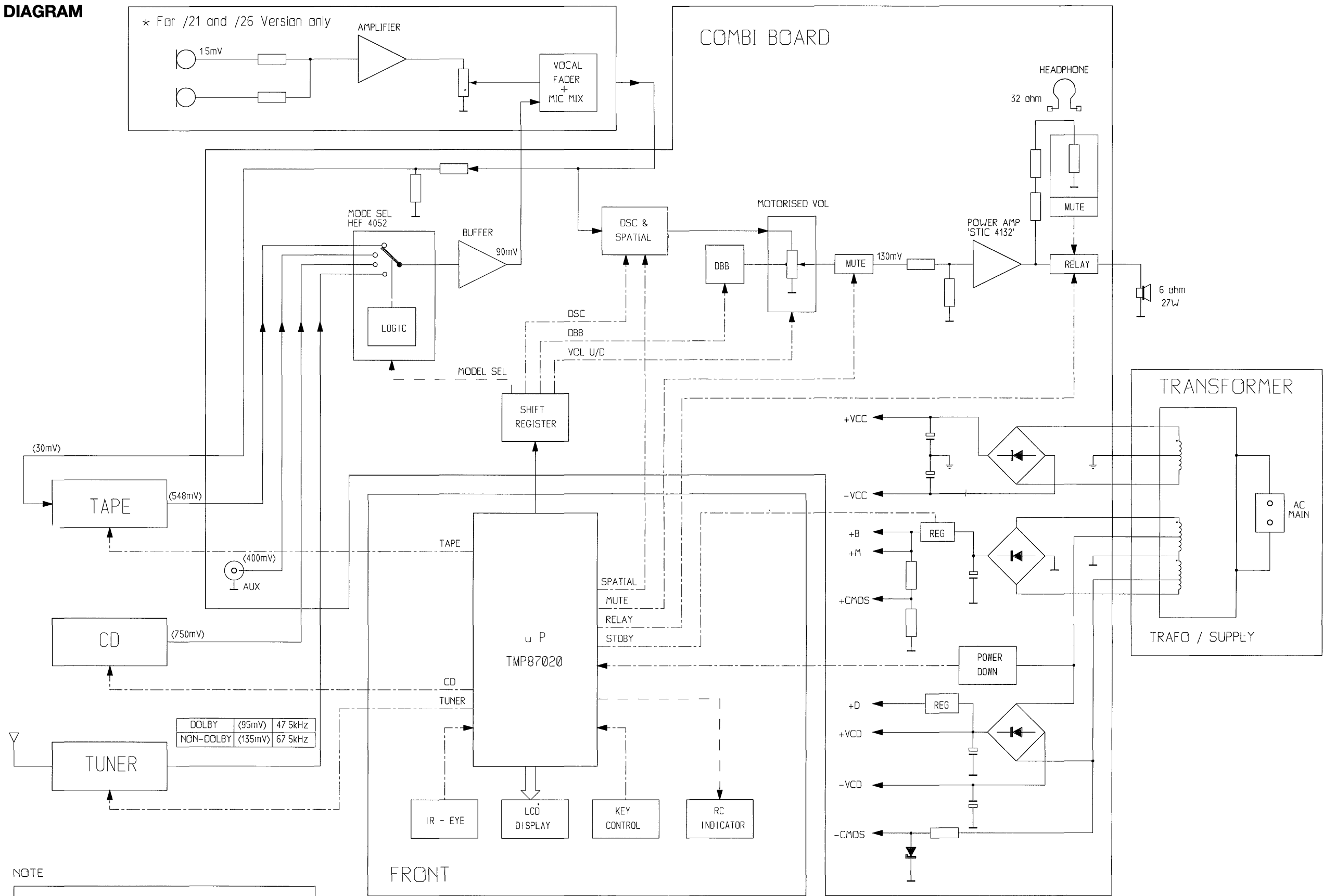
Error codes	Check area	Remarks
E 1002	ICs 7000, 7060 and 7080	Focus error, no disc
E 1007	CDM 12 and Disc	Subcode error, no valid subcode
E 1008	Bad Disc and Lens	TOC error, out of lead-in area while reading TOC
E 1009	IC 7101 and 7102	CD4 + decoder error
E 1010	IC 7000 and 7080	Radial error
E 1012	ICs 7000 and 7660	Fatal sledge error
E 1013	ICs 7102, 7140, 7141 and 7660	Turntable motor error
E 1030	CDM 12 and IC 7000	Too many grooves to jump
E 1031	CDM 12 and IC 7000	Search error
E 1032	CDM 12 and IC 7000	Search binary error
E 1033	CDM 12 and IC 7000	Search index error
E 1034	CDM 12 and IC 7000	Search time error
E 1037	CDM 12 and IC 7000	Selection error
E 1050	Operating error	Edit calculation error
E 1051	Operating error	Edit track count error
E 1052	Operating error	Edit optimal error

DISASSEMBLY DRAWING

Disassembly sequence:
A - B - C - D - E - F - G - H - J



BLOCK DIAGRAM



NOTE

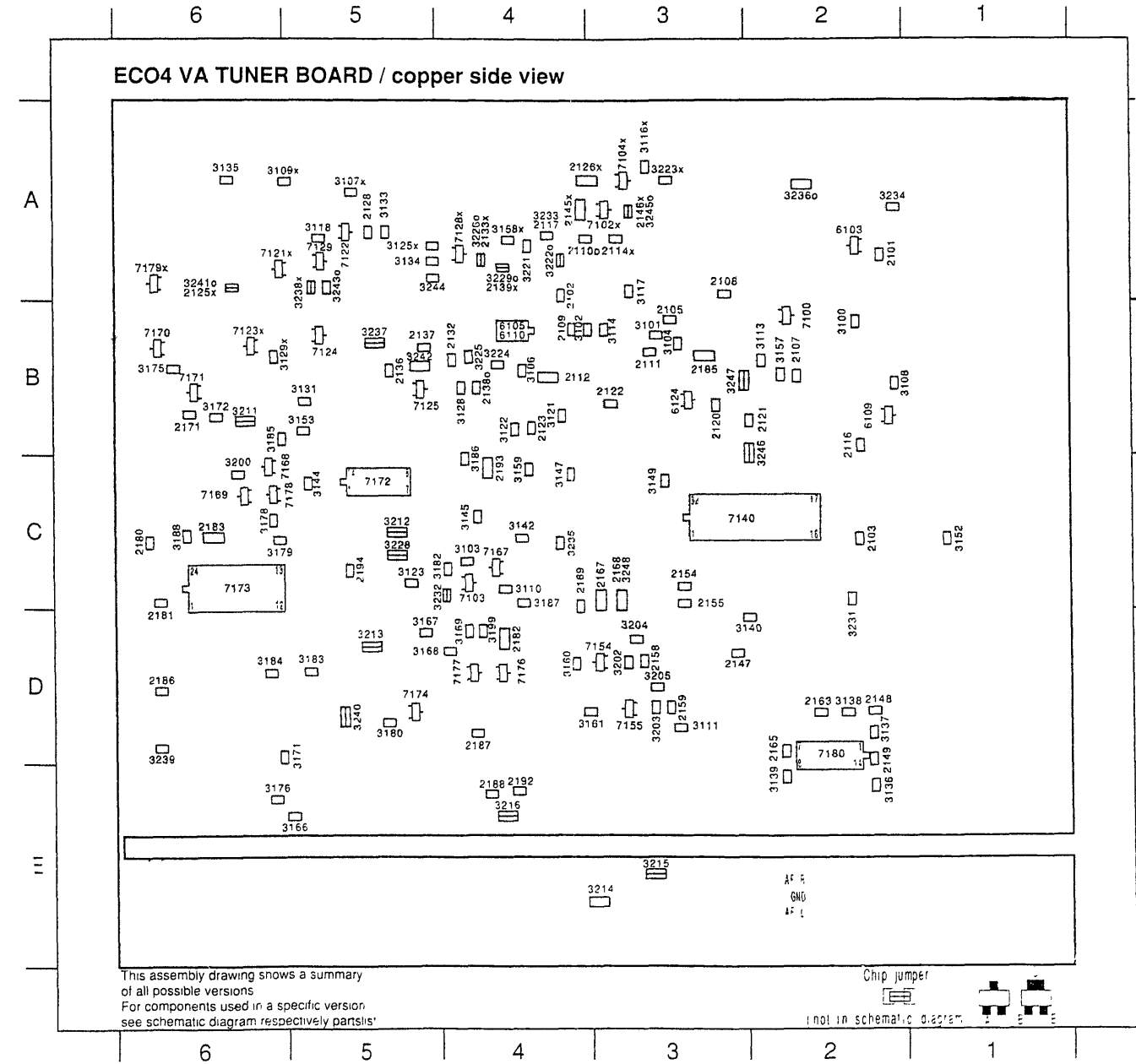
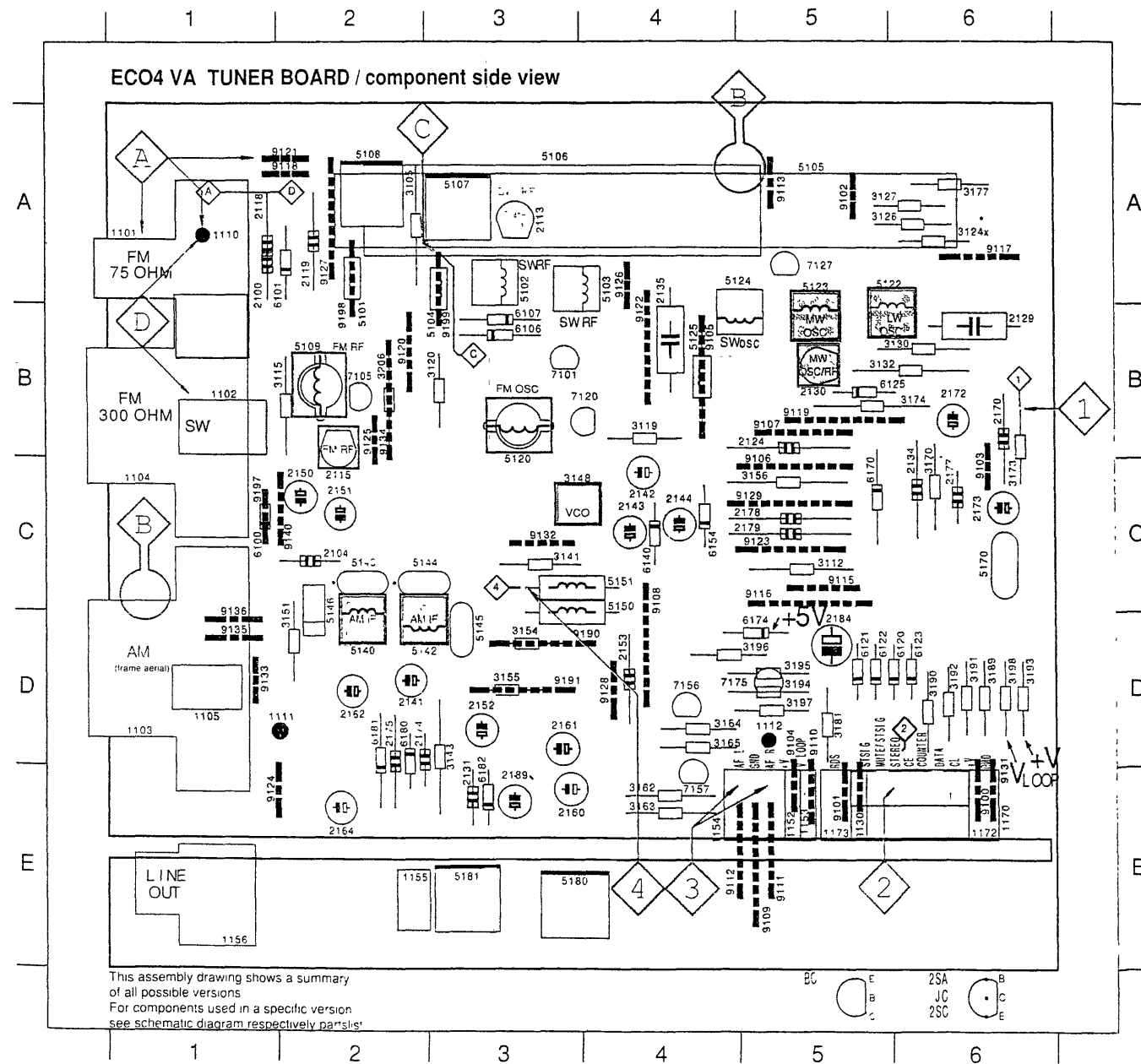
TUNER MODULE

ECC4 for all Version except
 For /22, use TUNER 92 with FTZ Version and
 For /26, use TUNER 92 JAPAN Version

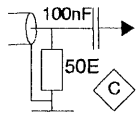
1101 A 1	1156 E 1	2100 A 1	2135 B 4	2164 F 2	2191 A 6	3143 D 3	3174 B 5	3198 D 6	5122 B 6	5170 C 6	6140 C 4	7157 E 4	9110 E 5	9123 C 5	9135 D 1
1102 B 1	1170 E 6	2104 C 2	2141 D 2	2170 B 6	3105 A 2	3148 C 3	3177 A 6	3206 B 2	5123 B 5	5180 E 3	6154 C 4	7175 D 5	9111 E 5	9124 F 1	9136 D 1
1103 D 1	1172 E 6	2106 B 4	2142 C 4	2172 B 6	3112 C 5	3151 D 2	3181 D 5	5101 A 2	5124 B 5	5181 E 3	6170 C 5	9100 E 6	9112 E 4	9125 B 2	9140 C 2
1104 B 1	1173 E 5	2113 A 3	2143 C 4	2173 C 6	3115 B 2	3154 D 3	3189 D 6	5102 A 3	5125 B 4	6100 C 1	6174 D 5	9101 E 5	9113 A 5	9126 A 4	9190 D 3
1105 D 1		2115 B 2	2144 C 4	2174 D 2	3119 B 4	3155 D 3	3190 D 6	5103 A 3	5140 D 2	6101 A 2	6180 D 2	9102 A 5	9115 C 5	9127 A 2	9191 D 3
1110 A 1		2118 A 1	2150 C 2	2175 D 2	3120 B 3	3156 C 5	3191 D 6	5104 A 3	5142 D 2	6106 B 3	6181 D 2	9103 C 6	9116 C 5	9128 D 4	9197 C 1
1111 D 2		2119 A 2	2151 C 2	2177 C 6	3124 A 6	3162 E 4	3192 D 6	5105 A 4	5143 C 2	6107 B 3	6182 E 3	9104 E 5	9117 A 6	9129 C 5	9198 A 2
1112 D 5		2124 B 5	2152 D 3	2178 C 6	3126 A 6	3163 E 4	3193 D 6	5106 A 4	5144 C 2	6120 D 6	7101 B 3	9105 B 4	9118 A 2	9130 E 5	9199 A 3
1152 E 5		2129 B 6	2153 D 4	2179 C 5	3127 A 6	3164 D 4	3194 D 5	5107 A 3	5145 D 3	6121 D 5	7105 B 2	9106 C 5	9119 B 5	9131 E 6	for AM version only
1153 E 5		2130 B 5	2160 E 3	2184 D 5	3130 B 6	3165 D 4	3195 D 5	5108 A 2	5146 D 2	6122 D 5	7120 B 4	9107 B 5	9120 B 2	9132 C 3	x for LW-version only
1154 E 4		2131 E 3	2161 D 3	2189 E 3	3132 E 6	3170 C 6	3196 D 4	5109 B 2	5150 D 3	6123 D 6	7127 A 5	9108 D 4	9121 A 2	9133 D 1	y for USA version only
1155 E 2		2134 C 6	2162 D 2	2190 A 2	3141 C 5	3173 B 6	3197 D 5	5120 B 3	5151 C 3	6125 B 5	7156 D 4	9109 E 5	9122 B 4	9134 B 2	z not for all versions

2101 A 2	2122 B 3	2149 D 2	2185 B 3	3109x A 5	3133 A 5	3157 B 2	3180 D 5	3212 C 5	3233 A 4	3248 C 3	7128x A 4	7178 C 6
2102 A 4	2123 B 4	2154 C 3	2186 D 6	3110 C 4	3134 A 5	3158x A 4	3182 C 4	3213 D 5	3234 A 2	3249 A 2	7129 A 5	7179x A 6
2103 C 2	2125x A 6	2155 C 3	2187 D 4	3111 D 3	3135 A 6	3159 C 4	3183 D 5	3214 E 3	3235 C 4	3248 B 2	7130 C 2	7180 D 2
2105 B 3	2126x A 3	2158 D 3	2188 E 4	3113 B 2	3136 E 2	3160 D 4	3184 D 6	3215 E 3	3236 A 2	3249 B 2	7131 D 3	
2107 B 2	2128 A 5	2159 D 3	2192 E 4	3114 B 3	3137 D 2	3161 D 3	3185 B 6	3216 E 4	3237 B 5	3249 C 4	7132 D 4	
2108 A 3	2132 B 4	2163 D 2	2193 C 4	3116x A 3	3138 D 2	3166 E 5	3186 C 4	3221 A 4	3238x A 5	3249 D 4	7133 C 4	
2109 B 4	2133x A 4	2165 E 2	2194 C 5	3117 A 3	3139 D 2	3167 D 5	3187 C 4	3222 A 4	3239 D 6	3249 E 5	7134 C 6	
2110 C 4	2136 B 5	2167 C 3	3100 B 2	3118 A 5	3140 D 2	3168 D 4	3188 C 6	3223x A 3	3240 D 5	3249 F 6	7135 C 6	
2111 B 3	2137 B 5	2168 C 3	3101 B 3	3121 B 4	3142 C 4	3169 D 4	3199 D 4	3224 B 4	3241 A 6	3249 G 6	7136 B 6	
2112 B 4	2138 B 4	2169 C 4	3102 B 3	3122 B 4	3144 C 5	3170 E 4	3200 C 6	3225 B 4	3242 B 5	3249 H 6	7137 B 6	
2114x A 3	2139x A 4	2171 B 6	3103 C 4	3123 C 5	3145 C 4	3172 B 6	3202 D 3	3226 A 4	3243 A 5	3249 I 6	7138 C 5	
2116 B 2	2145x A 4	2180 C 6	3104 B 3	3125x A 5	3147 C 4	3175 B 6	3203 D 3	3228 C 5	3244 A 5	3249 J 6	7139 C 6	
2117 A 4	2146x A 3	2181 C 6	3106 C 4	3126 A 4	3149 C 3	3176 E 6	3204 D 3	3229 A 4	3245 A 4	3249 K 6	7140 D 5	
2120 B 3	2147 D 3	2182 D 4	3107x A 5	3129x B 6	3152 C 1	3178 C 6	3205 D 3	3231 C 2	3246 B 2	3249 L 6	7141 D 4	
2121 B 2	2148 D 2	2183 C 6	3108 B 2	3131 B 5	3153 B 5	3179 C 6	3211 B 6	3232 C 4	3247 B 3	3249 M 6	7142 D 4	

o for AM-version only
x for LW-version only
y for USA version only
z not for all versions



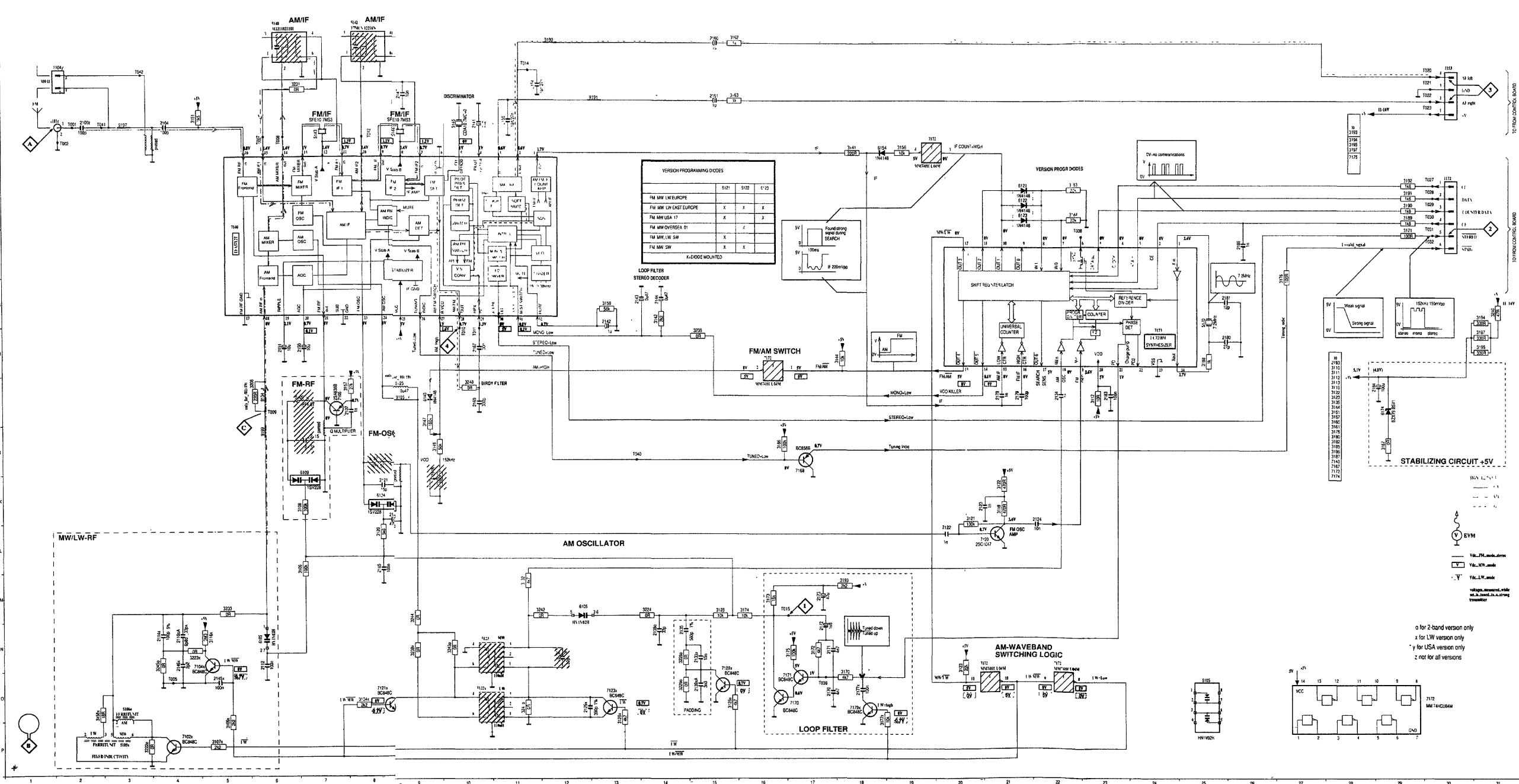
TUNER Adjustment table (ECO4 VA FM/MW- and FM/MW/LW - versions with AM-ferrite antenna)

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter	
<i>VARICAP ALIGNMENT * 1)</i>							
FM 87.5 - 108MHz			108 MHz	5120	◇ 1	8V ± 0.2V	
			87.5MHz	check		4.1V ± 0.5V	
FM /14 East Europe 65.81 - 108MHz			108 MHz	5120		8V ± 0.2V	
			65.81 MHz	check		0.8V ± 0.4V	
MW 2-band version, 10kHz grid 530 - 1710kHz			1710kHz	5123		9V±0.1V (7.2±1.2V) ¹⁾	
			530kHz	check		1V±0.4V (1.1±0.5V) ¹⁾	
LW 153 - 279kHz			279kHz	5122		8V±0.2V (7.5±1.5V) ¹⁾	
			153kHz	check		1V±0.4V (1.1±0.5V) ¹⁾	
MW 3-band version 522 - 1611kHz			1611kHz	5123		8V±0.1V (7.2±1.2V) ¹⁾	
			522kHz	check		1V±0.4V (1.1±0.5V) ¹⁾	
<i>FM - RF</i>							
FM	108MHz	◇ A mod=1kHz Δf=22.5kHz	108MHz	2115		◇ 3	MAX ↕
	87.5MHz		87.5MHz	5109			
FM /14 East Europe	108MHz		108MHz	2115			
	65.81MHz		65.81MHz	5109			
<i>VCO</i>							
FM	98 MHz, 1mV continuous wave	◇ A	98MHz	3148	◇ 2	152kHz ± 1kHz	
<i>AM - IF</i>							
MW	540kHz Δf = 10kHz as low as possible		540kHz	5142 5140	◇ 4	symmetrical and max height	
<i>AM - RF</i>							
LW	198kHz	◇ B mod=1kHz 30% AM	198kHz	5122	◇ 4	MAX	
MW 3-band version	1494kHz		1494kHz	2130			
	549kHz		549kHz	5123			
MW 2-band version, 10kHz grid	1500kHz		1500kHz	2130			
	550kHz		550kHz	5123			
MAX ↕							

* Use Service Test Program. By selecting the TUNER TEST, test frequencies will be stored as preset frequ automatically. Adjustment of AM-RF stage influences the varicap voltage. Therefore check if varicap voltage fulfills value stated within brackets after AM-RF adjustment.

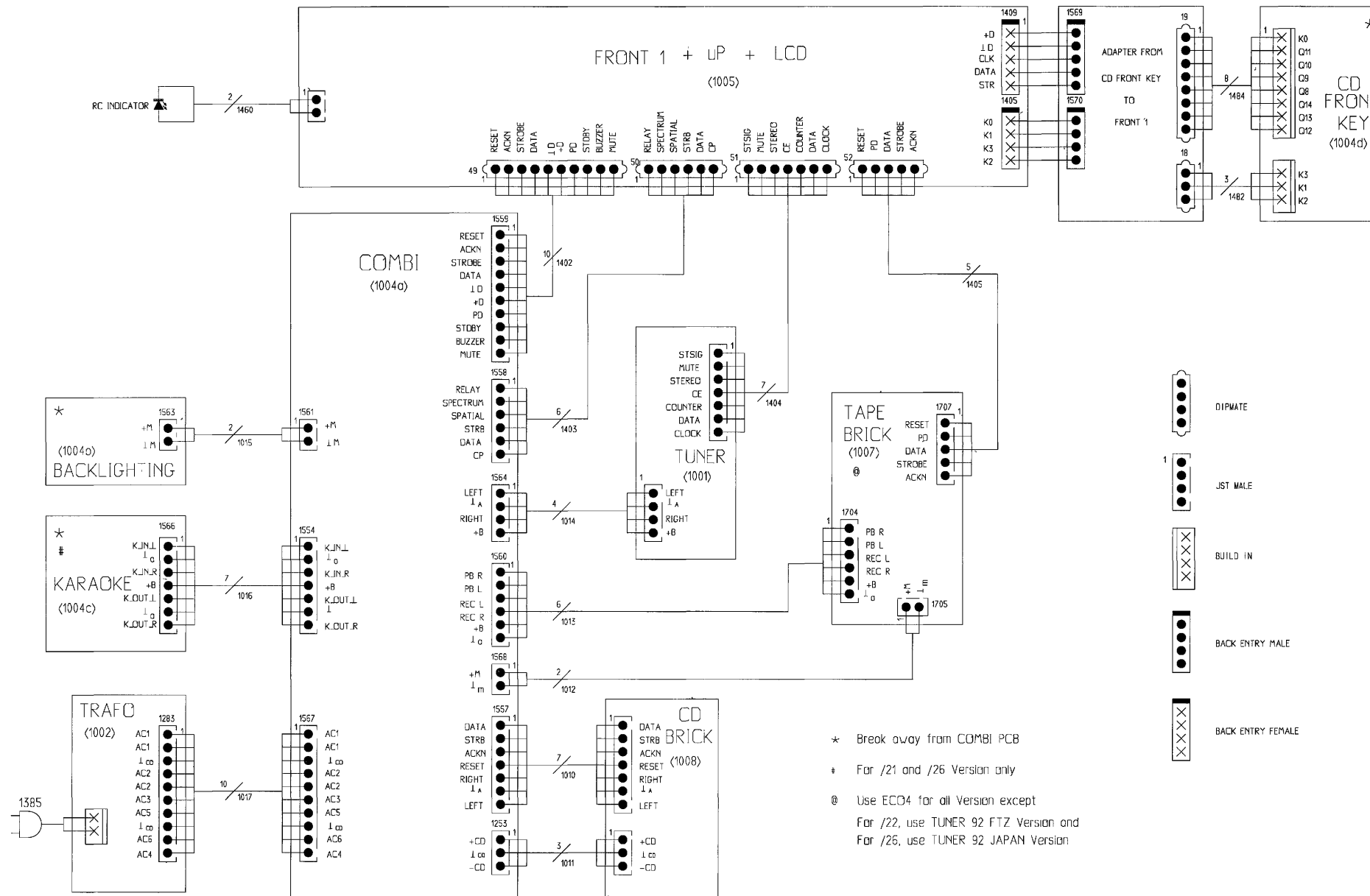
↕
repeat

TUNER UNIT ECO4-VA (MIDI)

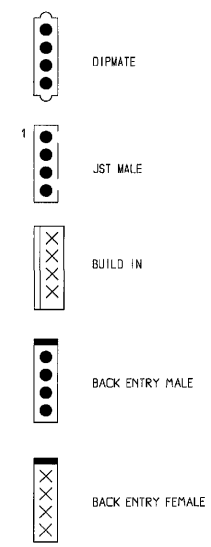


- | | |
|-----------|------------|
| 1101 C 1 | 1101 H 10 |
| 1101 C 2 | 1101 H 8 |
| 1101 C 3 | 1101 H 11 |
| 1101 C 4 | 1101 H 12 |
| 1101 C 5 | 1101 H 13 |
| 1101 C 6 | 1101 H 14 |
| 1101 C 7 | 1101 H 15 |
| 1101 C 8 | 1101 H 16 |
| 1101 C 9 | 1101 H 17 |
| 1101 C 10 | 1101 H 18 |
| 1101 C 11 | 1101 H 19 |
| 1101 C 12 | 1101 H 20 |
| 1101 C 13 | 1101 H 21 |
| 1101 C 14 | 1101 H 22 |
| 1101 C 15 | 1101 H 23 |
| 1101 C 16 | 1101 H 24 |
| 1101 C 17 | 1101 H 25 |
| 1101 C 18 | 1101 H 26 |
| 1101 C 19 | 1101 H 27 |
| 1101 C 20 | 1101 H 28 |
| 1101 C 21 | 1101 H 29 |
| 1101 C 22 | 1101 H 30 |
| 1101 C 23 | 1101 H 31 |
| 1101 C 24 | 1101 H 32 |
| 1101 C 25 | 1101 H 33 |
| 1101 C 26 | 1101 H 34 |
| 1101 C 27 | 1101 H 35 |
| 1101 C 28 | 1101 H 36 |
| 1101 C 29 | 1101 H 37 |
| 1101 C 30 | 1101 H 38 |
| 1101 C 31 | 1101 H 39 |
| 1101 C 32 | 1101 H 40 |
| 1101 C 33 | 1101 H 41 |
| 1101 C 34 | 1101 H 42 |
| 1101 C 35 | 1101 H 43 |
| 1101 C 36 | 1101 H 44 |
| 1101 C 37 | 1101 H 45 |
| 1101 C 38 | 1101 H 46 |
| 1101 C 39 | 1101 H 47 |
| 1101 C 40 | 1101 H 48 |
| 1101 C 41 | 1101 H 49 |
| 1101 C 42 | 1101 H 50 |
| 1101 C 43 | 1101 H 51 |
| 1101 C 44 | 1101 H 52 |
| 1101 C 45 | 1101 H 53 |
| 1101 C 46 | 1101 H 54 |
| 1101 C 47 | 1101 H 55 |
| 1101 C 48 | 1101 H 56 |
| 1101 C 49 | 1101 H 57 |
| 1101 C 50 | 1101 H 58 |
| 1101 C 51 | 1101 H 59 |
| 1101 C 52 | 1101 H 60 |
| 1101 C 53 | 1101 H 61 |
| 1101 C 54 | 1101 H 62 |
| 1101 C 55 | 1101 H 63 |
| 1101 C 56 | 1101 H 64 |
| 1101 C 57 | 1101 H 65 |
| 1101 C 58 | 1101 H 66 |
| 1101 C 59 | 1101 H 67 |
| 1101 C 60 | 1101 H 68 |
| 1101 C 61 | 1101 H 69 |
| 1101 C 62 | 1101 H 70 |
| 1101 C 63 | 1101 H 71 |
| 1101 C 64 | 1101 H 72 |
| 1101 C 65 | 1101 H 73 |
| 1101 C 66 | 1101 H 74 |
| 1101 C 67 | 1101 H 75 |
| 1101 C 68 | 1101 H 76 |
| 1101 C 69 | 1101 H 77 |
| 1101 C 70 | 1101 H 78 |
| 1101 C 71 | 1101 H 79 |
| 1101 C 72 | 1101 H 80 |
| 1101 C 73 | 1101 H 81 |
| 1101 C 74 | 1101 H 82 |
| 1101 C 75 | 1101 H 83 |
| 1101 C 76 | 1101 H 84 |
| 1101 C 77 | 1101 H 85 |
| 1101 C 78 | 1101 H 86 |
| 1101 C 79 | 1101 H 87 |
| 1101 C 80 | 1101 H 88 |
| 1101 C 81 | 1101 H 89 |
| 1101 C 82 | 1101 H 90 |
| 1101 C 83 | 1101 H 91 |
| 1101 C 84 | 1101 H 92 |
| 1101 C 85 | 1101 H 93 |
| 1101 C 86 | 1101 H 94 |
| 1101 C 87 | 1101 H 95 |
| 1101 C 88 | 1101 H 96 |
| 1101 C 89 | 1101 H 97 |
| 1101 C 90 | 1101 H 98 |
| 1101 C 91 | 1101 H 99 |
| 1101 C 92 | 1101 H 100 |

WIRING DIAGRAM



* Break away from COMBI PCB
 † For /21 and /26 Version only
 @ Use ECO4 for all Version except
 For /22, use TUNER 92 FTZ Version and
 For /26, use TUNER 92 JAPAN Version



(GB) 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.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
 Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet sorti d'une résistance de sécurité.
 Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
 Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.
 Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
 Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

ESD



(NL) WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
 Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
 Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
 Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
 La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione.
 Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialeto a resistenza.
 Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

(I)

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

(F)

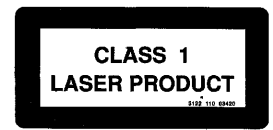
Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisés les pièces de rechange identiques à celles spécifiées.

