

A Bilingual Drive-In Installation

By FRANCESCO DE RENZIS

THE METRO Drive-In opened in 1958, in Rome, Italy, was the first drive-in theater to install bilingual equipment. With this equipment either the Italian dubbed version or the original (usually in English) may be selected. In 1959, another drive-in, the Motocine in Madrid, Spain, installed similar bilingual equipment. The ability to provide dual-language versions is important in view of the great

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number of English-speaking tourists visiting Rome and Madrid and the number of U.S. personnel stationed in or near these two cities. The Rome Metro Drive-In has a capacity of 800 cars; it covers an area of approximately 14 acres. The parking area is divided into 17 ramps, eight of which have been wired with power distribution to supply in-car heaters during the winter.

The facilities include a snack bar and boxoffice. Six hundred seats are reserved in the grandstand for motorcyclists. There is also a playground for children. The screen tower (Fig. 1), constructed in reinforced concrete, is 68 ft high and 125 ft wide. This screen is tilted 5° and curved on a 755-ft radius. It is the largest screen in Europe. The projection booth is placed on the ninth ramp. The projection distance is about 450 ft.

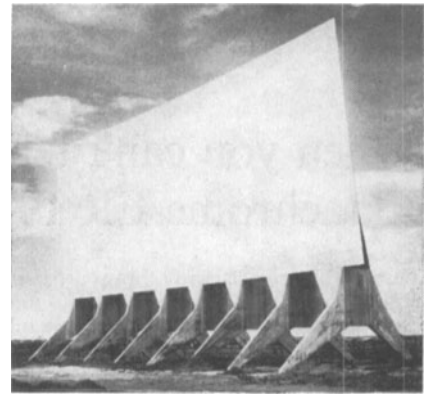


Fig. 1. Screen tower of the Metro Bilingual Drive-In- Rome.

The Italian language sound version is the standard photographic track of the release print and the original language version is a magnetic re-recorded soundtrack on a separate 35mm film. To reproduce simultaneously the two soundtracks for bilingual transmission, each Westrex R6A photographic reproducer is mechanically interlocked with an R-8-B magnetic sound reproducer for standard track reproduction (Fig. 2). The mechanical coupling, incorporating Century helical gears and ball bearings, is used only during the starting period as the magnetic reproducer and the projector are driven by separate synchronous motors.

A special panel, installed on each projector pedestal, simultaneously controls the projector and magnetic reproducer motors, operates the arc rectifier, and can reset the fire alarm circuit. As a safety precaution, a pushbutton, installed on each reproducer pedestal, is used to stop both the magnetic reproducer and the projector and to turn off the arc rectifier. When synchronous operation is not required, the mechanical coupling can easily be disconnected and the motors controlled separately from the same control panel. To facilitate alignment of the mechanical couplings, a special adjustable pedestal for the R-8-B reproducer was designed. Projectors and reproducer pedestals are fastened on heavy iron frames and secured to the booth floor in order to minimize mechanical vibration. A two-way Neumade Synchromaster assembly is used to speed the rewind operation and to make the synchronization easier in case of breakage of one of the two films.

The outputs of the magnetic and the photographic reproducers feed into a preamplifier cabinet installed on the front wall of the projection booth. This cabinet contains two sets of photoelectric cell and magnetic preamplifiers, the photographic and magnetic volume controls, the changeover pushbuttons, and an emergency switch.

Two separate power units, one for each set of preamplifiers, are provided. With the single changeover pushbutton, the magnetic heads and the exciter lamps are switched and the preamplifiers' outputs muted to eliminate clicks and other annoying noises during the changeover period. The magnetic and photographic low level outputs feed into the input panel of the main transmission equipment.



