



SERVICE INSTRUCTION

For

Transmission

15001614



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1 ASSEMBLY INSTRUCTIONS

NOTE 1 - The bracketed numbers in this text correspond with the position numbers in the parts list and in the drawing.

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

1.1 Preparation and initial assembly of the housing (10)

After cleaning the housing (10), locate the shims (230, 245 and 255) into their respective bearing bores in the housing.

Install the bearing cups of taper roller bearings (310, 320, 330, & 340) into the housing.

Apply **Loctite 307** to housing and install the twine shield ring (210). Peen it to secure.

Install retaining ring (440) into the gearbox housing. Apply **Loctite 574** to the housing location for seal (360) and install the seal until seated against the retaining ring.

1.2 **Flange Shaft (60) sub-assembly**

Press the wheel studs (170) into the shaft (60).

Press the inner race of bearing (330) onto the shaft and place spacer ring (200) and shim (250) onto the shaft against bearing (330) as shown in the enclosed drawing.

1.3 **Spiral Bevel Pinion (75) sub-assembly**

Apply **Loctite 603** to the bearing diameter of the pinion (75) and press the inner race of bearing (320) into position.

1.4 **Spiral Bevel Gear (75) sub-assembly**

Press the inner race of bearing (340) onto the gear (75).

1.5 **Lower Cover (40) sub-assembly**

Lubricate "O" Ring (380) and insert it into its groove in the cover (40).

Install the oil plug (470) with copper sealing ring (490) into the cover.

1.6 **Steering bearing (270).**

Assemble the steering bearing to the top cover (30) with 15 screws (550) and spring washers (600). Use **DELO 5249** (Blue Loctite) to secure and seal the screws.

Note: Vent plug boring must be aligned with hole in the top cover and sealed with o-ring (390) which is placed between the steering bearing and top cover prior to assembly.



1.7 Assembly of the gearbox

Feed the spiral bevel pinion sub-assembly (75) through the lower cover opening and locate it into position.

Install spacer sleeve (190) and the inner race of bearing (310) onto the spiral bevel pinion.

Install the helical gear (120) onto the spiral bevel pinion and secure with nut (150).

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

Tighten the nut (150) - tightening torque **280Nm** - Secure the nut with **DELO 5249** (Blue Loctite) andpeen 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 when peening the nut.

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

Pass the bevel gear sub-assembly through the lower cover opening and locate its bearing cone into cup (340), previously installed in the housing.

Locate the assembled flange shaft with spacer ring (200) and shim (250) into position through bearing cup (330) and spiral bevel gear sub-assembly (75).

Install the washer plate (240) and secure with three screws (520). Use **DELO 5249** (Blue Loctite) and torque to **130Nm**.

Re-check the breakaway torque at nut (150). It must now be **1.0 to 1.5 Nm**.

Also check, if it is necessary to adjust the tooth contact pattern of the bevel gear set. **See note 1.8**.

Mount the lower gearbox cover (40) 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 (540) and spring washers (600).

Assemble steering bearing and top cover sub-assembly, from Step 1.6 to the gearbox housing using M10 screws (570 & 580) and spring washers (610) and M8 screws (560) and spring washers (600). Use **DELO 5249** (Blue Loctite) and torque the M10 hardware to **33Nm**.

