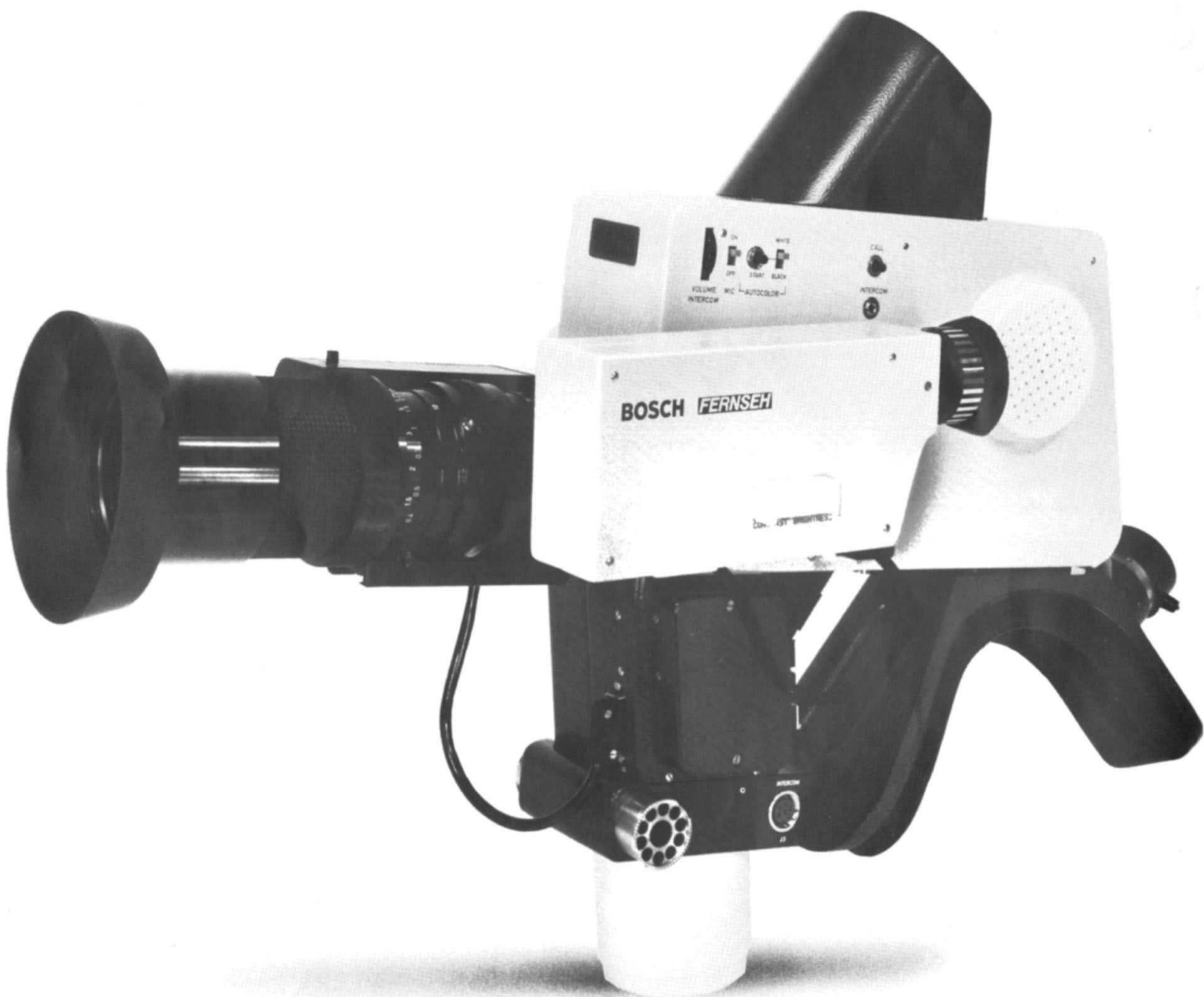# KCN 92

The Portable Production Color Television Camera for Studio Quality Pictures.

KCN 92.
made with a hand-

Dynamic pictures held television camera.

In the past, hand-held pictures with extreme mobility of the camera were possible only with film cameras. Television pictures had to be made with relatively cumbersome cameras mounted on tripods, which greatly limited the camera team's radius of action.

With the new portable production camera Model KCN 92 produced by Bosch, the principle of operating independent of a power line, a studio, or a remote van has now been introduced into mobile television production. If desired, however, this exceptionally mobile color camera can also be employed in conjunction with a larger system.

The KCN 92 offers the possibility of making dynamic television pictures using electronic technology, a function which can not be carried out with larger, less manageable cameras. This camera covers all areas of use in modern TV technology, from mobile reporting of current events to production on a tripod.

Introduction of this new portable production color camera, Model KCN 92, a camera designed especially for outdoor operation independent of a power line, thus represents an additional step forward in Bosch's continuing program to expand its product line in the field of advanced color television equipment. This camera meets all requirements placed on a production unit for programs of current interest. Hand-held pictures easily made in full studio quality. Optimum processing basis for the video signal. No loss of time between shooting and transmission – instantaneous coverage with the KCN 92 is always ensured.

Interlocked Operation
In order to solve a television photography problem it is often necessary to use portable cameras, which can be carried quickly from one location to another, interlocked with tripod-mounted cameras. In these cases as well (as shown here in use during a reception at an airport), the new KCN 92 developed by Bosch can be used successfully because it can be easily included in large multi-camera systems (O. B. vans, studios).

KCN 92. Independent.

The portable production camera Model KCN 92 produced by Bosch was designed as a completely independent, very compact camera unit. This concept has resulted in important new characteristics of the KCN 92 and opens up much more widely differing fields of use than offered by comparable camera systems today.

The camera operates independent of the power line. (Operation from a power line is also possible, however.) The battery-powered processor is carried by the cameraman or by an assistant.

The KCN 92 is a portable production camera, although as an alternative it can also be operated on a tripod.

The camera operates automatically. However, it can also be operated individually – locally or by remote control.

It is light, convenient to handle, and simple to operate. The camera head was designed for comfortable carrying, and the operating controls are logically arranged.

In comparison with other similar cameras, the KCN 92 is distinguished by exceptionally high electronic stability. When electronic values are once set, they remain constant without having to be readjusted.

Widely differing situations are encountered when reporting current events. In many cases, this dictates joint use of a portable television camera together with the large cameras in the mobile van. The KCN 92 is designed so that it can be connected at any time through a base station to mobile and stationary TV systems.

When a recording on site in studio quality is required, the KCN 92 can be connected by cable to a video recorder (for example the BCN 20 produced by Bosch, which can also operate independent of a power line). For the case of direct transmission – for example, from a helicopter – a two-way link line replaces the VTR. Using this line the video signal is transmitted to the studio or transmitter, and the sync information is sent in the opposite direction to the camera.

