AATON
CAMERAS

AÄTON - XTR

users' manual

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adaptator

LENSES

CHOOSING A LENS
The lens holder of the Aäton camera is mounted
directly onto the central chassis which carries
the aperture plate. The Aaton mecanical flange focal
distance is thus very stable: 40 mm. -8/-17 micron.
The respect of this tolerance is a very
important factor contributing to image sharpness,
a strong Aäton feature. Don't impair this
with a poorly aligned lens or a mount which
isn't perfectly clean.

lens fitted with adaptator

When selecting a zoom lens, or having it modified with
an adaptor (Arri Std/BL, Eclair, Nikon, Lecaflex),
be sure to obtain an optical flange focal distance of
40 mm +/-5 micron.

It is highly recommended to leave Aäton adaptors on
lenses once fitted and checked; even better is
to remove the "foreign" mount, and have an original
Aäton lens mount fitted onto the neutralised lens
 Angenieux parts n° 101867 and 40733 for Zoom 9.5-57,
 n° 101867 and 40731 for 10-150 and 12-120

Given the very short back focal distance of C-mount
lenses, this mount is incompatible with Aäton cameras.
To use some of these lenses the C-mount has to be
removed and replaced with an Aäton mount specially
designed for the lens to be modified.

INSTALLATION ON THE CAMERA
Turn the locking ring counter-clockwise as far as it
can go, leaving room to insert the lens mount into
the lens holder, with the three protruding lugs on
the lens mount (or adaptor) corresponding to the
slots in the locking ring. Tighten the locking ring
by turning it clockwise. The lens is now firmly held
in position and cannot be unlocked by mistake.

MATTE BOX
The Aäton XTR can be equipped with a lightweight
rigid matte box: it has two 75 x 75 mm filter
holders,one rotating. It fits on long handgrip rod,
and accepts fixed focus and zoom lenses with front
elements up to 86 mm in diameter. Three mates,
for 32, 75 and 150 mm lenses, slide onto the front
of the matte box.

SUPER 16

The very high film steadiness and definition of the
Aäton XTR camera make it an ideal choice for 35 mm
blow up work. And to make the most of 16, the largest
possible surface of the film has to be exploited.
This is where Super 16 (7.4 x 12.4mm) comes in,
using the otherwise unused sound tack area on the
unperforated side of the film. This gives a 47 %
increase over standard 16 mm cropped to 1.66 ratio.

To cover this larger field (the diagonal is 14.5 as
opposed to 12.7 mm), good lenses with high coverage
should be selected (fixed focus "Distagons" or
Cooke Varotal).
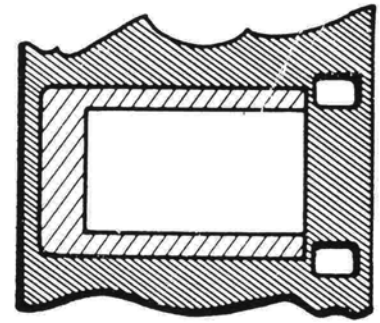
added Super 16 area
(1 : 1.66 aspect ratio)

All XTR Aäton cameras are delivered equipped for Super 16. You can, at a glance
determine whether the lens holder is set up for Standard 16 or Super 16.

.if the lens lock-in lever is on battery side of the camera then it is Super 16
.if the lens lock-in lever is on the motor side of the camera, then the lens is
 centered for Standard 16.

To transform a camera set up for Super 16 to Standard 16, the 3 following
operations must be carried out:
.the viewing screen must be shifted,
.the viewfinder centering slot has to be put into position,
.the lens port mount has to be set in relation to the aperture plate

A- Lens holder re-centering for Standard 16

a- Set the mirror out of viewing position
b- Remove the lens lock-in lever 01.112.08 by loosening the CHC 2.5x3
   screw.
c- Remove the lens lock-in lever 01.112.09 by turning it
   counter-clockwise
d- Remove the port ring SA 01.112.19 located under by loosening the
   three CHC 2.5x10
e- Set the ring in order to place the two pins 01.112.12 in the eleven
   and one o'clock position. Remove the three CHC 2.5x10 screws
   and tighten without blocking so that the lens holder ring can gently
   move for the final position.
f- Set the centering tool 09.100.73 over the ring with the pins in the
   holes. Set the centering shaft into the central hole with the standard 16
   end towards the aperture plate.
g- Put the lens lock-in ring 01.112.09 back by tightening clockwise.
h- Set the lever back in position with its screw

B- Viewing screen setting on Standard 16.

a- With the mirror out of viewing position, gently loosen the TC 2x8 screw
   on the viewing screen holder front.
b- Push the viewing screen holder leftwards as far as it can go.
c- Tighten and lock the screw (do not forget).

C- Viewfinder re-centering

a- Remove the 4 CHC 3x6 screws.
b- Place the spacer 03.610.18 on the opposite side of the finder base.
   In Super 16 the spacer should be on battery side,
   in Standard 16, motor side.
c- Tighten the 4 CHC 3 x 6 screws.

Centering and collimation should be checked after such an operation.

VIEWFINDER

The interchangeable viewfinder is a completely
independent part of the camera and is fixed using
4 CHC 3x6 screws (Warning: longer scews will cause
damage into the photometer circuits).

The interchangeable eyepiece exists in three
executions: left eye, right eye and 20 cm long
for tripod use. The eyepiece shutter is actuated
with a small knob above the rubber eyecup. There
is an automatic shutter on option (03.646.00).
The dioptric setting is adjusted by turning
the diopter ring which is locked into
position with the knurled screw fitted
into it.

left

right

long eyepieces

The "Pechan" prism ensuring erect
image during eyepiece rotation is
never perfectly centered. If you
find the image a little off center,
 rotate the eyepiece a whole turn.
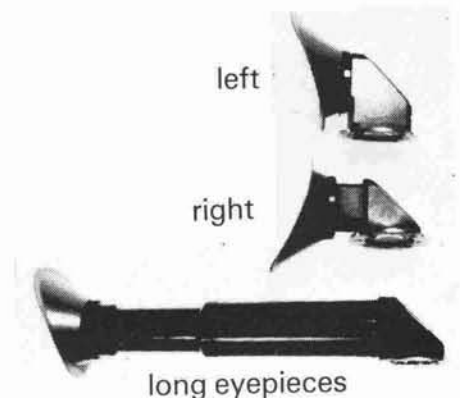
diopter setting

The **eyepiece friction** can be adjusted to individual preference as follows :

With an Allen wrench, loosen the locking screw HC 3x3 located on ring 03.631.09 and turn the friction ring until the desired friction is obtained. Then tighten the locking screw. Beware ! Do not loosen the HC 2x2 on ring 03.631.07: it is used to adjust the gear teeth spacing in factory.

All three eyepieces can be fitted in any one of 4 positions allowing upright image whatever the cameraman's orientation compared with the camera.
For the standard position, a reference point indicates the hole which will receive the pin. The long eyepiece is attached to the viewfinder extending forwards from the camera body; once attached, it is swung back into shooting position.

MIRROR SHUTTER

Its 180° opening permits 50 cycle HMI lighting at 25 fps and 60 cycle HMI lighting at 24 fps. On option, a 173° opening can be implemented.

The mirror stops automatically in viewing position, it can be moved manually for gate inspection by actuating the inching knob on the motor. If the mirror has been inched out of viewing position, it is advisable to inch it back to viewing position
before starting the motor up again ; this avoids undue effort on the mirror gears.

Always inch counter-clockwise.
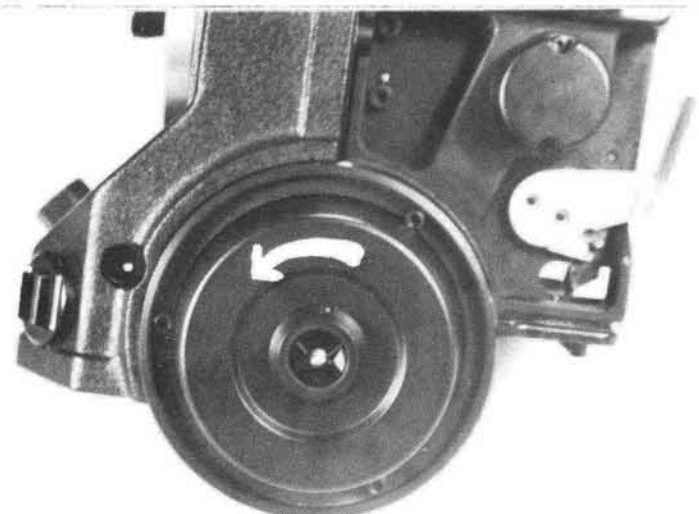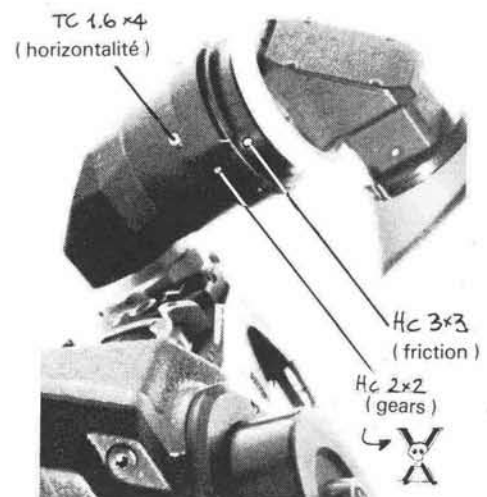
POWER

VOLTAGE AND CURRENT

The power consumption of the camera with a 12 Volt power supply is from 0.9 to 3.2 amps at +45°C and -20°C respectively. The voltage tolerance is from 10 to 18 V. In case of current overload or polarity reversal (for example crossed wires when running the camera from an automobile battery) there is a fuse protection : 5 Amp microfuse ref. 70.000.27 .

