



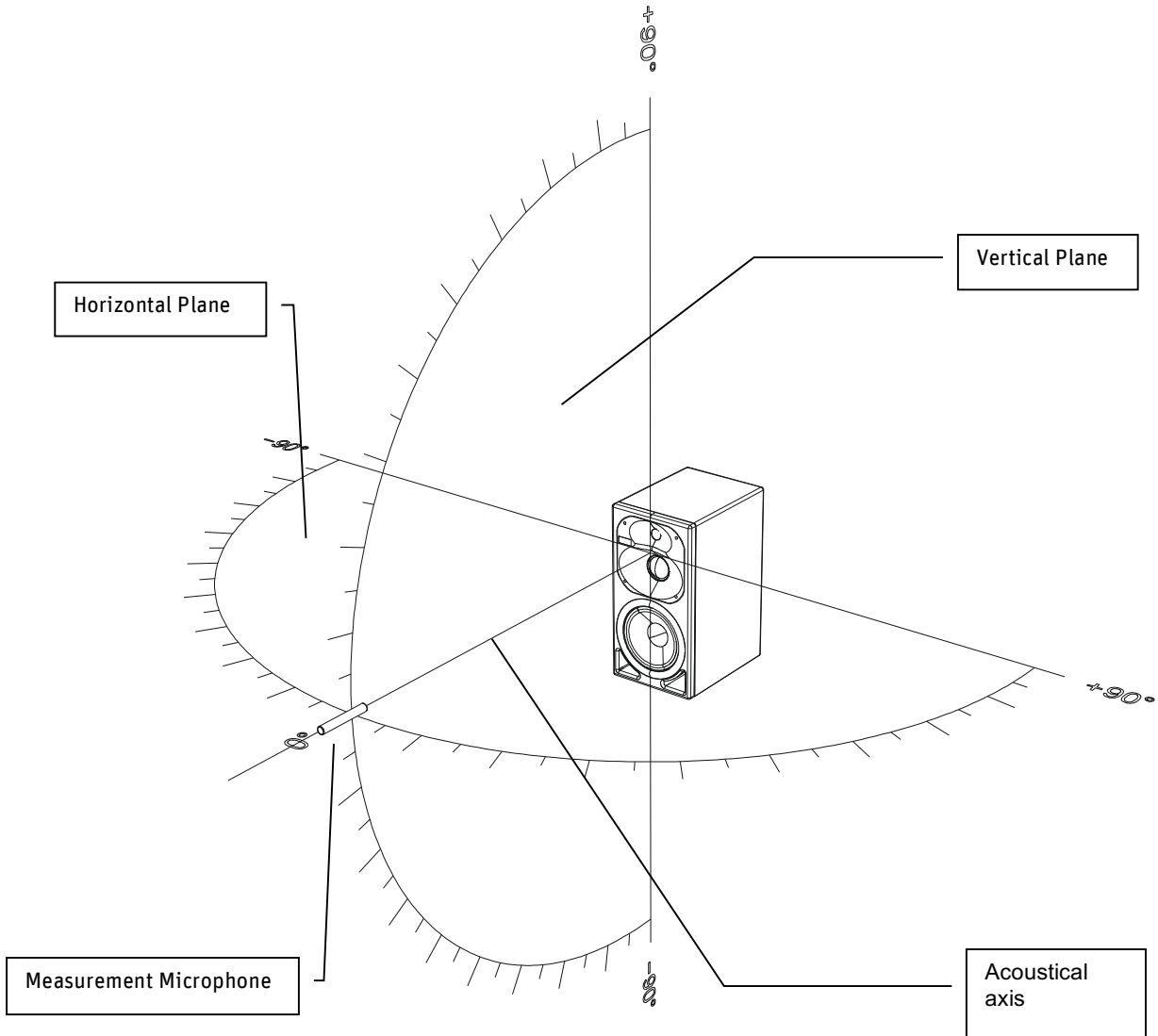
▶▶ **NEUMANN.BERLIN**

▶ **ACOUSTICAL AXIS DEFINITIONS** Studio Products



Introduction

The acoustical axis is a line normal to the loudspeaker's front panel along which the microphone was placed when tuning the loudspeaker's crossover during design. Pointing the acoustical axis, in the horizontal and vertical planes, towards the listening position or center of the listening area will give the best measured and perceived sound quality. Imperial dimensions are based on a conversion of the metric dimensions and are rounded to the nearest 1/8".

