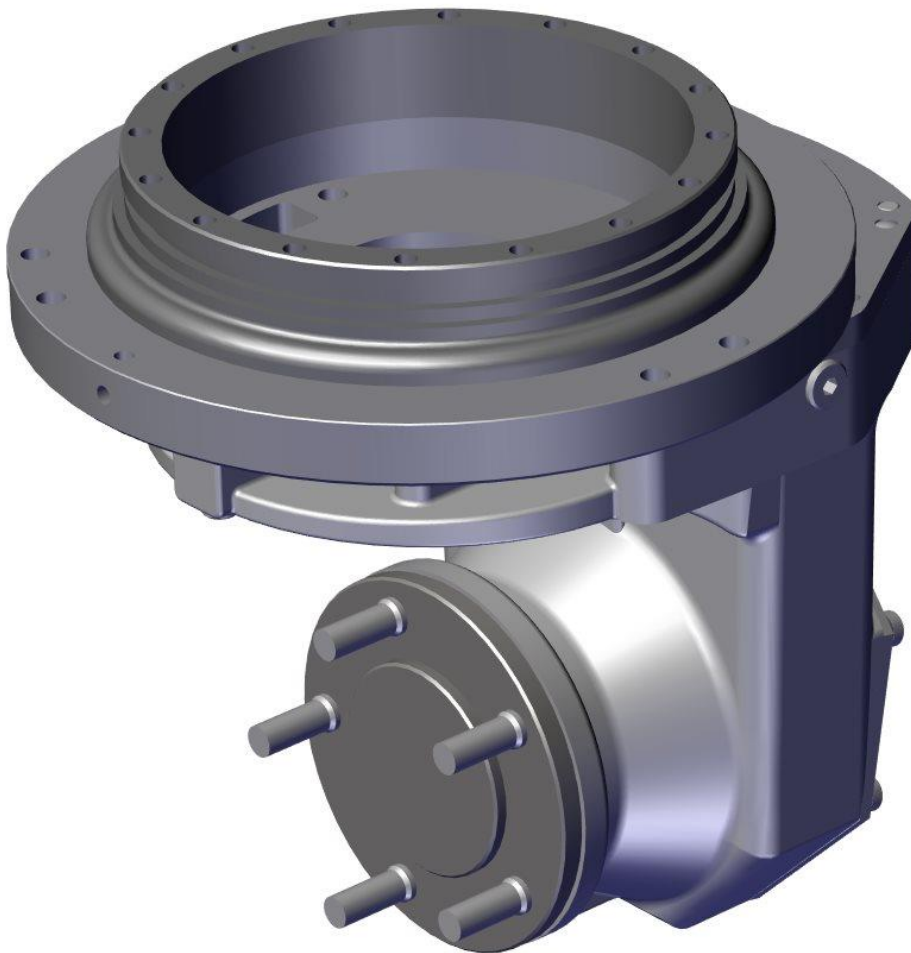


# SERVICE INSTRUCTIONS & MAINTENANCE FOR LIFT TRUCK TRANSMISSION

**15001612**

Parts Kits are shown in Parts Section



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### NOTE:

**1) The bracketed numbers in this text correspond with the position numbers in the parts list and in the drawings.**

**2) Where screw tightening torques are unspecified in the text, apply M8= 23 Nm**

## 1. ASSEMBLY INSTRUCTIONS

### 1.1. Preparation and initial assembly of the housing

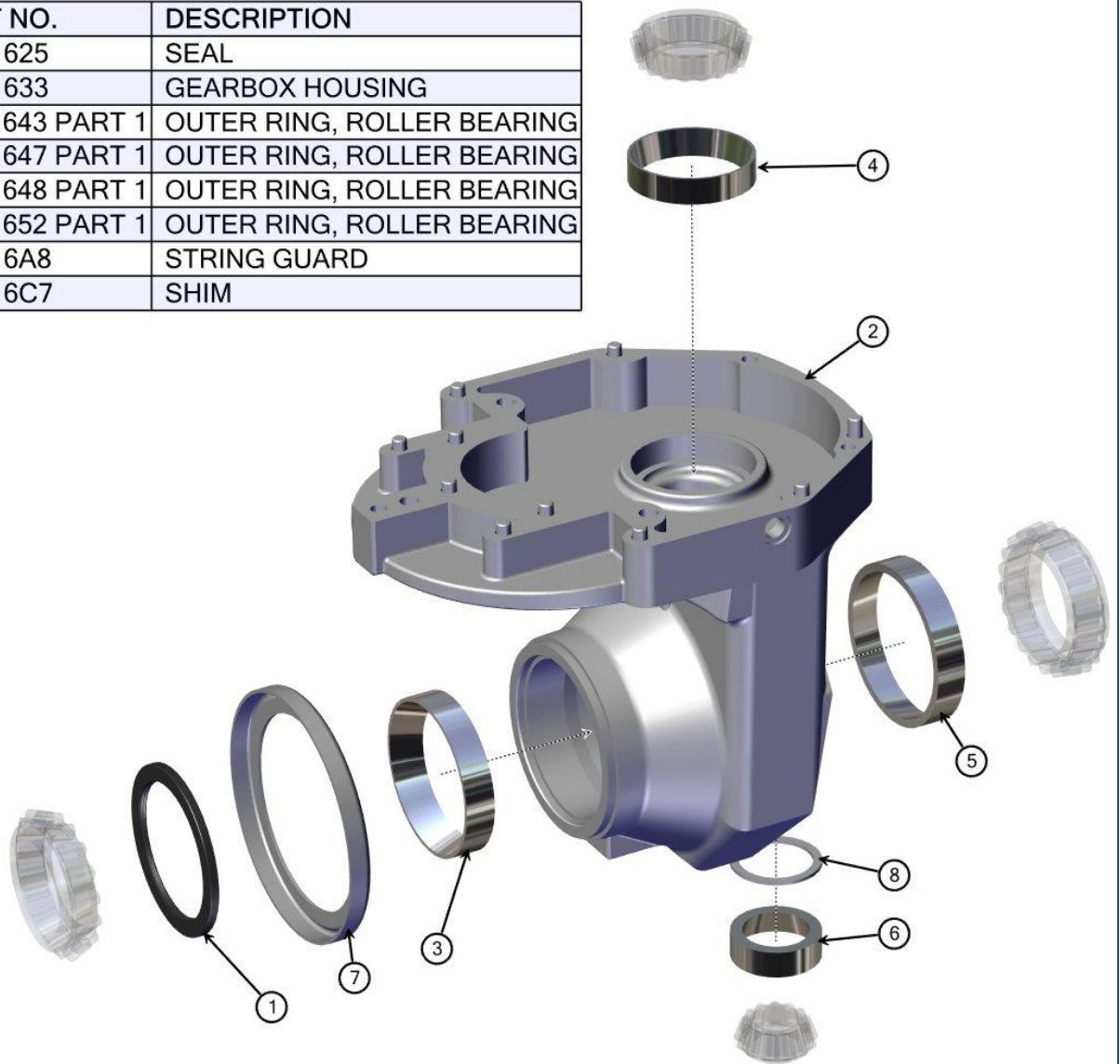
After cleaning the housing (2), locate shim (8) into its respective bearing bore in the housing.

Install the bearing cups of the taper roller bearings (3, 4, 5, and 6) into the housing.

Insert the twine shield ring (7) and peen it to secure.

Apply Loctite 574 to the housing location for seal (1) and install the seal.

BOM ID	Qty	PART NO.	DESCRIPTION
1	1	15001625	SEAL
2	1	15001633	GEARBOX HOUSING
3	1	15001643 PART 1	OUTER RING, ROLLER BEARING
4	1	15001647 PART 1	OUTER RING, ROLLER BEARING
5	1	15001648 PART 1	OUTER RING, ROLLER BEARING
6	1	15001652 PART 1	OUTER RING, ROLLER BEARING
7	1	150016A8	STRING GUARD
8	1	150016C7	SHIM

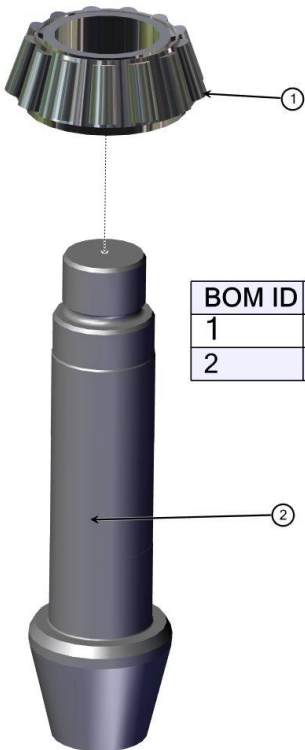
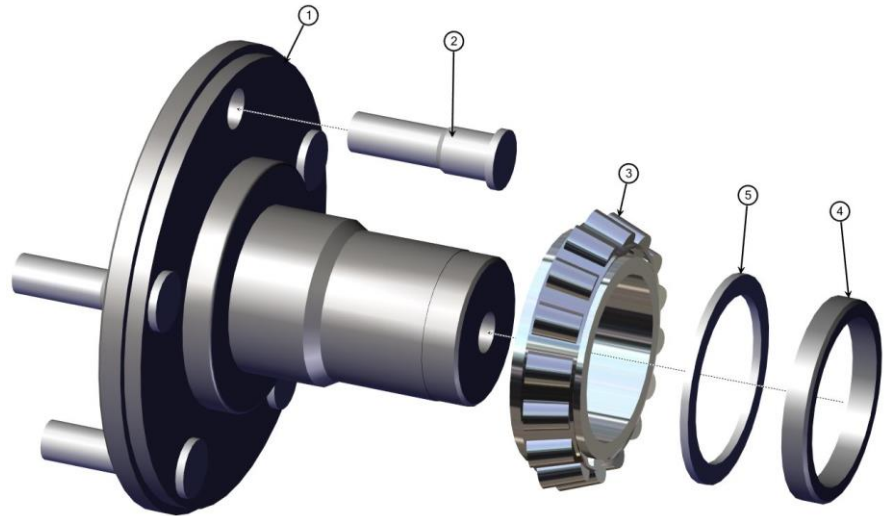


### 1.2. Flange Shaft sub-assembly

Press the wheel studs (2) into the shaft (1).

