

AATON

XTR<sup>prod</sup>

User's Guide  
Sept 96



## INTRODUCTION

This manual contains the handling, care and operating instructions for the Aaton 16mm XTRprod camera and its peripherals. Also included are chapters dedicated to the Super16 widescreen format and AatonCode, Aaton's patented in-camera timecode system.

### **Aatonomics**

In keeping in line with the budget-conscious nature of 16 and Super16 production, Aaton offers three camera models - X0plus, XTRplus and XTRprod.

Each model is equipped with features specifically geared for certain levels of production in order to help the user balance cost with his or her particular needs.

All camera models are built of the same mechanical construction and are identical with regards to size and weight, speed range, image steadiness, noise level and durability. Keep in mind that the differences between models is limited strictly to camera features.

The XTRprod is Aaton's high-end model and is designed to offer features such as Super16, AatonCode, internal lightmeter and integrated CCD assist combined with new, state-of-the-art studio features such as Aatonite illuminated viewing system, built-in crystal speed control in .001 increments, multi-position shutter, a full function illuminated LCD control panel and quick setting jog wheel.

## AATON XTRprod User Guide

This manual has first been written by Peter Abel - [ABELCINE TECH](#) -

### AATON

2 rue de la Paix  
38000 Grenoble  
FRANCE  
(33) 4 7642 9550  
(33) 4 7651 3491 *fax*

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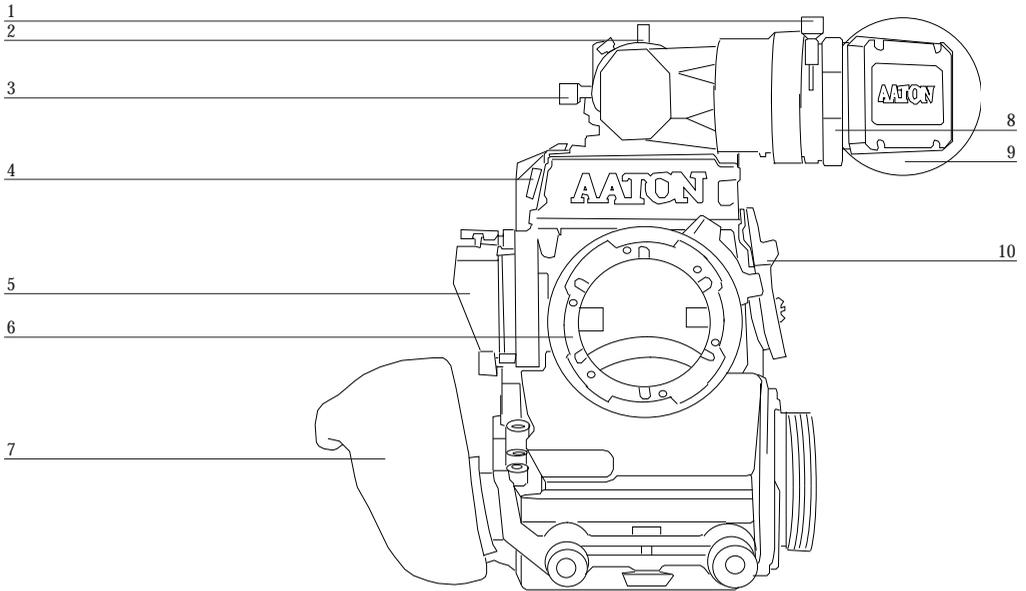
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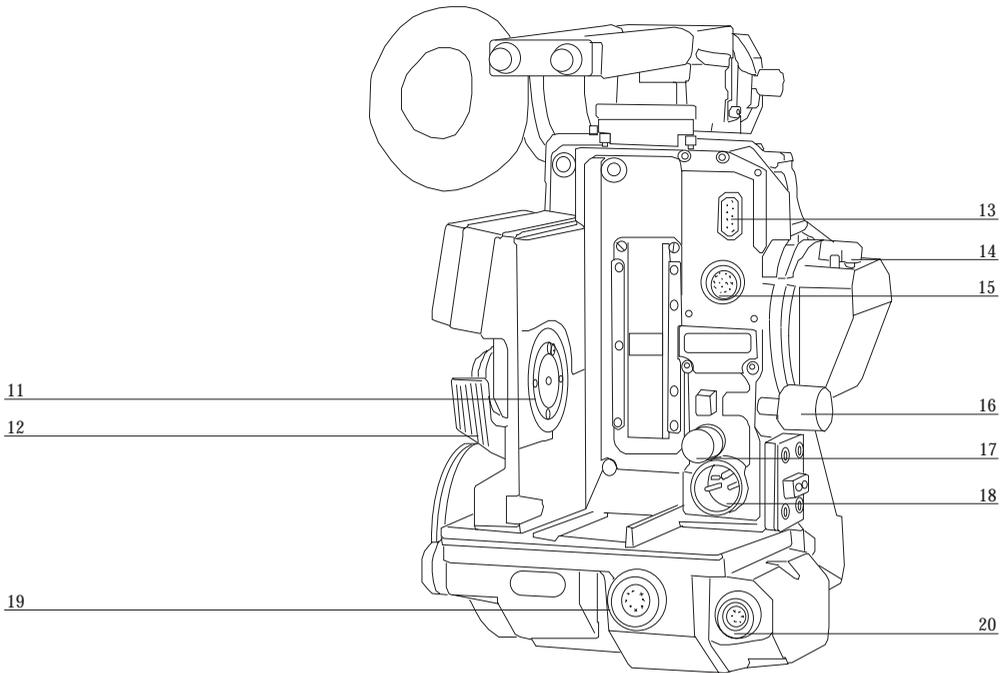
# 1

## SYSTEM FEATURES AND CONTROLS



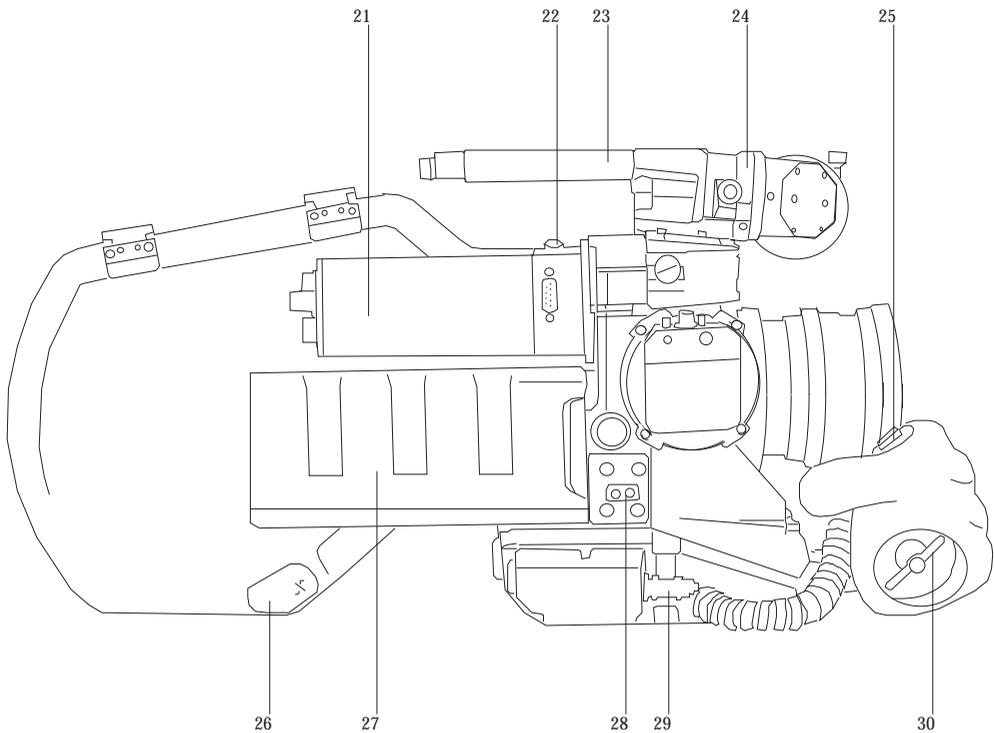
## 1.1 FRONT VIEW

1	Friction Adjusting Ring	<i>adjusts the tension of the eyepiece swivel.</i>
2	Tape Measure Stud	<i>holds tape measure at film plane.</i>
3	Lateral Lock Knob	<i>locks the lateral position of the viewfinder.</i>
4	Beamsplitter Access Cap	<i>covers the port which accesses the beamsplitter adjustment screw.</i>
5	CCD Cover	<i>accesses the CCD head.</i>
6	PL Lens Port	<i>standard mounting system for XTRprod.XTRprod.</i>
7	Wooden Handgrip	<i>allows for comfortable handheld operation.</i>
8	Eyepiece Lock Ring	<i>fastens interchangeable standard and extension finders.</i>
9	Eyepiece Shutter	<i>blocks light when operator's eye is away from the finder.</i>
10	Body Run/Test Switch	<i>provides camera run and half frame inching.</i>



## 1.2 BACK VIEW

11	Magnetic Drive	<i>provides magnetic magazine coupling.</i>
12	Mag Release Lever	<i>releases the magazine for removal.</i>
13	Amph9	<i>accessory input provides +/-, Hz, and camera run functions.</i>
14	Manual Iris Lever	<i>controls CCD iris operation.</i>
15	Lemo14	<i>connects CCD head to the CCD control unit.</i>
16	Battery Lock Screw	<i>fastens the on-board battery to the camera body.</i>
17	Camera Fuse	<i>protects the body from excessive current and reverse polarity.</i>
18	XLR4	<i>main power input for on-board battery or other 12V power source.</i>
19	Lemo8	<i>accessory input provides +/-, Hz, TVsync, 100PPF and camera run.</i>
20	Lemo6	<i>accessory input provides +/- and camera run functions.</i>



