

THE USERS GUIDE TO THE
MOVIECAM COMPACT
UPGRADED VERSION

NOVICAM
COMPACT
Mk2

WEB-EDITION 2007 V1.1

Compiled by Frédéric-Gérard Kaczek
Illustrated by Andreas Pauleschitz

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Preface

This is not another Users' Guide for a new camera; the following pages should offer information about the results of integration more than a quarter century of expertise into our well known and appreciated camera body. Many things have changed in the world of cinematography since the introduction of the COMPACT at the early 90ies. Following the launching of the MOVIECAM SL, our company developed among others the ARRICAM family of tools for contemporary cinematographers' demands, including the STUDIO and the LIGHT camera bodies as well as a wide-ranging array of accessories. The latest technologies in optical construction and electronic design as well as the state of the art video technology have been extensively integrated in those ARRICAM cameras. This latest expertise enables us to offer an equivalent up-grading package to all COMPACT owners. To achieve this, at ARRI – MOVIECAM SERVICE CENTER headquarters, older cameras are totally dismantled and not only rebuilt with new components, but furthermore a lot of complementary controls and features are implemented. Because the three perforation image acquisition technology seems to have a strong revival now, both ARRICAM cameras as well as the upgraded MOVIECAM COMPACT Mk2 enable shooting either with 4 or 3 perforation pull-down.

The "Mk2 updating package" contains among others the following key improvements:

- Replacement of the Viewfinder by a newly developed brighter optical system. The Mk2 Viewfinder (not compatible with other camera types) offers a much brighter and even illuminated Ground Glass image.

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Also the Eyepiece is larger, enabling a more comfortable viewing, especially from the side. The Eyepiece also contains the Heater so that it cannot drop. Complementary to the dioptre adjustment integrated in the Eyepiece, the exchangeable Eyecups allow the insertion of an individual dioptre lens. The ARRICAM Studio Extension Viewfinder Tubes – short, long with zoom, and long with zoom and with anamorphic un-squeezer lens – can be mounted between the Mk2 Viewfinder Arm and the Mk2 Eyepiece. The ARRICAM Studio Eyepiece will not perform as well as the Mk2 one in this configuration.

- The Mk2 Video Assist is based on the ARRICAM ST one. Beside the fact that some ARRICAM features like In-Camera Slate or electronic shutter angle adjustments are not provided in the COMPACT Mk2, most of the controls and features are similar. Even though the Mk2 Video Assist is exclusively made for this camera and cannot be mounted on the ARRICAM ST Viewfinder, two connectors enable to plug-in either a MOVIECAM or an ARRI On-board Video Assist Monitor.
- The Mk2 Camera Control Board includes all controls necessary to carried out e.g. speed or iris ramps. Also all synchronization setups are adjusted there. This makes the old COMPACT Syncobox and Speed Control Box obsolete.
- Exchangeable movement: The COMPACT Mk2 can be prepared to shoot with 4 or 3 perforation pull down by ARRI – MOVIECAM SERVICE CENTER trained maintenance personnel at any rental houses.

MOVIECAM COMPACT Mk2 CHECKLIST

The checklist (see button in the DOWNLOAD AREA) which is ready to be printed out, gives a general overview of all modular parts of the MOVIECAM COMPACT Mk2 and might be of help when placing your order.

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Care and Cleaning

The MOVIECAM COMPACT Mk2 is almost maintenance-free. There is only one requirement for a smooth operation: the camera has to be meticulously clean. Therefore you should protect it against any dirt or smudges.

Clean the camera exterior e.g. with window cleaner (caution – do not moisten connectors!). Only when really necessary, e.g. to remove camera tape, gum, should you use alcohol or benzine.

 **Caution!**
Never use acetone!

When applied properly, compressed air is the best cleaner; a vacuum cleaner or an air syringe will do fine. Cotton tips, orangewood sticks, soft and hard brushes may be used for gentle cleaning.

 **Caution!**
The camera may be lubricated at a MOVIECAM rental house only!

Safety Specifications

Warnings

- ▶ **Notice**
 - *Operational error possible!*
 - *Danger of injury or equipment damage possible!*

General Safety Specifications

 **Caution!**
Danger of injury!
Never place your hand in the lens port or inside of the camera while it is RUNNING.

In order to ensure optimal performance, it is essential that you acquaint yourself with this Users' Guide.

- Assembly and initial operation should be carried out only by persons who are familiar with the equipment!
- Switch OFF the camera MAIN switch before making electrical connections (i.e. plugging on electrical accessories)!
- Never RUN the camera without a lens or a protective cap mounted in the lens port.
- Never operate the movement locking mechanism while the camera is RUNNING!
- Ensure that the camera is securely mounted!
- Remove the battery cable before transport or servicing!
- Repairs should be carried out only by authorized service centres!
- Use only original MOVIECAM 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 case of solid dirt moisten a lens cloth with pure alcohol.
- Do not use solvents to clean the film gate!
- Do not remove any screws which are secured with paint!

PRODUCT SPECIFICATIONS

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

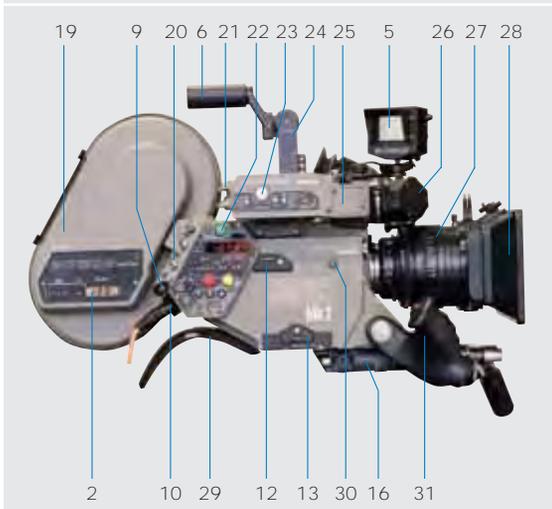
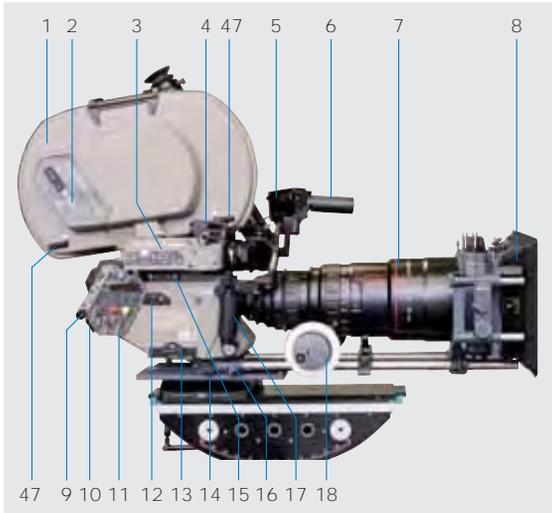
► **Notice**

This Users' Guide applies to the MOVIECAM Mk2 as well as the whole MOVIECAM Accessory range.

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THE COMPACT Mk2-SYSTEM



- 1 1000/300 magazine
- 2 magazine digital footage counter
- 3 video assist
- 4 read out unit
- 5 on board 2" video monitor
- 6 auxiliary handle
- 7 zoom lens
- 8 matte box mounted on rods
- 9 camera main switch (on/off)
- 10 power receptacle (24 V)
- 11 camera control board and displays
- 12 accessory connector – covered (e.g. for power distribution box)
- 13 accessory connector – covered (e.g. for time code box)
- 14 sliding plate
- 15 accessory attachment (e.g. for upper carrying handle)
- 16 lightweight base plate/rod holder
- 17 side carrying handle
- 18 follow focus
- 19 400/120 lightweight magazine
- 20 camera connectors
- 21 video assist connectors
- 22 run/stop button
- 23 video assist menu/store dial
- 24 upper carrying handle
- 25 video assist ccd cover
- 26 viewfinder arm
- 27 prime lens
- 28 lightweight matte box
- 29 padded shoulder rest (velcro attachment)
- 30 tape measure hook
- 31 right handgrip (mounted on rosette) with r/s button
- 32 filter holder
- 33 zoom ring on studio zoom extension tube
- 34 diopter adjustment barrel on eyepiece
- 35 eyecup
- 36 manual footage indicator
- 37 mask movie/llite module
- 38 top mount adapter with handle
- 39 pair of long rods
- 40 dust check/take-up button
- 41 connectors (for eyepiece heater or assistant work light)
- 42 camera door lock
- 43 viewfinder levelling rod
- 44 eyepiece bayonet mount
- 45 eyepiece with heater connector
- 46 rear mount adapter
- 47 magazine latch
- 48 left handgrip mounted on rods
- 49 pair of short rods
- 50 magazine/adaptor mounting rail

THE COMPACT Mk2 SYSTEM

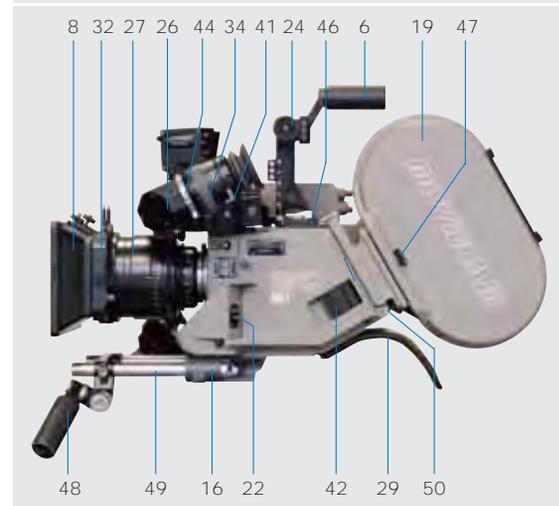
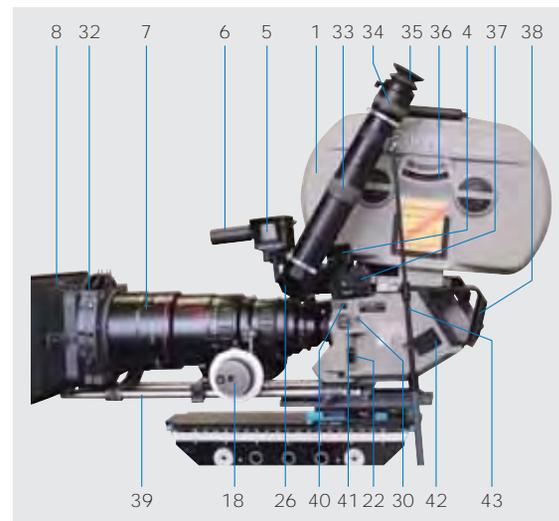
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1	1000/300 magazine
2	magazine digital footage counter
3	video assist
4	read out unit
5	on board 2" video monitor
6	auxiliary handle
7	zoom lens
8	matte box mounted on rods
9	camera main switch (on/off)
10	power receptacle (24 V)
11	camera control board and displays
12	accessory connector – covered (e.g. for power distribution box)
13	accessory connector – covered (e.g. for time code box)
14	sliding plate
15	accessory attachment (e.g. for upper carrying handle)
16	lightweight base plate/rod holder
17	side carrying handle
18	follow focus
19	400/120 lightweight magazine
20	camera connectors
21	video assist connectors
22	run/stop button
23	video assist menu/store dial
24	upper carrying handle
25	video assist ccd cover
26	viewfinder arm
27	prime lens
28	lightweight matte box
29	padded shoulder rest (velcro attachment)
30	tape measure hook
31	right handgrip (mounted on rosette) with r/s button
32	filter holder
33	zoom ring on studio zoom extension tube
34	diopter adjustment barrel on eyepiece
35	eyecup
36	manual footage indicator
37	mask movielite module
38	top mount adapter with handle
39	pair of long rods
40	dust check/take-up button
41	connectors (for eyepiece heater or assistant work light)
42	camera door lock
43	viewfinder levelling rod
44	eyepiece bayonet mount
45	eyepiece with heater connector
46	rear mount adapter
47	magazine latch
48	left handgrip mounted on rods
49	pair of short rods
50	magazine/adaptor mounting rail

THE COMPACT Mk2-SYSTEM



THE COMPACT Mk2 SYSTEM

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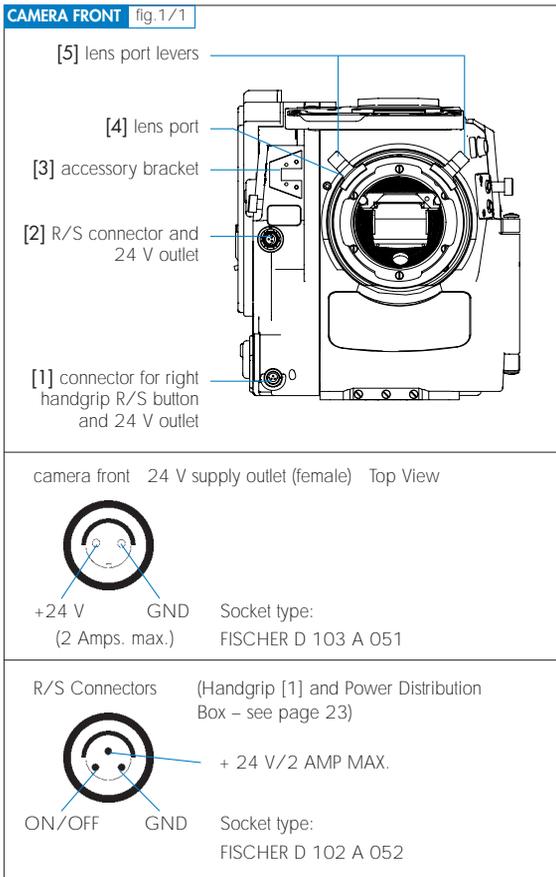
THE COMPACT Mk2 SYSTEM

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CHAPTER 1

THE BODY OF THE COMPACT Mk2 SYSTEM

THE CAMERA FRONT



A lens port [4] type ARRI PL is built into the camera front. Depending on the mounting of the port, shooting either STANDARD 35 or SUPER 35 format is possible. To remove the port cap or the lens itself, turn the two bayonet levers [5] counter-clockwise.

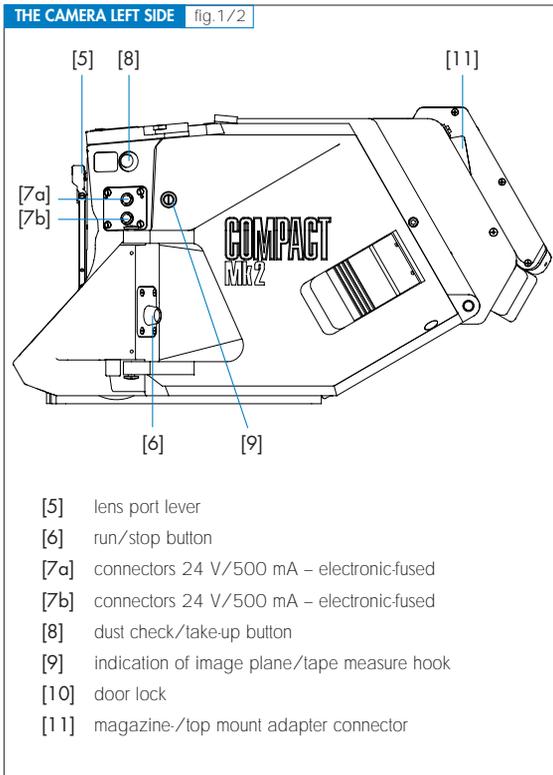
To mount a lens, turn the levers gently clockwise until the lens is seated properly. Do not use force!

To the left of the lens port there are two connectors [1] and [2]. The 3-pins Fischer connectors have a 24 V outlet protected by an on-chip circuitry rated at max. 4 A and they may be used for any remote-controlled device, e.g. zoom or focus drive. Both connectors may also be used for the remote control of the RUN/STOP (RS) button (e.g. handgrip button).

► Remark

Based on the wish by some rental houses, a number of cameras have a 2-pin connector instead of 3-pin next the lens port [2] – then the RUN/STOP function is not supported there.

THE CAMERA LEFT SIDE



The camera door is located at the camera left side. When it is closed, the door lock [10] must be flush with the door; a Velcro attachment keeps the lock in this position.

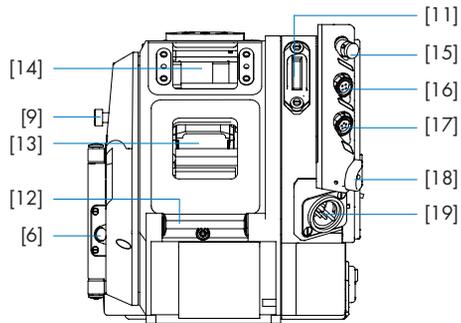
Power (24 V) for Eyecup Heater and Assistant Work Light is supplied via two connectors [7a] + [7b].

In case of an external short circuit, e.g. when Eyecup Heater or Assistant Work Light is defective, an electronic fuse automatically cuts off the power supply of these connectors. The total load (both outputs together) should not increase 1 Ampere.

The tape measure is attached to the hook [9] that indicates the image plane. The film will be tightened when the Dust Check/Take-Up button [8] is shortly pressed. By pressing about 3 seconds the Dust Check/Take-Up button, the mirror shutter is cleared out of the way and thus permits to check the film gate without having to open the camera door. The camera is switched to run or stop by pushing either the button [6] or some other Run/Stop buttons, e.g. at the camera right side. Equally, any of those buttons can be employed to switch to run or stop the camera, and vice versa.

THE CAMERA REAR

THE CAMERA REAR fig.1/3



- [6] run/stop button
- [9] indication of image ilane/tape measure hook
- [11] magazine-/top mount adapter connector
- [12] magazine-/top mount adapter mounting rail
- [13] rear camera opening
- [14] upper camera opening
- [15] video-in connector (sync)
- [16] sync-in connector
- [17] sync-out connector
- [18] main switch
- [19] power receptacle

The Magazines can be attached to either the rear opening [13] or the upper opening [14] at the camera rear resp. top by mounting them (or Magazine Adapter) to the mounting rail [12]. The connector [11], mounted mobile to facilitate the plug-in, is used for both electronic interface and power supply for the magazine drives.

Below the magazine connector there is the receptacle [19] for the camera's 24 V power supply.

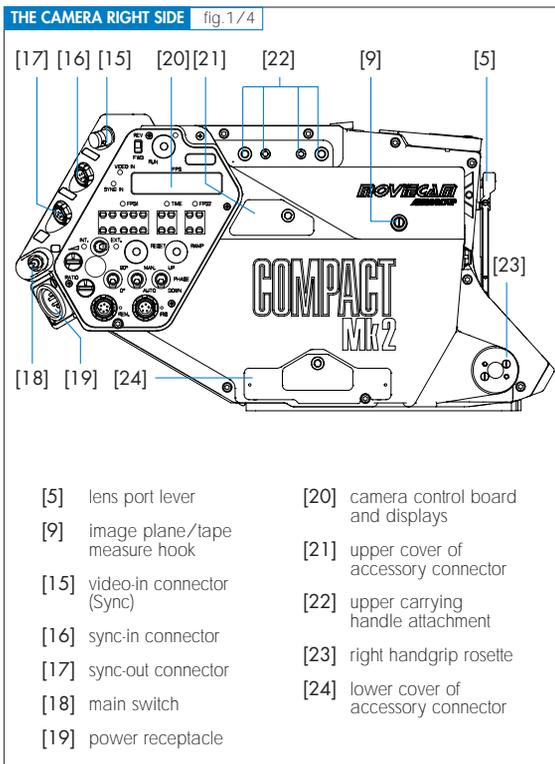
Protected by a crown, the Main switch [18] interrupts the power supply of all electronic components.

See page 23 for details about the 3 connectors [15], [16] and [17].

► Remark

The COMPACT Mk2 is electronically protected – there is no more glass-tube fuse like in its predecessor, the COMPACT camera.

THE CAMERA RIGHT SIDE



The Upper Carrying Handle is attached to the threaded sockets and gauged boreholes [22] located on top of the camera right side as well as on the Backload Adapter; the Right Handgrip is screwed into the threaded socket in the right handgrip rosette centre [23].

Below the cover plates [21] and [24] there are the connectors for accessories.

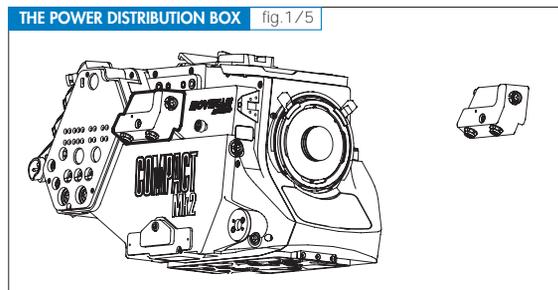
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SUPPLEMENTARY POWER DISTRIBUTION BOX

The little cover [21] can be replaced by the Power Distribution Box. The three supplementary 3-pins Fischer R/S connectors have 24 V outlets to supply power to further accessories.

► Remark

Be aware that the total load for the five power outlets (two at the front and the three supplementary) together is max. 4 A.



A Plexiglas panel covers the Camera Control Board and displays [20] (see chapter 11 page 197).

[15] Plug in a BNC Video cable for carrying on the appropriate video signal so to enable the camera to be synchronized with it.

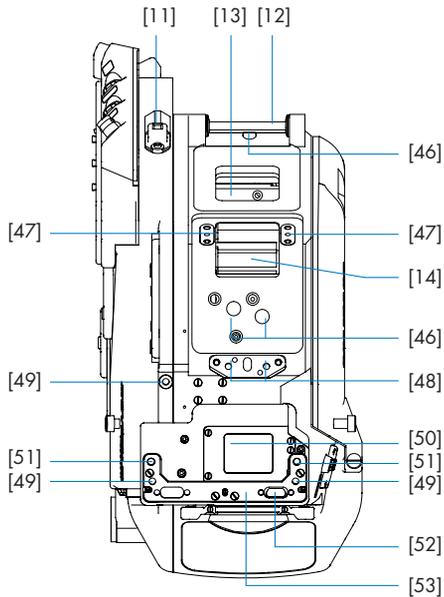
[16] Plug in a cable with a 4-pin Fischer connector to enable the camera to be synchronized with an external sync device (e.g. pulse generator) or with another camera.

[17] Plug in a cable with a 5-pin Fischer connector to forward the camera pulse to another device, e.g another camera.

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THE CAMERA TOP

THE CAMERA TOP fig.1/6

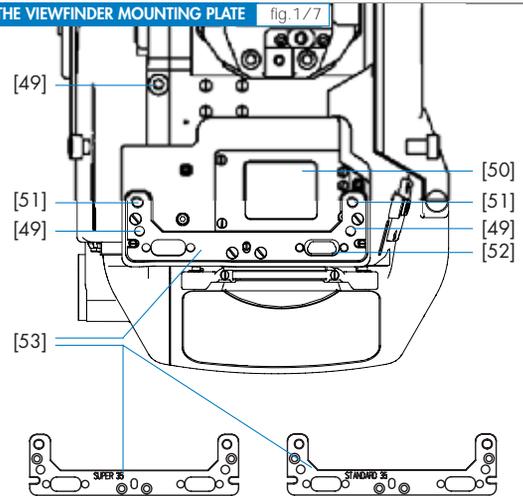


- | | |
|---|---|
| [11] magazine-/top mount adapter connector | [48] backload adapter and top mount adapter attachment (threaded sockets) |
| [12] magazine-/top mount adapter mounting rail | [49] viewfinder attachment (threaded sockets) |
| [13] rear camera opening | [50] glass surface (viewfinder) |
| [14] upper camera opening | [51] viewfinder attachment (gauged boreholes) |
| [46] adjusting screws (for rental house only!) | [52] viewfinder connector |
| [47] backload adapter attachment (threaded sockets) | [53] engraved viewfinder mounting plate |

Caution!

Do not touch the adjusting screws [46] – they are reserved for the technicians of the rental house only!

THE VIEWFINDER MOUNTING PLATE fig.1/7



The plate on top of the COMPACT Mk2 body shows the format the camera has been adjusted to (either STANDARD 35 or SUPER 35 format).

The engraved Viewfinder Mounting Plate [53] is turned upside down when changing the format at a rental house. The Viewfinder system is attached to the gauged boreholes [51] and threaded sockets [49] and flanged to the plate [53] on top of the glass surface [50]. The Backload Adapter is attached to the threaded sockets [47] and [48], the Top Mount Adapter only to the front threaded sockets [48].



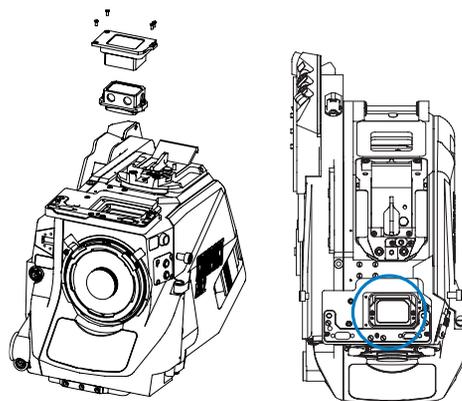
Caution!

The format should be changed at a rental house only! The Lens Mount and – by turning the mount plate upside down – also the viewfinder mount will be adjusted. Now, the engraving indicates the new format.

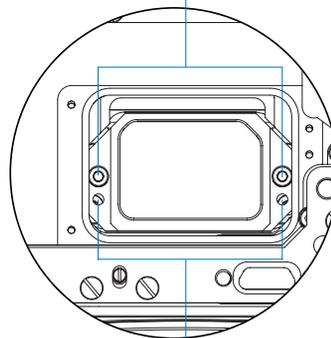
On top of the housing, next to the window, four screws enable to open the housing in order to clean the light pass. This operation has to be carried out preferably by maintenance personnel at the rental house.

OPERATION

1. Disconnect the camera from the power supply
2. Remove the four M2.5 screws located next to the window
3. Insert the MOVIECAM TOOL and screw in the M3 screw driver in one of the boreholes
4. Pull carefully the tool straight out in order to raise the optical block out of the cavity
5. Clean carefully all glass surfaces
6. Reintroduce the optical block and push it carefully into the cavity until it sits correctly on its holder
7. Place the cover on top of the block and secure it with the four M 2.5 screws.

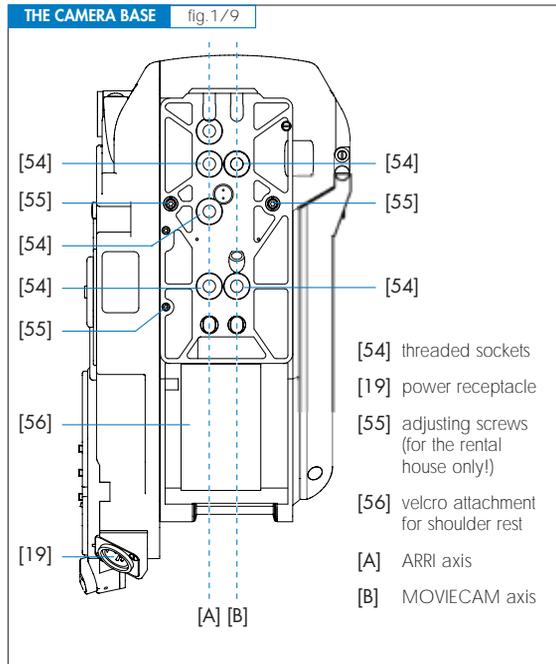


special metric screws M 2.5



threaded boreholes with 3 mm threads

THE CAMERA BASE



The COMPACT Mk2 has a dual axis base. The axis [A] is ARRI standard, the axis [B] MOVIECAM standard. Accessory may thus be interchangeable between both systems. A padded Shoulder Rest can be attached to the black Velcro adhesive strip [56].

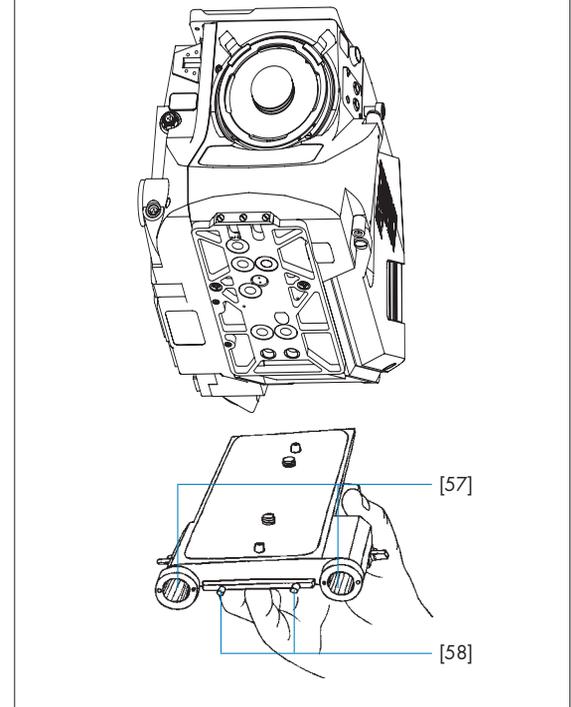


Caution!

Do not touch the adjusting screws [55] – they are reserved for the technicians of the rental house only!

1 – THE BODY OF THE COMPACT Mk2 SYSTEM		
28	MOVIECAM COMPACT Mk2	04/2007

BASE PLATE fig. 1/10



Support Rods and, subsequently, Lens Support, Matte Box, Studio Follow Focus etc. are attached to the Base Plate. You will not need the Base Plate when using Prime Lenses, flanged Filter Holders, Sunshades and Lightweight Follow Focus. Depending on the accessories, screw the Base Plate into either the left ARRI axis [A] or the right MOVIECAM axis [B] with a wide screwdriver.

1 – THE BODY OF THE COMPACT Mk2 SYSTEM		
04/2007	MOVIECAM COMPACT Mk2	29



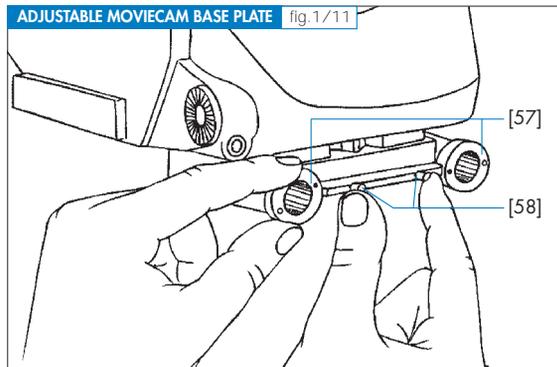
Caution!

In case no original MOVIECAM Base Plate is used, do not screw the attaching screws further than 7 mm into the threaded sockets of the camera base. Longer screws may damage the camera. When attaching the Base Plate, care should be taken that it sits flat on the camera base.

The Support Rod brackets on the MOVIECAM Base Plate are mobile. This is of advantage when shifting the optical axes for shooting in either STANDARD 35 or SUPER 35 format.

As centers and axes of the STANDARD 35 and SUPER 35 format are 1,27mm apart, it is not only necessary to change the film gate, but also to adapt the viewfinder system, the lens mount, the lens support and the matte box brackets when changing format.

The Rod brackets can be adjusted to either format by turning the asymmetrical rings [57]. Just press both sliders [58] toward the centre and turn the rings so that each two dots of the same colour face the centre and the locating pins engage in the holes.



White = STANDARD 35format
Red = SUPER 35 format

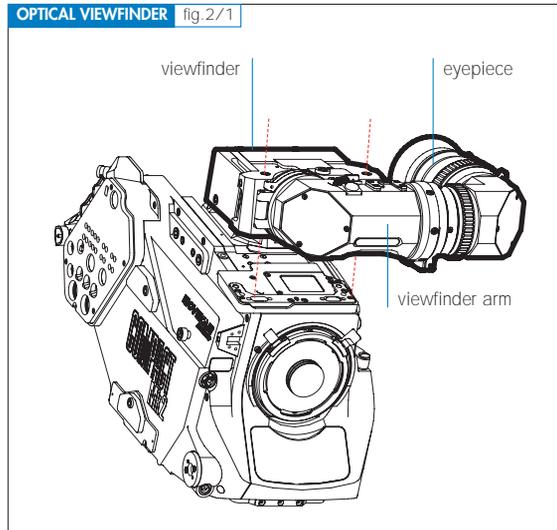
CHAPTER 2

THE COMPACT Mk2 VIEWFINDERS

The MOVIECAM Viewfinder System – built exclusively for the COMPACT Mk2 – has two components:

- A) The Mk2 OPTICAL VIEWFINDER
- B) The Mk2 100% VIDEO ONLY VIEWFINDER

The Mk2 OPTICAL VIEWFINDER



The new Mk2 Optical Viewfinder offers an exceptional viewing quality favoured by a large optical design. Special care has been taken to enable a bright image and to avoid the unpleasant vignette effect that could occur by looking from the side.

The Mk2 Optical Viewfinder permits the use of an Eyepiece (mounted on the Viewfinder Arm) and an Mk2 Video Assist Camera (mounted to the right side) at the same time. This combination gives the operator the choice between the possibility of using the optical image as well as the video image or only to use one of the two images alone. The video option would be chosen when looking through the Viewfinder is not possible or not desirable – e.g. STEADICAM[®] or remote head operation. To work with the “flexibility of a mini-HDV camera”, the operator can use an On-Board Monitor instead of looking through an Eyepiece.

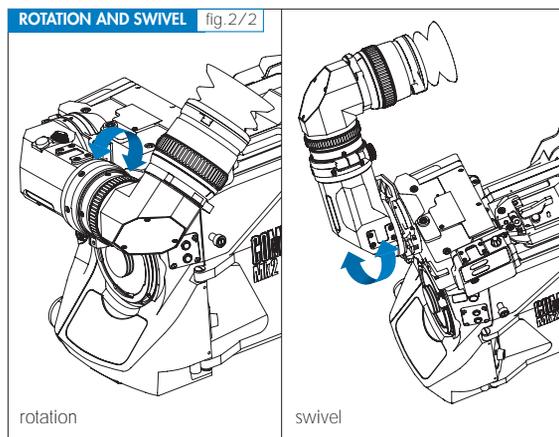
Light transmission of the built-in beam splitter has a ratio of 80% for the eyepiece and 20% for the video camera.

Even though a Long Zoom Anamorphic Extension Tube with a swing-away de-squeezer is attachable on this Viewfinder Arm, the Mk2 Optical Viewfinder is mainly foreseen for use with spherical lenses.

ERGONOMY

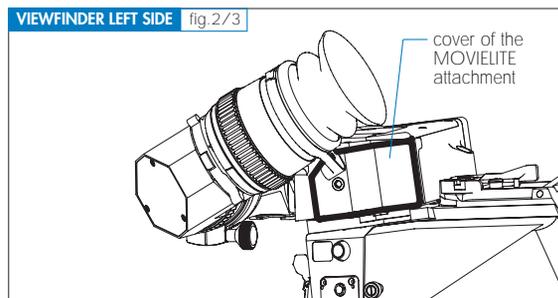
In order to adjust the Eyepiece position for a comfortable viewing, the Viewfinder Arm can be rotated, extended and swivelled.

The Arm - it can be rotated and swivelled to both sides of the camera - is permanently mounted to the Viewfinder by means of a hinge. This hinge enables to swivel the arm on the other camera side while a 1.000 ft/300 m Magazine is mounted on top.

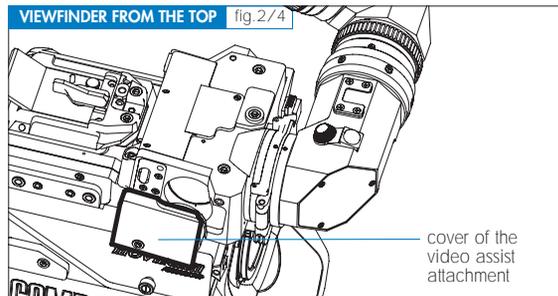


THE Mk2 VIEWFINDER'S HOUSING

On the left side of the Viewfinder a MOVIELITE module attachment is covered by a removable cover plate. Unscrew the 5 mm hex screws with an S4 Allen key to remove the cover plate and to mount the MOVIELITE module – see page 55 fig. 3/2.

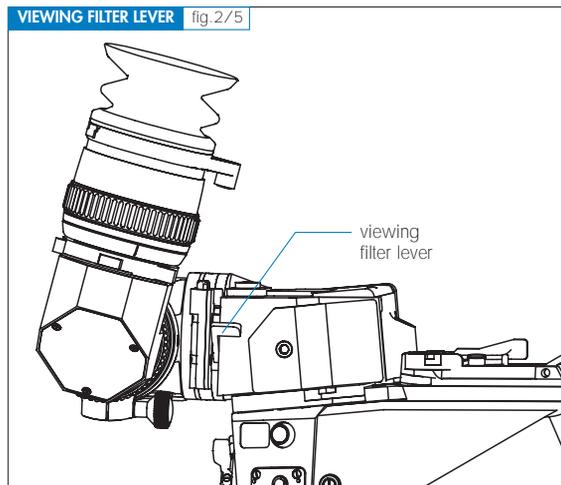


On the right side of the Viewfinder a Video Assist attachment is covered by a removable cover plate. Unscrew the two 5 mm hex screws with an S4 Allen key to remove the cover plate to mount the Video Assist Camera – see page 76 fig. 4/5.



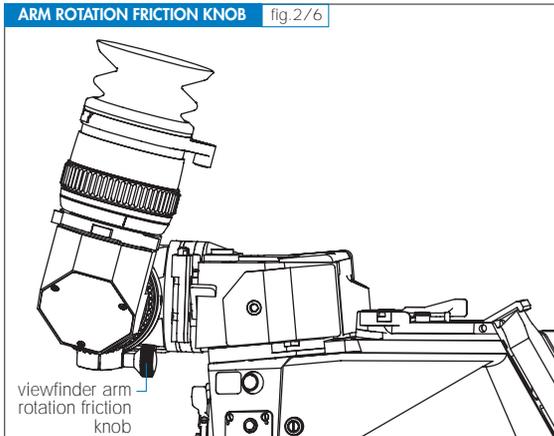
VIEWING FILTER LEVER

On the front of the Mk2 Viewfinder a viewing filter lever is located next to the Viewfinder Arm attachment. When depressing the filter lever, an ND 0.6 filter will be swung into the viewfinder optical beam path.



PIVOTING THE VIEWFINDER ARM – The friction adjustment

The Eyepiece mounted on the Viewfinder Arm rotates vertically through 360°. To rotate the Arm, loosen the Arm Rotation Friction knob below the Eyepiece mount, rotate the Arm until the Eyepiece reaches the desired position and tighten the knob again.



To loosen tension, turn counter-clockwise.

To tighten tension, turn clockwise.

Although this rotation friction adjustment can hold the weight of an Eyepiece Extension Tube, we recommend using the Levelling Rod – see page 70 fig.3/15.

