



FILM PROJECTION EQUIPMENT

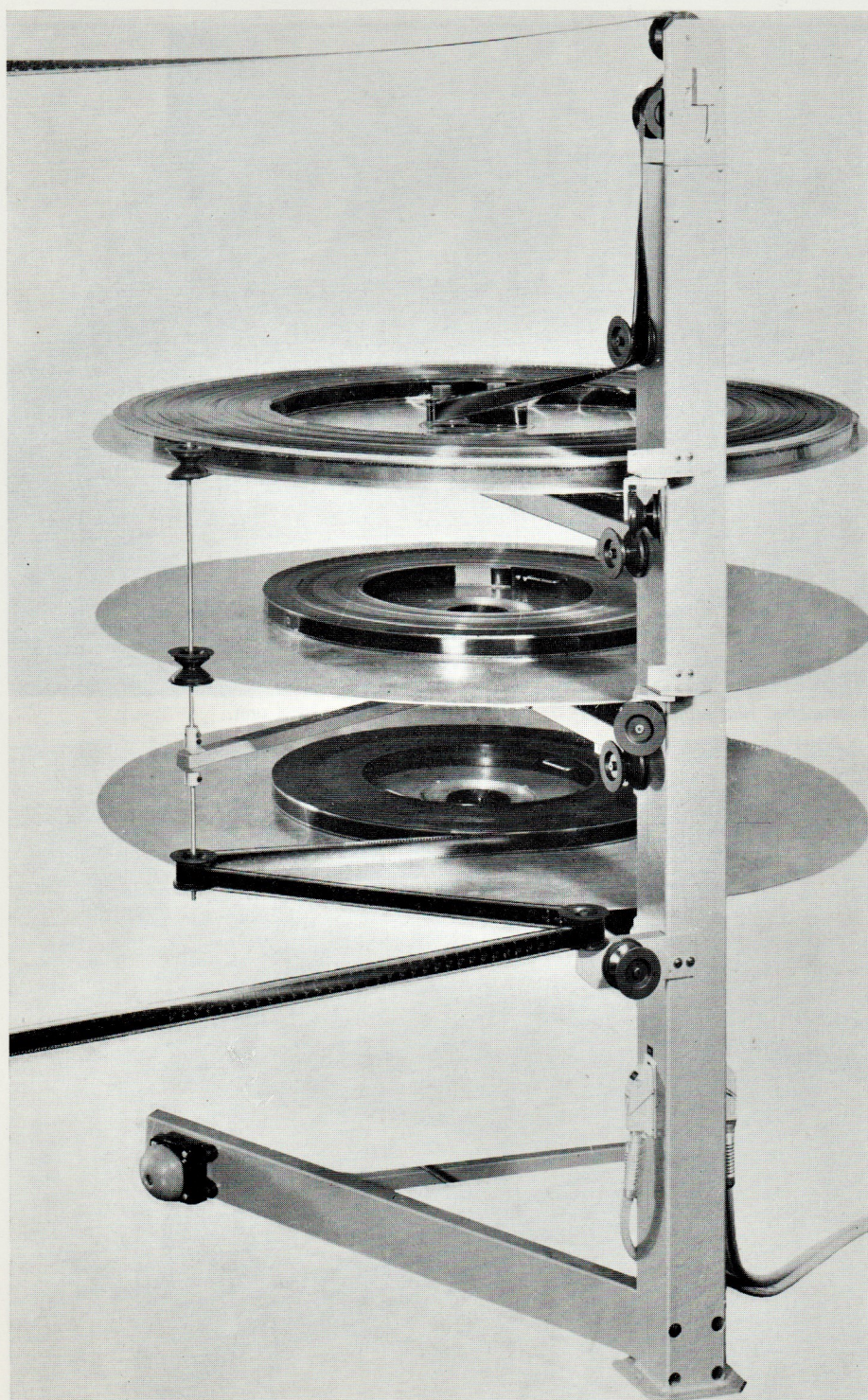
Norelco

**MOTION PICTURE
EQUIPMENT**

NORTH AMERICAN PHILIPS CORPORATION

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Non-rewind installation



No rewinding of films after the performance

Film damage minimised

Time-saving

Simple to install and operate

Little maintenance

Suitable for automation

By dispensing with the inter-screening rewind procedure the Philips Non-Rewind Device provides the necessary simplification which makes the automated cinema projection-room a practical proposition. With this system the longest films made at present can be shown without change-over, any type of cinema projector can be used, only a single projector need be used for a full length feature and the film is ready for re-screening at the end of each performance without the need for rewinding.

