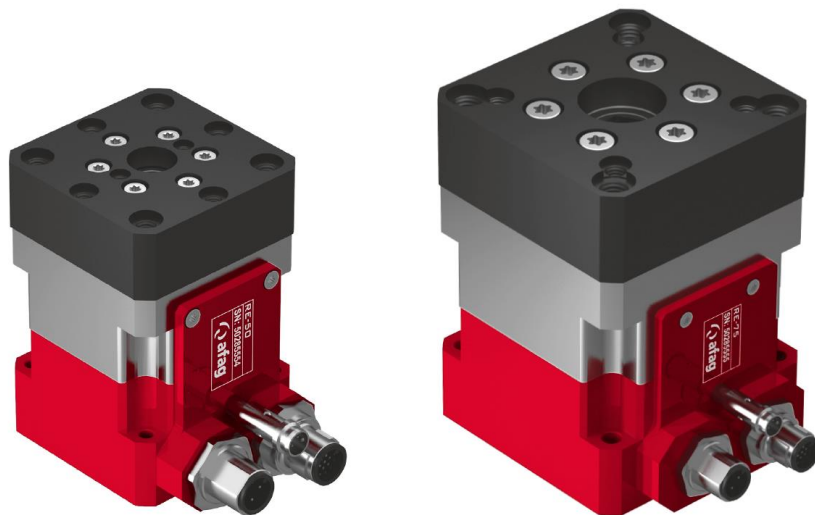


Assembly and operating instructions

Electric rotary module RE-50 | RE-75



Translation of the Original Assembly Instructions EN

- RE-50 ⇒ Order no.: 50285554
- RE-50 18-100V ⇒ Order no.: 50328767
- RE-50 ⇒ Order no.: 50294005 (without flange)
- RE-50 18-100V ⇒ Order no.: 50328768 (without flange)
- RE-75 ⇒ Order no.: 50285555
- RE-75 18-100V A ⇒ Order no.: 50545220
- RE-75 ⇒ Order no.: 50294006 (without flange)
- RE-75 18-100V A ⇒ Order no.: 50545219 (without flange)

Dear Customer,

Thank you for choosing our products and placing your trust and confidence in our company!

These assembly and operating instructions contain all essential information you need about your product. Our aim is to provide the required information as concisely and clearly as possible. If, however, you still have any questions on the contents or suggestions, please do not hesitate to contact us. We are always grateful for any feedback.

Our team will also be glad to answer any further question you may have regarding the electric rotary module or other options.

We wish you every success with our products!

With kind regards

Your Afag team

© Subject to modifications

The electric rotary modules have been designed by Afag Automation AG according to the state of the art. Due to the constant technical development and improvement of our products, we reserve the right to make technical changes at any time.

Updates of our documentations



Unlike the printed documents, our digital instructions manuals, product data sheets and catalogues are being continuously updated on our website.

Please keep in mind that the digital documents on our website are always the latest versions.

© Copyright 2022 Afag Automation AG

All contents of the present assembly and operating instructions, in particular the texts, photographs and graphics, are protected by copyright. All rights reserved. No part of these assembly and operating instructions may be reproduced, distributed (made available to third parties), or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of Afag Automation AG.

Afag Automation AG
Luzernstrasse 32
CH-6144 Zell (Switzerland)
Tel.: +41 62 959 86 86
e-mail: sales@afag.com
Internet: www.afag.com

Table of contents

1	General	5
1.1	Contents and purpose of these assembly instructions.....	5
1.2	Explanation of symbols.....	5
1.3	Additional symbols.....	6
1.4	Applicable documents	7
1.5	Warranty	7
1.6	Liability.....	7
2	Safety instructions.....	8
2.1	General	8
2.2	Intended use.....	8
2.3	Foreseeable misuse	8
2.4	Obligations of the operator and the personnel	9
2.4.1	Observe the assembly instructions	9
2.4.2	Obligations of the operating company.....	9
2.4.3	Obligations of the personnel	10
2.5	Personnel requirements	10
2.5.1	Personnel qualification	10
2.6	Personal protective equipment (PPE)	11
2.7	Changes & modifications.....	11
2.8	General hazards / residual risks.....	12
2.8.1	General hazards at the workplace	12
2.8.2	Danger due to electricity	13
2.8.3	Danger due to strong magnetic fields	13
2.8.4	Danger due to high temperatures	13
2.8.5	Mechanical hazards	13
3	Technical data	14
3.1	Electric rotary module RE-50	14
3.1.1	Dimension drawing RE-50	14
3.1.2	Technical data RE-50.....	15
3.1.3	Preferred combinations RE-50.....	16
3.2	Electric rotary module RE-75	17
3.2.1	Dimensional drawing RE-75.....	17
3.2.2	Technical data RE-75.....	18
3.2.3	Preferred combinations RE-75.....	19
3.3	Rotary flanges	20
3.4	Measuring values with SE-Power 1kVA.....	21
4	Transport, packaging and storage	22
4.1	Safety instructions for transport.....	22
4.2	Scope of supply	22
4.3	Transport	23

4.4	Packaging	23
4.5	Storage	23
5	Structure and description	24
5.1	Design electric rotary modules	24
5.2	Product description	24
5.3	Accessories	25
5.3.1	Accessories RE-50 without flange	26
5.3.2	Accessories RE-75 without flange	26
6	Installation, assembly & setting	27
6.1	Safety Instructions for installation & assembly	27
6.2	Assembly & attachment	28
6.2.1	Mounting holes	28
6.2.2	Tightening torques	28
6.2.1	Electrical interfaces	29
6.3	Mounting third-party modules	30
7	Commissioning	31
7.1	Safety instructions for commissioning	31
7.2	Preparatory activities for commissioning	32
7.3	Commissioning of the modules	32
7.4	Setting up & retrofitting	32
8	Fault elimination	33
8.1	Safety instructions for troubleshooting	33
8.2	Fault causes and remedy	34
9	Maintenance and repair	35
9.1	General notes	35
9.2	Safety instructions for maintenance and repair	35
9.3	Maintenance activities and maintenance intervals	36
9.3.1	Overview of the maintenance points	36
9.3.2	Further maintenance	36
9.4	Spare parts and repair work	36
10	Decommissioning and disposal	37
10.1	Safety instructions for decommissioning and disposal	37
10.2	Decommissioning	37
10.3	Disposal	37
11	Declaration of incorporation	38

1 General

1.1 Contents and purpose of these assembly instructions

These assembly instructions contain important information on assembly, commissioning, functioning and maintenance of the electric rotary module to ensure safe and efficient handling of the electric rotary module RE-50 & RE-75.

Consistent compliance with these assembly instructions will ensure:

- permanent operational reliability of the electric rotary module,
- optimal functioning of the electric rotary module,
- timely detection and elimination of defects (thereby reducing maintenance and repair costs),
- prolongation of the electric rotary module's service life.

The illustrations in this manual shall provide you with a basic understanding of the module and may vary from the actual design of your module.

1.2 Explanation of symbols

The safety notes are marked by a pictogram and a signal word. The safety notes describe the extent of the hazard.

DANGER



Danger!

This safety note indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING



Warning!

This safety note points out a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION



Caution!

This safety note points out a potentially dangerous situation which, if not avoided, can result in minor or slight injuries.

NOTICE

This safety note points out a potentially dangerous situation which, if not avoided, can cause substantial damage to property and the environment.



This note contains important additional information as well as useful tips for safe, efficient and trouble-free operation of the electric rotary module.

Further warning signs:

Where applicable, the following standardised symbols are used in this manual to point out the various potential health risks.

	Warning - Dangerous electrical voltage.
	Warning - Risk of injury from contact with hot surfaces.
	Warning - Risk of hand and finger injury due to uncontrolled movements of components.
	Warning - Magnetic field.
	Warning - Back injury due to heavy lifting.
	Warning - Risk of injury as a result of parts being flung out!
	Warning - High noise levels.

1.3 Additional symbols

In these assembly instructions the following symbols are used to highlight instructions, results, references, etc.

Symbol	Description
1.	Instructions (steps ...)
⇒	Results of actions
↪	References to sections
■	Enumerations not ordered

1.4 Applicable documents



Each electric rotary module is accompanied by a safety information sheet. This information sheet must be read carefully by every person who carries out work on and with the electric rotary modules.

1.5 Warranty

The warranty terms for Afag handling components and handling systems are the following:

- 24 months from initial operation and up to a maximum of 27 months from delivery.
- Wear parts are excluded from the warranty (*The customer is entitled to a product free of defects. This does also apply to defective accessories and wear parts. Normal wear and tear are excluded from the warranty*).

The warranty covers the replacement or repair of defective Afag parts. Further claims are excluded.

The warranty shall expire in the following cases:

- Improper use of the module
- Non-observance of the instructions regarding assembly, commissioning, operation and maintenance of the module.
- Improper assembly, commissioning, operation and maintenance
- Repairs and design changes carried out without prior technical instructions of Afag Automation AG
- Removing the serial number from the product
- Inadequate checking of wear parts
- Non-observance of the EC Machinery Directive, the Accident Prevention Regulations, the Standards of the German Electrotechnology Association (VDE) and these safety and assembly instructions.

