



Full Range Speaker



FE83-Sol

Thank you for purchasing our product. Read this manual thoroughly before using the product.

Insatiate creativity New lineup to evolve

FE83-Sol is a special full-range driver unit inheriting its own technology and development philosophy of FE103-Sol and it has been developed based on FE83En. Quality of mid-high frequency sound is further improved by two-layer paper-making and low distortion ferrite outer magnet circuit, and it offers higher resolution with delicate and articulate music reproduction. In addition, the newly designed damper has excellent linearity, even at a very low level input, it accurately follows the change of the input signal. Frame color is the same copper orange as the FE103-Sol, which expresses our passion and own technology to build sound. Please enjoy the newly evolved lineup of FE83.

FE83-Sol Main Features

- ES cone diaphragm with Two-layer paper-making

Based on the cone paper of FE83En, combining smooth high density ES cone using fine pieces of fiber with two-layer paper-making*, it achieves light weight but further high stiffness and high internal loss. The base layer is mainly built with the long fiber pulp to offer high stiffness and internal loss, and the surface layer is built with short fiber pulp to enhance the propagation speed of cone paper surface. Due to this, while keeping bright and high tension mid range sound as is, it has enabled sharp high frequency with good response and rich low frequency reproduction.

*Two-layer paper-making is; making a piece of diaphragm in two steps process with our unique paper-making technique that consists of base layer and surface layer.

- High compliance corrugation damper

In order to improve linearity, it uses a superior corrugation damper; although being high compliance, it has consistency in hardness regardless of input level from small to large and offers excellent movement.

- Low distortion ferrite outer magnet circuit

The magnetic circuit has secured a sufficient magnetic flux density by using Ø65 mm ferrite magnet. The magnetic circuit has achieved to reduce the current distortion by placing the copper cap to the peripheral portion of magnet and the pole piece, and to improve the clarity of the mid-high frequency with thorough low distortion of the drive system.

- Mechanical 2 way center cap/high heat resistance glass composite voice coil bobbin

Center cap is located as directly mounted to the voice coil bobbin to offer wider high frequency reproduction and achieves over 20 kHz frequency range. Also, the voice coil bobbin ensures transmitting the vibrations to center cap by employing glass fiber and phenol resin sheet that has high Young ratio.

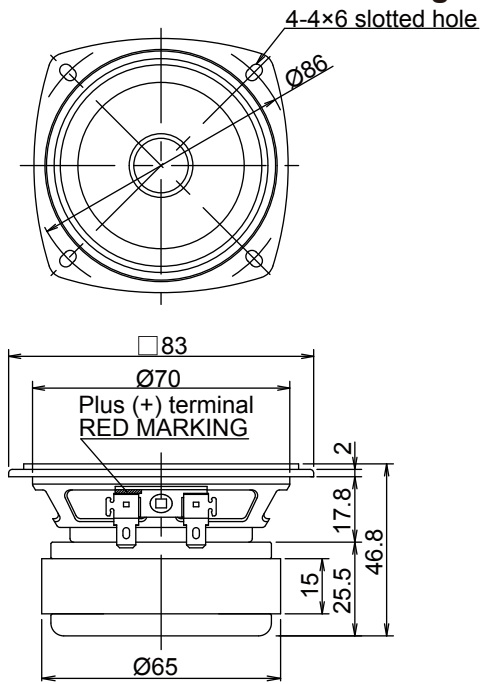
- 3-point bonding method

It uses a three-point bonding method, which adhere the cone paper, the damper and the voice coil in the same place. High frequency response is improved by increasing the strength of neck of cone.

- Fasten #205 gold plated terminal

It uses fasten #205 low loss gold plated speaker terminal. It ensures speaker cable connection and avoid sound quality deterioration.

Dimensional Outline Drawing



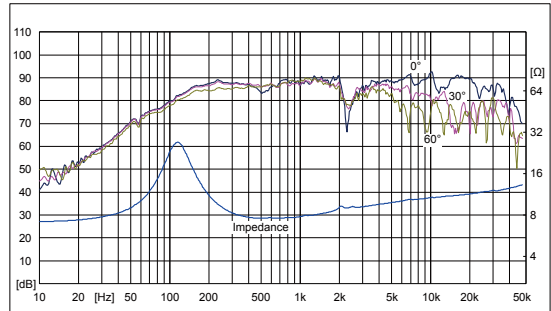
Specifications

Type	: 8 cm cone full-range
Impedance	: 8 ohm
Lowest resonance frequency	: 135 Hz
Reproduction frequency range	: f ₀ to 40 kHz
S.P.L.	: 88 dB/1w(m)
Input (MUS.)	: 15 W (NOM. 5 W)
m ₀	: 1.53 g
Q ₀	: 0.65
Effective vibration radius	: 3.0 cm
Magnet weight	: 187 g
Mass	: 470 g
Baffle opening dimensions	: Ø73

