ARRI

ARRIFLEX 435 Advanced

Instruction Manual

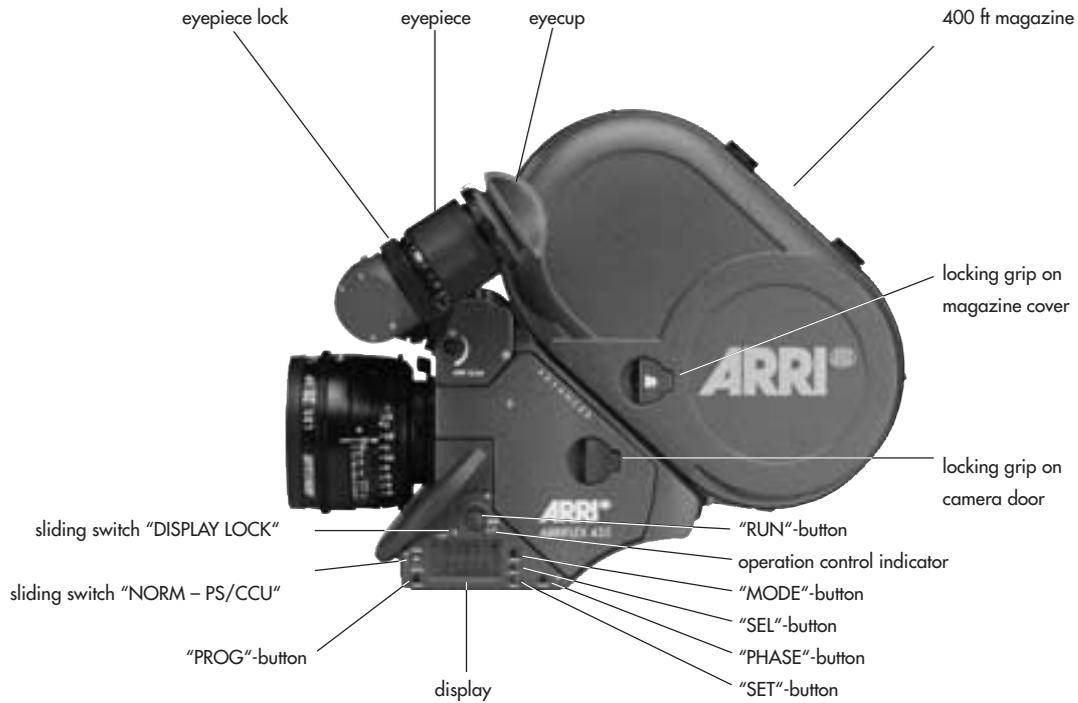As of: November 2001

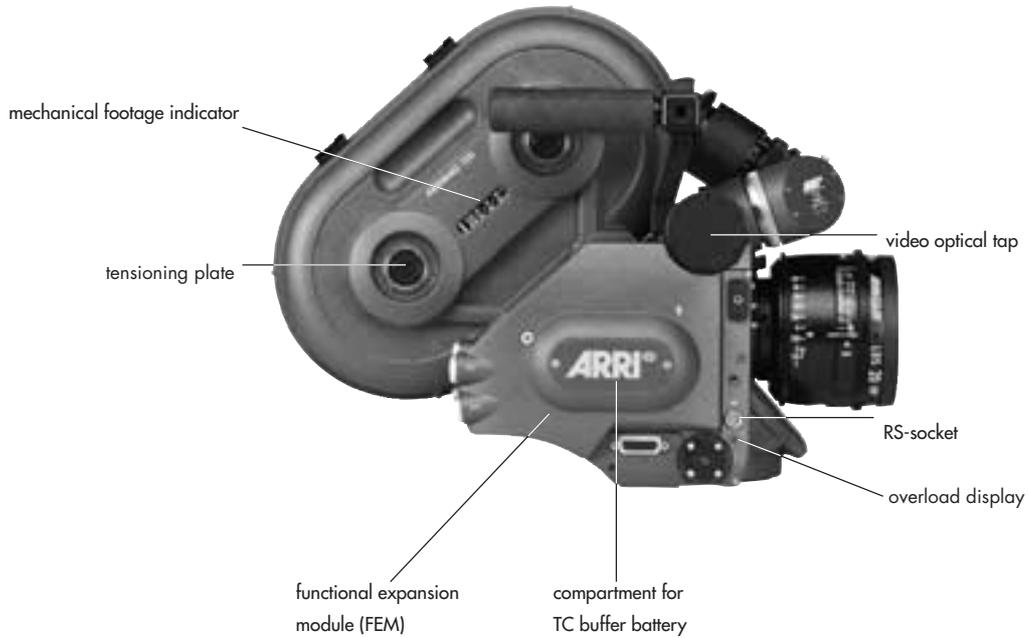eyepiece lock

eyepiece

eyecup

400 ft magazine

locking grip on
magazine cover

locking grip on
camera door

sliding switch "DISPLAY LOCK"

"RUN"-button

operation control indicator

sliding switch "NORM – PS/CCU"

"MODE"-button

"SEL"-button

"PROG"-button

"PHASE"-button

display

"SET"-button

mechanical footage indicator

tensioning plate

video optical tap

RS-socket

overload display

functional expansion
module (FEM)

compartment for
TC buffer battery

adjustment knob for
manual image
compensation

friction adjustment
finder arm

lock for telescoping
finder arm

unlocking key for
finder arm

spirit level

hook for tape focus

grip system

locking key for
manual image
compensation

11-pin
accessory socket

overload display
for 11-pin
accessory socket

functional expansion
module FEM

finder arm

LDS contacts

ACC-socket

CCU-socket

ground glass

adjustable
mirror shutter

PL mount

cover on
magazine opening

main camera switch

power supply
socket

1. Contents

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2. Safety Specifications

Warnings

Note: Operational error possible!

⚠️ *Danger of injury
or equipment damage possible!*

General Safety Specifications

⚠️ *Attention! Danger of injury! Never place your
hand in the lens mount receptacle or the inside
of the camera while it is running.*

- In order to ensure optimal performance, it is essential that you acquaint yourself with this instruction manual.

- Assembly and initial operation should be carried out only by persons who are familiar with the equipment!

- Switch off the main camera switch before making electrical connections (i.e. plugging on motion control etc.)!

- Never run the camera or bring the camera in motion control mode without a lens or a protective cap in the lens mount receptacle!

- Never operate the movement locking mechanism while the camera is running or in motion control mode!

- Ensure that the camera is stabily positioned!

- Remove the battery cable before transport or servicing!

- Repairs should be carried out only by authorized service centers!

- Use only original ARRI replacement parts and accessories!

Important Notes

- In wet weather the normal safety precautions for handling electrical equipment should be taken.

- Avoid operational errors!

- Clean optical surfaces only with a lens brush or a clean lens cloth! In cases of solid dirt moisten a lens cloth with pure alcohol.

- Do not use solvents in cleaning the film gate!

- Do not remove any screws which are secured with paint!

Product Specifications

In the case of enquiries or when ordering parts, please advise camera serial number and model.

Note: This instruction manual applies only to the ARRIFLEX 435 Advanced.

Explanation of the Symbols in the Instruction Manual

⇨ **photo** indicates objects which are shown in the photo-graphs or drawings.

Note:
This product and the accessories recommended by the manufacturer fulfill the specifications of the EU-Guideline 89/336/EWG.

⚠

Attention:
To use the Single Frame Handcontroler (SFHC) together with the ARRIFLEX 435 Advanced, software version S02.00 or higher must be installed in the camera.

The software version can be displayed on the camera's left display, as described in chapter 9 (Camera Operation/ Displaying and Setting Operational Parameters/ Overview of Display Modes/ Mode 8 – on page 59).

To update your camera software, please contact a ARRI service center for instructions.

If you are operating the ARRIFLEX 435 Advanced together with the SFHC, do not modify any parameters on the SFHC for the first three seconds after powering up the camera (as long as the display on the left camera side is not showing any information). If you have modified anything during this time period, please disconnect the SFHC and reconnect it to reset the SFHC.

3. General Description of the ARRIFLEX 435 Advanced

The ARRIFLEX 435 Advanced is a compact, light-weight MOS- and HS-camera. Due to the modular design of the camera, its range of functions can be individually expanded. The following features are already integrated into the basic version of the ARRIFLEX 435 Advanced.

• Operational parameters can be set directly on the camera.

• The frame rates range from 0.1 – 150 fps for forward or reverse running.

• The ARRIFLEX 435 Advanced is equipped with a low-main-tenance, 5-link movement with dual transport claws and registration pins.

• The electronic mirror shutter on the ARRIFLEX 435 Advanced can be set continuously from 11.2° to 180° while the camera is running.

• The viewfinder can be rotated in two axes and can be used on both sides of the camera with full image compensation.

• Via an integrated optical tap, a $^1/_2$" CCD video camera can be attached.

• The versatile grip system is connected directly to the camera body and can be used as a carrying handle or as an accessory holder.

A comprehensive range of optical, mechanical and electronic accessories further expands the operational possibilities of the camera.

movement
in locked position

magazine
opening cover

loop protector

4. Installation of the Camera

Packing and Transport

⚠️ **In order to prevent damage to the mirror shutter, a protective cap must be on the lens mount receptacle at all times.**

When transporting the camera, pay attention that the movement is in the locked position ⇨ photo.

If the ARRIFLEX 435 Advanced is transported or stored without a magazine, the magazine opening cover ⇨ photo should be attached.

Loaded or empty magazines should only be transported or stored with the loop protector ⇨ photo attached to avoid damage to the film stock and the magazine throat assembly.

Tripod Heads

The following tripod heads are suitable for use with the 435 Advanced:
- ARRIHEAD
- ARRIHEAD 2
- ARRIHEAD 2 with integrated encoders
- ARRI Fluid-Heads
- Sachtler Studio 7, 150 H
- Mitchell-Head
- Moy-Head
- Ronford F7
- Hot-Head
- Cam-Remote-Head
- Worall-Head

⚠️ *In applications where the camera mount is subject to high forces (e.g. helicopter mounts) the camera must be additionally secured with retaining cords. All fastening screws must be tightened firmly with an appropriate screwdriver (not with the commonly used coin!).*

spirit level

base plate

support rods

sliding
upper plate

Horizontal Leveling

The ARRIFLEX 435/435ES is equipped with a spirit level to aid horizontal leveling of the camera ⇨ **photo**.

⚠ *If the camera is set on a level surface with the magazine in place, the camera may tip back, as the center of gravity is located far to the rear.*

Bridge Plates BP-8, BP-9

The bridge plates facilitate balancing of the camera on the tripod and mounting of accessories. The BP-8 is designed for 19 mm support rods, the BP-9 for 15 mm support rods. The bridge plates consist of the base plate ⇨ **photo**, the sliding upper plate ⇨ **photo** and a pair of support rods ⇨ **photo**. In the standard version the support rods are 440mm long. Optionally, support rods are available in the lengths 240mm and 340mm.
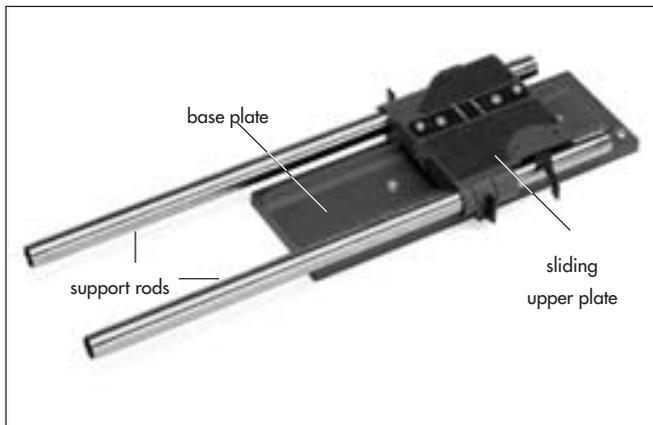
Note: The upper plate of the bridge plate can be converted for use with Super 35. This ensures that the accessories are also exactly adapted to the displaced optical center of the Super 35 format. See also *Chapter 12, Super 35.*

Attaching the Bridge Plate to the Camera

- Fasten the sliding upper plate ⇨ **photo** with the two slit screws to the camera base. Both cylindrical pins ⇨ **photo** (twist prevention) must glide into the holes.
- Then screw the base plate onto the wedge plate of the tripod and lock onto the tripod head.
- Slide the camera with the upper plate into the dovetail-guide of the base plate until the spring-loaded stop pin ⇨ **photo** snaps back audibly. The camera's position can then be fixed with the clamp lever.
- Slide the support rods into the guides and clamp.
- Equip the camera with the required accessories to determine the center of gravity. Loosen the clamping lever ⇨ **photo**, and by sliding the camera on the base plate find the optimal position. Then retighten the clamping lever.
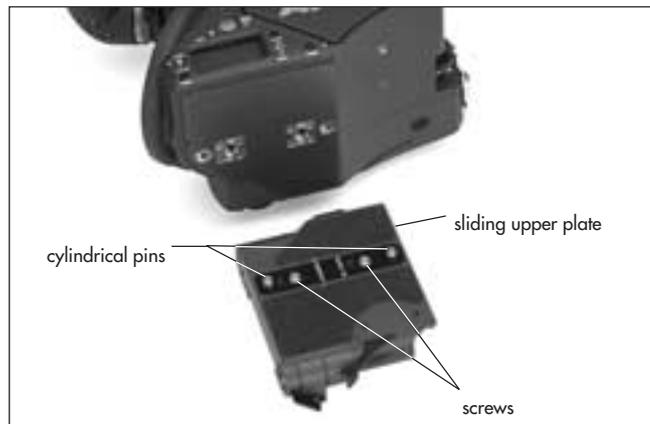
Removing the Camera from the Tripod

- Before removing the camera make sure that all cables are disconnected and that the eyepiece leveling rod is detached.
- For fast removal of the camera from the tripod, loosen the clamping lever ⇨ **photo**, push in the stop pin ⇨ **photo** and then pull the camera with the upper plate ⇨ **photo** from the base plate.

cylindrical pins

sliding upper plate

screws

sliding upper plate

stop pin

base plate

clamping lever

lens support
LS-8

lens support ring

clamp screw

base
plate

knurled
screw

lens support
LS-7

clamping lever

wedge plate
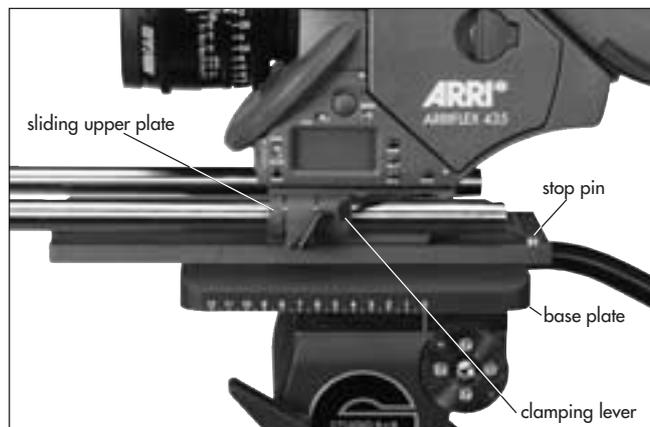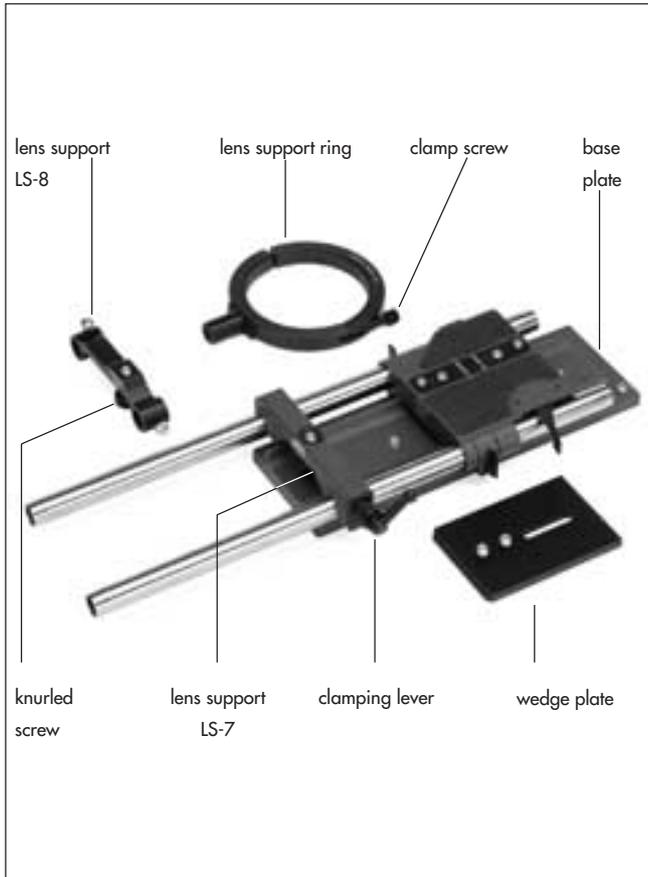
Lens Support

The lens support consists of the lens support LS-7 (can be snapped onto 19 mm support rods) ⇨ **photo** or the lens support LS-8 (can be pushed onto 15 mm support rods) and the respective lens support ring ⇨ **photo** for the lens in use.

- Mount the lens support onto the support rods from above and let it click into place by applying slight pressure (push the LS-8 onto the support rods from the front).
- Slide the relevant support ring ⇨ **photo** onto the lens but do not tighten.
- Then slide the lens into the lens mount receptacle and lock.
- Connect the support ring to the lens support and tighten the knurled screw ⇨ **photo** as well as the clamping lever ⇨ **photo**.
- Complete the process by tightening the clamp screw ⇨ **photo** on the support ring.

Note: Mounting the support ring on the relevant lens is usually carried out only once. The support ring can then remain in position on the lens.

Grip System

The multipurpose grip system on the ARRIFLEX 435/435ES guarantees highest stability through its fixed connection to the camera body and provides numerous possibilities for attaching accessories. Five 3/8" inner threads allow attachment in diverse positions ⇨ **photo**.

Attaching Additional Handgrips

Additional handgrips can be screwed onto the grip system in various positions as required. A safety mechanism in the handgrip prevents automatic loosening. This mechanism is activated by screwing in the handgrips tightly.

⚠️ *Before screwing in the handgrips, make sure that the 3/8" threaded bolt is completely screwed out of the handgrip.*

Removing the Grip System

In order to minimize camera height, the entire grip system can be removed.
- First remove the magazine.
- Loosen both the hexagon screws ⇨ **photo** in the strut and pull the grip system ⇨ **photo** upwards.

To attach the grip system, proceed in the reverse order.

grip system

hexagon screws

shoulder set S-4   base plate   shoulder cushion

Operation from the Shoulder

Shoulder Set S-4
The shoulder set S-4 was designed to optimize shoulder operation of the ARRIFLEX 435 Advanced. It allows the camera to be quickly transferred from the tripod onto the operator's shoulder without having to remove the optical accessories.

Shoulder Set S-4 with the Bridge Plate
- Remove the camera from the tripod (see under *Bridge Plates BP-8, BP-9*).
- The mounting screws on the shoulder set must first be screwed back as far as they will go ⇨ **photo**.
- Now slide the shoulder set from the rear into the dovetail-guide on the bridge plate as far as it will go. It locks automatically in position.
- Clamp the shoulder set using the bridge plate clamping lever.
- Plug the cable for starting and stopping the camera into the RS-socket.
- Check that the shoulder set is firmly seated on the camera.
- Position the shoulder cushion on the camera with the index pin and fasten it to the camera with the mounting screw ⇨ **photo**.
- Check that the shoulder cushion is firmly seated on the camera.

shoulder set S-4

mounting screws

mounting screw

fastening screw

RS-socket

„RUN"-button

handgrip
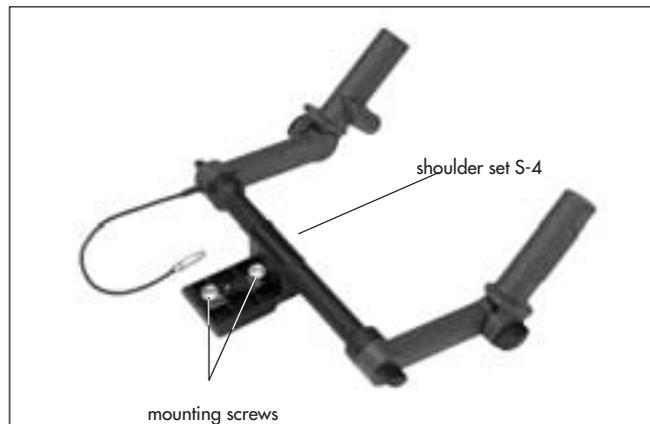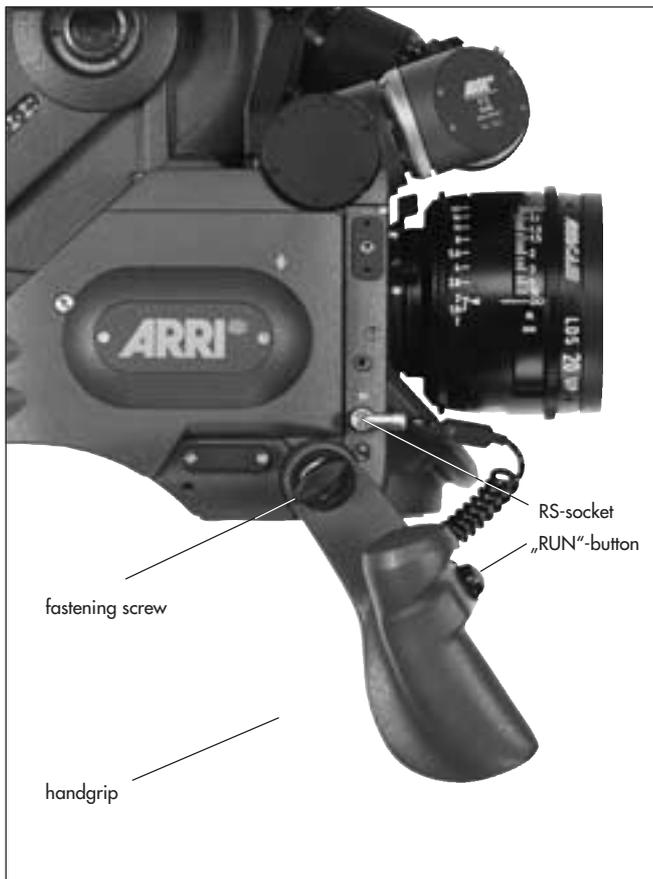
Shoulder Set S-4 without the Bridge Plate
- Remove the camera from the tripod.
- Detach the bridge plate.
- Position the shoulder set on the camera and fasten with the two mounting screws.
- Plug the cable for starting and stopping the camera into the RS-socket.
- Check that the shoulder set is firmly seated on the camera.
- Position the shoulder cushion on the camera with the index pin and fasten it to the camera with the mounting screw.
- Check that the shoulder cushion is firmly seated on the camera.

