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<http://www.lusznat.de/cms1/index.php/kinomuseum-muenchen/gerhard-fromm-s-sammelblaetter/ak-16-pentaflex-sammelblatt>

TECHNICAL DATA SHEETS

AK 16 / Pentaflex 16

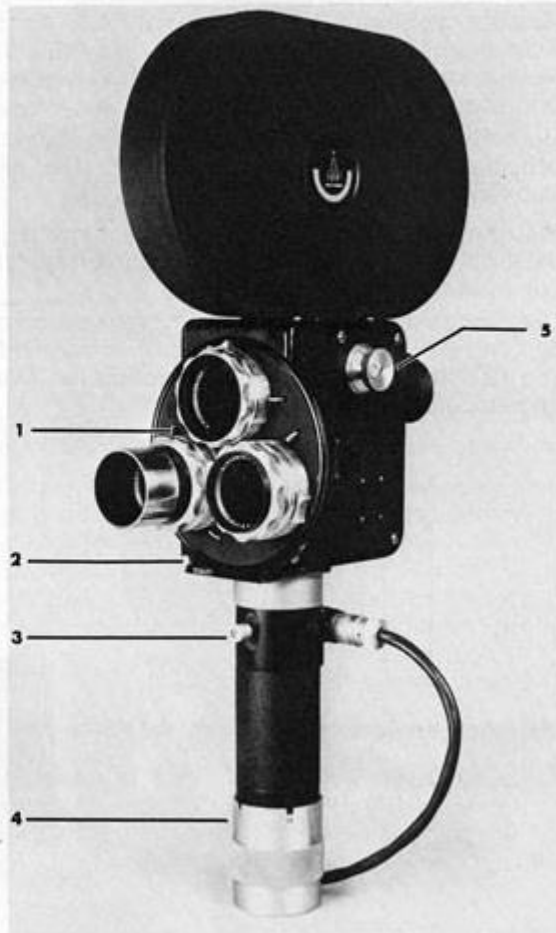


Fig. 1: AK 16 with standard motor and 120-m cassette 1.1 Lens locking mechanism 1.2 Lens revolver release 1.3 Shutter release mechanism (lockable) 1.4 Adjusting ring for B / s 1.5 Adjusting knob for light sector

General: She is really not beautiful, she is not small either, as a lightweight one can not designate her also, from running-quietly, or self-mumbled she is (East) worlds away, - "do not miss", - then It must be the inner values that make this camera from beautiful Dresden interesting. The fraternal union in our country makes it possible for us to see more and more products marked with the "1-DDR" seal of quality. And quality I have to certify the camera I am here an AK 16 available, as it was produced in the early 50s. Clean mechanics, the camera and the engines beautifully crafted in black leather, and the cassettes, etc. are held in the usual in those days shrink paint. Some of the accessories I've borrowed from a friend for this article, on the other hand, are from the Pentaflex 16 program and stand out in terms of workmanship and appearance. When the name changed around 1960, the look of the camera was also changed. Instead of leather, a matte-greyish plastic and elastic material was used and the camera was painted in grey hammered finish. It should be noted right here that the entire range of accessories remained fully compatible and as a manufacturer continued to record the VEB camera and cinema works Dresden.

Camera: A running-loud camera that seems neither in-the-hands nor on-the-shoulder «still designed for a tripod. An unwieldy black box, so to speak, where you can start one of the even more unmanageable motors at the bottom or right side and insert a cassette at the top. To mount the tripod, the motor is attached to the right side (Fig. 2) and the camera is fastened with a 3/8th screw. The camera base also contains a dovetail guide into which the holder for the compendium etc. can be inserted. This holder has the same dovetail guide below and also a 3/8th connection thread. The black AK 16 (stands for camera 16 mm) and the grey Pentaflex 16 differ only by name and colour, but are otherwise identical, and all accessories are compatible.

