



日本語の取扱説明書は裏面からお読みください。

## INSTRUCTION MANUAL

# F SERIES SPEAKER SYSTEM

<b>F-160G/F-160W</b>	(Low impedance)
<b>F-160GM/F-160WM</b>	(High impedance)
<b>F-160WP</b>	(High impedance/outdoor use)
<b>F-240G/F-240W</b>	(Low impedance)
<b>F-240GM/F-240WM</b>	(High impedance)

### TABLE OF CONTENTS

1. SAFETY PRECAUTIONS	2
2. DIMENSIONAL DIAGRAM AND NOMENCLATURE	3
3. HANDLING PRECAUTIONS	4
4. FEATURES	4
5. OVERLOAD PROTECTION CIRCUITRY INFORMATION	4
6. IMPEDANCE CHANGE	5
7. REAR COVER USAGE	5
8. LOGO BADGE REORIENTATION	6
9. OUTDOOR USE (F-160WP ONLY)	6
10. SPECIFICATIONS	7
11. CHARACTERISTIC DIAGRAM	8

Thank you for buying the TOA speaker system.  
Please read this manual carefully to get the best performance from this speaker.

TOA Corporation

## 1. SAFETY PRECAUTIONS

- Be sure to read the instructions in this section carefully before use.
- Make sure to observe the instructions in this manual as the conventions of safety symbols and messages regarded as very important precautions are included.
- We also recommend you keep this instruction manual handy for future reference.

### Safety Symbol and Message Conventions

Safety symbols and messages are used in this manual to prevent bodily injury and property damage which could result from mishandling. The conventions of the symbols and messages are described below. Before doing anything else, read this manual first so you are thoroughly aware of the potential safety hazards as well as understand the safety symbols and messages. Then before operating your product, read through the instruction manual so you are familiar with its general operation.

#### Symbols

● Symbols of caution actions

● Symbols of prohibited actions



CAUTION



PROHIBITION



### WARNING

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

### When Installing the Unit

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 speaker falling down and causing personal injury and/or property damage.



CAUTION



### CAUTION

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

### When the Unit is in Use

Do not stand or sit on a speaker as this may cause it to fall down or drop, resulting in personal injury and/or property damage.



PROHIBITION

Do not operate the speaker 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.