BATTERIES

The clip-on 12 or 16 V. batteries,
(Aaton Ni-Cad 1.4 Ah selected cells),
drive an average of 5 magazines in
normal conditions.
In cold weather, keep battery in a warm
place, shirt or jacket pocket, above 10°C;
use a 54 LL cable between battery and
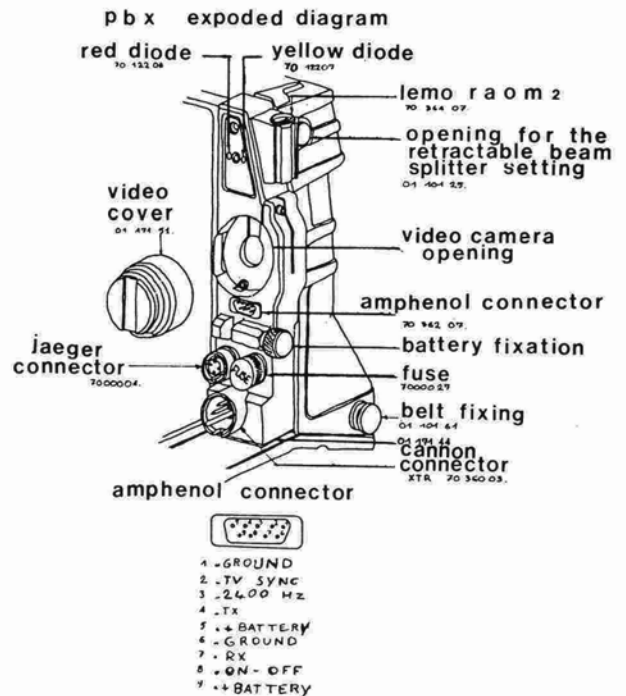camera. (see cold weather tips)

BATTERY CHARGER

It provides a full charge in 5 1/2 hours
at 300 mA. It is recommended not to go
above 50°C during this operation:
.select 110 or 220 V.
.plug the charger into mains.
.plug battery (or two 12V batt trough B2
 serial connection cable) into charger:
.green lamp lights up.
.if mains should for some reason
 be cut off, the charger will stop.
To resume the charge, battery must be
unplugged and plugged back for a new
5 1/2 hours charge.
.the green lamp indicates "charging in
 progress".
Fuse protection: mains 160 mA (T)
                 batt. 400 mA (T)

PBX CONNECTIONS

.Cannon XLR, for battery or 54 LL cable
 p1: Ground.   p4: +12 V.
.Jaeger J-4, for TV sync Atelen accessory
 p1: Ground.   p2: TV sync.
 p3: 2400 Hz   p4: +12 V.
.Amphenol A-9, for Video-head, "Scene and Take"
 handle or Walkman bracket.
 see pin-out 1 to 9 on drawing
.Red LED, battery and speed warning, same
 functions as the photometer red LED. (see p. 7).
.Yellow LED, lit up when the camera is running.
.Cover 01.171.51, held down with an M3 screw
 protects video relay optics when VR 30 head
 is not used.

p b x   expoded diagram

red diode — yellow diode

lemo r a o m 2

opening for the retractable beam splitter setting

video cover

video camera opening

amphenol connector

battery fixation

jaeger connector

fuse

belt fixing

cannon connector
XTR 70 360 03.

amphenol connector

1 .GROUND
2 .TV SYNC
3 .2400 HZ
4 .TX
5 .+ BATTERY
6 .GROUND
7 . RX
8 .ON- OFF
9 .+ BATTERY

MOTOR OPERATION

The motor is driven by electronic circuits housed
in the camera base, which is interchangeable on
location. XTR receives only the grey "X base"

There are two on/off switches : one on
the camera housing, the other on the
handgrip. Both are three position switches:

"TEST":
 Gate inspection inching and ASA setting control,
 (when there is no magazine on the camera)
 Single shot and photometer operation,
 (when there is a loaded magazine)
"OFF":
 Power consumption is a mere 10 mA when time code runs.
"ON":
 Camera runs at speed set on the "SPEED" knob.
 Crystal speeds (blue engraving): 24 25/29.97 fps.
 Precision +/- 50ppm
 Variable speeds (white engraving) 6/12/16/18/40/54 fps.
 Prercision +/- 5%. Use a 16 volts battery for 54 fps
 To avoid unfortunate mishaps, it is advisable
 to check speed before exposing film; run camera
 without magasine, press T2 on the control
 display. (see p 11)

The Lemo socket on the front housing can be
used for connection with intervalometer or
remote control switch.

The inching knob on the motor can be used to drive
the camera manually for gate inspection: turn
counter-clockwise using a money coin. But it is
much better to use the "test" switch to inch
electronically.

start

When the camera is running, whatever the set speed,
- The external yellow LED is lit.
- The external and internal red LED gives the following indications:

.Permanently unlit: camera is running at set crystal speed.
.Permanently lit: camera is running at set variable speed.
.Slow flicker, 0.5 Hz : battery is below 10,5 V, it's time to change
 battery before long; everything works: time code is not lost nor sync.
.Fast flicker, 2 Hz : selected speed, crystal or variable, is not reached.

A - CRYSTAL SPEED

Permanently unlit	Slow flicker ($\frac{1}{2}$ Hz)	Fast flicker (2 Hz)
ooooooooooooooooooooo	xxxxxx ⁰⁰⁰⁰⁰⁰ xxxxxx ⁰⁰⁰⁰⁰⁰	xx ⁰⁰ xx ⁰⁰ xx ⁰⁰ xx ⁰⁰
Crystal sync battery good	Crystal sync battery low	Crystal sync lost

B - VARIABLE SPEED

Permanently lit	Slow flicker ($\frac{1}{2}$ Hz)	Fast flicker (2 Hz)
xxxxxxxxxxxxxxxxxxxxx	⁰⁰⁰⁰⁰⁰ xxxxxx ⁰⁰⁰⁰⁰⁰ xxxxxx	⁰⁰ xx ⁰⁰ xx ⁰⁰ xx ⁰⁰ xx
Variable speed OK battery good	Choosen speed is OK battery low	Speed set is no more insured

ATELEN

The Atelen accessory delivers a controlled frequency signal to the camera,
derived from a standard video signal or pilotone; this allows automatic
elimination of the bar, when filming a TV monitor.
This accessory functions at 50 Hz TV and 25 fps only.
Connection to the camera goes trough the Jaeger J-4 or
Amphenol A-9 socket on the PBX.

DX-MAGAZINE

This magazine takes 122 m (400 ft) double or mono perforation 16 mm stock on 50 mm cores.
Each DX-magazine bears its own identification: A, B, C, depending on the presence and combination of two permanent magnets located on top of the drive wheel. This system called "Memo-mag" drives electronic sensors, counter and memory located in the camera body.
(Read in the "Control Display" section, page 12, how to use this Aaton patented feature wich gives end of film warnings.)

LOADING FEED-SIDE
In charging bag :
Block the footage counter by turning the indicator counter-clockwise.
Unfasten lid lock by turning it downwards.
Open the cover.
Squeeze the core-lock mechanism with thumb and forefinger on either side.
Place the roll of film over the core holder, and press on the center to lock the core into place.
Thread 10 cm of film into the left/right passage, and ensure that the film passes outside the idler roller.
Lock the lid, making sure the film is not caught in so doing.
Unlock the footage counter by turning it clockwise.

