



## OPERATING INSTRUCTIONS

# SUBWOOFER SYSTEM

# FB-120B FB-120W

Thank you for purchasing TOA's Subwoofer System.

Please carefully follow the instructions in this manual to ensure long, trouble-free use of your equipment.

## 1. SAFETY PRECAUTIONS

- Before installation or use, be sure to carefully read all the instructions in this section for correct and safe operation.
- Be sure to follow all the precautionary instructions in this section, which contain important warnings and/or cautions regarding safety.
- After reading, keep this manual handy for future reference.



### WARNING

Indicates a potentially hazardous situation which, if mishandled, could result in death or serious personal injury.



### CAUTION

Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.



### WARNING

- Refer all installation work to the dealer from whom the speaker was purchased. Installation for flying requires extensive technical knowledge and experience. The speaker may fall off if incorrectly installed, resulting in possible personal injury.
- Flying Precautions  
Be sure to follow the instructions below. Otherwise, the suspension wires or belts may be off or snap and the speaker may fall off, causing personal injury.
- Check to confirm that the suspension wires and belts are strong enough to withstand the speaker load.
- The connectors of the suspension wires and belts must be securely linked with those of the speaker.
- All parts and components (such as enclosures, metal pieces, and screws) must be free from any deformation, crack, and corrosion.
- Be sure to use screws supplied with the optional flying hardware when installing the speaker using such hardware.
- Install the unit only in a location that can structurally support the weight of the unit and the mounting bracket. Doing otherwise may result in the unit falling down and causing personal injury and/or property damage.
- Since the unit is designed for in-door use, do not install it outdoors. If installed outdoors, the aging of parts causes the unit to fall off, resulting in personal injury.
- Owing to the unit's size and weight, be sure that at least two persons are available to install the unit. Failure to do so could result in personal injury.
- Do not use other methods than specified to install the unit. Extreme force is applied to the unit and the unit could fall off, possibly resulting in personal injuries.

- Use nuts and bolts that are appropriate for the ceiling's structure and composition. Failure to do so may cause the speaker to fall, resulting in material damage and possible personal injury.
- Tighten each nut and bolt securely. Ensure that the bracket has no loose joints after installation to prevent accidents that could result in personal injury.
- Do not mount the unit in locations exposed to constant vibration. The mounting bracket can be damaged by excessive vibration, potentially causing the unit to fall, which could result in personal injury.



### CAUTION

- Avoid touching the unit's sharp metal edge to prevent injury.
- To avoid electric shocks, be sure to switch off the amplifier's power when connecting speakers.
- Do not place heavy objects on the unit as this may cause it to fall or break which may result in personal injury and/or property damage. In addition, the object itself may fall off and cause injury and/or damage.
- Do not operate the unit for an extended period of time with the sound distorting. This is an indication of a malfunction, which in turn can cause heat to generate and result in a fire.
- Do not stand or sit on, nor hang down from the unit as this may cause it to fall down or drop, resulting in personal injury and/or property damage.
- Have the unit checked periodically by the shop from where it was purchased. Failure to do so may result in corrosion or damage to the unit or its mounting bracket that could cause the unit to fall, possibly causing personal injury.

