



# **SERVICE INSTRUCTION**

For

**TRANSMISSION**

**5.45.310.1**

**15001613**



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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 (190 and 220) into their respective bearing bores in the housing.

Install the bearing cups of taper roller bearings (290, 300, 310, & 320) into the housing.

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

Press the wheel studs (150) into the shaft (60).

Press the inner race of bearing (310) onto the shaft and place shim (210) onto the shaft against bearing (310).

### 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 (300) into position.

### 1.4 Spiral Bevel gear (75) sub assembly

Press the inner race of bearing (320) onto the gear (75).

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

Lubricate "O" Ring (350) and insert it into its groove in the cover (40).

Install the oil plug (600) with copper sealing ring (630) into the cover.

### 1.6 Upper Cover and Steering bearing sub-assembly (270)

Assemble the bearing (270) to cover (30) with 12 screws (490) and spring washers (550). Please note that two o-rings (360) have to be placed between the bearing and cover to seal the grease borings. Note vent plug boring alignment and seal the boring with a third o-ring (360).



## 1.7 Gearbox Assembly

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

Install the inner race of bearing (290) onto the spiral bevel pinion (75).

Install the helical gear (110) onto the spiral bevel pinion and secure with nut (130).

**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 (130) - tightening torque **270Nm** - Secure the nut with **DELO 5249** (Loctite blue) 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 though the lower cover opening and locate its bearing cone into cup (320), previously installed in the housing.

Locate the assembled flange shaft with shim (210) into position through bearing cup (310) and spiral bevel gear assembly (75).

Install the washer plate (200), locking tab washer (240) and screws (580). The tightening torque is **110Nm**

Re-check the breakaway torque at nut (130). 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**.

If the checks are correct, remove the Flange shaft and remove the inner race of bearing (310) and place it into the bearing cup in the housing. Check to make sure Shim (210) is behind the Bearing.

Install retaining ring (460) into the gearbox housing. Apply **Loctite 574** to the housing location for seal (340) and install the seal until seated against the retaining ring.

Press the Flange Shaft (60) into the Bearing (310) and assemble the parts previously removed. Secure screws (580) by bending the tab washer against screw heads.

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 (480) and spring washers (550).

Insert Dowel Pin (440) into the Gearbox housing.

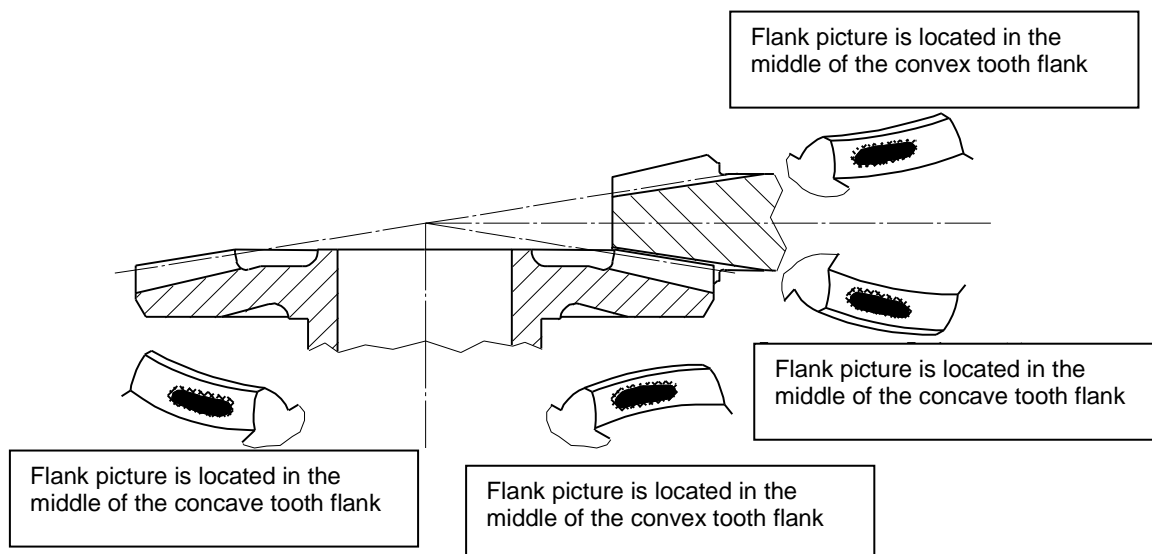
Clean and remove any oil from the mounting faces of the upper gearbox cover and the gearbox housing. Apply **Weicon Silmate** (Gasket Eliminator) to the mounting faces and fit the upper cover to the housing. Secure with socket screws (500, 510, 520 & 530) and spring washers. Please note to torque screws (510, 520 and 530) to 33Nm.

