



AVI SOUND INTERNATIONAL LTD.
UNIT 170, 11120 BRIDGEPORT ROAD
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MODEL **AVI SL-170, 170 mm (6.5") WOOFER DRIVER**

APPLICATIONS This is a woofer driver for small sized high performance sound systems. It can also be a midbass device in very high quality sound systems. Suggested operating range is 45 to 800 Hz.

PERFORMANCE 34 to 2100 Hz at -10 dB points, in optimum enclosure.
40 to 800 Hz at -3 dB points, in optimum enclosure.
300 watts music program material.
150 watts AES pink noise rating.
121 dB typical, in vehicle, with rated power.
97 dB typical, at 1 watt, in vehicle.
88 dB average, at 1 watt and 1 meter, in half space.
4 ohm nominal, 3.0 ohm minimum.

FEATURES Fiberglass frame with cavity vents, black.
Extended and vented pole piece with integrated bottom plate.
Both top and bottom plates with CNC and black absorbing finish.
Yellow HX type woven fiberglass cone with linearity damped composite rubber edge.
848 g (29.9 oz) magnet.
50 mm (2") copper ribbon voice coil, OFC edge wound.

PHYSICAL 170 mm (6.7") overall diameter.
86 mm (3.4") overall depth.
144 mm (5.6") cut out hole diameter.
78 mm (3.1") mounting depth.
2.5 Kg (5.5 lbs) weight.

T/S DATA	Znom 4 Ω	Revc 3.0 Ω	Fo 45 Hz
	Sd 0.013 M ² (20.2 in ²)	Le 0.80 mH	SPL 88 dB
	Xmax 2 mm (0.08 in)	Qms 6.0	BL 7.95 TM
	Vas 13.0 L (0.46 ft ³)	Qes 0.32	Pnom 150 W
	Cms 542 μ m/N	Qts 0.30	Pmax 300 W



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AVI SL-170 APPLICATION NOTE

	NET VOLUME	TOTAL VOLUME	PORTS	DIA	LENGTH	FILL	F _b (Hz)	F ₃ (Hz)	F ₋₁₀ (Hz)	NOTES
S CLOSED		5 L/0.18 ft³				20%		119	56	Q _{tc} =0.55
M CLOSED		8 L/0.28 ft³				20%		126	52	Q _{tc} =0.46
L CLOSED		10 L/0.35 ft³				20%		128	51	
	Note: Enclosures from 10 L (0.35 ft ³) to 20 L (0.7 ft ³) are typical of vehicle door cavities, and SL-170 output does not change substantially over this range. See special application note for midbass use.									
INF-BAFFLE		> 50 L/1.8 ft³						139	49	Q _{tc} =0.32
	Free air not recommended – Even a 5 L (0.2 ft ³) sealed box provides more useful performance, and much less risk of suspension damage.									
MINI VENTED	9 L 0.32 ft³		1	65 mm 2.5"	350 mm 13.8"	20%	54	54	42	
MIDI VENTED	11 L 0.4 ft³		1	65 mm 2.5"	300 mm 11.8"	20%	51	50	40	
MAXI VENTED	15 L 0.53 ft³		1	75 mm 3"	350 mm 13.8"	20%	47	44	37	
BANDPASS 4	14 L 0.5 ft³					10%		49	31	Closed
	4 L 0.14 ft³		1	50 mm 2"	270 mm 10.6"	20%	69	101	147	Vented
	Install SL-170 into the closed cavity, facing to the vented cavity.									
BANDPASS 6	14 L 0.5 ft³		1	65 mm 2.5"	380 mm 15"	20%	41	40	34	Vented
	5 L 0.18 ft³		1	65 mm 2.5"	250 mm 9.8"	20%	79	101	133	Vented

Install SL-170 into the large vented cavity, facing to the small vented cavity. Both ports are vented to the outside.

Note: The very small enclosure sizes required for the AVI SL-170 make compound isobaric designs highly undesirable.



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USING AVI SL-170, 170 mm (6.5") AS A MIDBASS DEVICE

AVI SL-170 may be used as a subwoofer, or as a midbass driver. A range of subwoofer enclosures is shown in the application note. In midbass applications, however, the rules are not clearly defined, and considerable opportunity for other enclosures is possible.

The SL-170 provides excellent midbass in a wide range of enclosures. Typical vehicle door cavities, of 5 to 15 liters (0.2 to 0.6 cubic feet), are adequate, although some trim panel reinforcement may be desirable. Aftermarket body panel damping sheets are highly recommended. When installing the SL-170 into vehicle doors, users must measure clearance, as the magnet is much larger than is common. While midbass performance in rear deck is good, there is some risk of suspension damage, particularly at high output levels.

The lower crossover frequency is very flexible, and AVI suggests 70, 80 or 90 Hz. If the SL-170 is used below about 70 Hz, then an appropriate sensible vented enclosure is required. In vehicle doors output the level below about 70 Hz is restricted by window seal leaks and panel flexing. In advanced systems, the subwoofers may be operated up to 80 Hz, and the midbass from 45 Hz to 400 Hz, enhancing the illusion of the bass coming from the front stage. It is essential that if signals below 70 Hz are applied to the SL-170, an active high pass filter (40 Hz or higher) **must** be used.

The suggested upper crossover frequency is 400 Hz, and AVI make the model XN-16L high performance passive 400 Hz low-pass filter specifically for this use. With any other crossovers, the upper frequency should be limited to about 600 Hz, to exploit the flattest part of the SL-170 frequency response curve.

AVI also makes the model XN-18H, a high power passive 400 Hz high pass filter, and several other modes of filters and crossovers for use with the SL-170 and XN-16L midbass set, in systems.

Active crossovers will provide maximum performance, particularly 18 or 24 dB per octave types. With 12 dB slope active crossovers, the frequency should probably be above 80 Hz, especially in high output systems. Simple 6 dB per octave filters will allow suspension damage, and are **not** sufficient.

Because the impedance of the SL-170 varies from a low of 3.5 ohms to a high of about 25 ohms when mounted on a baffle or in box, low frequency passive crossovers must **never** be used unless serious measures are made to flatten the impedance curve. For most installers and users this is complex and impractical, so passive crossovers below about 200 Hz should be avoided.