(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne"



(GB) Warning !

Invisible laser radiation when open
 Avoid direct exposure to beam

(S) Varning !

Osynlig laserstrålning när apparaten är öppnad och spårren ar urkopplad. Beträkta ej strålen

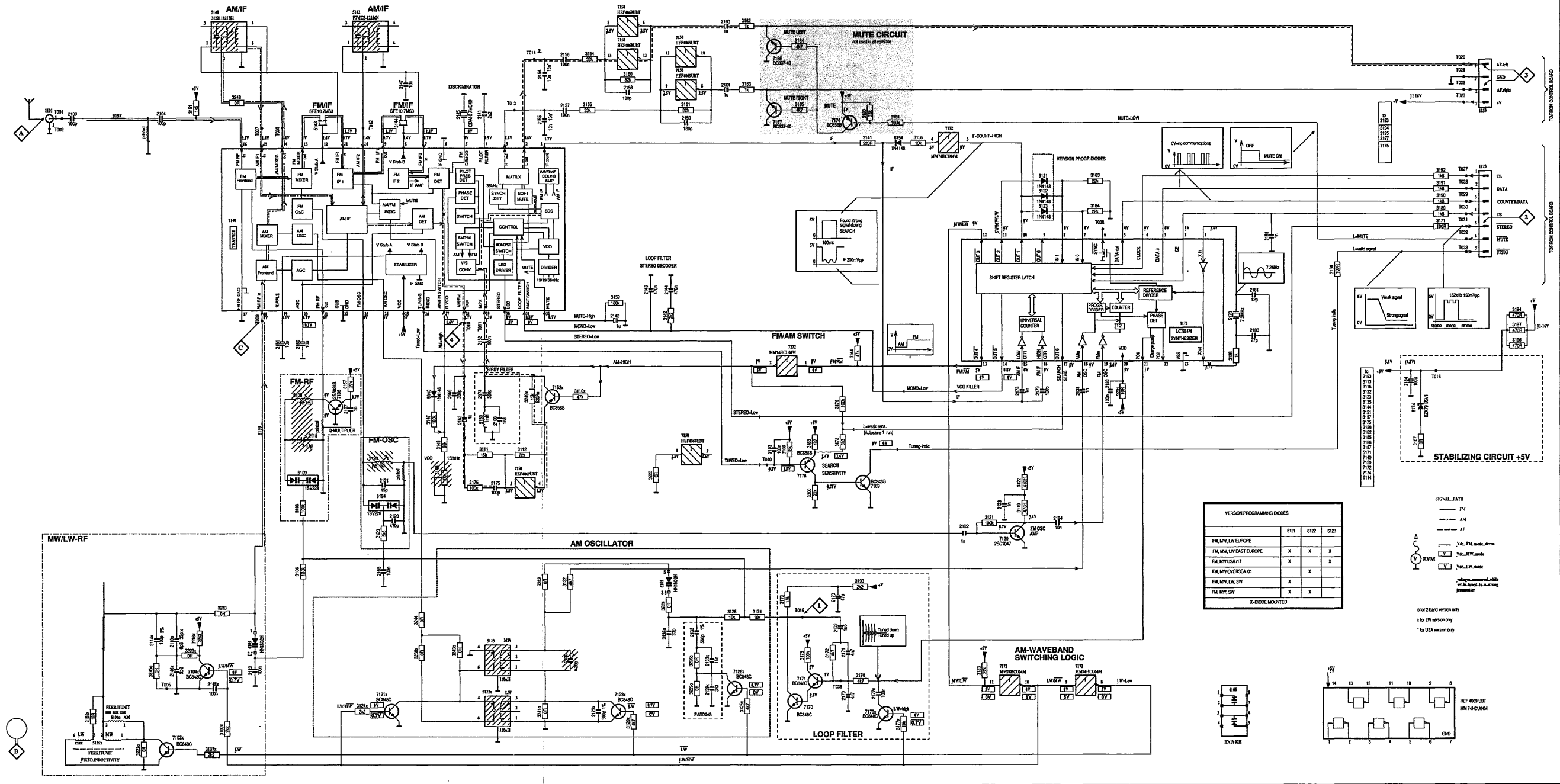
(SF) Varoitus !

Avatussa laitteessa ja suojalukituksen ohittatessa olet alttina näkymättömälle laserisäteilylle. Älä katso säteeseen!

(DK) Advarse !

Usynlig laserstrålning ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

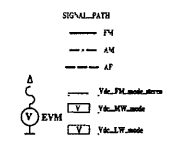
TUNER UNIT ECO4 (MIDI)



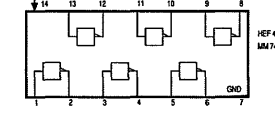
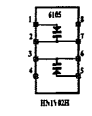
VERSION PROGRAMMING DIODES

	6121	6122	6123
FM MW, LW EUROPE			
FM MW, LW EAST EUROPE	X	X	X
FM MW USA/7	X	X	X
FM MW OVERSEA/01		X	
FM MW, LW, SW	X	X	
FM MW, SW	X	X	

X-DIODE MOUNTED



o for 2 band version only
 x for LW version only
 * for USA version only



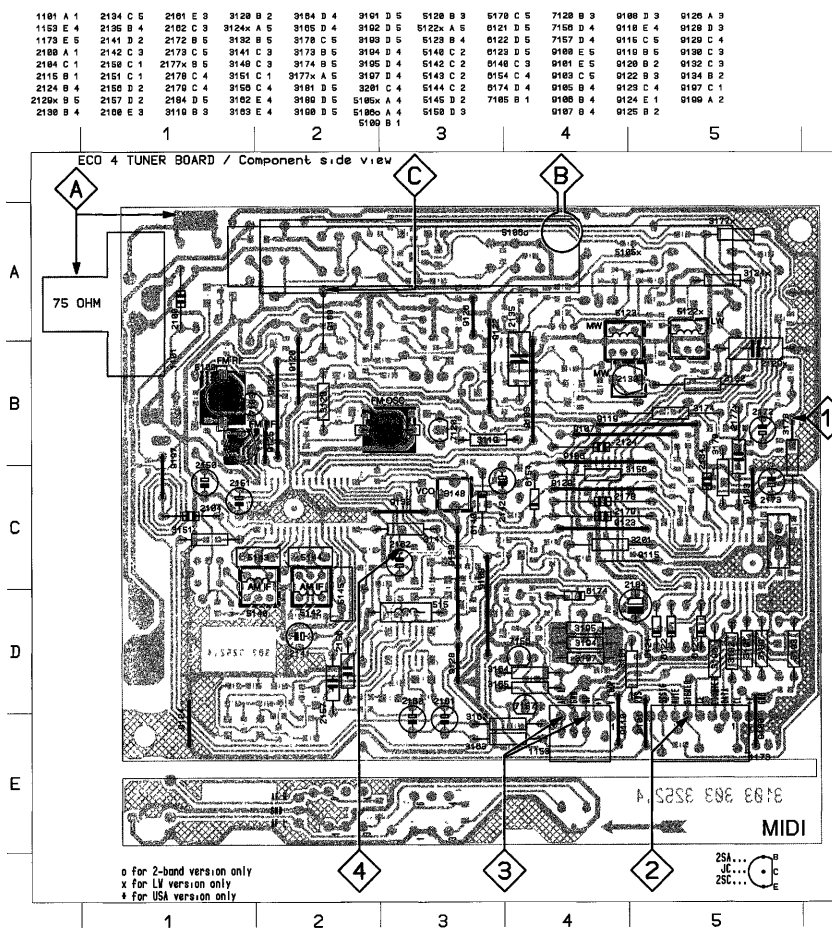
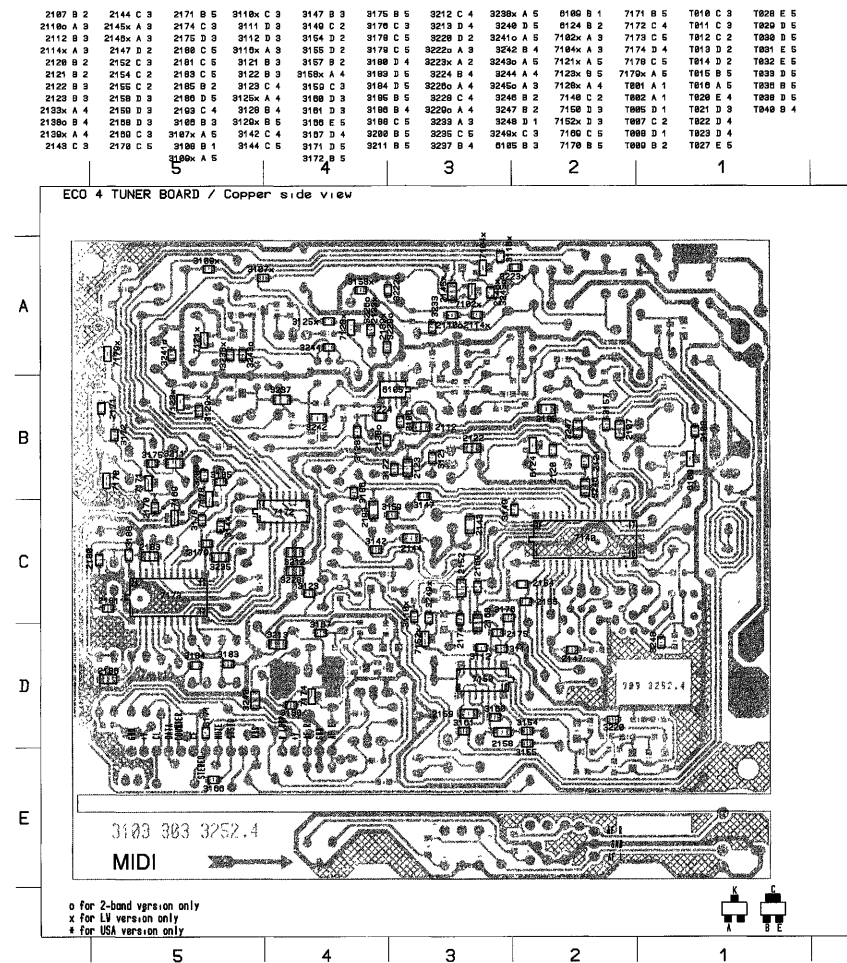
- 1101 C2
- 1103 C4
- 1103 D30
- 1104 C4
- 1107 B6
- 1110A H4
- 1111 C7
- 1112 H8
- 1112 H9
- 1120 D20
- 1120 D21
- 1121 C22
- 1121 C23
- 1121 C24
- 1121 C25
- 1121 C26
- 1121 C27
- 1121 C28
- 1121 C29
- 1121 C30
- 1121 C31
- 1121 C32
- 1121 C33
- 1121 C34
- 1121 C35
- 1121 C36
- 1121 C37
- 1121 C38
- 1121 C39
- 1121 C40
- 1121 C41
- 1121 C42
- 1121 C43
- 1121 C44
- 1121 C45
- 1121 C46
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- 1121 C48
- 1121 C49
- 1121 C50
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- 1121 C69
- 1121 C70
- 1121 C71
- 1121 C72
- 1121 C73
- 1121 C74
- 1121 C75
- 1121 C76
- 1121 C77
- 1121 C78
- 1121 C79
- 1121 C80
- 1121 C81
- 1121 C82
- 1121 C83
- 1121 C84
- 1121 C85
- 1121 C86
- 1121 C87
- 1121 C88
- 1121 C89
- 1121 C90
- 1121 C91
- 1121 C92
- 1121 C93
- 1121 C94
- 1121 C95
- 1121 C96
- 1121 C97
- 1121 C98
- 1121 C99
- 1121 C100

TUNER Adjustment table (ECO 4 FM/MW- and FM/MW/LW - versions with AM-ferrite antenna)

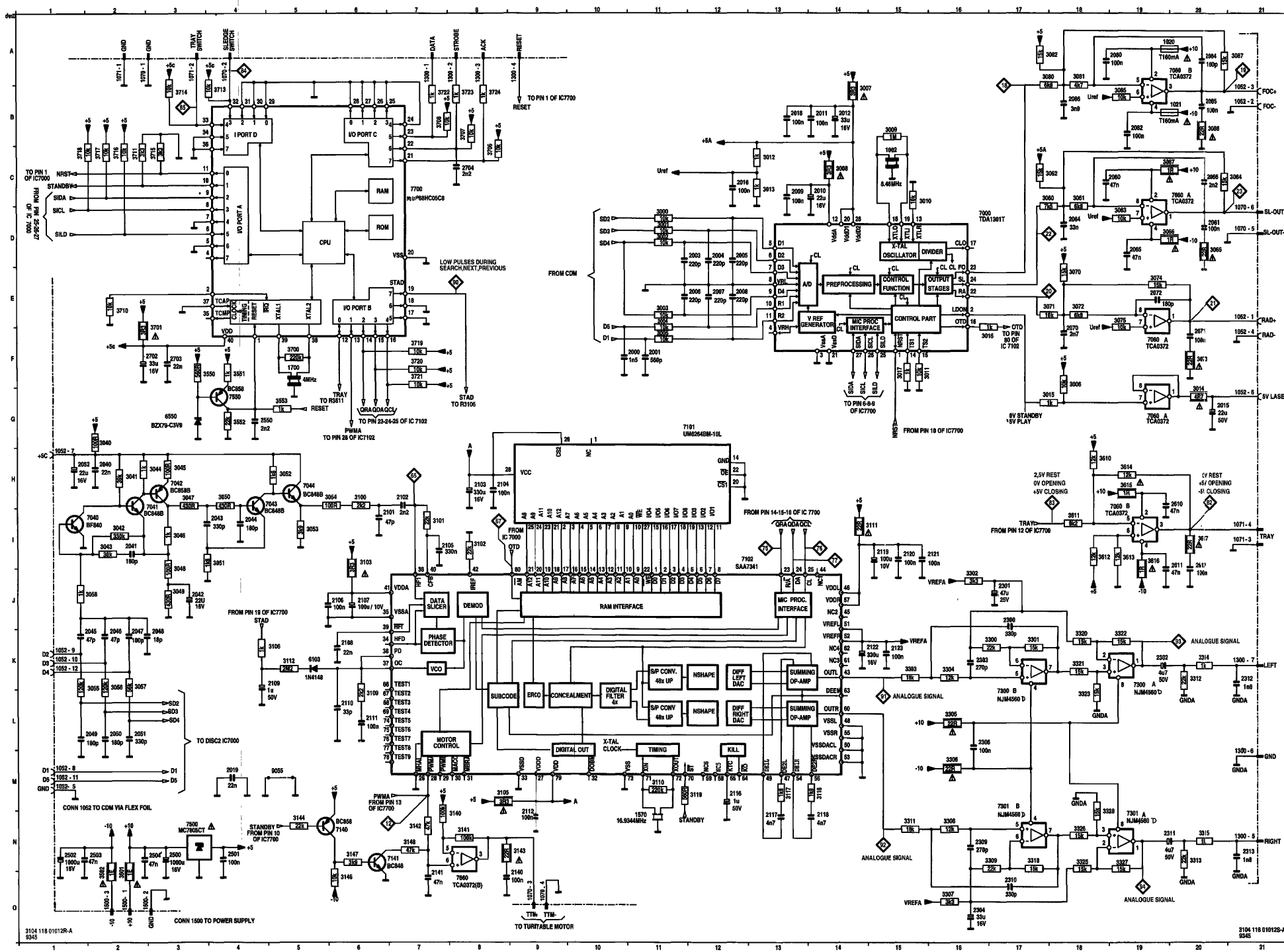
Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT * 1)						
FM 87.5 - 108MHz			108 MHz	5120		8V ± 0.2V
			87.5MHz	check		4.1V ± 0.5V
FM /14 East Europe 65.81 - 108MHz			108 MHz	5120		8V ± 0.2V
			65.81 MHz	check		0.8V ± 0.4V
MW 2-band version, 10kHz gnd 530 - 1710kHz			1710kHz	5123	1	9V±0.1V (7.5±0.7V) ¹⁾
			530kHz	check		1V±0.4V (1.1±0.5V) ¹⁾
LW 153 - 279kHz			279kHz	5122		8V±0.2V (7.5±1.5V) ¹⁾
			153kHz	check		1V±0.4V (1.1±0.5V) ¹⁾
MW 3-band version 522 - 1611kHz			1611kHz	5123		8V±0.1V (7.5±0.5V) ¹⁾
			522kHz	check		1V±0.4V (1.1±0.5V) ¹⁾
FM - RF						
FM	108MHz	A	108MHz	2115	3	MAX
	87.5MHz		87.5MHz	5109		
FM /14 East Europe	108MHz	mod=1kHz Δf=22.5kHz	108MHz	2115		
	65.81MHz		65.81MHz	5109		
VCO						
FM	98 MHz, 1mV continuous wave	A	98MHz	3148	2	152kHz ± 1kHz
AM - IF						
MW	540kHz Δf = 10kHz as low as possible	100nF 50E	540kHz	5142 5140	4	symmetrical and max height
AM - RF						
LW	198kHz	B	198kHz	5122	4	MAX
MW 3-band version	1494kHz		1494kHz	2130		
	549kHz		549kHz	5123		
MW 2-band version, 10kHz gnd	1500kHz		1500kHz	2130		
	550kHz	550kHz	5123			

* Use Service Test Program. By selecting the TUNER TEST, test frequencies will be stored as preset frequ. automatically.
 1) Adjustment of AM-RF stage influences the varicap voltage. Therefore check if varicap voltage fulfils value stated within brackets after AM-RF adjustment.

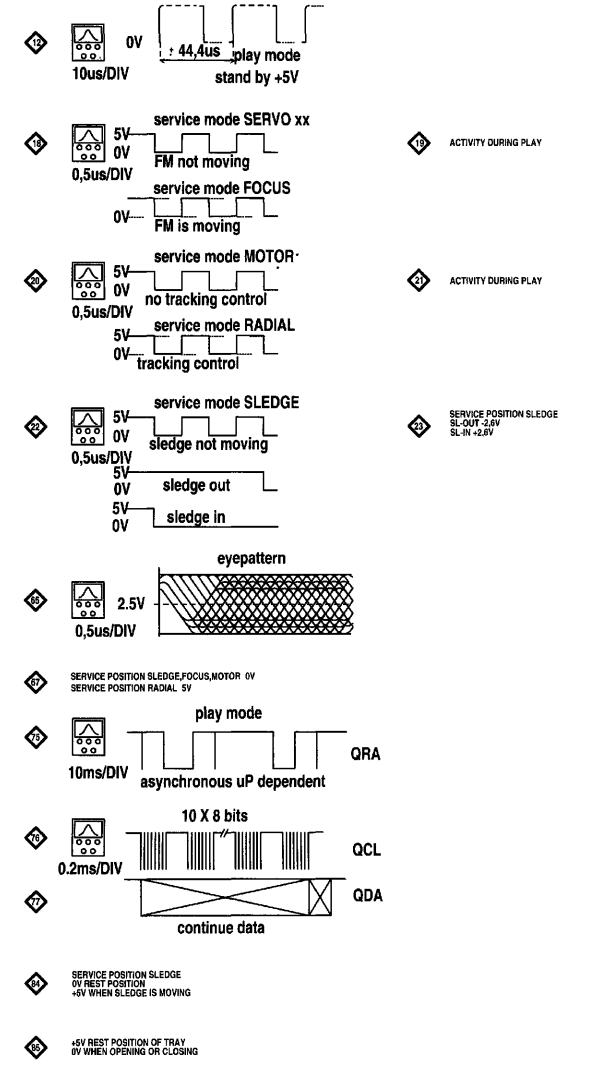
ECO4 (MIDI) LAYOUT (Not for /22/26)



