

MOTOX input units

BA 2019

Operating Instructions · 05/2010

MOTOX

Answers for industry.

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Input units BA 2019

Operating Instructions

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Supplement to MOTOX gearbox operating instructions
BA 2010 and BA 2515

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
with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.
CAUTION
without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.
NOTICE
indicates that an unintended result or situation can occur if the corresponding information is not taken into account.

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 for the specific task, 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 adhered to. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of the 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.

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General information and safety notes

1

1.1 General information



ATEX version gearboxes

Instructions and measures applying in particular to ATEX version gearboxes.



CAUTION

Siemens does not accept liability for any damage or outages resulting from non-compliance with these operating instructions.

These operating instructions are an integral part of the gearbox supplied and must be kept in its vicinity for reference at all times.

These operating instructions supplement the BA 2010 and BA 2515 MOTOX gearbox operating instructions.

They apply to the input units of the standard version of the MOTOX gearbox:

- Input units A, A5 - input units with additional input shaft
- Input unit K2 - coupling lantern with coupling for connecting an IEC motor
- Input unit K2TC - coupling lantern with coupling for connecting a NEMA motor
- Input unit K4 - short coupling lantern with clamp connection for connecting an IEC motor
- Input unit K5TC - short coupling lantern with clamp connection for connecting a NEMA motor
- Input units KQ, KQS - lanterns for servomotor with zero-backlash coupling for connecting a servomotor
- Input unit P - input unit with free input shaft and piggy back for connecting an IEC motor, foot-mounted version

1.1 General information

Table 1- 1 Order number code

Input unit for MOTOX gearbox	Order code
Input unit A	A00
Input unit A5	A02
Input unit K2	A03
Input unit K2TC	A05
Input unit K4	A04
Input unit K5TC	A06
Input unit KQ	A07
Input unit KQS	A08
Input unit P	A09

Note

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

Please read these operating instructions and the operating instructions for the MOTOX gearboxes BA 2010 or BA 2515 before working with the gearbox.

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

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

In the interest of technical progress we reserve the right to make changes to the individual assemblies and accessories which we regard as necessary to preserve their essential characteristics and improve their efficiency and safety.

If you have any technical questions, please contact Technical Support.

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Internet English: <http://www.siemens.com/automation/support-request>

Applicable operating instructions

Table 1- 2 MOTOX gearbox operating instructions

Title	Product
BA 2010	MOTOX gearboxes
BA 2011	MOTOX helical worm gearboxes and geared motors
BA 2019	MOTOX input units
BA 2510	MOTOX optional add-on units
BA 2515	MOTOX gearboxes for overhead conveyors

Table 1- 3 Motor operating instructions

Title	Product
BA 2310	Three-phase and single-phase alternating current motors and brake motors with accessories
BA 2320	LA / LG and LAI / LGI motors for fitting to MOTOX and CAVEX gearboxes

Table 1- 4 CAVEX gearbox operating instructions

Title	Product
BA 6610TU	CAVEX worm gearboxes, type C..., size 63 to 630
BA 6611TU	CAVEX worm gearboxes, type CS..., size 63 to 630
BA 6612TU	CAVEX worm gearboxes, type CD..., size 100 to 630
BA 6800TU	CAVEX elevator drives, type CG 26, size 100, 112, 135, 170
BA 6801TU	CAVEX elevator drives, type CG 45, size 120
BA 6802TU	CAVEX escalator drives, type CG 26, size 100, 112, 135, 170

1.2 Copyright

The copyright to these operating instructions is held by Siemens Geared Motors GmbH.

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 our agreement.

1.3 Intended use



ATEX version gearboxes

The ATEX gearbox meets the requirements of the Explosion Protection Directive 94/9/EC.

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

The MOTOX 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.

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.

Note

The performance data assumes an ambient temperature of -20 °C to +40 °C and an installation altitude of up to 5,000 m above sea level.

In the case of other ambient temperatures and installation altitudes, please contact Technical Support.

The gearboxes have been designed solely for the application described in Technical Data in the BA 2010 or BA 2515 operating instructions for MOTOX gearboxes. Do not operate the gearboxes outside the specified power limits. Other operating conditions must be contractually agreed.

Do not stand or walk on the gearboxes.

1.4 Obligations of the user

The operator must ensure that all persons assigned to work on the gearbox have read and understood these operating instructions and that they follow them in all points in order to:

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

Note the following safety information:

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.

Ensure compliance with the relevant safety and environmental regulations during transport, mounting and dismantling, operation, and care and maintenance of the unit.

Read 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, immediately switch off the drive unit.

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

Take appropriate 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. Remove oil spillages immediately with an oil-binding agent in compliance with environmental requirements.

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

Carry out equipotential bonding in accordance with applicable regulations and directives. Such work must be carried out by qualified electrical personnel only.

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

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

We can only accept liability for original spare parts supplied by Siemens Geared Motors GmbH.

If the geared motor is being installed in a plant or equipment, the manufacturers of such plant or equipment must ensure that the contents of these operating instructions are incorporated into their own instructions, information, and descriptions.

1.5 Particular type of risk and personal protective equipment

 **DANGER**

Depending on operating conditions, the gearbox may exhibit 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.

 **DANGER**

Danger of scalding caused by hot oil emerging from the unit.
Before starting any work wait until the oil has cooled down to below +30 °C.

 **DANGER**

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

 **DANGER**

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 required personal protective equipment, wear suitable protective gloves and eyewear when working with the gearbox.

Technical description

2.1 Flexible coupling

CAUTION
A coupling with a peripheral speed of up to 30 m/s at the outer diameter must be statically balanced. A coupling with a peripheral speed of more than 30 m/s requires dynamic balancing.

A flexible coupling is generally used 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.

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

2.2 Backstop



ATEX version gearboxes

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

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

CAUTION
Drive speeds below 1,000 rpm or frequent starting and stopping operations (≥ 20 starts / stops per hour) will limit service life.
Do not use the same backstop for prolonged periods; replace backstops regularly.

CAUTION
Damage or destruction of the backstop due to incorrect direction of rotation.
Do not run the motor against the backstop.
Note the directional arrow on the gearbox.

The gearbox can be fitted with a mechanical backstop. The backstop can be fitted either in the coupling lantern or in the 2nd stage of the bevel helical gearbox. It permits only the correct direction of rotation during operation. This 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.

Where the backstop is used in the coupling lantern, lifting of the sprags is ensured when the drive speed is above the speed listed in the table. The backstop is wear-free. It does not require maintenance.

Table 2- 1 Drive speed when using backstops

Motor size	Backstop	Minimum speed
		[rpm]
80/90	FXM-46 DX	> 820
100	FXM-51 DX	> 750
112	FXM-61 DX	> 750
132, 160	FXM-76 DX	> 670
180/200, 225, 250	FXM-101 DX	> 610
280	FXM-100 SX	> 400

When used in the bevel helical gearbox (gearbox intermediate shaft), the backstop operates at speeds below the lift-off speed of the sprags in a separate oil chamber. The oil must be changed at the same intervals as the gearbox.

Installation

3

3.1 Unpacking

CAUTION
Make sure that damaged gearboxes or geared motors are not put into operation.

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

Remove packaging and transport fixtures and dispose of them properly.

3.2 General information on installation



ATEX version gearboxes

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.

WARNING
The entire system must be load-free so that there is no danger during this work.

CAUTION
Overheating of the gearbox due to exposure to direct sunlight. Provide suitable protective equipment such as covers or roofs. Prevent heat accumulation.

CAUTION
Malfunction resulting from foreign objects. The operator must ensure that no foreign objects impair the function of the gearbox.

CAUTION
Exceeding the permissible oil sump temperature due to incorrect settings of temperature monitoring equipment. A warning must be given when the maximum permissible oil sump temperature is reached. The geared motor must be switched off when the maximum permissible oil sump temperature is exceeded. This switching off can cause plant shutdown.