Engines: The motors can be attached using a bayonet lock at the bottom or right. For different tasks, a range of different engines is available. The standard motor (Figure 1) is a centrifugal force-controlled 12V motor of considerable size and weight. By turning the grip ring, image frequencies of 12 over 16, 20, 24 to 32 Fps can be pre-selected in steps. The small locking lever is raised slightly (Fig. 1.4).

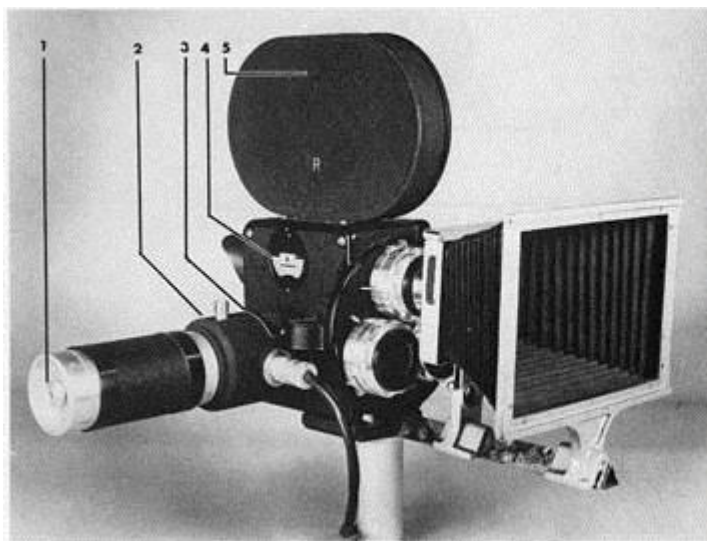
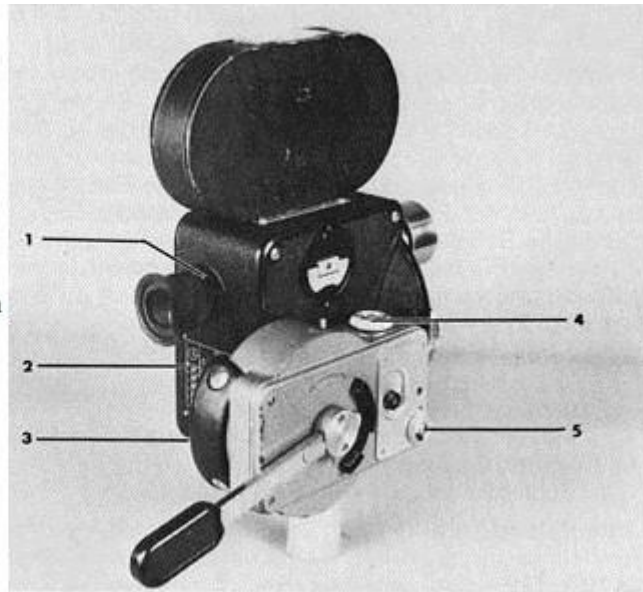


Fig. 2: AK 16 with high performance motor, intermediate gearbox and 60m cassette.

- 2.1 Rotary knob for view finder open position
- 2.2 dial for Fps and reverse (on the back)
- 2.3 Table for Fps and R
- 2.4 Cassette locks open position
- 2.5 Display window for film supply

For mains-synchronized recordings, a 220 V / 50 Hz motor was also built. With this engine, the camera runs 25 Fps. With a spring drive you can operate the camera without battery, cable, etc. (Fig. 3). The fully wound spring mechanism pulls about six meters of film through. A display scale allows you to control how many meters can still be pulled through. However, this ad has hidden so ingeniously next to the head pad that you certainly can not read it during the recording, at least not if the cameraman has his head on the eyepiece (and where else he has him?). The image frequencies are set on a knurled knob on the outside (Fig.3.5). 12, 16, 24 and 48 Fps can be selected. At the top there is the trigger with another adjusting knurled ring: “L” stands for run, and with the trigger pressed in, the ring can be turned to continuous “D”. On further rotation, the camera remains in the viewfinder-open position. Exposure images can be exposed in the Ex position, the exposure times at the various image frequencies are silent. And then the elevator lever, that is technology at its best - like the jack of the legendary VW Beetle. Up and down again and again.

