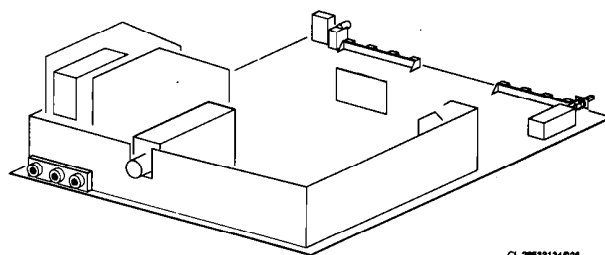


Service
Service
Service

Anubis S

AA



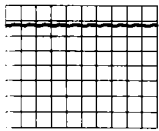
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140283

Service Manual

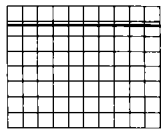
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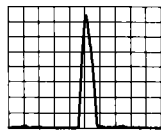
5. Block diagram



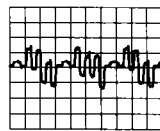
TP12
T=20ms
 $\Delta v=100v$



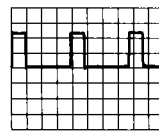
TP19
T=0.5ms
 $\Delta v=5v$



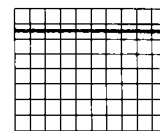
TP26
T=10us
 $\Delta v=100v$



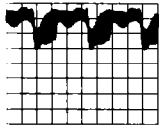
TP33
T=20us
 $\Delta v=0v2 AC$



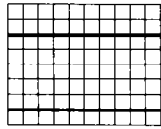
TP2
T=5us
 $\Delta v=2v$



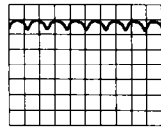
TP9
T=20ms
 $\Delta v=2v$



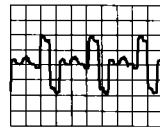
TP13
T=0.5ms
 $\Delta v=100v$



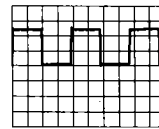
TP20
T=0.5ms
 $\Delta v=50v$



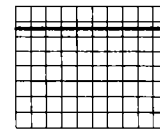
TP27
T=50us
 $\Delta v=5v$



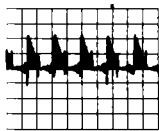
TP34
T=20us
 $\Delta v=0v2 AC$



TP3
T=5us
 $\Delta v=2v$



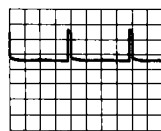
TP10
T=20ms
 $\Delta v=2v$



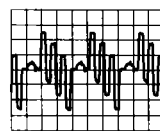
TP14
T=0.5ms
 $\Delta v=100v$



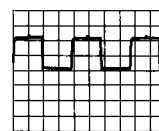
TP21
T=20us
 $\Delta v=500v$



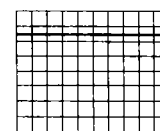
TP28
T=5ms
 $\Delta v=10v$



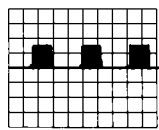
TP35
T=20us
 $\Delta v=0v2 AC$



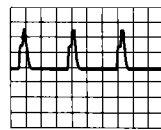
TP4
T=5us
 $\Delta v=2v$



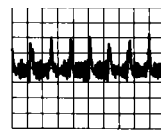
TP11
T=20ms
 $\Delta v=2v$



TP15
T=0.5ms
 $\Delta v=5v$



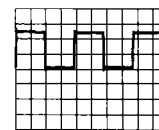
TP22
T=20us
 $\Delta v=2v$



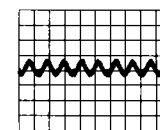
TP29
T=5ms
 $\Delta v=10v$



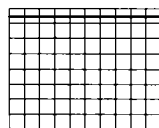
TP36
T=20us
 $\Delta v=1v$



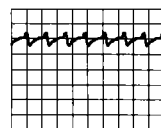
TP5
T=5us
 $\Delta v=2v$



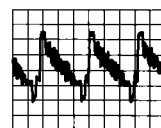
TP39
T=20ms
 $\Delta v=0v2 AC$



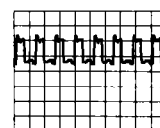
TP16
T=0.5ms
 $\Delta v=5v$



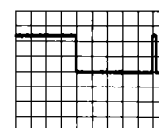
TP23
T=50us
 $\Delta v=2v$



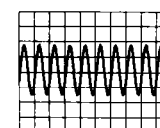
TP30
T=20us
 $\Delta v=0v5 AC$



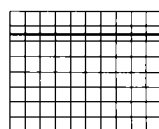
TP37
T=50us
 $\Delta v=1v$



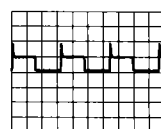
TP6
T=20ms
 $\Delta v=2v$



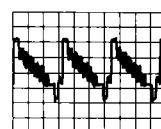
TP40
T=1ms
 $\Delta v=5v AC$



TP17
T=0.5ms
 $\Delta v=1v$



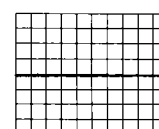
TP24
T=20us
 $\Delta v=50v$



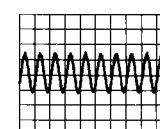
TP31
T=20us
 $\Delta v=0v5 AC$



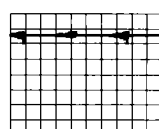
TP38
T=10us
 $\Delta v=1v$



TP7
T=20ms
 $\Delta v=2v$



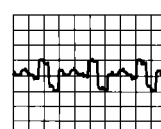
TP41
T=0.5ms
 $\Delta v=0v2 AC$



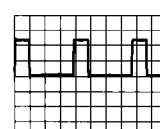
TP18
T=0.5ms
 $\Delta v=2v$



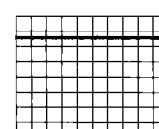
TP25
T=2us
 $\Delta v=5v$



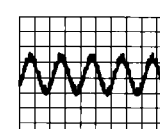
TP32
T=20us
 $\Delta v=0v2 AC$



TP1
T=5us
 $\Delta v=2v$

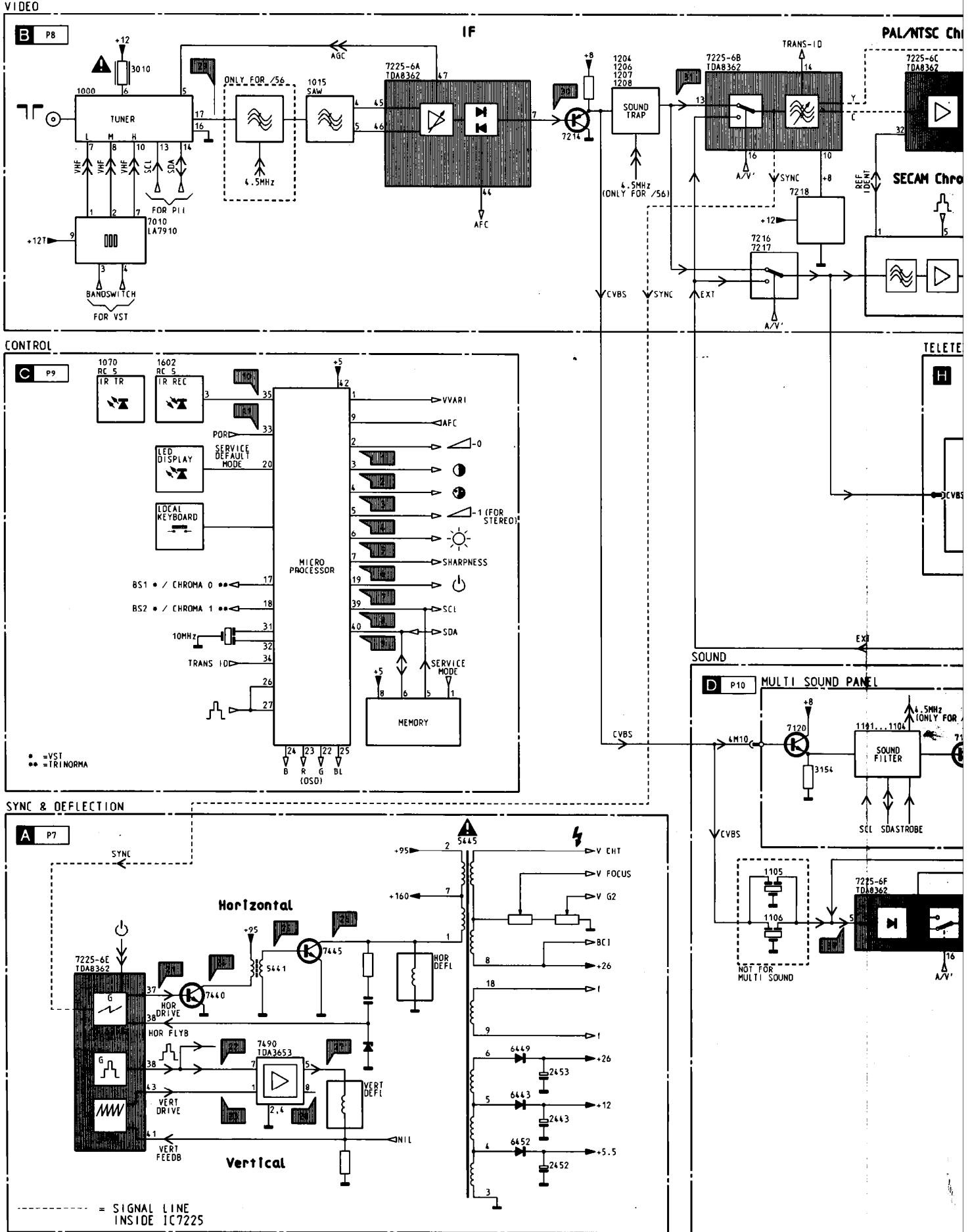


TP8
T=20ms
 $\Delta v=2v$



TP42
T=0.5ms
 $\Delta v=0v2 AC$

Block diagram



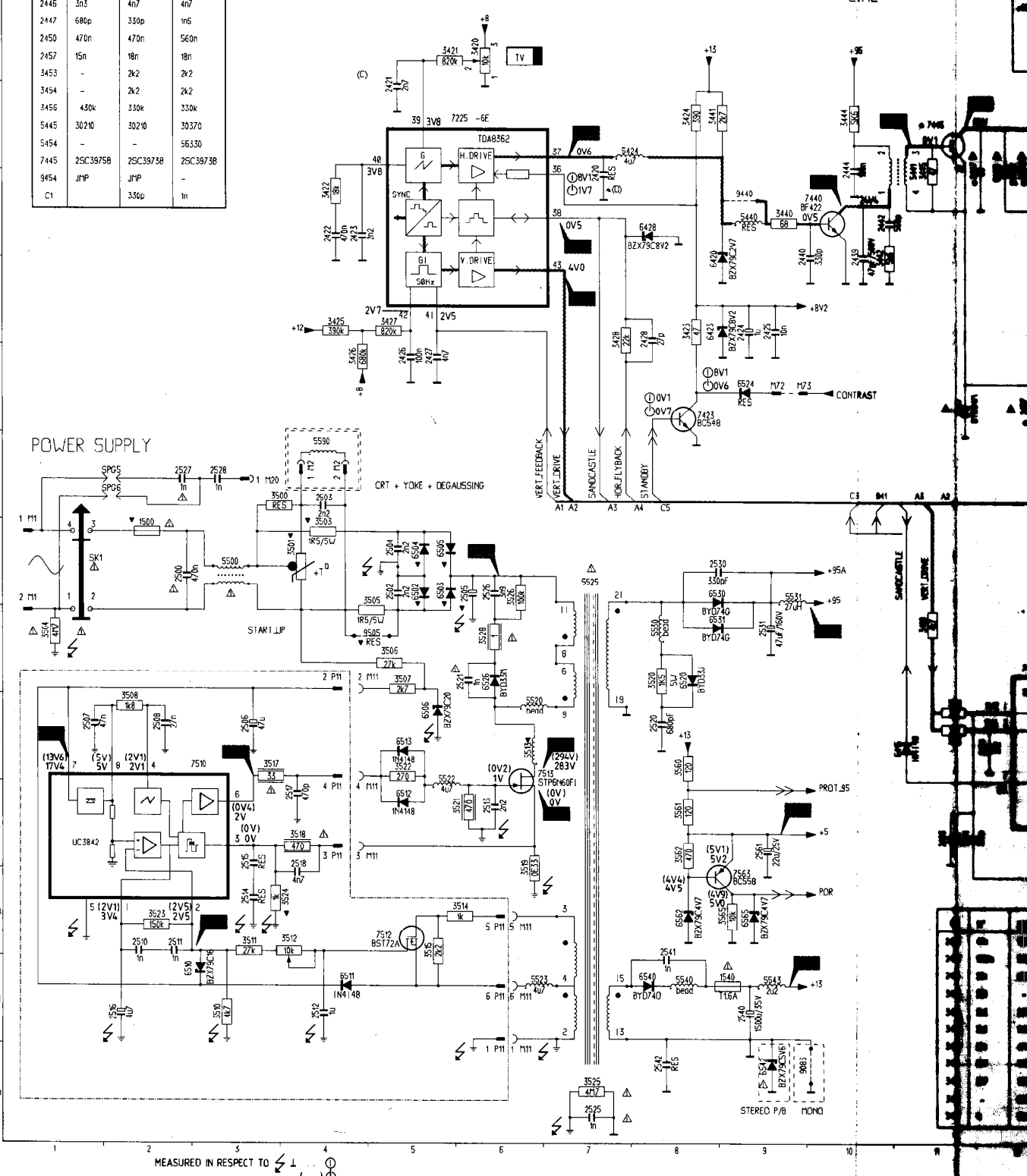
Power supply / Synchronisation / Deflection

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POWER-SUPPLY/SYNC/HOR-DEFL

	14"	20"	21"
2445	560p	1n	1n
2446	3n3	4n7	4n7
2447	680p	330p	1n5
2450	470n	470n	560n
2457	15n	18n	18n
3453	-	2k2	2k2
3454	-	2k2	2k2
3456	430k	330k	330k
5445	30210	30210	30370
5454	-	-	56330
7445	25C39758	25C39758	25C39738
9454	J1P	J1P	-
C1	-	330p	1n



MEASURED IN RESPECT TO



Power supply / Synchronisation / Deflection

FREQUENCY POWER SUPPLY OF

IC CHARACTERISTICS OF FFS POWER SUPPLY:

is isolated Fixed Frequency Supply (FFS) at 33 kHz, no opto coupler, no thyristor switching on the secondary side, no slow start circuitry on the power supply (only slow-start circuitry for linearity) and no standby mode of the power supply. Sense windings 4-2 and 3-2 duty cycle control on primary side.