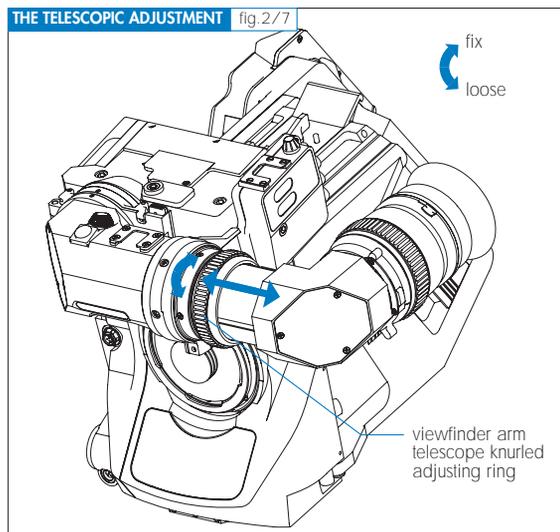


Caution!

The tension has to be loosened when using the Levelling Rod!

EXTENDING THE VIEWFINDER ARM – the telescopic adjustment

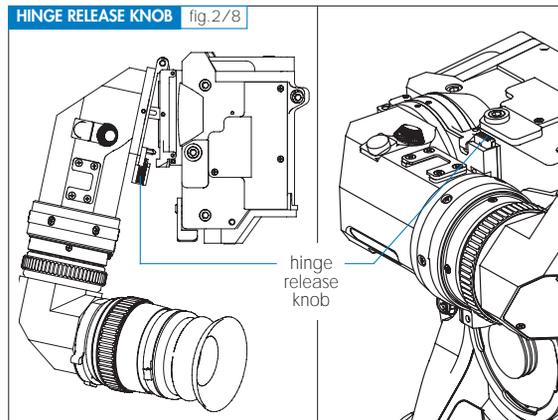
On the Mk2 Viewfinder Arm, an extending feature allows the Eyepiece to move in and out from the camera body to facilitate left or right eye viewing. The Arm can be telescoped up to approximately 36 mm. Shifting does not change size, sharpness or quality of the viewfinder image.



To extend or reduce the Viewfinder Arm length, turn the knurled ring towards the position labelled loose, then pull or push the Arm elbow to the desired length and retighten the knurled ring.

SWIVELLING THE VIEWFINDER ARM

The Viewfinder Arm can be swivelled in order to raise the viewing axe or to place the Eyepiece on the right side of the camera. When a 1000/300 Magazine is mounted on top of the camera, the orientable Viewfinder Arm has to be tilted forward in order to be able to swing the Arm over to the other side of the camera.



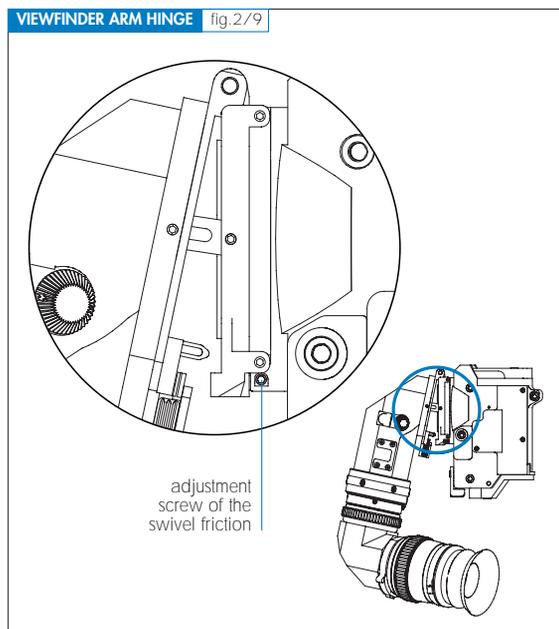
OPERATION

1. Loosen the Arm Rotation Friction knob first.
2. Then turn the Arm upwards to place the Eyepiece in its vertical position.
3. Now press the hinge release knob – the brake opens automatically when the hinge is “open” – and swing the Arm carefully forward.
4. After pivoting the Arm to the other side of the camera, close the Viewfinder again. It locks automatically when a fixing pin entered one of the gauged holes.

ADJUSTMENT OF THE SWIVEL FRICTION

► Remark

Because this operation is quite sensitive, maintenance personnel will carry out the adjustment before the equipment leaves the rental house. The friction of the swivel mechanism can be adjusted by means of an S1.5 Allen key. Turning the Allen key clockwise increases – or counter-clockwise, decreases the tension.



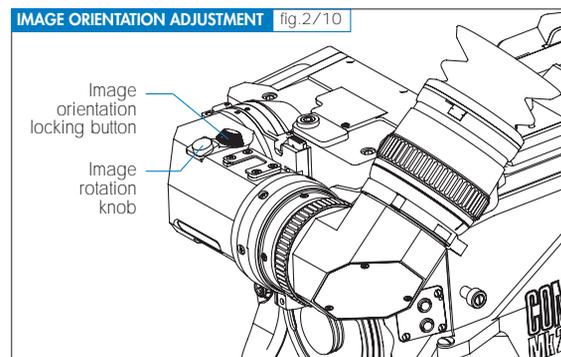
ERECT IMAGE VIEWFINDER – Levelling of the viewfinder image

While rotating and/or swivelling the Viewfinder Arm, the Viewfinder automatically give an upright erect and correct left-to-right image, regardless of the angle of view. When mounting or removing an Extension Tube between Viewfinder Arm and Eyepiece, however, the image orientation has to be adjusted manually by turning the prism assembly 180°.

In case a different image orientation is desired, you can turn it as you like.

To level the image, hold the locking button pressed down and turn the image rotation knob until the image is levelled as you wish. To re-activate the automatic image levelling, turn the image levelling knob until it locks in one of the locking positions. There are positive stops at 0° and 180°, so that the standard positions easily click into place.

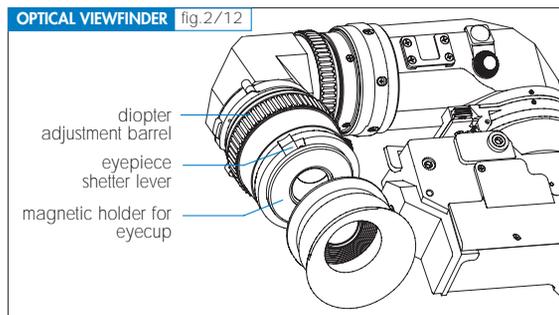
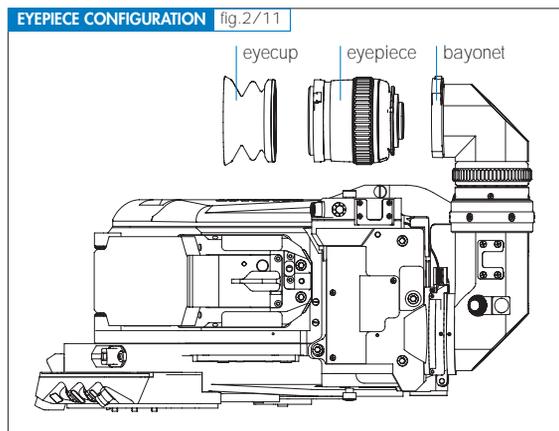
If the image is inverted, depress again the locking button and turn the levelling knob, while releasing the locking button, until it stops in the opposite locking position.



The Mk2 EYEPIECE

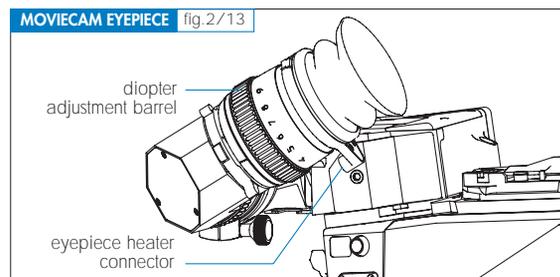
The specially designed Mk2 Eyepiece can only be mounted on the Arm of the Mk2 Optical Viewfinder. Even though the bayonet would enable mounting the ARRICAM ST Eyepiece, the best result is obtained with this Mk2 Eyepiece.

Magnetic holders for the Mk2 Eyecup are located at the rear side of the Eyepiece.



DIOPTER CORRECTION

The Eyepiece may be focused by turning the knurled barrel. With the help of a scale labelled from 1 to 12, the assistant can easily adjust the lens to the eyesight of different operators. Corrections may be made in a range from approx. - 5.5 to + 5.5 dioptres.



EYEPIECE HEATER

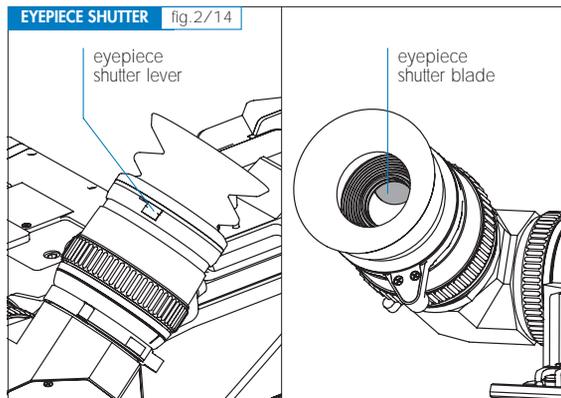
Unlike the ARRICAM System, here the heater is integrated in the Eyepiece. A cable connector for the integrated heater is located on the Eyepiece. In order to activate the heater, connect the short coiled cable into the Eyepiece connector, the other end into one of the power outlets [7a] or [7b] on the camera – see page 18 fig. 1/2. No switch is provided. When switching the Main switch on, the heater automatically activates, preventing so the entry pupil from fogging in low temperatures, e.g. when filming outdoors in winter.

Caution!

If the camera is powered by battery, it is recommended to switch off the eyecup heating during extended breaks in filming.

EYEPIECE SHUTTER

By moving the lever, an integrated shutter mechanism enables to protect the eyepiece and prevents light from entering the camera.



The Mk2 EYECUP

The rubber cushion Mk2 Eyecup can only be mounted on the Mk2 Eyepiece. This Eyecup is held by magnets located around the exit pupil.

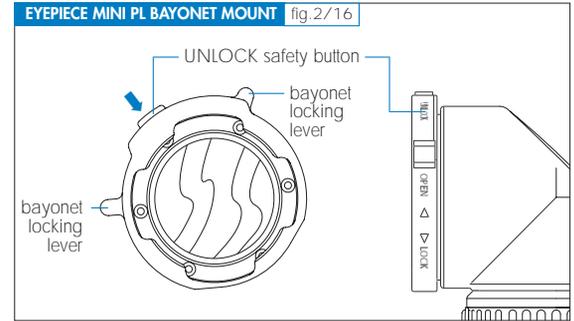
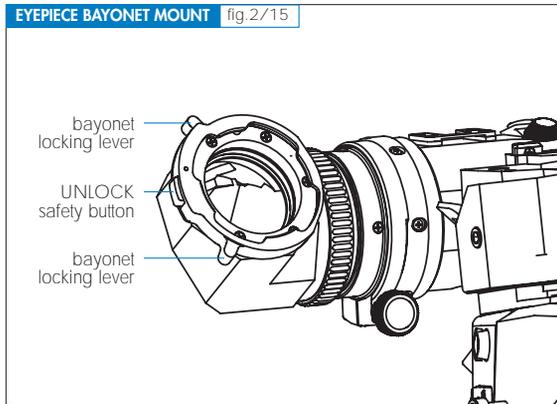
To clean the entry pupil, remove the Eyecup by simply pulling it straight out. Eye friendly covers, such as chamois or cotton cloth, can be easily attached with a rubber band. Another useful cover are the terry cloth "wrist bands", well-known from tennis, as they are sweat absorbing, reusable and easy to attach.

EYECUP RETAINING MOUNT

Into the rubber Eyecup there is a cavity in which a diop-
tre correction lens or a special filter can be fastened with an adhesive. This operation is carried out by trained maintenance personnel only. The optical component must have a diameter of $23.4 \text{ mm} \pm 0.1 \text{ mm}$.

MOUNTING THE EYEPIECE

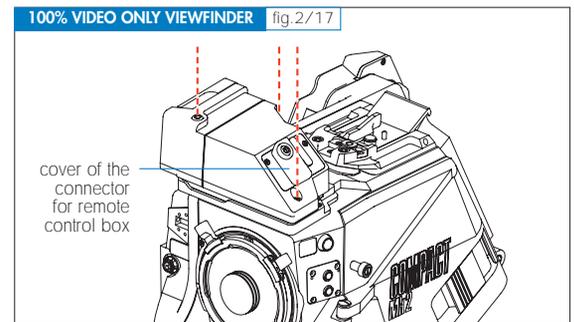
By means of a bayonet mount, the Eyepiece and Extension Tubes can be mounted and removed effortlessly from the Viewfinder Arm. To mount the Eyepiece, remove the protection cap by rotating the bayonet counter-clockwise. After checking that both parts are immaculately clean, gently insert the Eyepiece or Extension Tube into the port and lock it by rotating the retaining bayonet clockwise until it is correctly seated. In order to prevent the Eyepiece or Extension Tube from falling out when it is not held firmly during its removal, an additional UNLOCK safety button has been incorporated into the Eyepiece bayonets. So, after rotating partly the bayonet lever, push the little safety button and continue rotating the bayonet in order to release the Eyepiece or Extension Tube.



The Mk2 100% VIDEO ONLY VIEWFINDER

When no Optical Viewfinder is needed, the Mk2 Video Assists Camera can be mounted directly to the light-weight MOVIECAM Mk2 100% Video Only Viewfinder.

This Viewfinder has no beam splitter and thus provides 100% light transmission for the Video Assist Camera attached to the right side. No filter wheel is provided on the Video Only Viewfinder and no Readout Unit can be attached on it. A receptacle for the Remote Control Box is provided under a small cover plate.



MOUNTING THE OPTICAL VIEWFINDERS OR THE 100% VIDEO ONLY VIEWFINDER

On the base of both Viewfinders, the Viewfinder's window, the connector, the fixing pins and retaining screws are protected by a cover.

After removing the protection covers (fixed with two 5 mm hex screws) and checking that both parts (connectors, glass surfaces) are absolutely free of dust and fingerprints, mount the Viewfinder or 100% Video Only Viewfinder on the camera.

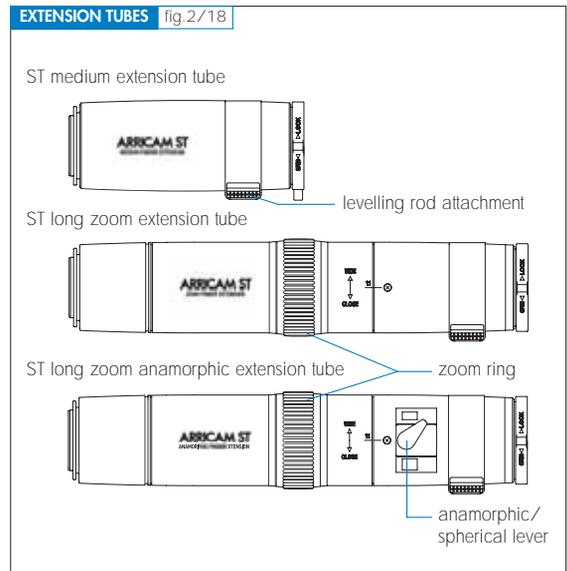
The pins must engage easily in the gauged holes. While tightening the three 5 mm hex screws, the connectors will fit together automatically. Therefore be sure that the Viewfinder or the 100% Video Only Viewfinder sits securely on the camera.

Because the MOVIECAM Mk2 offers the possibility to shoot in STANDARD 35 format or in SUPER 35 format, the Viewfinder must be mounted to fit these formats – see the Viewfinder Mounting Plate in chapter 1, page 25, fig. 1/7.

THE EYEPIECE EXTENSION TUBES

In order to extend the distance between the Viewfinder and the Eyepiece, MOVIECAM suggests the use of the ARRICAM STUDIO bayonet-mounted Extension Tubes. The three Extension Tubes are fitted with a receptacle for the ARRICAM Eyepiece Levelling Rod, are:

1. The Studio Medium Extension Tube brings the entry pupil of the Eyepiece about 15 cm/5.9" behind the film plane.
2. The Studio Zoom Extension with variable image magnifier (2x) brings the entry pupil of the Eyepiece about 30 cm/11.8" behind the film plane.
3. The Studio Anamorphic Extension Tube with variable image magnifier and flip-in de-squeezer lens brings the entry pupil of the Eyepiece about 30 cm/11.8" behind the film plane.



► **Notice**

- *Both the Zoom and Anamorphic Extension Tubes have built-in magnifiers that allow even more critical eye-focusing. Turn the zoom ring to magnify the image of the Ground Glass in a continuous range. A mark on the ring indicates the standard image size.*
- *It is recommended to use the zoom or magnifier only when checking and not when shooting because only the centre part of the image appears in the Eyepiece.*

CHAPTER 3

THE MOVIECAM ACCESSORIES to be attached to viewfinder components

MOVIECAM offers several accessories including:

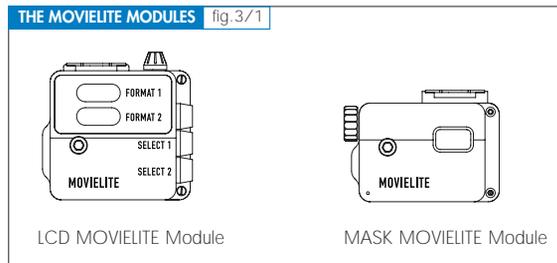
- two MOVIELITE modules,
 - 1) The LCD MOVIELITE Module
 - 2) The MASK MOVIELITE Module
- the Mk2 READOUT Unit,
- the REMOTE CONTROL Box with its Mk2 Cable Connector,
- the VIEWFINDER LEVELLING ROD.

► Remark

The MOVIECAM COMPACT REMOTE CONTROL BOX works with both camera types, the COMPACT and the COMPACT Mk2. But the Mk2 REMOTE CONTROL BOX CABLE has to be used in order to link the box to the Mk2 camera.

THE MOVIELITE MODULES

In order to make the frame lines of the Ground Glass visible while shooting dark scenes, MOVIECAM provides small attachments for the Mk2 Viewfinder called MOVIELITE. Two different MOVIELITE modules are provided; the differences between them are not only in the design but also in the technology employed.



THE LCD MOVIELITE MODULE

By means of a sophisticated electronic design, the LCD MOVIELITE module fades in one or – simultaneously – two luminous frame outlines. Besides those two frames, also a reticule can be faded in and out the viewfinder image by pushing the Crosshair button. Four frame outlines with the following aspect ratios are provided in the LCD MOVIELITE:

- 1 : 1.33 (TV)
- 1 : 1.375 (Academy)
- 1 : 1.66 (European Wide Screen)
- 1 : 1.85 (US/UK Wide Screen)

► **Important Remark**

The LCD MOVIELITE Module is usable only for shooting in STANDARD 35 format (not for SUPER 35).

THE MASK MOVIELITE MODULE

In order to satisfy special customer requests regarding the Ground Glass marks with faded-in luminous frames, another MOVIELITE module has been developed. The formats to be faded in are not chosen electronically but with the use of Masks (slides). Customer specific format combinations that are not offered as „Standard Masks“ or in the electronic MOVIELITE can be produced by MOVIECAM on order. The Masks created for the Mk2 MOVIELITE are neither compatible with the ones designed for previous MOVIELITE Modules nor with the ARRICAM Framglow Module.

MOUNTING THE MOVIELITE MODULES

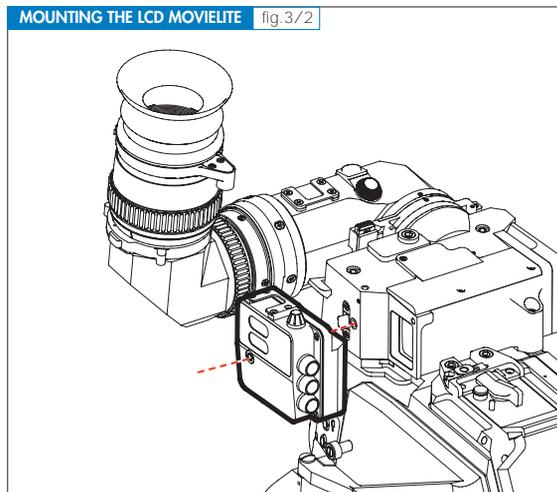
After removing both protection covers, attach the appropriate MOVIELITE module to the Viewfinder with one 5 mm screw (S4 Allen Key) [b].

► **Notice**

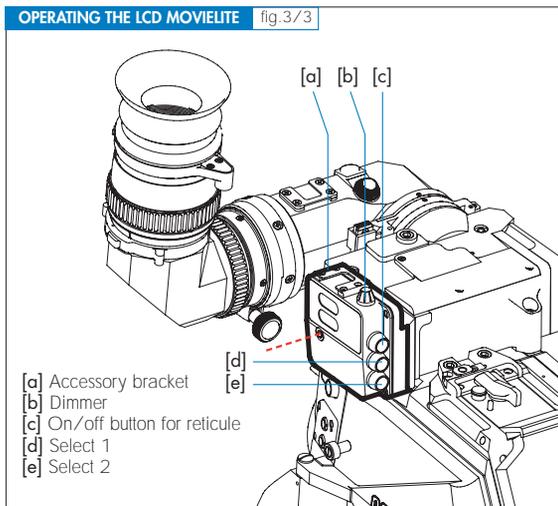
Care should be taken that:

- The camera is switched OFF by camera MAIN switch (also important when removing the MOVIELITE),
- Both glass surfaces [e] are absolutely clean,
- The pins [c] engage easily in the gauged holes [f] and the connectors [d] are properly seated – only then the MOVIELITE module sits correctly on the Viewfinder!

MOUNTING THE LCD MOVIELITE fig.3/2



HANDLING THE LCD MOVIELITE MODULE

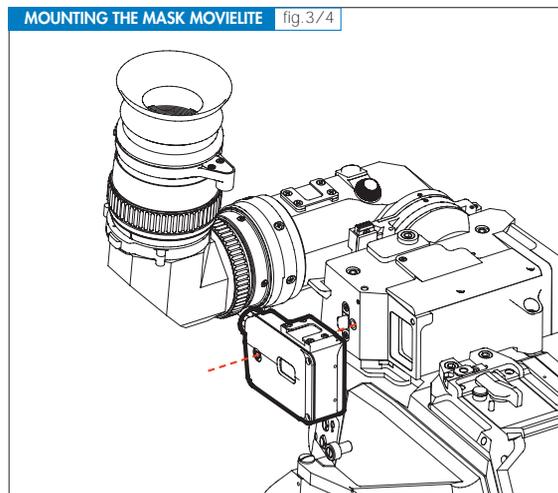


While the camera is powered and no figure is displayed on the MOVIELITE module, just push one of the buttons, so the device shows the preselected aspect ratio(s). By pressing the button "Select 1", a luminous frame appears on the ground glass. The display "Format 1" shows the aspect ratio. By pressing the button "Select 1" again, the other aspect ratios will be displayed. In case a frame, e.g. 1 : 1,66, is already faded in and you want to add another one, e.g. TV, just press the button "Select 2" until the desired aspect ratio appears in the display "Format 2". Each of the frames mentioned above may be switched on/off with either of the two "Select" buttons.

The MOVIELITE memory stores the latest setup chosen, even when the camera is disconnected. A luminous reticule can be switched on/off with button [c]. The brightness of the two luminous frames and the reticule may be continuously adjusted with the potentiometer [b].

HANDLING THE MASK MOVIELITE MODULE

The Mask MOVIELITE module inserts the luminous frame outlines of a single or of combined aspect ratio(s) into the viewfinder image. A set of Masks with different aspect ratios and/or aspect ratio combinations is provided by MOVIECAM.



EXCHANGING THE MASK

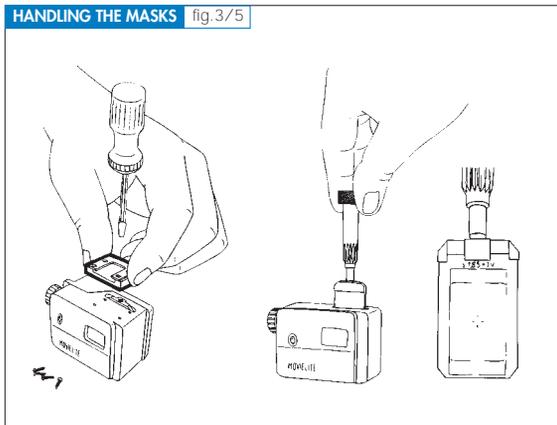
In order to exchange a mask, first the accessory bracket has to be removed.



Caution!

- When removing the accessory plug, everything must be extremely clean; no dirt must get into the opening. Take care not to lose the four screws.
- Care must be taken as the Mask is sensible to scratches.

HANDLING THE MASKS fig.3/5



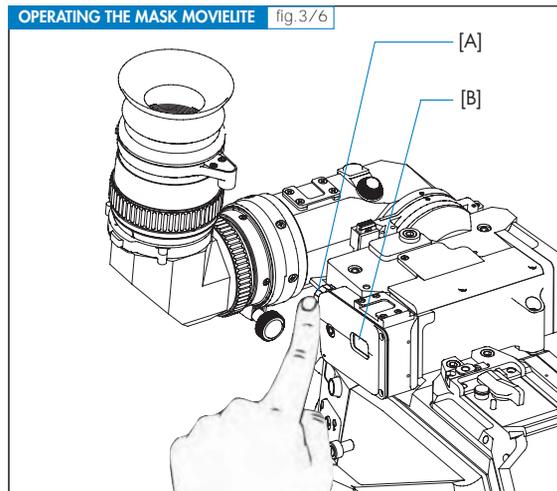
The Mask is mounted and removed with the MOVIE-CAM COMBITOOL. When mounting the Mask, care must be taken that it is inserted until it touches the buffer.

Below the removed accessory bracket is a strip of elastic material which fixes the Mask in its position.

► Notice

The rental houses offer a large variety of various formats and format combinations, such as [Super 35/ 1 : 1/85 & TV]. When collecting the equipment, care should be taken that the right slide (suitable to the ground glass) is available.

OPERATING THE MASK MOVIELITE fig.3/6



The Mask MOVIELITE module is activated with the rotary knob [A]. This knob, which is no on/off switch, is a dimmer that changes the brightness of the luminous frames from light to extinguish. In the small window [B] the slide marks can be read and the brightness checked.

ADJUSTING THE ALIGNMENT OF THE MOVIELITE MASK

This operation is performed by the MOVIECAM Maintenance Centre or Rental House only.

ADJUSTING THE BRIGHTNESS OF THE MOVIELITE FRAMES

The brightness of all displayed lines on both MOVIELITE Modules can be continuously adjusted by turning the DIMMER knobs. When turning the knob counter-clockwise, the brightness will diminish until it is no longer visible in the Viewfinder. Turning the knob all the way clockwise will set the MOVIELITE outlines of their maximum brightness.

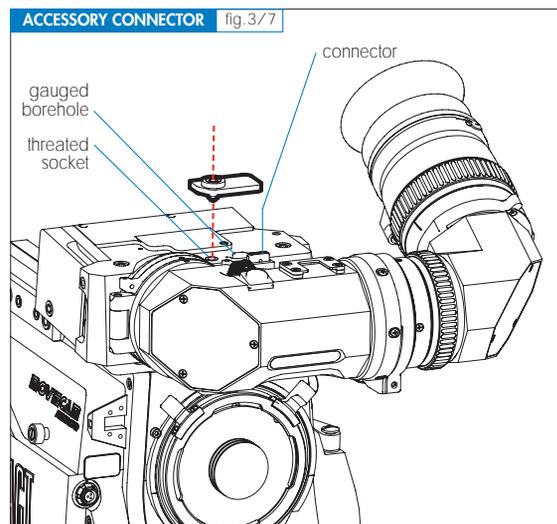
The brightness of the frame line illumination is independent from the brightness adjustment of the camera displays.

► Notice

- Be aware that the brightness of the luminous red frames may affect the colour rendition of the video assist system.
- MOVIELITE modules cannot be mounted on the 100% Video Only Viewfinder
- On top of the MOVIELITE Modules, a shoe for accessories is provided.

ACCESSORY CONNECTOR

On top of the Mk2 VIEWFINDER there is a 9 pin connector for the two accessories Readout Unit and Remote Control Box. Remove the small cover plate that protects the connector by unscrewing the 5 mm screws with an S4 Allen key and attach the accessory.



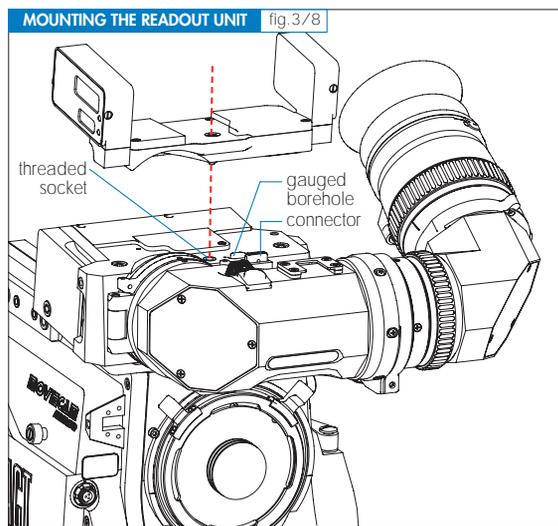
THE Mk2 READOUT UNIT

Although the Mk2 READOUT Unit is not a component of the viewfinder system, its mounting is only possible on top of an Mk2 Viewfinder.

The READOUT Unit is powered directly from the camera, through the Mk2 VIEWFINDER. The digital displays are easily readable from both camera sides. Their brightness can be adjusted with a dimmer. The figures glow whenever proper voltage is connected; the red diode BAT lights up in case of a substantial voltage drop (<20.5 V) and fades again when the camera is sufficiently powered. The frame speed, e.g. 24 fps, is displayed when switching on the camera. In case the actual frame speed of the camera differs from the preset speed, the red diode sync lights up; this diode remains also lit as long as the camera runs up to speed. The last indicated footage remains stored even when the camera is disconnected. Footage information is stored on the camera's mainboard. When the camera is plugged in, reset the footage counter to **0** by pushing the reset button at least for 3 sec. By pushing briefly, the preset unit of measurement – “f” for feet, “m” for meter – is displayed. To change measure unit (m/ft), contact your Rental House.

MOUNTING THE Mk2 READOUT UNIT

After having unscrewed the 5 mm screw (S4 Allen Key) and removed the cover from the top of the Mk2 Viewfinder, place the Mk2 Readout Unit on the Viewfinder and fix it firmly by tightening the screw. Care should be taken that the pin and the connector engage easily. By placing the S4 Allen Key in the access holes, the Mk2 Viewfinder can be removed or fixed to the camera without having to remove the Mk2 Readout Unit first.



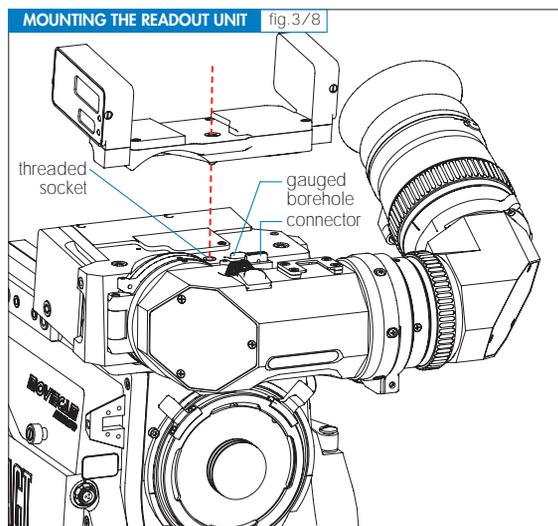
THE Mk2 READOUT UNIT

Although the Mk2 READOUT Unit is not a component of the viewfinder system, its mounting is only possible on top of an Mk2 Viewfinder.

The READOUT Unit is powered directly from the camera, through the Mk2 VIEWFINDER. The digital displays are easily readable from both camera sides. Their brightness can be adjusted with a dimmer. The figures glow whenever proper voltage is connected; the red diode BAT lights up in case of a substantial voltage drop (<20.5 V) and fades again when the camera is sufficiently powered. The frame speed, e.g. 24 fps, is displayed when switching on the camera. In case the actual frame speed of the camera differs from the preset speed, the red diode sync lights up; this diode remains also lit as long as the camera runs up to speed. The last indicated footage remains stored even when the camera is disconnected. Footage information is stored on the camera's mainboard. When the camera is plugged in, reset the footage counter to **0** by pushing the reset button at least for 3 sec. By pushing briefly, the preset unit of measurement – “f” for feet, “m” for meter – is displayed. To change measure unit (m/ft), contact your Rental House.

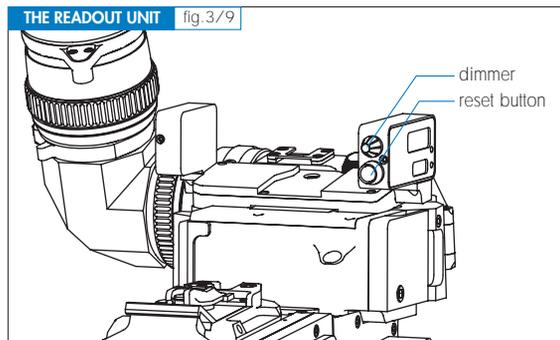
MOUNTING THE Mk2 READOUT UNIT

After having unscrewed the 5 mm screw (S4 Allen Key) and removed the cover from the top of the Mk2 Viewfinder, place the Mk2 Readout Unit on the Viewfinder and fix it firmly by tightening the screw. Care should be taken that the pin and the connector engage easily. By placing the S4 Allen Key in the access holes, the Mk2 Viewfinder can be removed or fixed to the camera without having to remove the Mk2 Readout Unit first.

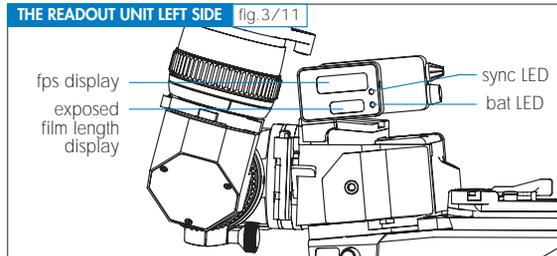
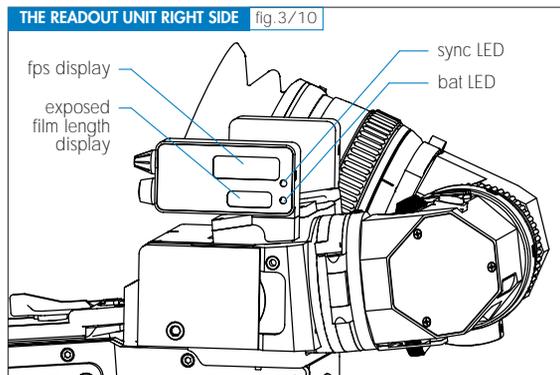


FUNCTIONS OF THE Mk2 READOUT UNIT

On the Mk2 Readout Unit, the dimmer (knob) and the reset button are located on the right side.



On both sides of the Mk2 Readout Unit, the FPS display, the Exposed Film Length display as well as a RUN LED and a BAT LED are provided.



The FPS displays either show the actual frame rate or other info – please consult the related list of messages in chapter 11 on page 205 dedicated to the FPS displays.

On the right side only, a further display also shows the exposed film length.

The LEDs either glow red [●] or are off [●].

SYNC LED

- while the camera is in STAND-BY status or when the camera is not powered
- camera is not running at the preset frame rate or while the camera is running up or running down. It also glows red while the camera is NOT IN SYNC

BAT LED

- while the camera is in STAND-BY status or when the camera is not powered
- when the battery supplies less than e.g. 20.5 V

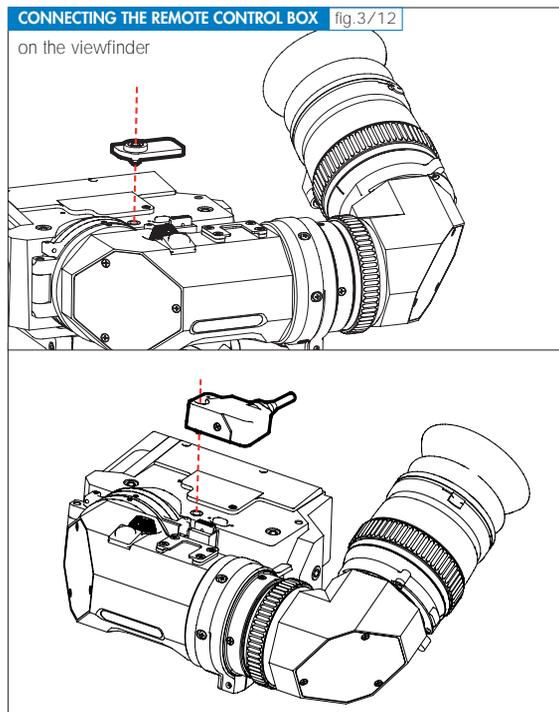
When pushing the RESET button for less than three seconds, counter mode is displayed: "f" for feet, "m" for meter. When pushing the RESET button for more than three seconds, the exposed film counter is reset and the display shows **0000**.

REMOTE CONTROL BOX

Similar to the Mk2 Readout Unit, the small connector of the Remote Control Box is attached to the MK2 Viewfinder or to the Mk2 100% VIDEO ONLY VIEWFINDER with one 5 mm hex screw.

▶ Remark

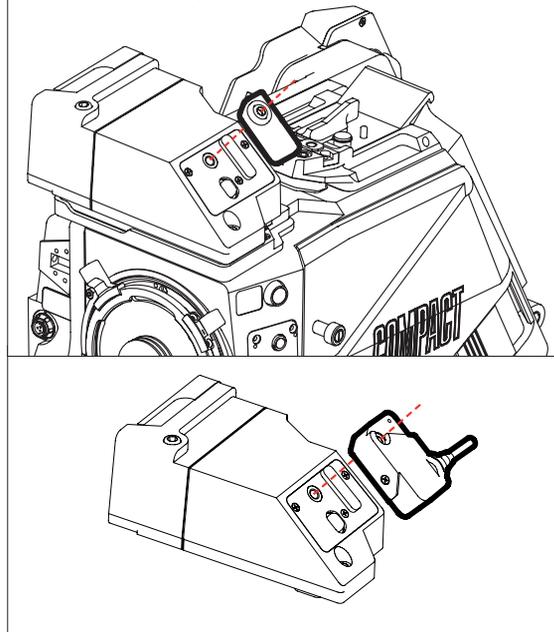
You cannot use the Remote Control Box when the Mk2 Readout Unit is mounted on the Mk2 camera.



