

Edition

05/2022

ORIGINAL MOUNTING AND OPERATING INSTRUCTIONS

SIMOGEAR

Adapter for gearbox

BA 2039 - KS, K2, K3, K4, K5, KQ, QQS, K8, A, AZ

SIEMENS

SIMOGEAR

Geared motors SIMOGEAR adapters for gearboxes - KS, K2, K3, K4, K5, KQ, KQS, K8, A, AZ

Operating Instructions

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Supplement to the SIMOGEAR gearbox operating instructions BA 2030

Original instructions


05/2022


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Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

 DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.

 WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.

 CAUTION
indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
indicates that property damage can result if proper precautions are not taken.


If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

 WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Introduction

Current changes with respect to BA_2039_0621

Main changes in this edition

Supplements

- Content of Ex note adapted; note on EU RoHS directive expanded with UK directive; individual sentences corrected and adapted; section 'Valid operating instructions for SIMOGEAR' added -> General overview (Page 19)
- Ex note and individual sentences corrected and adapted -> Intended use (Page 21)
- Note, ambient temperatures of the backstop, added -> Backstop K2X, K3X (Page 23)

Changes

- Cover sheet -> new layout, edition
- Change of term ATEX --> Ex
- Headers, Chapter 1 and Chapter 1.1 changed
- Chapter "Fundamental obligations" and "Specific hazard types" have been combined
- Last sentence "Vibration levels" changed -> Specific hazard types and fundamental obligations (Page 21)
- Attention deleted -> General information on installation (Page 25)
- z12 and z values changed in the KS adapter, size KS8.1 -> Mounting SIEMENS servomotors without parallel key onto adapter KS (Page 30)
- Assignment of coupling size and IEC B5 corrected --> Fit the standard motor to the K2 or K3 adapter (Page 33)
- New sentence on the ambient temperatures in the Ex note added, new list item added, section removed 'Prerequisites for smooth, vibration-free running' --> Operation (Page 43)
- Spare part drawings modified, new item 1513 included --> Spare parts (Page 49)
- U4 -> new layout

Target group

This manual is aimed at planning, project, and design engineers as well as electricians, fitters, and service personnel.

Avoiding dangers

Avoid dangers. Ensure safe, problem-free operation and a maximum service life:

- Before you start using the motor, you must read these Operating Instructions
- Always follow the safety instructions and notices in these operating instructions.

The warning notice system is explained at the beginning of this document.

This documentation should be kept in a location where it can be easily accessed and made available to the personnel responsible.

About this documentation

These operating instructions inform you about mounting the adapters on the SIMOGEAR gearbox. You will learn how to handle the adapter for gearboxes properly and safely from delivery to disposal:

- Setup and mounting
- Connecting
- Commissioning
- Operating
- Selection of the spare parts

You can find additional information in the relevant Configuration Manual.

This documentation describes the functionality of the product. The machine builder documents any modifications or changes to the product made by it.

This documentation cannot contain all of the detailed information on all of the product types. Moreover, this documentation cannot take into consideration every possible type of installation, operation, and maintenance.

Text features

In addition to the notes that you must observe for your own personal safety as well as to avoid material damage, in this document you will find the following text features:

Operating instructions

Handling instructions with a specified sequence start with the word "Procedure":

The individual handling steps are numbered.

1. Execute the operating instructions in the specified sequence.



The square indicates the end of the operating instruction.

Operating instructions without a specified sequence are identified using a bullet point:

- Execute the operating instructions.

Enumerations

- Enumerations are identified by a bullet point without any additional symbols.
 - Enumerations at the second level are hyphenated.

Notes

Notes are shown as follows:

Note

A Note is an important item of information about the product, handling of the product or the relevant section of the document. Notes provide you with help or further suggestions/ideas.

mySupport

Extensive assistance and more information can be found under the following link:

My Support Links and Tools (<https://support.industry.siemens.com/cs/de/en/my>)

You can individually compile your personal library, e.g. for your documentation based on Siemens content, and adapt it for your own machine documentation.

To do so, click "My Documentation".

Note

If you want to use this function, you must register once.

Later, you can log on with your login data.

You can create your own personal library under "mySupport" using the following procedure.

Precondition

You have registered for and logged on to "Siemens Industry Online Support", hereinafter referred to as "SIOS".

SIOS (<https://support.industry.siemens.com/cs/de/en/>)

Procedure for creating a personal library

1. Open SIOS and log on.
2. Enter the product you are looking for under "Search for product info" and press "Enter".
3. Select the doc. class you want, e.g. "Manual", under "Entry type".
4. Click on your desired manual under the entries.
5. Click on "Add to mySupport documentation".
6. Enter a title.
7. Press "OK".



The selected manual can be found under "mySupport". To find further functions, click on the icon located to the right of the document.

In this way, you can create your own library and quickly access your documentation.

Provide feedback

Siemens strives continually to improve the quality of information provided in these operating instructions.

Your questions, suggestions and corrections of the technical documentation are welcome. For this purpose, please use the "Send feedback" link in Siemens Industry Online Support at the end of an entry or send an Email (<mailto:docu.motioncontrol@siemens.com>) to the following address.

Technical Support

If you have any technical questions, contact Technical Support (<https://support.industry.siemens.com/cs/de/en/>).

To make a support request, proceed as follows:

Precondition

You have registered for and logged on to "Siemens Industry Online Support", abbreviated "SIOS". SIOS (<https://support.industry.siemens.com/cs/de/en/>)

Procedure

1. Click on "Your direct way to the Support Request" or follow the link Support Request (<https://support.industry.siemens.com/cs/de/en/my>).
2. Follow the instructions in the online form.



Websites of third parties

This document includes hyperlinks to websites of third-party companies. Siemens is not responsible for and shall not be liable for these websites and is not responsible for the content or information they provide. Siemens does not control the information on these websites and is not responsible for the content and information provided there. The user bears the risk for their use.

General Data Protection Regulation

Compliance with the General Data Protection Regulation

Siemens respects the principles of data protection, in particular the data minimization rules (privacy by design).

For this product, this means:

The product does not process neither store any person-related data, only technical function data

(e.g. time stamps). If the user links these data with other data (e.g. shift plans) or if he stores person-related data on the same data medium (e.g. hard disk), thus personalizing these data, he has to ensure compliance with the applicable data protection stipulations.

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Fundamental safety instructions

1.1 General safety instructions



WARNING

Electric shock and danger to life due to other energy sources

Touching live components can result in death or severe injury.

- Only work on electrical devices when you are qualified for this job.
- Always observe the country-specific safety rules.

Generally, the following steps apply when establishing safety:

1. Prepare for disconnection. Notify all those who will be affected by the procedure.
2. Isolate the drive system from the power supply and take measures to prevent it being switched back on again.
3. Wait until the discharge time specified on the warning labels has elapsed.
4. Check that there is no voltage between any of the power connections, and between any of the power connections and the protective conductor connection.
5. Check whether the existing auxiliary supply circuits are de-energized.
6. Ensure that the motors cannot move.
7. Identify all other dangerous energy sources, e.g. compressed air, hydraulic systems, or water. Switch the energy sources to a safe state.
8. Check that the correct drive system is completely locked.

After you have completed the work, restore the operational readiness in the inverse sequence.



WARNING

Electric shock due to connection to an unsuitable power supply

When equipment is connected to an unsuitable power supply, exposed components may carry a hazardous voltage. Contact with hazardous voltage can result in severe injury or death.

- Only use power supplies that provide SELV (Safety Extra Low Voltage) or PELV- (Protective Extra Low Voltage) output voltages for all connections and terminals of the electronics modules.



⚠ WARNING

Electric shock due to damaged motors or devices

Improper handling of motors or devices can damage them.

Hazardous voltages can be present at the enclosure or at exposed components on damaged motors or devices.

- Ensure compliance with the limit values specified in the technical data during transport, storage and operation.
- Do not use any damaged motors or devices.



⚠ WARNING

Electric shock due to unconnected cable shield

Hazardous touch voltages can occur through capacitive cross-coupling due to unconnected cable shields.

- As a minimum, connect cable shields and the conductors of power cables that are not used (e.g. brake cores) at one end at the grounded housing potential.



⚠ WARNING

Electric shock if there is no ground connection

For missing or incorrectly implemented protective conductor connection for devices with protection class I, high voltages can be present at open, exposed parts, which when touched, can result in death or severe injury.

- Ground the device in compliance with the applicable regulations.



⚠ WARNING

Arcing when a plug connection is opened during operation

Opening a plug connection when a system is operation can result in arcing that may cause serious injury or death.

- Only open plug connections when the equipment is in a voltage-free state, unless it has been explicitly stated that they can be opened in operation.

NOTICE

Property damage due to loose power connections

Insufficient tightening torques or vibration can result in loose power connections. This can result in damage due to fire, device defects or malfunctions.

- Tighten all power connections to the prescribed torque.
- Check all power connections at regular intervals, particularly after equipment has been transported.

NOTICE**Damage to equipment due to unsuitable tightening tools.**

Unsuitable tightening tools or fastening methods can damage the screws of the equipment.

- Only use screw inserts that exactly match the screw head.
- Tighten the screws with the torque specified in the technical documentation.
- Use a torque wrench or a mechanical precision nut runner with a dynamic torque sensor and speed limitation system.
- Adjust the tools used regularly.

**WARNING****Unexpected machine movement caused by radio devices or mobile phones**

Using radio devices, cellphones, or mobile WLAN devices in the immediate vicinity of the components can result in equipment malfunction. Malfunctions may impair the functional safety of machines and can therefore put people in danger or lead to property damage.

- Therefore, if you move closer than 20 cm to the components, be sure to switch off radio devices, cellphones or WLAN devices.
- Use the "SIEMENS Industry Online Support app" only on equipment that has already been switched off.

**WARNING****Unrecognized dangers due to missing or illegible warning labels**

Dangers might not be recognized if warning labels are missing or illegible. Unrecognized dangers may cause accidents resulting in serious injury or death.

- Check that the warning labels are complete based on the documentation.
- Attach any missing warning labels to the components, where necessary in the national language.
- Replace illegible warning labels.

 **WARNING**

Unexpected movement of machines caused by inactive safety functions

Inactive or non-adapted safety functions can trigger unexpected machine movements that may result in serious injury or death.

- Observe the information in the appropriate product documentation before commissioning.
- Carry out a safety inspection for functions relevant to safety on the entire system, including all safety-related components.
- Ensure that the safety functions used in your drives and automation tasks are adjusted and activated through appropriate parameterizing.
- Perform a function test.
- Only put your plant into live operation once you have guaranteed that the functions relevant to safety are running correctly.

Note

Important Safety instructions for Safety Integrated

If you want to use Safety Integrated functions, you must observe the Safety instructions in the Safety Integrated documentation.