The duty cycle of the power supply depends on T-on of TS7513 which is controlled by the control panel IC7510. The control panel detects variations of +95 (at the secondary side of 5525 at winding 9) via sensing windings 4-2 and 3-2 at the primary of 5525. The switching period of TS7513 is fixed in three main areas T-on, T-off and T-dead: **T-on** energy is extracted from mains into the primary winding 11-9 of transformer 5525 with a linearly increasing primary current (slope depends on voltage across C2505). Via T-on regulation the duty cycle of power supply and so the +95 can be controlled. As +95 is regulated, T-off is regulated as a result (P-out in -- T-on -- T-off).

T-off energy "inside" transformer is supplied to load via secondary windings of 5525. Current through secondary side of the transformer decreases linearly with firm slope.

T-dead no energy is extracted or supplied, the load gives "room" for T-on and T-off regulation in -- T-off -- T-dead)

PRIMARY SIDE:

Warming: R3501 is a dual PTC (2 PTC's in one winding). After switch on set, PTC is cold so low-ohmic so degaussing current very high. After warming, PTC is heated so high-ohmic, so in normal operation degaussing current very low.

Line voltage is filtered by L5500, full wave rectified modes 6502-6505 and smoothed by C2505 to V-in V DC for 220V AC mains).

Start up: Via start up circuitry R3506 and R3507 mains is used to start up IC7510 at supply pin 7 (+18V). At start up of IC7510, the internal oscillator drives TS7513 into conduction (approx. 33 kHz) via pin 6 of IC7510 and the FFS automatically starts up.

Control IC7510: During start up voltage across winding 4-2 is built up. At the moment the voltage across winding 4-2 reaches +18V, D6511 starts switching and takes over the +18 supply voltage of IC7510.

Multi voltage: No special circuitry, only value changes of components. For high mains voltages the slope of the primary current is more steep (so T-on shorter), for low mains voltages the slope of the primary current is less steep (so T-on longer). In this way income power is constant for different mains voltages ($P-in = V-in \cdot I-prim$)

CONTROL CIRCUITRY:

+95 feedback for duty cycle control: Sense windings 4-2 and 3-2 have same polarity as winding 21-19. During T-off winding 21-19 and so windings 4-2 and 3-2 are positive. TS7512 is switched "on" by the voltage over 3-4 and so rectifies the voltage over 4-2 in a well defined way, charging C2512; the DC level across C2512 is reference for +95. Via R3510, 3511 and 3512 this DC-voltage is brought to the required pin 2 IC7510; this voltage is the input for duty cycle control of IC7510. With R3512 the voltage at pin 2 and so the control can be adjusted.

IC7510 controls +95 by controlling T-on and so the duty cycle of the FFS: IC7510 compares voltage at pin 2 with an internal reference voltage. If stable situation, then pin 2 = reference voltage, so duty cycle remains the same. If +95 increases the voltage at pin 2 increases, so duty cycle and so the +95 decreases (new balance of pin 2 with reference voltage and so new lower stable duty cycle).

I-prim feedback (overload protection): Via R3519 the I-prim is converted in a voltage and via R3518 and 3524 to pin 3 IC7510 (normal operation between 0 - 1 V). If overload (short-circuit of power supply) pin 3 > 1V giving protection (hick-up mode): IC7510 switches TS7513 and so power supply "off" as long as I-prim is too high, starts up again, if I-prim still too high switches "off" again, etc.

SECONDARY SIDE:

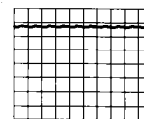
+95 for the line output stage, **+13** for sound output amplifier and start up of the line circuitry and derived from +13 the PROT_95 (for protection), +5 (C supply), POR (starting up the C).

PROT_95 for overvoltage protection: +13 follows +95 voltage variations and so PROT_95 also. If PROT_95 > 10V (+95 is approx. 110V) the C will switch the set in standby.

+5 C supply: via D6562, TS7563 (4.7V), emitter of TS7563 is 5.4V.

POR: C enters operational state as +5 supply voltage has reached 4.5V. POR will initialize the C at the moment the +5 is 5.5V

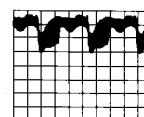
For a more detailed description see Training Manual 4822 727 19904.



TP12
T=20ms
Δv=100v



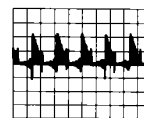
TP1
T=0.5ms
Δv=5



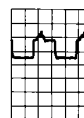
TP13
T=0.5ms
Δv=100v



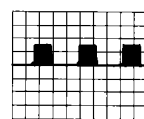
TP2
T=0.5ms
Δv=5



TP14
T=0.5ms
Δv=100v



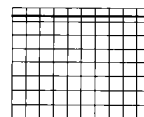
TP2
T=20ms
Δv=5



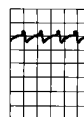
TP15
T=0.5ms
Δv=5v



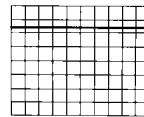
TP2
T=20ms
Δv=2



TP16
T=0.5ms
Δv=5v



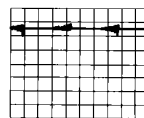
TP2
T=50ms
Δv=2



TP17
T=0.5ms
Δv=1v



TP2
T=20ms
Δv=5

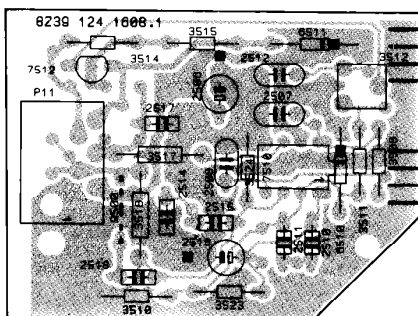


TP18
T=0.5ms
Δv=2v



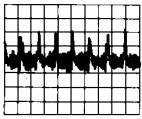
TP2
T=20ms
Δv=5

WITHOUT STEREO PB (+BTSC) PANEL			WITH STEREO PB (+BTSC) PANEL	
154/56/59/70 /77/85/94 90 - 276V	150/52/67/57 140 - 276V	158/62/75/79 140V only	154/56/59/70 /77/85/94 90 - 276V	150/52/67/57 140 - 276V
3.15AT	2AT	2AT	3.15AT	2AT
220μ	100μ	100μ	220μ	100μ
3k	25Ω	25Ω	3k	25Ω
1Ω5	4Ω5	4Ω5	1Ω5	4Ω5
2μ	2μ	1μ2	2μ	2μ
1N5062	1N4005GP	1N4005GP	1N5062	1N4005GP
1N5062	1N4005GP	1N4005GP	1N5062	1N4005GP
1N5062	1N4005GP	1N4005GP	1N5062	1N4005GP
1N5062	1N4005GP	1N4005GP	1N5062	1N4005GP
-	-	-	BZX79-C5V6	BZX79-C5V6
jumper	jumper	jumper	-	jumper

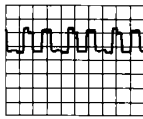


Tuner / IF / Video

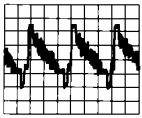
IC7225-6A-6B-6C-6D-6E-6F (TDA8362)



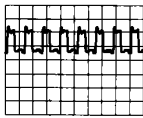
TP29
T=5ms
 $\Delta v=10v$



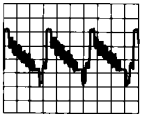
TP36
T=20us
 $\Delta v=1v$



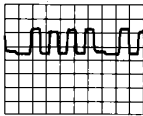
TP30
T=20us
 $\Delta v=0v5 AC$



TP37
T=50us
 $\Delta v=1v$



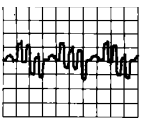
TP31
T=20us
 $\Delta v=0v5 AC$



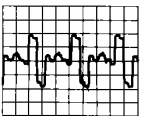
TP38
T=10us
 $\Delta v=1v$



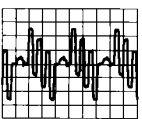
TP32
T=20us
 $\Delta v=0v2 AC$



TP33
T=20us
 $\Delta v=0v2 AC$



TP34
T=20us
 $\Delta v=0v2 AC$



TP35
T=20us
 $\Delta v=0v2 AC$

INTERMEDIATE FREQUENCY (IF) DEMODULATION (IC7225-6A)

IF-demodulation with reference circuit L5260 at pin 2 and 3 of IC7225-6A. AGC control of tuner via pin 47 IC7225-6A to tuner. Top sync. level is used for AGC inside IC7225-6A. Tuner AGC voltage at pin 49 IC7225-6A. AGC adjustment (tuner take over point) via R3264. C2265 at pin 48 determines time constant of the AGC. Base band CVBS signal at pin 7 IC7225-6A (normal = 2.4 Vpp) and fed to Multi-sound panel & sound trap filters. AEC at pin 44 is taken from the reference signal at L5260 for IF demodulation while C2213 stabilizes this voltage. **TRANS_ID for all sets without scart (euroconnector)** comes from pin 14 of IC7225-6B via TS7270 (TS7269 and R3268 not present); if no horizontal (hor.) synchronisation (sync.) (no signal detected), pin 14 IC7225-6B "low", so TS7270 not conducts; **TRANS_ID for sets with scart (euroconnector)** comes from pin 4 of IC7225-6A (TS7269 and R3268 present); if no hor. sync. (no signal detected); pin 4 IC7225-6A "low"; TS7269 not conducts thus TRANS_ID "low".

SOURCE SELECT, LUMINANCE AND CHROMINANCE SEPARATION (IC7225-6B)

Source select via A/V' which is, via TS7240, the inversion of A/V from pin 10 of the C. For all sets except the full multi sets (PAL/SECAM/NTSC) switching takes place inside IC7225-6B; pin 16 A/V' = 0V gives internal CVBS (pin 13), pin 16 A/V' = 8V gives external CVBS (pin 15). For full multi sets for PAL and NTSC switching takes place inside IC7225-6B via pin 16 IC7225-6B and for SECAM switching takes place via TS7216 and TS7217. **Luminance and chrominance separation**: chrominance signal is filtered out (-20dB) by a luminance notch filter which is internally calibrated at the subcarrier frequency (4.43 or 3.58). Pin 14 has a double function: **sharpness control** (in case hor. sync. is there) by controlling the gain of the internal luminance signal or **TRANS_ID** (in case IC7225-6E has no hor. sync., by then pin 14 is output pin "low" so TS7270 conducts so TRANS_ID "low").

CHROMINANCE DECODING (IC7225-6C)

PAL and NTSC chroma decoding inside IC7225-6C, SECAM chroma decoding inside IC7245. Inside IC7225-6C the PAL/NTSC chroma signal is fed via amplification and a burst demodulator to the R-Y and B-Y demodulator. PAL or NTSC processing is determined automatically by the burst demodulator inside IC7225-6C. The reference crystals for demodulation for IC7225-6C are present at pin 34 and/or pin 35 of IC7225-6C. **PAL/NTSC mode if voltage at pin 27 5.5V**; if IC7225-6C detects PAL the voltage at pin 27 makes no sense, if IC7225-6C detects NTSC the voltage at pin 27 is used for hue control (0-5V) as for NTSC sets jumper 9246 is added. For **Trinorma** the set selects (auto or forced) one of the 3 different crystals for PAL M, PAL N and NTSC M at pin 34 of IC7225-6C; for trinorma sets pin 26 of IC7225-6D has double function: saturation control (normal input pin) or trinorma system select (output pin) during system searching. **PAL/SECAM mode if voltage at pin 27 of IC7225-6C 5.5V**; IC7225-6C searches for PAL and IC7245 searches for SECAM. Via a **bidirectional communication line** between pin 32 of IC7225 and pin 1 of IC7245 both IC7225-6C and IC7245 "knows" whether a PAL/NTSC or a SECAM signal is detected: **4.43 calibration (on AC level)** for calibration the PLL and chroma cloche filter of IC7245, and **SECAM or PAL/NTSC operation (on DC level)** enabling automatic selection of IC7225-6C or IC7245 to supply R-Y and B-Y to the delay line IC7255: If IC7225-6C has detected PAL or NTSC **Vpin 32 = 1.5V** and so the demodulated R-Y and B-Y at output pins 30 and 31 of IC7225-6C to delay line IC7255. If IC7225 has not detected PAL or NTSC **Vpin 32 = 5.0V** and so no demodulated R-Y and B-Y at output pins 30 and 31 of IC7225-6C to delay line IC7255. If IC7245 has detected a SECAM signal **Vpin 1 IC7245 becomes "low"** pulling the 5.0V at pin 32 of IC7225-6C to ground and so IC7225-6C "knows" IC7245 has detected SECAM. The demodulated R-Y and B-Y via output pins 9 and 10 of IC7245 to delay line IC7255.

RGB DEMATRIXING (IC7225-6D)

RGB-dematrixing dematrixes the -(R-Y), -(B-Y) and the Y signals to RGB signals; the sandcastle pulse coming from the IC7225-6E synchronises RGB dematrixing and suppresses the RGB signals during line and frame flyback. **Control** by the microprocessor for contrast, brightness and saturation (0.5 to 4.5V). **RGB-source select** switches between RGB from the RGB-dematrix and RGB from TXT/OSD via the BLANKING signal at pin 21 of IC7225-6D. Switching between RGB from TXT or RGB from OSD is not possible.