CAUTION
Irreparable damage to geared components and bearings due to welding. Do not carry out any welding work on the gearbox. The gearbox must not be used as a grounding point for welding operations.

Note

Use headless screws of strength class 8.8 or higher to fasten the gearbox.

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 type of construction specified on the rating plate. This ensures that the correct quantity of lubricant is provided.

Use all the fastening means which have been assigned to the relevant type of construction.

Cap screws 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 Tightening torques for fastening bolts

The general tolerance for the tightening torque in Nm is 10%. The friction coefficient is 0.14 μ .

Table 3- 1 Tightening torques for fastening bolts

Thread size	Tightening torque at strength 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 the input or output element on the gearbox

 DANGER
Danger of burns due to hot parts. Do not touch the gearbox without protection.

CAUTION
Damage to shaft sealing rings caused by solvent or benzine. Avoid contact at all times.

CAUTION
Damage to shaft sealing rings caused by heating over 100 °C. Protect shaft sealing rings from heating up due to radiant heat using thermal shields.

CAUTION
Alignment errors caused by excessive angle or axial displacement of the shaft ends to be joined lead to premature wear or material damage. Ensure precise alignment of the individual components.

CAUTION
Damage to bearings, housing, shaft, and locking rings 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, the heat can be applied inductively, using a torch or in a furnace.

Use the centering holes in the shaft end faces.

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

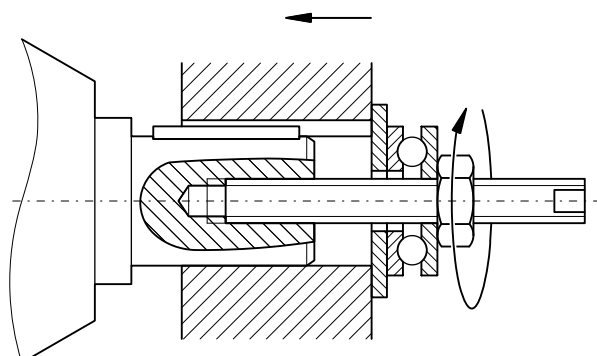
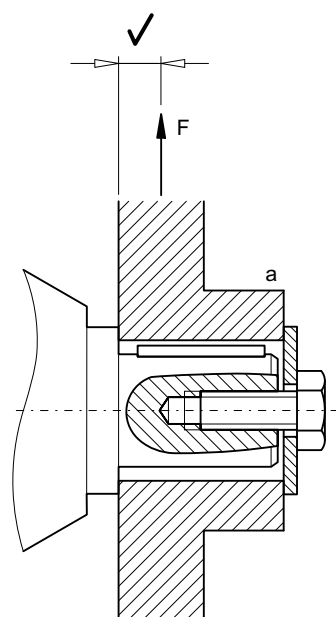


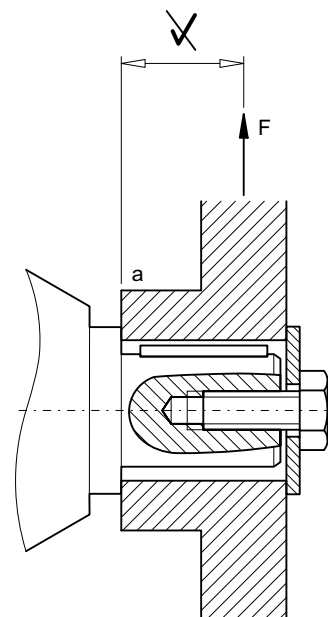
Figure 3-1 Example of a fitting device

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 minimum stress on shafts and bearings

Procedure

1. Using either benzine or solvent, remove the anti-corrosion protection from the shaft ends and flanges and remove the protective skin provided.
2. Fit the input and output elements onto the shafts and secure them if necessary.

You have now fitted the input or output element.

3.5 Mounting the motor

CAUTION
<p>If geared motors are inadequately sealed, moisture may find a way in.</p> <p>If the geared motor is to be installed outside or in an installation requiring a high degree of protection (\geq IP55),</p> <p>seal the flange, bolts 505 and any screw plugs 502 or 503 or integrated elements such as proximity switches, using an appropriate sealing compound.</p> <p>The flange-mounted motor must be sealed across the entire contact surface.</p>

3.5.1 Mounting a standard motor on a coupling lantern with a flexible coupling (K2, K2TC)



ATEX version gearboxes

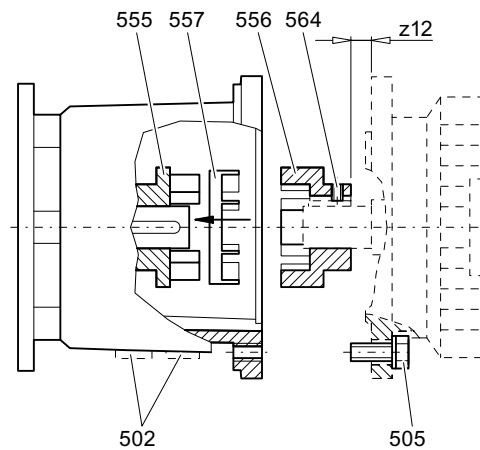
Impacts can cause sparks.

Secure the grub screw 564 and bolts 505 with Loctite 243.

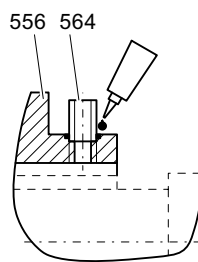
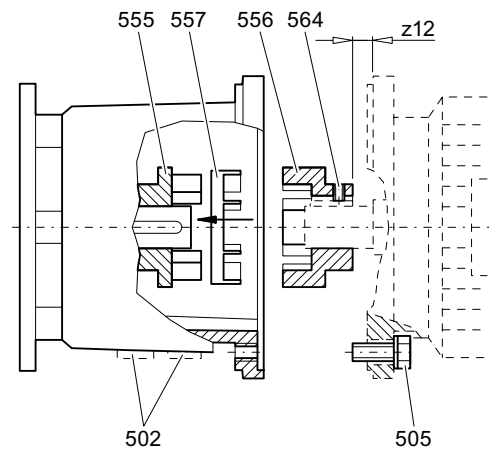
Note

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

IEC B5 80 - 315, NEMA TC 56 - 145



NEMA TC 182 - 365



- 502 Screw plug
- 505 Hexagon bolt
- 555 Coupling half
- 556 Coupling half
- 557 Flexible element
- 564 Grub screw

Figure 3-3 Coupling lantern with flexible coupling

Procedure

1. Fit the coupling half 556 onto the motor shaft end, see Mounting the input or output element on the gearbox (Page 18).
2. Maintain the clearance z12.
3. Secure the coupling half 556 with the grub screw 564 to prevent axial movement.
4. On motors balanced with half a featherkey (code "H"), remove projecting, visible parts of the featherkey.
5. Place the flexible element 557 inside the coupling half 555.
6. Apply adhesive (medium strength, e.g. Loctite 243) to the grub screw 564 and bolts 505.
7. Flange-mount the motor to the coupling lantern and secure it with the bolts 505 using the specified torque.

You have now mounted the standard motor on the coupling lantern with a flexible coupling.

Table 3- 2 Clearance z12 for K2

IEC B5	80	90	100	112	132	160	180	200	225	250	315
z12 [mm]	15	25	30	30	45	66	59	60	90	75	33

Table 3- 3 Clearance z12 for K2TC

NEMA TC	56C	143TC / 145TC	182TC / 184TC	213TC / 215TC	254TC / 256TC	284TC / 286TC	324TC / 326TC	364TC / 365TC
z12 [mm]	27.5	28	36.5	45.5	50	60.5	71	78

3.5.2 Mounting a standard motor on a short coupling lantern with a clamp connection (K4, K5TC)



ATEX version gearboxes

Impacts can cause sparks.