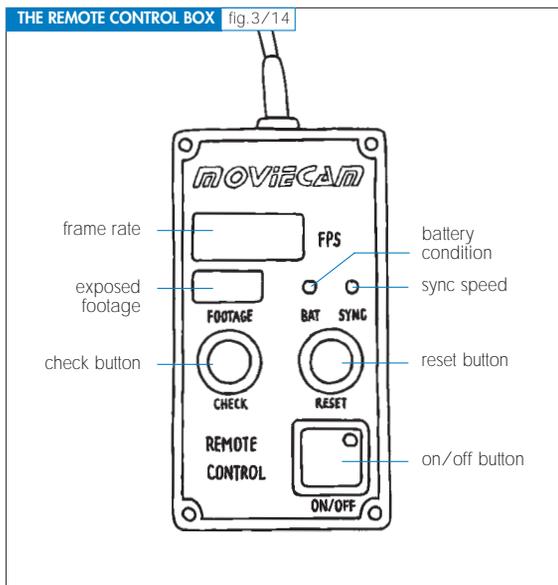
CONNECTING THE REMOTE CONTROL BOX

fig.3/13

on the 100% video only viewfinder



When connected to the MOVIECAM COMPACT Mk2, the Remote Control Box works as both on/off switch and "remote" Readout Unit. You can read exposed footage, frame rate, battery condition, sync speed and warning signs up to a distance of 10 m. As long as the Remote Control Box is connected to the ready-to-shoot camera (Stand-By status), the footage counter lights up.



Functions of the two buttons:

CHECK button In Stand-By mode	
Pressed briefly	Pressed for 2 seconds
Shows the preset FPS 1 or a warning message	

RESET button In Stand-By mode	
Pressed briefly	Pressed for 2 seconds
Current Unit of measurement is displayed	
Counter is reset to [0]	

RESET button While camera is running	
Pressed briefly	Pressed for 2 seconds
Trigger a preset ramp	
FPS 1 > FPS 2 or	
FPS 2 > FPS 1	

► Remark

While the camera is running, pressing the RESET button will trigger a preset ramp. Only with the COMPACT Mk2, it is now possible to reverse the ramp by pressing again the RESET button – without stopping the camera.

VIEWFINDER LEVELLING ROD

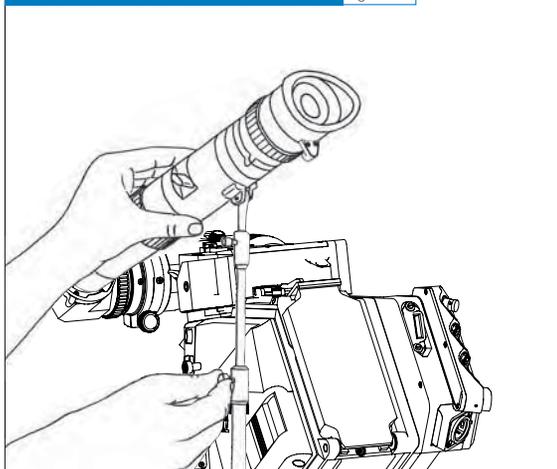
A Viewfinder Support Levelling Rod may be attached to the Viewfinder Extensions. This Rod is attached by sliding the sprung loaded dovetail into the holder. To remove it, press the spring lever. The support is clamped to the head and its length is adjustable.



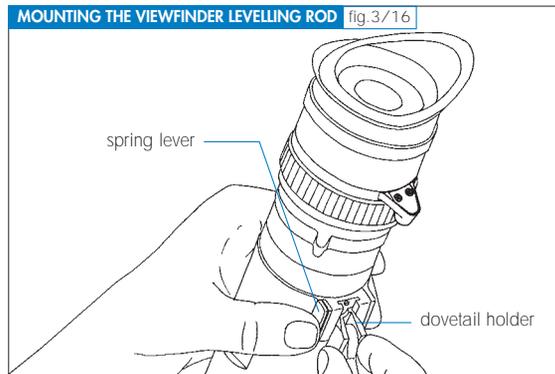
Caution!

When working with the Levelling Rod, the Rotation Friction Adjustment must be loose (see page 37 fig. 2/6)!

MOUNTING THE VIEWFINDER LEVELLING ROD fig.3/15



MOUNTING THE VIEWFINDER LEVELLING ROD fig.3/16



CHAPTER 4

THE Mk2 VIDEO ASSIST SYSTEM

THE MOVIECAM VIDEO ASSISTS' COMPONENTS



Important notes and safety specifications

- Turn OFF the Video Assist immediately in case of malfunction!
- Do not use in the presence of flammable gas!
- Do not disassemble!
- Use only MOVIECAM cables!
- Use MOVIECAM Mk2 Video Assist components only with MOVIECAM Mk2 Cameras and only as described in this manual!
- Assembly and initial installation should be carried out only by persons who are familiar with the equipment!
- Remove all cables before transport or servicing!
- Repairs should be carried out only by authorized MOVIECAM Maintenance Centres!
- Use only original MOVIECAM replacement parts and accessories!
- Check all operations on the corresponding monitor!
- In wet weather the normal safety precautions for handling electrical equipment should be taken!
- Keep the equipment dry and free of salt, sand or dust!
- Keep optical surfaces clean!
- Do not remove or turn any screws which are secured with paint!
- Turn the camera MAIN switch OFF before mounting or removing electric components or when connecting or removing the power supply!
- Keep equipment away from strong magnetic fields!
- Avoid sudden changes in temperature!
- Never feed power onto sync or video lines!

► Preliminary Remark

Even though the MOVIECAM Mk2 VIDEO ASSIST COMPONENTS are similar to the one provided by ARRI for the ARERICAM cameras, these MOVIECAM COMPONENTS are not compatible with the ARRI ones.

Nevertheless On Board Video Monitors provided by MOVIECAM as well as ARRI may be used with the MOVIECAM Mk2 VIDEO ASSIST – presuming that the connection is made adequately.

The MOVIECAM Video Assist System offers more than just a video tap picture. As well as the viewfinder picture, most of the camera status can be displayed on the monitor and/or recorded on tape or hard disc. This information is useful for further steps in production and post-production. By means of a sophisticated, but intuitive and user-friendly menu, several options can be selected. For example, flicker compensation, a picture storage capability and a frame line generator are provided.

To access all the different options, only a single dial needs to be operated. However, the main parameters can be changed straightaway by pushing dedicated buttons.

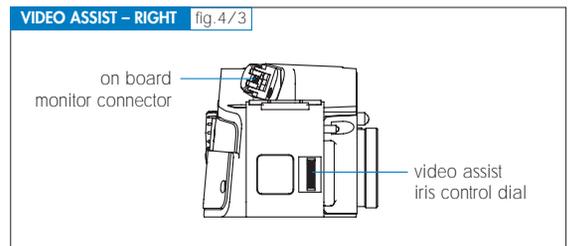
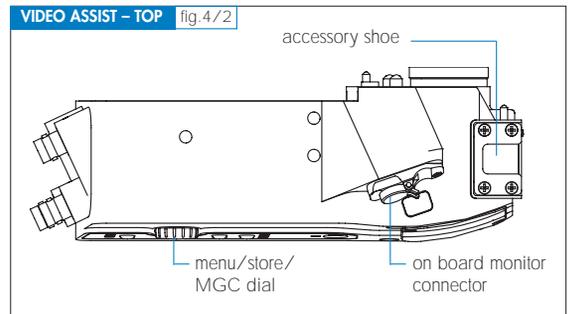
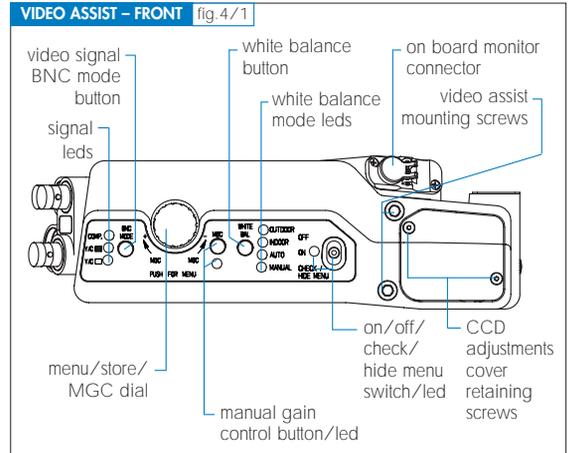
THE MOVIECAM VIDEO ASSIST'S COMPONENTS

The MOVIECAM Mk2 Viewfinder has a dedicated Video Assist system.

MOVIECAM also provides two 2", colour on board video monitors – one PAL and one NTSC – which can be mounted on the MOVIECAM COMPACT Mk2 camera, by means of articulated arms.

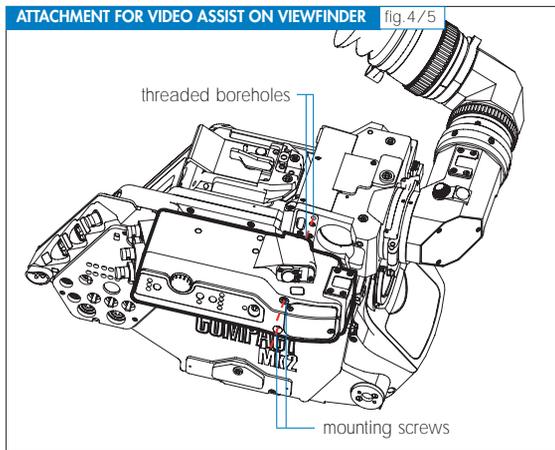
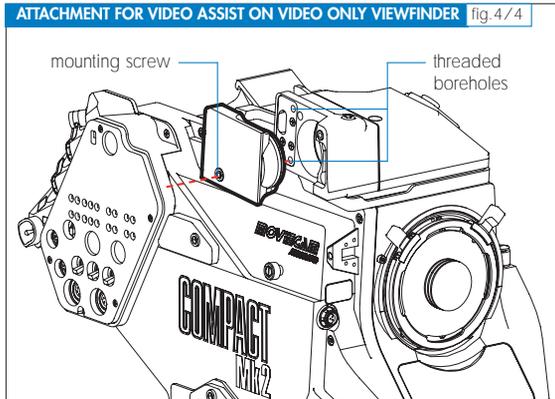
THE MK2 VIDEO ASSIST

The Mk2 Video Assist is equipped with lenses that cover the Super 35 acquisition format. Therefore no mechanical change to the Video Assist needs to be done when changing the format from Standard 35 to Super 35. Please be aware that not all monitors show the extended field of a S35 image. Depending on the video standard used, each Video Assist component is labelled either PAL or NTSC. Please be aware that only components working on the same standard are compatible.



MOUNTING THE VIDEO ASSIST

On the Mk2 VIEWFINDER and the Mk2 VIDEO ONLY VIEWFINDER, the Mk2 Video Assist is mounted on the right hand side.



After removing the protection cover (one 4 mm screw) and checking that both parts (connectors, glass surfaces) are absolutely free of dust and fingerprints, mount the Mk2 Video Assist to the Mk2 Viewfinder or Mk2 100% Video Only Viewfinder. While tightening the two screws, the connectors fit together automatically. Therefore be sure that the Mk2 Video Assist sits securely on the Viewfinder or Video Only Viewfinder.

! Caution!

Be sure that the Mk2 camera is not powered during mounting or removing the Video Assist. Do not slant the Mk2 Video Assist while mounting it on the Viewfinder or on the 100% Video Only Viewfinder!

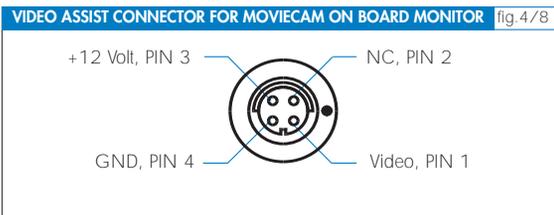
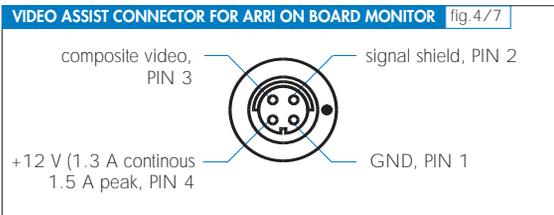
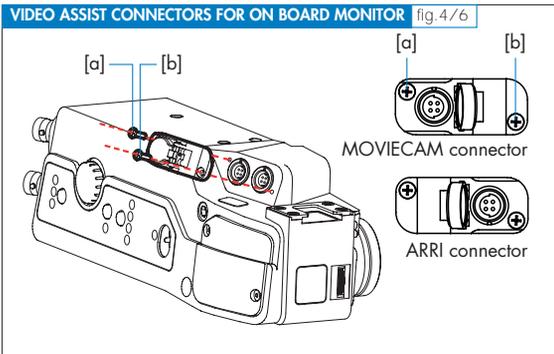
THE CONNECTORS AND THE LED INDICATORS

THE CONNECTORS FOR THE ON BOARD VIDEO MONITOR

Two connectors, one to connect a MOVIECAM ON BOARD VIDEO MONITOR and one for connecting an ARRI ON BOARD VIDEO MONITOR, are located on top of the Mk2 Viewfinder.

By means of a little rotatable cover – mounted adequately e.g. at the rental house – only one of both connectors will be reachable. This precaution should avoid any wrong connection. The accessible connector is protected by an aluminium cap. By lifting this cap, you will be able to connect only one ON BOARD MONITOR. Other monitors can be connected to the VIDEO OUT connector located at the rear side of the Mk2 Viewfinder.

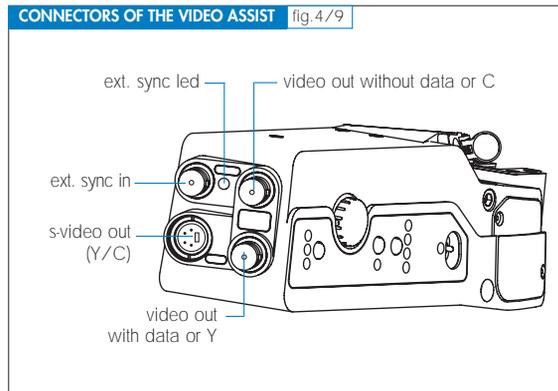
In case, the little protection has to be rotate, first switch the COMPACT Mk2 camera off, then remove the two little screws [a] and [b], raise the cover, rotate it and replace it carefully on the camera. Then secure it by tightening the two screws.



THE FURTHER CONNECTORS

On the left side of the Mk2 Video Assist, four connectors and one LED are located.

The LED lights up green when an external video sync signal is successfully fed to the Video Assist.



► Notice

When attaching a cable to one of the connectors, be sure not to bend it. Providing a strain relief will do fine.

In order to avoid interference, be sure not to install the video cable close to electric drives, e.g. lens motors.

Be sure the cable has enough slack to accommodate the full range of camera movements, either if it is operated manually or by a remote head! It is recommended to use of Y/C cables, which are delivered with the unit, for even better image quality.

THE VIDEO OUT SIGNAL (BNC CONNECTORS)

By means of the (video signal) BNC MODE button – see page 75 fig. 4 /1 – you may select the kind of video signal you would like to output. Three options are available and the selected choice is indicated by an LED.

video with data on screen | Y= luminance signal
 video without data | C= chrominance signal

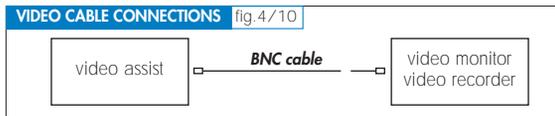
COMP.	composite video with on-screen data	A
	composite video without on-screen data	B
<input checked="" type="checkbox"/> Y/C.	Y portion of the video, with on-screen data	A
	C portion of the video signal, with on-screen data	B
<input type="checkbox"/> Y/C.	Y portion of the video, without on-screen data	A
	C portion of the video signal, without on-screen data	B



► Notice

If you would like the video picture in Black & White, please select either Y/C or and connect the video cable to "A" output.

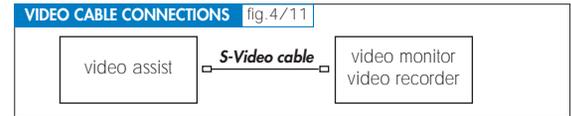
Standard BNC connection:



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THE S-VIDEO SIGNAL

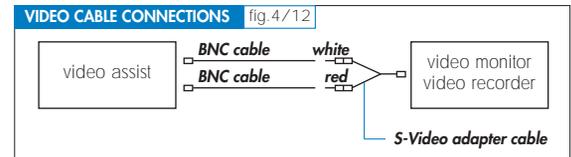
Provided that the monitor has a S-Video connector, using the S-Video signal instead of the composite one will provide an even better video picture. S-Video cables allow connection up to about 3 m/10 ft.



VIDEO CONNECTIONS

For longer distance more resistant BNC cables could be used.

A further possibility is to use two BNC cables and one S-Video adapter cable: Red = C, White = Y



This configuration will provide the best possible result when the distance between the MOVIECAM COMPACT Mk2 and the monitor(s) is (are) longer than 10 m/33 ft.



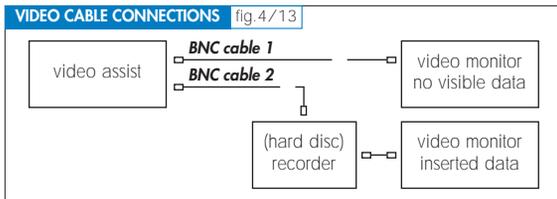
Caution!

Make sure that the length of both BNC cables is similar.

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► **Notice**

If video pictures with and without inserted data are needed simultaneously, e.g. viewing on monitor without data while recording on hard disc with the data inserted, two separated connections must be installed.

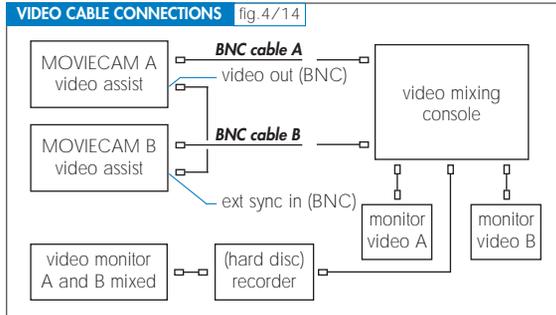


! **Caution!**

A standard S-Video connector has no fixture similar to a BNC one. Therefore, the S-Video connected cable must be secured in order not to slip accidentally out of the connector.

THE EXT. SYNC SIGNAL

When video images are provided from several MOVIECAM MK2 Video Assists, e.g. when cameras are used in a multiple camera application and the video images must be mixed together, they should be synchronized. To do so, a BNC cable must connect the Mk2 Video Assist e.g. of the camera A with the one of the camera B. The cable is plugged in a VIDEO OUT connector on camera A and connected to the EXT SYNC IN connector on Camera B. In the Video Config. menu, EXT SYNC (not TC) has to be selected.



► **Notice**

The synchronization provided by connecting a VIDEO OUT connector to an EXT SYNC IN connector only affects the video signal. If a synchronization of a MOVIECAM Camera itself is required, please see the dedicated explanations later in this chapter under “On Screen Display menu” (Sub-menu CAMERA SYNCED), page 100 or consult chapter 11 – Camera synchronization page 208.

THE MECHANICAL ADJUSTMENTS OF THE CCD

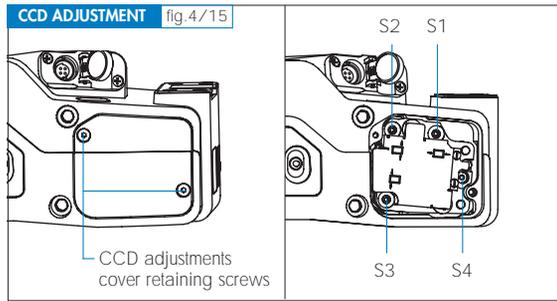
► **Notice**

This operation should be done by the rental house before delivering equipment. Once set, these adjustments should not move, but if adjustment does become necessary, the focus puller can improve the alignment and the focus of the video image. Adjustments are made with a 1.5 mm metric hex wrench.

! **Caution!**

Never use force.

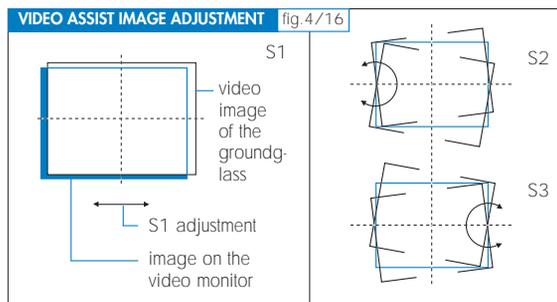
In order to access to the controls, first the cover must be removed from the Mk2 Video Assist by unscrewing two screws with a 1.5 mm metric hex wrench.



Three screws allow the fine positioning of the CCD and one screw (S4) moves it in and out to obtain the best possible focus.

Screw S1 moves the video image on the monitor horizontally.

Screw S2 and S3 rotate the image around a point which is located in the middle of the left side respectively right side of the image. To shift the image vertically, you will have to alternate the adjustments of both screws S2 and S3 to obtain the desired position.



THE ELECTRONIC ADJUSTMENTS OF THE VIDEO ASSIST CAMERA

► Remark

The electronic adjustments can only be carried out when the camera is ready to shoot (STAND-BY status) – no error message must be displayed.

THE BNC MODE BUTTON AND THE THREE LEDS

See page 80 for explanations.

THE WHITE BALANCE BUTTON AND THE FOUR LEDS

By pushing the WHITE BAL button several times, you cycle through the four options to adapt the Mk2 Video Assists' CCD to the lighting conditions (colour temperature) and the photographic conditions (use of compensation or coloured filter).

1. When shooting in daylight condition (about 5.600°K natural daylight, HMI or blue filtered tungsten luminaries) and when no compensation filter is used, you may obtain a good result in selecting OUTDOOR. If a Wratten 85 or similar filter is used to compensate daylight because the film used is balanced for 3.200°K, selecting INDOOR will produce a good result.
2. When shooting in interior conditions (about 3.200°K light or studio halogen luminaries) and when no coloured filter is used, you should obtain a good result in selecting INDOOR.
3. By selecting AUTO, the electronics will adapt automatically the CCD in order to obtain a "natural" rendition of the scene.

► **Notice**

When using the AUTO mode for adjusting the white balance, one should be aware that the colour of the MOVIELITE will affect the result. So, the more "red light" that surrounds the frame, the more cyan the video picture will appear.

4. A better result, especially when shooting in mixed lighting situation, will be obtained by using the MANUAL white balance adaptation. By using this option, you are able to change the white balance settings in the menu. For more details see the WB/GAIN description on page 94.

THE VIDEO LENS IRIS CONTROL

To control the brightness of the video image, two parameters can be changed on the Video Assist: the video gain setting and the video lens iris adjustment.

The lens of each Video Assist is equipped with an iris to control the amount of light falling on the CCD. However, because of the very effective AGC (Automatic Gain Control), which works over many f stops, it is suggested to normally leave the Video iris fully open.

THE MGC (MANUAL GAIN CONTROL) BUTTON AND THE LED

The gain is the electronic amplification of the video signal. Higher gain provides a brighter image but the video picture quality deteriorates with increased video 'noise'. That may bother the Director and other on the set.

Because of this it is preferable to first set the iris of the Video Assist lens wide open before increasing the gain manually.

Since the Automatic Gain Control (AGC) averages the image brightness, in some lighting situations (strong backlight, for instance) Manual Gain Control (MGC) is yield a better video image. Push the MGC button to toggle between Manual Gain Control (MGC LED ON) and Automatic Gain Control (MGC LED OFF). When MGC is ON, rotate (do not push it) the dial clockwise to increase or counter-clockwise to decrease the video gain.

► **Notice**

If the video image looks too dark or if there is too much electronic noise,

- *first check the iris setting of the lens on the camera; it should be set for the correct film exposure.*
- *secondly check the iris setting of the Video Assist; it must be wide open.*
- *now check if the gain control is set on AGC.*

If the video image is still too dark,

- *it is possible that the video exposure time is set to FILM (see submenu VIDEO CONFIG/EXPOS.TIME on page 97), the shutter opening is very small (e.g. 22.5°) or a high frame rate (e.g. 50 fps) is selected.*
- *it is possible that a strong light is coming directly into the lens (e.g. strong backlight from a window or from the sun during sunset).*

In these cases, switch to MGC (Manual Gain Control) and raise the gain a bit.

ON/OFF/CHECK/HIDE MENU SWITCH AND LED

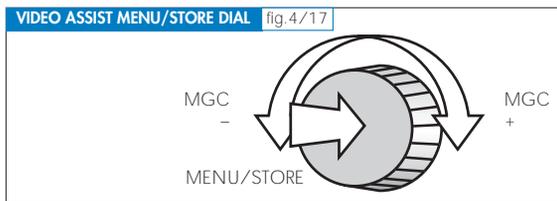
Before switching ON the video system, first make sure that the camera is powered. Now move the ON/OFF/CHECK/HIDE MENU switch on the Video Assist to the ON position. The ON LED will light up.

CHECK OR HIDE THE MENU

To display a summary of all options chosen from the menu while the OSD (On Screen Display) is not visible, push the ON/OFF/CHECK/HIDE MENU switch all the way down to CHECK/HIDE MENU. The OSD will automatically fade out after a few sec. To hide the OSD menu, push the ON/OFF/CHECK/HIDE MENU switch all the way down to CHECK/HIDE MENU. This is useful if the image needs to be checked while selecting options or making adjustments in the On Screen menu. See the configuration summary on page 114.

THE MENU/STORE DIAL

In order to navigate through the elaborate menu of the Video Assist functions, only handling one single user-friendly dial is needed. The dial can be pushed briefly or longer (about 3 sec.) and turned to the left and to the right. By means of these four operations, each one of the video functions can be selected, activated, and stored.



► Notice

1. When the navigation function has not been activated and the Manual Gain Control (MGC) is ON, the dial serves to increase (by turning it clockwise) or decrease (by turning it counter-clockwise) the gain level.
2. As soon as the On Screen Display (OSD) is activated (by having pushed the dial for about 3 sec.), there will always be data to all outputs in order to be able to use the menu.

! Caution!

By pushing the dial while the OSD is not visible, the actual image will be stored in the Video Assist memory, deleting the previous stored image.

While the OSD menu is ON, no changes of the settings by means of the buttons are possible. The data in the inserted windows are not updated.

THE VIDEO ASSIST ON SCREEN DISPLAY (OSD)

Beside the "normal video tap" function of the MOVIECAM Mk2 Video Assist System, many features are offered to the users in order to facilitate not only the work on the set, but also the processes in post production houses.

In order to adjust the various settings, first you have to make yourself familiar with the easy to use navigation system. To navigate, only the MENU/STORE dial is used; it is either pushed or turned.

► Notice

No OSD is available while the camera is RUNNING.



By pushing the dial briefly while the OSD is visible, you will activate the function or option marked by the menu-cursor **->**.

By pushing the dial for about 3 sec. – this can be done at any time – you will either open or close the On Screen Menu. While closing the OSD, the latest displayed options are automatically activated.



By turning the dial, you will either:

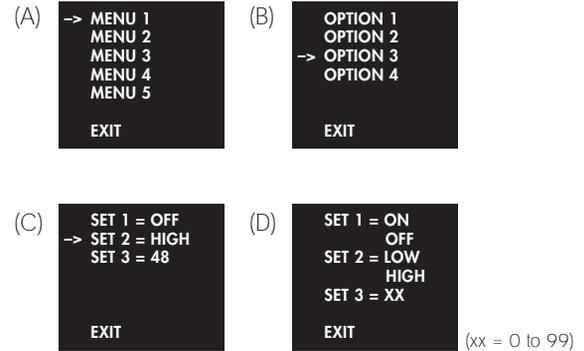
- move the menu-cursor **->**,
- move the character-cursor **X**,
- change the option between e.g. **ON**, and **OFF**, **SMALL**, and **LARGE**, etc.
- adjust a value, e.g. from **48** to **12** or to **54**,
- position a line, a frame or a window on the display.

THE MENU STRUCTURE

The menu is structured dynamically, this means that the several related levels (Sub-menus) will appear automatically when a higher menu level is selected. The first level – the Main Menu list (A) – will appear when the dial is pushed for about 3 sec.

The cursor **->** will face one of the Sub-menu titles. By turning the dial, the cursor will scroll all lines. Each of these Sub-menus offers different options. By pushing the dial, the selected Sub-menu will show its list of options (B). Each option offers the possibility to select individual-ly several settings (C) listed on the third level.

On each displayed level, the option EXIT, is provided. By selecting exit and pushing the dial shortly, you will climb the program to the next superior level (D). When you push more than 3 sec., the latest changes will be activated and the OSD will fade out.



THE CURSOR

While turning the dial, the cursor **->** will move from line to line. As soon as the desired option is reached, a short push on the dial will select it. Remember, if the dial is pushed longer than 3 sec., the OSD will fade out. When an option is selected, all its functions and settings will appear in a list. Now a function or a setting can be selected by turning the dial.

When the cursor **->** shows a function, a push on the dial will activate this function and the setting can be chosen again by turning the dial. While pushing the dial briefly, the selected setting is confirmed. The navigation in the menu is very simple and, because of its logical structure, can be learned in a few minutes.

THE SETTINGS

By turning the dial, the following changes can be done:
Changing of options: e.g. ON > OFF; LIGHT > DARK
Cycling several preset settings: e.g. SMALL > MEDIUM > LARGE; DEFAULT > CONFIG USER1 > CONFIG USER 2 > etc.

Changing of position: e.g. vertical shift, horizontal shift
Entering text: while turning the dial, the character-cursor **X** will mutate to letters and numbers. As soon as the desired character is On Screen, it will be saved and the cursor will move left to the next possible place by pushing the dial shortly.

Leaving the OSD menu: There are two ways to exit the menu:

1. To leave the actual menu level and to return to one menu level higher, move the cursor to EXIT and push the dial.
2. To close all menus and to leave the On Screen Display, push the dial for about 3 sec.

Notice

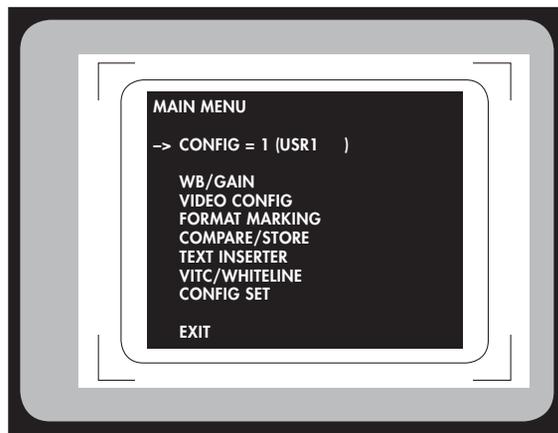
The menu can be left at any time.



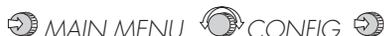
Caution!

The following menu description is related to the Software Version V2.06. To be sure that the latest software is installed, please check it by selecting the Sub-menu CONFIG SET. See page 113.

THE FIRST LEVEL – THE MAIN MENU



THE SECOND AND FURTHER LEVELS – THE SUB-MENUS



-> CONFIG = 1 (USR1)

By pushing the MENU/STORE dial for about 3 sec., the first menu level will appear. On top of the menu window, the name of the actual displayed level (here MAIN MENU) is indicated.

In the first line the cursor shows **CONFIG = 1 (USR1)**. Beside the possibility to use the default configuration **= 0**, the MAIN MENU offers the possibility to select between six customised configurations available in the Video Assist memory.

The settings of these six configurations (WB/GAIN, VIDEO CONFIG, FORMAT MARKING, COMPARE/STORE, TEXT INSERTER and VITC/WHITE LINE) will be done with the Sub-menu CONFIG SET – see page 113. There, the six individually preset configurations will automatically be numbered from 1 to 6 and you may also add a name into the brackets. The memory will save the configurations even when the camera is not powered.

▶ Notice

To check a summary of the settings saved in the memory – see page 115 – of the selected configuration, close the OSD by pushing the dial for 3 sec. and push the ON/OFF/CHECK/HIDE MENU switch all the way down to CHECK/HIDE MENU position.

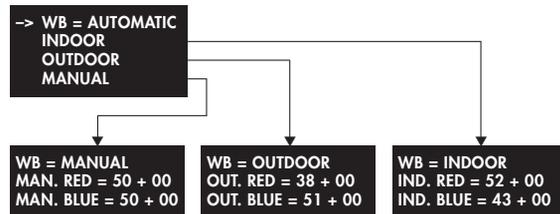
MAIN MENU WB/GAIN

→ WB/GAIN

While activating the WB/GAIN Sub-menu, you will be able to adjust manually the colour balance and the gain of the Video Assist. For "normal use", the selection of the colour balance as well as the gain can be done using the WHITE BAL button as well as the MGC button. The OSD menu allows to make fine adjustments of all preset settings beside the default one. By selecting e.g. IND. RED in the WB=INDOOR Sub-menu, you will be able to alter the factory presetting by reducing or raising the value in a range of 0 to 99.

If the individual factory setting of the colour saturation is e.g. 52, you will be able to change it from 52 to 0 (-52 steps) or 52 to 99 (+47 steps).

In AUTOMATIC, the electronics will analyse the light entering the camera and offer a neutral rendering of the colours, e.g.



In the same way, the MANUAL GAIN can be adjusted in a range from 0 to 99.

GAIN = AGC = MGC
GAIN = MGC
MANUAL GAIN = 0

MAIN MENU VIDEO CONFIG

→ VIDEO CONFIG

The VIDEO CONFIG Sub-menu allows the selection of several options related either to the video image rendering, to the signal provided by the Video Assist and to the synchronization of the camera.

MENU VIDEO CONFIG

→ FLICKERFREE = ON
EXPOS. TIME = FILM
LINE INTERP. = ON
Y/C (SVHS) DATA = ON
MINI MON. DATA = OFF
VID SYNC = EXT (NOT TC)
CAMERA SYNCED = OFF
PHASE 0 - 356 = 0.0

EXIT

-> FLICKERFREE = ON
= OFF

The flicker effect on video monitor results from the difference between the frame rate of the film camera and the one of the Video Assist. In selecting the option *ON*, the flicker will be fully eliminated. This is achieved by storing the digital image into a video frame storage while the mirror is in the viewing position and to display this picture in the correct timing of the video system. The *FLICKERFREE* option works when the frame rate of the Mk2 is set faster than 1 fps.

Notice

The storage of the digital image causes a slight delay, which is not desirable in some crucial time conditions, e.g. motion control or shooting singers or musicians with play-back sound. Therefore it is possible to select the FLICKERFREE = OFF option. This will eliminate the delay at expense of the return of flicker.

Caution!

The time-code information such as time-code, user bits, VITC and WHITELINE is not valid if FLICKERFREE = OFF is selected.

-> EXPOS. TIME = FIXED
= FILM

When the mode *FIXED* is selected, the exposure time of the CCD will automatically be calculated accordingly to the formula $1/(fps \times 2)$ regardless whether the video standard is PAL or NTSC. The shutter opening is considered 180° fixed. Example: the fps rate is 24; the exposure time will be $1/(24 \times 2) = 1/48$ Sec.

Caution!

This calculation is based on the 180° shutter opening; even though the shutter could have been modified manually!

In selecting the option *FILM*, the Video Assist electronics calculates the film exposure time while the film camera is in *STAND BY* status. In toggling between *FIXED* and *FILM* exposure time, you will see a difference in the image brightness.

A practical use of the option *FILM* is the "video visualization" of motion blur and stroboscopic effect that will be recorded on film.

MAIN MENU VIDEO CONFIG LINE INTERP.

-> LINE INTERP. = ON
= OFF

In order to enhance the quality of the Video Assist picture, you may virtually double the vertical resolution in adding so called interpolated lines.

MAIN MENU VIDEO CONFIG Y/C (S-VHS) DATA

-> Y/C (SVHS) DATA = ON
= OFF

By selecting ON, the video image supplied by the Y/C (S-VHS) connector will include the data information.

MAIN MENU VIDEO CONFIG MINI MON. DATA

-> MINI MON. DATA = ON
= OFF

By selecting ON, the video image supplied by the On Board Monitor connector will include the data information.

MAIN MENU VIDEO CONFIG VID SYNC

-> VID SYNC = EXT (NOT TC)
V= TC

With this menu, the reference used to synchronize the Video Assist can be selected.

► Notice

Without selecting CAMERA SYNCED ON (VID, TC), this synchronization is only related to the Video Assist, not to the one of the camera! Therefore, the external sync signal must be fed in the Video Assist connector and not in the Mk2 camera connector.

While selecting EXT, the Video Assist will be synchronized with an external signal e.g. video or clock fed in the EXT. SYNC IN BNC connector. The green LED located next to the connector will light up to monitor that the fed synchronization signal is OK.

If EXT is selected, either a standard video composite or a TTL (0 and 5 V) signal should be fed in the EXT SYNC IN connector.

The range of frequencies is 25 or 50 Hz for the PAL standard and 30 or 60 Hz for the NTSC standard. A divergence smaller than $\pm 0.1\%$ is tolerated. The input impedance will automatically switch between 10 K Ω for TTL and 75 Ω for video signals.

⚠ Caution!

If no usable external signal is fed to the EXT. SYNC IN connector, the Video Assist will run on its own internal oscillator.

The LED next to the connector will show by lighting green if the signal is appropriate. The use of the Pick-up Unit in connection with the Video Assist connector is not possible.

-> CAMERA SYNCED = OFF
= VID
= TC

With this Sub-menu, the synchronization reference of the film camera can be selected.

OFF means that the references signal is provided by the film camera's own quartz crystal generator.

VID means that the film camera will use the video signal for synchronization.

Selecting TC is currently not available

Caution!

TC selection is only possible when a TIME CODE BOX is connected.

Whenever the Video Assist is switched ON, the CAMERA SYNCED function is always set to OFF in order to avoid wrong speed.

-> PHASE 0 - 356 = 0.0

When VID is selected in the CAMERA SYNCED Sub-menu, the next menu level PHASE 0 - 356 allows to adjust the phase between the external sync signal and the film camera. By turning the dial, the phase can be adjusted with increments of 3.6° in a range 0° to 356.4°.

-> FORMAT MARKING

The FORMAT MARKING Sub-menu allows to design and insert one or two sets of frame lines – either individually or simultaneously – into the Video Assist image. Complementary to the following already programmed and named aspect ratios, the Sub-menu allows to design further twelve frames which can be labelled individually.

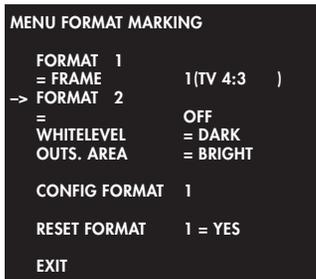
FORMAT No.	NAME	ASPECT RATIO
1	TV 4:3	1:1.333
2	TV 16:9	1:1.777
3	1.85	1:1.85
4	2.35	1:2.35

Even with the four listed frames, their sizes, their brightness and their positions on the TV screen can be adjusted. The positioning allows precise lining up the electronic frames with the Groundglass Format Markings.

Notice

If the electronic Format Markings are not parallel to the Groundglass Format Markings, readjust the CCD chip with the Adjusting screws as explained on page 84. Be aware that first the Groundglass Format Markings must be positioned on the TV monitor by means of the CCD chip adjustment before positioning the generated frame lines. It is recommended to point the film camera towards a bright surface and to turn OFF the MOVIELITE so that the Format Markings on the Groundglass are clearly visible.

