BLANKING AND PARABOLA GENERATOR

LDK 4807/00

CONTENTS:

A. TECHNICAL DATA

B. CHECKING AND ADJUSTING

C. CIRCUIT DESCRIPTION

D. SERVICE PARTS

LIST OF FIGURES

1. Circuit diagram
2. Printed Circuit board

A. TECHNICAL DATA

Input signals : H-pulse, negative, amplitude 3.5 V (-0.5 V) for 50 m. cable.
V-pulse, positive, amplitude $\geq$ 2.5 V.

Output signals :
a. 2 x composite blanking, positive, amplitude 48 V. H-pulse 7 $\pm$ 0.5 μsec, V-pulse 550 μsec.
The leading edge of the horizontal blanking pulse is 500 nsec. delayed with respect to the H pulse. Rise time leading edge 250 nsec, trailing edge 150 nsec.
b. 2 x comp. parabolic signal, negative.
At a capacitive load of 3000 pF the maximum amplitude of the horizontal parabolic signal is $\geq$ 20 V, that of the vertical parabola $\geq$ 16 V.
c. 1 x H-pulse 5.5 $\pm$ 0.25 μsec, negative, amplitude 3.7 V $\pm$ 0.2 V. Delay with respect to H-pulse $\leq$ 100 nsec.
d. 1 x clamping pulse, positive, amplitude approx. 9 V - 10 V.
Width pulse top 5 $\pm$ 1 μsec.
Delay front of top with respect to front at the bottom of H-blanking pulse $\geq$ 250 nsec.
Rise time trailing edge $\leq$ 500 nsec.
Rise time leading edge $\leq$ 4 μsec.

Power supply : +52 V
-12.9 V

B. CHECKING AND ADJUSTING

1. Horizontal oscillator

a. Connect an oscilloscope to the emitter of TS4.
b. Remove the H-input pulse.
The period of the oscillator, which is now free running, should be between 70 and 75 μsec. This can be adjusted by connecting a resistor R57, called "a", in parallel with R6.
c. Apply the H-pulse again. The pulse duration should be 5.5 μsec. $\pm$ 0.25 μsec. This can be adjusted with shunt resistor R55, called "a".

2. Parabola generator

a. Connect an oscilloscope to the collector of TS8.
b. Adjust the horizontal and vertical parabola to 10 Vpp each with R19 and R42.

C. CIRCUIT DESCRIPTION

The generator supplies the blanking pulses for the three plumbicons, the parabolic voltages which are used for dynamic focusing, a contrcl pulse for the horizontal output stage and a pulse for the "soft clamp" circuit of the video amplifier.
The H pulse applied to point 4 is obtained from the timing circuit in the control rack. The pulse is differentiated by C1 and serves to synchronise multivibrator TS1-2-3.
The pulse duration can be adjusted by selection of the shunt resistors of R6 and R2. Via emitter follower TS4 the pulses are applied to the horizontal output stage (via point 20), to the parabola generator and the blanking mixer.
Via C7 the pulse triggers sawtooth generator TS5-6. The sawtooth voltage arises across C8; TS5 then functions as a constant current source. With C9 the flyback of the sawtooth is slightly delayed so that the parabolic voltage, which is derived from the sawtooth voltage at a later stage, will have the correct phase with respect to the blanking.
Via TS8 a sawtooth current is applied to the capacitors of the 600 V smoothing circuit of the plumbicons. The sawtooth current is integrated, so that a parabolic coltage arises across the capacitors.
The amplitude of this voltage is adjusted with R19. TS9 ensures that the direct current flowing through the capacitive load of TS8 is 0. Thus pure and symmetrical integration is ensured.
The sawtooth voltage from one of the vertical plumbicon deflection coils is applied TS10. This voltage is differentiated by C14-R28.
Via C15 the pulse formed by TS10 triggers mono-stable multivibrator TS11-12, which supplies a pulse with the correct duration for the camera blanking. Via C19 the pulse triggers sawtooth generator TS13-14. The sawtooth voltage arises across C20. Emitter follower TS15 controls Miller integrator TS16 on whose collector a parabolic voltage arises.
The amplitude of this voltage is adjusted with R42.
After amplification by TS17 the vertical parabolic voltage is added to the horizontal parabolic voltage via TS18.
The horizontal pulse is amplified by TS19-20. With C4 the duration of the pulse is adjusted to the desired value for the camera blanking. R39 isolates TS19 from TS4; GR1 serves to reduce the switching time of TS19. When the negative pulse appears on GR1, this diode will immediately become conductive and short-circuit R39. C18 is charged and the diode will be cut off again. In TS21 the horizontal and vertical blanking pulses are mixed and amplified by TS22. Via double emitter follower TS23-24 the blanking signal is then applied to the plumbicons. From the collector of TS19 the horizontal pulse is applied to the "soft-clamp" circuit in the video amplifiers.