HORIZONTAL SYNCHRONISATION (IC7225-6E)

Start up of the hor. oscillator via +13 gives start up current into pin 36; if voltage at pin 36 5.8V the hor. oscillator starts running. At **standby** (STANDBY "high") TS7423 conducts, pin 36 IC7225-6E is 3.6V, thus no oscillation. In **normal operation** (STANDBY "low") TS7423 not conducts so pin 36 IC7225-6E is 8V (via zener D6423) thus hor. oscillator runs. **Hor. sync. separator** separates hor. pulses out of CVBS and so synchronises the free-running hor. sawtooth generator. **50/60Hz** is determined by chroma decoder part IC7225-6C. **Hor. oscillator sawtooth** is converted in square wave voltage with variable duty cycle (pin 37). **Hor. flyback pulse** at pin 38 compares phase of flyback pulse with phase of the hor. oscillator; if phase not correct the duty cycle of hor. oscillator will be adjusted. **Time constant** of the sync. circuit automatically determined by IC7225-6E. **Pin 38** is both sandcastle output and hor. flyback input. Selection automatically determined by the input current (sandcastle a few A, flyback 100-300 A determined by R3428). **Amplitudes of sandcastle pulse** are burst is 5.3V, line blanking is 3V, frame blanking is 2V.

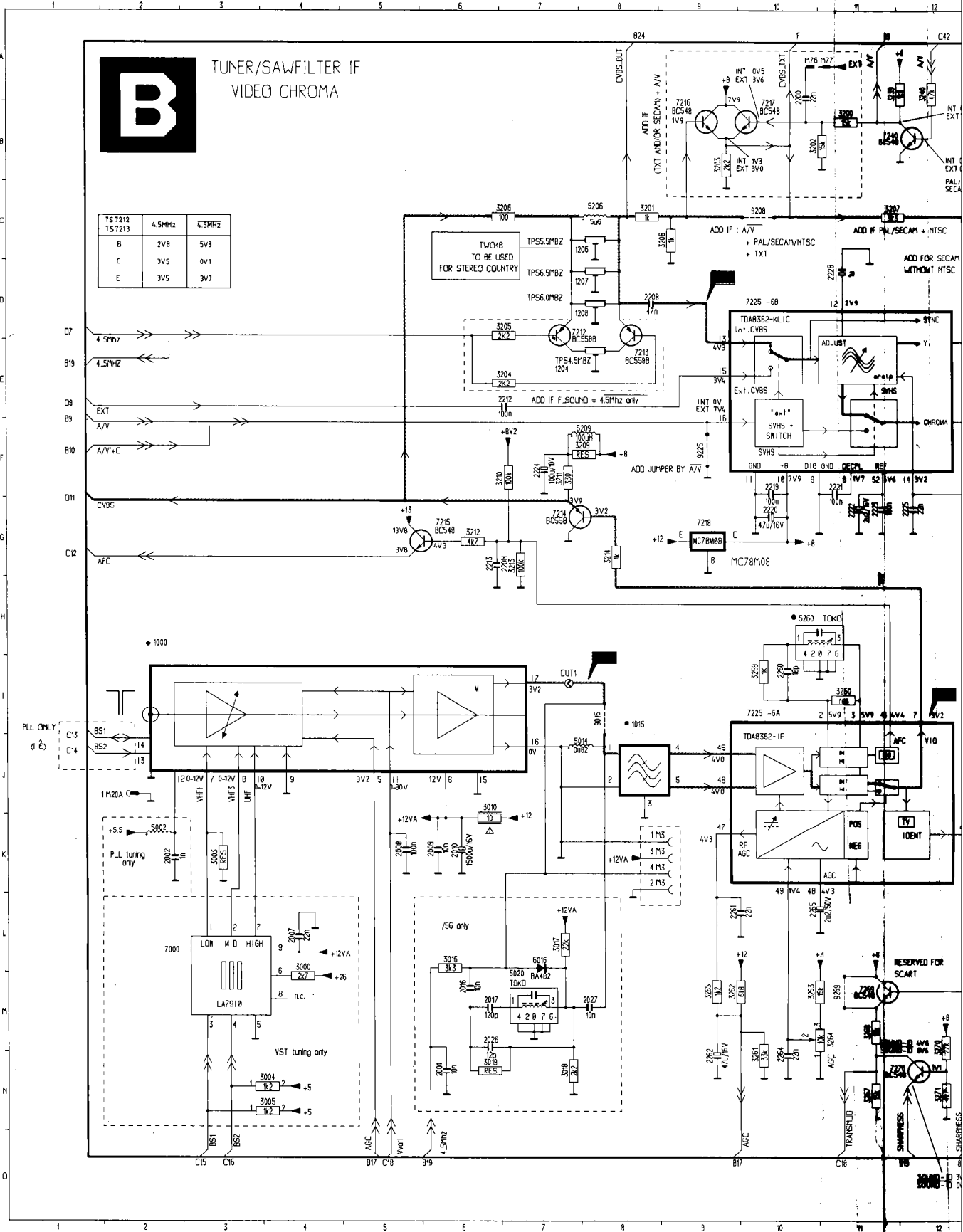
VERTICAL (VERT.) SYNCHRONISATION (IC7225-6E)

Vert. sync. separator separates frame sync. pulse synchronises frame oscillator. **IC7225-6E** compares pulse with phase of sawtooth at pin 42 (from external phase not correct the duty cycle of frame oscillator sync., the frame oscillator keeps running the earliest 50Hz or 60Hz. **Pre-amplifier** in IC7225-6E amplifies IC7225-6E).

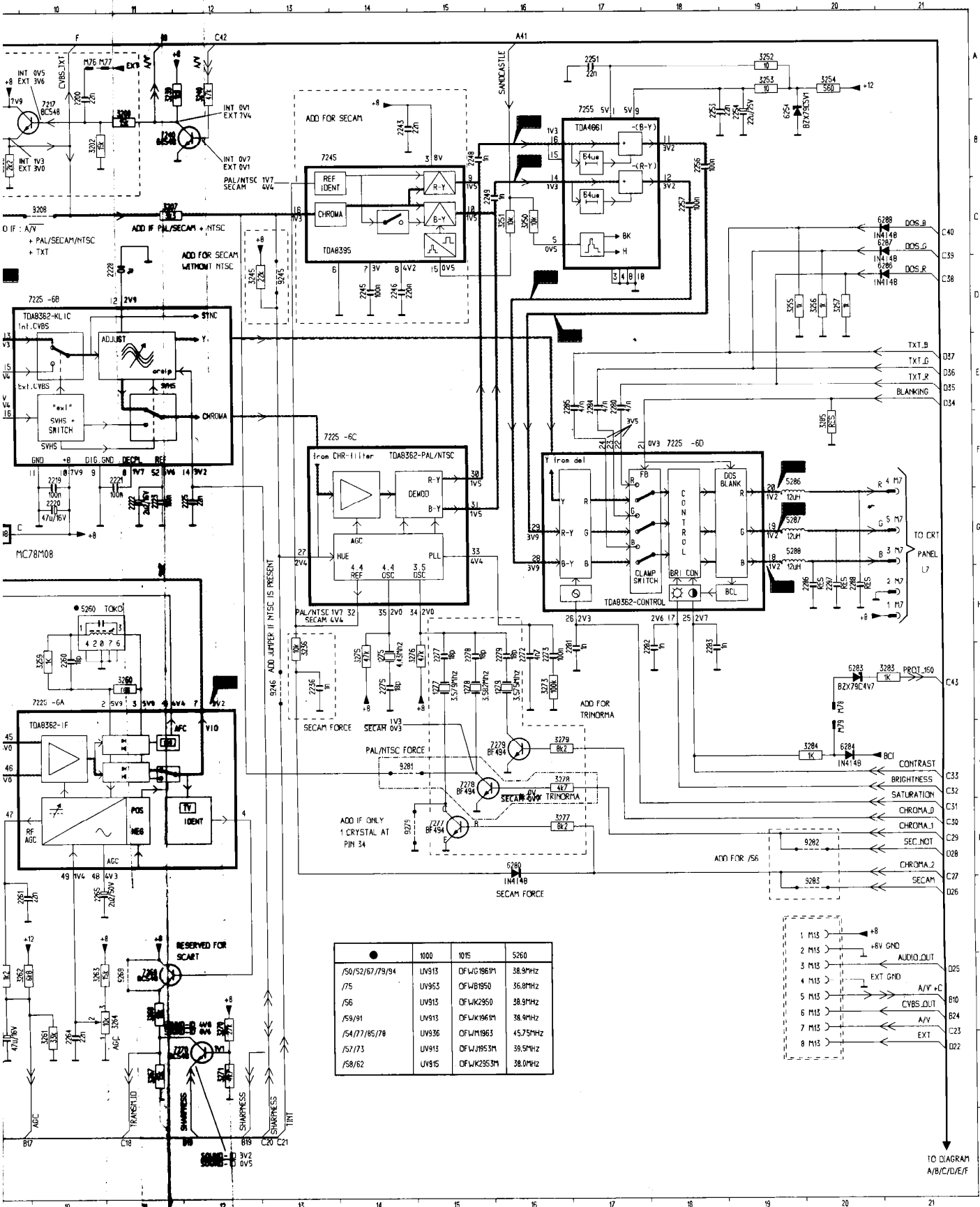
SOUND DETECTION (IC7225-6F)

Single FM-mono sound for single-, dual and multi-demodulation takes place in IC7225-6F. No adjust automatic PLL tuning (4.2 to 6.8 MHz). Sound freq defined by deemphasis C2104.

For a more detailed description see Training Manual



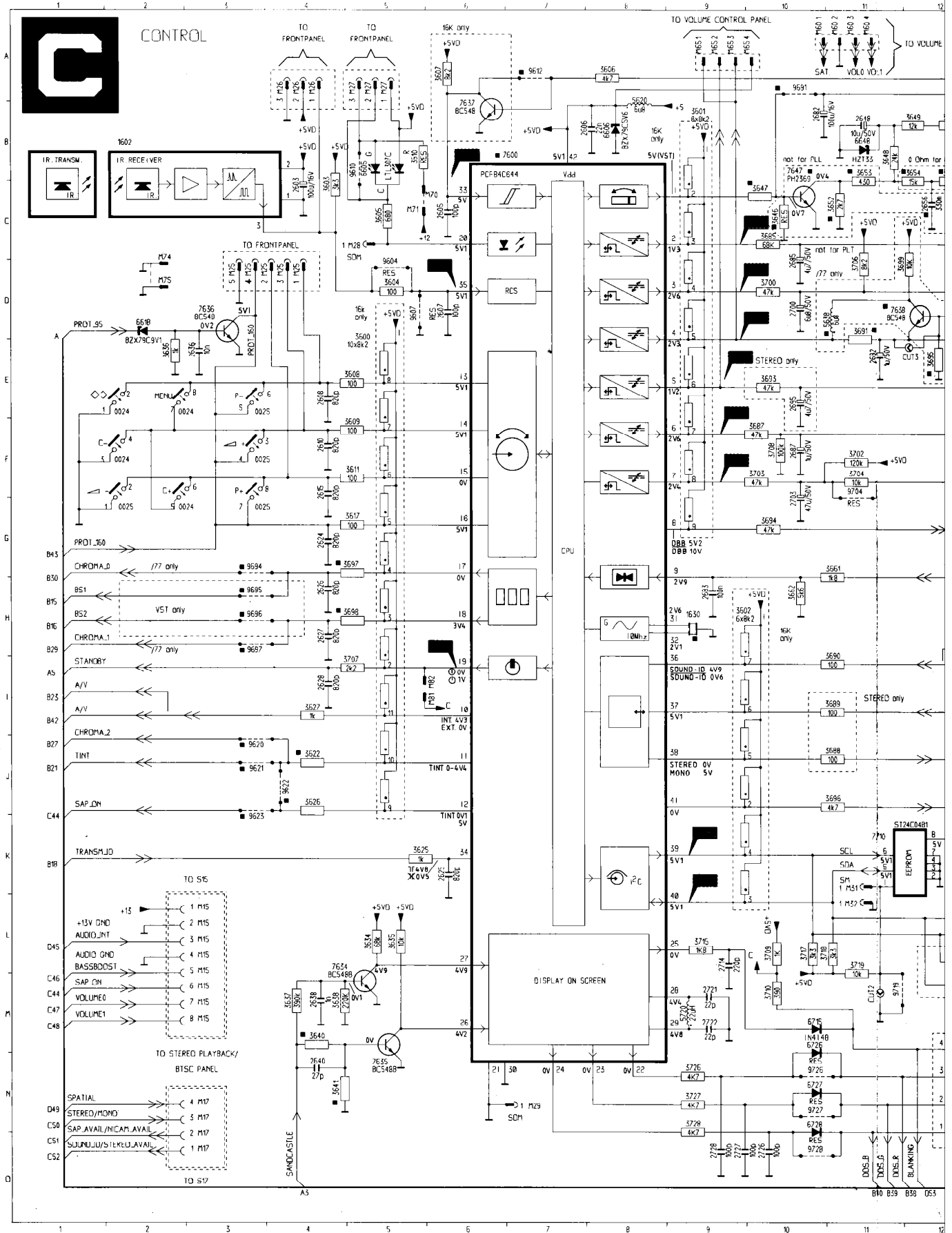
Tuner / IF / Video

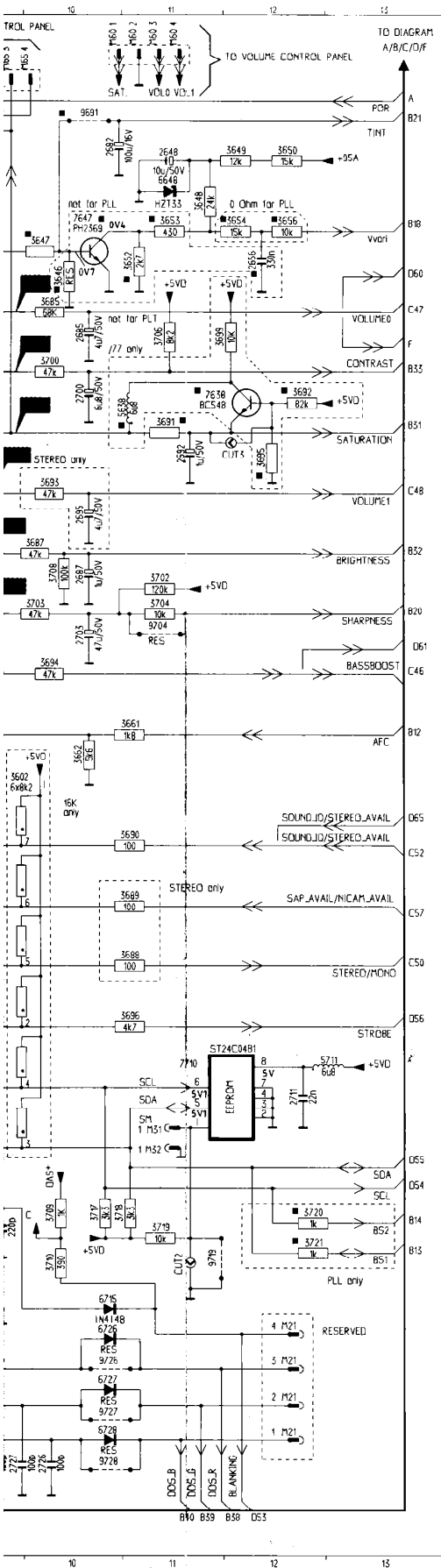


	1000	1015	5260
/50/52/67/79/94	UV913	DF/WG1961M	38.9MHz
/75	UV953	DF/WB1950	36.8MHz
/56	UV915	DF/WK2350	38.9MHz
/59/91	UV913	DF/WK1961M	38.9MHz
/54/77/85/78	UV936	DF/W11963	45.75MHz
/57/73	UV913	DF/WJ1953M	39.5MHz
/58/62	UV915	DF/WK2353M	38.0MHz