Secure the grub screw 564, hexagon socket-head screw 561 and bolts 505 with Loctite 243.

CAUTION

The grub screw 564 must not butt against the hexagon socket-head screw 561 when it is tightened.

CAUTION

Be careful not to axially distort the motor shaft when flange-mounting the motor.

Keep the motor shaft completely free from grease in the vicinity of the clamping ring.

In the case of brake motors, release the brake before mounting the motor.

CAUTION

The ventilation-side motor bearing can become distorted when pushing the motor onto the drive shaft of the input unit.

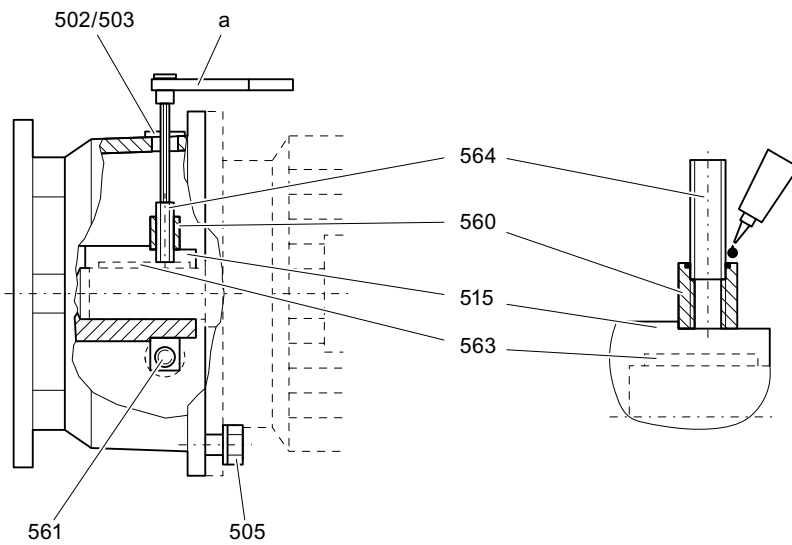
Above size 100, if the motor is mounted in a vertical position the weight of the rotor shaft prevents the bearing from being distorted.

When mounting the motor in a horizontal position and in a vertical position up to motor size 90, please observe steps 6 to 8.

Note

The connection between the shafts is rigid and without axial compensation. Therefore we recommend using motors with a fixed bearing on the drive side for optimum service life.

3.5 Mounting the motor



- a Torque wrench
- 502 Mounting plug
- 503 Mounting plug
- 505 Hexagon bolt
- 515 Drive shaft
- 560 Clamping ring
- 561 Hexagon socket-head screw (component of item 560)
- 563 Featherkey
- 564 Grub screw

Figure 3-4 Short coupling lantern with clamp connection

Procedure

1. Remove the mounting plugs 502 and 503.
2. Turn the drive shaft 515 and clamping ring 560 of the gearbox to align them with the mounting holes for the mounting plugs 502 and 503.
3. Apply adhesive (medium strength, e.g. Loctite 243) to the grub screw 564, hexagon socket-head screw 561 and bolts 505.
4. Secure the clamping ring 560.
5. Flange-mount the motor to the short coupling lantern and secure it with the bolts 505 using the specified torque.
6. Remove the fan cover.

7. Release the tension on the bearing by lightly pressing ① your hand on the end of the shaft.

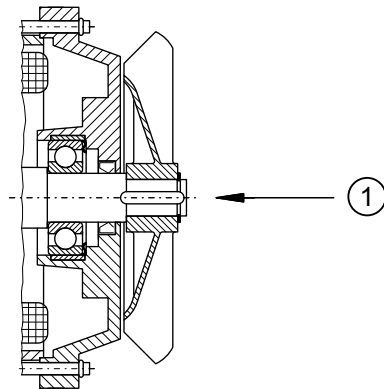


Figure 3-5 Pressure on motor shaft

8. Mount the fan cover.
9. Screw the grub screw 564 to the featherkey 563 until a slight resistance is felt, then turn the grub screw 564 half a turn back.
10. Insert the socket wrench into the grub screw 564 through the hole for the mounting plugs 503. This prevents the shaft from twisting.
11. Tighten the hexagon socket-head screw 561 with torque T_A SW2 and width across flats SW2.
12. Tighten the grub screw 564 with torque T_A SW1 and width across flats SW1.
13. Seal the mounting holes with the mounting plugs 502 and 503.

You have now mounted the standard motor on the short coupling lantern with a clamp connection.

Table 3- 4 Torque and width across flats for K4

IEC B5	63	71	80	90	100	112	132	160	180	200	225	250	280
T_A SW1 [Nm]	1.3	1.3	1.3	2.9	2.9	2.9	5.8	9.9	9.9	9.9	9.9	9.9	48
SW1 [mm]	2	2	2	3	3	3	4	5	5	5	5	5	8
T_A SW2 [Nm]	15	15	15	35	35	35	70	120	120	295	295	295	580
SW2 [mm]	5	5	5	6	6	6	8	10	10	14	14	14	17

Table 3- 5 Torque and width across flats for K5TC

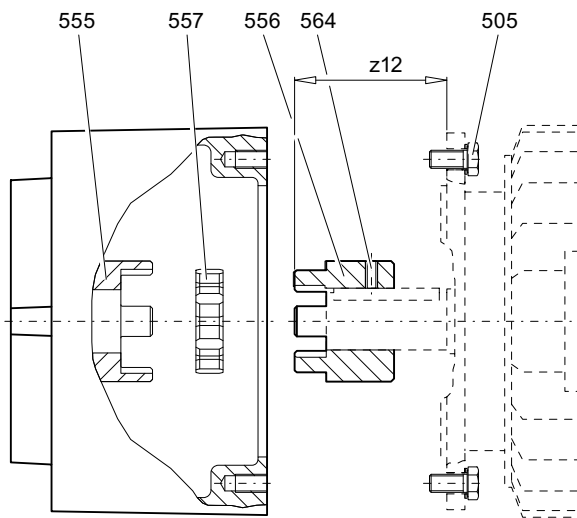
NEMA TC	56C	143TC / 145TC	182TC / 184TC	213TC / 215TC
T_A SW1 [Nm]	1.3	2.9	2.9	5.8
SW1 [mm]	2	3	3	4
T_A SW2 [Nm]	15	15	35	70
SW2 [mm]	5	5	6	8

3.5.3 Mounting a servomotor on lanterns with a zero-backlash coupling (KQ, KQS)

Note

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

Mounting version KQ - for motor shaft with featherkey



- 505 Hexagon bolt
- 555 Coupling half
- 556 Coupling half
- 557 Flexible element
- 564 Grub screw

Figure 3-6 Lantern for servomotor KQ

Procedure

1. Fit the coupling half 556 onto the motor shaft end, see Mounting the input or output element on the gearbox (Page 18).
2. Maintain the clearance z12.
3. Secure the coupling half 556 with the grub screw 564 to prevent axial movement.
4. On motors balanced with half a featherkey (code "H"), remove projecting, visible parts of the featherkey.
5. Place the flexible element 557 inside the coupling half 555.
6. Flange-mount the motor to the servomotor lantern and secure it with the bolts 505 using the specified torque.

You have now mounted the servomotor on the KQ lantern with a zero-backlash coupling.