Press the inner race of bearing (3) onto the shaft and place the shim (5) and the spacer ring (4) onto the shaft.

BOM ID	Qty	PART NO.	DESCRIPTION
1	1	15001629	AXLE SHAFT
2	5	15001630	WHEEL BOLT
3	1	15001643 PART 2	INNER RING, ROLLER BEARING
4	1	150016A7	SPACER SLEEVE
5	1	150016C2	SHIM



BOM ID	Qty	PART NO.	DESCRIPTION
1	1	15001652 PART 2	INNER RING, ROLLER BEARING
2	1	15001672 PART1	SPIRAL GEAR

### 1.3. Spiral Bevel Pinion sub-assembly.

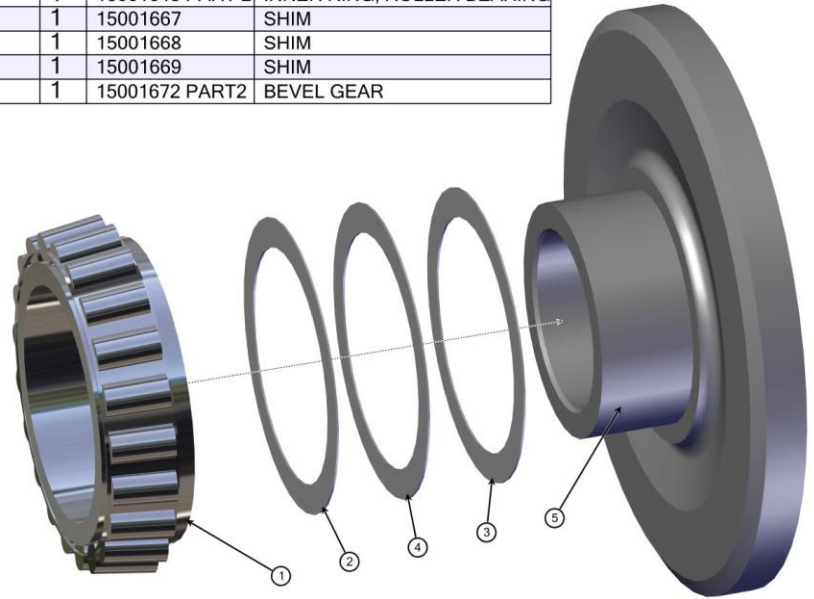
Apply Loctite 603 to the bearing diameter of the pinion (2)

and press the inner race of bearing (1) into position.

### 1.4. Spiral Bevel Gear sub-assembly

Install Shims (2, 3, 4) then press the inner race of bearing (1) onto the gear (5).

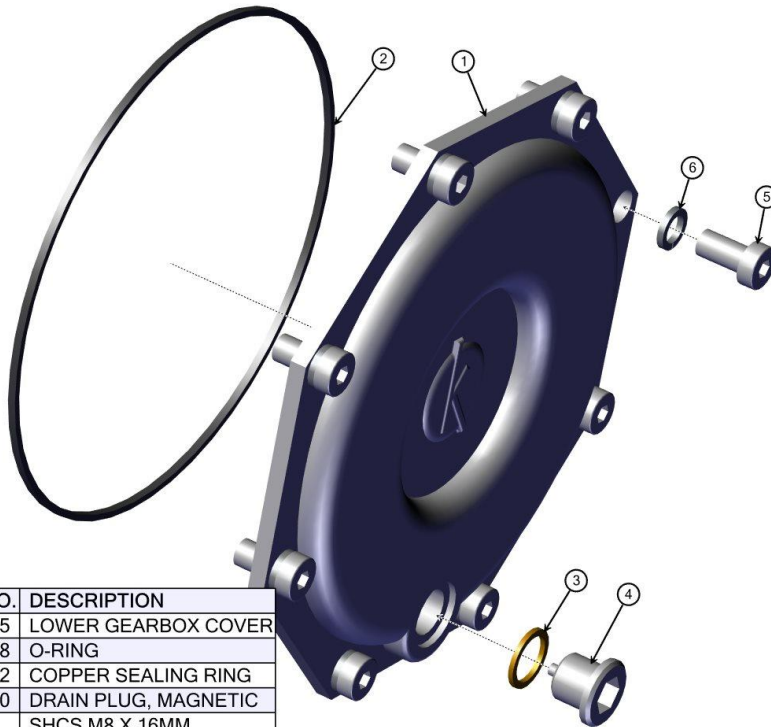
BOM ID	Qty	PART NO.	DESCRIPTION
1	1	15001648 PART 2	INNER RING, ROLLER BEARING
2	1	15001667	SHIM
3	1	15001668	SHIM
4	1	15001669	SHIM
5	1	15001672 PART2	BEVEL GEAR



### 1.5. Lower Cover sub-assembly

Lubricate the "O" Ring (2) and insert it into its groove in the cover (1).