 **WARNING**

Active implant malfunctions due to electromagnetic fields

Electromagnetic fields (EMF) are generated by the operation of electrical power equipment, such as transformers, converters, or motors. People with pacemakers or implants are at particular risk in the immediate vicinity of this equipment.

- If you have a heart pacemaker or implant, maintain the minimum distance specified in chapter "Correct usage" from such motors.



 **WARNING**

Active implant malfunctions due to permanent-magnet fields

Even when switched off, electric motors with permanent magnets represent a potential risk for persons with heart pacemakers or implants if they are close to converters/motors.

- If you have a heart pacemaker or implant, maintain the minimum distance specified in chapter "Correct usage".
- When transporting or storing permanent-magnet motors always use the original packing materials with the warning labels attached.
- Clearly mark the storage locations with the appropriate warning labels.
- IATA regulations must be observed when transported by air.

 **WARNING****Injury caused by moving or ejected parts**

Contact with moving motor parts or drive output elements and the ejection of loose motor parts (e.g. feather keys) out of the motor enclosure can result in severe injury or death.

- Remove any loose parts or secure them so that they cannot be flung out.
- Do not touch any moving parts.
- Safeguard all moving parts using the appropriate safety guards.

 **WARNING****Fire due to inadequate cooling**

Inadequate cooling can cause the motor to overheat, resulting in smoke and fire. Possible consequences can be serious injury or death. This can also result in increased failures and reduced service lives of motors.

- Comply with the specified cooling requirements for the motor.

 **WARNING****Fire due to incorrect operation of the motor**

When incorrectly operated and in the case of a fault, the motor can overheat resulting in fire and smoke. This can result in severe injury or death. Further, excessively high temperatures destroy motor components and result in increased failures as well as shorter service lives of motors.

- Operate the motor according to the relevant specifications.
- Only operate the motors in conjunction with effective temperature monitoring.
- Immediately switch off the motor if excessively high temperatures occur.

 **CAUTION****Burn injuries caused by hot surfaces**

In operation, the motor can reach high temperatures, which can cause burns if touched.

- Mount the motor so that it is not accessible in operation.

Measures when maintenance is required:

- Allow the motor to cool down before starting any work.
- Use the appropriate personnel protection equipment, e.g. gloves.

1.2 Equipment damage due to electric fields or electrostatic discharge

Electrostatic sensitive devices (ESD) are individual components, integrated circuits, modules or devices that may be damaged by either electric fields or electrostatic discharge.



NOTICE

Equipment damage due to electric fields or electrostatic discharge

Electric fields or electrostatic discharge can cause malfunctions through damaged individual components, integrated circuits, modules or devices.

- Only pack, store, transport and send electronic components, modules or devices in their original packaging or in other suitable materials, e.g. conductive foam rubber or aluminum foil.
- Only touch components, modules and devices when you are grounded by one of the following methods:
 - Wearing an ESD wrist strap
 - Wearing ESD shoes or ESD grounding straps in ESD areas with conductive flooring
- Only place electronic components, modules or devices on conductive surfaces (table with ESD surface, conductive ESD foam, ESD packaging, ESD transport container).

1.3 Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit

<https://www.siemens.com/industrialsecurity> (<https://www.siemens.com/industrialsecurity>).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under

<https://www.siemens.com/cert> (<https://www.siemens.com/cert>).

Further information is provided on the Internet:

Industrial Security Configuration Manual (<https://support.industry.siemens.com/cs/ww/en/view/108862708>)

**WARNING****Unsafe operating states resulting from software manipulation**

Software manipulations, e.g. viruses, Trojans, or worms, can cause unsafe operating states in your system that may lead to death, serious injury, and property damage.

- Keep the software up to date.
- Incorporate the automation and drive components into a holistic, state-of-the-art industrial security concept for the installation or machine.
- Make sure that you include all installed products into the holistic industrial security concept.
- Protect files stored on exchangeable storage media from malicious software by with suitable protection measures, e.g. virus scanners.
- On completion of commissioning, check all security-related settings.

1.4 Residual risks of power drive systems

When assessing the machine- or system-related risk in accordance with the respective local regulations (e.g., EC Machinery Directive), the machine manufacturer or system installer must take into account the following residual risks emanating from the control and drive components of a drive system:

1. Unintentional movements of driven machine or system components during commissioning, operation, maintenance, and repairs caused by, for example,
 - Hardware and/or software errors in the sensors, control system, actuators, and cables and connections
 - Response times of the control system and of the drive
 - Operation and/or environmental conditions outside the specification
 - Condensation/conductive contamination
 - Parameterization, programming, cabling, and installation errors
 - Use of wireless devices/mobile phones in the immediate vicinity of electronic components
 - External influences/damage
 - X-ray, ionizing radiation and cosmic radiation
2. Unusually high temperatures, including open flames, as well as emissions of light, noise, particles, gases, etc., can occur inside and outside the components under fault conditions caused by, for example:
 - Component failure
 - Software errors
 - Operation and/or environmental conditions outside the specification
 - External influences/damage

1.4 Residual risks of power drive systems

3. Hazardous shock voltages caused by, for example:
 - Component failure
 - Influence during electrostatic charging
 - Induction of voltages in moving motors
 - Operation and/or environmental conditions outside the specification
 - Condensation/conductive contamination
 - External influences/damage
4. Electrical, magnetic and electromagnetic fields generated in operation that can pose a risk to people with a pacemaker, implants or metal replacement joints, etc., if they are too close
5. Release of environmental pollutants or emissions as a result of improper operation of the system and/or failure to dispose of components safely and correctly
6. Influence of network-connected communication systems, e.g. ripple-control transmitters or data communication via the network

For more information about the residual risks of the drive system components, see the relevant sections in the technical user documentation.

Specific safety instructions

2.1 General overview



Ex-version gearboxes

This symbol marks notes and measures.

This symbol applies to gearboxes and geared motors in an Ex design.

Note

Siemens does not accept any liability for damage and operational disturbances that result from the non-observance of these operating instructions.

Note

European RoHS Directive and UK Directive

SIMOGEAR geared motors comply with the stipulations laid down in Directive 2011/65/EU and the UK Directive "The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012".

These operating instructions are part of the gearbox delivery. Please read the operating instructions prior to handling the gearbox and observe the information they contain. This is the best way of ensuring safe and trouble-free operation.

The operating instructions supplement the SIMOGEAR gearbox operating instructions BA 2030.

These operating instructions apply to the adapters of the standard SIMOGEAR gearbox version:

- Adapter KS - coupling adapter only for fitting a SIEMENS servomotor of the SIMOTICS S-1FK7/-1FT7, SIMOTICS M-1PH8, SIMOTICS S-1FK2, SIMOTICS S-1FL6 series
- Adapter K2 - coupling adapter with flexible coupling for fitting an IEC motor
- Adapter K3 - coupling adapter with flexible coupling for fitting an NEMA motor
- Adapter K4 - short adapter with plug-in connection for fitting an IEC motor
- Adapter K5 - short adapter with plug-in connection for fitting an NEMA motor
- Adapter KQ, KQS - coupling adapter for fitting a servomotor of the SIMOTICS S-1FK7/-1FT7 series
- Adapter K8 - coupling adapter for fitting a servomotor of the SIMOTICS M-1PH8 series
- Adapter A, AZ - adapter with free drive shaft

2.1 General overview

Table 2-1 Article number code

SIMOGEAR adapter	Article number position 12	Supplement
Adapter KS for mounting a SIEMENS servomotor	1	-
Adapter K2 for fitting an IEC motor	2	-
Adapter K3 for fitting an NEMA motor	3	-
Short adapter K4 for fitting an IEC motor	4	-
Short adapter K5 for fitting an NEMA motor	5	-
Adapter KQ, KQS for fitting a servomotor	7	-
Adapter K8 for fitting a servomotor	8	-
Adapter A	9	M1A
Adapter AZ	9	M1B

Example of an article number code for a SIMOGEAR gearbox with coupling adapter KS
2KJ3xxx-xxA01-xxxx

Note

For a special design of the gearbox and the supplementary equipment, the contractual agreements and technical documentation apply in addition to these operating instructions.

When using additional components, carefully observe the notes in the associated documentation.

Refer to the other operating instructions and safety instructions supplied with the product.

Valid operating instructions for SIMOGEAR

can be found in SIOS (<https://support.industry.siemens.com/cs/de/en/ps/13424/man>)

- BA 2030 - operating instructions for SIMOGEAR gearboxes
- BA 2031 - operating instructions for permissible mounting position deviations of SIMOGEAR gearboxes
- KA 2032 - compact operating instructions for SIMOGEAR worm geared motor S
- BA 2039 - operating instructions for adapters for mounting on SIMOGEAR gearboxes
- BA 2330 - operating instructions for LA/LE/LES motors for mounting on SIMOGEAR gearboxes
- BA 2331 - operating instructions for geared motors with DRIVE-CLiQ safety-related encoder for safety-related applications
- BA 2332 - operating instructions for geared motor with holding brake for safety-related applications
- BA 2535 - operating instructions for SIMOGEAR electric monorail gearboxes
- BA 2730 - operating instructions for SIMOGEAR geared motors with rotary encoder for safety-related applications

The described gearboxes correspond to the state-of-the-art at the time these operating instructions were printed.

Siemens reserves the right to change individual components and accessory parts in the interest of ongoing development. The changes are designed to improve performance and safety. The

significant features are retained. The operating instructions are updated regularly with new contents.

The latest versions of the operating instructions, the declaration of incorporation and the declarations of conformity are available in Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/13424/man>).

2.2 Intended use



Ex-version gearboxes

The Ex gearbox fulfills the requirements of the Explosion Protection Directive 2014/34/EU and the UK Directive UK SI 2016:1107.

In the case of Ex-version gearboxes, please observe the instructions marked with this symbol.

Note

Gearboxes and geared motors are partly completed machines for installation into machinery, or other partly completed machinery or equipment or plants, within the meaning of the current EC Machinery Directive 2006/42/EC and the UK directive "Supply of Machinery (Safety) Regulations 2008".

Based on the area of validity of these directives, commissioning is prohibited until it has been absolutely identified that the end product is in conformance with these directives.

Unless otherwise agreed, the gearboxes and geared motors are intended for use in commercial applications in machinery, other partly completed machinery, or equipment or plants.

The gearboxes and geared motors are designed and built according to state-of-the-art technology and are shipped in an operationally safe condition. Changes made by users could affect this operational reliability and are forbidden.

The gearboxes have been designed solely for the application described in Technical Data in the BA 2030 Operating Instructions for SIMOGEAR gearboxes. Do not operate the gearboxes outside the specified power limit. Other operating conditions must be contractually agreed.

Do not climb on the gearbox. Do not place any objects on the gearbox.


2.3 Specific hazard types and fundamental obligations




WARNING

Hot, escaping oil

Before starting any work wait until the oil has cooled down to below +30 °C.

