

PHL
A U D I O

4070 8Ω

X30

PROFESSIONAL SERIES

12" Coaxial Bass Midrange Driver 1" Entry Horn • High Sounding Quality High Sound Pressure Level

APPLICATIONS

SP4070 is a 12" high SPL high sounding quality 1" exit coaxial bass-midrange driver derived from SP4040 basis and specially designed with coaxial horn to match the behavior of a 1" entry HF compression chamber.

A mounting plate with gasket and standard fastening is supplied for the fitting of the HF driver.

Its well balanced design between sensitivity / high power handling / bass-extension, combined with linear response and smooth upper roll-off, make it ideal in Sound Reinforcement for ultra compact two way systems for proximity stage monitors, or side wedges of medium throw.

Recommended highest X-over is 2.5 kHz, while optimum acoustical load is Reflex type of 30L to maximum 40L tuned from 52Hz to 56 Hz.

DESIGN CONCEPT

DEFLECTION CONTROLLED DIAPHRAGM optimized for dynamic damping. DEFLECTION CONTROLLED DIAPHRAGM technology consists in optimizing the shape and material of the diaphragm so that it works as a mechanical transmission line, to avoid breaking modes as well as mechanical threshold which destroy sound quality.

This leading edge technology offers substantial sonic advantages. Among them: sound coherency, fast transients, stable sound imaging, high sensitivity, wide frequency range and reduced directivity pattern.

COMPACT MAGNET SYSTEM. Its design has been specially optimized to obtain maximum transducing efficiency while avoiding unlinear behavior such as coil inductance variation with position, flux modulation, harmonic distortion, rest position offset, air compression and off-axis voice-coil pushing.

Its design incorporates a T-shaped pole piece and a flux stabilization ring. It also takes into consideration demagnetization at cold temperatures.

INTERCOOLER SYSTEM (patented). Entirely integrated into the loudspeaker itself, the INTERCOOLER SYSTEM extracts the heat produced by Joule effect in the voice-coil by the means of an air flow directed through the heatsink rims of the basket by the motion of the dust-cap and the spider.

The gain brought about by this technology is over 20 % of extra power, so for example, a 3" coil according to this design has the same power handling capacity as a classical 4" one.

COAXIAL SYSTEM : PHL AUDIO COAXIAL SYSTEM concept is based on a horn which is formed by the cone profile and the pole piece extension of the LF driver.

The 1" horn entry is situated in the axis of the rear side of the magnet system. The front access to the LF driver voice-coil is protected against dust by an acoustically transparent dust-cap.

Coaxial drivers are always delivered with a compression driver standard mounting plate, screws and a 1" O ring sealing gasket.



FEATURES

Power handling capacity	400 W AES
Reference efficiency (1W @ 1m)	97 dB SPL
SPL max (continuous)	119 dB SPL
Usable frequency range	50-2500 Hz
Environmental withstanding	Outdoor

ARCHITECTURAL SPECIFICATIONS

NOMINAL DIAMETER : 300 mm.

FRAME : High tensile alloy pressure die-cast basket with patented INTERCOOLER SYSTEM.

MAGNET SYSTEM : 3" highly energized, heat extracting design with flux stabilizing ring and pole piece incorporating concentric horn flare

VOICE COIL : High-temperature stabilized copper wire wound on high-strength glass polyimide former.

CONE ASSEMBLY : High-strength cellulose fiber cone impregnated and front-coated with damped resins, fitted with acoustically transparent dust cap and high-compliance treated double-roll fabric surround

SPEAKER MASS : 8.7 kg

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TYPICAL CHARACTERISTICS

Rated impedance	Z	8	Ω
Reference efficiency (1 W@1 m)	-	97	dB SPL
Usable frequency range ¹	-	50-2500	Hz
Power handling capacity ² (AES)	-	400	W
Max Sound Pressure Level ³	SPL _{max}	119	dB SPL
Min. impedance modulus	Z _{min}	6.5 @ 270Hz	Ω
Voice-coil inductance ⁴ @ 1 kHz	L _{e1k}	1.07	mH
@ 10 kHz	L _{e10k}	0.51	mH
Bl product	Bl	20.6	N/A
Moving mass	M _{ms}	0.057	Kg