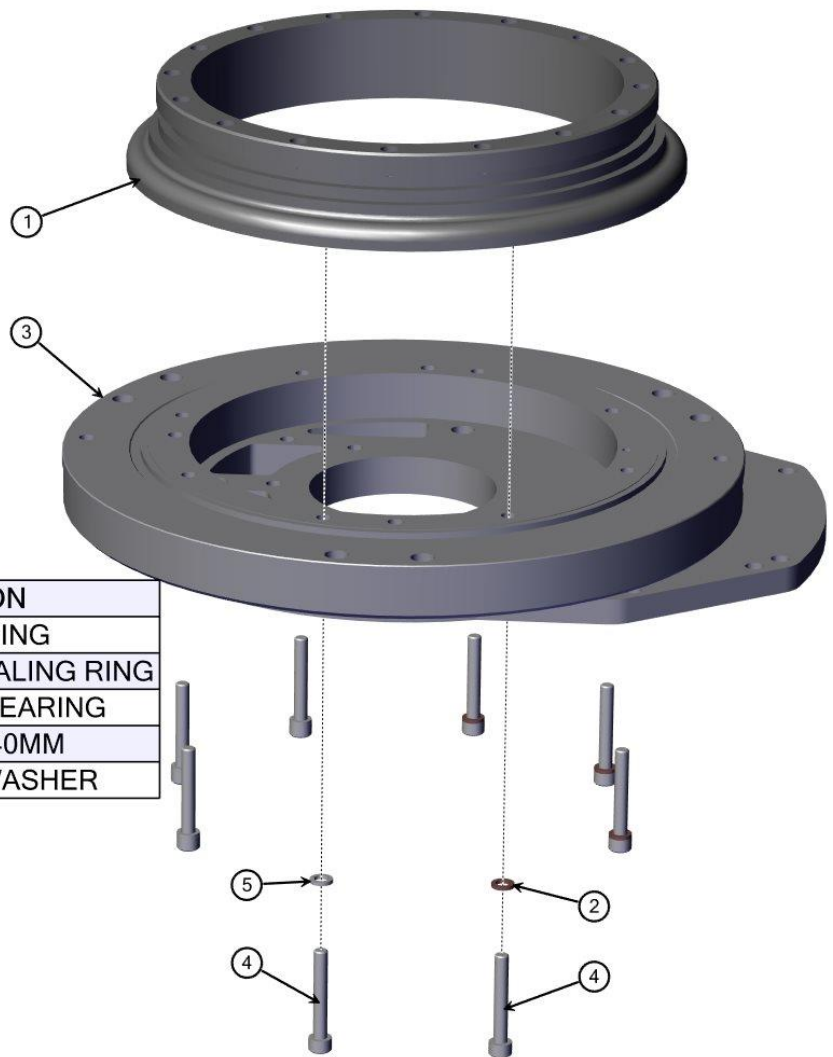
Install the oil plug (4) with the copper ring (3) into the cover.



BOM ID	Qty	PART NO.	DESCRIPTION
1	1	15001635	LOWER GEARBOX COVER
2	1	15001658	O-RING
3	1	15001662	COPPER SEALING RING
4	1	15001690	DRAIN PLUG, MAGNETIC
5	8	H1881	SHCS M8 X 16MM
6	8	H1885	8MM LOCKWASHER

### 1.6. Steering bearing / Top Cover sub-assembly

Assemble the steering ring (1) to the steering bearing / top cover with screws (4) and spring washers (5). Please note that 4 screws (4) have to be sealed from the inner side of the gearbox with sealing rings (2).



BOM ID	Qty	PART NO.	DESCRIPTION
1	1	15001641	STEERING RING
2	4	15001661	COPPER SEALING RING
3	1	150016D2	STEERING BEARING
4	8	H1873	SHCS M6 X 40MM
5	4	H1884	6MM LOCKWASHER

**1.7. Assembly of the Spur Gear and Pinion Gear in gearbox housing.**

Press the inner race of bearing (2) onto the spur gear (1).

Feed the assembled spiral pinion through the lower cover opening and locate it into position.

Install Spacer (4) and Shim (5) onto the spiral bevel pinion.