**Operation from the Shoulder
without the Shoulder Set**
The shoulder cushion can be used with or without the bridge plates BP-8 and BP-9.
- Position the shoulder cushion on the camera with the index pin and fasten it to the camera with the mounting screw.
- Check that the shoulder cushion is firmly seated on the camera.
- Position the handgrip on the rosette and fasten with the fastening screw ➪ **photo**.
- Plug the cable for starting and stopping the camera into the RS-socket.

5. Power Supply

The acceptable voltage range is from 20.6 to 35 V DC.
Depending on the desired frame rate, the following
voltage range should be chosen for the power supply:

Frame Rate	Voltage	
0.1 - 130 fps	20.6 - 35 V DC	for standard and low ramps
130 - 150 fps	24 - 35 V DC	for standard and low ramps
0.1 - 130 fps	24 - 35 V DC	for high ramps
130 - 150 fps	26.5 - 35 V DC	for high ramps

The power supply cable is attached to the power supply
socket on the camera.
Available are:

for 0.1 - 130 fps
- the battery NC 24/7 R ⇨ **photo**
  with charger NCL 24 R ⇨ **photo** and
- the mains unit NG 12/24 R.

for 0.1 - 150 fps
- the mains unit NG 12/26 R ⇨ **photo**.
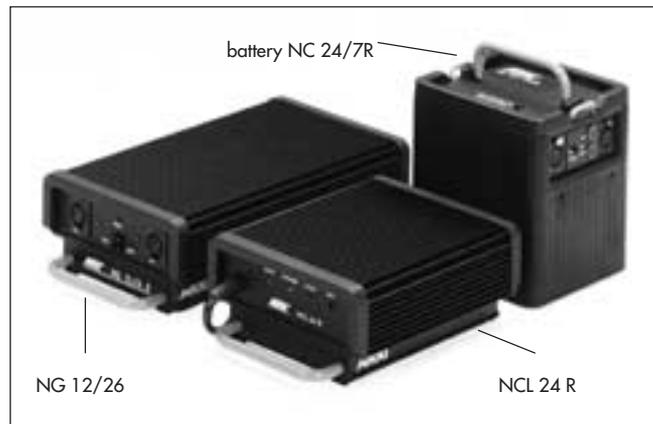
battery NC 24/7R

NG 12/26   NCL 24 R

- First switch on the mains unit (if used).
- Connect the camera to the mains unit or to the battery.
- Switch on the main switch of the camera.

⚠ *Do not open the batteries!*
Charge batteries only with the ARRI chargers!

Do not bypass the fuse or temperature switch!

Do not heat NC-batteries!
Do not short-circuit NC-batteries!

Battery NC 24/7 R

The battery NC 24/7 R has a capacity of 7 ampere-hours and is suitable for frame rates up to 130 fps.
• Ensure that the main switch on the camera is off.
• Plug the battery cable KC 20S or the spiral battery cable KC 29S into the power supply socket on the camera and into the battery-socket.

Note: If the battery voltage is not sufficient for the chosen frame rate, the "bat" symbol will show in the camera display.

Charger NCL 24 R

With this charger all ARRI 24 V batteries can be charged.
• First check whether the correct mains voltage is set on the charger.
• Connect the charger to the mains supply.
• Plug the charger cable into the battery socket.
• Press the start button.

Indication of the LEDs

LED	Indication
yellow	discharging (1A)
red	charging
green	charger connected to the mains

Mains Unit NG 12/24 R

Use of the mains unit is recommended for filming in the studio and when using electronic accessories with a high power consumption. It is suitable for frame rates up to 130 fps.

- First check that the correct mains voltage is set on the mains unit.
- Ensure that the main switch on the camera is off.
- Set the voltage switch on the mains unit to 24 V.
- Plug the battery cable KC 20S or the spiral battery cable KC 29S into the power supply socket on the camera and into the 24 V-socket on the mains unit.

Mains Unit NG 12/26 R

Use of the mains unit is recommended for filming in the studio and when using electronic accessories with a high power consumption. It is suitable for frame rates up to 150 fps.

- First check that the correct mains voltage is set on the mains unit.
- Ensure that the main switch on the camera is off.
- Set the voltage switch on the mains unit to 26 V.
- Plug the battery cable KC 20S or the spiral battery cable KC 29S into the power supply socket on the camera and into the 26 V-socket on the mains unit.

Note: The NG 12/24 R can easily be upgraded to an NG 12/26 R at an ARRI service center.

Accessory Power Supply

12 V Accessories

12 V accessories can be attached to the 11-pin accessory socket ⇨ **photo** which provides stabilized 12 V DC with 2.5 A continuous current.

Note: The 11-pin accessory socket can only be used as an output socket. Accessories that feed signals into the camera will not function at this socket.

11-pin accessory socket   overload warning LED
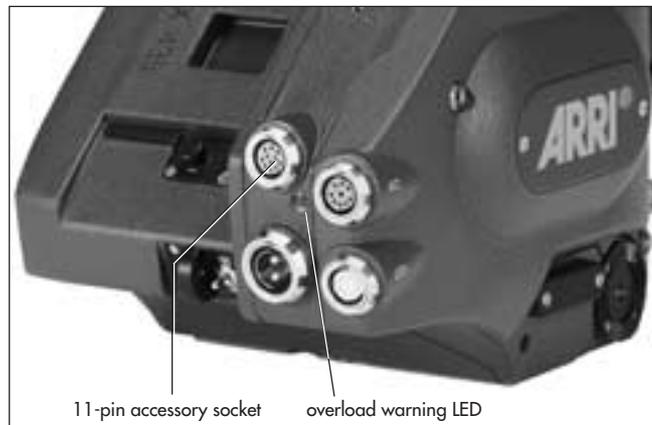
24 V Accessories

⚠️ *The RS-socket supplies the same voltage as the camera power supply. Voltages over 32 V will be limited to 32 V. In this case, the allowable continuous current is 2 A maximum.*
Ensure that the accessories to be used are suited to the available voltage!

24 V accessories are normally attached to the RS-socket ⇨ **photo**. At 24 V, the available continuous current is 3 A maximum, the peak load 5 A.

Overload Display

If the current drawn at the accessory sockets exceeds the allowable maximum, a safety circuit interrupts the power supply and a red warning LED lights up ⇨ **photo**.

RS-socket

overload warning LED

6. Magazines

In addition to the new 435-ARRIMAG magazines ⇨ **photo**, all ARRIFLEX 35 III and 35 II magazines – with the exception of the shoulder magazine – can be used.

⚠️ *Reverse operation with the ARRIFLEX 35 III / 35 II 300 m and 60 m magazines can lead to damage of the magazine or the camera!*
Time code can only be recorded with the new ARRIMAG magazines.
When the camera is set to reverse running and the old style 300m magazine is attached, the camera will display 'dir Error dIr' in the display.

The ARRIMAG magazines and the ARRIFLEX III magazines are automatically recognized. For the ARRIFLEX 35 III 300 m magazine the camera's run-up time is automatically extended. If the camera is set to a frame rate that exceeds the speed limit of the attached magazine, the "fps"-symbol flashes on the camera display and the camera will not run. If the frame rate is adjusted above the magazine speed limit during running, the camera´s speed will be limited to 130 fps. The frame rate must be reset.

Note: All magazines listed below are loaded with the same loop length as on the ARRIFLEX 35 III. The loading of ARRIFLEX 35 III magazines is described in the respective instruction manuals.

Magazine	Speed limit	Forward/Reverse operation	TC-Recording	Motion Control Support
ARRIFLEX 435				
ARRIMAG 120	150 fps	forw./rev.	yes	yes
ARRIMAG 120S	150 fps	forw./rev.	yes	yes
ARRIMAG 300E	150 fps	forw./rev.	yes	fwd only (rewind possible)
ARRIFLEX 35 III / 35 II				
60 m magazine	130 fps	only forwards	no	fwd only (do not rewind)
150 m magazine	130 fps	forw./rev.	no	yes
300 m magazine	130 fps	only forwards	no	no

Loading the ARRIMAG 120

Loading the magazine should be practised in daylight with a piece of test film until the procedure can also be carried out confidently in a darkroom or film changing bag. Cutting the film through the middle of the perforation holes simplifies the loading process considerably. The ARRI Film Cutting Gauge ⇨ **photo** simplifies cutting in the darkroom.
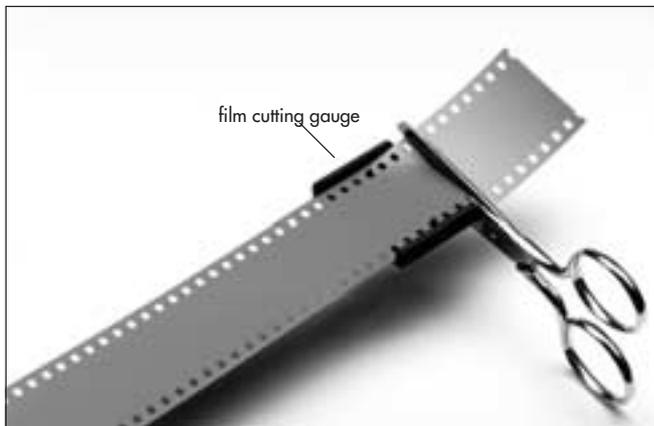
The following steps should be carried out in a darkroom or film changing bag!

- Remove the loop protector and lay the magazine on a flat surface with its cover facing upwards.
- To open the cover, depress the safety catch, flip up the flag-hinged locking grip and turn it counter-clockwise ⇨ **photo**.
- Flip up the magazine cover.
- Swing both roller arms ⇨ **photo** away from the winding shafts until they lock in place.
- Place the film roll next to the magazine.

film cutting gauge

flag-hinged locking clip

safety catch
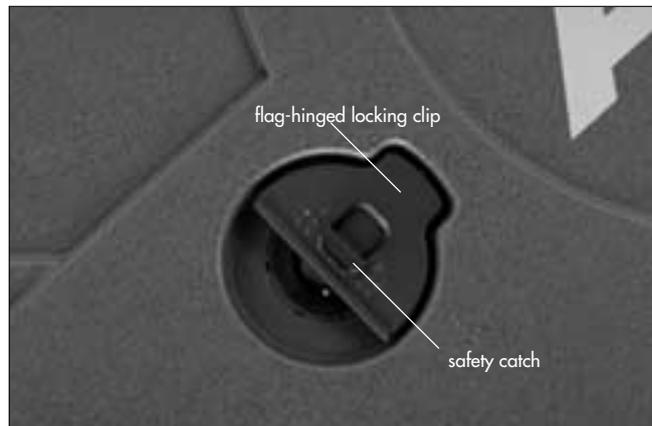
- Insert the film through the left slit on the magazine throat assembly from the inside ⇨ **photo**.
  Do not catch the film.
- With your free hand, turn the drive gear counter-clockwise while carefully pushing the film through until both perforation holes are picked up simultaneously by the sprockets.
- Keep turning the gear until the film has been transported through the throat assembly.
- Flip up the hinged locking clip on the feed shaft ⇨ **photo**.
- Place the film roll on the feed shaft, ensuring that the feed shaft catch engages the slot on the plastic core.

- Press down the hinged locking clip on the feed shaft.
- By turning the drive gear counter-clockwise, transport the film further until it reaches to the loop length marking ⇨ **photo**.

⚠ *Ensure that the film is lying flat against the outside of the magazine housing.*

roller arms
feed shaft
hinged locking clip _____ drive gear

loop length marking
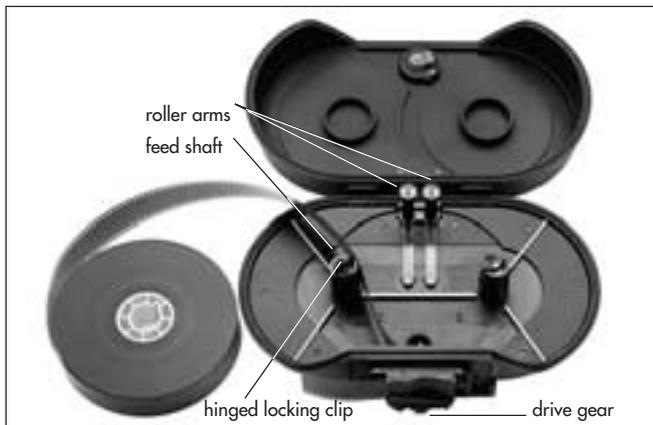
- Without changing the length, thread the film into the right film channel.
  Do not catch the film.
- By again turning the drive gear counter-clockwise, transport the film inside the magazine.
- Flip up the hinged locking clip on the take-up shaft ⇨ **photo**.
- Place an empty film core on the take-up shaft. The slit must point in the direction of operation. Ensure that the take-up shaft catch engages the slot on the plastic core.
- Press down the hinged locking clip on the take-up shaft.

- Hang the head of the film into the film core and bend over ⇨ **photo**.
  The bent film head should not stick out of the film core as this could cause unbalance.

Note: If the film head has been bent over, the film head must not be pulled through the throat assembly during reverse operation.

- Wind the film on at least one revolution until it is certain that the film is firmly seated on the film core.
- Check that the film is being taken up perpendicular to the shaft ⇨ **photo**.

hinged locking clip

film core
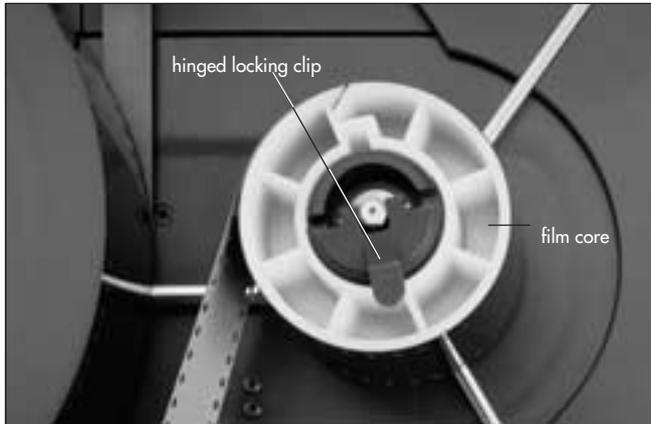
- Close the magazine cover. The roller arms will be automatically unlocked.
- To lock the cover, turn the locking grip clockwise and flip it back into the recess.
  The safety catch locks automatically.

Note: To tension the film in the magazine, press in both tensioning plates ➭ **photo** and turn outwards.

tensioning plates

Removing Exposed Film

The following steps should be carried out in a darkroom or a changing bag!

- Check if the entire film has been wound into the interior of the magazine. If not, transport the film into the magazine by turning the drive gear counter-clockwise.
- To open the cover, depress the safety catch and flip the locking grip upwards. Then turn the grip counter-clockwise.
- Flip up the cover.
- Swing both roller arms ➭ **photo** away from the winding shafts until they lock in place.
- Flip up the hinged locking clip on the take-up shaft.
- Pull the film roll upwards and off.

Note: When pulling the film roll off the shaft, grip it from underneath as far as possible to prevent the middle of the film roll from sagging down.

⚠   *The film should under no circumstances be pulled tight. This could cause scratches and static charging.*

loop protector

cover for
magazine
opening

Transport and Storage

Loaded or empty magazines should only be transported
or stored with the loop protector ⇨ **photo** attached to avoid
damage to the film stock and the magazine throat assembly.

If the ARRIFLEX 435/435ES is transported without a maga-
zine it is recommended to attach the magazine opening
cover.

Note: The cover must be attached to the ARRIFLEX 435
        Advanced to run frame rates above 130 fps
        without a magazine for testing purposes.

7. Camera Body

Electronically Adjustable Mirror Shutter

The mirror shutter on the ARRIFLEX 435 Advanced can be electronically adjusted from 11.2° to 180° when the camera is running as well as in standby.

Note: The electronically adjustable mirror shutter is also equipped with an adjustment mechanism that allows mechanical adjustment. The electronic mirror shutter function must then be switched off.

⚠   *Before electronically adjusting the mirror shutter, check that the shutter locking mechanism is in the "LOOSE" position ⇨* **photo**. *Adjusting the shutter angle while the shutter is locked could cause damage to the camera!*

locking mechanism unlocked

locking mechanism locked
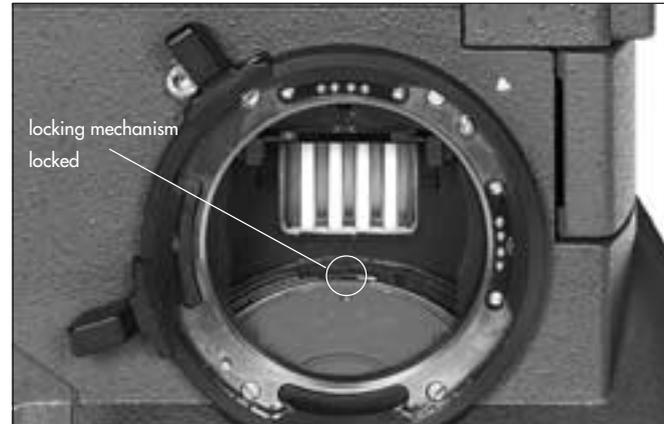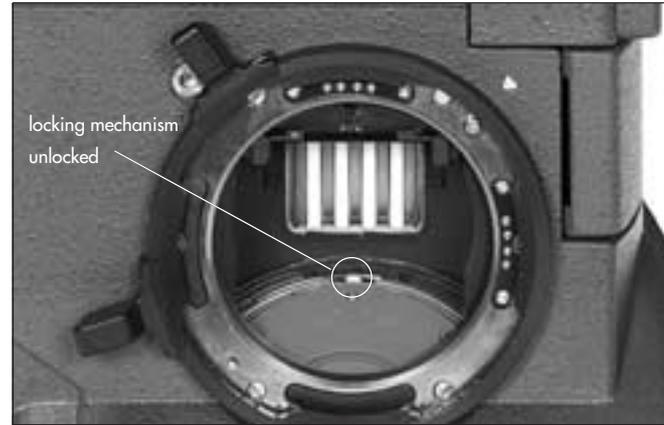
Checking the Shutter Locking Mechanism

- Switch on the camera's main switch.
- In standby, briefly depress the "PHASE"-button.
- Switch off the camera's main switch.
- Remove the lens or the protective cap from the lens mount receptacle.

⚠ *Never put your fingers into the lens mount receptacle.*

- The locking mechanism should be in the unlocked position ➪ **photo**.

If the shutter locking mechanism is unlocked
- Replace the lens or the protective cover.

If the shutter is locked in position
- Disconnect the camera from the power supply.
- With a 2 mm Allen key turn the locking mechanism ➪ **photo** towards the "LOOSE" position until it stops.
- Replace the lens or the protective cover.

Setting the Mirror Shutter Angles:
Without accessories, the following shutter angles can be set directly on the camera: 11.2°, 22.5°, 30°, 45°, 60°, 75°, 90°, 105°, 120°, 135°, 144°, 172.8° and 180°.
With accessories such as the LCC, CCU or RCU-1 other shutter angles can be set. The procedure is described in the respective instruction manuals.

⚠ *Adjusting the shutter angle when the shutter is locked could cause damage to the camera! Ensure that the locking mechanism is in "LOOSE" position before adjusting the shutter angle.*

- Switch on the camera's main switch.
- Change to Mode 7 by depressing the "MODE"-button six times (or four times if no functional expansion module is attached). The display shows the angle symbol and, in the upper line, the current shutter angle.

⚠ *If the display shows "OFF", the electronic adjustment of the mirror shutter is deactivated. The shutter angle can be adjusted mechanically and must then be locked. See the section "Mechanically Adjustable Mirror Shutter".*

- Depress the "SEL"-button repeatedly until the desired value blinks in the display. With the "SET"-button confirm the desired shutter angle.

Shutter Angle Measurement

- Holding the "PHASE"-button depressed in standby will make the camera inch forward.
- The display shows the measured shutter angle in the upper line. The lower line displays the voltage of the power supply.

**Switching Off
the Electronically Adjustable Shutter**

- Switch on the camera's main switch.
- Change to Mode 7 by depressing the "MODE"-button six times (or four times if no functional expansion module is attached). The display shows the angle symbol and, in the upper line, the current shutter angle.
- Depress the "SEL"-button repeatedly until the display shows "OFF". With the "SET"-button, confirm switching off the electronic angle adjustment.

⚠ *As the electronic shutter has been switched off, the shutter angle must now be adjusted and locked manually! See the section "Mechanically Adjustable Mirror Shutter".*

Note: As a warning that the electronic shutter has been switched off, the angle symbol in the camera display blinks in all modes.

◁   22.5   ▬
U   24.2

**Switching On
the Electronically Adjustable Shutter**

⚠ *Switching on the electronically adjustable shutter when the shutter is locked can cause damage to the camera! See "Checking the Shutter Locking Mechanism".*

- Before switching on, ensure that the shutter locking mechanism is in "LOOSE" position.
- Switch on the camera's main switch.
- Change into Mode 7 by depressing the "MODE"-button six times (or four times if no functional expansion module is attached). The display shows the angle symbol and "OFF" in the upper line.
- Depress the "SEL"-button repeatedly until the display shows the desired shutter angle. The "SET"-button confirms the entry and activates the electronic shutter adjustment.

Supply frequency	50 Hz		60 Hz
Frame rate	25 fps	24 fps	24 fps
Shutter angle	180°	172.8°	144°

Filming with HMI Light

When lighting scenes with HMI/CID-discharge lamps, the pulsing light intensity is dependent on the supply frequency. To achieve constant exposure, the camera's frame rate, the supply frequency of the lighting and the angle of the mirror shutter must all relate to each other. As the camera frame rate and the supply frequency of the lighting are normally given, compensation must be carried out through the angle of the mirror shutter.

The following table indicates the mirror shutter angle that needs to be set:

Exchanging the Ground Glass

- By briefly depressing the "PHASE"-button in standby, the shutter is positioned to protect the mirror surface from damage as far as possible ➪ **photo**.
- Before exchanging the ground glass, switch the camera's main switch off and disconnect the camera from the power supply!
- Remove the lens or the protective cap.

