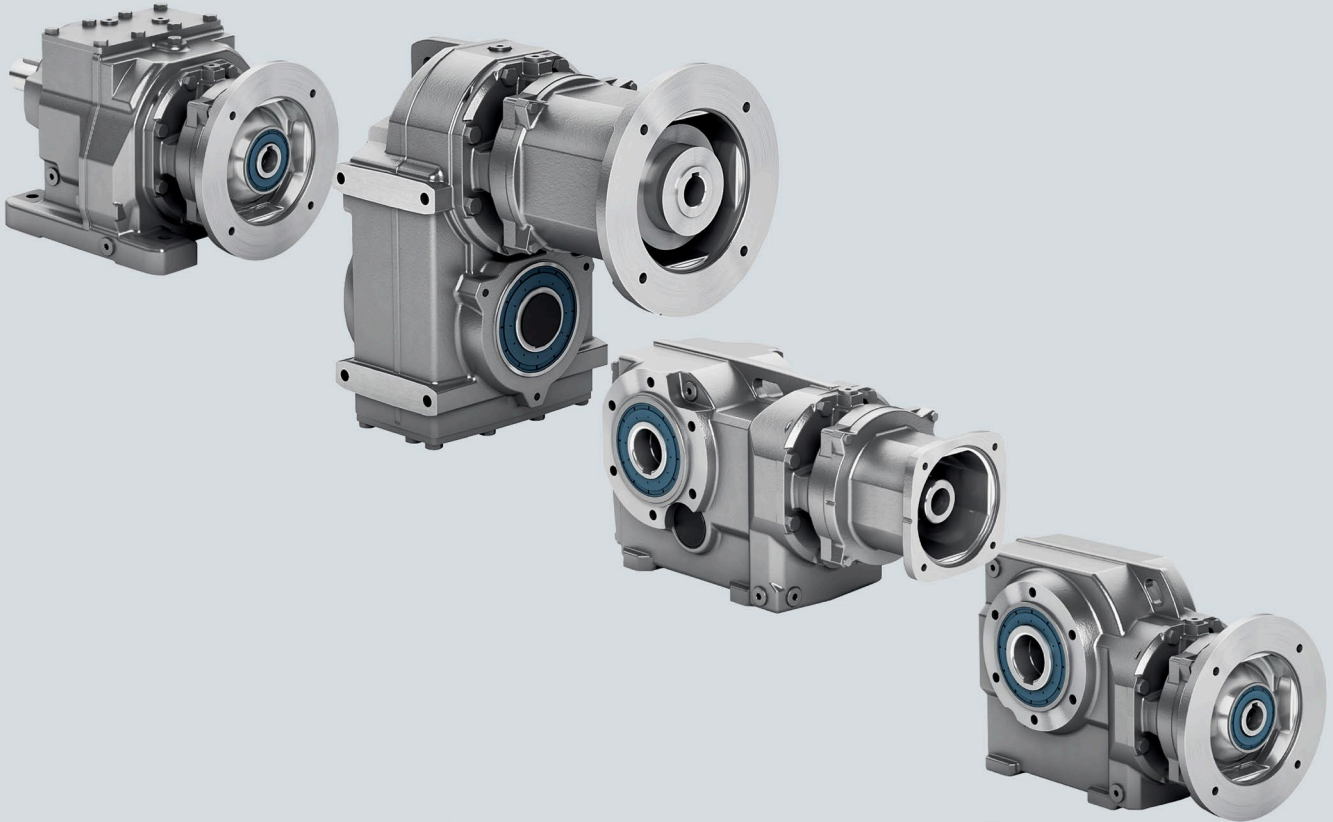


SIEMENS



Translation of the original
operating instructions

SIMOGEAR

Adapter for gearbox

BA 2039

Edition

06/2021

[siemens.com/simogear](https://www.siemens.com/simogear)

SIEMENS

SIMOGEAR

Adapter for gearbox BA 2039

Operating Instructions

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Supplement to the SIMOGEAR gearbox operating instructions BA 2030




Translation of the original instructions
06/2021

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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

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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.

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General information and safety notes

1.1 General Information



ATEX version gearboxes

Instructions and measures applying in particular to ATEX version gearboxes.

Note

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

Note

European RoHS directive

SIMOGEAR geared motors comply with the stipulations set up in the Directive 2011/65/EU regarding the restriction of the use of certain hazardous substances.

These operating instructions are part of the gearbox delivery. Store the operating instructions near the gearbox. 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 a 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 a NEMA motor
- Adapter KQ, QQS - 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

1.1 General Information

Table 1- 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 a NEMA motor	3	-
Short adapter K4 for fitting an IEC motor	4	-
Short adapter K5 for fitting a 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

Note

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

Please refer to the other operating instructions supplied with the product.

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

Siemens AG reserves the right to change individual components and accessory parts in the interest of further 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 electronic form in the Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/13424/man>).

You can find technical configuration data, spare parts lists and certificates of compliance on the Intranet at Once Delivered (https://cOp.siemens.com:8443/sie/1nce_delivered).

You can find the contact data of your Technical Support in the Database of contacts at Siemens AG (www.siemens.com/yourcontact).

If you have any technical questions, please contact Technical Support (<https://support.industry.siemens.com/cs/ww/en/sc/2090>).

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Valid operating instructions for SIMOGEAR

- 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 2535 - operating instructions for SIMOGEAR electric monorail gearboxes
- BA 2730 - operating instructions for SIMOGEAR geared motors with rotary encoder for safety-related applications

1.2 Copyright

The copyright to these operating instructions is held by Siemens AG.

These operating instructions must not be wholly or partly reproduced for competitive purposes, used in any unauthorized way or made available to third parties without agreement of Siemens AG.

1.3 Intended use



ATEX version gearboxes

The ATEX gearbox fulfills the requirements of the Explosion Protection Directive 2014/34/EU.

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

The SIMOGEAR gearboxes described in these operating instructions have been designed for stationary use in general engineering applications.

Unless otherwise agreed, the gearboxes have been designed for use in plants and equipment in industrial environments.

1.4 Obligations of the user

The gearboxes have been built using state-of-the-art technology and are shipped in an operationally reliable 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 limits. Other operating conditions must be contractually agreed.

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

1.4 Obligations of the user

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 in all points in order to:

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

Comply with the following safety instructions:

Shut down the geared motors and disconnect the power before you carry out any work on them.

Make sure that the drive unit cannot be turned on accidentally, e.g. lock the key-operated switch. Place a warning notice at the drive connection point which clearly indicates that work is in progress on the geared motor.

Carry out all work with great care and with due regard to "safety".

For all work, carefully comply with the relevant regulations for work safety and environmental protection.

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.

In the event of changes during operation, switch off the drive unit immediately.