### 1.3 BATTERY SIDE

- 21 CCD Control Unit
- 22 CCD On/Off
- 23 Carrying handle
- 24 Diopter Set Ring
- 25 Run/Test Switch
- 26 Take-up Latch
- 27 On-board Battery
- 28 LED Indicators
- 29 Lemo2
- 30 Adjusting Screw

*fastens to the body for CCD operation.*

*powers the CCD assist. Switch off to conserve battery life.*

*includes tape measure stud, 3/8-16 accessory hole and adjusting tools.*

*adjusts the diopter setting of the viewfinder to the operator's eye.*

*provides camera run and full frame inching from the handgrip.*

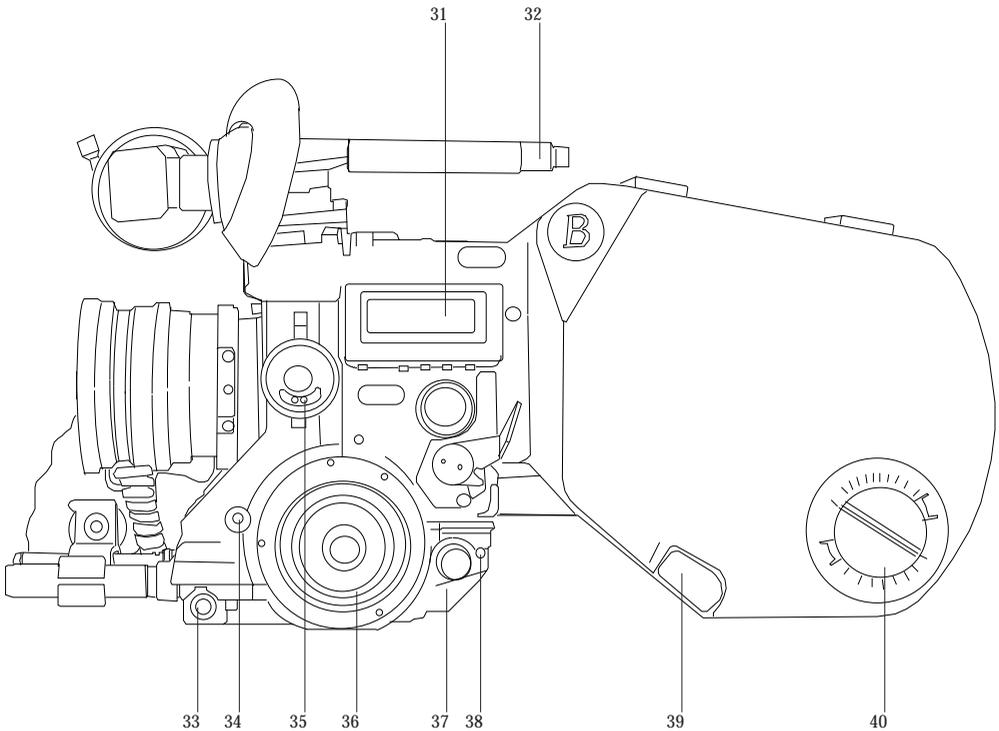
*locks the magazine take-up door.*

*12V nicad for handheld operation.*

*battery side indicators for camera run, camera test and low battery.*

*input provides camera run functions.*

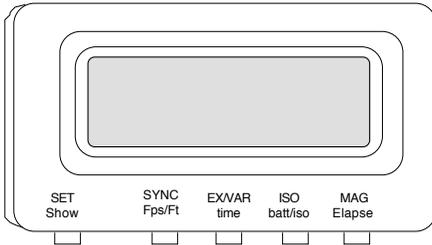
*adjusts the rotation of the handgrip.*



## 1.4 MOTOR SIDE

31	LCD Control Panel	<i>displays AatonCode, ASA, speed, voltage, remaining footage.</i>
32	Carrying Handle	<i>includes tape measure stud, 3/8-16 accessory hole and adjusting tools.</i>
33	Lemo5	<i>AatonCode and SMPTE timecode communication.</i>
34	Lightmeter On/Off	<i>activates the lightmeter display in the viewfinder.</i>
35	LED Indicators	<i>motor side indicators for camera run, camera test and low battery.</i>
36	Motor	<i>tripphase salarium, low power consumption. 3-75 fps operation.</i>
37	Aaton Jog	<i>provides quick adjustment of Aatonite, ASA, speed, phasing, footage.</i>
38	AatonCode Led	<i>flashes each second if the timecode has been initialized in the camera.</i>
39	Feed Latch	<i>locks the magazine feed door.</i>
40	Mag Footage Counter	<i>displays the footage remaining in the magazine feed side.</i>

## 1.5 LCD CONTROL PANEL - QUICK REFERENCE



### IN SHOW MODE

24' - 080	Camera speed and Remaining footage	(default mode)
ISO = 100	Film ASA	(1 x Batt/Iso)
Batt = 10'4	Battery voltage	(2 x Batt/Iso)
Ela = 042	Elapsed footage during last take	(2 x Speed)
22=32=54	Hours=minutes=seconds in AatonCode	(1 x Time)
95-03-25	Year-Month-Day in AatonCode	(2 x Time)
123456	Production ID in AatonCode	(3 x Time)
2321	Equipment number in AatonCode	(4 x Time)

### IN SET MODE

Sp =2 4'	Adjusting a preset speed	(SET, 1 x SYNC, toggle SYNC or use Jog)
Sp = 27'454	Adjusting a specific speed	(SET, 1 x VAR, use Jog)
Et	Speed controled by external speed device	(SET, 2 x VAR)
Phase	Phase Adjusting	(Camera running,SET, 2 x VAR, use Jog)
ISO = 100	ASA Setting	(SET, 1 x ISO, toggle ISO or use Jog)
MAG = 400	Indicating that the new magazine is fully loaded	(SET, 2 x MAG)
MAG = 140	Indicating the new magazine's footage	(SET, 1 x MAG, use Jog)

### WARNINGS

Lo Spd	Camera has not yet reached the selected speed
Lo Batt	Battery is too low (below 10V)
Empty	No more film in the magazine
Unadjust	Please check page 39





# 2

## THE CAMERA BODY



### Flange focal distance

Refers to the critical distance from the lens seat to the film plane. The precise FFD of the XTRprod is 52mm -6 to -15 $\mu$ m as measured with a depth gauge in the lens port. It is recommended that these tolerances be checked and maintained by a qualified technician. The combination of FFD and back focus distance of a lens directly affects precise focus and overall image sharpness. Make sure these critical measurements are strictly upheld. When using an unfamiliar lens for the first time, check that the eye focus matches the tape-measured focus marks of the lens, and / or shoot a focus test.

## 2.1 LENSES

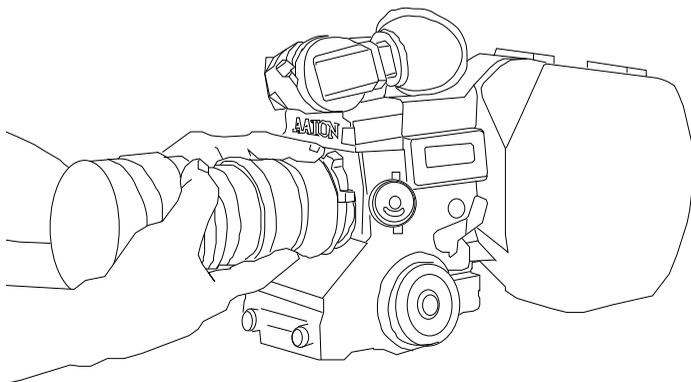
*The XTRprod's flexible lens mounting system allows for the use of a wide variety of 16mm, 35mm and still-photographic lenses.*

### 2.1.1 ArriPL Lens Port

The ArriPL lens port is the standard mounting system delivered with the XTRprod and allows the use of all 16 and 35mm ArriPL mounted motion picture lenses. PL lens adaptors are available for Arri standard and Arri bayonet mounted lenses. This mount is ideal for rental facilities, where a mounting system compatible with other manufacturer's 16 and 35mm cameras is often desired. The specific flange focal distance (FFD) of the XTRprod with PL port is 52mm -6 to -15 $\mu$ m.

### 2.1.2 Installing the Lens

To install the lens on the camera body, turn the outer locking ring counter-clockwise until it reaches its stop. If the port cap is on, remove it. Align the four protruding flanges on the lens with the four corresponding cutaways in the locking ring and insert the lens into the camera port so that its flanges rest evenly against the lens



seat. Tighten the locking ring by turning clockwise until the lens is secured in place and the lock ring is firmly set. Make sure the lock

ring is tight enough so that it cannot be inadvertently unlocked.

### 2.1.3 Aaton Lens Port

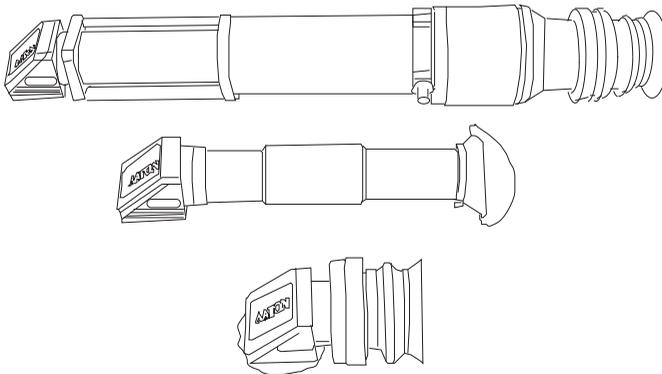
The XTRprod can also be equipped with an Aaton lens port. In order to install the Aaton port, the ArriPL lens seat and locking ring must first be removed.

Because the FFD of the Aaton lens port is shorter than most professional cameras (40mm), the XTRprod, equipped with this mount, can accommodate most motion picture and still camera lens mounts. Lenses can be used equipped with an Aaton mount or by adapting another manufacturer's lens mount. Aaton lens adaptors are available for Arri standard, Arri bayonet and Eclair CA-1, as well as Nikon and Leica-R photographic mounts.

