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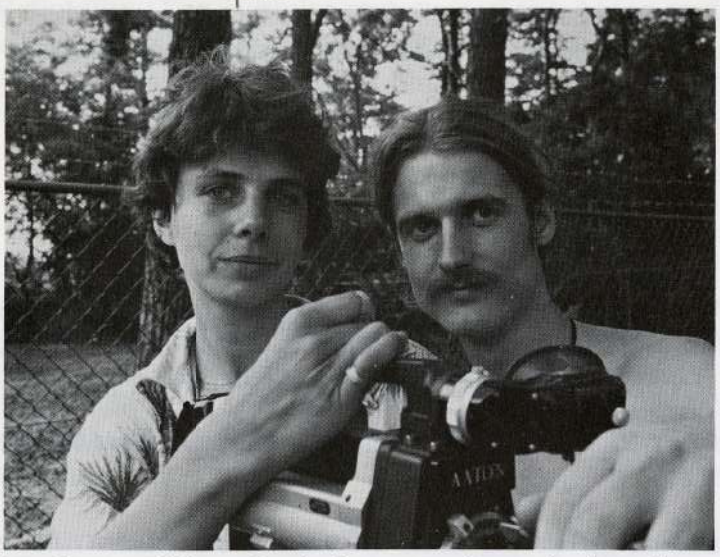
Aäton opens
its New York office
in November 1978



Anne Taverne and Thomas Brandt, first camera assistant and assistant director respectively, on « Meneer Klomp »» in Holland.

The Aäton 7 16 mm camera has come of age. The LTR model presented at Photokina 1978 represents the achievement of objectives set out when the camera was designed. Each progressive step not only in the evolution of the camera, but also in the innovations of Aäton has been marked by the Photokina over the last few years.

1972 : First appearance of the Aäton 7 in Cologne : news and documentary camera; comfortable hand holding, 31 dB, single system magazine, brush-type motor, groundglass viewing screen, and of course **built-in video** and battery. 16 mm cameras were at that time mainly for news reporting with large TV stations, though the switch towards video for this type of use was on the way.

1974 : Taking into account observations on the prototypes, Aäton presented an improved version of the '72 camera, more oriented on **production quality** as opposed to news : plug-in electronic circuits, brushless motor, high definition **fibre optic viewing screen,** 28 dB, easy dismantling of modular housing.

At Photokina '74, the incorporated video camera was of course still an integral part of the Aäton 7. But it also took on an identity of its own : the Aäton 30 hand video camera, a small tube held in the hand like a microphone.

Michael Kinmansson on location during « Captured Happiness » in Sweden.

1976. By 1976 in series production, the Aäton 7 began to make a place for itself as a camera for feature productions, quality documentaries, etc. Easy handholding, low noise level, and excellent image quality made it the choice of the more exacting TV stations and independent producers in Europe. An EBU **time code system** was shown at Photokina, and clear numbers were announced.

As video technology advanced leap and bound with new RCA and Ikegami portable color cameras, and the announcement of 1'' VTRs. Aäton reaffirmed its orientation for the Aäton 7 as a quality feature production film camera. The object was not to produce the lightest and least expensive camera on the market — such a camera would not stand up to the competition of a good video camera — but more than ever to work barring no compromise towards the ultimate perfection of the 16 mm medium.

Continuing its work on the video end, Aäton presented a miniature video monitor, and a prototype video transmitter. The Aäton 7 equipped with video viewing was linked cable-free to VTR and/or monitor. The Aäton 30 independent hand video system, considerably improved, was beginning its career in professional and industrial use.

1978. To take film to its full potential, Aäton (with more than 300 cameras sold in Europe) has concentrated its efforts for 1978 on **sound level, viewing, image definition, reliability,** and **freedom from constraint.**

If the choice is for 16 mm film, then it is essential to extract from this medium everything it has to offer; otherwise video is sufficient.

If film is to remain viable (in terms of shooting, leaving aside editing), film cameras have progress to make compared to video cameras : the noise level has to go down; image definition must be incomparably superior to video; the camera must be totally reliable; and the cameraman's freedom of movement must in no way be hindered.

The place is Copenhagen. The lady with the camera is Barbara Adler ; the other lady, « Standing Woman » by Gerhard Henning. The photograph is by Manuel Sellner, and the camera by Aäton.

Sound Level. Though a guaranteed 28 dB is in itself an achievement, sometimes even that is too noisy. The basic structure of the Aäton is such that it is possible (with more time and care) to obtain noise levels in the order of 24 dB. The absolute record for an Aäton is 19 dB. For those who feel that the price difference over a feature production budget is negligible, Aäton now supplies a guaranteed 23 dB, run in in the factory.

Image Definition. With the latest lenses and emulsions, image definition can be greatly improved; the camera must also do its share for better definition. Aäton has contributed towards this by assuring that the film is in a very stable position over the aperture plate — excellent vertical, lateral, and depth steadiness. This steadiness provides a definition ' reserve ' for 16 mm film, be it for 35 mm blow-up, reframing, or electronic image processing (see p. 10).

Viewing. In the Aäton viewfinder, the cameraman has a very sharp and immediate image; the discrete exposuremeter display gives an accurate linear reading of ± 2 stops in thirds, even with fast lenses (see p. 8).

Reliability. The modular structure of the Aäton makes it easy to take apart and put together without disaligning the vital mechanical and optical parts. The film channel is totally visible, and accessible for cleaning. With the red spares, electronics problems are solved by simple interchange (see p. 20).

Freedom from Constraint. The cameraman's freedom of movement depends upon two factors : comfort of holding, and freedom from cables (the nightmare of video). The ergonomic structure of the Aäton is now a known fact. And the necessary step to eliminate the last cables tying the cameraman down is clear time marking simultaneously on film and video monitor with UHF tranmission. Aäton has done advanced study into all forms of time marking (see pp. 36, 37).

Aäton's video products now form a complete professional line on their own : from the Aäton 30 video system, through the data inserter for airborne equipment, time generator for clear figure time marking with video cameras, and UHF transmitter and receiver. The future holds prospects of a digitalized video camera for both black and white and color.

Per Källberg and Stefan Jarl talking over a shot; the tool is part of the man. Sweden.

Cat on the Shoulder

In terms of image sharpness, it is a known fact that film cameras, be they 16 or 35 mm, have a distinct advantage over video cameras. The balance also weighs in favour of film cameras when it comes to freedom of movement and **independence.** The Aäton LTR goes a step farther with clear marking : assuring absolute sync to the sound recordist even if he is out of sight.

To turn these advantages of film to account, however, the camera must be easy to hold, comfortable — in short **it has to fit.** That is why the Aäton has its characteristic overall shape with a good chunk cut out for the cameraman's shoulder. And the viewfinder is placed so as to allow easy viewing without fatigue. A logical extension of the **ergonomic design** is the walnut front handgrip; it slides along a rod right back up against the camera body, enabling the cameraman to lift the camera off his shoulder, and hold it against his head for smooth pan and travelling shots.

Cats don't bark

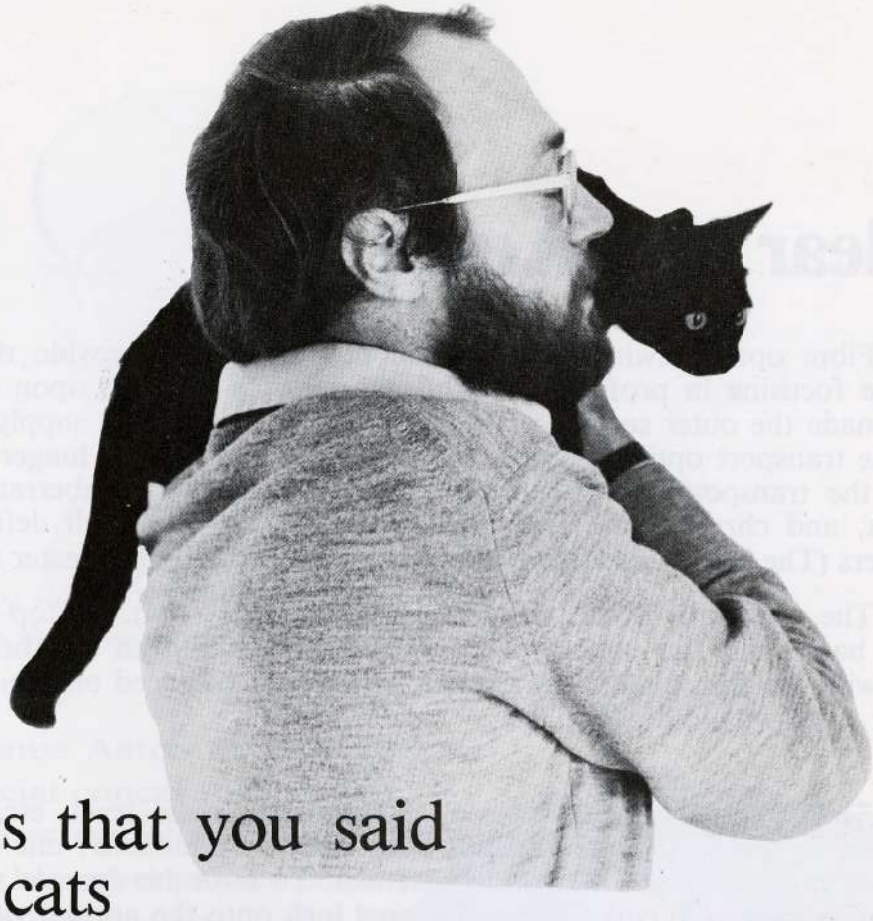
The Aäton was designed to be quiet. It is driven by a brushless motor directly linked to the claw movement; power transmission is by high technology gears — no noisy belts. As the film is flat and smooth while it moves over the aperture plate, it doesn't need strong rear pressure to hold it in place. This means the claw can move in and out of the perfs under low acceleration; there is no consequent generation of noise during pull-down.

Rarely is the noise level of an Aäton over 28 dB. With special machining (i.e. more time and more money) it can be made to run at **23 dB; every Aäton has this potential.**

Good-bye cables, fatigue, and noise. The cat came back and I'm glad.

32 **29** **26** **23** **20**

It is worth noting that sound measurements are made on a logarithmic scale; 29 dB is half as noisy as 32 dB, and 4 times noisier than 23 dB.



Q : What's that you said about cats and the Aäton ?

A : Cats catch mice, Aätons don't.

Q : Then what are these two pictures for ?

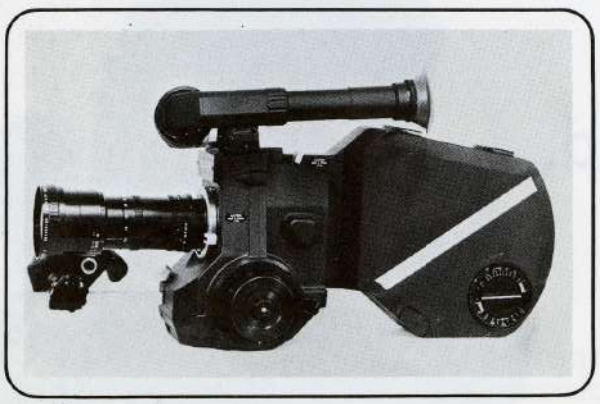
A : To show what cats and Aätons have in common : both comfortable to hold, and very quiet.

Clear and Acute

Fibre optic viewing screens have been found to provide the best surface for image focusing in professional film cameras. To improve upon this feature, Aäton has made the outer surface of the viewing screen concave, supplying a curved image to the transport optics. Because the **field curvature has no longer to be compensated for,** the transport optics can be optimised to eliminate aberrations : astigmatism, coma, and chromatism. The resulting image has very high definition, even in the corners (The Aäton viewfinder supplies a total image 20% greater than full field).

The structure of the viewfinder, coming out from the top of the camera and then back, puts the camera in a comfortable position on the shoulder; the eye is in line with the film plane. The camera is perfectly balanced on the shoulder, a complement to easy hand holding.

The Aäton's extremely steady images, low noise level, etc. have caused filmmakers to choose it more and more for heavy productions; one requirement for this type of production is a viewfinder extender. To meet this demand, Aäton has designed a **long eyepiece** (20 cm) : **instant bayonet lock** onto the normal viewfinder; automatic upright image over 360°. With both long and short eyepiece and automatic erect image control, Aäton introduces a new feature : the image position can still be adjusted manually to compensate for **unusual viewing positions.** Because the viewfinder supplies such a highly corrected image, the long eyepiece is a simple, lightweight, and therefore relatively inexpensive accessory to the Aäton.



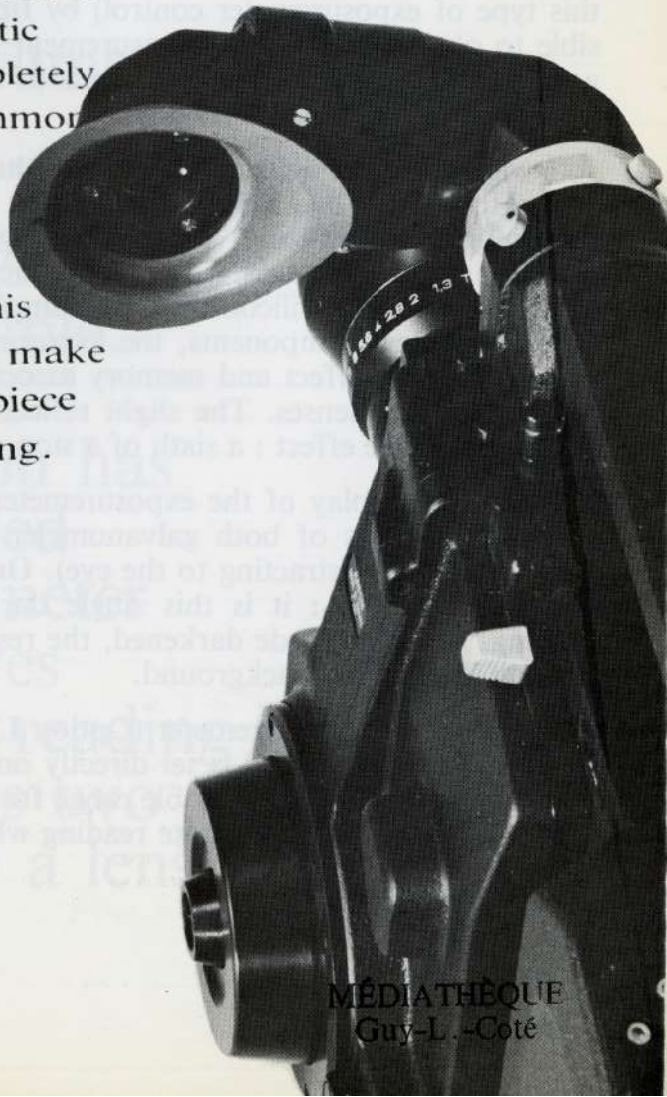
The Aäton viewfinder eyepiece extension.

Q : Why is the large viewfinder image in Aäton cameras so remarkably acute?

A : Because Aäton has designed a special concave fibre optic viewing screen almost completely eliminating the aberrations common to other systems.

Q : Shall we drink to it?

A : More than ever, since this unique screen allows Aäton to make a simple and inexpensive eyepiece extension for tripod shooting.



Light and Linear

Fast film and high speed lenses are now with us for available light shooting. Standard exposuremeters are hard pressed to deal with this new situation, and cannot always give accurate readings with wide open lenses.

The best way to measure light exposing the film would be to put a sensitive cell *in place of the film;* this type of system is used in the Leica still camera, and the cell is removed from the aperture precisely at the moment of exposure. But in a moving picture camera, this becomes impracticable because of the additional moving parts (and potential noise) inherent in such a system.

