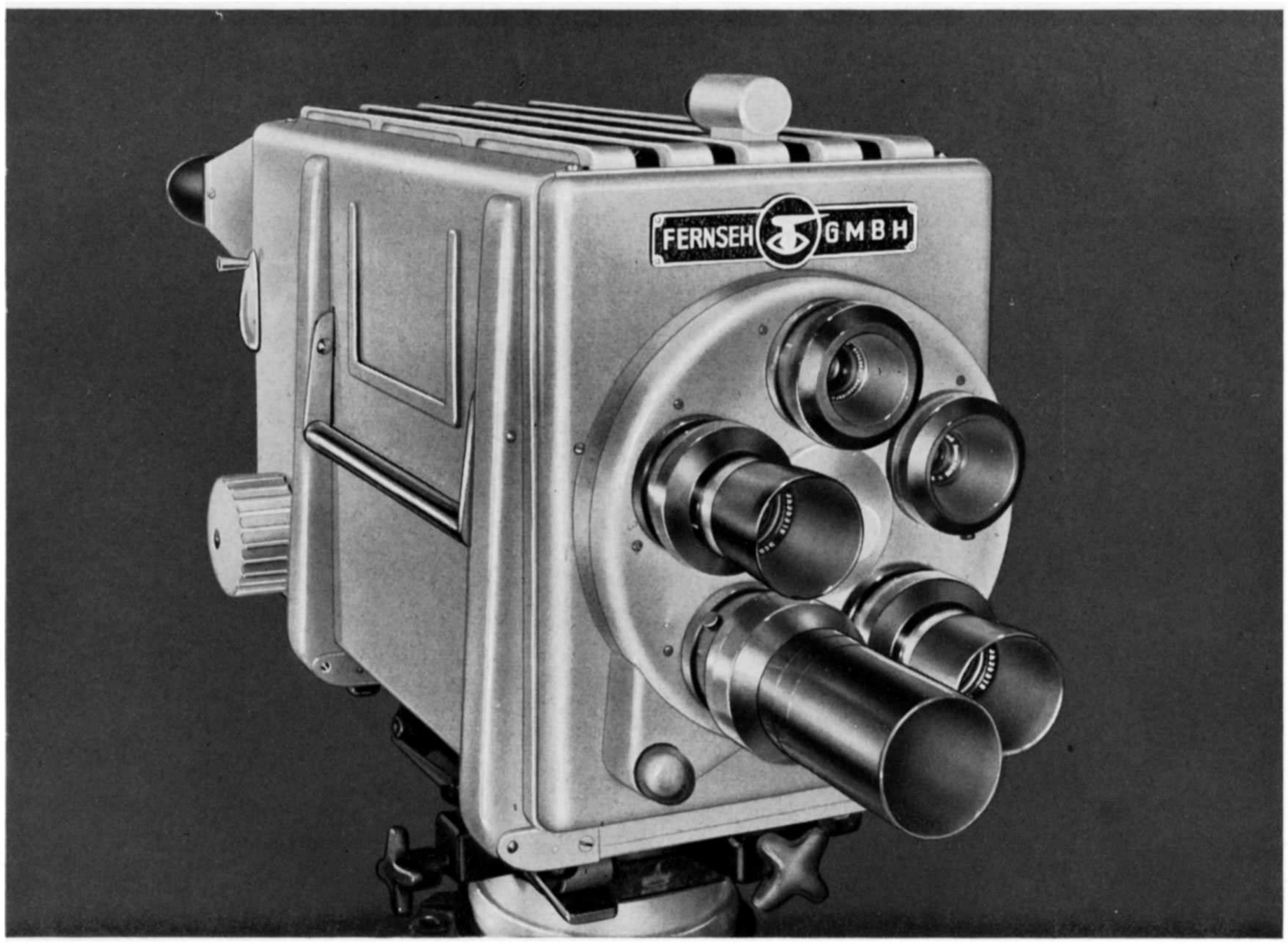
Camera Chain KJA 125 with Rieseliko

(Photo-Electrically Stabilized Iconoscope)

The Rieseliko-Camera is especially suitable for television pickup in the studio and provides pictures of particularly high quality. Full resolution over the entire picture field, low noise level in the picture signal and the high contrast obtainable for the natural reproduction of all half-tones allow the transmission of scenes which would normally only be suitable for the film studio. It may be employed without detrimental "halo effect" for the production of special lighting effects.