Mounting version KQS - for motor shafts without featherkey

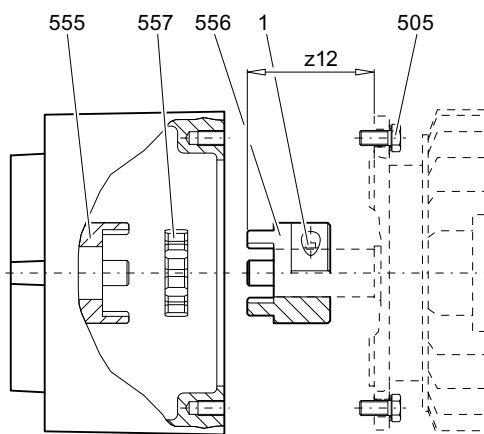
CAUTION

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

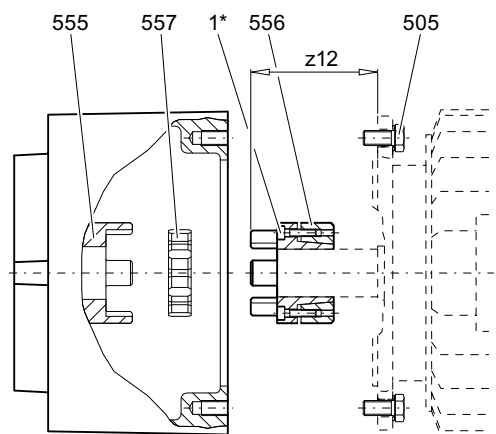
Keep the drill hole and motor shaft completely free from grease.

Do not use soiled cleaning cloths or contaminated solvents.

Sizes 71 to 112



Size 132



- 505 Hexagon bolt
- 555 Coupling half
- 556 Coupling half
- 557 Flexible element
- 1 Bolt

Figure 3-7 Lantern for servomotor KQS

Procedure

1. Loosen the bolt 1 slightly.
2. Fit the coupling half 556 onto the motor shaft end, see Mounting the input or output element on the gearbox (Page 18).
3. Maintain the clearance z12.
4. KQS 71 - 112:
Tighten bolt 1 with the specified torque.
KQS 132:
Tighten the bolt 1* evenly and gradually in a crossways pattern. Repeat the procedure until the specified to torque has been reached.
5. Place the flexible element 557 inside the coupling half 555.
6. Flange-mount the motor to the servomotor lantern and secure it with the bolts 505 using the specified torque.

You have now mounted the servomotor on the KQS lantern with a zero-backlash coupling.

Table 3- 6 Clearance z12 for KQ / KQS

Sizes	z12	Sizes	z12
	[mm]		[mm]
71.1	34.5	90.4/5	61
71.2/3	41.5	112.1/2	62.5
80.1/2	39	112.3	77.5
80.3/4	54	132.1/2	76
90.1/2/3	50	132.3	96

3.6 Adjusting the height of the piggy back

3.6.1 General information on adjusting the piggy back




ATEX version gearboxes

The piggyback version is supplied without belt, belt pulley or guard.
Friction linings or impact can cause sparks.

A safety system must be used to ensure that

- the belt cannot slip and cause a spark
- no foreign bodies can enter the vicinity of the belt drive.

 DANGER
<p>Rotating drive parts</p> <p>Always attach appropriate guards to cover the belt drive, chain drive or other open drive components.</p>

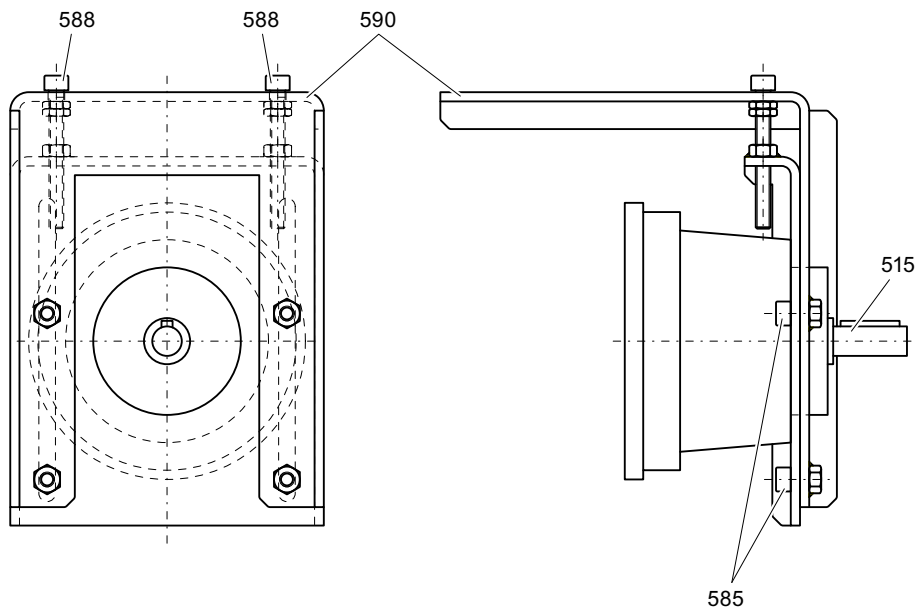
CAUTION
<p>Incorrect belt tension can cause the belt to break and damage the bearings.</p> <p>Refer to the operating instructions for V belt drives.</p> <p>Fit the belt pulley onto the drive shaft 515 as described in "Mounting the input or output element on the gear shaft".</p>

CAUTION
<p>After mounting or adjusting the piggy back protect unpainted areas against corrosion.</p> <p>Use a suitable, long-lasting anti-corrosion agent.</p>

The piggy back holds a conventional IEC motor, which is primarily used for driving a V belt drive. Install the motor in accordance with the manufacturer's operating instructions.

For other drive types, such as chain drives, please refer to the corresponding operating instructions or manufacturer's information.

3.6.2 Piggy back for IEC motor up to size 112



- 515 Drive shaft
- 585 Bolt
- 588 Bolt
- 590 Motor plate

Figure 3-8 Piggy back for IEC motor up to size 112

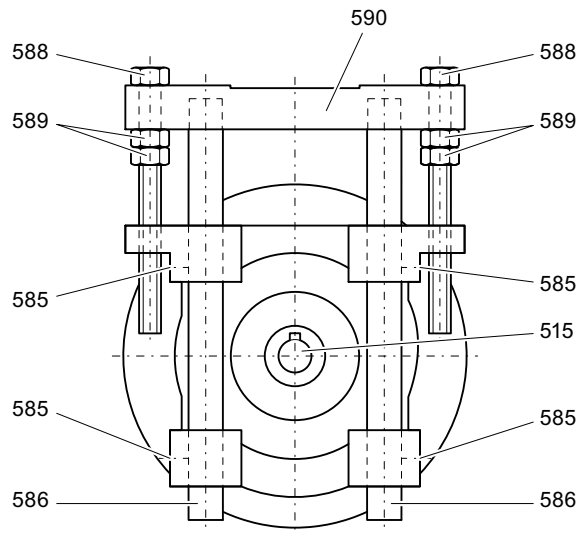
Procedure

1. Loosen the bolts 585.
 2. Adjust the height of the motor plate 590 by evenly turning the bolt 588.
 3. After setting the correct height, tighten the bolts 585 using the specified torque.
- You have now mounted the piggy back for IEC motors up to size 112.

3.6.3 Piggy back for IEC motor sizes 132 to 200

! DANGER

The piggy back can slip out of the support.
Do not move to a downward facing mounting position.