Furthermore, the appearance of the surrounding area of one of the selected frames can be adjusted accordingly to the users needs.



The following explanations are valid for both FORMATS and for all FRAMES



While FRAME is activated and the dial turned, all the preset configurations related to this selected FORMAT will appear cyclical.

OFF will appear at the end of the list; it can be activated if no frame saved under the selected FORMAT should be inserted.



While WHITELEVEL is activated, the brightness of the frame lines can be adjusted.



While OUTS. AREA is activated, the brightness of the surrounding of the selected frame can be adjusted. While selecting VIDEO, the video image will appear accordingly to the settings bright or dark. If BLACK is selected, the surrounding will show no video images but only a neutral black surface.

▶ Notice

This function is only available if FORMAT 1 or 2 is activated. No darkening function is available if there is no FORMAT Marking or if two FORMAT Markings are switched ON.

 MAIN MENU 
 MENU FORMAT MARKING 
 CONFIG FORMAT 

```

MENU CONFIG FORMAT 1
NAME = 1(TV 4:3 )

MOVE LINES
ALL
-> HORIZONTAL
    VERTICAL
    LEFT
    RIGHT
    TOP
    BOTTOM

EXIT
    
```

The Sub-menu CONFIG FORMAT 1 (or 2) allows the design and labelling of a frame.

While NAME is activated, it is possible to select the already displayed name, to clear it and to set a new one.

A cursor will indicate where characters can be placed. While ALL is activated, turning the dial will either increase or decrease the size of the frame.

While HORIZONTAL or VERTICAL is activated, the whole frame can be positioned.

 MAIN MENU 
 MENU FORMAT MARKING 
 CONFIG FORMAT 

```

FORMAT 1
-> = FRAME 1 (TV 4:3 )
    
```

Beside the possibility to change the size and position of a frame, each line (LEFT, RIGHT, TOP, BOTTOM) can be positioned individually. How to write a CONFIG NAME is described on page 92.

 MAIN MENU 
 MENU FORMAT MARKING 
 CONFIG FORMAT 

```

-> RESET FORMAT = YES
                  = NO
                  = UNDO
    
```

While RESET FORMAT is activated, the actual frame design can be reset to the factory default setting. While selecting UNDO, the last changes will be deleted and the previous setting activated. UNDO is only available when the OSD has not been left before.

 MAIN MENU  COMPARE/STORE 

```

-> COMPARE/STORE
    
```

The Video Assist allows to store one image in its own memory (the stored image) and to compare it with the image currently captured (the live image). The stored image will remain in the memory as long as the Video Assist is powered and obviously as long as it is not replaced by a new image.

```

MENU COMPARE STORE
-> VIEW MODE = LIVE

STORE IMAGE
CLEAR IMAGE

EXIT
    
```

Three options are provided in the VIEW MODE:

- LIVE the live image is shown on the video monitor
- STORED the stored image is shown on the video monitor
- COMPARE the live and the stored image are shown simultaneously on the video monitor.

▶ Notice

- Whenever the Video Assist is turned ON, the "live" image is displayed.
- It is always possible, by pushing for 1 sec. the dial, to store an image, even though the OSD is not activated. Therefore it is not necessary to enter the menu for storing an image.
- When showing the two images simultaneously, the Video Assist will interlace the pictures. This option offers the possibility to compare both images but a moiré effect can occur in certain situations.

MAIN MENU COMPARE/STORE

-> STORE IMAGE - STORE DONE

While the menu-cursor points towards STORE, pushing the dial shortly will store the actual image and DONE will appear.

MAIN MENU COMPARE/STORE

-> CLEAR IMAGE

While the menu-cursor points towards CLEAR, pushing the dial shortly will delete the stored image.

MAIN MENU TEXT INSERTER

-> TEXT INSERTER

The Video Assist enables to display a number of windows containing different data on the video monitor. In each window, the size and appearance of the data can be set. The position of each window can also be individually adjusted.

MENU TEXT INSERTER

```

-> SYSTEM/LDS/STATUS
TIME CODE
TC USER BITS
USER TEXT LINE
PULL DOWN

WHITELEVEL      = BRIGHT
INVERS          = OFF
SET TO DEF.     = NO
VERT. FINE POSITION

EXIT
    
```

▶ Remark

Even though some options (e.g. here LDS or TIME CODE) are proposed on the menu screen, they are currently not available with the Mk2.

While VERT: FINE POSITION is activated, all visible data can be precisely positioned vertically.

MAIN MENU TEXT INSERTER

```

SYSTEM LINE = OFF
              = ON
LDS LINE    = OFF
              = ON
STATUS LINE = OFF
              = ON

VERTICAL POSITION

BACKGRD.    = BLACK/WHITE
              = VIDEO

FILM COUNTER = REMAIN
              = FOOTAGE
              = TAKE
              = OFF

EXIT
    
```

While one of the three options has been activated, you may, by turning and pushing the dial, choose if the selected line should be inserted on the video screen or not.

Currently, only the STATUS LINE is available. Even though the option TC, LDS and SYSTEM LINE are displayed, these features are currently not available.

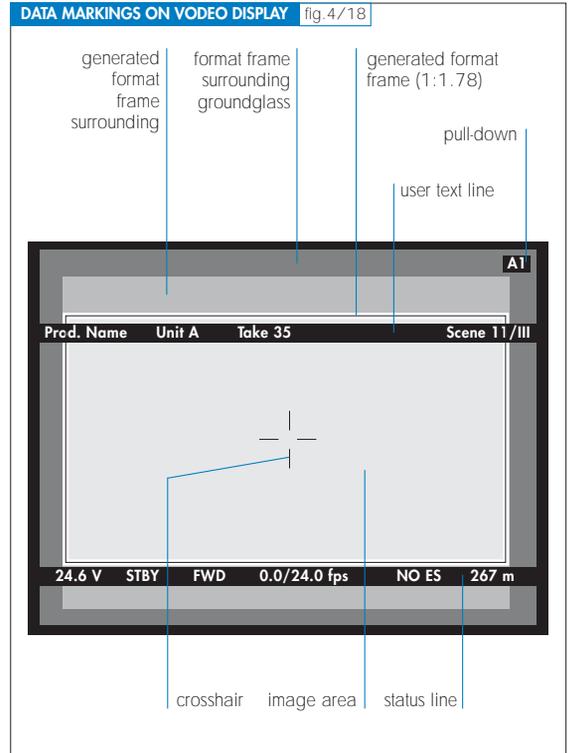
- SYSTEM LINE IS CURRENTLY NOT AVAILABLE
 LDS LINE IS CURRENTLY NOT AVAILABLE
 STATUS LINE
- actual voltage of the power supply
 - camera status
(*RUN, STAND BY, NOT READY*)
 - shooting direction (*FWD, REV*)
 - actual/preset fps
 - actual shutter opening
 - film length (remain, exposed, take)

While the STATUS LINE is activated, it is moved by turning the dial.

While BACKGRD is activated, either the video image or a box can be selected. The background box will be black or white depending if the INVERSE option has been selected OFF or ON.

While the STATUS LINE is activated, its background colour can be switched between black and white.

In the STATUS LINE, a FILM COUNTER displays the exposed film length.
 Depending on the preset of the camera, either "meters" or "feet" will be shown.



Changes of the unit of measurement can only be carried out at the maintenance centre. Only from [0] to [x] m or ft can be displayed.

Because no electronic droved shutter is built in, NO ES will appear instead of the actual shutter opening.



} currently not available

THE PULL-DOWN

The Video Assist can generate information on whether the current video image corresponds with a new film frame or it is a repeated video image. The pull-down information displays it in man readable form.

All Video Assists are based either on PAL or NTSC video standard, with a fixed video frequency of either 25 full video frames per second with PAL or 29.97 full video frames per sec. with NTSC. The frame rate of the film camera on the other hand can be selected over a wide range. At every film frame rate which is different from the video frequency, the Video Assist has to add repeated video fields (1 field is 1/2 video frame) to compensate for the different frame rate. In practice the most important case is a film camera frame rate of 23.976 fps and a NTSC Video Assist. This creates a situation described in the fig. 4/19.

From the first film frame, two video fields are derived, the second film frame, three video fields are derived, from the next film frame, two video fields and so on.

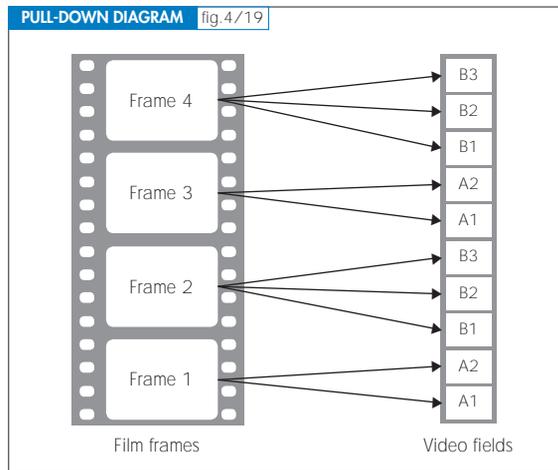
The pull-down information is created as follows: Every time, the video field corresponds with a new film frame, the letter will change either from A to B to A and the number will be set to 1. As long as no new film frame is taken, the video fields are counted, beginning from 1. Consequently A2 is the first repetition of A1, B2 would be the first repetition of B1, B3 would be the second repetition. In spite of the fact that the name pull-down

comes from the working practice in the NTSC system, where on a telecine the film is RUNNING on 23.976 fps and gets converted to 29.97 fps, the definition of pull-down information on the Video Assist can also be applied to PAL and to film frame rates other than 23.976 fps.

Like all man readable information, the data can be inserted as a window on the monitor.

► Notice

Pull-down information is only inserted when time-code is actually exposed on film. If there is no time-code exposing, for example because the film camera is not RUNNING on a time-code speed, only A1 will be displayed.



→ USER TEXT LINE

While USER TEXT LINE is activated, a new line and a character-cursor **X** appear. The line has the width of the video screen.

→ EDIT TEXT

In activating EDIT TEXT, three short lines appear. By turning the dial, the cursor moves back and forward. By pushing the dial, a character appears on the position marked by the cursor. While turning the dial, you are able to select a letter, a number or a symbol. By pushing the dial, the chosen character will be saved and the cursor will be activated again.

Notice

While writing the user text, briefly push the dial, otherwise the OSD menu will fade out.

WINDOWS ADJUSTMENTS

Following settings and adjustments can be done for most Sub-menu windows and characters:

- While one window is activated, you may select *ON* to display it or *OFF* to fade it out.
- While either HORIZONTAL or VERTICAL POSITION is activated, the position of the windows can be adjusted accordingly. By activating VERT. FINE POSITION a precisely vertical positioning of all windows is possible.
- Most characters or windows can be set SMALL, MEDIUM or LARGE when SIZE is activated.
- The characters or windows can be shown with either black on white background or reverse.

- The brightness of the white background or digits can be adjusted when WHITE LEVEL is activated.

→ CONFIG SET

By pushing the dial, the option to (re)name a configuration is given. By turning the dial, you cycle the six names already saved in the memory. As soon as a name appears that should be changed, you may edit it by activating EDIT NAME.

```
SET NAME INDIVIDUAL
NAME = 4 (TEST )
> x <
```

The name can be deleted (CLEAR NAME) and the selected configuration can be put to TO DEFAULT. Whilst activated, you have three options to choose from: YES, NO or UNDO.

Furthermore, if you would like to erase a setting and replace it by the default setting, you are asked if you are sure about it.

The TO DEFAULT configuration cannot be renamed. In choosing SET LIKE, you can assign a previous setting to the actual configuration.

```
MENU CONFIG SET
SW VERSION = 2.06
CONFIG = 2(USR2 )
EDIT NAME
CLEAR NAME = UNDO
SET LIKE (NO )
TO DEFAULT = NO
EXIT
```

-> EXIT

You may select EXIT at the bottom of each menu level (Main or Sub-menus) to leave the actual level and to access one menu level higher. While being in the Main Menu, you close the OSD by activating EXIT.

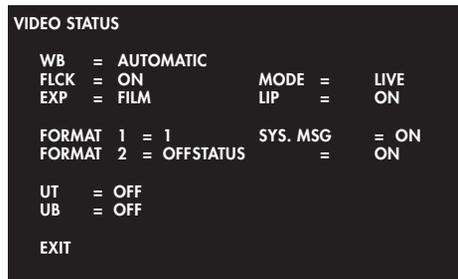
CHECKING THE CONFIGURATION

While the OSD menu is OFF and the ON/OFF/CHECK/HIDE MENU switch is pressed all the way down, a summary of the actual configuration, of the VIDEO STATUS, will be screened.

Even though, many features are displayed, only some are currently available.

EXP	Video exposure mode
FLCK	Flickerfree
FORMAT 1	Frame 1 aspect ratio
FORMAT 2	Frame 2 aspect ratio
GAIN	Manual CG or Automatic CG
MODE	Compare LIVE or STORE
PD	Pull-down
STATUS	Status Line
UT	User Text
WB	White Balance

Example



Caution!

The OSD will be switched OFF automatically when the camera starts UP.

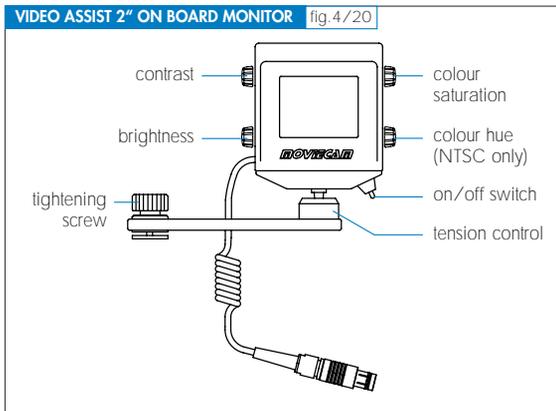
THE ON BOARD VIDEO MONITORS

MOVIECAM provides two 2" On Board LCD Colour Monitors; one for the NTSC standard and one for the PAL standard. Be sure to have the correct one before leaving the rental house.

The 2" ON BOARD VIDEO MONITOR

The 2" On Board Monitor is mounted on a ball joint. This attachment, fixed on a small bracket, can be mounted on several Accessory shoes on the Mk2 camera, where it is tightened by a screw. The tension of the ball joint can be regulated by turning the ring. Turn the On Board Monitor ON and OFF with the ON/OFF switch. Colour saturation, colour hue (NTSC only), brightness and contrast can be adjusted with four rotary knobs.

VIDEO ASSIST 2" ON BOARD MONITOR fig.4/20

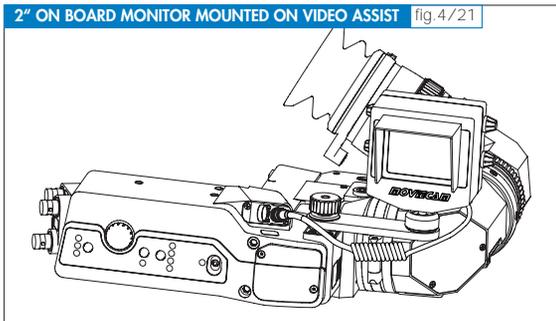


! Caution! This 2" Video Monitor is primarily conceived for shooting Standard 35 format. While shooting in a Super 35 format small portion of the image are not visible on the left and right.

CONNECTING THE ON BOARD MONITORS

Be sure that the 2" On Board Monitor has the same standard (PAL, NTSC) as the Video Assist.

2" ON BOARD MONITOR MOUNTED ON VIDEO ASSIST fig.4/21



! Caution! Be sure that the camera is not powered during connecting or disconnecting a Video Monitor.

► Notice While powering up on a On Board Monitor, the image on an extended (remote) monitor might disappear briefly.

CHAPTER 5

THE COMPACT Mk2 MAGAZINE ADAPTERS

THE MAGAZINE ADAPTERS

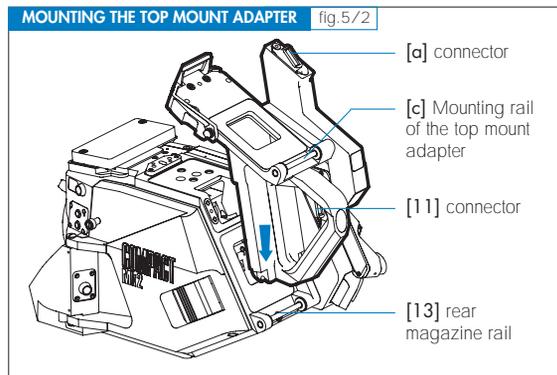
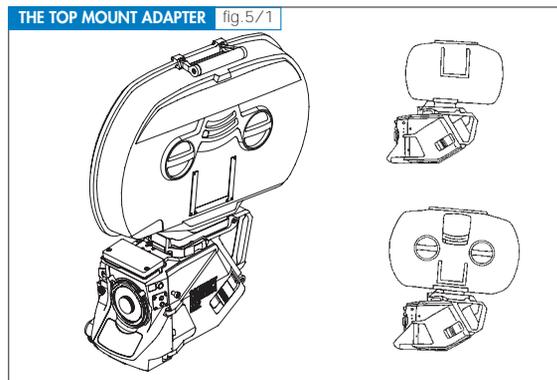
► **Preliminary remark:**

Not only the MOVIECAM Magazines but also the two COMPACT Magazine Adapters are compatible with the Mk2 System.

There are two possibilities to mount the magazines on the MOVIECAM COMPACT Mk2:

1. At the top
with a TOP MOUNT ADAPTER –
Studio configuration,
2. At the rear
with a REAR MOUNT ADAPTER –
Shoulder configuration.

THE TOP MOUNT ADAPTER

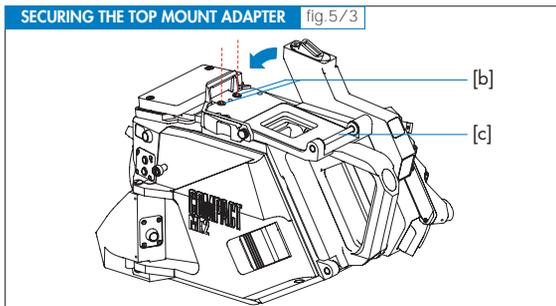


Mount the Top Mount Adapter on the rear magazine rail [13] and swing it forward toward camera until the locating pin engages. The Top Mount Adapter has two connectors; the upper one [a] is attached mobile to facilitate connecting it with the Magazine; the lower one connects the Top Mount Adapter to the connector [11] on the Camera Body.

Gently depress on adapter and tighten both 5 mm screws with an S4 Allen key [b].

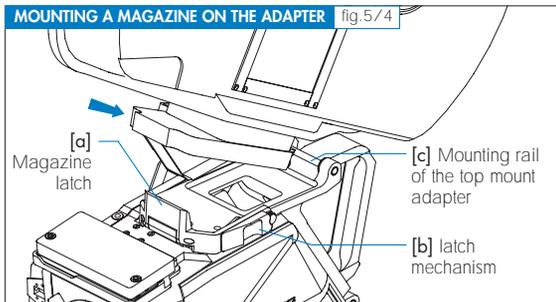
! Caution! When changing Adapters, contact surfaces have to be absolutely clean!

SECURING THE TOP MOUNT ADAPTER fig.5/3



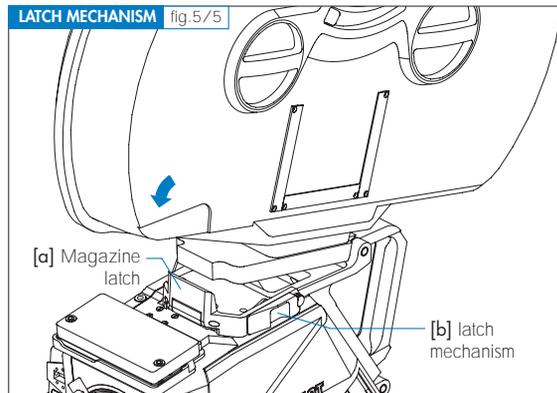
Mount the Magazine to the magazine rail [c] of the Top Mount Adapter.

MOUNTING A MAGAZINE ON THE ADAPTER fig.5/4



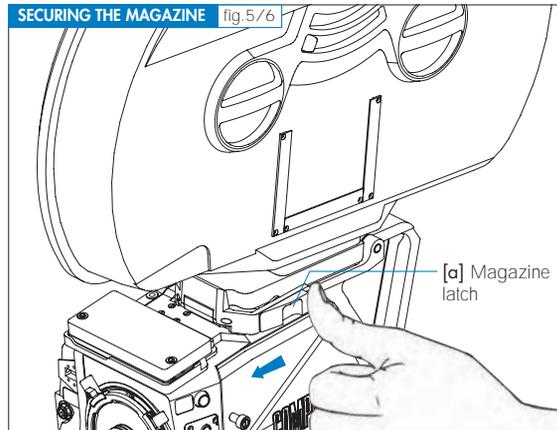
! Caution! Before mounting the Magazine, the latch mechanism [b] has to be open (locking slider in the back position).

LATCH MECHANISM fig.5/5



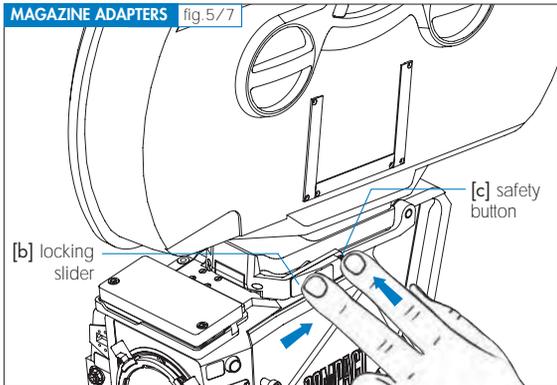
Swing the Magazine carefully forward toward the camera until it engages in the magazine latch [a].

SECURING THE MAGAZINE fig.5/6



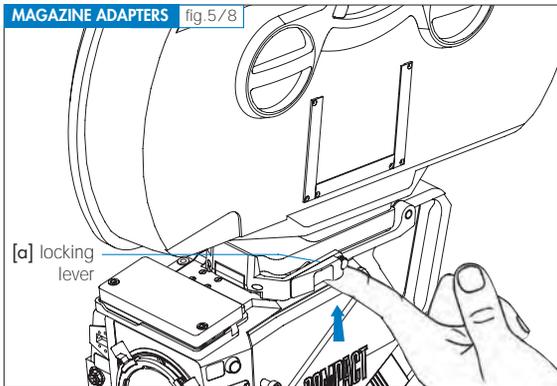
► **Do not forget!** Lock the latch mechanism by pulling the locking slider [b] forward.

MAGAZINE ADAPTERS fig. 5/7



To remove the Magazine, depress the safety button [c], push the locking slider [b] backward. Lift the locking lever [a] while holding the Magazine!

MAGAZINE ADAPTERS fig. 5/8



► **Do not forget!**

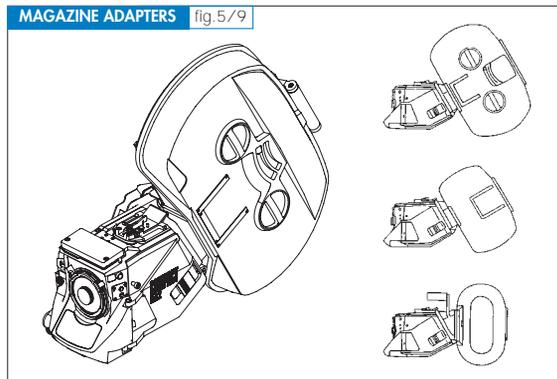
A Camera Cover Cap always has to be attached when no Magazine is mounted on the camera!

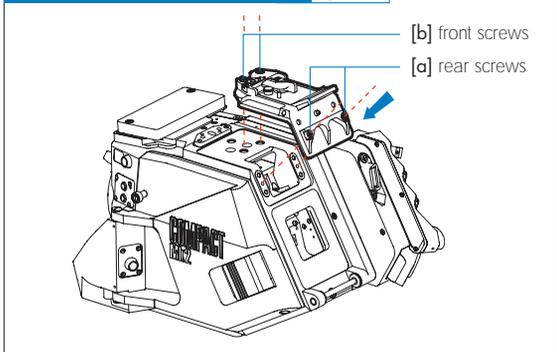
THE REAR MOUNT ADAPTER

After removing the Top Mount Adapter, attach the Magazine to the Camera Body with the Rear Mount Adapter [B].

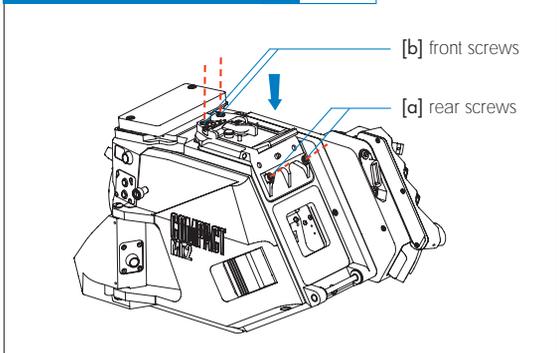
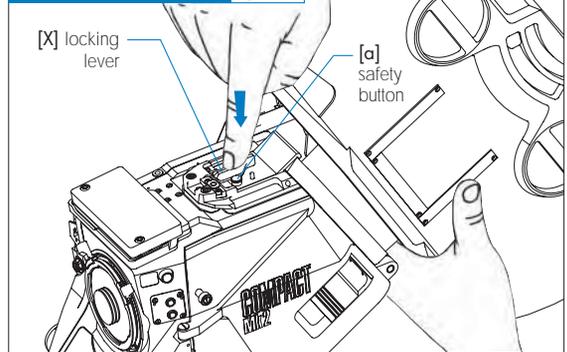
- 1) e.g. Fluid head operation
- 2) e.g. Handheld operation
- 3) e.g. STEADICAM® operation

MAGAZINE ADAPTERS fig. 5/9



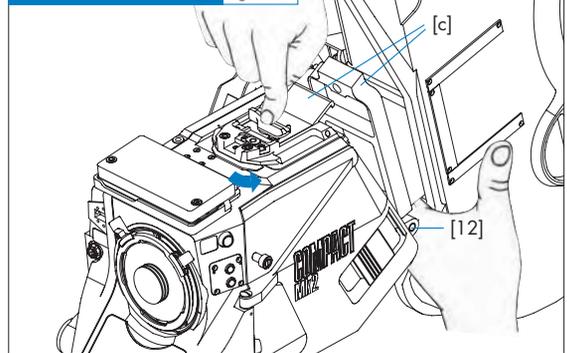
MOUNTING THE REAR MOUNT ADAPTER fig.5/10

The Rear Mount Adapter is attached to the MOVIECAM COMPACT Mk2 by four 5 mm screws with an S4 Allen key. When mounting the Rear Mount Adapter, tighten the rear screws [a] first, then the front screws [b].

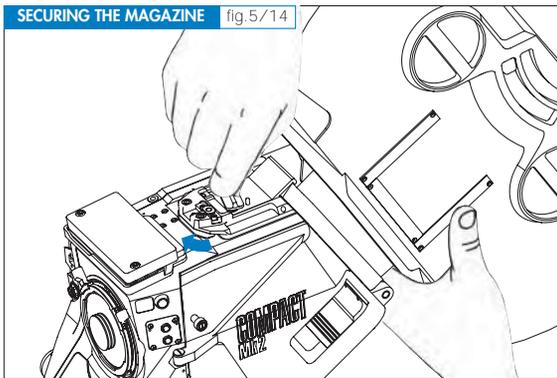
SECURING THE REAR MOUNT ADAPTER fig.5/11**MOUNTING THE MAGAZINE** fig.5/12

The Rear Mount Adapter has a latch mechanism with a safety button.

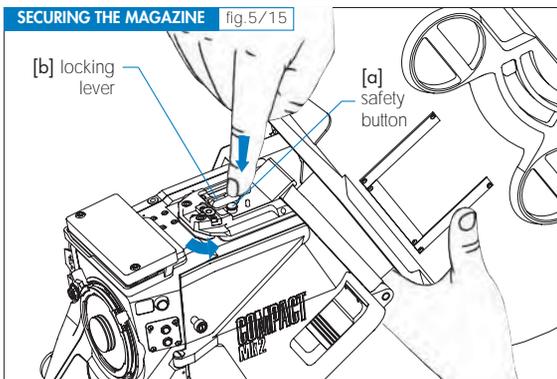
To open the latch mechanism, press the safety button [a], turn the locking lever [X] counter-clockwise and press it down. Attach the Magazine to the camera body mounting rail [12]. Swing the Magazine carefully forward toward the camera body and engage magazine mounting latch in latch [c] on the Rear Mount Adapter.

SECURING THE MAGAZINE fig.5/13

Caution! *Prior to mounting the Magazine, the latch mechanism must be open!*



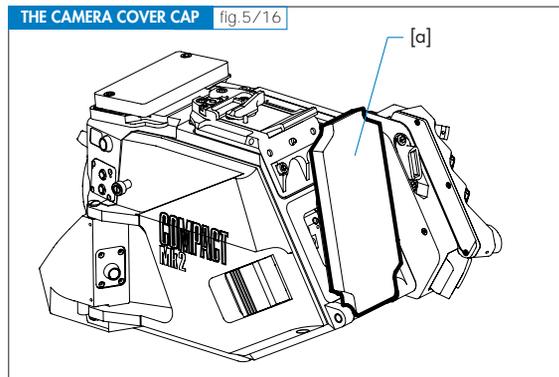
Lock the Magazine on the camera by turning the locking lever [b] clockwise.



To remove the Magazine, press the safety button [a], turn the locking lever counter-clockwise and press it down while holding the Magazine!

The Upper Carrying Handle is attached to the threaded socket [d] on the top of the Rear Mount Adapter.

CAMERA COVER CAP



Instead of a Magazine, you can attach a Camera Cover Cap [a] with or without handgrip – see chapter 7 page 151.

CHAPTER 6

THE MOVIECAM MAGAZINES

THE MAGAZINES

All Magazines supplied for MOVIECAM cameras can be used with the COMPACT Mk2 camera.

MOVIECAM offers five types of Magazines

- 1) 1.000 ft/300 m LIGHTWEIGHT MAGAZINE
- 2) 1.000 ft/300 m MAGAZINE
- 3) 400 ft/120 m LIGHTWEIGHT MAGAZINE
- 4) 500 ft/150 m MAGAZINE
- 5) 400 ft/120 m STEADICAM® MAGAZINE



Important!

*The Magazines have to be thoroughly clean.
Remove any smudges immediately!*

a) Magazine interior:

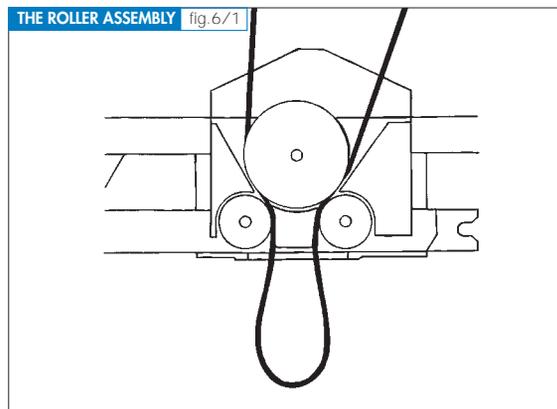
Clean interior and film plates from dust carefully with a vacuum cleaner. Use compressed air only very cautiously. An intact sealing rubber band is elastic and slightly flattened at the top. Inspect it regularly for mechanical damage and clean with a dry cloth – do not use solvents! If necessary, dab the velvet rollers carefully with adhesive tape.

b) Magazine exterior:

Clean Magazine lacquer and Plexiglas cover with a window cleaner – caution, do not moisten connector! Keep connector, tightening wheels and footage counter clean and inspect them for mechanical damage. Clean light trap plate thoroughly before attaching it to the camera.

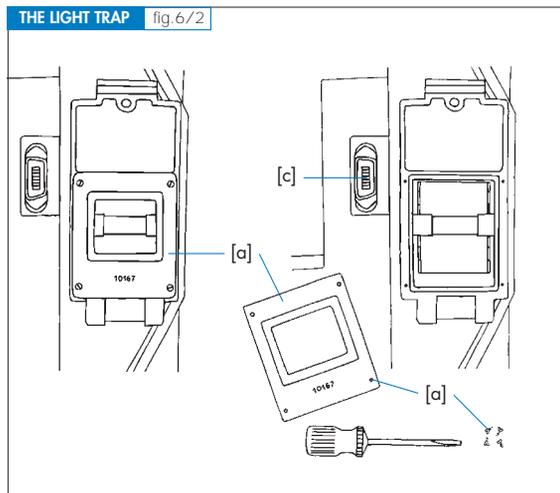
Magazines should always be protected by a clean Loop Protector.

ROLLER ASSEMBLY



The roller assembly contains three rollers, two of them can be velvet clad. Roller bearings should be serviced at a rental house only. The roller assembly is best cleaned with a vacuum cleaner. You may use compressed air to blow the Magazine; be careful not to blow the velvet rollers directly, they might get damaged.

THE LIGHT TRAP



[c] Magazine connector

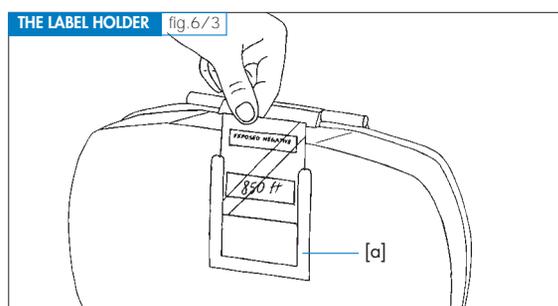
To remove film chips and dirt more easily, remove the light trap plate [a] (bearing the Magazine serial number) by unscrewing four M2.5 screws [b].



Caution!

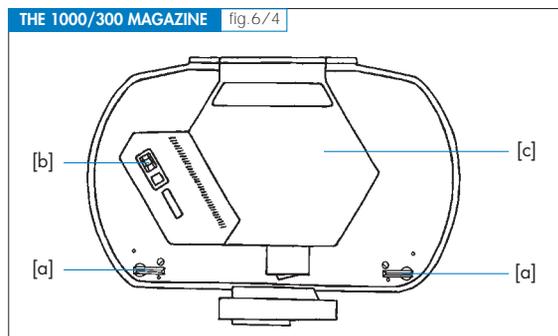
Due to the fine threads, the light trap plate should only – very carefully – be removed, if really necessary! When mounting the plate again, make sure that the plate is clean and plane (light leakage!) and the asymmetrical opening at its right place. You do not have to remove the roller assembly!

MAGAZINE 500/150 LEFT SIDE



Self-adhesive labels, supplied by the rental houses, can be slid into a holder [a] at the outside of the Magazine cover (left side). Use these labels to identify exposed film later on; stick them onto film cans.

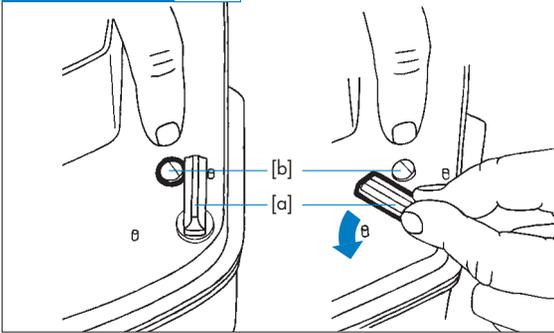
MAGAZINE 1.000/300 RIGHT SIDE



Motors, heater [c], digital footage counter [b], and latches [a] are located at the right side of a 1.000/300 or 500/150 Magazine.

MAGAZINE LATCH

THE MAGAZINE LATCH fig. 6/5



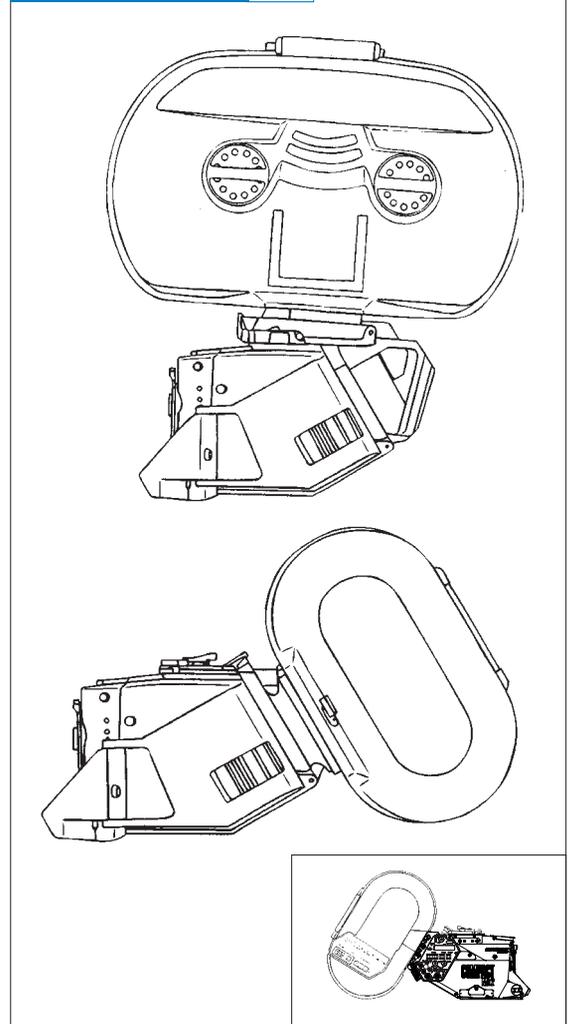
To open a Magazine, lay it down on its right side (footage counter side). Press the small black safety buttons [b] (with your middle finger) and hold them; this permits to easily turn the latches [a] toward each other with your index finger.

LIGHTWEIGHT MAGAZINES

The 400/120 and 1.000/300 Lightweight Magazines differ from the aluminium types by used materials and design. The fibreglass reinforced plastic/carbon blend enables the production of considerably lighter Magazines without losing stability and with the same acoustic properties as one produced in aluminium.

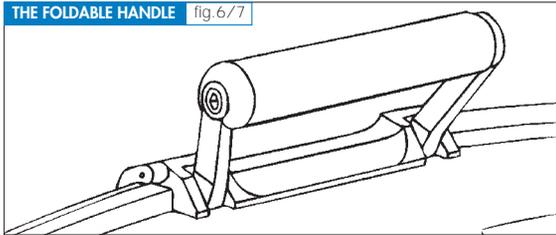
On top of the 1.000/300 Lightweight Magazine a foldable handle has been installed. All other parts, such as motors, heater, counter and manual tightening device, are identical with the aluminium model.

THE LIGHTWEIGHT MAGAZINES fig. 6/6



The 400/120 Lightweight Magazine has, apart from its camera attachment angle, the same shape as the lightweight Magazine designed especially for STEADICAM® shots. However, this Magazine has heater elements which, due to weight reasons, have not been built into the STEADICAM® Magazine.

