

# bj·gear



## Worm gear screw jacks

Manual

Customisation is our standard

# Worm gear screw jacks

## with trapezoidal spindle

BJ-Gear A/S offers four types of worm gear screw jacks. We have two types with trapezoidal spindle and two types with ball screw spindle.

### Through-going spindle

The spindle moves axially through the gearbox without rotation\*.

The nut is integrated into the gearbox.

Oil seal ring with dust lip

Integrated bronze nut

End cover ND-side

Tapered roller bearings

Worm wheel

Oil seal ring

Worm

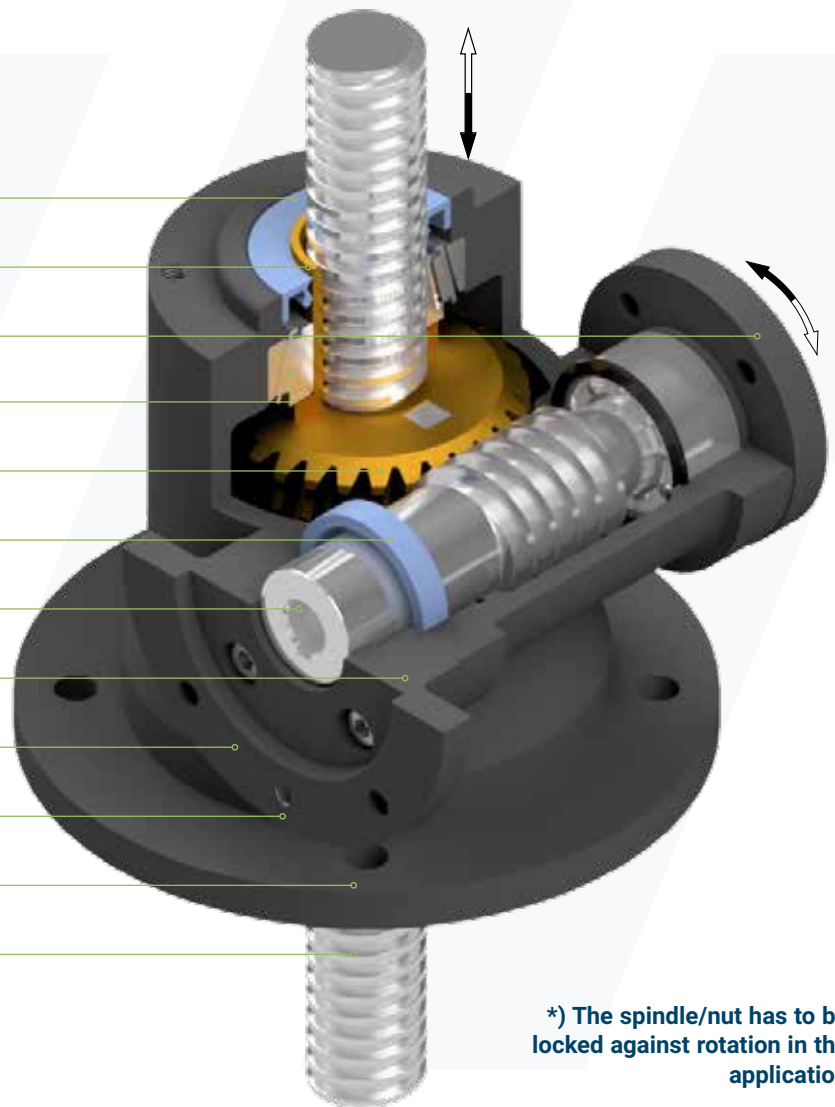
Cast iron housing

Motor flange

Thread

Side flange / bearing cover

