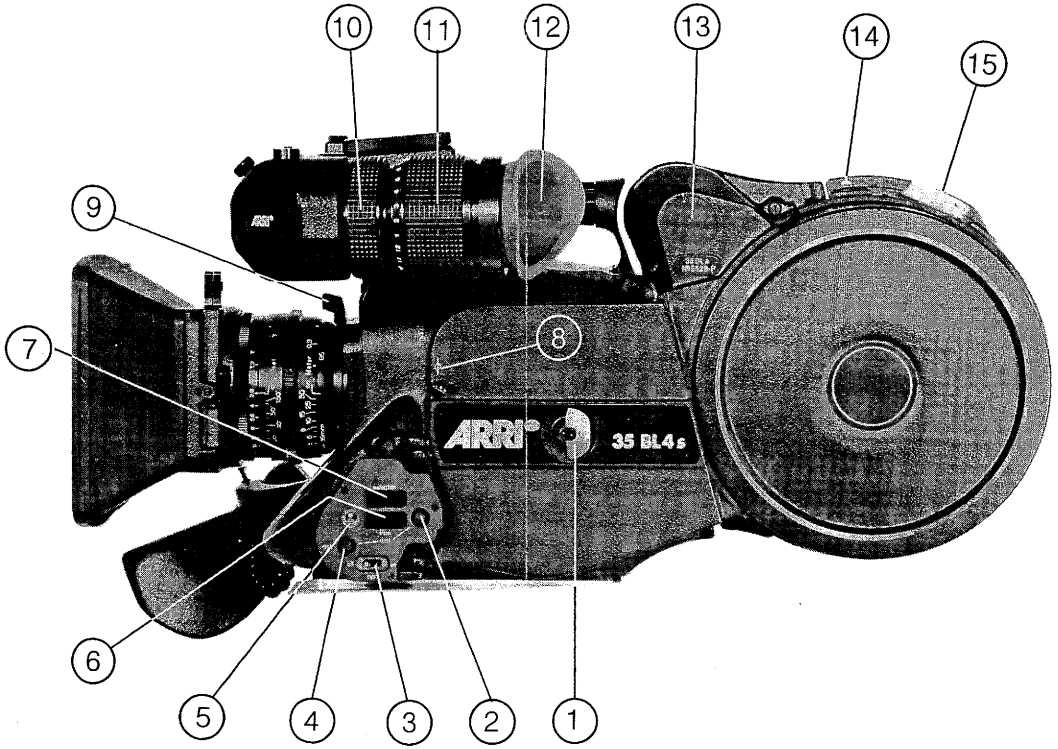
ARRI®

ARRIFLEX 35 BL 4 s

INSTRUCTION MANUAL

NOVEMBER 1989

Illustration guide



1 Camera door lock
2 Counter reset button
3 On/off switch
4 Counter read button
5 Feet/meters counter switch
6 Frame rate display
7 Footage counter (exposed film)
8 Film plane marker
9 Locking grip for PL-mount bayonet ring
10 Viewfinder coupling ring
11 Diopter adjustment ring
12 Eyecup
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14 Film loop marking notch
15 Magazine lock (take-up side)

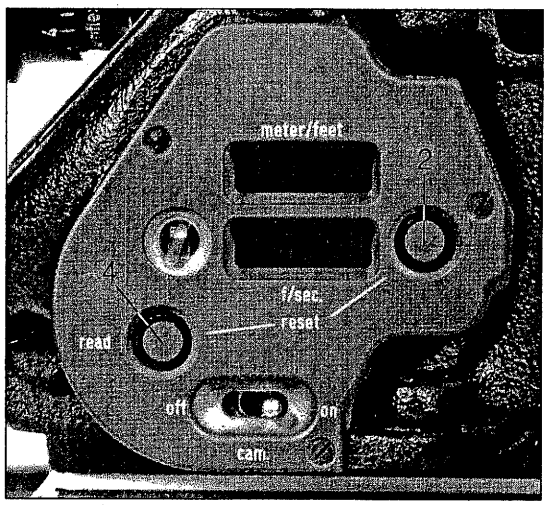
(continued on rear flap)

Contents

Footage counter (exposed film)

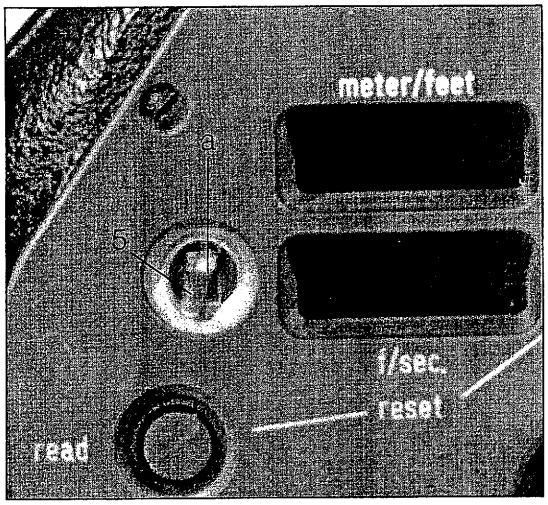
The digital footage counter employs an LED unit that is switchable between feet and meters. The recessed design allows easy legibility even under bright light. During camera operation, the footage counter continuously displays the amount of exposed footage.

To obtain a reading when the camera is not running, press button "read" (4). To return reading to zero, e.g. when a new magazine is attached, press buttons "read" and "reset" (2) simultaneously.

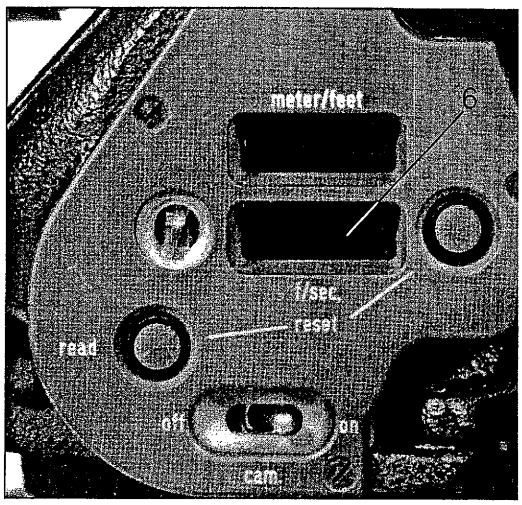


If the "reset" button is not pressed, the amount of film exposed is automatically retained even when the camera is disconnected from the power supply. A 10-year independent lithium battery provides the power for the display unit memory.

To switch the counter over from meters to feet and vice versa, remove cover (5) with a screwdriver and set slide switch (a) as required. Put plastic cover back in place.



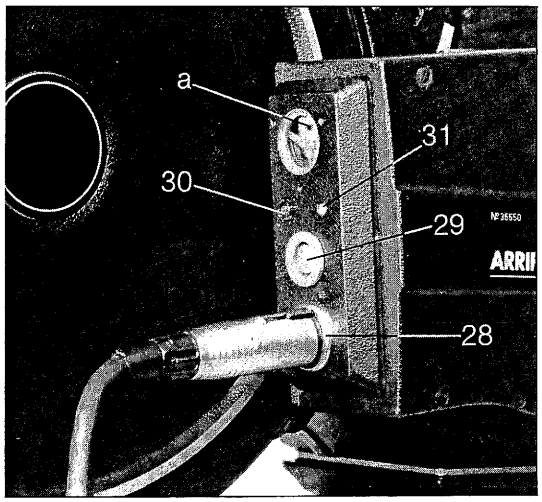
Frame rate display



After removal of the plastic cover, the frame rat selector switch (32 on back flap) can be set tc the quartz-controlled frame rates of 24 or 25 f (USA: 30 fps). To read or to verify any of the continuously adjustable frame rates from 6 to 50 fps (via VSU), the camera is equipped with digital LED frame rate display (6). Operation is identical with the counter for exposed film located above.

lectrical camera control functions

he panel located at the back of the camera ontains the following electrical control functons:



28) The 4-pin flange socket for battery cable CU or KCU-Sp which supplies power to the amera.

29) The 11-pin accessory flange socket for conecting electrical accessories, e.g. VSU or EFC. simultaneous connection of two electrical ccessories is required, use accessory conector ZV.

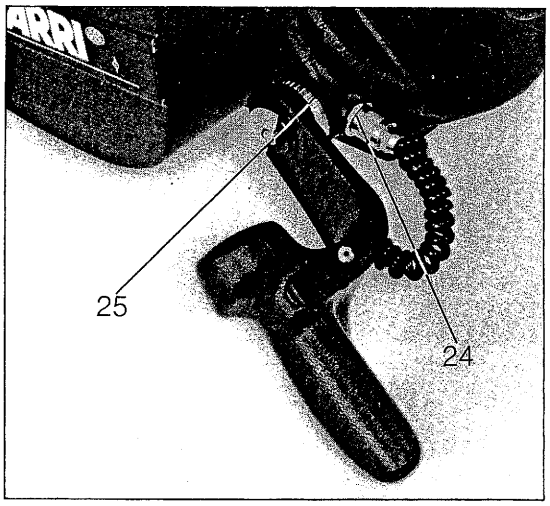
30) The volume control of the audible sync arning

31) The running control lamp

3

(a) The frame rate selector switch for 24 or 25 fps (USA: 30 fps) This socket contains both, an in-circuit fuse and a spare fuse marked "RES".

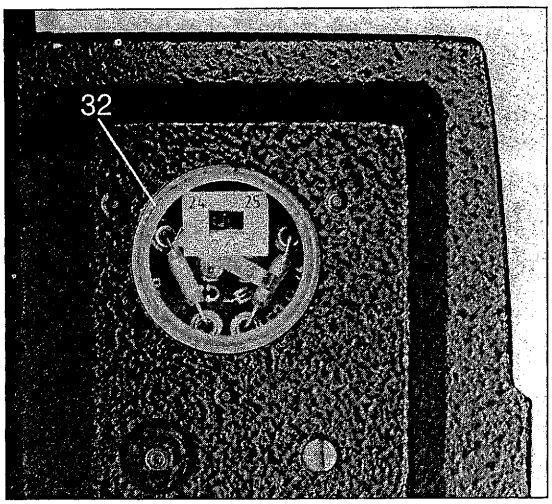
Handgrip



The handgrip with on/off switch is attached to the wedge-shaped rosette (25) of the camera and can be locked in various positions comfortable for the operator. The electrical connection between camera and handgrip is made by the coiled cord which is plugged into the 4-pole flange socket (24).

Changing the fuse

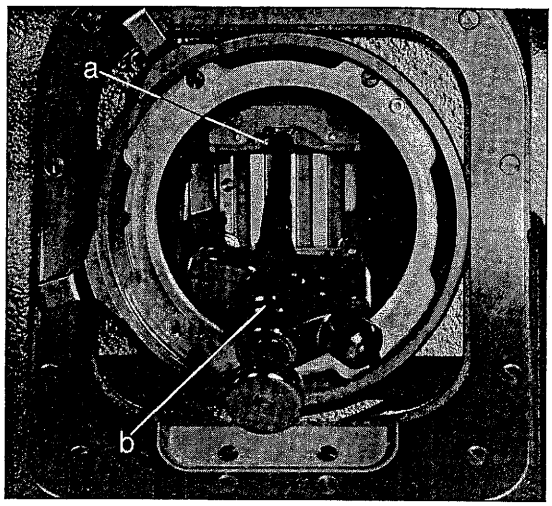
First unscrew the plastic cover (32) using a coin. The in-circuit fuse is located to the right of the frame speed selector switch, and marked "0.75 A". Remove the defective fuse with tweezers and replace it with the spare fuse marked "RES".



Replace the plastic cover. Obtain a new spare fuse immediately.

Changing the focusing screens

Special focusing screens with fluorescent-illuminated markings are available for the ARRIFLEX 35 BL 4 s. Non-illuminated focusing screens from the predecessor camera model may also be used. Screens are available in a variety of projection aspect ratios, including television, various theatrical and combined formats.



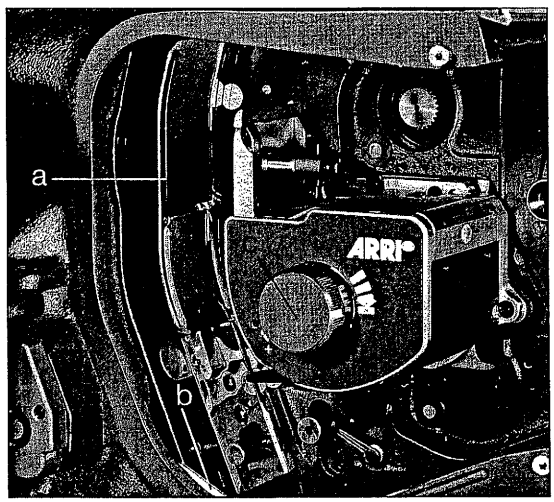
Before changing the focusing screen (a), remove the lens (or cavity cap). Rotate the mirror shutter out of the lens port area, by turning the knurled wheel on the movement block. Using a special forceps (b) or equivalent tool, first pull the focusing screen straight downwards and then out of its holder at a downward angle.

