OPERATING INSTRUCTIONS

☐ ARRIFLEX 16S/B, 16S/B-GS

☑ ARRIFLEX 16M/B

ARRIFLEX
CORPORATION OF AMERICA

OPERATING MANUAL
for
ARRIFLEX® 16 M/B

The following diagram pages may be kept folded out for your convenience in identifying operating parts while reading the instructions.

CONGRATULATIONS!

You now own an **ARRIFLEX**, one of the finest, most versatile motion picture cameras ever made.

Soon this new **ARRIFLEX** will be at work for you. We know it will perform to your entire satisfaction.

As a member of the **ARRIFLEX** family, you are cordially invited to call on us at any time for advice or assistance. If you use the **ARRIFLEX** in a particularly interesting, complicated, difficult or unusual application, won't you please write to us about it? We will be glad to hear from you.

IMPORTANT

Please be sure to fill out and mail the guarantee card which accompanies your camera. This not only makes the guarantee valid, but it also permits us to serve you better should you have any technical or service problems in the future.

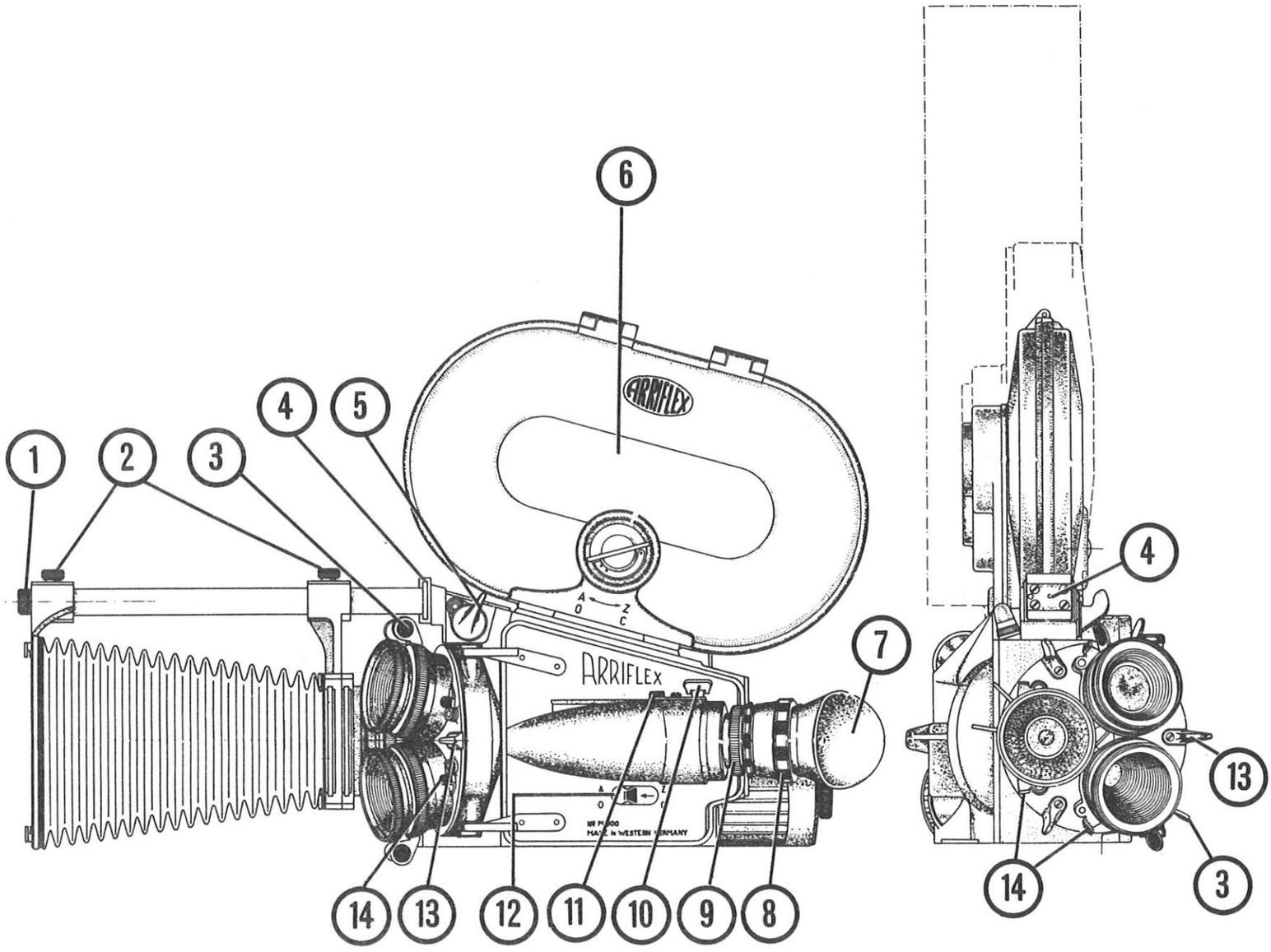
As we keep a permanent record of all registration cards, we can also help you better in case of theft.

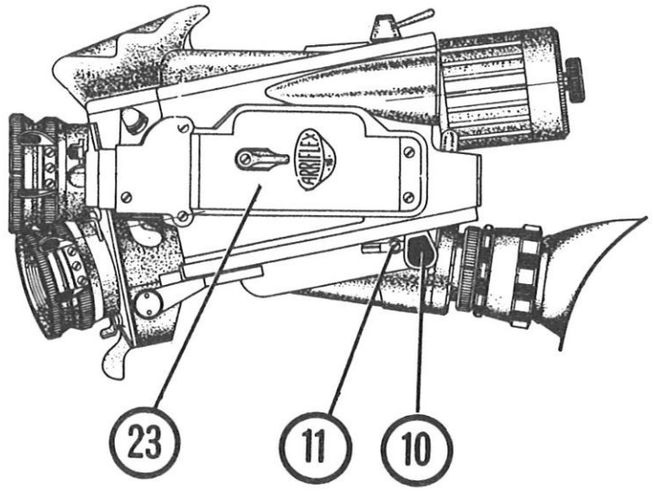
Each **ARRIFLEX 16M/B is SUPPLIED WITH:**

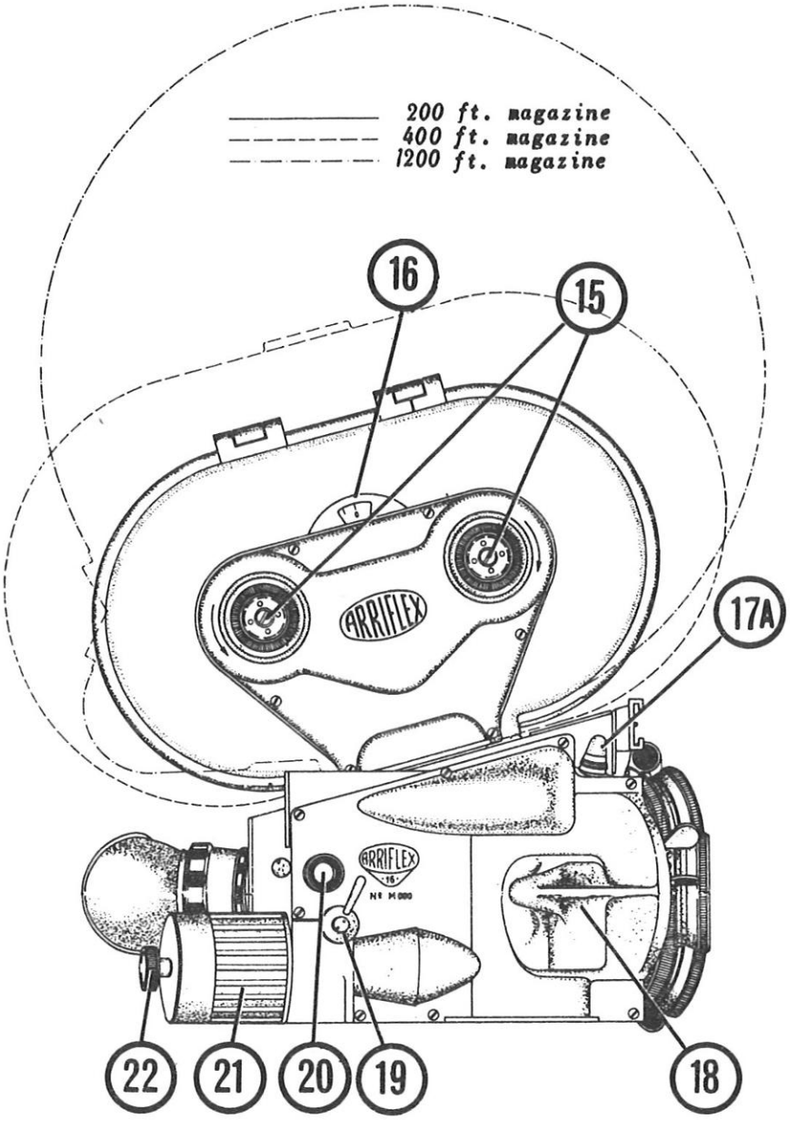
1) Test Film taken with camera
2) Matched set of replacement lamps for automatic electric start mark system
3) Fountain-pen type brush for cleaning optical surfaces (when cap is put on rear of brush holder, brush is pushed out)
4) Plastic skewer for cleaning emulsion from film gate.
5) Bottle with special camera oil
6) Tube of special grease for lens cavities of camera and lens mounts
7) Pressure oiler
8) Guarantee Card
9) Instruction Manual