Versatile.
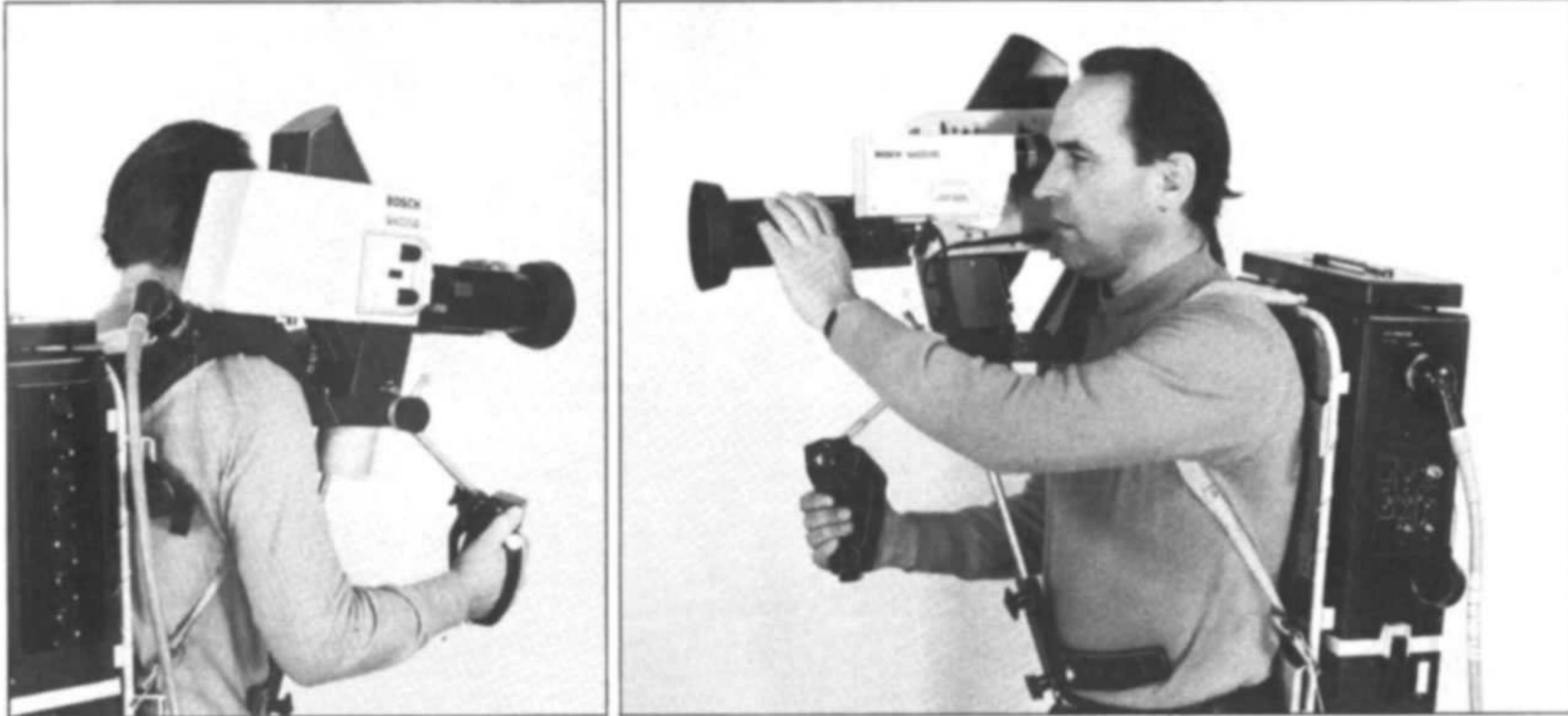
KCN 92, battery operated.
The camera head rests comfortably on the cameraman's shoulder, thus resulting in wide freedom of movement in situations where only hand-held camera operation is possible. The associated electronic circuitry, the KCN processor, is carried in a backpack.

Remote control of a video recorder.
The remote control section, by means of which the VTR (for example the BCN 20) is controlled, is mounted in a convenient position on the camera handle.
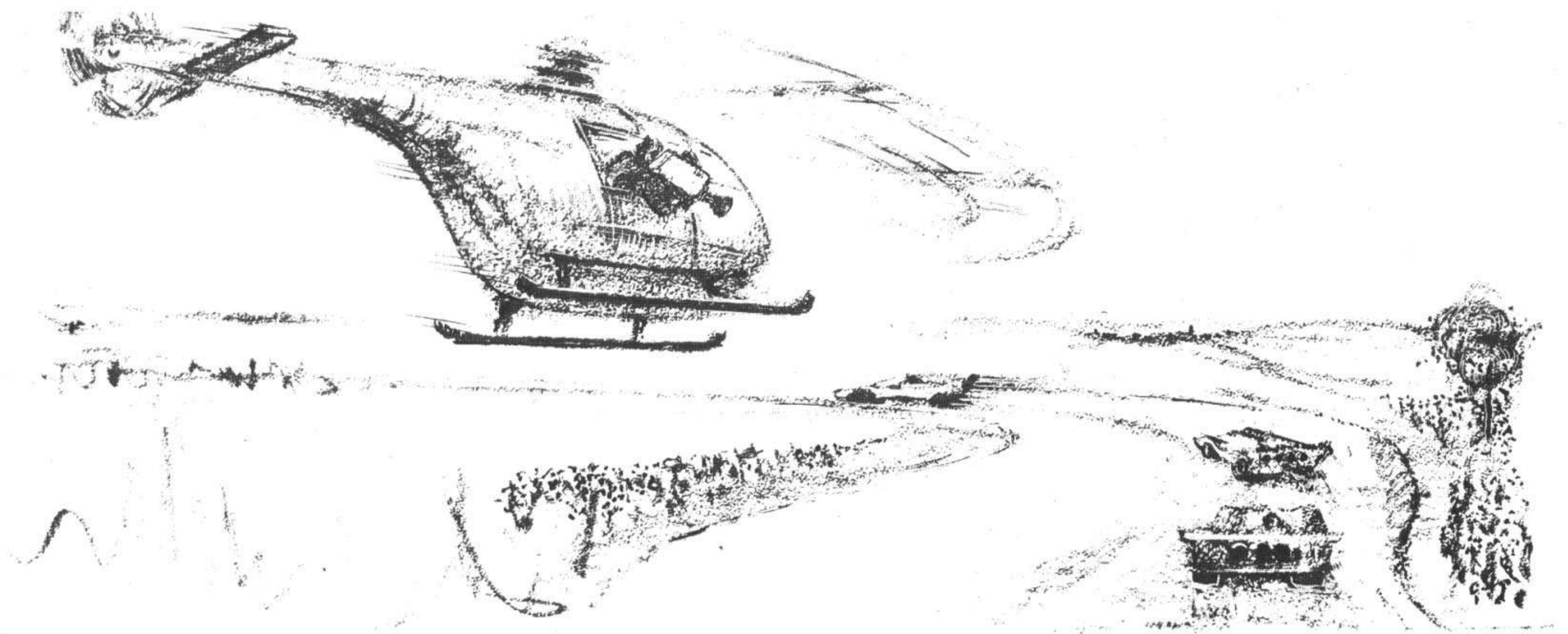
Dynamic Pictures
Special situations demand that exceptional measures be taken by the camera team. Situations which previously could only be recorded with film cameras can now also be photographed and recorded using electronic technology. The new KCN 92 camera produced by Bosch, and designed for operation independent of a power line, provides dynamic pictures in full broadcast quality in all field situations – as shown here, for example, during coverage of an automobile race from a helicopter.