Before fitting a new focusing screen, make sure that the focusing screen frame and the holder are completely clean, otherwise the lens may not focus correctly.

Using the special forceps, push the new focusing screen into the holder at an upward angle as far as it will go. Locate the exact position by gently shifting the focusing screen frame in a horizontal direction.

Changing the film gate

Before changing the film gate (a) press the movement lock (b), then push the movement block back to the stop position. Remove magazine for easier access. Then push the movement block to its rearmost position.



To avoid damage, move the mirror shutter out of the lens port area by turning the knurled wheel (c). If the camera is connected to a power supply, the mirror shutter can also be turned out of the lens port area by pressing the "inching speed" button (26 on back flap).

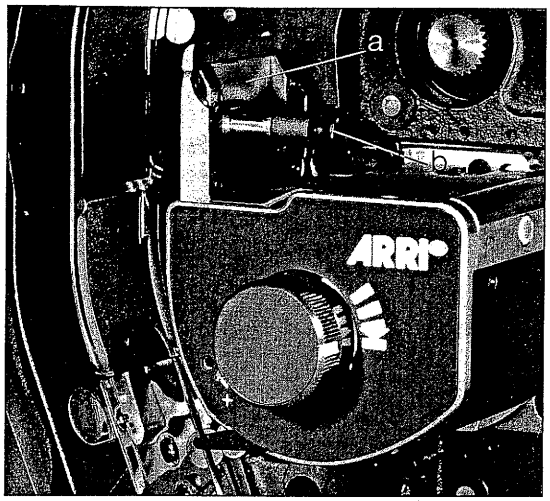
Placing the right index finger in the lower recess, push the film gate upwards and remove it in the direction of the movement block.

CAUTION! Keep fingers out of the film gate opening, as both the light-protective slat and the focusing screen could be damaged. See warning plate on camera door.

To re-insert, first press the film gate upwards in its holder (as when removing), and then push in completely. The film gate is fixed in its correct position by the upper, spring-mounted section of the holder.

Removing the spacer gate

The spacer gate (a) can also be removed for cleaning. However, as the spacer gate is aligned specially for each camera, it should not be interchanged with one from another camera.

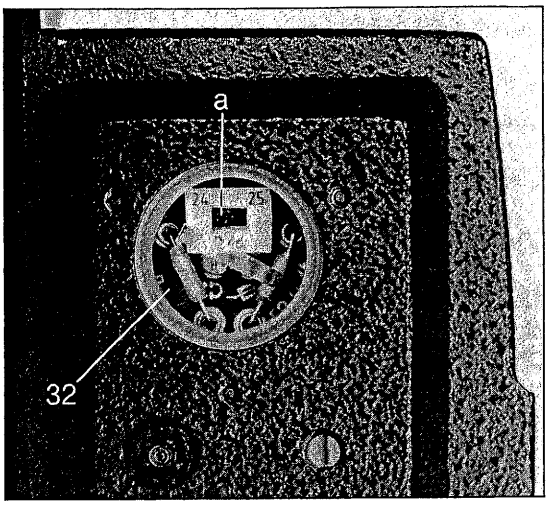


To remove, push the movement block back to the first stop position, pull out the pressure pin (b) and swing the spacer gate out upwards. Remove the spacer gate and clean – do not use objects made of metal or other hard materials. To replace, reverse the procedure.

Setting the frame rate

Quartz-controlled frame speeds:
The camera can be operated at frame rates of 24 or 25 fps (USA: 30 fps), with quartz accuracy. To change the frame rate, unscrew the plastic cover (32) with a coin and adjust the slide switch (a) accordingly. Then replace the plastic cover.

Variable frame speeds:
When using a variable speed unit (VSU), the camera can be operated at speeds between 6 and 50 fps. Use of VSU is described in the section "Electrical accessories."

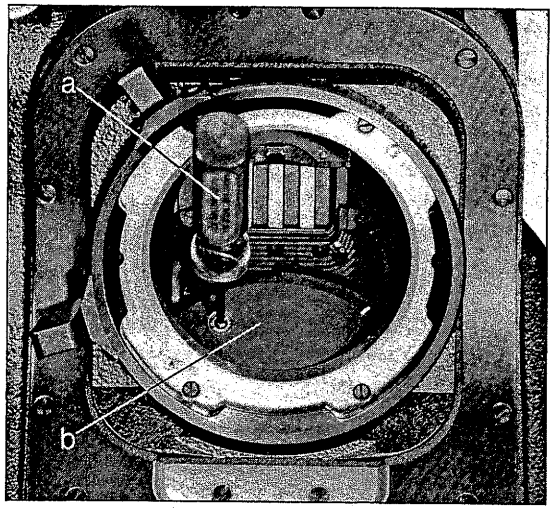


Adjustable mirror shutter

When filming with HMI/CID discharge lamps, remember that their light has an alternating intensity, dependent on AC supply voltage. The filming process is also intermittent due to the camera frame rate and camera shutter interval. To achieve consistent exposure in every frame, the frame rate, the shutter opening and the AC power frequency which supplies the luminaires, must have a constant ratio to one another. Since both the camera frame rate and power frequency are fixed values, the open sector of the rotating mirror shutter must be adjusted for optimal synchronization. Direct synchronism between the power frequency and camera speed is not necessary if the following values are maintained:

AC frequency	50		60	Hz
Crystal frame rate	25	24	24	30 fps
Shutter opening	180°	172.8°	144°	180°

The opening of the adjustable rotating mirror shutter can be set at the preset angles (180°, 172.8° and 144°) using a 2 mm hex. screwdriver (a). The shutter opening cannot, however, be set to intermediate values.



To adjust the shutter opening remove the lens (or the cavity cap). The rotating mirror shutter is now visible through the lens port. Turn the inching knob on the movement block until the shutter adjustment plate (b) is approximately in the center of the lens port. Insert the hex screwdriver (a) into the socket of the adjustment plate. Then release the lock using light axial pressure and simultaneously turn the adjustment plate by a few degrees. Then, release axial pressure and continue to turn the hex screwdriver to the next stop. The adjustment plate engages there automatically.

CAUTION! Before advancing the adjustment plate to another stop position, the lock must be released by light axial pressure using the hex screwdriver!

NEVER TURN FORCIBLY!

Adjustable transport claw

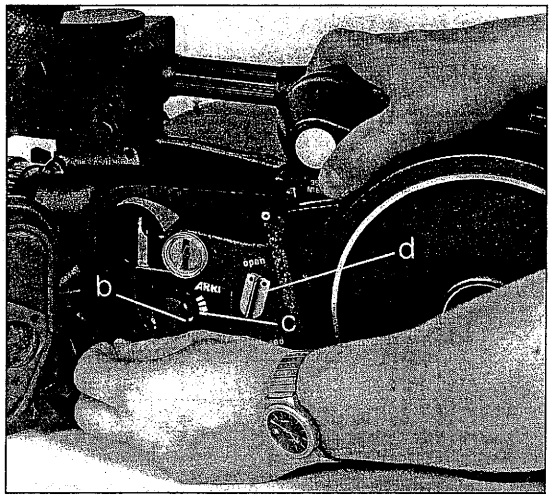
With the 7-link movement of the 35 BL 4 s, the movement pitch can be adjusted for slight differences in film stock perforation pitch, between various film types or between different batch numbers, thus achieving extremely quiet running. The camera noise level is affected by several factors:

1) Friction between film and transport
2) Distance between film perforation holes (perforation pitch)
3) Claw noise
4) Film loop noise

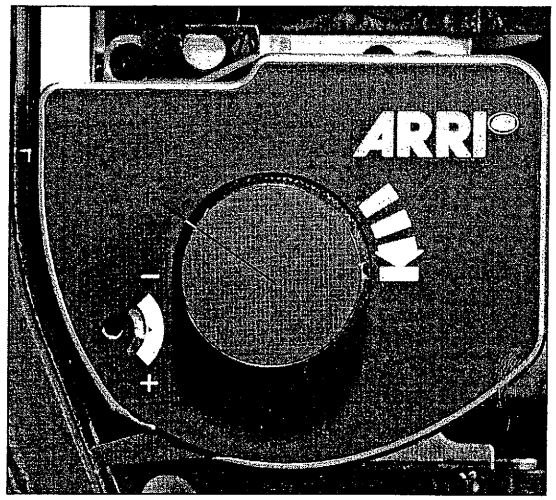
The camera is delivered with a standard claw setting, i.e. a negative claw with a claw pitch at 4.74 mm (short pitch).

This standard setting ensures the safe transport of all film stocks having a perforation pitch lying within a reasonable tolerance range.

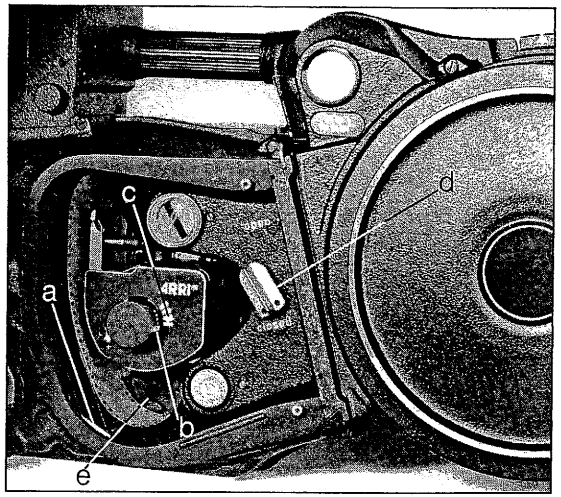
Before filming, a noise test should be completed with film of the same emulsion batch being used during production. To do this, insert approximately 200 ft (60 m) into a previously matched magazine (see section "Loading the magazine"). Open the camera door and, after pressing the movement lock (a on page 20), push the movement block in the direction of the magazine opening to its stop position.
Align the marking of knob (b) with the line on the movement block (c). Turn the magazine lock (d) "open" and place the loaded magazine into the camera while, with the left hand, guide the



film loop into the camera cavity between the film gate and movement block. Then turn the magazine lock (d) to "closed".

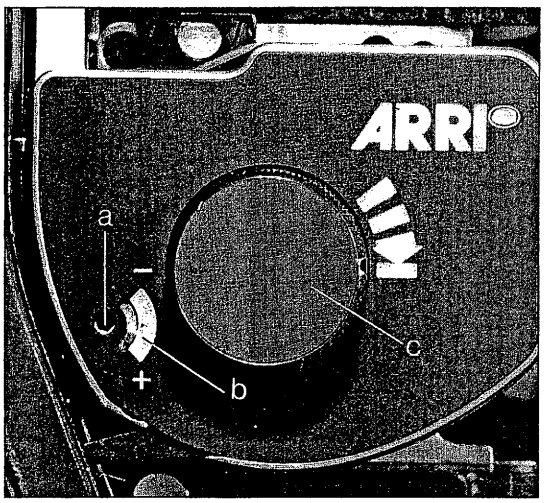


Adjust the film loop so that the film follows the film path markings and is engaged by the locating pin at the bottom of the film gate. Now push the movement block in the direction of the film gate until there is an audible click. Move the lever (e) of the buckle switch in a counter clockwise direction until it reaches the stop position. Check that the film travels through the movement correctly by turning the knurled knob (f). Optimal camera dB level must now be determined by adjusting the transport claw.



Adjusting the transport claw

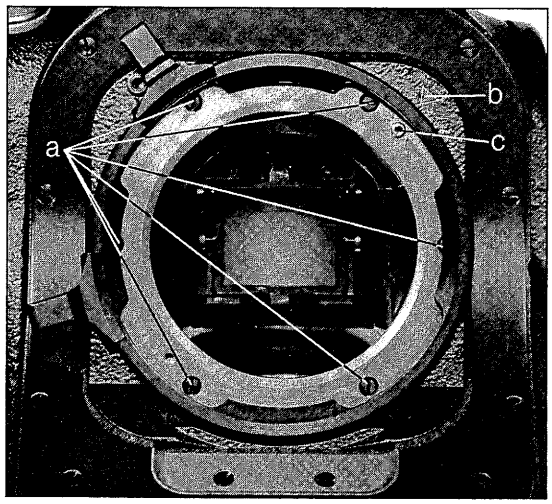
The transport claw pitch can be set to the particular film stock via the adjusting screw (a) by using a 2 mm hexagonal screwdriver (SW2). Both, the adjustment range and the direction (short pitch = – ; long pitch = +) can be read on the scale (b). To determine the quietest noise level, run the film through the camera at different pitch settings with the camera door open. However, before switching the camera on, check that the film is being transported correctly by turning the knob (c) manually. Pitch adjustments should be made while the camera is running. Listen closely while turning the pitch control to find the quietest setting. The adjustment range is limited by fixed mechanical stops in order to prevent film damage.