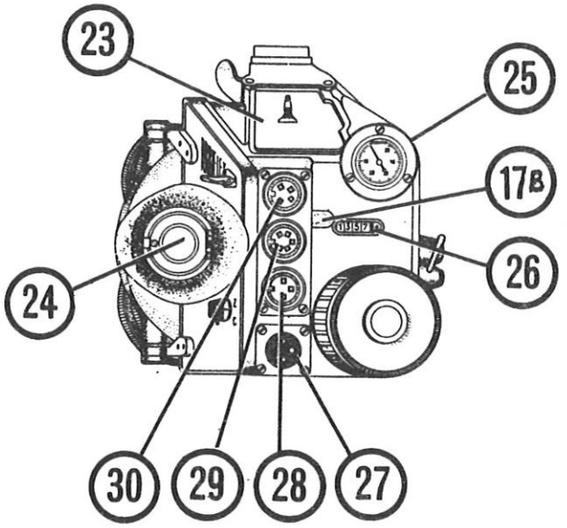
DIAGRAM OF ARRIFLEX 16M/B

SHOWING EXTERNAL CONTROLS AND FEATURES









1) Lock screw for matte box boom
2) Lock screws for adjusting front and rear matte box standards
3) Follow focus wings on each lens
4) Slide-in shoe for matte box
5) Magazine Lock
6) Interchangeable 200 ft. magazine (also available 400 ft. and 1200 ft. magazines)
7) Finder eyepiece with rubber eyecup
8) Diopter adjustment ring
9) Knurled ring for removing eyepiece
10) Locking start/stop switch
11) Lock release for switch
12) Latch for cover door
13) Turret grip (1 of 3)
14) Lens socket lock levers (1 of 6)
15) Magazine feed and take-up spindles
16) Footage counter on magazine
17a) Marker and indicating lights
17b) for automatic electric start mark and synch signal generator
18)) Contour grip with thumb rest
19) Motor lock lever
20) Footage and frame counter setting disk
21) Governor controlled constant speed motor
22) Knob for manually turning motor
23) Magazine cavity cover
24) Light cover in finder eyepiece in closed position
25) Tachometer
26) Footage and frame counter
27) Cannon outlet for battery cable
28) Additional Tuchel outlet parallel to Cannon outlet
29) Signal generator outlet
30) Blank outlet (may be custom wired for special applications)

FOREWORD

It was only in 1953, that the first Arriflex 16S Camera was sold in the United States. It was delivered to Walt Disney Studios for the shooting of "The African Lion," a prize-winning film made by Alfred Milotte.

Since then, literally thousands of Arriflex Cameras have been delivered to film production units around the country. Hundreds of award-winning films have been made with Arriflex Cameras, and the total footage exposed with them runs into uncountable millions.

Customer satisfaction and loyalty obligates. Therefore, Arnold & Richter has never been satisfied to leave well enough alone. As experience taught new methods and improvements, they were incorporated in successive models. As technological advances in mechanics, metallurgy, optics, or electronics were accomplished, they were utilized for successive Arriflex models.

The past years were good to the Motion Picture Business, and to us who are part of it. Television, industry, science, government and feature productions—they all need more and more film to report, entertain, record, teach and influence, – and the cameras to make these films.

Thus, we look forward to continuous growth in our industry and pledge to keep the Arriflex in step with, and if possible, ahead of the demands of our times.

New York, December, 1969

HOLDING CAMERA

Place the thumb of your right hand between the contour grip and the side of the camera, while the other fingers reach forward around the "bulge" where they are free to actuate the follow-focus grips and diaphragm ring of most prime lenses in the "taking position."

Place the palm of your left hand around the finder housing on the left side of the camera, fingers over the On-Off switch. Thus the camera can be held steady easily and comfortably.

When the switch is pressed down, it remains locked in the down position until its release lever is pushed in. For even more convenient and steady hand-holding an accessory PISTOL GRIP with or without SHOULDER BRACE is also available. It is attached to the tripod socket and has its own release trigger which connects through the switch behind the tripod socket.

SIGHTING

Place your right eye against the finder eyecup. An eyeglass wearer should raise his glasses to his forehead and sight without them. For left eye viewing, the eyecup may be turned around.

If the shutter is open and the viewing area is dark, turn the transport knob in the center of the motor to close it.

Then focus your eye to the ground glass by turning the wide knurled diopter adjustment ring at the eyepiece until the cross hair on the ground glass and the grain structure appears sharp. (You may want to do this without a lens in the socket.) Be sure to relock the fixing ring after adjustment of the diopter ring.

Now focus on the subject by actuating the focusing mount of the lens. For critical sharpness, always focus the lens with the diaphragm wide open, to get minimum depth of field.

Most Arriflex lenses have clicking diaphram stops so that the lens can be stopped down without removing the camera from the eye.

While the optical system of the finder is coated so that it prevents stray light from entering and fogging the film, the eyepiece must be shielded from direct (horizontal) sunlight or powerful spotlight if the eye is removed. For this purpose a light cover is provided inside the rubber eyecup. During filming, always press your eye firmly against the eyecup or close the cover door on the eyepiece.

As a convenient accessory, we have an automatic closure eyepiece (cat. No. 339 113) which opens only when slight pressure from your eye is applied.

FINDER WITH DETACHABLE EYEPIECE AND INTERCHANGEABLE GROUND GLASS

The detachable eyepiece permits attaching the PERISCOPIC ACCESSORY FINDER, which facilitates viewing from the side or the top (for instance, if camera is on a microscope or copy stand), or viewing with the left eye when a 400-ft., or 1200-ft., MAGAZINE is attached to the camera. (See illustration in Arri folder).

The eyepiece can be removed by turning the knurled chrome-plated collar clockwise (camera in shooting position). To mount it, engage the keyed flange properly and turn the collar counter-clockwise.

The rubber eyecup can be turned freely for right or left eye viewing.

The rubber eyecup assembly can be completely pulled off the finder eyepiece so if one camera is used by many people, each cameraman can have his own eyepiece. This is particularly advantageous for cameramen who want corrective lenses to be mounted into the eyepiece. The eyepiece frame is factory-equipped to take 15.5mm corrective lenses and any optician can easily mount them. Spare eyecup assemblies are listed in our accessory program.

Due to its anatomical shape, the eyecup always assumes the same position in relation to the eye and therefore, even cylindrical corrective lenses can be mounted.

Each camera is supplied with a TV-Ground Glass which is marked to show TV safe action area and projection area (ISO). The center-cross represents optical center axis and the total finder area corresponds to 16mm standard aperture. Different Ground Glasses as well as clear glasses, for Cinemicroscopy etc., are listed as accessories in our catalogue.

MIRROR REFLEX SHUTTER

The mirror reflex shutter is the heart of the Arriflex. It rotates at a 45° angle between lens and film plane, and reflects upon the ground glass of the viewfinder exactly the same image as is registered on the film. There are no beam splitters or other optical surfaces between the taking lens and the film that could deteriorate the image. The light rays reach the film through the lens without any interference while the shutter is open; they are reflected to the ground glass only while the shutter is closed. Thus the film, as well as the eye, always get 100% of the light transmitted by the taking lens.

The shutter opening of 180° results in the following exposures:

Camera Speed	Exposures
8 FPS	1/16 sec.
12 FPS	1/24 sec.
16 FPS	1/32 sec.
24 FPS	1/48 sec.
32 FPS	1/64 sec.
48 FPS	1/96 sec.

As this table indicates, the exposure can be calculated for any camera speed by doubling the FPS figure and reading the result as a fraction of a second.

THE THREE LENS DIVERGENT TURRET

The Arriflex 16M/B features a heavy duty three-lens turret. The lenses are mounted in a divergent manner (21°) to prevent optical and mechanical interference between wide-angle and telephoto lenses. Thus a 16mm wide-angle lens can be mounted simultaneously with a 300mm (12") Tele-Kilar without danger of interference.

ROTATING THE TURRET

Model 16M/B cameras are equipped with a turret lock to prevent the turret from being turned unintentionally. To lock the turret, make sure that the taking lens is precisely located as indicated by the detent mechanism, and then turn the lock lever as far as it will go. (See photo illustration.) To open the turret lock, turn the lever counter clockwise as far as it will go.

