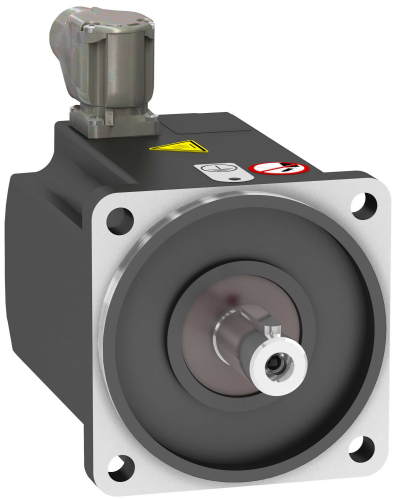
BMP

Synchronous motor
Motor manual

V1.3, 01.2017



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The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

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Safety Information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a DANGER safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety instructions that follow this symbol to avoid possible injury or death.

Hazard categories

Safety instructions to the user are highlighted by safety alert symbols in the manual. In addition, labels with symbols and/or instructions are attached to the product that alert you to potential hazards.

Four hazard categories exist depending on the criticality and nature of the hazard.

⚠ DANGER

DANGER indicates a hazardous situation, which, if not avoided, **will result** in death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation, which, if not avoided, **could result** in death, serious injury, or equipment damage.

⚠ CAUTION

CAUTION indicates a hazardous situation, which, if not avoided, **could result** in injury or equipment damage.

NOTICE

NOTICE indicates a hazardous situation, which, if not avoided, **can result** in equipment damage.

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Please note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

Qualification of personnel

Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation are authorized to work on and with this product.

In addition, these persons must have received safety training to recognize and avoid the hazards involved.

The qualified person must be able to detect possible hazards that may arise from parameterization, modifying parameter values and generally from mechanical, electrical, or electronic equipment.

The qualified person must be familiar with the standards, provisions, and regulations for the prevention of industrial accidents, which they must observe when designing and implementing the system.

Intended use

This product is a motor and intended for industrial use according to the present manual.

This product is not intended for use in cranes, elevators, vertical axes, applications with high moment of inertia or continuous regeneration conditions.

The product may only be used in compliance with all applicable safety regulations and directives, the specified requirements and the technical data.

Prior to using the product, you must perform a risk assessment in view of the planned application. Based on the results, the appropriate safety measures must be implemented.

Since the product is used as a component in an overall system, you must ensure the safety of persons by means of the design of this overall system.

Operate the product only with the specified cables and accessories. Use only genuine accessories and spare parts.

Any use other than the use explicitly permitted is prohibited and can result in hazards.

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel.

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Product Related Information

The use and application of the information contained herein require expertise in the design and programming of automated control systems.

Only you, the user, machine builder or integrator, can be aware of all the conditions and factors present during installation and setup, operation, repair and maintenance of the machine or process.

You must also consider any applicable standards and/or regulations with respect to grounding of all equipment. Verify compliance with any safety information, different electrical requirements, and normative standards that apply to your machine or process in the use of this equipment.

Many components of the equipment, including the printed circuit board, operate with mains voltage, or present transformed high currents, and/or high voltages.

The motor itself generates voltage when the motor shaft is rotated.

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⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation and who have received safety training to recognize and avoid hazards involved are authorized to work on and with this drive system. Installation, adjustment, repair and maintenance must be performed by qualified personnel.
- The system integrator is responsible for compliance with all local and national electrical code requirements as well as all other applicable regulations with respect to grounding of all equipment.
- Many components of the product, including the printed circuit boards, operate with mains voltage. Do not touch. Use only electrically insulated tools.
- Do not touch unshielded components or terminals with voltage present.
- Motors can generate voltage when the shaft is rotated. Prior to performing any type of work on the drive system, block the motor shaft to prevent rotation.
- AC voltage can couple voltage to unused conductors in the motor cable. Insulate both ends of unused conductors of the motor cable.
- Do not short across the DC bus terminals or the DC bus capacitors or the braking resistor terminals.
- Before performing work on the drive system:
  - Disconnect all power, including external control power that may be present.
  - Place a "Do Not Turn On" label on all power switches.
  - Lock all power switches in the open position.
  - Wait 15 minutes to allow the DC bus capacitors to discharge. The DC bus LED is not an indicator of the absence of DC bus voltage that can exceed 800 Vdc.

    Measure the voltage on the DC bus between the DC bus terminals (PA/+ and PC/-) using a properly rated voltmeter to verify that the voltage is less than 42 Vdc.
  - If the DC bus capacitors do not discharge properly, contact your local Schneider Electric representative. Do not repair or operate the product.
- Install and close all covers before applying voltage.

Failure to follow these instructions will result in death or serious injury.

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This equipment has been designed to operate outside of any hazardous location. Only install this equipment in zones known to be free of a hazardous atmosphere.

⚠ DANGER

POTENTIAL FOR EXPLOSION

Install and use this equipment in non-hazardous locations only.

Failure to follow these instructions will result in death or serious injury.

NOTE: See the product manual of the drive for additional important safety information.

If the power stage is disabled unintentionally, for example as a result of a power outage, errors or functions, the motor is no longer decelerated in a controlled way.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Verify that movements without braking effect cannot cause injuries or equipment damage.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and overtravel stop, power outage and restart.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- Observe all accident prevention regulations and local safety guidelines. [1)]
- Each implementation of this equipment must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

1) For additional information, refer to NEMA ICS 1.1 (latest edition), “Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control” and to NEMA ICS 7.1 (latest edition), “Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems” or their equivalent governing your particular location.

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Terminology Derived from Standards

The technical terms, terminology, symbols and the corresponding descriptions in this manual, or that appear in or on the products themselves, are generally derived from the terms or definitions of international standards.

In the area of functional safety systems, drives and general automation, this may include, but is not limited to, terms such as "safety", "safety function", "safe state", "fault", "fault reset", "malfunction", "failure", "error", "error message", "dangerous", etc.

Among others, these standards include:

Standard	Description
EN 61131-2:2007	Programmable controllers, part 2: Equipment requirements and tests.
ISO 13849-1:2008	Safety of machinery: Safety related parts of control systems. General principles for design.
EN 61496-1:2013	Safety of machinery: Electro-sensitive protective equipment. Part 1: General requirements and tests.
ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 60204-1:2006	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN 1088:2008 ISO 14119:2013	Safety of machinery - Interlocking devices associated with guards - Principles for design and selection
ISO 13850:2006	Safety of machinery - Emergency stop - Principles for design
EN/IEC 62061:2005	Safety of machinery - Functional safety of safety-related electrical, electronic, and electronic programmable control systems
IEC 61508-1:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: General requirements.
IEC 61508-2:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Requirements for electrical/electronic/programmable electronic safety-related systems.
IEC 61508-3:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Software requirements.
IEC 61784-3:2008	Digital data communication for measurement and control: Functional safety field buses.
2006/42/EC	Machinery Directive
2004/108/EC	Electromagnetic Compatibility Directive
2006/95/EC	Low Voltage Directive

In addition, terms used in the present document may tangentially be used as they are derived from other standards such as:

Standard	Description
IEC 60034 series	Rotating electrical machines
IEC 61800 series	Adjustable speed electrical power drive systems
IEC 61158 series	Digital data communications for measurement and control – Fieldbus for use in industrial control systems

Finally, the term "zone of operation" may be used in conjunction with the description of specific hazards, and is defined as it is for a "hazard zone" or "danger zone" in the Machinery Directive (2006/42/EC) and ISO 12100:2010.

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NOTE: The aforementioned standards may or may not apply to the specific products cited in the present documentation. For more information concerning the individual standards applicable to the products described herein, see the characteristics tables for those product references.

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About the book

This manual is valid for BMP standard products. Chapter *"1 Introduction"* lists the type code for this product. The type code allows you to identify whether your product is a standard product or a customized version.

Work steps

If work steps must be performed consecutively, this sequence of steps is represented as follows:

- ■ Special prerequisites for the following work steps
- ▶ Step 1
- ◁ Specific response to this work step
- ▶ Step 2

If a response to a work step is indicated, this allows you to verify that the work step has been performed correctly.

Unless otherwise stated, the individual steps must be performed in the specified sequence.

Making work easier

Information on making work easier is highlighted by this symbol:

Sections highlighted this way provide supplementary information on making work easier.

SI units

Technical data are specified in SI units. Converted units are shown in parentheses behind the SI unit; they may be rounded.

Example:
Minimum conductor cross section: 1.5 mm^2 (AWG 14)

Glossary

Explanations of special technical terms and abbreviations.

Index

List of keywords with references to the corresponding page numbers.

Related documents

Use your tablet or your PC to quickly access detailed and comprehensive information on all our products on www.schneider-electric.com

The Internet site provides the information you need for products and solutions

- The whole catalog for detailed characteristics and selection guides
- The CAD files to help design your installation, available in over 20 different file formats
- All software and firmware to maintain your installation up to date
- A large quantity of White Papers, Environment documents, Application solutions, Specifications... to gain a better understanding of our electrical systems and equipment or automation
- And finally all the User Guides related to your drive, listed below:

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Title of Documentation	Reference Number
Atv320 Getting Started	NVE21763 (English), NVE21771 (French), NVE21772 (German), NVE21773 (Spanish), NVE21774 (Italian), NVE21776 (Chinese)
Altivar 320 Getting Started Annex (SCCR)	NVE21777 (English)
Altivar 320 Installation manual	NVE41289 (English), NVE41290 (French), NVE41291 (German), NVE41292 (Spanish), NVE41293 (Italian), NVE41294 (Chinese)
Altivar 320 Programming manual	NVE41295 (English), NVE41296 (French), NVE41297 (German), NVE41298 (Spanish), NVE41299 (Italian), NVE41300 (Chinese)
Altivar 320 Modbus Serial Link manual	NVE41308 (English)
Altivar 320 Modbus TCP - Ethernet IP manual (VW3A3616)	NVE41313 (English)
Altivar 320 PROFIBUS DP manual (VW3A3607)	NVE41310 (English)
Altivar 320 DeviceNet manual (VW3A3609)	NVE41314 (English)
Altivar 320 CANopen manual (VW3A3608, 618, 628)	NVE41309 (English)
Altivar 320 POWERLINK manual (VW3A3619)	NVE41312 (English)
Altivar 320 EtherCAT manual (VW3A3601)	NVE41315 (English)
Altivar 320 Communication Parameters	NVE41316 (English)
Altivar 320 Safety Functions manual	NVE50467 (English), NVE50468 (French), NVE50469 (German), NVE50470 (Spanish), NVE50472 (Italian), NVE50473 (Chinese)
BMP Synchronous Motor manual	0198441113981-EN (English), 0198441113982-FR (French), 0198441113980-DE (German), 0198441113984-ES (Spanish), 0198441113983-IT (Italian), 0198441113985-ZH (Chinese)
SoMove: FDT	SoMove_FDT (English, French, German, Spanish, Italian, Chinese)
Altivar 320: DTM	ATV320_DTM_Library (English, French, German, Spanish, Italian, Chinese)

You can download these technical publications and other technical information from our website at
http://www.schneider-electric.com/ww/en/download

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1 Introduction

1.1 Motor family

The motors are AC synchronous motors with a very high power density. A drive system consists of the AC synchronous motor and the appropriate drive. Maximum performance requires the motor and drive to be adapted to each other.

Characteristics

The AC synchronous motors feature:

- High power density: the use of the latest magnetic materials and an optimized design result in motors with a shorter length at a comparable torque.
- High energy efficiency: due to optimized stator and rotor design with permanent magnets. Since these motors have a smaller size and operate without forced cooling, the surface temperature may be higher than that of an asynchronous motor.

1.2 Options and accessories

The motors are available with various options such as:

- Various lengths
- Various sizes

The options can be found in the type code section on page *17*.

For accessories see chapter *"6 Accessories and spare parts"*, page *59*.