1.6 Liability

No changes shall be made to the electric rotary modules unless described in this instructions manual or approved in writing by Afag Automation AG.

Afag Automation AG accepts no liability for unauthorized changes or improper assembly, installation, commissioning, operation, maintenance or repair work.

2 Safety instructions

2.1 General

This chapter provides an overview of all important safety aspects to ensure safe and proper use of the electric rotary module and optimal protection of personnel.

Safe handling and trouble-free operation of the electric rotary modules requires knowledge of the basic safety regulations.

Every person carrying out installation, commissioning, maintenance work or operating the ES modules must have read and understood the complete user manual, especially the chapter on safety instructions.

Also observe all rules and regulations regarding accident prevention applicable to the place of installation of the modules.

Improper use may result in danger to life and limb of the user or third parties or in damage to the automation system or other material assets.



Failure to follow the directions and safety instructions given in this instructions manual may result in serious hazards.

2.2 Intended use

The electric rotary modules series is designed for the shock-free linear movement of permanently mounted loads in **non-explosive** environments and in the ambient and operating specially conditions defined for these modules.

The electric rotary modules are used in automation systems.

The electric rotary modules are exclusively intended for operation with original LinMot components (controller, cables ...).

Any use beyond the described purpose is considered to be not in accordance with the intended use.



The intended use of the module also includes:

- observance of all instructions given in this instruction's manual,
 - compliance with the inspection and maintenance work and the specifications in the data sheets,
 - using only original spare parts.
-

2.3 Foreseeable misuse

Any use other than or beyond the intended use described above is considered a misuse/improper use of the electric rotary modules.

Especially the following use is considered a misuse:

- Use in potentially explosive atmospheres

WARNING



Risk of injury if the module is not used as intended!

The improper use of the electric rotary modules poses a potential hazard to the personnel.

- The electric rotary modules may only be used in a technically perfect condition in accordance with their intended use and instructions in this manual as well as in compliance with the safety requirements!
- Any malfunctions, particularly those that could impair safety, must be eliminated immediately!



Risks can occur if the module is not used as intended. In the event of damages caused by improper use the following shall apply:

- the operating company shall be solely responsible for such damage, and
- AFAG does not accept any liability for damages caused by improper use.

2.4 Obligations of the operator and the personnel

2.4.1 Observe the assembly instructions

A basic prerequisite for safe and proper handling of the parallel gripper is a good knowledge of the basic safety instructions.



These assembly instructions, in particular the safety instructions contained therein, must be observed by all persons working with the electric rotary modules.

2.4.2 Obligations of the operating company

In addition to the safety instructions given in this manual, the operating company must also comply with the safety, accident prevention and environmental protection regulations valid for the field of application of the electric rotary modules.

The operating company is required to use only personnel who:

- have the necessary professional qualifications and experience,
- are familiar with the basic rules regarding occupational safety and accident prevention,
- have been instructed in the correct handling of the electric rotary modules,
- have read and understood these assembly instructions.

The operating company is also required to:

- monitor on an ongoing basis that the personnel work safely considering any potential hazard involved and the assembly instructions are observed,
- ensure that the assembly instructions are always kept at hand at the automation system in which the electric rotary modules have been integrated,
- observe and communicate universally applicable laws and regulations regarding accident prevention and environmental protection,
- provide the necessary personal protective equipment (e.g. protective gloves) and instruct the personnel to wear it.

2.4.3 Obligations of the personnel

All personnel working with the electric rotary modules are required to:

- read and observe these assembly instructions, especially the chapter on safety,
- observe the occupational safety and accident prevention regulations,
- observe all safety and warning signs on the electric rotary modules,
- refrain from any activity that might compromise safety and health.



In addition, the personnel must wear the personal protective equipment required for carrying out their work. (➡Chapter 2.6).

2.5 Personnel requirements

2.5.1 Personnel qualification

The activities described in the assembly instructions require specific requisites at the level of professional qualifications of the personnel.

Personnel not having the required qualification will not be able to assess the risks that may arise from the use of the electric rotary modules thus exposing himself and others to the risk of serious injury. Therefore, only qualified personnel may be permitted to carry out the described activities on the electric rotary modules.

Persons whose ability to react is restricted due to the intake of medication or the like must not interact with the electric rotary modules.

These installation instructions are intended for skilled personnel (installers, system integrators, maintenance personnel, technicians), electricians and operating personnel.

The following is a description of the professional skills (qualifications) required for carrying out the different activities:

Qualified personnel:

Qualified personnel with appropriate training who are qualified due to their special know-how and fully familiar with the machine and who have been given instructions on how to carry out the task entrusted to them safely.

Qualified electrician:

Persons who have obtained their electrical qualifications through appropriate professional training and complementary courses that enables them to identify risks and prevent possible hazards resulting from electricity.

Operator (trained personnel):

Authorized persons who due to their specialized professional training, expertise and experience are capable of identifying risks and preventing possible hazards arising from the use of the machine.





2.6 Personal protective equipment (PPE)

The personal protective equipment serves to protect the personnel from hazards affecting their safety and health at work.

When working on/with the electric rotary modules, the personnel must wear the personal protective equipment assigned by the safety officer of the operating company or as required by safety regulations. In addition, the personnel are required to:

- wear the personal protective equipment provided by the operating company (employer),
- check the personal protective equipment for proper condition, and
- immediately notify the person responsible on site of any defects found on the personal protective equipment.

Personal protective equipment and the respective mandatory signs:

	<i>Protective clothing</i> is a close-fitting clothing specifically designed to protect personnel from hazards during work.
	<i>Protective gloves</i> are specifically designed to protect the personnel against hand injuries (such as cuts, abrasion, burns).
	<i>Safety shoes</i> are specifically designed to protect the personnel against foot injuries from crushing, falling objects or slipping on slippery surfaces.
	Hearing protectors are required to protect the personnel against excessive noise levels to prevent noise-induced hearing loss.

2.7 Changes & modifications

No changes may be made to the electric rotary modules which have not been described in these assembly instructions or approved in writing by Afag Automation AG.

AFAG Automation AG accepts no liability for unauthorised changes or improper assembly, installation, commissioning, maintenance or repair work.



The electric rotary modules may not be changed or modified in any way, except with the prior written consent of AFAG Automation AG.

2.8 General hazards / residual risks

Despite the safe design of the electric rotary modules and the technical protective measures taken, there still remain residual risks that cannot be avoided and which present a non-obvious residual risk when operating the electric rotary modules.

Observe the safety instructions in this chapter and in the other sections of this manual to avoid damage to property and dangerous situations for the personnel.

2.8.1 General hazards at the workplace

The electric rotary modules have been built according to the state-of-the-art and the applicable health and safety requirements. Nevertheless, improper use of the electric rotary modules may cause the following hazards to the personnel:

- danger to life and limb of the operator or third parties,
- on the electric rotary modules themselves,
- property damage.



Always keep the assembly instructions ready at hand at the workplace! Please, also observe:

- the general and local regulations on accident prevention and environmental protection.
- Observe the safety information sheet for the electric rotary module.

WARNING



Danger - Do not use in unsuitable environment!

The electric rotary modules are designed for use in **non**-explosive atmospheres.

- Do **not** use the electric rotary modules in potentially explosive atmospheres!

CAUTION



Risk of entanglement!

There is a risk of entanglement due to the rotary movements of the module.

- Maintenance and care should only be carried out by qualified personnel.
- Wear personal protective equipment (no loose clothing, tie long hair).

CAUTION



Risk of injuries due to uncontrolled parts movements!

When connecting the electric rotary modules to the control unit or when operating the electric rotary modules sudden, unexpected movements may occur which can cause personal injury or property damage.

- Only qualified personnel may work with or on the electric rotary modules.

2.8.2 Danger due to electricity

DANGER



Danger! Risk of electric shock!

If work on electrical components is required, ensure that the work is carried out properly, failure to do so will cause serious or fatal injuries.

- Work on the machine's electrical equipment may only be performed by skilled electrician or trained personnel under the supervision of a skilled electrician in accordance with all relevant electrical regulations.
-

2.8.3 Danger due to strong magnetic fields

DANGER



Danger due to magnetic fields!

Due to the strong magnetic fields, electronic devices such as pacemakers can be disturbed or their function impaired.

- Persons with a pacemaker must keep a safety distance of at least 50 cm.
-

2.8.4 Danger due to high temperatures

CAUTION



Danger of injury from hot surfaces!

During continuous operation of the electric rotary module, the surface of the rotary module heats up.

- Before touching hot surfaces without protective gloves, make sure they have cooled down to ambient temperature.
-

2.8.5 Mechanical hazards

CAUTION



Danger of injury from moving components!

Limbs can be crushed by moving components!