Adjustable lens carrier for the Super 35 mm format

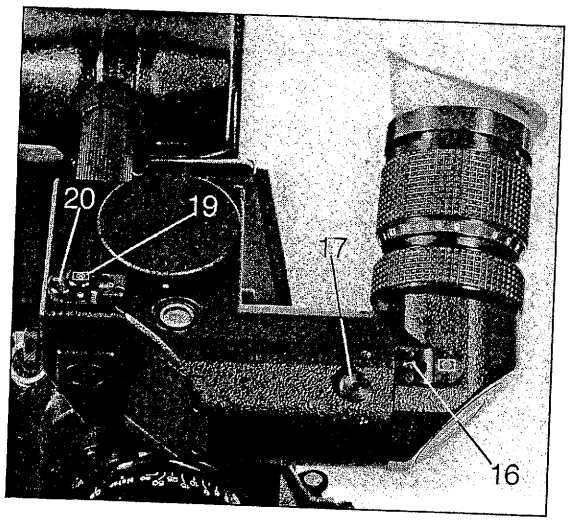
The lens carrier can be turned by 180° for filming with the Super 35 mm format. To do this, remove the six cheese head screws (a). The lens carrier can now be turned. Remove the index pin (c) and screw it into the threaded hole directly opposite on the lens carrier. Replace and tighten the six screws. When filming with the Super 35 mm format, ensure that the marking (b) points to the engraved number "2" on the lens carrier.

Note:
The bridge plate BP-3 can be altered easily for filming in the Super 35 mm format, so that the lens accessories can be attached concentrically in relation to the lens carrier. (See section "Bridge Plate BP-3").



Illuminated-frame (ARRIGLOW) viewfinder

The ARRIFLEX 35 BL 4s is equipped with an illuminated-frame viewfinder with an enlarged exit pupil. The finder can be turned through 360°. The fluorescent-illuminated frame outline with continuously variable brightness control makes filming in low light conditions easier. The brightness should be adjusted while the camera is not running. Simply turn the potentiometer (19) in the direction of the arrow. A control lamp (20) indicates that the illuminated frame is switched on. To swivel the viewfinder, loosen the locking



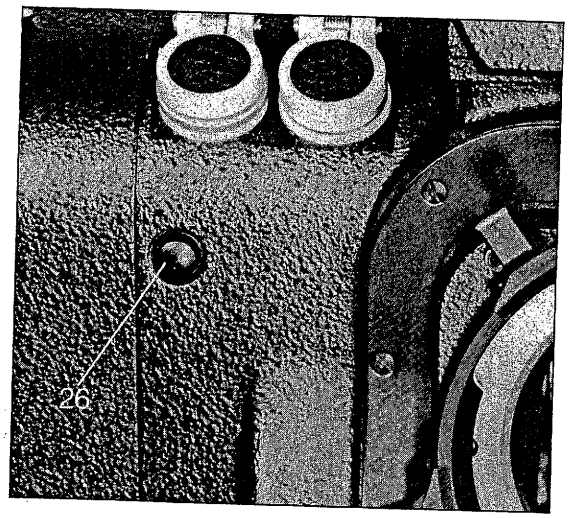
screw (17) and turn the viewfinder to the desired position. Then re-tighten the clamping screw.

Note: Always loosen the clamping screw before turning the viewfinder, to avoid damage.

"Inching speed" button

When the camera is switched off, the electronic motor control automatically stops the mirror shutter in the viewing position. If, however, the mirror shutter is to be turned to another position (e. g. for cleaning or checking the film gate), this can be done by operating the inching button (26).

The camera ON/OFF switch must be in the "OFF" position. Press the inching button (26) until the

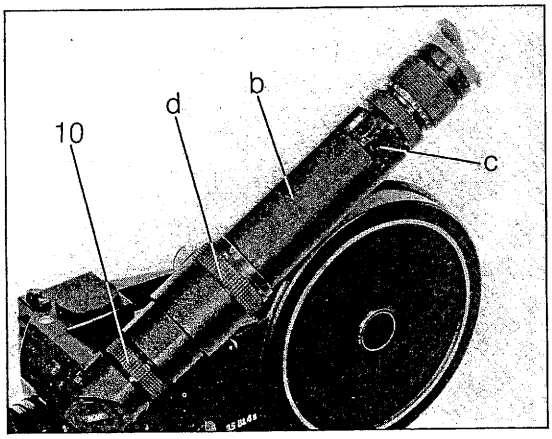


desired position of the mirror shutter has been reached. The mirror shutter stops immediately and the electronic motor control is switched off.

After cleaning, etc., switch the camera on briefly to restore the initial "viewing" position of the mirror shutter.

Attaching the viewfinder extension

While holding the eyepiece, loosen the coupling ring (10) by turning it counterclockwise, then remove the eyepiece. Insert the tabs of the viewfinder extension (b) into the notches of the viewfinder and re-tighten the coupling ring. Ensure that the knurled dial (c) of the pivoting contrast viewing filter is on the stop side of the viewfinder extension. Fasten the eyepiece to the viewfinder extension. The viewing image will now be correctly oriented.



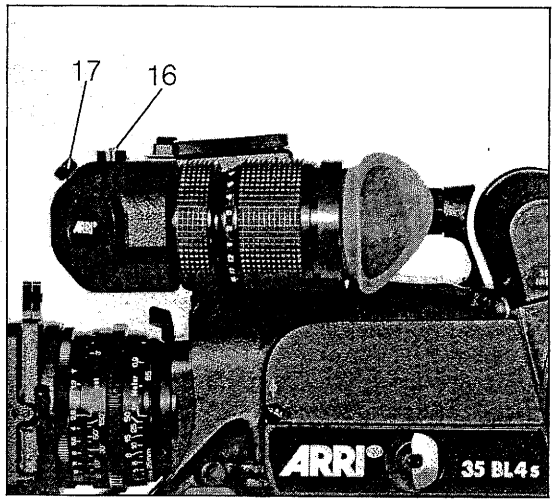
Zoom adjustment of the viewfinder extension

In order to better judge picture detail or to achieve better focusing, the viewfinder extension has been fitted with a zoom adjustment (d). By turning the zoom ring, the viewing image can be gradually magnified up to 2x.

Viewfinder extension

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

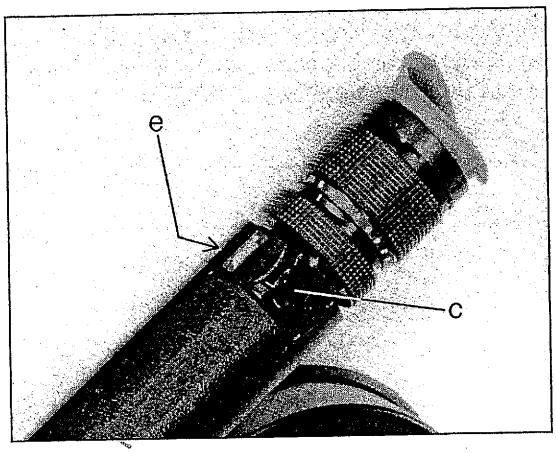
Rotating the Pechan prism



Loosen the clamping screw (17). Press the release button (16) and simultaneously turn the viewfinder approximately 30° clockwise. Now release the button and continue rotating the viewfinder around to its initial viewing position. Through the normal eyepiece, the viewfinder image should appear upside down and laterally inverted. Re-tighten the clamping screw.

Pivoting contrast viewing filter

To make it easier for the cameraman to see possible stray light and judge lighting contrast, a pivoting contrast filter is attached to the viewfinder extension. The filter can be pivoted in or out by turning the knurled dial (c).

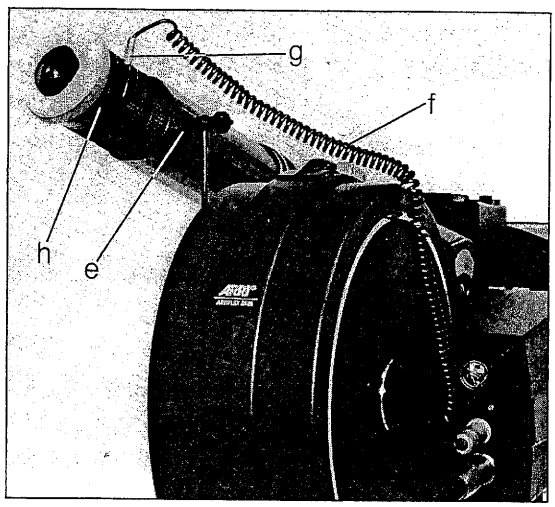


Leveling rod

When filming from a tripod or ARRIHEAD, a leveling rod holds the viewfinder extension and eyepiece at the operator's eye level during camera tilts. The leveling rod is threaded into the screwbase on the viewfinder extension (e). The lower section is screwed to the ARRIHEAD or a special holder on the tripod.

Heated eyecup

The heated eyecup prevents the eyepiece from misting up in varying temperatures. It is easily fitted in place of the normal eyecup, and is connected to the electrical system of the camera by a coiled cable (f).
The cable is fully detachable and is plugged into the socket (g) of the heater ring (h) with the small plug, and into the front (23) or rear (29) electrical accessory socket of the camera by the larger plug (see rear flap photo).



CAUTION:
If the camera and electrical accessories are powered by batteries, the illuminated-frame viewfinder should be switched off and the heater ring plug of the eyecup disconnected during longer shooting breaks. Unnecessary discharging of the batteries can thus be avoided.

Taking lenses

The ARRIFLEX 35 BL 4 s can use the newer 35 mm ARRIFLEX/Zeiss High Speed lenses with 54 mm dia. PL-mount, as well as all previous 35 mm zoom and fixed-focal-length lenses with 54 mm diameter PL mounts. The camera also accepts any 41 mm diam. Standard or steel bayonet mount lenses that are fitted with an appropriate ARRIFLEX PL adapter.

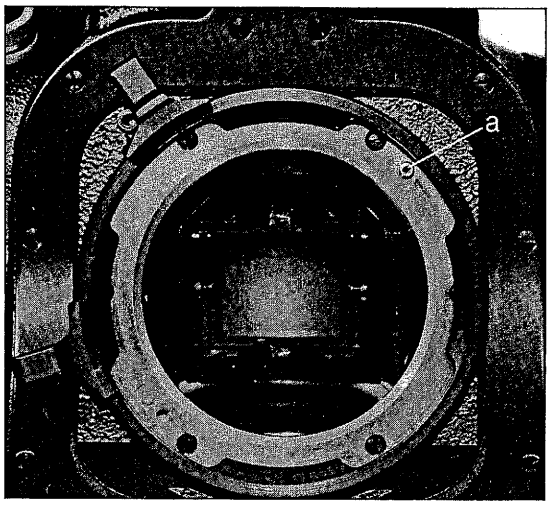
With heavy zoom or telephoto lenses, a special support is essential (see section "Lens support"), since otherwise the flange focal distance could change due to the excessive, uneven load on the lens carrier.

The correct choice of the lens accessories and their attachment to the bridge plate is described and shown in detail in the technical information booklet "Lens Accessory System for ARRIFLEX 35 BL 4 / BL III / and 35 III".

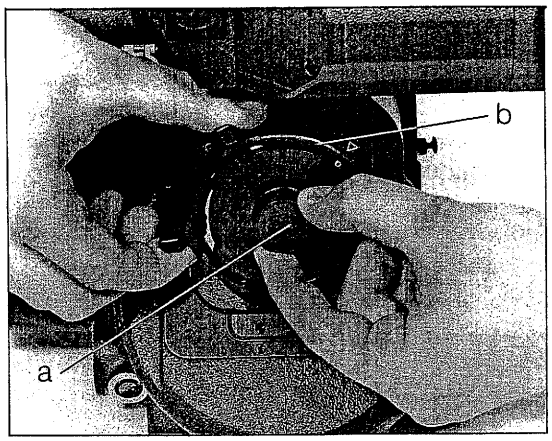
PL-mount and PL adapters

The PL lens mount (positive locking) has a diameter of 54 mm. The form-fit bayonet lock ensures secure attachment of even the heaviest lenses. The index pin (a) in the locating seat prevents accidental lens rotation. The PL-mount is

made of wear-and-corrosion resistant chromium-nickel steel.