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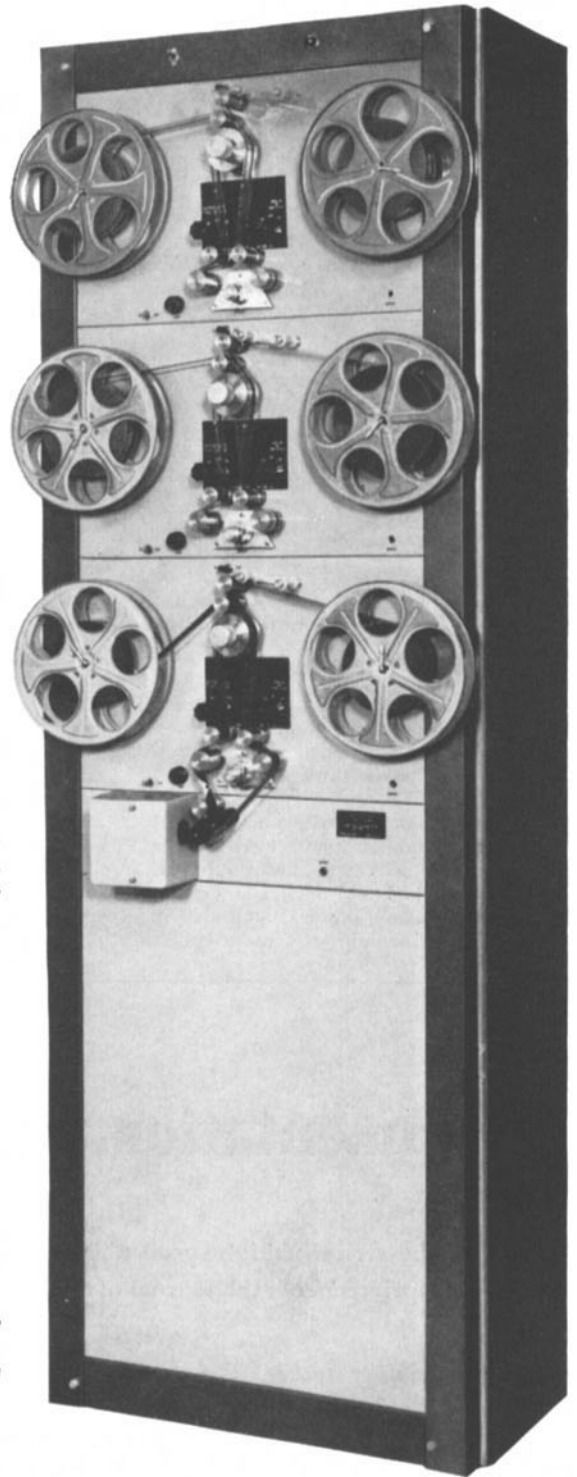
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MD435	35mm	90	MR435 MAGNETIC RECORD	OD435 OPTICAL DUBBER	OR435 OPTICAL RECORD
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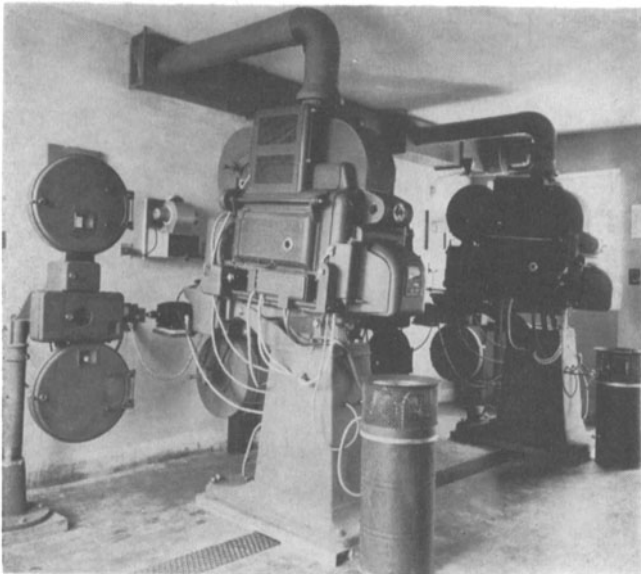


Fig. 2. R & B magnetic sound reproducer.

