


CALUMET/
HORSEMAN®
TECHNICAL
CAMERA
GUIDEBOOK

 **Calumet**
photographic, inc.



The Horseman Technical Camera... It's a Superior Hand Camera

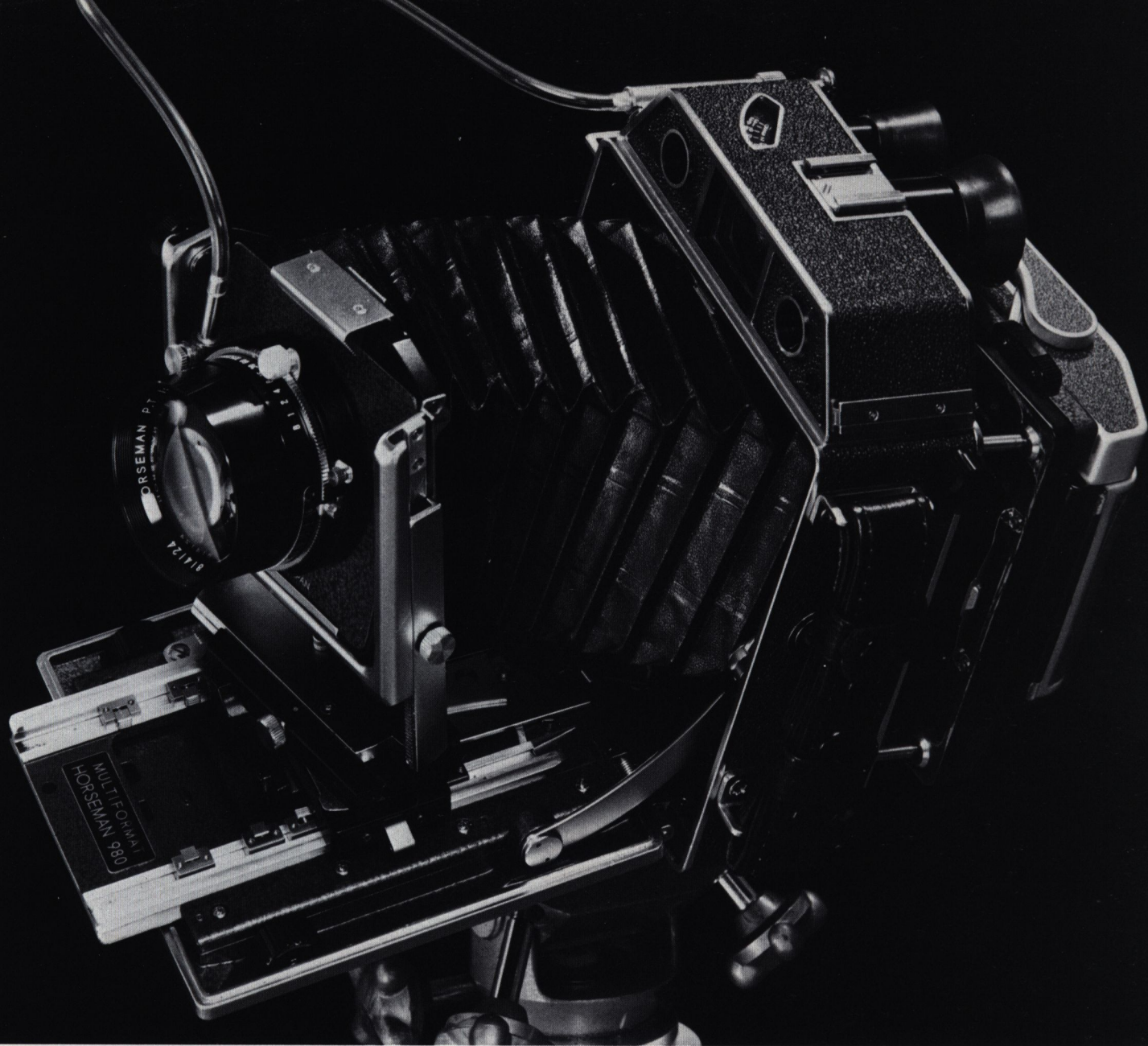
TECHNICAL means a camera made to do more. In effect the designers have put three cameras into one:

1. *A small, light weight hand camera in the 2¼" x 3¼" format. Pick up this camera. The Horseman has the great feel of a professional instrument. The focusing is smooth. Controls are in the "right" places. It gives you big negatives but handles with ease of a professional 35mm camera.*

2. *A very versatile view camera for corrective swings. The swings and tilts are so well designed that you are not aware of them until you need them to do a commercial job. You have both front and rear swings and tilts, front slide, rising front, drop bed—all the movements needed are there.*

3. *A precise camera for the scientist, engineer or law officer. The 10½" bellows draw permits linkage to a microscope, extreme close-ups of specimens with exact focusing on ground glass. The camera accepts sheet film, glass plates, 120 roll film or 220 rolls in formats 2¼" x 2¾" or 2¼" x 3¼" . . . up to 400% more picture area than from 35mm format.*

This camera can work all day—a wedding in the morning on color roll film, a group at noon on sheet film, and a commercial illustration with full swings—all with the same camera. The Horseman Technical Camera does more for you with hand camera convenience and view camera versatility.



It's a Precision View Camera

Calumet is the world's leading producer of view cameras. We know view cameras. The view camera will do things no other camera can. A view camera must have swings both *front and back*. Back swings alone just aren't enough. The Horseman Technical Camera has everything needed. Front slides, swings, twists and rises. The camera bed drops. The back has four-point swing or tilt in each direction. The amount of camera movement is very adequate for the 2¼" x 3¼" format.

These swings don't intrude. They snap back into aligned neutral. They "disappear" until you need corrections again. With the ground glass back in place, you can increase focus sharpness with swings, straighten out converging lines, or other view camera tricks.

The point is that the Horseman Technical Camera is a precise camera that ranks in between 35mm and 4" x 5".

It can deliver a very sharp, highly enlargeable negative, big enough for most jobs. Handling is adequate for a hand held camera, yet the view camera movements are sufficient to do the commercial jobs normally done on the bigger 4" x 5" view camera.

When sharpness counts and a hand camera is necessary (especially in color negatives), the 2¼" x 3¼" Horseman Technical Camera is a Studio Camera that travels on location. While no one camera does everything, the Horseman Technical Camera comes very close. If you make your living in photography, the Horseman Technical Camera offers you so very much.

The Horseman Technical Camera is a product of the finest professional camera maker in Japan — sold, tested and serviced by Calumet, the U.S. Company that serves the professional photographer.

Camera Swings and Tilts to Correct Perspective: When You Need Them

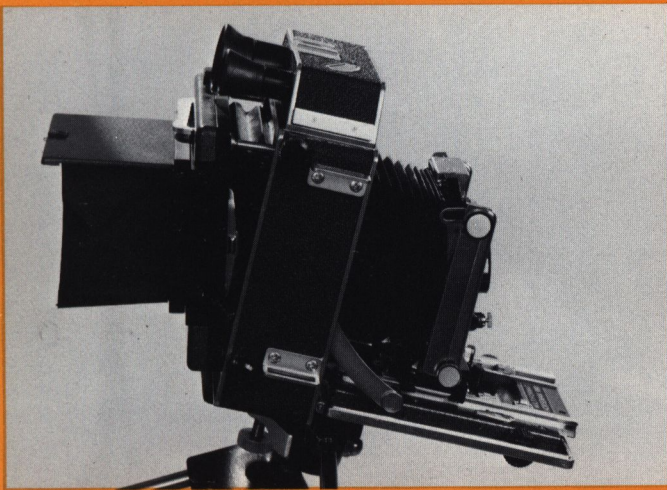
Camera adjustments, swings and tilts, slides and back swing can be a real friend when you need them. A photographer must work within the limitations of depth of focus, lens focal length and the natural distortion that results when you must

work in too close to the subject. A Technical Camera has the aids to overcome these limitations, to increase overall sharpness and to straighten out lines of the subject.

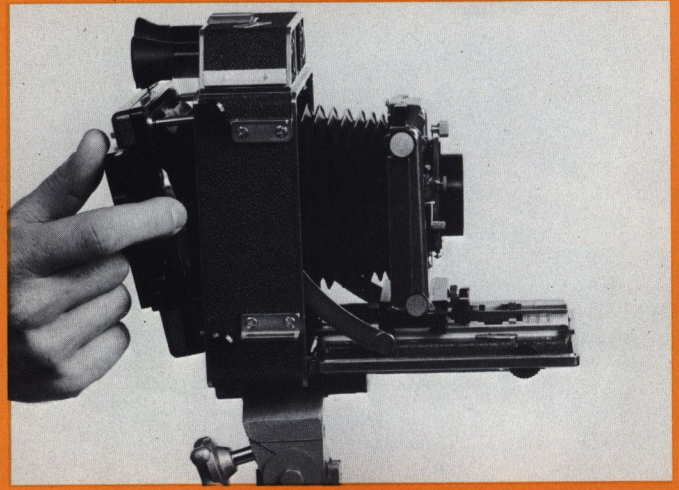
Back and Front Swings for Products

Most product photos are taken from a high angle to offer a natural view. Whenever a camera must be aimed off level, vertical lines start to converge. By aligning the camera front

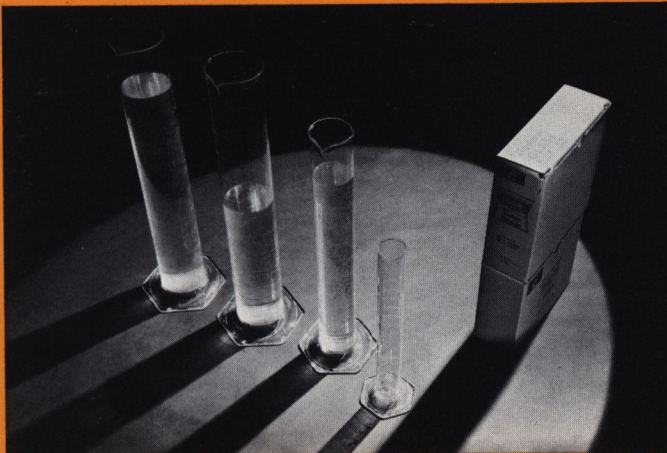
and back with the lines of the subjects, you can keep the higher angle without sacrifice.