KCN 92. Special advantages and

Flexible range of use.
Can be operated either from batteries or from the power line. Portable (reporting current events), but also operation on a tripod.
Pictures of studio quality.
Completely independent recording system with VTR or link – but can also be operated through a base station with larger systems.
Convenient operating features.
Light weight, convenient handling.
Automatic operation – but can be also controlled individually, either locally or by remote control.
Tiltable, easily interchangeable viewfinder.
Very simple operation resulting from automatic iris control and b/w balancing.
Overload indicator (zebra) during manual or automatic control of iris with variable peak or mean level reference.
Controls on camera for remote operation of video recorder.
Connection of a larger viewfinder monitor possible (tripod operation).
High quality.
High electronic stability.
High light sensitivity.
Good signal/noise ratio with optimum resolution.
Good color reproduction fidelity.
Exceptional long-term stability.
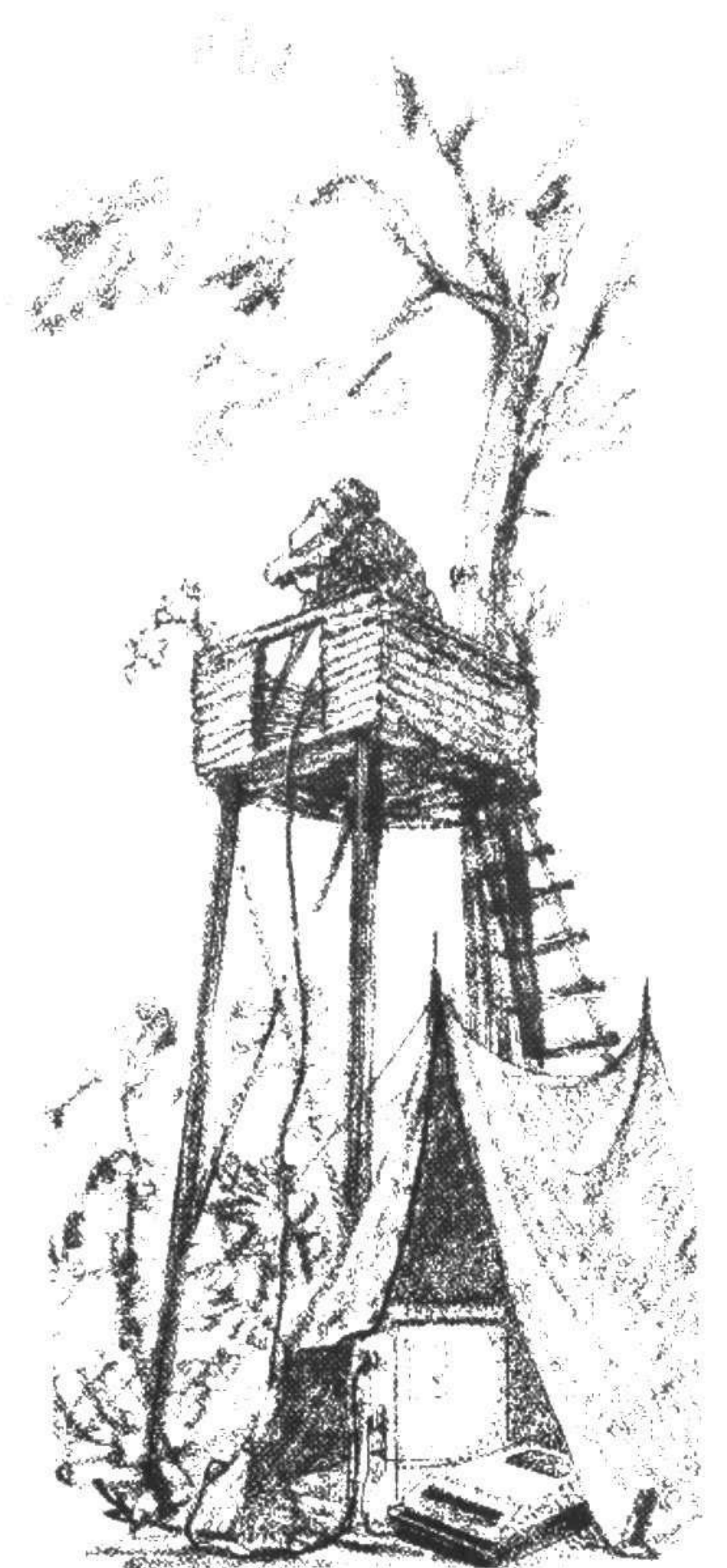
Completely Independent Photography and Recording System
Observation of wild animals in their natural habitat is one of the most interesting but at the same time one of the most difficult assignments for a cameraman. In such cases the compact KCN 92 – BCN 20 System produced by Bosch demonstrates its capabilities. Usable in a small space, very portable, and battery powered, it operates so quietly that wild animals will never notice it. Remotely controlled, the recordings can be made directly in full broadcast quality.

for production, operation, service.