Take appropriate protective measures to prevent accidental contact with rotating drive parts, such as couplings, gear wheels or belt drives.

Take appropriate protective measures to prevent accidental contact with parts and equipment that heat up to over +70 °C during operation.

When removing protective equipment, keep fasteners in a safe place. Re-attach removed protective equipment before commissioning.

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

Do not carry out any welding work on the geared motor. Do not use the geared motor as a grounding point for welding operations.

Carry out equipotential bonding in accordance with applicable regulations and directives by electrotechnology specialists.

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

Comply with the permissible tightening torque of the fastening bolts.

Replace damaged bolts with new bolts of the same type and strength class.

Siemens AG accepts the warranty only for original spare parts.

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

Make sure that you observe the maximum permissible vibration levels specified in ISO 20816-1 (zone limit A) during operation.

1.5 The five safety rules


For your own personal safety and to prevent material damage when carrying out any work, always observe the safety-relevant instructions and the following five safety rules according to EN 50110-1 Working in a voltage-free state. Apply the five safety rules in the sequence stated before starting work.


Five safety rules


1. Disconnect.
Also disconnect the auxiliary circuits, for example the anti-condensation heating.
2. Secure against reconnection.
3. Verify absence of operating voltage.
4. Ground and short circuit.
5. Cover or safeguard neighboring live parts.


After the work has been completed, undo the measures taken in the reverse order.


1.6 Particular types of hazards

 WARNING
Extreme surface temperatures Hot surfaces over +55 °C pose a burn risk. Cold surfaces below 0 °C pose a risk of damage due to freezing. Do not touch the gearbox without protection.

 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 in vapors when working with solvents. Ensure adequate ventilation.

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

 WARNING
Risk of eye injury Rotating parts can throw off small foreign particles such as sand or dust. Wear protective eyewear!

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

Technical description

2.1 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.

2.2 Maximum permissible operation

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

2.3 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.

2.4 Backstop K2X, K3X



ATEX 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.

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 2-1 Minimum drive speed when using backstops

Frame 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

3.1 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.

3.2 General information on installation



Gearbox and geared motor in an ATEX design

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.

NOTICE

Destruction of the machine

The machine can be mechanically destroyed if the vibration values in operation are not maintained in accordance with ISO 20816-1.

- In operation, maintain vibration values in accordance with ISO 20816-1.

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.


3.3 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 3- 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

3.4 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 any contact of solvent or benzine 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.

NOTICE

Premature wear or material damage due to misalignment

Misalignment caused by excessive angular or axis displacement to the connecting shaft ends.

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 impacts or knocks to force the input and output elements to be mounted 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.

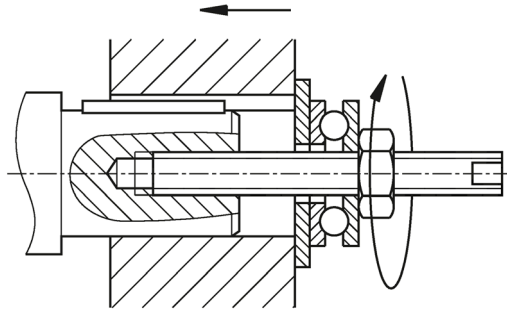
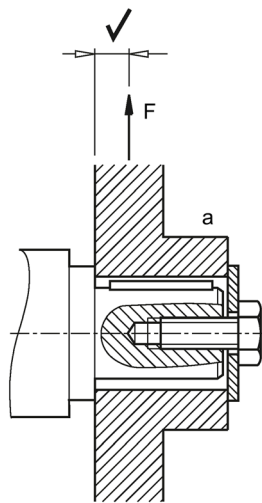


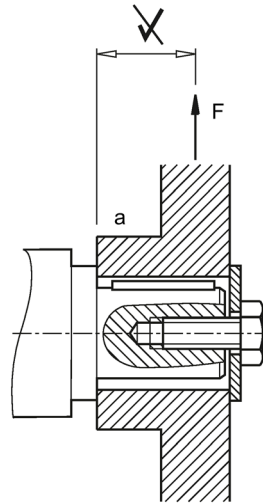
Figure 3-1 Example of a fitting device

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

Correct



Incorrect



a Hub
F Force

Figure 3-2 Mounting arrangement for low stress on shafts and bearings

Procedure

1. Use either benzine or solvent to remove the anti-corrosion protection from the shaft ends and flanges or remove the applied protective skin.
 2. Fit the drive input and output elements to the shafts. Fasten the elements when necessary.
- You have now fitted the input or output element.

3.5 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.

3.5.1 Mounting SIEMENS servomotors without parallel key onto adapter KS



ATEX version gearboxes

Impacts can cause sparks.

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



ATEX 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 mounting, 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

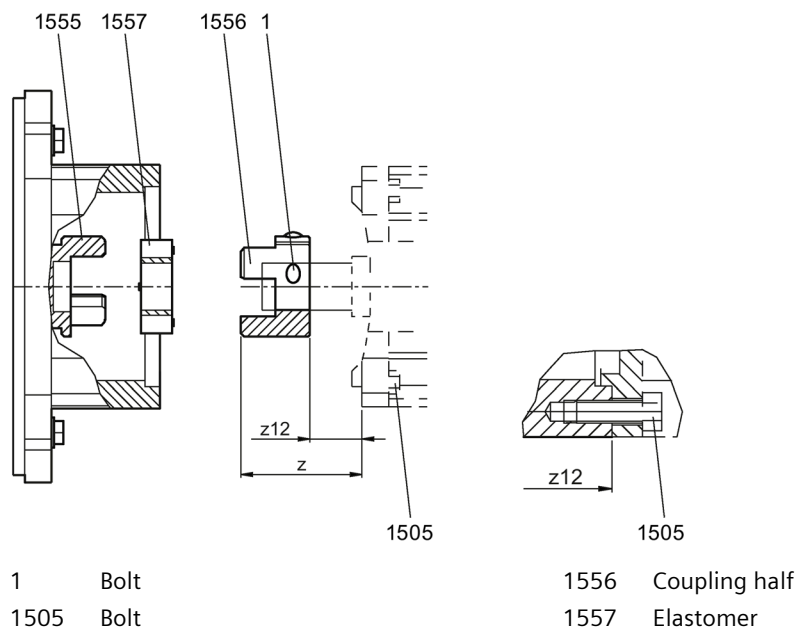


Figure 3-3 Adapter KS

Procedure

1. Loosen the bolt 1 slightly.
2. Fit the coupling half 1556 onto the motor shaft end. See Mounting an input or output element on the gearbox shaft (Page 15).
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 with the bolts 1505 with the prescribed torque. See Thread sizes and tightening torques for fastening bolts (Page 15).
The claws of the coupling parts must interlock.