Three finger grips (No. 16) make it easy to rotate the selected lens into taking position. A detent mechanism insures the precise alignment of the taking lens with the optical axis of the camera.

Always turn the turret by means of the grips, never by grasping the lenses.

The back of each finger grip is coded with one, two or three dots. The code may be used to indicate if the wide angle, normal or telephoto lens is in taking position. The code dots are readily seen from the rear, left side of the camera.

STANDARD ARRI LENS MOUNTS

Two of the three lens cavities in the Arriflex 16M/B are for standard Arriflex lens mounts. These are ideal for fixed focal length lenses of average size. Standard Arriflex lens mounts feature exceptionally rugged, reliable lens support-yet they are fast and easy to mount and dismount. To seat lenses in standard Arri lens mounts: Press the lens locking levers together (No. 15) and carefully place the lens in the socket. Take care to align the keyway in the lens mount with the key in the socket. When the lens is all the way in, release the lock levers. Then, check to be sure that the lens is seated and locked in place. Keep lens mount and lens socket lubricated with the barest trace of the instrument grease supplied with your outfit.

To remove standard Arri mounted lenses: with thumb and forefinger, press the lens lock levers (No.15) together, gently lift the lens straight out. Keep unused lens cavities covered with cavity caps.

ARRI BAYONET LOCK LENS MOUNT

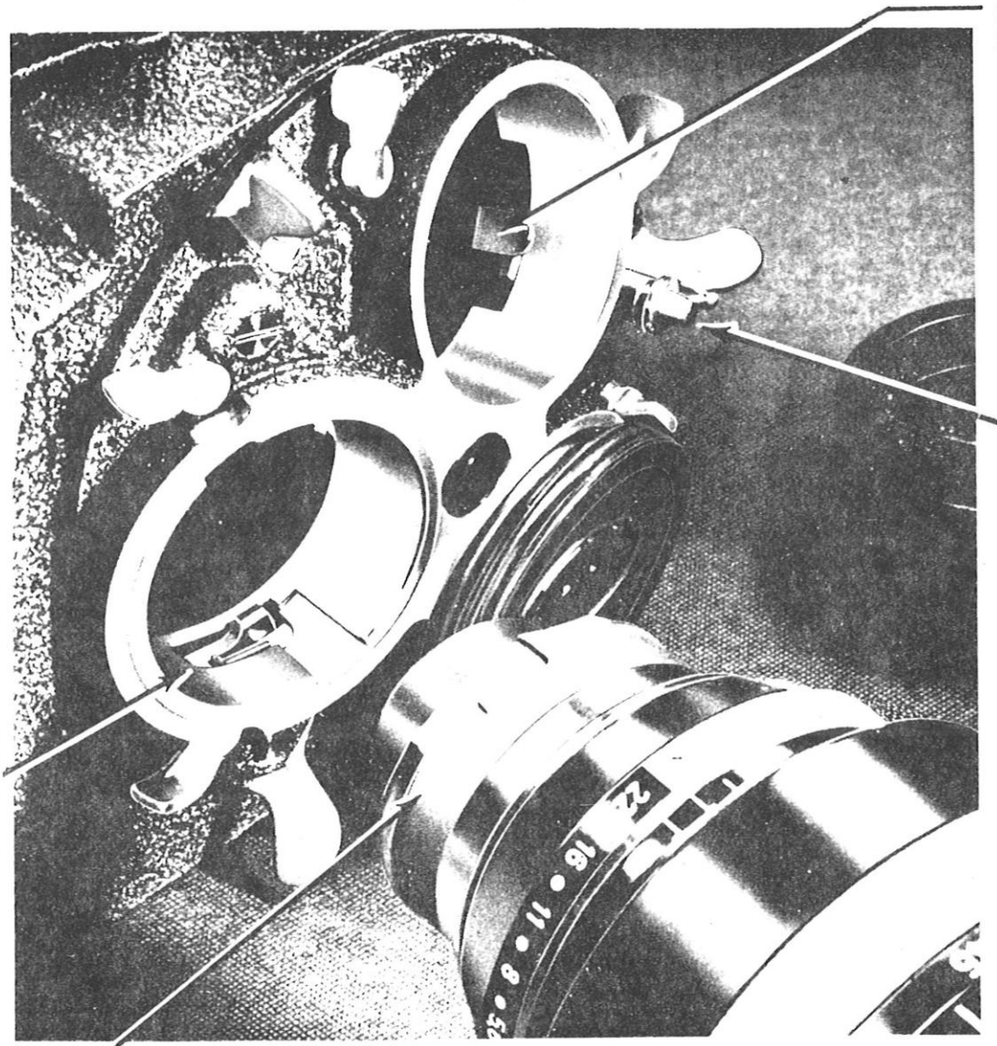
One of the three lens sockets is for lenses in Bayonet Lock Lens Mounts. This is intended for zoom lenses and other large, heavy lens types that require extra support.

To seat Bayonet Lock mounted lenses: Note the locking lugs at the rear of the lens mount—position the lens so that the engravings are at the top, and so that the lugs are in line with the keyways in the socket. (See illust) Insert the lens as far as it will go and then turn the entire lens clockwise 5 to 10 degrees.

You will hear the mount latch into place. The lens locking levers (No. 15) operate automatically in this case.

To remove Bayonet Lock Lenses: With thumb and forefinger press the locking levers together (No. 15) and rotate the entire lens counter clockwise 5 to 10 degrees. Then carefully lift the entire lens out of the socket.

The Bayonet Lock Lens Mount is fabricated from specially treated hardened steel. It provides seating and lens alignment of superior precision and durability. Always use zoom lenses in Arri Bayonet Lock Lens Mounts.



LENSES FOR ARRIFLEX 16M/B

are made by the world's best optical manufacturers and represent the ultimate in quality. The lenses available for the Arriflex 16 range in focal length from 5.7mm up. The standard lenses are equipped with follow-focus grips and most have diaphragm click-stops. Thus the lens can be stopped down from behind the camera without direct observation.

With due consideration for the professional use for which they are intended, all Arriflex lenses are triple-checked for best optical performance before they are mounted for the Arriflex; only the very finest lenses are selected. (See Arriflex price list for makes, focal lengths and maximum apertures).

Among telephoto lenses, we recommend the Kilfitt Kilars available up to 600mm. They are of outstanding quality and workmanship. All Kilars feature a removable Arriflex mount. Extension Tubes are available for filming at extremely close distances (Macro Cinematography).

For close-up work, the Kilfitt Macro-Kilar lenses are ideal. The Kilfitt 90mm Super Macro-Kilar focuses continuously from infinity to 5" from the subject. The 40mm Macro-Kilar focuses from infinity to 4".

A variety of variable focal length ("Zoom") lenses are also available, which are manufactured to Arriflex specifications and standards. (See price list for details). With your Arriflex 16M/B these lenses require no special finder. The field size, focus and depth of field are always clearly shown in the camera's unique mirror-shutter reflex system.

LENS SELECTION

It is the factory's policy to sell Arriflex Cameras only complete with top quality lenses. Inferior lenses mounted on these cameras would not only nullify the great expense of precision engineering that goes into each camera, but would not yield the superb results of which the Arriflex is capable.

The standard set of lenses for the Arriflex 16M/B is usually of 16mm, 25mm, and 50mm focal length. These lenses are used most frequently by professional cameramen, and work best with the standard matte box. For variable focal length lenses (zoom lens), we provide a special "Universal Matte Box", which covers the wide field variations of "zooms". When a longer focal length lens is mounted on the turret, the matte box often cannot be brought close enough to the 16mm or 25mm lenses, to work properly and the lens must therefore first be removed when using the 16mm or 25mm lens.

Whenever a lens socket is empty, it must be capped with a cavity cap which is supplied with the camera.

Extremely long or heavy lenses may require a cradle or other special support.

CAUTION:

When buying additional lenses for your Arriflex in the future, insist on "genuine" Arriflex Lenses. Not every lens in an Arriflex mount is genuine. Zoom lenses in factory original mounts have the Arriflex logo ARRI engraved on the lens mounts. Fixed focal length lenses are identified by the "Arriflex" name on the front rim. It would be false economy to pay for mechanical Arriflex perfection and to jeopardize the investment with "orphaned" lenses that are frequently of poor optical quality, poorly mounted, poorly centered, and that are too expensive at any price. If in doubt whether a lens is genuine, please write to us, mentioning make and serial number. This is especially important with Zoom lenses, due to their optical back-focus tolerances.

DETACHABLE BELLOWS TYPE MATTE BOX AND FILTER HOLDER

This indispensable accessory fits over the lens turret. To attach the camera, slide the end of the boom into the special shoe on the front of the camera housing; it is tightened and locked into position by turning the knurled knob at the front of the boom.

