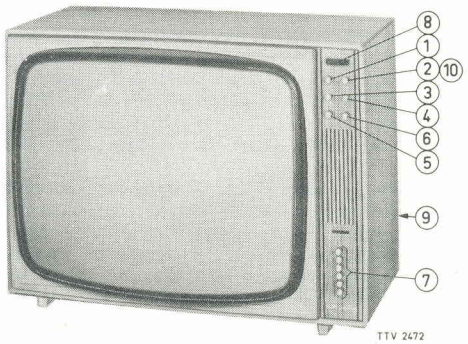
CTV S26K497/15

Service manual



PHILIPS

1	Volume control	R1381	5	Saturation control	R1382	8	Mains switch	SK1
2	Tone control	R976	6	Hue control	R1043	9	Black-white/colour switch	SK-3
3	Brightness control	R1380	7	VHF + UHF tuning	U14	10	Speech/music switch	SK2
4	Contrast control	R929						

Suited for reception of black-white and colour transmitters operating according to CCIR-PAL standard.

Aerial matching	75 Ω	F.M sound	6,0 MHz
Convergence	magnetic	I.F. chrominance	34,47 MHz
Focussing	electro-static	Subcarrier	4.43 MHz
I.F. luminance	38.9 MHz	Mains voltage	220 - 240 V
I.F. sound	32.9 MHz	Power consumption	280 W

Band I	(VHF)	47 - 68 MHz
Band III	(VHF)	174 - 230 MHz
Band IV + V	(UHF)	470 - 890 MHz

ces

COMBINED ELECTRONIC SERVICES LIMITED

604 PURLEY WAY · WADDON · CROYDON · CR9 4DR

TELEPHONE: 01-686 0505 (Recorded messages after business hours) TELEX: 262308

Index: CS27062-CS27074, CS26984, CS26985, CS27075

SERVICE

Subject to modification

4822 727 10525

Printed in the Netherlands

WARNINGS

. As the chassis is live independent of the position of the mains plug the set should be connected to the mains via an isolating transformer (approx. 500 VA) when the rear panel is removed.
. Due to the high tension (ca. 25 kV) the valves in the HT cage produce a certain amount of X-radiation. However, when the cage is closed the screening is so effective that the X-rays cannot leave the cage.
To prevent that the set can operate with opened HT cage a safety switch has been provided which interrupts the g2 voltage for the line output valves. This switch should never be closed or shunted when the cage is open.
After repair ensure that all screws in the lid are properly tightened.
. Never replace valves or components while the set is switched on.
. Use safety goggles when replacing the picture tube.
. When replacing valves or other components in the HT cage, removing the chassis and replacing the picture tube, first short-circuit the residual charge on the picture tube. For this connect a properly insulated wire to the chassis and hold the other end against the H.T. connection for a few seconds.
. Be careful when measuring the voltages on the tube socket. The focussing voltage (on point 9) is approx. 4.5 kV.

REMARKS

1. The oscillograms have been measured under the following conditions.
   a. For the black and white section a cross hatch pattern has been used as input signal and for the chrominance section a colour bar pattern.
   b. The brightness contrl, knob 3, at normal brightness.
   c. The contrast control, knob 4, set to 4 Vp-p on the control grid of the video output valve.
   d. Saturation control knob 5, set to 40 mV p-p on the base of TS439.
   e. The hue control, knob 6 in the mechanical mid-position

2. The direct voltages have been measured as follows:
   No aerial signal, minimum brightness, maximum contrast and saturation.
   The voltages in the chrominance section marked with an * have been measured with the colour/black-white switch in position "colour" and the collector and emitter of TS443 interconnected.

3. If a blank pattern is required when the PM 5507 is used, this pattern can be obtained by means of the rainbouw signal, the video knob turned fully clockwise and the black/white-switch of the set turned to position black/white.

4. Integrated circuit TAA550 (U414) mounted on p.c. board 8, is available in various versions under one code number. These versions are marked as follows:
   a. Red or yellow paint dot.
      The Zener voltage is between 30 and 33 V.
      This I.C. may be marked as follows:
      No code number or code number 30 on the housing of the I.C.
      In this case the bridge wire should be fitted in parallel with R1513.
   b. Green paint dot :
      The Zener voltage is between 33 and 36 V.
      This I.C. may be marked as follows:
      Code-number 33 on the housing of the I.C.
      In this case no bridge wire should be fitted in parallel with R1513.

MECHANICAL INSTRUCTIONS

1. Removing the cover of the convergence panel
   - Remove the screw from the upper side of the cover to the left of the rear panel, and remove this cover.

   Note: The convergence panel is provided with explaining signs to facilitate converging. The numbers indicate the sequence of converging.

2. Hinging out the chassis
   - Remove the rear panel and, subsequently, the nylon locking pin from the right-hand upper side of the chassis
   - Push the plastic locking plate on the right-hand underside of the chassis to the right.

3. Removing the chassis.
   - Hinge out the chassis.
   - Remove the plugs A, B, C, E, F, H, L, M - T-Z.
   - Remove the print of the picture tube.
   - Unsolder the two earth leads.
   - Detach the suspension cord from the chassis.
   - Detach the H.T.-cable from the picture tube.
   - Lift the chassis out of the two hinge points and remove it from the chassis.

4. Removing the control panel
   - Remove the cover from the convergence panel.
   - Remove the convergence panel from the set.
   - Remove with a long screwdriver.the two screws from the under- and the upperside of the control panel.
   - Remove the six knobs (volume, tone, etc.) from the front of the set and remove the control panel backwards.

5. Removing the push-button unit
   - Remove the plugs X and Y.
   - Remove the three fixing screws.
   - Remove the push-button unit.

6. Replacing the tuning potentiometers
   - Remove the push-button unit.
   - Remove the cap from the push-button unit.
   - Unsolder the leads from the defective potentiometer strip.
   - Bend the tag with which the strip is fixed, upwards.
   - Replace the strip with the potentiometer.

7. Replacing the p.c. board of the band switch of U14
   - Remove the tuning unit from the set.
   - Remove the screening cap and the pointer.
   - Loosen the fixing screw from the p.c. board of the band switch and pull the p.c. board outwards. (Attention! Do not damage the contact springs.)
   - Write down the colours of the connecting wires and unsolder them.
   - Connect the new p.c. board and place it in position, carefully lifting up the contact springs.
   - Refit the pointer and adjust the height of the p.c. board so that the pointer can move unhampered.

8. Replacing valves in the high-voltage cage.
   - First read the warnings.
   - Remove the cover from the H.T. cage.
   - Loosen the screws fixing the top plate, a few turns; push this plate upwards. Consequently, the PD500 is also moving upwards so that it can be easily removed.
   - Push the valve of valve holder GY 501 slightly upwards so that the top connection of this valve can be removed.
   - Now the valve can remove from the holder.

9. Removing the convergence coils
   - Remove the multipole plugs N, O, and P.
   - Insert a thin screwdriver into the middle opening (Fig. 2) and carefully press the screwdriver downwards.to disengage the locking pin.
   - Now the convergence coil can be withdrawn.

   Note: When the coil is inserted again into the holder, one should hear the holder clicking in the opening of the coil.

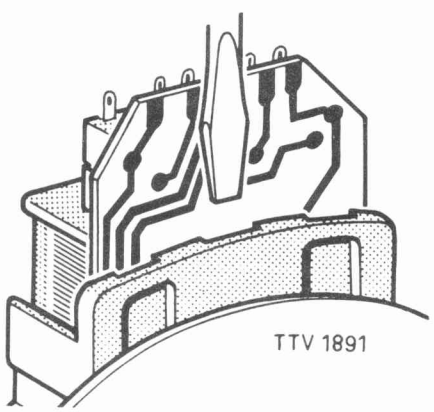
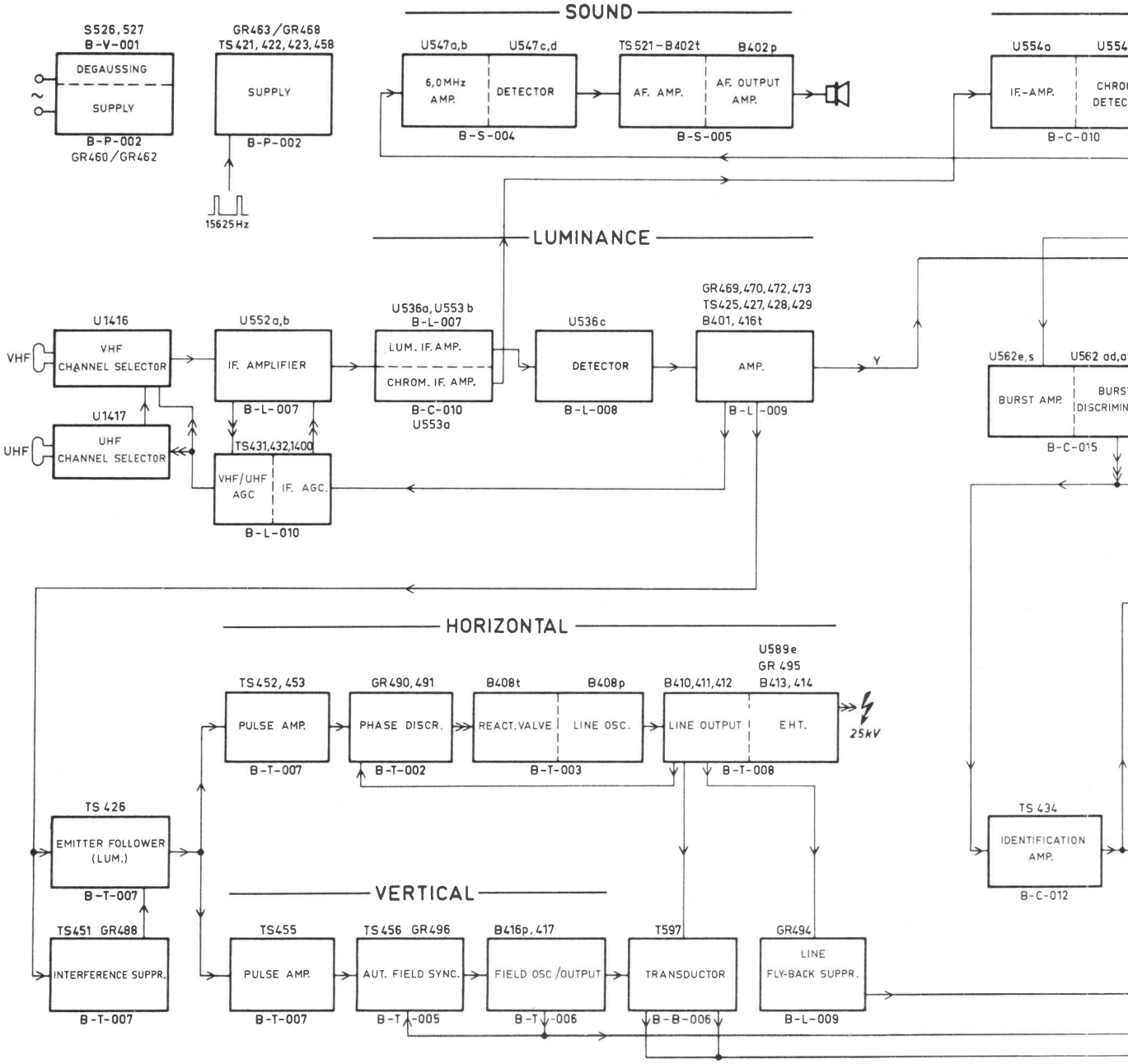
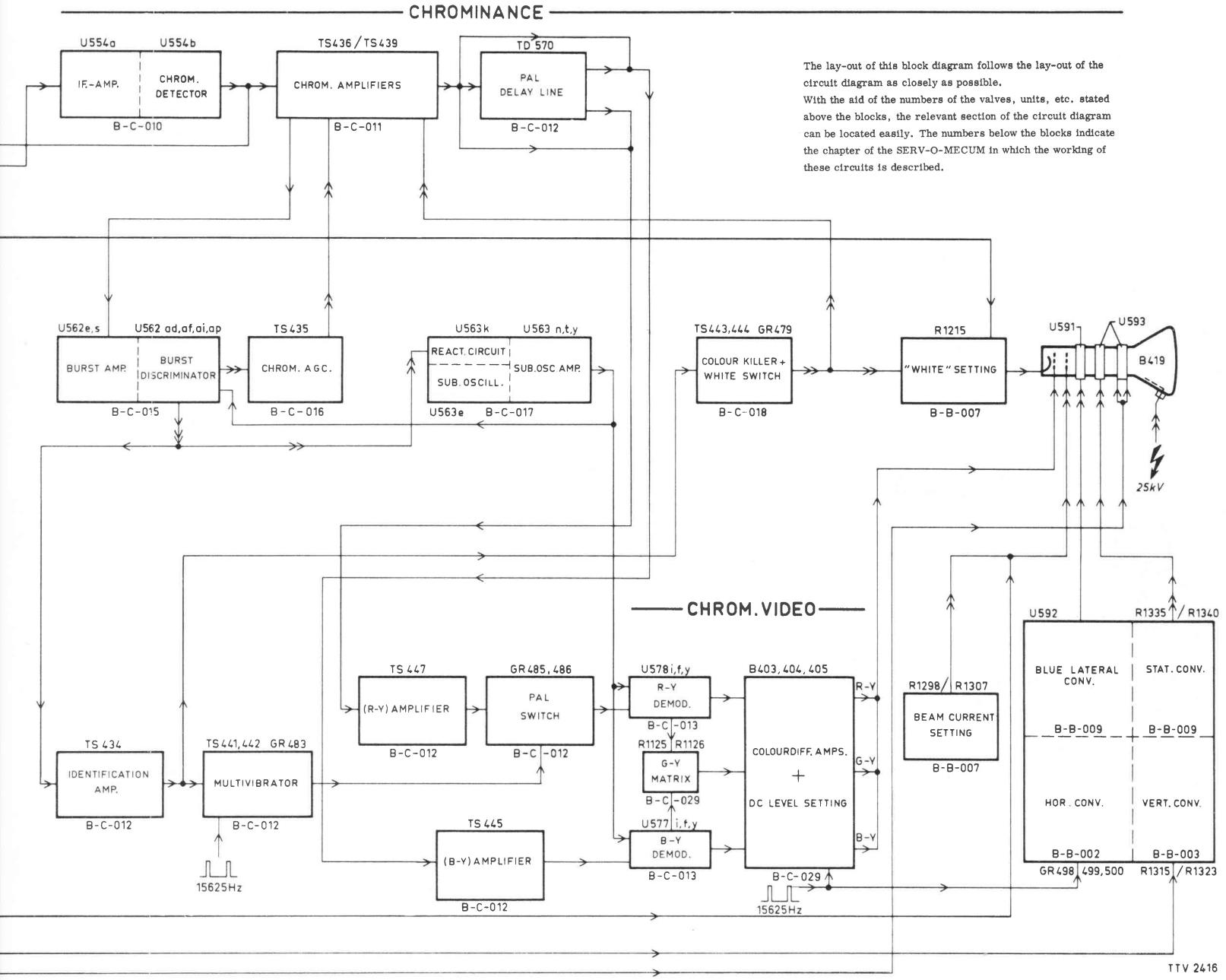


