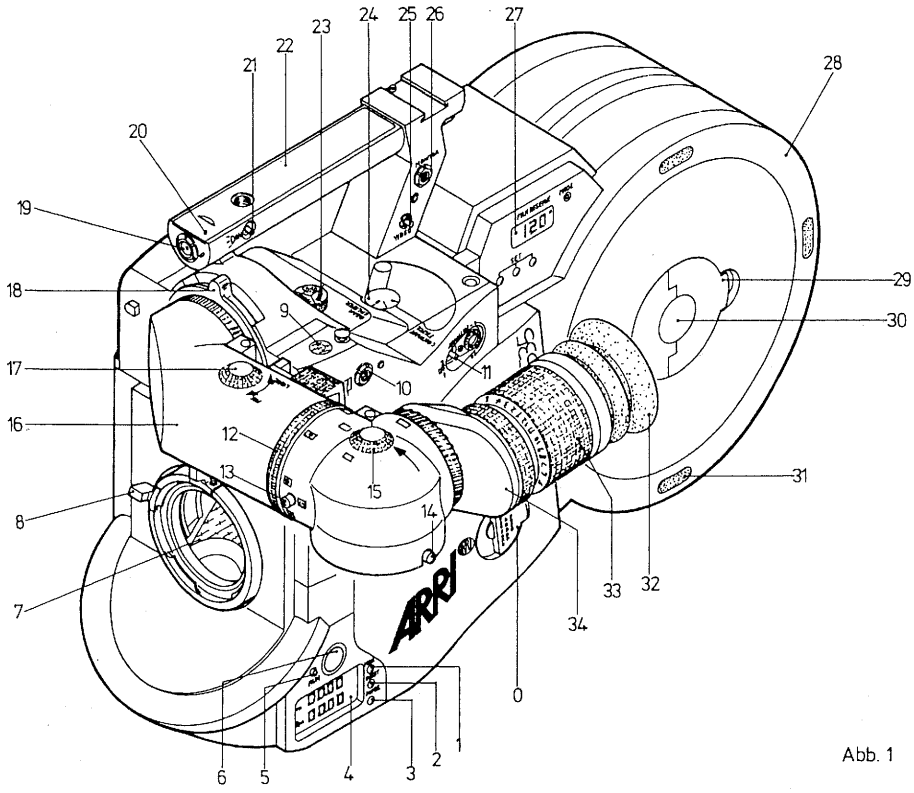
ARRI

ARRIFLEX 535

Instruction Manual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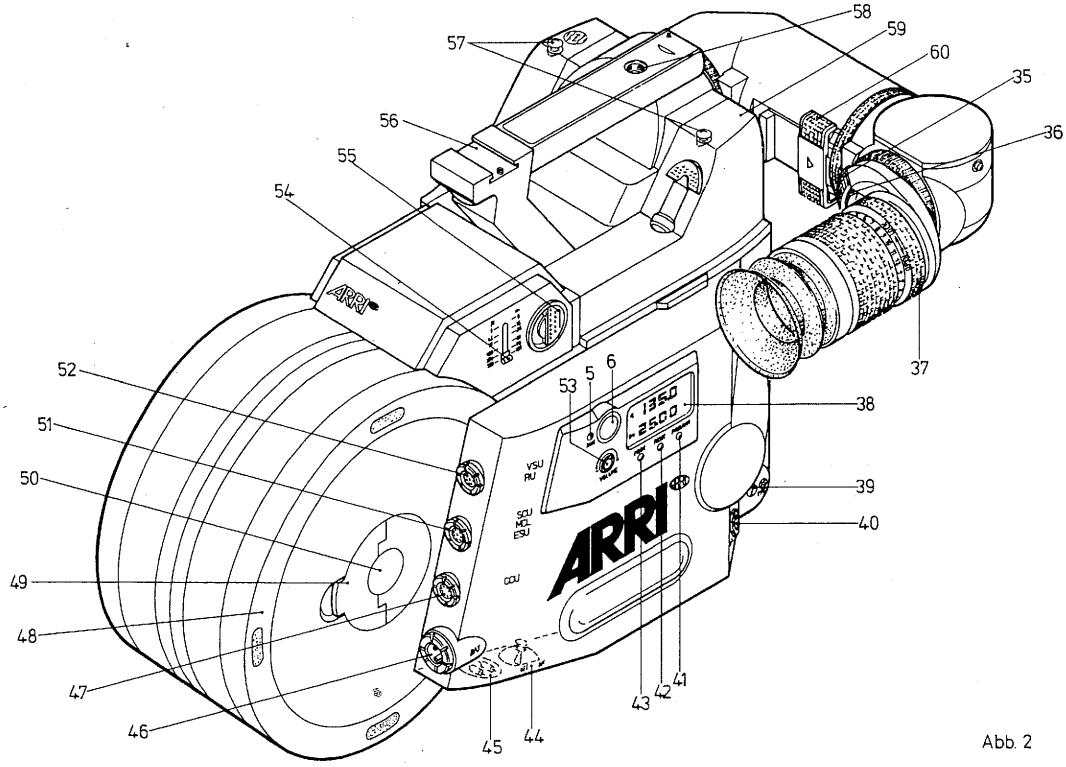
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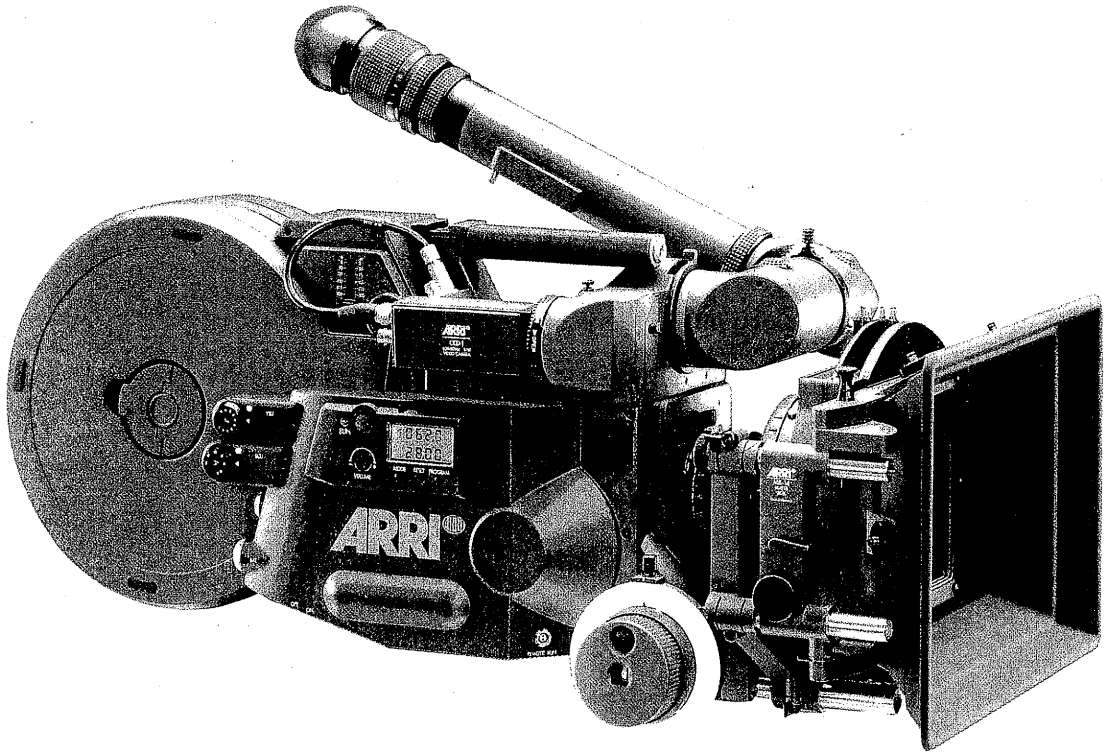

ARRIFLEX 535

General System Introduction

The **ARRIFLEX 535** is a silent, universal production camera for tripod and shoulder operation. The state-of-the-art electronic system allows simple operation and a great variety of possibilities.

The **ARRI time code system** is integrated in the camera. The robust design of the **ARRIFLEX 535** allows working under extreme conditions. The frame rates range from 3 to 50 fps for forward running; reverse filming is possible at 24/25 fps. The open sector of the mirror shutter can be infinitely adjusted between 11 degrees and 180 degrees.
The most common angle settings, i.e. 180, 172.8, and 144 degrees can be preset in the camera program.

The viewfinder system is interchangeable for shoulder- or tripod operation. Studio monitors, as well as a mini monitor can be connected to the camera via the Video-Optic Module VOM with video camera.

All camera functions are monitored by an electronic control system. Electronic testing and diagnosis facilities are also available. A separate Camera Control Unit (CCU) allows presetting of special- or operation programs.

The great variety of optical, mechanical and electronic accessories allows a universal operative range of the camera.

This instruction manual shows you how to use the **ARRIFLEX 535** with the complete range of accessories.

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Safety Specifications

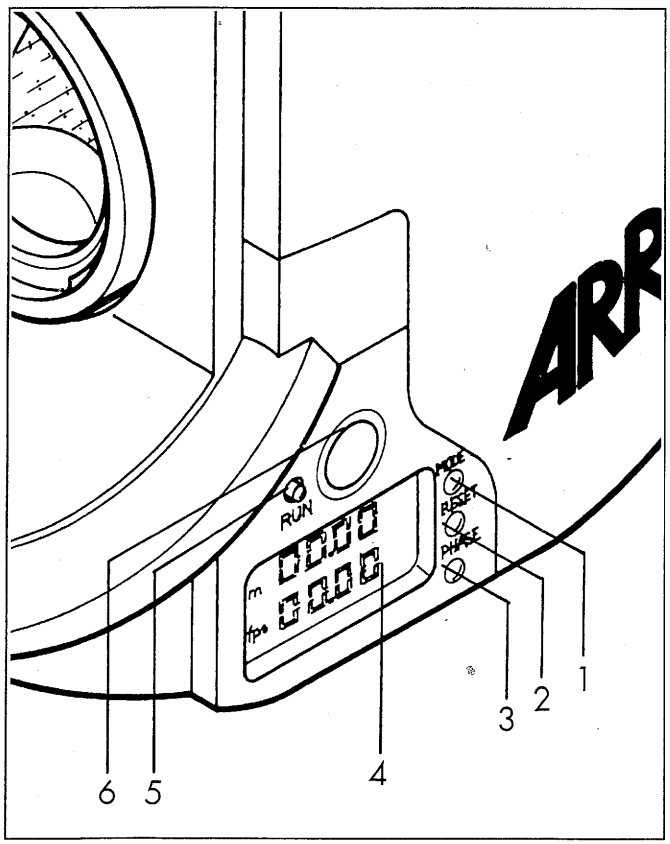
1. The **ARRIFLEX 535** camera system has been thoroughly factory-tested with regard to its functions, safety and quality workmanship.
2. In order to ensure optimal performance, it is essential that you acquaint yourself with this instruction manual and that you follow the operating instructions described herein.
3. Warnings

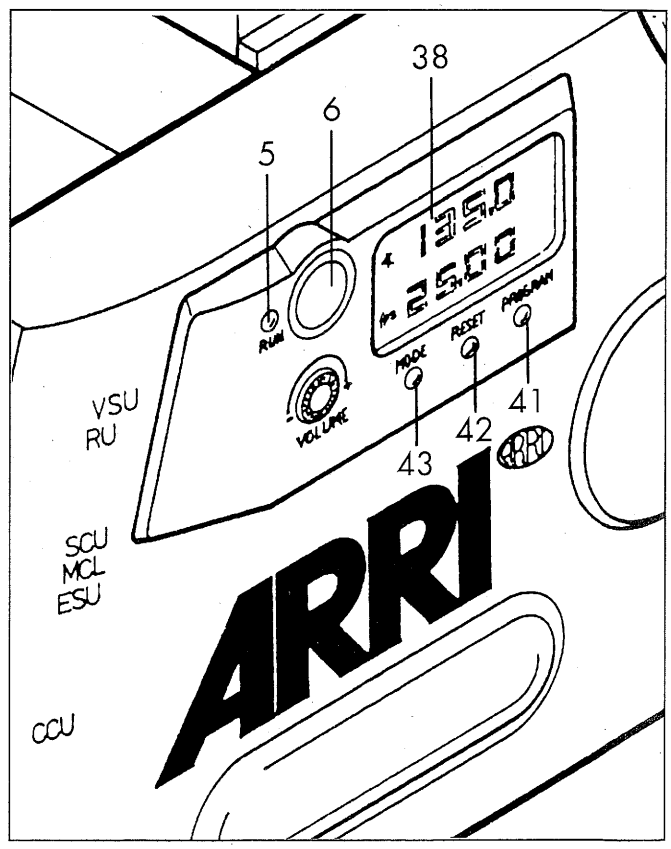
   "Note": Operational error possible

   "Caution": Camera (or accessory) fault possible
4. Assembly and initial operation only by qualified personnel which is already familiar with the equipment and the assembly procedures.
5. Use only original ARRI accessories and replacement parts!
6. Carefully follow the service and maintenance procedures mentioned in this manual!
7. Recommendations for transport and storage should also be followed.

In the case of enquiries or when ordering parts please advise camera number and type designation.

Contents





Operating elements, left camera side

Display and keys

Connect the camera to the power supply and switch the camera main switch (44) ON. The operation control light (5) illuminates red during the camera's self-acting test and goes out after approx. three seconds, if no failures are detected. The camera is now ready for operation (standby status).

With the camera ready for shooting, i. e. with properly attached magazine, and film guide rockers and movement block locked in correct position, the two displays at the left and the right side of the camera (4 and 38) show the value 0000 in the first mode.

The three existing modes can be activated one after the other by pressing the MODE key (1/43). With the TC module inserted, the number of available modes is increased to five.

The upper line of the displays shows the quantity of film used for the individual takes in meters or feet; the lower line indicates the frame rate (fps).

When the counter is changed from feet to meters (and vice versa), the corresponding values are automatically converted and the new values are shown on the displays.

In the second mode, the upper line shows the angle of the mirror shutter's open sector and the lower line the current frame rate.

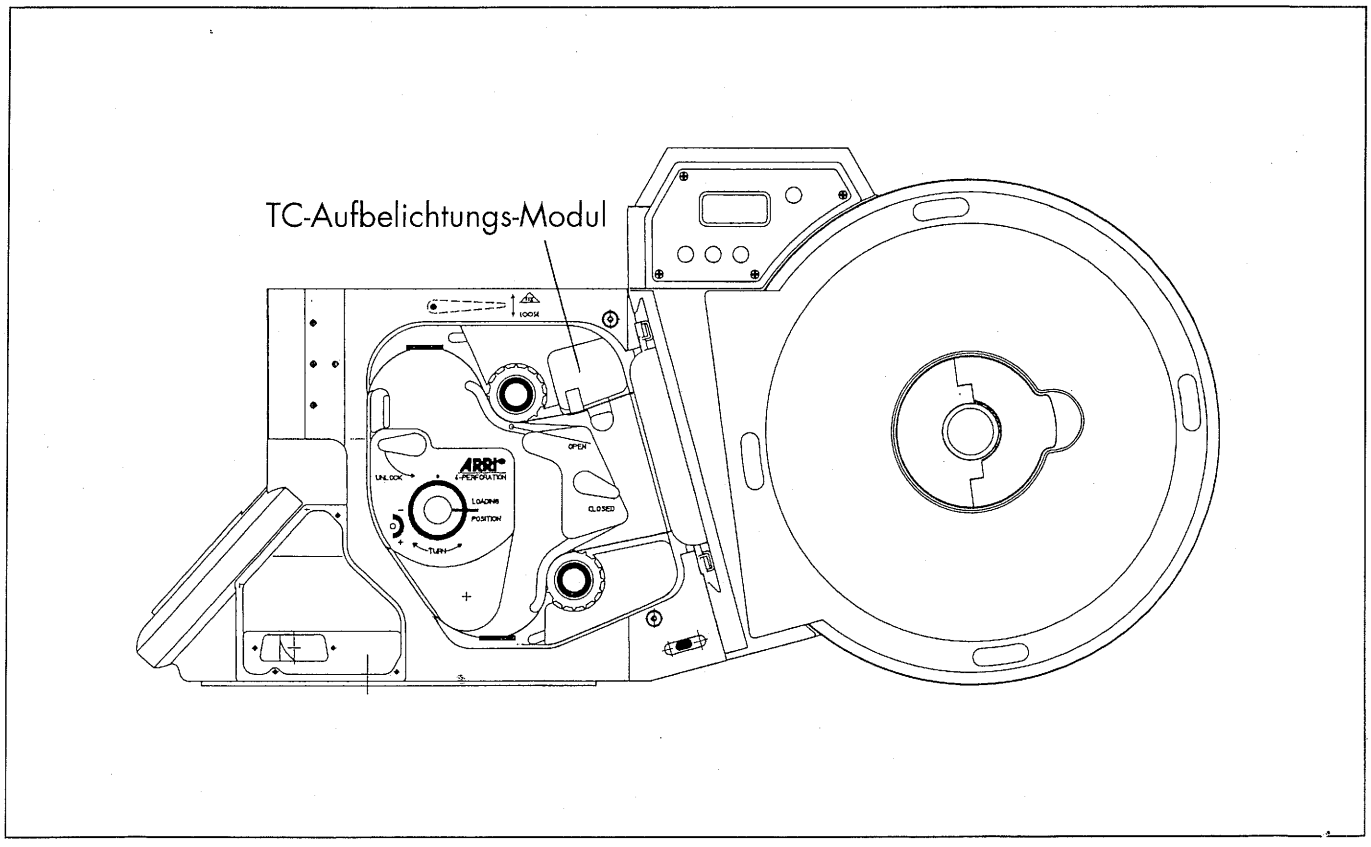
There are various methods to change the shutter angle:

1. by CCU-1

2. by RU-1

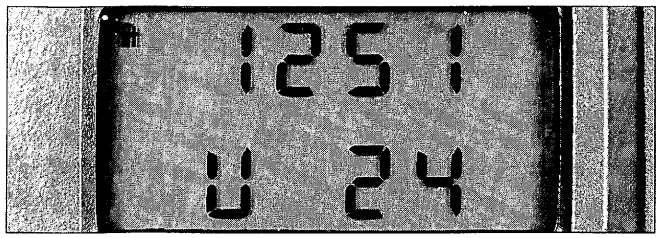
3. by SCU-1

Furthermore, the fixed values 180, 172.8 and 144 degrees can be set directly on the camera. For this keep the RESET key (2/42) pressed until the requested shutter angle is shown on the camera displays (4/38); then release the key.



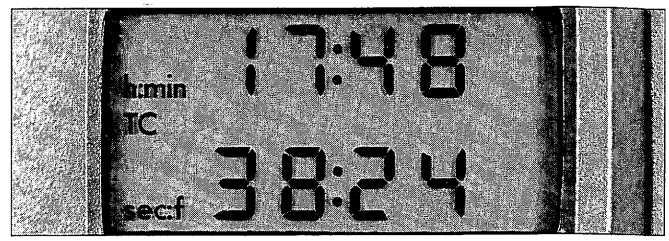
With the SCU plugged on and switched on, set the requested value on the SCU scale and check on the camera displays. The new data is retrieved into the camera storage by pressing the RESET key in mode 2. Approx. 30 seconds after the last key actuation the indication returns automatically to the first mode.

In the third mode, the upper line shows the quantity of film exposed after the RESET key (2/42) was pressed (daily counter), and the bottom line indicates the battery status.

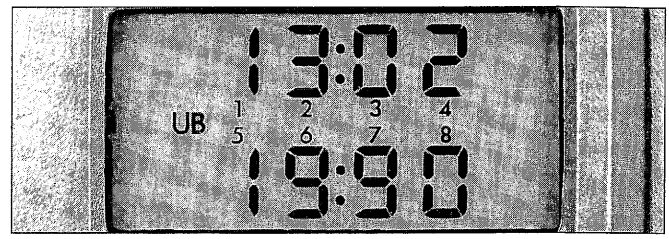


Activating the modes four and five requires the time code module. This module is plugged on in place of the light barrier module.

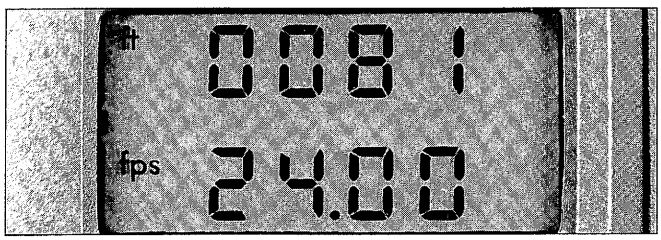
Mode four allows time reading in hours and minutes in the first line. The bottom line shows the seconds and the current frame rate.



In mode five the user bits are indicated. This example shows in the first line the day and the month and in the second line the year. Modes four and five are automatically masked out approx. 20 seconds after they are called up, and the displays show mode one again.



When the camera is started by pressing the RUN key (6) either on the left or on the right side of the camera, the following information is shown, e. g. on the displays:



Here, the quantity of exposed film is continuously indicated in the first line and the frame rate in the second line. The operation control light (5) illuminates green. To stop the camera run, the RUN key is pressed once again.

Note: The operation control light serves also as a warning indicator with several warning functions, e. g. ASY, low bat, END. As long as the camera is not in the "ready to operate" status, this is indicated by red illumination.

Indication of operating status, outline: Information that is indicated by a text segment on the camera displays.

filter (filter is inserted).

jam (film jam) Operation control light (5) illuminates red.

asy (asynchronous camera run) Operation control light illuminates red.

end (film end) Operation control light illuminates red.

end..flashing (film end pre-warning) Operation control light illuminates red.

bat (low battery) Operation control light illuminates red.

TC (time code activated)

TC..flashing (time code is not recorded or the 8-hour TC data storage time is exceeded) Operation control light illuminates red.

fps..flashing (no external frequency with ESU operation)* Operation control light illuminates red.

In mode 1 (standby) the camera displays also indicate the kind of accessory used for setting the frame rate.

VSU operation:	0000
	SU
ESU operation:	0000
	EH
Program operation:	0000
	Pr.

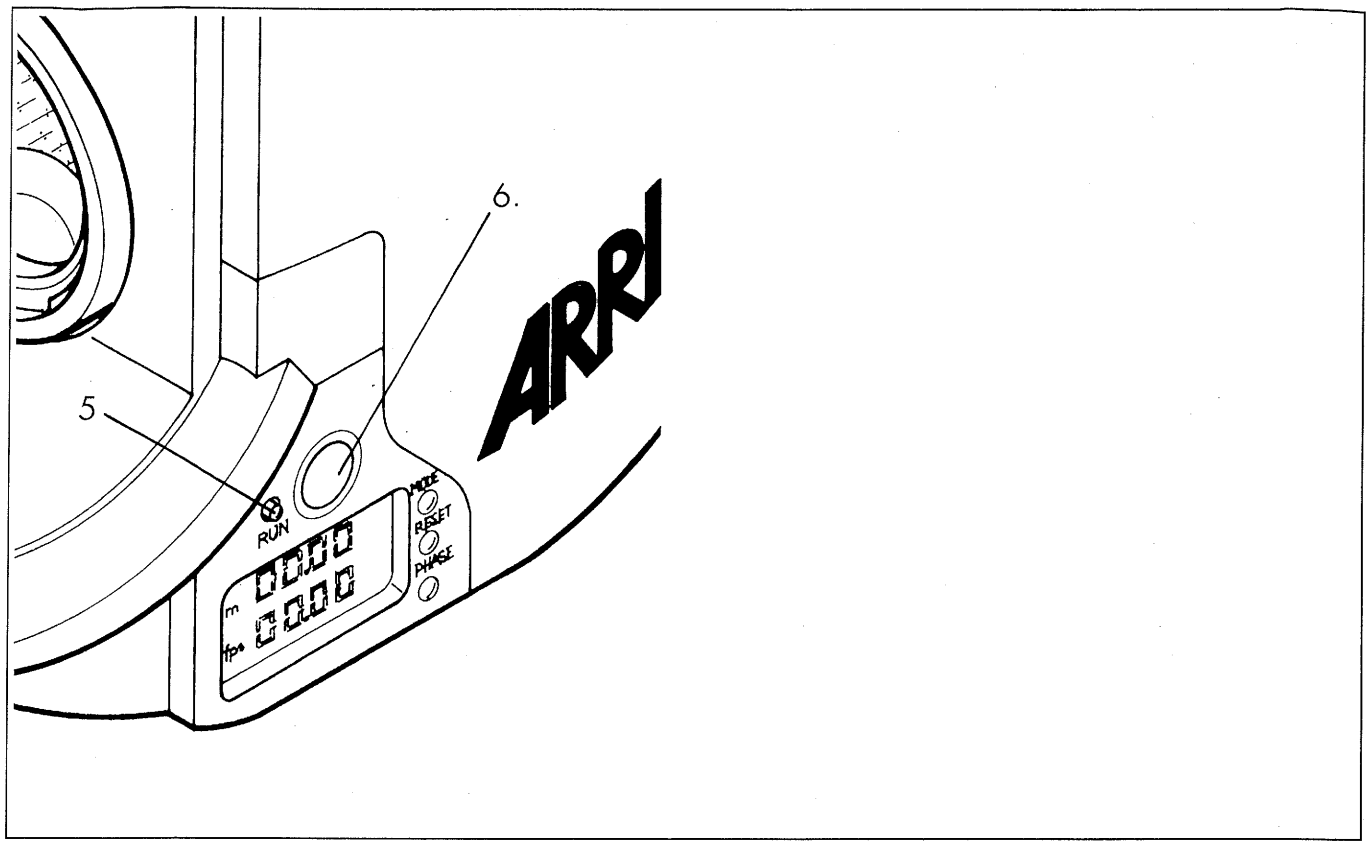
All warning or error messages are indicated by red illumination of the operation control light (5).

The RESET key (2/42) serves for zero setting of error messages on the displays.

* ESU (external sync unit)

The PHASE KEY (3) has three different functions: In the first mode and standby it actuates the inching speed, i. e. the mirror shutter and the movement complete only one slow turn. When the camera is running, the "PHASE" key serves in the second mode as phase shifter for filming quartz-synchronous monitors. Keep the key depressed until the horizontal bar is no longer visible in the viewfinder. The phase shifting is readable on the camera display: the frame rate increases by 0.2 fps.

In the third mode and standby the mirror shutter can be turned out of the viewfinder position by briefly tapping the PHASE key (e.g. for fluff check). The mirror shutter returns to viewfinder position by tapping the PHASE key once again.



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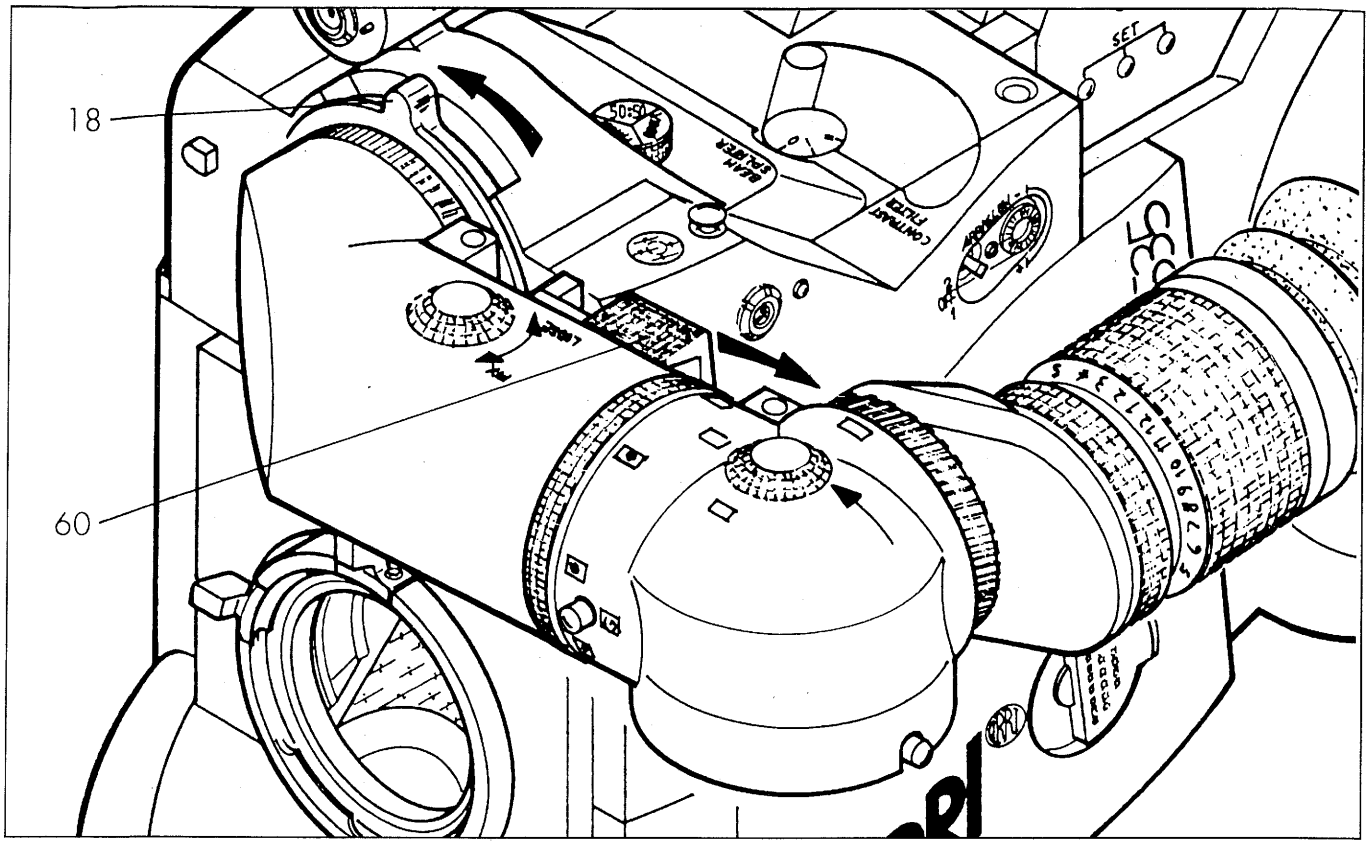
Camera ON/OFF switch with operation control indicator

The camera is started by slightly pressing the sensor key RUN (6). During trouble-free running, the operation control indicator (5) illuminates green. The camera run is stopped by pressing the RUN key once again. During run-up to the preselected frame rate and during drifting after switching the camera off, the control indicator illuminates red. Asynchronous running as well as possible faults (e.g. film jam) are also indicated by red light. During asynchronous running, the display shows in addition the word ASY. This word is also visible in the viewfinder.

Caution: The camera can only be started when the operation control indicator does not illuminate red.



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Bayonet connection for viewfinders

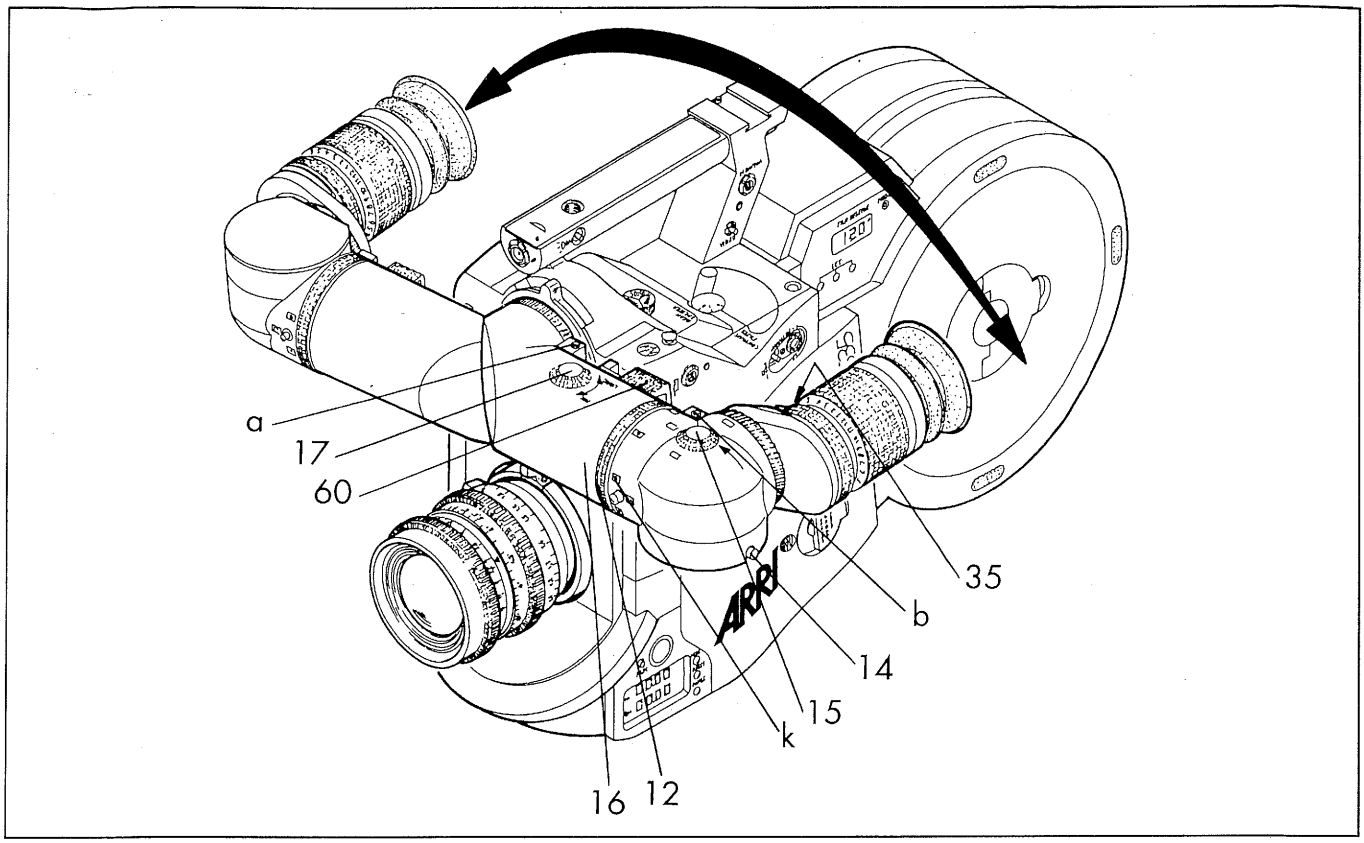
There are two easily interchangeable viewfinders available for the **ARRIFLEX 535**:

Standard viewfinder

Offset viewfinder for shoulder operation

To remove the viewfinder, hold it with one hand and, at the same time, turn the bayonet ring (18) in the direction of the arrow. Then pull the slide lock (60) to the outside and carefully pull off the viewfinder straight to the front. Attaching the viewfinder is carried out in reverse order.

Note: The offset viewfinder was designed for operation from the left side only; consequently it can only be attached in this position.



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Standard viewfinder

This finder is recommended when filming with the camera on a tripod or dolly.

Rotating the finder arm:

The finder arm can be rotated 270 degrees (locks at 0, 90, and 180 degrees).

Pull the lock bar (60) and rotate the finder arm (16) 180 degrees to the opposite camera side (locks automatically). The friction is optimally adjusted at the factory, however, it can be changed via the hexagon socket screw (a) with the hexagon socket wrench SW2.

Rotating the viewfinder:

The viewfinder can be infinitely rotated by 360 degrees. The friction can be adjusted with the rotary knob (17). It is factory adjusted so that the finder arm is fixed in any position.

Turning the eyepiece connector:

To optimize the ergonomic position of the viewfinder, the eyepiece can be turned so that the distance to the camera is increased. The optimal viewfinder position is marked with green paint.