## 2.2 VIEWING SYSTEM

### 2.1 Viewfinder Options

The viewfinder is designed to be fully orientable, providing left or right side viewing and an upright image in any position.



The viewfinder is equipped with a standard short eyepiece that can be used for handheld and tripod-mounted operation. For more comfortable tripod and studio applications, the standard extension finder can be fitted in place of the short eyepiece. With an Elemak or Mitchell type dolly, or in situations requiring additional reach,



#### The Pechan prism

In order to provide a fully orientable upright image, the Aaton viewfinder incorporates a pechan prism assembly, which is actually comprised of two triangular prisms sandwiched together. On some viewfinders, depending on the construction of this prism, rotation of the eyepiece a full 360° will cause the image in the finder to shift slightly left or right.

After attaching an extension finder, if the image in the finder appears to have shifted slightly, rotate the finder 360° and choose the preferred centered image.

---

the hyperlong finder, which is twice as long as the standard extension finder, can be used.

Note that standard short eyepiece can now be equipped with a heating system; in order to avoid any condensation on the eyepiece lens. Aaton can provide you a heating lens and the corresponding Amph9 cable.

### **2.2.2 Attaching the Extension Finder**

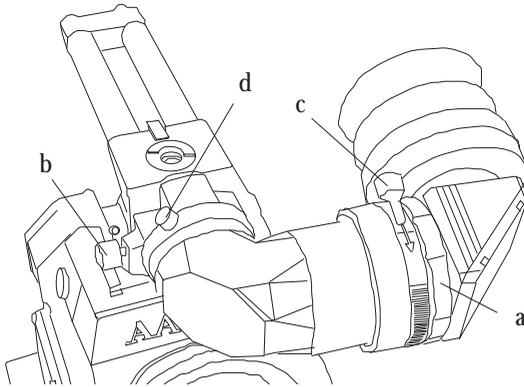
In order to use an extension finder on the XTRprod, the standard eyepiece must first be removed. To remove the eyepiece, locate the eyepiece lock ring, marked A in the photo below. Rotate counter-clockwise and gently pull off the eyepiece. To install the extension finder, locate the protruding guide pin on the seat of the viewfinder and align the pin with the hole in the flange of the finder. Mate the flange to the seat of the viewfinder and tighten the lock ring until it is set firmly in place. During this procedure, you will notice that the extension finder needs to face 180° away from the operator's eye to be installed onto the viewfinder. Because of its optical construction, this is completely normal. After installation, rotate the finder 180° to regular viewing position.

### **2.2.3 Viewfinder Tension Adjustments**

The large knurled knob at the base of the left/right lateral movement point (b) locks the lateral positioning.

The friction adjusting ring, located behind the eyepiece lock ring, can be used to adjust the tension of the eyepiece swivel, depending on the operator's preference and the viewfinder being used. When using the standard eyepiece, tension should be relatively light to allow for movement with a moderate amount of pressure. When using the standard extension finder, tension should be increased to hold the additional weight of this finder in place.

To adjust the tension of the swivel, loosen the steel knurled screw (c) located on the friction adjusting ring. Hold the eyepiece in place,



rotate the adjusting ring slightly and retighten the screw; 1/8 of a turn, at first, will have an effect. To increase tension of the eyepiece swivel, rotate the adjusting ring clockwise; to decrease the tension, rotate the adjusting ring counter-clockwise.

#### **2.2.4 Adjusting the Diopter**

Before shooting, the diopter setting of the viewfinder should be adjusted to the operator's eye. To set the diopter, locate the diopter set ring (d) in front of the carrying handle at the top of the viewfinder, and loosen the small knurled knob. Look through the viewfinder, rotate the diopter set ring until the edge of the cross-hair is at its sharpest point and retighten the knob. It is recommended that, for easiest setting, this adjustment be performed with the port cover off and no lens on the camera.

Notice that the diopter set ring is engraved with numbers and dots - use this reference to quickly recall your particular setting when more than one person will be looking through the viewfinder.

The range of the diopter setting is + or - 3. If the range does not reach your particular diopter setting, the viewfinder optics can quickly be adjusted by a qualified technician and the diopter range reset to meet your needs.

#### **2.2.5 The Eyepiece Shutter**

In order to avoid unwanted light seepage through the viewfinder,

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the eyepiece shutter must be closed any time the camera is running film and the operator's eye is away from the viewfinder. To close the eyepiece shutter on the standard bellows eyepiece, grasp the rubber ring at the base of the eyecup and rotate 1/8 of a turn counterclockwise. On the extension finder and the old style standard eyepiece, locate the small tab at the base of the rubber eyecup and slide it until the shutter completely covers the eyepiece opening. On the hyperlong finder, rotate the knurled ring closest to the eyecup counter-clockwise to close the shutter.

### **.2.2.6 Adjusting the Viewing Horizon**

If the rotation of the image seen through the camera's viewfinder does not exactly match what is seen through the naked eye, there is a fine adjustment that can be made to the image's relative horizon.

Locate the small slotted screw located on the underside of the viewfinder just inside the eyepiece lock ring. Notice that the screw travels in an elongated cutout. Loosen the screw one turn and, while looking through the viewfinder, move the screw within its cutout in order to adjust the horizontal rotation. When the images seen through your left and right eyes coincide, lock the screw.

### **2.2.7 Viewing Screen**

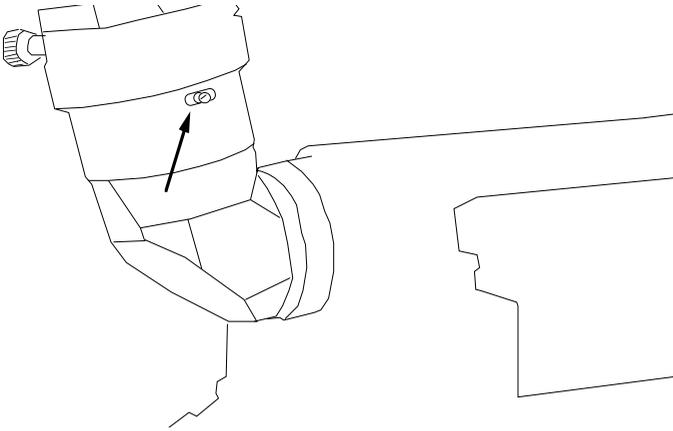
The unique concave design of the Aaton fiber optic viewing screen gives it its superior sharpness and lucid quality. If your viewing screen possesses a dark blemish or two, don't be alarmed; these spots are actually fractured fibers and are inherent in the manufacturing of fiber screens. Such blemishes, although occasional, are the trade-off for the brilliant screens which result from the use of this technology. The XTRprod utilizes an interchangeable viewing screen system which allows the cinematographer to install the screen which best suits his particular application(s). Aaton offers eleven viewing screens as standard. (see the Technical Specifications chapter) Specially marked screens can also be manufactured to order. Contact your local Aaton representative for details.

Unlike the XTRplus, which uses a universal screen that shifts



#### **Checking your Viewing Horizon**

here is a simple means of determining whether adjustment of the horizon needs to be made. Mount a zoom lens onto the camera and rest the camera on your shoulder in a standard handheld position. Look through the viewfinder with your right eye while also keeping your left eye open. Compose a frame that includes vertical or horizontal lines (a window frame, for example) and adjust the zoom of the lens so that the focal length of the lens generally matches what you see with your left eye. Ignore the viewing screen markings for the time being and determine whether the rotation of the image you see through the viewfinder matches what you see with your left eye. If it does not, then a fine adjustment may be necessary

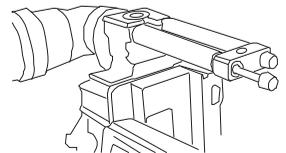


between std 16 and Super16 operation, the XTRprod requires separate screens for std 16 and Super16 formats.

### 2.2.8 Changing the Viewing Screen

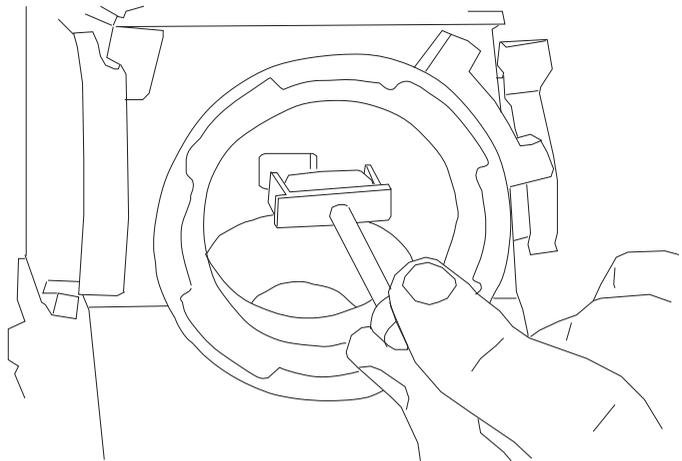
The viewing screen is designed to be easily removed by the user for the purposes of interchanging or for cleaning. To remove the screen, unscrew the black tool marked Vw located in the hollow at the rear of the camera's carrying handle. Remove the port cap. Clear the mirror shutter so that it is rotated safely inside the body by rotating at the base of the shutter with your finger or by setting the camera to test position, then removing the battery. Look into the port and locate the threaded hole directly above the aperture opening and screw in the tool until it is snug. Carefully pull the screen straight out.

To reinstall the screen, screw the Vw tool into the threaded hole of the screen until it is snug. Look into the port and locate the left and right lip of the viewing screen holder. With its flat side facing down, gently push the screen straight into the holder above the lip until it seats firmly in place. Unscrew the Vw tool and store back in the hollow of the carrying handle. Reaffirm that the screen is seated properly by carefully pressing against the threaded hole with your thumb.



**Attention !**

Each time you're touching the mirror, the viewing screen, or anything inside the lens port, disconnect the battery. You will therefore avoid any risk of seriously damaging your camera.

