



RANK AUDIO VISUAL LIMITED

**D-150
ALL - PURPOSE
PRESENTATION
SYSTEM**



150

What is D-150 ?

D-150 is two important innovations in one. It is a system of photography and presentation which makes it possible to present in the cinema a picture as nearly as possible identical with what the human eye would see in actuality. It is also the first presentation system designed as an all-purpose system suitable for screening films made in any aspect ratio including those made for the D-150 ratio.

The Development of D-150

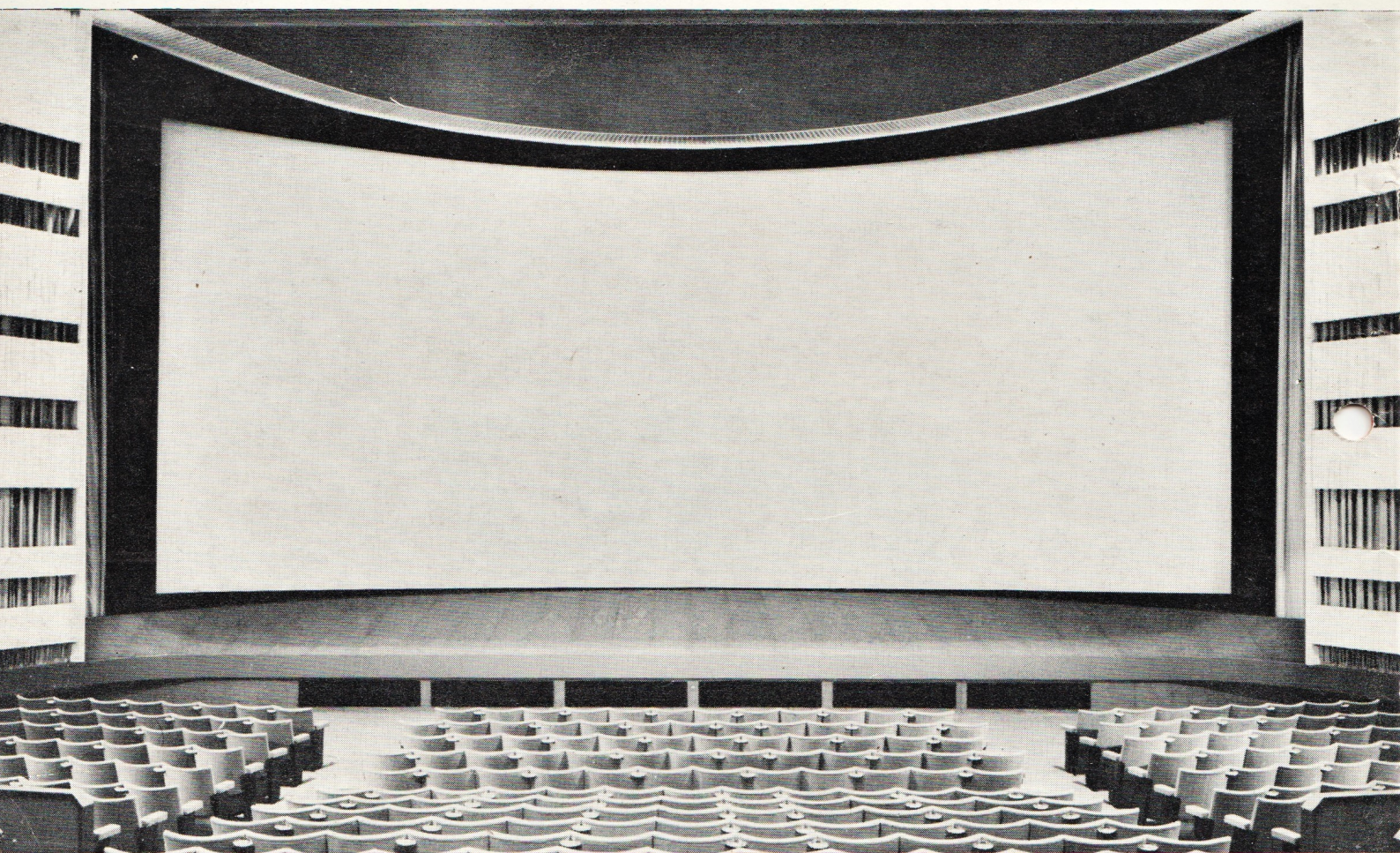
When the production of 'The Bible' was planned, producer Dino de Laurentiis and director John Huston sought a system of photography adequate for the vast scope of the subject and assuring even higher standards of presentation than the then available big-screen systems. They discovered that a 70mm. system aimed at matching the field of vision of the human eye had been developed. It stemmed from an earlier development for driving simulation by two Faculty members of the University of California, Dr. Richard Vetter and Carl W. Williams. This research work formed the basis of the optical system which became D-150.

