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Kodak Projection Calculator & Seating Guide

Kodak

HOW TO USE THE SEATING GUIDE

Figure 1 illustrates the arrangement used for rooms listed in the guide. The screen location was selected to cover the maximum seating area for a room.

Capacity figures in the table are based on the use of two side aisles (each 3 feet wide), and a rear aisle 4 feet deep. Six square feet of space is allowed per person, which includes provision for a 42-inch aisle, front-to-back, after every fourteenth seat.

For legibility, members of the audience should be seated within the specified angles for the screen material being used and should not be seated closer to the screen than two times, nor farther than eight times, the *height* of the projected image. Minimum image height, for legibility, can be determined by dividing by eight the distance from the screen to the rear of the back row of seats. For visual effect, it is sometimes desirable to project an image somewhat larger than legibility standards specify. To avoid obstruction of the screen by the seated audience, and to establish minimum *ceiling* height, add 4 feet to the minimum image height. In addition, it may be necessary to add extra height to allow positioning of the screen to clear overhead obstructions.

Determination of the maximum viewing area depends on the material used for the screen. The KODAK EKTALITE Projection Screen has excellent brightness characteristics within a viewing area of 60 degrees. Most matte, and a few lenticular, front-projection screen materials can provide good brightness levels for viewing areas up to 90 degrees wide. Beaded front-screen projection materials, and the most commonly used rear-projection screen materials, can give good brightness in a viewing area of up to 50 degrees. Examples follow:

1. Known:

a. Screen material—matte (60-degree viewing area).

b. Room size—28 x 21 feet.

Find:

a. Seating capacity for theater-style and for conference-style seating.

b. Minimum image height.

c. Minimum ceiling height.

The room has a 4:3 ratio. Using a 60-degree viewing area, you find in the table that theater-style capacity is 39. Conference-style capacity, half that of theater-style, is 19. Allowing 4 feet for the rear aisle, the distance to the rear of the last row of seats is 24 feet. Dividing this distance by eight gives you a minimum image height of 3 feet. Adding 4 feet to the minimum image height gives you a minimum ceiling height of 7 feet.

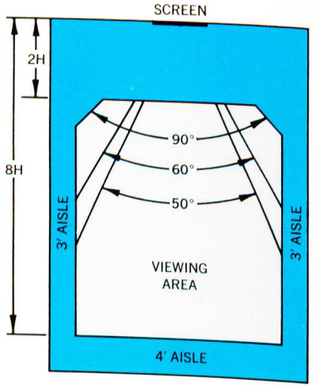

Figure 1

2. Known:

a. You plan to build a meeting room with theater-style seating for 90 people.

b. Screen material—beaded.

Find:

Room dimension that will be suitable.

Fifty degrees is the recommended maximum viewing angle for beaded screens. In the table, under the 50-degree columns, you find that a 40 x 40-foot room will accommodate 93 seats, a 48 x 24-foot room will seat 92, and a 60 x 20-foot room—96. Your ultimate choice will depend on such factors as the dimensions of available rooms or space, the ceiling height required, etc.

Standard 2 x 2-Inch Slide Formats

(Suitable for use in KODAK EKTAGRAPHIC and CAROUSEL Slide Projectors)

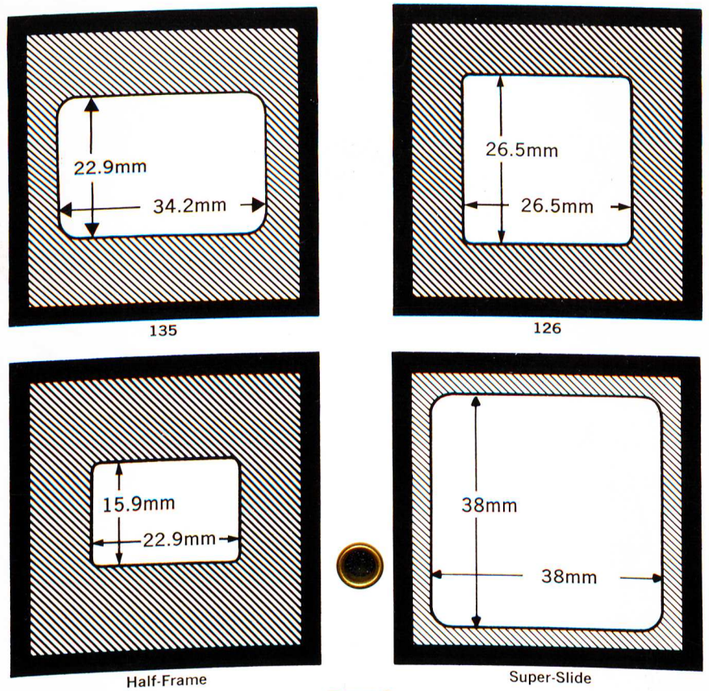

Figure 2

Filmstrip Format

(Can be shown in EKTAGRAPHIC and CAROUSEL Projectors by means of the KODAK EKTAGRAPHIC Filmstrip Adapter)