⚠️   *Do not touch the mirror surface!*

- Using the included special forceps, pull the ground glass ➪ **photo** out of the holder by its tongue ➪ **photo**.
- Check that the ground glass to be inserted as well as the ground glass frame are completely clean.
- With the special forceps, push the chosen ground glass into the holder as far as it will go. The red marker point must be on the left. A ball catch fixes the ground glass exactly in the right position.
- Check that the ground glass is correctly locked in place.

Note: Cleaning or exchanging the field lens, see *Chapter 14, Cleaning the Field Lens.*

ground glass   tongue

film gate locking lever

format mask

filter holder

knurled knob

movement locking lever

film gate

film gate shaft
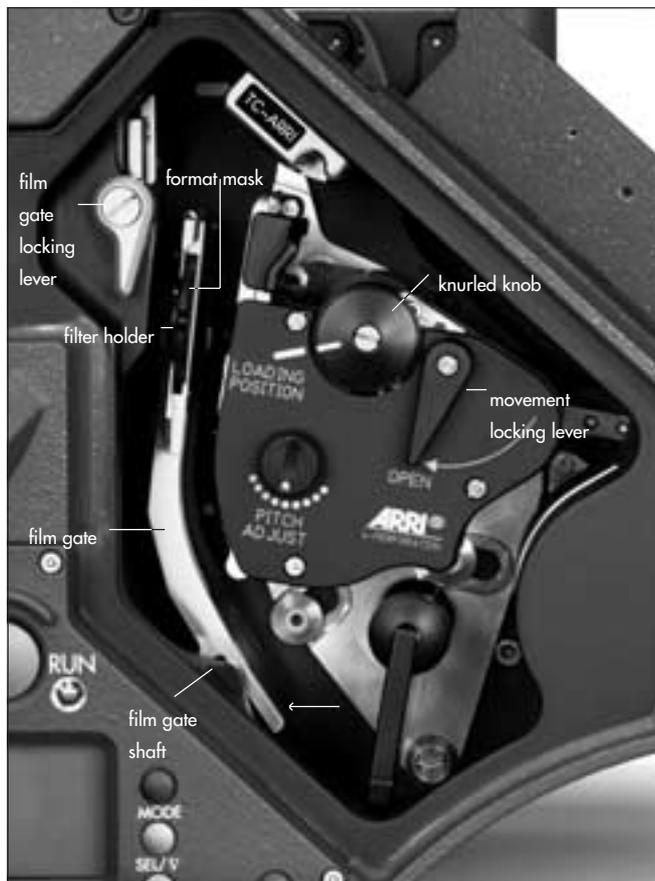
Film Gate

Changing the Format Masks
A format mask and filter holder must always be inserted in the film gate.

To take out the format mask:
- Switch off the camera's main switch and disconnect the camera from the power supply before exchanging the format mask.
- Turn the knurled knob ⇨ **photo** on the movement until its marking matches that on the movement block.
- Turn the movement locking lever ⇨ **photo** towards the "OPEN" position to swing the movement block away from the film gate.
- Press the film gate locking lever ⇨ **photo** towards the magazine throat assembly and swing the film gate ⇨ **photo** towards the movement block, pressing lightly on the lower end of the film gate and taking care that the film gate does not hit the movement block.
- Take hold of the film gate by the filter holder ⇨ **photo**, lift it up and remove.
- Now pull the filter holder ⇨ **photo** sideways out of the film gate.
- Press the format mask ⇨ **photo** lightly on its side flap towards the film gate and then pull this out sideways too.

To insert a format mask:
- Check that the film gate frame and the contact surface are absolutely clean.
- Push the new format mask ➪ **photo** sideways into the film gate.
- Push the filter holder sideways into the film gate ➪ **photo**.
- Check that the film gate and the film gate shaft are completely free of dust and dirt.
- Take hold of the film gate by the filter holder and place onto the film gate shaft from above.
- Check that the film gate is correctly seated on the shaft.
- Press the film gate locking lever towards the magazine throat assembly and push the film gate forwards to the correct position.
- Ensure that the film gate locking lever swings back completely.

Note: The film gate can only be locked if the format mask and the filter holder are correctly inserted.

⚠ *Swinging the movement block forwards when the film gate is not correctly in place can cause damage to the camera!*

filter foil   filter holder   format mask   film gate

Inserting Filters into the Film Gate
Filter foils such as gelatine filters can be inserted into the filter holder.

The camera display does not show a warning when a filter is in use.

- Switch off the camera's main switch and disconnect the camera from the power supply before inserting a filter.
- Turn the knurled knob ⇨ **photo** (p. 38) on the movement until its marking matches that on the movement block.
- Turn the movement locking lever ⇨ **photo** towards the "OPEN" position to swing the movement block away from the film gate.
- Press the film gate locking lever ⇨ **photo** towards the magazine throat assembly and swing the film gate ⇨ **photo** towards the movement block, pressing lightly on the lower end of the film gate and taking care that the film gate does not hit the movement block.
- Take hold of the film gate by the filter holder ⇨ **photo**, lift it up and remove.
- Now pull the filter holder ⇨ **photo** sideways out of the film gate.
- Open the filter holder slightly and insert the filter foil ⇨ **photo**. Cut off the jutting edge.
- Check that the film gate frame and the contact surface are absolutely clean.

- Push the filter holder sideways into the film gate ⇨ **photo**.
- Check that the film gate, the filter and the film gate shaft ⇨ **photo** are free of dust and dirt.
- Take hold of the film gate by the filter holder and place onto the film gate shaft from above.
- Check that the film gate is correctly seated on the shaft.
- Press the film gate locking lever ⇨ **photo** towards the magazine throat assembly and push the film gate forwards to the correct position.
- Ensure that the film gate locking lever ⇨ **photo** swings back completely.

Note: The film gate can only be locked if the format mask and the filter holder are correctly inserted.

⚠️ *Swinging the movement block forwards when the film gate is not correctly in place can cause damage to the camera!*

Movement

The ARRIFLEX 435 Advanced features a highspeed 5-link movement, equipped with ball-bearings for low maintenance.

⚠️ *Never operate the movement locking mechanism while the camera is running!*

Removing the Spacer Gate
- Press the safety spring ⇨ **photo** downwards, at the same time pressing the spacer gate backwards by its handle ⇨ **photo**. Then remove by pulling upwards.

Installing the Spacer Gate
- Take hold of the spacer gate by its handle ⇨ **photo** and insert it at an angle from above into the movement block.
- Push the spacer gate downwards until it locks audibly in place.

spacer gate handle
safety spring

Attaching the Magazine, Threading the Movement

- Pull the magazine release lever ⇨ **photo** back and remove the cover.
- Open the camera door.
- Check that the movement block is swung forwards.
- Remove the loop protector from the magazine.

⚠️ *When attaching the magazine, pay attention that the film does not get caught between the magazine and the dovetail on the camera opening!*

- Position the back part of the magazine's throat assembly on the lower dovetail of the camera opening.
- With your left hand pull the film loop through the camera opening as far as possible into the movement block area ⇨ **photo**.
- Before locking the magazine into place, ensure that the film is pulled far enough into the movement block area so that the film does not get caught between the magazine and the magazine locking mechanism!

magazine release lever

film

• Lock the magazine completely into the camera opening.

Note: The magazine drive gear engages automatically. Lightly turning the knurled knob on the movement block facilitates the precise engagement of the gear wheel if necessary.

• Check that the magazine is firmly seated.
• With your right hand pull the film loop downwards out of the camera ➪ **photo**. Then push it as far upwards as
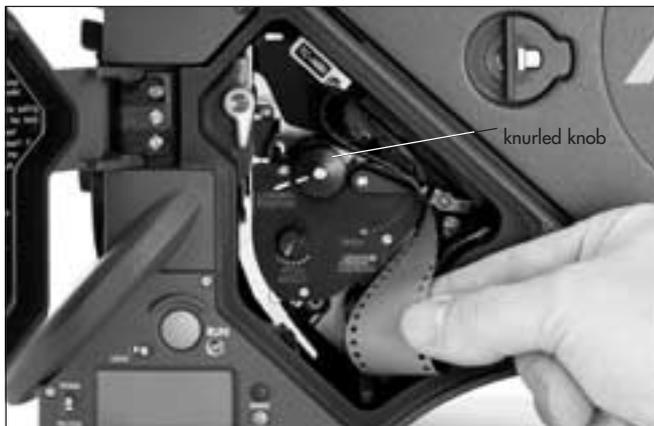
possible until the loop can be positioned between the movement plate and the film gate.

Note: The film cannot yet be completely placed into the film channel.

• Turn the knurled knob ➪ **photo** on the movement until its marking matches that on the movement block.
• Turn the movement locking lever towards the "OPEN" position to swing the movement block away from the film gate.

knurled knob

knurled knob

- Bring the film loop into position ⇨ **photo**.
- Position the film by one perforation hole onto the positioning pin ⇨ **photo** in the film guide, bringing the film loop to rest within the marking ⇨ **photo**.
- Check that the film is correctly fixed on the positioning pin and that the loop is positioned within the upper marking.

Note: Before the movement block is swung forwards, make sure that the film is correctly positioned in relation to the film gate over entire area, otherwise the film may be damaged!

positioning pin

marking for film loop
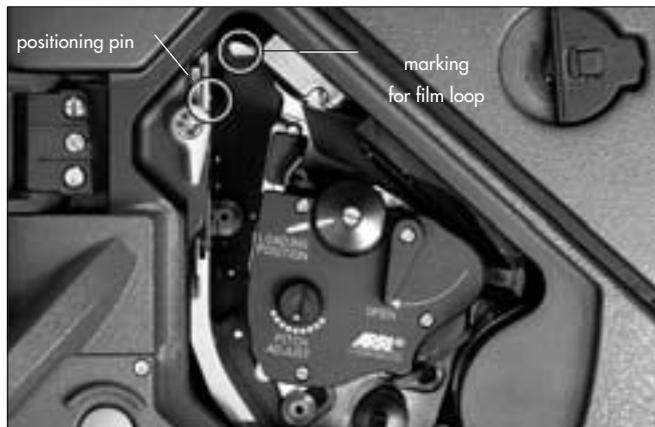
- Turn the movement locking lever counter-clockwise as far as it will go. This will cause the movement block to swing forwards and to lock into position.
- By turning the knurled knob ⇨ **photo**, check that the film runs smoothly.
- Turn the knurled knob until its marking matches that on the movement block and again check if the loop is lying within the marking.

⚠ *If the loop does not lie within the marking the film may be torn and the equipment damaged. In TC operation, the correct recording position in relation to the image will also not be guaranteed.*

- Close the camera door.

Note: Threading the movement is described and displayed on the inside of the camera door.

Pitch Adjustment

The camera is delivered with a transport claw pitch adjusted to 4.74 mm (short pitch). With this basic setting, negative film stock having a perforation hole distance within the tolerance range is transported smoothly and reliably by the movement. If the film stock used differs from this perforation distance, the movement can be optimally adapted using the pitch adjustment mechanism.

It is recommended to establish the optimal pitch setting for the film stock in use at a frame rate of 24 fps before beginning filming.

- Attach a loaded magazine and thread the movement. See "Attaching the Magazine, Threading the Movement".
- Leave the camera door open.
- Run the camera.
- Slowly turn the pitch adjustment ⇨ **photo** back and forth until the quietest setting is reached.

pitch adjustment

Removing the Magazine

If the film has not run through the camera completely:

- Open the camera door.
- Swing back the movement block just far enough to enable the film to be pulled out from between the film gate and the movement block.

Note: When slowly swinging back the movement block, a ball catch is noticeable.

- Pull out the film loop sideways from between the movement block and the film gate.
- Bring the loop into the area between the movement block and the magazine throat assembly ⇨ **photo**.

> *Ensure that the loop does not get twisted behind the movement block as otherwise the film could be damaged when removing the magazine!*

- Swing the movement block forwards again and lock.
- Hold the magazine firmly with one hand and pull the magazine locking lever back with the other.

⚠️ *When pulling away the magazine ensure that the film does not get damaged!*

- Pull the magazine off upwards.
- Replace the cover on the camera opening.

If the entire film has run through the camera:
- Hold the magazine firmly with one hand and pull the magazine release lever back with the other.
- Pull the magazine off upwards.
- Replace the cover on the camera opening.

film

8. Optics

Lenses

The ARRIFLEX 435 Advanced is prepared for the Lens Data System. All ARRIFLEX lenses with Lens Data System can be used. It is also possible to use all older ARRIFLEX lenses with a PL-mount. Lenses with a Ø 41 mm standard or bayonet mount cannot be used. Heavy and long lenses, such as zoom-lenses, must be supported at all times.

Attaching Lenses

• Remove the protective cap from the lens mount receptacle by turning the bayonet ring ➪ **photo** counter-clockwise as far as it will go and then pulling out the protective cap.

⚠️ *Never put your fingers into the lens mount receptacle. Do not change lens while camera is in motion control mode*

• Push the lens into the lens mount receptacle without catching it at the edges. One of the four slots on the lens mount must fit over the index pin ➪ **photo**.
• Press the lens flat onto the lens mount receptacle and pull the bayonet ring clockwise to tighten.

Note: For Super 35 shots the lens mount receptacle must be turned 180°. See *Chapter 12, Super 35.*

bayonet ring   index pin

Viewfinder System

The viewfinder system on the ARRIFLEX 435 Advanced can be swivelled in two axes. The viewfinder image is always up-right and correct left-to-right when the viewfinder is swivelled within the main axes ➪ **photo**.
A warning signal (red LED) for asynchronous running is reflected into the viewfinder.
An 80/20 beamsplitter for b/w video cameras is integrated into the viewfinder system. For colour video cameras, a beamsplitter with a ratio of 50/50 is also available, and can be fitted by a service center.
The entire viewfinder system can be replaced by a video finder (100%). An anamorphic viewfinder arm is also available.
An ARRIGLOW module is available as an option.
Using slide-in masks, the filming format currently in use can be displayed in the viewfinder as an illuminated frame with continuously adjustable brightness. The ARRIGLOW also displays the warnings ASY (asynchronous running), BAT (supply voltage too low) and END (end of film) in the viewfinder.

The Eyepiece

Removing the Eyepiece
- Hold the eyepiece with one hand and with the other turn the knurled ring ⇨ **photo** towards the "OPEN" position as far as it will go.
- Remove the eyepiece ⇨ **photo**.
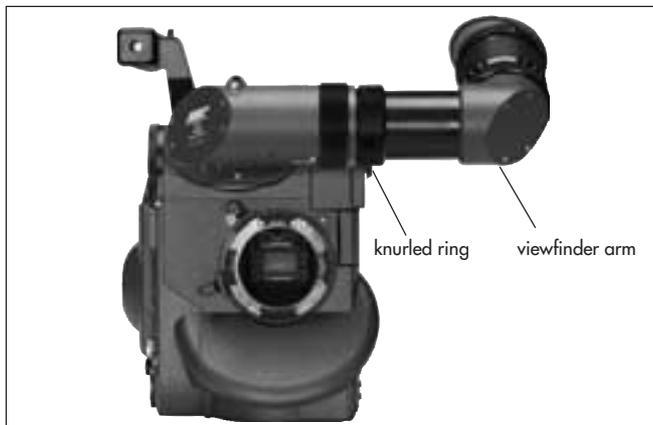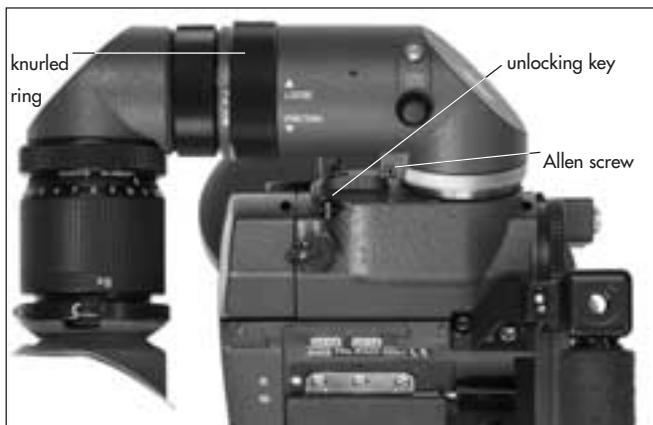
Attaching the Eyepiece
- Ensure that the knurled ring is turned to the "OPEN" position.
- Position the eyepiece on the viewfinder.
- Turn the knurled ring ⇨ **photo** towards the "LOCK" position.
- Check that the eyepiece is correctly seated.

Adjusting the Diopter
The diopter compensation is fitted with a scale ⇨ **photo** of 1 to 12. Position "6" is normal focus.
- To adjust, turn the ring right/left until the ground glass markings are totally in focus.

knurled ring

eyepiece

scale

knurled ring

unlocking key

Allen screw

knurled ring   viewfinder arm
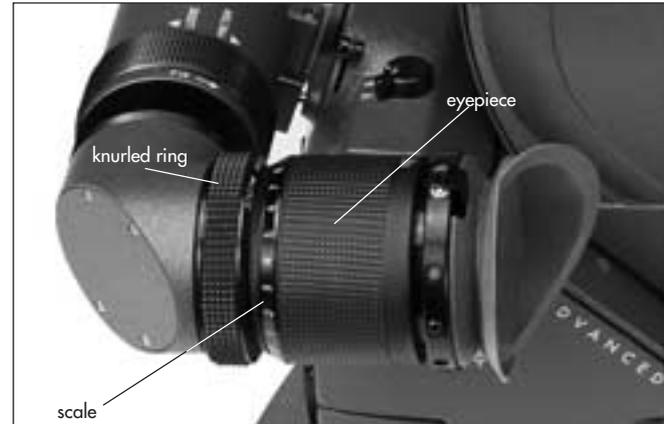
Adjusting the Viewfinder

Turning the Eyepiece
The eyepiece can be rotated 360° around the viewfinder arm. The eyepiece is held in adjusted position by friction.
- To set friction, turn the knurled ring ⇨ **photo** right/left until the desired friction has been reached.

Swivelling the Viewfinder Arm
The viewfinder arm can be swivelled approx. 270° left to right. On the left side of the camera the viewfinder arm locks into the horizontal position. The viewfinder arm friction can be altered if necessary by turning the Allen screw ⇨ **photo**.
- To adjust the viewfinder arm, release the locking mechanism by depressing the unlocking key ⇨ **photo**.
- Turn the viewfinder arm to the desired position.

Extending the Viewfinder Arm
The viewfinder arm can be telescoped continuously by approx. 50 mm.
- Turn the knurled ring ⇨ **photo** towards the "LOOSE" position.
- Pull the viewfinder arm ⇨ **photo** out to the desired length.
- Retighten the knurled ring.

Image Compensation

The viewfinder system is fitted with an automatic image compensation mechanism.
To enable setting a different image position in certain situations, the viewfinder system is additionally equipped with a manual image adjustment mechanism.

Manually Adjusting Image Compensation

- Depress the locking key ⇨ **photo** and hold depressed.
- Turn the adjustment knob ⇨ **photo** until the viewfinder image is in the desired position.

Reactivating Image Compensation

- Turn the adjustment knob ⇨ **photo** until this locks in position. Do not depress the locking key.

Note: The automatic image compensation locks in two positions, 180° apart. This allows the image compensation to be set to provide an upright image when using a finder extension.

If the viewfinder image is inverted without the finder extension, the image compensation must be adjusted to the opposite locking position.

Inverting the Image

- Depress the locking key ⇨ **photo** and keep depressed.

- Turn the adjustment knob ⇨ **photo** approx. 30°
- Release the locking key ⇨ **photo**.
- Keep turning the adjustment knob ⇨ **photo** until this locks in position.

Pivoting the Contrast Filter

To enable a subjective reduction of viewfinder contrast, a contrast filter (ND 6) can be pivoted into the optical beam path by means of a lever ⇨ **photo**.

- The lever ⇨ **photo** is brought into the "ON" position automatically by depressing the locking key ⇨ **photo**.
- For unrestricted viewing, turn the lever ⇨ **photo** back into the "OFF" position until it locks in.

locking key
adjustment knob
lever
locking key
for contrast filter

ARRIGLOW module
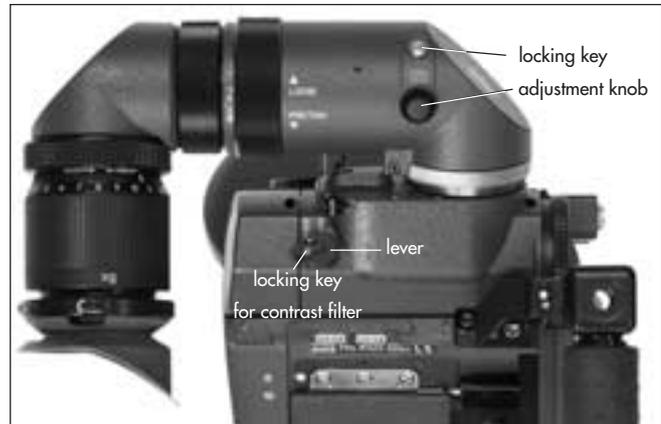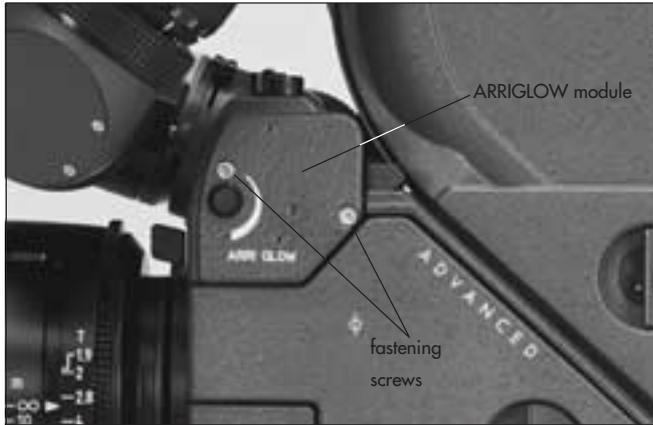
fastening
screws

ARRIGLOW

Attaching ARRIGLOW

The ARRIGLOW module is available as an option. It allows
illuminated format markings to be superimposed onto the
viewfinder image with continuously adjustable brightness.
- Loosen both fastening screws ⇨ **photo** on the warning
  display module.
- Pull the warning display module off sideways.

⚠️ *Attach the ARRIGLOW module straight.
Attaching at an angle could damage the plug.*

- Push on the ARRIGLOW module ⇨ **photo**.
- Screw both fastening screws tight.

Adjusting ARRIGLOW Brightness

The brightness of the illuminated format markings can be
continuously adjusted by turning the adjustment knob
⇨ **photo**.
By turning the adjustment knob counter-clockwise as far
as it will go, the ARRIGLOW can be turned off.