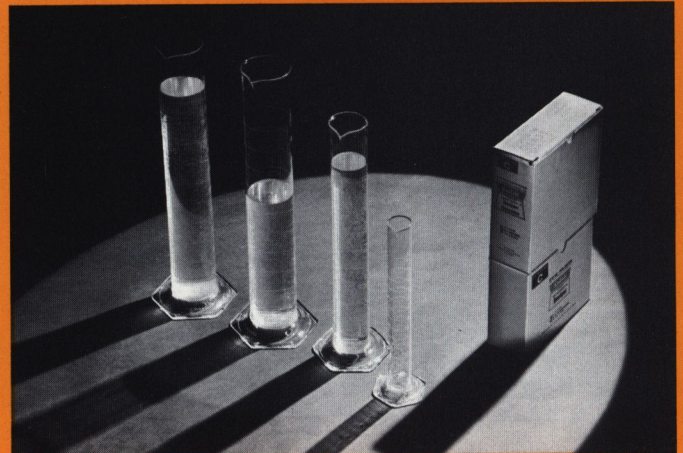
Lateral swing in front is also often used to align front with back for sharp overall focus. Horseman camera movements are very smooth and snap quickly back into neutral when not needed.



Back swing moves on four-point basis, thereby allowing back movements in all directions. Front swing moves on optical axis for ease in alignment with back.



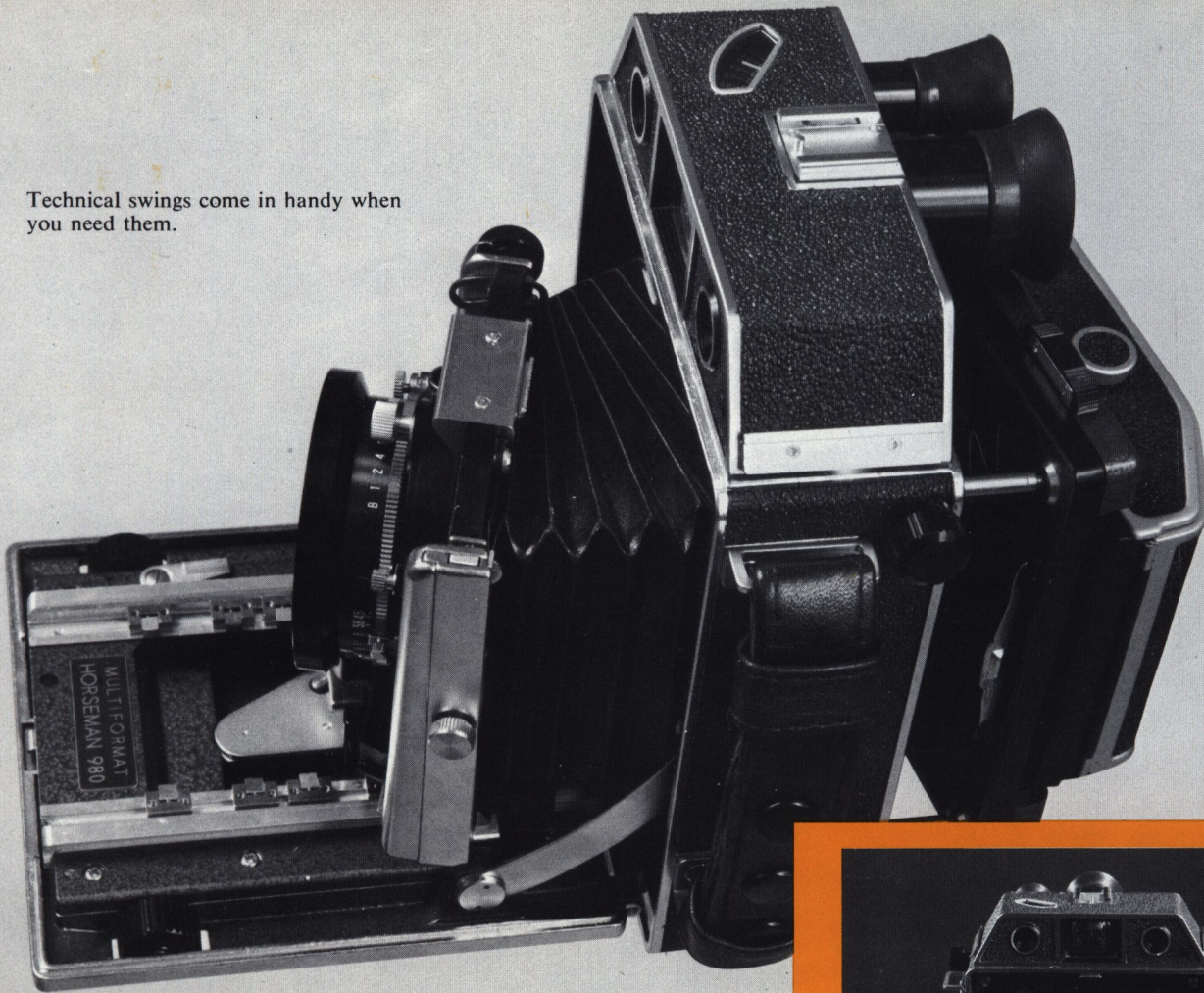
Shot from a high angle without camera swings. The tops of the glassware, being closer to the camera, show distortion. Taken with a 75mm lens without using camera swings. Typical of a 120 film camera.



The same high angle. The camera back has now been moved so that it is aligned with the subject. The camera front swing is to be paralleled with the camera back to insure sharp overall focus. This is the most common camera adjustment for product illustration. To do it, you need both front and rear adjustments, plus ground glass focusing. Taken with a 105mm lens with full swing.



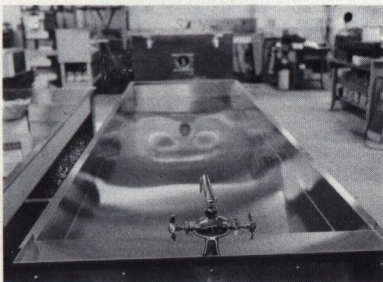
Technical swings come in handy when you need them.



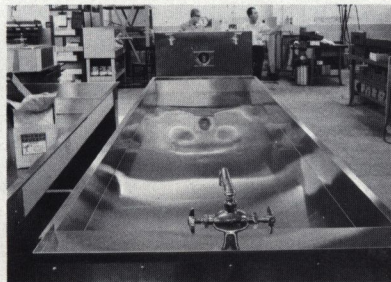
Increasing Depth of Focus

Longer focal length lenses have limited depth of focus. Camera swings and tilts can make a picture sharper by giving you "selective focus" across the field. The Calumet/Horseman Technical Camera swings in both horizontal and vertical axis. By using selective swings, you can increase the effective sharpness on near and far objects.

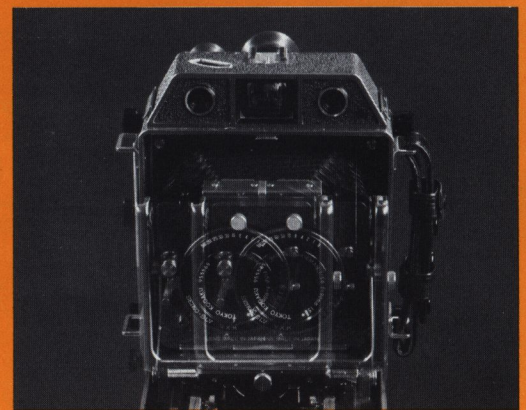
By using counter swings, the focusing distance between lens and film is increased for near objects and decreased for far away ones. The effect sounds complicated, but it is fairly simple.



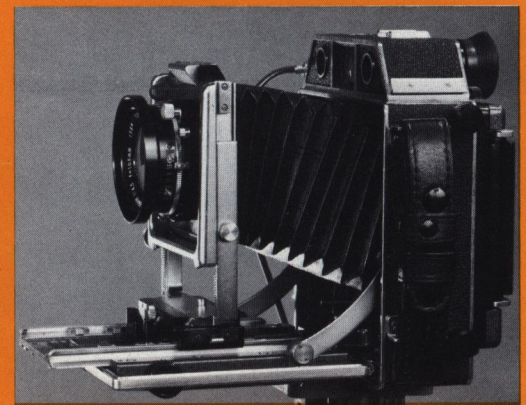
Camera and lens with no swing. The plane of sharp focus coincides with the optical depth of focus of the lens. Note that the faucet is sharp, but the back area is too far away from the lens depth of field.



By swinging the camera back and front, considerable increase in depth can be obtained. The idea is that swinging the back away from near objects and towards far objects behaves as if you were focusing individually on each part of the picture.



Slides Left and Right The camera is all set up. Then you notice that the aim needs to be a little left or a little right to get all of the subject. The front slide allows the image to be shifted left or right without disturbing the basic swings, tilts or camera angles. This feature can be a real time saver.



Rising Front To avoid distortion a camera should be held parallel to the subject. However, many times the camera would have to be aimed up to catch the top of the subject (such as a building). The rising front on the Horseman Technical Camera allows you to position the subject on your ground glass without disturbing the relationship of the camera back to the subject.

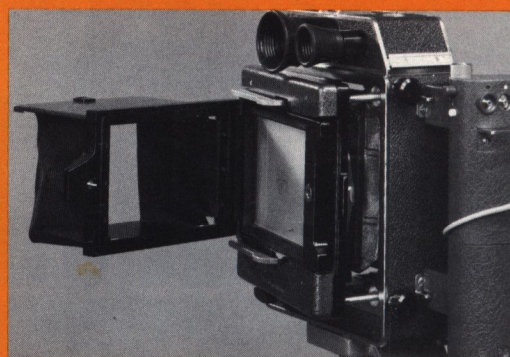
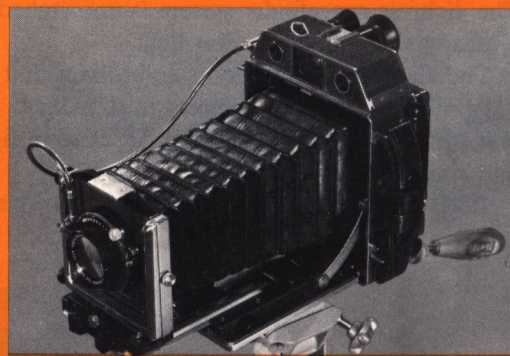
Close-Ups for Detail or Enlarged Copies

The ability to work in close can be vital when you need it. The rangefinder will couple-in to 39" with the standard 105mm lens. Go to the 65mm lens and the lens can be focused to only $4\frac{3}{8}$ " from the subject (1" of subject = $2\frac{1}{8}$ " on the film). The sharp ground glass focusing means critical close-in detail when you need it. $10\frac{1}{2}$ " of bellows draw is exceptional in such a compact camera. The Calumet/Horseman Technical Camera is a precisely aligned close-up camera with plenty of bellows draw for a flower or a wire.