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1.3 Nameplate

The nameplate contains the following data:

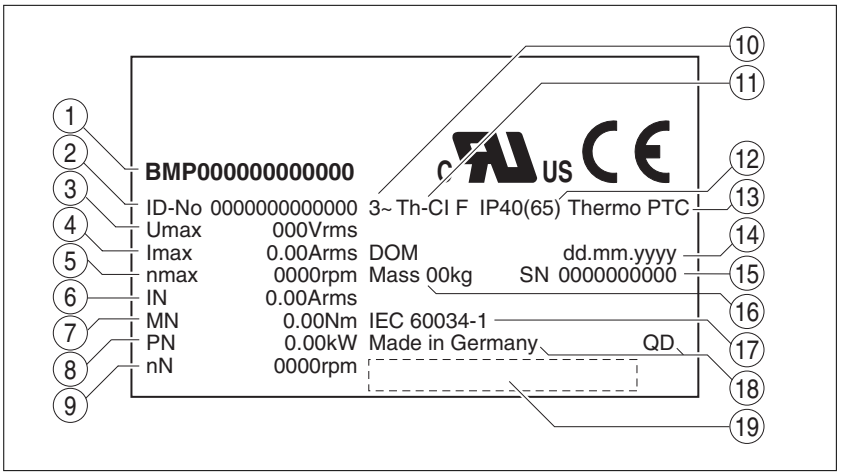

Figure 1: Nameplate

(1) Motor type, see type code
(2) Identification number
(3) Maximum nominal value of supply voltage
(4) Maximum Current
(5) Maximum speed of rotation
(6) Nominal Current
(7) Nominal torque
(8) Nominal power
(9) Nominal speed of rotation
(10) Number of motor phases
(11) Thermal class
(12) Degree of protection (housing without shaft bushing)
(13) Temperature sensor
(14) Date of manufacture
(15) Serial number
(16) Mass of the motor
(17) Applied standard
(18) Country of manufacture, site
(19) Barcode

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1.4 Type code

BMP	070	1	C	3	N	A	2	A

Product family
BMP: Synchronous motor - medium moment of inertia

Size (housing)
070 = 70 mm flange
100 = 100 mm flange
140 = 140 mm flange

Length
1 = 1 stack
2 = 2 stacks

Winding
C = 1500 rpm (drive with 400 Vac supply voltage)
F = 1500/3000 rpm (drive with 200/400 Vac supply voltage)
R = 3000 rpm (drive with 200 Vac supply voltage)

Shaft and degree of protection
3 = Parallel key; degree of protection: shaft and housing IP65 [1)]

Encoder system
N = No encoder

Holding brake
A = Without holding brake

Connection version
2 = Angular connector 90°, can be rotated

Mechanical interface - mounting
A = International IEC Standard

1) In the case of mounting position IM V3 (drive shaft vertical, shaft end up), the motor only has degree of protection IP50.

If you have questions concerning the type code, contact your Schneider Electric sales office.

Designation customized version

In the case of a customized version, position 8 of the type code is an "S". The subsequent number defines the customized version. Example: B••••••S1234

Contact your machine vendor if you have questions concerning customized versions.

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1.5 Permissible product combinations

Drive	Motor	Supply voltage	Nominal power
		Vac	kW
ATV32H037N4, ATV320U04N4•	BMP0701F	400	0.37
ATV32H037M2, ATV320U04M2•	BMP0701R	200	0.37
ATV32H055N4, ATV320U06N4•	BMP0702F	400	0.55
ATV32H055M2, ATV320U06M2•	BMP0702R	200	0.55
ATV32H075N4, ATV320U07N4•	BMP1001F	400	0.75
ATV32HU11N4, ATV320U11N4•	BMP1001F	400	0.75
ATV32H075M2, ATV320U07M2•	BMP1001R	200	0.75
ATV32HU15N4, ATV320U15N4•	BMP1002F	400	1.50
ATV32HU11M2, ATV320U11M2•	BMP1002R	200	1.10
ATV32HU15M2, ATV320U15M2•	BMP1002R	200	1.50
ATV32HU11N4, ATV320U11N4•	BMP1401C	400	1.10
ATV32HU15N4, ATV320U15N4•	BMP1401C	400	1.10
ATV32HU11M2, ATV320U11M2•	BMP1401F	200	1.10
ATV32HU15M2, ATV320U15M2•	BMP1401F	200	1.10
ATV32HU22N4, ATV320U22N4•	BMP1401F	400	2.00
ATV32HU22M2, ATV320U22M2•	BMP1401R	200	2.00
ATV32HU22N4, ATV320U22N4•	BMP1402C	400	2.20
ATV32HU22M2, ATV320U22M2•	BMP1402F	200	2.20
ATV32HU30N4, ATV320U30N4•	BMP1402F	400	3.00
ATV32HU40N4, ATV320U40N4•	BMP1402F	400	3.00

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2 Technical Data

This chapter contains information on the ambient conditions and on the mechanical and electrical properties of the product family and the accessories.

2.1 General characteristics

Motor type	AC synchronous motor	
Number of pairs of poles	5	
Degree of protection motor housing	IP65	As per IEC 60034-5
Degree of protection with IP67 kit	IP67 1)	As per IEC 60034-5
Thermal class	F (155 C°)	As per IEC 60034-1
Vibration grade	A	As per IEC 60034-14
Test voltage	> 2400 Vac	As per IEC 60034-1
Maximum permissible winding voltage	BMP••••C 480 Vac BMP••••F 480 Vac BMP••••R 240 Vac	
Temperature sensor	PTC, switching threshold 155°C (311°F)	As per DIN 44081, DIN 44082
Maximum voltage to ground	280 Vac	
Perpendicularity	normal class	As per IEC 60072-1, DIN 42955
Housing color	Black RAL 9005	
Overvoltage category	III	As per IEC 61800-5-1
Protection class 2)	I	As per IEC 61140, EN 50178

1) In the case of mounting position IM V3 (drive shaft vertical, shaft end upward), the motor only has degree of protection IP 50. The degree of protection only relates to the motor itself, not to mounted components such as, for example, a gearbox.
2) The signals of the temperature sensor meet the PELV requirements.

Compatibility with foreign substances

The motor has been tested for compatibility with many known substances and with the latest available knowledge. Nonetheless, you must perform a compatibility test prior to using a foreign substance.

Climatic environmental conditions transportation and storage

The environment during transportation and storage must be dry and free from dust.

The storage time is primarily limited by the service life of the lubricants in the bearings. Do not store the product for more than 36 months and periodically operate the motor.

Temperature	°C (°F)	-40 ... 70 (-40 ... 158)
Relative humidity (non-condensing)	%	≤75
Set of class combinations as per IEC 60721-3-2		IE 21

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Climatic environmental conditions operation

Ambient temperature [1] (no icing, non-condensing)	°C (°F)	-20 ... 40 (-4 ... 104)
Ambient temperature with current derating of 1% per °C (per 1.8 °F) [1]	°C (°F)	40 ... 60 (104 ... 140)
Relative humidity (non-condensing)	%	5 ... 85
Class as per IEC 60721-3-3		3K3, 3Z12, 3Z2, 3B2, 3C1, 3M6
Installation altitude [2]	m (ft)	<1000 (<3281)
Installation altitude with current reduction of 1% per 100 m (328 ft) at altitudes of more than 1000 m (3281 ft) [2]	m (ft)	1000 ... 3000 (3281 ... 9843)

1) Limit values with flanged motor (steel plate, height and width = 2.5 * motor flange, 10 mm (0.39 in) thickness, centered hole).
2) The installation altitude is defined in terms of altitude above mean sea level.

Vibration and shock

Vibration, sinusoidal	Type test with 10 runs as per IEC 60068-2-6 0.15 mm (10 ... 60 Hz) 20 m/s² (60 ... 500 Hz)
Shock, semi-sinusoidal	Type test with 3 shocks in each direction as per IEC 60068-2-27 150 m/s² (11 ms)

Service life

Nominal bearing service life L_{10h} [1]	h	20000

1) Operating hours at a probability of failure of 10%

The service life of the motors when operated correctly is limited primarily by the service life of the rolling bearing.

The following operating conditions significantly reduce the service life:

- Installation altitude >1000 m (3281 ft) above mean sea level
- Rotary movements exclusively within a fixed angle of <100°
- Operation under vibration load >20 m/s²
- Allowing sealing rings to run dry
- Contact of the seals with aggressive substances

Shaft sealing ring / degree of protection

The motors can be equipped with an optional shaft sealing ring. With a shaft sealing ring, they have degree of protection IP65. The shaft sealing ring limits the maximum speed of rotation to 6000 rpm.

Note the following:

- The shaft sealing ring is factory-pre-lubricated.
- If the seals run dry, this increases friction and greatly reduces the service life of the sealing rings.

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Compressed air connection

The compressed air generates a permanent overpressure inside the motor. This overpressure inside the motor is used to obtain degree of protection IP67.

Compressed air must also be available when the system is switched off, for example to maintain the required degree of protection during cleaning work. When the compressed air is switched off, the degree of protection is decreased to IP65. The degree of protection only relates to the motor itself, not to mounted components such as, for example, a gearbox.

Special compressed air must be used:

Nominal pressure	bar (psi)	0.1 ... 0.3 (1.45 ... 4.35)
Maximum air pressure	bar (psi)	0.4 (5.8)
Permissible humidity	%	20 ... 30
Other properties of the compressed air		Free from dust, free from oil

Tightening torque and property class of screws used

Tightening torque of housing screws M3	Nm (lb•in)	1 (8.85)
Tightening torque of housing screws M4	Nm (lb•in)	1.5 (13.28)
Tightening torque of housing screws M5	Nm (lb•in)	5 (44.3)
Tightening torque protective ground conductor M4	Nm (lb•in)	2.9 (25.7)
Property class of the screws		8.8

Approved drives

You may only use drives that are approved for the corresponding BMP motor. See *"1.5 Permissible product combinations"* for a list of permissible product combinations.

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2.2 Motor-specific data

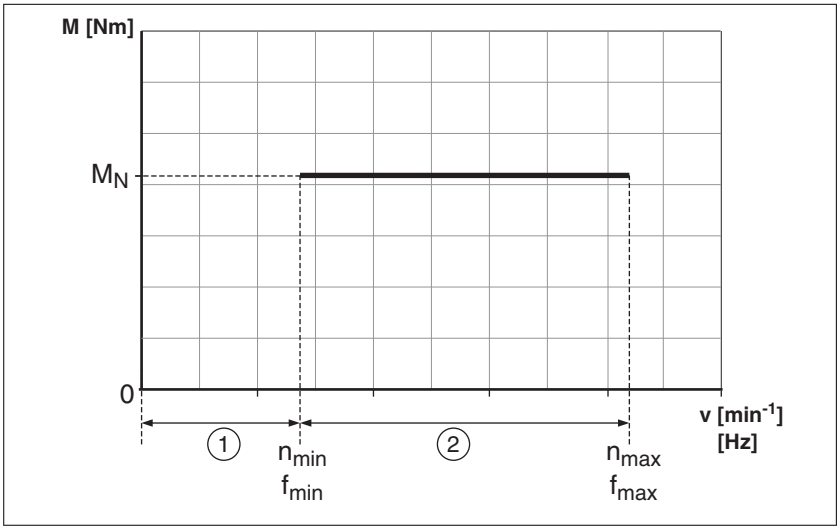

Figure 2: Characteristic curve BMP

(1) The range is only permissible during acceleration phases and deceleration phases.

The range must be left as quickly as possible. Other ranges of the speed of rotation can be optimized by adjusting the default values in the configuration file, see *"4 Commissioning"*.

(2) Continuous operation with the default values from the configuration file.