Any of a wide range of D-150 65 mm. camera lenses can be used, from a telephoto lens for close-ups, to a special 150 degree lens which matches the reception angle of the human eye. This is the lens from which the

system derives its name. D-150 films are shot on 65 mm. negative and printed on 70 mm. positive.

The Screen

To do justice to films made by this system a deep-curve screen was necessary with a 120 degree angle of arc. But cross-reflection and light fall-off had ruined all previous attempts at deep-curved screens. Only one manufacturer in the world was thought capable of solving these problems: Andrew Smith Harkness Ltd. a marketing unit of Rank Audio Visual Limited. This company fabricated to D-150 specifications a new screen surface with a gain factor of 2, which avoids cross-reflection. Andrew Smith Harkness Ltd. have now installed more than 34 screens in the United States including America's two most prominent theatres, the Loew's State and the Rivoli, New York.



The Odeon Installation

The screen at the Odeon, Marble Arch – London's newest and most advanced cinema – measures 79 ft. round the curve and 62 ft. 6 in. across the chord; it has a depth of curvature of 18 ft., and is 34 ft. high, masked to a maximum picture height of 32 ft. The movable masking provides five ratios – D-150, Todd-AO

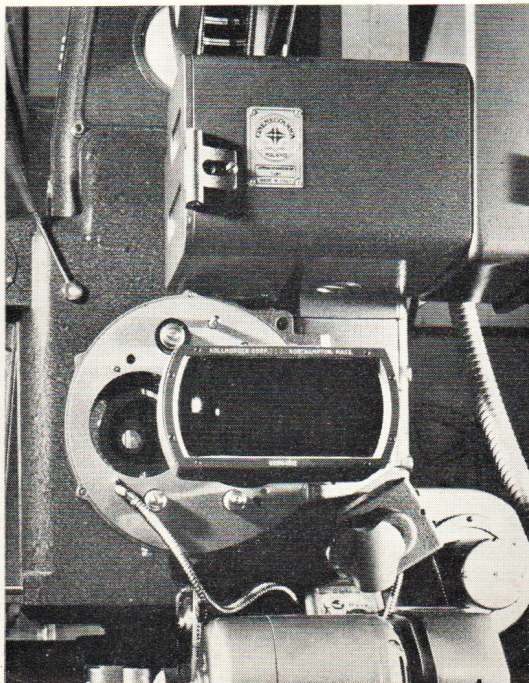
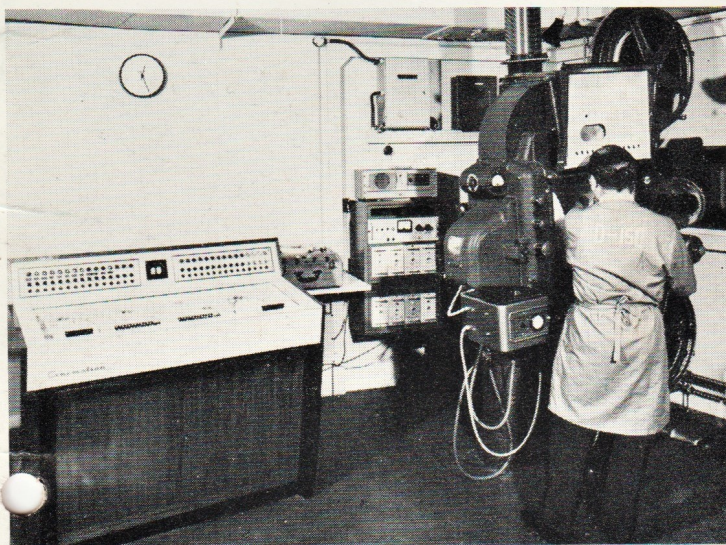
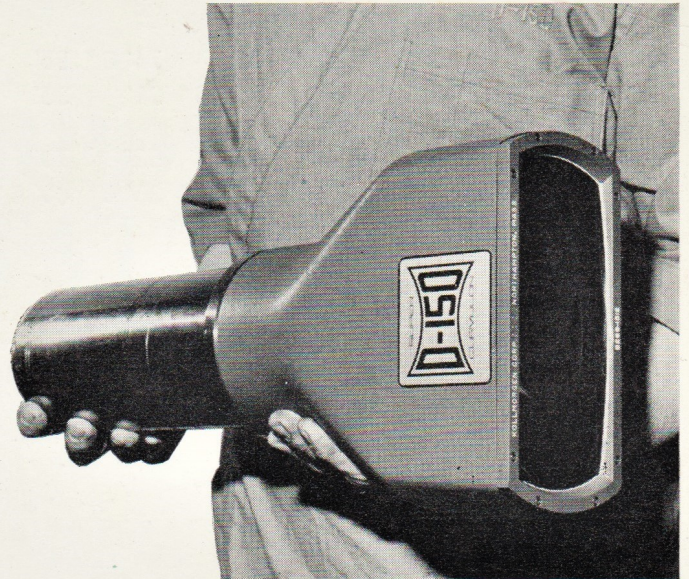
Cinemascope, Wide Screen and television. The whole of the masking, the masking controls and curtain controls were supplied to D-150 specifications and installed by Andrew Smith Harkness Ltd. Curtains were made by Rank Audio-Visual Ltd. who also supplied twin Cinemeccanica Victoria 8 projectors, Cinemeccanica C.65 Transistorised multi-channel sound, Cinemation automatic control equipment, seating and carpets.

