

HPS-4000®

HIGH PERFORMANCE STEREO

Sound IS the Experience !™

**HIGH PERFORMANCE STEREO™
AMPLIFIER POWER REQUIREMENTS
FOR
DIGITAL MOTION PICTURE THEATRES**

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HIGH PERFORMANCE STEREO™

INTRODUCTION

The charts in this brochure are intended to provide an accurate guideline when designing digital sound systems for motion picture theatres. The power requirements are calculated using the inverse square law. This provides the most reliable predictor of the power demanded by digital motion picture soundtracks.

The actual power required by digital soundtracks has been verified in actual theatres equipped with metered power amplifiers. These tests have shown that, in the center of the theatre, the peak sound pressure level (SPL) for a single screen channel is 105 dB, 102 dB SPL for each surround channel and 115 dB SPL for the subwoofer channel.

This also corresponds to standard sound system calibration levels, plus the 20 dB crest factor used in the master recordings themselves. These tests also verify that the first arrival of these peaks should be considered anechoic and that there is no meaningful contribution from the rooms themselves, with respect to such first arrivals.

Charts are included which provide the power required to produce these signal peaks, with no additional headroom or safety margin. A second set of charts is also included which provides the power required for the signal peaks and an additional 6 dB of headroom. A minimum safety margin of 6 dB has been shown to provide the loudspeakers with sufficient power to prevent amplifier clipping, which not only causes audible distortion, but can destroy the speakers as well.

SPEAKER SENSITIVITY

A word of caution: Some speaker manufacturers provide a sensitivity specification as measured with a 1 watt input. Others show a 2.83 Volt input. There is a significant difference which must be taken into consideration when using these charts or any others.

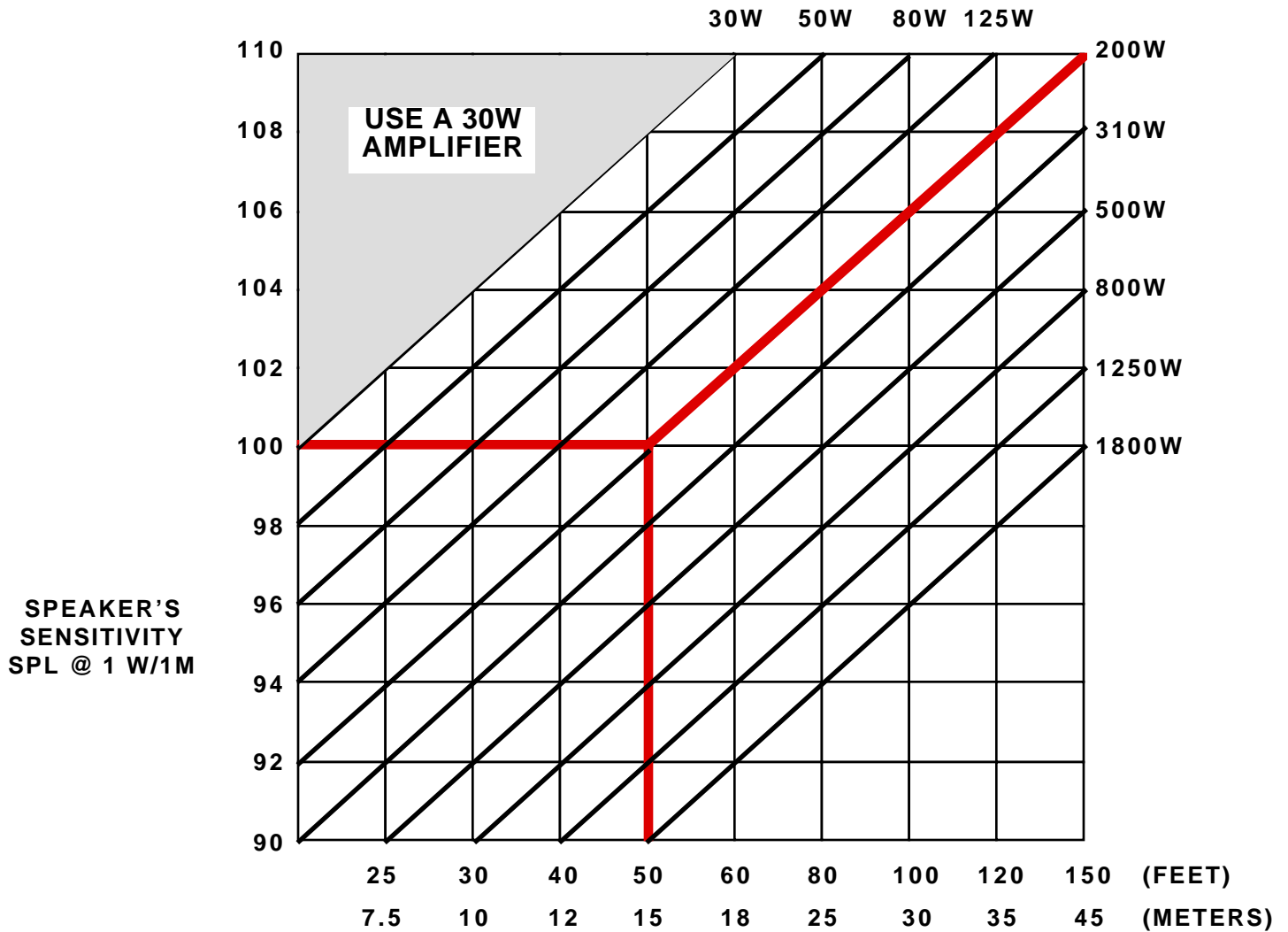
If the specification sheet of a loudspeaker being considered quotes a 1 watt sensitivity, these charts may be read directly. However, if the speaker under consideration is specified at 2.83 Volts, the speaker's minimum impedance specification must be checked. If the minimum impedance is 8 ohms, these charts may be read directly.