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2.2.1 Motor data per drive

Motor type		BMP0701F	BMP0701R
Drive		**ATV32H037N4, ATV320U04N4•**	**ATV32H037M2, ATV320U04M2•**
Nominal torque M_N	Nm	1.18	1.18
Peak torque M_{max}	Nm	3.16	3.70
Nominal current I_N	A_{rms}	0.80	1.45
Maximum current I_{max}	A_{rms}	2.30	5.00
Nominal speed of rotation n_N	rpm	3000	3000
Maximum speed of rotation n_{max}	rpm	3600	3600
Minimum speed of rotation n_{min}	rpm	720	510
Nominal frequency f_N	Hz	250	250
Maximum frequency f_{max}	Hz	300	300
Minimum frequency f_{min}	Hz	60	43
Nominal power P_N	kW	0.37	0.37
Maximum winding voltage U_{max}	Vac	480	240
Torque constant k_t	Nm/A	1.48	0.81
Winding resistance R_{20}	Ω	17.75	5.37
Winding inductance L_q	mH	40.03	12.15
Winding inductance L_d	mH	40.03	12.15
Rotor inertia without holding brake J_M	$kgcm^2$	0.59	0.59
Mass without holding brake m	kg	1.60	1.60

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Motor type			**BMP0702F**	**BMP0702R**
Drive			**ATV32H055N4, ATV320U06N4•**	**ATV32H055M2, ATV320U06M2•**
Nominal torque M_N	Nm	Nm	1.75	1.75
Peak torque M_{max}	Nm	Nm	4.24	4.54
Nominal current I_N	A_{rms}	A_{rms}	1.16	2.08
Maximum current I_{max}	A_{rms}	A_{rms}	2.90	5.60
Nominal speed of rotation n_N	rpm	rpm	250	250
Maximum speed of rotation n_{max}	rpm	rpm	300	300
Minimum speed of rotation n_{min}	rpm	rpm	25	25
Nominal frequency f_N	Hz	Hz	3000	3000
Maximum frequency f_{max}	Hz	Hz	3600	3600
Minimum frequency f_{min}	Hz	Hz	300	300
Nominal power P_N	kW	kW	0.55	0.55
Maximum winding voltage U_{max}	Vac	Vac	480	240
Torque constant k_t	Nm/A	Nm/A	1.51	0.84
Winding resistance R_{20}	Ω	Ω	6.96	2.19
Winding inductance L_q	mH	mH	20.70	6.45
Winding inductance L_d	mH	mH	20.70	6.45
Rotor inertia without holding brake J_M	$kgcm^2$	$kgcm^2$	1.13	1.13
Mass without holding brake m	kg	kg	1.80	1.80

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Motor type		BMP1001F	BMP1001F
Drive		**ATV32H075N4, ATV320U07N4•**	**ATV32HU11N4, ATV320U11N4•**
Nominal torque M_N	Nm	2.39	2.39
Peak torque M_{max}	Nm	5.68	7.06
Nominal current I_N	A_{rms}	1.40	1.40
Maximum current I_{max}	A_{rms}	3.50	4.50
Nominal speed of rotation n_N	rpm	3000	3000
Maximum speed of rotation n_{max}	rpm	3600	3600
Minimum speed of rotation n_{min}	rpm	300	300
Nominal frequency f_N	Hz	250	250
Maximum frequency f_{max}	Hz	300	300
Minimum frequency f_{min}	Hz	25	25
Nominal power P_N	kW	0.75	0.75
Maximum winding voltage U_{max}	Vac	480	480
Torque constant k_t	Nm/A	1.71	1.71
Winding resistance R_{20}	Ω	4.54	4.54
Winding inductance L_q	mH	15.30	15.30
Winding inductance L_d	mH	13.28	13.28
Rotor inertia without holding brake J_M	$kgcm^2$	3.19	3.19
Mass without holding brake m	kg	3.34	3.34

Motor type		BMP1001R	BMP1002F
Drive		**ATV32H075M2, ATV320U07M2•**	**ATV32HU15N4, ATV320U15N4•**
Nominal torque M_N	Nm	2.39	4.77
Peak torque M_{max}	Nm	5.99	9.33
Nominal current I_N	A_{rms}	2.70	3.05
Maximum current I_{max}	A_{rms}	7.20	6.20
Nominal speed of rotation n_N	rpm	3000	3000
Maximum speed of rotation n_{max}	rpm	3600	3600
Minimum speed of rotation n_{min}	rpm	300	300
Nominal frequency f_N	Hz	250	250
Maximum frequency f_{max}	Hz	300	300
Minimum frequency f_{min}	Hz	25	25
Nominal power P_N	kW	0.75	1.50
Maximum winding voltage U_{max}	Vac	240	480
Torque constant k_t	Nm/A	0.884	1.56
Winding resistance R_{20}	Ω	1.28	1.75
Winding inductance L_q	mH	4.08	7.65
Winding inductance L_d	mH	3.54	6.64
Rotor inertia without holding brake J_M	$kgcm^2$	3.19	6.28
Mass without holding brake m	kg	3.34	4.92

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Motor type		BMP1002R	BMP1002R	BMP1401C
Drive		**ATV32HU11M2, ATV320U11M2•**	**ATV32HU15M2, ATV320U15M2•**	**ATV32HU11N4, ATV320U11N4•**
Nominal torque M_N	Nm	3.50	4.77	7.00
Peak torque M_{max}	Nm	8.43	9.60	13.49
Nominal current I_N	A_{rms}	4.20	5.72	2.29
Maximum current I_{max}	A_{rms}	10.40	12.00	4.50
Nominal speed of rotation n_N	rpm	3000	3000	1500
Maximum speed of rotation n_{max}	rpm	3600	3600	1800
Minimum speed of rotation n_{min}	rpm	300	300	150
Nominal frequency f_N	Hz	250	250	125
Maximum frequency f_{max}	Hz	300	300	150
Minimum frequency f_{min}	Hz	25	25	13
Nominal power P_N	kW	1.10	1.50	1.10
Maximum winding voltage U_{max}	Vac	240	240	480
Torque constant k_t	Nm/A	0.83	0.83	3.06
Winding resistance R_{20}	Ω	0.53	0.53	2.56
Winding inductance L_q	mH	2.18	2.18	23.33
Winding inductance L_d	mH	1.89	1.89	19.40
Rotor inertia without holding brake J_M	$kgcm^2$	6.28	6.28	16.46
Mass without holding brake m	kg	4.92	4.92	8.00

Motor type		BMP1401C	BMP1401F	BMP1401F
Drive		**ATV32HU15N4, ATV320U15N4•**	**ATV32HU11M2, ATV320U11M2•**	**ATV32HU15M2, ATV320U15M2•**
Nominal torque M_N	Nm	7.00	7.00	7.00
Peak torque M_{max}	Nm	18.05	15.95	18.15
Nominal current I_N	A_{rms}	2.29	4.42	4.42
Maximum current I_{max}	A_{rms}	6.20	10.40	12.00
Nominal speed of rotation n_N	rpm	1500	1500	1500
Maximum speed of rotation n_{max}	rpm	1800	1800	1800
Minimum speed of rotation n_{min}	rpm	150	150	150
Nominal frequency f_N	Hz	125	125	125
Maximum frequency f_{max}	Hz	150	150	150
Minimum frequency f_{min}	Hz	13	13	13
Nominal power P_N	kW	1.10	1.10	1.10
Maximum winding voltage U_{max}	Vac	480	240	240
Torque constant k_t	Nm/A	3.06	1.58	1.58
Winding resistance R_{20}	Ω	2.56	0.70	0.70
Winding inductance L_q	mH	23.33	6.23	6.23
Winding inductance L_d	mH	19.40	5.18	5.18
Rotor inertia without holding brake J_M	$kgcm^2$	16.46	16.46	16.46
Mass without holding brake m	kg	8.00	8.00	8.00

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Motor type		BMP1401F	BMP1401R	BMP1402C
Drive		**ATV32HU22N4, ATV320U22N4•**	**ATV32HU22M2, ATV320U22M2•**	**ATV32HU22N4, ATV320U22N4•**
Nominal torque M_N	Nm	6.37	6.37	14.01
Peak torque M_{max}	Nm	12.65	13.28	23.51
Nominal current I_N	A_{rms}	4.12	7.74	4.83
Maximum current I_{max}	A_{rms}	8.30	16.50	8.30
Nominal speed of rotation n_N	rpm	3000	3000	1500
Maximum speed of rotation n_{max}	rpm	3600	3600	3600
Minimum speed of rotation n_{min}	rpm	150	300	150
Nominal frequency f_N	Hz	250	250	125
Maximum frequency f_{max}	Hz	300	300	300
Minimum frequency f_{min}	Hz	25	25	13
Nominal power P_N	kW	2.00	2.00	2.20
Maximum winding voltage U_{max}	Vac	480	240	480
Torque constant k_t	Nm/A	1.55	0.82	2.90
Winding resistance R_{20}	Ω	0.70	0.20	1.24
Winding inductance L_q	mH	6.23	1.76	15.52
Winding inductance L_d	mH	5.18	1.47	13.86
Rotor inertia without holding brake J_M	$kgcm^2$	16.46	16.46	32.00
Mass without holding brake m	kg	8.00	8.00	12.00

Motor type		BMP1402F	BMP1402F	BMP1402F
Drive		**ATV32HU22M2, ATV320U22M2•**	**ATV32HU30N4, ATV320U30N4•**	**ATV32HU40N4, ATV320U40N4•**
Nominal torque M_N	Nm	14.01	9.55	9.55
Peak torque M_{max}	Nm	24.34	15.84	20.83
Nominal current I_N	A_{rms}	9.24	6.45	6.45
Maximum current I_{max}	A_{rms}	16.50	10.70	14.30
Nominal speed of rotation n_N	rpm	150	300	300
Maximum speed of rotation n_{max}	rpm	1500	3000	3000
Minimum speed of rotation n_{min}	rpm	1800	3600	3600
Nominal frequency f_N	Hz	13	25	25
Maximum frequency f_{max}	Hz	125	250	250
Minimum frequency f_{min}	Hz	150	300	300
Nominal power P_N	kW	2.20	3.00	3.00
Maximum winding voltage U_{max}	Vac	240	480	480
Torque constant k_t	Nm/A	1.52	1.48	1.48
Winding resistance R_{20}	Ω	0.34	0.34	0.34
Winding inductance L_q	mH	4.23	4.23	4.23
Winding inductance L_d	mH	3.78	3.78	3.78
Rotor inertia without holding brake J_M	$kgcm^2$	32.00	32.00	32.00
Mass without holding brake m	kg	12.00	12.00	12.00

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2.3 Dimensions

Dimensions BMP070

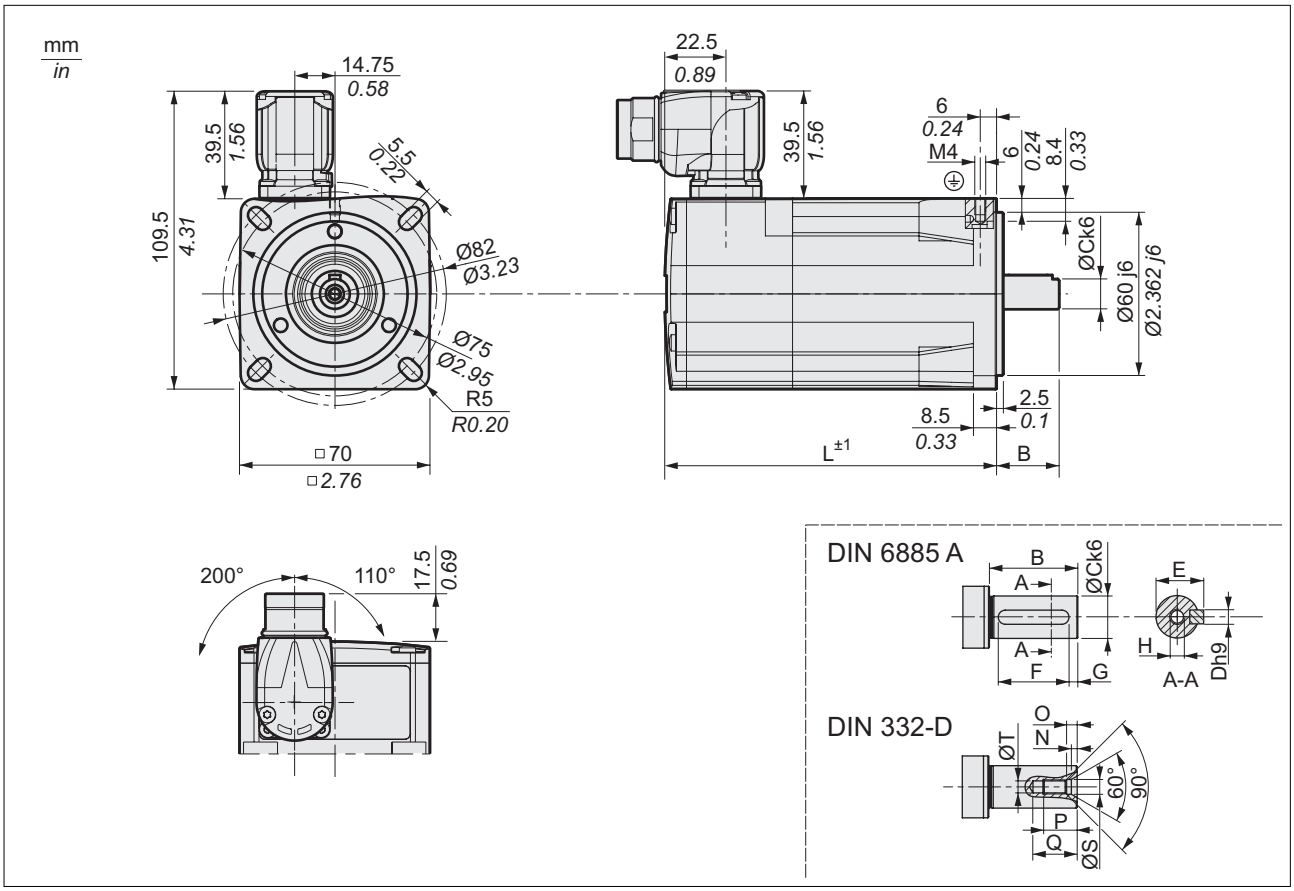

Figure 3: Dimensions BMP070

BMP...			0701	0702
L	Length	mm (in)	122 (4.8)	154 (6.06)
B	Shaft length	mm (in)	23 (0.91)	23 (0.91)
C	Shaft diameter	mm (in)	11 (0.43)	11 (0.43)
D	Width of parallel key	mm (in)	4 (0.16)	4 (0.16)
E	Shaft width with parallel key	mm (in)	12.5 (0.49)	12.5 (0.49)
F	Length of parallel key	mm (in)	18 (0.71)	18 (0.71)
G	Distance parallel key to shaft end	mm (in)	2.5 (0.1)	2.5 (0.1)
	Parallel key		DIN 6885-A4x4x18	DIN 6885-A4x4x18
H	Female thread of shaft		M4	M4
N		mm (in)	2.1 (0.08)	2.1 (0.08)
O		mm (in)	3.2 (0.13)	3.2 (0.13)
P		mm (in)	10 (0.39)	10 (0.39)
Q		mm (in)	14 (0.55)	14 (0.55)
S		mm (in)	4.3 (0.17)	4.3 (0.17)
T		mm (in)	3.3 (0.13)	3.3 (0.13)