Larger than life close-ups are easy with the precision focusing plus ground glass. Front and back swings can be used to increase depth of focus on extreme close-ups. Little extras make the job easier. The focusing hood swings out of the way so you can see all of the glass. Fresnel lens and center spot aid sharpness.

For copy work, the perfect alignment and precision focusing can yield images of exceptional quality. The Horseman Technical Camera is ideal for the scientist, engineer or law officer, with its ability to work in close for detail.

The 75mm or 90mm Horseman lenses are ideal for copy work. They produce excellent illumination across the field plus high sharpness. The rising front plus side shift allows adjustments of image alignment without having to move the camera.



Dichroic Rangefinder for Optimum Sharpness in Dim Light

The rangefinder system has a wide base (almost 3"). This gives critical focusing at any distance. This precise distance finding system has its own optics. Keeping the rangefinding separate from the view finder allows a wider base between rangefinder windows and also permits greater brilliance. The dichroic rangefinder system is unmatched in obtaining critically sharp focus in dim light.

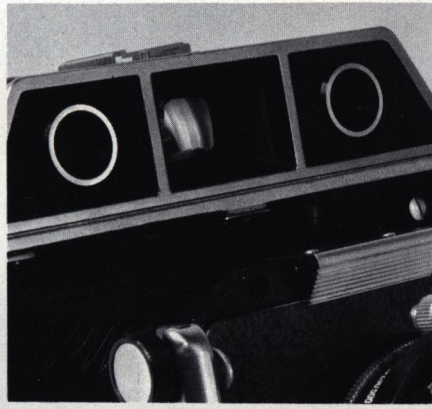
The dichroic rangefinder is so brilliant that fast focusing is possible on moving subjects in dim light. In weddings, you can focus on the aisle shot or come in tight on hands and ring photos with equal ease.

Each lens is coupled to the rangefinder by a cam ground

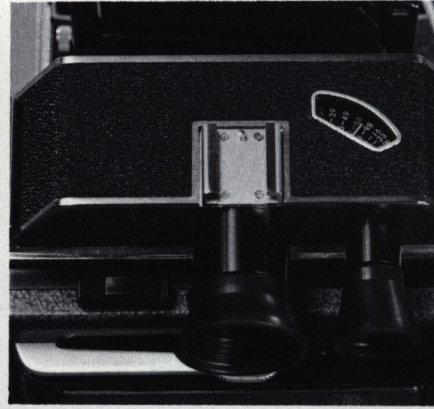
to the focusing characteristics of that lens. A footage meter automatically couples to each lens for rapid zone focusing. The big viewfinder area is protected by a soft rubber cup and is exactly in the camera center. Wearers of eyeglasses find the large Horseman rangefinder/view finder system very easy to use. Keeping the rangefinder separate from the view finder permits a brighter rangefinder image on a full 3" base line.

The rangefinder couples to all seven lenses from 65mm to 180mm. The brilliant split image type finder permits very accurate focusing even in dim light. The excellent focusing accuracy results in critically sharp negatives.

A wide 3" base line of the rangefinder permits very accurate focusing. Each lens is cam coupled.

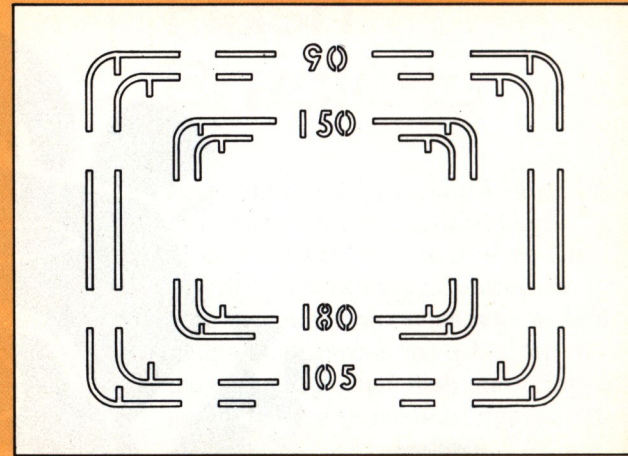


The big center view finder is easy to use even when wearing eyeglasses. A footage scale couples automatically to each lens.



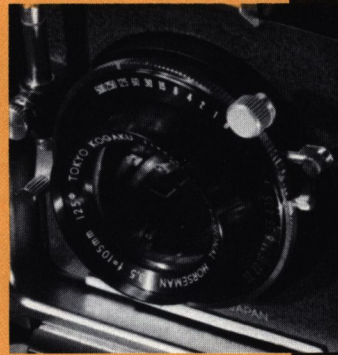
Parallax Corrected Bright Line Finder

The brilliant view finder uses a dichroic mirror to project brilliant lines into the image showing the area covered by the various lenses. The finder is very easy to operate by photographers with eyeglasses. The soft rubber eye cup prevents damage to eyeglasses and the entire frame covered by the camera can be easily seen. This accurate finder is oversized for all lenses except extreme wide angle. It allows rapid shooting, as you can see the action coming into the field marked by the bright lines in the finder.



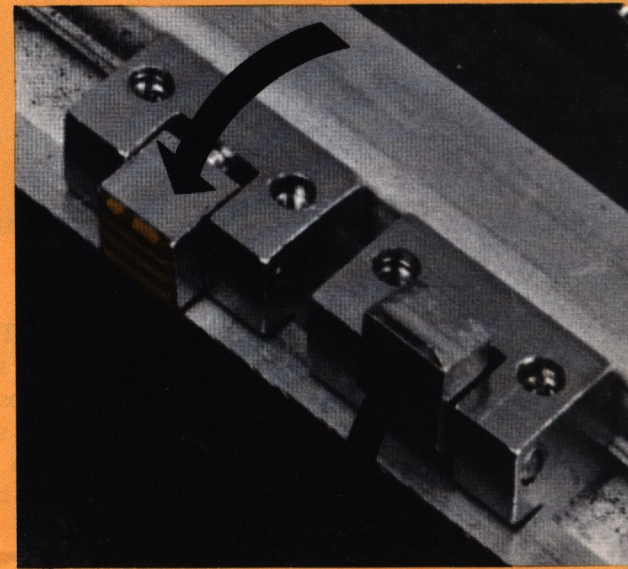
Cam Coupled to Each Lens

The focusing cams are ground to the characteristics of each lens' focal length and type. These cams interchange quickly. The view finder automatically adjusts for parallax, the footage indicator operates correctly and the rangefinder settings are exact. A storage area for extra cams is located inside the camera. Each lens is provided with the proper cam (extras are available at a nominal cost). Since each lens is governed by its own ground cam, focusing and viewing are very accurate.



Infinity Stops for All Seven Lenses

Infinity stops are color coded and snap out of the way when not required. Each camera is factory mounted with infinity stop for all Horseman lenses. Extra stops are easily installed for other lenses. For extra bellows draw in extreme close-ups, the stop can be snapped out of the way and the bellows can be used at its longest extension.



High Adaptability...

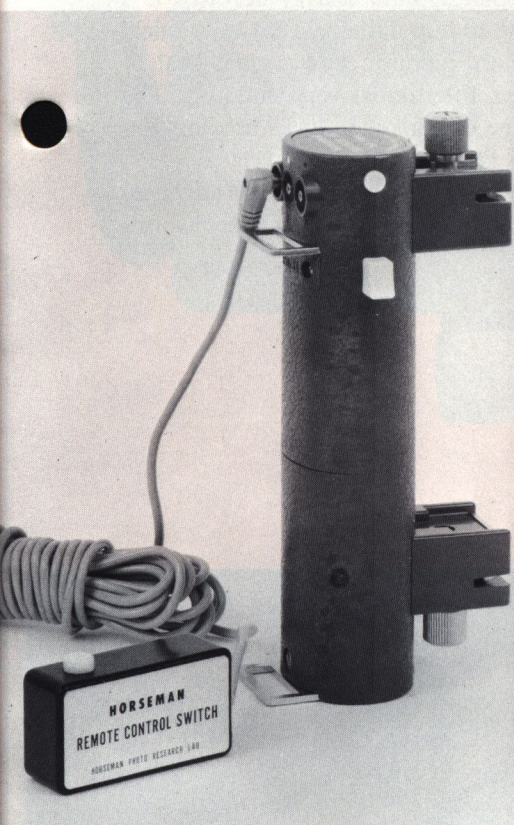


Electrical Grip for Vibration Free Shutter Release

The Electrical Grip serves two functions. The triggering solenoid is of the vibration-free type. The micro switch on the grip allows you to squeeze off a long exposure without moving the camera. Being able to fire a slow shutter speed without camera movement can save a picture. It also serves as a sturdy camera grip to hang on to.

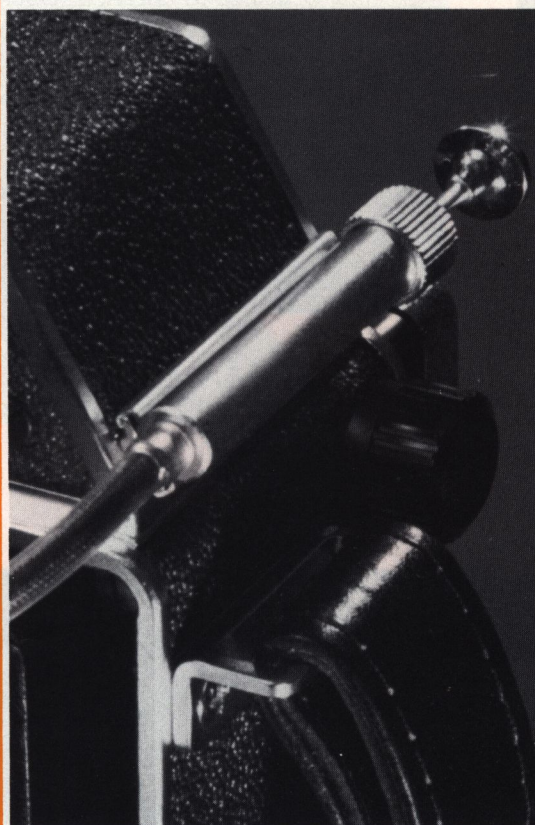
Remote Control

The electrical grip has two extra contact sockets. An accessory firing button with wire permits remote shutter release at considerable distances. The other contact will operate from a radio relay. This remote operation of the electrical grip is ideal for the nature photographer. The grip permits fast shooting and greatly reduces the change of camera movement. The firing by an internal capacitor from a 22½ volt battery gives you great dependability.