THE FOLDABLE HANDLE fig.6/7

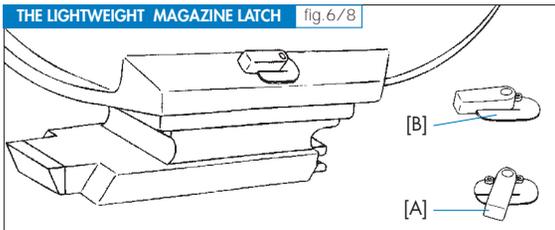


Left and right lockers of the aluminium design have been replaced by a central locker (400/120 only). The small lock lever [A] is, when locked, secured by a spring steel safety tab [B].

Open the Magazine by pressing the safety tab down and turning the lever counter-clockwise. When closing, the safety tab automatically prevents an unintended opening.

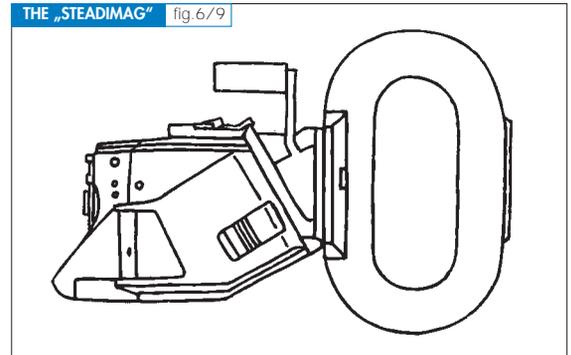
Caution!
Do not twist the safety tab!

THE LIGHTWEIGHT MAGAZINE LATCH fig.6/8



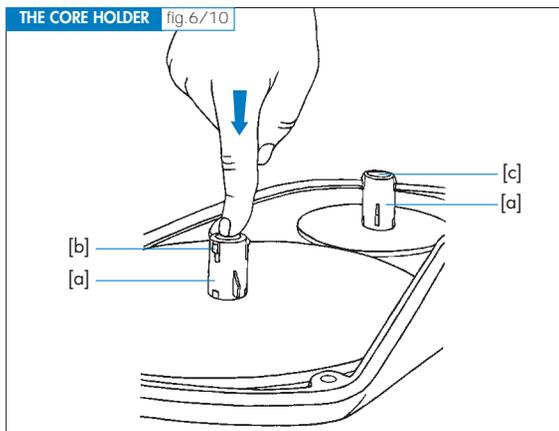
400/120 MAGAZINE FOR STEADICAM OPERATION

THE „STEADIMAG“ fig.6/9

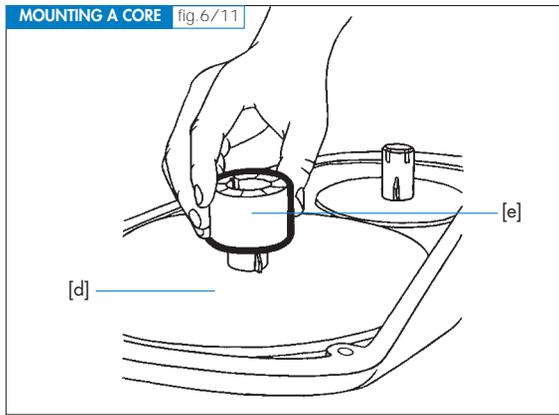


This extremely lightweight plastic Magazine was developed for STEADICAM® shots. The carrying handle can be removed by unscrewing two 5 mm hex screws with an S4 key (see page 152 fig. 7/8). Apart from that, the Magazines are alike. The latch is secured by a thin spring steel safety tab. Open the Magazine by depressing this safety tab down and turning the latch clockwise 180°.

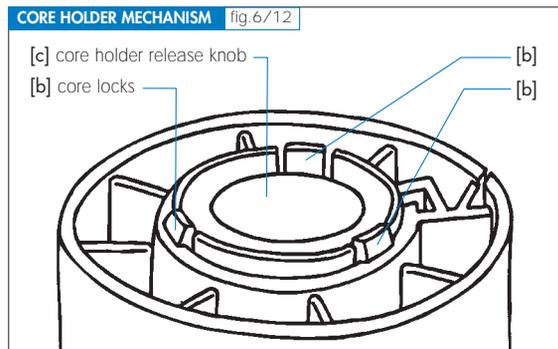
CORE HOLDER



Checking core holders [a] and core locks [b]: By pressing the release knob [c] on top of the core holder, the three core locks move inward.



Now put a core [e] on the film plate [d] until you hear a first "click". Hold the plate and – simultaneously – turn the core gently to the left or right until you hear a second "click". Only now the core is properly seated.



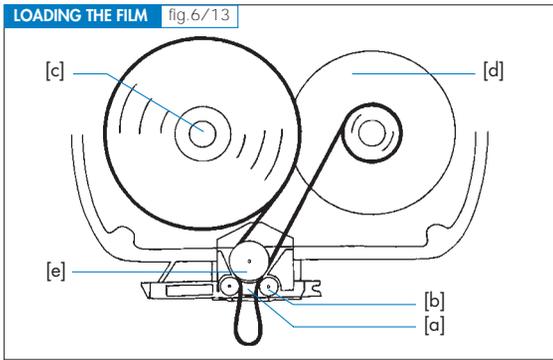
In case you do not hear the "clicks", the core holder pin has engaged in the hole of the core already at the beginning. It is not properly seated – have another try. Locked cores are released by pressing the release knob [c] on core holder.



Caution!

In case of a malfunction of the core holder, do not disassemble – Magazine should be serviced at a rental house.

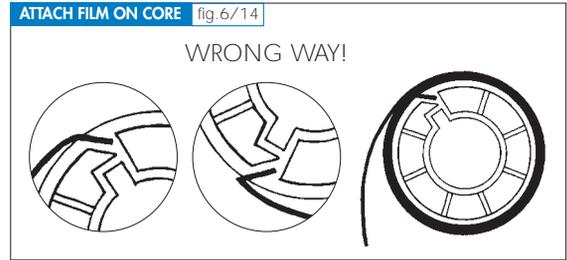
LOADING OF THE MAGAZINES



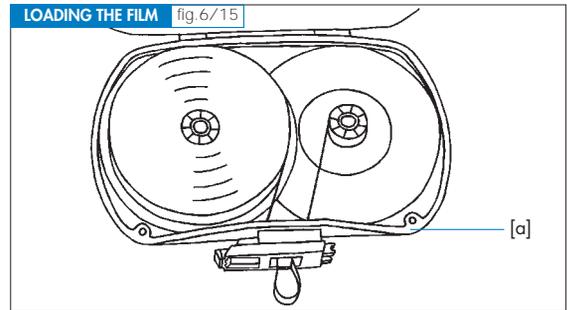
- 1) Clean darkroom/changing bag.
- 2) Check and clean Magazine. Insert core in the take-up side [d].
- 3) Lay the Magazine down carefully in the darkroom or changing bag onto footage counter side; roller assembly is facing you.
- 4) Lift Magazine cover.

From now on in darkness.

- 5) Put film roll on empty can and place it to the Magazine left side.
- 6) Wind off just enough film to insert it in the roller assembly to the left of the main roller [e]. Gently push the film into the slot until it emerges from the other side.
- 7) Pull approx. 50 cm film toward you. Unlock the left core holder by depressing the release knob [c]. Place film roll onto core holder – do not press toward Magazine bottom (caution – film might be scratched!).
- 8) Insert film from outside into Magazine between Magazine nose [a] in roller assembly and right roller [b].



- 9) Attach to take up core. Feed film into core slot so that no acute angle forms when turning the core clockwise! Wind just enough film around take-up core to make sure it will not accidentally slide out again. Wound-up film has to be flush with the core and lie flat on take-up plate.



! Caution!

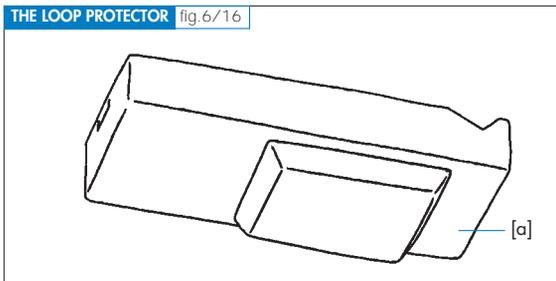
When closing the Magazine, care should be taken that nothing (e.g. changing bag, film bag etc.) is caught between Magazine cover and Magazine base. Especially with the 1.000/300 Magazine, forcible closing might lead to LIGHT LEAKAGE! Furthermore, the rubber sealing [a] might be damaged!

- 10) The film windings on the feed side must not protrude below plate – film might touch the Magazine bottom. Close and latch Magazine after checking that film is properly seated and nothing is caught between Magazine and cover!

From now on with light.

- 11) Attach a Loop Protector [a].

THE LOOP PROTECTOR fig. 6/16

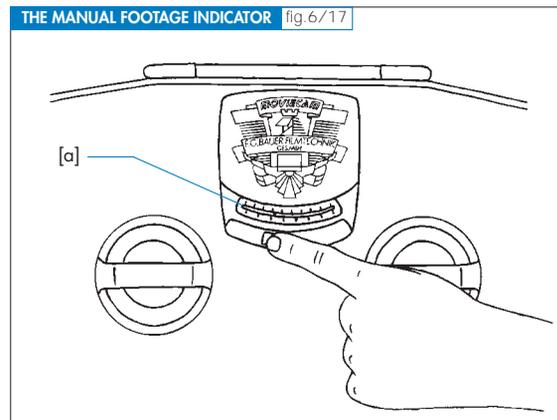


- 12) Feed length of unexposed film into footage counter (see page 144 fig. 6/20) and

- 13) Insert a label into the assigned holder.

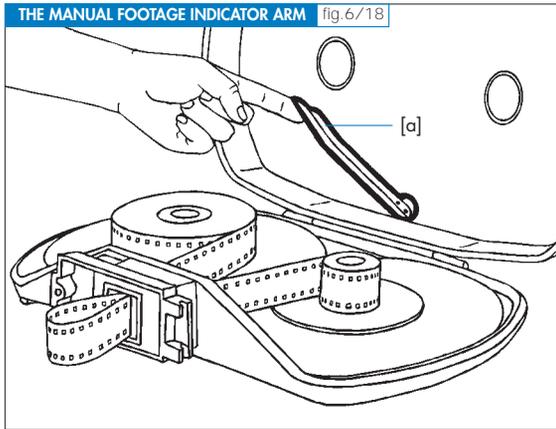
FOOTAGE INDICATOR (manual)

THE MANUAL FOOTAGE INDICATOR fig. 6/17



Each 1.000/300 Magazine has both digital footage counter and analogue display [a]. When the camera is not running, move the indicator arm gently to the right; the footage indicator arm swings toward the film. The film length remaining in the Magazine's left half – usually the unexposed film – is shown on the display. Although the footage indicator arm is spring loaded, the indicator arm should be moved back manually.

FOOTAGE INDICATOR (arm)



The footage indicator arm [a] should lie flat on the Magazine cover interior. Check spring and arm attachment by gently moving them.

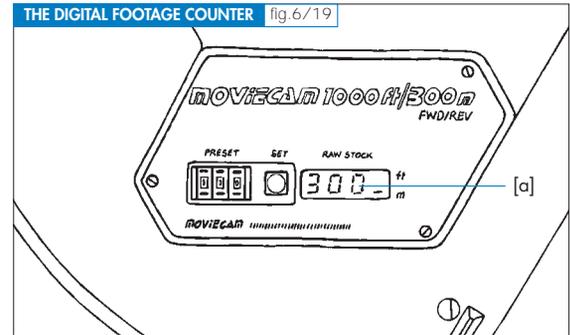


Caution!

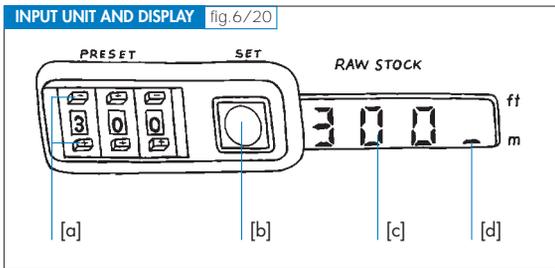
Due to the length of the footage indicator arm, extreme care should be taken when checking it (leverage)!

Lock lever counterparts in the Magazine cover, film tightening wheels and Magazine interior have to be absolutely clean.

DIGITAL FOOTAGE COUNTER



The digital footage counter displays the remaining footage [a]; it is powered by its own on-board battery. When a Magazine is attached to a powered camera, the Magazine battery recharges automatically. In case nothing is displayed (which very rarely happens), simply mount the MAGAZINE to a powered camera to reactivate the display. The Magazine battery usually recharges automatically during the shooting period.



After loading the Magazine, use the preset buttons [a] to input the length of film loaded. By pressing the set button [b], the footage counter stores the input. It counts backward when the camera is running. The Raw Stock display [c] shows the length of remaining unexposed film.

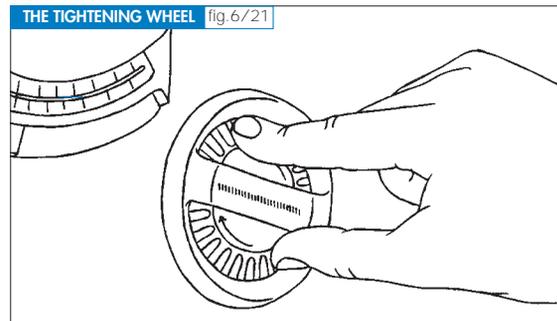
For reverse filming, set the footage counter to 000. When the camera is running backward, it counts up and displays the length of exposed film.

Remaining film length is displayed in either feet or meters – a mark [d] next to ft or m shows the preset option.

▶ Remark

Ft/m changes are performed at a rental house only!

TIGHTENING WHEELS



Additionally to the electronically controlled film tightening, a tightening wheel (for manual tightening) for each film plate is built into the cover of the 1.000/300 Magazine.

By depressing the tightening wheel, you may turn the core via friction plates in the direction of the arrow. The spring bringing the tightening wheel back to its resting position can be controlled by depressing slightly.

⚠ Caution!

In case a tightening wheel does not swing back into its resting position, the Magazine has to be repaired. When the camera is running, the tightening wheels must not turn!

When pressing briefly the Dust Check/Take-Up button (see [8] page 18 fig. 1/2), both core holders should turn outward. If not, check the safety buckle switch! Electronic adjustment of the clutch tension and maintenance of the motors below the footage counter as well as the thermostatically controlled heaters should be carried out at a rental house only.

CHAPTER 7

THE MOVIECAM CARRYING HANDLES, HANDGRIPS and SHOULDER REST

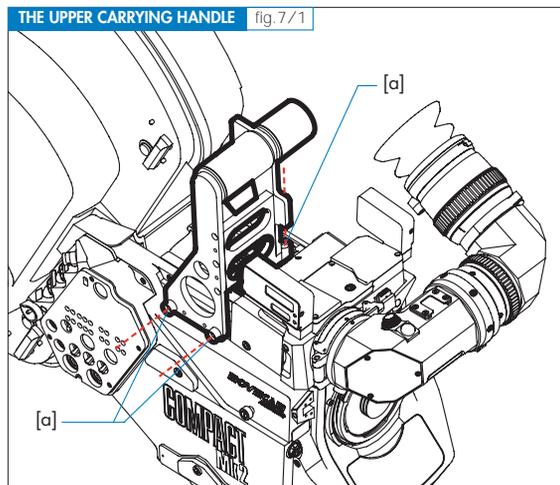
CARRYING HANDLES and HANDGRIPS

Various Carrying Handles and Handgrips have been designed for the MOVIECAM COMPACT Mk2 to permit ergonomic handling in all camera configurations.

► Remark

Carrying handles for the MOVIECAM COMPACT have to be slightly modified in order to be used with the Mk2.

UPPER CARRYING HANDLE



7 – THE MOVIECAM CARRYING HANDLES

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The Upper Carrying Handle has been designed for shoulder configuration (Magazine mounted to the camera rear).

Handling:

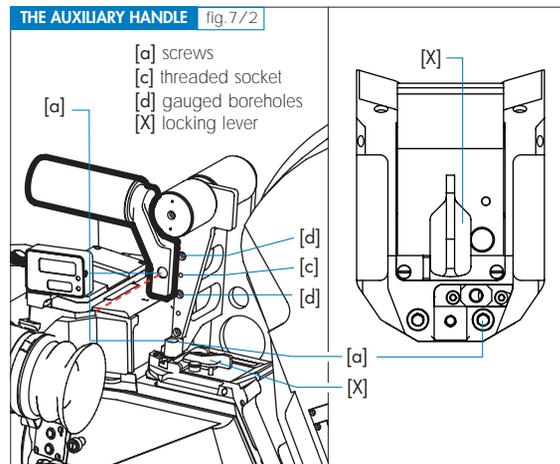
► Preliminary Remark

To attach or remove the Upper Carrying Handle, first the Video Assist has to be removed.

Attach the Upper Carrying Handle to the camera right side attachment [22] (see page 22 fig. 1/4) with two 5 mm hex screws [a] and to the REAR MOUNT ADAPTER with one 5 mm hex screw [d].

MOVIECAM provides an Auxiliary Handle for the Upper Carrying Handle.

AUXILIARY HANDLE



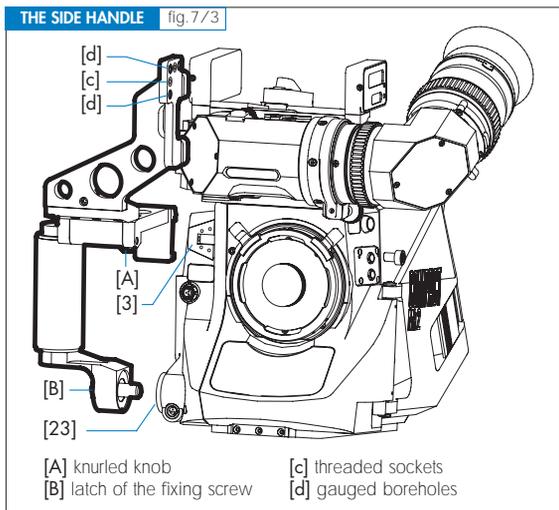
7 – THE MOVIECAM CARRYING HANDLES

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Handling:

Mount this small handle to the Upper Carrying Handle with one 5 mm hex screw [a] for easier camera handling.

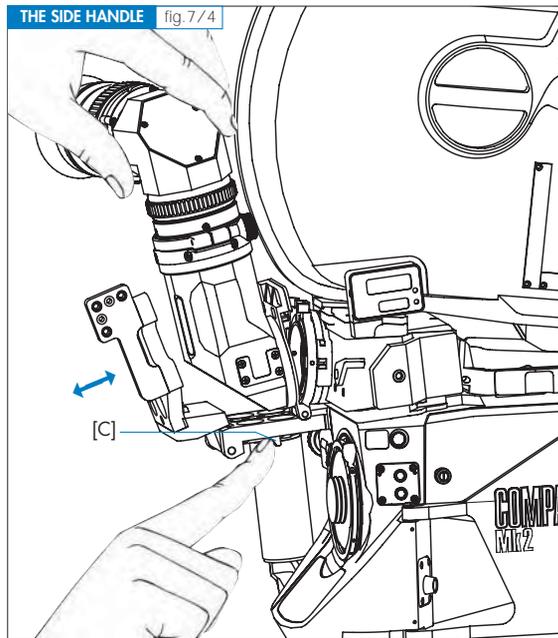
SIDE HANDLE



Use the Side Handle when a Magazine is attached to the camera top.

Handling:

Slide this handle onto the dove tail bracket (see [3] on page 16 fig. 1/1) and tighten it with the knurled knob [A]. Screw the lower part of the handle into the rosette (see [23] page 22 fig. 1/4) with fixing screw [B]. This screw has a latch that permits easier handling.

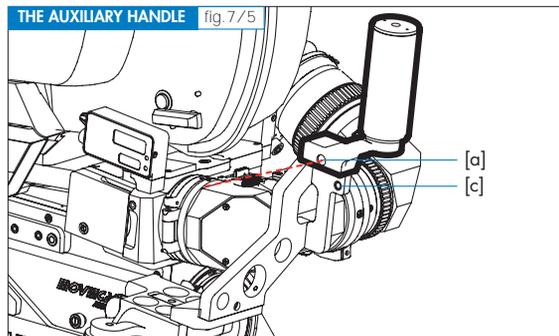


The Side Handle is equipped with a tilting device which allows pivoting the orientable Viewfinder Arm from one side of the camera to the other, when top-mounted 1.000/300 magazines are installed.

Handling:

After softly pressing the release lever [C], the upper part of the Side Handle can be tilted forward in order to give way to the bent Viewfinder Arm. When the viewfinder is on the other side, the upper part of the handle can be put upright again; it then locks automatically.

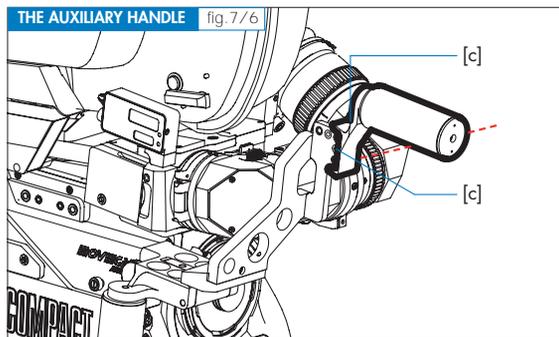
AUXILIARY HANDLE



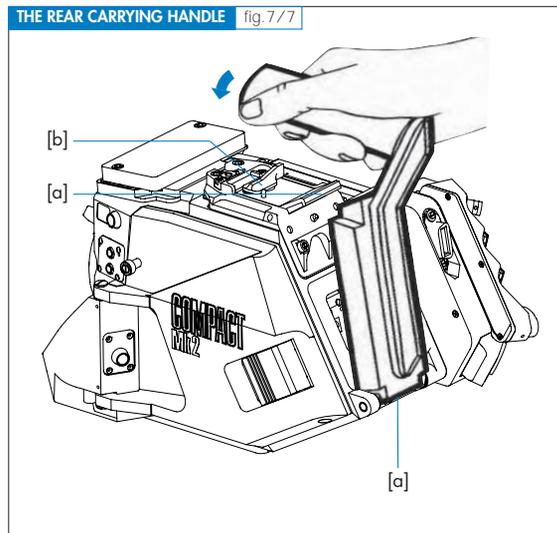
The Auxiliary Handle can be screwed into one of the two threaded sockets [c] on top of the Side Handle.

Handling:

It can be attached either vertically or horizontally with one M5 hex screw [a] for easier handling.



REAR CARRYING HANDLE



Instead of a Magazine, the Rear Carrying Handle can be attached to the camera.

Handling:

Open the latch [a] of the REAR LOAD ADAPTER, mount the REAR CARRYING HANDLE on the rail (see [12] page 20 fig. 1/3) and swing it forward toward the camera.

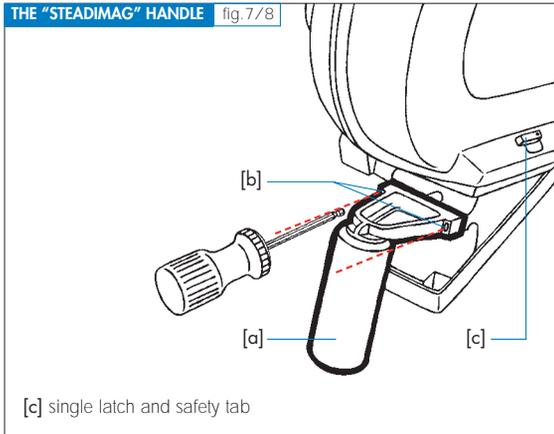


Caution!

Do not forget to open the latch before mounting the handle!

As soon as the rear handle has engaged, secure the latch by turning clockwise the lever [X]!

LIGHTWEIGHT MAGAZINE'S CARRYING HANDLE

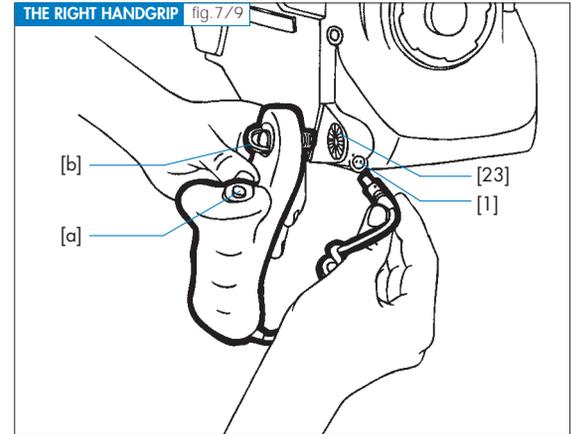


The Handle of the Lightweight Magazine (Steadimag) can be removed in order to reduce weight or to be able attaching some special STEADICAM® accessories. See also page 135.

Handling:

Remove the Handle [a] of the 400/120 by unscrewing two M5 hex screws [b].

RIGHT HANDGRIP

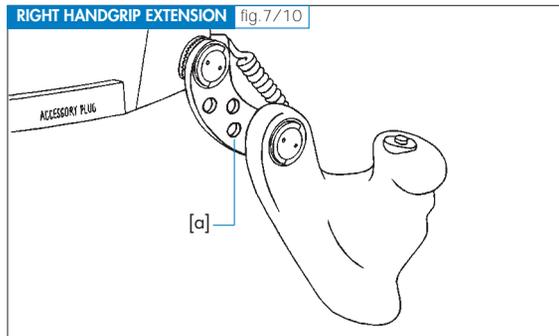


For handheld operation, MOVIECAM offers an ergonomically designed Handgrip with built-in Run/Stop button [a]. This button works like an "alternating switch": you can switch on the camera with the handgrip button and switch it off with another (e.g. that on the Camera Control Board) and vice versa.

Handling:

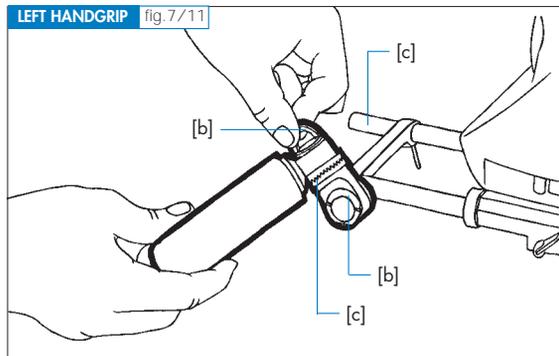
The Handgrip is screwed into the camera rosette [23] with a screw [b] which mobile latch permits easier handling. Due to the rosette joint, the Handgrip may be attached firmly at any vertical angle. Do not forget to connect the Handgrip plug to the Run/Stop button outlet [1].

RIGHT HANDGRIP EXTENSION



A further accessory, the Right Handgrip Extension [a], permits to adjust the handgrip position ergonomically. This extension facilitates the simultaneous use of Right Handgrip and a Follow Focus Unit.

LEFT HANDGRIP



MOVIECAM provides an additional Handgrip for the camera left side that can be turned in any direction.

Handling:

Slide the Left Handgrip onto the Support Rods and tighten at both sides.

To change the handgrip position, lift both latches [a] and loosen the screws [b].

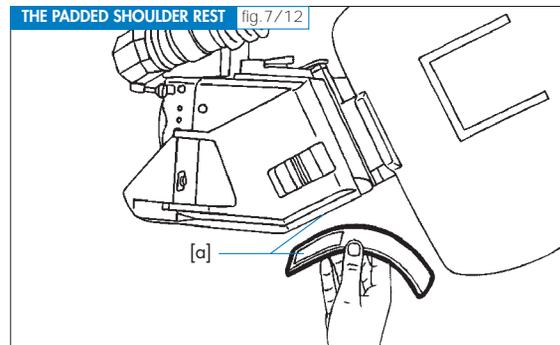
In the desired position, tighten the screws in both rosette joints [c] and put the latches down again.



Caution!

The left handgrip is only an additional support; do not use as carrying handle – one sided strain!

PADDED SHOULDER REST

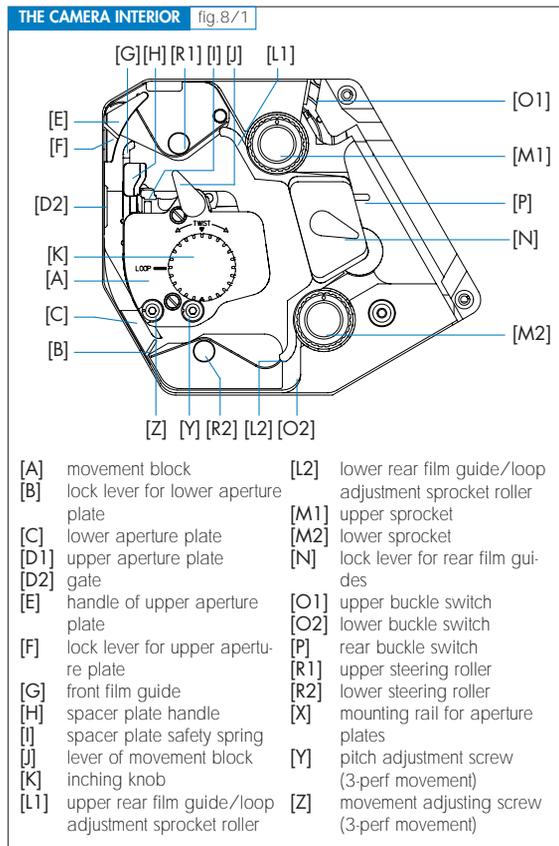


The Shoulder Rest can be easily formed to fit on each shoulder ergonomically. It is attached to the camera body with Velcro adhesive strips [a] and permits a comfortable handheld operation of the MOVIECAM COMPACT Mk2. Both Velcro parts must be clean to ensure a good adhesive performance. Regular cleaning or combing saves valuable time and needless trouble.

CHAPTER 8

THE COMPACT Mk2 INTERIOR

THE MOVEMENTS, THE APERTURE PLATES THE PRESSURE AND THE SPACER PLATES THE MIRROR SHUTTER, THE GROUND GLASSES



THE Mk2 CAMERA INTERIOR

One of the main differences between the interior of the COMPACT and the COMPACT Mk2 camera is the introduction of two guide rollers, one placed above and one located below the movement. These rollers [R1] and [R2] have been added in order to guarantee the smooth film transport to all frame rates with both 3-Perf and 4-Perf pull-down movements.

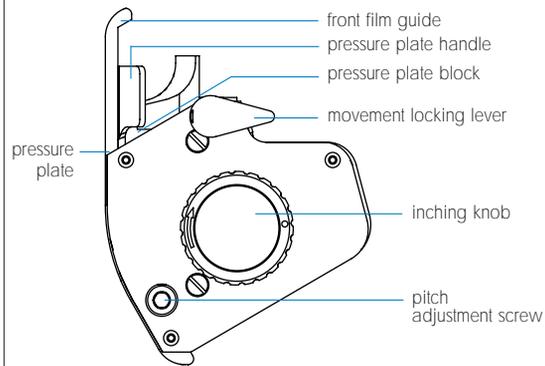
THE Mk2 MOVEMENTS

Either a 3-Perf or a 4-Perf pull-down Movement can be installed by trained maintenance technicians in the MOVIECAM Mk2 Camera Body. Both Movements are fitted with similar operational items. By turning the Movement Locking Lever [J] clockwise, the Movement will slide back into the loading position. By turning the lever counter-clockwise, the Movement Block slides forward to the Aperture Plate and finally locks in place.

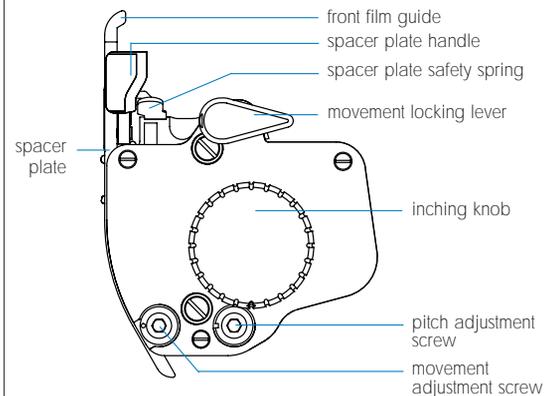
Caution!

- Before sliding the Movement to the loading position, turn the Inching knob until the index is in the Loop position.
- In order to secure the Movement in its shooting position, push the lever counter-clockwise to overcome a mechanical resistance with a click, which will hold the movement firmly in this front shooting position.
- In order to perform well, the Movement have always to be adjusted as quite as possible, independently from the shooting direction FWD or REV.

THE 4-PERF MOVEMENT fig.8/2



THE 3-PERF MOVEMENT fig.8/3



THE PITCH ADJUSTMENT SCREW

In order to adjust the Movement to the properties and dimensions of the film stock in use, and at the same time achieve the quietest and most gentle film transport, the pitch can be controlled. The Pitch Adjustment Screw has marks; the adjusting range is a narrow segment of a screw turn. While the camera is running at the normal frame rate (24 or 25 fps), slowly turn the Pitch Adjustment Screw back and forth until the noise level reaches its minimum. In this position, the camera runs smoothly and quietly. This Pitch Adjustment should be repeated whenever the raw stock type is changed.

► Important Remark

To adjust the Pitch, use an S4 Allen key with the 4-Perf Movement and an S3 Allen key with the 3-Perf Movement!

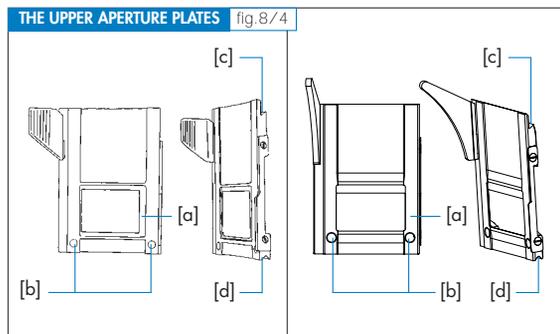
THE MOVEMENT ADJUSTMENT SCREW – Only visible on the 3-Perf Movement

Because some films have unusual mechanical properties, it is recommended to carry out a secondary adjustment by means of a second screw in order to obtain the optimum steadiness. To do so, turn the Movement Adjustment Screw with an S3 Allen key on the 3-Perf movement. A similar adjustment screw is of course also provided on the 4-Perf movement, but it is only accessible for maintenance technician.

THE INCHING KNOB

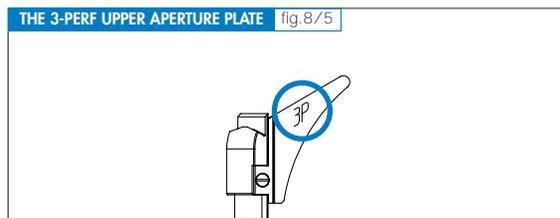
The large knurled knob allows manual INCHING of the camera. While the camera is powered, the film in the magazine is tightened automatically. If you want to prevent this, e.g. when threading the camera, first move the buckle trips [P] out of its rest position.

THE APERTURE PLATES



Like in the previous COMPACT, the Mk2 has also two plates, the Upper Aperture Plate with the gate and the Lower Aperture Plate.

The film gate with gate matte is integrated in the Upper Aperture Plate.



Caution!

The Upper Aperture Plates for 3-Perf and 4-Perf are different and they are not interchangeable! Be sure to use the appropriate one! Upper Aperture Plates for the three perforations pull down movement show 3 PERF engraving on the handle.

APERTURE PLATES with the following gates are available for the Mk2 camera:

	4-PERF pull down		3-PERF pull down
	Standard 35	Super 35	Super 35
1 : 1.33 (Full aperture)	✓		
1 : 1.375 (Academy)	✓		
1 : 1.66	✓		
1 : 1.777 (HDTV 16/9)	✓	✓	
1 : 1.85	✓	✓	✓
1 : 2.35	✓	✓	

These Aperture Plates are made of extremely hard material; the film touches the plate only in the perforation area. To avoid deposits, e.g. hair or film dust, the fine gate matte [a] in the Upper Aperture Plate is slightly recessed. The openings [b] for the registration pins are located left and right of the gate. Clean the aperture plate carefully and regularly – best with a vacuum cleaner. Only when it is badly smudged – which will rarely be the case when handled meticulously – you should clean it very carefully with a small brush or a soft toothpick.

Caution!

Never ever lubricate the Aperture Plate!

HANDLING THE UPPER APERTURE PLATE

The image plane is located between the Upper and Lower Aperture Plate and the front film guide. Both Aperture Plates are attached to notched brackets.

For mounting, the Upper Aperture Plate has V-shaped notches at its top [C] and bottom [D] edges (see fig. 8/4). These notches must be absolutely clean to make sure the Upper Aperture Plate can be seated properly. The V-shaped bottom edge of the Upper Aperture Plate, seated on the rail (see [X] on fig. 8/7) is held by a spring loaded lever.

When removing the Upper Aperture Plate

1. Push back the movement by turning lever [J] clockwise,
2. Lift the small lever [F] and pull out Upper Aperture Plate by its handle [E].



Caution!

Be careful not to damage aperture plate or gate – this might have serious consequences!

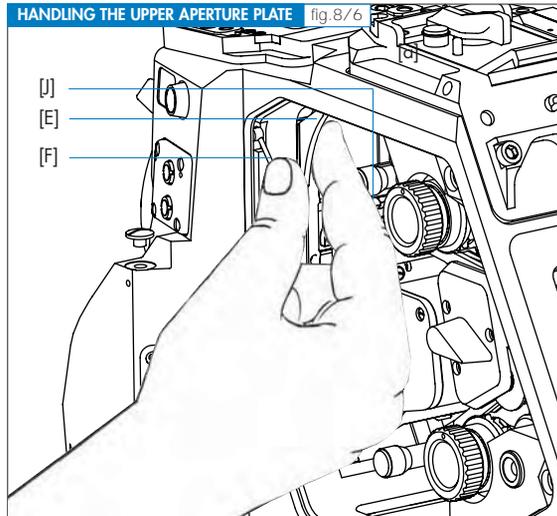
Mount the Upper Aperture Plate on the rail [X] and press forward gently while lifting the small lever [F] and bringing it back to its resting position (= lock) again. You can insert the Upper Aperture Plate only parallel to the rail [X]!



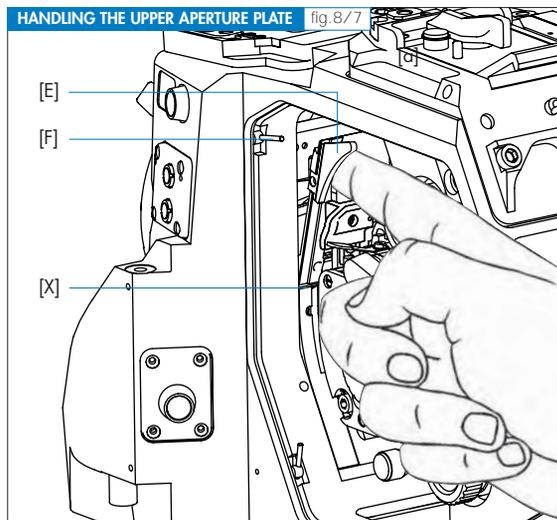
Caution!

