A Cameraman is never so low as when he is using a SAMCINE INCLINING PRISM!

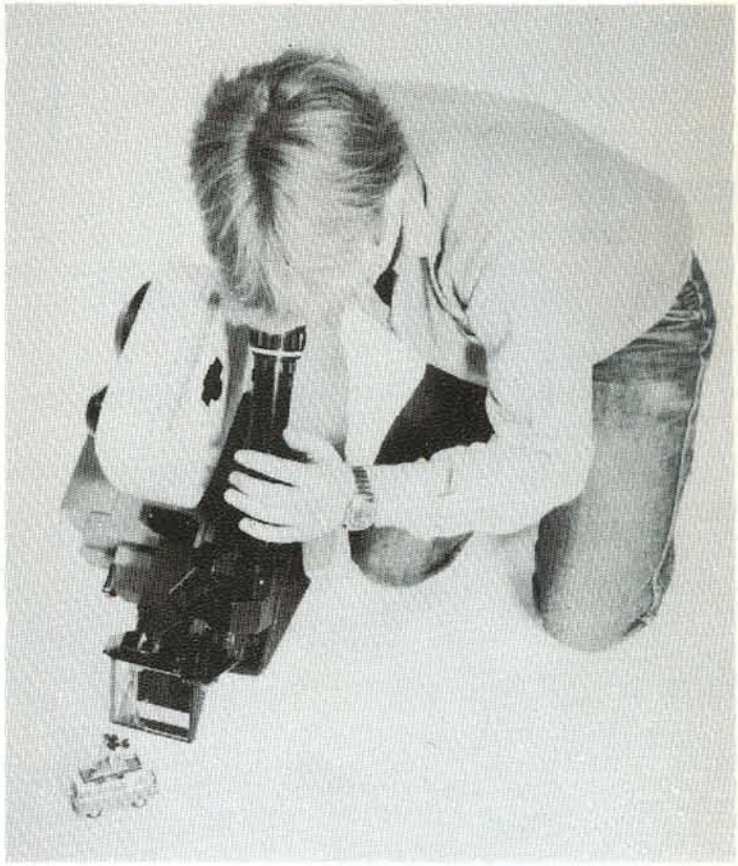
The Samcine Inclining Prism is a 'front of the lens' optical accessory incorporating a specially computed Bauernfeind prism which makes possible very low (or very high) angle cinematography with a wide range of lenses without loss of aperture (speed), optical performance, or picture orientation.

When fitted to the front of a lens the optical axis is deviated through 51° and, because the light path is both reflected and refracted, i.e. is bent twice, the image emerges the right way up and the right way round, left to right.

By using a glass of high refractive index it is possible to make a compact unit which covers a 50 mm Anamorphic lens, a 24 mm non-Anamorphic lens for 35 mm Academy format, and a 12 mm lens for use with 16 mm cameras. Larger units have been made to use with Anamorphic lenses as wide as 30 mm and with various 35 mm zoom lenses including the 20-100 and 20-125 mm types.

Samcine Inclining Prisms are especially useful for filming miniatures.

Among the advantages of the Samcine Inclining Prism are that it is so small that it may be dipped into a position, that the bottom edge is pointed so that the entire unit may be tilted backwards to look up from a low angle without losing 'lowness' (in fact the optical axis is lowered), that the regular lenses being used on a production may not only continue to be used and will operate at their full aperture if required (T1.3 remains virtually T1.3) and so requires no additional light (and heat) to make up for transmission losses in the optical system, it is very quick to fit or remove, it may equally well be fitted 'upside down' to give increased camera height, and it is an inexpensive answer to the age-old requirement of cinematographers to get a camera viewpoint that is lower (or higher) than is possible with the regular equipment available.



Available from Samuelson Film Service Ltd., its subsidiaries and associates all over the world.

