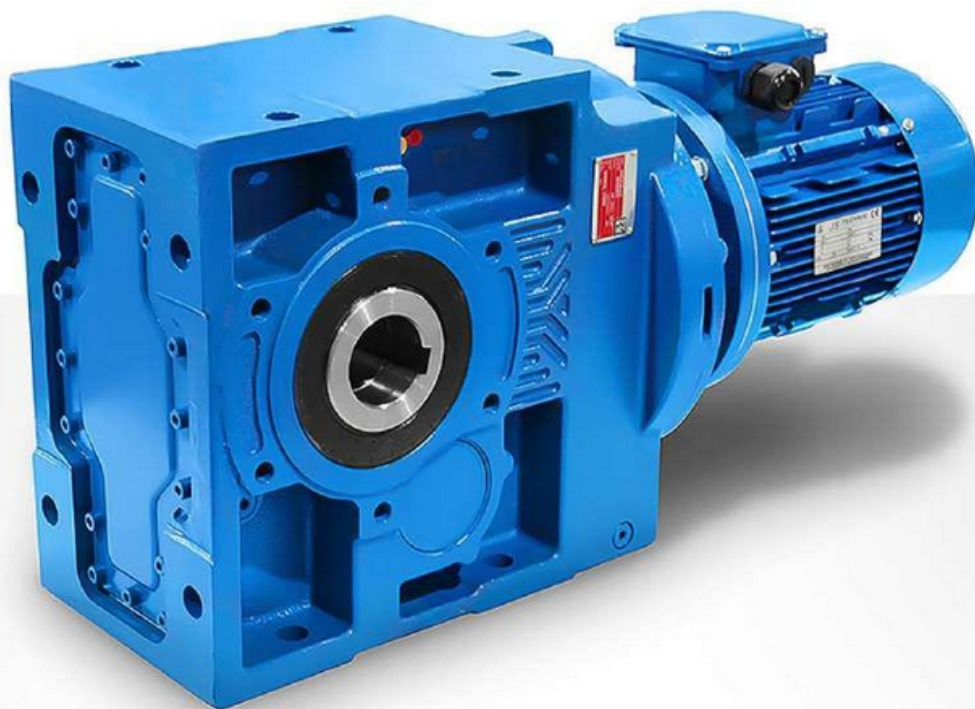


Operating Instructions Bevel Gear Motors Series K





Content.....	02
1- How To Use This Manual	04
2- Unit Designation	05
2.1- Detailed unit designation	05
2.2- Nameplate, unit designation.....	06
3-Standard type Gearbox Parts List.....	07
3.1- Size: K00...K20 Type: 00.....	07
3.2- Size: K00...K20 Type: 01L.....	08
3.3- Size: K00...K20 Type: 01R	09
3.4- Size: K00...K20 Type: 02L.....	10
3.5- Size: K00...K20 Type: 02R	11
3.6- Size: K00...K20 Type: 03L.....	12
3.7- Size: K00...K20 Type: 03R	13
3.8- Size: K00...K20 Type: 04.....	14
3.9- Size: K00...K20 Type: 05.....	15
3.10- Size: K00...K20 Type: 08.....	16
3.11- Size: K27...K97 Type: 00	17
3.12- Size: K27...K97 Type: 01.....	18
3.13- Size: K27...K97 Type: 02.....	19
3.14- Size: K27...K97 Type: 03.....	20
3.15- Size: K27...K97 Type: 04.....	21
3.16- Size: K27...K97 Type: 05.....	22
3.17- Size: K27...K97 Type: 08.....	23
3.18- Size: K27...K97 Type: 0S	24
3.19- Size: K27...K97 Type: 0E	25
4- Safety	26
4.1- Intended Use.....	26
4.2- Improper Use.....	26
4.3- Safety Instructions.....	27
4.3.1- General Safety Instructions	27
4.3.1.1- Working on the gear unit	27
4.3.1.2- Operation	27
4.4- Tightening Torques.....	28
4.5- In case of Fire.....	28
5- Things to Check Before the Gear Unit or Gear Motor is Installed	29
5.1- Transportation	29
5.2- Storage.....	30
6- Installing The Gear Unit	30
6.1- Before you start.....	30
6.2- Check that the shaft dimensions fit	31
6.3- Check the ambient temperature.....	31



6.4- Check the voltage supply.....	31
6.5- Check the mounting position.....	34
6.6- Use of breather plug.....	34
6.7- Check the oil level.....	34
6.8- Check shaft ends and mounting faces.....	34
6.9- Cover abrasive ambient.....	34
6.10- Check accessibility to filling, breather and drain plugs.....	35
7- Mechanical Installation	35
7.1- Installing customer shaft with shoulder	36
7.2- Installing customer shaft without shoulder	37
7.3- Disassembling customer shaft with shoulder	38
7.4- Disassembling customer shaft without shoulder	39
7.5- Shaft tightening torques	40
7.6- Recommended shaft dimensions for KT...00 types	41
7.7- Dimensions of Splined Hollow Shaft according DIN5480	42
7.8- Assembling customer shaft with shrink disk.....	43
7.9- Disassembling customer shaft with shrink disk.....	45
7.10- Assembling gear unit with torque arm	46
7.11- Fixing bolt position.....	48
7.12- K.00.. - K.20.. Torque arm assembly details.....	50
7.13- Fitting output shaft elements.....	51
7.14- Correct position of output shaft elements.....	51
7.15- Fitting couplings	52
8- Maintenance and Inspections	53
9- Lubrication	54
9.1- Oil Types	54
9.2- Changing the oil	55
9.3- Oil Quantities (l) and oil plugs.....	55
9.3.1- K.00.. - K.20.. Two-Three Stage Oil Quantities (l) and oil plugs.....	55
9.3.2- K.27.. - K.97.. Two-Three Stage Oil Quantities (l) and oil plugs.....	56
9.3.3- K.28.. - K.97.. Four Stage Oil Quantities (l) and oil plugs.....	57
9.3.4- K.27.. - K.97.. Five-Six Stage Oil Quantities (l) and oil plugs.....	58
9.4- Mounting Positions	59
10- Troubleshooting Guide.....	60
11- Disposal	63
11.1- Disposal of Oil	63
11.2- Disposal of Seals.....	63
11.3- Disposal of Metal.....	63



1- How To Use This Manual

Please pay attention to the following safety and warning instructions.



Electrical Hazard ; Can cause severe or fatal injuries.



Mechanical Hazard; Can cause severe or fatal injuries.



Likely to be Hazardous; Can cause minor or fatal injuries.



Damage Risk; Can damage gearbox or environment.



Important Information.



EC Machinery Directive:

Within terms of the EC machinery directive 2006/42/EC, the gearboxes are not considered as autonomous machines.

Operation is prohibited within the area of validity of the EC directive, until it has been determined that the machine, in which this product is installed, corresponds to the regulations within this directive.

The operating instructions contain important information to ensure;

- Trouble-free operation
- Fulfilment of any rights to claim under guarantee

The operating instruction must be kept close to the gearbox and must be available in case it is needed.

These operating instructions are written for K series gear units and are only applicable for K series. If any different type of gearbox is used please ask JS-Technik GmbH for the operating instructions of that type.

These instructions can only be used for standard type JS-Technik GmbH gear units. For special application and modified gear units ask JS-Technik GmbH for validity.

This manual does not cover 94/9/EC compatible gearboxes. For 94/9/EC contact JS-Technik GmbH.

Operating Instructions

K Series

Unit Designation

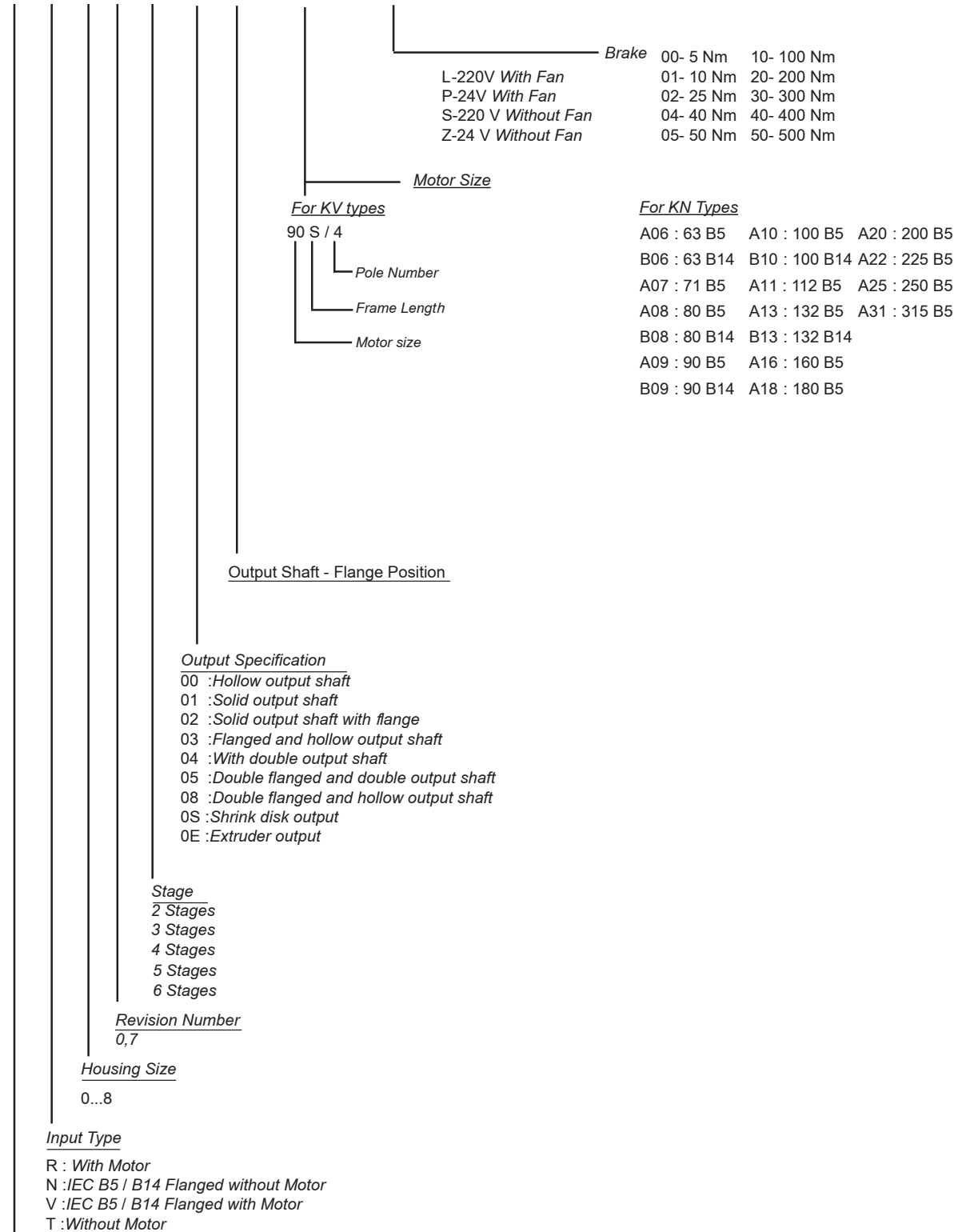
2- Unit Designation

2.1- Detailed unit designation



Detailed K Series gear units designation for ordering
 (This Designation is different from the short nameplate designation)

K R 3 7 3 . 02 R - 90S/4 - L05





2.2- Nameplate, unit designation



Nameplate unit designation is a short abbreviation from the detailed designation

A sample name plate for K Series

JS-Technik GmbH www.js-technik.de		
Type: KR373.00.100L / 4a		
Serial N.: 100052892		
Power : 3	kW	Ratio: 51.05
Speed: 28	rpm.	M. Pos.: M1
Oil:	ISO VG 220 (Mineral Oil)	Oil Qty : 1.4 lt.

Abbreviations:

Serial N. : Serial Number

M.Pos. : Mounting Position

Type Designation;

KR373.00
Type

R

Shaft Arrangement

Viewed from input side

L - Right Input, Left Output

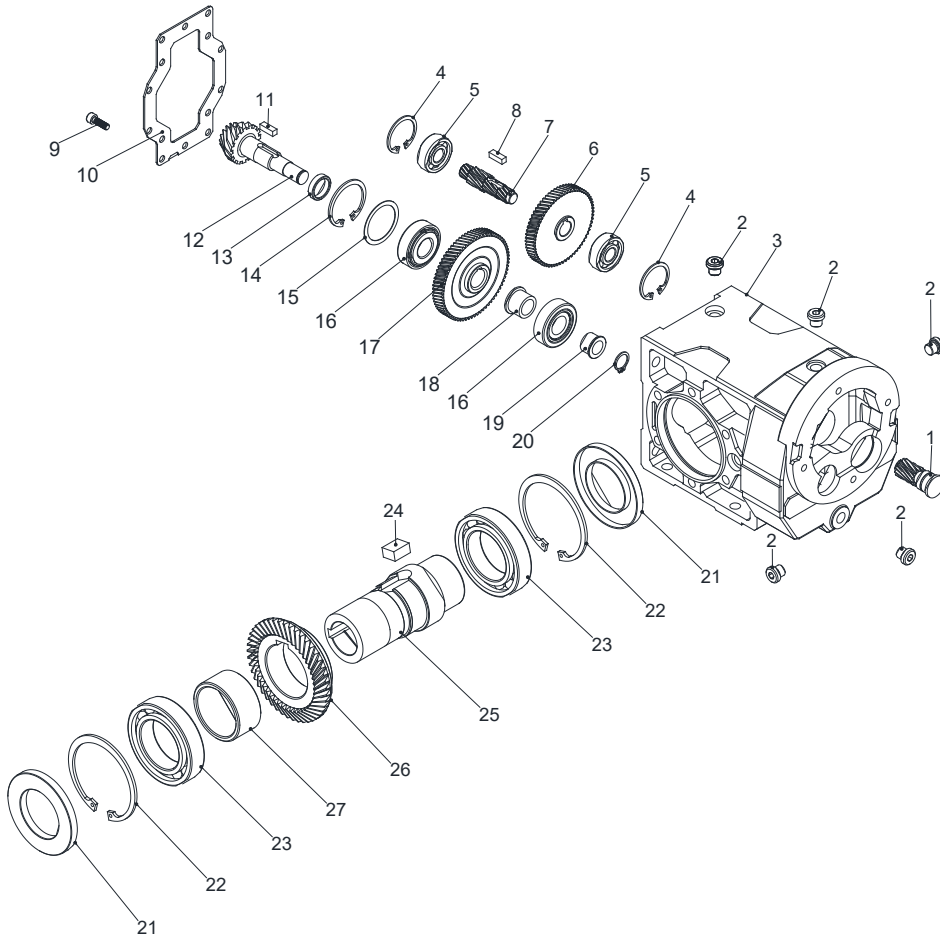
R - Left Input, Right Output

Operating Instructions

K Series

Part Designations

3- Standard Type Gearbox Parts Lists
 3.1- Size: K00...K20...
 Type: 00

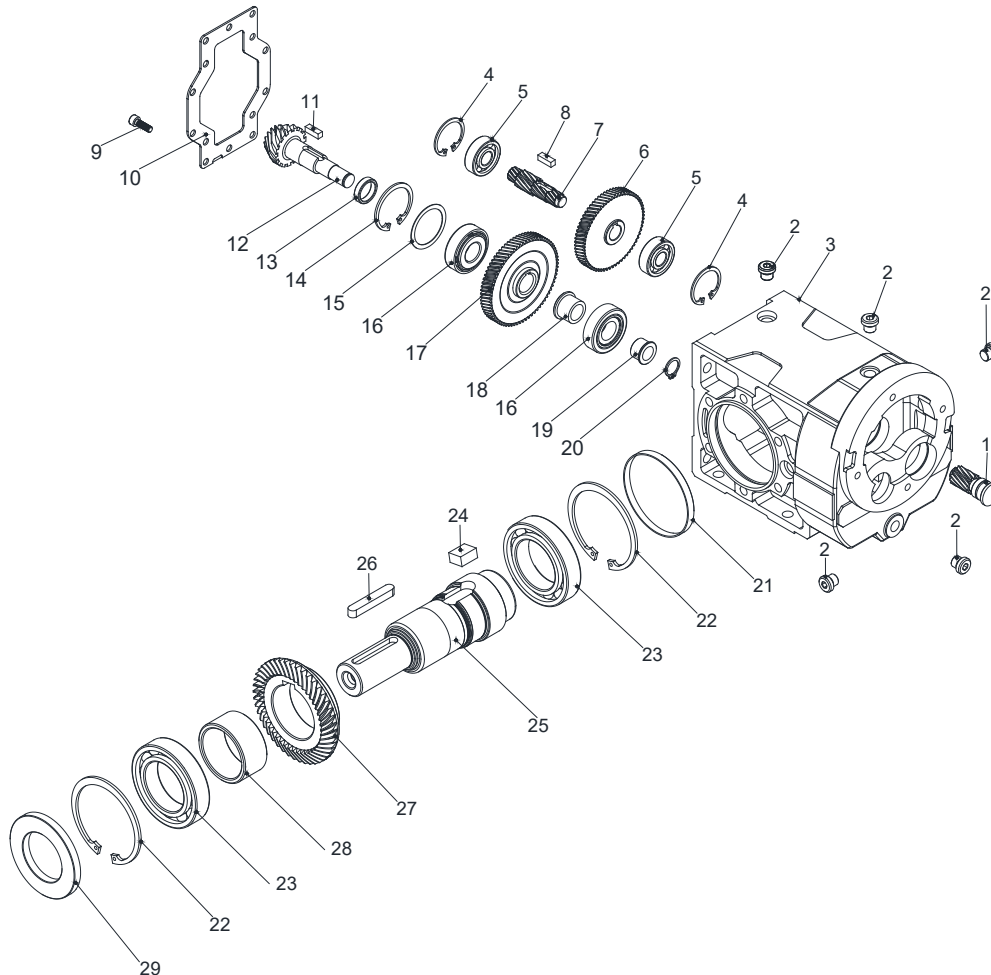


Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

1- Pinion	9- Bolt	17- Gear	25- Output Shaft
2- Plug	10- Cover Plate	18- Spacer	26- Gear
3- Housing	11- Key	19- Spacer	27- Spacer
4- Circlip	12- Pinion Shaft	20- Circlip	
5- Bearing	13- Shim Ring	21- Oil Seal	
6- Gear	14- Circlip	22- Circlip	
7- Pinion Shaft	15- Shim Ring	23- Bearing	
8- Key	16- Bearing	24- Key	

3.2- Size: K00...K20...
Type: 01L



Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

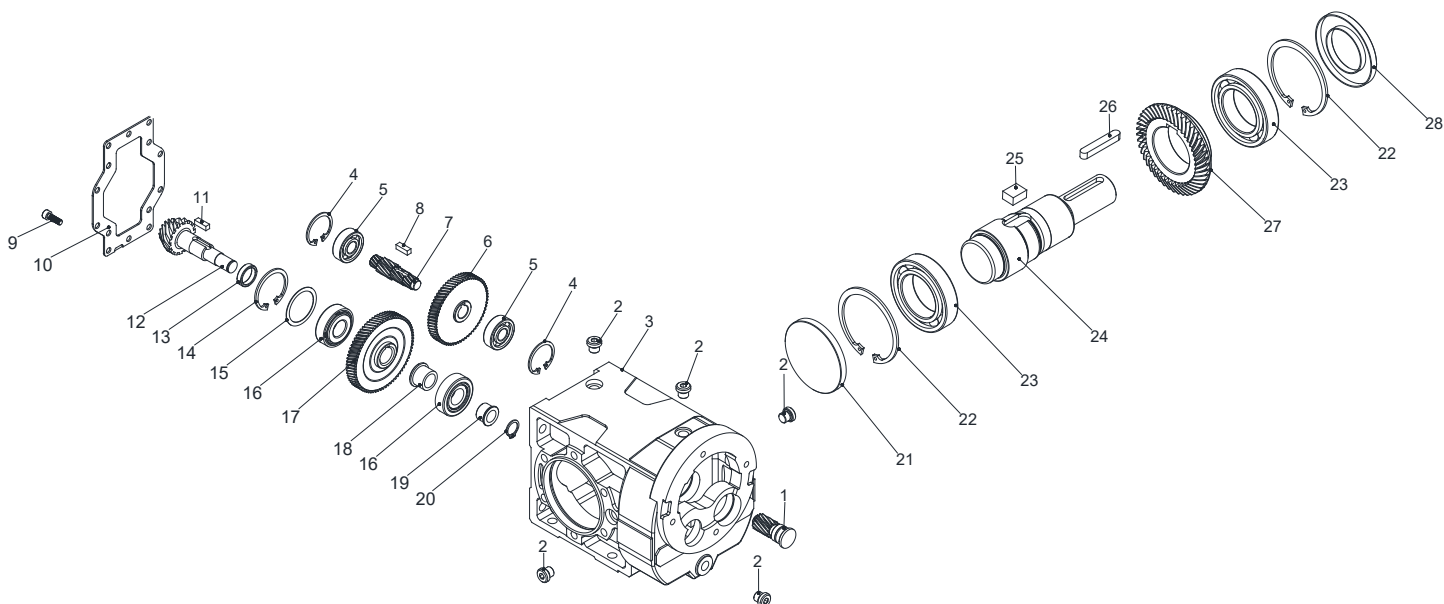
1- Pinion	9- Bolt	17- Gear	25- Output Shaft
2- Plug	10- Cover Plate	18- Spacer	26- Key
3- Housing	11- Key	19- Spacer	27- Gear
4- Circlip	12- Pinion Shaft	20- Circlip	28- Spacer
5- Bearing	13- Shim Ring	21- Closing Cap	29- Oil Seal
6- Gear	14- Circlip	22- Circlip	
7- Pinion Shaft	15- Shim Ring	23- Bearing	
8- Key	16- Bearing	24- Key	

Operating Instructions

K Series

Part Designations

3.3- Size: K00...K20...
Type: 01R

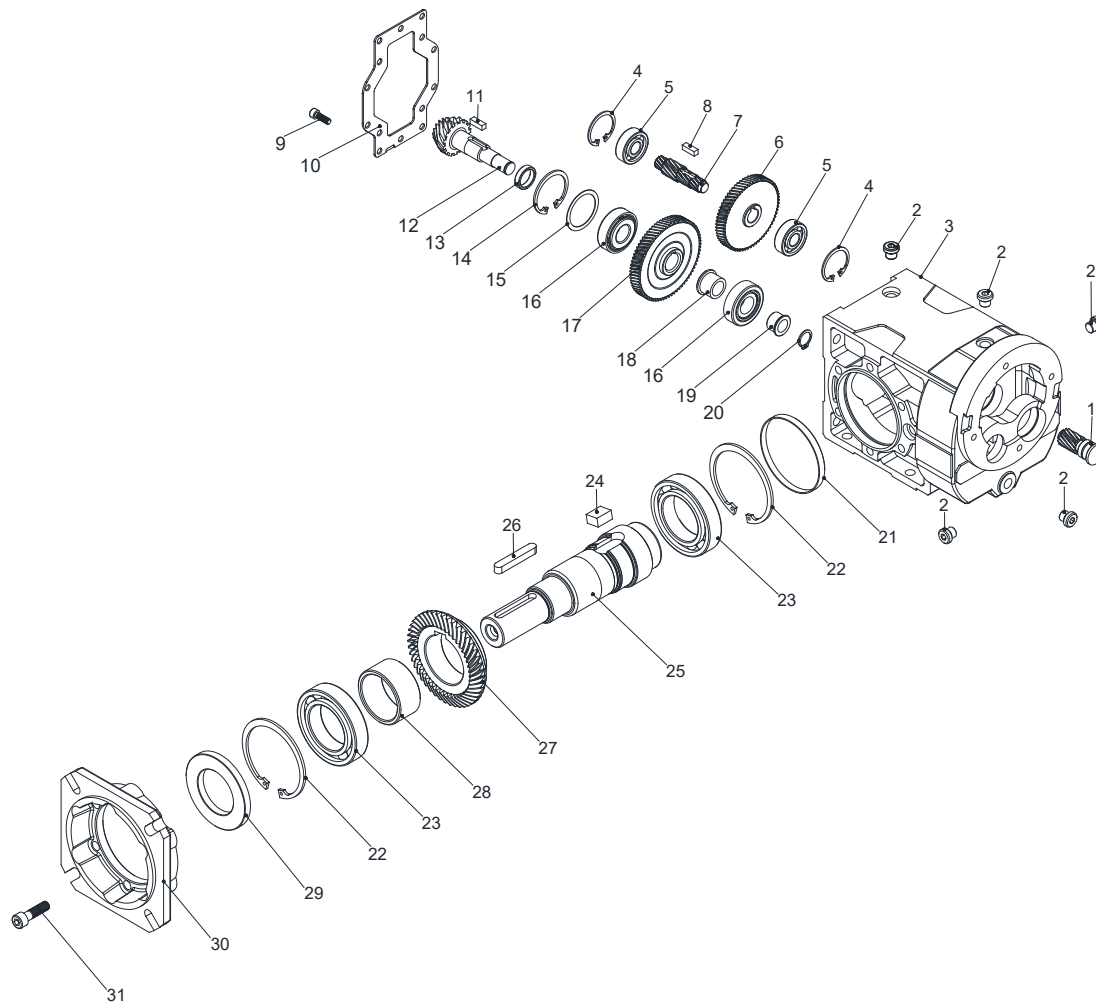


Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

1- Pinion	9- Bolt	17- Gear	25- Key
2- Plug	10- Cover Plate	18- Spacer	26- Key
3- Housing	11- Key	19- Spacer	27- Gear
4- Circlip	12- Pinion Shaft	20- Circlip	28- Oil Seal
5- Bearing	13- Shim Ring	21- Closing Cap	
6- Gear	14- Circlip	22- Circlip	
7- Pinion Shaft	15- Shim Ring	23- Bearing	
8- Key	16- Bearing	24- Output Shaft	