- 515 Drive shaft
- 585 Grub screw
- 586 Column
- 588 Bolt
- 589 Hexagon nut
- 590 Motor plate

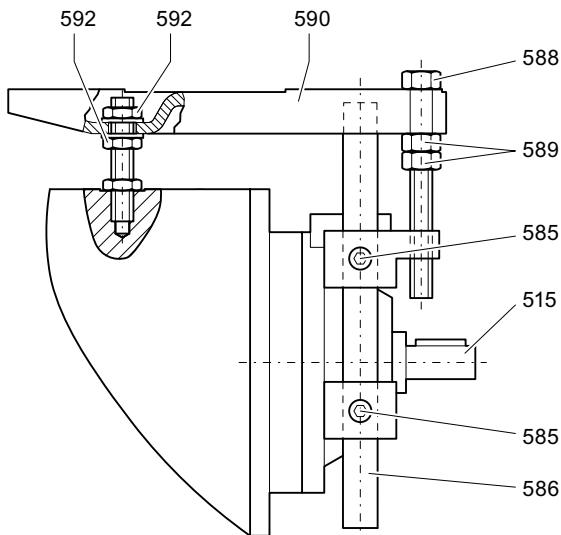
Figure 3-9 Piggy back for IEC motor sizes 132 to 200

Procedure

1. Loosen the grub screws 585.
 2. Adjust the height of the motor plate 590 by evenly turning the bolt 588.
 3. After setting the correct height, tighten the grub screws 585.
- You have now mounted the piggy back for IEC motors sizes 132 to 200.

3.6.4 Piggy back for IEC motor size 225 and above

CAUTION
When tightening the hexagon nuts 592, do not distort or force the motor plate 590 into a different position.



- 515 Drive shaft
- 585 Grub screw
- 586 Column
- 588 Bolt
- 589 Hexagon nut
- 590 Motor plate
- 592 Hexagon nut

Figure 3-10 Piggy back for IEC motor size 225 and above

Procedure

1. Loosen the grub screws 585.
 2. Loosen the hexagon nuts 592 on the support.
 3. Adjust the height of the motor plate 590 by evenly turning the bolt 588.
 4. After setting the correct height, tighten the grub screws 585.
 5. Tighten the hexagon nuts 592 on the support.
- You have now mounted the piggy back for IEC motors size 225 and above.



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.

CAUTION

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

Use the fault table in the section titled "Faults, causes, and remedies" to determine the cause of the fault.

Remedy faults or have faults remedied.

CAUTION

On cylindrical-roller bearings in the input unit, undershooting the minimum radial force can damage bearings.

Check the gearbox during operation for:

- Excessive operating temperature
- Changes in gear noise
- Possible oil leakage at the housing and shaft seals.

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.



WARNING

Secure the drive unit to prevent it from being started up unintentionally.
Attach a warning notice to the start switch.

CAUTION

Service and maintenance must only be carried out by properly trained and authorized personnel. Only genuine parts supplied by Siemens Geared Motors GmbH can be used for servicing and maintenance.

All inspection, maintenance, and repair work must be carried out with care by trained personnel only. Observe the information in Section General information and safety notes (Page 7).

5.2 Regreasing the roller bearing

CAUTION
When regreasing, do not mix greases of different soap bases!

Drive units of motor size 160 and above need to be regreased for K2, A and P and drive units of motor size 225 and above need to be regreased for K4. Regrease at least every 12 months or every 4,000 operating hours.

The bearings are supplied greased.

The standard lubricating grease used is a mineral-oil-based lithium-saponified grease of NLGI class 3/2.

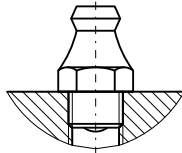


Figure 5-1 Grease nipple

Using a grease gun, inject the grease into the bearing point via the lubricating nipples provided. Inject 50 g grease per lubricating point, unless otherwise specified in the vicinity of the lubricating point.

Spare parts / Accessories

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.

<p>CAUTION</p> <p>Please note that spare parts and accessories not supplied by us have not been tested or approved by us.</p> <p>The installation and / or use of such products can therefore 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 Geared Motors GmbH will accept no liability or warranty whatsoever for damage occurring as a result of the use of non-original spare parts or accessories.</p>

We can only accept liability for original spare parts supplied by Siemens Geared Motors GmbH.

Please note that single components often have special production and supply specifications. We always supply spare parts which meet state-of-the-art technical standards and comply with the latest legal requirements.

Please state the following data when ordering spare parts:

- Serial no. see rating plate ⑤
- Type designation see rating plate ③
- Part no. (3-digit item no. from spare parts list, 6-digit code no. or 7-digit article no.)
- Quantity


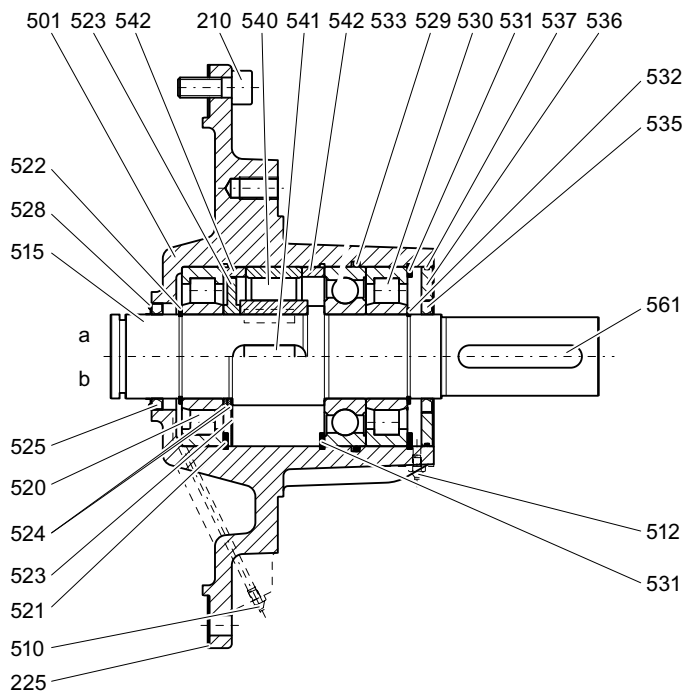
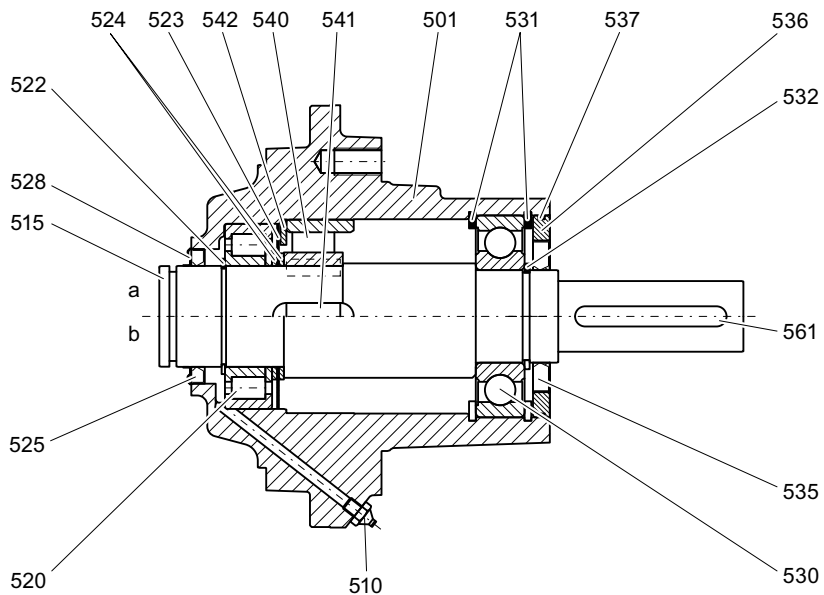
SIEMENS		CE IEC60034	
KAF108-LA160L4-L150/100GH 2KJ1506-5JR13-2FD1-Z		FDU1001/8999999 nnn 254kg (IM) H-01-A	
G. 6.2L OIL CLP PG VG220 i=12.9 50Hz 113/min 60Hz 136/min 1266Nm fB=1.5 1264Nm fB=1.5			
3-Mot. ThCI.155(F) TP-PTC  100Nm 190-240V AC 50Hz 400/690V D/Y 60Hz 460V Y 29/16.74A cosPhi 0.84 28.6A cosPhi 0.87 15kW IE1-90% 1460/min 15kW 1755/min			
		SIEMENS	
		1 2	
		3 4 5 6 7 8	
		9 10 11 12 13 14 15 16 17 18 19 20	
		21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42	

Figure 6-1 Rating plate example

For motors of series 1LA/1LG with their own rating plate, the spare parts documentation in the original operating instructions applies.