For moving picture cameras, there are only two possibilities : either to place the light measuring device *behind the viewing screen,* or to measure the light *reflected from the film.*

The system which measures the light rediffused by the viewing screen has been used widely; but with the replacement of the groundglass (itself quite satisfactory for this type of exposuremeter control) by fibre optic viewing screens, it is nearly impossible to obtain an accurate measurement with light rays at a high angle of incidence, as in wide open lenses. Improvements to viewing screens and lenses have to all intents and purposes outdated this system.

Measuring the light **reflected from the film** has been common knowledge since the '40s. However it has only become really viable in the last year or so with the latest technological advances. As very little light is reflected from the film, the sensitive elements must necessarily have extremely high performances : low dark current gallium-arsenic and silicon cells, and amplifiers running on very low bias current (pA). With these new components, the exposuremeter system is **photometrically perfect** — none of the lag effect and memory associated with CdS cells, and complete accuracy with wide open lenses. The slight reflectance variations between different rawstocks have a negligible effect : a sixth of a stop error at the most.

For the display of the exposuremeter too, Aäton chose a new solution avoiding the disadvantages of both galvanometer (fragile, and hard to see in low light) and moving diodes (distracting to the eye). **On a line of 13 evenly illuminated LEDs, only one is modulated :** it is this single darkened or brightened LED which gives the reading. With the diode darkened, the result is comparable to a galvanometer moving over an illuminated background.

The Aäton exposuremeter (Option **L**) is a true photometer, reading $\pm$ 2 stops in thirds; the film speed is set directly on the ASA knob on the camera body : 50 to 400 ASA (this provides a usable range from 25 ASA with + 1 stop reserve to 800 ASA with -1 stop reserve); accurate reading whatever the camera speed, including variable.

More and more films call
for sequences
in low light.
Fast film and lenses
make this possible.

That is why Aäton has
recently developed
a new exposuremeter
system that gives
a faithful linear reading
(plus or minus two
stops) even with a lens
at f 1.

Thepictureabov
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ofvideoimages.

Sharpness through Steadiness

To obtain sharp images in moving picture cameras, each successive frame must superpose the preceding frame with precision corresponding to the smallest detail (i.e. 2-3 microns); for this type of microsteadiness, there must be no vibrations within the camera, and absolute registration from one frame to the next.

The film path in the Aäton is such that the natural position the film tends to take is exploited rather than counteracted. The loop is long and twistless, and moves smoothly against the aperture plate over a long trajectory. As the film is brought to the gate in a natural manner, there is no need to press it hard to keep it flat and accurately positioned; the light pressure applied by the rear pressure plate for the image ensures that breathing cannot occur, giving **dynamic depth stability.** (The full value of dynamic depth stability obtains only if **static depth stability** is ensured consistently : the flange focal distance must be very stable. The Aäton supplies perfect static depth stability : the lens mount is linked directly to the aperture plate without any housings between the two.)

Working with the low pressure from the rear pressure plates, the lateral pressure plates easily position the film against the fixed guide bar, giving excellent **lateral steadiness.**

The long smooth loop (no spring effect) and the claw pull-down movement from a point *in* the film plane combine to produce **vertical steadiness** superior to that obtained with registration pin systems.

The long loop ensures both flatness and steadiness (1/2000th of frame dimensions). This means that there should be no problem in removing the horizontal banquettes from the aperture plate — on the contrary it would be the most logical way to eliminate risks of hairs and micro-scratches. After in-depth experimentation and testing both in the factory and in the field, Aäton has removed these banquettes : the cameraman is now sure that his images will be **free from hairs and micro-scratches.** A boon to 16 mm blow up, not to mention Super 16 which takes up the whole frame.

A logical consequence of this type of fluid and vibration-free system is that the Aäton is quiet — another reason for choosing it for feature film production.

Absolute image steadiness allows the Aäton to **make the most of the latest emulsions and lenses** with improved sharpness. If one is to film in 16 mm, it is worth having the best instrument around to take full advantage of this medium. Otherwise video is enough — the people involved in EFP have known this for some time.

Q :
Why do so many people in Sweden* use the Aäton camera to film 16 mm for 35 blow-up?
A :
Because the image is so sharp.
Q :
Why is it so sharp?
A :
Because the Aäton has a very long and twistless loop. No breathing during exposure. No vibrations. Absolute steadiness.

(* The birthplace of Super 16)

A Well-loaded Magazine

The magazine of the Aäton camera features ease of loading and unloading, heavy duty lock into the camera body, and sturdy overall structure.

Loading is fast and simple : the rawstock is placed in the feed compartment using the charging bag, and all threading is done in daylight.

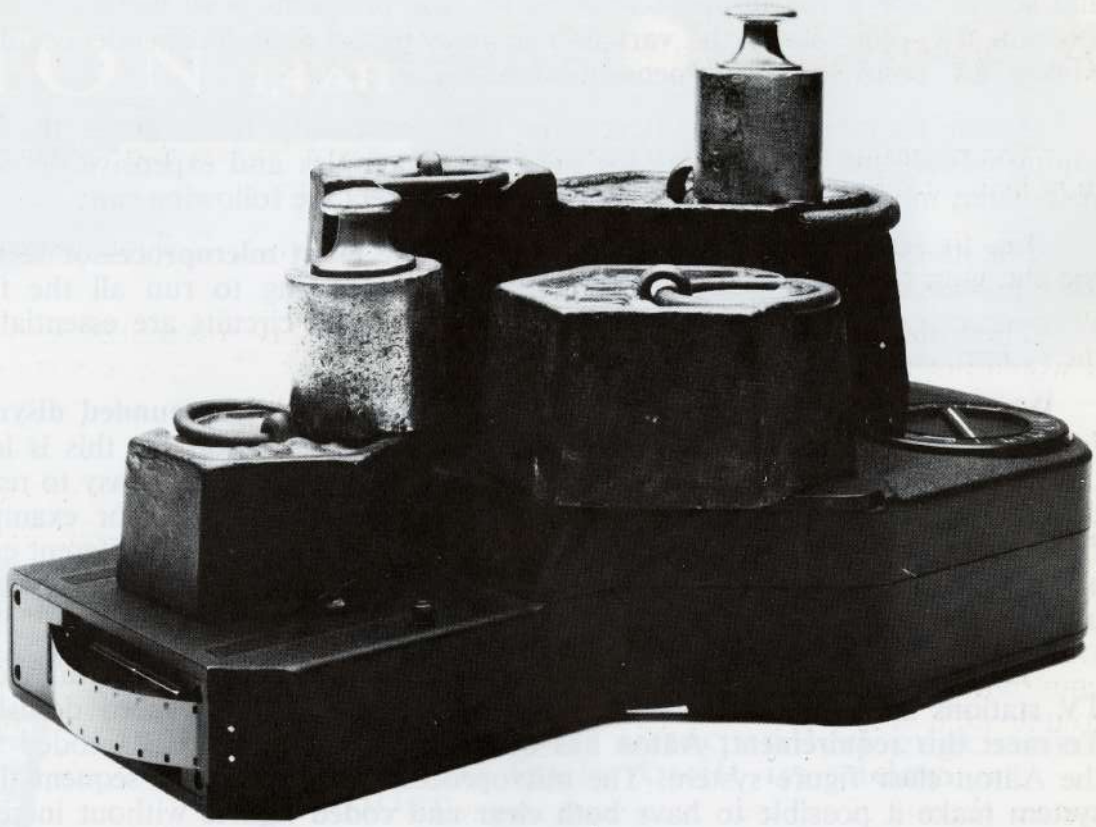
The trajectory of the film is such that it is in no way constrained into positions it would not naturally take. The loop is long and twistless. **Loop length is not critical** — if it is a frame or two too long or too short, this has no consequence on the steadiness or noise level.

With the new **independent rear pressure plates,** recent post-processing anti-scratch coated emulsions run problem free in the Aäton, giving the characteristic image steadiness and low noise level expected of the camera.

Two features to prevent the tendency of the film to coil off the roll when it is removed from the take up compartment in the charging bag : winding on take-up is emulsion side in, and a handy lock device blocks the core in place; when it is time to unload, a press on the lock button **leaves the core totally free for easy removal.**

The counter (feet and metres) is large and **easily visible;** the soundman or director can see the end of roll indication from **several yards away.**

The door to single system is open — there is space in the magazines to install the Aäton patented sound recording system.



Q : What are all those weights for ?
A : To show that the Aäton magazines are sturdy.
Q : You could try throwing them on the floor too, maybe...
A : Uh... It might be useful to mention the super easy loading, handy spool lock, and footage counter easily visible several yards away.

Time on Film

Time information on film, be it coded or in clear figures, has been shown as a major step in the filming process; the inscription of universal time on film, video tape, and sound tape is the ultimate solution to sync problems both in the studio and on location. No more slate; the various machines regain their independence; derushing, editing, and archiving are immensely simplified.

Aäton introduced clear figures in 1976 essentially to facilitate the work on editing tables, and to eliminate the need for a complex and expensive decoder. Two years later, many of the major camera manufacturers are following suit.

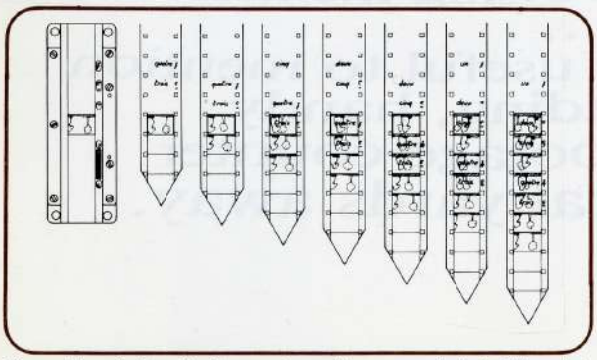
For its time marking system, Aäton uses the **latest microprocessor technology :** data processing replaces traditional electronic processing to run all the functions. Very large scale integration circuits and custom made circuits are essential parts of the system.

When it came to choosing the figures, Aäton opted for **rounded disymmetrical forms** instead of the usual seven segment display. The reason for this is legibility : the Aäton figures are not only easily legible right side up, but also easy to read upside down and backwards (2 and 5, 6 and 9 cannot be confused, for example). The figures are formed sequentially as tiny diodes light up behind five different engravings along the side of the aperture plate; the various "hieroglyphs" progressively build up into figures.

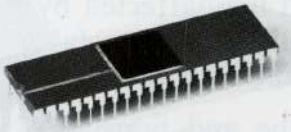
Though the clear numbering system does present some advantages, many TV stations still require a coded system for large scale high speed derushing, etc. To meet this requirement, Aäton has quite simply added the EBU coded system to the Aäton clear figure system. The microprocessor and patented sequential marking system make it possible to have **both clear and coded figures** without increasing the overall dimensions of the camera (option **T**). It is also possible with the microprocessor to have an image counter on the camera body — a display showing the number of images converted into feet and metres.

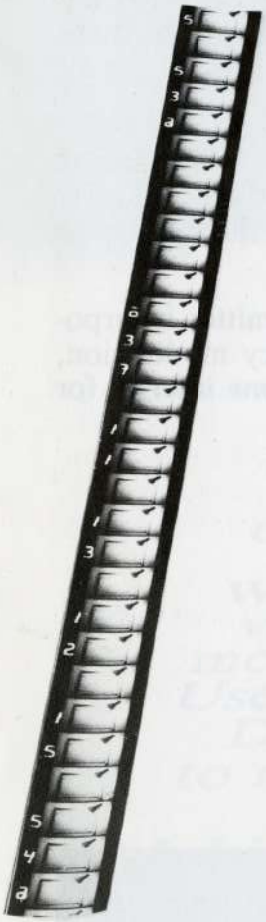
For sound recorders, both Kudelski and Stellavox supply circuits which record time information on the synchrotone track. This information is transformed into clear figures which are printed on the 16 mm magnetic tape on a specially adapted transfer bench (firms in Germany, the U.K., and Switzerland are developing this transfer bench adaptation).

For video tape, Aäton supplies a clear time inserter (INS 26) adaptable either on the video finder of the Aäton LTR, or on any independent video camera (see p. 36).



The « hieroglyphs » in the aperture plate progressively build up into clear figures on the film.





First in 1974 with unequalled ergonomic design and truly built-in video viewfinder.

Then in '77, the lowest noise level ever in 16 mm — down as far as 23 dB*.

And now the first microprocessor controlled camera. A breakthrough in film-making : clear numerals for time marking.

Aäton.
Leading the way for high quality motion-picture cameras.
Putting the latest technology to good use.

* Available on special order.
Average camera noise level under 28 dB.

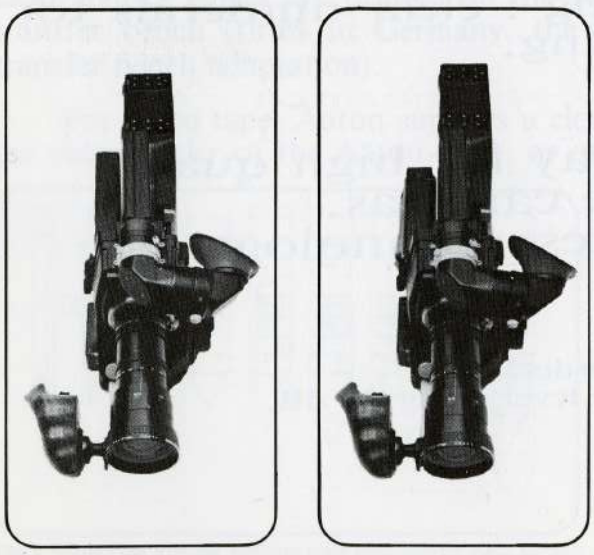
Relaying the Video

When the Aäton 16 mm camera was originally designed, a totally integrated video viewing system was one of the many parameters to be met, along with comfortable handholding, Super 16 capacity, etc. As the film camera progressively took form, the built-in video system found its place : beam splitter and relay optics *inside* the camera body, and video tube alongside the magazine — completely **unobtrusive.** And the fact that the video system was there from the start meant that the strict minimum of equipment went on the camera, the rest out of the way in the control unit. No need to add on awkward boxes in difficult positions; the **orientable viewfinder retains total freedom** of movement in every plane, and is unaffected by the presence of the video system. The design of the camera chassis allows a **retractable beam splitter** — no light drain from the viewfinder to the vidicon tube when not in use.

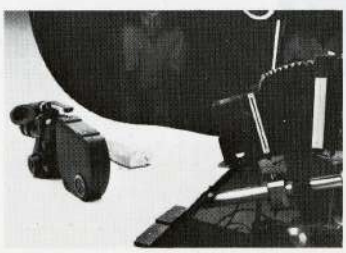
During video shooting, the video tube and housing (VR 30) fit into the **PBX universal holder** where the battery otherwise goes (once you are using the video system, the battery goes onto your belt with the video control unit). Only *one* cable out of the camera : the power cable running both film and video systems.

The system in the film camera body allowing the installation of a video viewing system is called Option **R.** It consists of a beam splitter which is now retractable, relay optics, and the PBX holder which allows the VR 30 video camera to be fitted onto the film camera in a matter of seconds.

To extend the complete system, Aäton now offers a **video transmitter** incorporated on option into the video control unit (UHF 800 MHz, frequency modulation, 100 metre range in direct transmission), and the Aäton INS 26 **clear time inserter** for time information on every frame (see p. 36).



The video head (plus relay optics) is truly unobtrusive. On the left, camera with battery plugged in ; on the right, video head in place.



Give us this day...
... our instant dailies.
With the only truly incorporated
video finder leaving untouched the
mobility of the orientable viewfinder.
Use the Aäton UHF transmitter.*
Do without cable link
to monitor and VTR.

Making 16 mm even more efficient in production.

