SCAN FAILLURE AND TEST SIGNAL BOARD

LSK 4809/00

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	: 3x voltages from the vertical deflection coils 1 signallling voltage from the horizontal output stage. 1x H pulse negative, amplitude 3 - 3.5 V.
Response level	: The unit switches on the stand-by circuit as soon as one of the vertical deflection voltages becomes smaller than 0.15 V p-p or when the horizontal signalling voltage is <3 V.
Output signals	: Protection circuit : 12.8 V at normal deflection, 0 V in the case of incorrect deflection
Test Sawtooth	: 3x VB, negative amplitude adjustable between 0 and >400 mV at a load resistance of 220 Ω.
Supply voltage	: -12.9 V.

B. CHECKING AND ADJUSTING

With R13 the flat top of the sawtooth voltage is adjusted between 10 and 20 μseconds; the bottom between 15 and 25 μseconds. R24, R25 and R26 can be adjusted according to the Setting-Up procedure (see camera Chain - chapter 4).

C. CIRCUIT DESCRIPTION

The unit comprises a circuit which applies a signalling voltage to the stand-by circuit in the control rack. In the case of failure or too small a deflection current the stand-by circuit is energised. This circuit protects the plumbicons because the +300 V for the camera head is switched off.
The unit moreover, comprises a sawtooth generator which supplies the signals by means of which the video amplifier in the camera head can be checked and adjusted.

1. Protection circuit

The protection circuit consists of a gate circuit with GR1-2-3-4. The cathodes of these diodes are negatively biased with R31-R44. In the normal operating condition the diodes are cut off on account of the negative bias applied to the anodes. For GR4 this voltage is obtained from the horizontal output stage. In the case of GR1...3 the voltages are obtained by rectification of voltages on the vertical deflection coils. By means of emitter followers TS1-3-5 the rectifiers are isolated from the deflection coils.
During the negative cycles of the deflection signals TS2-4-6 will be conductive because the emitters are then negative with respect to the bases. During the positive cycles of the signals, TS2-4-6 are cut off.
The average current and the collector voltage of TS1-4-6 therefore depend on the amplitude of the deflection signal.
The collector voltages are smoothed with C10-12-14.
Normally TS7 is conductive and drives TS8 into saturation.
The collector voltage of TS8 is then approx. -12.8 V.
If one of the deflection currents become too small, one of the anodes of GR1-2-3-4 will become positive with respect to the cathode.
The base voltage of TS7 increases, TS7 is cut off and, consequently, TS8. The collector voltage of TS8 then becomes zero. The collector voltage of TS8 controls the protection circuit in the CCU, which switches the camera chain to the STANDBY POSITION. The +300 V for the camera head is then cut off, the anodes of the plumbicons receive no voltage so that the beam current is suppressed.

2. Test generator

The H pulse is clipped and amplified by TS1. The pulse triggers bootstrap sawtooth generator TS10-11. Through feedback via C4 a linear sawtooth is obtained. Amplifier TS12-13 is overdriven by the sawtooth, so that a flat "white" level is obtained for the sawtooth. The level at which the a amplifier is overdruven is determined with feedback resistor R15. Amplifier TS14 applies the sawtooth signal to the inputs of three video amplifiers, (where the signals are fed to the amplifier input).
The signal amplitude is adjustable per channel. The sawtooth signal can be switched off by cutting off TS12. This is achieved by connecting R17 parallel to R11.
The value of R13 has been selected so that in position "off" no sawtooth signal is available on the outputs.