A fully automated cinema can be obtained by using a Non-Rewind device and one projector with lens-turret and a Philips punched-card programmer, or two projectors without lens-turret, and with a Philips punch-card programmer.

As existing projectors can be used the capital outlay is restricted to the installation of the Non-Rewind device and the programmer. The non-rewind device can be delivered for presenting 35 mm film programmes or for presenting 35 mm and 70 mm film programmes.

NON-REWIND

The Non-Rewind device consists of three large discs 47 inches (1.2 m) in diameter, a splay-footed vertical stand, with guide-rollers attached to its frame, a winding table for make-up and break-down of the programme, and a control unit. The discs are positioned horizontally on the three support arms which project from the stand, one above the other. One disc is selected as the feed disc, and another as the take-up disc. A plug-in speed control unit is inserted in the middle of the feed disc and a plug-in take-up ring is inserted into the take-up disc. A spring-loaded arm is located below the middle support arm and controls the speed of the take-up disc.

The film to be screened is placed on the feed disc and fed via the plug-in speed control unit, over the rollers on the frame of the stand, to the projector.

It passes through the projector and is attached to the take-up ring on the take-up disc via a roller on the stand and one of the rollers on the spindle of the spring-loaded arm. At no time during screening is the film under tension. When the programme is finished the plug-in take-up ring has only to be replaced by a plug-in speed control unit and the programme can be instantly repeated. Each installation is supplied complete with two plug-in take-up rings and two plug-in speed control units (the 35/70 mm device has one of each of these items for 35 mm film and likewise for 70 mm film). The control unit contains all the electrical control elements other than the d.c. disc-driving motors mounted below the support arms of the stand and certain equipment in the winding table. This equipment has to be independent because the system permits the winding-table to prepare a second programme with the aid of the middle disc even while the other two discs are in operation. Each disc rotates smoothly and quietly on a light-running ball-race.

Since tangential velocity increases with radius and the film is fed from the inside of a filmroll placed around the plug-in speed control unit, the speed (angular velocity) of the feed disc is reduced at a constant rate so that the film is fed to the projector at a constant rate. Furthermore the speed of the take-up disc is also reduced at a constant rate because the film is fed to it at a constant rate while the diameter of the reel gradually increases. As the film passes through the plug-in speed unit it activates one of two micro-switches which cause relays in the control unit to be energised.

These relays cause drive pulses to be applied to the motor attached to a variable

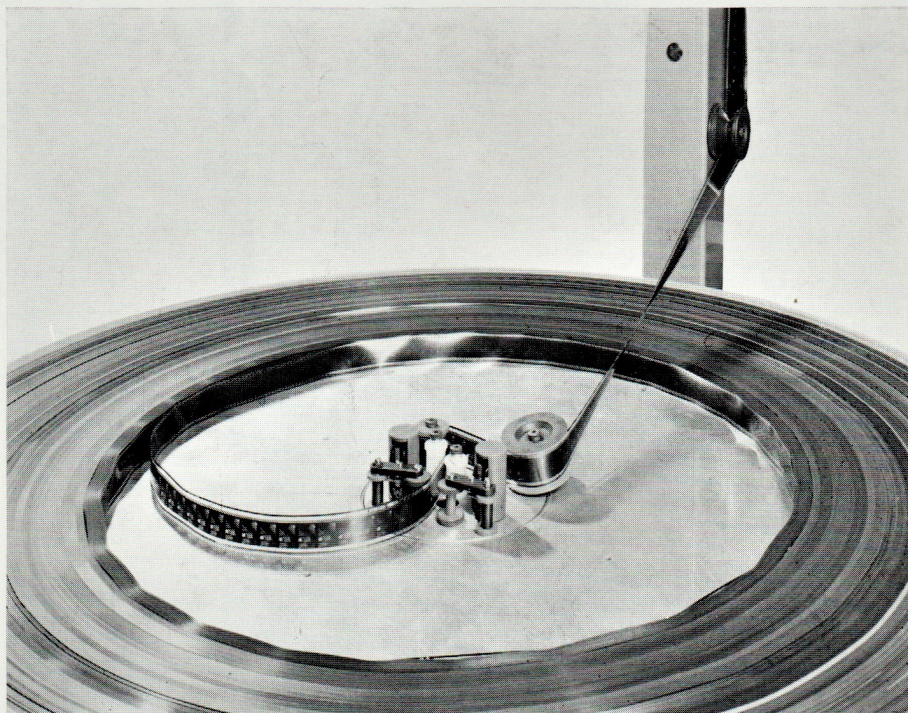
transformer. The transformer controls the supply voltages of the d.c. disc-driving motors and depending on which micro-switch the film activates the speed is increased or decreased. A similar drive-motor and variable transformer control the speed of the take-up disc but it is the displacement of the spring-loaded control arm which initiates the action. If the film should break, the spring-loaded control-arm moves to its end position and operates a switch which interrupts the supply voltages for the disc drives and the projector.