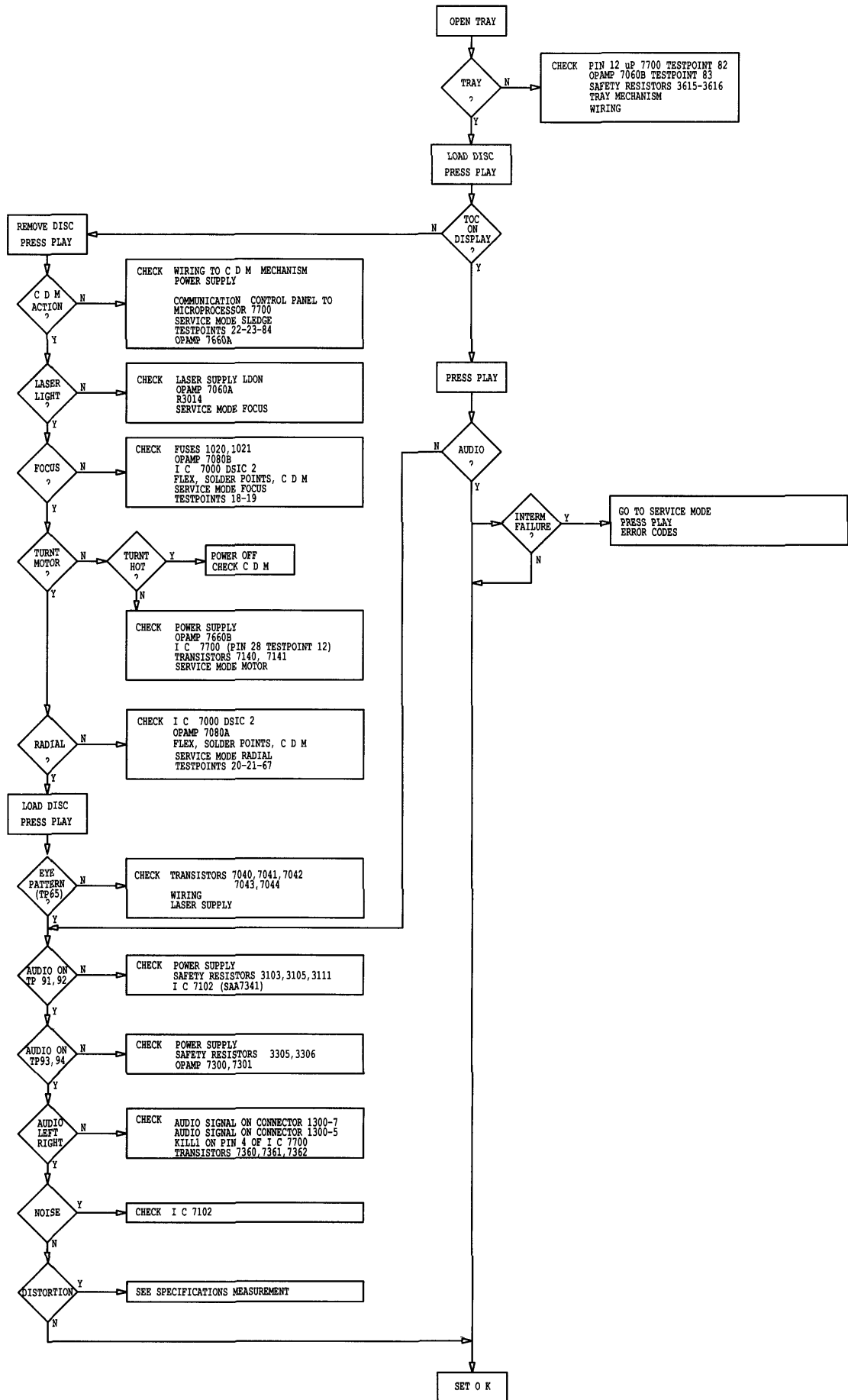
repeat



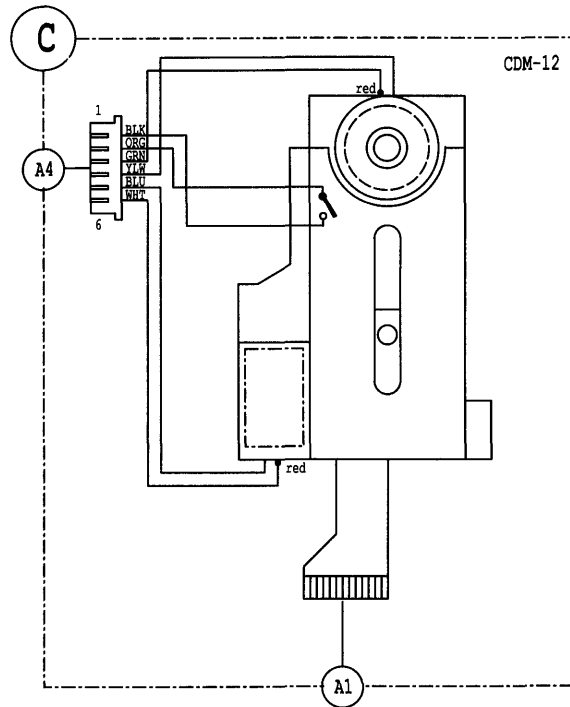
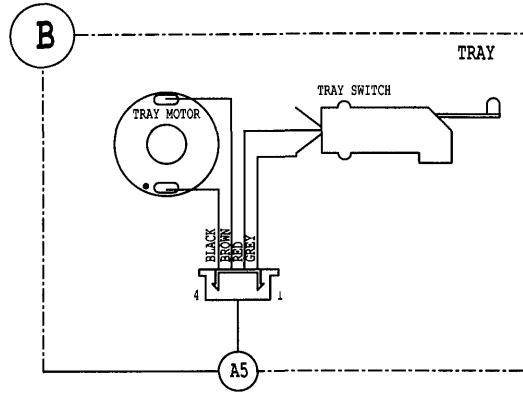
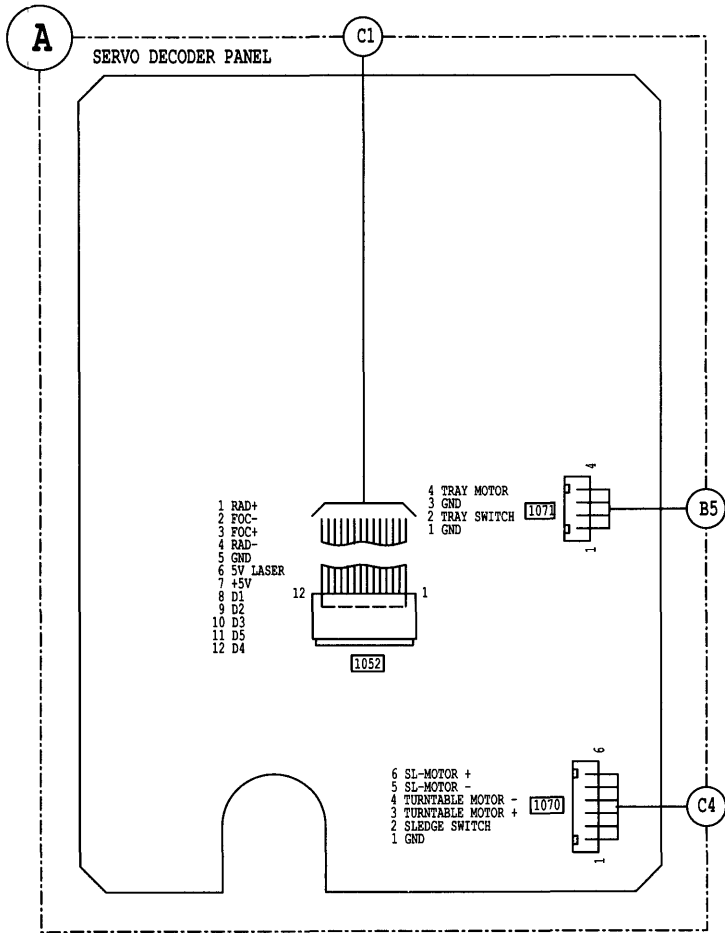
1002 C15	3062 C17
1009 A11	3063 D19
1011 B20	3064 C21
1012 K 1	3065 D19
1022 M 1	3067 C19
1022 N 1	3070 F16
1022 O 1	3072 F26
1022 P 1	3073 F26
1022 Q 1	3074 F16
1022 R 1	3075 F16
1022 S 1	3081 A18
1022 T 1	3081 A18
1022 U 1	3082 D19
1022 V 1	3085 D19
1022 W 1	3086 D20
1022 X 1	3087 A21
1022 Y 1	3100 H 6
1022 Z 1	3100 H 6
1070 A 4	3101 H 7
1070 B 5	3102 H 8
1070 C 6	3103 H 9
1070 D 7	3104 H 10
1070 E 8	3105 H 11
1070 F 9	3106 H 12
1070 G 10	3107 H 13
1070 H 11	3108 H 14
1070 I 12	3109 H 15
1070 J 13	3110 H 16
1070 K 14	3111 H 17
1070 L 15	3112 H 18
1070 M 16	3113 H 19
1070 N 17	3114 H 20
1070 O 18	3115 H 21
1070 P 19	3116 H 22
1070 Q 20	3117 H 23
1070 R 21	3118 H 24
1070 S 22	3119 H 25
1070 T 23	3120 H 26
1070 U 24	3121 H 27
1070 V 25	3122 H 28
1070 W 26	3123 H 29
1070 X 27	3124 H 30
1070 Y 28	3125 H 31
1070 Z 29	3126 H 32
1080 A 1	3127 H 33
1080 B 2	3128 H 34
1080 C 3	3129 H 35
1080 D 4	3130 H 36
1080 E 5	3131 H 37
1080 F 6	3132 H 38
1080 G 7	3133 H 39
1080 H 8	3134 H 40
1080 I 9	3135 H 41
1080 J 10	3136 H 42
1080 K 11	3137 H 43
1080 L 12	3138 H 44
1080 M 13	3139 H 45
1080 N 14	3140 H 46
1080 O 15	3141 H 47
1080 P 16	3142 H 48
1080 Q 17	3143 H 49
1080 R 18	3144 H 50
1080 S 19	3145 H 51
1080 T 20	3146 H 52
1080 U 21	3147 H 53
1080 V 22	3148 H 54
1080 W 23	3149 H 55
1080 X 24	3150 H 56
1080 Y 25	3151 H 57
1080 Z 26	3152 H 58
1090 A 1	3153 H 59
1090 B 2	3154 H 60
1090 C 3	3155 H 61
1090 D 4	3156 H 62
1090 E 5	3157 H 63
1090 F 6	3158 H 64
1090 G 7	3159 H 65
1090 H 8	3160 H 66
1090 I 9	3161 H 67
1090 J 10	3162 H 68
1090 K 11	3163 H 69
1090 L 12	3164 H 70
1090 M 13	3165 H 71
1090 N 14	3166 H 72
1090 O 15	3167 H 73
1090 P 16	3168 H 74
1090 Q 17	3169 H 75
1090 R 18	3170 H 76
1090 S 19	3171 H 77
1090 T 20	3172 H 78
1090 U 21	3173 H 79
1090 V 22	3174 H 80
1090 W 23	3175 H 81
1090 X 24	3176 H 82
1090 Y 25	3177 H 83
1090 Z 26	3178 H 84
1100 A 1	3179 H 85
1100 B 2	3180 H 86
1100 C 3	3181 H 87
1100 D 4	3182 H 88
1100 E 5	3183 H 89
1100 F 6	3184 H 90
1100 G 7	3185 H 91
1100 H 8	3186 H 92
1100 I 9	3187 H 93
1100 J 10	3188 H 94
1100 K 11	3189 H 95
1100 L 12	3190 H 96
1100 M 13	3191 H 97
1100 N 14	3192 H 98
1100 O 15	3193 H 99
1100 P 16	3194 H 100
1100 Q 17	3195 H 101
1100 R 18	3196 H 102
1100 S 19	3197 H 103
1100 T 20	3198 H 104
1100 U 21	3199 H 105
1100 V 22	3200 H 106
1100 W 23	3201 H 107
1100 X 24	3202 H 108
1100 Y 25	3203 H 109
1100 Z 26	3204 H 110



CD REPAIR CHART



CD WIRING

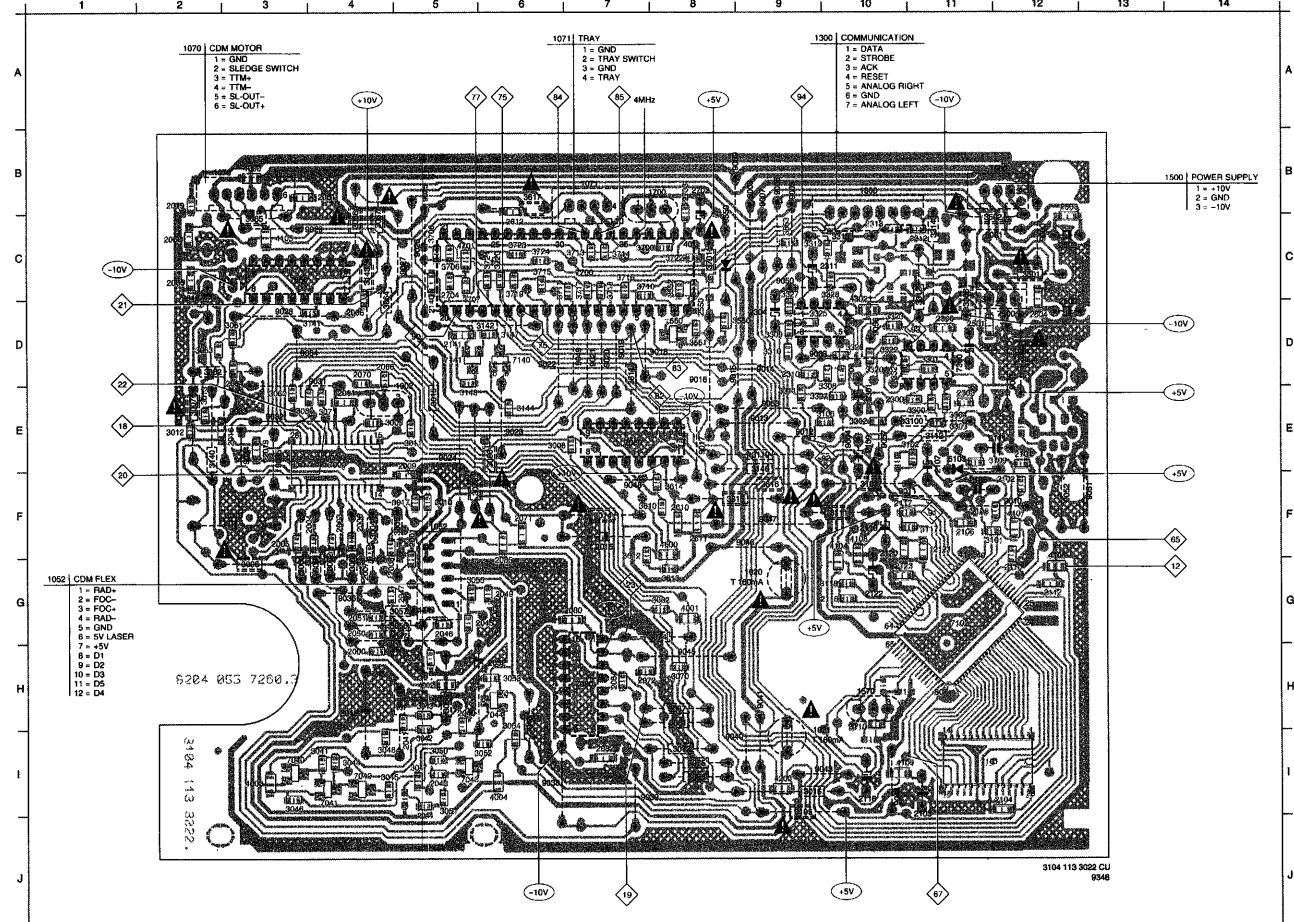
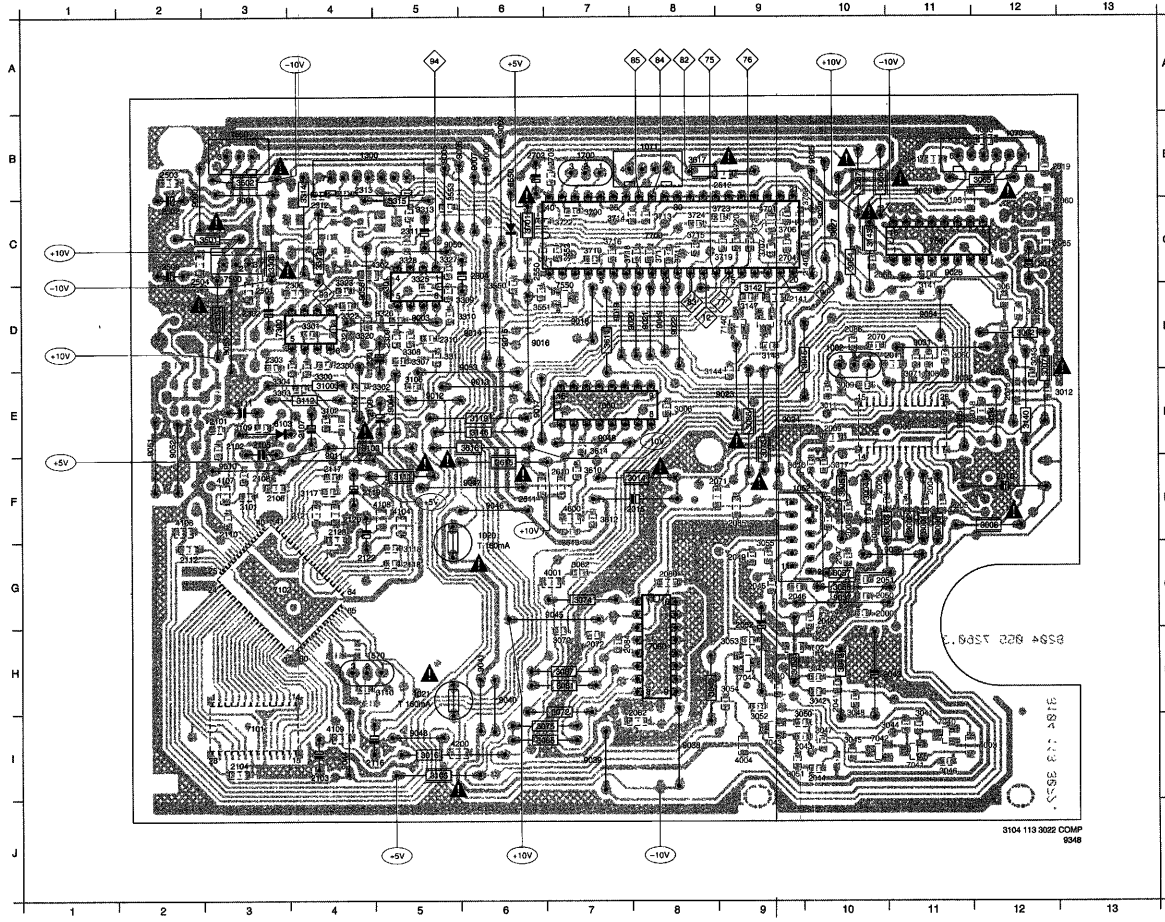


HAS1096
9235

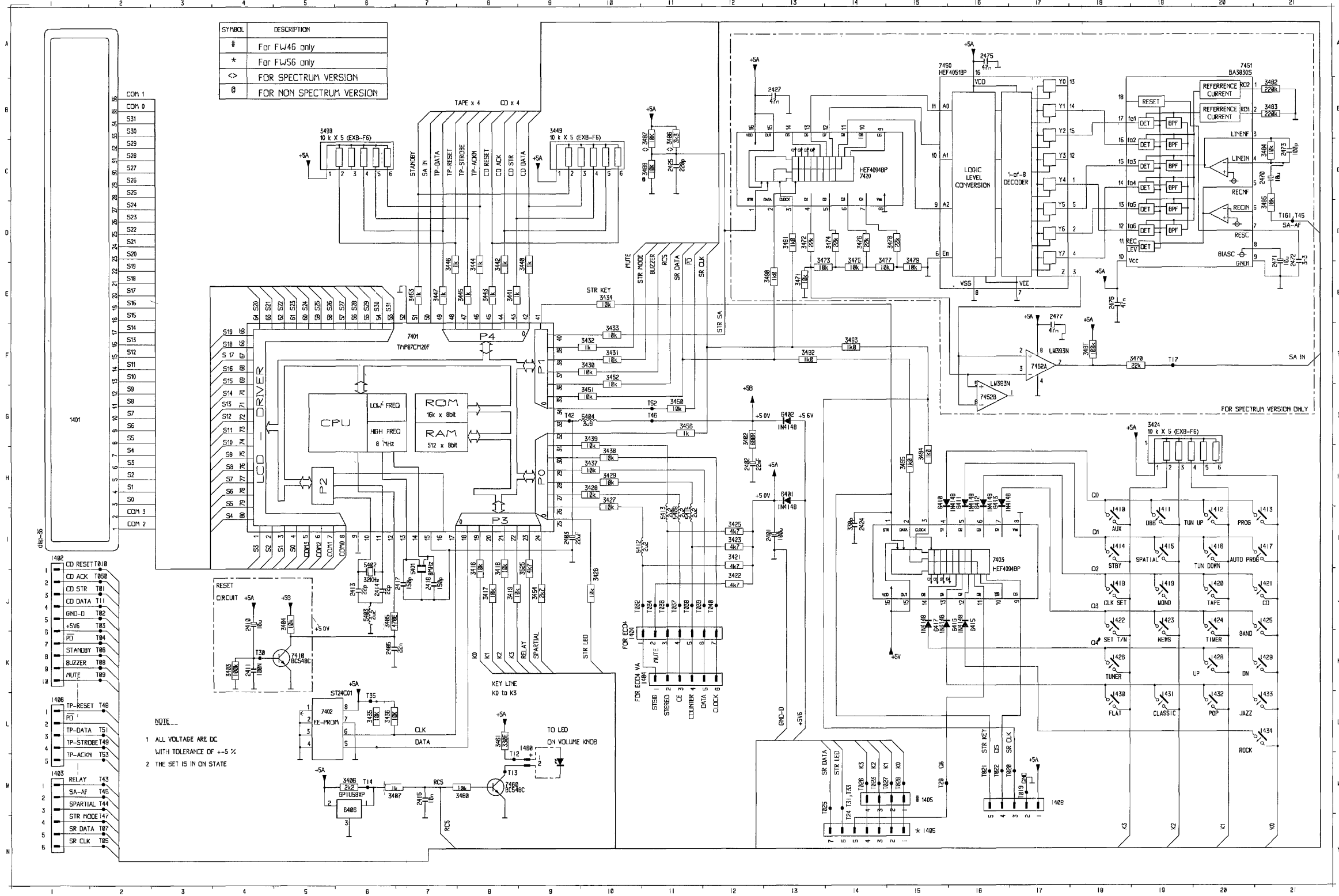
CD COMPONENT AND TRACK SIDE LAYOUT

1002	D10	2009	E10	2050	G10	2103	H	2140	C10	2250	C8	3011	E10	3051	I8	3072	I7	3111	F3	3205	C3	3268	C5	3707	C9	4002	H10	7042	I10	9004	E5	9022	D8	9041	H8
1000	F8	2010	F12	2051	G10	2104	I8	2141	D8	2251	F7	3012	E12	3052	I9	3073	F8	3112	E4	3206	C2	3269	C2	3708	C10	4003	I12	7043	I9	9005	B5	9023	E8	9042	I8
1001	H5	2011	D10	2052	H8	2105	E3	2142	D4	2252	F6	3013	D12	3053	H8	3074	G7	3113	F4	3207	D5	3270	B3	3710	C7	4004	I9	7044	H9	9006	B6	9024	E9	9043	I4
1002	F9	2012	C12	2053	F9	2106	F3	2143	D4	2253	H8	3014	F7	3054	H8	3075	I8	3114	G5	3208	D5	3271	D6	3711	C8	4005	I10	7045	H9	9007	B6	9025	F10	9044	H8
1070	B12	2015	F7	2051	B11	2107	E4	2202	D3	2702	H8	3015	D10	3055	G8	3090	E11	3119	E8	3209	D5	3272	D8	3712	C8	4106	C11	7050	H8	9008	B6	9026	C10	9045	F8
1071	B8	2016	E12	2054	D12	2108	F3	2203	D3	2703	G7	3016	I5	3056	G10	3081	H7	3140	E12	3310	D5	3522	C7	3714	C7	4108	F2	7101	I3	9009	B6	9027	C10	9047	F8
1300	B4	2018	E12	2055	C12	2109	E4	2304	C8	2704	C9	3017	F10	3057	G10	3082	G7	3141	D11	3311	D6	3523	C5	3715	C8	4109	F3	7102	G3	9010	F9	9028	C11	9048	E7
1600	E3	2019	B12	2056	C10	2110	F3	2305	D3	2705	F11	3040	H8	3058	H8	3083	H8	3142	D9	3312	C4	3510	F7	3716	C7	4106	F4	7140	D9	9011	F4	9029	B11	9049	D6
1670	H4	2040	H8	2070	D10	2111	E3	2306	D5	3001	F11	3041	I11	3060	D11	3088	E9	3143	C10	3313	C5	3511	D7	3717	C8	4109	I4	7141	D9	9012	E5	9031	D11	9030	C5
1700	B7	2041	H10	2071	F8	2112	G2	2310	D5	3002	F11	3042	H10	3061	D12	3087	H7	3144	E8	3314	C4	3512	F7	3718	C7	4200	I5	7300	D3	9013	E9	9032	E11	9031	E2
2000	G10	2042	H10	2072	H7	2113	H4	2311	D5	3003	F11	3043	H10	3062	D12	3109	E4	3145	D9	3315	C5	3513	G7	3719	C8	4300	C4	7301	D5	9014	D8	9033	E12	9032	F2
2000	F10	2043	I9	2080	G8	2117	F4	2312	C4	3004	F10	3044	I10	3063	D12	3101	F3	3147	D9	3320	D4	3514	E7	3720	C8	4600	F7	7500	C3	9015	D6	9034	E12	9033	D5
2005	F11	2044	I10	2082	I7	2118	G5	2313	B4	3005	F10	3045	H10	3064	C10	3102	E4	3148	D9	3321	D4	3515	F8	3721	C9	4701	C9	7550	D7	9016	D6	9035	E11	9034	D1
2004	F11	2045	G9	2084	H7	2119	F4	2314	C2	3006	E9	3046	I11	3065	B12	3103	E4	3149	E4	3322	D4	3516	E8	3722	C7	4108	G3	7600	C11	9017	E8	9036	G10	9035	D3
2005	F11	2046	G9	2085	F8	2120	F4	2315	D3	3007	E12	3047	I10	3066	B10	3103	I5	3301	D4	3323	C4	3517	B8	3723	C8	4550	B6	7700	C8	9018	D7	9037	G10	9036	D4
2006	F10	2047	G10	2086	D10	2121	F4	2316	C2	3008	F12	3048	H10	3067	B10	3106	E5	3302	E4	3324	C5	3518	C7	3724	C8	7000	E11	8000	C2	9019	D7	9038	I8	9037	E4
2007	G10	2048	G10	2101	E3	2122	G4	2317	B2	3009	E10	3049	H10	3070	H7	3109	E3	3303	E3	3325	D5	3519	C8	4000	B12	7000	I11	8001	C3	9020	D6	9039	I7	9038	I7
2008	F10	2049	G9	2102	E3	2123	F4	2318	C2	3010	F9	3050	I9	3071	E11	3110	H5	3304	E3	3327	C5	3520	C9	4001	G8	7001	I11	8003	D5	9021	D8	9040	H8	9039	I7

1002	E5	2008	G4	2048	H5	2086	D4	2120	F10	2500	D12	3006	F5	3044	I4	3082	D2	3087	H8	3143	C4	3312	D11	3353	C9	3714	C7	4105	C3	7050	E7	9008	B9	9023	E6	9041	H9
1020	G9	2009	E5	2049	G6	2101	E12	2121	F11	2501	D11	3008	E9	3045	I4	3083	D2	3100	E10	3144	E8	3313	C9	3310	F7	3715	C6	4108	G12	7050	H7	9007	B9	9024	E5	9043	I8
1021	I9	2010	F8	2050	G4	2102	F12	2122	G10	2502	D12	3007	E2	3046	I3	3084	D4	3101	F11	3145	F9	3314	C11	3311	D7	3716	C7	4107	F12	7101	I11	9008	B9	9025	E5	9044	I10
1022	F5	2011	E4	2051	G4	2103	I11	2123	G10	2503	D12	3008	G3	3047	I5	3085	C3	3102	E10	3147	D6	3315	C10	3312	G7	3717	D7	4108	F10	7102	G11	9009	B9	9026	C5	9045	H8
1070	B2	2012	C2	2052	H8	2104	I11	2140	D8	2504	D12	3009	E4	3048	I4	3086	C4	3103	F10	3148	E9	3320	D10	3313	G8	3718	D7	4109	H0	7140	D6	9010	F12	9027	C5	9046	F8
1071	B7	2015	F7	2053	C10	2110	F3	2202	D3	2505	D8	3010	F5	3049	H5	3087	C4	3105	I8	3320	E10	3314	F8	3719	C8	4200	I5	7300	D12	9011	F10	9028	C9	9047	F9		
1900	B10	2016	E3	2054	B4	2105	F11	2300	E10	2810	F8	3011	E5	3050	I5	3070	H8	3106	E9	3301	D11	3322	D10	3315	F8	3720	C6	4302	D10	7300	D11	9012	E9	9029	C3	9048	F7
1900	B11	2018	E3	2054	E3	2107	F11	2301	E10	2811	F8	3012	E2	3051	I5	3071	E4	3109	E11	3302	E10	3323	D10	3316	F8	3721	C9	4600	F8	7301	D10	9013	E9	9031	D3	9049	D7
1570	H10	2019	B2	2055	C2	2108	F11	2302	D11	2812	C6	3013	E2	3052	I5	3072	I8	3110	H0	3303	E11	3324	D10	3317	B8	3722	C4	4701	C6	7500	D12	9014	D9	9032	E3	9050	C9
1700	B7	2040	H5	2068	D4	2109	E10	2303	E11	2702	B8	3014	F7	3053	H8	3073	F5	3111	F10	3304	E11	3325	D10	3318	C7	3723	C6	6103	E11	7550	D8	9015	D8	9033	E3	9051	F13
2000	H4	2041	I5	2070	D4	2110	G12	2304	D9	2703	B8	3015	E5	3054	H8	3074	G7	3112	E11	3305	D12	3327	C9	3319	C7	3724	C8	6550	D8	7800	C3	9016	D8	9034	E5	9052	F12
2001	F5	2042	H4	2071	F8	2111	E11	2305	D11	2704	C5	3016	I9	3055	G5	3075	I6	3117	F11	3306	D12	3328	C9	3320	C9	3725	C4	4300	F5	7000	G10	9017	E8	9035	E3	9053	E9
2003	F4	2043	I5	2072	H7	2112	G12	2306	D10	2705	C3	3017	F4	3056	G4	3080	E3	3118	E9	3307	E9	3301	C12	3327	D5	4001	G8	7040	I3	8000	C12	9018	D7	9036	G4	9054	D3
2004	F4	2044	J5	2080	G8	2118	H10	2310	D9	2706	C4	3040	I6	3057	G4	3081	H8	3119	E9	3308	E9	3302	C11	3328	C5	4002	H6	7041	I4	8001	C11	9019	D7	9037	G4	9055	E12
2005	F3	2045	G5	2082	I7	2117	F10	2311	C9	2707	G4	3041	I9	3058	H5	3082	G8	3140	E2	3309	D9	3329	D9	3329	D9	3710	C7	4003	I3	7042	I4	8002	D8	9020	D7	9038	I8
2006	F4	2046	G5	2084	H7	2118	G8	2312	C11	2708	G4	3042	I6	3059	E3	3085	I8	3141	D3	3310	D9	3351	D8	3311	C6	4004	I6	7043	I5	8004	E10	9021	D7	9039	I7	9057	E10
2007	G4	2047	G5	2086	G8	2119	F10	2313	C10	2709	F4	3043	H6	3061	D3	3086	E9	3142	D5	3311	E9	3352	C8	3313	C7	4104	F10	7044	H8	8005	B9	9022	D6	9040	I8		



FRONT CIRCUIT



SYMBOL	DESCRIPTION
#	For FW46 only
*	For FW56 only
<>	FOR SPECTRUM VERSION
⊗	FOR NON SPECTRUM VERSION

NOTE

- ALL VOLTAGE ARE DC WITH TOLERANCE OF ±5%
- THE SET IS IN ON STATE

- 1481 G
- 1482 G
- 1483 M
- 1484 K11
- 1485 N15
- 1486 M17
- 1487 J20
- 1488 J21
- 1489 J22
- 1490 J23
- 1491 J24
- 1492 J25
- 1493 J26
- 1494 J27
- 1495 J28
- 1496 J29
- 1497 J30
- 1498 J31
- 1499 J32
- 1500 J33
- 1501 J34
- 1502 J35
- 1503 J36
- 1504 J37
- 1505 J38
- 1506 J39
- 1507 J40
- 1508 J41
- 1509 J42
- 1510 J43
- 1511 J44
- 1512 J45
- 1513 J46
- 1514 J47
- 1515 J48
- 1516 J49
- 1517 J50
- 1518 J51
- 1519 J52
- 1520 J53
- 1521 J54
- 1522 J55
- 1523 J56
- 1524 J57
- 1525 J58
- 1526 J59
- 1527 J60
- 1528 J61
- 1529 J62
- 1530 J63
- 1531 J64
- 1532 J65
- 1533 J66
- 1534 J67
- 1535 J68
- 1536 J69
- 1537 J70
- 1538 J71
- 1539 J72
- 1540 J73
- 1541 J74
- 1542 J75
- 1543 J76
- 1544 J77
- 1545 J78
- 1546 J79
- 1547 J80
- 1548 J81
- 1549 J82
- 1550 J83
- 1551 J84
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- 1559 J92
- 1560 J93
- 1561 J94
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- 1563 J96
- 1564 J97
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- 1566 J99
- 1567 J100
- 1568 J101
- 1569 J102
- 1570 J103
- 1571 J104
- 1572 J105
- 1573 J106
- 1574 J107
- 1575 J108
- 1576 J109
- 1577 J110
- 1578 J111
- 1579 J112
- 1580 J113
- 1581 J114
- 1582 J115
- 1583 J116
- 1584 J117
- 1585 J118
- 1586 J119
- 1587 J120
- 1588 J121
- 1589 J122
- 1590 J123
- 1591 J124
- 1592 J125
- 1593 J126
- 1594 J127
- 1595 J128
- 1596 J129
- 1597 J130
- 1598 J131
- 1599 J132
- 1600 J133