 WARNING
Poisonous vapors when working with solvents Avoid breathing vapors when working with solvents. Ensure adequate ventilation.

 WARNING
Risk of explosion when working with solvents Ensure adequate ventilation. Do not smoke.

The company operating the unit must ensure that all persons assigned to work on the geared motor have read and understood these operating instructions and that they comply with them fully in all points in order to:

- Eliminate any risk to life and limb of users and third parties
- Ensure the operational safety of the geared motor.
- Avoid disruptions and environmental damage through incorrect use.

Carefully comply with the safety instructions:

In addition to the specified personal protection gear, also wear suitable protective gloves and safety glasses.

Comply with the instructions on the rating plates attached to the geared motor. The rating plates must be kept free from paint and dirt at all times. Replace any missing rating plates.

Collect and dispose of used oil in accordance with regulations. Immediately remove any oil spills with an oil-binding agent.

Do not use high-pressure cleaning equipment or sharp-edged tools to clean the geared motor.

The machine OEM who installs the geared motors in a plant must include the regulations contained in these operating instructions in its own operating instructions.

During operation, comply with the vibration levels according to ISO 20816-1. You will find the maximum permissible vibration values in SIMOGEAR gearboxes - E, D, Z, FD, FZ, B, K, C (BA 2030) in Chapter General installation notes.

Technical description

3.1 General technical description

The adapters are intended for the mounting of IEC and NEMA standard motors or SIEMENS servomotors.

The adapters are equipped with grease-lubricated roller bearings. The bearings are permanently lubricated.

The adapters are made of aluminum or gray cast iron.

3.2 Maximum permissible operation

Observe the maximum values specified on the rating plate. Explanation in BA 2030, General technical data.

3.3 Flexible coupling

Generally use a flexible coupling for the gearbox input and output.

If a rigid coupling or other input or output elements are to be used that give rise to additional radial and / or axial forces (e.g. gear wheels, belt pulleys), this must be contractually agreed.

Refer to the relevant operating instructions for details of how to use the coupling.

3.4 Backstop K2X, K3X



Ex-version gearboxes

The drive speed in the table "Drive speed when using backstops" must be maintained in continuous operation.

Starting and stopping operations ≤ 20 starts / stops per hour are permissible.

NOTICE
Service life limited
Drive speeds below 1,000 rpm or frequent starting and stopping operations (≥ 20 starts / stops per hour) will limit service life.
Ensure that the backstop is replaced in time when frequent starting and stopping operations are performed.

NOTICE

Damage or destruction due to incorrect direction of rotation

Do not run the motor against the backstop.

Note the directional arrow on the motor.

Note

The backstop is not suitable for ambient temperatures under -25 °C.

The gearbox can be fitted with a mechanical backstop in the coupling adapter. The backstop permits only the correct direction of rotation during operation. The adapter is indicated by an arrow pointing in the corresponding direction.

The backstop is fitted with centrifugally operated sprags. When the gearbox is running in the specified direction, the inner ring and the cage with the sprags also rotate while the outer ring remains stationary.

If the drive speed exceeds the speed listed in the table, the sprag rises. The backstop is wear-free.

Table 3-1 Minimum drive speed when using backstops

Size		Backstop	Speed
K2X - IEC	K3X - NEMA		rpm
80	56	FXN46-25DX	> 890
90	140		> 860
100, 112	180	FXN51-25DX	> 860
132	210	FXN76-25DX	> 750
160	250		> 730
180	280		> 670
200	-	FXN101-25/DX	> 670
225, 250	320, 360		> 630

Installing

4.1 Unpacking

NOTICE
Transport damage impairs the correct function of the geared motor
Never commission faulty or defective motors.

Check the motor for completeness and damage. Report any missing parts or damage immediately.

Remove and dispose of the packaging material and transport equipment in compliance with regulations.

4.2 General information on installation



Ex-version of gearbox and geared motor

Effect on bearings of stray electric currents from electrical equipment.

When mounting the gearbox on or connecting it to the machine, take care to ensure potential equalization. The information on grounding and equipotential bonding provided by the motor supplier must be observed.

WARNING
Operating under load
Under load, the system can start or reverse in an uncontrolled fashion.
The entire system must be load-free so that there is no danger during this work.

NOTICE
Destruction caused by welding
Welding destroys the geared parts and bearings.
Do not weld on the gearbox. The gearbox must not be used as a grounding point for welding operations.

NOTICE
Overheating caused by solar radiation Overheating of the gearbox due to exposure to direct sunlight. Provide suitable protective equipment such as covers or roofs. Prevent heat accumulation.
NOTICE
Malfunction resulting from foreign objects The operator must ensure that no foreign objects impair the function of the gearbox.
NOTICE
Damaged components impair the correct function of the gearbox If any components are damaged, the correct function of the gearbox will no longer be ensured. Do not install any damaged gearbox components.
NOTICE
Violation of the maximum permissible oil sump temperature The oil sump temperature may be exceeded if the temperature monitoring equipment is incorrectly set. An alarm must be output when the maximum permissible oil sump temperature is reached. The geared motor must be switched off when the maximum permissible temperature is exceeded. If the geared motor is shut down, then this can cause the machine to come to a stop.

Exercise particular care during mounting and installation. The manufacturer cannot be held liable for damage caused by incorrect mounting and installation.

Make sure that there is sufficient space around the gearbox or geared motor for mounting, maintenance and repair.

On geared motors with a fan, leave sufficient free space for the entry of air. Observe the installation conditions for the geared motor.

Provide sufficient lifting gear at the start of mounting and fitting work.

Observe the mounting position specified on the rating plate. This ensures that the correct quantity of lubricant is provided.

Use all the fastening means that have been assigned to the particular mounting position and mounting type.

Cap bolts cannot be used in some cases due to a lack of space. In such cases, please contact Technical Support quoting the type of gearbox.

4.3 Thread sizes and tightening torques for fastening bolts

The general tolerance for the tightening torque is 10%. The tightening torque is based on a friction coefficient of $\mu = 0.14$.

Table 4-1 Tightening torques for fixing screws

Thread size	Tightening torque for property class		
	8.8	10.9	12.9
	Nm	Nm	Nm
M4	3	4	5
M5	6	9	10
M6	10	15	18
M8	25	35	41
M10	50	70	85
M12	90	120	145
M16	210	295	355
M20	450	580	690
M24	750	1 000	1 200
M30	1 500	2 000	2 400
M36	2 500	3 600	4 200

4.4 Mounting an input or output element on the gearbox shaft

 **WARNING**

Risk of burns caused by hot parts

Do not touch the gearbox without protection.

NOTICE

Damage to shaft sealing rings caused by solvent

Avoid contact of solvent or benzene with the shaft sealing rings.

NOTICE

Damage to shaft sealing rings caused by heating

Use thermal shields to protect shaft sealing rings from heating above 100 °C due to radiant heat.

4.4 Mounting an input or output element on the gearbox shaft

NOTICE

Premature wear or material damage due to misalignment

Misalignment caused by excessive angular or axial misalignment of the shaft ends to be joined. Ensure precise alignment of the individual components.

NOTICE

Damage caused by improper handling

Bearings, housing, shaft and locking rings are damaged due to improper handling. Do not use impact or knocks to mount input and output elements onto the shaft.

Note

Deburr the parts of elements to be fitted in the area of the hole or keyways.

Recommendation: 0.2 x 45°

Where couplings are to be fitted in a heated condition, observe the specific operating instructions for the coupling. Unless otherwise specified, apply the heat inductively using a torch or in a furnace.

Use the center holes in the shaft end faces.

Use a fitting device to fit the input or output elements.

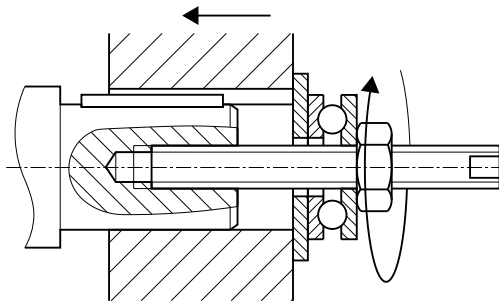


Figure 4-1 Example of a fitting device

Observe the correct mounting arrangement to minimize stress on shafts and bearings due to lateral forces.

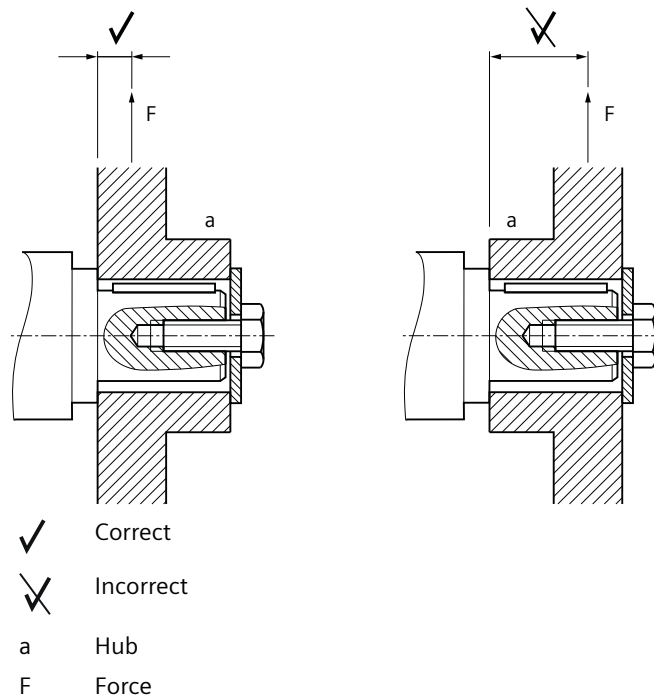


Figure 4-2 Mounting arrangement for low stress on shafts and bearings

Procedure

1. Use benzine or a solvent to remove the anti-corrosion protection from the shaft ends and flanges. Or remove the existing protective skin.
 2. Fit the drive input and output elements to the shafts. Lock the elements.
- You have now attached the input or output element.

4.5 Mounting the motor

NOTICE

Moisture penetrates an inadequately sealed geared motor

If the geared motor is to be installed outdoors or for an installation requiring a high degree of protection (\geq IP55):

- Seal the flange, bolts 1505 or integrated elements such as proximity switches, using an appropriate sealing compound.
- The flange-mounted motor must be sealed across the entire contact surface.
- Seal the geared motor in the outer area.

Note

The flange-mounted motor must always be sealed using a suitable sealing compound.

4.5.1 Mounting SIEMENS servomotors without parallel key onto adapter KS



Ex-version gearboxes

Impacts can cause sparks.

Apply adhesive (medium strength, e.g. Loctite 243) to the bolts 1505 and 1.



Ex-version gearboxes

The flange-mounted motor must be sealed across the entire contact surface in order to prevent the penetration of a potentially explosive atmosphere.

NOTICE

Damage to the bearing caused by excessive forces

Avoid high axial forces when installing on the motor.

