



### Projector FP 20

The outstanding design and constructional features of the 35 mm Projector FP 20 make it one of the most versatile and advanced professional sound projectors available for virtually any application. Complete data on projection distance characteristics, control and automation, light sources and reverse running is given in the full technical brochure which is available on request. This publication summarises the main characteristics of the FP 20 Projector.

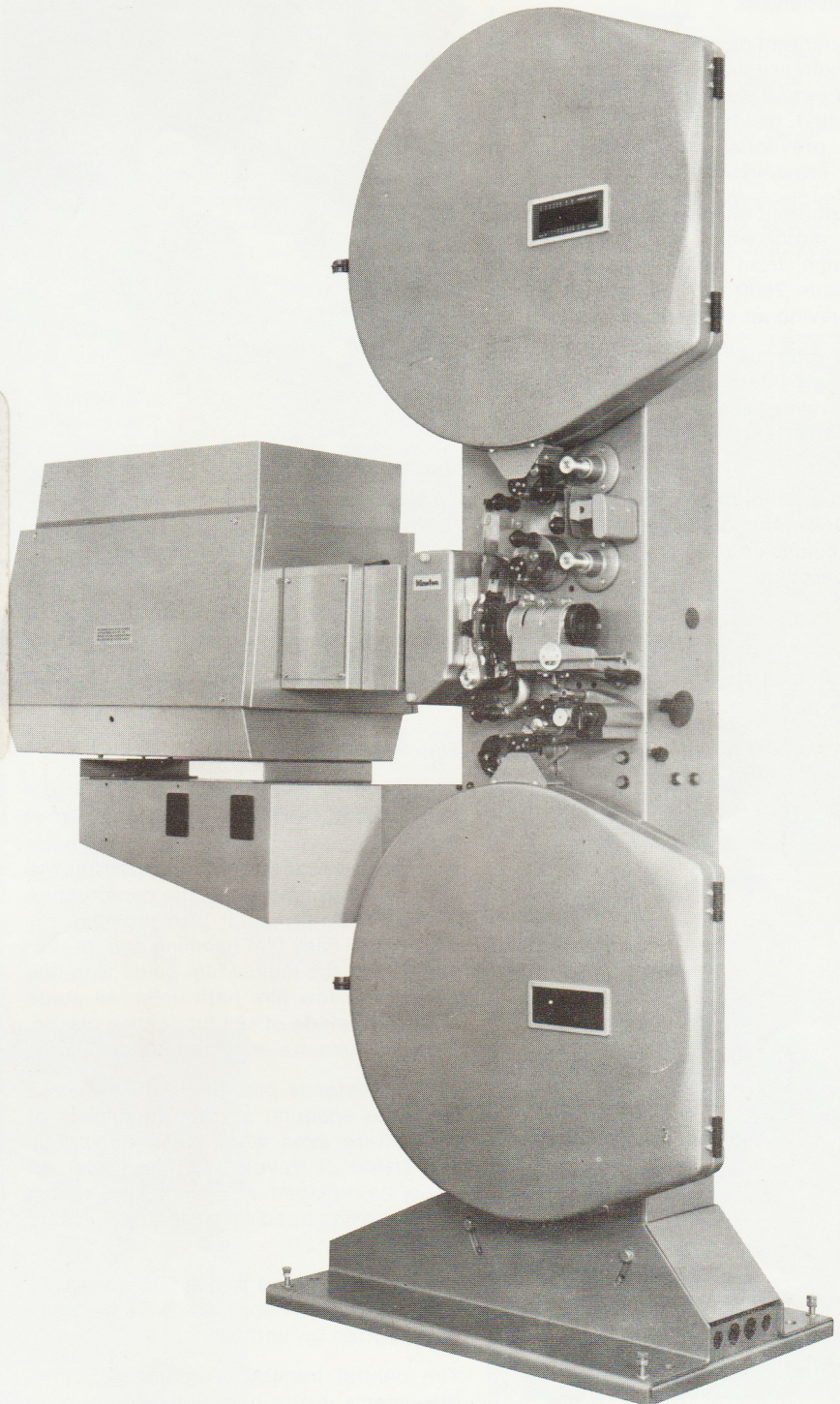


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#### Special features of the FP 20 Projector:

- Perfect accuracy in respect of picture-steadiness.
- Optical sound-scanning
- High light-efficiency
- Designed for straightforward economic installation
- Easy film threading
- High reliability due to precision construction and simple gearing
- Minimal maintenance
- Wide versatility of use



## Steel Housing

The front panel of the steel housing is completely flat, consequently all built-in units or facilities that may be fitted subsequently (including spool shafts and frictions) are automatically adjusted on the film plane. As the steel housing contains the complete projector, and in some cases also the built-in light source, and further, as the electrical units are included completely wired, problems of installation, wiring and adjusting are eliminated. This 'monoblock' design concept has been patented, and these features, together with stringent inspection and testing procedures during manufacture, contribute significantly to the low installation costs achieved.

## Drive Mechanism

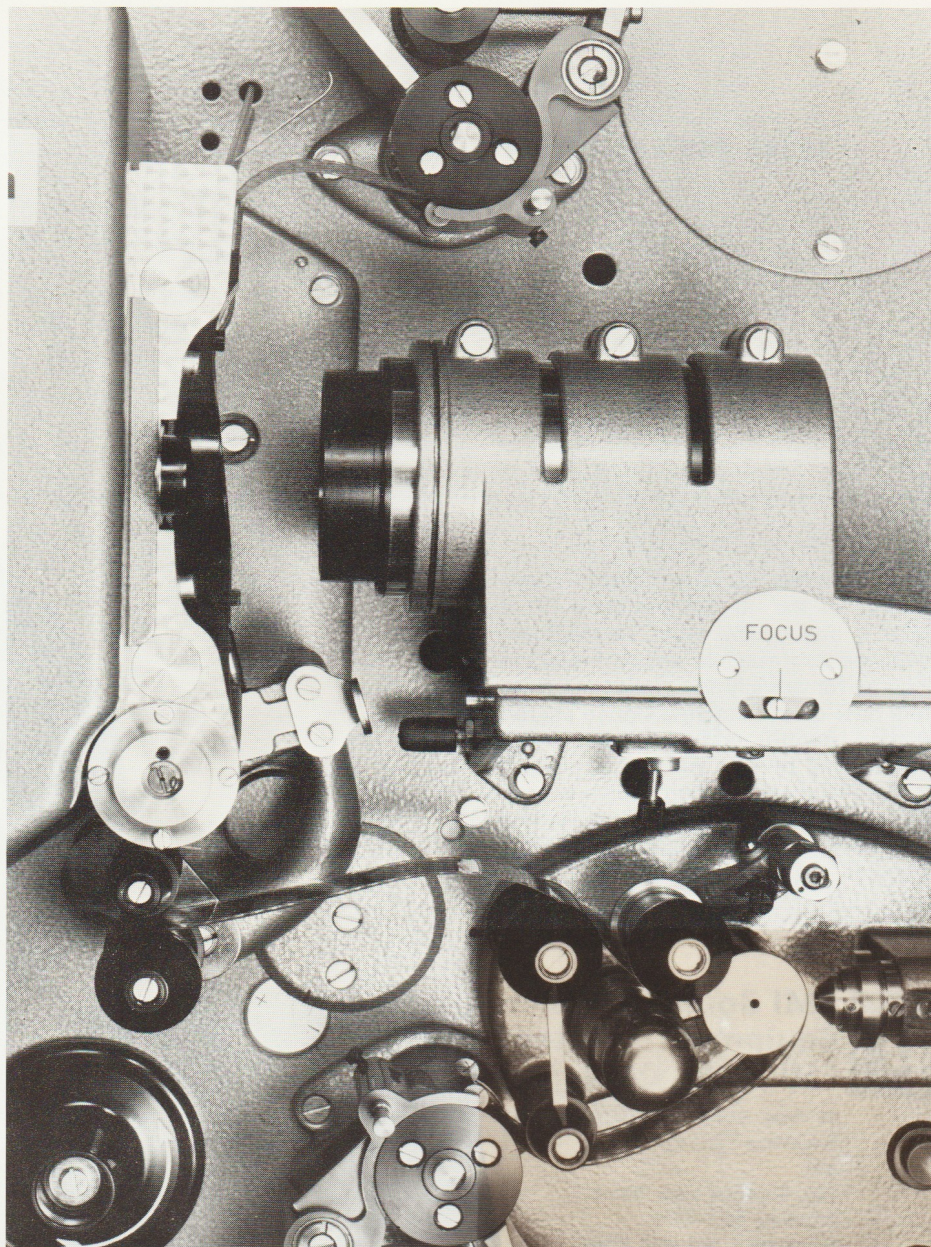
The intermittent movement, manufactured with proven precision, runs in an oil bath. All spindles and shafts run in maintenance-free sealed ball-bearings ensuring long life and preventing oil contamination of the film.