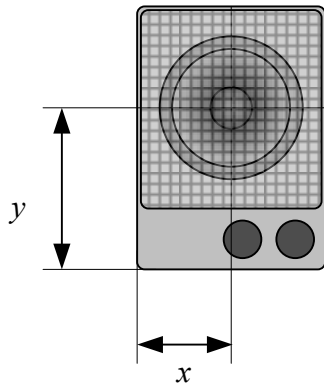


Setup for measuring a loudspeaker's radiation pattern



One-way Systems

For one-way loudspeakers, the acoustical axis is located at the mid-point of the driver.

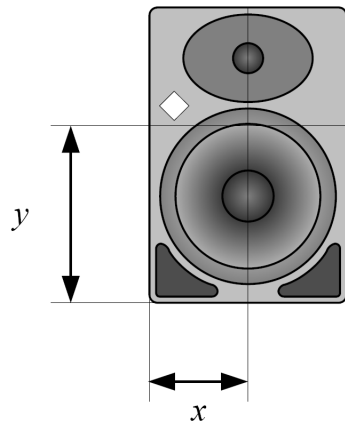


Product	x dimension	y dimension
Klein+Hummel Products		
M 52	6.0 cm (2 3/8")	10.0 cm (3 7/8")
M 52 D	6.0 cm (2 3/8")	10.0 cm (3 7/8")



Two-way Systems

For two-way loudspeakers, the acoustical axis is located at the mid-point of the bass and tweeter drivers.

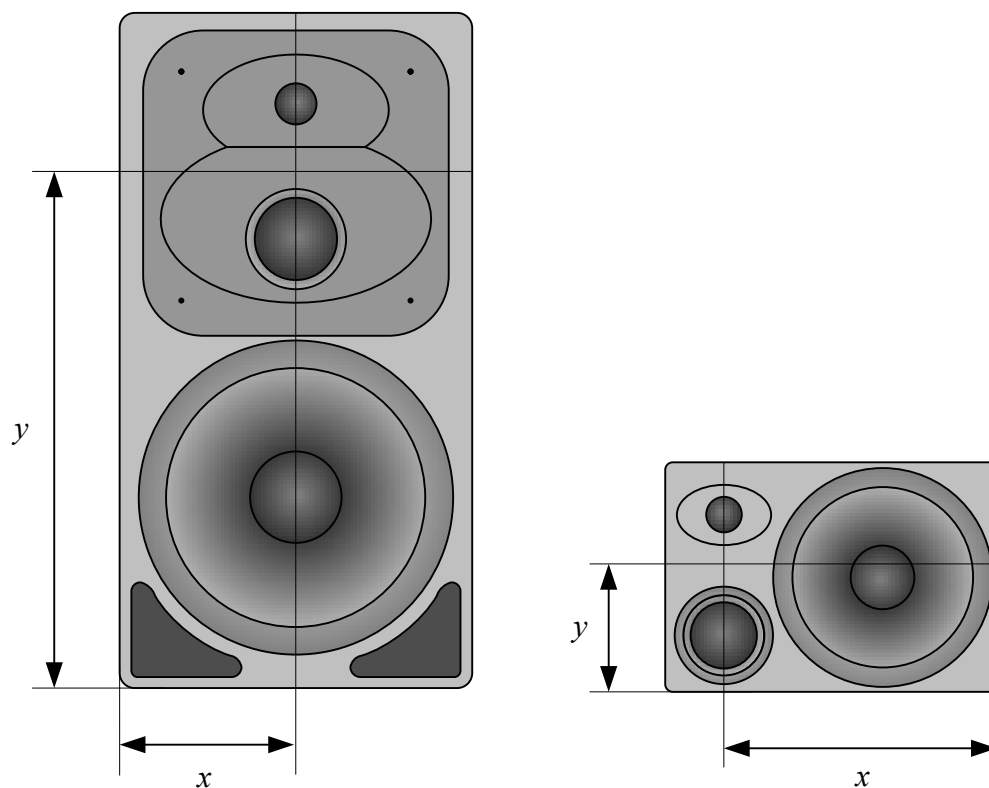


Product	x dimension	y dimension
Neumann Products		
KH 80 DSP A	7.7 cm (3")	12.9 cm (5 1/8")
KH 120 A	9.1 cm (3 5/8")	17.0 cm (6 3/4")
KH 120 D	9.1 cm (3 5/8")	17.0 cm (6 3/4")
Klein+Hummel Products		
O 110	8.5 cm (3 3/8")	16.5 cm (6 1/2")
O 110 D	8.5 cm (3 3/8")	16.5 cm (6 1/2")



Three-way Systems

For three-way loudspeakers, the acoustical axis is located at the mid-point of the midrange and tweeter drivers.