SAMUELSON FILM SERVICE LIMITED
303/315 Cricklewood Broadway
London NW2 6PQ, England
Tel: (01) 452 8090, Telex: 21430
Cables: Samcine London

SAMUELSON ALGA-CINEMA SA
24/26 Rue Jean Moulin
94 Vincennes, nr. Paris, France
Tel: 328 58 30, Telex: 670260F
Cables: Samcine Paris;

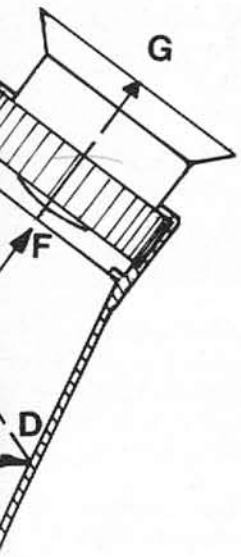
SAMUELSON FILM SERVICE AUSTRALIA (Pty) LIMITED
1 Giffnock Avenue
North Ryde 2113, N.S.W., Australia
Tel: 888 2766 Telex: 71 25188

25 Lothian Street, N. Melbourne
Victoria 3051, Australia
Tel: 329 5155

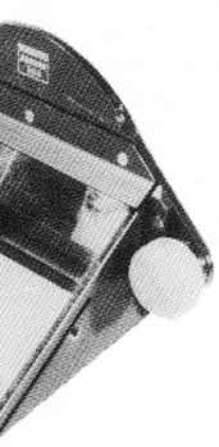
SAMUELSON GENOP (Pty) LIMITED
Genop House, 15 Hulbert Road
New Centre, Johannesburg, S. Africa
Tel: 836 4275, Telex: 43 0057
Cables: Genop Johannesburg

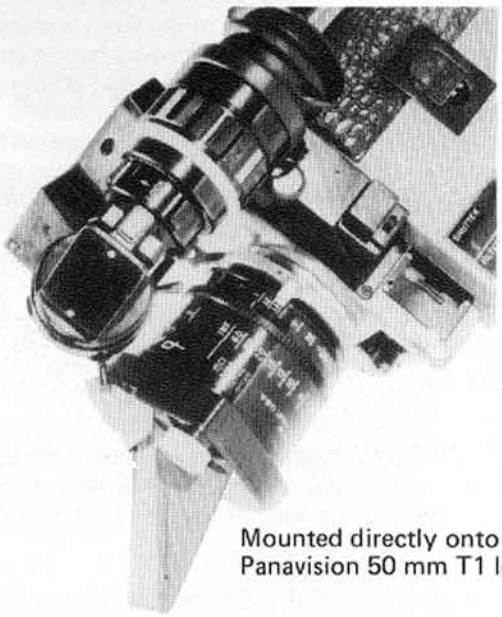
MCINE
NING
SM

WORKS



ch closer to a solid object than
t optical assistance.
lower optical axis.
lar to air/glass surface. Light
eviation.
s mirrored, reflecting light at
nce.
rface at an angle of incidence
acted.
lar to rear glass/air surface.
nout deviation.
ith optical axis 51° to the

