WOOFER
15WS600

15” Woofer for low and mid bass professional sound reinforcement, offering high power capacity, outstanding low end response and exceptionally smooth transition into the vocal range. This new design is capable of handling up to 1,200 Watts Continous Music.

The 15WS600 is ideal for side fill as well as front of house cabinets. This woofer exhibits outstanding acoustics with work horse construction. Designed for smaller enclosures, the 15WS600 is a versatile, high performance woofer. General construction includes a sturdy cast frame, an impregnated cloth surround, impregnated long fiber paper cone and stable double spider.

The 15WS600 woofer incorporates, a large magnetic assembly central hole and 6 windows on the frame which increases heat dissipation and reduces operating temperature increasing the output power with reduced power compression.

SPECIFICATIONS

Nominal diameter	380 (15)	mm (in)
Nominal impedance	8	
Minimum impedance @ 190 Hz	7.1	
Power handling		
Peak	2,400	W
Continous Music[1]	1,200	W
NBR[2]	600	W
AES[3]	450	W
Sensitivity (2.83V@1m) averaged from 100 to 500 Hz	97	dB SPL
Power compression @ 0 dB (nom. power)	3.2	dB
Power compression @ -3 dB (nom. power)/2	2.1	dB
Power compression @ -10 dB (nom. power)/10	0.7	dB
Frequency response @ -10 dB	40 to 3,500	Hz

[1] Power handling specifications refer to normal speech and/or music program material, reproduced by an amplifier producing no more than 5% distortion. Power is calculated as true RMS voltage squared divided by the nominal impedance of the loudspeaker.
[2] NBR Standard (10,303 Brasilian Standard).
[3] AES Standard (60 - 600 Hz).

THIELE-SMALL PARAMETERS

Fs	35	Hz
Vas	215 (7.59)	l(ft^3)
Qts	0.35	
Qes	0.36	
Qms	20.07	
o (half space)	2.5	%
Sd	0.0814 (126.17)	m^2 (in^2)
Vd (Sd x Xmax)	350.0 (21.36)	cm^3 (in^3)
Xmax (max. excursion (peak) with 10% distortion)	3,75 (0.15)	mm (in)
Xlim (max.excursion (peak) before physical damage)	21 (0.82)	mm (in)

Atmospheric conditions at TS parameter measurements:

Temperature	24 (75)	°C (°F)
Atmospheric pressure	1,005	mb
Humidity	63	%

Thiele-Small parameters are measured after a 2-hour power test using half AES power . A variation of ±15% is allowed.

ADDITIONAL PARAMETERS

L	19.1	Tm
Flux density	0.98	T
Voice coil diameter	100 (4)	mm (in)
Voice coil winding length	29.7 (97.4)	m (ft)
Wire temperature coefficient of resistance ( )	0.00388	1/°C
Maximum voice coil operating temperature	237 (459)	°C (°F)
vc (max.voice coil operating temp./max.power)	0.53 (1.02)	°C/W(°F/W)
Hvc (voice coil winding depth)	17.0 (0.67)	mm (in)
Hag (air gap height)	9.5 (0.37)	mm (in)
Re	6.4	
Mms	90.88(0.200)	g (lb)
Cms	2 30	m/N
Rms	0.991	kg/s

NON-LINEAR PARAMETERS

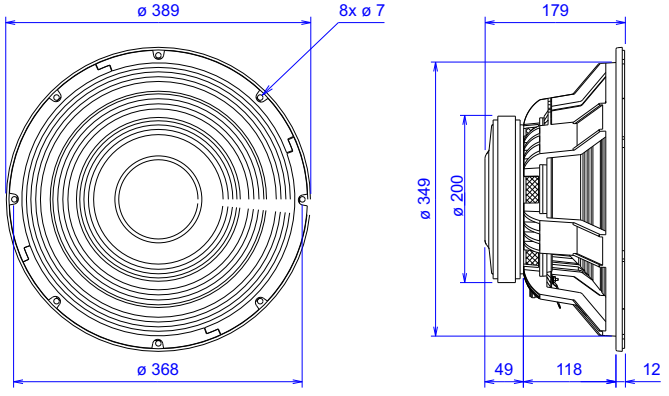
Le @ Fs (voice coil inductance @ Fs)	4.109	mH
Le @ 1 kHz (voice coil inductance @ 1 kHz)	1.66	mH
Le @ 20 kHz (voice coil inductance @ 20 kHz)	0.739	mH
Red @ Fs	0 21	
Red @ 1 kHz	4.769	
Red @ 20 kHz	77.338	
Krm	1.4	m
Kxm	17.6	mH
Erm	0.93	
Exm	0.73	