BCN 20

KCN 92. Modifications with
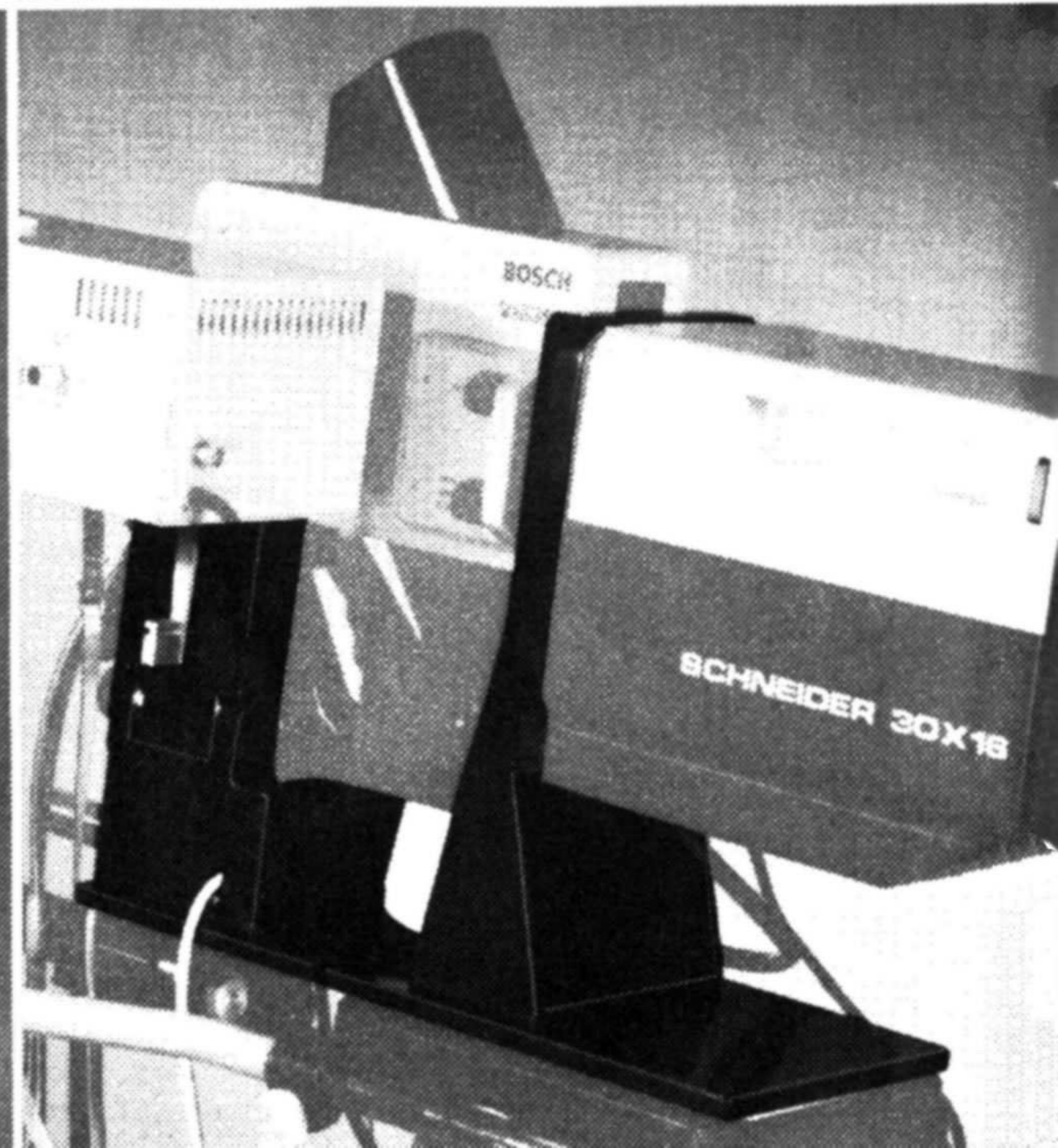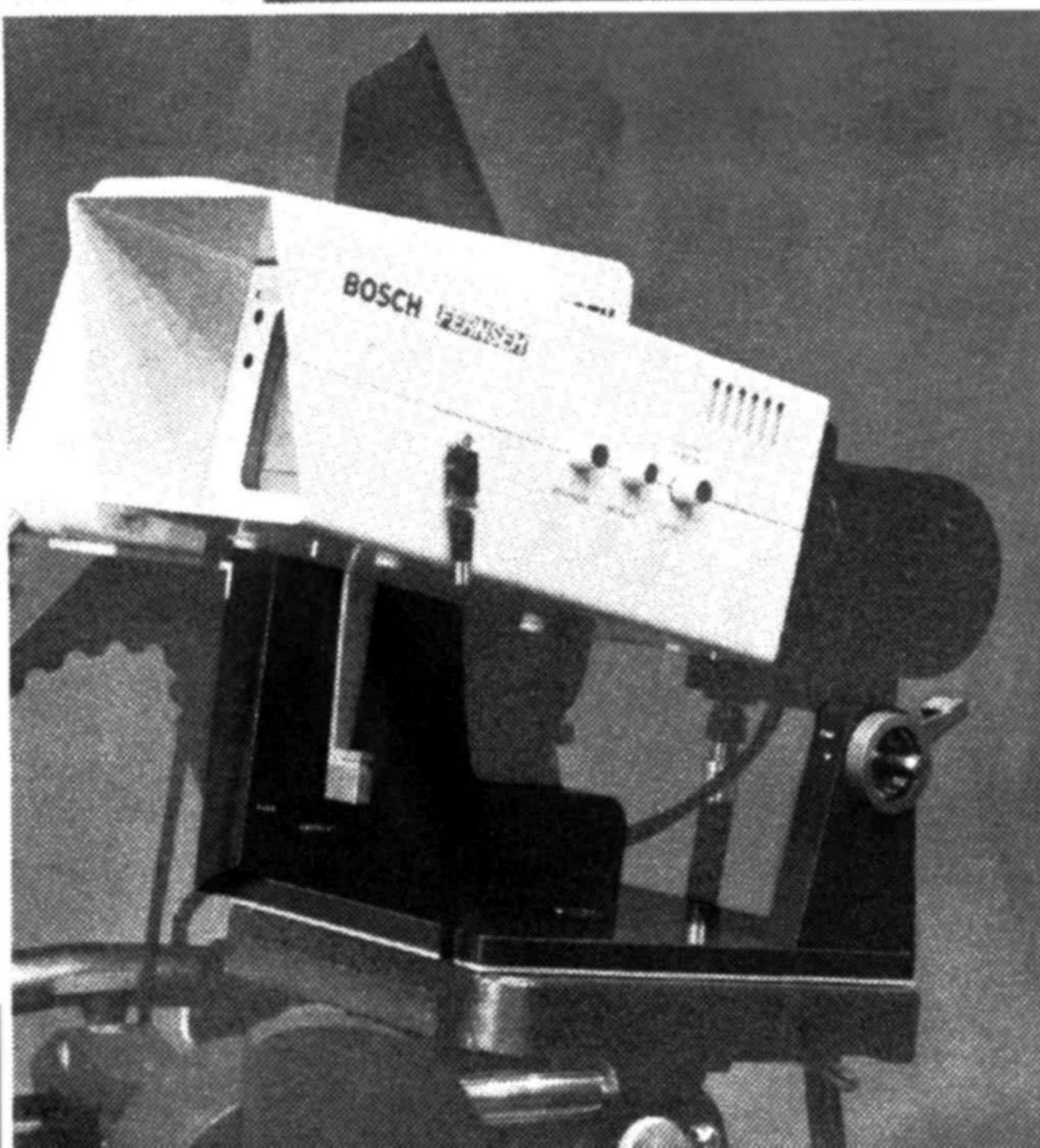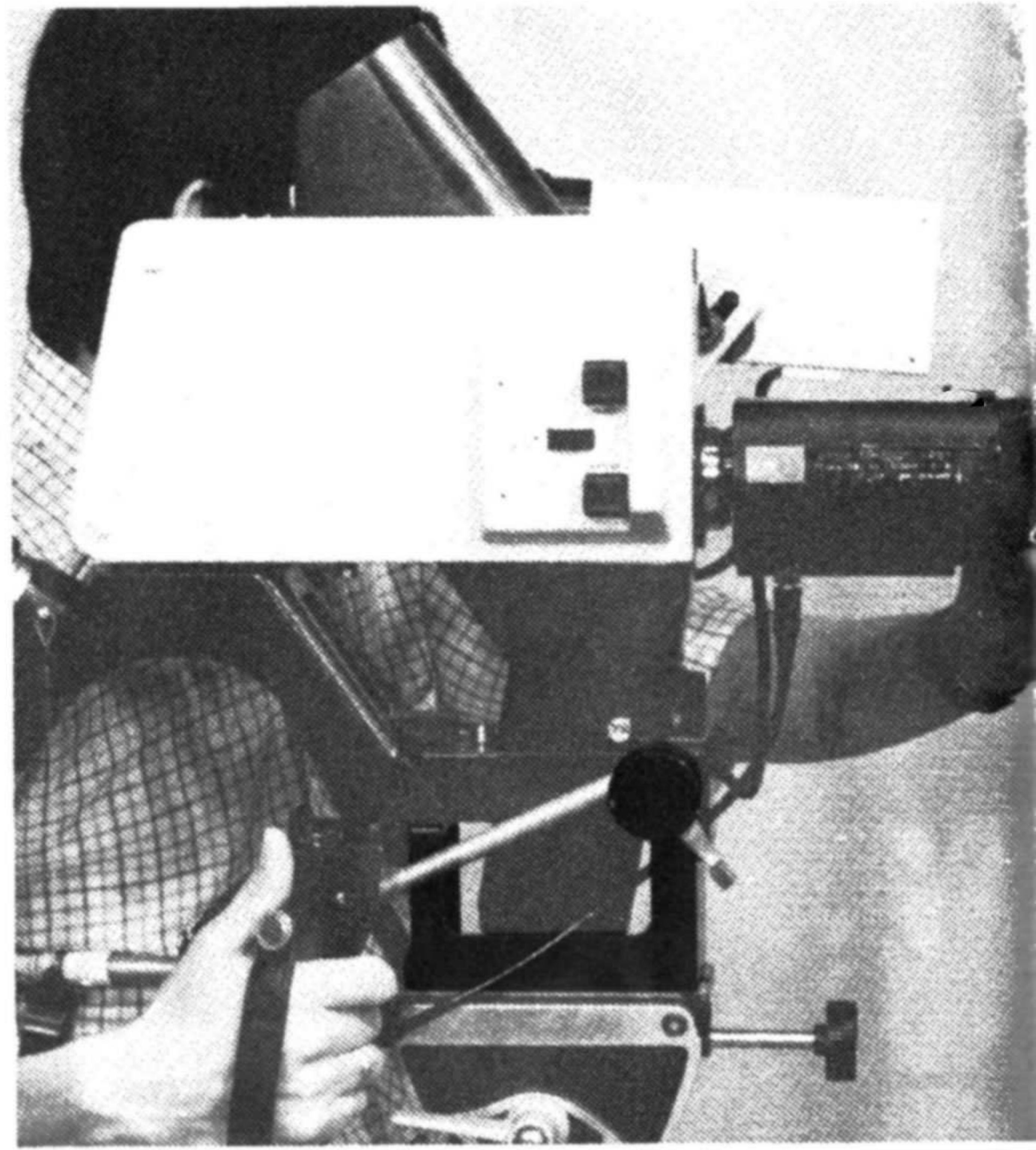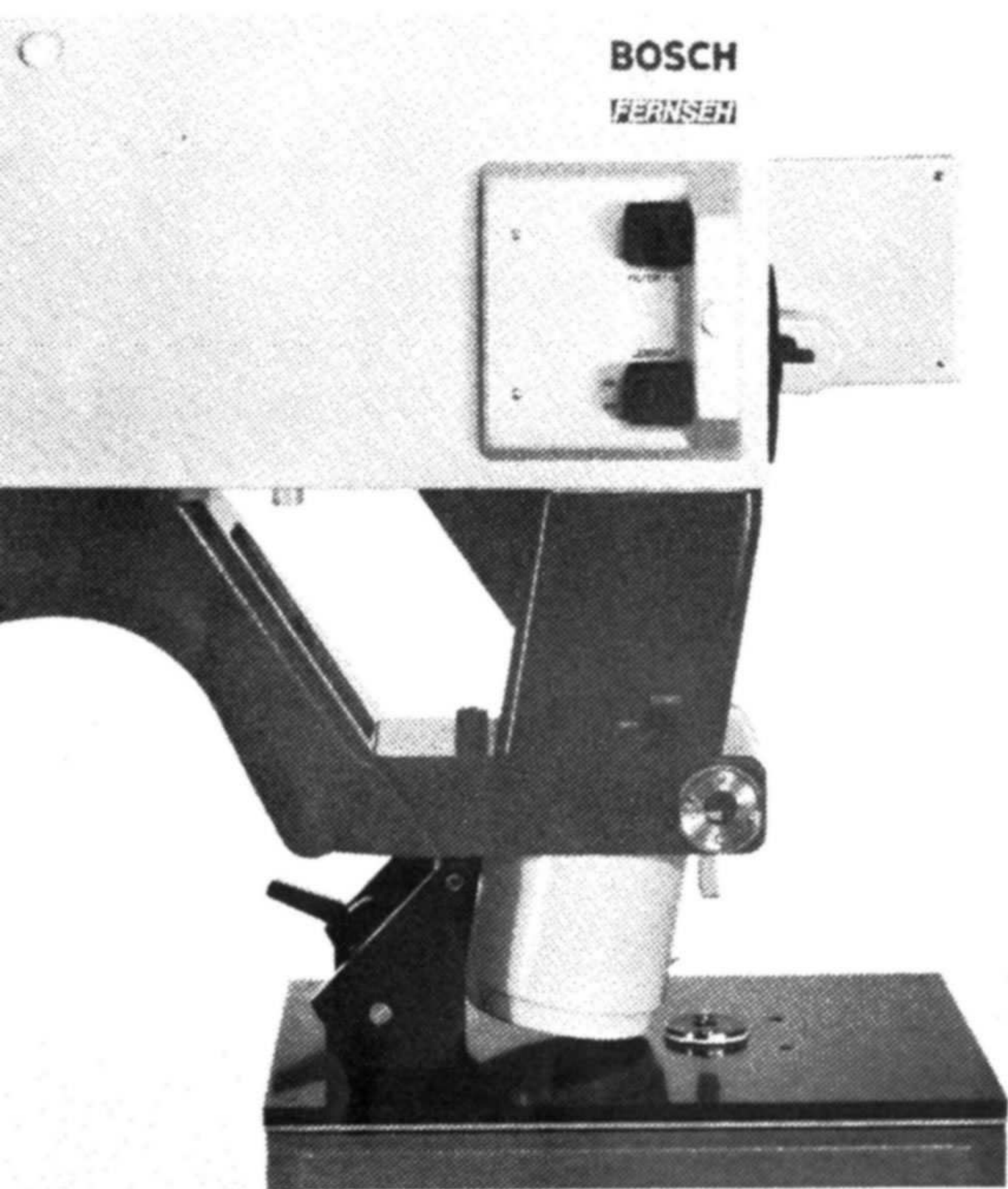
various tripod adapters.