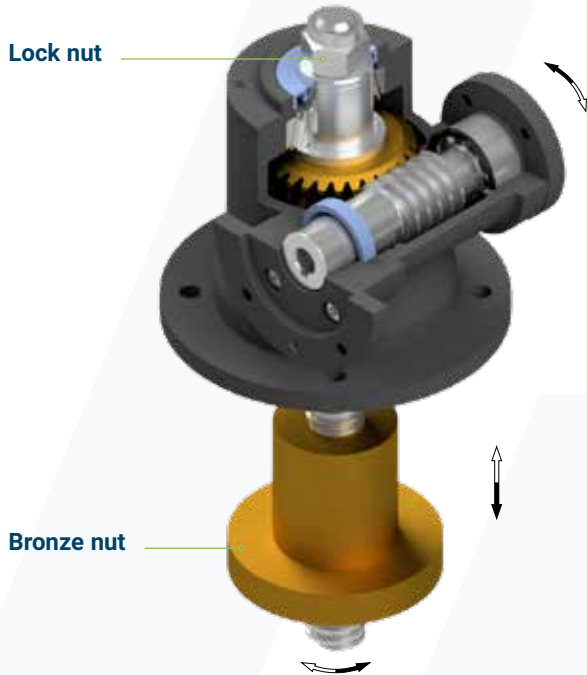
Trapezoidal spindle



**\*) The spindle/nut has to be locked against rotation in the application**

### Trapezoidal, rotating spindle

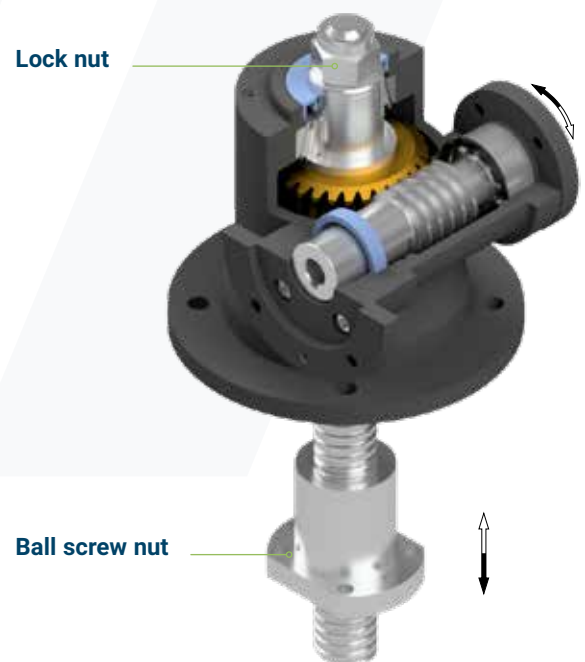
The spindle is fastened to the hollow shaft of the gearbox and rotates. The nut moves axially to the spindle\*.



Configuring BJ-Gear's worm gear screw jacks with rotating trapezoidal spindle and with ball screw spindle requires contact to the BJ-Gear Sales Department.

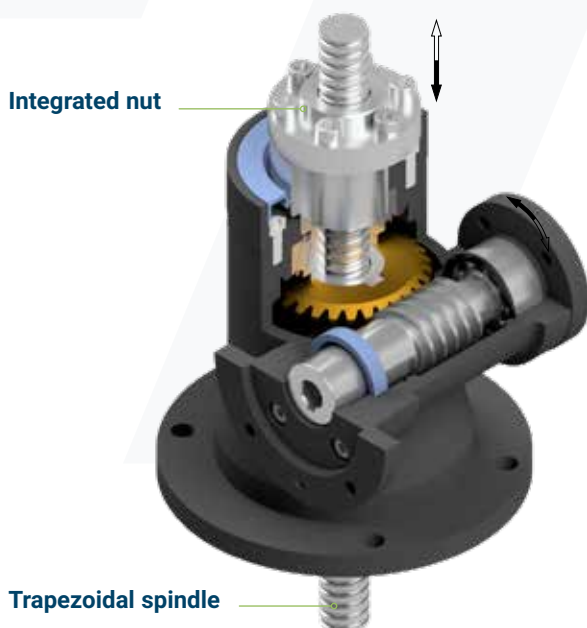
### Rotating ball screw spindle

The spindle is fastened to the hollow shaft of the gearbox and rotates. The nut moves axially to the spindle\*.