- Work on and with the electric rotary modules may only be carried out by qualified personnel.
 - Never reach into the system during normal operation!
-

3 Technical data

3.1 Electric rotary module RE-50

3.1.1 Dimension drawing RE-50

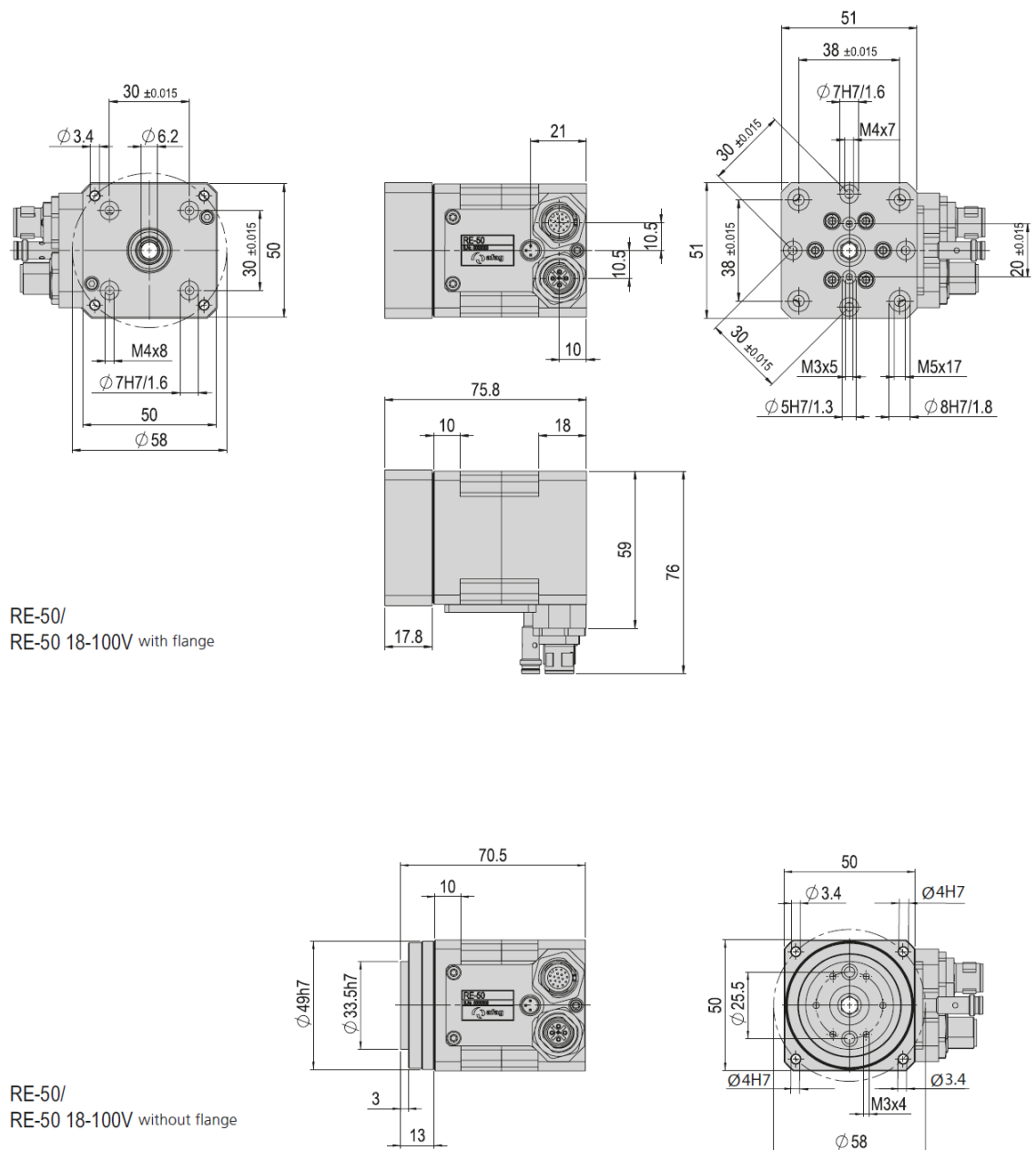


Fig. 1 Dimensional drawing of electric rotary module RE-50

Electric rotary module RE-50

3.1.2 Technical data RE-50

RE-50	
Attachment grid rear	30 x 30 mm
Attachment grid rear LK Ø	58 mm
Attachment grid, front	30 x 30 mm
Attachment grid, front, alternative	38 x 38 mm
Operating temperature	0 - 40 °C
Storage temperature	0 - 50 °C

Type	RE-50	RE-50 without flange	RE-50 18-100V	RE-50 18-100V without flange
Order number	50285554	50294005	50328767	50328768
Net weight	0.575 kg	0.502 kg	0.575 kg	0.502 kg
Max. payload, radial	*0 - 800 N	*0 - 800 N	*0 - 800 N	*0 - 800 N
Max. payload, axial	*0 - 200 N	*0 - 200 N	*0 - 200 N	*0 - 200 N
Max. rotational speed	*200 rpm	*200 rpm	*/ **200 rpm	*200 rpm
Noise level	< 65 dB (A)	< 65 dB (A)	< 65 dB (A)	< 65 dB (A)
Repeat accuracy	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °
Hollow shaft Ø	6.2 mm	6.2 mm	6.2 mm	6.2 mm
Operating voltage	230 V	230 V	18 - 100 V	18 - 100 V
Nominal torque	0.75 Nm	0.75 Nm	0.75 Nm	0.75 Nm
Max. output torque	*1.8 Nm	*1.8 Nm	*1.8 Nm	*1.8 Nm
Max. static tipping torque	93 Nm	93 Nm	93 Nm	93 Nm
Max. dynamic tipping torque	15 Nm	15 Nm	15 Nm	15 Nm
Tipping strength	5.8 Nm/arcmin	5.8 Nm/arcmin	5.8 Nm/arcmin	5.8 Nm/arcmin
Protection type	IP 40	IP 40	IP 40	IP 40
Ratio	i = 30	i = 30	i = 30	i = 30
Nominal speed	117 rpm	117 rpm	117 rpm	117 rpm
Mounting position	✚	✚	✚	✚

The technical data pertains to Afag standard test conditions.
Cleanroom class ISO 14644-1, class ISO 7

*The maximum values listed above depend on the application and must not be combined. In case of doubt, please contact your Afag partner

**With SE-24: 117 rpm

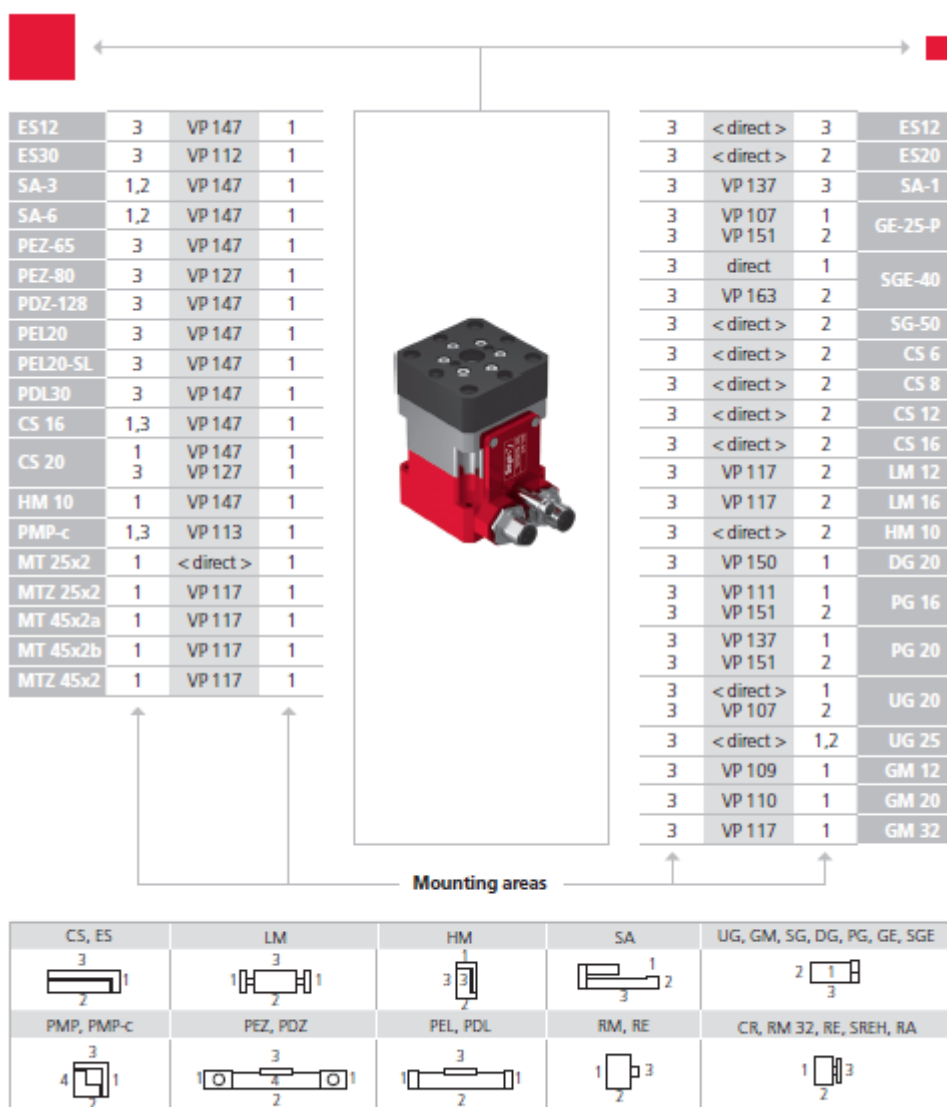
Included in the delivery (Catalogue HT accessories)

