

Blowers for mounting to MDD Motors

Applications

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Purpose of documentation It supplies information for

- selecting a blower to match a specific type of motor,
- integrating the motor with blower into the structure of the machine, and,
- determining the necessary order codes.

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1. Applications

MDD motors can be equipped with surface ventilation for extreme loads such as continuous start-stop operations with high repetitive rates.

Advantages The surface ventilation equipment, or blower, can be supplied as an independent unit separate of the motor.

This offers the following advantages:

- the MDD motors can be optionally equipped with or without a blower,
- a blower can be mounted to an MDD motor at a later point in time,
- cuts down on maintaining replacement parts (the blower and the MDD motor can be stored separately and not installed until required).

Variations Surface ventilation offers the following structural variations:

- with an axial blower
- with a radial blower

Blowers with either

- AC 230 V or
- AC 115 V

are available.

1.1. Axial blower

Axial blowers are most suited for those applications that require a construction that is as slender as possible. This variation is not possible with MDD motors with stub shaft.

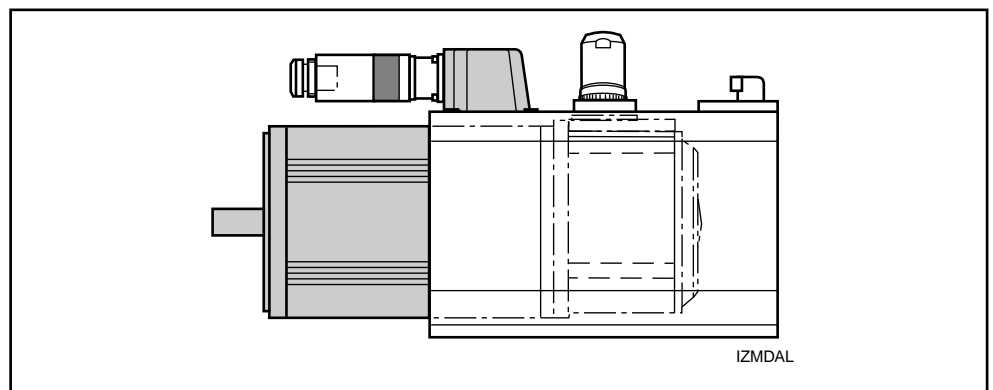


Figure 1.1: MDD motor with an axial blower

1.2. Radial blowers

A radial blower is most suited for those applications requiring a construction which is as short as possible. Only radial blowers are suited for surface ventilation in MDD motors with stub shaft.

Radial blowers should also preferably be used in those cases where higher shock requirements must be met.

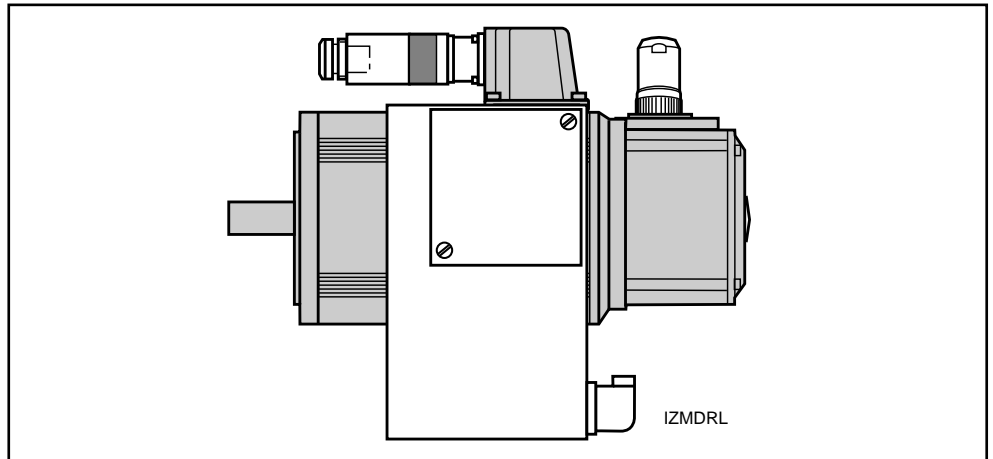


Figure 1.2: MDD motor with a radial blower

2. Selecting the blower

2.1. Axial blower

Use the following selection list to determine which blower can be used with which motor type:

Motor type	Axial blower
MDD 065 ¹⁾	LEMD-AB065X•L1
MDD 071 ²⁾	LEMD-AB071X•L1
MDD 090	LEMD-AB090X•L1
MDD 093	LEMD-AB093X•L1
MDD 112	LEMD-AB112X•L1
MDD 115	LEMD-AB112X•L1

Complete the items labelled „•“ in the selection lists using the data listed in section 4.
 1) No axial surface ventilation with MDD 065A .
 2) No axial surface ventilation with MDD 071A.

Figure 2.1: Selection list for axial blowers



An axial blower cannot be used on a motor with stub shaft.

2.2. Radial blowers

Use the following selection list to determine which blower can be used with which motor type:

Motor type	Radial blower
MDD 071B, 071C	LEMD-RB071B •XX
MDD 090B, 090C, 093B, 093C, 093D	LEMD-RB090B •XX
MDD 112A	LEM -RB112A •XX
MDD 112B, 115A, 115B	LEM -RB112B •XX
MDD 112C, 112D, 115C, 115D	LEM -RB112C •XX

Complete the items labelled „•“ in the selection lists using the data listed in section 4.

Figure 2.2: Selection list for radial blowers

3. Technical data

3.1. Power data

3.1.1. Power data of a cooled servo-motor

The power data of cooled servo-motors are listed in the documentation about the individual motors.

3.1.2. Power data of an axial blower

Blower	Rated voltage U	Rated current I	Power consumption S	Frequency f	Weight m
Type \ Unit	V _{AC}	A	VA	Hz	kg
LEMD-AB065X1L1	230	0.12/0.11	17/15	50/60	approx. 1.1
LEMD-AB065X2L1	115	0.23/0.22	17/15	50/60	approx. 1.1
LEMD-AB071X1L1	230	0.14/0.13	23/20	50/60	approx. 2.3
LEMD-AB071X2L1	115	0.28/0.26	23/20	50/60	approx. 2.3
LEMD-AB090X1L1	230	0.30/0.28	41/39	50/60	approx. 3.3
LEMD-AB090X2L1	115	0.60/0.57	41/39	50/60	approx. 3.3
LEMD-AB093X1L1	230	0.30/0.28	41/39	50/60	approx. 3.3
LEMD-AB093X2L1	115	0.60/0.57	41/39	50/60	approx. 3.3
LEMD-AB112X1L1	230	0.30/0.28	41/39	50/60	approx. 3.3
LEMD-AB112X2L1	115	0.60/0.57	41/39	50/60	approx. 3.3

Figure 3.1: Power data of an axial blower

3.1.3. Power data of a radial blower

Blower	Rated voltage U	Rated current I	Power consumption S	Frequency f	Weight m
Type \ Unit	V _{AC}	A	VA	Hz	kg
LEMD-RB071B1XX	230	0.14/0.13	23/20	50/60	approx. 2.2
LEMD-RB071B2XX	115	0.28/0.26	23/20	50/60	approx. 2.2
LEMD-RB090B1XX	230	0.30/0.28	41/39	50/60	approx. 3.2
LEMD-RB090B2XX	115	0.60/0.57	41/39	50/60	approx. 3.2
LEM -RB112•1XX	230	0.30/0.28	41/39	50/60	approx. 3.2
LEM -RB112•2XX	115	0.60/0.57	41/39	50/60	approx. 3.2

Figure 3.2: Power data of a radial blower

3.1.4. General data

The following general data apply to all blowers:

Ambient temperature in °C	0°... + 45°
Protection category of the blower	IP 24
Protection category of the blower motor	IP 44