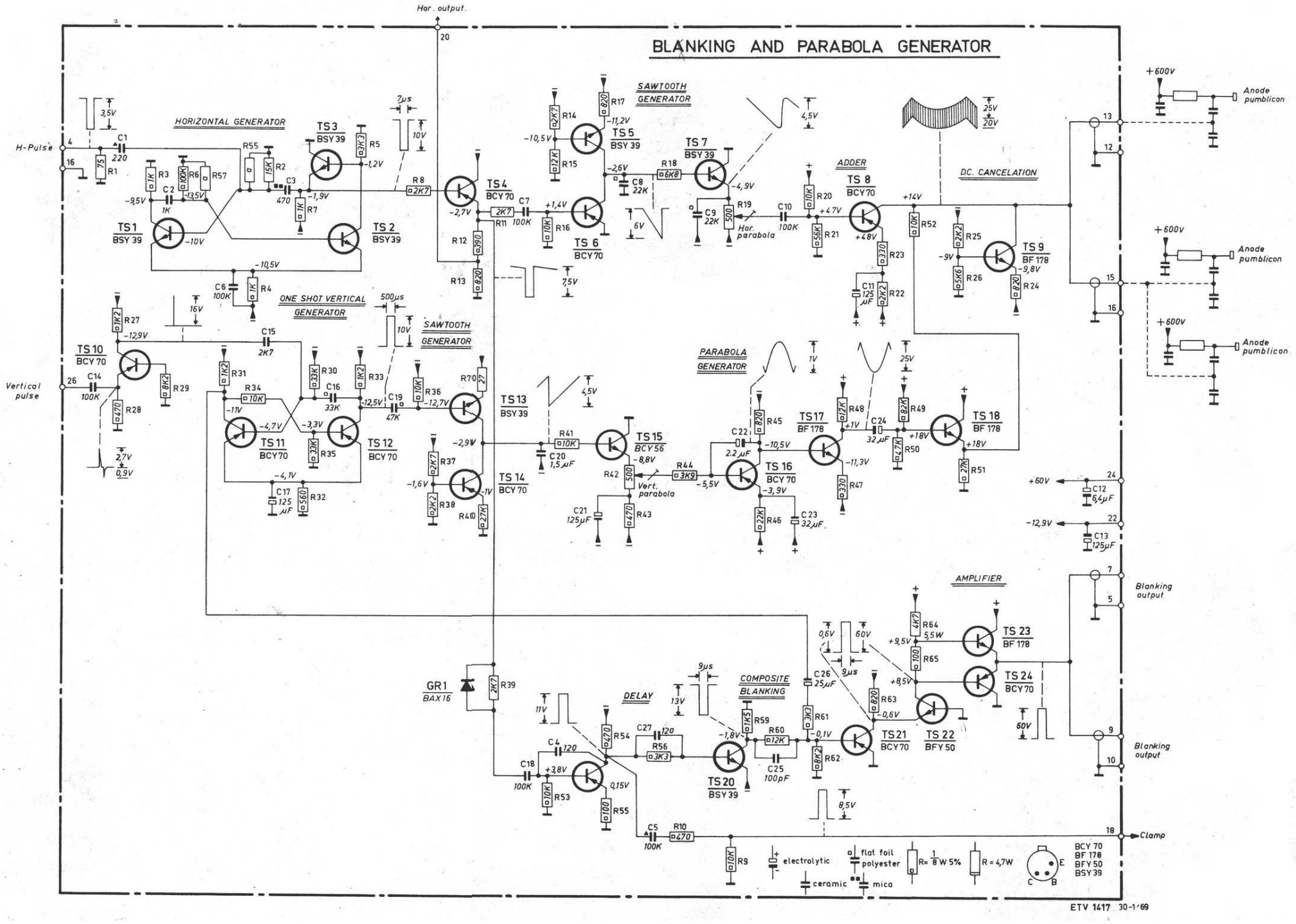
D. SERVICE PARTS

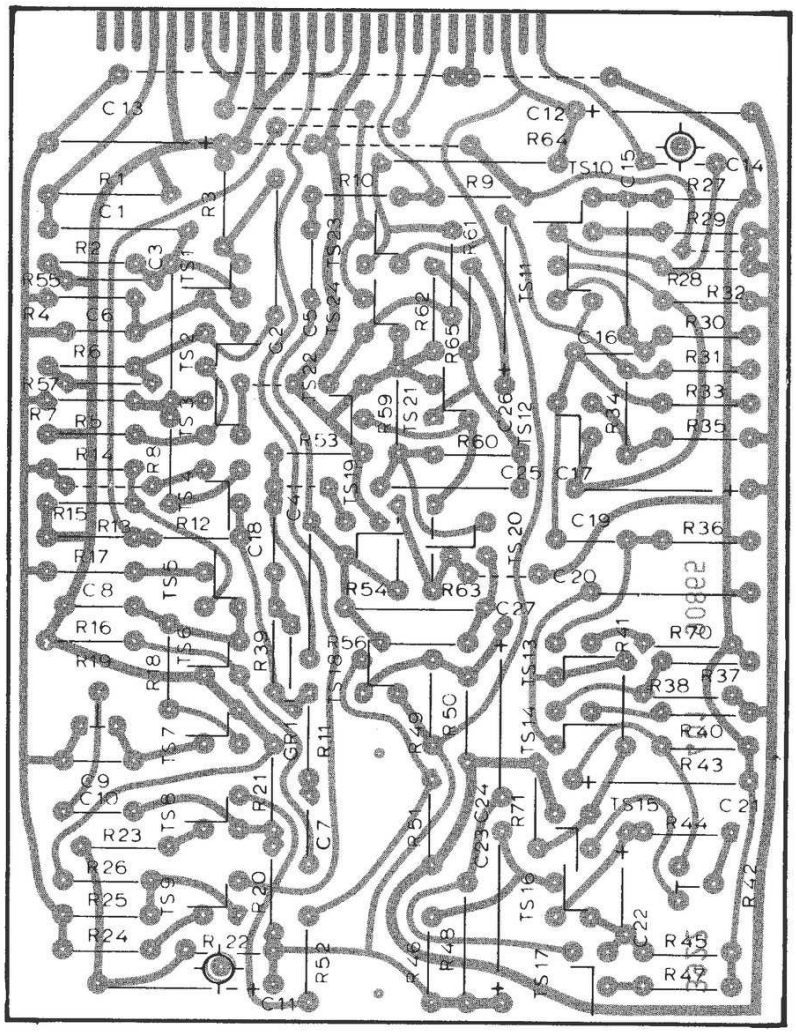
1. Mechanical

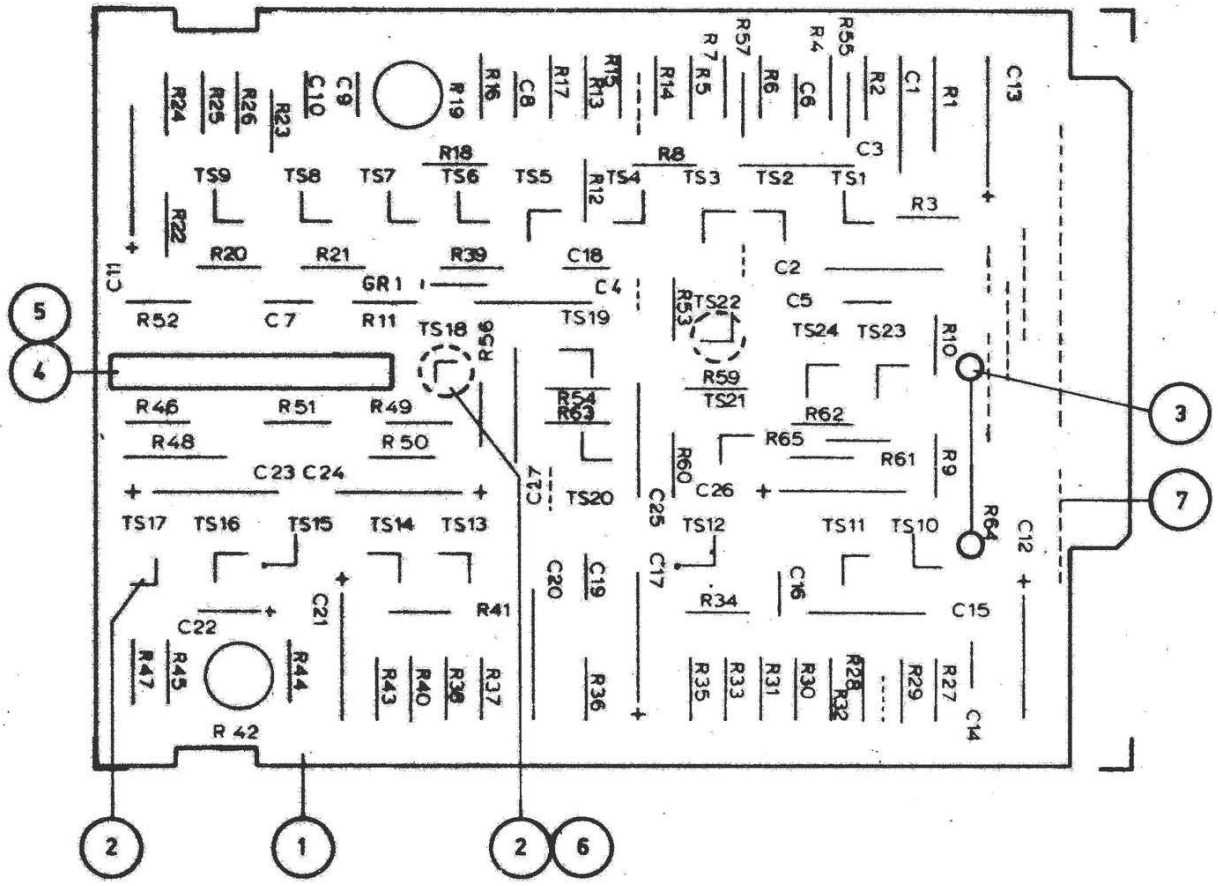
	Spacer for transistors	4822 255 40006

2. Electrical

Item Pos.	Description	Code number Code-Nummer
TS1-2-3-5-7-13-20	BSY39 Silicon transistor NPN	4822 130 40125
TS4-6-8-10-11-12-14-16-19-21-24	BCY70 Silicon transistor PNP	4822 130 40324
TS9-17-18-23	BF178 Silicon transistor NPN	4822 130 40299
TS15	BCY56 Silicon transistor NPN	4822 130 40325
TS22	BFY50 Silicon transistor NPN	4822 130 40294
GR1	BAX16 Silicon diode	4822 130 30273
C5-6-7-10-14-18	0.1 µF 100 V Polyester	4822 121 40059
C8-9	0.22 µF 250 V Polyester	4822 121 40045
