

# ASCENDO

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SYSTEM ZF-3

USER'S MANUAL

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## 1. Overview

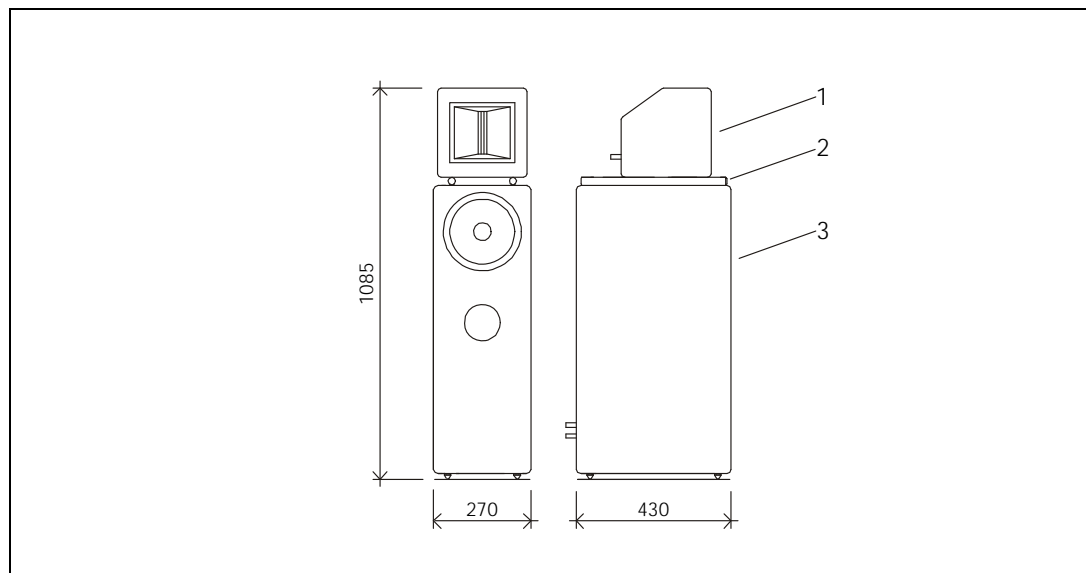
The ASCENDO System ZF-3 is a three-way Loudspeaker constructed with ASCENDO's SASB-Technology.

The strictly modular design leads to several advantages.

- perfect phase reconstruction at the actual position of the listener by time alignment.
- consequently mechanical and electrical decoupled: more details and transparency.
- very low resonance between loudspeaker and floor.

The crossover, low-frequency-unit and high-frequency-unit can be adjusted for different amplifiers and cables.

### 1.1 Overall Picture



- 1 High frequency unit
- 2 Stainless steel mounting bars
- 3 Low frequency unit

## 1.2 Application

The ASCENDO Loudspeaker System ZF-3 is intended for use in small to mid-size rooms (< 100 m<sup>3</sup>, see section 2.1).

You can use the System M with amplifier in the power range of 10 W to 350 W.

## 1.3 Safety Warning



### Warning

This Loudspeaker can produce big sound-levels. This may damage your ears permanently!

## 1.4 Operating modes

You can use the System ZF-3 in a single-amp setup (one power amplifier for high- and low-frequency unit) or in a bi-amp setup (one power amplifier for the low-frequency-unit, one for the high-frequency unit) or in a tri-amp setup (one power amplifier for the low-frequency-chassis, one for the middle-frequency chassis, one for the high-frequency unit).

If your setup is single-amping you must bridge the high- and low-frequency unit with a high quality speaker cable.

## 1.5 Technical Data

Principle	Three-way SASB- technology
Construction	modular, low-resonance mounting of units variable time-alignment for listener`s position between 50 cm and 190 cm over floor.
Material	Low-Magnetic Stainless-Steel sandwich construction of Bitumen and MDF
Dimensions	27 / 108,5 / 43 cm
Weight	43 kg
Power	500 W RMS (min.)
Impedance	5 Ohm
Sensitivity	89,5 dB/1W/m
High-Frequency Unit	Driver: Ribbon Tweeter Switch for high and low damping-factor of amp
Low-Frequency Unit	Outer Chassis: 21cm, HPS diaphragm, phase plug Inner Chassis: 21 cm, Kevlar diaphragm Switch for high and low damping-factor of amp
Connector	Si / Bi / Tri-Wiring
Finish	Piano lacquer: black / white

## 2. Installation

### 2.1 Demands of speaker location

- Use the System ZF-3 in closed rooms only. Do not expose the speaker to high humidity, direct water and direct sunbeam.
- Take care of a minimum distance of 2 m of the speaker to monitors (TV, computer) and magnetic devices (audio/video-cassettes, floppy-disks, etc.).