Figure 3.3: Table of general blower data

3.1.5. Rating plate specifications

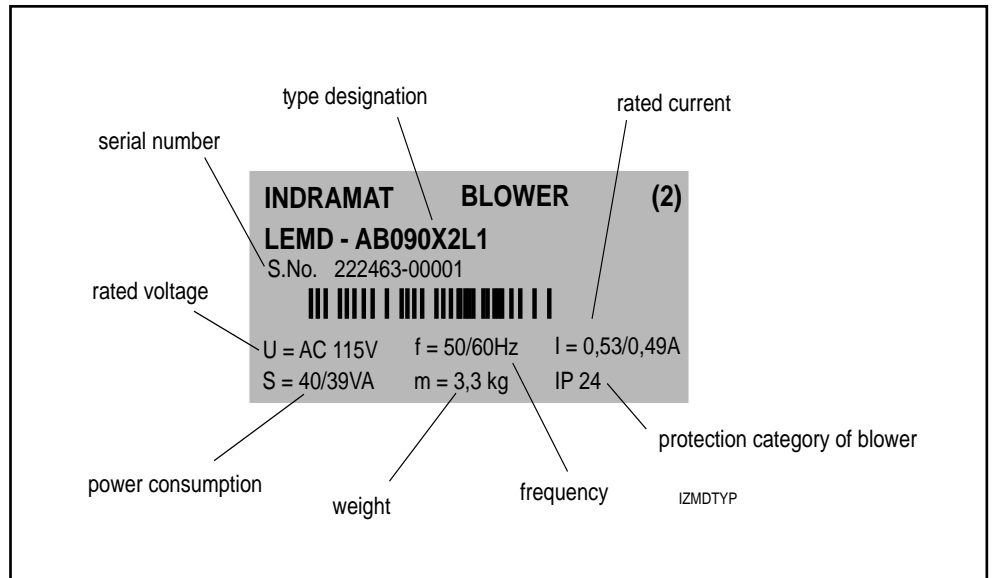


Figure 3.4: Rating plate specifications

3.2. Dimensional data for an axial blower

3.2.1. Axial blower for an MDD065

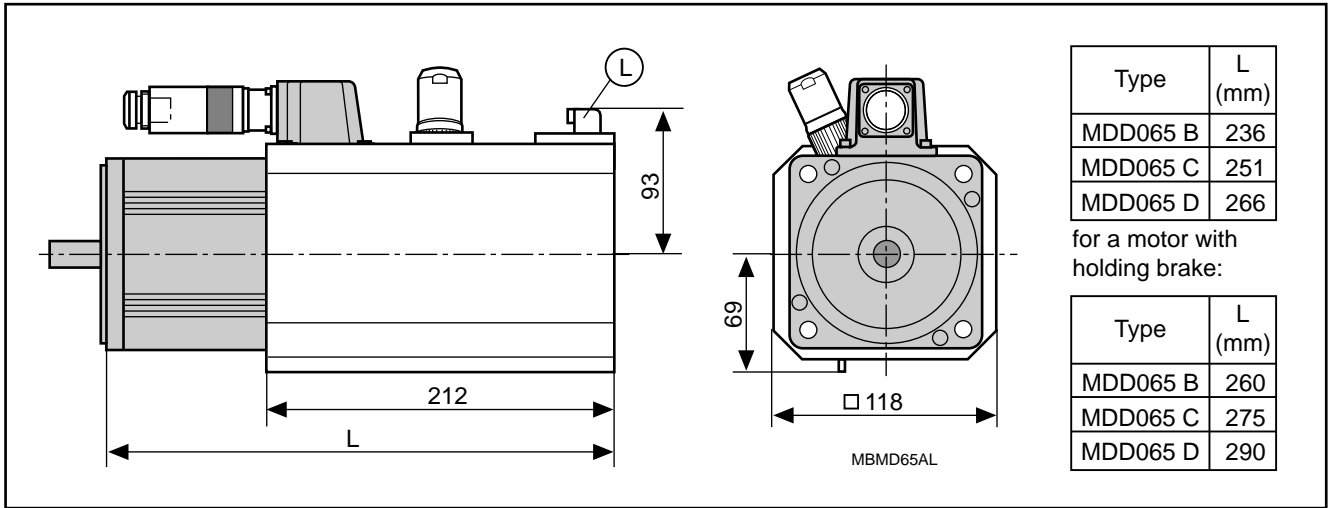


Figure 3.5: Dimensional data for an MDD065 with axial surface ventilation

3.2.2. Axial blower for an MDD071

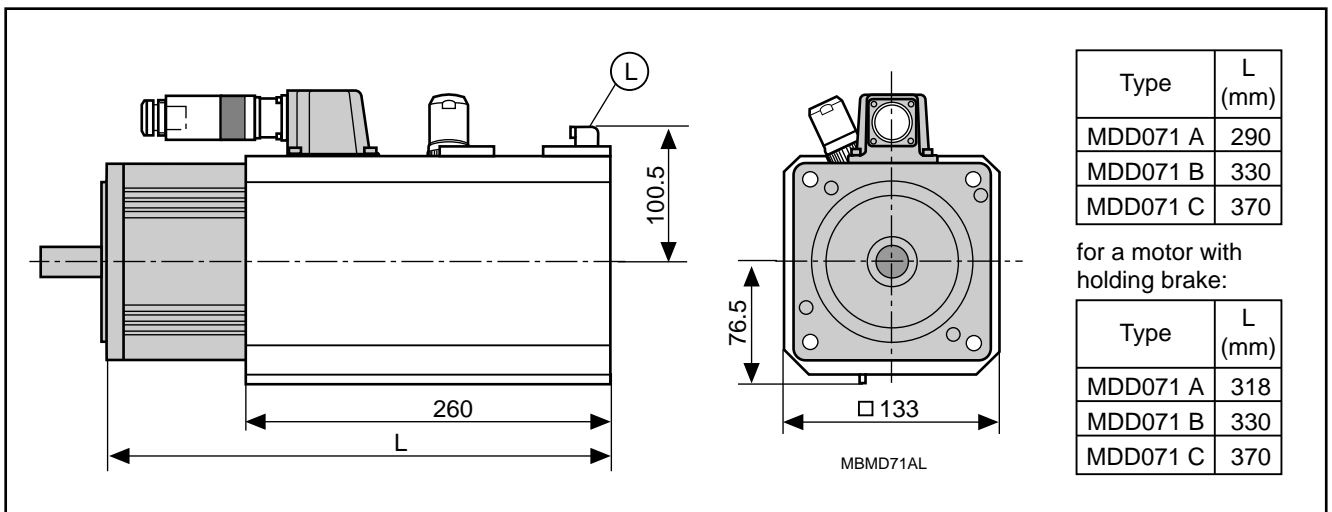


Figure 3.6: Dimensional data for an MDD071 with axial surface ventilation

3.2.3. Axial blower for an MDD090

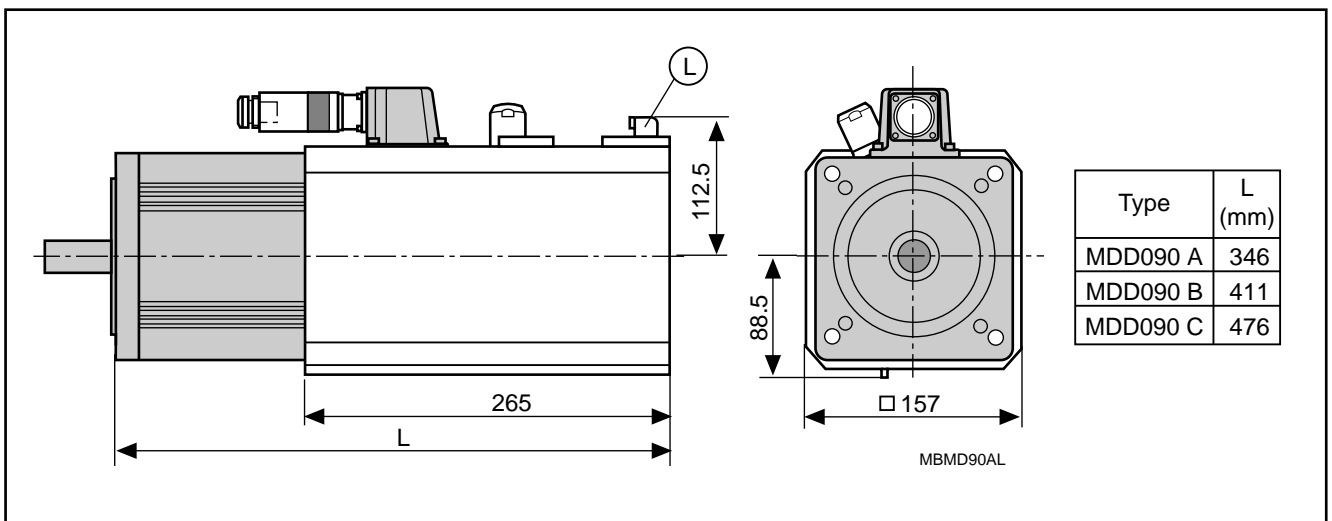


Figure 3.7: Dimensional data for an MDD090 with axial surface ventilation

3.2.4. Axial blower for an MDD093