Fig. 2

BLOCK DIAGRAM



OCK DIAGRAM


CHROMINANCE
U554a
U554b
IF.-AMP.
CHROM. DETECTOR
B-C-010
TS436 / TS439
CHROM. AMPLIFIERS
B-C-011
TD 570
PAL DELAY LINE
B-C-012
The lay-out of this block diagram follows the lay-out of the circuit diagram as closely as possible.
With the aid of the numbers of the valves, units, etc. stated above the blocks, the relevant section of the circuit diagram can be located easily. The numbers below the blocks indicate the chapter of the SERV-O-MECUM in which the working of these circuits is described.
U562e,s
U562 ad,af,ai,ap
BURST AMP.
BURST DISCRIMINATOR
B-C-015
TS435
CHROM. AGC.
B-C-016
U563k
U563 n,t,y
REACT. CIRCUIT
SUB. OSCILL.
SUB. OSC AMP.
U563e
B-C-017
TS443,444 GR479
COLOUR KILLER + WHITE SWITCH
B-C-018
R1215
"WHITE" SETTING
B-B-007
U591
U593
B419
25kV
CHROM. VIDEO
TS 447
(R-Y) AMPLIFIER
B-C-012
GR485, 486
PAL SWITCH
B-C-012
U578 i,f,y
R-Y DEMOD.
B-C-013
B403, 404, 405
COLOURDIFF. AMPS. + DC LEVEL SETTING
B-C-029
R-Y
G-Y
B-Y
R1298 / R1307
BEAM CURRENT SETTING
B-B-007
U592
R1335 / R1340
BLUE LATERAL CONV.
STAT. CONV.
B-B-009
B-B-009
HOR. CONV.
VERT. CONV.
B-B-002
B-B-003
GR498, 499, 500
R1315 / R1323
TS 434
IDENTIFICATION AMP.
B-C-012
TS441, 442 GR483
MULTIVIBRATOR
B-C-012
15625Hz
R1125 / R1126
G-Y MATRIX
B-C-029
TS 445
(B-Y) AMPLIFIER
B-C-012
U577 i,f,y
B-Y DEMOD.
B-C-013
15625Hz
TTV 2416

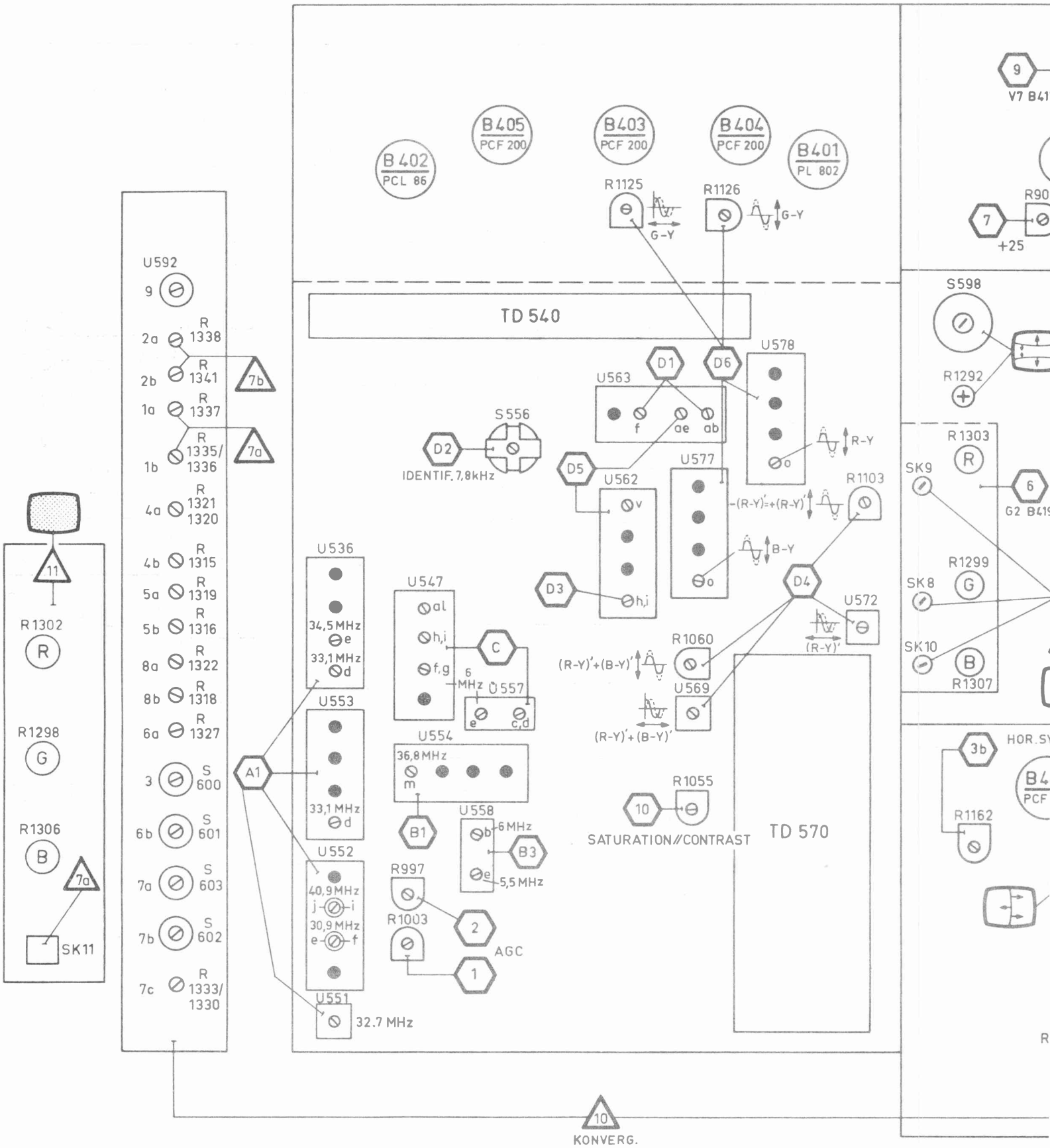


Fig. 3

CS27065

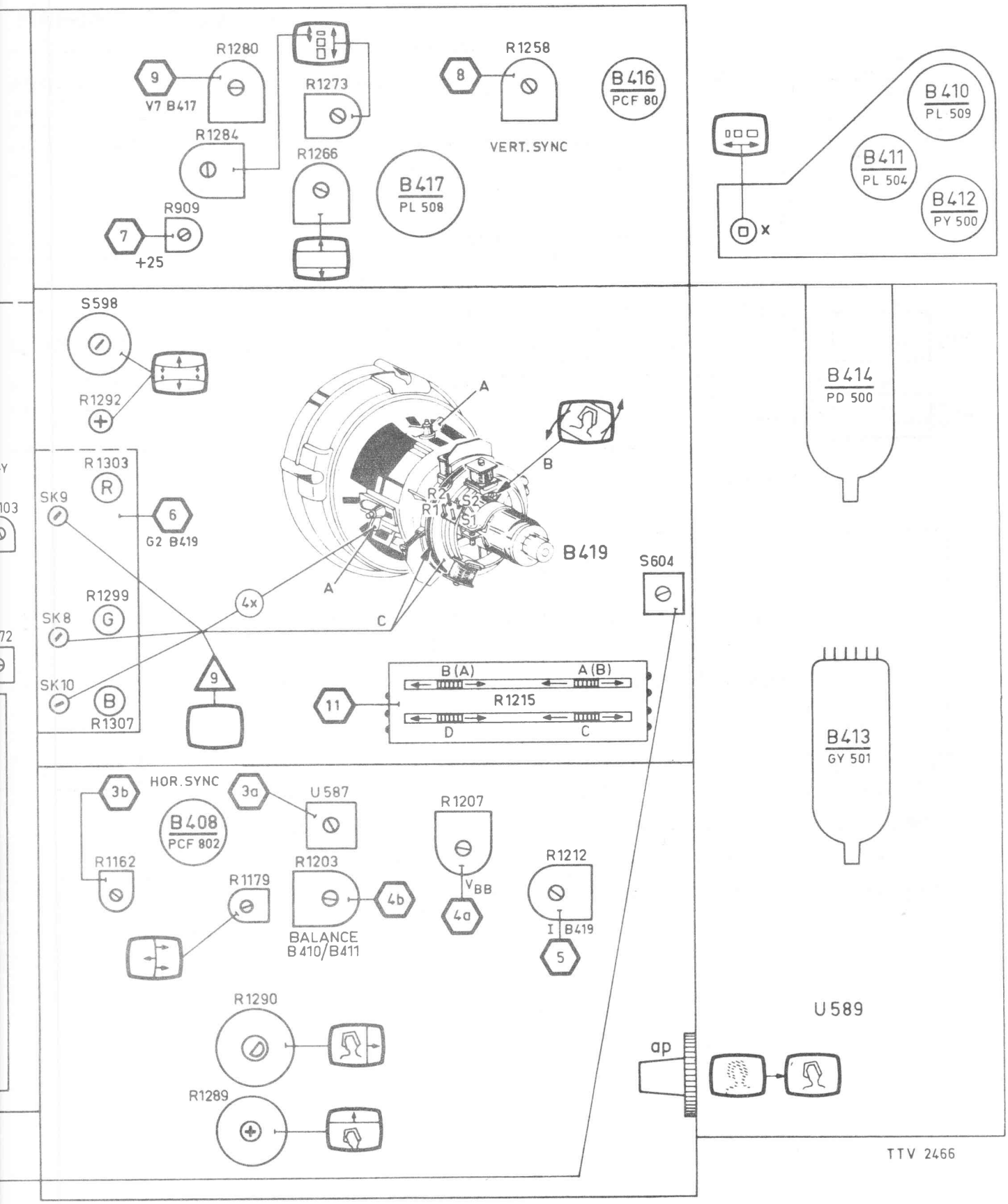

R1280
9
V7 B417
R1273
R1284
R1266
R909
7
+25
B417
PL 508
R1258
8
VERT. SYNC
B416
PCF 80
B410
PL 509
B411
PL 504
B412
PY 500
x
S598
R1292
R1303
R
SK9
6
G2 B419
R1299
G
SK8
SK10
B
R1307
4x
A
B
C
R2
R1
S2
S1
B419
S604
9
11
B(A)
A(B)
R1215
D
C
B414
PD 500
B413
GY 501
U589
ap
HOR.SYNC
3b
3a
U587
B408
PCF 802
R1162
R1179
R1203
4b
BALANCE
B410/B411
R1207
VBB
4a
R1212
I B419
5
R1290
R1289
TTV 2466

Fig. 3

△ ADJUSTMENTS

1 Adjusting for a straight picture (see Fig. 3)

Slightly loosen screw B. Turn the complete deflection unit slightly to the left or to the right until the picture is straight.
Tighten screw B again.

2 Focusing (see Fig. 3)

Set potentiometer ap of U589 so that the entire picture is as sharp as possible at high brightness.

3 Pin-cushion correction (see Fig. 3)

a. With the aid of S598 and R1292 make the horizontal lines at the top and bottom of the picture as straight as possible.
b. With the aid of R1179 make the vertical lines in the middle of the picture as straight as possible.

4 Horizontal linearity (see Fig. 3)

This is adjusted with the core in coil x of U589.

5 Vertical linearity (see Fig. 3)

a. Deviations over the full picture height are corrected with the aid of R1273.
b. Deviations in the top of the picture are corrected with the aid of R1284.

6 Picture height (see Fig. 3)

This is adjusted with R1266.

7. Static convergence (see Fig. 3)

Use a dot or cross-hatch pattern.
a. Switch off the blue gun with SK11, see Fig. 3.
Make the red and green patterns coincide in the centre of the picture by means of knob 1a and knob 1b. Thus a yellow pattern is obtained.
Switch on the blue gun again.
b. Adjust knob 2a and 2b so that the blue pattern and the yellow pattern coincide in the centre of the screen. As a result a white pattern is obtained.

Note: If no satisfactory result is obtained, it is possible to interchange the terminals S1-S2 of the blue lateral unit, see Fig. 3.

8 Centring (see Fig. 3)

a. With R1290 the picture can be shifted in the horizontal direction.
b. With R1289 the picture can be shifted in the vertical direction.

9 Colour purity (see Fig. 3)

Allow the set to warm up for approx. 20 minutes. Apply a blank pattern signal. The room should be as dark as possible, brightness and contrast should be set to normal light intensity. Switch off the green and blue guns by means of SK8 and SK10 respectively.
Loosen the four wing nuts A a few turns and slide the deflection coil as far as possible forwards or backwards until the red blur on the screen is as small as possible.
After this the red spot is centred as well as possible by means of colour purity rings C.
After this the deflection coil is slid back until the entire screen is uniformly red. Subsequently, check the blue and green colour purity by first switching on only SK8 and then only SK10. When after this SK8, SK9 and SK10 are switched on simultaneously, a uniformly white picture should be obtained. This picture should contain no blurs.
If it contains blurs, correction to some extent is possible by slightly turning the colour purity rings and/or slightly moving the deflection coil. After this the three colours should be rechecked individually. Tighten the wing nuts again.
If no proper result is obtained the complete procedure should be repeated.
For checking the landing of the electron beams on the phosphor dots, use can be made of microscope type 800/MLS, ordering number 4822 395 90041.

10 Dynamic convergence (see Fig. 4)

Remove the cover in front of the convergence panel.

Start by checking and, if necessary, readjusting the static convergence (see point 7a and 7b).
Use a cross-hatch pattern, switch off the blue gun with SK11.
If the centre horizontal green and red lines intersect, turn the core of S604 (see Fig. 3) until the lines are parallel as far as possible or until they coincide.
Switch on SK11.

- With knobs 7a, 7b and 7c (only if the convergence strongly deviates): start with the knobs in the mid-position.
Make the central horizontal blue lines as straight as possible.
- Switch off the blue gun (SK11).
- With knob 3:
Adjust so that the horizontal red and green lines are parallel over the entire picture width.
- With knobs 4a and 4b:
Adjust so that the central vertical red and green lines are parallel over the entire picture height.
- With knobs 5a and 5b:
Adjust so that the distance between the horizontal line pairs (red + green) is equal over the entire picture height in the middle of the screen.
- With knobs 6a and 6b:
Adjust so that the distance between the vertical line pairs (red + green) is equal over the entire picture width in the middle of the screen.
- Cary out red and green static convergence (see point 7a).
- With knobs 7a, 7b and 7c:
Adjust so that the central horizontal blue line and the corresponding horizontal yellow line are parallel over the entire picture width.
- With knobs 8a and 8b:
Adjust so that the distance between the horizontal line pairs (blue and yellow) is equal over the entire picture height in the middle of the screen.
- Static convergence (see 7a and 7b).
- With knob 9:
Adjust so that the distance between the vertical line pairs (blue and yellow) is equal over the entire picture width in the middle of the screen.

Note: If no satisfactory result is obtained it is possible to interchange the terminals R1-R2 of the blue lateral unit, see Fig. 3.

- Static convergence (see point 7a and 7b).

11 At the back of the set above the additional loudspeaker socket there are the knobs R, G and B (R1302-R1298 and R1306 respectively) behind the cap on the rear panel. With these knobs the background colour can be adjusted according to the wishes of the customer.

ADJUSTMENTS AFTER REPAIRS

1. IF-AGC

   Adjust R1003 for maximum noise in the picture (no signal).

2. HF-AGC

   This circuit is only operative at very strong input signals. If the picture of a local transmitter is distorted, adjust R997 so that the picture is undistorted.

3. Horizontal time base (use a cross-hatch pattern)

   a. Connect junction C785/R1170 (M7) to chassis.
      Adjust U587 so that the picture is straight.
      Remove the connection between junction C785/R1170 and chassis.
   b. Connect bTS453 to chassis.
      Adjust R1162 so that the picture is straight.
      Remove the connection between bTS453 and chassis.

4. Booster voltage (a) and booster diode current (b) (use a cross-hatch pattern)

   a. Connect a valve voltmeter (range 1000 V d.c.) between junction C860/S590 ("-") and point 10 of U589 (M10).
      Adjust R1207 to 550 V meter deflection.
   b. Connect a valve voltmeter between 9B410 (M8) and 3B411 (M9).
      Adjust R1203 to 0 V meter deflection.
      Check the voltage under a again and, if necessary, correct it.

   Note: The booster voltage should be accurately adjusted to the value specified and should never exceed this value.
   Also take into account the tolerances of the measuring instrument used and ensure that the mains voltage does not deviate.

5. Beam current limitation (use a plain white and synchronized raster)
   Brightness and contrast to maximum.
   Remove jumper across R1213 (wire support on high-voltage cage).
   Connect voltmeter across R1213 and adjust for 0.1 V with R1212.
   Subsequently, brightness and contrast to minimum. The meter reading should now be 1.3 V (± 0.1 V)
   Refit jumper across R1213.
   Check the booster voltage. For any corrections see point 4a.