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Dimensions BMP100

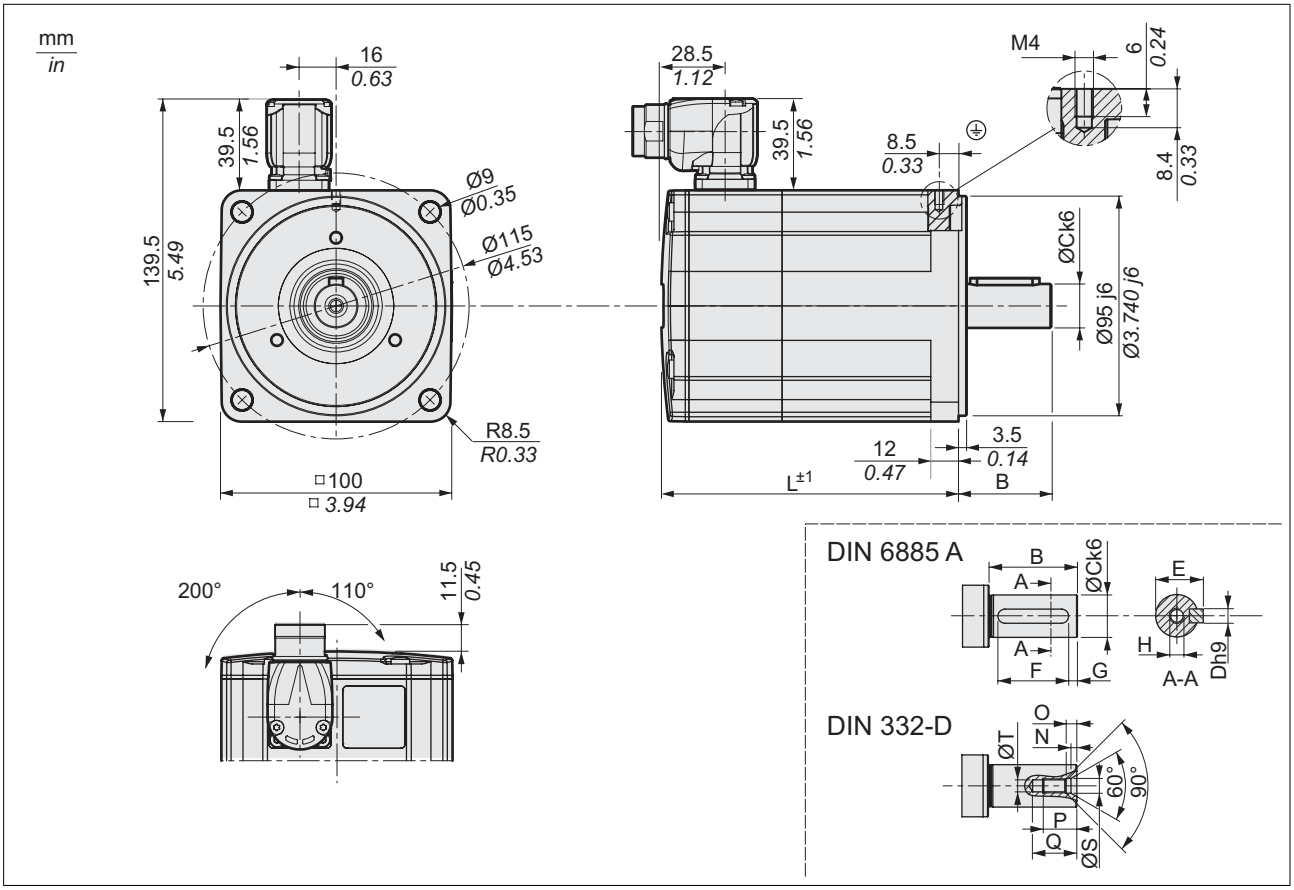

Figure 4: Dimensions BMP100

BMP...			1001	1002
L	Length	mm (in)	128.6 (5.06)	160.6 (6.32)
B	Shaft length	mm (in)	40 (1.57)	40 (1.57)
C	Shaft diameter	mm (in)	19 (0.75)	19 (0.75)
D	Width of parallel key	mm (in)	6 (0.24)	6 (0.24)
E	Shaft width with parallel key	mm (in)	21.5 (0.85)	21.5 (0.85)
F	Length of parallel key	mm (in)	30 (1.18)	30 (1.18)
G	Distance parallel key to shaft end	mm (in)	5 (0.2)	5 (0.2)
	Parallel key		DIN 6885-A6x6x30	DIN 6885-A6x6x30
H	Female thread of shaft		M6	M6
N		mm (in)	2.8 (0.11)	2.8 (0.11)
O		mm (in)	5 (0.2)	5 (0.2)
P		mm (in)	16 (0.63)	16 (0.63)
Q		mm (in)	21 (0.83)	21 (0.83)
S		mm (in)	6.4 (0.25)	6.4 (0.25)
T		mm (in)	5 (0.2)	5 (0.2)

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Dimensions BMP140

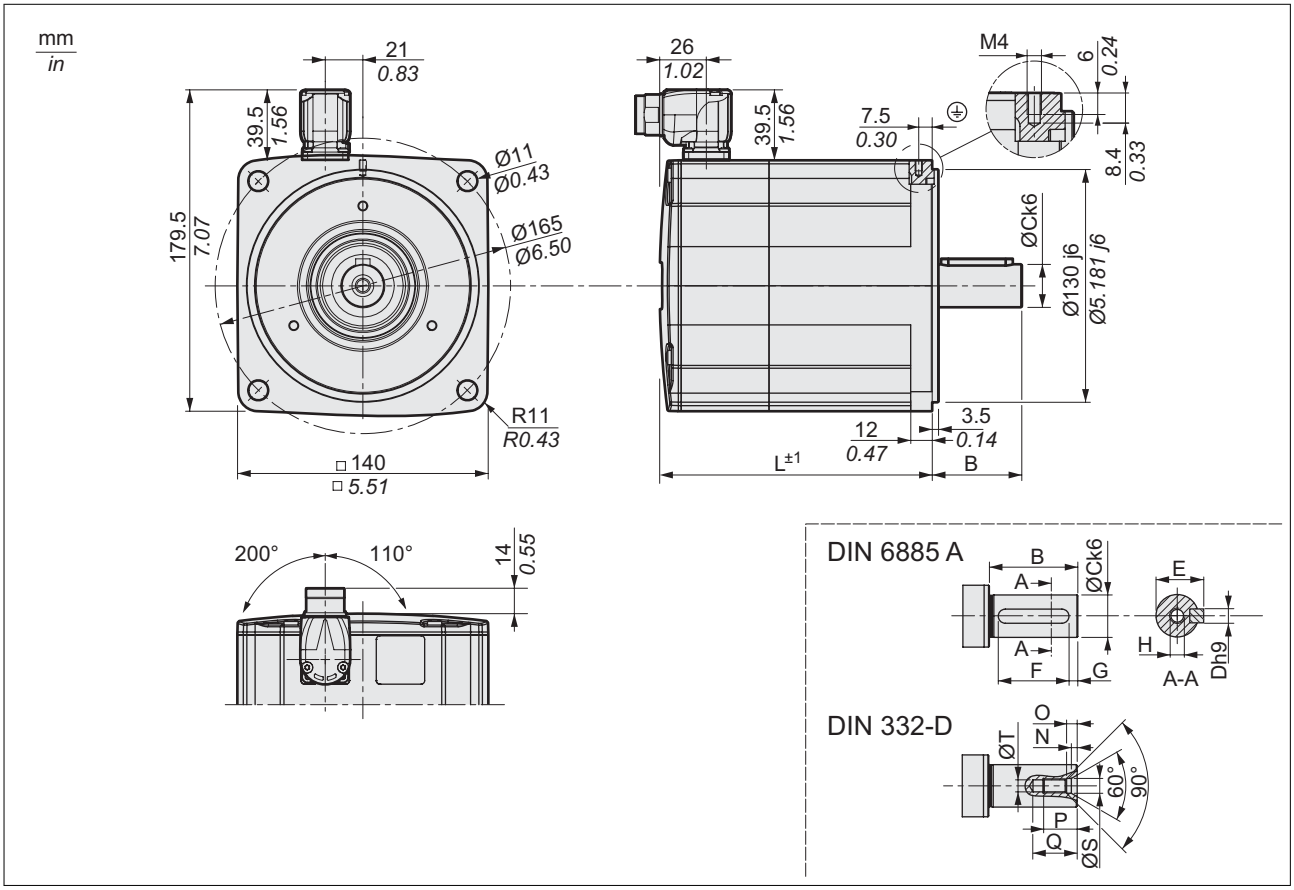

Figure 5: Dimensions BMP140

BMP...			**1401**	**1402**
L	Length	mm (in)	152 (5.98)	192 (7.56)
B	Shaft length	mm (in)	50 (1.97)	50 (1.97)
C	Shaft diameter	mm (in)	24 (0.94)	24 (0.94)
D	Width of parallel key	mm (in)	8 (0.31)	8 (0.31)
E	Shaft width with parallel key	mm (in)	27 (1.06)	27 (1.06)
F	Length of parallel key	mm (in)	40 (1.57)	40 (1.57)
G	Distance parallel key to shaft end	mm (in)	5 (0.2)	5 (0.2)
	Parallel key		DIN 6885-A8x7x40	DIN 6885-A8x7x40
H	Female thread of shaft		M8	M8
N		mm (in)	3.3 (0.13)	3.3 (0.13)
O		mm (in)	6 (0.24)	6 (0.24)
P		mm (in)	19 (0.75)	19 (0.75)
Q		mm (in)	25 (0.98)	25 (0.98)
S		mm (in)	8.4 (0.33)	8.4 (0.33)
T		mm (in)	6.8 (0.27)	6.8 (0.27)

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2.4 Shaft-specific data

2.4.1 Force for pressing on

If the maximum permissible forces at the motor shaft are exceeded, this will result in premature wear of the bearing or shaft breakage.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION DUE TO MECHANICAL DAMAGE TO THE MOTOR

- Do not exceed the maximum permissible axial and radial forces at the motor shaft.
- Protect the motor shaft from impact.
- Do not exceed the maximum permissible axial force when pressing components onto the motor shaft.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Maximum force during pressing on

The force applied during pressing on must not exceed the maximum permissible axial force, see chapter *"2.4.2 Shaft load"*. Applying assembly paste to the shaft and the component to be mounted reduces friction and mechanical impact on the surfaces.

If the shaft has a thread, use it to press on the component to be mounted. This way there is no axial force acting on the rolling bearing.

It is also possible to shrink-fit, clamp or glue the component to be mounted.