Exchanging the Format Mask
- Open the camera door as wide as possible.
- Grip the format mask ⇨ **photo** with the special forceps and pull downwards and out.
- Now grip the new format mask with the special forceps and push in with the notch ⇨ **photo** facing towards the rear until it locks in place securely.

adjustment knob

notch

format mask
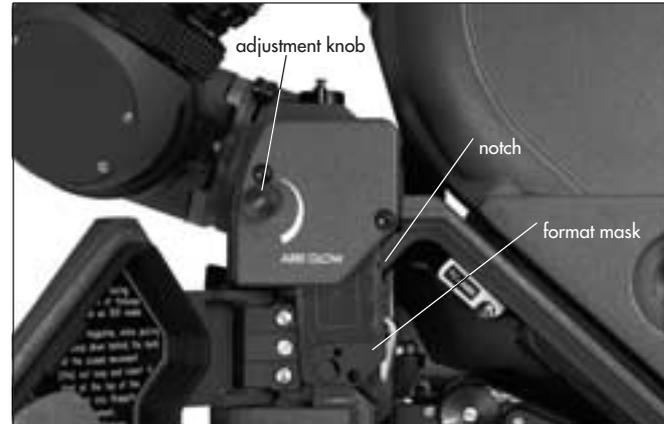
Exchanging the Viewfinder System
The entire viewfinder system can be replaced by a 100% video finder. See *Chapter 11, Accessories.*

Removing the Viewfinder System
Before removing the viewfinder system, the viewfinder arm should be brought back to its normal position.
- Loosen the three fastening screws ⇨ **photo**.
- Pull the viewfinder system up and off.

Attaching the Viewfinder System
- Position the viewfinder system on the camera body from above.
- Tighten the fastening screws.

screws
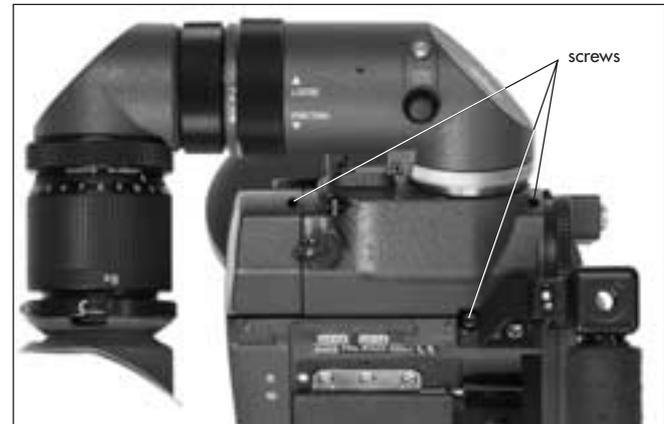
9. Camera Operation

Main Camera Switch

The main camera switch ⇨ **photo** is located on the back of the camera below the magazine opening.

- First switch on the mains unit (if used).
- Connect the camera to the mains unit or to the battery.
- Switch on the main camera switch.

In the "ON" position the camera is in standby. In the "OFF" position the camera is cut off from the power supply.

main camera switch

"RUN"-button

operation control indicator

"LOCK" sliding switch

"MODE"-button   "PHASE"-button

Running and Stopping the Camera

A "RUN"-button is located on the left side of the camera ⇨ **photo**.

Running the Camera

⚠️ *If the operation control indicator glows red while in standby, the camera is not ready and will not run*
(see "Overview of Display Symbols").

• Briefly depress the "RUN"-button. While the camera is running up, the operation control indicator ⇨ **photo** glows red. Once the set frame rate has been reached, the operation control indicator turns green.

Stopping the Camera

• Again depress the "RUN"-button ⇨ **photo** briefly. While the camera is running down the operation control indicator glows red. The mirror shutter automatically stops in a position that enables unrestricted viewing through the viewfinder. On reaching this position, the operation control indicator flashes green before going out.

Inching
Inching can be started by depressing the "PHASE"-button while the camera is in standby. If the "PHASE"-button is only briefly depressed, the movement rotates one revolution and the mirror shutter rotates half a revolution to enable an un-restricted view of the film gate (e.g. for checking the gate). If the "PHASE"-button is held depressed longer, the camera will inch forward at approx. 1 fps. The upper line of the display indicates the measured shutter angle, the lower line the measured voltage of the power supply.

> ⚠ *While inching, shutter and movement are not exactly synchronized. As this can cause faulty exposures, do not film while inching.*

Displaying and Setting Operational Parameters

The currently set operational parameters on the ARRIFLEX 435 Advanced are displayed on the camera display ⇨ **photo** in various modes. The desired mode is selected via the "MODE"-button. In each mode the corresponding operational parameters can be set using the "SEL"- and "SET"-buttons ⇨ **photo**.

Note: Mode 1 is indicated ⇨ **photo** in the display by a black horizontal bar.

To prevent an unintentional alteration of the operational parameters the buttons "SEL", "SET", "PROG" and "PHASE" can by locked using the sliding switch "LOCK". If a button is depressed when the display is locked, the display will show the "OFF" sign.

Note: Locking the "PHASE"-button has no influence on the inching function.

> ⚠ *Locking the "SEL"- and "SET"-buttons has no influence on accessories such as the RCU-1.*
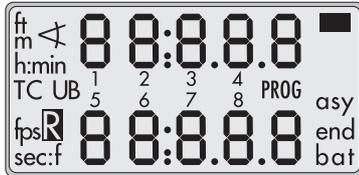
Overview of Display Modes

Mode 1 is displayed:
after switching on the camera,
after depressing the "RUN"-button or
30 seconds after the last operation.
Mode 4 and 5 can only be selected
if the functional expansion module is attached.

	1st Display Line	2nd Display Line	Adjustment Possibility
Mode 1	total exposed film counter (m/ft) or take counter (m/ft) or mirror shutter angle take counter is replaced by frame counter in motion control mode	frame rate (fps) or ESU, SU in standby and frame rate (fps) while running (external control connected) or Pr if a program is activated	selection of a standard frame rate configuration of the 1st display line
Mode 2	programmed frame rate (PS) ESU, SU – external control connected current shutter angle if a program is activated	programmed frame rate (fps) current frame rate if a program is activated	programmed frame rate (forwards / reverse)
Mode 3	total exposed film counter (m/ft) or take-counter (m/ft) take counter is replaced by frame counter in motion control mode	power supply voltage (V)	configuration of the film counter unit of measurement (m/ft)
Mode 4	time code time (hours, minutes)	time code time (seconds, frames)	time code on / off time code time can only be set via the CCU or externally

|	1st Display Line	2nd Display Line	Adjustment Possibility
Mode 5	time code user bits time code warnings	time code user bits	time code user bits can only be set via the CCU or externally
Mode 6	volume of the acoustic warning signal	TCS-value or voltage of the time code buffer battery (V)	warning signal on / off volume TCS-value
Mode 7	stored program settings set shutter angle	frame rate (fps) stored program settings	setting of the shutter angle
Mode 8	rampspeed	-capping shutter state in motion control modes: - transport encoder position (modulo 2000) - shutter encoder position (modulo 2000) - motion control exit error code - software version	setting of ramping and runup speed
Mode 9	EC (external control)	external control mode	selection of external control mode

Overview of Display Symbols		
Symbol		**Meaning**
	glows	The display is in Mode 1.
bat	glows	Battery voltage too low for the set frame rate
		≤ 130 fps and voltage < 20.6 V
		130-150 fps rampspeed St and LO and voltage < 24 V
		130-150 fps rampspeed HI and voltage < 26.5 V
asy	glows	Asynchronous operation
		(camera is not running at set frame rate)
	blinks	Movement/shutter not synchronous
end	glows	film end
fps	blinks	The magazine is not suited to the set frame rate, or ESU is connected
		and no sync-frequency is available
PROG	glows	The stored program is activated and can be started while the camera is running by depressing the "PROG"-button.
	blinks	The activated program cannot be run with the set values: e. g.: incorrect magazine for the frame rate set in the program, or battery voltage too low for the frame rate set

		in the program.
Symbol		**Meaning**
	blinks	The shutter is mechanically locked in electronic operation or
		the electronic shutter function is switched off.
		The symbol blinks and the operation control
		indicator glows
		red although the shutter is not locked:
		The electronic shutter adjustment is defective –
		the electronic shutter adjustment can be switched off
		see chapter 7.
R	glows	Reverse operation is switched on.
TC	glows	TC-generator is switched on and set.
	blinks	TC-generator is switched on
		during running: no recording
		during standby: the last synchronization
		was over 8 hours ago
		additional acoustic warning,
		see also TC warning display.

Display: Movement Open
The display shows if the movement has not been locked correctly into operating position.

The operation control indicator glows red the movement block is not correctly locked, the camera is not operational.

```
m    t r A n S  ■
fps  o P E n
```
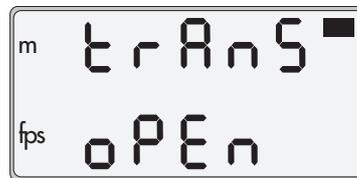
**Display: Warning of Reverse Operation with an ARRIFLEX 35 III 300 m Magazine**
Reverse operation is not possible with an ARRIFLEX 35 III 300 m magazine. If the camera is set to reverse operation and an ARRIFLEX 35 III 300 m magazine is attached, this warning will show in the camera display.

Note:     See *Appendix* for other messages

```
m    E r r o r  ■
fps  d I r
```
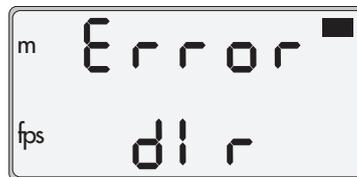
Display: ARRIMAG 300E is taking up film
This message will be displayed while the ARRIMAG 300 E is taking up loose film (slack) in the magazine.

```
m    b u S Y  ■
fps  3 0 0 E
```
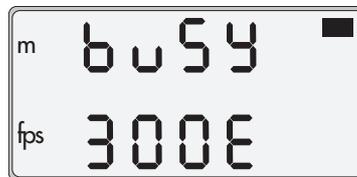
Film Counter

Displaying the Film Counting Values (Modes 1 and 3)
Film counting values are shown in Modes 1 and 3.
Two different counting values are shown respectively:
- the total amount of exposed film or
- the take length (amount of film used in an individual take)
  A "t" in the first digit of the upper display line indicates the display of take length.

Setting the Film Counter Configuration (Mode 3)
The display configuration can be set individually.
The two shown combinations are possible:
The desired display configuration can be set in Mode 3:
- Change from Mode 1 to Mode 3 by depressing the "MODE"-button twice.
- Depress the "SEL"-button twice; the first digit in the upper display line blinks.
- Within three seconds, depress the "SET"-button.
- The currently set counting value of Mode 3 is displayed. The corresponding counting value in Mode 1 is auto-matically altered.

In motion control modes, the take counter is replaced by a frame counter with a counting range from -19999 to 99999 frames. The frame counter will count Modulo 100000 in foreward operation, and Modulo 20000 on reverse operation.

Mode 1
take length or total exposed film

Mode 3
total exposed film or take length or
frame counter

The counter can be reset by depressing the "SET"-button for at least 3 seconds.

Resetting the Film Counter (Modes 1 and 3)
- Change to the mode which shows the total amount of exposed film ("MODE"-button).
- The total exposed film counter can be set to zero by depressing the "SET"-button (for at least 3 seconds) while in standby.
- The take length counter is automatically reset each time the camera is started.

Changing the Unit of Measurement (Meters/Feet) (Mode 3)
Standby Operation
- Change from Mode 1 to Mode 3 by depressing the "MODE"-button twice.
- Depress the "SEL"-button once; the symbol m/ft blinks.
- Depress the "SET"-button within three seconds to change the unit of measurement.

Displaying the Angle of the Mirror Shutter (Mode 1)

- As long as the "PHASE"-button is depressed while in standby, the set angle of the mirror shutter appears in the upper display line.
  The camera runs at inching speed.

Setting the shutter angle: see *Chapter 5.*

Configuring Mode 1

On the ARRIFLEX 435ES a constant display of the shutter angle can be configured in Mode 1:

- Depress the "SEL"-button repeatedly until the upper display line blinks.
- The "SET"-button switches between film counter and shutter angle.

Frame Rates

The ARRIFLEX 435 Advanced offers the possibility to set and store two frame rates. It is possible to select and store:

- a standard frame rate (23.976, 24, 25, 29.97 and 30 fps),
- and a freely programmed frame rate
  in increments of 0.001 fps for frame rates up to 100 fps and above 100 fps in increments of 0.01 fps.

The frame rate is activated via the "NORM/PS"-switch ➪ **photo** on the left of the camera. The "NORM"-position corresponds to the standard frame rate, the "PS/CCU"-position to the freely programmed frame rate.

"NORM/PS"-switch   "PHASE"-button

```
m   0031              ▬
fps  24.000
```

```
    PS
fps  150.00
```
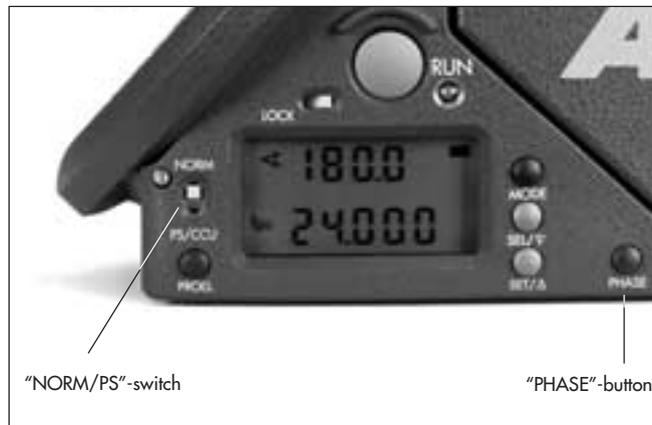
Note: The frame rate can be set between 0.1 and 150 fps. For frame rates over 130 fps and a ramping speed set to LO or St, the power supply voltage has to be at least 24 V. for rampspeed Hi at least 26.5 V.

Note: The programmed frame rate is stored in a non-volatile memory.

Selecting a Standard Frame Rate
(Mode 1)
Standby Operation
- The camera must be in Mode 1 and the "NORM/PS" switch must be in the position "NORM".
- Depress the "SEL"-button repeatedly until the desired frame rate is selected. Within 3 seconds, confirm this choice by depressing the "SET"-button, otherwise the initial setting is retained.

Setting a Programmed Frame Rate
(Mode 2)
Standby Operation
- Change from Mode 1 to Mode 2 by depressing the "MODE"-button once.
- Depress the "SEL"-button repeatedly until the digit to be set blinks.
- Depress the "SET"-button repeatedly until the desired value is reached.
- Repeat this procedure until all digits are set to the desired values. For frame rates below 100 fps, a "0" should be entered as the first digit, for frame rates above 100 fps, a "1". A final confirmation of the set frame rate is not necessary.

Switching Between Forward and Reverse Operation (Mode 2)
Standby Operation
- Change from Mode 1 to Mode 2 by depressing the "MODE"-button once.
- Depress the "SEL"-button; "Cd" blinks.
- Hold the "SET"-button depressed for more than three seconds. The display shows an "R" for reverse operation at the bottom left.

The frame rate can be altered as described above.

Changing the Frame Rate while the Camera is Running
By means of the "NORM/PS"-switch it is possible to switch between the standard frame rate ("NORM") and the programmed frame rate ("PS/CCU") while the camera is running.

Note: The attached magazine must be suited for the programmed frame rate. For HS-operation above 130 fps, an appropriate power supply must be connected.

Fine-Tuning the Programmed Frame Rate (PS-Mode)
Fine-tuning of the programmed frame rate can be carried out while the camera is running by means of the buttons "SEL" (slower) and "SET" (faster). The setting can be adjusted in increments of 0.001 fps (1.000 to 99.999).
- Set the "NORM/PS" switch to "PS/CCU".
- Run the camera.
- Depress the "MODE"-button once to change to Mode 2.
- With the buttons "SEL" (slower) and "SET" (faster) change the frame rate.

"PHASE"-button

Shifting Phase

To film quartz-synchronized monitors, hold the "PHASE"-button depressed after the camera has run up until the horizontal bar is no longer visible in the viewfinder. The frame rate will increase by 0.2 fps while the button is depressed.

Displaying the Power Supply Voltage (Mode 3)

• Change from Mode 1 to Mode 3 by depressing the "MODE"-button twice. The power supply voltage is shown in the lower line of the display.

Switching On and Off the Warning Signal for Asynchronous Running (Mode 6)

Standby Operation

- Change from Mode 1 to Mode 6 by depressing the "MODE"-button five times (or three times if no functional expansion module is attached).
- By depressing the "SEL"-button twice, activate the display for setting the warning signal.
- Within three seconds, depress the "SET"-button to select one of the four settings.
- Depressing the "MODE"-button confirms the selection and changes the display back to Mode 1.

Setting the Volume of the Warning Signal

- Change from Mode 1 to Mode 6 by depressing the "MODE"-button five times (or three times if no functional expansion module is attached).
- Depress the "SEL"-button three times to activate the display for setting the warning signal volume.
- Select the desired volume with the "SET"-button.

⚠️ *At volume level 0 the acoustic TC-warning is also switched off.*

0…off
3…maximum volume

Display	Warning tone on start	Warning tone on stop
L5 _ _	off	off
L5 – _	on	off
L5 _ –	off	on
L5 – –	on	on
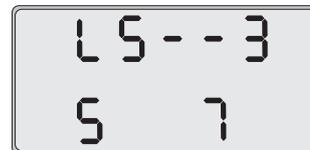
```
L5 _ - 3
5      7
```

```
L5 - - 3
5      7
```

Note: When the camera exits the motion control mode because of a fault, a permanent beep will occur until the camera is restarted or the error was checked in the motion control error menu.

setting	ramping speed
LO	$25f/s^2$
ST	$40f/s^2$ (as 435ES)
HI	$100f/s^2$

Mode 8
Changing the Ramping Speed:
In menu 8 the ramping speed can be changed in three steps.
• Depress the "SELECT"-key several times until the desired ramping speed blinks.
• Select the desired ramping speed by pressing the "SEL"-button.

Note: Ramping speed HI is only applicable for internal ramps.

Checking Capping Shutter Position
In the 2nd line is the position of the capping shutter (if mounted) indicated.

Checking the accurate Position of the Camera Motors in Motion Control Modes:
In the bottom line of the display the accurate position of the shutter and transport motor modulo 2000 can be checked for motion control purposes when the camers is in motion control mode.

The software version of the camera can be displayed when neither a single frame shutter nor a motion control interface is attached to the camera:

• Press "SET" for three seconds in the rampspeed menu: the second line will display Sxx.xx for the camera software version
• Press "SEL": the second line will display Fxx.xx for the FPGA software version
• Press "SEL": the second line will display bxx.xx for the bootloader software version
• Press "SEL": the second line will display Pxx.xx for the boot FPGA software version

Mode 9

In this mode the external control configuration of the camera can be selected when the MCI-1 module is mounted on the right side of the camera:

Note: For further information on the maximum speed and acceleration limits see page 70.

mode	maximum speed	maximum acceleration	capping shutter	notes
SD1	96fps (150 fps)	40f/s^2 (100 f/s^2)	open	shutter and transport internally synchronized adjustable sector has to be set in camera
SD2	96fps (150 fps)	40f/s^2 (100 f/s^2)	open	shutter and transport internally synchronized adjustable sector can be controlled externally
SD3	96fps (150 fps)	40f/s^2 (100 f/s^2)	open	shutter and transport phase can be adjusted externally adjustable sector can be controlled externally
SDCS1	96fps (150 fps)	40f/s^2 (100 f/s^2)	external control	shutter and transport internally synchronized adjustable sector has to be set in camera the capping shutter can be controlled externally
SDCS2	96fps (150 fps)	40f/s^2 (100 f/s^2)	external control	shutter and transport internally synchronized adjustable sector can be controlled externally the capping shutter can be controlled externally
SDCS3	96fps (150 fps)	40f/s^2 (100 f/s^2)	external control	shutter and transport phase can be adjusted externally adjustable sector can be controlled externally adjustable sector can be controlled externally the capping shutter can be controlled externally
CAN1	150fps	100f/s^2	external control	ARRIMOTION only
CAN2	150fps	100f/s^2	external control	ARRIMOTION only
CAN3	150fps	100f/s^2	external control	ARRIMOTION only

The camera can only be set to a motion control mode when the "NORM/PS" switch is in "PS/CCU" position.

When an external control mode is enabled, the camera will close the control loops and position the shutter and transport in the mid shutter closed position.

The adjustable sector will be set to 180 degress if the mode allows external control of the adjustable sector, otherwise it will set to position which was set in the camera.

When the "NORM/PS" switch is set to "NORM" during motion control mode the control loops will be disabled and the camera can be loaded or a gate check can be performed. The camera will re-enter the selected motion control mode when the switch is set to "PS-CCU" again.

Note: The camera will indicate the actual frame count but will not reposition the film to the framecount where the motion control mode was left for reloading/gate checking.

Note: The camera checks for any overacceleration/ overspeed and will exit motion control mode if any error occurs.
See *Appendix* for motion control error codes.

⚠️ *Attention: The external controller has to take care if the capping shutter has been withdrawn from the gate before filming. When the phase relation of the transport and the shutter motor is shifted exposure will happen during the pulldown which will result in blured images.*

Note: The ARRIFLEX 435 Advanced has a built in supervisory function that prevents the camera from being overdriven by third party motion control systems. This supervisory function will trip at the following limits:
155 fps +/- 5fps
100 f/s^2 Acceleration +/- 20 f/s^2

However, if you run the camera on a motion control system above the following limits
96 fps
40 f/s^2
we recommend to shoot tests before starting production.

Special care has to be taken:
- The acceleration ramp should be very smooth (e.g. some systems tend to run "staircase" type accelerations, others can oscillate causing minor fluctuations).

- The power supply must be able to supply sufficient current.

- The camera power cable must not be extended to avoid excessive voltage drop.

- The camera must not be "hard stopped" by simply pulling the connectors on the MCI or the MCI itself.

- An ARRIMAG 120 or a Steadimag should be used on the camera.

If any of the above are not adhered to the camera might not perform as expected and/or switch off.

Note: For motion control mode exit warning see page 67. The shutter and the transport motor will be positioned in mid shutter closed position⇨ **photo**.

For further information see the documentation of the motion control adapter (MCA) modules.