### Through-going ball screw spindle

The spindle moves axially through the gearbox without rotation\*. The nut is integrated into the gearbox.



## Mounting instructions

This instruction applies for BJ worm gear screw jacks size 42, 52, 61, 79 and 99. All according to our catalogues.

Mounting and taking into service shall be done by trained and/or skilled personnel.

### Field of application

- Unless otherwise agreed, the gearboxes may be used in ambient temperatures between 0 and +40°C, in normal atmosphere and normal atmospheric pressure.
- If the gearbox is used in a dusty or dirty environment be sure that ingress in glands is avoided. The same goes for outdoor use or wet environments.

### Before mounting

- Examine the gearbox for damages and leakages.
- Make sure that the unit corresponds to the unit ordered.
- Some units are deliberately delivered without oil. If so, it is clearly marked. If the unit is delivered without oil, be sure to fill it with the correct type and amount according to this catalogue.
- If possible, make a test run of the unit before mounting
- Be sure that unintentionally starts it are not possible.
- If the unit is delivered with motor, electromagnetic brake or coupling, encoder etc., be sure to follow the operating instructions for these.
- Be sure to secure parts that may move inadvertently, thus causing damage or harm. Be aware that not all devices are self-locking.
- Be sure that the mounting planes are stable, clean and plane.

### Mounting:

- Use only the holes or threads of the unit that is intended for mounting.
- Do not make changes to the units unless approved by BJ-Gear.
- Do not over-constrain if torque arm is used.
- Be sure to mount it in such a way that sufficient cooling is provided. If the gearbox or motor is provided with cooling fan, be sure that sufficient air flow is accessible.
- Do not use hammering or excessive force during mounting.
- The drive shaft and the driven shaft are to be properly aligned.
- If the gearbox is supplied with air vent screw, the gearbox is to be positioned so it is placed above the oil level. If the gearbox is delivered with a transport screw, the transport screw is to be interchanged with the air vent screw. Do not use a motor with higher power than allowed according to catalogue or documentation.
- Do not load the gearbox with higher torque or forces than allowed according to catalogue or documentation.
- Mount the gearbox in such a way that vibrations are minimised or eliminated.
- Secure screws to they cannot loosen.
- Be sure to place feather keys where needed.

## Mounting of motor and other accessories (brake, encoder etc.)

### Mounting of motor:

- Lubricate using mounting grease between the motor shaft and the hollow input shaft of the gearbox.
- The input shaft should be pre-greased before mounting.
- Do not use hammering or excessive force during mounting of the motor. It can damage the bearings in the unit.
- If the motor and unit are connected by a coupling, the alignment has to be within the specifications of the coupling.

### Mounting of other accessories

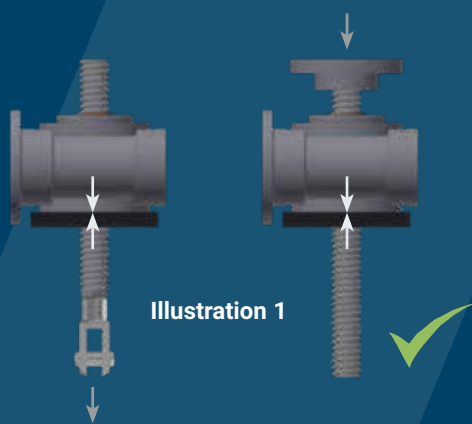
- The operating instructions is to be followed at all times.
- Especially with brakes and clutches it is important that there is no dirt, dust, oil or grease on or between friction elements.

