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Service
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Service Manual

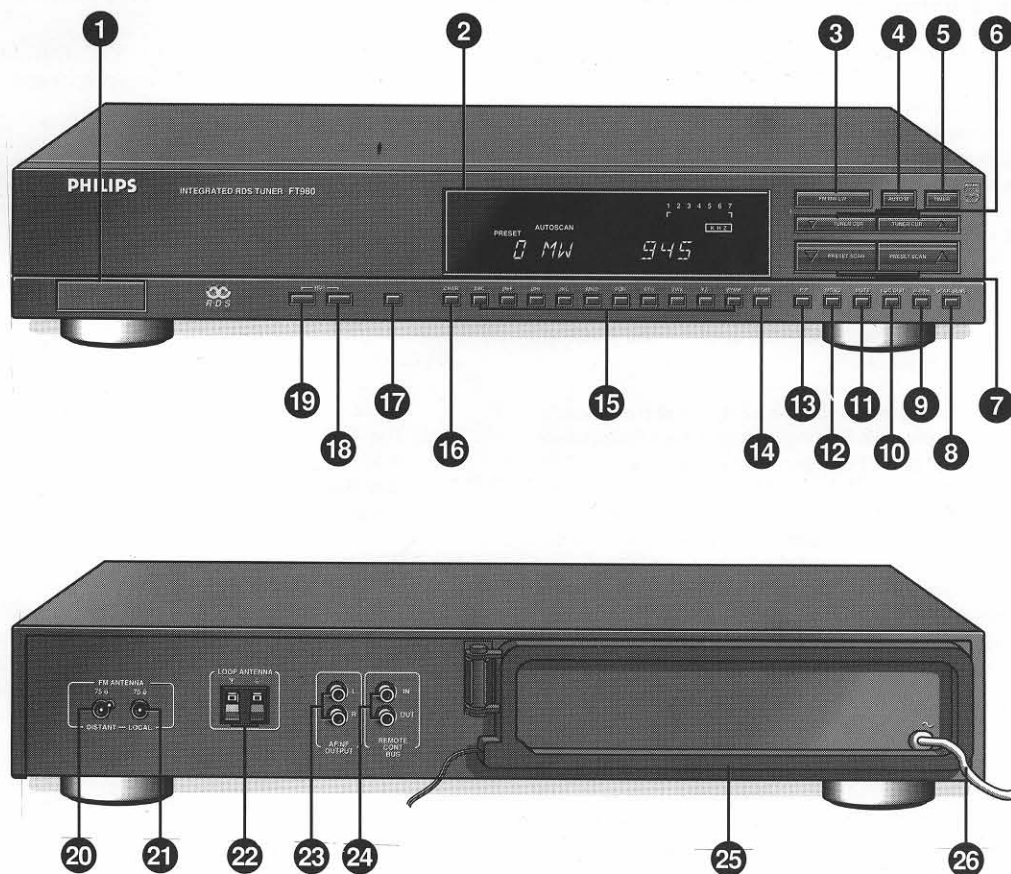
FT 980

Table of contents	page
Specification	2
Connections and controls	3
Service test programme and display	4
Servicing hints, alignment and alignment layout	5, 6, 7, 8
RDS description	9
List of electrical parts	10
RF+IF PCB	11, 12
RF+IF circuit diagram 1	13, 14
RF+IF PCB	15, 16
RF+IF circuit diagram 2	17, 18, 19
Computer PCB	20, 21, 22
Computer circuit diagram	23, 24, 25
Operating PCB and standart symbols/components	26, 27, 28
Operating circuit diagram	29
Wiring diagram	30, 31
Exploded view, list of mechanical parts	32, 33

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



SPECIFICATION	Nominal value	Typical value	
General			
Mains voltage	: 220 V-240 V ~	: 220 V-240 V ~	
Mains frequency	: 50-60 Hz	: 50-60 Hz	
Dimensions (W x H x D)	: 420 x 67/86x334	: 420 x 67/86x334	
Tuner: FM section			
Tuning range	: 87.5 MHz to 108 MHz	: 87.5 MHz to 108 MHz	
Aerial inputs	: 75 Ω coaxial LOCAL/DX	: 75 Ω coaxial	
Frequency response	: 30-12500 Hz +0.5 dB -2 dB	: 10-15000 Hz +1.5 dB	
Sensitivity	mono : 1.2 μV 26 dB S/N at 98 MHz, 75 Ω	: 0.8 μV at 98 MHz, 75 Ω	
	stereo : 50 μV 50 dB S/N Δf=75 kHz	: 35 μV 50 dB S/N Δf=75 kHz	Selectivity
width / narrow	: > 56 dB / > 76 dB	: > 65 dB / > 86 dB	Suppression
IF - AM	: 100 dB - 50 dB	: 120 dB - 55 dB	
pilot tone	19 kHz / 38 kHz: > 55 dB / > 60 dB	: > 60 dB / > 80 dB	
image			
frequency	: 80 dB (at 98 MHz)	: 86 dB	
Distortion (1 kHz)	: 40 dB	: 50 dB / 44 dB width / narrow	Channel separation
D	mono		Distortion T.H.D.
	width / narrow : 0.1% / 0.25%	: 0.08% / 0.15%	
stereo	width / narrow : 0.3% / 0.7%	: 0.15% / 0.4%	Signal/noise ratio
	mono : 84 dB IEC bewertet	: 86 dB	Output
stereo	: 77 dB IEC bewertet	: 78 dB	
	: 295 mV at Δf = 22.5kHz	: 370 mV	Tuner: AM section
Wave ranges	MW : 528 kHz - 1605 kHz	: 528 kHz - 1605 kHz	
	LW : 150 kHz - 283 kHz	: 150 kHz - 283 kHz	
	MW (1 MHz) : 2.3 mV/m 26 dB S/N (Loop-Ant.)	: 1.8 mV/m 26 dB S/N	Sensitivity
	LW (261 kHz) : 5.8 mV/m	: 5.2 mV/m	
IF	: 26 dB for 9 kHz off resonance	: 30 dB for 9 kHz off resonance	Selectivity
	: 47 dB	: 55 dB	Suppression
	: 350 mV	: 400 mV	Output
section			
	: EEPROM	: EEPROM	Tuner: Digital
FM / MW / LW	: 50 kHz / 25 kHz / 9kHz / 1 kHz (Auto / Man.)	: 50 kHz / 25 kHz / 9kHz / 1 kHz (Auto / Man.)	Memory
FM / MW / LW	: 59 / 59 / 59 random / sequentill	: 59 / 59 / 59 random / sequentill	Tuning steps
			Presets



FRONT PANEL

- ① **ON/OFF button** - press in to switch the unit on; press again to switch off
- ② **display showing:**
 LW (Long Wave), MW (Medium Wave) or FM - the selected waveband
 AUTOSCAN - automatic tuning mode
 AUTOSCAN HIGH - automatic tuning at increased sensitivity
 TUNED - when a station is found and correctly tuned to STEREO or MONO - FM stereo or mono reception
 STORE - when the memory has been opened to store a preferred station
 The tuned frequency in 'MHz' (for FM) or 'kHz' (for MW and LW)
 1 to 59 - the number of the selected preset station
 The name of the station. If you have tuned to a transmitter with RDS signal, the name given by the station will appear automatically. For the other transmitters you can program a name yourself.
 DISTANT or LOCAL - the selected aerial
 MUTING - during silent tuning
 TIMER - the timer program is activated
 — — - the bandwidth
 1 > to 7 > - the signal strength
 DIMMER - you can now adjust the display brightness
- ③ **waveband buttons** - to select LW, MW or FM band
- ④ **AUTO/MAN button** - to select automatic or manual tuning *and* to adjust the display brightness
- ⑤ **TIMER button** - to program 3 stations for use with an external timer
- ⑥ **TUNER Δ ∇ buttons** - press Δ to tune towards the higher end of the selected band and press ∇ to tune towards the lower end of the selected band
- ⑦ **PRESET SCAN/CURSOR Δ ∇ buttons** - to call up preset stations in ascending Δ or descending order ∇ *and* to move the cursor when programming a name
- ⑧ **SCAN.SENS button** - to select a higher tuning sensitivity when tuning automatically to FM transmitters
- ⑨ **WIDTH button** - to select the bandwidth (wide or narrow) for FM stations

- ⑩ **LOC/DIST button** - to select the aerial connected to the socket LOCAL or to the socket DISTANT
- ⑪ **MUTE button** - for silent tuning
- ⑫ **MONO button** - for mono reception
- ⑬ **F/P button** - to enter directly the tuning frequency
- ⑭ **STORE button** - for opening the memory to store a preferred station *and* to enter a name into the memory
- ⑮ **figure/alphabet buttons:**
 figures - 0 to 9
 letters - A to Z
 symbols - /, +, <, -, >, *,
 space - —
- ⑯ **CHAR. button** - for opening the memory to program a name
- ⑰ **+/-** - to switch between 1- and 2-digit number entry
- ⑱ **RDS DISPLAY button** - to select between the name and the frequency of a station
- ⑲ **RDS AF button** - to display the alternative frequencies of the tuned station

BACK PANEL

- ⑳ **FM-ANTENNA DISTANT** - socket for connection of:
 - a roof-mounted FM aerial with an impedance of 75 ohms
 - the supplied wire aerial (to the centre pin)
- ㉑ **FM-ANTENNA LOCAL** - socket for connection of:
 - the Community or Cable Antenna System, impedance 75 ohms
- ㉒ **LOOP ANTENNA** - terminals for connection of:
 - the MW/LW loop aerial
 - an external AM aerial, Y for the aerial wire and \perp for the ground wire
- ㉓ **AF/NF OUTPUT** - output sockets for connecting the tuner to an amplifier
- ㉔ **REMOTE CONTROL** - RC-5 remote control input/output sockets
- ㉕ **loop aerial** - for MW/LW reception
- ㉖ **mains lead**

SERVICE TEST PROGRAMME.

SWITCHING ON THE TEST PROGRAMME.

The microprocessor contains a testprogramme. The tuner can be brought in the test mode by simultaneously pressing the keys DISPLAY and AF while switching on the set. The display now shows the version of the software.

TESTFUNCTIONS.

CLEAR DISPLAY: by pressing the MONO key, all segments and labels of the display are extinguished. The display remains in this state until another test function button is pressed.

FULL DISPLAY: By pressing the FP button all labels and segments of the display are lighting up and remain illuminated until another test function is activated.

TEST DISPLAY: Pressing the key MUTE activates a special display test consisting of the consecutive display of various brightness levels, symbols, figures and letters. After completion of this sequential programme, the display shows again the software alphanumeric data.

OPTION TEST: By pressing the LOCAL/DISTANT key, the display will show the selected diode option: EUR, EURLW USA.

SOFTWARE VERSION: By pressing any key, except MONO, FP MUTE and LOCAL/DISTANT, SCAN SENS the display shows the version of the software. (VER 3-XX).

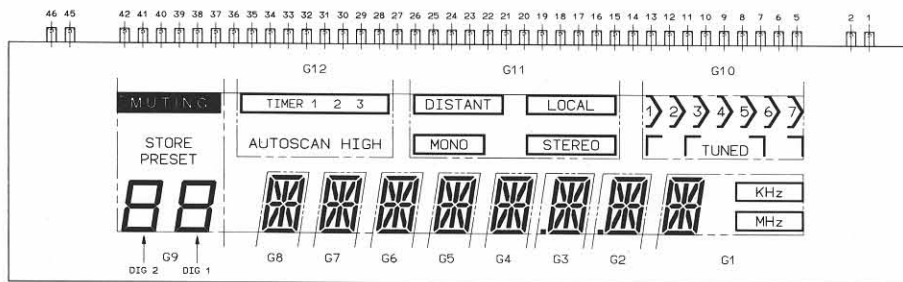
Each of the above functions can be interrupted by activating another test function key.

LEAVING THE TEST MODE: By switching off and on, or by pressing the button SCAN SENS.

Note: The test programme will not start if the microprocessor is defective, or if a few other basic conditions are not met. Therefore, it is recommended that you first check the supply voltage the clock signal and the reset pulse in case of a defect.

TEST PORTS: Microprocessor IC: pin 43: RDS-Synchronisation With RDS voltage=5V/ without RDS=0V.
Microprocessor IC: pin 42: RDS-Valid block. When a valid block is read: 5V/ otherwise 0V.
Microprocessor IC: pin 3: EEPROM-write. During EEPROM-writing: 5V/ otherwise 0V.

µC-PIN	DISPLAY-PIN	
	1	FILAMENT 1
	2	FILAMENT 1
	3	NO PIN
	4	//
20	5	S 1
19	6	S 2
18	7	S 3
17	8	S 4
37	9	S 5
36	10	S 6
35	11	S 7
34	12	S 8
33	13	S 9
16	14	G 1
15	15	G 2
14	16	G 3
13	17	G 4
22	18	G 5
23	19	G 6
	20	N C
	21	N C
	22	N C
	23	N C
	24	N C
	25	N C
	26	N C
	27	N C



µC-PIN	DISPLAY-PIN	
24	28	G 7
25	29	G 8
26	30	G 9
27	31	G 10
28	32	G 11
29	33	G 12
32	34	S 10
31	35	S 11
30	36	S 12
09	37	S 13
08	38	S 14
07	39	S 15
06	40	S 16
11	41	S 17
10	42	S 18
	43	NO PIN
	44	NO PIN
	45	FILAMENT 2
	46	FILAMENT 2

	G12 PIN33	G11 PIN32	G10 PIN31	G9 PIN30	G8 PIN29	G7 PIN28	G6 PIN19	G5 PIN18	G4 PIN17	G3 PIN16	G2 PIN15	G1 PIN14
S 1 PIN 5	AUTO SCAN		FBI MUTING	DIG 1a	a	a	a	a	a	a	a	a
S 2 PIN 6	HIGH			1b	b	b	b	b	b	b	b	b
S 3 PIN 7	TIMER +FRAME			1c	c	c	c	c	c	c	c	c
S 4 PIN 8	1 (TIMER)			1d	d	d	d	d	d	d	d	d
S 5 PIN 9	2 (TIMER)			1e	e	e	e	e	e	e	e	e
S 6 PIN 10	3 (TIMER)			1f	f	f	f	f	f	f	f	f
S 7 PIN 11				1g	g	g	g	g	g	g	g	g
S 8 PIN 12		STEREO	NARROW TUNED	PRESET						DP (DECIMAL POINT)	DP (DECIMAL POINT)	MHz
S 9 PIN 13				DIG 2a	h	h	h	h	h	h	h	h
S 10 PIN 34				2b	i	i	i	i	i	i	i	i
S 11 PIN 35				2c	k	k	k	k	k	k	k	k
S 12 PIN 36				2d	m	m	m	m	m	m	m	m
S 13 PIN 37				2e	n	n	n	n	n	n	n	n
S 14 PIN 38				2f	p	p	p	p	p	p	p	p
S 15 PIN 39				2g	r	r	r	r	r	r	r	r
S 16 PIN 40		MONO	WIDE TUNED	STORE								KHz
S 17 PIN 41		LOCAL	TUNED	MUTING								
S 18 PIN 42		DISTANT	1234567									

ELECTRICAL ADJUSTMENTS AND CHECKS

General

- For the HF adjustments, the injected signals should be kept as small as possible.
- Connect the frame aerial in case AM is used.
- The AM IF amplifier is adjusted with a wobulator signal of approx 600 kHz having a sweep of 250 kHz at a rhythm of 50 Hz.

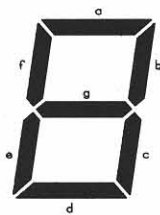
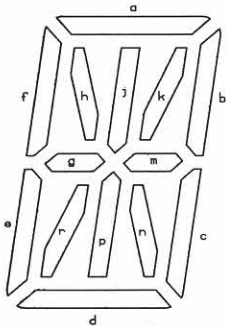
Measuring equipment used

- Power-supply equipment
- Oscilloscope
- DC voltmeter
- AC millivoltmeter
- Distortion meter

ELUCIDATIONS

- 1 Place the top of the response curve in the centre of the screen by displacing the wobulating frequency.
- 2 Adjust for maximum height and symmetry.
- 3 Adjust for minimum THD distortion on the distortion meter.
- 4 Before adjustment turn the potentiometer to its extreme clockwise position.
- 5 Before adjustment turn the potentiometer to its extreme counterclockwise position.
- 6 Adjust the left and the right channel to the same minimum level.

- Measuring point
- Trimming element



SERVICING HINTS

1. ESD



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. See Service Information A86 - 1000 for this.

2. Display DP 601

The outputs of the display drivers are not protected against external overvoltages! When testing the display with external voltages, you should interrupt the connections with IC 601.

3. Warning

If the set is connected to mains voltage, there is a risk of shock-hazard voltages after the set is deaced.

4. FM IF offset

The ceramic resonators (F2 - F6) have different intermediate frequencies as a result of tolerances. Dependent on the IF, a jumper has to be closed or a jumper has to be opened. B0 - B3 (see table). The resonators have been provided with a colour code.

5. Ceramic resonators F2 - F6

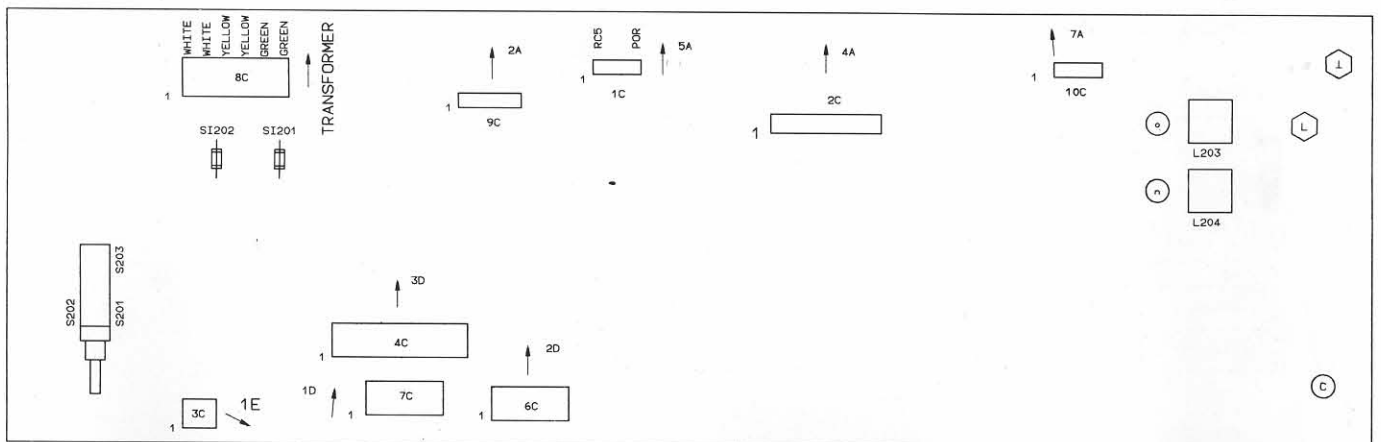
When replacing one of the ceramic resonators, take care that the colour codes of all three resonators are the same.