ADDITIONAL INFORMATION

Magnet material	Barium ferrite	
Magnet weight	2,640 (92)	g (oz)
Magnet diameter x depth	200 x 24 (7.87 x 0.95)	mm (in)
Magnetic assembly weight	7,000 (15.45)	g (lb)
Frame material	Aluminum	
Frame finish	Black Silver epoxy	
Voice coil material	Copper	
Voice coil former material	Polyimide	
Cone material	Long fiber pulp	
Volume displaced by woofer	6.0 (0.212)	l (ft^3)
Net weight	8,520 (18.81)	g (lb)
Gross weight	9,740 (21.50)	g (lb)
Carton dimensions (W x D x H)	40 x 40 x 18.5 (15.8 x 15.8 x 7.3)	cm (in)

MOUNTING INFORMATION

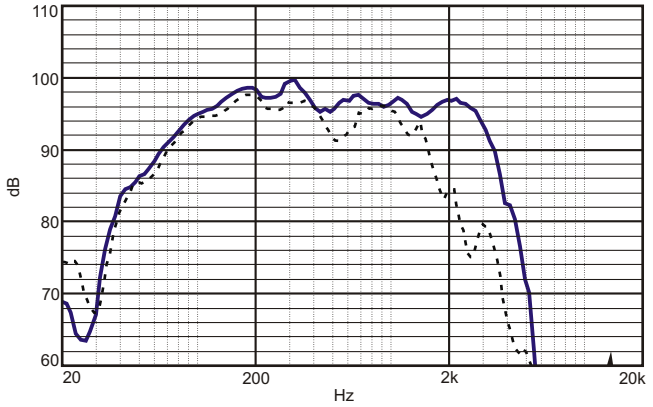
Number of bolt-holes	8	
Bolt-hole diameter	7 .0 (0.27)	mm (in)
Bolt-circle diameter	368 (14.49)	mm (in)
Baffle cutout diameter (front mount)	351 (13.82)	mm (in)
Baffle cutout diameter (rear mount)	345 (13.58)	mm (in)
Connectors	Silver-plated push terminals	
Polarity	Positive voltage applied to the positive terminal (red) gives forward cone motion	
Minimum clearance between the back of the magnetic assembly and the enclosure wall	75 (3)	mm (in)



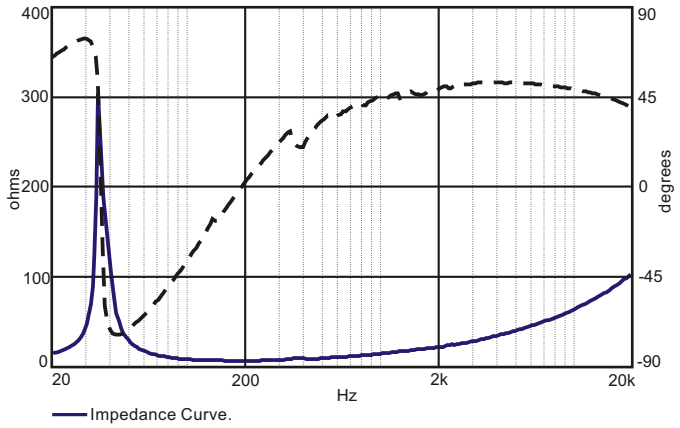
Dimensions in mm.

WOOFER 15WS600

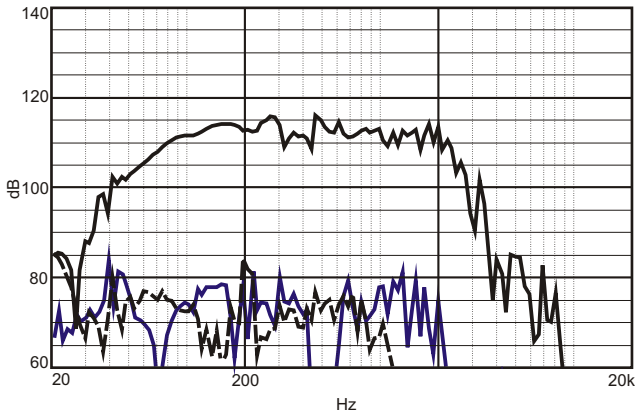
RESPONSE CURVES (0° AND 45°) IN A TEST ENCLOSURE INSIDE AN ANECHOIC CHAMBER, 1 W / 1m