6. Cut-off point of picture tube (use no aerial signal)

   Remove single plug from p.c. board 4. (CRT-base panel)
   R1298, R1302 and R1306 (g2-fine adjustment) to mid-position.
   Make the room as dark as possible.
   The potentiometers mentioned below should be adjusted so that the screen just remains dark.
   R1299 for the green gun (switch on SK8 and switch off SK9+SK10).
   R1303 for the red gun (switch on SK9 and switch off SK8+SK10).
   R1307 for the blue gun (switch on SK10 and switch off SK8+SK9).
   Switch on SK8 and SK9 and refit the single plug.
   Apply a black/white test pattern from a transmitter or a generator, and vary the brightness from high to low with the brightness control.
   In so doing, the grey hue should not change. Correct any deviations at a low level of brightness by means of knobs G, R, and B.
   (R1298, R1302 and R1306).

7. +25 Supply Voltage

   Connect a voltmeter between the collector of TS421 and chassis.
   Adjust R909 so that the meter reading is 24.6 V.

8. Vertical time base (use a cross-hatch pattern)

   Short-circuit R1246.
   Connect an 8.2 MΩ resistor between the cursor of R1258 and 2B416.
   Adjust R1258 until the picture is stationary;
   Remove the short-circuit and the 8.2 MΩ resistor.

9. Vertical output stage

   Connect a voltmeter between 7B417 and chassis.
   Adjust R1280 to the voltage value indicated on the chassis.

10. Tracking of saturation and contrast (apply a colour signal)

    Contrast and saturation controls to maximum.
    Connect an oscilloscope to 7B405; measure and note down the peak-to-peak value of the colour signal.
    Connect the oscilloscope to 7 B401; measure and note down the difference in voltage between the black and the white level.
    Reduce this voltage with the aid of the contrast control to 2/3 of the value measured.
    Connect the oscilloscope again to 7B405 and adjust R1055 to 2/3 of the voltage measured at this point.

11. White adjustment (e.g. after replacement of picture tube; use a blank pattern)

    Set the colour switch SK3 to position black and white.
    Use another set of the same type as a reference; this set should be connected and adjusted in the same way.
    Allow both sets to warm up for approx. 10 minutes.
    Adjust the cut-off point of the new picture tube (see point 6).
    If required, correct the g2 fine adjustments (R1298, R1302 and 1306) until the light intensity of both tubes is the same (at low brightness).
    Next, set both tubes to a high brightness. If the white colour of the new tube deviates, the cursors A, B and C of slide potentiometer R1215 (see Fig. 3) should be adjusted until the white tones of both tubes are approximately the same.
    If the sliders A and B of slide potentiometer R1215 have to cross each other, the jumpers V2 and V3 on the picture tube printed panel can be soldered in the other position.
    In both sets remove SV3 and connect the pin of SV3 on the p.c. board to the +25 V (junction R914/R905 on print 5).
    Now equalise the white colours with cursor D.
    Remove the interconnection and refit terminal SV3.

TRIMMING INSTRUCTIONS

Notes:

1. During trimming the T.V. set should be connected to the mains via an isolating transformer (500 VA).
   The measuring equipment should be properly earthed.

2. Applying the IF-signal

   Apply the IF-signal via 1000 pF capacitor to point G of the VHF channel selector (print 8).

A. LUMINANCE CIRCUIT

1. The IF stages + luminance detector (see Fig. 3)

   Set the band switch to position UHF and apply unmodulated IF signals of approx. 10 mV to the IF injection point on the VHF channel selector (see point 2 under "Notes").
   Turn the contrast control to max.
   Apply a direct voltage of 5.5 V between junction R1003/C681 (measuring point "M2") and chassis ("-" at chassis).
   Connect a valve voltmeter (position 10 V d.c. negative) to junction S451/C654 (test point "M3"), and adjust the cores mentioned below for minimum meter deflection.

   "f" of U552 at 30.9 MHz *
   "e" of U552 at 30.9 MHz *
   "i" of U552 at 40.9 MHz *
   "j" of U552 at 40.9 MHz *
   "d" of U553 at 33,1 MHz
   "d" of U536 at 33,1 MHz
   "e" of U536 at 34.5 MHz **
   U551 at 32.7 MHz

   * Cores "e" and "j" of U552 are hollow and are located at the top of the coil can.
   Coil "f" and "i" are accessible by means of a trimming key through the hollow cores "e" and "j".

   ** For adjusting this core first interconnect the collector and emitter of TS443.

2. Checking the IF bandpass curve

   Set the band switch to position UHF and apply a wobbulator signal of 36 MHz (sweep 10 MHz) to the IF injection point of the VHF channel selector. Apply a direct voltage of 5.5 V between junction R1003/C681 (test point "M2") and chassis ("-" to chassis).
   Connect an oscilloscope to point 1 of U536.
   The curve should be as shown in Fig. 7. When the collector and the emitter of TS443 are interconnected, the dotted curve of Fig. 7, should be obtained.

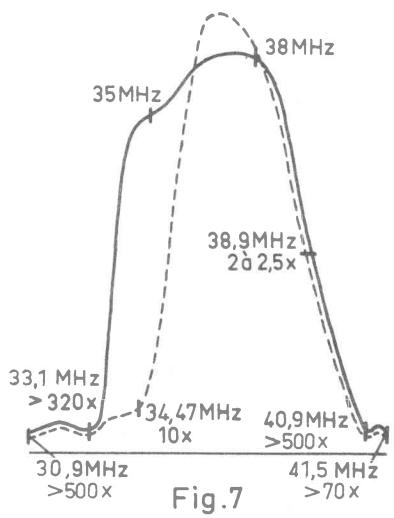


Fig.7

B. THE CHROMINANCE CIRCUIT

1. The IF chrominance detector (see Fig. 3)

   Set the band switch to position UHF an apply an unmodulated 36.8 MHz signal of approx. 10 mV to the IF injection point on the channel selector (see point 2 under "Notes").
   Apply a direct voltage of 5.5 V between junction R1003/C681 (test point "M2") and chassis ("-" to chassis).
   Connect a valve voltmeter (position 10 V d.c., negative) to point 1 of U554 (test point "M29") and adjust core "m" of U554 for minimum deflection.

2. Checking the IF bandpass curve

   Set the band switch to position UHF and apply a wobbulator signal of 36 MHz (sweep 10 MHz) to the IF injection point on the VHF channel selector. Apply a voltage of 5.5 V between junction R1003/C681 (test point "M2") and chassis ("-" to chassis).
   Connect an oscilloscope to point 1 of U554 (test point "M29").
   The curve should be as shown in Fig. 8.

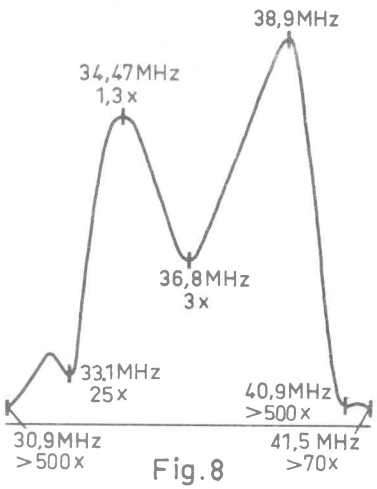


Fig.8

3. The 4.43 MHz chrominance-amplifier, see Fig. 3

   Pull out the IF cable at the bottom-left on the chassis
   Turn the saturation control to max. and set black-white/colour switch (SK3) to position "colours".
   Interconnect the collector and emitter of TS443.
   Connect an oscilloscope (position AC) or valve voltmeter with frequency range up to 6 MHz to the collector of TS439.
   Apply an unmodulated 6 MHz signal (approx. 10 mV) to point 1 of U554 (test point "M29") via a capacitor of 2200 pF and adjust core "b" of U558 for minimum amplitude.
   Now apply a 5,5 MHz signal and adjust core "e" of U558 for minimum amplitude.

C. SOUND SECTION

The 6 MHz sound section (see Fig. 3)

Pull out the IF cable at the bottom-left on the chassis.
Apply an unmodulated 6 MHz signal (approx. 10 mV) to point 1 of U554 (test point "M29") via a 2200 pF capacitor.
Connect a valve voltmeter (position 3 V d.c. positive) to junction R975/C665 (test point "M5"). Turn core "h,i" of U547 a quarter turn anti-clockwise (the meter gives a reading of approx. 1 V) and adjust "f,g" of U547 for max. meter deflection. Subsequently, connect an 820 Ω resistor between point 3 of U557 and chassis and adjust "e" of U557 for max. deflection.
Remove the resistor from point 3 and connect it between point 9 of U557 and chassis and adjust "c,d" of U557 for max. deflection.
Remove the resistor and adjust "h,i" of U547 to a deflection of 0 V.
Subsequently, apply a 30 % modulated AM signal and adjust "a1" of U547 for minimum ouput voltage on test point "M5", to be measured by means of an oscilloscope or milli-voltmeter.

D. SPECIFIC CHROMINANCE ADJUSTMENTS (see Fig. 3)

1. The sub-oscillator

Apply a colour signal and adjust the receiver to normal setting.
Connect an oscilloscope to point 9 of U563 via an attenuator probe (10:1).
Connect junction S561/C688 to chassis and interconnect the collector and emitter of TS443.
Adjust "ab" of U563 for minimum amplitude on the oscilloscope.
Remove the oscilloscope and adjust "f" of U563 so that the colour pattern is practically stationary.

2. The identification circuit

Apply a colour signal and set all controls of the receiver to their normal positions.

a. By means of a single-beam oscilloscope:
Connect an oscilloscope to the collector of TS434 (measuring point M23) and adjust S556 for maximum amplitude (about 20 V p-p). Remove the oscilloscope

b. By means of a double-beam oscilloscope:
Connect the "beam A" input to the collector of TS434 (measuring point M23) and the "beam B" input to junction C732/C733. Adjust S556 so that the line pulse coincides with the maximum and the minimum value of the identification signal (see Fig. 9).
Remove the oscilloscope.

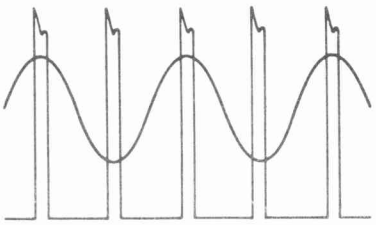


Fig. 9

3. The colour AGC

- Apply a colour signal and set all controls of the receiver to their normal positions.
- Connect a valve voltmeter (in position 10 V⎓) to junction R1029/R1031 (measuring point M"25") and adjust "h, i" of U562 for minimum meter reading (about 5 V).
Remove the voltmeter.

4a. The delay line TD570 (with PM 5507)

Apply the rainbow signal from the PM5507 and adjust the receiver to normal setting. Connect the "beam B" input of a double beam oscilloscope to junction R1104/U575 (test point "M19") and adjust the horizontal time base so that three periods are displayed (see Figs. 10a and 10b).

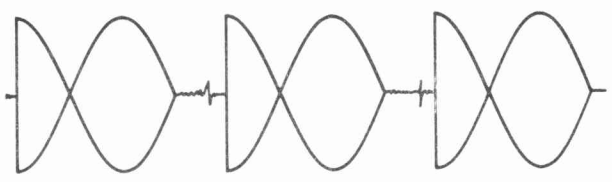


Fig. 10a

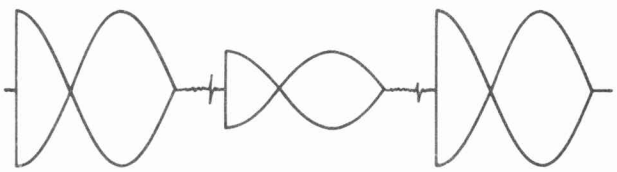


Fig. 10b

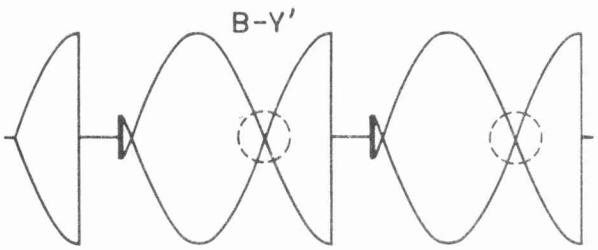


Fig. 11

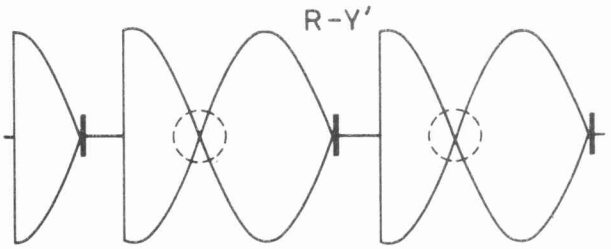


Fig. 12

When Fig. 10b is obtained, adjust R1103 so that Fig. 10a arises. Subsequently, connect the "beam A" input to the collector of TS445 (test point "M18) and adjust the horizontal time base so that $2\frac{1}{4}$ periods arise (see Figs. 11 and 12). In these figures the sections indicated by means of the circle are essential. Display one of these sections on the oscilloscope by setting the horizontal amplitude to x5 (if necessary, use X shift). The oscilloscope may now show one of Figs. 13.

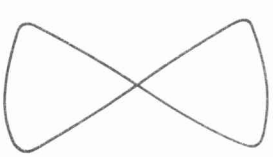


Fig. 13a

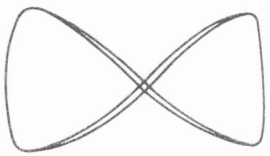


Fig. 13b

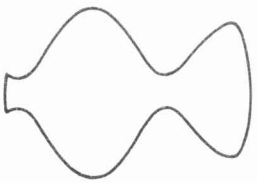


Fig. 13c

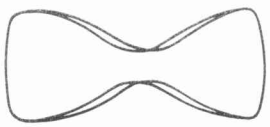


Fig. 13d

- If Fig. 13a is displayed both for the B-Y' (Fig. 11) and for the R-Y' signal (Fig. 12), the amplitude and phase of the delay line are correct and no further adjustment is necessary.
- If Fig. 13b is only obtained for the B-Y' signal, then adjust U572 so that Fig. 13a is obtained.
- If Fig. 13b is obtained both for the B-Y' and for the R-Y' signal, then first adjust the core (crosshead) of U569 so that Fig. 13a is obtained for the R-Y' signal and adjust U572 so that this is also obtained for the B-Y' signal.

- If Fig. 13d is obtained, first adjust R1060 so that Fig. 13b is displayed. Further proceed as described in the preceding section.
- If Fig. 13c is obtained, adjust R1060 so that Fig. 13a is displayed.

4b. The PAL delay line TD570 (with PM5506 or PM5508)

Set the generator to position "Delay". Set the contrast and the brightness to their normal positions, and set the saturation control to 3/4 of its range.

- If the third bar shows the "Venetian blinds" effect, eleminate this with R1060.
- If the first and second bars show the "Venetian blind" effect, eliminate this with U569.
- Set the generator to position "Colour Bar".

  If the third or the fifth bar from the left (cyan and magneta respectively) shows the "Venetian blinds" effect, eliminate this with U572.
- Set the generator to position "Matrix".
  If the red bar shows the "Venetian blinds" effect, eliminate this with R1103.
  Note: For photographs of the "Venetian blinds" effect reference is made to the Directions for Use of the colour pattern generator (PM 5506 - PM 5508).

5a. The sub-oscillator phase and phase discriminator (with PM 5507)

Check adjustments 1, 2 and 3.
Apply the rainbow signal from the PM 5507 and turn contrast and saturation to maximum.
Connect a valve voltmeter (position 30 V d.c., positive) to point 3 of U562.
Apply a direct voltage of 5 V between junction R1029/R1031 (test point "M25") and chassis ("-" to chassis).
Adjust "h,i" and "v" of U562 accurately to maximum meter deflection.
Remove the direct voltage and the valve voltmeter.
Interconnect points 4 and 5 (test points "M16" and "M17" respectively) of delay line TD570.
Connect the Y input of an oscilloscope to point 3 of B405 and the X input to point 3 of B403.
The oscilloscope now shows ellipses according to one of Figs. 14.

