Film-Tech

The information contained in this Adobe Acrobat pdf file is provided at your own risk and good judgment.

These manuals are designed to facilitate the exchange of information related to cinema projection and film handling, with no warranties nor obligations from the authors, for qualified field service engineers.

If you are not a qualified technician, please make no adjustments to anything you may read about in these Adobe manual downloads.

www.film-tech.com

Film-Tech

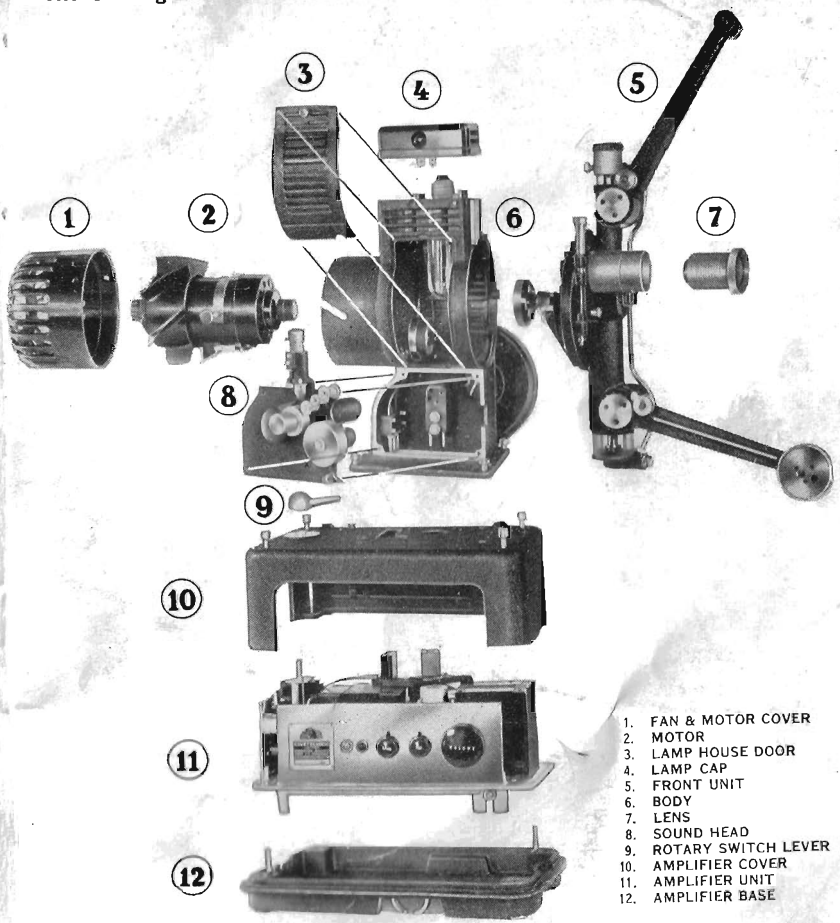
Missing Page

This page was missing from the source material at the time of scanning. If you have access to this missing material, please contact us through the website.

www.film-tech.com

EXPLODED VIEW OF THE "D.16" PROJECTOR

Illustrating the Unit Construction of the Sound and Silent Machines.



1. FAN & MOTOR COVER
2. MOTOR
3. LAMP HOUSE DOOR
4. LAMP CAP
5. FRONT UNIT
6. BODY
7. LENS
8. SOUND HEAD
9. ROTARY SWITCH LEVER
10. AMPLIFIER COVER
11. AMPLIFIER UNIT
12. AMPLIFIER BASE

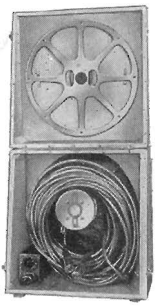
THE "D.16" SILENT AND SOUND MODELS

with the exception of units Nos. 8, 10 and 11, **are identical.** The Silent Model is convertible, within minutes, into the standard Sound Model on simple replacement of the base plate and the blank sound panel by the amplifier (No. 10 and 11) and sound head (No. 8) units.

ECHNIC LIMITED
VFORD, LONDON

ALTERNATIVE FORMS, SIZES AND WEIGHTS OF "D.16" EQUIPMENT

Portable Sound Model—The projector is supplied in a "pullover" type carrying case, $21'' \times 17'' \times 8\frac{1}{2}''$, which is tightened to its rubber-lined, light metal base by two swing bolts, and protects the machine against weather, dust, sand, insects, etc. in transit and storage. The loudspeaker is mounted in a compact carrying case, $17'' \times 17'' \times 8\frac{1}{2}''$, which opens out to provide a large baffle. This case is also used to house the standard 75′ speaker lead with moulded rubber plugs (25′ or 50 extensions can be supplied) and one "D.16" standard 1,800′ spool. A socket for a second loudspeaker is mounted in the case. Total weight is approximately 90 lbs.



SPEAKER IN PORTABLE CASE 17" × 17" × 8½"

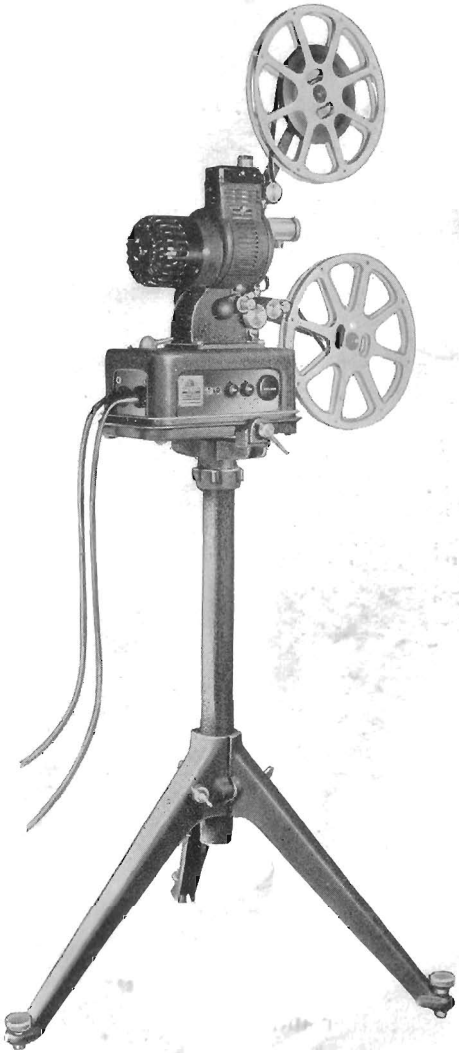
"D.16" SOUND MODEL IN "PULLOVER" CASE 21" × 17" × 8½"

SPEAKER WITH BAFFLE (Static Model) 2′ 6″ × 2′ 6″

Static Sound Model—The projector is supplied without a carrying case, but with a loose dust cover. The loudspeaker is fixed to an open baffle, approx. 2′ 6″ square.

Silent Model—Same machine as above but without amplifier, loudspeaker and sound head. Provided with the "pull-over" all-weather carrying case $8\frac{1}{2}'' \times 17'' \times 17''$. Approximate weight of the machine in case, 35-lbs. It can be converted into the standard sound model by the simple addition of units.

"D.16" SILENT MODEL



The standard "D.16" projector is designed to operate on 10 amps. at 110 volts, A.C., 50 cycles. Check your mains voltage, rating and frequency, and provide suitable transformer or other electrical equipment if necessary.

SETTING UP OF EQUIPMENT

Mounting of projector
Filling of oil chamber
Electrical connections
Testing of projector
Alignment of projector and screen

OPERATION

Sound film threading and operating diagram
Threading
Sound film projection
Silent film projection

SUMMARY OF POINTS TO WATCH WHEN OPERATING

CINETECHNIC LIMITED
GREENFORD, LONDON

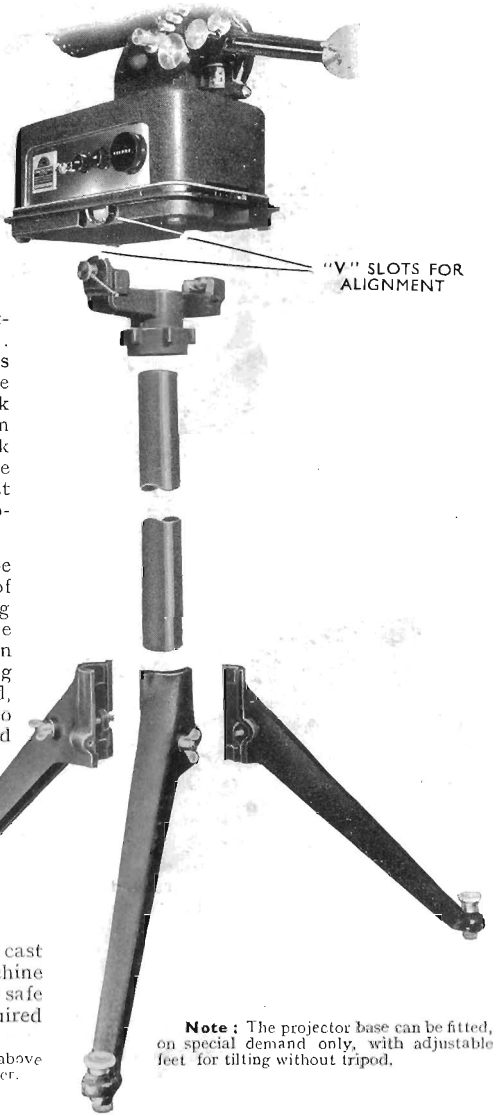
MOUNTING OF PROJECTOR

Improvised support or correctly designed stand? To align the projected picture, the projector must be levelled and adjusted for height, tilt and pan. The usual "built-in" tilting devices, used with improvised supports (tables, furniture, etc.), are invariably unsatisfactory and troublesome. An appropriately designed stand should be used in all possible conditions, at home, in schools, halls, etc., for a safer, better performance.

The "D.16" Tripod.—All adjustable, all aluminium, robust. assembled within seconds, it is composed of 5 interchangeable parts: three legs, tube and self-lock head. Placing the projector on and removing it from, the self-lock head is possible only with machine in vertical position. The slightest tilt automatically locks the projector, so that it cannot fall off.