Fig. 3: AK 16 with spring mechanism motor and 30 m cassette
3.1 Diopter adjustment
3.2 Table for the bright sector Adjustment
3.3 Head pad
3.4 Trigger and dial for engine function
3.5 adjustment ring for 12, 16, 24 and 48 Fps



A so-called high-performance motor (Fig. 2) can only be used with an intermediate gearbox and allows recordings up to 96 Fps forward and 19 Fps reverse. Power supply with 12 V and at least 8 Ah. For high speed use only the special cassette R 96 or 120 m cassettes. (According to the VEB instructions for use, only a film with anti-friction layer (?) May be used.) Adjusting the frame rate on the setting knob on the intermediate gear, only at standstill - press in the ring and set to the desired speed. A scale on the gearbox allows the most daring combinations with the various engines. With the high-performance motor, 1 = 96 Fps and 4 would therefore be 24 Fps. With "R" the camera runs backwards for 19 Fps. Setting the standard engine to the transmission and selecting 12 Fps on the engine results in a frame rate of 3 Fps at position 4 on the transmission, and at "R" the camera runs 2.3 Fps backwards.



Fig. 4:
Accessories Collection
standard motor with single-
frame transmission Cassette
with coding device Cover
for motor bayonet original
Zeiss battery 80 mm and
135 mm support bridge for
telephoto lenses and adapter
for Praktica lenses

In conjunction with the suspension you can even drive 9.5 Fps in reverse, who needs it! In order to also be able to take a single image with the electric motors, a small single-frame switching device can be used (Fig. 4). It is placed between the engine and the camera. Then select the desired function on the knurled knob. In position B the exposure takes place as long as one presses on the mechanical release. With "E", the exposure is independent of the shutter release time. The exposure time corresponds to the set frame rate. In the "L" position, endurance would then be announced again, but only if the electrical switch on the motor and the mechanical switch on the gearbox are actuated simultaneously. For the single-frame shots in each case, the electrical switch must first be pressed and locked, the engine is then running without the camera is driven. Only a pressure on the mechanical switch triggers an exposure. For special tasks, especially in the medical field, there is a synchronizing contact for connecting a flash unit directly next to the unlocking of the motorized bayonet.

Note: If a single-frame sequence is exposed with one or more flash units, the light sector must be set to 180 degrees. Otherwise it could be too
Wrong exposures are coming!

Circular aperture and gripper: Two-wing mirror-type aperture with 180 degrees corresponding shutter angle, infinitely adjustable at standstill or with the camera running from 180 degrees to zero. The resulting exposure times can be read off a table on the back of the camera. When using standard motor or spring mechanism, the orifice will always remain in the viewfinder open position. With the high-performance high-speed motor, it is possible to continue turning the adjusting wheel in the bottom of the motor if necessary (Fig. 2.1). The camera has a single-sided transport gripper, which is unusually located above the image window. When running backwards, there is a slight offset in the image stroke due to the design.

Magnifying glass and ground glass: The camera available to me for this description has a relatively rough screen with hardly recognizable center cross and without inscriptions. But I can not rule out that later cameras, possibly the Pentaflex, were supplied with TV-recording. A unique feature is the solution of the reflex viewfinder. The mirror aperture is located above the image window, meaning the screen below. The beam path is now carried out by means of three prisms under the cassette shaft. The optical axis of the eyepiece is thus exactly in the extension of the optical axis of the recording lens. Also unique is an additional aperture in the beam path of the viewfinder system, which is 90 degrees offset synchronously to the mirror aperture and protects against light from the rear.

Lenses: Lens turret for three lenses. The version is very similar to the old Arri standard version - but different. Here 45 mm diameter, at Arri 41 mm diameter. In addition, with the three standard focal lengths 12.5 - 25 - 50 mm, the three panels are coupled together. If you adjust the aperture on a lens, the at set the same value, so you can if necessary swing in another lens while the camera, without having to fear differences in exposure. To insert one of the standard lenses in the revolver, it is best to turn the remaining two to the brightest value. At 12.5 mm, this means well over the 2.8 to the stop, since the others f have 1.4. After you have turned the lens to be used also completely open, the driver for the aperture and the Justiernase are opposite, and the lens can be easily used.