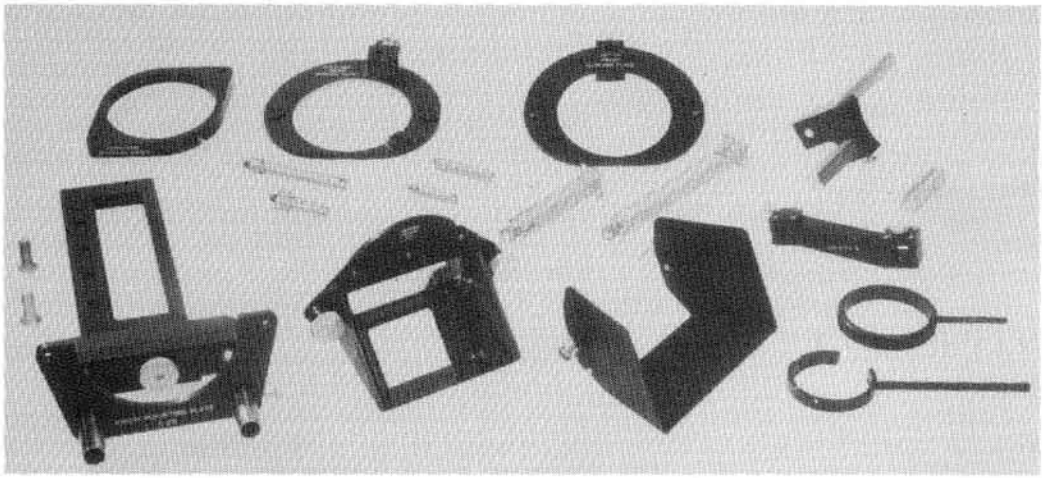


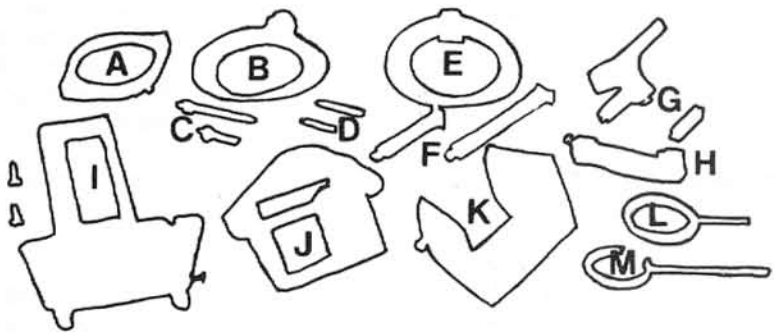


Mounted directly onto
Panavision 50 mm T1 lens

Large 'Super-Size'
Inclining Prism mounted
to cover Panavision 30mm
anamorphic lens

SAMCINE INCLINING PRISM OUTFIT





A Panavision lens adaptor
B Arriflex IIC adaptor
C Long and short top support studs for Arriflex IIC
D Long and short bottom support studs for Arriflex IIC
E Arriflex 35III, 16 BL and 16 St adaptors
F Long and short support bars for Arriflex 16 mm cameras
G Arriflex 35BL support system
H Arriflex III adaptor
I Mitchell S35 MkII adaptor
J Samcine Inclining Prism
K Sun shade
L Kilfit Macro Kilar focus lever
M Cooke Series II and III focus lever

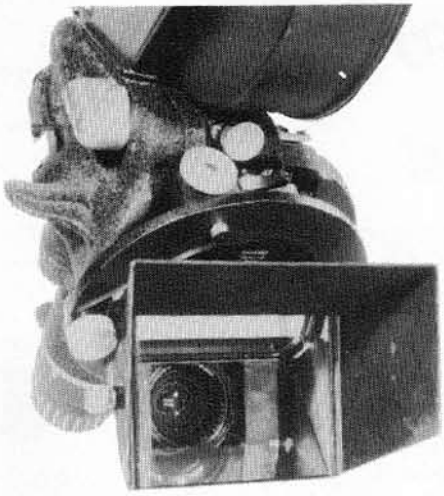
Among the patents covering the Samcine Incling Prism are the following:

U.K.	1,422,159	Italy	49221-A/73
France	73,12303	Japan	39441/73
W. Germany	P2317168.8		