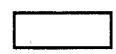
Press the key (35) and turn the eyepiece connector to the requested position. When the key is released, the eyepiece connector is locked in this position.

In case of abating friction it can be readjusted via the hexagon socket screw (b) with the afore-mentioned hexagon socket wrench.

Changing over to deanamorphosing:

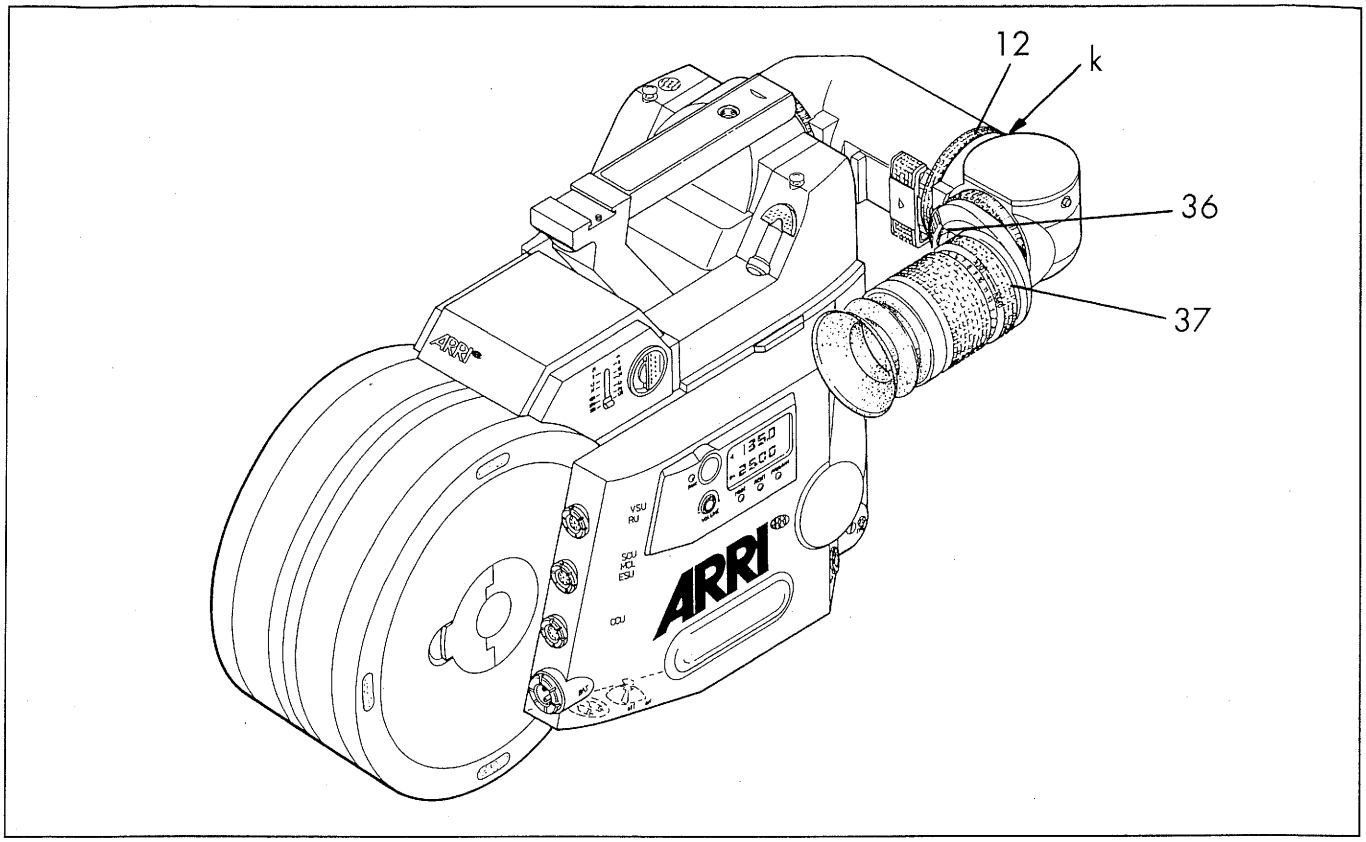
Press the locking key (14) and turn the rotary knob (15) to the corresponding symbol. Lock in position by releasing the key.

Symbol  standard format

Symbol  deanamorphosed position

Symbol  blind position

In *"blind position"* the viewfinder eyepiece is closed. This position is recommended when filming in bright sunlight or bright scene illumination. It prevents stray light from leaking onto the film through the beam path of the viewfinder.



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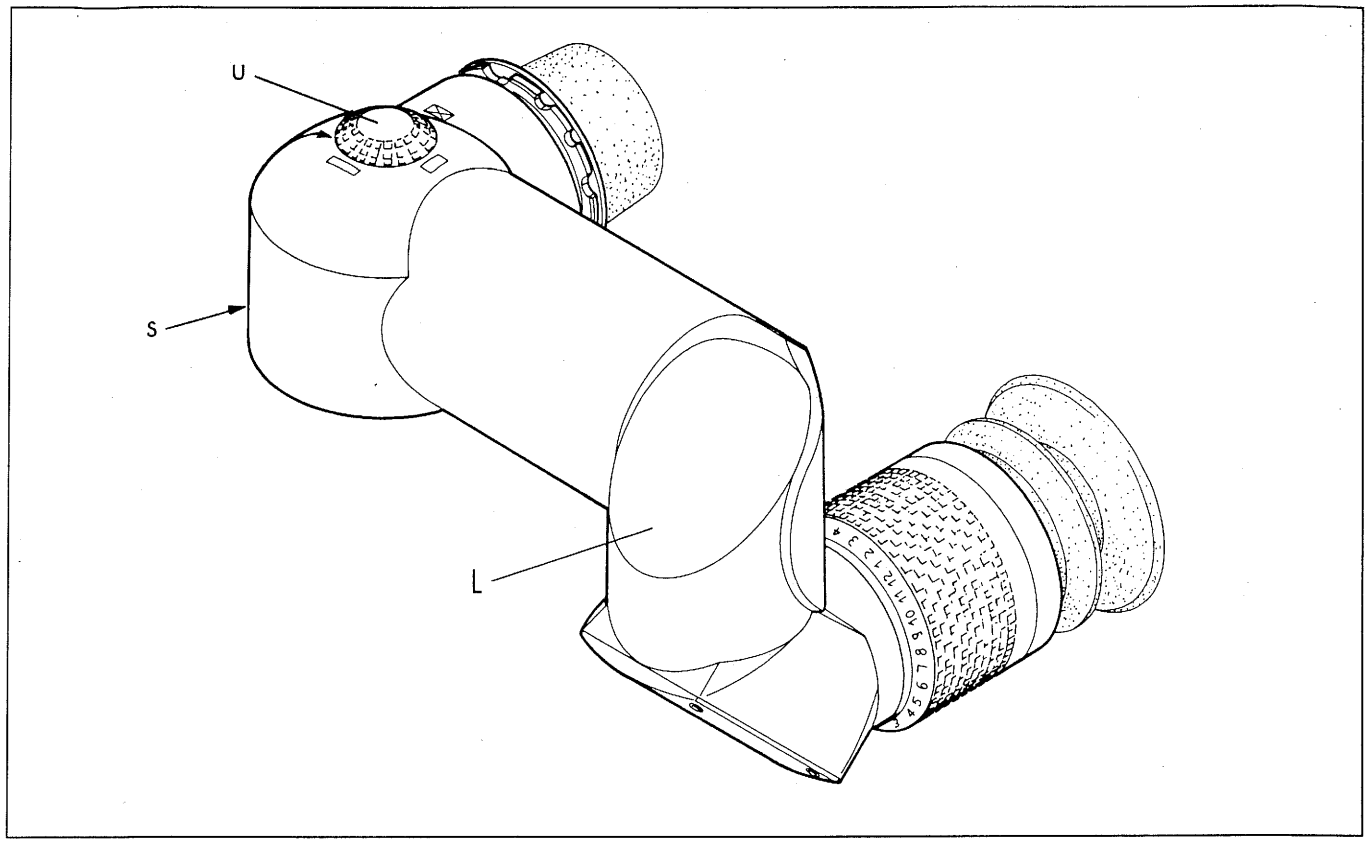
2 x Extension of viewfinder image magnification:

Turn the ring (12) so that the mark points at the symbol (k). The 6.5 x image magnification is now doubled to 13 x. In the intermediate position the viewfinder image is dark.

Attaching the eyepiece:

Insert the eyepiece with its lugs into the recesses of the bayonet lock and turn the union ring (37) in the lock direction to the stop (audible "click") of the safety lock (36). Before removing the eyepiece, press the key (36) and turn the union ring (37) in the open direction while holding onto the eyepiece. Then pull the eyepiece off straight to the rear.

Note: For tripod operation we recommend the use of the extension viewfinder (see page 94/95).



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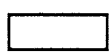
Offset viewfinder for shoulder operation

This viewfinder displaces the viewing position further to the front of the camera so that the camera's center of gravity is centric on the operator's shoulder. The adjustable viewing position (1) with compensation of the image orientation allows an optimal adaptation to the height of the individual operator. The factory-adjusted friction guarantees that the finder arm is fixed in any requested position.

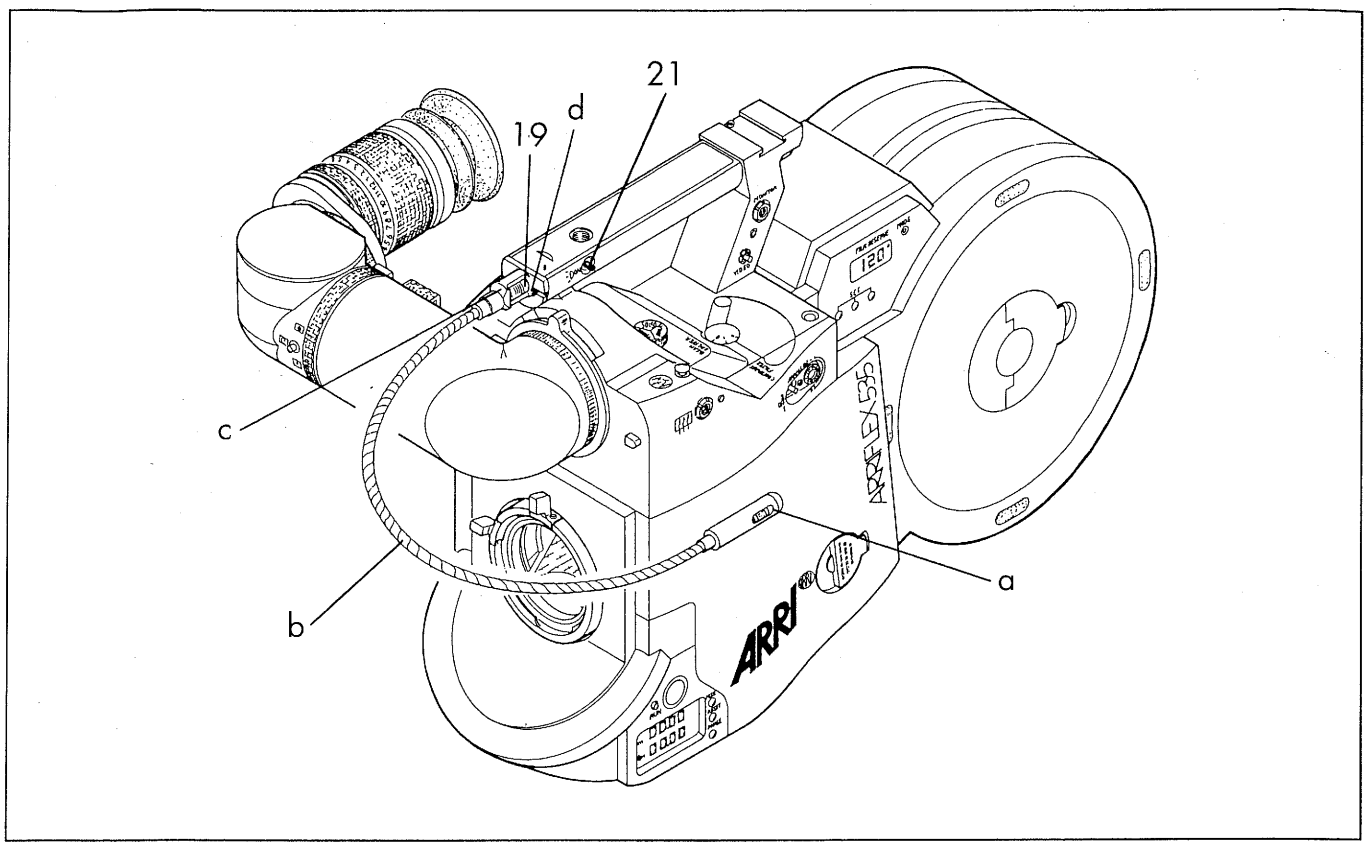
Changing over to deanamorphosing:

Press the locking key (s) and turn the rotary knob (u) to the corresponding symbol. Lock in position by releasing the key.

Symbol		standard format
Symbol		deanamorphosed position
Symbol		blind position

In "blind position" the viewfinder eyepiece is closed. This position is recommended, when filming in bright sunlight or bright scene illumination. It prevents stray light from leaking onto the film through the beam path of the viewfinder.

Note: The offset viewfinder is rigidly fixed to the viewfinder arm and can, therefore, not be removed. Rotating the finder over to the other camera side for operation from the left shoulder is not possible.



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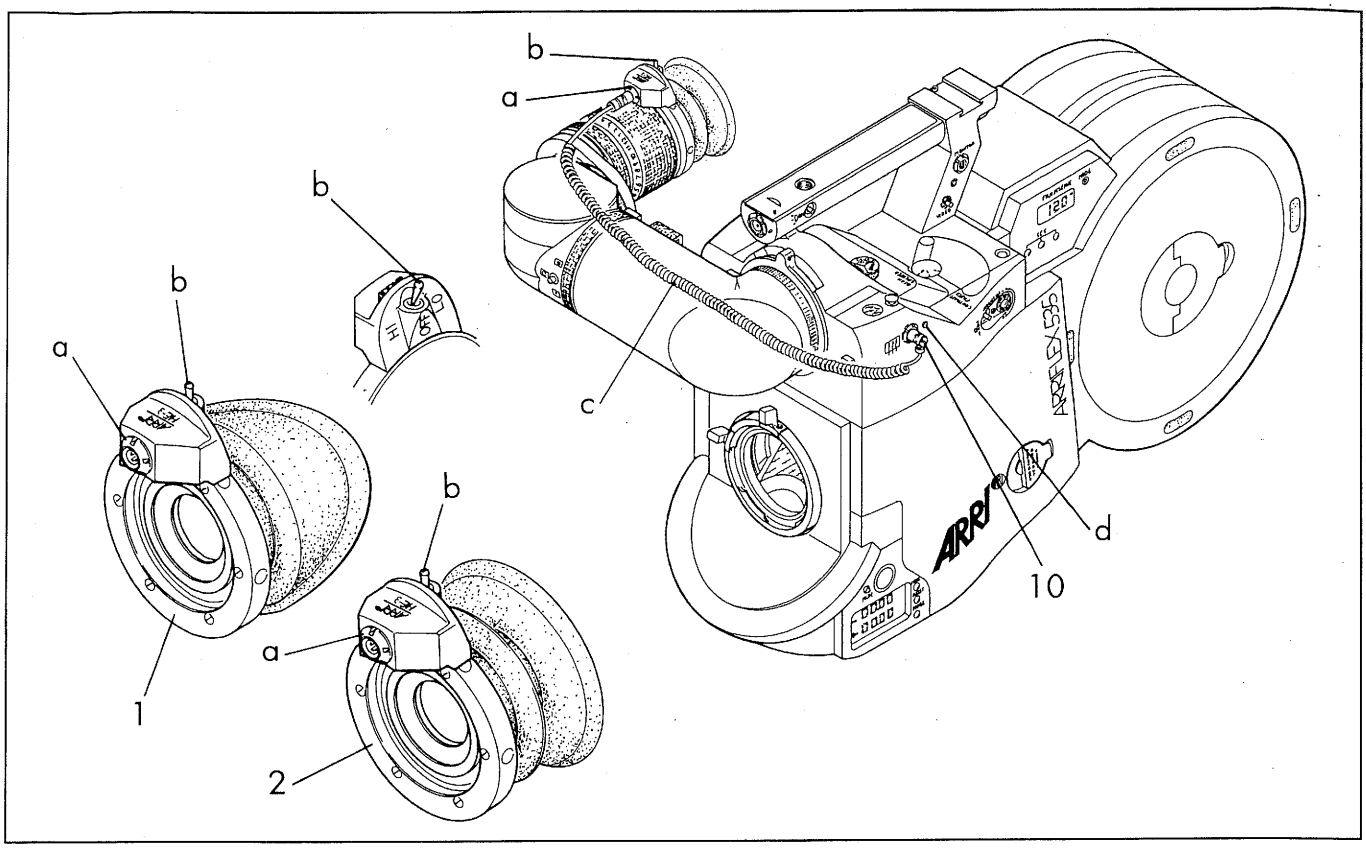
Work light

The work light enables the camera assistant to form the correct film loop inside the camera and to carry out other adjustments on the movement block or the camera even under poor light conditions. The work light also allows reading or checking the lens settings during filming without impairing the take or the scene illumination.

The work light consists of a lamp head (a) which is mounted on a flexible shaft (b) and a plug with holder (c). It is plugged into a flange socket (19) on the camera's carrying handle and switched on and off with the switch (21). A safety pin (d) prevents twisting of the plug.



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Heated eyecup

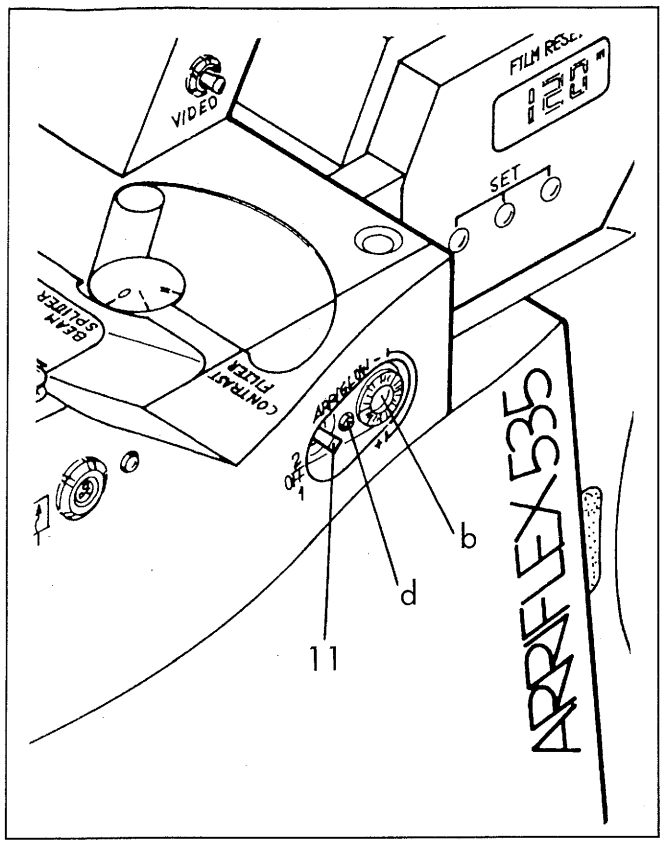
The heated eyecup prevents the eyepiece from misting up in varying temperatures. It is easily fitted in place of the standard eyecup and is connected to the electrical system of the camera by a cable. This cable (c) is fully detachable. On the camera it is plugged into the socket (10) and on the eyecup into the socket (a). The two heating stages (HI/LO) can be selected via a flip switch (b). The indicator lamp (c) illuminates when the heating is switched on.

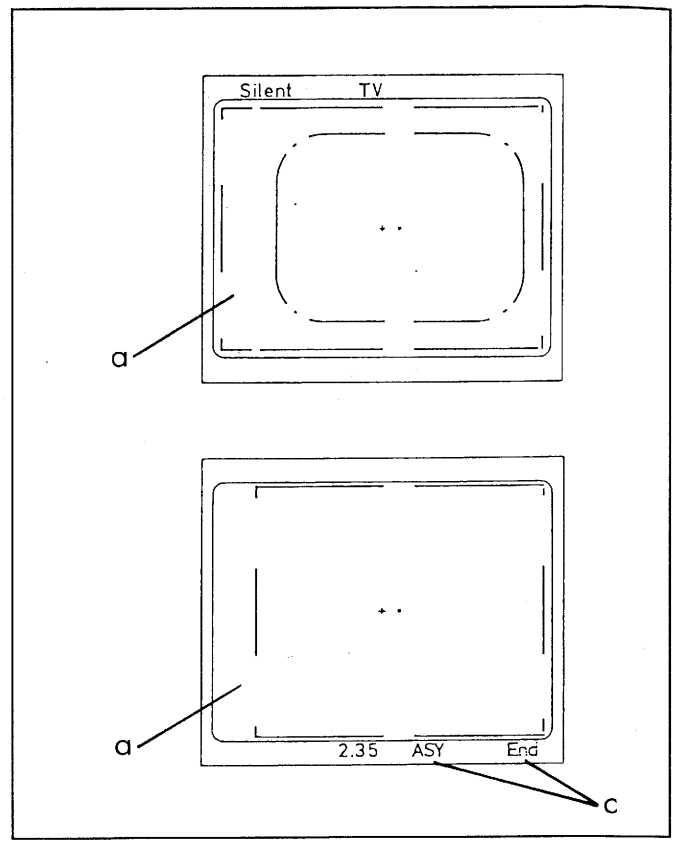
The heated eyecup is available in two versions:

HE-3A (anatomically shaped)

HE-3F (folding type)

Note: If camera and electrical accessories are powered by batteries, the eyecup heating should be switched off during longer shooting breaks. Unnecessary discharging of the batteries can thus be avoided.





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ARRIGLOW illuminated-frame viewfinder

The **ARRIFLEX 535** is equipped with an illuminated-frame viewfinder (ARRIGLOW). The LCD-illuminated frame outline in the viewfinder (a) with continuously variable brightness control makes filming in low light conditions easier, where otherwise it would be difficult or even impossible to see the format markings.

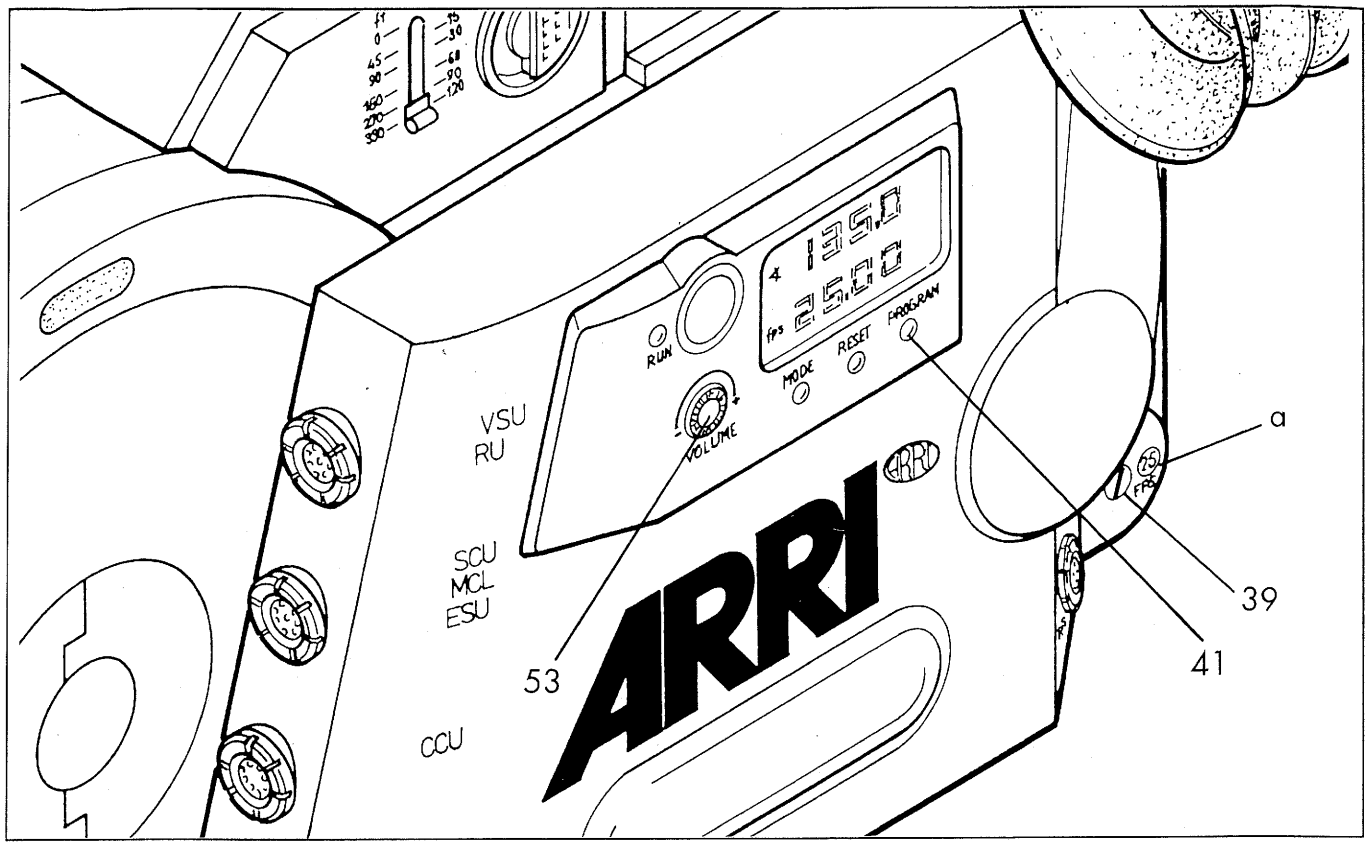
For brightness control turn the potentiometer (b) in the + or — direction. Up to three different format markings (with or without side ratio marking) can be made visible via the flip switch (11). A control light (d) illuminates when the ARRIGLOW is switched on.

1 = format markings with side ratio indication

2 = format markings without side ratio indication

Note: The required format markings must be selected via the Camera Control Unit CCU-1.

Possible error messages (e. g. ASY, low bat, END), are shown in the viewfinder image frame outside the format markings, also when the **ARRIGLOW** is switched off (c).



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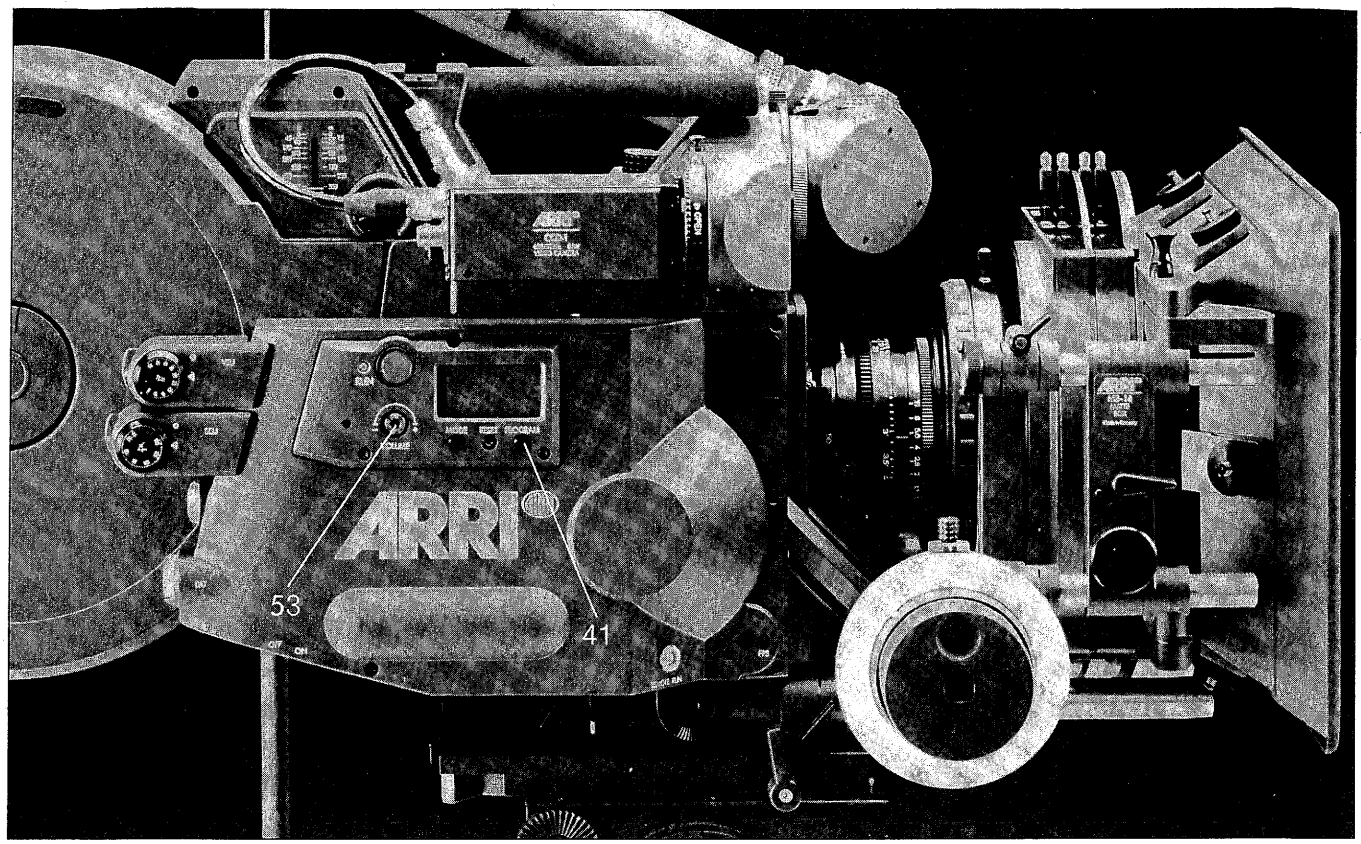
Operating elements, right camera side

Frame rate selector switch (manual)

With the frame rate selector switch (39) the camera can be set for quartz-controled speeds of 24/25/29.97 and 30 fps. To set the selected speed, insert a coin in the slot of the switch, and turn to the requested position. The selected frame rate can be read on the scale (a). In the CCU-position the camera can be operated with any frame rate between 3 and 50 fps via the Camera Control Unit CCU-1 with individual steps of 0.001 frame.



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Displays and keys

In order to allow a universal operation of the camera, displays and keyboard are also arranged on the right camera side. The main functions are identical with those on the left keyboard. In addition, there is a programming key (41).

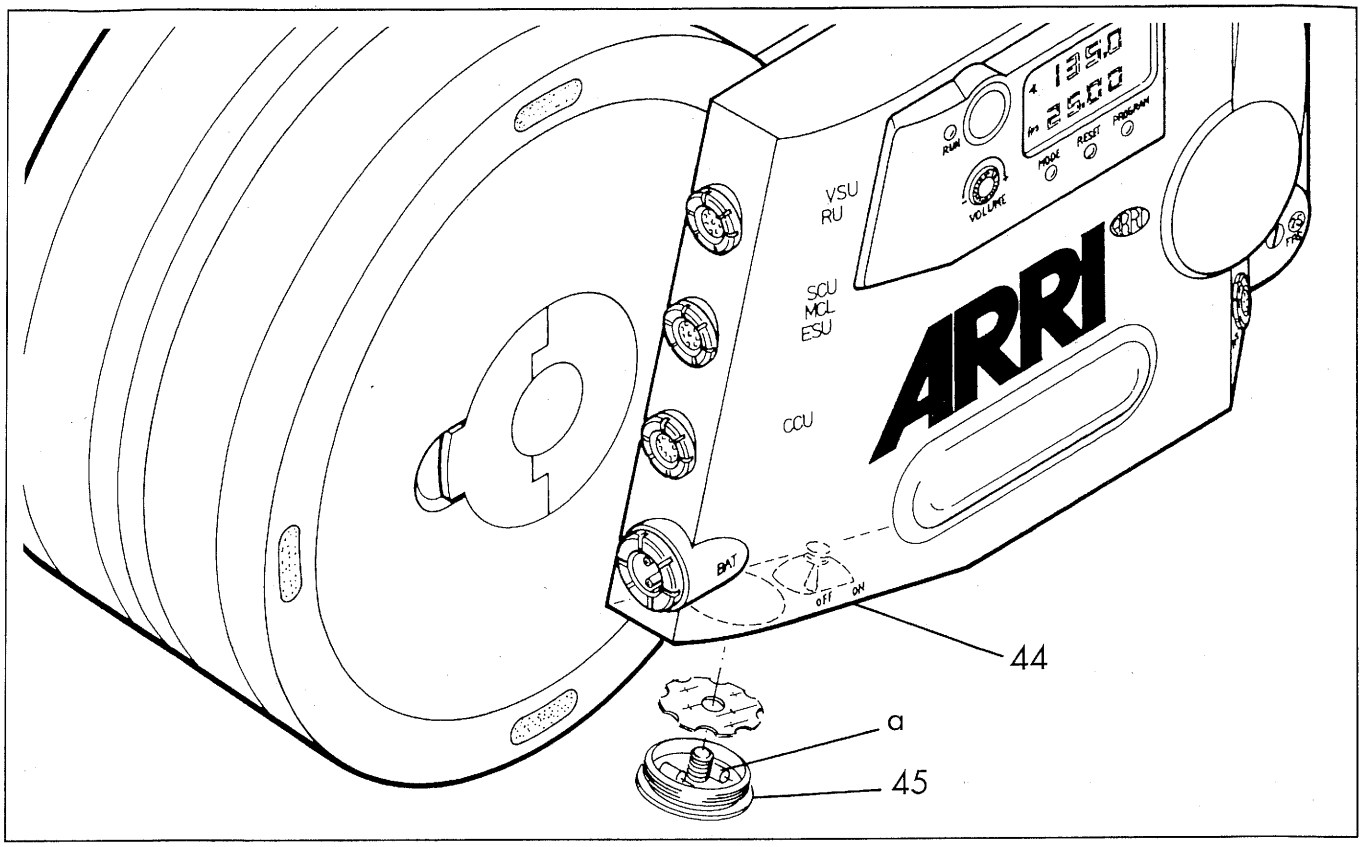
a) Functions of the PROGRAM key in standby:

A program created with the CCU-1 and stored in the camera can be called in by pressing the PROGRAM key. For this, the initial values for frame rate and the open sector of the mirror shutter are set. The camera displays show (in the first mode) "Pr.". The original values are set again by repeated pressing of the PROGRAM key. This toggle function allows activating and deactivating a program as requested.

b) Functions of the PROGRAM key during camera run:

With an activated program, the camera runs with the initial values of the program. If the PROGRAM key is now pressed (with running camera), the final values of the camera are set within the programmed time. By repeated pressing of the PROGRAM key it is possible to choose between final and initial values as requested. When the camera is switched off, the program is automatically deactivated.

The volume of the ASY sound is controlled via a knurled wheel (53) with + and — marks. If the wheel is turned to the end of the — direction, the ASY sound is completely shut off.