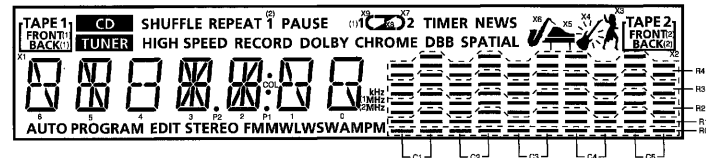


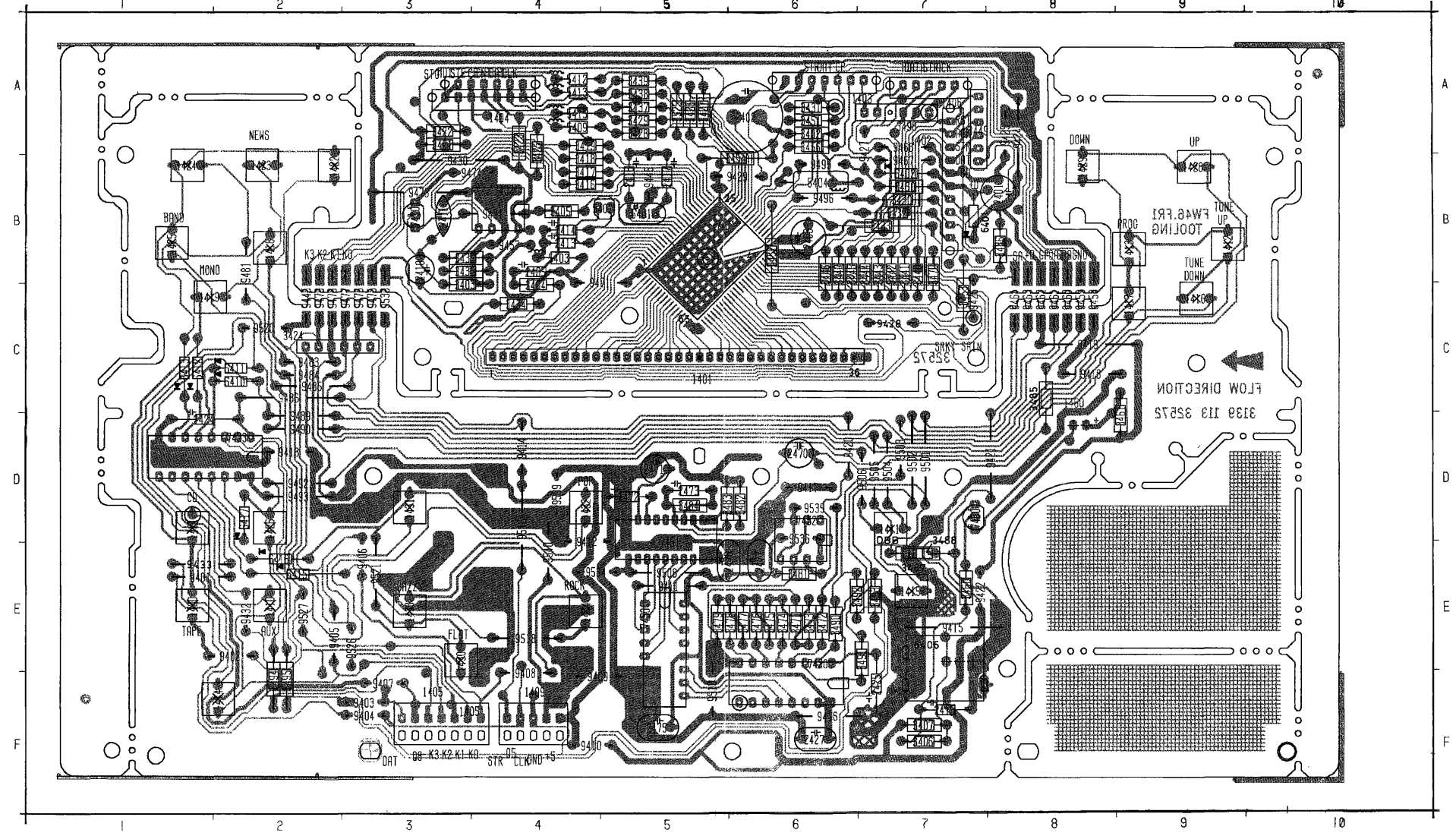
Figure 7. LCD pin connections

LCD DISPLAY PINS CONNECTIONS

PIN NO.	COM 0	COM 1	COM 2	COM 3
1	-	-	COM 2	-
2	-	-	-	COM 3
3	6gm	6f	6e	6n
4	6b	6a	6c	6d
5	FRONT (1)	6h	BACK (1)	TAPE 1,X1
6	SHUFFLE	CD	HIGH SPEED	AUTO
7	5g	5f	5e	PROGRAM
8	5b	5a	5c	5d
9	TUNER	5hn	5m	5jp
10	1 (1), 2	TIMER	RECORD	REPEAT
11	4gm	4f	4e	EDIT
12	4b	4a	4c	4d
13	X7	X9	X8	1 (2)
14	FRONT (2)	X6	BACK (2)	TAPE 2,X2
15	3g	3f	3e	3n
16	3b	3a	3c	3d
17	3k	3h	3m	3jp
18	3r	DBB	PAUSE	STEREO
19	2gm	2f	2e	2n
20	2b	2a	2c	2d
21	2kr	CHROME	DOLBY	2jp
22	LW	-	MW	R0
23	1gm	1f	1e	1n
24	1b	1a	1c	1d
25	COL	1h	FM,P1,MHz (1)	SW,P2,MHz (2)
26	X4	kHz	PM	AM
27	0gm	0f	0e	0n
28	0b	0a	0c	0d
29	X3	X5	SPATIAL	NEWS
30	C1R1	C1R2	C1R3	C1R4
31	C2R1	C2R2	C2R3	C2R4
32	C3R1	C3R2	C3R3	C3R4
33	C4R1	C4R2	C4R3	C4R4
34	C5R1	C5R2	C5R3	C5R4
35	COM 0	-	-	-
36	-	COM 1	-	-

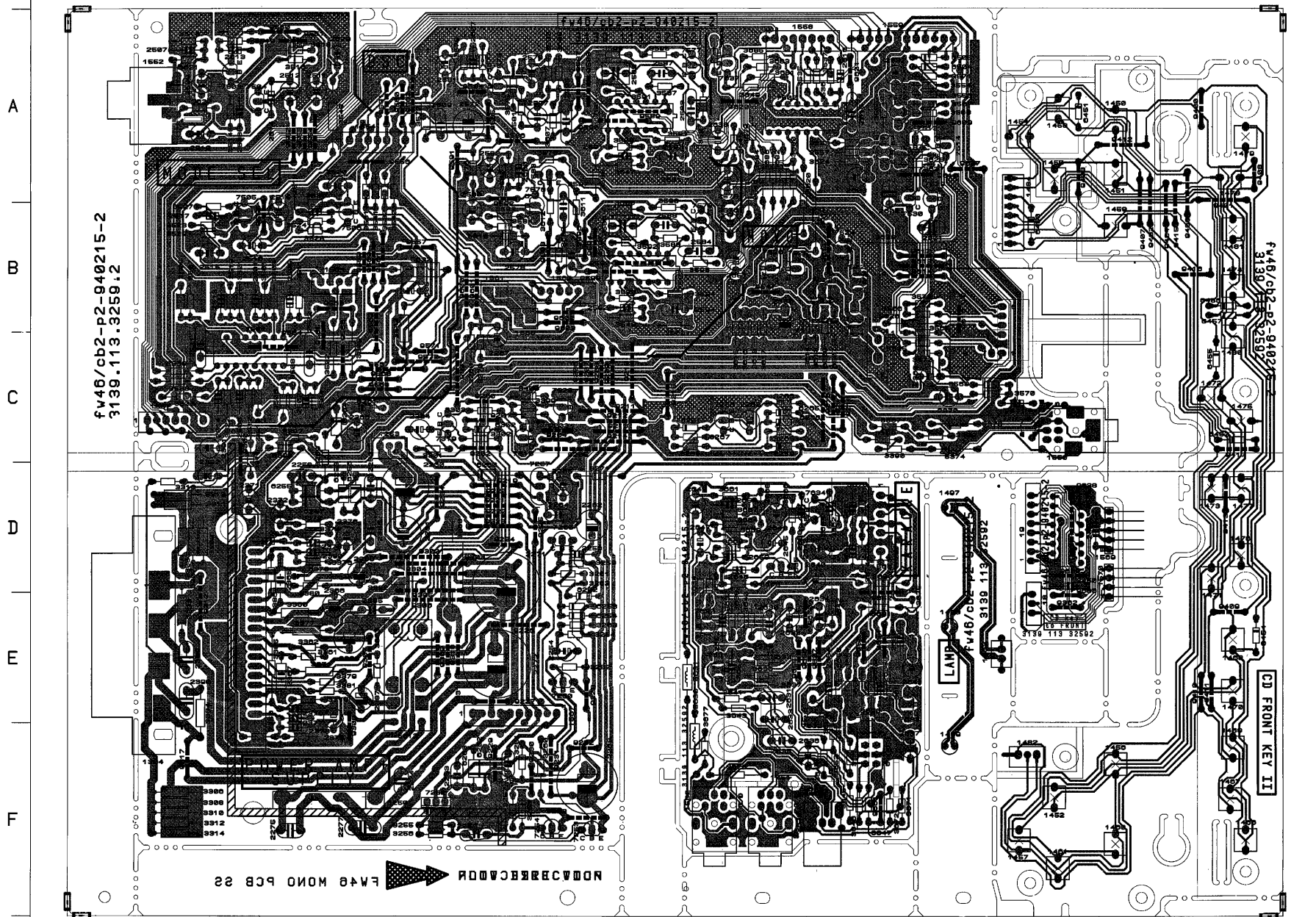
FRONT COMPONENT LAYOUT

- 1401 C5 1412 B9 1421 D1 1431 D3 2410 B3 2427 F6 3403 C4 3421 B3 3430 B7 3439 A5 3449 A7 3470 C7 3479 E5 3490 E6 5402 B5 6406 E7 7402 B4 9402 E2 9411 E5 9420 D6 9430 B4 9461 C8 9475 C3 9486 C2 9503 D7 9521 E9
- 1402 A7 1413 B9 1422 B3 1432 D4 2411 B3 2470 D6 3404 C4 3422 A3 3431 A6 3440 C7 3450 B7 3471 E6 3481 E6 3491 F6 5403 B4 6410 C2 7403 D2 9403 F3 9412 E4 9421 D8 9431 B4 9462 C8 9476 C3 9489 D2 9504 D7 9526 F2
- 1403 A7 1414 F2 1423 B2 1433 E3 2413 B4 2471 D5 3405 B4 3423 A4 3432 B7 3441 C7 3451 A6 3472 E6 3482 D5 3492 E6 5404 B6 6411 C2 7410 B3 9404 F3 9413 D2 9422 E7 9432 E2 9463 C8 9477 C2 9490 D2 9505 D7 9527 E2
- 1404 A4 1415 E7 1424 B1 1434 E4 2414 B4 2472 D5 3406 F7 3424 C2 3433 B7 3442 C7 3452 B6 3473 E6 3483 D5 3493 E7 5409 A4 6412 C1 7420 F6 9405 F2 9414 D4 9424 A8 9445 C2 9464 C8 9478 C2 9492 D2 9506 D6 9530 C3
- 1405 F3 1416 C9 1425 B1 1460 C8 2415 F7 2473 D5 3407 F7 3425 A4 3434 C4 3443 C7 3453 B7 3474 E6 3484 D5 3494 F2 5412 A4 6413 C1 7450 E5 9406 E3 9415 E7 9425 B8 9446 B5 9466 B7 9479 C2 9493 D2 9508 E5 9534 E5
- 1406 A7 1417 C9 1426 D2 2401 B8 2417 B5 2475 F5 3416 B4 3426 A5 3435 B4 3444 C6 3454 B6 3476 E6 3485 D8 3495 F2 5413 A4 6415 E2 7451 D5 9407 F3 9416 F6 9426 C7 9457 B4 9467 B7 9481 B2 9495 B6 9510 F5 9535 D6
- 1409 A4 1418 B2 1428 B9 2402 A6 2418 B5 2476 E6 3417 B4 3427 A5 3436 C4 3445 C6 3456 B6 3476 E6 3486 B7 3498 A7 5415 A4 6416 E2 7452 D6 9408 F4 9417 D6 9427 A7 9458 C8 9471 C5 9483 C2 9496 B6 9516 E4 9536 E6
- 1410 E2 1419 C2 1429 B8 2403 B6 2424 D2 2477 E6 3418 B4 3428 A5 3437 A5 3446 C6 3460 E7 3477 E6 3487 E7 3525 A5 6401 B7 6417 D2 7460 E7 9409 F5 9418 C8 9428 C7 9459 C8 9473 B3 9484 C2 9501 D7 9518 E4 9539 D4
- 1411 D7 1420 E1 1430 F4 2405 C4 2425 E7 3402 A6 3419 B4 3429 A5 3438 A5 3447 C6 3461 D8 3478 E5 3488 E7 5401 B5 6402 B7 7401 B5 9401 E2 9410 F4 9419 C8 9429 B6 9480 C8 9474 B4 9485 C2 9502 D7 9520 C2 9540 D4



COMBI COMPONENT LAYOUT

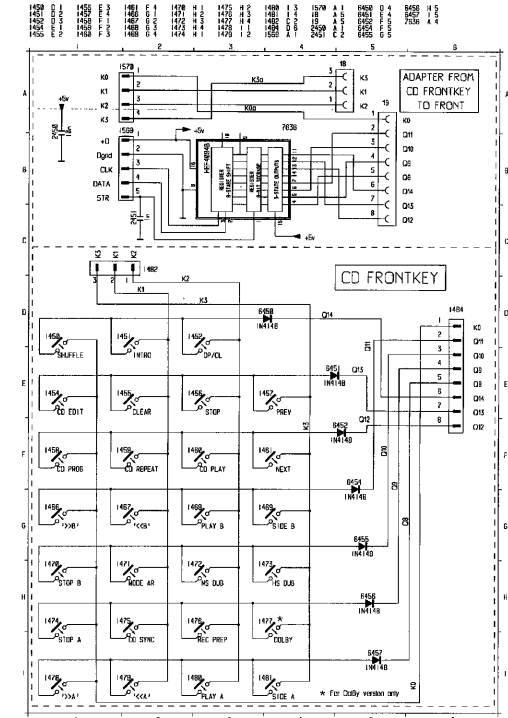
3139 113 3259 2
FW48 MONO PCB 22

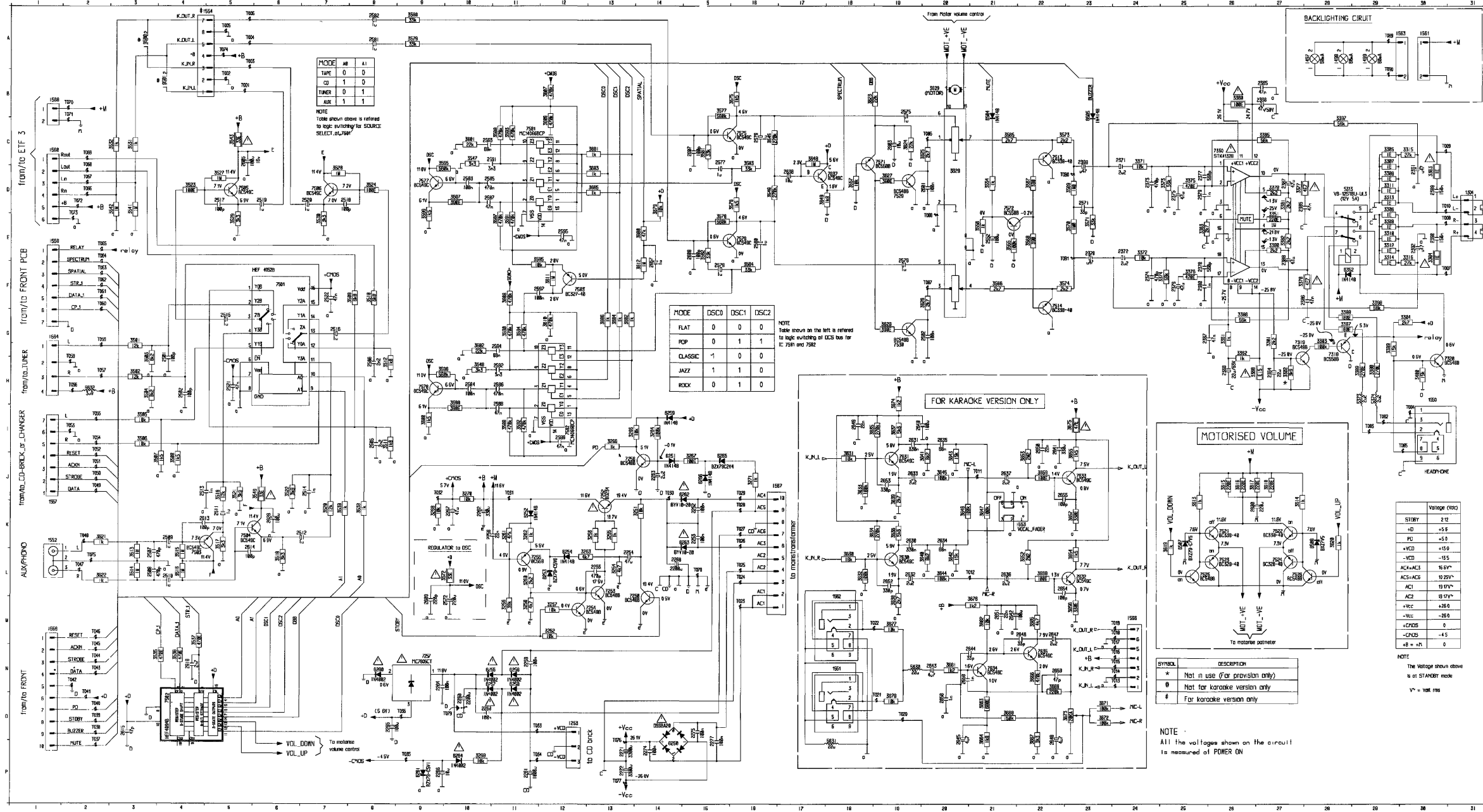


NOTE: THIS LAYOUT IS COMPLETE FOR ALL VERSIONS/OPTIONS FOR DIFFERENCES PLEASE REFER TO SCHEMATIC DIAGRAM

18 E 0	2388 D 3	3254 E 4	3536 A 6	3649 A 8	7538 A 7	9588 B 3
10 D 8	2389 E 1	3255 F 3	3537 A 0	3652 F 6	7571 A 7	9581 B 3
1253 C 3	2390 E 1	3256 F 3	3538 C 1	3653 E 6	7572 A 7	9582 B 3
1304 E 1	2391 C 1	3257 F 4	3539 C 1	3654 E 6	7575 A 4	9583 B 2
1458 A 8	2392 D 1	3258 F 4	3541 A 3	3655 E 6	7576 B 4	9584 C 2
1451 A 8	2458 D 8	3259 D 4	3542 A 3	3656 E 6	7577 A 5	9585 C 2
1452 F 8	2451 D 8	3260 F 4	3543 B 3	3657 E 7	7578 B 5	9586 C 2
1454 A 8	2581 B 2	3261 D 4	3545 A 5	3658 F 6	7581 A 5	9587 C 3
1455 A 8	2582 D 4	3262 D 4	3546 A 5	3659 F 7	7582 B 5	9588 C 3
1456 F 8	2585 D 2	3263 E 4	3547 A 5	3660 F 7	7583 A 5	9589 C 3
1457 F 8	2586 C 2	3264 C 5	3548 B 5	3662 D 8	7586 E 6	9571 C 3
1458 A 8	2587 A 1	3265 C 6	3549 A 2	3663 D 5	7591 E 5	9572 C 3
1459 B 8	2588 A 2	3266 C 6	3554 A 7	3664 D 5	7592 E 6	9588 A 3
1460 F 8	2589 A 1	3267 C 5	3555 A 7	3665 D 5	7593 E 7	9581 A 3
1461 F 8	2510 A 1	3268 C 3	3556 A 7	3666 D 5	7634 D 6	9582 A 3
1466 F 9	2511 A 2	3269 C 2	3567 A 8	3667 D 5	7695 D 8	9584 A 3
1467 F 9	2512 A 2	3270 C 3	3566 C 7	3668 D 6	7636 D 8	9585 A 4
1468 E 9	2513 B 2	3271 D 4	3566 B 7	3669 D 5	7637 A 8	9589 A 4
1469 F 9	2514 C 1	3268 C 3	3567 A 7	3671 F 7	9288 C 4	9587 A 4
1478 E 9	2515 B 1	3262 C 3	3568 A 7	3672 F 7	9291 C 4	9588 A 4
1471 D 9	2516 B 2	3263 C 3	3569 C 7	3673 F 8	9282 C 4	9589 A 5
1472 C 9	2517 B 1	3264 C 4	3578 C 7	3674 D 6	9293 C 4	9588 A 5
1473 D 9	2518 B 2	3265 D 1	3571 A 7	3675 E 7	9284 C 4	9591 A 3
1474 B 9	2519 B 2	3266 F 1	3572 A 3	3676 D 6	9285 C 4	9592 A 4
1475 C 9	2520 A 2	3267 D 1	3573 C 7	3677 F 5	9286 C 4	9593 B 4
1476 D 9	2521 C 1	3268 F 1	3574 B 7	3678 F 5	9288 C 3	9594 B 4
1477 D 9	2522 C 2	3269 D 1	3575 A 4	3679 A 6	9289 C 3	9597 B 4
1478 A 9	2522 A 7	3270 F 1	3576 A 3	3688 A 6	9210 C 5	9588 B 5
1479 A 9	2571 C 8	3271 D 1	3577 A 4	3681 A 6	9211 C 4	9589 B 5
1480 C 9	2572 A 3	3272 F 1	3578 A 4	3682 A 6	9212 C 5	9608 B 3
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1508 C 8	2581 A 3	3279 E 2	3585 A 4	5374 C 7	9219 D 4	9612 B 7
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1584 B 2	2595 A 4	3279 E 2	3598 B 5	6258 D 2	9231 F 4	9654 E 7
1586 D 7	2596 B 4	3280 D 2	3599 A 5	6259 C 6	9232 F 4	9655 E 8
1587 E 4	2597 B 4	3281 E 2	3600 B 5	6260 D 4	9233 F 4	9656 E 8
1588 B 4	2688 B 6	3282 D 3	3601 A 5	6261 C 3	9234 D 3	9659 F 8
1589 D 8	2689 B 5	3283 E 3	3602 B 5	6262 E 4	9300 A 2	9788 A 7
1578 D 8	2682 A 7	3284 E 1	3607 A 5	6263 F 3	9381 C 3	
2252 F 4	2683 A 6	3285 E 2	3608 B 4	6264 C 2	9382 D 3	
2253 F 3	2685 B 3	3286 D 2	3609 A 4	6265 C 6	9383 D 3	
2254 E 4	2687 A 3	3287 C 7	3618 B 4	6266 C 6	9384 D 3	
2255 F 3	2688 A 4	3288 C 7	3611 B 4	6352 C 4	9385 D 3	
2256 D 4	2689 A 3	3289 C 7	3612 B 4	6458 B 8	9386 E 3	
2259 D 2	2613 A 2	3290 C 7	3613 B 6	6451 A 8	9387 C 4	
2258 D 3	2614 A 2	3291 C 2	3614 B 6	6452 C 9	9388 C 4	
2258 D 3	2615 A 6	3290 C 2	3615 B 5	6454 E 9	9389 E 3	
2261 D 2	2618 A 6	3290 C 4	3616 B 6	6455 C 9	9310 E 3	
2262 D 4	2620 A 2	3488 C 4	3617 B 6	6456 B 8	9311 E 3	
2263 C 6	2630 E 6	3581 B 2	3618 B 6	6457 B 9	9312 E 1	
2264 D 4	2631 E 6	3582 C 2	3619 B 6	6584 A 7	9316 F 2	
2265 D 4	2632 E 6	3583 B 2	3620 A 6	6585 A 7	9317 F 1	
2266 C 3	2633 E 6	3584 C 2	3621 A 1	6587 B 6	9322 E 8	
2267 C 4	2634 E 6	3585 B 1	3622 A 1	6588 B 6	9400 A 9	
2268 F 4	2635 F 6	3586 C 2	3623 A 0	7256 E 6	9401 A 9	
2271 D 4	2638 F 8	3587 B 1	3624 A 6	7252 F 3	9402 B 9	
2272 E 4	2637 F 7	3588 C 2	3625 C 7	7253 F 4	9403 A 8	
2274 F 3	2638 A 5	3589 C 3	3626 B 7	7254 F 4	9404 B 8	
2275 F 2	2640 D 6	3510 C 2	3627 A 7	7255 D 4	9406 A 9	
2277 F 3	2641 E 7	3511 B 2	3628 A 7	7256 C 5	9407 B 9	
2384 C 3	2642 D 6	3512 C 2	3629 B 7	7257 D 4	9408 A 9	
2385 D 2	2643 D 5	3513 A 1	3638 D 7	7318 C 4	9409 E 9	
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COMBI CIRCUIT I





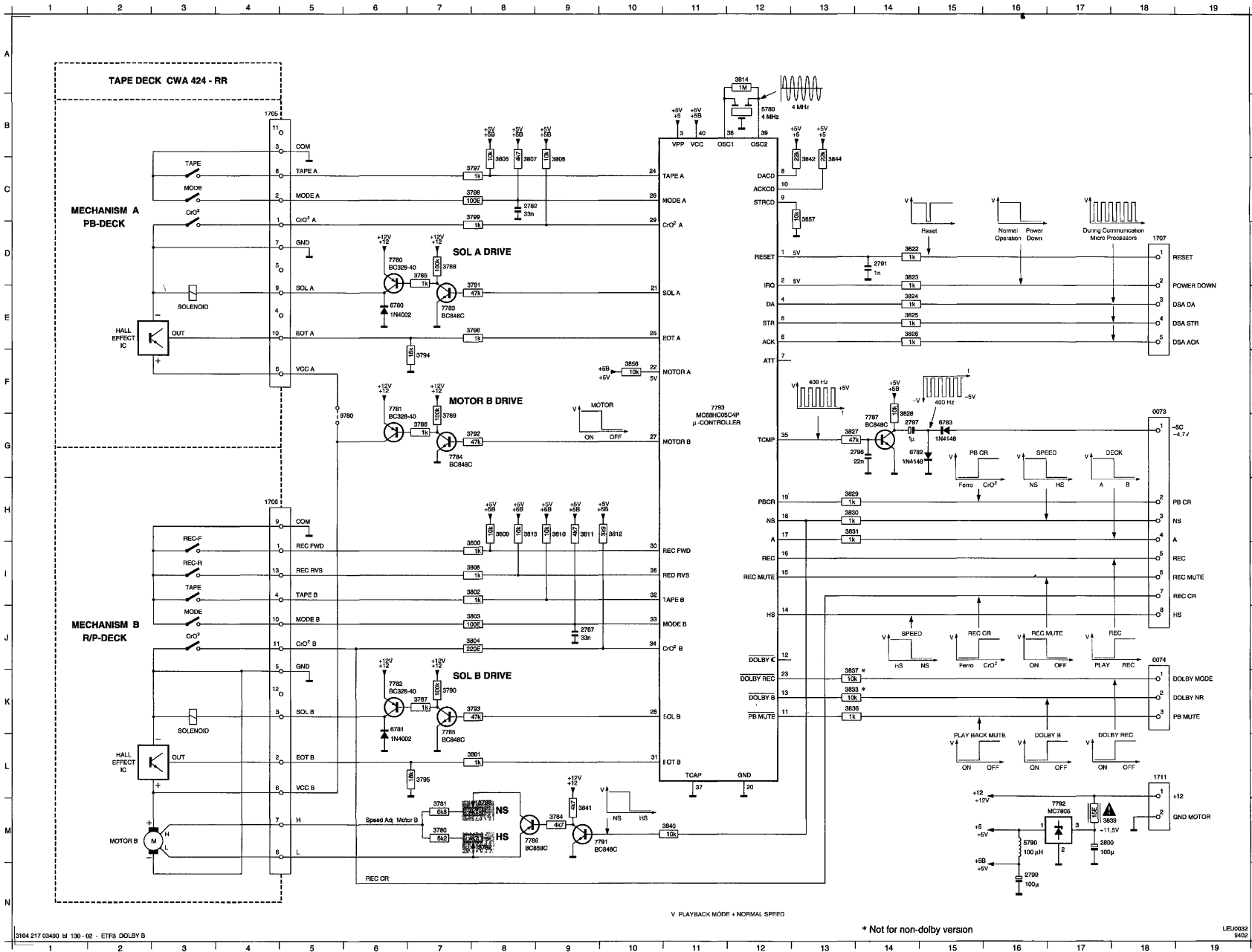
EXPLANATION OF ABBREVIATIONS

A	Deck A or B	PB Lever ADJ L	Playback Lever Adjustment Left
CRO2	Chrome	PB CR	Playback Chrome
Dolby NR	Dolby Noise Reduction	PB mute	Playback mute
Dolby Mode	Dolby Mode (Rec or Play)	PB Lever ADJ R	Playback Lever Adjustment Right
DSA STR	DSA Strobe	PBL	Playback Left
DSA DA	DSA Data	PBR	Playback Right
DSA ACK	DSA Acknowledge	Rec Mute	Recording Mute
EOT A	End of Tape A	Rec R	Recording Right
EOT B	End of Tape B	Rec L	Recording Left
FE	Ferro	Rec CR	Recording Chrome
HS	High Speed	REC RVS	Recording Reverse
MODE A	Slide Deck A Up / Down	REC	Recording
MODE B	Slide Deck B Up / Down	REC FWD	Recording Forward
NC	Not Connect	SOL A	Solenoid A
NS	Normal Speed	SOL B	Solenoid B
PB CR	Playback Chrome	VCC B	VCC Motor B
PB mute	Playback mute		

µProcessor 7793 pinning , values , In- Output Port

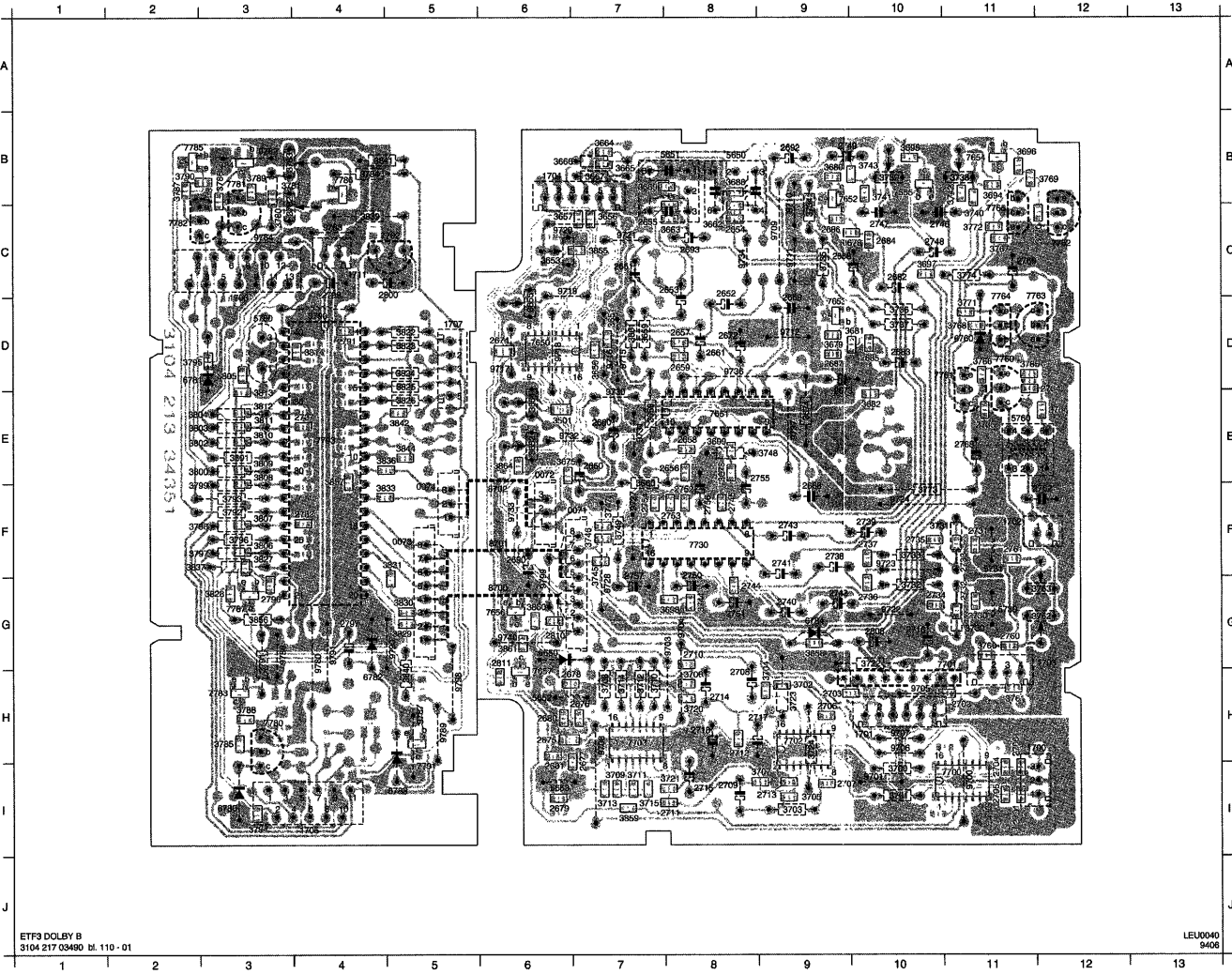
Pin	Discription	I/O PORT	Values
1	Reset	I	Must be driven by external reset circuitry
2	IRQ	I	0 = Power down 1 = normal operation
3	VPP	-	+5V
4	Date	I/O	DSA bus data line
5	Strobe	I/O	DSA bus clock line
6	Acknowledge	I/O	DSA bus acknowledge line
7	Attenuate	O	0 = Off 1 = On
8	DSA CD Data	I/O	DSA CD bus data line
9	DSA CD Strobe	I/O	DSA Bus strobe line
10	DSA CD Acknowledge	I/O	DSA CD bus Acknowledge line
11	Playback Mute	O	0 = Playback mute On
12	Dolby C	O	1 = Dolby C Off 0 = Dolby C On
13	Dolby B	O	1 = Dolby B Off 0 = Dolby B On
14	High Speed	O	0 = Normal speed 1 = High speed
15	Record Mute	O	1 = Record mute On
16	Play / Record	O	0 = Play 1 = Record
17	Playback A/B	O	1 = Deck A 0 = Deck B
18	Normal Speed	O	0 = High speed 1 = Normal speed
19	Playback Fe/CrO2	O	0 = Ferro 1 = CrO2
20	GND	-	Ground
21	Solenoid Deck A	O	Solenoid Deck A
22	Motor deck A	O	Not used
23	Dolby Record	O	0 = Record 1 = Play
24	Tape Detect Deck A	I	0 = Tape present in deck A
25	Halle IC Deck A	I	4 Pulses per rotation of winding wheel
26	Mode Deck A	I	0 = Slide up 1 = Slide down
27	Main Motor	O	Motor B
28	Solenoid Deck B	O	Solenoid Deck B
29	CrO2 Deck A	I	0 = Ferro Tape 1 = CrO2
30	Record Frontside Deck B	I	0 = Record enabled on frontside
31	Hall IC Deck B	I	4 Pulses per rotation of winding wheel
32	Tape Detect Deck B	I	0 = Tape present in deck B
33	Mode Deck B	I	0 = Slide up 1 = Slide down
34	CrO2 Deck B	I	0 = Ferro Tape 1 = CrO2
35	TCMP	O	400 Hz oscillator
36	Record Rearside Deck B	I	0 = Record enable on rearside
37	TCAP	I	Not used
38	OSC 1	-	4 MHz
39	OSC 2	-	4 MHz
40	VCC	-	+5V