Mini monitor connector

Switch ON/OFF/Keyboard locked

Manual gain control (ON)

White balance (Indoor/Outdoor/Automatic/Manual)

Flicker free (ON/OFF)

Mode (Frame store / Compare)

Store key

Activate inserter onscreen menu or • store position of inserted windows

Increase gain or • cursor up or • move inserted window up or • increase blue

Go to sub menu or • move position of inserted windows right or • increase inserter values or
   • increase red or • change format marking number

Go to sub menu or • move position of inserted windows left or • reduce inserter values or
   • reduce red or • change format marking number

Decrease gain or • cursor down or • move inserted window down or • decrease blue

"Normal video" composite out or C

"Video with data" composite out or Y

Genlock In

10. Video-Assist-System

The Integrated Video-Assist System (IVS) for the ARRIFLEX 435 integrates a complete video assist system totally into the camera body. It offers unsurpassed image quality combined with a state-of-the-art inserter to add frame lines, time code, full manual white balance control and text to the video image. For instructions on mounting and operation, please see the *ARRIFLEX 435 IVS II manual*.

Main Features

- Integrated into the camera body
  Instead of a bulky add on, the video assist becomes an integrated part of the camera without additional cabling.

- High sensitivity
  A high speed lens with an aperture of 1 : 1.4 and one of the most sensitive CCD-Chip available on the market provide an excellent color video image in editing quality even when the light was set for a high speed film stock, which will be pushed during processing.

- High resolution
  The design of the new IVS optics was based on the 435´s view finder data and resulted in an image quality which can not be realized by add on solutions.

- Flicker-free
  An integrated digital frame store enables the video camera to be synchronized to the film camera´s mirror shutter and provides a flicker-free video image from 1 fps to maximum speed (in manual gain control mode) because the video image is always taken at the ideal position of the mirror shutter.
  Flicker free can be switched of to bypass the digital frame store and have the video assist output with no delay.

- Full manual white balance
  In addition to the standard indoor white balance setting with 3200 K, an outdoor setting with 5600 K and automatic adjustment, color can be fine tuned with a separate red and a separate blue channel for manual white balance.

- Even further resolution in camera run mode
  Video images are now also in the camera run mode in almost full video resolution due to a new technology.

- New video exposure time mode 'identical with film exposure'
  The exposure time of the video assist can be programmed to follow the exposure time of the film. Thus, identical motion blur on film and video assist is achieved.

- Store and recall for all settings
  All settings can be stored and recalled. By this, it is possible for example to trim all the settings for indoor shooting, store them, have some exterior scenes, go back indoor and call the old settings back.
  Up to 6 sets of settings can be stored.

- Integrated frame line inserter
  Frame lines can be electronically added to the video image. This ensures that the lines are visible even in difficult conditions. The area outside of the frame lines can be darkened electronically to emphasize the important image area.

- Integrated time code inserter
  It is possible to insert Time code into the video image. Thus, the video assist creates a reliable link to video editing. The information on "3:2" pull-down, which can be inserted as well, ensures the same reliability in an NTSC environment.

- Integrated text inserter
  Additional text like take numbers or production name can be added to the video image by sending characters on a serial interface.

- Two additional Y/C Outputs
  In addition to the usual composite output, the IVS offers a Y/C output (S-VHS) for an even better video image without annoying color artifacts with or without data inserted into the video image. The output is on a standard S-VHS connector as well as on two BNC sockets.

- On-Screen programming
  All functions, which do not effect the image appearance directly like gain control, can be conveniently programmed with an onscreen programming menu on the video monitor.

- Full remote controllable
  All settings can be controlled directly on the IVS as well as via RS 232 with the remote control software (under development).

- Image compare function
  It is possible to store a particular image and compare it against other images. This clearly shows the difference between the images e.g. during stop effect shots.

- Automatic and manual gain control
  The gain is controlled automatically to its best value but can also be set manually.

- External synchronization input (Genlock)
  The IVS has an external synchronization input to enable multi camera use.

- Mini monitor connector
  The IVS offers a connector for a 12 V LCD mini monitor combined with a 1.1 A power supply.

Note: Both ARRIFLEX 435 versions (435 and 435 ES) can be equipped with the IVS independently of the expanded function module. However, the time code functions such as insertion of time code, user bits, pull-down information, VITC and white line flags can only be activated if the expanded function module is installed.

As the IVS is designed for an 80 : 20 beam splitter, there is no need for the 50 : 50 beam splitter, which is used for other color video assists.

The IVS consists of

- Optic Silent and/or K2.47230.0
- Optic Academy K2.47231.0
- Video Electronic complete .... K2.47365.0 for PAL
                                                 or K2.47366.0 for NTSC

The Video Electronic complete consists of two parts:
- CCD Optic Module
- Inserter / Antiflicker Module

- Software for text input .... On request

Optic Silent

For a complete and working IVS, either the optic silent or the optic acacemy has to be installed inside the CCD optic module. They can be easily exchanged.

The optic silent forms an image on the CCD chip which is based on the 35 mm silent format with a picture width of 24 mm. An additional area will surround the actual image. This is to check for important objects outside the image area. The lenses are especially designed and built for the use with the ARRIFLEX 435 to achieve the best possible image quality. Especially the aperture of 1 : 1.4 is important for the use as video assist lenses because only a small portion of the light that goes through the camera lens reaches the video chip. Therefore the lenses are not designed as zoom lenses because it would be impossible to get the same image quality and speed.

All silent optics are marked with an S in the serial number, e.g. S0040.

There are no different lenses for PAL and NTSC.

Optic Academy

For a complete and working IVS, either the optic silent or the optic acacemy has to be installed inside the CCD optic module. They can be easily exchanged.

The optic academy forms an image on the CCD chip which is based on the 35 mm academy format with a picture width of 22 mm. An additional area will surround the actual image. This is to check for important objects outside the image area. The lenses are especially designed and built for the use with the ARRIFLEX 435 to achieve the best possible image quality. Especially the aperture of 1 : 1.4 is important for the use as video assist lenses because only a small portion of the light that goes through the camera lens reaches the video chip. Therefore the lenses are not designed as zoom lenses because it would be impossible to get the same image quality and speed.

All academy optics are marked with an N in the serial number, e.g. N0040.

There are no different lenses for PAL and NTSC.

CCD Optic Module

The CCD optic module, which is mounted on the ARRIFLEX 435 view finder system has to be equipped with a video lens. This module contains the CCD-chip and all the necessary elements to center the video image on the TV-Monitor screen and to adjust the focus. It houses also a video pre-amplifier to increase the sensitivity of the IVS at low light conditions. The CCD optic module is available in PAL and NTSC.
It is necessary to keep the combination of CCD optic module and Inserter/Antiflicker module together as delivered. Mixing the modules might lead to a reduced image quality. On request ARRI can supply a second CCD optic module optimized for a particular Inserter/Antiflicker Module.

Inserter / Antiflicker Module

The Inserter/Antiflicker module contains most of the IVS electronics. This 22 mm wide module, which is mounted on the right side of the ARRIFLEX 435, holds the video camera electronic, an anti flicker processor and the entire inserter. All control elements, which are often used, as well as all in- and outputs are located here.
The Inserter/Antiflicker module is available in PAL and NTSC. It is necessary to keep the combination of CCD optic module and Inserter/Antiflicker module together as delivered. Mixing the modules might lead to a reduced image quality. On request ARRI can supply a second CCD optic module optimized for a particular Inserter/Antiflicker module.

11. Accessories

Anamorphic Viewfinder AVF-2

When using anamorphic lenses, the AVF-2 allows de-squeezed viewing of the ground glass image. This viewfinder arm can also be switched over to check the anamorphically squeezed image. The anamorphic viewfinder AVF-2 can be fitted in place of the standard viewfinder arm by a service center or in a rental house.

- To switch over the viewfinder image, turn the switching knob ⇨ **photo**. The knob does not need to be unlocked.

All other operating elements are identical in function to those on the standard viewfinder.

The anamorphic viewfinder can also be used together with the finder extender FE-3. A mechanical remote control facilitates switching over the viewfinder image in this operating position. The remote control is attached under the viewfinder arm to the shaft of the switching knob. The operating knob can be attached to the finder extender.

switching knob

adjusting screw
Allen screws
FRICTION

brace
clamping screw
adjusting screw
fastening screw
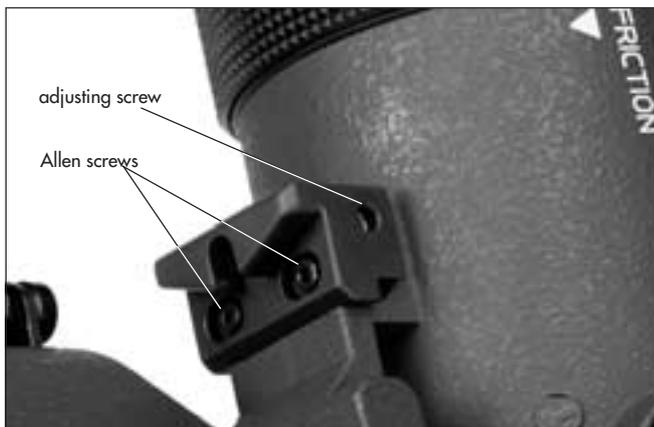
Adjusting the AVF-2

Unlike the standard viewfinder, the anamorphic viewfinder will only provide an undistorted image in horizontal, locked position. The locking stops of the AVF-2 can be adjusted to an exactly horizontal position.

Using the AVF-2 on the Left Side of the Camera

- Loosen (do not remove) the two Allen screws ➪ **photo** in the locking stop.
- Turn the adjusting screw ➪ **photo** with an Allen key until the viewfinder image is free of distortion.
- Retighten the Allen screws.
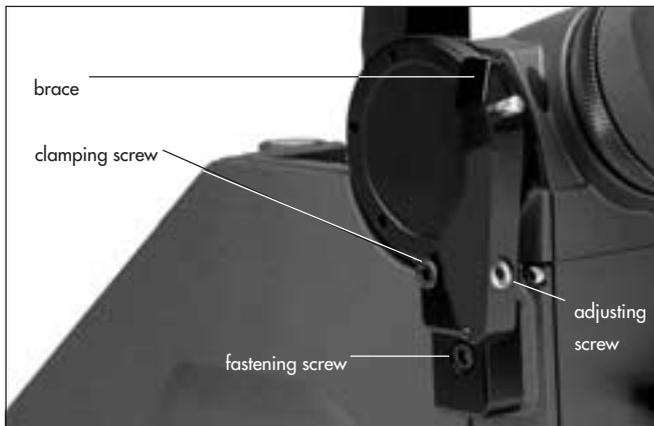
Using the AVF-2 on the Right Side of the Camera

The AVF-2 can also be locked into horizontal position on the right side of the camera. An adjustable brace ➪ **photo** can be fitted to the camera for this purpose.

The brace is attached to the accessory flange on the camera body with a screw ➪ **photo**. The horizontal position of the AVF-2 on the right side of the camera is adjusted solely on the brace.

- Loosen the clamping screw ➪ **photo**.
- Using the adjusting screw ➪ **photo**, pivot the brace until the viewfinder image is free of distortion.
- Retighten the clamping screw.

Video Viewfinder VT-2

The video viewfinder VT-2 is a 100%-video-tap module. It can easily be fitted in place of the standard viewfinder system for Steadicam or crane operation. The same video optic that is used on the standard viewfinder system can be also fitted to the video viewfinder.

Mounting the Video Viewfinder

Removing the Standard Viewfinder System
- Lock the viewfinder arm into horizontal position.
- Unscrew the three fastening screws of the standard viewfinder system ⇨ **photo**.
- Pull the viewfinder system up and off.

Mounting the VT-2
- Position the VT-2 on the camera body from above.
- Tighten the fastening screws.

Mounting the video optic is carried out in the same way as on the standard viewfinder system.

fastening screws

Work Light WL-3
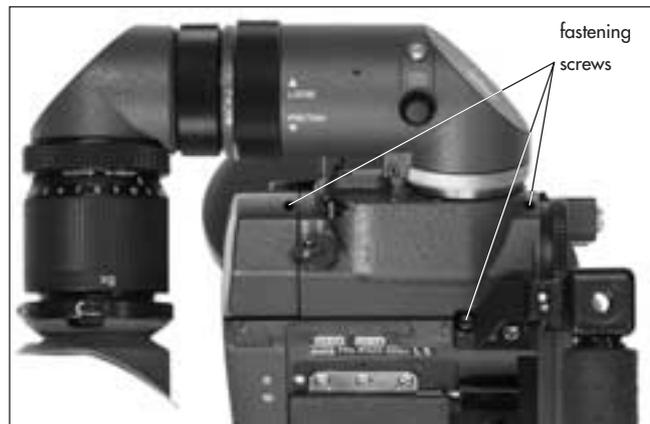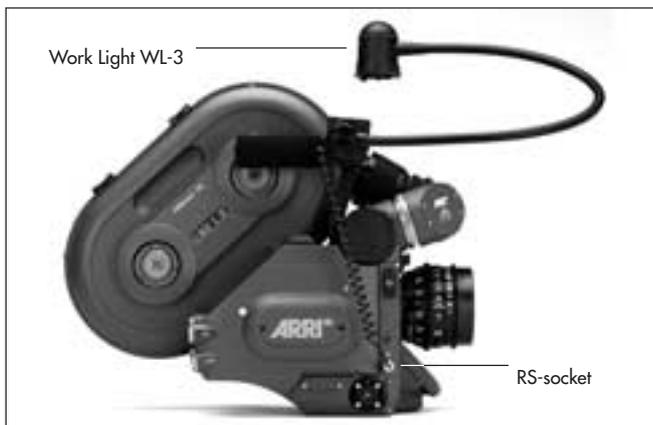
RS-socket

Work Light WL-3

- Screw the dovetail-adapter to the handgrip.
- Slide the work light into the dovetail-guide and clamp.
- Connect the plug to the "RS"-socket ⇨ **photo**.
- By adjusting the flexible arm, bring the work light into the desired position. The work light can be turned on and off with the ring on the lamp head ⇨ **photo**. The brightness of the work light can be adjusted with the mechanical aperture.

Heated Eyecup HE-3

The heated eyecup prevents the eyepiece ⇨ **photo** from fogging in low temperatures e.g. when filming outdoors in winter.

• Pull the normal eyecup off the eyepiece, then place the heated eyecup on the eyepiece.
• Plug the heated eyecup either
  with cable KC-26S to the 11-pin accessory socket, or
  with cable KC-42S to the RS-socket.
• Set the heating level with the toggle switch ⇨ **photo**:
  "LO": low heat output
  "HI": higher heat output.

⚠ *If the camera and accessories are powered by battery, it is recommended to switch off the eyecup-heating during extended breaks in filming.*

Remote Run Switch RS-4

• Attach the remote run switch with the spring clamp ⇨ **photo** (e.g. to the pan handle).
• Plug the RS-4 plug into the "RS"-socket.

fastening screw

fastening flaps
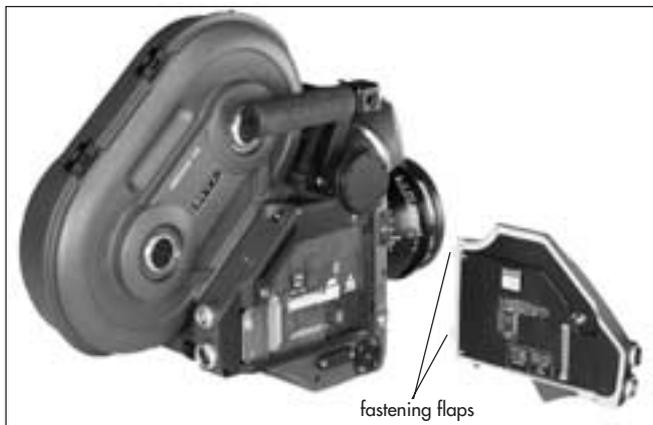
Functional Expansion Module FEM

The functional expansion module is included in the standard package of the ARRIFLEX 435 Advanced.
The TC-generator, the TC-buffer and the TC in- and outputs are integrated into the FEM. In addition, the FEM offers interfaces for camera accessories:
"ACC" socket: ESU-1, RU-1
"CCU" socket: CCU-1, RCU-1, LCC and RS 232 interface.

Note: Use of the RU-1 is possible, but not recommended. The range of frame rates that can be adjusted with the RU-1 is limited to 8.1 - 130 fps. Furthermore, the set frame rate does not correspond to the scale on the adjusting wheel. The exposure time in "Auto"-mode is also not 1/100 s, but 1/260 s.

The FEM is mounted directly onto the camera in place of the electronic cover.
• Switch off the camera's main switch and disconnect the camera from the power supply.
• Unscrew the fastening screw on the electronic cover.
• Swing the electronic cover away to the side and pull off backwards.
• Place the fastening flaps of the FEM ⇨ **photo** into the recesses in the camera housing.

⚠️ *Ensure that the fastening flaps are properly positioned in the camera housing before swinging the FEM into place, otherwise they may catch and be damaged!*

- Swing the functional expansion module onto the camera housing.
- Screw tight the fastening screw ⇨ **photo** on the functional expansion module.

External Synchronization Unit ESU-1

The use of the ESU-1 ⇨ **photo** is only possible with the function expansion module attached to the camera. The external synchronization unit ESU-1 can be used with the ARRIFLEX 435 Advanced as well as with the 435/435ES, 535, 535B and 16SR 3/Advanced. It allows synchronization of the camera to other equipment such as TV monitors. By means of a BNC-socket, it is possible to synchronize to an external standard video signal (50/60 Hz) or, through an inductive pickup, to a computer or video monitor. The camera display shows "ESU" in the upper line. The ESU-1 can be used for frame rates from 3 to 60 fps.

Note: The ARRIFLEX 435/435ES can additionally be synchronized within a frame rate range of 3 to 150 fps. An appropriate cable is available on request.

The frame rate is indicated on the camera display in Mode 2. A phase shifter and a pilottone generator have also been integrated into the external synchronization unit. The synchronization is retained even when the camera is switched off. See TECHN. INFORMATION "External Synchronization Unit ESU-1".

MC-socket
fastening screw
ICS-socket

Motion Control Interface MCI-1

The MCI-1 ⇨ **photo** is attached to the 26pin connector on the lower right side of the camera and secured with a screw ⇨ **photo** to the handgrip mount (use a 3mm allen key). It adds the motion control modes to the camera and splits the 26pin connector in two differently coded 12pin Fischer connectors for the capping shutter and the interface for external motion control computer.

- The MC socket ⇨ **photo** is for the motion control computer.
- The ICS socket ⇨ **photo** is for the capping shutter.

The capping shutter has to be fitted with a 12pin Fischer socket and the K-MCI-ICS K2.52147.0 has to be used.

⚠ *ATENTION: switch off power and disconnect battery cable before installing the MCI-1 and attaching cables to the MC and ICS socket.*

Camera Control Unit CCU-1

The CCU-1 ⇨ **photo** can only be used in conjunction with the functional expansion module. The electronic adjustment of the shutter angle is only possible on the ARRIFLEX 435 Advanced. The camera control unit CCU-1 enables control of the following functions:

- Starting and stopping the camera.
- Selection of the frame rate.
- Selection of the shutter angle.
- Checking all set operational parameters.
- Entry of programmed frame rate changes (programs).
- Entry of programmed shutter angle changes (programs).
- Display and operation of the film counter.
- Setting of warning signals.
- Display and setting of TC-time (time code) and TC-user bits.
- Display of the set TC-sensitivity in the REMOTE menu.

The camera control unit is supplied with power by the camera. If the camera is not connected, the camera control unit will be powered by the internal batteries. As the life of the camera control unit's batteries is limited to to approx. 5 hours, the display illumination switches off

button

socket

battery compartment

CCU-socket
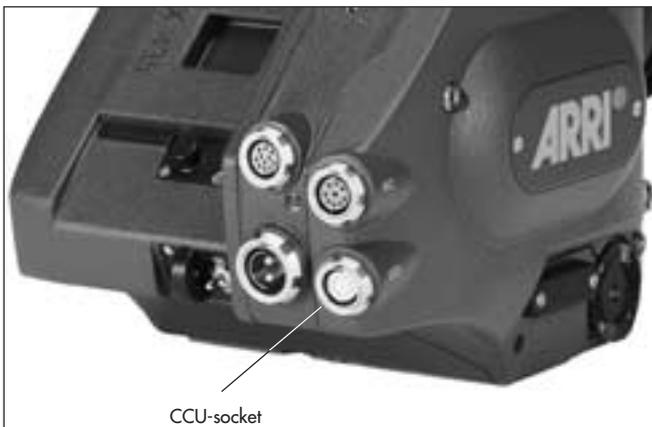
approx. 10 seconds after the last operation when it is being run on batteries, and the camera control unit itself switches off after approx. 5 minutes.

Replacing the Batteries
• Open the battery compartment ⇨ **photo** with a coin.
• Pull out the battery pack.

⚠️ *Pay attention to the correct polarity of the battery pack!*

• Insert batteries as indicated on the battery pack.
• Insert the battery pack into the camera control unit and close the battery compartment.

Connecting the Camera Control Unit
• Switch off the main camera switch (position "OFF").
• Plug the cable KC 24S (2.4m) or KC 30S (20m) into the socket on the side ⇨ **photo** of the camera control unit, pressing the slide on the plug in the direction of the plug.
• Plug the cable into the CCU-socket ⇨ **photo** on the camera.
• Switch on the camera.
• Switch on the camera control unit with the red button ⇨ **photo** on the side.

Key Functions in all Menus

Key	Function
RUN	Starts and stops the camera.
SEND	Sends the selected values to the camera.
HELP	Shows the help text for the activated menu.
	Cannot be used in the input mode.
	The help text can be exited by depressing the ENTER-key.
EXIT	Ends input mode
	or exits the activated menu.
☀	Switches display illumination on / off.

Error Displays

In the case of operational errors on the CCU-1, the display on the camera control unit will show an error display that disappears again after the next key operation. Additionally, an acoustic signal will sound. This can be turned off.

The Main Menu

When the camera control unit is switched on, the main menu appears on the display. It enables access to the sub-menus. It also shows whether the camera is switched off (OFFLINE), is in standby (STANDBY) or is running (RUN).
In addition, the frame rate set on the camera is displayed.

• With the keys "1" to "8", choose the desired menu. The menu FORMAT (4) is intended for the ARRIFLEX 535 and has no function on the ARRIFLEX Advanced.

sliding switch "NORM – PS/CCU"

The SPEED Menu

With the SPEED menu any frame rate within the acceptable range can be set, from 1 to 99.999 fps in increments of 0.001 fps, above 100 fps in increments of 0.01 fps. The frame rate can be altered in standby as well as while the camera is running. In the upper line, the frame rate currently set on the camera control unit is displayed, and below that, the frame rate of the camera.