**2.2.9 Adjusting the Viewing Screen**

The image on the viewing screen should be sharp, and its focus should match to that of the film. This can be best determined with the use of a collimator, or by looking through the viewfinder and checking that the sharp focus of a lens matches the measured distance on its barrel. If it does not, then you need to make an adjustment of the viewing screen focus.

To proceed, you must first unscrew and remove the circular cap located on behind the camera body Run/Test switch. Inside the access hole, insert a 2mm Allen wrench and screw or unscrew it. Replace the circular cap. Use a collimator to check that you have reached the sharpest focus of the viewing screen image. If the image is not yet sharp enough, proceed again.

**2.10 Aatonite Illumination**

The XTRprod features illuminated viewing screen markings referred to as Aatonite. The level of illumination is adjustable by the user via the Jog wheel, which is located to the right of the motor. To operate Aatonite, power the body and switch the run/test switch to test position and off again to turn on the camera electronics. Look

through the viewfinder and rotate the jog to set the desired level of illumination. The markings will remain illuminated for a full 2 minutes after the camera is set in the off position. The illumination level set in test position will be memorized and recalled once the camera is run. The illumination level can also be readjusted while the camera is running.

The configuration of illuminated markings will differ slightly between screen types. Refer to the screen illustration on page 21 for a specific description of each screen type along with its corresponding Aatonite markings.

## 2.3 MIRROR SHUTTER

### 2.3.1 Concept

The reflex mirror shutter is designed to provide an optical path to the viewfinder while the claw movement advances the film to the next frame.

The shutter features a four-position user-adjustable opening:

- Standard 180° for filming
  - under standard 60 Hz HMI lighting at 24 fps \_or\_
  - under standard 50 Hz HMI lighting at 25 fps without flicker
- 172.8° for filming
  - at 24 fps under 50 Hz HMI lighting without flicker.
- 150° for filming
  - at 25 fps under 60 Hz HMI lighting without flicker.
- 144° for filming
  - to minimize the roll bar while filming an NTSC broadcast monitor at 24 fps.

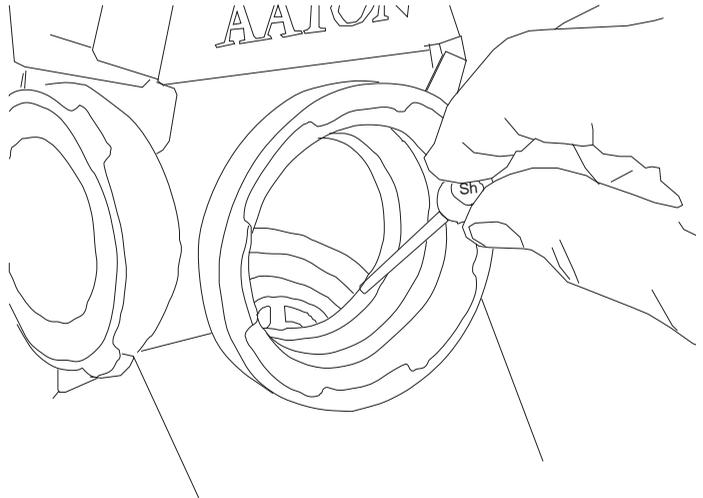
### 2.3.2 Adjusting the Shutter

To adjust the shutter opening, unscrew the blue shutter tool marked Sh located in the hollow at the rear of the camera's carrying handle. Make certain that the battery is off the camera and remove the port cap. Locate the tool guiding hole to the lower right of the inside of

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the lens holder (see diagram). Gently rotate the shutter at its base with your finger until the brass driving gear is centered underneath the tool guiding hole. Insert the shutter tool through the guiding hole and into the brass gear. Rotate the tool until the appropriate notched shutter setting is reached; turning counterclockwise will reduce the shutter opening, turning clockwise will increase the opening.

When setting the opening to  $172.8^\circ$  or  $144^\circ$ , a shutter blade indicating these settings will be visible from behind the left edge of the mirror. Make sure the white line to the immediate right of the  $172.8^\circ$  and  $144^\circ$  markings meet the left edge of mirror. When the adjustment is complete, remove the tool and store back in the hollow of the carrying handle.



## 2.4 FILM GATE AND PULLDOWN CLAW

### 2.4.1 Co-planar Movement

All Aaton cameras incorporate a patented means of advancing the film called a co-planar claw movement. By utilizing this technique,

Aaton is able to achieve an ultra-precise pulldown with a minimal number of moving parts. The co-planar concept is the key to the camera's low-noise operation.

The film gate also features a side pressure bar which is recessed into the claw-side rail at the point of image exposure to assure maximum lateral stability.

This unique, straight forward mechanism design results in horizontal and lateral film registration that is superior to all other 16mm camera movements with an accuracy of 1/2000 of the image dimensions.

#### 4.2 The Hair-Free Gate

In most 16mm camera designs, there is a certain amount of film dust (also referred to as fluff or hair) that is generated as film rolls through the magazine and enters the camera gate. Because the gate and pulldown are the areas where the film must be held most rigidly, these are also the areas where most of the accumulating film dust tends to be deposited. The result could be a visible hair in the picture area and an unuseable shot.

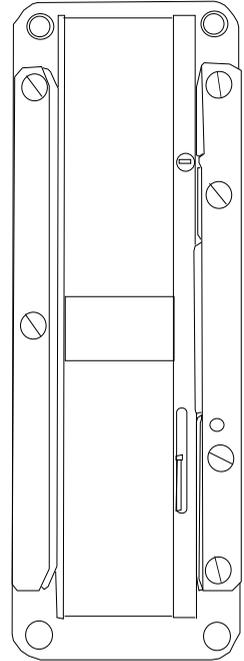
Aaton has taken steps in the design of their magazines and gate assembly to ensure hair and dust-free images. The Aaton magazine features a twistless film path with little sprocket contact, which minimizes the amount of film dust that builds up before entry into the aperture area.

#### 4.3 Cleaning the Gate

In order to avoid film dust buildup in the recessed channels of the gate, the gate should be inspected during magazine changes and cleaned every three to four mags if the shooting schedule permits. Refer to the Cleaning chapter for more detailed information.

## 2.5 FLANGE FOCAL DISTANCE ADJUSTMENT

### 2.5.1 Concept



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For a few years now, Aaton has inserted a spacer between the lens port and the camera body. This thin (0.3mm) metallic ring is responsible for the precise distance between the lens port seat and the film plane called the flange focal distance (FFD), and therefore it is also mainly responsible for the sharpness of the images.

Anyone who would like to change the FFD of his own camera should now do so by simply changing the spacer, and only with the spacer. He has not to polish any other surface, or to insert anything else between the lens port and the film plane. For that purpose, you can order some aluminium spacers (0.35mm) to Aaton, and then safely change the FFD of your camera.

### **2.5.2 Polishing a Spacer**

In order to fine-adjust the thickness of a specific spacer, Aaton carries a specific tool (ref 35 310 32) designed to hold the spacer firmly and evenly against Emery paper. When polishing a spacer, always work on a perfectly flat worktable or stone, and be sure to hold the tool firmly.

### **2.5.3 Changing the Spacer**

The spacer is placed between the lens port and the camera body's titanium lens holder. If your camera is equipped with a PL lens port, you first need to remove the lens locking ring: screw two or three turns its stop (placed on the bottom, inside the PL port), and turn the ring counterclockwise.

Remove the lens port by unscrewing its screws. Then remove the aluminium spacer gently.

Once you have placed a new spacer, replace the lens port, then the lenses locking ring. Do not forget to unscrew two or three turns the locking ring stop, if you have a PL lens port.

### **2.5.4 Adjusting the Viewing Screen**

Because you have changed the distance separating the base of the lens and the camera body, the image on your viewing screen might

now appear to be less sharp than usual. Most likely, you may need to readjust the precise focus of the viewing screen. Refer to the 2.9 section of this chapter to proceed.

### 2.5.5 Flange Focal Distances

Here are the flange focal distances for all the lens port available for the XTRprod.

Mont	Reference	FFD	Diametre	Adjustment
Aaton (AA)	01 112 35	40.00 mm	50.00 mm	-40 / -50 microns
Arriflex (PL)	01 113 20	52.00 mm	54.00 mm	-60 / -70 microns
Panavision (PV)	01 113 25	57.15 mm	49.50 mm	-40 / -50 microns

## 2.6 THE MAGAZINE

The Aaton magazine holds 400 ft (122m) of standard 16mm or Super16 film. Shooting at 24 fps, a 400 ft roll will run for 10.5 minutes; shooting 30 fps, the same roll will run for approximately 9 minutes. The coaxial design of the magazine allows for complete self-contained threading, quick mag changes and a minimal amount of loading to be performed in the changing bag. Loading the magazine is a simple operation that, with practice can be performed in a little over a minute. Refer to the Magazine chapter of this manual for complete details on loading and caring for magazines.

### 6.1 Installing the Magazine

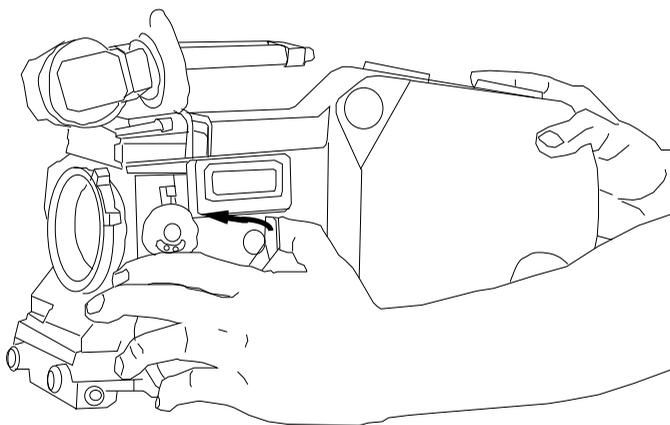
The instant mag design allows for instantaneous switching between mags on the set. To install the magazine on the camera, situate yourself towards the rear motor side of the camera body. If the aperture cover plate is on, remove it. Place your left hand around the front of the camera just underneath the lens area. Grasp the magazine firmly with your right hand below the midway point of its rear. While holding the camera body with your left hand, guide the magazine along the base of the camera into the aperture area. Make sure that the top edge of the throat of the magazine is parallel to the

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carrying handle of the camera as you guide the mag in place. Push firmly and evenly until you feel and hear the magazine snap into place.