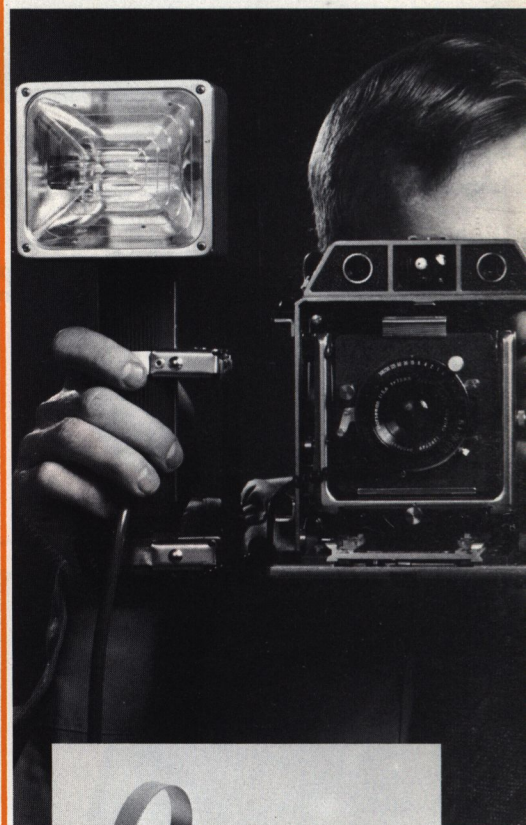
Shielded Cable Release

The 16½" plastic covered cable release locks into place for firing either left or right for convenience. It's long enough for full bellows extension. The end locks into the cable lock on each Horseman lensboard. (There's no chance of a shutter release coming loose or hanging up.)



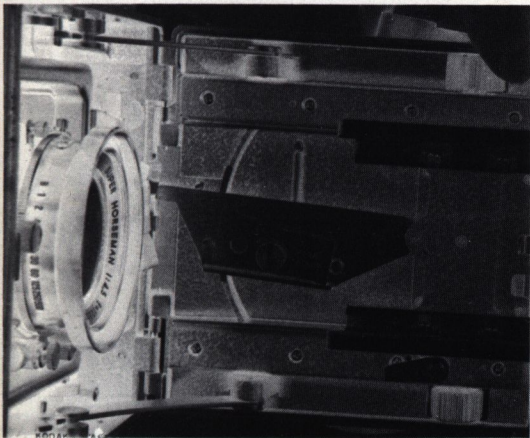
Professional Flash Brackets

Flash units may be mounted either left or right, or on the Electrical Grip. Mount brackets are installed on left and right side of camera. Accessory flash mounting bracket fits any standard flash unit. A shoe is located on top of the camera for small flash units. The hand strap can be mounted right or left.

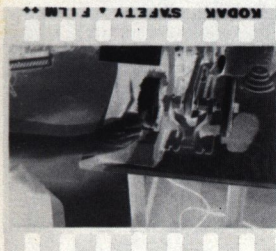




2¼" x 3¼" format is perfect for groups, sports action and wide angle photography. The wider negative leaves room for cropping when you have to work fast and time doesn't permit perfect aiming.



2¼" x 2¾" format fits the dimensions of 8" x 10" paper. There is no lost image area in enlarging. Also permits ten exposures on 120 film and 20 exposures on 220 film.



You get up to 400% more picture area than from the 35mm format.

The Multi Format Technical Camera

Three Roll Film Backs Sheet Film Glass Plates

The roll film backs have the following formats available:

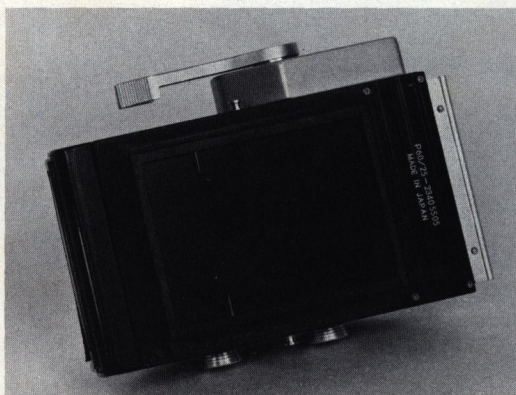
120	2¼" x 3¼"	8 exposures	(6 x 9cm)
120	2¼" x 2¾"	10 exposures	(6 x 7cm)
220	2¼" x 2¾"	20 exposures	(6 x 7cm)

The Horseman roll film backs are beautifully made from machined metal. Pressure plates, film bearing surfaces and transport drive all contribute to film flatness. This mechanical perfection is essential to sharp pictures, and a great deal of attention was spent in design. Film tracks very smoothly. The holders are easy to load. The camera slide locks holding film attachments in place are very positive.

Each holder has a quick advance ratchet-lever type advance. Automatic film stops, dark slides and film sensing mechanism give precise film spacing.



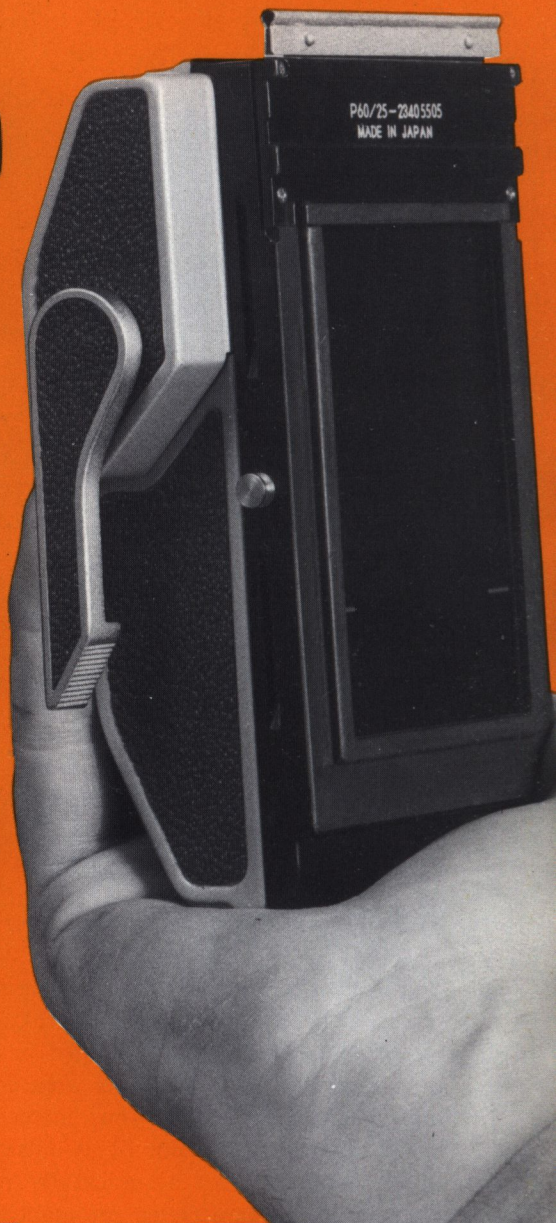
Holders for 120 or 220 attach rapidly and are very compact for carrying. You can always have a loaded holder ready with the correct film type.



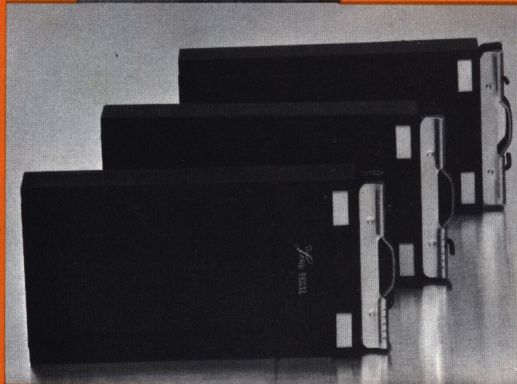
Professional "extra" features indicate the thought put into the Horseman roll film holders. Red lines indicate when dark slides are withdrawn out of film area.



Film reminder shows type of film loaded.



Fast loading and precise in internal construction. The roll holder produces picture sharpness by maintaining film always in the correct film plane.

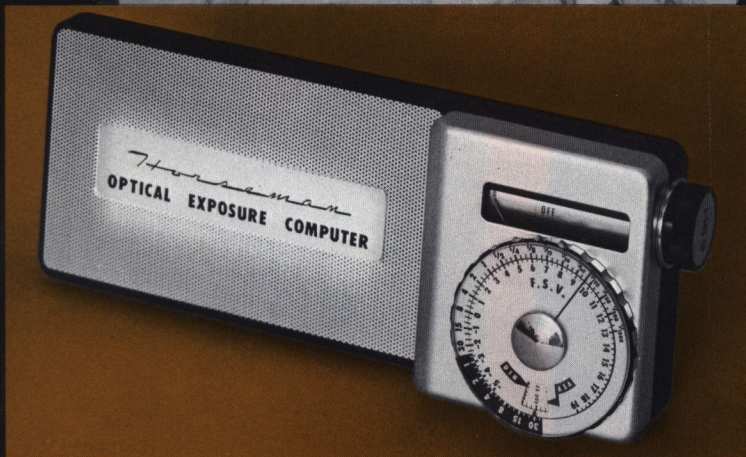


2 1/4" x 3 1/4" sheet film holders for fast changes of film types. You can use roll film, then switch to a few sheets of color negative with great ease.