NOTICE

Soiling impairs the torque transmission

Any soiling in the vicinity of the shaft/hub connection will have a detrimental effect on the torque transmission.

Keep the drill hole of the coupling half 1556 and motor shaft completely free from grease.

Do not use soiled cleaning cloths or contaminated solvents.

Note

Dimension z12 applies for standard assignment of the coupling. If a special assignment is required, consult the appropriate special dimension drawing.

Note

Reduce assembling force

Lightly grease or oil the gear ring tooth flanks of the elastomer 1557.

The following are permitted:

- Mineral-oil based oils or greases
- Silicon-based lubricants
- Vaseline

Note

The force required to join the coupling halves is released after assembly, meaning that there is no danger of excessive axial load on the bearings.

Note

The contact surfaces between adapter and motor must always be sealed using a suitable sealing compound.

Mounting of smooth shafts

The KS adapter has been designed for mounting servomotors with smooth shafts (without feather key).

Permissible

SIMOTICS S-1FL6	1FL6XXX-XXXXX-XXGX 1FL6XXX-XXXXX-XXHX
SIMOTICS S-1FK2	1FK2XXX-XXXXX-0XXX
SIMOTICS S-1FK7	1FK7XXX-XXXXX-XXGX 1FK7XXX-XXXXX-XXHX
SIMOTICS S-1FT7	1FT7XXX-XXXXX-XXGX 1FT7XXX-XXXXX-XXHX 1FT7XXX-XXXXX-XXKX 1FT7XXX-XXXXX-XXLX
SIMOTICS M-1PH8	1PH8XXX-XXXXX-0XXX

SIMOTICS S-1FT7 Flange-mounted design

Only the classic flange may be used in this version. The recessed version cannot be mounted on the KS adapter.

Permissible

SIMOTICS S-1FT7	1FT7XXX-XXXX1-XXXX 1FT7XXX-XXXX4-XXXX
-----------------	--

SIMOTICS S-1FK2 IP65

The IP65 version of SIMOTICS S-1FK2 is mechanically not compatible with the KS adapter. However, the degree of protection IP65 is nevertheless complied with by attaching the motor to the gear.

Permissible

SIMOTICS S-1FK2	1FK2XXX-XXXX0-XXXX (IP64 without shaft sealing ring)
-----------------	--

Not permissible

SIMOTICS S-1FK2	1FK2XXX-XXXX1-XXXX (IP65 with shaft sealing ring)
-----------------	---

Size KS3 to KS10

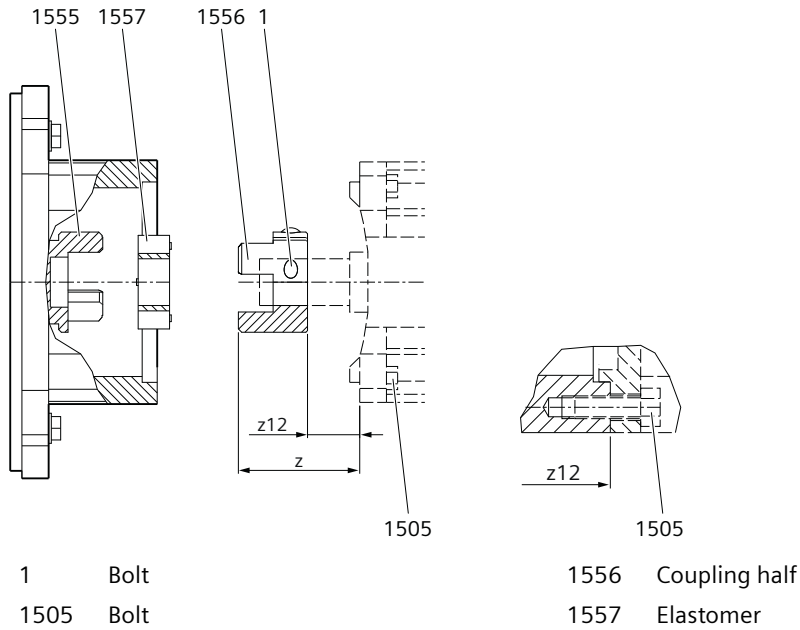


Figure 4-3 KS adapter

Procedure

1. Loosen the bolt 1 slightly.
2. Fit the coupling half 1556 onto the motor shaft end, as described in Mounting an input or output element on the gearbox shaft (Page 27).
3. Maintain the clearances z_{12} and z .
4. Apply adhesive (medium strength, e.g. Loctite 243) to the bolt 1.
5. Tighten bolt 1 with the specified torque T_A SW.
In the case of 2 bolts, tighten both alternately in equal steps with the specified tightening torques.
6. Insert the elastomer 1557 in the already assembled coupling half 1556 on the motor shaft end.
7. Lightly grease or oil the tooth flanks to reduce the mounting force.
8. Apply adhesive (medium strength, e.g. Loctite 243) to the bolts 1505.
9. Fasten the motor using the bolts 1505 with the specified torque based on the table in Thread sizes and tightening torques for fastening bolts (Page 27).
The claws of the coupling parts must intermesh.

You have mounted the SIEMENS servomotor onto the KS adapter.

Table 4-2 KS adapter

Size	Coupling size	z12	z	Grub screw 1564	T _A SW	SW	Bolt 1505
		mm	mm		Nm	mm	
KS3.1	16	5	25.7 _{-0.8}	M4	4.1	3	M5
KS3.2	16	5	25.7 _{-0.8}	M4	4.1	3	M6
KS4.1	19	5	36 ₋₁	M6	10	4	M6
KS4.2	19	5	36 ₋₁	M6	10	4	M6
KS5.1	19	5	36 ₋₁	M6	10	4	M6
KS5.2	19	5	36 ₋₁	M6	10	4	M8
KS5.3	19	5	36 ₋₁	M6	10	4	M6
KS6.1	24	8	42 ₋₁	M6	10	4	M8
KS6.2	24	8	42 ₋₁	M6	10	4	M8
KS8.1	28	2	40.5 ₋₁	M8	25	6	M10
KS10.1	38	5	52 ₋₁	M10	49	8	M12
KS10.2	38	5	52 ₋₁	M10	49	8	M12

4.5.2 Fit the standard motor to the K2 or K3 adapter



Ex-version gearboxes

Impacts can cause sparks.

Apply adhesive (medium strength, e.g. Loctite 243) to the grub screw 1564 and bolts 1505.



Ex-version gearboxes

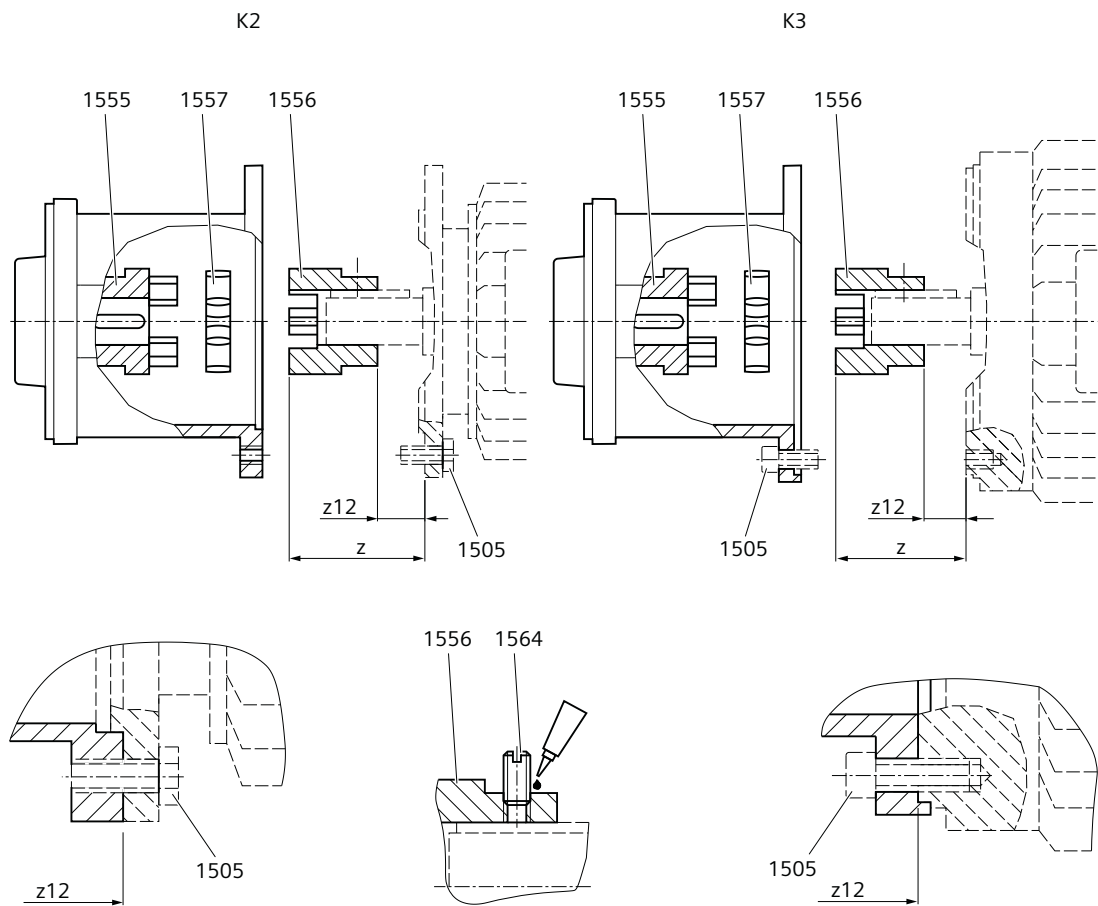
The flange-mounted motor must be sealed across the entire contact surface in order to prevent the penetration of a potentially explosive atmosphere.

Note

Dimension z12 applies for standard assignment of the coupling. If a special assignment is required, consult the appropriate special dimension drawing.

Note

The contact surfaces between adapter and motor must always be sealed using a suitable sealing compound.



- 1505 Bolt
- 1555 Coupling half
- 1556 Coupling half
- 1557 Flexible element
- 1564 Grub screw

Figure 4-4 Adapter K2 and K3

Procedure

1. Fit the coupling half 1556 onto the motor shaft end, as described in Mounting an input or output element on the gearbox shaft (Page 27).
2. Maintain the clearances z_{12} and z .
3. Apply adhesive (medium strength, e.g. Loctite 243) to the grub screw 1564.
4. Tighten the grub screw 1564 to the specified torque T_A SW and across-flats dimension SW.
5. On motors balanced with half a parallel key (code "H"), remove projecting, visible parts of the parallel key.
6. Place the flexible element 1557 inside the coupling half 1555.

7. Apply adhesive (medium strength, e.g. Loctite 243) to the bolts 1505.
8. Fasten the motor using the bolts 1505 with the specified torque based on the table in Thread sizes and tightening torques for fastening bolts (Page 27).