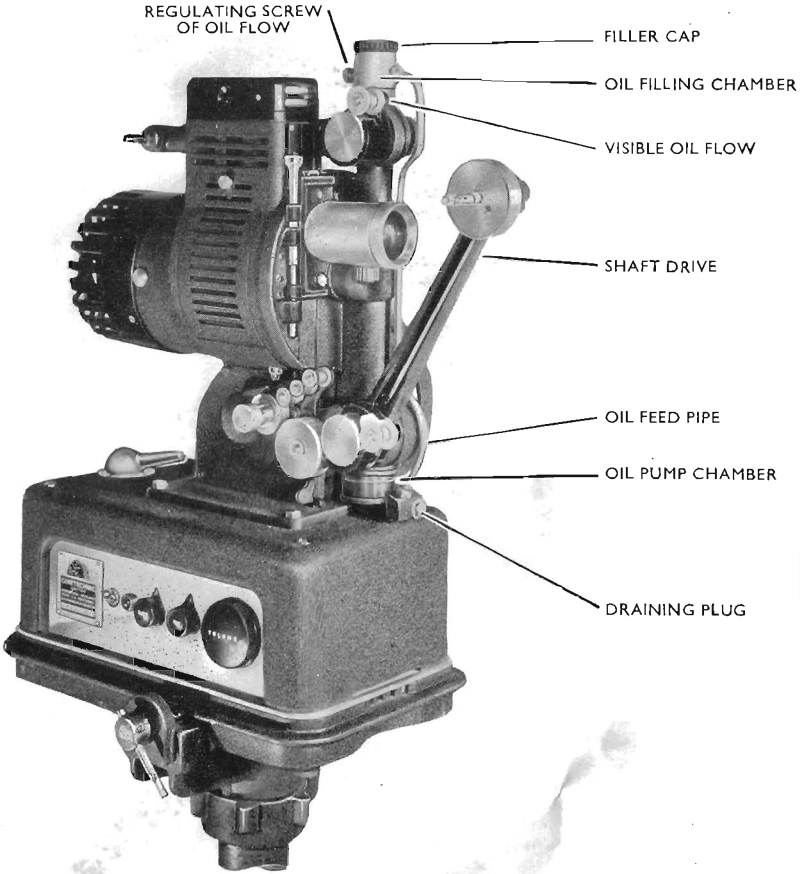
Mounting on Tripod.—The three legs are assembled by means of captive wing bolts, thus forming a circular aperture, into which the tube is placed. Adjust the tube in height, and tighten the three wing bolts. Before adding tripod head, turn its eccentric locking ring into "free" position. Slide the tripod head on to tube and lock by turning the ring. Unscrew bar handle as far as possible and place the machine in vertical position on to tripod head. To facilitate alignment a "V" slot is cast in the flange of projector base, which corresponds to a similar slot cast in top of tripod head. When the machine is in position, it is automatically safe from falling off. Tilt to the required angle and tighten bar handle.

Do not lift or carry projector by any part above amplifier. Grip by flange at base of amplifier.



Note: The projector base can be fitted, on special demand only, with adjustable feet for tilting without tripod.

FILLING OF OIL PUMP CHAMBER



The projector is always delivered with the oil pump chamber drained, so it is necessary to refill with oil from the small bottle supplied with the equipment before proceeding any further. The filler cap is situated at the top of the oiling system pump. Unscrew the cap, fill the exposed chamber and allow oil to drain off : repeat this operation three times, thus giving three complete fillings.

If there is any doubt at any time as to the quantity of oil in the pump, allow the machine to stand for a few minutes in an untilted position, thus permitting all the oil to drain into the lower glass chamber, an the oil should fill about $\frac{1}{3}$ of this chamber.

Note—For protracted journeys drain the oil pump system of oil; otherwise, see that the machine is in its normal vertical position so as to prevent escape of oil.

CINETECHNIC LIMITED
GREENFORD, LONDON

ELECTRICAL CONNECTIONS

Transformer—The standard transformer is a 1-Kw. auto-transformer (double-wound on demand) with input tappings for 200-210-220-230-240-250 volts, and output to the projector of 110 volts. A 15-ft., 3-core cab tyre cable from transformer to mains and a 6-ft., 3 or 4-core cable to the projector are provided.

Mains supply and consumption—Check the mains voltage and rating; which must be 5 amperes at 200/250 volt or 10 amperes at 110 volt, the total consumption of the equipment being 950 watts. When the supply is 200/250 volts, A.C., 50 cycles, set the transformer to suit. If it is 110v., 50 cycles, the machine is connected direct to the mains. In case of other supply voltages, frequencies, D.C., etc., or of use of two projectors alternately, suitable transformers, convertors, D.C. power packs, changeover units, etc., can be supplied.

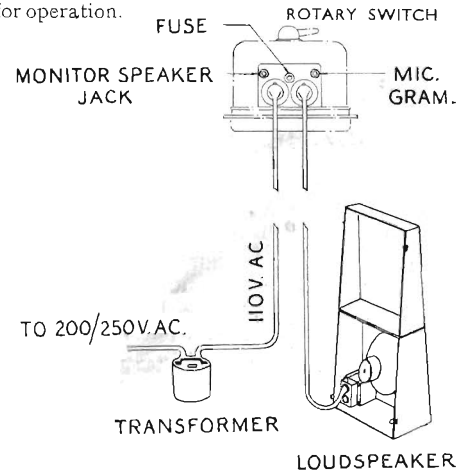
Connections—The rotary switch and the amplifier switch should be "off." The mains and speaker plugs are not interchangeable, and errors in connection are impossible. Connect the equipment in this order:

(1) **Projector to speaker :**—The speaker cable has rubber plugs at each end, marked with fig. 2. Insert one end into the socket in the speaker case, the other into the speaker socket at the back of the projector.

(2) **Projector to transformer :**—Insert the rubber plug of transformer cable into the mains socket at the back of the machine. If this cable is provided with a second end plug, insert into the output socket on transformer.

(3) **Transformer to mains :**—Insert the connector or the plug of the mains cable into the transformer input socket. The mains end of this cable is supplied without plug, so that one suitable for the mains socket used may be fitted. The green-coloured core of the cable is the earth connection.

The projector is now ready for operation.

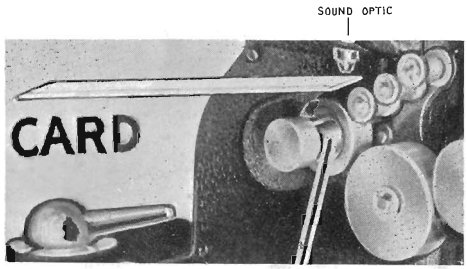


ELECTRICAL CONNECTIONS DIAGRAM

TESTING OF PROJECTOR

To test projector, turn the rotary switch handle in a clockwise direction from position "off" to position "motor only" and let the machine run until oil begins to drip through the upper glass chamber. Adjust the oil flow to 5 drips a minute. Move the switch handle to the next position to illuminate the lamp at 500-watt level, and then to the next position 4, to bring the lamp to full brilliance—i.e., 750-watts. Return the switch to position 3 at 500-watt level. Use the 500-watt level whenever possible: in a small hall, when testing and aligning the projector, etc., to treble lamp life.

To check the sound, with lamp on, switch on the amplifier and the pilot light next to switch should light up. In about half a minute, for warming up, turn the volume control slightly in a clockwise direction and quickly pass a card between the sound drum and the sound optic. As this is done a "plop" will be heard in the loudspeaker, indicating that sound system is working.



PASSING CARD BETWEEN SOUND OPTIC AND SOUND DRUM

ALIGNMENT OF PROJECTOR AND SCREEN

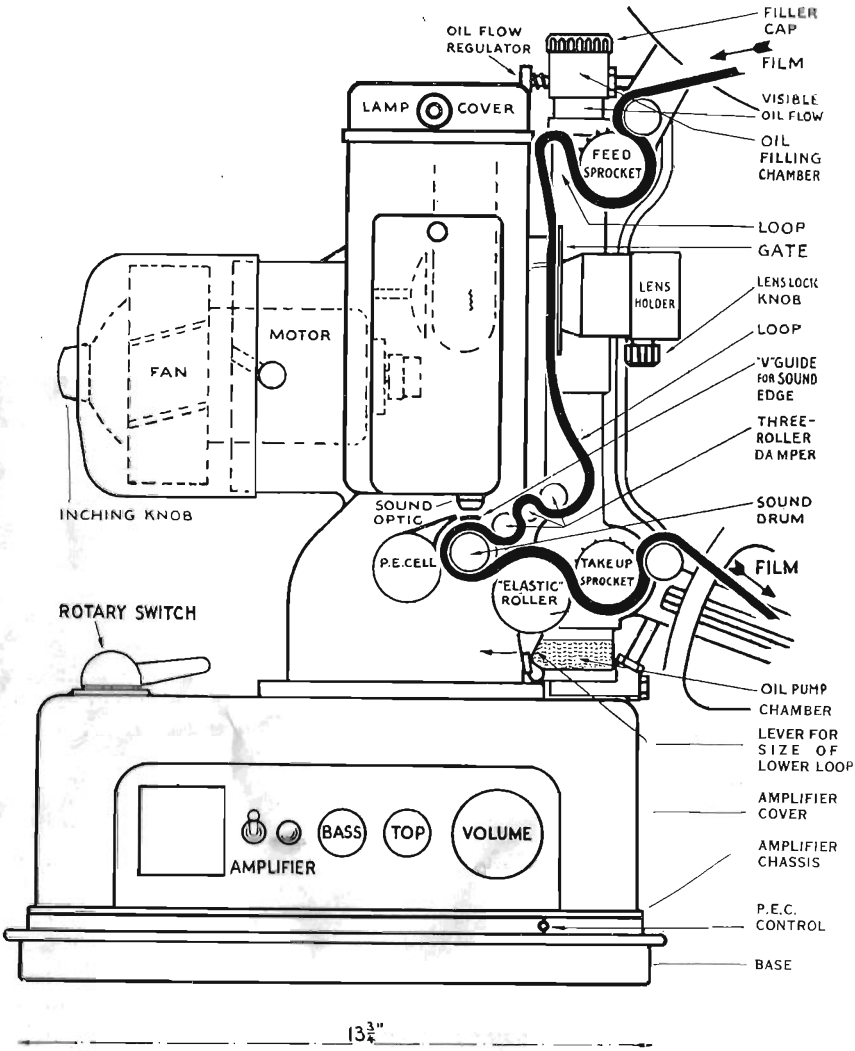
The machine is centred in relation to the screen by first adjusting the tripod tube in height, then the whole is levelled by three aluminium levelling screws at the base of the tripod legs. To tilt the machine, slacken the bar handle of tripod head, while holding the machine with the other hand. Tilt and tighten up the bar handle. To pan, loosen the eccentric locking ring under tripod head. Frame (by knob on gate) and focus the projected frame on screen.

It must be remembered that the projected image should overlap the black border of the screen by about 1". Return switch to "off" position.

CINETECHNIC LIMITED
GREENFORD, LONDON

OPERATION

SOUND FILM THREADING AND OPERATING DIAGRAM



THREADING

Unfold the two arms to the maximum. Place the full spool on the spindle situated at the end of the upper arm, making sure that the spool is pressed home and is held by the spindle locking spring.