The Projection lens

A conventional projection lens would be quite incapable of maintaining a high standard of screen definition over this depth of curve. A special projection lens was therefore developed which maintains an equally precise focus over all segments of the curve, and projects a picture free from distortion. This D-150 lens is manufactured by the Kollmorgen Corporation to a D-150 formula. It is a large rectangular lens of 4 in. diameter which ensures a uniform distribution of light.

All-purpose Masking

When the problem of equipping theatres to show D-150 films was further studied, it was realised that no one had ever designed an all-purpose presentation system. Yet the need for a system which left exhibitors free to screen films in any aspect ratio was obvious. The D-150 automated masking system was developed to meet this need, together with a way of modifying existing projection lenses to make possible a high quality image in each ratio on a segment of the deep-curve screen.



What is an all-purpose Theatre?

The D-150 All-Purpose Presentation System is the logical choice for an exhibitor building a new, or re-styling an old, cinema. It makes possible a genuine all-purpose theatre – the theatre of the future.

The system consists of:

- (a) Deep-curve screen;
- (b) Motorised screen masking with automatic controls adjustable to normal 35 mm., wide screen, Cinemascope, 70 mm., and D-150.
- (c) Projector lens especially developed for screening D-150 films or for showing standard 70 mm. films for the extra impact of full-size D-150 screen presentation. Corrected lenses are necessary for screening films in other aspect ratios.

All equipment except the D-150 full-screen lens is bought outright by the exhibitor. The D-150 lens is supplied to the cinema without cost for every performance in which the lens is used for presenting features filmed in D-150.

Other requirements

The all-purpose theatre, of course, requires dual 70/35 mm. projectors and a multi-channel sound system. A space of 5 ft. is needed behind the screen to accommodate the speaker assemblies. A curtain track following the curve of the screen but extending to 180 deg. to allow room for curtain pile-up can be supplied as part of the package deal, with suitable curtains.

Illustrations: *Top*—Projection room at the Odeon, Marble Arch, showing Cinemation console, Cinemeccanica C.65 Transistorised Sound System Power Amplifier Assembly, and Cinemeccanica Victoria 8 70/35mm. Projector. *Below*—D-150 full-screen lens in position on lens-turret of Victoria 8 Projector.