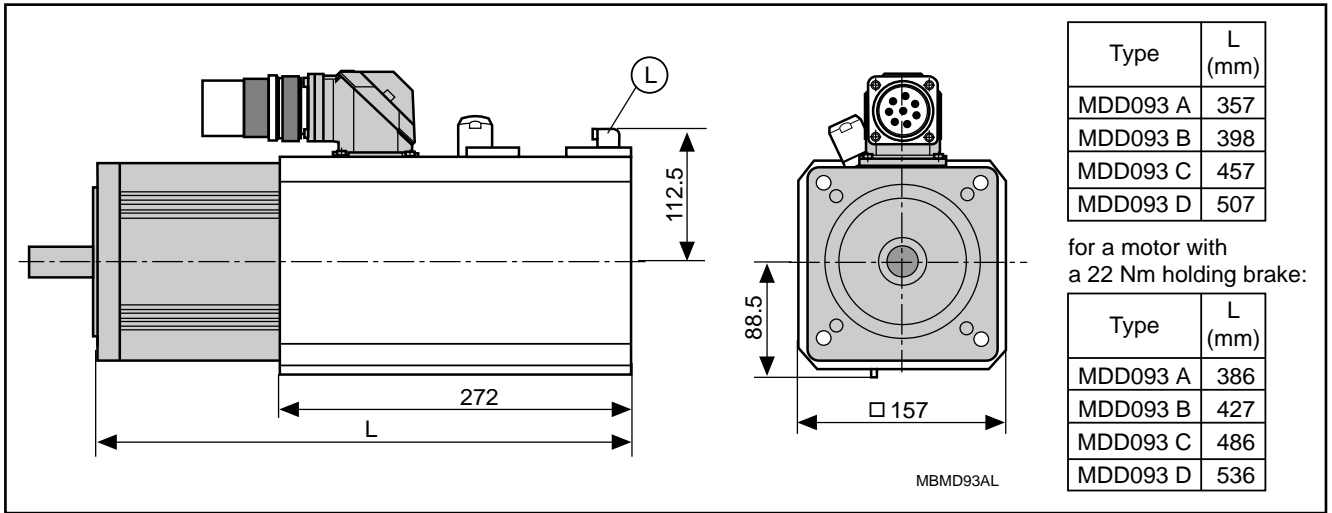


Figure 3.8: Dimensional data for an MDD093 with axial surface ventilation

3.2.5. Axial blower for an MDD112

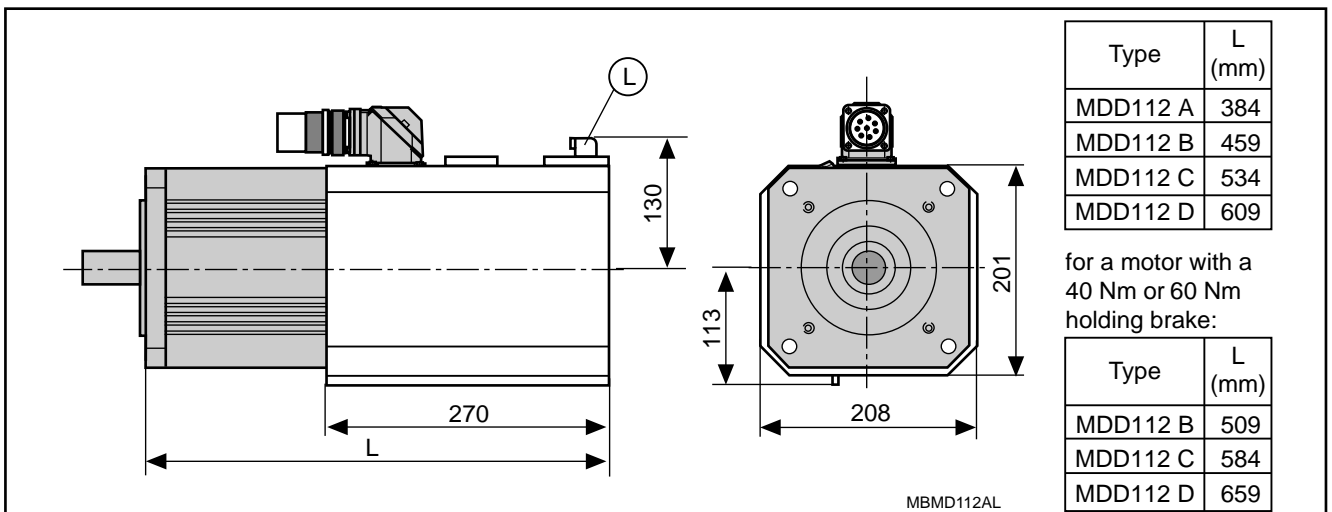


Figure 3.9: Dimensional data for an MDD112 with axial surface ventilation

3.2.6. Axial blower for an MDD115

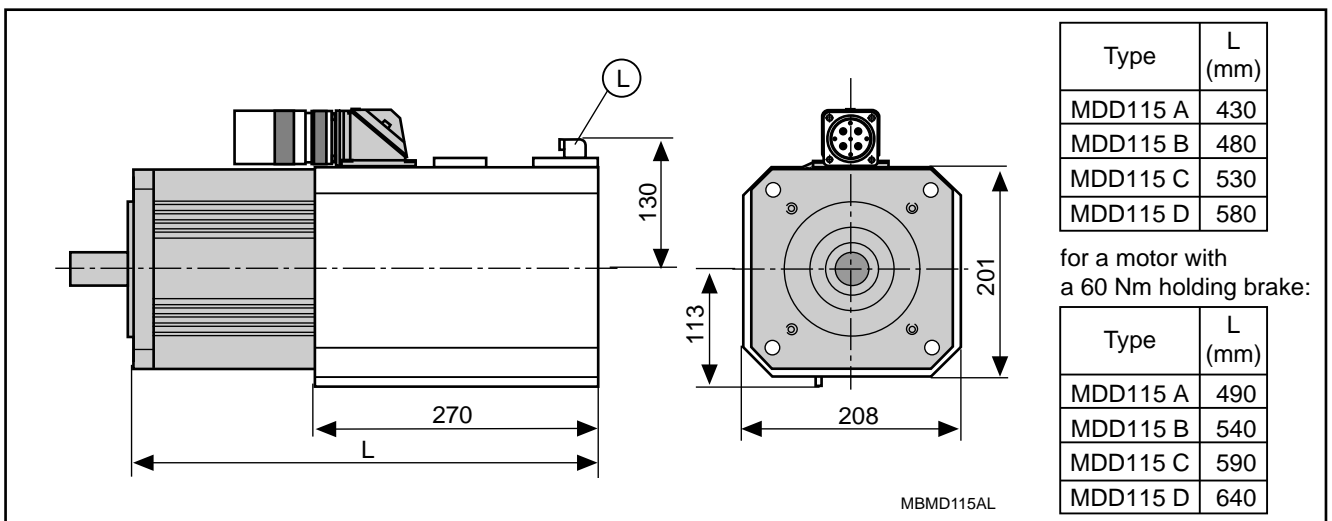


Figure 3.10: Dimensional data for an MDD115 with axial surface ventilation

3.3. Dimensional data for radial blowers

3.3.1. Radial blower for an MDD071

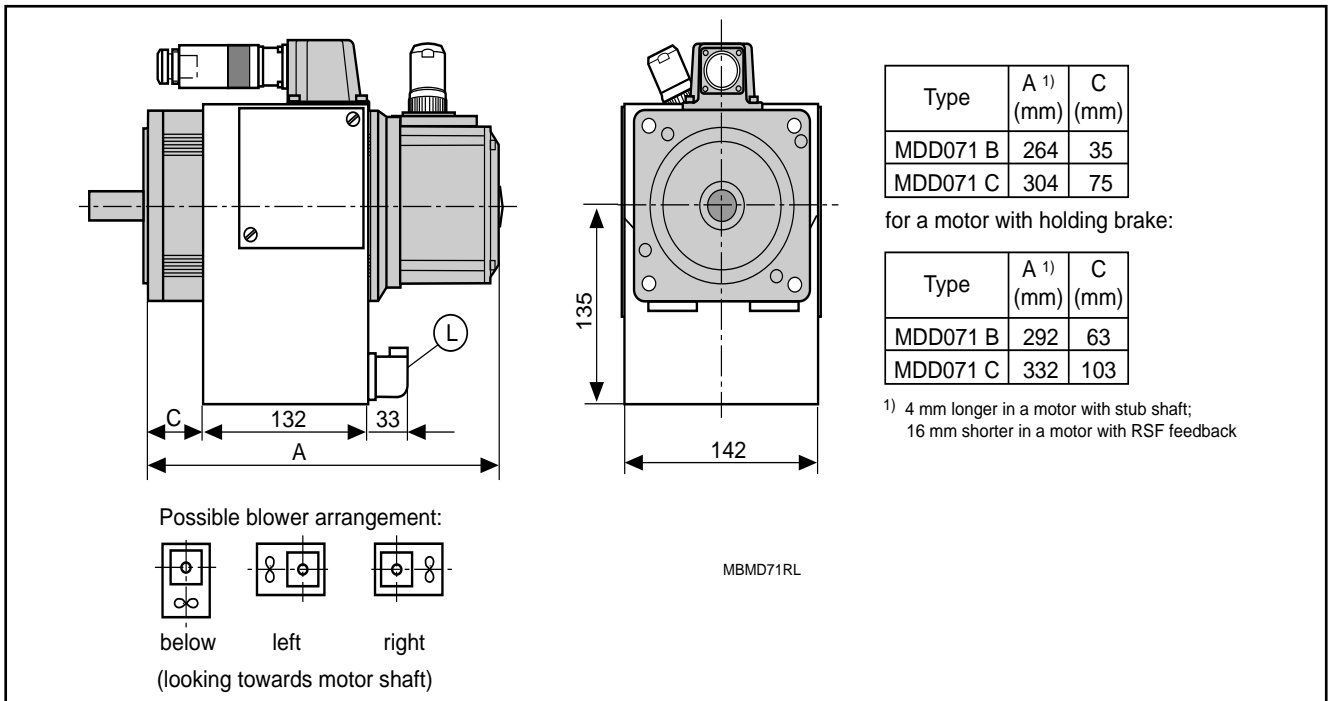


Figure 3.11: Dimensional data for an MDD071 with radial surface ventilation

3.3.2. Radial blower for an MDD090

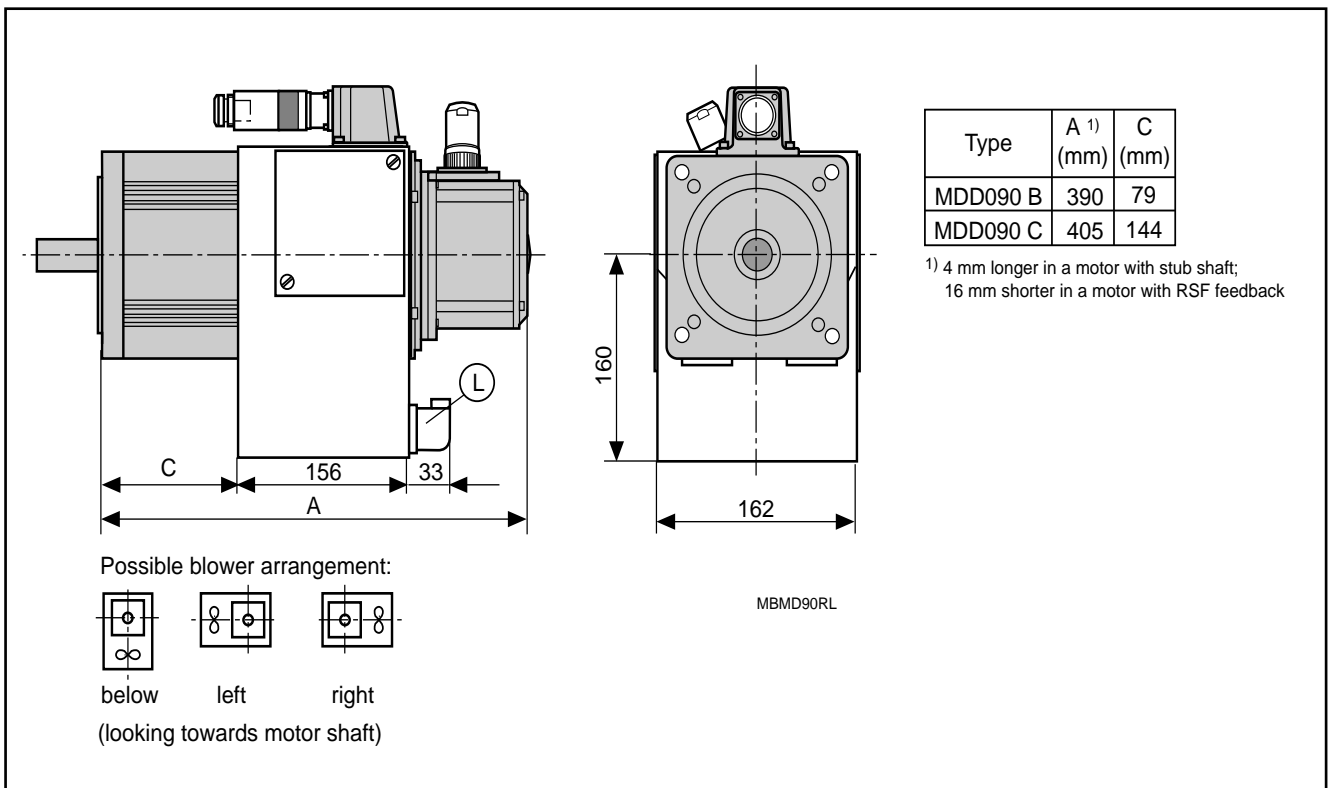