- Switch the sliding switch ⇨ **photo** on the camera to "PS/CCU".
- Using keys "1" to "7", select one of the standard frame rates listed in the SPEED-menu. The selected frame rate is displayed in the uppermost line.
- Transfer the selected value to the camera with the "SEND"-key.

Alternatively, other frame rates within the acceptable range can be entered directly:

- Switch the sliding switch ⇨ **photo** on the camera to PS/CCU.
- Depress key "8 " (VAR) in the SPEED menu.
- Enter the desired frame rate.

- If digits after the decimal point are to have the value 0, these need not be entered. Complete the input with the "ENTER"-key. The selected frame rate is displayed in the uppermost line on the CCU.
- Transfer the chosen value to the camera with the "SEND"-key.

All selected frame rates within the acceptable range can be fine-tuned, from 1 to 99.999 fps in increments of 0.001 fps, above 100 fps in increments of 0.01 fps. This can be done in standby or while the camera is running.

To carry out a fine-tuning of the frame rate:

• Switch the sliding switch on the camera to PS/CCU.
• Pre-select the frame rate.
• Depress key "9" in the SPEED menu.
• Switch the camera to Mode 2.
• Carry out fine-tuning:
  Increase frame rate with key F1
  Decrease frame rate with key F2
• Exit fine-tuning with the "EXIT"-key.

The SHUTTER Menu

With the SHUTTER menu, shutter angles within acceptable range of 11.2° to 180° can be set as desired with an accuracy of 0.1°. The shutter angle can be changed in standby or while the camera is running. In the upper line the shutter angle currently set on the camera control unit is displayed, below that the shutter angle of the camera.

• Using keys "1" to "7", select one of the standard shutter angles listed in the SHUTTER menu. The selected shutter angle is displayed in the uppermost line.
• Transfer the selected value to the camera with the "SEND" key.

Alternatively, other shutter angles within the acceptable range can be entered directly:

• Depress key "9" (VAR) in the SHUTTER menu.
• Enter the desired shutter angle.
• If the digit after the decimal point is to have the value 0, this needs not be entered. Complete the input with the "ENTER"-key. The selected shutter angle is displayed in the uppermost line on the CCU.
• Transfer the chosen value to the camera with the "SEND"-key.

The REMOTE Menu

In the REMOTE menu the camera control unit displays the same information as the camera display. The last digit after the decimal point will be suppressed (4 digits instead of 5 as in the camera display).

The keys "F1" to "F4" assume the functions of the operating elements on the camera. The lower line of the CCU display shows the key functions:

F1 "PHASE" -button
F2 "MODE" -button
F3 "SET" -button (RESET on the CCU)
F4 "PROG" -button (program)

Operating the camera in the REMOTE menu is analogous to operation with the respective buttons on the camera.

The TIMECODE Menu

In the TIMECODE menu the current values are displayed: the time code time and user bits last entered on the CCU as well as the time code time and user bits of the camera.

Changing Time Code Time

• Depress key "5" to change to the time code menu.
• Depress key "1" - "TIMECODE" is displayed against a dark background.
• Depress the "ENTER"-key - the camera control unit is ready for input of the new TC-time.
• Enter a TC-time value within the acceptable range of 00:00:00 to 23:59:59 - the new TC-time is displayed. Confirm the input by depressing the "ENTER"-key; all unfilled digits will default to zero.
• Transfer the new TC-time to the camera with the "SEND"-key.

Changing Time Code User Bits
- Depress key "2" - "USERBITS" is displayed against a dark background.
- Depress the "ENTER"-key - the camera control unit is ready for input of the new user bits.

- Enter up to 8 user bits with figures 0-9 or letters A-F - the new user bits are displayed. Confirm the input by depressing the "ENTER"-key; all unfilled digits will default to zero.
- Transfer the new user bits to the camera with the "SEND"-key.

Note: On productions lasting several days we recommend that the date and the camera number be entered as user bits (e.g. 280895C1) in order to ensure clear identification of the film stock.

The OPTIONS Menu
The OPTIONS menu allows access to the sub-menus ASYNC-MODE, LENGTH UNIT, END WARNING and COUNTER DISPLAY MODE.

Note: The menu point END WARNING is not available on the ARRIFLEX 435/435ES.

- With the keys "1" to "4", select the desired function.

ASYNC-MODE
The ASYNC mode enables switching the warning signal for asynchronous running on and off. There are four possibilities available:

	Warning tone on camera start	Warning tone on camera stop
1	off	on
2	on	off
3	on	on
4	off	off

- Select the desired setting with the corresponding key.
- Transfer the chosen setting to the camera with the "SEND"-key.

LENGTH-UNIT
The LENGTH-UNIT mode enables switching the film counter between meters and feet.

- Select meters with key "1" or feet with key "2" - the selected unit of measurement is displayed against a dark background.
- Transfer the chosen setting to the camera with the "SEND"-key.

COUNTER DISPLAY MODE
The COUNTER DISPLAY mode enables changing the configuration of the film counter.
There are three possible combinations:

Note: The third menu point is not available on the ARRIFLEX 435 Advanced.

	camera-display Mode 1	camera-display Mode3
1	total exposed film counter	take counter
2	take counter	total exposed film counter
3	total exposed film counter	remaining film counter

- Select the desired combination with the corresponding key.
- Transfer the chosen setting to the camera with the "SEND"-key.

The PROGRAM Menu

The PROGRAM menu enables writing and storing of programs (ramps) to change the frame rate and shutter angle.

When the camera is set to HI or LO ramping speed, the ramps that have been sent to the camera by the CCU (LCC) are re-calculated to the fastest possible ramping speed, and the total time of the ramp will be reduced as much as possible (depending on magazine type and supply voltage).

Check Mode 7 for the recalculated duration of the ramp.

Note: Minimum fps for internal ramps is 1 fps!

Up to 6 programs can be stored by the CCU-1. One at a time can be transferred to the camera by depressing the "SEND"-key. If the functional limits of the camera are exceeded, the CCU-1 will show an error reading when the selected values are sent to the camera.

General information:
- The "FETCH"-key transfers a program that is already stored in the camera to the selected memory area of the CCU-1.
- The "DELETE"-key deletes the selected memory area.
- The "E" (edit)-key initiates the input of new values with the keys.

Note: Frame rate programs (ramps) are defined by a starting frame rate, an end frame rate and an adjustment time.
In the same manner, the shutter angle can be changed simultaneously within given limits.

sliding switch "NORM – PS/CCU"   "PROG"-button
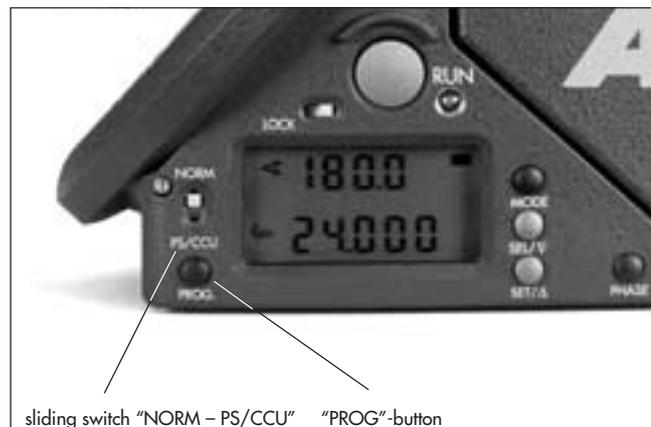
Ramping with the ARRIFLEX 435 Advanced

User Defined Ramping:

In user defined ramping the user can set
– the starting frame rate and the starting shutter angle,
– the end frame rate and the end shutter angle,
– and the ramp time
independently of each other.

- Depress key "7" to change to the PROGRAM menu.
- With keys "1" to "6", activate one of the available memory areas.
- Depress the "E"-key. The values can now be edited.
- Enter the desired starting frame rate.
  If the digits after the decimal point need not be entered, complete the entry with the "ENTER"-key.
- Enter the desired starting shutter angle.
  If the digit after the decimal point needs not be entered, complete the entry with the "ENTER"-key.
- Enter the desired end frame rate.
  If the digits after the decimal point need not be entered, complete the entry with the "ENTER"-key.
- Enter the desired end shutter angle.
  If the digit after the decimal point needs not be entered, complete the entry with the "ENTER"-key.

- Enter the desired ramp time.
  If the digit after the decimal point needs not be entered, complete the entry with the "ENTER"-key.
- Depress the "SEND"-key to transfer the program to the camera.

Note: A program previously stored in the camera will be erased by this process.

Note: The CCU will calculate ramps always for 40f/s^2. The camera will do the conversion for HI and LO rampspeeds internally.

**Speed Ramping
with Exposure Compensation:**

In addition to pure speed ramping, exposure compensation is possible. The shutter angle is then linked to the speed ramp for constant exposure.
The CCU-1 offers the possibility to automatically calculate such programs:
• Depress key "7" to change to the PROGRAM menu.
• With key "1" to "6", activate one of the available memory areas.
• Depress the "A"-key to activate the "AUTO" mode.
• Depress the "E"-key. The values can now be edited.
• Enter the desired starting frame rate.
  If the digits after the decimal point need not be entered, complete the entry with the "ENTER"-key.
• Enter the desired end frame rate.
  If the digits after the decimal point need not be entered, complete the entry with the "ENTER"-key.

Note: A maximum of four aperture stops can be compensated via the shutter angle. The starting and end frame rates may therefore only differ from each other by a maximum of factor 16.

• Depress the "C"-key. Calculation is started.
• The display shows the set frame rates (starting and end) with the corresponding shutter angles, as well as the time which the CCU-1 suggests for the ramp.
• To change the suggested ramp time, depress the "E"-key.
• Confirm frame rates and shutter angles by depressing the "ENTER"-key four times.
• Enter the desired ramp time.
  If the digit after the decimal point needs not be entered, complete the entry with the "ENTER"-key.
• Transfer the program to the camera with the "SEND"-key.

Note: A program previously stored in the camera will be erased by this process.

Note: The CCU will calculate ramps always for $40f/s^2$. The camera will do the conversion for HI and LO rampspeeds internally.

Activating and Running Programs

Note: If the "PROG"-button on the camera is not
          accessible, the "F4"-key in the REMOTE menu on
          the CCU-1 can be used as a "PROG"-button.

- Set the NORM/PS switch on the camera to "PS/CCU".
- Activate the program mode with the "PROG"-button
  on the left side of the camera (the indication "Pr" appears
  in the camera display).
- Start the camera. The camera runs at the starting
  frame rate and the corresponding shutter angle.
- Depress the "PROG"-button.
  The camera changes its frame rate and the shutter angle
  in the programmed time to the end frame rate and
  end shutter angle.
- By again depressing the "PROG"-button the frame
  rate and shutter angle will return to their starting
  values simultaneously.

Note: If the camera is set to rampspeed HI the total
          duration of the ramp will be minimized. Check
          Mode 7 for recalculated duration.

Note: To prevent an unintentional alteration the function of
          "PROG" button can be locked using the sliding
          switch "LOCK". However this locking does not
          affect connected accessories such as the CCU-1.

Note: The program itself is stored in the camera and
          therefore can also be activated if the CCU is not
          plugged in. As soon as a program is activated,
          accessories connected to the "ACC" socket will no
          longer control the camera. At the same time, it is
          no longer possible to send a new program from
          the CCU to the camera. Furthermore, the RCU-1
          can only be used in the "CAM" Mode.

Displaying Programs
which are Stored in the Camera

- Depress the "PROG"-button to activate the stored program.
- Depress the "MODE"-button six times (or four times if no functional expansion module is attached) to change to Mode 7.
- The display shows an angle symbol and the starting shutter angle in the upper line. In the lower line the starting frame rate is shown.
- Depress the "SEL"-button.
- The display shows an angle symbol and the end shutter angle in the upper line. In the lower line the end frame rate is shown.
- Depress the "SEL"-button.
- In the upper line "SEC" (or "SECLO" for LO, "SECHI" for HI rampspeed) is shown, in the lower line the ramp time.
- Depress the "SEL"-button – the camera will display the screentime SCrtI for the calculated screen time based on 24 fps screening speed.

Note: After 3 seconds the display switches back ito the start display of mode 7.

The INFO Menu
The INFO menu allows access to the menu points STATUS and COUNTER and enables switching on and off the acoustic signal on the camera control unit.
The 3rd menu point is not available on the ARRIFLEX 435 Advanced.

- Select the desired menu point with keys "1" to "2".
- Switch on or off the acoustic signal with key "4".

STATUS
STATUS displays the values currently set on the camera.

COUNTER
COUNTER displays the current values of the total exposed film and take counters as well as the power supply voltage to the camera.

SOUND CCU ON/OFF
The acoustic signal of the CCU can be switched on and off with key "4". When switched on, a test signal sounds.

Remote Control Unit RCU-1

Use of the RCU-1 ⇨ **photo** is only possible in conjunction with the functional expansion module. The RCU-1 is a practical remote control unit for all new-generation ARRIFLEX cameras. It can be used in all applications that call for an uncomplicated, quick, sturdy and yet still comprehensive remote control. An automatic mode enables synchronous control of running speed and shutter opening angle for automatic exposure compensation. Complete programs can easily be created to control changing of frame rate and angle of the mirror shutter over a certain period of time. These programs can be recalled repeatedly as necessary. The RCU-1 automatically calculates the actual screen-time for the programmed speed ramps. Running values can be regulated with the large handwheel. The free programming of end stops to individually defined minimum and maximum values is particularly comfortable. The illuminated LCD-display quickly, precisely and comprehensively shows all set values as well as the status of the camera, or the RCU-1 respectively, including all warning signals.

For further information see the RCU-1 instruction manual.

Note: The RCU-1 will always operate in the standard ramping speed. Operation in HI or LO is not possible.

IRIS sliding switch

RUN-LED

WRC/CAM sliding switch

READY-LED

SEL button

MODE button

OPEN/PHASE button

SET button

RAMP button

WRC rotary switch

COMPENSATION rotary switch

handwheel

RELEASE button

radio channel

ON button

RF-LED

CAL-LED

CAL button

READY-LED

BAT-LED

RUN-LED

RUN button
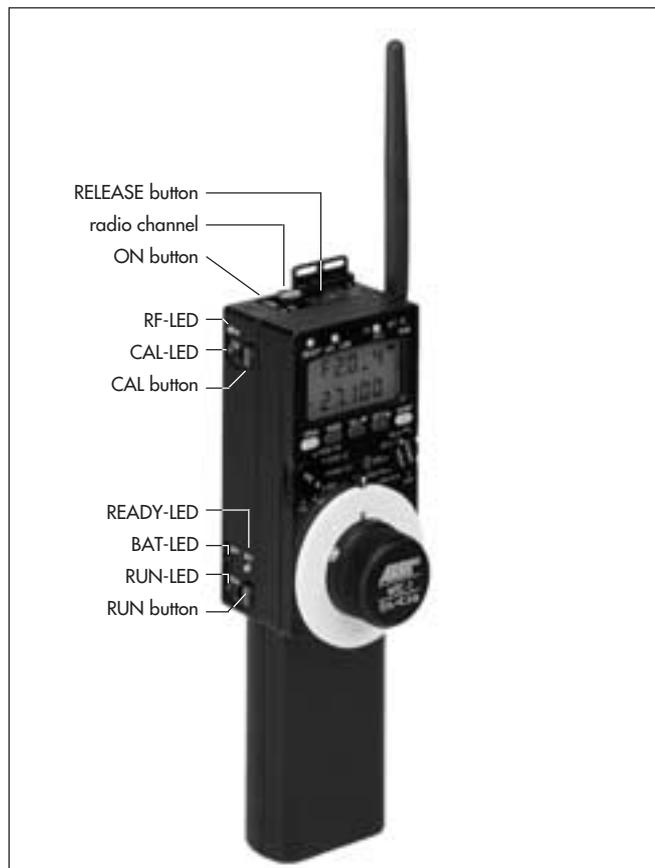
Wireless Remote Control WRC-1

The Wireless Remote Control WRC-1 is a handy remote control unit for use with all of the latest generation of ARRIFLEX camera models: ARRIFLEX 16SR 3/Advanced, 16SR 3 HS/Advanced, 535, 535B, 435 Advanced, 435ES It enables the user to remotely control:
• the camera speed,
• the shutter angle of the mirror shutter, and
• the aperture of the lens (iris),
providing a wide range of compensation options for constant exposure.

The range of functions offered by the WRC-1 is automatically adapted to the limits of the camera and the lens control motor to which it is connected. The large handwheel permits sensitive adjustment of operational values, and easy programming of end-stops for user-defined minimum and maximum values.

The illuminated LCD provides quick, precise and comprehensive information about all the settings, the status of the camera and the WRC-1, including all warnings.

The WRC-1 is the perfect addition to the ARRI Wireless Lens Control System. Connected to the Wireless Main Unit WMU-1 of the Wireless LCS it enables all functions to be remotely controlled. The WRC-1 can also be connected to the camera via cable using the Wireless Handgrip Attachment WHA-1 of the Wireless LCS system. However, the lens remote-control functions are not available in this mode.

Note: The WRC-1 will always operate in the standard ramping speed. Operation in HI or LO is not possible.

🍎　File　Edit　FPS　Shutter　Programs　Accounting　Tools　　　　?　📷

=== Sample Accounting ===

Status:　Standby
FPS:　24.000
Shutter:　180.0°
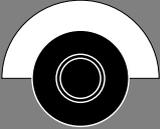
(**RUN**)

(**Phase**)
(**PGM Trigger**)

435

	Take:	6'		(**Mode**)
	Total:	10'		(**Reset Total**)
	Frames:	434		
				(**Run at 1 fps**)
	Battery:	24 V		(**- 0.001 fps**)
	Program:	None		(**+ 0.001 fps**)

☐ **Roll:** 4 ▼　(**New Roll**)　(**Close Roll**)　Open

	Scene	Take	W	NG	FPS	Shutter	Ft/Tk	Total
–	12	1		●	12.000	180.0	1	3
–	12	(2)			12.000	180.0	1	3
–	12	3		●	6.000	180.0	2	5
–	12	4			23.976	180.0	4	9
–	12	(5)			23.976	180.0	1	10
–	67	1			23.976	180.0	8	18
–	68	1			13.678	180.0	10	28
–	68	2			13.678	180.0	2	30
–	68	3			24.000	180.0	19	49
–	68	4		●	13.678	180.0	11	60
–	68	5						

☐ **Timecode:**　00:05:25:01 NDF　　(**On**)　(**Off**)
　 Userbits:　00:01:19:96　　(**Set TC/UB**)
　 TC Status:　On

Laptop Camera Controller LCC

The LCC is a computer program that allows the ARRIFLEX 435 Advanced, 435 ES, 535, 535B or 16SR 3 to be controlled from a laptop or notebook computer. The LCC is available for Macintosh PowerBooks and for Windows PC's. An easily understandable user-interface ⇨ **photo** provides access to all camera status information and enables setting operational parameters, as well as time code time and user bits. Additionally, the LCC can be used to log film stock and to create camera reports.

Monitoring/Controlling
- Frame rate and shutter angle can be precisely controlled. Often used values can be stored in a menu.
- Frame rate changes in any number of steps can easily be programmed and stored. The LCC automatically computes the screen time, the shutter angles necessary for exposure compensation and the length of film that will be exposed.
- In conjunction with the iris control unit (ICU), it is possible to run exposure compensated frame rate programs with cameras not equipped with an electronically adjustable shutter.
- For multiple exposures, frame-accurate rewinding is possible.
- Setting time code and camera preferences is simplified.

Accounting
- The film stock accounting functions offer a clear overview of raw stock and exposed film.
- Camera reports can be created and filled in either automatically or manually. For each take, information such as frame rate, shutter angle, take length, frame numbers, time of day or time code data can be automatically recorded in the camera report. This can then be printed or exported as a text file.
- A daily film report lists all the footage used according to emulsion number.

For further details, see the information pamphlet.

accessory socket distributor
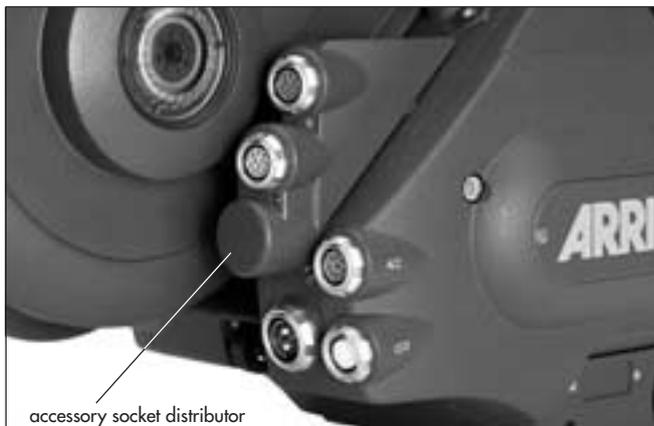
fastening

screw

R/S socket distributor

Accessory Socket Distributor (11-pin)

Mounting the Accessory Socket Distributor

• Push the accessory socket distributor ⇨ **photo** onto the 11-pin socket.
• Tighten the fastening screw.

R/S - Socket Distributor (3-pin)

To facilitate operating the camera from the right side, a RUN-button is also integrated into the R/S-socket distributor.

Mounting the R/S Socket Distributor

• Plug the R/S-socket distributor into the R/S-socket ⇨ **photo**.
• Tighten the fastening screw ⇨ **photo**.

⚠ *The RS-socket supplies the same voltage as the camera power supply. Voltages over 32 V will be limited to 32 V.*
Ensure that the accessories to be used are suited to the available voltage!

12. Super 35

The Super 35 format offers a range of technical advantages compared to filming with anamorphic lenses:
- a larger selection of available focal lengths,
- smaller and lighter-weight lenses,
- faster lenses,
- shorter lens focus for close-up shots,
- clearly reduced image distortion and geometric aberrations.

In addition, a greater variety of post-production possibilities is available.

For shooting in Super 35, the lens mount receptacle and the upper plate of the bridge plate must be altered for the format. This ensures that the lenses and accessories are exactly aligned to the displaced optical center of Super 35.

Converting the Lens Mount Receptacle to Super 35

For shooting in Super 35, the lens mount receptacle must be turned 180°.
- Remove the six cylindrical screws ⇨ **photo**.
- Unscrew both locking grips ⇨ **photo**.
- Turn the lens mount receptacle so that the number "2" is positioned next to the marking ⇨ **photo**.