Open the film gate fully by pivoting the front plate and lens holder (locking and unlocking of the gate is automatic).

Make sure that the triple claw located on the left of the gate is at the bottom of its course and protruding, if it is not, turn the motor by the inching knob at the rear of the machine until the claw reaches the position indicated above.

Unwind about 5' of film. The emulsion should be towards the screen. Check that the perforations are on the same side as the sprocket teeth.

Take hold of the film on the level of the upper feed sprocket and pass it over the guide roller of the feeding sprocket and then between the sprocket itself and its ebonite guide. Make sure that the perforations are in mesh with the sprocket teeth.

Place the film in the gate, leaving a loop between the upper sprocket and the top of the gate.

Securely close the film gate and check that the film is engaged with the claws, by lightly pulling it upwards and downwards.

Pass the film between the three damper rollers (in front of the rotary sound drum), as shown on the threading diagram, then around the rotary sound drum (ensuring that the inside edge of the film is in its " V " guide), then over the large " elastic " roller. Before passing the film under the lower take-up sprocket and over its guide roller, press from right to left the lever which moves the three damper rollers outwards : this will automatically give the size of the lower loop of film entering the sound head.

Place an empty spool on the lower arm : this is done by unscrewing the knurled knob at the end of the friction take-up spindle, placing the spool on the spindle and screwing it home. Never force the spool locking knob when unscrewing, so as not to strain the lock spring.

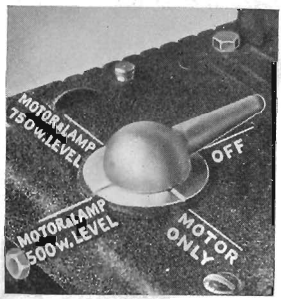
Secure the end of the film to the spool and take up any slack by turning the lower spool in an anti-clockwise direction.

CINETECHNIC LIMITED
GREENFORD. LONDON

SOUND FILM PROJECTION

The sound controls are on the amplifier panel. If sound/silent speed device is fitted, see lever is in position "sound."

Switch on the amplifier and allow about a minute for the valves to warm up. Start the projector by turning the rotary switch from position 1 ("off") to 2 (motor only). The motor will then start turning. Turn the same handle from position 2 (motor only) to 3 (motor and lamp at 500 watts level) to commence projection. This should be done as the lead-in ends, that is to say, at the beginning of the title.

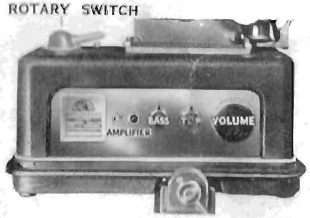


ROTARY SWITCH

The sound volume should be adjusted, by turning the volume knob, until a comfortable listening level is reached, and it should not be necessary to alter this control unless the recording on film varies.

Focus the picture by rotating the lens in the required direction and lock in position by tightening the moulded knob under the forward end of the lens holder. If necessary, frame the picture by means of the framing knob on the gate. Compare picture brightness by turning the switch to 750 watts level. Often the 500 watts level is sufficient and is preferred, so as to treble lamp life.

ROTARY SWITCH



SOUND CONTROL PANEL

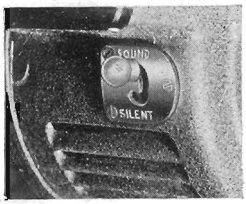
Make sure that the visible oil flow in the upper oil feed chamber is adjusted, by the feed screw, to 5 drops a minute.

The very effective top and bass controls should be used in accordance with the quality of sound recording and the accoustic properties of the hall.

By turning the "top" control knob, "brilliance" of the sound reproduction and sharpness of speech are increased. This control is extremely useful in compensating for a "woofy" recording, or, in cases where dialogue has to be more than usually crisp. The separate bass cut control, when used in conjunction with the above "top" control, will enable intelligible reproduction to be obtained from the "woofiest" of recording. A little practice in the use of these controls is the surest way of getting the best possible results. When projection has been completed:—Switch off amplifier. Return the rotary switch to position "off."

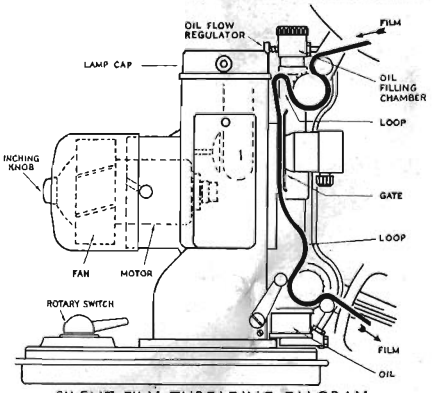
SILENT FILM PROJECTION

With Sound Machine— If the machine is fitted with Sound/Silent device, the lever should be in position "Sound" for films taken at 24 pictures per second, and in position "Silent" for films at 16 pictures per second. The threading of a silent film on a sound machine is the same as for sound projection — in other words, even silent film must always be threaded through the sound head. The amplifier and loudspeaker are then still available for commentary by plugging in the microphone. To stop the ripple caused by the second row of perforations passing through the scanning area, pull out the photo-cell cap and replace it with the projecting wing pointing vertically downwards.



SILENT/SOUND SPEED LEVER

With Silent Machine—The Silent "D.16" can be fitted with Silent/Sound speeds for silent films taken at 16 and 24 frames per second. All the foregoing instructions apply to the silent machine operation and threading, with the exception of Sound amplifier and film passage through sound head. Thread the film as shown in the Silent Machine Threading Diagram.



SILENT FILM THREADING DIAGRAM

Important—As silent films have two rows of perforations, do not forget that the emulsion in the gate must be towards the screen.

Rewinding—After projection, the film is in reverse position on the lower spool. The "D.16" equipment being of professional nature, the film is rewound on to another spool not on the machine itself, but with the aid of a separate rewinder (see Accessories), in order not to hold up the showing of successive reels, to prevent damage to the film, and obviate unnecessary wear of the machine.

CINETECHNIC LIMITED
GREENFORD, LONDON

SUMMARY OF POINTS TO WATCH WHEN OPERATING

Before film Threading.

1. Check mains supply voltage and transformer.
2. Check oil level in the oil-pump chamber.
3. Let the machine run until the oil starts to drip at the upper glass chamber, adjusting to 5 drops a minute. Then switch off.
4. Check the projection lamp, screen alignment and frame focussing, by turning the rotary switch from the "off" position to positions 1, 2 and 3 and back to the "off" position.
5. Set the top and base knobs to "mid" position, and the volume knob to approx. "¼-on". After amplifier is warmed up, and with lamp on, pass a card between the rotary sound drum and the sound optic. If a distinct "plop" is heard, the sound is correct.
6. See photo-cell and sound prism are clean by removing P.E.C. cap and sound drum.
7. See if condenser, lens and lamp are clean.
8. Open the gate and make absolutely sure that the front and the rear gate skates are spotless.
9. See that the "sound"/"silent" lever is correct.

When threading.

1. Make sure that the gate is closed without jamming the film.
2. Make sure that the bottom loop is of correct size. Check this by the loop lever on the sound head, for synchronisation of picture and sound. Lock the take-up spool by spindle knob; never force it.
3. Make sure that the film over the rotary sound drum is properly guided at the scanning point between the "V" guide and flange of the sprung roller next to the sound drum.

At the beginning of the performance.

1. Total room darkness unnecessary. General light of one-tenth of foot candle is not harmful. At this level it is difficult, but possible to read ordinary newspaper type.
2. Focus and frame the picture on the screen. See the lens holder knob is locked.
3. Adjust volume knob to comfortable level. In cases of "boomy" sound add "top" and/or cut "bass". Where the sound is "edgey," add "bass" and/or cut "top."
4. Compare the brightness of the picture by turning the rotary switch from 500-watt level to 750-watt level, and back to 500-watts. If possible use the 500-watt level to treble the lamp life.
5. When oil is warmed up, glance at the rate of flow in the upper glass chamber and adjust to 5 drops a minute to avoid escape of oil.

After performance.

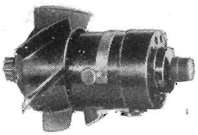
1. See that the rotary switch, the amplifier switch on the control panel, and the mains supply switch are in the "off" position. Remove plugs from the socket panel.
2. When unlocking spool do not force the spindle knob over the stop.
3. Avoid leaving machine on its tripod unprotected, or with spools on, or arms unfolded. Move it out of the way, for example, to a corner of the room. Use a dust-proof loose cover, to keep machine tidy.
4. Roll up the speaker cable and close the speaker-case properly.
5. **When transporting or storing the machine,** see that it is in its normal vertical position, to avoid damage and oil escape from the oil chamber. For prolonged or "out of sight" journeys, drain the pump system of oil. Do not lose the oil plug and its washer.

COMPONENTS and MAINTENANCE

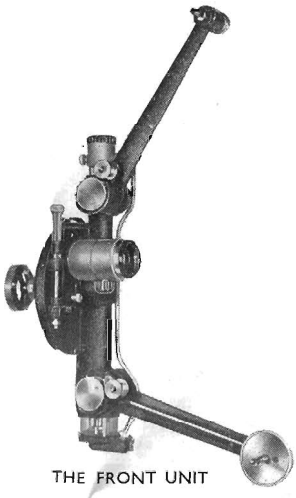
"D.16" Front Assembly
Lubrication
Driving motor
Intermittent mechanism
Large Sprockets
One lamp—2 intensities
Projection lamp and
Optical system
"Optifocus" gate
Sound head
Sound optic
"D.16" Amplifier

ACCESSORIES ● FAULT LOCATION

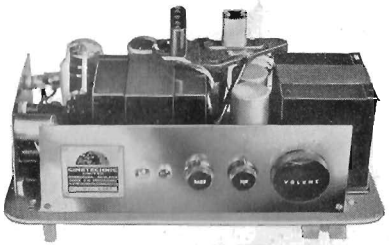
General fault location
Sound fault location



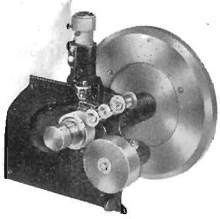
THE MOTOR



THE FRONT UNIT



THE AMPLIFIER UNIT

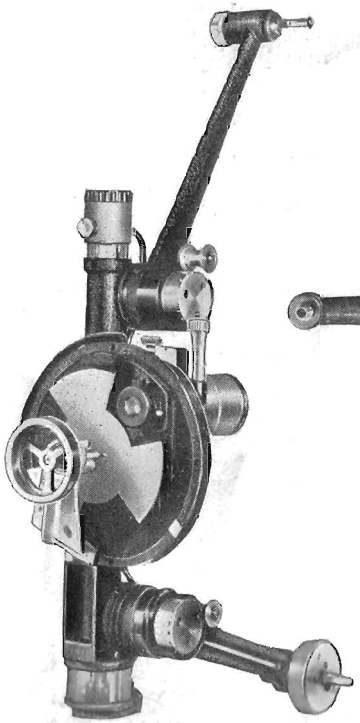


THE SOUND HEAD

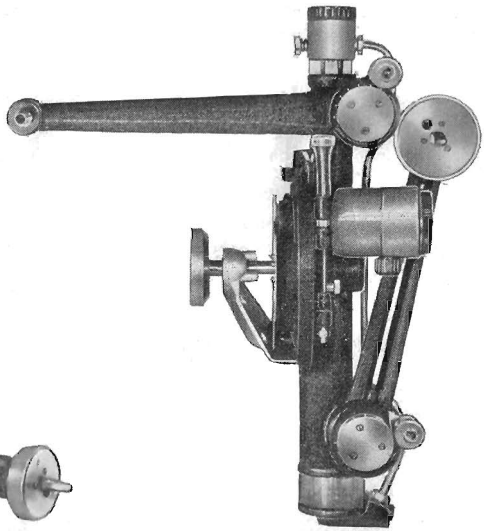
These are the four main units in the "D.16" Projector—all interchangeable between all machines without engineering experience.