#### WARNING

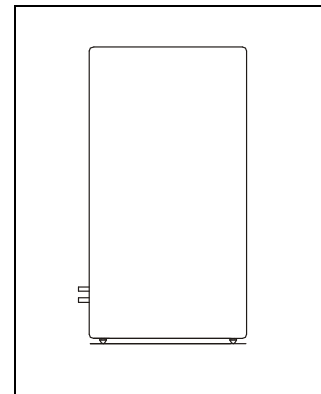
There may be a slight permanent imprint in soft floor-material!

### 2.2 Mounting

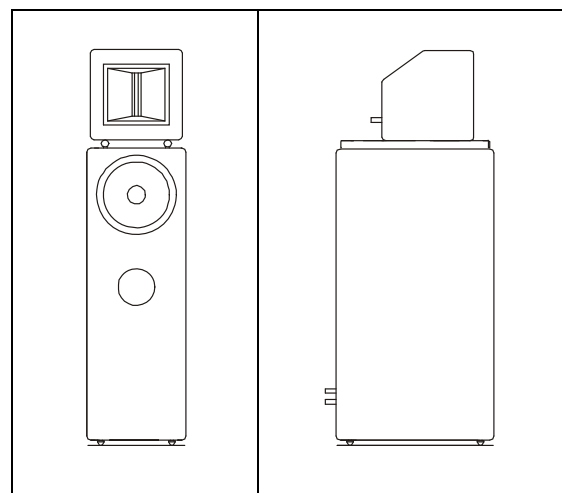
#### WARNING

Don't try to mount the System ZF-3 alone. The weight of the low-frequency unit is too much for a single person. You need at least two persons to build up the system.

1. Place the low-frequency unit (3) carefully at the desired place.
2. Adjust the low-frequency unit (3) for your specific hearing position.



3. Place the high-frequency module on top of the low-frequency module.  
The stainless steel bars (2) shall start and end at the end of the 12 mm rounding of the woofer edge.
4. Connect the units with your power amplifier(s). See section 4



#### Warning

The high frequency module is not fixed or bolt with the low-frequency module.