3.4- Size: K00...K20...
Type: 02L



Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

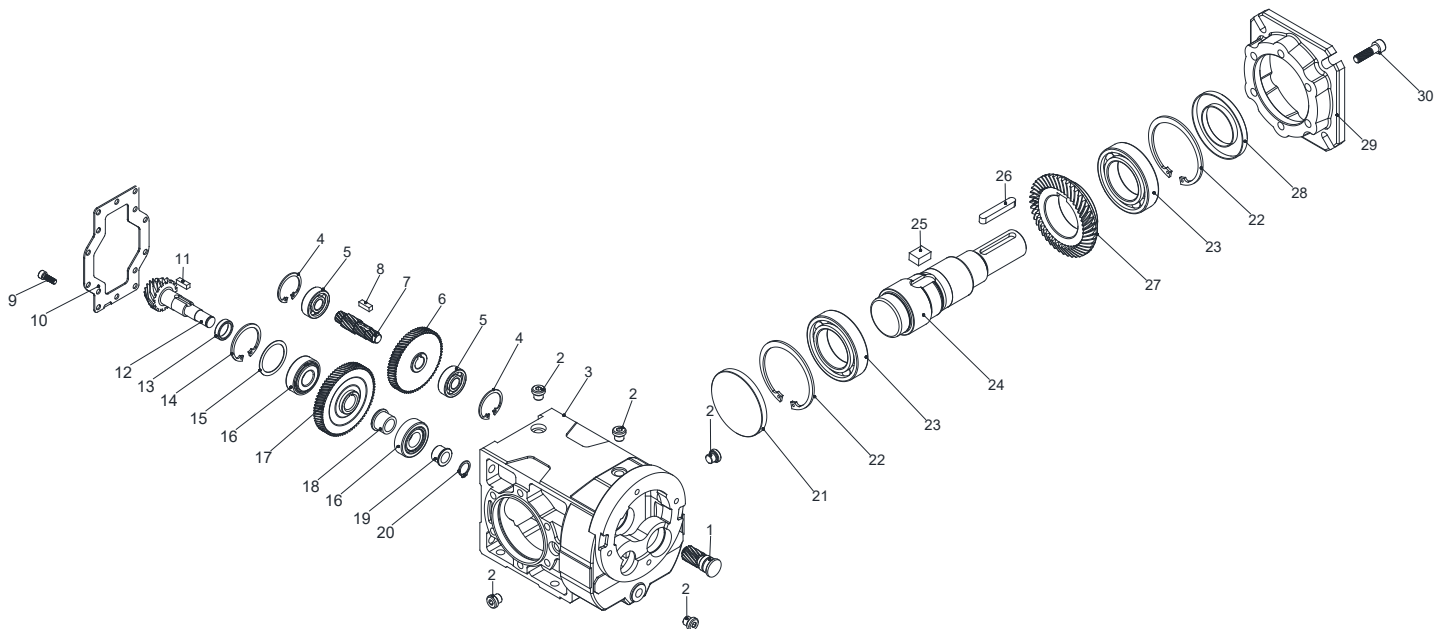
1- Pinion	9- Bolt	17- Gear	25- Output Shaft
2- Plug	10- Cover Plate	18- Spacer	26- Key
3- Housing	11- Key	19- Spacer	27- Gear
4- Circlip	12- Pinion Shaft	20- Circlip	28- Spacer
5- Bearing	13- Shim Ring	21- Closing Cap	29- Oil Seal
6- Gear	14- Circlip	22- Circlip	30- Flange
7- Pinion Shaft	15- Shim Ring	23- Bearing	31- Bolt
8- Key	16- Bearing	24- Key	

Operating Instructions

K Series

Part Designations

3.5- Size: K00...K20...
Type: 02R

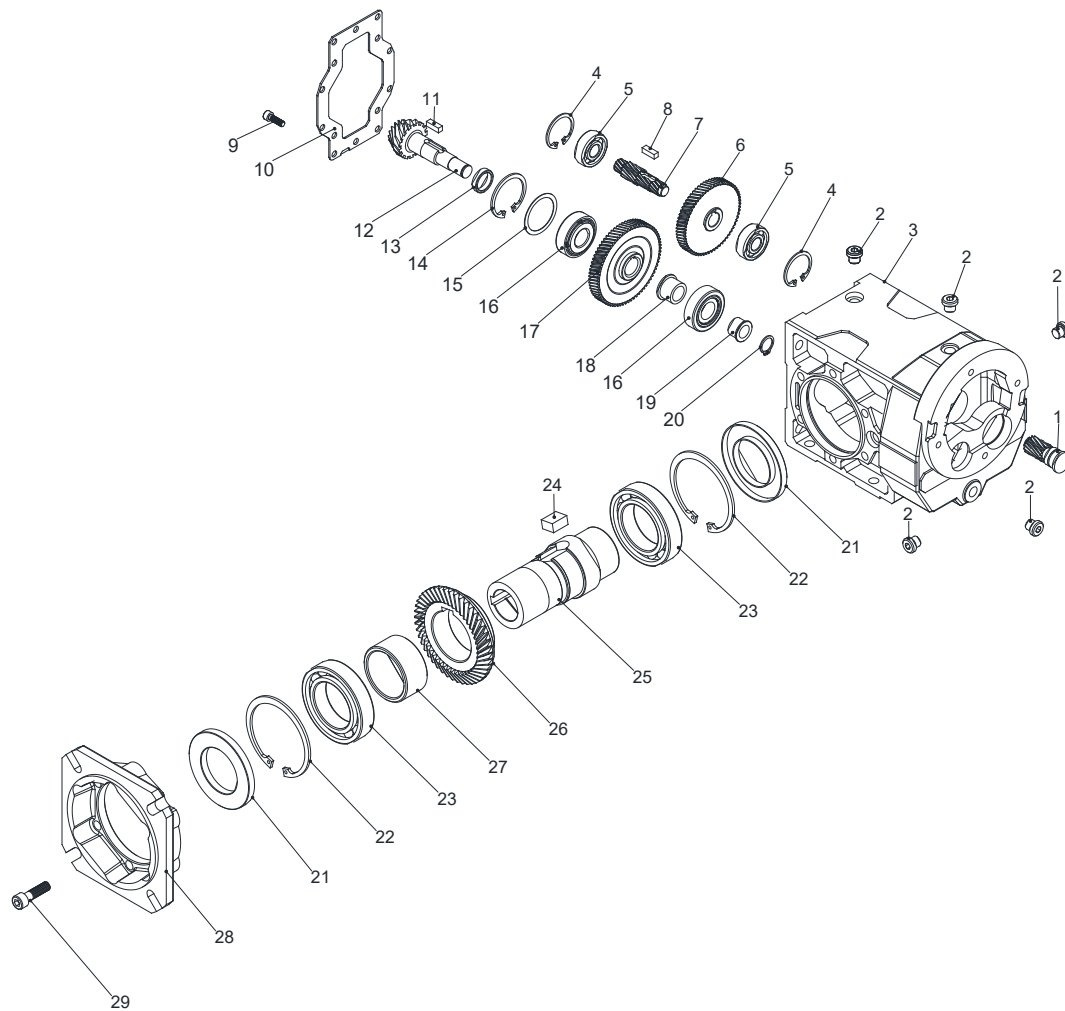


Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

1- Pinion	9- Bolt	17- Gear	25- Key
2- Plug	10- Cover Plate	18- Spacer	26- Key
3- Housing	11- Key	19- Spacer	27- Gear
4- Circlip	12- Pinion Shaft	20- Circlip	28- Oil Seal
5- Bearing	13- Shim Ring	21- Closing Cap	29- Flange
6- Gear	14- Circlip	22- Circlip	30- Bolt
7- Pinion Shaft	15- Shim Ring	23- Bearing	
8- Key	16- Bearing	24- Output Shaft	

3.6- Size: K00...K20...
Type: 03L



Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

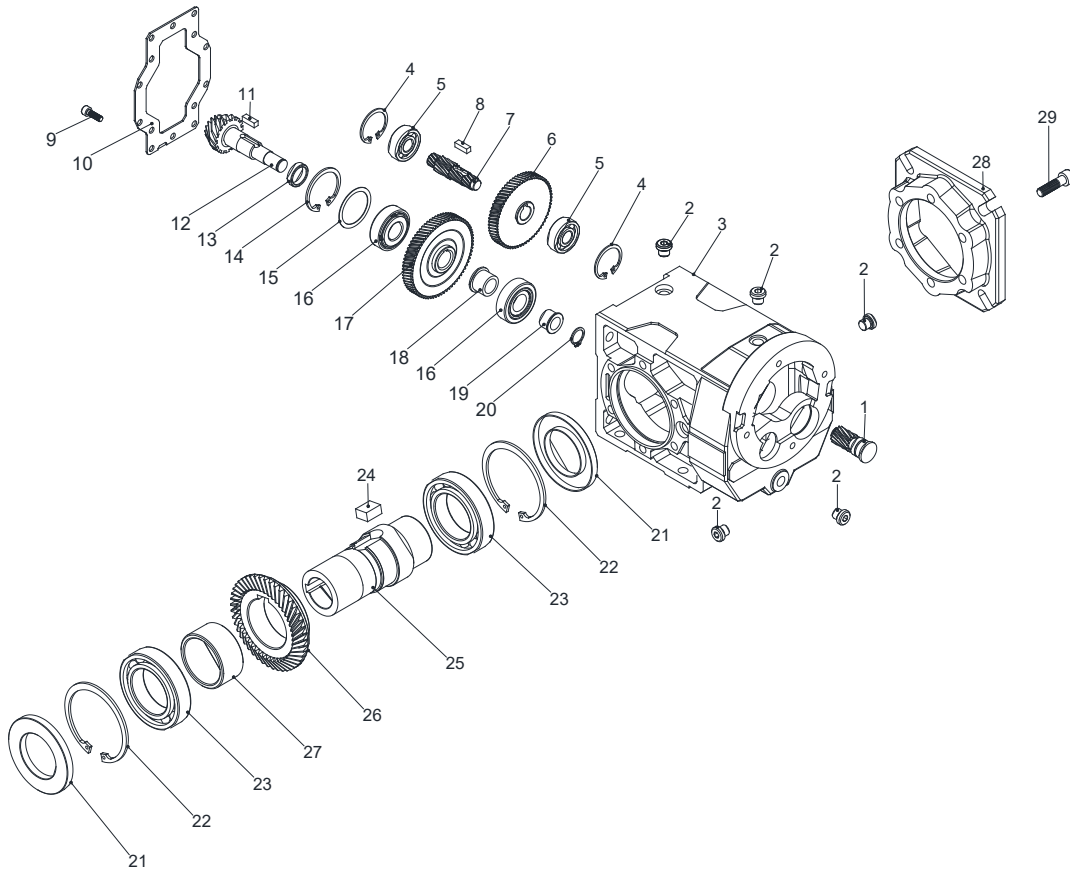
1- Pinion	9- Bolt	17- Gear	25- Output Shaft
2- Plug	10- Cover Plate	18- Spacer	26- Gear
3- Housing	11- Key	19- Spacer	27- Spacer
4- Circlip	12- Pinion Shaft	20- Circlip	28- Flange
5- Bearing	13- Shim Ring	21- Oil Seal	29- Bolt
6- Gear	14- Circlip	22- Circlip	
7- Pinion Shaft	15- Shim Ring	23- Bearing	
8- Key	16- Bearing	24- Key	

Operating Instructions

K Series

Part Designations

3.7- Size: K00...K20...
Type: 03R



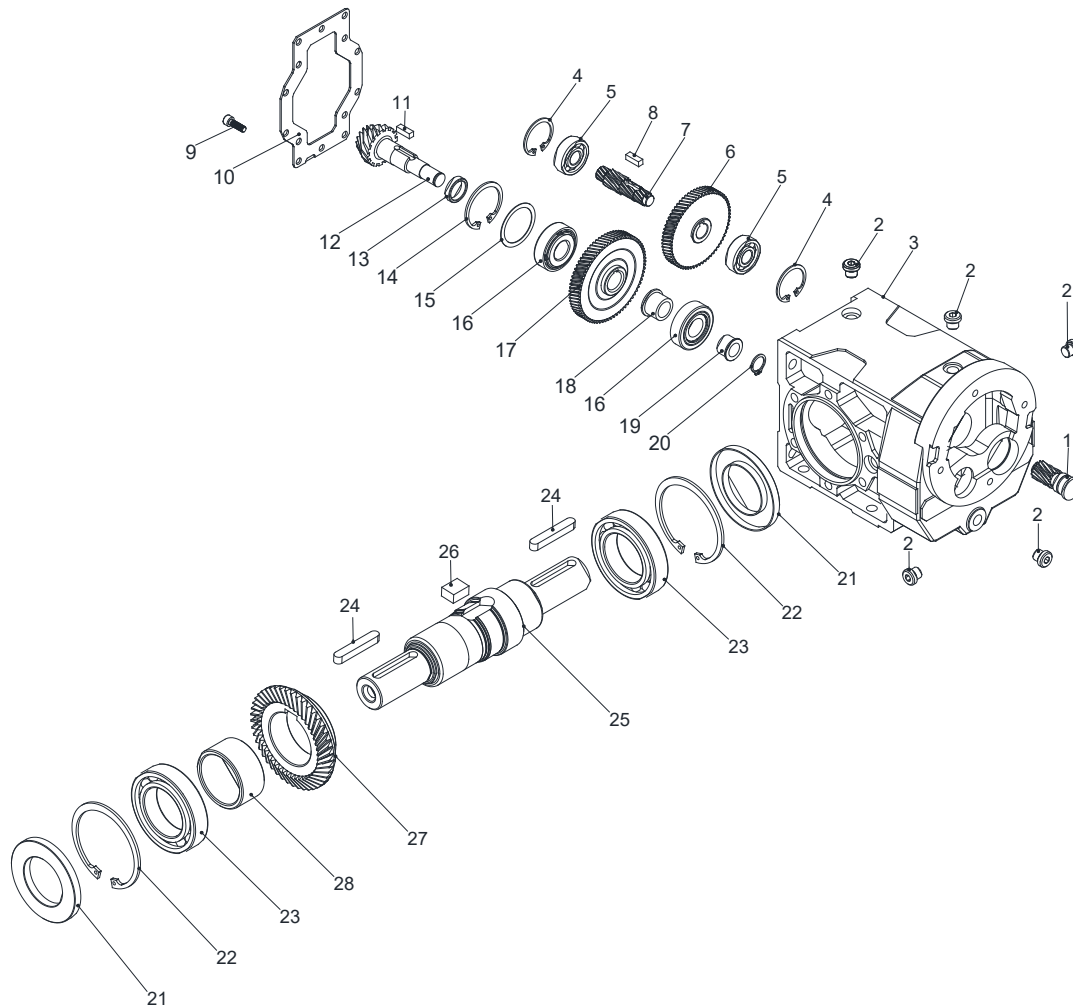
Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

1- Pinion	9- Bolt	17- Gear	25- Output Shaft
2- Plug	10- Cover Plate	18- Spacer	26- Gear
3- Housing	11- Key	19- Spacer	27- Spacer
4- Circlip	12- Pinion Shaft	20- Circlip	28- Flange
5- Bearing	13- Shim Ring	21- Oil Seal	29- Bolt
6- Gear	14- Circlip	22- Circlip	
7- Pinion Shaft	15- Shim Ring	23- Bearing	
8- Key	16- Bearing	24- Key	



3.8- Size: K00...K20...
Type: 04



Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

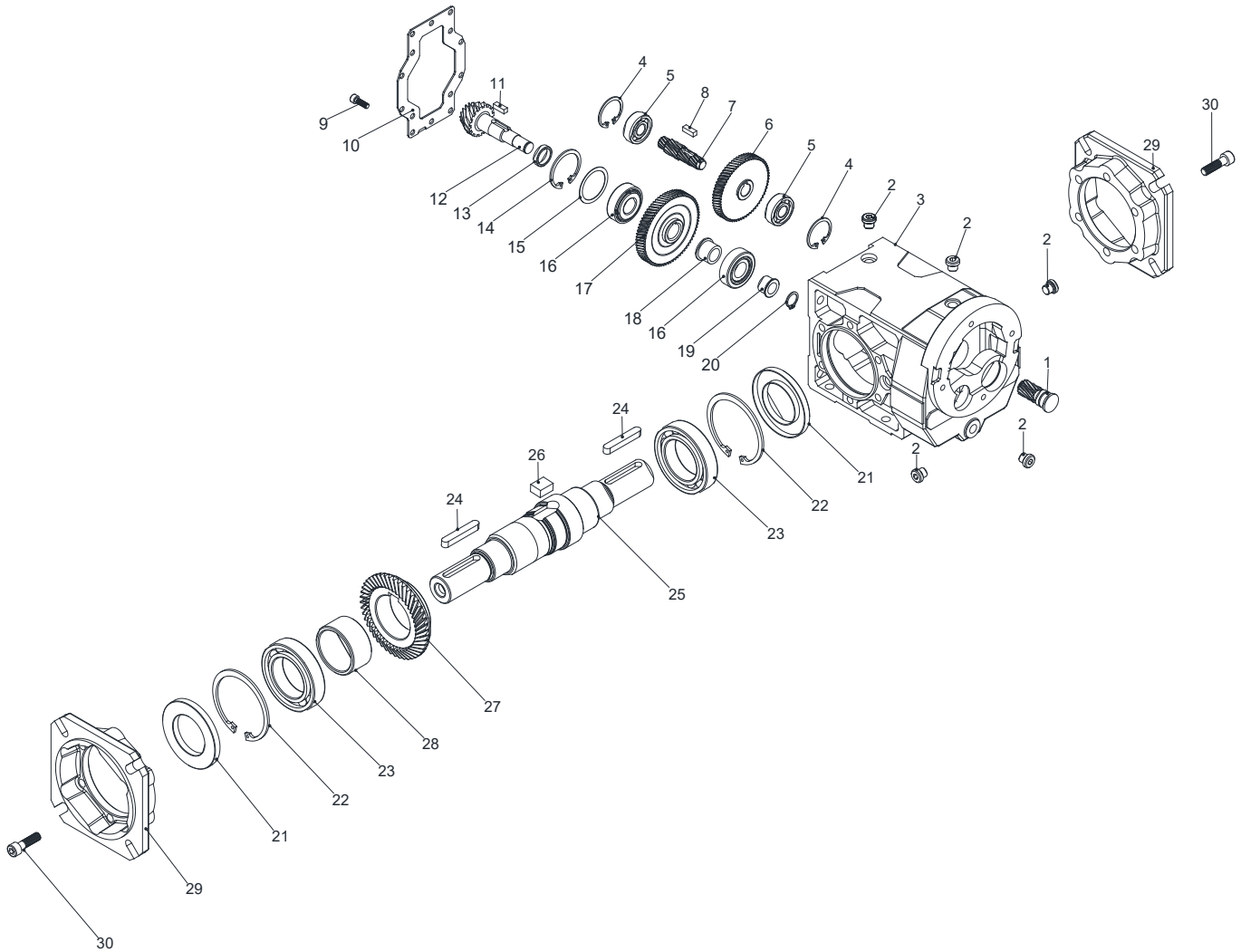
1- Pinion	9- Bolt	17- Gear	25- Output Shaft
2- Plug	10- Cover Plate	18- Spacer	26- Key
3- Housing	11- Key	19- Spacer	27- Gear
4- Circlip	12- Pinion Shaft	20- Circlip	28- Spacer
5- Bearing	13- Shim Ring	21- Oil Seal	
6- Gear	14- Circlip	22- Circlip	
7- Pinion Shaft	15- Shim Ring	23- Bearing	
8- Key	16- Bearing	24- Key	

Operating Instructions

K Series

Part Designations

3.9- Size: K00...K20...
Type: 05



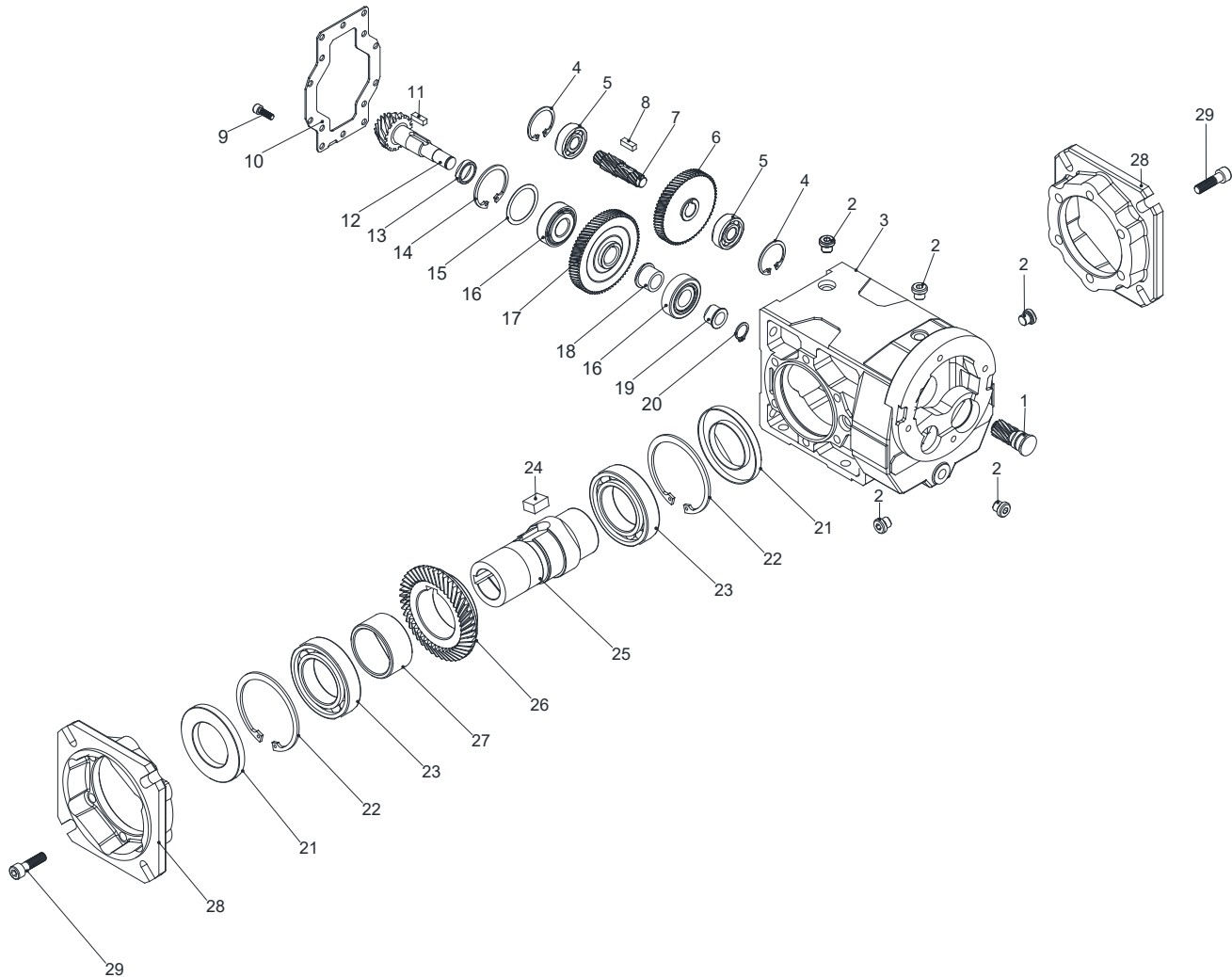
Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

1- Pinion	9- Bolt	17- Gear	25- Output Shaft
2- Plug	10- Cover Plate	18- Spacer	26- Key
3- Housing	11- Key	19- Spacer	27- Gear
4- Circlip	12- Pinion Shaft	20- Circlip	28- Spacer
5- Bearing	13- Shim Ring	21- Oil Seal	29- Flange
6- Gear	14- Circlip	22- Circlip	30- Bolt
7- Pinion Shaft	15- Shim Ring	23- Bearing	
8- Key	16- Bearing	24- Key	



3.10- Size: K00...K20...
Type: 08



Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

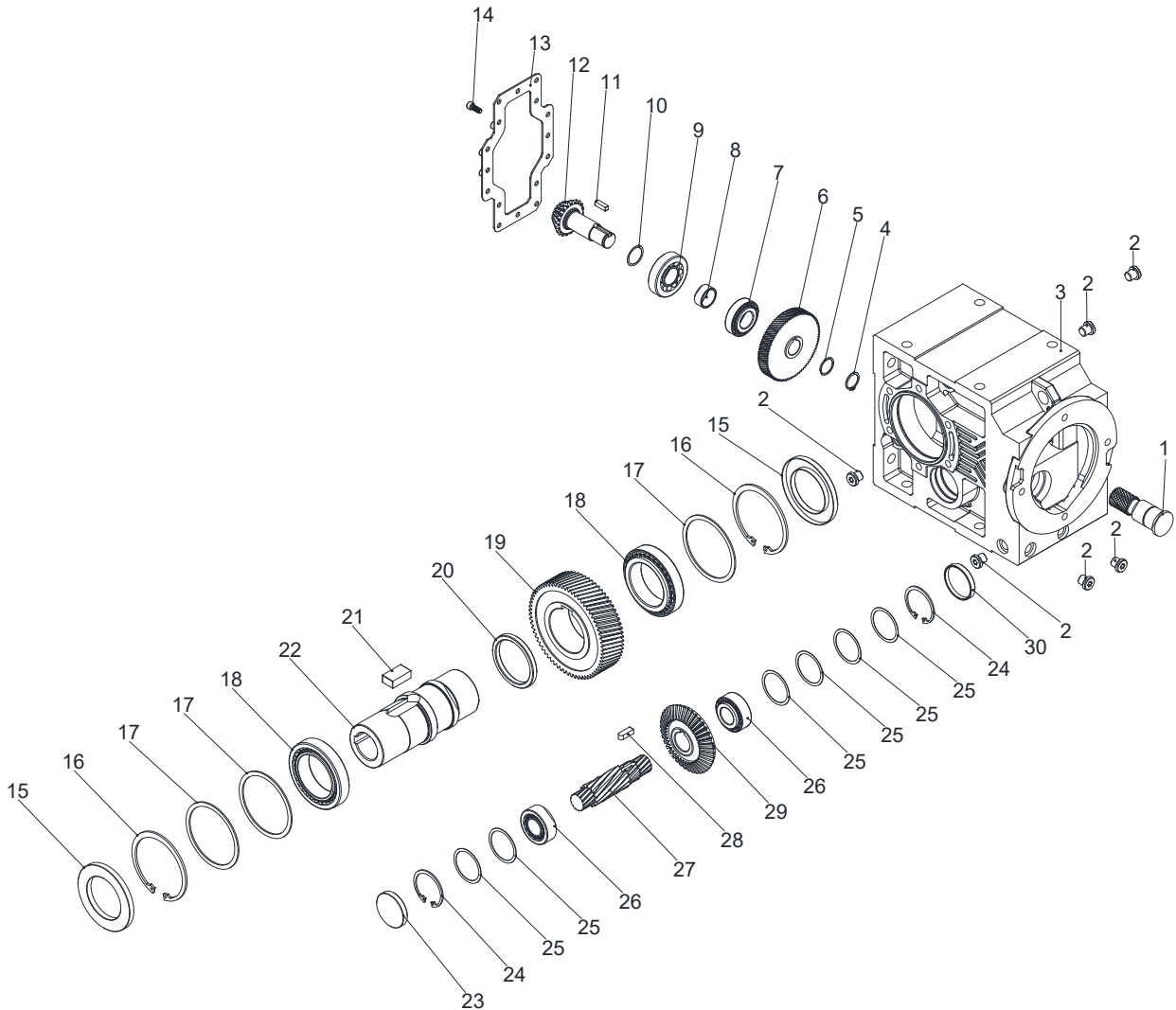
1- Pinion	9- Bolt	17- Gear	25- Output Shaft
2- Plug	10- Cover Plate	18- Spacer	26- Gear
3- Housing	11- Key	19- Spacer	27- Spacer
4- Circlip	12- Pinion Shaft	20- Circlip	28- Flange
5- Bearing	13- Shim Ring	21- Oil Seal	29- Bolt
6- Gear	14- Circlip	22- Circlip	
7- Pinion Shaft	15- Shim Ring	23- Bearing	
8- Key	16- Bearing	24- Key	