Accessories

Wood screws x 4
Washer x 4
Packing x 1

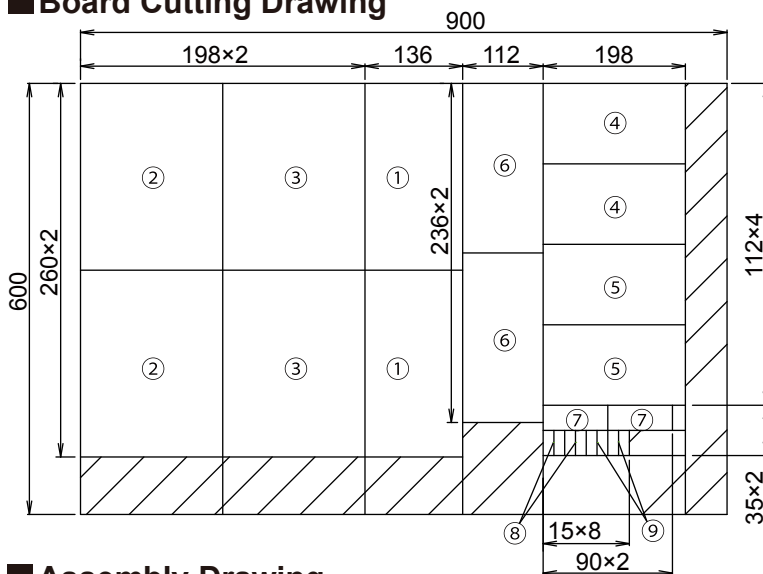
Frequency Response



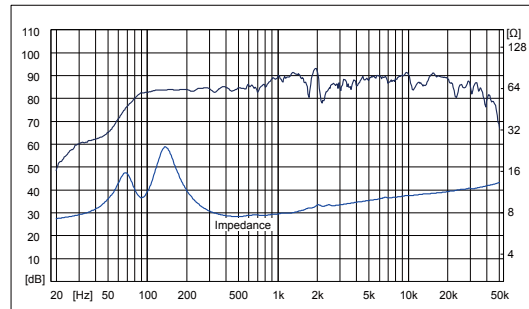
Standard Bass Reflex Enclosure

This is an example of installing FE83-Sol into the standard capacity bass reflex enclosure. Its design emphasizes full-body bass rather than being too ambitious on the lowest frequency. Caution to take when assembling the enclosure; adjust the mounting dimensions of duct with its actual size. As for the acoustic absorption material, attach coarse felt on the bottom board, wool on the ceiling board, rear board and lateral board.

Board Cutting Drawing



Frequency Response



Parts Used

Terminal	: P24B x 2 sets
Internal wire	: SFC83 adequate length
Board	: MDF 900 mm x 600 mm t12 x 1
Duct	: Ø40 PVC pipe, 60 mm x 2 pcs.
Acoustic absorption material	: wool, coarse felt adequate dose