- 2x Centering bushing Ø7x3
- 4x Mounting screw M3x22

Accessories

- Flange plate set RE-50 [p. 223]

3.1.3 Preferred combinations RE-50

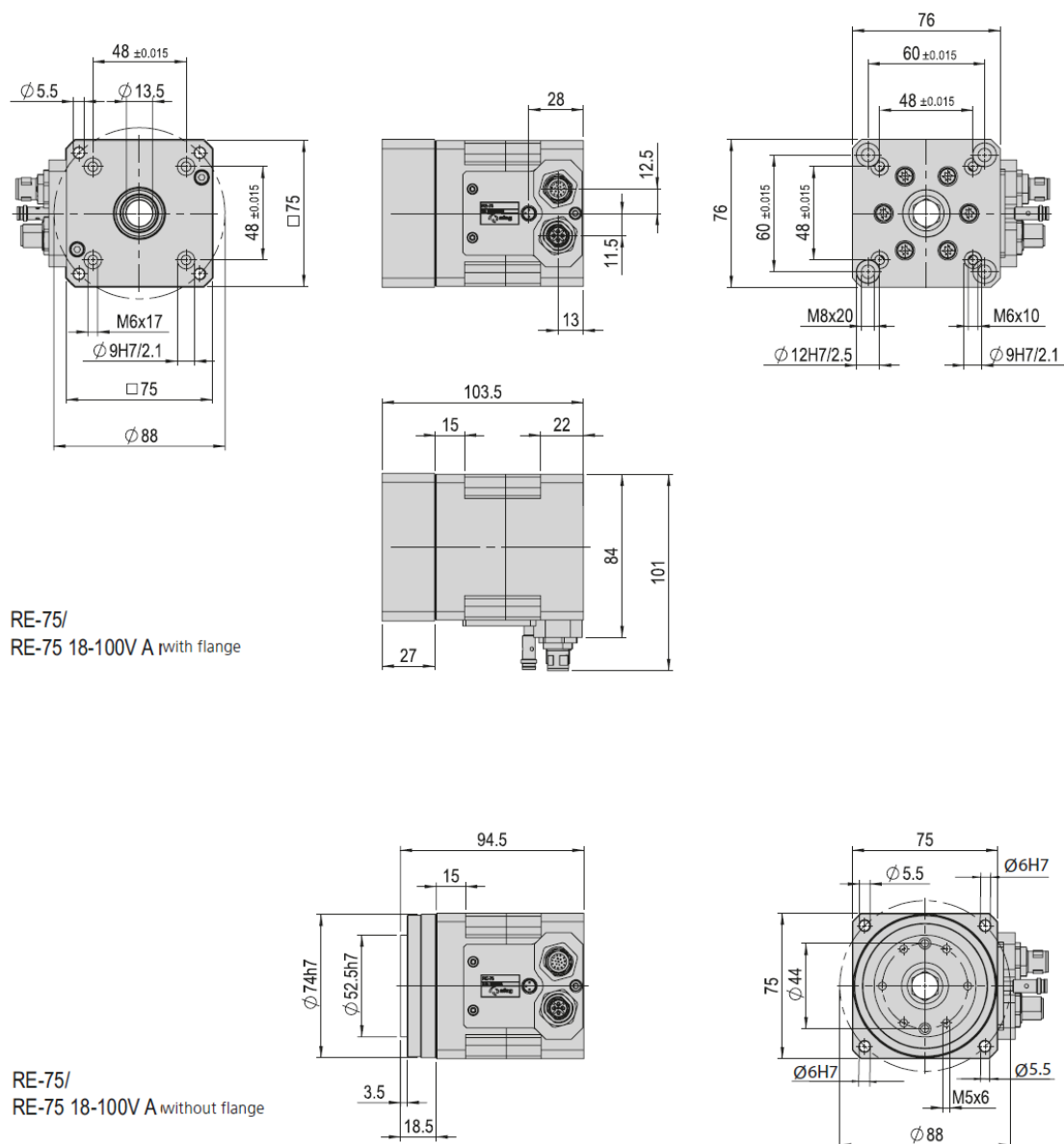


Note that there might be different mounting positions from one module to another one.

The required connection elements and the range of support columns are depicted in the catalogue HT accessories.

3.2 Electric rotary module RE-75

3.2.1 Dimensional drawing RE-75



3.2.2 Technical data RE-75

RE-75	
Attachment grid rear	48 x 48 mm
Attachment grid rear LK Ø	88 mm
Attachment grid, front	48 x 48 mm
Attachment grid, front, alternative	60 x 60 mm
Operating temperature	0 - 40 °C
Storage temperature	0 - 50 °C

Type	RE-75	RE-75 without flange	RE-75 18-100V A	RE-75 18-100V A without flange
Order number	50285555	50294006	50545220	50545219
Net weight	1.725 kg	1.482 kg	1.725 kg	1.482 kg
Max. payload, radial	*0 - 1200 N	*0 - 1200 N	*0 - 1200 N	*0 - 1200 N
Max. payload, axial	*0 - 600 N	*0 - 600 N	*0 - 600 N	*0 - 600 N
Max. rotational speed	*200 rpm	*200 rpm	*200 rpm	*200 rpm
Noise level	< 65 dB (A)	< 65 dB (A)	< 65 dB (A)	< 65 dB (A)
Repeat accuracy	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °
Hollow shaft Ø	13.5 mm	13.5 mm	13.5 mm	13.5 mm
Operating voltage	230 V	230 V	18 - 100 V	18 - 100 V
Nominal torque	3.5 Nm	3.5 Nm	3.5 Nm	3.5 Nm
Max. output torque	*9 Nm	*9 Nm	*9 Nm	*9 Nm
Max. static tipping torque	230 Nm	230 Nm	230 Nm	230 Nm
Max. dynamic tipping torque	75 Nm	75 Nm	75 Nm	75 Nm
Tipping strength	23.5 Nm/arcmin	23.5 Nm/arcmin	23.5 Nm/arcmin	23.5 Nm/arcmin
Protection type	IP 40	IP 40	IP 40	IP 40
Ratio	i = 30	i = 30	i = 30	i = 30
Nominal speed	100 rpm	100 rpm	100 rpm	100 rpm
Mounting position	✚	✚	✚	✚

The technical data pertains to Afag standard test conditions.
Cleanroom class ISO 14644-1, class ISO 7

*The maximum values listed above depend on the application and must not be combined. In case of doubt, please contact your Afag partner.

Included in the delivery
(Catalogue HT accessories)

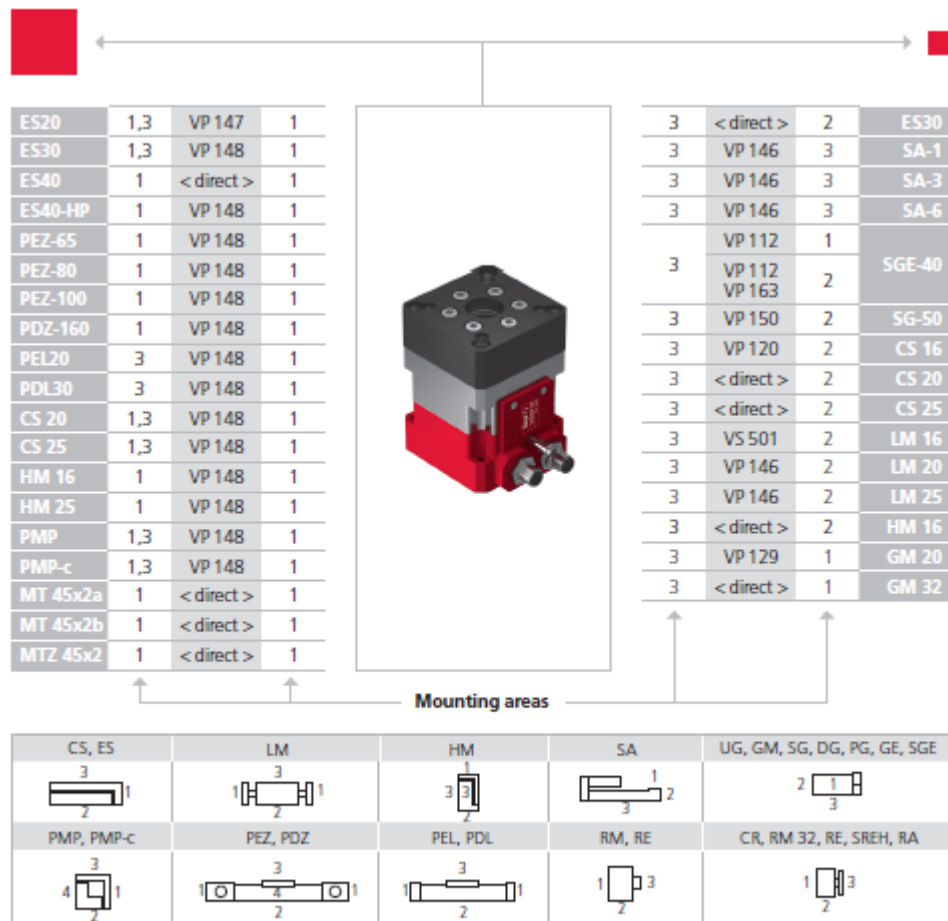
- 2x Centering bushing Ø9x4
- 2x Mounting screw M5x30

