OPERATION

OPERATION

In this chapter it is assumed that the camera has been correctly adjusted in accordance with the instructions given in chapter 4 SETTING UP.
Chapter 4 should only be followed completely in the case of initial setting up and after replacement of one or more plumbicons.
For operation of the oscilloscope unit see file ACCESSORIES FOR STUDIO COLOUR CHAIN LDK3, which contains the Service Notes for this unit.
SURVEY OF CONTROLS AND LAMPS REQUIRED FOR OPERATION OF THE CAMERA AND THEIR FUNCTION (see Fig. 1).

1. Volume for headphones
2. Call switch with call lamp
3. Socket for headphones
4. On-off switch "production room"
5. On-off switch headset microphone
6. Switch for gray filters. "CLEAR" = normal (no filter), 1 = filter for two lens stops, 2 = filter for 5 lens stops, "CAP" = lens cap (0 % transmission)
7. Switch for coulour filters. 3 = no colour filters (studio operation), 5 = outdoor broadcast in sunlight, 7 = outdoor in sunlight with strong reflections, 9 = outdoor broadcasts with clouded sky
8. Master gain (for all the three channels)
9. "On air" light
10. Test switch: anti-clockwise - test signal in camera head
    clockwise - test signal in MATRIX unit
11. Red signal for monitor: anti-clockwise - no signal
    clockwise - red signal
12. Green signal for picture monitor: anti-clockwise - negative green signal
    clockwise - positive green signal
13. Y and blue signal for monitor: anti-clockwise - Y-signal
    clockwise - blue signal
14. External signal for monitor: anti-clockwise - Extern 1, cannot be mixed with R-G-B-Y
    clockwise - Extern 2, can be mixed with R-G-B-Y
15. Master black level: controls black level in all the three channels
16. Iris
17. Remote control. When depressed operation is possible from remote control panel.
18. Colour bar. Feeds colour bar signal to built-in encoder; camera signal is then disconnected.
19. Operate switch
20. Standby switch
21. Off switch
22. Pilot lamps indicating power supply or deflection failure

For next numbers see Fig. 2

30. Microphone switch headset
31. On-off switch for illuminated red ring round lens
32. Dim switch for lamps near viewfinder
33. Switch for script lamp underneath viewfinder
34. Red signal for viewfinder, also see 39
35. Green signal for viewfinder
36. Blue signal for viewfinder, also see 39.
37. External signal 1 for viewfinder, cannot be mixed with R-G-B-Y; therefore these signals are disconnected.
38. Peaking switch for viewfinder image
39. Switch R, B or Y, E; Position up: red and blue signals can be selected; position down: Y-signal is selected with red button and Extern. 2 with the blue button. Ext. 2 can be mixed with R-G-B-Y.
40. Call switch with call lamp
41. Hooks for script
42. Volume headset
43. Contrast viewfinder image
44. Brightness viewfinder image
45. Focusing viewfinder image
46. Zoom indicator (focal distance)
47. "On-air" light
48. "Call" light
49. "On air" light
50. "On air" light
51. Headphone jack
52. Additional audio line
53. Additional audio line

A. SWITCHING ON

Check that the cable length compensation switch (VIDEO IN module of CCU) is in the correct position.
Press button STANDBY. The lamp in this button lights up.
Lamps POWER-FAILURE-SCAN will start flashing. These lamps are located on the control panel and the REMOTE modul in the CCU. When these lamps extinguish the camera is ready for operation.
Now press button OPERATION and the camera will become operative.
If the camera is not to be used, but should remain switched on (for example during a break), press button STANDBY.
In position STANDBY the aperture of the lens is closed and the +300 V for the camera head and the hour counter are disconnected. However, should the camera remain fully operative and should only the lens be covered, control GRAY FILTER should be set to position "CAP".
The light-path in the camera is then interrupted so that no lights falls onto the prism and the plumbicons. When the camera is to be used for broadcasting again, GRAY FILTER

should be set to position "CLEAR".

B. READY FOR USE

Two minutes after switching on the camera can be used for trial shots. After five minutes the camera is ready for broadcasting.