30 m daylight spools can be used on feed side only.
(In which case the mechanical counter is not operational any more, only the electronic one works.)
To remove the core holder, loosen screw 02.613.02 using knurled tool 02.620.00 found near the left/right passage.
Then use this knurled tool to hold spool on spindle.
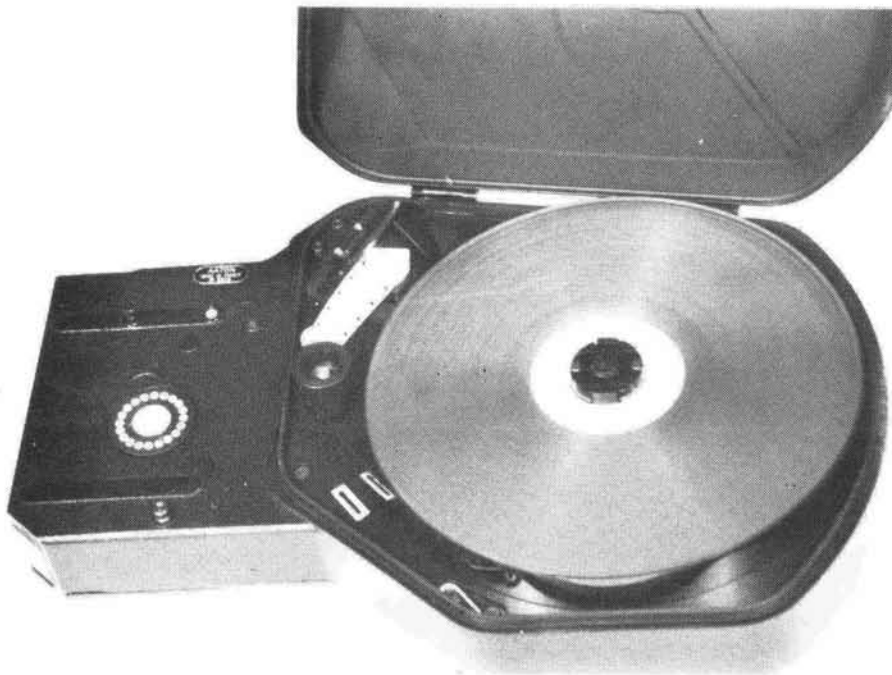
LOADING TAKE-UP SIDE
(In daylight)
Open the cover, which remains attached to the magazine, and release
both pinch rollers by pressing the white buttons.
Pull through the film which appears in the left/right passage slot.
Introduce the end of the film into the upper film guide, passing below the first
idler roller ; it will appear outside the magazine nose.
Re-introduce the film into the lower film guide, and pull through about 50 cm of
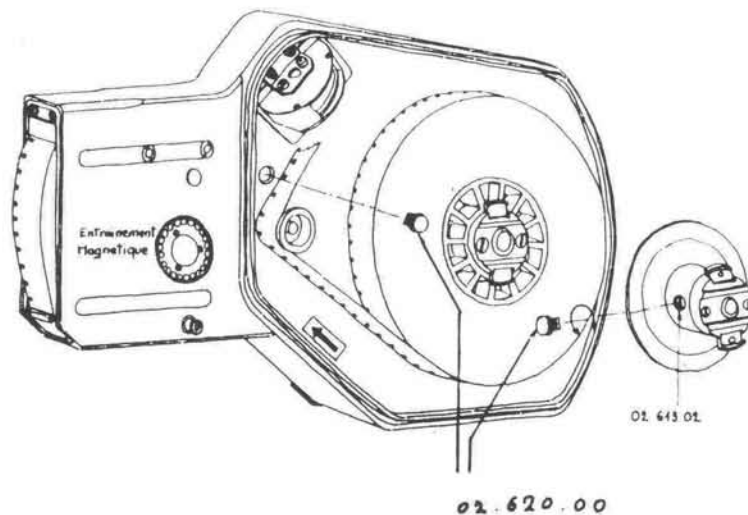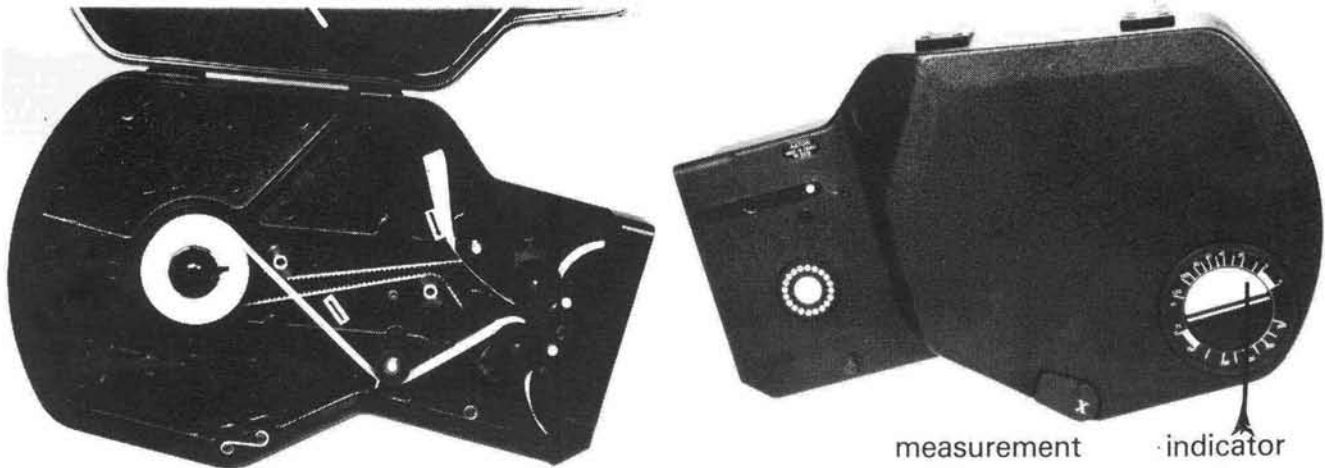film.
Thread the film around the upper sprocket wheel, making sure the perforations
engage with the sprockets.
Close the upper pinch roller which should be locked firmly into position.
Same operations with the lower sprocket wheel, making sure that the taut length
of the film around the lower sprocket wheel is 15 frames outside the magazine
nose.
Fit the film end into the core, and wind on a few turns.
Place the core onto the take-up spindle and lock it into position by pressing
down on the central button.

measurement   indicator

02.620.00

Check that the film is firmly attached to the take-up core;
forgetting to do this can result in film jams.
Rotating the core, check that the film is positioned correctly around
the sprocket wheels. Lock the magasine door.
Re-enter the film loop into the magasine, pushing the film up completely and
then down by one frame.


PUTTING MAGAZINE ON CAMERA
Holding the magazine by the back, rest it on the magazine brace
then slide the magazine into the camera body.
When it is in place, a noticeable click indicates that the
magazine lug is held by the lock mechanism.

If the magazine does not click into position, check the rubber gasket
around the magazine nose to see if it is in correct place.

Before putting a magazine on the camera, it is very advisable to make sure
the aperture plate and the rear pressure plates are clean, and that
the lateral pressure bar moves freely.

REMOVING MAGAZINE
Holding the camera with left hand, push the magazine lock-lever with the left
thumb; taking the magazine with the right hand, pull it backwards.
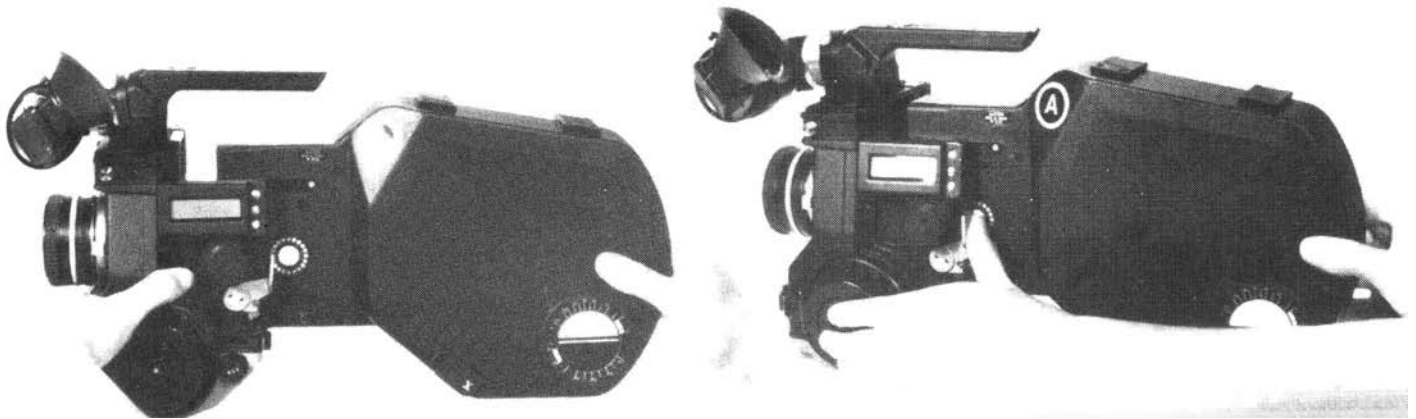
CONTROL DISPLAY

A--**Camera body with battery, without magazine;**
the following steps should be taken, and controlled on
the external display:
  1. If time recording is being used, initalize camera
  with "Origin C": the display shows **minutes and seconds.**
  2. Pressing button T3, gives **battery voltage** read-out,
  run the camera, the working voltage should be
  over 10.8 Volt, below, the battery should be replaced.
  3. In order to display the **ASA setting**, push to "test"
  the camera on/off switch.
  4. To check the **fps setting**, run the camera and press T2,

B--**With magazine in place, camera not running;**
the display shows the internal time if the camera coder
has been initialized. If not, the last information shown
remains stationary on the display.

  1. By pressing **T1**, the magazine index A, B, or C and
  remaining footage in meters are called to the display.

  2. **To set the counter to a full 122 m.** roll of film,
  press on T1 and T3 simultaneously.