Glass plate holder for the highest degree of film alignment and sharpness possible. Holds 2 1/4" x 3 1/4" glass plates.

The Super Sensitive CdS cell has three range settings from dim room light at f/32 to bright snow scenes — exposures are accurately read. 1/5 at f/8 by Exposure Computer.



Optical Exposure Computer

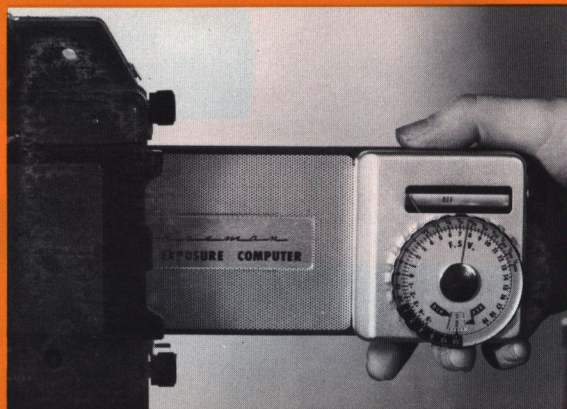
**Reads Exposure
Through the Lens Even
in Dim Room Light**

The Optical Exposure Computer operates by "seeing" the image projected by the camera lens. An extremely sensitive CdS Cell system can read an image formed in dim light even when the lens is set at f/32. The meter area coincides exactly with the image formed by the lens. Thus, meter is seeing the actual image and is not affected by side lights outside of the picture area.

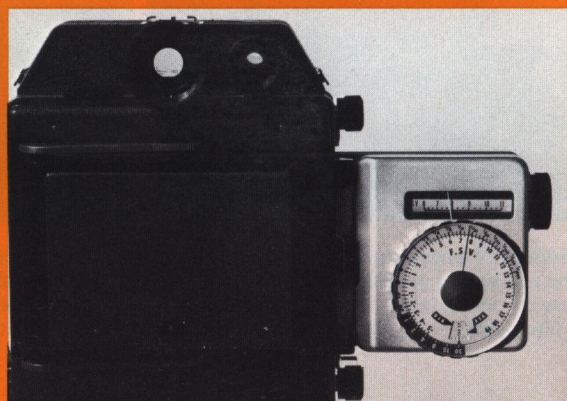
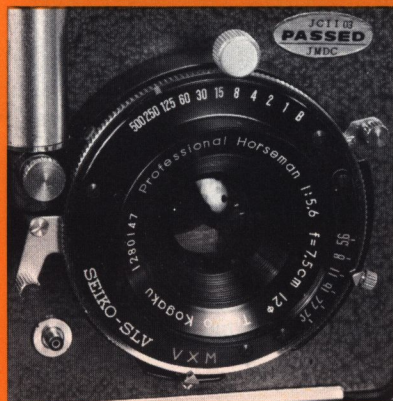
The result is great accuracy. By reading through the lens, the optical exposure meter automatically compensates for such factors as bellows draw or diaphragm error.

* Fits other cameras too! Will work on all 2 1/4" x 3 1/4" cameras that accept sheet film holders.

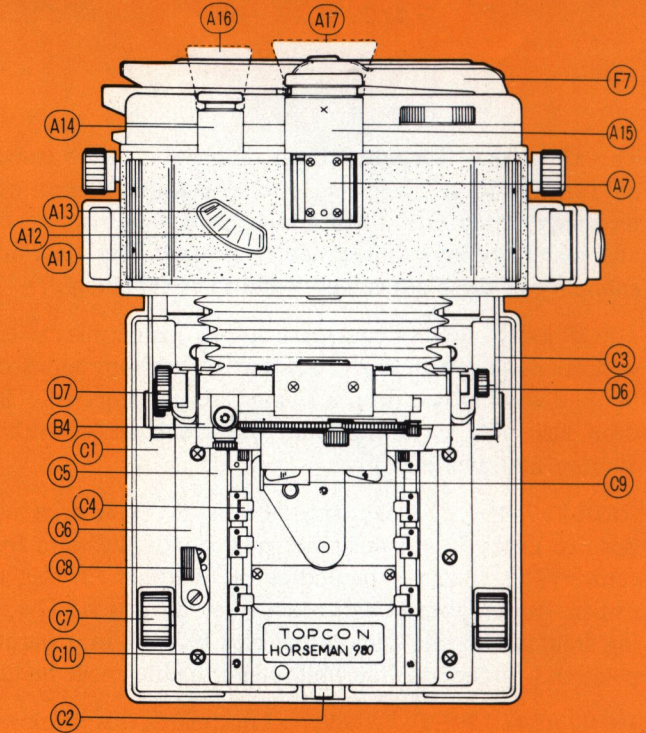
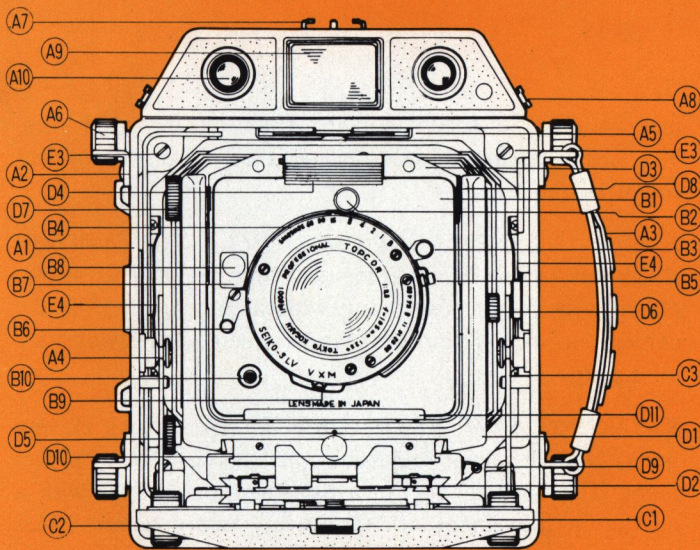
Because it reads a projected image and is not affected by side reflections, the Computer gives exact exposures even under difficult lighting ratios. Factors such as bellows extension and f/stop errors are automatically compensated for.



Set lens at desired aperture. The exposure reading can be made directly through the lens. Read correct shutter speed directly, or you can work at a desired shutter speed and computer will give correct f/stop.

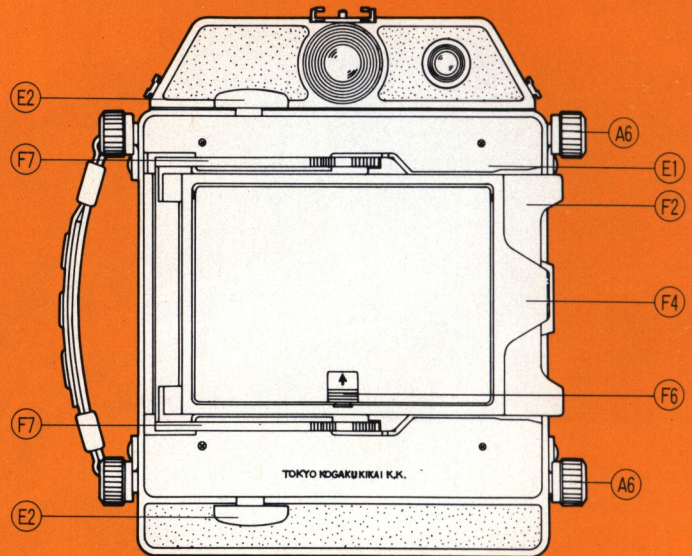
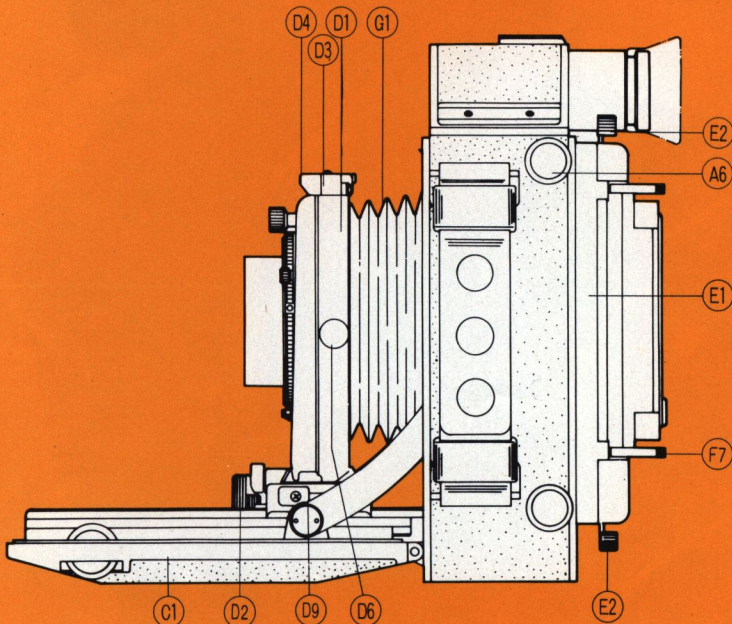


The Technical Camera with More Precision Features



CAMERA BODY

- | | |
|-------------------------------|----------------------------------|
| (A1) Body | (A10) Rangefinder Front Lens |
| (A2) Flashgun Bracket | (A11) Distance Scale Cover Glass |
| (A3) Carrying Strap | (A12) Distance Scale |
| (A4) Vertical Retaining Screw | (A13) Distance Scale Indicator |
| (A5) Cam Storage Slots | (A14) Rangefinder Eye Piece |
| (A6) Swing Back Locking Knob | (A15) Viewfinder Eye Piece |
| (A7) Accessory Shoe | (A16) Rangefinder Rubber Shade |
| (A8) Cable Release Catch | (A17) Viewfinder Rubber Shade |
| (A9) Optical Viewfinder | |



LENS STANDARD

- | | |
|---|----------------------------------|
| (D1) Lens Front Standard | (D7) Tilt Front Locking Knob |
| (D2) Pull Out Grips | (D8) Tilt Front Vertical Locator |
| (D3) Lens Panel Frame | (D9) Swing Front Release |
| (D4) Lens Panel Retainer with Safety Lock | (D10) Cross Front Locking Knob |
| (D5) Rising Front Control Knob | (D11) Lens Panel Spring Clip |
| (D6) Rising Locking Knob | |

CAMERA BACK

- | | |
|-----------------------------------|---|
| (E1) Swing Back Plate | (F3) Focusing Shade |
| (E2) Accessory Catch | (F4) Focusing Shade Frame |
| (E3) Swing Back Limited Screw | (F5) Focusing Shade Snap Button |
| (E4) Swing Back Plate Spring Hook | (F6) Focusing Shade Closure Catch |
| | (F7) Retaining Arms for Focusing Screen Frame |

GROUNDGLASS

- | |
|----------------------------------|
| (F1) Groundglass w/Fresnel Glass |
| (F2) Focusing Screen Frame |

BELLOWS

- | |
|--------------|
| (G1) Bellows |
|--------------|

A Superior Technical Camera with Full View Camera Adjustments

The Horseman Technical Camera has full view camera adjustments to give you the greatest possible control over the image. These adjustments "disappear" when not needed and snap back into aligned neutral settings. Here is a brief summary of these adjustments and their functions:

DROP BED Bed of camera drops 15° to permit extreme wide angle lens with corrective swings. (65mm lenses can be used without bed drop if swings are not required.) Bed drop also acts as falling front for lower angles without altering film position.