CINETECHNIC LIMITED
GREENFORD, LONDON

THE "D.16" FRONT UNIT



THE "FRONT" WITH SPOOL ARMS OPEN



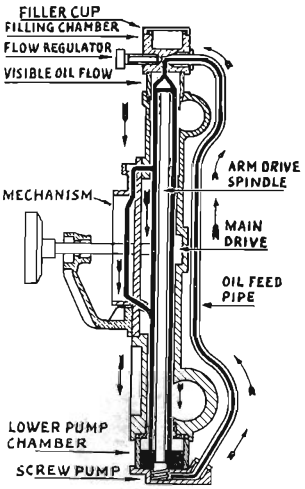
ARMS FOLDED FOR TRANSIT

The "Front"—main mechanical unit of the Projector—illustrates strikingly its serviceability and the unit principle applied consistently throughout the machine. It incorporates (with exception of the motor and sound head), in the form of **self-contained, fitted and adjusted sub-assemblies,** all the mechanical working parts of the machine—such as Intermittent Mechanism with drive coupling, Arm Drive, Automatic Oiling Device and Gate—**yet it is a compact unit,** interchangeable between all machines by removing 4 screws from the periphery of the circular front plate with no further adjustment necessary.

For all mechanical servicing, this **front unit** is attended to and transported instead of the complete machine. The economy and advantages of this facility will be obvious where quantities of machines are involved, In fact, many organisations carry in stock a **spare front assembly,** and practise successfully such immediate servicing without adjustment.

LUBRICATION

It is of screw-pump type and fully automatic. The screw-pump is situated directly on lower end of the main vertical spindle in the lower oil pump chamber, whence it automatically forces the oil up the feed pipe, through the flow regulator and the upper feed chamber into the visible flow chamber. The oil then flows by gravity through the mechanism, cams, gears, shafts, bearings, back into the lower oil chamber. The whole oil system is fool-proof, without any mechanism, gears, etc. The whole pump system must be drained of oil for long journeys.

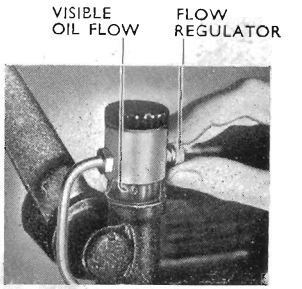


AUTOMATIC OIL CIRCUIT

To empty the oil—Remove outlet screw at the base of the lower oil chamber. Do not lose its washer.

To refill the oil system—Unscrew the filler cap at the top, fill the exposed feed chamber. Allow it to drain off. Repeat this operation three times. Wait a few minutes until the oil has drained into the lower oil pump chamber, and ensure that the oil fills about $\frac{3}{4}$-$\frac{4}{5}$ths of the chamber, but not more.

To regulate the oil flow—Switch on motor, wait a short while until the oil is pumped up the feed pipe and begins to drip through the visible flow chamber. Adjust the knurled button at the top of the oil pump, which controls a pointed screw, to 5-6 drops per minute, not more. Excess feed of oil will cause its escape to the outside.



ADJUSTING OIL FLOW

Oil consumption—The oil contained in the lower oil pump chamber (approximately $\frac{1}{5}$th full) is sufficient for 150/200 hours' use.

Grade of oil—The "Debroil" supplied by us is selected for its right quality and viscosity. Gargoyle Vactra Oil AAX or Mobiloil D.T.E. or Mobiloil B.B. may also be used.

NOTE—From time to time place a drop of oil into the lubricating holes of the feed and take-up spool spindles. All other rollers are fitted with self-lubricating bearings and it is not necessary to lubricate them.

CINETECHNIC LIMITED
GREENFORD, LONDON

DRIVING MOTOR INTERCHANGEABLE ON ALL "D.16" MACHINES

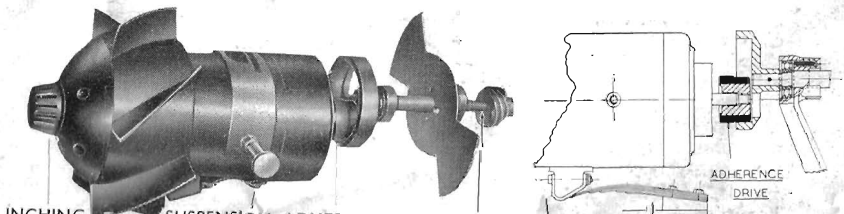
Induction split-phase type, with built-in starting switch. Functions on 110 volts A.C. 50 cycles with a consumption of approximately 1.3 amps.

Revolving at 2,880 r.p.m. it has on its spindle an efficient exhaust fan which draws the hot air from the interior of the machine and ejects it through the slotted cover at the rear. The other end of the motor spindle carries a smooth roller driving by adherence the pulley of the mechanism, the speed of which is thus reduced to 1,440 r.p.m. (24 frames per second).

The motor can easily be removed from the machine. For this, remove the slotted fan cover at the rear of the machine (fixed to the body by three screws) and lift out the motor. It is freely suspended by two studs fixed to the motor body which engage in two slots provided in the machine body and is held in position by leaf springs. These springs serve a dual purpose.—

(1) They press the driving roller against the mechanism pulley with sufficient pressure to eliminate slipping.

(2) The leaf springs, being conductive and in direct contact with the motor terminals, form the electrical connection for the motor.



ADHERENCE DRIVE—This "gearless" transmission is unique and exclusive to our machine and ensures an exceptionally smooth, noiseless and fool-proof drive. The "D.16" "Adherence Transmission" does not require oiling.

Sound/Silent Speed Device—Changeover from 16 to 24 frames per second, or vice versa, is achieved by altering the diameter ratio between the motor driving roller and the mechanism shaft on the same gearless, shock-proof principle. This enables the changeover, even when running, without any mechanical shock to mechanism or film. It is to be noted that the motor speed and, consequently, the cooling remain the same at 16 and at 24 frames per second.

This device, as the motor itself, does not require any lubrication.

INTERMITTENT MECHANISM

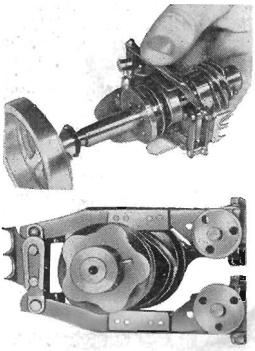
Utmost precision and finest quality alloy steels are used in manufacture. All wearing parts hardened, ground and lapped.

Highly accurate fixtures and gauges in the factory ensure quiet running and long trouble-free life of the mechanism.

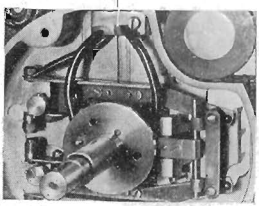
The claw movement is controlled by hardened, ground and lapped nitralloy steel shoes and generously sized precision-ground cams: a "heart" cam for vertical movement and a helical cam for "in and out" movement.

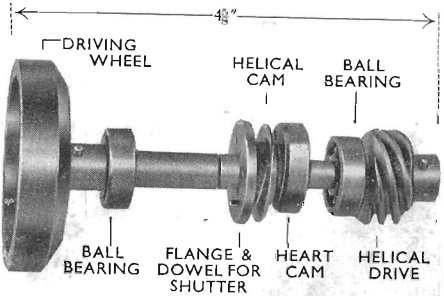
Unalterable synchronisation of the above two movements and of the shutter is achieved by accurate jigging and dowelling of the cams and shutter on the substantial main drive shaft, one end of which carries the "adherence" drive wheel, the other end—a robust, helical gear, driving the spool arms.

MECHANISM ASSEMBLY



OIL DISTRIBUTION TO CAMS, SHOES AND BEARINGS





MECHANISM DRIVING SHAFT

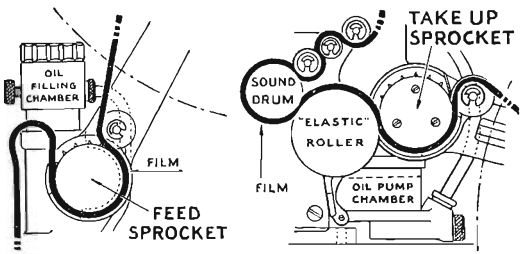
This mechanism is constantly and automatically lubricated by the oil pump system. It is recommended to drain and refill the system with clean oil after every 150 hours' use. This replenishment cleanses the mechanism and disposes of undesirable fine abrasive matter which may otherwise accumulate and shorten the life.

Remember that the intermittent movement cycle of operations is repeated 1,440 times in one minute, and a constant fresh oil supply is necessary to maintain silent, efficient operation and minimise wear. Increase in noise of mechanism indicates lack of lubrication. **See General Fault Location.**

CINETECHNIC LIMITED
GREENFORD, LONDON

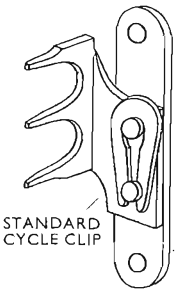
FILM TRANSPORT

Large 16-teeth Sprockets, no Sprung Guides



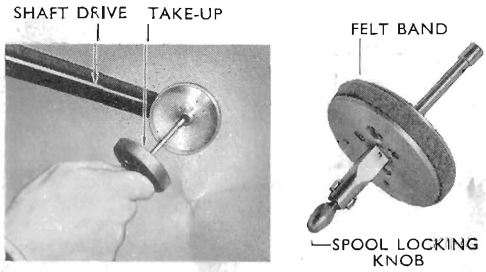
The film is freely laid round the sprockets. Due to size and reduced speed of the sprockets, to the number of teeth in mesh with the film and to the form of the threading path, the film adheres to the sprockets automatically, without being forced over the teeth. This sprocket drive is so damage-proof that, for example, the size of the film loops may be altered even when the film is running through the machine, without the slightest danger.