The intermittent movement is directly driven by a motor which is also mounted in the column, from which the disc-shaped single-blade 2800 r.p.m. shutter is operated, achieving an efficiency of 54 %.

The projector can be provided with an accelerated intermittent movement with extremely small steps giving an efficiency of 70 %, and hence a light gain of approximately 30 %.

The feed and holdback sprockets, as well as the lower friction, are driven by slow-running chains on robust wheels, ensuring silent operation.

*simple film guide ▶*



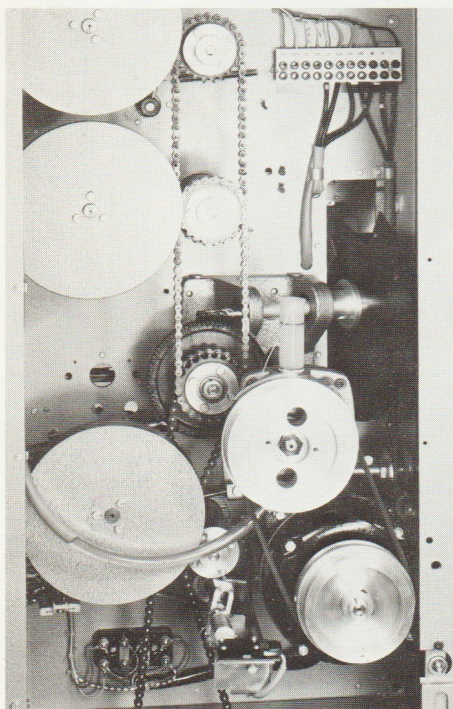
## Film Path Units

In addition to the advantage that all film path units (for example, spool shafts, projector mechanism, optical and magnetic sound head) are already adjusted on the common mounting-plate, the construction of the FP 20 projector also provides exceptionally easy film handling and threading, due to the logical film guide with few rollers and few film path units. All guide rollers are made of self-lubricating plastic, the sprockets are enclosed by pad shoes.

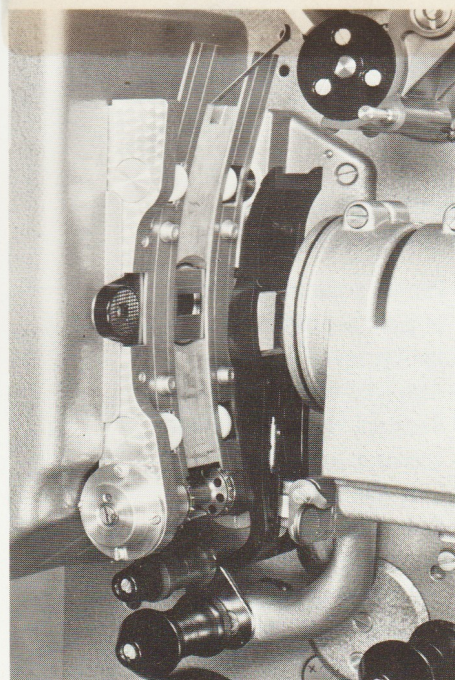
The projector is provided with a curved film gate ensuring perfect steadiness of the picture even when using old prints. The Delrin or Novotex runner strips can easily be replaced, as also can the skates which are equipped with a central pressure control.