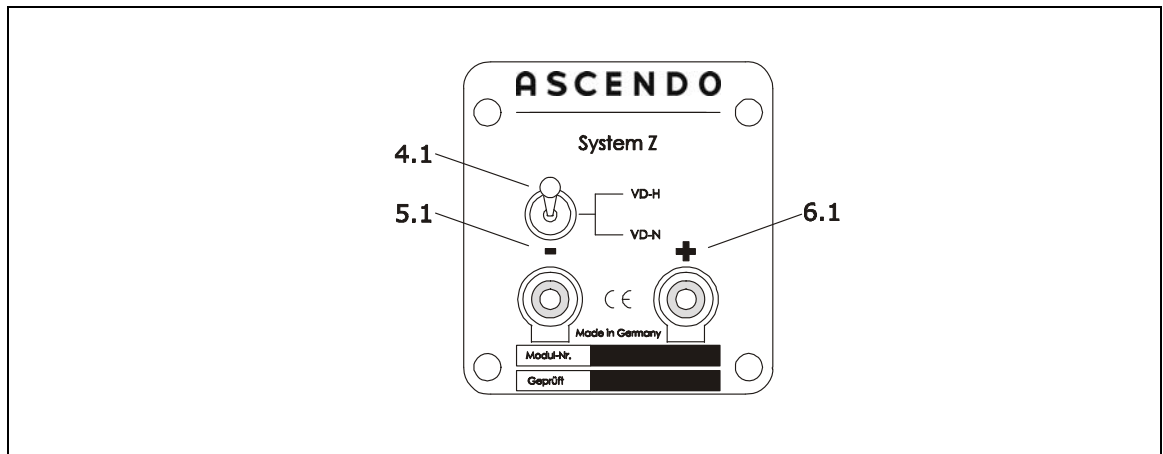
## 3 Transport

**Warning**

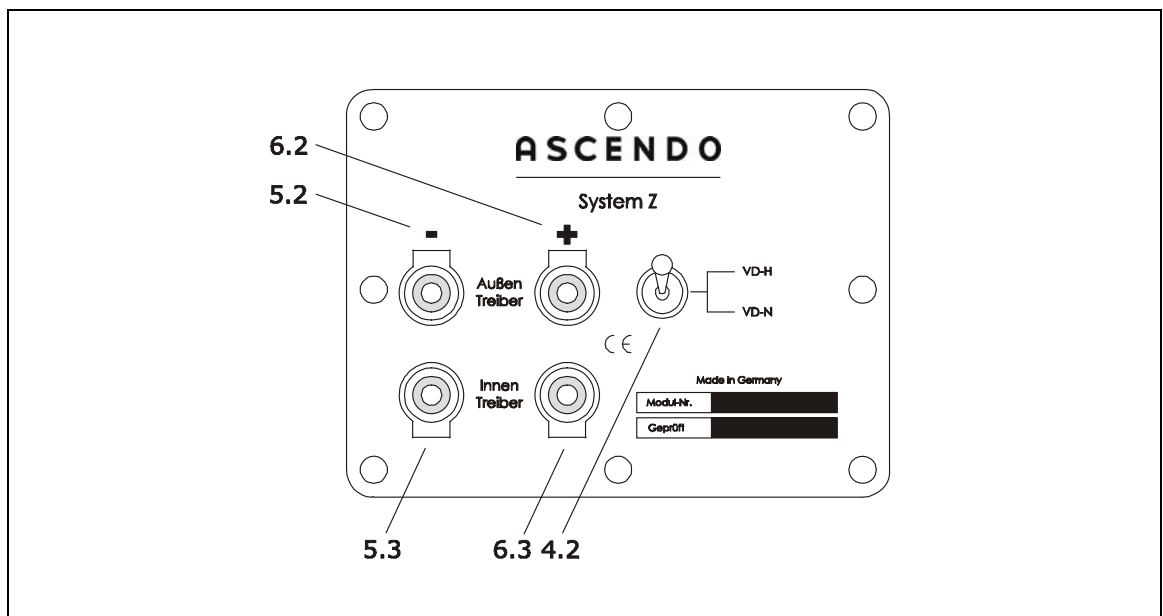
Don't try to move or transport the System ZF-3! The weight affords at least two persons.

1. Switch off the power amplifiers and disconnect all cables of the System ZF-3.
2. Pull off the high-frequency (1) unit from the low-frequency unit (3). Lay it on a soft dry cloth. Take care not to touch the diaphragm of the tweeter.
3. Lift the low-frequency unit from the stand and the upper back-spike. Take care not to touch the diaphragm of the woofer.
4. Place the low-frequency unit (3) at its new position.

## 4. Connection



- 4.1 Switch / High-frequency-unit
- 5.1 Minus / High-frequency-unit
- 6.1 Plus / High-frequency-unit



- 4.2 Switch Low-frequency-unit
- 5.2 Minus / Low-frequency-unit / outer chassis
- 6.2 Plus / Low-frequency-unit / outer chassis
- 5.3 Minus / Low-frequency-unit / inner chassis
- 6.3 Plus / Low-frequency-unit / inner chassis



The high- and low-frequency unit can be connected as follows:

- **single-wired:**

- one cable-pair from power-amp to high-frequency unit
- one cable-pair from low-frequency unit to high-frequency unit
- one cable-pair from inner chassis to outer chassis

- **bi-wired:**

Version1:

- one cable pair from power amp to low-frequency unit
- one cable pair from the power amp to high-frequency unit
- one cable pair from inner chassis to outer chassis

Version2:

- one cable pair from power amp to inner chassis
- one cable pair from the power amp to high-frequency unit
- one cable pair from high-frequency-unit to outer chassis

- **tri-wired:**

- one cable pair from power amp to outer chassis
- one cable pair from the power amp to inner chassis
- one cable pair from the power amp to high-frequency unit.

- **bi-amped:**

Version1:

- one cable-pair from separate amps for low- and high-frequency unit
- one cable-pair from inner chassis to outer chassis

Version2:

- one cable-pair from two separate amps for inner chassis and high-frequency unit
- one cable-pair from high-frequency unit to outer chassis

- **tri-amped:**

- one cable-pair from three separate amps to inner chassis, outer chassis and high-frequency unit.