The rear standard of the matte box is movable to accommodate lenses of various lengths. Its front is also adjustable to give maximum efficiency and to prevent vignetting irrespective of the lens used.

IMPORTANT: Adjust bellows extension while looking through the viewfinder in order to avoid possible vignetting.

SPECIAL EFFECT MATTES (accessory item—see price list) can be inserted into the front frame.

The two filter stages accept rectangular **ARRI OPTICAL GLASS FILTERS or ARRI FILTER HOLDERS** with frame for 2" square Kodak gelatine or glass filters.

One of the stages can be rotated for use with Graduated or Polarizing Filters. (For available filters-see price list).

The rear opening of the matte box is threaded to accept a screw-in adaptor ring for circular Series VIII glass-mounted filters.

UNIVERSAL MATTE BOX

Use of the matte box improves the picture quality considerably; never shoot without it; In addition, it permits one filter to be used with most lenses.

The Universal Matte Box brings matte box usefulness and economy to the most popularly used zoom lenses, the 12-120 Angenieux and the Zeiss 12.5-75 Vario Sonnar. The Universal Matte Box also accommodates many standard and many telephoto, fixed focal length lenses. Features include large apertures, adjustable front and rear standards, and two filter stages, one of which may be rotated for polarizing filters. 3" x 3" Wratten or Arri filters, 75mm x 100mm graduated filters, and 4" x 4" Wratten filters may be used.

MOTORS

All motors are interchangeable instantly without the need of tools.

When the motor is put back into place, care must be taken to line up the locating pin against the keyway in the body casting and pushing it all the way in, as otherwise it will not make contact. Then relock it.

The film transport knob in the very center of all motors is used to turn the shutter over by hand for sighting, and to actuate the registration pin and film transport claw during loading operation.

CONSTANT SPEED MOTOR

A **GOVERNOR CONTROLLED MOTOR** 24 fps which works with a regular 8V **ARRI** 16 battery is generally used with the **ARRIFLEX 16M/B.**

After opening the lock lever, the motor may be pulled out of the camera housing and interchanged with the **VARIABLE SPEED MOTOR, SYNCHRONOUS MOTOR, or ANIMATION MOTOR.**

VARIABLE SPEED MOTOR

By turning the motor shell, a built-in rheostat is actuated that regulates the speed of the motor, which —in turn — can be read in frames per second on the tachometer. The figures around the motor shell are arbitrary ones, and after a little experience permit the operator to reset the camera quickly for any desired speed. (With a fully charged 8 Volt battery, the rheostat will be set between 3 and 4 to give 24 fps).

"DURO-PACK" BATTERIES

These are steel-cased, longlife Nickel Cadmium batteries in which the electrolyte is an alkaline. Each cell is hermetically sealed and never requires the addition of water or the usual battery maintenance. Each battery is supplied complete with a miniature charger built into the case,—Dollar for Dollar, it is the best buy, - The following two models are available:

8 V4AH----------8,4 Volt 4AH. It will run the Arriflex 16M for approximately 1800 ft, of film on a full charge.

16V4AH----------It has a selector switch with permits drawing 8. 4 Volt 8AH for use with Arriflex 16 or 16.8 Volt 4AH for use with Arriflex 35. Good for approximately 3600 ft. on a full charge.

This battery with the 8.4 Volt 8AH setting is especially desirable for long filming sessions particularly with 1200 ft. magazines.

CAUTION:

The Arriflex 16M/B camera and all its accessories are rated for 8V DC. Do not use power sorces other than Arriflex "Duro-Pack" products. Damage from improper power sorces could be quite extensive. Make sure power cables are polarized.

HOUSE CURRENT

To use the Arriflex with 8V DC Motors, on 110 Volt AC house current, a step-down transformer/rectifier is necessary. An excellent unit of this type is the **ARRIFLEX REGULATED D.C. POWER SUPPLY** (see separate specifications). It is ideal for indoor shooting and has its own ammeter, volt meter and rheostat built-in plus four fixed outputs of 8, 12, 16 and 24 V DC.

Aside from the DC-motors, a full line of Synchronous 110 Volt 60 HZ Motors is available for the Arriflex 16M/B.

CAMERA CONTROLS

TACHOMETER

The tachometer, conveniently located for easy visibility in the rear of the camera, is calibrated in frames per second from 0 to 50. A red line marks the important 24 fps. setting.

FOOTAGE AND FRAME COUNTER

A 3-digit footage and combination frame counter is arranged in a window beneath the tachometer. This footage counter indicates the footage exposed and adds or subtracts depending on whether the camera is running forward or reverse. It can be reset by means of the thumb wheel (20).

With motors which have a reverse switch, such as the Variable Speed Motor or the Time Lapse Motor, any length of film can be reversed and any frame can be easily located for trick exposure purposes.

ELECTRICAL CONNECTIONS AND WIRING

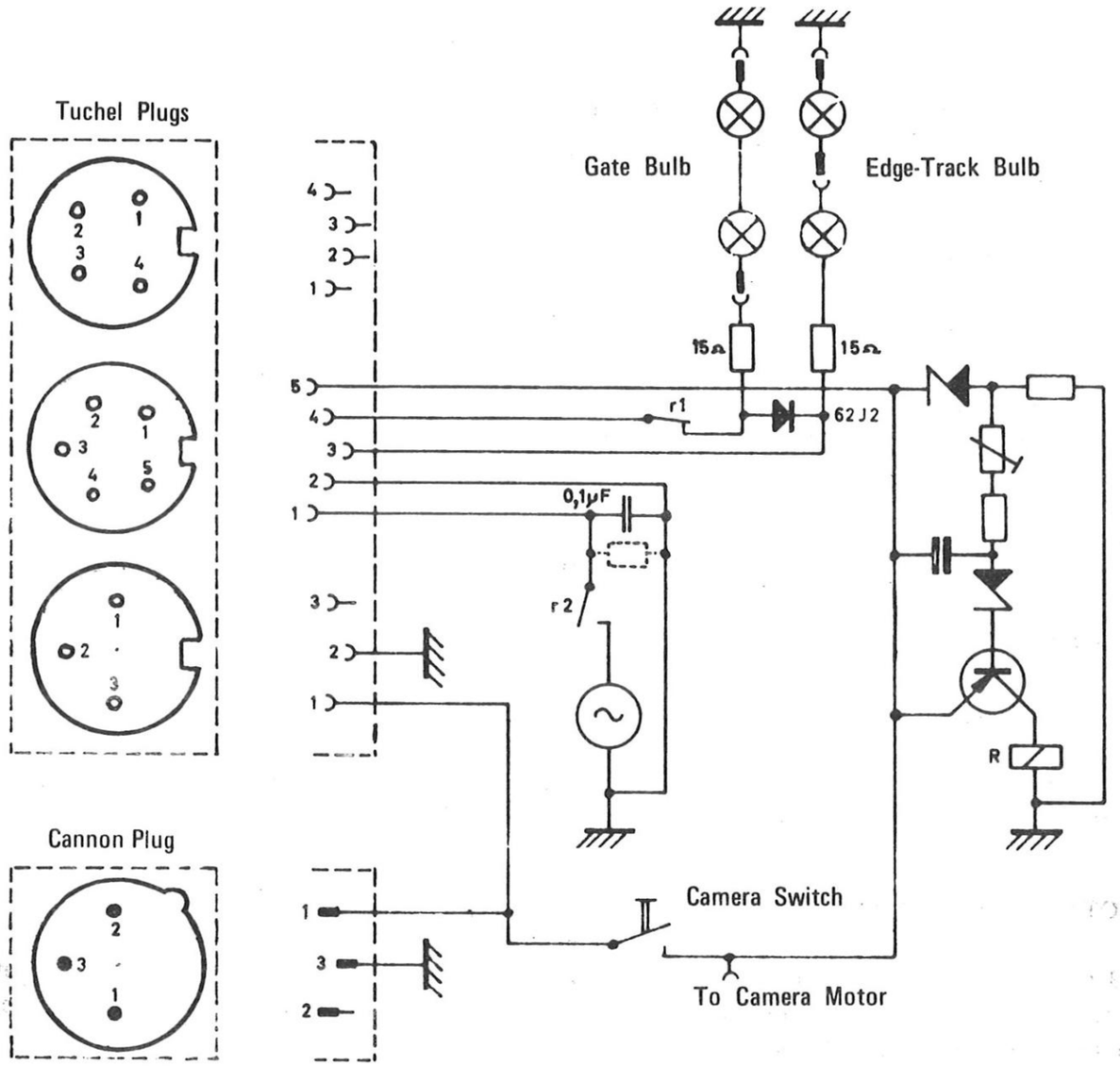
On the very bottom of the rear panel is a Cannon outlet which accepts the battery cable with self-locking Cannon plug.