Operating Instructions

K Series

Part Designations

3.11- Size: K27...K97...
Type: 00



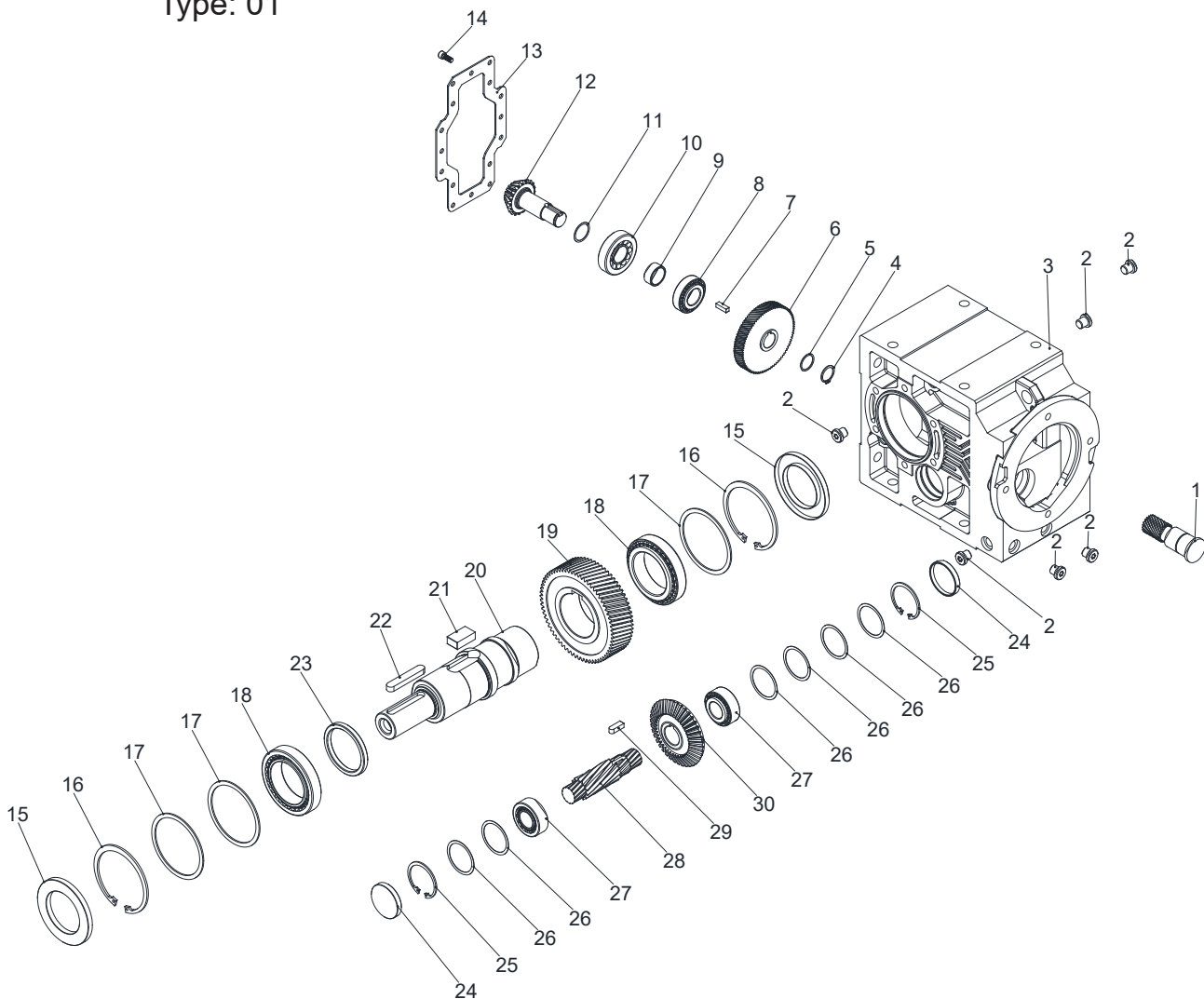
Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

1- Pinion	9- Bearing	17- Shim Ring	25- Shim Ring
2- Plug	10- Shim Ring	18- Bearing	26- Bearing
3- Housing	11- Key	19- Gear	27- Pinion Shaft
4- Circlip	12- Pinion Shaft	20- Shim Ring	28- Key
5- Shim Ring	13- Cover Plate	21- Key	29- Gear
6- Gear	14- Bolt	22- Output Shaft	30- Shim Ring
7- Bearing	15- Oil Seal	23- Closing Cap	
8- Spacer	16- Circlip	24- Circlip	



3.12- Size: K27...K97...
Type: 01



Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

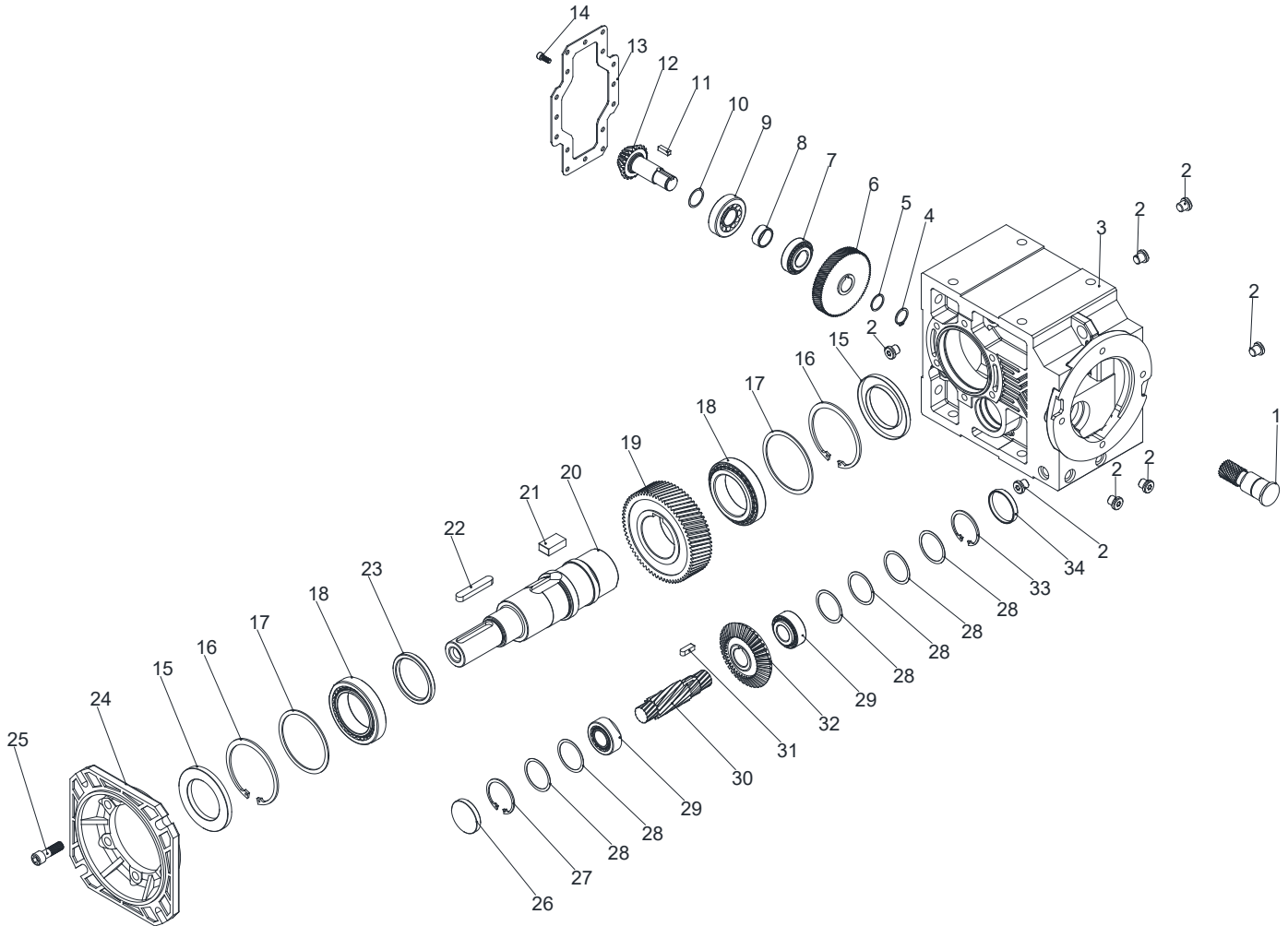
1- Pinion	9- Spacer	17- Shim Ring	25- Circlip
2- Plug	10- Bearing	18- Bearing	26- Shim Ring
3- Housing	11- Shim Ring	19- Gear	27- Bearing
4- Circlip	12- Pinion Shaft	20- Output Shaft	28- Pinion Shaft
5- Shim Ring	13- Cover Plate	21- Key	29- Key
6- Gear	14- Bolt	22- Key	30- Gear
7- Key	15- Oil Seal	23- Shim Ring	
8- Bearing	16- Circlip	24- Closing Cap	

Operating Instructions

K Series

Part Designations

3.13- Size: K27...K97...
Type: 02



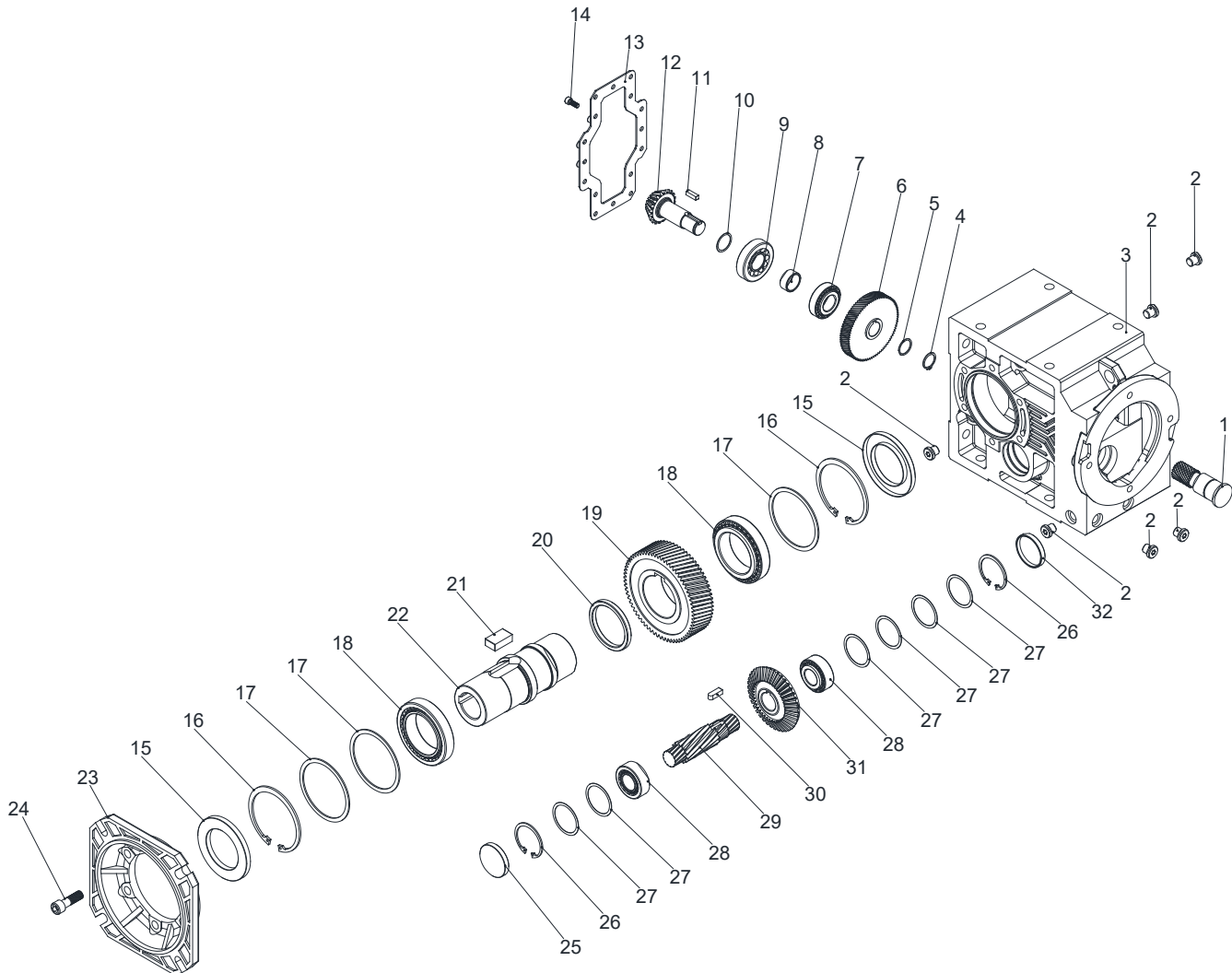
Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

1- Pinion	9- Bearing	17- Shim Ring	25- Bolt	33- Circlip
2- Plug	10- Shim Ring	18- Bearing	26- Closing Cap	34- Shim Ring
3- Housing	11- Key	19- Gear	27- Circlip	
4- Circlip	12- Pinion Shaft	20- Output Shaft	28- Shim Ring	
5- Shim Ring	13- Cover Plate	21- Key	29- Bearing	
6- Gear	14- Bolt	22- Key	30- Pinion Shaft	
7- Bearing	15- Oil Seal	23- Shim Ring	31- Key	
8- Spacer	16- Circlip	24- Flange	32- Gear	



3.14- Size: K27...K97...
Type: 03



*Basic parts diagram for standard types.
Parts may differ for special applications.*

Standard Parts List

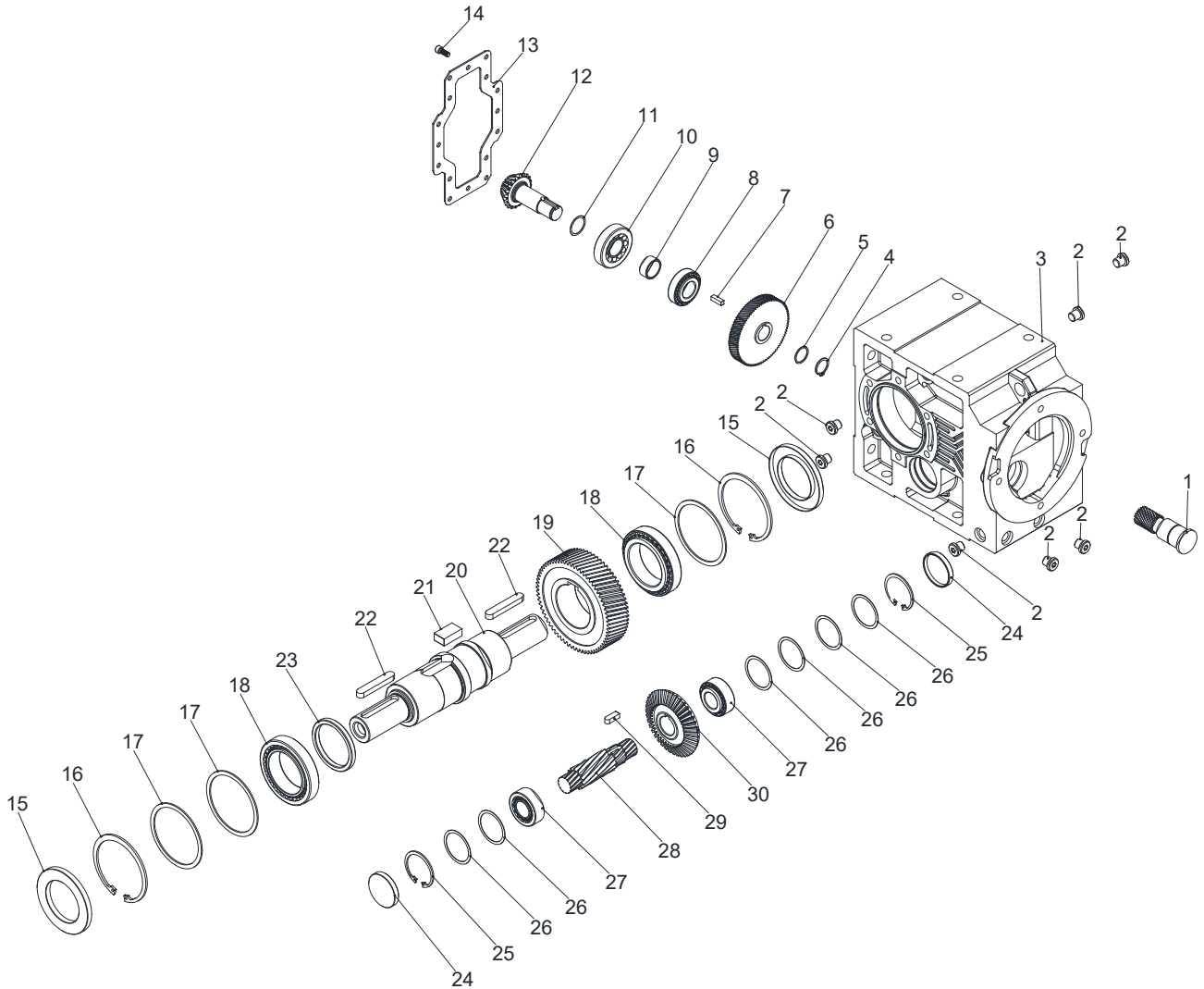
1- Pinion	9- Bearing	17- Shim Ring	25- Closing Cap
2- Plug	10- Shim Ring	18- Bearing	26- Circlip
3- Housing	11- Key	19- Gear	27- Shim Ring
4- Circlip	12- Pinion Shaft	20- Shim Ring	28- Bearing
5- Shim Ring	13- Cover Plate	21- Key	29- Pinion Shaft
6- Gear	14- Bolt	22- Output Shaft	30- Key
7- Bearing	15- Oil Seal	23- Flange	31- Gear
8- Spacer	16- Circlip	24- Bolt	32- Shim Ring

Operating Instructions

K Series

Part Designations

3.15- Size: K27...K97...
Type: 04



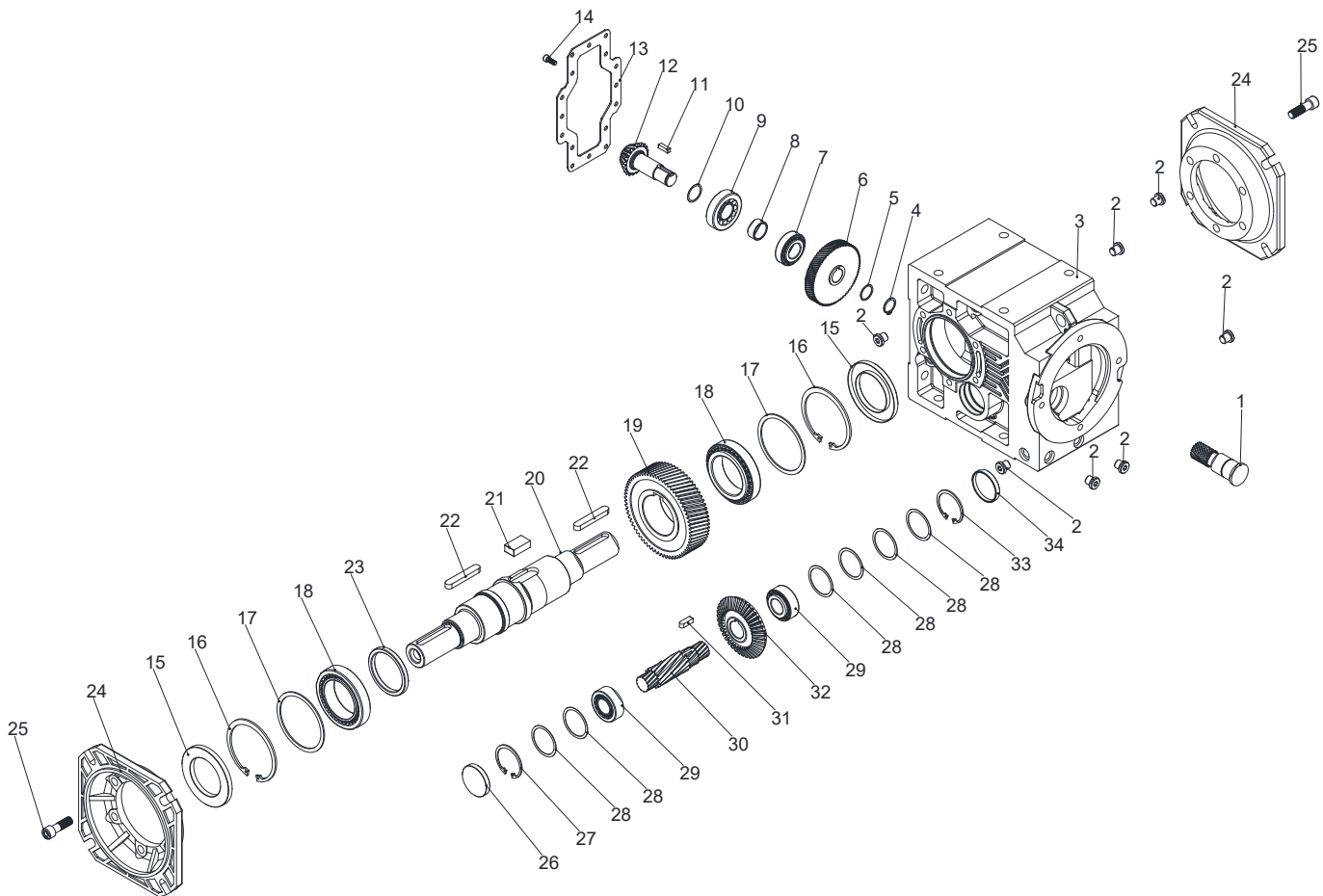
Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

1- Pinion	9- Spacer	17- Shim Ring	25- Circlip
2- Plug	10- Bearing	18- Bearing	26- Shim Ring
3- Housing	11- Shim Ring	19- Gear	27- Bearing
4- Circlip	12- Pinion Shaft	20- Output Shaft	28- Pinion Shaft
5- Shim Ring	13- Cover Plate	21- Key	29- Key
6- Gear	14- Bolt	22- Key	30- Gear
7- Key	15- Oil Seal	23- Shim Ring	
8- Bearing	16- Circlip	24- Closing Cap	



3.16- Size: K27...K97...
Type: 05



Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

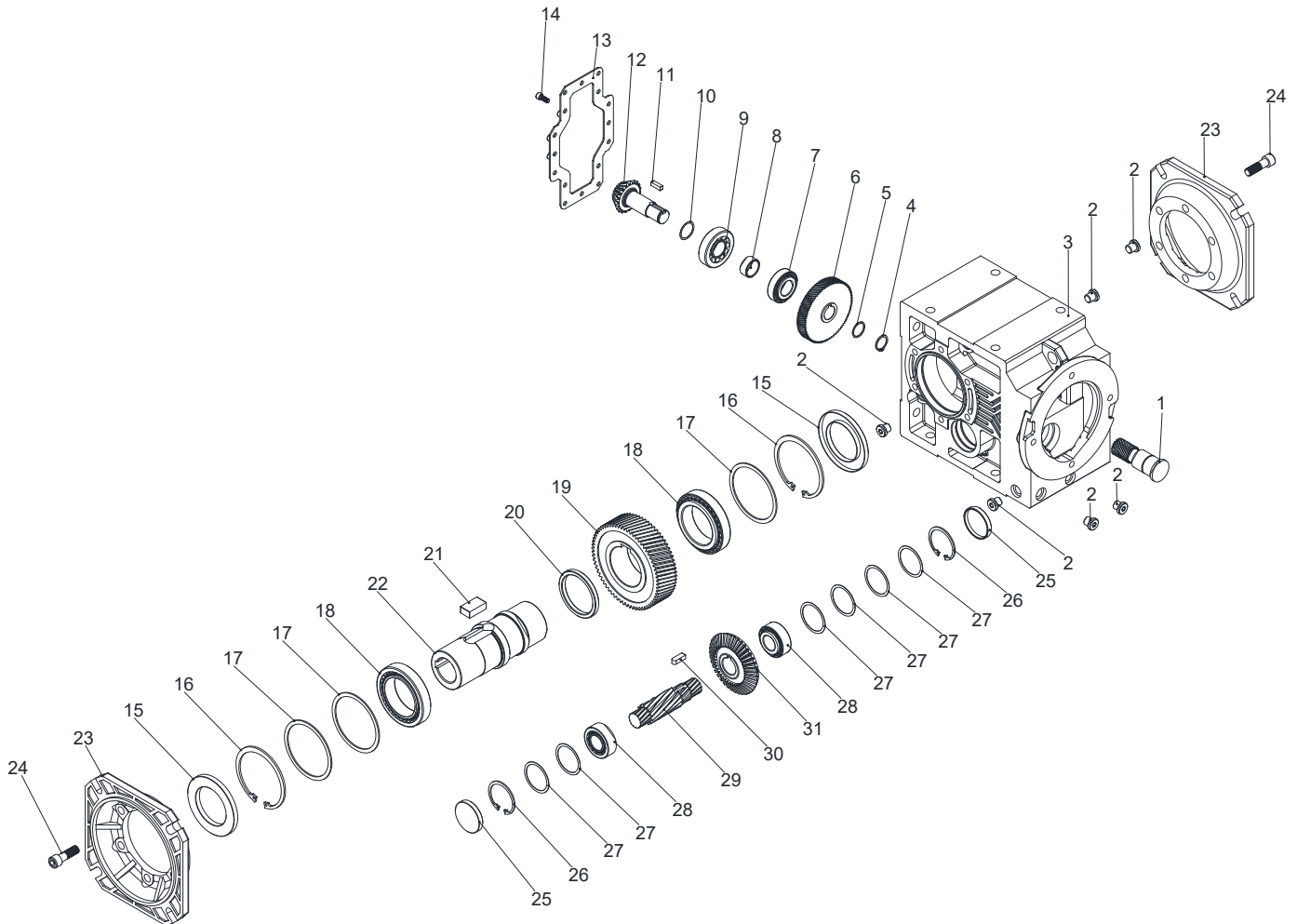
1- Pinion	9- Bearing	17- Shim Ring	25- Bolt	33- Circlip
2- Plug	10- Shim Ring	18- Bearing	26- Closing Cap	34- Shim Ring
3- Housing	11- Key	19- Gear	27- Circlip	
4- Circlip	12- Pinion Shaft	20- Output Shaft	28- Shim Ring	
5- Shim Ring	13- Cover Plate	21- Key	29- Bearing	
6- Gear	14- Bolt	22- Key	30- Pinion Shaft	
7- Bearing	15- Oil Seal	23- Shim Ring	31- Key	
8- Spacer	16- Circlip	24- Flange	32- Gear	