- Change the position of the two rubber caps covering the unused slots for the LDS contacts ⇨ **photo**.

⚠️ *Do not damage the LDS contacts!*

- Unscrew the index pin ⇨ **photo** and screw into the opposite inner thread.
- Screw both locking grips firmly into the correct operating position ⇨ **photo**.
- Replace the six cylindrical screws and screw tight.
- Check the flange focal distance.

index arrows
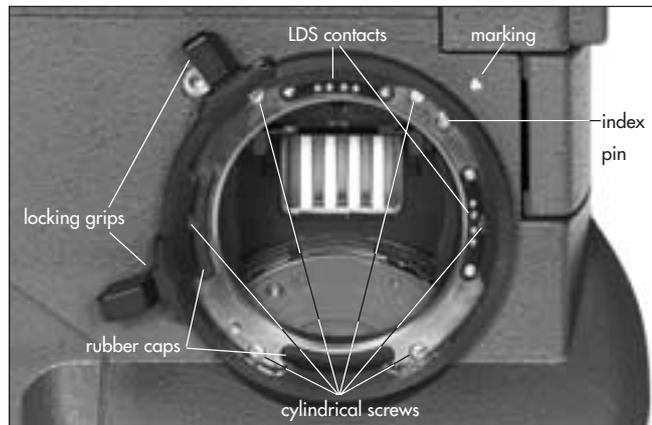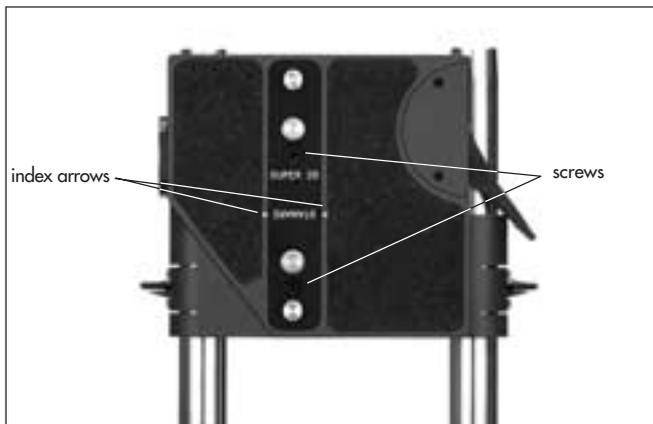
screws

Converting the Bridge Plate to Super 35

The current position, standard or Super 35, is displayed by two index arrows on the sliding upper plate. The bridge plate can be converted to Super 35 as follows:

• Remove the two screws ⇨ **photo**.
• Turn the compensation bar 180° and screw tightly in this position.

Note: The viewfinder system is so designed that no alteration is necessary for shooting in Super 35.

For instructions on inserting format masks into the film gate for Super 35, see *Chapter 7, Camera Body, Film Gate.* Regarding illuminated format markings for this format, see *Chapter 8, Optics, Viewfinder System, ARRIGLOW.*

13. Time Code

In modern post-production, time code (TC) is finding increased application. The precise correlation of the film, sound and video recordings is made possible by the use of equipment with time code capability.
The ARRIFLEX 435 Advanced is prepared for recording time code onto film. It is only necessary to fit the TC-recording module in place of the film recognition module and to attach the functional expansion module.
Time code is exposed onto the film in accordance to SMPTE guidelines RP 135 and RP 136, Form C.

⚠️ *For recording time code, only the new magazines (ARRIMAG) may be used on the ARRIFLEX 435. With the ARRIFLEX 35 III or 35 II magazines no time code can be recorded!*

Time Code Frame Rates

Recording time code is only possible at the following frame rates in forward operation:
23.976 fps
24.000 fps
25.000 fps
29.970 fps
30.000 fps
At other frame rates time code will not be recorded. However, the time code generator on the camera continues counting with the last set time code frame rate. If the camera is later set back to a time code frame rate, time code will again be available.
At 29.970 fps and 23.976 fps the time code frame rate will be counted in the "Nondrop-Frame" mode adapted to NTSC-video. Time in the "Nondrop-Frame" mode runs exactly 0.1% slower than real time.

screws

fastening
screws
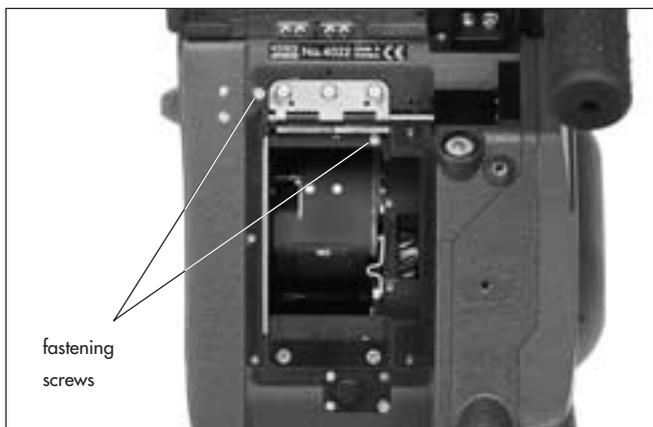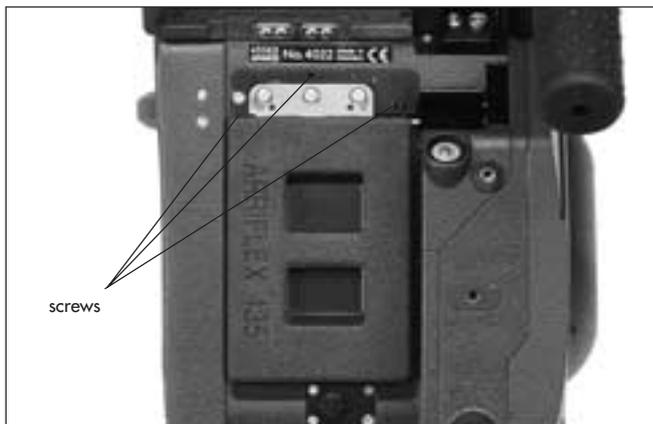
Mounting the Time Code Module

- Switch off the camera's main switch and disconnect the camera from the power supply.
- Unscrew the three screws from the cover of the magazine locking mechanism ⇨ **photo**.
- Remove the cover of the magazine locking mechanism.

⚠ *Hold the film recognition module firmly so that it does not fall on the movement block and damage the film guides.*

- Unscrew both fastening screws ⇨ **photo**.
- Remove the film recognition module ⇨ **photo** in the direction of the movement block.

⚠ *When installing the module, make certain that the plug is correctly seated, otherwise the plug contacts may be damaged.*

- Attach the time code module ⇨ **photo**.
- Tighten both screws ⇨ **photo**.
- Replace the cover of the magazine locking mechanism and tighten with the three screws ⇨ **photo**.

After switching on the camera, the time code frame rate and time code must be set.

Checking the Loop Length

⚠️ *The upper film loop must lie within the marking otherwise the time code recording position will not have the correct relation to the image.*

marking

knurled knob

- Set the knurled knob ⇨ **photo** to "LOADING POSITION".
- The upper film loop must lie within the marking ⇨ **photo**.

Note: For instructions on setting the loop length see *Chapter 7, Attaching the Magazine, Threading the Movement.*

TC module

film recognition module
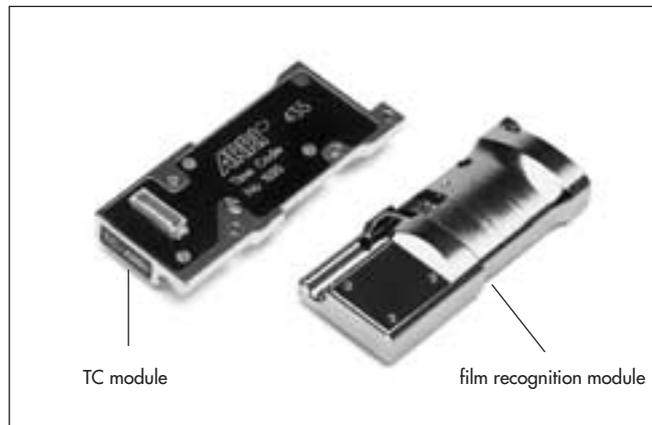
Filmstock	Type	TCS
Fuji 8510	(Color Negative)	7
Fuji 8520	(Color Negative)	5
Fuji 8521	(Color Negative)	7
Fuji 8522	(Color Negative)	7
Fuji 8530	(Color Negative)	6
Fuji 8531	(Color Negative)	7
Fuji 8532	(Color Negative)	6
Fuji 8550	(Color Negative)	4
Fuji 8551	(Color Negative)	6
Fuji 8552	(Color Negative)	6
Fuji 8560	(Color Negative)	6
Fuji 8561	(Color Negative)	5
Fuji 8562	(Color Negative)	5
Fuji 8570	(Color Negative)	6
Fuji 8571	(Color Negative)	5
Kodak 5222	(B/W Negative)	8
Kodak 5231	(B/W Negative)	8
Kodak 5239	(Color Reversal)	6
Kodak 5240	(Color Reversal)	5
Kodak 5245	(Color Negative)	7
Kodak 5246	(Color Negative)	6
Kodak 5248	(Color Negative)	7
Kodak 5274	(Color Negative)	6
Kodak 5277	(Color Negative)	5
Kodak 5279	(Color Negative)	5
Kodak 5287	(Color Negative)	6

Setting Film Sensitivity (TCS-Value)

In order to attain optimal readability of the recorded time code, the brightness of the recording LED must be adapted to the film stock being used.
The time code sensitivity (TCS-value) of various film stocks is listed in the following table.
The corresponding TCS-value is set on the camera.

Filmstock	Type	TCS
Kodak 5289	(Color Negative)	4
Kodak 5293	(Color Negative)	6
Kodak 5294	(Color Negative)	5
Kodak 5296	(Color Negative)	5
Kodak 5297	(Color Negative)	5
Kodak 5298	(Color Negative)	5
Kodak 5620	(Color Negative)	5

Setting the TCS Value (Mode 6)
- Depress the "MODE"-button five times to change from Mode 1 to Mode 6.
- Depress the "SEL"-button four times; an "S" appears in the lower line and the next digit blinks.
- Depress the "SET"-button repeatedly until the desired value appears.
- Confirm the entry with the "SEL"-button

Displaying the TCS-Value (Mode 6)
- Depress the "MODE"-button five times to change from Mode 1 to Mode 6.
- The TCS-value appears in the second line of the display with values of 1 to 9.

Note: The TCS-value must be set beforehand for the film stock used.
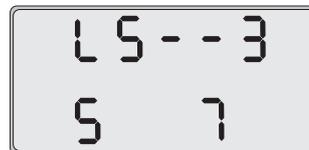
Time Code Input

Setting Time Code Time and User Bits

The time code generator (TCG) which is integrated into the functional expansion module can be set via the CCU-1, the LCC or an external LTC-source. The following section describes the setting of TC-time and user bits via the camera control unit CCU-1.

See also *Chapter 11, Camera Control Unit CCU-1.*

Setting Time Code Time with the CCU-1:
* Depress key "5" to change to the time code menu.
* Depress key "1" – "TIMECODE" is displayed against a dark background.
* Depress the "ENTER"-key – the camera control unit is ready for input of the new TC-time.
* Enter a TC-time value within the acceptable range of 00:00:00 to 23:59:59 – the new TC-time is displayed. Confirm the input by depressing the "ENTER"-key; all unfilled digits will default to zero.
* Transfer the new TC-time to the camera with the "SEND"-key.
* Depress the "EXIT"-key to return to the main menu.

Changing Time Code User Bits with the CCU-1:
Normally the date and camera number are entered as user bits: e.g. 290895C1. This ensures clear identification of the film stock on productions lasting several days. However, it is possible to use letters (A to F) and numbers (0 to 9) as desired.
* Depress key "5" to change to the time code menu.
* Depress key "2" – "USERBITS" is displayed against a dark background.
* Depress the "ENTER"-key – the camera control unit is ready for input of the new user bits.
* Enter up to 8 user bits with figures 0-9 or letters A-F – the new user bits are displayed. Confirm the input by depressing the "ENTER"-key; all unfilled digits will default to zero.
* Transfer the new user bits to the camera with the "SEND"-key.
* Return to the main menu by depressing the "EXIT"-key.

External Synchronization

The ARRIFLEX 435 Advanced can also be synchronized to other time code compatible equipment. For this it is necessary to plug an LTC-signal (longitudinal time code) into either the "CCU"- or the "ACC"-socket. It is possible to use signals from a time code master clock, a time code recorder, a video recorder, another camera or a time code studio supply.

A suitably configured cable (available through an ARRI service center) and an LTC-signal level of > 500 mV$_{pp}$ are necessary.

If the time code cable with the correct LTC-signal is connected to the "CCU"- or "ACC"-socket, time code time and user bits will automatically be taken on by the camera.

Synchronization can be checked in Mode 4 on the camera display: when the LTC-signal is plugged in, a blinking "EC" (external code) will be displayed in the last two display digits instead of the time code frame rate. When the information has been correctly transferred, the display "CC" (code correct) will appear at the same position for 10 seconds. After this the time code frame rate will be displayed again.

Note: For external synchronization, both pieces of equipment to be synchronized must be running at the same speed.

```
h:min   07:02
TC

sec:f   36:24
```

```
        95:06
TC UB  1  2  3  4
       5  6  7  8
        07:C 2
```

Displaying Time Code and User Bits

Displaying Current Time Code Time (Mode 4)
- Depress the "MODE"-button three times to change from Mode 1 to Mode 4. Time code time will be displayed with "Hours : Minutes" in the first line and "Seconds : Frames" in the second line of the camera display.

Correlation:	Frame Rate	"Frames"
	23.976	23
	24.000	24
	25.000	25
	29.970	29
	30.000	30

Displaying Time Code User Bits (Mode 5)
- Depress the "MODE"-button four times to change from Mode 1 to Mode 5. User bits will be displayed in the first and second lines of the camera display. Setting user bits is only possible via the CCU, the LCC or external synchronization.

Switching On and Off
the Time Code Recording

Before switching on time code recording, the TCS-value must be set (TCS-value > 0).

Switching on Time Code (Mode 4)
- Depress the "MODE"-button three times to change from Mode 1 to Mode 4.
- Hold the "SET"-button depressed for three seconds until the "TC" symbol appears.

Switching off Time Code (Mode 4)
- Depress the "MODE"-button three times to change from Mode 1 to Mode 4.
- Hold the "SET"-button depressed for three seconds until the "TC" symbol disappears.

Note: For test purposes, time code recording can be switched on even if no valid time code is set. In this case the acoustic TC warning "TC switched on but not set" will sound
see *TC Warnings* at the end of this chapter.
It is possible to record a test time code with a non-valid time

Time Code Output

Time code information is available as 80 bit LTC:
- at the CCU-socket in standby and during camera operation with 2.5 V at 600 Ω asymmetric,
- at the ACC-socket in standby with 5 V asymmetric.

Via the LTC-output, other TC-compatible equipment on the set can be synchronized once to the camera's time code or, from the "CCU"-socket, receive constant time code from the camera. The camera then takes on the function of the master clock. Without a constant connection, the equipment should be newly synchronized after approx. 8 hours' operation.

Time Code and the External Synchronization Unit ESU-1

Via the ESU-1, it is also possible to operate the ARRIFLEX 435 Advanced synchronously to other equipment (e.g. a television monitor) during TC-operation. Before plugging in the ESU-1, it is necessary to set the camera – and therewith the integra-ted time code generator – to the expected ESU frame rate. A deviation of maximum ± 1% from the time code frame rate is acceptable. If the ESU frame rate varies too much from that of the time code, the time code recording will switch off (the TC-symbol on the camera display goes off). Only when the acceptable speed range has been reached will time code be recorded again.

Note: During simultaneous time code and ESU operation, the counting of the images and of time code can run apart if the source of synchronization does not run at an exact time code rate. This can cause a jump in the time code count.

Time Code Buffer Battery

The internal time code clock on the camera continues running if the camera is switched off (or if the camera is disconnected from the power supply) as long as a time code buffer battery has been inserted into the camera's functional expansion module. Ten hours after time code was last set, time code time will cease to be buffered.

Displaying the Time Code Buffer Battery Voltage (Mode 6)
- Depress the "MODE"-button five times to change from Mode 1 to Mode 6.
- Depress the "SEL"-button once.
- The TC battery voltage is shown in the second line of the display. If the voltage is < 1 V there will be no display.

Note: The voltage should be > 7.5 V as otherwise the TC values will not be stored.

```
L 5 - - 3
U   9.0
```
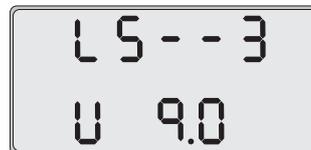
Replacing the Buffer Battery

The buffer battery ➪ **photo** is a standard 9V battery
(we recommend IEC designation GLRG 1, e.g. Duracell
MN 1604 or Varta No. 4022) which in normal operation
lasts for at least a week.
The buffer battery is located in a compartment on the side
of the functional expansion module.
- Switch off the camera's main switch and disconnect
  the camera from the power supply.
- Completely unscrew the two fastening screws ➪ **photo**
  with a screwdriver.
- Remove the cover.
- Remove the battery and unplug.

⚠️ *Pay attention to polarity!*

- Plug in a new 9V battery.
- Place the battery into the compartment.
- Replace the cover and screw tight.

battery

screws

Overview of the Display Indications in Time Code Operation
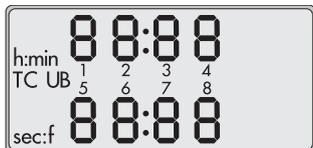
Time code symbol (TC)	Time code is set, and will be recorded when the camera is running.
No Time code symbol (TC)	Time code is off.
Time code symbol blinks in standby	Time code was last set or external synchronization was last carried out over 8 hours ago. Note: If the last setting or synchronization was over 8 hours ago time code can still be recorded for test purposes.
Time code symbol blinks while the camera is running	Time code is not beeing recorded on the film because of a functional disturbance.

TC-Warnings

A TC warning is displayed firstly as a blinking TC symbol in the camera display. If the warning signal volume on the camera is set to 1 or higher, an acoustic tone will also sound in the same rhythm as the blinking of the symbol when the camera is in standby.

The acoustic warning can be switched off as follows:
- Remedy the cause of the warning.
- Switch off time code.
- Set the warning tone volume to 0 (see under *Switching On and Off the Warning Signal for Asynchronous Running and the Acoustic TC-Warning, Chapter 9).*
- By briefly depressing the "SET"-button in Mode 1 of the display, the acoustic warning can be suppressed for 15 minutes.
- The acoustic TC-warning is automatically switched off as long as the camera is running. After stopping the camera, the warning tone will begin to sound again in standby after approx. 3 seconds.

Additionally, the camera is capable of displaying one or several more detailed warnings in hexadecimal form. Change to display Mode 5 (user bits) with the "MODE"-button and depress the "SEL"-button.

In the upper line four figures or letters will be shown. Their meaning can be looked up in the following table. If there is no warning, the upper line displays **00:00**.
Example: The message 00:03 indicates two warnings:
- error in external synchronization and
- TC is switched on but not set

Both warnings can be remedied by external synchronization or by setting TC via the CCU-1.

1st display-digit for TC warnings

0	1	2	3	4	5	6	7	8	9	A	b	C	d	E	F	Warning	Remedy
	●		●		●		●		●		●		●		●	no valid TC frame rate	set correct TC frame rate or switch off TC
		●	●			●	●			●	●			●	●	no TC with PROG	switch off TC
				●	●	●	●					●	●	●	●	no TC in REVERSE	switch off TC
								●	●	●	●	●	●	●	●	in the last take no or only intermittent TC	briefly depress the "PHASE"-button, or reshoot

2nd display-digit for TC warnings

0	1	2	3	4	5	6	7	8	9	A	b	C	d	E	F	Warning	Remedy
	●		●		●		●		●		●		●		●	>8 hours since TC last set	reset TC as last setting was over 8 hours ago
		●	●			●	●			●	●			●	●	TCS value not valid	reset TCS value
				●	●	●	●					●	●	●	●	given ESU frame rate outside TC range	check given ESU frame rate (display Mode 1) and TC generator frame rate (Mode 4); allowable difference of max. ± 1 %
								●	●	●	●	●	●	●	●	no TC with variable speed	switch off variable speed accessory or TC as TC-operation with variable speed is not possible

3rd display-digit for TC warnings

0	1	2	3	4	5	6	7	8	9	A	b	C	d	E	F	Warning	Remedy
	●		●		●		●		●		●		●		●	TC magazine not recognized	use a suitable 435 magazine
		●	●			●	●			●	●			●	●	TC not set to NDF/RT and swiched to RT/NDF	reset TC at current frame rate RT (Real Time) is 24, 25, 30 fps NDF (Nondrop Frame) is 23,976 and 29,97 fps
				●	●	●	●					●	●	●	●	TC-LED not recognized	attach or check TC-module
								●	●	●	●	●	●	●	●	TC not buffered	reset TC; either the TC buffer battery is used up or the power supply was insufficient or interrupted, or over 10 hours passed since TC was last set

4th display-digit for TC warnings

0	1	2	3	4	5	6	7	8	9	A	b	C	d	E	F	Warning	Remedy
	●		●		●		●		●		●		●		●	error in external synchronization	repeat external synchronization
																	check LTC-signal
		●	●			●	●			●	●			●	●	TC switched on but not set	set TC via CCU-1, LCC, or external synchronization
				●	●	●	●					●	●	●	●	TC not ready	have functional expansion module (FEM) checked

14. Maintenance

When maintaining and cleaning the camera and accessories, pay careful attention to the following notes and tips:

- Always disconnect the camera from the power supply.
- Clean the camera and accessories only on a clean and flat surface which is covered with foam material or a clean, lint-free cloth.
- Under no circumstances use acetone or nitro-thinner. These chemicals dissolve the paint and can damage highly-polished surfaces.
- For cleaning, it is recommended to use soft, lint-free cloths and swabs. Also suitable are special cleaning tissues and small sponges as used in cleaning computers and video equipment.