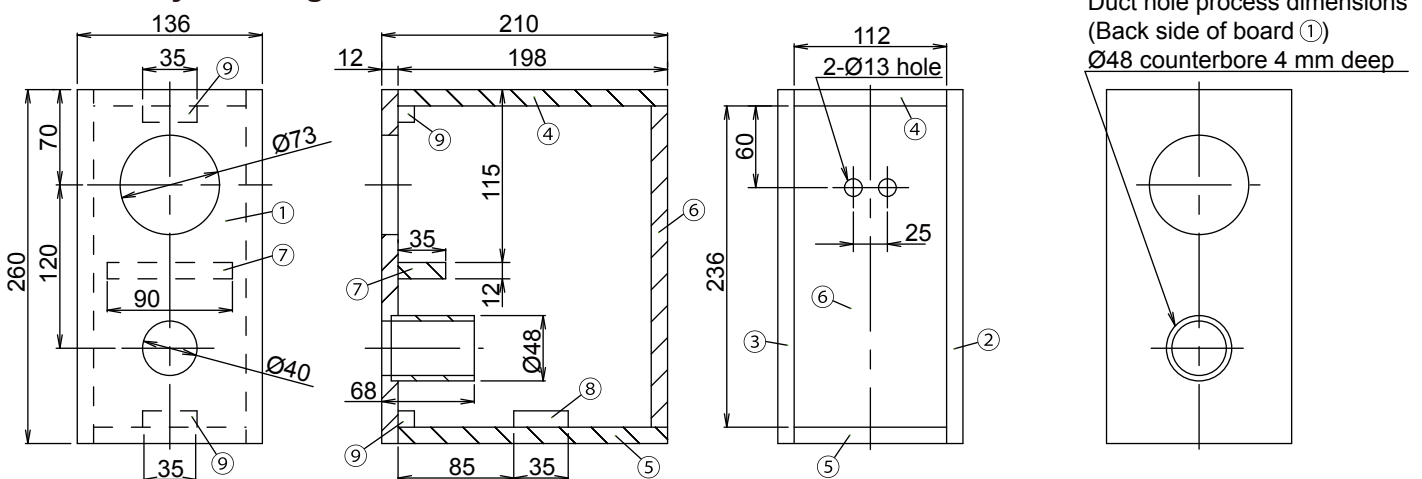
Design Value

Internal capacity	: 4.9 liters
Tuning freq. (fb)	: 89 Hz
Duct diameter	: Ø40
Duct length	: 68 mm

Assembly Sequence

A: 4 + 6 + 5
B: A + 2 + 3
C: B + 8* + 8*
* #8 is for both lateral boards.
D: C + (1 + 7) + 9 + 9

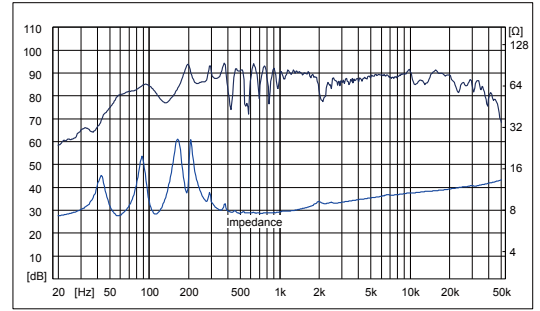
Assembly Drawing



Duct hole process dimensions
(Back side of board ①)
Ø48 counterbore 4 mm deep

Back Loaded Horn Enclosure

This is an example of installing FE83-Sol into the back loaded horn type enclosure. It is a two-division structure of the body and the stand and the stand bottom sides is the horn opening. Follow the assembly order, but in advance, mark the guide line with pencil on the board #2 for the position to adhere the board #10 and #12 (lateral boards). We recommend using generous portion of adhesive at the end face of the board #8 and #10 to fill the gap because they are bonded to the diagonal. The internal wire will go through the Ø8 hole of board #8, but this should be done before adhering the board #3. After assembling the main body and the stand, place the body to the stand. For fall prevention, fix the board #15 and #17 with either adhesive or screws. As for acoustic absorption material, we recommend inserting thin wool inside the air compartment and attach coarse felt on the both sides of stand board #20.



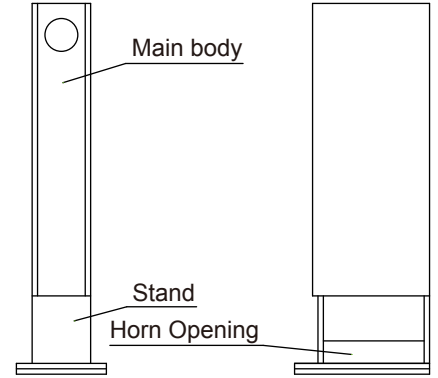
Design Value

Air compartment : 0.99 liters
 Throat dimension : 21.2 square cm
 Horn opening dimension: 224 square cm
 Horn length: 185 cm
 Horn cross-over freq. : 250 Hz
 Cut-off freq. : 35 Hz
 Broadening coefficient : 1.14

Assembly Sequence

Main body Stand
 A : 6 + 13 I : 17 + 20 + 19 + 21 + 18
 B : 4 + 13 + 13 J : 1 + 22 + 22
 C : (5 + 13) + 1 + 11 + 7
 D : 12 + 9
 E : 10 + 14 + 14
 F : 2 + C + B + A
 G : F + D + E + 3
 H : G + (15 + 16 + 16)