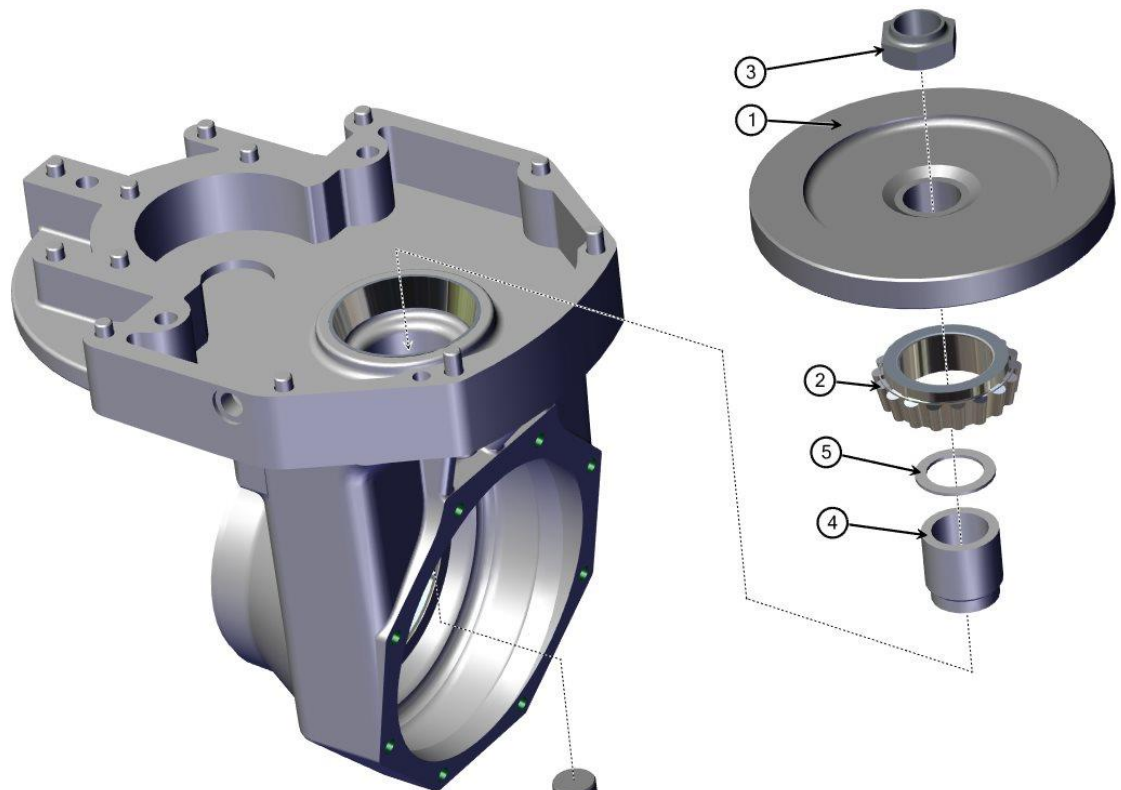
Install the spur gear assembly onto the spiral bevel pinion and secure with nut (3).

Note: To achieve the correct bearing pre-load, the break-away torque at the nut must be 0.5 to 0.8 Nm.

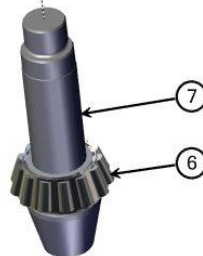
See note 1.8 for adjusting the spiral bevel tooth contact pattern.

Tighten the nut (3) - tightening torque 170Nm- Secure the nut with DELO 5249 (Loctite blue) and peen after the bearing preloads and bevel gear tooth contact pattern have been correctly set.

Note: It is important not to apply radial force to the pinion while peening the nut.



BOM ID	Qty	PART NO.	DESCRIPTION
1	1	15001618	SPUR GEAR
2	1	15001647 PART 2	INNER RING, ROLLER BEARING
3	1	150016A5	HEX NUT
4	1	150016B4	SPACER SLEEVE
5	1	150016C6	SHIM
6	1	15001652 PART 2	INNER RING, ROLLER BEARING
7	1	15001672 PART1	SPRIAL GEAR

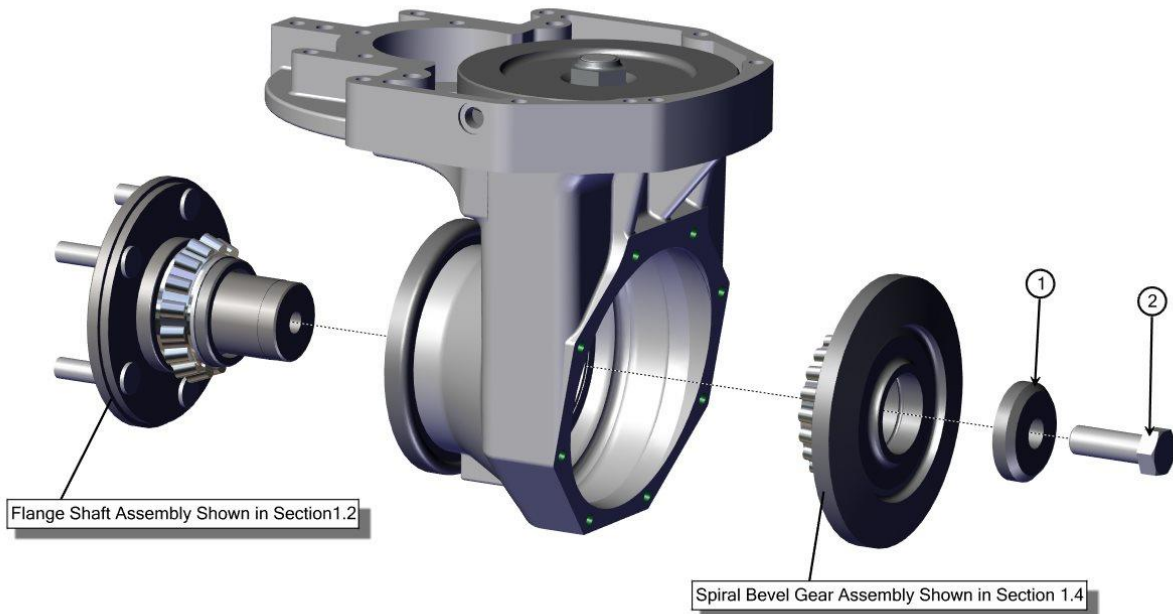


Pass the Spiral bevel gear assembly through the lower cover opening and locate its bearing cone into cup previously installed in the housing.