If the minimum impedance is found to be around 4 ohms, then a 2.83 Volt input is actually 2 watts. In this case, deduct 3 dB from the given 2.83 Volt sensitivity specification to get the speaker's true 1 watt sensitivity. In other words, if a sensitivity is given as 100 dB SPL with a 2.83 Volt input and the speaker's minimum impedance is 4 ohms, reduce the sensitivity to 97 dB. Since the enclosed charts can only be used with a 1 watt sensitivity, failure to make this correction will result in underestimating the amplifier power requirements by 50 per cent.

FOR FURTHER INFORMATION, PLEASE CONTACT:
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SECTION 1
STAGE SPEAKERS

MINIMUM STAGE SPEAKER POWER REQUIREMENTS NO HEADROOM, AMPLIFIERS CLIPPING

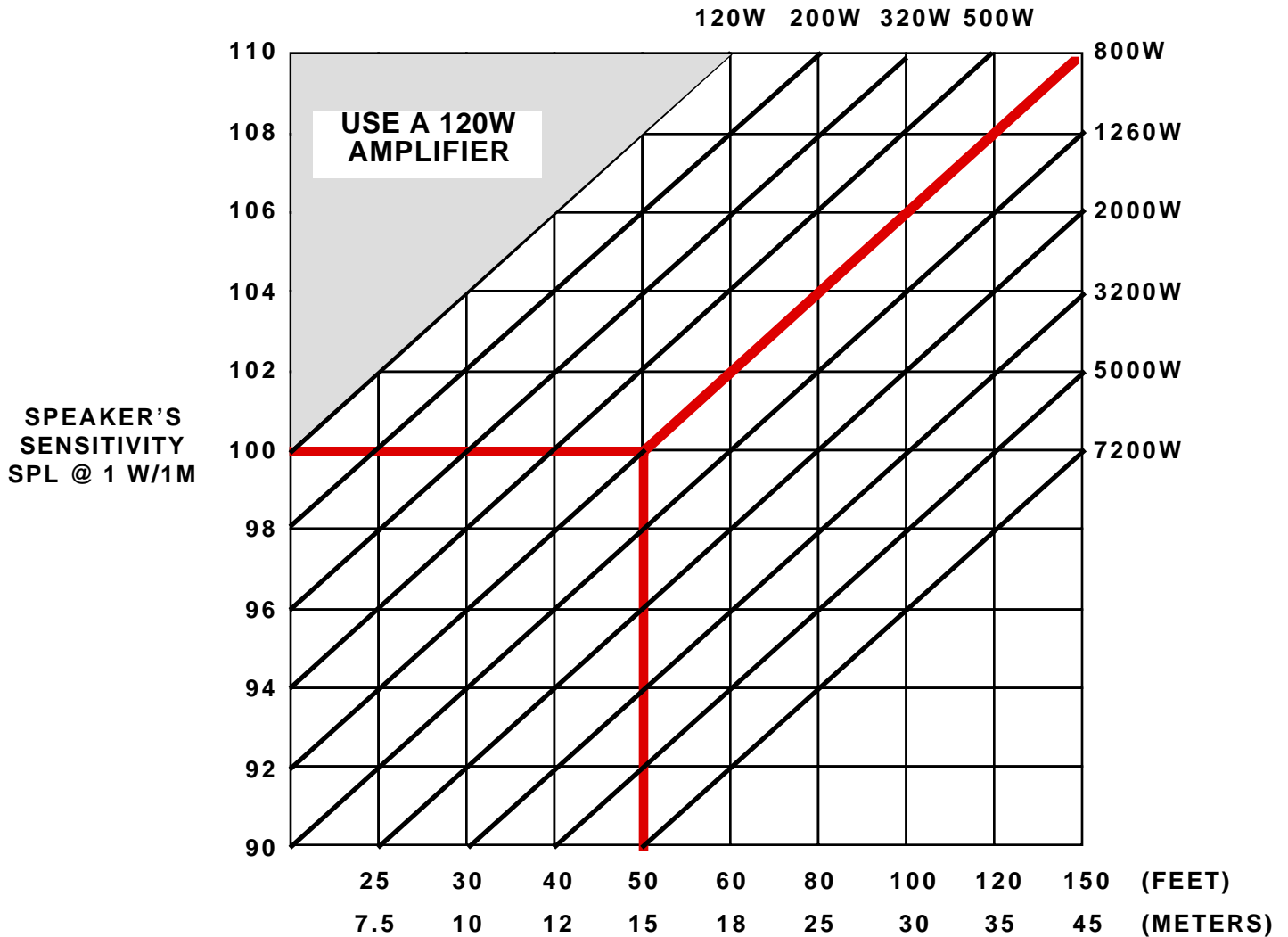


LENGTH OF THEATRE FROM SCREEN TO BACK WALL

**SINGLE SCREEN CHANNEL POWER REQUIREMENTS
FOR 105 dB SPL @ 1/2 BACK FROM SCREEN**

RECOMMENDED STAGE SPEAKER POWER REQUIREMENTS

6 dB HEADROOM, SPEAKERS & AMPLIFIERS SAFE



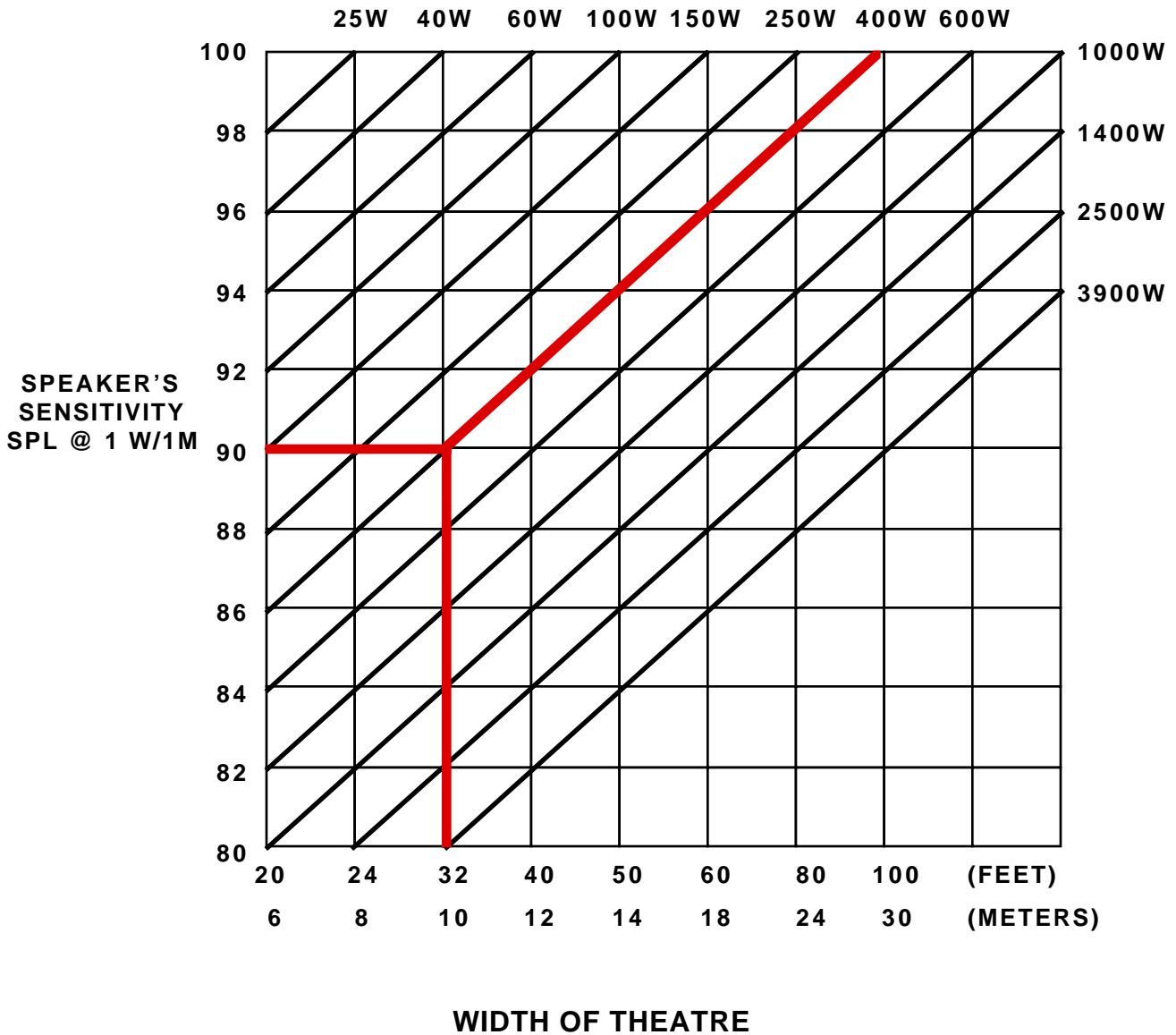
LENGTH OF THEATRE FROM SCREEN TO BACK WALL