Two additional Zeiss Jena lenses were supplied in the AK-16 version: a Biometar 2.8 / 80 mm and a Triotar 1: 4/135 mm. Unusual was the execution of the Pentovar 16 Kombi Zoom. One exchanged the rear lens (better said: the taking lens) and had so two different Focal areas. Once at a light intensity of 2.8 from 15 to 60 mm and then

from 30 to 120 mm, but only with f 5.6. Of course you could order the zooms also as only wide-angle or only telephoto zoom, then they were called model I or II. There was also an intermediate ring, with which all Pentacon or Praktica lenses and accessories, such as bellows and macro Device, can use. If one uses focal lengths over 150 mm, an additional support must be placed on the Compendium rod.

Battery and power supply: If the camera is operated with the standard motor, 12 V and 2.5 Ah batteries are sufficient. The original battery looked something like an old Arri battery: artificial leather bag with non-tilting cells, where the state of charge was readable on small beads. When working with the high-performance motor in the high-speed range, at least one 12 V / 8 Ah battery must be used.

Cassettes: Basically, there is a 30-meter cassette for film on daylight reels for the AK 16 / Pentaflex 16, a 60-meter cassette for film on Bobby, and a 120-meter cassette in which to shoot 120-foot film Bobby or after removing the two plates and an intermediate plate in the lid can also use 30 m or 60 m daylight coils. (120-m daylight coils can not be used because they are overlapping single-space cartridges.)

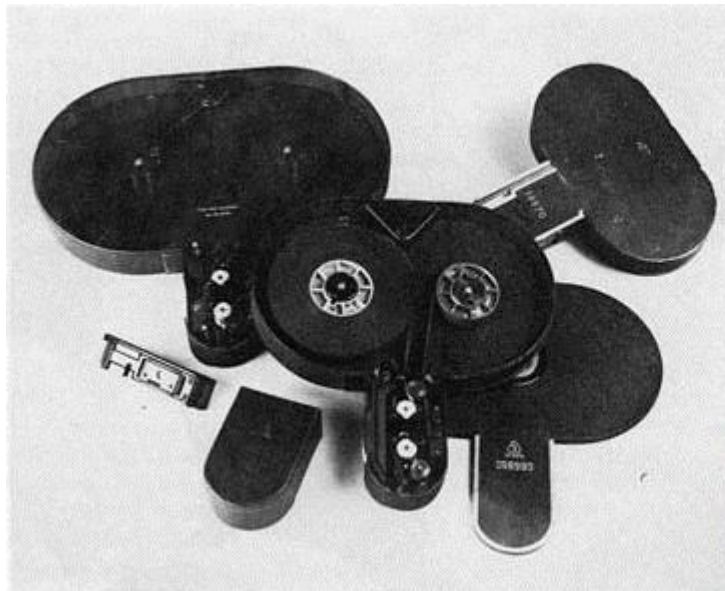


Fig. 5: Group picture with cassettes from left: 120 m cassette with removed film pressure block 60 m cassette with inserted film 30 m cassette rear side

All newer cassettes are suitable for reverse and therefore marked with an "R" on the back. For high-speed recordings, only a special 30-meter cassette labelled "R 964" or the 120-meter cassette can be used. For shooting motion sequences that need to be accurately timed, there is a 30m cartridge with recording equipment. Connected to 220 V 50 Hz, strokes are illuminated every ten milliseconds, which allow a precise reference identifier. The exposure is 32 images in front of the image window. It is only one-sided perforated film to use. Inserting the film into the cassette is relatively easy with all three versions, as long as you have film on daylight bobbins. After opening the lid, the TL is inserted into the cassette so that the film runs in the middle down, of course, just the meter arms. Now pull out about 40 cm of film, open the two pressure rollers until they click into place. Then insert the film according to the drawn diagram. So before the thick pulley down - around the upper toothed drum down around - in front of the slender guide pulley back up - through the picture window through (just briefly press the Justier pin away.) - then equal to the lower toothed drum - again down to the lower thickness

