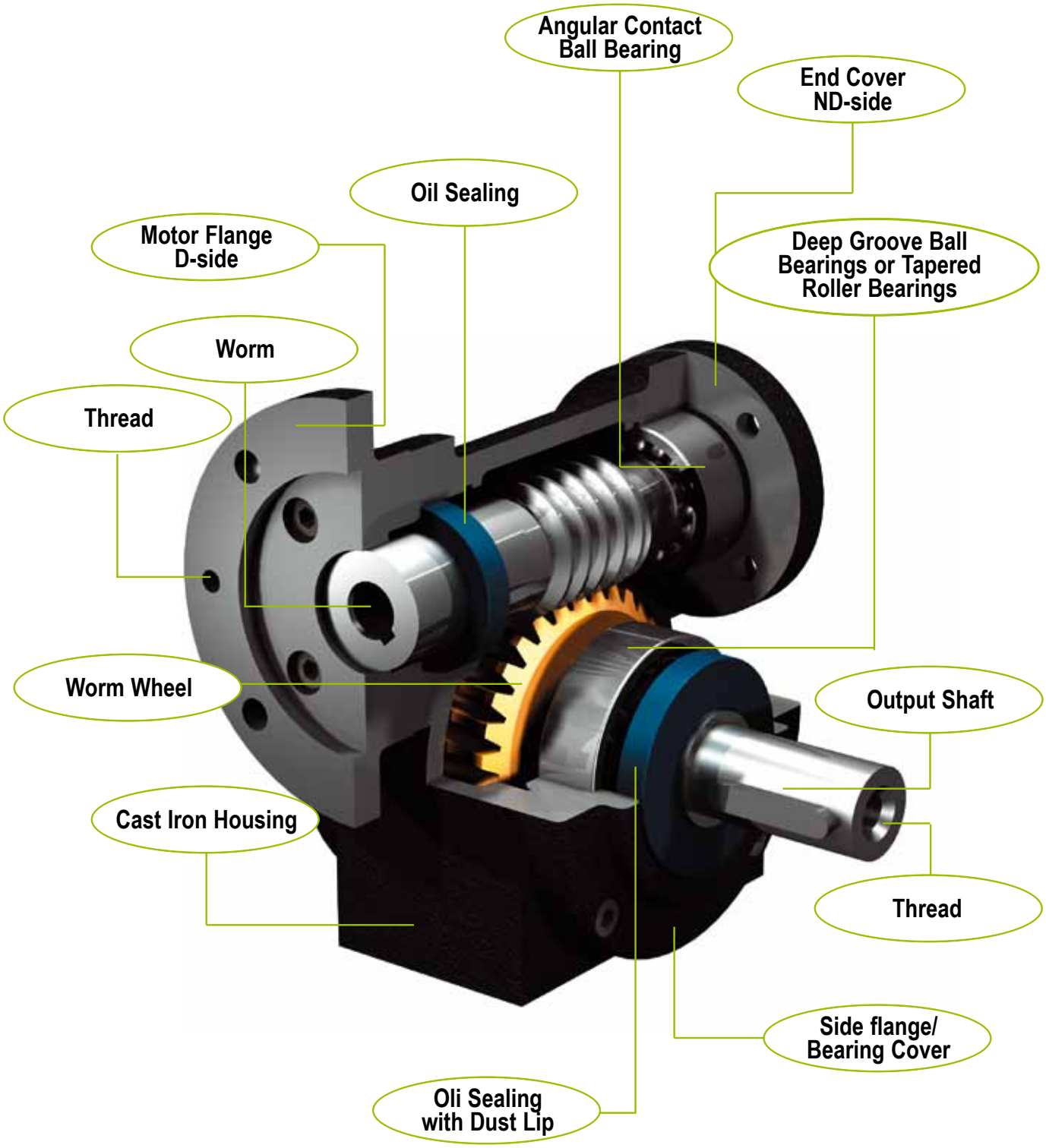
bj·gear

dedicated gear drive solutions

Worm Gear
Manual

Gears and linear products since 1964

Design of the Worm Gear



Mounting instructions

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This instruction applies for BJ worm gears 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 gears may be used in ambient temperature between 0 and +40 ° C and in normal atmosphere and normal atmosperic pressure.
If the gear is used in dusty or dirty environment, be sure that ingress in glands is avoided. The same goes for outdoor use or wet environment.