The other 3 outlets accept Tuchel plugs with screw-in sleeves and serve the following purpose:

The **lowest one** is a 3-pin outlet which parallels the main power outlet. When the camera is connected to the battery, battery current can be drawn from this outlet for use with auxiliary equipment.

The **center one** is the outlet which delivers the 60 cycle synch signal on **Pins 1 + 2** and is connected by cable to the tape recorder.
Pin 3 gets an 8 Volt current when the camera is turned on and functions together with the scene marking oscillator (optional accessory) which is described below.
Pins 4 + 5 are bridged (automatically) by the Tuchel plug in order to complete the circuit. Therefore, if this outlet is not connected, the lamps are inactivated. If the user wants to attach his own connections, care must be taken to bridge pin 4 + 5.

The **top 4-pin outlet** is blank and may be custom wired for special applications, (Remote control, actuating automatic devices, etc.)



ELECTRICAL CONNECTIONS AND WIRING

SYNCH SIGNAL SYSTEM-ELECTRIC START MARK DEVICE-ELECTRIC SCENE MARK DEVICE

Location synchronous sound filming is done more and more. The Arriflex 16 M/B is especially designed for this type of shooting. It is factory equipped with a 60-cycle generator, an automatic clapstick and a manually operated cue marker, designed to work with all the popular, portable tape recorders used in Pilotone, Neo-Pilotone, Rangertone, and similar synchronous sound systems.

AUTOMATIC CLAPSTICK

The 16M/B has an automatic clapstick capable of putting startmarks on the film and on the tape, automatically, each time the camera is started.

The miniature lamp, which is visible just over the camera hand grip is paired with another one, located inside the camera. The inside lamp flashes whole frames of film, during camera run-up time. The result is that at the beginning of each take, three or four frames of film are flashed. The start mark on film corresponds with the point just past the last flashed frame. Light from the interior marking lamp is visible in viewfinder, during run-up time. Note that the lamps are operative only when a properly wired cable is plugged into the 5-pin Tuchel outlet.

THE 60-CYCLE SIGNAL GENERATOR

A miniature generator is built into the camera. When the camera runs at 24 fps, the generator output is a 60-cycle signal of approximately 1.2 volts. This signal is the heart of all Pilotone-Rangertone synchronizing systems. The output appears across pins 1 and 2 of the camera's 5-pin Tuchel outlet, after a 300 mili-second delay. (See page 10) Arri sync cables are used to carry this signal to the tape recorder. (See price list for various types.

To remove the start marking lamps for replacement, turn the plastic housing on its metal base counter clockwise. The pair of lamps are secured to the ends of the black rod, which may be lifted out. These lamps are matched pairs, and must always be replaced with a new, matched pair.

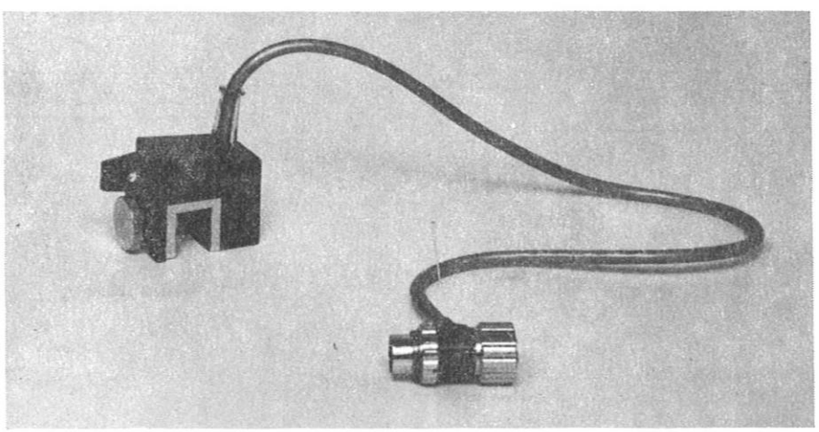
8 VOLT DC OUTPUT

At the same time, during which the start mark lamps are energized, the camera will supply 8 volts DC through pin 3 on the Tuchel outlet. This voltage is used to energize a 1000 Hz oscillator included as standard equipment as part of many popular recorders including the Nagra. For recorders not equipped with a built-in oscillator, the **Arri oscillator scene marker** may be used (See below).

EDGE MARKING SYSTEM

The interior, edge marking lamp is mounted in the base of the camera, under the coin slotted contact screw. The mating indicator lamp for edge marking is located in the rear near the footage counter on the right side of the camera. These lamps are also a matched pair and must be replaced with matched pairs.

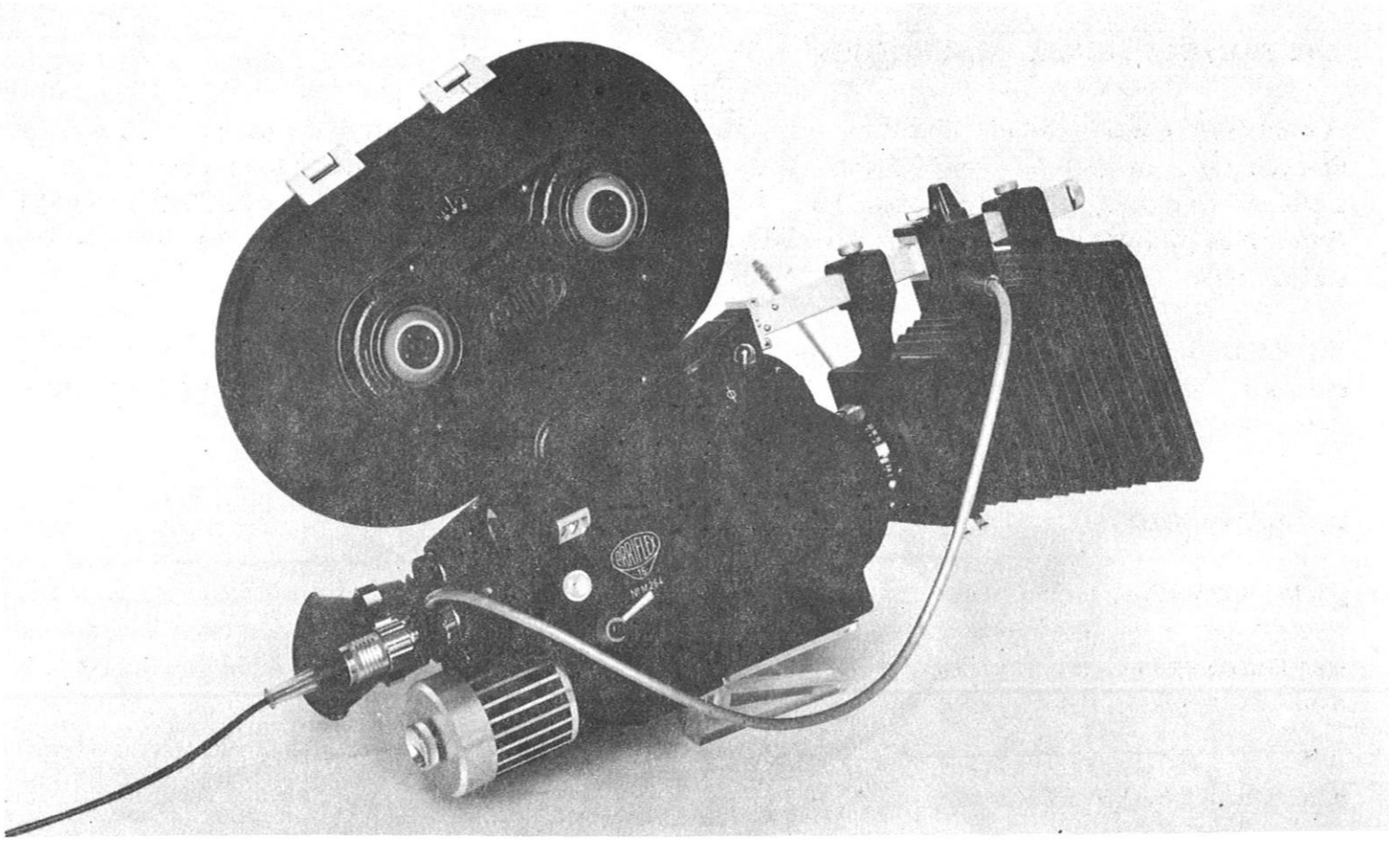
The edge-marking lamps work simultaneously with the full frame marking lamps. However these lamps mark the film at the edge only, and the edge marking is displaced on the film by about 3½ frames from the aperture. (See schematics.) The full frame marking lamps should be depended upon for all normal, start mark purposes.