D. SERVICE PARTS.

D. SERVIC

1. Mechanical

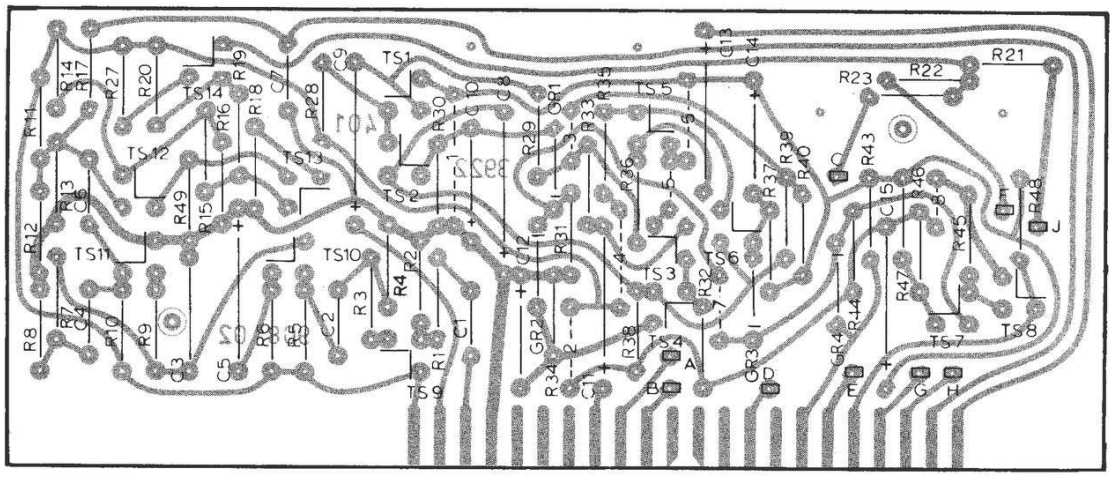
1. Mechan

	Description	Code number Code-Nummer
	Spacer for transistor	4822 255 40006
	Test socket (Yellow)	4822 267 30176
	Test socket (Black)	4822 267 30185