Before mounting
- Examine the gear for damages and leakages.
- Ensure that the unit corresponds to the ordered.
- Some units are deliberately delivered without oil. If this is the case it is clearly marked. If the unit is delivered without oil, be sure to fill it with the right type and amount according to catalogues (can be found at www.bj-gear.com and on page 4).
- If possible, make a test run of the unit before mounting. (see page 4).
- If the unit is delivered with motor, electromagnetic brake or coupling, encoder etc., be sure to follow the operating instructions for these.
- Be sure that it is not possible to start the unit unintentionally during mounting.
- Before mounting the unit in the application, be sure to secure parts that could move unintentionally and make harm or damage. Please observe that not all units are self-locking.
- Be sure that the mounting planes are stable, clean and plane.

Mounting of motor:
- Be sure that there is mounting grease between the motor shaft and the hollow input shaft of the gear.
- The gear input shaft should be pre-greased at delivery.
- 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, be sure that the alignment is within the specifications of the coupling.

Mounting of other accessories (brake, encoder etc.):
- Be sure to follow the operating instructions for these.
- Especially for brakes and clutches, be sure that no dirt, dust, oil or grease is present on or between any friction elements.

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

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Operating instructions

Starting up:
Before starting up the gear be sure that:

- The motor is properly secured to the unit.
- The gear is properly secured to the application.
- Test the functionally of electric brakes, couplings or safety devices, if such are installed.
- Brakes and couplings are released.
- Tools, wiring, clothes etc. are removed from moving part.
- When starting up, do it as gently as possible.
- Observe closely that the intended function occur, and if not, shut down the system and search for errors in a safe way.
- If unexpected noise or vibrations occur shut down the system and search for errors in a safe way.
- When the gear has reached its operation temperature, examine for leakages.

Running-in:
The lifetime of the gear will improve if is run in properly. A proper run in is as follows:

- Run the gear for about 15 minutes in each direction with no load.
- Let the gear cool down.
- Start it up and load it with app. half the torque. Gradually increase to full torque. Do this in both directions.
- It is not always possible to do it this way but some running in is better than none.

Choice of oil and oil quantities

Oil change

The gears are lubricated for life. However, gears being exposed to heavy load should be subjected to oil change approx. every 5 years. Gears running in very hot environments may require oil change every year. **Do not mix** synthetic oils and mineral oils. All indicated outputs are based on synthetic oils.