ETF3 CONTROL PART (DOLBY B & NON-DOLBY)



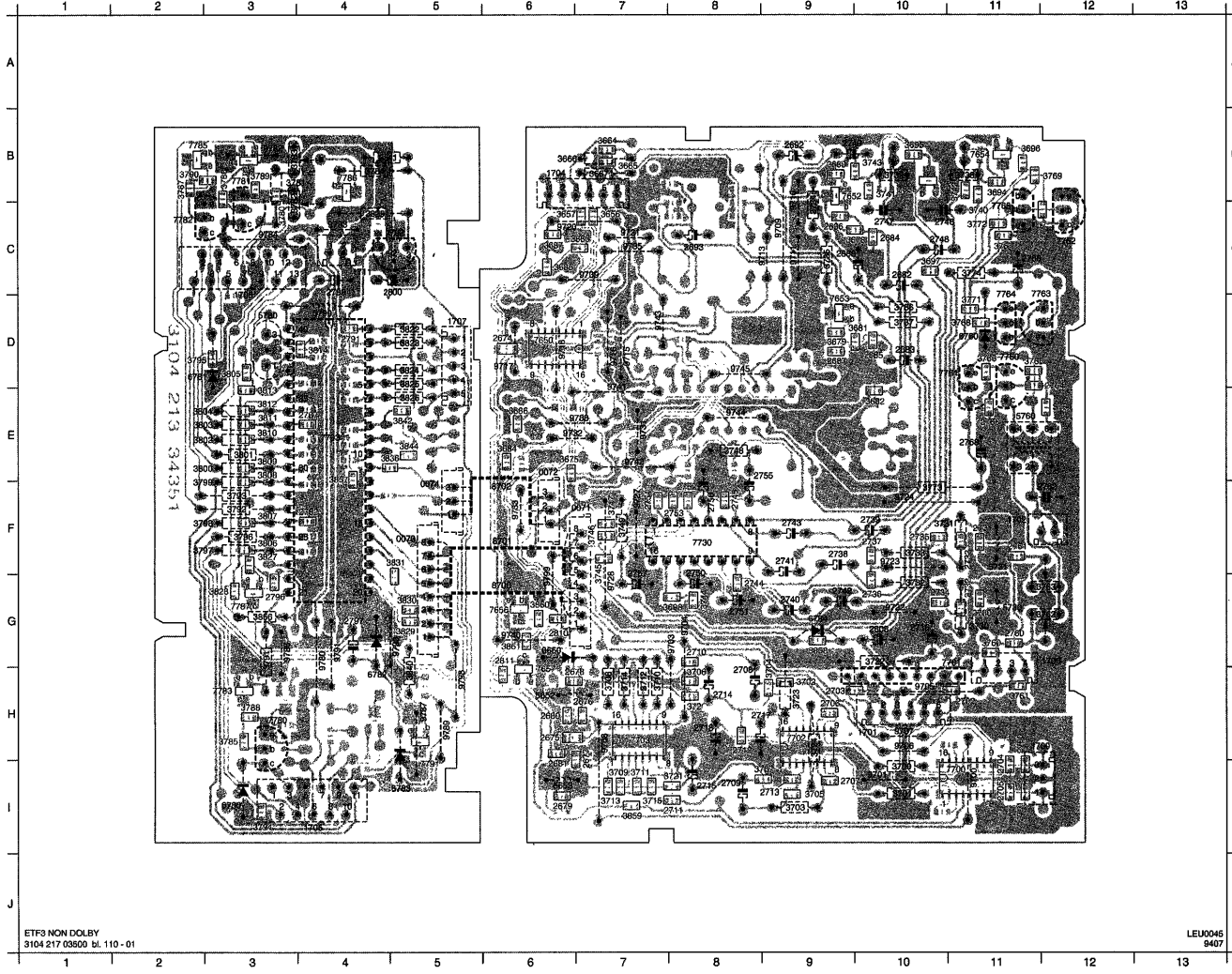
ETF3 DOLBY B (for all versions except /21)

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0072	E6	2658	E8	2686	C9	2714	H8	2745	F8	2782	F4	3659	D7	3695	B10	3716	I7	3744	G6	3774	C11	3799	F2	3826	E3	3864	E6	7852	B9	7783	H3	9710	C9	9735	D8
0073	F5	2659	D8	2687	C9	2715	I8	2746	C10	2787	E4	3660	F7	3696	B11	3720	H8	3745	G7	3780	C3	3800	E2	3827	F3	3865	C7	7853	D9	7784	B3	9711	C9	9737	E9
0074	F5	2660	E7	2688	C9	2716	G10	2747	C10	2791	D4	3661	D7	3697	C10	3721	I7	3746	F7	3781	B3	3801	E3	3828	G3	3866	B6	7854	B11	7785	B2	9712	D9	9740	G6
1700	H11	2661	D8	2690	F6	2717	H8	2748	C10	2796	G3	3662	C8	3698	G7	3722	G10	3747	F7	3782	C4	3802	E2	3829	G5	3867	B7	7855	B10	7786	B4	9715	D7	9780	H4
1701	H10	2668	F9	2692	B9	2718	H8	2749	B9	2797	G4	3663	C7	3699	E8	3723	H8	3748	E9	3783	B4	3803	E2	3830	G5	3868	G5	7856	G6	7787	G3	9716	D7	9782	B3
1702	F11	2669	D9	2693	C8	2720	G11	2750	G8	2798	D4	3664	B7	3700	I10	3734	H8	3749	F7	3784	B4	3804	E2	3831	F4	3869	I6	7857	H6	7791	I5	9717	D8	9783	C4
1703	G12	2672	D9	2700	H11	2721	F11	2751	G8	2800	D4	3665	B7	3701	I10	3735	G11	3760	G11	3795	H3	3805	D3	3832	F4	3870	G11	7700	I10	7792	C4	9718	D8	9784	C3
1704	B6	2673	E9	2701	I11	2732	G11	2752	F8	2808	G10	3666	B6	3702	H9	3731	F10	3761	H11	3796	B3	3806	F3	3833	E4	3871	F11	7701	G10	7793	E4	9719	C6	9786	G3
1705	I4	2674	D6	2702	H11	2733	F11	2753	F7	2810	G6	3667	B7	3703	I9	3732	G10	3762	G11	3797	B2	3807	F3	3837	F2	3872	E11	7702	H9	9700	G6	9720	C6	9787	H5
1706	D3	2675	H6	2703	H9	2734	G10	2754	F7	2811	G6	3673	E8	3704	H9	3733	F10	3763	G11	3798	H3	3808	E3	3839	C4	3873	D3	7703	H7	9701	F6	9721	C7	9788	H5
1707	D5	2676	H6	2704	I11	2735	F10	2755	E8	2812	G6	3674	E9	3705	I9	3734	C9	3764	E12	3799	B3	3809	E3	3840	H3	3874	D4	7704	F8	9702	F6	9722	G10	9790	G5
1711	C4	2677	I7	2705	I11	2736	G10	2756	F8	2813	G6	3675	D6	3706	H8	3735	C9	3765	D11	3799	B2	3810	E3	3841	B4	3875	G6	7705	D11	9703	I11	9723	F10	9791	G4
2650	E7	2676	H6	2706	H9	2737	F10	2757	G7	2814	G6	3676	C9	3707	I8	3736	D10	3766	D11	3791	H3	3811	E3	3842	E5	3876	D11	7706	D10	9704	I10	9724	F10	9792	H6
2651	C7	2679	I6	2707	I9	2738	F9	2760	G11	2815	G6	3679	D9	3708	H7	3737	D10	3767	C11	3792	F3	3812	E3	3844	E5	3878	I5	7707	C12	9705	G6	9727	F7	9799	G6
2652	C8	2680	H6	2708	H8	2739	F10	2761	F11	2816	G6	3680	B9	3709	I7	3738	B11	3768	D11	3793	F3	3813	E3	3845	G5	3879	D2	7708	D11	9706	G8	9728	G7	9799	G6
2653	C7	2681	I6	2709	I8	2740	G8	2762	F11	2817	G6	3681	D9	3710	H7	3739	B10	3769	B12	3794	I3	3814	D4	3846	H4	3881	F4	7709	D11	9707	H10	9729	E7	9799	G6
2654	C8	2682	C10	2710	G8	2741	F9	2764	E12	2818	G6	3682	E10	3711	I7	3740	C11	3770	C12	3795	D2	3822	D5	3858	G9	3882	I5	7710	C11	9708	H10	9731	E7	9799	G6
2655	C7	2683	D10	2711	I7	2742	G9	2765	E11	2819	G6	3683	B8	3712	H7	3741	B10	3771	D11	3796	F3	3823	D5	3859	I7	3883	G9	7711	G8	9709	H10	9732	E6	9799	G6
2656	E7	2684	C10	2712	H8	2743	F9	2766	C11	2820	G6	3684	B7	3713	I7	3742	C11	3772	C11	3797	F2	3824	D5	3860	G6	7850	D6	7781	B3	9708	H7	9733	F6	9799	G6

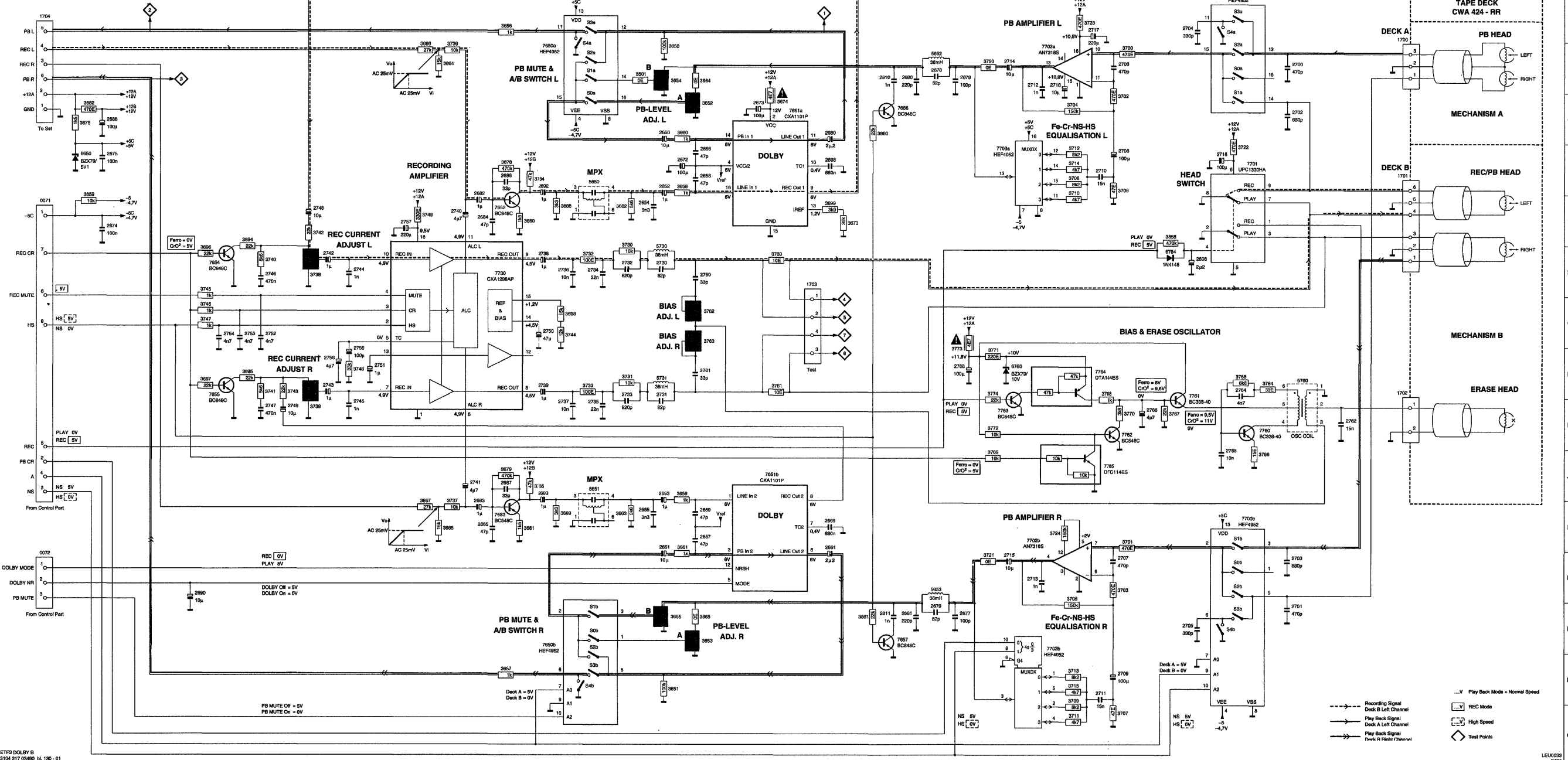


ETF3 NON-DOLBY (For /21 only)

0071	F6	2679	I6	2706	H8	2735	F10	2763	F7	2800	D4	3686	E6	3711	I7	3738	B11	3766	D11	3789	B3	3807	F3	3836	E4	3870	D3	7702	H9	7792	C4	9716	D7	9742	E7
0072	E6	2680	H6	2707	I9	2736	G10	2754	F7	2808	G10	3687	C6	3712	H7	3739	B10	3767	C11	3790	B2	3808	E3	3839	C4	3870	D4	7703	H7	7793	E4	9717	D6	9743	D7
0073	F5	2681	I6	2708	H8	2737	F10	2755	E8	2810	G6	3688	B11	3713	I7	3740	C11	3768	D11	3791	H3	3809	E3	3840	H5	3871	D5	7704	H8	7794	F4	9718	D6	9744	E8
0074	F5	2682	C10	2709	I8	2738	F9	2756	F8	2811	G6	3689	B10	3714	H7	3741	B10	3769	B12	3792	F3	3810	E3	3841	B4	3872	D5	7705	D11	9709	F6	9720	C8	9745	D8
1700	H11	2683	D10	2710	G8	2739	F10	2757	G7	2812	G6	3690	B11	3715	I7	3742	C11	3770	C12	3793	F3	3811	E3	3842	E5	3873	D5	7706	D10	9702	F6	9721	C7	9780	H4
1701	H10	2684	C10	2711	I7	2740	G9	2760	G11	2813	G6	3691	C10	3716	I8	3743	B10	3771	D11	3794	I3	3812	E3	3844	E5	3874	D2	7707	C12	9700	I11	9722	G10	9782	B3
1702	F11	2685	D10	2712	H8	2741	F9	2761	F11	2814	G6	3692	G7	3717	I7	3744	G8	3772	C11	3795	D2	3813	E3	3845	G3	3875	D3	7708	D11	9701	I10	9723	F10	9783	C4
1703	G12	2686	C9	2713	I8	2742	G9	2762	F11	2815	G6	3693	B7	3718	I8	3745	G7	3773	F10	3796	F3	3814	D4	3857	F4	3876	I5	7709	D11	9703	G8	9724	F10	9784	C3
1704	B6	2687	D9	2714	H8	2743	F9	2764	E12	2816	G6	3694	B6	3719	I9	3746	F7	3774	C11	3797	F2	3822	D5	3858	G9	3877	D6	7710	C11	9704	G8	9727	F7	9786	G3
1705	I4	2688	C9	2715	I8	2744	G8	2765	E11	2817	G6	3695	B7	3720	H9	3747	F7	3780	C9	3798	F2	3823	D5	3859	I7	3880	D6	7711	H3	9705	H10	9728	G7	9787	H5
1706	D3	2692	B9	2716	G10	2745	F8	2766	C11	2818	G6	3696	C9	3721	H9	3748	E8	3781	B3	3799	F2	3824	D5	3860	G6	3881	G6	7782	B9	9706	H10	9731	E7	9789	H5
1707	D5	2693	C8	2717	H8	2746	C10	2768	E11	2819	G6	3697	C9	3722	H9	3749	F7	3782	C4	3800	E2	3825	D5	3861	G6	3882	D9	7783	C2	9707	H10	9732	E8	9790	G5
1711	C4	2700	H11	2718	H8	2747	G10	2762	F4	2820	G6	3699	D9	3725	I9	3752	G10	3783	G11	3783	B4	3801	E3	3862	E5	3883	C8	7854	B11	9708	H3	9733	F6	9791	G4
2674	D6	2701	I11	2720	G11	2748	C10	2767	E4	2821	G6	3700	H8	3726	H9	3753	F10	3784	B4	3802	E2	3827	F3	3863	E5	3884	C8	7855	B10	9709	C9	9735	C7	9796	H5
2675	H6	2702	H11	2721	F11	2749	B9	2791	D4	2822	G6	3701	H8	3727	E4	3864	B9	3708	H6	3733	F10	3785	H3	3803	E2	3828	G3	7856	G6	7785	B2	9710	C8	9738	E8
2676	H6	2703	H8	2722	G11	2750	G8	2796	G3	2823	E10	3702	H7	3735	C9	3763	G11	3786	B3	3804	E2	3829	G5	3885	G6	3886	G6	7786	B4	9711	C8	9739	C7	9799	G6
2677	I7	2704	I11	2723	F11	2751	G6	2797	G4	2824	E6	3703	H7	3736	D10	3764	E12	3787	B2	3805	D3	3830	G6	3887	G6	3888	G6	7787	B3	9712	C9	9740	G6	9799	G6
2678	H6	2705	I11	2724	G10	2752	F9	2799	D4	2825	C6	3704	H7	3737	D10	3765	D11	3788	H3	3806	F3	3831	F4	3889	E11	7701	G10	7791	I5	9715	D7	9741	E7		



DOLBY B ANALOG PART (For all versions except /21)



0071	E1	3681	K10
0072	L1	3682	C2
1700	A23	3689	E11
1701	D38	3689	K11
1702	H88	3694	E5
1703	F16	3695	H5
1704	A1	3696	F4
2650	C15	3697	H4
2651	K13	3698	O11
2652	D13	3699	E16
2653	J15	3700	R22
2654	E13	3701	K22
2655	K13	3702	C22
2656	D14	3703	L22
2657	K14	3704	C21
2658	D14	3705	L21
2659	K14	3706	D22
2660	C15	3707	O22
2661	K16	3708	D21
2662	D16	3709	N21
2663	K16	3710	O21
2664	D13	3711	O21
2665	E2	3712	N21
2666	D2	3713	N21
2667	D2	3714	D21
2668	B10	3715	N21
2669	M19	3720	E19
2670	M18	3722	D25
2671	S18	3723	A21
2672	K9	3724	F12
2673	E10	3732	F12
2674	K10	3733	H12
2675	D10	3734	D11
2676	J10	3735	J11
2677	C11	3736	H9
2678	L4	3737	H9
2679	D11	3738	F8
2680	C2	3739	H5
2681	S28	3740	F5
2682	M28	3741	H5
2683	C28	3742	E8
2684	L28	3743	H8
2685	A30	3744	O11
2686	S22	3745	G4
2687	L22	3747	O4
2688	D22	3748	H7
2689	N22	3749	H7
2690	D22	3750	F16
2691	N22	3751	H15
2692	R60	3752	G14
2693	L60	3753	G14
2694	B20	3754	H24
2695	L20	3755	H24
2696	D24	3756	H25
2697	J24	3757	H25
2698	F12	3758	H19
2699	F12	3759	H19
2700	F12	3760	H12
2701	M23	3761	H2
2702	C28	3762	H5
2703	L28	3763	H8
2704	A30	3764	O11
2705	M23	3765	F4
2706	S22	3766	G4
2707	L22	3767	O4
2708	D22	3768	H7
2709	N22	3769	H7
2710	D22	3770	F16
2711	N22	3771	H15
2712	R60	3772	G14
2713	L60	3773	G14
2714	B20	3774	H24
2715	L20	3775	H24
2716	D24	3776	H25
2717	J24	3777	H25
2718	F12	3778	H19
2719	F12	3779	H19
2720	F12	3780	H12
2721	M23	3781	H2
2722	C28	3782	H5
2723	L28	3783	H8
2724	A30	3784	O11
2725	M23	3785	F4
2726	S22	3786	G4
2727	L22	3787	O4
2728	D22	3788	H7
2729	N22	3789	H7
2730	D22	3790	F16
2731	N22	3791	H15
2732	R60	3792	G14
2733	L60	3793	G14
2734	B20	3794	H24
2735	L20	3795	H24
2736	D24	3796	H25
2737	J24	3797	H25
2738	F12	3798	H19
2739	F12	3799	H19
2740	F12	3800	H12
2741	M23	3801	H2
2742	C28	3802	H5
2743	L28	3803	H8
2744	A30	3804	O11
2745	M23	3805	F4
2746	S22	3806	G4
2747	L22	3807	O4
2748	D22	3808	H7
2749	N22	3809	H7
2750	D22	3810	F16
2751	N22	3811	H15
2752	R60	3812	G14
2753	L60	3813	G14
2754	B20	3814	H24
2755	L20	3815	H24
2756	D24	3816	H25
2757	J24	3817	H25
2758	F12	3818	H19
2759	F12	3819	H19
2760	F12	3820	H12
2761	M23	3821	H2
2762	C28	3822	H5
2763	L28	3823	H8
2764	A30	3824	O11
2765	M23	3825	F4
2766	S22	3826	G4
2767	L22	3827	O4
2768	D22	3828	H7
2769	N22	3829	H7
2770	D22	3830	F16
2771	N22	3831	H15
2772	R60	3832	G14
2773	L60	3833	G14
2774	B20	3834	H24
2775	L20	3835	H24
2776	D24	3836	H25
2777	J24	3837	H25
2778	F12	3838	H19
2779	F12	3839	H19
2780	F12	3840	H12
2781	M23	3841	H2
2782	C28	3842	H5
2783	L28	3843	H8
2784	A30	3844	O11
2785	M23	3845	F4
2786	S22	3846	G4
2787	L22	3847	O4
2788	D22	3848	H7
2789	N22	3849	H7
2790	D22	3850	F16
2791	N22	3851	H15
2792	R60	3852	G14
2793	L60	3853	G14
2794	B20	3854	H24
2795	L20	3855	H24
2796	D24	3856	H25
2797	J24	3857	H25
2798	F12	3858	H19
2799	F12	3859	H19
2800	F12	3860	H12

ETPS DOLBY B
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EXPLANATION OF ABBREVIATIONS

A	Deck A or B
CRO2	Chrome
Dolby NR	Dolby Noise Reduction
Dolby Mode	Dolby Mode (Rec or Play)
DSA STR	DSA Strobe
DSA DA	DSA Data
DSA ACK	DSA Acknowledge
EOT A	End of Tape A
EOT B	End of Tape B
FE	Ferro
HS	High Speed
MODE A	Slide Deck A Up / Down
MODE B	Slide Deck B Up / Down
NC	Not Connect
NS	Normal Speed
PB CR	Playback Chrome
PB mute	Playback mute
PB Lever ADJ L	Playback Lever Adjustment Left
PB CR	Playback Chrome
PB mute	Playback mute
PB Lever ADJ R	Playback Lever Adjustment Right
PBL	Playback Left
PBR	Playback Right
Rec Mute	Recording Mute
Rec R	Recording Right
Rec L	Recording Left
Rec CR	Recording Chrome
REC RVS	Recording Reverse
REC	Recording
REC FWD	Recording Forward
SOL A	Solenoid A
SOL B	Solenoid B
VCC B	VCC Motor B

SERVICE SOLUTION for RIF INTERFERENCE

Re-adjust oscillator coil 5760 (half a turn)
so that the interference is gone.