Operating Instructions

K Series

Part Designations

3.17- Size: K27...K97...
Type: 08



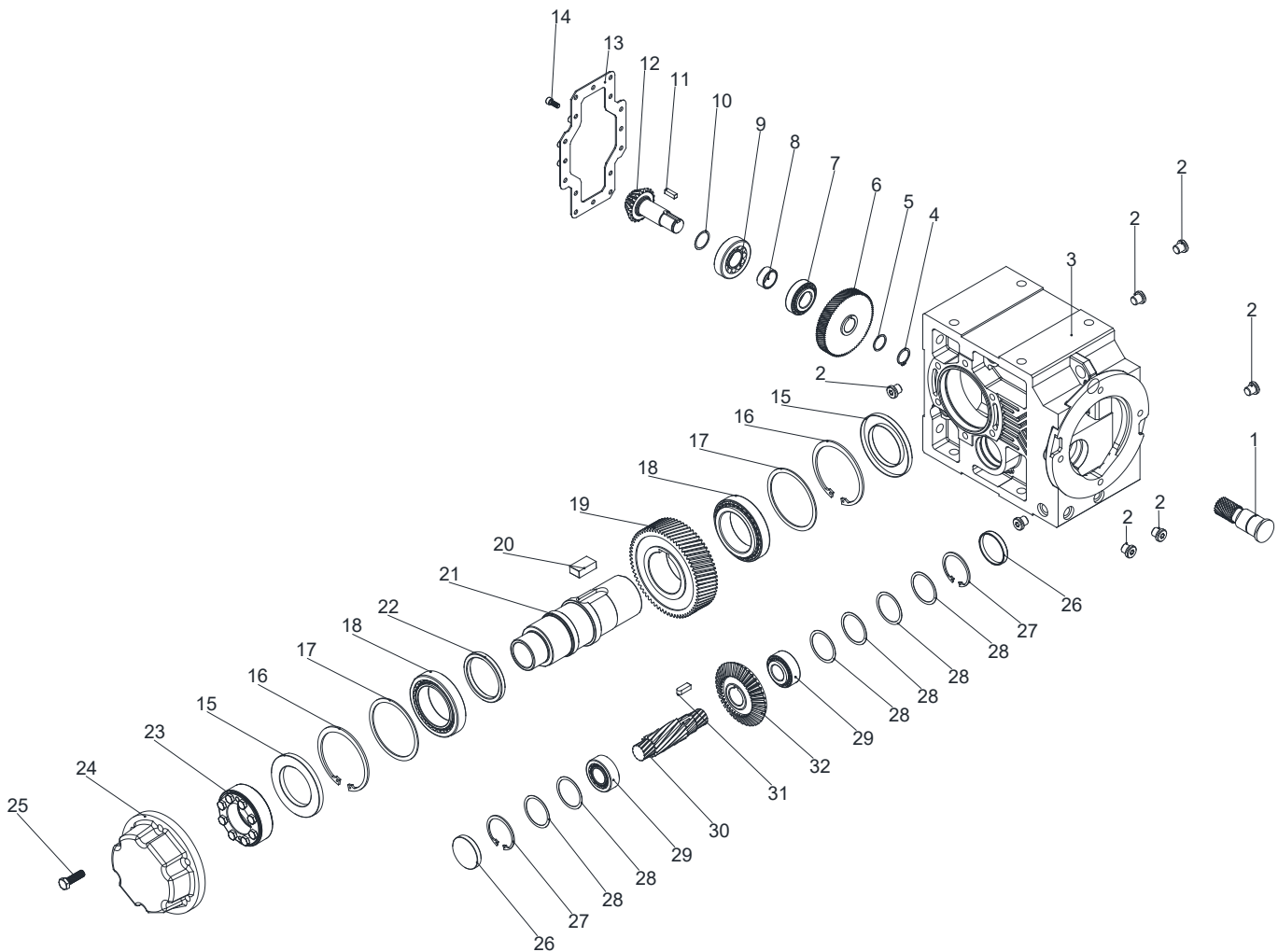
Basic parts diagram for standard types.
Parts may differ for special applications.

Standard Parts List

1- Pinion	9- Bearing	17- Shim Ring	25- Closing Cap
2- Plug	10- Shim Ring	18- Bearing	26- Circlip
3- Housing	11- Key	19- Gear	27- Shim Ring
4- Circlip	12- Pinion Shaft	20- Shim Ring	28- Bearing
5- Shim Ring	13- Cover Plate	21- Key	29- Pinion Shaft
6- Gear	14- Bolt	22- Output Shaft	30- Key
7- Bearing	15- Oil Seal	23- Flange	31- Gear
8- Spacer	16- Circlip	24- Bolt	



3.18- Size: K27...K97...
Type: OS



Basic parts diagram for standard types. Parts may differ for special applications.

Standard Parts List

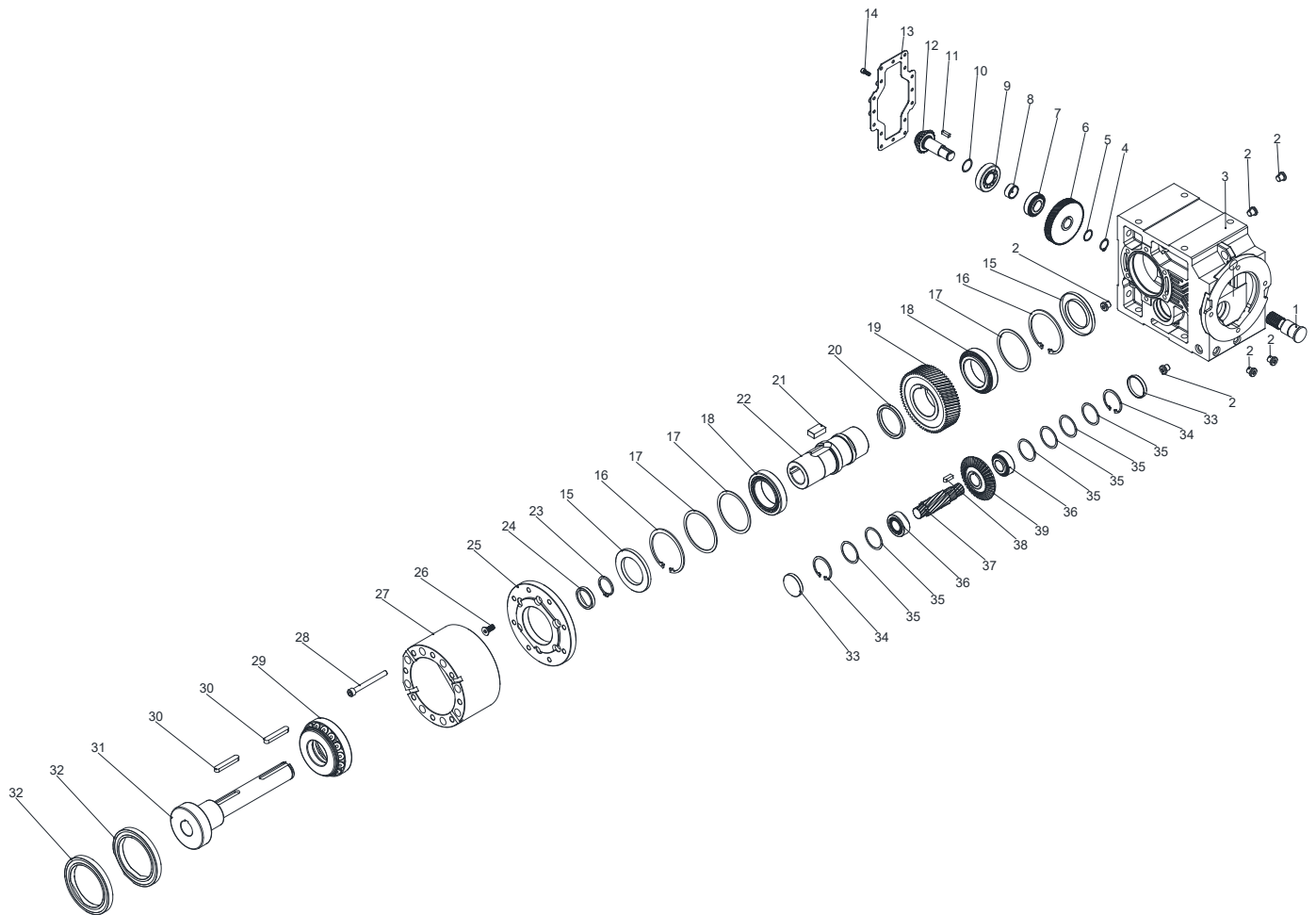
1- Pinion	9- Bearing	17- Shim Ring	25- Bolt
2- Plug	10- Shim Ring	18- Bearing	26- Closing Cap
3- Housing	11- Key	19- Gear	27- Circlip
4- Circlip	12- Pinion Shaft	20- Key	28- Shim Ring
5- Shim Ring	13- Cover Plate	21- Output Shaft	29- Bearing
6- Gear	14- Bolt	22- Shim Ring	30- Pinion Shaft
7- Bearing	15- Oil Seal	23- Shrink Disk	31- Key
8- Spacer	16- Circlip	24- Cap	32- Gear

Operating Instructions

K Series

Part Designations

3.19- Size: K27...K97...
Type: 0E



Basic parts diagram for standard types.
Parts may differ for special applications.

Standards Parts List

1- Pinion	9- Bearing	17- Shim Ring	25- Flange	33- Closing Cap
2- Plug	10- Shim Ring	18- Bearing	26- Bolt	34- Circlip
3- Housing	11- Key	19- Gear	27- Ekstruder Housing	35- Shim Ring
4- Circlip	12- Pinion Shaft	20- Shim Ring	28- Bolt	36- Bearing
5- Shim Ring	13- Cover Plate	21- Key	29- Bearing	37- Pinion Shaft
6- Gear	14- Bolt	22- Hollow shaft	30- Key	38- Key
7- Bearing	15- Oil Seal	23- Circlip	31- Shaft	39- Gear
8- Spacer	16- Circlip	24- Shim Ring	32- Oil Seal	



4- Safety

4.1- Intended Use

These gear units are designed for industrial use. Please refer to our catalogue or our web page for the maximum permitted torques and speeds. The most important maximum permitted values are indicated on the nameplate of the product. The complete information can be found in our product catalogue. Using the product out of the product catalogue / nameplate's permitted ranges will cancel the warranty/manufacturer declaration and JS-Technik GmbH will not take any responsibility.

The gear units are intended for industrial machines and may only be used in accordance with the information provided in this manual the product catalogue and the nameplate of the gearbox. They comply with the applicable standards and regulations and meet the requirements of the directive 2006/42/EC. The gearbox must be started up, maintained, and operated according to this manual. The gearbox must be incorporated with 2006/42/EC conforming parts/machines.



Motor installation and/or operation is only permitted if the permissible catalogue values or name plate data are not exceeded. For frequency inverter operation, the speed range can be entered on the type plate. The information must be provided when the order is placed. Without notification, only a fixed speed is entered on the name plate; a subsequent speed change is not permitted. The three-phase motor and frequency inverter must comply with directive 2006/42/EC.



If the gearboxes are to be operated with a speed controller, this must be stated when the order is requested or placed. The permissible maximum and minimum speed range is entered on the name plate. If no information is given when the order is placed, the gearbox will be delivered with a fixed speed and only this speed is permissible.



If the gearboxes are operated with a belt drive / coupling / chain drive etc., only the data on the name plate / catalogue values are permitted. Deviating speeds, higher motor outputs, higher radial/axial loads etc. are not permitted.



The ambient temperature may be between +5 and +40°C, abrasive medium must be kept away from the seals and paint. In the event of deviating operating conditions, JS-Technik must be informed before placing the order.

4.2- Improper Use



Every usage which exceeds the limits stated above, on the nameplate of the product or in the catalogue (especially higher torques and speeds) is not compliant with the regulations, and thus prohibited.

The operation of the gear unit is prohibited if:

- It was not mounted/installed according to regulations and this manual
- The gear unit is very dirty
- It is operated without lubricant
- The operating data exceeds the permissible catalogue data.

Operating Instructions

K Series

Safety

4.3- Safety Instructions

4.3.1- General Safety Instructions

4.3.1.1- Working on the gear unit



- Inappropriately executed work can lead to injury or damage.

Make sure that the gear unit is only installed, maintained and dismantled by trained technicians.



- Foreign bodies spinning through the air can cause grave injury.

Before putting the gear unit into operation, check that there are no foreign bodies or tools near the gear unit.

4.3.1.2- Operation



- Touching hot surfaces can lead to burns.

Do not touch the gear unit if its operation temperatures are too high or use suitable safety equipment like gloves.



- Rotating machinery can lead to injuries. There is danger of being trapped or pulled in!

Keep sufficient distance and mount a guard in front of the rotating machine parts. See relevant norms EN349+A1, EN13857.

4.3.1.3- Maintenance



- An unintentional start of the machine during maintenance work can lead to serious accidents.

Make sure no one can start the machine while you are working on it.



- Even a brief running of the machine during maintenance work can lead to accidents if the safety devices are not operating.

Make sure that all safety devices are mounted and active.

4.3.1.4- Lubricant



- Extended, intensive contact with oils can lead to skin irritations.

Avoid extended contact with oil, and clean oil off skin thoroughly.



- Hot oil can cause scalding.

When changing oil, protect yourself against contacting hot oil.

4.3.1.5- Ambient Conditions



- Standard gearboxes are allowed to work in ambient temperatures between +5 to +40°C unless differently specified on the nameplate. Using the gear unit out of this range can cause damage to the gear unit or environment. At ambient temperatures above +40°C, touching the gear unit surface can cause burns.



- If the gear unit will be used in outdoor applications the gear unit must be protected from rain snow and dust. Entering substances inside the gear unit from seals can damage the gear unit. Observe the safety instructions for outdoor use EN12100:2010.



-

4.4- Tightening Torques

All screws with a specified tightening torque should always be tightened and checked with a calibrated torque wrench. Use the following torques for the threaded bores over the gear unit housing. For connecting elements refer to the mechanical installation part.

Bolt Size	Class	Tightening Torque [Nm]
M5	8.8	6
M6	8.8	10
M8	8.8	25
M10	8.8	48
M12	8.8	84
M16	8.8	206
M20	8.8	415
M24	8.8	714

4.5- In case of Fire

The gear unit itself is not combustible. However, it usually contains a synthetic or mineral gear oil.

Please observe the following if the gear unit is situated in a burning environment.

4.5.1- Suitable extinguishing agents, Protective equipment

Always keep suitable extinguishing and protective equipment like carbon dioxide, powder, foam and fog easily accessible around the gear unit.



High temperatures produce irritating steam .

Use a protective breathing apparatus.



4.5.2- Unsuitable extinguishing agents

Do not spray with water!

5- Things to Check Before the Gear Unit or Gear Motor is Installed



If gear motors are used, please also refer to the manual of the motor manufacturer.

Before installing the gear unit, please check that it has been delivered in full and check for any transportation damage. Points to take into consideration before you start to install the unit;

- You have received the correct operation manual for your product.
- The gearbox and all its parts are transported without damage.
- The gearbox is stored correctly according to the instructions in this manual.
- You have the latest product catalogue or you have access to our web page.

5.1- Transportation

Upon delivery of the gear unit, ensure that the delivery corresponds to the purchase contract and that there is no damage. If there is any transport damage, report it to the shipping company immediately, and inform us about the damage.



Use the upper foot connection holes for lifting up the gear unit by using eyebolts. The eyebolts should be capable to carry the weight of gearboxes. Do not hang additional loads on the gear box by lifting. Use suitable hoisting equipment that can hold the weight of the gear unit. Refer to the catalogue for various types of weights. If the gearbox is delivered with a steel carrying construction, use the construction holes to lift the gear unit. See drawing below for hoisting point

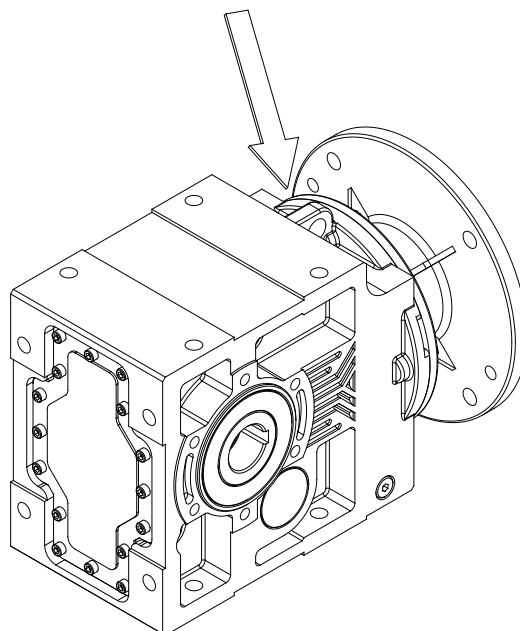


Do not stay beneath / under the lifting/hoisting equipment which may cause serious injuries by falling down objects, accidental movements, unexpected accidents.



Falling or hard placement can damage the gear unit.

Only use hoisting and securing equipment which is permitted for the size / weight of your gear unit. Ensure that the load is slowly and carefully handled and placed.





5.2- Storage

If the gear unit or gear motor will be stored up to 3 years refer to the following instructions:

With Packaging

-Use corrosion protection oil for the output shaft and connection surfaces like flange surface or foot assembling surface. Seal the unit in plastic wrap and pack it in a container. A moisture indicator should be placed around the container to observe the moisture. Relative atmospheric humidity should not exceed 50%. The container should be kept under a roof which protects from snow and rain. Under these conditions, the gear unit can be stored for up to 3 years with regular checks. The ambient temperature should be between -5° to 60° Celsius.

Without Packaging

-Use protection oil for the output shaft and connection surfaces like flange surface or foot assembling surface. If the packaging is used and the gearbox is stored without packaging, the ambient temperature should be between 5° to 60° Celsius. The gearbox must be kept under an enclosed roof with constant temperature and constant humidity not exceeding 50%. The storage should be free of dust and dirt and ventilated with a filter. If the gearbox is stored without packaging it is recommended not to store it for more than 2 years and regular checks during this time are recommended.

If stored in open areas protect against insect damage.

6- Installing The Gear Unit

6.1- Before you start

- Observe the gear unit for damages of storage or transportation. If there is any damage, please contact JS-Technik.
- Please ensure that you have all necessary equipment for the installation such as spanners, torque, wrench, shims and distance rings, fixing devices for input and output elements, lubricant, bolt adhesive, etc..



- This manual is not for 94/9/EC (ATEX) conforming gear units. For 94/9/EC conforming gear units refer to the ATEX range manual. ATEX conforming gear units have name plates indicating the zone and the temperature class and are different from standard type geared units. Therefore, standard units cannot be installed in potentially explosive atmospheres.

Operating Instructions

K Series

Checking

6.2- Check that the shaft dimensions to fit

Type	Hollow Shaft Diameter	Hollow Shaft Tolerance (H7)	Output Shaft Diameter	Output Shaft Tolerance (DIN748) Up to 50mm k6 Over 50mm m6	Flange Centering Shoulder Diameter	Centering Shoulder Tolerance (g6)
K.00...	Ø20	+0.02 0	Ø20	+0.02 0	Ø95	-0.01 -0.03
K.10...	Ø30	+0.02 0	Ø30	+0.02 0	Ø110	-0.01 -0.03
K.20...	Ø35	+0.03 0	Ø35	+0.02 0	Ø130	-0.01 -0.04
K.27...	Ø35	+0.03 0	Ø35	+0.02 0	Ø130	-0.01 -0.04
K.28...	Ø40	+0.03 0	Ø40	+0.02 0	Ø180	-0.01 -0.04
K.37...	Ø40	+0.03 0	Ø40	+0.02 0	Ø180	-0.01 -0.04
K.47...	Ø50	+0.03 0	Ø50	+0.02 0	Ø230	-0.02 -0.04
K.57...	Ø60	+0.03 0	Ø60	+0.03 +0.01	Ø250	-0.02 -0.04
K.67...	Ø70	+0.03 0	Ø70	+0.03 +0.01	Ø300	-0.02 -0.05
K.77...	Ø90	+0.04 0	Ø90	+0.04 +0.01	Ø350	-0.02 -0.05
K.87...	Ø110	+0.04 0	Ø110	+0.04 +0.01	Ø450	-0.02 -0.06
K.97...	Ø120	+0.04 0	Ø120	+0.04 +0.01	Ø550	-0.02 -0.06

6.3- Check the ambient temperature;

The ambient temperature must be between +5 °C to +40 °C for standard type gear units. If different contact JS-Technik GmbH for special solutions.

6.4- Check the voltage supply;

The standard gear motors are supplied with 230/400V 50/60 Hz up to 3 kW including 3 kW and 400/690 V 50/60 Hz over 3 kW and is indicated on the motors name plate unless it is differently ordered.

If only the gear unit is supplied from JS-Technik GmbH please observe the name plate of the electric motor and the instructions of the supplier. Check the basic electric connection diagrams below. Use experienced electric technician.



Using wrong connection or voltage can damage the electric motor or environment.



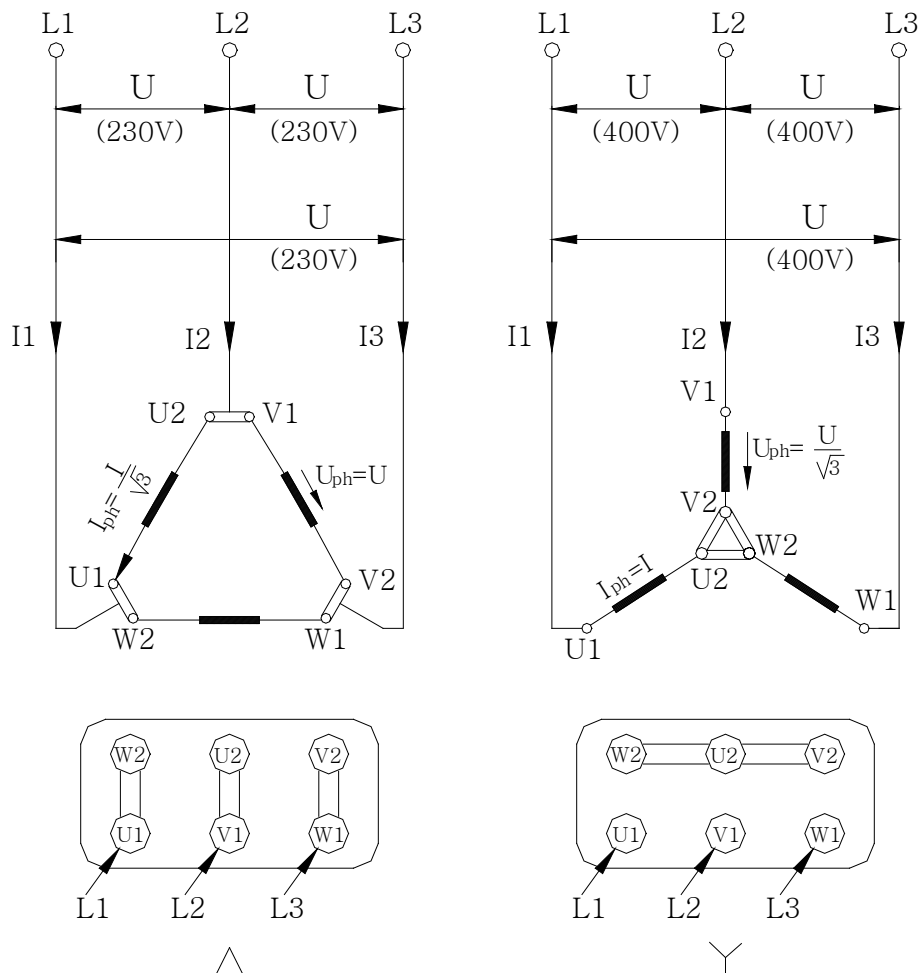
The following wiring diagram is for standard 230/400 V 50 Hz AC electric motors. For different voltages please contact JS-Technik GmbH. For gear units supplied without motor, refer to the motor manufacturers user manual.



The electrical installation and commissioning may only be carried out by qualified personnel. The gear unit and the motor must both be grounded separately.