You have mounted the SIEMENS servomotor on the KS adapter.

Table 3-2 Adapter KS

Size	KS3.1	KS3.2	KS4.1	KS4.2	KS5.1	KS5.2	KS5.3	KS6.1	KS6.2	KS8.1	KS10.1	KS10.2
Coupling size	16	16	19	19	19	19	19	24	24	28	38	38
z_{12} in mm	5	5	5	5	5	5	5	8	8	3	5	5
z in mm	25.7 ^{-0.8}	25.7 ^{-0.8}	36 ⁻¹	36 ⁻¹	36 ⁻¹	36 ⁻¹	36 ⁻¹	42 ⁻¹	42 ⁻¹	41 ⁻¹	52 ⁻¹	52 ⁻¹
Bolt 1	M4	M4	M6	M6	M6	M6	M6	M6	M6	M8	M10	M10
T_A SW in Nm	4.1	4.1	10	10	10	10	10	10	10	25	49	49
SW in mm	3	3	4	4	4	4	4	4	4	6	8	8
Bolt 1505	M5	M6	M6	M6	M6	M8	M6	M8	M8	M10	M12	M12

3.5.2 Fit the standard motor to the K2 or K3 adapter



ATEX version gearboxes

Impacts can cause sparks.

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



ATEX version gearboxes

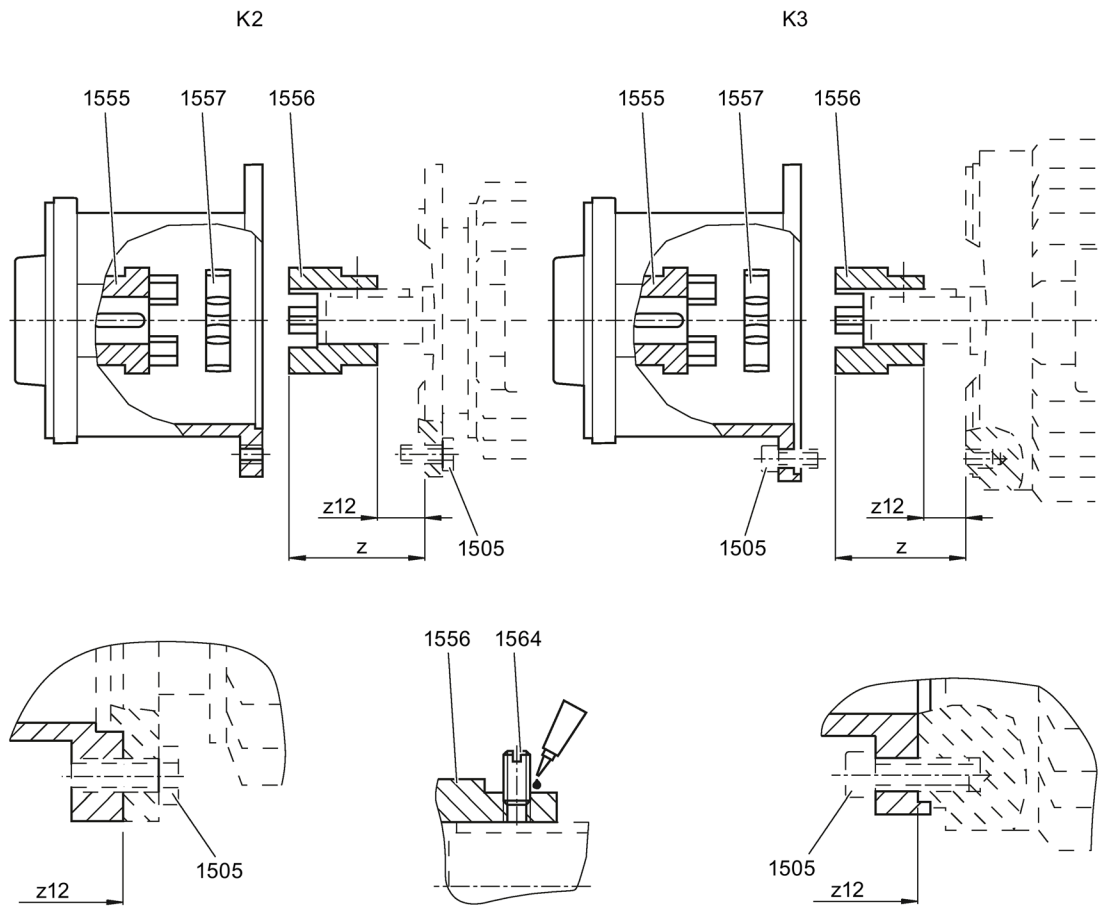
The flange-mounted motor must be sealed across the entire contact surface in order to prevent the penetration of a potentially explosive atmosphere.

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 3-4 Adapter K2 and K3

Procedure

1. Fit the coupling half 1556 onto the motor shaft end. See Mounting an input or output element on the gearbox shaft (Page 15).
2. Maintain the clearances z12 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 with the bolts 1505 with the prescribed torque. See Thread sizes and tightening torques for fastening bolts (Page 15).

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

Table 3-3 Adapter K2

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

Table 3-4 Adapter K3

NEMA TC	56	140	180	210	250	280	320	360
Coupling size	19	19	24	28	38	42	48	55
z12 in mm	27.5	28	36.5	44	50	61	71	78
z in mm	66.5 ⁻¹	67 ⁻¹	82.5 ⁻¹	96.5 ⁻¹	116.5 ^{-1.5}	134 ^{-1.5}	151.5 ^{-1.5}	169 ^{-1.5}
Grub screw 1564	M5	M5	M5	M8	M8	M8	M8	M10
T_A SW in Nm	2	2	2	10	10	10	10	17
SW in mm	2.5	2.5	2.5	4	4	4	4	5
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

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



ATEX version gearboxes

Impacts can cause sparks.

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



ATEX 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

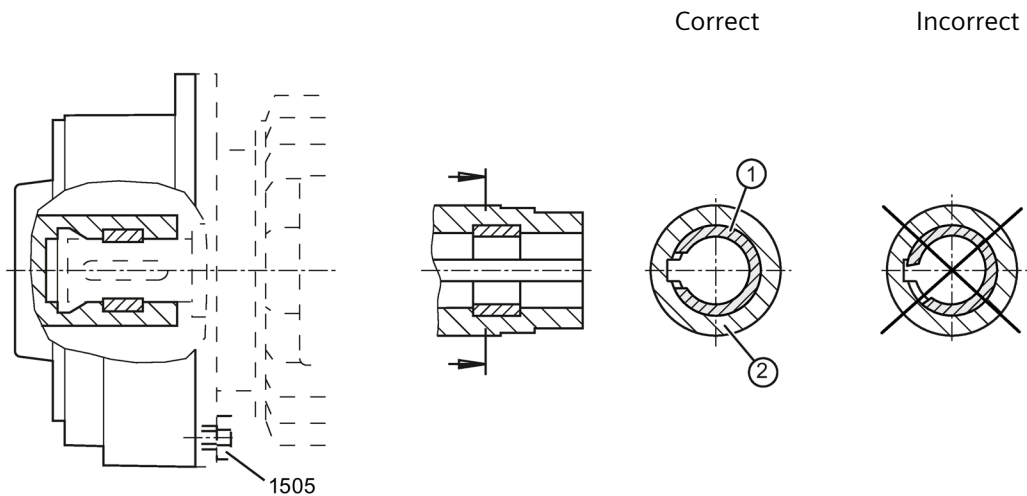
Ensure that the plastic ring ① is located in the correct position.