# Mounting instructions

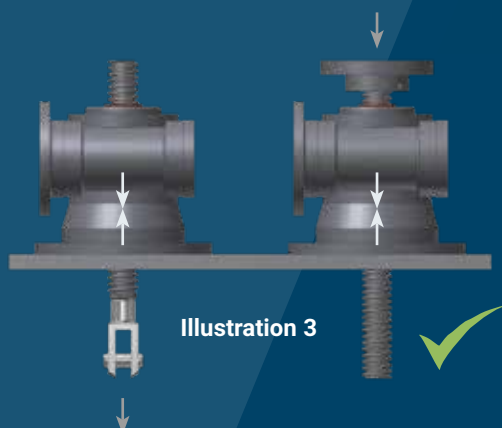
- There must only be a maximum load by compression of the gear to avoid that the side flange and the gear housing move apart from each other.
- On mounting, please make sure that the fixing on to the worm gear screw jack is perpendicular to the working direction of the spindle. Ensure a stable and even surface for the worm gear screw jack. See illustration 1 and 3 for an ideal way of mounting.
- All data are based on axial forces seeing that the worm gear screw jack must not be affected by radial forces (bending strain).
- There is no build in mechanical end stops in the worm gear screw jacks. Take the proper means to ensure that it stops correctly. Uncontrolled stops must be avoided, i.e. running against mechanical stop or gear housing must not occur.
- The spindle must always be 100% in mesh with nut.
- Before mounting be sure to secure the load it is meant to drive.
- Please notice that spindles are not always self- locking.
- Ensure that the spindle and spindle nut is always greased properly.
- Be sure not to over-constrain the worm gear screw jack.
- Be sure not to over-load spindle and nut.
- Do not load the gear with higher torque or forces than allowed according to catalogue or documentation. (see worm gear screw jack catalogue)

During mounting, service and re-lubrication be sure to do it in a safe way and with the loads properly secured. For lubrication of trapezoidal spindle we recommend Mobil Mobiltemp SHC 460 Special, Castrol Longtime Greas. PD2 or similar. For lubrication of ball screw spindles use regular ball bearing grease.

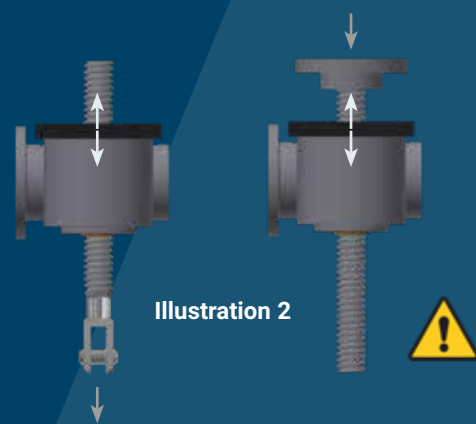
**Ideal way of mounting:**



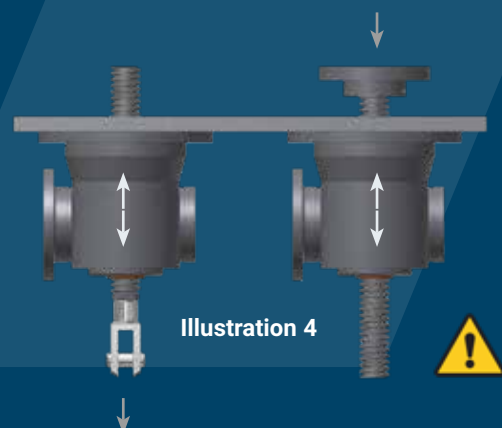
**Ideal way of mounting gearboxes with sideflanges:**



**Mounting is subject to reservations. Contact our specialists:**



**Mounting of gearboxes with sideflanges is subject to reservations. Contact our specialists:**



# Operation and maintenance instructions

## Starting up

### Before starting up the gearbox, be sure:

- That the motor is properly secured to the unit.
- That the gearbox is properly secured to the application.
- To test the functionality of electric brakes, clutches or safety devices, if installed.
- That brakes and couplings are released.
- That tools, wiring, clothes etc. are removed from moving parts.
- To make the starting as gentle as possible.
- To closely monitor that the intended function occurs and if it does not, shut down the system and search for errors in a safe way.
- To shut down the system and safely check for any unexpected noise or vibration.
- To examine for leakages when the gearbox has reached its operation temperature.