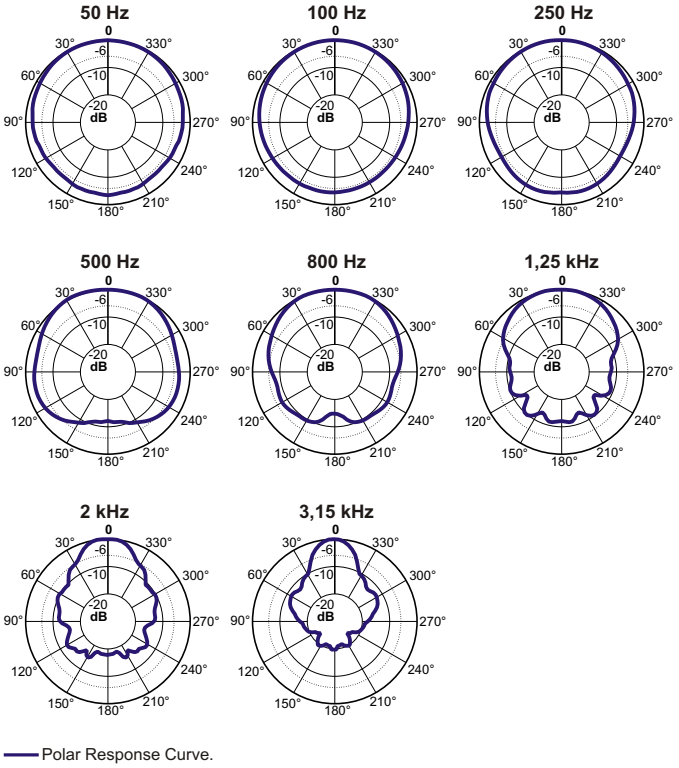
IMPEDANCE AND PHASE CURVES MEASURED IN FREE-AIR



HARMONIC DISTORTION CURVES MEASURED AT 10% AES INPUT POWER, 1 m



POLAR RESPONSE CURVES



HOW TO CHOOSE THE RIGHT AMPLIFIER

The power amplifier must be able to supply twice the RMS driver power. This 3 dB headroom is necessary to handle the peaks that are common to musical programs. When the amplifier clips those peaks, high distortion arises and this may damage the transducer due to excessive heat. The use of compressors is a good practice to reduce music dynamics to safe levels.

FINDING VOICE COIL TEMPERATURE

It is very important to avoid maximum voice coil temperature. Since moving coil resistance (R_E) varies with temperature according to a well known law, we can calculate the temperature inside the voice coil by measuring the voice coil DC resistance:

$$T_B \quad T_A \quad \frac{R_B}{R_A} \quad 1 \quad T_A \quad 25 \quad \frac{1}{25}$$

T_A , T_B= voice coil temperatures in °C.
R_A , R_B= voice coil resistances at temperatures T_A and T_B, respectively.
= voice coil wire temperature coefficient at 25 °C.

POWER COMPRESSION

Voice coil resistance rises with temperature, which leads to efficiency reduction. Therefore, if after doubling the applied electric power to the driver we get a 2 dB rise in SPL instead of the expected 3 dB, we can say that power compression equals 1 dB. An efficient cooling system to dissipate voice coil heat is very important to reduce power compression.

NON-LINEAR VOICE COIL PARAMETERS

Due to its close coupling with the magnetic assembly, the voice coil in electrodynamic loudspeakers is a very non-linear circuit. Using the non-linear modeling parameters Krm, Kxm, Erm and Exm from an empirical model, we can calculate voice coil impedance with good accuracy.

SUGGESTED PROJECTS

HB1505A1 HB1505B1 HB1505C1 HB1505D1 HB1505E1 HB1502B1
VB1505A1 VB1505B1 VB1505C1 SD1505A3 SD1505B3 SD1505C3
PAS1MA1 PAS3MA2 PAS3MA3 PAS3G2 RB1505A1
For additional project suggestions, please access our website.

TEST ENCLOSURE

110-liter volume with a duct ø 4" by 1.58" length.

www.selenium.com.br

www.seleniumloudspeakers.com

Specifications subject to change without prior notice.

Cod.:28026134 Rev.: 00 - 01/06