FM-IF program

IF (MHz)	Jumper				Filter color
	B 3	B 2	B 1	B 0	
10.6500	0	1	0	0	Black
10.6750	0	1	1	0	Blue
10.7000	1	0	0	0	Red
10.7225	1	0	1	0	Orange
10.7500	1	1	0	0	White





0 = jumper open

1 = jumper closed









SK... WAVE RANGE SWITCH	 → SIGNAL	 TO	DISPLAY TUNE IN	REMARKS DETUNE	 ADJUST	 OSCILLOSCOPE OR A.C. METER	 D.C. METER INDICATOR
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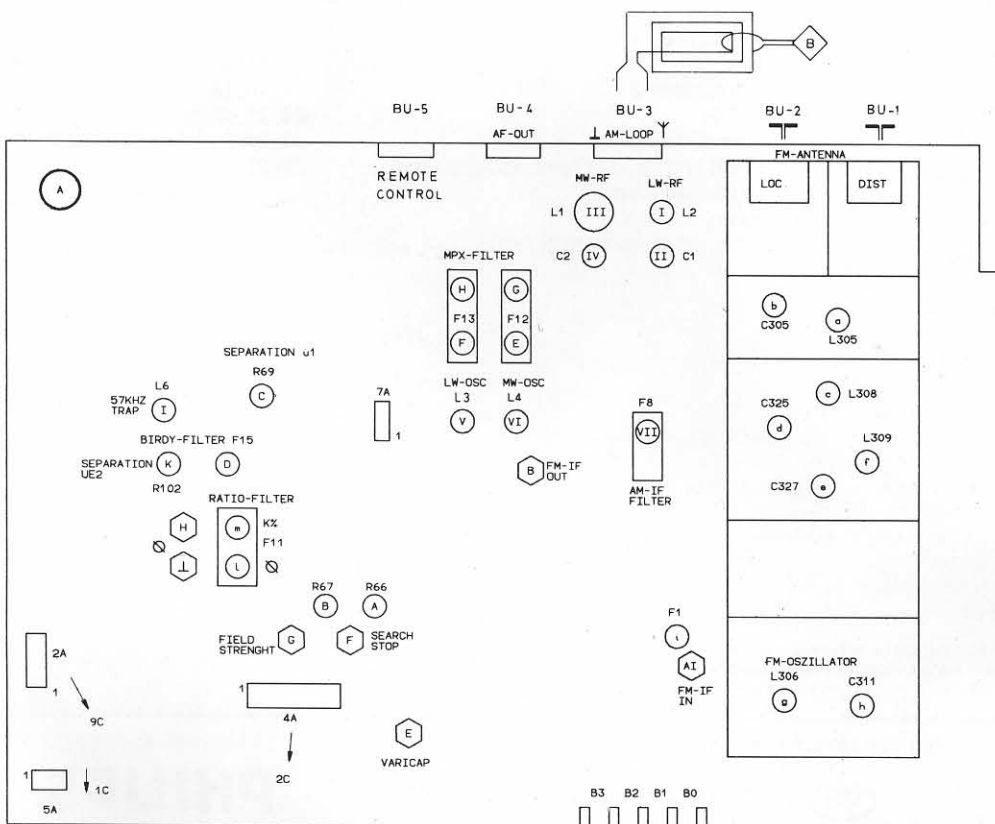
AM-RF (Oscillator)






MW			Display 531 kHz		 L 4		 1,1 V =
LW			Display 153 kHz		 L 3		 1,8 V =

AM-RF-IF









MW	1449 kHz 1 kHz mod. m=30 %		Display 1449 kHz		  C 2 F 8	BU-4 max. ~	
	558 kHz 1 kHz mod. m=30 %		Display 558 kHz		 L 1		
261 kHz 1 kHz mod. m=30 %	Display 261 kHz		 C 1				
LW	162 kHz 1 kHz mod. m=30 %		Display 162 kHz		 L 2		

‡ Repeat -Herhalen -Répéter -Wiederholen -Ricominciare -Repetera -Gentage -Gjentagelse -Toista







SK... WAVE RANGE SWITCH	 SIGNAL	 TO	DISPLAY TUNE IN	REMARKS DETUNE	 ADJUST	 OSCILLOSCOPE OR A.C. METER	 D.C. METER INDICATOR
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FM-IF/TH.D.

FM Distant Stereo	10,7 MHz				 F 1	 1  max.~ + sym.	
	108 MHz $\Delta f = 75$ kHz 1 mV	BU-1 (A) DX	Display 108,00 MHz		 F 11		 0V \pm 8 mV
					 F 11	BU-4 min. distortion 	





FM-RF (Oscillator)






FM Distant			Display 108,00 MHz		 C311		 8,5 V =
			Display 87,50 MHz		 L 306		 2,5 V =

FM-RF

FM Distant	106 MHz 1 kHz mod. $\Delta f = 75$ kHz	BU-1 (A) DX	Display 106,00 MHz		 C 305	BU-4 max. ~	
	88 MHz 1 kHz mod. $\Delta f = 75$ kHz		Display 88,00 MHz		 C 325		 C 327
					 L 305		
					 L 308		
					 L 309		

FM -FIELDSTRENGTH IND -SEARCH STOP

FM Distant	98 MHz 1 mV	BU-1 (A) DX	98,00 MHz		 R 67		 1.5 V +0.05 V
	98 MHz 15 μ V				 R 66		 0.7 V +0.05 V

SK... WAVE RANGE SWITCH	 SIGNAL	 TO	DISPLAY TUNE IN	REMARKS DETUNE	 ADJUST	 OSCILLOSCOPE OR A.C. METER	 D.C. METER INDICATOR
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FM -STEREO DECODER CROSSTALK

FM Distant Stereo Width: narrow	106 MHz L mod. 1kHz	BU-1 (A) DX	106.00 MHz			C R 69 4	BU-4-R min. ~ 6
	106 MHz R mod. 1kHz						BU-4-L min. ~ 6
FM Distant Stereo Width: wide	106 MHz L mod. 1kHz						BU-4-R min. ~ 6
	106 MHz R mod. 1kHz						BU-4-L min. ~ 6

57 kHz WAVE TRAP

FM Distant Stereo Mute off	57 kHz approx. 50 mV	H			I L 6	M min. ~	
-------------------------------------	-------------------------	---	--	--	----------	-------------	--

ADJACENT CHANNEL FILTER

FM Distant Stereo Mute off	114 kHz approx. 100 mV	H			D F 15	M min. ~	
-------------------------------------	---------------------------	---	--	--	-----------	-------------	--

FM -PILOT -FILTERS

FM Distant Stereo Mute off	19 kHz approx. 100 mV	H				E F 12 F F 13	BU-4 min ~ 19 kHz
	38 kHz approx. 100 mV						G F 12 H F 13

RDS -DEMODULATOR

FM Distant	56.4 kHz (50 Hz) approx. 4 mV	K				o L 203	L max. ~
	57.7 kHz (50 Hz) approx. 4 mV						

RDS DESCRIPTION

RDS = RADIO DATA SYSTEM. The RDS signal accompanies the program and is an additional information for FM broadcasting stations.

The most important informations are.

PI CODE = program identification. This is an uniform 16 Bit code for all stations broadcasting the same program e. g. all NDR 2 stations.
 Example: Germany FR = D Area coverage: traffic area B = B Program: NDR 2 = 33 => EX Code DB 21

D				B				2				1			
1				5				9				13			
1	1	0	1	1	0	1	1	0	0	1	0	0	0	0	1

- Bit 1....4 country code e. g. "D" for Germany
"A" for Azstria
"4" for Switzerland
- 5....8 area code e. g. similar to the VF area code
- 9....16 program index e. g. "57" for "HR 3"

TP CODE = traffic program
 = traffic program code. This information indicates whether the adjusted program broadcasts trsfic announcements.

TA CODE = traffic announcement
 = traffic announcement code. Is broadcasted during traffic announcements.

PS CODE = program service name. Transmission of the program name into clear code by 8 addressed ASCII signs.

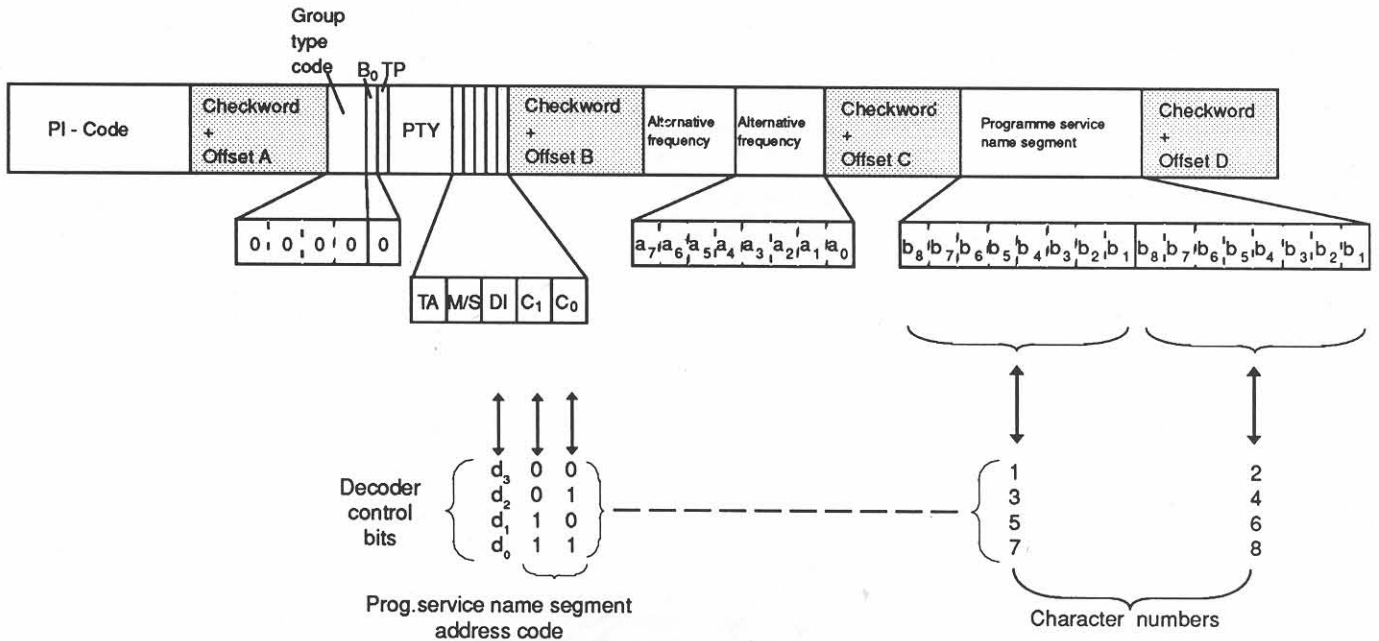
AF CODE = alternative frequencies. Each station is broadcasting a number of alternative frequencies which can be used in case of need, e. g. failure of transmitter.

DATA FRAME:

The data are transmitted serially, without start and stop bits. For a later decoding, recognition of errors and correction of errors, a check word of 10 bits is adhered to each data word of 16 bits. This data word of 26 bits is named "block". Four "blocks" are forming one "group". The total information is composed of a file of groups. The combination of the single groups can be tuned to special program aims. Thereby the repetition rates of the sigle informations are different.

WAY OF MODULATION

The digital signal is bi-phase coded and band limited by an exactly defined filter before it AM modulates a supressed 57 kHz carrier. This way of modulation corresponds toa 2 phase PSK modulation with a phase shift of ± 90 degrees.





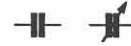



RDS DEMODULATOR:

Although the technical resources for the demodulation are considerable higher than e. g. for an VF-decoder, the actual expense of component parts and the waste of alignment is nearly comparable due to a specially developed IC. During the development of the IC 203 (LA 2231) it was considered to bring the alignment time to a minimum. This was succeeded so far, that the real demodulator needs no alignment. A big problem of the RDS demodulation is the low deviation of the actually 1,2 kHz, against the VF deviation of 3,5 kHz and the useful deviation of 20-75 kHz. It is possible that the program of stations which are far away and therefore recieved with a low field strength can be haerd with a satisfying quality, but the RDS signal can, however, disappear in the background noise and it is no more possible to demodulate it. The RDS demodulation is also complicated at the

appearance of disturbances caused by multipath reception (multipath disturbances).

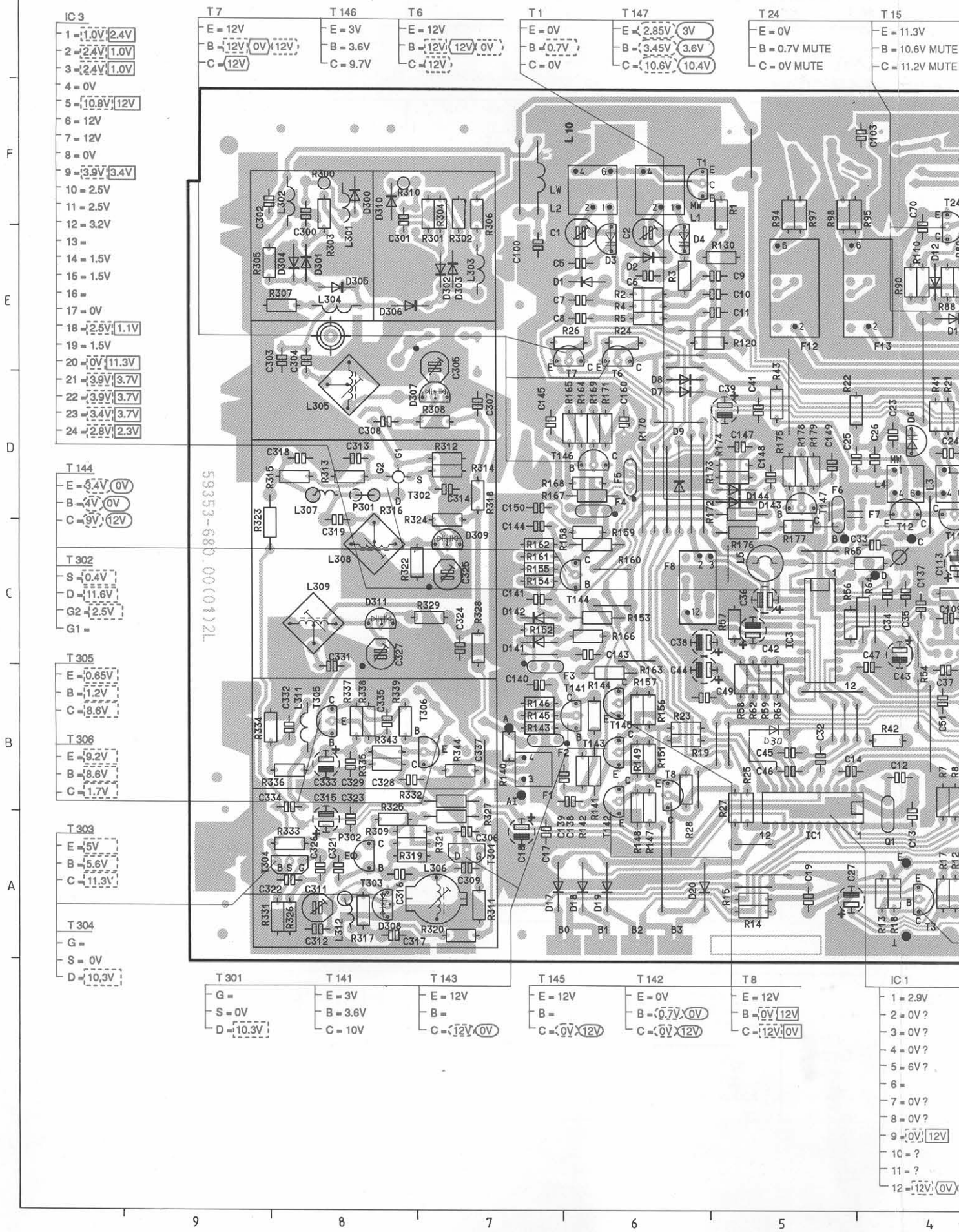
The RDS signal is taken from the signal path of the modulation. In order to avoid disturbances caused by the useful modulation, they must be separated. This is essebtially done by two single circuits which are decoupled by OP2 in IC 202 and are shifted by -600 Hz/+700 Hz to the carrier frequency of 57 kHz. This filtering effect is support by OP1 wired up for an active high-pass. As the RDS signal is a PSK modulation, the total information is included in the phase relationship of the zero passages. IC 203 supplies a demodulated RDS signal, composed of the RDS clock (pin 18) with 1 187,5 Hz and the RDS data signal (pin 17). Both signals will be passed to the microcomputer (IC 201) for the further software processing.

