Screen Size Selection

One of the most important decisions in screen selection is to determine the correct size of screen based upon the dimensions of the audience area and the projection format(s) to be used.

In some situations, these two questions yield the same answer; in others they do not and compromises must be made. Here are the key considerations—

- **Audience Area—**In determining the correct screen size in relation to the audience area, the goal is to make the screen large enough so those in the rear of the audience area can read the subject matter easily, but not so large that those in the front of the audience area have difficulty seeing the full width of the projected image.

- **Height—**Use the following formulas for calculating screen height for maximum legibility. For 4:3 moving video and entertainment, screen height should be at least $\frac{1}{6}$ the distance from the screen to the furthest seat; for charts and data, as in a conference or lecture room, use ¼; for complex graphics, as in a command/control center, use ½. For HDTV projection, screen height should equal or exceed $\frac{1}{3}$ the distance from the screen to the optimum seat.

- **Width—**Screen width is generally determined by the height of the screen and the projection formats to be used.

- **Ceiling Height—**The bottom of the screen should be approximately 40–48" above the floor in a room with a level floor and several rows of seats. In rooms with theatre seating or only one or two rows, such as a home theatre, the bottom of the screen should usually be 24–36" above the floor. Try to make sure that the lower part of the screen will be visible from all seats. Extra drop may be required to position the screen at a comfortable viewing level in a room with a high ceiling.

- **Projection Format—**Once you have determined the correct size of screen for the audience area, that size may be modified based upon the type(s) of projection equipment to be used. If the screen will only be used with one type of projector (NTSC video, HDTV, etc.), it is easy to determine exact screen dimensions based upon the projection format of that projector. Projection formats are expressed in terms of aspect ratio, which is the relationship of the height of the projected image to its width. Aspect ratios of common projection formats are listed below.

Aspect Ratios of Common Projection Formats

H:W		H:W	
1:1	Overhead and opaque projection	16:9	High Definition Television (HDTV)
4:3	NTSC video and most data-graphics	1.85:1	WideScreen (also known as Letterbox and Panavision)
3:2	2x2 standard slides (35mm DF)	2.05:1	70mm
16:10	WXGA (1280 x 800)	2.35:1	CinemaScope
15:9	WXGA (1280 x 768)	5:4	High-end data graphics

Note: Vertical presentation of a slide reverses its aspect ratio. To allow this, use a 1:1 aspect ratio for any type slide.

Projection Formats

Most models of Draper screens are offered in both audio visual and 4:3 NTSC video formats. Many models are also offered in HDTV, WideScreen, and CinemaScope formats. Now, Draper also offers many screens in new **16:10** and **15:9** aspect ratios, commonly used for projecting native laptop computer displays.

We provide almost any Draper screen in the size and projection format of your choice. We can provide any size up to and including the largest published size. If you do not find the size and format you need listed, please call or fax your requirements to us; and we will be delighted to quote your request.

Audiovisual (or AV) format screens are intended for general use. They accommodate a variety of projector types and range from square to wide horizontal in aspect ratio. **AV format screens** are described in terms of height x width and are standard without black borders, although borders are optionally available. Screens with Draper's Tab Tensioning System always include black borders and 12" black drop at the top.

NTSC format screens are specifically designed for use with video projectors. The **NTSC** format is strictly defined as a 4:3 rectangle (4 wide by 3 high), and the size is usually described in terms of a nominal diagonal. Conventional models of video format screens are furnished with black borders to frame the image on all four sides, allowing for video projector overscan. Draper's standard is to furnish Tab-Tensioned electric screens with black borders at the sides and bottom and 12" of black drop at the top. **HDTV format** (16 wide by 9 high) is also available for high-definition television projection, and **WideScreen format** (1.85:1) is offered for letterboxed video images. The ultimate in home theater, **CinemaScope format** (2.35:1) allows projection of movies in their full native width without letterboxing. Other formats are available by quotation.

NEW 16:10 & 15:9 Formats!

How to Calculate a Custom Size

Draper manufactures custom size screens to meet your specification. Virtually any size within the maximum shown for a given model is available. Please call for pricing on special sizes. If you need to calculate a custom size, the following formulas may be useful (D = exact diagonal; H = viewing area height; W = viewing area width).

4:3 NTSC Video	*16:9 HDTV*	*1.85:1 WideScreen(Letterbox)*	*2.35:1 CinemaScope*	*5:4 Data Graphics*	*15:9*	*16:10*
H = D x .6	H = D x .49	H = D x .4762	H = D x .3915	H = D x .625	H = D x .5146	H = D x .5299
W = D x .8	W = D x .87146	W = D x .881	W = D x .92	W = D x .781	W = D x .8576	W = D x .848
D = H x 1.667	D = H x 2.04	D = H x 2.1	D = H x 2.554	D = H x 1.601	D = H x 1.9433	D = H x 1.8868
D = W x 1.25	D = W x 1.1475	D = W x 1.135	D = W x 1.0868	D = W x 1.281	D = W x 1.166	D = W x 1.1793