PA1/560-1

TELEVISION TEST LINE ERASER / INSERTER

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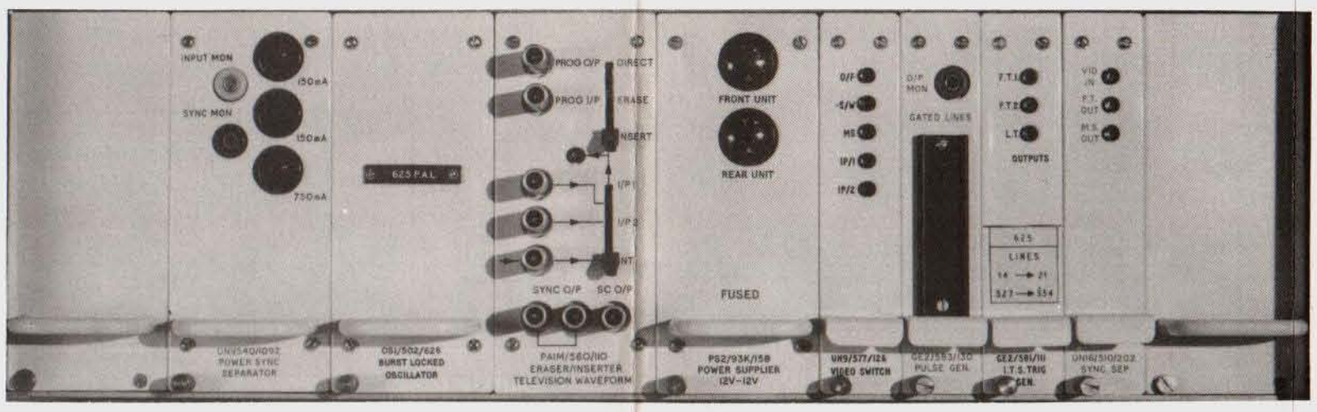
TELEVISION TEST LINE ERASER/INSERTER PA1/560 & PA1/561



Introduction

The Test Line Eraser/Inserter can either erase or insert a test signal into the vertical interval of a 625-line video signal. The erase/insert action operates on any combination of lines 14 to 21 and 327 to 334; the required combination is pre-selected by pluggable links. The PA1/560 Eraser/Inserter is contained in a portable carrying case and the PA1/561 version is mounted on a PN3/23 panel. Both versions are electrically identical.

Any of the three following modes of operation can be selected by a front panel switch:

DIRECT. Input connected directly to output. Mixed syncs and colour subcarrier reference are available at Musa sockets on the front panel.

ERASE. Active line period of the selected lines is blanked. Thus any previous signal including noise is erased.

INSERT. Either of two external inputs or the output of an internal generator, usually a GE4/546 Bar and Sweep Generator, is selected by a front panel switch and inserted into the active line period of the selected lines. Note that the inserted signals must be synchronised with the video input, and that synchronising pulses and subcarrier are produced at the synchronising outputs of the Eraser/Inserter for this purpose.

The Test Line Eraser/Inserter consists of the following units:

Sync Separator UN1/540

Burst-Locked Oscillator OS1/502

Stabilised Power Supplier PS2/93K (alternatively PS2/121K)

Video Switch UN9/577

Switching Pulse Generator GE2/583

Insertion Signal Trigger Pulse Generator GE2/581

Mixed Syncs, Field and Line Trigger Pulse Separator UN16/510

Bar and Sweep Generator GE4/546 (optional)

General Specification

Input and Output Levels (video)	1 V p-p
Input and Output Load Impedances	75 ohms
Sync Outputs	2 V p-p negative-going into 75 ohms
Subcarrier Output	1 V p-p into 75 ohms
Linearity	Better than 1%
Differential Gain	Better than 1%
Differential Phase	Better than 0·5°
Differential Black-Level Drift	Better than 3 mV
Crosstalk	Better than −50 dB
Spurious overshoots	Less than 10 mV
Operating Lines	14 to 21 and 327 to 344
Switching Period (each selected line)	Start: 9 ± 0·2μs after line sync leading edge End: 1·2 ± 0·2μs before line sync leading edge
Temperature Range	+2 to +40°C
Weight	PA1/560: 9 kg PA1/561: 8·6 kg

Circuit Description

Fig. 1 is a block-text diagram of the unit and Fig. 2 shows the back-wiring and back components.