Rieseliko Camera KKJe 100

The construction of the apparatus is suitable for studio use. The camera is easy to control, robustly built and of relatively light weight. The amplifier desk presents the assembled controls in an arrangement which has been found convenient in many hours working. The whole of the electrical functions are controlled from the desk, so that the cameraman can devote himself wholly to his task of aiming the camera.

The complete camera chain consists of the **Camera** with Rieseliko, the **Camera Control Unit** with **Monitor** and the necessary cables.

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Advantages:

1. Excellent gradation of the transmitted images, highest contrast, no "halo effect".
2. High and constant resolution over the entire picture field, electrical aperture corrector, distortionless picture geometry.
3. No spurious signals, very low noise level.
4. Ready for use two minutes after switching on.
5. Built-in illumination meter.
6. Five-way lens turret with mounting for test projector, simultaneous remote control of the iris diaphragms of all lenses.
7. Small size, light weight, ready access to all controls.

Camera KKJe 100

a) **Optical Equipment**

The lens turret carries four mountings for objective lenses of different focal length and one mounting with contacts for a test projector, in which a lens may equally well be fitted.

The test image projected on the photocathode by the test projector serves both for the adjustment of the correct position and size of the raster traced by the scanning beam and for inspection of the picture sharpness and picture geometry.

Lens Changing is effected by rotation of a crank at the right hand side of the camera. Each full rotation of the crank causes a change to the next objective. An indicator at the back of the camera shows the cameraman the immediate position of the lens turret as well as the focal length of the objective. The turret position can also be remotely displayed by an instrument. This instrument may be placed at any suitable position, e. g., at the control desk.

The **Fine Focus adjustment** is made by a knob on the right side.

The **Diaphragms** of the four objectives are constantly coupled together and may be remotely controlled from the Camera Control Unit by a small motor. Resetting of the iris after a lens change is therefore unnecessary. Alteration of the iris setting may be either slow or rapid, as is advantageous in case of a sudden, large change in light intensity.