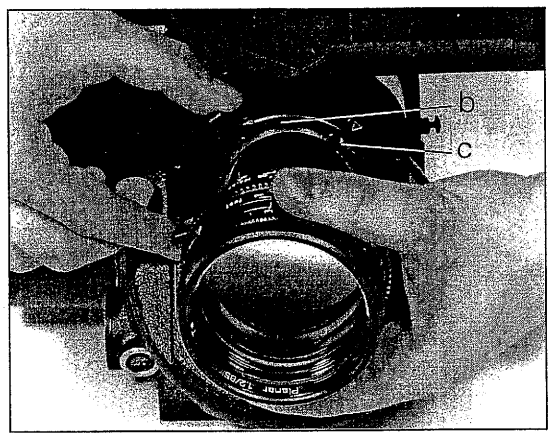


An adapter must be used for lenses with 41 mm diameter, standard or steel bayonet mounts. Two different adapters are available for fixed-focal-length lenses: one which is screwed permanently onto each lens and another one which can be quickly interchanged amongst a set of lenses. An adapter with a union ring is available for converting zoom lenses with 41 mm dia. steel bayonet mounts. It is easily substituted for the previous 41 mm adapter. Re-alignment is not necessary.



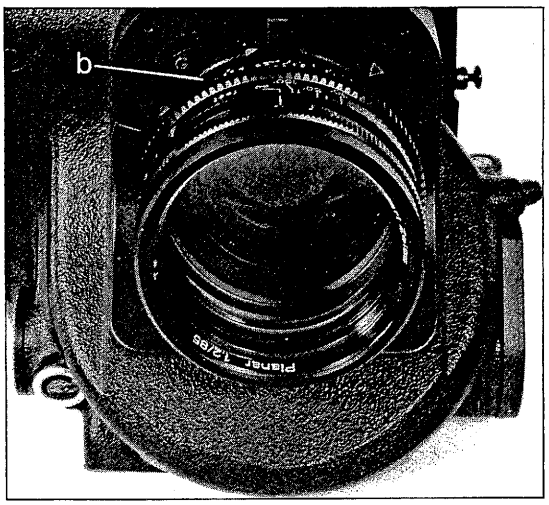
Installing lenses with PL-mount

The camera lens port is protected by a cavity cap (a). By turning the bayonet ring (b) counter-clockwise to its stop position, the lock is released and the cap can be removed. To install the lens, first guide it straight into the lens mount with the focusing scale oriented to preference.

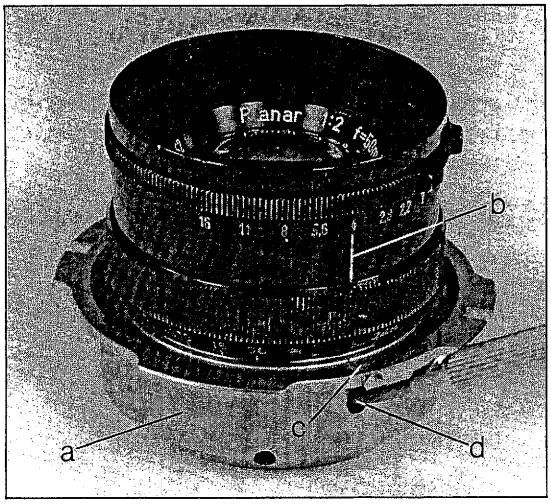


Four grooves in the locating collar of the lens permit attachment at 90° intervals: Ensure that the lens carrier index pin engages one of the grooves on the lens flange. While holding the lens in one hand, use the other to turn the bayonet ring (b) clockwise as far as it will go.

Note: Medium axial force (from one hand) is sufficient to secure the lens.



Converting prime lenses with 41 mm diameter standard or steel bayonet mounts to PL-mount.

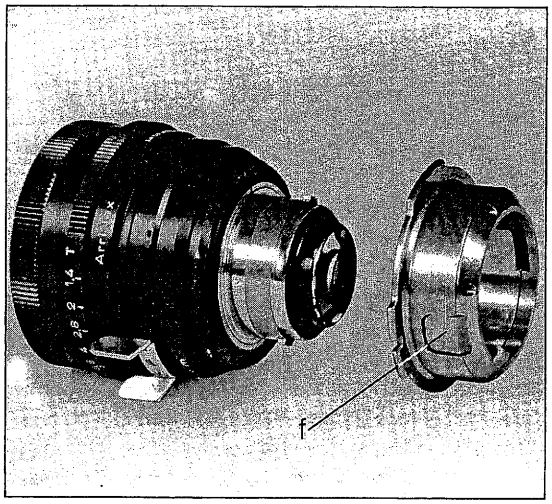


Either PL universal adapters or PL adapters for permanent assembly can be used for converting fixed-focal-length lenses with 41 mm dia. standard or steel bayonet mounts, to a PL-mount.

a) The PL adapter for permanent assembly is simply pushed over the lens mount and turned so that the index mark (b) of the lens coincides with one of the two index marks (c) of the adapter. The adapter is then tightened into this position with the three setscrews (d).

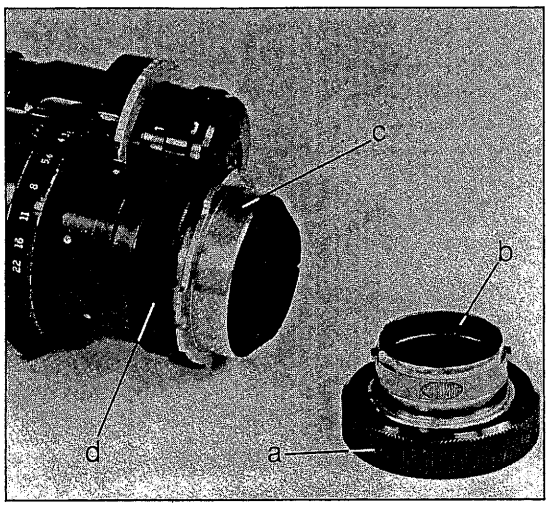
b) The PL universal adapter can be used for both the 41 mm bayonet lenses, and also with the "old" fixed-focal-length lenses without guides (e. g. Cooke Speed Panchro). First, the PL universal adapter is pushed over the lens mount and then locked by turning clockwise. A retaining finger in the adapter attaches the lens to the adapter index. To take off the adapter, press both release buttons (f) and remove it by turning counter-clockwise.

Installing the lens into the lens port is described above in section "Installing lenses with PL-mounts".



Converting zoom lenses with 41 mm dia. steel bayonet mounts to PL-mounts

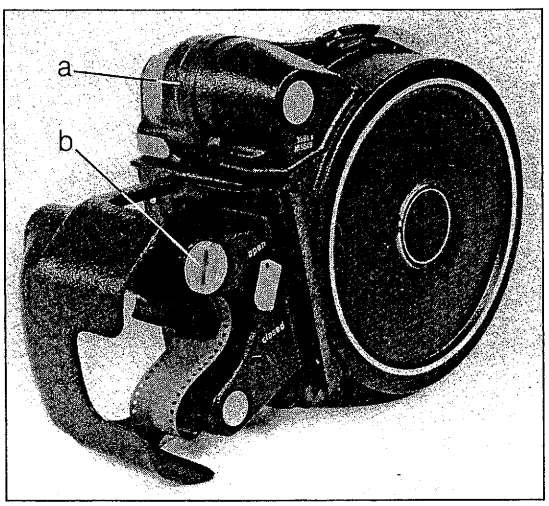
First, remove the bayonet mount (b) by unscrewing the union ring (a). The complete 41 mm dia. steel bayonet mount (b) can now be removed. Align the union ring (d) of the PL zoom adapter (c), so that the fixing pin of the lens engages the appropriate groove on the adapter. Then secure the adapter by tightening the union ring (d). Realignment of the lens is not necessary. Installing the lens into the camera is described above in section "Installing lenses with PL-mount".



Important: It is not possible to change lenses while the adapter remains in the camera's lens port. Lens and adapter must be removed together from the camera, before the adapter can be fitted to another lens.

400 ft (120 m) and 1000 ft (300 m) 35 BL 4 s magazines

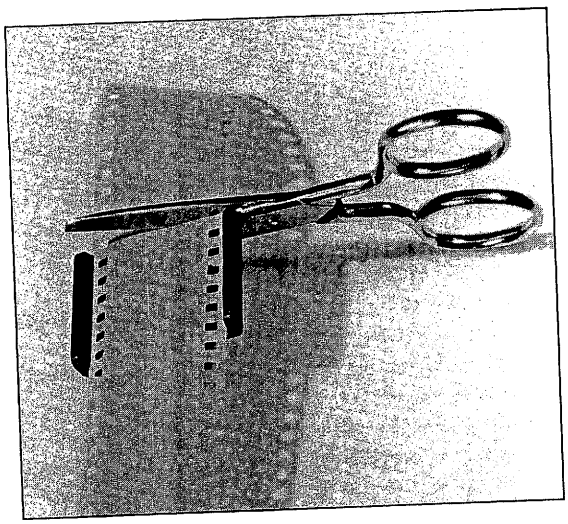
To ensure that the camera runs as quietly as possible, the 35 BL 4 s magazine has been modified from its predecessor to permit adjustment of the film loop length, even after loading the magazine (a) into the camera. It is also possible to adjust the magazine sprocket drum (b) to the potential variation in perforation pitch amongst various film stocks or batch numbers.
Other design measures aimed at reducing magazine noise include a mechanical unexposed footage counter, whose sensor arm pivots onto the film roll only when a footage reading is required. Also, a newly designed expandable magazine core on the feed side ensures a tight fit with the film core.



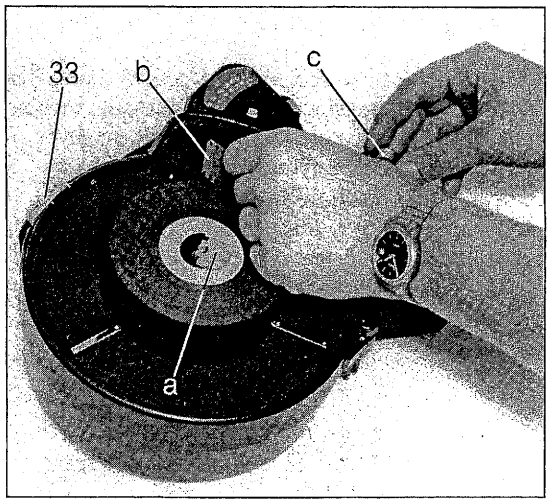
The magazine should be adjusted for the exact film perforation pitch of each different film stock or emulsion batch, before filming.

Loading the magazine

Use a piece of test film to practice threading the film before attempting to work in a dark room or changing bag. Cut the film at a right angle through the middle of two corresponding perforation holes so that the magazine throat sprockets will easily engage the perforation holes of the film. A film gauge (available from ARRI) simplifies cutting the film in a dark room.



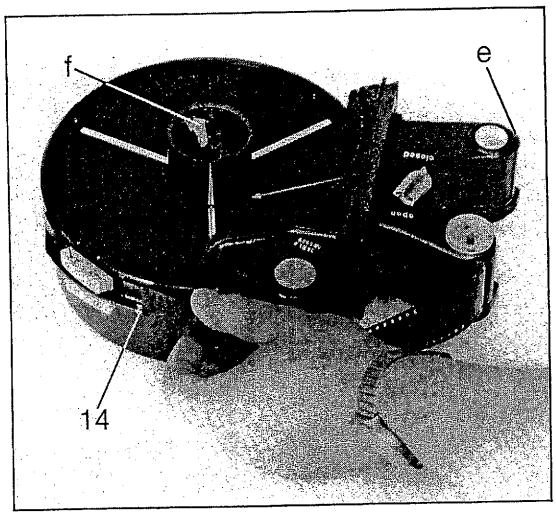
To open the magazine, push the safety latch (33 on back flap) in the direction of the arrow "A." The magazine lid can now be lifted off. Use only film stock for which the magazine has been previously adjusted. See section "Matching the magazines to the film stock used".