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Camera main switch

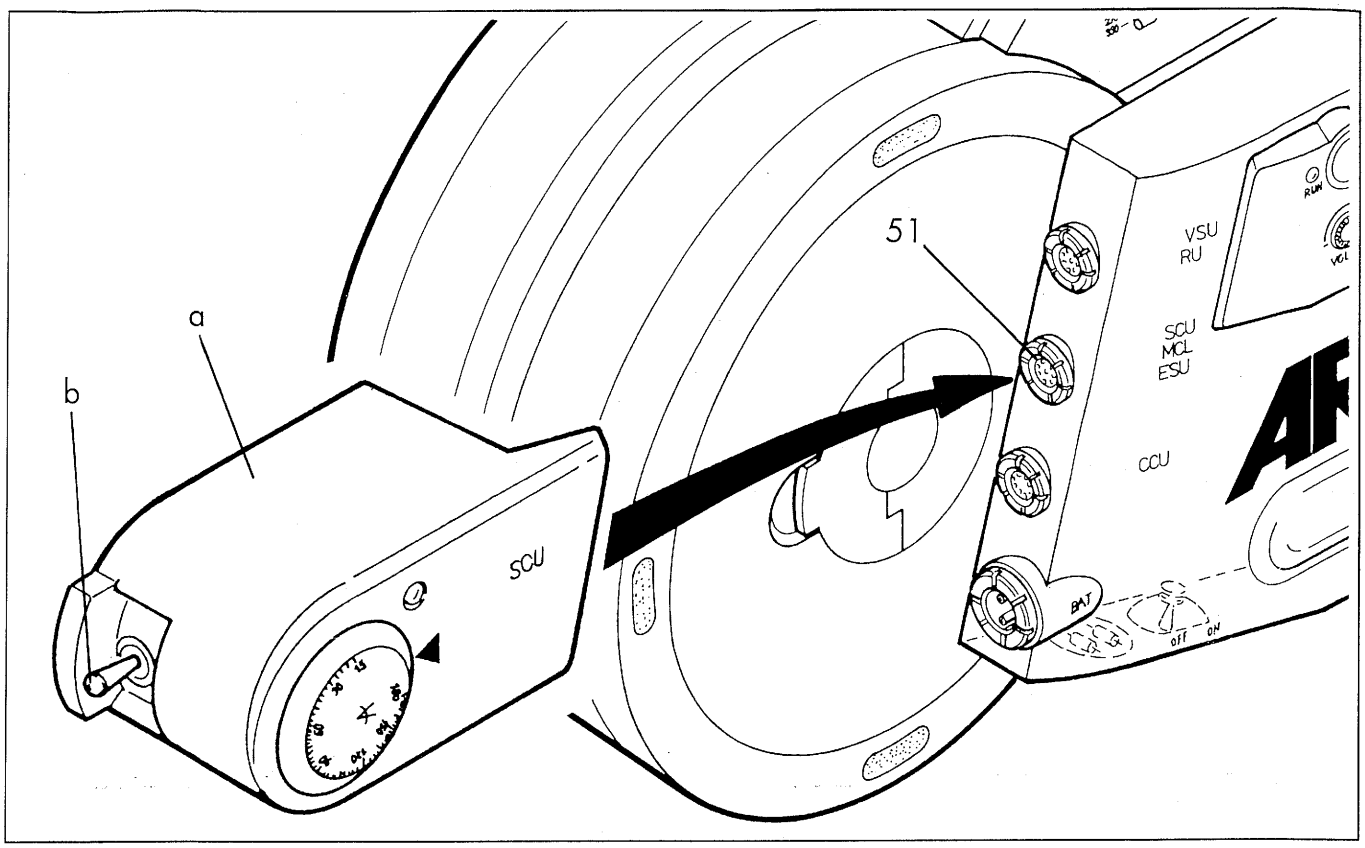
In order to avoid unintentional switching ON or OFF, the main camera switch (44) is recessed-located on the bottom side of the electronic cover. In the **ON** position the camera is ready to operate (standby) and the displays show the values 0000. Position **OFF** means that the camera is cut off the power supply and the displays are without indication.

Note: To avoid a short circuit, ensure that the camera main switch is always in the **OFF** position, when connecting the power supply or the electrical accessories to the camera.

Fuses

For replacing the fuses, unscrew the cover (45), using a coin. Take the spare fuses (a) off the cover. Remove the defective fuses with the special ground glass forceps and replace them with the spare fuses. Replace the cover.

To avoid possible breakdowns or interruptions, make sure that you always have spare fuses to hand (accessory fuse 2.5 A, camera fuse 15 A).



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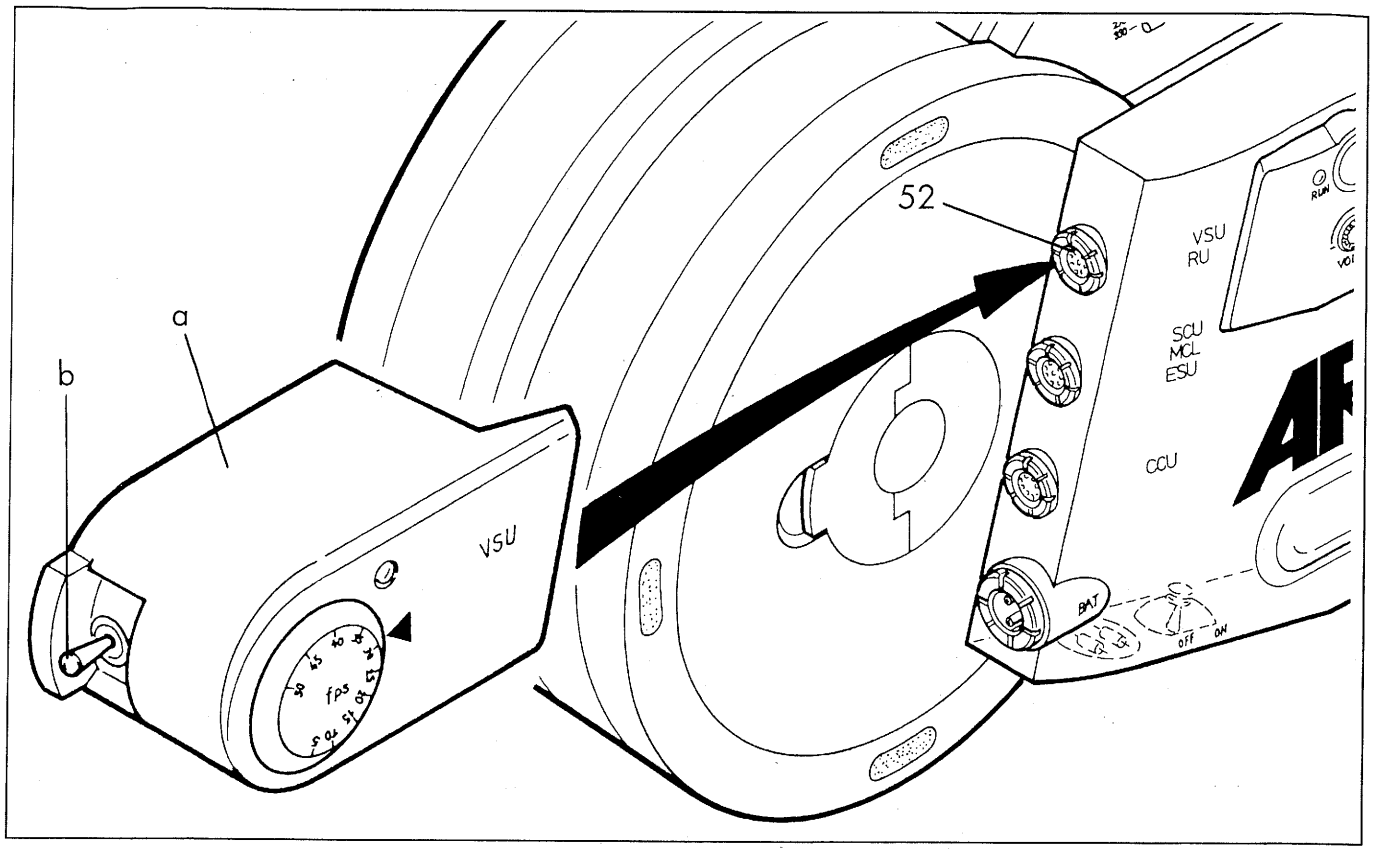
Shutter Control Unit SCU

With the Shutter Control Unit (a), the open sector of the mirror shutter can be continuously adjusted from 11 1/4 to 180 degrees. The SCU is plugged into the plug socket (51) and switched on with the flip switch (b).

When the SCU is switched on, the shutter angle stored in the camera program is suppressed and the angle selected with the SCU becomes effective. The shutter angle can be seen on both displays (4 and 38).

The use of the Shutter Control Unit guarantees a uniform depth of field during the take with differing light conditions. Changing the shutter angle while the camera is running takes only about two seconds for the entire range of 11 to 180 degrees.

Note: The same effect can also be obtained with a corresponding camera operation program.



40

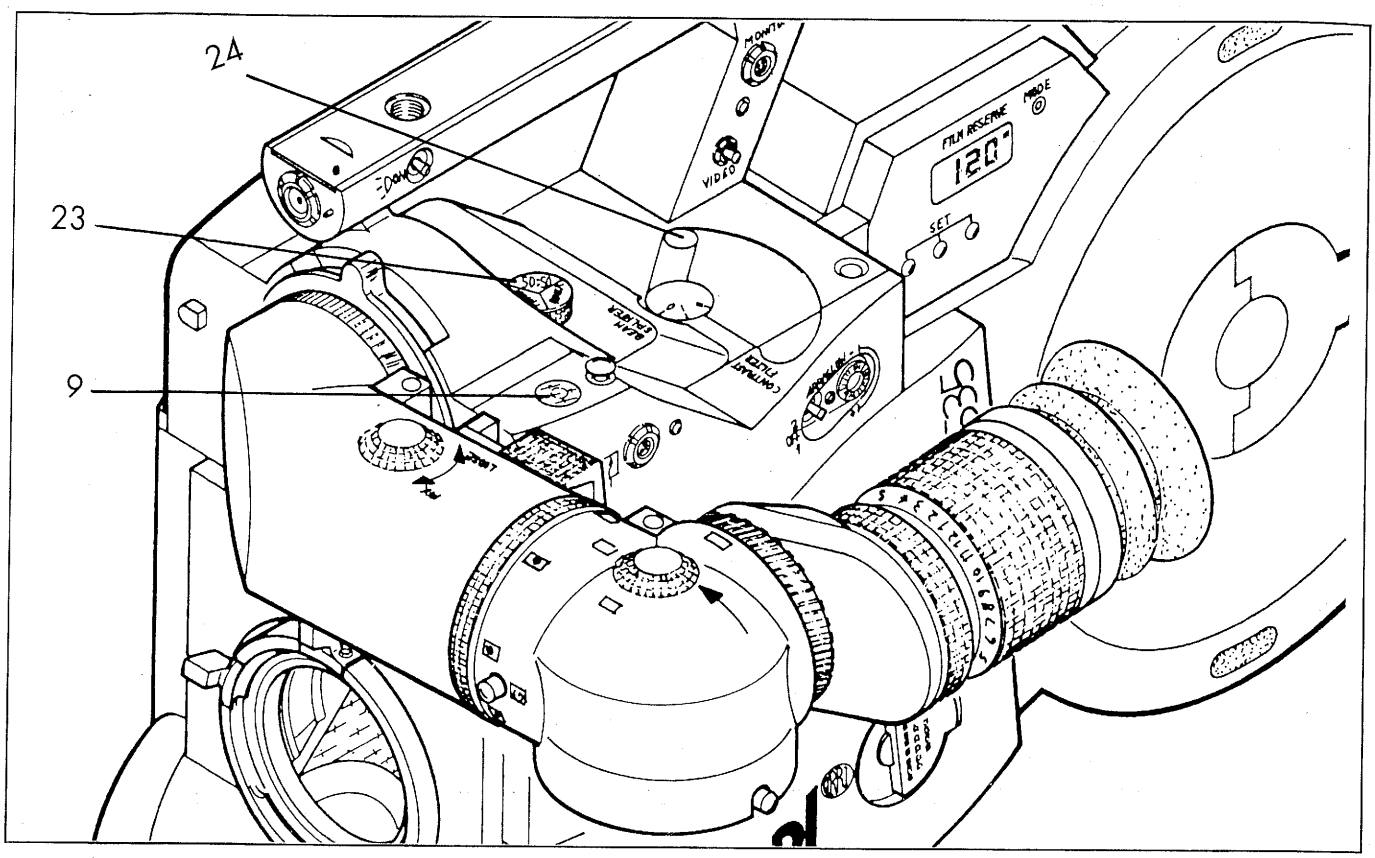
Variable Speed Unit VSU

The use of the Variable Speed Unit (a) enables infinitely variable frame rates from 3⅛ to 50 fps. The VSU is plugged into the flange socket (52) and actuated with the flip switch (b).

When the Variable Speed Unit is switched on, the frame rate stored in the camera is suppressed and the one set with the VSU becomes effective. The new frame rate as well as the information that the camera is controlled via VSU is indicated on the displays (4 and 38).

Reverse camera run

Reverse running of the camera is only selectable via the CCU-1. It is indicated on the camera displays (4/38) with —24 or —25 fps.



42

Operating elements, camera top

Pivoting contrast filter

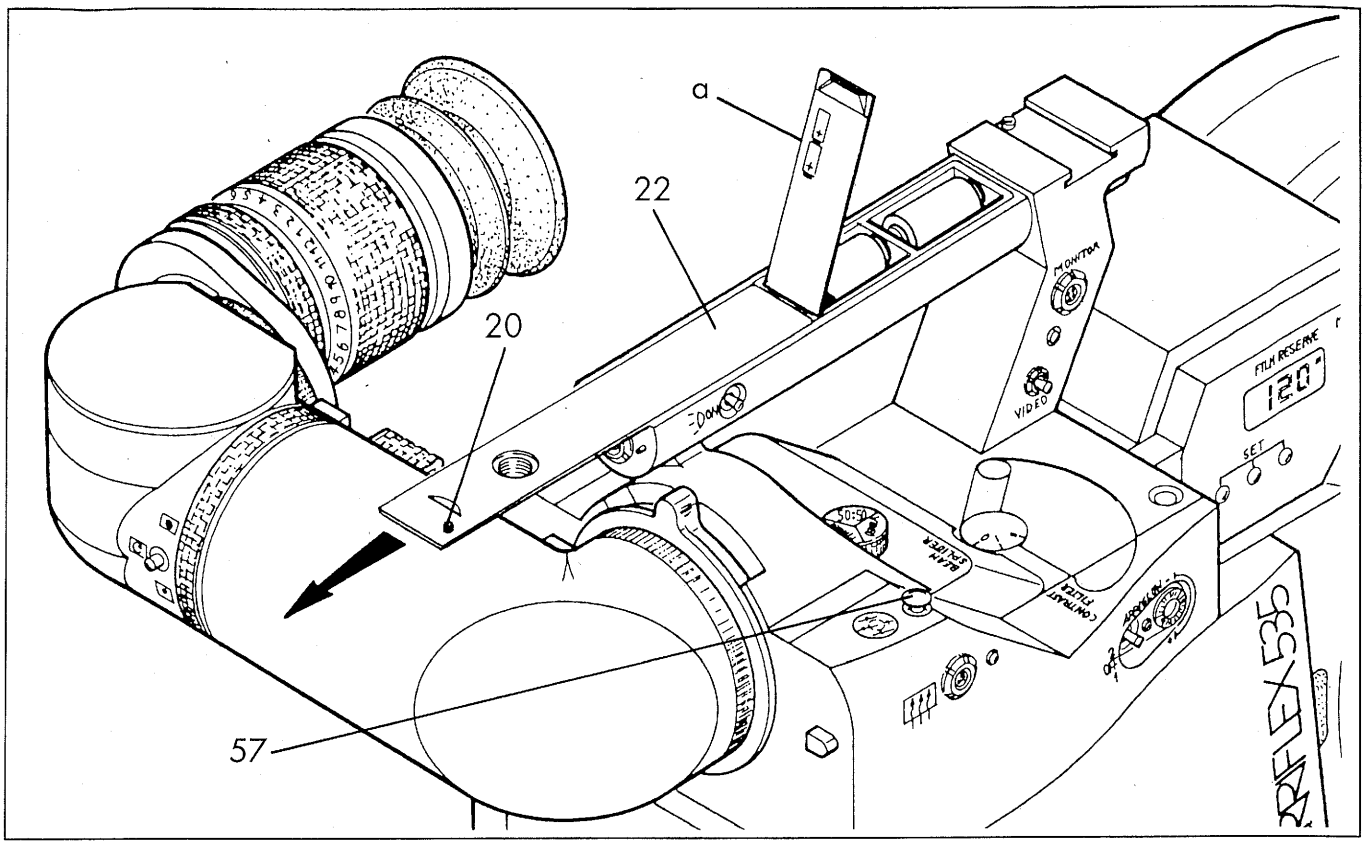
To make it easier for the camera operator to see possible stray light and light reflexes, the camera is equipped with two different contrast filters which can be pivoted into the optical beam path of the viewfinder via the lever (24). Included in the standard equipment of the camera are contrast filters with a rated density of 03 and 06. For free viewing without filters return the lever to its "0" position.

Pivoting beam splitters

The camera is equipped with three different beam splitters which can be pivoted in as required. For pivoting, turn the rotary knob (23) to the requested position. The knob locks automatically in the correct position. For filming without video assist the rotary knob is turned to the VIEWFINDER position which means that a maximum of the light is transmitted from the optical beam path to the viewfinder. The positions 50/50 and VIDEO are required, when a certain amount of the incident light is used for video assist viewing or video recording in addition to filming. The operator can choose between 50% : 50% or 90% : 10% of the incident light.

Bubble level

A built-in fluorescent bubble level (9) allows horizontal leveling of the camera even under poor light conditions.



44

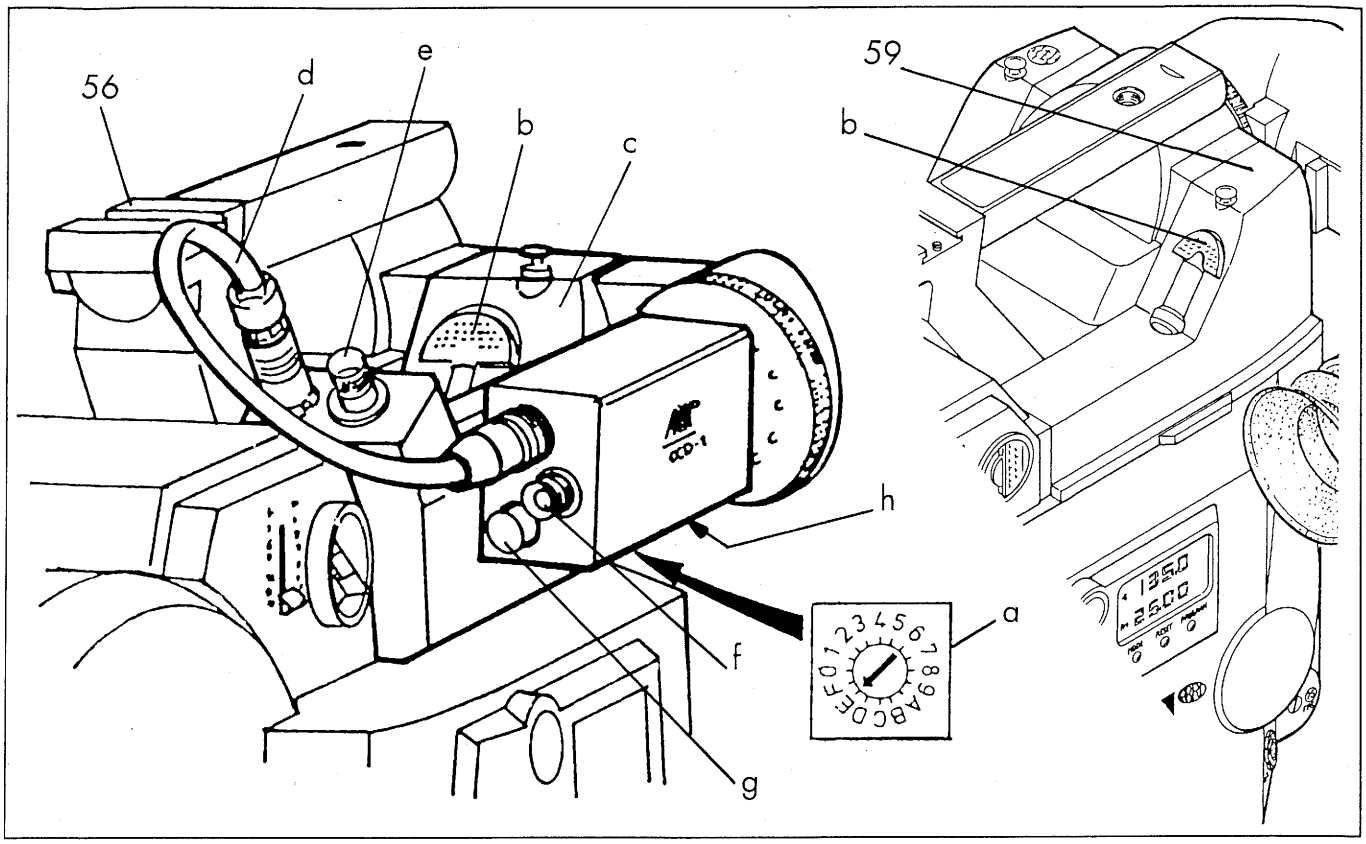
TC-buffer battery

Time code operation requires that the real time is maintained and continues to run even with the camera unplugged. The power supply of the real-time clock is then ensured by the TC-buffer battery. For inserting the batteries, press the knob (20) and push the lid (22) to the side in the direction of the arrow. Fold up the cover (a) and insert the batteries in accordance with the markings.

Note: Use only batteries with the designation **No. 4001 1.5 V LR 1 Lady NAM 5**, and ensure that new batteries are in the battery compartment, before starting TC operation.

Attachments for tape measure

The camera is fitted with tape measuring pins (57) on either side of the camera. The location of the film plane is engraved on the pins so that the distance to the object can always be measured precisely from the film plane.



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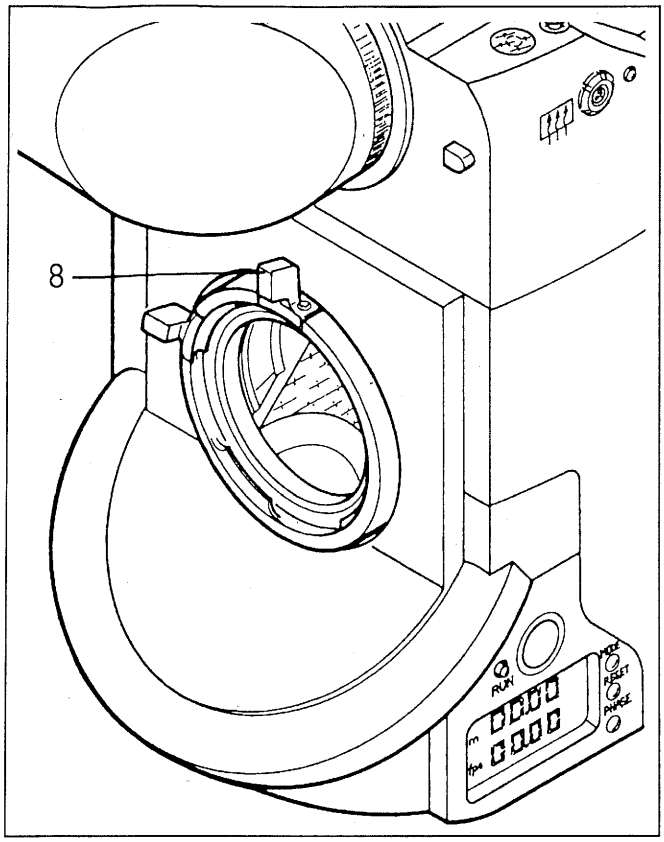
Video Optic Module VOM

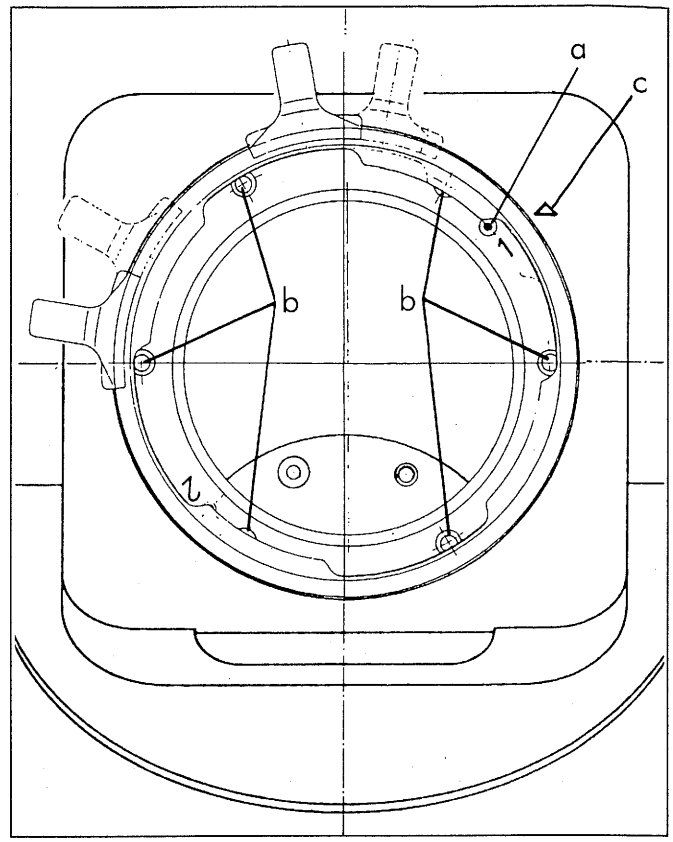
The **ARRIFLEX 535** is prepared for the adaptation of a video camera. To attach the Video Optic Module, fold up the lock lever (b) of the cover plate (59) and turn the lever counterclockwise to its stop. Now the cover plate can be pulled off upwards. Before attaching the Video Optic Module (c) ensure that the optic-protection slide is open. The protective glasses of the film camera and the VOM must be absolutely clean.
Insert the Video Optic Module (c) from the top into the flat guide and fasten by turning the grip (b) clockwise. When taking the VOM off the film camera make sure to close the optic protection slide.

Note: Before mounting the Video Optic Module ensure that the camera main switch (44) is in the OFF position or the power cable unplugged. Connect the cable (d). Select the required beam splitter with the rotary knob (23). The video camera is switched on with the flip switch (25). The control lamp illuminates. One or several monitors can be connected with a BNC standard plug (e) at the rear side of the video adapter. In addition, a mini monitor can be attached on the accessory holder (56) of the carrying handle (power connection for the mini monitor through the socket 26). The use of a mini monitor allows the cameraman or assistant an additional image control. The iris diaphragm of the video camera can be changed with the knurled wheel (h).
Video cameras are available in black-and-white (CCD-1) and in color (CCD-2). Identification of the video camera used must be set via a coding switch (a) on the bottom of the Video Optic Module for optimal flicker reduction. The image location is fixed, i.e. there is no adjustment possibility on the video camera. Due to the design, the video camera is attached to the VOM tilted at an angle of 5 degrees. This angle must not be changed.
A = CCD-2 (Color video camera)
9 = CCD-1 (b & w video camera)
Note: The connector sockets (f and g) are not used.

Accessory holder

In the first place, the accessory holder (56) serves for attaching the on-board battery and in the second place for attaching the mini monitor.





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Operating elements, front and rear camera side

PL-lens receptacle

The PL-lens receptacle has a diameter of 54 mm. The form-fit bayonet lock (8) ensures secure fitting of even the heaviest lenses. An index pin (a) in the lens locating seat prevents accidental lens rotation. The PL-mounts are made of wear-and-corrosion resistant chromium-nickel steel.

Note: Lenses with 41 mm dia mounts cannot be used with this camera.

Super 35 mm format

For filming with the Super 35 mm format the lens receptacle has to be turned by 180 degrees. For this, remove the 6 cheese head screws (b). Then turn the lens receptacle so that the engraved number "2" points at the mark (c). Unscrew the index pin (a) and screw it into the opposite threaded hole. Replace and tighten the 6 screws (b).

Note: Before fitting a lens ensure that the lens receptacle is in the right position.

Flicker-free frame rates for 50 Hz HMI light generators with quartz accuracy

Exposure factors of mirror shutter:	180 degrees =	1,00
	172,8	0,96
	165	0,91667
	144	0,8
	135	0,75

Camera speeds flicker-free at 50 Hz HMI power generators

HMI-light impulse	t exp.	Open sector of mirror shutter: degrees 180	172,8	165	144	135
1	1/100 s	50	48	45,8333	40	37,5
2	1/50 s	25	24	22,9167	20	18,75
3	1/33 s	16,6667	16	15,2778	13,3333	12,5
4	1/25 s	12,5	12	11,4583	10	9,375
5	1/20 s	10	9,6	9,16667	8	7,5
6	1/17 s	8,33333	8	7,63889	6,66667	6,25
7	1/14 s	7,1429	6,85714	6,54762	5,71429	5,35714
8	1/12 s	6,25	6	5,72917	5	4,6875
9	1/11 s	5,55556	5,3333	5,09259	4,44445	4,16667
10	1/10 s	5	4,8	4,58333	4	3,75

Camera speeds: frames per second

Flicker-free frame rates for 60 Hz HMI light generators with quartz accuracy

Exposure factors of mirror shutter:	180 degrees =	1,00
	172,8	0,96
	165	0,91667
	144	0,8
	135	0,75

Camera speeds flicker-free at 60 Hz HMI power generators

HMI-ligth impulse	t exp.	Open sector of mirror shutter: degrees 180	172,8	165	144	135
1	1/120 s	60	57,6	55	48	45
2	1/60 s	30	28,8	27,5	24	22,5
3	1/40 s	20	19,2	18,3333	16	15
4	1/30 s	15	14,4	13,75	12	11,25
5	1/24 s	12	11,52	11	9,6	9
6	1/20 s	10	9,6	9,16667	8	7,5
7	1/17 s	8,57143	8,22857	7,85714	6,85714	6,42857
8	1/15 s	7,5	7,2	6,875	6	5,625
9	1/13 s	6,66667	6,4	6,11111	5,33333	5
10	1/12 s	6	5,76	5,5	4,8	4,5

Camera speeds: frames per second

Adjustable mirror shutter

Filming with daylight (incandescent light)

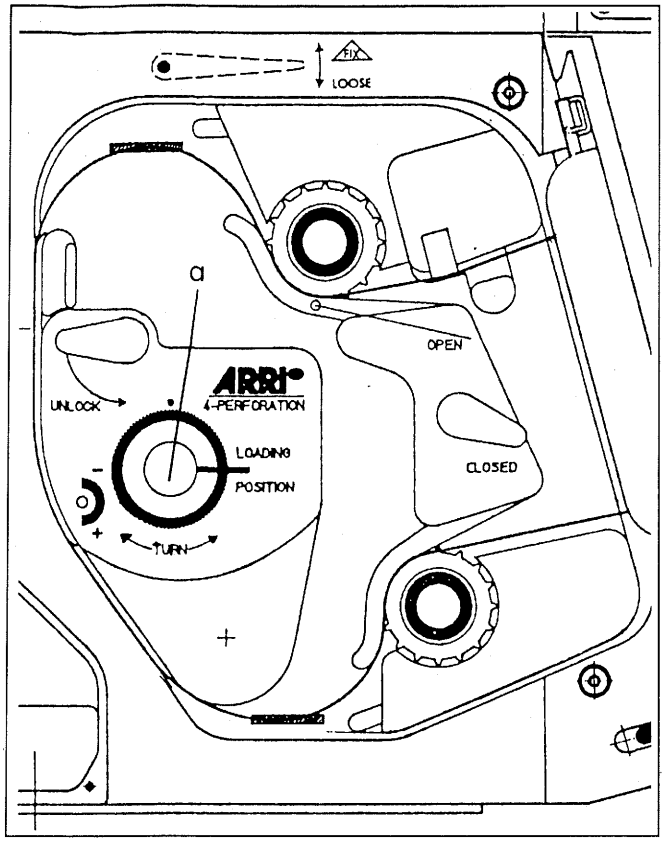
If a uniform depth of field is requested when filming under differing light conditions, the angle of the mirror shutter's open sector has to be changed. Therefore, the camera is equipped with a motor-driven adjustable mirror shutter (7). The adjustment can be effected during the camera run either via a value stored in the camera or via the external Shutter Control Unit SCU. The most common shutter angles (180, 172.8, and 144 degrees) can be set in the standby position of the camera.

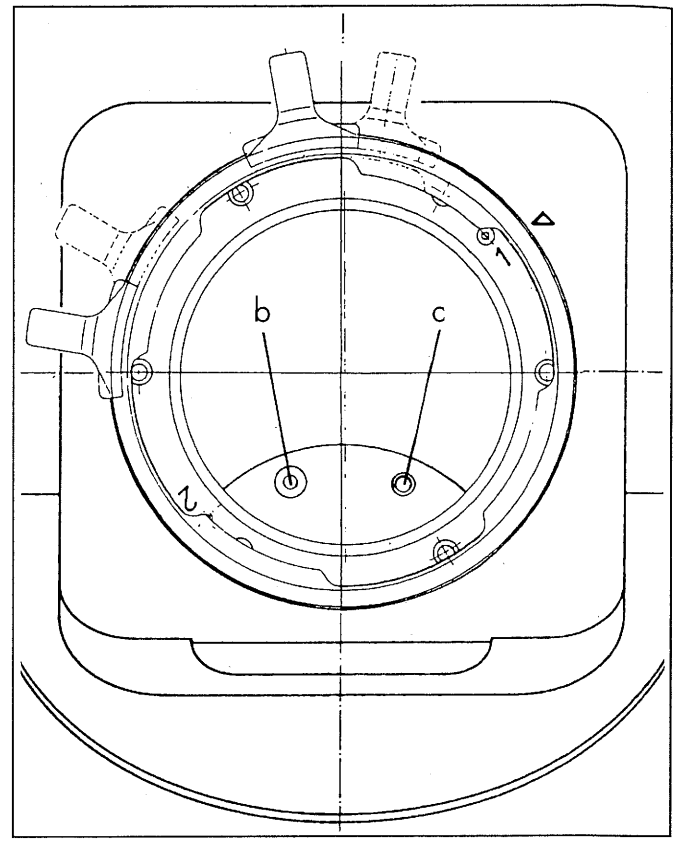
Filming with HMI light

For scene illumination with HMI/CID discharge lamps it has to be considered that these lamps have an alternating light intensity, dependent from the supply frequency. The filming process is also intermittent, due to the camera frame rate and the camera shutter interval. To achieve constant exposure in every frame, the frame rate and shutter opening of the camera, als well as the supply frequency of the luminaires, must have a constant ratio to one another. Since both the camera frame rate and the supply frequency are fixed values, the open sector of the rotating mirror shutter must be adjusted for optimal synchronization. Direct synchronism between the supply frequency and the camera frame rate is not necessary, if the following values are maintained:

Supply frequency	**50**		**60**	**Hz**
Frame rate	**25**	**24**	**24**	**fps**
Shutter opening	**180**	**172,8**	**144**	**degrees**

The open sector of the adjustable rotating mirror shutter can be set in the camera main storage via the Camera Control Unit.