ELECTRICAL MEASUREMENTS AND ADJUSTMENTS

Adjustment	Cassette	Recorder in position	Measure on	Read on	Adjust with	Value	Remarks
Deck A High Speed HS	SBC419 3150Hz	High Speed dubbing	Test point TP 1	Counter	3782	5,4kHz ±0,5%	see #1
Deck A Norm Speed NS	SBC419 3150Hz	Play in forward direction	Test point TP 2	Counter	3783	3,15 kHz ±0,5%	
Wow and Flutter	SBC419 3150Hz	Play in forward direction	Test point TP 2	Wow and Flutter meter	check	< 0,4%	
Deck A Playback DolbyLevel	Dolby 200 N Wb/m	Play in forward direction	TP 2 left ch TP 3 right ch	AC mV meter	3652 3653	548mV ±0,5dB	see #2
Deck B Playback DolbyLevel	Dolby 200 N Wb/m	Play in forward direction	TP 2 left ch TP 3 right ch	AC mV meter	3654 3655	548mV ±0,5dB	
Deck A Azimuth	SBC 419 12kHz	Play in forward direction or Play in reverse direction	TP 2 left ch or TP 3 right ch	AC mV meter	Left screw Norm Dir (>) Right screw Rev Dir (<)	max output left=right	
Deck B Azimuth	SBC 419 12kHz	Play in forward direction or Play in reverse direction	TP 2 left ch or TP 3 right ch	AC mV meter	Left screw Norm Dir (>) Right screw Rev Dir (<)	max output left=right	
Bias current Chrome	-	Record mode and Chrome mode	TP 4 5 L ch TP 6 7 R ch	AC mV meter	3762 3763	7 mV	see #3
Bias current Ferro	-	Record mode and Ferro mode	TP 4 5 L ch TP 6 7 R ch	AC mV meter	check check	4,4mV ±0,5dB	
Recording current	Dolby 200N Wb/m (deck A) and Chrome cass (deck B) Dolby 200N Wb/m (deck A) and Ferro cass (deck B)	Record mode and Chrome mode Record mode and Ferro mode	TP 4 5 L ch TP 6 7 R ch TP 4 5 L ch TP 6 7 R ch	AC mV meter	3738 3739 check check	0,68mV Rec/PB Level within ±1 dB of 548 mV 0,45mV Rec/PB Level within ±1 dB of 548 mV	Filter out osc with audio filter see also #4
Multiplex Filter		Record mode Inject 19kHz at line in	TP 2 left ch TP 3 right ch	AC mV meter	5650 5651	Min output Typ Attenuation >40dB Min Attenuation >30dB	
Oscillator Frequency		Record mode	TP 4 5 L ch	Counter	5760	88kHz ±6kHz	

#1 Motor must be aligned for HS before NS H.S ratio = 1,7

#2 Dolby level to be tested in reverse direction within same tolerance

#3 Bias current must be aligned for Chrome position

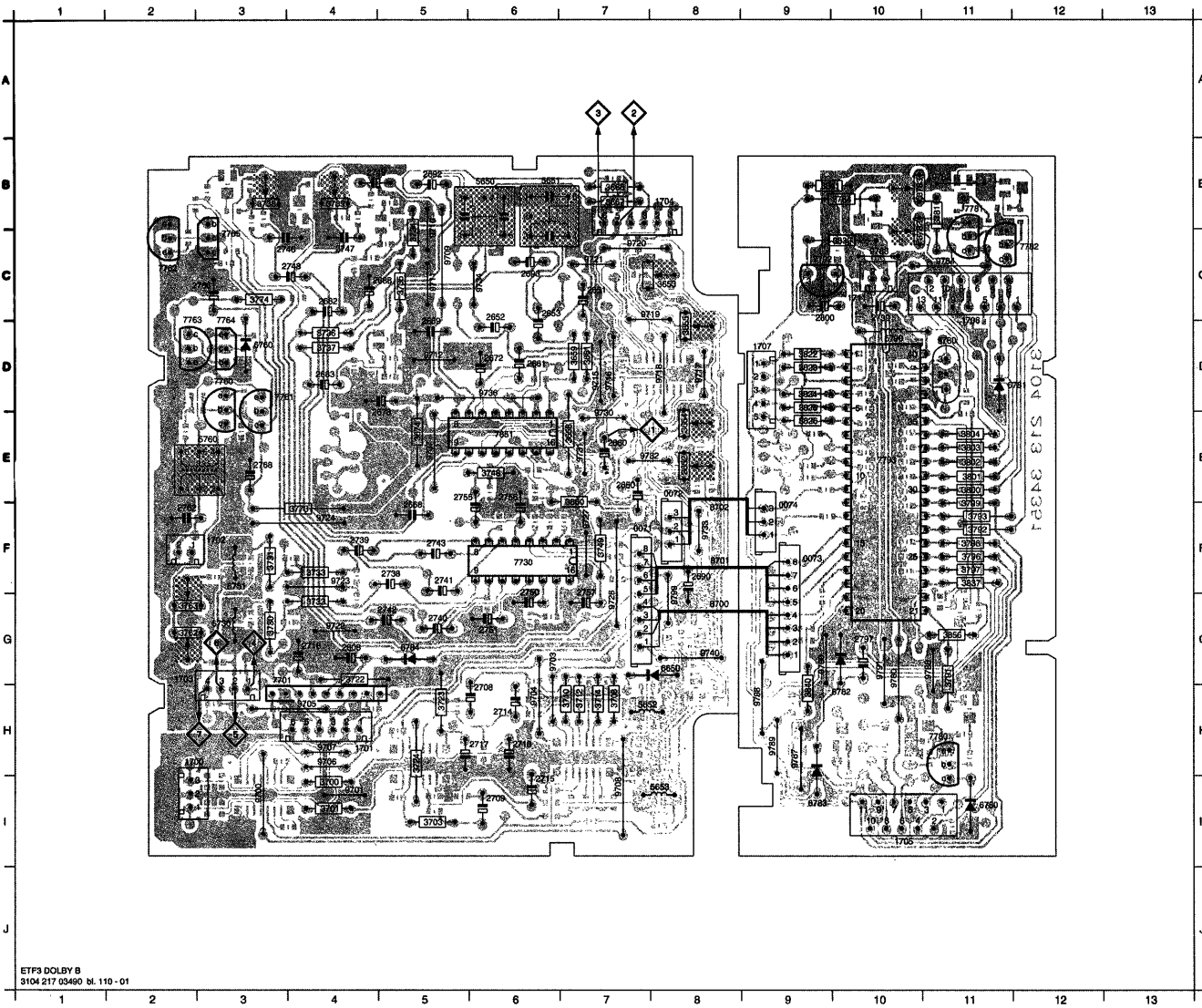
#4 Recording current should be aligned using an iterative method Perform a dubbing using test tape Dolby 200 N Wb/m as source, and Ferro tape or Chrome tape as target blank tapes Check that the output t p gives 548 mV during dubbing Then playback the recorded tape The record/playback level should also be 548 mV ± 0 5 dB If not, adjust 3738 (L) and 3739 (R) accordingly

ETF3 DOLBY B - COMPONENTS

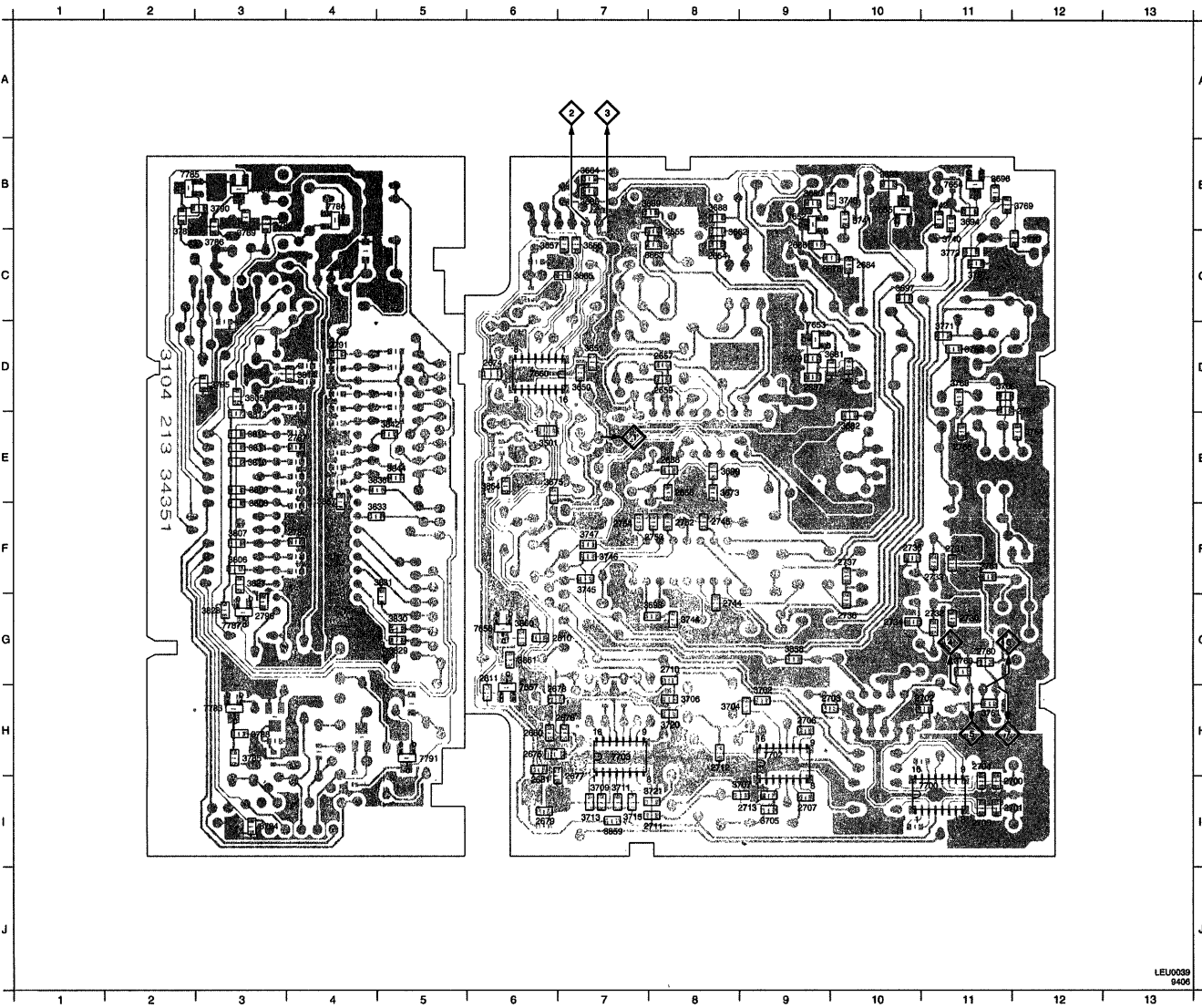
ETF3 DOLBY B - CHIPS

0071	F7	1707	D9	2673	E4	2716	G4	2748	C3	2790	D10	3686	B7	3723	H5	3730	B4	3791	H11	3804	E11	5550	B6	6780	H11	7763	D2	9700	J3	9712	D5	9727	F7	9782	B11
0072	E8	1711	C10	2682	C4	2717	H6	2749	B4	2800	D9	3667	B7	3724	H5	3748	E6	3792	F11	3822	D9	5551	B6	6781	D11	7764	D3	9701	I4	9715	D7	9728	G7	9783	C10
0073	F9	2650	E7	2683	D4	2718	H6	2750	G6	2808	G4	3674	E5	3730	G3	3749	F7	3793	F11	3823	D9	5552	H7	6782	H9	7765	C3	9703	G6	9716	D7	9730	E7	9784	C11
0074	F9	2651	C7	2684	C4	2738	F5	2751	G6	3652	E8	3700	H4	3731	F3	3762	G2	3796	F11	3824	D9	5553	I7	6783	H9	7766	H11	9704	H6	9717	D8	9731	E7	9785	G11
1700	H2	2652	C8	2690	F8	2739	F4	2755	E5	3653	C8	3701	I4	3732	G4	3763	G2	3797	F11	3825	D9	5700	G3	6784	G5	7767	B11	9705	H4	9718	D8	9732	E7	9786	H9
1701	H4	2653	C6	2692	B5	2740	G5	2756	E6	3654	E8	3703	I5	3733	F4	3773	F4	3798	F11	3826	E9	5731	F3	6785	E6	7768	C12	9706	H4	9719	C7	9733	F8	9789	H9
1702	F3	2660	E7	2693	C6	2741	F5	2757	G7	3655	D8	3708	H7	3734	C5	3774	C3	3799	F11	3827	F11	5760	E3	7701	G3	7769	C9	9707	H4	9720	C7	9734	C6	9790	G9
1703	G2	2661	D6	2706	H6	2742	G4	2762	F2	3656	E7	3710	H7	3735	C5	3781	B11	3800	E11	3839	C10	5760	D11	7730	F6	7793	E10	9708	I7	9721	C7	9736	D6	9791	G10
1704	D8	2665	F5	2709	I6	2743	F5	2766	C2	3659	D7	3712	H7	3736	D4	3782	C11	3801	E11	3840	H9	5760	D10	7760	D3	6790	G8	9709	C5	9722	G4	9737	E5	9798	H9
1706	H0	2666	D5	2714	H6	2746	C3	2768	C3	3660	F7	3714	H7	3737	D4	3783	B11	3802	E11	3841	D9	6550	G6	7761	D3	6791	D3	9710	C5	9723	F4	9740	G8	9799	G8
1706	D11	2672	D6	2715	I6	2747	C4	2797	G10	3661	D7	3722	G4	3738	B3	3784	B10	3803	E11	3858	G11	6760	D3	7762	C2	6792	F6	9711	C5	9724	F4	9790	H10		

2654	C8	2677	I7	2700	I11	2711	I7	2736	G10	2764	E12	3650	D7	3675	E6	3695	B10	3707	I8	3742	B11'	3765	D11	3785	H3	3806	F3	3827	F3	3857	F4	7653	D9	7784	B3
2655	C8	2678	H8	2701	H11	2712	H8	2737	F10	2765	E11	3651	D7	3678	C9	3696	B11	3709	I7	3743	B10	3768	D11	3786	C3	3807	F3	3828	G3	3858	G9	7654	B11	7785	B2
2656	E8	2679	I9	2702	H10	2713	I8	2738	G8	2766	F4	3656	C7	3679	D9	3697	C10	3711	I7	3744	G8	3767	C11	3787	C2	3808	F3	3829	G5	3859	I7	7655	B10	7786	B4
2657	D8	2680	H6	2703	H8	2730	G11	2745	F8	2767	E4	3657	C6	3680	B9	3698	G7	3713	I7	3745	F7	3768	D11	3788	H3	3809	E3	3830	G5	3860	G6	7656	G6	7787	G3
2658	E8	2681	I6	2704	H11	2731	F11	2752	F8	2791	D4	3662	C8	3681	D9	3699	E8	3715	I7	3746	F7	3769	B12	3789	C3	3810	E3	3831	F4	3861	G6	7657	H6	7791	H5
2659	D8	2684	C10	2705	I11	2732	G11	2753	F7	2796	G3	3663	C7	3682	E10	3702	H8	3720	H8	3747	F7	3770	C12	3790	B3	3811	E3	3833	F4	3864	E8	7700	H0		
2674	D8	2685	D10	2706	H8	2733	F11	2754	F7	2810	G6	3664	B7	3683	G8	3704	H8	3721	I7	3760	G11	3771	D11	3794	I3	3812	E3	3836	E4	3865	C7	7702	H9		
2675	H6	2686	C9	2707	I9	2734	G10	2760	G11	2811	G6	3665	B7	3684	B7	3705	I9	3740	C11	3761	H11	3772	C11	3795	D3	3813	E3	3842	E5	7650	D6	7703	H7		
2676	H8	2687	D9	2710	G8	2735	F10	2761	F11	3501	E6	3673	E8	3694	B11	3706	H8	3741	B10	3764	E12	3780	B3	3805	D3	3814	D4	3844	E5	7652	B9	7783	H3		

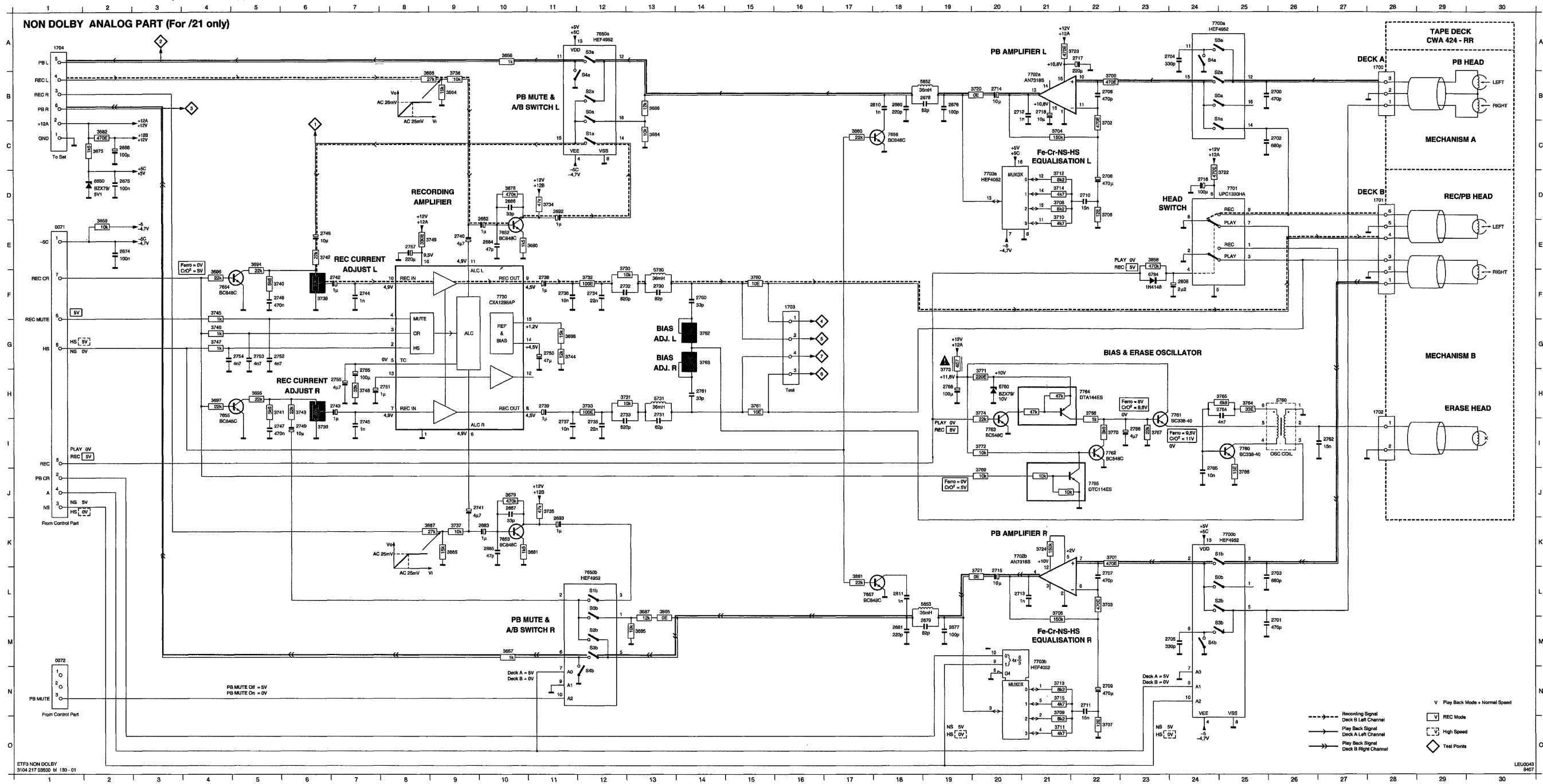


ETF3 DOLBY B
3104 217 03490 bl. 110 - 01



LEU0289
9406

NON DOLBY ANALOG PART (For /21 only)



0071	E1	3700	F12
0072	M1	3731	H12
1700	A28	3736	F12
1701	C28	3732	H12
1702	H28	3734	O11
1703	F16	3736	J11
1704	A1	3738	S6
2674	E2	3737	K9
2675	D2	3738	F8
2676	B19	3738	S6
2677	M19	3740	F5
2678	B18	3741	H6
2679	M18	3742	S6
2680	B18	3743	H6
2681	M18	3744	O11
2682	E3	3745	F4
2683	K9	3746	G4
2684	E10	3747	G4
2685	I10	3748	H7
2686	D10	3749	E8
2687	J10	3750	F15
2688	C2	3751	H15
2689	D11	3752	G14
2690	K11	3753	G14
2700	S28	3754	H25
2701	M28	3755	H24
2702	C26	3756	J25
2703	L28	3757	E3
2704	A23	3758	H22
2705	M23	3759	J20
2706	S22	3770	S22
2707	L22	3771	H20
2708	D22	3772	S20
2709	H22	3773	H18
2710	D22	3774	H20
2711	H22	3658	E23
2712	S20	3659	E2
2713	L20	3860	C17
2714	B20	3901	L17
2715	L20	3902	L13
2716	D24	5652	B18
2717	A22	5653	L18
2718	S21	5720	F13
2720	F13	5731	H13
2721	H13	5760	H28
2722	F12	5656	O11
2723	H12	5760	H20
2724	F12	5764	F23
2725	H12	7858	B11
2726	F11	7858	M11
2727	F11	7855	E10
2728	F11	7853	K10
2729	H11	7854	F4
2740	E9	7855	H4
2741	J8	7856	C18
2742	F6	7857	L17
2743	H8	7700a	A24
2744	F7	7700b	K25
2745	I7	7701	D25
2746	F5	7702a	B21
2747	S	7702b	K20
2748	E6	7703a	D20
2749	B	7703b	M21
2750	G11	7720	F10
2751	H8	7760	I25
2752	G5	7761	H24
2753	G5	7762	S22
2754	G5	7763	S20
2755	H7	7764	H22
2756	H7	7766	J22
2757	E8	50a	B24
2758	F14	50b	L24
2759	H14	51a	C24
2762	E7	51b	K24
2764	H24	52a	B24
2765	J24	52b	L24
2766	I23	53a	A24
2768	H19	53b	M24
2809	F24	54a	A24
2810	B17	54b	M24
2811	L16		
2855	A10		
3654	B9		
3655	K9		
3656	B8		
3657	H8		
3675	C2		
3676	D10		
3679	J10		
3690	E11		
3681	K11		
3682	C2		
3684	C13		
3685	M13		
3686	B18		
3687	L19		
3694	E5		
3695	H5		
3696	F4		
3697	H4		
3698	G11		
3700	B22		
3701	K22		
3702	C22		
3703	L22		
3704	C21		
3705	L21		
3706	D22		
3707	O22		
3708	D21		
3709	N21		
3710	D21		
3711	O21		
3712	D21		
3713	N21		
3714	O21		
3715	N21		
3720	B19		
3721	L19		
3722	I25		
3723	A21		
3724	K21		

EXPLANATION OF ABBREVIATIONS

A	Deck A or B
CRO2	Chrome
Dolby NR	Dolby Noise Reduction
Dolby Mode	Dolby Mode (Rec or Play)
DSA STR	DSA Strobe
DSA DA	DSA Data
DSA ACK	DSA Acknowledge
EOT A	End of Tape A
EOT B	End of Tape B
FE	Ferro
HS	High Speed
MODE A	Slide Deck A Up / Down
MODE B	Slide Deck B Up / Down
NC	Not Connect
NS	Normal Speed
PB CR	Playback Chrome
PB mute	Playback mute
PB Lever ADJ L	Playback Lever Adjustment Left
PB CR	Playback Chrome
PB mute	Playback mute
PB Lever ADJ R	Playback Lever Adjustment Right
PBL	Playback Left
PBR	Playback Right
Rec Mute	Recording Mute
Rec R	Recording Right
Rec L	Recording Left
Rec CR	Recording Chrome
REC RVS	Recording Reverse
REC	Recording
REC FWD	Recording Forward
SOL A	Solenoid A
SOL B	Solenoid B
VCC B	VCC Motor B

SERVICE SOLUTION for RIF INTERFERENCE

Re-adjust oscillator coil 5760 (half a turn)
so that the interference is gone.

ELECTRICAL MEASUREMENTS AND ADJUSTMENTS

Adjustment	Cassette	Recorder in position	Measure on	Read on	Adjust with	Value	Remarks
Deck A High Speed HS	SBC419 3150Hz	High Speed dubbing	Test point TP 1	Counter	3782	5,4kHz ±0,5%	see #1
Deck A Norm Speed NS	SBC419 3150Hz	Play in forward direction	Test point TP 2	Counter	3783	3,15 kHz ±0,5%	
Wow and Flutter	SBC419 3150Hz	Play in forward direction	Test point TP 2	Wow and Flutter meter	check	< 0,4%	
Deck A Azimuth	SBC 419 12kHz	Play in forward direction or Play in reverse direction	TP 2 left ch or TP 3 right ch	AC mV meter	Left screw Norm Dir (>) Right screw Rev Dir (<)	max output left=right	
Deck B Azimuth	SBC 419 12kHz	Play in forward direction or Play in reverse direction	TP 2 left ch or TP 3 right ch	AC mV meter	Left screw Norm.Dir.(>) Right screw Rev.Dir.(<)	max. output left=right	
Bias current Chrome	-	Record mode and Chrome mode	TP 4 5 L.ch TP 6 7 R.ch	AC mV meter	3762 3763	7 mV	see #2
Bias current Ferro	-	Record mode and Ferro mode	TP 4 5 L ch TP 6 7 R ch	AC mV meter	check check	4,4mV ±0,5dB	
Recording current	Dolby 200N Wb/m (deck A) and Chrome.cass (deck B) Dolby 200N Wb/m (deck A) and Ferro.cass (deck B)	Record mode and Chrome mode Record mode and Ferro mode	TP 4 5 L ch TP 6 7 R ch TP 4 5 L ch TP 6 7 R ch	AC mV meter	3738 3739 check check	0,68mV Rec/PB Level within ±1 dB of 548 mV 0,45mV Rec/PB Level within ±1 dB of 548 mV	Filter out osc with audio filter see also #3
Oscillator Frequency		Record mode	TP 4 5 L.ch	Counter	5760	88kHz ±6kHz	

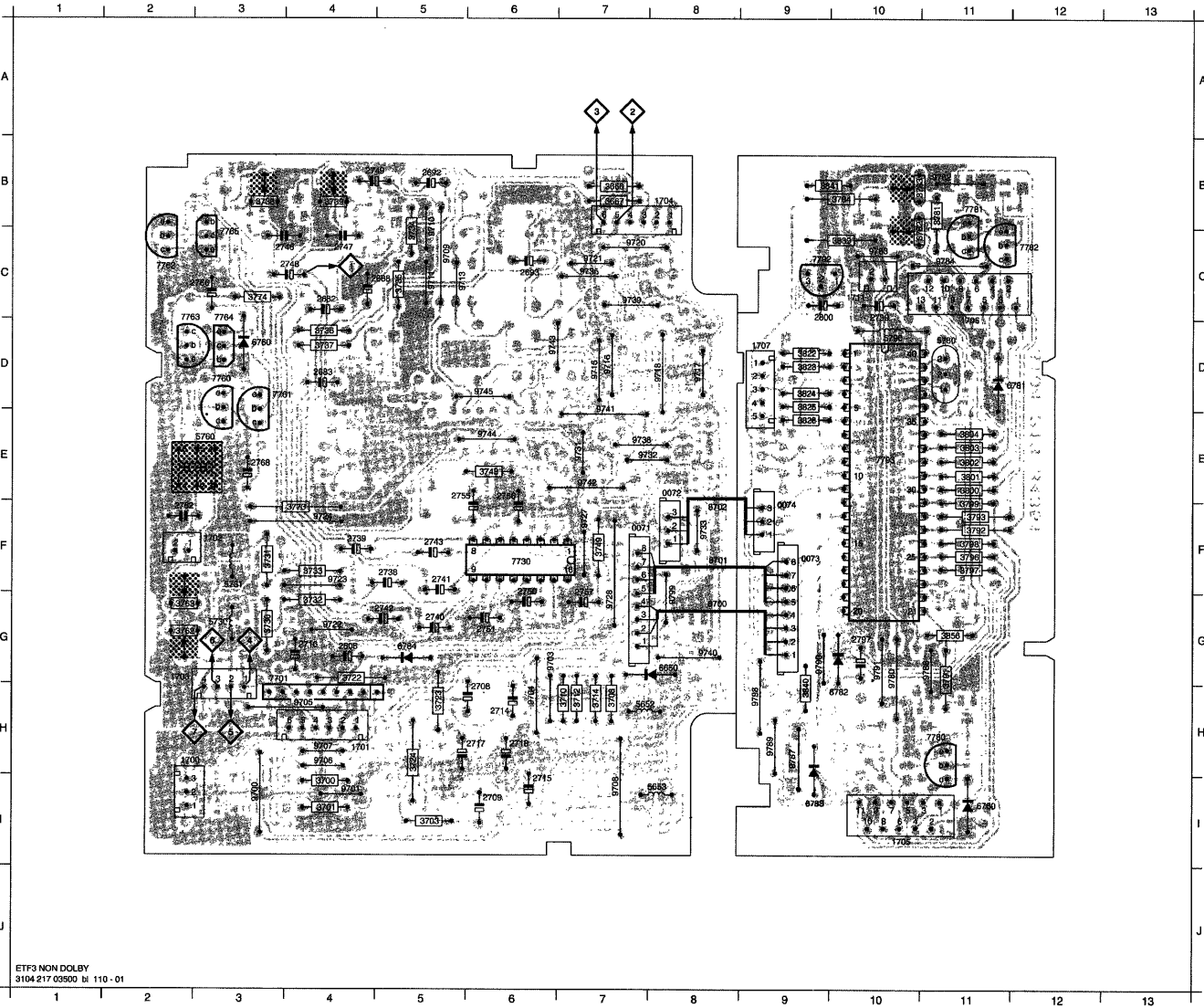
#1 Motor must be aligned for HS before NS. H.S. ratio = 1,7

#2 Bias current must be aligned for Chrome position.

#3 Recording current should be aligned using an iterative method. Perform a dubbing using test tape Dolby 200 N. Wb/m as source, and Ferro tape or Chrome tape as target blank tapes. Check that the output t.p. gives 548 mV during dubbing. Then playback the recorded tape. The record/playback level should also be 548 mV ± 0.5 dB. If not, adjust 3738 (L) and 3739 (R) accordingly.