In case the aperture plate is slanting, start inserting again.

HANDLING THE UPPER APERTURE PLATE fig. 8/6



HANDLING THE UPPER APERTURE PLATE fig. 8/7



HANDLING THE LOWER APERTURE PLATE

Like the Upper Aperture Plate, the Lower One also has V-shaped notches [c] and [d] at its top and bottom edges. The Lower Aperture Plate has two slots [e] for the pull down claws and some have a round window for any markings.

Notches, slots and surface of the Aperture Plate must always be clean – check regularly.

Like the Upper Aperture Plate, the Lower Plate is attached to notched brackets.

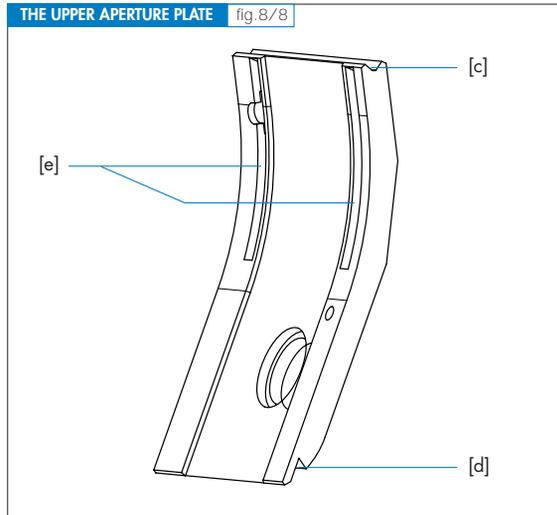
To remove the LOWER APERTURE PLATE:

1. Slide back the Movement Block by turning lever [J],
2. Press the small lever [B] down,
3. Hold the released Lower Aperture Plate [C] at its base and remove it.

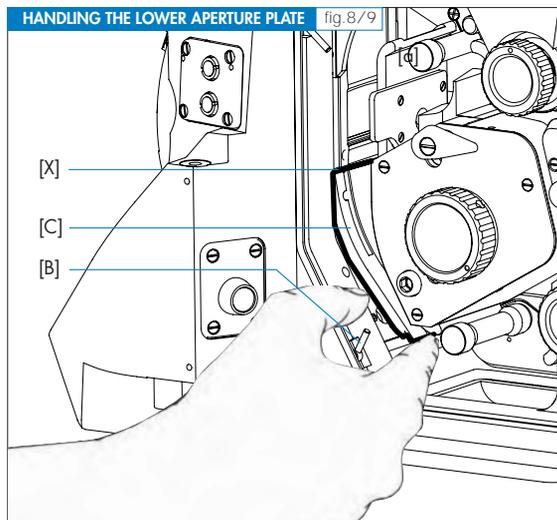
To insert the Lower Aperture Plate, follow the steps described below:

1. Slide back the Movement Block by turning lever [J],
2. Insert the Lower Aperture Plate in the camera below the movement block,
3. Pull Lower Aperture Plate up and swing slightly toward camera front until it touches the rail [X],
4. Simultaneously, pull down the small lever [B] and press the lower part of the Lower Aperture Plate in,
5. Lock the Lower Aperture Plate in the camera by releasing the spring loaded lever [B].

THE UPPER APERTURE PLATE fig.8/8



HANDLING THE LOWER APERTURE PLATE fig.8/9

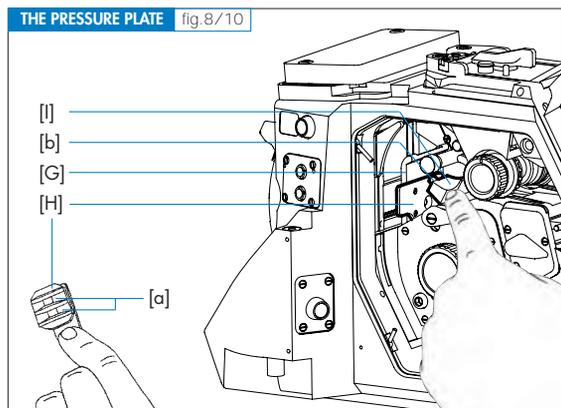


THE PRESSURE PLATE

► Preliminary Remark

There is a difference between the pressure devices on the 4-Perf and the 3-Perf Movements

THE PRESSURE PLATE ON THE 4-PERF MOVEMENT

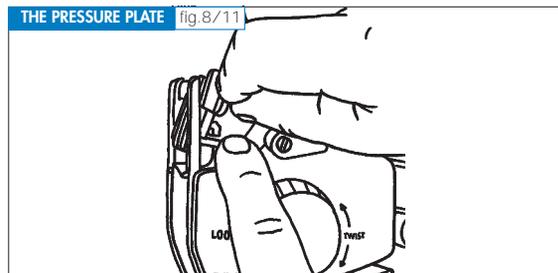


In the centre of the front film guide [G], there is an opening for the Pressure Plate [H]. This plate has two raised surfaces [a] that hold the film in the gate plane with a spring loaded pin. Smudged surfaces inevitably cause film scratches! To clean the Pressure Plate, remove it as described below:

1. Swing the pressure block [l] backward.
2. Lift and remove the Pressure Plate.
3. Check Pressure Plate and both surfaces thoroughly and – if necessary – clean them with lint-free cloth or orangewood sticks. Clean also the cavity at the rear of the Pressure Plate.

The spring is pressed into this cavity. The spring-loaded steel pin [b] in the pressure block presses the plate onto the film with a certain force. When tapped lightly, the pin should move easily and spring back to its former position.

THE SPACER PLATE ON THE 3-PERF MOVEMENT



In the centre of the front film guide, there is an opening for the Spacer Plate. This Plate – held firmly in place by magnets – has raised surfaces that hold the film in the gate plane. Smudged surfaces may cause film scratches!

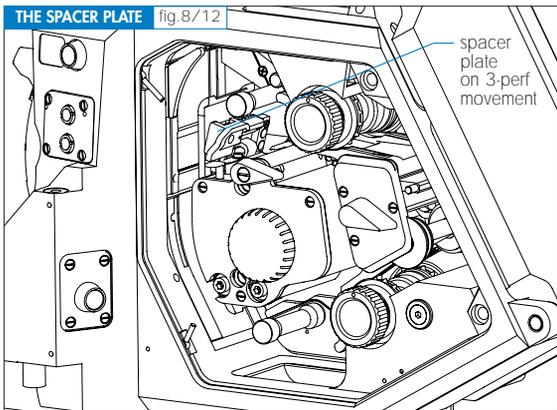
To clean the Spacer Plate, it must be removed first

1. Slide the Movement to its rear position.
2. Press the safety spring fixture downwards, at the same time pull the Spacer Plate backwards by its handle.
3. Remove the Spacer Plate by pulling it upwards.
4. Check Spacer Plate thoroughly and – if necessary – clean it with lint-free cloth or a toothpick. Also clean the rear of the Spacer Plate.



Caution!

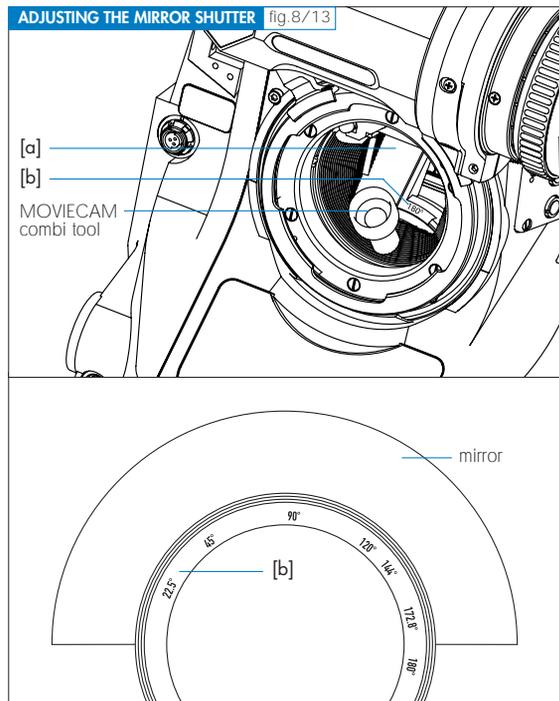
While manipulating the Spacer Plate, great care must be taken not to touch the Aperture Plate and the gate with the Spacer Plate. If you take the Spacer Plate out of the camera, it is paramount to slide the movement to its rear position before removing or inserting the Spacer Plate.



To install the Spacer Plate

1. Take hold of the Spacer Plate by its handle and insert it at an angle from above into the Movement Block.
2. Push the Spacer Plate downwards until it locks audibly in place.

THE MIRROR SHUTTER



Depending on the type of mirror installed in the camera, either six or seven opening angles can be pre set manually. Older Mirror Shutters can be adjusted between 180° and 45°; newer ones enable an adjustment between 180° and 22.5°.

The following positive stops are provided:

(22.5°), 45°, 90°, 120°, 144°, 172.8°, 180°.

To check or adjust the mirror shutter angle, proceed as follows:

1. Important:
disconnect the camera from its power supply.
2. Remove lens or cavity cap.
3. Advance Mirror Shutter [a] with inching knob [K] until shutter angle mark [b] is visible in the lens mount.
4. Insert the MOVIECAM COMBI TOOL [T6] in the small opening below this mark and turn it until you get the desired mirror shutter angle marked on the scale [b].

THE MOVIECAM Mk2 GROUND GLASSES



Caution!

- The MOVIECAM Ground Glasses are compatible with both, the COMPACT and the COMPACT Mk2 cameras.
- These Ground Glasses are not compatible with any other ARRI or ARRICAM Ground Glasses.

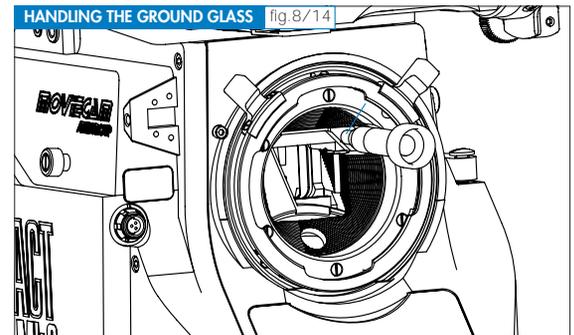
The MOVIECAM Ground Glass lies flat above the mirror shutter and has a metal holder with a thread in the right front corner.

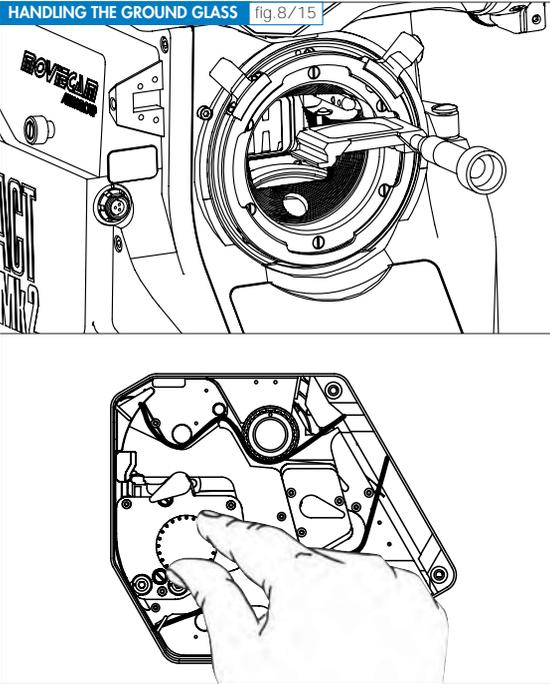
HANDLING THE GROUND GLASS

Use the MOVIECAM COMBI TOOL to remove or install a Ground Glass:

Handling:

1. Press the Dust Check/Take-Up button for at least 3 seconds in order to move the mirror out of the lens port cavity – see page 18 fig. 1/2.
2. Switch the Camera MAIN switch OFF!
3. Screw the Combi Tool into the metal holder of the Ground Glass.
4. When the Combi Tool is screwed fully home, pull out the Ground Glass gently.
5. Clean the Ground Glass gently with a lens brush or small vacuum cleaner. Using an aerosol spray may be dangerous because of the pressure and the possibility for chemicals to drop on the glass.
6. When screwing the Combi Tool in or out, hold the Ground Glass holder only.
7. Push the Ground Glass frame gently all the way in until it rests against the stop and then unscrew the Combi Tool.



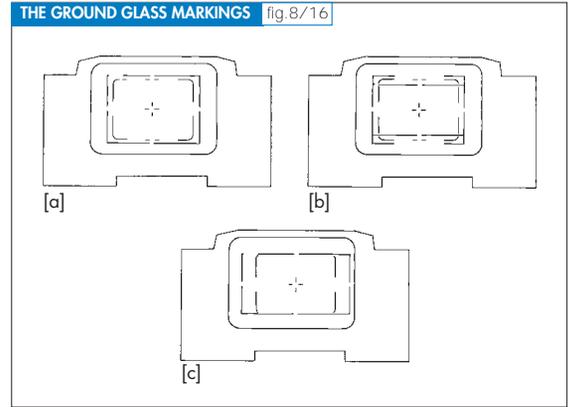


► **Notice**

- Do not touch with fingers or a solid object!
- Do not moisten or wipe!
- Never place the Ground Glass on its edges!
- Do not use force!

GROUND GLASS MARKINGS

The MOVIECAM COMPACT Mk2 is equipped with the same Ground Glasses as the MOVIECAM COMPACT and SUPERAMERICA.



Examples:

- [a] 1 : 1.375 + TV (4/3)
 [b] 1 : 1.85 + TV
 [c] Super 1 : 1.85 + TV

Ground Glasses with the following markings are available:

35/4-PERFORATION

Reference	Format(s)	Camera	Projection	TV-Format	Additional Format
C 64.209	1 : 1.33 (silent / ISO)		23,5x17,5		
C 64.201	1 : 1.375 + TV (4/3)		20,9x15,2	18,2x13,6	
C 64.216	1 : 1.375 + TV old style	22x16	20,9x15,2	18,2x13,6	
C 64.202	1 : 1.375 (ACADEMY)		20,9x15,2		
C 64.203	1 : 1.375 (camera + projector)	22x16	20,9x15,2		
C 64.210	1 : 1.375 + 1 : 1.66		20,9x12,6		20,9x15,2
C 64.211	1 : 1.375 + 1 : 1.85		20,9x11,3		20,9x15,2
C 64.204	1 : 1.66		20,9x12,6		
C 64.220	1 : 1.66 (camera + projector)	22x13,2	20,9x12,6		
C 64.205	1 : 1.66 + TV		20,9x12,6	18,2x13,6	20,9x15,2
C 64.217	1 : 1.66 + TV old style		20,9x12,6	18,2x13,6	20,9x15,2
C 64.219	1 : 1.66 + 1 : 1.85		20,9x12,6		20,9x11,3
C 64.224	1 : 1.78 (HDTV 16/9)		20,9x11,8		
C 64.236	1 : 1.78 (HDTV 16/9) Standard Commercial		20,95x11,78	16,76x10,96	
C 64.206	1 : 1.85		20,9x11,3		
C 64.221	1 : 1.85 (camera + projector)	22x11,9	20,9x11,3		
C 64.207	1 : 1.85 + TV		20,9x11,3	18,2x13,6	20,9x15,2
C 64.218	1 : 1.85 + TV old style		20,9x11,3	18,2x13,6	20,9x15,2
C 64.208	1 : 2.35 (SCOPE)		21,3x18,2		

35/3-PERFORATION

Reference	Format(s)	Camera	Projection	TV-Format	Additional Format
C 64.242	3P Super HDTV (16/9)		23,11x12,98		
C 64.243	3P Super HDTV (16/9) / TV		23,11x12,98	17,27x12,98	

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8 – THE MOVIECAM Mk2 INTERIOR

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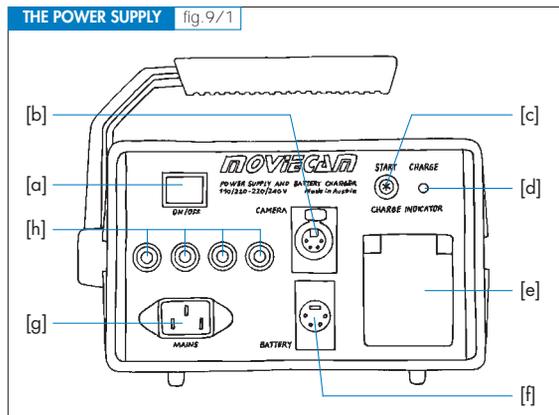
SUPER 35/4-PERFORATION

Reference	Format(s)	Camera	Projection	TV-Format	Additional Format
C 64.239	SHDTV 1 : 1.78		24x13,49		
C 64.228	SHDTV 1 : 1.78 + TV		24x13,49	18,2x13,6	
C 64.237	Super 16/9 (1 : 1.78) Super Commercial		24x13,5	19,2x12,56	
C 64.241	SHDTV 1 : 1.78 + S 1 : 2.35, Decentred ¼		24x10,2		24x13,49
C 64.233	S-TV SAFE		24x18,1	22,5x16,9	
C 64.230	Super 1 : 1.85		24x13		
C 64.234	Super 1 : 1.85 + TV		24x13	18,2x13,6	
C 64.212	Super 1 : 1.85 + TV CAM	24,8x13,4		18,2x13,6	
C 64.213	Super 1 : 1.85 CAM	24,8x13,4			
C 64.232	Super 1 : 1.85 + S 1 : 2.35 Both centred		24x13		24x10,2
C 64.229	Super 1 : 1.85 + S 1 : 2.35 Common headroom		24x13		24x10,2
C 64.235	Super 1 : 1.85 + S 1 : 2.35, Decentred ¼		24x13		24x10,2
C 64.238	Super 1 : 1.85 / Superscope ISO, Decentred ⅓		23,5x10		23,5x12,7
C 64.240	Super 1 : 1.85 + S 1 : 2.40		24x10		24x13
C 64.214	Superscope (1 : 2.35)		24x10,2		
C 64.215	Superscope (1 : 2.35) + TV Common headroom		24x10,2	18,2x13,6	
C 64.231	Superscope (1 : 2.35) / S TV safe		24x10,2	24x18,1 22,5x16,9	
C 64.223	Superscope (camera + projector)	24,8x10,5	24x10,2		
C 64.226	Superscope, Decentred Common headroom with S 1 : 1.85 without 1 : 1.85 marking		24x10,2		

CHAPTER 9 THE MOVIECAM POWER SUPPLY

THE MOVIECAM POWER SUPPLY UNIT

All Power Supply Units supplied for MOVIECAM cameras can be used with the COMPACT Mk2 camera.



- [a] Main switch
- [b] Camera supply 24 V/8 A stabilized
- [c] Charge start button
- [d] Charger control LED
- [e] Plug socket 110 V or 220 V
- [f] Battery charger 24 V/1.3 A
- [g] Connector 110/220 V – 50/60 Hz
- [h] Fuse
 - Rear side 1 x 2 A glass fuse
 - Front side 8 A automatic fuse
 - 2 A automatic fuse
 - 2 A automatic fuse
 - 2 A automatic fuse

9 – THE MOVIECAM POWER SUPPLY		
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The BAT LED [d] lights up in case the voltage drops below 20.5 V.

The integrated, thermostatically controlled heating elements of the camera need approx. 20 W, even when the camera is not running.

The Mk2 has a newly designed temperature sensor – the camera heater is processor controlled; it switches on at 5° C and it switches off at 10° C.

The MK2 camera can be powered either by a MOVIECAM Power Supply Unit or a MOVIECAM Battery Block.

A stabilized 24 V (direct current) outlet, a 110 V/220 V (alternating current) outlet and a lead battery charger are integrated in the Power Supply Unit.

! Caution! Prior to connecting the Power Supply Unit with the mains, check the given voltage and, if necessary, adjust the selector at the Power Supply Unit rear accordingly!

When the camera is connected, you can simultaneously run the camera and charge a Battery Block. You have to switch on the main button [a] of the Power Supply Unit not only to operate the camera (switch lights red), but also when the Power Supply Unit serves as battery charger.

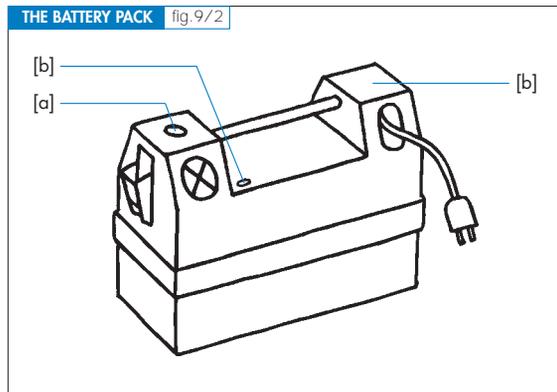
Charging needs approx. 4 – 6 hours and is indicated by a green diode [d] lighting up. It fades out when the battery is fully charged. Start charging by pressing the small button charge [c].

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Use the plug socket [e], secured by a 2 A automatic fuse, to charge a second Battery Block via its integrated charger or to supply e.g. an "Obie Light" (max. 300 W / 220 V).

At the Power Supply Unit rear, there are the voltage selector and the glass fuse 2 A slow (5 x 20 mm).

MOVIECAM BATTERY BLOCK



The 7 Ah 24 V DC MOVIECAM Battery Block is an assembly of lead cells. To charge, either connect the Battery Block to the Power Supply Unit charger or use the built-in charger. The built-in charger [c] operates with 220 V.



Caution!

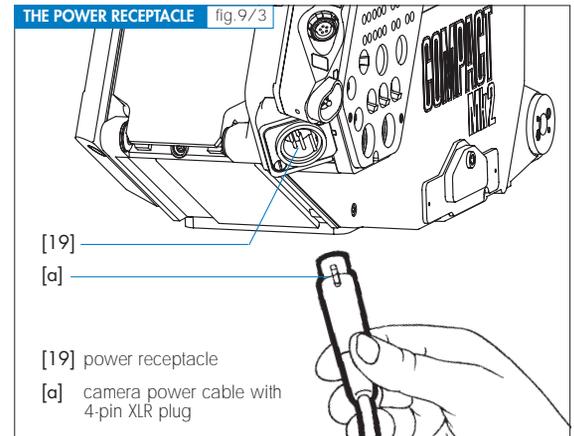
Prior to operating the built-in charger with a different voltage, contact the rental house!

9 – THE MOVIECAM POWER SUPPLY		
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The green LED [b] lights up during charging period. After the Battery Block has been fully charged, in approximately 6 hours, the charger switches off and the LED extinguishes.

To operate the MOVIECAM COMPACT Mk2, plug the MOVIECAM Orange Camera Cable into the 24 V outlet [a].

CAMERA POWER SUPPLY



MOVIECAM provides two special coiled cables: The MOVIECAM Blue Camera Cable connects the mains with the Power Supply Unit. The MOVIECAM Orange Camera Cable connects the Power Supply Unit or a Battery Block with the COMPACT Mk2. Both coiled cables may be stretched up to approximately 2.5 m.

9 – THE MOVIECAM POWER SUPPLY		
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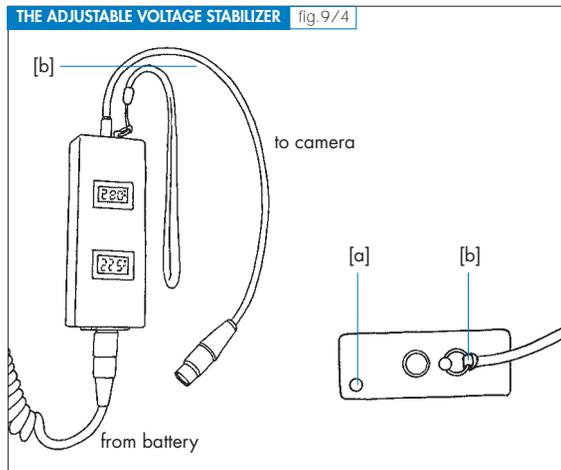
Caution! Do not overstretch the Camera Cable!

As the voltage may drop up to 1 V per cable length (depending on the power consumption of the camera), do not use a longer cable. The Camera Cable [a] can be easily plugged into the sloped connector [19].

The leverage caused by connector length and cable weight resp. strain might damage the socket attachment. Therefore it is recommended to protect it against tension, e.g. by attaching the cable at the fluid or geared head.

Secure the Camera Cable to a HANDGRIP when the Mk2 is operated handheld or on a portable support like a Steadicam®.

AVS/ADJUSTABLE VOLTAGE STABILIZER



The MOVIECAM Adjustable Voltage Stabilizer DC-DC Converter stabilizes the battery voltage to the maximum performance for all MOVIECAM cameras.

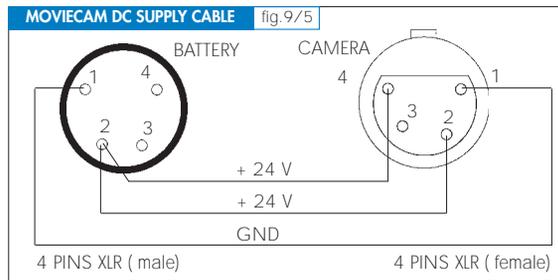
The input range is 18 – 36 V DC.

The output range is 24 – 28 V DC.

The max. output power is 150 W.

Operation:

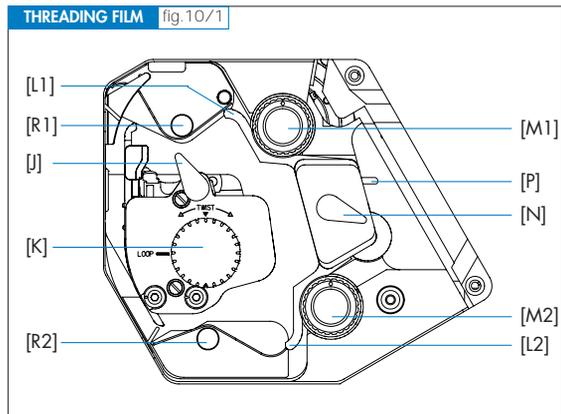
1. Plug the Orange Camera Cable to the power receptacle at the base of the unit,
2. Adjust the desired voltage, e.g. 24 V, by means of a 2 mm flathead screw driver introduced in the little hole on the top of the unit [a],
3. Connect the Adjustable Voltage Stabilizer to the camera,
4. A strap [b] should help you securing the Adjustable Voltage Stabilizer in order to prevent any restriction of the operator's and the camera's movement.



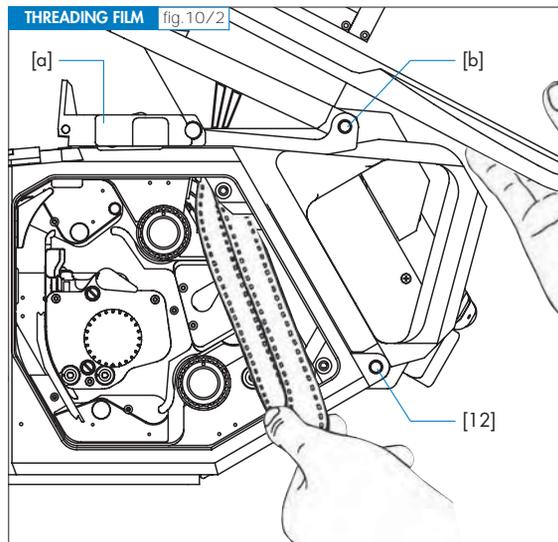
CHAPTER 10

THREADING FILM IN THE MOVIECAM COMPACT Mk2

THREADING FILM IN THE COMPACT Mk2



1. Open camera door.
2. Bring the Movement to its rear position by turning the lever [J] clockwise.
3. Swing away the rear film guides [L1] + [L2] by lifting the lever [N].



4. Pull film loop (approx. 20cm/8") out of magazine.
- 5a. With the Top Mount Adapter:
Attach magazine mounting claw to the adapter mounting rail [c].

Insert film loop in camera.
- 5b. With the Rear Mount Adapter:
Attach magazine mounting claw to the camera body mounting rail [12].

Insert film loop in camera.
6. Grab the film loop and swing Magazine forward toward camera body until it engages in the latch [a].

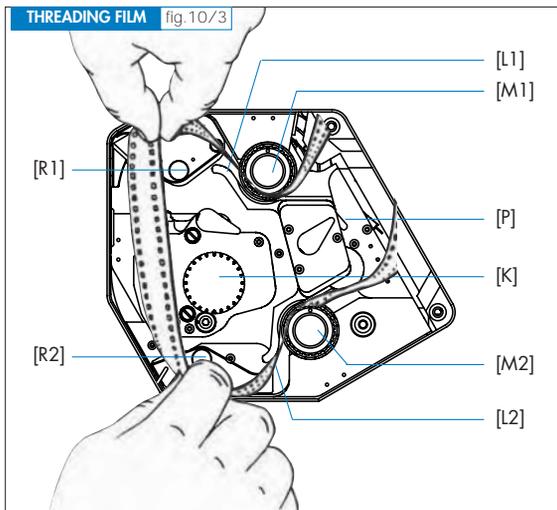
**Caution!**

The latch must be open!

Do not crimp or fold the film!

Do not forget: Lock the magazine on the camera by

- turning the Rear Mount Adapter locking lever clockwise or
- pulling the Top Mount Adapter locking lever forward.



7. Move film loop toward film gate and insert it between film guides [L1] + [L2] and sprockets [M1] + [M2].

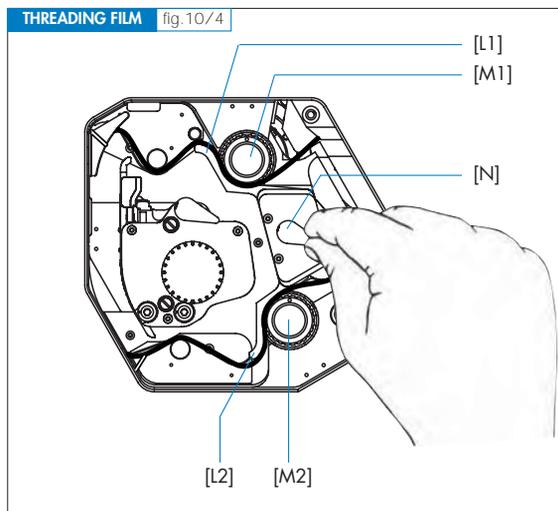
**Caution!**

Please be aware that the film runs below the upper steering roller [R1] and above the lower steering roller [R2].

8. Then thread film between Aperture Plates and Movement Block in a not too narrow loop.

**Caution!**

As soon as you connect the camera, the film winders are shortly activated to tighten the film. Turning the Inching knob [K] also activates these winders. To avoid this when loading film, just lift or lower the rear Buckle switch [P].



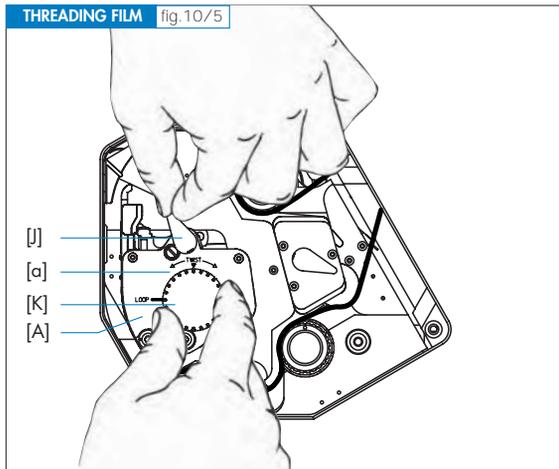
9. Swing rear film guides [L1] + [L2] toward the sprockets [M1] + [M2] by lowering the lever [N].



Caution!

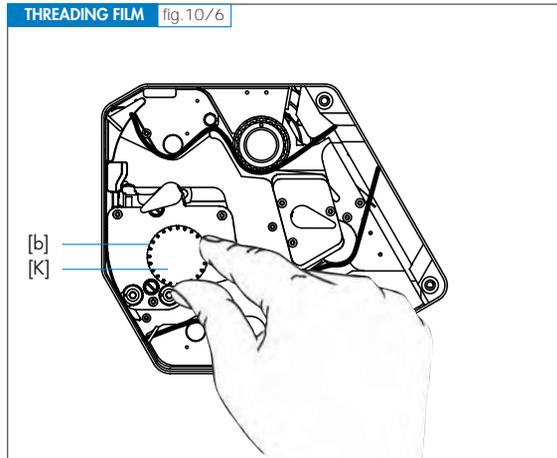
Sprocket teeth must engage properly in perforation!

THREADING FILM fig.10/5



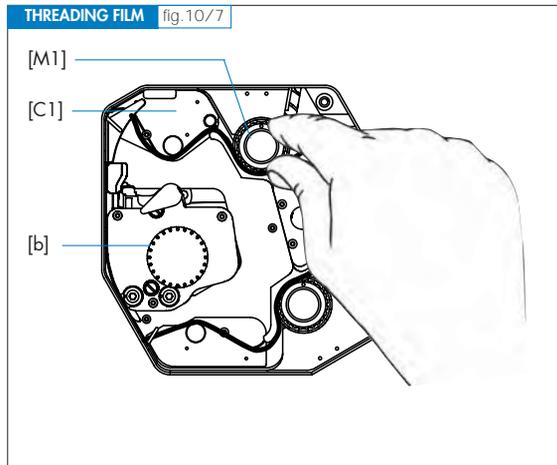
10. Turn the lever [J] with one hand gently counter-clockwise to move the Movement Block [A] into its front position. Simultaneously, turn Inching knob [K] with the other hand to the left and right within the range of the twist mark [a] to engage the pull down claws gently and properly in the film perforations. Only then lock the Movement Block by further turning the lever [J] counter-clockwise until it engages in its front position.

THREADING FILM fig.10/6

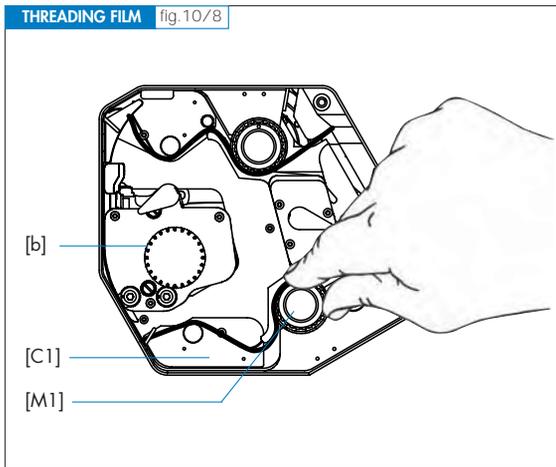


11. To adjust loop length, turn Inching knob [K] to the position (dot) marked LOOP [b].

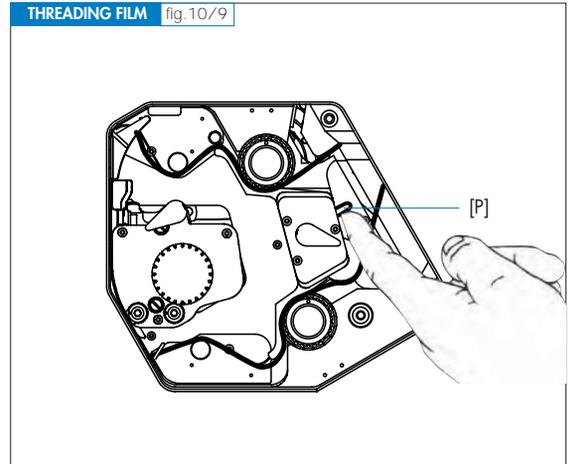
THREADING FILM fig.10/7



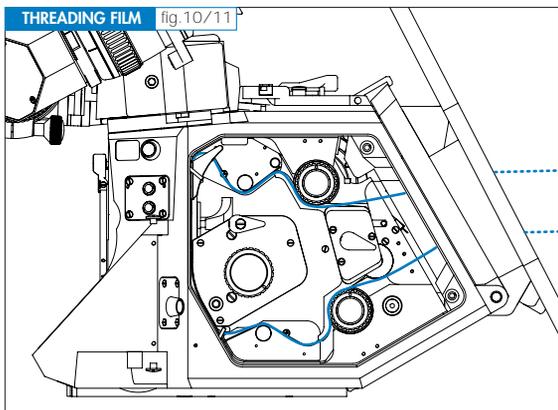
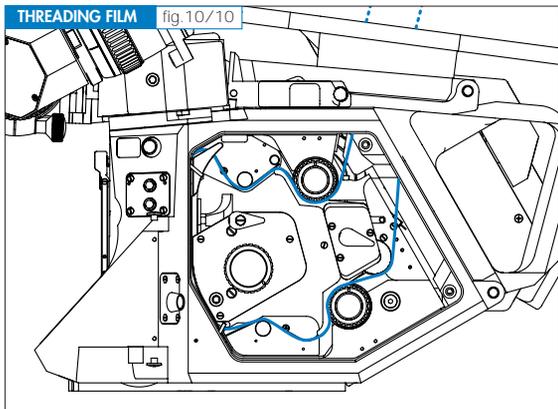
12. Form upper film loop to the LOOP mark [C1] engraved on the rear side of the camera interior by depressing and turning the Sprocket button [M1].



13. Repeat this procedure with the lower film loop [C2] + [M2].



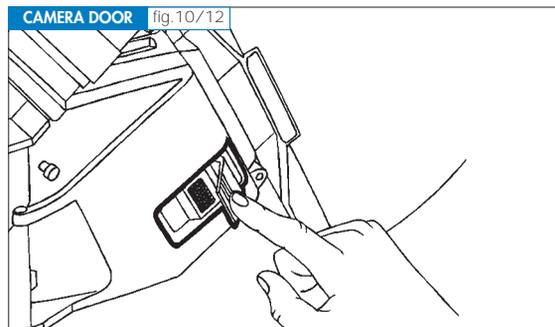
14. Turn the Buckle switch [P] to its center position and check film transport by turning the Inching knob [K]. Film should always be tightened now by the winders. If not, check that the locking levers and buckle switches are in the shooting position.



15. To conduct a test run, run camera shortly at its regular frame rate.

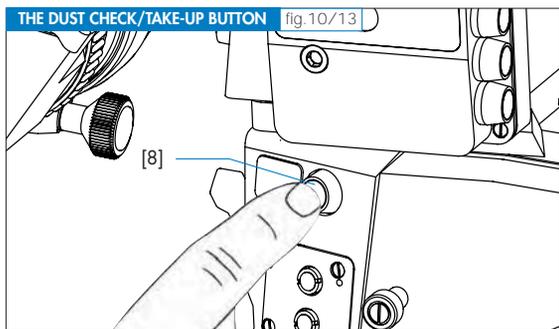
16. When closing the camera door, care should be taken that the camera interior is clean and the door lock is flush with the door.