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 3-5 Plastic ring for K4 and K5

Procedure

1. Check the correct position of the plastic ring ① in the shaft. Correct the position if required.
2. Align the position of the motor shaft so that you can insert it in the shaft ②. The shafts do not need to be greased.
3. Apply adhesive (medium strength, e.g. Loctite 243) to the bolts 1505.
4. Fasten the motor with the bolts 1505 with the prescribed torque. See Thread sizes and tightening torques for fastening bolts (Page 15).

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

Table 3- 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 3- 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

3.5.4**Mount the servomotor with parallel key to the KQ or K8 adapter****ATEX version gearboxes**

Impacts can cause sparks.

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

**ATEX 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:

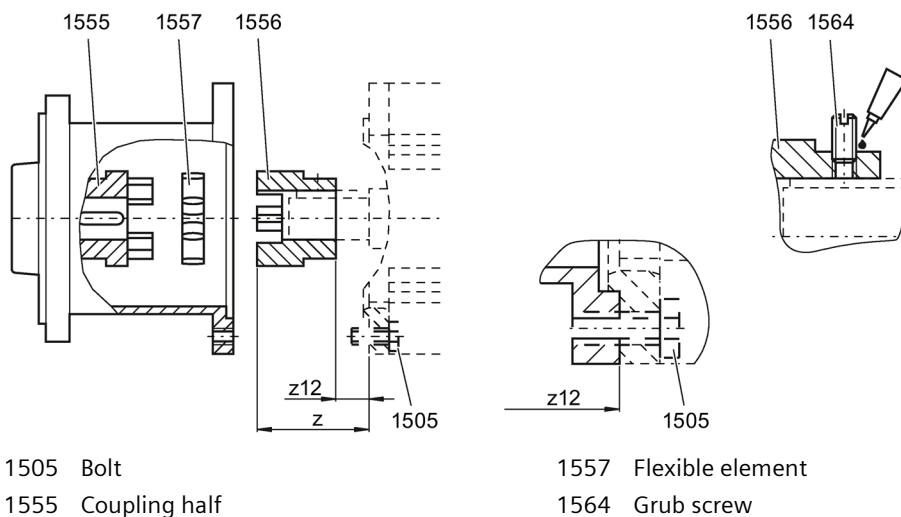
- Mineral-oil based oils or greases
- Silicon-based lubricants
- Vaseline

Note

The force required to join the coupling halves is released after mounting, 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 3-6 KQ and K8 adapters

Procedure

1. Fit the coupling half 1556 onto the motor shaft end. See Mounting an input or output element on the gearbox shaft (Page 15).
2. Maintain the clearances z12 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 with the bolts 1505 with the prescribed torque. See Thread sizes and tightening torques for fastening bolts (Page 15).

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

Table 3-7 KQ and K8 adapters

Size	703	704	706	708	808	710 / 810	813	816	818	822
Coupling size	14	19	24	28	28	38	42	42	75	90
z12 in mm	18	14	15	23.5	43.5	33	60	60	73	58.5
z in mm	40.5-0.5	53-1	61-1	76-1	96-1	99-1.5	133-1.5	133-1.5	193-2	198-2
Grub screw 1564	M4	M5	M5	M8	M8	M8	M8	M8	M10	M12
T_A SW in Nm	1.5	2	2	10	10	10	10	10	17	40
SW in mm	2	2.5	2.5	4	4	4	4	4	5	6
Bolt 1505	M6	M6	M8	M10	M10	M12	M16	M16	M16	M16

3.5.5 Mount servomotor without parallel key to the KQS adapter



ATEX version gearboxes

Impacts can cause sparks.

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



ATEX 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
-

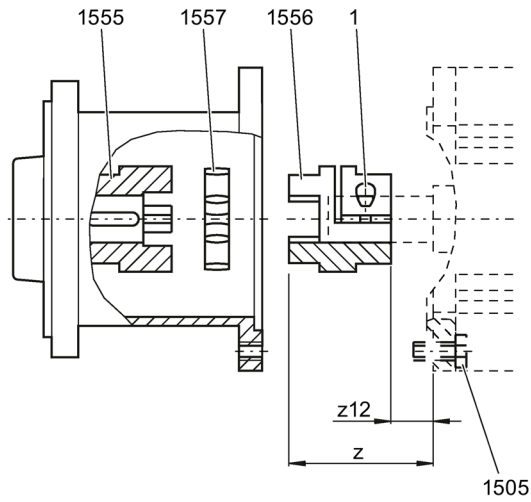
Note

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

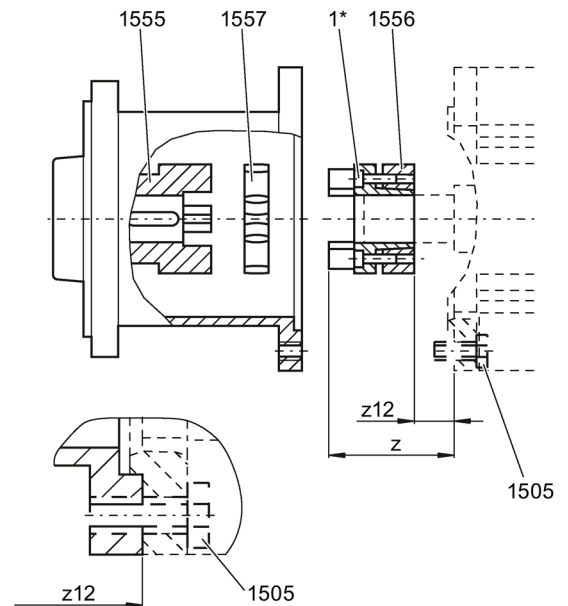
Note

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

Sizes 703 to 708



Size 710



1, 1* Bolt
 1505 Bolt
 1555 Coupling half

1556 Coupling half
 1557 Flexible element

Figure 3-7 KQS adapter

Procedure

1. Loosen the bolt 1 or 1* slightly.
2. Fit the coupling half 1556 onto the motor shaft end. See Mounting an input or output element on the gearbox shaft (Page 15).
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.