### **6.2 Removing the Magazine**

To remove the magazine, situate yourself as before, towards the rear motor side of the camera. Grasp the magazine anywhere which is comfortable at its rear. Place your hand above the motor of the camera and push the mag release lever towards the front of the camera with your thumb. Pull the magazine straight off the camera with your right hand.



## **2.7 POWER**

XTRprod body requires only 12 volts for all aspects of operation. One standard Aaton on-board (12V 1.7 ah rechargeable nicad) will power the camera, CCD and any accessories which are connected to the body's accessory inputs (such as zoom controls, speed controls etc.) through a standard 4 pin XLR connector. One 1.7 ah on-board battery will run 7-8 magazines on the XTRprod, without CCD and

accessories. With accessories in use, this number will decrease.

### **2.7.1 Installing the Battery on the Camera**

The on-board battery fits below the CCD control unit on the battery side of the camera body. In order to install, loosen the black knurled screw approximately four or five turns. Push the battery evenly onto the XLR4 connection on the body. When snug, tighten the knurled screw onto the battery tab to hold it in place.

When running AatonCode, get into the practice of having a fresh battery on hand before removing the one from the camera. Even a low battery that no longer runs the body (below 10V) will have enough voltage to keep accurate time counting.

Thanks to a super capacitor built into the camera base, you will have a full minute to change the battery before time is lost. After replacing the battery, confirm that time is still counting by looking for the yellow blinking diode to the right of the motor or checking the control panel.

### **2.7.2 Battery Charging**

The Aaton on-board can be recharged with an appropriate 12V nicad battery charger.

For the best results, use a microprocessor-controlled charger or a standard trickle charger with a charging output of at least 200ma, both of which prevent the overheating and mistreatment of your nicad cells. Always follow the specific guidelines of the charger manufacturer. You can use the Aaton Chr1, designed to charge two standard batteries in 6 hours, without any risk.

Beware of older, timed chargers manufactured when 1.2 and 1.4ah batteries were the norm; these chargers were most likely rated for the lower amperage batteries of that time and will consistently undercharge the higher rated nicad cells of today.

### **2.7.3 Other Power Options**

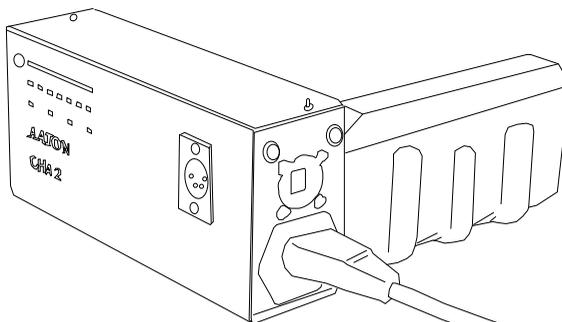
Since the XTRprod power input is a standard 4pin XLR type, a great variety of 12-14 volt sources can be used to power the camera.



### Nicad Batteries Tips

Follow a few simple rules to insure the long life of your nicad cells:

- Allow batteries to run through their normal cycle of charging and use. Avoid topping off partially full batteries. Once every few months, discharge cells to 8-10V using a standard discharger to minimize their memory.
- Do not rapid-charge your cells more than necessary, as the added heat will eventually shorten their life span. Instead, recharge batteries at a normal charging rate when your schedule allows.
- If your batteries will not be used for long periods of time, always store them in a cool, dry environment fully charged.



This includes AC power supplies, battery blocks, lithium cells and car batteries.

Get into the habit of carrying a standard XLR4 powercable in your package in case an alternative power source is needed.

Regarding AC power supplies, it is recommended that the unit you use be at least 4 amps and 25 watts. Before connecting any non-standard source, always make sure that the pin configuration of the unit is correct. See the Technical Specifications chapter of this manual for details for proper wiring.

## 2.8 MOTOR

*The tri-phase samarium motor design of the XTRprod provides low power consumption and improved stability at high speeds. The body is capable of speeds between 3 and 75 fps with a standard 12V battery.*

### 2.8.1 Camera Speeds

The XTRprod provides both preset crystal speeds (in sync mode) and specific crystal speeds (in variable mode) in .001 increments, all accessible from the LCD control panel.

Available preset speeds consist of 6, 12, 18, 20, 23.98, 24, 25, 29.97, 30, 36, 40, 48, 60 and 75 fps. The preset speed selector (SYNC) allows for quick access to these frequently used speeds. If any other speed is desired, or if the camera speed must match the frequency of a monitor to eliminate a roll bar, the specific speed selector (EX/VAR) should be employed. The specific speed selector

enables the body to run at any speed between 3 and 75 in .001 frame increments. A phase adjustment of the variable speed is accessible from the EX/VAR selector.

The camera speed can also be adjusted while the camera is running in either sync or variable mode. For more information on these speed functions, refer to section LCD Control Panel and Jog of this chapter.

### **2.8.2 Using External Speed Devices**

The XTRprod can be driven externally from devices such as film/video synchronizers, speed aperture computers and external speed controls. In these situations, the camera EX/VAR selector must be set to et. If such a device is connected and the selector is not set to et, the camera will run at the speed indicated on the display.

Keep in mind that, with certain manufacturer's speed controls, it may be possible to run the camera at speeds higher than the 75 fps factory limitation. Overcranking in such a way, however, will increase mechanism wear, increase noise and compromise image registration. Aaton urges to avoid such usage at all cost and will not be responsible for the resulting damage that may occur. This top speed cap of 75 fps has been designated by Aaton because it is the level at which the camera can run safely without any adverse effects on its mechanics.

### **2.8.3 Electronic Inching**

The inching function of the motor is accomplished electronically and can be accessed in a number of ways.

#### **•From the Body**

The large run/test switch on the motor side of the body, not only runs the camera, but provides half frame inching for gate inspection, lightmeter functions and loop situating when installing a fresh mag.

#### **From the Handgrip**

The wooden handgrip switch, by way of the Lemo2 connector, provides camera run and full frame inching for single frame

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operation and loop situating.

- From a Remote Cable

The Lemo2 connector, as well as Lemo6, Lemo8 and Amph9 accessory connectors, provide the capability of using a remote on/off with either a half-frame or full-frame inching function.

## 2.9 LIGHTMETER

The XTRprod is equipped with an internal lightmeter that is designed to read the quantity of light reflected off the film itself. For added accuracy, the meter measures the light by means of two photocells. The metering system automatically compensates for filters and changes in camera speed.

### 2.9.1 Display

Through the viewfinder, the lightmeter display is positioned directly below the viewing screen across the bottom of the frame. A single darkened diode moves across an array of 13 yellow and green diodes, indicating proper exposure (see diagrams). Each diode represents one third of a stop, while normal exposure darkens the center green diode. Underexposure of -2 stops or more darkens the green diode on the left end of the row; overexposure of +2 stops or more darkens the green diode on the furthest right of the display.

To the immediate left of the display is the red diode indicator, which has the same functions as the red diodes on the left and right sides of the body. See section LED Indicators for further details.

### 2.9.2 Operation

Because the lightmeter takes its measurement as a reflection off the film, you must have film in the gate for the camera to provide an accurate reading.

To use the lightmeter, follow these simple guidelines: Set the ISO selection on the control panel to the exposure index of the film

stock being used. Set the camera to run or test position and adjust the lens iris until the center green diode is darkened; this will be your proper metered exposure.

Remember, the lightmeter is giving you an average reading of the entire frame. You may choose to vary the suggested exposure according to subject conditions.

### 2.9.3 Using the Lightmeter without Running Film

It is also possible to use the lightmeter without actually running the camera. Set the ISO selection to the exposure index of the film being used. Set the camera to test position using the on/off switch on the body or the handgrip. If the handgrip is used, the momentary switch must be held in the test position. The mirror shutter will rotate 180° allowing light from the lens to reach the film and a reading to be taken by the meter. Adjust the lens iris until the center green diode is darkened, indicating proper exposure.

### 2.9.4 Testing and Adjusting the Meter

If you are operating the lightmeter for test purposes, don't forget to have film in the gate before taking a reading

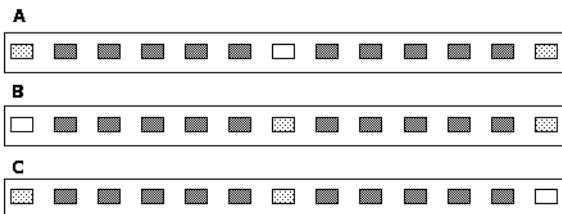
The following is the procedure for checking and adjusting the sensitivity reading of the lightmeter:

- 1 - Evenly light a standard 18% grey card.
- 2 - With a loaded magazine and lens on the camera, frame the chart so that it completely fills the Super16 frame.
- 3 - With a properly calibrated handheld lightmeter, take a reading of the grey surface and set the T stop of the lens accordingly.
- 4 - Switch the camera to run or test position and check the position of the darkened diode. If the center green diode is



#### Single Frame Operation

You may use the wooden handgrip Run/Test switch of your camera to shoot a single frame: just press this button to Test and immediately release it. In that case, the film is exposed during 1/4 second. But you need to know that the XTRprod chamber is still not opaque enough so that more than 10 minutes can separate two single image shots. To use an Aaton camera in single image shooting, you'd better use an intervalometer and a lens shutter.