Figure 3.12: Dimensional data for an MDD090 with radial surface ventilation

3.3.3. Radial blower for an MDD093

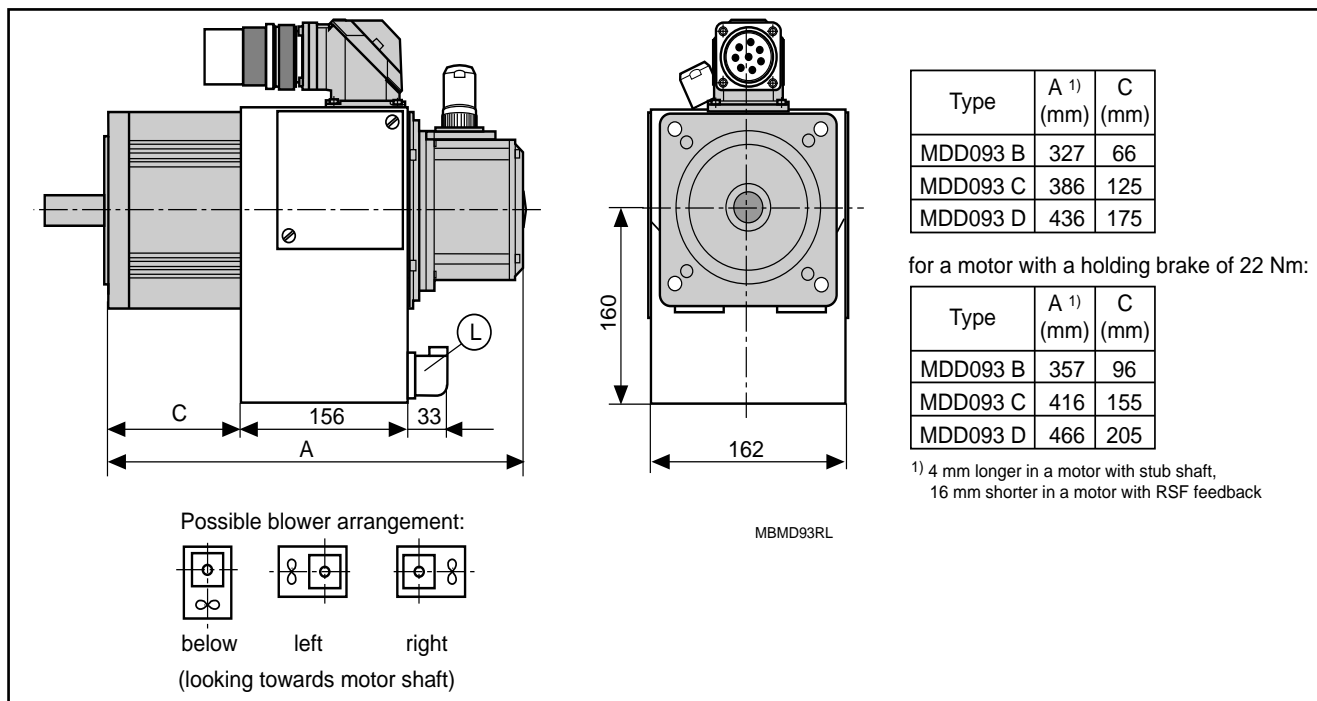


Figure 3.13: Dimensional data for an MDD093 with radial surface ventilation

3.3.4. Radial blower for an MDD112

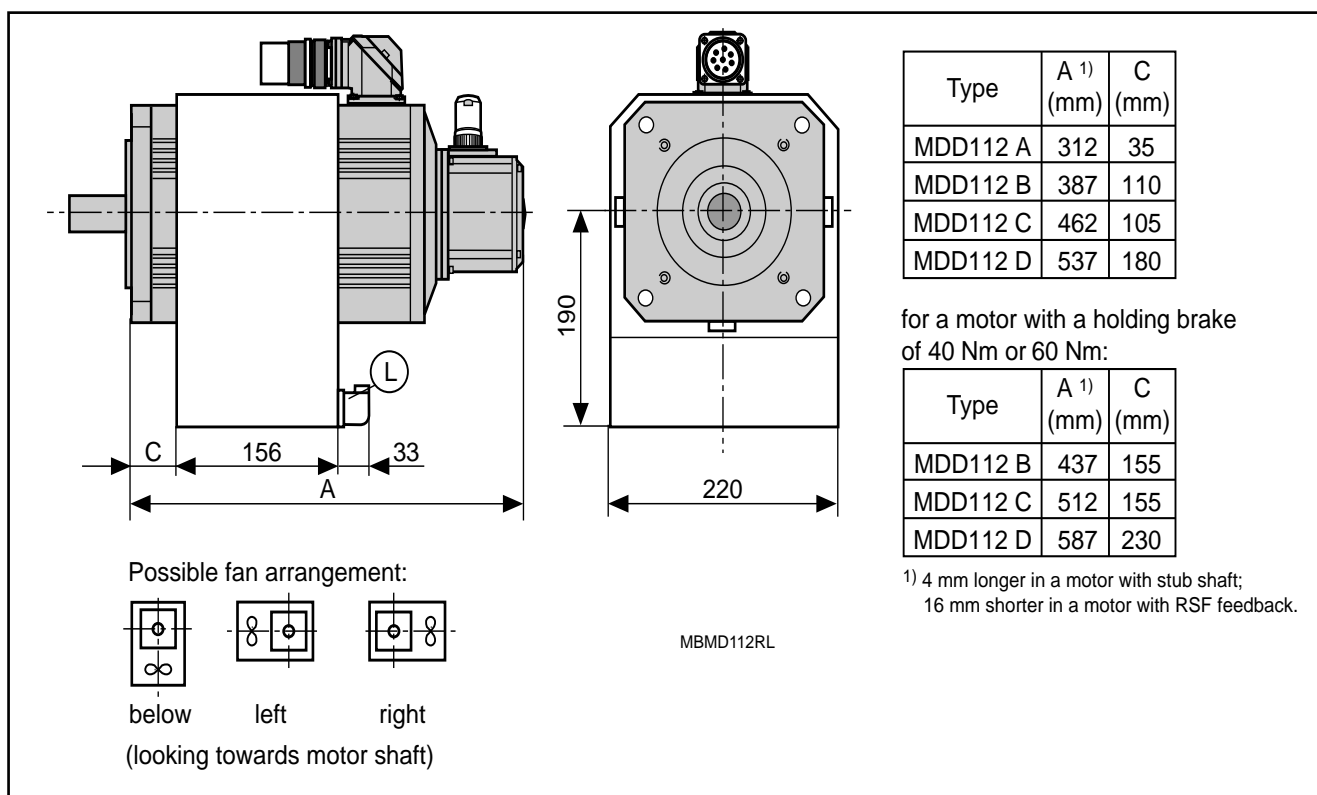


Figure 3.14: Dimensional data for an MDD112 with radial surface ventilation

3.3.5. Radial blower for an MDD115

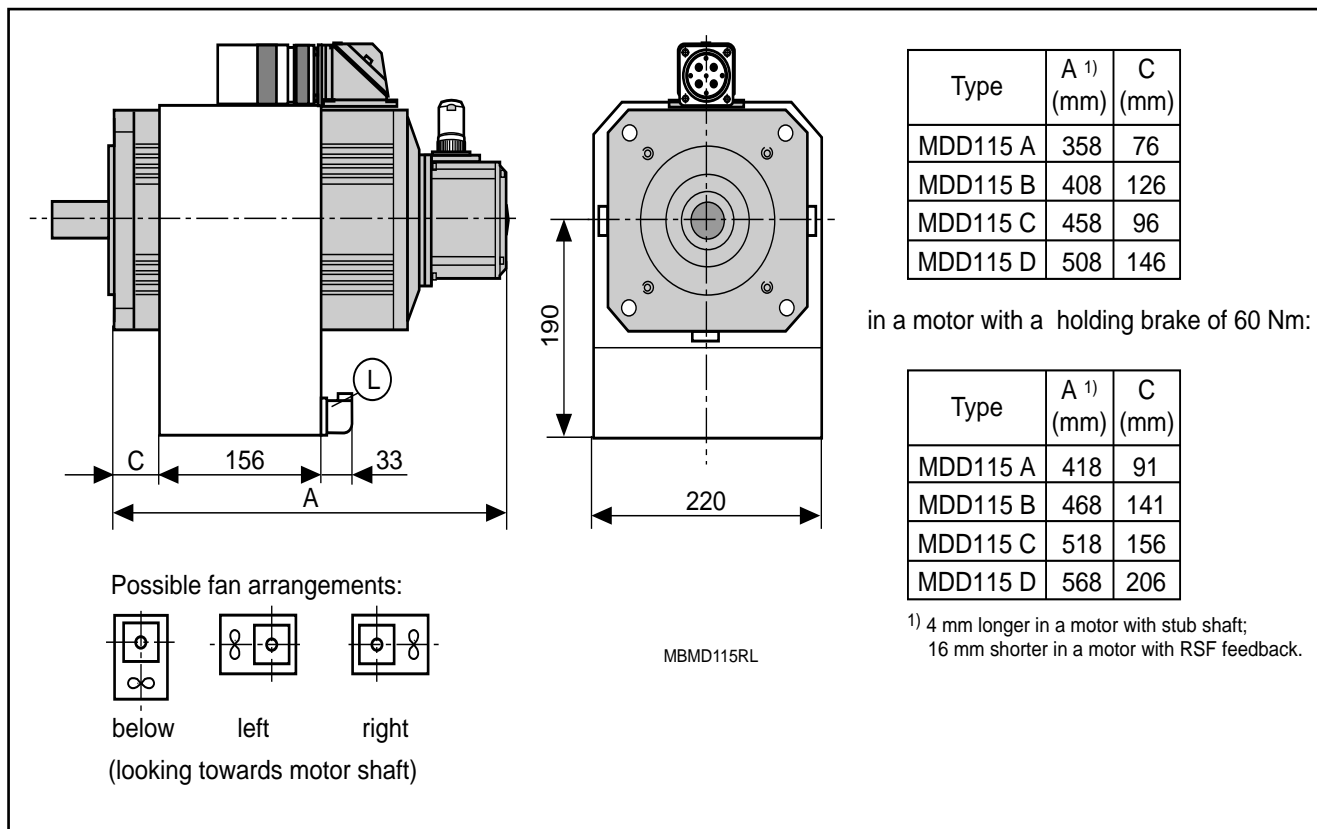


Figure 3.15: Dimensional data for an MDD115 with radial surface ventilation

3.4. Mounting the blower to the motor



To avoid the danger of injury to personnel from rotating parts, disengage the electrical connections to the blower and the motor while mounting the blower.

3.4.1. Axial blowers

LEMD-AB065 for MDD065
LEMD-AB071 for MDD071
LEMD-AB090 for MDD090
LEMD-AB093 for MDD093

The mounting procedure is as follows:

1. Slacken the electrical connections to the motor and the blower.
2. Slacken the clamping screws and any mounted cover plates.
3. Release the fixing bolts of the blower which are on the side opposite the electrical blower connections.
4. Mount both parts of the fan cowl to the position designated in the diagram.
5. Tighten the fixing bolts of the blower. Make sure that the screws are properly in place.
6. Tighten clamping screws and apply the electrical connections.
7. Remount any cover plates possibly removed in position 2.