3.5 Mounting the motor

8. Apply adhesive (medium strength, e.g. Loctite 243) to the bolts 1505.
9. Fasten the motor with the bolts 1505 with the prescribed torque. See Thread sizes and tightening torques for fastening bolts (Page 15).

You have mounted the servomotor on the KQS adapter.

Table 3- 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



ATEX version gearboxes

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

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.



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
- Changes in gear noise
- Possible oil leakage at the housing and shaft seals

Preconditions for smooth, vibration-free operation

During operation, observe the maximally permissible vibration values specified in ISO 20816-1. Avoid inadmissible vibration levels caused by imbalance, for example (drive output element), external vibration or any resonance over the complete speed range.

Service and maintenance

5.1 General notes about maintenance



ATEX version gearboxes

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




ATEX version gearboxes

Maintenance work only by Siemens

Measures and work have to be performed during the repairs and servicing of ATEX 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 ATEX-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 AG may be installed.

Only qualified personnel may perform the inspection, maintenance and servicing work. Please observe the General information and safety notes (Page 5).

5.2 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.

5.3 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 (ZZ bearing) after 3 or 4 years at the latest.

Table 5-1 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 5-2 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	-	-	24 000	24 000					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							20
8.1	112	-	112	708	808	112	17 000	17 000					45
10.1, 10.2	132	210	132	710	810	132							75
-	160	250	160	-	-	160	17 000	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

6.1 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.

NOTICE

Safety impairment caused by inferior products

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.

Siemens AG states explicitly that only spare parts and accessories supplied by Siemens have been tested and approved by Siemens.

If you do not use original spare parts and original accessories, Siemens AG excludes every liability and warranty.

Siemens AG accepts the warranty only for original spare parts.

Note that special manufacturing and delivery specifications often apply to individual components. All spare parts offered by Siemens AG 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 IEC60034</p> <p>FDU0412/8999999 nnn 2KJ3105-1EM22-2AV1-Z ZF59-LE90SG4E-L32/14N-IN SI04 IP55 30kg Tamb -15...+40°C K-ID: 1234567890</p> <hr/> <p>1.5L OIL CLP VG220 i: 28 50Hz n2: 49.3r/min 60Hz n2: 59.7r/min T2: 213Nm fB: 2.1 T2: 203Nm fB: 2.2</p> <hr/> <p>3~Mot. THCL.155(F) 14Nm 230V ±10% AC 50Hz 230/400V ±10% D/Y 60Hz 460V ±10% Y 4.33/2.5A cosφ 0.78 2.2 A cosφ 0.78 1.1kW S1 IE2-81.4% 1425r/min 1.27kW S1 IE2-81.4% 1725r/min Mot. 1AV2090B 1LE1001-0EB0 SIEMENS AG, Bahnhofstr. 40, DE-72072 Tübingen</p>	<p>SIEMENS 1</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding: 2px;">3</td> <td style="padding: 2px;">2</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">5</td> <td style="padding: 2px;">4</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">6</td> <td style="padding: 2px;">7</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">8</td> <td style="padding: 2px;">9 10</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">11</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">12 13 14 15</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">16</td> <td style="padding: 2px;">17 20</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">18</td> <td style="padding: 2px;">19 22</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">24</td> <td style="padding: 2px;">25 26 27</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">29</td> <td style="padding: 2px;">30 31 38 39</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">32</td> <td style="padding: 2px;">33 41</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">34</td> <td style="padding: 2px;">35 36 37 43 44 45</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">47</td> <td style="padding: 2px;">48</td> </tr> </table> <p style="text-align: center; font-size: small;">SIEMENS AG, Bahnhofstr. 40, DE-72072 Tübingen</p>	3	2	5	4	6	7	8	9 10	11		12 13 14 15		16	17 20	18	19 22	24	25 26 27	29	30 31 38 39	32	33 41	34	35 36 37 43 44 45	47	48
3	2																										
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24	25 26 27																										
29	30 31 38 39																										
32	33 41																										
34	35 36 37 43 44 45																										
47	48																										

Figure 6-1 Example of a SIMOGEAR rating plate

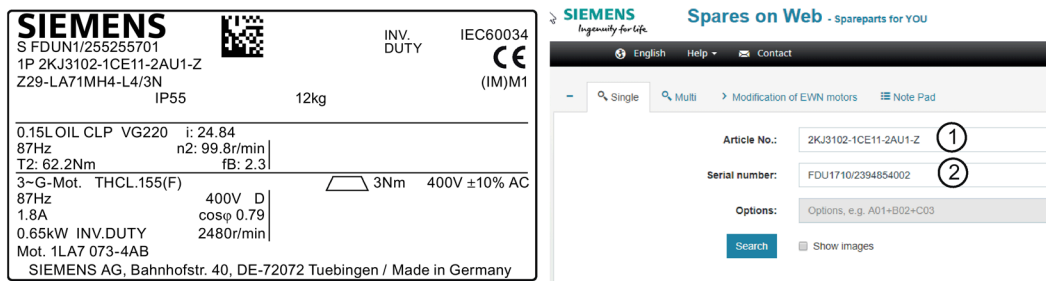
For motors with their own rating plate, the spare parts documentation in the original operating instructions applies.

6.2 Spares on Web

Rapid support around the clock – our SIMOGEAR service

Our service is your partner for comprehensive support and innovative services for increasing your productivity. The original parts and manufacturing expertise we offer help you achieve maximum machine availability and productivity. Our 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 6-2 Enter a sample article and serial number in Spares on Web

