# TECHNICAL INFORMATION BULLETIN

FROM

UNITED ARTISTS CORP.

FOR THE

TECHNICOLOR®

PANAVISION 70® RELEASE

OF THE BETA PRODUCTION



# WEST SIDE STORY

Introduction ...

 $T_{\text{HE PRESENTATION}}$  of our picture west SIDE STORY may find you faced with 70MM release problems for the first time.

In order to assist you in the installation of 70MM projectors, as well as screens, screen masking, and sound considerations, the engineering department of United Artists has compiled technical information data in this brochure for your convenience.

An outstanding feature is the screen chart which will facilitate the selection of proper focal length lenses for your screen size, all computed for the new 70MM projection aperture. A selection of easy-to-use formulas has also been provided in case your theatre requires deviation from the screen chart.

A drawing showing the recommended aperture for 70MM projection has been included, as well as a drawing showing the sound track placement for the six magnetic tracks. We have also supplied information about the sound track, speaker arrangements, and theatre specifications.

In WEST SIDE STORY we are delivering to you unmatched entertainment on the finest release prints ever made. No amount of effort or expense was spared to achieve these goals.

This motion picture deserves the finest presentation possible. We hope this technical bulletin will be of assistance.



# PRESENTATION

ALTHOUGH YOU WILL undoubtedly have your own rehearsals with the picture before your first public showing, the following procedure has been found most ideal for the presentation of the picture and should be followed as closely as possible.

A special design has been created for the beginning of the picture over which the overture is played. It is of vital importance that the first 4½ minutes of this design be projected with the house lights lowered by only 25%.

For the proper presentation, please follow these directions:

1. From the start mark the first 28 feet of the reel is black. Over this, from the surround horns only, comes the sound of 3 separate whistles.

The first whistle starts at 12½ feet. At this point the curtains should be opened slowly and the house lights lowered by 25%. Since the time required for opening curtains varies from theatre to theatre it must be timed so that these operations are completed by the time the overture design fades in at 28 feet.

NOTE: If any of the house lights are directed on the screen, it is necessary that these lights go out completely by 28 feet or they will wash out the design when it is projected on the screen.

2. At 414 feet from the start mark, when the red color dissolves to the blue, the house lights should be dimmed completely or to the level at which the picture will play. This operation must be completed by the time the title WEST SIDE STORY starts to appear on the screen.

It is most important that the opening is handled in this fashion. If it is not, if the house lights are dimmed all the way at the beginning, the audience will expect the actual picture to start much sooner than it does.

If the opening design is played with the house lights well up the audience will accept the music for what it is—the overture.

Please be good enough not to start closing the curtains with the appearance of "The End" title on the screen. There are still 5 minutes of end "credits" to be shown before the picture is completed.



# Picture

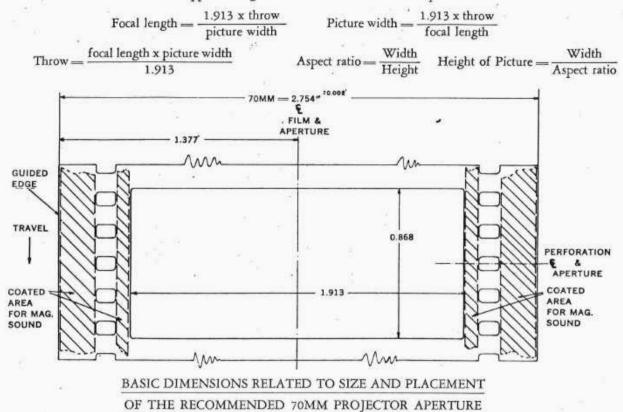
The screen chart on the opposite page is especially calculated for the 70MM projector aperture of 1.913 x 0.868 inches. The aspect ratio is 2.21 to 1.

This aperture was established by Todd-AO and is now a recommended SMPTE standard.

The table shows picture widths in the left and focal length of lenses in the top column. The figures in the table are distances from projector aperture to center screen in feet.

The table below lists picture height to corresponding picture width based on a 2.21 to 1 aspect ratio. To the right of the main chart is an additional small table to relate corresponding focal length in millimeters to dimensions in inches—just for general orientation.