 <table border="0"> <tr><td>T1</td><td>5322 130 44647</td><td>BC368</td></tr> <tr><td>T2</td><td>4822 130 42121</td><td>2SK30</td></tr> <tr><td>T3</td><td>4822 130 44196</td><td>BC548C</td></tr> <tr><td>T6+T8</td><td>4822 130 44197</td><td>BC558B</td></tr> <tr><td>T11</td><td>4822 130 40937</td><td>BC548B</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>T12</td><td>4822 130 40937</td><td>BC548B</td></tr> <tr><td>T15</td><td>4822 130 44197</td><td>BC558B</td></tr> <tr><td>T16</td><td>4822 130 40937</td><td>BC548B</td></tr> <tr><td>T17</td><td>4822 130 40937</td><td>BC548B</td></tr> <tr><td>T18</td><td>4822 130 60163</td><td>2SC1047C</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>T19</td><td>4822 130 60163</td><td>2SC1047C</td></tr> <tr><td>T21</td><td>4822 130 40937</td><td>BC548B</td></tr> <tr><td>T22</td><td>4822 130 41124</td><td>BC560B</td></tr> <tr><td>T23</td><td>4822 130 41096</td><td>BC550C</td></tr> <tr><td>T24</td><td>4822 130 40937</td><td>BC548B</td></tr> <tr><td 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40902	BF240	T147	4822 130 40902	BF240	T201	4822 130 40937	BC548B	T202	4822 130 40937	BC548B	T203	4822 130 44197	BC558B				T204	4822 130 40937	BC548B	T205	4822 130 44197	BC558B	T206	4822 130 40937	BC548B	T207	4822 130 40937	BC548B	T210	4822 130 40937	BC548B				T301	4822 130 61298	2SK544E	T302	4822 130 41817	BF982-I	T303	4822 130 40902	BF240	T304	4822 130 61298	2SK544E	T305	4822 130 40902	BF240				T306	5322 130 42626	BF440	 <table border="0"> <tr><td>F1</td><td>4822 157 62292</td><td>FILTER</td></tr> <tr><td>F2+F6</td><td>4822 157 62297</td><td>FM-IF 10.7MHZ</td></tr> <tr><td>F8</td><td>4822 242 72289</td><td>AM-IF 450KHZ</td></tr> <tr><td>F11</td><td>4822 157 62302</td><td>FILTER 335</td></tr> <tr><td>F12</td><td>4822 156 11104</td><td>19KHZ PILOT FILTER</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>F13</td><td>4822 156 11104</td><td>19KHZ PILOT FILTER</td></tr> <tr><td>F15</td><td>4822 214 51727</td><td>LPF</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>L1</td><td>4822 156 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640KHZ</td></tr> </table>	F1	4822 157 62292	FILTER	F2+F6	4822 157 62297	FM-IF 10.7MHZ	F8	4822 242 72289	AM-IF 450KHZ	F11	4822 157 62302	FILTER 335	F12	4822 156 11104	19KHZ PILOT FILTER				F13	4822 156 11104	19KHZ PILOT FILTER	F15	4822 214 51727	LPF				L1	4822 156 11094	MW-RF	L2	4822 156 11095	LW-RF	L3	4822 156 11091	LW-OSC.	L4	4822 156 11089	MW-OSC.	L5	4822 157 53632	CHOKE 39MH				L6	4822 157 62293	COIL	L10	4822 157 53628	2.2UH 10%	L202	4822 157 62309	100UH	L203	4822 157 62294	7X7	L204	4822 157 62294	7X7				L301	4822 157 62299	3.3UH 10%	L302	4822 157 62299	3.3UH 10%	L303	4822 157 62299	3.3UH 10%	L304	4822 157 62299	3.3UH 10%	L305	4822 156 11099	FM-RF				L306	4822 156 11096	FM-OSC.	L307	4822 157 60206	CHOKE	L308	4822 156 11098	FM-RF	L309	4822 156 11097	FM-RF	L311	4822 157 53631	1.5UH 5%				L312	4822 157 53628	COIL 2.2UH	L601	4822 157 62301	100UH 10%				P301	4822 526 10406	FERRITE CORE	P302	4822 526 10406	FERRITE CORE				Q1	4822 242 72294	7.2MHZ	Q2	4822 242 72295	456KHZ				Q201	4822 242 73603	8MHZ	Q202	4822 242 73604	456KHZ	Q601	4822 242 73605	CRYSTAL 640KHZ	 <table border="0"> <tr><td>D1</td><td>5322 130 34052</td><td>1N4151</td></tr> <tr><td>D2</td><td>5322 130 34052</td><td>1N4151</td></tr> <tr><td>D3+D6</td><td>4822 130 81002</td><td>SVC321</td></tr> <tr><td>D7+D9</td><td>5322 130 34052</td><td>1N4151</td></tr> <tr><td>D12+D20</td><td>5322 130 34052</td><td>1N4151</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>D136</td><td>5322 130 34052</td><td>1N4151</td></tr> <tr><td>D141+D144</td><td>4822 130 30971</td><td>BA243</td></tr> <tr><td>D200</td><td>5322 130 34052</td><td>1N4151</td></tr> <tr><td>D201</td><td>5322 130 34052</td><td>1N4151</td></tr> <tr><td>D202</td><td>4822 130 82109</td><td>9.1C 0.5W</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>D203</td><td>4822 130 31353</td><td>BAT42/43</td></tr> <tr><td>D209+D217</td><td>5322 130 34052</td><td>1N4151</td></tr> <tr><td>D218+D221</td><td>4822 130 31353</td><td>BAT42/43</td></tr> <tr><td>D222</td><td>4822 130 31438</td><td>1N4001</td></tr> <tr><td>D223</td><td>4822 130 81005</td><td>5.1C 0.5W</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>D224</td><td>4822 130 82108</td><td>ZPY24</td></tr> <tr><td>D225+229</td><td>4822 130 31438</td><td>1N4001</td></tr> <tr><td>D230</td><td>4822 130 31353</td><td>BAT42/43</td></tr> <tr><td>D231</td><td>5322 130 34052</td><td>1N4151</td></tr> <tr><td>D232</td><td>5322 130 34052</td><td>1N4151</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>D233</td><td>4822 130 31438</td><td>1N4001</td></tr> <tr><td>D234</td><td>5322 130 34052</td><td>1N4151</td></tr> <tr><td>D300+D302</td><td>4822 130 34189</td><td>BAV20</td></tr> <tr><td>D303+D306</td><td>4822 130 80638</td><td>BA282</td></tr> <tr><td>D307</td><td>4822 130 81003</td><td>KV1310</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>D308</td><td>4822 130 81003</td><td>KV1310</td></tr> <tr><td>D309</td><td>4822 130 81003</td><td>KV1310</td></tr> <tr><td>D310</td><td>4822 130 34189</td><td>BAV20</td></tr> <tr><td>D311</td><td>4822 130 81003</td><td>KV1310</td></tr> <tr><td>D601</td><td>4822 130 82109</td><td>9.1C 0.5W</td></tr> </table>	D1	5322 130 34052	1N4151	D2	5322 130 34052	1N4151	D3+D6	4822 130 81002	SVC321	D7+D9	5322 130 34052	1N4151	D12+D20	5322 130 34052	1N4151				D136	5322 130 34052	1N4151	D141+D144	4822 130 30971	BA243	D200	5322 130 34052	1N4151	D201	5322 130 34052	1N4151	D202	4822 130 82109	9.1C 0.5W				D203	4822 130 31353	BAT42/43	D209+D217	5322 130 34052	1N4151	D218+D221	4822 130 31353	BAT42/43	D222	4822 130 31438	1N4001	D223	4822 130 81005	5.1C 0.5W				D224	4822 130 82108	ZPY24	D225+229	4822 130 31438	1N4001	D230	4822 130 31353	BAT42/43	D231	5322 130 34052	1N4151	D232	5322 130 34052	1N4151				D233	4822 130 31438	1N4001	D234	5322 130 34052	1N4151	D300+D302	4822 130 34189	BAV20	D303+D306	4822 130 80638	BA282	D307	4822 130 81003	KV1310				D308	4822 130 81003	KV1310	D309	4822 130 81003	KV1310	D310	4822 130 34189	BAV20	D311	4822 130 81003	KV1310	D601	4822 130 82109	9.1C 0.5W
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R141	4822 116 82473	SAF.RES. 33 OHM 5%	R153	4822 116 82473	SAF.RES. 33 OHM 5%	R158	4822 116 82473	SAF.RES. 33 OHM 5%	R163	4822 116 82473	SAF.RES. 33 OHM 5%	R167	4822 116 82473	SAF.RES. 33 OHM 5%				R172	4822 116 82473	SAF.RES. 33 OHM 5%	R176	4822 116 82473	SAF.RES. 33 OHM 5%	R181	4822 116 53666	SAF.RES. 47 OHM 5%	R182	4822 116 53666	SAF.RES. 47 OHM 5%	R823	4822 116 53666	SAF.RES. 47 OHM 5%				R327	4822 116 53666	SAF.RES. 47 OHM 5%	R332	4822 111 30511	SAF.RES. 12 OHM 5%	 <table border="0"> <tr><td>C1</td><td>4822 125 50332</td><td>7.5-50PF LW-RF</td></tr> <tr><td>C2</td><td>4822 125 50329</td><td>4.5-20PF MW-RF</td></tr> <tr><td>C12</td><td>4822 122 33562</td><td>36PF N150 2%</td></tr> <tr><td>C13</td><td>4822 122 33562</td><td>36PF N150 2%</td></tr> <tr><td>C22</td><td>4822 122 33568</td><td>68PF N750 2%</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>C23</td><td>4822 122 33567</td><td>4.7PF 0.25PF N750</td></tr> <tr><td>C24</td><td>4822 122 33564</td><td>150PF N150 2%</td></tr> <tr><td>C26</td><td>4822 122 33572</td><td>390PF N1500 2%</td></tr> <tr><td>C45</td><td>4822 126 10809</td><td>100PF N750 2%</td></tr> <tr><td>C46</td><td>4822 126 10809</td><td>100PF N750 2%</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>C62</td><td>4822 122 33569</td><td>180PF N750 2%</td></tr> <tr><td>C66</td><td>4822 122 33569</td><td>180PF N750 2%</td></tr> <tr><td>C105</td><td>4822 126 10808</td><td>220PF N750 2%</td></tr> <tr><td>C106</td><td>4822 126 10811</td><td>180PF N750 5%</td></tr> <tr><td>C108</td><td>4822 126 10809</td><td>100PF N750 2%</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>C122</td><td>4822 126 10808</td><td>220PF N750 2%</td></tr> <tr><td>C123</td><td>4822 126 10808</td><td>220PF N750 2%</td></tr> <tr><td>C305</td><td>4822 125 50329</td><td>4.5-20PF FM-RF</td></tr> <tr><td>C311</td><td>4822 125 50386</td><td>3-10PF FM-OSC.</td></tr> <tr><td>C312</td><td>4822 126 10813</td><td>1.8PF 0.25PF N150</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>C316</td><td>4822 122 33559</td><td>10PF N150 2%</td></tr> <tr><td>C322</td><td>4822 122 33559</td><td>10PF N150 2%</td></tr> <tr><td>C325</td><td>4822 125 50329</td><td>4.5-20PF FM-RF</td></tr> <tr><td>C327</td><td>4822 125 50329</td><td>4.5-20PF FM-RF</td></tr> <tr><td>C332</td><td>4822 122 33564</td><td>150PF N150 2%</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>C334</td><td>4822 122 33557</td><td>4.7PF 0.25PF N150</td></tr> </table>	C1	4822 125 50332	7.5-50PF LW-RF	C2	4822 125 50329	4.5-20PF MW-RF	C12	4822 122 33562	36PF N150 2%	C13	4822 122 33562	36PF N150 2%	C22	4822 122 33568	68PF N750 2%				C23	4822 122 33567	4.7PF 0.25PF N750	C24	4822 122 33564	150PF N150 2%	C26	4822 122 33572	390PF N1500 2%	C45	4822 126 10809	100PF N750 2%	C46	4822 126 10809	100PF N750 2%				C62	4822 122 33569	180PF N750 2%	C66	4822 122 33569	180PF N750 2%	C105	4822 126 10808	220PF N750 2%	C106	4822 126 10811	180PF N750 5%	C108	4822 126 10809	100PF N750 2%				C122	4822 126 10808	220PF N750 2%	C123	4822 126 10808	220PF N750 2%	C305	4822 125 50329	4.5-20PF FM-RF	C311	4822 125 50386	3-10PF FM-OSC.	C312	4822 126 10813	1.8PF 0.25PF N150				C316	4822 122 33559	10PF N150 2%	C322	4822 122 33559	10PF N150 2%	C325	4822 125 50329	4.5-20PF FM-RF	C327	4822 125 50329	4.5-20PF FM-RF	C332	4822 122 33564	150PF N150 2%				C334	4822 122 33557	4.7PF 0.25PF N150	 <table border="0"> <tr><td>IC1</td><td>4822 209 73435</td><td>LC7217</td></tr> <tr><td>IC2</td><td>4822 209 73434</td><td>LA3401</td></tr> <tr><td>IC3</td><td>4822 209 71785</td><td>LA1266</td></tr> <tr><td>IC4</td><td>5322 130 42221</td><td>7812</td></tr> <tr><td>IC5</td><td>4822 209 61801</td><td>TA7061BP</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>IC201</td><td>4822 209 62432</td><td>MC68HC11A8</td></tr> <tr><td>IC202</td><td>4822 209 62435</td><td>RC4560</td></tr> <tr><td>IC203</td><td>4822 209 62433</td><td>LA2231 DIP/24S</td></tr> <tr><td>IC204</td><td>4822 209 80891</td><td>MC78M05CT</td></tr> <tr><td>IC205</td><td>4822 209 71898</td><td>M51957A</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>IC601</td><td>4822 209 62434</td><td>UPD7537 ACU-221</td></tr> </table> <p>Miscellaneous</p> <table border="0"> <tr><td>LA1</td><td>4822 134 40915</td><td>LAMP 5V 60MA AND CAP</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>DP601</td><td>4822 130 90837</td><td>DISPLAY</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>SI201</td><td>4822 253 30017</td><td>FUSE 500MA/T</td></tr> <tr><td>SI202</td><td>4822 070 32001</td><td>FUSE 200MA/T</td></tr> </table>	IC1	4822 209 73435	LC7217	IC2	4822 209 73434	LA3401	IC3	4822 209 71785	LA1266	IC4	5322 130 42221	7812	IC5	4822 209 61801	TA7061BP				IC201	4822 209 62432	MC68HC11A8	IC202	4822 209 62435	RC4560	IC203	4822 209 62433	LA2231 DIP/24S	IC204	4822 209 80891	MC78M05CT	IC205	4822 209 71898	M51957A				IC601	4822 209 62434	UPD7537 ACU-221	LA1	4822 134 40915	LAMP 5V 60MA AND CAP				DP601	4822 130 90837	DISPLAY				SI201	4822 253 30017	FUSE 500MA/T	SI202	4822 070 32001	FUSE 200MA/T																																																																																																																																																															
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C23	4822 122 33567	4.7PF 0.25PF N750																																																																																																																																																																																																																																																																																																																																																																																	
C24	4822 122 33564	150PF N150 2%																																																																																																																																																																																																																																																																																																																																																																																	
C26	4822 122 33572	390PF N1500 2%																																																																																																																																																																																																																																																																																																																																																																																	
C45	4822 126 10809	100PF N750 2%																																																																																																																																																																																																																																																																																																																																																																																	
C46	4822 126 10809	100PF N750 2%																																																																																																																																																																																																																																																																																																																																																																																	
C62	4822 122 33569	180PF N750 2%																																																																																																																																																																																																																																																																																																																																																																																	
C66	4822 122 33569	180PF N750 2%																																																																																																																																																																																																																																																																																																																																																																																	
C105	4822 126 10808	220PF N750 2%																																																																																																																																																																																																																																																																																																																																																																																	
C106	4822 126 10811	180PF N750 5%																																																																																																																																																																																																																																																																																																																																																																																	
C108	4822 126 10809	100PF N750 2%																																																																																																																																																																																																																																																																																																																																																																																	
C122	4822 126 10808	220PF N750 2%																																																																																																																																																																																																																																																																																																																																																																																	
C123	4822 126 10808	220PF N750 2%																																																																																																																																																																																																																																																																																																																																																																																	
C305	4822 125 50329	4.5-20PF FM-RF																																																																																																																																																																																																																																																																																																																																																																																	
C311	4822 125 50386	3-10PF FM-OSC.																																																																																																																																																																																																																																																																																																																																																																																	
C312	4822 126 10813	1.8PF 0.25PF N150																																																																																																																																																																																																																																																																																																																																																																																	
C316	4822 122 33559	10PF N150 2%																																																																																																																																																																																																																																																																																																																																																																																	
C322	4822 122 33559	10PF N150 2%																																																																																																																																																																																																																																																																																																																																																																																	
C325	4822 125 50329	4.5-20PF FM-RF																																																																																																																																																																																																																																																																																																																																																																																	
C327	4822 125 50329	4.5-20PF FM-RF																																																																																																																																																																																																																																																																																																																																																																																	
C332	4822 122 33564	150PF N150 2%																																																																																																																																																																																																																																																																																																																																																																																	
C334	4822 122 33557	4.7PF 0.25PF N150																																																																																																																																																																																																																																																																																																																																																																																	
IC1	4822 209 73435	LC7217																																																																																																																																																																																																																																																																																																																																																																																	
IC2	4822 209 73434	LA3401																																																																																																																																																																																																																																																																																																																																																																																	
IC3	4822 209 71785	LA1266																																																																																																																																																																																																																																																																																																																																																																																	
IC4	5322 130 42221	7812																																																																																																																																																																																																																																																																																																																																																																																	
IC5	4822 209 61801	TA7061BP																																																																																																																																																																																																																																																																																																																																																																																	
IC201	4822 209 62432	MC68HC11A8																																																																																																																																																																																																																																																																																																																																																																																	
IC202	4822 209 62435	RC4560																																																																																																																																																																																																																																																																																																																																																																																	
IC203	4822 209 62433	LA2231 DIP/24S																																																																																																																																																																																																																																																																																																																																																																																	
IC204	4822 209 80891	MC78M05CT																																																																																																																																																																																																																																																																																																																																																																																	
IC205	4822 209 71898	M51957A																																																																																																																																																																																																																																																																																																																																																																																	
IC601	4822 209 62434	UPD7537 ACU-221																																																																																																																																																																																																																																																																																																																																																																																	
LA1	4822 134 40915	LAMP 5V 60MA AND CAP																																																																																																																																																																																																																																																																																																																																																																																	
DP601	4822 130 90837	DISPLAY																																																																																																																																																																																																																																																																																																																																																																																	
SI201	4822 253 30017	FUSE 500MA/T																																																																																																																																																																																																																																																																																																																																																																																	
SI202	4822 070 32001	FUSE 200MA/T																																																																																																																																																																																																																																																																																																																																																																																	

RF + IF PANEL

9 8 7 6 5 4

solder side



IC 3

1	= 1.0V	2.4V
2	= 2.4V	1.0V
3	= 2.4V	1.0V
4	= 0V	
5	= 10.8V	12V
6	= 12V	
7	= 12V	
8	= 0V	
9	= 3.9V	3.4V
10	= 2.5V	
11	= 2.5V	
12	= 3.2V	
13	=	
14	= 1.5V	
15	= 1.5V	
16	=	
17	= 0V	
18	= 2.5V	1.1V
19	= 1.5V	
20	= 0V	11.3V
21	= 3.9V	3.7V
22	= 3.9V	3.7V
23	= 3.4V	3.7V
24	= 2.8V	2.3V

T 7

E	= 12V
B	= 12V (0V) 12V
C	= 12V

T 146

E	= 3V
B	= 3.6V
C	= 9.7V

T 6

E	= 12V
B	= 12V 12V 0V
C	= 12V

T 1

E	= 0V
B	= 0.7V
C	= 0V

T 147

E	= 2.85V	3V
B	= 3.45V	3.6V
C	= 10.6V	10.4V

T 24

E	= 0V
B	= 0.7V MUTE
C	= 0V MUTE

T 15

E	= 11.3V
B	= 10.6V MUTE
C	= 11.2V MUTE

T 144

E	= 3.4V	0V
B	= 4V	0V
C	= 9V	12V

T 302

S	= 0.4V
D	= 11.6V
G2	= 2.5V
G1	=

T 305

E	= 0.65V
B	= 1.2V
C	= 8.6V

T 306

E	= 9.2V
B	= 8.6V
C	= 1.7V

T 303

E	= 5V
B	= 5.6V
C	= 11.3V

T 304

G	=
S	= 0V
D	= 10.3V

T 301

G	=
S	= 0V
D	= 10.3V

T 141

E	= 3V
B	= 3.6V
C	= 10V

T 143

E	= 12V
B	=
C	= 12V 0V

T 145

E	= 12V
B	=
C	= 0V 12V

T 142

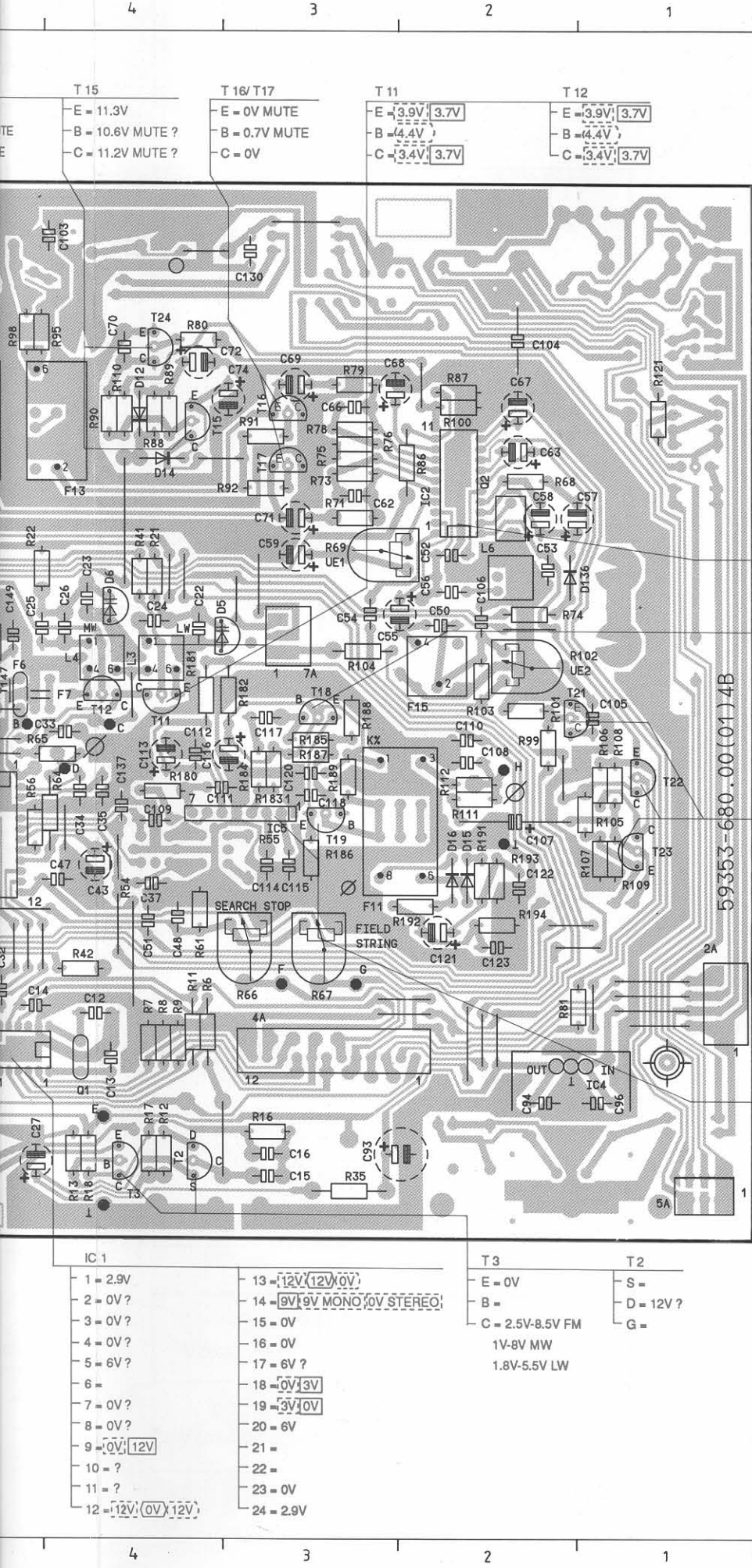
E	= 0V
B	= 0.7V 0V
C	= 0V 12V

T 8

E	= 12V
B	= 0V 12V
C	= 12V 0V

IC 1

1	= 2.9V
2	= 0V?
3	= 0V?
4	= 0V?
5	= 6V?
6	=
7	= 0V?
8	= 0V?
9	= 0V 12V
10	= ?
11	= ?
12	= 12V 0V



T 15
E = 11.3V
B = 10.6V MUTE ?
C = 11.2V MUTE ?