* *More about The Other End later.*

The Other End

What use having video viewing on a film camera if the result is not usable dailies ? Instant dailies cannot be fully exploited at the end of the day unless they contain the information necessary to **match any video sequence to its film counterpart** — not just the images, but also the time information on the edge of the film every second : year, month, day, hour, second. If the dailies contain this information, then video pre-editing and derushing are made considerably easier, and they in turn greatly simplify the film editing procedures.

To insert the time information on video, Aäton has produced a clear time inserter (INS 26) incorporating clear figures into the video signal.

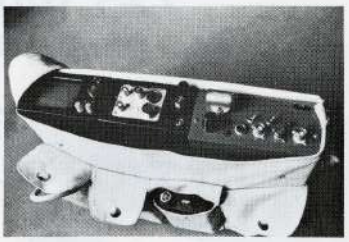
The choice of clear figures for video marking in the Aäton system eliminates the need for special coding devices used with other types of video time marking. Moreover, the Aäton system is compatible with most commonly used cameras and VTRs. No adaptation need be made to existing equipment.

The video marking system functions independent of the camera marking system, but in perfect synchronism with it. **The figures** it produces on the monitor and sends out to the VTR **are those the camera is marking simultaneously on the edge of the film.** Each video field is marked; even with the VTR on image-hold the figures appear on the monitor. The figures can be moved to appear in any position on the screen, or set outside in the vertical blanking area.

The same master clock can be used to set the film, sound recorder, and video marking systems using the EBU information (year, month, day, etc.) or all three can be set alternatively starting simply from zero.

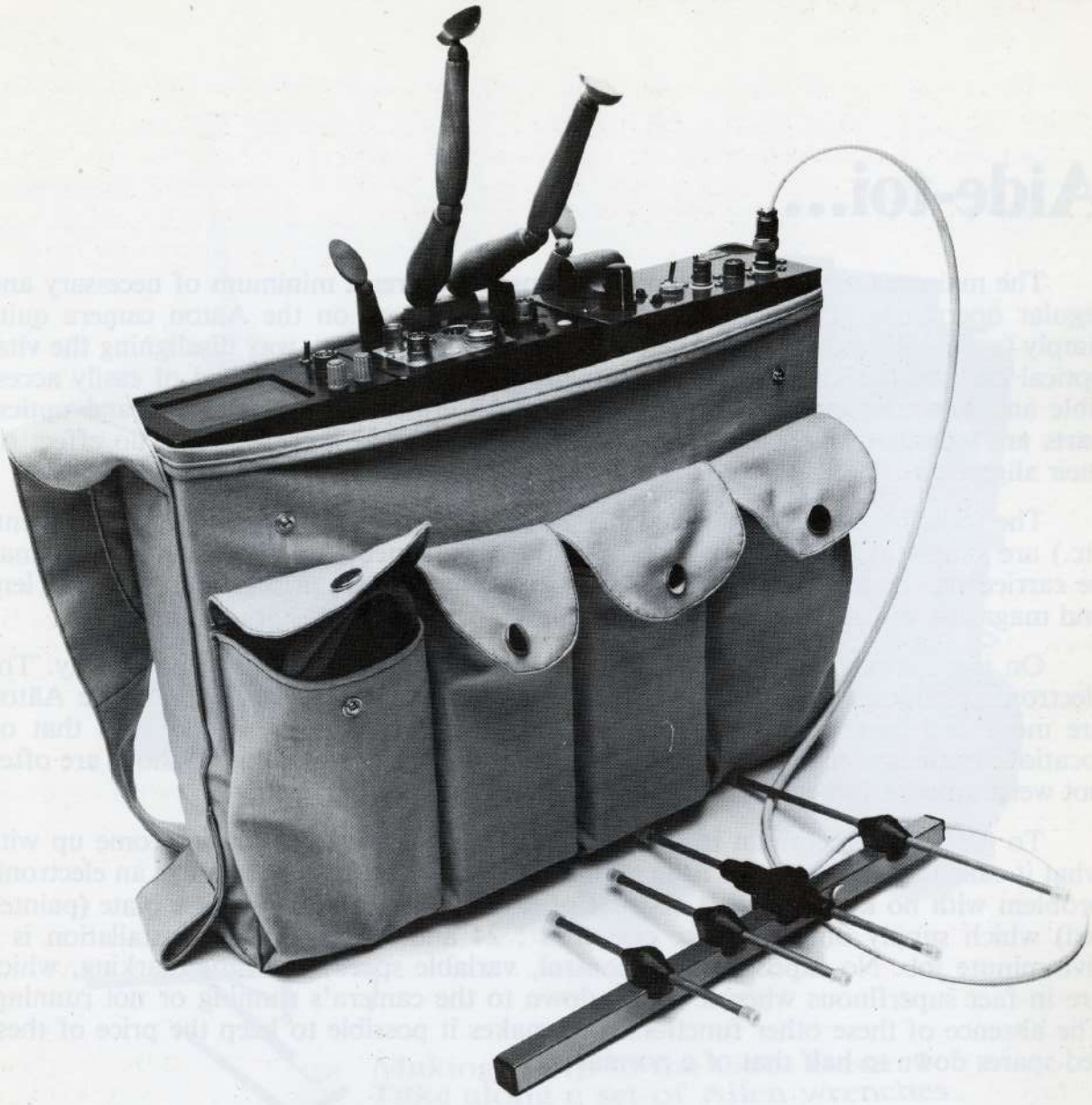
With the development of crystals in cinematography, the cameraman first achieved the freedom of movement necessary to do his job with ease. Then with the arrival of video viewing added onto film cameras, he once more lost his freedom. To return this independence to the cameraman, and to allow him to take full advantage of the autonomy and agility of his film camera, Aäton installs a video transmitter (FTR 800)* into the control unit on his belt. The assistant has the rest **at the other end** (which in direct vision could be a hundred or so metres away) : a canvas bag containing a **video receiver** (FRX 800), **clear time inserter** (INS 26), small **monitor** (KWA 52), two batteries, mains power supply and battery charger.

Now the cameraman is free again — he carries the camera on his shoulder, battery and transmitter equipped control unit on his belt, and that's all; the man at the other end has the rest.



In the bag left to right, monitor, clear time inserter, and video receiver; battery in front pocket.

* In most countries a special authorisation from the state is required to use this equipment outside a Faraday cage.



Somebody watching TV in the bag?

No. The Other End : Aäton's way of helping out the cameraman equipped with Aäton film camera and video finder. The bag contains a receiver, video monitor, and time marking system. The whole bag is linked to the VTR which records the same time information as on the film. (The assistant carries the bag — cameraman the transmitter. No cables to worry about.)

Aide-toi...

The maintenance of any quality instrument requires a minimum of necessary and regular operations. These operations can be carried out on the Aäton camera quite simply (using oils and a set of Allen wrenches) without in any way disaligning the vital optical and mechanical parts of the camera. The camera is composed of easily accessible and interchangeable modular elements. All critically set **mechanical and optical parts are located on a rigid internal chassis;** the external housings have no effect on their alignment.

The tools for in-depth maintenance (dismantling central chassis, claw movement, etc.) are simple in both their design and use. Adjustments to the dynamic parts may be carried out on an opened out body (part of the maintenance kit) allowing the lens and magazine with film to remain in place and in running condition.

On the electronics end, maintenance cannot be dealt with in the same way. The electronic components such as **VLSI circuits, hybrid circuits,** etc. used in the Aäton are more and more complex with the advances in technology. This means that on location repair is pretty much out of the question, and even small workshops are often not well enough equipped to carry out electronic repairs.

To give the cameraman in the field **electronic security,** Aäton has come up with what it calls the « **red spares** » : the minimum first aid equipment to solve an electronic problem with no know-how. It consists of a motor and electronic base plate (painted red) which supply only the bare essentials : 24 and 25 fps crystal. Installation is a five minute job. No exposuremeter control, variable speed, nor time marking, which are in fact superfluous when it comes down to the camera's running or not running. The absence of these other functions also makes it possible to keep the price of these red spares down to half that of a normal set.

With Aäton in hand, Dutch cameraman Ron Kvoon jumped (accidentally) into the Pacific during a recent TV documentary production in Hawaii. After an hour's work in his hotel room, he was able to continue, and shot 80 rolls of VNF without a hitch.

Making a trip to the Gobi Desert?
Take along a set of Allen wrenches
and some oil — enough equipment
for you to cope with a dust storm
on location.

You can take your Aäton apart
and put it back together again
with next to no tools
because all the critically aligned
mechanical and optical parts are
located on a rigid central chassis.

Aäton 7 LTR 16 mm camera

General

Sound level 28 dB measured one meter in front of film plane (weighted A scale, .5 second integration time).

Steadiness equal to or better than **1/2000th** of frame dimensions, i.e. ± .0035.

Reflex exposuremeter : linear measure even with very fast lenses; sensitivity 50 to 400 ASA; ± **2 stops** (option **L**).

Built-in circuits for **clear and code** time marking (option **T**).

Beam splitter and relay optics (option **R**) : image bleed-off from viewing screen for video viewing.

Positive claw movement eliminating registration pin.

Interchangeable aperture plate for standard 16 mm (10.4 × 7.44 mm, ratio 1.4) and Super 16 (12.4 × 7.44 mm, ratio 1.66); no horizontal banquettes — no risk of hairs or scratches.

Electronic image counter transformable into feet and metres (option T).

Excellent balance on shoulder for handholding; adjustable walnut front handgrip.

Low profile : overall size 370 × 230 × 150 mm without lens or front handgrip.

Weight : 6 kg with 120 metres of film and battery (less lens).

Temperature range : -20° to + 50°C.

Viewing

High definition fibre optic viewing screen; 10 times magnification; open to f 4.

Exit pupil (diameter 5 mm) of standard eyepiece in film plane.

Automatic erect image plus **hand setting** for unusual positions.

Total viewing 20% greater than full field of standard 16 mm frame.

Out of sync warning by LED in viewfinder; low battery warning on same diode.

Long eyepiece (20 cm) for tripod veiwing.

Mirror shutter

Reflex viewing with single blade mirror : **180°/180°** (HMI 50 Hz, 25 i/s) and on option 188°/172° (HMI 50 Hz, 24 i/s).

Automatic stop in viewing position.

Inching knob for gate inspection.

Exterior phase control of the shutter for filming on TV screen — elimination of the bar (Atelen accessory, see page 38).

Lens mount

Diameter 50 mm.

Flange focal depth 40 mm making possible the use of most current lenses : Arri, Nikon, Eclair, «C».

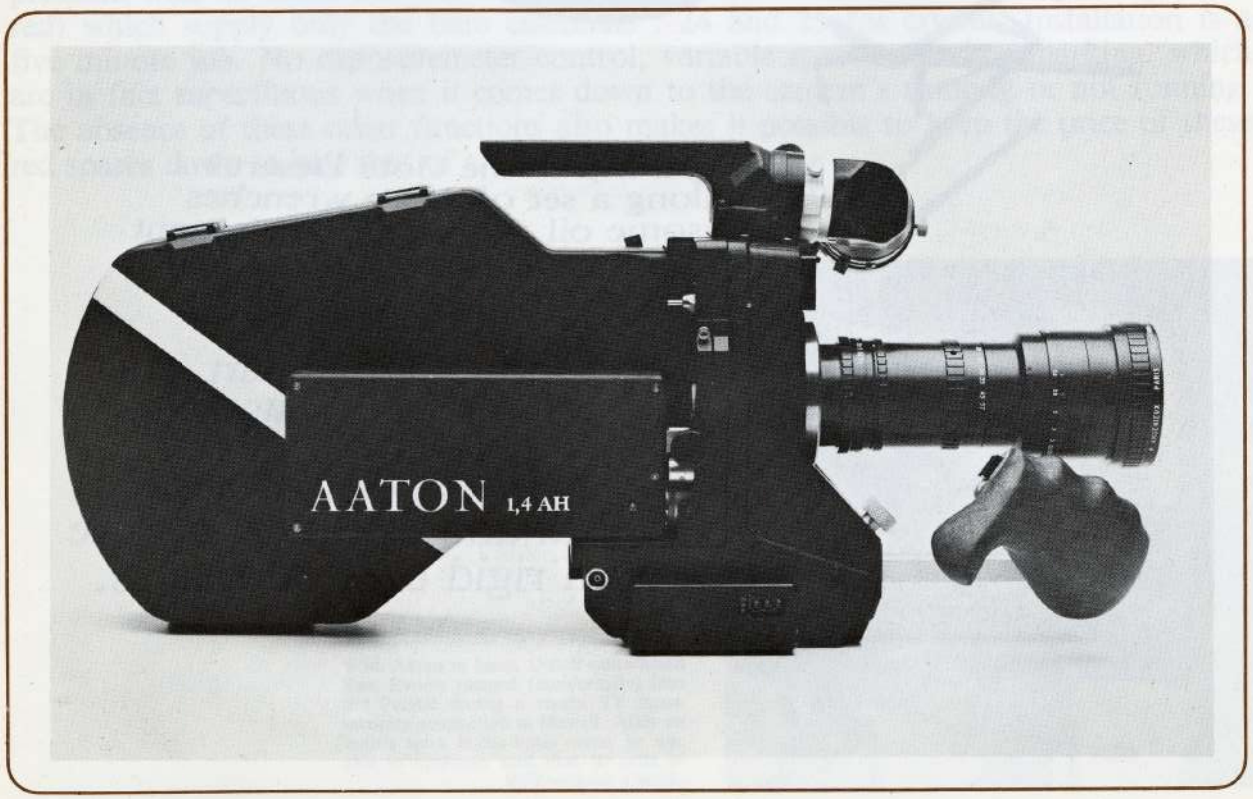
Lens locks positively into mount — no torque on lens itself.

Magazine

Coaxial, clip-on; 120 metre capacity.

Mechanical footage counter visible from the rear — large engravings.

Aäton LTR - battery in place.



Can take 30 metre daylight spools.

Special core locks to facilitate removing film roll.

Motor

DC brushless, long life.

Delivers 2400 Hz tachometric signal at 24 or 25 fps.

Plug-in electronic circuits : crystal drive at 24 or 25 fps, and seven other variable speeds (6, 12, 16, 18, 20, 28, 36 fps); single shot for time lapse; and remote control.

Out of phase warning in viewfinder and on outside of camera body.

12 V cadmium nickel battery clips on to camera : **1.4 Ah** (i.e. 600 metres of film); weight 600 gr.; dimensions 172 × 75 × 26 mm; XLR 422 C standard international connection — can be used with low loss 54 LL cable.

Power drain : 1.2 Ah ± 0.3 A at 20°.

Precision : ± 5 ppm from -20°C to + 50°C.

Exposuremeter - option **L**

Two silicon or gallium arsenic photodiodes measure the light reflected from the film itself.

Calculates i × t, quantity of light : **automatic correction** for whatever speed (fps) is set.

Test position puts exposuremeter reading into memory.

Film sensitivity knob on camera body in ASA : 50 to 400.

Precision display in viewfinder on row of LEDs : **± 2 stops in thirds** (allowing evaluation in sixths of stops).

Time marking - option **T**

Sequential marking system driven by microprocessor : **clear figures and code** incorporated in aperture plate.

Clear figures have rounded form for easy naked eye legibility.

Very high density electronic circuitry allows **incorporation into standard camera base.**

Standard crystal reference : ± 1 frame over 2 hours.

TCXO reference : ± 1 frame over 6 hours.

Video relay - option **R**

Retractable beam splitter inside camera housing : 35% reflection, 65% transmission.