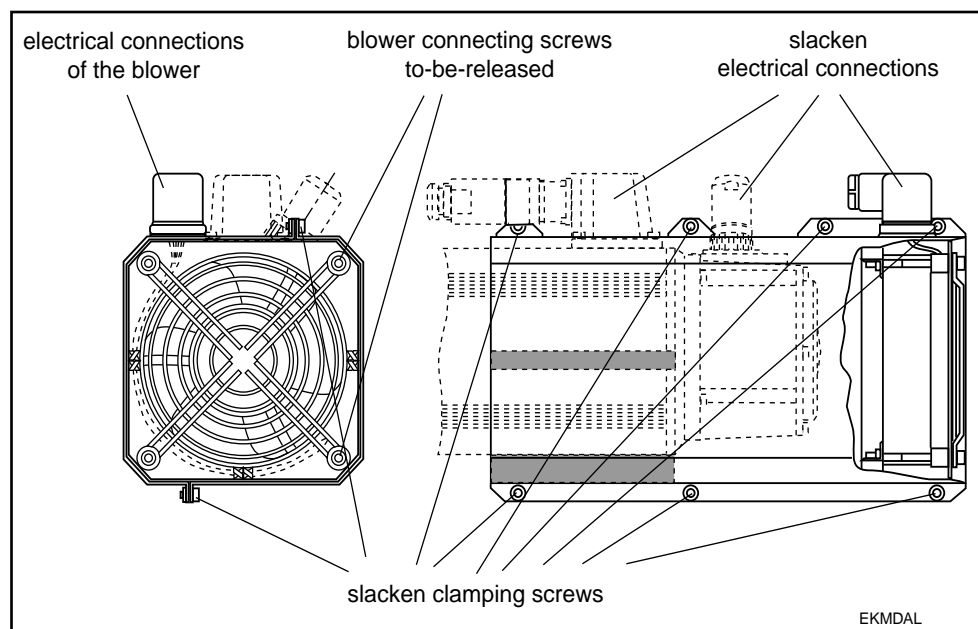


Figure 3.16: Mounting the axial blowers LEMD-AB065, LEMD-AB071, LEMD-AB090 and LEMD-AB093 to the motor

3. Technical data

LEMD-AB112
for *MDD112* or *MDD115*

The mounting procedure is as follows:

1. Slacken all electrical connections to the motor and blower.
2. Loosen the clamping screws and slacken the fixing strip and the cover plate.
3. Insert the fixing strip into the motor stator keyway.
4. Push the hood onto the catch on the motor. Do not damage the rubber edging of the blower. The bevelled ridge grips the slot on the side of the motor.
5. Bring the fixing strip into the correct position under the fixing clamp.
6. Screw the nut, disc and resilient preloading disc onto the windings of the fixing strip.
7. Tighten the clamping screws and apply the electrical connections.
8. Remount the cover plate removed under position 2.

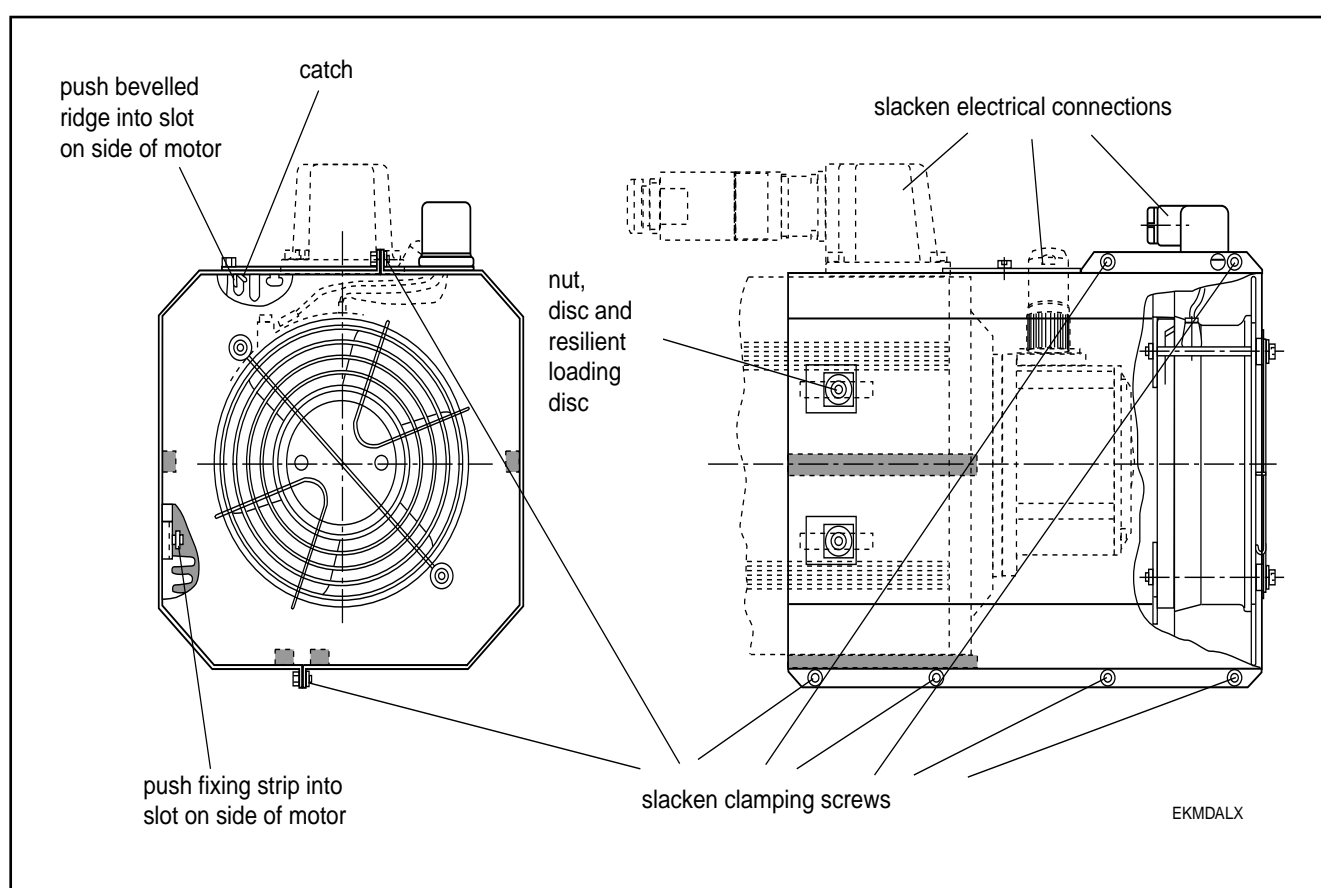


Figure 3.17: Mounting the axial blower LEMD-AB112 to the motor

3.4.2. Radial blowers

LEMD–RB071 for MDD071
LEMD–RB090 for MDD090
or for MDD093

The positioning of the blowers in reference to the motor can be selected at the time of installation.

The mounting order is as follows:

1. Disconnect the electrical connections to the motor and the blower.
2. Remove mounting cover and any cover plates (A or B) attached thereto. Depending upon the desired arrangement, additionally remove either cover plate A or B.
3. Insert the motor into the blower and mount it in the position designated in the dimensional data. The motor will not perform to the fullest if the proper position is not achieved. Do not damage the rubber edging of the blower during mounting.
4. Attach and affix the removed mounting cover into place.
5. Apply all electrical connections.
6. The cover plates must be mounted to the blower in such a way that all existing openings are sealed as best as possible.

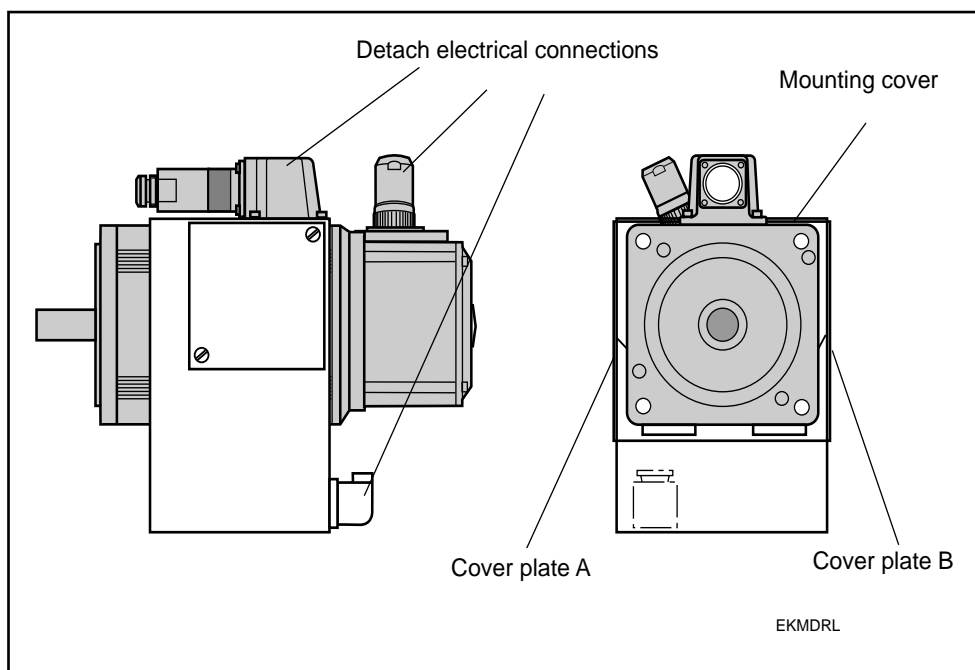


Figure 3.18: Mounting the radial blowers LEMD–RB071 and LEMD–AB090 to the motor

3. Technical data

LEM-RB112 for MDD112
or for MDD115

The position of the blower with respect to the motor can be selected at the time of installation.