C. SELECTING THE IMAGE ON THE VIEWFINDER AND THE BLACK-WHITE MONITOR

During normal use it is recommended to select the Y-signal or the green signal for monitoring. The red and blue signals are used only for adjusting the registration.
On the cable compensation unit in the camera a switch is fitted. The mid-position is for camera cable $\leq$ 300 m.
Furhermore, there is a position for 600 m and one for 1000 m

will become one lens stop more insensitive and the point at which the plumbicons become overstabilised at the 100 % level will be closely approached (the plumbicons have an over-beam of one stop).
When the gain is set to +6 dB, the camera becomes one lens stop more sensitive, but the signal-to-noise ratio will then deteriorate.
If at a small aperture (F/22 for Angénieux 10x8 lens), the light level is still too high, a GRAY FILTER should be switched in with the switch on the control panel.
In position 2 the attenuation of the light corresponds to two iris stops, in position 3 to five iris stops (this applies to the standard version of the camera).
When the light level is considerably reduced, first set the GRAY FILTER switch back to position "CLEAR" and then re-adjust IRIS.
When with the aperture fully opened the output signal is still too low, set GAIN to +6 dB. At higher light levels first set GAIN back to 0 and then adjust IRIS.

D. SIGNAL SELECTION ON THE OSCILLOSCOPE UNIT

During normal operation select either the R-G-B signals or the C-signal for display on the oscilloscope unit (C = encoded signal). When R-G-B is selected set the INPUT switch on the oscilloscope unit to position B.

E. REGISTRATION AND COLOUR REPRODUCTION

If required, the registration of the camera can be checked after five minutes. If a registration error occurs this will usually be a matter of a horizontal or vertical shift of one of the pictures. Check these registration errors with the aid of the -G signal.
The registration procedure is described in section 0 of chapter 4, SETTING UP.
Check the colour reproduction with the aid of a gamma test chart and a colour monitor. If necessary gamma adjustment can be effected in accordance with section T of chapter 4, SETTING UP.

F. IRIS AND GAIN CONTROL

By means of the iris the output amplitude of the camera chain is kept at 100 % on the oscilloscope unit. The signal should lie between 0 and 100 %. In the case of an encoded signal with sync. the max. amplitude is 140 % (-40...+100 %).
It is not necessary that the three signals R, G and B simultaneously reach the 100 % level; this is only the case with a uniform white surface. In the case of coloured objects, the signals will have different amplitudes; in such a case adjust the largest amplitude to 100 %. Normally, the gain control is not required for this. When the gain is set to -6 dB, the camera

G. MATCHING OF TWO OR MORE CAMERAS

If two or more cameras have to be matched, the should first be adjusted individually by means of the same test pattern and under the same conditions (colour temperature etc.).
Then eliminate the remaining deviations. For this use one camera as a reference (called camera 1 in the following).
Proceed as follows:

1. Apply the green gamma-corrected signal of camera 1 (one of the G1 outputs of camera 1) to input G-REF of the oscilloscope unit of camera 2.
2. Set the INPUT switch of the oscilloscope to position B. Select the green and the G-REF signal on the oscilloscope. These two signals coincide on the screen.
3. Adjust green gamma, master black and aperture of camera 2 so that the gray stops of the two signals exactly co-incide. This should also be the case with the black levels and peak white. The white stops can be equalised with the aperture control.
4. Now make the red and blue channels of camera 2 identical to green, which usually means that the red and blue gamma will have to be re-adjusted.
5. Repeat the same procedure for camera 3 etc. using camera 1 as reference.

H. ADAPTATION TO A VARIATION IN COLOUR TEMPERATURE

A slight variation in colour temperature can be compensated for by adapting the video gain with the individual GAIN controls. In such a case, never change the green gain. This is because

this would affect the sensitivity of the camera, which may result in a poor signal-to-noise ratio or a reduced sensitivity.
For large variations in colour temperature, first select the appropriate colour filter. In the standard version of the camera the colour filter switch has the following positions:

3 = transparent glass; for studio operation with colour temperature of approx. 3200 ^{o}K.
5 = outdoor broadcasts in sunlight
7 = outdoor broadcasts with sunlight and strong reflections from e. g. water and chromium-plated objects.
9 = outdoor broadcasts with clouded sky.