Flip up the hinged clip of the magazine core (a) and insert the film roll into the magazine. Ensure that the guide of the magazine core engages the groove of the plastic film core. Thread the film into the slit (b) as per the film path markings, then flip down the hinged clip. Ensure that the film roll is flush and even. Then carefully turn the magazine wheel (c), while pushing the film into the magazine throat until the film perforations are easily engaged by the magazine sprockets. Continue to turn the magazine wheel carefully until the film emerges from the magazine throat. The film should advance easily without jamming or straining. If the film jams or crackles in the transport, it is either threaded incorrectly or the magazine needs to be adjusted to the film stock's particular perforation pitch. (See section "Matching the film magazines to the film stock used"). Now the magazine lid can be closed and locked.

All further steps can be carried out in daylight.

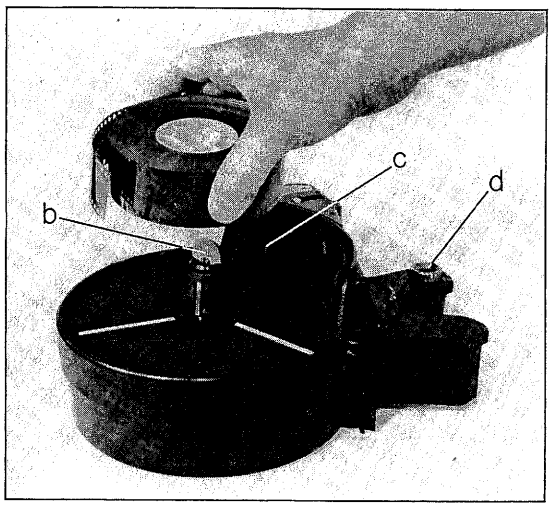
Turn the magazine over so that the take-up side is on top. Unlock and remove the lid. Advance the film by turning the magazine wheel (c), until it reaches the film loop marking (14). Then thread the film into the lower magazine throat (e) and turn the magazine wheel until the film emerges inside the take-up compartment of the magazine.



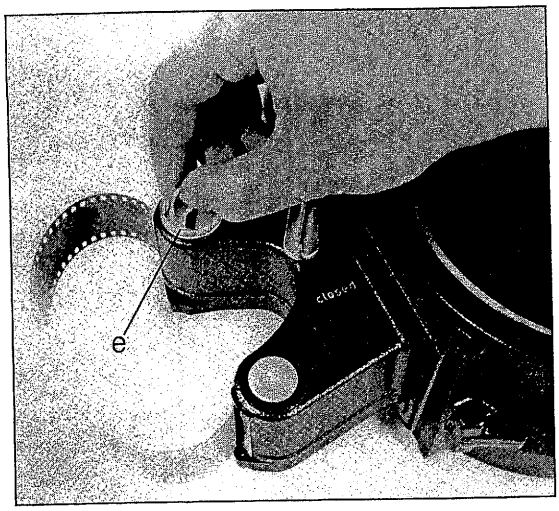
Insert the film into the expandable film core and clamp it in place with the lever (f). Wind the core approximately one turn clockwise. To prevent the film roll from dishing, run a finger around the outer edge of the film core to ensure that the film sits flush with the take-up core. The magazine cover can now be closed.

Adjusting the magazine to the film stock

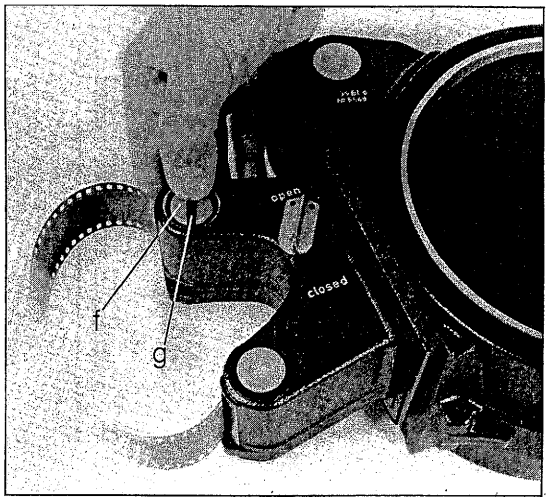
The marking of the knurled magazine wheel must be turned to the "0" setting before adjusting the magazine timing. The film transport system in the magazine throat can be adjusted for minimal noise by loading and testing a sample of approximately 200 ft. (60 m) of the exact film stock and emulsion batch to be used while filming. Place the camera on a table with the feed-side



up, and remove the magazine lid. Flip up the hinged clip of the magazine core (b) and insert the sample film roll. Ensure that the guide of the magazine core engages the groove of the plastic film core. Thread the film into the slit (c) as per the film path marking, then return the hinged clip to its horizontal position. The diameter of the magazine core expands when closed, ensuring that the film roll sits snugly and quietly on the feed-side spindle.



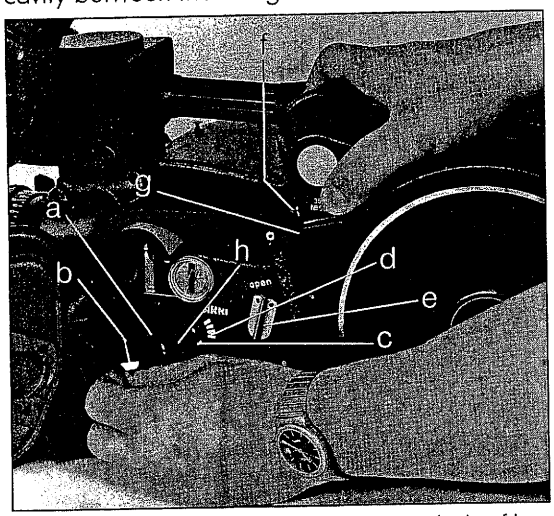
Unscrew the plastic cover (e) with a coin. Then thread the film by carefully turning the magazine wheel (d) in the direction of the arrow, while simultaneously pushing the film inside the magazine throat, until the film perforations are engaged by the magazine sprockets. Continue to turn the magazine wheel carefully. The film should advance freely, without jamming or straining, before it emerges from the magazine throat.



To adjust the timing, turn the film back approximately 2 inches (5 cm) using the magazine wheel (d). Press the control button (f) and turn the knurled wheel (g) by one preset position. Then turn the magazine wheel in the direction of the arrow. If the film jams or crackles the knurled wheel must be advanced to the next stop in the same direction.
This procedure should be repeated in the same order until the optimal setting is found where the film can be transported smoothly and quietly, by turning the magazine wheel (d).
If advancing the control in one direction produces greater film noise or friction, repeat procedure, moving the pitch control in the opposite direction.
Note: The perforation of the test film may be damaged by repeating the matching procedure. For this reason, the film should always be pulled out of the magazine throat between matching procedures and the damaged footage discarded.

Inserting the loaded magazine

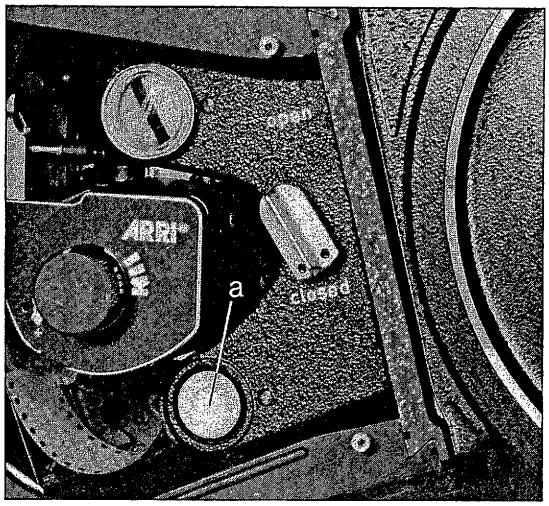
Open the camera door, press the lock (b), then slide the movement block (a) in the direction of the magazine opening, to the first stop position. Align the marking of the rotary knob (c) with the line on the movement block (d). Turn the magazine lock (e) to "open" and place the loaded magazine so that the guide nose (f) rests on the camera guide rail (g). Then carefully push the magazine as far as it will go into the dovetail on the back of the camera. Simultaneously with the left hand, guide the film loop into the camera cavity between the film gate and the movement



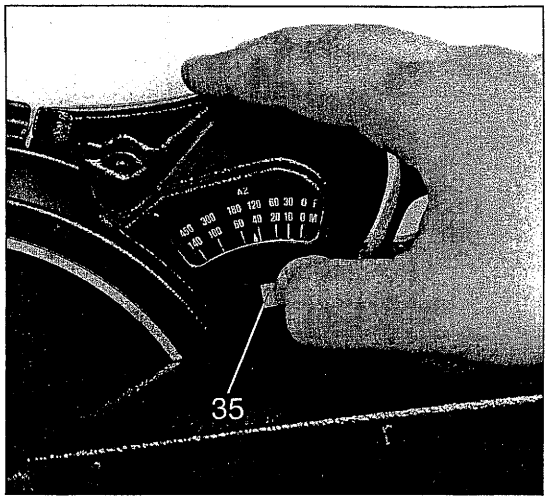
block. Align the film in accordance with the film path marking. Ensure that a perforation of the film loop is engaged by the locating pin at the bottom of the film gate. Turn the magazine lock (e) to "closed". Now push the movement block in the direction of the film gate until there is an audible click. Move the lever of the buckle switch counter-clockwise to its stop position. Then check that the film travels through the movement correctly by turning the knurled knob (h).

Setting the lower film loop

The lower loop length can be adjusted for quieter running. Simultaneously press and turn the knurled disc (a) counter-clockwise for a larger loop. Turning the disc clockwise will shorten the loop length. Ensure that the knurled disc springs back to its normal position after adjustment. This can be checked by rotating the disc slightly.

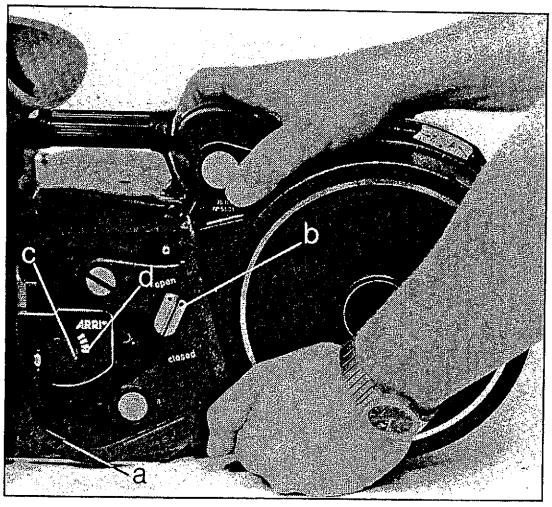


Counter for unexposed film



The ARRIFLEX 35 BL 4 s magazines have a new mechanical footage counter for the monitoring of the unexposed film supply. For quieter running, the newly designed magazine roller sensor arm is retracted, except when a footage reading is desired. To take a footage reading, move the slide (35) to the right until it stops. The indicator arrow above indicates in both feet and meters the unexposed film remaining. When the slide is released, the sensor arm is returned to its normal position by a retraction spring. Noise caused by a sensor arm that touches the film roll during operation is thus avoided.

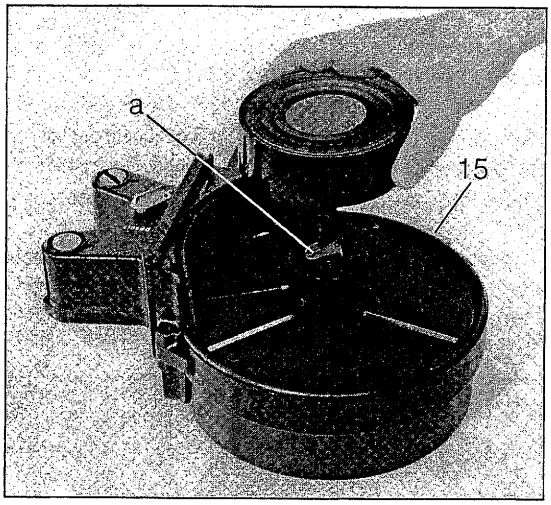
Removing the magazine



To remove a magazine with fully exposed roll, first open the camera door and, after releasing the lock (a), push back the movement block in the direction of the magazine into the lock position. Turn the magazine lock (b) to "open" and pull the magazine out of the dovetail guide of the camera.
When removing a magazine before all film is exposed, first align the marking on the rotary knob (c) with the marking (d) on the movement block. In this position the registration pin tips will release the film. This procedure prevents damage to both the film and the pin tips.