T 16/ T17
E = 0V MUTE
B = 0.7V MUTE
C = 0V

T 11
E = 3.9V 3.7V
B = 4.4V
C = 3.4V 3.7V

T 12
E = 3.9V 3.7V
B = 4.4V
C = 3.4V 3.7V

IC 2

- 1 = 3.2V
- 2 = 3.2V
- 3 = 3.2V
- 4 = 3.2V
- 5 = 5.5V
- 6 = 3.2V
- 7 = 3.2V
- 8 = 5.5V
- 9 = 3.2V
- 10 = 0V 5.5V
- 11 = 0V 2.8V
- 12 = 0V
- 13 = 0.5V STEREO
5V MONO 5V
- 14 = 5V 0V
- 15 = 0V 4V MUTE
- 16 = 2.8V
- 17 = 2.7V STEREO 0.4V
- 18 = 2.9V 5.4V
- 19 = 2.9V 5.4V
- 20 = 4V 7.5V
- 21 = 1.8V MONO
- 22 = 12V

T 18

- E = 2.4V
- B =
- C = 10.5V

T 22

- E = 12V
- B = 11.3V ?
- C = 12V ?

T 21

- E = 0V
- B = 0.7V ?
- G = 0V ?

T 23

- E = 0.4V
- B = 0.9V
- C = 11.3V ?

T 19

- E = 2.4V
- B = 2.7V
- C = 10.5V

IC 5

- 1 = 1.95V
- 2 = 1.92V
- 3 = 8V
- 4 = 0V
- 5 = 11.4V
- 6 = 1.95V
- 7 = 1.95V

T 3

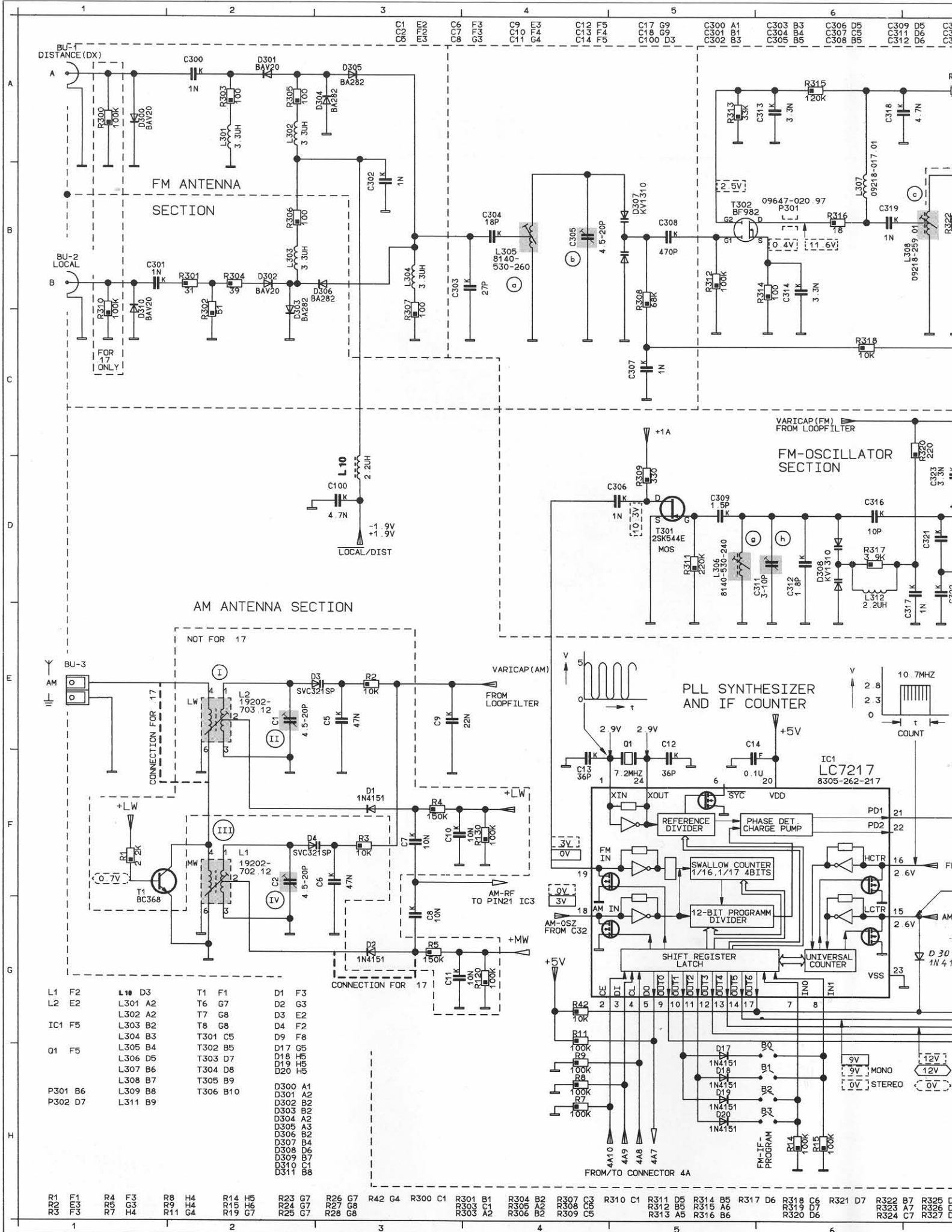
- E = 0V
- B =
- C = 2.5V-8.5V FM
1V-8V MW
1.8V-5.5V LW

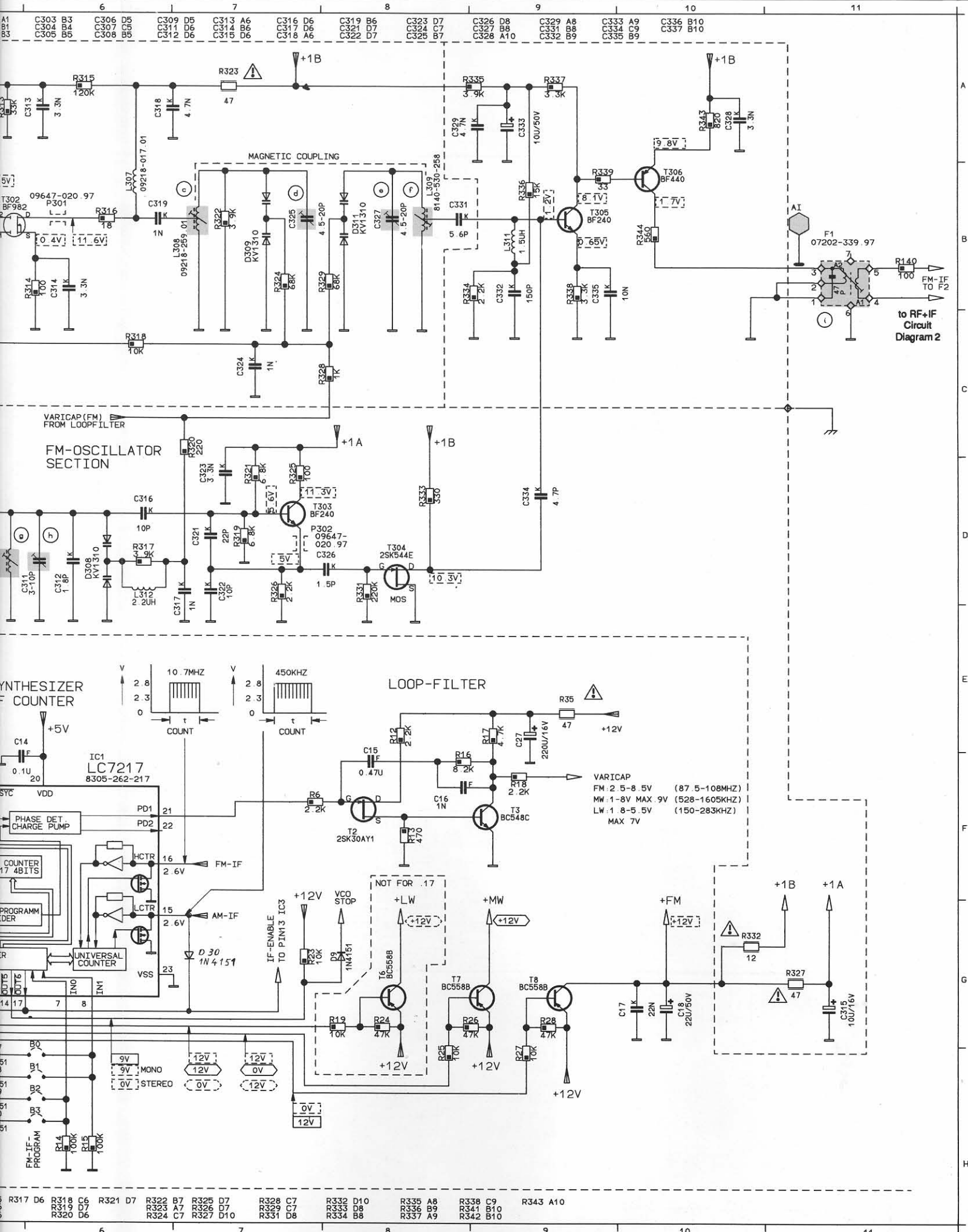
T 2

- S =
- D = 12V ?
- G =

- IC 1
- 1 = 2.9V
 - 2 = 0V ?
 - 3 = 0V ?
 - 4 = 0V ?
 - 5 = 6V ?
 - 6 =
 - 7 = 0V ?
 - 8 = 0V ?
 - 9 = 0V 12V
 - 10 = ?
 - 11 = ?
 - 12 = 12V 0V 12V
 - 13 = 12V 12V 0V
 - 14 = 9V 9V MONO 0V STEREO
 - 15 = 0V
 - 16 = 0V
 - 17 = 6V ?
 - 18 = 0V 13V
 - 19 = 3V 0V
 - 20 = 6V
 - 21 =
 - 22 =
 - 23 = 0V
 - 24 = 2.9V

2A	B1	C337	B7	R097	F5
4A	B3	D001	E7	R098	F5
5A	A1	D002	E6	R099	C2
6A	F5	D003	E6	R100	E2
7A	D3	D004	E6	R101	C2
8A	F1	D005	D4	R102	D2
9A	F1	D006	D4	R103	D2
C001	E7	D007	F6	R104	C3
C002	E6	D008	D6	R105	C1
C005	E7	D009	D6	R106	C1
C006	E6	D012	E4	R107	C1
C007	E7	D014	E4	R108	C1
C008	E7	D015	C2	R109	C1
C009	E6	D016	C2	R110	E4
C010	E6	D017	A7	R111	C2
C011	E6	D018	A7	R112	C2
C012	B4	D019	A6	R120	E6
C013	A4	D020	A6	R121	E1
C014	B5	D021	E1	R126	E1
C015	A3	D022	E1	R127	E1
C016	A3	D023	E1	R128	E1
C017	A7	D024	B2	R130	E6
C018	A7	D029	A2	R130	F4
C019	A5	D031	F1	R140	B7
C022	D4	D032	F1	R141	B6
C023	D4	D033	F1	R142	B6
C024	D4	D034	F2	R143	B7
C025	D5	D040	F1	R144	B6
C026	D4	D050	F1	R145	B7
C027	A5	D136	D2	R146	B7
C032	B5	D141	C5	R147	B6
C033	C5	D142	C5	R148	B6
C034	C4	D143	C5	R149	B6
C035	C4	D144	D5	R151	B6
C036	C5	D300	F8	R152	C5
C037	B4	D301	E8	R153	C6
C038	C6	D302	E8	R154	C5
C039	D6	D303	E7	R155	C5
C041	D5	D304	E7	R156	C5
C042	C5	D305	E8	R157	B6
C043	C4	D306	E8	R158	C6
C044	B6	D307	D8	R159	C6
C045	B5	D308	A8	R160	C6
C046	B5	D309	C5	R161	C5
C047	C4	D311	C8	R163	D7
C048	B4	D311	C8	R163	D7
C049	B6	F001	B7	R164	D7
C050	D2	F002	B7	R165	D7
C051	B4	F003	B7	R166	C5
C052	D2	F004	D6	R166	C6
C053	D2	F005	D6	R167	D7
C054	C3	F006	D6	R167	D7
C055	D3	F007	C5	R169	D6
C056	D2	F008	C6	R170	D6
C057	E2	F009	C4	R171	D6
C058	E2	F010	C4	R172	D5
C059	D3	F011	C3	R173	D5
C062	D3	F012	E3	R174	D5
C063	E2	F013	A4	R175	D5
C066	E3	F015	D2	R177	C5
C067	E2	IC001	A5	R178	D5
C068	E3	IC002	E2	R179	D5
C069	E3	IC003	C5	R180	C4
C070	F4	IC004	F4	R181	C4
C071	E3	IC005	C3	R182	D4
C072	E4	IC006	A2	R183	C3
C074	E4	L001	F6	R184	C3
C093	A3	L002	F7	R185	C3
C094	A2	L003	D4	R186	C3
C096	A1	L004	C5	R187	C3
C100	E7	L005	C8	R188	C3
C101	E1	L006	D2	R189	C3
C102	D1	L006	F7	R191	C2
C103	F5	L301	F8	R192	B2
C104	F2	L302	F9	R193	C2
C105	C1	L303	F7	R194	B2
C106	D2	L305	D8	R300	B8
C107	C2	L305	E8	R301	F8
C108	C2	L306	A8	R302	F7
C109	C4	L307	D8	R303	F8
C110	C2	L308	C8	R304	F8
C111	C4	L309	C8	R305	E9
C112	A4	L312	A4	R307	E9
C113	C4	L331	B8	R307	E9
C114	C3	P301	B8	R308	D8
C115	C3	Q001	A4	R309	A8
C116	C4	R001	F6	R310	F8
C117	C3	R002	E6	R311	A7
C118	C3	R003	F7	R312	D8
C120	C3	R004	E6	R313	D8
C121	B2	R005	E6	R314	D7
C122	B2	R006	B4	R315	D9
C123	B2	R007	B4	R317	A8
C125	A1	R008	B4	R318	D7
C126	B2	R009	D2	R319	A8
C130	F3	R011	B4	R320	A7
C131	F1	R012	A4	R321	A8
C132	F1	R013	A4	R322	C8
C133	F1	R014	A5	R323	D9
C134	F1	R015	A5	R324	C8
C135	F2	R019	A3	R325	A8
C137	C4	R021	A4	R326	A8
C138	B7	R018	A4	R327	A7
C139	B7	R019	B6	R328	C5
C140	B7	R021	D4	R329	C8
C141	C5	R022	D5	R331	A9
C143	C6	R023	B6	R332	B8
C144	C5	R024	B6	R333	B8
C145	D7	R025	B5	R334	B9
C147	D5	R026	E7	R335	B8
C148	D5	R027	B5	R336	B9
C149	D5	R028	B6	R337	B8
C150	D7	R029	A3	R338	B8
C160	D6	R041	D4	R339	B8
C300	F8	R042	A4	R341	B8
C301	F8	R043	D5	R342	B7
C302	F9	R054	C4	R343	B8
C303	E9	R055	C3	R344	B7
C304	E8	R056	C5	T001	F6
C305	E8	R057	C5	T002	A4
C306	A7	R058	B7	T003	A4
C307	D7	R059	B5	T006	E6
C308	D8	R061	B4	T007	E7
C309	A7	R062	B5	T008	B6
C310	E8	R063	B5	T011	C4
C311	A8	R064	C5	T012	D4
C312	A8	R065	C5	T015	E4
C313	D8	R066	B3	T016	C3
C314	D7	R067	B3	T017	C3
C316	A8	R068	E2	T018	C3
C316	A8	R069	D3	T019	C3
C317	A8	R071	E3	T021	C2
C318	D9	R073	E3	T022	C1
C319	C8	R074	D2	T023	C1
C320	D7	R075	E3	T024	F4
C321	A8	R076	E3	T025	E1
C322	A9	R078	E3	T114	C5
C323	A8	R079	E3	T141	B7
C324	C5	R080	F4	T142	B6
C325	C5	R081	B2	T143	B6
C326	A8	R084	B1	T145	B6
C327	C8	R086	E3	T146	D7
C328	B8	R087	E2	T147	D5
C329	B8	R088	E4	T301	A7
C331	C8	R089	E4	T302	D8
C332	B9	R090	F4	T303	A9
C333	B8	R091	E3	T304	B9
C334	B9	R092	F3	T305	B8
C335	B8	R094	F5	T306	B8
C336	B7	R095	F5	T306	B8





RF + IF PANEL

1 2 3 4 5 6

component side

- IC 2
- 1 = 3.2V
- 2 = 3.2V
- 3 = 3.2V
- 4 = 3.2V
- 5 = 5.5V
- 6 = 3.2V
- 7 = 3.2V
- 8 = 5.5V
- 9 = 3.2V
- 10 = 0V 15.5V
- 11 = 0V 2.8V
- 12 = 0V
- 13 = 0.5V STEREO; 5V MONO; 5V
- 14 = 5V 10V
- 15 = 0V 4V MUTE
- 16 = 2.8V
- 17 = 2.7V STEREO; 9.4V
- 18 = 2.9V 5.4V
- 19 = 2.9V 5.4V
- 20 = 4V 7.5V
- 21 = 1.8V MONO
- 456 kHz STEREO
- 22 = 12V

- T 18
- E = 2.4V
- B =
- C = 10.5V

- T 22
- E = 12V
- B = 11.3V ?
- C = 12V ?