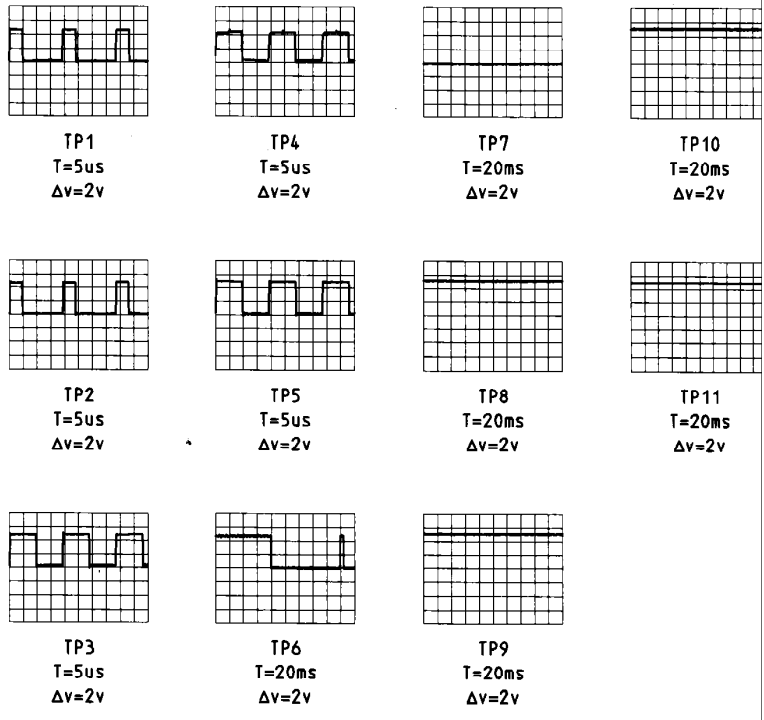
- 1000 H 2
- 1015 I 8
- 1044 E 7
- 1058 D 7
- 1067 D 7
- 1088 D 7
- 1097 H 5
- 1104 H 5
- 1115 H 5
- 1127 K 2
- 1135 K 2
- 1144 K 2
- 1155 K 2
- 1165 K 2
- 1175 K 2
- 1185 K 2
- 1195 K 2
- 1205 K 2
- 1215 K 2
- 1225 K 2
- 1235 K 2
- 1245 K 2
- 1255 K 2
- 1265 K 2
- 1275 K 2
- 1285 K 2
- 1295 K 2
- 1305 K 2
- 1315 K 2
- 1325 K 2
- 1335 K 2
- 1345 K 2
- 1355 K 2
- 1365 K 2
- 1375 K 2
- 1385 K 2
- 1395 K 2
- 1405 K 2
- 1415 K 2
- 1425 K 2
- 1435 K 2
- 1445 K 2
- 1455 K 2
- 1465 K 2
- 1475 K 2
- 1485 K 2
- 1495 K 2
- 1505 K 2
- 1515 K 2
- 1525 K 2
- 1535 K 2
- 1545 K 2
- 1555 K 2
- 1565 K 2
- 1575 K 2
- 1585 K 2
- 1595 K 2
- 1605 K 2
- 1615 K 2
- 1625 K 2
- 1635 K 2
- 1645 K 2
- 1655 K 2
- 1665 K 2
- 1675 K 2
- 1685 K 2
- 1695 K 2
- 1705 K 2
- 1715 K 2
- 1725 K 2
- 1735 K 2
- 1745 K 2
- 1755 K 2
- 1765 K 2
- 1775 K 2
- 1785 K 2
- 1795 K 2
- 1805 K 2
- 1815 K 2
- 1825 K 2
- 1835 K 2
- 1845 K 2
- 1855 K 2
- 1865 K 2
- 1875 K 2
- 1885 K 2
- 1895 K 2
- 1905 K 2
- 1915 K 2
- 1925 K 2
- 1935 K 2
- 1945 K 2
- 1955 K 2
- 1965 K 2
- 1975 K 2
- 1985 K 2
- 1995 K 2

Controls



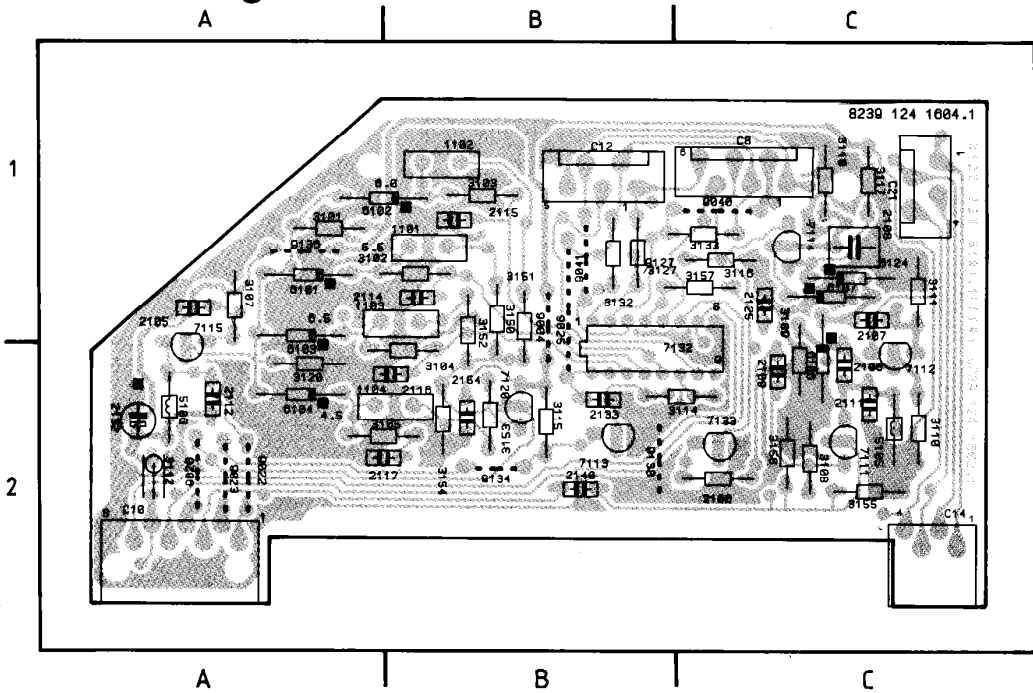


- 0024 E 2
- 0025 G 2
- 1602 B 2
- 1630 H 9
- 2653 C 4
- 2655 B 6
- 2656 B 6
- 2657 B 6
- 2658 B 6
- 2659 B 6
- 2660 B 6
- 2661 B 6
- 2662 B 6
- 2663 B 6
- 2664 B 6
- 2665 B 6
- 2666 B 6
- 2667 B 6
- 2668 B 6
- 2669 B 6
- 2670 B 6
- 2671 B 6
- 2672 B 6
- 2673 B 6
- 2674 B 6
- 2675 B 6
- 2676 B 6
- 2677 B 6
- 2678 B 6
- 2679 B 6
- 2680 B 6
- 2681 B 6
- 2682 B 6
- 2683 B 6
- 2684 B 6
- 2685 B 6
- 2686 B 6
- 2687 B 6
- 2688 B 6
- 2689 B 6
- 2690 B 6
- 2691 B 6
- 2692 B 6
- 2693 B 6
- 2694 B 6
- 2695 B 6
- 2696 B 6
- 2697 B 6
- 2698 B 6
- 2699 B 6
- 2700 B 6
- 2701 B 6
- 2702 B 6
- 2703 B 6
- 2704 B 6
- 2705 B 6
- 2706 B 6
- 2707 B 6
- 2708 B 6
- 2709 B 6
- 2710 B 6
- 2711 B 6
- 2712 B 6
- 2713 B 6
- 2714 B 6
- 2715 B 6
- 2716 B 6
- 2717 B 6
- 2718 B 6
- 2719 B 6
- 2720 B 6
- 2721 B 6
- 2722 B 6
- 2723 B 6
- 2724 B 6
- 2725 B 6
- 2726 B 6
- 2727 B 6
- 2728 B 6
- 2729 B 6
- 2730 B 6
- 2731 B 6
- 2732 B 6
- 2733 B 6
- 2734 B 6
- 2735 B 6
- 2736 B 6
- 2737 B 6
- 2738 B 6
- 2739 B 6
- 2740 B 6
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- 2742 B 6
- 2743 B 6
- 2744 B 6
- 2745 B 6
- 2746 B 6
- 2747 B 6
- 2748 B 6
- 2749 B 6
- 2750 B 6
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- 2778 B 6
- 2779 B 6
- 2780 B 6
- 2781 B 6
- 2782 B 6
- 2783 B 6
- 2784 B 6
- 2785 B 6
- 2786 B 6
- 2787 B 6
- 2788 B 6
- 2789 B 6
- 2790 B 6
- 2791 B 6
- 2792 B 6
- 2793 B 6
- 2794 B 6
- 2795 B 6
- 2796 B 6
- 2797 B 6
- 2798 B 6
- 2799 B 6
- 2800 B 6



	PCA84C644/09B	PCA84C844P/072 for /54/77/85 Trinorma
1630	10 MHz	10 MHz
2656	330n	-
3622	47k	1k
3626	47k	51Ω
3640	68k	270k
3641	33k	120k
3646	2k7	-
3647	10k	47k
3652	220k	-
3653	430Ω	-
3654	15k	jumper
3656	10k	jumper
3692	-	82k
3695	100k	20k
3697	100Ω	1k
3698	100Ω	1k
3699	10k	8k2
3720	-	1k
3721	-	1k
5638	jumper	6μ8
7600	PCA84C644/09B	PCA84C844P/072
7638	-	BC548
7647	PH2369	-
9612	jumper	jumper
9620	-	jumper
9621	jumper	-
9622	jumper	-
9623	-	jumper
9691	-	jumper
9694	-	jumper
9695	jumper	-
9696	jumper	-
9697	-	jumper

Multi and Single sound



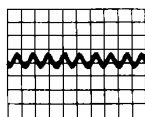
1101 B1	2114 B1	3103 B1	3115 B2	3153 B2	6106 C2	9004 B1	C8 C1
1102 B1	2115 B1	3104 B1	3116 C1	3154 B2	6107 C1	9022 A2	C10 A2
1103 B1	2116 A2	3105 A2	3117 C1	3155 C2	6124 C1	9023 A2	C12 B1
1104 B2	2117 A2	3106 C2	3118 C1	3156 C2	7111 C2	9025 B1	C14 C2
2105 A1	2125 C1	3107 A1	3120 A2	3157 C1	7112 C1	9026 A2	C21 C1
2106 C2	2132 A2	3108 C2	3127 B1	5105 C2	7113 B2	9040 C1	
2107 C1	2133 B2	3109 C2	3132 B1	5106 A2	7114 C1	9041 B1	
2108 C1	2140 B2	3110 C2	3133 C1	6101 A1	7115 A1	9127 B1	
2109 C2	2154 B2	3111 C1	3150 B1	6102 A1	7120 B2	9134 B2	
2111 C2	3101 A1	3112 A2	3151 B1	6103 A1	7132 B1	9136 A1	
2112 A2	3102 B1	3114 B2	3152 B1	6104 A2	7133 C2	9138 B2	

LIST OF ABBREVIATIONS:

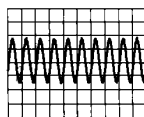
- +95 +95 Supply voltage from the power supply to the line output stage (see section B)
- 4_5 MHz Status signal; "low" sound trap also blocks 4.5 MHz (for NTSC M) AV Audio and Video inputs rear cinches ("low" for external CVBS, "high" for internal CVBS)
- AFC Automatic Frequency Control
- AGC Automatic Gain Control
- AUDIO_INT Volume controlled LF audio signal from pin 50 IC7225-6F (sound decoder)
- AUDIO_OUT Not volume controlled LF audio signal from pin 1 IC7225-6F (sound decoder)
- BASSBOOST Status signal switching bassboost function; "low" for bassboost "on"
- BCI Beam Current Info
- BS1 For VST sets bandswitching, for PLL sets SDA from I²C
- BS2 For VST sets bandswitching, for PLL sets SCL from I²C
- BTSC Broadcast Television System Committee (L-R and L+R)
- CRT Picture tube
- CVBS Colour Video Blanking Sound
- EEPROM Electrical Erasable Programmable Read Only Memory
- EHT Extra High Tension (25 kV)
- HOR Horizontal
- HUE Tint adjustment for NTSC system
- I²C Digital control bus of the microcomputer
- IF Intermediate Frequency
- MPX Multiplexed BTSC signal
- NICAM_AVAIL Status signal; pulled "low" by NICAM panel if NICAM available
- NIL Non Interlace
- NTSC National Television System Committee
- OSD (DOS) On Screen Display (in diagrams Display On Screen)
- PB Play Back
- PLL Phase Locked Loop
- POR Power On Reset

- exceeds 110V)
- RC5 Remote Control 5 system
- RGB Red Green Blue
- SAP Second Audio Program
- SAP_AVAIL Status signal; pulled "low" by BTSC panel if SAP is available
- SAP_ON Status signal; "low" for SAP selected
- SAW Surface Acoustic Wave
- SCL Clock of the I²C-bus
- SDA Data of the I²C-bus
- SDM Service default mode
- SEC SECAM (Sequential Couleur à Memoire)
- SM Service mode
- SOUND_ID Status signal; pulled "low" by multisound panel if current selected sound system is not correct
- SOUND_ILF Sound signal from Multisound panel to FM mono decoder IC7225-6F
- SPATIAL Status signal; "high" gives spatial mode
- STEREO/MONO Status signal; "low" for stereo, "high" for mono
- STEREO_AVAIL Status signal; pulled "low" by BTSC decoder if stereo sound is available
- STROBE Strobe signal from microprocessor to multisound panel to control IC7132
- TINT Pulse width modulated control signal for hue control
- TRANS_ID Status signal; "high" for hor. sync. present so video identification
- V-in The DC voltage across C2505 present at pin 11 of the primary side of the transformer
- V-VARITuning voltage (0-30V for VST, 30V for PLL)
- VG2 Voltage on Grid 2 of the picture tube
- VST Voltage Synthesized Tuning
- Y Luminance part of the video signal

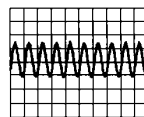
PROT_95 Status signal switching set in standby in case +95



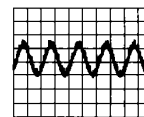
TP39
T=20ms
ΔV=0V2 AC



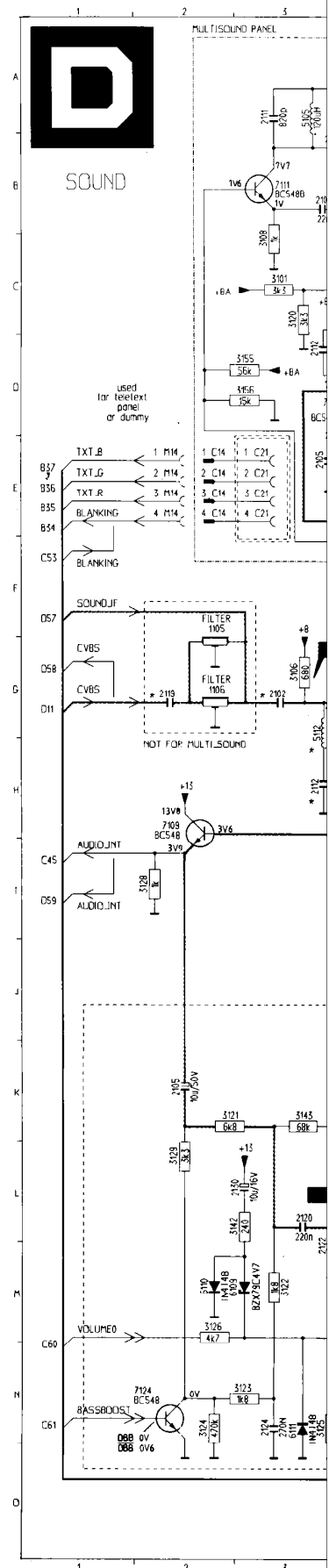
TP40
T=1ms
ΔV=5V AC



TP41
T=0.5ms
ΔV=0V2 AC



TP42
T=0.5ms
ΔV=0V2 AC





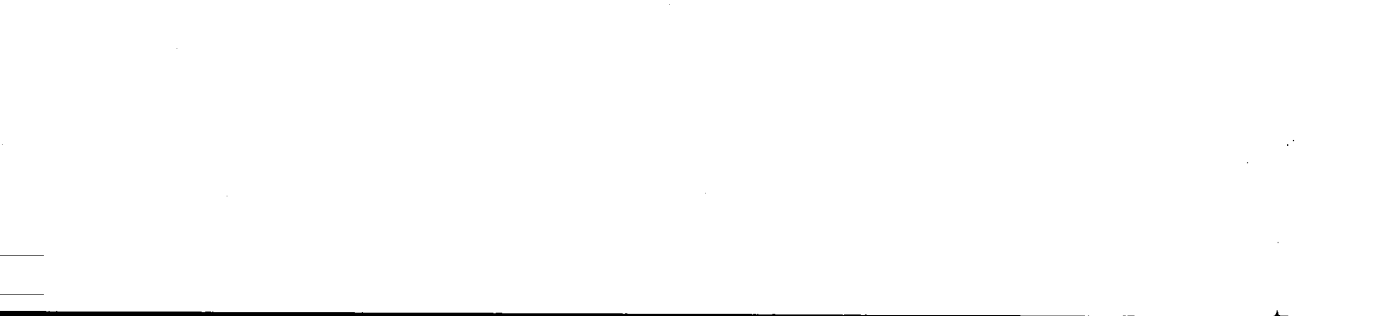
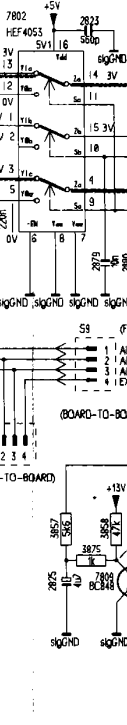
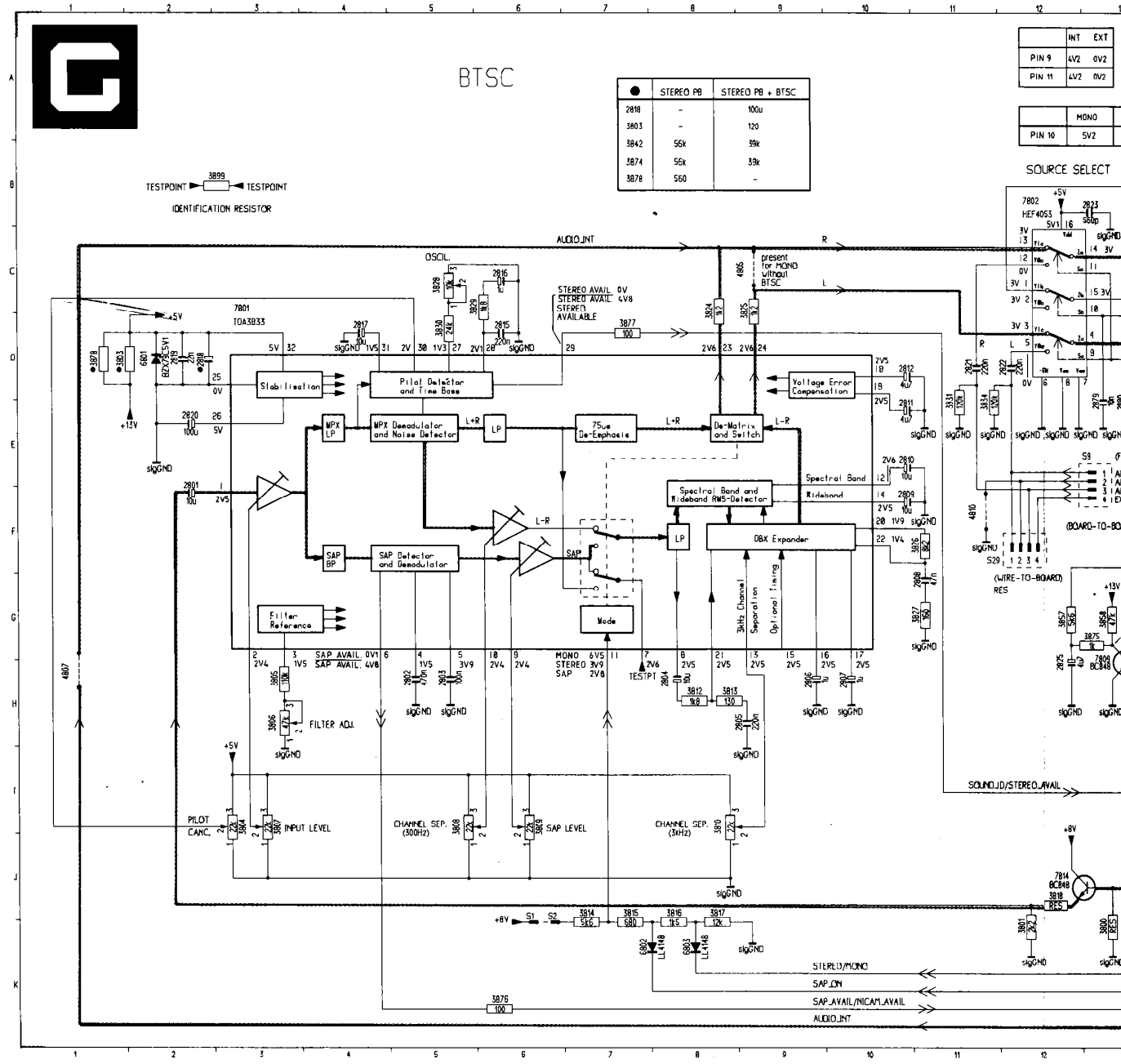
BTSC

	STEREO PB	STEREO PB + BTSC
2818	-	100u
3803	-	120
3842	56k	39k
3874	56k	39k
3878	560	-

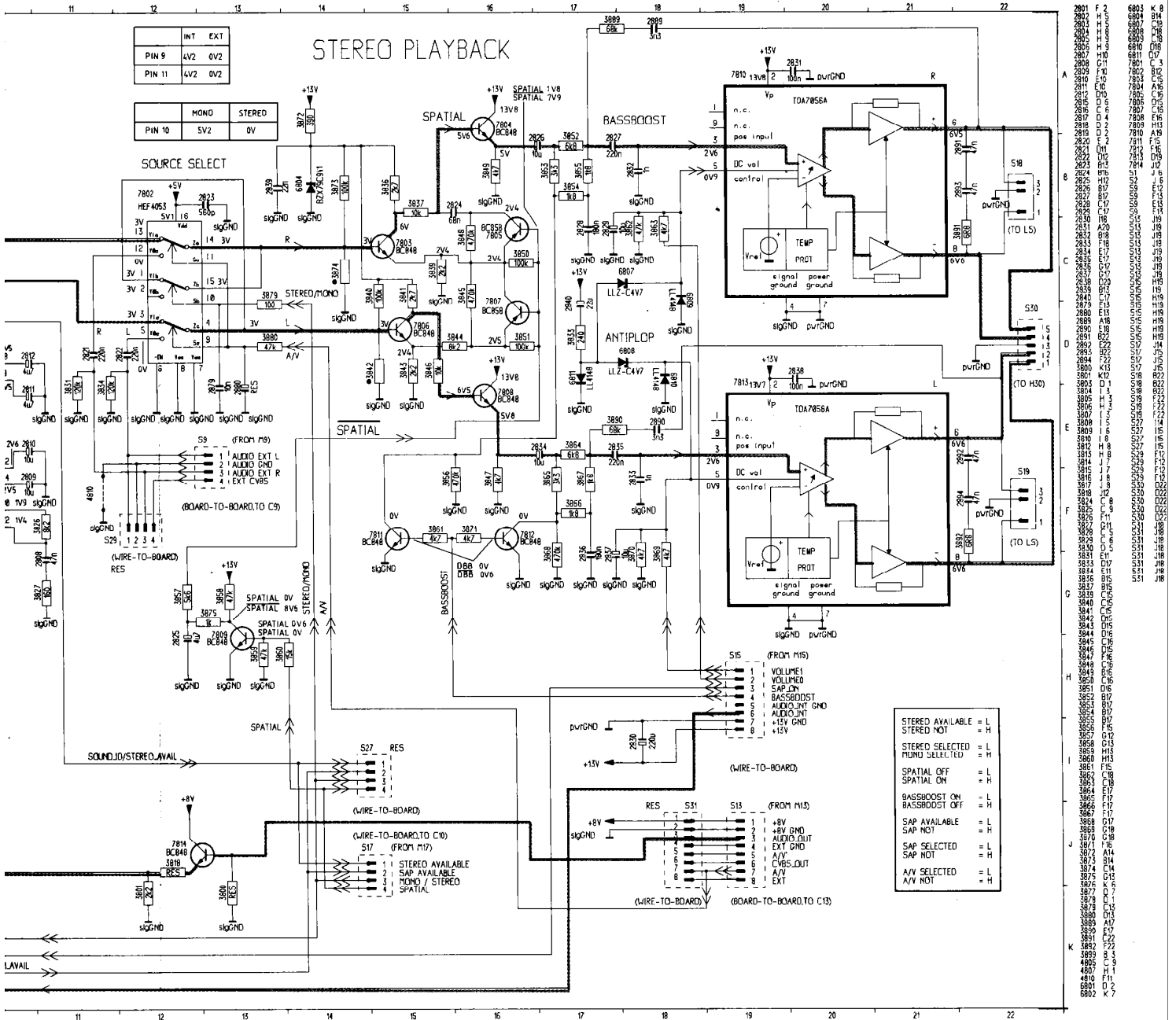
	INT	EXT
PIN 9	4V2	0V2
PIN 11	4V2	0V2

	MONO
PIN 10	5V2

SOURCE SELECT



Stereo PB / BTSC



7. Electrical adjustments

1. Settings on the carrier panel

- 1.1 +95V power supply voltage**
Connect a multimeter (DC) across C2531. Set brightness at mid position and contrast at maximum. Apply a pattern generator with a colour bar. Adjust potentiometer 3512 to +95V \pm 0.5V DC.
- 1.2 Horizontal centring**
Adjust with potentiometer 3420.
- 1.3 Vertical centring**
Is adjusted with switch 3408.
- 1.4 Picture height**
Is adjusted with potentiometer 3410.
- 1.5 Focusing**
Is adjusted with the focusing potentiometer in the line output transformer 5445 (if necessary brightness at minimum and contrast at maximum).
- 1.6 RF AGC adjustment**
Connect pattern generator (e.g. PM5518) at aerial input with RF Amplitude = 1 mV. Connect a multimeter (DC) at pin 5 of tuner. Adjust 3264 to 7.5 \pm 0.5V DC.
- 1.7 Picture demodulator adjustment**
Connect a pattern generator (e.g. PM5518) with a cross hatch. Set oscilloscope to 1 μ s/DIV. Connect an oscilloscope to pin 7 of IC7225 and adjust L5260 so that the overshoot response is minimum, see Fig. 7.1. Select a colour bar signal and verify if the picture is alright.