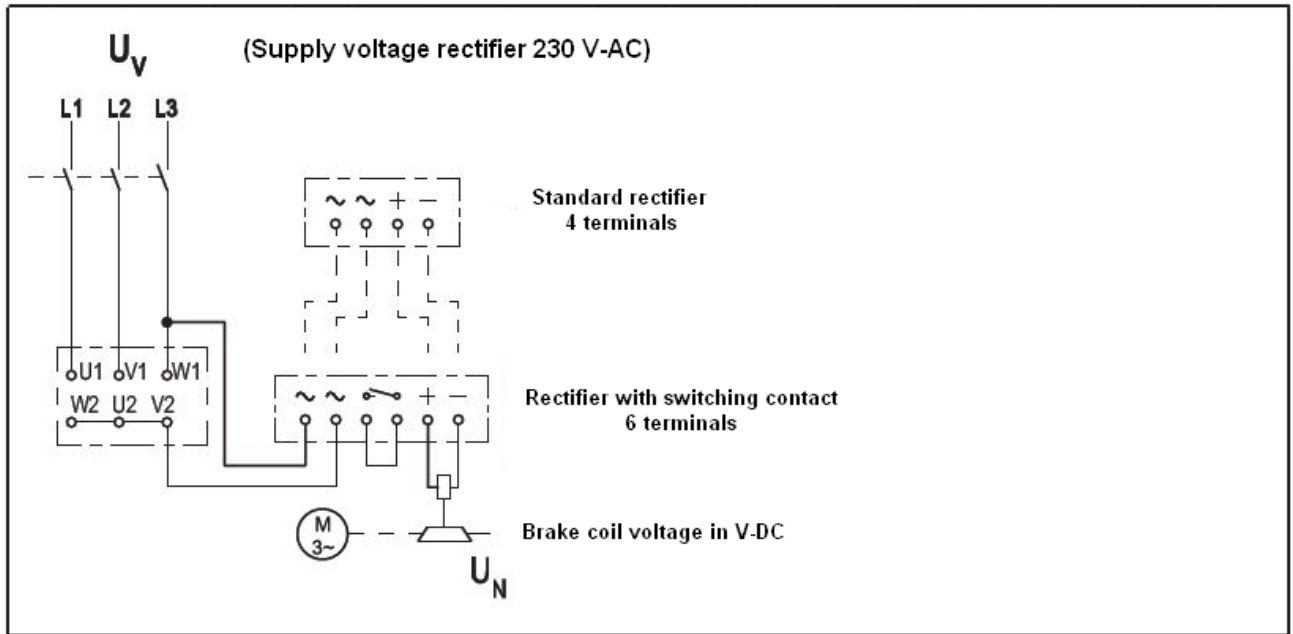
Pole Number	Nominal Powers at 400V, 50Hz	
	230V (Δ) / 400 V (Y)	400V (Δ)
2 or 4	≤ 3 kW	≥ 4 kW
6	$\leq 2,2$ kW	≥ 3 kW
8	$\leq 1,5$ kW	$\geq 2,2$ kW
Starting Principle	Direct	Direct or Y/ Δ

Basic motor connection wiring diagram





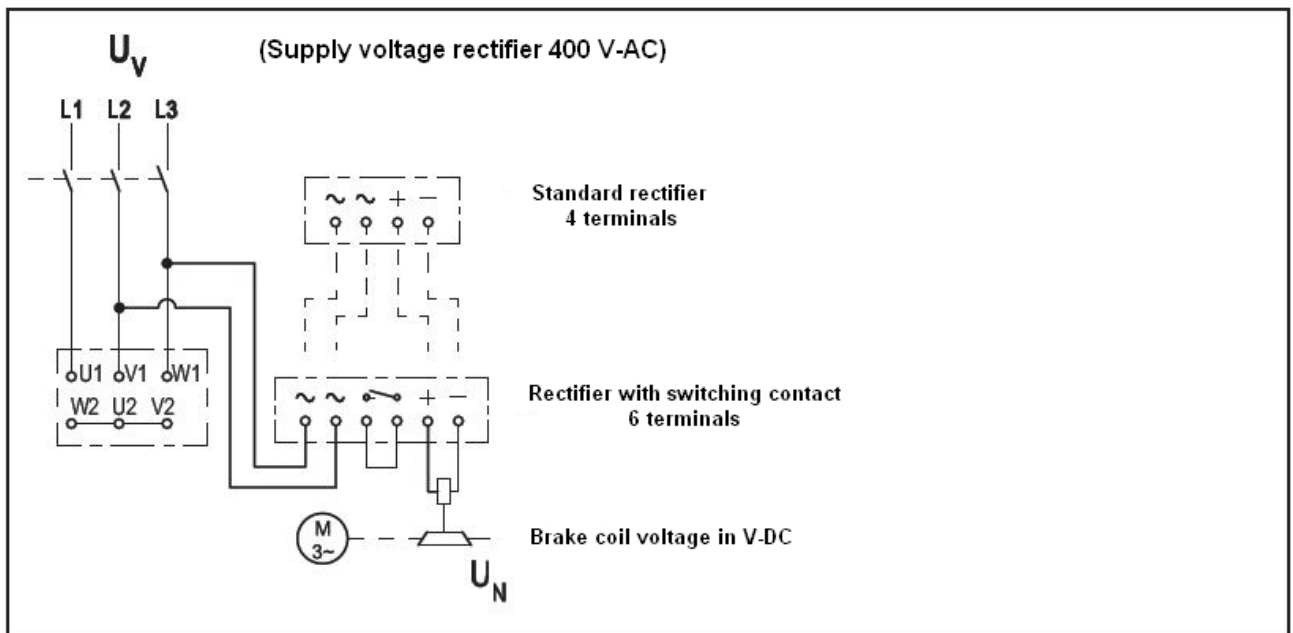
Standard Circuit Diagrams for Brake Motors



Supply: Phase-Starpoint

Bridge rectifier

$$U_N [\text{VDC}] = 0.9 \cdot U_V [\text{VAC}]$$



Supply: Phase-Phase

Half-wave rectifier

$$U_N [\text{VDC}] = 0.45 \cdot U_V [\text{VAC}]$$



6.5- Check the mounting position;

The mounting position must be in accordance with the mounting position mentioned on the name plate. If different please contact JS-Technik GmbH for possibilities of using in a different mounting position. Refer to the mounting positions and oil quantities in this manual and adjust the oil level accordingly with the recommended oil types given in this manual.

STOP

Do not mix synthetic oils with mineral oils which can cause serious damage on the gear unit.

6.6- Use of breather plug;

Breather plugs are recommended by JS-Technik for heavy ambient conditions and long working hours. They will be delivered together with the gearbox and must replace the plug located at the highest gearbox position after gearbox disassembly and before start-up.

i

Not all possible screw plug threads are machined. If no mounting position is specified in the order, the delivery is made in the standard "M1" position. Only the threads for the desired mounting position are then machined. .

6.7- Check the oil level ;

Please refer to the installation position table and make sure that the oil level is correct according to the installation position. If the oil level is below the correct filling level, please take a wire to check. The oil level may be max. 3mm below the correct filling level. Please make sure that you use the correct oil. The required oil fill quantity and oil viscosity can also be found on the name plate.

STOP

Do not mix synthetic oils with mineral which can cause serious damage on the gear unit.

6.8- Check shaft ends and mounting faces;

Before starting assembly, make sure that the fasteners are free of dirt and oil. The output shafts are coated with anti-corrosion oil. Remove it with a commercially available solvent. It is essential to avoid solvent coming into contact with the sealing ring lips and the housing paint.

6.9- Cover abrasive ambient;

If the gear motor is to be used in a dirty and abrasive environment, make sure that the shaft seals are protected against abrasive agents as well as chemical products and chemical liquids. Please protect the gearboxes and shaft seals from additional overpressure, which can cause protective particles (solid and liquid) to enter the gearbox via the shaft seal and destroy the gearbox. If gear motors cannot be protected against overpressure and abrasive dirt particles, please contact JS-Technik.

STOP

Abrasive material, chemicals, water, positive or negative pressure exceeding 0,2 bar can affect or damage the sealing lip or output shaft. Inside entering substances from the seals can cause serious damage to the gear unit.



6.10- Check accessibility to filling, breather and drain plugs .

The oil filler, breather and exhaust plugs must be freely accessible for subsequent service work.

7- Mechanical Installation

The gear unit can only be installed using the supplied connection points like foot and flange assembling points.



Installing the gear unit without the supplied connection points can cause serious injuries by loosening or breaking the gear unit. Even if the gear unit is correctly installed according to this manual, ensure that no one will be harmed by accidental breakdowns or loosening.

Please ensure that the gearbox mountings are stable to prevent vibration and that it can be mounted on a machined surface without distortion. When using chain drives, this is especially important because of the polygon effect. If load shocks, prolonged overloads or blockages are likely to occur, install appropriate protective elements such as hydraulic clutches, etc. Check the radial and axial loads that occur. These must not exceed the permissible values. Take the permissible values from the product catalogue.



If the output or input shaft is overloaded by radial or axial loads it can cause serious damage to the gear unit.

Secure the gear unit using 8.8 or higher quality bolts.



Protect all rotating parts from possible contact. Rotating machine parts can lead to serious injuries.

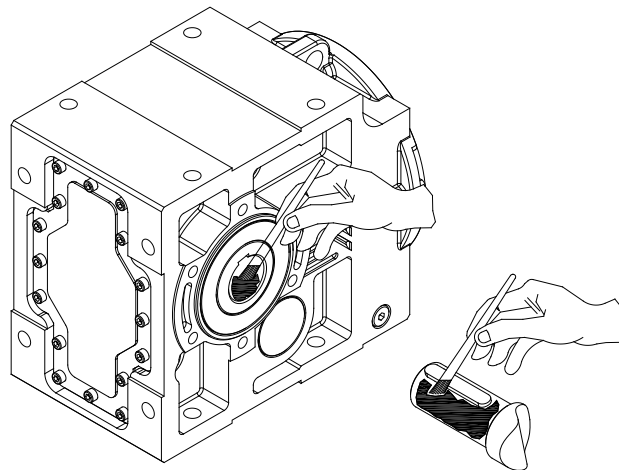


For different kind of basic installations refer to the following illustrations.

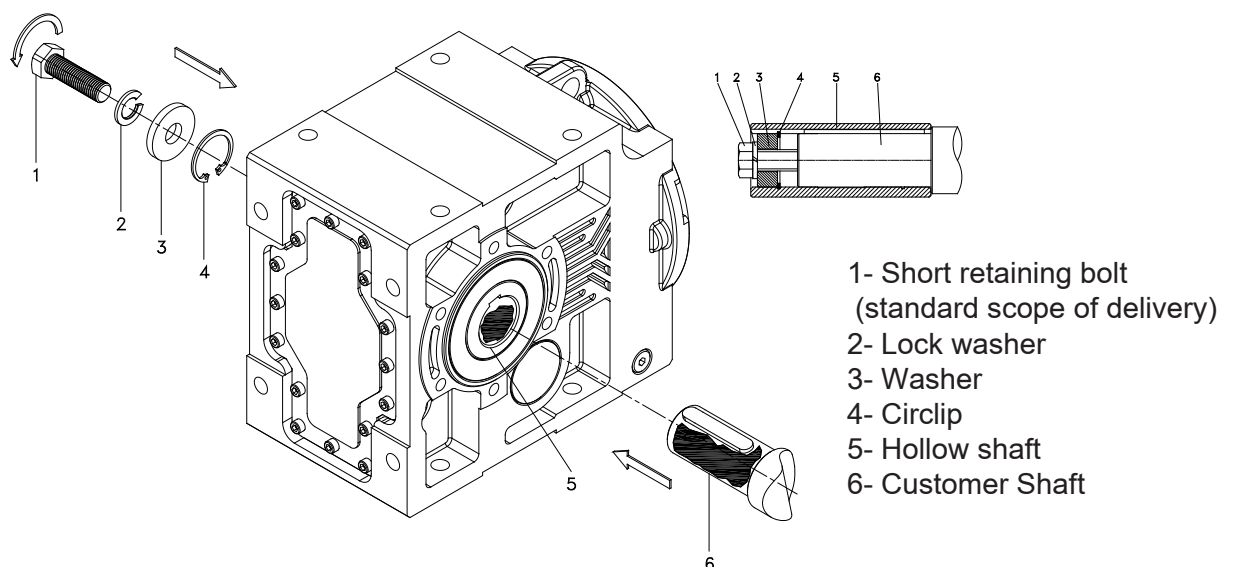


7.1- Installing customer shaft with shoulder

7.1.1- Use commercially available anti-seize assembling paste.
Use a brush to apply the paste.



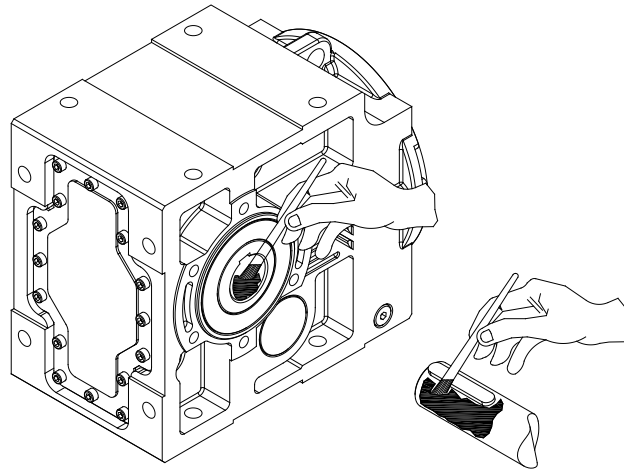
7.1.2 -Fasten the bolt as shown below.



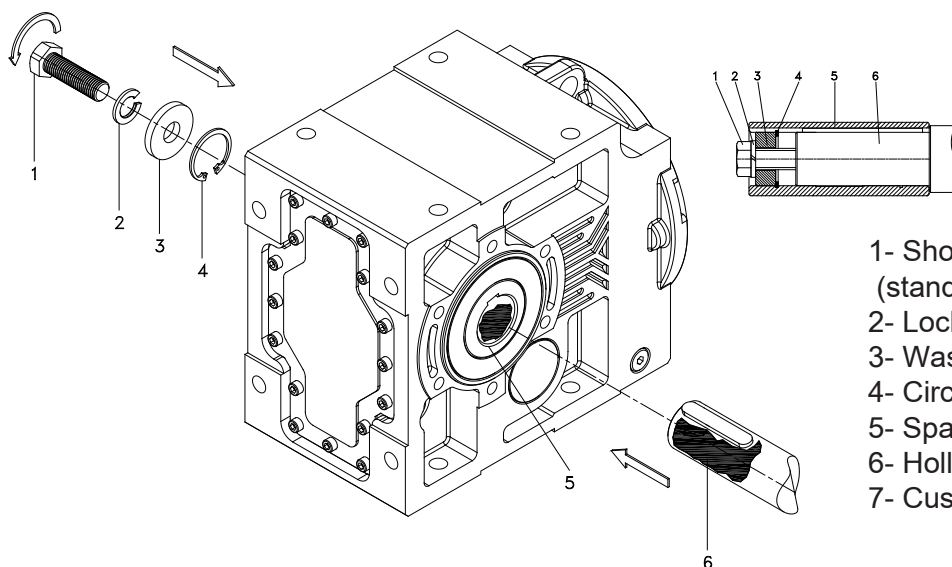


7.2- Installing customer shaft without shoulder

- 7.2.1- Use commercially available anti-seize assembling paste.
Use a brush to apply the paste.



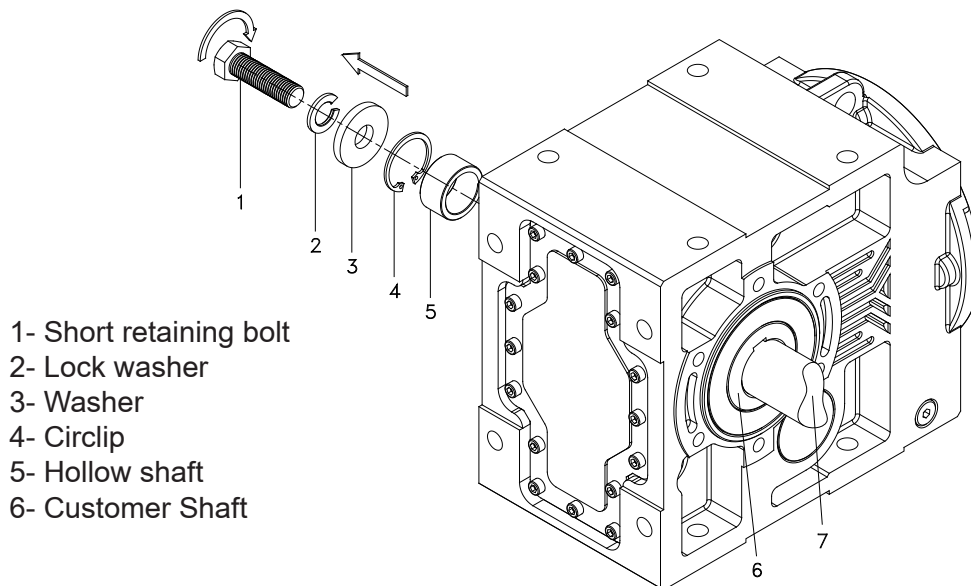
7.2.2 -Fasten the bolt as indicated below



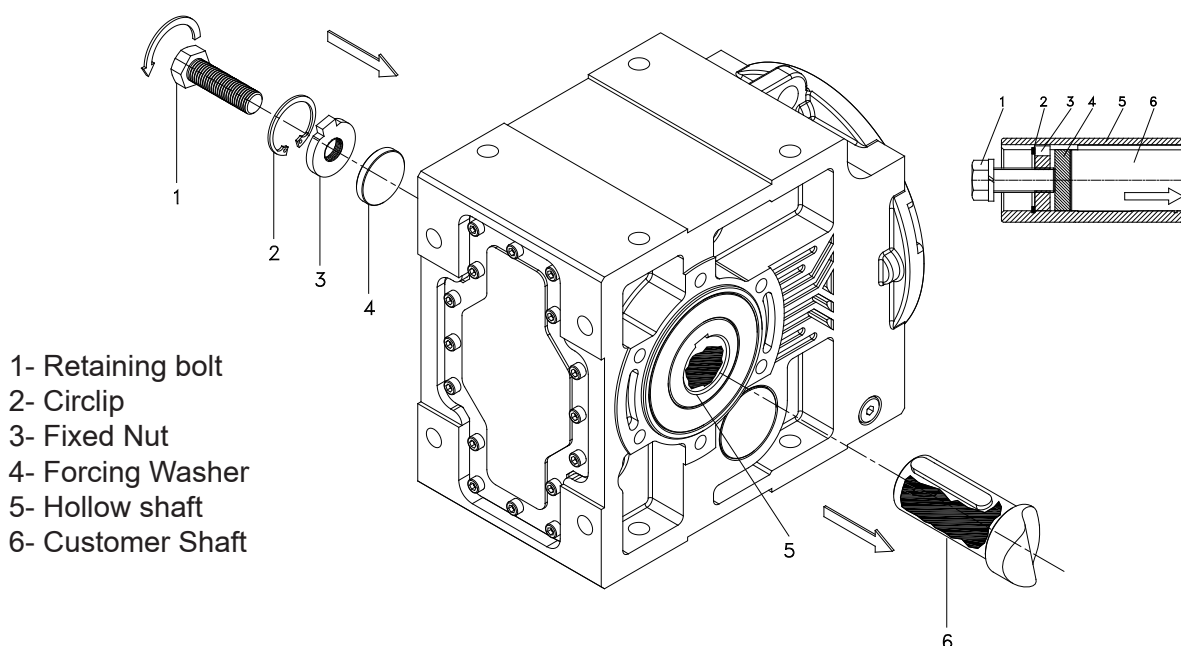


7.3- Disassembling customer shaft with shoulder

7.3.1- Disassemble the bolt and take out the parts as shown



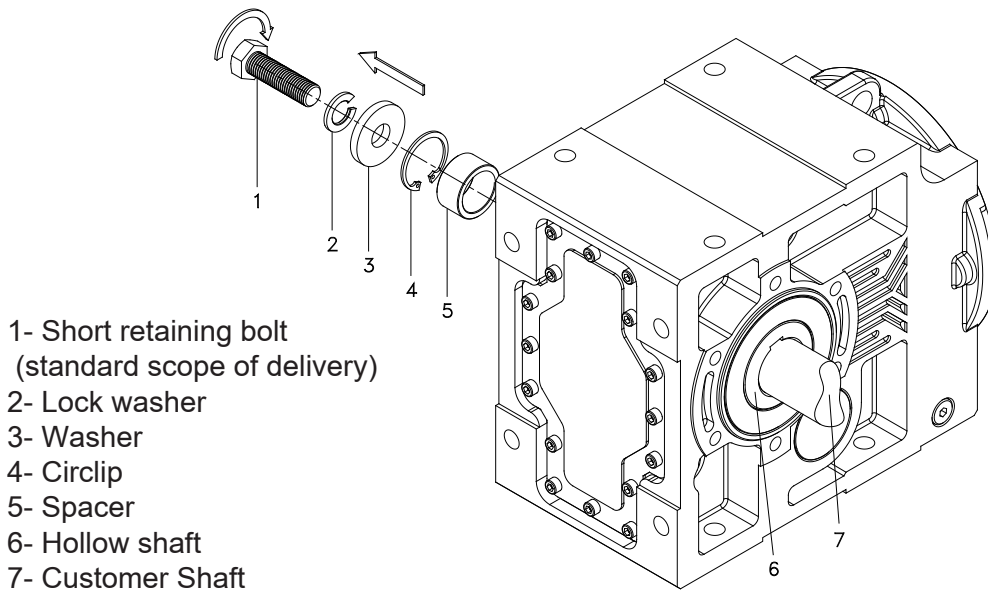
7.3.2- Use the JS-Technik disassembling set and fasten the bolt as shown below to remove the output shaft. For more information on disassembling sets, please see the following pages.



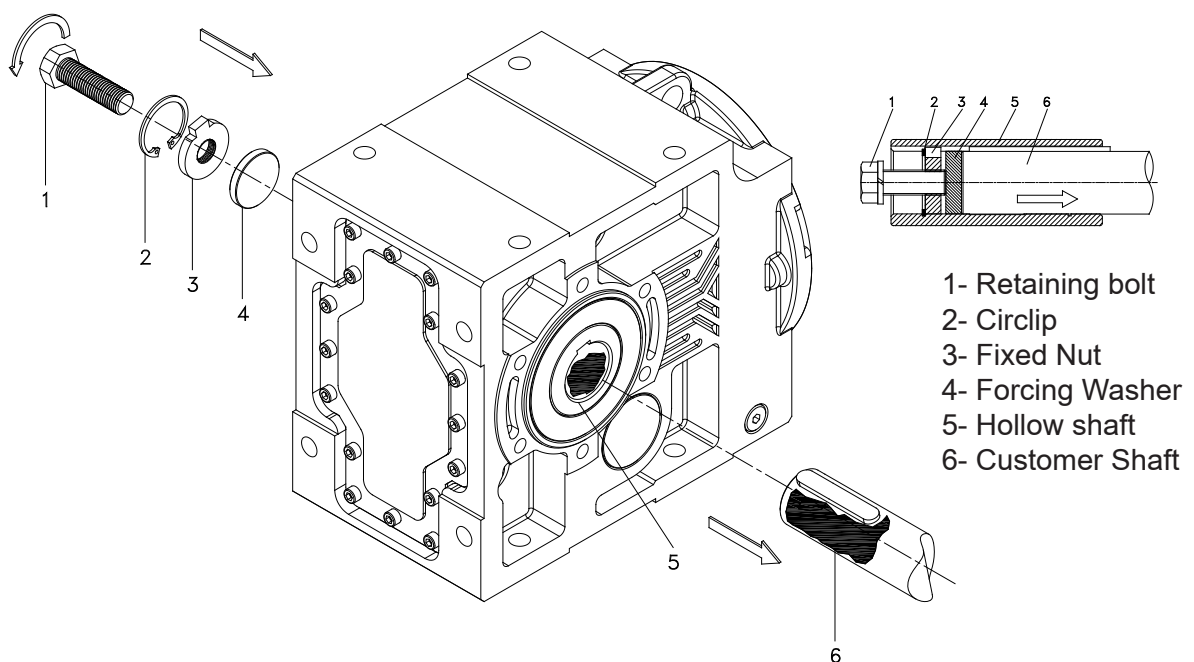


7.4- Disassembling customer shaft without shoulder

7.4.1- Disassemble the bolt and remove the parts as shown below

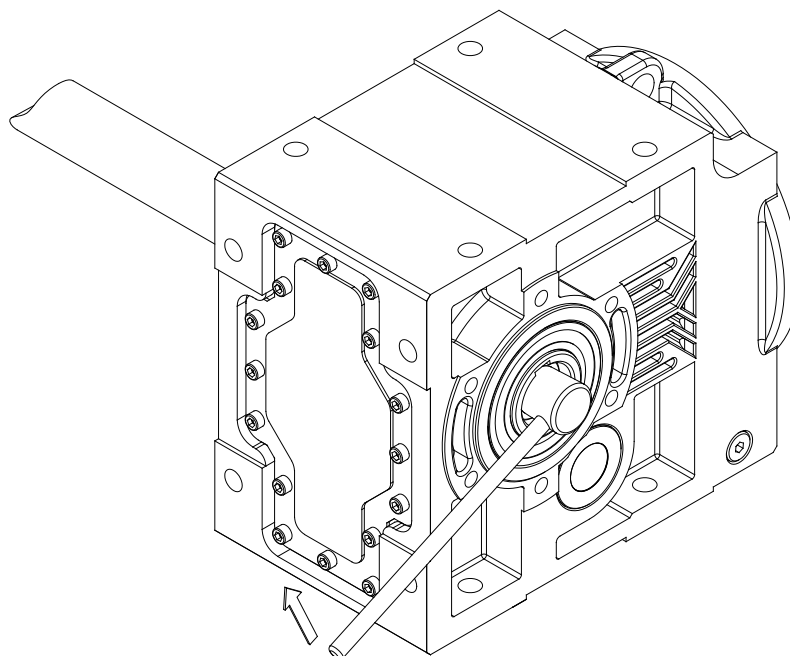


7.4.2- Use the JS-Technik disassembling set and fasten the bolt as shown below to remove the output shaft. For more information on disassembling sets, please see the following pages.