## Running-in:

### The lifetime of the gearbox will improve if a proper run in is made. A proper run in is as follows:

- The first running time should not exceed half an hour. Run the gearbox for about 15 minutes in each direction with no load.
- Let the gearbox cool down.
- Start it up and load it with an application half the torque. Gradually increase the load to full torque. Do this in both directions.
- It might not always be possible to do as described above, but some running in is better than none.

## Oil change

The gearboxes are lifetime lubricated. However, gearboxes subjected to extremely heavy loads must have changed oil approx. every 5 years. Gearboxes operating in very warm environments may require oil changes every year. See page 14 for lubricants and quantities.

# Oil and lubricants

The gearboxes are lubricated for life. However, gears being exposed to heavy load should be subjected to oil change approx. every 5 years. Gearboxes running in very hot environments may require oil change every year.

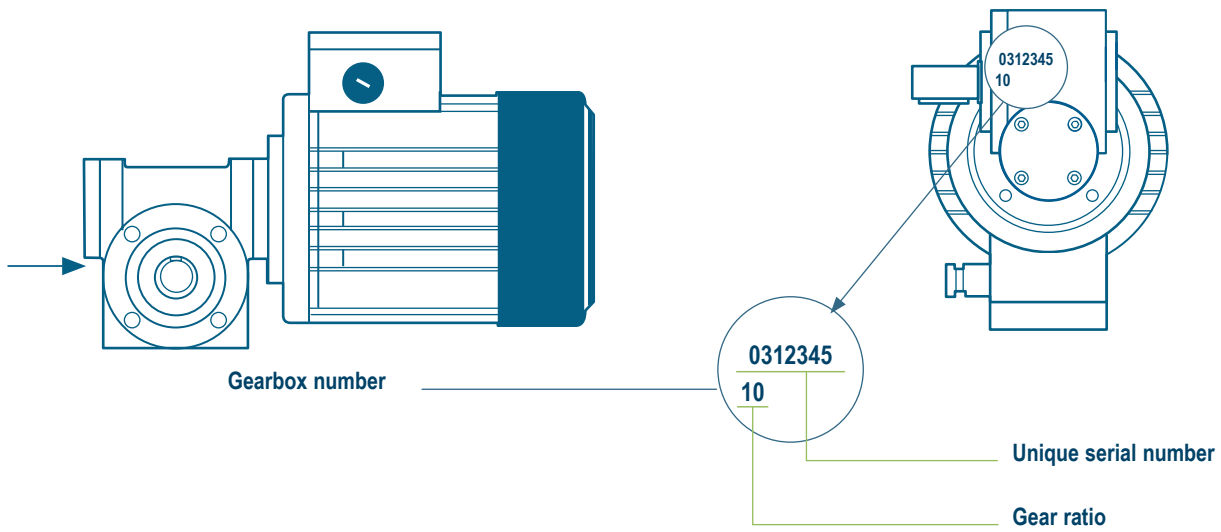
	Description	Application	Viscosity	Lubricant
0	Fully synthetic gear oil, standard	Normal load and ambient temp. -25°C to +40°C	220	Klübersynth GH 6-220
1	Fully synthetic gear oil	Heavy load and ambient temp. -20°C to >+40°C	460	Klübersynth GH 6-460
2	Fully synthetic gear oil	Heavy load and ambient temp. -20°C to >+40°C	680	Klübersynth GH 6-680
3	Liquid grease	Normal load and ambient temp. -40°C to >+40°C	1200	Klübersynth GE 46-1200
4	Special lubricating oil for food and pharmaceutical industries	Normal load and ambient temp. -20°C to +40°C	460	Klüberoil 4 UH1-460 N

Ambient temperatures are guide values depending on the lubricant's composition, the intended use and the application method. All data is based on synthetic oil. Do not mix synthetic oil with mineral oil.