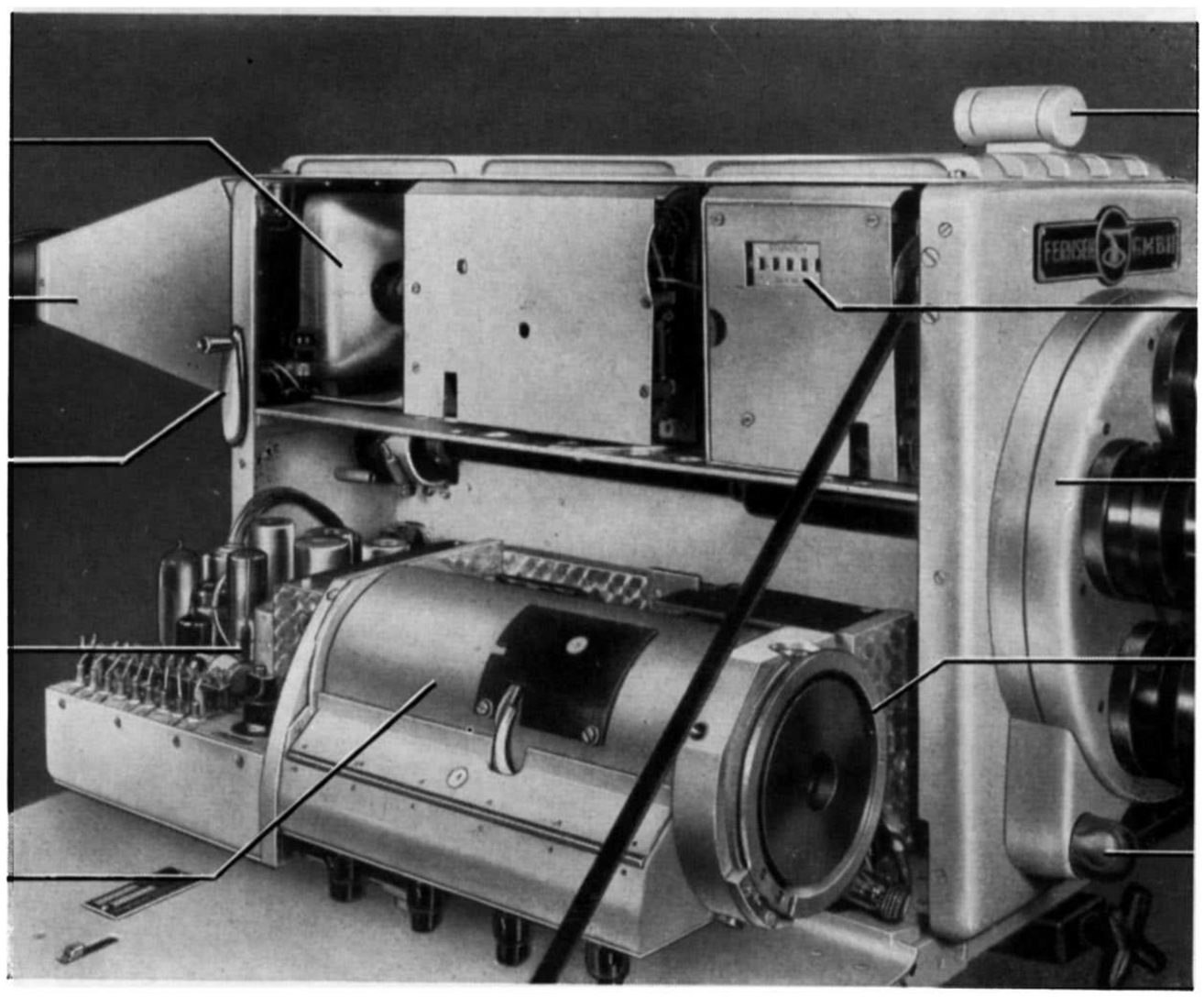
b) **Viewfinder**

The camera is equipped with an electronic viewfinder, which forms a self-contained unit. Brightness and contrast may be adjusted by the cameraman at will. The picture size (90 x 120 mm) is so chosen that at the physiologically correct viewing distance (visor length 300 mm) the line structure of the scan can still be observed. In this way the cameraman is enabled to make an exact judgement of the focus setting. The visor is adjustable about a horizontal axis. The picture signal for the finder is taken from the output of the camera amplifier; the finder therefore shows the true output picture.

c) **Electrical Equipment**

The camera employs as **pickup tube** the Rieseliko IS 9/12, a photo-electrically stabilized Iconoscope developed by Fernseh GmbH. The Rieseliko is a further development of the super-iconoscope and possesses the advantage that the spurious signal is practically abolished by flooding the storage target with slow electrons; in addition, the sensitivity may be increased above that of the super-iconoscope.

The **preamplifier** in the camera receives the picture signal delivered by the Rieseliko. The input arrangement of the five-stage preamplifier is so chosen that the noise level is as low as possible and microphonic interference is avoided. The last stage serves as matching valve for the camera cable, through which the signal is led at a suitable level to the Camera Control Unit. In addition to the preamplifier, the camera also contains the stage for blanking the beam flybacks and the deflection generators, as well as an automatically operating beam trigger which in practice trips if a deflection generator fails.



Camera KKJe 100, Amplifier and Rieseliko swung out

d) **Mechanical Arrangement**

The camera is relatively small and light. All components are mounted on chassis which can easily be swung out and can also be readily removed by releasing a single fastening. The Rieseliko itself is contained in a completely preadjusted cartridge, which can also be easily interchanged. The cartridge guarantees exact optical adjustment and also the important electrical preadjustments for the Rieseliko. In interchanging cartridges some easily accessible controls for adjustment of the picture field and the potential field in front of the target need to be re-adjusted, which is very easily done with the built-in test projector.