- T 21
- E = 0V
- B = 0.7V ?
- C = 0V ?

- T 23
- E = 0.4V
- B = 0.9 V
- C = 11.3V ?

- T 19
- E = 2.4V
- B = 2.7V
- C = 10.5V

- IC 5
- 1 = 1.95V
- 2 = 1.92V
- 3 = 8V
- 4 = 0V
- 5 = 11.4V
- 6 = 1.95V
- 7 = 1.95V

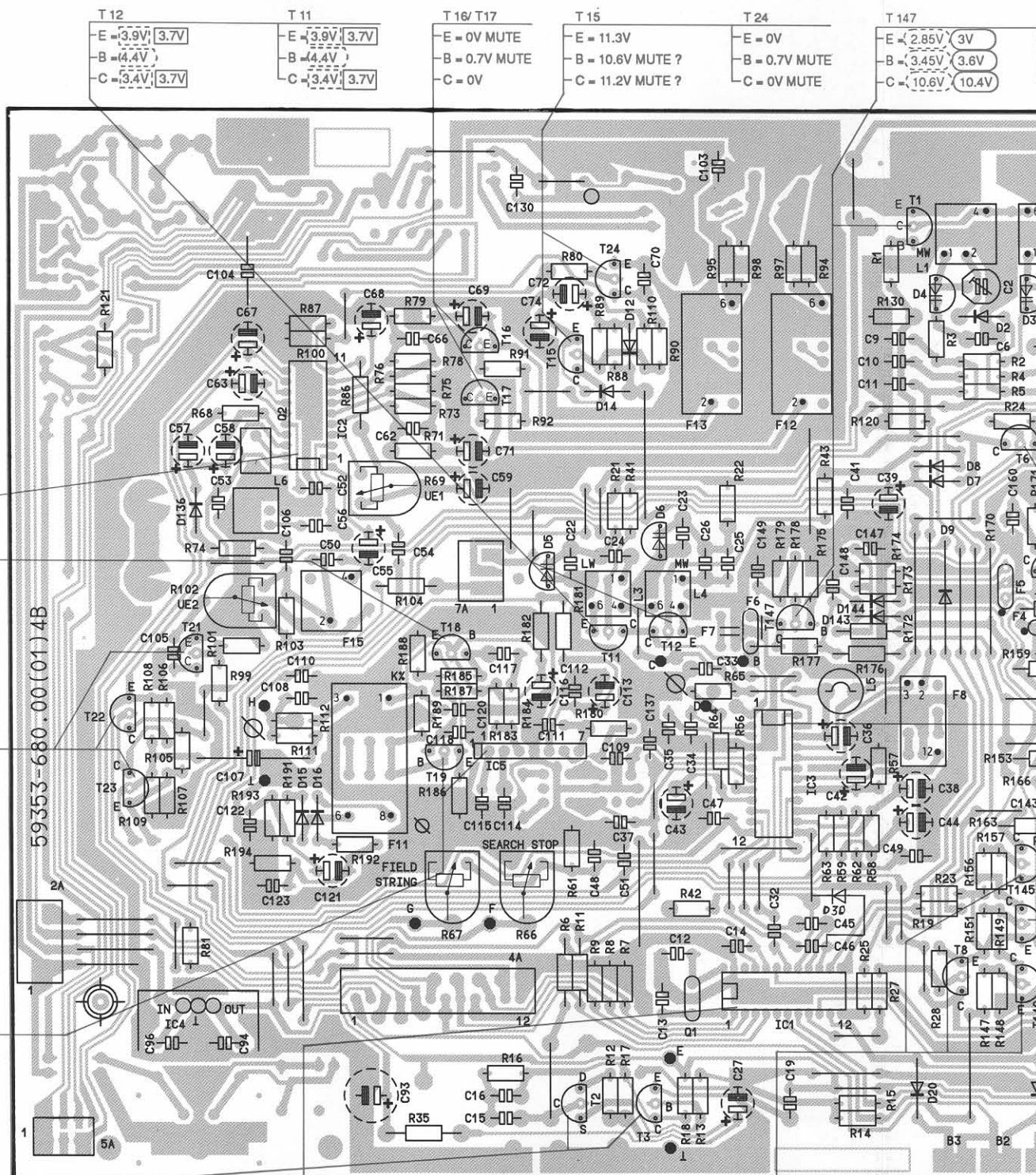
- T 2
- S =
- D = 12V ?
- G =

- T 3
- E = 0V
- B =
- C = 2.5V-8.5V FM
- 1V-8V MW
- 1.8V-5.5V LW

- IC 1
- 1 = 2.9V
- 2 = 0V ?
- 3 = 0V ?
- 4 = 0V ?
- 5 = 6V ?
- 6 =
- 7 = 0V ?
- 8 = 0V ?
- 9 = 0V 12V
- 10 = ?
- 11 = ?
- 12 = 12V (0V) 12V

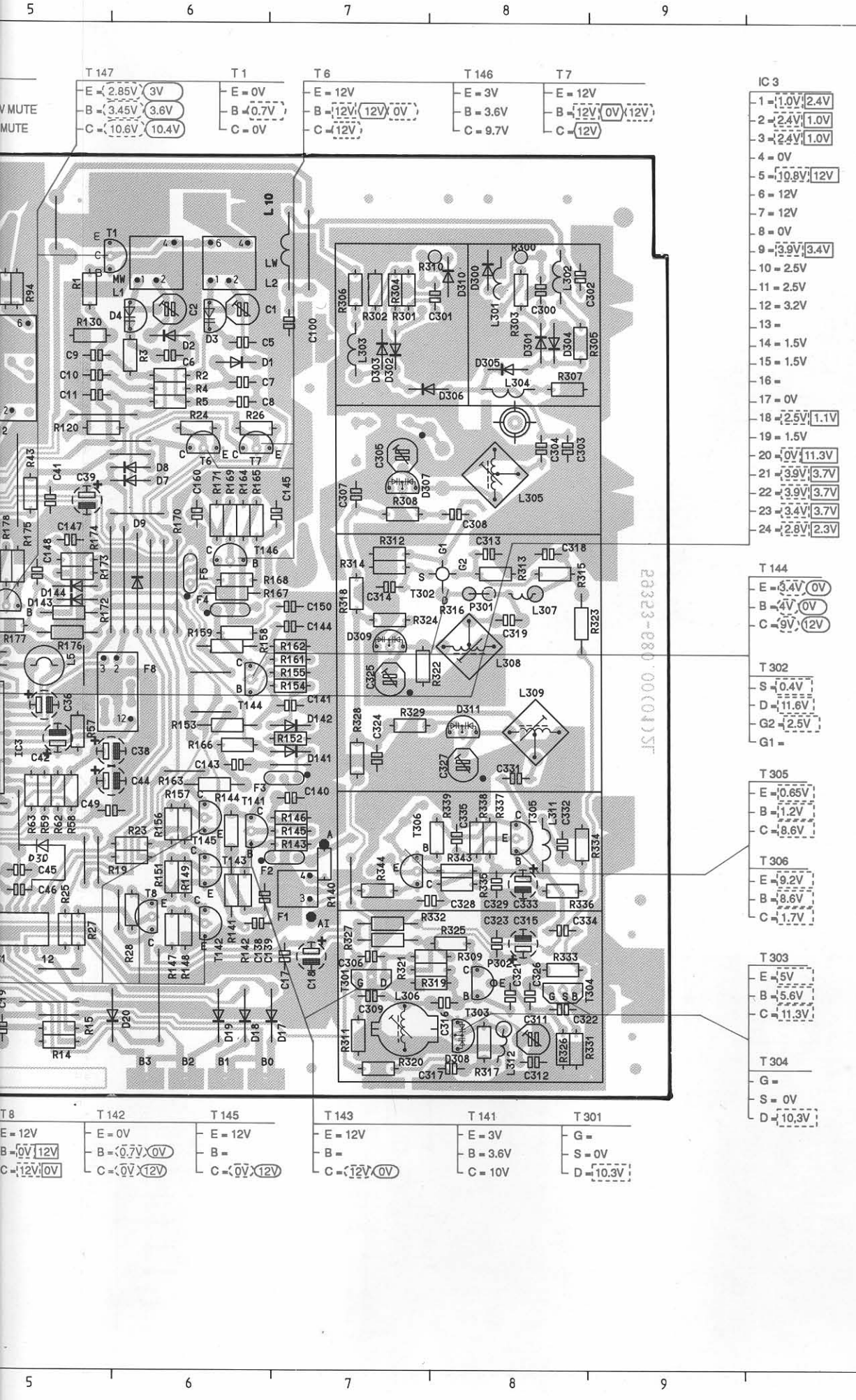
- T 8
- E = 12V
- B = 0V 12V
- C = 12V 0V

- T 142
- E = 0V
- B = 0.7V 0V
- C = 0V 12V



59353-680.00(01)4B

1 2 3 4 5 6



IC 3

1	=	1.0V	2.4V
2	=	2.4V	1.0V
3	=	2.4V	1.0V
4	=	0V	
5	=	10.8V	12V
6	=	12V	
7	=	12V	
8	=	0V	
9	=	3.9V	3.4V
10	=	2.5V	
11	=	2.5V	
12	=	3.2V	
13	=		
14	=	1.5V	
15	=	1.5V	
16	=		
17	=	0V	
18	=	2.5V	1.1V
19	=	1.5V	
20	=	0V	11.3V
21	=	3.9V	3.7V
22	=	3.9V	3.7V
23	=	3.4V	3.7V
24	=	2.8V	2.3V