The mounting order is as follows:

1. Disconnect the electrical connections to the motor and the blower.
2. Remove mounting cover and any cover plates (A or B) attached thereto. Depending upon the desired arrangement, additionally remove either cover plate A or B.
3. Remove bottom plate fixing screws, remove bottom plate with fixing strip, and slacken fixing strip nuts.
4. Insert the bottom plate with fixing strip into the slot on side of the motor. Fix into position $C + 13$ mm. (See Figure 3.14 or 3.15 for position C.)

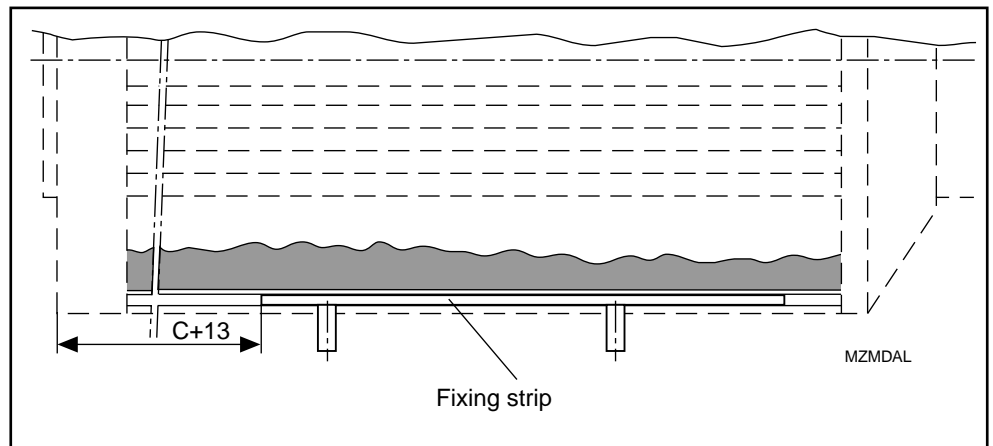


Figure 3.19: Mounting radial blower LEMD-RB112

5. Push blower over bottom plate onto motor, tighten bottom plate fixing screws. Do not damage rubber edging during this procedure.
6. Mount and install the mounting cover.
7. Apply electrical connections.
8. The cover plates must be mounted to the blower in such a way that all existing openings are sealed as best as possible.

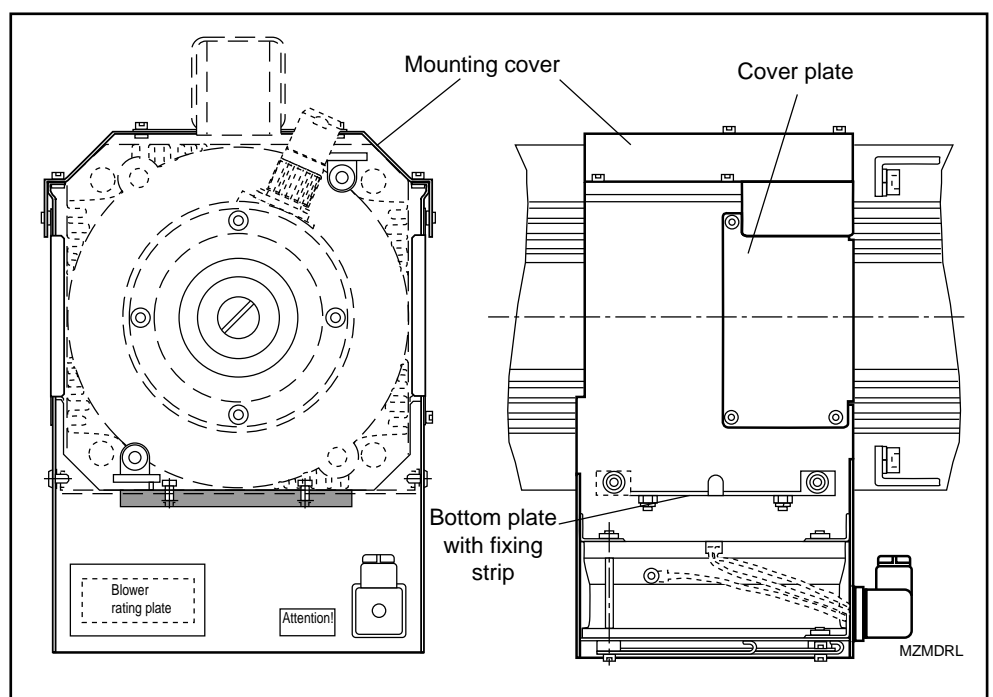


Figure 3.20: Mounting the bottom plate

3.5. Electrical connections

The connecting cable must be a cable with three conductors. Its cross section must be at least 0.75 mm^2 .

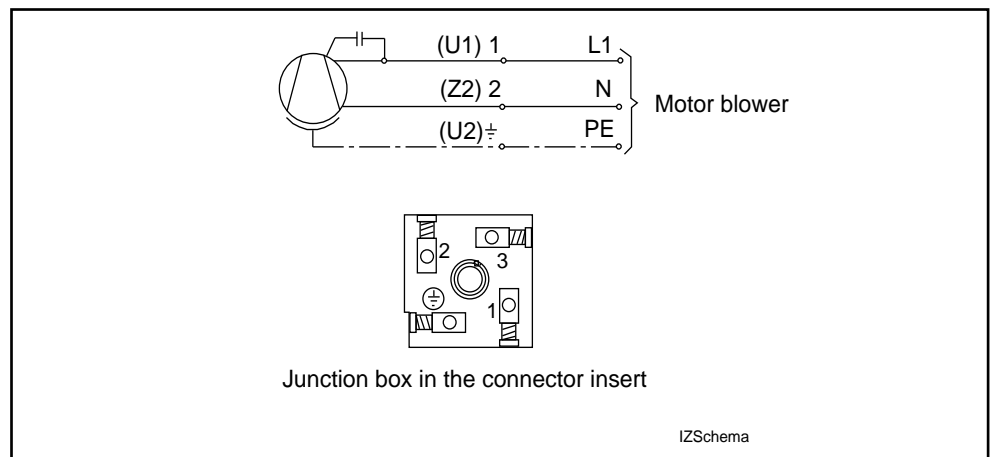


Figure 3.21: Schematic diagram for the blower

Mounting guidelines for mounting the connecting cables to the blower connector: (see Figure 3.22)

- Slacken Pg-screw connection 6 (SW 17).
- Screw filister head screw 1 out of socket 4 using screwdriver 5.
- Remove connector housing 2 with connector insert 3 from socket 4.
- Remove filister head screw 1.
- Pry out connector insert 3 with screwdriver 5 (see Figure 3.22), and pull out of connector housing 2.
- Push Pg-screw connection 6, ring 7, gasket 8, and connector housing 2 onto connecting cable ($3 \times 0.75 \text{ mm}^2$).
- Strip approx. 20 mm off of the outer sheath of the cable, strip approx. 10 mm off of the litz wire. Connect these per above diagram to connector insert 3.
- Push connector insert 3 into connector housing 2. Put filister head screw 1 into place, screw socket 4 and connector together.
- Tighten Pg-screw connection 6. Note strain relief device!