Removing the exposed film

Exposed film must be removed in the dark room or changing bag. Place the magazine on a flat surface with take-up side facing upwards. Slide the lock (15) in the direction of arrow "0" and remove the magazine cover. 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



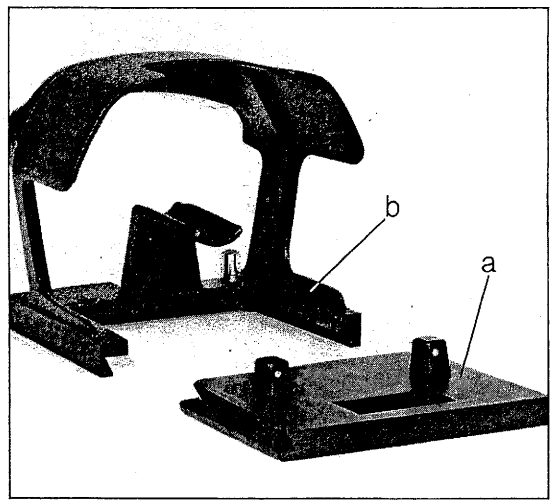
one hand under the roll to prevent sagging. Now place the roll on a flat surface and insert a plastic film core in its center to stabilize the roll for transport.

Note: 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.

Transport and storage of camera and magazines

Note: The camera must never be transported in its case with a magazine attached, whether the magazine is loaded or empty.

When the camera is stored or transported, a magazine opening cover (a) should be inserted in the rear camera cavity in place of the magazine.
A magazine loop protector (b) which also functions as a handle for the magazine, should be fitted to the magazine before transport.



Electrical accessories

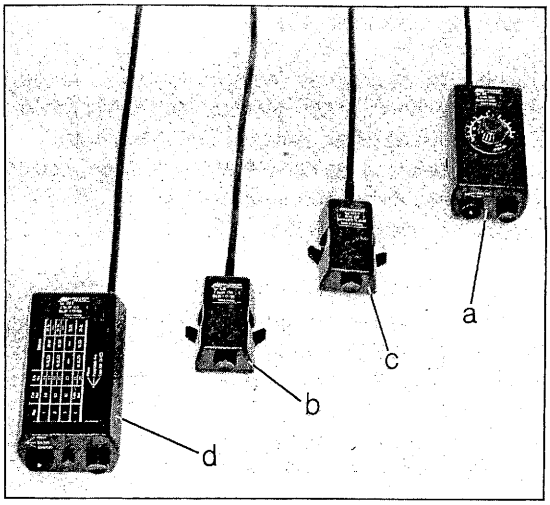
The electrical accessories are plugged into the flange sockets (23/29 on rear flap) and consist of the devices listed below. If required, two accessories can be connected simultaneously to the camera through one socket by using the accessory distributor box (ZV).

a) The Variable speed unit (VSU), has a built-in remote on/off switch, and a selector switch for choosing constant 24/25 fps (USA: 30 fps) quartz-controlled operation or variable frame rates between 6 and 50 fps. The VSU is electrically connected to the camera via a cable and can be fixed to the pan handle.

b) The Pan handle remote control (RCSR) switches the camera on and off when using a tripod head. The RCSR is fixed to the pan handle by its own spring clamp.

c) The PHU II phase shifter permits synchronization of the phase relationship between the camera and quartz-synchronized TV monitors.

d) The EXS II external sync unit, with a composite video signal, built-in remote on/off switch, out-off-sync indicator, camera selector switch and built-in phase shifter, is used for synchronizing the camera with AC power frequency, with a second camera, or with the composite video signal from a monitor.



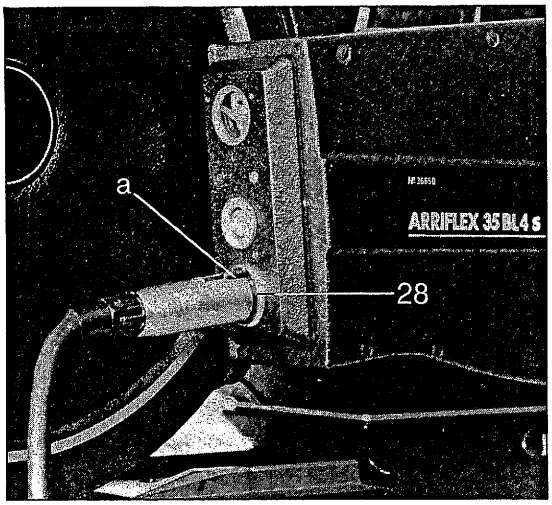
e) The NSYTR 2 AC-synchronizing transformer is used in conjunction with the EXS II for synchronizing the camera with the AC power.

f) The External pilotone attachment for lip-synchronous recording electronically marks the audio tape point when the camera reaches its full running speed. It is connected between the camera and tape recorder and can be set to 50/60 Hz.

g) The EFC 35 is a detachable electronic tachometer and footage counter with a display readable in feet or meters. The reading is automatically stored in an internal memory powered by a battery with a 6-month life and retained when the camera is disconnected from the power supply.

h) ZV (accessory distributor) allows simultaneous connection of two electrical accessories through one accessory socket.

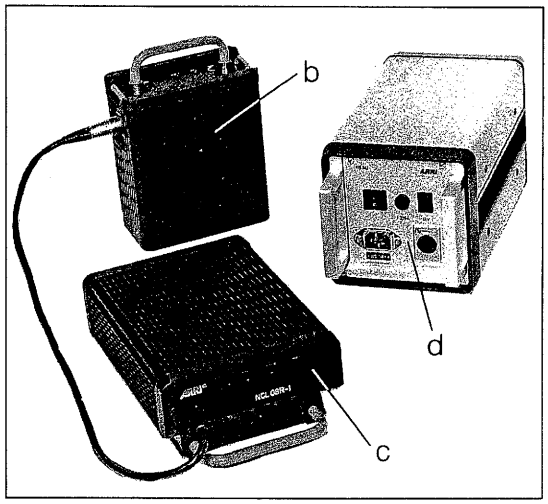
Camera power supply



Connect the camera to the battery or the AC sync transformer NSYTR 2, using the cable KCU or the coiled cord KCU Sp. When inserting the 4-pin connecting plug into the flange socket (28), the locking lever (a) must point upwards so that the guide rib of the plug slides exactly into the groove of the flange socket. Ensure correct mechanical locking.

For location filming, ARRI provides a battery (NC 12/7 R-1) (b). This battery can be charged using the NCL 08R-1 (c) or the NCL 08D double charger which can charge two batteries simultaneously.

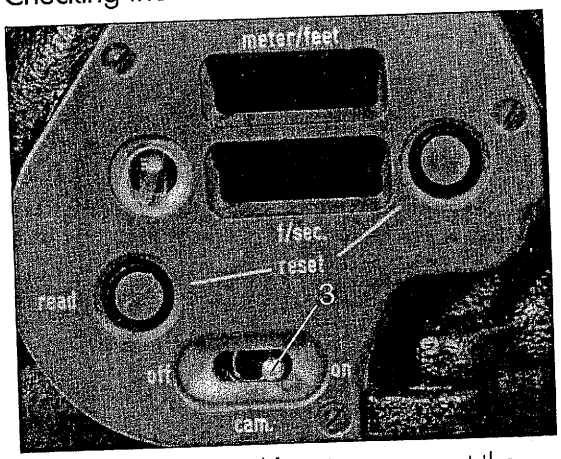
For studio applications, the power supply unit NG 7 U (d) can be used instead of a battery.



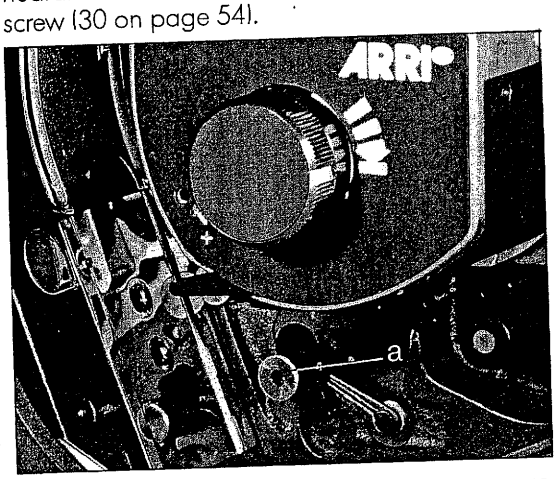
Video assist

A video assist camera can be attached to the 35 BL 4 s camera via the video port. Specific information available on request.

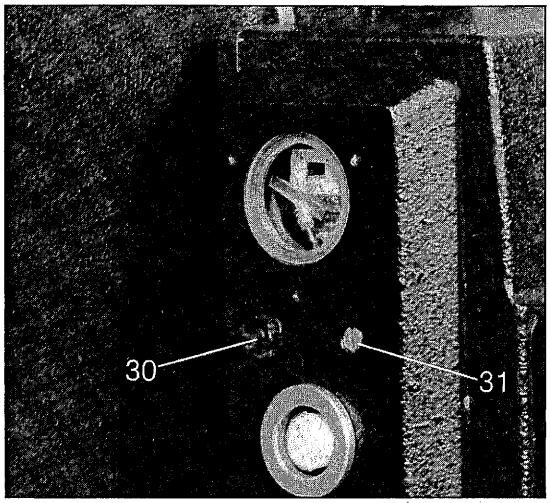
Checking the electrical functions



To check the electrical functions, connect the camera to the power supply; then operate the ON/OFF switch (3). The camera will start to run when the buckle switch (a) is pushed in a counter clockwise direction. While the camera runs up to the selected speed, the red sync control lamp remains visible in the viewfinder. Simultaneously, the out-of-sync warning tone will be heard. Its volume can be adjusted by turning the screw (30 on page 54).

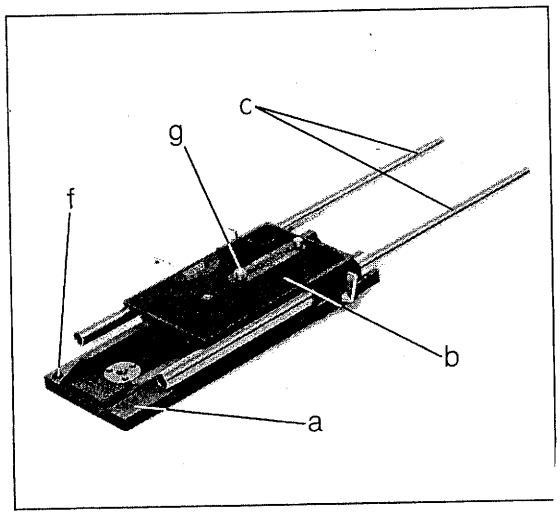


Camera running is indicated by the running control lamp (31 on back flap) on the control panel. The correct functioning of the buckle switch can be verified by operating it while the camera is running.
When the camera is switched off, the red sync control lamp lights up during the run-down and the out-of-sync tone should also be audible.



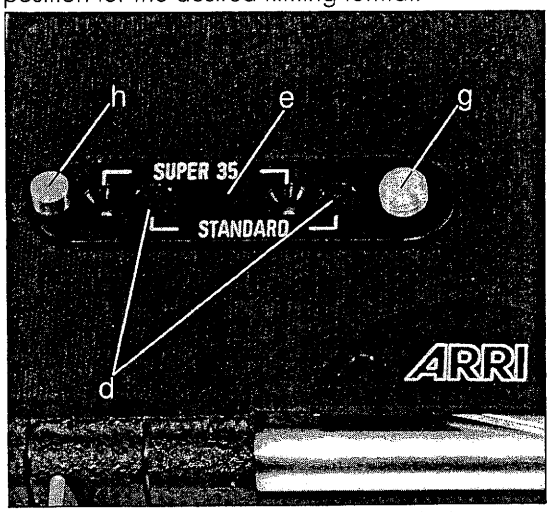
Bridge plate BP-3

The bridge plate is required when using a tripod head, zoom or telephoto lens, matte box, servo zoom drive or follow-focus system. It consists of a base plate (a), a sliding upper section (b) and two support rods (c). The support rods are available in various lengths.



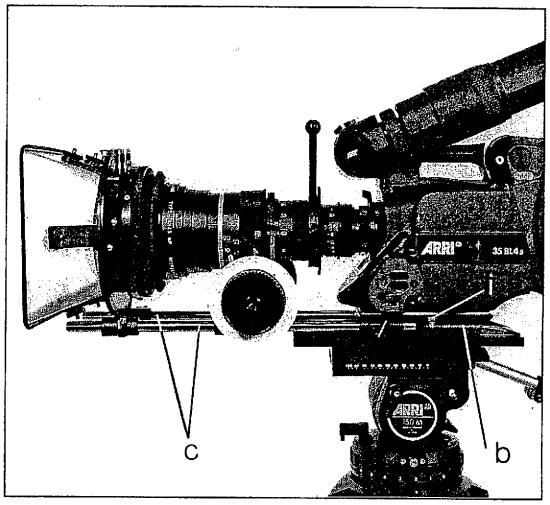
Note:
Filming in Super 35 mm format is made possible by adjusting the lens carrier and using a specia film gate. Since the lens is laterally shifted, the bridge plate must be adjusted accordingly, in order to properly align the lens accessories.