The following table shows the maximum permissible axial force F_A at standstill.

BMP...		**070**	**100**	**140**
Maximum axial force F_A at standstill	N (lb)	80 (18)	160 (36)	300 (65)

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2.4.2 Shaft load

The following conditions apply:

- The permissible force applied during pressing on must not be exceed.
- Radial and axial limit loads must not be applied simultaneously
- Nominal bearing service life in operating hours at a probability of failure of 10% (L_{10h} = 20000 hours)
- Mean speed of rotation n = 4000 rpm
- Ambient temperature = 40 °C (104 °F)
- Peak torque = Duty types S3 - S8, 10% duty cycle
- Nominal torque = Duty type S1, 100% duty cycle

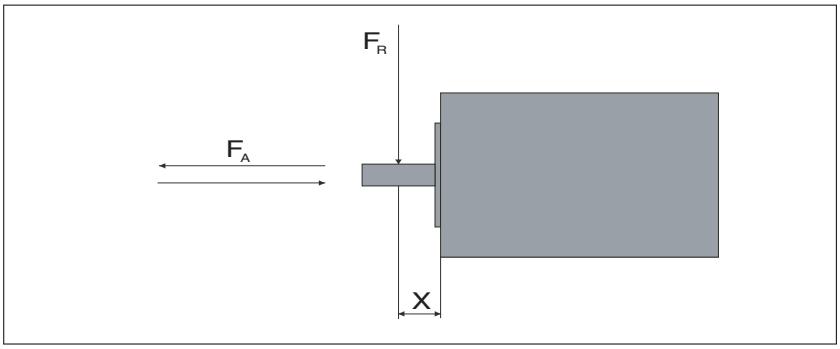

Figure 6: Shaft load

The point of application of the forces depends on the motor size:

Motor version		Values for "X"
BMP070	mm (in)	11.5 (0.45)
BMP100	mm (in)	20 (0.76)
BMP140	mm (in)	25 (0.98)

The following table shows the maximum radial shaft load F_R.

BMP...		0701	0702	1001	1002	1401	1402
1000 rpm	N	660	710	900	990	1930	2240
2000 rpm	N	520	560	720	790	1530	1780
3000 rpm	N	460	490	630	690	1340	1550
4000 rpm	N	410	450	570	620	-	-

The following table shows the maximum axial shaft load F_A.

BMP...		0701	0702	1001	1002	1401	1402
1000 rpm	N	132	142	180	198	386	448
2000 rpm	N	104	112	144	158	306	356
3000 rpm	N	92	98	126	138	268	310
4000 rpm	N	82	90	114	124	-	-

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If the maximum permissible forces at the motor shaft are exceeded, this will result in premature wear of the bearing or shaft breakage.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION DUE TO MECHANICAL DAMAGE TO THE MOTOR

- Do not exceed the maximum permissible axial and radial forces at the motor shaft.
- Protect the motor shaft from impact.
- Do not exceed the maximum permissible axial force when pressing components onto the motor shaft.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

2.5 Conditions for UL 1004-1, UL 1004-6 and CSA 22.2 No. 100

PELV power supply Use only power supply units that are approved for overvoltage category III.

Wiring Use at least 60/75 °C (140/167 °F) copper conductors.

2.6 Certifications

Product certifications:

Certified by	Assigned number
UL	File E208613

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3 Installation

⚠ ⚠ DANGER

ELECTRIC SHOCK CAUSED BY INSUFFICIENT GROUNDING

- Verify compliance with all local and national electrical code requirements as well as all other applicable regulations with respect to grounding of the entire drive system.
- Ground the drive system before applying voltage.
- Do not use conduits as protective ground conductors; use a protective ground conductor inside the conduit.
- The cross section of the protective ground conductor must comply with the applicable standards.
- Do not consider cable shields to be protective ground conductors.

Failure to follow these instructions will result in death or serious injury.

⚠ ⚠ DANGER

ELECTRIC SHOCK OR UNINTENDED EQUIPMENT OPERATION

- Keep foreign objects from getting into the product.
- Verify the correct seating of seals and cable entries in order to avoid contamination such as deposits and humidity.

Failure to follow these instructions will result in death or serious injury.

Motors are very heavy relative to their size. The great mass of the motor can cause injuries and damage.

⚠ WARNING

HEAVY AND/OR FALLING PARTS

- Use a suitable crane or other suitable lifting gear for mounting the motor if this is required by the weight of the motor.
- Use the necessary personal protective equipment (for example, protective shoes, protective glasses and protective gloves).
- Mount the motor so that it cannot come loose (use of securing screws with appropriate tightening torque), especially in cases of fast acceleration or continuous vibration.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

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Motors can generate strong local electrical and magnetic fields. This can cause interference in sensitive devices.

⚠ WARNING

ELECTROMAGNETIC FIELDS

- Keep persons with electronic medical implants, such as pace-makers, away from the motor.
- Do not place electromagnetically sensitive devices in the vicinity of the motor.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

The metal surfaces of the product may exceed 70 °C (158 °F) during operation.

⚠ WARNING

HOT SURFACES

- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive parts in the immediate vicinity of hot surfaces.
- Verify that the heat dissipation is sufficient by performing a test run under maximum load conditions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

IMPROPER APPLICATION OF FORCES

- Do not use the motor as a step to climb into or onto the machine.
- Do not use the motor as a load-bearing part.
- Use hazard labels and guards on your machine to help prevent the improper application of forces on the motor.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

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3.1 Overview of procedure

3.2 Electromagnetic compatibility (EMC)

The measures for electromagnetic compatibility (EMC) are intended to minimize electromagnetic interference of the device and interference caused by the device that affects the environment. Such measures include measures to reduce interference and emission as well as to increase immunity.

Electromagnetic compatibility hinges to a great extent on the individual components used in the system. The EMC measures described in this manual may help to comply with the requirements of IEC 61800-3. You must comply with all EMC regulations of the country in which the product is operated. Also, respect any special EMC regulations that may apply at the installation site (for example, residential environments or airports).

Signal interference can cause unexpected responses of the drive system and of other equipment in the vicinity of the drive system.

⚠ WARNING

SIGNAL AND EQUIPMENT INTERFERENCE

- Install the wiring in accordance with the EMC requirements described in the present document.
- Verify compliance with the EMC requirements described in the present document.
- Verify compliance with all EMC regulations and requirements applicable in the country in which the product is to be operated and with all EMC regulations and requirements applicable at the installation site.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

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Motor cables

In terms of EMC, motor cables are especially critical since they are particularly prone to causing interference.

When planning the wiring, take into account the fact that the motor cable must be routed separately. The motor cable must be separate from mains cables or signal cables. Use only pre-assembled cables or cables that comply with the specifications and implement the EMC measures described below.

EMC measures	Effect
Keep cables as short as possible. Do not install unnecessary cable loops, use short cables from the central grounding point in the control cabinet to the external ground connection.	Reduces capacitive and inductive interference.
Ensure that there is a ground connection between the motor flange and the mounting surface on the machine (no paint, oil and grease or any insulating material between the motor flange and the mounting surface on the machine).	Reduces emissions, increases immunity.
Connect large surface areas of cable shields, use cable clamps and ground straps.	Reduces emissions.
Do not install switching elements in motor cables.	Reduces interference.
Route the motor cable separately from mains cables and signal cables (for example, for limit switches), for example by using shielding plates or by keeping the cables apart from each other at a distance of at least 20 cm (5.08 in).	Reduces mutual interference
Route the motor cable without cutting it. [1)]	Reduces emission.

1) If a cable is cut for the installation, take appropriate measures for uninterrupted shielding (such as a metal housing) at the point of the cut. Connect a large area of the cable shield to the metal housing at both ends of the cut.

Pre-assembled motor cables with various lengths are available for the drive solutions. Contact your local sales office.

Pre-assembled connection cables (accessories)

Using pre-assembled cables helps to reduce the possibility of wiring errors. See chapter *"6 Accessories and spare parts"*.

Place the female connector of the motor cable onto the motor connector and tighten the union nut. Connect the motor cable to the drive according to the wiring diagram of the drive.

Equipotential bonding conductors

Potential differences can result in excessive currents on the cable shields. Use equipotential bonding conductors to reduce currents on the cable shields. The equipotential bonding conductor must be rated for the maximum current.

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⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Ground cable shields for all fast I/O, analog I/O, and communication signals at a single point. [1)]
- Route communications and I/O cables separately from power cables.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

1) Multipoint grounding is permissible if connections are made to an equipotential ground plane dimensioned to help avoid cable shield damage in the event of power system short-circuit currents.

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3.3 Before mounting

Inspecting the product

- Verify the product version by means of the type code on the nameplate. See chapter *"1.3 Nameplate"* and chapter *"1.4 Type code"*.
- Prior to mounting, inspect the product for visible damage.

Damaged products may cause electric shock or unintended equipment operation.

⚠ ⚠ DANGER

ELECTRIC SHOCK OR UNINTENDED EQUIPMENT OPERATION

- Do not use damaged products.
- Keep foreign objects (such as chips, screws or wire clippings) from getting into the product.

Failure to follow these instructions will result in death or serious injury.

Contact your local Schneider Electric sales office if you detect any damage whatsoever to the products.

Cleaning the shaft

The shaft extensions are factory-treated with an anti-corrosive. If output components are glued to the shaft, the anti-corrosive must be removed and the shaft cleaned. If required, use a grease removal agent as specified by the glue manufacturer. If the glue manufacturer does not provide information on grease removal, acetone may be used.

- Remove the anti-corrosive. Avoid direct contact of the skin and the sealing parts with the anti-corrosive or the cleaning agent.

Mounting surface for flange

The mounting surface must be stable, clean, deburred and low-vibration. Ensure that the mounting surface is itself grounded, and that a potential exists between the motor flange and the mounting surface.

⚠ ⚠ DANGER

ELECTRIC SHOCK CAUSED BY INSUFFICIENT GROUNDING

- Verify compliance with all local and national electrical code requirements as well as all other applicable regulations with respect to grounding of the entire drive system.
- Ground the drive system before applying voltage.
- Do not use conduits as protective ground conductors; use a protective ground conductor inside the conduit.
- The cross section of the protective ground conductor must comply with the applicable standards.
- Do not consider cable shields to be protective ground conductors.

Failure to follow these instructions will result in death or serious injury.

- Verify that the mounting surface meets all requirements in terms of dimensions and tolerances. See chapter *"2.3 Dimensions"*.

Heat dissipation

Since these motors have a smaller size and operate without forced cooling, the surface temperature may be higher than that of an asynchronous motor.

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The metal surfaces of the product may exceed 70 °C (158 °F) during operation.

⚠ WARNING

HOT SURFACES

- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive parts in the immediate vicinity of hot surfaces.
- Verify that the heat dissipation is sufficient by performing a test run under maximum load conditions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

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Conductor cross sections according to product combination

Drive	Motor	Supply voltage	Power	Cross section [1]
		Vac	kW	mm^2
ATV32H037N4, ATV320U04N4•	BMP0701F	400	0.37	1.5
ATV32H037M2, ATV320U04M2•	BMP0701R	200	0.37	1.5
ATV32H055N4, ATV320U06N4•	BMP0702F	400	0.55	1.5
ATV32H055M2, ATV320U06M2•	BMP0702R	200	0.55	1.5
ATV32H075N4, ATV320U07N4•	BMP1001F	400	0.75	1.5
ATV32HU11N4, ATV320U11N4•	BMP1001F	400	0.75	1.5
ATV32H075M2, ATV320U07M2•	BMP1001R	200	0.75	1.5
ATV32HU15N4, ATV320U15N4•	BMP1002F	400	1.50	1.5
ATV32HU11M2, ATV320U11M2•	BMP1002R	200	1.10	1.5
ATV32HU15M2, ATV320U15M2•	BMP1002R	200	1.50	1.5
ATV32HU11N4, ATV320U11N4•	BMP1401C	400	1.10	1.5
ATV32HU15N4, ATV320U15N4•	BMP1401C	400	1.10	1.5
ATV32HU11M2, ATV320U11M2•	BMP1401F	200	1.10	1.5
ATV32HU15M2, ATV320U15M2•	BMP1401F	200	1.10	1.5
ATV32HU22N4, ATV320U22N4•	BMP1401F	400	2.00	1.5
ATV32HU22M2, ATV320U22M2•	BMP1401R	200	2.00	1.5
ATV32HU22N4, ATV320U22N4•	BMP1402C	400	2.20	2.5
ATV32HU22M2, ATV320U22M2•	BMP1402F	200	2.20	2.5
ATV32HU30N4, ATV320U30N4•	BMP1402F	400	3.00	2.5
ATV32HU40N4, ATV320U40N4•	BMP1402F	400	3.00	2.5

1) See chapter *"6 Accessories and spare parts"* for available cables.