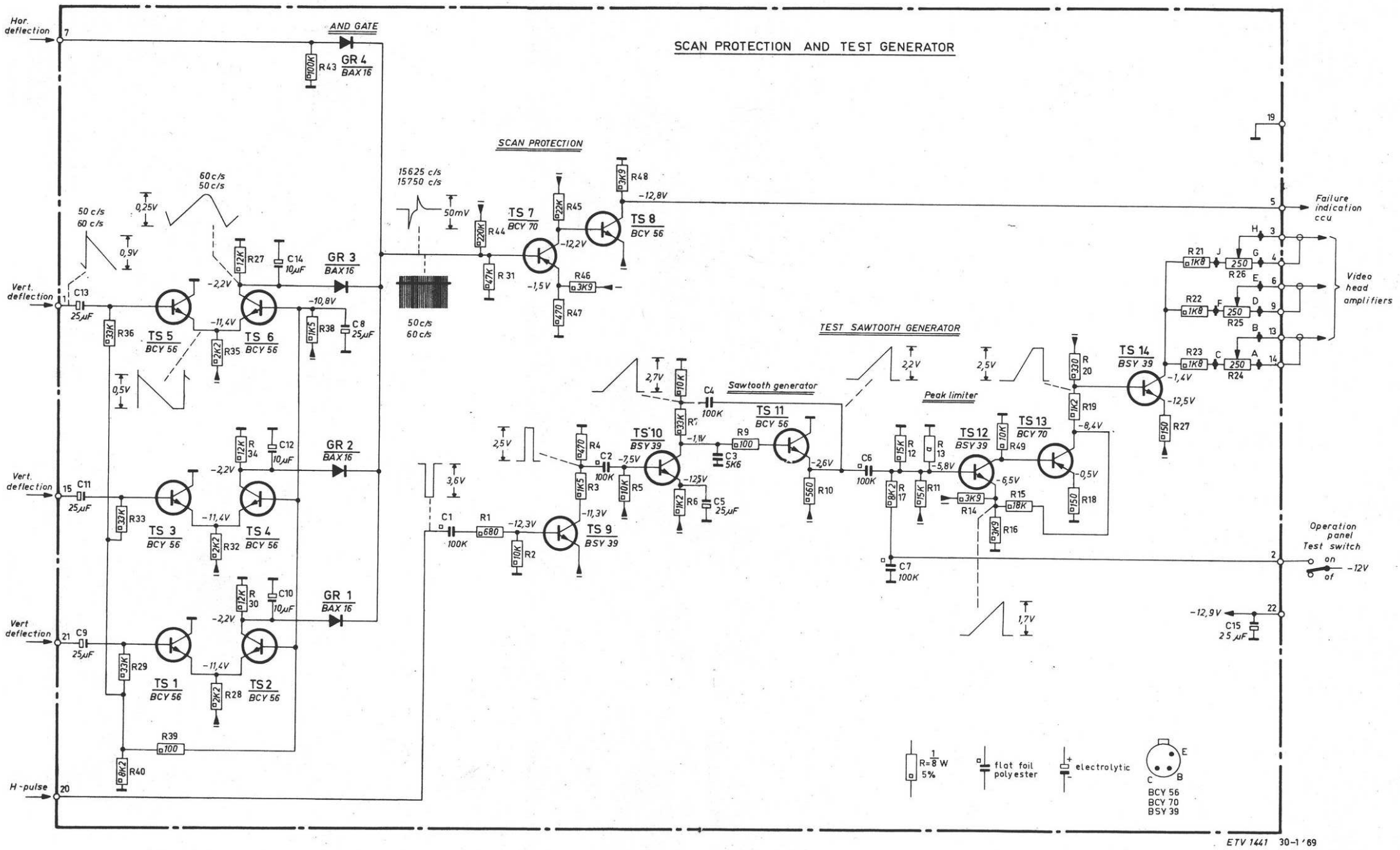
2. Electrical

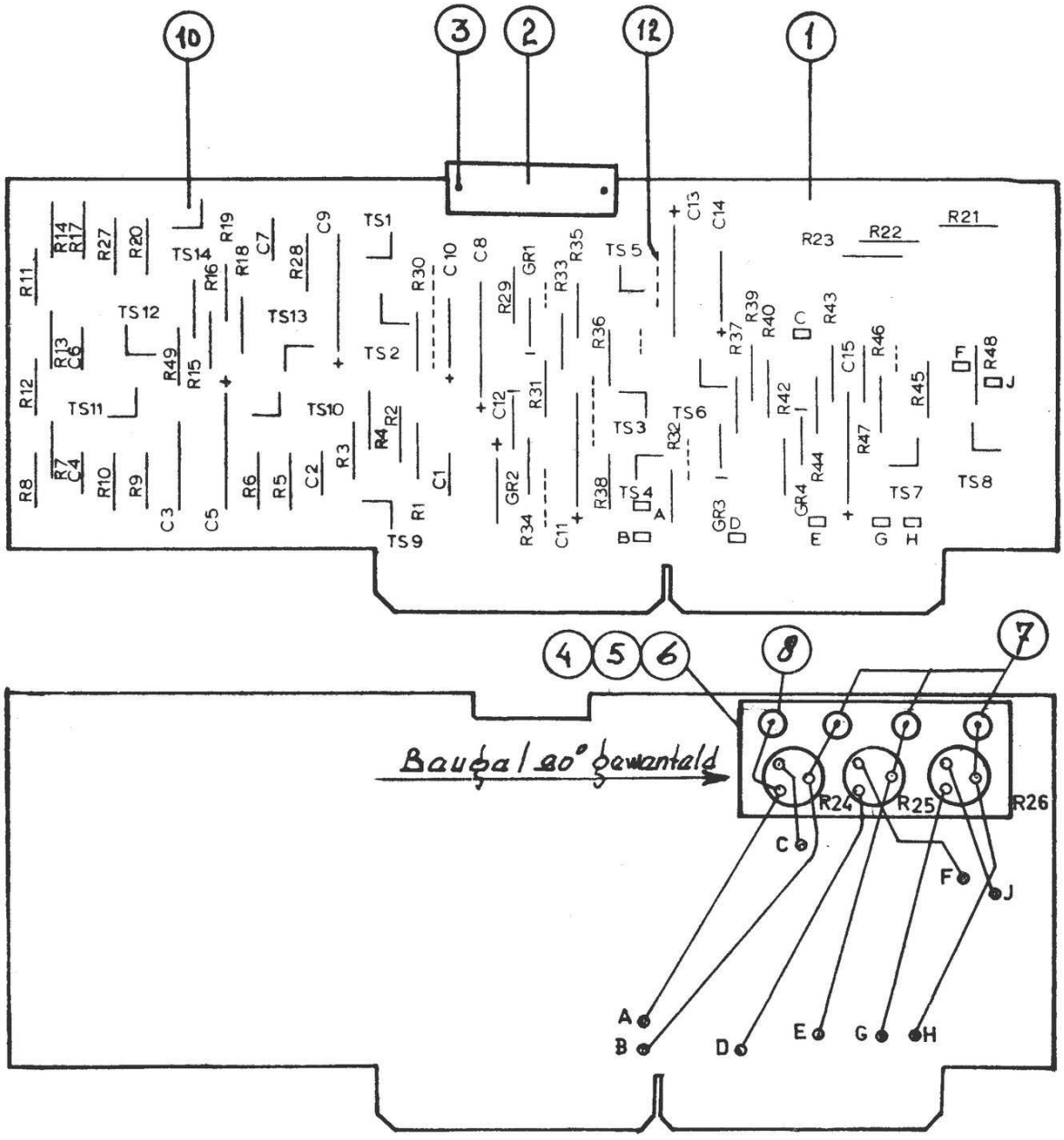
2. Elektris

Item Pos.	Description	Code number Code-Nummer
TS1-2-3-4 5-6-8-11	BCY 56 Silicon transistor NPN	4822 130 40325
TS7-13	BCY 70 Silicon transistor PNP	4822 130 40324
TS9-10-12-14	BSY 39 Silicon transistor NPN	4822 130 40125
GR1 - 4	BAX 16 Silicon diode	4822 130 30273
C1-2-4-6-7	0,1 µF 100 V Polyester capacitor	4822 121 40036
C3	5600 pF 63 V Polyester capacitor	4822 121 50373
C5-8-9-11-13-15	25 µF 25 V Electrolytic capacitor	4822 124 20366
C10-12-14	10 µF 20 V Electrolytic capacitor	4822 124 10004
R24-25-26	250 Ω lin. Potentiometer	4822 100 20015



ETV 2553


SCAN PROTECTION AND TEST GENERATOR
AND GATE
SCAN PROTECTION
TEST SAWTOOTH GENERATOR
Sawtooth generator
Peak limiter
Hor. deflection
Vert. deflection
Vert deflection
H-pulse
Failure indication ccu
Video head amplifiers
Operation panel
Test switch
on
of
-12V
GR 1 BAX 16
GR 2 BAX 16
GR 3 BAX 16
GR 4 BAX 16
TS 1 BCY 56
TS 2 BCY 56
TS 3 BCY 56
TS 4 BCY 56
TS 5 BCY 56
TS 6 BCY 56
TS 7 BCY 70
TS 8 BCY 56
TS 9 BSY 39
TS 10 BSY 39