Even though the tables are self-explanatory, for the calculation of specific installations, with given lenses, screen sizes, and throw, the usual formulas can be applied using the dimensions of the 70MM aperture:



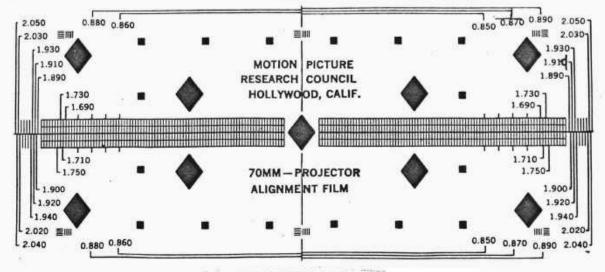
IMPORTANT: THE FOCAL LENGTH LENSES LISTED IN THE TOP COLUMN ARE ALL AVAILABLE THROUGH PANAVISION, INC., 1917 PONTIUS AVENUE, WEST LOS ANGELES, CALIF., AND ARE LENSES ESPECIALLY DESIGNED TO COVER THE 70MM APERTURE. ONLY SUCH LENSES SHOULD BE USED.

<u>DO NOT</u> PROJECT 70MM PRINTS WITH LENSES ONLY SUITED FOR 35MM APERTURES—EVEN IF THEY HAVE A 4" O.D.

DO NOT PROJECT 70MM PRINTS BY USING SUPPLEMENTARY LENSES, LENS ATTACHMENTS, OR FOCAL LENGTH CONVERTING DEVICES.

### THEY ALWAYS DETERIORATE PICTURE QUALITY AS COMPARED TO LENSES DESIGNED FOR THE JOB.

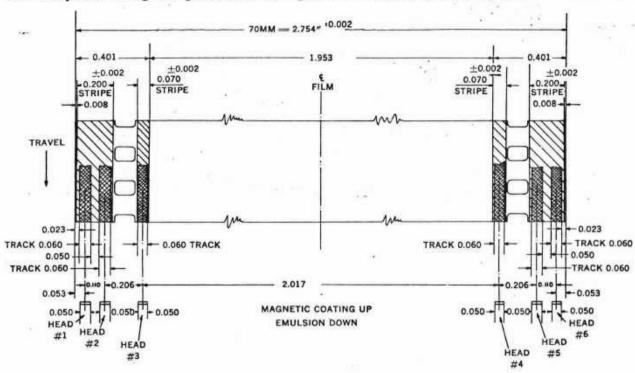
A 70MM projector alignment film with a test chart as shown below, should be used to check lens performance for cleanest and sharpest picture projection. This test film is available through supply houses and shipped with instruction sheet for its use. It can also be ordered from SMPTE, 55 West 42nd Street, New York 36, N. Y.



70MM TEST FILM CHART

# Sound

It is understood that the sound system for six-channel sound reproduction, as established for 70MM release prints, is generally handled by service organizations. We think, however, that it will be appreciated within the scope of this bulletin to publish the engineering facts on the six magnetic sound tracks on 70MM release film.



## MAGNETIC COATING AND TRACK PLACEMENT DIMENSIONS FOR 70MM RELEASE FILM

As can be seen in the drawing above, the tracks are numbered from 1 to 6—going from left to right if the film is placed with the magnetic coating up and the emulsion down.

The tracks shall be used as follows: (with the listener facing the screen)

TRACK 1 for the left speaker-TRACK 2 for the left center speaker-TRACK 3 for the center stage speaker

TRACK 4 for the right center speaker—TRACK 5 for the right speaker—TRACK 6 for the surround or auditorium speakers.

The recording and reproducing speed shall be 24 frames (5 perforations) per second—representing exactly 120 perforations per second or 112.2 feet per minute.

The center of the picture shall precede the corresponding sound by a distance of 24 FIVE PERFORATION FRAMES.

It should again be noted that the above specifications have been established by TODD-AO and are in accordance with their presently used process.

In line with the specifications for 70MM composite film sound as outlined by the TODD-AO Corporation we likewise require the theatre sound equipment to fulfill the following specifications:

- The frequency response as measured on theatre equipment should be: 50-8,000 cycles flat within plus or minus ½ db. 40-12,000 cycles flat within plus or minus 1.5 db.
- 2. Cross talk between channel...minus 40 db. at 1,000 cycles.
- 3. Signal to noise...55 db.
- 4. Wow and/or flutter not to exceed 0.2 of one per cent in a band width between 2-200 cycles.
- Preamplifier distortion not to exceed one per cent when operated at a level of 12 db. above the level from magnetic film recorded at three per cent distortion.
- Power amplifier distortion not to exceed two per cent at rated output of the amplifier between 50 and 12,000 cycles.
- Speakers and power amplifiers should be of such power rating that any single track can properly fill the auditorium's acoustical needs.

All necessary test films for checking 6-channel magnetic sound installations, as specified above, are available through the TODD-AO Corporation, West Coast Division, 1021 North Seward Street, Hollywood, California.