**SINGLE SCREEN CHANNEL POWER REQUIREMENTS
FOR 111 dB SPL @ 1/2 BACK FROM SCREEN**

SECTION 2

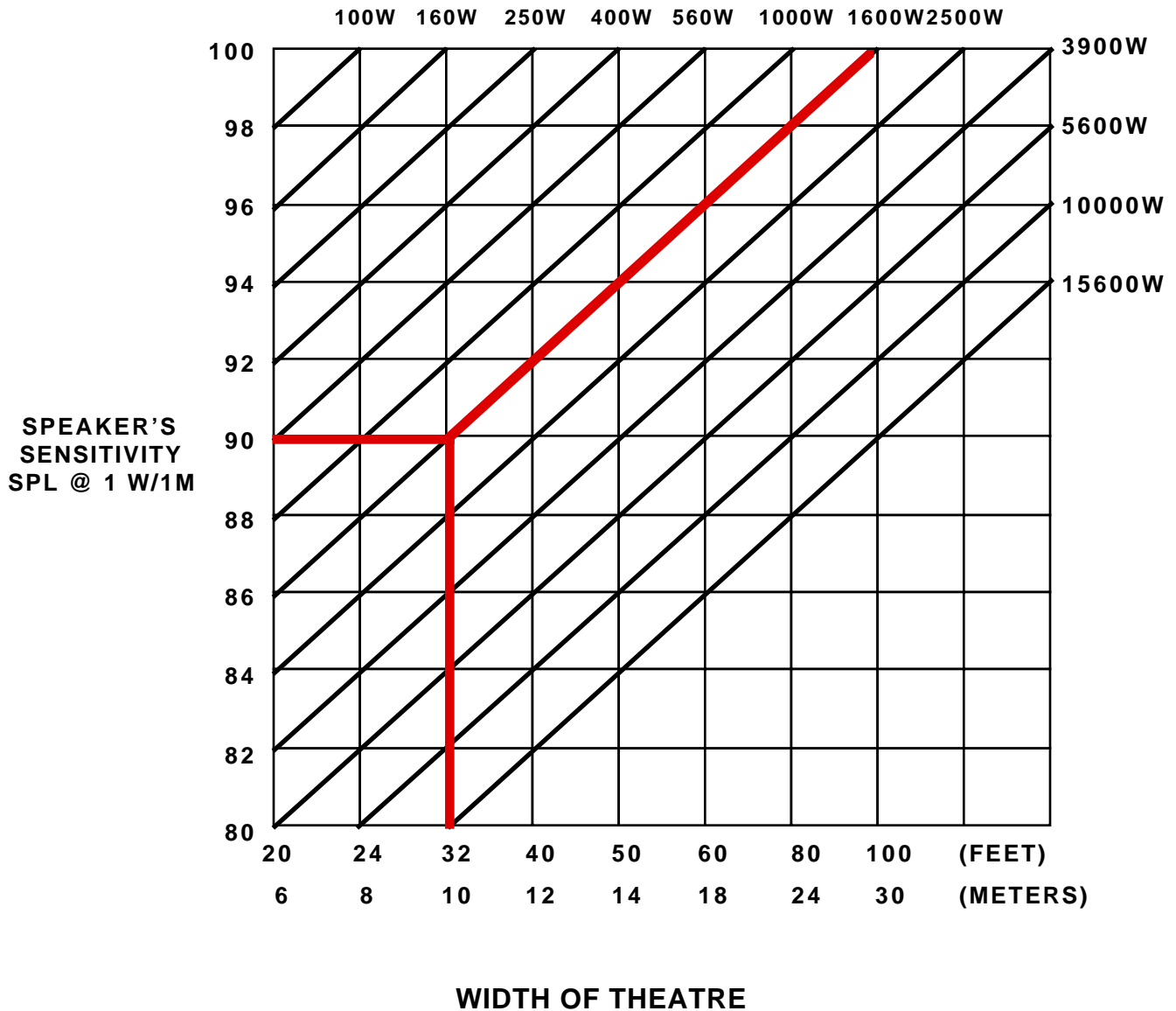
SURROUND SPEAKERS

MINIMUM SURROUND CHANNEL POWER REQUIREMENTS NO HEADROOM, AMPLIFIERS CLIPPING



SINGLE SURROUND CHANNEL (LEFT OR RIGHT) POWER REQUIREMENTS
FOR 102 dB SPL AT THE CENTER OF A THEATRE

