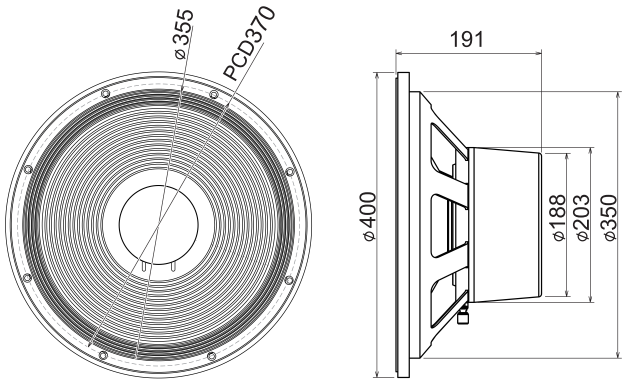
TAD Technical Audio Devices

TL-1601b

LOW FREQUENCY LOUDSPEAKER

Instruction Manual



FEATURES

1. 500W maximum permissible input, with high efficiency

The powerful magnetic circuit of the TL-1601b uses an Alnico magnet in order to extremely reduce distortion. The material and shape of the magnetic circuit have been carefully designed to realize a flux density of as high as 1.24 T and almost eliminate sensitivity due to demagnetization at high input. This in combination with lighter moving parts and the long-travel voice coil have resulted in a sensitivity of 97.5 dB / W (1m).

2. Low-distortion high-efficiency circuit

The TL-160lb features an edgewise-wound 23mm (7 / 8 in) long travel voice coil which moves completely within the magnetic gap even at peak-to-peak excursions as long as 16mm (5 / 8 in). You are thus assured of a powerful, distortion-free bass at virtually all input levels. The edgewise conductors make more effective use of the flux within the magnetic gap, resulting in increased acoustic conversion efficiency. The voice coil bobbin and adhesive materials are extremely heat resistant resulting in a maximum input of 500W.

3. No influence of parasitic resonance

Making holes at voice coil bobbin and diving the Alnico magnet into 9 segments eliminate parasitic resonance caused by a chamber behind the diaphragm assembly. This results in smooth and clear sound. This also improves the air cooling effect, increasing maximum input and linearity.

4. Use of large-size input terminal

This speaker can be drirectly connected to a 14mm^2 speaker cable.

5. Use of corrugation type cloth surround

The TL-1601b employs an extremely linear corrugation type cloth surround which has been coated with a specially developed damping material to provide a sufficient degree of internal loss. This ensures positive piston action at high amplitude and also prevents cone breakup in the higher region, resulting in extremely low distortion.

6. Strong diecast frame

The TL-1601b employs a sturdy aluminum alloy diecast frame which firmly supports the extremely heavy magnetic circuit and also the highly efficient moving parts of the speaker. The frame itself has been designed in such a way that it does not resonate.

SPECIFICATIONS

Nominal diameter	400mm (16 in)
Impeance	8Ω (rated)
	8 Ω (min) ± 7% at 20℃
Sound pressure level[1]	97.5 dB SPL, 1 W (2.83 V), 1 m (3.3 ft)
Power capacity	500 W RMS (max power)[2]
	200 W RMS (rated power)[3]
Frequency range[4]	28Hz to 2,000Hz
Highest recommended crossover[5]	900Hz
Reccommended enclosure[6]	113 to 304 ℓ (4 to 11 ft^3)
Effective piston diameter	335mm (13.2 in)

THIELE/SMALL PARAMETERS:

Fs	28Hz
Qts	0.31
Qes	0.32
Qms	6.8
Bl	20.5 Tm
Re	6.6 Ω
η_0	2.0 %
Vas	304 ℓ (10.7 ft^3)
Sd	0.0881 m^2 (137 in^2)
Mms	0.117 kg
Mmd	0.086 kg
Cms	2.76 x 10^{-4} m/N
Le	1.7 mH

LARGE-SIGNAL PARAMETERS:

Pe (max)	500 W[2]
Xmax	8.0mm (0.3 in) [O-P]
Vd	705cm^3 (43.0 in^3)
Maximum excursion before damage	36mm (1.42in) [P-P]

MAGNETIC CIRCUIT AND VOICE COIL:

Total magnetic flux	2.77 x 10^{-3} Wb
Magnetic flux density	1.24 T
Magnetic gap depth	7mm (0.28 in)
Magnetic assembly weight	11kg (24.3 lb)
Voice coil diameter	100mm (4 in)
Voice coil material	Edgewound OFC ribbon
Voie coil winding depth	23mm (0.91 in)

MOUNTING INFOMATION:

Baffle opening diameter	352mm (13-7 / 8 in)
Bolt circle diameter	370mm (14-9 / 16 in)
Volume displaced by driver	4.8 ℓ (0.17 ft^3)

EXTERNAL DIMENSIONS:

Diameter	400mm (15-3 / 4 in)
Depth	191mm (7-1 / 2 in)
Weight	13.0 kg (28.7 lb)

ACCESSORIES:

Mounting screw M5 x 40 Phillips head)	8
Nuts, fang nuts, washers	8 each
Airtight packing	4
Instruction manual	1

Specifications and dimensions are subject to change without notification.