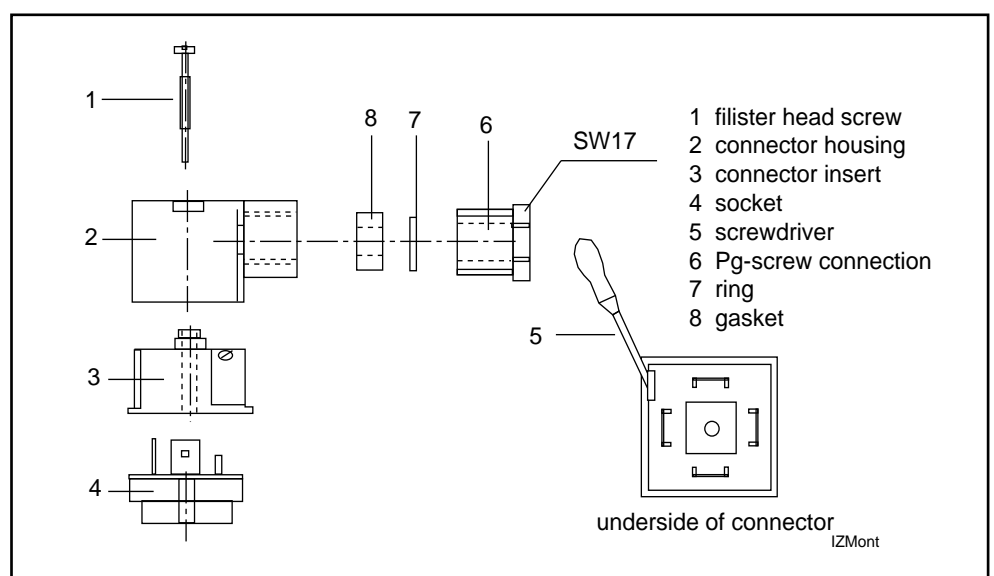


Figure 3.22: Mounting the connecting cable to the blower connector

4. Order details

4.1. Type codes for axial blowers

Type code fields:	Example:	
1. Designation blowers for motors	LEM	L E M
2. Group MDD motors	D	D
3. Cooling method axial	A	A
4. Cooling direction blowing	B	B
5. Size of the motor with blower ¹⁾		1 2 X 1 L 1
MDD065	065 ²⁾	
MDD071	071 ³⁾	
MDD090	090	
MDD093	093	
MDD112 + MDD115	112	
6. Length of the motor with blower any	X	X
7. Rated connection voltage		
AC 230 V	1	
AC 115 V	2	
8. Motor feedback unit		
Digital servo feedback	L1	
Digital servo feedback with integrated multi-turn absolute encoder	L1	
Resolver feedback	L1	
Resolver feedback with integrated absolute encoder with marker pulse	L1	

¹⁾ See selection lists for types or allocations (see section 2)

²⁾ No axial ventilation with an MDD065A.

³⁾ No axial ventilation with an MDD071A.

Figure 4.1: Available variations of axial blowers

4.2. Type codes for radial blowers

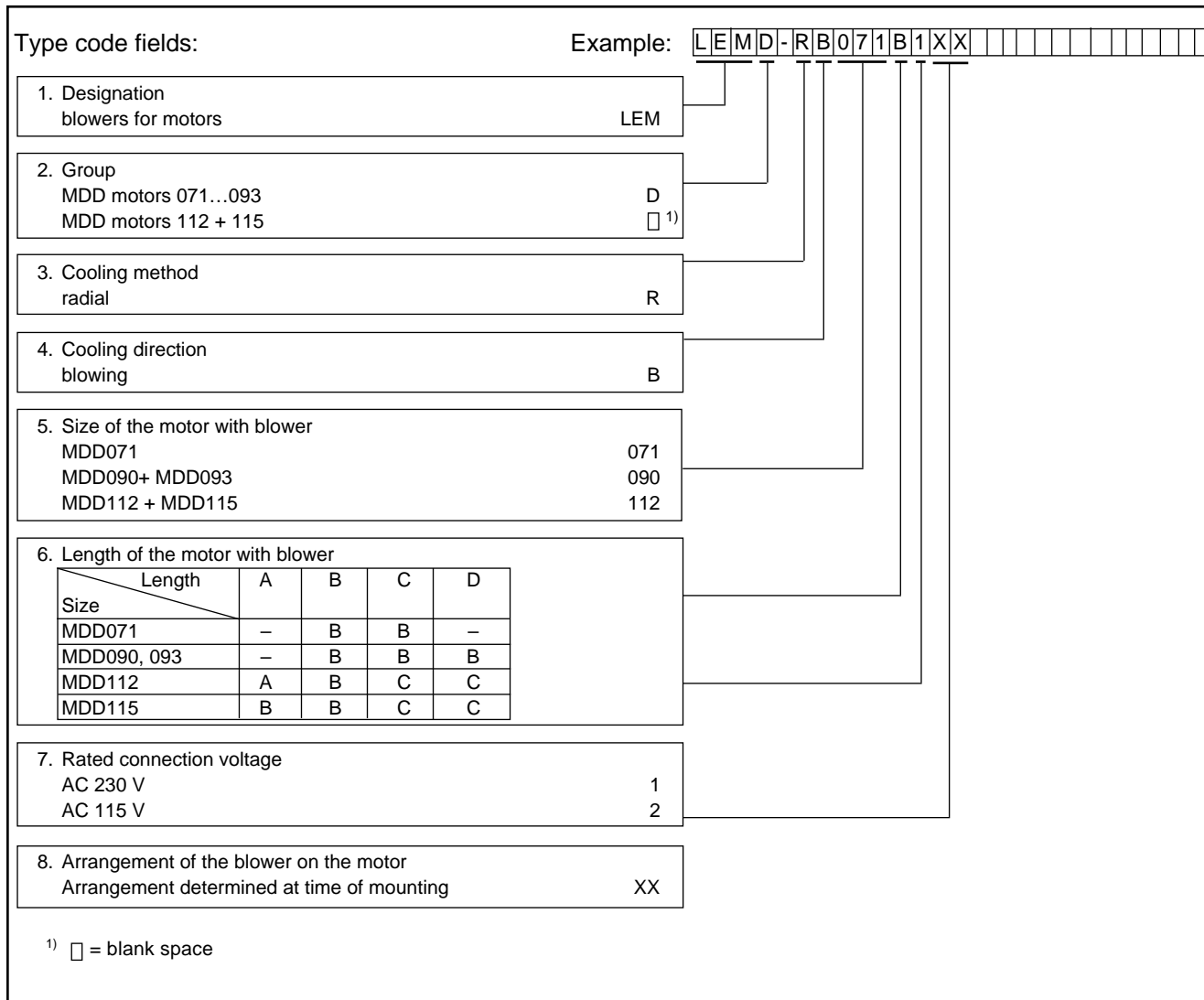


Figure 4.2: Available variations of radial blowers

4.3. Order details for ventilated MDD motors with blowers ordered as separate items

Whether a blower is delivered mounted or not can be determined by using the appropriate order codes.

If the blower is ordered as a sub-item of the motor, then it will be delivered mounted to the motor.

If the blower is ordered as an item separate, in other words, not part of the motor, then it will be delivered not mounted to the motor.

In order to be able to complete the order in proper detail, the associated "Technical Documentation" with title and numbers have been listed with the sample orders.

4.3.1. Blower mounted to motor

Sample order:		
Item	Designation	Technical documentation
1	1 AC servo motor MDD090 C-N-030-N2L-110GB0	„Project planning documents“ MDD065 no. 9.578.056.4-XX MDD071 no. 9.578.058.4-XX MDD090 no. 9.578.057.4-XX MDD093 no. 9.578.054.4-XX MDD112 no. 9.578.059.4-XX MDD115 no. 9.578.064.4-XX
1.1	1 Blower LEMD-AB090X1L1 mounted to item 1	See section 3 of this document!

Figure 4.3: Sample order for blowers mounted to the motor



The position of the blower must be indicated, e.g., "mounted to item 1, on the left", in the text of those radial blowers which offer different mounting positions as an option.

4.3.2. Blower delivered not mounted to motor

Sample order:		
Item	Designation	Technical documents
1	1 AC servo motor MDD090 C-N-030-N2L-110GB0	„Project planning documents“ MDD065 no. 9.578.056.4-XX MDD071 no. 9.578.058.4-XX MDD090 no. 9.578.057.4-XX MDD093 no. 9.578.054.4-XX MDD112 no. 9.578.059.4-XX MDD115 no. 9.578.064.4-XX
1.1	1 Blower LEMD-AB090X1L1	See section 3 of this document!

Figure 4.4: Sample order for blowers delivered not mounted to motor

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