T 144

E	=	3.4V	0V
B	=	4V	0V
C	=	9V	12V

T 302

S	=	0.4V	
D	=	11.6V	
G2	=	2.5V	
G1	=		

T 305

E	=	0.65V	
B	=	1.2V	
C	=	8.6V	

T 306

E	=	9.2V	
B	=	8.6V	
C	=	1.7V	

T 303

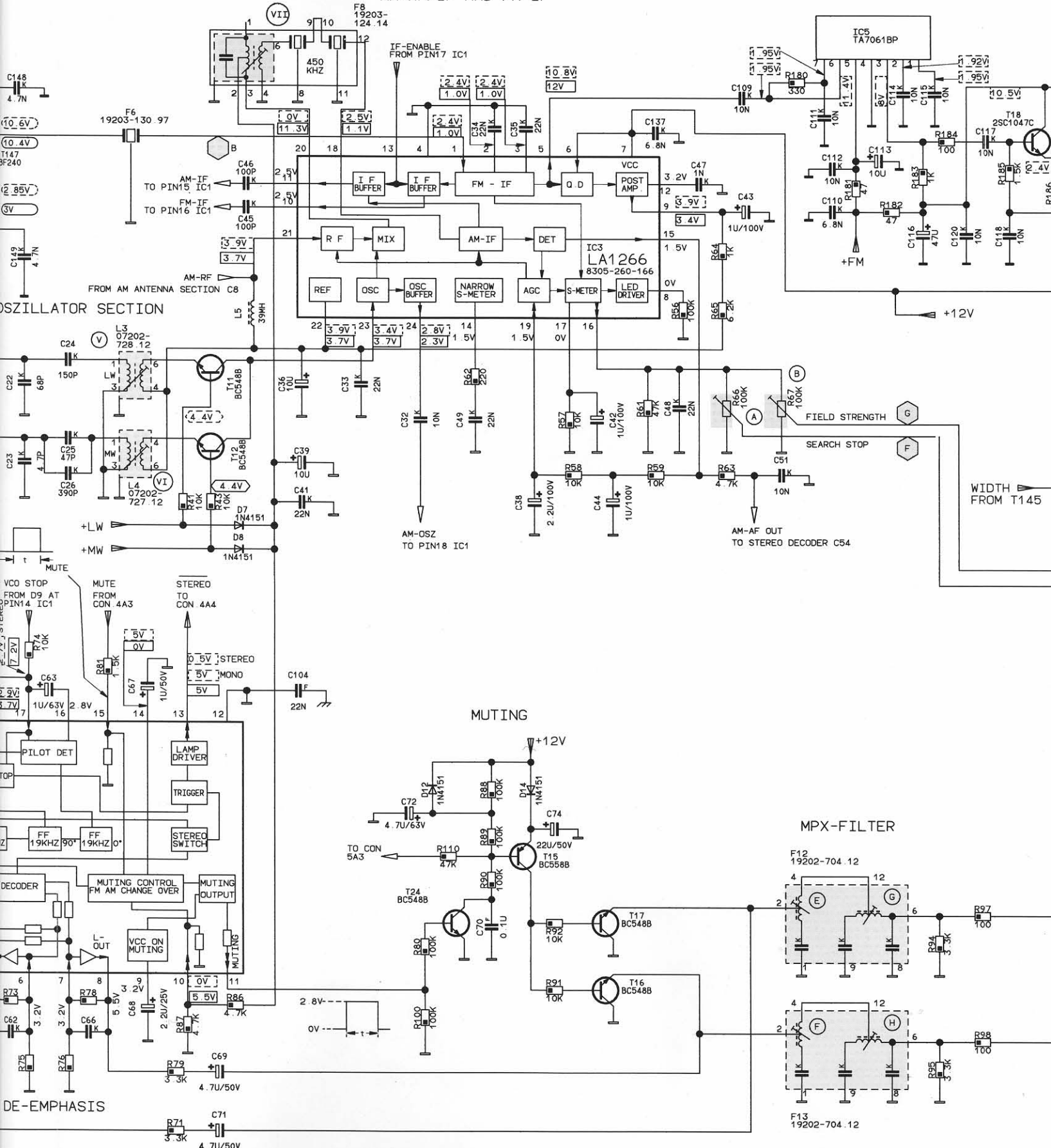
E	=	15V	
B	=	15.6V	
C	=	11.3V	

T 304

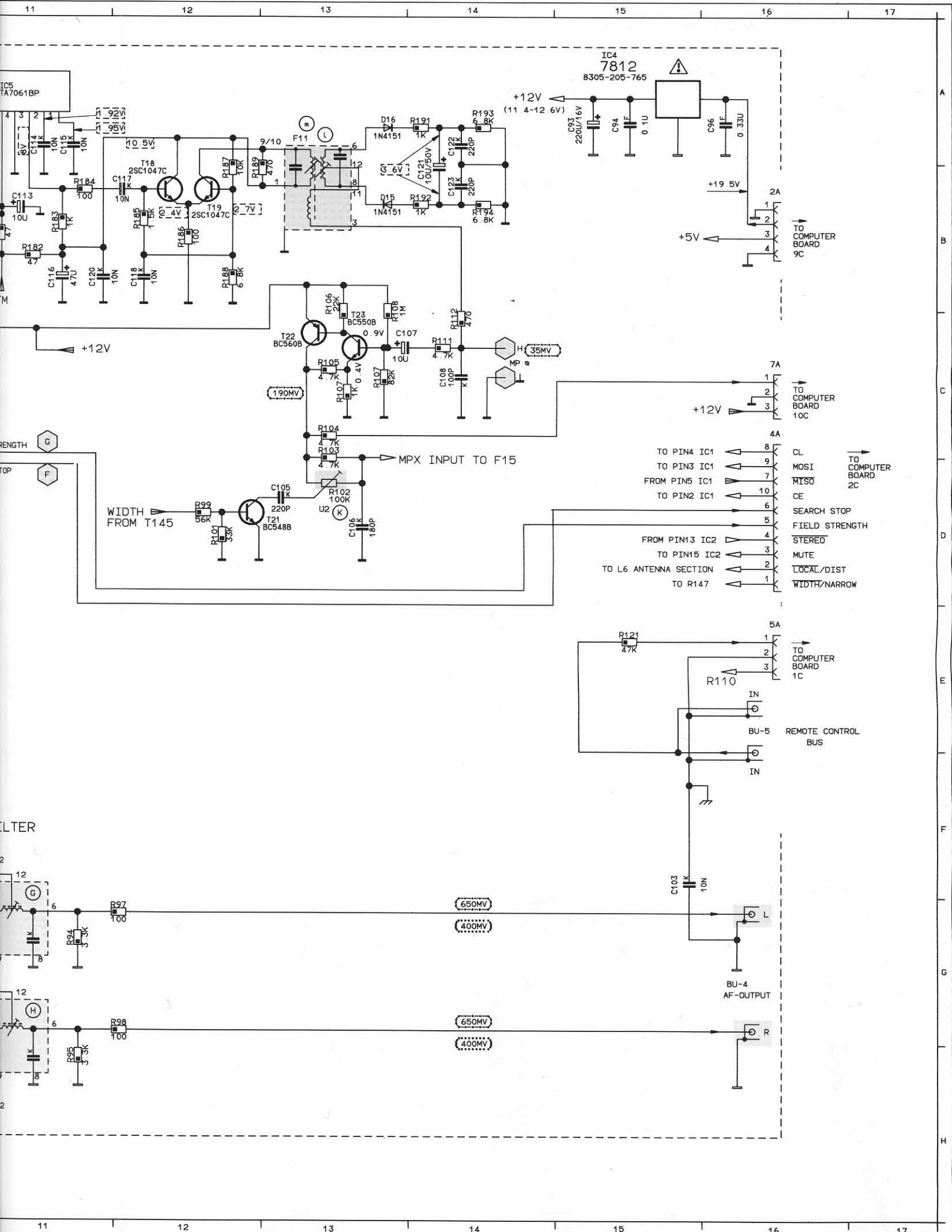
G	=		
S	=	0V	
D	=	10.3V	

2A	B1	C337	B7	R097	F5
4A	B3	D001	E7	R098	F5
5A	A1	D002	E6	R099	C2
6A	F5	D003	E6	R100	E2
7A	D3	D004	E6	R101	C2
8A	F1	D005	D4	R102	C2
9A	F1	D006	D4	R103	D2
C001	E7	D007	D6	R104	D3
C002	E6	D008	D6	R105	C1
C005	E7	D009	D6	R106	C1
C006	E6	D012	A4	R107	C1
C007	E7	D013	A4	R108	C1
C008	E7	D015	C2	R109	C1
C009	E6	D016	C2	R110	E4
C010	E6	D017	A7	R111	C2
C011	E6	D018	A7	R112	C2
C012	B4	D019	A6	R120	E6
C013	A4	D020	A6	R121	E1
C014	B5	D021	E4	R122	E1
C015	A3	D022	E1	R127	E1
C016	A3	D023	E1	R128	E1
C017	A7	D024	B2	R130	E6
C018	A7	D029	A2	R130	F4
C019	A5	D031	F1	R140	B7
C022	D4	D032	F1	R141	B6
C023	D4	D033	F1	R142	B7
C024	D4	D034	F2	R143	B7
C025	D5	D040	F1	R144	B6
C026	D4	D050	F1	R145	B7
C027	A5	D136	D2	R146	B7
C032	B4	D141	C5	R147	B6
C033	C5	D142	C5	R148	B6
C034	C4	D143	D5	R149	B6
C035	C4	D144	D5	R151	B6
C036	C5	D300	F8	R152	C5
C037	B4	D301	E8	R153	C6
C038	B4	D302	E8	R154	C5
C039	D5	D303	E8	R155	C5
C041	D5	D304	E9	R156	B6
C042	C5	D305	E8	R157	B6
C043	C4	D306	E8	R158	C6
C044	B6	D307	D8	R159	C6
C045	B5	D308	A8	R160	C6
C046	B5	D309	A8	R161	F8
C047	C4	D310	F8	R162	C5
C048	B4	D311	C8	R163	B6
C049	B6	F001	B7	R164	D7
C050	D2	F002	B7	R165	D7
C051	A4	F003	B7	R166	C5
C052	D2	F004	B7	R167	C6
C053	D2	F005	D6	R167	D7
C054	D3	F006	D5	R168	D7
C055	D3	F007	C5	R169	D6
C056	D2	F008	C6	R170	D6
C057	D2	F009	C4	R171	D6
C058	D2	F010	C4	R172	D5
C059	D3	F011	C3	R173	D5
C062	E3	F012	E5	R174	D5
C063	E2	F013	A4	R175	D5
C066	E2	F015	D2	R177	C5
C067	E2	IC001	A5	R178	D5
C068	D4	IC002	B5	R179	D5
C069	E2	IC003	C5	R180	C4
C070	F4	IC004	A2	R181	D4
C071	E3	IC005	C3	R182	D4
C072	E4	IC006	A2	R183	C4
C074	A4	L001	F6	R184	C3
C083	A3	L002	D4	R185	C3
C084	A3	L003	D4	R186	C3
C096	A1	L004	D4	R187	C3
C100	E7	L005	C5	R188	C3
C101	E1	L006	D2	R189	C3
C102	D1	L006	F7	R191	C2
C103	F5	L301	F8	R192	B2
C104	F5	L302	F8	R193	B2
C105	C1	L303	E7	R194	C2
C106	D2	L305	D8	R300	F8
C107	C2	L305	E8	R301	F8
C108	C2	L306	A8	R302	F7
C109	C4	L307	D8	R303	F8
C110	C4	L308	C8	R304	F8
C111	C4	L309	C8	R305	E9
C112	C4	L312	A8	R306	F7
C113	C4	L331	B8	R307	E9
C114	C3	P301	D8	R308	D8
C115	C3	Q001	A4	R309	A8
C116	C3	Q002	A4	R310	F8
C117	C3	Q002	E6	R311	A7
C118	C3	Q003	E6	R312	D7
C120	C3	Q004	E6	R313	D8
C121	B2	Q005	E6	R314	D7
C122	B2	Q006	A4	R315	D9
C123	B2	Q007	A4	R317	A8
C125	A1	Q008	B4	R318	D7
C126	A2	Q009	B4	R319	A8
C130	F3	R011	B4	R320	A7
C131	F1	R012	A4	R321	A8
C132	F1	R013	A4	R322	C8
C133	F1	R014	A4	R323	D9
C134	F1	R015	A4	R324	B8
C135	F2	R016	A3	R325	A8
C137	C4	R017	A4	R326	A9
C138	B7	R018	A4	R327	A7
C139	B7	R019	B6	R328	C5
C140	B7	R021	D4	R329	C8
C141	C5	R022	B6	R331	A8
C143	C6	R023	B6	R332	B8
C144	C5	R024	E6	R333	A9
C145	D7	R025	B5	R334	B9
C147	D5	R026	E7	R335	B8
C148	D5	R027	B5	R336	B9
C149	D9	R028	B6	R337	B8
C150	D9	R029	B6	R338	B8
C160	D6	R041	D4	R339	B8
C300	F8	R042	B4	R341	B8
C301	F8	R043	D5	R342	B7
C302	F9	R054	C4	R343	B8
C303	E9	R055	C3	R344	B7
C304	E9	R056	C5	R345	F6
C305	E8	R057	C5	T002	A4
C306	A7	R058	B5	T003	A4
C307	D7	R059	B5	T006	E6
C308	D8	R061	B4	T007	E7
C309	A7	R062	B5	T008	B6
C310	E8	R063	B5	T011	A4
C311	A8	R064	C5	T012	D4
C312	A8	R065	C5	T015	E4
C313	D8	R066	B3	T016	E3
C314	D7	R067	B3	T017	C3
C316	A8	R068	E2	T018	C3
C317	A8	R071	E3	T021	C2
C318	D9	R073	E3	T022	C1
C319	C8	R074	D2	T023	C1
C320	D7	R075	E3	T024	F4
C321	A8	R076	E3	T025	E1
C322	A9	R078	E3	T114	C5
C323	A8	R079	B3	T301	A7
C324	C5	R080	F4	T142	B6
C325	C5	R081	B2	T143	B6
C326	A8	R084	B1	T145	B6
C327	C8	R086	E3	T146	D7
C328	B8	R087	E2	T147	D5
C329	B5	R089	E4	T301	A7
C331	C8	R089	E4	T302	D8
C332	B9	R090	E4	T303	A8
C333	B8	R091	E3	T304	A9
C334	B9	R092	E3	T305	B8
C335	B8	R094	F5	T306	B8
C336	B7	R095	F5	T306	B8

AM-RF/IF AND FM-IF

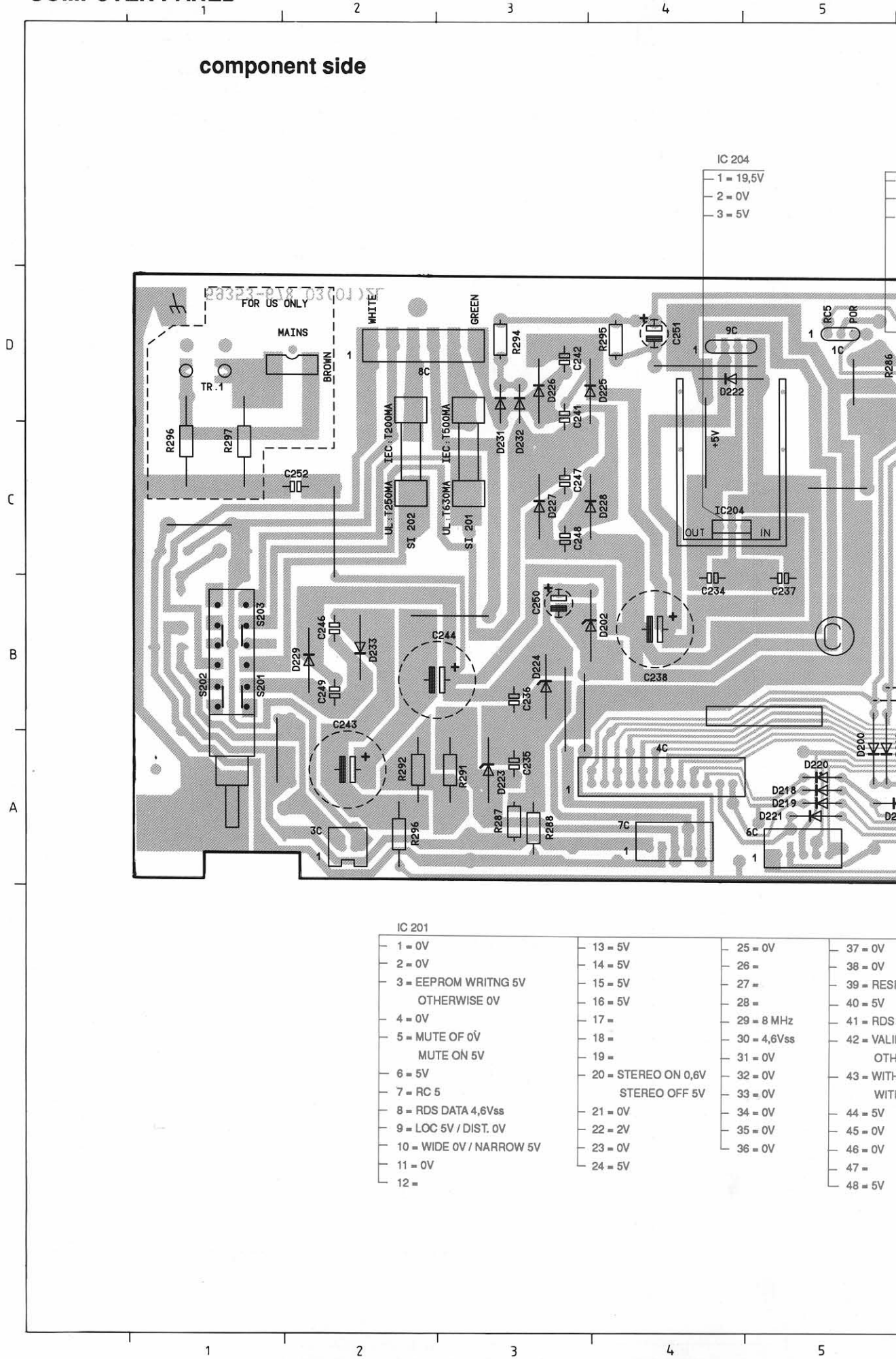


RESISTORS FOR:	R73	R75	C62
	R78	R76	C66
	270K	330K	180P
	270K	330K	180P
	270K	330K	270P



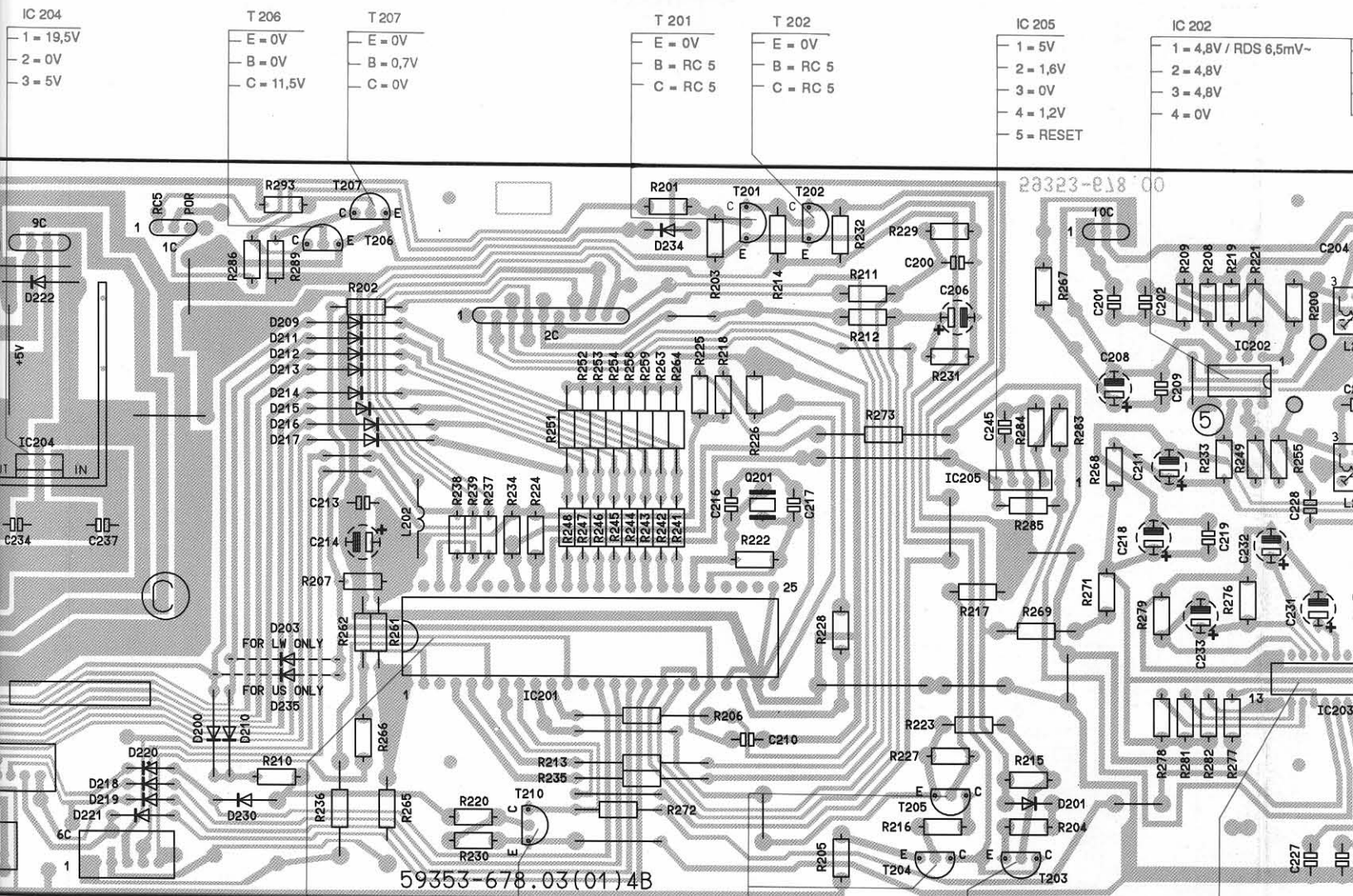
COMPUTER PANEL

component side



IC 204
 1 = 19,5V
 2 = 0V
 3 = 5V

IC 201			
1 = 0V	13 = 5V	25 = 0V	37 = 0V
2 = 0V	14 = 5V	26 =	38 = 0V
3 = EEPROM WRITNG 5V OTHERWISE 0V	15 = 5V	27 =	39 = RES
4 = 0V	16 = 5V	28 =	40 = 5V
5 = MUTE OF 0V MUTE ON 5V	17 =	29 = 8 MHz	41 = RDS
6 = 5V	18 =	30 = 4,6Vss	42 = VALI
7 = RC 5	19 =	31 = 0V	OTH
8 = RDS DATA 4,6Vss	20 = STEREO ON 0,6V STEREO OFF 5V	32 = 0V	43 = WITH
9 = LOC 5V / DIST. 0V	21 = 0V	33 = 0V	WIT
10 = WIDE 0V / NARROW 5V	22 = 2V	34 = 0V	44 = 5V
11 = 0V	23 = 0V	35 = 0V	45 = 0V
12 =	24 = 5V	36 = 0V	46 = 0V
			47 =
			48 = 5V



IC 204
 1 = 19,5V
 2 = 0V
 3 = 5V

T 206
 E = 0V
 B = 0V
 C = 11,5V

T 207
 E = 0V
 B = 0,7V
 C = 0V

T 201
 E = 0V
 B = RC 5
 C = RC 5

T 202
 E = 0V
 B = RC 5
 C = RC 5

IC 205
 1 = 5V
 2 = 1,6V
 3 = 0V
 4 = 1,2V
 5 = RESET

IC 202
 1 = 4,8V / RDS 6,5mV-
 2 = 4,8V
 3 = 4,8V
 4 = 0V

59353-678.03(01)4B

25 = 0V
 26 = 0V
 27 = 0V
 28 = 0V
 29 = 8 MHz
 30 = 4,6Vss
 31 = 0V
 32 = 0V
 33 = 0V
 34 = 0V
 35 = 0V
 36 = 0V

37 = 0V
 38 = 0V
 39 = RESET
 40 = 5V
 41 = RDS CLOCK 4,6Vss
 42 = VALID BLOCK IS READ: 5V
 OTHERWISE: 0V
 43 = WITH RDS: 5V
 WITHOUT RDS: 0V
 44 = 5V
 45 = 0V
 46 = 0V
 47 =
 48 = 5V

T 210
 E = 0V
 B = AT TUNING: 0,7V
 C = AT TUNING: 0V

T 205
 E = LOC 5V / DIST. 0V
 B = LOC 4,3V / DIST. 0V
 C = LOC 5V

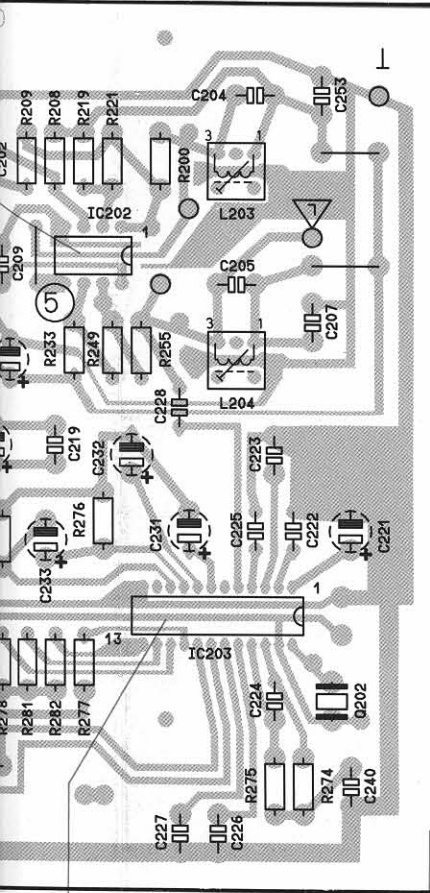
T 204
 E =
 B =
 C = LOC -1,8V 7 DIST. 1,8V

T 203
 E =
 B =
 C = LOC -1,8V 7 DIST. 1,8V

IC 203
 1 = 1,4V
 2 = 1,4V
 3 = 0V
 4 = 1,5V
 5 = 2V
 6 =
 7 = 3V
 8 = 0,7V
 9 = 1,4V
 10 = 0V
 11 =
 12 = 0V

11 12

- IC 202
- | | |
|-----------------------|----------------------|
| 1 = 4,8V / RDS 6,5mV~ | 5 = 4,8V |
| 2 = 4,8V | 6 = 4,8V |
| 3 = 4,8V | 7 = 4,8V / RDS 42mV~ |
| 4 = 0V | 8 = 10,9V |



- IC 203
- | | |
|----------|----------------------|
| 1 = 1,4V | 13 = 4,8V |
| 2 = 1,4V | 14 = 0,7V |
| 3 = 0V | 15 = 0,7V |
| 4 = 1,5V | 16 = |
| 5 = 2V | 17 = RDS DATA |
| 6 = | 18 = RDS CLOCK |
| 7 = 3V | 19 = 0,6Vss |
| 8 = 0,7V | 20 = 1V |
| 9 = 1,4V | 21 = 2V |
| 10 = 0V | 22 = 2V |
| 11 = | 23 = 4,8V |
| 12 = 0V | 24 = 2,5Vss / 456KHz |