RISING FRONT The rising front is on a gear drive with positive locks. It will raise the front standard 28mm from center. This is useful in photos of buildings. Tilting the camera back upwards will often show distortion. The rising front allows the camera back to be kept in a parallel position with the building while centering the image on film.

VERTICAL TILT FRONT Lensboard tilts backward 15° and forward 10° on lens axis.

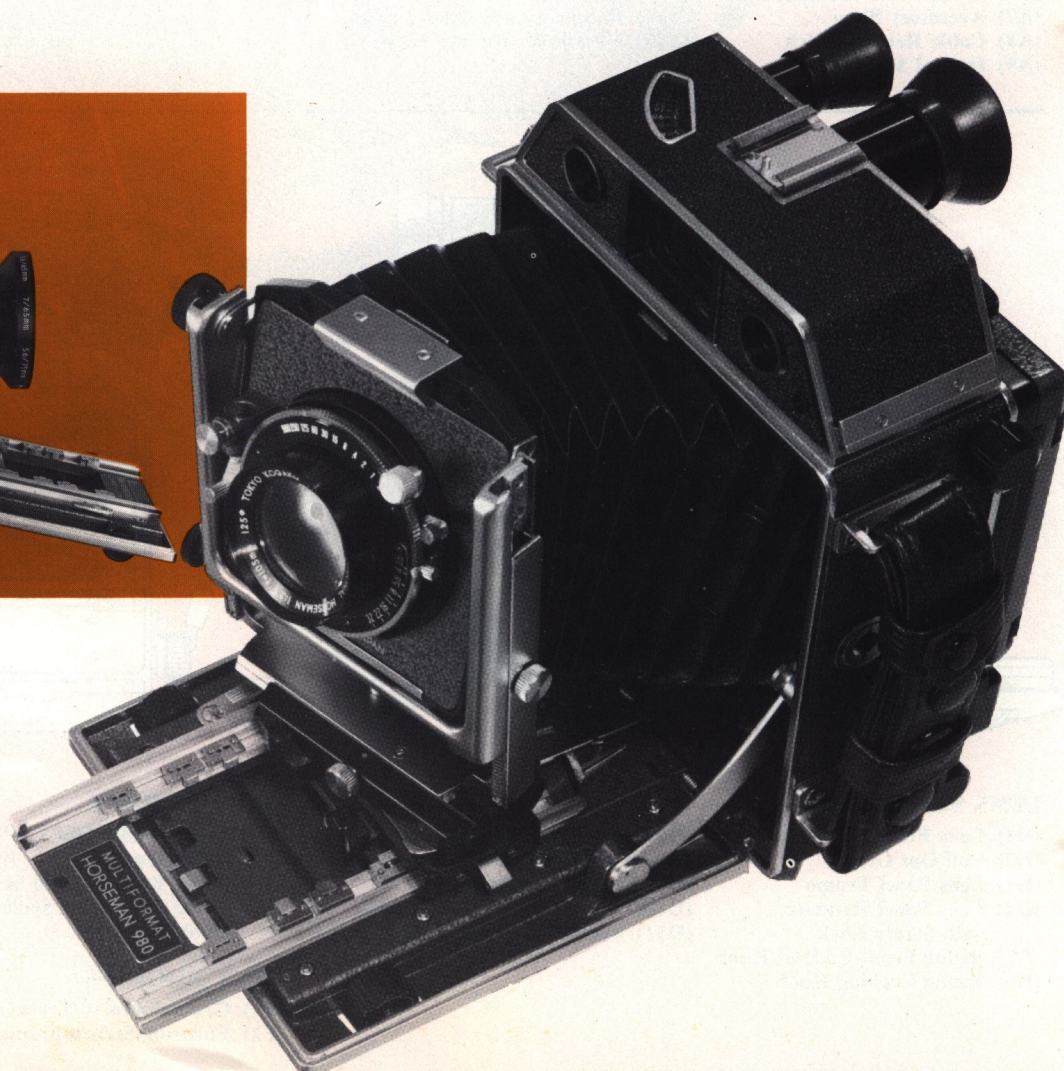
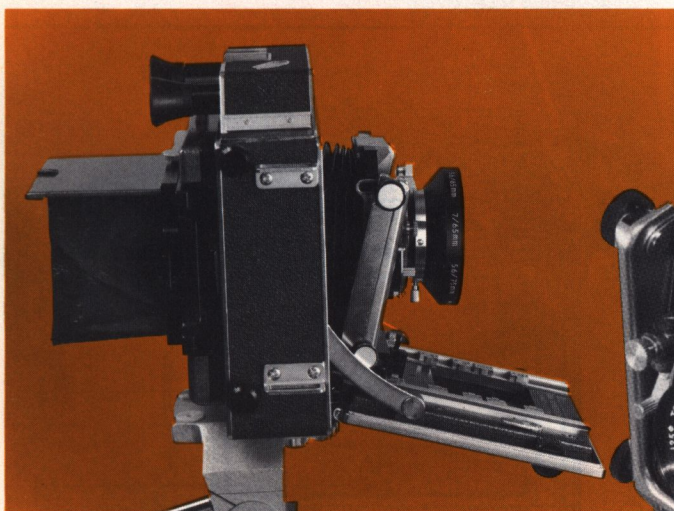
LATERAL SWING FRONT Lensboard swings left or right 15° from center. These front swings are used to

increase depth of focus or to straighten out distorted lines. The lensboard thus moves on two axes, all on the optical center of the lens.

LATERAL SHIFT LEFT OR RIGHT. The Lensboard slides left 14mm from center or 14mm right. This allows changes in image positioning without having to shift the camera, a very important feature when your swings are all set up.

SWINGING AND TILTING BACK For proper corrections, *both* the front and back must be capable of movement. The back moves on a four-position linkage with a maximum movement of 10° in any one direction. This permits alignment of the back with front swings for maximum overall sharpness. The swinging back has a very positive lock to prevent accidental movements. The ground glass back removes easily for use of roll film holders.

DOUBLE EXTENSION BELLOWS 10½" full extension. 1.3x magnification with 105mm normal lens and up 2x with shorter focal lengths.



Control Perspective with Lens Focal Lengths

The Horseman Technical Camera adapts to a wide variety of professional lenses. By selecting the desired focal length, the perspective can be altered. The perspective, or appearance, of a subject is normally altered by the distance of the camera to the subject. Once this distance is established, a lens focal length is picked that allows you to fill the

negative. Working in too close with short lenses causes nearer objects (such as a nose) to photograph larger. With its ground glass focusing plus wide lens selection, the Horseman Technical Camera offers many possibilities to the professional photographer.

The Effect of Camera to Subject Distance

65mm Wide Angle at 2½ Feet

Some distortion. For intentional effects this technique can be useful. The Wide Angle lens shows 76° on a 2¼" x 3¼" format and serves well when maximum area coverage is required. On a wide angle scenic, with some swing and the camera level with the subject, little or no distortion can be seen.



90mm (wide field) at Four Feet

A good picture. Some distortion is there, but you have to look for it. Equivalent to portraits with most roll film cameras or 35mm. A good medium focal length for weddings.

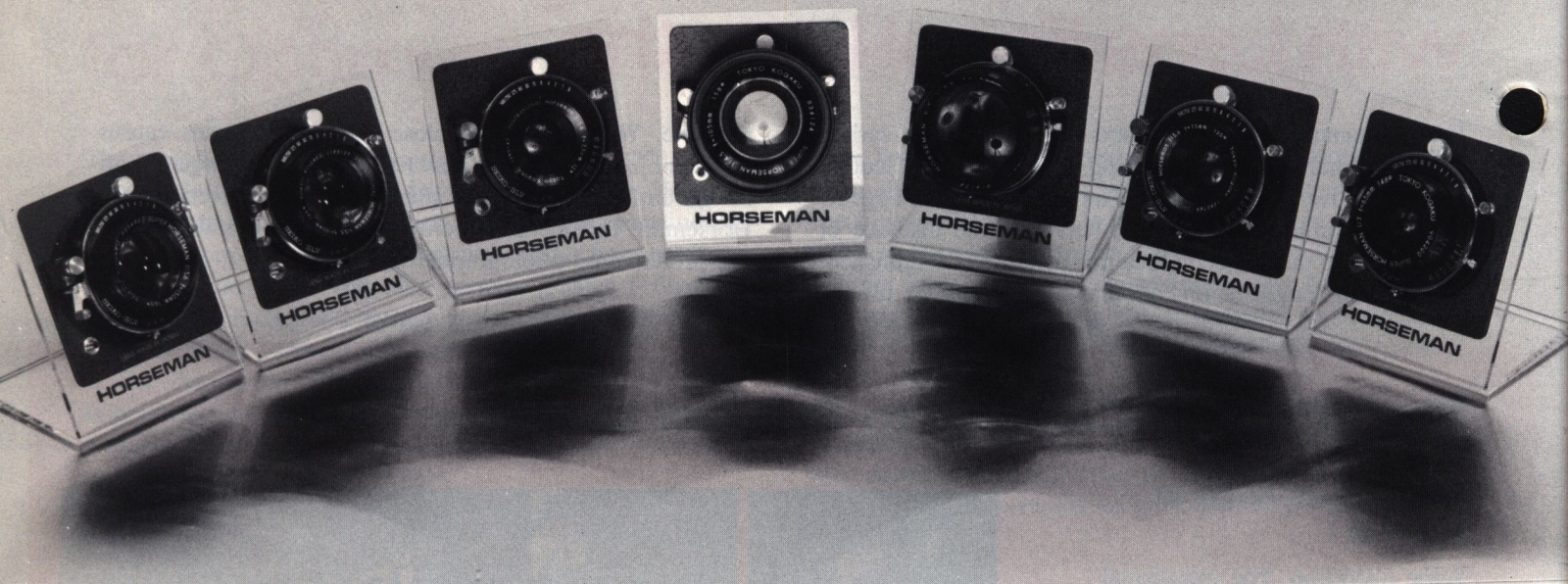


105mm (normal) at Eight Feet

Very pleasing rendition. No objectionable distortion. A good lens for people and things in 2¼" x 3¼" format. Gives the best perspective in "people photos." Very good for objects.