  3. **To set the counter to a short end of film,** first
  determine with the manual counter what the remaining
  footage is (in meters). Then press on T1 and T2 simulta-
  neously for rapid countdown: release the T2 button when
  the countdown has reached the appropriate figures.
  If you go too far, it is possible to start again
  at 122 m. by pressing T1 and T3 together.

3--**With magazine in place, camera running;**
. Every time a given magazine is put back onto
the camera body after an initial setting,
the detector will continue the footage count
where it left off.
. Pressing on T1 calls the magazine index to
the display, and the remaining footage
appears counted down in meters.
. Five meters before the end of the roll,
the exposure meter will flash visibly so
as to attract the cameraman's attention,
when there is no more film left in the
magazine, the left to right flashing is
even more pressing.

metric counter

t 1
t 2
t 3
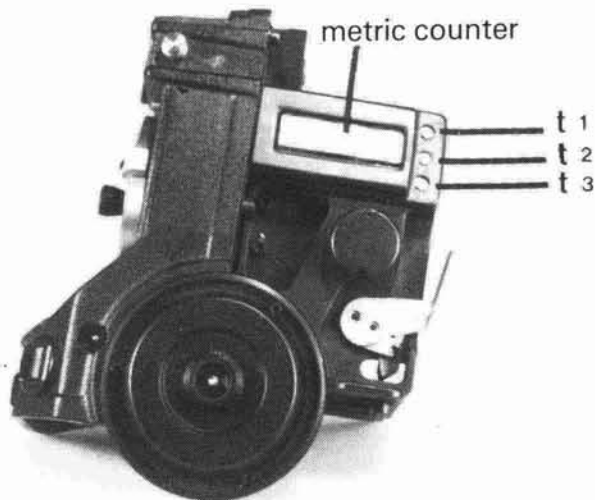
PHOTOMETER LX

Two photocells measure the quantity of light reflected by the film during the entire exposure time, thus giving a measurement independent of film cadence.

Photocells measure the light reflected from the film. So **don't forget to have film in your camera** when you test the photo-meter.

The film sensitivity from 64 to 800 ASA is set on a 12 position switch, located near the motor on the electronic base.

A luminous micro-diode display well above the frame-line in the viewfinder leaves a large visible zone outside the frame. The reading is shown by a single darkened diode moving over a line of 13 LEDs.
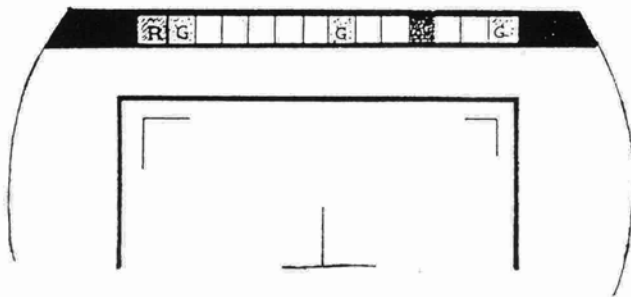
R : Warning red LED
G : Green LED
The others are yellow

Each LED represents a third of a stop:
.the central green LED indicates the position of normal exposure for the film sensitivity set on the camera,
.underexposure is shown when the darkened LED is towards the left (minus 2 stops); overexposure toward the right (plus 2 stops).

IRIS SETTING

It is possible to adjust the lens iris without running film: simply press on maintain "test", the miror rotates 180° leaving the light reach the film and thus the photometer. Photometer display light on. Turn iris ring to set the off diode to central position.

END OF FILM WARNING

- During the last five meters of film the photometer display flickers once each meter
- At the end of film the display flickers continuously half by half.

If the meter counter setting was wrong, and some meter of film still avaible, stop and start the camera. Then the photometer is operational again

OPTION R - VIDEO RELAY

Option R consists of two optical subassemblies fitted
into the camera body:
A **beam splitter** which bleeds off 50 % of the light
going from the viewing screen to the viewfinder, and
a **relay lens** plus mirror providing an aerial
image of the viewing screen at the rear of the PBX.

The beam splitter is retractable ; when the video
signal is not being used, the cameraman can remove
the beam splitter from the light path, leaving all
the light for the viewfinder image.
To retract the beam splitter :
- unscrew the button on the side of the camera.
- with an M1 Allen wrench in this opening, turn
  clockwise (about 30 turns) until you feel a
  resistance indicating the pellicle is out
  of the light path.
- to slide it back into video viewing position,
  turn the screw counter clockwise until it locks,
  then turns clockwise to bring the beam splitter
  into the correct position.

To put the R option to work, the small video head
Aäton VR30 is fitted into the PBX battery-
video holder, transforming the aerial image into an
electronic signal to be monitored or recorded for
later viewing.
To insert the VR30 video camera, loosen the small
M3 locking screw on the side of the PBX, and remove
the cover.
(do not loose this cover, it protects the relay lens
when the VR30 is removed)

insert VR 30

positioning the retractable

Now insert the VR30 camera into the opening so that
the protruding Amphenol plug goes into the guiding
socket; push firmly.
Then tighten the locking screw.
With the SPX 19 cable, connect the camera and the
control unit. The power supply (ideally a 4 Ah
battery) is connected to either the PBX or the
control unit using a 54 LL cable.
Only one power supply needs to be used for both the
film and the video camera.

Warning: If two batteries were connected in parallel
on the two XLR plugs, the batteries would discharge
into each other; this would cause very high currents,
burning out the SPX 19 cable.

Using a VR30 camera for the first time on a given
PBX, it is advisable to check the focus beforehand.
During the following steps, it may be helpful to push
the "contour" potentiometer on the control unit to
its maximum power ; this enhances apparent sharpness
thus making it easier to find the best focus adjust-
ment at the expense of the aesthetic quality of the
picture.
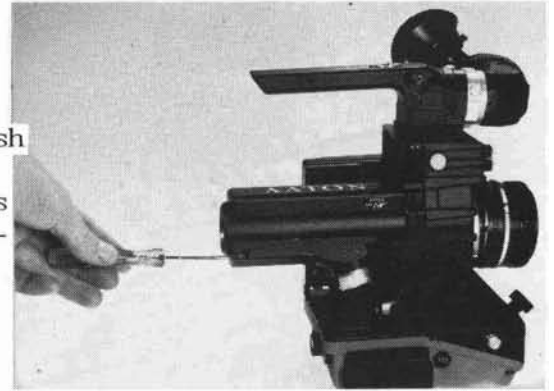
- Turn the power on and wait five minutes or so for
  the camera to warm up and reach its level of
  performance.
- With a screwdriver in the "focus" opening on the
  control unit, check on a TV monitor that the optimum
  focus current sent to the VR30 camera.
- Insert a screwdriver into the setting screw at
  the rear of the VR30 housing ; turning this screw
  moves the video tube horizontally so that the target
  can be placed in the exact position of the aerial
  image obtained from the viewing screen.
  Again, use the monitor to determine optimal position;
  when the image cannot be made sharper, check the
  electronic focus once more, and you are ready to go.

On the control unit, select the video standard to be
used:
50 Hz/625 lines, for 25 fps in CCIR contries;
48 Hz/651 lines, for 24 fps in CCIR contries;
60 Hz/525 lines, for 24 fps in NTSC contries.

16
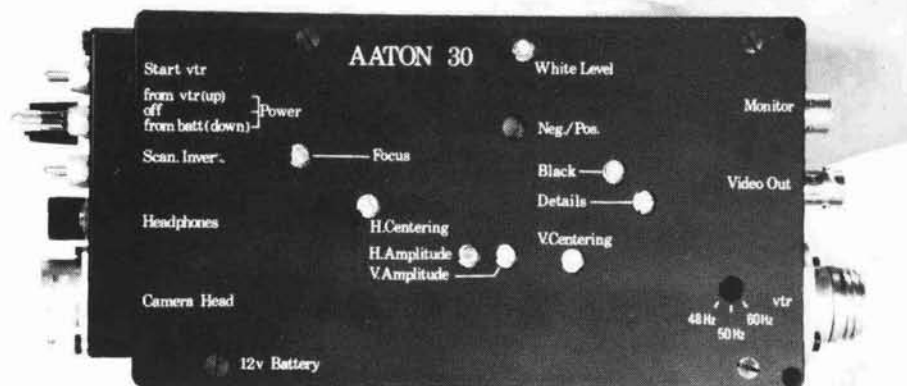
Once initialized by a master clock, the camera
timecoder ensures time marking on the film edge
for a period of **8 hours.**
Every time the camera runs, 7 microleds in an
array on the aperture plate are lit up
sequentially, so as to expose **clear figures**
and/or SMPTE **code flags** onto the film edge
between the perforations. These figures or
flags constitute **Film Data Tracks (FDT).**

Operational instructions:
1. The camera timecoder is initialized by
entering the time from **Origin CX** via the Lemo-5
connector on the camera base. (See Origin CX user
instructions)
Remember that the camera must be powered -- but
not running -- for initialization to be effected,
or for dialogue with a master clock or computer.