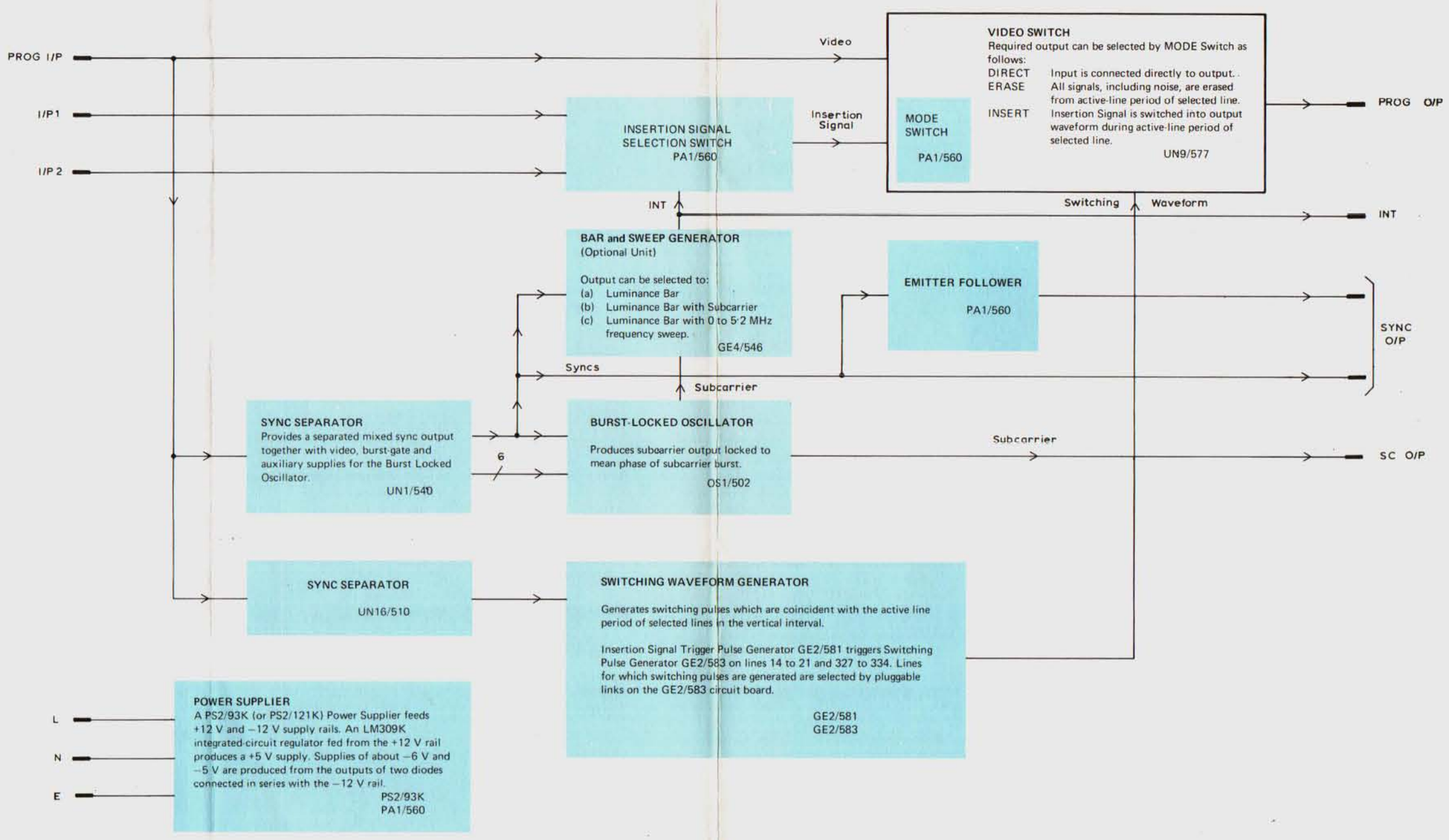