Take care of connecting always the plus (red) terminal of your power amp with the plus (6 / red) terminal of the speaker!

Take care not to connect a plus with a minus pin of your cable!

The speaker-units are adjustable to the characteristics of your power-amplifier. Since these differ strongly you have to check the best switch position for your specific setup.

These are the key-rules for the adjustment:

### **High-frequency unit**

Switch (4) in position VD-N

- This is recommended for transistor power amps with damping-factor falling with frequency

Switch (4) in position VD-H (Standard)

- Recommended for transistor power amps with constant damping factor

### **Low-frequency unit**

Switch (4) in position VD-N

- This is recommended for fast transistor power amps.

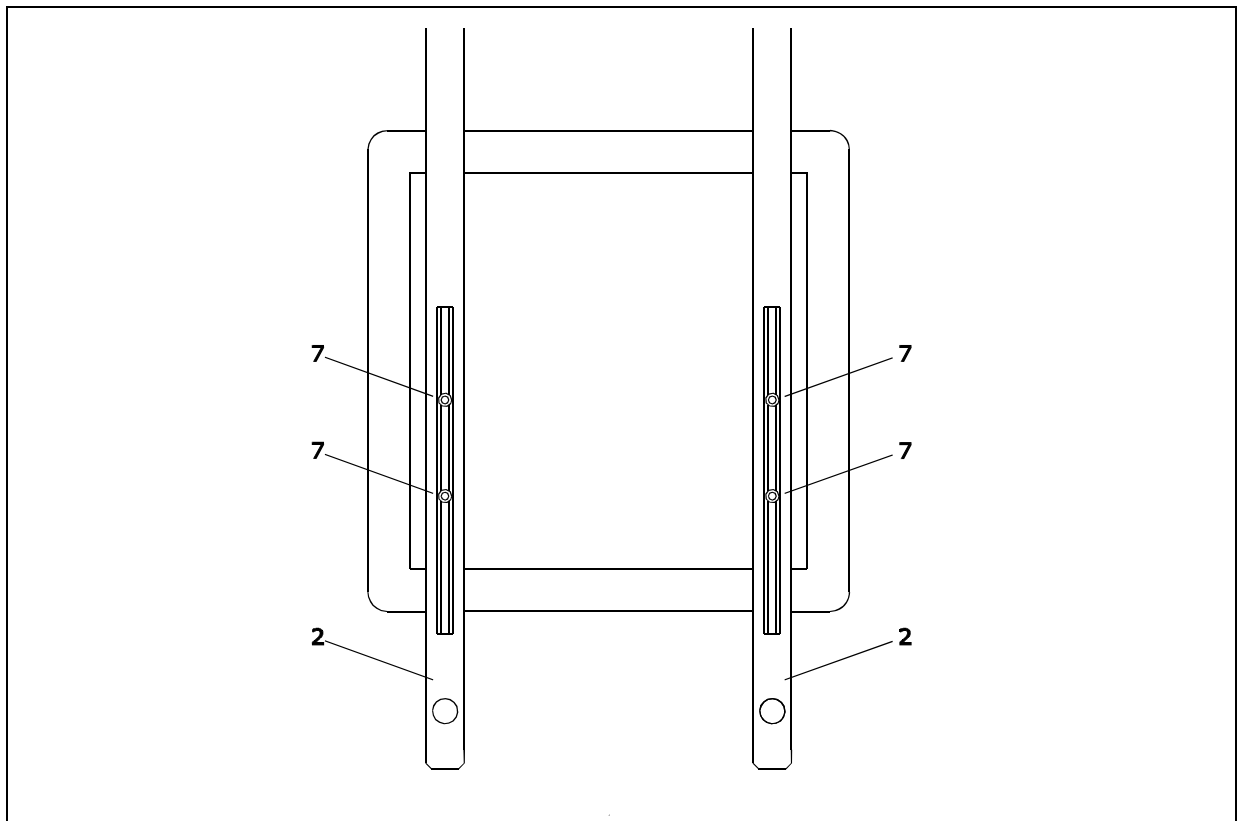
Switch (4) in position VD-H (Standard)

- Recommended for transistor amps with strongly load- dependent output-power

## 5. Time alignment for the listener's position

To achieve a perfect phase reconstruction, at the actual position of the listener, the delays of the transducers must be adjusted carefully. The position of the tweeter has to be mechanically adjusted, so that a plane wave will leave the speaker system exactly in the direction to the listener's ear. This is possible owing to the specific design of the ASCENDO Systems. The displacement of the high frequency Unit ensures the correct phase in over-floor positions between 50 cm and 190 cm.