The portable production camera Model KCN 92 can also be operated on tripods, and as a result modifications with respect to the selection of the viewfinders and lenses are possible.

While the small viewfinder and the small lenses can generally be attached directly to the camera, the large viewfinder and the large lenses can be connected to the camera only through separate tripod adapters.

Four characteristic camera configurations are possible with these adapters:

for service purposes.

for small viewfinder and lenses up to 4 kg.

for large viewfinder and lenses up to 4 kg.

for large viewfinder and large lenses.

Extreme Mobility
Rapid changes from scene to scene can only be made with an extremely mobile camera such as the KCN 92 produced by Bosch.
This camera remains fully flexible even with a heavy lens on a large tripod. Here the example of use for coverage of figure skating is shown: the KCN 92 in power-line operation with remote control of a video recorder (BCN 20).

KCN 92 System.

Optional Accessories
(Alternatives see list, Page 19)

Testprojector K-119

10 × 16 0-116

10 x 17 0-101 . . .

10 × 15 0-133

10 × 12 0-134

7 × 11 0-140

6 × 18,5 0-130

Close up lens
0 . . .

Testcharts
K-800

Weather cover
Head K-125

Plumbicon-Set
K-120.02

Plumb. Simulator
K-128

Interface
KCK

Camera Head
K-120.01

Head Without Plumbicons

Cam. Cable 2,2 m

K-120.03

Cam. Cab

Waistband
K-127

Color Camera Chain KCN 92

15 × 12,5 0-110

20 × 17 0-107

Service Adaptor
K-120.04

Pedestal-Adaptor
K-120.04

Viewfinder Cable
1,5 m   K-129

Weather Cover K-118

Light Hood K-118

Lenses

30 × 12,5 0-109

Okular
K-129

1,5 m

Viewfinder
K-118

30 x 16 0-105 . . .

Pedestal Adaptor
K-120.04

30 × 26 0-111

Pedestal Adaptor
K-120.04

Transport Case
Head K-120.08

CCU-Trolly
K-126

Standard Accessories

Support
2112 030 100

Extension
Board Cam.
0112 030 100

Earphone
0112 260 000

Headset Cam.
3119 100 078

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Ordering information.

Weather cover
CCU K-125

V-Aperture K-120.08
Encoder K-120.06
Sync. Gen. K-120.07

CCU
without
V-Aperture
Encoder
Sync. Gen.
without
Power supply

CCU K-120.05

le 15 m

Monitoring

GRK 486/49

M 24 BA | P 14 0S
| P 4 ES 9

Connection
Cable

Service Panel
K-124

3 m

BCN 20-Remote Control II (without Video)
max. 200 m K-123

VTR-Operation

(BCN 20)

LINE-
Operation

(Mixer, VTR,
Link. Monitor)

Video Cable

max. 15 m

BCN Remote Control I K-123 (incl. Video)

max. 200 m

Video Cable

Video
Equalizer
H-004,
H-020

Battery — Charger

Power supply K-120.09

220/110 VAC

Power supply K-120.09

Base-Station
K-122.01

Reporter-
Micro

Cam. Cable
max. 200 m
K-122.02

Video-
Equalizer
K-122.02

Conn. Cable
max. 150 m
K-122.02

Joystick
K-122.02

Unipulse

Subc.
Blank.
Sync.
Burst Flag

Unipulse (FASK)
Encoder

From
Sync. Pulse
Gen. (ICTG)

Camera Remote Control
and Genlock Operation

Transport case
CCU K-120.010

Sparepart
Kit K-121

Backpack
2112 460 027

Extension
Board CCU
0113 276 800

Headset CCU
3119 100 072

Color camera head
Maneuverable, maximum

In situations where only hand-held camera operation is possible, this camera head, which rests comfortably on the cameraman's shoulder (design: E. Slany, DID), offers wide freedom of action.

The features of the camera head designed to match it to the cameraman's body – – shoulder pad, support, backpack – can be replaced individually.

The position of the electronic viewfinder, designed as an independent attachable unit, can be adjusted in three planes and thus conveniently matched to the height of the cameraman's eye. The cue lights are fitted inside the viewfinder hood.

For purposes of more convenient communication, the microphone was also built into the camera so that only a light, one-sided headphone must be carried.

For the maximum possible operating convenience, all controls on the camera are grouped logically together. Above the viewfinder and easily visible are the operating buttons to control the automatic b/w balance. The operating buttons for the three-stage filter wheel as well as for a separate mechanical lens cap mechanism are located within easy reach on the right side of the camera head. Using these controls, the cameraman can adapt his camera quickly and easily to varying operating parameters such as the changing intensity and color temperature of the scene light.

Remote control of VTR: the VTR system is operated from a control section integrated into the camera handle with the functions of forward, play, record, and rewind.

The KCN 92 can be fitted with different lenses – from the fixed-focus wide-angle lens to the 30-x zoom lens. These lenses can be easily interchanged (by means of a fast-acting lock). The iris can be controlled either manually or automatically. All prominent producers of lenses supply lenses for this camera.

The camera head and the processor are normally connected by a cable 2.2 meters long. A 15-meter cable can also be used for this purpose, however, if the backpack is to be set on the ground or carried by a second man.

This camera head is also used in the same design in the Model KCK-R camera; here, the camera head is connected to a fixed camera control unit through the portable backpack electronics.