2. The **ASA setting** should correspond to the
sensitivity of the film in the camera. Though the
Film Data Track system tolerance is from **half to
four times** the optimum illumination, it is better
to ensure clean and sharp tracks by making sure
the ASA setting is correct: "on-off"switch on
"test", no magazine, gives reading on LCD
display.

3. The timecoder contains a back-up battery which
is charged by the external battery. This internal
back-up battery **drives the coder accurately for
one minute** should the camera's external battery
be disconnected.
When the red LED slow-flash warning appears, it
means that the power contained in the external
battery though inefficient for the whole camera,
is enough to run the coder for at least an hour,
leaving ample time to find a fresh battery.
The depleted one should be removed only when the
new one is ready so as not to use up the one-
minute back-up battery allowance.
(Even with icy fingers, battery exchange is a
10-second job).

4. If the timecoder's internal battery is
depleted because the camera has not been used for
several weeks, it can be **recharged** by simply
leaving a battery (12 or 16 V) on board
overnight.
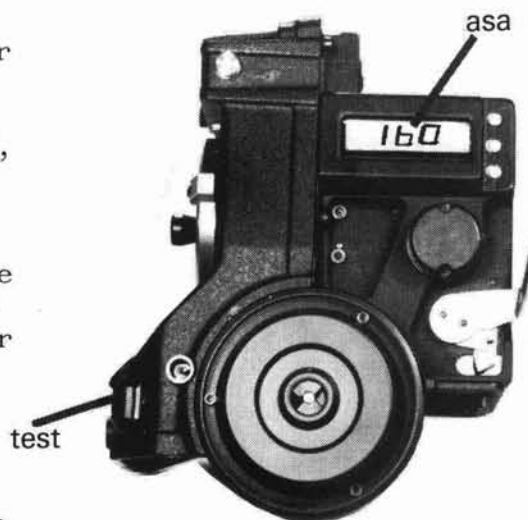
5. **A handy visual check** on the data track projection system,
is recommended from time to time.
Remove the magazine from the camera body and turn the camera
on: the LED array in the aperture plate will flash once per
second if the camera is set for clear figures, and will
twinkle continuously for coded data track.

6. If there is any doubt about how the editing is to be done
(film or video) it is advisable to set the FDT switch to
"Code" since this provides an entire SMPTE code every frame
for 20 frames, and one simplified clear time address per
second for direct user access (day, h, m, s.).
If post production is to be done on film, the FDT switch will
be set to "Clear": no more code, but scene-take-equipment-
production-year, plus month-day-hour-minute-second visible in
clear numbers, on every second of the film.

7. Remember to ask your laboratory to **expose the "edge-
number" track generously** during printing. Laboratories using
perf to perf exposure systems will provide better exposure
of the edge tracks than those equipped with printers using
the Bell and Howell principle which causes shadowing on each
side of the perforations.

8. Via the 5 pins Lemo the coder communicates with portable
computers like TRS-80 or Mini-Scribe, using ASCII language.
This allows data to be entered and recorded on **SMPTE users'
bits**: roll number, scene and take numbers, producer name,
etc.

9. The coder retains in its semiconductor
memory the exact **start and stop times** of
all takes longer than 5 seconds. With the
data retrieved from this memory throught a
Mini-Scribe, a take list can be constituted
making it easy to classify and select the
corresponding sync audio takes.

10. It is also possible to enter
scene and take information, via
a small five-dials accessory
screwed on the carrying handle
of the camera.

POIGNEE   MARQUAGE : Nº SCENE ET PRISE
            SCENE AND TAKE. HANDLE

PBX
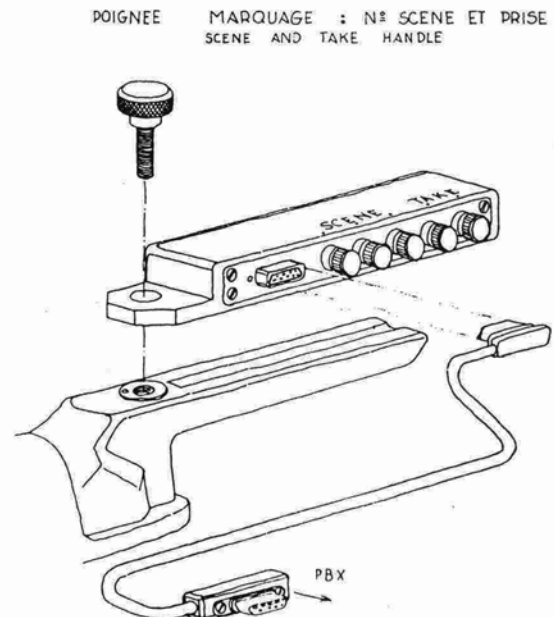
CLEANING

Lens holder
It's of utmost importance, particularly when using wide angle and super speed zooms, to keep the front surface of the lens holder completely clean, as a build-up here can adversely affect the critical back focus needed to obtain the best results from such lenses. Similarly, the rear surfaces of the lens mount itself must be regularly inspected and cleaned.

Viewfinder
The eyepiece glass should of course be cleaned on a regular basis; the whole eyepiece shutter and rubber must be removed from this if desired. A good quality lens cleaning fluid can be used if the lens becomes very greasy.

Mirror
Surface dust and dirt may be removed from the mirror from the front of the camera without removing the housing. For this, use the soft side of a lens cloth or good quality lens tissue wrapped around a cotton bud stick. It is not recommended to use lens cleaning fluid for this operation, as it will tend to smear too much due to uneven pressure.
If very thorough cleaning is required, the camera housing should be removed allowing freer and more even access to the mirror.

Viewing screen
Here too, surface dust and dirt can be wiped or blown off. A plain clean cotton wool bud passed over the surfaces with light pressure is the best technique.
On the first 7-LTR camera, the access to the top surface of the viewing screen is quite tight and, when using a cotton bud, it is necessary to squeeze the plastic stick with pliers).

More thorough cleaning will necessitate the removal of the camera housing and possibly of the fibre screen itself, a workshop operation.

Aperture Plate
This should be kept very clean and free
of grease by polishing with a good
quality non-fluffy cloth (eg. the hard
side of a lens cloth such as Selvyt, or
good Egyptian cotton). It is a good
idea between magazines to give a quick
brush over the aperture plate with a 10
mm paintbrush.
A sharpened wooden or plastic stick can
be used to dislodge any emulsion
build-up on the side guides.

**N.B. : Never remove the guide rails on
the aperture plate, as they are set in
the factory.**

Magazines
Both take-up and feed sides of the
magazine should be regularly cleaned by
using a 10 mm paint brush to remove all
traces of dust and dirt. In addition,
the area around the sprocket wheels
should be kept free of oil and grease.
The feed guide rails and pressure
plates should be inspected and cleaned
periodically: pressurized air
cannisters or good rubber blowers can
be used for this operation.

Changing bag
It will be found useful to keep the
inside of the changing bag as clean as
possible by turning it inside out and
shaking it vigourously, paying
particular attention to the corners.

IMPORTANT NOTE: Be very careful when
using "Dust-off" type air cannisters,
not to use them off-level: a burst of
liquid or frozen freon can have
disastrous effects on optical surfaces.

COLD WEATHER TIPS

From Rune Ericson, based on his experience in filming in Greenland.
The Aäton 1.4 A.h battery should be used in preference to battery belts which are exposed to the cold. Several small batteries can be warmed up much more easily than one large heavy one. Each member of the shooting crew can keep one in his or her breast pocket. When actually running film, the cameraman should have the Aäton battery in his breast pocket and a lead to the camera: this will give him two or three four hundred foot rolls per battery.

- At 30° below zero (centigrade), Rune advises to wear lots of clothes in the sleeping bag, and to sleep with the batteries too.

- When filming out of doors in extreme cold, the camera should not be taken indoors at all, so as to avoid condensation inside and outside the camera. In any case, the camera **should not be stored above 0°centigrade.** If the camera must be taken inside, then it should be put in a hermetically sealed container. It should be allowed to thaw for a few hours before being removed from the sealed container.

- The raw stock should also be kept below zero: again, to avoid condensation. For the same reason, the magazine should also be loaded in the cold.

TRANSPORT

ALWAYS, ALWAYS, always, always remove the lens from the camera body during transport. An expert in endurance and vibration testing for bridges, freighters, etc... was asked to estimate the force that would be exerted on a lens mount if the camera, packed in its ruggedized metallic case with foam rubber inner housing, was dropped on the floor from about two feet up, said Aäton camera, equipped with a zoom lens 185 mm long weighing 1.38 kg. The answer is fantastic : at impact point, the camera is exposed to 100 G, (in other words 138 kilos). The torque on the lens mount is 625 kgxcm...

So just let your mind boggle a few minutes while you think about airport handling. Even hours of bumping along bad roads with the camera in the back of the vehicle can cause damage.

"Incidents" of this nature do not always cause obvious breakdowns in the camera; the lens mount may simply feel a little off kilter, or the locking device sluggish. The lens itself often has no damage either, but the back focus goes to blazes. In the factory, the camera is set to back focal distance precision down to the micron. The variation caused by a fall as described above is in the area of 50 micron: this can destroy the necessary precision for the clean crisp images that have made a name for Aäton.