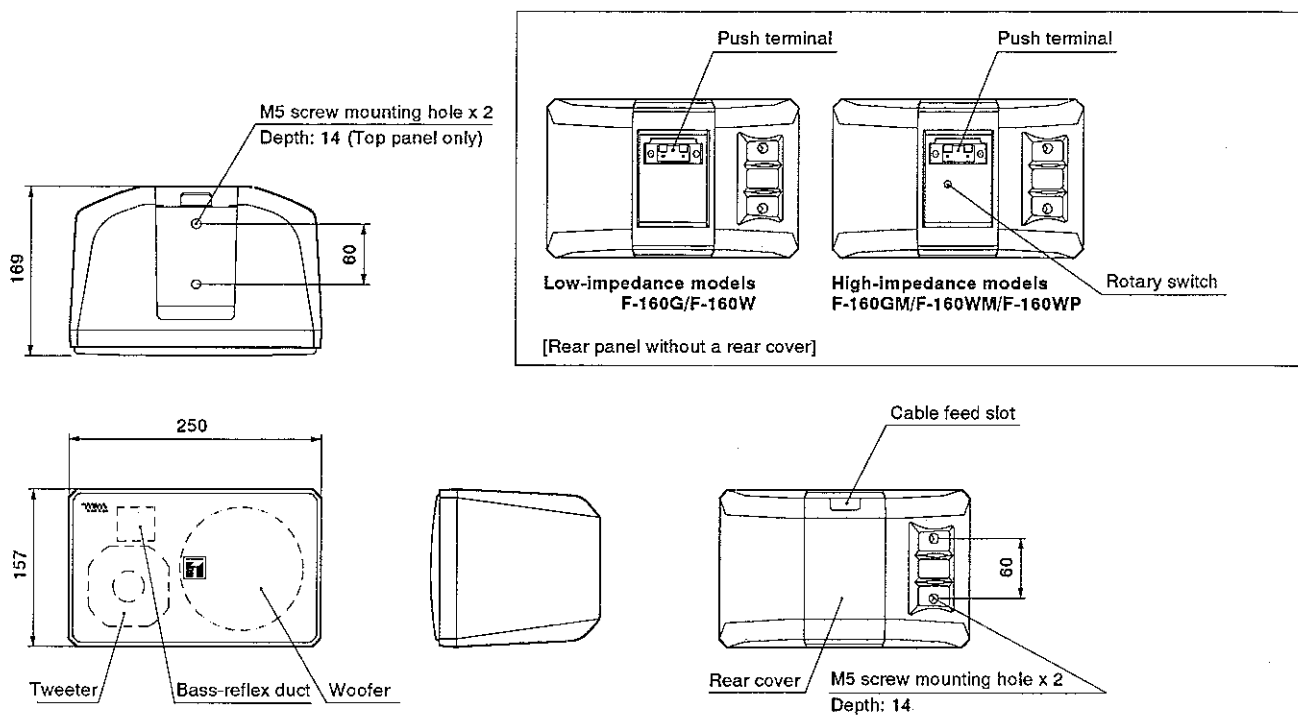


PROHIBITION

## 2. DIMENSIONAL DIAGRAM AND NOMENCLATURE

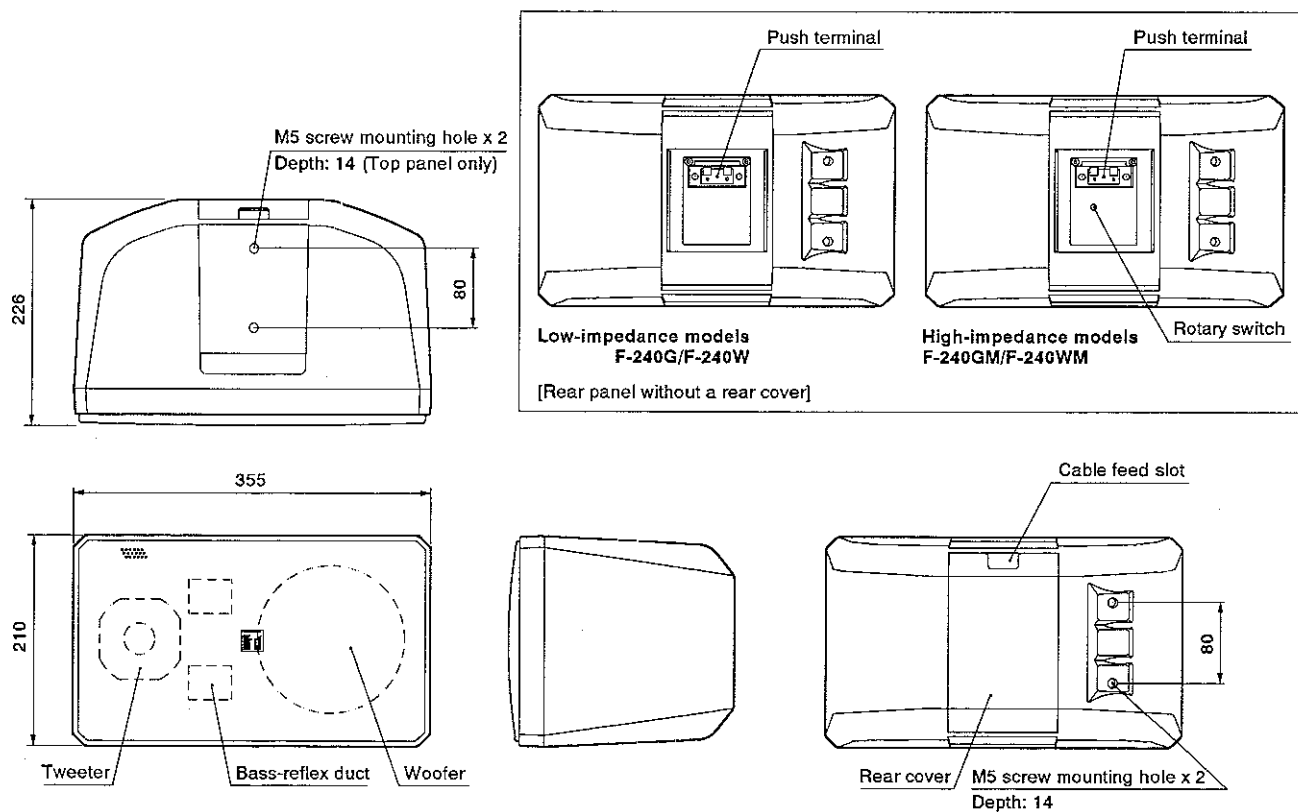
### ● F-160 Series

(Unit: mm)



### ● F-240 Series

(Unit: mm)



### 3. HANDLING PRECAUTIONS

- Use optional mounting brackets when mounting the speaker to the ceiling or wall.
- Avoid using the speaker on the beach because the speaker's life can be greatly shortened by sea breezes.
- TOA takes no responsibility for any accident or equipment failure due to inadequate installation places or incorrect installation methods or disassembly or modifications carried out for the purposes other than repair service.
- The F series speaker is not magnetically shielded. Install it as far away as possible from color televisions or video monitors to avoid degradation in television picture quality.

### 4. FEATURES

- Two-way bass-reflex system.
- High efficiency, wide range, and high input power handling capacity.
- F-160 series: High power capacity 13 cm woofer with a large 90 mm magnetic circuit, and high-efficiency 3 cm dome tweeter with a large 70 mm magnetic circuit.
- F-240 series: High power capacity 16 cm woofer with a large 90 mm magnetic circuit, and high efficiency 3 cm dome tweeter with a large 70 mm magnetic circuit and a titanium diaphragm.
- The tweeter employs a constant directivity horn which ensures uniform sound dispersion of 90 ° horizontal and 90 ° vertical.
- Independent built-in overload protection circuitry for woofer and tweeter. (Low-impedance models only)
- A detachable rear cover cleanly conceals the speaker terminals
- Acoustically efficient polypropylene enclosure.
- Optional wall and ceiling mounting brackets.