Color camera head KCR
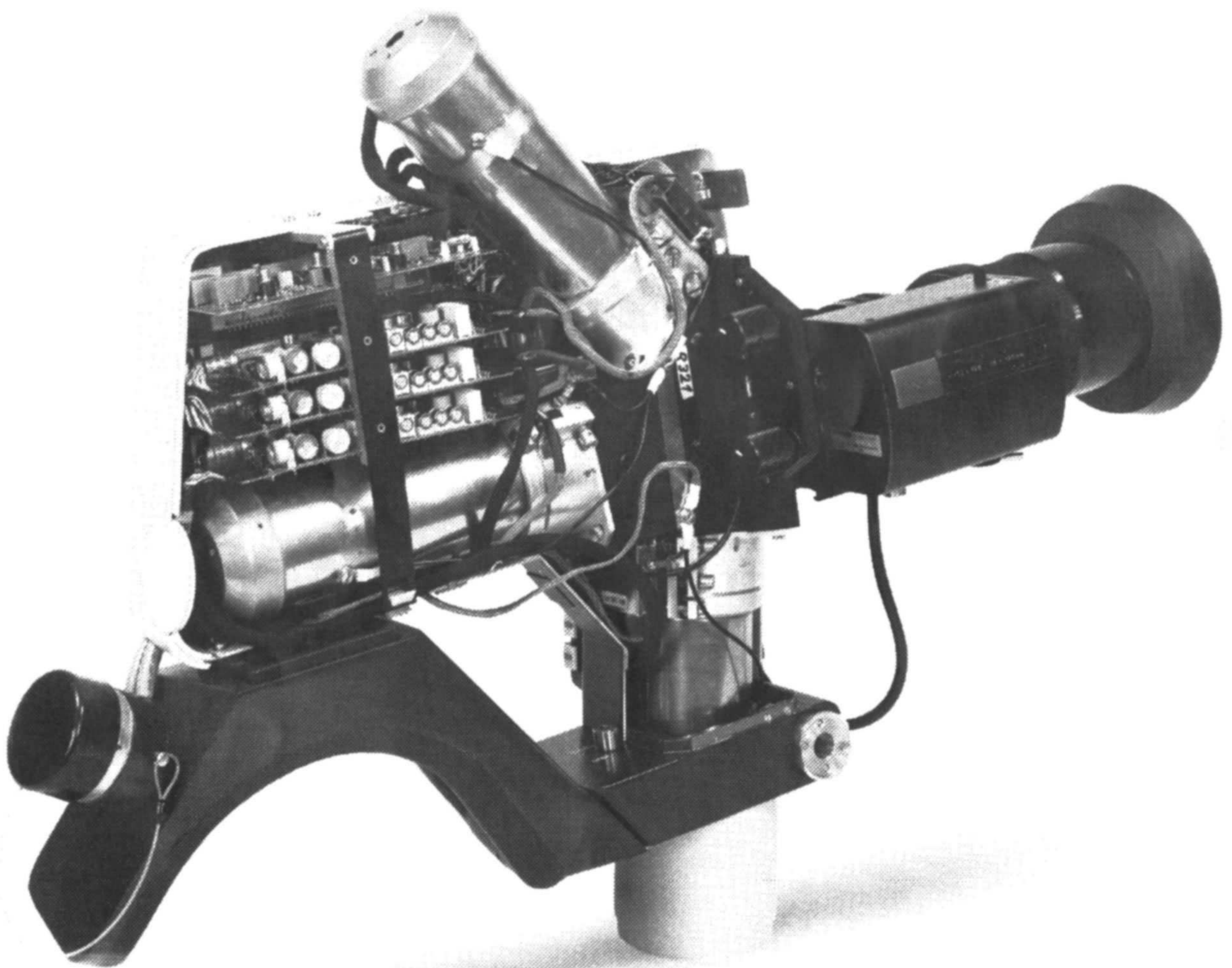
A look inside the camera.
Both sides of the camera can be swung oper for servicing.

PK 9B. Inside the camera.

The color splitting prismen in the camera is provided with the same dichroic layers as the splitter in the KCK studio camera. It therefore guarantees the same color quality.

The KCN 92 operates with three one-inch Plumbicon® tubes, one of which can have increased sensitivity in the red. In the KCR PK 9B2 camera head, Plumbicon® tubes with ACT (anti-comet-tail) are used.

Completely new coil systems were developed in order to arrive at an especially light weight. In addition, a new type of focusing coil is used which results in higher resolution with the minimum landing error.

The three preamplifiers are − as a result of a new type of circuit technology − distinguished by especially small dimensions and light weight together with an improved S/N ratio and extreme black level stability.