Conclusions: By selecting the desired focal length, you can achieve subtle changes in the image. There is no "right" focal length; it depends on your needs.





A Professional Selection of Lenses Cam Coupled to Rangefinder

The Horseman lenses are made by Tokyo Optical. Tokyo Optical is known for its camera equipment and is a leading maker of professional focal length lenses in Japan. Many famous 35mm cameras today utilize the excellent optics of Tokyo Optical. The Horseman optics are selected for professional quality. There are two types: *Professional* and *Super*.

The *Professional lenses* are brilliant with high definition and are made especially for good tonal separation in color. In normal focal lengths the Professional lenses allow some camera swings and tilts. These lenses are similar in formula to the Caltar® lenses.

The *Super lens series* has extra elements and covers a wider image circle at a given focal length. Their purpose is to permit corrective swings and tilts with minimum light fall off as the lens is moved radically from the center of the film. These lenses are similar to the Type S Caltar®.

For example, the Professional Horseman in 105mm focal length covers a 125mm diagonal circle at f/22. Therefore, some corrective swings are possible. The Super Horseman 105mm lens covers 160mm aperture. Thus, the Super lens could take full rise without darkening the picture edges.

Both the Professional and Super lenses are equal in sharpness. The Super lens has wider front and rear elements to permit fullest usage of camera movements. The Super lenses are slightly higher in resolution and therefore are useful for black and white, where 20"x24" or even 30"x40" enlargements are anticipated.

Each Focal Length Has a Purpose

65mm

Wide angle. Good for room interiors, special effects, has great depth of focus, "sees" 76° in 2¼" x 3¼" (angle

in full image circle is 85°). Wherever shooting room is limited, will focus from 3½ feet to infinity sharply at f/32 for depth effects.

75mm—90mm

Good wedding or close-in lenses. Covers 68° to 58° angles on film. Fine for groups in limited distances, fast action sports or other shooting when work must be rapid. Excellent depth of field. When you need to work fast in limited space, these are good focal lengths.

105mm

The all around standard. Long enough to do a good head and shoulder portrait. Also has less tendency for distortion as you can work further away. A very good illustration lens, particularly for product photos. Covers 51° view on 2¼" x 3¼" (about normal). A good choice for landscapes, general scenics.

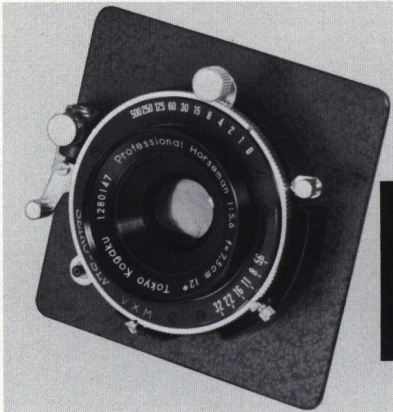
150mm

Longer than normal. Fine for portraits and product photos requiring minimum distortion plus full camera movements. Sees a 37° angle on the film.

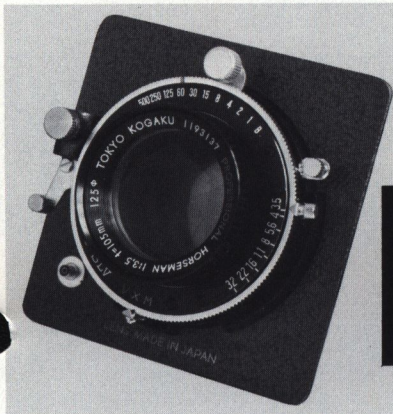
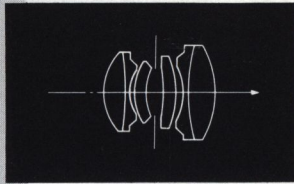
180mm

A telephoto lens. Excellent to reach out and pull in a big image. For sports, nature studies, landscapes. Also compresses apparent perspective by allowing greater working distances. Often preferred for head and shoulder portraits or baby photography to avoid any distortion of features. Shows a 37° angle on film.

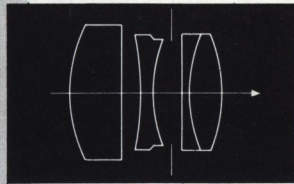
Professional Lenses



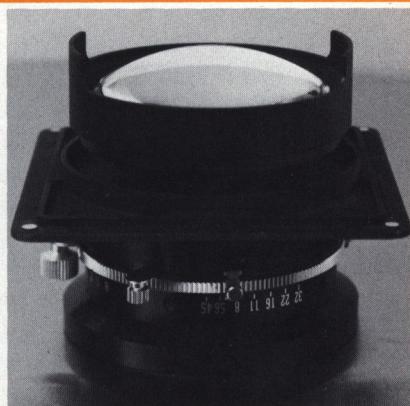
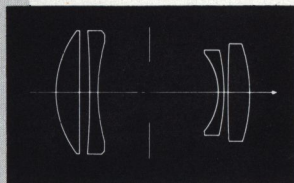
75mm f/5.6-f/32
Seikosha M/X/V shutter
1 sec to 1/500th,
Bulb, focus



105mm f/3.5-f/32
Seikosha M/X/V shutter
1 sec to 1/500th,
Bulb, focus

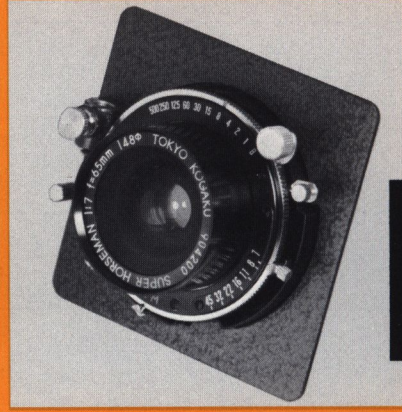


180mm telephoto f/5.6-f/45
Seikosha M/X/V shutter
1 sec to 1/500th,
Bulb, focus

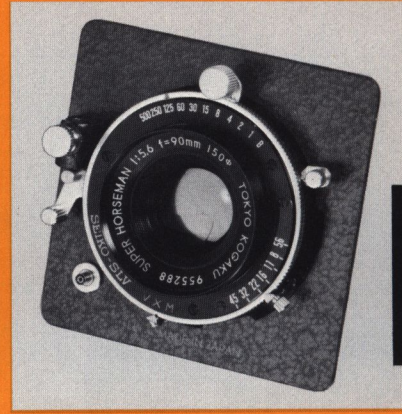
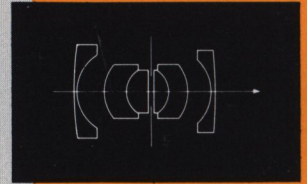


The Super Horseman lenses contain extra elements and wider front and rear elements to allow extensive movements of camera lens from the center of the film. This wider field coverage is needed when camera swings and tilts are required.

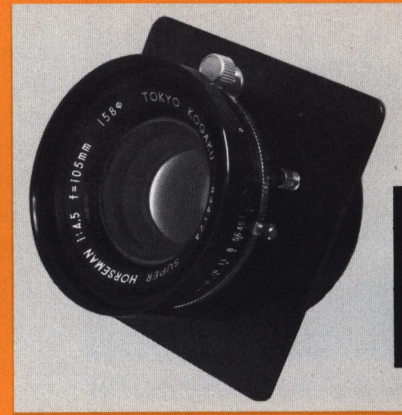
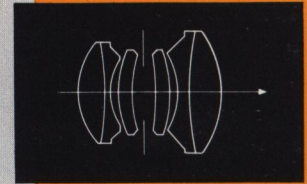
Super Lenses



65mm f/7.0-f/45
Seikosha M/X/V shutter
1 sec to 1/500th,
Bulb, focus



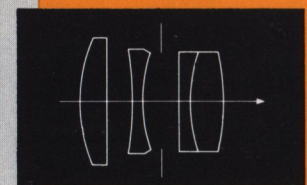
90mm f/5.6-f/45
Seikosha M/X/V shutter
1 sec to 1/500th,
Bulb, focus



105mm f/4.5-f/45
Seikosha M/X/V shutter
1 sec to 1/500th,
Bulb, focus



150mm f/5.6-f/45
Seikosha M/X/V shutter
1 sec to 1/500th,
Bulb, focus



TECHNICAL CHARACTERISTICS

LENS	Nominal Focal Length	Maximum Aperture Ratio (F-Stops)	Lens Components and elements	Maximum angle of View on 2¼ x 3¼ Film	Diameter of Image circle produced by lens*	Shutter Speed	Dia-phragms	Distance from lens seat to film plane at infinity Distance	Range-finder Coupling Range	Diameter of inside screw of Filter	Filter Series
Super HORSEMAN Wideangle lens	65mm	1:7	4:6	76°	F:7 (120) 85° F:22 (148)	B.I. -1/500	7 -4.5	70.3 ±0.05	inf. -1m	40.5φ P = 0.5	6
Professional HORSEMAN Wideangle lens	75mm	1:5.6	4:6	68°	F:5.6 (100) 68° F:22 (120)	B.I. -1/500	5.6 -32	70.3 ±0.05	inf. -1m	40.5φ P = 0.5	6
Super HORSEMAN Standard lens	90mm	1:5.6	4:6	58°	F:5.6 (130) 72° F:22 (150)	B.I. -1/500	5.6 -45	92.6 ±0.05	inf. -1m	40.5φ P = 0.5	6
Professional HORSEMAN Standard lens	105mm	1:3.5	3:4	51°	F:3.5 (100) 51° F:22 (125)	B.I. -1/500	3.5 -32	92.6 ±0.05	inf. -1m	40.5φ P = 0.5	6
Super HORSEMAN Standard lens	105mm	1:4.5	4:6	51°	F:4.5 (128) 63° F:22 (160)	B.I. -1/500	4.5 -32	110.3 ±0.05	inf. -1m	52φ 62φ P = 0.75	8
Super HORSEMAN Local focal length lens	150mm	1:5.6	3:4	37°	F:5.6 (140) 50° F:22 (160)	B.I. -1/500	5.6 -45	141.8 ±0.05	inf. -2m	40.5φ P = 0.5	6
HORSEMAN telephoto	180mm	1:5.6	4:4	32°	F:5.6 (100) 32° F:22 (140)	B.I. -1/500	5.5 -45	122.4 ±0.05	inf. -2m	52φ P = 0.75	8

* At infinity focus. At closer distances the lens covers considerably more area.