- F-160WP: Drip-proof construction makes the speaker system ideal for outdoor use.

### 5. OVERLOAD PROTECTION CIRCUITRY INFORMATION

#### (LOW-IMPEDANCE MODELS ONLY)

- The F-160G, F-160W, F-240G, and F-240W have a built-in overload protection circuitry.
- If the excessive input is applied to a woofer or tweeter, the overload protection circuitry is activated and cuts off the signal supply to the speaker component.
- A sudden drop of the volume level of either the high or low frequencies during speaker operation indicates that the overload protection circuitry has been activated. In such a case, reduce the amplifier volume and just wait. The protection circuitry is automatically reset after approximately 3-30 seconds. After the circuitry is reset, set the volume at a lower level than before.

#### [Important Note]

This overload protection circuitry does not perfectly protect the speaker component. Depending upon the excessive input to be applied, the protection circuitry may not operate, causing damage to the speaker component. In addition, the circuitry may not be restored to the previous state if the excessive input is applied continuously for long time. Take special care that the excessive input is not applied to the speaker during use.

## 6. IMPEDANCE CHANGE (HIGH-IMPEDANCE MODELS ONLY)


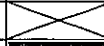
- Because the following models have a built-in matching transformer, connect them to the amplifier with a high-impedance (70 or 100) line output.

**F-160GM, F-160WM, F-160WP, F-240GM and F-240WM**

- Input impedance can be switched in five steps, as shown in the table at right (factory-preset to 330 ohms). To change, set the rotary switch to the desired impedance using a screwdriver blade.