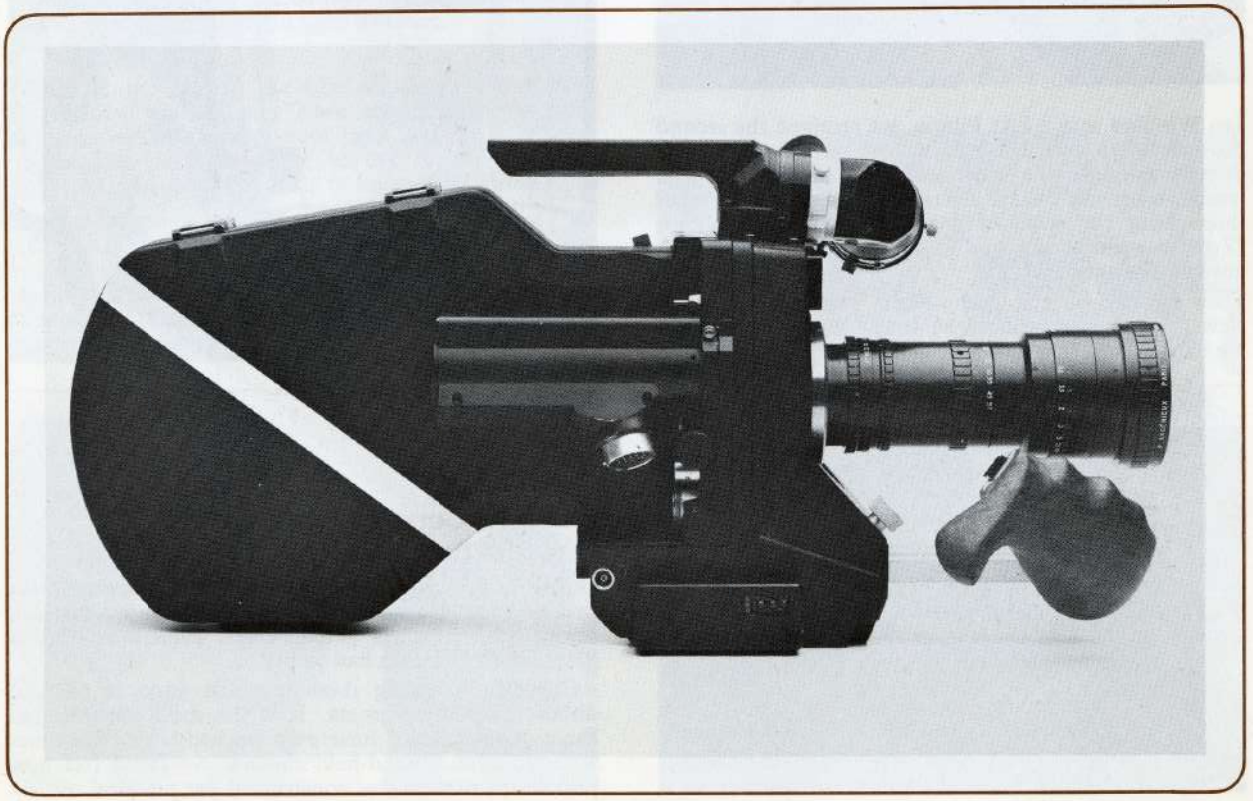
Relay lens f 1.9 to ∞ , reduction 12.7 to 11 mm.

PBX : battery and video holder for **rapid installation** of video camera.

Option R allows camera to be fitted with Aäton VR 30 video camera, Cable link (SPX 19), CTU 10-18 control unit (with or without UHF transmitter FTR 800), KWA 52 monitor, and clear video marking system INS 26) For description of this equipment, see page 31 onwards.

bold type : new specifications Photokina '78

Aäton LTR - VR 30 video head in place.

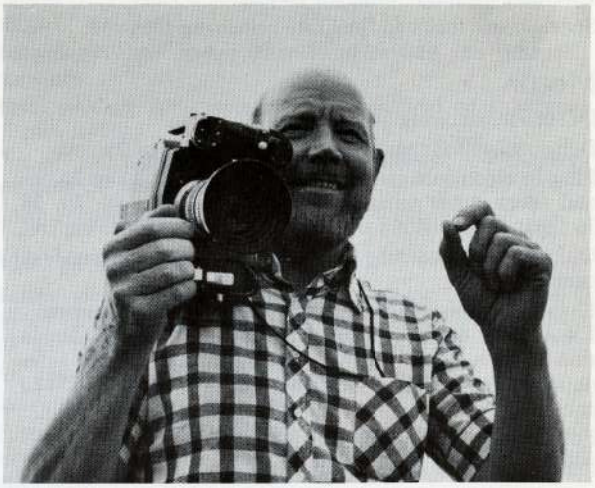


Scandinavia

Rune Ericson, the Aäton agent for Scandinavia, and a well known cameraman, has already filmed several feature productions with the Aäton. But he is not alone : to date some fifty cameras have been sold in Scandinavia, nineteen of which to the Swedish Broadcasting Corporation. Sveriges Radio (Swedish Broadcasting Corp) purchased its cameras once it had subjected two Aätons to intensive tests for a period of six months.

For Super 16 filming in Scandinavia, Aäton has become *the* camera; it has been used for a number of feature films over the last few years. The camera was designed with Super 16 in mind right from the start — the long aperture plate and high precision claw movement produce excellent image stability, making the images eminently suitable for enlargement. The blow up results from Super 16 to wide screen 35 are extraordinarily good. Rune Ericson dares a practical comparison :

« I would say that Super 16 shot on ECN II 7247, blown up to 35 mm CRI, exhibits the same visual quality as an original exposure on the old 35 mm ECN 5254 negative — a fact which should give some cause for thought to producers and cameramen the world over ».



Jan Winblad

Jan Winblad says : « At Filmia, we received the second Aäton camera ever delivered in Sweden. We then went directly out into the snow and cold of Kalix to film lumber transport trucks. There were long, exterior takes throughout the day. At worst we worked in minus 17 degrees centigrades and in snow. No sync problems, nor camera noise.

Then directly back into the warm interiors for interviews. On two occasions the sound engineer asked if the camera was really rolling — and this occurred in an office during sync shooting. We are now shooting Super 16 with equally good results.

I often shoot instruction film with technically difficult angles, for example : auto repair work. With our video viewfinder we can have a technician sit alongside and watch the entire operation on the monitor simultaneously as we film. We can rehearse in an entirely different way than we did previously since the technician can instantly check if everything is as it should be. For the moment our Aäton appears a bit worn, but so is the case with all good instruments. They continue to work as if nothing affected them. It's a camera we can depend upon.

Norway, Super 16 country, three feature films in the first half of 78

In Mo and in Rana North Norway, a railroad drama produced by Marcus Film was filmed under difficult conditions. This is what chief camerman Erling Thurmann-Andersen had to say :

« Generally speaking there is much good to be said about the Aäton camera. It is the most amiable and functional camera I have ever worked with. The times we used it as a hand-held camera, we could feel how perfect the camera was constructed for practical use. »

Freezing temperatures in Finland

Four happy Finns during the production of « Rosvo Filmi » a film shot in Super 16 about a robbery. Henry Paersch shot the film in Helsinki during the coldest February days, 18-20 degrees below zero centigrade. Everyone was wrapped in furs except the Aäton which weathered the freeze without a stitch.

North of the Artic Circle with Aäton

« The Black bear » — a Moviemaker production for TV 2, about a legendary trolley-clock at the Malmbans railway construction site which Lennart Karlsson filmed at Björkliden north of the Artic Circle. The camera was tested in minus 20 degrees prior to the start of the shooting.

Some comments from Aäton users in Scandinavia

Jörgen Persson :

« I think the Aäton is the best 16 mm camera I've ever worked with. It has a wonderfully bright viewfinder. It's smooth and easy to handle and just the right weight for hand held shooting. »

Roland Lund :

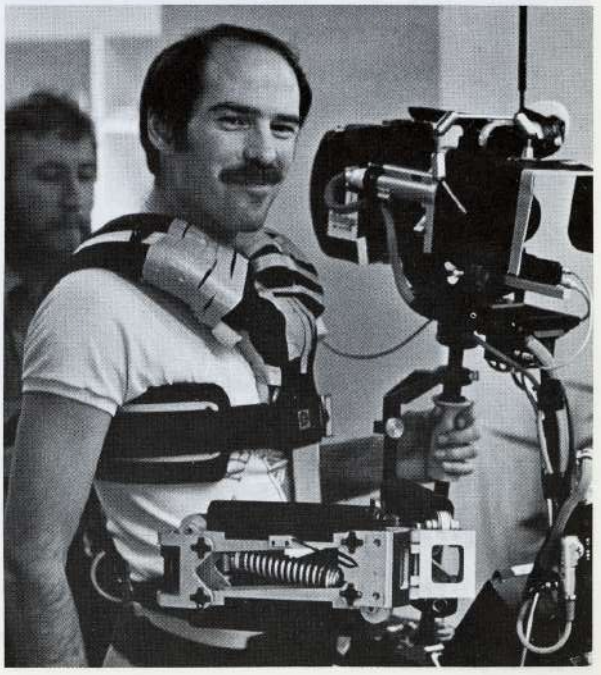
« I began the production of Peter's Baby (a TV Series directed by Hans Dalhberg) with another camera, but had problems with camera sound. Afterwards, 1 got an Aäton and it turned out to be a very positive experience. Especially when working with the large bright viewing image and with all the camera angle possibilities, particularly in tight quarters. »

Per Källberg :

« Without the Aäton, the film sequel to « They Call Us Mods » would never have made it to the can. At times we shot in such poor light that the only solution was to press the VNF to 800 ASA. There the bright Aäton viewfinder came to be a great help. »

Michael Kinmansson :

« At last a real film camera is born. The Aäton ! For a whole month this summer I had the opportunity to familiarize myself with this cinema-creation during the filming of « Captured Happiness » a TV theater production for Swedish Television. »



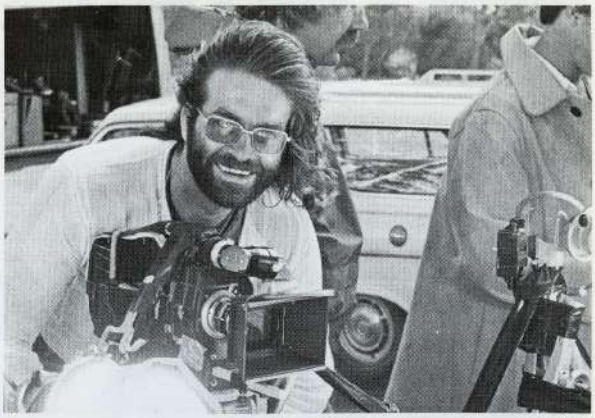
Australia

The Aäton representative in Australia, Samuelson Film Service, has a rental fleet of four Aäton cameras. These rental cameras are used on the most part for documentaries, as well as some TV films and small budget features.

Recently Kevin Lynne used the Aäton to shoot a 90 minute thriller, « The Night of the Prowler » in and around Sydney.

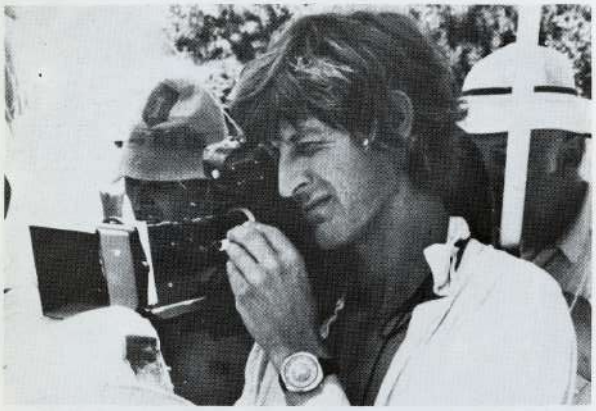
Among other productions using the Aäton are a TV special starring Julie Anthony, and a series of TV commercials filmed around the world including locations in New York, London, Europe, and the Far East.

The first privately owned Aätons in Australia have gone to former Australian Broadcasting Corporation cameramen now freelance. A cameraman of note who has made Aäton his choice is Paul Tait; he won the news section of the American Cinematography award for his work on a documentary about the famous Sydney to Hobart Yacht Race.



On location in Sydney, « The Night of the Prowler ». The man behind the camera is Simon Purton, lighting technician. The cameraman was Kevin Kynne.

Holland



On location : « The Big Red One ».

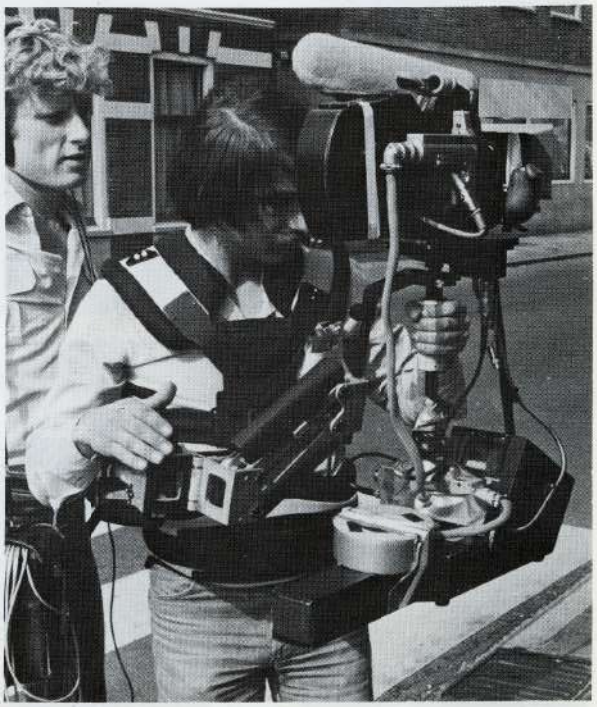
Otto Jongerius directing his first feature film : checking the frame on the KWA video monitor.

Through Holland Equipment, Aäton's Dutch Agent, over a dozen Aäton cameras are now in use in the Netherlands. Several feature productions and TV films have been made with the Aäton, among which :

— Albert Brosens' film about fishing in Holland.

— « The Big Red One », a feature production starring Lee Marvin, shot in Israel and directed by Sam Fuller.

— « Meneer Klomp » a feature production shot in Super 16 also using Aäton video system : (Cameraman : Frans Bromet; director : Otto Jongerius; production Hollandia Filmprodukties).



Frans Bromet, cameraman : Aäton Super 16 plus video plus steadicam. Hollandia Filmprodukties, Amsterdam.

Belgium

For over a year now, the Radio Television Belge has had 14 Aäton cameras. The cameras are used mainly for documentaries and news. All fourteen are on the road and problem free.

The United Kingdom

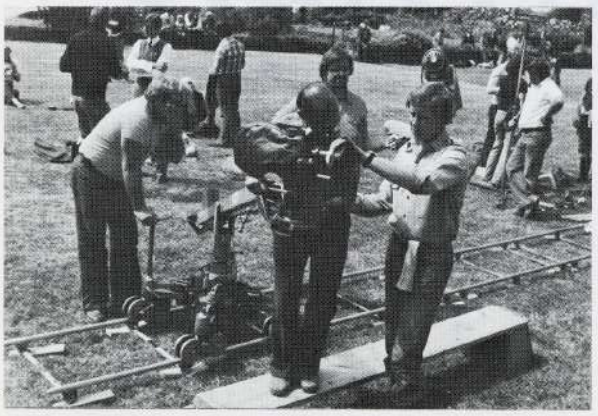
Through Nic Knowland and Stephen Mellor at ICE Co (London), the Aäton has now been in service for some three years in the United Kingdom. Some seventy cameras are now in the hands of a wide range of users, including the BBC. The initial attraction of the Aäton 7 was to the cameraman because of the simplicity of its operation, excellent handling characteristics and the general aesthetics of its appearance.

Since being introduced in the UK, the quiet running characteristic has been the aspect most enjoyed. ICE is now in a position to supply all cameras at 26 dBA ± 2 and in fact has several running below 23 dBA with 7247 stock. There can be no doubt that this enhances the creative flexibility of the camera especially on drama shoots where more and more producers are asking for the Aäton 7. They find that crews can work faster and more freely and with less tension between the sound and camera departments.