Since the middle disc is the preferred one for making-up and breaking-down programmes its speed can also be controlled from the winding-table and a magnetic brake is incorporated for instantaneous

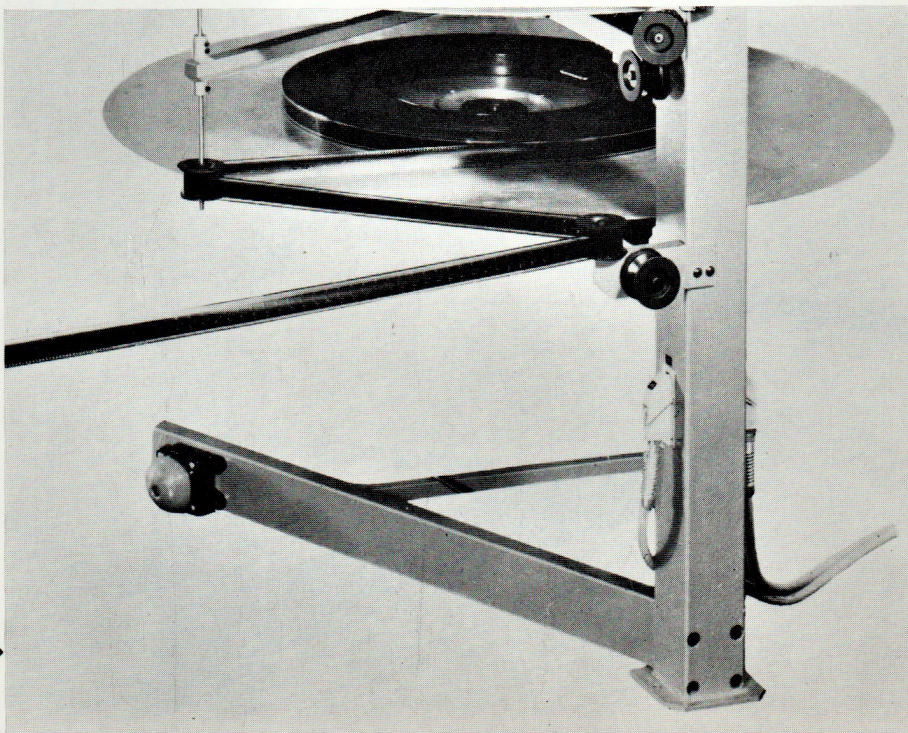
stopping. When winding film onto the winding-table a solenoid, which disengages the drive-motor from the middle disc, is activated. This disc can then rotate freely on its bearings.

The speed control unit facilitates threading up as one of the micro-switches, which is activated when the film is pulled from between the rollers of the plug-in speed control unit, causes the feed-discs motor to operate until sufficient film has emerged.

On one foot of the stand is a foot-operated switch. With this switch the take-up disc can be driven until the slack film is taken up and the spring-loaded control arm has reached its correct position for programme start.



A prepared film emerging from the rollers of the plug-in feed unit.



Bottom-positioned disc performing the take-up function. On the stand foot in the foreground the foot-operated switch used during threading-up can be seen.

The guide rollers located at the top of the stand have two distinct positional relationships which enable film to be fed to any one of two projectors. A change-over switch ensures that the control unit supplies power to the correct projector. A complete set of guide rollers suitable for use with FP 20 or DP 75 projectors are supplied with the standard device. The number of guide-rollers required will depend on the type of projectors and the positioning of the equipment and will be calculated for each order. For 35/70 mm devices guide-rollers which can accommodate both sizes of film will be provided.

CONTROL UNIT

A 220 V single-phase a.c. mains supplies the control unit.