1. Switch off the power amplifiers and disconnect all cables of the System ZF-3
2. Place the high frequency unit upside down on a soft towel.
3. Loose the 4 screws (7) that fix the steel mounting bars (2) at the unit. Take care not to remove the screws fully. Apply 2-3 rounds only.

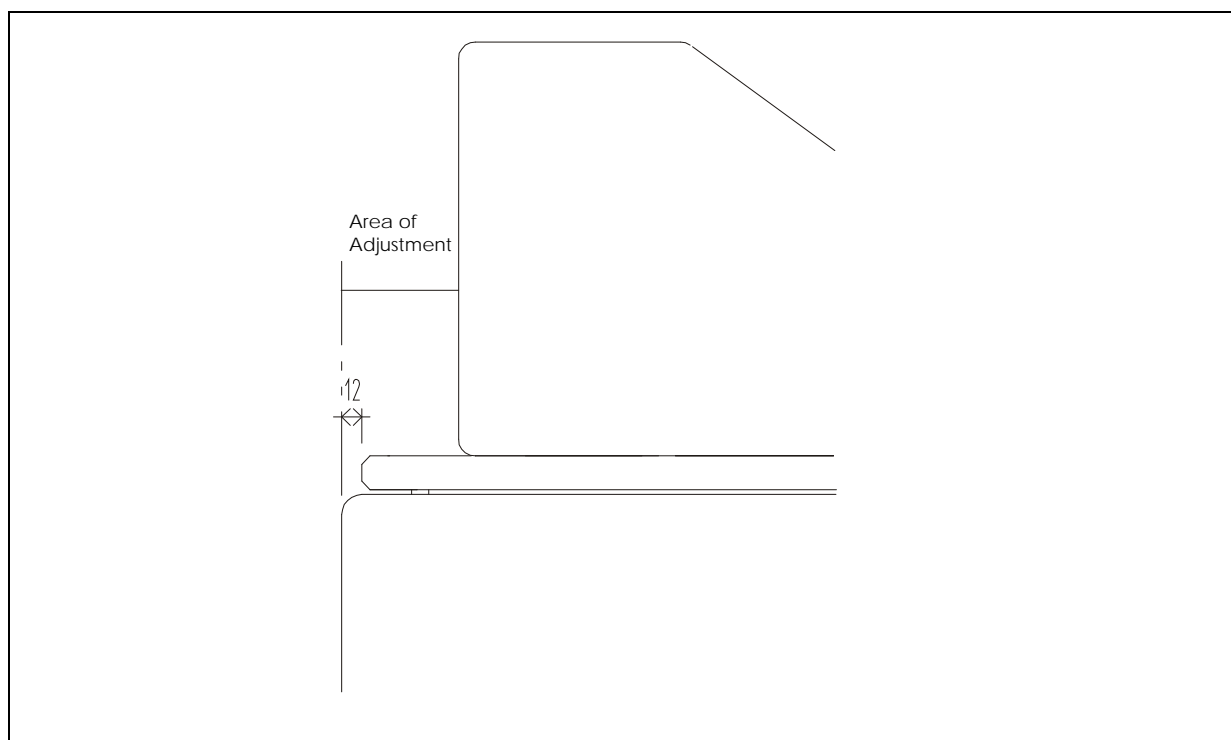


### Warning

Don't open the screws (7) too many rounds! The screw may loose the contact to the Low-Frequency unit.

4. Move the steel bars (2) to the right position (see section 5.1).
5. Fix the screws (7) again.

## 5.1 Adjustment of the time alignment



The adjustment is measured from the front of the woofer to the front of the tweeter.