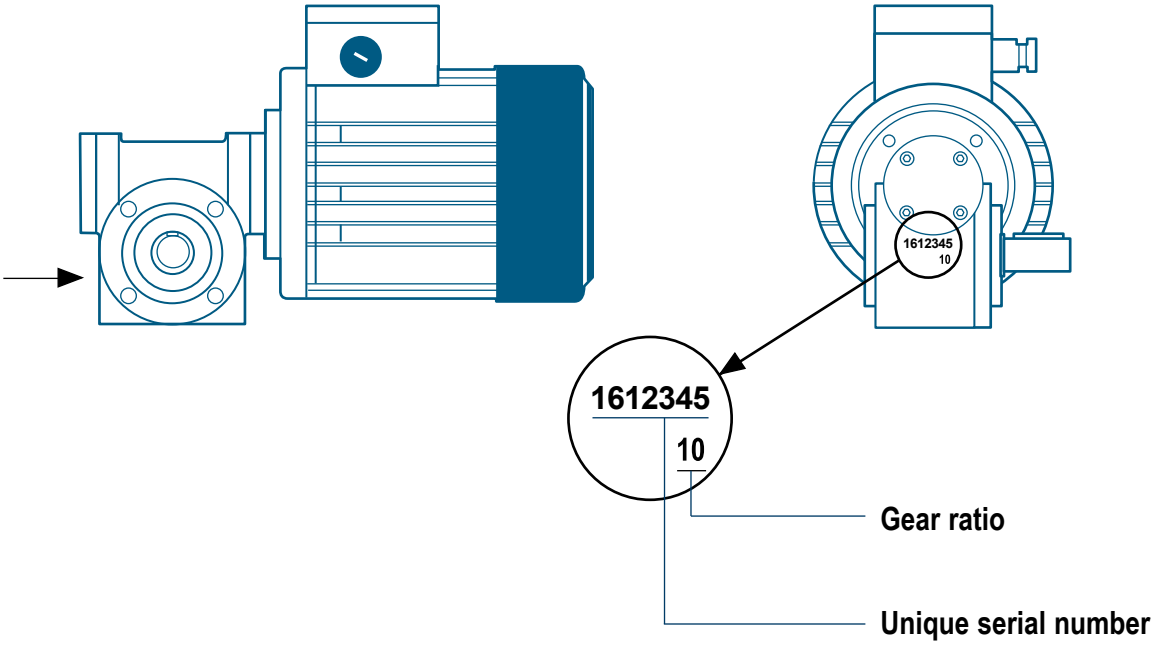
Oil quantities

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

Description	Application	Viscosity	Oil
Fully synthetic gear oil, Standard	Normal load and ambient temp. -25° to +40°C	**220**	Klübersynth GH 6-220
Fully synthetic gear oil	Heavy load and ambient temp. -20° to > +40°C	**460**	Klübersynth GH 6-460
Fully synthetic gear oil	Heavy load and ambient temp. -20° to > +40°C	**680**	Klübersynth GH 6-680
Liquid grease	Normal load and ambient temp. -40° to > +40°C	**1200**	Klübersynth GE 46-1200
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 which depend on the lubricant's composition, the intended use and the application method.
Read more on www.klubersolutions.com