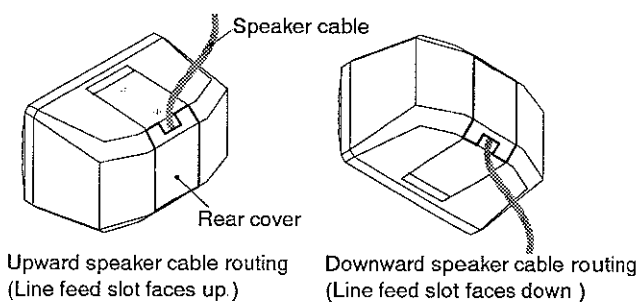
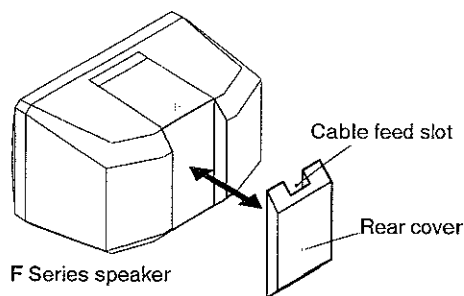
### [Note]

When using the 100 line, never set the impedance to 170 ohms. The speaker itself or the power amplifier may be damaged.

 Rotary switch	2 k $\Omega$	5 W	2.5 W
	1 k $\Omega$	10 W	5 W
	500 $\Omega$	20 W	10 W
	330 $\Omega$	30 W	15 W
	NC	—————	—————
	170 $\Omega$		30 W
	100 Line	70 Line	

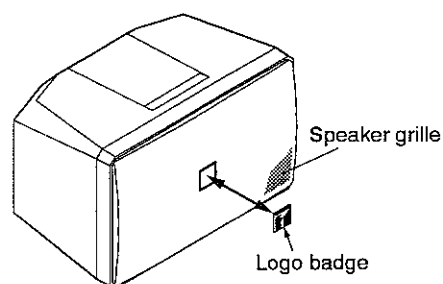
## 7. REAR COVER USAGE

- F Series speakers feature a rear cover that cleanly conceals the speaker terminals on the rear panel.
- To remove the cover, insert a finger in the line feed slot and pull the cover away from the speaker. To reattach, simply snap the cover back into place.
- If required, the positioning of the cover's line feed slot can be easily reversed by snapping the cover on "upside down".
- Model F-160WP must be mounted with the line feed slot facing down.



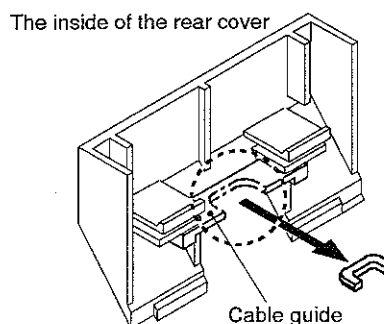
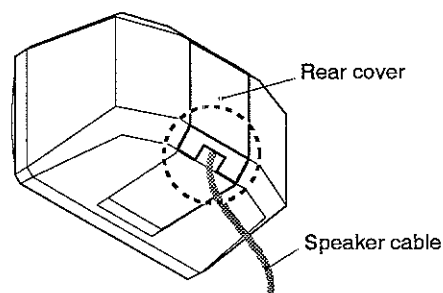
## 8. LOGO BADGE REORIENTATION

The speaker's front grille logo badge is attached with double-sided tape. To change its orientation, carefully peel the logo off the grille and stick it back on again in the same location in the desired orientation.



## 9. OUTDOOR USE (F-160WP ONLY)

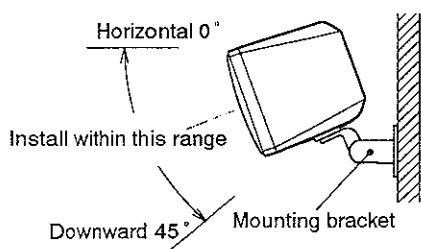
- Model F-160WP can be permanently installed outdoors, and other F Series speakers cannot.
- In the F-160WP, the rear cover prevents water from getting into the terminal section. When installing the F-160WP outdoors, make sure that the rear cover is mounted with the line feed slot facing down.
- If using a thicker speaker cable that does not easily fit through the rear cover's cable guide, use a knife to cut out the rubber cable guide along the imprinted groove, as shown in the illustration at right.