On location : « Crossroads of Civilisation ». Aäton also shoots horses.

The last few years have seen a great change in the type of equipment required in the industry, and in the techniques of filming. Michael Davis, Director of Photography on the Reconstruction unit of « Crossroads » reports :

« There has arisen the requirement for a new generation of cameras to match the new demands of the industry. So far there's only two cameras — the Arriflex 16 SR and the Aäton — that meet those demands, and it seems to me that the Aäton fits the bill specially well ».



On the scenes of « Horseman Riding By », a BBC drama serial.

« Crossroads of Civilisation », an English Aäton abroad.

Among the numerous major productions involving the Aäton, it is significant to note that the camera featured in making award winning films and series such as the Granada Television production « Hard Times ». It is also the exclusive choice of the B.A.F. T.A. technical craft award winning cameraman Chris Menges.

To date, Super 16 has not yet caught on a large scale in the U.K, but there are signs that this technique is progressively making inroads. A production currently being set up, to be directed by Ken Loach, will be shot in Super 16 using high speed lenses.

Several British rental houses are equipped with Aätons. Samuelsons have eight Aätons, and Cine Europe, AKA, Cine Focus, Tattooist, and Ray Soni also have Aätons in their rental fleets.

Granada TV Production : « Hard Times ».

Switzerland

Georges Hofer chez Salvador Dali. On the right, a composition by Dali : the Aäton plus a model of the sword hilt he will present at the Académie des Beaux Arts in Paris this autumn.

Our man in Switzerland, Georges Hofer, reports : «For 20 years I have specialized in large scale reportage and news coverage. Since the Aäton joined my professional equipment a year ago, I have shot films for la Télévision Suisse Romande : « 25 years of Swiss TV »; for Télésip-Paris « Grands Tableaux » series a film on Salvador Dali's « Leda and swan »; for the Italian TV (RAI TV2) : « La Svizzera »; Three 50' documentaries for the BBC : films on the « America » aircraft carrier, independent TV stations in Rome and the Italian communist party.

The Aäton has been reliable in adverse conditions : in the desert, and at 4000 metres altitude. It is easy to handle and stable for shooting in helicopters... and riding on a camel ! ».

Georges Hofer's personal Aäton runs at 22 dB and has done since it came off the Aäton production line.

Filming on board the « America » aircraft carrier.

Canada

There are now several Aäton cameras in Canada. The National Film Board, showing interest in Aäton since its inception, was logically among the first to have their own cameras. They also acquired the Aäton 30 hand video camera.

The other Canadian cameras have gone to Kingsway Film Equipment, Aäton's agent for English speaking Canada, and from there to the CBC for extensive tests and production use.

Allan Rubin filming the Canada Cup Challenge Yacht trials on Lake Ontario.

AATON VIDEO

professional

scientific

Video Ergo Sum

Aäton 30 Hand Video :

« With this camera, I can once more return to the movements of writing — hand and arm the link between mind and instrument. » (Armand Gatti).

The Aäton 30 system is based on the peculiarity of video technology as opposed to still and moving picture cameras : the viewfinder is not optically linked to the taking lens on either side of a darkened chamber. Video viewing allows what photographic viewing does not : a lens and an electronic sensor collect information from the outside world, and a separate electronic display shows the framing at a distance.

The Aäton 30 carries to an extreme the separation of these two functions (sensor/lens, and framing) by making both elements as small and independent as possible : the **« lens head » is in the hand,** and the framing screen in removed from the eye and put on the chest or waist. The lens now has access to what it could not otherwise observe; **the frame is no longer imposed by the shoulder and the head,** but instead **determined by the arm, the hand.** A new sensation : an eye at one's fingertips.

For this eye to see farther, and better to exploit its sight, Aäton has given the hand video camera the necessary complements : UHF video transmitter (see p. 35) to eliminate lugging VTRs about, and video time marking (see p. 36) for **easy editing** and classification of video documents.

Find the hidden CX 30 video camera.

The Hand Video System in Use

Interviewer and subject. CX 30 camera head, in hand, monitor and battery on belt, left hand side; control unit with transmitter on belt, right hand side. Headphones because this CX 30 has the sound option with a built in microphone. « Excuse me Sir... »

The subject seems to feel at home with the camera... maybe he doesn't realize that a VTR a few yards away is taping his every movement.

How can I interview the man if he takes my tools away? I don't want the umbrella.

It's easier to interview somebody if you can get close to him.

Aäton 30

professional video camera

The two basic components* of the Aäton black and white video system are the **CX 30 video head** (containing video tube, deflection yokes, and pre-amp circuitry) with C mount adaptor, and the **CTU 10-18 control unit** containing video signal processing and synchronisation functions. Low weight, small size, low power drain, high sensitivity, and stable electronic circuitry make this system particulary well adapted for three types of use.

1. **Technical, scientific and medical applications.** (see p. 32).

The advantages of its very small volume are clear : **insertion into measuring instruments** etc. is feasible with little modification. The CX 30 video head can be housed in a small enclosed area without heating problems (low dissipation : 6 W) — the circuitry is in the CTU 10-18 control unit several meters away. The low inertia and very small mass of the system make it stand up to vibrations easily.

When reliability and small space are of prime importance, this system has an important role to play : medical endoscopes and microscopes, metallographic analysis, probes, architecture scale model study, computerized identification and sorting, automotive testing. The camera can run in single field mode, thereby increasing definition and allowing the use of computer video data.

2. **Cinematography.**

The VR 30 is a special version of the CX 30 for adaptation onto 16 and 35 mm cameras as video finders (see p. 32). It has been adapted onto the 35 BL and the Panaflex, and can be fitted into several common 16 mm cameras with a minimum of modifications and parts. The choice of **3 standards** (525 lines/30 fps, 625 lines/25 fps, and 651 lines/24 fps), **and high sensitivity** means the camera can be used for video pick-up on a number of various types of cinematographic equipment. In addition, scanning inversion and positive/negative image provide applications for correcting mirror images (or viewing through a mirror) and viewing film negatives.

3. **News and reportage** : hand viewing (see p. 30).

As the CX 30 can be handled **like a microphone at arm's length,** the cameraman is free to choose a wide variety of unusual shooting angles retaining total mobility. Because the camera is light and small, a non-professional or even a child can use it with ease; it can be attached to a pole or even dissimulated. A simple tripod attachment is available also. The high performance video signal processing circuits plus a sensitive tube (eg. Newvicon 4113X extended into infra red range) make it possible to shoot in very low light conditions (eg. 0.1 lux on the target).

Aäton CX 30 video head. Actual size.

* This video system is the beginning of a whole series of equipment : see following pages.

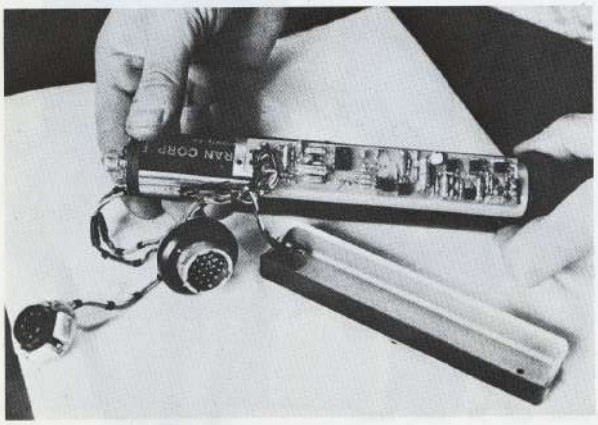
Video head (CX 30, VR 30)

The head, in itself very small **(36 mm in diameter)** contains a 2/3" tube (lower lag than 1" tubes). The video head circuits **accommodate both ordinary Vidicon tubes** (normally used in black and white cameras with automatic gain control for surveillance applications), **and the latest high quality tubes** such as the Saticon and Newvicon (originally designed for color cameras).

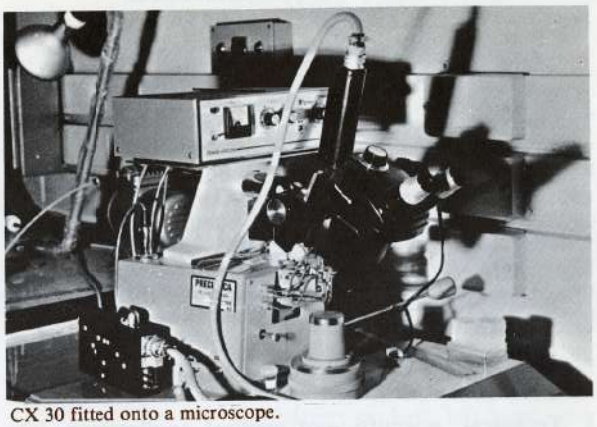
The video head is connected to the control unit by a 19-wire cable with Socapex bayonet lock plugs (length 1.25 m, 3 m, 5 m; 12 m on special order). An adaptor can be screwed onto the front of the head, adjusting back focus for all lens types; the standard video head is delivered with a «C» mount adaptor. The deflection yokes and electronic circuits for high voltage distribution, and low-noise field effect transistor pre-amplifier are also part of the video head.

CX 30 above, VR 30 below.

When the housing is opened to change Vidicon tubes the target voltage and high voltages can be modified in function of the new tube's specifications. For example the 8 V target voltage will go up to 35 V if a Silicon tube is replaced by a Newvicon tube.



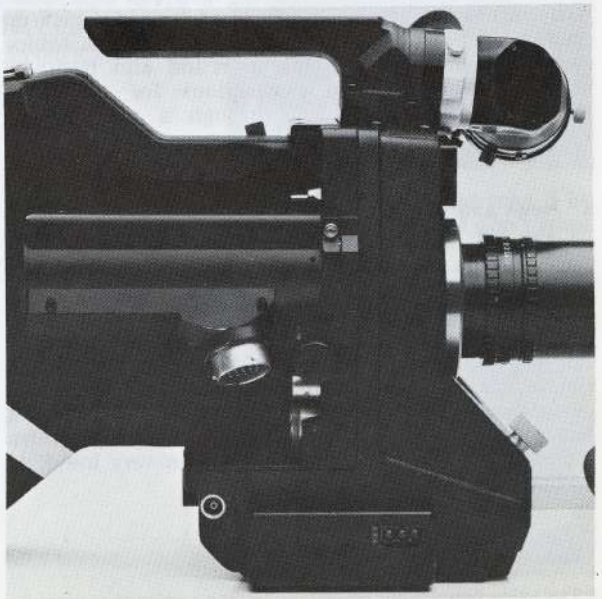
Changing the video tube.



CX 30 fitted onto a microscope.

Specifications

CX 30.	VR 30.
Diameter : 36 mm.	Diameter : 36 mm.
Overall length : 157 mm.	Overall length : 130 mm.
Weight : 300 gr.	Weight : 300 gr.
2/3" vidicon tube : see graphs.	2/3" vidicon tube : see graphs.
Deflection yoke printed circuits.	Deflection yoke printed circuits.
SPX 19 cable connection from the rear.	SPX 19 cable connection on side of housing.
Optional microphone.	Amphenol connector for control signals.
Distance between front surface and target : 17.54 mm with «C» mount.	Distance between front surface and target : 6 mm.



The VR 30 video head in position on the Aäton 7 camera.

Comparison of different video tubes

Given the various requirements made of the Aäton 30 video system, certain tubes are more suitable to particular applications. Below is a list of some of the tubes used in this camera.

CHALNICON E 5072 (Cadmium Selenide)

— very sensitive in visible range : 250 nA/1 lux.
— good definition : 600 TV lines.
— average blooming.
— high lag at low light levels.
— very resistant to intense light.

Use :

This tube is used less and less for reportage, because it has too much lag for interior shots with « domestic » lighting. It is recommended for technical applications where sudden bursts of light may occur.

NEWVICON S 4075 and S 4113X* (Cadmium, Zinc, Tellurium)

— very sensitive in visible range : 300 nA/1 lux.
— good definition : 500 TV lines.
— low blooming.
— acceptable lag at low light levels.
— burn-in damage if directed at the sun with a lens opened to more than f 11.

4113 X is extended into the infra-red range; characteristics otherwise similar to S 4075.

Use :

Despite the sun risk (on sunny days the lens is stopped down to at least f 16 if not f 22 in any case — the risk of burn-in is therefore nearly nonexistent) this tube is rapidly becoming a standard for reportage; high sensitivity and low lag make it a good all-round tube.

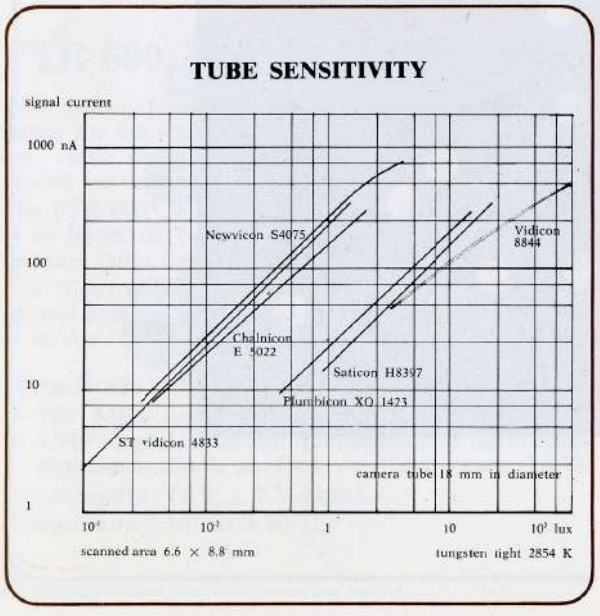
4113 X because of its infra-red capacity is also suited to surveillance and technical observation applications.

VIDICON XQ 1271 (Antimony Trisulphide)

— low sensitivity : 10 nA/1 lux — comparable to the high dark current of the tube.
— good to very good definition : 500 to 650 TV lines.
— acceptable blooming.
— high lag at low light levels.
— easily marked by intense light.

Use :

Surveillance cameras in well lit conditions, and work with automatic gain systems. (This tube is very inexpensive — about a fifth of the price of a Newvicon).

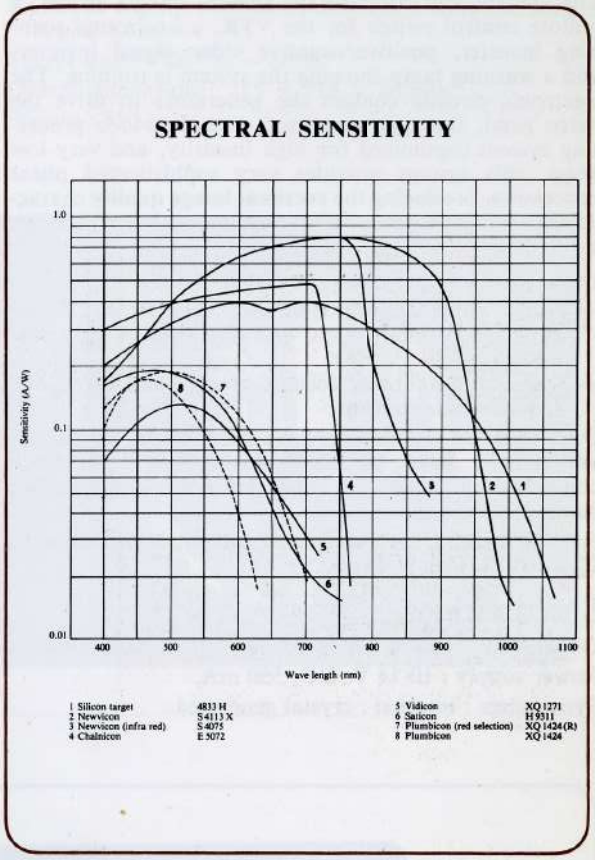


SATICON H 9311 (Selenide - Arsenic - Tellurium)

— average sensitivity in the visible range : 15 nA/1 lux.
— excellent definition : 650 TV lines.
— low blooming.
— low lag at low light levels.