Now set the individual GAIN controls to the mid-position.
Adjust the green signal to 100 % with APERTURE.
Then make the white amplitude of red and blue equal to that of green with the aid of the red and blue GAIN controls.
If necessary, readjust PULSE COMPENSATION for red and blue.
For adaptation of the colour temperature do not use the R and B controls on the MATRIX module.

J. GRAY FILTERS

In the standard version of the camera the GRAY FILTER switch has for positions:

position "CLEAR" = transparent glass, 100 % transmission
1 = gray filter, 2 iris stops
2 = gray filter, 5 iris stops
"CAP" = closed off, 0 % transmission

Position "CLEAR" is for normal operation, position "CAP" serves for interrupting the light path e. g. when adjusting PULSE COMPENSATION.
Positions 1 and 2 can be used to attenuate the light in cases that the lens aperture is nearly closed and the light level is still too high. Another application is when a large aperture (e. g. F/4) is required at a high light level. The light is then attenuated by the gray filter.
This may be necessary in view of the depth of focus.

K. CUEING AND TALKBACK FACILITIES

The cameraman can be called with the aid of light signals, by repeated depression of the call button on the control panel.
The cameraman can do the same with the call button on the camera head; the call light on the control panel will then start flashing. The camera head is provided with two jacks for the intercom and two for additional audio lines.
The additional audio line may for example, be used for a broadcast microphone.

L. ON AIR

When the chain is "on air", the red pilot lamps on the camera head and the control panel will light up. The lamps illuminating the red ring round the lens can be switched off with push-button F at the back of the camera.

M. DIMMING SCRIPT

The lights "call" and "on air" near the viewfinder and the zoom indicator illumination can be dimmed with switch D at the back of the camera head. The script lamp can be turned on with button S.

N. REMOTE CONTROL

When switch REM. CONTROL on the control panel is not depressed, the camera is operated from the control panel.
When the switch is depressed (lamp in button lights up) operation is only possible from the remote control unit.
Changing over is only possible when the remote control unit is connected. The functions which can be remote-controlled are divided into three groups, viz.

Group 1	Group 2	Group 3
	Stand by - off	off
iris	cont. on-off	colour bar
individual video gain		master video gain
master black	individual black levels	gray filter
Ext. 1 selector		colour filter
		gamma selector

O. UTILITY SOCKET

On the right-hand side of the camera a socket is provided.
To this socket the local mains voltage can be applied via the terminals at the rear of the CCU. The max. load current is 2 A.

P. GETTERING

When the camera has been inoperative for more than one week, it is recommended to getter the plumbicons.
This is because there is a chance that gas traces are released in the plumbicon, which will then combine with the getter.
Before the camera is switched on, the beam current switches on the registration panel should be set to position i = 0.
Subsequently, switch on the camera with button STANDBY and

leave the camera in this position for approx. 15 minutes. Then set the beam current switches back to their normal positions and put the camera into operation.