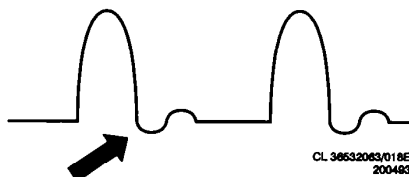


Fig. 7.1

1.8 Adjustment of I.F.-response curve (for /56 only)

Switch off the set.
Disconnect pin 17 of the tuner by desoldering the V-cut. Connect a signal generator at 33.4 MHz at pin 3 of plug M3. Set oscilloscope to 1 μ s/DIV. Connect an oscilloscope to pin 1 of the SAW filter 1015 and adjust L5020 for minimum amplitude of the signal. Resolder the V-cut to reconnect the tuner.

2. Settings on the CRT panel

- 2.1 VG2 adjustment**
Connect a signal generator (e.g. PM5518) and set it to white raster pattern.
Set contrast and the Vg₂ potmeter (in line output transformer) minimum. Adjust with brightness control the top video level at pin 3 of plug L7 (on CRT panel) to the same voltage level as the emitter of transistor of transistor TS7325.
Note: store this value as Personal Preference (PP)!
Pre-adjust the black level preset potmeters of each gun, 3307 (B), 3320 (G) and 3334 (R), to give a black level of 140V on pins 11, 6 and 8 (RGB for Mini Neck (14") or pins 3, 9 and 7 (RGB for Narrow Neck (20" and 21") on the picture tube socket.
Remove probe of voltmeter or oscilloscope.
Adjust the Vg₂ potmeter until one of the colours just becomes visible. Adjust the **other** two guns by means of the corresponding resistors (3307, 3320 or 3334) until the colours just become visible or until the picture is white.
- 2.2 White-D adjustment**
Use the same signal as prescribed in 2.1.
Adjust contrast to such a level that red is good visible. Adjust potmeters 3313 (B) and 3314 (G) to have a correct White-D picture.
Note: Store nominal values for contrast, saturation and brightness as Personal Preference when settings 2.1 and 2.2 have been carried out.

2607
⊕
10

3214

7245

CRT PA

3313



Electrical adjustments

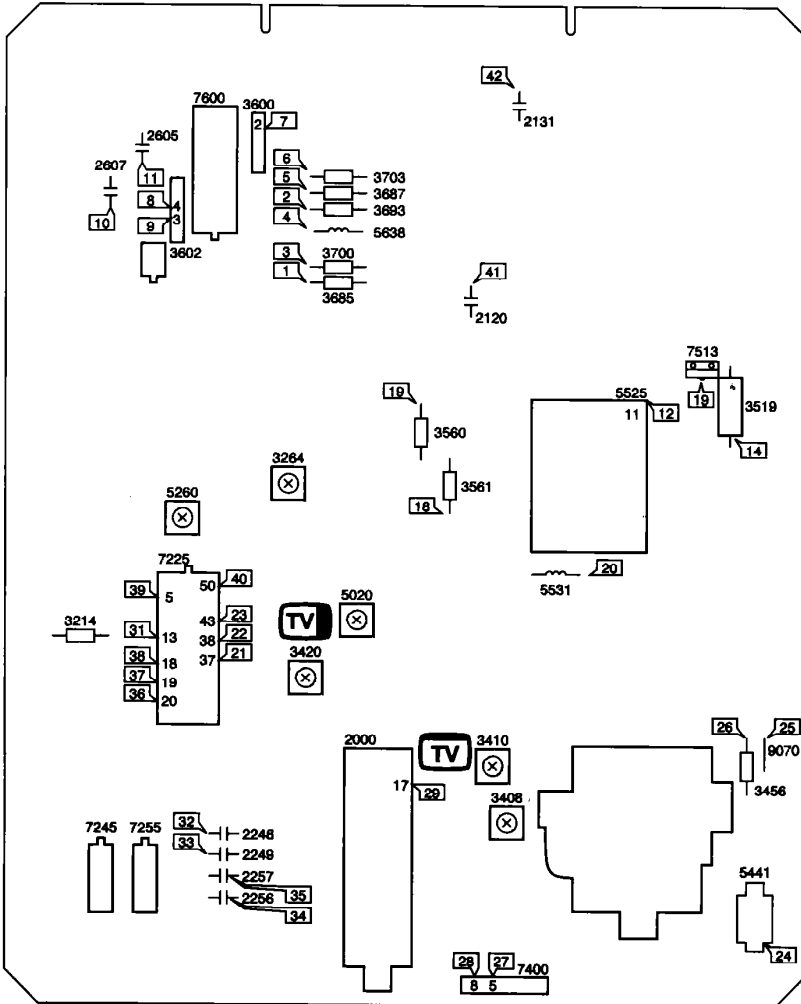
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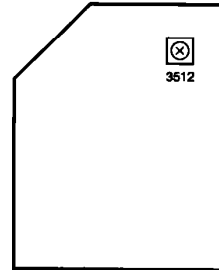
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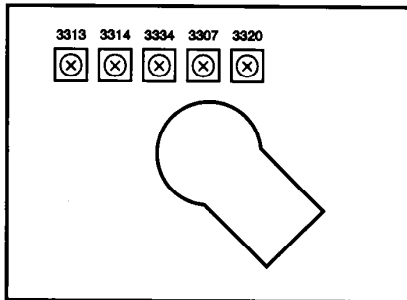
CL 36632063/18A
 200463

POWER SUPPLY PANEL



CL 36632063/18B
 200463

CRT PANEL



CL 36632063/018C
 200463

3. Adjusting the picture tube

Note:

The colour purity and convergence adjustments described hereafter need only be carried out if a completely new adjustment is called for or if a new picture tube has been fitted. Otherwise, for instance after replacing the deflection unit, it will not be necessary to remove the rubber wedges (G in Fig. 4). Corrections by means of the multi-pole unit will then suffice.

3.1 Colour purity (see Fig. 4)

1. Loosen fixing screw "F" of the deflection unit a few turns.
2. Move the deflection unit and remove the three rubber wedges "G".
3. Slide the deflection unit forward as far as possible against the glass of the picture tube cone and tighten fixing screw "F" in such a manner that the deflection unit can be moved with some friction.
4. Place the multi-pole unit in the position shown, turn screw "A" and turn securing ring "B" counter clockwise.
5. Let the apparatus face East or West and switch on the set.
Supply a cross-hatch pattern and set brightness control to maximum. Allow for a warming-up time of 10 minutes.
6. Adjust the static convergence, using tabs "C" and "D" (if necessary, see procedure II).
7. Switch off the green and the blue gun by disconnecting the resistors 3316 and 3303.
8. By turning the colour purity rings with tabs "E", the vertical red bar is adjusted nearest to the centre of the screen, while the central horizontal line should be as straight as possible.
9. Supply a white pattern signal and check that the red bar is in the centre of the screen. If not, switch on the cross-hatch pattern again and move the red bar in the right direction, taking care that the picture does not move too much in vertical direction.
10. Supply the white pattern signal and move the deflection unit until the whole picture surface is uniformly red.
11. Switch on the green and the blue guns by reconnecting R3316 and R3303. No colour patches should occur in the white picture now obtained. If necessary a minor correction can be made by slightly turning the colour purity rings "E" and/or slightly moving the deflection unit.
12. Tighten screw "F" tightly.
13. Proceed to the static and dynamic convergence adjustments.

3.2 Static convergence (see Fig. 4)

1. Supply a cross-hatch pattern and allow for a warming-up time of 10 minutes.
2. Switch off the green gun by disconnecting resistor 3316 and turn locking ring "B" anticlockwise.
3. By turning the four-pole rings with tabs "C", the red and blue cross-hatch patterns in the centre of the screen are placed on top of each other.
4. Switch on the green gun by reconnecting 3316 and switch-off the blue gun by disconnecting resistor 3303.
5. By turning the six-pole rings with tabs "D" the red and green cross-hatch patterns in the centre of the screen are placed on top of each other.
6. Switch-on the blue gun again and tighten ring "B" again.

3.3 Dynamic convergence (see Fig. 5 and 6)

Remark:

The dynamic convergence is achieved by vertical and horizontal tilting of the deflection unit. To secure the right position of the deflection unit, three rubber wedges are fitted between the glass of the picture tube and the deflection unit, as shown in Fig. 5d or 6d.

1. First check the colour purity and switch off the green gun by disconnecting resistor.
2. Supply a cross-hatch pattern and switch off the green gun by disconnecting resistor 3316.
3. Eliminate the crossing of the central horizontal blue and red line and the crossing of the central vertical blue and red line, by vertical tilting of the deflection unit. If the position of the deflection unit is correct, then place rubber wedge 1, paper strip not removed, at the top (Fig. 5a) or at the bottom (Fig. 6a). Fig. 5a is applicable if the deflection unit is tilted upwards and Fig. 6a if the unit is tilted downwards.
4. by horizontal tilting of the deflection unit, now both the horizontal blue and red lines in the upper and lower halves of the picture and the vertical blue and red lines on the left and right hand side of the picture are placed on top of the other.
If the position of the deflection unit is correct, then place wedges 2 and 3 with paper strips removed, as shown in Fig. 5b or 6b. Firmly press the adhesive sides of these wedges against the glass of the picture tube.
5. Now place wedge 4 as shown in Fig. 5c or 6c and press on the adhesive side firmly.
6. Remove wedge 1, to obtain the condition shown in Fig. 5d or 6d.
7. Switch on the green gun by reconnecting 3316.

4. Settings on BTSC panel

4.1 Input gain adjustment

Adjust **R3807** for optimal BTSC reception.

4.2 Oscillator adjustment

Connect pin 31 to pin 32 (+5V) of IC7801 by a 2k7 resistor. Connect an oscilloscope (or frequency counter) to pin 7 of IC7801 and align **R3828** at 15,734 kHz (pilot frequency).

4.3 Pilot cancelation adjustment

Select an off-air BTSC channel with a strong pilot. Connect an oscilloscope at pin 7 of IC7801 and adjust **R3804** for minimum 15,734 kHz, then **R3806** for minimum 15,734 kHz and then again **R3804** for minimum 15,734 kHz.

4.4 Stereo channel separation at 300 Hz

Connect an BTSC generator (e.g. Leader Model LMS-238P) to the tuner input. Set generator to an internal frequency of 300 Hz at L-signal only with Pilot and SAP "on" and Level Control pushed in. Connect AC millivoltmeter at pin 23 IC7801 (R-output) and align **R3808** for minimum amplitude at pin 23.

4.5 Stereo channel separation at 3 kHz

Connect an BTSC generator (e.g. Leader Model LMS-238P) to the tuner input. Set generator to an internal frequency of 3 kHz at L-signal only with Pilot and SAP "on" and Level Control pushed in. Connect AC millivoltmeter at pin 23 IC7801 (R-output) and align **R3810** for minimum amplitude at pin 23.

If no BTSC generator available try to adjust **R3808** and **R3810** for optimal stereo channel separation over the entire audio spectrum by listening.

4.6 SAP level alignment

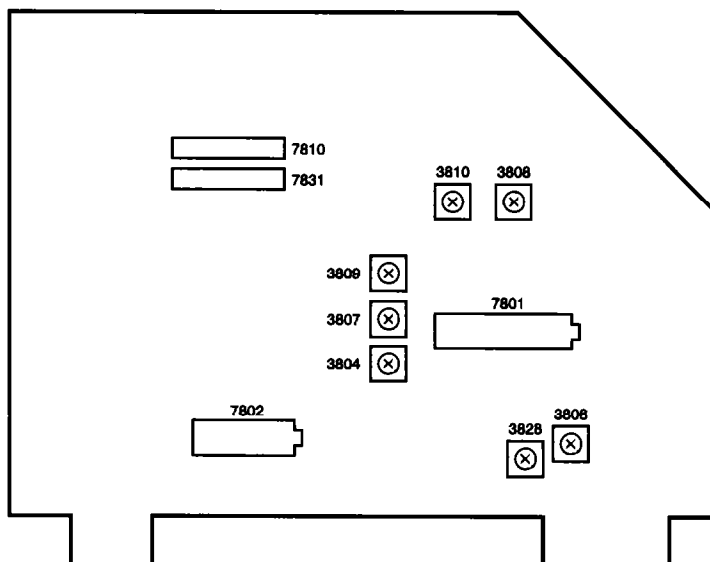
Select a BTSC channel with dual language. Switch with the remote control from language I to language II and adjust **R3809** until both I and II have approx. same sound amplitude.