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darkened, the camera's lightmeter is set correctly. If the darkened diode is to the left or right, it is possible to adjust its reading.

- 5 - To access the lightmeter potentiometer, remove the complete viewfinder by means of the four screws which mount it to the front housing. Locate the hole between the two viewfinder screwholes on the top motor side of the front housing. The white potentiometer will be visible within this hole.
- 6 - With a small screwdriver, adjust the potentiometer slightly; 1/8 of a turn will have an effect. Rotating clockwise will correct an overexposure and move the darkened diode to the left; rotating counterclockwise will correct an underexposure.
- 7 - In order to check your adjustment, replace the viewfinder, tighten the four screws and repeat the procedure from step 4. When the reading through the camera matches your handheld meter, the adjustment is complete.

### **2.9.5 Turning the Lightmeter Off**

If the lightmeter is not being used, it may be turned off. The on/off toggle switch is located on the operators side to the left of the motor. Keep in mind, the red diode indicator and end-of-film warnings will function whether the display is on or off.

## **2.10 LCD CONTROL PANEL AND JOG**

### **2.10.1 The Aaton Jog**

Located to the immediate right of the motor, the Aaton jog is a small wheel designed to simplify many user functions. When used in conjunction with the control panel, the jog allows quick adjustment of some of the otherwise time-consuming parameters (such as the setting of a precise 5-digit speed or a film short end)

### **2.10.2 Understanding the Control Panel**

The LCD control panel consists of an illuminated display and five buttons to access information (see diagram). The control panel

operates in two modes: Show and SET. To show a parameter without adjusting, go directly to one of the four function buttons (1 through 4 in the diagram) to view relative information. To set a parameter, first press SET, then go to the appropriate button. Information is changed by either toggling that button or by rotating the jog, depending on the parameter. Pressing SET afterwards (or waiting for 7 seconds) will enter your selection.

Capped text ( SYNC, EX/VAR, ISO, MAG) refers to those functions adjustable while in the SET mode; standard text (Fps/Ft, time, batt/iso, elapse) refers to those functions accessible directly in the default Show mode.

Note that, while viewing a Show function on the control panel, any inactivity longer than 10 seconds will revert the display back to its default mode (speed and remaining footage). As mentioned previously, any break longer than 7 seconds while in SET mode will automatically enter the last selection.

The following parameters can be accessed from the LCD control panel in conjunction with the jog. For more concise information, see the table in the System Features and Controls chapter of this manual.

### 2.10.3 Aatonite

In its default mode, the Jog controls the level of Aatonite viewing screen illumination from zero to full brightness.

### 2.10.4 AatonCode

As a standard feature, the XTRprod is equipped with the capability of recording AatonCode in-camera time. Timecode information is exposed onto the film by means of seven micro-diodes, which are relayed, by means of fiber optics, into the gate above the claw to the right of the aperture opening. These micro-diodes flash rapidly to form the code as the film rolls through the gate between exposures. For more elaborate information regarding the uses and functioning of AatonCode, OriginCplus and other related devices, refer to the AatonCode chapter of this manual.



#### Adjustment Tips

While adjusting the sensitivity of the lightmeter, you may wish to use your direct view of the display through the body's top cavity for reference. If so, there are a few points to remember:

- Because the image is inverted without the viewfinder in place, your adjustments will move in the opposite direction than what is seen through the finder.
- Since the cavity is open, light will enter through this opening, making any reading inaccurate by 1/3 to 2/3 of a stop. Therefore, only use the direct view of the display to reference the number of diodes adjusted. Always check your final adjustment with the viewfinder in place.

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If AatonCode has been initialized in the camera, press button Time to view timecode information. Toggling button Time will display hour/minute/second, then year/month/day, then the six-digit production ID, then the camera's equipment #, in that order.

### **2.10.5 ASA Setting**

When using the internal lightmeter and/or AatonCode in the XTRprod, the ASA (ISO) setting must be adjusted to the exposure index of the film stock being used. The ISO selector on the LCD control panel provides settings between 25 and 1000 ASA.

With regards to the lightmeter, the setting on the ISO selector dictates to the camera what the exposure should be for a particular film stock. For AatonCode, proper ASA / ISO selection will insure that the timecode matrix recorded on the edge of the film in the gate will be exposed at an appropriate and useable level.

Press button Batt/Iso twice to view the ASA selection. To adjust the ASA setting, press SET, then button Batt/Iso. Make your selection between 25 and 1000 ISO by toggling Batt/Iso or by rotating the jog wheel.

If the ISO selector is adjusted while the camera is in test or run position, the correction will not take place until the next camera start.

### **2.10.6 Battery Voltage**

Press button 3 to read the voltage of the camera's power source. Notice that, if the camera is running and button 3 is pressed, the control panel will read and display the voltage under load.

### **2.10.7 Camera Preset Speed**

The default mode of the control panel will automatically display the camera speed selection, whether it be in sync or variable mode, when the camera is powered but not running. When the camera is turned on, the actual running speed to the .01 frame is displayed. To adjust the preset speed, press SET, then button SYNC. Make your selection of stepped crystal speed between 6 and 75 fps by

toogling SYNC or via the jog wheel.

### 2.10.8 Camera Specific Speed

To choose a specific speed press SET, then EX/VAR. Make your selection of any .001 incremented crystal speed between 3.000 and 75.000 fps via the jog.

To set the camera to be driven from an external source (such as film/video synchronizer or external speed control), press SET, then EX/VAR twice. Et will be displayed, indicating that camera is set in external mode.

### 2.10.9 Speed Phasing

The phasing of the variable speed can be set to eliminate a roll bar while filming a monitor. Operate first with no magazine on the camera, because you first need to synchronise the camera speed to the monitor frequency. Run the camera. Press SET, then EX/VAR once, turn the jog, until the roll bar seems stable on the screen. Press SET to enter. Stop the camera, and then install a magazine. Run the camera. Press SET, then EX/VAR twice. Look through the camera at the monitor and press EX/VAR until the roll bar is out of view. Press SET to enter.

### 2.10.10 Feet or Meters

The control panel can be set to count in either feet or meters in the following manner. Unplug power from the camera until the display goes dark. Simultaneously press button MAG while plugging power back in. Continue to hold button MAG and set camera Run/Test switch to test position; foot or meter will show on the display. Toggle button MAG to make your selection.

### 2.10.11 Footage Remaining

The control panel will display the memorized footage remaining any time the camera is running with a magazine on.



### Force Processing and the AatonCode matrix

Regardless of the situation, always set the ASA selector to the actual exposure index of the film. If you know beforehand that your footage will be pushed or pulled, don't worry about compensating for the sake of the precise exposure of your timecode matrix. The matrix is resistant enough to handle exposure variances of one and a half stops or more in either direction.



### **Changing Speeds while Running the Camera**

Any camera speed, whether preset or specific, can be changed when the camera is running. To do so, run the camera, then follow these simple steps:

- Operating under a preset speed (in sync mode), press SET, then SYNC, then use the jog wheel to choose a higher or lower stepped speed.

Under a specific speed (in variable speed), press SET, then VAR, then use the jog to ramp the speed higher or lower in .001 frame increments.

### **2.10.12 Footage Elapsed**

With the camera stopped, press button MAG to view the elapsed footage of the previous camera run. With the camera running, press MAG to view the elapsed footage of that particular take. The display will revert back to the default mode (speed and remaining footage) after 10 seconds.

### **2.10.13 Mag ID**

The XTRprod will recall the footage according to the mag ID, which distinguishes seven magazines (A through G). To check the ID of a particular mag, as read from the control panel, press button MAG twice; the letter ID on the display should coincide with the letter on the mag's feed side door. For more information regarding Mag ID, refer to the chapter entitled The Magazine.

### **2.10.14 New Magazine's Footage**

With a fully loaded magazine on board, press SET, then button MAG twice to reset the control panel to count down a full 400 ft load. If a short end is being used, press SET, then button MAG, then reset the desired footage via the jog.

Note that the camera does not take a physical reading of the film roll to determine the footage reading on its display; it is only a counter and it must be set by the user. There is, however, a mechanical footage counter on the magazine that automatically measures the size of the camera roll; use the magazine footage counter to determine the correct short end length to input on the control panel.

### **2.10.15 Camera Software Version Number**

If you need to know the software version number your camera is equipped with, proceed as follows. Unplug the battery from the camera. Put the camera on Test mode. Then, while plugging back the battery, watch carefully the LCD control panel. During one second it will display something like: T4 U6.00, indicating the you own a

35mm 4-Perf camera, working with the software version number 6.00.



## 2.11 LED INDICATORS

*The XTRprod utilizes LED indicators in three locations to convey information: in the viewfinder and on both left and right outsides of the camera body.*

### 2.11.1 Position and Meaning of the Diodes

- Two yellow diodes, placed on both right and left sides of the camera body indicate that the camera is either on Test or on Run mode.
- Two red diodes, placed on both right and left side of the camera body, and a third one, visible from the view finder, display a special warning.
- One yellow diode, located to the right of the Jog wheel and called the timecode diode, flashes each second if the timecode has been initialized in the camrea.

### 2.11.2 Camera Test Indicator

- Yellow diode is on.
- ○ ● ○ ● Red diode is blinking fast.

### 2.11.3 Camera Run Indicator

- Yellow diode is on.
- Red diode is off.

### 2.11.4 Low Battery Indicator

- Yellow diode is on.
- ○ ○ ● ○ ○ ● Red diode is flashing slowly.

The LCD control panel displays Lo Batt.

### Displaying a 5 Digit Speed

If the XTRprod is set to a variable (5-digit) speed, the control panel will only display that speed to the .01 digit. Keep in mind, the display will not round off the speed, but simply leave off the last digit. For example, if the 5 digit speed of 23.976 is entered, the control panel will display 23.97, not 23.98.



### Remember...

**Variable Speed for Phasing**  
Keep in mind, the speed phase function of the control panel will only operate when a variable speed is initially selected.