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Cable specifications

Using pre-assembled cables helps to reduce the possibility of wiring errors. See chapter *"6 Accessories and spare parts"*.

The genuine accessories have the following properties:

Cables with connectors		**VW3M5501R•••**	**VW3M5502R•••**
Cable jacket, insulation		PVC orange (RAL 2003), polypropylene (PP)	
Capacitance	pF/m	1.5 mm^2 = approx. 80 (wire/wire) 1.5 mm^2 = approx. 120 (wire/shield) 1 mm^2 = approx. 75 (wire/wire) 1 mm^2 = approx. 110 (wire/shield) 0.14 mm^2 = approx. 50 (wire/wire) 0.14 mm^2 = approx. 80 (wire/shield)	2.5 mm^2 = approx. 85 (wire/wire) 2.5 mm^2 = approx. 130 (wire/shield) 1 mm^2 = approx. 70 (wire/wire) 1 mm^2 = approx. 100 (wire/shield) 0.14 mm^2 = approx. 50 (wire/wire) 0.14 mm^2 = approx. 80 (wire/shield)
Number of contacts (shielded [1])		[(4 x 1.5 mm^2) + (2 x 1 mm^2) + (2 x 0.14 mm^2)]	[(4 x 2.5 mm^2) + (2 x 1 mm^2) + (2 x 0.14 mm^2) [1]]
Connection version		Motor end 8-pin circular connector M23, other cable end open	
Cable diameter	mm (in)	12.4 ± 0.2 (0.49 ± 0.1)	14.4 ± 0.3 (0.57 ± 0.1)
Minimum bend radius		5 times the cable diameter with permanently installed connection 12 times the cable diameter with flexible installation	
Nominal voltage Power wires Signal wires	V	 600 300	
Maximum orderable length	m (ft)	50 [2] (164)	
Permissible temperature range during operation fixed: moving:	 °C (°F) °C (°F)	 -40 ... 90 (-40 ... 194) -20 ... 80 (-4 ... 176)	
Certifications / declaration of conformity		UL, cUL, DESINA / CE	

1) The wires for the temperature sensor have an additional shield.
2) Contact Schneider Electric sales office for longer cables.

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Space for connectors

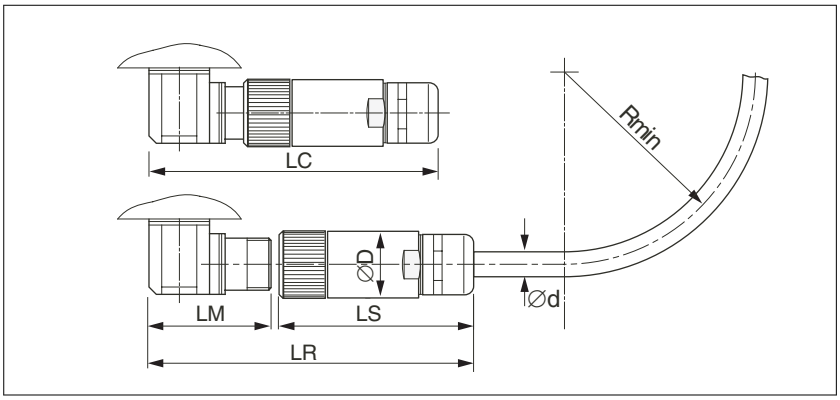

Figure 7: Connector installation space

Dimensions		Motor connectors angular BMP070 ... 140
D	mm (in)	28 (1.10)
LS	mm (in)	76 (2.99)
LR	mm (in)	132 (5.20)
LC	mm (in)	114 (4.49)
LM	mm (in)	55 (2.17)

Dimensions		Motor cables BMP070 ... 140
d	mm (in)	approximately 12 / 14 (0.47 / 0.55)
R_{min}	mm (in)	90 (3.54)

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3.4 Mounting the motor

If the permissible ambient conditions are not respected, external substances from the environment may penetrate the product and cause unintended movement or equipment damage.

⚠ WARNING

UNINTENDED MOVEMENT

- Verify that the ambient conditions are respected.
- Do not allow seals to run dry.
- Keep liquids from getting to the shaft bushing (for example, in mounting position IM V3).
- Do not expose the shaft sealing rings and cable entries of the motor to the direct spray of a pressure washer.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

If the maximum permissible forces at the motor shaft are exceeded, this will result in premature wear of the bearing or shaft breakage.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION DUE TO MECHANICAL DAMAGE TO THE MOTOR

- Do not exceed the maximum permissible axial and radial forces at the motor shaft.
- Protect the motor shaft from impact.
- Do not exceed the maximum permissible axial force when pressing components onto the motor shaft.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

The metal surfaces of the product may exceed 70 °C (158 °F) during operation.

⚠ WARNING

HOT SURFACES

- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive parts in the immediate vicinity of hot surfaces.
- Verify that the heat dissipation is sufficient by performing a test run under maximum load conditions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

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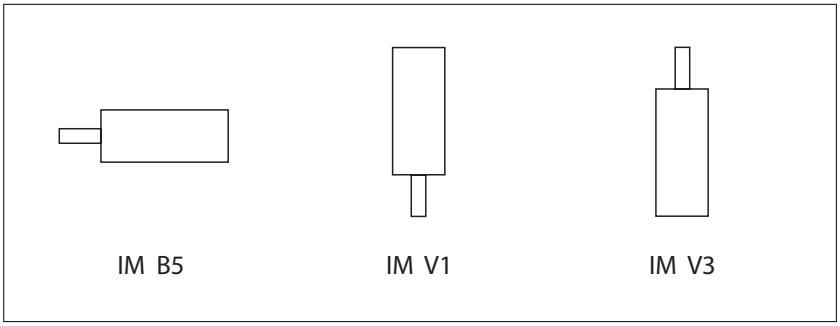
Mounting position

The following mounting positions are defined and permissible as per IEC 60034-7:



Mounting

When the motor is mounted to the mounting surface, it must be accurately aligned axially and radially and make even contact with the mounting surface. All mounting screws must be tightened with the specified tightening torque. No uneven mechanical load must be applied when the mounting screws are tightened. See chapter *"2 Technical Data"* for data, dimensions and degrees of protection (IP).

Mounting output components

Output components such as pulleys and couplings must be mounted with suitable equipment and tools. Motor and output component must be accurately aligned both axially and radially. If the motor and the output component are not accurately aligned, this will cause runout and premature wear.

The maximum axial and radial forces acting on the shaft must not exceed the maximum shaft load values specified, see chapter *"2.4.2 Shaft load"*.

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3.4.1 Installation and connection of IP67 kit (accessory)

The IP67 kit is used to connect compressed air to the motor. Degree of protection IP65 is a prerequisite for the use of the IP67 kit. The compressed air generates a permanent overpressure inside the motor. This overpressure inside the motor is used to obtain degree of protection IP67.

Note the special requirements in terms of the compressed air in chapter *"2 Technical Data"*.

Installation procedure

When the IP67 kit is installed, the existing cover is replaced by the cover of the IP67 kit. The O-ring is also replaced (shipped with the IP67 kit).

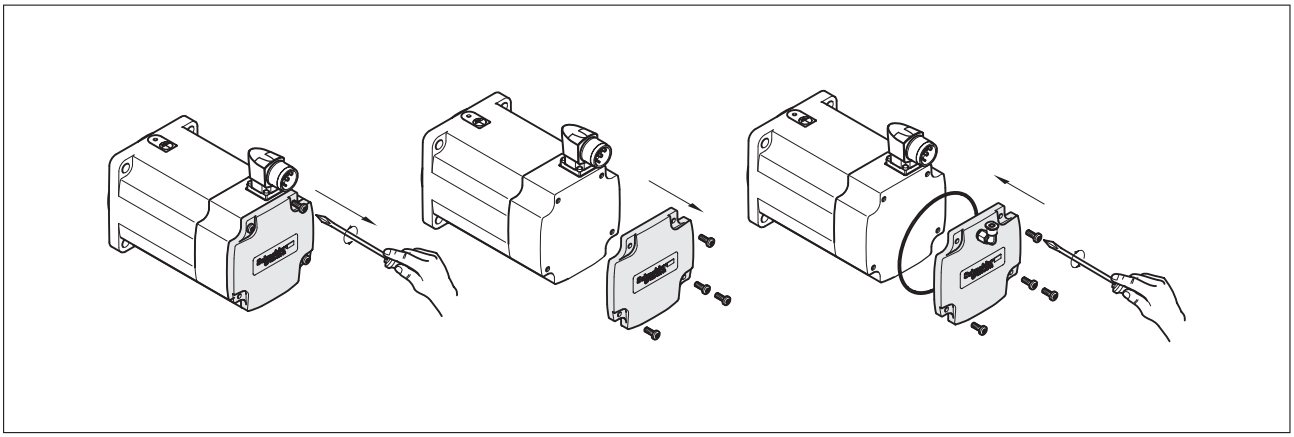

Figure 8: Installation IP67 Kit

- Loosen the 4 housing screws of the cover.
- Remove the cover and the O-ring
- Verify proper seat of the O-ring in the cover of the IP67 kit.

  To facilitate mounting of the new O-ring, you may slightly grease the O-ring to hold it in place.
- Fasten the cover of the IP67 kit with the 4 housing screws.

Tightening torque of housing screws M3	Nm (lb•in)	1 (8.85)
Tightening torque of housing screws M4	Nm (lb•in)	1.5 (13.28)
Tightening torque of housing screws M5	Nm (lb•in)	5 (44.3)

- Verify the tightening torque of the compressed air connection:

Tightening torque compressed air connection	Nm (lb•in)	0.6 (5.31)

Compressed air connection

The compressed air connection of the L-shaped push-in fitting is designed for compressed air hoses made of standard plastic with a nominal diameter of 4 mm.

Compressed air monitoring

Use a compressed air monitor.

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3.5 Electrical installation

3.5.1 Connectors and connector assignments

CN1 motor connection M23

Motor connector for connection of the motor phases and the temperature sensors.

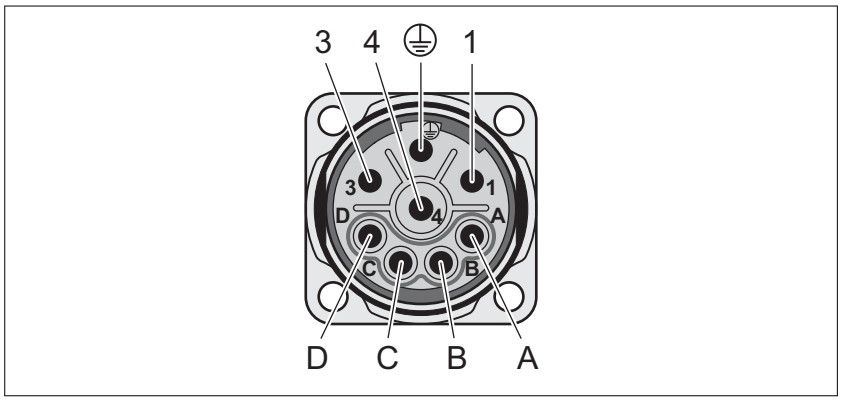

Figure 9: Pin assignment motor connection M23

See chapter *"6.2 Connectors"* for suitable mating connectors.

The signals of the temperature sensor meet the PELV requirements.

Pin	Assignment	Meaning	Colour [1]
1	U	Motor phase U	BK
⏚	PE	Protective ground conductor	YE
3	W	Motor phase W	BK
4	V	Motor phase V	BK
A	Reserved	Reserved	WH
B	Reserved	Reserved	GY
C	PTC	Temperature sensor [2]	BU
D	PTC	Temperature sensor [2]	RD
	SHLD	Shield (to connector housing)	-

1) As per IEC 757
2) Additional shield required.

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3.5.2 Power connection

High voltages may be present at the motor connection. The motor itself generates voltage when the motor shaft is rotated. AC voltage can couple voltage to unused conductors in the motor cable.