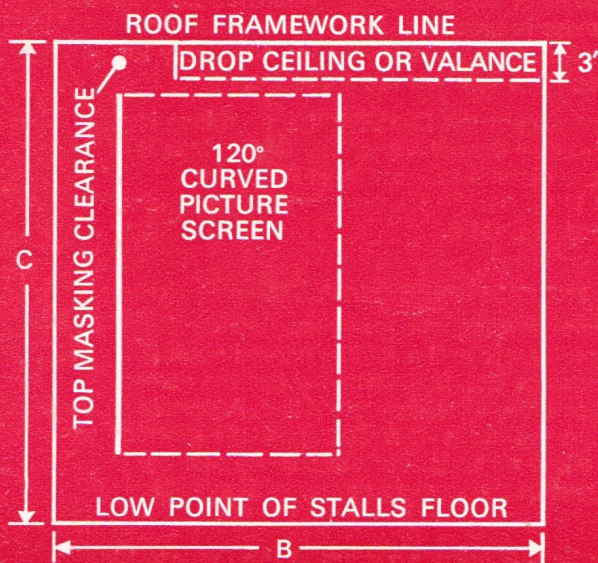
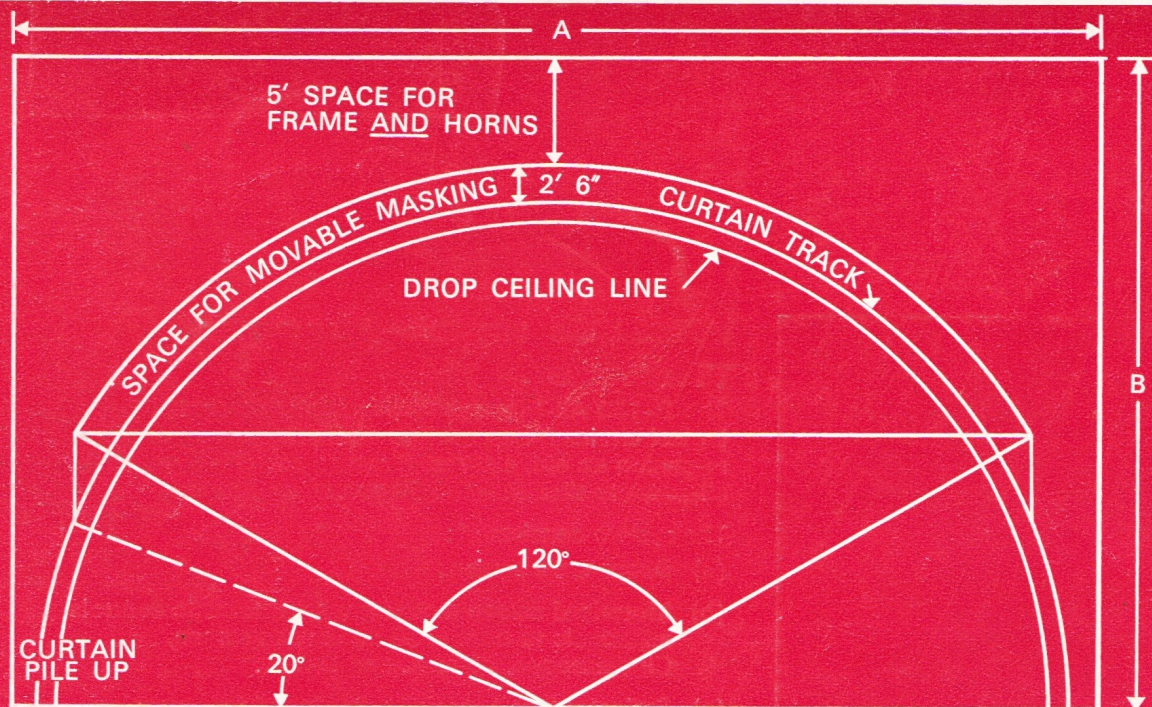
Technical Information

Typical sizes of the deeply-curved D-150 All-Purpose screen and masking installation available for installation in both existing and new theatres are:

	SIZE-FORMATS			
	1	2	3	4
CURVILINEAR WIDTH (max. D-150 picture) ..	57' 6"	66'	74' 6"	85'
PICTURE HEIGHT (max.)	24'	27' 6"	31'	35'
CHORD (max. D-150 picture)	48'	55'	62'	70'
SCREEN RADIUS.....	27' 6"	31' 6"	35' 6"	40' 6"
BOTTOM OF PICTURE OFF LOW-POINT OF STALLS FLOOR	5'	5'	4'	4'
CURVILINEAR WIDTH OF CURTAIN	78' 6"	91'	104'	119'
CURTAIN RADIUS....	25'	29'	33'	38'

For installation of D-150, it must be possible for the D-150 screen to extend from wall to wall, and from floor to ceiling, forming in effect the whole of the front end of the auditorium. The actual size of the screen will depend upon the characteristics of the cinema.

The front seats should ideally be no closer than one-fifth of the screen chord and the rearmost seating no further than twice the chord, in both cases measured from the chordal line. The projection axis should be as near as possible to the mean of the sightlines, to avoid visual curvature of the image, which means that a balcony type theatre must have the projection room below the balcony. It may be necessary to increase the size of the projection ports.



DIMENSION A represents the minimum inside building width.

DIMENSION B represents the minimum depth from the inside surface of the wall behind the screen to the nearest exit door, or other obstruction.

DIMENSION C represents the minimum inside building height from the low point of the stalls floor to the underside (finished ceiling line) of the roof framework.

FORMAT	DIMENSION		
	A	B	C
1	52'	32.6'	33'
2	60'	36.5'	36.5'
3	68'	40.5'	39'
4	78'	45.5'	43'



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