Use :

The signal uniformity and definition of this tube suit it well for black and white applications in scientific measurement where low sensitivity is not a disadvantage.



PLUMBICON XQ 1424 (Lead Monoxide)

— average sensitivity in the visible range : 20 nA/1 lux.
— good definition : 500 TV lines.
— low blooming.
— very low lag (the lowest).

Use :

This rather expensive tube is recommended by its low lag and high signal uniformity.

ST VIDICON 4833H (Silicon - low blooming)

— very sensitive in red and near infra-red range, less so in the visible range : 250 nA/1 lux.
— acceptable definition : 400 TV lines.
— low blooming.
— acceptable lag at low levels.
— in the industrial model, often has defects on the target (marks).

Use :

Its resistance and infra-red sensitivity make this tube suitable for reportage in low level tungsten lighting. However its poor rendition of flesh tones and fair definition would limit use more to surveillance than to reportage.

* These two tubes are most often chosen by Aäton 30 users.

Control unit CTU 10-18

The control unit can be installed up to 12 metres from the video head. Its flat shape makes it easy to install in various situations; it can be attached to the cameraman's belt, or added onto the base of a film camera. It can easily be fixed into the wing of a plane, or onto the cover of a VTR. The power supply is from either a 12 V battery (Cannon XLR 442), a VTR (using the universal 10 pin EIAJ cable : length 2 to 30 metres), or a mains power supply.

Video output through either EIAJ or BNC plugs, or Jaeger 4 plug to the KWA 52 control monitor.

The control unit contains the general on/off switch, a remote control switch for the VTR, a horizontal scanning inverter, positive/negative video signal inverter, and a warning lamp showing the system is running. The electronic circuits contain the generators to drive the video head, the sync generator, and the video processing system (optimized for high linearity, and very low noise, this system provides very sophisticated phase processing, producing the **excellent image quality** characteristic of the Aäton 30). Professional components throughout ensure high reliability.

Initial settings :

— choice of standard to be used : CCIR 625 lines/ 25 fps, 525 lines/30 fps, and 651 lines/24 fps (cinematography).
— scanning amplitude, focus current, black level, and contour enhancement.

Once these initial settings have been made, **no further adjustments need be made during use :** feedback compensation techniques on beam, focus and scanning currents do the job.

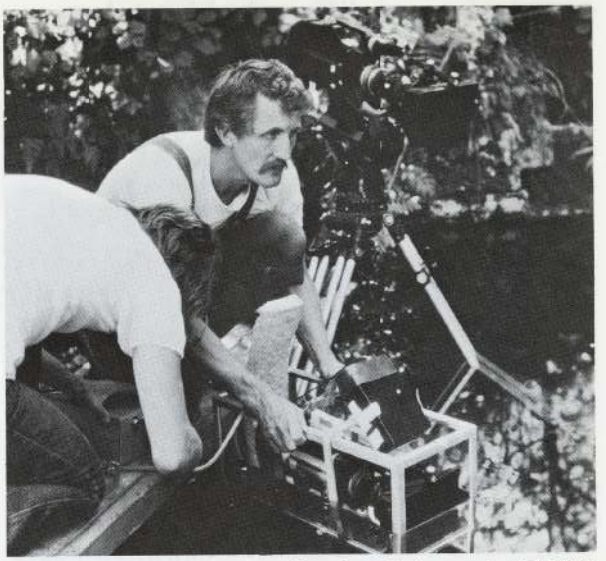
A UHF video transmitter can be incorporated into the CTU 10-18. (See p. 35).

Specifications

Dimensions : 180 × 100 × 35 mm. Weight : 700 gr.

Power supply : 10-14 V. DC; 550 mA.

Sync pulses : internal : crystal generated.



Filming a children's film «Grandma through the woods with Eight Children» in Sweden. The Aäton on the tripod is film only; the one in the water film plus video. Monitor attached to top of water housing.

Sync pulses : external :, separate, horizontal and vertical pulse (EIAJ) HdVd; negative pulses; amplitude > 3 V.

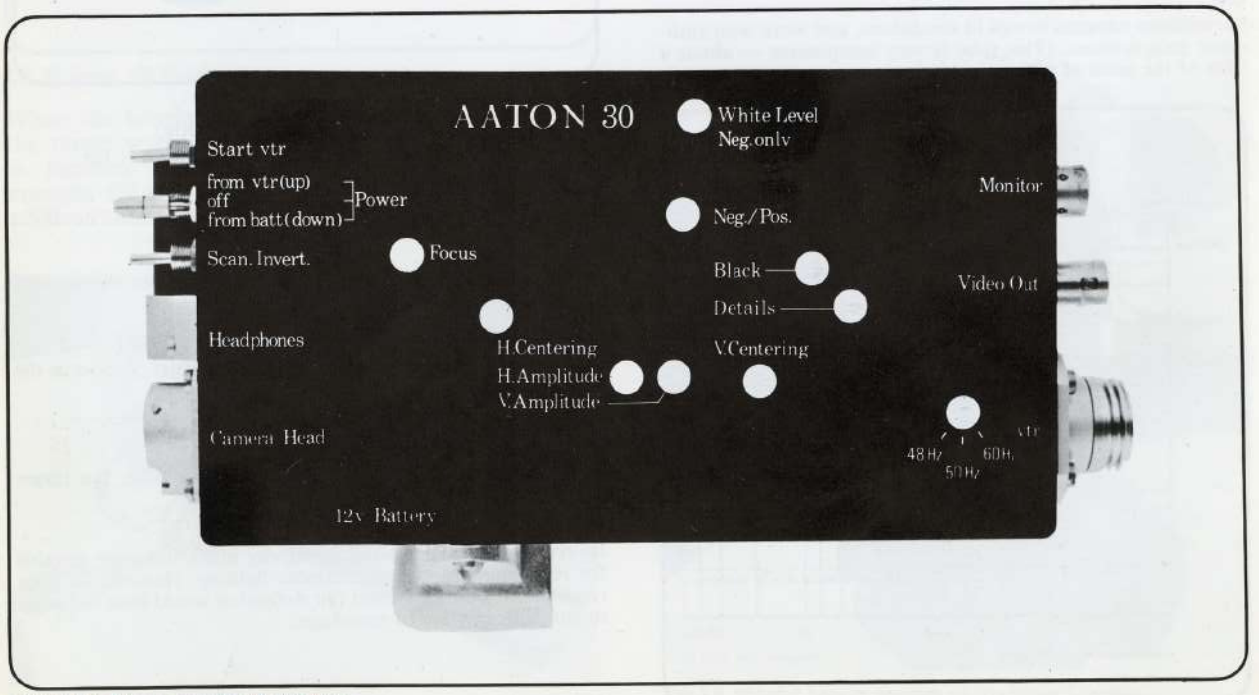
Video output : 1 V composite signal.

Scanning standards compatible with US, Japanese and European line frequencies for VTRs and video monitors : 625/50, 525/60, 651/48 (24 fps cinema) : 2 : 1 interlace.

Video bandwidth : 6 MHz in. at 1 dB. Resolution : > 450 lines for Si tube; > 500 lines for CdSe tube. Gamma correction $\delta = 5$.

Sensitivity : depends on the tube used; correct functioning with Newvicon at about .1 lux on the target.

Environment : ambient temperature -10° to +50°C. Humidity : 95 % non-condensing.



CTU 10-18, three quarters of actual size.

KWA 52 Monitor

The **miniature** KWA 52 is well adapted for **video monitoring in instrumentation** and audio-visual applications: good definition on small screen, video amplitude measurement, shift of vertical sync interval, and scanning inversion are features of this monitor.

Functions

1. Continuous monitoring of video signal amplitude with **black level clamping.**

2. Video signal **amplitude measurement** by vertical sampling and display of peak signal; the minimum level (black) is on the vertical sampling line, and maximum (white) on the right hand side of the frame.

With this system, it is possible to set the right exposure of a video camera, whatever the amount of surrounding light on the control monitor.

3. Vertical time base shift, **allowing the «retrace» signal and indications contained in the vertical blanking area to appear** (clear time numbers or various carriers).

4. Horizontal definition 450 lines (improved over earlier model KWA 0), and pre-accentuation, allowing excellent check of camera focus.

5. **Vertical scanning inversion** for viewing in a mirror.

6. Venetian blind type protection screen improving contrast in high surrounding light.

Signals

1. CCIR video and standard cinema signals on Jaeger 4 plug (pins 1 and 3), 75 Ω terminated or not.

2. Power supply : 12 V ± 2 V (350 mA) on Jaeger 4 pins 1 and 4.

Temperature : -20° to + 60°C.

Overall dimensions : 185 × 115 × 66 mm.

Weight : 850 gr.

KWA 52 monitor, actual size.

FTR 800 Transmitter

Low power, frequency modulation **UHF video transmitter** for use when transmission by cable is impossible (eg. video camera on alternator rotors, or on scale models for industrial research).

The FTR 800* is a very low power transmitter — use in an imperfect Faraday cage does not result in objectionable radio frequency leakage in the public domain.

The transmitter is incorporated into the CTU 10-18 control unit (see p. 34), and adds 200 grams and 15 mm to its size. Code CTU 10-18 E.

Functions

— 720 MHz typical carrier, frequency modulation.
— UHF amplification and transmission on 120 Ω omnidirectional dipole antenna : radiated power 2 mW.

Power supply : 12 V ± 2 V 40 mA.

Temperature : -10° to + 40°C.

N.B. — A reminder that the transmission of radio frequency in the public domain (outside a Faraday cage) is subject to strict regulations in most countries.

FRX 800 Receiver

The FTR **receiver** demodulates signals from the FTR 800 transmitter, and can be at a distance up to 100 metres from the transmitter.

Functions

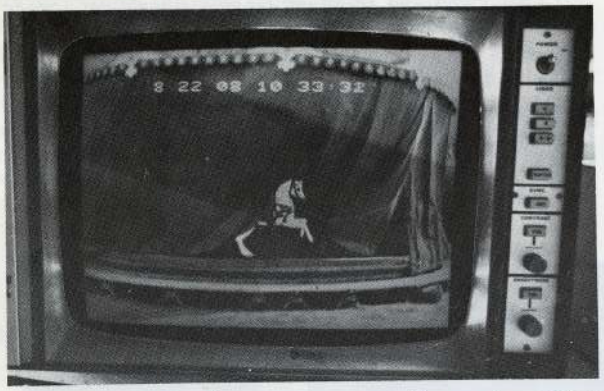
— Manual setting and automatic frequency control.
— Demodulation by frequency shift (Fi = 33 MHz) and discriminator.
— Bandwidth 4.5 MHz (i.e. 400 to 450 lines definition).
— Video out BNC 75 Ω and Jaeger 4 to INS 26 or KWA 52.
— Power supply 12 V ± 2 V (300 mA).

Exterior dimensions : 70 × 145 × 300 mm.

Temperature : -10° to + 40°C.

INS 25 and INS 26 Video time generator

Microprocessor run **video time generator and inserter** for audiovisual, cinematography and physics instrumentation. This machine, linked between a video camera and a VTR gives extremely simple time marking to all existing video equipment, including 1/4" VTRs.



Video image with time insert on upper part of screen August 22nd, 8:10 am, 33 seconds, field 32.

Functions

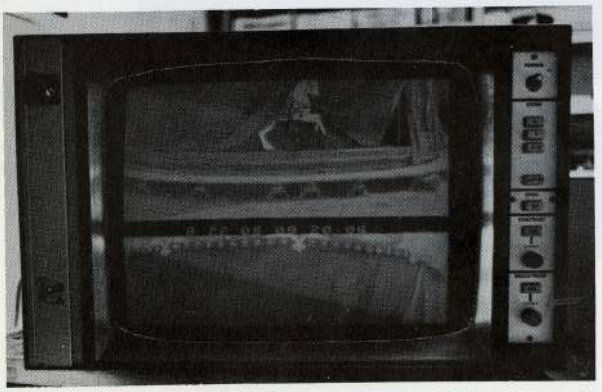
1. **Inscription of figures on video signal** (field number, seconds, minutes, hour, day, month) from an internal crystal clock (± 5 ppm from -20 to +50°C) for INS 25, or TCXO (± 1 ppm from -10 to +45°C) for INS 26.

2. Automatic frequency adjustments for 24 fps/651 l, 25 fps/625 l, and 30 fps/525 l.

3. The internal clock is set either by EBU master clock HM Mark II to local time (year month day hour minute second...) or by a general zero start (cutting off power supply).

Once the system is started up, it functions like a time-keeper, and does not need to be linked to a time source.

4. The figures can be positioned **in the visible part of the image** on the top or bottom of the screen for scientific and technical applications. Alternatively they can be set **off the screen in the vertical blanking area;** this is necessary in audio-visual use when it is important not to perturb the image on the screen. In order to see the figures, in this case, the monitor needs to have vertical scanning shift — the Aäton KWA 52 miniature monitor has this feature.



Time figures in vertical blanking area. August 22nd, 8:09 am, 20 seconds, field 5.

Signals

1. Processing of CCIR 25 fps/625 lines and 30 fps/525 lines, as well as any special signals such as cinematography's 24 fps/651 lines.

2. As this system is in fact a current generator, it is totally transparent to the video signal; i.e. no signal deterioration even when the power is off.

3. The EBU II setting signal is PCM at 2.4 KHz clock frequency with video-like negative sync pulses. Input on a Lemo miniature coaxial plug.

4. Control LED blinks when power is under 10 V.

5. Power supply (12 V ± 2 V) on any one of the following standard input connectors :
   Honda 10 (VTR) pins 9 (ground) and 10 (+ 12 V).
   Cannon XLR (cinema) pins 1 and 4.
   Jaeger 4 (instrumentation) pins 1 and 4.

Dimensions : 185 × 115 × 66 mm.

Weight : 700 gr.

Temperature : -20° to + 60°C.

Canvas bag containing UHF receiver (FRX 800), monitor (KWA 52) and video insert system (INS 26).

HM Mark II Master clock

A **microprocessor run clock,** HM Mark II elaborates the time information necessary to set sound recorders, film cameras, and video time inserters in accordance with both EBU recommendations EBU I (IRT) and EBU II (TDF).

Functions

1. Input : Keyboard (similar to hand calculators) to enter date and time information — either local time, or any other information.

2. Internal crystal clock ± 1 ppm from -10° to +40°C; maximum error of ± 1/2 frame over 5 hours at 25 fps.

3. Date and hour (minute etc) on liquid crystal display (useful for script assistant).

4. Generation of electric setting signals to either EBU II TDF standard (continuous 2400 Hz PCM, with video-like sync signals) or EBU I IRT standard : high frequency pulse bursts triggered by pressing a button.

This feature allows a single HM Mark II to set a Nagra IV or Stellavox with EBU I or EBU II code generator, and an Aäton LTR with EBU II input circuits.

Dimensions : 25 × 66 × 115 mm.
Temperature : -10° to +40°C.

IRG 2122
Video inserter

Microprocessor driven **video inserter** for use in aeronautics and physics (IRIG B code).

In accordance with military standards as concerns vibrations and radioelectric interference.

The use of a microprocessor simplifies the IRIG decoder, and increases reliability (low heat dissipation (6 W) and small circuit mass).

Functions

1. Inscription of **time information on video images** (tenths of seconds, seconds, minute, hour, and day or various other indications) from an IRIG B time generator. No internal clock.

Display is in sync with IRIG time markers; an anticipating system calculates the correct time to be displayed eliminating end of minute errors.

2. Inscription of **electronic graticules** by internal digital generators.

3. Special execution : adjustable electronic graticule using an external numeric control.

Signals

1. The video signal to be processed must be to the CCIR standard : 525/625 lines on 75 Ω . IRG 2122 is a current generator — **totally transparent** to the video signal. There is no signal deterioration, even when the system is not powered. [BNC input and output plugs].