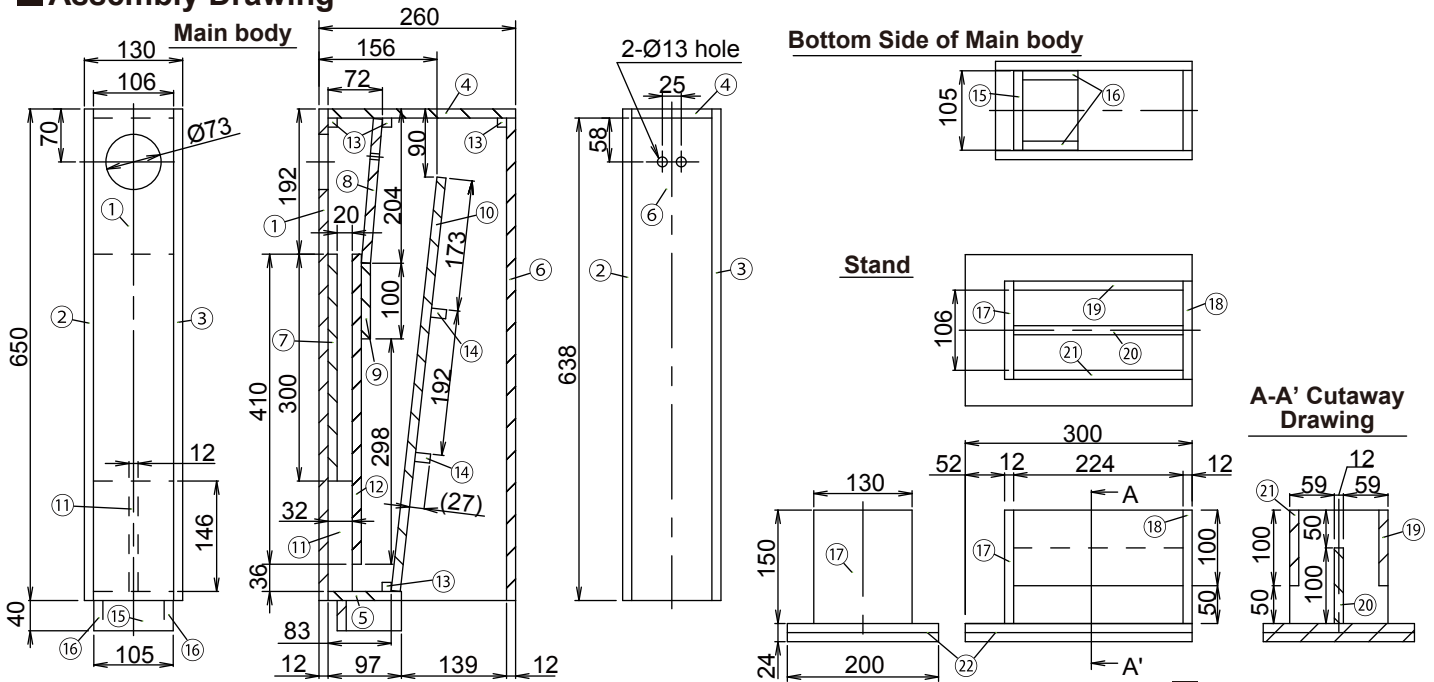
Completion Drawing



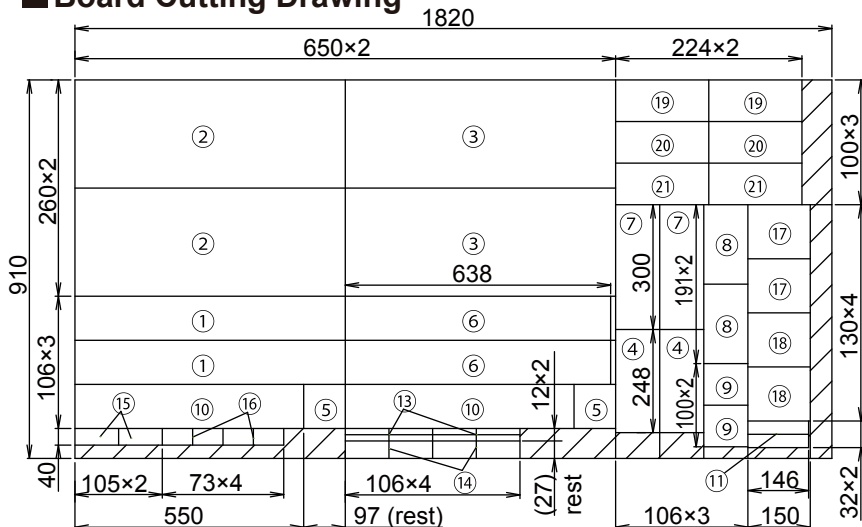
Parts Used

Terminal : P24B x 2 sets
 Internal wire : SFC83 adequate length
 Board : China plywood 910 mm x 1820 mm t12 x 1
 : MDF 900 mm x 450 mm t12 x 1
 Acoustic absorption material: wool / coarse felt x adequate dose