## Oil and lubricants quantities

Series 42	Series 52	Series 61	Series 79	Series 99
0.06 litres	0.18 litres	0.21 litres	0.5 litres	1.1 litres

## Unique gearbox number



On the ND side, our gearboxes are marked with a unique gearbox number, which consists of a serial number and a gear ratio. This ensures identification anytime at a later date.

The unique serial numbering of the product means that we can always identify the worm gearbox and supply the correct spare parts. If there is a need for a replacement product, we can always reproduce a worm gearbox by using the unique serial number, no matter what degree of specialisation and whenever it was originally delivered.

# Declaration of incorporation of Partly Completed Machinery

Issued in accordance with The Supply of Machinery (Safety) Regulations 2008

## BJ-Gear A/S

Niels Bohrs Vej 47  
DK-8660 Skanderborg  
Tlf: +45 87 40 80 80  
Fax: + 45 87 40 80 81  
bj@bj-gear.com

Hereby declare that the partly completed machines:

- **Worm gearboxes series 31, 35, 42, 52, 61, 79, 99, 127 and 152 in both cast iron and stainless steel versions**
- **Linear actuators size 42, 52 and 61 in both cast iron and stainless steel versions**
- **Worm gear screw jacks size 42, 52, 61 and 79 in both cast iron and stainless steel versions**
- **Strong spiral bevel gearboxes in both cast iron and stainless steel versions**
- **Stainless steel helical bevel gearboxes**
- **Stainless helical gearbox MA-0**
- **Combinations and derivatives of the above**

Which are configured, dimensioned and ordered according to our standard catalogues and standard dimensioning material, conform to the relevant provisions of The Supply of Machinery (Safety) Regulations 2008.

The following essential health and safety requirements have been complied with: 1.1.2 Principles of safety integration, 1.1.3 Materials and products, 1.1.5 Design of machinery to facilitate its handling, 1.3.1 Risk of loss of stability, 1.3.2 Risk of break-up during operation, 1.3.4 Risk due to surfaces, edges or angles, 1.3.9 Risks of uncontrolled movements, 1.5.5 Extreme temperatures.

The technical documentation is compiled in accordance with Annex VII(B) of the Regulation.

We undertake to transmit, in response to a reasoned request by the national authorities, relevant information on the partly completed machinery, either electronically or on paper.

The partly completed machine must not be put into service until the final machinery in which it is to be incorporated has been declared in conformity with the provisions of the Regulations.

