

OPERATING MANUAL

AC Centrifugal Blowers MB Series

Introduction

■ Before using the fan

Only qualified and educated personnel should work with the product. Use the product correctly after thoroughly reading the section "Safety precautions." The product described in this manual has been designed and manufactured to be incorporated in general industrial equipment. Do not use for any other purpose. Oriental Motor Co., Ltd. is not responsible for any damage caused through failure to observe this warning.

Safety precautions

The precautions described below are intended to prevent danger or injury to the user and other personnel through safe, correct use of the product. Use the product only after carefully reading and fully understanding these instructions.

⚠ WARNING	Handling the product without observing the instructions that accompany a "WARNING" symbol may result in serious injury or death.
⚠ CAUTION	Handling the product without observing the instructions that accompany a "CAUTION" symbol may result in injury or property damage.
Note	The items under this heading contain important handling instructions that the user should observe to ensure safe use of the product.

⚠ WARNING

- Do not use the product in explosive or corrosive environments, in the presence of flammable gases, locations subjected to splashing water, or near combustibles. Doing so may result in fire, electric shock or injury.
- Only qualified and educated personnel should be allowed to perform installation, connection, operation and inspection/troubleshooting of the product. Handling by unqualified and uneducated personnel may result in fire, electric shock or injury.
- Do not transport, install the product, perform connections or inspections when the power is on. Always turn the power off before carrying out these operations. Failure to do so may result in electric shock.
- Turn off the power in the event the overheat protection device (thermal protector) is triggered. Failure to do so may result in injury or damage to equipment, since the fan will start abruptly when the overheat protection device (thermal protector) is automatically reset.
- The fan for class I equipment. Be sure to ground the Protective Earth Conductor when installing the fan. Failure to do so may result in electric shock.
Lüfter zur Verwendung in Geräten der Schutzklasse I. Erden Sie den Motor bei der Installation mit einem Schutzerdungskabel. Nichtbeachtung dieses Hinweises könnte einen elektrischen Schlag verursachen.
- Install the fan in an enclosure in order to prevent electric shock or injury.
- Keep the input-power voltage within the specified range to avoid fire and electric shock.
- Connect the cables securely according to the wiring diagram in order to prevent fire and electric shock.
- Do not forcibly bend, pull or pinch the cable. Doing so may result in fire.
- Turn off the power in the event of a power failure, or the fan will suddenly start when the power is restored and may cause injury or damage to equipment.
- Do not disassemble or modify the fan. This may cause electric shock or injury. Refer all such internal inspections and repairs to the branch or sales office from which you purchased the product.

⚠ CAUTION

- Do not use the fan beyond its specifications, or electric shock, injury or damage to equipment may result.
- Keep your fingers and objects out of the openings in the fan. This may cause injury.
- Do not touch the motor during operation or immediately after stopping. The surface is hot and may cause a burn.
- Do not hold the rotating parts (impeller) of the fan or lead wire. This may cause injury.
- Keep the area around the fan free of combustible materials in order to prevent fire or a skin burn(s).
- To prevent the risk of damage to equipment, leave nothing around the fan that would obstruct ventilation.
- Do not touch the rotating parts (impeller) when the fan is in operation. This may cause injury. The use of the accessory finger guard is recommended to ensure protection.
Wegen der Verletzungsgefahr dürfen die Lüfterflügel bei Ventilatorbetrieb nicht berührt werden. Der Gebrauch des als Sonderzubehör erhältlichen Fingerschutzes ist empfehlenswert, um erhöhte Sicherheit zu gewährleisten.
- When an abnormality is noted, stop the operation immediately, or fire, electric shock or injury may occur.
- The motor's surface temperature may exceed 70 °C (158 °F), even under normal operating conditions. If a fan is accessible during operation, post the warning label shown in the figure in a conspicuous position to prevent the risk of skin burn(s).
- Dispose the product correctly in accordance with laws and regulations, or instructions of local governments.



Warning label

Thank you for purchasing an Oriental Motor product.

This Operating Manual describes product handling procedures and safety precautions.

- Please read it thoroughly to ensure safe operation.
- Always keep the manual where it is readily available.

Preparation

Verify the model number of the purchased product against the number shown on the package label. The fan model name is listed on the fan nameplate.