You have mounted the standard motor onto the K2 or K3 adapter.

Table 4-3 Adapter K2

IEC B5	Coupling size	z12	z	Grub screw 1564	T _A SW	SW	Bolt 1505
		mm	mm		Nm	mm	
80	19	15	54 _{.1}	M5	2	2.5	M10
90	19	25	64 _{.1}	M5	2	2.5	M10
100	24	30	76 _{.1}	M5	2	2.5	M12
112	24	30	76 _{.1}	M5	2	2.5	M12
132	28	45	97.5 _{.1.5}	M8	10	4	M12
160	38	66	132 _{.1.5}	M8	10	4	M16
180	42	59	132 _{.1.5}	M8	10	4	M16
200	42	60	133 _{.1.5}	M8	10	4	M16
225	48	84	164.5 _{.1.5}	M8	10	4	M16
250	55	75	166 _{.1.5}	M10	17	5	M16
280	75	51	171 _{.2}	M10	17	5	M16
315	90	33.5	173 _{.2}	M12	40	6	M20

Table 4-4 Adapter K3

NEMA TC	Coupling size	z12	z	Grub screw 1564	T _A SW	SW	Bolt 1505	T _A for 1505
		mm	mm		Nm	mm		Nm
56	19	27.5	66.5 _{.1}	M5	2	2.5	3/8"	31
140	19	28	67 _{.1}	M5	2	2.5	3/8"	31
180	24	36.5	82.5 _{.1}	M5	2	2.5	1/2"	75
210	28	44	96.5 _{.1}	M8	10	4	1/2"	75
250	38	50	116.5 _{.1.5}	M8	10	4	1/2"	75
280	42	61	134 _{.1.5}	M8	10	4	1/2"	75
320	48	71	151.5 _{.1.5}	M8	10	4	5/8"	150
360	55	78	169 _{.1.5}	M10	17	5	5/8"	150

4.5.3 Mount the standard motor to the K4 or K5 short adapter



Ex-version gearboxes

Impacts can cause sparks.

Apply adhesive (medium strength, e.g. Loctite 243) to the bolts 1505.



Ex-version gearboxes

The flange-mounted motor must be sealed across the entire contact surface in order to prevent the penetration of a potentially explosive atmosphere.

Note

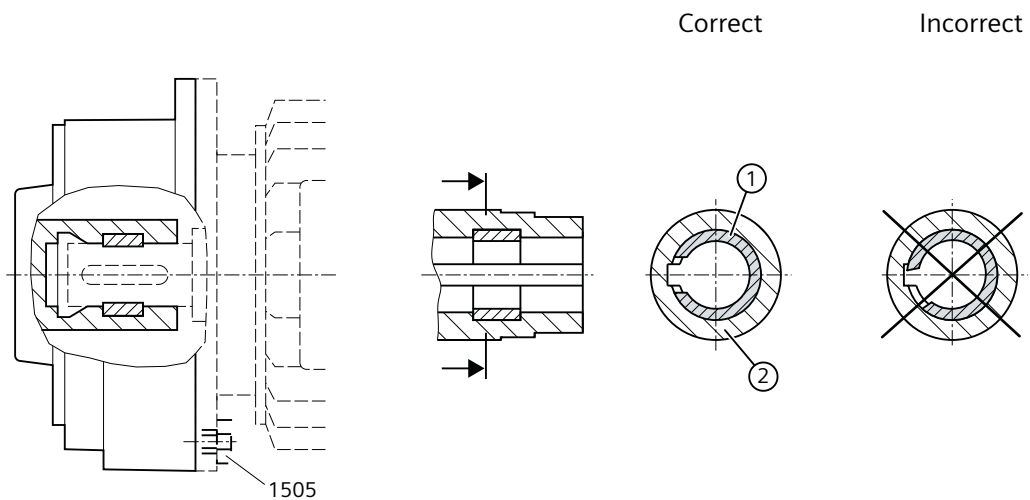
Ensure that the plastic ring ① is located in the correct position.

The plastic ring ① prevents fretting corrosion on the cylinder surface of the motor shaft.

To prevent fretting corrosion on the feather key of the motor shaft, apply a suitable lubricant to the contact surfaces (e.g. Castrol: Apply Optileb Paste NH1).

Note

The contact surfaces between adapter and motor must always be sealed using a suitable sealing compound.



① Plastic ring

② Shaft

1505 Bolt

Figure 4-5 Plastic ring for K4 and K5

Procedure

1. Check the correct position of the plastic ring ① in the shaft. Correct the position.
2. Align the position of the motor shaft so that you can insert it in the shaft ②. It is not necessary to grease the shafts.
3. Apply adhesive (medium strength, e.g. Loctite 243) to the bolts 1505.
4. Fasten the motor using the bolts 1505 with the specified torque based on the table in Thread sizes and tightening torques for fastening bolts (Page 27).

You have mounted the standard motor on the K4 or K5 adapter.

Table 4-5 Adapter K4

Coupling size	63	71	80	90	100	112	132	160	180	200	225	250
Bolt 1505	M8	M8	M10	M10	M12	M12	M12	M16	M16	M16	M16	M16

Table 4-6 Adapter K5

Coupling size	56	140	180	210	250	280	320	360
Bolt 1505	3/8"	3/8"	1/2"	1/2"	1/2"	1/2"	5/8"	5/8"
T _A for 1505 in Nm	31	31	75	75	75	75	150	150

4.5.4 Mount the servomotor with parallel key to the KQ or K8 adapter

**Ex-version gearboxes**

Impacts can cause sparks.

Apply adhesive (medium strength, e.g. Loctite 243) to the grub screw 1564 and bolts 1505.

**Ex-version gearboxes**

The flange-mounted motor must be sealed across the entire contact surface in order to prevent the penetration of a potentially explosive atmosphere.

NOTICE**Damage to the bearing caused by excessive forces**

Avoid axial forces when installing on the motor.

Note

Dimension z12 applies for standard assignment of the coupling. If a special assignment is required, consult the appropriate special dimension drawing.

Note

Reduce assembling force

Lightly grease or oil the gear ring tooth flanks of the flexible element 1557 or the hub.

The following are permitted:

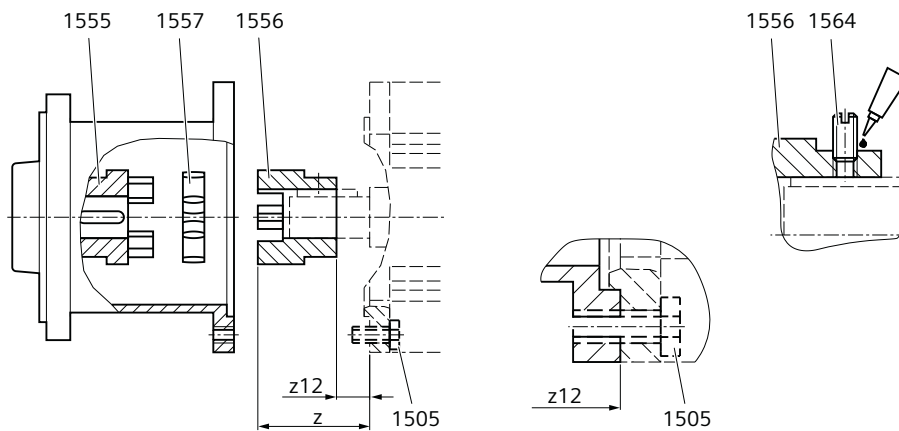
- Mineral-oil based oils or greases
- Silicon-based lubricants
- Vaseline

Note

The force required to join the coupling halves is released after assembly, meaning that there is no danger of excessive axial load on the bearings.

Note

The contact surfaces between adapter and motor must always be sealed using a suitable sealing compound.



1505 Bolt

1555 Coupling half

1556 Coupling half

1557 Flexible element

1564 Grub screw

Figure 4-6 KQ and K8 adapters

Procedure

1. Fit the coupling half 1556 onto the motor shaft end, as described in Mounting an input or output element on the gearbox shaft (Page 27).
2. Maintain the clearances z_{12} and z .
3. Apply adhesive (medium strength, e.g. Loctite 243) to the grub screw 1564.
4. Tighten the grub screw 1564 to the specified torque T_A SW and across-flats dimension SW.
5. On motors balanced with half a parallel key (code "H"), remove projecting, visible parts of the parallel key.

6. Place the flexible element 1557 inside the coupling half 1555.
7. Lightly grease or oil the tooth flanks to reduce the mounting force.
8. Apply adhesive (medium strength, e.g. Loctite 243) to the bolts 1505.
9. Fasten the motor using the bolts 1505 with the specified torque based on the table in Thread sizes and tightening torques for fastening bolts (Page 27).

You have mounted the servomotor onto the KQ or K8 adapter.

Table 4-7 KQ and K8 adapters

Size	Coupling size	z12	z	Grub screw 1564	T _A SW	SW	Bolt 1505
		mm	mm		Nm	mm	
703	14	18	40.5 _{-0,5}	M4	2	2	M6
704	19	14	53 ₋₁	M5	2.5	2.5	M6
706	24	15	61 ₋₁	M5	2.5	2.5	M8
708	28	23.5	76 ₋₁	M8	4	4	M10
808	28	43.5	96 ₋₁	M8	4	4	M10
710 / 810	38	33	99 _{-1,5}	M8	4	4	M12
813	42	60	133 _{-1,5}	M8	4	4	M16
816	42	60	133 _{-1,5}	M8	4	4	M16
818	75	73	193 ₋₂	M10	5	5	M16
822	90	58.5	198 ₋₂	M12	6	6	M16

4.5.5 Mount servomotor without parallel key to the KQS adapter



Ex-version gearboxes

Impacts can cause sparks.

Apply adhesive (medium strength, e.g. Loctite 243) to the bolts 1505 and 1 or 1*.



Ex-version gearboxes

The flange-mounted motor must be sealed across the entire contact surface in order to prevent the penetration of a potentially explosive atmosphere.

NOTICE

Damage to the bearing caused by excessive forces

Avoid axial forces when installing on the motor.

NOTICE

Soiling impairs the torque transmission

Any soiling in the vicinity of the shaft/hub connection will have a detrimental effect on the torque transmission.

Keep the drill hole and motor shaft completely free from grease.

Do not use soiled cleaning cloths or contaminated solvents.

Note

Dimension z12 applies for standard assignment of the coupling. If a special assignment is required, consult the appropriate special dimension drawing.

Note

Reduce assembling force

Lightly grease or oil the gear ring tooth flanks of the flexible element 1557 or the hub.

The following are permitted:

- Mineral-oil based oils or greases
 - Silicon-based lubricants
 - Vaseline
-

Note

The force required to join the coupling halves is released after assembly, meaning that there is no danger of excessive axial load on the bearings.

Note

The contact surfaces between adapter and motor must always be sealed using a suitable sealing compound.