The housing of the color splitter and the three coil systems form a single mechanical unit.
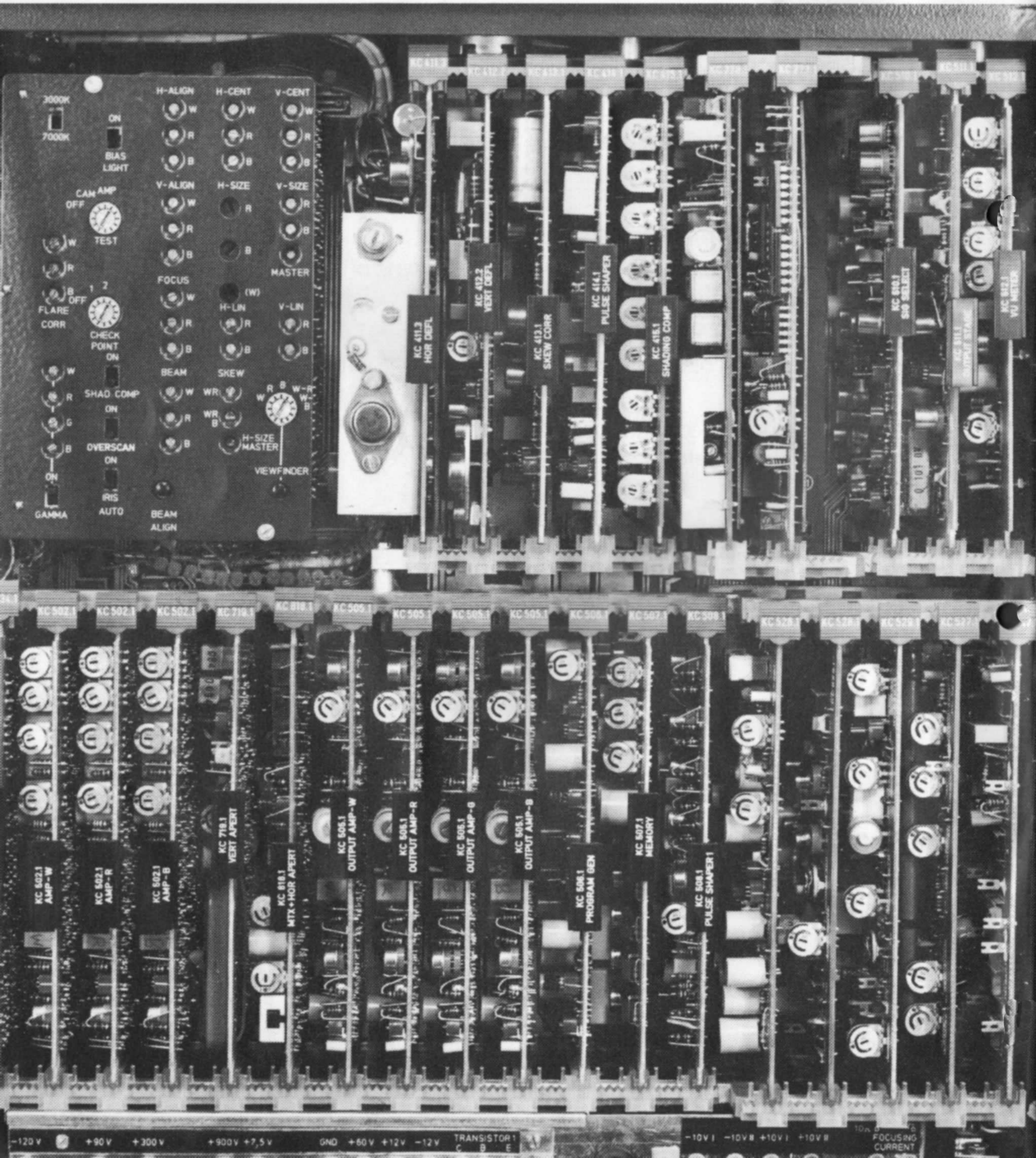
Components for intercom and signalling, as well as the circuits for ACT and bias light operation (if these features are included) are also contained in the small camera housing.
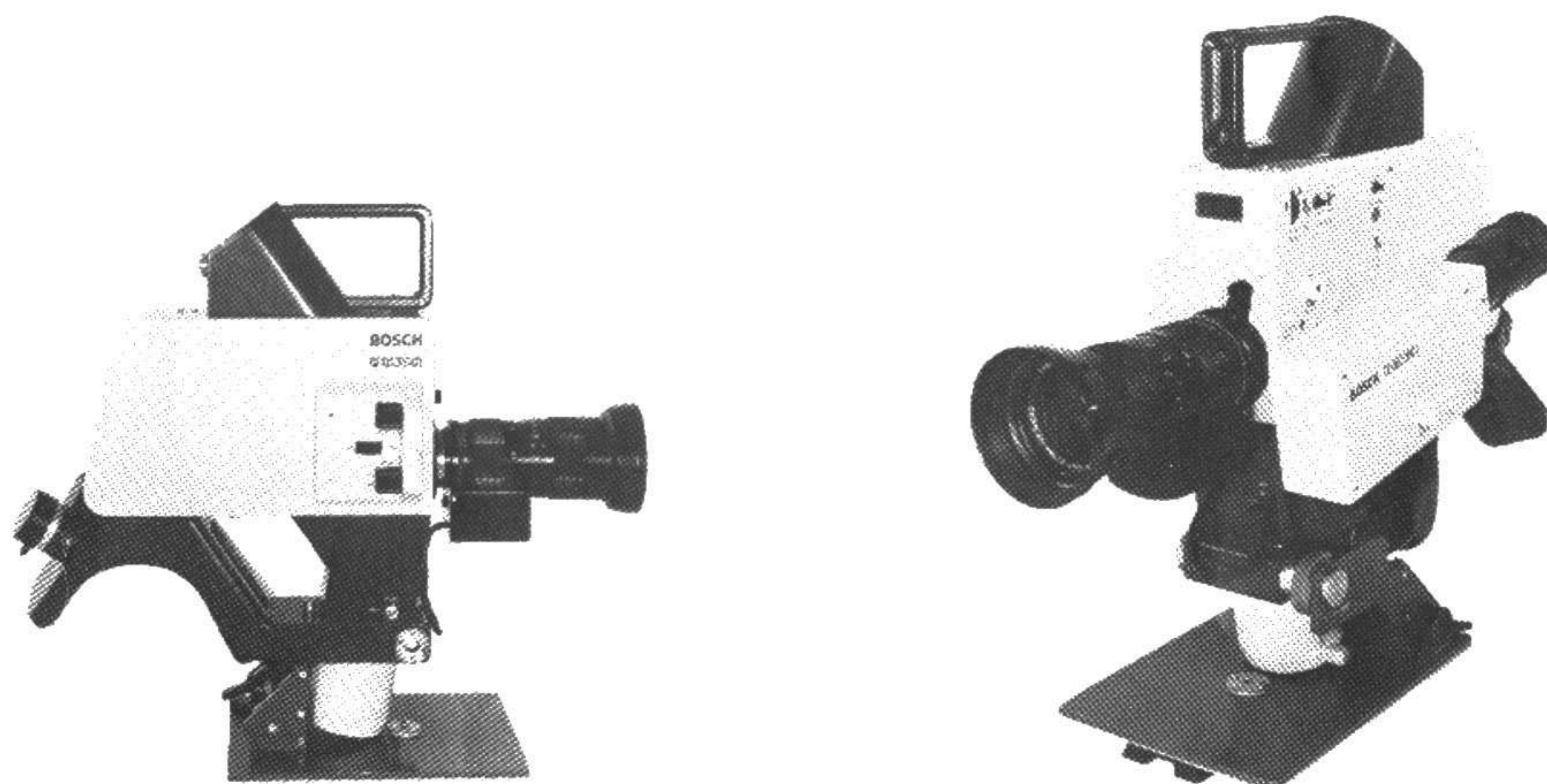
Last Minute Information
The KCN 92 will be delivered from now on with a handle as shown in the pictures above.

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KCN processor KCN PV 9B.

The independent processor.

The KCN processor is a miniaturized, compact, and independent processor. In this unit are the following components: camera electronics, encoder, color bar generator, H and V aperture corrector, as well as the sync generator or FASK demodulator.

All functions necessary for operating the camera such as b/w balance, iris control, etc. are actuated by the cameraman and controlled independently by automatic circuits. Controls for these functions are located on the camera head.

The processor input amplifier has three channels for white, red, and blue, and it permits the sensitivity to be switched in six steps between −6 db and +9 db.

Stages following the input amplifier are the AGC amplifier, shading compensators, gamma amplifiers, white level limiter, as well as the horizontal and vertical contour correctors.

A linear matrix derives the luminance, red, green, and blue (Y, R, G, B) signals from the white, red, and blue inputs. As a result, optimum color mixing curves are set electronically with this matrix.

The advantageous separate luminance principle makes it possible to control the color camera similar to a b/w camera and reduces possible residual registration errors by a factor of at least 2.

Encoding into any color system (PAL, PAL-M, NTSC, and SECAM) is possible. The built-in encoder is designed to be especially compact, and contains an electronic color bar generator for test purposes.

The processor can be easily serviced. Clear arrangement of the plug-in circuit board system. Good accessibility of all components.

A look at the electronic circuitry.
Easy servicing of the KCN processor results from clear arrangement of the plug-in circuit board system and good accessibility of all components.

Ordering

Item	Description	Unit Type	Order Number
	Color Camera Chain KCN 92		
K-120.01	camera head for all standards with electronic viewfinder and standard accessories	KCR PK 9 B 1	0 105 740 000
alt.	camera head for all standards with bias light and for ACT operation with electronic viewfinder and standard accessories	KCR PK 9 B 2	0 105 750 000
K-120.02	plumbicon set or	XQ 1070 G/B XQ 1075 R	0 920 100 000
	plumbicon set for ACT	XQ 1080 G/B XQ 1085 R	0 920 510 000
K-120.03	camera cable 2.2 m long or	Kz 24/2	0 794 730 400
	camera cable 15.0 m long	Kz 24/2	0 794 730 200
K-120.04	pedestal adaptor with 3/8" fixing for camera head with 1 inch viewfinder and lenses up to 4 kg suitable for service		2 105 380 710
alt.	pedestal adaptor with wedgeplate and 3/8" fixing for camera head with 1 inch viewfinder and lenses up to 4 kg suitable for service only		2 105 380 430
opt.	pedestal adaptor with wedgeplate suitable for camera head with 6 inch viewfinder and lenses up to 4 kg		2 112 410 030
opt.	pedestal adaptor with wedgeplate suitable for camera head with 6 inch viewfinder and heavy lenses of Schneider	K UO 9 R	0 112 960 000
K-120.05	CCU (basic device) incl. H-contour corrector and standard accessories	KCN PV 9 B	0 113 270 000
K-120.06	encoder PAL version NTSC version PAL-M version SECAM version	KC 591.1 KC 494.1 KC 859.1 KC 787.1	0 113 274 100 0 113 274 800 0 113 276 000 0 113 275 400
K-120.07	sync. pulse generator PAL version	KC 802.1	0 113 272 600
alt.	NTSC version	KC 780.1	0 113 273 100
alt.	PAL-M version	KC 847.1	0 113 273 800
alt.	SECAM version	KC 803.1	0 113 273 500
alt.	UNIPULSE decoder PAL version SECAM version NTSC/PAL-M version	KC 495.3 KC 856.1 KC 871.1	0 113 271 900 0 113 272 400 0 113 272 200
K-120.08	V-Aperture corrector for PAL or SECAM	KC 708.1	0 113 270 400
alt.	for NTSC or PAL-M	KC 719.1	0 113 270 500
K-120.09	power supply lead battery	KC 31 NB 9 R1	0 112 350 000
alt.	nickel-cadmium-battery	KC 31 NB 9 R2	0 112 490 000
alt.	battery box for silber-zinc-battery without batteries	KC 31 NB 9 R3	0 112 800 000
opt.	charger	K LA 9 A	0 112 640 000
alt.	power supply 220V/110V	KCN NB 9 B	0 113 380 000
alt.	power supply of base station	KC 31 NB 9 R4	see K-122.01