TS 11 BCY 56
TS 12 BSY 39
TS 13 BCY 70
TS 14 BSY 39
50 c/s 60 c/s
15625 c/s 15750 c/s
50mV
0,25V
0,9V
0,5V
3,6V
2,7V
2,5V
2,2V
1,7V
-12,8V
-12,2V
-1,5V
-2,2V
-11,4V
-10,8V
-2,5V
-12,5V
-11,3V
-12,3V
-1,1V
-2,6V
-5,8V
-6,5V
-8,4V
-0,5V
-1,4V
-12,5V
-12,9V
R1 680
R2 10K
R3 1K5
R4 470
R5 10K
R6 1K2
R7 33K
R9 100
R10 560
R11 15K
R12 R
R13 R
R14 3K9
R15 18K
R16 3K9
R17 8K2
R18 150
R19 1K2
R20 330
R21 1K8
R22 1K8
R23 1K8
R24 250
R25 250
R26 250
R27 150
R31 47K
R32 2K2
R33 33K
R34 12K
R35 2K2
R36 33K
R38 1K5
R39 100
R40 8K2
R43 100K
R44 220K
R45 22K
R46 3K9
R47 470
R48 3K9
C1 100K
C2 100K
C3 5K6
C4 100K
C5 25µF
C6 100K
C7 100K
C8 25µF
C9 25µF
C10 10µF
C11 25µF
C12 10µF
C13 25µF
C14 10µF
C15 25µF
R 1/8 W 5%
flat foil polyester
electrolytic
BCY 56
BCY 70
BSY 39
ETV 1441 30-1'69


10
3
2
12
1
4
5
6
8
7
TS1
TS2
TS3
TS4
TS5
TS6
TS7
TS8
TS9
TS10
TS11
TS12
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TS14
R1
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R46
R47
R48
R49
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
GR1
GR2
GR3
GR4
A
B
C
D
E
F
G
H
J
Bauteil 90° gewandelt