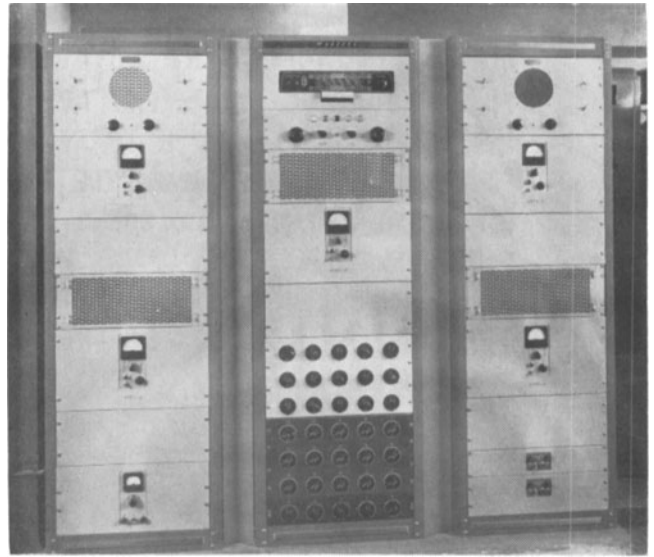


Fig. 3. Transmission equipment.

Transmission Equipment

The transmission equipment, modified for bilingual operation and augmented with some locally designed special accessories, is installed in three cabinets each 5½ ft high (Fig. 3).

The first cabinet contains one modified output and monitor panel, two power amplifiers with associated power supplies, a ventilating panel, and regular and emergency exciter lamp power supplies. The second cabinet contains the radio tuner,

the input switching panel, one power amplifier and associated power supply, a ventilating panel and the ramp switchboard panel. The third cabinet houses one output and monitor panel, two power amplifiers with associated power supplies, a ventilating panel, and the regular and emergency preamplifier power units.

Two 200-w power amplifiers in the first cabinet serve the Italian language in-car speaker distribution bus; two similar amplifiers are in the third cabinet. One of

these amplifiers serves the original language bus and the other serves the speakers installed in the grandstand, snack bar, and manager's office. The fifth power amplifier, located in the second cabinet, is for emergency purposes and can be substituted for any one of the other four amplifiers by operating the input panel emergency switch and the output emergency switch of the defective amplifier. Two of these latter switches are installed on each output panel.

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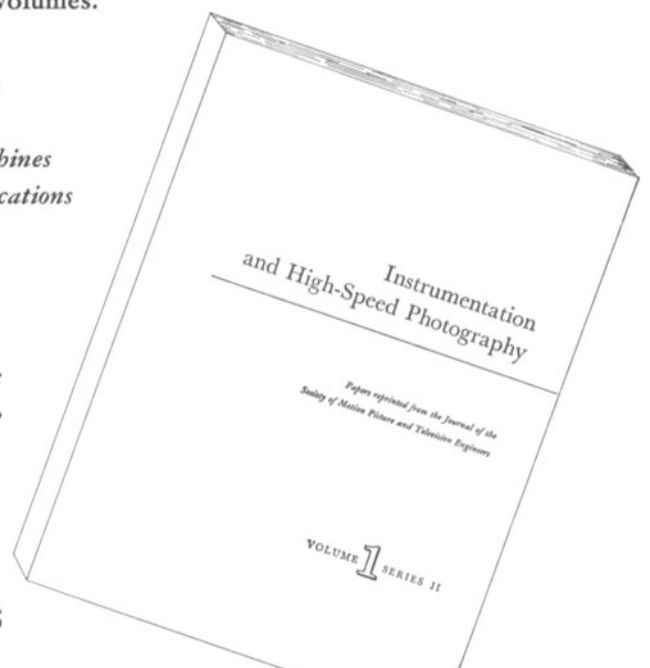
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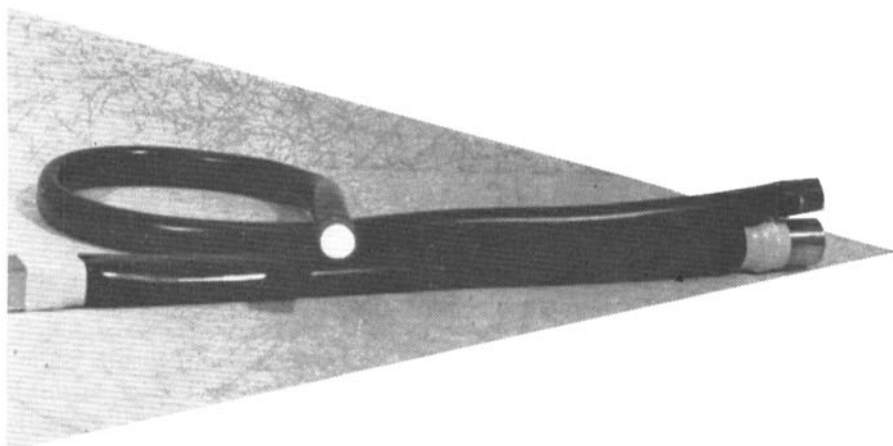
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A Technical Paper on Fiber Optics Printing was given on May 12, 1961, at the SMPTE Convention, Toronto, Canada, by A. J. Miller, Vice Pres., Du Art Film Labs & Tri Art Color Corp. Copies are available on request.