Accessories

- Flange plate set RE-75 [p. 221]
(Catalogue HT accessories)
- INI d5x36-Sn2.0-PNP-NC-M8x1

Electric rotary module RE-75

3.2.3 Preferred combinations RE-75

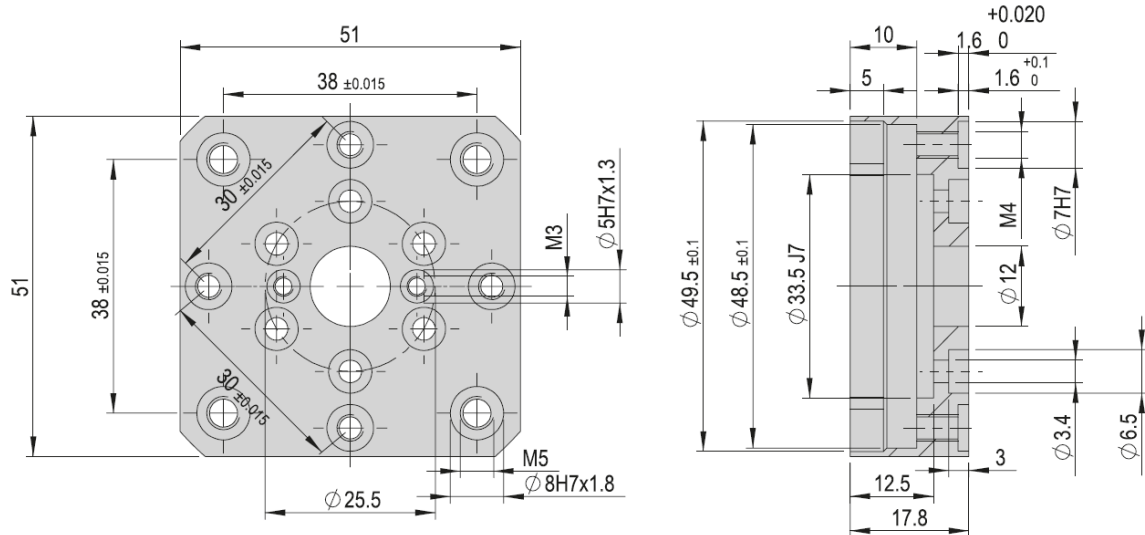


Note that there might be different mounting positions from one module to another one.

The required connection elements and the range of support columns are depicted in the catalogue HT accessories.

3.3 Rotary flanges

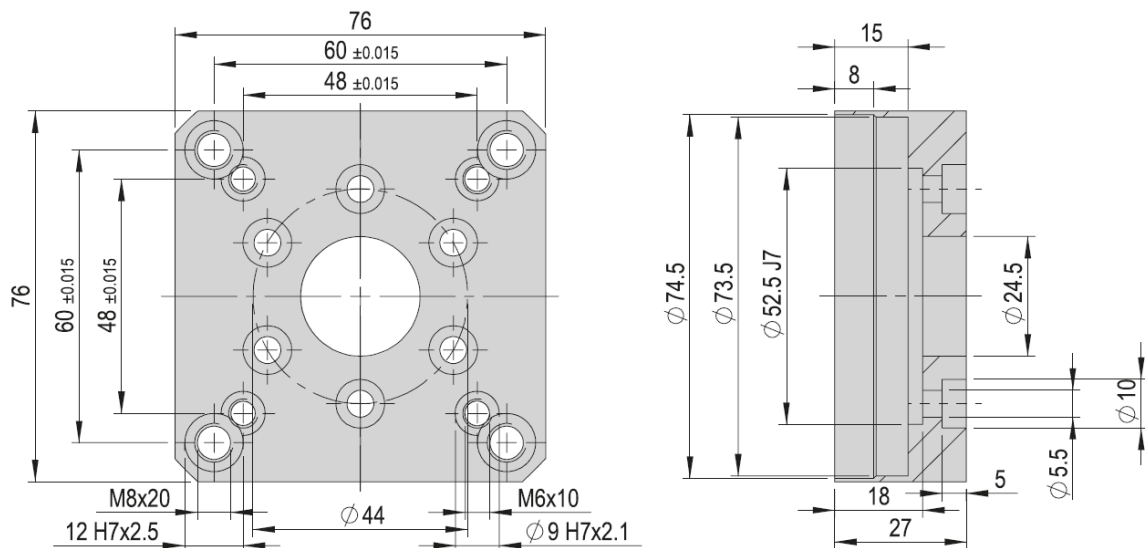
Flange plate set RE-50	RE-50
Order number	50294008
Net weight	0.063 kg



Included in the delivery
(Catalogue HT accessories)

- 6x Mounting screw M3x6

Flange plate set RE-75	RE-75
Order number	50294009
Net weight	0.21 kg



Included in the delivery
(Catalogue HT accessories)

- 6x Mounting screw M5x10

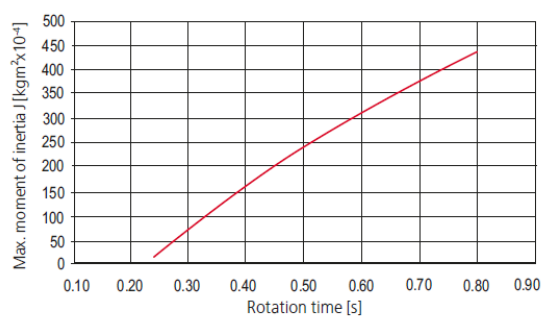
Fig. 3 Rotary flanges

Measuring values with SE-Power 1kVA

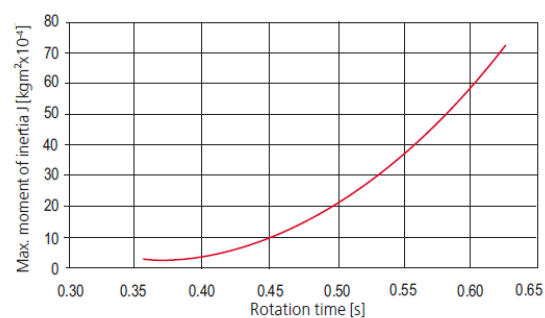
3.4 Measuring values with SE-Power 1kVA

Load diagrams

Rotation time RE-50, 180° - horizontal with SE power

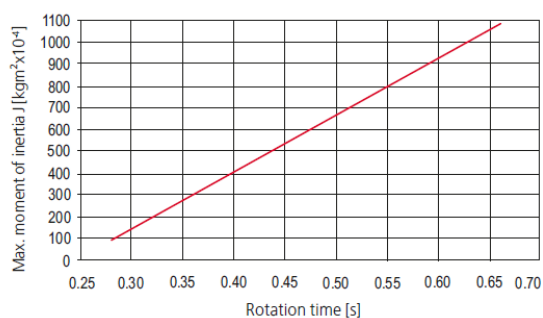


Rotation time RE-50 18-100V, 180° - horizontal with SE-24



Load diagrams

Rotation time RE-75, 180° - horizontal with SE power



4 Transport, packaging and storage

4.1 Safety instructions for transport



CAUTION

Risk of injury when packing and unpacking the electric rotary modules!

The electric rotary modules can be moved back and forth while they are still loose and cause crushing injuries.

- Pack and unpack the electric rotary modules carefully.



Also observe the safety instructions in  chap. 2 „Safety instructions“ in this manual.

4.2 Scope of supply



In addition to the assembly and operating instructions, a safety information sheet is enclosed with each electric rotary module.

This information sheet must be read by every person who carries out work with and on the electric rotary modules!



Fig. 4 Scope of delivery electric rotary modules

Unt.	RE-50	RE-75
1 x	Rotary module (weight < 1 kg)	Rotary module (weight < 2 kg)
2 x	Centering sleeves \varnothing 7x3 mm	Centering bushing \varnothing 9x4 mm
2 x	Mounting screws M3x22 mm	Mounting screws M4x30 mm
1 x	Mounting/operating instructions	Mounting/operating instructions

4.3 Transport



No liability can be assumed for damages caused by improper installation on the part of the operating company.



The following conditions must be complied with for transport and storage:

- Storage temperature: 0-50 °C
 - Relative air humidity: < 90%, non condensing
-

4.4 Packaging

The electric rotary modules are transported in the transport packaging of AFAG Automation AG. If no AFAG packaging used, the electric rotary modules must be packed so that they are protected against shock and dust.