Sizes 703 to 708 and size 710

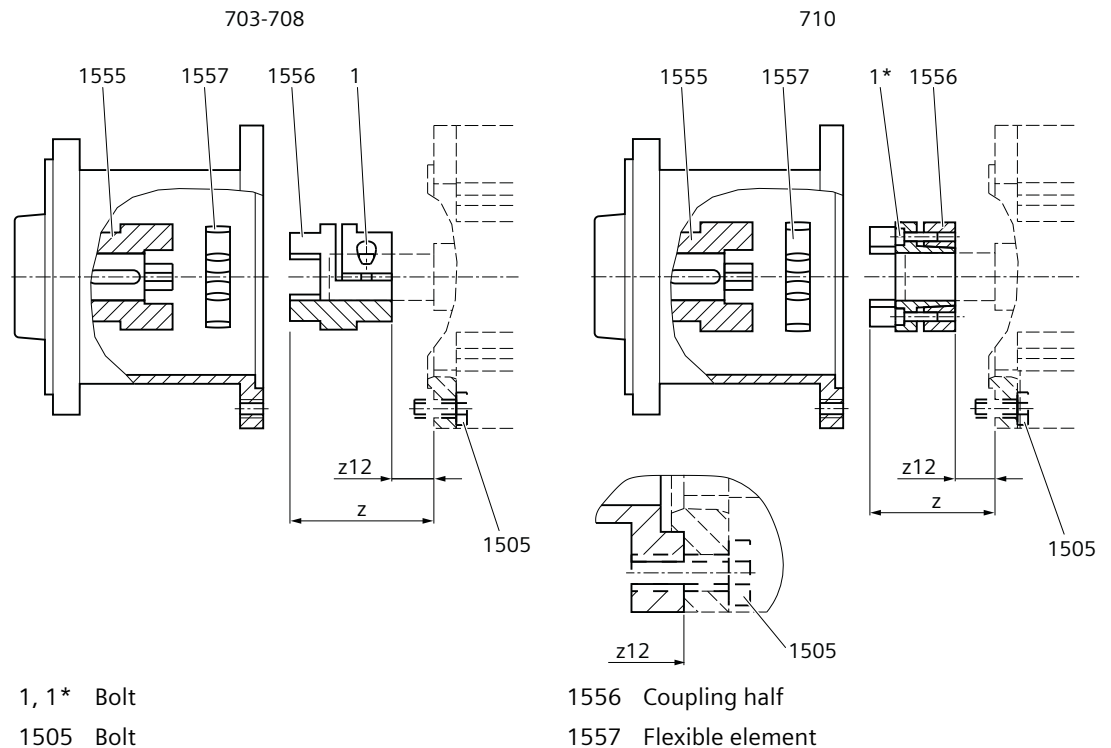


Figure 4-7 KQS adapter

Procedure

1. Loosen the bolt 1 or 1* slightly.
2. Fit the coupling half 1556 onto the motor shaft end, as described in Mounting an input or output element on the gearbox shaft (Page 27).
3. Maintain the clearances z_{12} and z .
4. Apply adhesive (medium strength, e.g. Loctite 243) to the bolts 1 or 1*.
5. KQS 703 to 708:
Tighten bolt 1 with the specified torque T_A SW and across-flats dimension SW.
KQS 710:
Tighten the bolt 1* with across-flats dimension SW evenly and gradually in a crossways pattern. Repeat the procedure until the specified T_A SW torque has been reached.
6. Place the flexible element 1557 inside the coupling half 1555.
7. Lightly grease or oil the tooth flanks to reduce the mounting force.
8. Apply adhesive (medium strength, e.g. Loctite 243) to the bolts 1505.
9. Fasten the motor using the bolts 1505 with the specified torque based on the table in Thread sizes and tightening torques for fastening bolts (Page 27).

You have mounted the servomotor onto the KQS adapter.

Table 4-8 KQS adapter

Size	703	704	706	708	710
Coupling size	14	19	24	28	38
z12 in mm	18	14	15	23.5	33
z in mm	40.5 _{-0.5}	53 ₋₁	61 ₋₁	76 ₋₁	99 _{-1.5}
Bolt 1, 1*	M3	M6	M6	M8	M6
T _A SW in Nm	1.34	10.5	10.5	25	10
SW in mm	2	2.5	2.5	4	4
Bolt 1505	M6	M6	M8	M10	M12



Ex-version gearboxes

The difference between the temperature of the housing and the ambient temperature of max. +40 °C must not exceed 70 K.

If the ambient temperatures differ, contact Technical Support.

Using a suitable temperature sensor, measure the temperature at the lowest point of the housing (oil sump) or at the mounting surface in the case of output units.

Changes are an indication of possible incipient damage.



CAUTION

Malfunctions can cause injuries or gearbox damage

In the event of changes during operation, the drive unit must be switched off immediately.

Determine the fault as described in Section "Faults, causes and remedies" in the gearbox operating instructions. Remedy faults or have faults remedied.

Check the gear unit during operation for:

- Excessive operating temperature
- Smooth and vibration-free operation
- Changes in gear noise
- Possible oil leakage at the housing and shaft seals

Service and maintenance

6.1 General notes about maintenance



Ex-version gearboxes

All measures, checks, and their results must be documented by the operator and records kept in a safe place for 10 years.



Ex-version gearboxes

Maintenance work only by Siemens

Measures and work have to be performed during the repairs and servicing of Ex gearboxes that may pose a potential ignition hazard if such work is not carried out properly.

We ensure that our gearboxes meet specifications by monitoring the internal production and logging measures at the manufacturer's factory and at trained partners.

Maintenance work on an Ex-stamped product is only allowed to be performed by SIEMENS or authorized partners.



WARNING

Unintentional starting of the drive unit

Secure the drive unit to prevent it from being started up unintentionally.

Attach a warning notice to the start switch.

NOTICE

Improper maintenance

Only authorized qualified personnel may perform the maintenance and servicing. Only original parts supplied by Siemens may be installed.

Only qualified personnel may perform the inspection, maintenance and servicing work. Please observe the General information and safety notes (Page 19).

6.2 Maintenance of the friction clutch

Note

Check the condition of the friction clutch initially after 500 operating hours and then at least once yearly and after every blockage of the machine.

Note

Friction clutches with proximity switch are not suitable for ambient air temperatures under -20 °C.

If the ambient temperatures differ, contact Technical Support.

If necessary, readjust the friction torque or replace the wearing parts, e.g. friction lining and bushes. Replace the friction linings only as pair. We recommend replacing worn bushes in sets.

6.3 Lubrication

The bearings of the SIMOGEAR adapters are permanently lubricated up to frame size 250.

The specified grease service life values are valid for an ambient temperature of up to a maximum of +40 °C. For every 10°C increase in temperature, the grease service life is reduced by a factor of 0.7 of the value in the table (max. +20 °C = factor 0.5).

At an ambient temperature of +25 °C, the grease service life can be expected to be doubled.

Irrespective of the number of operating hours, renew the roller bearing grease or the bearing (2Z bearing) after 3 or 4 years at the latest.

Table 6-1 Roller-bearing and shaft-sealing-ring grease

Fields of application	Ambient temperature	Manufacturer	Type
Standard	-40 °C to +80 °C	Klüber Fuchs	Petamo GHY-133 N Renolit CX-Tom 15 ¹⁾
Foodstuff-compatible for the food industry	-30 °C to +60 °C	Castrol	Optileb GR UF 1 NSF H1
Biologically degradable, for agriculture, forestry and water industries	-35 °C to +60 °C	Fuchs	Plantogel 2 S
¹⁾ Rolling-bearing grease based on a semi-synthetic base oil.			

Table 6-2 Grease service life in operating hours [h] with permanent lubrication

Frame size							Input speed n_N in rpm						Grease quantity in the bearing in g
							3 600	3 000	1 800	1 500	1 200	≤ 1 000	
KS	K2	K3, K5	K4	KQ	K8	A, AZ	Operating hours in h						
-	-	-	63	-	-	-	33 000	33 000	33 000	33 000	33 000	33 000	7
3.1, 3.2, 4.1, 4.2	-	56	71	703	-	-							7
-	80	-	80	704	-	80							9
5.1, 5.2, 5.3	90	140	90	706	-	90							15
6.1, 6.2	100	180	100	-	-	100	24 000						20
8.1	112	-	112	708	808	112							45
10.1, 10.2	132	210	132	710	810	132		24 000					75
-	160	250	160	-	-	160	17 000						90
-	180	-	180	-	813	180							110
-	200	280	200	-	-	200							
-	225	320	225	-	816	225	Grease service live = bearing service life						
-	250	360	250	-	-	250							

Spare parts

7.1 Stocking of spare parts

By stocking the most important spare and wearing parts on site, you can ensure that the gearbox or geared motor is ready for use at any time.

<p>NOTICE</p> <p>Safety impairment caused by inferior products</p> <p>The installation and / or use of inferior products can have a negative impact on the design characteristics of the geared motor and might consequently impair the active and / or passive safety features of the machine.</p> <p>Siemens explicitly states that only spare parts and accessories supplied by Siemens have been tested and approved by Siemens.</p> <p>If you do not use original spare parts and original accessories, Siemens excludes any liability and warranty.</p> <p>Siemens accepts the warranty only for original spare parts.</p>
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Note that special manufacturing and delivery specifications often apply to individual components. All spare parts offered by Siemens are state-of-the-art and conform to the latest legal regulations.