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Mechanical adjustment of the mirror shutter

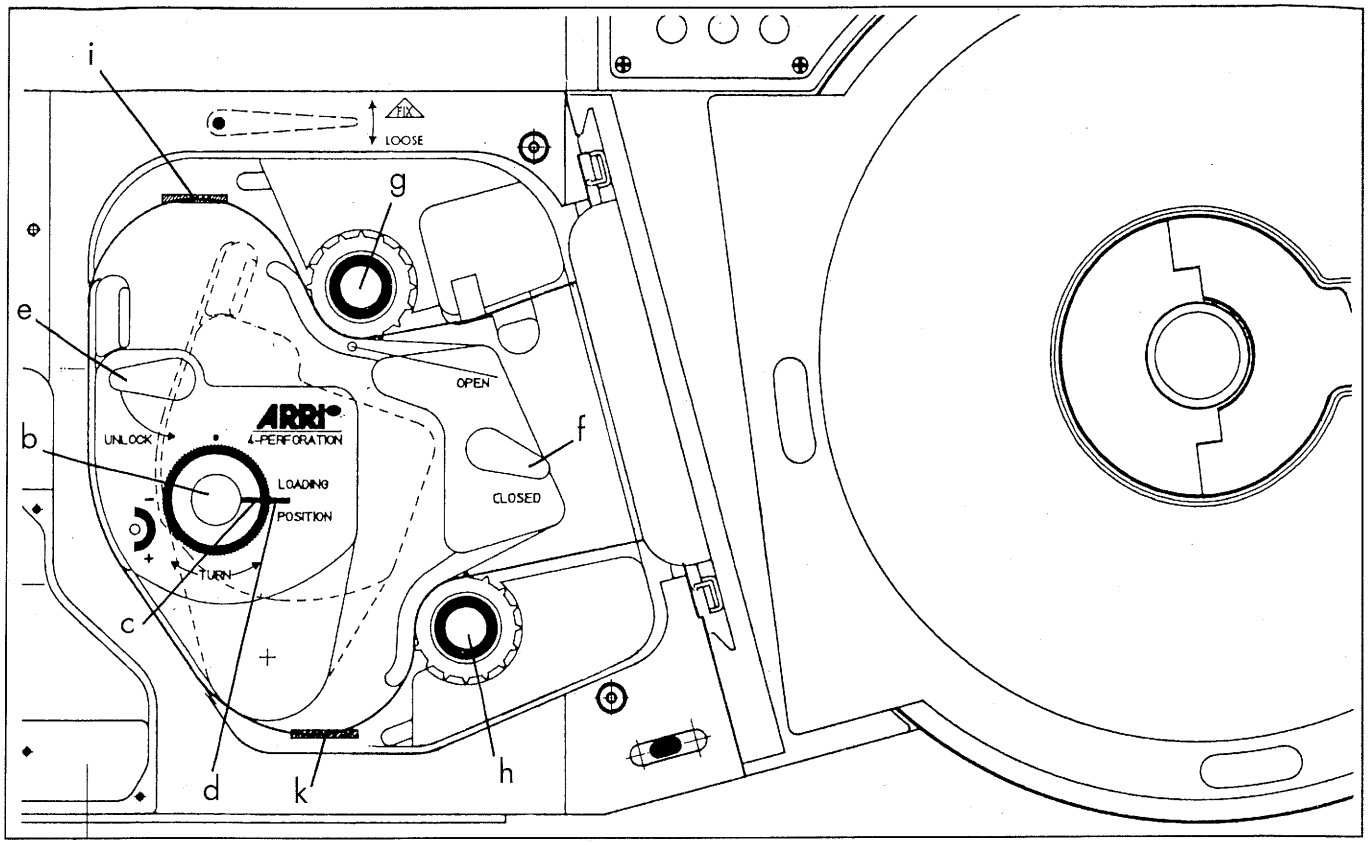
Caution: Mechanical adjustment of the mirror shutter should only be done in the case of failure of the electronic adjustment. In this case the camera displays indicate the error message "E4".

Remove the lens or lens cavity cap from the lens receptacle. The mirror shutter (7) is now visible and accessible through the opening of the lens receptacle. Position the mirror shutter by turning the knurled wheel (a) so that the open sector adjusting device (b) and the locking device (c) are easily accessible.

Normally, with automatical mirror shutter adjustment, the locking device should always be in the LOOSE position. Turn the locking device with the special wrench (d) in the direction **LOCK** until it stops. Then turn the open sector adjusting device (b) with the same wrench a few degrees to the next angle position. The locking device snaps in automatically at the exact angle position.

Caution: The locking device (c) must be released before every new angle adjustment.

Never turn forcibly!



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Modification of Movement

The camera drive system has been modified with a swingaway coupling between claw mechanism and drive motor. With the claw mechanism swung away the camera can be started via "RUN" or "PHASE" key. If the camera is started with the claw mechanism in the swung-away position and film inserted, an electronic warning signal appears in the camera display (alternating upper and lower line segment) (flashing error LED). If an additional sensor (guide runner) is actuated, the "RUN" function is disabled. The readout in the camera display is maintained: The CCU-1 gets the "NOT READY" status. "RUN" and "PHASE" functions are disabled.

When the claw mechanism swung away, the two markings (c and d) must coincide in order to disengage the coupling. The claw can now be freely turned by hand without moving the drive system. If the camera is now switched on and off, it is electronically stopped in the correct position to ensure that the claw mechanism in securely swung back into the coupling.

Attention!

Camera handling in currentless state.
Should the claw mechanism hit an obstacle when swung into position, the coupling engagement does not coincide. Restore correct coupling engagement by slowly turning one of the two knurled discs (g/h) and slightly pushing the claw mechanism.

All camera functions are again ensured.

The inner camera

The movement

The camera noise level is affected by several factors:

a) Sliding friction of the film

b) Distance between perforation holes of the film

c) Claw noise

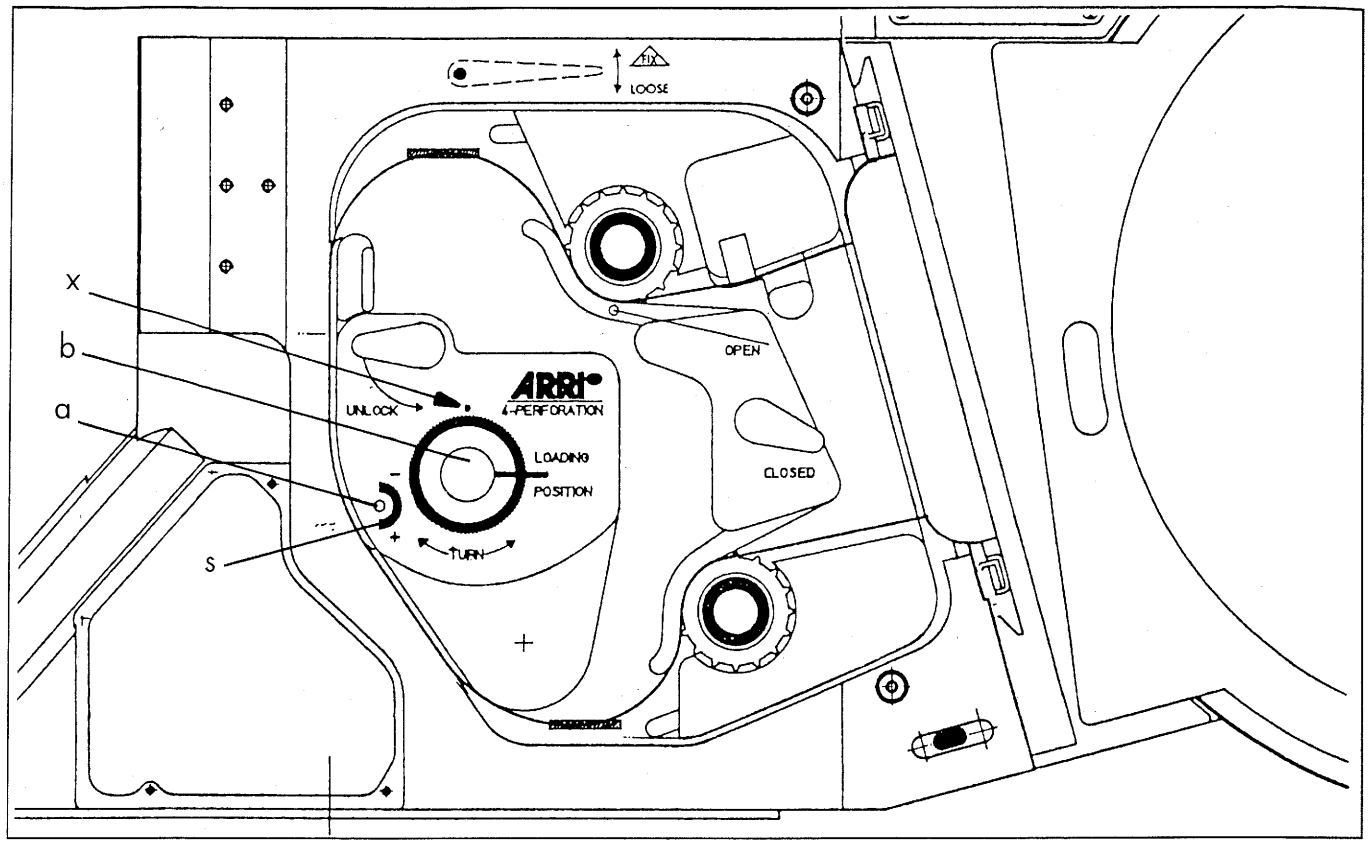
d) Film loop noise

Generally our cameras are delivered with a standard claw setting, i. e. negative claw with a claw pitch of 4.74 mm (short pitch). This standard setting ensures safe transport of all negative film stocks with a perforation pitch within a reasonable tolerance range.

The **ARRIFLEX 535** has a newly designed 7-link movement. This movement allows adjustments for differences in film stock perforation pitch of various film types or emulsion batch numbers, thus achieving extremely quiet running. We recommend that, before filming, a noise test is completed with a piece of film of the same emulsion batch being used during production:

Load approximately 200 ft (60 m) of film into a magazine. Open the camera door and turn the knurled wheel (b) so that the marks (c and d) are in line. Then press the lock lever (e) and swing the movement block back. Turn the film rockers to OPEN with the lever (f) and attach the loaded magazine onto the camera while, with the left hand, guide the film loop past the camera door into the camera cavity and position the film between the film gate and the movement block. Then turn the lever (f) to CLOSED. While doing so, ensure that the film guide rockers are carefully moved back into position so that no damage is done to the perforation holes of the film. Swing the movement block back into position and lock with the lever (e). Adjust the upper and lower film loops precisely to the two marks (i and k) with the two knurled discs (g and h).

Caution: The knurled discs must be pressed first and then turned.



56

The film should be lined up in the middle of the guide lines in order to ensure correct time code recording.

Check that the film travels through the movement correctly by turning the knurled wheel (b). The optimal camera dB level should now be determined by different adjustments of the transport claw.

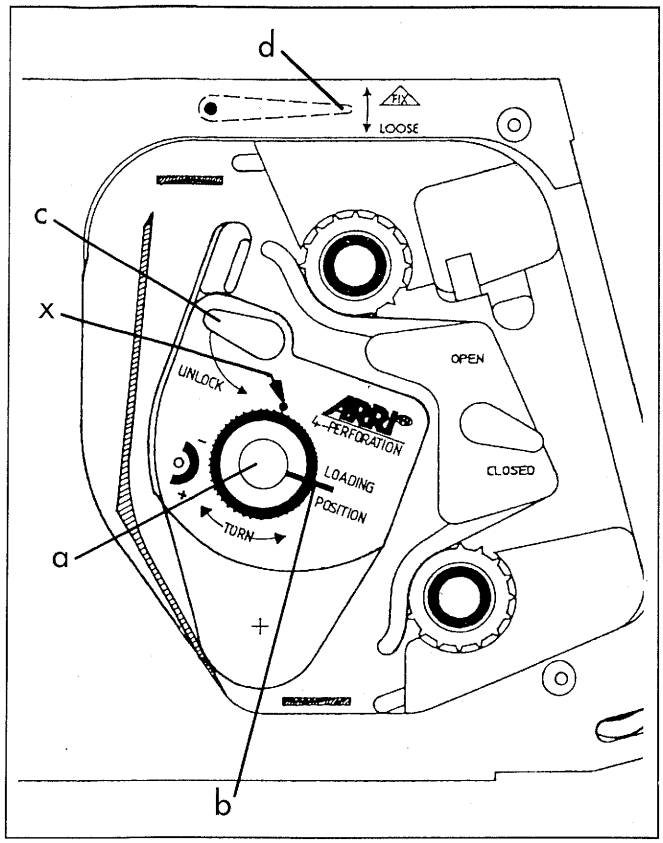
Note: The marking (x) serves, among others, for checking the correct overlapping (the film gate must be completely covered by the mirror shutter during the transport phase). If the marking of the knurled wheel points at the marking (x), the left edge of the mirror shutter should be in the middle of the lens receptacle.

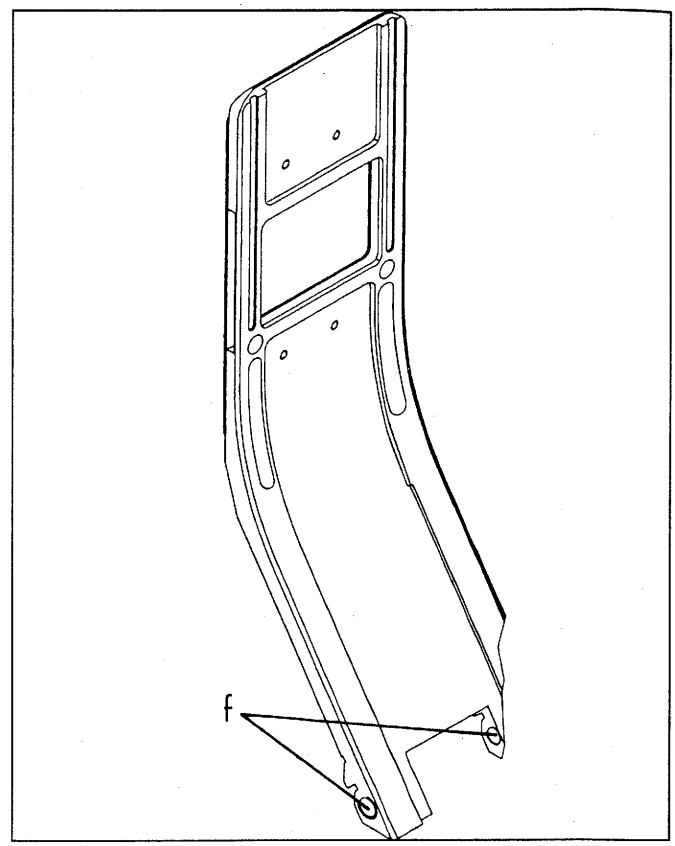
Adjusting the transport claw

The transport claw pitch is adjusted to the particular filmstock via the adjusting screw (a). Latest camera version is fitted with a knurled wheel for pitch adjustment. Both, the adjustment range and the adjustment direction can be read on the scale (s). To determine the lowest noise level, run the film through the camera at different pitch settings, with the camera door open. Pitch adjustments must be made while the camera is running.

Caution: The adjusting screw should be turned very slowly, to avoid film damage. The figures 1—5 serve for orientation and identification only, and should not be considered as measurement.

Note: Before switching the camera on, check that the film is transported correctly, by turning the knurled knob (b) manually or by activating the inching speed with the phase key.





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Film gate

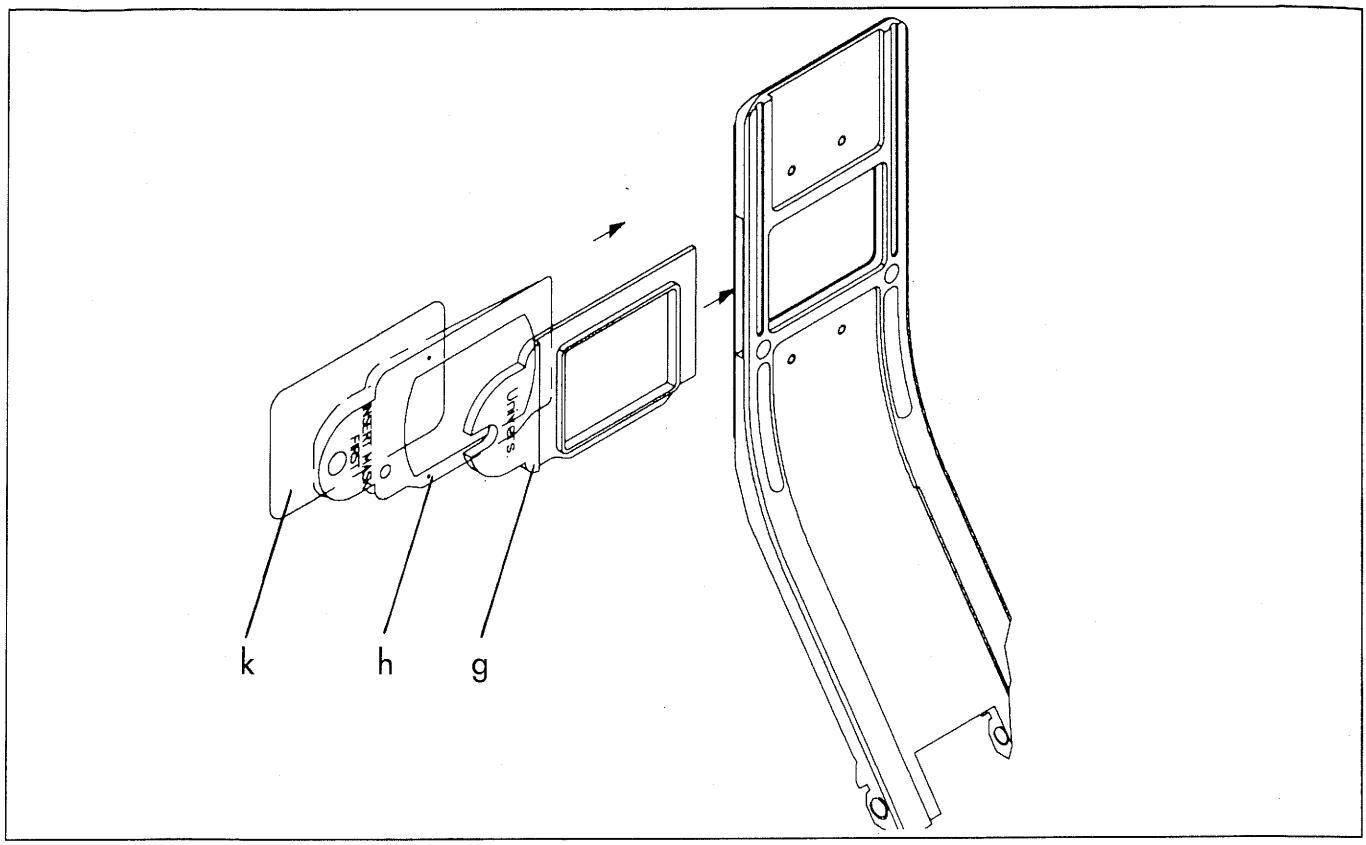
With the **ARRIFLEX 535** it is no longer necessary to interchange the film gates for different filming formats; only the format masks need to be interchanged.

It is, however, possible to remove the film gates for cleaning. For this, turn the knurled wheel (a) so that its marking points at the marking (b) of the movement block. Swing the movement block back by pressing the lever (c). Then turn the knurled wheel so that its marking points at the marking (x).

Now the claw pins are pulled back into the film track as far as they will go, in order to prevent damage. Pull the lever (d) and flip the film gate off in the direction of the arrow. Pull the film gate out of its holder in an upward direction, using slight pressure.

Caution: Keep fingers out of the film gate opening in order to prevent fouling or damaging the mirror shutter.

When replacing the film gate, ensure that the spring-loaded balls (f) at the bottom snap exactly into the bore holes of the camera housing.



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Interchanging the format masks

Swing the movement block back by pressing the lever (c). For easier handling take off the magazine first. Pull the lever (d) and flip the film gate off in the direction of the arrow. Pull the filter holder (h) sideways out of the film gate. Press the format mask by its plate handle (g) slightly in the direction of the lens receptacle; then pull it out sideways.

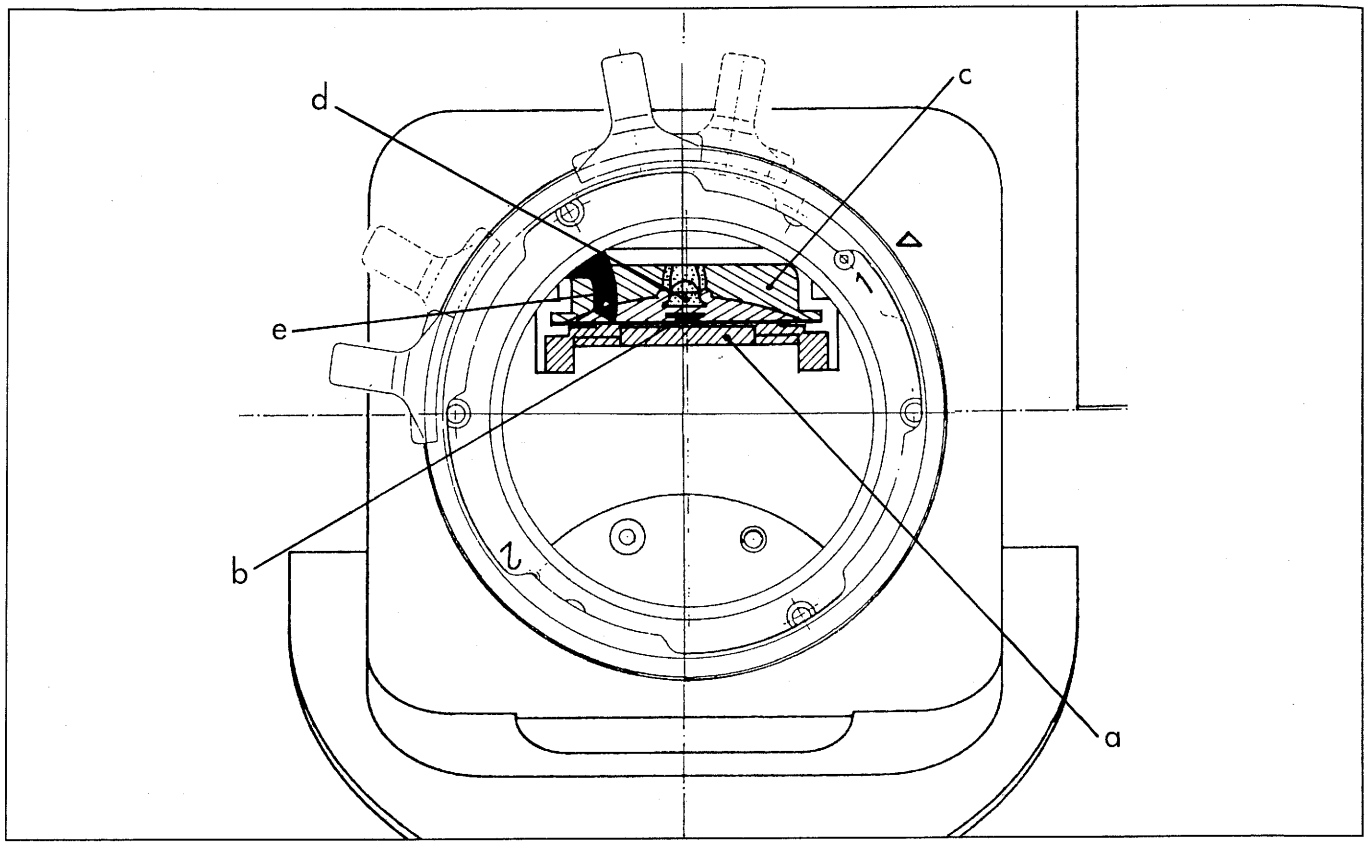
Insert the new format mask in reverse order. Ensure that the frame of the film gate and the surface of the rest are absolutely clean.

Note: To ensure perfect images, a format mask should always be inserted in the film gate.

Filter holder

The filter holder (h) serves for holding gelatine filters. Slightly expand the filter holder, insert the required filter foil and cut off the jutting edge. Then slide the filter holder back in again and flip the film gate back to its correct position.

Caution: On the camera displays it is indicated that a filter is inserted, however, not the correct positioning of same. Therefore, it is essential that the correct position of the filter holder is checked before filming.



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Interchanging the ground glass

Remove the lens or the lens cavity cap. Move the mirror shutter out of the lens receptacle area by turning the knurled wheel of the claw movement or by briefly tapping the PHASE key (third mode, standby).

Pull the ground glass out of its holder by its catch (b), using the special forceps. Make sure that the ground glass frame is absolutely clean before inserting the new ground glass. Push the new ground glass into the holder until it stops, using the special forceps. The ground glass is fixed in the correct position by a ball catch. Check by slightly pressing with your finger.

Cleaning the field lens

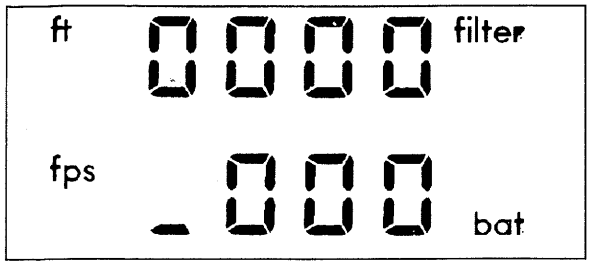
Before taking out the field lens it is essential to remove the ground glass first (see previous section). Push the safety plate (e) with a finger or a screw driver upwards. Hold the field lens (c) by its catch (d) and pull it off the holder using the special forceps.

Use only dry and non-fraying cloth for cleaning!

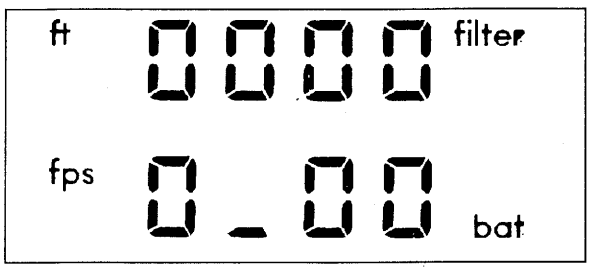
Make sure that the frame is absolutely clean before replacing the field lens!

Push the field lens into the holder until it stops, using the special forceps. It is fixed in the correct position by a ball catch. Push the safety plate (e) downwards again. Replace the ground glass as described in the previous section. Check the exact position of the field lens and ground glass by slightly pressing with your finger. Move the mirror shutter back to the initial position by turning the knurled wheel of the claw block or by briefly tapping the PHASE key (third mode, standby).

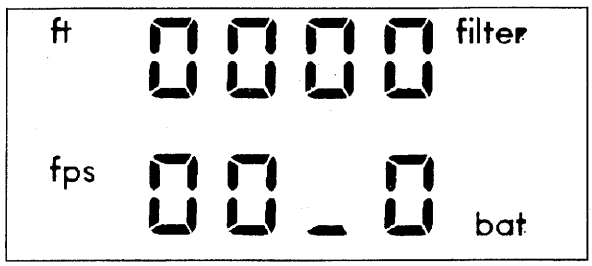
a)



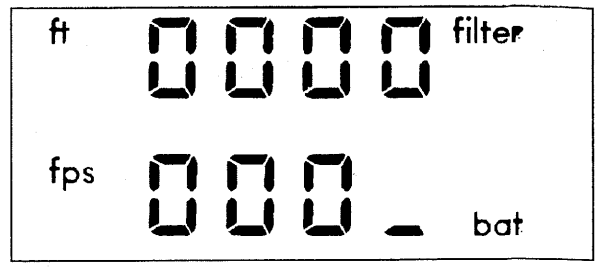
b)



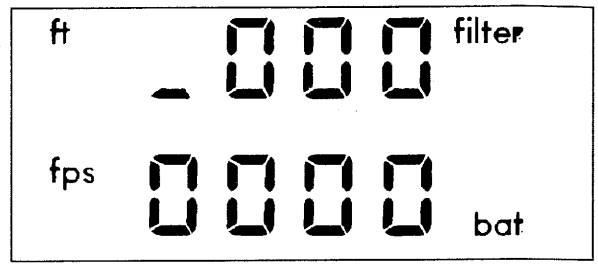
c)



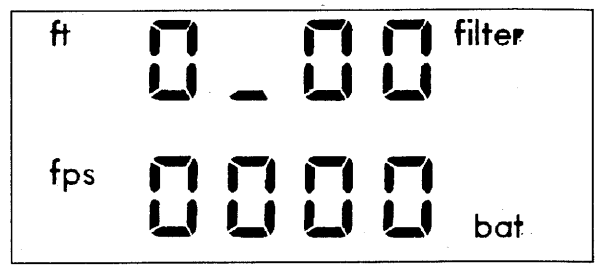
d)



e)



f)



Sensors and displays

The **ARRIFLEX 535** is equipped with several sensors for operation fault and failure detection. The acknowledgements are indicated either on the camera displays or in the viewfinder. An additional acoustic signal with volume control indicates possible asynchronous run of the camera. The signal can be shut off if unwelcome.

The supply voltage of the camera is 24 V. In case of an under- or overvoltage, i. e. < 18 V or > 32 V, the camera cannot be switched on and the operation control indicator (5) illuminates red (camera not ready for operation).

Failure indication on the camera displays:

a) movement block not locked in position

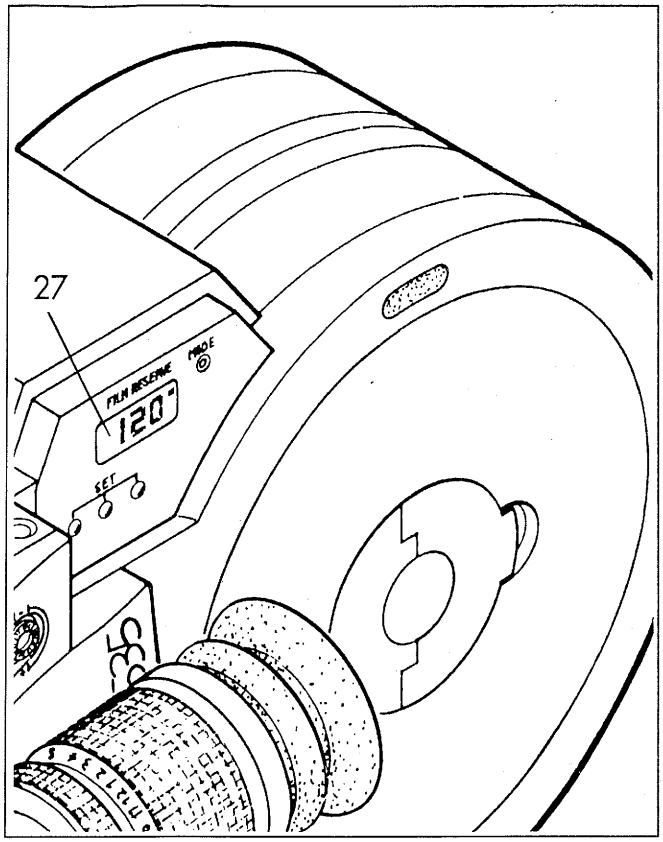
b) film jam in upper film loop area

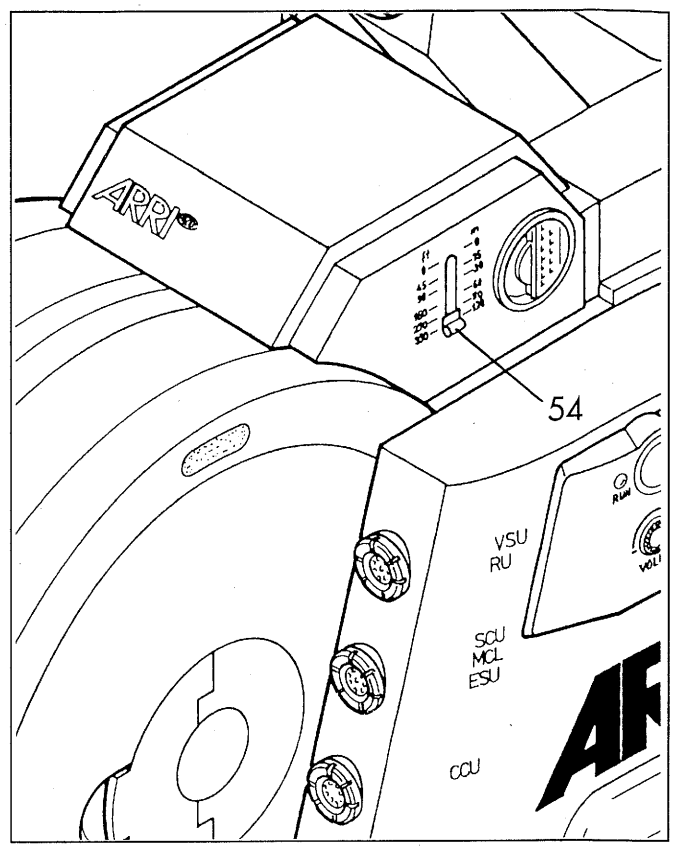
c) film guide rockers not locked in position

d) film jam in the lower film loop area

e) magazine not properly attached

f) magazine not ready for operation
(This indication disappears after approx. two seconds, if there is no failure.)





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Magazines

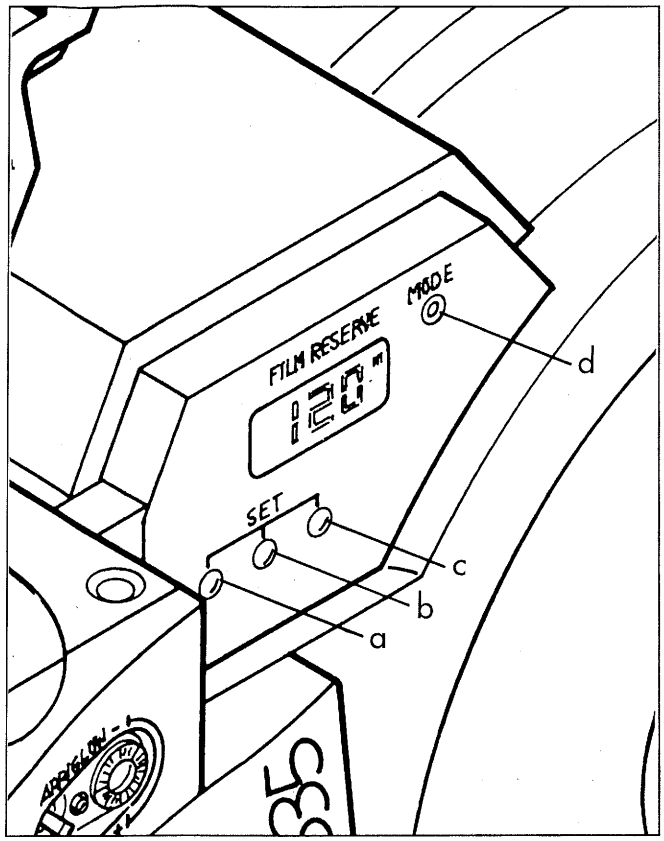
The **ARRIFLEX 535** system includes 400 ft (120 m) and 1000 ft (300 m) film magazines. Both magazines are equipped with an electronic and a mechanical film stock indicator.

The electronic film stock indicator is powered by an internal lithium long life battery which allows reading and programming also, when the magazine is not attached to the camera.

For an optimal quiet camera run the magazine throat was newly designed.

The mechanical film stock indicator (54) is equipped with a pivoting feeler arm. The remaining film stock can be read on a scale.

A newly designed expandable film core on the feed side also contributes to reduce the noise level at the magazines. Take-up and feed motors are monitored by the magazine's electronics.