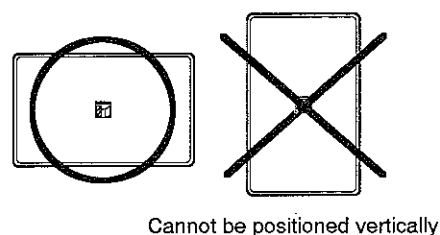
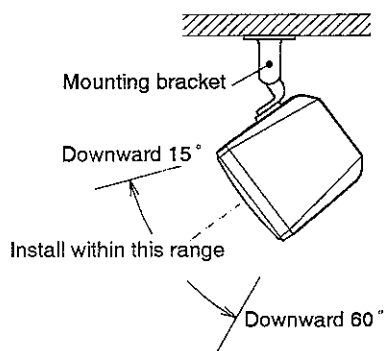
### [Note]

- When mounting model F-160WP on the wall or under the eaves, be sure to use optional outdoor mounting brackets.
- Adjust the speaker installation angle and direction within the ranges shown in the figures below:

### When mounting on the wall



### When mounting under the eaves



- Model F-160WP features drip-proof construction. However, do not dash water over it when cleaning as this may cause damage to the speaker components.
- When installing the F-160WP outdoors in a snowy area, protect the speaker by preventing snow from piling up on it.

## 10. SPECIFICATIONS

Model No.	F-160G	F-160W	F-240G	F-240W
Enclosure Type	Bass-reflex type			
Speaker Low frequency High frequency	13 cm cone speaker 3 cm dome speaker (film diaphragm)		16 cm cone speaker 3 cm dome speaker (titanium diaphragm)	
Rated Impedance	8 Ω			
Power Handling Capacity	Continuous pink noise: 50W (*) Continuous program: 150W			
Output Sound Pressure Level	91 dB (1 W/1 m)(**)		92 dB (1 W/1 m) (**)	
Crossover Frequency	4 kHz (passive network)			
Frequency Response	100 - 20,000 Hz ( -10 dB) 150 - 13,000 Hz ( -3 dB)		65 - 20,000 Hz ( -10 dB) 130 - 15,000 Hz ( -3 dB)	
Input Connector	Push terminal			
Enclosure Material	Polypropylene resin			
Color	Dark gray	White	Dark gray	White
Dimensions	250 (W) × 157 (H) × 169 (D) mm		355 (W) × 210 (H) × 226 (D) mm	
Weight	Approximately 3.3 kg		Approximately 4.9 kg	

Model No.	F-160GM	F-160WM	F-240GM	F-240WM
Enclosure Type	Bass-reflex type			
Speaker				
Low frequency	13 cm cone speaker		16 cm cone speaker	
High frequency	3 cm dome speaker (film diaphragm)		3 cm dome speaker (titanium diaphragm)	
Rated Impedance	100 Line : 330 Ω (30 W), 500 Ω (20 W), 1 kΩ (10 W), 2 kΩ (5 W) 70 Line : 170 Ω (30 W), 330 Ω (15 W), 500 Ω (10 W), 1 kΩ (5 W), 2 kΩ (2.5 W)			
Rated Input Power	30 W			
Output Sound Pressure Level	91 dB (1 W/1 m)(**)		92 dB (1 W/1 m) (**)	
Crossover Frequency	4 kHz (passive network)			
Frequency Response	100 - 20,000 Hz ( -10 dB) 150 - 13,000 Hz ( -3 dB)		65 - 20,000 Hz ( -10 dB) 130 - 15,000 Hz ( -3 dB)	
Input Connector	Push terminal			
Enclosure Material	Polypropylene resin			
Color	Dark gray	White	Dark gray	White
Dimensions	250 (W) × 157 (H) × 169 (D) mm		355 (W) × 210 (H) × 226 (D) mm	
Weight	Approximately 3.9 kg		Approximately 5.5 kg	