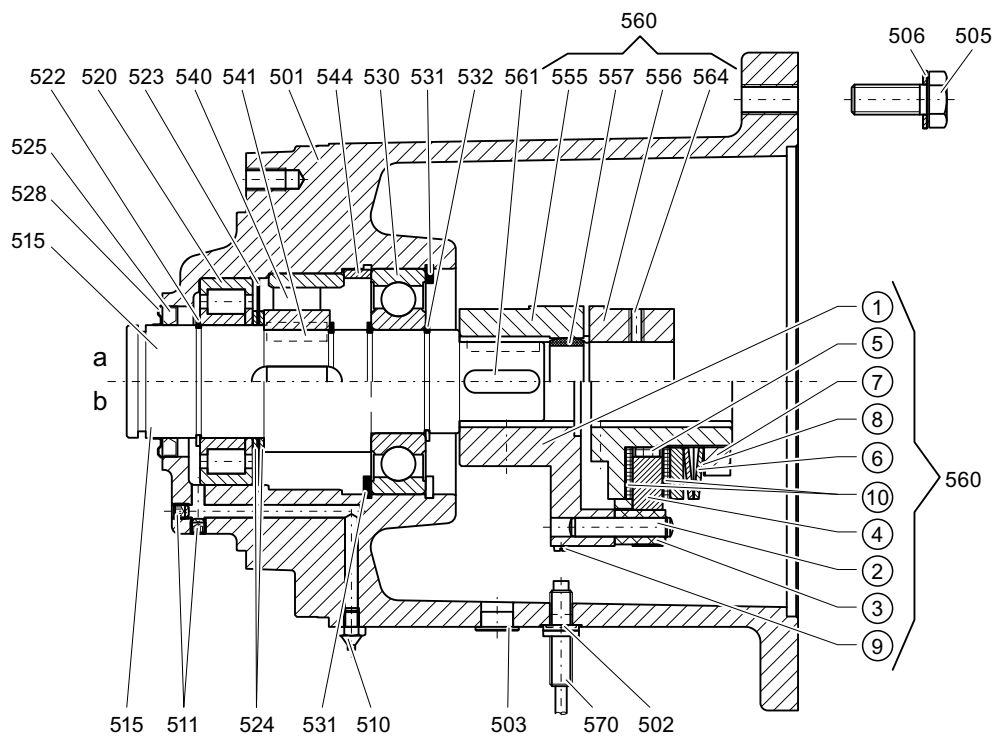
6.2 Spare parts lists

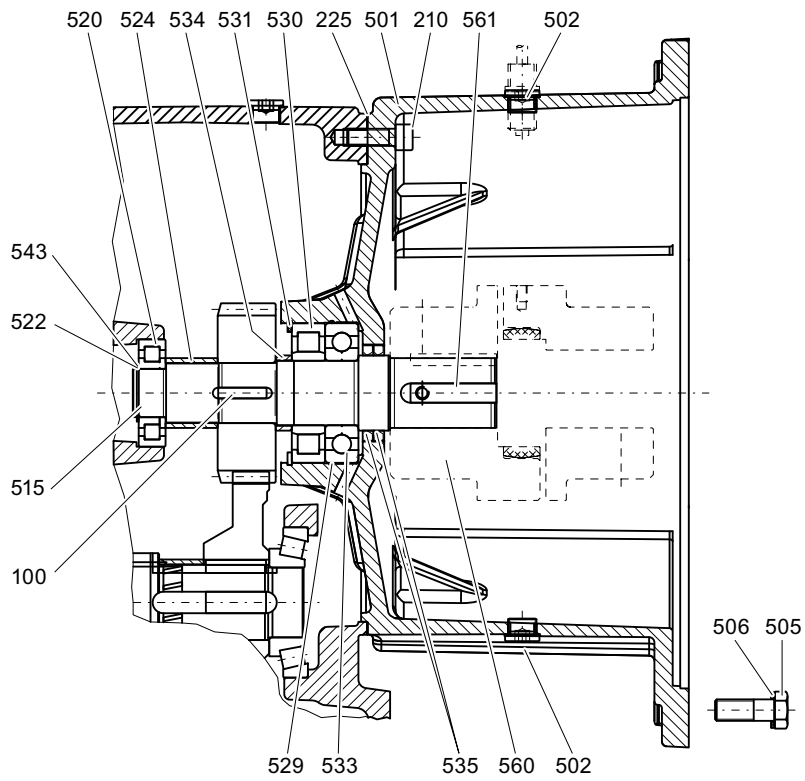
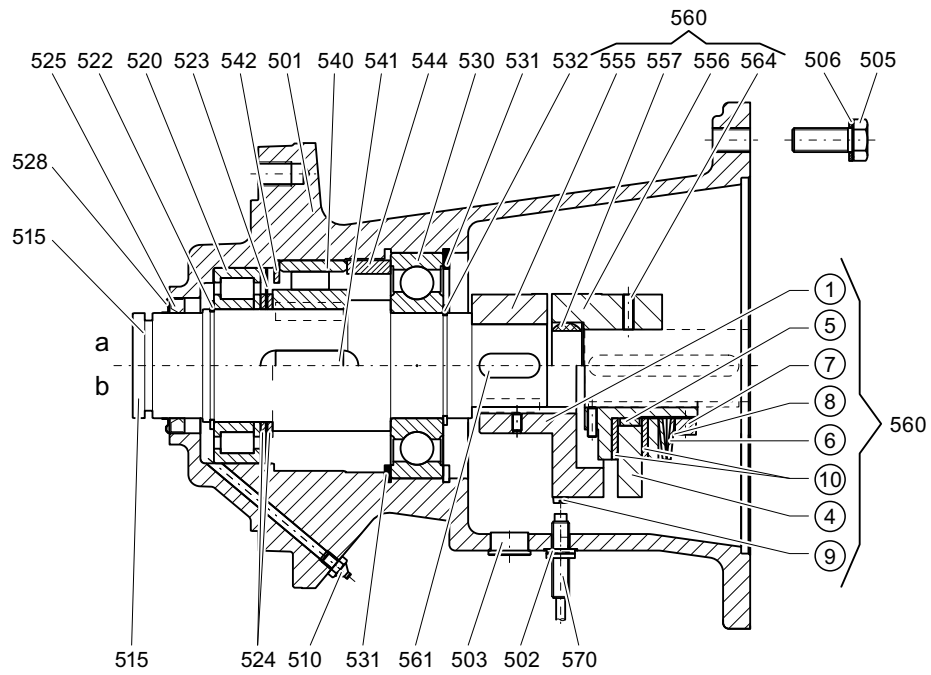
6.2.1 Input units A, A5



- a with backstop
 - b without backstop
 - 210 Bolt
 - 225 Gasket
 - 501 Cover
 - 510 Tapered grease nipple
 - 512 Tapered grease nipple
 - 515 Drive shaft
 - 520 Cylindrical-roller bearing
 - 521 Locking ring
 - 522 Locking ring
 - 523 Sealing disk
 - 524 Supporting disk
 - 525 Shaft sealing ring
 - 528 Oil splasher
 - 529 O-ring
 - 530 Deep-groove ball bearing / cylindrical-roller bearing
 - 531 Locking ring
 - 532 Locking ring
 - 533 Deep-groove ball bearing
 - 535 Shaft sealing ring
 - 536 Ring for shaft sealing ring
 - 537 O-ring
 - 540 Backstop
 - 541 Featherkey
 - 542 Supporting disk
 - 561 Featherkey
- Figure 6-2 Input units A, A5