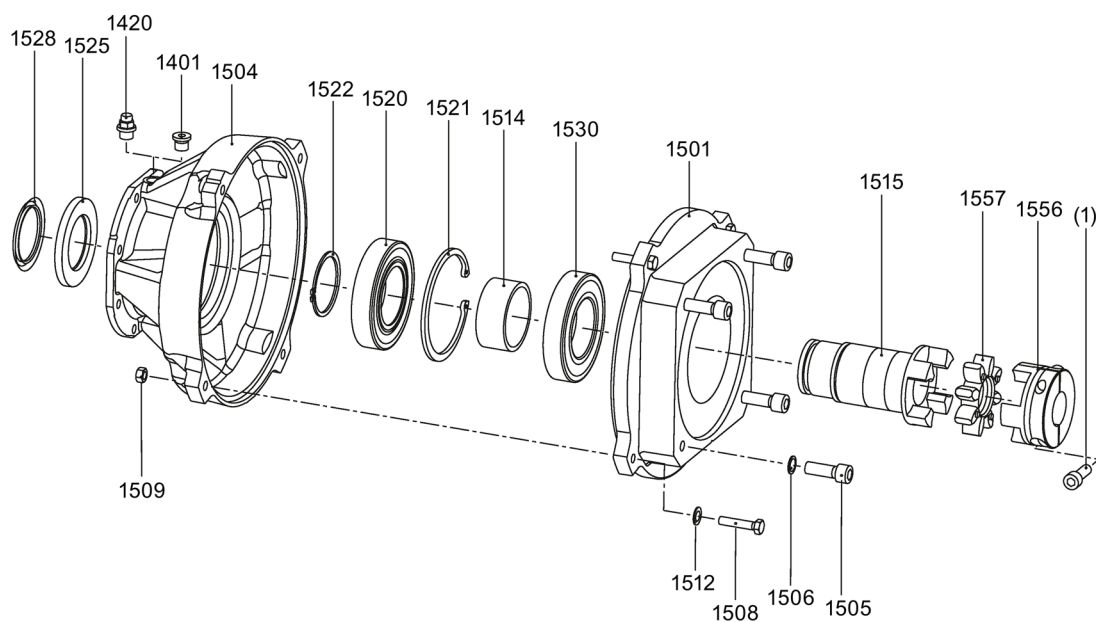
Procedure

1. Open the stated link.
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: FDU1710/2394854002 or 2394854
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 39).

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

6.3 Lists of spare parts

6.3.1 Adapter KS

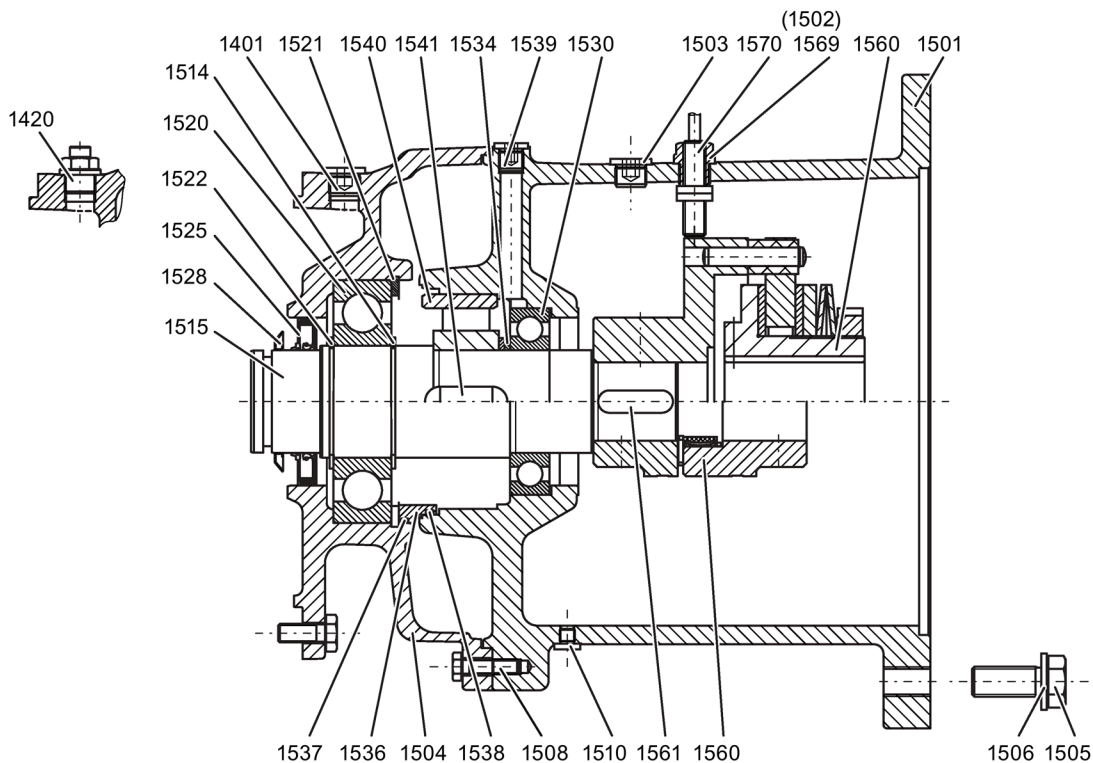


- (1) Bolt
- 1401 Bolt plug
- 1420 Vent filter
- 1501 Adapter
- 1504 Bearing shield
- 1505 Bolt
- 1506 Washer / screw lock
- 1508 Bolt
- 1509 Nut
- 1512 Washer
- 1514 Bush
- 1515 Shaft
- 1520 Bearing
- 1521 Locking ring
- 1522 Locking ring
- 1525 Shaft sealing ring
- 1528 Washer
- 1530 Bearing
- 1556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

Figure 6-3 Adapter KS for mounting a SIEMENS servomotor

6.3.2 K2 and K3 adapters with elastic coupling

Adapter K2 sizes 80 - 250, adapter K3 sizes 56 - 360



- | | | | |
|------|----------------------|------|-------------------|
| 1303 | Slip-on pinion | 1529 | Bearing |
| 1304 | Parallel key | 1530 | Bearing |
| 1401 | Screw plug | 1531 | Locking ring |
| 1420 | Vent filter | 1533 | O-ring |
| 1501 | Adapter | 1534 | Disk |
| 1502 | Screw plug | 1536 | Intermediate ring |
| 1504 | Bearing shield | 1537 | O-ring |
| 1505 | Bolt | 1538 | O-ring |
| 1506 | Plate / locking ring | 1539 | Screw plug |
| 1508 | Bolt | 1540 | Backstop |
| 1510 | Screw plug | 1541 | Parallel key |
| 1514 | Locking ring | 1543 | Supporting disk |
| 1515 | Shaft | 1544 | Shim |
| 1519 | Sleeve | 1545 | Shim |
| 1520 | Bearing | 1546 | Shim |
| 1521 | Locking ring | 1554 | Sleeve |
| 1522 | Locking ring | 1560 | Coupling |
| 1524 | Locking ring | 1561 | Parallel key |

- | | | | |
|------|--------------------|------|------------------|
| 1525 | Shaft sealing ring | 1569 | Reduction piece |
| 1528 | Disk | 1570 | Proximity switch |