Triple Claw



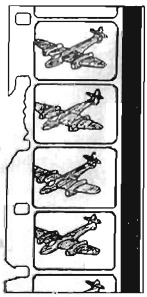
Hardened precision-ground, and hard chromium-plated. Where two perforations in sequence are torn, only the triple claw will avoid a break. A standard cycle-chain clip holds the claw in position.

Gravity Controlled Take-up.



This is shaft-driven. The gravity-controlled tension varies automatically with size of film roll. Locks spool in position. To clean, remove from its housing by pressing the small pin near the spindle, and pull gently. After cleaning, oil the felt if it becomes hard. Replace the take-up by gently pushing it into its housing until it is automatically locked. Lock spool by tightening locking knob. To unlock, unscrew knob until stop: NEVER force it, so as not to strain or break lock spring.

Safer Transport

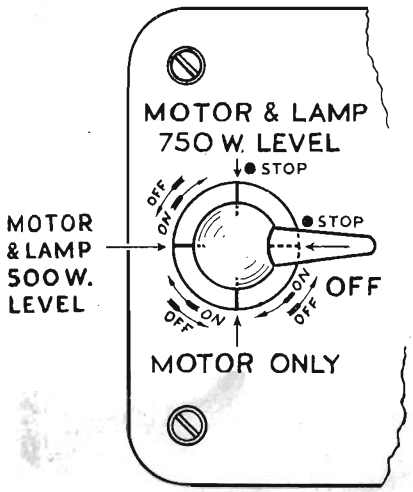


Badly worn films are transported without break by the 16-teeth sprocket and the triple claw.

ONE LAMP—TWO LIGHT INTENSITIES BY ROTARY SWITCH

500-watt for short and medium throws and trebled lamp life. 750-watt for extra brilliance and longer throw.

The 500-watt and 750-watt illumination levels, with the ***standard 750-watt Projection lamp,*** as well as the driving motor, are all controlled by one single rotary master-switch. A first turn of the switch starts the motor only; the next turn lights, with the motor on, the 750-watt lamp, undervolted approximately 10% (by means of a small choke or by a tapping on the mains transformer), the approximate intensity of which is thus 500-watts; the third, and last turn, brings the lamp (still with motor on) to full 750-watt intensity. A stop prevents further turning of the switch. For switching off, turn in reverse. This exclusive arrangements ensures that:



ROTARY SWITCH CONTROLLING MOTOR AND 2 LAMP INTENSITIES

(a) the lamp is switched on and off in steps, eliminating a sudden surge of full voltage and too sudden cooling off.

(b) the lamp burns only with motor and fan on.

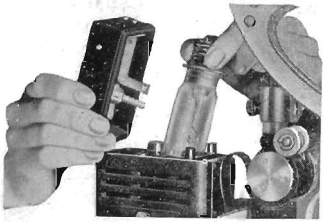
(c) the 500-watt illumination, obtained by undervolting from a 750-watt lamp, gives a 300% longer lamp life. It is used on every occasion, such as: in small and medium-sized halls, when testing and aligning the machine, etc.

The extent of the lamp economy will be fully realised when using this device, with a third of the usual quantity of lamps consumed.

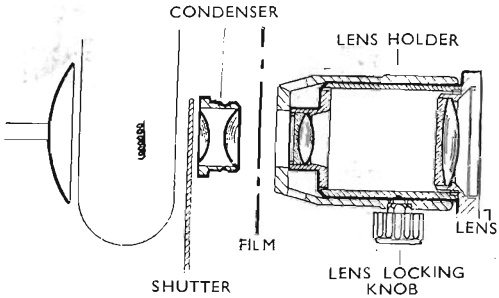
Note—The sound projection at 500-watt level is unimpaired, due to ample reserve of sound volume.

CINETECHNIC LIMITED
GREENFORD, LONDON

PROJECTION LAMP AND OPTICAL SYSTEM



REPLACING LAMP



Projection Lamp: Prefocus type, 750-watts. The pre-set, prefocus ring, with unsymmetrical fins of the lamp makes it impossible to insert the lamp incorrectly and locates the filament in position without adjustment.
Made by the most known lamp manufacturers: Mazda, Osram, Phillips, Siemens, etc., easily obtainable.

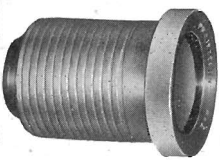
Replacing Lamp: Lamp is removed with exceptional ease from outside the machine: press the two buttons on both sides of lamp cover, lift it out, then the lamp. When replacing, see the fins of prefocus ring are properly located, and push cover well down over the lamp.

Mirror: Aluminised, highly resistant, adjustable. To eliminate dark or coloured patches, loosen the mirror fixing-screw on outside of machine, and adjust. Re-tighten screw.

Condenser: Compact, one piece, spring-located, slip-in type, with sprung mounted lenses to prevent heat damage.

Shutter: 2-bladed shutter is standard with "D.16" Sound Machines. If Silent/Sound device is fitted or on Silent models, a 3-bladed shutter is supplied to eliminate flicker at 16 frames p.s.

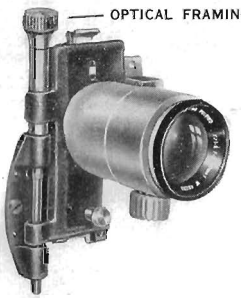
Projection Lens: Controlled and focused by an external thread and spring ball. Focal distances f=1" to f=4", and apertnres F/1.4, F/1.5 and F/1.6 available. Lens holder is designed to take standard size lenses of 1.11/16" dia. for higher F. values with long focus lenses.
To focus: *Slacken the lens locking spring Ball knob of lens holder and rotate lens. Re-tighten knob.*



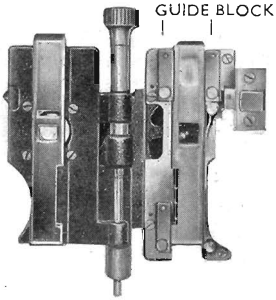
STANDARD LENS f=2" IN "D.16" MOUNT

To clean: *Remove lamp cover and lamp. Remove lamp side door by pressing down knurled knob. If shutter covers condenser, turn inching knob. Pull condenser out. Using soft linen, wipe lamp, mirror, condenser and projection lens.*

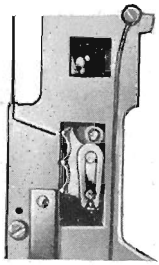
OPTIFOCUS "HOOK-ON" PROJECTION GATE



OPTIFOCUS GATE



GATE OPEN



REAR RUNNER OFF—
CLAW LAID OPEN

Opens out 180°, enables instantaneous maintenance and offers exceptional advantages, unrivalled even in the 35mm. field.

The front and rear gate runners, precision ground and hard chrome plated, are replaceable by simply hooking them on and off the gate. Spotless condition of the gate is solved by this easiest of methods, using alternately two sets of runners. Also, this is the answer when special runners in special conditions – for example, velvet runners in case of green film, or for extreme silence—are preferred.

The gate runners are precision curved in width, with the result of improved sharpness at the edges of the picture across the screen. Lateral play of the film in the gate is entirely eliminated to ensure perfect steadiness on the screen.

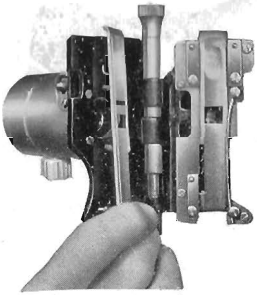
The three ground and hardened guide-blocks in the gate are interchangeable with each other for maintenance and wear compensation.

"Optical" framing means that the up and down framing movement on the screen does not exceed the actual linear framing margin in the gate and is practically invisible.

The claw assembly is laid open by hooking off the rear runner.

The gate snap-lock is sturdy, positive and automatic.

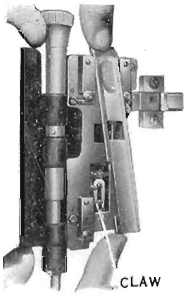
Note—The optifocus gate can be fitted to earlier models of the "D.16."



REPLACING FRONT
RUNNER

VELVET
FACED
RUNNER

HARD
CHROME-PLATED
RUNNERS



REPLACING REAR
RUNNER

CINETECHNIC LIMITED
GREENFORD, LONDON

SOUND HEAD—COMPACT, INTERCHANGEABLE

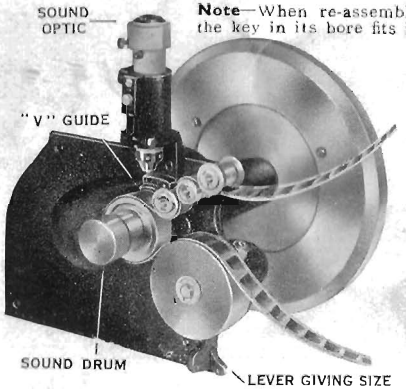
It is of the revolving sound drum type, with exclusive, detachable sound drum. Before entering the sound head, the film is passed through the three-roller damper (forming lever controlling the size of lower loop), where the intermittent motion is changed to continuous and perfectly even speed, essential to good sound reproduction. The process is assisted by a balanced and extra heavy flywheel on a precision-ground shaft. The film then passes over the rotary scanning drum. The "sound edge" of the film is supported at the actual scanning point by a precision-ground, hardened "V" guide, another feature exclusive to the projector, which assists in the production of good flutter-free sound.

The sound head assembly is completed by an "ELASTIC" compensator roller, between the take-up sprocket and the sound drum. It is mounted on an externally ground and internally broached sleeve over a square spindle, which carries a pivoting centre with a coil spring on either side. The very special rocking action of this patented sub-assembly ensures perfect adherence of the film to the sound drum and compensates for irregular film shrinkage and speed variations. The two coil springs are carefully set in the factory, and should not be touched. When dismantling, the coil springs may spring away while the roller and sleeve are being withdrawn : do not lose them, and replace each in its own original position.

Film alignment in sound head—Behind the elastic compensator roller is an eccentric screw with lock nut, enabling alignment of the three-roller damper (which guides the film into the sound head), with the sound drum and the "V" guide. It is carefully set and locked in the Factory and should not be touched.