Roll around and then before (!) The block with the pressure-unlocking high - between thick and thin through and then attach in the Aufwickel-TL - quite simple, right? We

practice that a few times now and then we put a fun movie on Bobby in the dark bag. The original VEB instruction manual casts a spell over this - so it can not be difficult. Above all, it says: »The film loop above the picture window may rather be slightly smaller, but in no case larger than indicated in the diagram. On the other hand, (!) The loop below the image stage has to be formed 1 to 2 perforation holes larger than indicated in the diagram. End of the quote! The best, it seems to me, you take one of the gentlemen designers in the dark bag. Here's just a little trick: Take in the dark bag the film from the L bush and the black paper and pulls about 50 cm of film from the roll down. Now you put the roll of film either in the film canister and carefully closes the lid (only if it is easy, without the film is thereby bent). Otherwise you leave the roll of film in black paper, additionally also in the dark bag for safety's sake, then you put the film, cozy and without beads of sweat on the forehead, in the light in the cassette. After attaching the film leader to the take - up side, briefly take the cassette with you into the dark bag - do not forget the lid - and then insert the film roll only in the dark, then close the lid and lock it.

Caution and attention: Above the pressure plate is the already mentioned small locking gripper «, so to speak inside the cartridge as adjusting pin. The film is thereby fixed in a certain position, so that when attaching a cassette to the camera of the transport gripper in each case a perforation hole meets.

If necessary, with the cassette already closed, the release button can be pressed next to it and the film can be fumbled with a perforation hole in the pin.

Note: As often as possible, the block with the pressure plate should be taken out of the cassettes and cleaned, especially the small velvet strips. There is the famous little difference: For the 30-m and the 60-m cartridges at the top of the block a small lock must be swung away, then the block can be pulled up to the top of the 120-m tapes is the Block held only by two ball detents, there is only one thing helps: a few index fingers behind the block, a thumb on the Pressure plate and nails - somehow you get it out already.

Handling: When inserting a cassette in the hinged lid closure necessarily with a little feeling to go to work. If a clear resistance is felt, the cassette lock (Fig.2.4) is certainly in the Z "position.

In such a case immediately take out the cassette again, bring lock into the A position and insert cassette again. When locking, the cassette is pushed slightly forward, thereby the transport gripper slides into the film, and the adjustment pin is pushed back. The tiny windows on the back of the cassette (Fig. 2.5) can reduce film consumption

When unlocking the cassette, the transport gripper is automatically pulled to a lower position and out of the film. Damage is effectively prevented.

Note: After built-in light meter, video output mirroring. Timecode or Super 16 format is better not asked. The development probably stuck right after construction in the early 50s.

Care and inspection: According to the manufacturer, the camera is largely maintenance-free. After about 50 hours of operation, the camera, cassettes, and motors should be serviced to the factory or an authorized workshop. In between a drop of oil for the camera drive in the red marked hole on the lateral drive axle is sufficient. Presumably, the high-speed gear would also like a few drops of oil in between - because there are two red marked holes.

PS: For once, I would like to attach a personal supplement. An AK 16 as described here was the camera with which I shot my first real movie. During my training at the DEFA in the early 50s, I was already allowed to shoot a film about the Wasserwacht at Mueggelsee in our young film group as a cameraman. The photo shows me with the camera on a daring tripod combination (and on the right a colleague), recording our title in a basement of the DEFA. Gerhard Fromm



To clean the picture window channel, clean only with a cloth through the hinged lid closure. Only remove the heel in the corners of the canal with a hardwood or plastic stick. Residues in the image window can actually only be removed from the front, after removing a lens. Weight ready to rotate as shown in Fig. 1 (without battery) 7.5 kg. Gerhard Fromm