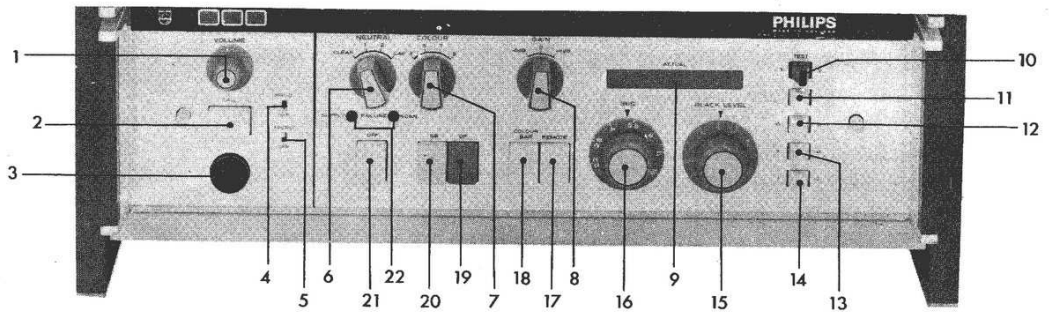

PHILIPS
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Fig. 1

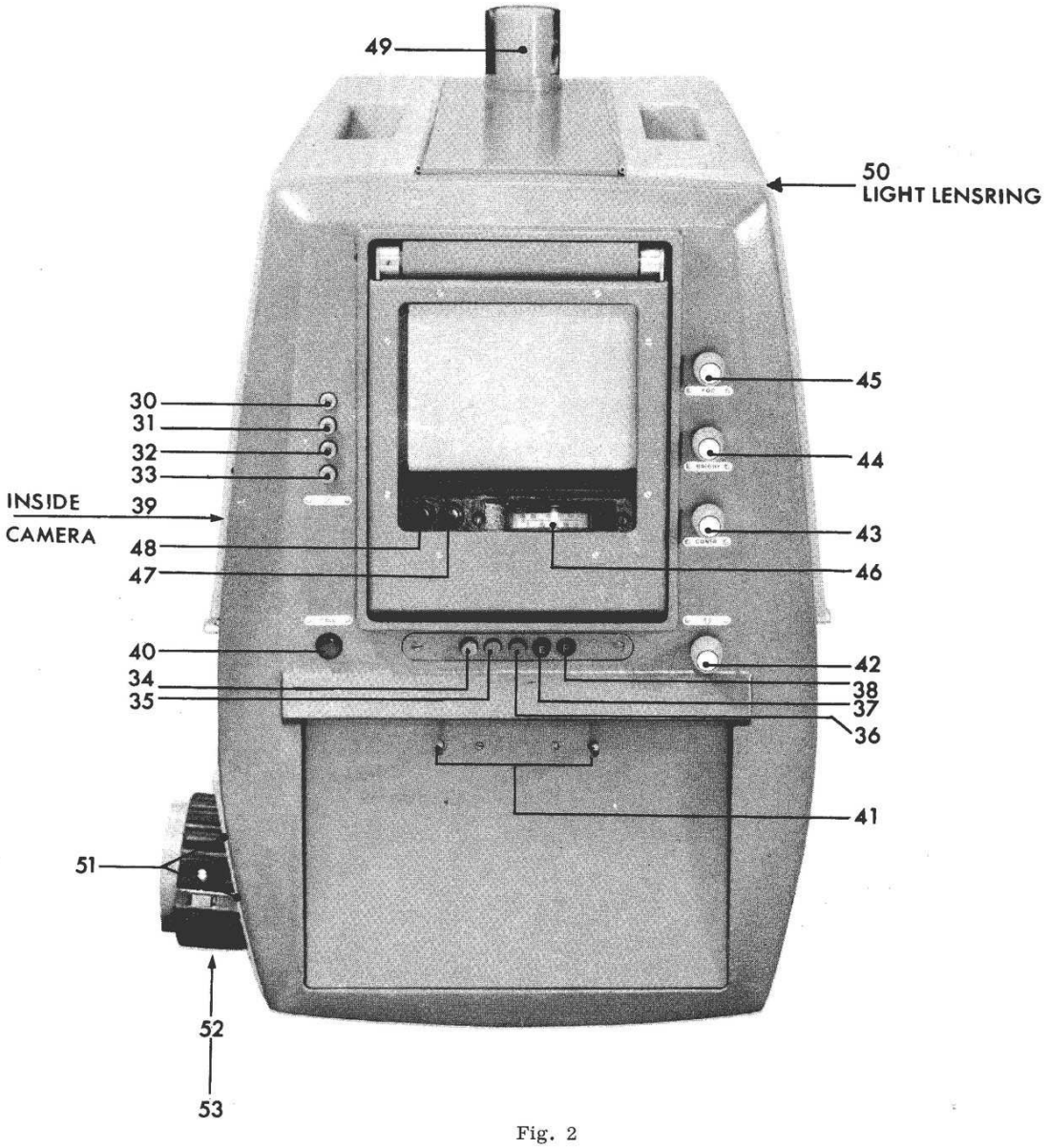

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LIGHT LENSRING
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Fig. 2