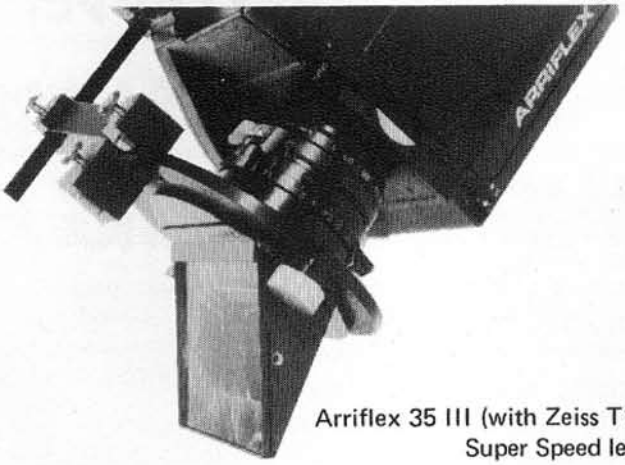
The Samcine Inclining Prism can be n

THE SA
INCL
PR

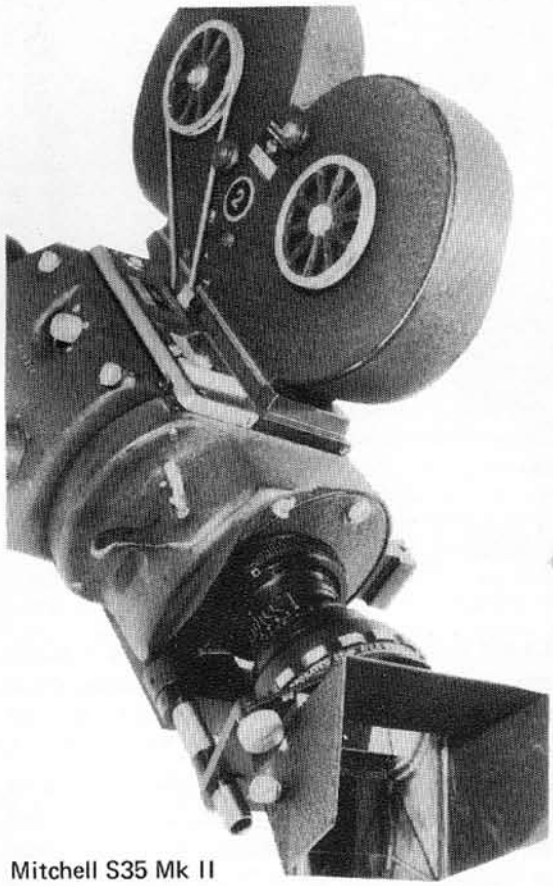
HOW I



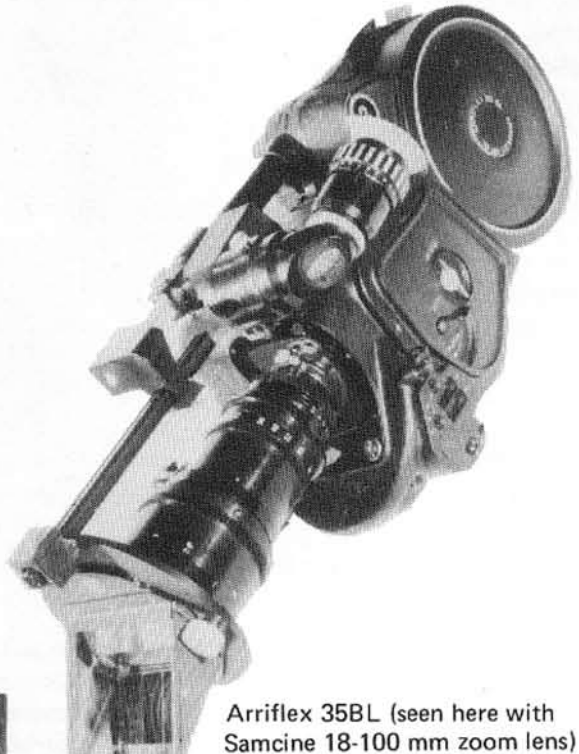
Arriflex II'C'



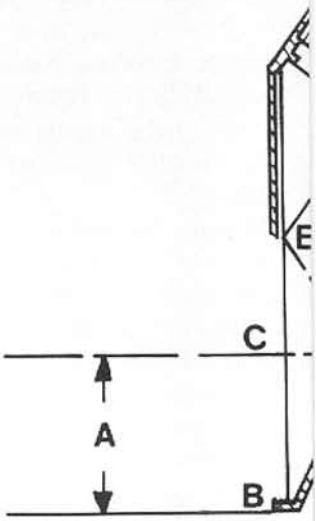
Arriflex 35 III (with Zeiss T1.4 Super Speed lens)



Mitchell S35 Mk II



Arriflex 35BL (seen here with Samcine 18-100 mm zoom lens)



A. Optical axis set very m
would be possible with
B. Tip of prism cut-away t
C. Optical axis perpendic
passes through without
D. Rear surface of prism
twice the angle of incid
E. Light strikes glass/air
of 45° and is totally re
F. Optical axis perpendi
Light passed through w
G. Camera lens inclined
horizontal.

Used in the "Upside down" position for high angle cinematography

The Samcine Inclining Prism

HOW IT WORKS

Light entering the Samcine Inclining Prism at an angle of incidence perpendicular to the front surface, is reflected off the mirrored rear surface of a Bauernfeind type prism at such an angle that it re-encounters the front surface at an angle of 45°, causing it to be totally refracted in the direction of the third surface of the triangular prism, which is set at 90° to the resultant optical axis, permitting the light to pass through without further deviation or loss.

Because the light path is deflected twice, once by reflection and once by refraction, it emerges correctly orientated, and without the "mirror-image" effect that would result if it were only bent once.

The glass used in the Samcine Inclining Prism is S.K. 16, a glass with a refractive index of nd1.62041, which is especially poured to order by Schott. By using a glass of such high refractive index it is possible to produce a prism which will accommodate camera lenses with a horizontal angle of 49°, wide enough to use a 50 mm anamorphic lens, a 24 mm non-anamorphic lens covering an Academy frame or a 12 mm lens covering a 16 mm frame.

Because the front surface of the prism, through which the light enters, is also used to refract the light from behind, a single unit can be produced that is not only more compact than would be possible with a two mirror periscope, but also accommodates a wider cone of light without the restriction of one mirror impinging into the light path of the other.