Another advantage is that the extremely light intermittent sprocket with its shaft, is supported on both sides.

The central framing is achieved by the displacement of a backlash-free coupling bush.



*projector mechanism FP 20*



*curved film gate with skate and intermittent sprocket with shaft supported on both sides*

## Aperture Plates and Lensholders

The aperture plates for the different aspect ratios are interchangeable, even during projection. They snap positively and automatically into their correct position directly behind the film gate and consequently a sharply defined picture is produced avoiding marked de-focussing at the edges.

The lensholder slides over a sturdy support fixed to the projector. Optimal sharpness can be adjusted by a fine focussing screw. The lens holder with lens can be taken from the support in a single operation, so that for change-over to another aspect ratio, the required lens fitted to its holder can be quickly and easily exchanged. Sharpness is ensured by positive location in the correct position.

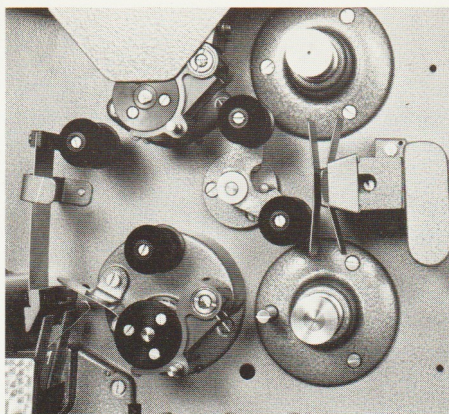
These lensholders are suitable for lenses up to 70.6 mm diameter, but the use of an adaptor enables lenses of 62.5 mm diameter to be used, lenses with an extremely short focal length, (up to 30 mm) or special lenses. A lensholder for lenses with a diameter of up to 101.6 mm is also available.

## Scanning of the Sound Track

The standard FP 20 projector is equipped with an optical sound head. It can also be supplied or fitted subsequently with a 4-channel magnetic sound head. The necessary mounting holes and lugs in the front panel are provided at time of manufacture.

The optical sound head with the rotating sound drum has a maximum starting time of only 3 seconds. Its construction absorbs small shocks and any risk of rasping due to sprocket modulation is eliminated. The high quality slit lens of the optical system, rapid replacement of the pre-adjusted exciter lamp and the solar cell equipment are in accordance with the demands of modern cinema practice.

The magnetic sound head has two sound drums, running in precision ball bearings and provided with heavy flywheels. Spring loaded rollers provide the requisite tension between the feed sprocket and the built-in intermediate sprocket in the four channel magnetic sound head. Thus the film runs more smoothly through the sound head and stress on the film perforations is reduced.



*four channel magnetic sound head*

This is a decided advantage over projector mechanisms where the sound heads are not coupled to the projector.

## Electrical Equipment

The dowsing of the projector is actuated by two magnetic spools. It can be operated by the same push-buttons which start and stop the projector mechanism. This push-button operation enables remote control facilities and automation to be fitted to the projector with minimal additional costs and contributes greatly to simple operation and handling.

The integration of the automatic film-rupture device ensures the immediate closing of the dowsing, the switching off of the drive motor and lamp, via free contacts on the motor relay. Automation is also simplified by this arrangement.

All electrical units, as well as the terminal strips, are logically arranged in the rear door of the steel housing, allowing ease of access.