Instantaneous access to the Sound Prism and Photo-cell—Dust from running film always accumulates on the scanning prism and photo-cell and often, sometimes suddenly, causes poor sound. Unless the machine is designed to enable quick removal of this sound-distorting dust and dirt, a poor and deteriorating performance must be endured (a fact too well known to every operator). The solution of this problem is exclusive and simple on the "D.16": (a) remove the photo-cell cap ; (b) unscrew the stop nut of the rotary sound drum (no tool required) and pull the latter outwards to uncover the prism completely ; (c) without displacing prism and photo-cell, carefully clean them with a soft and clean brush ; (d) re-assemble. This operation is a matter of seconds, but it is of incomparable value. A good precaution is regularly to clean the prism and photo-cell in this way, to prevent sound distortion.

Note—When re-assembling sound drum, see that the key in its bore fits into the keyway of spindle.



SOUND HEAD

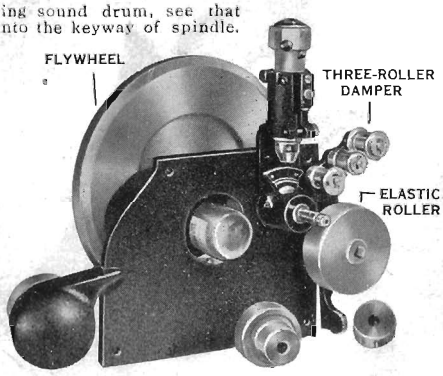
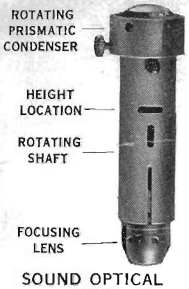


PHOTO-CELL CAP & SOUND DRUM REMOVED

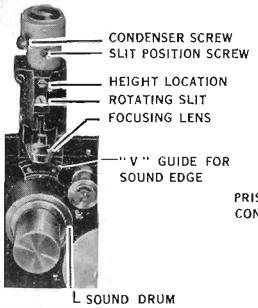
SOUND OPTIC, DIRECTIONAL, SELF-CONTAINED

The exciter light is derived from the 750-watt projection lamp; thus a separate exciter lamp and its replacements are eliminated. Not only is the exciter light so powerful at 750 watts, but it does away with valves, components, windings, exciter lamp house, its heat, etc., etc., simplifying amplifier and resulting in safer, high fidelity performance.

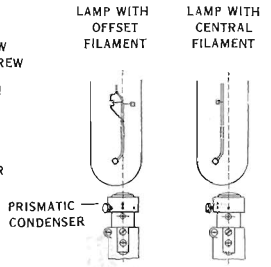
Full benefit from this arrangement is secured with the specially designed and patented sound optic, with its compensating and light-directing features.



SOUND OPTICAL UNIT



OPTICAL UNIT ON SOUND HEAD

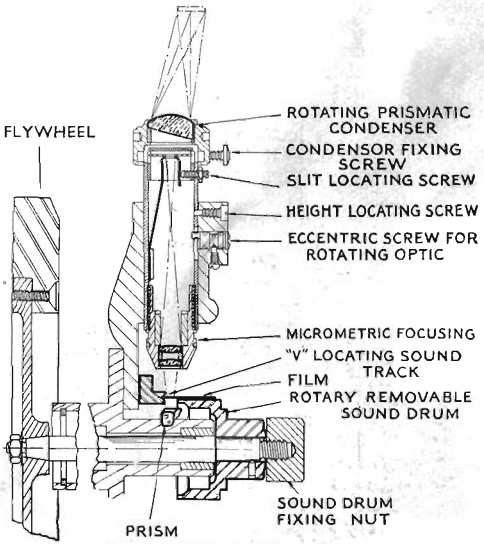


Position of prismatic condenser for lamps with central and offset filaments

The upper part of this optical unit carries a light-directing prismatic condenser, greatly simplifying centering of the lamp light on to the slit. It is sufficient to turn this condenser to the right or to the left to find the optimum position, i.e., the maximum sound volume, and so compensate for variations in lamp filament positions. The position of the scanning light slit is also adjustable in all directions.

This all-round optical adjustment combined with the powerful scanning light source (750w.) with the patented guide of the sound track at the very scanning point and with accessibility to prism and photo cell, form an exceptionally efficient system of sound reproduction.

Note—The sound optic unit is adjusted and set in our Works, and should not be touched, with exception of the prismatic condenser for lamp filament compensation, as described above.



SOUND READING SYSTEM

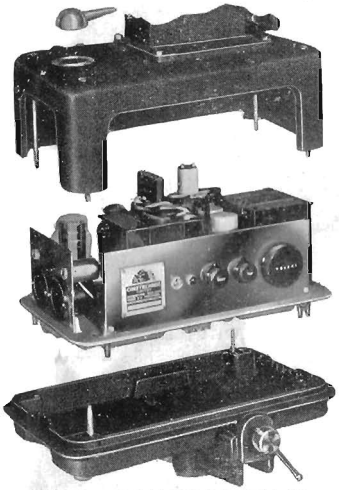
CINETECHNIC LIMITED
GREENFORD, LONDON

THE "D.16" AMPLIFIER

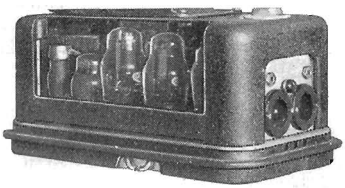
CONSTRUCTION—The amplifier, which is built into the base of the projector is a four-stage resistance coupled circuit employing high power pentodes in the output stage. It is a completely self-contained unit with built in non-corrosive metal panels, carrying all control plugs and sockets. It can be removed from the projector very quickly by unscrewing the four captive retaining bolts at each corner of the amplifier cover casting and the rotary switch handle. It is interchangeable between all "D.16" machines with no loose ends and no connecting up.

Much care has been taken to ensure that all components are accessible for servicing, whilst the general layout is simple and "open." Interstage coupling components are carried on two main group boards and all the soldered joints associated with them are clearly visible, facilitating trouble shooting and rapid servicing.

TONE CONTROLS—Two tone controls are provided, one providing bass attenuation below 200 c.p.s., and the other providing top boost from 1000 c.p.s. upwards. This boosting of the higher frequencies is very often necessary for good speech reproduction and a considerable amount of attention has been paid to the design of this network.



"DROP IN" CONSTRUCTION OF THE AMPLIFIER UNIT

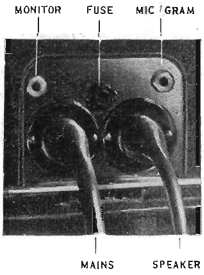


ALL VALVES DIRECTLY ACCESSIBLE

GRAMOPHONE or MICROPHONE INPUT and MONITOR SPEAKER

A jack is provided for microphone or gramophone input and either electrodynamic or crystal types may be used. The outer sleeve of the jack plug is "earthed" and must be connected to the screening braid and or neutral side of the mic. or pick-up wiring. Failure to do so will introduce severe hum.

Most crystal pick-ups require a correction attenuator-network as recommended by the makers; omission may result in overloading and distortion. With magnetic pick-ups a parallel resistor of 10-100k is sometimes desirable. The use of "soft"-tone needles is often helpful in obtaining well-balanced reproduction.



AMPLIFIER
REAR SOCKET PANEL

Another jack is provided for a monitor speaker, with a speech coil impedance of 5 ohms. The standard monitor is a 4" permanent magnet type, with its own volume control.

Note Two forms of sound control for gramophone and microphone are in use on the "D.16":—

(a) **Sound from the film is cut off** when the input plug is inserted and the gramophone and microphone are regulated by the sound controls on the amplifier.
(b) **Sound from the film is not cut off** on plugging in and the microphone or gramophone volume is controlled individually. It is thus possible to mix the film sound and that of the microphone/gramophone input.

ADJUSTMENT OF PHOTO CELL VOLTAGE—

The control is a potentiometer, in the amplifier base, accessible through a small hole. This control is set in our Sound Department and should not require adjustment. If, however, a new cell is fitted or the control needs re-setting the procedure is as follows:—


PHOTO CELL CONTROL

(1) Switch on the amplifier and wait about two minutes for the H.T. to become stable.
(2) Turn the volume control to maximum.
(3) Insert a screwdriver into the hole in the side of the amplifier base and slowly rotate the screw clockwise. A hiss will be heard from the speaker increasing in volume until it disappears with a "plop." The control should then be turned back until the hiss is barely audible, this being the correct operating point.

The cell control should never be turned too far clockwise as this will cause "blueing" and destruction of cell.

SPEAKER—The speaker used is a 12" permanent magnet type, in a special case which combines efficient baffle area, with compactness and minimum cabinet resonance. Provision is made for an extension speaker. The speaker cable is 75' long, carried in the back of the case.


SPEAKER IN PORTABLE CASE

CINETECHNIC LIMITED
GREENFORD, LONDON

CIRCUIT ARRANGEMENT OF "D.16" AMPLIFIER

The circuit consists of a high gain voltage amplifier, feeding a double triode, one half of which is used as a triode amplifier, the other half acting as a cathode following phase splitter, a push-pull output stage and a rectifier.

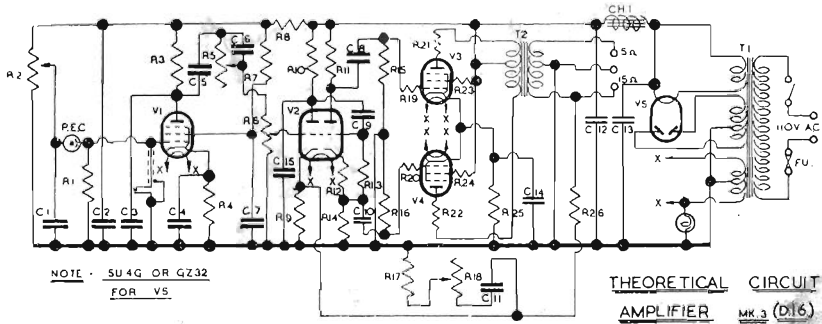
The output stage is capable of delivering 25 watts undistorted and the speech circuit impedance is 15 ohms.

The push-pull output valves operate as a balanced pair, and, when replacements are necessary, should be matched for minimum distortion (by anode-current measurement) to within 15%. When replacing the valve (EF37) it is an advantage to select a specimen with low noise-level.

WORKING CONDITIONS						
No.	VALVE	E_a	E_{g1}	E_{g1}	I_a	I_{g1}
V1	EF37	50V.	45V.	-1·5V.	·5 MA.	·2 MA
V2	ECC 32	140V.	═══	-4·5V.	1 MA.	═══
V3	EL 37	285V.	300V.	-19V.	70MA.	10MA.
V4	EL 37	285V.	300V.	-19V.	70MA.	10MA.
V5	5U4G	═══	═══	═══	═══	═══

ABOVE READINGS TAKEN ON AVO MODEL No.7, 1000V. & ·01 AMP. RANGES, AT 110V. A.C. INPUT.
F.U. — 2AMP. FUSE.
CH.1. — CHOKE, 20H., 200 MA.
REC. — GS 16.
T.1. — MAINS TRANSFORMER.
T.2. — OUTPUT TRANSFORMER.