Skanderborg, 25.10.2022

Signed for and on behalf of BJ-Gear A/S



Jesper Olesen  
R & D Manager



# Declaration of incorporation of Partly Completed Machinery

Issued in accordance with The Machinery Directive 2006/42/EC

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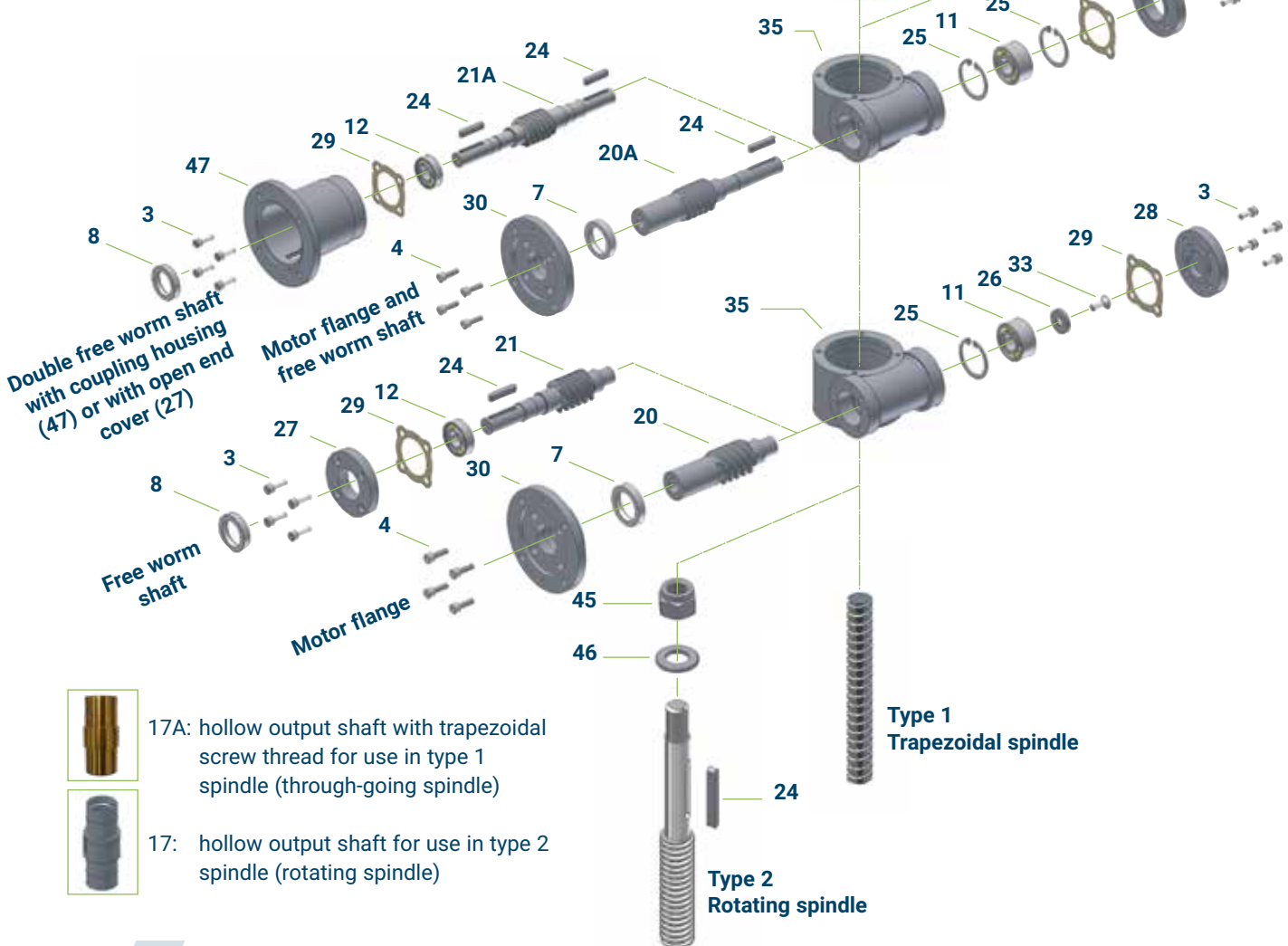
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Jesper Olesen  
R & D Manager

# Spare parts

- 2 . . . .Gasket
- 3 . . . .Screw
- 3B . . .Screw
- 4 . . . .Screw
- 5 . . . .Oil seal
- 7 . . . .Oil seal
- 8 . . . .Oil seal
- 8A . . .Oil seal
- 9 . . . .Tapered roller bearing
- 11 . . .Angular contact ball bearing
- 12 . . .Ball bearing
- 13 . . .Worm wheel
- 15 . . .Spacer ring
- 17 . . .Hollow output shaft
- 17A . .Hollow output shaft
- 20 . . .Hollow worm shaft
- 20A . .Hollow worm with free shaft
- 21 . . .Free worm shaft
- 21A . .Double free worm shaft
- 22 . . .Parallel key B
- 24 . . .Parallel key A
- 25 . . .Locking ring
- 26 . . .Washer A
- 27 . . .End cover, open
- 28 . . .End cover, closed
- 29 . . .Gasket
- 30 . . .Motor flange
- 31 . . .Bearing cover
- 31A . .Side flange
- 33 . . .Screw
- 35 . . .Gear housing
- 45 . . .Lock nut
- 46 . . .Washer B
- 47 . . .Coupling housing



17A: hollow output shaft with trapezoidal screw thread for use in type 1 spindle (through-going spindle)



17: hollow output shaft for use in type 2 spindle (rotating spindle)





bj-gear

**bj-gear**

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