ETF3 NON-DOLBY - COMPONENTS

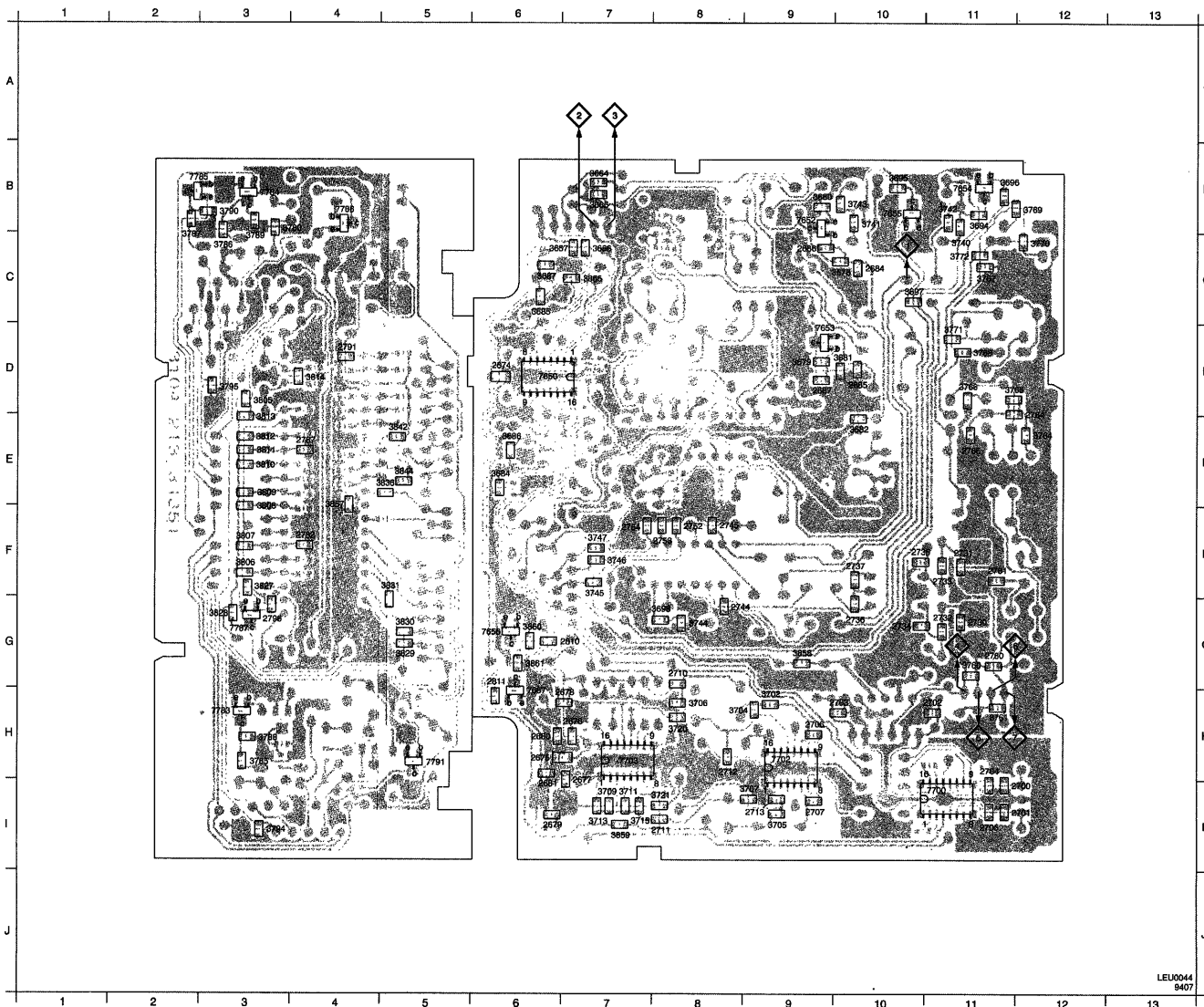
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0072	E8	1707	D9	2715	I6	2746	C3	2766	C2	3703	I5	3732	G4	3762	G2	3793	F11	3822	D9	5730	G3	6783	I9	7780	H11	8703	G8	9715	D7	9728	G7	9743	D6	9790	G9
0073	F9	1711	C10	2716	G4	2747	C4	2768	E3	3708	H7	3733	F4	3763	G2	3794	F11	3823	D9	5731	F3	6784	G5	7781	B11	8704	H6	9716	D7	9731	E7	9744	E8	9791	G10
0074	F9	2682	C4	2717	H8	2748	C3	2767	G10	3710	H7	3734	C5	3764	F4	3795	F11	3824	D9	5732	F3	6785	G5	7782	C12	8705	H4	9717	D8	9732	E7	9745	D6	9792	H9
1700	H2	2683	D4	2718	H6	2749	B4	2769	D10	3712	H7	3735	C5	3774	C3	3796	F11	3825	D9	5733	G3	6786	C9	7783	F6	8706	H4	9718	D8	9733	F8	9746	D6	9793	G8
1701	H4	2688	C4	2738	F5	2750	G6	2800	D9	3714	H7	3736	D4	3781	B11	3799	F11	3826	E9	5780	D11	7730	F6	7792	C9	8707	H4	9720	C7	9735	C7	9782	B11		
1702	F3	2692	B5	2739	F4	2751	G6	2808	G4	3722	G4	3737	D4	3782	C11	3800	E11	3838	C10	5790	D10	7760	D3	7793	E10	8707	H4	9720	C7	9735	C7	9782	B11		
1703	G2	2693	C8	2740	G5	2755	E5	2806	B7	3723	H5	3738	B3	3783	B11	3801	E11	3840	H9	6550	G8	7761	D3	7793	G8	8708	I7	9721	C7	9736	E7	9783	C10		
1704	B8	2708	H6	2741	F5	2756	E6	2807	B7	3724	H5	3739	B4	3784	B10	3802	E11	3841	B9	6760	D3	7762	C2	7794	F8	8709	C5	9722	G4	9739	C7	9784	C11		
1705	I10	2709	I8	2742	G4	2757	G7	2700	I4	3730	G3	3748	E6	3761	H11	3803	E11	3856	G11	6760	I11	7763	D2	8702	F8	8710	C5	9723	F4	9740	G8	9786	G11		



ETF3 NON DOLBY
3104.217.03500 BI 110-01

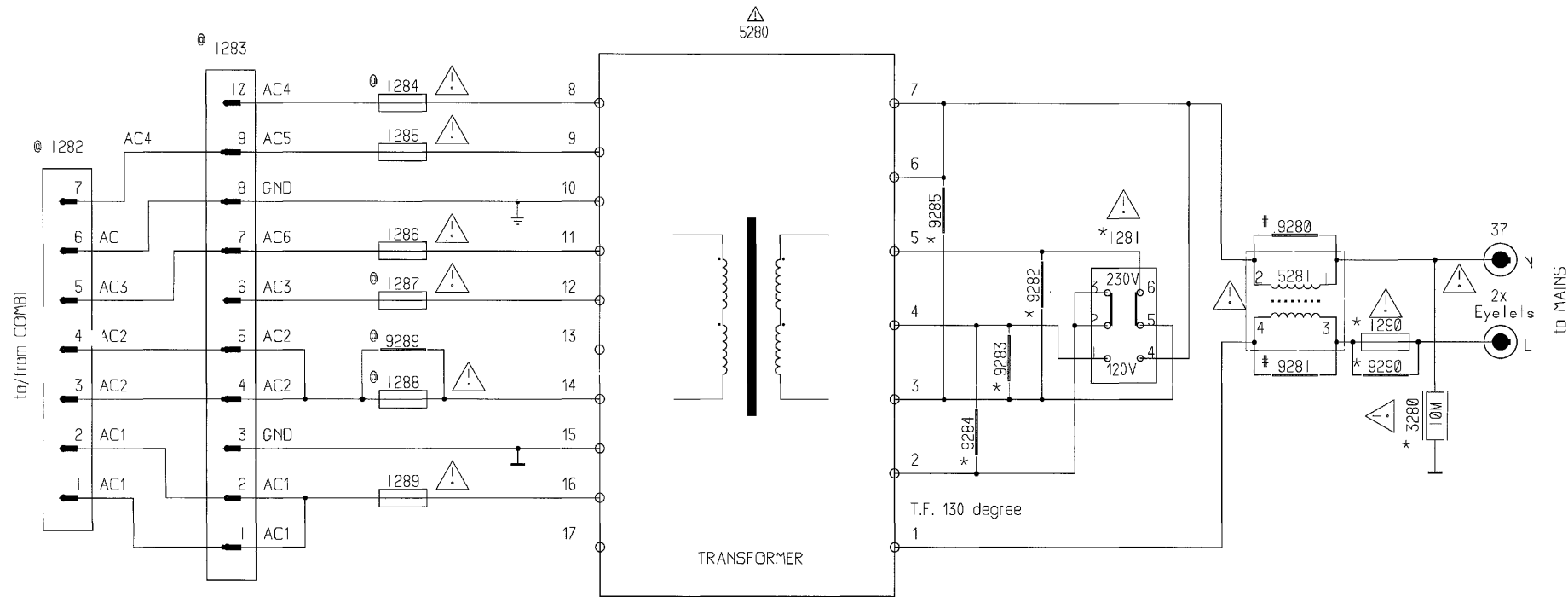
ETF3 NON-DOLBY - CHIPS

2674	D6	2684	C10	2704	H11	2730	G11	2744	G8	2785	E11	3657	C6	3684	E8	3696	G7	3713	I7	3744	G8	3766	D11	3785	H3	3805	D3	3813	E3	3842	E5	7650	D6	7702	H9
2675	H6	2685	D10	2705	I11	2731	F11	2745	F8	2782	F4	3684	B7	3685	C6	3702	H9	3715	I7	3745	F7	3767	C11	3786	C3	3806	F9	3814	D4	3844	E5	7652	D9	7703	H7
2676	H7	2686	C9	2706	H9	2732	G11	2752	F8	2787	E4	3685	B7	3686	E6	3704	H8	3720	H8	3746	F7	3768	D11	3787	C2	3807	F3	3827	F3	3857	F4	7653	D8	7789	H3
2677	I7	2687	D9	2707	I9	2733	F11	2753	F8	2791	D4	3678	C9	3687	C6	3705	I9	3721	I7	3747	F7	3769	B12	3788	H3	3808	F3	3828	G3	3858	G8	7654	B11	7784	B3
2678	H8	2700	I11	2710	G8	2734	G10	2754	F7	2796	G3	3679	D9	3684	B11	3706	H8	3740	C11	3760	G11	3770	C12	3789	C3	3809	E3	3829	G5	3859	I7	7655	B10	7785	B2
2679	I8	2701	I11	2711	I7	2735	F10	2760	G11	2810	G6	3680	B6	3685	B10	3707	I8	3741	B10	3761	H11	3771	D11	3790	B3	3810	E3	3830	G5	3860	G6	7656	G6	7786	B4
2680	H9	2702	H10	2712	H8	2736	G10	2761	F11	2811	G6	3681	D9	3696	B11	3709	I7	3742	B11	3764	E12	3772	C11	3794	I3	3811	E3	3831	F5	3861	G6	7657	H8	7787	G3
2681	I6	2703	H9	2713	I9	2737	F10	2764	E12	2856	C7	3682	E10	3697	C10	3711	I7	3743	B10	3765	D11	3780	E3	3795	D3	3812	E3	3836	E4	3866	C7	7700	I11	7791	H5



LEU0044
8407

TRAF0 CIRCUIT



NOT IN USE (FOR PROVISION ONLY)

Note for items marked @

ITEM	MODEL	FW26	FW46
1282		Use	Not use
1283		Not use	Use
1284		Not use	Use
1287		Not use	Use
1288		Not use	Use
9289		Use	Not use
9282		Not use	UseX
9283		Not use	UseX

NOTE FOR ITEMS MARKED *

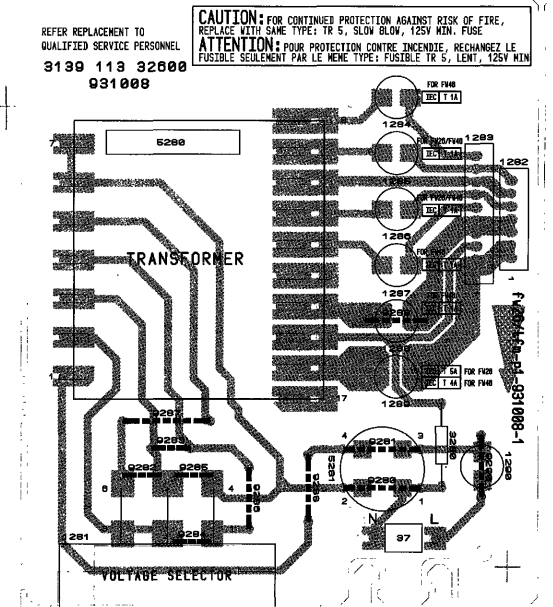
VOLTAGE ITEM	VOLTAGE				
	220-230V	110-127/ 220-240V	230-240V	120V	100V
1281	Not use	Use	Not use	Not use	Not use
9282	Use@	Not use	Not use	Not use	Not use
9283	Not use	Not use	Use@	Not use	Not use
9284	Not use	Not use	Not use	Use	Not Use
9285	Not use	Not use	Not use	Use	Not Use
3280	Not use	Not use	Not use	Use	Not Use
1290	Not use	Not use	Not use	Use	Not Use
9290	Use	Use	Use	Not Use	Use

Remark

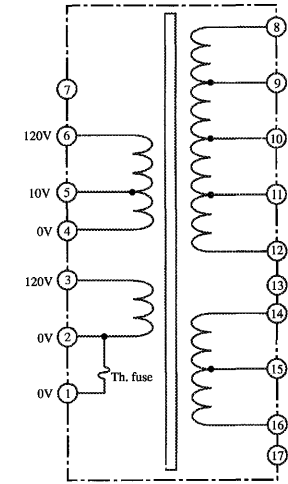
For the exact value of fuses, refer to partlist

	FW26	FW46
1284	Not use	Use
1285	Use	Use
1287	Not use	Use
1288	Not use	Use
1289	Use	Use

TRAF0 COMPONENT LAYOUT



FW46 (except /26 and /37)

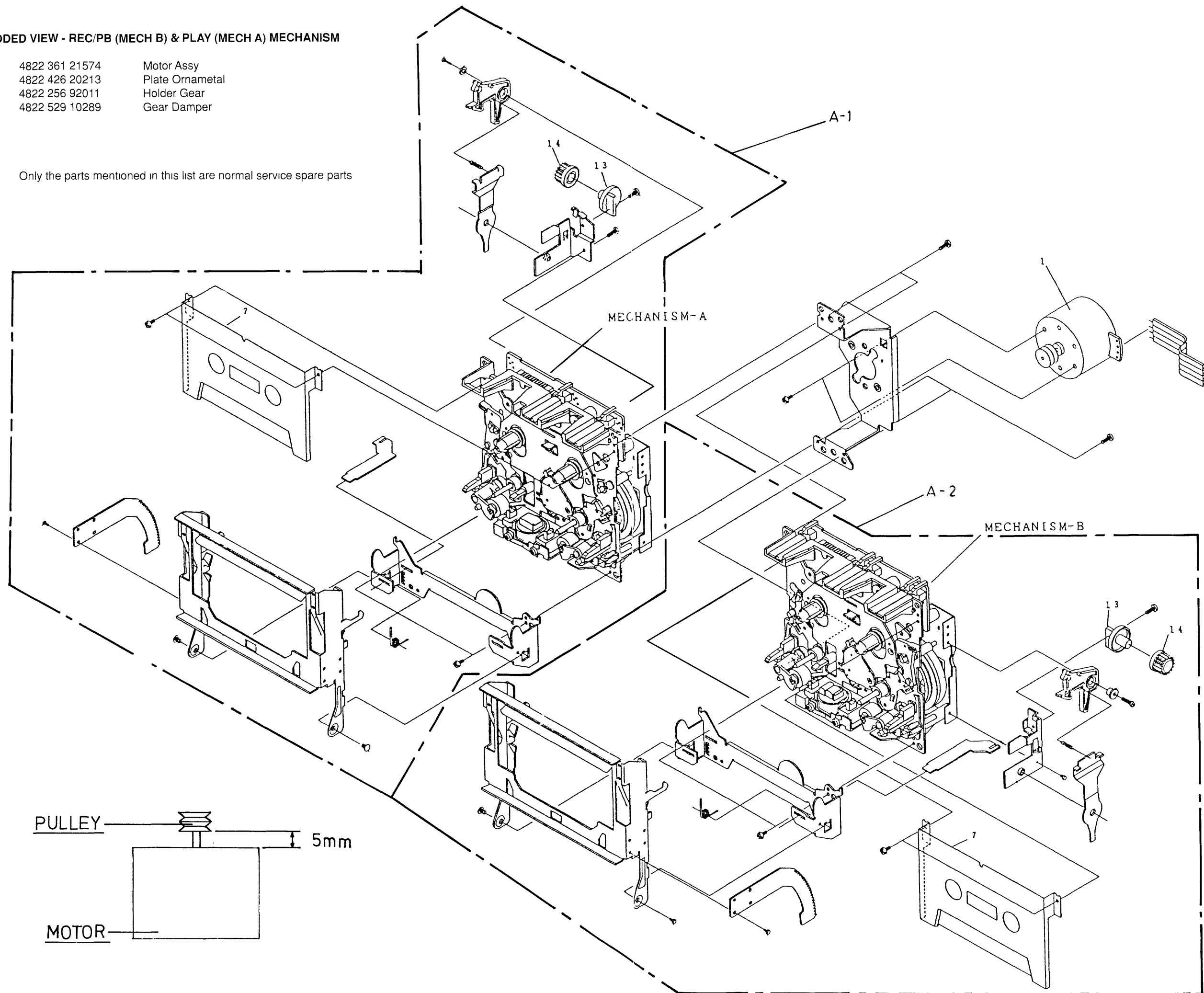


4822 146 31335

EXPLODED VIEW - REC/PB (MECH B) & PLAY (MECH A) MECHANISM

- | | | |
|----|----------------|-----------------|
| 1 | 4822 361 21574 | Motor Assy |
| 7 | 4822 426 20213 | Plate Ornametal |
| 13 | 4822 256 92011 | Holder Gear |
| 14 | 4822 529 10289 | Gear Damper |

Note Only the parts mentioned in this list are normal service spare parts



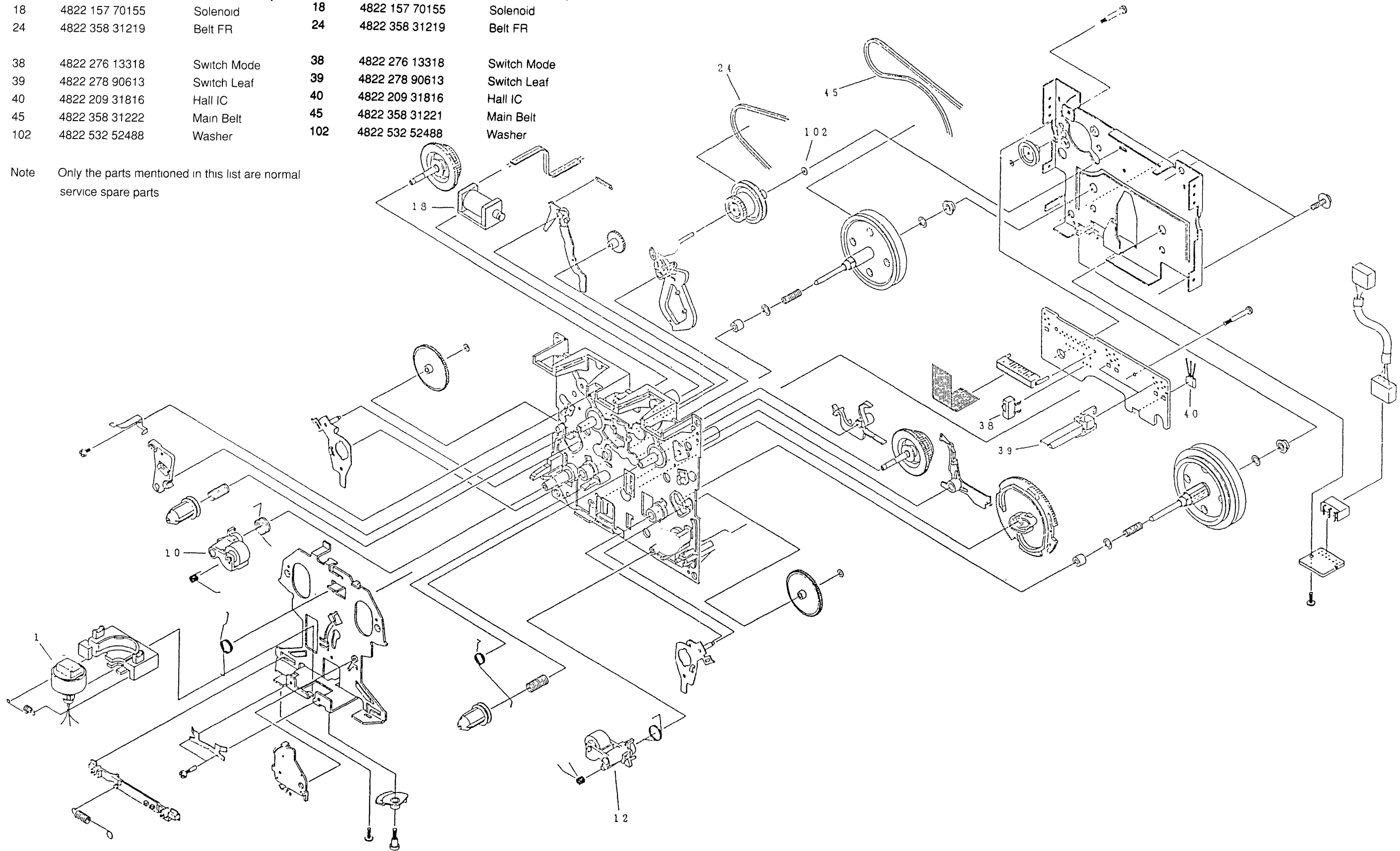
EXPLODED VIEW - PLAY (MECH A) MECHANISM

1	4822 249 30189	Play Head Assy
10	4822 403 70729	Pinch Arm Assy L
12	4822 403 70731	Pinch Arm Assy R
18	4822 157 70155	Solenoid
24	4822 358 31219	Belt FR
38	4822 276 13318	Switch Mode
39	4822 278 90613	Switch Leaf
40	4822 209 31816	Hall IC
45	4822 358 31222	Main Belt
102	4822 532 52488	Washer

Note Only the parts mentioned in this list are normal service spare parts

EXPLODED VIEW - REC/PB (MECH B) MECHANISM

1	4822 249 10472	Rec/Play Head Assy
10	4822 403 70729	Pinch Arm Assy L
12	4822 403 70731	Pinch Arm Assy R
18	4822 157 70155	Solenoid
24	4822 358 31219	Belt FR
38	4822 276 13318	Switch Mode
39	4822 278 90613	Switch Leaf
40	4822 209 31816	Hall IC
45	4822 358 31221	Main Belt
102	4822 532 52488	Washer



Procedure to replace belts/mechanisms

1. Remove the damper gear assembly (pos 13 + 14) and gear lever (pos 9).
2. Remove 4 screws (pos 5) and Playback mechanism (pos A-1) and Rec/Pb mechanism pos (A-2) can now be separated.

Note: The assembly of main belt for the Rec/Pb mechanism must always be done before that of Playback mechanism.

3A. Record/Pb Mechanism A-2

- i) Unscrew 4 screws (pos 85 + 86) and remove the cover bracket (pos 41).
- ii) Route the belt as shown in figure 1 around the temporary pins (see arrow).
- iii) Assemble the cover bracket (pos 41), care should be taken not to loosen the belt.
- iv) Assemble the motor bracket assembly (pos 1 + 3) onto the Rec/Pb mechanism.
- v) Use a wire with a hook end (see figure 3), transfer the belt from the temporary position onto the motor pulley (pos 1) as in figure 5 & 6.

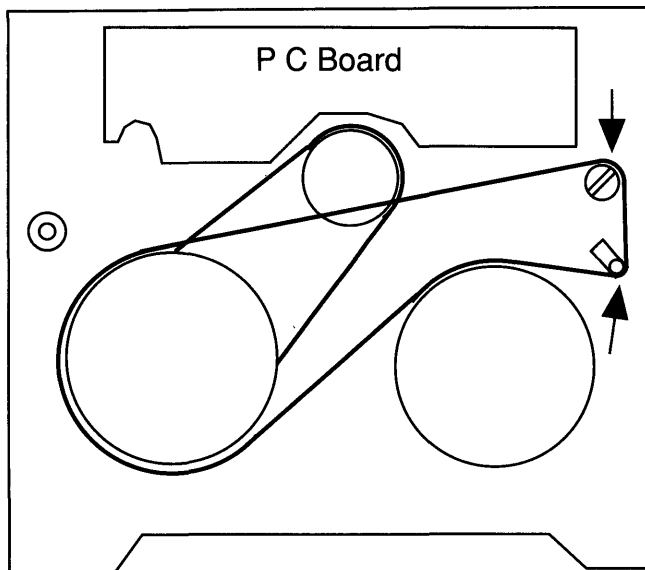


Figure 1. Rec/Pb mechanism A-2

2B. Playback Mechanism A-1

- i) Place a piece of tape to hold the eject lever (pos 11) to bracket (pos 16) and remove the door catch (pos 12).
 - ii) Unscrew 4 screws (pos 85 + 86) and remove the cover bracket (pos 41).
 - iii) Route the belt as shown in figure 2 around the temporary pins (see arrow).
 - iv) Assemble the cover bracket (pos 41), care should be taken not to loosen the belt.
 - v) Assemble the Playback mechanism A-1 onto the rest of the tape mechanism.
 - vi) Use a wire with a hook end (see figure 3), transfer the belt from the temporary position onto the motor pulley (pos 1) and the small pulley (pos 42) on cover bracket as in figure 4 - 6.
 - vii) Remove the tape on the eject lever and assemble door catch (pos 12).
3. Assemble the damper gear assembly (pos 13 + 14) and gear lever (pos 9).
 4. After completion, perform the tape adjustment to ensure no mis-alignment due to handling.

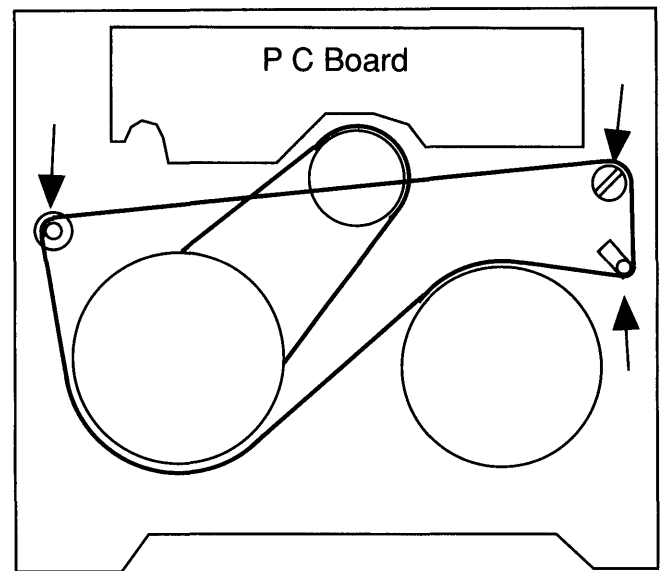


Figure 2. Play mechanism A-1



Figure 3. Wire with hook at the end

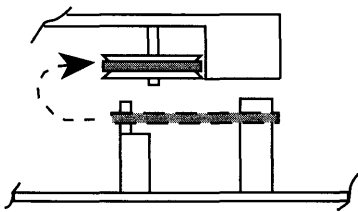


Figure 4. Hook belt onto pulley

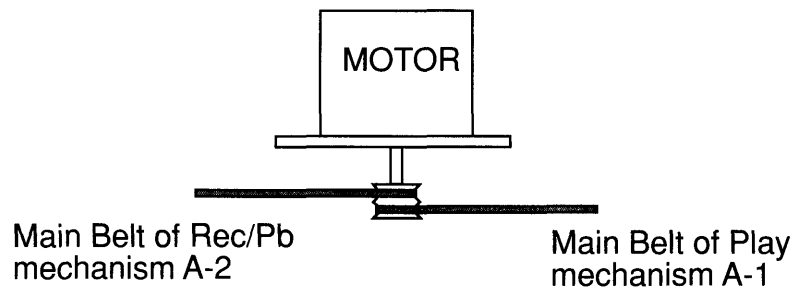


Figure 5. Motor pulley Belt hooking

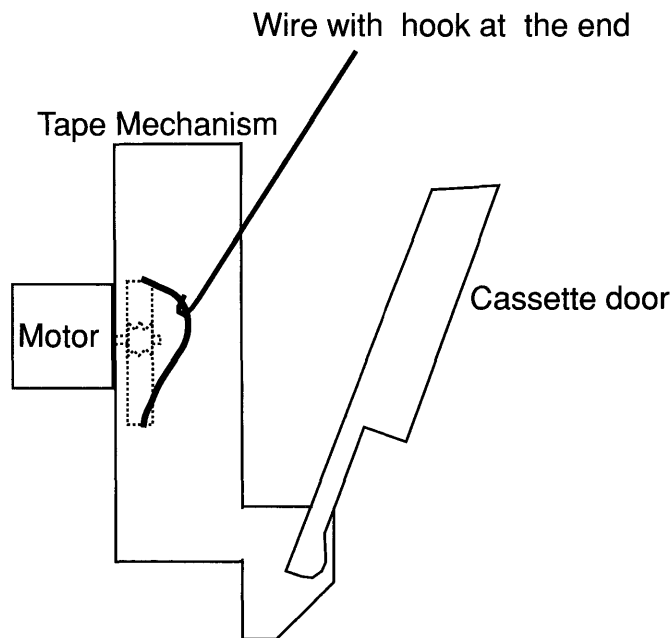


Figure 6. Hooking of the belt onto the motor pulley

EXPLODED VIEW - CENTRE UNIT

- 023 - 4822 255 40128
- 200 - 4822 426 51721 - **FW46**
- 200 - 4822 426 51751 - **FW56**
- 219 - 4822 450 62199
- 224 - 4822 413 51467 - VOLUME

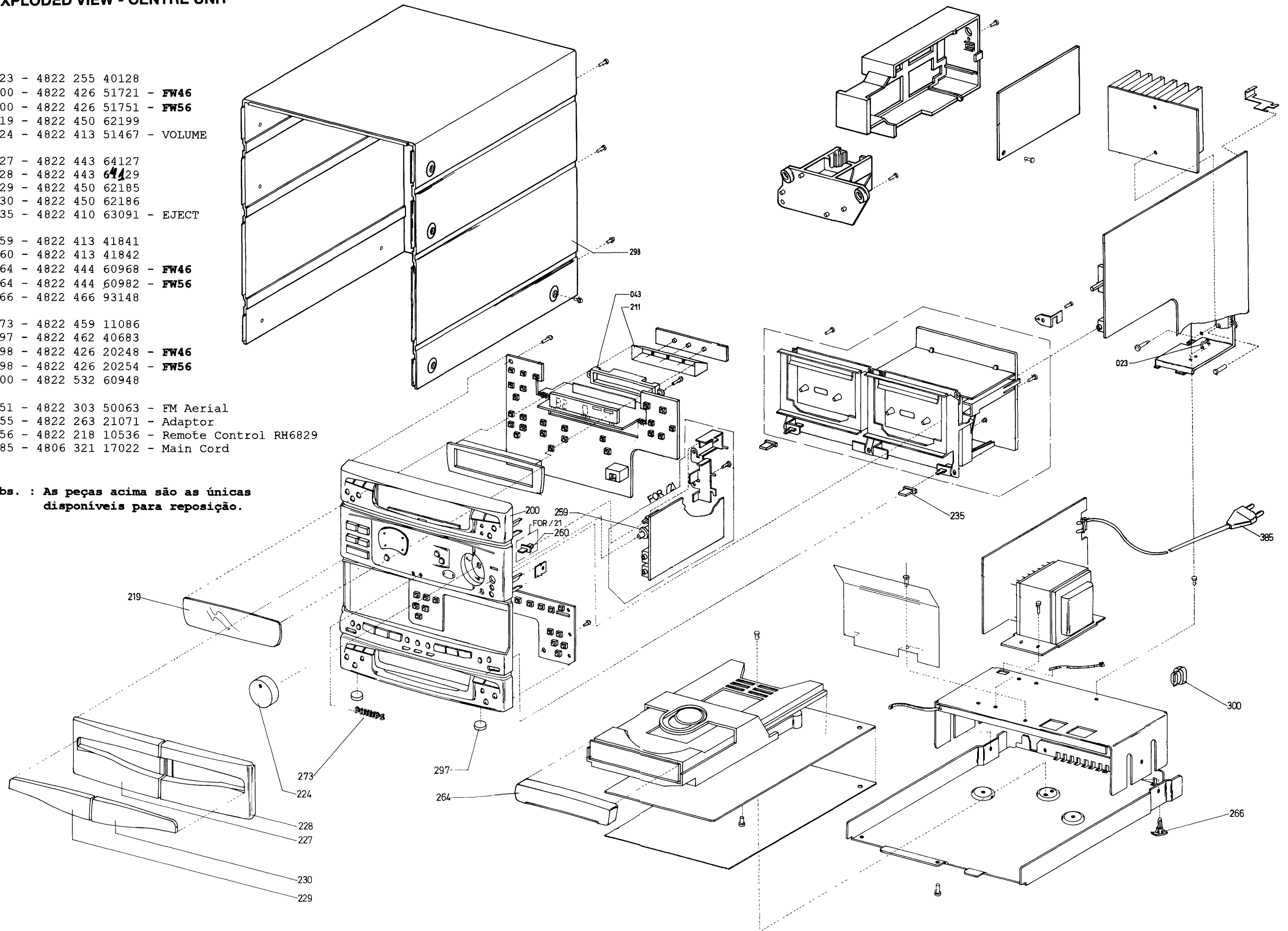
- 227 - 4822 443 64127
- 228 - 4822 443 64429
- 229 - 4822 450 62185
- 230 - 4822 450 62186
- 235 - 4822 410 63091 - EJECT

- 259 - 4822 413 41841
- 260 - 4822 413 41842
- 264 - 4822 444 60968 - **FW46**
- 264 - 4822 444 60982 - **FW56**
- 266 - 4822 466 93148

- 273 - 4822 459 11086
- 297 - 4822 462 40683
- 298 - 4822 426 20248 - **FW46**
- 298 - 4822 426 20254 - **FW56**
- 300 - 4822 532 60948

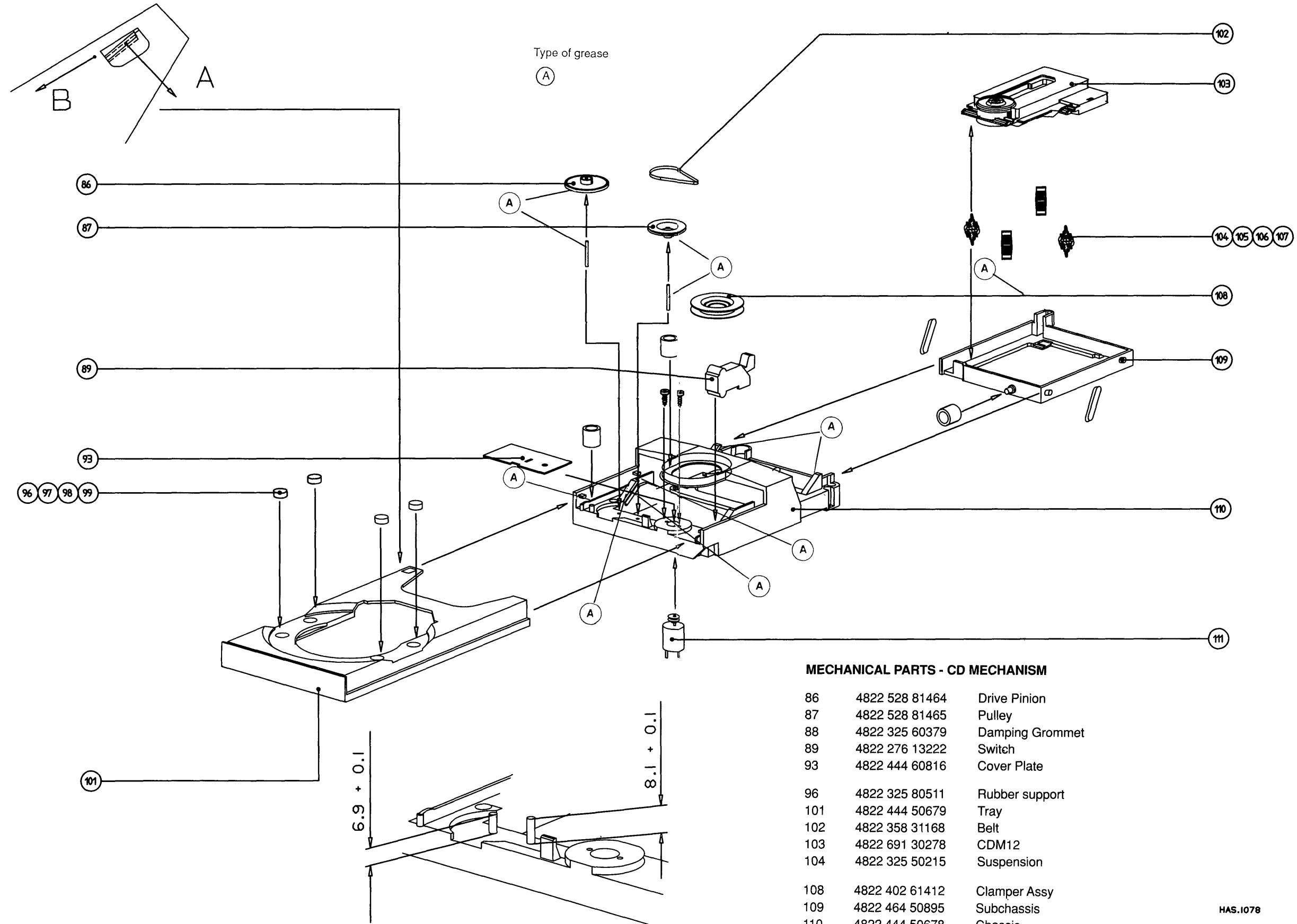
- 351 - 4822 303 50063 - FM Aerial
- 355 - 4822 263 21071 - Adaptor
- 356 - 4822 218 10536 - Remote Control RH6829
- 385 - 4806 321 17022 - Main Cord

Obs. : As peças acima são as únicas disponíveis para reposição.