Item	Description	Unit Type	Order Number
K-120.10	transport case for KCR head for KCN CCU		2 115 790 300 2 115 790 400
K-121	spare parts kit with components	Z KC 9-015	0 805 450 000
alt.	with circuit-boards	Z KC 9-014	0 805 440 000
opt.	deflection system (standard) or deflection system (ACT)	KC - 960 KC - 962	0 105 740 400 0 105 750 200
K-122.01	base station for KCN remote control up to 200 m consisting of: operation unit connection plate power supply	K 64 AD 90-001 KC HP 42 N KC AP HP 42 N KC 31 NB 9 R4	0 113 050 000
K-122.02	camera cable (max. 200 m) cable per meter	Ka 64 753-5	0 791 100 000 5 136 201 009
opt.	remote control unit (joystick) connection cable cable per meter	KC VS 515 K1 Kv 77/3 16 x 18 x 0.1	0 281 210 000 0 794 980 000 5 136 301 003
opt.	video equalizer (up to 150 m cable) or video equalizer (up to 200 m cable)	HC 15 VE 41 A HC AP 15 VE 41 U HC 15 EQ 41 B HC AP 15 EQ 41-001	0 173 040 004 0 507 750 000 0 174 050 000 0 505 700 000
K-123	remote control for BCN 20 remote control I with coax cable adaption coax cable (15 m or up to 200 m with equalizer HC 15 EQ 41 B) cable per meter	KC 1020 Kv 3/4 (6 mm)	0 115 790 100 0 792 610 000 5 136 111 002
opt.	remote control II with multiwire cable connection cable (max. 200 m) cable per meter	KC 963 Kv 28/25	0 105 740 700 0 795 790 000 5 136 301 008
K-124	service panel (adaptor)	KC PS 9N	0 112 760 000
K-125	weather cover for camera for camera w. heavy lenses for CCU		2 105 740 060 2 112 960 020 2 113 270 004
K-126	trolly for CCU		2 112 460 050
K-127	waistband for camera cable		1 105 380 282
K-118	camera viewfinder 6"	K 14 BB 9B	0 113 450 000
opt.	pedestal adaptor (holder for viewfinder and camera)		see K-120.02
opt.	weather cover		2 105 380 704
opt.	service adapter	K 301.1	0 112 410 900
opt.	service adapter	K 305.1	0 112 411 000
K-119	test projector incl. test slides	O PP 9A	2 736 580 000
K-128	simulator for 1 inch plumbicon	P PM 9 C	0 448 540 000
alt.	simulator for 1 inch plumbicon, with ACT	P PM 9D	0 448 620 000

information.

Item	Description	Unit Type	Order Number
K-129	camera viewfinder 1"	K BB9 C	0 113 360 000
opt.	connection cable for 1 inch viewfinder service (1,5 m)	KV 191	0 795 780 000
opt.	ocular for 1 inch viewfinder		2 105 740 040
K-800	test plate set		2 015 630 010
H-004	**video equalizer** (up to 150 m cable)	HC 15 VE 41 B HC AP 15 VE 41-U	0 174 050 000 0 507 750 000
H-020	**video equalizer** (up to 200 m cable)	HC 15 EQ 41 A HC AP 15 EQ 41-001	0 173 850 000 0 505 700 000

Lenses for KCR, KCN (1 inch)
(Tripod use see also K-118)

Item	Description	Unit Type	Order Number
O-101	**Schneider Variogon (10 x 17)** focal distance: 17-170 mm, f: 2 iris: servo focus: manual zoom: manual	TV 24.16.1	1 000 690 431
opt.	close-up lens weight: 4.5 kg for shoulder use		1 000 691 109
O-102	**Schneider Variogon (10 x 17)** focal distance: 17-170 mm, f: 2 iris: servo focus: manual zoom: manual	TV 24.16.2	1 000 690 482
opt.	close-up lens weight: 4.5 kg for tripod use		1 000 691 109
O-103	**Schneider Variogon (10 x 17)** (for KCR only) focal distance: 17-170 mm, f: 2 iris: servo focus: servo zoom: servo	TV 24.16.3	1 000 690 481
opt.	close-up lens weight: 4.5 kg for tripod use		1 000 691 109
O-105	***Schneider (30 x 16)*** focal distance: 16-480 mm, f: 1.7 iris: servo focus: manual zoom: manual	TV 26.12.1	1 000 690 484
opt.	close-up lens(0.425-0.85 m) weight: 16.0 kg		1 000 691 101
O-106	***Schneider (30 x 16)*** (for KCR only) focal distance: 16-480 mm, f: 1.7 iris: servo focus: servo zoom: servo	TV 26.12.2	1 000 690 483
opt.	close-up lens (0.425-0.85 m)		1 000 691 101
opt.	shot box TV 10-A 250 weight: 16.0 kg		1 000 690 376
O-107	***Schneider Variogon (20 x 17)*** focal distance: 17-340 mm, f: 2 iris: servo focus: manual zoom: manual weight: 6.5 kg	TV 27.16	1 000 690 491

Item	Description	Unit Type	Order Number
O-109	***Schneider (30 x 12,5)*** focal distance: 12,5-375 mm, f: 1.7 iris: servo focus: servo zoom: servo	TV 35.12	1 000 690 493
opt.	shot box TV 10-A 250 weight: 16.0 kg		1 000 690 376
O-110	***Schneider (15 x 12,5)*** focal distance: 12,5-190 mm, f: 1.7 iris: servo focus: servo zoom: servo	TV 36.12	1 000 690 495
opt.	shot box TV 10-A 250 weight: 16.0 kg		1 000 690 376
O-111	***Schneider (30 x 26)*** focal distance: 26-800 mm, f: 1.7 iris: servo focus: servo zoom: servo	TV 39.12	1 000 690 498
opt.	shot box TV 10-A 250 weight: 16.0 kg		1 000 690 376
O-116	**Angenieux** focal distance: 16-160 mm, f: 2 iris: servo focus: manual zoom: manual	10 x 16 T 11	1 000 690 423
opt.	close-up lens 0.75-1.45		1 000 691 107
opt.	close-up lens 0.55-0.80 weight: 4.0 kg for tripod use		1 000 691 108
O-130	**Canon** focal distance: 18,5-110 mm, f: 2.3 iris: servo focus: manual zoom: manual weight: 1.2 kg for shoulder use additional servo zoom 1.2 kg also available for already supplied lenses	PV 6 x 18 B 1	2 105 380 340
O-133	**Canon** focal distance: 15-150 mm, f: 2 iris: servo focus: manual zoom: manual weight: 4.0 kg for tripod use (shoulder use possible)	PV 10 x 15 KCR	1 000 690 395
O-134	**Canon** focal distance: 12-120 mm, f: 2 iris: servo focus: manual zoom: mot./servo weight: 2.5 kg for shoulder use	PV 10 x 12 B	1 000 690 379
O-140	**Fujinon** focal distance: 11-80 mm, f: 2-2.8 iris: servo focus: manual zoom: manual weight: 2.4 kg for shoulder use	K 7 x 11	1 000 690 485

*only for use with pedestal adapter K-120.04 K UO 9 R