ORIGIN CX MASTERCLOCK.   general

Origin CX is a simple masterclock the size of a
pocket calculator; it is designed to be foolproof
and **very, very easy to use.**

The keyboard used to set the time once a day is
the one we are all used to: exactly like a push-
button telephone.
The connection cable to cameras and sound
recorders is built right in, well protected and
impossible to lose.
The connector is the miniature Lemo-5, standard
within the audio-video industry: Nagra 4S-TC,
Stellavox SU-8, Ampex-Kudelski VPR-5.

At the beginning of each shooting day, Origin CX
is initialized to local time and date (or to any
chosen time) by direct push-button entry on the
keyboard.
It keeps time for 5 minutes, and then shuts off
automatically; this is more than long enough to
start the cameras and recorders.

There is **only one button** (*) to push, to handle
all possible cameras and recorders operations.

1- 'Origin' is taken around to initialize cameras
(push *) and recorders (push *)

2- a new (i.e. uninitialized) camera or recorder
arrives on location:
'Origin' gets (push *) the time address from one
of the cameras or recorders already working, and
as a go-between transmits it (push *) to the new
arrival.

3- a nervous script assistant wants to ensure
that all the equipment on the shoot is
maintaining the same time:
'Origin' is successively connected to cameras
(push *) and recorders (push *), comparing each
to the time address taken from the first. If
everything is OK, the display should read GOOD.

Conclusion: to use the Aaton master-clock, you
only have to know how to push one button.

marking
smpte
clear

T connector

Origin CX can be set either by entering the time
of one's choice on the keyboard or by external
feed from timecoded equipment which is already
running.

Keyboard entry. Turn Origin CX on. Its display
asks the first question: Production number?
Enters the number, press on the shift key (=)
and the display asks: Year? etc.
If for some reason you enter erroneous
information (for example, 45th month) the display
shows ERR and then flashes the erroneous data
until the correct information is entered.
Once the complete time address is entered to your
satisfaction, start the clock by pressing on (*).
A simple flashing bar on the display indicates
the master-clock is keeping time, and will do so
until it cuts off automatically five minutes
later.
To display the masterclock address in the
meantime, press (=).

External feed : Connect Origin CX to a camera or
sound recorder whose time code is already
running. This can be done at any time, press (*)
To display the address obtained by the
masterclock, press (=).
With a single punch on (=), the display reads
hours minutes and seconds; punches in rapid
succession show production number and date.

**A single button (*) handles all possible
situations between 'Origin' and equipment.**
Once connected to an equipment, and the (*)
button pressed 'Origin' first checks to see
whether or not the machine it is connected to
contains time information. There are three
possibilities:

**1. 'Origin' contains a time address -- camera or
recorder does not.**
Press *. 'Origin' transmits its time to camera or
recorder, and checks the correctness of the
transfer, if it's OK the display reads GOOD. If
the camera or recorder is not connected to a
battery, or if 'Origin' is not properly
connected, the display will read VOID.

**2.Origin CX does not contain a time address --
camera or recorder does.**
Press *. The camera or recorder's time is fed
into 'Origin', which shows a flashing bar on the
display to indicate that it has been initialized,
is counting, and will do so for five minutes.

3.Origin CX and camera or recorder each contain
time addresses.
Press *. Origin CX compares both addresses:

They are the same: display reads GOOD (shift less
than $\frac{1}{2}$ frame).

They are within $\frac{1}{2}$ frame to $1\frac{1}{2}$ frames: display
reads FAIR; this means the shooting equipment
should be re-initialized before long. To remind
the user, display thereafter flashes RELOAD;
while RELOAD is on the screen, press * to reload
the camera or recorder.
Any equipment that displays shift, however,
should be kept under supervision, and checked
every hour. If FAIR reappears, the TCXO needs
attention, and the equipment should be taken in
for maintenance.

The difference is more than $1\frac{1}{2}$ frames: display
reads BAD. While RELOAD appears on the display,
re-initialize right away (press *), and a few
seconds later check again (press *). Either the
answer is GOOD, which means that perhaps an
intermittent loss of power was responsible, or it
is BAD again; in that case the timecoder needs
repair.

N.B. It is essential for the camera and audio
recorders to be powered but not running for
transmission of time addresses; these conditions
not respected, the display will read VOID.

When Origin CX's internal battery is depleted,
the display reads BATT; connecting it to a
standard 12 V battery puts it back into
commission immediately.
The small battery charger delivered with Origin
CX charges the internal Ni-Cad 9 Volt battery, in
14 hours.

WALKMAN TIMECODER   general

More and more documentary sound recordists are
turning to cassette equipment, either as back-up
or as a much more easy-to-handle source of good
quality audio: no rewinding, instant cassette
change, 45 minute duration.

The Sony WMD-6C is one of the best miniature
cassette sound recorder on the market; with time
code, this recorder becomes a blessing for those
film makers who want to record multi-track audio
on location.
While a "Main Recorder" is monitored by the sound
engineer, several cassette recorders spread in
the environs record proximity sounds; in crowds
or on a stage, each actor can have his mike and
move around with time coded Walkman for 45
minutes without multi-channels radio mike
problems.

The time code generator that Aaton manufactures,
is a small flat box built onto the WMD-6C, which
records on the right track a standard continuous
80 bit SMPTE signal at 30 fps**, mixed with a 50
or 60 Hz pilotone signal.

In order to obtain quality sound, a static
microphone must be used. For microphones like the
AKG, Schoeps or Sennheiser, a **phantom 12 V power
supply** and a low noise preamplifier are
incorporated into the time coder, making the
Walkman-Pro even more pro.

Available also are three accessories*** to fix
the timecoded WMD-6C, and microphones onto the
Aaton 16 mm camera: "sound within the cameraman
field of view" can thus be recorded providing a
security track should the cameraman lose touch
with sound engineer.

**

During transfer, the Aaton Comprehensive-
transcoder delivers a choice of SMPTE signals
(24, 25, 29.97, 30) as it does from 1/4" tape
recorded on the Nagra 4.2 or SU 8 Stellavox.

***
1- Bracket (with internal 12V to 6V converter) to
attach the recorder on the PBX, in place of the
battery.
2- Bracket to hold an elastic mike suspension.
3- Front handle to start both camera and
recorder, with another switch to run the recorder
before and after the camera.

*Initializing the time coder
The time coder may be initialized in any one of
three ways:

- An ASCII master clock "Origin CX" feeds its
  address into the coder via the Lemo-5
  connector(5)

- An SMPTE generator (Nagra IV S TC for example)
  feeds its time address, also via the Lemo-5;
  its SMPTE input accepts an AC signal of 0.5V
  minimum amplitude.
  Lemo 5 pin attribution:
  1.Ground   2.SMPTE-in   3.ASCII-in/out
  4.SMPTE-out (tape)   5.SMPTE-out (reshaped)

- A 'Zero start' is achieved by flicking the
  Start switch (4).

Once the coder has a start address, the LED (6)
flashes once per second ; it will increment time
for eight hours, or until the batteries are
drained : 0.9V per battery .

*Running the Walkman
The recorder may be started with its on-board
switch or by remote control via the camera
front handgrip switch. To operate it by remote
control, the "motor" switch (8) should be in
the "off" position, the L2W remote control cable
plugged into the "RC" input (9).
To use it independently, the motor switch (8)
should be in the "on" position.

*Recording sound
To record sound without time code and pilotone,
go through the normal recording procedure without
starting the coder.
To record mono sound plus time code, start the
coder and go through the normal recording
procedure:
a- For one 'Phantom 12 V' static mike, use
the Switchcraft socket (2) Ref TA3M, plug TA3F.
Switch (7) in the "up" position, and "-20dB"
on the Walkman attenuator.
b- For two mikes, use the "AMW", Aaton mixer
for Walkman, connected through the line-input
bottom socket. Switch (7) in the "down" position,
and attenuation "0dB".
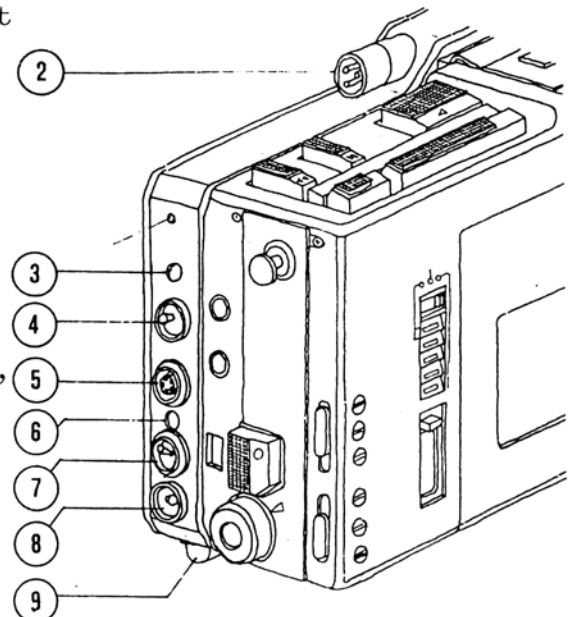
The headphone socket has been modified so that the left track
(audio) is monitored alone.
To check that SMPTE signal and pilotone have been recorded,
rewind a few seconds of tape, plug the headphone into the
"line out" socket, and play the tape back. The pilotone and
SMPTE signal can be heard faintly whistling alongside the
audio.
For the best results, use metal tape (type VI) up to C 90.