When shooting 29.97, for example, be sure to choose the specific 29.970 instead of the preset 29.97 if you plan to incorporate the phase function for that particular shot.

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### **2.11.5 Low Speed Indicator**

- Yellow diode is on.
- ○ ● ○ ● Red diode is blinking fast.

The LCD control panel displays Lo Speed.

### **2.11.6 End-of-Film Warning Sequence**

The lightmeter display features pre-end-of-film and end-of-film warnings for the operator.

Under normal operation, the lightmeter display will flash once for every foot or meter that is counted down. When the footage counter on the LCD control panel counts down to 10 feet remaining, the display will flash more rapidly, at a frequency of about 2-3 times per second. Keep in mind, the pre-end-of-film warning will only operate if the lightmeter display is turned on.

When the counter reaches zero, the left and right sides of the display will alternately flash, indicating the end of a roll. The end-of-film warning will function whether the lightmeter display is on or off.

### **2.11.7 8-hours Warning Sequence**

The timecode diode flashes slowly, every 4 seconds, to indicate that 8 hours have now been elapsed since the timecode was initialized or controlled in the camera. You need here to re-initialize or to control your camera timecode.

## **2.12 CCD ASSISTS**

*The Aaton VR42 black & white and VR46 color CCD taps are designed to add video assist capability to the XTRprod without compromising the body's size, flexibility and ease-of-use. Because the CCD head is incorporated into the XTRprod camera body, there are no centering or focus adjustments necessary (unless, of course, when converting the body between 16 and Super16 formats). The control units for all Aaton CCD assists attach quickly to the camera's PBX housing and can be used with an on-board battery.*

### **2.12.1 Installing the Control Unit**

Both the VR42 and VR46 CCD control units can be easily attached onto the XTRprod in a few seconds without the need for adjustment.

Remove the two allen screws located on the PBX immediately below the Lemo14 connector. Mate the Amph9 and Lemo14 connectors of the control unit to those connectors on the body and plug in the unit.

Replace the two allen screws to fasten the control unit; a third screw of the same size should be screwed into the upper right side of the unit from the opposite direction.

The control unit can remain permanently attached to the XTRprod without adding discernable bulk or weight. Simply keep the unit turned off and the beamsplitter retracted (see below) when video assist is not needed.

### **2.12.2 The Internal Beamsplitter**

The Aaton CCD assist system employs an internal, user-retractable beamsplitter that reroutes a portion of the viewfinder's light path to the CCD target while the video assist is in use. In situations which do not require the CCD assist, the beamsplitter is designed to be retracted to allow 100% of the viewfinder's light to reach the eyepiece.

From body # 1928 and on, the beamsplitter delivered as standard from the factory has a 75/25 reflection ratio. This means that 25% of the light from the viewfinder is sent to the CCD target when the beamsplitter is in place. This 75/25 ratio is ideal for use with Aaton's VR42 black and white CCD. Although not visible from the outside of the body, the 75/25 beamsplitter is identified by its blue anodized holder.

Also available is a 50/50 beamsplitter, which sends a greater percentage of light to the CCD target. This beamsplitter is recommended for use with the VR46 color CCD and is distinguished by its black holder.

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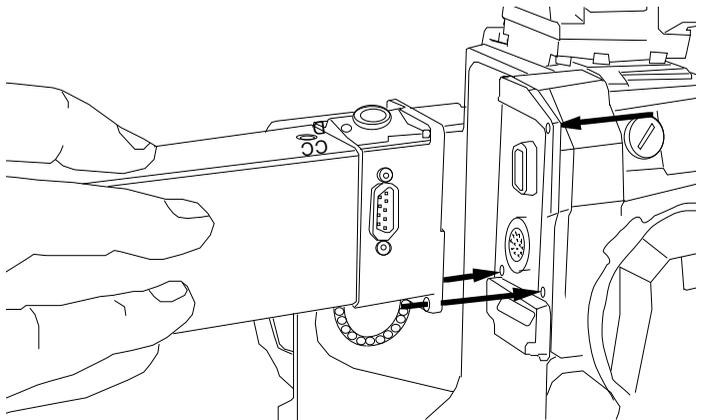
### 2.12.3 Positioning the Beamsplitter

The beamsplitter adjustment screw is located underneath a small, capped port on the battery side of the camera. To access the beamsplitter, unscrew and remove this silver cap. An allen head adjustment screw will be visible through the opening. With the shutter tool, gently rotate the adjustment screw approximately 30 turns in the desired direction to position or retract the beamsplitter.

After 30 or so turns, the adjusting screw will reach its stop and resistance will be felt. At this point, stop and rotate the adjusting screw one turn in the opposite direction to complete the adjustment. By backing the beamsplitter off its stop, fine centering of the CCD target is maintained and the beamsplitter itself is less susceptible to residual shocks caused by a drop or sudden jolt. Positioning the beamsplitter for video use - the adjusting screw should be rotated counter-clockwise to move the glass in place. Retracting the beamsplitter for non-video use - the adjusting screw should be rotated clockwise to move the glass out of viewing area.

### 2.12.4 The Beamsplitter Axis Adjustment

The beamsplitter axis adjustment is used to recenter the CCD assist image when switching between 16 and Super16 formats. If, when you turn on the control unit, the image on your monitor appears off



to one side, the angle of the beamsplitter must be adjusted.

The beamsplitter axis adjustment is located to the above/right of the aperture and consists of an allen screw within a slot (see diagram on the following page). A red dot to the upper left of the slot indicates the position of the screw for Super16.

Loosen the allen screw one turn; while looking at the monitor move the screw within the slot in the appropriate direction until the image of the screen is centered. Afterwards, if the image is not sharp, follow the directions under 14.7 Installing the CCD Head to adjust focus.

### **2.12.5 The Manual Iris**

The VR42 and VR46 CCD assists feature an automatic gain. In certain situations, however, further light control may be desired (such as high contrast or strong back-light circumstances). In these instances, it is recommended to employ the manual iris feature, which is located on the CCD head cover on the battery side of the camera.

Under normal operation, this mechanical iris should be wide open; on the VR42, check that the iris lever on the CCD cover is pointing to the right at the large circle, indicating an open iris. When further light control is necessary, look at the video monitor and move the iris lever to the left, towards the smaller circle, to the desired degree. On the VR46, the manual iris is controlled by a silver dial; moving the black dot on the dial towards the large circle will open the iris, towards the small circle will close it.

### **2.12.6 Battery Life with CCD Assists**

The VR42 assist draws 180-200ma when powered. This translates into approximately 8 to 9 hours of operation (without the XTRprod running) from one 12V 1.8 ah on-board battery.

Although battery life will vary greatly depending on the amount of film run and the number of accessories powered from one power source, you could estimate that one 12V on-board could run 4-5 magazines and the VR42 for 4-5 hours.

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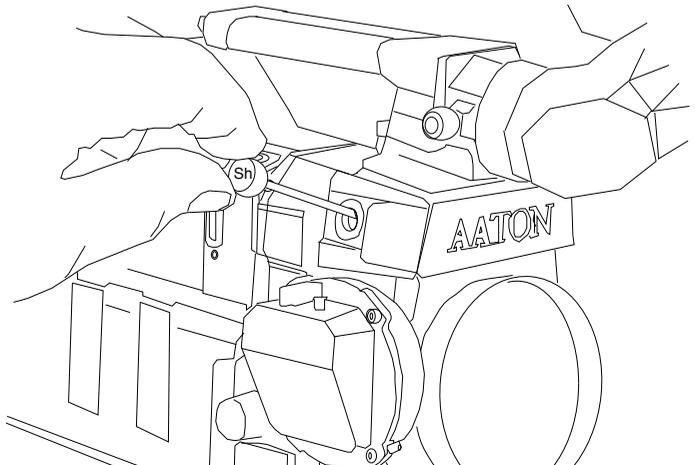
In order to conserve battery life, get into the habit of shutting off the VR42 assist when not in use.

The VR46, on the other hand, because of its color, frame-store and timecode capabilities, draws 730-750ma, which translates into approximately 2 to 2.5 hours of operation from one 12V 1.8 ah on-board battery. For this reason, it is recommended to use a battery block or AC power supply when using the VR46 for long periods of time.

### **2.12.7 Installing the CCD Heads**

Under normal circumstances, if you own a video assist, you will not need to deal with the removal and/or installation of the CCD head. The head and its accompanying relay lens are designed to remain within the camera body whether the assist is being used or not. In some instances, however, such as the renting or sharing of a unit among a few cameras, it would be necessary to remove and install this head.

The installation and removal of the VR46 color head assembly is somewhat involved and considered a shop operation. Therefore, it is recommended that this procedure be performed by a qualified technician. If you own a VR46, however, and feel that you would

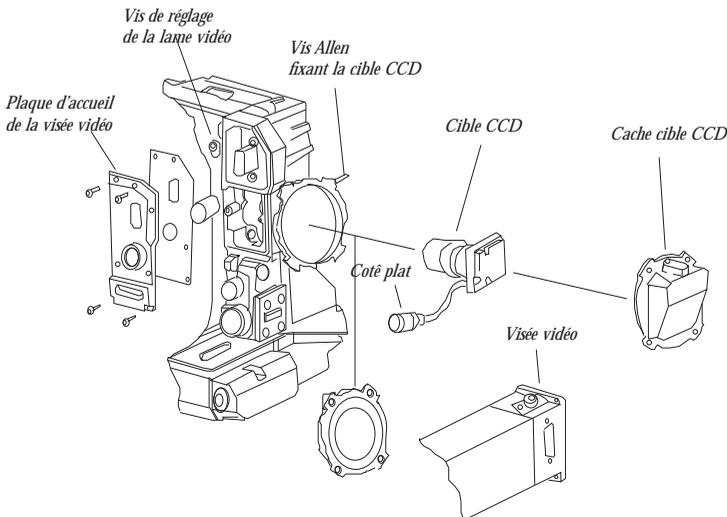
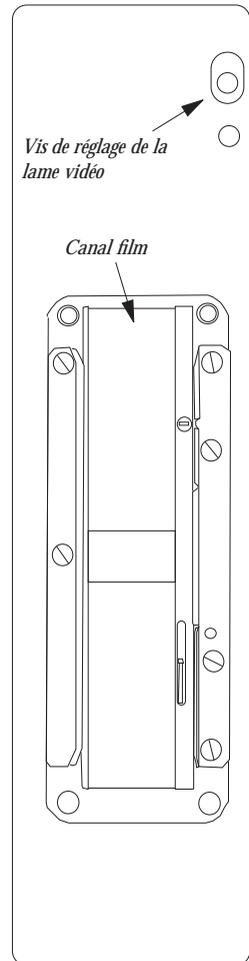


need to remove the assembly frequently, this procedure can be demonstrated and taught to you by an Aaton technician. Contact your Aaton representative for further details.