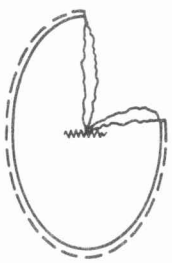


Fig.14a

Fig.14b

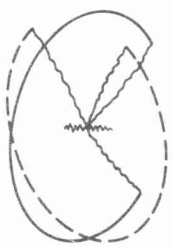


Fig.14c

In these Figs. one ellipse is indicated with an interrupted line and one with an uniterrupted line.
Adjust the video amplitude of the PM 5507 so that approx. 2.5 V is obtained in the Y direction.

- If Fig. 14b is obtained, adjust "v" of U562 so that the two ellipses precisely coyer each other as shown in Fig. 14a.
- If Fig. 14c is obtained, first adjust "ae" of U563 until the two ellipses coincide (see Fig. 14b) and then adjust "v" of U562 until Fig. 14a is obtained.

5b. The sub-oscillator and the burst-phase discriminator (with PM 5506 or PM 5508)

Set the generator to position "Phase" and set all controls of the receiver to their normal positions.

a. Adjust "ae" of U563 until the lower part of bars 1 and 2 is practically equal to the upper part of these bars.
b. Adjust "v" of U562 until the lower and the upper part of the third bar are equal.
c. Repeat the adjustments mentioned sub a) and b) until the lower and the upper part of the first, the second and the third bar are equal.

6a. The R-Y/B-Y demodulator and G-Y matrix (with PM 5507)

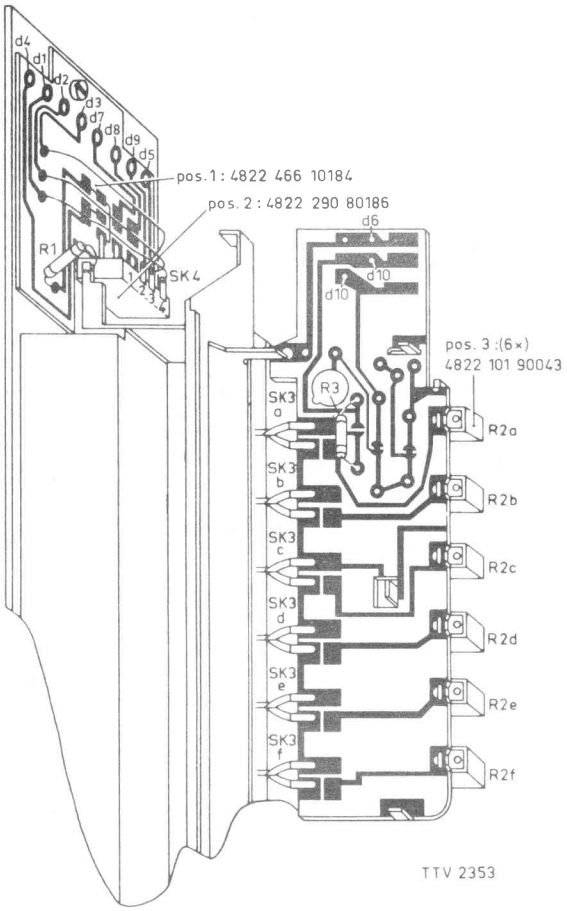
Check successibely the above adjustments 1, 2, 4a and 5a then adjustments 5-6 and 11 under the heading "Adjustments after repairs".
Apply the colour bar pattern from the PM5507 and tune the receiver carefully to the higher sideband.

Turn contrast and saturation to maximum and brightness to minimum. Set the hue control to its mid-position and the black-white/colour switch to "colour". Turn the video control of the PM 5507 to maximum. Connect an oscilloscope to point 12 of B419 (B-Y signal) and adjust "o" of U577 to 150 V, (peak-to-peak value). By means of the saturation control decrease this value to half (75 V), then by adjusting "o" of U577 increase it again to 150 V.
Next adjust, in turn, the contrast, brightness and saturation controls for a normal picture. With the vertical amplitude control of the oscilloscope adjust the peak-to-peak value of the signal to 4 blocks. Measure the peak-to-peak value of the voltage at point 11 of B419 on the oscilloscope and note it. Next adjust the amplitude control of the oscilloscope so that the peak-to-peak value of the voltage at point 2 of B419 corresponds to the value noted. Connect the oscilloscope to point 3 of B419 (R-Y signal) and adjust "o" of U578 to $2\frac{1}{4}$ blocks. Then connect the oscilloscope to point 6 of B419 and set the amplitude control of the oscilloscope so that the peak-to-peak value is the same as that previously noted.
Switch off the red and the blue gun (with SK9 and SK10 respectively) and set the black-white/colour switch to "black-white". Adjust the brightness control until the green bars are just visible, then set the black-white/colour switch to "colour". Adjust R1125 so that on the screen the 6th green bar from the right (there are 10 in total) just looses its brightness. Connect the oscilloscope to point 7 of B419 (G-Y signal) and adjust R1126 so that the peak-to-peak value is 1.4 blocks.

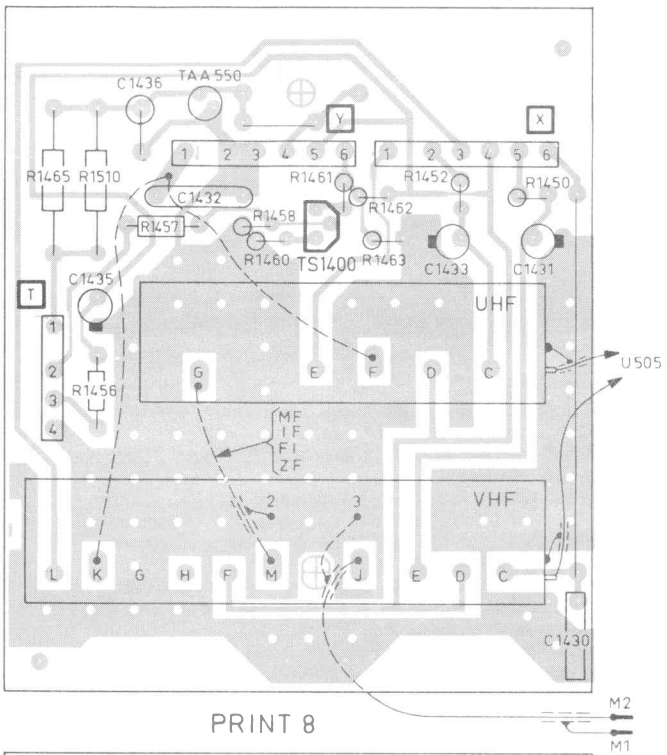
6b. The R-Y/B-Y demodulator and the G-Y matrix (with PM 5506 or PM 5508)

This adjustment can only be realised with the aid of the modified "Colour Bar" test pattern; in this case the upper part of the pattern is made up of colour bars and the lower part of a white area. If this should not be the case, first refer to the conversion instructions Cd 583 for generators PM 5506 and PM 5508.

- Check successively the above adjustments 1, 2, 4b and 5b, then adjustments 5-6 and 11 under the heading "Adjustments after repairs".
- Set the generator to position "Colour Bar".
- Adjust the contrast and the saturation to maximum and the brightness to minimum.
  Set the hue control to mid-position.
- Connect an oscilloscope to point 12 of the picture tube (B-Y signal) and adjust for 150 Vp-p with preset "o" of U577.
- Adjust the saturation control until the voltage is reduced to 100 Vp-p.
- Adjust "preset" "o" of U577 again to 150 Vp-p remove the oscilloscope.
- Switch off the red and green guns with SK9 and SK8 respectively. Adjust the brightness, the contrast and the saturation so that there is no difference in brightness between the four blue bars, and the blue lower part of the screen.
- Switch on the red gun and switch off the blue gun. If required, adjust preset "o" of U578 so that there is no difference in brightness between the four red bars and the red lower part of the screen.
- Switch on the green gun and switch off the red gun. If necessary, adjust R1125 and R1126 so that there is no difference in brightness between the four green bars and the lower green part of the screen.
- Switch on the red and the green gun again.
- Check adjustment 5b.



U14



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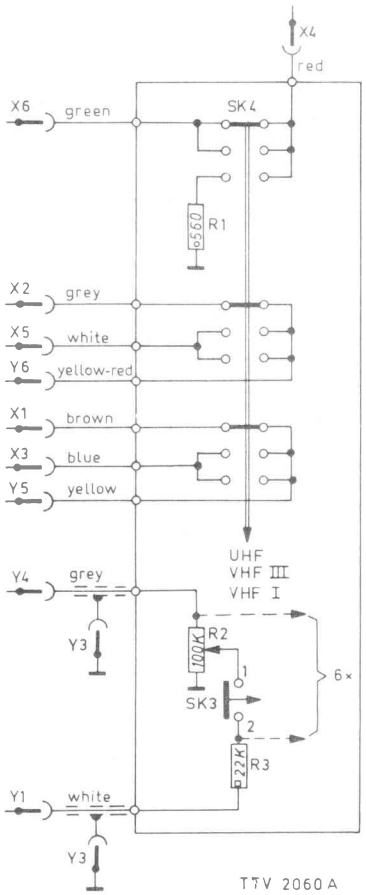
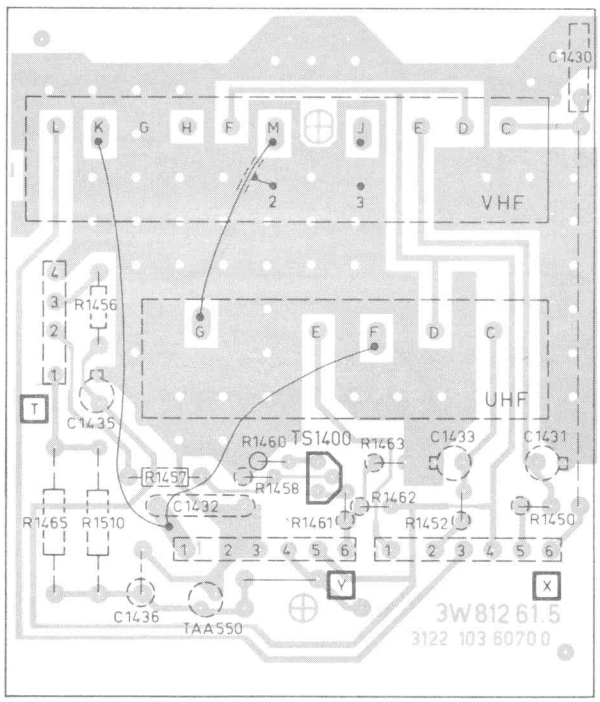
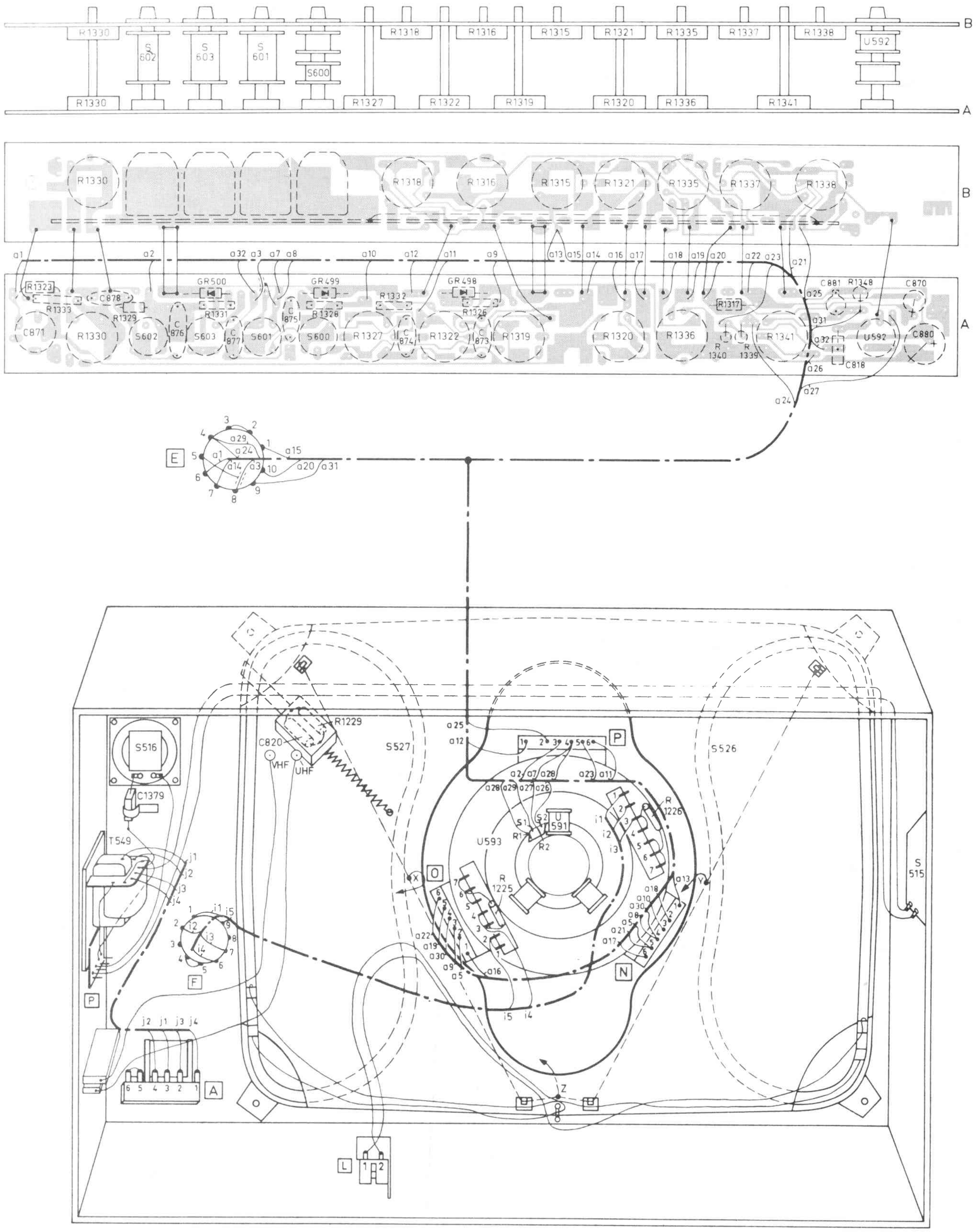