TCS-Table

Make	Film type	Kind	TCS-setting
Agfa	XT 125	CN	6
	XT 320	CN	7
	30/166	b&w	8
	36/195	b&w	7
Eastman	5247	CN	6
Kodak	5294	CN	5
	5295	CN	4
	5297	CN	5
	5239	CU	6
	5240	CU	5
	5222	b&w	8
	5224	b&w	8
	5231	b&w	8
Fuji	8510	CN	7
	8514	CN	5
	8520	CN	5
	8530	CN	6
	8550	CN	4

CN = Color negative CU = Color reversal
b&w = black and white

Operating elements

Displays and keys, electronic film stock indicator

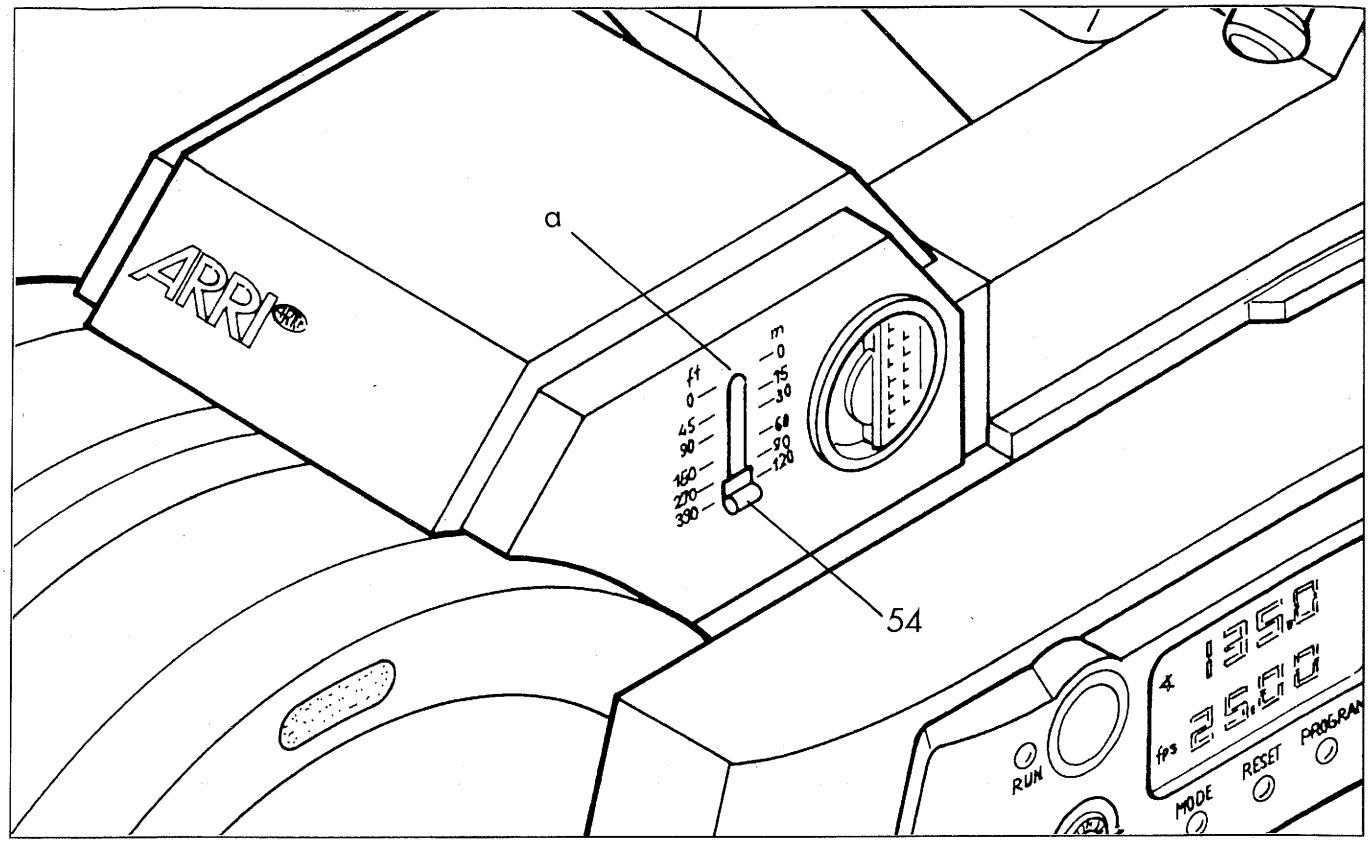
Like the displays on the camera, the magazine display also has a mode key (d); the number of modes, however, is limited to two only.

a) In the first mode (MODE key not pressed), you can set the quantity of film loaded in the magazine (in standby only). The set keys (a, b, c) are arranged according to their place value. When the camera is running, the unexposed film stock remaining in the magazine is continuously indicated in metres or feet. During reverse camera run the quantity of film transported back into the magazine is automatically added to the remaining film stock. For quick setting of the film length press the two keys a and c simultaneously. The film stock is set in accordance with the magazine type and unit of length (m or ft).

Magazine type	Unit "m"	Unit "ft"
120 m	120	393
300 m	300	983

In case of no input within 10 seconds the counter electronics switch off automatically.

b) The second mode is activated by pressing the MODE key. With time code operation, the identification character of the film sensitivity can be set with the set keys. Setting is only possible in camera standby.



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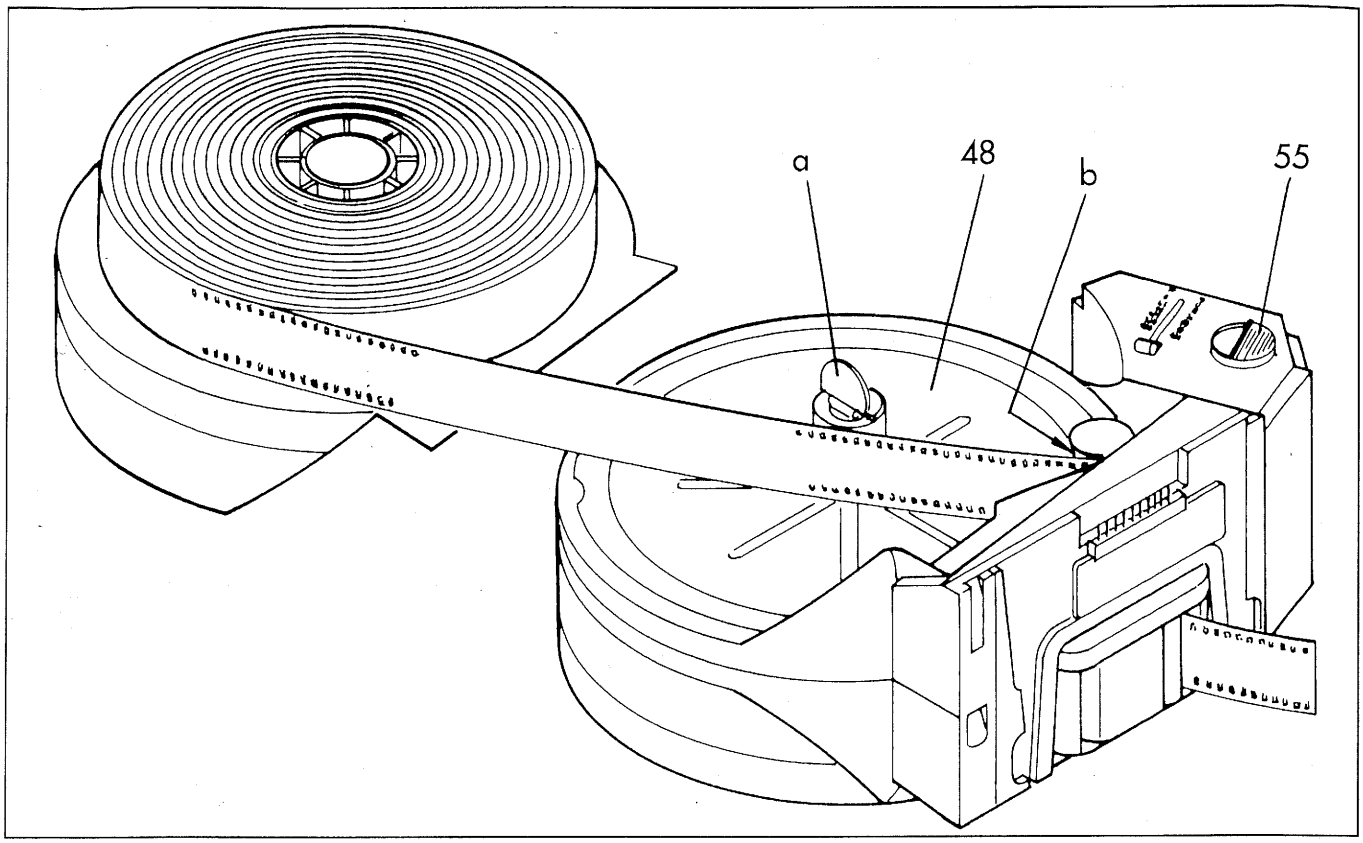
It is initiated by pressing the MODE key. The magazine is in the TCS mode, when the indication TCS appears on the display. The MODE key can now be released. Set the film speed in accordance with the table. All SET keys have the same function. If the set value exceeds the figure "9", the indication moves to the value "0". If there is no input in this mode within 5 seconds, the display shows the present remaining film stock again. After further 5 seconds the counter electronics switch off automatically, if SET keys are not pressed.

Note: Ensure that the film quantity is set after loading the magazine.

Mechanical film stock indicator

In addition to the electronic film stock indicator, the magazines are also equipped with a mechanical film stock indicator. This allows the control of film short ends or when the magazine is loaded with film stock of less than the maximal magazine capacity. For reasons of noise reduction the quantity of remaining film stock is not continuously indicated. The quantity is indicated in ft or m on the scale (a) after the feeler arm is pivoted onto the film roll with the slide bar (54).

When the slide bar is released, the feeler arm is pulled back to its original position by a recuperating spring.



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Loading the magazine

Loading the magazines should be practised in daylight with a piece of test film, until you are familiar with all movements and able to work in a darkroom or film changing bag.

Cut the film straight across the perforation holes so that the magazine throat sprockets will easily engage the holes. The **ARRI Film Cutting Gauge** simplifies cutting the head of the film in the dark room.

The following work should be done in a dark room or film changing bag:

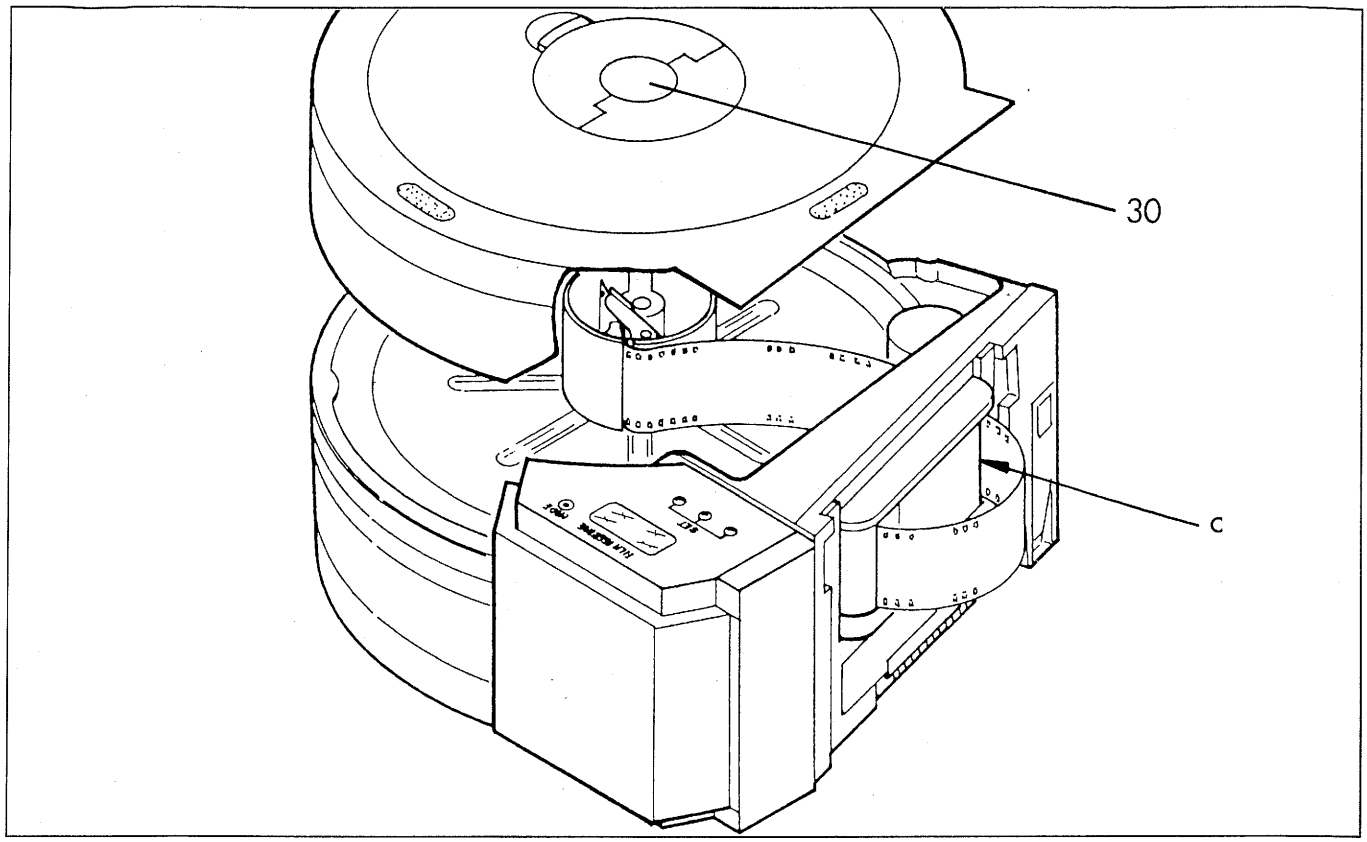
Place the magazine with the feed side (48) up on a flat surface. Press the button (50) and flip the flap-hinged locking clip (49) up. Then turn the locking clip counter-clockwise until it stops and take off the magazine lid. Place the film roll beside the magazine.

Note: We reommend that the magazine lid is used as height-compensation base for the film roll. Ensure that the film roll is flush and even.

Feed the head of the film into the slot (b) and ensure that it is not canted or buckled. Continue to push the film through, until it emerges out of the magazine throat. If the film cannot be pushed through easily, use the threading aid (55). Set the threading aid in an upright position, turn it carefully counterclockwise and push the film gently inside, until you feel the sprockets engaging the film perforation.

Now place the film roll on the feed shaft and flip the hinged clip (a) down horizontally. Continue to turn the threading aid until the film emerges from the magazine throat. Close and lock the magazine lid.

Caution: Ensure that the hinged grip (55) of the threading aid is flipped back horizontally to disengage the driver; otherwise the clip rotates when the camera is running, causing a loud noise and possibly film jam.



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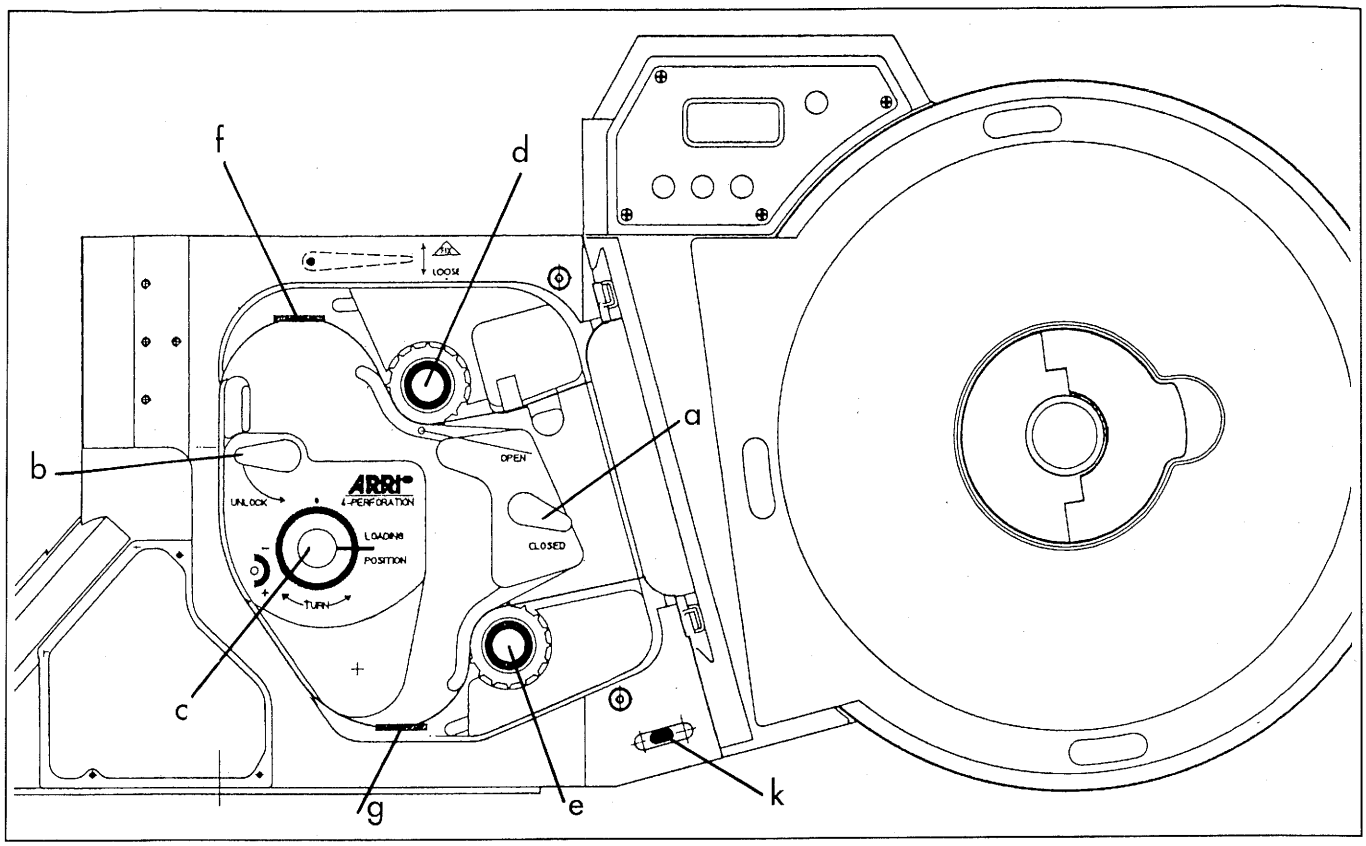
All further steps can be carried out in daylight.

Turn the magazine over so that the take-up side is on top. Press the button (30) and take the magazine lid off as previously described.
Pull the head of the film out with your hand and feed it into the lower slot (c) of the throat. Gently push the film until it emerges inside the take-up compartment of the magazine. Insert the head of the film into the expandable film core, clamp it in place and wind the film roll approximately one turn.
Ensure that the film runs at a right angle to the take-up shaft in order to prevent dishing of the film roll. The magazine lid can now be closed.



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Attaching the loaded magazines

Open the camera door and remove the magazine throat cover. Lift the film guide rockers off the sprockets by pivoting the lever (a).

Align the marking of the rotary knob (c) with the one of the movement block. Swing the movement block away from the film track to the stop position by pivoting the lever (b).

Carefully slide the loaded magazine approximately halfways into the dovetail of the camera. Enlarge the film loop with your hand so that you can guide it past the movement block between the film track and the film gate.

Following this, push the magazine completely into the camera to the stop position. It is automatically locked in this position by a mechanical spring-loaded locking device (k). Carefully tilt the film guide rockers onto the sprocket drums by pivoting the lever (a). If found necessary, move the film slightly to ensure that the sprockets engage properly in the film perforations. Align the marking of the rotary knob (c) with the one of the movement block.

Swing the movement block to the film gate by pivoting the lever (b). Ensure that the transportation pins properly engage the film perforations.

To adjust the upper and lower film loops, press and then turn the knurled discs (d and e) so that the film is in the middle of the marking lines (f and g). Check the correct film travel either by pressing the PHASE key (inching speed) or by turning the knurled knob (c). Then close and lock the camera door. The total film stock can now be set with the set keys.

Removing the magazines

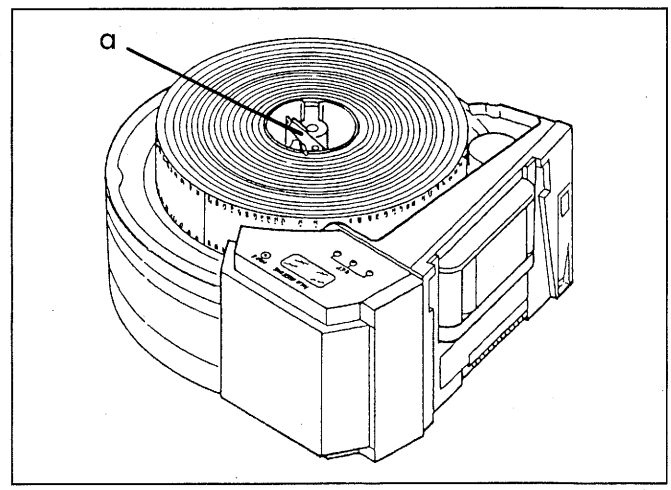
Open the camera door. If there are film short ends in the magazines, i.e. the film loop is still in existence, the movement block must first be swung back. Then pivot the film guide rockers away.

Push the lever (k) and pull the magazine approximately halfways out of the camera housing. Remove the film loop between film track and film gate with your hand, then pull the magazine completely out of the camera housing. Ensure that the film is not caught by the sprockets of the film guide rockers.

If the film is completely exposed and in the take-up compartment of the magazine, the movement block and the film guide rockers need not be swung back. In this case it is sufficient to press the lever (k) and to pull the magazine out of the camera housing.

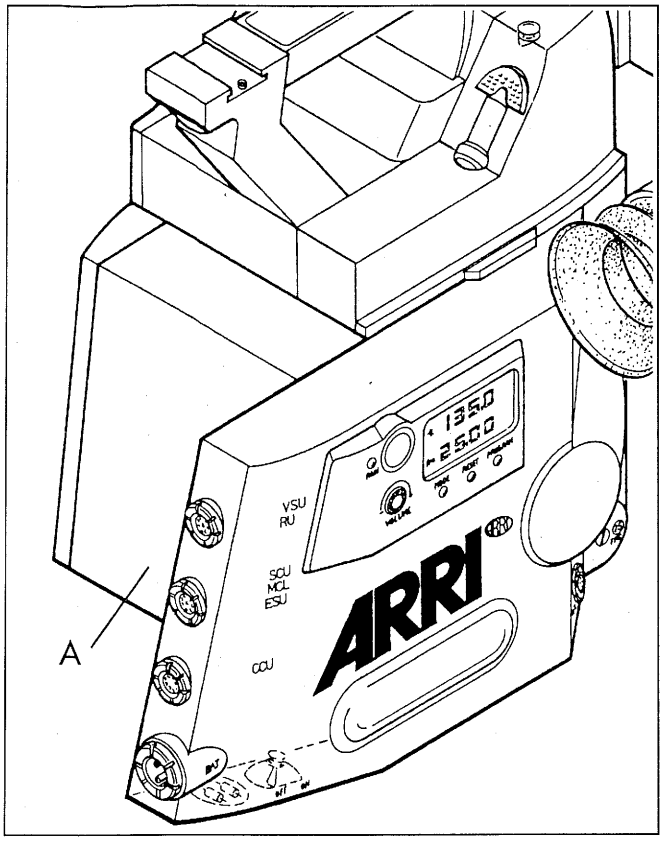
Removing the exposed film

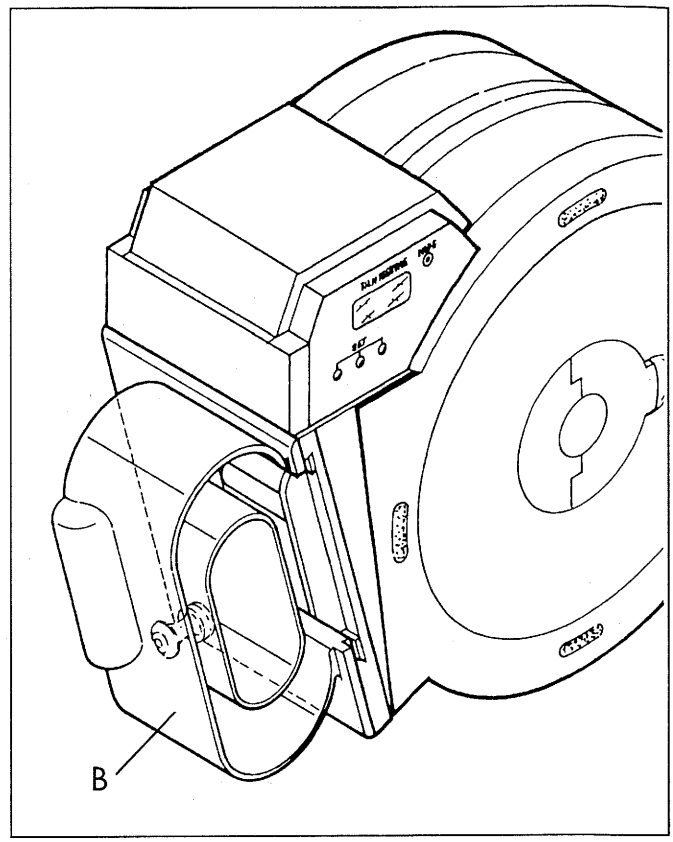
Exposed film must be removed from the magazine in the dark room or film changing bag. Place the magazine on a flat surface with the take-up side (28) facing upwards. Press the button (30), turn the lock (29) to the left to the end position and lift the magazine lid off. Relax the expandable magazine core by pressing the lever (a) which releases the film for removal. Lift the film by gripping the roll's outer edge and by sliding one hand under the roll to prevent sagging.



Now place the roll on a flat surface and insert a plastic film core in its centre to stabilize the roll for transport.

Caution: The plastic core sits loosely in the film roll, but provides sufficient stability. Under no circumstances should the film be pulled tight, as this may damage the emulsion and reduce the quality of the images.





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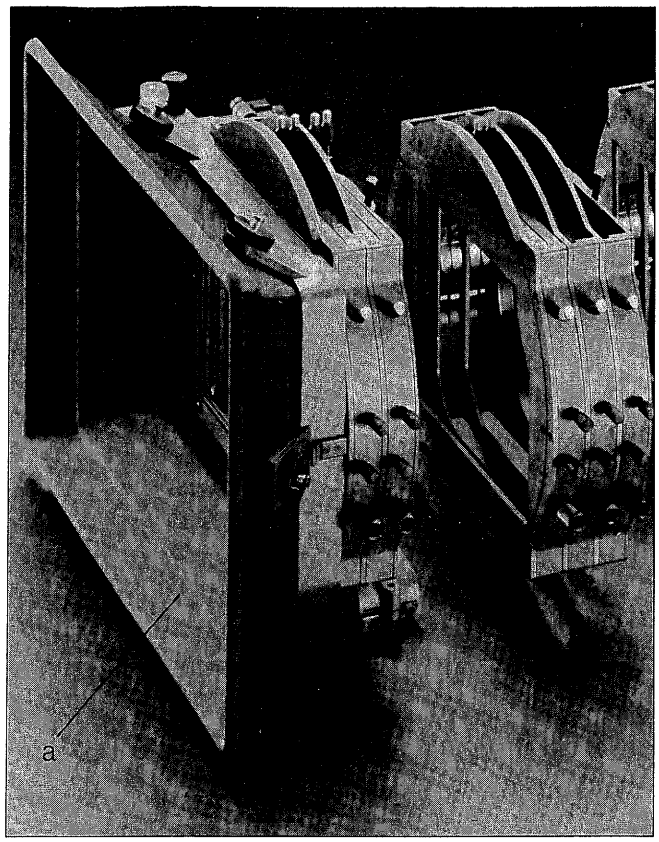
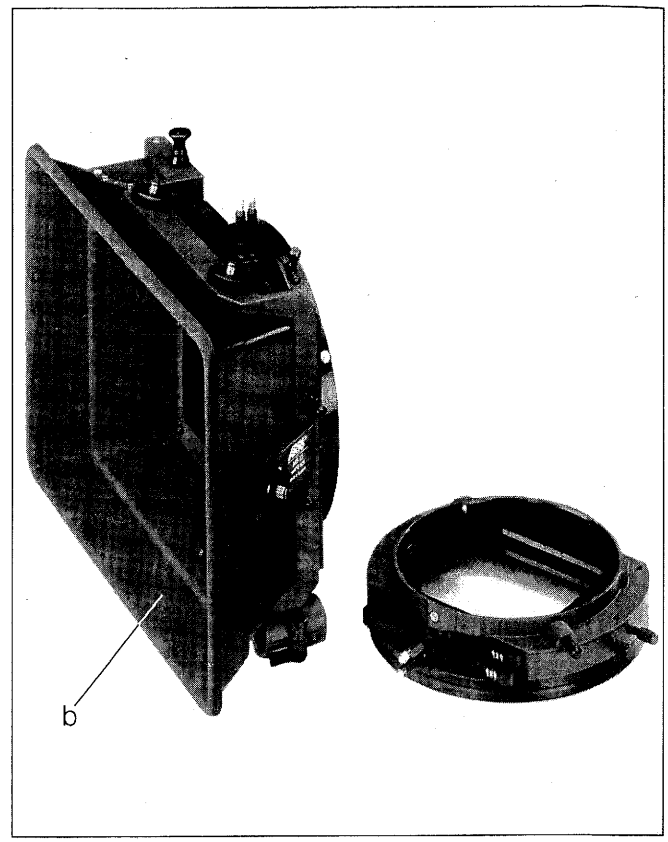
Shipping and storage of camera and magazines

When the camera is stored or transported without magazine attached, a magazine opening cover (A) should be fitted in place of the magazine. Furthermore, a loop protector (B) which also functions as a carrying handle for the magazine, should be fitted before transporting or storing empty or loaded magazines. This helps to prevent damage of the film or the magazine throat.





Optical accessories

Matte boxes

The 6.6″×6.6″ production matte box MB-14

This matte box (a) is equipped with four filter stages for four 6.6″×6.6″ filters (two each are rotatable and can be pushed through), as well as a filter frame with rotary knob or flexible shaft drive. At the rear there is a receptacle for 6.6″, 138 mm and 4½″ filter rings and reflex prevention rings plus an additional 4″×4″ filter stage. The 4 x filter stage can be interchanged against other filter stages.

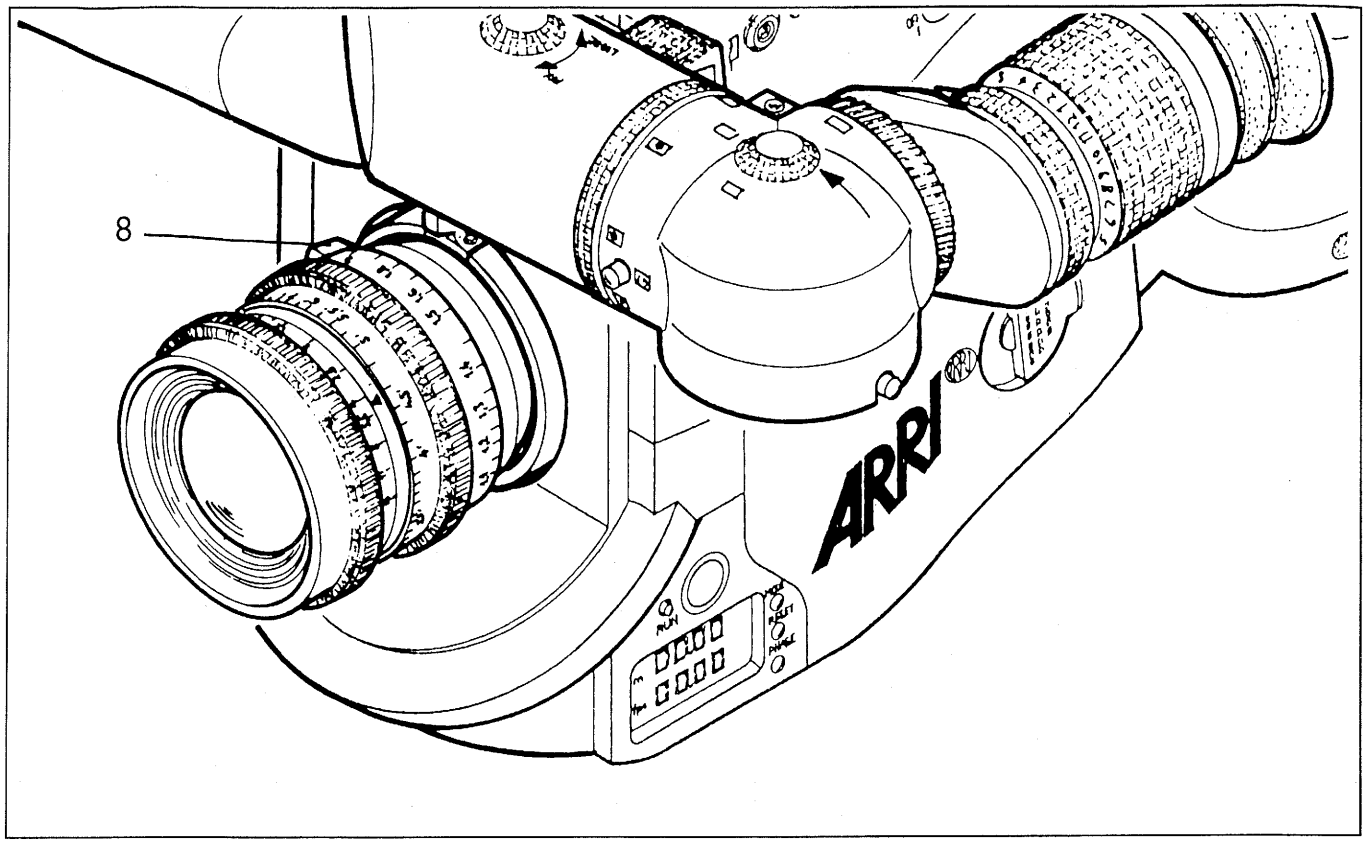
The matte box can be swung open to the front for easy lens changing. On the right side of the matte box there is a rotary knob and a quick set clamp for longitudinal adjustment. An additional holder serves for fastening French flags.

The matte box is suitable for lenses from 12 mm focal length up. For lenses with shorter focal lengths (min. 9.8 mm), use the MB-14 W accessories.

The 5″×6″ production matte box MB-15

This matte box (b) has a filter stage for two 5″×6″ filters. At the rear it has a receptacle for 6″, 138 mm and 4½″ filter rings and reflex prevention rings plus an additional 4″×4″ filter stage. It can be swung open to the front for easy lens changing. An additional holder serves for fastening French flags.

The matte box is suitable for lenses from 14 mm focal length up.



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Lenses

The **ARRIFLEX 535** can use all PL-mounted 35 mm zoom and prime lenses. Lenses with 41 mm dia standard or steel bayonet mount cannot be used.

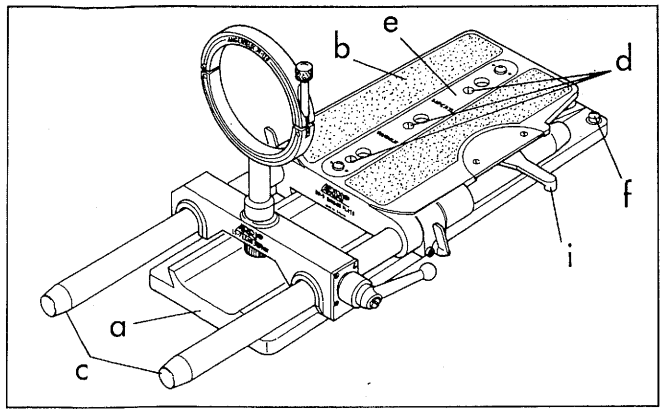
Heavy zoom, telephoto or anamorphic lenses require a special support since otherwise the flange focal distance could change due to the excessive, uneven load on the lens carrier.

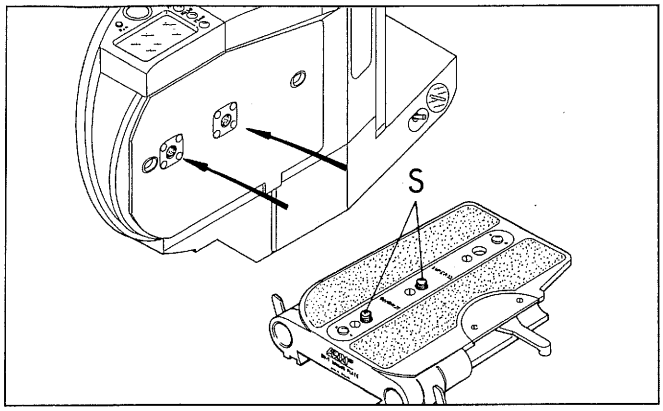
The right choice of lens accessories as well as their attachment onto the support systems is described in the following sections.