1) Indicates the average of 300 to 600 Hz.
2) IEC 268-5: Long term maximum power
3) IEC 268-5: Rated noise power
4) For frequency band, a frequency 10 dB lower than the rated output level at half space condition placed in an enclosure of 22 ft^3 is shown.
5) When a high-range impedance compensation network is necessary, insert 27 μF + 8 Ω in parallel with the speaker.
6) Computer simulation sample of bass characteristics is shown on the other side.

CROSSOVER FREQUENCY

It is recommended that the TL-1601b is be used with a crossover network (low-pass filter) having a crossover frequency of no more than 900Hz, and cutoff characteristics of either 12dB / oct. or 18dB / oct.
When a high range impedance compensation network is necesary, insert 20μF + 8Ω in parallel with the speaker.

INSTALLATION METHOD

Method of fitting gasket

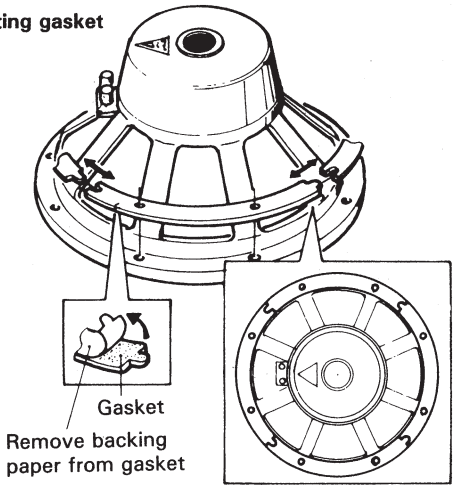
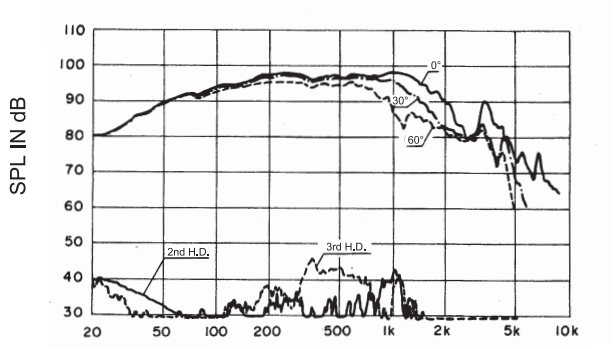


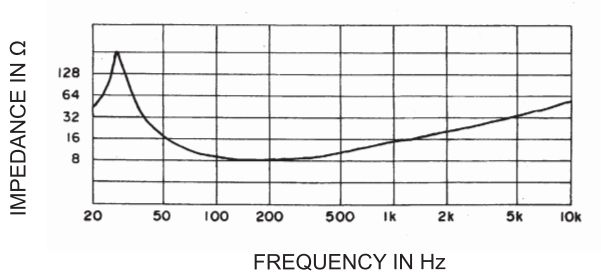
Fig. 1

HARMONIC DISTORTION



FREQUENCY IN Hz

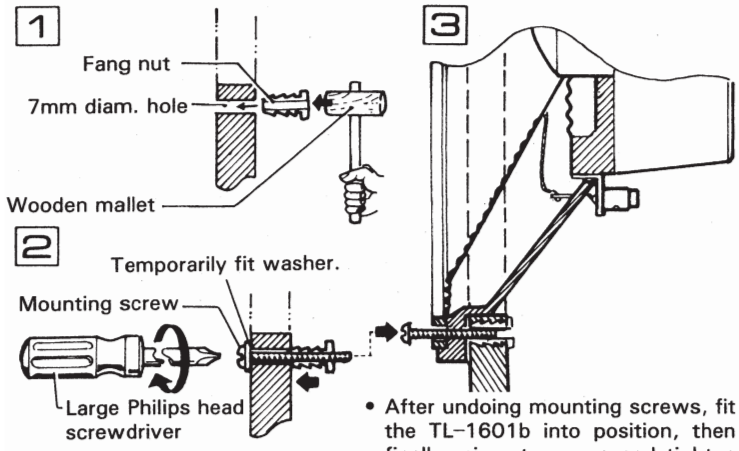
IMPEDANCE



FREQUENCY IN Hz

WHEN USING FANG NUTS

First, drill 7mm diam. holes into the baffle. Next, using the method shown in Fig. 2, drive the fang nut into these holes from the back of the baffle. Finally, insert the screws provided (8) and tighten them up.



- Use the screwdriver to pull the fang nut completely into the baffle board.
- After undoing mounting screws, fit the TL–1601b into position, then finally reinsert screws and tighten up diagonally opposite screws, applying the final tightening torque after adjusting the speaker position. As washers are not required, make sure they are removed from the mounting screws.

Fig. 2

WHEN USING NUTS

First, drill 6mm diam. holes. Next, using the method shown in Fig. 3, fit mounting screws, washers and nuts, and then tighten up firmly.

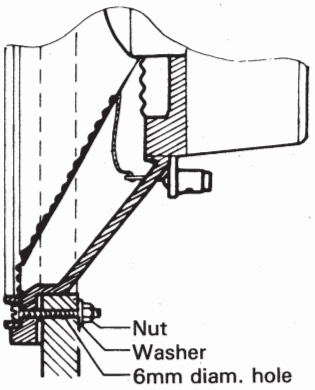


Fig. 3

Note:
Be careful not to short-circuit the cable end when hooking up.

Recone

Use the diaphragm assy DP-1603 for TL-1601b as cone replacement repair kit.

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