C11-13-17-21	125 µF 16 V Electrolytic	4822 124 20388
C12	6.4 µF 150 V Electrolytic	4822 124 20059
C15	2700 pF 125 V Polyester	4822 121 50435
C16	0.33 µF 250 V Polyester	4822 121 40054
C19	0.47 µF 100 V Polyester	4822 121 40055
C22	2.2 µF 35 V Tantalum	4822 124 10058
C23-24	32 µF 64 V Electrolytic	4822 124 20372
C26	25 µF 25 V Electrolytic	4822 124 20366
R1	75 Ω 1 % Carbon resistor	4822 111 20002
R19-42	500 Ω lin. Potentiometer	4822 100 20021


BLANKING AND PARABOLA GENERATOR
Hor. output
H-Pulse
Vertical pulse
HORIZONTAL GENERATOR
ONE SHOT VERTICAL GENERATOR
SAWTOOTH GENERATOR
SAWTOOTH GENERATOR
PARABOLA GENERATOR
ADDER
DC. CANCELATION
DELAY
COMPOSITE BLANKING
AMPLIFIER
TS1 BSY 39
TS2 BSY39
TS3 BSY 39
TS4 BCY 70
TS5 BSY 39
TS6 BCY 70
TS7 BSY39
TS8 BCY70
TS9 BF 178
TS10 BCY 70
TS11 BCY 70
TS12 BCY 70
TS13 BSY 39
TS14 BCY 70
TS15 BCY 56
TS16 BCY 70
TS17 BF 178
TS18 BF 178
TS20 BSY 39
TS21 BCY70
TS22 BFY 50
TS23 BF 178
TS24 BCY70
GR1 BAX16
Hor. parabola
Vert. parabola
+600V
Anode pumblicon
+60V
-12,9V
Blanking output
Clamp
electrolytic
flat foil polyester
ceramic
mica
R= 1/8 W 5%
R = 4,7W
BCY 70 BF 178 BFY 50 BSY 39
ETV 1417 30-1-69


C13
C12
R64
TS10
C15
C14
R1
R10
R9
R27
C1
R3
R29
R2
C3
TS11
R61
TS23
R55
R28
R32
R4
C6
C5
TS24
R62
R30
R6
C2
TS22
R65
C16
R31
R57
TS21
R59
C26
R33
R7
R5
TS12
R34
R35
R53
R60
R14
C25
C17
R15
R13
R12
C41
TS19
C18
C19
R36
R17
TS20