To adjust the bridge plate, remove the two countersunk screws (d) and shift the plate (e) so that the two holes marked "SUPER 35" are aligned with the threads underneath. Insert the two countersunk screws (d) and tighten.
Before attaching the bridge plate to the camera, always ensure that the plate (e) is in the proper position for the desired filming format.



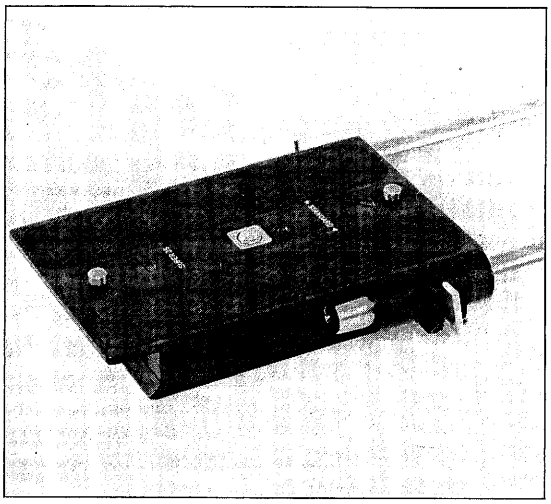
For assembly, press in the spring-loaded stop pin (f) of the base plate (a) and pull the sliding upper section (b) completely out of the dovetail guide of the base plate. Then fasten the upper section to the camera by the special captive screw (g). Ensure that the locating pin (h) fits into the hole of the camera base plate. Fasten the tripod release plate to the base plate (a); then snap the base plate onto the tripod head. Now push the upper section of the bridge plate (b), with camera attached into the dovetail guide of the base plate (a) continuing until the spring-loaded stop pin (f) springs back audibly. Tighten the clamping lever (i) then install the support rods (c) and fix in position. (For further details see Technical Information "Lens Accessory System for ARRIFLEX 35 BL 4/35 BL III/35 III").

The support rods can be adjusted in their receptacle guides. To balance the camera, first mount all necessary accessories on the rods and slide the camera back and forth on the base plate until the correct position is found, then secure the clamping lever (i). To quickly remove the camera from the tripod, first ensure that any cable connections, (power supply or servo zoom drive) are unplugged beforehand. Then release the clamping lever (i), press the stop pin (f) and pull the camera and the upper section of the bridge plate (b) from the base plate (a).



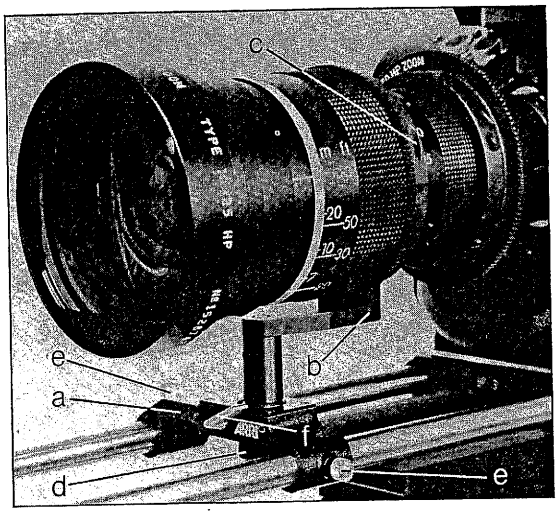
Bridge plate BP-4

The BP-4 is designed to be mounted on a tripod or geared head (e.g. the ARRIHEAD) that contains a balance adjustment. It is not advised to use the BP-4 on a tripod or base that has no balancing feature. The unit's permanent bottom release plate fits only 35 mm camera heads. Lens accessories are attached in the same way as with the BP-3 bridge plate, after the support rods are inserted in their receptacles. The BP-4 bridge plate is supplied with 440 mm support rods.



Lens support

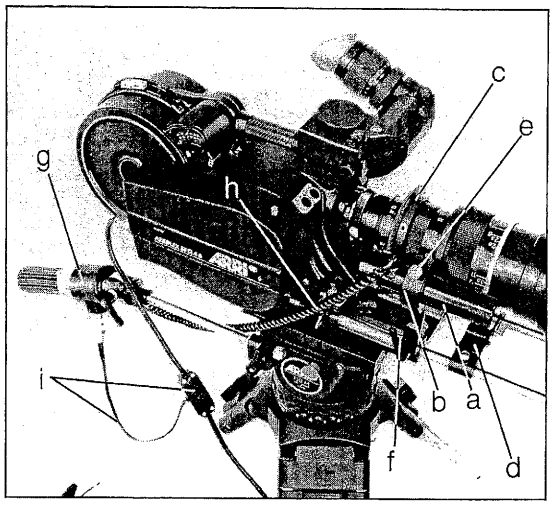
The lens support consists of two parts: the bottom lens support guide (a) and the support ring (b). The ring remains on the lens after its precise position is fixed by a clamp screw (c).



To assemble the two-part lens support, first slide the lens support guide (a) onto the bridge plate support rods. Mount the lens with its lens support ring (b), on the camera. While supporting the lens, slide the lens support guide directly underneath the spacer rod of the lens support ring (b). Tighten the knurled screw (d) to secure the lens support, then tighten the knurled screws (e) that fix the support to the lens rods. Finally tighten the clamping lever (f) in position.

Servo zoom drive

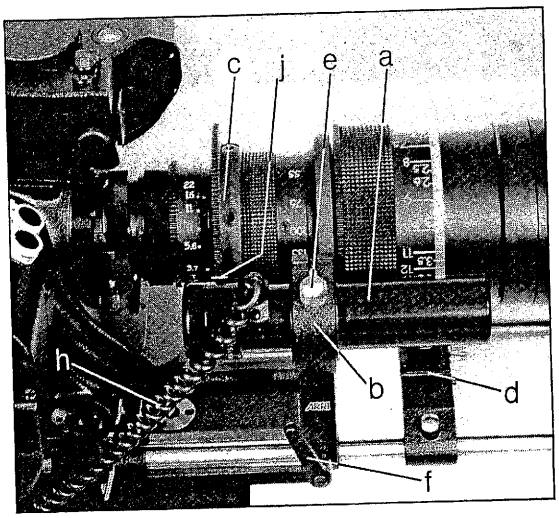
The servo zoom drive consists of the drive motor (a), the motor mount (b), and the toothed drive ring (c) which is fixed to the lens. (Remember to attach the motor mount to the support rods before the lens support guide).



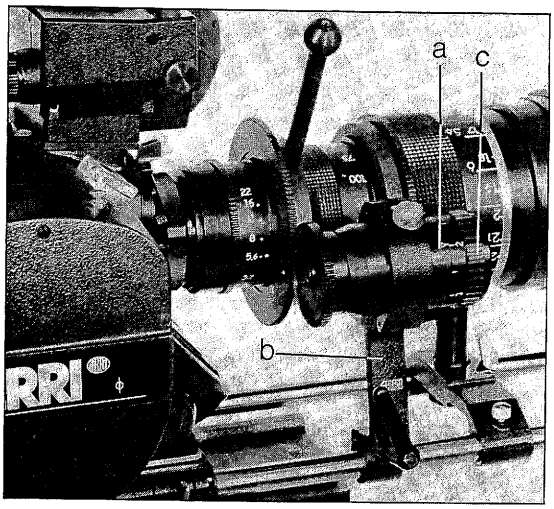
First push the drive-motor inside the mount, ensuring that both motor head and pinion face the camera. Then slide the unit onto the right lens support rod. Slide the lens support guide over the support rods and mount the lens (as described in the previous section "Lens Support").

Then engage the zoom drive pinion (j) with the toothed drive ring (c) of the lens: Loosen the lever (f) and pivot the zoom drive pinion into contact with the drive ring. Position the motor in its locating bore as illustrated with the power connector facing up. Then secure the knurled screw (e) and locking lever (f).

Now fit the zoom grip (g) with the pan handle into the holder on the tripod head (use a reducing sleeve, if necessary). Connect the zoom motor to the zoom handle with the control cable (h). Power for the zoom drive is supplied by using the two-way power cable (i), which also supplies power to the camera.



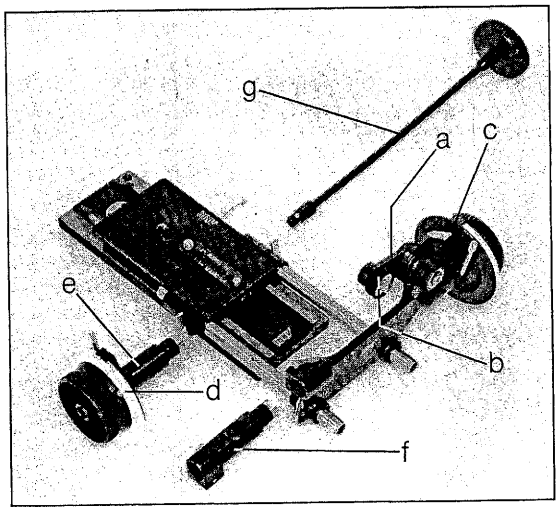
Fluid drive



The fluid drive (a) enables smooth manual zooming. Like the servo zoom drive, it is secured in the motor mount (b), swung into the toothed drive ring on the lens and secured in position. The friction effect can be graduated as desired via the setting ring (c).

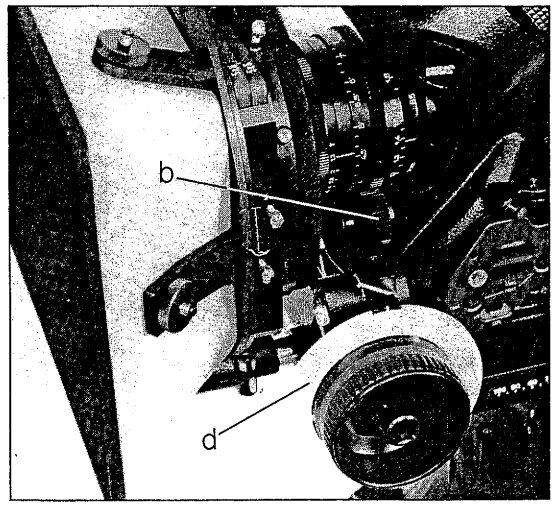
Universal follow-focus system FF-2

The universal follow-focus system FF-2 can be used for both fixed-focal-length and zoom lenses. Before mounting the follow-focus, set the lens focusing ring to infinity (∞).



Set the swing arm (a) in either its highest or lowest position. (It swings either up or down to engage the lens focus drive ring, depending on preference). Push the follow-focus unit onto the support rods so that the swing arm is in line with the focus drive ring. Attach the focus gear (b) to the pivoting arm. Swing the arm inward so that the focus gear and lens focusing ring mesh tightly. Fix the pivoting arm into position and then tighten the follow focus to the support rods.

The focusing index (c) is used to reference focus marks made on the white marking disc (d). The discs can be marked with a water soluble felt-tip pen or china marker, and easily wiped clean with spirits. To use the follow-focus from the camera-right side, connect the focus knob right (e). The follow-focus extension (f) can be used only on the camera-right side.

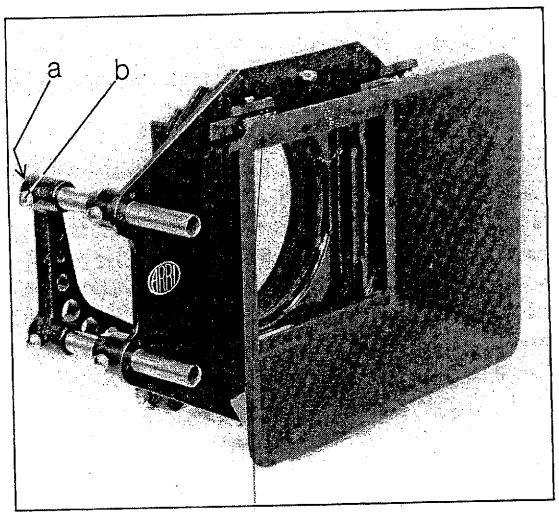


The flexible focus shaft (g) inserts directly into the focusing knob on either side of the camera.