D

C

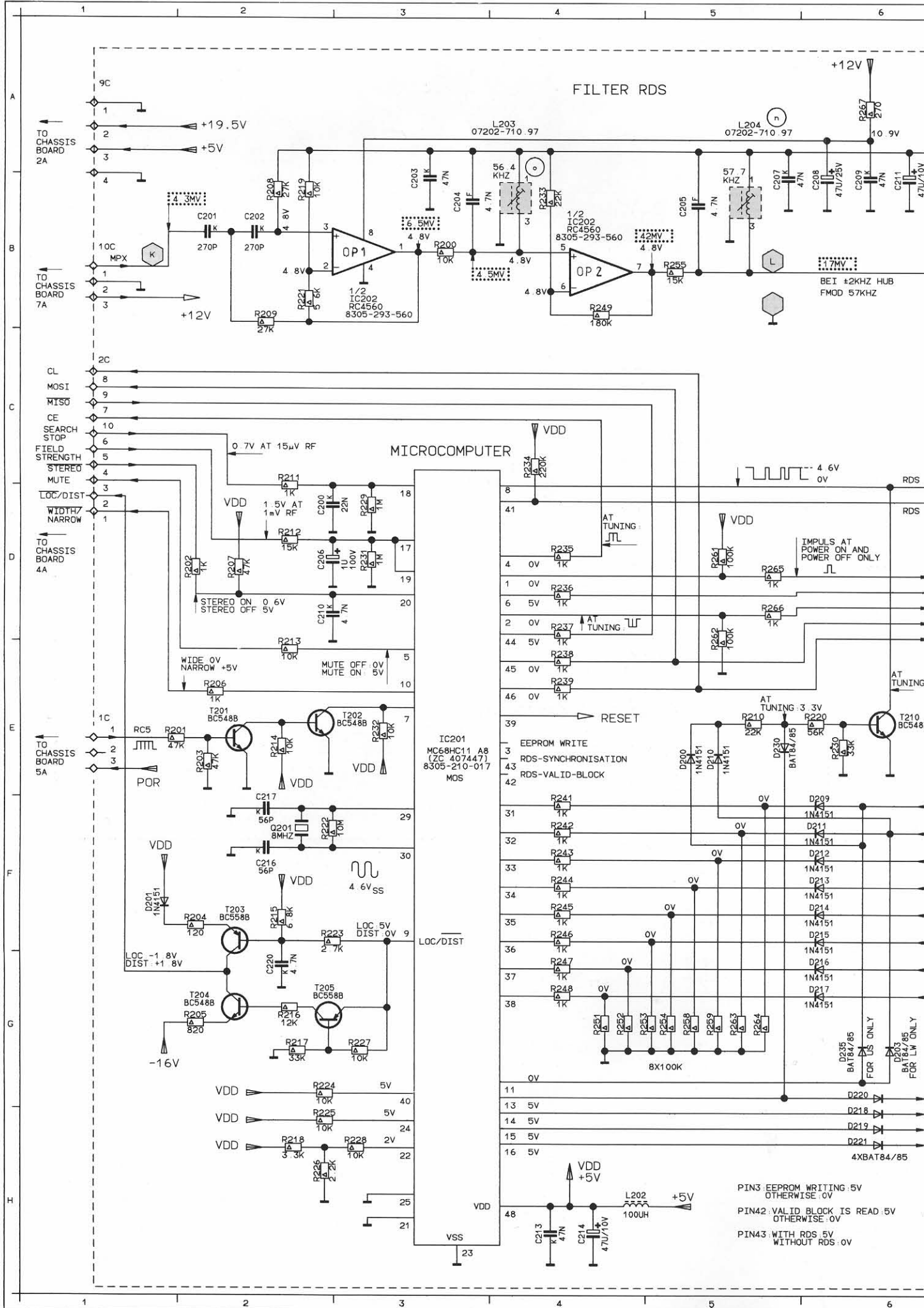
B

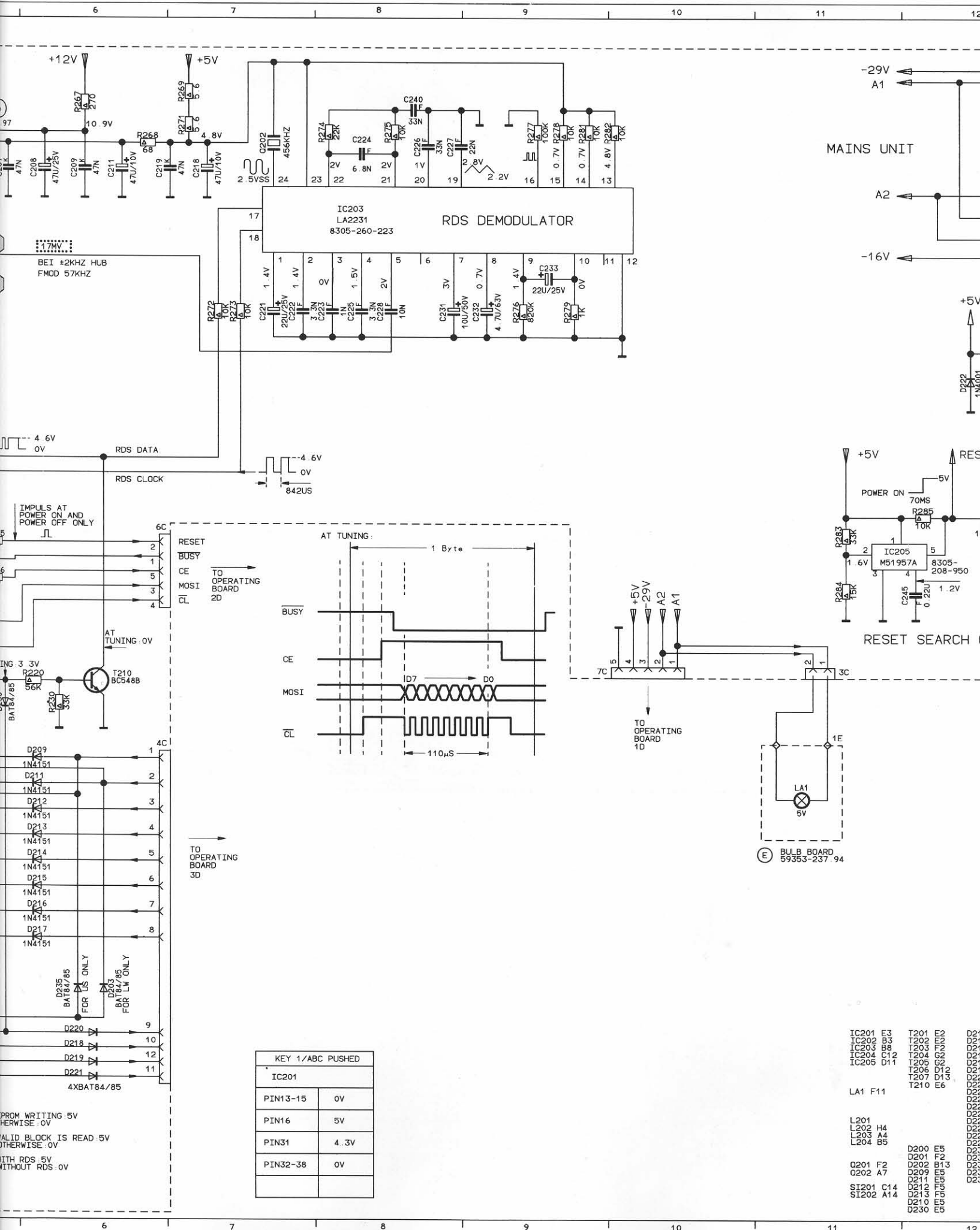
A

1C	D5	D215	C6	R236	B7
2C	D7	D216	C6	R239	B7
3C	A2	D217	C6	R241	C8
4C	A4	D218	A5	R242	C8
6C	A5	D219	A5	R243	C8
7C	A4	D220	A5	R244	C8
8C	D2	D221	A5	R245	C8
9C	D4	D222	D4	R246	B7
10C	D10	D223	A3	R247	B7
C200	D9	D224	B3	R248	B7
C201	D10	D225	D4	R249	C11
C202	D10	D226	D3	R251	C7
C204	D12	D227	C3	R252	C7
C205	C12	D228	C4	R253	C7
C206	D9	D229	B2	R254	C8
C207	C12	D231	D3	R255	C11
C208	C10	D232	D3	R256	C8
C209	C11	D233	B2	R259	C8
C210	A8	D234	D8	R261	B6
C211	C11	D235	B6	R262	B6
C212	B12	IC 201	B7	R263	C8
C213	C6	IC 202	C11	R264	C8
C214	B6	IC 203	B11	R265	A6
C216	C8	IC 204	C4	R266	A6
C217	C9	IC 205	C10	R267	D10
C218	B10	L202	B7	R268	C10
C219	B11	L203	D12	R269	B10
C221	B12	L204	C12	R271	B10
C222	B12	O201	C8	R272	A8
C223	B12	O202	A12	R273	C9
C224	A12	R200	D11	R274	A12
C225	B12	R201	D8	R275	A12
C226	A12	R202	D6	R276	B11
C227	A11	R203	D8	R277	A11
C228	C11	R204	A10	R278	A11
C231	B11	R205	A9	R279	B10
C232	B11	R206	A8	R281	A11
C233	B11	R207	B6	R282	A11
C234	B4	R208	D11	R283	C10
C235	A3	R209	D11	R284	C10
C236	B3	R211	D9	R285	C10
C237	B5	R212	D9	R286	D6
C238	B4	R213	A8	R287	A3
C240	A12	R214	D8	R288	A3
C241	D3	R215	A10	R289	D6
C242	D3	R216	A9	R291	A3
C243	A2	R217	B10	R292	A2
C244	B3	R218	C8	R293	D6
C245	C10	R219	D11	R294	D3
C246	B2	R221	D11	R295	D4
C247	C3	R222	B8	R296	C1
C248	C3	R223	A9	R296	A2
C249	B2	R224	B7	R297	C1
C250	B3	R225	C8	S201	B1
C251	D4	R226	C8	S202	B1
C252	C2	R227	A9	S203	B1
C253	D12	R228	B9	SI201	C3
D202	B4	R229	D9	SI202	C2
D203	B6	R231	C9	T201	D8
D205	A10	R232	D9	T202	D9
D209	D6	R233	C11	T203	A10
D211	C6	R234	B7	T204	A9
D212	C6	R235	A8	T205	A9
D213	C6	R236	A6	T206	D6
D214	C6	R237	B7	T207	D6



11 12





KEY 1/ABC PUSHED

IC201	
PIN13-15	0V
PIN16	5V
PIN31	4.3V
PIN32-38	0V

- IC201 E3
- IC202 B3
- IC203 B8
- IC204 C12
- IC205 D11
- T201 E2
- T202 E2
- T203 F2
- T204 G2
- T205 G2
- T206 D12
- T207 D13
- T210 E6
- LA1 F11
- L201
- L202 H4
- L203 A4
- L204 B5
- D200 E5
- D201 F2
- D202 B13
- D209 E5
- D211 E5
- D212 F5
- D213 F5
- D210 E5
- D230 E5

PROM WRITING 5V
HERWISE 0V

VALID BLOCK IS READ 5V
OTHERWISE 0V

WITH RDS 5V
WITHOUT RDS 0V

FOR US ONLY
FOR LW ONLY

D209
1N4151
D211
1N4151
D212
1N4151
D213
1N4151
D214
1N4151
D215
1N4151
D216
1N4151
D217
1N4151

D203
1N4151
D204
1N4151
D205
1N4151
D206
1N4151
D207
1N4151
D208
1N4151
D209
1N4151

RESET
BUSY
CE
MOSI
CL

TO OPERATING BOARD 2D

AT TUNING 0V

T210
BC548B

R220
56K

R221
50K

BAT84/85

BEI 2KHZ HUB
FMOD 57KHZ

17MV

+12V

+5V

R267
270

R268
68

R271
56

R272
10K

R273
10K

R274
22K

R275
10K

R276
820K

R277
100K

R278
10K

R281
10K

R282
10K

R283
10K

R284
10K

R285
10K

C208
47U/25V

C209
47N

C211
47U/10V

C218
47U/10V

C219
47N

C221
22U/25V

C222
1.4V

C223
3.3N

C225
1N

C228
3.3N

C231
10U/50V

C232
0.7V

C233
22U/25V

C240
33N

Q202
456KHZ

Q203
8305-260-223

Q204
8305-208-950

Q205
8305-208-950

Q206
8305-208-950

Q207
8305-208-950

Q208
8305-208-950

Q209
8305-208-950

Q210
8305-208-950

Q211
8305-208-950

Q212
8305-208-950

Q213
8305-208-950

Q214
8305-208-950

Q215
8305-208-950

Q216
8305-208-950

Q217
8305-208-950

Q218
8305-208-950

Q219
8305-208-950

Q220
8305-208-950

Q221
8305-208-950

Q222
8305-208-950

Q223
8305-208-950

Q224
8305-208-950

Q225
8305-208-950

Q226
8305-208-950

Q227
8305-208-950

Q228
8305-208-950

Q229
8305-208-950

Q230
8305-208-950

Q231
8305-208-950

Q232
8305-208-950

Q233
8305-208-950

Q234
8305-208-950

Q235
8305-208-950

Q236
8305-208-950

Q237
8305-208-950

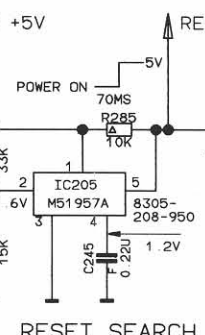
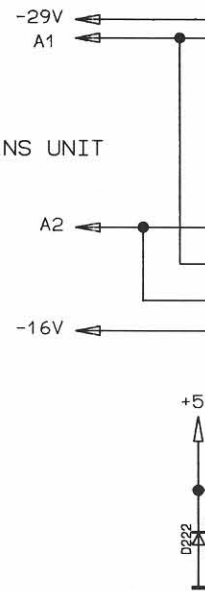
Q238
8305-208-950

Q239
8305-208-950

Q240
8305-208-950

6 7 8 9 10 11 12

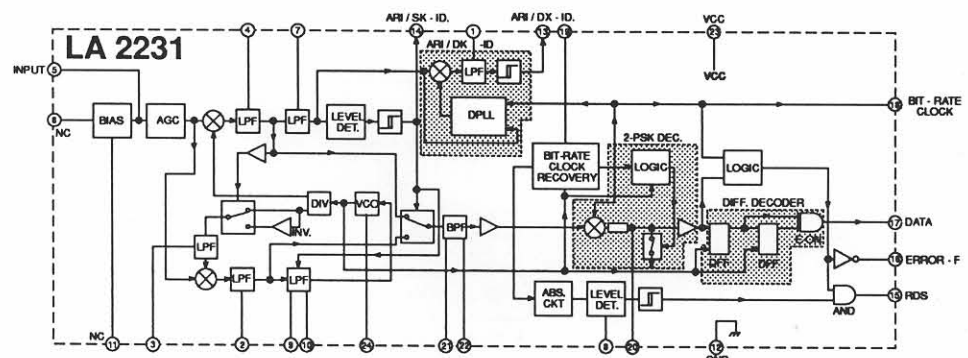
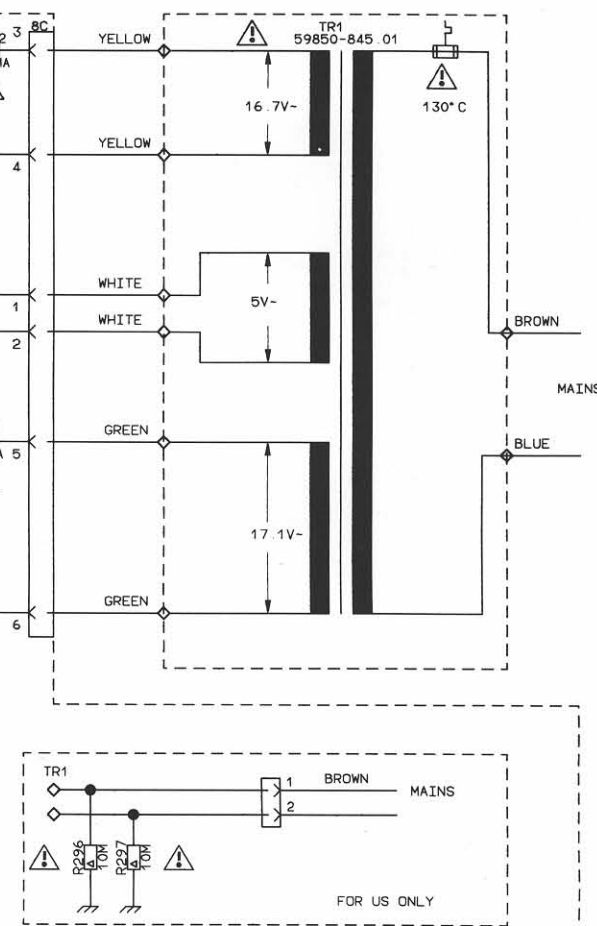
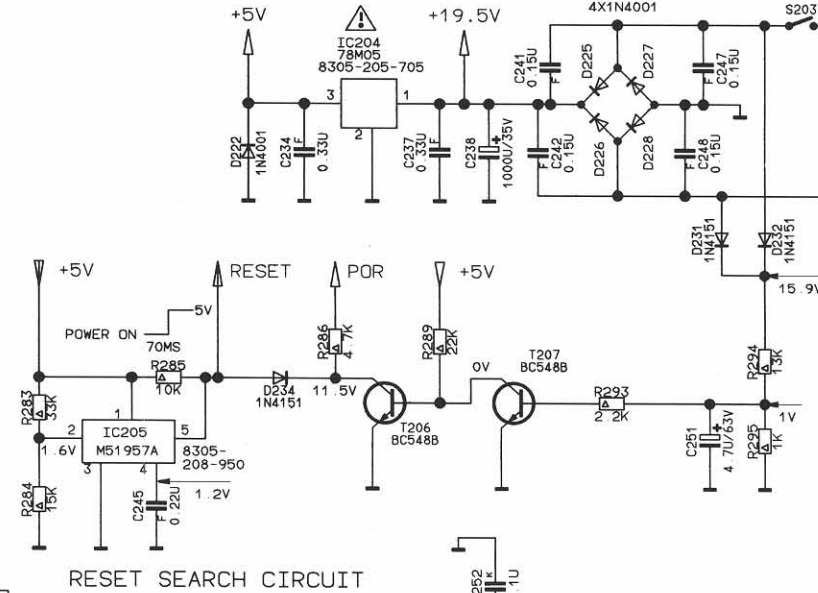
MAINS UNIT