The camera may be carried by two appropriate, collapsible side handles. An hour counter for the pickup tube is included.

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Camera Control Unit with Monitor KVs Je 125

In the locker part of the camera control unit is accommodated the whole of the gear for operating the camera chain, main amplifier, pulse generator and monitor, connection board for all cables, in addition the desk carries the control and supervisory instruments. The power packs for the camera, amplifier and monitor are so stabilized that supply voltage variations and transients may range from −10 % to +5 % of the nominal voltage without any marked influence on the picture or on the output level.

At the control desk all the operating conditions for the camera may be adjusted to their optimum values. Two instruments serve for the supervision of important operating values (iris diaphragm, illumination of the photocathode). All controls and adjustments are arranged in full view. An hour counter for the Camera Control Unit is built-in.



Camera Control Unit with picture and wave form monitor KVs Je 125

a) **Main Amplifier**

The main amplifier includes further clamp controls for suppression of low-frequency interference as well as a control for stabilizing the flybacks, which allows the black level to be controlled as desired, either from the flyback potential or from the darkest area in the picture. In the latter case the automatic adjustment is taking place so slowly that no interferences in the picture can be observed. The main amplifier includes an aperture corrector designed as cosinus equalizer without phase shift. Adjustable compensation for the cable attenuation is also provided. This compensation, in conjunction with the matching delay-time corrector, is suitable for cables 50, 100 or 150 metres long.

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A blanking stage serves for blanking the picture signal at a constant level and is at the same time so arranged that the signal is sharply limited at about 1.3 times the normal signal level, so that overloading of the subsequent amplifiers may with certainty be avoided. Output stages are provided for the blanked out picture signal (BA) and for the composite video signal (BAS) for connection to a monitor.

b) **Pulse Generator**

The pulse generator delivers all the impulses necessary for the operation of the scanning and blanking generators accommodated in the camera. It serves also to generate the blanking and clamping pulses required for the amplifiers.

c) **Monitor EOv 31**

Over the control desk at eye level is arranged the picture monitor and the waveform monitor. The monitor picture has a size of 193 x 257 mm, so that the quality of the camera picture may be judged without difficulty.

The waveform monitor includes an amplifier which has a wide frequency range and is practically free from overshoot. The large oscillogram (height 60 mm) in conjunction with a specially well-focused oscillograph tube with post-acceleration permits an accurate estimation of the signal waveform and level. A cursor is provided to show the correct signal level and may be adjusted either way by a control knob. The sweep frequency may be chosen for examination of either the horizontal (line) or vertical (frame) waveform. Three different picture signals, looped through filters, can be applied alternatively to the Monitor.

The three possibilities are used for control of the black level, the BA-output and the BAS-output.

Signalling and Talk-back Arrangements

Suitable green lamps on the back of the camera and also in the viewfinder indicate that the camera is ready for use. On the front, immediately next to the working objective and on the top of the camera as well as in the viewfinder are placed red lamps to let the cameraman and the actor know that the camera is on the air. The lamp on the frontside may be switched off.

On the control unit are likewise arranged a red and a green lamp, these are to be switched at the same time with the corresponding signal lamp on camera and mixing desk by means of the latter.

Additionally, a blue-yellow signal system is provided between camera control unit and mixing desk.

To provide a speech link from the camera head to the control desk the camera is provided with connections for microphone and headset. The loudness of the telephones is adjustable and the microphone may be switched off. It is also possible at the Camera Control Unit to superimpose on this speech link the associated sound transmission.

Stands, Cables

There is a vast range of possible requirements as to the stand. Normally a tripod will be offered, but adaptors can be provided for attachment of our camera to special stands and dollies.

The **camera cable Ko - 11 - 8 c** connecting Camera and Camera Control Unit contains 3 coaxial tubes with a surge impedance of 60 ohm, 3 high-tension leads and 20 wires for signalling and controlling. The cable is attached to the Camera and to the Control Unit by special terminals of outstanding quality. The cable has an outer diameter of 19 mm; the smallest radius of curvature is 200 mm. The cable can be used up to a length of 300 m.