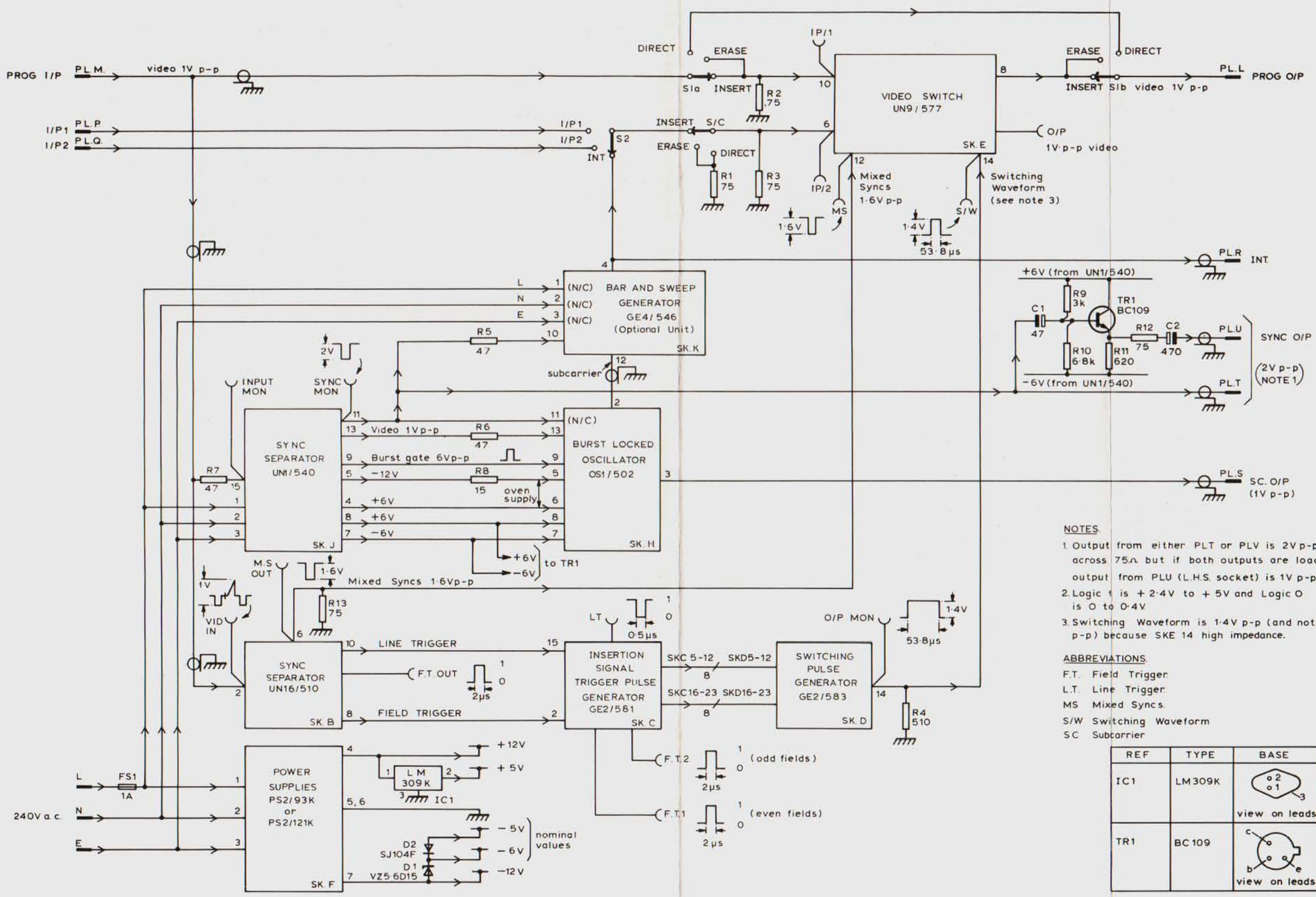