OSCILLATOR/SCENE MARKER CATALOG NO. 339-355

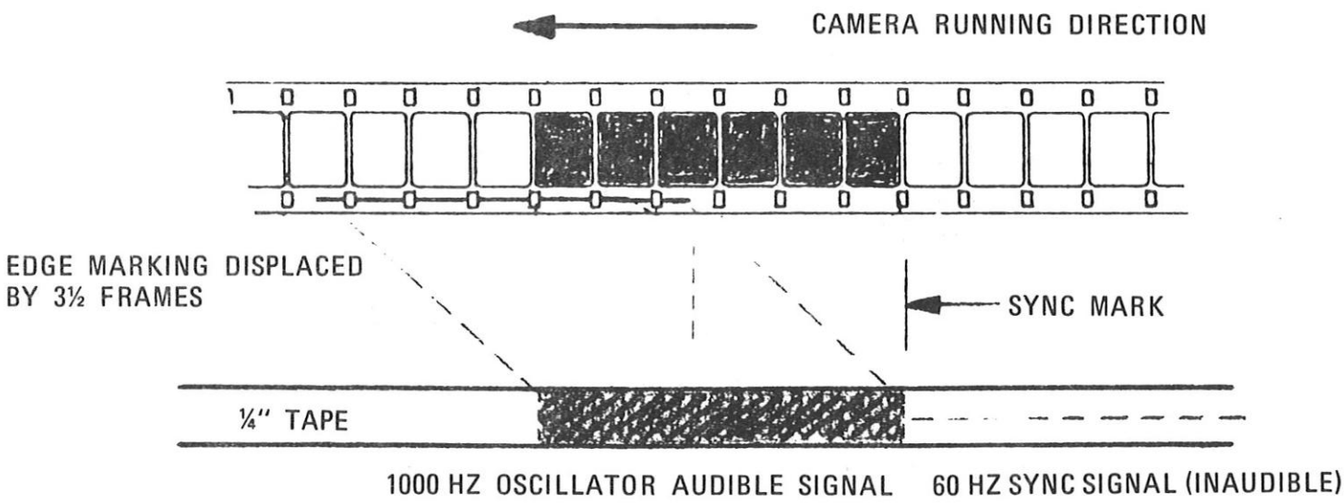
Not all tape recorders are equipped with a built-in 1000 cycle start mark oscillator. In these cases, the Arriflex oscillator scene marker provides the answer. (see illustration) The Arriflex oscillator is normally mounted on the beam of the camera matte box. A short cable and T-plug provides camera and sync cable connections.

For automatic start marking, the Arri oscillator is energized automatically and impresses a 1000 cycle tone on the Pilotone-Rangertone recording head of the tape recorder. The end of the full frame marking on film and the end of the tone on the tape, constitute start marks.



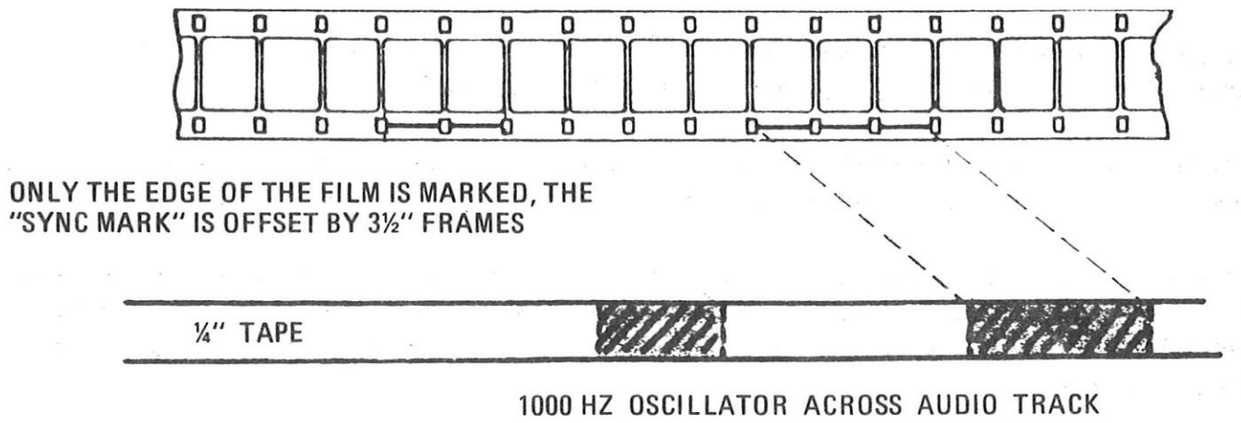
OSCILLATOR INSTALLED ON MATTE BOX BOOM

Scene marking: The Oscillator/Scene Marker may be operated manually by means of a small push button. In this mode, the edge marking lamps and the 1000 cycle tone are energized. (The full frame marking lamps are not energized.) This feature may be used to establish end marks, cue marks etc. The scene marker should be used only during moments when there is no useful audio to be recorded on the tape.



AUTOMATIC CLAPSTICK

When no 1000 HZ oscillator is installed, the "sync mark" is the last fogged frame on the film, and the beginning of the 60 Hz sync signal.
This however can only be matched at the recording studio with a special meter.



MANUAL SCENE MARKING WITH "ARRI" OSCILLATOR

FILM TRANSPORT MECHANISM

As with any Arriflex Motion Picture Camera, you are getting the finest most reliable and accurate film transport movement ever built. Here are some details:

FILM GATE

The film gate is extra long (3 inches) and has a solid, removable rear pressure pad and a side pressure rail. Cross stages around the picture frame both on aperture and pressure plates eliminates "film breathing". Made of stainless steel, and lapped to high precision, it has a highly polished surface to assure against film scratching; but is poreous enough to prevent molecular adhesion of film and the resulting deposit of base material and picture jitter.

REGISTRATION PIN FILM MOVEMENT

The registration pin, which engages the film from the base side, can be seen when the film gate is open just above the transport claw. Its function is to locate the film precisely in vertical position and hold it in place during the moment of exposure. Thus, in combination with the side rail, it ensures rock-steady pictures and a perfect, precise frame line for accurate inter-cutting of takes. This precision is of the utmost importance when multi-camera setups are used for special effects or multi-screen productions.

FILM TRANSPORT CLAW

The film transport claw engages the film from the lens side, thus making loading easier. Watch its action by turning the inching knob on the motor.

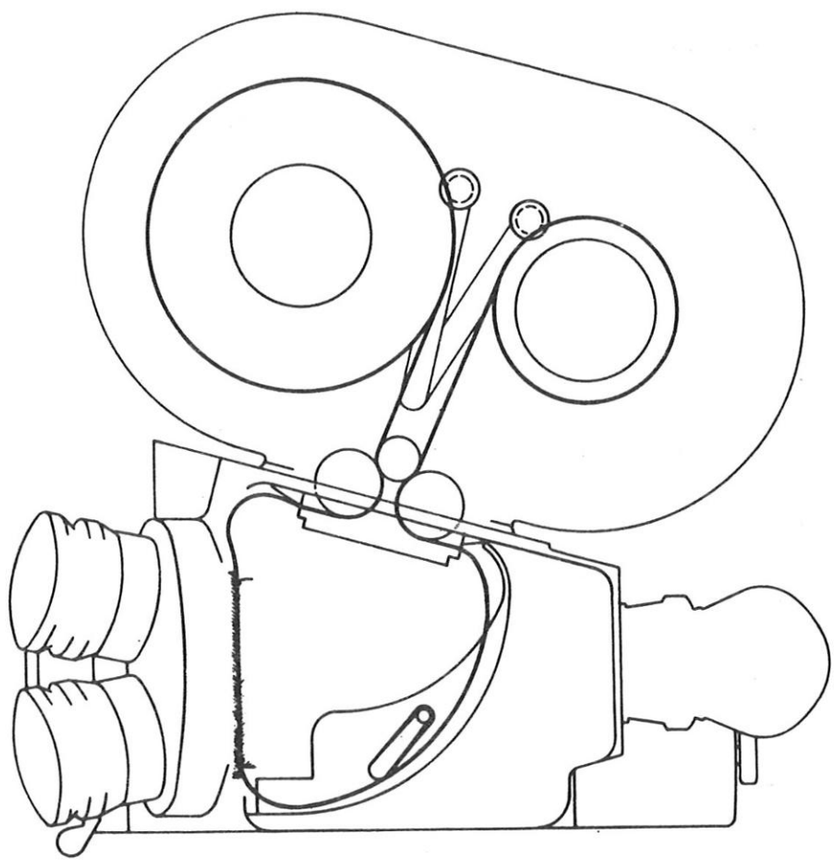
Because of the interaction of the pull-down claw and the registration pin, the film is always engaged during filming and cannot slip, irrespective of camera position or gravity forces.