NOTICE

Risk to the environment due to incorrect disposal of the packaging material

Environmental damage can be caused by incorrect disposal of the packaging material.

- Dispose of the packaging material in an environmentally sensitive way in accordance with the local environmental regulations.
-

4.5 Storage

If the electric rotary modules are stored for an extended period of time, observe the following:

- Store the electric rotary modules in the transport packaging
- Do not store the electric rotary modules outdoors or expose them to weather conditions.
- The storage space must be dry and dust free.
- Room temperature of the storage space: 0-50 °C.
- Relative air humidity: < 90% non condensing.
- Clean the electric rotary modules and protect the blank metal parts against corrosion using the appropriate means.
- Protect the electric rotary modules from dirt and dust.

5 Structure and description

5.1 Design electric rotary modules

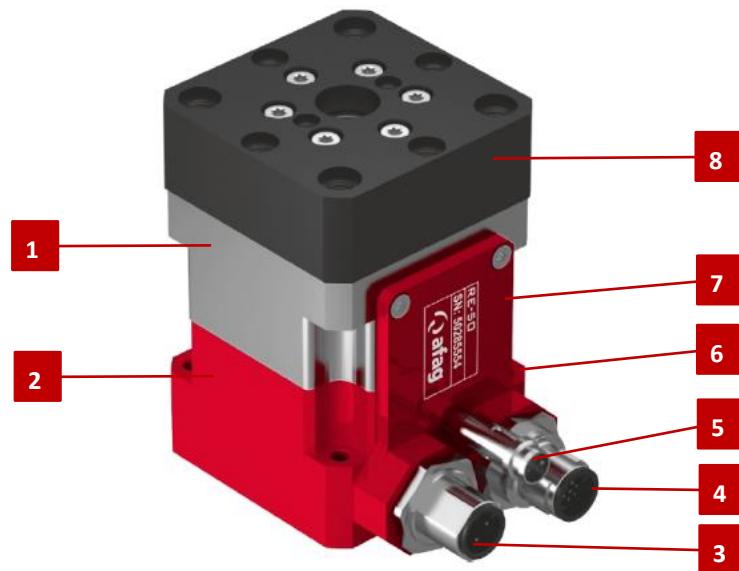


Fig. 5 Design of the rotary module

- | | |
|--------------------------|---------------------------|
| 1. Fastening servo motor | 5. Initiator |
| 2. Encoder housing | 6. Mounting holes at rear |
| 3. Motor connection | 7. Plug cover |
| 4. Encoder connection | 8. Rotary flange |

5.2 Product description

The rotary module is a highly compact electric rotary module for rotating loads. The rotary modules are equipped with a 17-pin industrial connector (G13) and a 4-pin M15 connector.

The rotary modules are designed for operation with the AFAG controllers SE-Power 1kVA and SE-24. The modules can also be operated with other third-party controllers.

Further technical information can be found in chapter 3 “Technical Data” in this manual.

5.3 Accessories

No.	Denomination	Order number
1	Centering sleeve 7x3mm	11016850
2	Centering sleeve 9x4mm	11004942
3	Flange plate set RE-50	50294008
4	Flange plate set RE-50	50294009
5	Motor cable-M12-5m-0-open (SE-Power)	50290459
6	Motor cable-M12-10m-0-open (SE-Power)	50310506
7	Motor cable-M12-5m-90-open (SE-Power)	50290460
8	Motor cable-M12-10m-90-open (SE-Power)	50310507
9	Motor cable-M15-3m-0-0 (SE-24)	50332418
10	Motor cable-M15-3m-90-0 SE-24)	50332420
11	Motor cable-M15-5m-0-0 (SE-24)	50338977
12	Motor cable-M15-5m-90-0 (SE-24)	50338978
13	Encoder cable-G10-5m-0-0 (SE-Power)	50297199
14	Encoder cable -G10-10m-0-0 (SE-Power)	50310508
15	Encoder cable -G10-5m-90-0 (SE-Power)	50297200
16	Encoder cable -G10-10m-90-0 (SE-Power)	50310509
17	Encoder cable -G10-5m-0-open	50290461
18	Encoder cable -G10-10m-0-open	50310511
19	Encoder cable -G10-5m-90-open	50290462
20	Encoder cable -G10-10m-90-open	50310512
21	Encoder cable -G12-3m-0-0 (SE-24)	50332416
22	Encoder cable -G12-3m-90-0 (SE-24)	50332417
23	Encoder cable -G12-5m-0-0 (SE-24)	50338975
24	Encoder cable -G-12-5m-90-0 SE-24)	50338976
25	Proximity switch cable-R1-5m-0-open (SE-Power)	11006446
26	Proximity switch cable-R1-10m-0-open (SE-Power)	50072072
27	Proximity switch cable-R1-5m-90-open (SE-Power)	11007826
28	Proximity switch cable-R1-10m-90-open (SE-Power)	50310513
29	Proximity switch cable-R2-3m-0-0 (SE-24)	50340271
30	Proximity switch cable-R2-5m-0-0 (SE-24)	11017754
31	Proximity switch cable-R2-3m-90-0 (SE-24)	50340272
32	Proximity switch cable-R2-5m-90-0 (SE-24)	50340903
33	Servo controller SE-24	-
34	Servo controller SE-Power 1 kVA	-
35	Sensor INI d8x36-SN2.0-PNP-NCM8x1	50569881

5.3.1 Accessories RE-50 without flange

Flange plates kit (incl. screw) Order no.: 50294008

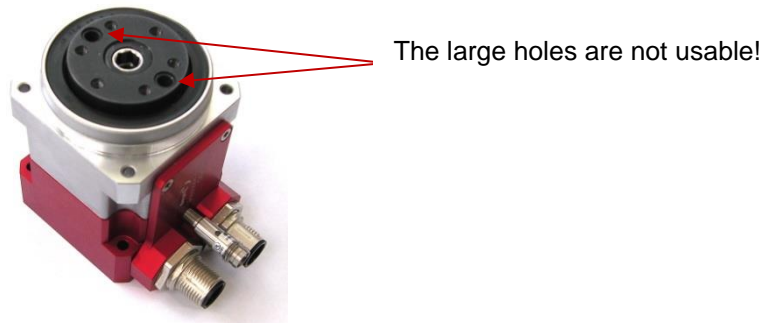


Fig. 6 Accessories RE-50 without flange

5.3.2 Accessories RE-75 without flange

Flange plates kit (incl. screws) Order no.: 50294009

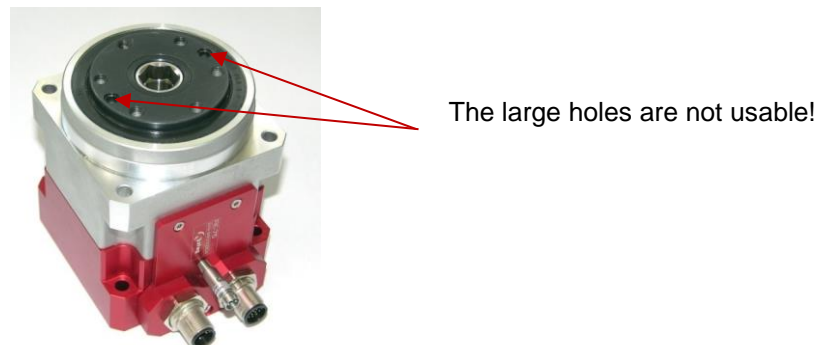


Fig. 7 Accessories RE-75 without flange

6 Installation, assembly & setting

The rotary module is an incomplete machine. For safe operation, the modules must be integrated into the safety concept of the machine.

During normal operation, it must be ensured that the user cannot reach into the working area of the rotary module. This can be achieved by suitable protective measures (e.g. enclosure, light grid).

In special operating modes, it must be ensured that there is no danger to the system operator.



The customer is responsible for the installation of the electric rotary modules into the automation system!

6.1 Safety Instructions for installation & assembly

CAUTION



Danger from hot surfaces!

High surface temperatures of up to 80 °C can occur on the rotary modules. There is a risk of injury and damage to property.

- No temperature-sensitive parts such as cables or electronic components may be in contact with or attached to the rotary module!
- Before touching hot surfaces without protective gloves, make sure that they have cooled down to ambient temperature.

CAUTION



Risk of injuries due to uncontrolled parts movements!

When the control unit is switched on, signals from the control unit can lead to unintentional movements of the electric rotary modules and cause serious injuries or material damage.

- When working on the electric rotary modules, make sure that the control unit is switched off and that it cannot be switched on again unintentionally.



No liability can be assumed for damages caused by improper installation/assembling work carried out by the operator.



Also observe the safety instructions in  Chap. 2 „Safety instructions“ in this manual.

6.2 Assembly & attachment

The RE-50 and RE-75 rotary modules can be installed both vertically and horizontally.

6.2.1 Mounting holes

The rotary modules are attached to the back of the housing. For mounting on AFAG modules suitable connection plates must be used.