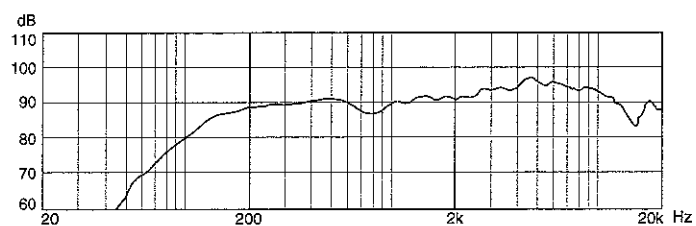
Model No.	F-160WP
Enclosure Type	Bass-reflex type
Speaker Low frequency High frequency	13 cm cone speaker (drip-proof) 3 cm dome speaker (film diaphragm)
Rated Impedance	100 Line : 330 $\Omega$ (30 W), 500 $\Omega$ (20 W), 1 k $\Omega$ (10 W), 2 k $\Omega$ (5 W) 70 Line : 170 $\Omega$ (30 W), 330 $\Omega$ (15 W), 500 $\Omega$ (10 W), 1 k $\Omega$ (5 W), 2 k $\Omega$ (2.5 W)
Rated Input Power	30 W
Output Sound Pressure Level	91 dB (1 W/1 m)(**)
Crossover Frequency	4 kHz (passive network)
Frequency Response	100 - 20,000 Hz ( -10 dB) 150 - 13,000 Hz ( -3 dB)
Input Connector	Push terminal
Enclosure Material	Polypropylene resin
Color	Dark gray
Dimensions	250 (W) $\times$ 157 (H) $\times$ 169 (D) mm
Weight	Approximately 3.9 kg

(\*) Continuous 24 hours pink noise of 50 Hz - 20 kHz  
(\*\*) Pink noise of 330 Hz - 3.3 kHz

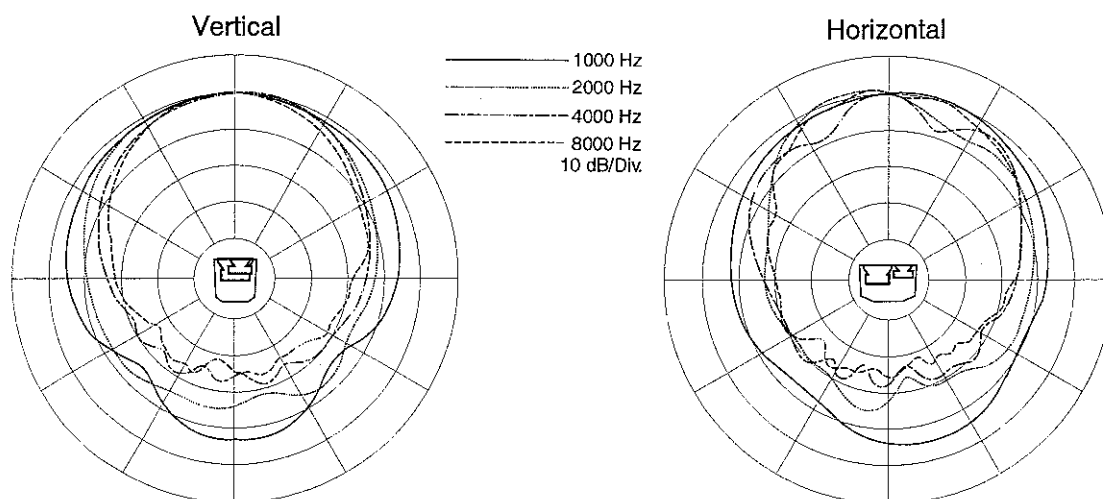
Specifications are subject to change without notice.

## 11. CHARACTERISTIC DIAGRAM

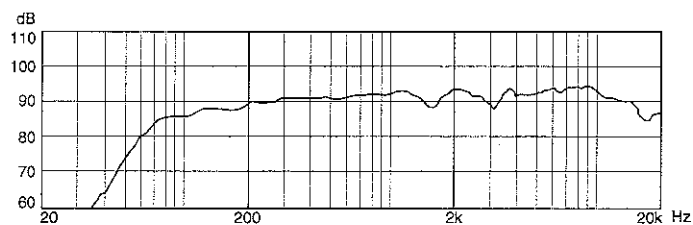
### ● F-160 Series Frequency Response (1 W/1 m)



### ● F-160 Series Directional Characteristics



### ● F-240 Series Frequency Response (1 W/1 m)



### ● F-240 Series Directional Characteristics