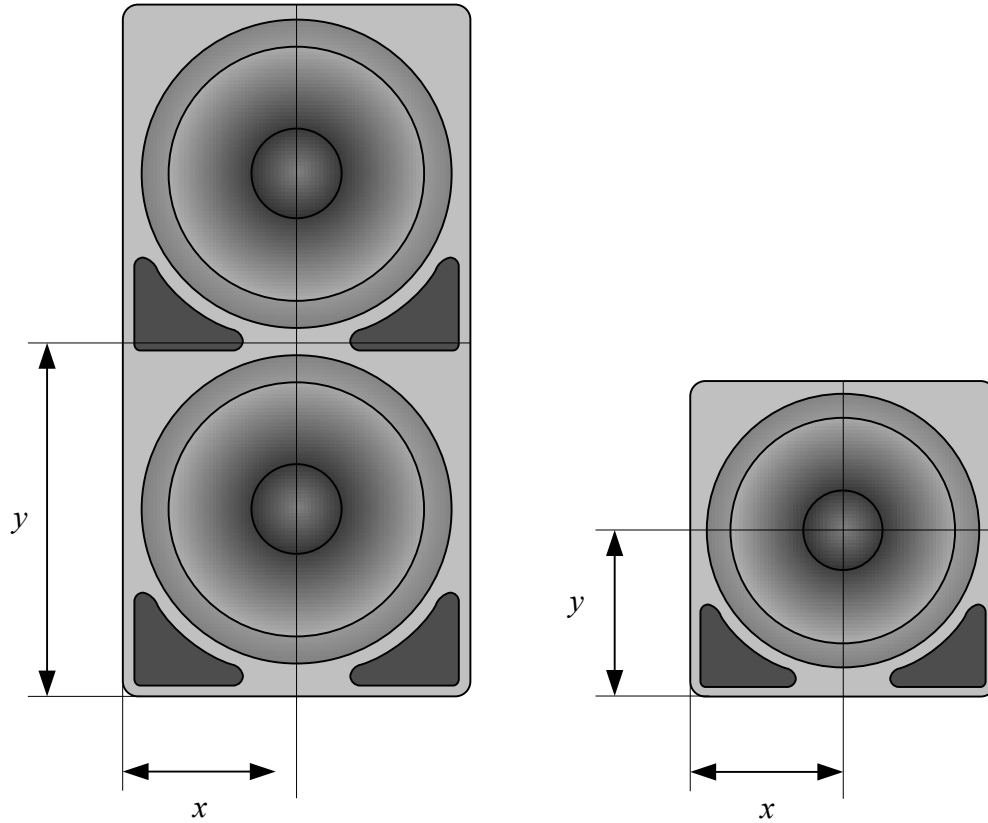
Product	x dimension	y dimension
Neumann Products		
KH 310 A	30.5 cm (12")	14.5 cm (5 3/4")
KH 310 D	30.5 cm (12")	14.5 cm (5 3/4")
KH 420	16.5 cm (6 1/2")	49.9 cm (19 5/8")
Klein+Hummel Products		
O 300	30.5 cm (12")	14.5 cm (5 3/4")
O 300 D	30.5 cm (12")	14.5 cm (5 3/4")
O 410	16.5 cm (6 1/2")	51.0 cm (20 1/8")
O 500 C	20.0 cm (7 7/8")	57.5 cm (22 5/8")



Subwoofers

For subwoofers with two drivers, the acoustical axis is located at the mid-point of the two drivers. For subwoofers with one driver, the acoustical axis is located at the mid-point of the driver.

Subwoofers can be considered to be omni-directional in their pass band, which is generally below 120 Hz. Therefore it does not matter in which direction a subwoofer faces when it is placed in a room.