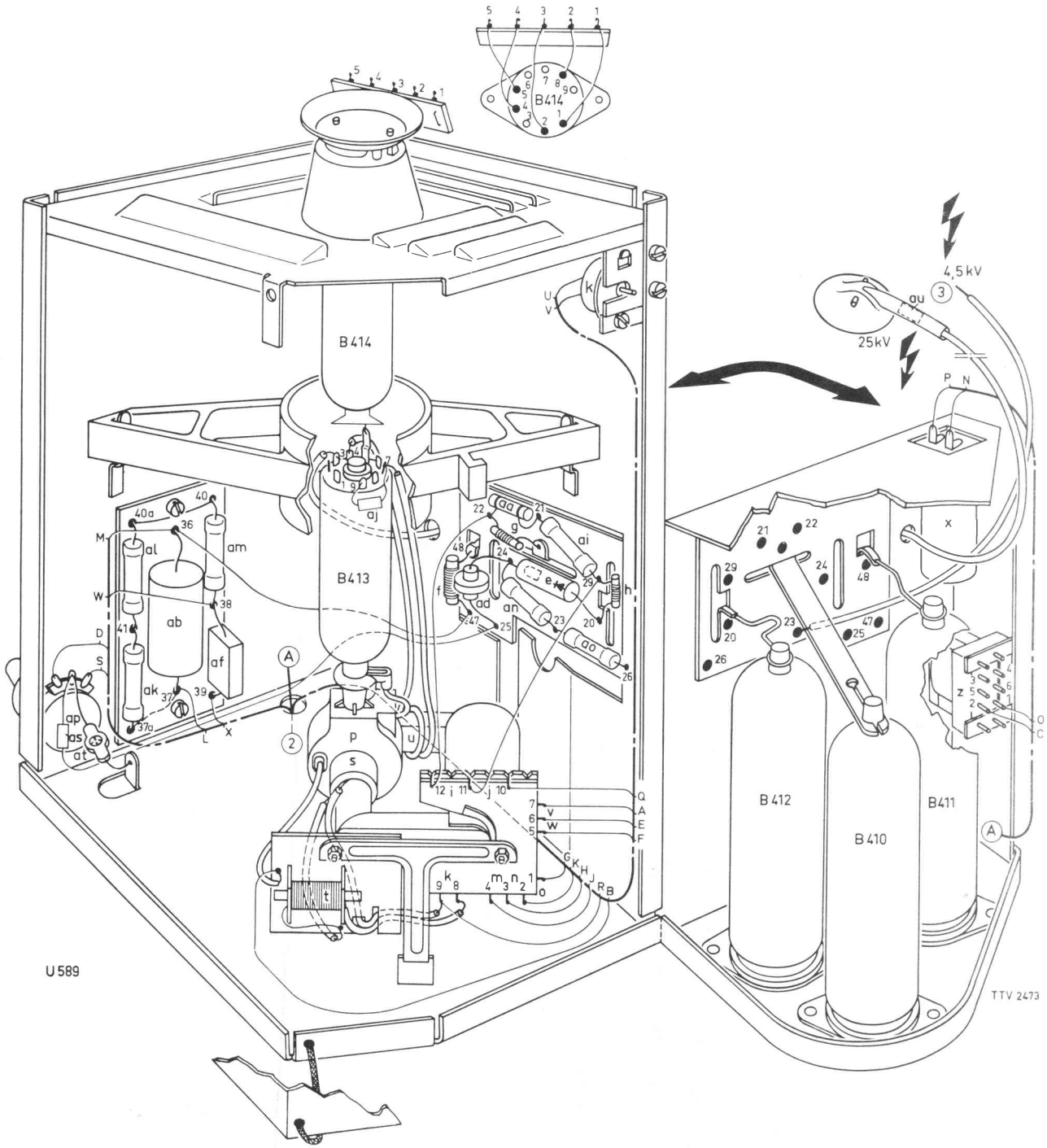


TTV 2371



TTV 2468

CS27072


B414
B413
B412
B410
B411
4,5kV
25kV
U589
TTV 2473

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				1111	1113	
				1112	1131	1127
	S 543	983		1116		
				1115		1139
GR 492		982	969			
		980				
		981		1114		1120
B405		985				1130
B403						
B404						
B401		955		1119		
B402		961				
		988		1121		
			956			1122
TS 429		986	971	1125		1135
	S 545	984	969	1126		
			960			1123
		951	952	1145		
GR 470		947	945	1147		
GR 472		949	948	1154		1152
TS 452		958	987	1148		
	S 541	934	953			
		957				
	TD 540					
TS 441	U 578			1011		1088
TS 442						
GR 483		935	933	1086		
TS 453			964			
GR 477		963	967	1155		1085
GR 473		936		1010		1158
				1087		
	U 563	940		1089		
	S 561			1093		
	S 556	924				
	T 586	942				1095
	KT 502			1092		1094
TS 428				1146		1150
	U 577			1091		1099
TS 427	S 585	941		1013		1149
TS 434	U 562			1019		
TS 426	U 575			1015		1104
TS 451				1100		
GR 488						
GR 486		925	922	1103		
GR 485		927	926	1014		1049
GR 479		921		1097		1101
TS 425				1151		1082
TS 443		920		1080		1106
				1153		1102
	U 536			1012		1075
TS 445	S 571			1071		1081
TS 447	S 537			1016		1107
	U 547			1070		1077
	S 573			1098		1076
				1064		
				1066		1058
				1065		1059
	S 572			1052		1074
TS 444				1025		1073
				1026		1068
				1051		1060
GR 478	TD 570	975		1024		1067
TS 435	S 568			1022		
	U 553					
	U 557					
	U 569			1029		
TS 439	U 567					1031
				1008		
	U 554					
				1053		1063
				1030		1054
				1056		
				1044		
TS 438						
	S 559			1050		1055
				1023		
						1048
TS 436	U 552					
	U 565					
		998		1035		1039
				1036		1033
	U 558			1040		1057
TS 431		995		1038		1045
TS 437		997	993			
GR 467		930	971	1041		
		996	994	1046		
				1002		1003
				1042		1004
						1346
TS 432				1005		
GR 469		992	931			
	U 551					
GR 475				1000		1006
						1345
				1001		1343
TS 458						1344

C			
600	700 -		
699			
	756	745	
669			
	743		
	744		
	749		
	754		
670			
671			
658	750	752	
659			
672	755		
	761		
656	757		
	762	763	
654		770	
634			
655			
660			
657			
	734		
	769	733	
663			
	732		
635	736		
696	730	735	
698			
662	767		
	775		
	737		
695	760	738	
	766		
	764	708	
693	741		
694			
652	765		
	731	739	
651	740		
688			
649	723		
	768		
653	724	728	
650	721	717	
	722		
697	719	726	
	713		
	701		
	704	718	
	703	712	
689			
	702		
690	705		
	709		
691			
	716		
684			
685	710		
	706		
	680		
	707		
678	711		
677			
653			
681			
683			
629			
682			
686			

PRINT 1

TS,GR	GR446, 449, 448, 450					TS 521					
C	814		813		816	815	1387		1388		
R	1140	1142	1141	1143			1393	1390	1392	1394	1395	1391

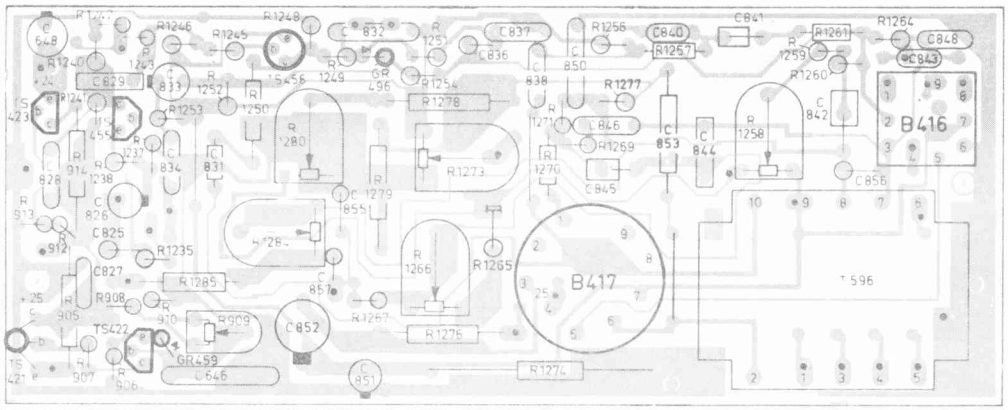
PRINT 13

PRINT 12

GR	460d, b, c, a										
S	525										
C	609b, d, c, a						610			611	
R	888	889	884	887	1398		885				

PRINT 11

CS27073



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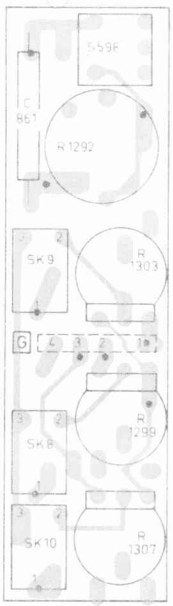
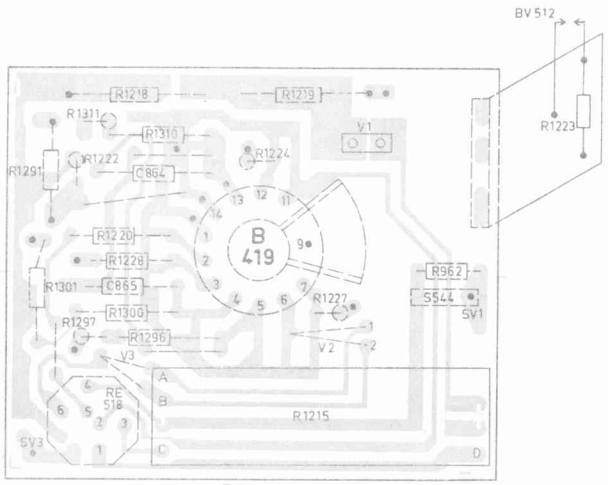
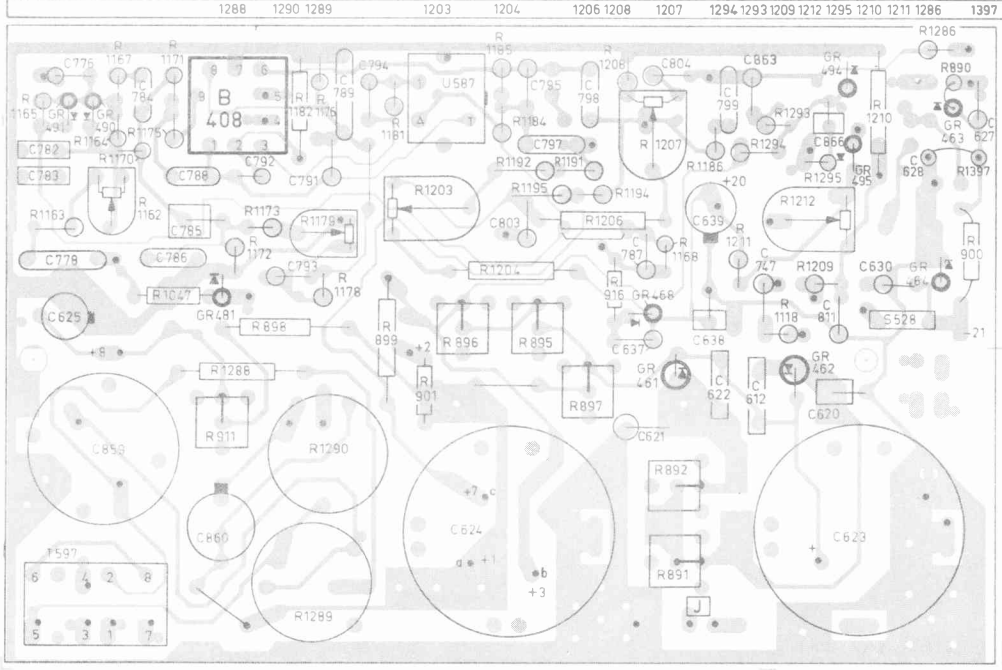