		Distance (Ear) in cm																		
Hight of ear in cm	Area Of Adjustment	150	160	170	180	190	200	225	250	275	300	325	350	375	400	425	450	475	500	600
	80,0	3,3	3,1	3,0	2,9	2,9	2,8	2,6	2,5	2,4	2,3	2,2	2,2	2,1	2,1	2,0	2,0	1,9	1,9	1,8
82,5	3,5	3,4	3,3	3,2	3,1	3,0	2,8	2,7	2,6	2,5	2,4	2,4	2,3	2,3	2,2	2,2	2,2	2,1	2,0	
85,0	3,8	3,6	3,5	3,4	3,3	3,2	3,1	2,9	2,8	2,7	2,7	2,6	2,5	2,5	2,4	2,4	2,4	2,3	2,2	
87,5	4,0	3,9	3,8	3,7	3,6	3,5	3,3	3,2	3,1	3,0	2,9	2,8	2,8	2,7	2,7	2,6	2,6	2,6	2,4	
90,0	4,3	4,1	4,0	3,9	3,8	3,7	3,5	3,4	3,3	3,2	3,1	3,0	3,0	2,9	2,9	2,8	2,8	2,8	2,7	
92,5	4,5	4,4	4,2	4,1	4,0	4,0	3,8	3,6	3,5	3,4	3,3	3,3	3,2	3,1	3,1	3,0	3,0	3,0	2,9	
95,0	4,7	4,6	4,5	4,4	4,3	4,2	4,0	3,9	3,7	3,6	3,5	3,5	3,4	3,4	3,3	3,3	3,2	3,2	3,1	
97,5	5,0	4,9	4,7	4,6	4,5	4,4	4,2	4,1	4,0	3,9	3,8	3,7	3,6	3,6	3,5	3,5	3,4	3,4	3,3	
100,0	5,2	5,1	5,0	4,9	4,8	4,7	4,5	4,3	4,2	4,1	4,0	3,9	3,8	3,8	3,7	3,7	3,6	3,6	3,5	
102,5	5,5	5,3	5,2	5,1	5,0	4,9	4,7	4,5	4,4	4,3	4,2	4,1	4,1	4,0	3,9	3,9	3,9	3,8	3,7	
105,0	5,7	5,6	5,5	5,3	5,2	5,1	4,9	4,8	4,6	4,5	4,4	4,3	4,3	4,2	4,2	4,1	4,1	4,0	3,9	
107,5	6,0	5,8	5,7	5,6	5,5	5,4	5,2	5,0	4,9	4,7	4,6	4,6	4,5	4,4	4,4	4,3	4,3	4,2	4,1	
110,0	6,2	6,1	5,9	5,8	5,7	5,6	5,4	5,2	5,1	5,0	4,9	4,8	4,7	4,6	4,6	4,5	4,5	4,5	4,3	
112,5	6,5	6,3	6,2	6,1	5,9	5,8	5,6	5,4	5,3	5,2	5,1	5,0	4,9	4,9	4,8	4,8	4,7	4,7	4,5	
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122,5	7,5	7,3	7,1	7,0	6,9	6,8	6,5	6,4	6,2	6,1	6,0	5,9	5,8	5,7	5,7	5,6	5,6	5,5	5,4	
125,0	7,7	7,5	7,4	7,2	7,1	7,0	6,8	6,6	6,4	6,3	6,2	6,1	6,0	5,9	5,9	5,8	5,8	5,7	5,6	
127,5	8,0	7,8	7,6	7,5	7,4	7,2	7,0	6,8	6,7	6,5	6,4	6,3	6,2	6,2	6,1	6,0	6,0	5,9	5,8	
130,0	8,2	8,0	7,9	7,7	7,6	7,5	7,2	7,0	6,9	6,7	6,6	6,5	6,4	6,4	6,3	6,2	6,2	6,1	6,0	
132,5	8,5	8,3	8,1	8,0	7,8	7,7	7,5	7,3	7,1	7,0	6,8	6,7	6,7	6,6	6,5	6,5	6,4	6,4	6,2	
135,0	8,7	8,5	8,4	8,2	8,1	8,0	7,7	7,5	7,3	7,2	7,1	7,0	6,9	6,8	6,7	6,7	6,6	6,6	6,4	
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140,0	9,2	9,0	8,8	8,7	8,5	8,4	8,2	7,9	7,8	7,6	7,5	7,4	7,3	7,2	7,2	7,1	7,0	7,0	6,8	
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Conditions:

1. Coplanar setup (left and right speaker)
2. Adjustment to hearing position
3. High-frequency unit switch in position "VD-H"
4. Low-frequency unit switch in position "VD-H"
5. 0-phasis of amplifier

## 6. **Cleaning**

Clean the enclosure and stand of the ASCENDO System ZF-3 with a dry and soft cloth.

Don't use water or other chemicals. Don't touch the tweeter and the woofer.