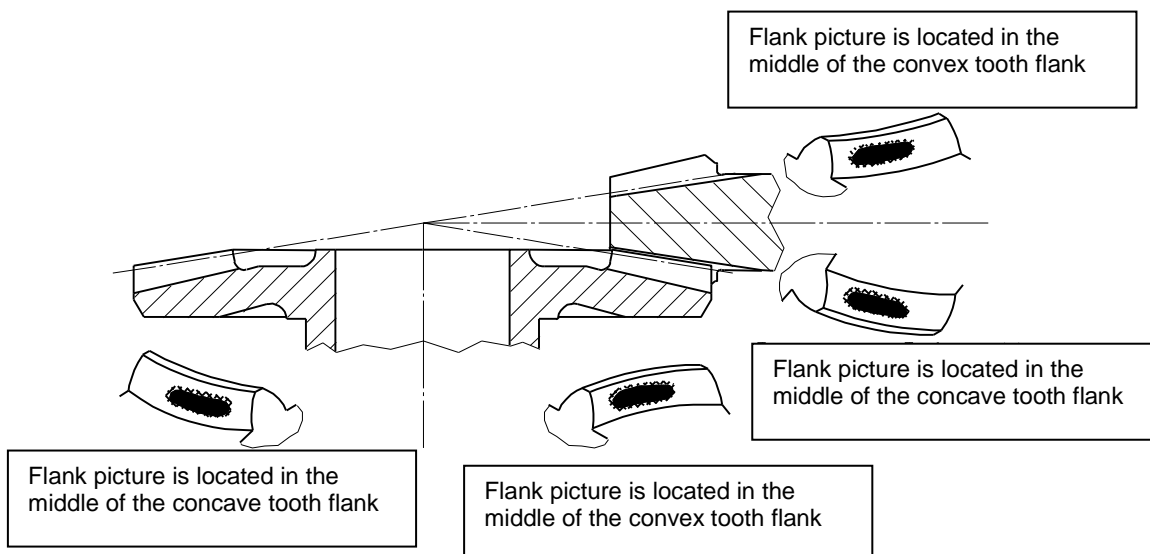
Note: Clean and remove any oil from the mounting faces of the upper gearbox cover and the gearbox housing. Apply **Loctite 574** to the mounting faces and fit the upper cover sub-assembly to the housing.

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.

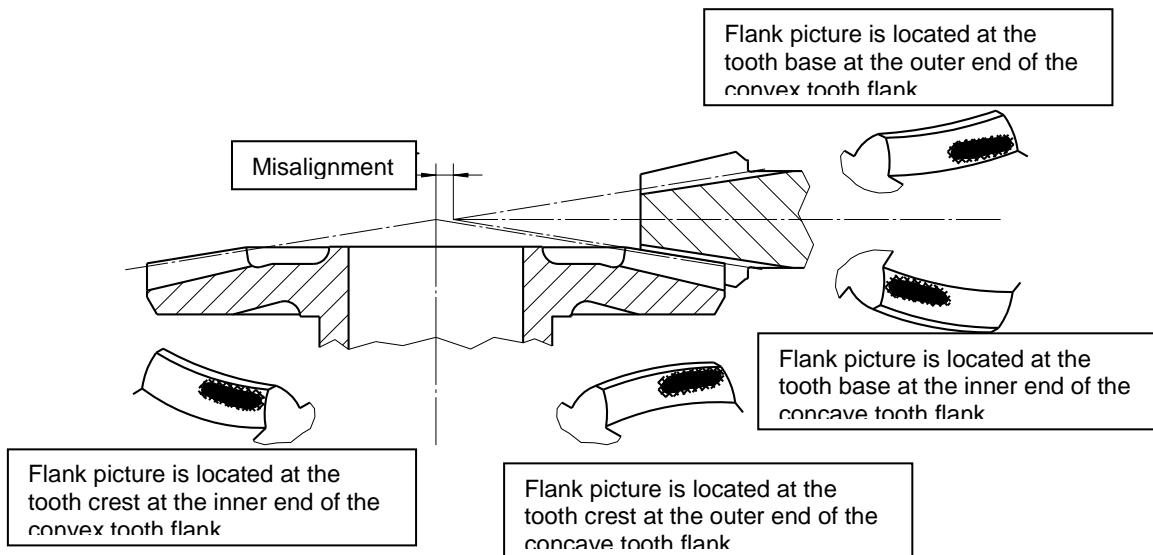
The recommended flank picture looks like as follows:



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 (320) after being ground to the right measurement or by shims in the corresponding thickness.