OPENING AND LOADING

The door of the Arriflex 16M/B is permanently attached to the camera by means of two sturdy hinges. To open it, slide the latch on the cover door from C (close) to 0 (open).

Note the large prism surface which picks up the reflected image from the field lens near the film gate and transmits it through the finder system. Guard this optical prism carefully and keep it clean.

Notice the uncluttered, easily accessible film chamber within the camera. Since the film sprockets are built into the magazines rather than into the camera like on the Arriflex 16S, the 16M/B can be loaded very quickly by simply attaching the pre-loaded magazine and placing the film properly into the filmgate. It takes but seconds to do this.



FILM PATH IN ARRIFLEX 16M/B CAMERA AND MAGAZINE

PROCEDURE

First remove the magazine opening cover by holding the spring lock lever down and turning the magazine lock towards the front of the camera until you hear an audible click. Now the magazine latch is released and you can lift the magazine opening cover out. (This cover must always be in place when the magazine is not attached to the camera to prevent dust from getting into the camera).

Hold the loaded magazine with the geared side away from you over the camera. Pull the film loop into the camera. Apply the magazine mouth to the rear side of the dove-tail and then rest it against the front. Make sure that the film loop is not caught or jammed between magazine and camera. Please note that the drive gear in the camera is spring-loaded and will automatically mesh with its counter parts in the magazine when the camera is turned on.

Secure the magazine in place by turning its lock to the right as far as it will go.

Open the film gate by depressing the small button located at the rear of the gate. Turn the inching knob in rear of the motor until the registration pin is in a disengaged position. Place the film into the gate under the registration pin with the fore-and middle finger of your left hand. The film can now be shifted up and down, thereby adjusting the lower film loop so that it does not touch the guide track at the bottom of the film chamber. Engage the registration pin by turning the knob in the rear of the motor. Then close the film gate.

Move a few inches of film through the gate by manually turning the knob in the rear of the motor clockwise. Connect the camera to the battery. Push down the internal switch lever and watch about 2 feet of film run through the camera.

Close the camera door which will automatically lock unless the push button is depressed. Set the footage and frame counter to "0" by their control disk.

BUCKLE SWITCH

Your Arriflex 16M/B is equipped with a buckle switch which automatically turns the camera off when the end of film has passed the film gate, or when the film loop in the camera body is lost. The buckle switch is automatically reset when the camera door is opened and closed.

MAGAZINES

200 ft., 400 ft. and 1200 ft. magazines are available for your Arriflex 16M/B.

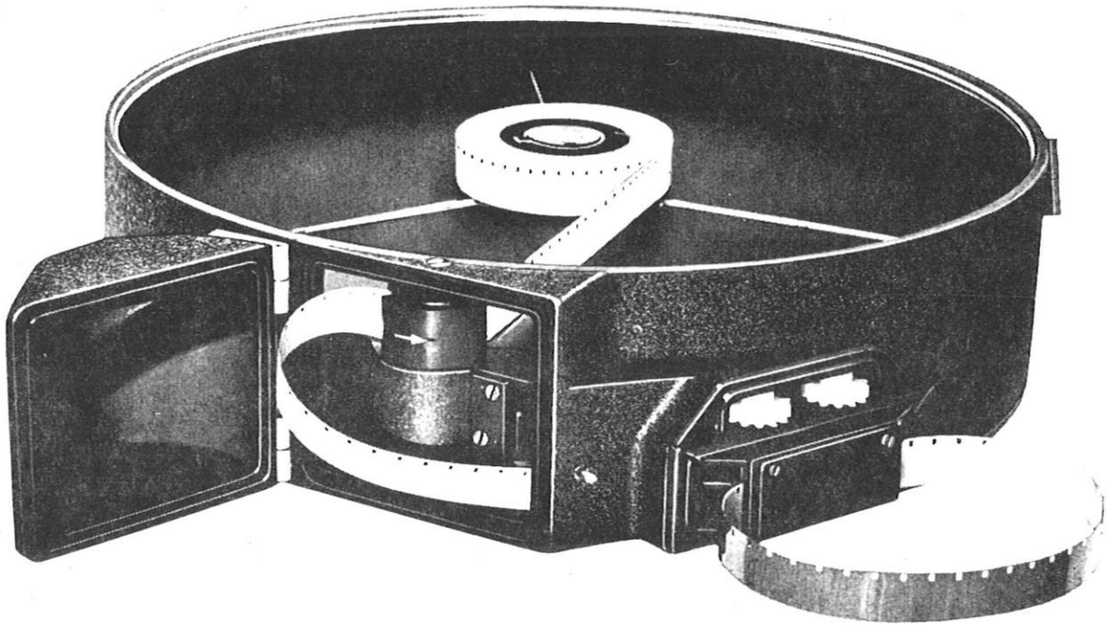
200 ft. and 400 ft. magazines

For reasons of compactness and lightweight these magazines are of the single compartment, displacement type and accept 200 ft. and 400 ft. darkroom loads on plastic cores. The 200 ft. magazine also accepts 100 ft. daylight spools, the 400 ft. magazine 200 ft. daylight spools.

The large size anodized metal plate on the magazine cover may be used for film data recordings.

1200 ft. magazine

The 1200 ft. magazine is of the double compartment coaxial type, in order to make it as lightweight and compact as possible.



Arriflex 16M/B magazines feature a new and ingenious gear drive which is automatically connected to the camera drive gear when the magazine is attached. A completely new friction mechanism functions automatically both in forward and reverse operation. There is no need to switch or adjust belts. (Please note: the 1200 ft. magazine only runs forward, NOT reverse). Thus with 200 ft. or 400 ft. magazines the camera can be switched for forward or reverse operation without having to make any adjustments on the magazines.

FEED AND TAKE-UP SPINDLES

The knurled spindle disks on the outside of the camera are used to take up film slack by turning them in direction of the engraved arrows.

When the film is running, the spindles turn and thus indicate whether the film goes forward or backward. When the film has run off, the feed spindle stops turning, thus indicating that the camera is empty.

FOOTAGE COUNTER

All 200 and 400 ft. magazines are provided with a subtractive footage counter of the "feeler" type indicating the unexposed film footage in the magazine.

MAGAZINE COVER LOCK

Both, 200 ft. and 400 ft. magazines feature cover locks which are automatically secured by a locking spring when in the closed position.

The cover of the 200 ft. magazine is permanently hinged, while the 400 ft. magazine is of the conventional lift-off type. The 1200 ft. magazine has threaded covers.

FILM LOOP PROTECTOR

In order to avoid any possibility of damage to the film loop during transport, it is advisable to use the loop protector. This accessory is supplied with all magazines and is available as replacement. The loop protector consists of a loose cover shield which is pushed under the metal plate attached to the magazine mouth.

After the magazine has been loaded, press the film gently against the magazine mouth and slip the guard cover with the notch first over the film loop and under the plate. The film loop is now completely protected against kinking or any other form of damage.

LOADING OF 200 Ft. and 400 Ft. MAGAZINES

(For loading of 1200 ft. magazine, please see separate instruction folder included in this manual).

IMPORTANT: The film must be wound on T-type cores, emulsion side in. The maximum capacity of 200 ft., 400 ft. respectively, should not be exceeded, particularly with color film. If single perforated film is to be used, it must be B-wound.

The operation described in this paragraph should first be practiced in daylight with blank film until the operator is perfectly familiar with the entire procedure. This will greatly facilitate the loading of unexposed film in the darkroom or in a changing bag.

To **remove the magazine cover** for loading, first **press down** the safety catch and turn the lock counter-clockwise.

200 ft. magazine: Lift the cover up from the bottom and tilt it upward on its two hinges.

400 ft. magazine: Take hold of the cover by the projection above the lock, tilt it forward and then lift it out of the two slots at the bottom.

Then **arrest the film guide rollers as follows:**

200 ft. magazine: Move the guide rollers to the center and press them together
400 ft. magazine: Move the guide rollers to the top of the film chamber **left hand roller first.**

If you are using 100 ft. or 200 ft. daylight loading spools, remove the core adapter from the spindle by pressing the button in the center and lifting it off.

The core adapters are designed to hold standard T-type plastic cores conveniently and securely.

On the take-up side, all 200 ft. and 400 ft. magazines are factory-equipped with a collapsible take-up core with a quick action film catch. The advantage of the collapsible core is the convenience of attaching the film easily and quickly with the complete assurance that the film will take up concentrically. Before sending the film to the processing lab, make sure to remove the collapsible core and place it back into the magazine. In this case, it is advisable to push a plastic core into the center of the film.

For loading, the film should be laid on the table to the left of the magazine and ready to be reeled off in a clockwise direction. (If single perforated film is used, make sure it is B-wound,that means the perforation will be on the bottom when the film is placed into the magazine). Cut the leader end so as to bisect a perforation hole.