Figure 6-4 K2 and K3 adapters with elastic coupling

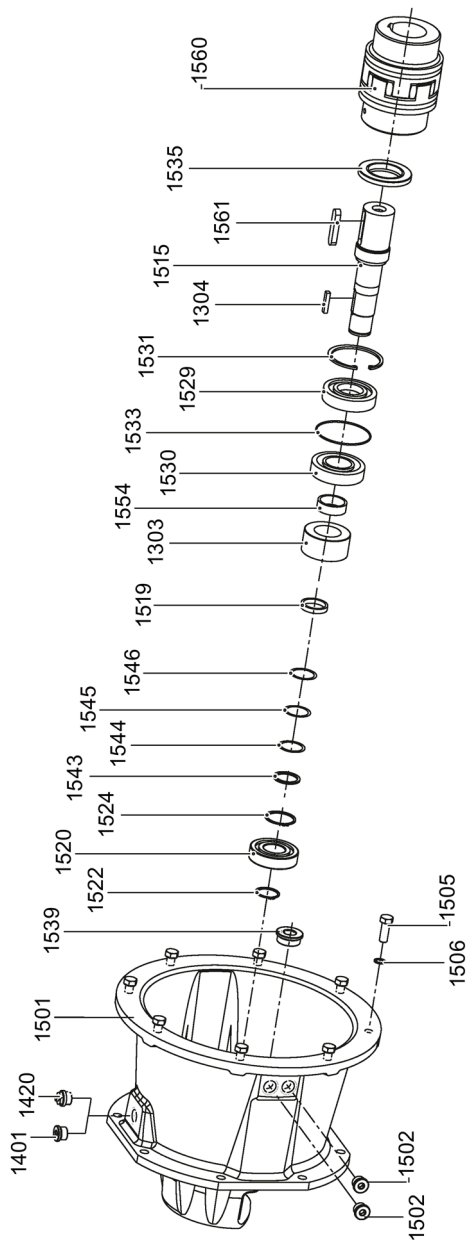
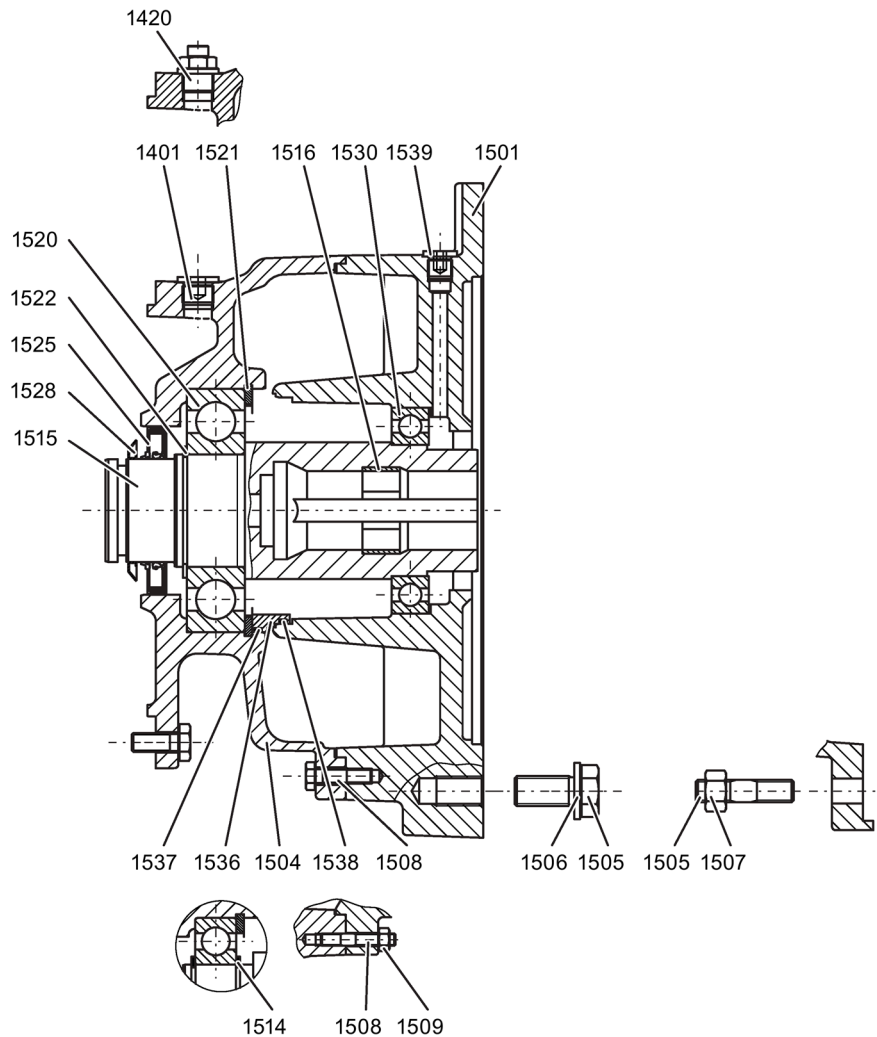


Figure 6-5 Adapter K2 sizes 280 - 315

6.3.3 K4 and K5 short adapters with plug-in connection



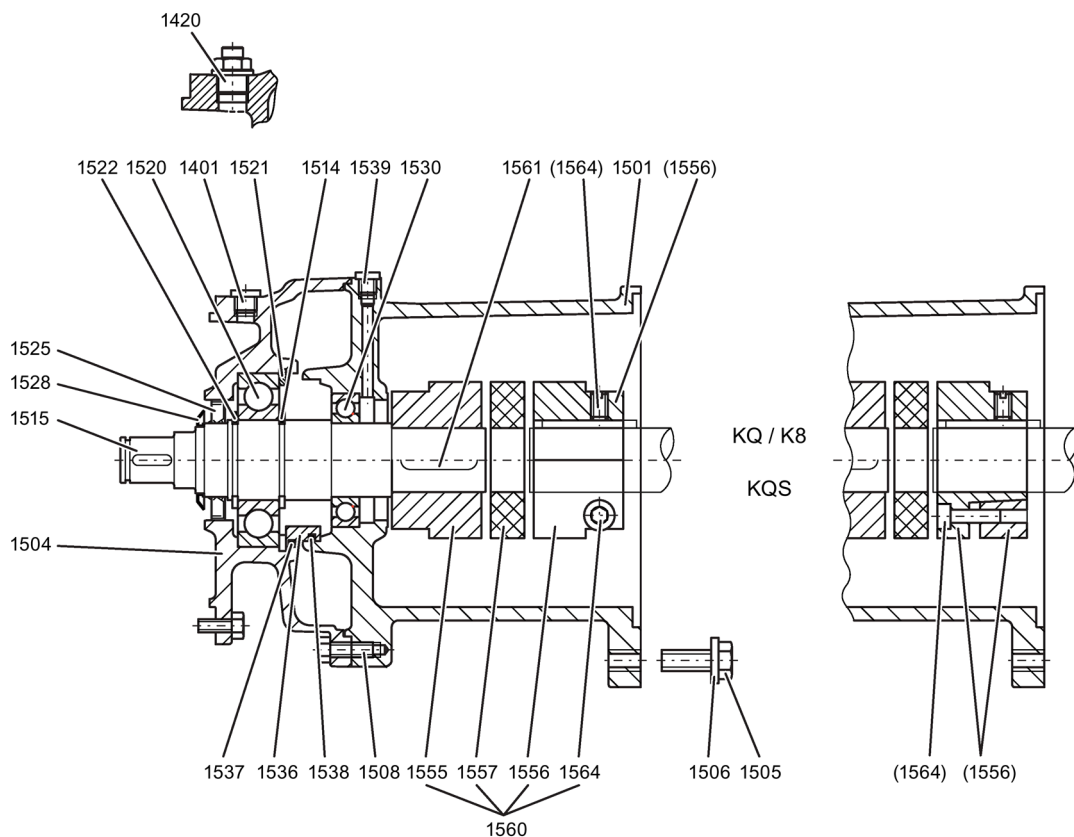
1401	Screw plug	1516	Bush
1420	Vent filter	1520	Bearing
1501	Adapter	1521	Locking ring
1504	Bearing shield	1522	Locking ring
1505	Bolt	1525	Shaft sealing ring
1506	Plate / locking ring	1528	Disk
1507	Nut	1530	Bearing
1508	Bolt	1536	Intermediate ring
1509	Nut	1537	O-ring
1514	Locking ring	1538	O-ring
1515	Shaft	1539	Screw plug