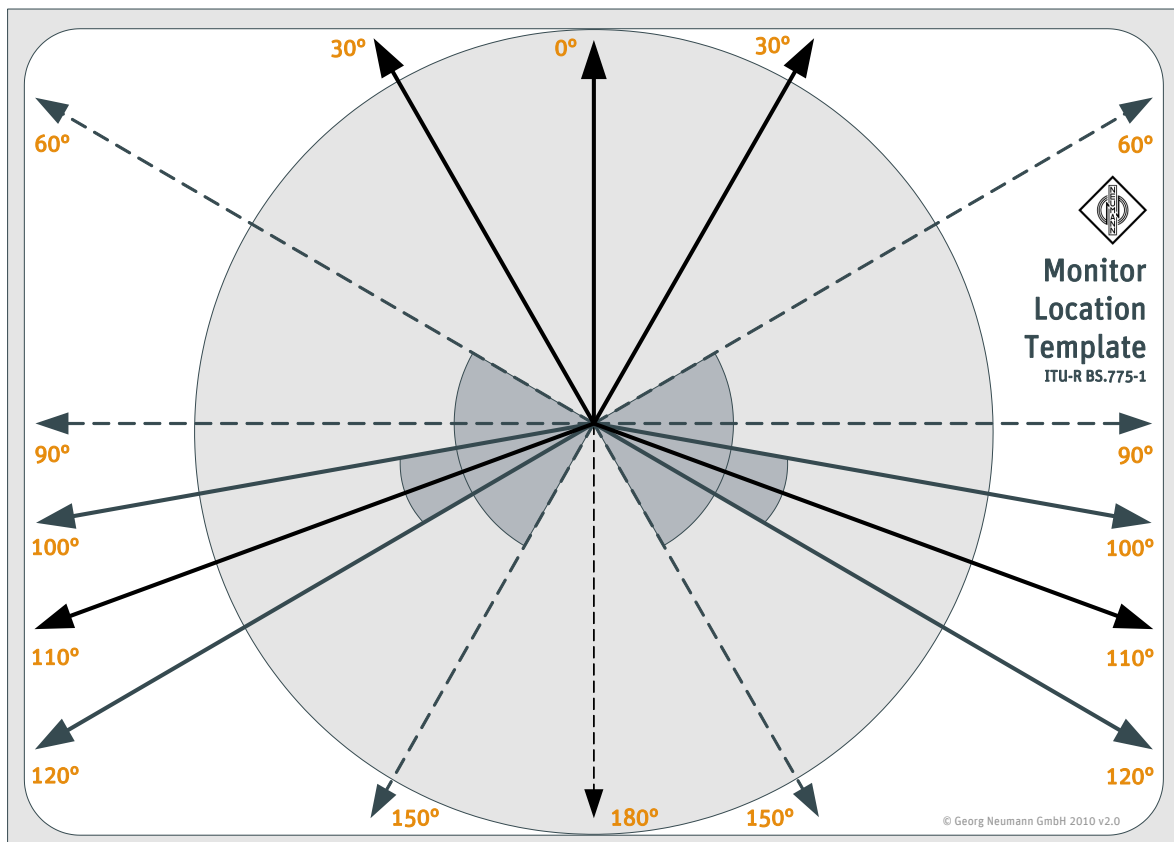


Product	x dimension	y dimension
Neumann Products		
KH 805	16.5 cm (6 1/2")	17.0 cm (7 1/2")
KH 810	16.5 cm (6 1/2")	17.0 cm (7 1/2")
KH 870	16.5 cm (6 1/2")	36.0 cm (14 1/8")
Klein+Hummel Products		
O 800	16.0 cm (6 1/4")	20.2 cm (8")
O 810	16.5 cm (6 1/2")	17.0 cm (7 1/2")
O 870	16.5 cm (6 1/2")	36.0 cm (14 1/8")
O 900	20.0 cm (7 7/8")	60.5 cm (23 7/8")

Loudspeaker Angles Chart

Use this chart to help position the loudspeakers' acoustical axis at the correct position:

- Print this page.
- Place it at the listening position or center of the listening area.
- Pull a cable from the center of the circle towards the loudspeaker's acoustical axis, as defined in this document.
- Adjust the position of the loudspeaker so that the cable runs along the appropriate arrow.
- The loudspeakers' distance from the center of the circle can be simultaneously adjusted.
- For 2.0 systems use $\pm 30^\circ$.
- For 5.1 systems use $\pm 30^\circ$, 0° , and $\pm 110^\circ$.
- For 7.1 systems use $\pm 30^\circ$, 0° , $\pm 90^\circ$, and $\pm 120^\circ$ or $\pm 150^\circ$.



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