The VR42, however, is much more straightforward; the following is the procedure for its installation.

- 1 - Unscrew the four allen screws as indicated in the diagram below and remove the PBX cover plate and rubber gasket. On the cover plate, you'll notice a plastic plug which is press-fit into the cover plate. Remove this plug by pushing it to the inside of the plate. If it is very tight, use a pencil eraser to do the job. On some cameras, you may find a blank cover plate without a hole. If this is the case, remove this plate completely and use the plate supplied with the CCD assist in its place.

- 2 - Remove the four screws which hold the CCD cover onto the battery side of the camera and carefully remove the CCD cover. If you do not own a VR42, you may have a flat plate in place of the CCD cover.

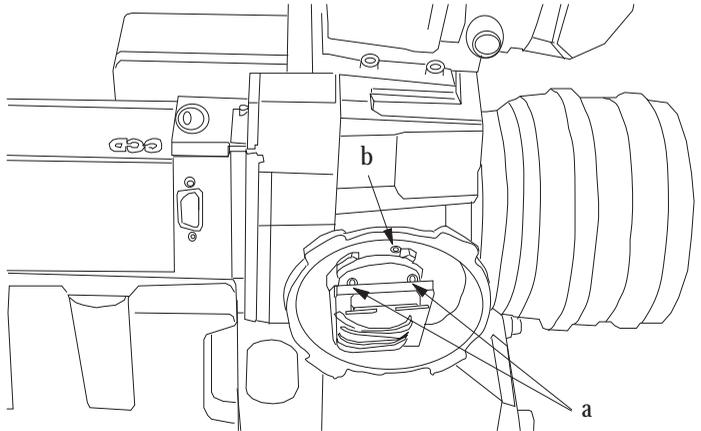


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- 3 - Check that the exposed lens of the CCD head assembly is free of dust particles. If necessary, clean this surface with lens fluid applied with a foam or cotton Q-tip. In order to install the head assembly into the side cavity, first feed the Lemo14 connector into the PBX so that it faces towards the rear of the camera. With the iris rod facing up, install the head assembly into the tubular holder until the steel collar is stopped by the tube.

- 4 - While holding the head assembly in place, locate the allen set screw in the diagram above and tighten moderately until the head assembly is secure. To avoid any damage to the relay lens housing, do not overtighten this screw.

- 5 - Position the Lemo14 in its cutout within the PBX and hold in place. Make sure that the flat index towards the rear of the connector faces up and mates with the flat in the cutout. Do not confuse this flat with the two flats on the threaded portion of the Lemo.



- 6 - Replace the rubber gasket and the PBX cover plate via the four allen screws. Double-check that the Lemo14 sits flush against the lip of the circular opening in the cover plate.

- 7 - Plug the control unit into the PBX and fasten it to the body with three allen screws. Connect a BNC cable to a monitor and power the XTRprod. Turn on the toggle switch of the CCD assist; the yellow diode should light. You should also see an image of the viewing screen on the monitor. If this is not the case, the beamsplitter may be retracted. Remove the beamsplitter access cap on the battery side of the camera and position the beamsplitter by rotating the adjustment screw approximately 30 turns counter-clockwise until it reaches its stop. Back off the stop one turn clockwise.
  
- 8 - Locate two allen head screws on the CCD head identified by a red dot (marked A above). Loosen the screws 1/2 a turn. While looking at the monitor, gently move the CCD head until the viewing screen image is in focus. Notice that this adjustment also affects image rotation. When sharp, even focus is achieved and the image is square to the monitor, tighten the two screws.
- 9 - If the CCD image is centered in the monitor, your adjustment is complete. However, if the image is off to one side, the beamsplitter axis adjustment needs to be reset. Follow the directions under 14.4 The Beamsplitter Axis Adjustment to recenter the image. Afterwards, loosen the two screws on the CCD head and refocus the optics.
- 10 - Locate the iris rod on the CCD head (marked B in diagram) and move it by hand to an upright position. Replace the CCD cover on the body; take care to locate the iris control fork and position it around the iris lever. Tighten the four screws to secure the cover in place. Operate the manual iris lever and check that the CCD iris itself is functioning by looking at the monitor. If the brightness of the image does not change, the iris rod may not be engaged in the control fork. If this is the case, remove the CCD cover and repeat the procedure.

### **2.12.8 The VR46 Color CCD Assist**

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You may use the VR46 color CCD assist in two different ways. In some special situations (if you're filming in the dark for example), it might be more comfortable to look your images on a monitor than through the viewfinder. This is why the VR46 is equipped with a frame generator: as you can choose the size and position of the generated frame, the image you see through the viewfinder (which might be in ratio 1.78 or 1.66 for example) can match exactly the image you see inside the frame on the monitor. Moreover this frame is easier to locate than the viewing screen's frame. The director can then immediately control his operator's images, or the operator is allowed to stay away from his camera.

Of course, the video assist was first created to be used in such a way. But, now that video editing (including the virtual video editing) offers new powerful tools to the editor, the VR46 can be used in a different way. The VR46 provides a Vitc lines generator, which are the dots and lines, usually put above the video image, used by video editing machines. Therefore, images recorded by the video assist may be directly used to make a video editing of the film; no need to use a telecine, no need also to have developed the rushes you won't use.

### **2.12.9 Menu Operation (V3.11)**

The VR46 unit contains six operator buttons: up, down, left, right arrows, menu and exit keys.

Press menu to have the menu displayed.

Use arrows to access to the desired parameter.

Press menu to indicate that you want to modify this parameter.

Use arrows to adjust this parameter.

Press menu to validate

Press exit to memorize the new configuration.

- PAL

IN Video Output, choose between Flicker & No Flicker. In No Flicker Mode, the camera automatically chooses the image frequency

you need between 24 and 25 frames per second. Keep in mind that choosing 24 fps, provides a non standard video signal, that you won't be able to record.

•NTSC

In video Output, you can select between COLOR and B&W.

• Color Temp

Depending on the kind of film you're using (a film for insides or a film for outsides) the colors it will register will not be the same. To have the video colors closer to the film colors, you can choose between 3200K (inside film) and 5600K (outside film).

•Gain (NTSC only)

The Gain function (Normal/High) increases visibility in low light situation, but increases video noise.

• Date

Date allows you to choose the position of the current date insertion inside the video image. Use the arrows to proceed.

• Time

Time allows you to choose the position of the current time insertion inside the video image. Use the arrows to proceed.

• Cam

Cam allows you to choose the position of the magazine number insertion inside the video image. Use the arrows to proceed.

• Frame

Frame/Frame On-Off allows you to choose if you want (On) or not (Off) a frame to be inserted in the video image.

Frame/Frame Top Left allows you to choose the position of the top left position of the frame. Use the arrows to proceed.

Frame/Frame Bottom Right allows you to choose the position of the bottom right position of the frame. Use the arrows to proceed.

Frame/Edge Shadow allows you to choose between an Edge around the frame, or No Edge.



Vitc lines

- First line is the video timecode line. Each time you switch on the video assist, the video timecode is set to 1:00'00" 00 (the last number is the image number). The time count is continuous regardless of the camera.
- Second line is the keycode line. As the keycode should be read from the film, this line cannot be generated. Only synchronization and checksum bits are inserted.
- Third line is the audio timecode line, i.e. all the timecode information of the AatonCode are inserted here.

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- Phase adjust (PAL only)

This adjustment is available by pressing down on the “menu” button when turning VR46 on.

Phase adjust is designed to move the flicker area outside the video image. This function is available only when the VR46 and the 35-III are running at the same speed (both at 25 fps, for example). Use the up and down arrows for a first quick phase adjustment. And then, use the left and right arrows for a fine adjustment. To proceed, run the camera and watch the video monitor.

- Options

Options allows you to access to a submenu only dedicated to the AatonCode insertion.

Options/TimeCode ON/OFF allows you to choose to insert (On) or not (Off) AatonCode information, which consists of Time, Date, and Equipment number ID.

In PAL only, Options/Screen Y/C allows you to choose to insert (On) or not (Off) the Y/C video exit informations.

Options/Font allows you to choose the font you need for the characters to be inserted. Choose 0 for edged characters, 1 for standard characters, and 2 for bold characters.

- Technical

Technical allows you to access to a submenu only dedicated to the Vitc lines insertion. These lines are automatically inserted in the video image.

Technical/VITC Position allows you to choose the position of the Vitc lines. Choose between line 16 and line 22 in PAL, between 11 and 24 in NTSC.

Technical/VITC Parity allows you to select the parity of the Vitc lines between Odd and Even. Make sure that your post-production tools run properly with the selected value.

- *About the Vitc lines*

In order to have meaningful information encoded in the Vitc lines, camera and video need to run at the same speed. If the video is set to run at 25 fps, then the XTR Prod should run at 25 fps. And

when the video is set to 24 fps, the XTR Prod should run at 23.98 fps (this slight variation between these two speeds comes from some electronical imperious needs).