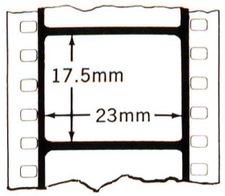

Figure 3

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Motion Picture and Education Markets Division
EASTMAN KODAK COMPANY • Rochester, N.Y. 14650

KODAK Projection Calculator and Seating Guide
Kodak Publication No. S-16

9-69 New Publication
CH-BX
Printed in the United States of America

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Kodak Projection Calculator & Seating Guide

SEATING GUIDE

THEATER-STYLE SEATING FOR DIFFERENT ROOM SIZES

(FOR CONFERENCE-STYLE SEATING, USE ONE-HALF THE SEATING CAPACITY SHOWN)

Room Ratio 1:1				Room Ratio 4:3				Room Ratio 3:2				Room Ratio 2:1				Room Ratio 3:1			
Room Size— ft	Viewing Angle* 50°	60°	90°	Room Size— ft	Viewing Angle* 50°	60°	90°	Room Size— ft	Viewing Angle* 50°	60°	90°	Room Size— ft	Viewing Angle* 50°	60°	90°	Room Size— ft	Viewing Angle* 50°	60°	90°
L x W	Seating Capacity			L x W	Seating Capacity			L x W	Seating Capacity			L x W	Seating Capacity			L x W	Seating Capacity		
16x16	10	11	13	16x12	8	8	8	16x11	6	6	6	16x8	—	—	—	16x5	—	—	—
20x20	18	21	25	20x15	15	16	17	20x13	13	13	13	20x10	7	7	7	20x7	—	—	—
24x24	28	33	41	24x18	24	26	28	24x16	22	23	23	24x12	14	14	14	24x8	5	5	5
28x28	41	48	60	28x21	36	39	43	28x19	33	34	36	28x14	22	23	23	28x9	9	9	9
32x32	56	66	83	32x24	50	55	60	32x21	46	48	51	32x16	33	33	33	32x11	16	16	16
36x36	73	87	109	36x27	66	73	80	36x24	61	65	69	36x18	45	46	46	36x12	23	23	23
40x40	93	111	139	40x30	85	93	104	40x27	78	84	90	40x20	59	60	61	40x13	32	32	32
44x44	115	137	173	44x33	106	116	130	44x29	98	105	113	44x22	74	77	77	44x15	42	42	42
48x48	139	167	210	48x36	129	141	159	48x32	119	128	139	48x24	92	95	96	48x16	53	53	53
52x52	166	199	252	52x39	154	169	191	52x35	143	154	167	52x26	111	115	117	52x17	66	66	66
56x56	195	234	296	56x42	181	200	226	56x37	169	182	198	56x28	132	137	139	56x19	80	80	80
60x60	226	272	345	60x45	211	233	264	60x40	197	212	232	60x30	155	161	164	60x20	96	96	96
64x64	259	313	397	64x48	243	269	305	64x43	227	245	268	64x32	180	187	191	64x21	112	112	112
68x68	295	356	453	68x51	277	307	348	68x45	259	280	307	68x34	206	214	219	68x23	131	131	131
72x72	334	402	512	72x54	313	347	395	72x48	293	318	349	72x36	234	244	250	72x24	150	150	150
76x76	374	452	576	76x57	352	390	445	76x51	330	357	393	76x38	264	275	283	76x25	171	171	171
80x80	417	504	642	80x60	393	436	497	80x53	368	399	440	80x40	296	309	317	80x27	193	193	193
84x84	462	558	713	84x63	436	484	552	84x56	409	444	489	84x42	330	344	354	84x28	216	216	216

*The 90-degree figures should be used only with screens capable of producing good brightness characteristics in that range, and then only when maximum seating capacity is necessary.