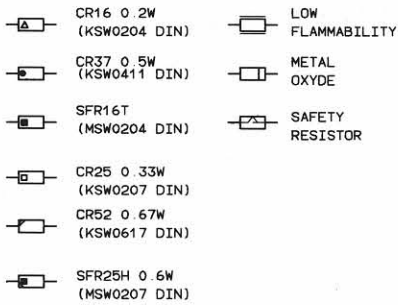
RESET SEARCH

ⓔ BULB BOARD 59353-237 94

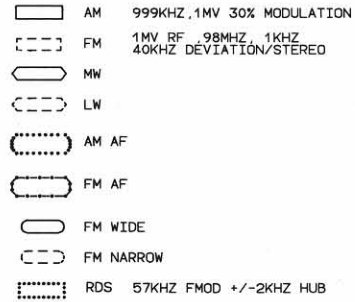
MAINS UNIT



IC201 E3	T201 E5	D214 F5	C200 D3	C223 C7	C246 A14	R200 B3	R225 H2	R252 G4	R278 A9
IC202 B3	T202 E5	D215 F5	C201 D3	C224 B8	C247 C14	R201 E1	R226 H2	R253 G5	R279 C9
IC203 B8	T203 E5	D216 F5	C202 D3	C225 B8	C248 C14	R202 E1	R227 G3	R254 G5	R281 A9
IC204 C12	T204 G5	D217 F5	C203 D3	C226 B8	C249 B14	R203 E1	R228 G3	R255 G5	R282 A10
IC205 D11	T205 G5	D218 G6	C204 D3	C227 B8	C250 B13	R204 F1	R229 G3	R256 G5	R283 A11
T206 D12	T206 G5	D219 G6	C205 D3	C228 B8	C251 D14	R205 F1	R230 G3	R257 G5	R284 D11
T207 D12	T207 G5	D220 G6	C206 D3	C229 B8	C252 F13	R206 F1	R231 G3	R258 G5	R285 D11
T210 E6	T210 E6	D221 G6	C207 D3	C230 B8		R207 F1	R232 G3	R259 G5	R286 D11
LA1 F11		D222 C12	C208 D3	C231 C8		R208 F1	R233 G3	R260 D5	R287 A12
		D223 C12	C209 D3	C232 C8		R209 F1	R234 G3	R261 D5	R288 B10
		D224 B13	C210 D3	C233 C8		R210 F1	R235 G3	R262 D5	R289 D10
		D225 C13	C211 D3	C234 C8		R211 F1	R236 G3	R263 G5	R290 A13
		D226 C13	C212 A8	C235 A10		R212 F1	R237 D4	R264 G5	R291 A13
		D227 C13	C213 H4	C236 B10		R213 F1	R238 E4	R265 D5	R292 A13
		D228 C14	C214 H4	C237 C10		R214 F1	R239 E4	R266 D5	R293 D13
		D229 G6	C215 H4	C238 C10		R215 F1	R240 E4	R267 D5	R294 D14
		D230 G6	C216 F2			R216 F1	R241 E4	R268 A6	R295 A13
	D200 E5	D231 D14	C217 F2			R217 F1	R242 E4	R269 A7	R296 D15
	D201 F2	D232 A14	C218 F2			R218 F1	R243 F4	R270 A7	R297 D15
	D202 B13	D233 A13	C219 B7			R219 F1	R244 F4	R271 A7	R298 D15
	D203 A7	D234 D12	C220 B7			R220 F1	R245 F4	R272 C7	R299 A13
	D204 B5	D235 G6	C221 C7			R221 F1	R246 F4	R273 C7	
			C222 C7			R222 F1	R247 F4	R274 A7	
			C223 C7			R223 G5	R248 G4	R275 A8	
			C224 B8			R224 G5	R249 C4	R276 C9	
			C225 B8			R225 H2	R250 G4	R277 A9	
			C226 B8			R226 H2			
			C227 B8			R227 G3			
			C228 B8			R228 G3			
			C229 B8			R229 G3			
			C230 B8			R230 G3			
			C231 C8			R231 G3			
			C232 C8			R232 G3			
			C233 C8			R233 G3			
			C234 C8			R234 G3			
			C235 A10			R235 G3			
			C236 B10			R236 G3			
			C237 C10			R237 D4			
			C238 C10			R238 E4			
						R239 E4			
						R240 E4			
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						R258 G5			
						R259 G5			
						R260 D5			
						R261 D5			
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						R264 G5			
						R265 D5			
						R266 D5			
						R267 A6			
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						R271 A7			
						R272 C7			
						R273 C7			
						R274 A7			
						R275 A8			
						R276 C9			
						R277 A9			



VOLTAGES ARE MEASURED WITH 220V
DC-VOLTAGES ARE MEASURED AGAINST GROUND



CAPACITOR

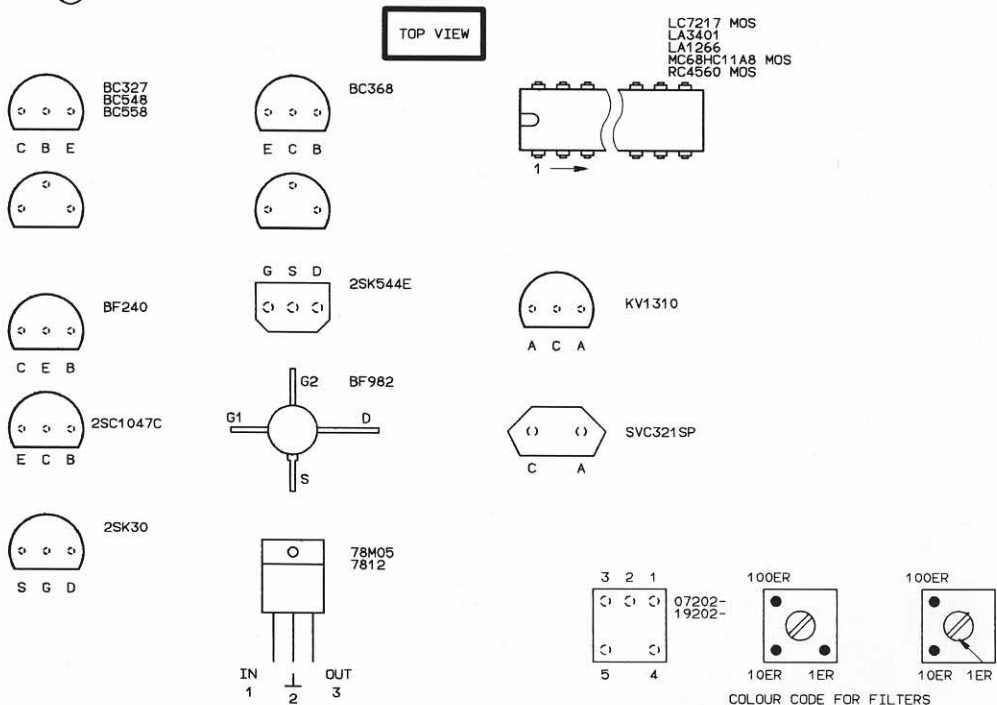


ATTENTION!
OBSERVE MOS COMPONENTS HANDLING
INSTRUCTIONS WHEN SERVICING!

▲ ABSOLUTELY NECESSARY FOR THE SAFETY OF THE SET, THESE COMPONENTS
MEET THE SAFETY REQUIREMENTS ACCORDING TO VDE OR IEC, RESP.
AND MUST BE REPLACED BY PARTS OF SAME SPECIFICATION ONLY

⬡ MEASUREMENT POINT

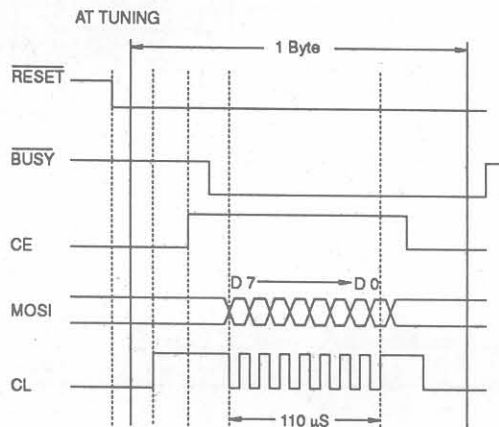
○ ALIGNMENT POINT



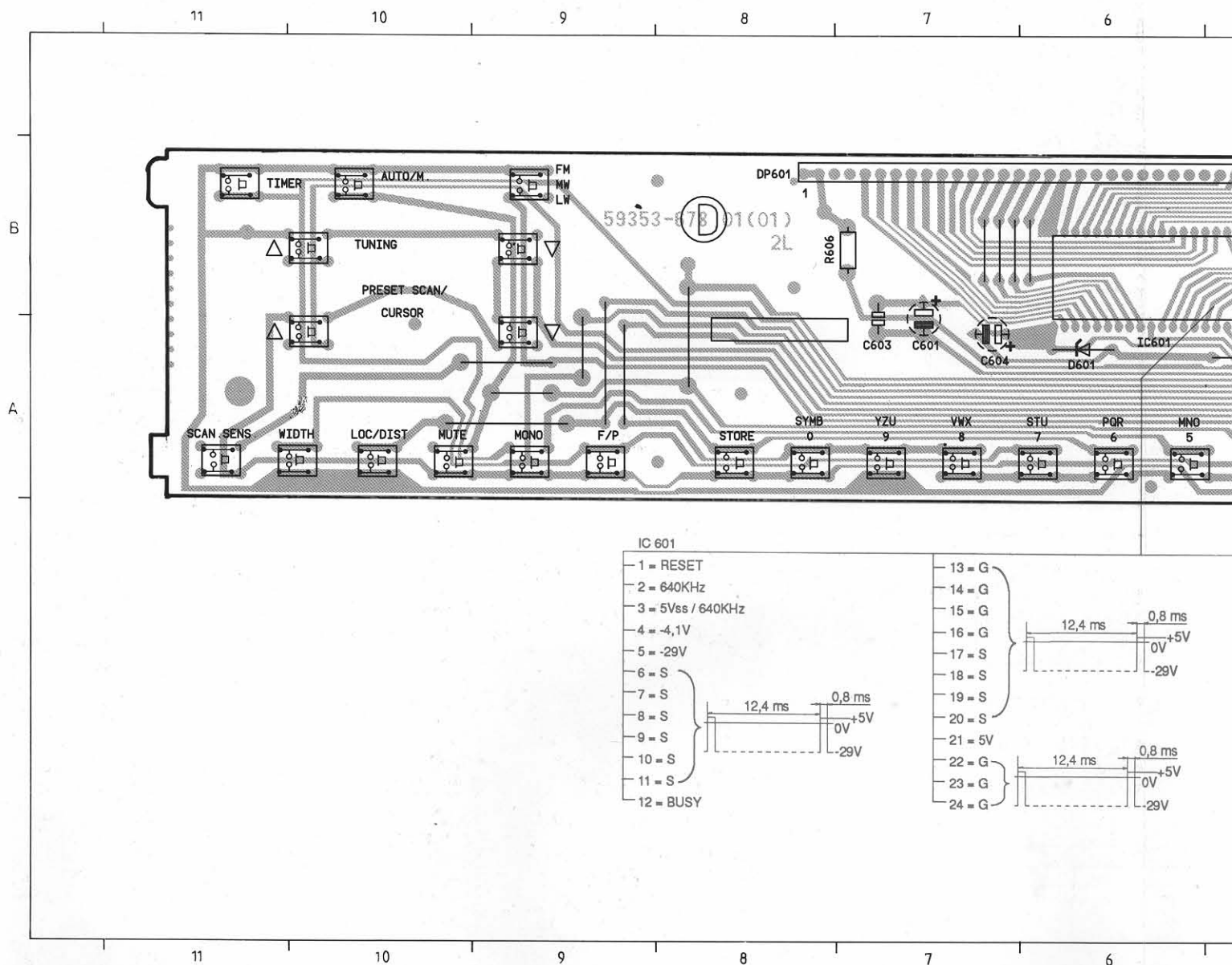
COLOUR CODE FOR FILTERS

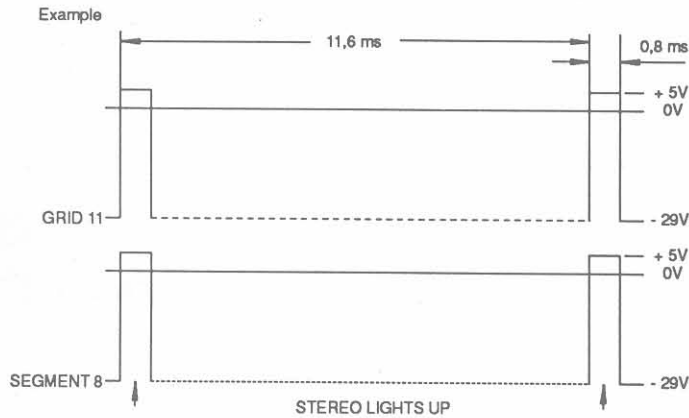
OPERATI



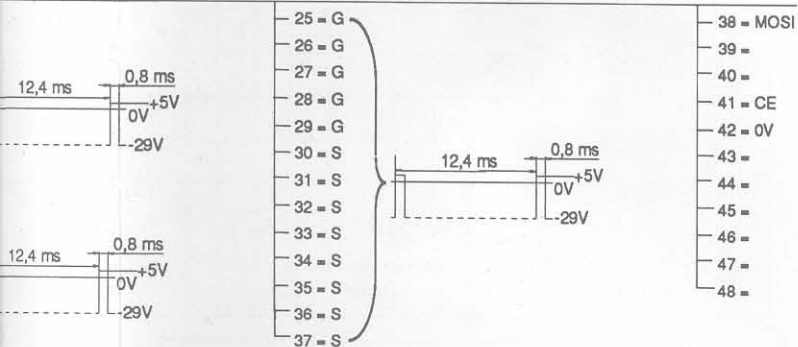
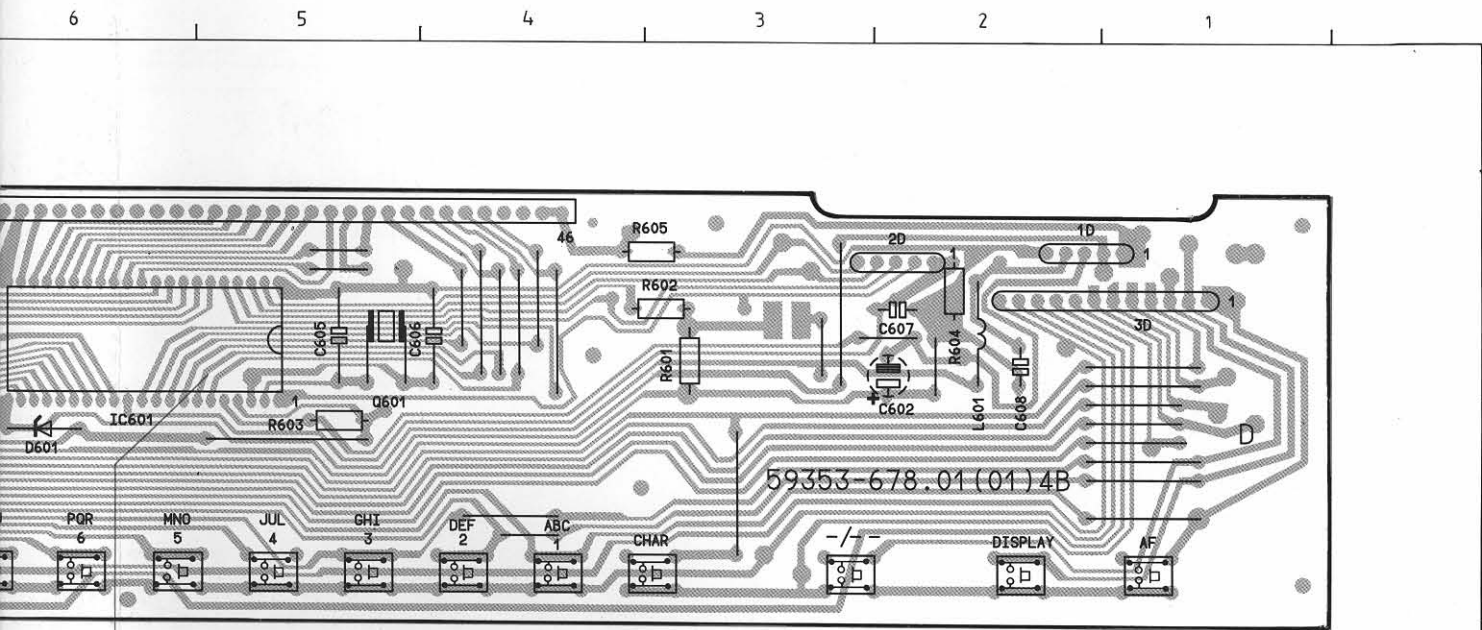


OPERATING PANEL

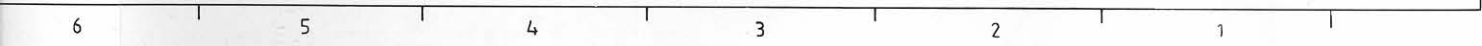




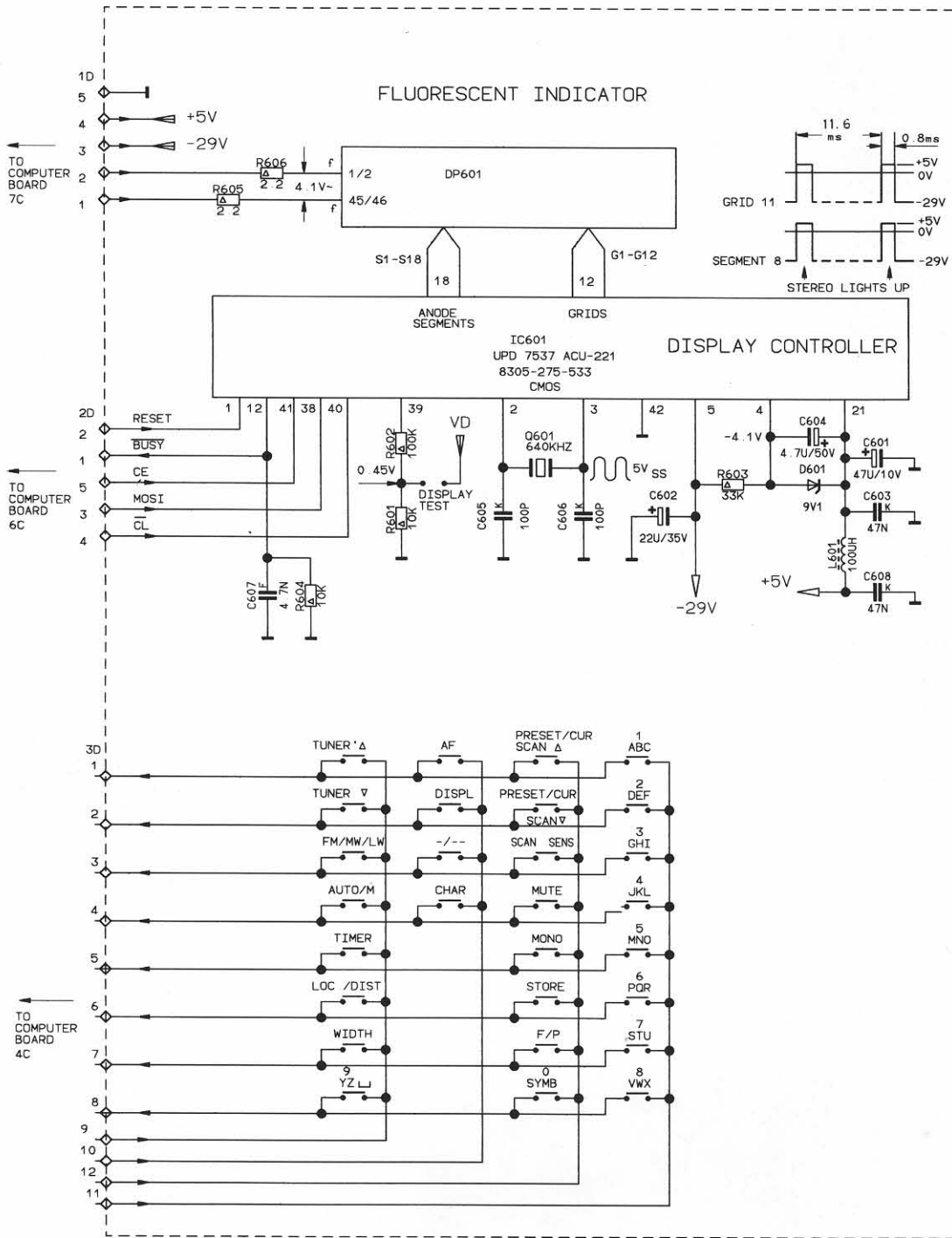
1 D	B 2
2 D	B 2
3 D	B 1
C 601	A 7
C 602	B 2
C 603	A 7
C 604	A 7
C 605	B 5
C 606	B 5
C 607	B 2
C 608	B 2
D 601	A 6
DP 601	B 8
IC 601	B 6
L 601	B 2
Q 601	B 5
R 601	B 3
R 602	B 4
R 603	A 5
R 604	B 2
R 605	B 4
R 606	B 8



solder side



OPERATING CIRCUIT DIAGRAM



DP601 B3	R601 D3	C601 D5
IC601 C3	R602 C3	C602 D4
	R603 D4	C603 D5
	R604 D2	C604 C5
O601 C3	R605 B2	C605 D3
D601 D4	R606 B2	C606 D3
		C607 D2
L601 D5		C608 D5

WIRING DIAGRAM