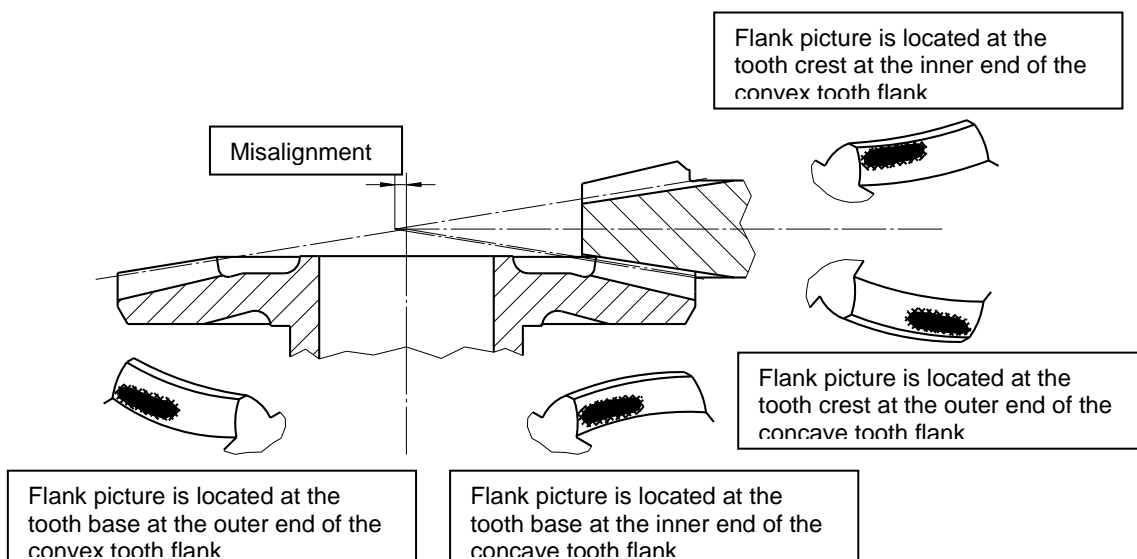
Possibility 1: Assembly distance reduction of the bevel pinion

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 (460).

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.

Note: Turn bearing during greasing.

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

Please 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 (690) from the 82 mm dia. bore.

The motor pinion (110) is supplied with plastic cap (700) for protection during shipment.

THE GEARBOX IS DELIVERED EMPTY OF OIL.
IT MUST THEREFORE BE FILLED PRIOR TO USE.



5. Spare parts list

15001614

Pos	Part No.	Part Name (English)	Qty
10	01.0863.0	Gearbox Housing	1
30	08.0802.1	Top Gearbox Cover	1
40	08.0301.2	Lower Gearbox Cover	1
60	12.0132.3	Axle Shaft	1
75	2801943+2902463	Spiral Bevel Gear Set	1
110	43.0780.4	Spur Pinion	1
120	44.0346.4	Spur Gear	1
150	60.0047.4	Hex Nut	1
170	61.0011.4	Wheel Bolt	7
190	65.0825.4	Spacer Sleeve	1
200	65.0896.4	Spacer Ring	1
210	65.0897.4	String Guard	1
230	66.0108.4	Shim	1
240	66.0229.4	Washer Plate	1
245	66.0240.4	Shim	1
250	66.0249.4	Shim	1
255	66.0404.4	Shim	1
260	72.1846.4	Data Plate	1
270	7.05.30.2	Steering Bearing	1
280	7.71.05.3	Chain Tightener	1
310	106 0106900	Bearing, Roller	1
320	106 0906900	Bearing, Roller	1
330	106 0314800	Bearing, Roller	1
340	106 0316800	Bearing, Roller	1
360	200 0900201	Seal	1
380	211 2033000	O-ring	1
390	211 0092000	O-ring	1
440	232 0011002	Retaining Ring	1
460	341 0016010	Fill Plug	1
470	341 0016015	Drain Plug, Magnetic	1
490	215 1602000	Copper Sealing Ring	2
520	351 0001950	Hex Bolt	3
540	308 0802040	Socket Head Screw	8
550	308 0803040	Socket Head Screw	15
560	307 0806040	Socket Head Screw	2
570	307 1005040	Socket Head Screw	10
580	307 1006040	Socket Head Screw	2
600	411 0008000	Lock Washer	25
610	411 0010000	Lock Washer	12
630	463 0802400	Dowel Pin	1
680	361 1415020	For packaging only	1
690	490 0081504	For packaging only	1
700	488 0500000	For packaging only	1
760	251 0005249	Thread Lock	AR
770	250 0000307	Loctite	AR
780	250 0000574	Loctite	AR
790	250 0000603	Loctite	AR
810	701 3000003	Black Paint	0.2