The leader is then inserted between the feed sprocket and the center idler roller of the magazine from the inside until it emerges from the left-hand film channel. This procedure can be faciliated by carefully turning the gearing by hand in clockwise direction. When inserting the film, make sure that this is done in a perfectly straight direction and parallel to the wall of the magazine.

PLACING THE FILM ON THE FEED SPINDLE

Daylight loading spools

After you have removed the core adapter as described above, place the spool on the spindle. By turning it a few times in both directions, the square opening of the spool will line up with the square socket of the spindle and the spring-loaded balls will snap in. To remove the spool, press the button in the center of the spindle and lift the spool off. In this case, the film guide rollers must remain arrested.

Core-wound 200 ft. or 400 ft. darkroom loads

IT IS IMPORTANT THAT THE FILM SHOULD LIE PERFECTLY FLAT AND BE TIGHTLY WOUND ON THE CORE.

Place the film over the core adapter. Be careful, not to "dish" it. By turning the spindle knob, the spring of the spindle will snap in with an audible click.

The end of the film emerging from the film channel should now be pulled out to the left around the magazine housing until the first (bisected) perforation hole coincides with the loop length marker, which is a red recessed line on the left hinge of the 200 ft. magazine and a bar cast onto the outside of the 400 ft. magazine. This ensures that the film loop is of the correct size, exactly 39 perforation holes (including the bisected one).

Without pulling any more film out of the magazine – if necessary, one or two fingers can be kept on the gearing to prevent it from turning – insert the end of the film into the right-hand channel of the magazine mouth, thus forming a loop. The perforations must engage the sprockets properly. Make sure that the emulsion side of the film loop is now facing outwards. Pull the end of the film a little way into the magazine, taking care to see that the size of the loop remains unchanged and that the gearing runs smoothly. The **properly formed loop has 36 visible perforation holes.**

After the magazine has been loaded as described above, insert the end of the film into the slot of the collapsible take-up and push the clamp towards the center of the core until it clicks into position, thus holding the end of film in place. Take up a few turns of film on the core and then release the film guide rollers. Make sure that the film guide rollers **overlap the film edges,** in other words that the roller rim **does not ride on the film.**

To unload the magazine, it is then merely necessary to press the clamp outwards so that the core contracts. If a plastic core is used instead of the collapsible take-up, the end of film should be carefully attached to the core, preferably by means of Scoth Tape.

To close the 400 ft. magazine, insert the two holding clips of the magazine cover obliquely into the corresponding slots of the rim of the magazine housing and then close the cover down carefully. If the cover is properly applied, no force should be needed at all. As soon as the magazine is tightly closed, secure the cover by turning the lock clockwise.

TRIPOD SOCKETS

Two tripod sockets, one European and one American type, are provided in the bottom of the camera housing.

FILM PLANE MARK

A film plane mark is engraved on the shutter housing of the camera. All distance measurements must be taken from this point.

A tape measure can be hooked into the eyelet located at the rear of the camera. You may want to extend the tape measure so that the "0" mark coincides with the film plane indicator.

CHROME EDGE

A chrome edge, which is parallel with the optical axis, is located under the thumb rest on the camera housing, to facilitate lining up the camera on the tripod or in the blimp.

CARRYING CASES

A genuine Arriflex carrying case is a good investment for the protection of your camera as it is especially designed for safe storage and transport of Arriflex cameras. This case, however, is not designed for shipment of cameras by means of a commercial carrier. For shipment save the original factory packing.

The following cases are available:

DELUXE ALU 16M/B CAMERA CASE

with heavy gauge hammered aluminum exterior, corduroy lining and chromeplated brass hardware and channeling around the cover to ensure dustproof, moisture space proof storage. The inside is partitioned to hold the camera and accessories safely.

Accepts: Camera with three (3) lenses, matte box, one 200 or 400 ft. magazine, filters and small accessories.

FIBRE 16M/B CAMERA CASE

Accepts: Camera with a 400 ft. magazine and three regular lenses mounted on the camera. Compartments provide space for one additional 400 ft. magazine, the Arri matte box, plus other accessories.

DELUXE ALU MAGAZINE CASE

with hammered aluminum exterior, fitted corduroy lined interior.

Accepts: Four 200 ft. or 400 ft. magazines.

FIBRE MAGAZINE CASE

Accepts: Three 16M/B 400 ft. magazines.

FIBRE M1200 MAGAZINE CASE

Accepts: One M1200 magazine for Arriflex 16M/B.

ARRIFLEX SHOULDER POD

This simple but efficient accessory is a MUST for the cinematographer who is compelled to shoot hand-held for any length of time. Please refer to the enclosed booklet for more detailed information.

ARRIFLEX PISTOL GRIP

It permits the cameraman to hold the camera and release the shutter with the left hand, while the right hand balances the camera and operates the follow-focus. See detailed description in the enclosed booklet.

COMBINATION PISTOL GRIP / SHOULDER POD

An attractive combination of pistol grip and shoulder pod for maximum hand-held camera stability. Pistol grip has an internal trigger switch mechanism to control camera "start" and "stop". For further information see enclosed booklet.

ARRIFLEX BODY BRACE

The Arri Body Brace, available with or without pistol grip is ideal for mobile camera techniques combining excellent camera balance with outstanding camera steadiness. The body brace is a lightweight fiberglass construction, and highly adjustable for camermen comfort and camera stability. A battery may be mounted on the special shoulder support of the brace.

SERVICING AND MAINTENANCE

The Arriflex 16M/B is built with utmost precision and inherent ruggedness. It will give absolute satisfaction if treated as any precision instrument should be treated, and if serviced at regular intervals, consistent with the amount of use.

The most important rule is:

KEEP YOUR CAMERA SPOTLESSLY CLEAN – INSIDE AND OUT!

Particular attention must be given to the film gate. It is precision-lapped and chrome-plated to prevent film emulsion to settle. However, due to the comparatively great length of the film gate and pressure plate to ensure maximum film registration, some emulsion deposit is inevitable. This will vary with the type of film used, humidity and other factors.

The film gate should be brushed out after every 400 ft. roll and should be carefully inspected and thoroughly cleaned at least after every 1200 ft. roll. Remove emulsion deposit with the plastic skewer supplied with the camera **(Never Metal).** If emulsion is hardened on film gate, remove it with a Q-tip dipped in acetone. Use very little acetone and don't let it touch anything else, as it also destroys paint. After cleaning, polish gently with chamois or other soft material.

From time to time, the lens mounts and the three lens sockets in the turret should be cleaned to remove dirt and dust which will adhere. After such cleaning, re-lubricate lightly with the special grease supplied with the camera.

The lubricants used with the Arriflex are suitable for use in temperatures down to 0° F. (on new equipment with fresh lubricants)

On special request and for extra charge, Arriflex cameras can be winterized at our Service Department to function at still lower temperatures. Cameras can be prepared to operate to temperatures as low as–80° F.

OILING

Your camera has been properly lubricated at the factory and is ready for operation. Do not oil before using!

After each run of 30,000 ft, of film through the camera, the camera should be lightly oiled at the two oil valves marked with arrows (one near the film gate, and one near the spindle). Only use the ball and pressure oiler supplied with your camera and the special oil contained therein. Do not over oil – too much oiling is as bad as too little!

By observing the following **"DON'Ts"** you will protect the continued operation of your Arriflex:

DON'T run the camera without film at high speeds.

DON'T attempt to disassemble the optical mechanism. This should be done by factory-trained personnel.

DON'T touch the mirror shutter with your fingers. Clean it only with soft camel hair brush. In any case, a spot on the mirror does not affect the picture.

DON'T use old or shrunk film; the registration pin's stroke is adjusted to the perforation pitch of fresh film, according to ASA specifications

DON'T allow cameras to be serviced in unqualified service shops. Arriflex cameras require special knowledge and experience.

DON'T neglect to have your camera serviced after approximately every 100,000 ft. or every two years, whichever comes first. Service should be more frequent under adverse conditions.

Our Technical Service Department welcomes your inquiries and is particularly anxious to hear about unusual applications of the Arriflex camera.

GUARANTEE

Arriflex equipment is carefully checked before shipment, and is guaranteed to the original purchaser for a period of ONE year, except for electronic components, which are guaranteed for 90 days; provided that the registration is filled out and mailed to us within TEN days after date of purchase.

Repair and adjustment of Arriflex equipment which may become necessary during the guarantee period because of original defects in material or workmanship, will be made by us without charge if the equipment is sent to us prepaid and properly packed.

Except for such repair or adjustment, no other warranty or other liability is given or implied, and we are not responsible for any expenses, loss, inconvenience or consequential damage caused by such equipment.

All features and specifications are subject to change without notice.

We have inserted a price list and general literature into this manual, in order to show the new Arriflex owner the many accessories and adaptations which make the Arriflex a "system" camera and enlarge its applications.

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