The projector can be equipped with either asynchronous motors for 220 V, 110 V, 50 and 60 Hz, or with synchronous motors. Interlock operation is also available. Variable speed D.C. motors with their own or other power supplies can be used.

## Spool Shafts and Spool Boxes

The FP 20 Projector is equipped with spool shafts for 600 m or 1800 m spools. In the latter case, the shaft centres and the friction

power is also sufficient for 2400 m spools.

Spool shafts are available in European and American versions.

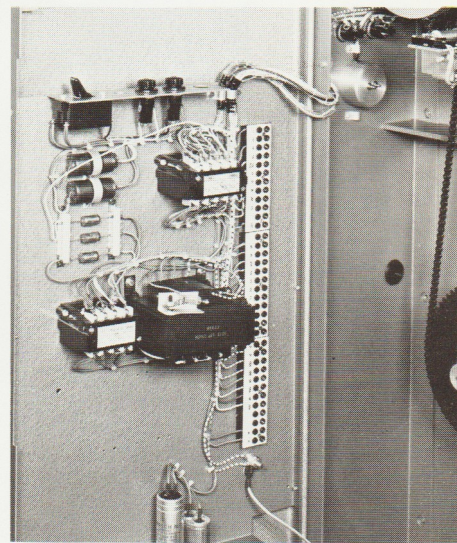
Spool Boxes are not essential for the satisfactory operation of the projector, but they are available in an elegant design with an illuminated time scale for 600 m and 1800 m spools as an optional extra.

## Light Sources

The optical system with the lamp turret for the 36 V 400 Watts halogen lamps is built directly into the shutter housing. Alternative lamp housings are available, also directly attached to the projector housing, for 110 V 1000 Watt projection lamps, for 500 Watt, 700 Watt and 1000 Watt horizontal Xenon lamps.

An adjustable-height mounting table is available for all other types of Xenon lamps, of our own or other manufacture, for carbon arc lamps and for SPP lamps.

In addition slide attachments with or without automatic slide device can be used as well as manual and automatic lens turrets. Further details are available in separate brochures.



*electrical equipment (without cover)*

## Additional Equipment

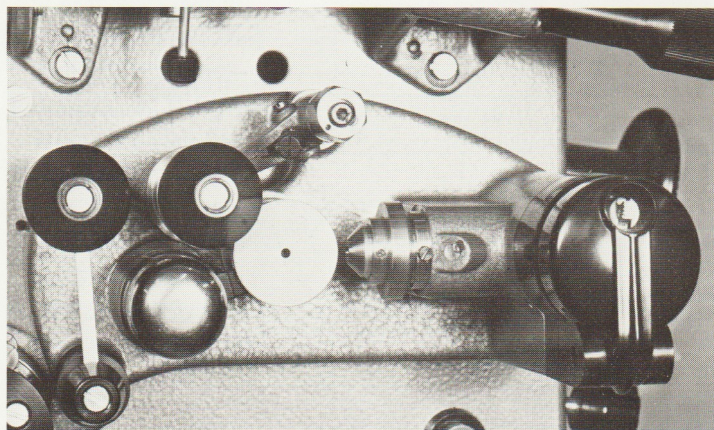
In the case of high light efficiency or extreme heat conditions, the standard version is available with built-in water cooling system.

When a simple amplifier system is used, it is recommended that the exciter lamp rectifier is installed in the projector.

An ignition delay unit and an automatic ignition device for use with the Xenon lamps, can be supplied.

Further supplementary equipments are described in special brochures.

If required, all lenses, sound systems, rectifiers and the complete-booth equipment package can be supplied.



*optical sound head*

Code-Numbers and Weights

	type	net weight kg
projector FP 20 with optical sound head and 600 m (2000 ft.) spool boxes	0010 201 11011	151
or with 1800 m (6000 ft.) spool boxes	0010 203 11012	179
<b>Accessories</b>		
magnetic sound head	8990 240 28109	6,5
lensholder	8990 240 29009	0,6