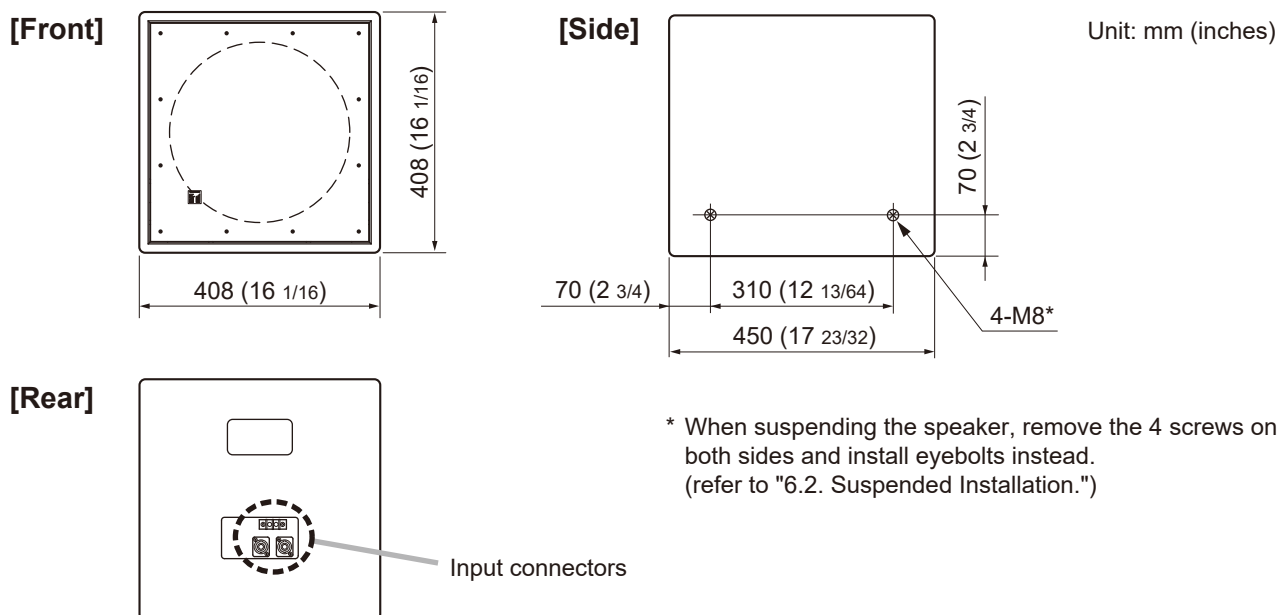
## 2. GENERAL DESCRIPTION

TOA's FB-120B/W is a compact, indoor-use subwoofer system employing a high-power 30 cm (12") woofer. It is designed for use in conjunction with TOA's HX-5 series or other full range speakers, and is particularly ideal for reproducing dynamic low-frequency sound for both permanent and temporary installations.

## 3. FEATURES

- Equipped with a convenient carrying handle.
- Suspended by wire or chain.

## 4. DIMENSIONAL DIAGRAM

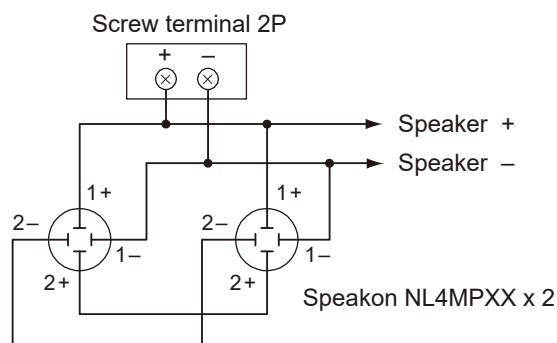


## 5. INPUT CONNECTORS

- The NEUTRIK Speakon connectors are internally connected in parallel to the screw terminals; you can use either one.
- The right table shows the pin arrangement of the Speakon NL4MPXX connector.

Pin No.	FB-120B, FB-120W
1 +	Speaker +
1 -	Speaker -
2 +	—
2 -	—

- The usable connector (on the cable end) for the Speakon NL4MPXX is Speakon NL4FC.
- Wiring diagram of the input connectors is shown at right.

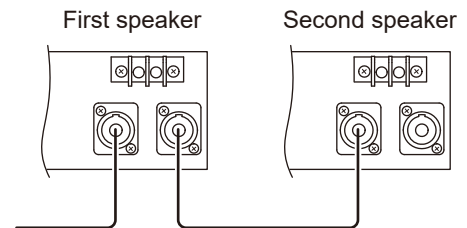


- Two speaker systems can be operated in parallel by connecting them in a cascade configuration as shown at right.

**Note**

Be sure to connect the speaker system to the power amplifier's output terminal of  $4\ \Omega$  or less.

Connecting it to an output terminal of over  $4\ \Omega$  may cause amplifier failure.

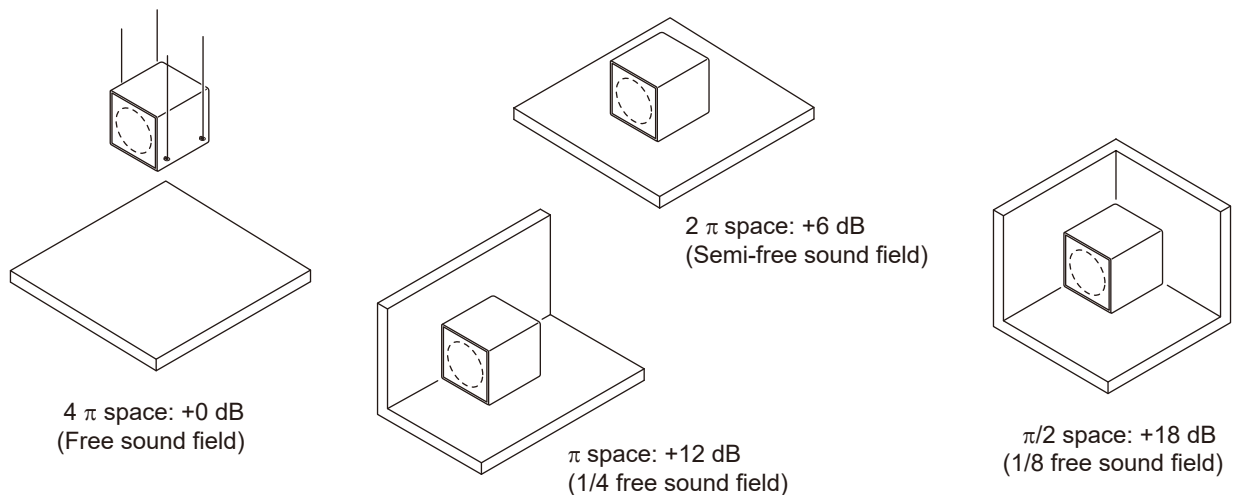


## 6. INSTALLATION

### 6.1. Installation Location and Acoustic Energy

Acoustic energy emitted from the speaker differs depending on installation locations.