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Technical Data

Dimensions:

	Camera KKJe 100 (without stand, without objectives)	Camera Control Unit KVs Je 125
Height	410 mm	1200 mm
Width	330 mm	720 mm
Depth	545 mm	1005 mm

Weight:

about 45 kg — about 172 kg

Mains Input:

220 V $^{+5\%}_{-10\%}$ 50 c/s about 8 A.

Picture Scanning: according to CCIR Standard
625 lines per picture, 25 pictures per second
Single interlace, aspect ratio 3 : 4

Camera KKJe 100

Optic:

Lens turret with five lens mounts, normally fitted with mounting for test projector. There are a great number of suitable lenses available with focal lengths between 28 and 150 mm, i. e., horizontal picture angles between 32° and 6°, and in particular

Designation	Numerical Aperture	Focal Length	Horizontal Picture Angle
Xenon	2,0	28 mm	32°
Xenon	2,0	35 mm	26°
Xenon	2,0	50 mm	18°
Xenon	2,0	75 mm	12°
Xenon	2,0	100 mm	9°
Xenotar	2,8	150 mm	6°

Illumination:

Minimum illumination of scene for full control of pickup tube:
For aperture 2.0 and a reflectance of 50 % in the brightest parts of the viewed scene for a contrast of 1 : 100 — 500 Lux
Optimum illumination of scene for aperture 2.8 — 1500 Lux
Maximum reproducible contrast — 1 : 300

Viewfinder: picture size: 90 x 120 mm

Camera Control Unit KVs Je 125

Input:

Horizontal (line) Impulse (H)
Vertical (frame) Impulse (V)
Blanking Signal (A)
Synchronizing Signal (S)
} —4 V_{pp} at 75 ohms

All the inputs are taken through filters which allow the passage of the cable without disturbing the connectors.

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Output:

One blanked picture signal (BA)	+1 V_{pp} at 75 ohms
One composite video signal (BAS)	+1.4 V_{pp} at 75 ohms

Amplifier Characteristics:

Frequency Range	7 Mc/s ± 1 dB	With aperture corrector disconnected
Overshoot	< 10 %	
Overshoot Frequency	> 7,5 Mc/s	

Limit of fully phase-corrected frequency range
(0 dB to 5 Mc/s, 26 dB attenuation at 6 Mc/s. Symmetrical overshoots 6 % at 5 Mc/s.)

Overall Characteristic:

A 5 Mc/s bar pattern is reproduced, at the picture centre 100 % of the black-to-white transition

Signal-to-noise ratio in the video signal:

The signal-to-noise ratio is defined as the ratio of the amplitudes of the black-to-white transition and the noise voltage in white picture areas.

Measured for full output of the Rieseliko IS 9 mm/12 without aperture correction with an upper frequency limit of 5 Mc/s.

for the **peak value** of the noise	> 22 dB
for the **r. m. s. value** of the noise	> 37 dB
visible signal-to-noise ratio, allowing for the noise spectrum	> 42 dB

Black Level Control:

The black level may be selectively controlled either by the darkest points of the scene or by the flyback potential of the Rieseliko.

Geometry:

At no point in the picture is the departure of the actual geometry from the ideal geometry greater than ± 2 % of the line length.

Monitor

Picture Monitor:

Picture size	193 x 257 mm
Contrast	up to 1 : 100
Brightness	up to 400 Apostilb

Wave form Monitor:

Oscillogram size 60 x 110 mm

Sweep frequency
5208 1/3 c/s (H/3) and 16 2/3 c/s (V/3)

Amplifier Characteristic of the Monitor:

	Video Amplifier	Oscillograph Amplifier
Frequency Range	7 Mc/s –2 dB	7 Mc/s –3 dB*)
Overshoot	< 5 %	< 2 %
Overshoot frequency	> 7 Mc/s	> 10 Mc/s

*) By means of a push-button the frequency response can be brougth exactly to 0 dB.

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