RESISTORS						CONDENSERS					
No.	VALUE	RATING	No.	VALUE	RATING	No.	VALUE	WORKING VOLTAGE	No.	VALUE	WORKING VOLTAGE
R1	1M Ω	·5 W.	R15	470K Ω	·5 W.	C1	·25 μF D	500 V.	C15	150 μF D	MICA.
R2	1M Ω	POT.	R16	470K Ω	·5 W.	C2	·1 μF D EL.	500 V.			
R3	270K Ω	·5 W.	R17	1K Ω	·5 W.	C3	150 PF D	MICA.			
R4	22K Ω	·5 W.	R18	10K Ω	POT.	C4	25 μF D	25 V.			
R5	1M Ω	POT.	R19	1K Ω	·5 W.	C5	·1 μF D	500V.			
R6	2·5 M Ω	POT.	R20	1K Ω	·5 W.	C6	150PF D	MICA.			
R7	1M Ω	·5W.	R21	100 Ω	·5 W.	C7	·1 μF D	500V.			
R8	6·8K Ω	·5W.	R22	100 Ω	·5W.	C8	·1 μF D	500V.			
R9	4·7K Ω	·5W.	R23	100 Ω	·5W.	C9	·1 μF D	500V.			
R10	100K Ω	·5W.	R24	100 Ω	·5W.	C10	·1 μF D	500V.			
R11	50K Ω	·5W.	R25	125 Ω	3W.	C11	·05 μF D	350V.			
R12	47 Ω	·5W.	R26	15K Ω	·5W.	C12	16 μF D EL.	500V.			
R13	270K Ω	·5W.				C13	16 μF D EL.	500V.			
R14	50K Ω	·5W.				C14	25 μF D	25V.			



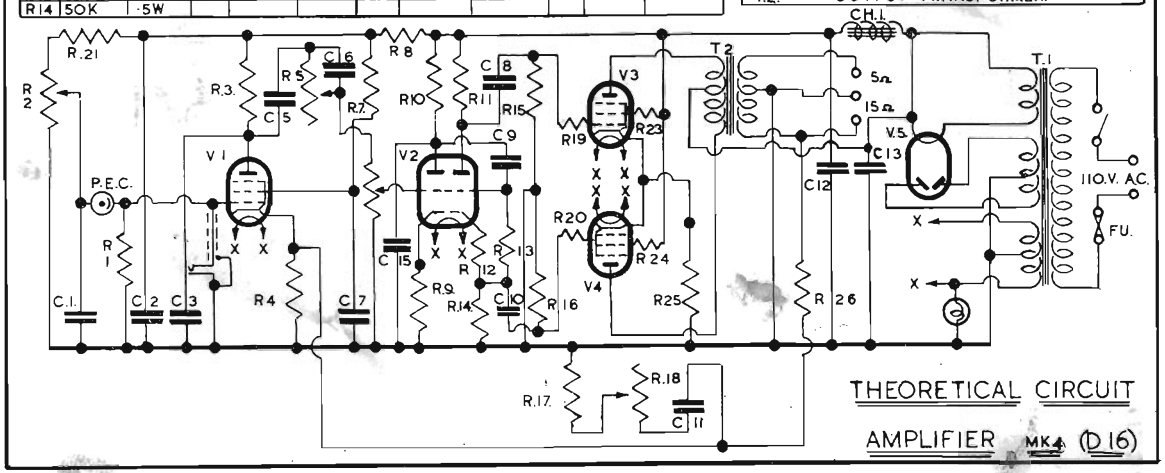
AMPLIFIER CIRCUIT—MARK 3

RESISTORS						CONDENSERS					
No	VALUE	RATING	No	VALUE	RATING	No	VALUE	WORKING VOLTAGE	No	VALUE	WORKING VOLTAGE
R1	1M Ω	.5W	R15	470K Ω	.5W	C1	.25 mFd	500 V.	C15	150mfd	MICA
R2	1M Ω	POT	R16	470K Ω	.5W	C2	8mFd EL.	500 V.			
R3	270K	.5W	R17	100 Ω	.5W	C3	150pFd	MICA.			
R4	2.2K	.5W	R18	10K	POT	C4					
R5	1M	POT	R19	20K	.5W	C5	.1mFd	500V.			
R6	.25M	POT	R20	20K	.5W	C6	150pFd	MICA.			
R7	1M	.5W	R21	100K	.5W	C7	.1mFd	500V.			
R8	100K	.5W	R22			C8	.1mFd	500V.			
R9	4.7K	.5W	R23	1000 Ω	.5W	C9	.1mFd	500V.			
R10	100K	.5W	R24	1000 Ω	.5W	C10	.1mFd	500V.			
R11	50K	.5W	R25	125	3W	C11	0·1 mFd	350 V.			
R12	4.7K	.5W	R26	470 K	.5W	C12	16mFd EL	500V.			
R13	270K	.5W				C13	16mFd EL	500 V			
R14	50K	.5W									

WORKING CONDITIONS						
No	VALVE	Ea	Eg2	Eg1	Ia	Ig2
V1	EF 37	50 V	45 V	-1·5 V	·5 MA	·2 MA
V2	ECC 32	140 V	—	-4·5 V	1 MA	—
V3	EL 37	335 V	320 V	-19 V	70MA	10 MA
V4	EL 37	335 V	320 V	-19 V	70MA	10 MA
V5	GZ 32	—	—	—	—	—

ABOVE READINGS TAKEN ON AVO MODEL No.7, 1000V. & ·01 AMP. RANGES AT 110V. AC. INPUT

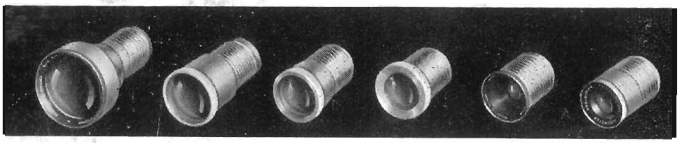
FU — 2AMP FUSE
CH.1. — CHOKE 20H. 200 MA.
PEC — GS 16
T.1. — MAINS TRANSFORMER.
T.2. — OUTPUT TRANSFORMER.



AMPLIFIER CIRCUIT — MARK 4

ACCESSORIES AVAILABLE

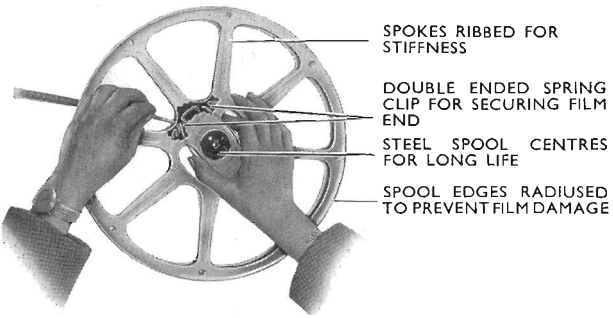
STANDARD RANGE OF LENSES



f = 4″ f = 3″ f = 2½″ f = 2″ f = 1½″ f = 1″

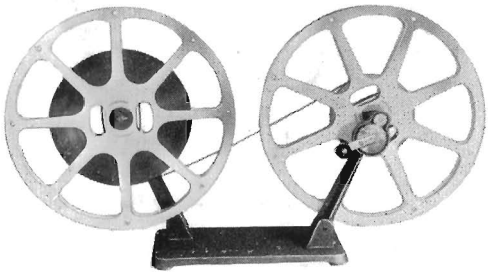
Apertures : F/1.7—F/1.6— F/1.5—F/1.4.

" D.16 " Spool—1,800 ft. capacity.



" D.16 " Rewinder—

This unit is of robust construction and combines two spool arms, which fold flat on to the aluminium base when not in use. Will take spools up to 2,000 ft. capacity.



ACCESSORIES AVAILABLE—*continued.*

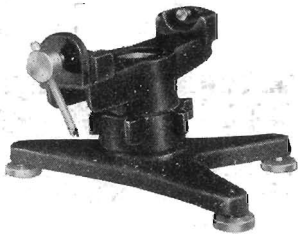


Table Model Tripod Stand—
This unit is designed to give the tilt and pan features of the Standard Tripod, when using the Projector on a table.

Microphone (crystal type)—
Hand type, with volume control, cable and plug.

Monitor Speaker—
5″ P.M. type with volume control, cable and plug.

Splicers, Screens, Tool Kits—

Speaker Cable Extensions—
In standard 25-ft. and 50-ft. lengths in heavy section cab tyre, with rubber moulded, unbreakable plugs and linking connectors.

Control unit for use with two Projectors and one Loudspeaker system—
The output from both projectors is fed into the unit, and two core cables from the unit are plugged into the extension speaker socket on the standard loudspeaker. Use of this unit is essential for this arrangement.

Convertors—
For D.C. supply and non-standard frequency A.C. supply.

D.C. Power Packs—
These are arranged to split the supply, so that the lamp (which is by far the heaviest load) is fed by D.C. through a variable resistance, and the motor and amplifier are supplied with 50 cycles, A.C., through a convertor. It is necessary to make a minor alteration to the Standard Projector switching arrangement when using this unit.
A voltmeter is provided on all D.C. Power Packs.

Transformers—
Auto and double wound for all voltages.

Voltmeters—
On transformer or control panel of the machine.

Projection Lamps—
750 w,, 500 w., and 200 w.

CINETECHNIC LIMITED
GREENFORD. LONDON

GENERAL FAULT LOCATION

Breakdowns are mostly due to setting-up errors and lack of maintenance. Indicated below are certain symptoms, which will help in tracing faults, and also a few remedies.

MOTOR NOT STARTING—If the motor will not start, even when aided by a sharp twist of the inching knob, check all cables and plugs from the mains to the machine sockets, as well as the rotary switch, and make sure that all connections are correct.

ABSENCE OF OIL DRIP IN UPPER GLASS CHAMBER—See that the feed regulating knob is not tightened up completely. Check oil level in lower oil pump chamber. If it is normal, approximately $\frac{3}{4}$ full, an air-lock in feed pipe may be suspected. To remedy, unscrew the feed regulating screw at the top of oil pump, to release air bubble, then re-adjust the flow to 5 drops a minute.

IRREGULAR SPEED—on starting or in course of projection. Probable cause: too abundant lubrication and presence of oil between the driving roller and the mechanism pulley. Stop the machine, open the projector side-door, and carefully wipe the roller and pulley. A defective motor starting switch may also be the reason, and, in this case, lift the motor out of machine and return it for examination.

NO ILLUMINATION—If the motor starts, but the lamp does not light up, stop the machine and check the lamp filaments.