HOW IT ALL BEGAN

Among the odd quirks of human progress are the facts that a simple innovation can sometimes do as much for applied technology as a complicated product of years of expensive research, and that a component that has been around for a long time can, by a change of application, become a totally original invention which fills a definite requirement and is even patentable all over the world. It is sometimes called 'lateral thinking'.

Typical is the Bauernfeind prism which became the Samcine Inclining Prism.

The Bauernfeind Prism is listed in the manuals of Reflecting Prisms and Optical Devices as having 'one surface silvered', is classified as 'wide field with constant deviation' and described as being used in the design of 'bent telescopes; to permit of inclined eyepieces for comfortable viewing'.

It occurred to Samuelson's that if such a prism were put in front of a photographic lens, rather than behind the viewfinder, it would 'permit of' very low angle cinematography, without loss of light and with the body of the camera raised clear of the ground. Similarly it could be applied "upside down" to give a higher camera position than would otherwise be possible.

In 1973, after some experimental prisms had been made of ordinary glass and tried in front of motion picture camera lenses, it was found that for normal 35 mm cinematography a 28 mm lens could be accommodated.

The result was sufficiently encouraging to apply for a patent and to make the first series of inclining prisms, a "large" one, which covered a 28 mm lens and a smaller "narrow" one which just covered a 40 mm macro-lens. This latter prism was intended for such shots as dipping into a beer glass for the close up of a drinkers mouth, taken from inside the glass and for shots looking down the street of a miniature model.

It became apparent that there was a need to cover wider angle lenses and to this effect one of Britain's top optical designers examined the problem and produced a design using a special glass of high refractive index, which would cover the next wider angle lenses generally available for motion picture photography.

An optical manufacturer was engaged to grind the prisms but reported that delivery would be one year as Schott had said that they could not schedule a pouring of that particular glass until nine months hence.

Meanwhile full Patents were secured in many parts of the world, including the United States, East and West Germany, Japan and Italy.

Eventually the new prisms were delivered and a mounting system was devised that could be fitted, either way round, directly onto the front of the appropriate Panavision lenses, to the matte box support system of any Arriflex 35 or 16 mm camera, and by support bars to Mitchell S35 Mark II and Eclair Cameflex cameras, thus covering all of the portable cameras most regularly used in professional cinematography.

Still the need to cover wider angle lenses was reitterated, and a series of six pieces of glass of extra large dimensions were ordered which would cover any 35 mm zoom lens or a 30 mm wide angle anamorphic lens. Unfortunately, three of these large prisms broke during manufacture due to the heat treatment necessary in the coating process (they are all coated with multi-layer anti-reflection coatings) so there are only three super size inclining prisms available and these are much prized by cinematographers who book them for films long in advance of their first shooting date. More large pieces of glass are on order but the delivery time is now even longer.

The Samcine Inclining Prism is a classic example that there are still many good ideas under the stones, it just needs someone who has a feeling for what's wanted, to uncover them.

WHAT MAKES SAMCINE INCLINING PRISMS SO SPECIAL

The primary advantage of Samcine Inclining Prisms over other low angle imaging systems is the fact that they work in conjunction with regularly available motion picture camera lenses without significant loss of light transmission. With most optical periscopic devices there is a 2, 3, 4 or even more stop loss in light transmission. This affects both the aperture, which sets the depth of field, and the T stop which is the amount of light which actually reaches the film. They can also be used with Vistavision format cameras.

If there is a 4 stop difference between the two it means that for shooting miniatures, where it is needed to stop down to a very small aperture to get the maximum depth of field, the subject must be saturated in light and very often heated to an intolerable degree just to compensate for the light loss of the optical system. To work at T8 with a system losing 4 stops of light means lighting at T.32 which, without force processing, would be 12,800 foot candles compared with 800 if there were no loss of light.

At the other end of the scale a system that has a restricted aperture may not pass more light than T5.6 under any circumstances, even if an T1.4 lens were fitted. With the Samcine Inclining Prism a Panavision 50 mm T1 lens can be fitted and remains T1 at the film plane.

If the problem of heat is a severe limitation when lighting miniatures, shots of food stuffs, especially ice-creams and insects etc. becomes a dilemma.

Samcine Inclining Prisms are a unique tool that film directors and Directors of Photography employ to further explore the creative sides of film making. They have been used on countless feature films, TV commercials, documentaries and sports programmes all over the world.

10/80/1069