Locate the assembled flange shaft with shim and spacer ring into position through bearing cup and spiral bevel gear assembly.

Install the disc and secure with the screw after first applying Delo 5249 (Loctite blue) to the screw thread. The tightening torque is 300Nm.

BOM ID	Qty	PART NO.	DESCRIPTION
1	1	150016B6	WASHER PLATE
2	1	H1888	HHCS M16 X 45MM, 2MM PITCH



Re-check the breakaway torque at nut (3) shown at the beginning of section 1.7. It must now be 1.3 to 1.6 Nm.

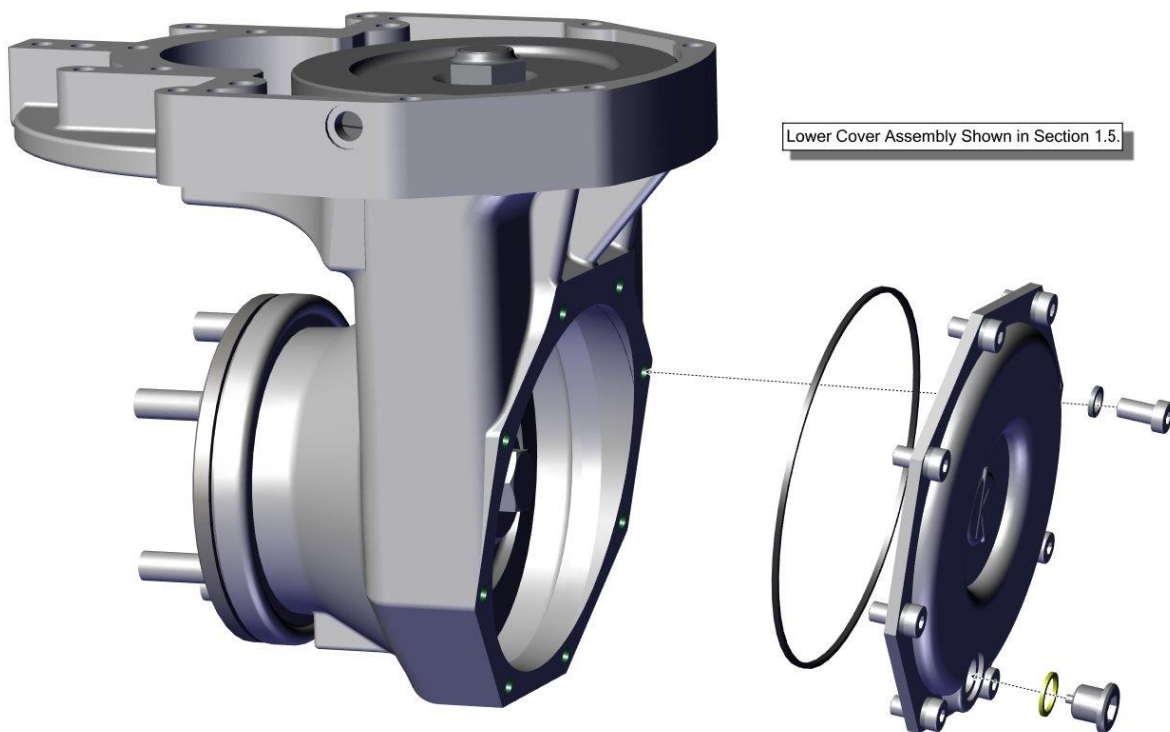
Also check if it is necessary to adjust the tooth contact pattern of the bevel gear set.

See note 1.8.



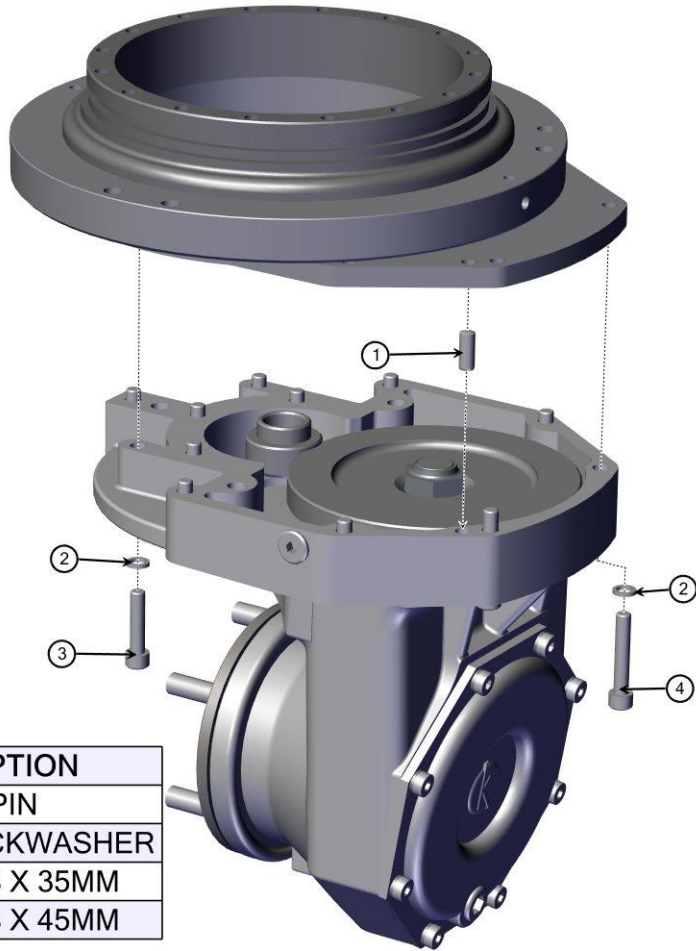
### 1.7.5 Final Housing Assembly

Mount the lower gearbox cover onto the gearbox housing so that the oil hole is at the lowest point when the gearbox is mounted in the truck. Fix the cover in position with screws (5) and spring washers (6).