Filters and Sunshades

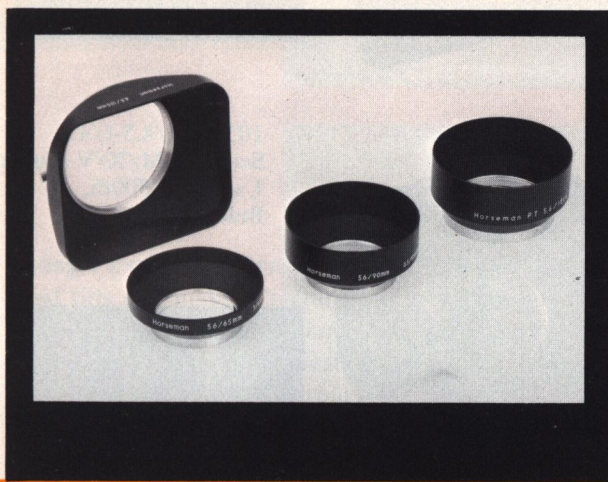
The Technical Horseman uses screw-in filters and sunshades. The sunshades are of matte black finish and are clearly marked as to the lens they are suited to. All Horseman lenses *except* the 105mm Super Horseman and 180mm Telephoto Horseman accept 40.5mm screw-in type filters (series 6). The 105mm Super Horseman and 180mm Telephoto require 52mm screw-in filters.

- P3023 for 90mm, Professional 105mm, Super 150mm
- P3024 for 65mm and 75mm
- P3025 for 180 Telephoto
- P3026 for 105mm Super Horseman

Cases

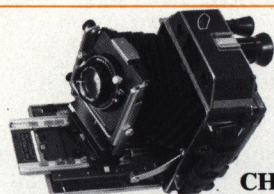
Black Leather Carrying Cases travel well and have accessory Shoulder Straps. The P4087 Case is divided into three compartments. The center compartment holds the camera. A side compartment has slots for lenses and is subdivided into two sections. A top layer has straps for lens shades and accessories. The right compartment has room for roll back sheet film holders, etc. This is a very well thought out case that travels well. You can carry a complete commercial studio in here. Dimensions: 8¼" x 13¼" x 11". Furnished with shoulder strap.

Model P4088 Gadget Case. Soft leather with grey lining. For camera, lenses or accessories. Smaller and very useful for the multitude of accessories.



Horseman Technical Camera

TECHNICAL CAMERA



CH6000

MODEL NO.

DESCRIPTION

- | | |
|---------------|--|
| CH6000 | Technical Camera with L5011 105mm f/3.5 professional Lens, Seikosha 1 sec to 1/500th shutter, Ground Glass Back for sheet film and P4085 cable release |
| C6000 | Camera only, less lens |

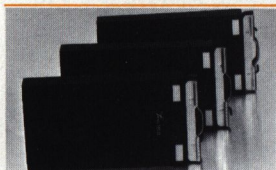
ROLL FILM HOLDERS



P6025

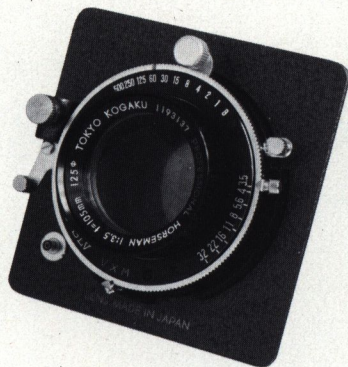
- | | |
|--------------|--|
| P6025 | 6 x 9cm, 2¼ x 3¼, 8 exposures on 120 roll |
| P5023 | 6 x 7cm, 2¼ x 2¾, 10 exposures on 120 roll |
| P5024 | 6 x 7cm, 2¼ x 2¾, 20 exposures on 220 roll |

SHEET FILM HOLDERS



- | | |
|--------------|---|
| CH844 | Double, Lisco sheet film holder, 2¼ x 3¼ |
| CH830 | Single, for 2¼ x 3¼ glass plates or film, double exposure prevention lock |

LENSES



L5011

- | | |
|--------------|---|
| L6010 | 75mm f/5.6 professional Wide Angle lens |
| L5011 | 105mm f/3.5 professional |
| L4051 | 180mm f/5.6 telephoto |
| L4022 | 65mm f/7.0 Super Wide Angle |
| L4031 | 90mm f/5.6 Super lens |
| L4012 | 105mm f/4.5 Super Standard lens |
| L4041 | 150mm f/5.6 Super lens |

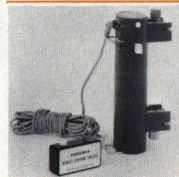
Note: The proper focusing cam is furnished with each lens. Lenses are mounted in the Horseman lensboard.

LENS HOODS



- | | |
|--------------|---|
| P3023 | Fits 90mm (L4031), 105mm professional (L5011) and 150mm (L4041) |
| P3024 | Fits 65mm (L4022) and 75mm (L6010) |
| P3025 | Fits 180mm (L4051) |

ELECTRICAL GRIP AND RELEASE



- | | |
|--------------|---|
| S5031 | Electrical Grip with Solenoid release and remote control switch |
|--------------|---|

OPTICAL EXPOSURE COMPUTER

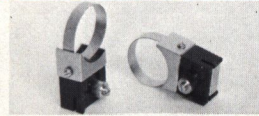
MODEL NO.

DESCRIPTION



- S5004** Optical Exposure Computer for Horseman, Linhof, Mamiya or similar cameras accepting 2 1/4 x 3 1/4 sheet film holders.
- S5005** 4 x 5" Adapter plate for usage of S5004 meter in 4 x 5" cameras. Fits any standard 4 x 5" spring back camera. Permits through-the-lens metering. S5004 required.

FLASH BRACKETS



- FL2068**
Horseman Universal flash clamps (2 required).



CASES

- P4087** Carry case, compartmented, black leather finish
- P4088** Gadget case

WIDE FIELD HORSEMAN



- CH842** Compact Horseman lens frame, 62mm Wide Angle lens and protective back cover (uses roll backs listed above for Horseman camera, or Graflex roll backs).
- CH8010** Special Wide Angle lens Hood for CH842 camera.

CONDENSED SPECIFICATIONS TECHNICAL HORSEMAN

- Formats:** 6 x 9cm (2 1/4 x 3 1/4") and 6 x 7cm (2 1/4 x 2 3/4").
- Film Sizes Accepted:** 120 or 220 roll film, 2 1/4 x 3 1/4" sheet film, 2 1/4 x 3 1/4 glass plates.
Will also accept Graflex roll film holders.
- Dimensions (outside):** H 17.5cm, W 15.9cm, D 9.0 cm.
- Weight (body):** 2 Kgs. (4.4 lbs.)
- Bellows Extension:** 10 1/2".
- View Finder:** Parallax corrected, bright frame finder for 90mm, 105mm, 150mm and 180mm lenses. Full frame used for 75mm, 85% of field shown for 65mm.
- Rangefinder:** Cam coupled. Individual cams for each lens. Minimum coupling distances: 65mm, 75mm, 90mm, 105mm—3.3 feet (1 meter). 150mm and 180mm—6.6 feet (2 meters).
Note: Cams can be ground for special lenses on request at extra price. Write describing lens to be mounted.
- Lenses:** Equipped with infinity stops for 7 lenses
- Standard: 105mm f/3.5, 4 element (furnished with basic camera)
90mm f/5.6, 6 element
105mm f/4.5, 6 element
- Wide Angle: 75mm f/5.6, 6 element
65mm f/7.0, 6 element
- Long focal length: 150mm f/5.6, 4 element
Telephoto: 180mm f/5.6, 4 element
Cam furnished with each lens

WIDE FIELD HORSEMAN

- Formats:** Same as Technical Horseman camera.
- Weight (body):** .9 Kgs. (2 lbs.)
- Size:** H 4 1/4", W 5 1/4", D 3 1/2".
- View Finder:** Wire sports type.
- Focusing:** Zone type to 1 meter (3.3 feet). Depth at f/22. 1.5 meter to infinity.
Accepts Horseman or Graflex roll backs.
- Lens and Shutter:** 62mm, 6 element. f/32—f/5.6 Shutter 1 sec to 1/500th M/X Synch. Angle of view 6 x 9cm format—80°.
Neck strap fastening clips, tripod or accessory sockets top and bottom. Rapid release catch on roll back. Rapid shutter cocking lever, built-in body release.
- Roll Film Holders:** 6 x 9cm, 2 1/4 x 3 1/4, 8 exposures.
6 x 7cm, 2 1/4 x 2 3/4, 10 exposures.
6 x 7cm, 2 1/4 x 2 3/4, 20 exposures on 220.

Horseman Cameras are available from:



Calumet

CALUMET PHOTOGRAPHIC INC.

Calumet Photographic Inc., 1590 Touhy Ave., Elk Grove Village, Ill. 60007
Phone Area 312 439-9330

TECHNICAL SALES CENTERS

In New York: Suite 3502, Empire State Building, New York, N.Y. 10001
Phone Area 212 695-4780

In Los Angeles: 434 N. LaBrea, Los Angeles, Calif. 90036
Phone Area 213 933-5735