Check if lamp cap makes proper contact with the flat spring inside the bakelite cover, and adjust spring if necessary.

Should there still be no light, even after replacement of lamp, a fault in the rotary switch or lamp circuit is indicated.

NOISY OPERATION—Lack of oil flow to the mechanism. Check oil drip (as above) and see lubrication instructions. Check also that the film in the gate and the film loops are correctly threaded.

SOUND FAULT LOCATION

In all cases, the amplifier as a unit may be checked by plugging a gramophone pick-up or microphone in jack provided. If the sound is good, the cause of faulty sound track reproduction may be diagnosed as suggested below:—

NO SOUND

1. **If pilot lamp not alight:**
   (*a*) Check amplifier fuse. (*b*) Inspect mains wiring to transformer and plugs, also amplifier switch. (*c*) Check pilot lamp.
2. **If pilot alight:**
   (*a*) Replace any cold valves. (*b*) Remove top cap of first valve V.1. Touch top of valve with finger: a loud hum will be heard from speaker if amplifier is O.K.
3. **Inspect L.S. plugs and sockets** and L.S. itself. Cone may be jammed or wire broken off.

DISTORTION, HISS, CRACKLE or LOW SOUND

1. See that the **four amplifier cover bolts and the four bolts of the projector base** are properly tightened up.
2. Ensure that **mains voltage** has not dropped.
3. **Photo-electric cell** may be over-run. Reduce cell voltage by turning the photo-cell control in the amplifier base anti-clockwise. Remove P.E.C. cap and clean cell. See that P.E.C. pins are making good contact. Try fresh cell; adjust voltage to instructions.
4. **Check that film is correctly threaded** and properly guided under sound optic between the "V" and the flanged sprung roller.
5. **Check that sound optical system is free from dirt.** Remove sound drum and clean prism.
6. **Check that the scanning light line** on the sound track is very thin and perpendicular to film direction, If not, clean and rotate top condenser of sound optic to maximum volume.
7. **Check output valves.** Replace if cold. Check that these valves are matched. Mis-matching would cause distortion.
8. **Check all plugs** and external wiring.

EXCESSIVE BACKGROUND NOISE/MICROPHONY

This may be caused by faulty P.E.C. projector lamp, first stage valve, dampness on P.E.C. block, or motor vibration. It is imperative that the first stage valve is carefully selected for low noise level and freedom from microphony.

FAULTY AMPLIFIER

If the sound is still poor or dead, suspect faulty components in the amplifier, such as volume control, photo-cell control, resistors, capacitors, electrolytics, etc. It is easy to take out the amplifier unit (by unscrewing the four cover bolts) and to check, with the aid of the circuit schematic, all the terminals and components, which are freely accessible. The amplifiers are all jigged, dowelled and interchangeable on all "D.16" machines. A spare amplifier can instantly be "dropped in" in place of the faulty one, and the latter properly attended to, or returned to Works for overhaul.

CINETECHNIC LIMITED
GREENFORD, LONDON

PROJECTION CHART

Distance From Lens To Screen.	FOCAL LENGTH OF LENS USED															
	3/4 Ins		1 Ins		1½ Ins		2 Ins		2½ Ins		3 Ins		3½ Ins		4 Ins	
	SIZE OF PICTURE (WIDTH & HEIGHT)															
	W	H	W	H	W	H	W	H	W	H	W	H	W	H	W	H
2	1'0"	0'9"	0'9"	0'7"												
3'	1'6"	1'2"	1'0"	0'9"	0'9"	0'7"										
4'	2'1"	1'7"	1'6"	1'2"	1'0"	0'9"	0'10"	0'7"								
5'	2'6"	1'10"	1'10"	1'4"	1'4"	1'0"	1'0"	0'9"								
6'	3'0"	2'2"	2'4"	1'9"	1'6"	1'2"	1'2"	0'11"	0'10"	0'7"						
7'	3'6"	2'7"	2'8"	2'0"	1'9"	1'4"	1'4"	1'0"	1'0"	0'9"						
8'	4'0"	2'11"	3'0"	2'2"	2'0"	1'6"	1'6"	1'2"	1'2"	0'10"						
10'	5'0"	3'9"	3'9"	2'10"	2'6"	1'10"	1'10"	1'4"	1'6"	1'2"	1'3"	0'11"	1'0"	0'9"		
12	6'0"	4'6"	4'7"	3'5"	3'0"	2'2"	2'3"	1'8"	1'9"	1'4"	1'5"	1'0"	1'3"	0'11"	1'1"	0'10"
15'	7'0"	5'3"	5'8"	4'2"	3'10"	2'10"	2'10"	2'1"	2'3"	1'8"	1'10"	1'4"	1'6"	1'2"	1'4"	1'0"
18'	9'2"	6'10"	6'10"	5'0"	4'6"	3'4"	3'5"	2'6"	2'10"	2'1"	2'2"	1'7"	1'10"	1'4"	1'7"	1'2"
20'	10'0"	7'6"	7'6"	5'6"	5'0"	3'9"	3'10"	2'10"	3'0"	2'2"	2'6"	1'10"	2'1"	1'6"	1'10"	1'4"
25'	12'6"	9'4"	9'4"	6'11"	6'4"	4'8"	4'8"	3'6"	3'10"	2'10"	3'2"	2'4"	2'8"	2'0"	2'4"	1'9"
30'	14'10"	11'0"	11'6"	8'7"	7'6"	5'7"	5'8"	4'3"	4'6"	3'4"	3'8"	2'9"	3'4"	2'6"	2'10"	2'1"
35'	17'6"	13'0"	13'4"	9'11"	8'10"	6'7"	6'6"	4'10"	5'2"	3'10"	4'4"	3'3"	3'10"	2'10"	3'2"	2'4"
40'	20'0"	14'11"	15'0"	11'2"	10'0"	7'5"	7'6"	5'7"	6'0"	4'6"	5'0"	3'9"	4'4"	3'3"	3'10"	2'10"
45'	22'6"	16'9"	16'10"	12'6"	11'4"	8'5"	8'6"	6'4"	6'9"	5'0"	5'8"	4'2"	4'10"	3'7"	4'2"	3'1"
50'	25'0"	18'8"	18'8"	13'10"	12'6"	9'4"	9'4"	6'11"	7'6"	5'6"	6'4"	4'8"	5'5"	4'0"	4'8"	3'6"
60'			22'0"	16'5"	15'6"	11'7"	11'7"	8'11"	9'6"	7'0"	8'0"	6'0"	6'6"	4'10"	5'10"	4'4"
75'					18'8"	13'9"	14'2"	10'6"	11'4"	8'6"	9'6"	7'0"	8'2"	6'0"	7'2"	5'4"
100'					25'0"	18'8"	18'9"	14'0"	15'2"	11'4"	12'8"	9'5"	10'10"	8'1"	9'6"	7'0"
125'									19'8"	14'7"	15'7"	11'7"	13'4"	10'0"	11'8"	8'8"
150'									22'5"	18'0"	18'8"	13'11"	16'0"	12'0"	14'0"	10'0"

Film-Tech

Missing Page

This page was missing from the source material at the time of scanning. If you have access to this missing material, please contact us through the website.

www.film-tech.com

THE "D 16" SILENT PROJECTOR

Convertible into the standard sound model by simple addition of the standard sound head and amplifier units.

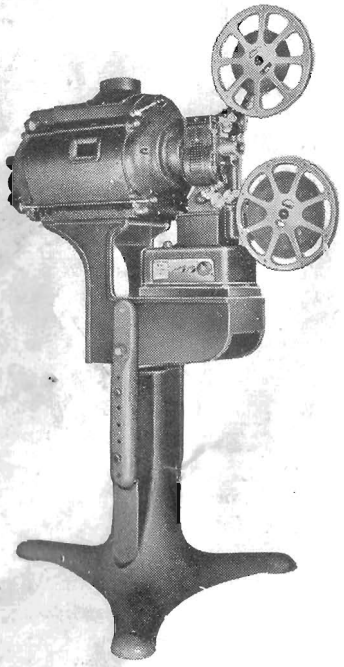
All description and instruction in this handbook apply in full to the silent model with the exception of the sound reproducing part.

"D 16" CONTINUOUS SOUND AND SILENT PROJECTORS

Non-stop projection at 400 ft. of films, without reloading.

THE "D 16" ARC PROJECTOR

Specially built to suit arc conditions. A.C. or D.C., 60-80 amp arc lantern, with automatic controls, 300 m/m. dia. mirror. Suitable for large installations and for mobile work.



Manufactured by:

CINETECHNIC LIMITED, GREENFORD, LONDON

Address: 169, Oldfield Lane, Greenford, Middx. Cables: CINTEC. Phone: WAXLOW 1011

DEBRIE FILM EQUIPMENT FOR STUDIO AND LABORATORY

Printing and processing of 35mm., 16mm., 9.5mm. and 8mm. films. Automatic reduction, in one operation, of picture and sound from 35mm. films on to two 16mm. combined picture and sound films.

PARVO, SUPER-PARVO AND SUPER PARVO "BI-PACK" 35mm. cameras for 400-ft and 1,000-ft. 35mm. film.

"G.V." HIGH SPEED, 35mm. CAMERAS, up to 240 pictures per second, by intermittent film mechanism (pins and register pins).

OPTIMA perforating and slitting machines for 35mm., 16mm., 9.5mm. and 8mm. film.

MATIPO film printing machines by contact, for automatic and simultaneous printing of pictures and of sound on 35mm., 16mm., etc. film.

MATIPO "BI-PACK" printing machines for colour (picture and sound).

MATIPO "T.U." printing machines for simultaneous printing of picture, sound and superimposed titles.

TIPRO film reduction printing machines for simultaneous and automatic reduction of pictures and of sound from 35mm. film on to two combined picture and sound 16mm. films in one operation.

"D.U." developing machines for automatic processing of 35mm., 16mm., etc., negative and positive films. Output of developed, fixed and dried film, according to model of machine, from 150-ft. to 2,000-ft. per hour.

MULTIPLEX heavy duty DAYLIGHT developing machines for automatic processing of 35mm., 16mm., etc., negative and positive films. Output of developed, fixed and dried film, according to model of machine, from 2,000-ft. to 10,000-ft. per hour.

MICROFILM EQUIPMENT of new design for taking two separate films simultaneously or singly on film strips or rolls, at will.

Quotations for and supplies of above equipment obtainable from :

CINETECHNIC LIMITED, GREENFORD, LONDON

Address : 169, Oldfield Lane, Greenford, Middlesex.
Cables : CINTEC. Phone : WAXLOW 1011

Sole agents for the British Empire of :

ETABLISSEMENTS ANDRE DEBRIE, PARIS.

Printed in England by George Pulman & Sons, Ltd., London and Harrow