Insert Dowel Pin (1) into the gearbox housing.

Clean and remove any oil from the mounting faces of the upper gearbox cover and the gear housing. Apply Weicon Silimate (Silicone Adhesive) to the mounting faces and fit the upper cover to the housing. Secure with socket screws (3, 4) and spring washers (2). Please note to torque screws (3 and 4) to 33Nm.



BOM ID	Qty	PART NO.	DESCRIPTION
1	1	150016A2	DOWEL PIN
2	12	H1885	8MM LOCKWASHER
3	10	H269A	SHCS M8 X 35MM
4	2	H247	SHCS M8 X 45MM

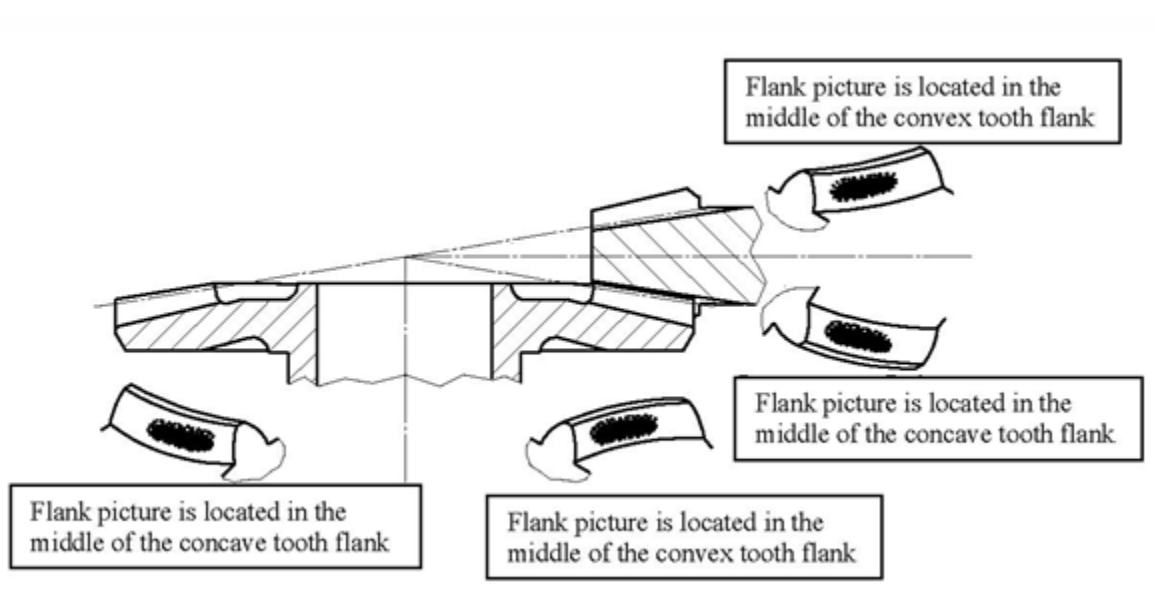
### **1.8 Adjusting the spiral bevel gear set**

It is very important that the flank picture of the bevel gear set is correct. An incorrect adjustment results in noise or, in the worst case, in damages to the gearing.

For a control of the flank picture the flanks of the gears are painted with white oil color.

Then after some turnings, the flank picture is visible as shiny spots on the flanks.

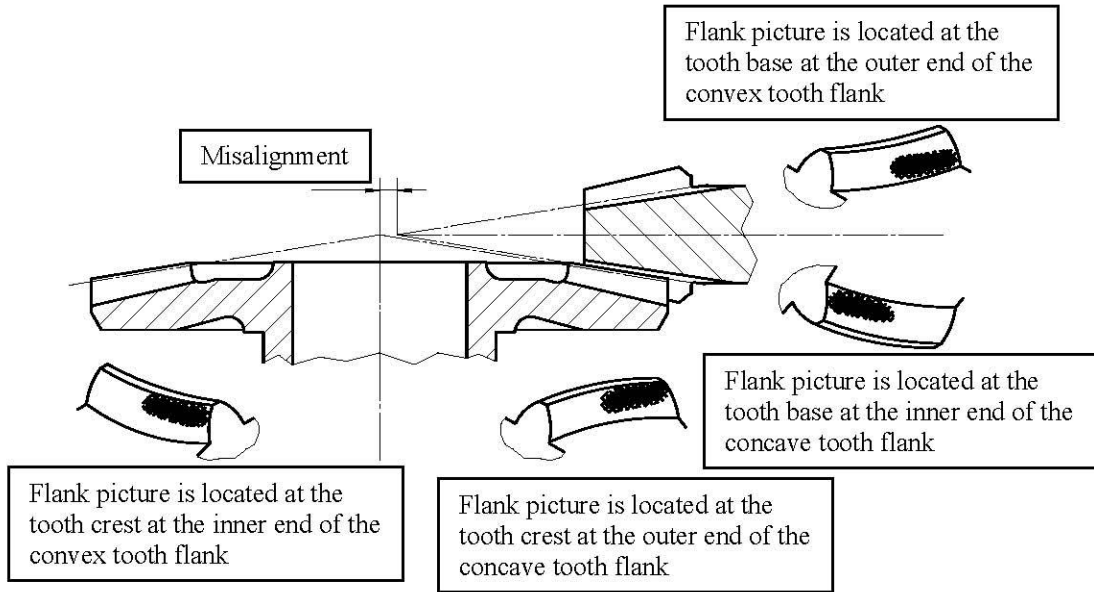
The recommended flank picture looks like as follows:



If there are some differences between your flank picture and the standard flank picture above there are some possibilities for correction. The adjustment is to be done by means of supporting rings which are laid under bearing cup (300) after being ground to the right measurement or by shims in the corresponding thickness.

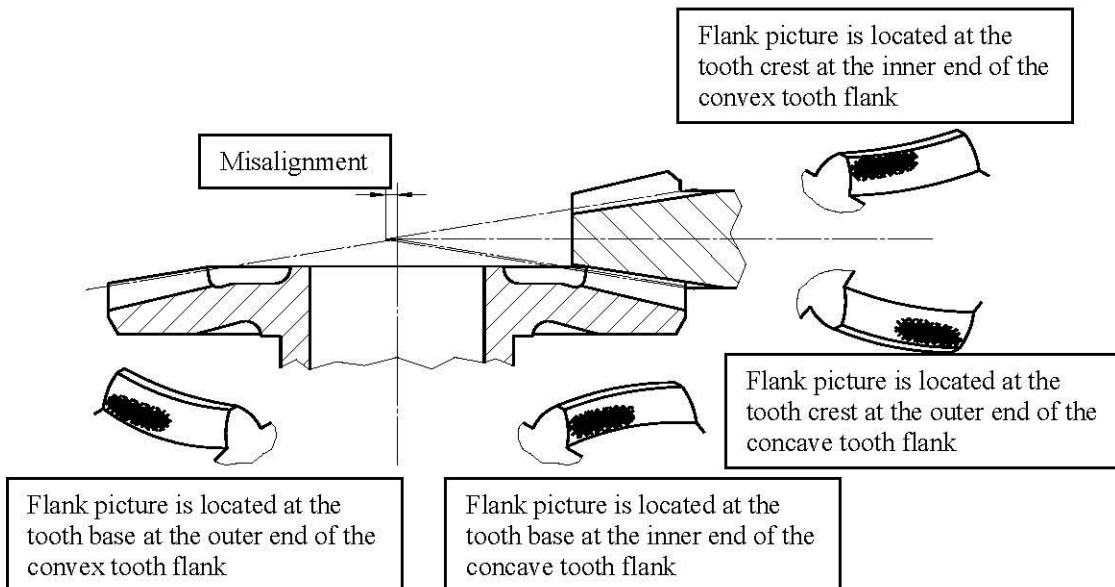
**Possibility 1: Assembly distance reduction of the bevel pinion**

For correction of the flank picture the assembly distance of the bevel pinion must be reduced.



**Possibility 2: Assembly distance enlargement of the bevel pinion**

For correction of the flank picture the assembly distance of the bevel pinion must be enlarged.



## 2. MAINTENANCE AND OPERATING INSTRUCTIONS

### 2.1. GEARBOX OIL

#### 2.1.1. OIL TYPES

For normal use oil SAE 80-90 must be used

ATTENTION: The maximum allowable temperature is 80 °C.

Please consult the manufacturer if the gearbox is to be subjected to extreme operating temperatures.

#### 2.1.2. OIL LEVEL

The gearbox must be filled with oil up to the under-edge of the filler-screw (480).

#### 2.1.3. OIL CHANGES

The first oil change is to be carried out after approximately 200 hours of operating time. Subsequently, the oil must be changed after 2000 operating hours or once a year whichever comes first.

### 2.2. GREASING THE STEERING BEARING

The steer-bearing must be greased at least once a year.

Grease must be re-applied after any thorough cleaning (e.g. steam cleaning) of the transmission.

Note: Turn bearing during greasing.

Use corresponding flow grease (e.g. ARAL ARALUB 2024 or a similar product).

## 3. SHIPPING PROTECTION

**All shipping protection items must be removed before a new gearbox is put into commission.**

The M6x8 threaded pins must be removed from the gearbox cover (steering bearing) and replaced by the grease nipples which are supplied loose with the gearbox.

Remove the protective plastic cap from the 82 mm dia. bore.

The motor pinion is supplied protected with a plastic cap.

**THE GEARBOX IS DELIVERED EMPTY OF OIL.**

**IT MUST THEREFORE BE FILLED PRIOR TO USE.**