RECOMMENDED SURROUND CHANNEL POWER REQUIREMENTS 6 dB HEADROOM, SPEAKERS & AMPLIFIERS SAFE

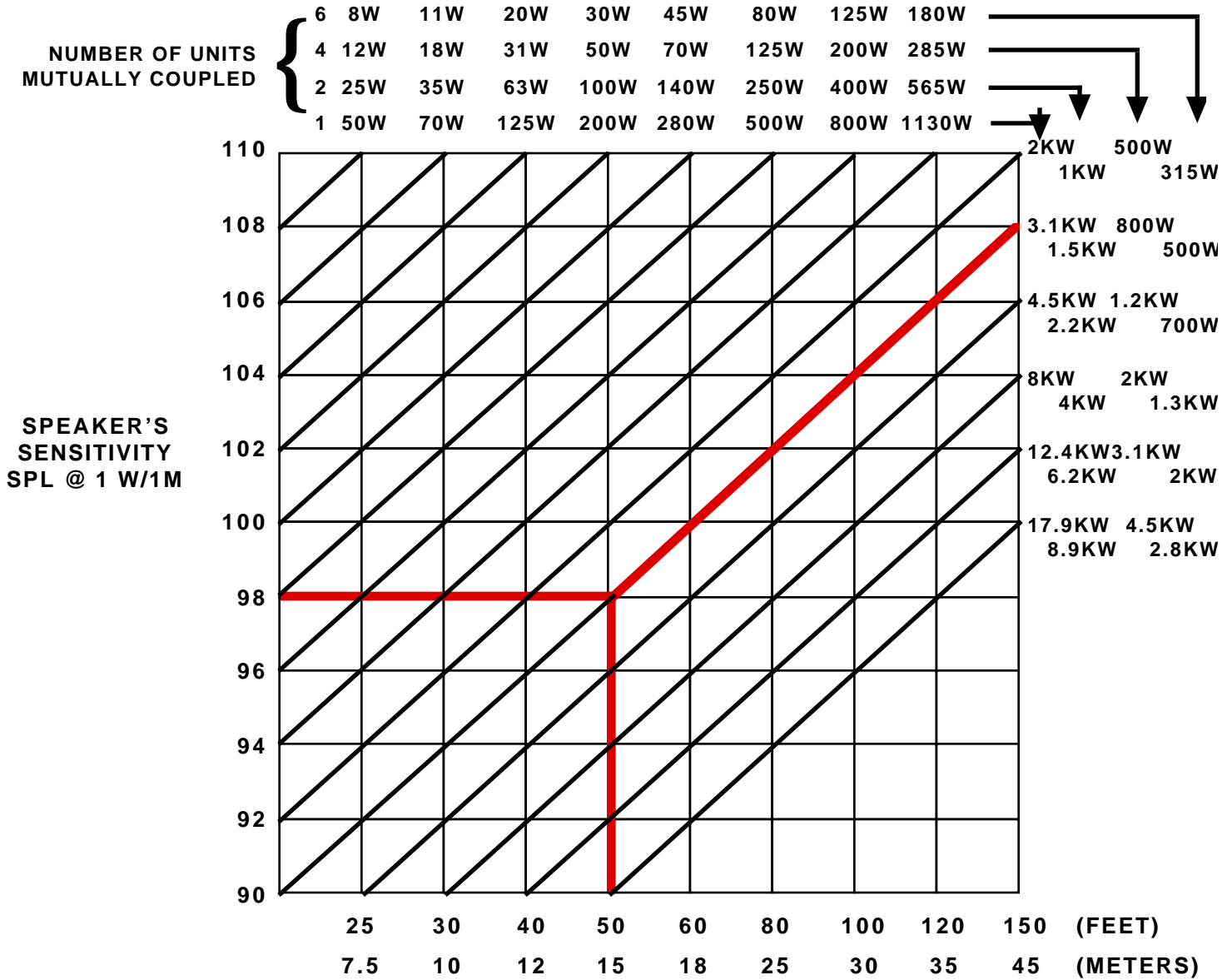


**SINGLE SURROUND CHANNEL (LEFT OR RIGHT) POWER REQUIREMENTS
FOR 108 dB SPL AT THE CENTER OF A THEATRE**

**SECTION 3
SUBWOOFERS**

MINIMUM SUBWOOFER POWER REQUIREMENTS

NO HEADROOM, AMPLIFIERS CLIPPING