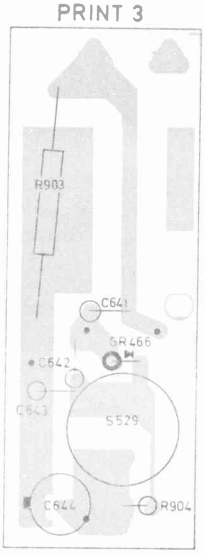
PRINT 6



PRINT 4

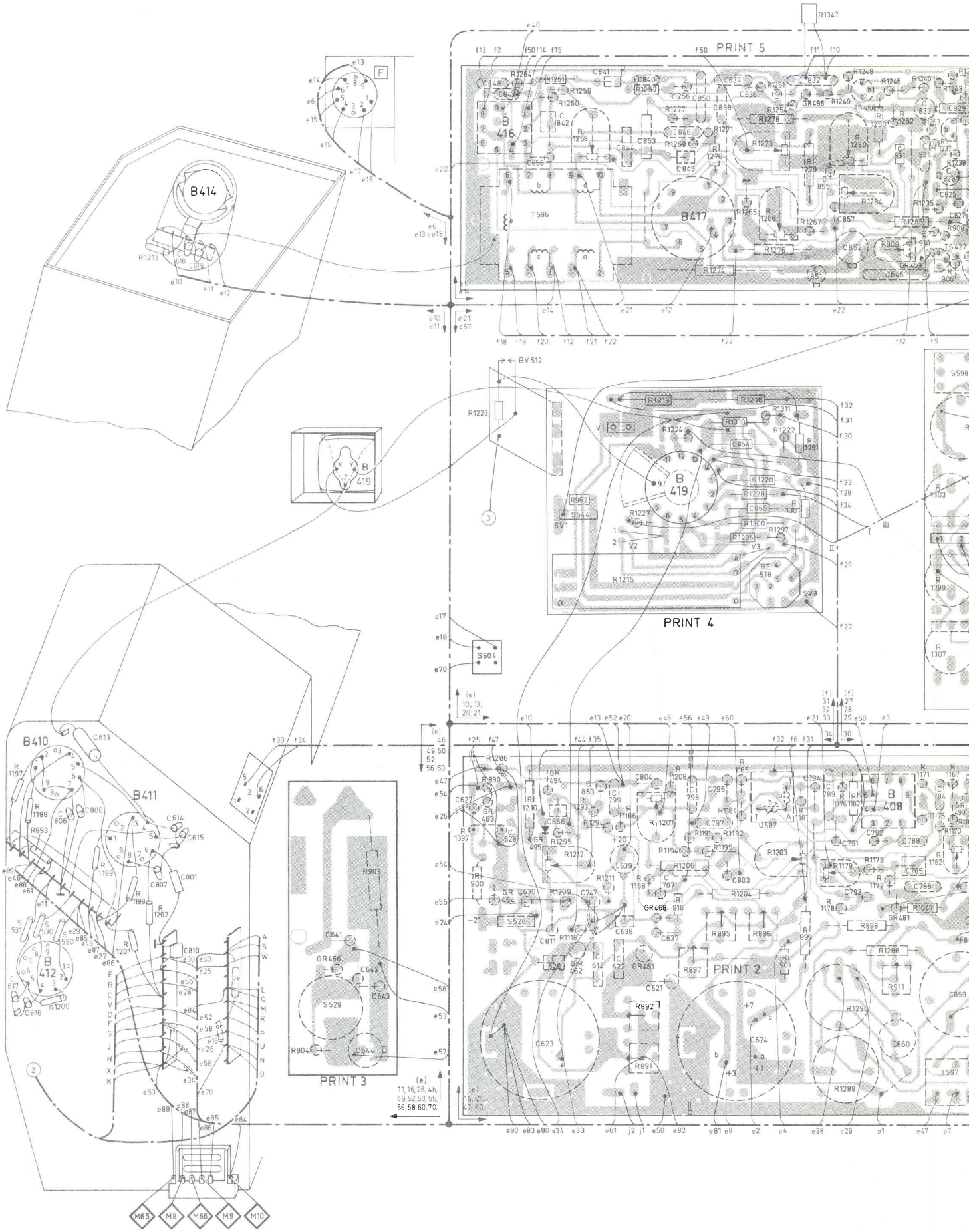
PRINT 2

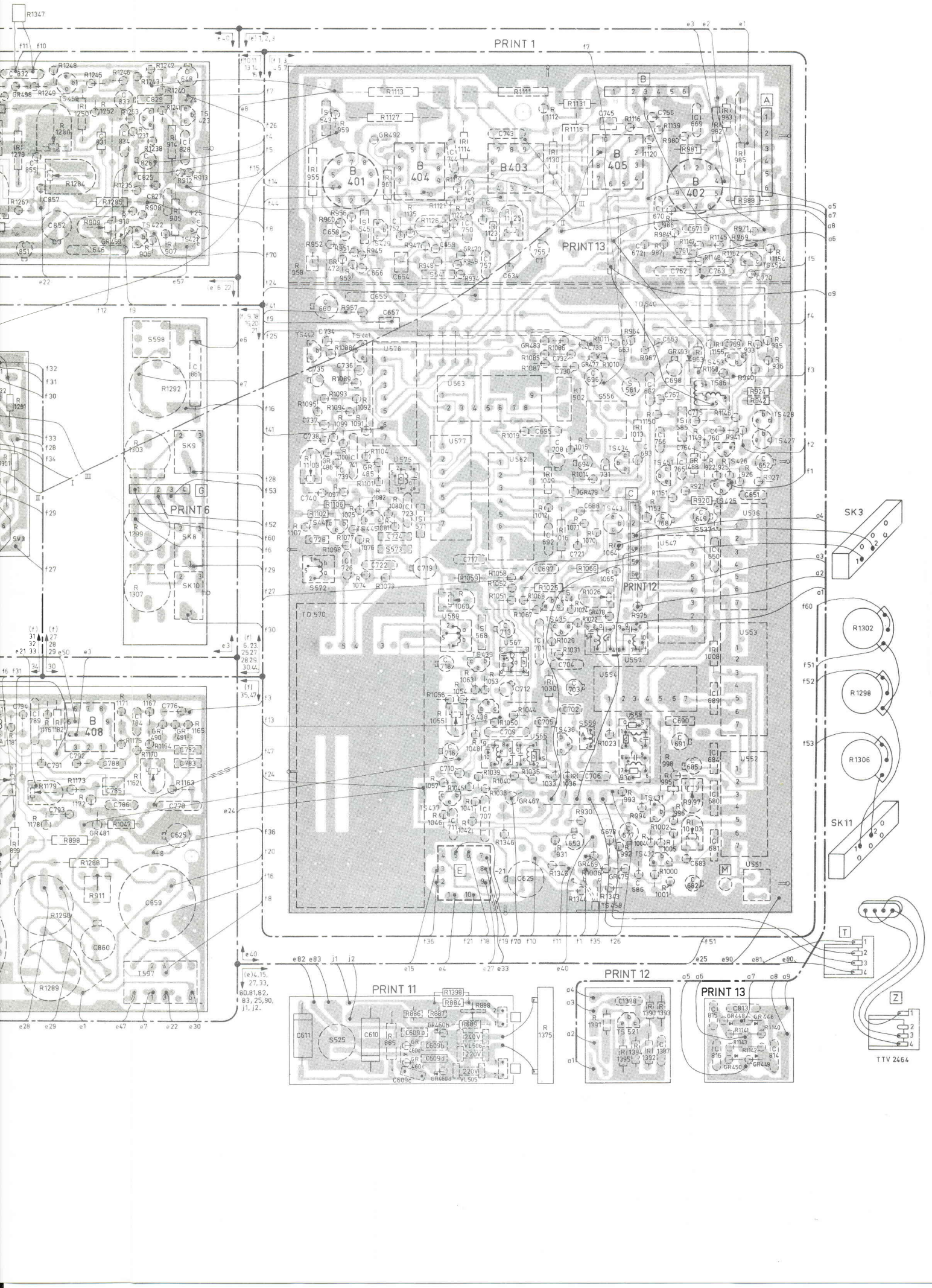


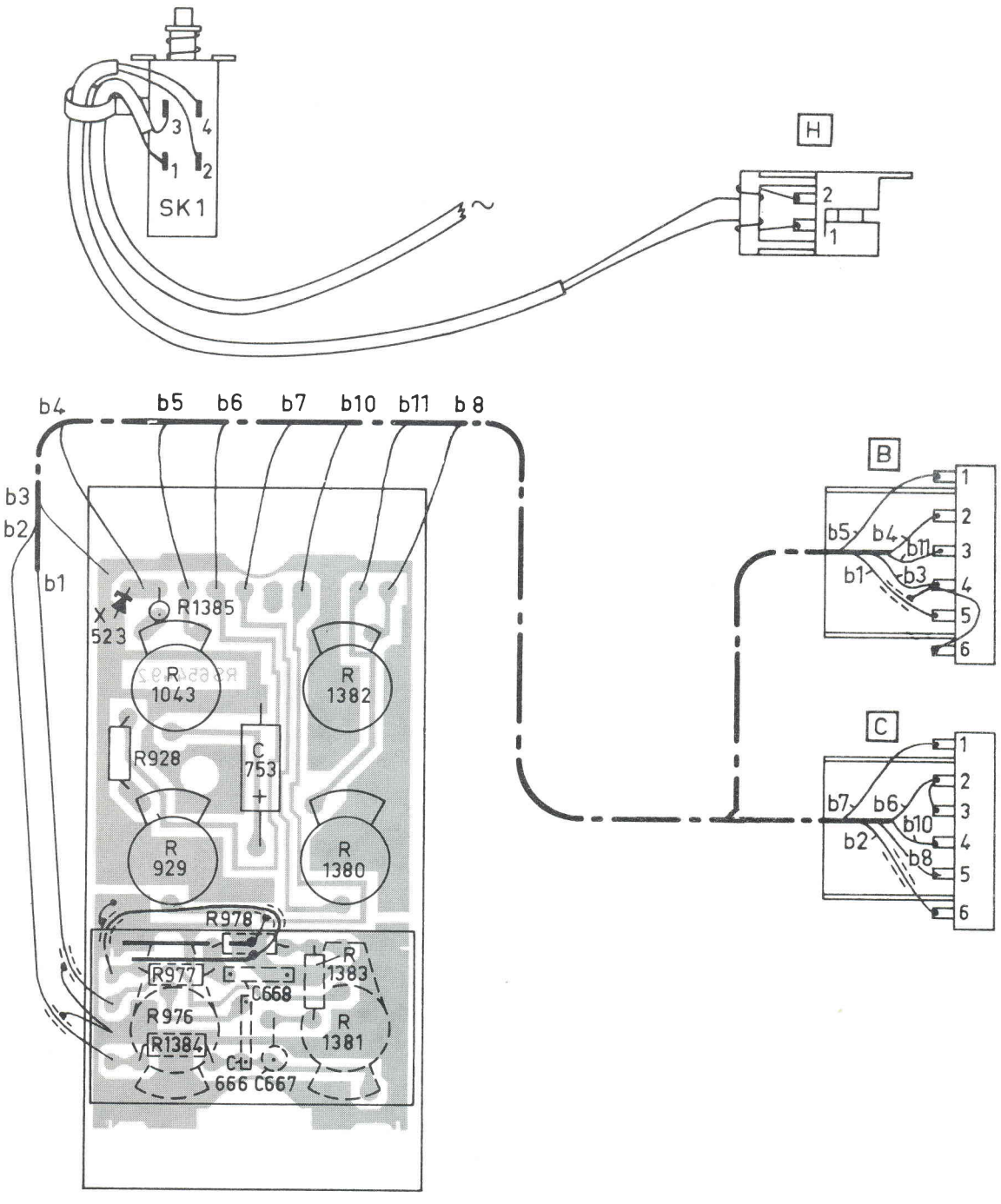


PRINT 3

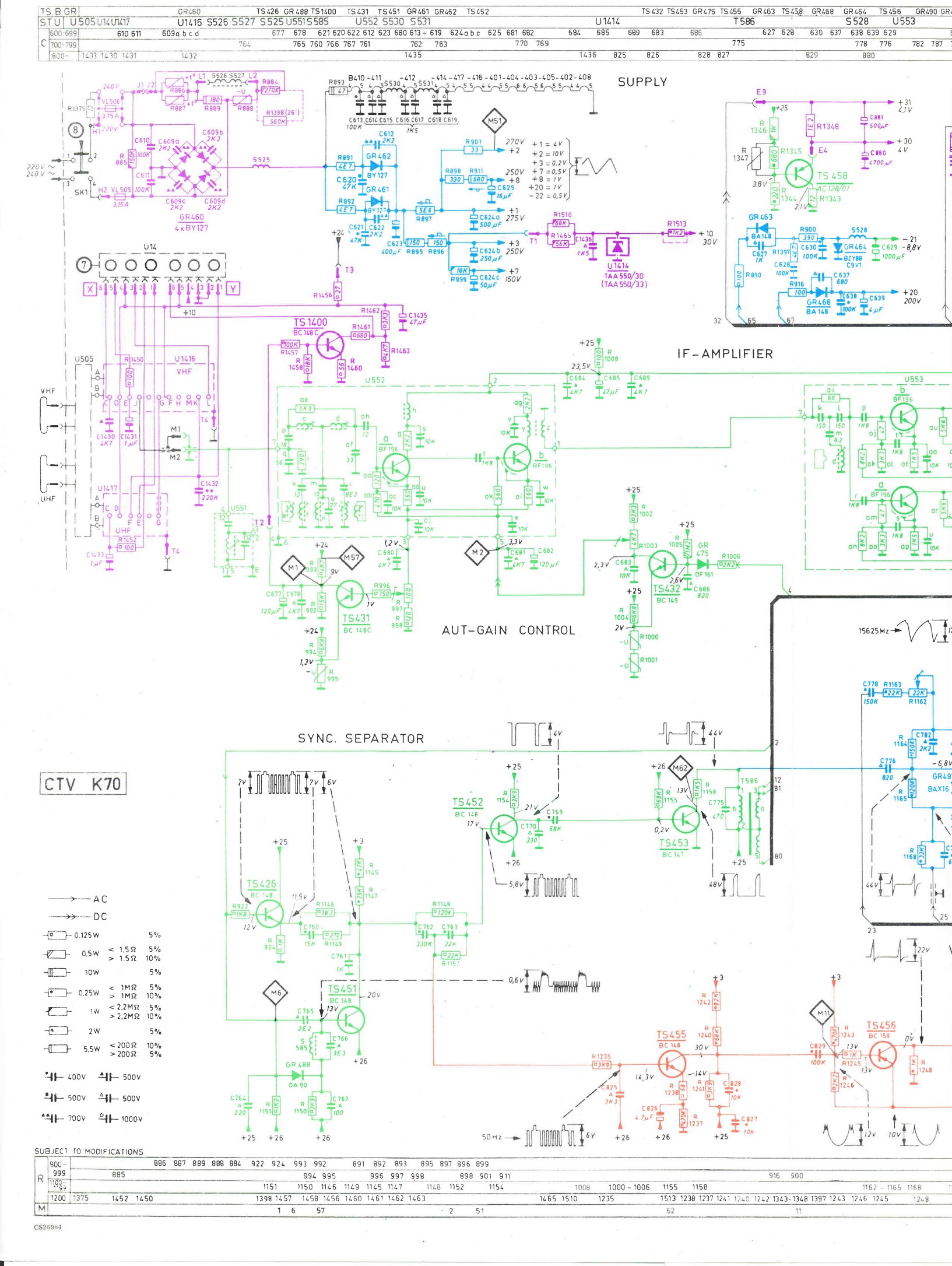
1TV 2465

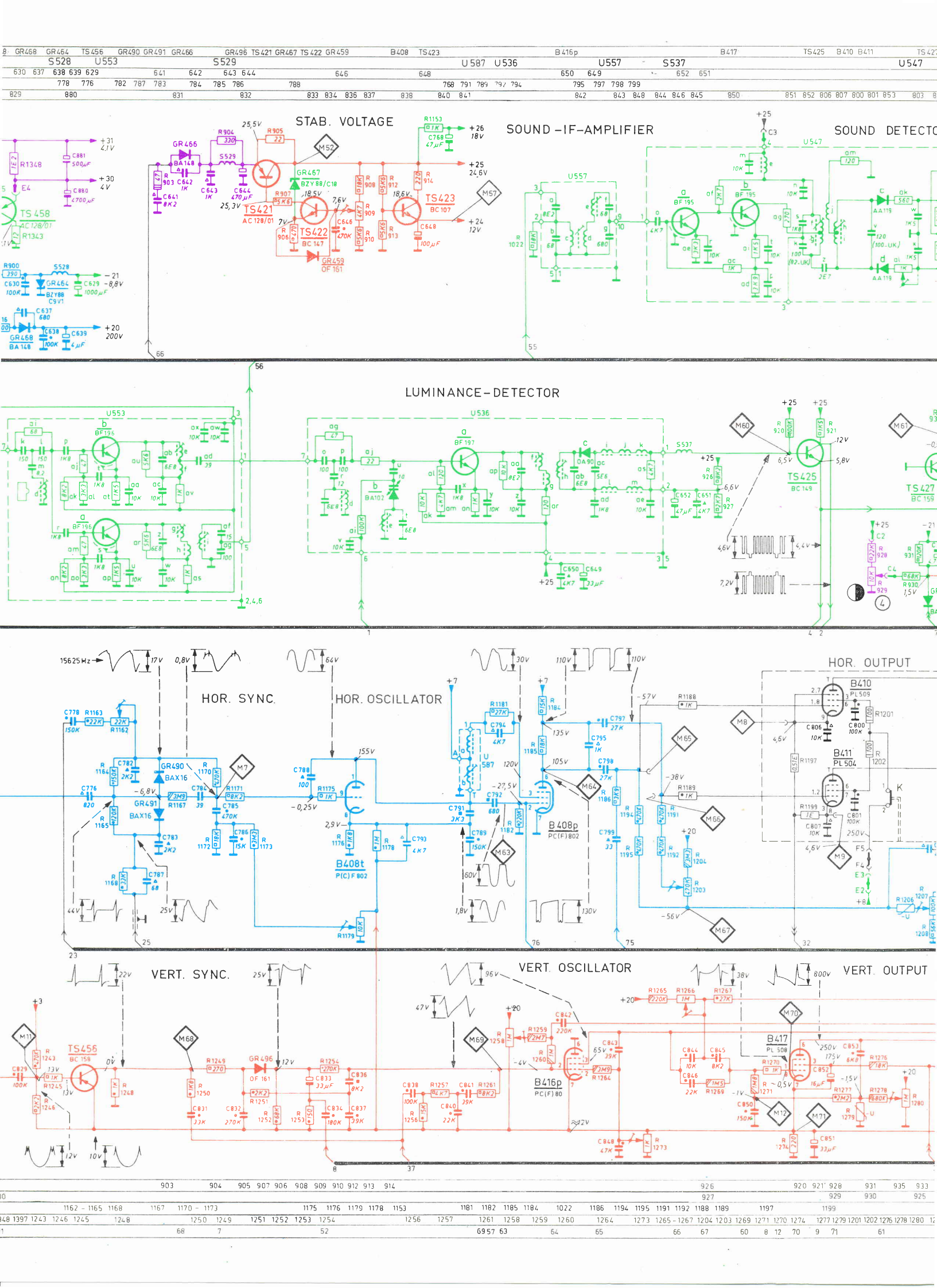

PRINT 5
PRINT 4
PRINT 3
PRINT 2
B414
B416
B417
B419
B410
B411
B412
B408
T596
S604
S529
S528
S544
BV512
M65
M8
M66
M9
M10
CS27074