■ Checking the product

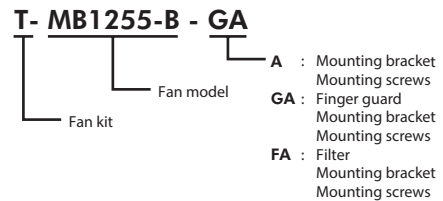
Verify that the items listed below are included. Report any missing or damaged items to the branch or sales office from which you purchased the product. A plug cord is not supplied with the fan kit product of the lead wire type.

Fan	Fan kit
<input type="checkbox"/> Fan	<input type="checkbox"/> Fan
<input type="checkbox"/> OPERATING MANUAL (this document)	<input type="checkbox"/> OPERATING MANUAL (this document)
<input type="checkbox"/> Capacitor *1	<input type="checkbox"/> Capacitor *1
<input type="checkbox"/> Capacitor cap *1	<input type="checkbox"/> Capacitor cap *1
	<input type="checkbox"/> Mounting bracket
	<input type="checkbox"/> Mounting screws
	<input type="checkbox"/> Finger guard or Filter *2

*1 Only for single-phase models except for **MB630** type and **MB520** type.

*2 Except for **MB1665** type, **MB630** type and **MB520** type.

How to identify the fan kit model



Installation

■ Location for installation

Install it in a well-ventilated location that provides easy access for inspection. The location must also satisfy the following conditions:

- Inside an enclosure that is installed indoors
- Operating ambient temperature -10 to +50 °C (+14 to +122 °F) [non-freezing]
MB630 type and **MB520** type: -10 to +60 °C (+14 to +140 °F)
- Operating ambient humidity 85%, maximum [non-condensing]
- Area that is free of explosive atmosphere or toxic gas (such as sulfuric gas) or liquid
- Area not exposed to direct sun
- Area free of excessive amount of dust, iron particles or the like
- Area not subject to splashing water (rains, water droplets), oil (oil droplets) or other liquids
- Area not subject to continuous vibration or excessive shocks
- Area free of radioactive materials, magnetic fields or vacuum
- Area free of excessive electromagnetic noise (from welders, power machinery, etc.)

When using near a switching circuit or high-frequency power supply, the induced current may flow inside the fan due to electromagnetic noise (conductive noise, radiative noise). If the induced current flows, the electric corrosion is caused in the bearings of the fan. As a result, it may generate the noise or shorten the service life of the products. Use the fan in the environment that the electromagnetic noise does not cause.

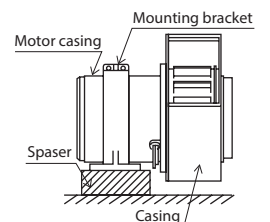
■ How to install the fan

Install the fan onto an appropriate flat metal plate having excellent vibration resistance and heat conductivity.

● Use of mounting brackets (sold separately)

An accessory mounting bracket the diameter of the motor casing is available. Be sure to use a spacer so that the casing does not touch the surface to which the mounting bracket is secured.

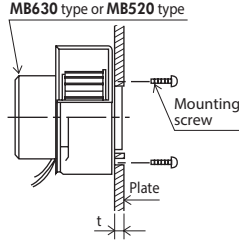
Model	Screw size	Tightening torque
MB630 type MB520 type	M3	0.6 N·m (5.3 lb-in)
Other MB series	M4	1.4 N·m (12.4 lb-in)



● Securing the fan to the equipment with mounting screws

MB630 type and **MB520** type have three mounting screw holes* on the casing so that the fan can be secured without using an accessory mounting bracket. Install the fan by using screws (not supplied), after making corresponding screw holes on the surface where the fan is to be mounted by referring to the inlet dimensions (see general catalog).

Model	Screw size	Tightening torque
MB630 type	M3 P0.5 Length=t+3.5 mm (0.14 in.)	0.6 N·m (5.3 lb-in)
MB520 type	M3 P0.5 Length=t+2.5 mm (0.1 in.)	

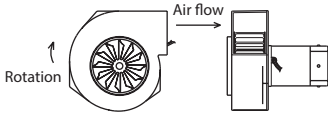


t: Thickness of mounting plate [Unit: mm (in.)]
Tolerance of the length of screw: ±0.5 mm (0.02 in.)

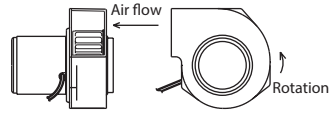
* These mounting screw holes are also used to install a finger guard (sold separately).
When using the finger guard, the fan cannot be screwed to the equipment directly. Use the dedicated mount bracket.