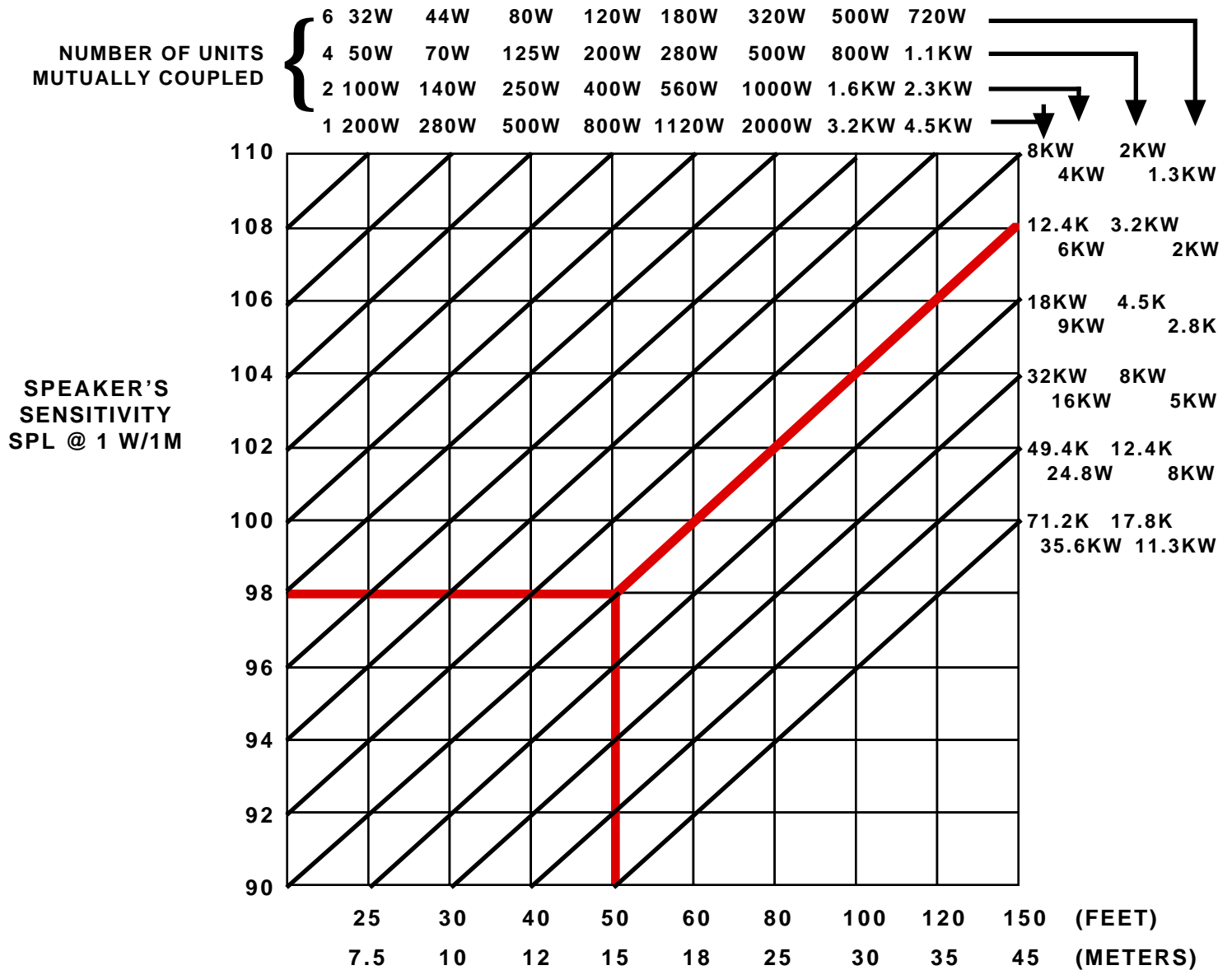


LENGTH OF THEATRE FROM SCREEN TO BACK WALL

SUBWOOFER CHANNEL POWER REQUIREMENTS
FOR 115 dB SPL @ 1/2 BACK FROM SCREEN

MINIMUM SUBWOOFER POWER REQUIREMENTS

6 dB HEADROOM, SPEAKERS & AMPLIFIERS SAFE



LENGTH OF THEATRE FROM SCREEN TO BACK WALL

SUBWOOFER CHANNEL POWER REQUIREMENTS
FOR 121 dB SPL @ 1/2 BACK FROM SCREEN