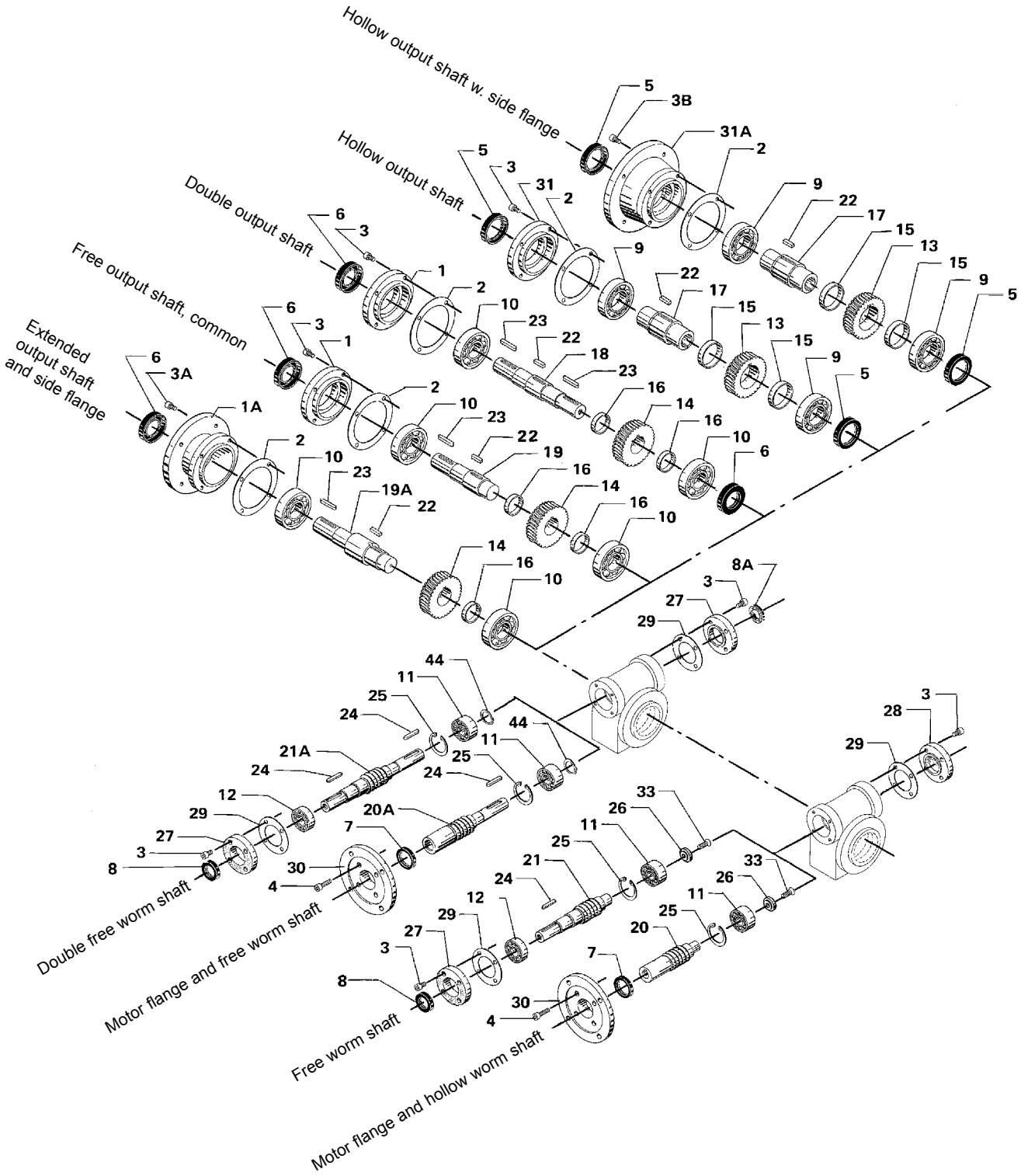
Unique gear number



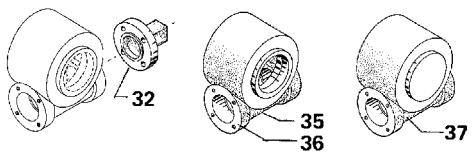
Unique gear number

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

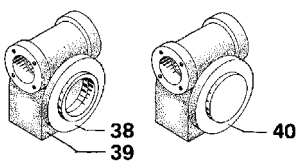
Spare parts diagram



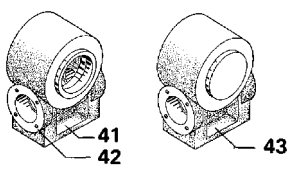
Housing Type 1



Housing Type 2



Housing Type 3



Spare parts list

1	Bearing Cover
1A	Side Flange
2	Gasket
3	Screw
3A	Bolt
3B	Screw
4	Screw
5	Oil Seal
6	Oil Seal
7	Oil Seal
8	Oil Seal
8A	Oil Seal
9	Ball Bearing or Tapered Roller Bearings
10	Ball Bearing or Tapered Roller Bearings
11	Ball Bearing or Tapered Roller Bearings
12	Ball Bearing or Tapered Roller Bearings
13	Worm Wheel
14	Worm Wheel
15	Spacer Ring
16	Spacer Ring
17	Hollow Output Shaft
18	Double Output Shaft
19	Single Output Shaft
19A	Single Output Shaft, extended
20	Hollow Worm Shaft
20A	Hollow Worm with Free Shaft
21	Free Worm Shaft
21A	Double Free Worm Shaft
22	Parallel key B
23	Parallel key A
24	Parallel key A
25	Locking Ring
26	Washer
27	End Cover, open
28	End Cover, closed
29	Gasket
30	Motor Flange
31	Bearing Cover
31A	Side Flange
32	Stud Cover
33	Screw
35	Gearbox, type 1, for Hollow Output Shaft
36	Gearbox, type 1, for Double Free Output Shaft
37	Gearbox, type 1, for Free Output Shaft
38	Gearbox, type 2, with Support, Worm at Top, for Hollow Output Shaft
39	Gearbox, type 2, with Support, Worm at Top, for Double Free Output Shaft
40	Gearbox, type 2, with Support, Worm at Top, for Free Output Shaft
41	Gearbox, type 3, with Support and Worm at Buttom, for Hollow Output Shaft
42	Gearbox, type 3, with Support and Worm at Buttom, for Double Free Output Shaft
43	Gearbox, type 3, with Support and Worm at Buttom, for Free Output Shaft
44	Locking Ring

Declaration of incorporation

The below mentioned manufacturer and authorized to produce technical documentation for the partly finished machine, and in response to a reasoned request, transmit relevant information regarding the partly finished machine:

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 finished machine:

Gears and gear motors: Worm gears both BJ and LJ series, Strong helical gears, Strong spiral bevel gears, actuators og spindle gears, configured and ordered according to our standard catalogues

are produced in accordance to machinery directive 2006/42/EC annex II B og annex VII B.

Relevant standards used:

EN ISO 12100-1:2005
EN ISO 12100-2:2005

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 machinery directive 2006/42/EC.

Stilling, 19.01.2010

Jesper Olesen
R & D Manager