Tip:

IC7801 can be forced by a DC voltage at pin 11:

- Pin 11 = 2.5V → SAP (second audio program)/ Language II mode
- Pin 11 = 4.25V → Stereo mode
- Pin 11 = 7.2V → Mono mode

STEREO PLAYBACK + BTSC DECODER



8. Repair tips

1. Error messages

Via I²C the μ C can detect malfunction of all I²C controlled IC's. Maximal 3 error codes can be displayed indicating maximal 3 different errors detected at switch on (see Table 8.1). These error codes will be displayed via OSD, only in normal operation mode after every switch on of the set. Error codes detected in the past can be displayed in the Service Mode (see section 3.1.3).

Error Code	Error description	Possible defective component
1	PLL tuner	Tuner
2	EEPROM Checksum Error	Set not correct configured
3	Simulcast tuning	TDA8442
4	2CS Stereo decoder	TDA9840
5	Internal RAM error	IC7600
6	EEPROM	IC7710
7	Nicam stereo decoder	SAA7280
8	Not used	-

Table 8.1

2. Service Default Mode

2.1 Entry of the Service Default Mode:

Shortcircuit the 2 Service Default Mode pins on the main carrier (M28 and M29 near μ C) for a short moment while switching on the set. An "S" on the screen will indicate the activated Service Default Mode.

2.2 Functions of the Service Default Mode:

In the Service Default Mode the set is in a pre-defined condition: All controls at 50% except volume 25%, VST sets tuned at program 1 and PLL sets tuned at 475.25 MHz (if possible with auto system search). All DC voltages & oscillograms indicated in the Service Manual are measured in the Service Default Mode.

2.3 Exit of the Service Default Mode:

Standby and switching off the set (of course the Service Default Mode pin shortcircuit has to be removed by then).

3. Service Mode

3.1 Entry of the Service Mode:

At the printed indication up on the μ C the last 4 digits (e.g. xxyy) indicate the software number (cluster) and version of that particular μ C; The "xx" indicate the software number and the "yy" indicate the masking and version of that particular software number (so if the last 4 digits are 0128 it means software number 01 with 2nd masking with 8th version).

The entry of the Service Mode for sets with software number 1:

First bring the set in Service Default Mode. Then press local keys "Channel -" & "Store" simultaneously for 3 sec. Switch-off EEPROM-protection by shortcircuit 2 Service Mode pins on the main carrier (M31 and M32 near μ C) as long as settings are changed. Remove shortcircuit after changing the options.

The entry of the Service Mode entry for sets with software numbers 3 and higher.

Shortcircuit 2 Service Mode pins on the main carrier (M31 and M32 near μ C) for a short moment while switching on the set.

Switch-off EEPROM-protection will be done automatically as soon as the Service Mode is entered. The EEPROM will be protected again at the moment the Service Mode is exited (via standby, not via switch off of the set).

3.2 Functions of the Service Mode:

Functions of the Service Mode are; display the software number and version, set all software controlled options, display error codes detected in the past and erase the error code detected in the past

3.2.1 Display the software number and version.

In the Service Mode the following menu will appear:

ANUBIS-S1 V28
ADR XXX DATA XXX"

S1 indicates software number 1, V28 indicates 2nd masking with 8th version.

3.2.2 Set all software controlled options

The addresses where the option settings are stored are the addresses 245 up to and including 253. The default data (stored by the factory) differs from stroke version to stroke version. This default data is given at a sticker inside the set.

For manipulation of the data at the option addresses 245 up to and including 253 table 8.2 or 8.3 can be used (resp. for sets with software number 1 or 3).

Changing the options settings according to the hardware environment, can be done in the Service Mode via the keys:

1. "CONTROL -/+ "By pressing the "control -/+ " keys the value behind ADR or DATA will be highlighted sequently
- 2a. "PROG -/+ "By pressing "prog -/+ " keys the highlighted value can be increased or decreased
- 2b. "0-9" By pressing "0-9" keys the highlighted value can directly be keyed in
3. "STORE" After every ADR and/or DATA change a "store" command has to be given to store these changes

For the option addresses 245, 246 and 247 first determine what is valid for your particular set (e.g. the first option for a software number 1 set at address 245 to choose for is "Off air" or "No off air stereo") by choosing between the option A or B (option A is always the opposite of option B). After determination of all options (so 8 option choices per address) add the 8 corresponding values for that particular address. This sum is the data to be keyed in, so e.g. for address 245 a set with software number 1 data can be calculated as follows:

- No off air possible → 128
- AV stereo is selectable → 0
- AV is selectable → 32
- Spatial sound possible → 16
- Hue control possible → 8
- No simulcast → 0
- Remote STORE key not allowed → 2
- Recall current control settings after reset → 1

The data at address 254 by then is: 187

For option addresses 248 up to and including 253 the values in table 8.2 and 8.3 are related to the used tuner. These given values can directly be keyed in as the data for the corresponding option addresses.

The changed settings are only activated when the set is switched off and on again and if the checksum at address 254 is correctly updated; if the checksum is not OK the set will use default settings!!

The checksum can be obtained by adding all data at the addresses 245 up to and including 253 and then subtract 256 until the data has a value under 256: for example, if EEPROM contains the following data, the checksum will be:

Address	Data
245	187
246	117
247	41
248	82
249	74
250	33
251	132
252	8
253	226

	900

900 - 256 - 256 - 256 = 132

Checksum address	Data
254	132

The other addresses of the EEPROM (so all addresses except 240 to 254 and 220) contain program information and preference-, factory- and current settings.

3.2.3 Display error codes detected in the past

The data at address 220 indicates all error codes detected in the past. The data at address 220 is a byte whereby the 8 bits refer to 8 possible error codes detected in the past; see table 8.2.

Data at address 220	Error codes: 8 7 6 5 4 3 2 1	Error codes detected in the past
000	0 0 0 0 0 0 0 0	No error codes detected
001	0 0 0 0 0 0 0 1	1
002	0 0 0 0 0 0 1 0	2
003	0 0 0 0 0 0 1 1	1 & 2
004	0 0 0 0 0 1 0 0	3
005	0 0 0 0 0 1 0 1	1 & 3
006	0 0 0 0 0 1 1 0	2 & 3
007	0 0 0 0 0 1 1 1	1 & 2 & 3
etc.		
etc.		
256	1 1 1 1 1 1 1 1	1 & 2 & 3 & 4 & 5 & 6 & 7 & 8

Table 8.2

3.2.4 Erase the error code detected in the past

If data at address is overwritten with 000 the error code history has been erased.

3.3 Exit of the Service Mode:

For all software numbers the Service Mode is exited via the standby command.

Repair tips

Option setting table for software number 1

Address	Option A	Value	Option B	Value
245	Off air stereo possible	0	No off air stereo possible	128
	AV stereo playback enabled	0	AV uses mono only	64
	No AV selectable	0	AV selectable	32
	No spatial sound possible	0	Spatial sound possible	16
	No hue control possible	0	Hue control possible	8
	No simulcast	0	Simulcast available	4
	Remote STORE key allowed	0	No remote STORE key	2
	Recall PP after reset	0	Recall current control settings after reset	1
246	No hotel mode possible	0	Hotel mode can be enabled	128
	No UHF tuning possible	0	UHF band allowed	64
	No VHF3 tuning possible	0	VHF3 band allowed	32
	No VHF1 tuning possible	0	VHF1 band allowed	16
	Not used			0
	No sound standard selection	0	Auto, M, B/G, I, D/K sound selection possible	4
	Not used			0
	No colour system selection	0	Auto, SECAM, PAL(/NTSC)	1
247	With multisound panel			39
	Without multisound panel			38
248	UV 913 (VST)			191
	UV 915 (VST)			42
	UV 963 (VST)			159
249	UV 913 (VST)			93
	UV 915 (VST)			73
	UV 963 (VST)			90
250	UV 913 (VST)			25
	UV 915 (VST)			0
	UV 963 (VST)			33
251	UV 913 (VST)			134
	UV 915 (VST)			129
	UV 963 (VST)			136
252	UV 913 (VST)			0
	UV 915 (VST)			0
	UV 963 (VST)			0
253	UV 913 (VST)			224
	UV 915 (VST)			224
	UV 963 (VST)			224

Table 8.3

Option setting table for software number 3

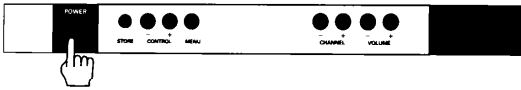
Address	Option A	Value	Option B	Value
245	BTSC stereo enabled	0	BTSC stereo disabled	128
	AV Stereo playback enabled	0	AV uses mono only	64
	No AV selectable	0	AV available	32
	No spatial sound possible	0	Spatial sound possible	16
	No hue control possible	0	Hue control possible	8
	Not used			0
	Always allow RC5 STORE key	0	Allow RC5 STORE key only in Service Default Mode and in Service Mode	2
	Recall PP after reset	0	Recall current control settings after reset	1
246	No hotel mode possible	0	Hotel mode can be enabled	128
	UV936 installed	0	UV934 tuner installed	64
	Single colour system	0	Trinorma system	32
	Not used			0
	Not used			0
	Not used			0
	Not used			0
	Autoskip with optimal speed	0	Autoskip at lower speed	1
247	UV 963 (PPL)			4
248	UV 963 (PPL)			15
249	UV 963 (PPL)			5
250	UV 963 (PPL)			3
251	UV 963 (PPL)			3
252	UV 963 (PPL)			60
253	UV 963 (PPL)			5

Table 8.4

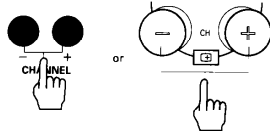
Installation

Switching the TV ON/OFF

- Press the **POWER** button on the front of the TV to switch ON/OFF.



Note : If the RED light below the screen is lighted up, then you must press the **CHANNEL +** or **-** button on the TV or the **CH +** or **-** button on the remote control handset. The TV will then switch itself on (for further information refer to the section on 'To Select Stand-by Mode'). You can also press the stand-by button or any digit buttons on the remote control handset to switch the TV set on.



Searching and Storing TV Channels

The control buttons you need to store the TV stations on channel numbers are found on the front of the TV. (Up to 70 TV stations can be stored on channel numbers using the following methods.) You can store the TV stations either automatically or manually.

(Note : For Australia (version 76) the TV is pre-tuned to channel number 0, 2, 7, 9, 10, 28 and 36.)

A. To Store the TV Stations Automatically

- Press the **STORE** button, located on the front of the TV, to activate the **INSTALLATION Menu**; the **AUTO** menu is selected first.



- Press the **MENU** button to select the **AUTO** menu.



- Press the **CONTROL +** button to activate the **AUTO** mode.

The TV will start searching and store all available stations in an ascending sequence.
Note : Pressing any button during the auto searching will stop the searching process.



When all the available stations are stored, it will automatically exit from the **INSTALLATION Menu** and channel 1 will be displayed.

B. To Store the TV Stations Manually

Switching the TV ON/OFF

- Press the **POWER** button on the front of the TV to switch ON/OFF.

- Press the **STORE** button, located on the front of the TV, to activate the **INSTALLATION Menu**.



- Press the **CONTROL +** button to highlight the **MANUAL** menu.



- Press the **Menu** button to select the **MANUAL** Menu.

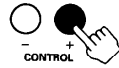


- Press the **CONTROL +** button to activate the **MANUAL** mode.

The TV will start searching and at every available station, it will prompt you to enter your preference channel number. If the signal is weak and you do not wish to store the TV station, press the **CONTROL +** button to continue searching. If the signal is good and you wish to store the TV station, press the **CHANNEL +** or **-** button to select the desired channel number and then press the **STORE** button to store the selected TV station.



- Press the **CONTROL +** button to carry on searching for every available TV stations.



Repeat Step 4 and 5 to store the available TV stations.

- When all the TV stations are stored, press the **STORE** button once more to exit from the **INSTALLATION Menu**.



C. Fine Tuning

In case the picture and sound is not optimum or in area of poor reception and constant interference, a slight adjustment of the tuning may improve the picture and sound quality.

1. Select the channel which you want to fine tune.



2. Press the STORE button, located on the front of the TV, to activate the INSTALLATION Menu.



3. Press the CONTROL + button to highlight the FINE tuning menu.



4. Press the Menu button to activate the FINE tuning Menu.



5. Press and hold the CONTROL + or - button until the desired picture or sound is obtained. A moving indicator and blinking channel number will appear on the screen indicating that the set is being fine tuned.



6. Press the STORE button to store the new settings. Repeat the above procedures for other channel number which you wish to do a fine tuning or press the STORE button again to exit.



D. Swapping channel numbers

If you had used the automatic frequency searching, the TV stations stored under the channel numbers may not be to your preference. You can make use of the SWAP feature to re-arrange the TV stations according to the channel numbers respectively to your preference.

1. Select the channels which you want to do a swap. e.g. Ch 5



2. Press the STORE button, located on the front of the TV, to activate the INSTALLATION Menu.



3. Press the CONTROL + button to highlight the SWAP menu.



4. Press the Menu button to activate the SWAP Menu. The current channel will be indicated at the "FROM" column in green and flashing. e.g. Ch 5



5. Press the CONTROL + button to select the "TO" column, where you want to indicate the channel number you wish to do the swapping with. Pressing the CONTROL + or - button will enable you to toggle between the "TO" and the "FROM" function.



6. Select the channel number you want to do the swapping with. e.g. Ch 8



7. Press the STORE button to activate the SWAP function and to store the swapped channels.



8. Press the STORE button again to exit from the INSTALLATION Menu.









Note :
When the TV is at the following modes, the SWAP feature does not activate :-



1. AV
2. Teletext (if your set is equipped)
3. The "FROM" column is indicated with "-" symbol.

E. Skipping channel numbers

This feature enable you to skip those channel numbers which have bad or no TV station signal via the **CH +** or **-** button on the remote control. But if you do a direct channel number keying on a remote control, you still can select the particular channel number even though it is been skipped.




1. Press the **STORE** button, located on the front of the TV, to activate the **INSTALLATION Menu**.

2. Press the **CONTROL +** button to highlight the **SKIP** menu.

3. Press the **Menu** button to activate the **SKIP Menu**.

4. Press the **CHANNEL +** or **-** button to select the required channels to be skipped.

5. Press the **CONTROL +** button to select **YES** and the channel will be skipped from the memory. When a channel is skipped, the **On Screen Display** in the **SKIP Menu** will displayed. e.g. *10 in red.