6.2.2 Input units K2, K2TC

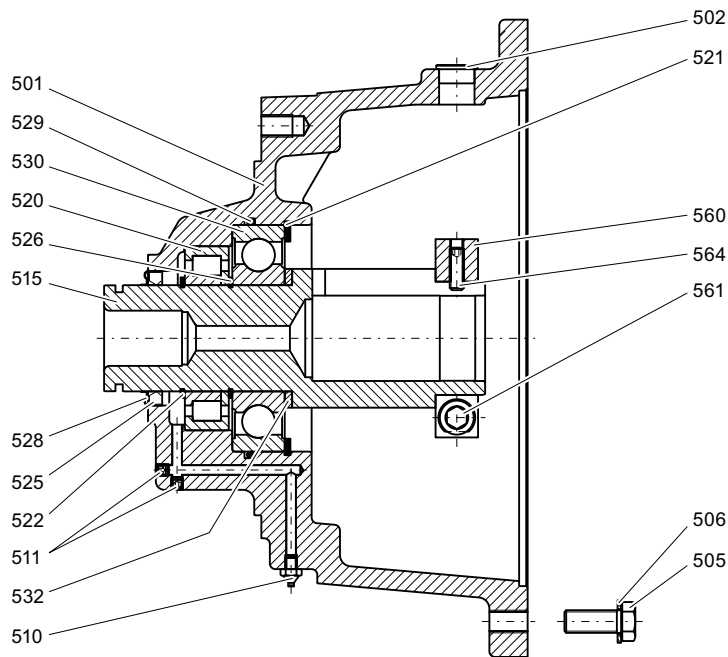
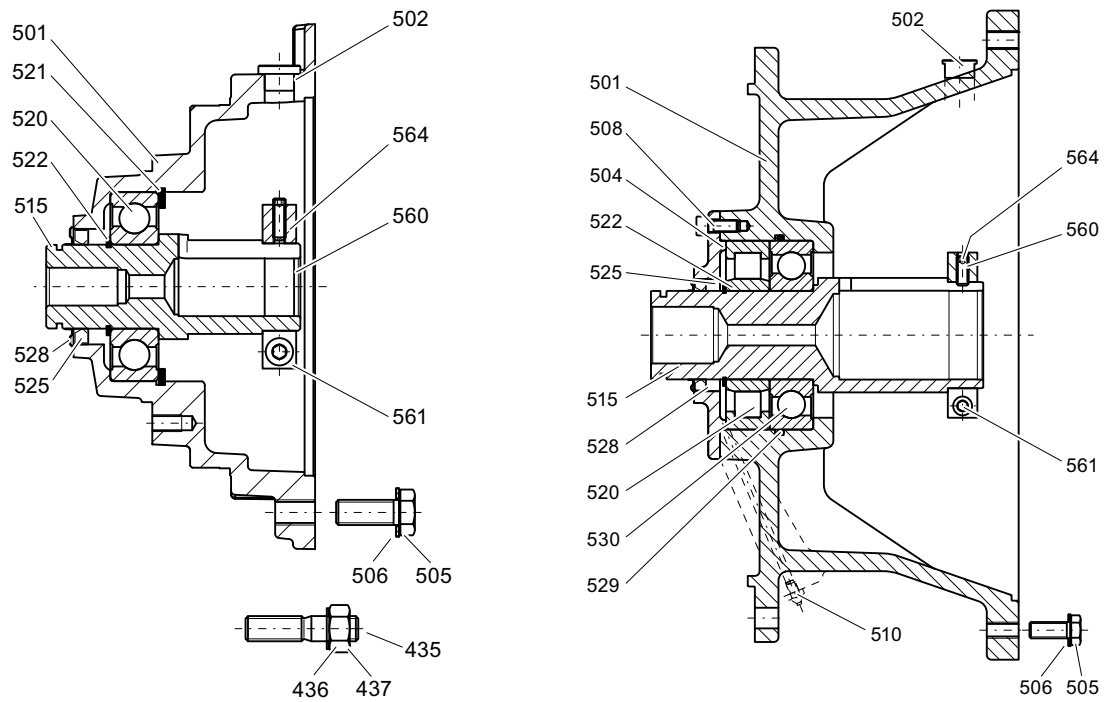




Spare parts list for input units K2, K2TC

- a with backstop
- b without backstop
- 100 Featherkey
- 210 Bolt
- 225 Gasket
- 501 Lantern
- 502 Plug
- 503 Plug
- 505 Bolt
- 506 Locking ring
- 510 Tapered grease nipple
- 511 Grub screw
- 515 Drive shaft
- 520 Cylindrical-roller bearing
- 522 Locking ring
- 523 Sealing disk
- 524 Supporting disk / socket
- 525 Shaft sealing ring
- 528 Oil splasher
- 529 O-ring
- 530 Deep-groove ball bearing / cylindrical-roller bearing
- 531 Locking ring
- 532 Locking ring
- 533 Four-point bearing
- 534 Socket
- 535 Shaft sealing ring
- 540 Backstop
- 541 Featherkey
- 542 Supporting disk
- 543 Shim
- 544 Socket
- 555 Coupling part 2
- 556 Coupling part 1
- 557 Gear ring
- 560 Coupling
- 561 Featherkey
- 564 Set screw
- 570 Proximity switch

6.2.3 Input units K4, K5TC

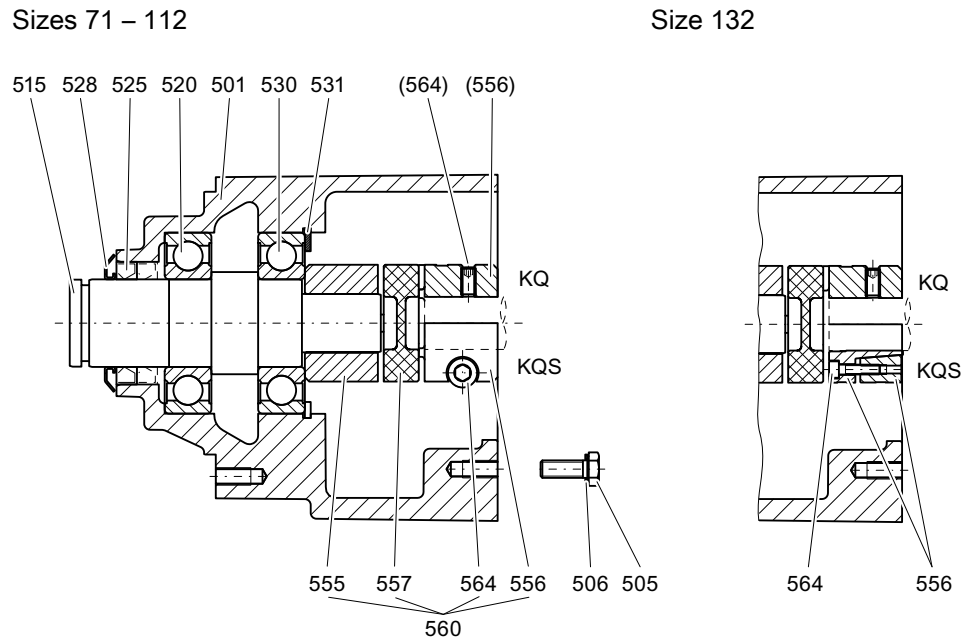


6.2 Spare parts lists

- 435 Stud bolt
- 436 Locking ring
- 437 Hexagon nut
- 501 Lantern
- 502 Plug
- 504 Cover
- 505 Bolt
- 506 Locking ring
- 508 Bolt
- 510 Tapered grease nipple
- 511 Grub screw
- 515 Drive shaft
- 520 Deep-groove ball bearing / cylindrical-roller bearing
- 521 Locking ring
- 522 Locking ring
- 525 Shaft sealing ring
- 526 Locking ring
- 528 Oil splasher
- 529 O-ring
- 530 Deep-groove ball bearing
- 532 Shim
- 560 Clamping ring
- 561 Bolt (component of Item 560)
- 564 Locking screw