Please state the following data when ordering spare parts:

- Serial number shown on the rating plate ③
- Type designation shown on the rating plate ⑥
- Part number
 - 4-digit item number from the spare parts list
 - 6-digit object number
 - 7-digit article number
 - 14-digit material number
- Quantity

<p>SIEMENS</p> <p>SFDUN1/255255701</p> <p>1P.2KJ3105-1EM22-2AV1-Z</p> <p>ZF59-LE90SG4E-L32/14N-IN S104</p> <p>2KJ3 1AV2090B IP55 30kg Tamb -15...+40°C</p> <p>K-ID: 1234567890</p> <hr/> <p>1.5L OIL CLP VG220 i: 28</p> <p>50Hz n2: 49.3r/min 60Hz n2: 59.7r/min</p> <p>T2: 213Nm fb: 2.1 T2: 203Nm fb: 2.2</p> <hr/> <p>3-Mot. THCL.155(F) TP-PTC 14Nm 230V ±10% AC</p> <p>50Hz 230/400V ±10% D/Y 60Hz 460V ±10% Y</p> <p>4.33/2.5A cosj 0.78 2.2 A cosj 0.78</p> <p>1.1kW S1 IE2-81.4% 1425r/min 1.27kW S1 IE2-81.4% 1725r/min</p> <p>Mot. 1LE1001-OEBO —□□□— 230 V</p> <p>SIEMENS AG, Bahnhofstr. 40, DE-72072 Tuebingen / Made in Germany</p>	<p>SIEMENS</p> <table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>4</td> <td></td> <td>5</td> </tr> <tr> <td>6</td> <td></td> <td>7</td> </tr> <tr> <td>8</td> <td>10</td> <td>11</td> </tr> <tr> <td>9</td> <td></td> <td>12</td> </tr> <tr> <td>13</td> <td></td> <td></td> </tr> <tr> <td>14</td> <td>15</td> <td>16</td> </tr> <tr> <td>17</td> <td></td> <td>19</td> </tr> <tr> <td>20</td> <td></td> <td>21</td> </tr> <tr> <td>22</td> <td></td> <td>24</td> </tr> <tr> <td>23</td> <td></td> <td>25</td> </tr> <tr> <td>26</td> <td>27</td> <td>28</td> </tr> <tr> <td>29</td> <td>30</td> <td>31</td> </tr> <tr> <td>32</td> <td>33</td> <td>34</td> </tr> <tr> <td>35</td> <td>36</td> <td>41</td> </tr> <tr> <td>37</td> <td>38</td> <td>39</td> </tr> <tr> <td>40</td> <td>46</td> <td>47</td> </tr> <tr> <td>48</td> <td></td> <td>49</td> </tr> <tr> <td>50</td> <td></td> <td>51</td> </tr> <tr> <td></td> <td></td> <td>52</td> </tr> </table> <p>SIEMENS AG, Bahnhofstr. 40, DE-72072 Tuebingen /</p>	1	2	3	4		5	6		7	8	10	11	9		12	13			14	15	16	17		19	20		21	22		24	23		25	26	27	28	29	30	31	32	33	34	35	36	41	37	38	39	40	46	47	48		49	50		51			52
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40	46	47																																																											
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50		51																																																											
		52																																																											

Figure 7-1 Example of a SIMOGEAR rating plate

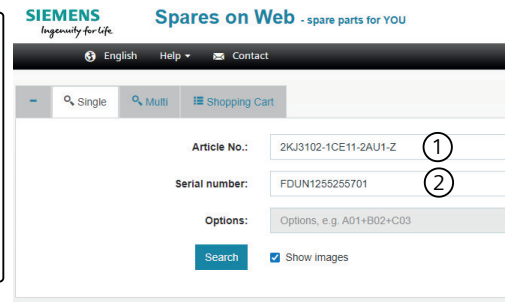
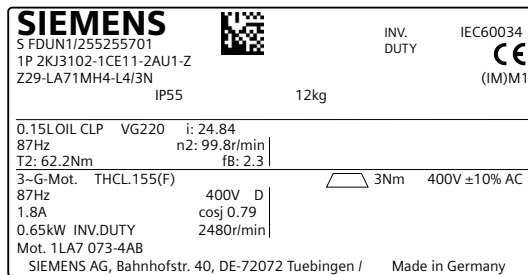
For motors with their own rating plate, the spare parts documentation in the original operating instructions applies.

7.2 Spares on Web

Rapid support around the clock – SIMOGEAR Service

Service is your partner for comprehensive support and innovative services for increasing your productivity. The original parts and manufacturing expertise help you achieve maximum machine availability and productivity. The proven services therefore contribute to reducing the total cost of ownership for you, as well as to creating sustainable values and solutions.

The technical product lists are provided in Spares on Web (<https://www.sow.siemens.com/?lang=en>).



- ① Article number
- ② Serial number

Figure 7-2 Enter a sample article and serial number in Spares on Web

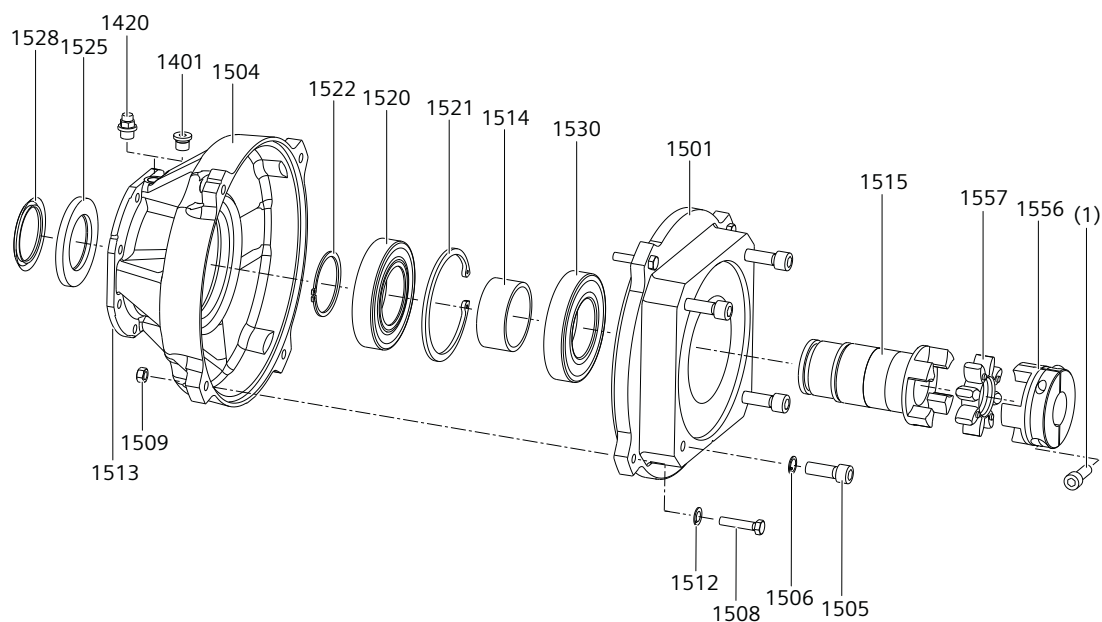
Procedure

1. Open the spare parts list with the link provided.
2. In the field ①, enter the "Article No." stated on the rating plate or SIMOGEAR.
Example: 2KJ3102-1CE11-2AU-Z or SIMOGEAR
3. In the field ② "Serial number", enter the production number stated on the rating plate or only the abbreviated number.
Example: FDUN1/255255701 or 2552557
4. You can directly access the operating instructions via "Industry Online Support (SIOS)".
5. Use the "Search" function to display the spare parts list.
6. The installation positions of the listed spare parts can be determined based on the position numbers specified in column "BKZ" (equipment marking) and the spare part drawings in Chapter Lists of spare parts (Page 51) .

You have opened the spare parts list through Spares on Web.

7.3 Lists of spare parts

7.3.1 Adapter KS

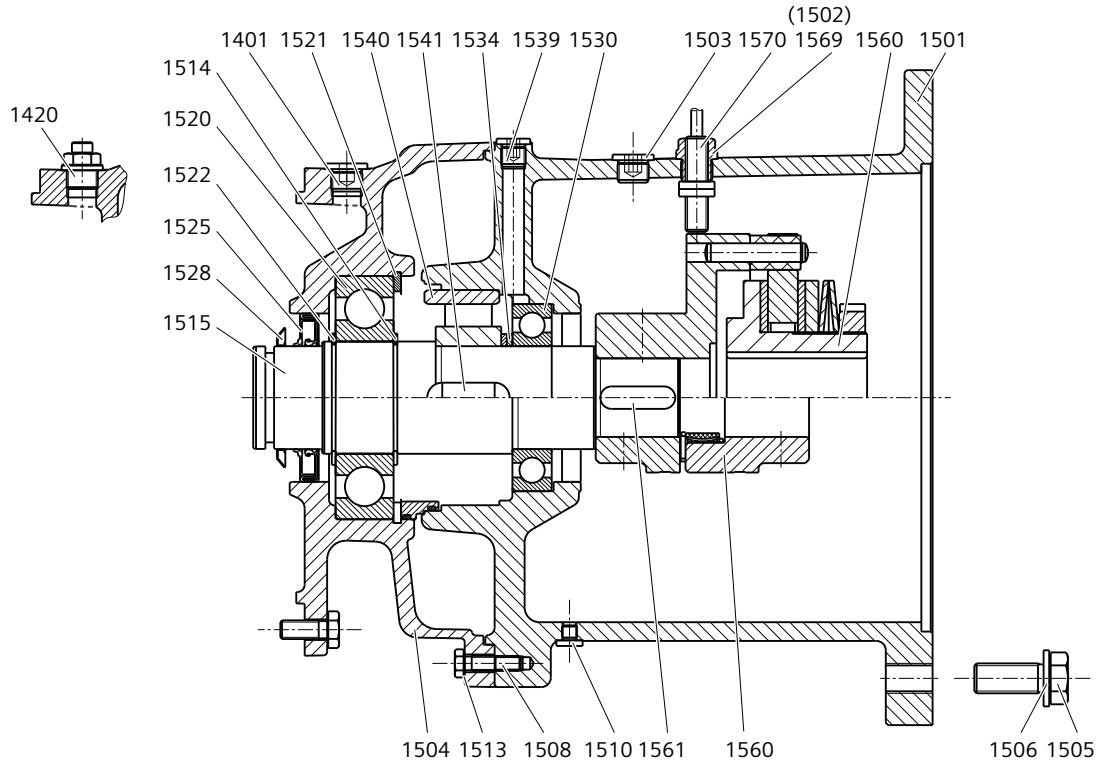


(1)	Bolt	1514	Bush
1401	Screw plug	1515	Shaft
1420	Vent filter	1520	Bearing
1501	Adapter	1521	Locking ring
1504	Bearing shield	1522	Locking ring
1505	Bolt	1525	Shaft sealing ring
1506	Washer / screw lock	1528	Washer
1508	Bolt	1530	Bearing
1509	Nut	1556	Coupling half
1512	Washer	1557	Elastomer
1513	O-ring		

Figure 7-3 Adapter KS for mounting a SIEMENS servomotor

7.3.2 K2 and K3 adapters with elastic coupling

Adapter K2 sizes 80 - 250, adapter K3 sizes 56 - 280



- | | |
|---------------------------|-------------------------|
| 1303 Slip-on pinion | 1525 Shaft sealing ring |
| 1304 Parallel key | 1528 Washer |
| 1401 Screw plug | 1529 Bearing |
| 1420 Vent filter | 1530 Bearing |
| 1501 Adapter | 1531 Locking ring |
| 1502 Screw plug | 1533 O-ring |
| 1504 Bearing shield | 1534 Washer |
| 1505 Bolt | 1539 Screw plug |
| 1506 Plate / locking ring | 1540 Backstop |
| 1508 Bolt | 1541 Parallel key |
| 1510 Screw plug | 1543 Supporting disk |
| 1513 O-ring | 1544 Shim |
| 1514 Locking ring | 1545 Shim |
| 1515 Shaft | 1546 Shim |
| 1519 Sleeve | 1554 Sleeve |
| 1520 Bearing | 1560 Coupling |
| 1521 Locking ring | 1561 Parallel key |
| 1522 Locking ring | 1569 Reduction piece |
| 1524 Locking ring | 1570 Proximity switch |