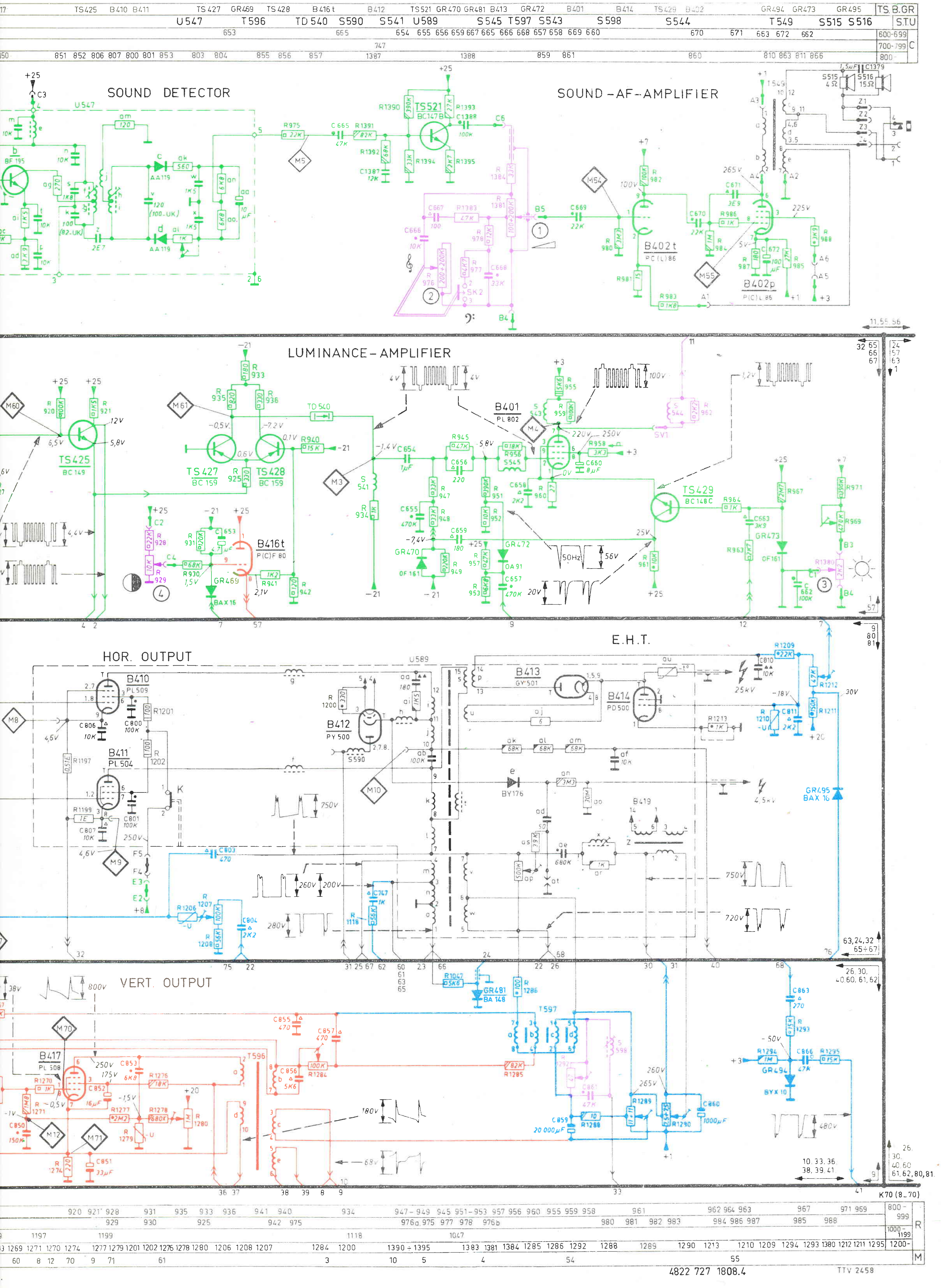

PRINT 1
PRINT 6
PRINT 11
PRINT 12
PRINT 13
PRINT 112
PRINT 13
SK3
SK11
R1302
R1298
R1306
TTV 2464


SK1
1
2
3
4
H
2
1
b4
b5
b6
b7
b10
b11
b8
b3
b2
b1
X
523
R1385
R
1043
R
1382
R928
C
753
+
R
929
R
1380
R978
R977
R976
R1384
C668
C666
C667
R
1383
R
1381
B
1
2
3
4
5
6
b5
b4
b11
b1
b3
C
1
2
3
4
5
6
b7
b6
b10
b2
b8

TTV 2469


SUPPLY
IF-AMPLIFIER
AUT-GAIN CONTROL
SYNC. SEPARATOR
CTV K70
TS 1400
BC 148 C
TS 458
AC 128/01
TS 431
BC 148C
TS 432
BC 149
TS 426
BC 148
TS 452
BC 148
TS 453
BC 147
TS 451
BC 148
TS 455
BC 148
TS 456
BC 158
U 1414
TAA 550/30
(TAA 550/33)
GR 460
4 x BY 127
U 1416
VHF
U 1417
UHF
U 505
U 552
U 553
T 586
S 528
U 14
AC
DC
SUBJECT TO MODIFICATIONS
CS26954


STAB. VOLTAGE
SOUND – IF – AMPLIFIER
SOUND DETECTO
LUMINANCE – DETECTOR
HOR. SYNC.
HOR. OSCILLATOR
HOR. OUTPUT
VERT. SYNC.
VERT. OSCILLATOR
VERT. OUTPUT
TS 458
TS421
TS422
TS423
TS425
TS427
TS456
B408p
B408t
B410
B411
B416p
B417
U547
U557
U553
U536
U587
S528
S529
S537
GR466
GR467
GR459
GR490
GR491
15625 Hz



4822 727 1808.4

TS. B . GR	GR 477	TS 434				TS 442	GR 483	TS 441		TS 447	TS 435	GR 478		GR 485	GR 486	TS 436	TS 445			
S.T.U	S 561	S 556			U 562		U 554			U 558				S 559		U 575	S 573		U 565	KT 502
C 600 699	688 693		698 696 694		691 690			692				697								
C 700 799					730		736 733 735		732 734	726		728 737 – 740		701 722 704	703	702	706	724 741	723	705
800–																				

SOUND -/CHROMINANCE DETECTOR

CHROMINANCE

BURST AMPL.

BURST DISCRIMINATOR

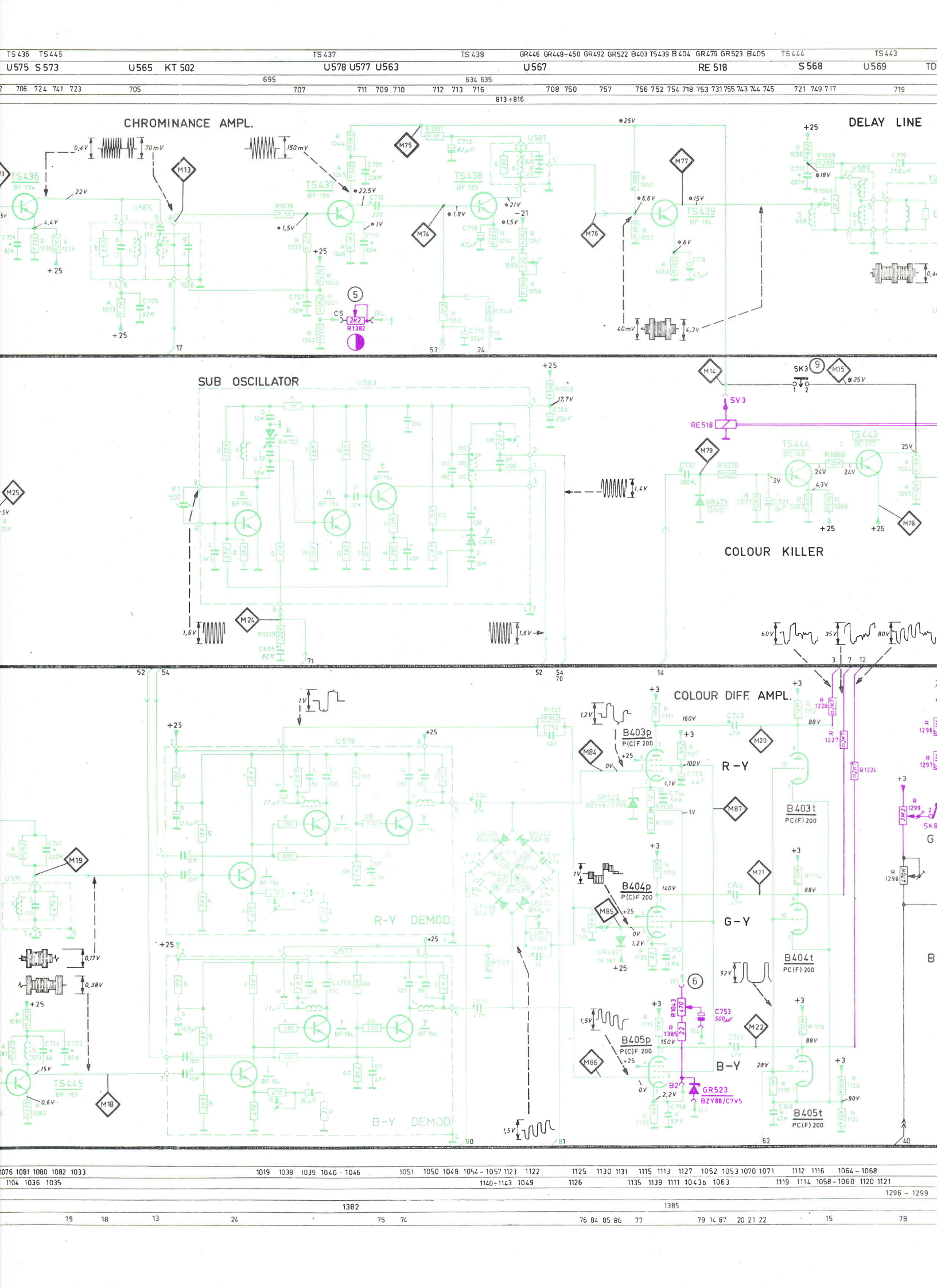
CHROM. A.G.C.

PAL SWITCH

PAL IDENTIFICATION

SUBJECT TO MODIFICATIONS.

R	1000 – 1199	1010	1011	1013	1014	1015	1087	1093	1089	1086	1091	1085	1088	1092	1097	1098	1095	1094	1106	1107	1102	1101	1100	1099	1030	1075	1076	1081	1080	1082	1033	
												1012		1023				1016	1103	1024	1025	1026	1029		1031	1104	1036	1035					
	1200–1299																															
	1300–																															
M						23				29								80 81		82	83	73		25				19		18		13


TS 436 TS 445
TS 437
TS 438
GR 446 GR 448÷450 GR 492 GR 522 B 403 TS 439 B 404 GR 479 GR 523 B 405
TS 444
TS 443
U 575 S 573
U 565 KT 502
U 578 U 577 U 563
U 567
RE 518
S 568
U 569
TD
695
634 635
706 724 741 723
705
707
711 709 710
712 713 716
708 750
757
756 752 754 718 753 731 755 743 744 745
721 749 717
719
813÷816
CHROMINANCE AMPL.
DELAY LINE
SUB OSCILLATOR
COLOUR KILLER
COLOUR DIFF. AMPL.
R-Y DEMOD.
B-Y DEMOD.
R - Y
G - Y
B - Y
B403p P(C)F 200
B404p P(C)F 200
B405p P(C)F 200
B403t PC(F) 200
B404t PC(F) 200
B405t PC(F) 200
GR523 BZY88/C7V5
1076 1081 1080 1082 1033
1019 1038 1039 1040 – 1046
1051 1050 1048 1054 – 1057 1123 1122
1125 1130 1131 1115 1113 1127 1052 1053 1070 1071
1112 1116 1064 – 1068
1104 1036 1035
1140÷1143 1049
1126
1135 1139 1111 1043b 1063
1119 1114 1058 – 1060 1120 1121
1296 – 1299
1382
1385
19 18 13 24 75 74 76 84 85 86 77 79 14 87 20 21 22 15 78

DELAY LINE

COLOUR

KILLER

BEAM CURRENT

CONVERGENCE

B401	PL802
B402	PCL86
B403	PCF200
B404	PCF200
B405	PCF200
B408	PCF802
B410	PL509
B411	PL504
B412	PY500
B413	GY501
B414	PD500
B416	PCF80
B417	PL508
B419	A66 - 120 X

TS421	AC128/01
TS422	BC147
TS423	BC107
TS425	BC149
TS426	BC148
TS427	BC159
TS428	BC159
TS429	BC148C
TS431	BC148C
TS432	BC149
TS434	BC147B
TS435	BC148C
TS436	BF194
TS437	BF195
TS438	BF195
TS439	BF194
TS441	BC148
TS442	BC148
TS443	BC177
TS444	BC148
TS445	BF195
TS447	BF195
TS451	BC148
TS452	BC148
TS453	BC147
TS455	BC148
TS456	BC158
TS458	AC128/01
TS521	BC147B
TS1400	BC148C

GR446	BAX16
GR448	BAX16
GR449	BAX16
GR450	BAX16
GR459	OF161
GR460	BY127
GR461	BY127
GR462	BY127
GR463	BA148
GR464	BZY88/C9V1
GR466	BA148
GR467	BZY88/C18
GR468	BA148
GR469	BAX16
GR470	OF161
GR472	OA91
GR473	OF161
GR475	OF161
GR477	BAX16
GR478	BZY88/C7V5
GR479	OA91
GR481	BA148
GR483	OF161
GR485	OA90
GR486	OA90
GR488	OA90
GR490	BAX16
GR491	BAX16
GR492	OF161
GR494	BYX10
GR495	BAX16
GR496	OF161
GR498	OF161
GR499	OF161
GR500	OF161
GR522	BZY88/C7V5

KT502	4822 242 70147
VL505	4822 253 30027
VL506	4822 253 30027
BV512	4822 466 10144
Printed board 4	4822 212 20063
S515 - 4 Ω	4822 240 10007
S516 - 16 Ω	4822 240 30066
RE518	4822 280 70093
S525	4822 157 50308
S528	4822 157 10006
S529	4822 157 50308
S530	4822 158 10101
S531	4822 158 10101
U536	4822 210 20156
S537	4822 157 50624
TD540	4822 157 50652
S541	4822 157 10034
S543	4822 157 10042
S544	4822 157 10007
S545	4822 157 10007
U547 - UK	4822 210 20186
T549	4822 140 60184
U551	4822 154 50133
U552	4822 212 20034
U553	4822 212 20051
U554	4822 210 20158
S556	4822 158 20184
U557	4822 154 40039
U558	4822 154 30029
S559	4822 158 10251
S561	4822 156 20212
U562	4822 212 20049
U563 μ	4822 212 20037
U565	4822 154 90027
U567	4822 153 90025
S568	4822 157 10045
U569	4822 156 10332
TD570	4822 218 20042
S571	4822 157 10007
U572	4822 156 10332
S573	4822 157 10011
U575	4822 156 20493
U577	4822 212 20038
U578	4822 212 20038
S585	4822 157 10008
T586	4822 157 40109
U587	4822 156 10044
U589 i-w	4822 140 10107
ab 100 kpF	4822 121 40193
ad 50 pF	4822 122 50033
af 10 kpF	4812 121 40192
aj 6 Ω	4822 113 90046
ao 30 MΩ	4822 111 70103
ap 500 kΩ	4822 101 20365
as 39 kΩ	4822 110 20149
at	4822 252 60002
au N.T.C.	4822 116 30065
e BY176	4822 130 30588
f	4822 158 10102
g	4822 158 10102
h	4822 158 10102
t	4822 157 50583
x	4822 150 50027
z	4822 157 50592
S590	4822 158 10082
U591	4822 150 20015
U592	4822 156 30278
U593 a-h	4822 150 10076
i-j-k	4822 150 20012
T596	4822 140 20036
T597	4822 152 30075
S598	4822 156 20484
S600	4822 156 40495
S601	4822 156 40496
S602	4822 156 20546
S603	4822 157 50585
S604	4822 157 50239
U1414 - TAA550	4822 130 40463