⚠ ⚠ DANGER

ELECTRIC SHOCK

- Verify that no voltage is present prior to performing any type of work on the drive system.
- Block the motor shaft to prevent rotation prior to performing any type of work on the drive system.
- Insulate both ends of unused conductors of the motor cable.
- Only touch the motor shaft or the mounted output components if all power has been disconnected.
- Verify compliance with all local and national electrical code requirements as well as all other applicable regulations with respect to grounding of all equipment.

Failure to follow these instructions will result in death or serious injury.

The motor is designed for operation via a drive. Connecting the motor directly to AC voltage will damage the motor and can cause fires.

⚠ DANGER

FIRE HAZARD DUE TO INCORRECT CONNECTION

Only connect the motor to a matching, approved drive in the way described in the present documentation.

Failure to follow these instructions will result in death or serious injury.

Drive systems may perform unintended movements if unapproved combinations of drive and motor are used. Even if motors are similar, different adjustment of the encoder system may be a source of hazards. Even if the connectors for motor connection and encoder connection match mechanically, this does not imply that the motor is approved for use.

⚠ WARNING

UNINTENDED MOVEMENT

Only use approved combinations of drive and motor.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

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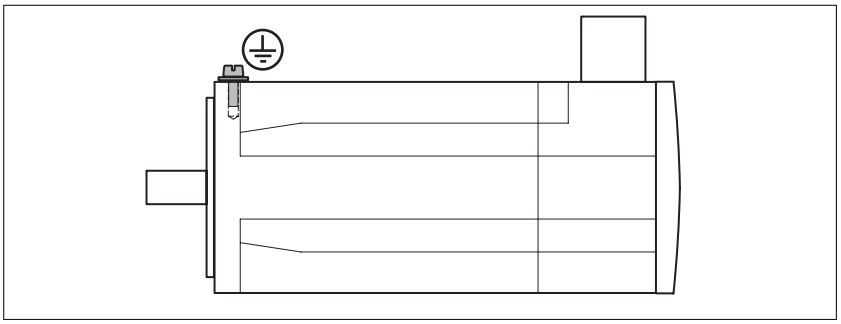
Protective ground conductor connection



- Ground the motor via a grounding screw if grounding via the flange and the protective ground conductor of the motor cable is not sufficient. Use parts with suitable corrosion protection. Note the required tightening torque and the property class of the grounding screw, see page *21*.

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Assembling cables Insulate unused wires individually.

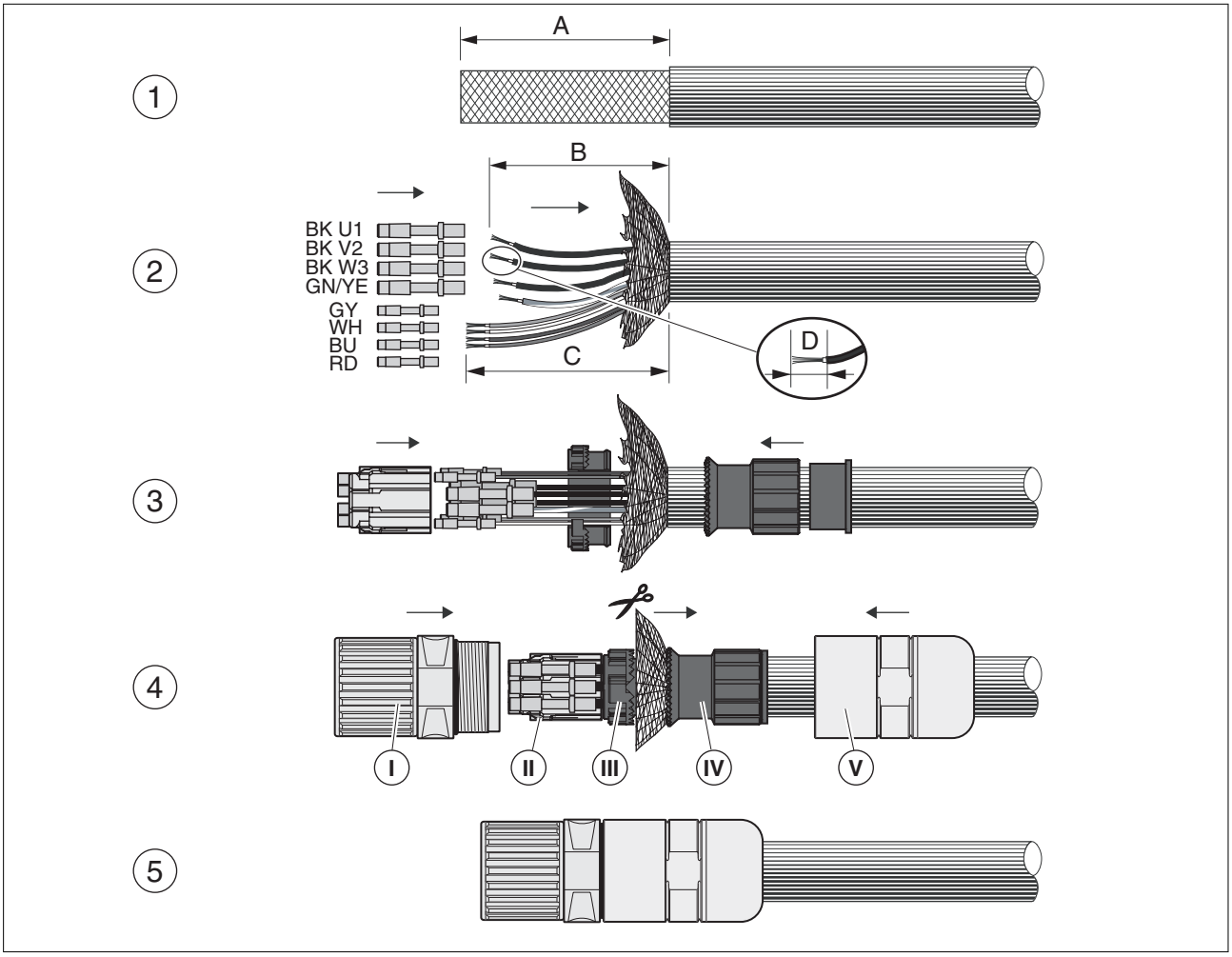

Figure 10: Assembling motor cables with M23 motor connector

- (1) Strip the cable jacket; length as specified (see table below).
- Open the shielding braid and slide it back over the outer cable jacket.
- Shorten the inner cable jacket.
- (2) Shorten the wires to the specified length (see table below) and crimp them to the connector.

  If possible, also connect unused wires. This improves EMC. Wires that are not connected must be insulated at both ends.
- (3) Push part (V) and part (IV) onto the cable. Snap the contacts into part (II). Open the side of part (III) and enclose the wires using this part.
- (4) Slide part (III) behind the shielding braid and insert part (II) into part (I). Arrange the shielding braid as shown. Push part (I) and part (III) together and shorten the shielding braid.
- Screw part (IV) onto part (I) all the way to the stop.

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	Signal wires 0.14 mm² Verify values	**Power wire 1.5 mm²**	**Power wire 2.5 mm²**
Stripping length A	40 mm (1.57 in)	40 mm (1.57 in)	40 mm (1.57 in)
Stripping length B	-	36 mm (1.42 in)	36 mm (1.42 in)
Stripping length C	40 mm (1.57 in)	-	-
Stripping length D	4.5 mm (0.18 in)	8 mm (0.31 in)	8 mm (0.31 in)
Crimping tool	SF-Z0007	SF-Z0008	SF-Z0008
Positioner type	SF-Z2002	SF-Z0012	SF-Z0012
Parameters positioner	Fixed	-2	-2
Parameters eccentric	6	4	6

Connecting the cables

Incorrect installation of the cable may damage the insulation. Broken conductors in the cable or improperly connected connectors may promote arcing within the cable.

⚠ ⚠ DANGER

ELECTRIC SHOCK, ARC FLASH AND FIRE CAUSED BY INCORRECT INSTALLATION OF THE CABLE

- Disconnect all power before plugging in or unplugging the connectors.
- Verify correct pin assignment of the connectors according to the specifications in this chapter before connecting the cables.
- Verify that the connectors are properly inserted and locked before applying power.
- Avoid forces or movements of the cable at the cable entries.

Failure to follow these instructions will result in death or serious injury.

- ▸ Place the female connector of the motor cable onto the motor connector and tighten the union nut.

  Keep the connection cables from being twisted when tightening the union nut.
- ▸ Connect the motor cable to the drive according to the wiring diagram of the drive.
- ▸ Ground the shield to a large surface area. See the product manual of the drive for information on connecting the shield.

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4 Commissioning

⚠ ⚠ DANGER

ELECTRIC SHOCK OR UNINTENDED EQUIPMENT OPERATION

- Keep foreign objects from getting into the product.
- Verify the correct seating of seals and cable entries in order to avoid contamination such as deposits and humidity.

Failure to follow these instructions will result in death or serious injury.

Rotating parts may cause injuries and may catch clothing or hair. Loose parts or parts that are out of balance may be ejected.

⚠ WARNING

MOVING, UNGUARDED EQUIPMENT

Verify that rotating parts cannot cause injuries or equipment damage.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

The motor may move, tip and fall as a result of incorrect or insufficient mounting.

⚠ WARNING

FALLING PARTS

Mount the motor so that it cannot come loose (use of securing screws with appropriate tightening torque), especially in cases of fast acceleration or continuous vibration.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

The metal surfaces of the product may exceed 70 °C (158 °F) during operation.

⚠ WARNING

HOT SURFACES

- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive parts in the immediate vicinity of hot surfaces.
- Verify that the heat dissipation is sufficient by performing a test run under maximum load conditions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

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Motors can generate strong local electrical and magnetic fields. This can cause interference in sensitive devices.

⚠ WARNING

ELECTROMAGNETIC FIELDS

- Keep persons with electronic medical implants, such as pace-makers, away from the motor.
- Do not place electromagnetically sensitive devices in the vicinity of the motor.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

IMPROPER APPLICATION OF FORCES

- Do not use the motor as a step to climb into or onto the machine.
- Do not use the motor as a load-bearing part.
- Use hazard labels and guards on your machine to help prevent the improper application of forces on the motor.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTICE

DESTRUCTION DUE TO INCORRECT CONFIGURATION

Incorrect configuration can cause immediate or later destruction of the product.

- Do not activate the frequency inverter unless you have completed the configuration.
- Load the correct configuration file. (The configuration file also contains internal parameters.)
- When replacing the motor, also verify that you use the correct configuration file.
- Check the accessible parameters.

Failure to follow these instructions can result in equipment damage.

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Verifying installation

Prior to commissioning, verify correct installation.

- ▸ Verify proper mechanical installation.
- ▸ Verify proper electrical installation.
- Did you connect all protective ground conductors?
- Did you properly connect and install all cables and connectors?
- Did you tighten the cable glands properly?
- ▸ Verify ambient conditions.
- Does the installation meet the ambient conditions specified?
- Is the heat dissipation sufficient?
- ▸ Verify the output components.
- Have the installed output components been balanced and accurately aligned?
- ▸ Verify the parallel key at the shaft end of the motor.
- If you have a motor with a parallel key groove and parallel key, the parallel key must not be inserted during commissioning without output component or it must be appropriately secured.

Prerequisites for commissioning

The bundle ATV32• and BMP can only be configured with the SoMove commissioning software. Prerequisites for commissioning include:

- ATV32 with firmware version ≥1.5IE08
- SoMove with software version ≥V1.6.0.2

Commissioning

- ▸ Observe the information in the programming manual of the drive.
- ▸ Load the correct configuration file into the drive. The procedure is described in the online help of the SoMove commissioning software. The SoMove commissioning software and the configuration file can be downloaded at:
  http://www.schneider-electric.com

  The configuration file contains internal parameters and accessible parameters required for correct operation of the motor. The internal parameters can only be loaded via the configuration file.
- ▸ After you have loaded the configuration file, you can adjust the accessible parameters. See chapter *"4.1 Default values of the accessible parameters"*.
- ▸ Perform tuning when the motor is cold.
- ▸ Test the motor under full load (continuous load). Run the test until the temperature of the motor no longer increases.
- ▸ Verify that the motor accelerates and decelerates under all conditions.

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4.1 Default values of the accessible parameters

The temperature sensor must be connected. The parameter for the temperature sensor must remain activated, DRI- > CONF > FULL > FLT > PtC- > PtCL > AS and SW2 = PTC.