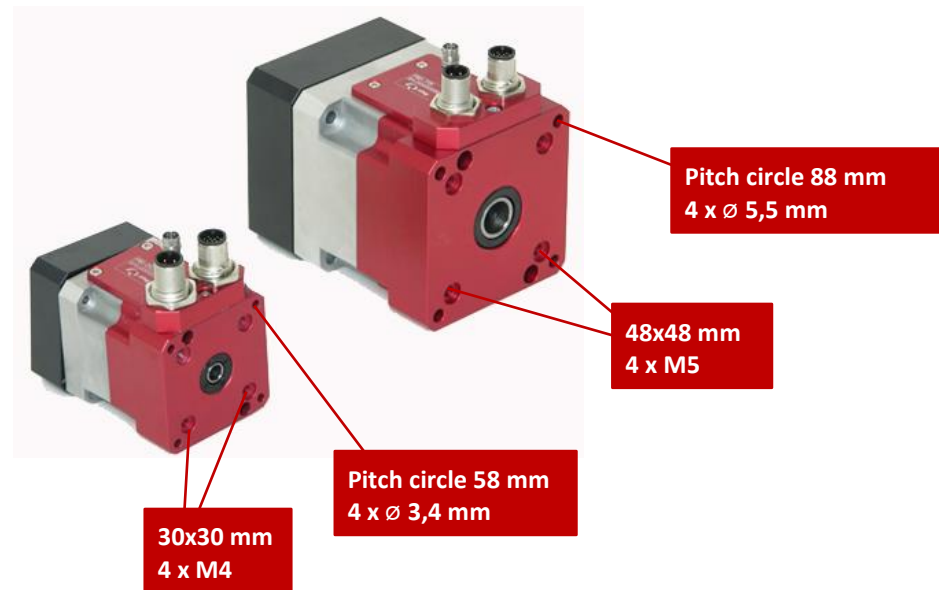


Fig. 8 Mounting holes on the rotary module RE-50 & RE-75



Use the centering bushings included in the scope of supply for positioning and insert these sleeves in the diagonally opposite bore holes of the mounting grid.

6.2.2 Tightening torques

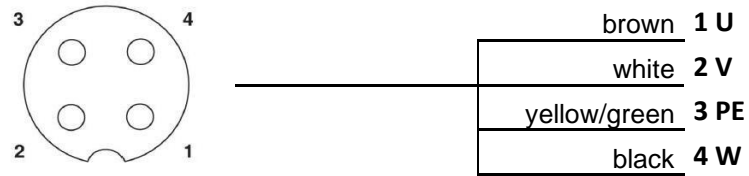
For assembling use screws with the following minimum specifications:

Standard	VDI 2230
Screw strength	Category 8.8
Surface:	Galvanized blue, oiled or greased

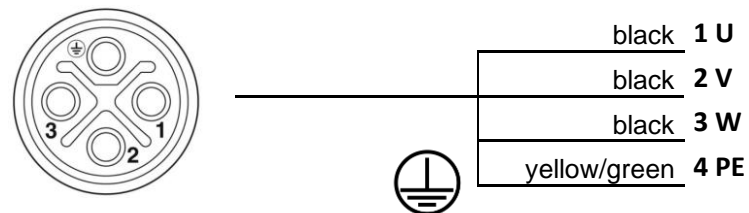
Thread	Tightening torque
M2	0.3 ... 0.35 Nm
M2.5	0.5 ... 0.73 Nm
M3	1.1 ... 1.4 Nm
M4	2.6 ... 3.3 Nm
M5	5.2 ... 6.5 Nm
M6	9.0 ... 11.3 Nm
M8	21.6 ... 27.3 Nm

6.2.1 Electrical interfaces

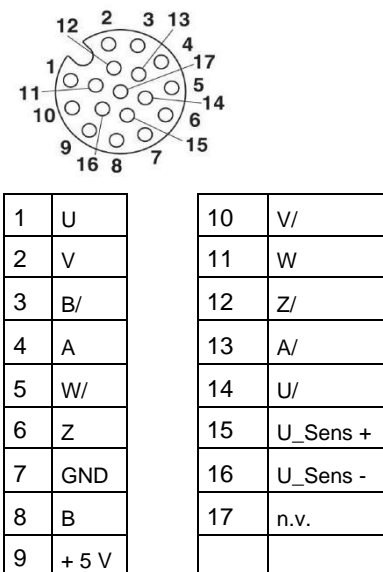
Motor cable (M12 or M15)



Motor cable (M27 or M28)



Encoder cable (G10, G12 or G14)



Sensor plug

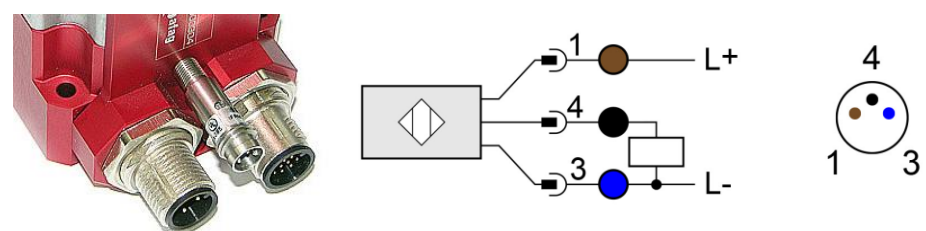


Fig. 9 Electrical interfaces RE-50 & RE-75

6.3 Mounting third-party modules

The rotary flange is designed for the mounting of AFAG modules.

The rotary flange can also be removed if third-party modules are used. It can be replaced by a rotating flange adapted for the third-party modules.



Observe the permissible payloads of the module (➡ Chap. 3 “Techn. Data”)!
AFAG accepts no liability for modifications to the modules!

7 Commissioning

After connection, the electric rotary modules are put into operation for the first time via the control.



Only carry out commissioning in set-up or step-by-step mode!

7.1 Safety instructions for commissioning



DANGER

Danger! Risk of electric shock!

An inadmissible removal of the connector cover may lead to an electric shock!

- NEVER remove the connector cover from an installed rotary module!
- Avoid actions on the installed module that endanger safety!



CAUTION

Danger of injury in the working area of the electric rotary modules!

Due to the decentralised control system, the operator of the electric rotary module must not necessarily stand next to the rotary modules during operation so that he may not have a complete view of the working area. Persons within the working area may be injured.

- During operation ensure a good overview of the entire working area.
- Unauthorized persons must not stay within working area during operation.



CAUTION

Risk of injuries due to uncontrolled parts movements!

When the control unit is switched on, signals from the control unit can lead to unintentional movements of the electric rotary modules and cause serious injuries or material damage.

- When working on the electric rotary modules, make sure that the control unit is switched off and that it cannot be switched on again unintentionally.
- Only connect or disconnect the cables when the control unit is switched off!



CAUTION

Risk of injury due to mounted components!

Attachments to the rotation module can pose a danger in connection with the moving parts.

- Take appropriate measures to ensure safe operation!



Also observe the safety instructions in  Chap. 2 „Safety instructions“ in this manual.

Also observe the operating instructions of the controller used!

7.2 Preparatory activities for commissioning

The electric rotary module is designed for operation with LinMot servo controllers.


The operation of the servo controllers is described in the operating manual of the respective servo controller.

Perform a test run to prepare for commissioning. Proceed as follows:

1. Connect the servo controller to the control system (operating software must be installed).
 - The use of the operating software is described in the installation instructions for the servo controller used.
2. if the modules are delivered with an AFAG servo controller, no further action is required (operating parameters already stored in the controller).
3. if another servo controller is used, special cables must be made and the operating parameters determined.
 - ⇒ The test operation can now be carried out.

7.3 Commissioning of the modules

Proceed carefully and follow the instructions step by step when commissioning the modules for the first time:

1. Observe the permissible technical values ( Chapter 3).
 - Payload
 - Movement frequency
 - Momentary load
2. Make sure that there are no persons or tools in the working area.
3. Perform test run:
 - Start with slow movements
 - Then continue under normal operating conditions
 ⇒ Commissioning is completed.

7.4 Setting up & retrofitting

Improperly performed adjustment work can cause considerable damage to property and serious injury. The work may be carried out by trained personnel only.



Before carrying out any setting work at the electric rotary module, deactivate the controller enable. Activate the controller enable only after the work has been completed!

8 Fault elimination

8.1 Safety instructions for troubleshooting



DANGER

Danger! Risk of electric shock!

An inadmissible removal of the connector cover may lead to an electric shock!

- NEVER remove the connector cover from an installed rotary module!
 - Avoid actions on the installed module that endanger safety!
-



WARNING

Danger of injury due to faulty troubleshooting!

Poorly performed troubleshooting work can lead to serious injuries and damage to property.

- Only use trained specialist personnel for troubleshooting.
 - All work on the electric rotary modules must be carried out with the power supply cut off!
-



WARNING

Risk of injuries due to uncontrolled parts movements!

Signals from the control system can trigger unintentional movements of the electric rotary modules and cause injury.

- Before starting any work on the electric rotary modules, switch off the control unit and make sure that it cannot be switched on again unintentionally.
 - Observe the operating instructions of the controller used!
-



Also observe the safety instructions in ➞ Chap. 2 „Safety instructions“ in this manual.