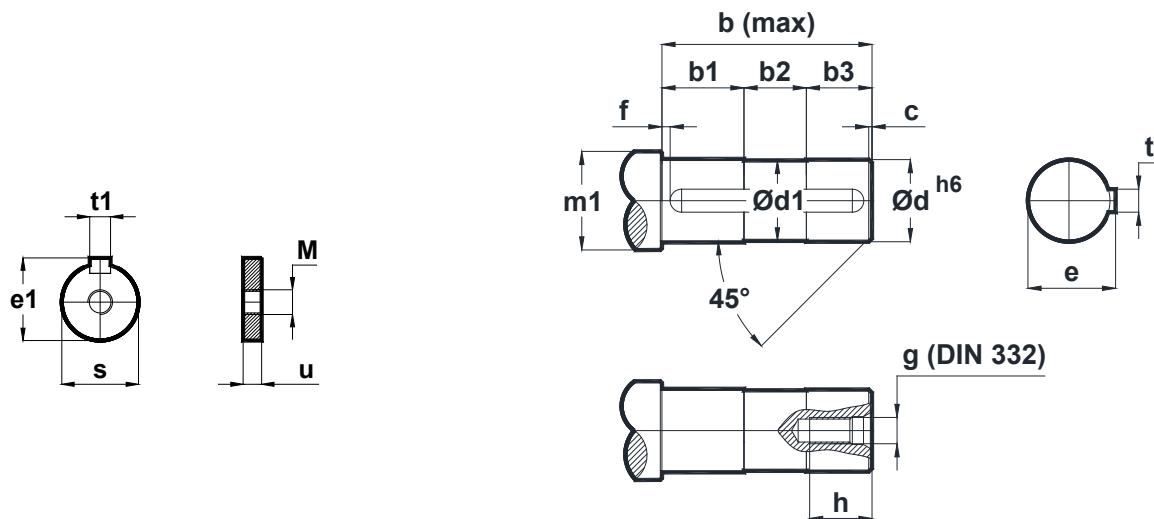
7.5 Shaft tightening torque values are as shown below



Type	Bolt	Tightening Torques [Nm]
K.00	M6	10
K.10	M10	48
K.20	M12	84
K.27	M12	84
K.28	M16	206
K.37	M16	206
K.47	M16	206
K.57	M20	415
K.67	M20	415
K.77	M24	714
K.87	M24	714
K.97	M24	714



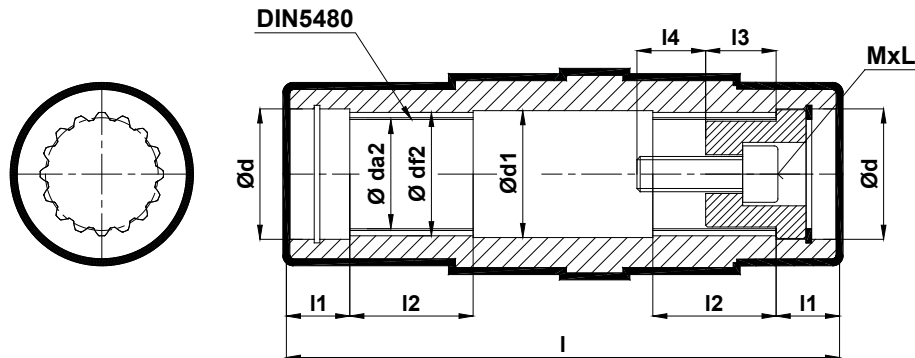
7.6- Recommended shaft dimensions for KT ...00 types



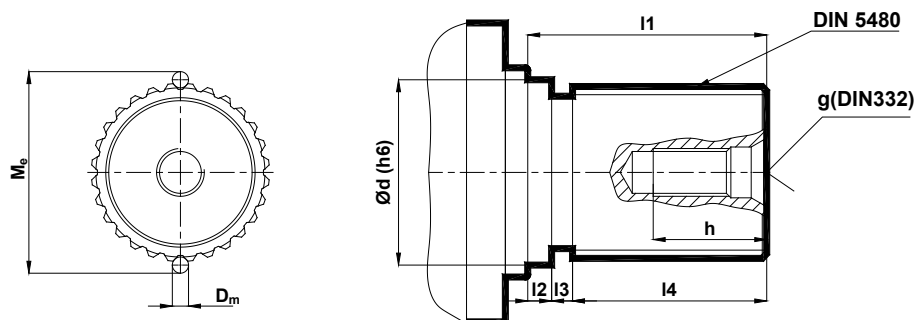
Type	s	u	e1	t1	M	d	d1	m1	f	b	b1	b2	b3	c	g	h	e	t
K.00..	19.7	10	22	5.5	M10	20	19	24	5	86	45	25	16	0.5	M6	18	22.5	6
K.10..	29.7	10	33	7.5	M12	30	29	36		90	50	20	20	1	M10	24	33	8
K.20..	34.7	12	38	9.5	M16	35	34	43		102	60	20	22	1	M12	30	38	10
K.27..	34.7	12	38	9.5	M16	35	34	43		114	65	27	22	1	M12	30	38	10
K.28..	34.7	12	43	11.5	M20	40	39	50		124	70	28	26	2	M16	38	43	12
K.37..	39.7	12	43	11.5	M20	40	39	50		138	75	35	28	2	M16	38	43	12
K.47..	49.7	12	53.5	13.5	M20	50	49	60		165	87	41	37	3	M16	38	53.5	14
K.57..	59.7	16	64	17.5	M24	60	59	75		188	101	44	43	3	M20	44	64	18
K.67..	69.7	16	74.5	19.5	M24	70	69	85		248	115	78	55	4	M20	44	74.5	20
K.77..	89.7	20	95	24.5	M30	90	89	110		287	140	83	64	4	M24	52	95	25
K.87..	109.7	20	116	27.5	M30	110	109	130		347	165	98	84	4	M24	52	116	28
K.97..	119.7	20	127	31	M30	120	119	140		434	185	130	119	4	M24	52	127	32



7.7- K.00.. - K.97.. DIMENSIONS OF SPLINED HOLLOW SHAFT T O DIN 5480



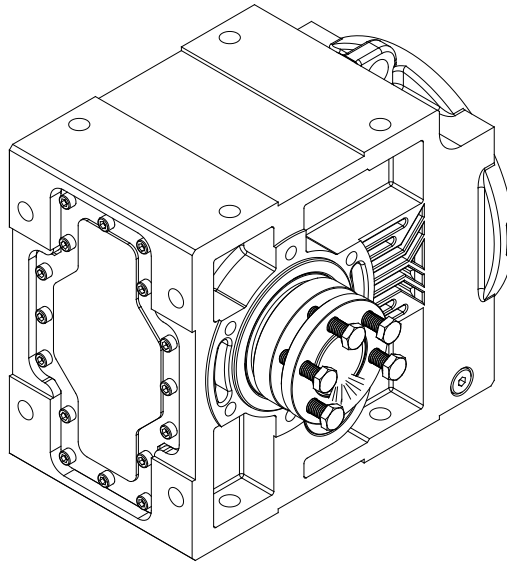
Type	DIN5480	$\varnothing d$	$\varnothing d1$	$\varnothing d2$	$\varnothing da2$	$\varnothing df2$	l	l1	l2	l3	l4	MxL
K00	N25x1,25x30x18x9H	27	26	44	22,5	25,25	115	17	22	20	20	M10x60
K10	N30x1,25x30x22x9H	32	31	53	27,5	30,25	120	18	25	20	20	M10x60
K20 K27 K28	N35x2x30x16x9H	37	36	64 58 63,5	31	35,4	140 157 166	18	35	20	20	M10x70 M10x90 M10x100
K37	N45x2x30x21x9H	47	46	74	41	45,4	185	25	45	24	32	M16x110
K47	N50x2x30x24x9H	55	51	84	46	50,4	215	25	55	24	32	M16x130
K57	N65x2x30x31x9H	72	66	104	61	65,4	246	25	65	30	40	M20x150
K67	N70x2x30x34x9H	72	71	119	66	70,4	308	25	75	30	40	M20x210
K77	N85x3x30x27x9H	90	86	139,5	79	85,6	363	26	90	30	40	M20x240
K87	N100x4x30x24x9H	110	101	169	92	100,8	428	30	105	41	50	M24x290
K97	N120x4x30x28x9H	130	121	179	112	120,8	500	35	120	41	50	M24x340



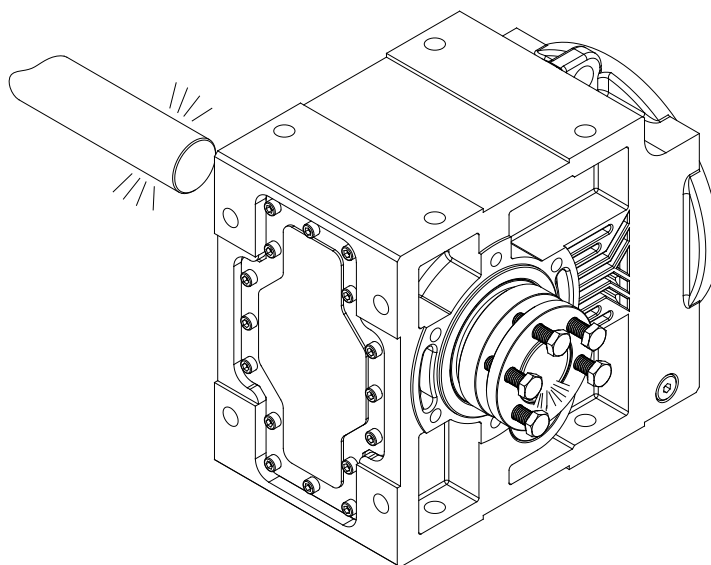
Type	DIN5480	$\varnothing d$	l1	l2	l3	l4	M_e	D_m	g (DIN332)
K00	W25x1,25x30x18x8f	27	44	10	7	27	28,01	2,75	M10x24
K10	W30x1,25x30x22x8f	32	48	11	7	30	33,05	2,75	M10x24
K20 K27 K28	W35x2x30x16x8f	37	58	11	7	40	38,94	4,00	M10x24
K37	W45x2x30x21x8f	47	75	18	7	50	48,88	4,00	M16x38
K47	W50x2x30x24x8f	55	85	18	7	60	54,16	4,00	M16x38
K57	W65x2x30x31x8f	72	95	17	8	70	68,99	4,00	M20x44
K67	W70x2x30x34x8f	72	105	17	8	80	74,18	4,00	M20x44
K77	W85x3x30x27x8f	90	121	16	10	95	91,02	6,00	M20x44
K87	W100x4x30x24x8f	110	140	20	10	110	108,37	8,00	M24x52
K97	W120x4x30x28x8f	130	160	23	12	125	127,89	8,00	M24x52



7.8- Assembling customer shaft with shrink disk
7.8.1- Loosen the bolts of the shrink disk

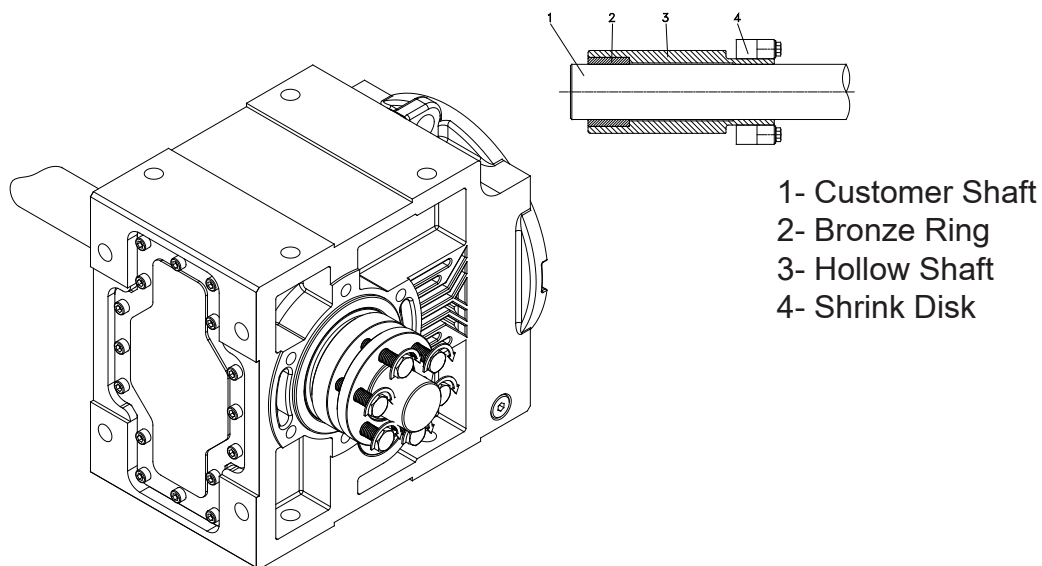


7.8.2- Use a commercially available solvent to remove all the dirt and oil from the shaft and shrink disk hollow. The surfaces must be free from oil or any dirt. The solvent must be re-moved from the surfaces as well.





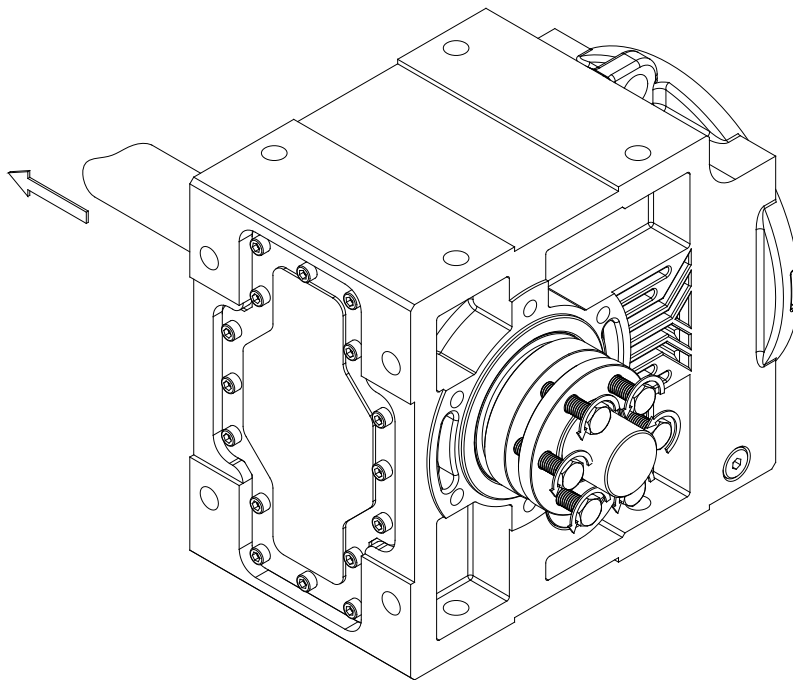
7.8.3- Insert the shaft and tighten the bolts as shown. Be sure that there is a clearance between the shrink disk shoulder and the hollow shaft shoulder of the gearbox.



Type	Bolt	Quantity	Tightening Torque [Nm]
K.00	M5	6	4
K.10	M6	5	12
K.20	M6	7	12
K.27	M6	7	12
K.28	M6	8	12
K.37	M6	8	12
K.47	M6	10	12
K.57	M8	7	30
K.67	M8	7	30
K.77	M10	9	59
K.87	M12	10	100
K.97	M12	12	100



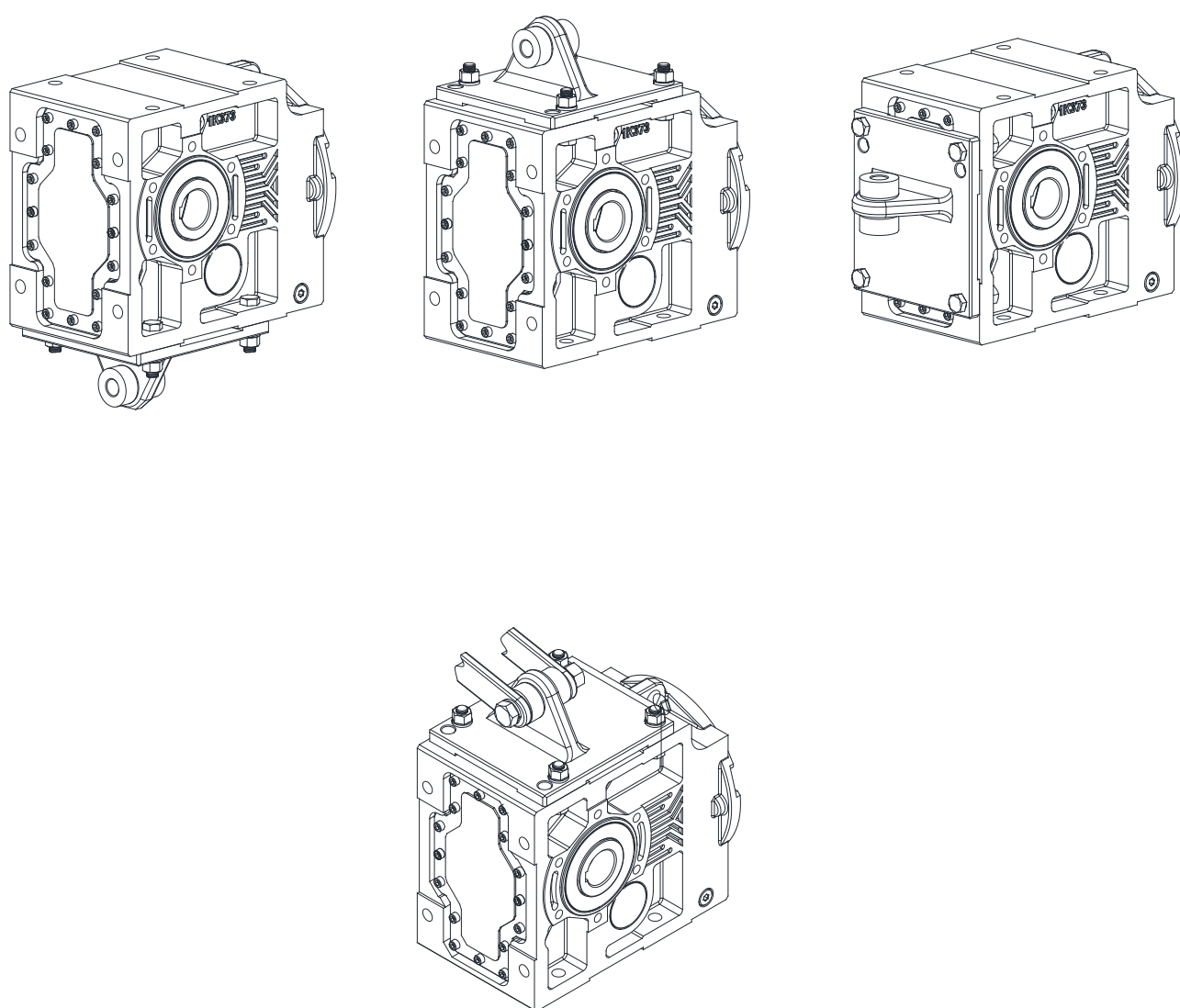
- 7.9- Disassembling customer shaft with shrink disk
- 7.9.1- Loosen the bolts of the shrink disk and take out the shaft.





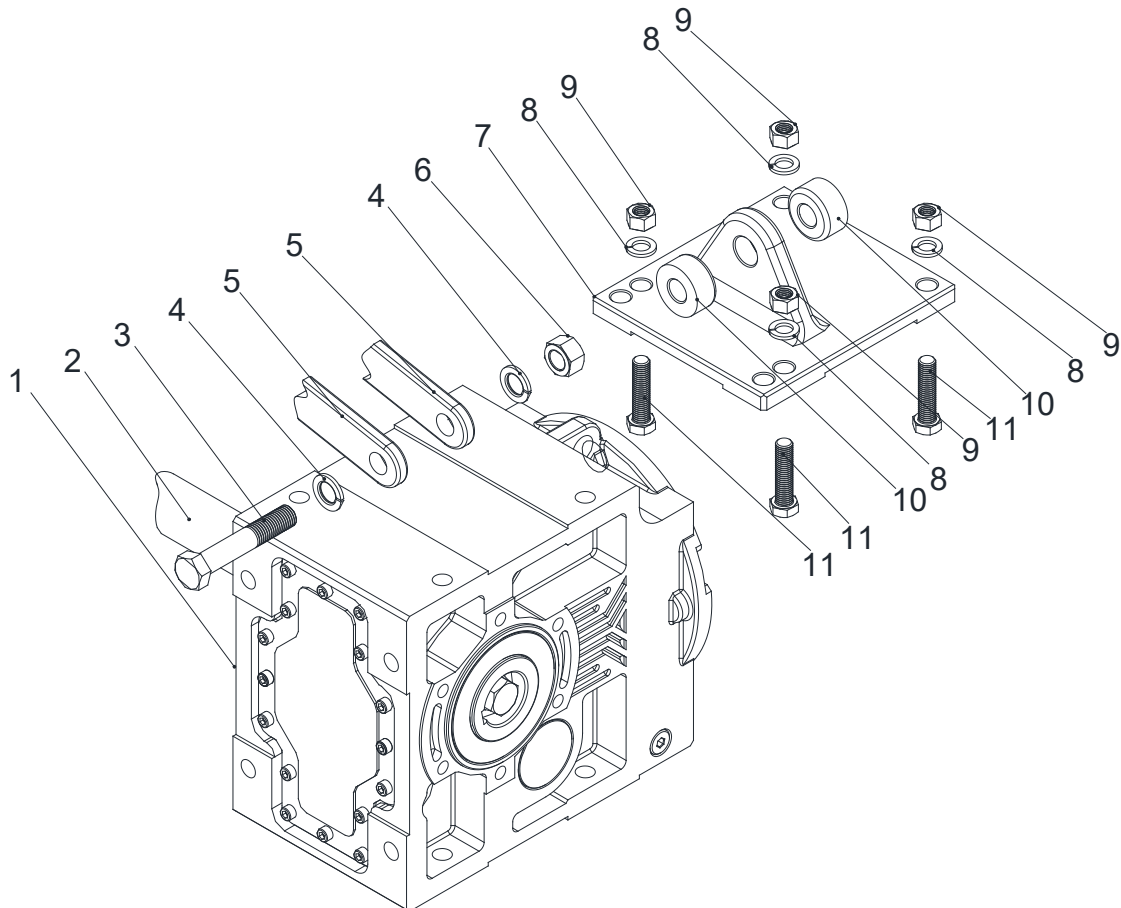
7.10 Assembling Gear Unit with Torque Arm

7.10.1- The following connecting possibilities are available. Use one position which is the most suitable.





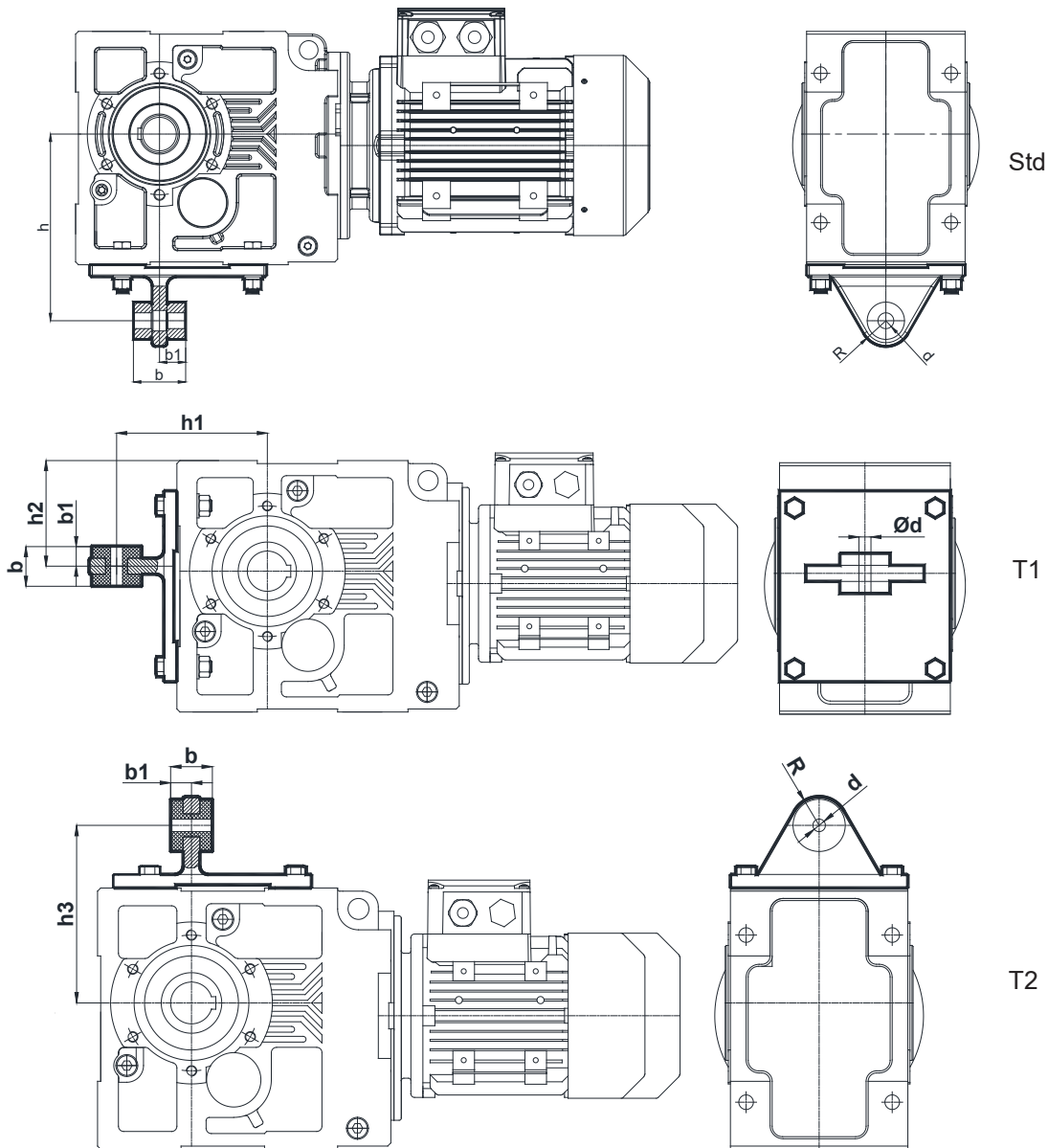
7.10.2- Assemble the parts as shown below



1- Gear Unit	4- Spacer Ring	7- Torque Arm	10- Rubber Buffer
2- Assembled Shaft	5- Machine Extension	8- Spacer Ring	11- Bolt
3- Bolt	6- Nut	9- Nut	



7.11- Fixing bolt position

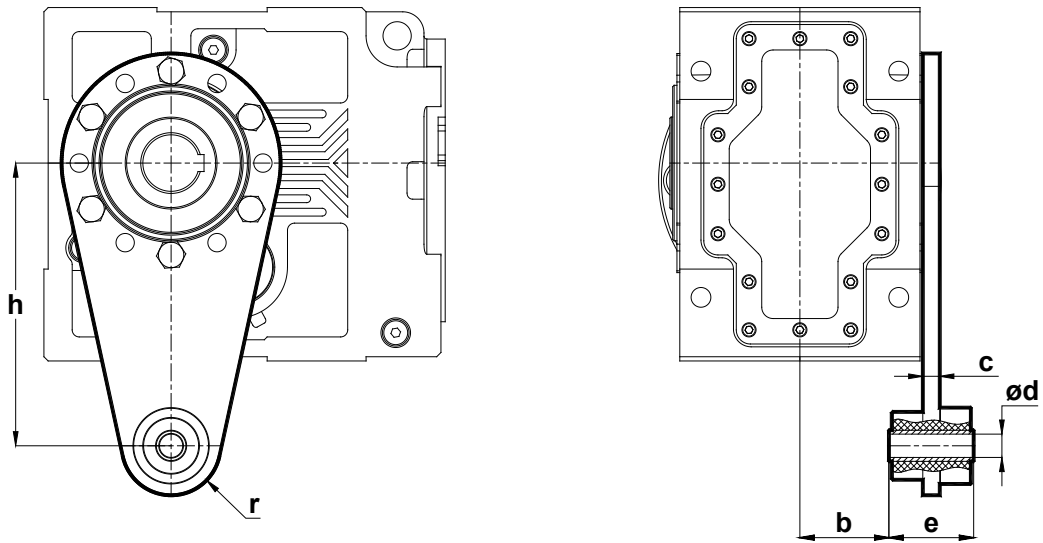


Type	b	b1	d	R	Std	T1		T2
					h	h1	h2	h3
KR273.10	56	28	Ø17	22,5	160	119	73	141
KR283.10	76	38	Ø22	27,5	192	140	77	150
KR373.10	76	38	Ø22	27,5	200	150	105	170
KR473.10	80	40	Ø22	27,5	250	182	155	210
KR573.10	105	52,5	Ø26	42,5	300	220	180	251
KR673.10	110	55	Ø26	42,5	350	245	200	260
KR773.10	155	77,5	Ø32	50	450	335	260	360
KR873.10	160	80	Ø32	55	550	400	263	410
KR973.10	190	95	Ø38	70	700	530	380	550