Drive	Motor	NSPS [1] n_nom	TFR [1]	TQS [1]	NCRS [1]	SFR [1]	PHS [1]	FAB [1]	BOO [1]
		min^{-1}	Hz	Nm	A_{rms}	kHz	mV_{rms}/min^{-1}	Hz	%
ATV32H037N4, ATV320U04N4•	BMP0701F	3000	300	1.18	0.80	8	78.00	100	100
ATV32H037M2, ATV320U04M2•	BMP0701R	3000	300	1.18	1.45	8	43.50	60	100
ATV32H055N4, ATV320U06N4•	BMP0702F	3000	300	1.75	1.16	8	80.00	100	100
ATV32H055M2, ATV320U06M2•	BMP0702R	3000	300	1.75	2.08	12	45.50	60	100
ATV32H075N4, ATV320U07N4•	BMP1001F	3000	300	2.39	1.40	12	87.50	50	50
ATV32HU11N4, ATV320U11N4•	BMP1001F	3000	300	2.39	1.40	12	87.50	50	50
ATV32H075M2, ATV320U07M2•	BMP1001R	3000	300	2.39	2.70	12	44.50	60	70
ATV32HU15N4, ATV320U15N4•	BMP1002F	3000	300	4.77	3.05	12	85.50	40	100
ATV32HU11M2, ATV320U11M2•	BMP1002R	3000	300	3.50	4.20	12	45.00	40	50
ATV32HU15M2, ATV320U15M2•	BMP1002R	3000	300	4.77	5.72	12	45.00	40	50
ATV32HU11N4, ATV320U11N4•	BMP1401C	1500	150	7.00	2.29	8	145.00	40	70
ATV32HU15N4, ATV320U15N4•	BMP1401C	1500	150	7.00	2.29	8	145.00	40	70
ATV32HU11M2, ATV320U11M2•	BMP1401F	1500	150	7.00	4.42	8	76.50	40	50
ATV32HU15M2, ATV320U15M2•	BMP1401F	1500	150	7.00	4.42	8	77.00	40	50
ATV32HU22N4, ATV320U22N4•	BMP1401F	3000	300	6.37	4.12	8	79.50	40	40
ATV32HU22M2, ATV320U22M2•	BMP1401R	3000	300	6.37	7.74	8	44.00	40	30
ATV32HU22N4, ATV320U22N4•	BMP1402C	1500	150	14.01	4.83	8	164.00	40	50
ATV32HU22M2, ATV320U22M2•	BMP1402F	1500	150	14.01	9.24	8	86.00	20	20
ATV32HU30N4, ATV320U30N4•	BMP1402F	3000	300	9.55	6.45	8	86.00	20	30
ATV32HU40N4, ATV320U40N4•	BMP1402F	3000	300	9.55	6.45	8	86.00	20	30

1) See programming manual

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5 Diagnostics and troubleshooting

5.1 Mechanical problems

Problem	Cause	Troubleshooting
Excessive heat	Overload	Reduce load
	Heavy pollution	Clean the motor
Whistling or knocking noise	Rolling bearings	Contact your sales office
Grinding noise	Rotating output component grinds	Align output component
Radial oscillation	Poor alignment of output component	Align output component
	Output component out of balance	Balance output component
	Shaft bent	Contact your sales office
	Resonance with machine bed	Suppress resonance
Axial oscillation	Poor alignment of output component	Align output component
	Damage to the output component	Repair/replace output component
	Resonance with machine bed	Suppress resonance

5.2 Electrical problems

Problem	Cause	Troubleshooting
Motor does not start or has difficulty starting	Overload	Reduce load
	Unsuitable settings for the drive	Correct drive settings
	Cable damaged	Replace damaged cables
Excessive heat	Overload	Reduce power
Heat at the terminals or connectors	Poor contact	Tighten the terminals / connectors with the specified tightening torque

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6 Accessories and spare parts

6.1 IP67 Kit

Degree of protection IP65 (shaft sealing ring) is a prerequisite for the use of the IP67 kit.

Description	Reference
IP67 kit for size 070, cover with compressed air connection, O-ring, 4 screws	VW3M2301
IP67 kit for size 100, cover with compressed air connection, O-ring, 4 screws	VW3M2302
IP67 kit for size 140, cover with compressed air connection, O-ring, 4 screws	VW3M2303

6.2 Connectors

Description	Reference
Motor connector (cable end) M23, 1.5 ... 2.5 mm^2, 5 pcs	VW3M8215

Tools The tools required for cable assembly can be ordered directly from the manufacturer.

- Crimping tool for power connector M23:
  Coninvers SF-Z0007, SF-Z0008
  www.phoenixcontact.com

6.3 Motor cables

6.3.1 Motor cables 1.5 mm^2

Description	Reference
Motor cable 3 m, [(4 x 1.5 mm^2) + (2 x 1 mm^2) + (2 x 0.14 mm^2)] shielded; motor end 8-pin circular connector M23, other cable end open	VW3M5501R30
Motor cable 5 m, [(4 x 1.5 mm^2) + (2 x 1 mm^2) + (2 x 0.14 mm^2)] shielded; motor end 8-pin circular connector M23, other cable end open	VW3M5501R50
Motor cable 10 m, [(4 x 1.5 mm^2) + (2 x 1 mm^2) + (2 x 0.14 mm^2)] shielded; motor end 8-pin circular connector M23, other cable end open	VW3M5501R100
Motor cable 15 m, [(4 x 1.5 mm^2) + (2 x 1 mm^2) + (2 x 0.14 mm^2)] shielded; motor end 8-pin circular connector M23, other cable end open	VW3M5501R150
Motor cable 20 m, [(4 x 1.5 mm^2) + (2 x 1 mm^2) + (2 x 0.14 mm^2)] shielded; motor end 8-pin circular connector M23, other cable end open	VW3M5501R200
Motor cable 25 m, [(4 x 1.5 mm^2) + (2 x 1 mm^2) + (2 x 0.14 mm^2)] shielded; motor end 8-pin circular connector M23, other cable end open	VW3M5501R250
Motor cable 50 m, [(4 x 1.5 mm^2) + (2 x 1 mm^2) + (2 x 0.14 mm^2)] shielded; motor end 8-pin circular connector M23, other cable end open	VW3M5501R500

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6.3.2 Motor cables 2.5 mm²

Description	Reference
Motor cable 3 m, [(4 x 2.5 mm²) + (2 x 1 mm²) + (2 x 0.14 mm²)] shielded; motor end 8-pin circular connector M23, other cable end open	VW3M5502R30
Motor cable 5 m, [(4 x 2.5 mm²) + (2 x 1 mm²) + (2 x 0.14 mm²)] shielded; motor end 8-pin circular connector M23, other cable end open	VW3M5502R50
Motor cable 10 m, [(4 x 2.5 mm²) + (2 x 1 mm²) + (2 x 0.14 mm²)] shielded; motor end 8-pin circular connector M23, other cable end open	VW3M5502R100
Motor cable 15 m, [(4 x 2.5 mm²) + (2 x 1 mm²) + (2 x 0.14 mm²)] shielded; motor end 8-pin circular connector M23, other cable end open	VW3M5502R150
Motor cable 20 m, [(4 x 2.5 mm²) + (2 x 1 mm²) + (2 x 0.14 mm²)] shielded; motor end 8-pin circular connector M23, other cable end open	VW3M5502R200
Motor cable 25 m, [(4 x 2.5 mm²) + (2 x 1 mm²) + (2 x 0.14 mm²)] shielded; motor end 8-pin circular connector M23, other cable end open	VW3M5502R250
Motor cable 50 m, [(4 x 2.5 mm²) + (2 x 1 mm²) + (2 x 0.14 mm²)] shielded; motor end 8-pin circular connector M23, other cable end open	VW3M5502R500

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7 Service, maintenance and disposal

7.1 Service address

If you have any questions please contact your sales office. Your sales office staff will be happy to give you the name of a customer service office in your area.

http://www.schneider-electric.com/ccc

7.2 Maintenance

There are no user-serviceable parts within the motor. Either replace the complete motor, or contact Schneider Electric.

The product may only be repaired by a Schneider Electric customer service center.

Repairs cannot be made with the device installed.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Only use software and hardware components approved by Schneider Electric for use with this equipment.
- Do not attempt to service this equipment outside of authorized Schneider Electric service centers.
- Update your application program every time you change the physical hardware configuration.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Use only the accessories and mounting parts specified in the documentation and no third-party devices or components that have not been expressly approved by Schneider Electric. Do not modify the equipment.

Include the following points in the maintenance plan of your machine.

Connections and fastening

- ▸ Inspect all connection cables and connectors regularly for damage. Replace damaged cables immediately.
- ▸ Verify that all output elements are firmly seated.
- ▸ Tighten all mechanical and electrical threaded connections to the specified torque.

Lubricating the shaft sealing ring

In the case of motors with shaft sealing ring, lubricant must be applied to the space between the sealing lip of the shaft sealing ring and the shaft with a suitable non-metallic tool. If the shaft sealing rings are allowed to run dry, the service life of the shaft sealing rings will be significantly reduced.

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Cleaning

If the permissible ambient conditions are not respected, external substances from the environment may penetrate the product and cause unintended movement or equipment damage.

⚠ WARNING

UNINTENDED MOVEMENT

- Verify that the ambient conditions are respected.
- Do not allow seals to run dry.
- Keep liquids from getting to the shaft bushing (for example, in mounting position IM V3).
- Do not expose the shaft sealing rings and cable entries of the motor to the direct spray of a pressure washer.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Clean dust and dirt off the product at regular intervals. Insufficient heat dissipation to the ambient air may excessively increase the temperature.

Motors are not suitable for cleaning with a pressure washer. The high pressure may force water into the motor.

Care must be taken with cleaning products as some active agents may have deleterious effects on plastics and welds. When using solvents or cleaning agents, verify that the cables, cable entry seals, O-rings and motor paint are not damaged.

NOTICE

CORROSION CAUSED BY CLEANING AGENTS

- Before using a cleaning agent, carry out a compatibility test in relation to the cleaning agent and the component affected.
- Do not use alkaline detergent.
- Do not use any chloride-containing cleaning agents.
- Do not use any sulfuric acid containing detergent.

Failure to follow these instructions can result in equipment damage.

Replacing the rolling bearing

When the rolling bearing is replaced, the motor is partially demagnetized and loses power.

NOTICE

INOPERABLE EQUIPMENT

Do not replace the rolling bearing.

Failure to follow these instructions can result in equipment damage.

For all service matters, contact your Schneider Electric representative.

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7.3 Replacing the motor

- Power off all supply voltages. Verify that no voltages are present.
- Label all connections.
- Uninstall the product.
- Note the identification number and the serial number shown on the product nameplate for later identification.
- Install the new product as per chapter *"3 Installation"*.
- Commission the product as per chapter *"4 Commissioning"*.

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7.4 Shipping, storage, disposal

Respect the ambient conditions presented in chapter *"2.1 General characteristics"*.

Shipping The product must be protected against shocks during transportation. If possible, use the original packaging for shipping.

Storage The product may only be stored in spaces where the specified permissible ambient conditions are met.
Protect the product from dust and dirt.

Disposal The product consists of various materials that can be recycled. Dispose of the product in accordance with local regulations.

Visit http://www.schneider-electric.com/green-premium for information and documents on environmental protection as per ISO 14025 such as:

- EoLi (Product End-of-Life Instructions)
- PEP (Product Environmental Profile)

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Glossary

Terms and Abbreviations

See chapter *" Terminology Derived from Standards"* for information on the pertinent standards on which many terms are based. Some terms and abbreviations may have specific meanings with regard to the standards.

Axial forces Tension or compression forces acting longitudinally on the shaft

Centering collar Centering device at the motor flange that allows for accurate motor mounting.

Degree of protection The degree of protection is a standardized specification for electrical equipment that describes the protection against the ingress of foreign objects and water (for example: IP 20).

DOM **D**ate **o**f **m**anufacturing: The nameplate of the product shows the date of manufacture in the format DD.MM.YY or in the format DD.MM.YYYY. For example:
31.12.11 corresponds to December 31, 2011
31.12.2011 corresponds to December 31, 2011

Drive system System consisting of controller, drive and motor.

EMC Electromagnetic compatibility

Length In the type code, the length is defined in terms of the number of stacks.

PELV Protective Extra Low Voltage, low voltage with isolation. For more information: IEC 60364-4-41

Radial forces Forces that act radially on the shaft

Size In the type code, the size is defined in terms of the flange size.

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