8.2 Fault causes and remedy

The following table contains an overview of possible fault causes and how to proceed to eliminate them.

Fault	Possible cause	Remedy:
Rotary flange oscillates (very strong vibrations at the drive)	<ul style="list-style-type: none"> ▪ Moments of inertia of the elements / useful load on the rotary flange too high 	<ul style="list-style-type: none"> ▪ Reduce moment of inertia (keep to the indications of the technical data)
Rotary flange turns continuously (stopper not mounted)	<ul style="list-style-type: none"> ▪ Wrong setting of control parameters ▪ Wrong connection of end position sensor ▪ End position sensor connection interrupted ▪ End position sensor defective 	<ul style="list-style-type: none"> ▪ Reset parameters on the control system ▪ Check pin assignment and correct, if necessary ▪ Check sensor cable ▪ Replace end position sensor (only by Afag service technician! see below)
Rotary flange rotates up to the wrong side of the optional stopper and then stops	<ul style="list-style-type: none"> ▪ Wrong direction of reference run ▪ Wrong drive connection 	<ul style="list-style-type: none"> ▪ Check direction of reference run and change, if necessary ▪ Check pin assignment and correct, if necessary
Rotary flange does not move	<ul style="list-style-type: none"> ▪ Wrong drive connection ▪ Motor connection interrupted ▪ Drive defective 	<ul style="list-style-type: none"> ▪ Check pin assignment and correct, if necessary ▪ Check motor cable ▪ Have the drive replaced by AFAG (only by Afag technicians!)
Rotary flange stops after a short turn	<ul style="list-style-type: none"> ▪ Important contouring error ▪ Encoder connection interrupted 	<ul style="list-style-type: none"> ▪ Reduce values for acceleration and speed ▪ Check whether module shaft is mechanically blocked ▪ Check encoder cable ▪ Check encoder for correct function

End position sensor replacement



The sensor may only be exchanged by the manufacturer.

The manufacturer does not accept any liability for a sensor which was replaced by the customer!

9 Maintenance and repair

9.1 General notes

The electric rotary modules are almost maintenance-free. Nevertheless, some maintenance work must be carried out to ensure an optimum operating condition of the electric rotary modules.

9.2 Safety instructions for maintenance and repair



DANGER

Danger! Risk of electric shock!

An inadmissible removal of the connector cover may lead to an electric shock!

- NEVER remove the connector cover from an installed rotary module!
- Avoid actions on the installed module that endanger safety!



WARNING

Danger of injury due to improper maintenance!

Improperly carried out maintenance activities can cause considerable damage to property and serious injury.

- Only use qualified personnel to carry out the activities.
- Always wear personal protective equipment when carrying out maintenance and repair work!



WARNING

Risk of injuries due to uncontrolled parts movements!

Signals from the control system can trigger unintentional movements of the electric rotary modules and cause injury.

- Before starting any work on the electric rotary modules, switch off the control unit and make sure that it cannot be switched on again unintentionally.
- Observe the operating instructions of the controller used!



Also observe the safety instructions in ➡ Chap. 2 „Safety instructions“ in this manual.

9.3 Maintenance activities and maintenance intervals



- Observe the specified maintenance and care intervals. The intervals refer to normal operating conditions.

9.3.1 Overview of the maintenance points

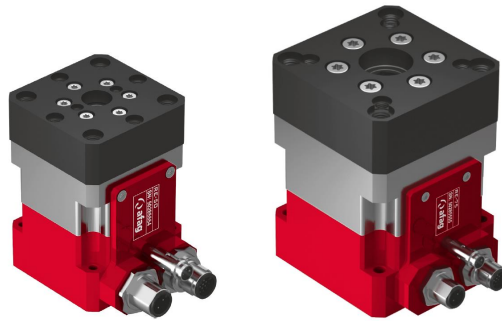



Fig. 10 Maintenance rotary modules RE-50& RE-75

No.	Maintenance point	Maintenance work	Interval	System [On/Off]	Remarks
1	Rotary module	Cleaning and checking 	As required	[Off]	- <ul style="list-style-type: none"> ▪ Clean the module with a dry, lint-free cloth. ▪ The rotary module must not be sprayed. Do not use aggressive cleaning agents. ▪ Perform a visual inspection of the rotary module.

9.3.2 Further maintenance

Further maintenance is not required, if the ambient conditions listed below are complied with:

- Clean working area
- No use of splash water
- No abrasive or process dust and vapours
- Ambient conditions as specified in the technical data

9.4 Spare parts and repair work

Afag Automation AG offers a reliable repair service. Defective modules can be sent to Afag for warranty repair within the warranty period. After the warranty period has expired, the customer can replace or repair defective modules or wear parts himself or send them to the Afag repair service.



Please note that Afag does not assume any warranty for modules that have not been replaced or repaired by Afag!

10 Decommissioning and disposal

The electric rotary modules must be properly dismantled after use and disposed of in an environmentally friendly manner.

10.1 Safety instructions for decommissioning and disposal

WARNING



Risk of injury from improper decommissioning and disposal!

Improperly carried out activities can result in considerable material damage and serious injury.

- Use only qualified personnel to carry out the activities.
- Disconnect the media supply (electronics) before removing the grippers!
- Only remove the electric rotary modules when the control system is switched off and secured!

10.2 Decommissioning

If the electric rotary modules are not used for a longer period of time, they must be properly decommissioned and stored as described in ➡ chapter 4.5.

10.3 Disposal

The electric rotary modules must be disposed of properly at the end of their service life and the raw materials used must be recycled. Observe the legal regulations and company requirements.

The electric rotary modules must not be disposed of as a complete unit. Dismantle the electric rotary modules and separate the various components according to type of material and dispose of properly:

- Scrap the metallic materials.
- Hand over plastic parts for recycling.
- Sort the rest of the components by their material properties and dispose of them accordingly.

NOTICE

Risk to the environment from incorrect disposal of the electric rotary modules.

Environmental damage can be caused by improper disposal of the electric rotary modules.

- Electronic parts, electrical scrap, auxiliary and operating materials must be disposed of by approved specialist companies.
- Information on proper disposal can be obtained from the responsible local authorities.

11 Declaration of incorporation

Declaration of incorporation

for partly completed machinery according to the Machinery Directive 2006/42/EC, Annex II, 1.B

The manufacturer hereby declares:

Afag Automation AG, Luzernstrasse 32, CH-6144 Zell

that the partly completed machine:

Product description	Rotary module RE
Type:	RE-50, RE-75, RE-50 18-100 V, RE-75 18-100 V

complies with the following essential health and safety requirements of the Machinery Directive 2006/42/EC at the time of declaration: 1.1; 1.1.1; 1.1.2; 1.2; 1.2.1; 1.2.3; 1.2.4.4; 1.2.5; 1.3; 1.3.3; 1.3.5; 1.3.6; 1.3.7; 1.3.8.1; 1.3.8.2; 1.3.9; 1.4; 1.4.1; 1.5; 1.5.1; 1.6; 1.6.1; 1.6.3; 1.6.4; 1.7; 1.7.1; 1.7.4.; 1.7.4.1; 1.7.4.2; 1.7.4.3; 3.3.5; 3.4.1

Harmonised standards applied, in particular:	
2014/30/EU	Electromagnetic compatibility Directive (EMC)
2014/35/EU	Low voltage Directive (LVD)
EN ISO 12100:2010	Safety of machinery - General design principles - Risk assessment and risk reduction
DIN EN 60204-1:2018	Safety of machinery - Electrical equipment of machines - Part 1: General requirements

Note: The partly completed machinery must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of Machinery Directive 2006/42/EC.

The manufacturer undertakes to transmit, in response to a reasoned request by the national authorities, relevant technical documentation for the partly completed machinery.


The relevant technical documentation has been created according to Annex VII, Part B of the above-mentioned Directive.

Authorised representative for compiling the technical documentation:

Niklaus Röthlisberger, Product Manager, Afag Automation AG, CH-6144 Zell

Zell, 31.05.2023

Adrian Fuchser



CEO Afag Gruppe

Klaus Bott



CTO Afag Gruppe

Afag Automation AG
Luzernstrasse 32
6144 Zell
Switzerland
T +41 62 959 86 86
sales@afag.com

Afag GmbH
Wernher-von-Braun-Straße 1
92224 Amberg
Germany
T +49 9621 650 27-0
sales@afag.com

Afag Engineering GmbH
Gewerbestraße 11
78739 Hardt
Germany
T +49 7422 560 03-0
sales@afag.com

Afag Automation Americas
Schaeff Machinery & Services LLC.
883 Seven Oaks Blvd, Suite 800
Smyrna, TN 37167
USA
T +1 615 730 7515
nashville@afag.com

Afag Automation APAC
Afag Automation Technology (Shanghai) Co., Ltd.
Room 102, 1/F, Bldg. 56, City Of Elite
No.1000, Jinhai Road, Pudong New District
Shanghai, 201206
China
T +86 021 5895 8065
shanghai@afag.com