● Rotational direction and air orientation

● MB1665 type

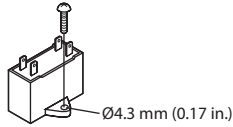


● Other MB series



■ Mounting the capacitor

Before mounting the provided capacitor, check that the capacitor's capacitance matches that stated on the fan's name plate. Mount the capacitor securely by using M4 screws (not provided).

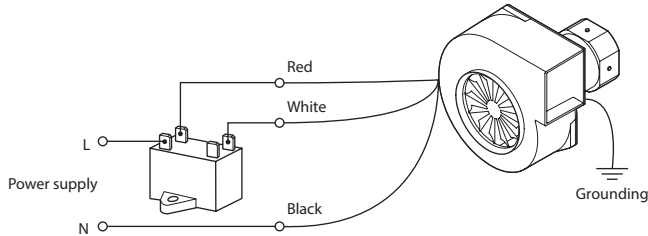


Note

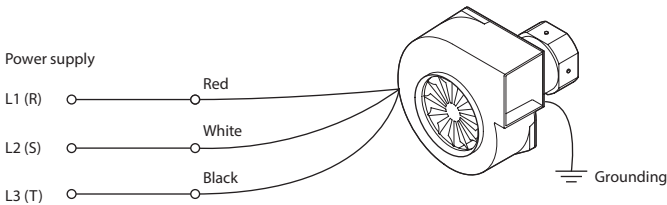
- Do not let the screw fastening torque exceed 1 N·m (8.8 lb-in) to prevent damage to the mounting foot.
- Mount capacitor at least 10 cm (3.94 in.) away from the motor. If it is located closer, the life of the capacitor will be shortened.

Wiring

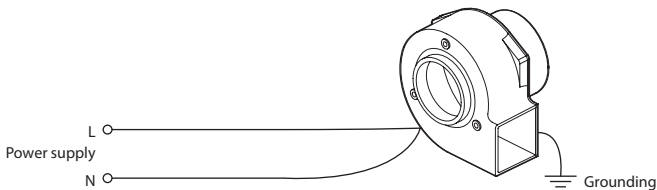
● MB1665-B, MB1665-D, MB1255-B, MB1255-D, MB1040-B, MB1040-D, MB840-B, MB840-D



● MB1665-T, MB1255-T, MB840-T

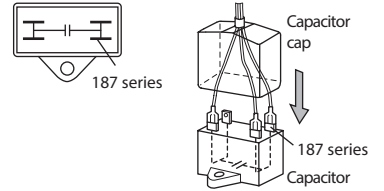


● MB630-B, MB630-D, MB520-B, MB520-D



■ Connecting the capacitor

When crimp terminals are used, use the FASTON terminals 187 Series (TE Connectivity). Use the included capacitor cap to insulate the capacitor terminal connection. The capacitor has four terminals that are internally connected as shown in the figure.



Note

For lead wire connection, use one lead wire for each individual terminal.

Overheat protection

This fan is equipped with one of two methods to prevent burning the fan as a result of abnormal heating.

● Thermal protection (MB1665 type, MB1255 type, MB1040 type and MB840 type)

The fan uses a thermal protector for overheat protection. Once the temperature reaches a specified level, the internal thermal protector that has an automatic return feature is triggered to stop the fan operation. Be sure to turn off the power when checking the thermal protector.

Operating temperature of thermal protectors

Open [Power OFF]..... 120±5 °C (248±9 °F) **MB1665** type 130±5 °C (266±9 °F)
Close [Power ON]..... 76±20 °C (169±36 °F) **MB1665** type 85±20 °C (185±36 °F)

● Impedance protection (MB630 type and MB520 type)

Impedance protection means the fan will not burn out in the event of a lockup.

Regulations and standards

■ UL Standards, CSA Standards

This product is recognized by UL under the UL and CSA Standards.
Thermal class UL/CSA Standards:105(A) **MB1665** type only 130 (B)

■ CE Marking

This product is affixed the CE Marking under the Low Voltage Directive. (Excluding **MB1665** type)

Applicable standards

Overvoltage category II, Pollution degree 2, Class I equipment

If the overvoltage category III is required based on the equipment, supply the rated voltage to the fan via an isolation transformer.

■ RoHS Directive

This products do not contain the substances exceeding the restriction values.

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