CAMERA DOOR AND DOOR LOCK



A lever, attached with a Velcro strip, locks the camera door. Move the lever toward the door until it is flush with the door. The Velcro has to be absolutely clean; otherwise the lever – and thus the door – might open accidentally.

DUST CHECK



When the camera is manually switched off, the electronic system of the MOVIECAM COMPACT Mk2 automatically sets the Mirror Shutter to “viewing position”.

To inspect the gate without opening the camera door, set the Mirror Shutter to shooting position by pressing the Dust Check/Take-Up button [8] for at least 3 seconds.

► Remark

If the Dust Check/Take-Up button is pressed briefly, only the tack up motors in the Magazine are activated and tighten the film.

Inspect the gate by either shining a flashlight through the lens or removing the lens. By pressing the Dust Check/Take-Up button, the letters [DC] are displayed on the camera control board and the Readout Unit resp. Remote Control Box.

The camera can then be switched on only after pressing the Dust Check/Take-Up button once again, which sets the Mirror Shutter to “viewing position”.

⚠ Caution!

Before cleaning the film gate (with great care!), disconnect the camera to prevent possible accidents or damage. When the camera is connected again, the electronic system is automatically reset (“stand by” mode); the Mirror Shutter, however, remains in the shooting position and can be moved by either pressing the Dust Check/Take-Up button or switching on the camera.

CHAPTER 11 OPERATING THE COMPACT Mk2

► Preliminary remarks

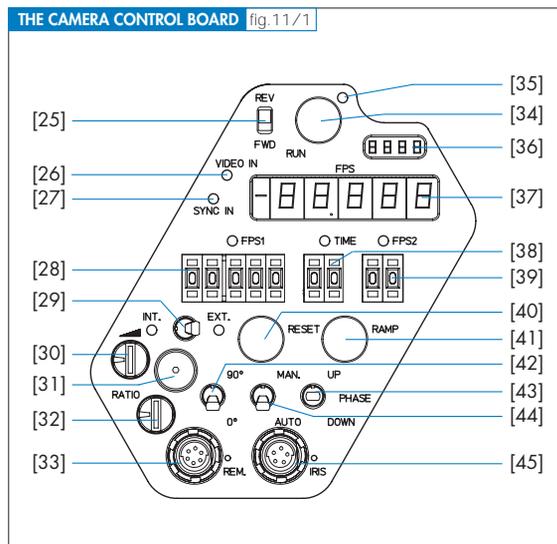
One of the main differences between the previous MOVIECAM COMPACT and the MOVIECAM COMPACT Mk2 is the fact that no accessory box is needed to be attached to the camera in order e.g. to run reverse, to perform a ramp or to synchronize the camera with an external device or signal.

On the Mk2, almost all operations can be controlled with the components of the camera control board. Furthermore, all info, messages and warnings are also shown on the two displays and LEDs arranged on the control board.

At least, one of two removable accessory boxes – the MOVIECAM AATONBOX and the AATON CODER MK-4 – is required for synchronization by means of a Time Code system.

MOVIECAM provides 2 Interface Cables to connect the boxes to the Mk2.

THE Mk2 CONTROL BOARD



25 THE FWD/REV SELECTOR

enables selecting the shooting direction forward or reverse only while the camera is in STAND-BY.

26 THE VIDEO-IN LED

flashes red when the supplied signal is not suitable for sync at the preset ratio.
By selecting the appropriate Ratio, this LED fades to green.

27 THE SYNC-IN LED

flashes red when the supplied signal is not suitable for sync at the preset ratio.

By selecting the appropriate Ratio, this LED fades to green.

28 THE FPS-1 INPUT UNIT

enables, while the camera is not running, presetting a frame rate in a range of 1 to 50 frames per second with an accuracy of 1/1000 image.

THE FPS 1 LED

- flashes red when the entered fps is out of the possible range or when the preset ramp time is too short.
- glows green when the entered fps is appropriate.

29 THE INT/EXT SWITCH

enables selecting if the camera should be steered by the internal crystal control (INT) or by an external sync signal (EXT).

THE INT LED

- glows green when the camera is controlled by the Int. crystal.

THE EXT LED

- flashes red when the frequency of the Ext. Sync Signal doesn't suit with the preset Ratio.
- glows green when the camera is controlled by an Ext. Sync signal.

30 THE SIGNAL VOLUME CONTROL SELECTOR

has 4 steps:

0 = mute, 1 = low, 2 = medium, 3 = high.

The acoustic signal beeps shortly when the camera:

- has reached the preset frame speed (after starting up),
- is switched off.

31 THE SIGNAL BEEPER

32 THE RATIO SELECTOR

enables to adapt the camera to an external sync signal – see table on page 212.

33 THE REMOTE SOCKET

enables connecting the MOVIESPEED Remote Control Unit. As soon as this control unit is connected, the Time Function is inactivated and the current frame rate – it has to be in the range between FPS-1 and FPS-2 – is set by the wheel – see page 227.

34 THE RUN/STOP BUTTON

can be used alternatively with other R/S buttons.

35 THE R/S LED

- glows green when the camera is running (sync) at the preset frame rate.
- glows red while camera is running-up or running-down or when the camera is in error status (NOT READY) e.g. FPS-1, TIME or FPS-2 shows inappropriate values or one of the buckle trap switches is open.

36 THE STATUS DISPLAY

shows info and warnings – see table on page 201.

37 THE FPS DISPLAY

shows the current frame rate – see page 205.

38 THE TIME INPUT UNIT

enables presetting the duration of a ramp.

THE TIME LED

- flashes red when the entered ramp time is too short for a ramp from FPS-1 to FPS-2 or vice versa.
- glows green when the camera is RUNNING a ramp.

39 THE FPS-2 INPUT UNIT

enables, while the camera is not running, presetting a frame rate in a range of 1 to 50 frames per second.

THE FPS-2 LED

- flashes red when the entered fps is out of the possible range or when the preset ramp time is too short.
- flows green when the entered fps is appropriate and the camera is steered by the FPS-2 Input Unit.

40 THE RESET BUTTON

reactivates the frame rate set with FPS-1 while the camera is RUNNING. Pushing this button while the camera is running a ramp will stop the ramp and the camera will return to the preset FPS-1 rate.

41 THE RAMP BUTTON

will trigger the preset ramp from FPS-1 to FPS-2. Pushing this button while the camera is RUNNING A RAMP alternates the ramp direction and the camera runs from the current FPS back to FPS-1 or FPS-2.

42 THE 0°/90° SWITCH

enables turning the sync phase 90°.

43 THE MAN/AUTO SWITCH

enables selecting the automatic or manual phase setting.

44 THE UP/DOWN PHASE SWITCH

enables to adjust manually the position of the mirror shutter proportionately to an external sync phase. While the camera is running and the Phase toggle switch is raised, the frame rate increases by 0.25 fps. By lowering the toggle switch, the fps will diminish by 0.25 fps. This toggle switch has a middle "rest" position.

45 THE IRIS SOCKET

enables connecting the MOVIECAM IRIS CONTROL Unit – see page 223.

The STATUS DISPLAY – see [36] on page 197 fig. 11/1

MESSAGE	Explanation of the message, GLOWS
(MESSAGE)	Explanation of the message, FLASHES

(BUKL) FLASHES
NOT READY A Buckle switch and/or the Movement is/ are in a wrong position.

(BAT) FLASHES
The power supply is lower than 20.5 V.

(Fps!)
NOT READY The FWD/REV switch [25] shows REV but the camera cannot run reverse because e.g. an inappropriate magazine is mounted or the preset fps is out of the possible range (12.000 – 32.000 FPS).

Fps! GLOWS
NOT READY The value in one of the FPS Input Units is out of the possible range:
FWD: 1.000 – 50.000 FPS
REV: 12.000 – 32.000 FPS

Time GLOWS
The preset duration is too short to carry out a ramp between FPS-1 and FPS-2. The max duration is 99 sec.
The INT/EXT switch [29] shows EXT.

(Man!) FLASHES
NOT READY The warning flashes as soon as the MOVIE SPEED REMOTE CONTROL UNIT is connected to the camera and it disappears as soon as the hand wheel has been rotate counter clockwise until the end stop.

(MOT) FLASHES
NOT READY A problem occurred with the motor; the camera has to be checked at a maintenance centre.

(MOV) FLASHES
NOT READY A problem occurred with movement; the camera has to be checked at a maintenance centre.

(SYNC) FLASHES
NOT READY While the INT/EXT switch [29] shows EXT, no signal or a signal with inappropriate frequency for the preset ratio (see [32]) is supplied.

DC GLOWS
NOT READY When the Dust Check button has been pressed, the mirror rotates out of the way and remains there enabling the gate inspection. By pushing the button again, the mirror rotates in the viewing position and **DC** fades out.

MAG GLOWS
STYND BY Indicates that magazine motors tighten the film. This happens e.g. while the movement is rotated manually.

ATC

Shows the conversion of an AATON TC pulse to an ARRI one. It has to appear when the AATON CODER Box is used.

MTC

Shows the conversion of an AATON TC pulse to an MOVIECAM one. It has to appear when the MOVIECAM-AATONBOX is used.

THE FPS DISPLAY – see [37] on page 197 fig. 11/1

Following information is provided by the FPS display on the control board, on the Readout Unit or on the Remote Control Box

NOT READY No power supply

0.000
STAND BY The camera is controlled by the internal crystal and it is ready to run FWD.

-0.000
STAND BY The camera is controlled by the internal crystal and it is ready to run REV.

24.000
RUNNING The camera is controlled by the internal crystal and it is RUNNING forward at 24.000 fps

-24.000
RUNNING The camera is controlled by the internal crystal and it is RUNNING reverse at 24.000 fps.

48.24
STAND BY The camera is controlled by an external signal. Preset FPS: 24 forward. The selected RATIO [0] enables sync with 48 Hz.

60.24

STAND BY The camera is controlled by an external signal. Preset FPS: 24 forward. The selected RATIO [1] enables sync with 60 Hz. The preset frame rate is indicated by the 2 figures at the far right of the display.

72.24

STAND BY The camera is controlled by an external signal. Preset FPS: 24 forward. The selected RATIO [2] enables sync with 72 Hz.

50.25

STAND BY The camera is controlled by an external signal. Preset FPS: 25 forward. The selected RATIO [3] enables sync with 50 Hz.

75.25

STAND BY The camera is controlled by an external signal. Preset FPS: 25 forward. The selected RATIO [4] enables sync with 75 Hz.

10.025

STAND BY The camera is controlled by an external signal. Preset FPS: 25 forward. The selected RATIO [5] enables sync with 100 Hz.

60.30

STAND BY The camera is controlled by an external signal. Preset FPS: 30 forward. The selected RATIO [6] enables sync with 60 Hz.

75.35

STAND BY The camera is controlled by an external signal. Pre set FPS: 35 forward. The selected RATIO [7] enables sync with 70 Hz.

1.1

STAND BY The camera is controlled by an external signal.
The fps depends on the signal frequency. The selected RATIO [8] or [9] engenders that the frame rate will be equal to frequency of the external sync signal.

68**For example**

STAND BY The camera is controlled by an external signal.
The PHASE switch shows MAN. When Sync frequency is OK and the PHASE switch is raised (UP) or pressed (DOWN), the angle will be displayed.

SPEED CONTROL AND SYNCHRONIZATION

The drive of the MOVIECAM COMPACT Mk2 has an integrated crystal control with a tolerance smaller than $\frac{1}{4}$ of the frame height per 1.000 ft film roll. This crystal controls all film speeds from 1 to 50 fps. Inputs outside this range are signalled by either 1 or 50 flashing in the display on camera and Readout resp. Remote Control Box. As long as the camera is not running with the preset frame rate, e.g. during its start-up (approx. 1.3 sec. to 24 fps), the Sync warning LED blinks on the Readout or Remote Control Box. According to the requirements, the camera can be controlled either with the integrated crystal control or with an external device.

SYNCHRONIZATION

Example 1:

The possibility of synchronizing the MOVIECAM COMPACT Mk2 with TV and computer screens is limited when no cable connection is used.

Handling:

1. Choose frame rate: with a frequency of 50 Hz – 25 fps, with 60 Hz – 30 fps.
2. Run the film-loaded camera and shift the image separation bar on the TV or computer screen toward the bottom of the viewfinder image by pushing or raising the UP/DOWN PHASE switch [44] on the control board (fig. 11/1).

As long as the bar remains in this position, it is not visible on film.

Caution!

Due to the relative instability of video signals, synchronizing the MOVIECAM COMPACT Mk2 without using the synchronization tool provided by the camera can only be maintained for some time. Longer "video sync" settings are difficult! The sync setting without using the synchronization facilities cannot automatically be repeated; you have to re-adjust the phase position after each start – this procedure engenders unnecessary waste of raw stock.

Example 2:

Synchronization with a projector without cable connection.

Handling:

1. Set the camera's frame rate equal to the one of the projector, e.g. 24 fps.
2. Run the camera and push or raise the UP/DOWN PHASE switch [44] until the projected picture appears in the viewfinder as dark as possible.

Synchronization is given as long as the projector and the camera are RUNNING.

Precondition: projector with a stabilized drive.

Example 3:

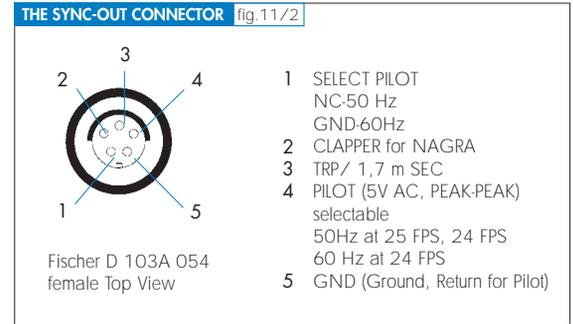
Synchronization at a frame speed of 24 fps with discharging (pulsating) lamps, e.g. HMI lamps, with a frequency of 50 Hz is not possible.

By closing the mirror shutter to 172.8°, however, the flickering is reduced so that it is hardly discernible anymore.

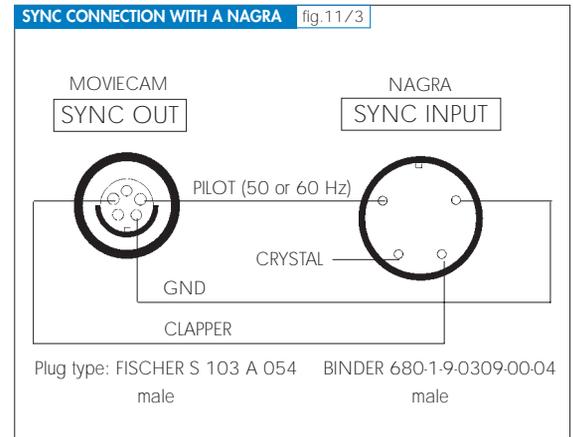
Recommended combinations:

60 Hz	144°	24 fps
50 Hz	172.8°	24 fps
48 Hz	180°	24 fps
50 Hz	180°	25 fps

SYNC OUT connector [17] at the camera rear



Pilot connection with Nagra tape recorder



Apart from an exact and repeatable synchronization of the MOVIECAM COMPACT Mk2 with video and computer images, the film camera may also be synchronized with generators, other film cameras, front and rear projectors etc. The integrated synchronization tool of the Mk2 can process any SYNC signal with low < 1 V and high between 4 V and 24 V, or video norm signal (1 Vpp). The frame rate input at the control board and the crystal control of the camera are inactivated when using these tools.

THE RATIO SELECTOR (HZ/FPS) – see fig. 11/1 [32]

By rotating the Ratio selector, one of the following ratios can be selected:

SELECTOR	Frequency and Frame Rate
0	48 Hz – 24 fps
1	60 Hz – 24 fps
2	72 Hz – 24 fps
3	50 Hz – 25 fps
4	75 Hz – 25 fps
5	100 Hz – 25 fps
6	60 Hz – 30 fps
7	70 Hz – 35 fps
8 and 9	fps = frequency of the external sync signal.

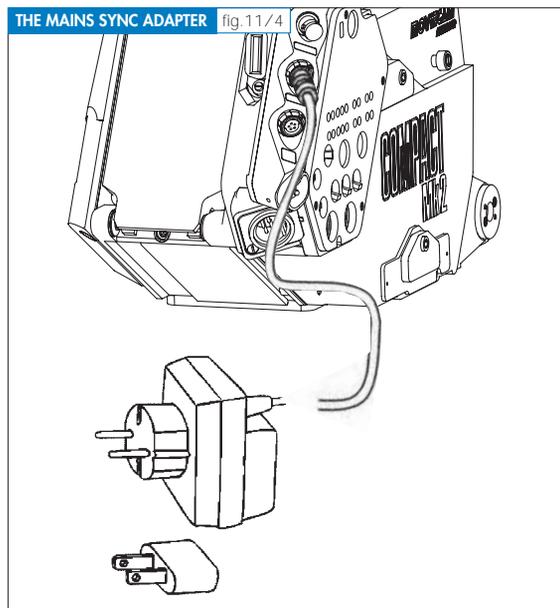
When the ratio "8" or "9" is selected, the frequency of the input synchronization signal determines the camera frame rate. At least, a 1 Hz pulse steers the camera to run at 1 fps.

Example 4:

Synchronizing the mirror shutter with the pulses of discharging lamps (e.g. HMI lamps) powered by a generator.

When HMI or fluorescent lamps are powered by a generator that is not crystal controlled, frequency variations might cause flickering. Therefore the mirror shutter has to be synchronized with the generator's frequency. When using several generators, the mirror shutter is synchronized with the generator that is used to illuminate wide areas.

THE MAINS SYNC ADAPTER



The MOVIECAM Mains Sync Adapter scans the power frequency and its deviations. With a connecting cable (4-pin Fischer connector), the SYNC pulses are forwarded to the Sync In connector [16] on the Mk2.

Even when the camera is switched on and off, phase synchronization is maintained.

The MOVIECAM Mains Sync Adapter can be connected to either a 110 V AC or a 220 V AC outlet without special setting.

Handling:

1. Set switch [29] to EXT.
2. Set switch [43] to AUTO.
3. Switch off the camera [18].
4. Connect the MOVIECAM Mains Sync Adapter to the Mains (e.g. from a generator) and the cable to the Sync-In connector [16] of the Mk2.
5. Switch on the camera [18].
6. Set frame rate by selecting the adequate ratio [32].



Caution!

The camera has to be connected to either power supply unit or battery block. The sync pulses are used for synchronizing only!

Example 5:

Synchronizing the mirror shutter with TV/computer screens without cable connection between video recorder or computer and the MOVIECAM COMPACT Mk2.

Synchronizing without connecting cable is possible due to the frame rate setting with an accuracy of 0.001 fps. When looking through the viewfinder of the RUNNING Mk2 at the video image, the frame rate is set on the FPS-1 Input Unit [28] so that the image separation bar stops.

This means that the frame rate is about one half – e.g. 50 Hz – 25 fps – or a third of the video frequency, e.g. 72 Hz – 24 fps.

An exact approach is possible due to the three decimals. Then the bar has to be moved toward the lower corner of the viewfinder image by operating the UP/DOWN PHASE switch [44].

The synchronization thus achieved is maintained as long as both devices are switched on.

► **Notice**

The synchronization can be repeated without manual readjustment only when a connecting cable is used.

Example 6:

Synchronizing the mirror shutter with TV/computer screens when the video recorder or the computer is connected with the MOVIECAM COMPACT Mk2.

Handling:

1. Set switch [29] to EXT.
2. Switch off the camera [18].
3. Connect a coax cable to the BNC Video-In plug [15] and to the video outlet of the image source (e.g. a Video Recorder, a DVD Player or a Computer).
4. Switch on the camera [18].

► **Remark**

The VIDEO signal comes from the video outlet of e.g. a video recorder or a DVD player. In case a SYNC signal is used instead of a VIDEO signal [e.g. from a Sync-Out connector of a video player or an inductive detector such as the Magnetic Pick Up Unit], this signal is transmitted to the Sync-In connector [16].

Handling:

1. Set PHASE switch [42] to 0°.
2. Set PHASE switch [43] to auto.
3. Point camera toward the TV or computer screen.
4. Set the adequate frame rate with the five-digit keys [28], e.g. 24.000.
The frame rate depends on the ratio chosen previously by means of the selector [32].
5. Run the camera – even when not loaded.

The auto function of the Mk2 automatically guides the video image separation bar to the lower corner of the viewfinder image. This phase setting is automatically stored and used again when switching on the camera (e.g. after threading film), the video recorder or the computer.

This function is ensured even with battery-driven devices.



Caution!

The auto function may only be applied with frame speeds corresponding with one half of the sync frequency. With 48 Hz, for instance, the camera can run 24 fps, 25 fps with 50 Hz or 30 fps with 60 Hz.

In case the image separation bar is visible in spite of the auto function, switch to MAN and set the bar to the lower image corner by pushing or raising the UP/DOWN PHASE switch [44]. The PHASE switch [42] 0°/90° may be useful.

Handling:

1. Set PHASE switch [42] to 90°.
2. Set PHASE switch [43] to MAN.
3. Set the lower edge of the image separation bar into the centre of the reticule by pushing or raising the UP/DOWN PHASE switch [44].
4. Set PHASE switch [42] to 0° so that the bar is not visible on film.

► **Remark**

As long as the bar remains at the viewfinder image bottom, it is not visible on film.

Example 7:

Synchronization with sync pulses of a projector.
There are two synchronization possibilities:

Possibility A – Mains synchronization

The projector drive is controlled by the frequency of the mains. By detecting the mains frequency, the MOVIE-CAM Mains Sync Adapter passes the pulse signals on to the camera.

Handling:

1. Connect the MOVIECAM Mains Sync Adapter to the mains and to the camera.
2. Set PHASE switch [43] to MAN.
3. Set PHASE switch [29] to EXT.
4. Look through the viewfinder at the projected image and push or raise the UP/DOWN PHASE switch [44] until the projected image appears darkest.

Switching from 0° to 90° may be useful here. Now synchronization between projector shutter and mirror shutter of the camera is achieved.

► **Remark**

This setting cannot be stored but is maintained only until one of the devices is switched off.

Possibility B – Sync pulses:

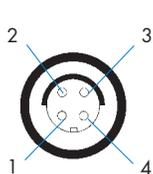
When the projector has a pulse generator (contacts at the mirror shutter) or a photo cell is installed in the projected beam, their pulses may be used as sync signals.
Handling:

1. Switch off the camera [18].
2. Connect the projector's "Sync Cable" to the SYNC-IN connector [16] on the Mk2.
3. Switch on the camera [18].
4. Set PHASE switch [43] to MAN.
5. Set PHASE switch [29] to EXT.
6. Look through viewfinder at projected image and push or raise the UP/DOWN PHASE switch [44] until the projected image appears darkest.

Then synchronization of the projector shutter with the camera mirror shutter is achieved.

► **Remark**

1. *This setting remains stored even when the devices are switched on and off.*
2. *It is recommended to make a test because some projectors are equipped e.g. with 3 blades (shutter) that may influence the quality of the film recording.*



- 1 SYNC IN
- 2 MAINS IN 5V AC MAX
- 3 MAINS IN 5V AC MAX
- 4 GND (Ground, Return for Pilot)

Socket type: FISCHER D 103 A 053

THE SPEED CONTROL

With the MOVIECAM COMPACT Mk2, the following frame rates can be chosen with an accuracy of 0.001 fps:

- Forward filming 1 to 50 fps,
- Reverse filming 12 to 32 fps.

The specific acceleration or deceleration time within the camera should change to the next preselected frame rate [FPS-2] can be adjusted within the range from 1 to 99 seconds.

The camera can be very precisely programmed [FPS-1] and may therefore be used to synchronize with video and computer screens in case no synchronization cable connection is available.

The frame rate can also be remote controlled with the Moviespeed Remote Control Unit plugged into the [REM] connector [33].

Handling of the FRAME RATE features:

Feed the desired frame rate into the FPS-1 Input Unit [28] and set the slide switch [25] to the desired option, [FWD] or [REV].

Reverse filming is indicated by the sign "minus" – in front of each frame rate on the displays of Mk2 and Readout Unit resp. Remote Control Box.

Although the time and [FPS-2] functions are not relevant in this case, the input unit time [38] has to be set to at least 1 second and the unit [FPS-2] [39] between 2 and 50 fps when shooting forward or 12 to 32 when shooting reverse is intended.

► Remarks

*A frame rate outside the range of +1 to +50 fps or -12 to -32 fps will be indicated by **Fps!** flashing on the FPS display [37].*

*Even though no ramp is intended, the TIME input has to be set to a value enabling a ramp between FPS-1 and FPS-2. Otherwise, **Time** will show up.*

Changing the frame rate while shooting:

When activating the camera with one of the Run/Stop buttons, the camera runs with the preset frame rate [FPS-1] and the FPS-1 LED glows green.

When the camera runs with frame rate [FPS-1], change to frame rate [FPS-2] by pressing the Ramp button. As soon as the frame rate [FPS-2] is reached, the LED marked FPS-2 lights up.

Press the Reset button [40] in order to stop a ramp between [FPS-1] and [FPS-2], then the camera will automatically continue to run with the frame rate set at [FPS-1]. While the camera runs with frame rate [FPS-2], change to frame speed [FPS-1] again by pressing the Ramp button [41]. The ramp time from 2 to 1 will be the same as from 1 to 2.

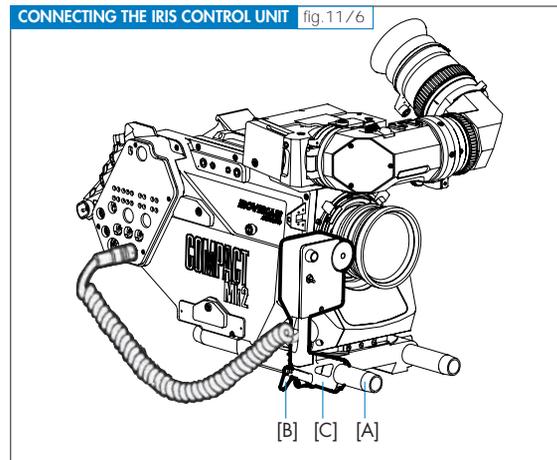
While camera is running and the Reset button is pressed, the camera will speed up or speed down in the shortest possible time to reach the frame rate preset at [FPS-1].

It is not possible to program the changing time from [FPS-2] to [FPS-1]; this is achieved in the shortest possible time when reset is pushed or in the preset time when RAMP is pushed.

If you switch the camera off while a ramp is performed or after reaching frame rate [FPS-2], the system is automatically reset to frame rate [FPS-1].

The LEDs located on top of the FPS Input Units as well as above the TIME Input Unit glow green when the entered values are possible. By flashing red, they indicate that the values are not possible or inappropriate in relation to the other values, e.g. the ramp time is set too short.

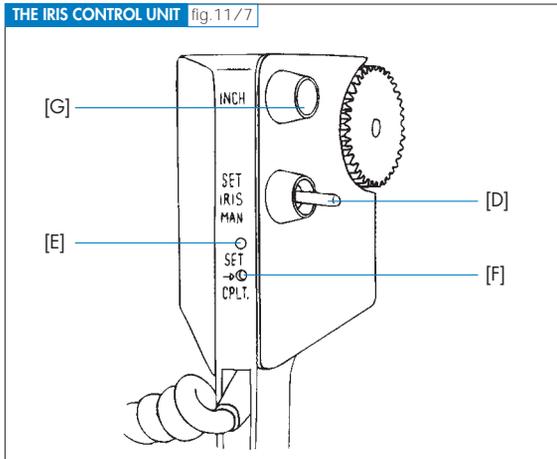
THE IRIS CONTROL UNIT



The Iris Control Unit helps to automatically adjust the aperture to a programmed change of the shooting frame rate. To use the Iris Control Unit, plug the coiled cable to the Mk2 Iris connector [45].

The Iris Control Unit is placed on the right Support Rod [A] so that its gear wheel can easily be swung into the gear rim of the lens iris. The lever [B] serves to fix the system.

In case an ARRI Base Plate with 19mm Ø rods should be used instead of 15 mm Ø rods (MOVIECAM Base Plate), fixing unit [C] of the Iris Control Unit can be exchanged.



After connecting the Iris Control Unit to the Mk2, switch the Main switch on.

The LED [E] shortly lights up. Now the following procedure should be pursued:

1. Swing away the Iris Control Unit from the lens (decoupling of gear wheel).
2. Put lens aperture to "8".
3. Calibrate the Iris Control Unit by pressing the Inching knob [G].
4. Fence the gear wheel into the aperture gear rim.
5. Turn the gear wheel electrically with the help of the small Flip switch [D] until aperture "8" has been reached exactly!
6. Operate Set switch [F] – for safety reasons only accessible through a 2 mm hole – with the help of a sharp object (e.g. screwdriver, toothpick, pen).
7. The red LED [E] lights up.

8. Turn the gear wheel electrically with the help of the small Flip switch [D] until an aperture value 3 steps higher or lower (2.8 or 22, depending on the lens) has been reached exactly!
9. Press Set switch [F] again.
10. Red LED [E] fades.
11. Adjust camera to either of the two desired frame rates (FPS 1 or 2).
12. Turn the gear wheel electrically with the help of the small lever [D] to the desired (measured) aperture value.

Example:

fps 1 = 24 fps	Aperture 5.6
or fps 2 = 48 fps	Aperture 4.0

► Check

When setting a different frame rate with the FPS Input Unit on the Mk2, the aperture is automatically adjusted. This check is done when the camera is STAND-BY. Now the Iris Control Unit is calibrated with the lens in use. This setting remains stored until the next calibration, even when the devices are removed and mounted again or are separated from the power supply.



Caution!

The Iris Control Unit only works with modern lenses where the aperture scale is linear!

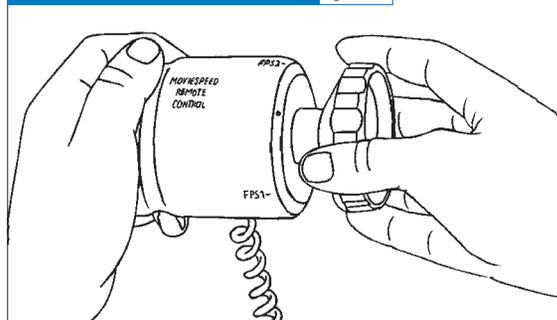
Warning

The aperture ring must not be turned manually as long as the gear wheel of the Iris Control Unit is engaged in the aperture gear rim of the lens! Should the aperture be changed, the aperture gear rim can be operated manually after disengaging. The lock lever [B] allows quick pivoting of the Iris Control Unit.

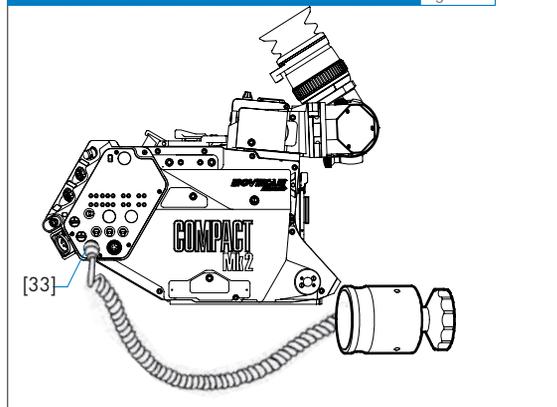
A new input is not necessary as long as the right aperture value is set when reengaging again. A check is recommended nevertheless. In case the LED starts flashing, a manipulation error has occurred; it can be eliminated by repeating the input steps 1 to 5. In case the LED continues flashing, which indicates a malfunction, the camera has to be disconnected for a while; thus the Iris Control Unit software is reset.

THE MOVIESPEED REMOTE CONTROL UNIT

THE MOVIESPEED REMOTE CONTROL UNIT fig.11/8



CONNECTING THE MOVIESPEED REMOTE CONTROL UNIT fig.11/9



Connection:

The cable of the MOVIESPEED Remote Control Unit has to be plugged in the Remote Socket [33] located on the Camera Control Board.

Handling:

When using the MOVIESPEED Remote Control Unit, both programmed frame rates are automatically assigned to the marks 1 [a] and 2 [b] on the hand wheel. When using the hand wheel, the changing time is set manually which inactivates the timer. Unlike the programmable timer, the Moviespeed Remote Control Unit hand wheel permits to individually control the changing time from the rates entered in [FPS-1] to [FPS-2] and vice versa.

► **Important**

It is important to calibrate the Moviespeed Remote Control Unit in rotating the wheel from stop to stop once!

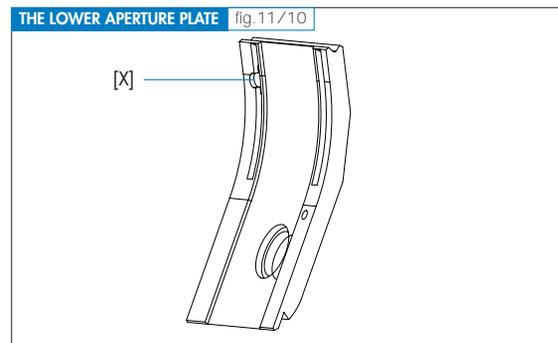
Prior to start the camera, turn the hand wheel to the position fps 1!

THE AATON TIME CODE

The code system AATONCODE, developed by the French camera manufacturer AATON, can be used together with the MOVIECAM COMPACT Mk2. The AATONCODE, recorded on the film negative and the sound recording media, helps to simplify various post-production tasks decisively.

Examples: synchronization of film rushes with the sound support; identification of simultaneous shots with several cameras; film cutting; identification of film sequences transferred to video tapes and post-production work with video equipment; negative cutting and light and colour matching. Contrary to some other code systems, the AATONCODE can be read by man (figures) as well as machine (SMPTE matrix).

During shooting, the AATONCODE is exposed onto the film in the MOVIECAM Mk2 and at the same time recorded on the sound support.



MOVIECAM offers an exposure module, an accessory box with the AATONCODE GENERATOR – the AATONCODE BOX – and a Lower Aperture Plate with exposure slot [X].

The exposure module, which is built in at the Vienna Headquarters only, consists of a two-row miniature matrix with seven yellow and seven red LEDs and a projection lens. AATON offers input (master) clocks, e.g. ORIGIN C or ORIGIN C+, as well as Time Code Generators like the AATON Coder MK-4 or the AATON GMTS.

SYNCHRONISATION WITH AATON TIME CODE TECHNOLOGY

Two options for Time Code synchronization are provided: the MTC and the ATC

The MK2 camera automatically recognises which option is applied.

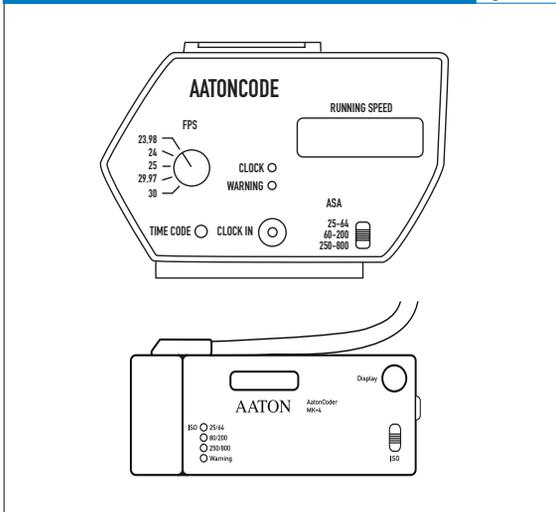
1. MTC

The MOVIECAM AATONCODE Box is connected to the Mk2 camera with the AATON Interface Cable for Mk2

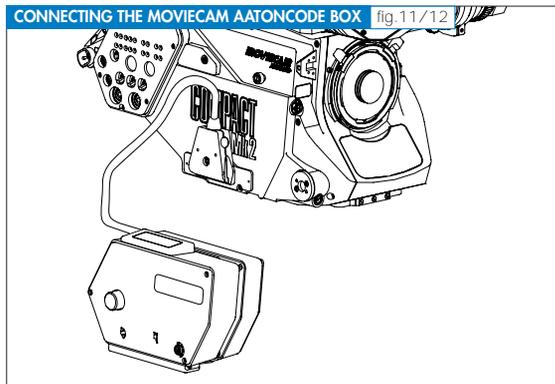
2. ATC

The AATON CODER MK-4 time generator is connected to the Mk2 camera with the AATON Coder Interface Cable

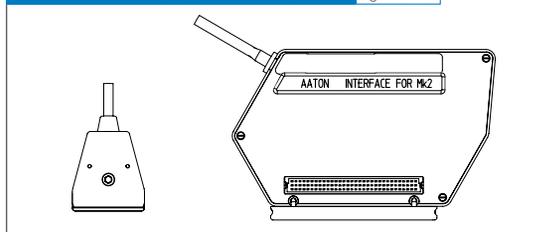
THE MOVIECAM AATONCODE BOX AND THE AATONCODER MK-4 fig.11/11



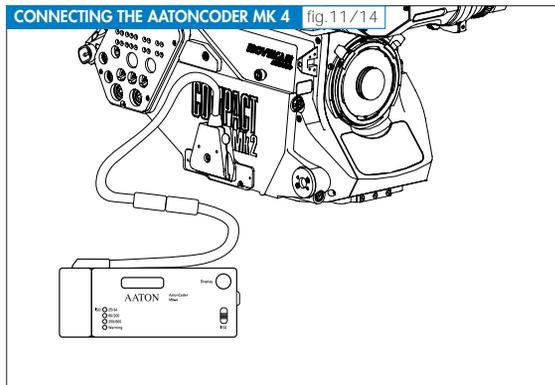
CONNECTING THE MOVIECAM AATONCODE BOX fig.11/12



THE MOVIECAM AATONCODE INTERFACE CABLE fig.11/13

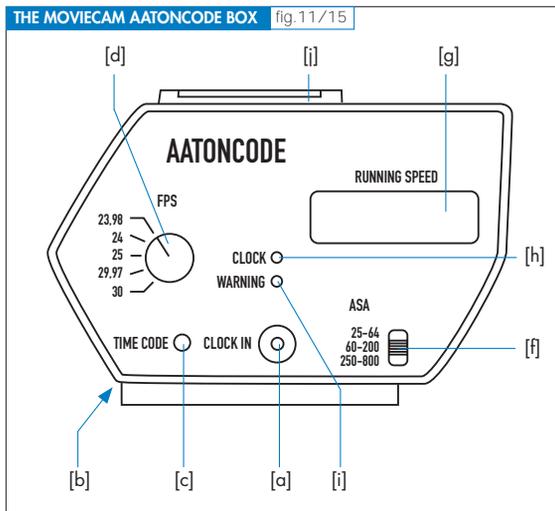


CONNECTING THE AATONCODER MK 4 fig.11/14



OPERATIONS

A/Synchronizing the Mk2 by means of the MOVIE-CAM AATONCODE Box (MCT)



The MOVIECAM AATONCODE Box has the following connectors, control switches and displays:

- [a] Front side: CLOCK IN, Lemo plug for connections with the AATON Input Clock.
- [b] Back side: Connecting rail to the Interface.
- [c] Front side: TIME CODE, press button to choose the display.
- [d] FPS, rotary selector to choose the frame rate. This selector is OUT OF FUNCTION when the box is used with the MK2! The frame rate has to be set with the Fps Input Unit [28] on the Camera Control Board!