It is hoped that the submitted technical information will be helpful and appreciated as a guidance to achieve top performance and highest quality for picture and sound in releasing our magnificent picture

# **WEST SIDE STORY**

# SCREEN CHART FOR 70 MM PROJECTION

### LENS FOCAL LENGTH IN MM AND INCHES

	66 MM	70 MM	75 MM	80 MM	85 MM	90 MM	95 MM	. 4"	41/4"	41/2"	43/4"	5"	51/	4"	51/2"	53/4"	6"			
25	34.0	36.0	38.6	41.2	43.7	46.3	48.9	52.3	55.5	58.8	62.1	65.3	68.	.6	71.9	75.1	78.4			
30	40.7	43.2	46.3	49.4	52.5	55.6	58.7	62.7	66.6	70.6	74.5	78.4	82.	.3	86.3	90.2	94.1	CON	ERSION	
35	47.6	50.4	54.0	57.6	61.2	64.8	68.4	73.2	77.7	82.3	87.0	91.5	96	.1 1	00.6	105.2	109.8		TABLE MM TO INCHES	
40	54.4	57.6	61.7	65.9	70.0	74.1	78.2	83.6	88.7	94.1	99.3	104.5	109	.8	15.0	120.2	125.5	66	2.60	
45	61.2	64.8	69.4	74.1	87.7	83.3	88.0	94.1	99.9	105.9	111.7	117.6	123	.5	129.4	135.3	141.1	70	2.76	
50	68.0	72.0	77.2	82.3	87.5	92.6	97.8	104.5	111.1	117.6	124.2	130.7	132	.0	143.8	150.3	156.8	75	2.95	
55	74.7	79.2	84.9	90.6	96.2	101.9	107.5	115.0	122.2	129.4	136.6	143.8	150	.9	158.1	165.3	172.5	80 85	3.15 3.35	
60	81.5	86.4	92.6	98.8	104.9	111.1	117.3	125.5	133.3	141.1	149.0	156.8	164	.7	172.5	180.3	188.2	- 90	3.54	
65	88.3	93.6	100.3	107.0	113.7	120.4	127.0	135.9	144.4	152.9	161.4	169.9	178	.4	186.9	195.4	203.9	95	3.74	
70	95.1	100.8	108.0	115.3	122.4	129.6	136.9	146.4	155.5	164.7	173.8	183.0	192	.1	201.3	210.4	219.6			
75	102.0	108.0	115.7	123.5	131.2	138.9	146.6	156.8	166.6	176.4	186.2	196.0	205	.8	215.6	225.4	235.2			
80	108.7	115.2	123.4	131.7	140.0	148.2	156.4	176.3	177.7	188.2	198.6	209.1	219	.6	230.0	240.5	250.9			
85	115.5	122.5	131.2	140.0	148.7	157.4	166.2	177.7	188.8	200.0	211.1	222.2	233	.3	244.4	255.5	266.6			
90	122.3	129.7	138.9	148.2	157.4	166.7	176.0	188.2	199.9	211.7	223.5	235.2	247	.0	258.8	270.5	282.3			
95	129.1	136.9	146.6	156.4	166.2	175.9	185.7	198.6	211.1	223.5	235.9	248.3	260	.7	273.1	285.5	298.0			
100	135.9	144.0	154.3	164.7	174.9	185.2	195.5	209.1	222.2	235.2	248.3	261.4	274	.4	287.5	300.6	313.6			
105	142.7	151.3	162.0	172.9	183.6	194.5	205.3	219.6	233.3	247.0	260.7	274.4	288	.2	301.9	315.6	329.3			
110	149.5	158.5	169.7	181.1	192.4	203.7	215.0	230.0	244.4	258.8	273.1	287.5	301	.9	316.3	330.6	345.0			
120	163.0	172.9	185.2	197.6	209.9	222.2	234.6	254.9	266.6	283.3	298.0	313.6	329	.3	345.0	360.7	376.4			
			FIGURES II	N THE ABOV	E TABLE SH	OW PROJE	ECTION DIS	STANCE IN	FEET FROM	PROJECTOR	APERTURE	TO CENTE	ER OF SC	REEN.		i				
Width:	25	30 3	35 40	45	50	55	60	65 7	0 75	80	85	90	95	100	105	110	120			
leight:	11.3	13.6	15.8 18.	.1 20.4	22.6	24.9	27.1	29.4	1.7 33.9	36.2	38.5	40.7	43.0	45.2	47.5	49.8	54.3			