Fig. 1 PA1/560 Block-text Diagram



NOTES.

1. Output from either PLT or PLV is 2V p-p across 75Ω but if both outputs are loaded output from PLU (L.H.S. socket) is 1V p-p
2. Logic 1 is + 2·4V to + 5V and Logic 0 is 0 to 0·4V.
3. Switching Waveform is 1·4V p-p (and not 0·7V p-p) because SKE 14 high impedance.

ABBREVIATIONS.

F.T. Field Trigger.
L.T. Line Trigger.
MS Mixed Syncs.
S/W Switching Waveform
S.C. Subcarrier.

REF	TYPE	BASE
IC1	LM309K	view on leads
TR1	BC109	view on leads

Fig. 2 PA1/560 Wiring Diagram

PA1/560 Operational Procedures

Connecting the PA1/560 into a video circuit

1. Select the mode switch to DIRECT.
2. Break the video chain at the point where signals are to be either erased or inserted and feed the video signal to the PROG I/P socket. Connect the video output from the PROG O/P socket back to the remaining section of the video chain.

Note that the Eraser/Inserter DIRECT mode signal path is not affected by the removal of supplies and plug-in units.

Selecting the erase/insert lines

3. Withdraw the Switching Pulse Generator GE2/583 and select the required lines by the pluggable links on the circuit board.
4. Check that the BAR AMP link is selected to +0·7 V.
5. Restore the GE2/583 to the parent unit.

Erasing an incoming signal

6. Check that the PA1/560 is powered and then select the ERASE mode.
7. Observe the output waveform (O/P) of the UN9/577 Video Switch and check that all signals including noise are erased from the active line period of the lines selected in step 3.

Inserting an internally generated test signal

8. Select the required test signal output from internal test signal generator (usually a GE4/546 Bar and Sweep Generator) and observe that the selected output is present at the INT socket. Note that the output of the internal generator is not terminated in 75-ohms until the insertion-signal selection switch is selected to INT and the mode switch is selected to INSERT; therefore the observed signal will be twice normal amplitude.
9. Set the insertion-signal selection switch to INT.
10. Select the mode switch to INSERT.
11. Observe the output waveform (O/P) of the UN9/577 Video Switch and check that the inserted test signal is present in the active line period of the lines selected in step 3.

Inserting an externally generated test signal

12. Synchronise the output of the external generator with the video input of the Eraser/Inserter. The Eraser/Inserter provides outputs of syncs and subcarrier for this purpose.
    Note: A non-sync signal must not be inserted into a programme chain.
13. Connect the output of the external generator to either I/P1 or I/P2.
14. Set the insertion-signal selection switch to the corresponding position.
15. Select the mode switch to INSERT.
16. Observe the output waveform (O/P) of the UN9/577 Video Switch and check that the inserted signal is present in the active line period of the lines selected in step 3.

PA1/561 Operational Procedures

This unit is bay mounted and permanently connected into a video chain. The PROG I/P and PROG O/P sockets are retained on the front panel of unit as monitoring points for the video input and output: it is essential that these sockets are not loaded.

Operational procedures for PA1/560 from step 3 onwards apply to the PA1/561 as well as the PA1/560.

Maintenance Notes

To aid localisation, monitor point waveforms from each of the front panel monitor points are shown in Fig. 2. When the mode switch is selected to DIRECT any of the Eraser/Inserter plug-in units can be withdrawn without breaking the continuity of the video signal path. Detailed information for each plug-in unit is provided in this manual.