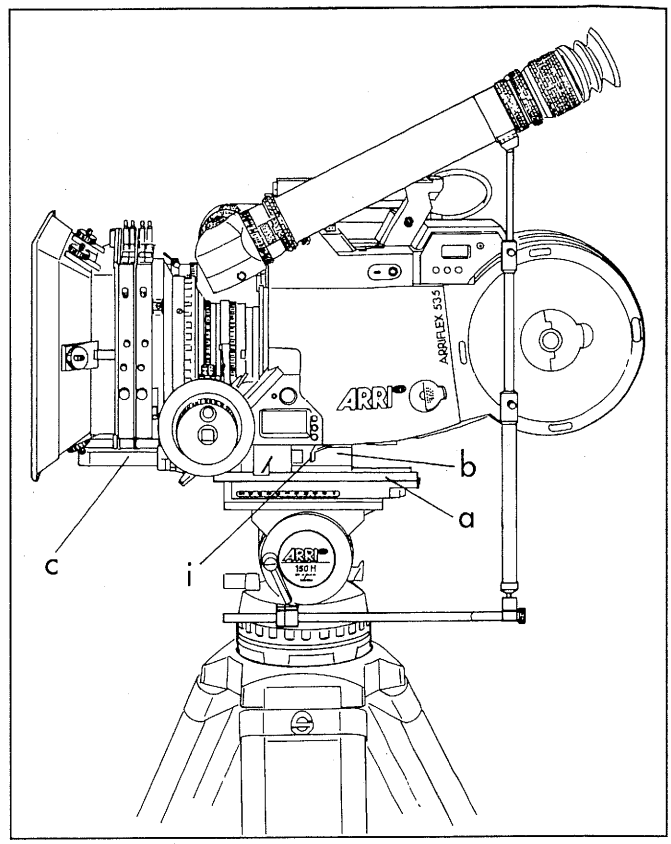
Fitting the lenses

The camera lens port is protected by a cavity cap. By turning the bayonet ring (8) counterclockwise to its stop position, the lock is released and the cap can be removed.

Guide the lens straight into the lens receptacle. Four grooves in the locating collar of the lens permit attachment a 90 degrees intervals. Ensure that the lens index pin on the camera engages one of the grooves on the lens flange. For locking, hold the lens with one hand and turn the bayonet ring clockwise.







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Bridge plate BP-5

The bridge plate BP-5 facilitates balancing of the fully equipped camera on a tripod. It consists of the base plate (a), the sliding upper plate (b) and a pair of support rods (c). The latters are available in different lengths.

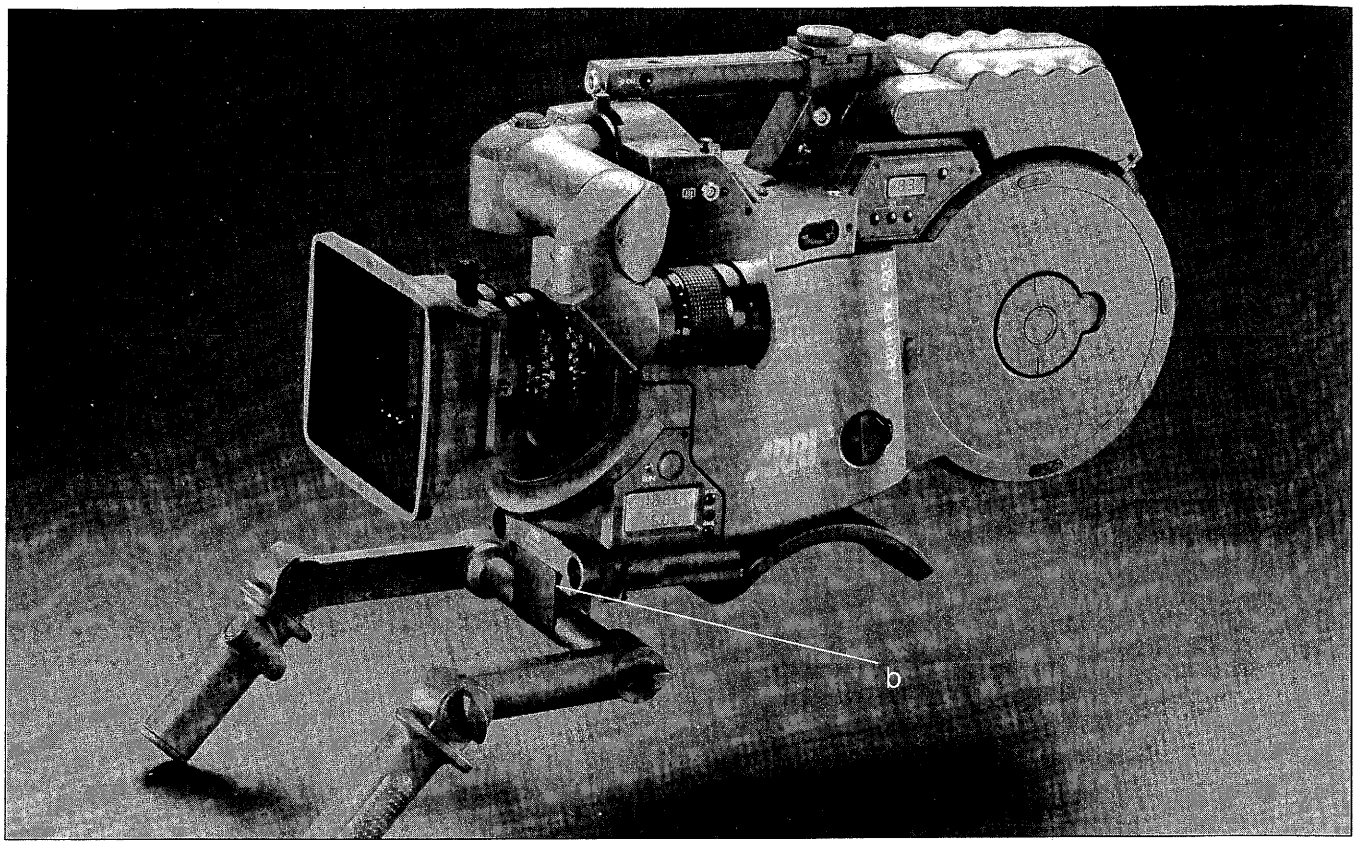
The sliding upper plate is equipped with a special compensating plate (e) to facilitate filming in the Super 35 mm format. To prepare the bridge plate for Super 35 mm filming, remove the three screws (d), rotate the compensating plate 180 degrees and refasten in this position. The current setting (Standard or Super 35) is shown by two index arrows on the sliding upper plate.

For mounting the camera, fasten the upper plate (b) to the camera base with the two screws (s). Following this, screw the base plate (a) onto the wedge plate of the tripod and lock on the tripod head. Slide the camera with the upper plate into the dovetail guide of the base plate until the spring-loaded stop pin (f) snaps audibly back.

Push the required support rods into the guides and clamp slightly. Equip the camera with all required accessories "ready to shoot" for balancing on the tripod. Release the clamping lever (i) and find the optimal position by moving the camera on the base plate back and forth. Then retighten the lock lever (i).

For fast removal of the camera from the tripod, loosen the lock lever (i), push in the stop pin (f) and pull the camera with the upper plate (b) off the base plate.

Before removing the camera from the tripod ensure that all cables are disconnected and that the eyepiece leveling rod is detached.



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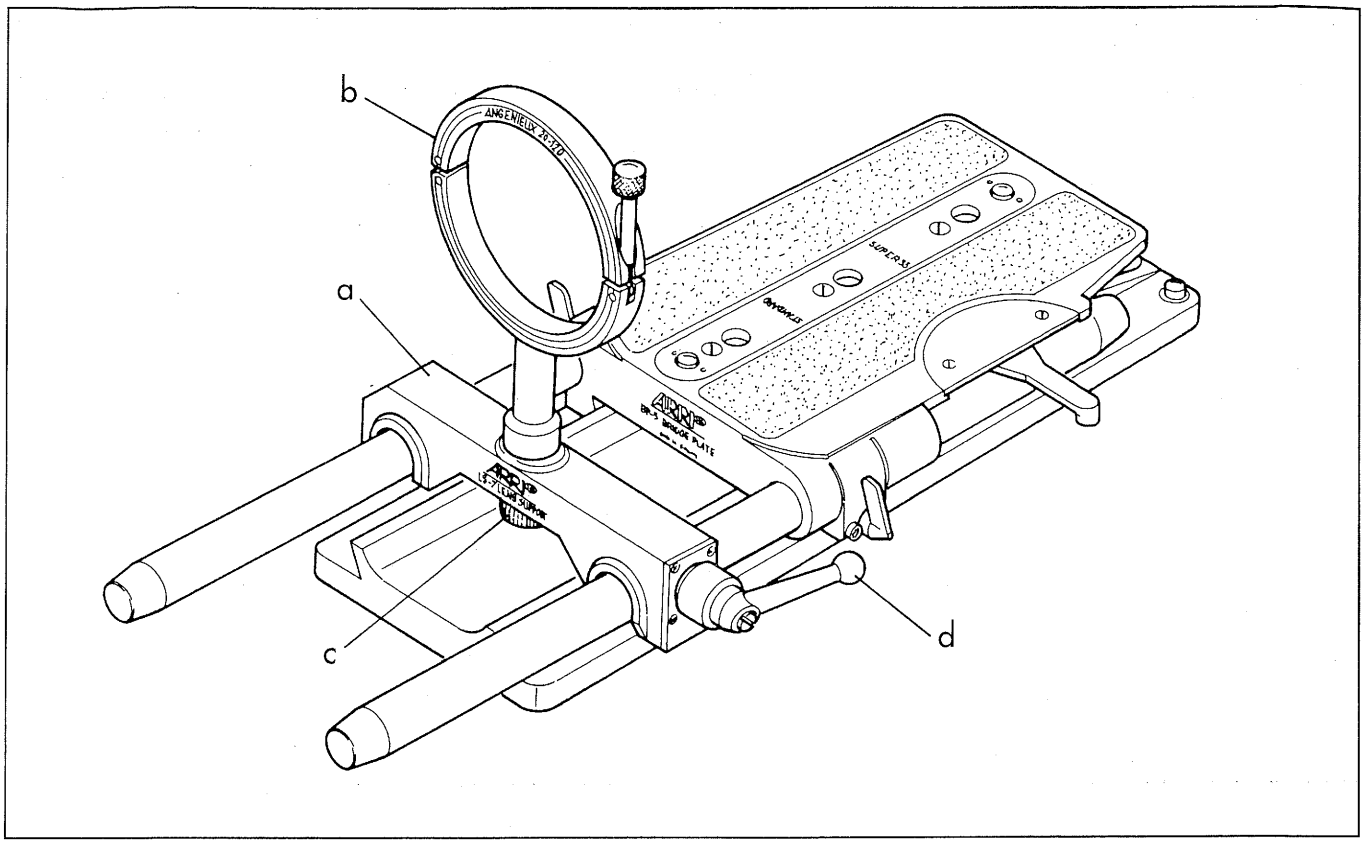
Shoulder set S-1

The shoulder set S-1 (b) was designed for takes that require frequent changes of the camera position. It allows quick rearranging of the camera from the tripod onto the operator's shoulder without having to remove the optical accessories.

Take the camera off the tripod as described on page 87.

Slide the upper plate (b) into the wedge lock of the shoulder support (locks automatically in stop position). Plug the cable for the camera release into the flange socket (40). For shoulder operation we recommend the shoulder battery NC 24/2 which also serves as a counterweight.



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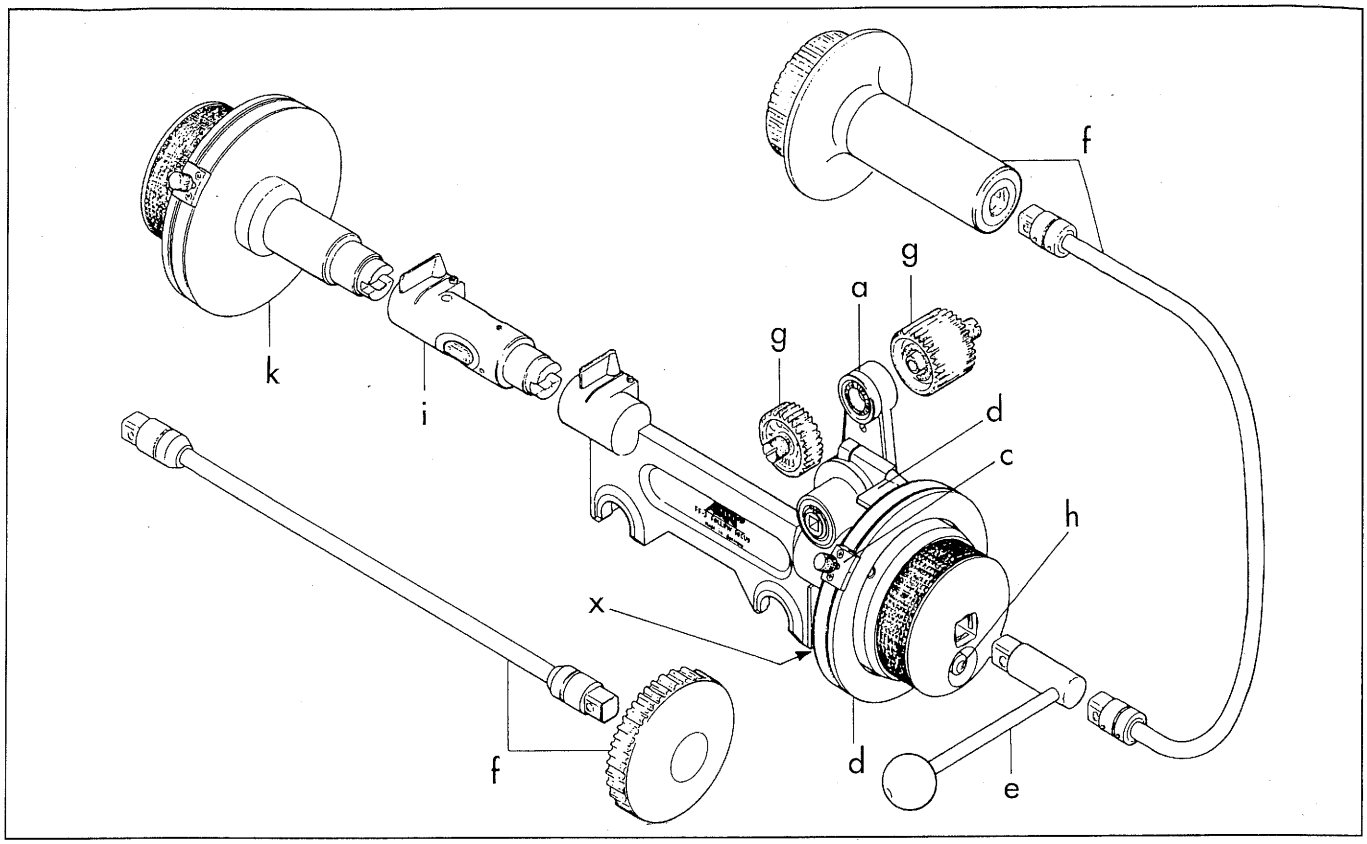
Lens support

The lens support consists of two parts: the lens support LS-7 (a) and the individual lens support ring (b).

Mount the lens support from the top on the support rods and let it click-shut by applying slight pressure. Lock the lens with its individual support ring in the camera. Connect the support ring with the lens support. Tighten the knurled screw (c) and the lock lever (d).

The support ring remains on the lens in fixed, correct position.



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Universal follow focus system FF-3

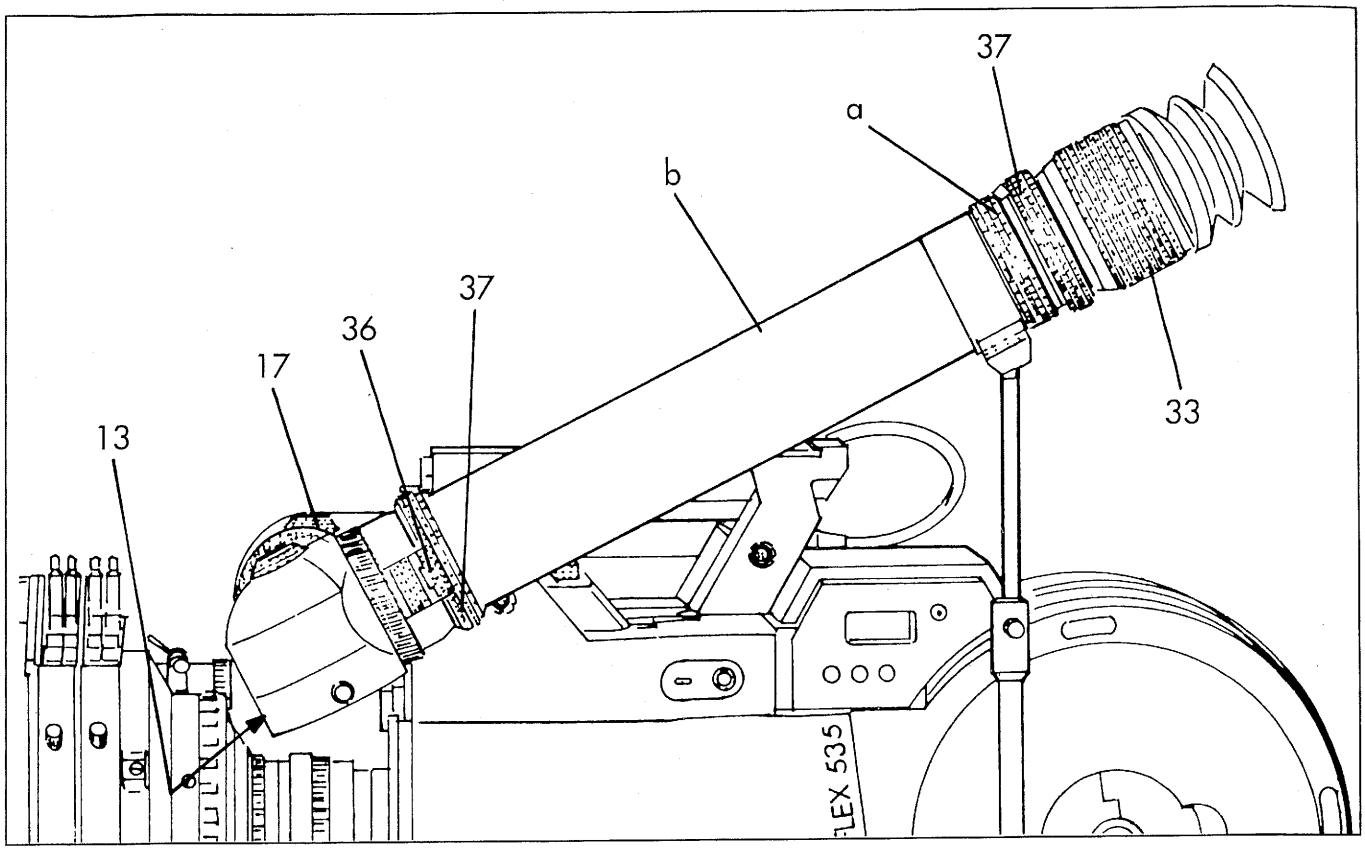
The universal follow focus system FF-3 can be used for both prime and zoom lenses. It is guided and fixed on the support rods of the bridge plate. Mount the corresponding gear (g) for the chosen lens on the swing arm (a). The swing arm swings either up or down to engage the lens focus drive ring, depending on preference. It is locked in position with the lock lever (b). The focusing index (c) can be rotated 360 degrees and locked in any position. The marking discs (d) can be marked with a water-insoluble felt-tip pin or a china marker and easily wiped clean with spirits.

For operation of the follow focus device from the camera-right side, connect the "follow focus knob right" (k). When used with the 6.6" x 6.6" production matte box, connect the "extension right" (i) also. The follow focus lever (e) as well as the flexible shaft (f) can be attached on the left or right side.

For easier mounting and adjusting the follow focus device, lock the lens in the camera and set the lens focusing ring to infinity (∞). Slide the follow focus device onto the support rods so that the swing arm (a) with the corresponding gear can be swung into the geared ring of the lens free of play. Fix the follow focus device in this position with the lock lever (x).

To check that the gears are engaged free of play, turn the focus knob several times in both directions. Then tighten the lock lever (b).

The FF-3 is equipped with a step-down gear. To actuate same, press the button (h) and simultaneously pull the hand wheel to the outside to the stop. The step-down ratio is now 1 : 0.6 (as compared with 1 : 1, when the hand wheel is pushed in).



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Viewfinder extension

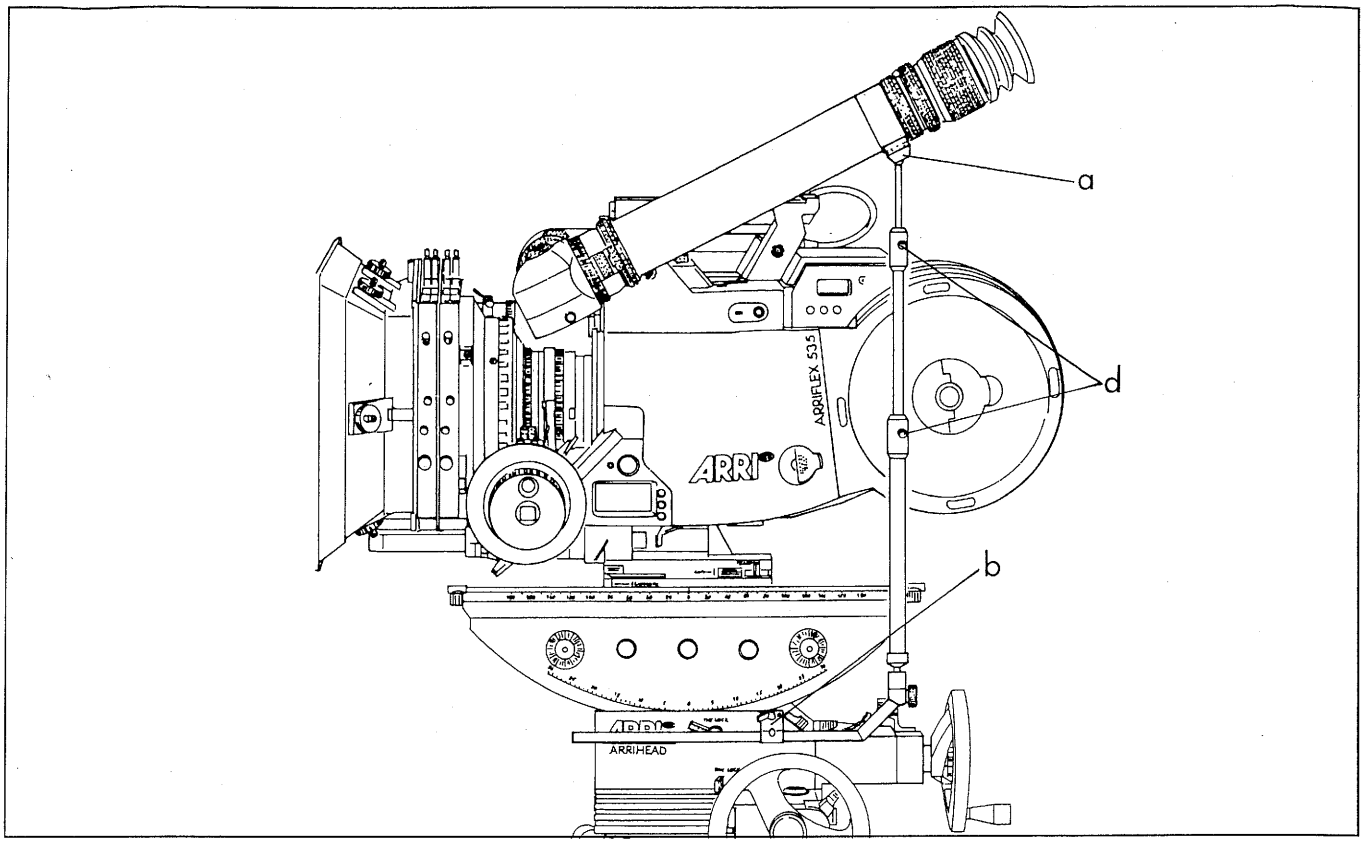
The viewfinder extension (b) is recommended for filming from a tripod or geared head and for 1000 ft magazines.

Note: Due to its optical design, the viewfinder extension requires an inversion of the properly oriented viewfinder image. This inversion is achieved by rotating the Pechan prism in the viewing system of the viewfinder.

Before rotating the Pechan prism, ease the friction (17). Then press the release button (13) and turn the viewfinder approximately 30 degrees clockwise. Release the button and continue rotating the viewfinder to its initial viewing position (the release button locks automatically). Without the viewfinder extension the image should now appear upside down and laterally inverted.

Attaching the viewfinder extension:
Push the safety button (36) and turn the bayonet ring (37) in the OPEN direction while holding the eyepiece with the other hand. Remove the eyepiece. Attach the viewfinder extension in the correct position onto the viewfinder and lock by turning the bayonet ring in the CLOSED direction. The safety button (36) locks automatically. Ensure that the support is facing the camera. Fasten the previously removed eyepiece in the same way onto the viewfinder extension. The viewfinder image will now be correctly oriented.

If required, the viewfinder extension can be extended even further to the rear by approximately 100 mm: Turn the clamping ring (a) counterclockwise, pull out the tube to the requested length and lock in position.



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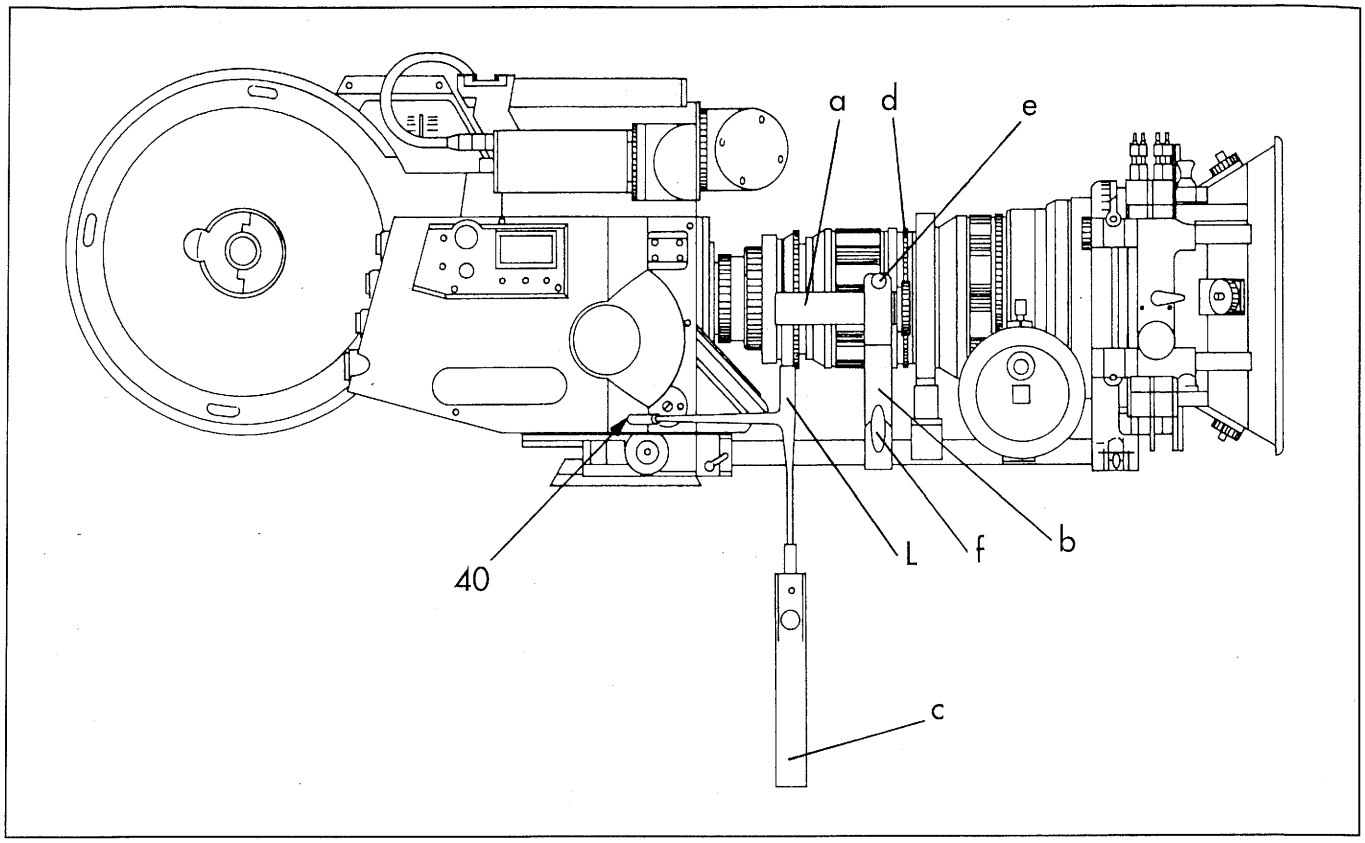
Leveling rod for viewfinder extension

When filming from a tripod or **ARRIHEAD**, the leveling rod holds the eyepiece of the viewfinder extension at the operator's eye level during camera tilts. It is fastened to the finder extension by a plug rail (a). The bottom part is fixed on the **ARRIHEAD** or, with a special holder (b), on a tripod. The height can be adjusted and locked in any position with the two knurled screws (d).



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Servo zoom drive

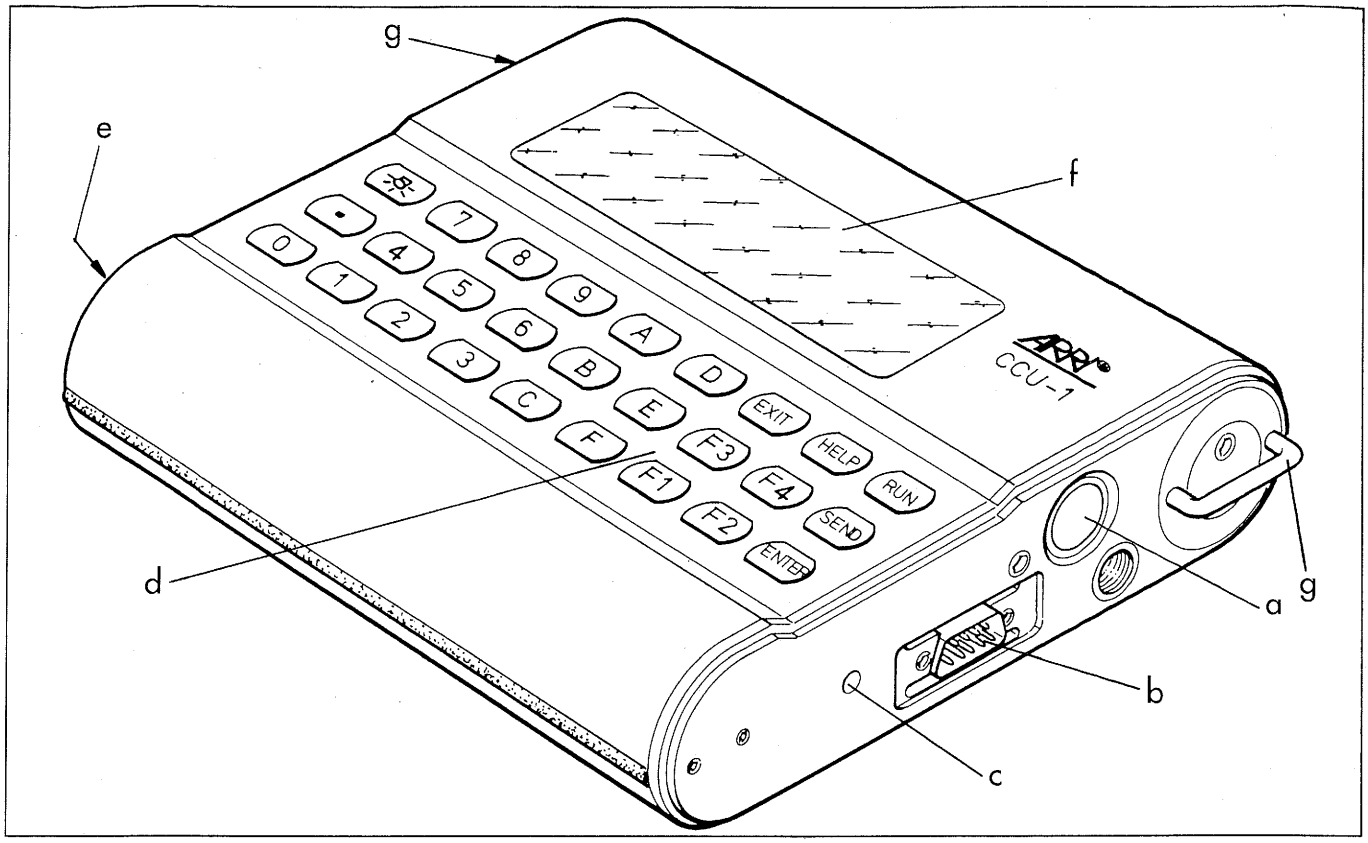
The servo zoom drive consists of the drive motor (a), the motor mount (b), the control unit (c) and the toothed drive ring (d) which is fixed to the individual lens.

The zoom motor is fixed in the motor holder which is guided on the right support rod of the bridge plate and swung into position in the toothed drive ring of the lens.

For mounting fix the camera with the bridge plate on the tripod. Attach the motor holder on the right support rod (as seen in the direction of shooting) and push the zoom motor in so that the motor head with pinion faces the lens. Clamp the lens support onto the support rods. Lock the lens with its support ring in the camera and connect with the lens support.

Engage the zoom drive pinion with the toothed drive ring of the lens by swinging the motor holder into position and moving same on the support rod and by twisting the motor in its holder. Then tighten the knurled screw (e) and the locking lever (f).

Finally, plug the control unit (c) into the flange socket (40). Connect the drive motor (a) to the control unit with the cable (1). The power for the zoom drive motor is supplied by the camera.