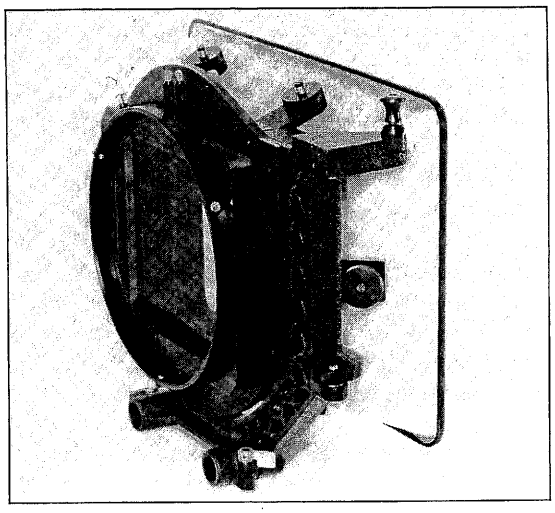
The 6.6" x 6.6" production matte box

This production matte box is mainly used for zoom lenses. Before mounting, attach the camera with bridge plate and support rods to a camera head. Attach the lens and accessories, (follow-focus system, lens support, servo zoom drive) in position on the support rods.* Carefully slide the matte box and adjust the cam on the upper knurled wheel (a), to find the precise position where the lens front sits concentrically just inside the back ring of the matte box. Focus the lens at infinity (∞), to ensure that its front ring will not touch the rear most filter in the matte box. Tighten the clamping screws (b) to lock the matte box in position.

* The arrangement of accessories on the support rods, is described in detail in the Technical Information booklet "Lens Accessory System for ARRIFLEX 35 BL 4/ARRIFLEX 35 BL III/ARRIFLEX 35 III".



The 5" x 6" production matte box



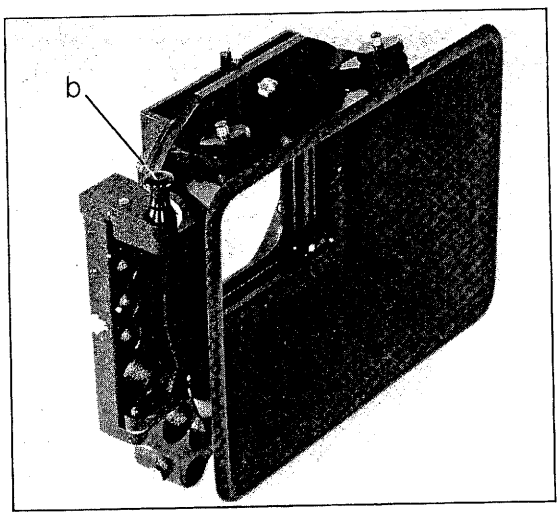
This production matte box is used for all prime lenses with a focal length of 14 mm or more and for all zoom lenses.

Before mounting, attach the camera with bridge plate to a camera head. Attach the lens and accessories (follow-focus system, lens support, servo zoom drive) in position on the support rods. Slide the matte box onto the support rods of the bridge plate and fix in the precise position where the lens front ring sits just inside the back ring of the matte box. The 5" x 6" matte box swings open 90° for easy lens-changing. An additional rotatable filter stage for a 5" x 6" filter with a flexible drive shaft for graduated filters can be attached.

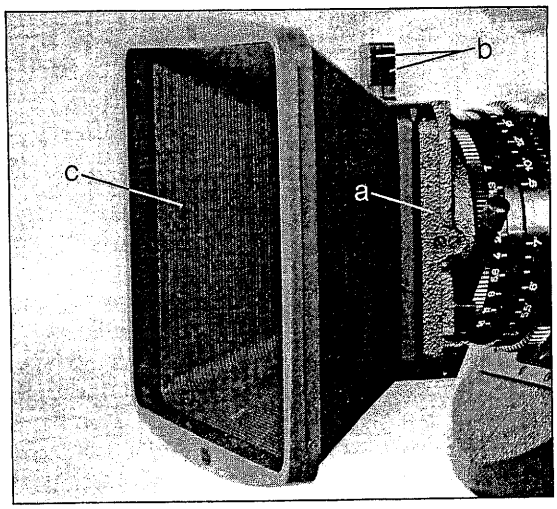
Further lens accessories are described in detail in the technical information booklet "Lens Accessory System for ARRIFLEX 35 BL 4/35 BL III/35 III."

The 4" x 4" production matte box

is mainly used for fixed-focal-length lenses. As described above, the matte box is attached to the support rods of the bridge plate. To aid lens changing, it can be swung outwards 90° by pulling up on the grip (b). The mounting sequence of lens accessories is also described in the Technical Information booklet "Lens Accessory System for ARRIFLEX 35 BL 4/35 BL III/35 III."



The lightweight matte box



The lightweight matte box is composed of the filter holder (a), the two filter frames (b) and the rectangular sunshade (c). The filter holder is clamped over the front ring of the lens. Lenses with a smaller front diameter require an adapter ring to establish a tight fit. For further information see our Technical Information booklet "Lens Accessory System for ARRIFLEX 35 BL 4/35 BL III/35 III."

Tripods

ARRI tripods can be supplied with long, medium and short legs. The special brochure "ARRIHEAD", is available on request.

Service and maintenance

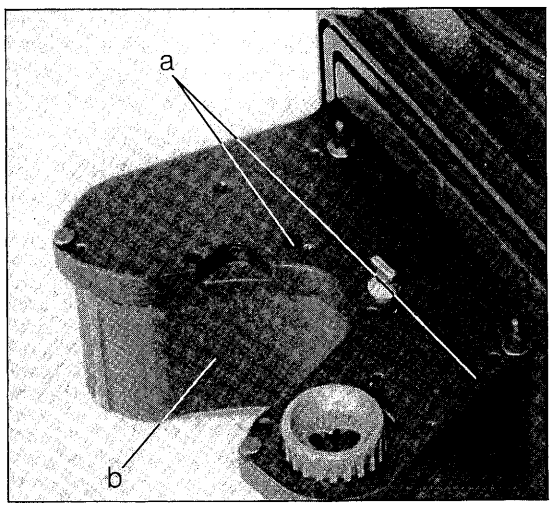
While the camera is running, the film meets its only substantial friction when pressed between the film gate and the spacer gate. When cleaning, special attention should be paid to this film channel area, especially when using a film stock which has a tendency towards high emulsion deposit. Loose emulsion 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.

To clean the film gate and spacer gate, push the movement block back to the end position. Remove the film gate and the spacer gate (refer to sections "Replacing the film gate" and "Removing the spacer gate." Remove any emulsion deposit with an ARRI plastic skewer or a PVC rod. Under no circumstances should a hard or metal tool be used.

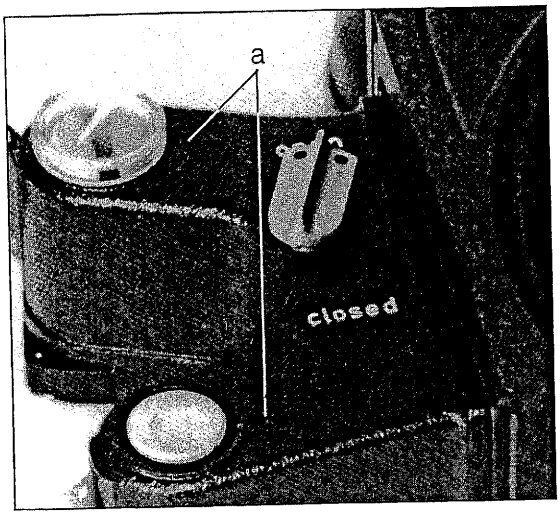
Under normal circumstances the 35 BL 4 s pulldown claw needs servicing once per approximately every 300,000 feet of exposed film. Lubrication of the claw system should only be attempted with the low-temperature special oil PDP 2000.

Sluggishness of the claw block should be treated by applying a small quantity of PDP 2000 oil also. This lubrication must be carried out by qualified ARRI service technicians only.

Clean the dovetail guide of both the magazine and the camera body periodically with ARRI special grease. Remove any excess with a linen cloth.



The following parts should also be greased: Magazine lock, the pins of the magazine cover lock (3 each) and the corresponding parts of the magazine cover, camera door lock and tripod thread. Oil the camera door hinges when neccessary.



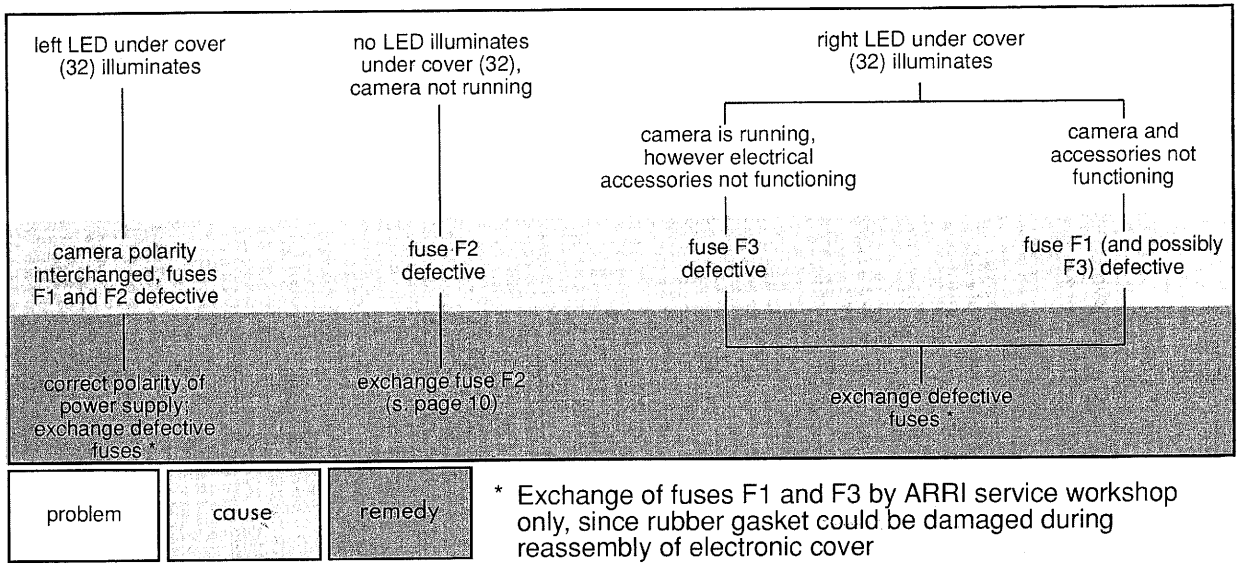
The magazine throat can be cleaned with a soft brush when the captive screws (a) are loosened and the cover (b) is removed. Treat the sprockets with care. Under no circumstances should they be disassembled.

Technical data

Film width:	35 mm
Lens mount:	54 mm dia PL (adapters for 41 mm dia mounts are available)
Focal flange distance:	51.98 mm – 0.01 mm
Mirror shutter (open sector):	180°, 172,8°, 144°
Viewfinder magnification:	x 6.5
Frame rates:	24/25 fps (USA: 30 fps) quartz-controlled, 6 – 50 fps variable
Footage counter:	digital, electronic LED display
Frame rate display:	digital, electronic LED display
Magazines:	400 ft (120 m) and 1000 ft (300 m) coaxial double-compartment magazines
Drive:	Quartz-controlled DC disc-type motor
Power supply:	12 V
Power consumption:	approx. 3 A at 24/25 fps
Temperature range:	– 4° F to + 122° F (– 20 °C to + 50 °C)

Dimensions with 1000 ft (300 m) magazine, w/o lens:	l: 21.5" (545 mm), w: 12.0" (305 mm), h: 12.4" (315 mm)
Dimensions with 400 ft (120 m) magazine, w/o lens:	l: 17.3" (440 mm), w: 12.0" (305 mm), h: 9.0" (230 mm)
Camera weight with 400 ft (120 m) magazine, w/o lens, w/o film:	approx. 31.9 lbs (14.5 kg)

The electrical fuse of the ARRIFLEX 35 BL 4s



* Exchange of fuses F1 and F3 by ARRI service workshop only, since rubber gasket could be damaged during reassembly of electronic cover

16 Release for rotating Pechan prism
17 Viewfinder locking screw
18 Bubble level
19 Illuminated viewfinder on/off switch (rheostat)
20 LED indicator for illuminated viewfinder
21 Accessory locking screw
22 Time code flange socket
23 11-pin accessory socket
24 Socket for handgrip cable plug
25 Wedged rosette for hand grip
26 Inching button
27 Pin for tape measure
28 Power supply socket
29 11-pin accessory socket
30 Volume knob for audible sync warning
31 Running control lamp
32 Frame rate selector switch and main fuse
33 Magazine lock (feed side)
34 Mechanical footage counter (unexposed film)
35 Sliding arm for footage counter
36 Carrying handle
37 Cap for video port