6. Press the **STORE** button to exit from the **SKIP Menu**.


F. Adding back the skipped channel numbers

1. Repeat steps **E1** to **E4** as above.
2. Press the **CONTROL -** button to select **NO** and the channel will be added to the memory. When a channel is added, the **On Screen Display** in the **SKIP Menu** will displayed. e.g. *10 in green.

3. Press the **STORE** button to exit from the **SKIP Menu**.



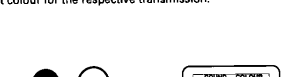
Sound System Selection (for /56 set only)

If during Automatic or Manual Tuning, the selected sound is distorted due to different TV transmission system, proceed with the following operations to restore the correct sound for the respective transmission.

1. Select the channel number you want to rectify the sound system.

2. Press and hold the **STORE** button continuously for about 2 seconds, to activate the **SOUND and COLOUR Menu**; the **SOUND** menu is selected first.

3. Press the **Menu** button to activate the **SOUND menu**.

4. Press the **CONTROL +** or **-** button to select one of the following sound systems according to the respective transmission mode.




AUTO ; B/G ; I ; D/K or M

If you select the **AUTO** mode, the TV will automatically select the respective sound system according to the transmission system.


5. Press the **STORE** button to store the selections and exit from the **SOUND and COLOUR Menu**.




Colour System Selection (for /56 set only)

If during Automatic or Manual Tuning, the selected colour is distorted due to different TV transmission system, proceed with the following operations to restore the correct colour for the respective transmission.

1. Select the channel number you want to rectify the colour system.

2. Press and hold the **STORE** button continuously for about 2 seconds, to activate the **SOUND and COLOUR Menu**; then press the **CONTROL +** or **-** button to highlight the **COLOUR** menu.

3. Press the **Menu** button to activate the **COLOUR menu**.

4. Press the **CONTROL +** or **-** button to select one of the following colour systems according to the respective transmission mode.

AUTO ; SECam or PAL/NTSC

If you select the **AUTO** mode, the TV will automatically select the respective colour system according to the transmission system.


5. Press the **STORE** button to store the selections and exit from the **SOUND and COLOUR Menu**.


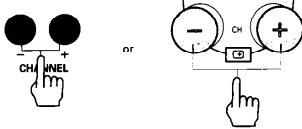
Operation

You can now operate your TV either directly using the TV buttons or the remote control handset.

1. Switching the TV ON/OFF

- Press the **POWER** button on the front of your TV to switch the TV ON and OFF.
- Note : The last viewed TV station will be automatically selected when the set is first switched on.

2. Selecting the TV Channels



- Press the **CHANNEL +** on the TV or the **CH +** on the remote control to select a TV station stored on a higher channel number.

- Press the **CHANNEL -** on the TV or the **CH -** on the remote control to select a TV station stored on a lower channel number.

Channel numbers can also be selected using the digit buttons 0 to 9 on the remote control.

A. Single Digit Channel Number

- Press and hold any of the respective digit buttons which correspond to the stored TV station. (see Fig. 1)

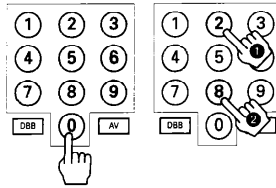


Fig. 1

Fig. 2

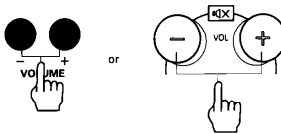
B. Two Digit Channel Number

(e.g. channel 28, see Fig. 2)

- Press the digit 2 button then
- Press the digit 8 button.

You must complete the above operation within a time frame of 2 seconds, if not, it will react as a Single Digit operation.

3. Adjusting the Volume



- Press the **VOLUME +** on the TV or the **VOL +** on the remote control to increase the volume.

- Press the **VOLUME -** on the TV or the **VOL -** on the remote control to decrease the volume.

The following functions, S/No 4 to 9 are operations with the remote control handset.

4. Muting the Sound

- Press the **MIX** button to switch off the sound.

The sound is temporarily muted and the mute symbol is display on the screen.



- Press the **MIX** or the **VOL +** or **-** button to restore the sound.

5. Switching to 'Stand-by' mode

The TV can be put into 'Stand-by' mode in the following two ways.

A. Directly

- Press the **OFF** button. The RED lamp below the TV screen is lighted and the TV is put into 'Stand-by' mode.

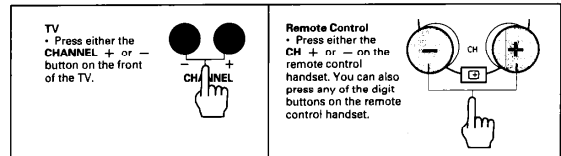


B. Automatically

- Approximately 10 minutes after a TV station stops transmission or at no signal reception, then the TV switches itself automatically to 'Stand-by' mode.

6. Switching the TV ON from 'Stand-by' mode

You can switch the TV ON again either from the TV or with the remote control handset.

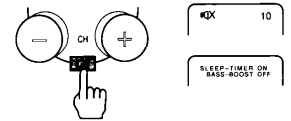


The RED light below the TV screen will disappear.

7. Displaying OSD

The 'On-Screen-Display' (OSD) allows you to see the channel number on which a TV station is store and also the sleep timer and bassboost selections.

- Press the **OSD** button once to display the channel number.
- Press the **OSD** button again to display the sleep timer and bassboost.
- Press the **OSD** button once more to switch off the displayed information.

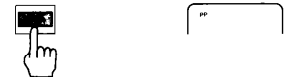


8. Personal Preference (PP)

If adjustments had been made to the picture and sound settings, it is possible to recall the stored settings either from your own or factory stored preferences.

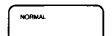
A. Recalling Personal Preference (PP)

- Press the **PP** button once to reset the picture and sound settings to the one you have stored previously. (Refer to Menu Operation on storing of personal preference.) It is indicated by the word **PP**.



B. Recalling Factory Stored Personal Preference (NORMAL)

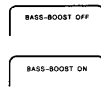
- Press the **PP** button once more will enable you to reset the picture and sound settings to the one that had been stored by the factory previously (you cannot adjust this settings) and is indicated by the word **NORMAL**.



9. Dynamic Bass Boost (DBB)

This feature enable you to enhance the amplification of the bass.

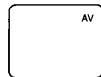
- Press the **DBB** button to switch on or off the amplification.



10. AV Source Selection

If your TV are connected to other peripherals equipment via the AV inputs, you can watch the playback programmes in the AV channel.

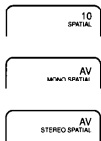
- Press the **AV** button to switch between the AV mode and the TV mode.



AV can also be selected via the **CH +** or **-** button on the remote control by scrolling through the channel numbers (provided AV channel is not skipped).

11. Spatial Sound (for model 21GX1563 only)

- Press the **Spatial** button to switch on or off the special acoustic sound effect.

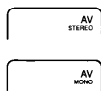


If you are in the AV mode, you can select either **Stereo Spatial** or **Mono Spatial** depending on which sound mode you are playing back.

12. Stereo Sound (for model 21GX1563 only)

This feature is only applicable if you are playing back **stereo** programme via the AV sockets from stereo VCR or laser disc player.

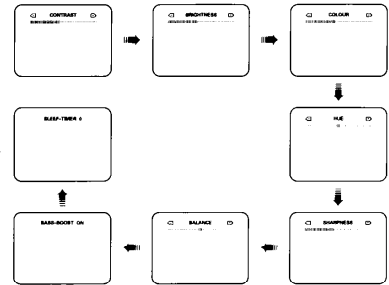
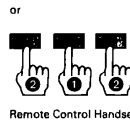
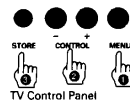
- Press the **Stereo** button to switch between **stereo** or **mono** sound.



If you are playing back mono programmes (i.e. you only connect a video socket and one Audio socket), you must select to the mono sound mode, if not, you will only hear the sound coming out from one side of the speaker.

Menu Operation

The picture and sound settings are pre-set by the factory for ideal viewing, but you can store your own personal preference using the 'On Screen Menu'.
 * Press the **MENU** button on the Front Control Panel of the TV set or the remote control handset to cycle through the menu.



Contrast

- Press the **MENU** button to select **CONTRAST**.
- Press the **CONTR** - or + to decrease or increase the contrast setting.
- If you want to store this setting as your personal preference, press the **STORE** button on the TV set.

Brightness

- Press the **MENU** button to select **BRIGHTNESS**.
 - Press the **CONTR** - or + to decrease or increase the brightness setting.
 - If you want to store this setting as your personal preference, press the **STORE** button on the TV set.
- Note : At minimum contrast setting, the picture will be a blank screen.

Colour

- Press the **MENU** button to select **COLOUR**.
- Press the **CONTR** - or + to decrease or increase the colour setting.
- If you want to store this setting as your personal preference, press the **STORE** button on the TV set.

Hue (For NTSC System or Playback Only)

- Press the **MENU** button to select **HUE**.
- Press the **CONTR** - or + to decrease or increase the colour tone setting.
- If you want to store this setting as your personal preference, press the **STORE** button on the TV set.

Sharpness

- Press the **MENU** button to select **SHARPNESS**.
- Press the **CONTR** - or + to decrease or increase the sharpness setting.
- If you want to store this setting as your personal preference, press the **STORE** button on the TV set.

Balance

- Press the **MENU** button to select **BALANCE**.
- Press the **CONTR** - or + to select left or right speaker output.
- If you want to store this setting as your personal preference, press the **STORE** button on the TV set.

Bass Boost

- Press the **MENU** button to select **BASS BOOST**.
- Press the **CONTR** - or + to switch off or on the bass boost.

Sleeptimer

- Press the **MENU** button to select **SLEEPTIMER**.
 - Press the **CONTR** - or + to decrease or increase the sleeptimer setting.
- With this feature, you can select a time period after which the TV set will switch to Stand-by mode automatically. The timer can be set in steps of 15 minutes from **OFF** up to a maximum of 120 minutes.
- Note : At the final minute of the selected time period, an indication bar will be shown on the screen. During the final 30 seconds, the indication bar will begin to count down on the screen informing you that the TV set is going to switch to the Stand-by mode. At the end of the countdown, the TV will switch over to the stand-by mode.
- To switch off the timer, select the **SLEEPTIMER** menu and select the timer to **OFF**.

Operating The Video Cassette Recorder

To store the Video Cassette Recorder (VCR) signal on a channel number
(Please refer to section on 'Peripherals Equipment Connections' on how to connect your VCR.)

Note : Your VCR could already have pre-tuned TV channel numbers stored. For detailed connection and installation of the VCR, please refer to the Instruction Manual of the VCR.

1. Switch on the TV and the VCR.

In most VCR, there is a test signal switch located at the back of the set.

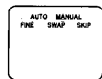
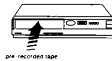
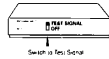
2a. Switch the test signal switch from the off position to the test signal position.

or

If your VCR does not have the test signal switch, you can use a pre-recorded tape to simulate the video signal.

2b. Insert a pre-recorded tape into the VCR and press the **PLAY** button on the VCR.

3. Press the **STORE** button on the TV.



4. Press the **MENU** button on the TV to select the **AUTO** menu.



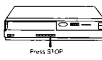
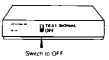
5. Press the **CONTROL** + button on the TV to search for the VCR test signal or the video tape signal automatically.



When the auto searching is completed, the TV will display the channel number (it will be channel 1) with the video signal. If you want to change the video signal on channel 1 to your preferred channel, repeat the procedure as in the section on Swapping channel number on page 9.



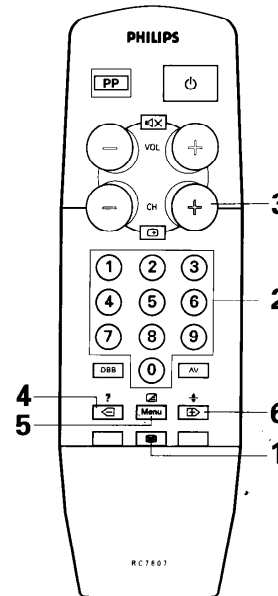
6. Switch back the test signal switch on the VCR to the off position (or stop the VCR if you are using the pre-recorded tape).



7. Switch off the TV and the VCR.

Teletext (for 21GX1760 only)

Your TV is equipped with a simple teletext decoder which is sufficient for you to enjoy the full benefits of the teletext. Most TV channels broadcasting contains teletext information. Each channel which broadcasts teletext transmit a page with information on how to use its teletext system. Look for the page with the index (usually page 100).



1. Switching Teletext On and Off

Select a TV channel on which teletext is being transmitted. (Check with a TV programme guide)
 • Press the **CH +** button to switch on the Teletext display. Usually the list of contents (index) is displayed on the screen.
 • Press the **CH -** button again to switch off the Teletext.

2. Selecting a Teletext Page (Digit 0 - 9)

• Press the appropriate digit buttons for the required Teletext page.
 The selected page number is displayed at the bottom left corner of the screen while the Teletext page counter is at the top left corner of the screen. The Teletext page counter will search until the selected page number is located, then the respective page will be displayed on the screen. But if the counter keeps searching, then the page is not available for selection.

3. To Fast select a Teletext Page

• Press the **CH +** button to select the next sequential page.

4. Reveal ?

Sometimes a Teletext page contains concealed information such as a quiz or puzzle.
 • Press the **?** button to reveal or hide the concealed information.

5. Mix

• Press the **Mix** button to superimpose the text over the TV programme on the screen.
 • Press the **Mix** button again to return to the Teletext page.

6. Enlarge

• Press the **Enlarge** button to view the enlarged top half of the Teletext page.
 • Press the **Enlarge** button again to view the enlarged bottom half of the Teletext page.
 • Press the **Enlarge** button once more to return to normal Teletext page size.