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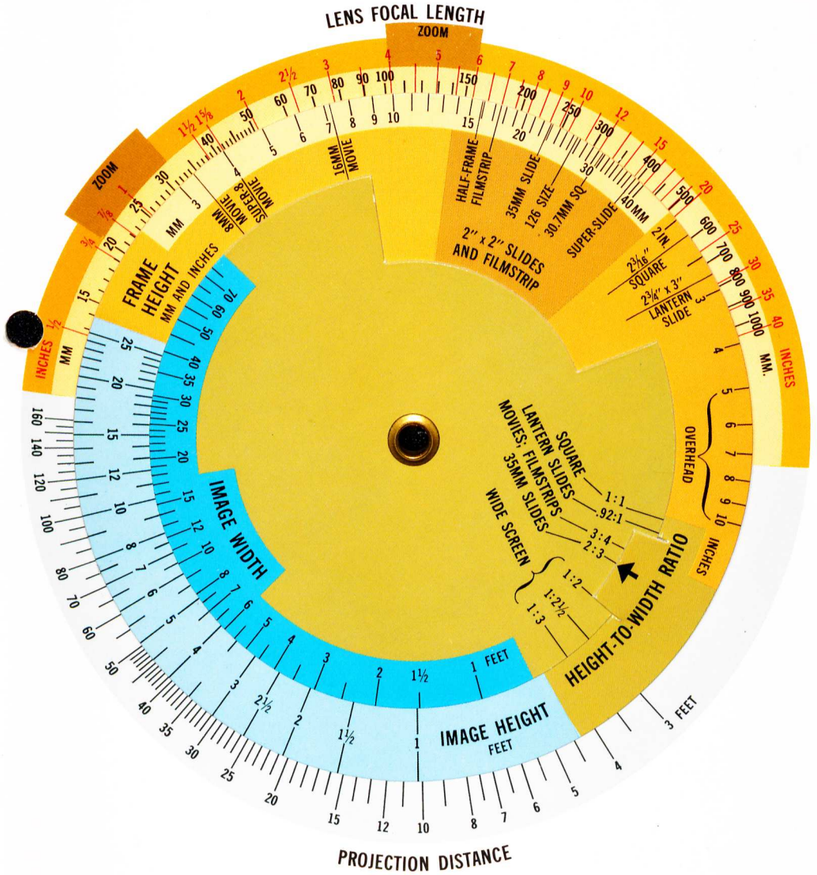
PROJECTION CALCULATOR



HOW TO USE THE PROJECTION CALCULATOR

Four projection factors are interrelated. They are:

- Image/Screen Size
- Frame Size (of transparency mask or projector gate)
- Projection Distance
- Lens Focal Length

When three of these factors are known, the other factor is provided by the calculator. If only two of the factors are known, the calculator will yield many combinations of the remaining factors. From these combinations you can choose the most practical one for equipment location, image quality, etc.

The Height-to-Width Ratios (aspect ratios) shown are for *horizontal* images. When you are intermixing horizontal and vertical formats, use a square screen large enough for both. Ratios given are for commonly used projection materials.

Most standard projection formats are marked on the Frame Height Scale. To calculate for nonstandard formats, measure the transparency frame height in inches or millimeters and set this figure opposite the Lens Focal Length.

To find PROJECTION DISTANCE:

Example:

1. Set the HEIGHT-TO-WIDTH RATIO of the projection material opposite the arrow. — 2:3 for 35mm slides
2. Set the projection FRAME* HEIGHT opposite the LENS FOCAL LENGTH†. — 35mm slide opposite 5 inches
3. Select the IMAGE HEIGHT and IMAGE WIDTH that are closest to the available screen size. — 4 feet opposite 6 feet for 4 x 6-foot screen
4. Read the PROJECTION DISTANCE opposite the selected IMAGE HEIGHT. — *Answer:* 22 feet

To find IMAGE HEIGHT and IMAGE WIDTH
(to determine screen size required):

Example:

1. Set the HEIGHT-TO-WIDTH RATIO of the projection material opposite the arrow. — 1:1 for 126-size slides
2. Set the projection FRAME HEIGHT opposite the LENS FOCAL LENGTH. — 126 size opposite 5 inches
3. Locate the correct PROJECTION DISTANCE on the scale. — 33 feet
4. Read the IMAGE HEIGHT and IMAGE WIDTH opposite the PROJECTION DISTANCE to determine minimum screen size. — *Answer:* 7 x 7-foot screen required

To find LENS FOCAL LENGTH:

Example:

1. Set the HEIGHT-TO-WIDTH RATIO of the projection material opposite the arrow. — 3:4 for 16mm movies
2. Select the IMAGE HEIGHT and IMAGE WIDTH closest to the available screen size. — 4½ x 6-foot screen
3. Set the IMAGE HEIGHT and IMAGE WIDTH opposite the PROJECTION DISTANCE. — 4½ x 6 opposite 32 feet
4. Read the LENS FOCAL LENGTH opposite the appropriate line on the FRAME HEIGHT scale. — *Answer:* 2-inch lens

*The projection frame is the image area of the material that is surrounded by a mount, mask, or frame. For the aperture dimensions of a filmstrip, and of various 2 x 2-inch slide formats, see Figures 2 and 3.

†The lens focal length is normally marked on the lens barrel, in either inches or millimeters (there are approximately 25mm per inch).