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Electric/electronic accessories

Camera Control Unit (CCU-1)

The most important and common camera functions can be set directly on the camera. Programming of the following functions, however, requires the use of the Camera Control Unit CCU-1:

Change-over m/ft

Acoustic asynchronous running control

Film end prewarning (indicated in the viewfinder and the camera displays)

ARRIGLOW film format markings

Operation program

Frame rate and open sector of the mirror shutter

TC time and user bits entry

Illustration guide CCU-1

a) ON/OFF key

b) Camera connector

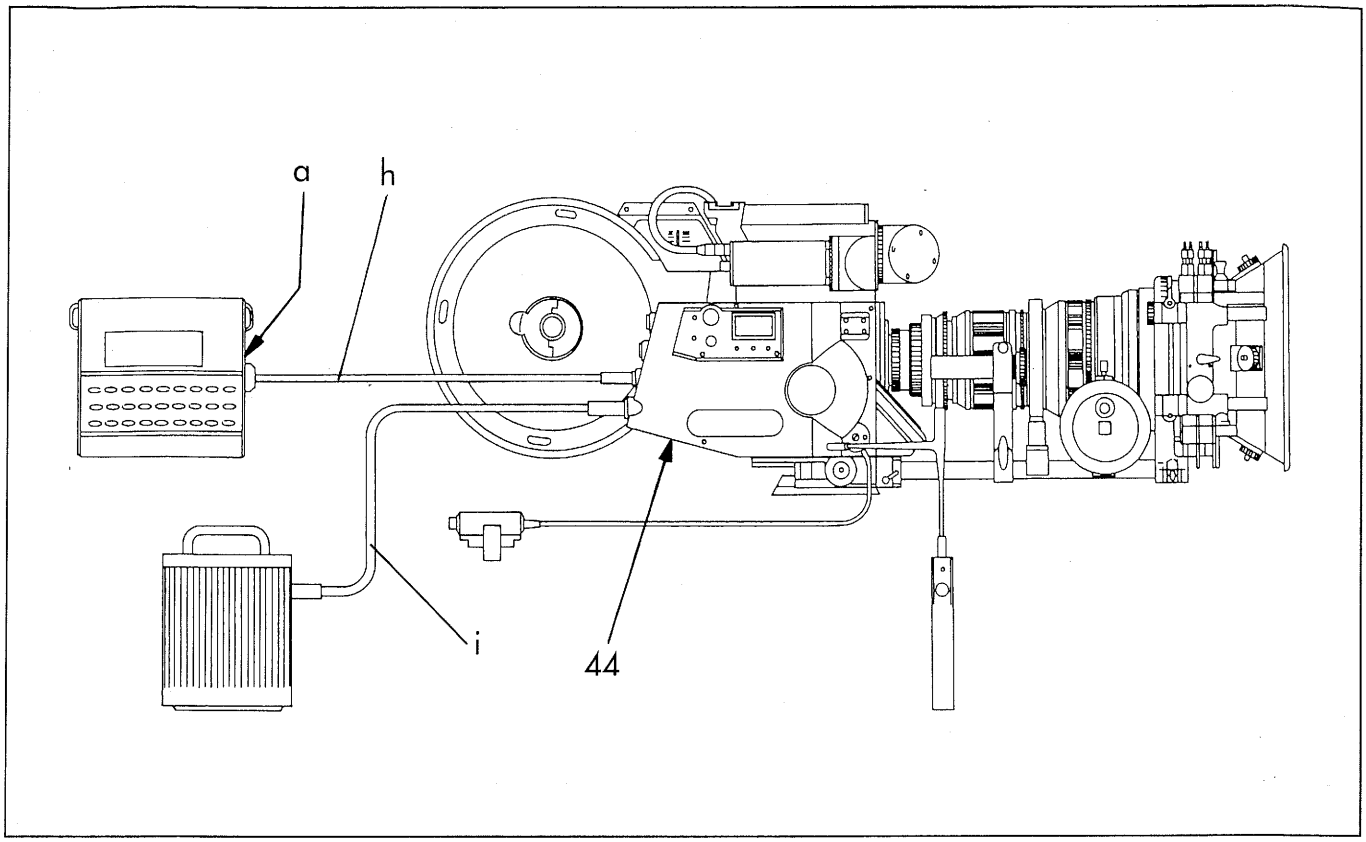
c) Acoustic signal (beep-tone)

d) Keyboard

e) Battery compartment

f) Display

g) Holder for carrying strap



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Working with the CCU-1

Connect the camera to the power supply (the illustration shows power supply by battery NC 24/7 R):

1. Connect camera and battery with power cable (i).

2. Connect camera and CCU-1 with cable (h).

3. Switch the camera on (camera main switch 44).

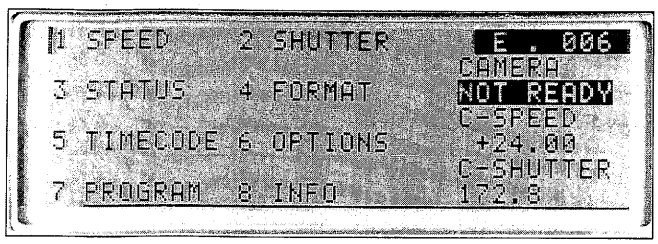
4. Briefly press key (a) on the CCU-1.

Note: The CCU-1 is powered either from the camera or by internal batteries.

Since the latters have a rather limited life (approx. 5 hours), the illumination of the displays is automatically switched off about 10 seconds after the last key pressing, when the unit is powered by the internal batteries. The CCU-1 is automatically switched off after five minutes.

The main menu... and what all menus have in common

After switching the CCU-1 on, the main menu appears on the display:



When connected to the camera, the CCU-1 display shows in the main menu (as in all other menus) the current camera status (speed and shutter). Error messages from the camera are indicated in the top right-hand corner or in the four bottom lines. (This applies to all submenus also.) The error messages in the top right-hand corner remain visible until the error is recovered, the ones indicated at the bottom only until the next key is depressed. An acoustic signal (beep tone) is audible whenever the CCU-1 is switched on and with every error message.

Key functions in all menus:

"RUN" sends the "RUN" command to the camera.

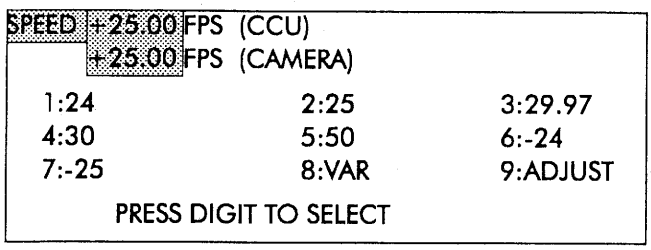
"HELP" shows a page with help text for the current menu. In the input mode, however, "HELP" is not effective. The input mode can be terminated at any time with "EXIT".

With the "LIGHTSYMBOL" key the display light can be switched on or off.

Key functions of the main menu:

The figure keys 1-8 serve for selecting the requested menu point.

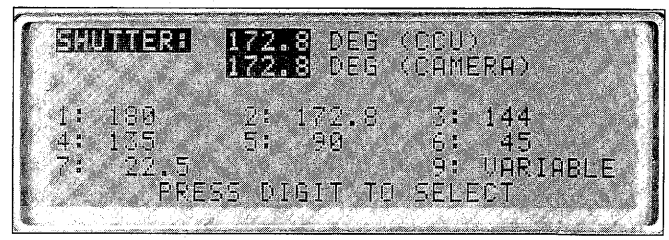
The SPEED menu



Key functions:

The requested frame rate is selected with the figure keys 1-7. The selected frame rate is displayed in inverse figures. The stored frame rate is sent to and set in the camera by depressing the "SEND" key. During this action, the character "SEND" illuminates briefly in the top right corner of the display. With the figure key 8 (VAR) it is possible to set any frame rate with an accuracy of 0.001 fps. This value can be increased or decreased in steps of 0.001 with the two function keys F1 and F2, after depressing key 9 (ADJUST).
Note: These functions can only be set for forward running of the camera. For the decimal point depress the "." key.
Return to the main menu by depressing the "EXIT" key.

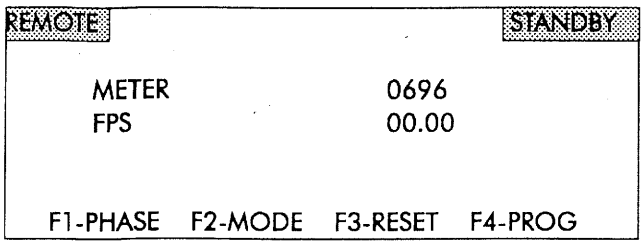
The SHUTTER menu



Key functions:

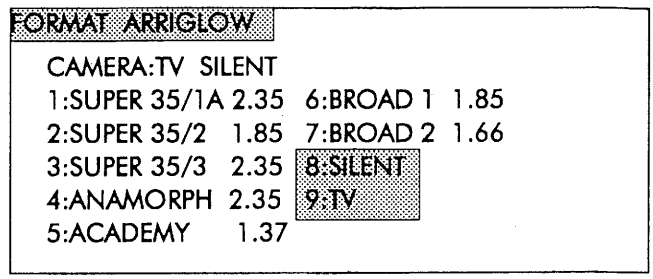
The key functions are the same as described in the previous section, except that key 8 is not used.

The REMOTE menu



In this menu, the CCU-1 display shows the same information as the camera display. In addition, the camera keys MODE, PHASE, RESET and PROGRAM can be activated via the corresponding CCU-1 functions keys F1 to F4 (PHASE = F1, MODE = F2, RESET = F3, PROGRAM = F4) Thus, the CCU-1 has the same user surface as the camera, allowing full remote control.

The FORMAT menu

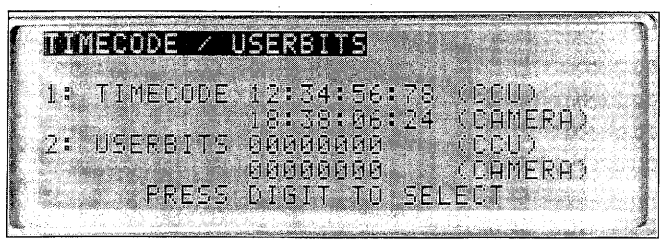


Max. three formats can be stored. The selected formats are displayed in inverse figures. On request, the formats are transmitted to the camera with the "SEND" key and activated there.

Key functions:

The formats are selected or given up by depressing the corresponding figure key. Return to the main menu with the "EXIT" key.

The TIME CODE menu



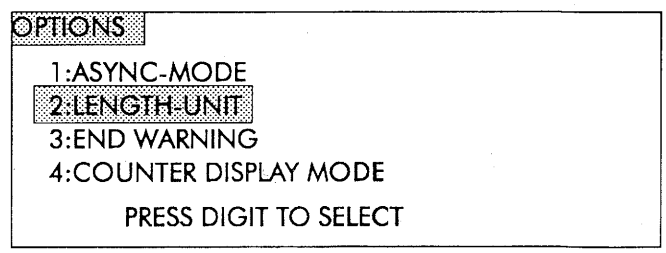
In this menu the present values for TC and user bits are shown. These values are continuously updated as long as the CCU-1 is connected to the camera. In addition, also those values are indicated which were keyed into the CCU-1 last.

Key functions:

Depress number key 1 or 2 to select whether you want to change the time code or the user bits. To effect the change, depress the "ENTER" key. The new value is then entered via the number keys. Note: The max. value that can be set is 23:59:59 (h:min:sec). The input is automatically ended after the 6th digit in time code or after the 8th digit in user bits.

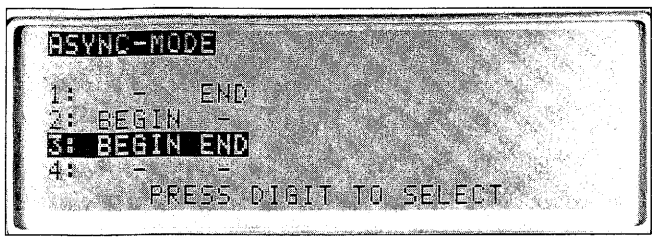
The user bits can be set from A to F and from 0 to 9. The set value is transmitted to the camera with the "SEND" key. Return to the main menu by depressing the "EXIT" key.

The OPTIONS menu



Various general settings can be made in the OPTIONS menu. One of the four sub-menus can be called up with the number keys 1 to 4. Return to the main menu with the "EXIT" key.

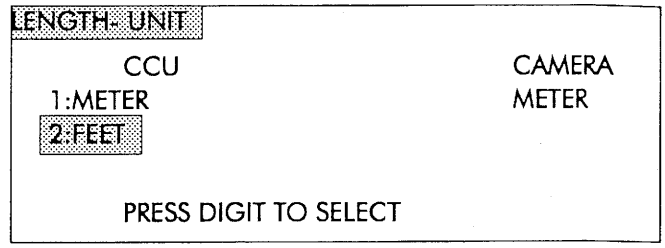
ASYNC mode



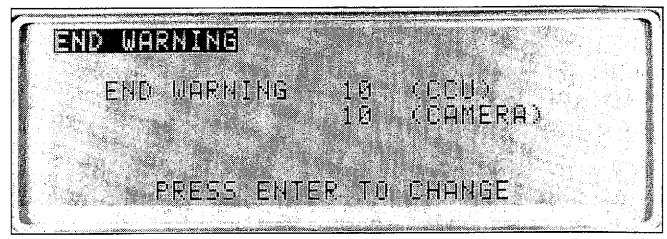
A new ASYNC mode can be selected with the keys 1-4. The selected value is shown in inverse letters and transmitted to the camera with the "SEND" key. An acoustic signal (beep tone) with volume control (53) on the camera is audible in accordance with the selected ASYNC mode (1-3). Depress digit 4 if no beep tone is requested. Return to the OPTIONS menu with the "EXIT" key.

LENGTH-UNIT

The number keys 1 and 2 serve for selecting the unit of film length measurement (metres of feet). The selected unit is indicated on the display in inverse letters and transmitted to the camera with the "SEND" key. Depress the "EXIT" key to return to the OPTIONS menu.

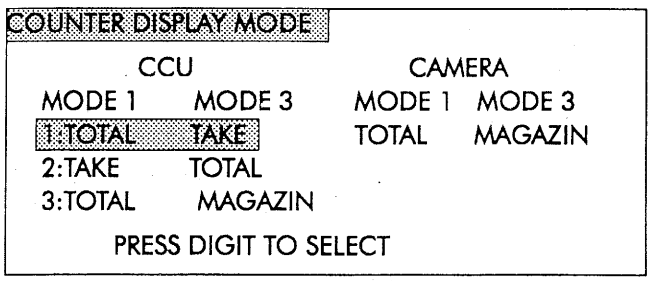


END WARNING



Here, the film end prewarning which is indicated in the viewfinder and on the camera display is set or changed. Depress "ENTER" key and change the set value (according to the basic camera setting in metres or feet). Values between 0 an 99 can be set (0 = no end warning). The input is terminated after the input of 2 digits.

COUNTER DISPLAY mode

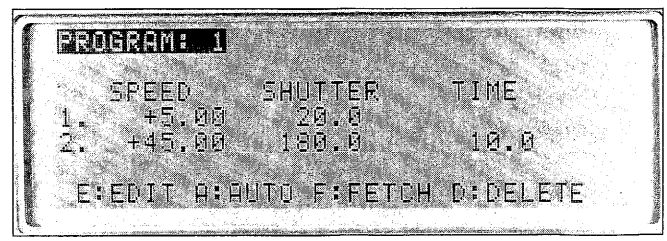


In this mode it is possible to influence the indications of the camera displays. On the camera there are three different film counters: one for total quantity of exposed film, one counting the length per take and one indicating the remaining film stock. In this menu it can be programmed which of the three should be displayed and when. In camera display mode 1 and 3 the four top indicator digits are reserved for a count.
The following three combinations are possible:

camera display mode 1	camera display mode 3
1) Total exposed film	: length per take (t)
2) length per take (t)	: total exposed film
3) Total exposed film	: film stock (r)

The selected combination is transmitted to the camera with the "SEND" key. Return to the OPTIONS menu with the "EXIT" key.

The PROGRAM-menu



This menu serves for managing the programs.

Key functions:

With the number keys 1 through 6 you can select one of six programs. All following instructions refer to the selected program number.

"FETCH" fetches the program stored in the camera and files it under the activated program number.

"DELETE" cancels the selected program in the CCU-1.

"EDIT" enables the entry and change of a program (flashing entry position). Depress the "ENTER" key to proceed to the next entry position.
Depress the "EXIT" key to terminate the input mode. The activated program is transmitted to the camera with the "SEND" key.
In submenu "AUTO" it is e. g. possible to compute (via "CALCUTATE") the values of the adjusting time for the set frame rates and shutter angles (on the basis of the largest open angle, the highest frame rate and the shortest adjusting time). The values for the requested frame rate and the open shutter angle are set via "EDIT".

Program function:

The frame rate can be changed during camera run with preset adjusting time. The open angle of the mirror shutter can also be changed during camera run so that exposure fluctuations do not occur. Furthermore it is possible to program all parameters like initial and final values of the frame rate, the open angle of the mirror shutter and the adjusting period. A program ist composed of as follows:

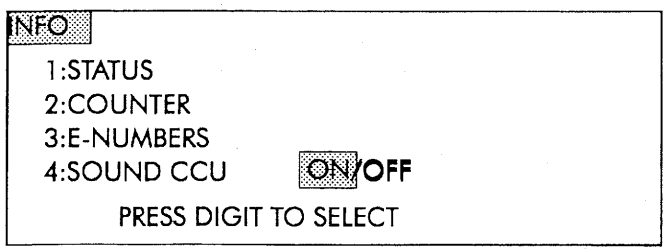
1. Initial values for frame rate and open angle of mirror shutter
2. Final values for frame rate and open angle of mirror shutter
3. Adjusting time between initial and final values.

Up to six programs can be stored in the CCU-1. These programs are transferred to the camera with the "SEND" key, where they are called in and are activated when the key is pressed a second time.

The permissible values for frame rate and open angle of the mirror shutter are as folows:
frame rate: 3–50 fps
open angle: 11–180 degrees

The adjusting time depends on the programmed initial and final values. The max. adjusting speed of the frame rate is 30 fps and of the open angle of the mirror shutter 80 degrees per second.
The longest possible adjusting time is 100 seconds.

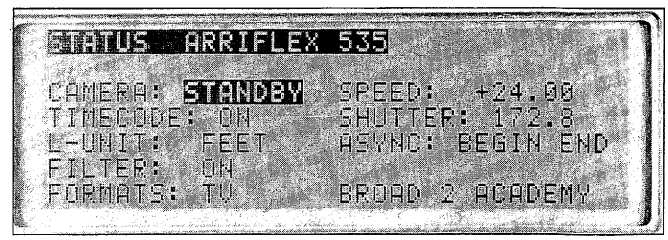
The INFO program



Key functions:

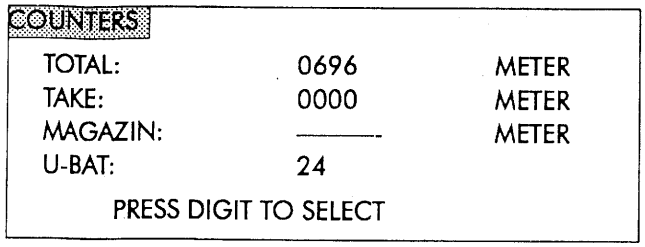
Depress the figure keys 1-4 to select the requested submenu.

STATUS



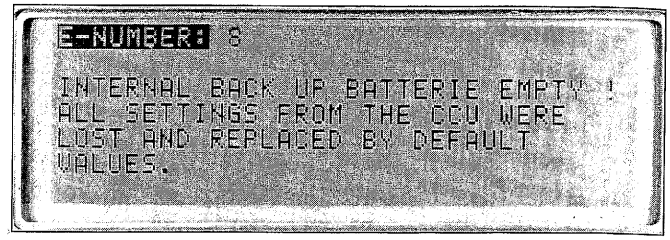
Depress number key "1" to enter submenu "STATUS". The display of this submenu shows the current data of the camera (input not possible). If no camera is connected to the CCU-1, there is no indication on the display, except "OFFLINE". Return to the INFO menu with the "EXIT" key.

COUNTERS



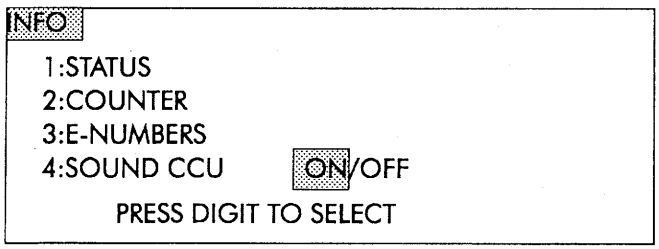
Depress number key "2" to enter submenu "COUNTERS". The display of this submenu shows the status of all camera counters, including battery voltage (input not possible). If no camera is connected to the CCU-1, there is no indication on the display, except "OFFLINE". Return to the INFO menu with the "EXIT" key.

E-NUMBERS

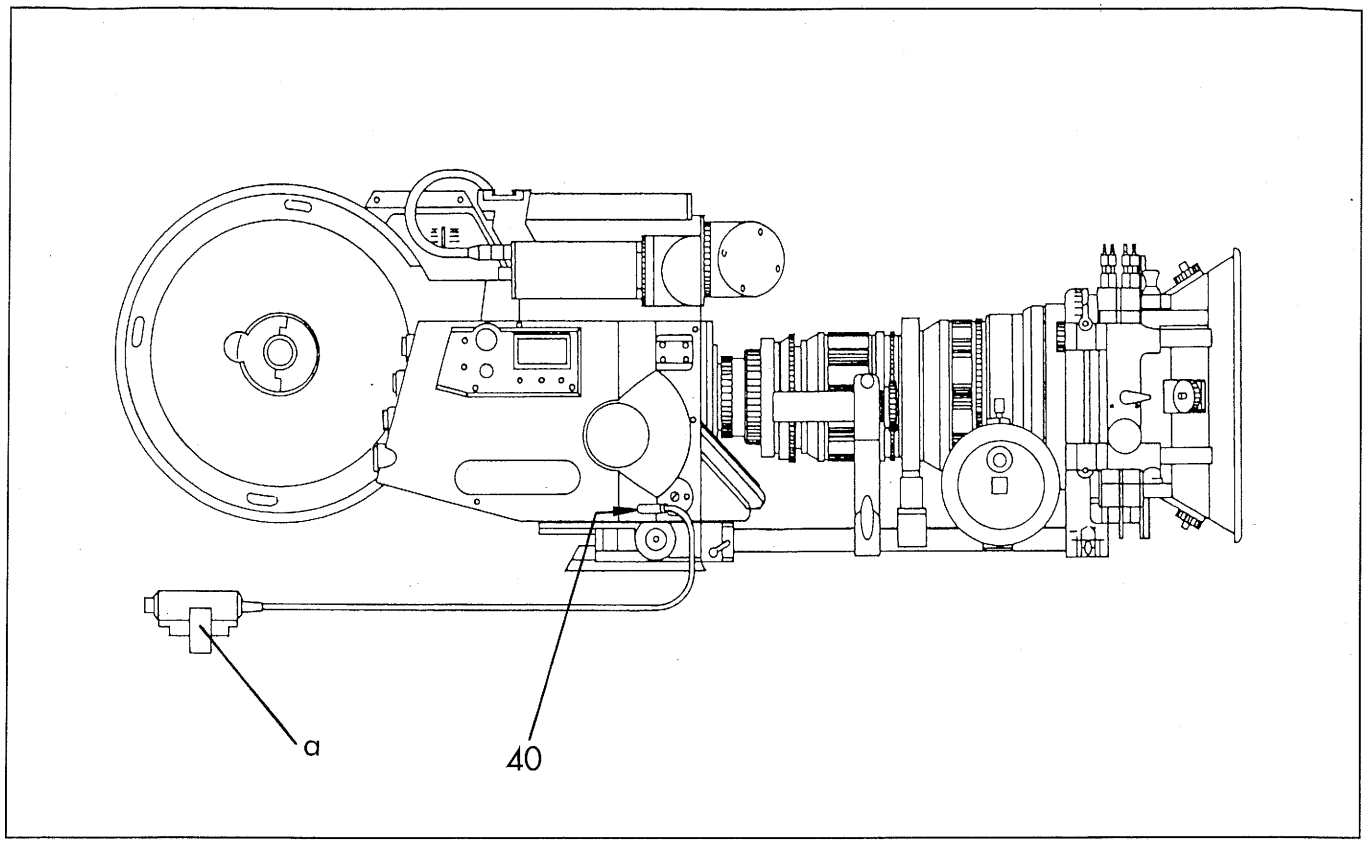


Depress number key "3" to enter submenu "E-NUMBERS". The display of this submenu shows in plaintext an error message indicated on the camera or CCU-1 display. To read the plaintext of error numbers 2-9, depress the "ENTER" key after the input of the corresponding error number. The plaintext of error numbers 10-13 appears immediately after input of the corresponding number. At present, only the error numbers 2-13 are used. Return to the INFO menu with the "EXIT" key.

SOUND CCU-1



The acoustic signal (beep tone) can be switched on or off by depressing the number key "4". The current status is shown on the display in inverse letters. Return to the main menu with the "EXIT" key.



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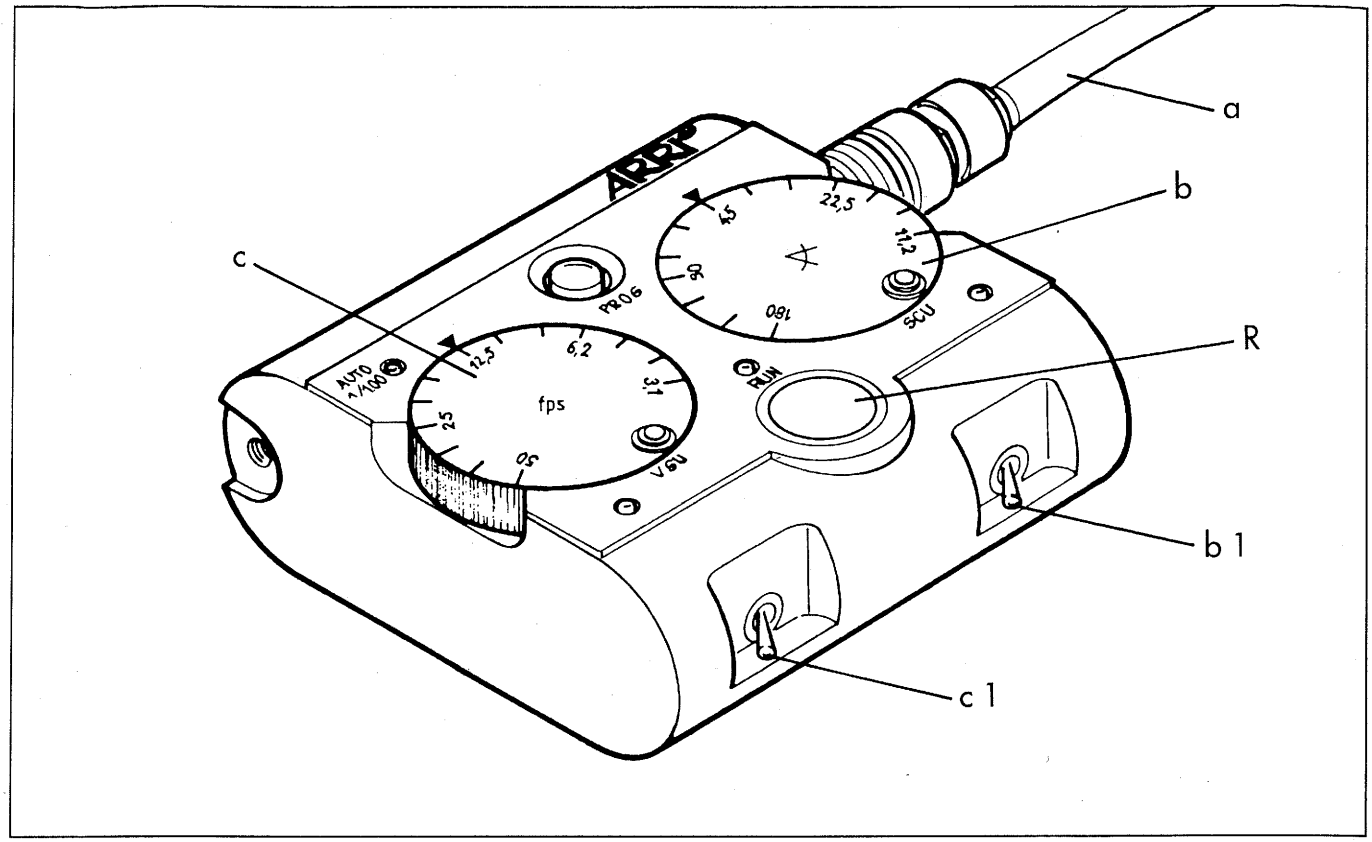
Remote ON/OFF switch RS-3

The remote ON/OFF switch RS-3 (a) switches the camera on and off when filming from a tripod. It is electrically connected to the camera via socket (40) and fixed to the pan handle with its own spring clamp.



Remote Control Unit RU-1

This unit was designed for the external control of the main camera functions (RUN, VSU, SCU, and PROG), from a distance up to 75 ft (25 m). It facilitates operation of the camera under extreme filming conditions. Switch the camera main switch (44) **ON** (standby). Connect the RU-1 with the camera (socket 52) with control cable (a). Start the camera with the **RUN** key (R). Stop the camera by pressing the **RUN** key once more.

The VSU (c) and the SCU (b) of the RU-1 can be coupled electronically by setting the flip switch (c1) to AUTO. This ensures constant exposure, independently from the frame rate. Within the range of 3 to 50 fps, the open sector of the mirror shutter is automatically adjusted so that the following values can be obtained:

50 fps : 180° degrees

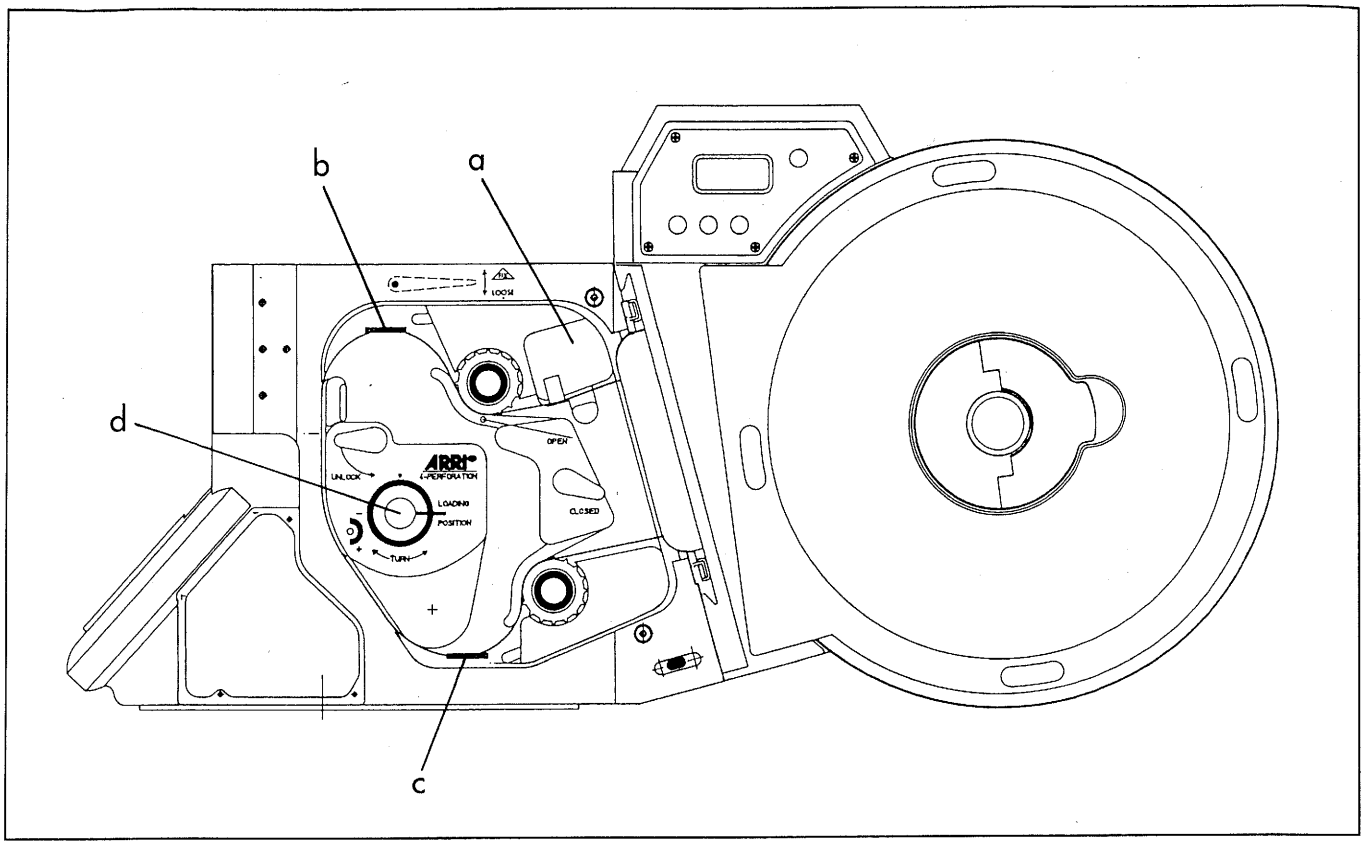
25 fps : 90° degrees

12,5fps : 45° degrees ect.

The switch positions (of c1 and b1) are indicated by the related LED's (VSU, AUTO, SCU). The functioning of the SCU and VSU is described on page 39 and page 41.

Note: With 25 fps and 90 degrees open sector of the mirror shutter, the iris diaphragm of the taking lens needs to be corrected by one f-stop. If, e. g. the actual diaphragm is f 11, the set value must be f 8.

Caution:
Ensure to unplug the VSU and to switch off the SCU before using the RU-1.



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Time code

The integrated time code generator allows time code recording on the film. For this, the light emitting recording module (a) must be fitted in place of the film recognition module. The respective module is locked in correct position in relation to the film by a ball catch. To interchange the two modules, simply pull out the one in position; adjustments are not required.

The integrated time code generator (TCG) can be set via the CCU-1 or a master clock. With the CCU-1, the electric connection is effected via connector socket (47) marked CCU and with the master clock via connector socket (51) marked MCL.

The time code is optically exposed onto the film in compliance with SMPTE regulations RP 135 and RP 136, form C.

Note:

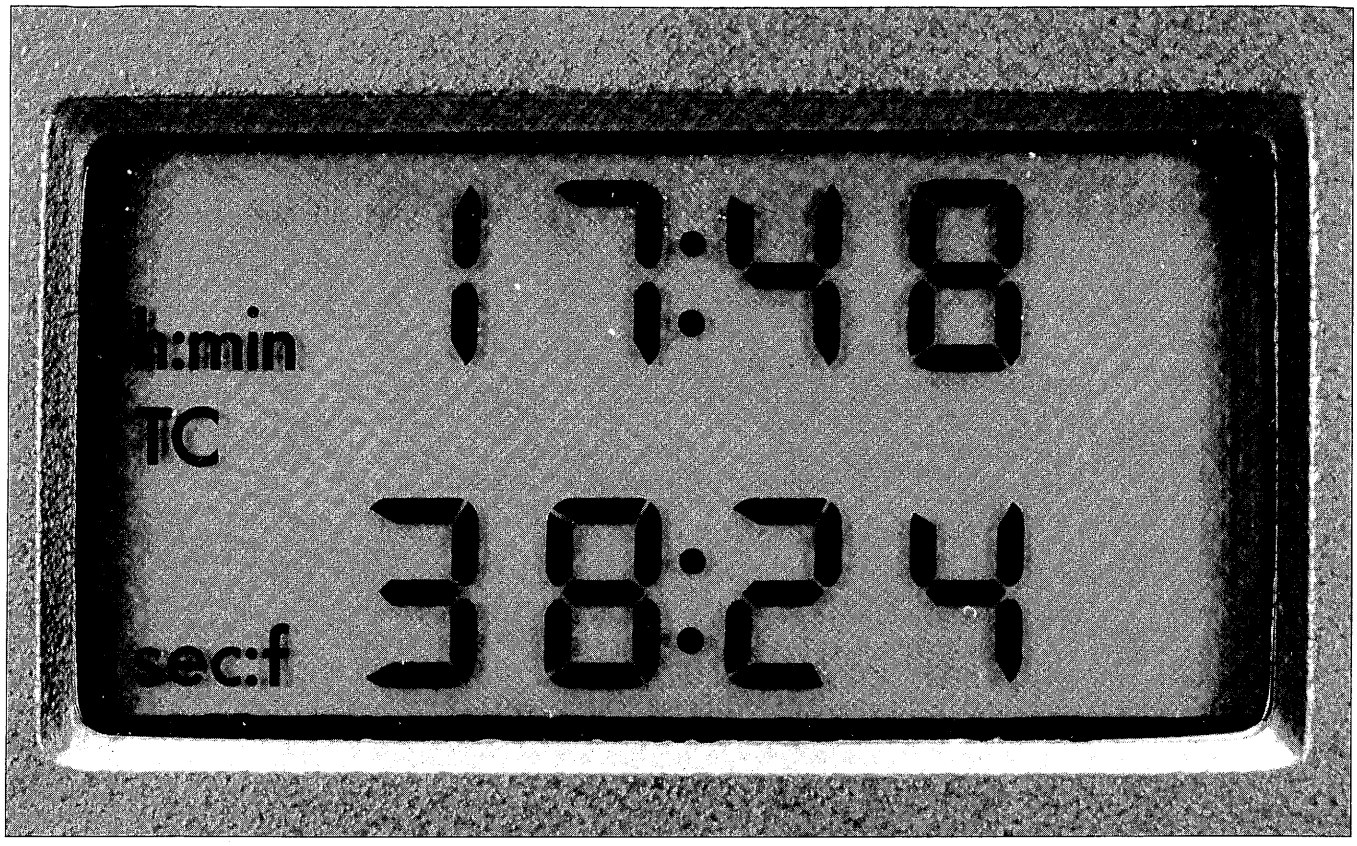
1) Film loop

To ensure proper TC recording on the film frame it is absolutely essential that the film loop is located precisely within the marking (b). To prove that this is the case, advance the film at least one frame and check the loop position once again. Make sure that the rotary knob is always in LOADING POSITION!