THIELE-SMALL PARAMETERS : TYPICAL (QC LIMITS)

Resonance frequency ⁵	F _s	47 (±6)	Hz
DC resistance ⁶	R _e	5.5 (±0.6)	Ω
Mechanical quality factor	Q _{ms}	3.5	1
Electrical quality factor	Q _{es}	0.22	1
Total quality factor	Q _{ts}	0.21	1
Mechanical suspension compliance	C _{ms}	205	10 ⁻⁴ m/N
Effective piston area	S _d	0.049	m ²
Equivalent C _{as} air load	V _{as}	0.068	m ³
Max. linear excursion	X _{max}	± 5.5	mm
Linear displacement volume	V _d	0.270	10 ⁻³ m ³
Half-space efficiency		3.1	%
Unity load volume	V _{as} Q _{ts} ²	2.9	10 ⁻³ m ³

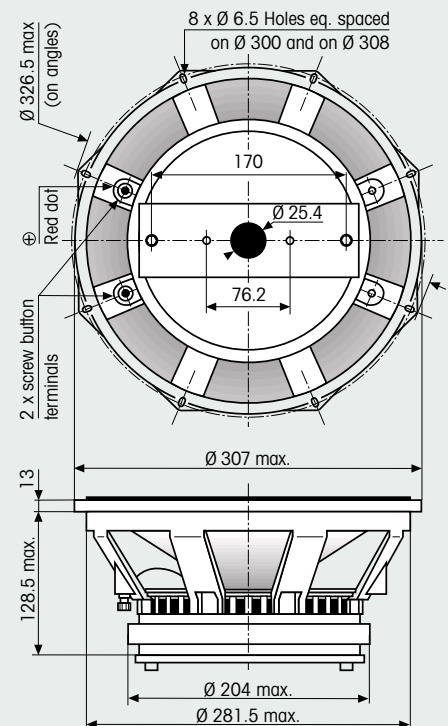
ABSOLUTE MAXIMUM RATINGS

Short term max. input voltage ⁷	V _{max}	115	V
Max. excursion before damage	X _{dam}	12	mm
Ambient operating temperature		-10 to +50	°C
Storage temperature ⁸		-20 to +70	°C
Environmental conditions ⁹		Outdoor	

APPLICATION INFORMATION

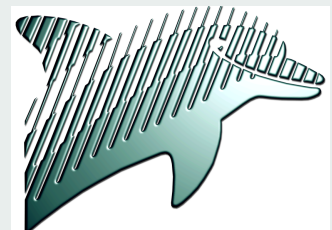
Air volume occupied by the driver ¹⁰		2.6	10 ⁻³ m ³
Speaker net mass		8.7	Kg
Recommended reflex box	V _b /F _b	50 / 53	L / Hz
Electrical polarity	A positive voltage applied on the red terminal produces forward cone motion.		

PHYSICAL CHARACTERISTICS



SPECIFICATION NOTES

- Note 1 : Allowing for energy response, excursion capability, Power spectrum, and -3dB low freq. roll-off for standard reflex tuning.
- Note 2 : Established at 20°C ambient temp, according to AES2-1984 standard using IEC268-1 simulated programme signal and a 50 liter Bass-Reflex test enclosure tuned at 53Hz.
- Note 3 : Established at 1m on axis of the loudspeaker mounted in test enclosure, when driven at full AES Power Handling Capacity, including 4dB of thermal compression loss.
- Note 4 : Measured at 20 mA in free air.
- Note 5 : Measured at 20 mA and 20°C ambient temp. in free air conditions, after full run and rest.
- Note 6 : Measured at 20°C ambient temp. QC limits are ±10%
- Note 7 : Stated in RMS voltage according to IEC 268-5.
- Note 8 : Includes shipping conditions. The lower limit prevents from demagnetization.
- Note 9 : Our products are classified in three categories : Indoor, Outdoor, and Outdoor+ for permanent outdoor use or severe conditions.
- Note 10 : Calculated for front mounting on to a 18 mm thick board.



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