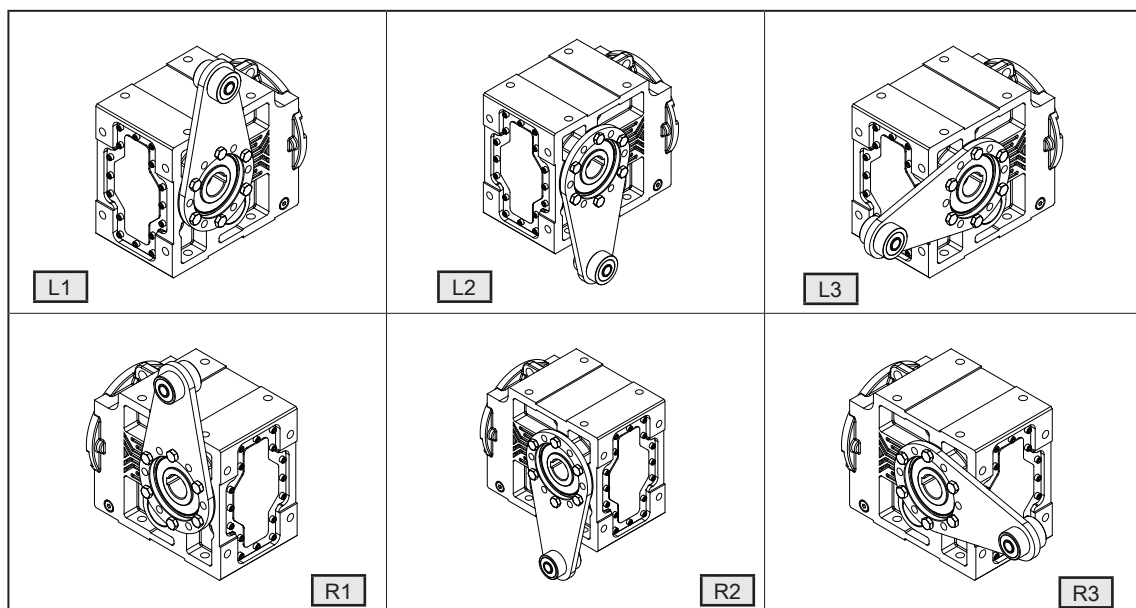
Operating Instructions

K Series

Mounting

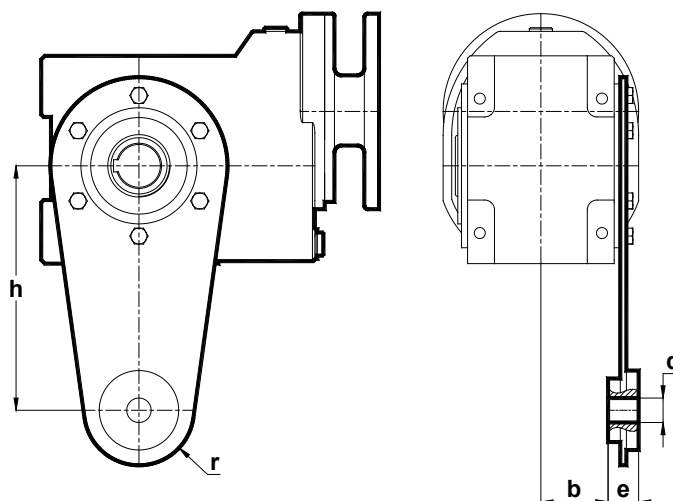


Type	b	e	ød	r	h	c
K.273	62	36	ø11	25	160	12
K.283	63	60	ø16,5	35	200	12
K.373	63	60	ø16,5	35	200	12
K.473	78	60	ø16,5	35	250	12
K.573	73,5	100	ø25	48	300	12
K.673	105,5	100	ø25	54	380	15
K.773	131,5	100	ø25	58	450	15
K.873	155	120	ø32	70	550	20
K.973	195	120	ø38	75	700	20

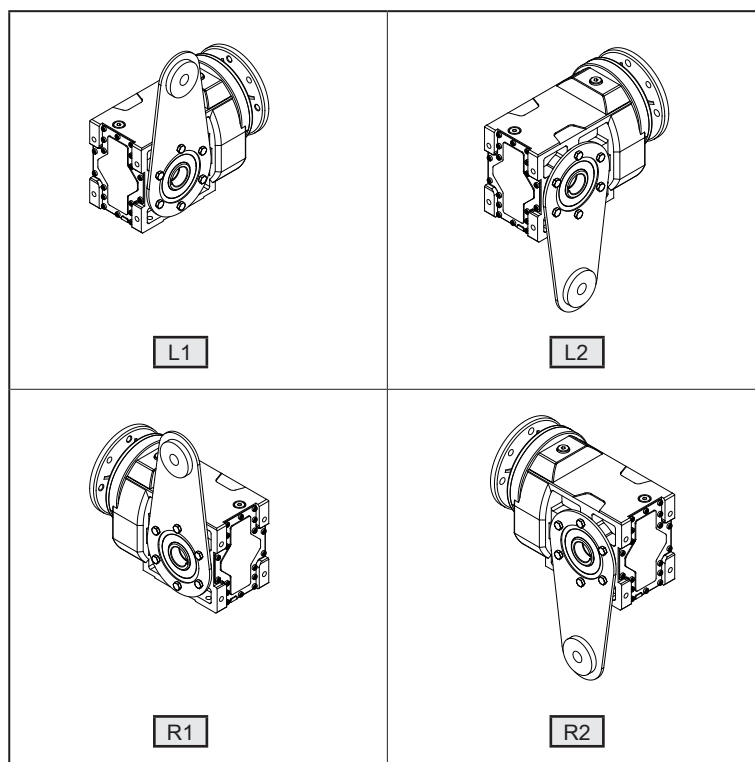




7.12 K.00.. - K.20.. TORQUE ARM ASSEMBLY DETAILS



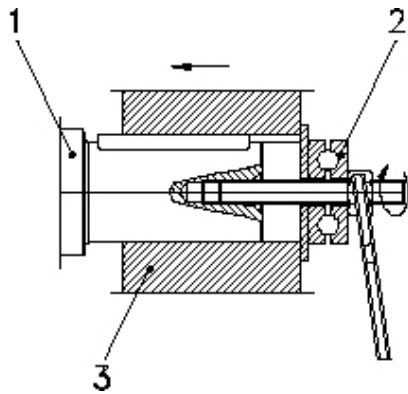
Type	b	e	d	r	h
K.00..	47	16	10	32	100
K.10..	49.5	16	10	36	150
K.20..	54.5	25	20	45	200





7.13- Fitting output shaft elements

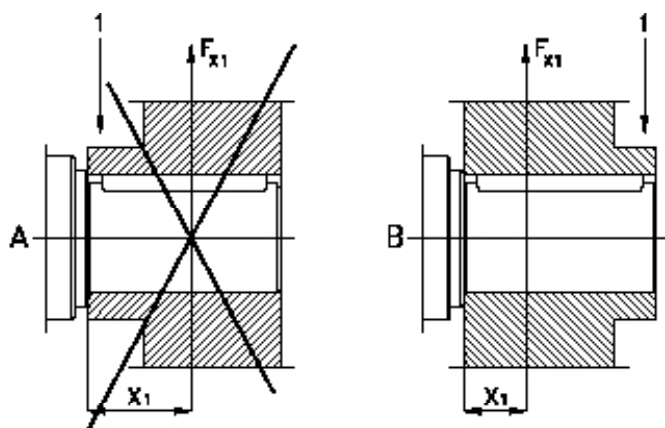
Use the following illustration to assemble output shaft units



- 1) Gear shaft end
- 2) Thrust bearing
- 3) Coupling hub

7.14- Correct position of output shaft elements

The output shaft unit (transmission elements) must be placed closely to the gear unit so that the radial load is as close as possible to the gear unit.

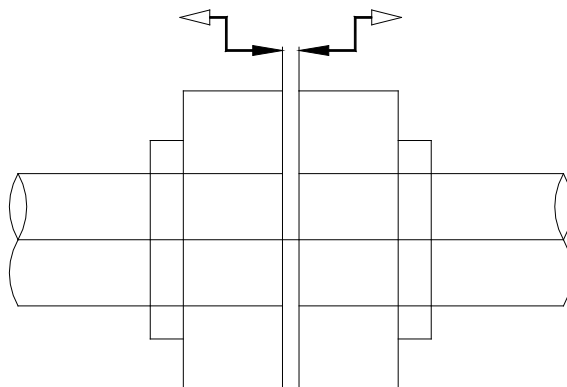


- 1) Hub

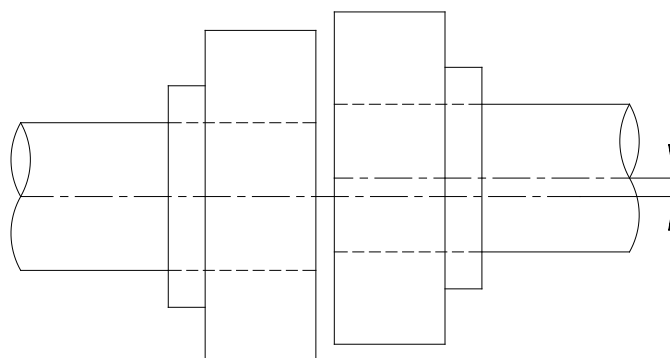


7.15- Fitting Couplings

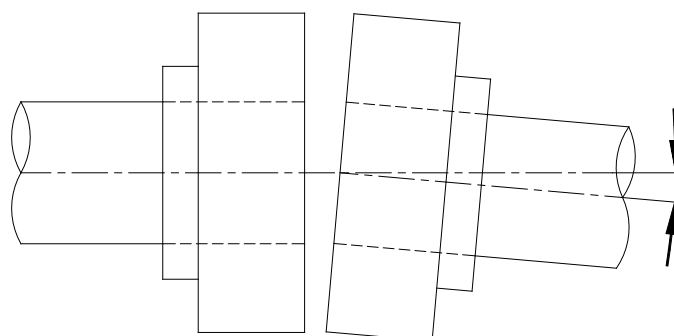
7.15.1- When installing the coupling, please ensure that there is an air gap between the two elements.

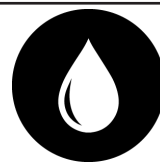


7.15.2- When installing the coupling, please observe the maximum permissible axial misalignment.



7.15.3- When installing the coupling, please observe the maximum permissible angular displacement.

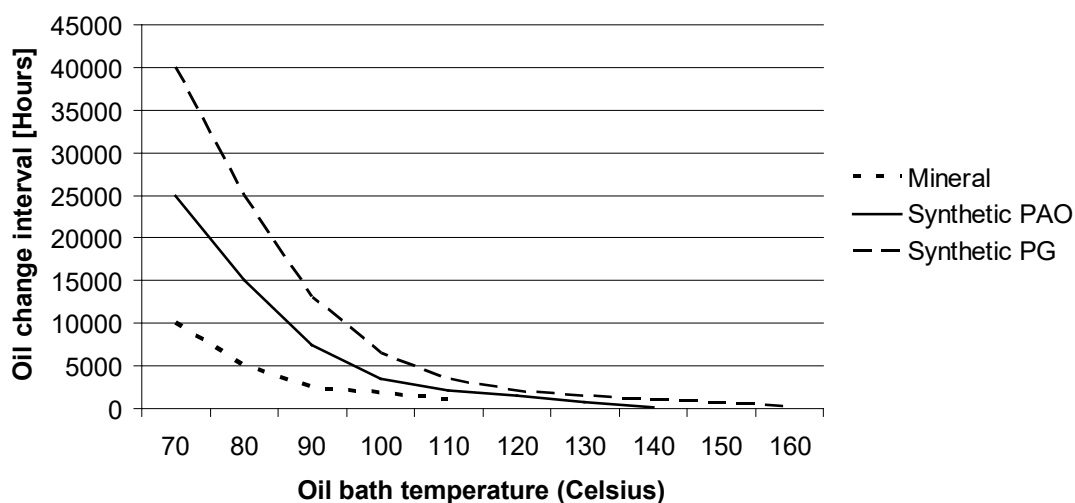




8- Maintenance and Inspections

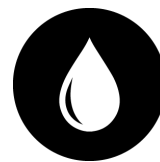
Under normal ambient and working conditions, the gear unit should be checked according to the following intervals.

Item to check / replace	Every 3.000 work - ing hours or every 6 months	Every 4.000 work - ing hours	Every 10.000 working hours or every 3 years	Every 25.000 working hours
Check for oil leakage	x			
Check for oil level	x			
Check oil leakage from seal	x			
Check Rubber buffer	x (Change if neces- sary)			
Check Bearings Noise		x (Change if neces- sary)		
Change Mineral Oil			x (See Below for details)	
Change Synthetic-PAO Oil				x (See Below for details)
Change Sealing				x
Change Bearing Grease				x
Change Bearings				x
Check for noise Changes				x










For normal ambient conditions 70 degrees Celsius oil bath temp. should be taken as reference

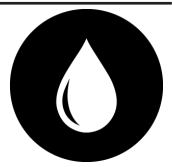
* For K series Mineral oil is used unless it is differently ordered. For oil type and quantities refer to the following tables.



9- Lubrication

9-1 Oil Types

Yağ Cinsi Lubricant Art des Schmier	DIN 51517-3	Çevre Sıcaklığı (C) Ambient Temperature (C) Umgebungstemperatur (C)		ISO VG	Aral	Beyond Petroleum	Castrol	Klüber Lubrication	Mobil	Shell	Total
		Daldırma Yağlama Dip Lubrication Tauchschnier.	Basınçlı Yağlama Forced Lubrication Druckschnier.								
Mineral Yağlar Mineral Oil Mineralöl	CLP	0 ... +50	-	680	Degol BG 680	Energol GR-XP 680	Alpha SP 680	Klüberoil GEM 1-680 N	Mobilgear 600 XP 680	Omala S2 GX 680	Carter EP 680
		-5 ... +45	-	460	Degol BG 460	Energol GR-XP 460	Alpha SP 460	Klüberoil GEM 1-460 N	Mobilgear 600 XP 460	Omala S2 GX 460	Carter EP 460
		-10 ... +40	+15 ... +40	320	Degol BG 320	Energol GR-XP 320	Alpha SP 320	Klüberoil GEM 1-320 N	Mobilgear 600 XP 320	Omala S2 GX 320	Carter EP 320
		-15 ... +30	+10 ... +30	220	Degol BG 220	Energol GR-XP 220	Alpha SP 220	Klüberoil GEM 1-220 N	Mobilgear 600 XP 220	Omala S2 GX 220	Carter EP 220
		-20 ... +20	+5 ... +20	150	Degol BG 150	Energol GR-XP 150	Alpha SP 150	Klüberoil GEM 1-150 N	Mobilgear 600 XP 150	Omala S2 GX 150	Carter EP 150
		-25... +10	+3 ... +10	100	Degol BG 100	Energol GR-XP 100	Alpha SP 100	Klüberoil GEM 1-100 N	Mobilgear 600 XP 100	Omala S2 GX 100	Carter EP 100
Sentetik Yağlar Synthetic Oil Synthetisches Öl	CLP PG	-10 ... +60	-	680	Degol GS 680	Energyn SG-XP 680	-	Klübersynth GH 6 -680	Mobil Glygoyle 680	Omala S4 WE 680	Carter SY 680
		-20 ... +50	-	460	Degol GS 460	Energyn SG-XP 460	Aphasyn PG 460	Klübersynth GH 6 -460	Mobil Glygoyle 460	Omala S4 WE 460	Carter SY 460
		-25 ... +40	+5 ... +40	320	Degol GS 320	Energyn SG-XP 320	Aphasyn PG 320	Klübersynth GH 6 -320	Mobil Glygoyle 320	Omala S4 WE 320	Carter SY 320
		-30 ... +30	0 ... +30	220	Degol GS 220	Energyn SG-XP 220	Aphasyn PG 220	Klübersynth GH 6 -220	Mobil Glygoyle 30	Omala S4 WE 220	Carter SY 220
		-35 ... +20	-5 ... +20	150	Degol GS 150	Energyn SG-XP 150	Aphasyn PG 150	Klübersynth GH 6 -150	Mobil Glygoyle 22	Omala S4 WE 150	Carter SY 150
		-40 ... +10	-8 ... +10	100	-	-	-	Klübersynth GH 6 -100	Mobil Glygoyle 100	-	-
	CLP HC	-10 ... +60	-	680	-	-	-	Klübersynth GEM 4-680 N	Mobil SHC Gear 680	Omala S4 GXV 680	Carter SH 680
		-20 ... +50	-	460	Degol PAS 460	Energyn EP-XF 460	Alphasyn T 460	Klübersynth GEM 4-460 N	Mobil SHC Gear 460	Omala S4 GXV 460	Carter SH 460
		-30 ... +40	+5 ... +40	320	Degol PAS 320	Energyn EP-XF 320	Alphasyn T 320	Klübersynth GEM 4-320 N	Mobil SHC Gear 320	Omala S4 GXV 320	Carter SH 320
		-40 ... +40	0 ... +30	220	Degol PAS 220	Energyn EP-XF 220	Alphasyn T 220	Klübersynth GEM 4-220 N	Mobil SHC Gear 220	Omala S4 GXV 220	Carter SH 220
		-40 ... +40	-5 ... +20	150	Degol PAS 150	Energyn EP-XF 150	Alphasyn T 150	Klübersynth GEM 4-150 N	Mobil SHC Gear 150	Omala S4 GXV 150	Carter SH 150
		-40 ... +40	-8 ... +10	100	-	-	-	Klübersynth GEM 4-100 N	Mobil SHC 627	Omala S4 GXV 100	-
Gıda Uyumlu Yağ Food Grade Oil Lebensmittelöl	CLP NSF H1	-30 ... +25	+5 ... +25	220	-	-	Optileb GT 220	Klüberoil 4 UH1-220 N	Mobil SHC Cibus 220	Cassida Fluid GL-220	Nevastane SL 220
Çevre Dostu Yağ Biodegradable Oil Biologisch abbaubares Öl	CLP E	-25 ... +40	+5 ... +40	320	-	-	Tribol BioTop 1418-320	Klübersynth GEM 2-320	-	-	Carter Bio 320
Mineral Gresler [-20 +120 C Çalışma Sıcaklığı] Mineral Grease [-20 +120 C Working Temperature] Mineral-Fett [-20 +120 C Betriebstemperatur]					Aralub HL3	Energrease LS 3	Spheerol AP3	Centoplex 2 EP	Mobilux EP 3	Gadus S2 V100 3	Multis Complex EP 2
Sentetik Gresler [-30 +100 C Çalışma Sıcaklığı] Synthetic Grease [-30 +100 C Working Temperature] Synthetisches Fett [-30 +100 C Betriebstemperatur]					-	Energrease SY 2202	-	Petamo GHY 133 N	Mobiltemp SHC 100	Gadus S5 V100 2	Multis Complex SHD 220



9.2- Changing the oil



Refer to the nameplate to find out the correct oil filling level inside the gearbox.

-Do not mix synthetic oils with mineral oils as this will cause serious damage to the gear unit.

The oil change must be done by using the filling, draining and level plugs according to the mounting position illustrated in section 9.4.



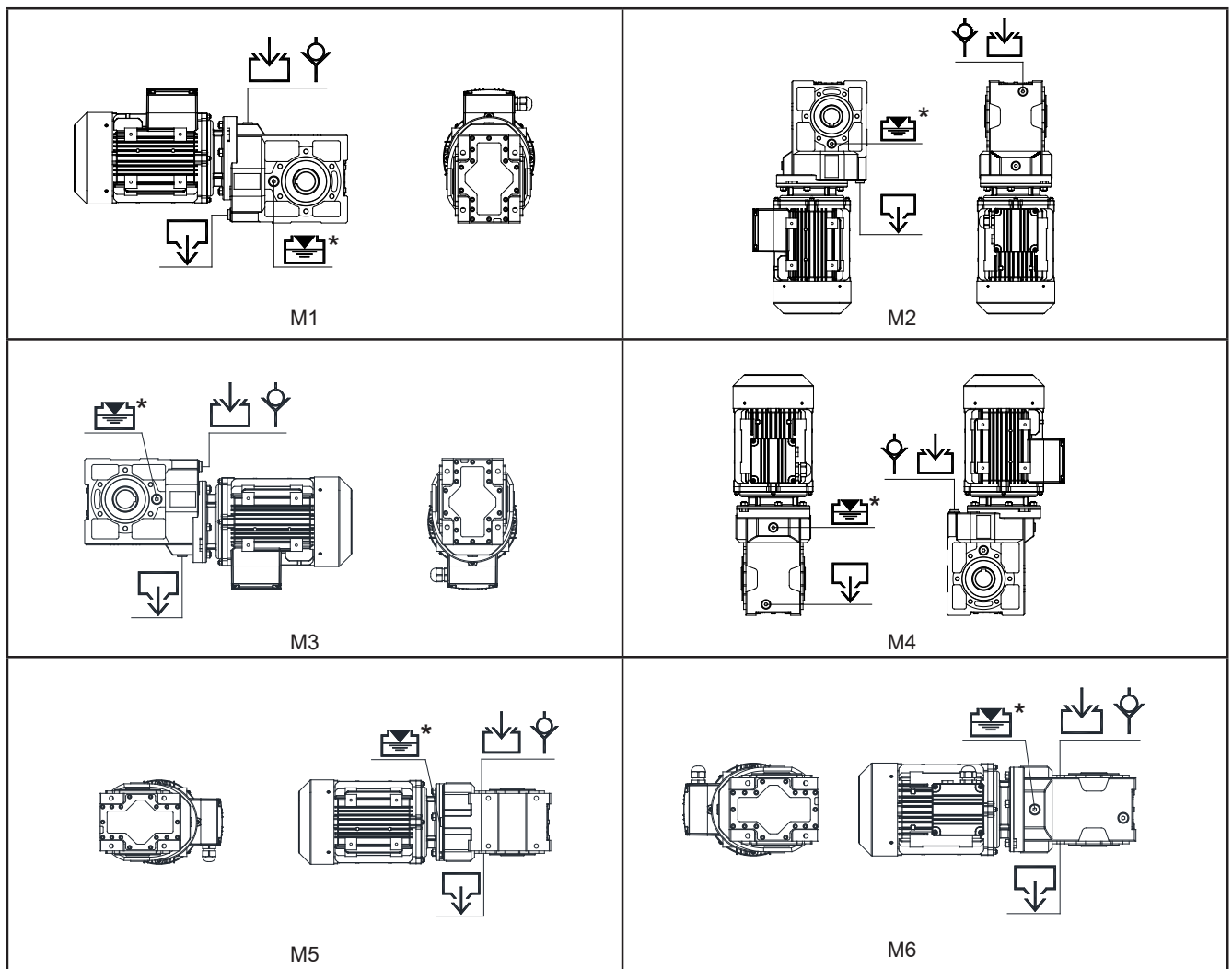
-Extended, intensive contact with oils can lead to skin irritations.

Avoid extended contact with oil, and clean oil off skin thoroughly.

-Hot oil can cause scalding. When changing oil, protect yourself against contacting hot oil.

9.3- Oil Quantities (l) and oil plugs

9.3.1-K.00. - K.20. Two-Three Stage Oil Quantities (l) and oil plugs



*: For K002 and K003 this plug doesn't exist. Please refer to oil quantities.