The figures below show that the acoustic energy increases in other installation locations, referenced to the free sound field (ceiling suspension).



### 6.2. Suspended Installation



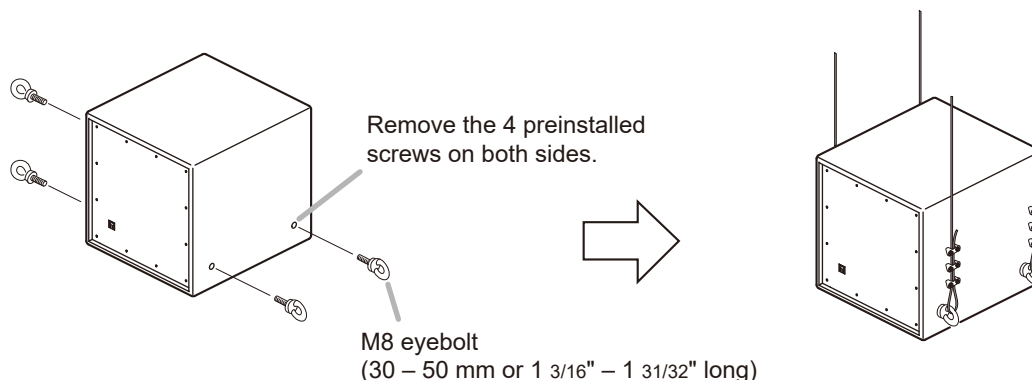
## WARNING

Be sure to select wire, chain, and/or anchor shackles with a safety factor appropriate to the weight of the speaker system. Incorrect selection of these suspension components may cause the speaker system to fall, potentially resulting in damage and/or personal injury.

Remove the 4 screws on both sides of the subwoofer system, screw 30 – 50 mm (1 3/16" – 1 31/32") M8 eyebolts into the exposed holes, and use these to suspend the subwoofer using wire or chain.

**Note**

Eyebolts, nuts, and washers are not supplied and should be acquired separately.



Use the optional HY-PF1B or HY-PF1W Speaker Rigging Frame to suspend the FB-120 subwoofer together in the same location with TOA HX-5 series speakers.

For suspension, refer to the instruction manual attached to the HY-PF1B or HY-PF1W.

## 7. COMBINING THE FB-120 WITH FULL-RANGE SPEAKERS

### 7.1. Crossover Settings

The subwoofer system already possesses the characteristic of suppressing sound in the mid- to high-frequency range, but a low-pass filter can also be added to eliminate unwanted mid- and high-frequency components even further for even greater efficiency. When using a digital signal processor as a low-pass filter, the filter settings shown below are recommended.

Filter	Frequency	Q
HPF (12 dB/oct)	40 Hz	2.053
LPF BW (24 dB/oct)	100 Hz	—

### 7.2. Level Balance & Polarity

When using the FB-120 series in conjunction with full-range speakers (such as those in TOA's HX-5 series), adjust the level balance and polarity for each speaker independently depending on the installation site.

#### 7.2.1. Level balance adjustment

Increase or decrease the level of the subwoofer (or full range speaker) as appropriate to the number of units and installation conditions.

#### 7.2.2. Polarity adjustment

- If the subwoofer and full-range speakers are in phase in their crossover band, then acoustic energy is added; however, acoustic energy is subtracted if the two are in reversed phase. Since the phase characteristics of both the subwoofer and full-range speaker change continuously depending on the frequency, it may not be ideal to follow the subwoofer's polarity instructions when connecting it.
- Compare the degree to which acoustic energy increases by switching the polarity of the connection at the subwoofer (from positive to negative and from negative to positive). Choose the way of connection that results in the greatest increase in acoustic energy. To match the polarity correctly, make actual measurements of acoustic energy using a real time spectrum analyzer.

## 8. SPECIFICATIONS

Model No.	FB-120B	FB-120W
Power Handling Capacity	Continuous pink noise: 200 W, Continuous program: 600 W	
Impedance	8 $\Omega$	
Sensitivity	90 dB (1 W, 1 m) at installation in free sound field 96 dB (1 W, 1 m) at installation in 1/2 free sound field	
Frequency Response	40 to 1200 Hz (–10 dB)	
Speaker Component	30 cm (12") cone-type	
Input Terminal	Speakon NL4MPXX x 2 and M4 screw terminals, distance between barriers: 11 mm	
Finish	Enclosure: Wood Punched net: Steel plate, black, paint	Enclosure: Wood Punched net: Steel plate, white, paint
Dimensions	408 (w) x 408 (h) x 450 (d) mm 16 1/16 (w) x 16 1/16 (h) x 17 23/32 (d) inches	
Weight	15 kg	

**Note:** The design and specifications are subject to change without notice for improvement.

#### • Optional products

Speaker rigging frame: HY-PF1B (black), HY-PF1W (white)