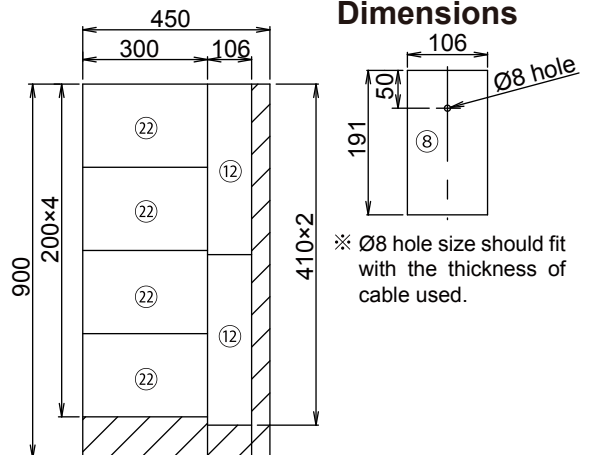
Assembly Drawing



Board Cutting Drawing



Board Process Dimensions





FE83-Sol Thiele/Small Parameters

Size	80 mm	3.2 in	Surface Area of Cone	Sd	0.0028 m ²
Overall Diameter	83 mm	3.3 in	Nominal Impedance	Zn	8 ohm
Baffle Hole Diameter	73 mm	2.9 in	Resonance Frequency	Fs	135 Hz
Depth	46.8 mm	1.85 in	DC Resistance	Re	6.9 ohm
Voice Coil Diameter	16.4 mm	0.65 in	Coil Inductance	Le	0.3 mH
Cast / Stamped	Stamped		Mechanical Q	Qms	3.62
Impedance	8 ohm		Electromagnetic Q	Qes	0.79
Reproduction Frequency Response	Fs - 40 kHz		Total Q	Qts	0.65
Sound Pressure Level	88 dB/W (1m)		Equivalent Mass	Mms	1.53 g
Rated Input	5 W		BL Product (Factor Force)	BL	3.53 Tesla/m
Music Power	15 W		Compliance Equivalent Volume	Vas	0.88 L
Magnet Weight	187 g	0.412 lb	Voice Coil Overhang	Xmax	0.25 mm
Net Weight	470 g	1.036 lb	Reference Efficiency n0	Eff/n0	0.35 %
Equivalent Diaphragm Radius	a	30 mm	Mechanical Compliance of Suspension	Cms	0.75 mm/N
Effective Cone Diameter	D	60 mm	Efficiency Bandwidth Product	EBP	170.886

IMPORTANT SAFETY INSTRUCTIONS

- Read this manual carefully before starting operation and use this product safely. We cannot be responsible for problems resulting from failure to observe the instructions in this manual.
- This manual uses various pictorial displays to show how to use this product and to avoid harm to yourself and others and damage to your property. Here is what these pictorial displays mean.

 WARNING	This label is intended to alert the user to the presence of important operating instructions. Failure to heed the instructions will result in severe injury or death.
 CAUTION	This label is intended to alert the user to the presence of important operating instructions. Failure to heed the instructions can result in injury or material damage.

WARNING

- Do not disassemble or alter. Doing so may lead to accident, fire or electric shock.
- Do not place the speaker cabinet (enclosure) on an unstable cart, stand or tripod, bracket, or table. It may fall, causing serious injury and / or serious damage.
- Do not expose the product to rain or moisture, never wet the inside with any liquid and never pour or spill liquids directly onto this product. Please do not put any objects filled with liquids (e.g. vases, etc.) onto the speaker cabinet.

- After taking the product out of the plastic bag, be sure to dispose of it out of the reach of children. Otherwise, they may play with the bag, which could cause hazard of suffocation. Also keep small articles out of reach of children. If swallowed, consult a physician immediately.
- Halt use immediately if a problem appears. When problems occur such as a lack of sound, foreign objects inside the unit, smoke coming out, or noxious odors, stop use immediately and contact the dealer where you bought the product. Failure to do so may result in an accident or injury.
- Never expose this product to extremely high or low temperatures.
- High SPL's may damage your hearing! Please do not get close to the loudspeakers when using them at high volumes.
- Please note that the diaphragm build up a magnetic field. Do not play with magnetic items at close range to the diaphragms.

CAUTION

- Use specified accessory parts and install them securely. Use of other than designated parts may damage the product internally or may not securely install the product in place as parts that come loose may create hazards.
- Avoid touching the speaker membranes and do not block the woofer's ventilation ports.
- Always use fully checked cables. Defective cables can harm your speakers. They are a common source for any kind of noise, hum, crackling, etc.

Fostex

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