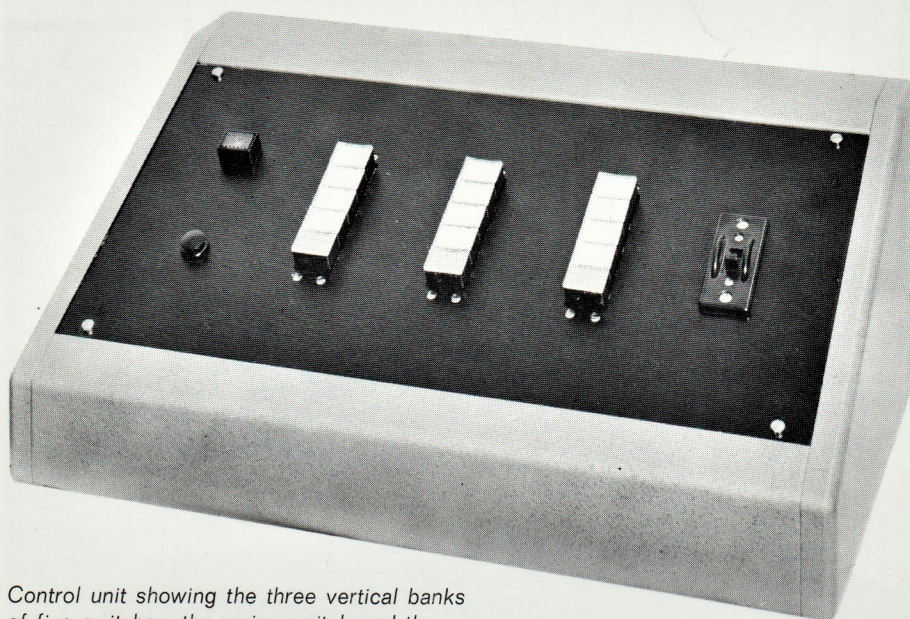
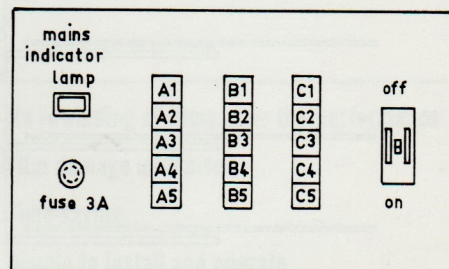
All cables and plugs are supplied with the installation. On the front-panel of the control unit there is a mains on-off switch, a mains indicator lamp, a 3 A fuse-holder, and three vertical banks of five push-button switches which control the different operating modes expected from the three horizontal discs. The left-hand, central, and right-hand banks control the top, middle, and bottom discs respectively.

Inside the control unit are relays, a motor-driven variable transformer, rectifiers for supplying the disc-driving motors, and a delay circuit for matching the disc run-out time to that of the projector when the projector is stopped. The variable transformer supplies the take-off discs drive-motor. The two micro-switches of the speed control

unit determine the minimum and maximum speeds of this disc. If the film speed does not increase satisfactorily within 3 seconds a relay causes the drive-motor to rotate the variable transformer to the position corresponding to maximum disc speed.

Schematic of the control units front-panel layout.

A1 take-off safety button for top disc; A2 take-off on top disc; A3 take-up on top disc; A4 prepare on top disc; A5 reset. Push-buttons B and C perform same functions but are for middle and bottom discs respectively.



Control unit showing the three vertical banks of five switches, the mains switch and the mains indicator lamp with the fuse-holder below it.

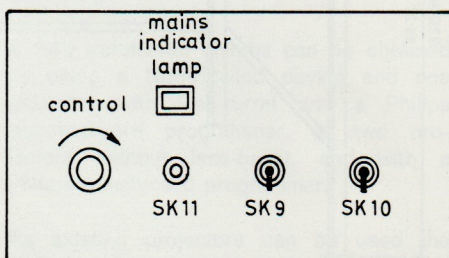
WINDING-TABLE

On the top of the winding-table there is a small disc with a spindle for spools and an adapter for 2 inch bobbins. The disc is driven by a motor which is supplied via a variable transformer incorporated in the table. Two tumbler switches permit a choice of function i.e. take-up or take-off. There is ample work-space on the table so that making-up and breaking-down the programme can be easily performed. If desired, the table can be equipped with a second disc, friction-driven by the same motor, permitting a film to be re-wound on the table alone.

Two adapters are supplied with the 35/70 mm installation. One is used with 35 mm film spools and the other with 70 mm film spools. A cable and plug are supplied for electrically connecting the winding table to the disc stand.

Schematic of the winding tables control panel.

SK 11 - push-button for applying magnetic brake to middle disc; SK 10 - tumbler switch to be selected when winding film onto the middle disc; SK 9 - tumbler switch to be selected when rewinding film from the middle disc.



◀ Programme 1 being screened and programme 2 being prepared at the same time. The item to the left of the winding disc is a tape splicer.