R886	100 Ω	4822 116 40006
R887	100 Ω	4822 116 40006
R888	V.D.R.	4822 116 20081
R891	4,7 Ω	4822 113 80121
R892	4,7 Ω	4822 113 80121
R895	150 Ω	4822 115 10031
R896	150 Ω	4822 113 90044
R897	5,6 Ω	4822 113 90045
R900	390 Ω	4822 111 50166
R901	33 Ω - 1/8 W	4822 111 30004
R904	330 Ω	4822 111 30011
R905	22 Ω - 1 W	4822 111 50346
R909	4K7 Ω	4822 100 10036
R911	680 Ω	4822 113 90043
R914	220 Ω - 1/2 W	4822 111 50193
R916	100 Ω - 1/8 W	4822 111 30343
R929	10 kΩ	4822 101 10118
R941	1K2Ω - 1/4 W	4822 111 30316
R958	3K3 Ω - 3 W	4822 115 90077
R960	27 Ω - 1/4 W	4822 111 30003
R969	470 Ω	4822 101 10069
R976	200 kΩ + 200 kΩ	4822 101 10116
R981	15 Ω - 1/8 W	4822 111 30027
R985	27 kΩ - 10 W	4822 112 30145
R987	180 Ω - 1/2 W	4822 111 50204
R988	3K9Ω - 1/4 W	4822 111 30018
R995	V.D.R.	4822 116 20063
R997	220 Ω	4822 100 10075
R1000	V.D.R.	4822 116 20083
R1001	V.D.R.	4822 116 20083
R1003	4K7 Ω	4822 100 10036
R1019	120 kΩ - 1/8 W	4822 110 60163
R1026	470 Ω	4822 100 10038
R1043	470 Ω	4822 101 10115
R1050	2K2Ω - 1/4 W	4822 111 30015
R1055	220 Ω	4822 100 10019
R1060	2k2 Ω	4822 100 10029
R1103	470 Ω	4822 100 10038
R1111	10 kΩ - - 10 W	4822 112 30134
R1113	10 kΩ - 10 W	4822 112 30134
R1115	10 kΩ - 10 W	4822 112 30134
R1125	22 kΩ	4822 100 10051
R1126	10 kΩ	4822 100 10035
R1127	8K2Ω - 10 W	4822 112 30132
R1130	12 Ω - 1/4 W	4822 111 30255
R1131	68 Ω - 1/8 W	4822 111 30007
R1135	82 Ω - 1/4 W	4822 111 30299
R1139	82 Ω - 1/4 W	4822 111 30299
R1162	22 kΩ	4822 100 10051
R1179	10 kΩ	4822 100 10035
R1197	0,51 Ω	4822 113 60088
R1199	1 Ω - 1 W	4822 113 60084
R1203	470 kΩ	4822 101 10068
R1206	V.D.R.	4822 116 20038
R1207	100 kΩ	4822 101 10022
R1210	V.D.R.	4822 116 20003
R1212	47 kΩ	4822 101 10027
R1215	3k9Ω	4822 105 20013
R1258	1 MΩ	4822 101 10019
R1266	1 MΩ	4822 101 10019
R1273	1 kΩ	4822 100 10102
R1274	220 Ω - 2 W	4822 111 70006
R1279	V.D.R.	4822 116 20084
R1280	1 MΩ	4822 101 10019
R1284	100 kΩ	4822 101 10022
R1289	11 Ω + 11 Ω	4822 103 10087
R1290	7,5 Ω + 7,5 Ω	4822 103 20213
R1292	47 Ω - 2 W	4822 103 10076
R1298	470 kΩ	4822 101 20262
R1299	2M2 Ω	4822 101 20265

R1302	470 kΩ	4822 101 20263
R1303	2M2 Ω	4822 101 20265
R1306	470 kΩ	4822 101 20263
R1307	2M2Ω	4822 101 20265
R1315	330 Ω - 2 W	4822 103 10079
R1316	330 Ω - 2 W	4822 103 10079
R1318	150 Ω + 150 Ω - 2 W	4822 103 10081
R1319	100 Ω - 2 W	4822 103 10078
R1320	120 Ω - 2 W	4822 103 10082
R1321	120 Ω - 2 W	4822 103 10082
R1322	100 Ω - 2 W	4822 103 10078
R1327	47 Ω - 2 W	4822 103 10076
R1330	100 Ω - 2 W	4822 103 10078
R1335	100 Ω - 2 W	4822 103 10078
R1336	100 Ω - 2 W	4822 103 10078
R1337	100 Ω - 2 W	4822 103 10078
R1338	100 Ω - 2 W	4822 103 10078
R1341	100 Ω - 2 W	4822 103 10078
R1347	1K5Ω	4822 116 30087
R1375	12 Ω - 35 W	4822 115 50129
R1383	47 kΩ - 1/8 W	4822 110 60152
R1384	33 kΩ - 1/8 W	4822 110 60147
R1385	22 Ω - 1/4 W	4822 110 50063
R1398	560 kΩ - 1/4 W	4822 110 30181

C610	100 kpF - 250 V	4822 121 20068
C611	100 kpF - 250 V	4822 121 20068
C623	400 µF	4822 124 40087
C624	500 + 250 + 50 µF	4822 124 40088
C625	16 µF - 300 V	4822 124 20433
C629	1000 µF - 16 V	4822 124 20417
C639	4 µF - 400 V	4822 124 20035
C644	470 µF - 40 V	4822 124 20407
C648	100 µF - 40 V	4822 124 20384
C649	33 µF - 40 V	4822 124 20366
C652	47 µF - 25 V	4822 124 20371
C653	4,7 µF - 63 V	4822 124 20347
C660	8 µF - 350 V	4822 124 20066
C672	100 µF - 16 V	4822 124 20385
C677	120 µF - 16 V	4822 124 20385
C682	120 µF - 16 V	4822 124 20385
C685	47 µF - 25 V	4822 124 20371
C691	47 µF - 25 V	4822 124 20371
C694	1 µF - 63 V	4822 124 20341
C698	15 µF - 63 V	4822 124 20357
C703	47 µF - 25 V	4822 124 20371
C708	27 µF - 25 V	4822 124 20362
C712	33 µF - 40 V	4822 124 20366
C713	82 µF - 25 V	4822 124 20379
C716	47 µF - 25 V	4822 124 20371
C718	47 µF - 25 V	4822 124 20371
C719	250 µF - 25 V	4822 124 20399
C721	1 µF - 63 V	4822 124 20341
C735	47 µF - 25 V	4822 124 20371
C753	500 µF - 2,5 V	4822 124 20024
C755	4 µF - 400 V	4822 124 20035
C768	47 µF - 25 V	4822 124 20371
C820	5 kpF - 5000 V	4822 124 20067
C826	4,7 µF - 63 V	4822 124 20347
C833	33 µF - 40 V	4822 124 20366
C851	33 µF - 40 V	4822 124 20366
C852	16 µF - 300 V	4822 124 20433
C859	20.000 µF - 2,5 V	4822 124 40097
C860	1000 µF - 16 V	4822 124 20417
C870	330 µF - 16 V	4822 124 20403
C871	50 µF - 30 V	4822 124 40091
C880	4700 µF - 4 V	4822 124 20428
C881	500 µF - 2,5 V	4822 124 20408
C1431	1 µF - 63 V	4822 124 20341
C1433	1 µF - 63 V	4822 124 20341
C1435	47 µF - 25 V	4822 124 20371

Table protector	4822 462 70698
Cam securing the chassis	4822 404 30051
Hinge of chassis	4822 404 30052
Cam securing the rear panel	4822 404 30053
Push-button of mains switch	4822 410 21068
Dial window of push-button unit	4822 459 20128
Clamping spring of p.c.board of channel selector	4822 492 61398
Mounting plate of control panel	4822 459 60211
Spindle of potentiometers (volume, etc.)	4822 535 70345
Mains switch SK1	4822 276 10372
Knob, volume, tone, etc.	4822 413 30446
Push-button unit U14	4822 210 40111
P.C. board of band switch U14	4822 466 10184
Potentiometer strip U14	4822 101 90043
Contact holder of band-switch U14	4822 290 80186
Rear panel	4822 432 10081
Long spindle of convergence knobs	4822 535 90678
Short spindle of convergence knobs	4822 535 90667
Convergence knob, small diameter	4822 413 30448
Convergence box	4822 691 10113
Switch SK8-9-10	4822 273 30179
Knob g2 (fine-tuning)	4822 413 30447
Switch SK3-SK11	4822 276 10383
Knob of SK3-SK11	4822 410 21003
Casing of deflection coil	4822 691 10068
Buffer ring of deflection coil	4822 532 60438
Purity rings	4822 532 50712
Spring securing the purity rings	4822 492 61342
Red plug on convergence unit	4822 266 40029
Green plug on convergence unit	4822 266 40031
Blue plug on convergence unit	4822 266 40032
Coaxial plug M	4822 264 10036
Coaxial coupling socket M	4822 267 10036
Plugs A-B-C-D-X-Y	4822 266 30055
Plugs H-L	4822 266 20045
Plugs Z-T	4822 266 30054
Plugs E-F	4822 264 50051
Holder of safety fuse	4822 492 60063
Knob, , focusing	4822 413 40396
Plug holder F	4822 255 70147
Valve holder, 10 pins, pertinax	4822 255 70071
Valve holder, 9 pins, ceramic	4822 255 70139
Valve holder, 9 pins, pertinax	4822 255 70101
Valve holder, PL 508	4822 255 70097
Valve holder of picture tube	4822 255 70142
Valve holder PL504 - PL509 - PY500-PD500	4822 255 70044
Valve holder GY501	4822 255 70141
Filament winding GY 501	4822 320 20043
Focus cable	4822 320 20045
HT-cable with cap	4822 320 20035
Ring round HT-cable	4822 532 60307
Top connection PD 500	4822 256 90066
Safety switch of HT-cage	4822 276 10302
Channel selector VHF - U1416	4822 210 40104
Channel selector UHF - U1417	4822 210 50064
Aerial casing, complete	4822 691 10143

SERVICE INFORMATION

15-4-1971	K70 CTV sets	Bk 41

a. S22K492/15/55 - S26K497/15/55.

Modified: Channel selector U1417 - UHF - 4822 210 50064.
New version with built-in n+4 -filter 4822 218 20057.

b. General.

Modified line output stage, see Fig. 1.
B411 (PL 504) has been replaced by PL 509.
R1181 (27 kΩ) has been replaced by a resistor of 47 kΩ.
Added: R1180 (220 kΩ - 1/8 W) between 3B408 and 8B408.
No longer used: R893.
R899 (18 kΩ) has been replaced by a resistor of 1.8 kΩ.
In the filament circuit, B410 has been fitted in the place of B411, and vice versa.
R1199 (1 Ω) has been replaced by a resistor of 0.51 Ω - 4822 113 60088.
Added: D503 - D 504, BY 127, between 9B410 and 1B410, and between 9B411 and 1B411.
Reason: Reduction of dissipation of B410 and protection of PL 509.

c. General.

Modified: Controls on g2 panel.
Control g2 fine tuning was 4822 413 30447; has become 4822 413 30437.

d. General.

Modified: Blue and Green Adjustment.
Added : R1312 - 8.2 kΩ - 1/4 W between point 2 of the picture tube and junction R1215 - V1.

e. General.

Modified: R1209 has been replaced by safety resistor - 22 kΩ - 4822 111
Reason : Protection against picture tube flashover.

f. General.

Modified: R906 (470 Ω) has been replaced by a resistor of 680 Ω.
Reason : Improvement of stabilisation.

g. General.

Modification brightness control, see Fig. 2.
Modified : OF 161 (GR 473) has been replaced, by AAZ 17.
R971 (390 kΩ) has been replaced by a resistor of 470 kΩ.
The supply voltage on R971 was +7, and has become +3.
Added: R1108 - 1 kΩ, R1109 - 68 Ω and R1110 - 2.2 kΩ.
R900 (390 Ω) has been replaced by a resistor of 330 Ω.
Reason: Decrease in brightness fluctuations owing to mains voltage fluctuations.

Printed in the Netherlands

Bk 41

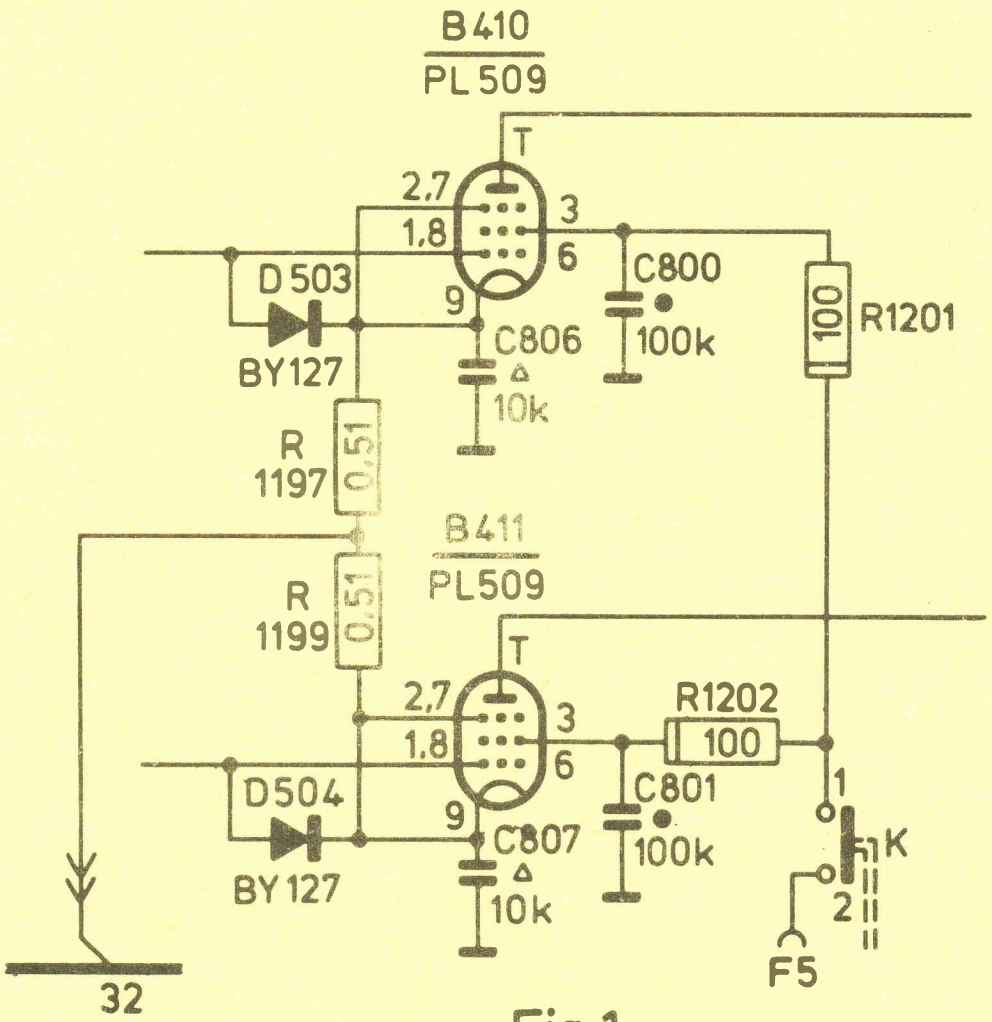


Fig.1

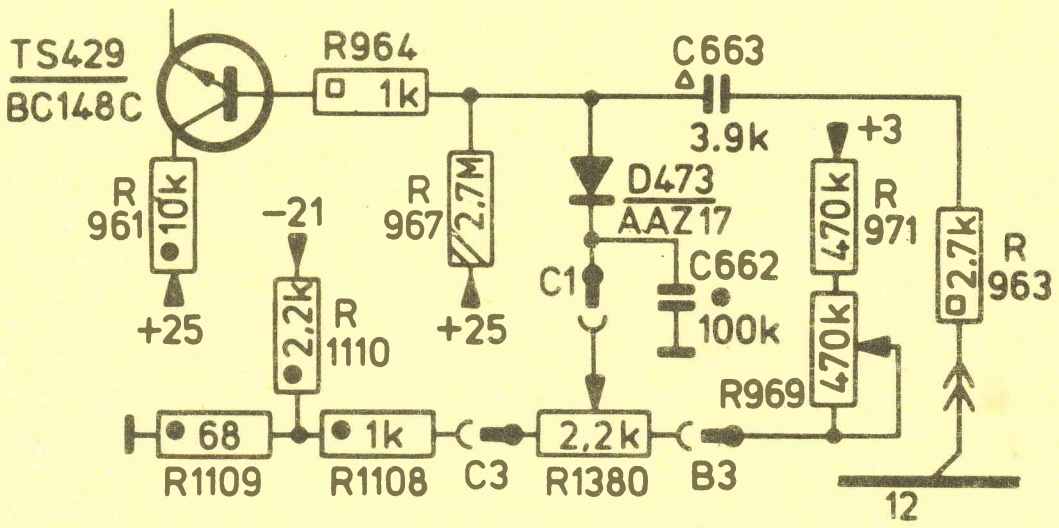


Fig.2

13A