- When cleaning the film movement, do not exert too much pressure. Use only the prescribed special tools. Use only screwdrivers of the correct size.
- From time to time – at the latest however after the occurrence of a film jam – it is recommended to clean the entire interior of the camera and also the magazine throat, the film movement and the film gate with a brush. In most cases it is sufficient to vacuum out dust and film chips from the camera and the magazine interiors. A small battery-powered vacuum cleaner, as used in cleaning computers, is suitable for this task.

film gate locking lever

format mask

knurled knob

filter holder

LOADING POSITION

movement locking lever

OPEN

film gate

PITCH ADJUST

ARRI

RUN

film gate shaft

MODE

SEL/ V
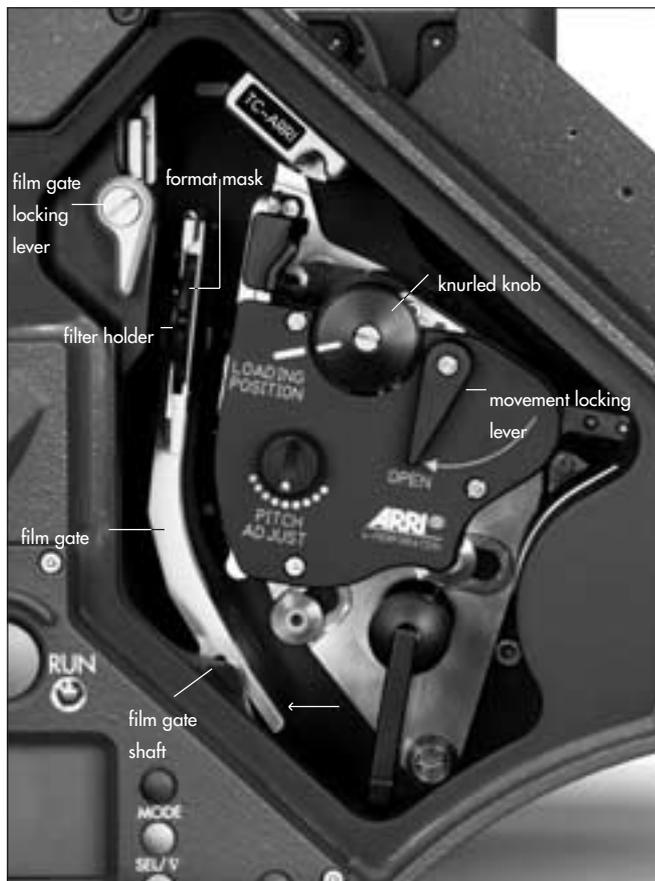
Camera

Cleaning the Film Gate

To avoid a build up of dirt in the image area, the format mask on the ARRIFLEX 435Advanced is set back from the surface of the film gate.

Loose dust or dirt leads to a layer of emulsion forming on the film gate. This can cause scratches on the film and can also lead to a change in the film's coefficient of friction. The film gate must be removed for cleaning.

⚠️ *Attention!*
Keep fingers out of the film gate opening as this may dirty or damage the mirror shutter.

To remove the film gate

- Switch off the camera's main switch and disconnect the camera from the power supply before removing the film gate.
- Turn the knurled knob ➪ **photo** on the movement until its marking matches that on the movement block.
- Turn the movement locking lever ➪ **photo** towards the "OPEN" position to swing the movement block away from the film gate.
- Press the film gate locking lever ➪ **photo** towards the magazine throat assembly and swing the film gate ➪ **photo** towards the movement block, pressing lightly on the lower end of the film gate and taking care that the film gate does not hit the movement block.
- Take hold of the film gate by the filter holder ➪ **photo**, lift it up and remove.

To clean the film gate

- Remove the layer of emulsion from the film gate with a plastic rod (e.g. an ARRI film gate cleaner). Under no circumstances use hard or metal objects.
- When cleaning, pay particular attention to the area opposite the film guides of the movement if film stock with a strong tendency to build up emulsion (e.g. b/w stock) is being used.

Inserting the film gate

⚠️ *Warning: It is absolutely essential to ensure that the connecting surfaces are free of dust and debris (e.g. film chips) in order to guarantee the accuracy of the film channel.*

- Check that the film gate and the film gate shaft are completely free of dust and dirt.
- Take hold of the film gate by the filter holder and place onto the film gate shaft from above.
- Check that the film gate is correctly seated on the shaft.
- Press the film gate locking lever ➪ **photo** towards the magazine throat assembly and push the film gate forwards to the correct position.
- Ensure that the film gate locking lever ➪ **photo** swings back completely.

⚠️ *Swinging the movement block forwards when the film gate is not correctly in place can cause damage to the camera!*

spacer gate
handle
safety spring

Cleaning the Spacer Gate

Loose dust leads to a build-up of emulsion on the spacer gate. This can cause scratches on the film and a change in the coefficient of friction.

- Switch the camera´s main switch off and disconnect the camera from the power supply!
- Press the safety spring ⇨ **photo** downwards, at the same time pressing the spacer gate backwards by its handle ⇨ **photo**. Then remove by pulling upwards.
- Remove the layer of emulsion from the spacer gate ⇨ **photo** with a plastic rod (e.g. an ARRI film gate cleaner). Under no circumstances use hard or metal objects.
- When cleaning, pay particular attention to the spacer gate if film stock with a strong tendency to build up emulsion (e.g. b/w stock) is being used.
- Take hold of the spacer gate by its handle ⇨ **photo** and insert it at an angle from above into the movement block.
- Push the spacer gate downwards until it locks audibly in place.

Cleaning the Field Lens

- By briefly depressing the "PHASE"-button, the shutter is positioned to protect the mirror surface from damage as far as possible.
- Before cleaning the field lens, switch the camera's main switch off and disconnect the camera from the power supply!
- Remove the lens or the protective cap.

⚠️ *Do not touch the mirror surface!*

- Pull the ground glass ⇨ **photo** out of the holder by its tongue ⇨ **photo** using the special forceps.
- Using the special forceps, first lift the field lens ⇨ **photo** upwards by its tongue ⇨ **photo** then pull it out of its holder.
- Clean the field lens with a dry, lint-free cloth.
- Make sure that the frame is completely clean.

- Using the special forceps, push the field lens as far as it will go into the holder. A ball catch fixes the field lens in the correct position.
- Push the safety plate ⇨ **photo** down again with the screwdriver.
- Check if the ground glass to be used and the ground glass frame are completely clean.
- Using the special forceps, push the ground glass into the holder as far as it will go. A ball catch fixes the ground glass in the correct position.
- Check that the ground glass is locked in place.

tongue — field lens

holder plate

screws

running surfaces

guide rollers
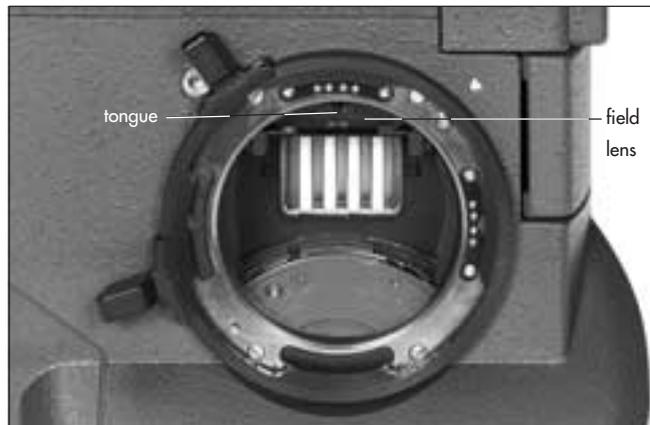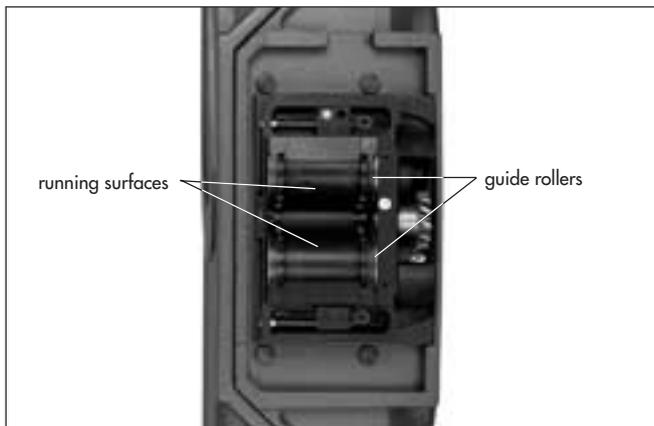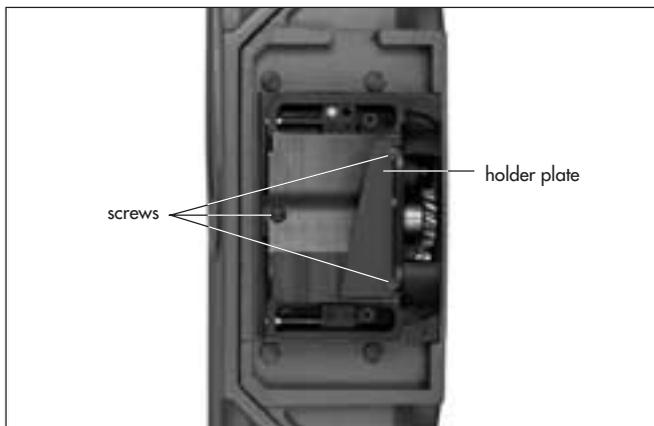
Magazine

Cleaning the Throat Assembly

The throat assembly ⇨ **photo** can be disassembled for cleaning.

- Loosen the three screws ⇨ **photo** on the throat assembly cover ⇨ **photo**.
- Remove the holder plate ⇨ **photo** for the loop protector.
- Pull out the throat assembly cover.
- Clean the film running surfaces ⇨ **photo** and guide rollers ⇨ **photo** with a brush.
- Put the throat assembly cover back in place.
- Replace the holder plate for the loop protector and re-tighten the throat assembly cover with the three screws.

Setting Friction on the ARRIMAG 120

- Swing both roller arms ⇨ **photo** away from the winding shafts until they lock in place.
- Unscrew the three screws on the transparent tensioning plate ⇨ **photo**.
- Remove the plate.
- Place film cores on both winding shafts.
- Place the tension measurement device ⇨ **photo** on the film core which will not be measured.
- Hang the hook of the measurement device ⇨ **photo** on the film core which is to be measured.
- Attach the open magazine to the camera.

⚠️ *Do not place your hand in the running magazine!*

- To set the take-up shaft, run the camera at 24 fps. For setting the tension of the feed shaft, the camera must run at 24 fps reverse.
  The tension measurement device should be showing ring "5".
- If the tension measurement device is not showing "5", stop the camera.
- Switch off the camera's main switch and disconnect the camera from the power supply.
- Place the special key ➪ **photo** in the holes of the friction adjustment and turn in steps. The adjustment must lock in at each step. When setting friction, the corresponding winding shaft must be held firmly.
- Turn clockwise to increase friction, counter-clockwise to decrease friction.
- Connect the camera to the power supply and switch on.
- Run the camera at 24 fps.
- Check the tension.

Note: Repeat this procedure until ring "5" is shown.

- After setting the friction, replace the tensioning plate.
- Fasten the plate with the three screws.

special key

transparent tensioning plate

screws

measurement device

roller arms

hook

15. Appendix

The frame rate of the camera is constantly monitored while it is running. If the actual frame rate deviates from the set frame rate, the operation control indicator glows red and the camera display shows the warning for asynchronous running ("asy").
The synchronization of the shutter and the movement is also monitored. Should an undue deviation in the synchronization occur, the camera will stop. The display will show "asy". This monitor function is built into the electronic control of the drive system.
As an additional security feature for the user, a second, independently operating monitor system for the shutter/movement synchronization is integrated into the camera electronics. If this additional circuit stops working while the camera is running, the display will show a warning after the camera is stopped. The operation control indicator will remain red, the camera cannot be re-started and must be checked by an ARRI service center.
This display only indicates that the additional monitor system is defective.

⚠️ *If the warning "Monitoring Defective" is overridden, an additional fault in the electronic control of the drive system will not be detected and may cause faulty exposure!*

⚠️ *If the display reads "SUPLY Error" the battery voltage is extremely low and the processor of the camera halted execution of the camera software.*

⚠️ *If the display reads "Intxx Error", switch the camera off and on to reset it. This is a internal software error message that a unexpected state occured. xx stands for a two digit number that will be displayed in this position*

Display: Monitoring Defective

Note: The warning "Monitoring Defective" can be over-
         ridden by switching off and on the camera's
         main switch.

m   Error

fps CntL

Loose Film Loops in the Magazine

If the camera shuts off automatically while running, loose film loops may be formed in the magazine. Before the camera is started again, the film in the magazine must be tensioned manually.

Fuses

The ARRIFLEX 435 Advanced is equipped with self-resetting automatic fuses. It is therefore not necessary to replace blown fuses.

Motion Control Error Codes

In motion control mode the camera will display an error code in the bottom line of menu 8 if a control error occured:

E_ _ _ _   no exit code / no error occured / everything ok

ESPdt   Overspeed transport

EACSt   Accleration step limit transport

EACCt   Acceleration limit transport

ESPdS   Overspeed shutter

EACSS   Acceleration step limit shutter

E ACCS   Acceleration limit shutter

E SPdA   Speed limit adjustable sector

E PHAS   Phase Offset between Shutter and Transport bigger than +/-2000 counts

E An6   Adjustable shutter overspeed or overacceleration

E tYPE   Magazine type not alowed in motion control mode

Note: When the external motion control computer cammands the camera a shutter angle bigger than 180° or smaller than 11,2° the camera will display a flashing shutter angle reading to indicate that the actual position reference to the step&direction inputs might be lost.

Note: When the camera exits the motion control mode because of a fault a permanent beep will occur until the camera is restarted or the error was checked in the motion control error menu.

Problem	Cause	Remedy
Scratches on the emulsion side of the negative		
In the image area, over several frames	Dirty or damaged cross bars on the film gate	Clean or, if defective, replace the film gate or format mask
In the image area, short and periodically recurring (above and below)	Upper or lower film loop too long, film touches inside of camera housing	Check the position of the upper loop in relation to the marking Check the loop length of the magazine
Outside the image area	Dirty or damaged longitudinal bars on the film gate or film running surfaces in the magazine throat	Carefully clean film gate and magazine throat or, if defective, replace
Scratches on the glossy side of the negative		
In the image area	Dirty or damaged film track or spacer gate	Clean film track (movement) and spacer gate or, if defective, replace
Outside the image area	Dirty or damaged longitidinal bars on the film track or film running surfaces in the magazine throat	Carefully clean longitudinal bars and magazine throat or, if defective, replace
Scratching in general	Strong tendency of raw film stock to build up emulsion, dust on raw stock from perforation process, extreme temperatures, scratched raw stock	Complain to the manufacturer of the film stock, use different film stock

Problem	Cause	Remedy
Unsteady Image		
Vertical	Heavy emulsion build-up in the film gate area, damaged film perforation, very poor gliding ability of the raw film stock, film stock with positive perforation, dimensions of raw stock not within tolerance	Clean film gate area, use different film stock
Horizontal	Heavy emulsion build-up in the film gate area, film edge is not straight	Clean film gate area, use different film stock
Pressure exposures arround perforation holes	Mechanical stress on the perforation holes	Pressure exposures do not effect the image steadiness
Image Problems		
Blurred image	Flange focal distance is incorrectly set, lens is incorrectly set, poor quality or defective lens, film gate is not properly locked into position	When cleaning or exchanging the film gate ensure that the surfaces are absolutely clean, check the lens and the flange focal distance

Problem	Cause	Remedy
Problems at extremely low temperatures		
Damage to the film	Greatly reduced tensile strength and increased brittleness of raw stock. In temperatures under - 15°C (5° F) especially, a change in the film´s friction properties ocurs.	The camera, battery and particularly the film stock 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 storage of the equipment at approx. 0°C (32°F).
The camera does not reach the selected frame rate	Capacity or voltage of the battery is insufficient	Check the battery charge following the directions in the instruction manual. Check that the camera movement turns easily by turning the knurled knob on the movement manually. If difficult to turn, let the camera run for a few minutes without film. Check that the magazine turns easily.
Problems in extremely high temperatures		
Increased emulsion build-up	The mechanical properties of the film change considerably at temperatures of over 30°C (86°F). The film becomes soft and easily deformed. The friction coefficient changes and the film builds up more emulsion.	Protect the camera and the film stock from extreme heat, e. g. by shading or white covering etc.

Appendix

16. Technical Data

Film Format
35mm (DIN 15501)

Magazines
ARRIMAG 120 .... forwards/reverse up to 150 fps
ARRIMAG 120S .... forwards/reverse up to 150 fps
ARRIMAG 300E .... forwards/reverse up to 150 fps
Recording of TC is possible with these magazines.

All ARRIFLEX 35 III and 35 II magazines
with exception of the shoulder magazine;
150m magazine .... forwards/reverse up to 130 fps
60m and 300m magazine .... forwards up to 130 fps
Recording of TC is not possible with these magazines.

Lens Mount
54mm PL-mount (positive locking)
Convertible for Super 35
Prepared for the ARRICAM LDS System

Flange Focal Distance
51.98-0.01mm

Mirror Shutter ARRIFLEX 435 Advanced
Continuously adjustable from 11.2° - 180°
in standby or while running.

Movement
5-link highspeed movement
with dual-pin registration
and dual three-pin pull-down claws
for 35mm negative film (DIN 15501);
equipped with ball bearings for low maintenance.

Speed Range
0.1-150 fps forwards and reverse (quartz stabilized)
adjustable to 0.001 fps for frame rates up to 100 fps
adjustable to 0.01 fps for frame rates over 100 fps

Viewfinder
Adjustable in two axes with automatic image compensation
and additional manual image compensation.
Warning for asynchronous film running is reflected in.
Available as an option, the ARRIGLOW provides an illuminated frame
with continuously adjustable brightness and warnings for
ASY, BAT and END.

Ground Glasses

Interchangeable for various filming formats

Operating Temperature Range

-20°C to +50°C (-4°F to +122°F)

Power Supply

Up to 130 fps	24 V DC
Above 130 fps and rampspeed LO or St	24 V DC
With rampspeed HI	26.5 V DC
Acceptable voltage range:	20.6…35 V DC

Function Monitoring

Power supply voltage (BAT)

Synchronous running (ASY)

Time code recording (TC)

Display of time code information

Time Code

The time code generator that is integrated into the functional expansion module

generates 80 bit time code in

accordance to SMPTE RP136, Form C.

Time code quartz accuracy:

± 1 frame in 8 hours at 0°C to 50°C (32°F to 122°F)

Dimensions

Length	with 120m magazine without lens: .... 400mm .... (15 $^1/_2$")

Width	with viewfinder on the left: .... 250 mm ....(10")
	with viewfinder on the right: .... 300mm ....(12")

Height	with grip: .... 270mm .... (10 $^1/_2$")
	without grip: .... 230mm ....(9")

Weight

Camera without magazine, without lens:

ARRIFLEX 435 Advanced: .... 6.77 kg ... (14.9 lbs)

(including functional expansion module)

17. Order Numbers

ARRIFLEX 435 Advanced .... K

ARRIFLEX 435 Advanced, anamorphic viewfinder .... K

ARRIFLEX 435 Advanced, 3-Perf .... K

Installation of the Camera

ARRIHEAD 2 .... K2.43670.0

ARRIHEAD 2 with Encoders .... K

Hydrohead Studio 80 II M K2.45348.0

Hydrohead 150 H K2.50491.0

Wedge plate K2.47092.0

Lens support LS-7, ø 19mm K2.42538.0

Lens support LS-8, ø 15mm K2.49012.0

Shoulder set S-4 (without shoulder cushion) K2.47093.0

Shoulder cushion K4.46446.0

Bridge plate BP-8, ø 19mm K2.47090.0

Bridge plate BP-9, ø 15mm K2.47091.0

Support rods 240mm, ø 19mm K2.43046.0

Support rods 240mm, ø 15mm K2.21958.0

Support rods 340mm, ø 19mm K2.47347.0

Support rods 340mm, ø 15mm K2.47348.0

Power Supply

Battery NC 24/7 R K2.41950.0

Battery cable KC 20S K2.41966.0

Charger NCL 24 R K2.42010.0

Mains unit NG 12/24 R K2.44481.A

Mains unit NG 12/26 (4-pin) K2.47352.0

Mains unit NG 12/26 (5-pin) K2.47351.0

Spiral battery cable KC 29S K2.44693.0

Magazines

ARRIMAG120 120m / 400 ft magazine K2.47083.0

150 m / 500 ft magazine (ARRIFLEX 35 III) K2.15700.0

300 m / 1000 ft magazine (ARRIFLEX 35 III) K2.17800.0

Tool set for adjusting magazine friction K2.26100.0

Optical Accessories

Follow focus FF-3 .... K0.59973.0

3" x 3" light-weight matte box LMB-2 .... *K0.59954.0

4" x 4" light-weight matte box LMB-3 .... *K2.44471.0

4" x 4" production matte box MB-16 .... *K2.44472.0

4" x 5.65" production matte box MB-18 .... *K2.47178.0

4" x 5.65" production matte box MB-19 .... *K2.47099.0

5" x 6" production matte box MB-15 .... *K2.44473.0

6.6" x 6.6" production matte box MB-14 .... *K0.59971.0

Heated eyecup HE-3 .... K2.47097.0

Cable KC-42 (for RS socket) K4.47473.0

Cable KC-26 (for accessory socket) K4.44093.0

Finder extender FE-3 .... K2.47082.0

Super wide-angle eyepiece (10x) K2.41822.0

Wide angle eyepiece (8x) K2.47081.0

Anamorphic viewfinder AVF-2 .... K2.47084.0

* These order numbers refer to matte boxes for ø 19mm support rods

Accessories

Functional expansion module FEM K4.52136.0

MCI-1 .... K

MCA-1 .... K

K-MCI-MCA .... K

ARRIGLOW module K2.47088.0

Extra handgrip K4.46680.0

Camera control unit CCU-1 with cable K2.42320.0

External synchronization unit ESU-1 .... K2.46006.0

Remote switch RS-4 .... K2.46942.0

Remote control unit RCU-1 .... K2.47197.0

Work light WL-3 .... K2.47098.0

Iris control unit (ICU) K2.47028.0

Zoom control set (LCS) K2.41377.0

Focus /iris control unit (FIU-1) K2.41383.0

Laptop Camera Controller (LCC) software K2.47119.0

Accessory socket distributor (11-pin, 12V) K2.52003.0

RS-socket distributor (3-pin, 24V) K2.52001.0

Accessory set 435 .... K4.52094.0

Video

Optic Silent and/or K2.47230.0

Optic Academy K2.47231.0

Video Electronic complete .... K2.47365.0 for PAL
or K2.47366.0 for NTSC

The Video Electronic complete consists of two parts:

CCD Optic Module

Inserter / Antiflicker Module

Time Code

SMPTE Time code module K2.52000.0

18. ARRI Service

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