2. The IRIG B signal (digital signals modulating a 1 KHz carrier's amplitude and duration) can vary from 1 to 10 Volts peak to peak. Two diodes give a check on the level. [BNC input plug].

3. The remote control signals (display of day or other indications; presence or absence of electronic graticule) are digital : 0 - 5 V; 1 KΩ . [Input on a 19 pin Bendix].

4. Power supply : from 15 to 50 V (300 to 150 mA) 28 V nominal, high frequency converter. [3 pin Bendix].

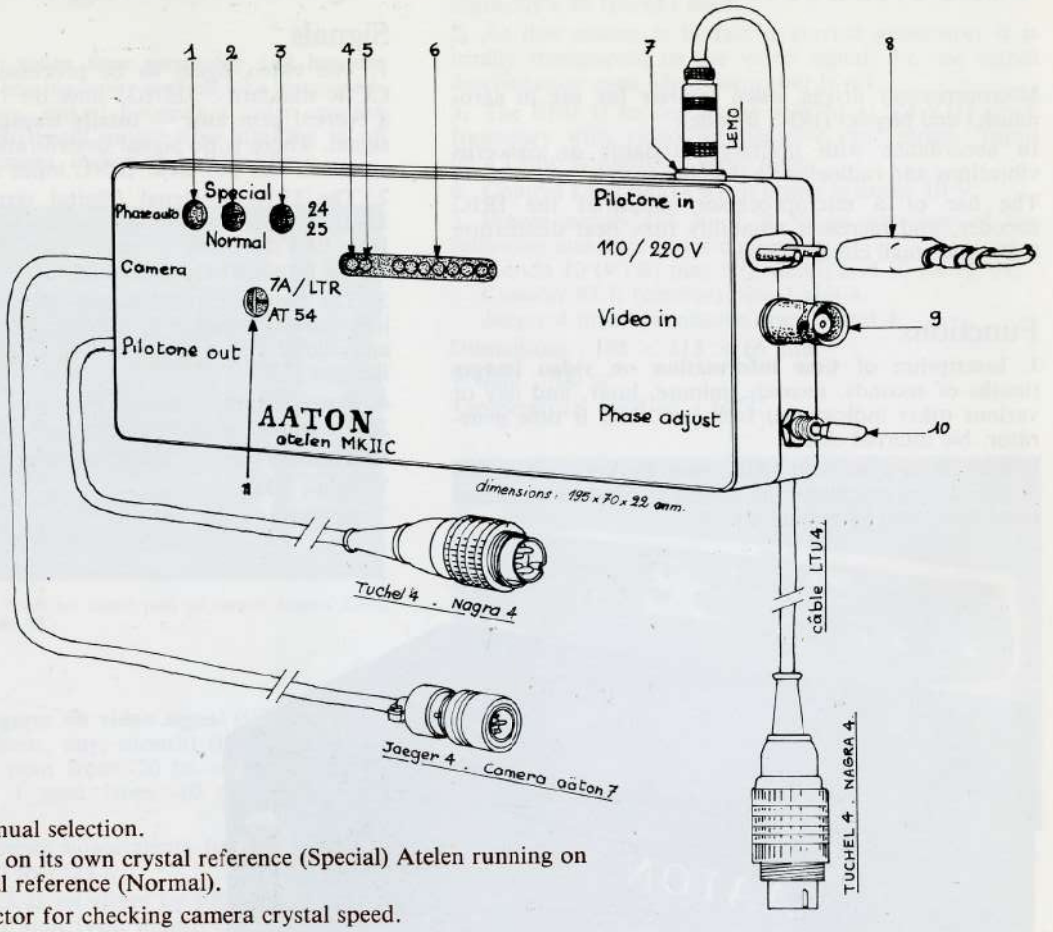
Dimensions : 165 × 110 × 100 mm (on board housing).

Weight : 1 kg.

Temperature : -20° to +60°C.

IRG 2122 video data inserter.

Atelen Mark II c



1. Automatic/manual selection.
2. Atelen running on its own crystal reference (Special) Atelen running on camera's crystal reference (Normal).
3. Frequency selector for checking camera crystal speed.
4. LED lit at 24 fps, out at 25 fps.
5. LED lit during periods when Atelen accelerates camera (phase tracking).
6. Speed control LEDs.
7. Pilotone input 50 cycles 1 V RMS.
8. Mains input 50 cycles 80 to 240 V RMS.
9. CCIR video input.
10. Manual phase setting.
11. 7A/LTR : 2400 Hz on Jaeger 4 plug — AT 54 : 1200 Hz on Jaeger 4 plug.

When film cameras are linked up with other audio-visual equipment, very often they must be not only synchronous (filming with HMI lighting), but also in phase (kinescoping from a VTR). The Atelen carries out these functions on both the Aäton 7 and the Eclair 16 equipped with AT 54 motor.

1. Slaving the camera phase to an external reference such as a video signal, a sound recorder or camera pilotone signal, or 50 cycle mains. With the Atelen, the phase can be set so as to eliminate the TV bar; once the initial setting has been made, **the camera shutter is automatically shifted** to the right phase at each start-up.

2. Checking the camera's crystal speed. The display functions as a stroboscope, comparing camera crystal speed and the crystal clock in the Atelen. Any discrepancy in the camera speed as observed on the shutter shows in a line of flickering LEDs on the Atelen.

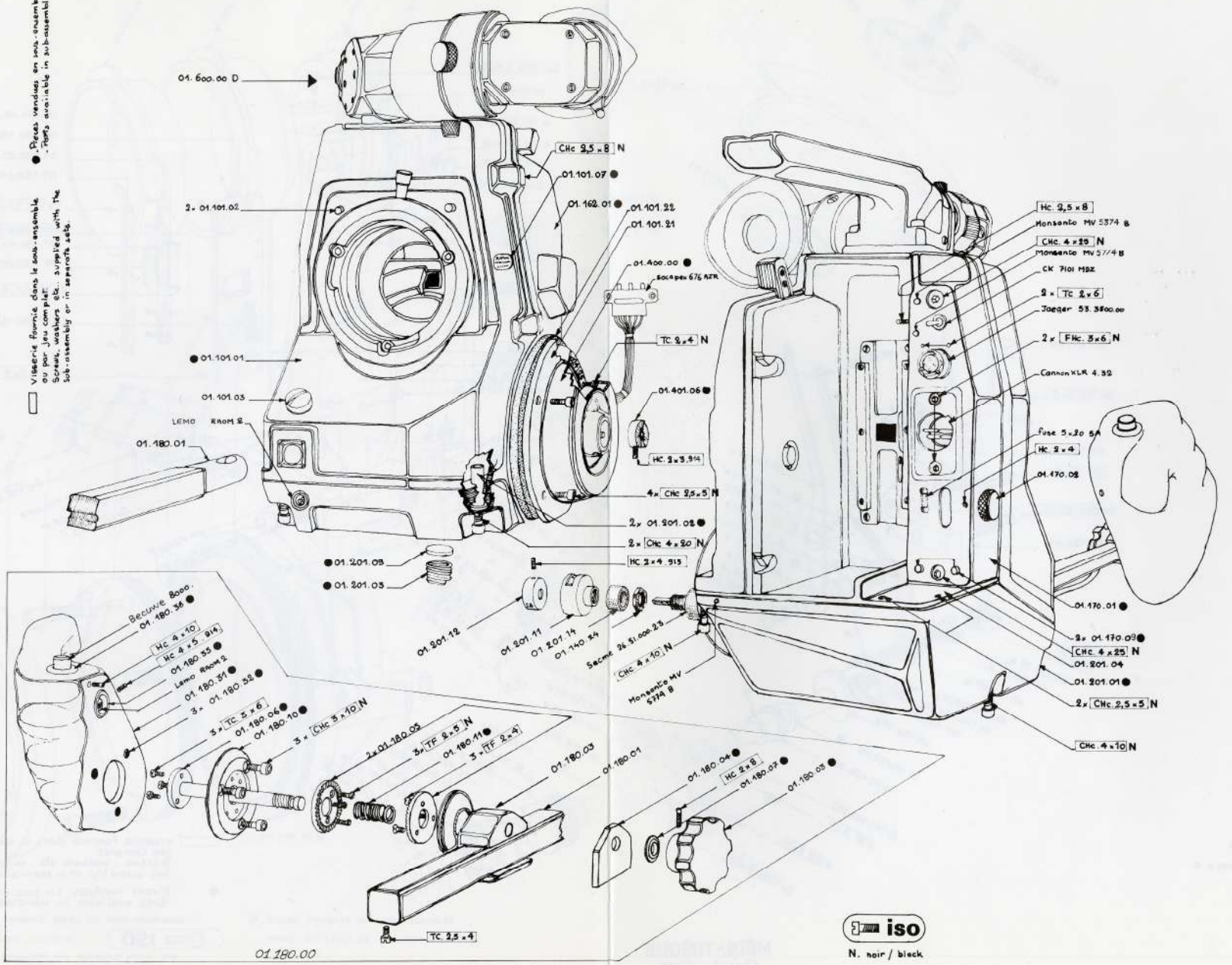
The crystal reference frequency in the Atelen can, if necessary, replace the camera's internal reference (broken crystal).

The Atelen supplies a 50 cycle sinusoidal pilotone signal (1 V RMS) generated by the internal crystal; when a 50 cycle input frequency is connected to the Atelen, the signal is then generated by the input, and no longer by the crystal. This means it is possible **to kinescope a video programme** from a VTR without any sync problems.

The Atelen is a useful accessory for the cameraman, providing a solution to unexpected frequency and phase problems. For example, a camera driven by 50 cycle mains through the Atelen can **film flicker free with any shutter in HMI lighting.**

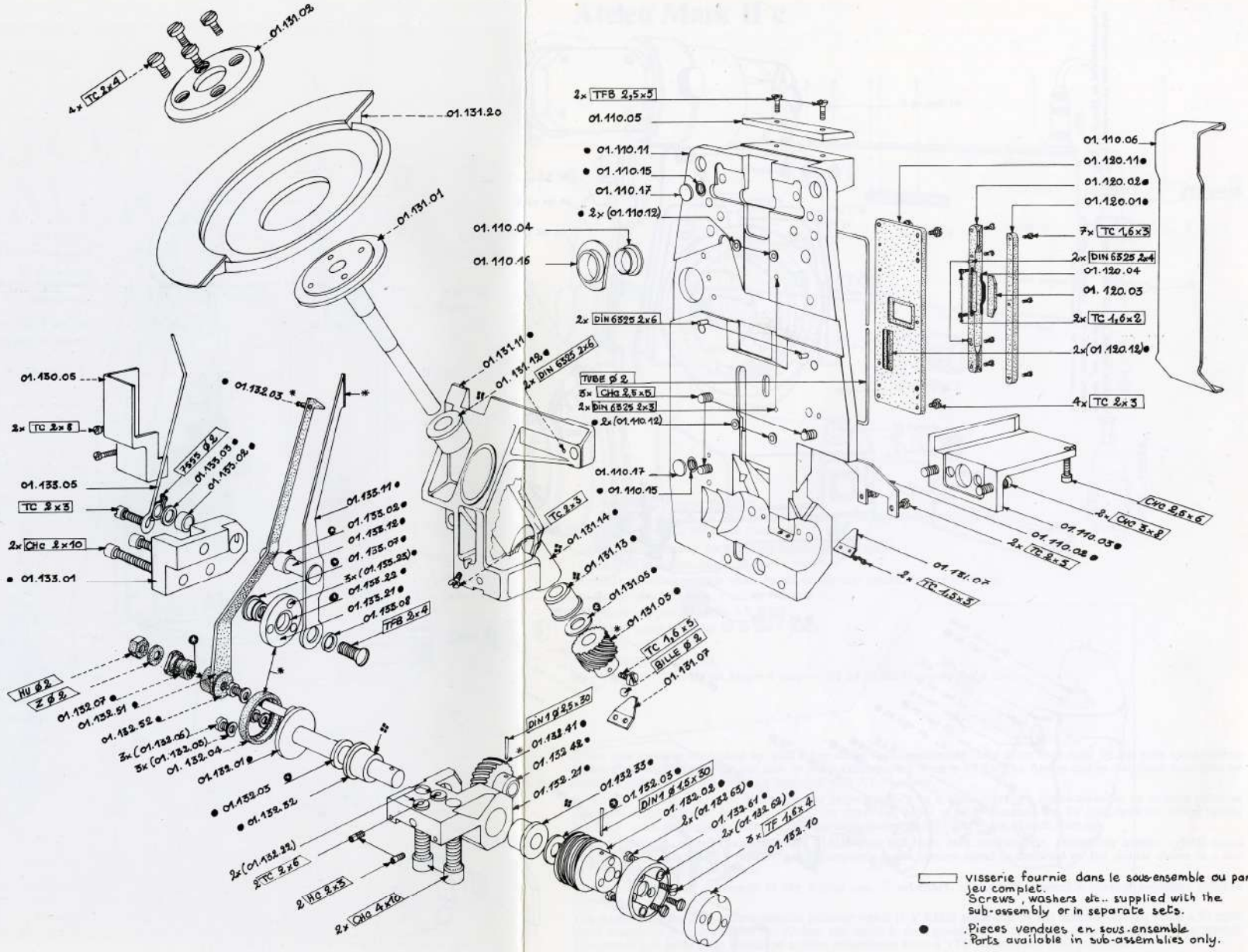
● Pièces vendues en sous-ensembles
. Parts available in sub-assemblies only.

□ Visserie fournie dans le sous-ensemble ou par jeu complet
Screws, washers etc. supplied with the sub-assembly or in separate sets



iso

N. noir / black



- TONNA ø2 SHELL
- AEROSHELL GREASE 6
- J 43 ESSO

Visserie fournie dans le sous-ensemble ou par jeu complet.
Screws, washers etc.. supplied with the sub-assembly or in separate sets.