For precise adjustment it might be necessary to swing back the claw block once more, and to shift the film one perforation hole. Following this swing the claw block into correct position again. The loop should be formed and checked again.

2) TCS adjustment (sensitivity)

The intensity of the TC recording must be adapted to the sensitivity of the film. Set the TCS value on the magazine (see table page 68).



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3) TC buffer battery

The camera is equipped with a TC buffer battery so that the internal time clock continues to run when the camera is switched off or disconnected from the power supply (see page 45).

4) Camera displays (indications with TC operation)

In camera standby, the following indications are shown on the camera displays:

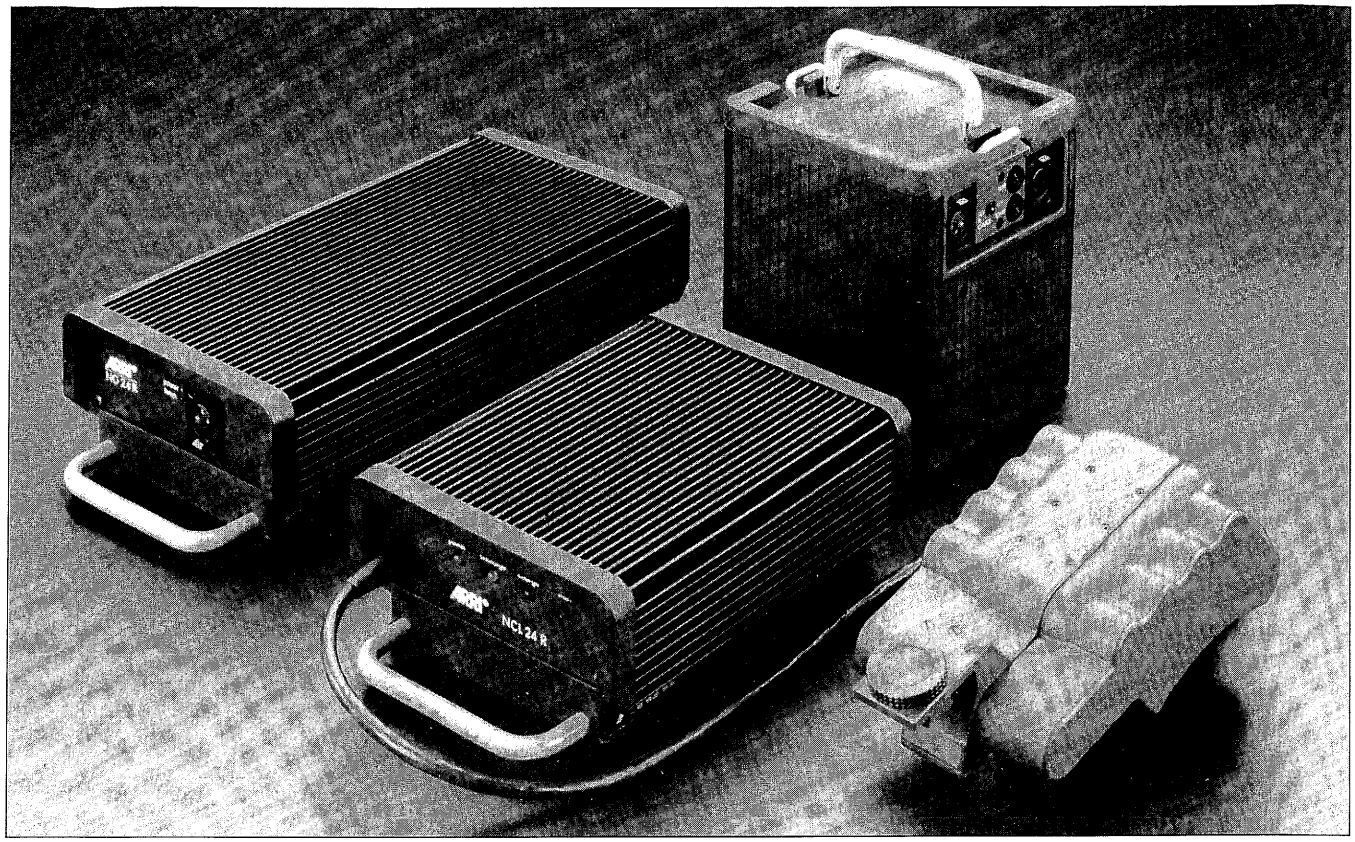
a) No indication: TC not in function.

b) TC indication: TC is set; TC is recorded during camera run.

c) Flashing TC indication: Last external synchronization (via MCL) more than eight hours ago, therefore, exact synchronization no longer guaranteed.

d) Flashing TC indication during camera run: TC not recorded on the film (error).

Note: In the case of external synchronization (via MCL), ensure that both units to be synchronized have the same frame rate.



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Power supply

For the power supply of the ARRIFLEX 535 we offer the reversible 12V/24V battery **NC 24/7R**, the on-board battery **NC 24/2** and the mains unit **NG 12/24R**. For charging the above batteries use the battery charger NCL 24R.

The electrical connection between the camera (socket 46) and the **NC 24/7R** is made by a battery cable. The plugs and the sockets are color-coded. Ensure correct mechanical interlocking of the plugs!

The on-board battery **NC 24/2** is only used with the 400ft (120m) magazine. It has a dovetail guide which slides into the accessory holder (56) and locks with the knurled wheel. The electrical connection is made by a short battery cable of approx 30 cm (1ft) length. Ensure correct mechanical interlocking of the plugs.

Tripods

The **ARRIFLEX 535** can be used with the following tripods and geared heads:

ARRI Fluid Heads

ARRIHEAD

Mitchell-Head

MOY-Head

Sachtler Studio 7+7 and 150 H

Ronford F7

HOT-HEAD

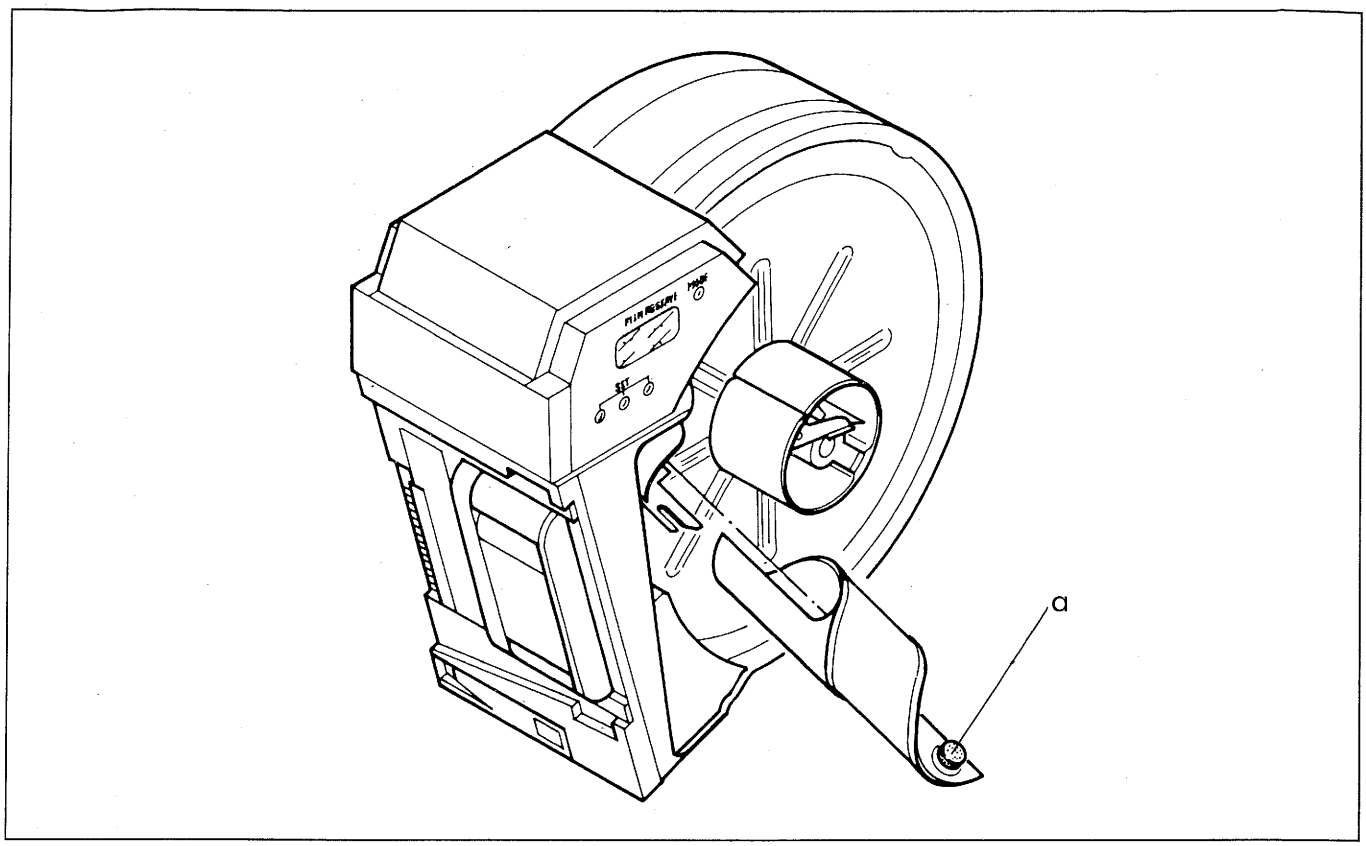
CAM-REMOTE-HEAD

WORRAL-Head

Service and maintenance

The following cleaning-, service- and maintenance procedures for camera and accessories should be carefully observed:
Clean the camera and the accessories on a flat and clean surface which is covered with foam material or a clean, non-fraying cloth. Under no circumstances use acetone or nitro-diluent. These chemicals dissolve the paint and are aggressive to high-polished surfaces.
For cleaning we recommend soft and non-fraying tissues and cotton swabs or special cleaning tissues and little sponges which are used for computers and video equipment. Do not exert major pressure on the mirror shutter and the film movement when cleaning! Use only the specified tools (see the notes in this manual)! Use only screwdrivers of the right size!

When cleaning, special attention should be paid to the area between the film channel and the film gate, especially, when using a film stock which has a tendency towards high emulsion deposits. Loose emulsion dust leads to the formation of emulsion deposits on the film gate. This can produce film scratches and substandard film transport, resulting in poor image stability. For cleaning, we recommend to take out the entire film gate (see page 59) and to remove the emulsion deposits with an **ARRI** plastic skewer or a little PVC rod. Under no circumstances should a hard or metal tool be used.
From time to time, however, at the latest after a film jam, the entire camera cavity, the magazine throat, the film guide rockers and the movement block should be cleaned with a brush. Usually, it is sufficient to dust off the camera and its cavity and the magazines with compressed air. (Follow the instructions of the manufacturer of the compressed-air gear!)
Caution: Don't hold the nozzle of the compressed-air bottle too close to the parts to be cleaned. The condensation water resulting from the latent heat of evaporation could cause corrosion on the metal surfaces.



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Cleaning the turnover loop

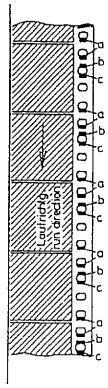
Remove the take-up side magazine lid (28). Following this, push the pushbutton (a) of the interlocking device and pull the turnover loop completely off its holder. For cleaning, use only a brush or compressed air.

After cleaning slide the turnover loop carefully back into the holder until it stops. Ensure that the interlocking tappet runs in the middle of the guiding groove and that it locks audibly. Check with a finger, using slight pressure that the turnover loop fits exactly in the locking device.

Faults and their remedies

Problem	Cause	Remedy
See also failure indications on the camera displays (page 64/65).		
Scratching on the emulsion side of the negative.		
In the picture area, over several frames.	Dirty or damaged cross bars on the film gate.	Clean or, if defective, replace film gate or format mask (see page 61).
In the picture area, short and rhythmically recurring.	Upper or lower film loop too long, film touches inside of camera housing.	Follow the upper and lower film loop markings.
Outside the picture area.	Dirty or damaged longitudinal bars on the film gate, film guide rockers or slide bars in the magazine throat.	Carefully clean film gate, film guide rockers and magazine throat; if defective, replace.
Scratching on the glossy side of the negative. In the picture area.	Dirty or damaged film track or spacer gate.	Clean film track and spacer gate; if defective, replace.
Outside the picture area.	Dirty or damaged longitudinal bars on the film track or on the slide bars in the magazine throat.	Carefully clean longitudinal bars and magazine throat.

Problem	Cause	Remedy
Scratching in general.	Strong tendency of raw film stock to emulsion deposits; dust deposits on raw stock from perforation process; extreme temperatures; scratched raw stock.	Complain with manufacturer; use different film stock.
Unsteady image, vertical.	Heavy emulsion depositing in the film gate area; damaged film perforation; very poor gliding ability of the raw film stock; film stock with positive perforation; raw stock not standard size; pitch incorrectly adjusted.	Clean film gate area; use the right film stock with negative perforation; check and if necessary adjust the claw pitch.
Unsteady image, horizontal.	Heavy emulsion depositing in the film gate area; film edge cut undulated.	Clean film gate area; use different film stock.
Pressure exposures from perforation holes.	Mechanical stress on the perforation holes.	Pressure exposures do not effect the image steadiness.

Problem	Cause	Remedy
Mechanically damaged perforation holes. 	as a) Damage from the tips of the transportation claw pins during the transport phase, caused by very poor gliding conditions in the film gate area.	Improve gliding conditions in film gate area; avoid emulsion deposits build-up.
	as b) Film transported too far, therefore very strong correction of the register pin against running direction.	Check pitch adjustment of transportation claw.
	as c) Film not transported far enough, therefore very strong correction of the register pin in running direction.	Check pitch adjustment of transportation claw.
Film jam in the camera cavity.	Film pile-up in the upper or lower loop area; film supplied from the magazine is not transported by the movement; when the film perforation holes are badly damaged, the film often tears.	Check pitch adjustment of transportation claw.

Problem	Cause	Remedy
Film jam in the magazine.	Film pile-up on the take-up side; film supplied from the camera is not wound on. Flap-hinged grip of film threading aid (55) not folded down.	Check the magazine take-up motor; clamp the film head properly in the expansion core.
Echo images.	The film has been repositioned by the register pin during exposure.	Adjust the claw movement.
Blurred image in a corner.	The film is moved slightly while shutter is partly opened.	The correction phase of the register pin must be completely covered by the mirror shutter; readjustment required.
Picture lacks definition.	The flange focal distance is out of adjustment; lens is incorrectly set; poor quality or defective lens; the film gate is not properly locked.	When cleaning or interchanging the film gate, ensure that the contact edges are absolutely clean; check the lens and the flange focal distance.

Problem	Cause	Remedy
General film transport problems, e.g. film jam, damaged perforation holes, poor image steadiness.		
a) In extreme cold weather.	The selected frame rate is not attained because of increased power requirement of the camera or low battery. Mechanical damage to the film due to greatly reduced strength factor and brittleness of raw stock. Especially below minus 15 degrees C (plus 5 degrees F) also different gliding conditions.	Camera, battery and above all the film, must be protected from extreme cold; when a cold camera is brought into a warm and humid room, condensation builds up; this can be prevented by interim storing the equipment at approximately 0 degrees C (32 degrees F).
b) In extreme hot weather.	The raw film stock's mechanical properties change drastically at temperatures above 30 degrees C (86 degrees F). The film becomes soft and easily deformed. The film's coefficient of friction changes. The film tends to form emulsion depositing.	Camera and film should be protected from extreme heat, e.g. by shading or white covering etc.

Problem	Cause	Remedy
c) The camera does not attain the selected frame rate.	Operating error; too high energy consumption of the camera in the cold; low battery; (see also error number E 2).	Check the charge of the battery; follow the directions in the instruction manual; check that the movement of the camera turns easily by turning the knurled knob of the movement by hand; if difficult to turn, let the camera run for a few minutes at 24/25 fps.
d) "Lightning" on the developed negative	Electro-static discharge caused by too low humidity of the film stock.	Acclimatize the raw film stock for approx. 24 hours; in case of low air humidity, take the film out of the pack and load and expose within a short time.
The camera does not run, the operation control light (5) illuminates red, the camera main switch is ON.	Operating error; camera not ready for operation (NOT READY status). The cause detected by the camera sensors is indicated on the camera displays.	See page 65 of this instruction manual.

Problem	Cause	Remedy
Error messages		
Note: Malfunctionings are immediately signalled by the red illuminated operation control light (5). The corresponding error number is only indicated in standby (first mode). The camera is then in NOT READY status.		Remedial action only by an authorized ARRI service workshop.
Error number E 2 Asynchronous camera run.	Too high power consumption of the camera (see also ''Problems: a) in extreme cold weather'').	Check that the movement of the camera turns easily by turning the knurled wheel on the movement block by hand; if difficult to turn, let the camera run for a few minutes at 24/25 fps.

Problem	Cause	Remedy
Error number E 3 Open sector of mirror shutter incorrect.	The electronic control of the mirror shutter does not attain the set value and switches off after 10 seconds.	Set new open sector value of the mirror shutter via CCU-1 or SCU. If the system shuts off again after 10 seconds, set and fix the angle of the mirror shutter mechanically (see page 53).
Error number E 4 as E 3	as E 3	as E 3
Error number E 5 Faulty magazine run.	Film transport is blocked in the magazine.	Change magazine.
Error number E 6 Data error in the magazine. Film-end prewarning does not work.	The m/ft setting and the forward/reverse setting is not transmitted to the magazine.	You can finish shooting without hesitation. The remaining film stock can be checked with the mechanical film stock indicator (see page 71).
Error number E 7 Time code is not recorded on the film (problem also as E 6)	Error in the internal data exchance of the time code generator.	Call on an authorized ARRI service workshop. The electronic cover needs to be exchanged.

Problem	Cause	Remedy
Error number E 8 Overrun of stored data in the camera.	The internal longlife lithium battery (buffer battery) is empty.	Program new values with the CCU-1. In case of repeated data overrun call on an authorized ARRI service workshop.
Error number E 9 The quantity of exposed film and remaining film stock is not counted during camera run. The "viewfinder open" automatic does not work when camera is switched off.	No scanner signal from the mirror shutter.	
Error number E 10 Proper program run of the camera is no longer ensured.	EPROM in camera is defective.	Call on an authorized ARRI service workshop.
Error number E 11 Proper program run in the TC generator is no longer ensured.	EPROM in TC generator is defective (result of E 6 and E 7).	Call on an authorized ARRI service workshop.

Problem	Cause	Remedy
Error number E 12 The camera runs uncontrolled and is then automatically switched off.	No scanner signal from the motor.	Call on an authorized ARRI service workshop.
Error number E 13 The camera starts running and is then automatically switched off.	The speed limitation of 55 fps is exceeded; the output stage is possibly defective.	Call on an authorized ARRI service workshop.

Technical Data:

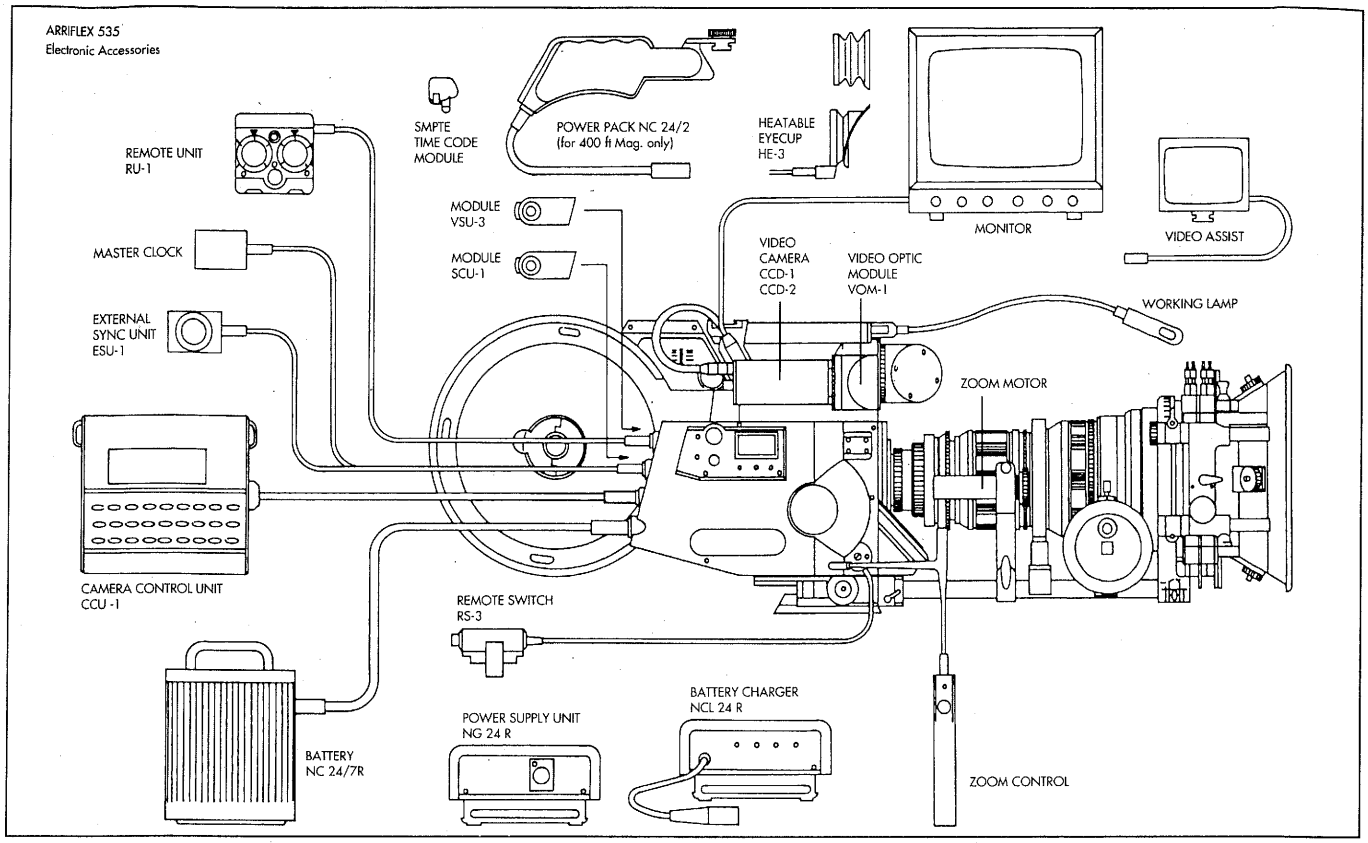
Programmable 35 mm universal mirror reflex camera Film width:	Data input via Camera Control Unit CCU-1 35 mm (DIN 15 501)
Lens mount:	54 mm dia PL, adjustable for Super 35 mm
Flange focal distance:	51.98 –0.01 mm
Viewfinder system:	mirror reflex system with a) standard viewfinder b) offset viewfinder for shoulder operation
Viewfinder magnification:	x 6.5/13
Mirror reflex shutter:	single-blade, 180 degrees; open sector can be motor-adjusted during camera run; adjusting period from 11¼ to 180 degrees: approx. 2 seconds
Displays in the viewfinder:	ASY, low bat, film end, film end prewarning, format markings
Frame rate display:	digital, electr. LCD display

Frame rate:	3–50 fps, infinitely variable (quartz accuracy) via VSU and RU-1; fixed values 24/25/29.97/30 fps adjustable via CCU-1 (up to 0.001 fps) or selector switch (37)
Asynchronous indication:	on the camera displays and in the viewfinder; also acoustic; operation control light illuminates red
Sensory error detection:	indicated on the camera displays are: film jam, film end, claw block not correctly positioned, magazine not or not correctly attached, film guide rockers open; when the camera is not ready for operation, the control light illuminates red
Beam splitter:	selectable, with the following options: 50/50%, 90/10%, and 80/20%
Contrast filter:	selectable, with the options neutral ND 03 and ND 06

Movement:	7-link movement with dual-pin transportation and registration claws for 35 mm negative film (DIN 15501)
Camera drive:	quartz-controlled disc-type DC motor
Power supply:	24 V
Power consumption:	at 20 degrees C (68 degrees F) room temperature with 120 m (400 ft) magazine and film approx. 2 A
Battery:	NC 24/7R block or NC 24/2 on-board battery
Magazines:	120 m (400 ft) /300 m (1000 ft) coaxial, with individual drive motors, electr. and mechan. raw stock indication; electr. connection to camera via multi pin plug; data transfer to camera via interface
Time code system:	plug-in TC data recording module, format SMPTE RP 136, form C, 80 bit TC quartz accuracy +/–1 ppm at 0–50 degrees C (32–122 degrees F)

Video assist:	plug-in Video-Optic Module (VOM) with BNC connector for studio monitors, and flange socket with 2/3" target, available for 50 Hz or 60 Hz in b&w or color.
Camera weight (with standard viewfinder, 120 m/400 ft magazine, w/o film, w/o lens):	16.8 kg/37.1 lbs
Dimensions (with standard viewfinder, 120 m/400 ft magazine, w/o lens):	349 x 279 x 490 mm (w x h x l) 13.7 x 11.0 x 19.3 in

The camera is supplied with a 4- perforation movement for 35 mm negative film stock with basic adjustment of 4.74 mm (short pitch).


ARRIFLEX 535
Electronic Accessories
REMOTE UNIT
RU-1
SMPTE
TIME CODE
MODULE
POWER PACK NC 24/2
(for 400 ft Mag. only)
HEATABLE
EYECUP
HE-3
MONITOR
VIDEO ASSIST
MODULE
VSU-3
MODULE
SCU-1
MASTER CLOCK
VIDEO
CAMERA
CCD-1
CCD-2
VIDEO OPTIC
MODULE
VOM-1
WORKING LAMP
EXTERNAL
SYNC UNIT
ESU-1
ZOOM MOTOR
CAMERA CONTROL UNIT
CCU -1
REMOTE SWITCH
RS-3
BATTERY CHARGER
NCL 24 R
POWER SUPPLY UNIT
NG 24 R
BATTERY
NC 24/7R
ZOOM CONTROL

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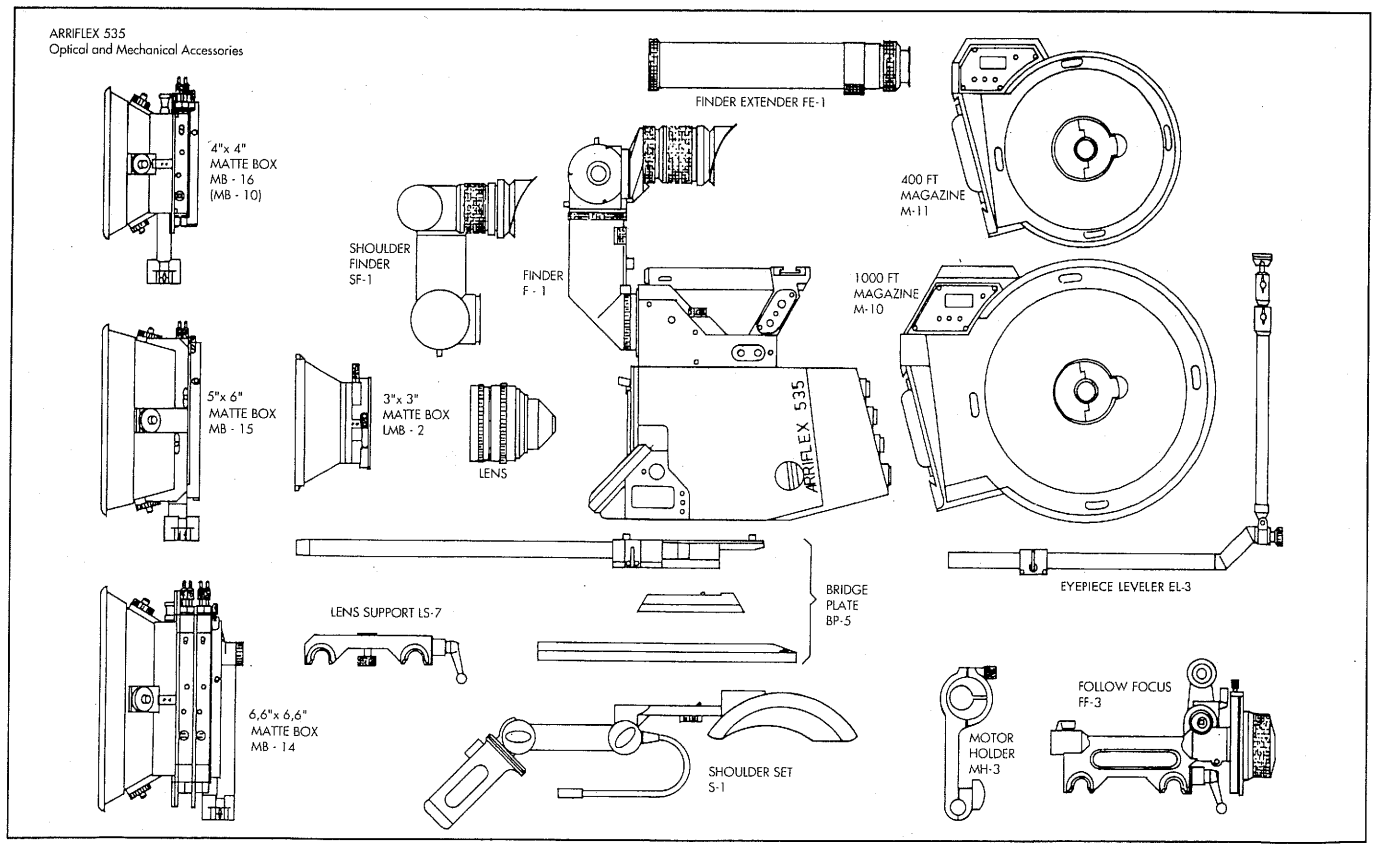
ARRIFLEX 535
Optical and Mechanical Accessories
FINDER EXTENDER FE-1
4"x 4"
MATTE BOX
MB - 16
(MB - 10)
400 FT
MAGAZINE
M-11
SHOULDER
FINDER
SF-1
FINDER
F - 1
1000 FT
MAGAZINE
M-10
5"x 6"
MATTE BOX
MB - 15
3"x 3"
MATTE BOX
LMB - 2
LENS
ARRIFLEX 535
EYEPIECE LEVELER EL-3
BRIDGE
PLATE
BP-5
LENS SUPPORT LS-7
6,6"x 6,6"
MATTE BOX
MB - 14
FOLLOW FOCUS
FF-3
MOTOR
HOLDER
MH-3
SHOULDER SET
S-1

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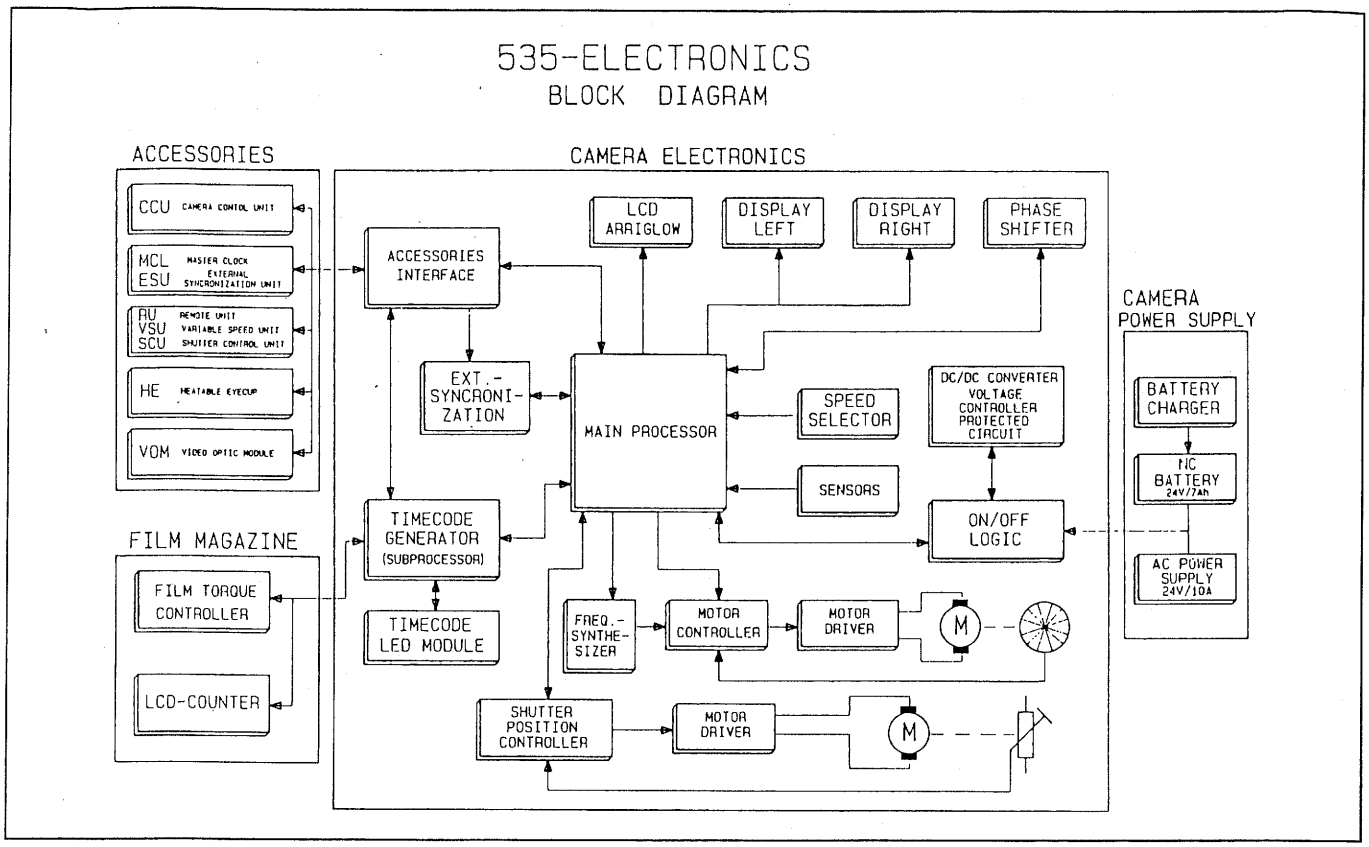

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