CD EXPLODED VIEW

DETAIL I



MECHANICAL PARTS - CD MECHANISM

86	4822 528 81464	Drive Pinion
87	4822 528 81465	Pulley
88	4822 325 60379	Damping Grommet
89	4822 276 13222	Switch
93	4822 444 60816	Cover Plate
96	4822 325 80511	Rubber support
101	4822 444 50679	Tray
102	4822 358 31168	Belt
103	4822 691 30278	CDM12
104	4822 325 50215	Suspension
108	4822 402 61412	Clamper Assy
109	4822 464 50895	Subchassis
110	4822 444 50678	Chassis
111	4822 361 21492	Motor

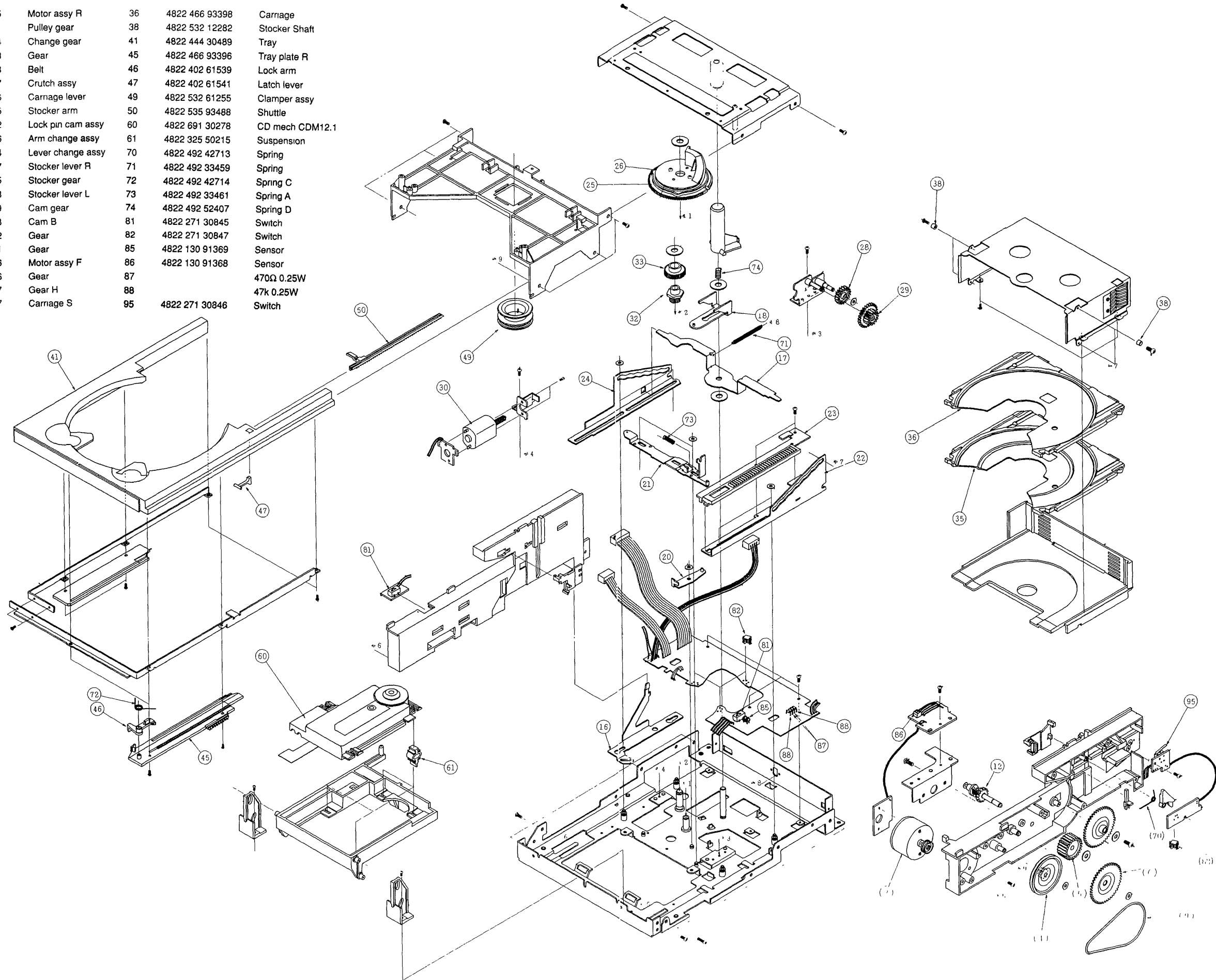
HAS.1078

Note: Only the parts mentioned in this list are normal service spare parts.

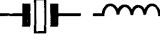


CDC EXPLODED VIEW FW56

MECHANICAL PARTS - CDC MECHANISM

3	4822 361 21725	Motor assy R	36	4822 466 93398	Carrige
4	4822 528 70861	Pulley gear	38	4822 532 12282	Stocker Shaft
5	4822 522 33484	Change gear	41	4822 444 30489	Tray
6	4822 522 33483	Gear	45	4822 466 93396	Tray plate R
9	4822 358 10148	Belt	46	4822 402 61539	Lock arm
12	4822 522 20457	Crutch assy	47	4822 402 61541	Latch lever
16	4822 402 50316	Carrige lever	49	4822 532 61255	Clamper assy
17	4822 402 50315	Stocker arm	50	4822 535 93488	Shuttle
18	4822 402 61542	Lock pin cam assy	60	4822 691 30278	CD mech CDM12.1
20	4822 402 61536	Arm change assy	61	4822 325 50215	Suspension
21	4822 402 50314	Lever change assy	70	4822 492 42713	Spring
22	4822 402 61537	Stocker lever R	71	4822 492 33459	Spring
23	4822 522 33485	Stocker gear	72	4822 492 42714	Spring C
24	4822 402 61538	Stocker lever L	73	4822 492 33461	Spring A
25	4822 522 33479	Cam gear	74	4822 492 52407	Spring D
26	4822 522 33478	Cam B	81	4822 271 30845	Switch
28	4822 522 33482	Gear	82	4822 271 30847	Switch
29	4822 522 33481	Gear	85	4822 130 91369	Sensor
30	4822 361 21726	Motor assy F	86	4822 130 91368	Sensor
32	4822 522 33476	Gear	87		470Ω 0.25W
33	4822 522 33477	Gear H	88		47k 0.25W
35	4822 466 93397	Carrige S	95	4822 271 30846	Switch




ELECTRICAL PARTS - CDC BOARD

MISCELLANEOUS		
1830	4822 071 51601	Fuse T160mA 250V
1850	4822 267 60383	Flex socket 24P
1852	4822 267 60383	Flex socket 24P
8801	4822 321 62522	Flex cable 24P
		
5860	4822 242 81151	Crystal 16.9334MHz
5861	5322 242 73697	Ceramic resonator 8MHz
5890	4822 242 73557	Resonator 8 467MHz
		
6857		1N4002GP
6858		1N4002GP
6881	4806 130 37190	BZX79-C3V9
6883	4806 130 37314	BZX79-C2V7
		
7800	4822 209 30704	MC74HCU04D
7820	4806 130 47332	BC338-40
7830	4822 209 33407	TMP87CC70
7850	4822 209 31064	TDA1301T/N1
7851	4822 209 32852	TDA7073A/N2
7852	4822 209 32852	TDA7073A/N2
7853	4822 209 32852	TDA7073A/N2
7856	4806 130 47227	BC328-40
7860	4822 209 33339	SAA7345GP/M5
7870 #	4822 209 33252	TDA1549T/N1
7872 *	4822 209 32421	TDA1311A/N2
7881		BC558C
7883		BC558C
7884	4806 130 47030	BC337
7885		BC337
7886	4822 209 80891	MC7805CT


For Bitstream versions only

* For Non-bitstream versions only

Note: Only the parts mentioned in this list are normal service spare parts.

		
7450	4806 130 47041	BC548B
7495	5322 209 71555	74HC373D
7496	5322 209 71555	74HC373D
7498	4806 209 87164	HEF4094BP


ELECTRICAL PARTS - CDC KEY BOARD


MISCELLANEOUS		
1450	4822 276 13114	Tact switch
1451	4822 276 13114	Tact switch
1452	4822 276 13114	Tact switch
1453	4822 276 13114	Tact switch
1454	4822 276 13114	Tact switch
1455	4822 276 13114	Tact switch
1456	4822 276 13114	Tact switch
1457	4822 276 13114	Tact switch
1458	4822 276 13114	Tact switch
1459	4822 276 13114	Tact switch
1460	4822 276 13114	Tact switch
1461	4822 276 13114	Tact switch
1462	4822 276 13114	Tact switch
1463	4822 276 13114	Tact switch
1464	4822 276 13114	Tact switch
1465	4822 276 13114	Tact switch
1466	4822 276 13114	Tact switch
1467	4822 276 13114	Tact switch
1468	4822 276 13114	Tact switch
1469	4822 276 13114	Tact switch
1470	4822 276 13114	Tact switch
1471	4822 276 13114	Tact switch
1472	4822 276 13114	Tact switch
1473	4822 276 13114	Tact switch
1474	4822 276 13114	Tact switch
1475	4822 276 13114	Tact switch
1476	4822 276 13114	Tact switch
1478	4822 276 13114	Tact switch
1479	4822 276 13114	Tact switch
1480	4822 276 13114	Tact switch
1481	4822 276 13114	Tact switch
1484	4822 276 13114	Tact switch
1485	4822 276 13114	Tact switch
		
	4806 130 37078	1N4148
6459	4822 130 82978	LTL-16KPE
6460	4822 130 83363	LTL-16KGE
6461	4822 130 82978	LTL-16KPE
6462	4822 130 83363	LTL-16KGE
6463	4822 130 82978	LTL-16KPE
6464	4822 130 83363	LTL-16KGE
6465	4822 130 82978	LTL-16KPE
6466	4822 130 82978	LTL-16KPE
6467	4822 130 83363	LTL-16KGE
6468	4822 130 82978	LTL-16KPE
6469	4822 130 83363	LTL-16KGE
6470	4822 130 82978	LTL-16KPE
6471	4822 130 83363	LTL-16KGE
6472	4822 130 83363	LTL-16KGE

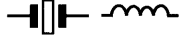
MECHANICAL PARTS - CDC MECHANISM


3	4822 361 21725	Motor assy R
4	4822 528 70861	Pulley gear
5	4822 522 33484	Change gear
6	4822 522 33483	Gear
9	4822 358 10148	Belt
12	4822 522 20457	Crutch assy
16	4822 402 50316	Carriage lever
17	4822 402 50315	Stocker arm
18	4822 402 61542	Lock pin cam assy
20	4822 402 61536	Arm change assy
21	4822 402 50314	Lever change assy
22	4822 402 61537	Stocker lever R
23	4822 522 33485	Stocker gear
24	4822 402 61538	Stocker lever L
25	4822 522 33479	Cam gear
26	4822 522 33478	Cam B
28	4822 522 33482	Gear
29	4822 522 33481	Gear
30	4822 361 21726	Motor assy F
32	4822 522 33476	Gear
33	4822 522 33477	Gear H
35	4822 466 93397	Carriage S
36	4822 466 93398	Carriage
38	4822 532 12282	Stocker Shaft
41	4822 444 30489	Tray
45	4822 466 93396	Tray plate R
46	4822 402 61539	Lock arm
47	4822 402 61541	Latch lever
49	4822 532 61255	Clamper assy
50	4822 535 93488	Shuttle
60	4822 691 30278	CD mech CDM12.1
61	4822 325 50215	Suspension
70	4822 492 42713	Spring
71	4822 492 33459	Spring
72	4822 492 42714	Spring C
73	4822 492 33461	Spring A
74	4822 492 52407	Spring D
81	4822 271 30845	Switch
82	4822 271 30847	Switch
85	4822 130 91369	Sensor
86	4822 130 91368	Sensor
87		470Ω 0.25W
88		47k 0.25W
95	4822 271 30846	Switch


ELECTRICAL PARTS - ECO4 MIDI BOARD

MISCELLANEOUS		
1101	4822 267 10283	Coaxial Socket 75Ω
1101	4822 265 20598	F-connector Coaxial 75Ω
		
2100		100pF 10% 50V
2104		100pF 10% 50V
2107		1nF 2% 63V
2110		33pF 5% 50V for LW version
2110		6.8pF 5% 50V
2112		100nF 10% 63V
2114		100pF 5% 50V for LW version
2115	4822 125 60101	Trimmer 3-11pF 100V
2120		470pF 10% 50V
2121		15pF 5% 50V
2122		1nF 2% 63V
2123		1nF 2% 63V
2124		10nF 20% 16V
2129		390pF 1% 160V for LW version
2130	4822 125 50355	Trimmer 4-20pF 100V

		
3148	4822 100 11163	Trimmer 100k 30% 0.2W

		
5106	4822 158 60642	Ferrite antenna MW for 2-band version
5109	4806 156 37045	RF Coil 1.5T
5120	4806 156 37045	RF Coil 1.5T
5122	4822 157 60517	Coil 110μH 8% for LW version
5123	4822 157 60517	Coil 110μH 8%
5140	4822 158 60511	AM IF Coil 450kHz
5142	4822 157 70302	AM IF Coil 450kHz
5143	4822 242 70665	Ceramic Filter 10.7MHz
5144	4822 242 70665	Ceramic Filter 10.7MHz
5145	4806 242 77124	Ceramic Discriminator
5150		Coil 1mH 10%
5170	4822 242 72976	Ceramic Resonator 7.2MHz

		
6105	4822 130 83075	HN1V02H
6109	4822 130 82833	1SV228
6121	4806 130 37078	1N4148 (refer to circuit)
6122		1N4148 (refer to circuit)
6123		1N4148 (refer to circuit)
6124	4822 130 82833	1SV228
6140		1N4148
6154		1N4148
6174	4822 130 34233	BZX79-B5V1

		
7105	4806 130 47337	2SA838B
7120	4806 130 47316	2SC1047
7140	4822 209 32011	TEA5712T/N2 (RF IC)
7150	5322 209 14482	HEF4096UBT (6 x Inverter)
7156	4806 130 47234	BC337-40
7157		BC337-40
7169	4806 130 47321	BC848C
7170		BC848C
7171		BC848C
7172	5322 209 11517	MM74HCU04M (6 x Inverter)
7173	4822 209 31998	LC7218M (Synthesizer)
7174	4806 130 47269	BC858B
7178		BC858B

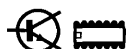
Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS - CD BOARD

MISCELLANEOUS		
1002	4822 242 73557	Ceramic Resonator 8.46MHz
1020	4822 071 51601 Δ	Fuse T160mA 250V
1021	4822 071 51601 Δ	Fuse T160mA 250V
1570	4822 242 80997	Resonator 16.93MHz
1700	4822 242 72527	Ceramic Resonator 4MHz



6103	4806 130 37078	1N4148
6550	4806 130 37190	BZX79-C3V9



7000	4822 209 31064	TDA1301T/N1
7040	4822 130 60887	BF840
7041	4806 130 47321	BC848B
7042	4806 130 47269	BC858B
7043		BC848B
7044		BC848B
7060	4822 209 72587	TCA0372DP2
7080	4822 209 72587	TCA0372DP2
7101	4822 209 32036	UM6264BM-10L
7102	4806 209 87619	SAA7341GP
7140	4806 130 47322	BC858
7141		BC848
7300	4806 209 87373	NJM4560D
7301		NJM4560D
7500	4822 209 80891 Δ	MC78M05CT
7550		BC858
7660	4822 209 72587	TCA0372DP2
7700	4806 209 87374	MC68HC05C8/ SERVO-S22

ELECTRICAL PARTS - FRONT BOARD

7401	4822 209 33236	TMP87CM20F
7402	4822 209 31508	ST24C01
7403		HEF4094BP
7410		BC548C
7420		HEF4094BP
7450	4806 209 87279	HEF4051BP
7451	4822 209 31515	BA3830S
7452	4822 209 80797	LM393N
7460		BC548C

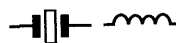
Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS - FRONT BOARD

MISCELLANEOUS		
1401	4822 130 91324	LCD Display
1410	4822 276 13114	Tact Switch
1411	4822 276 13114	Tact Switch
1412	4822 276 13114	Tact Switch
1413	4822 276 13114	Tact Switch
1414	4822 276 13114	Tact Switch
1415	4822 276 13114	Tact Switch
1416	4822 276 13114	Tact Switch
1417	4822 276 13114	Tact Switch
1418	4822 276 13114	Tact Switch
1419	4822 276 13114	Tact Switch
1420	4822 276 13114	Tact Switch
1421	4822 276 13114	Tact Switch
1422	4822 276 13114	Tact Switch
1423	4822 276 13114	Tact Switch
1424	4822 276 13114	Tact Switch
1425	4822 276 13114	Tact Switch
1426	4822 276 13114	Tact Switch
1427	4822 276 13114	Tact Switch
1428	4822 276 13114	Tact Switch
1429	4822 276 13114	Tact Switch



3424	4822 116 90836	Resistor network 5 x 10k
3498	4822 116 90836	Resistor network 5 x 10k
3449	4822 116 90836	Resistor network 5 x 10k
3507	4822 105 11107	Potm Slide 50k x 2
3508	4822 105 11107	Potm Slide 50k x 2
3509	4822 105 11107	Potm Slide 50k x 2
3510	4822 105 11107	Potm Slide 50k x 2
3511	4822 105 11107	Potm Slide 50k x 2



5401	5322 242 73697	Ceram Resonator 8MHz
5402	4822 242 70938	Crystal 32.768kHz
	4822 157 62552	Coil 2.2μH 20%
5404	4822 156 21125	Coil 3.9μH 10%



	4806 130 37078	1N4148
6420	4822 130 82978	LTL-16KPE
6406	4822 214 52009	GP1U58XP



7402	4822 209 31508	ST24C01
7403	4806 209 87164	HEF4094BP
7539	4806 209 87373	NJM4560D

ELECTRICAL PARTS - COMBI BOARD

MISCELLANEOUS

1304	4822 267 31176	Loudspeaker Socket
1450	4822 276 13114	Tact Switch
1451	4822 276 13114	Tact Switch
1452	4822 276 13114	Tact Switch
1453	4822 276 13114	Tact Switch
1454	4822 276 13114	Tact Switch
1455	4822 276 13114	Tact Switch
1456	4822 276 13114	Tact Switch
1457	4822 276 13114	Tact Switch
1458	4822 276 13114	Tact Switch
1459	4822 276 13114	Tact Switch
1460	4822 276 13114	Tact Switch
1497	4822 134 41171	Lamp Assy blue
1498	4822 134 41171	Lamp Assy blue
1499	4822 134 41171	Lamp Assy blue
1550	4822 267 40898	Headphone Socket
1551 *	4822 267 40898	Mic Socket
1552	4806 267 37060	AUX/TV Socket
1553 *	4822 276 12571	Vocal Fade Switch



3629	4822 102 10414	Potm 20k x 2 w/motor
3673	4822 101 21204	Potm Rotary 20KA



5313	4822 280 80777	Relay 2P 12V 7A
5373	4822 157 62552	Coil 2.2μH 20%
5374	4822 157 62552	Coil 2.2μH 20%
5630 @	4822 157 50961	Coil 22μH 10%
5631 @	4822 157 50961	Coil 22μH 10%
5632	4822 156 21125	Coil 3.9μH 10%



6250	4822 130 82078 Δ	D5SBA20
6251		1N4148
6252	4806 130 37078	1N4148
6253	4822 130 34173	BZX79-C5V6
6254		1N4148
6255	4806 130 37501 Δ	1N4002
6256		Δ 1N4002
6257		Δ 1N4002
6258		Δ 1N4002



6259	4806 130 37078	1N4148
6260	4806 130 37501	1N4002
6261	4822 130 34233	BZX79-C5V1
6262	4822 130 31631 Δ	BYV10-20
6263	4822 130 31631 Δ	BYV10-20
6264		Δ 1N4002
6265	4806 130 37198	BZX79-C2V4
6266		1N4148
6352		1N4148
6450		1N4148
6451		1N4148
6452		1N4148
6454		1N4148
6455		1N4148
6456		1N4148
6457		1N4148
6504		1N4148
6505		1N4148
6507	4806 130 37053	BZX79-C7V5
6508		BZX79-C7V5
6714		1N4148
6716		1N4148
6719		1N4148
6720		1N4148
6721		1N4148
6724		1N4148
6728		1N4148
6729		1N4148
6730		1N4148
6732		1N4148
6734		1N4148
6735		1N4148
6736		1N4148
6738		1N4148
6739		1N4148
6740		1N4148
6741		1N4148



7250	4806 130 47078	BC548B
7252	4806 130 47066 Δ	BD234
7253		BC548B
7254		BC548B
7255	4806 130 47050	BC558B
7256		BC548B
7257	4822 209 80891 Δ	MC7805CT
7501	4822 209 10263	HEF4052B
7502	4806 209 87164	HEF4094BP

* For Karaoke version only

ELECTRICAL PARTS - COMBI BOARD




7503	4806 130 47045	BC549C
7504		BC549C
7505		BC549C
7506		BC549C
7507	4806 130 47041	BC548B
7508		BC548B
7509		BC548B
7511		BC549C
7512		BC549C
7513	4806 130 47332	BC338-40
7514		BC338-40
7521		BC338-40
7522		BC338-40
7523		BC328-40
7524	4806 130 47227	BC328-40
7525		BC548B
7526		BC548B
7529		BC548B
7530		BC548B
7571		BC558B
7572		BC558B
7575		BC549C
7576		BC549C
7577		BC549C
7578		BC549C
7581	5322 209 14865	MC14066BCP
7582	5322 209 14865	MC14066BCP
7583	4806 130 47153	BC327-40
7630 @		BC549C
7631 @		BC549C
7632 @		BC549C
7633 @		BC549C
7634 @		BC549C
7635 @		BC549C
7636		HEF4094BD
7637		BC549C

@ For Karaoke version only

Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS - TRAF0 BOARD

MISCELLANEOUS

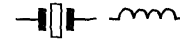
1281	4822 272 10269	△	Voltage Selector for -/21 only
1284	4822 071 51002	△	Fuse T1A 250V
1285	4822 071 51002	△	Fuse T1A 250V
1286	4822 071 51002	△	Fuse T1A 250V
1287	4822 071 51002	△	Fuse T1A 250V
1288	4822 071 54002	△	Fuse T4A 250V
1289	4822 071 54002	△	Fuse T4A 250V
			
5280	4822 146 31377		Mains Transformer FW56
5280	4822 146 31335	△	Mains Transformer FW46
5281	4822 157 70003	△	Mains Choke Coil

Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS - ETF3 BOARD



3709		8k2 5% 0 1W
3710		4k7 5% 0 5W
3711		4k7 5% 0 1W
3712		8k2 5% 0 5W
3713		8k2 5% 0 1W
3714		4k7 5% 0 5W
3715		4k7 5% 0 1W
3720		0Ω Jumper (0805)
3721		0Ω Jumper (0805)
3722		470Ω 5% 0 5W
3723		470Ω 5% 0 5W
3724		150k 5% 0 5W
3730		10k 5% 0 5W
3731		10k 5% 0 5W
3732		100Ω 5% 0 5W
3733		100Ω 5% 0 5W
3734		47k 5% 0 5W
3735		47k 5% 0 5W
3736		10k 5% 0.5W
3737		10k 5% 0 5W
3738	4822 100 11771	Trimmer 20k 30% 0 1W
3739	4822 100 11771	Trimmer 20k 30% 0 1W
3740		5k6 5% 0 1W
3741		5k6 5% 0 1W
3742		22k 5% 0 1W
3743		22k 5% 0 1W
3744		12k 5% 0 1W
3745		1k 2% 0 25W
3746		1k 2% 0 25W
3747		1k 2% 0 25W
3748		33k 5% 0 5W
3749		330Ω 5% 0.5W
3760		10Ω 5% 0.1W
3761		10Ω 5% 0 1W
3762	4822 100 11163	Trimmer 100k 30% 0 1W
3763	4822 100 11163	Trimmer 100k 30% 0 1W
3764		33Ω 5% 0 1W
3765		6k8 5% 0 1W
3766		15Ω 5% 0 1W
3767		22k 5% 0 1W
3768		1k 2% 0 25W
3769		10k 1% 0 1W
3770		3k9 5% 0.1W
3771		220Ω 5% 0 1W
3772		10k 1% 0 1W
3773		△ 4Ω7 5% 0.33W
3774		22k 5% 0 5W
3780		8k2 5% 0 1W
3781		6k8 5% 0 5W
3782	4822 100 11319	Trimmer 4k7 30% 0 1W
3783	4822 100 11319	Trimmer 4k7 30% 0 1W
3784		4k7 5% 0.5W
3785		1k 2% 0 25W
3786		1k 2% 0 25W



5650 *	4822 156 21725	MPX Filter
5651 *	4822 156 21725	MPX Filter
5652	4822 156 20811	Coil 36mH 5%
5653	4822 156 20811	Coil 36mH 5%
5730	4822 156 20811	Coil 36mH 5%
5731	4822 156 20811	Coil 36mH 5%
5760	4822 156 20946	Osc coil 100kHz
5780	4822 242 72527	Cer Resonator 4MHz
5790		Coil 100μH 10%



6650	4822 130 34233	BZX79-C5V1
6760	4806 130 37041	BZX79-C10V
6780	4806 130 37501	1N4002
6781		1N4002
6782	4806 130 37078	1N4148
6783		1N4148
6784		1N4148
7650	4822 209 32919	HEF4952BT
7652	4806 130 47321	BC848C
7653		BC848C
7654		BC848C
7655		BC848C
7656		BC848C
7657		BC848C
7700	4822 209 32919	HEF4952BT
7701	4806 209 87486	UPC1330HA
7702	4822 209 32918	AN7318S
7703	5322 209 11102	HEF4052BT
7730	4822 209 31505	CXA1298AP
7760	4806 130 47332	BC338-40
7761		BC338-40
7762	4806 130 47078	BC548C
7763		BC548C
7764	4822 130 42682	DTA144ES
7765	4822 130 60588	DTC114ES
7780	4806 130 47227	BC328-40
7781		BC328-40
7782		BC328-40
7783		BC848C
7784		BC848C
7785		BC848C
7786	4806 130 47269	BC858C
7787		BC848C
7791		BC848C
7792	4806 209 87639	MC78L05ACP
7793	4822 209 12612	MC68HC05C4P

* For Dolby B version only
For Non-Dolby version only

Note. Only the parts mentioned in this list are normal service spare parts