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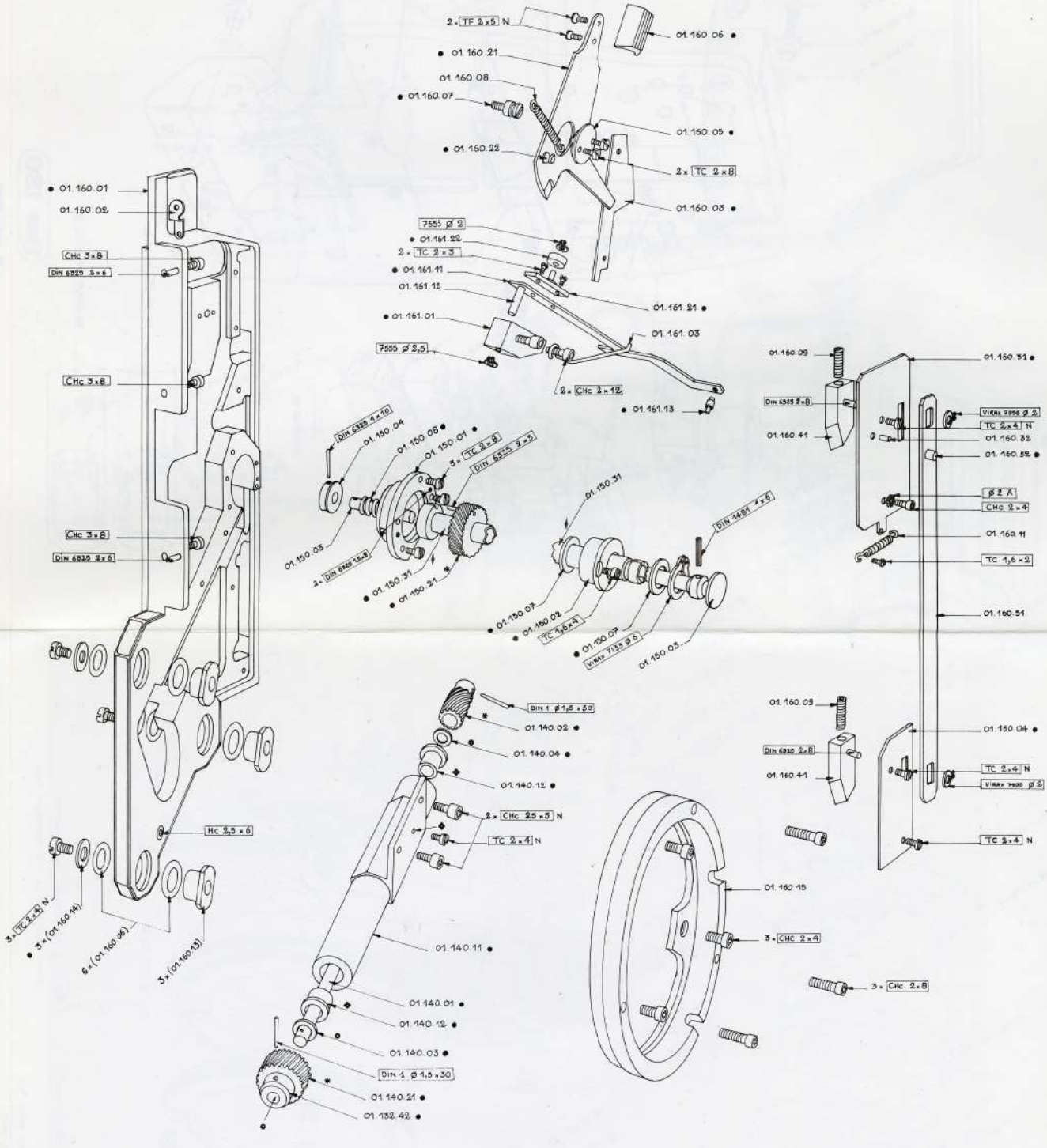
ISO



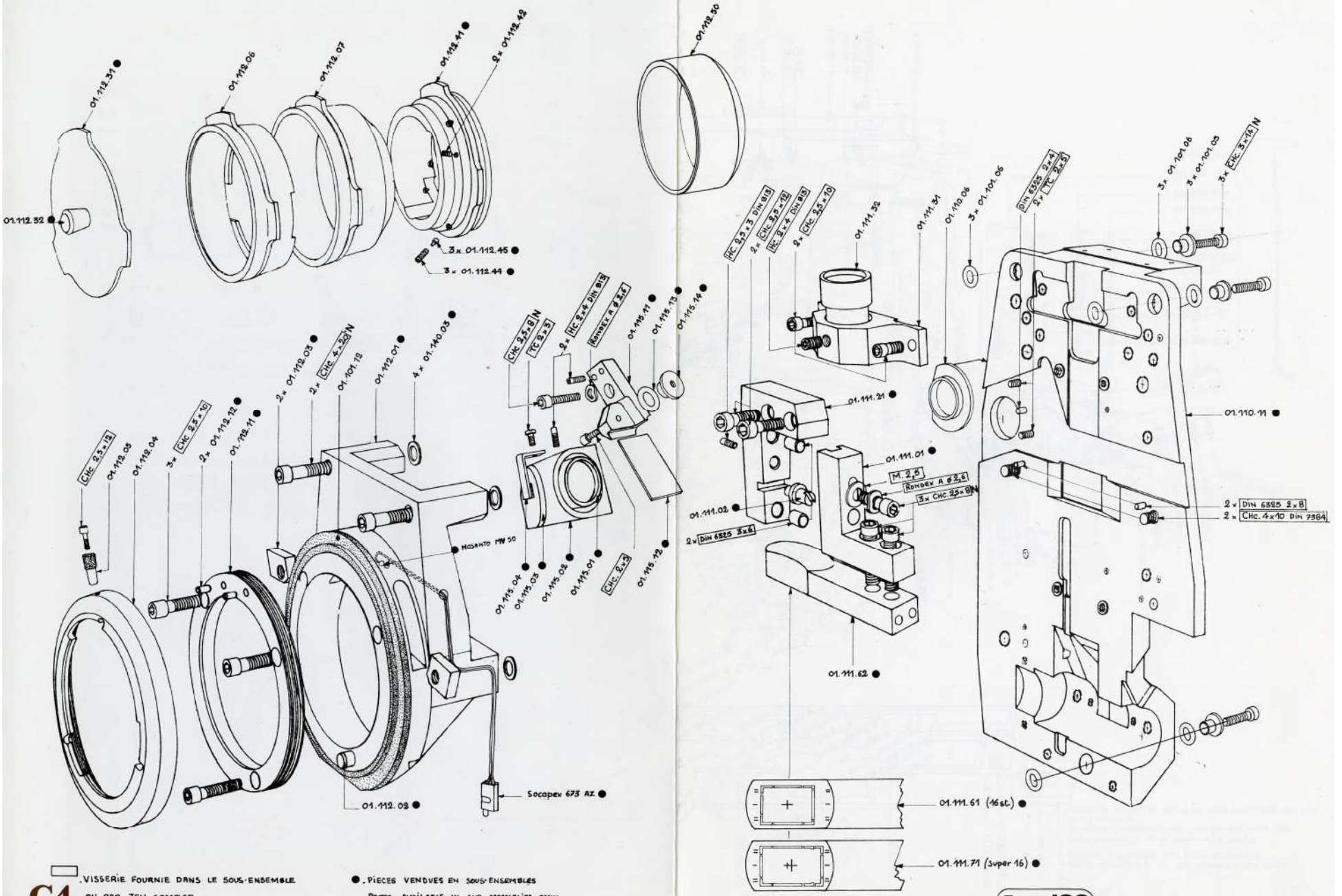
○ TONNA 72 SHELL
* AEROSHELL GREASE 6
◆ J43 ESSO
ESSO UNIVIS J 26

▭ VISSERIE FOURNIE DANS LE SOUS-ENSEMBLE OU PAR JEU COMPLET.
SCREWS, WASHERS ETC. SUPPLIED WITH THE SUB-ASSEMBLY OR IN SEPARATE SETS.

• PIECES VENDUES EN SOUS-ENSEMBLES.
PARTS AVAILABLE IN SUB-ASSEMBLY ONLY.

iso

N : noir / black



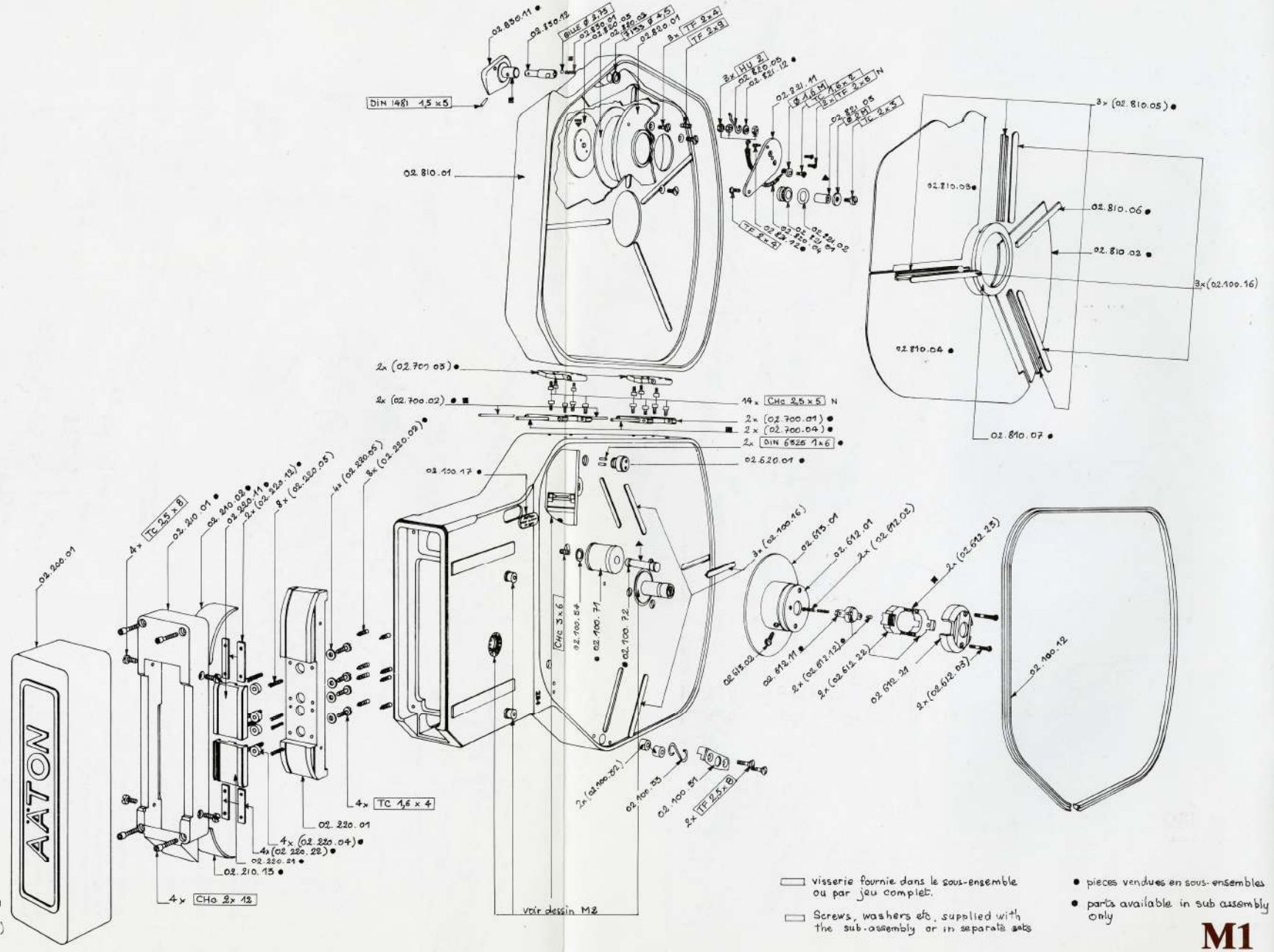
C4

▭ . VISSERIE FOURNIE DANS LE SOUS-ENSEMBLE OU PAR JEU COMPLET

. SCREWS, WASHERS ETC. SUPPLIED WITH THE SUB-ASSEMBLY OR IN SEPARATE SETS.

● . PIECES VENDUES EN SOUS-ENSEMBLES

. PARTS AVAILABLE IN SUB-ASSEMBLIES ONLY.


02.850.11
02.850.12
DIN 1481 1,5 x 5
02.810.01
3x TF 2,5 x 8
3x TF 2 x 8
3x (02.810.05)
02.810.08
02.810.06
02.810.02
3x (02.100.16)
02.810.04
02.810.07
2x (02.700.03)
2x (02.700.02)
14x CHc 2,5 x 5 N
2x (02.700.01)
2x (02.700.04)
2x DIN 6325 1x6
02.620.01
02.100.17
02.200.01
4x TC 2,5 x 8
02.210.01
02.210.03
02.220.11
2x (02.220.18)
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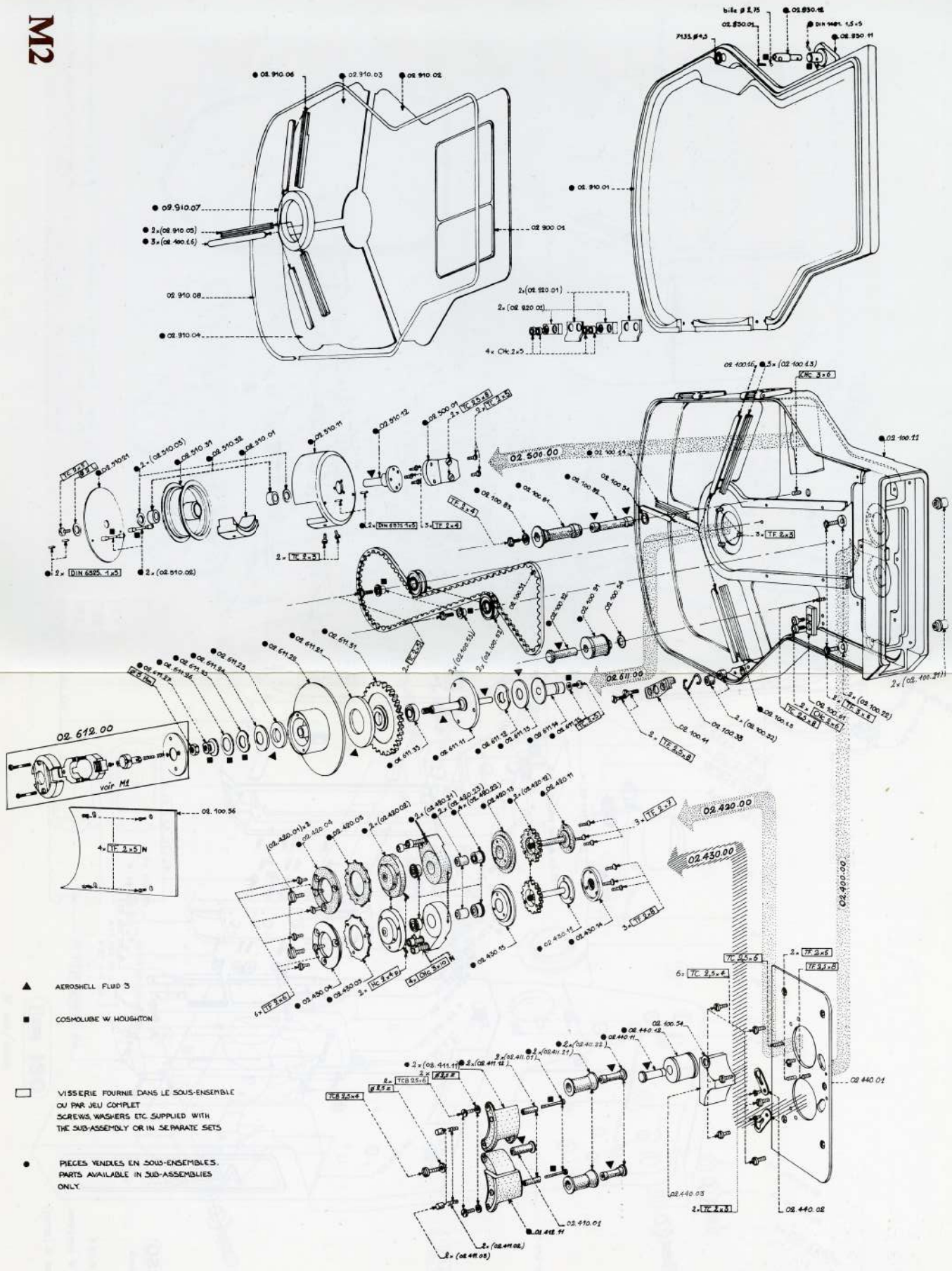
voir dessin M2
ISO
N : noir / black
▲ Aeroshell Fluid 3
■ Casmolube W Houghton
▼ Molykote 321 R (spray)
visserie fournie dans le sous-ensemble ou par jeu complet.
Screws, washers etc, supplied with the sub-assembly or in separate sets
• pieces vendues en sous-ensembles
• parts available in sub assembly only
M1

M2



▲ AEROSHELL FLUID 3

■ COSMOLUBE W HOUGHTON

▭ VISSERIE FOURNIE DANS LE SOUS-ENSEMBLE OU PAR JEU COMPLET
SCREWS, WASHERS ETC. SUPPLIED WITH THE SUB-ASSEMBLY OR IN SEPARATE SETS

● PIECES VENDUES EN SOUS-ENSEMBLES.
PARTS AVAILABLE IN SUB-ASSEMBLIES ONLY.

ISO

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