*Turning the coder off
Though the coder consumes very little (8 mA) it is best to
turn it off at the end of the shooting day; using a pointed
instrument (pen, key etc.), push on the recessed "Stop"
switch (3). If the coder is not switched off, it cuts out
automatically eight hours after the last "record" operation.

*Using the coder to initialize other time code equipment
To use the coder to initialize a camera or any other
recorder, connect the two via an L5-L5 cable, and push the
"Start" switch (4). Both camera and Walkman must be powered
but not running.

*Installing the "bracket" on the coder
Open the coder cover, three M2.5 screws hold the bracket.
A 12V to 6V DC regulated converter (10) is incorporatd inside
the bracket; use a 54 LL cable from camera battery to XLR
socket (11).
It is wise to leave four AA cells into the Walkman power
pack: they act as a back-up for the clock during camera
battery exchange.

*Setting the time coder
To modify the factory-selected pilotone frequency to be
recorded on the control track:
1. Open the coder housing
2. Choose the frequency on the selector located next to the
TCXO crystal:
. position 4: 50 Hz/24 fps
          5: 50 Hz/25 fps
.   8: 60 Hz/24 fps
The other positions should not be selected.

NAGRA 4.2 TIMECODER   general
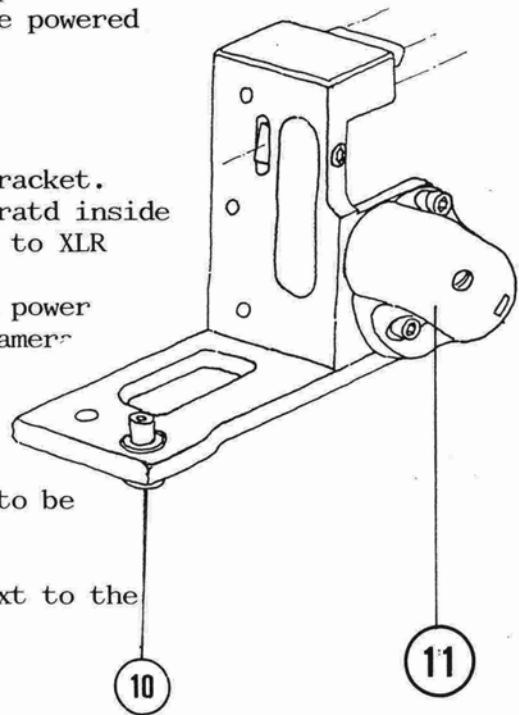
Though SMPTE time code has now been integrated
into the Nagra 4S by Kudelski, (Cf. 4S TC), the
workhorse of the audio industry, the Nagra 4.2
would be out in the cold time-code-wise if it
were not for Aaton.

Because of the interwoven layout of the sound and
pilot tracks in the 4.2, crosstalk would be
unacceptable between sound and the SMPTE signal,
if it was recorded permanently on the pilotone
track. The system Aaton has developed, called
Piloburst, lays a two second burst of **SMPTE** code
onto the audio track every time the recorder is
started, thenceforth the Nagra-generated pilot
signal (50/60 Hz) is maintained on the pilotone
track.

This system is now in use on a great number of
4.2's; it comes in a small module (29.5 x 8.5 x
1.5 cm) attached in less than two minutes to the
recorder without any modifications; it is thin
enough to allow use of the original leather pouch
designed for the Nagra alone.

Later on during transfer, it is easy to inter-
polate the time retrieved from the burst with
the pilotone signal, in order to reconstitute
a **continuous** SMPTE time code; this code is then
laid onto the 16 or 35mm fullcoat (or video
tape).

During transfer too, assuming that a Comp-
rehensive Aaton Transcoder is used, the final
choice of SMPTE standard (24, 25, 29.97, 30 fps)
can be made independently of the choices made on
location.
This is a clear advantage when it comes to using
audio material from various sources.

NAGRA 4.2 TIMECODER   user
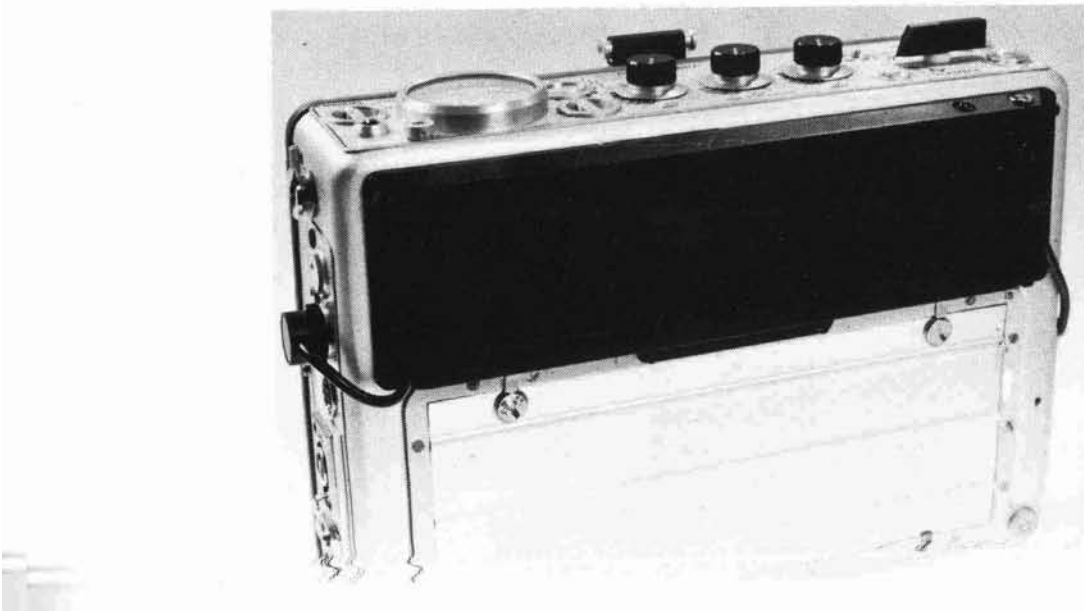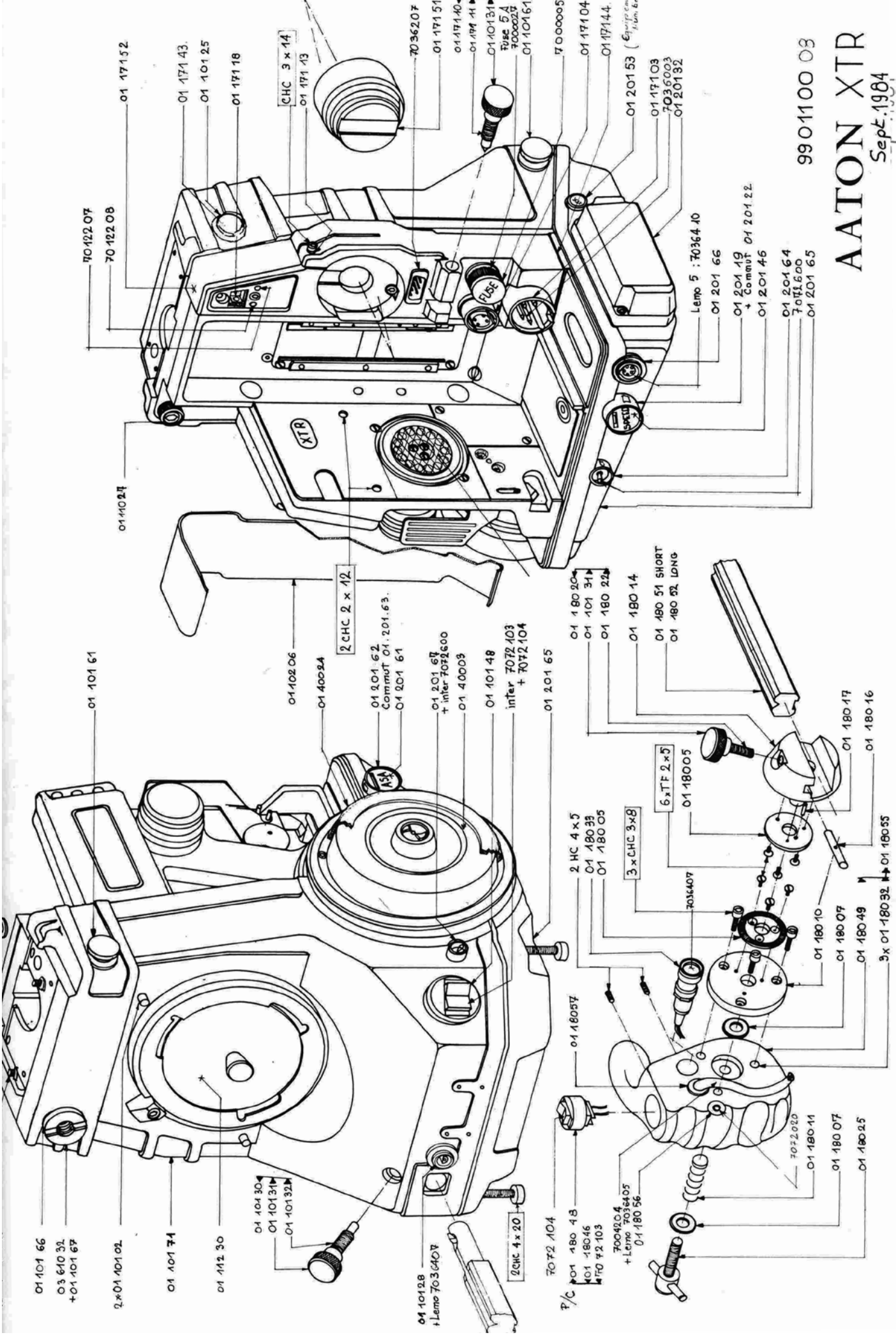
Installing the coder on the 4.2
1. Remove the two front rubber rests and the two central screws on the battery box on the 4.2 base, and use the four screws supplied with the timecoder (2 CHc 3, and 2 CHc 2.5) to fix the coder into position.