C8
R54
R63
C20
R16
C27
R70
R19
R39
R56
R41
TS13
R38
R37
C9
C10
TS14
R40
R43
R21
R11
R49
R50
TS15
C23
C24
R71
C7
R51
R44
C21
R23
TS6
R26
TS9
R20
R42
R25
TS16
C22
R45
R24
R22
R52
R48
R46
TS17
R47
C11
TS18
ETV2551


R24
R25
R26
R23
C10
C9
R19
R16
C8
R17
R15
R13
R14
R7
R5
R57
R6
C6
R4
R55
R2
C1
R1
C13
C3
R18
R8
TS9
TS8
TS7
TS6
TS5
R12
TS4
TS3
TS2
TS1
R3
R22
C11
R20
R21
R39
C18
C2
GR1
C4
C5
R52
C7
R11
TS18
R56
TS19
R53
TS22
TS24
TS23
R10
5
4
R59
TS21
3
R46
R51
R49
R54
R63
R62
R48
R50
R65
R61
R9
R60
C23
C24
C27
TS20
C25
C26
7
TS17
TS16
TS15
TS14
TS13
TS12
TS11
TS10
R64
C12
C22
C21
R41
C20
C19
C17
R34
C16
C15
R47
R45
R44
R43
R40
R38
R37
R36
R33
R31
R30
R28
R32
R29
R27
C14
R 42
2
1
2
6