Figure 7-4 K2 and K3 adapters with elastic coupling

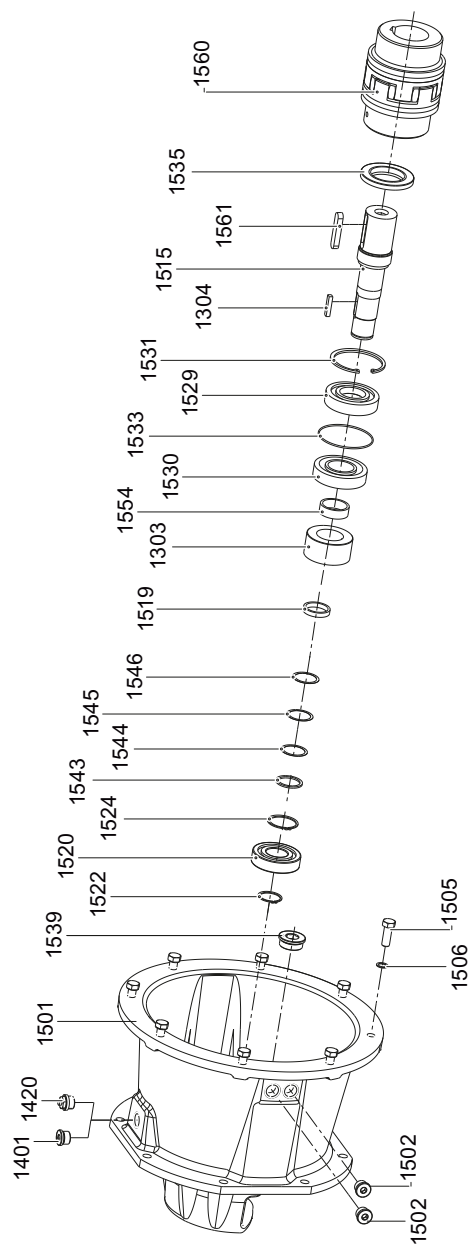
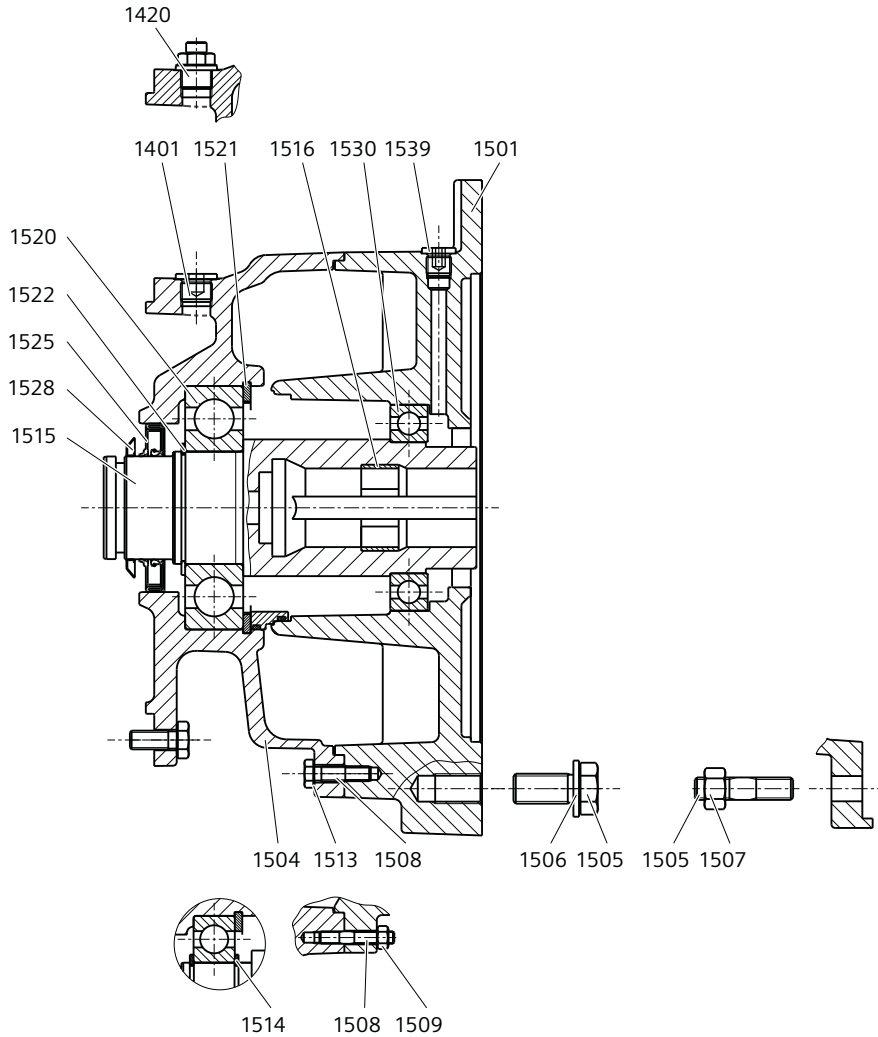


Figure 7-5 Adapter K2 sizes 280 - 315

7.3.3 K4 and K5 short adapters with plug-in connection



- | | | | |
|------|----------------------|------|--------------------|
| 1401 | Screw plug | 1514 | Locking ring |
| 1420 | Vent filter | 1515 | Shaft |
| 1501 | Adapter | 1516 | Bush |
| 1504 | Bearing shield | 1520 | Bearing |
| 1505 | Bolt | 1521 | Locking ring |
| 1506 | Plate / locking ring | 1522 | Locking ring |
| 1507 | Nut | 1525 | Shaft sealing ring |
| 1508 | Bolt | 1528 | Washer |
| 1509 | Nut | 1530 | Bearing |
| 1513 | O-ring | 1539 | Screw plug |

Figure 7-6 K4 and K5 short adapters with clamp connection

7.3 Lists of spare parts

- 1518 Bolt
- 1519 Sleeve

- 1560 Coupling
- 1561 Parallel key

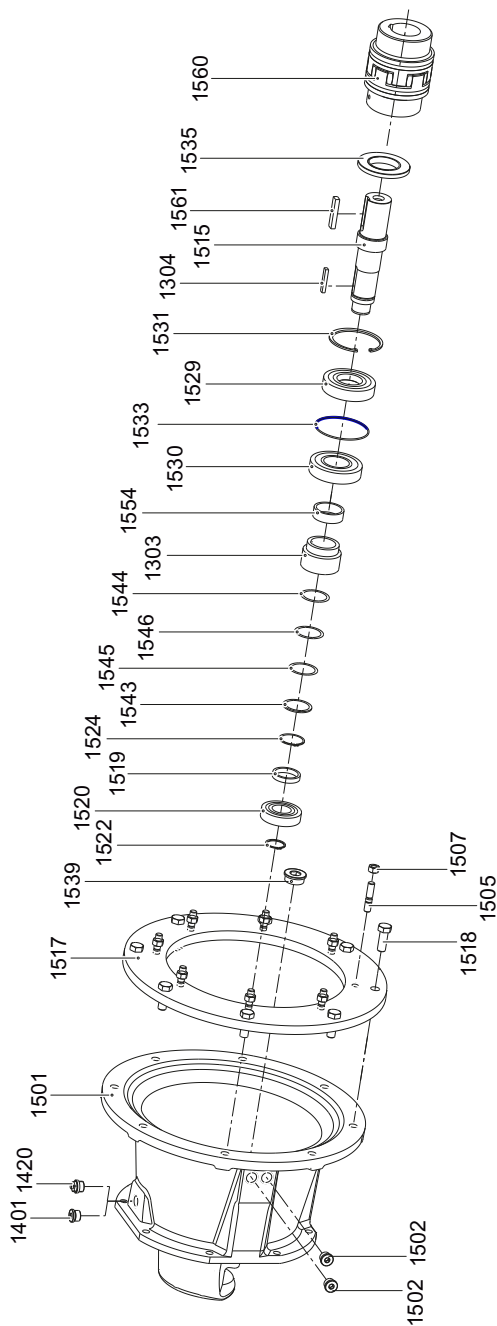
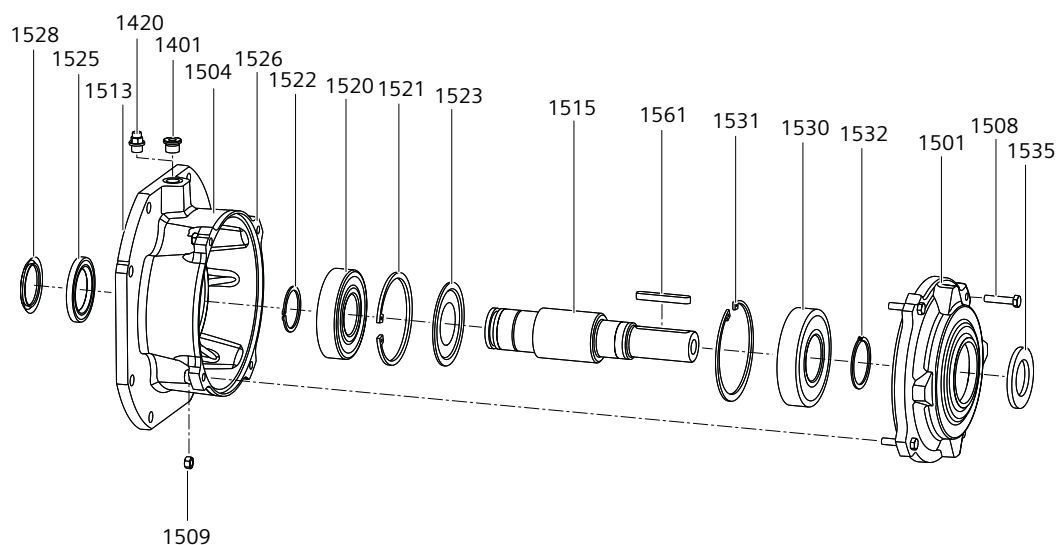


Figure 7-8 K8 sizes 818 - 822

7.3.5 A, AZ adapter



1401	Screw plug
1420	Vent filter
1501	Adapter
1504	Bearing shield
1508	Bolt
1509	Nut
1513	O-ring
1515	Shaft
1520	Bearing
1521	Locking ring
1522	Locking ring
1523	Sealing washer
1525	Shaft sealing ring
1526	Seal, Loctite 574
1528	Washer
1530	Bearing
1531	Locking ring
1532	Locking ring
1535	Shaft sealing ring
1561	Parallel key

Figure 7-9 A, AZ adapter

More information

SIMOGEAR on the Internet:
www.siemens.com/simogear

Industry Online Support (Service and Support):
www.siemens.com/online-support

IndustryMall:
www.siemens.com/industrymall

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Scan the QR code
for more
information on
SIMOGEAR.