2. Plug the connectors on either side into the 4.2:
- 7 pin Tuchel into the power socket
- 8 pin Tuchel into the mixer socket; in the correct position, the cable leads out of the Tuchel connector directly **downwards.**

Using the time coded Nagra 4.2.
1. When initializing, make sure the Nagra is equipped with charged batteries, is switched on "internal" power and is not running.

2. Connect an "Origin", and press on the (*) button; Origin's display reads GOOD,

3. If no master clock is available, the Nagra 4.2 timecoder can be initialized by zero start. Push the "start" button.

4. To use the Nagra 4.2 timecoder to initialize a camera, connect the two via an L5-L5 cable, and push the Nagra timecoder "start" button. Both camera and Nagra must be powered but not running.

5. Whatever the means of initialization (master clock or zero start), the Nagra 4.2 timecoder will run continuously for eight hours, once set. The flashing diode at the front of the module indicates that the timecoder is running.

6. Each time the tape starts to roll, the sound recordist will hear the -8dB time code signal in his earphones as it is laid down on the tape.

7. Given that the time code burst is laid on the quarter inch tape only at the beginning of each take, during specially long takes the sound recordist might want to lay an additional time code burst when its presence on the audio track will have no ill effect. In this case, simply press the "start" button during recording; this will lay a -8 dB signal on the audio track for 2 seconds.

8. If the audio timecoder is not activated by a master clock or zero start, the Nagra 4.2 will function in standard pilotone mode.

9. In the 'wait' mode (i.e. initalized and counting, but no tape running), the 4.2 timecoder circuit drains about 8 mA from the Nagra. Though the timecoder cuts out automatically eight hours after being set, it is advisable to cut the recorder power supply off during the night, by flipping the internal/external switch.

10. It may be useful to have a portable 'playback-decoder' on location: with it, each day's tapes can be reviewed, and the time addresses viewed on the display.
In addition, with this 'playback-decoder' when a take is being shot in playback-mode, the time information on the 1/4" tape can be used to set the camera accordingly via the ASCII output of the decoder. Thus there is no need to re-record the sound for sync reasons.

AATON XTR

Sept.1984

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01 101 31
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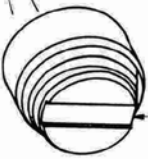01 40024

01 110217

70 122 07
70 122 08

01 101 52
2×01 101 02
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01 171 43
01 101 25
01 171 18

CHC 3 × 14

703 620 7
01 171 51
01 171 40
01 171 11
01 101 31
Fuse 5 A
70002 8
01 101 61
70 000 05
01 171 51
01 171 04
01 171 44

Lemo 5 : 70 364 10
01 201 66
01 201 19
+ Commut 01 201 22
01 201 46
01 201 64
70 71 600
01 201 65
01 201 53
01 171 03
70 360 03
01 201 32

2 CHC 2 × 12

01 201 62
Commut 01 201 63
01 201 61

01 201 67
+ inter 70 72 600
01 40003
01 101 48
inter 70 72 103
+ 70 72 104

01 201 65

01 180 20
01 101 31
01 180 22
01 180 14

01 480 51 SHORT
01 480 52 LONG

2 HC 4 × 5
01 180 48
01 180 05

3 × CHC 3 × 8
6 × TF 2 × 5
01 180 05
01 180 10
01 180 07
01 180 49
3 × 01 180 32

01 180 17
01 180 16

01 180 55

01 180 57

01 180 48
01 180 46
70 72 103
70 360 04

70 72 104

2 CHC 4 × 20

P/C 01 180 48
01 180 46
70 72 103

700 40 4
+Lemo 70 364 05
01 180 56

700 40 4
+Lemo 70 364 05
01 180 56

70 72 020
01 180 11
01 180 07
01 180 25

AATON XTR

Juillet 1984

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TYPE D

D×₁
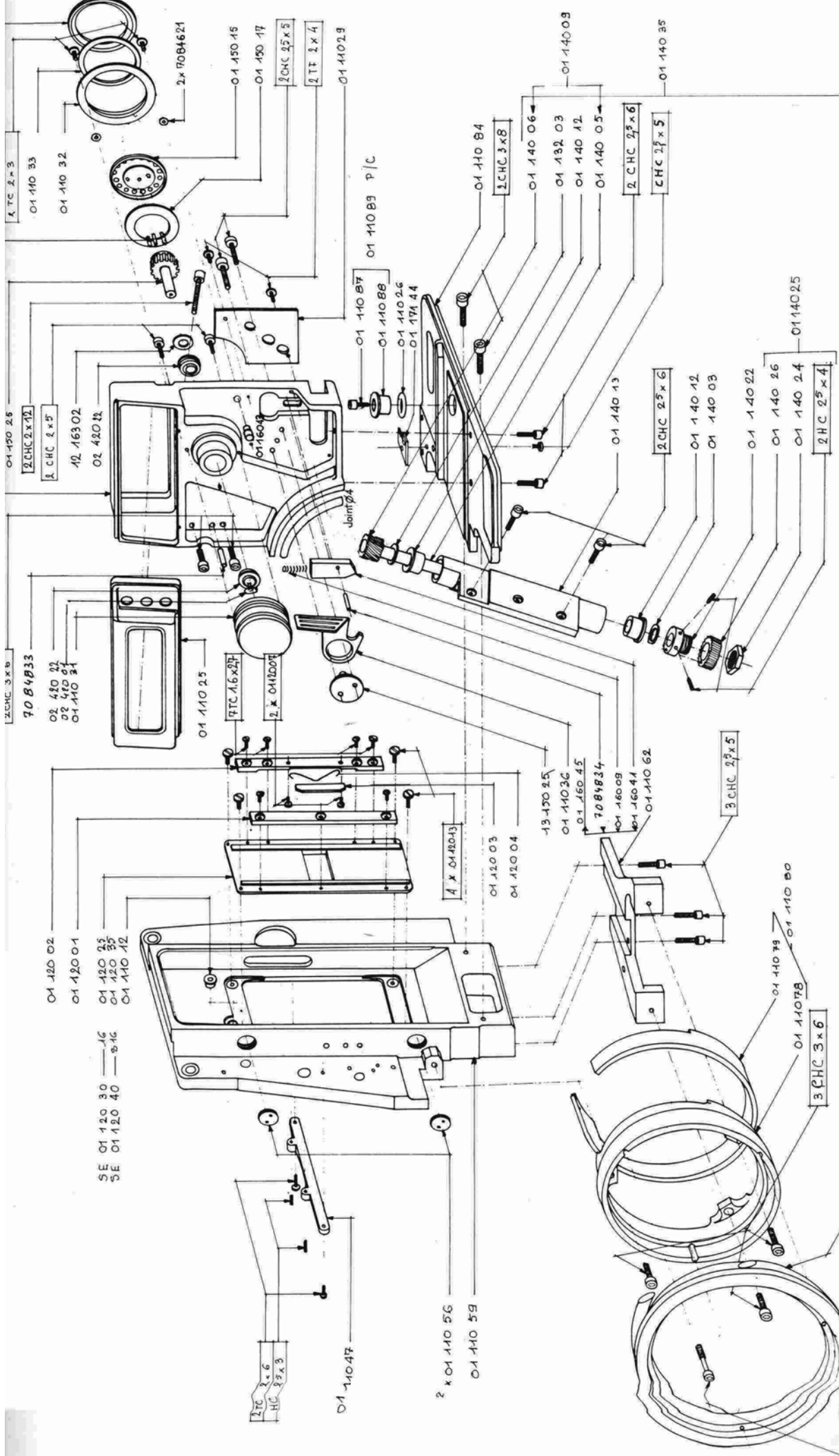
* Aeroshell Fluid 3
♦ Aeroshell Grease 6