- [f] ASA, slide switch to input film sensitivity.
- [g] Front side: Frame rate display is out of function
- [h] CLOCK, green LED
- [i] WARNING, red LED
- [j] on top of the box: eight-digit LCD display.

Connection:

1. Remove the Lower cover of accessory connector [24] from the camera right side
2. Mount the MOVIECAM AATONCODEBOX to its Interface Cable for Mk2
3. Plug the Interface connector into the socket located on the camera right side.

In order to use the AATONCODE correctly, various operations have to be performed.

At the beginning of the shooting day:

To be sure that the camera is equipped with the internal exposure module

1. Switch off the camera.
2. Attach the AATONBOX to the camera.
3. Switch on the camera.

If the message

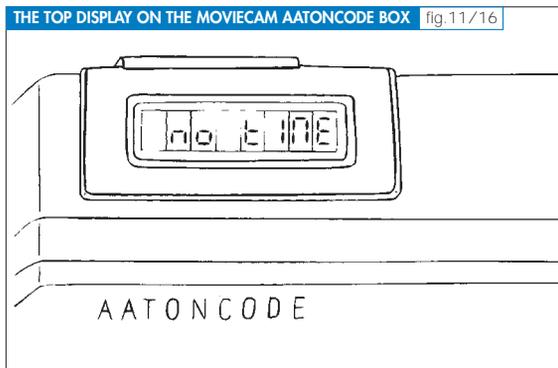
no LED

appears on the display of the AATONBOX, no exposure module is built in or it is not functional.

Furthermore, the Time Code compatible LOWER APERTURE PLATE has to be installed in the camera.

The AATON input clock (Master Clock ORIGIN C or C+) is connected to the AATONBOX ("CLOCK IN" plug). For more info about this master clock see:

<http://www.aaton.com/products/accessories/origin/index.php>



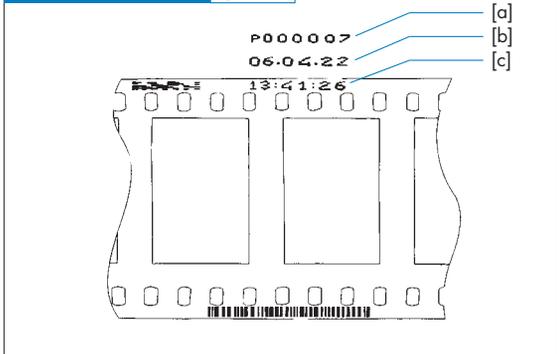
When the clock is connected for the first time, the red LED flashes and

no tIME

is displayed.

During initialization, which is started by pressing the [*] switch of the clock, the necessary information such as year, month, day, hour, minute and second is fed into the memory of the AATONCODE GENERATOR. The clock display shows e.g. PRODUCTION number. Input of a digit (production number) serves to mark the production.

For the time being, further parameters, such as equipment numbers, can be programmed at the AATON factory only. If further identification has to be entered in the system, the ORIGIN Master Clock will offer these possibilities.



During shooting, the whole information is recorded onto the film.

Example:

- [a] = production number
- [b] = date
- [c] = time

After initializing, the following appears on the display of the clock:

GOOD

or

GOOD 00.0

In case an earlier "TIME" is still stored in the memory of the CODE GENERATOR, it will be displayed. In case it is asynchronous to the actual "TIME", the message

BAD TIME

appears on the display. Then the question

RELOAD?

appears. By pressing again the [*] switch located on the clock, the actual "TIME" is recorded.

After the new initialization, the message

GOOD

appears on the clock display. Only then, the input clock can be disconnected.

Is an EBU Smpte Ltc signal used for initialization instead of the AATON ASCII input clock, this signal has to be transferred via the LEMO plug ("CLOCK IN" plug). When the AATONCODE GENERATOR understands the signal, the message

LTC - IN

appears within approx. 10 seconds on the display of the AATONBOX for 1 second. Initialization is done before shooting with the same input clock for all cameras and sound recorders. Then the assistant puts the sensitivity of the negative film in use into the exposure unit by operating the "ASA slide switch" on the AATONBOX. Initialization of the AATONCODE GENERATORS remains stored for approx. eight hours; unless the generators have been disconnected from the camera power supply for more than one hour and the ambient temperature is not within

the range from -10°C to $+40^{\circ}\text{C}$. Thus AATON limits the crystal-accurate time guarantee to eight hours. After eight hours, the red LED lights up and the time display

HH=MM=SS

starts to flash.

Is the MOVIECAM Mk2, and thus also the AATON-BOX, disconnected from its power supply for a short time (max. one hour), e.g. when changing batteries, the AATONCODE generator is supplied meanwhile by a buffer battery built into the AATONBOX. As long as the AATONBOX is connected to the powered MOVIECAM Mk2, the buffer battery is continually recharged. During a power bridging with the buffer battery, both LEDs flash and

Std-6488

appears on the display.

88

is the number of minutes for which the buffer battery guarantees operation.

After 60 minutes, the built-in timer switches off the AATON GENERATOR; a new initialization is then necessary. In order to avoid this, just connect the AATONBOX to the powered MOVIECAM for a short time; this results in a new countdown of the stand-by operating time. In the course of the shooting day, the camera assistant will check the synchronism of the AATONCODE GENERATOR with the input clock every

four hours. Should the temperature fall below -10°C or rise above $+40^{\circ}\text{C}$, it is recommended to check the AATONCODE system more frequently. To do so, connect the AATONBOX with the input clock. By pressing the TIME CODE switch on the AATONBOX, information appears on the display; by further pressing the switch, the next information appears. After initialization, when the camera is not operated, the first information

HH=MM=SS

appears on the display.

The green LED starts to flash as soon as the AATON-CODE generator is ready for operation. The red LED has faded. When the green LED does not flash prior to shooting, the AATONCODE will not be recorded. The green LED will permanently light up during shooting. During shooting, "II" is added to the time information:

HH=MM=SS II

It stands for the frame speed, e.g.

11093224 = 11hours, 9 minutes, 32 seconds and 24 fps.

The red LED lights up when a problem occurred; it is then necessary to check the display. The message "ERROR" appears when a jam or error occurs; for minor errors, the display message and the error message will flash alternatively, each for one second a time.

Examples for error messages and further information: Should the actual camera speed deviate from the pre set frame rate, e.g. 24 fps, by more than $1/24$

seconds, the red LED will glow with 10% of its brightness.

Furthermore, **SHIFT-X.X** alternatively with **HH MM SS II** will appear on the display. X.X is the deviation in 1/24 (25, 30) seconds.

This error must not occur when shooting with 24, 25 and 30 fps. For other frame rates, this "error" has to be indicated. A minus (-) in front of the digit indicates too high frame rates.

Further examples:

14=32=07 14 hours, 32 minutes, 7 seconds.

43060216 Production number = 43, year = 2006, month = February, 16th day.

CAM=0004 Camera with code generator No.4.

▶ Remark

This number is programmed at the AATON factory and it cannot be changed by the user.

BAT=23.9 Power supply voltage = 23.9 V. The AATONBOX is powered by the power supply of the Mk2 camera.

BAT=11.9 Power supply voltage of the buffer battery = 11.9 V, when the MOVIE-CAM is not connected to a power supply.

▶ WARNING

When less than 10V are indicated, the buffer battery has to be recharged by connecting the AATONBOX to the powered MOVIECAM. Recharging time is approximately ten hours. During this time the Mk2 camera can of course be operated.

LO-ASA The emulsion sensitivity is between 25 and 64 ASA.

MED-ASA The emulsion sensitivity is between 64 and 200 ASA.

HI-ASA The emulsion sensitivity is between 200 and 800 ASA.

TC=22.6 The temperature sensor indicates 22.6°C

At 100% brightness of the red LED:

UNADJUST The generator is defective and can only be repaired at AATON.

At 100% brightness of the red LED:

NO TIME (flashing) The code has not been initialized; No code is recorded although the camera is running.

At 100% brightness of the red LED:

NO LED No code recording; the exposure unit is defective.

Exposure module and connectors have to be checked at the rental house.

At 50% brightness of the red LED:

NO BAT

The exposure unit is supplied by the buffer battery of the AATONBOX; the voltage is too low. Check power supply.

At 50% brightness of the red LED:

RED R XX

XX means the amount of defective red LEDs in the exposure module. Recording is continued with the help of yellow LEDs. This is just an interim solution; the damage has to be repaired soon.

At 50% brightness of the red LED:

RED Y XX

XX means the amount of defective yellow LEDs in the exposure module. Recording is continued with the help of red LEDs. This is just an interim solution; the damage has to be repaired soon.

At 10% brightness of the red LED:

HH=MM=SS

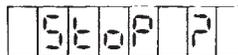
(flashing) Last initialization was done more than eight hours ago.

At 1% brightness of the red LED:

STD-BYXX

The buffer battery has been operated for XX minutes.

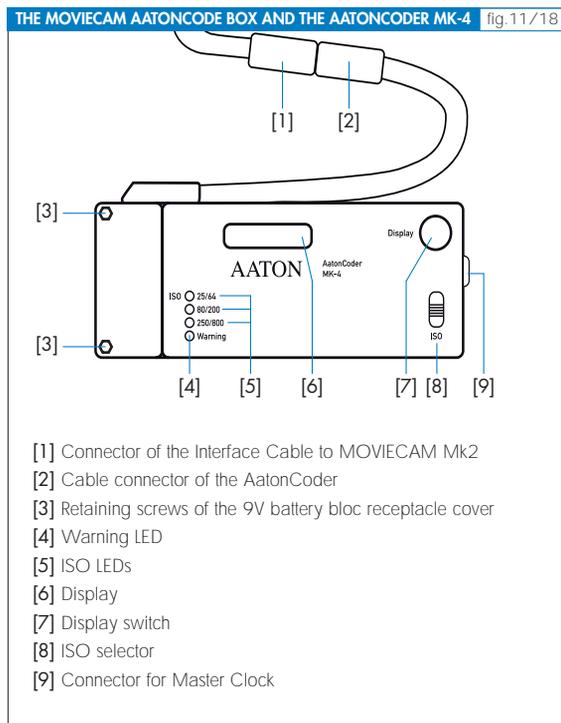
By continuously pressing the display switch,



appears on the display.

By pressing the display switch again, the AATONCODE GENERATOR is switched off. This saves the buffer battery charge during a shooting break (or after a shooting day); when needed again, however, all devices have to be initialized again!

B/Synchronizing the Mk2 by means of the AATON CODER MK-4.



The integration of the Aaton Code into the MOVIECAM COMPACT Mk2 camera system consists of the following components:

Internal:

A matrix projection device has been mounted underneath the lower aperture plate.

External:

An Aatoncoder MK-4 has to be connected to the camera by means of the MOVIECAM – AATON interface cable.

Furthermore, also a master clock like the AATON Origin C+ is requested for using the Time Code synchronization features.

The Moviemecam Compact Mk2 automatically recognises the kind of box used for time code operation. As soon as the Aatoncoder Mk-4 is connected, ATC will appear on the displays of the camera and readout.

For complementary information, don't hesitate to contact the MOVIECAM Headquarters or one of the AATON Agents listed on www.aaton.com

AATON FRANCE

2 rue de la Paix
38001 Grenoble
Tel: (+33) 7642 6409
Fax: (+33) 7651 3491

AATON USA

4110 W Magnolia Blvd
Burbank CA 91505 USA
Tel: (+1 818) 972 9078
Fax: (+1 818) 972 2673

SUBJECT TO TECHNICAL MODIFICATION

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1. USER MANUAL

(The following pages have been edited by AATON)

To use this Aatoncode data printer, you need:

- A camera equipped with an AATON printing head and optical path.
- A time code generator as an AATON origin C or C+, or an Ube/Smpte Ltc signal in a Lemo 5 male connector.
- The Aatoncoder MK-4 properly plugged to the camera which model is indicated on the setting sticker.
- To read the following...

1.1. Time code initialization

Before shooting, once every eight hours maximum, the Aatoncoder must be fed with time code data. This can only be done when the coder is powered by the camera power supply.

1.1.1. Ascii interface

Use an Origin C/C+ to feed the time in the coder through the ascii interface. Init the origin time. Plug it to the coder with the lemo 5. Press "*" on the origin keyboard.

If the coder was not initialized, the origin will load the time in the coder, check it and display "GOOD" or "GOOD 00.0".

If the coder was initialized, the origin will compare its time to the coder time, will give a diagnostic as "Bad time", and will ask you "Reload?". Press "*" again to change the coder time code data.

The origin will recheck and display "GOOD". You can

then unplug the origin.

1.1.2. Ube/Smpte Ltc interface

To use an Ube/Smpte Ltc signal, you must wire it in a male lemo 5 and plug it in the coder. The coder tries to read an incoming signal every ten seconds. The coder will display "ltc-in" for one second, as an acknowledgement.

1.2. How long time code will be ok

The coder is equipped with a temperature compensated oscillator, giving it the ability of keeping the time for eight hours with less than one frame error. The coder will display the time blinking after the eighth hour. If the supply disappears, the coder will use its internal battery displaying "STD_BYXX" and will keep the time for one hour, and shut down.

In case of extreme temperature (-20°C to -10°C, 40°C to 60°C), check the time code devices more often. Do not forget to initialize the sound recorder, and the others related cameras with the same time code data.

1.3. Display

The display is used to check the time code and other parameters of the coder. Each time you will press the display button you will change the parameter displayed. After ten seconds it will return to the first display:

1.3.1. First display

No time code data	
Camera stopped	Camera shooting
"NO TIME"	"NO TIME"
Time code initialized	
Camera stopped	Camera shooting
"HH=MM=SS"	"HH.MM.SS.II"
Where slanted means blinking.	

HH, MM, SS: means hour, minutes, second.

lI: means the printing rate

If a major error happens, the first display will be replaced by the error indicator. If a minor error happens, the first display will display once the error, once the display, every second. Refer to red led.

1.3.2. Next displays:

"PP.YY.MM.DD" Production #, Year, Month, Day

"CAM=XXXX" Equipment #

"BAT= XX.X" Power supply voltage

"MED ISO" Iso switch position (LOW, MED, HIGH)

"TC= XX.X" Temperature sensor (°C)

(for oscillator compensation)

1.4. ISO selector

This selector is used to select the film sensitiveness. Only heavy errors like shooting 400 asa with the 25 - 64 position will make the code unreadable. The human readable code is always readable, insuring manual recovery.

1.5. Green led, red led

1.5.1. Green led:

It will blink at the ASA value when camera is stopped and lit continuously when shooting.

1.5.2. Red led (Warning):

Means that something is wrong; check the display (decreasing priorities):

Lit 100% "UNADJUST"

The coder is out of order, return it to AATON.

Lit 100% "NO TIME"

Time code is not initialized, and camera is shooting. No code is printed.

Lit 100% "NO LED "

There is no way to print correct code, the printer head in the camera is out of order. Check connections, change the printer head.

Lit 50% "NO BATT"

Means that the camera is shooting, and the coder is printing using its own battery for power supply because camera supply is less than 10 Volts. Check connections.

Lit 50% "LED R XX"

One of the red leds of the printer head is burned or disconnected.

The coder will use the yellow leds, printing correct time code. Check connections, make the printer head fixed as soon as possible.

Lit 50% "LED Y XX"

One of the yellow leds of the printer head is burned or disconnected. The coder will use the red leds, printing correct time code. Check connections; make the printer head fixed as soon as possible.

Lit 10% "SHIFT.X.X"

While shooting, the camera has shifted from the sync speed for more than 1/24 of second. X.X is given in 24th of second. If you shooting to sync 24, 25 or 30 this must not happen. If you shooting other speeds, this must happen. Negative numbers appear when the camera is too fast.

Lit 10% "HH=MM=SS"

Time code has been initialized for more than eight hours.

Lit 1% "STD-BYXX"

Time code is initialized, but camera power supply is less than 10 Volts, the coder is using its own battery to keep the time code. XX are the minutes of backup left. After one hour the coder will shut down and will need initialization to work again.

1.6. While shooting

Check that green led is blinking, and that red led is off. Start the camera. The green led must now be lit continuously. All is ok.

1.6.1. European (PAL) sync speeds

If you choose to shoot 24, set your sound recorder time code at 24 frames per second.

If you choose to shoot 25, set your sound recorder time code at 25 frames per second.

The coder will sense itself the correct speed.

1.6.2. U.S. (NTSC) sync speeds

Shooting 24 or 30, set your sound recorder time code at 30 frame per second.

If you want to shoot 23.976 or 29.97 with sync sound, check first that your lab has a key-link with a 6.00 or more software version:

If it has not, set your sound recorder to 30. The sound will shift one image per 41 second of take.

If it has, set your sound recorder to 29.97 drop frame and the sound will not shift.

The coder will sense itself the correct speed.

1.7. Battery backup

1.7.1. Battery

Use a long life alkaline 9V battery. It will provide you 50 hours of backup. Change it every week if heavy duty.

You can work without battery, but the time code will be lost at every power disconnection.

1.7.2. Stopping the coder

If you want to stop the coder to save battery, shut down the power of the camera, and press continuously the display button. As soon as it displays "STOP ?", release and press it again. It will stop. Warning: Doing this will cancel time code initialization.

2. SPECIFICATIONS

2.1. Absolute maximum ratings

Functional temperature

-20° to 60°

Avoid direct exposition to sunshine. When used in extreme temperature, initialize your time code recorders more often.

Humidity

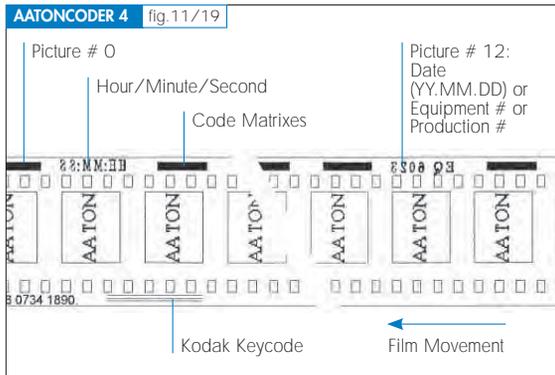
Avoid condensation while powered.

Long term storage

Remove the battery, avoid humidity.

2.2. What's printed on the film?

The coder will print time code data on the edge of the film. Part is coded in matrixes, and part is human eye readable. Matrixes are printed with the red leds (if available), human readable with the yellow leds (if available).

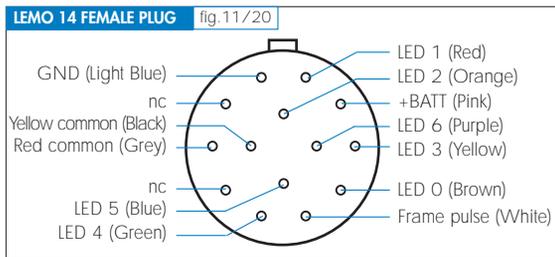


2.3. Electrical interfaces

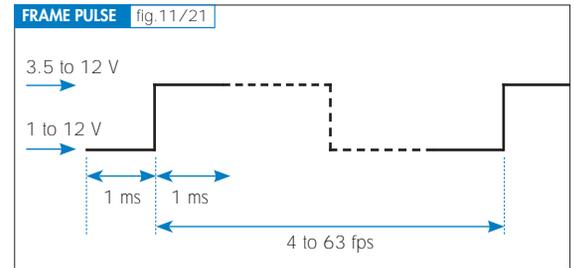
2.3.1. Camera wiring

The coder receives the power supply from the camera, and a frame pulse.

Looking to the lemo 14 female plug



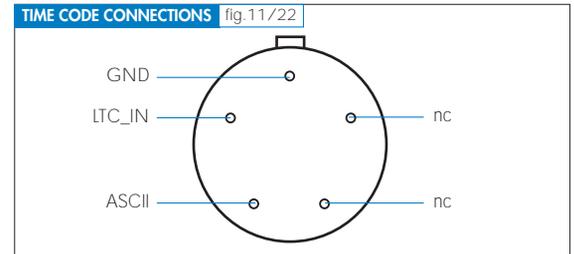
2.3.2. Frame pulse



The coder senses that the camera is shooting when it will receive 5 pulses giving the same period $\pm 1\%$. Quickly changing speed may be ignored. As soon as the coder detected that the camera is shooting, it will print until the camera stops, i.e. no frame pulse during 300 ms.

2.3.3. Time code connections

Looking to the female plug



LTC signal: 1V peak to peak UBE or SMPTE, 24, 25, 30 fps.

ASCII: TTL levels RS232 half duplex.

2.3.4. Power supply

Maximum power supply is 30V, minimum is 10V.

Consumptions are:

Printing

Average: 100 mA max, Peaks 400 mA,
depending on asa setting

Camera stopped

20 mA max

Stand by

5 mA max on internal battery.

Warning:

Printing with no external power supply will quickly discharge the internal battery (Down in 2 hours).

3. Maintenance manual

Setting up the parameters:

Each camera model needs a special setting. These settings are indefinitely recorded in your coder, but can be modified by special commands sent through the ascii line.

Each setting as a two letters identifier.

3.1. Parameters

3.1.1. EQ (Equipment number):

6000 to 6999:

It is a four digit number which is supposed to be different for every Aatoncode printing device. 0000 to 5999 are reserved for Aaton cameras. 6000 to 6999 are reserved for Aatoncoder-4. It appears on a sticker near the lemo5. Do not change it.

3.1.2. CA and CL (Quartz compensation) :

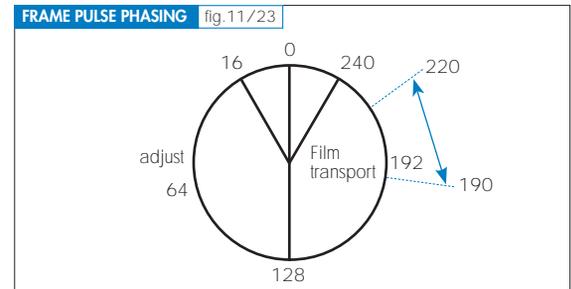
Parameters for temperature compensation of the oscillator are written on the quartz. To be checked, but cannot be modified.

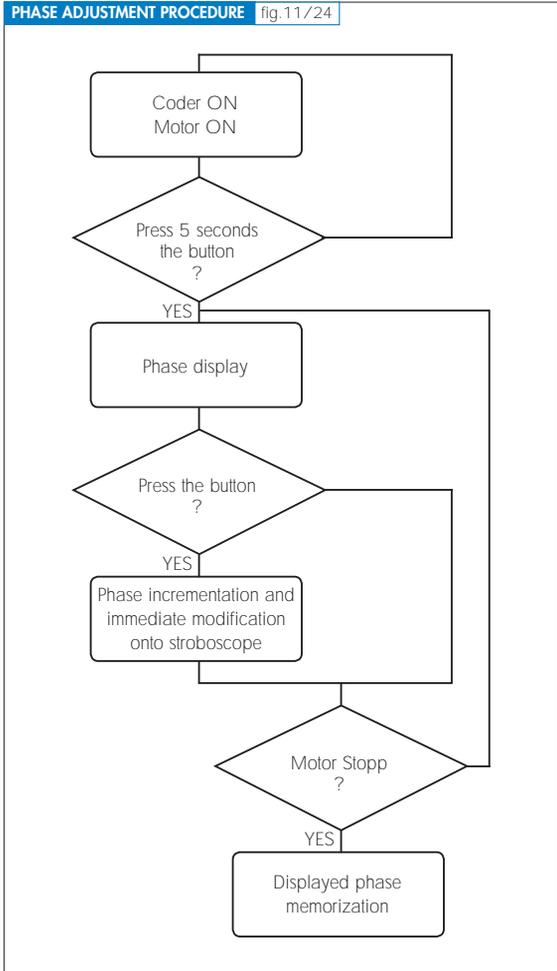
3.1.3. PH (frame pulse phase) :

16 to 240

This parameter sets the phasing between the frame pulse and the moving of the film. If the frame pulse happens in the middle of the exposure, the value must be 64. If it happens in the middle of the film moving the value must be 196. (Valid values: 16 to 240)

Frame pulse phasing (Values 240 to 16 prohibited)





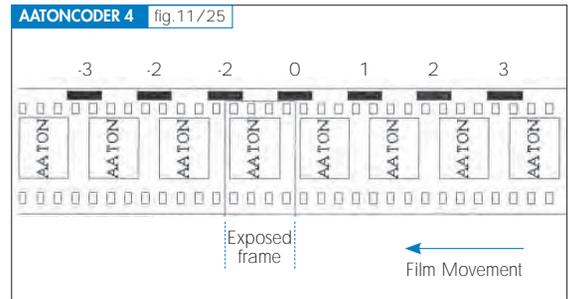
Phase is adjustable between 190 and 220

3.1.4. HP (printing head position):

+7 to -8.

This parameter depends on the position of the printing head related to the window exposure.

Values from +7 to -8.



3.1.5. SE (film sensitiveness setting):

0 to 255.

This parameter sets the relative light intensity for correct exposure of the matrixes. 0 to 255.64 is the correct value for Aaton 35 mm. Depends on the optical aperture of the projection lens.

3.1.6. LR (left_right):

0 or -1

This parameter inverts the printing leds order left to right or right to left. Depends on the number of mirrors of the projection device.

3.1.7. GR (Claw speed):

192 to 255

Depending on the movement of the claw. From 255 for slow claws (180°) to 192 (135°) for fast claws.

3.2. Detail of acceptable LTC signal

* If bits in the user bits means a valid date, this date will be chosen. If not the date is fixed to 01.01.86.

TIME DATA (Mandatory)	Binary Weight	Bit #	Binary Weight	Date & Options*
Picture Units	1	0		
	2	1		
	4	2		
	8	3		
		4	1	Production Digit 0
		5	2	
		6	4	
		7	8	
0	1	8		
	2	9		
		10		Ignored
		11		Ignored
		12	1	Production Digit 1
		13	2	
		14	4	
	15	8		
Second Units	1	16		
	2	17		
	4	18		
	8	19		
		20	1	Year Units
		21	2	
		22	4	
		23	8	
Second Tens	1	24		
	2	25		
	4	26		
		27		Ignored
		28	1	Year Tens
		29	2	
		30	4	
		31	8	
Minutes Units	1	32		
	2	33		
	4	34		
	8	35		

TIME DATA (Mandatory)	Binary Weight	Bit #	Binary Weight	Date & Options*
		36	1	
		37	2	
		38	4	
		39		
Minute Tens	1	40		
	2	41		
	4	42		
		43		Ignored
		44	1	Month Tens
		45	2 (0)	
		46	4 (0)	
		47	8 (0)	
Hours Units	1	48		
	2	49		
	4	50		
	8	51		
		52	1	Day Units
		53	2	
		54	4	
		55	8	
	1	56		
	2	57		
		58		Ignored
		59		Ignored
		60	1	Day Tens
		61	2	
		62	4 (0)	
		63	8 (0)	Synchr Word
		64	0	
		65	0	
		66	1	
		67	1	
		68	1	
		69	1	
		70	1	
		71	1	
		72	1	
	73	1		
	74	1		
	75	1		
	76	1		
	77	1		
	78	0		
	79	1		

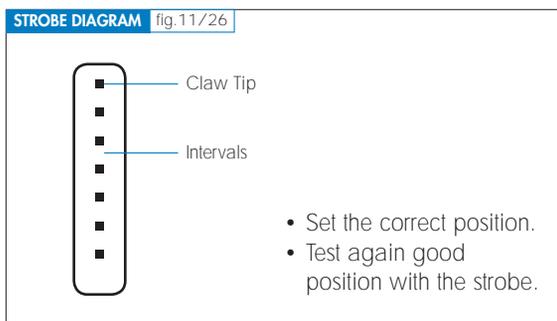
3.3. Strobe control

3.3.1. Operations

- Plug a battery in the camera.
- Initialize the camera timecoder with an Aaton Origin C +.
- Plug the Amphenol 9 connector on the Aatoncoder.
- Illuminate the claw with the strobe.
- The seven claw tip images and the six intervals must have the same size.

3.3.2. Time code matrix adjustment

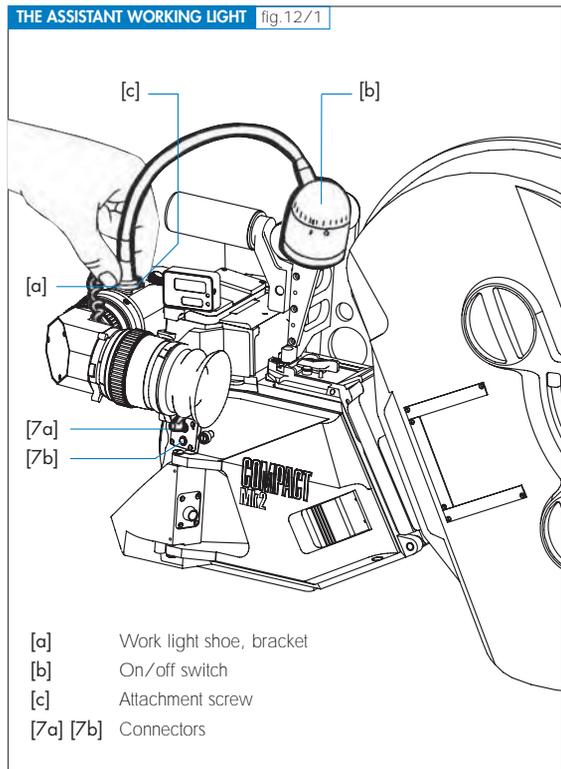
- Camera without magazine with battery.
- Unclutch the motor. Keep the electrical connection.
- Place by hand the mirror in central closed position symmetric to the vertical.
- Push on the test switch, then stop position.
- Set back the motor without any rotation on motor and mirror shaft.
- Screw lightly the motor screw.
- Connect the strobe to the amphenol.
- Set the camera 24 Fps at 25 ASA and run.
- Look at the claw tip with the strobe : it must be set as shown on the following diagram:



CHAPTER 12

MISCELLANEOUS and APPENDIX

THE ASSISTANT WORK LIGHT



The Assistant Work Light can be mounted like a flash to a still camera either on the MOVIELITE or on the Readout Unit. After loosening the fixing screw, slide the WORK LIGHT shoe into one of the several brackets [a] and tighten the screw [c]. Disconnect the camera, then connect the short coiled cable (similar to that of the Eyecup Heater) to one of the two connectors [7a] or [7b]. The Assistant Work Light is switched on by turning its cap [b]. It is recommended to always carry a spare bulb (24 V/4 W) with you equipment. Eyepiece Heater and Assistant Work Light may be used together (but keep an eye on the battery power consumption!).

TOOLS

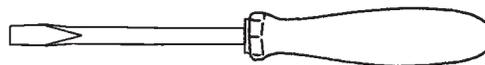
In addition to the various cleaning tools, the camera assistant needs the following tools to work with the MOVECAM COMPACT Mk2.

- [T1] enables attaching the Base Plate to the camera.
- [T2] enables mounting and removing e.g. Viewfinder, Handgrips, as well as adjusting the Pitch on the 4-Perf movement.
- [T3] enables adjusting the Pitch on the 3-Perf movement.
- [T4] is used for different tasks which however, should be left to the experts at the rental house.
- [T5] is used to remove or fix the optical bloc on top of the Field Lens.
- [T6] enables exchanging the Ground Glass and setting the Mirror Shutter angle.
- [T7] enables adjusting the Video Assist and the brake of the Viewfinder swivel mechanism.
- [T8] is needed to remove or fix the Field Lens.
- [T9a] enables exchanging the Ground Glass.
- [T9b] enables to adjust the Video Assist and to exchange the Ground Glass.



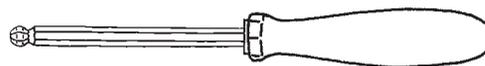
Caution!

Compressed air should only be used for blowing the Magazines! Apart from this, high pressure does more harm than good, especially to glass surfaces.



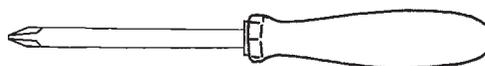
[T1] 8-10 mm flathead screwdriver

[T4] M2 (1/12") mm flathead screwdriver

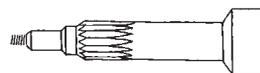


[T2] M5 ballpoint hex socket (S4 Allen Key)

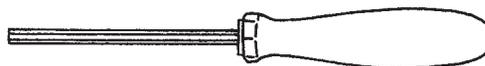
[T3] M4 ballpoint hex socket (S3 Allen Key)



[T5] PHILIPS 0.75



[T6] MOVIECAM Combi Tool



[T7] M2.5 hex socket (S1.5 Allen Key no ballpoint!)

[T8] M3 hex socket (S2 Allen Key no ballpoint!)

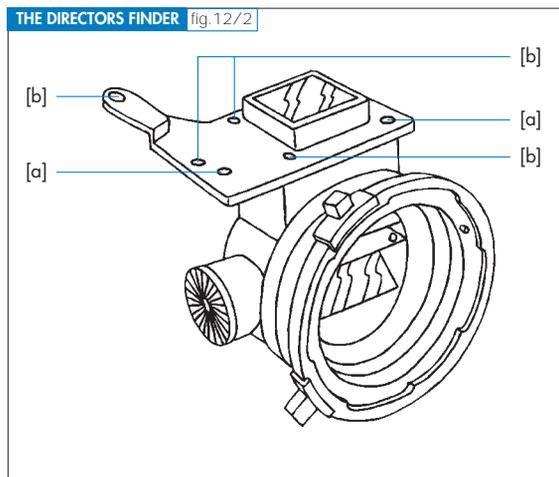


[T9a] ARRICAM Combi Tool M2.5/M3



[T9b] ARRICAM Combi Tool M1.5 Allen key (hex)/M3

THE DIRECTORS FINDER



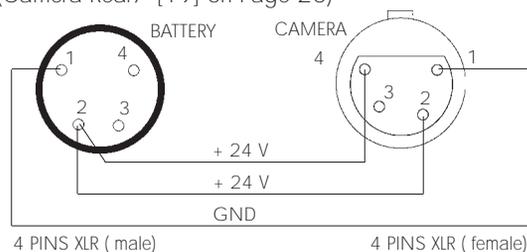
The Directors Finder allows looking for set-ups by using the MOVIECAM COMPACT Mk2 Ground Glasses (same format), the Mk2 Viewfinder, the Lenses and the Right Handgrip. These components are mounted to the Directors Finder in the same way as to the camera.

The threaded sockets [a] and the gauged boreholes [b] serve as attachments for the Mk2 Viewfinder.

CONNECTORS

POWER DC SUPPLY

(Camera Rear/ [19] on Page 20)



POWER DISTRIBUTION AND RUN/STOP TRIGGER

Power Supply for Accessories

(Camera Front/ [2] on Page 16)

camera front 24 V supply outlet (female) Top View



+24 V GND Socket type:
(2 Amps. max.) FISCHER D 103 A 051

Power Supply for Accessories and R/S Trigger

(Camera Front [1] on page 16 and Power Distribution Box, page 23)

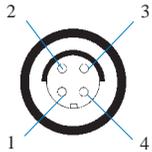
R/S Connectors (Handgrip [1] and Power Distribution Box – see page 23)



+24 V/2 AMP MAX.
ON/OFF GND Socket type:
FISCHER D 102 A 052

SYNCHRONIZATION AND SPEED CONTROL

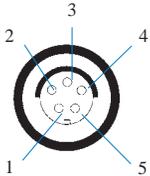
The SYNC-IN connector
(Camera rear/ [16] on page 20)



- 1 SYNC IN
- 2 MAINS IN 5V AC MAX
- 3 MAINS IN 5V AC MAX
- 4 GND (Ground, Return for Pilot)

Socket type: FISCHER D 103 A 053

The SYNC-OUT connector
(Camera rear/ [17] on page 20)

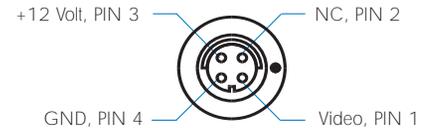
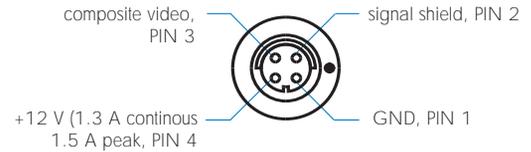


Fischer D 103A 054
female Top View

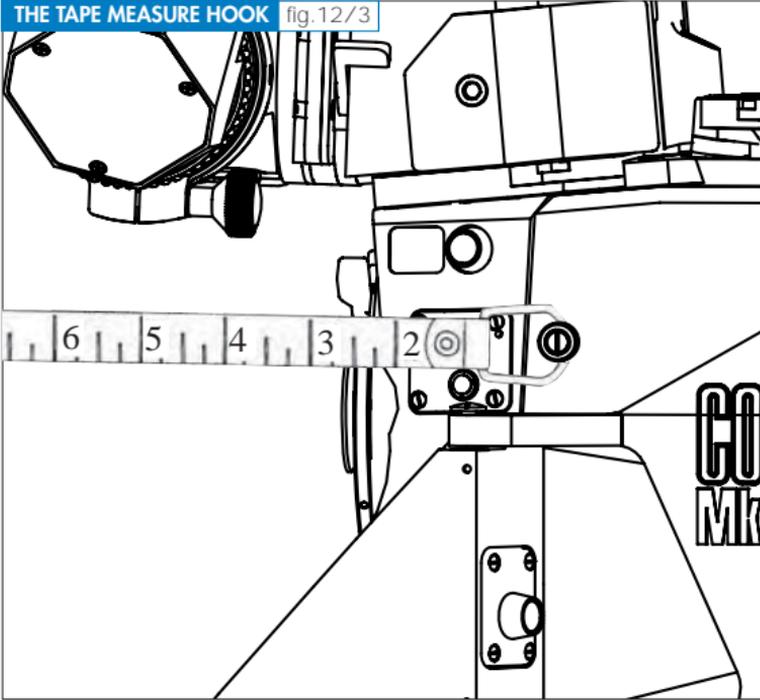
- 1 SELECT PILOT
NC-50 Hz
GND-60Hz
- 2 CLAPPER for NAGRA
- 3 TRP/ 1,7 m SEC
- 4 PILOT (5V AC, PEAK-PEAK)
selectable
50Hz at 25 FPS, 24 FPS
60 Hz at 24 FPS
- 5 GND (Ground, Return for Pilot)

VIDEO ASSIST CONNECTION

For ARRI ON BOARD Monitor (page 78)



THE TAPE MEASURE HOOK fig.12/3



Now that you have read the whole manual, you already know the COMPACT Mk2 by heart. Just attach the tape measure to the hook and start shooting.

Good luck!

ARRI CINE + VIDEO GERÄTE GES.M.B.H
MOVIECAM SERVICE CENTER
Pottendorferstrasse 25-27
1120 Vienna
Austria