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The input panel (center cabinet, Fig. 3), in addition to the 5-position input emergency switch, contains the nonsynchronous volume control as well as volume control for the grandstand, snack bar and manager's office speaker, and a 6-position input switch. This switch operates as follows:

First position—the photoelectric cell preamplifier drives the four power amplifiers when only the photographic sound-track is to be reproduced.

Second position—the preamplifier drives the Italian version power amplifiers. (The magnetic preamplifier drives the original version power amplifier when the Italian language is on the phototrack of the release print and the original on the track of the magnetic film.)

Third position—the second position connections are reversed if the original is on the phototrack and the Italian on the magnetic track.

Fourth position—all power amplifiers are fed by the radio tuner.

Fifth position—the manager's office microphone preamplifier drives all power amplifiers.

Sixth position—a tape reproducer pre-amplifier feeds all power amplifiers.

The output switchboard panel switches the original and Italian sound distribution systems of each ramp and the grandstand, snack bar, and manager's office sound distribution lines. This panel contains 35 4-position, 2-pole, make-before-break

switches, the first position of which is "off". Dummy load resistances are not required because the power amplifier has a 14 to 1 output damping factor and can work into a load resistance of infinity without going into oscillation. A 3-kva voltage regulator feeds the a-c to the transmission equipment and a 6-kva power transformer supplies the in-car speaker controls and the concession and signal lights.

Amplifiers

The main amplifier has a continuous power output rating of 200 w with a harmonic distortion of less than 1% over a frequency range of 20 to 20,000 cycles and a peak power rating of 400 w with not more than 1% harmonic distortion.

To minimize the crosstalk interference between the Italian and the original sounds, each distribution system has been wired with separate twisted-pair ground balanced conductors. As the 25-ohm output (70.7 v standard) of the power amplifiers has no center tap, center-tapped retardation coils with a low d-c resistance and a high inductance winding were connected in parallel to the power amplifier outputs and with the center tap grounded to balance the outputs.

The in-car speakers are made by Westrex Company Ltd. in London and are equipped with coiled cords. The outdoor loudspeakers were designed and manufactured in Italy for this installation. The speaker controls have been modified to incorporate two matching transformers (one for each of the two in-car speakers), two terminal strips, and two DPDT (double pole, double throw) switches to select the Italian or the original sound distribution system.

Century CCW double shutter, curved gate, water-cooled mechanisms are used in combination with Ashcraft Super-Cinex arc lamps and Bausch & Lomb 4-in. lenses to obtain the maximum light efficiency. Century heavy-duty pedestals and 18-in. magazines, zipper changeovers, Ashcraft 1612 type rectifiers and water recirculators, and Dayton blowers for the exhaust ducts are the necessary accessories which complete the installation.

Positive 13.6-mm × 18-in. and negative $\frac{1}{4}$ -in. × 9-in. National Carbon trims are used with an operating range of 120 to 150 arc amperes. The lower current is used for black-and-white films and standard-size aperture plates; the higher current is used for CinemaScope and MetroScope.

Because of the poor voltage regulation of the main power supply, and to facilitate the handling of the various arc currents required for the different types of films projected during a single show, a 6-position 3-pole commutator switch is used instead of the customary strapping of the "Y" center of the primary winding of the rectifier power transformer.

To comply with fire prevention regulations, an electromechanical safety circuit has been included in the projector to prevent the projectionist from opening the arc-lamp dowsers with the mechanism stopped. Projection porthole glasses have been eliminated to minimize light absorption. Blowers were installed to prevent dust from entering the projection room.

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