Figure 6-3 Input units K4, K5TC

6.2.4 Input units KQ, KQS



- 501 Lantern
- 505 Bolt
- 506 Locking ring
- 515 Drive shaft
- 520 Deep-groove ball bearing
- 525 Shaft sealing ring
- 528 Oil splasher
- 530 Deep-groove ball bearing
- 531 Locking ring
- 555 Coupling part 2
- 556 Coupling part 1
- 557 Gear ring
- 560 Coupling
- 564 Set screw

Figure 6-4 Input units KQ, KQS

6.2.5 Input unit P

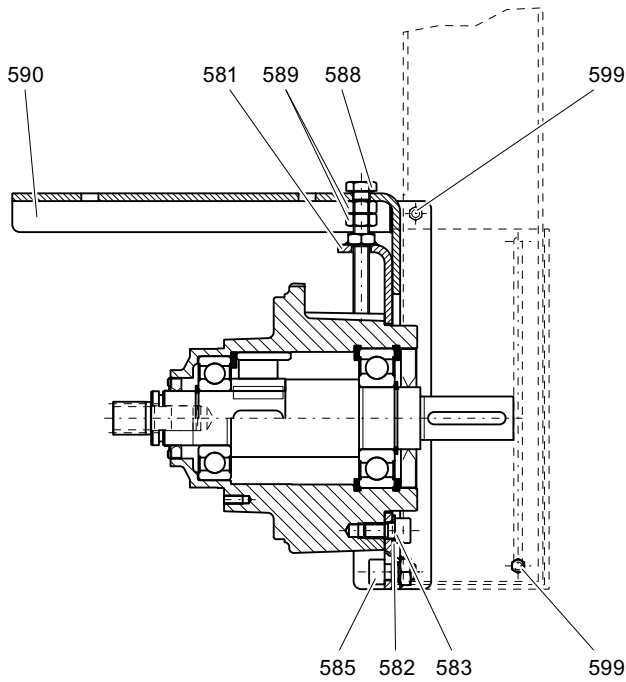


Figure 6-5 Input unit P for IEC motor up to size 112

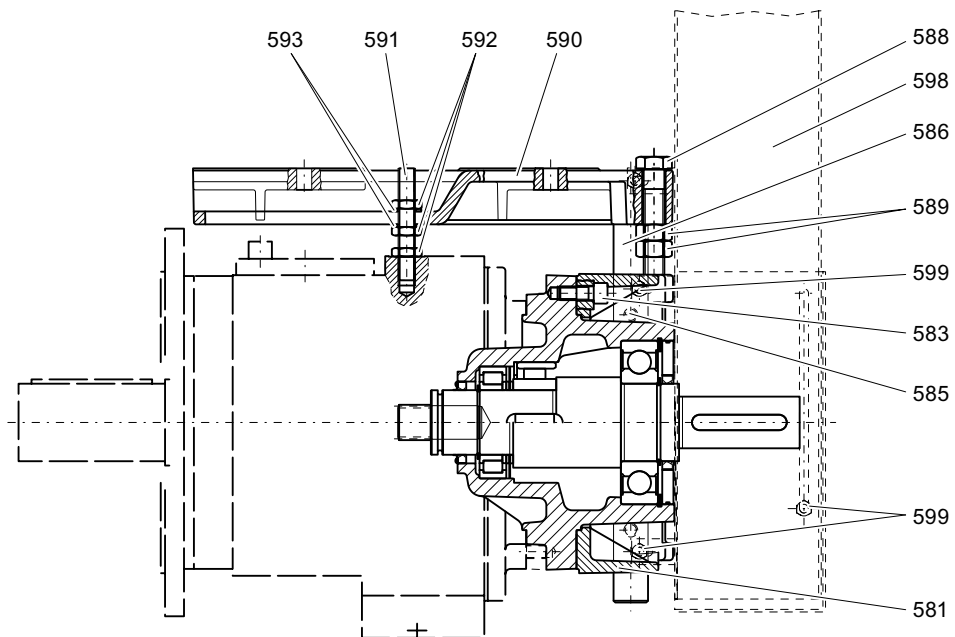


Figure 6-6 Input unit P for IEC motor up to sizes 132 to 280 on helical gearbox

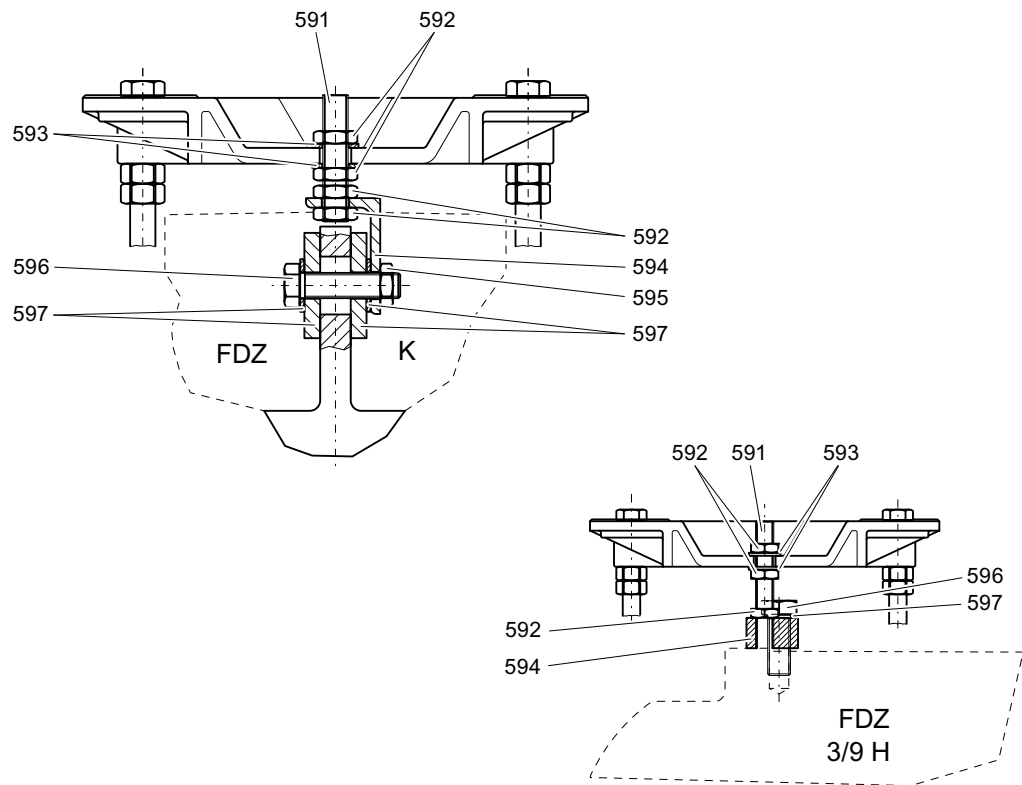


Figure 6-7 Input unit P for IEC motor up to sizes 132 to 280 on parallel shaft gearbox and bevel helical gearbox

Spare parts list for input unit P

- 581 Intermediate cover
- 582 Disk
- 583 Bolt
- 585 Grub screw / bolt
- 586 Column
- 588 Bolt
- 589 Nut
- 590 Piggy back plate
- 591 Threaded rod
- 592 Nut
- 593 Disk
- 594 Bracket
- 595 Nut
- 596 Bolt
- 597 Disk
- 598 Belt guard
- 599 Bolt

Further information

MOTOX geared motors on the Internet:
www.siemens.com/gearedmotors

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