Oil Quantities (lt)

Type	M1	M2	M3	M4	M5	M6
K.002	0,3	0,6	0,5	0,8	0,65	0,65
K.003	0,3	0,6	0,5	0,8	0,65	0,65
K.102	0,55	0,8	0,85	1,1	0,8	0,8
K.103	0,5	0,7	0,8	1,0	0,8	0,8
K.202	1,0	1,35	1,5	1,7	1,4	1,4
K.203	0,9	1,25	1,4	1,4	1,6	1,3

Symbols :



: Drain plug



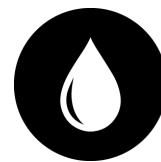
: Oil filling



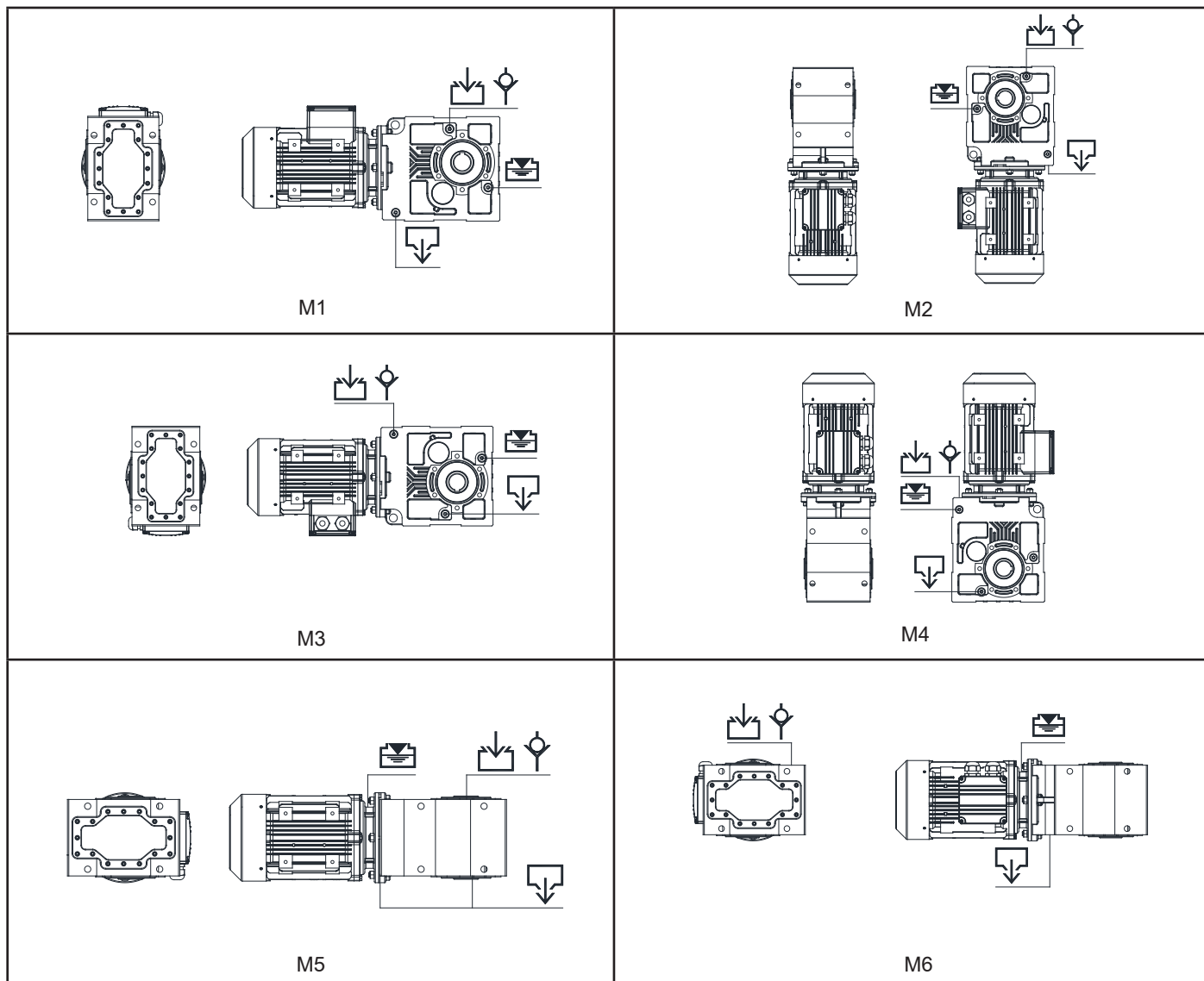
: Vent plug



: Oil level



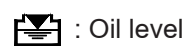
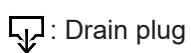
9.3.2- K.27.. - K.97.. Two-Three Stage Oil Quantities (l) and oil plugs



Oil Quantities (lt)

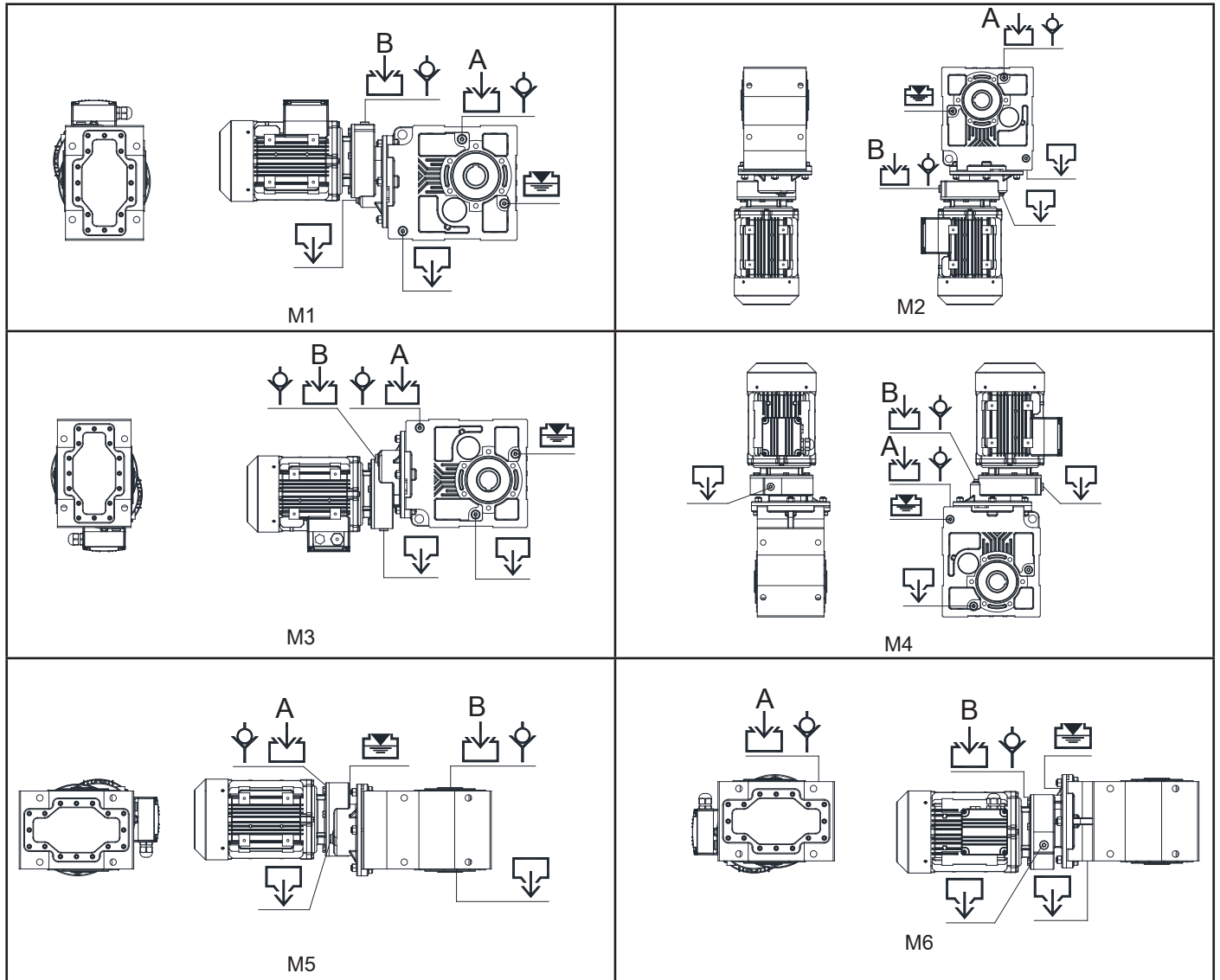
Type	M1	M2	M3	M4	M5	M6
K.273	0,8	1,8	2,2	2,3	1,4	1,5
K.283	1,2	2,4	2,5	2,9	1,9	1,7
K.373	1,4	3,3	3,4	4,0	1,9	2,2
K.473	2,7	5,9	6,5	7,8	4,0	4,5
K.573	4,1	9,0	9,7	11,5	5,5	6,6
K.673	8,7	16,3	18,0	22,5	11,7	13,2
K.773	13,0	28,0	30,0	35,0	18,0	20,0
K.873	28,0	49,0	46,0	63,0	30,0	36,0
K.973	47,0	85,0	84,0	117,0	77,0	64,0

Symbols :





9.3.3- K.28.. - K.97.. Four Stage Oil Quantities (I) and oil plugs



Oil Quantities (I)

Type	M1 A / B	M2 A / B	M3 A / B	M4 A / B	M5 A / B	M6 A / B
K.284	1,2 / 0,25	2,4 / 0,25	2,5 / 0,25	2,9 / 0,25	1,9 / 0,25	1,7 / 0,25
K.374	1,4 / 0,25	3,3 / 0,25	3,4 / 0,25	4,0 / 0,25	1,9 / 0,25	2,2 / 0,25
K.474	2,7 / 0,4	5,9 / 0,4	6,5 / 0,4	7,8 / 0,4	4,0 / 0,4	4,5 / 0,4
K.574	4,1 / 0,5	9,0 / 0,5	9,7 / 0,5	11,5 / 0,5	5,5 / 0,5	6,6 / 0,5
K.674	8,7 / 0,9	16,3 / 0,9	18,0 / 0,9	22,5 / 0,9	11,7 / 0,9	13,2 / 0,9
K.774	13,0 / 1,0	28,0 / 1,0	30,0 / 1,0	35,0 / 1,0	18,0 / 1,0	20,0 / 1,0
K.874	28,0 / 2,2	49,0 / 2,2	46,0 / 2,2	63,0 / 2,2	30,0 / 2,2	36,0 / 2,2
K.974	47,0 / 7,0	85,0 / 7,0	84,0 / 7,0	117,0 / 7,0	77,0 / 7,0	64,0 / 7,0

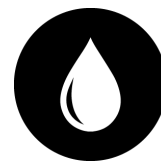
Symbols :

: Drain plug

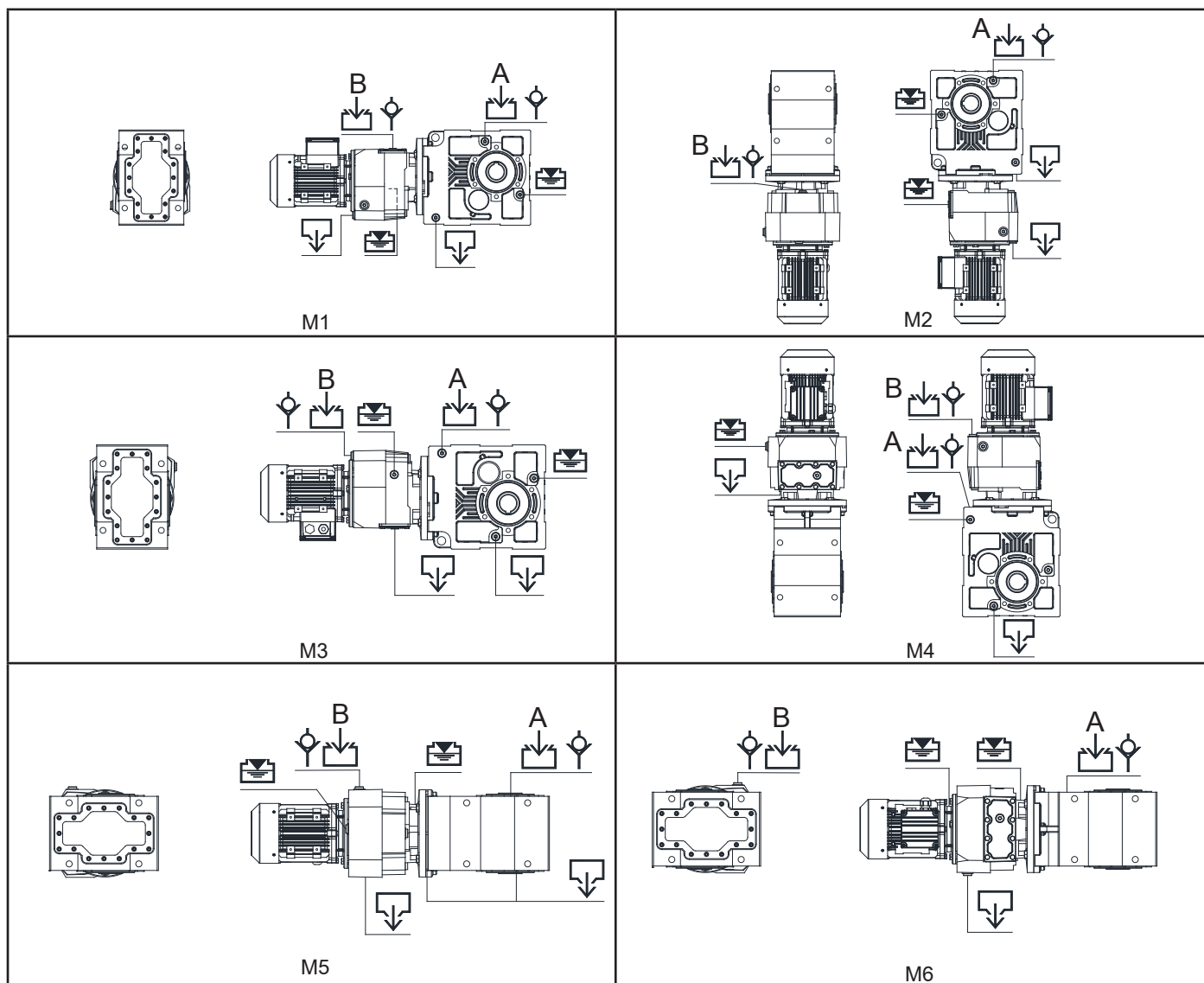
: Oil filling

: Vent plug

: Oil level



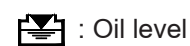
9.3.4- K.27.. - K.97.. Five-Six Stage Oil Quantities (l) and oil plugs



Oil Quantities (l)

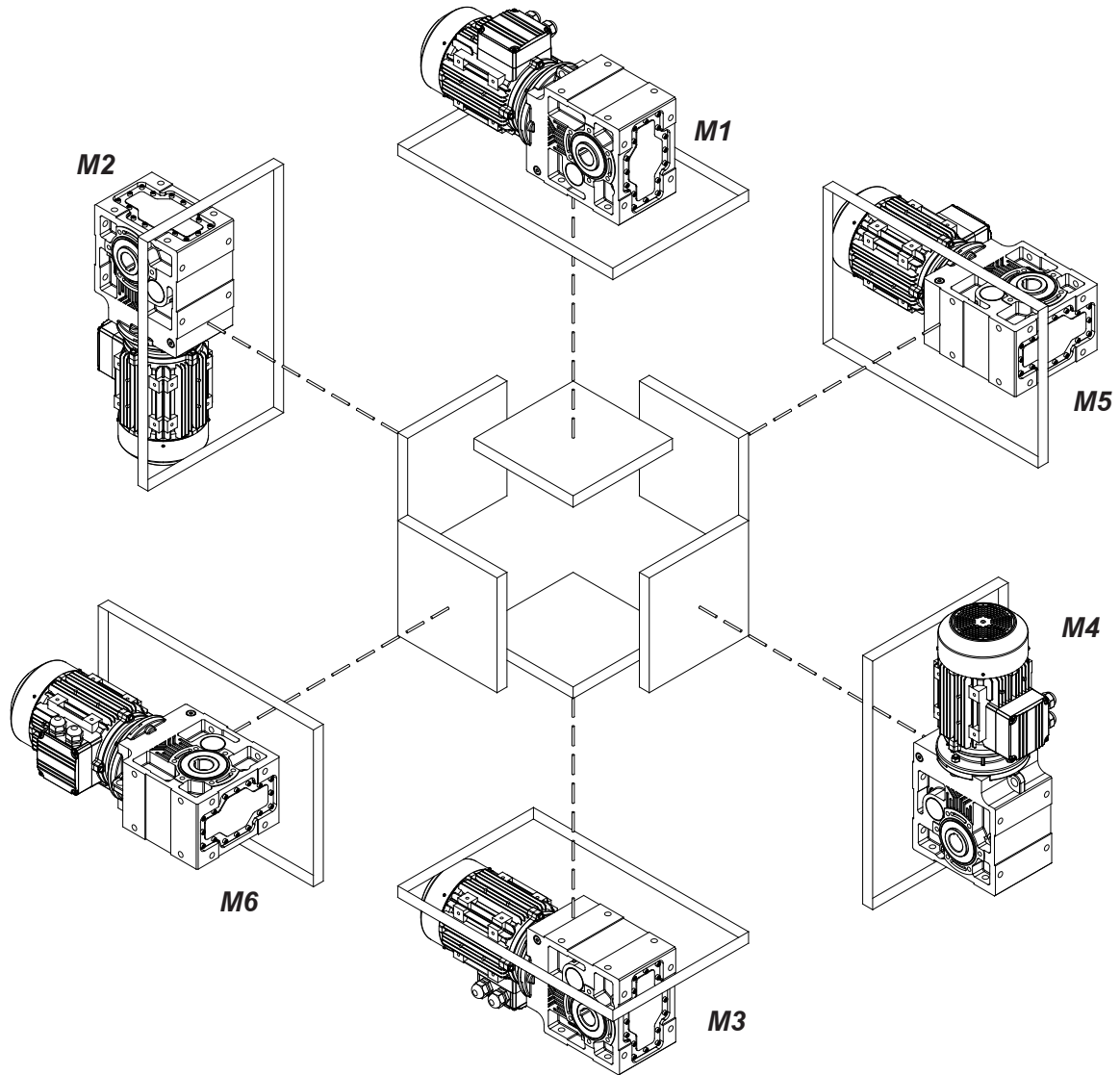
Tip / Type / Typ	M1 A / B	M2 A / B	M3 A / B	M4 A / B	M5 A / B	M6 A / B
K.275-276	0,8 / 0,4	1,8 / 0,6	2,2 / 0,5	2,3 / 0,6	1,4 / 0,5	1,5 / 0,5
K.285-286	1,2 / 0,54	2,4 / 0,8	2,5 / 0,6	2,9 / 0,8	1,9 / 0,6	1,7 / 0,6
K.375-376	1,4 / 0,65	3,3 / 0,95	3,4 / 0,7	4,0 / 0,95	1,9 / 0,7	2,2 / 0,7
K.475-476	2,7 / 1,2	5,9 / 2,1	6,5 / 2,0	7,8 / 2,1	4,0 / 1,4	4,5 / 1,4
K.575-576	4,1 / 1,2	9,0 / 2,1	9,7 / 2,0	11,5 / 2,1	5,5 / 1,4	6,6 / 1,4
K.675-676	8,7 / 2,0	16,3 / 3,4	18,0 / 3,1	22,5 / 3,4	11,7 / 2,8	13,2 / 2,8
K.775-776	13,0 / 2,0	28,0 / 3,4	30,0 / 3,1	35,0 / 3,4	18,0 / 2,8	20,0 / 2,8
K.875-876	28,0 / 2,0	49,0 / 3,4	46,0 / 3,1	63,0 / 3,4	30,0 / 2,8	36,0 / 2,8
K.975-976	47,0 / 4,0	85,0 / 7,6	84,0 / 7,0	117,0 / 7,6	77,0 / 5,0	64,0 / 5,0

Symbols :





9.4- Mounting Positions



The mounting positions M1 to M6 (shown above) act as reference for the directional position of the gearbox.



10- Troubleshooting Guide



All instructions recommended below must be carried out by professionally trained mechanics or electricians. JS-Technik must be informed before any modification is made to the gear unit. An oil change can be carried out without consultation. All modifications or executions without the knowledge of JS-Technik are at the user's own risk.

ID	Problem	Observation	Remedy
001	Gearbox Does Not Start Up	You hear no noise and shaft is not turning. You are not using any driver or frequency inverter.	Please Check the voltage supply and frequency of your electric connection. They must be in accordance with the nameplate of the motor. Observe motor manufacturers start up manual. If you are still having issues, go to ID001.
002	Gearbox Does Not Start Up	You hear no noise and shaft is not turning. You are using frequency inverter or driver.	Please observe the frequency inverter/driver manual. Check the motor by connecting the motor directly to the supply voltage to determine if the problem is with the inverter. If you are still having issues, go to ID001.
003	Gearbox Does Not Start Up	You hear some noise, but the motor and the gear shaft are not rotating. You are not using any driver/frequency inverter or brake motor.	Please Check the voltage supply and frequency of your electric connection. They must be in accordance with the nameplate of the motor. Observe motor manufacturers start up manual. If the same problem persists, the load may be too great for the chosen motor. Loosen the gearbox from the load/torque. If this works, the starting torque is insufficient and higher motor power is needed. For monophase motors, check the starting up condensator and running condensator as well. If you are still having issues, refer to ID100.
004	Gearbox Does Not Start Up	You hear some noise, but the motor and the gear shaft are not rotating. You are using a driver or frequency inverter.	Please observe the frequency inverters or drivers manual. To determine the source of the fault, disconnect the motor from the converter. Connect the motor directly to the mains including safety devices. If you are still having issues, go to ID 100.
005	Gearbox Does Not Start Up	You hear some noise, but the motor and the gear shaft are not rotating. You are using a brake motor.	Please check the supply voltage and frequency of the mains connection. These values should be according to the nameplate of the gear motor. Check the operating instructions of the motor manufacturer. Make sure that the brake is in order. Examine the operating instructions of the motor brake. If no solution is found, supply power to the brake individually, for example 198V DC. If a clicking sound is heard, the brake will open. If you do not hear this sound, the brake or the rectifier is damaged. When the brake is active, the motor is supplied with voltage. If the problem persists, the motor may be oversized for the load. Go to ID 003.

Operating Instructions

K Series

Troubleshooting Guide

ID	Problem	Observation	Remedy
006	Gearbox Does Not Work in Low Speeds/ frequencies.	You are using a frequency inverter.	At low speeds, the motors frequency is too low. The parameters of the motor and the inverter must be optimised. The efficiency of the gearbox may be too low at low speed, especially for helical worm gear units. The recommended frequency range is 20-70Hz for helical worm gear units, 10-70 Hz for helical gear units. Use a stronger motor power or change the gear ratio of the gearbox to operate in the recommended frequency range.
007	Transmission does not start in the morning or after a long break	Ambient temperature is below +5° Celsius.	The oil is not in accordance with your working conditions. Change to lower viscosity oils. Refer to the owner's manual for the correct oil selection. Control the engine ambient temperature with a heater. If the problem persists, select an engine with higher power.
008	Gearbox is Heating Up too Much	The gearbox is used below 40 °C ambient temperature.	Measure the surface temperature of the gearbox under full load. If the temperature is below 80°C, it is OK. All ATEX certified gearboxes are designed to operate below 120°C. If the ambient temperature of ATEX gearboxes is above 120°C, be sure to shut down the operation and contact JS-Technik. If a gearbox without ATEX certification is operated above 80°C ambient temperature, check the lubrication type and oil quantity according to the mounting position. Check the mounting position on the gearbox nameplate. If it does not match the current mounting position, go to ID 100.
009	Gearbox is Heating Up too Much	You are using a helical gear unit. Ambient temp is lower than +40 Celsius	Measure the surface temperature of the gearbox under full load. If the temperature is below 80°C, it is OK. All ATEX certified gearboxes are designed to operate below 120°C. If the ambient temperature of ATEX gearboxes is above 120°C, be sure to shut down the operation and contact JS-Technik. If a gearbox without ATEX certification is operated above 80°C ambient temperature, check the lubrication type and oil quantity according to the mounting position. Check the mounting position on the gearbox nameplate. If it does not match the current mounting position, go to ID 100.
010	Gearbox is Heating Up too Much	Ambient temperature is over +40° Celsius	Standard gearboxes are designed for ambient temperatures below 40°C. If the ambient temperature is above 40°C, a special solution must be used. Please contact JS-Technik GmbH.
011	Gearbox is noisy	Noise is regular and continuous	Check Your moving parts for noise. Disassemble the gearbox and run without load. If you still hear the noise motor bearings or gearbox bearings are defect. Change bearings. Go to ID 100
012	Gearbox is noisy	Noise is random	Check Your moving parts for noise. Disassemble the gearbox and run without load. If the noise is still audible in this case, there may be particles in the oil of the gearbox. Change the oil and check it. If there are metal particles in the oil, the gearbox is damaged. Go to ID100.

Operating Instructions

K Series

Troubleshooting Guide



ID	Problem	Observation	Remedy
013	Gearbox is noisy	Regular knocking noise	Check Your moving parts for noise. Disassemble the gearbox and run without load. If you still hear the noise one of the gears inside is defect. Go to ID 100
014	Gearbox is noisy	Regular noise increase and decrease	Check the output shaft for concentricity. Disconnect the gearbox from the machine. If you continue to hear the noise, one of the gears probably has a runout. Follow ID 100.
015	Gearbox is noisy	Gear motor with brake makes irregular noises.	Low random clicking noise may come from the brake disk, which is fine. If the noise level is too high, the brake may be defective or the air gap of the brake disk needs adjustment.
016	Gearbox is noisy	An inverter is used and the volume changes according to the speed.	The parameters of the frequency inverter are not optimised for the frequency range of the motor used. Read the operating instructions of the converter. If the problem persists, possibly change the transmission ratio of the gearbox. Follow ID 100.
017	Oil is Leaking	Oil Leakage from Seal	If the ambient temperature is over 40°C or the operating time without a break is over 16 hours, please fit a breather screw. To do this, read the gearbox bleeding instructions. If it does not help either, a seal may be damaged. Follow ID 100.
018	Oil is Leaking	Oil Leakage from Plug	Check the position of the vent screw. In every assembly position, the vent screw should be in the uppermost position. The screw is sometimes not tight enough. There are some particles sitting under the rubber surface of the screw. Clean and reassemble the screw. If the problem continues, go to ID 100.
019	Oil is Leaking	Oil Leakage from Housing	Find the place where the oil is leaking. It may be that the oil is coming out of the seal or the vent but is flowing over the housing. If this is the case, go to ID018/019. If you are sure that the oil is coming out of the housing, the housing may have a micro-crack. Go to ID 100.
020	Oil is Leaking	Oil Leakage from Cover	The seal under the lid is damaged. Remove the lid and replace the seal. Fit the cover and tighten the cover screws. If the problem is not solved, go to ID 100.
021	Gearbox has regular runout	A torque arm is used	The concentricity error of the gearbox is caused by the connection point. The air gap between the shaft and the hub does not have a proper fit. It has negative influences on the gearbox, especially when using a torque arm.
022	Gearbox has random runout	A torque arm is used.	The concentricity error of the gearbox is caused by the connection point. The air gap between the shaft and the hub does not have a proper fit. It has negative influences on the gearbox, especially when using a torque arm.
023	Motor is heating up	Motor is running over its nominal current	The motor power is not enough or some overload to the motor is possible. The motor may be defect. Go to ID 100
024	Motor is heating up	Ambient is dusty	Check the self-cooling via the motor ribs. If a frequency inverter is used, a forced cooling fan may be necessary at low speed. Go to ID 100.

Operating Instructions

K Series

Troubleshooting Guide

ID	Problem	Observation	Remedy
025	Motor is running but gearbox shaft is not rotating	Friction noise occurs	Some elements (gears, shafts) may be defective. Go to ID 10.
026	Gearbox Housing is Defect	You are using chain drive or pinion gear	The radial load or polygon effect of the chain may have caused the damage. Check if mounting screws are loose or if the mounting base is loose. Check if you are using the correct diameter of chain drive and you are not exceeding max. allowed radial load. Check the position of your output element, re-calculate your radial load and check if this suits the maximum allowed radial load. Go to ID 100
027	Output Shaft is Defect	You are using chain drive or pinion gear	The radial load or polygon effect of the chain may have caused the damage. Check the position of your output element, re-calculate your radial load and check if this suits the maximum allowed radial load. Go to ID 100.
028	Gearbox is stopping too late	A brake motor is used	Check the brake rectifier, the brake disk, and the wiring of the motor brake.
029	Gearbox is starting too late	A brake motor is used	Check the brake rectifier, the brake disk, and the wiring of the motor brake.
100	Service Required	No self solution found	Please contact JS-Technik. The contact details can be found on each page of these operating instructions. Changes to mechanical parts can only be carried out by JS-Technik or with its consent. The warranty will be invalidated if changes are made without consent.

11- Disposal

If your product is no longer of use and you wish to dispose of it, refer to the instructions here. If you have any questions regarding ecological disposal methods, please consult our service points given on the backside of this manual.

11.1- Disposal of Oil

-Lubricants (oil and greases) are hazardous substances, which can contaminate soil and water. Collect drained lubricant into suitable receptacles and dispose of it according to the valid national guidelines.

11.2-Disposal of Seals

Remove the seal rings from the gear unit and remove oil and grease residues. Dispose the seals as composite material (metal/plastic).

11.3-Disposal of Metal

If possible, separate the gear material into iron, aluminium and other materials. Dispose of it according to the valid national guidelines.