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

6.3.4 KQ, K8 and KQS adapters for mounting a servomotor

Sizes KQ 703, 704, 706, 708 / K8 808, 813, 816

Size KQ 710 / K8 810



1303	Slip-on pinion	1524	Locking ring
1304	Parallel key	1525	Shaft sealing ring
1401	Screw plug	1528	Disk
1420	Vent filter	1529	Bearing
1501	Adapter	1530	Bearing
1502	Screw plug	1531	Locking ring
1504	Bearing shield	1533	O-ring
1505	Bolt	1536	Intermediate ring
1506	Plate / locking ring	1537	O-ring
1507	Nut	1538	O-ring
1508	Bolt	1539	Screw plug
1514	Fuse	1543	Supporting disk
1515	Shaft	1544	Shim
1517	Flange	1545	Shim
1518	Bolt	1546	Shim
1519	Sleeve	1554	Sleeve

6.3 Lists of spare parts

- | | | | |
|------|--------------|------|--------------|
| 1520 | Bearing | 1560 | Coupling |
| 1521 | Locking ring | 1561 | Parallel key |
| 1524 | Locking ring | | |

Figure 6-7 KQ, K8 and KQS adapters for servomotor

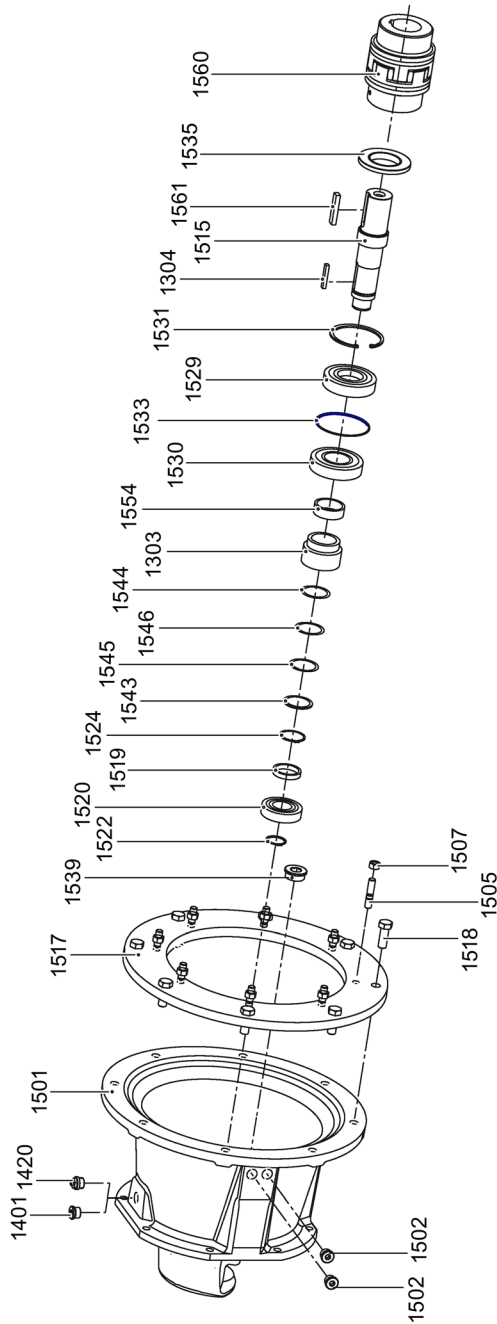
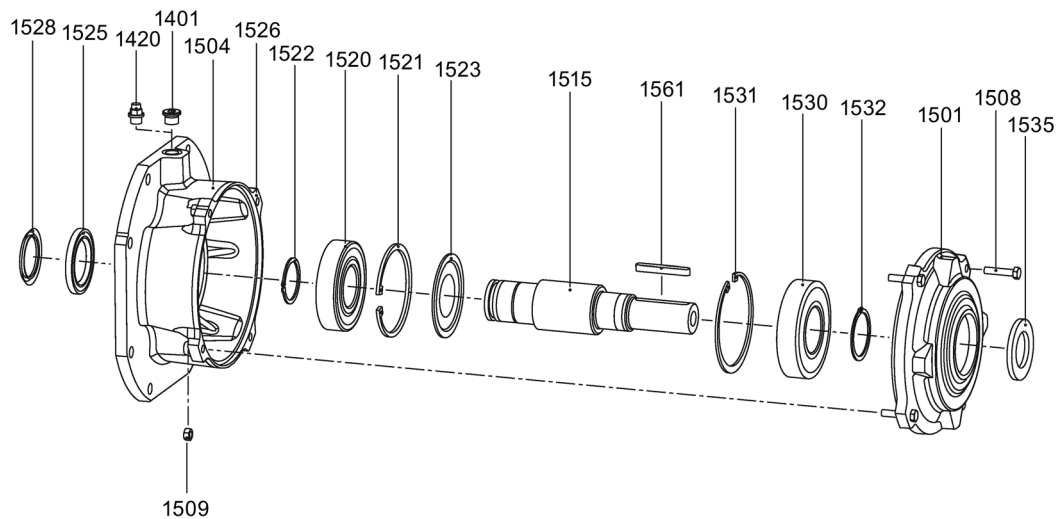


Figure 6-8 K8 sizes 818 - 822

6.3.5 A, AZ adapter



1401	Bolt plug
1420	Vent filter
1501	Adapter
1504	Bearing shield
1508	Bolt
1509	Nut
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	Feather key

Figure 6-9 A, AZ adapter

Further information

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