## 1.8 Adjustment of the tooth contact pattern of the 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 colour. Then, after some turnings, the flank picture is visible as shiny spots on the flanks.

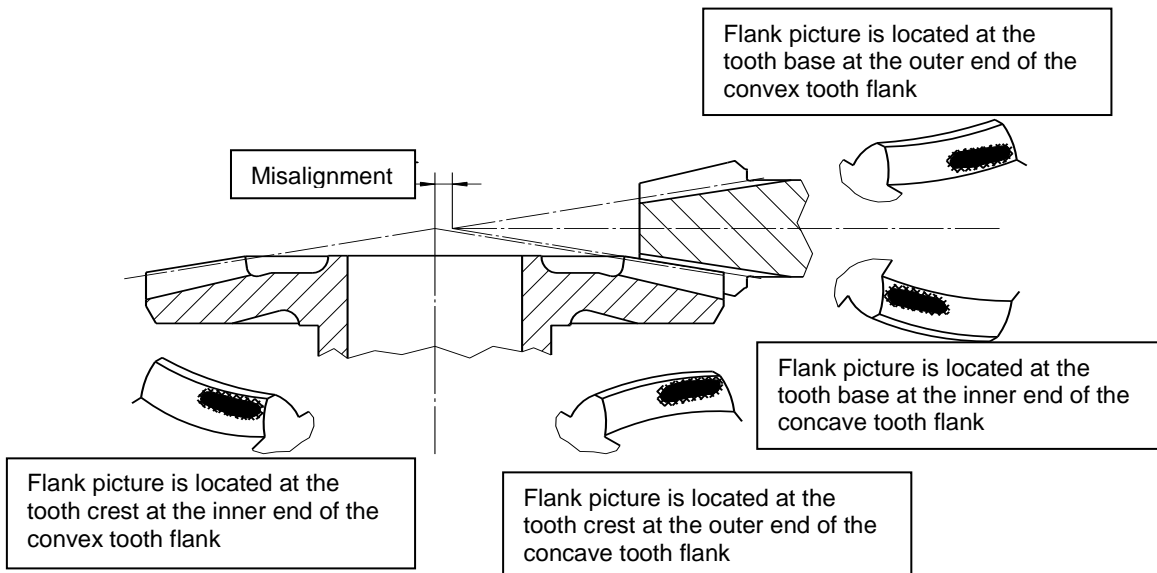
The recommended flank picture looks like as follows:



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.

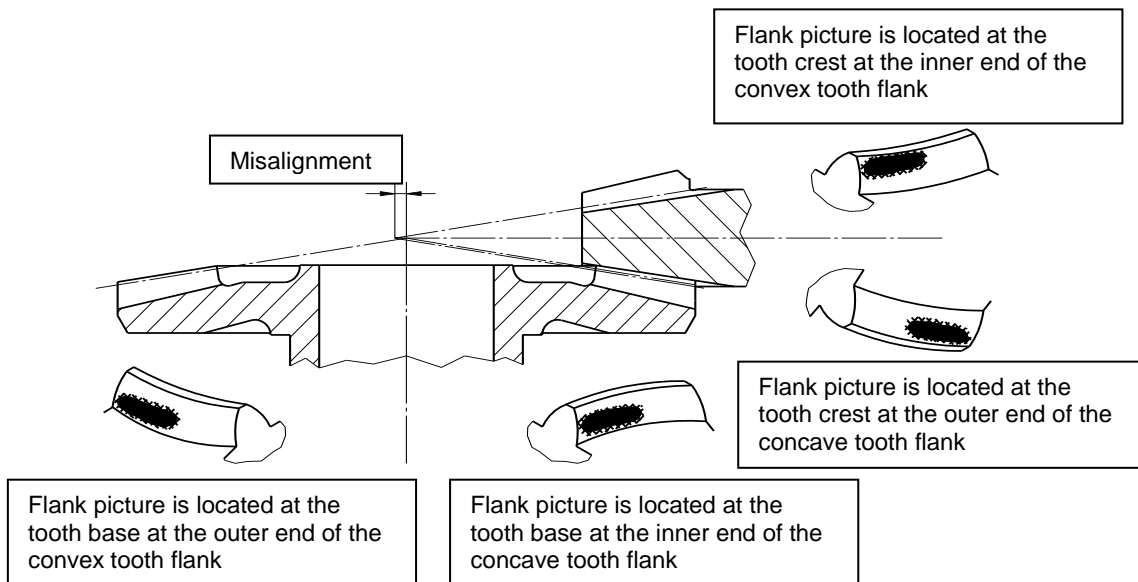
## Possibility 1: Assembly distance reduction of the bevel pinion

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 (610).

#### 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 ITEMS

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

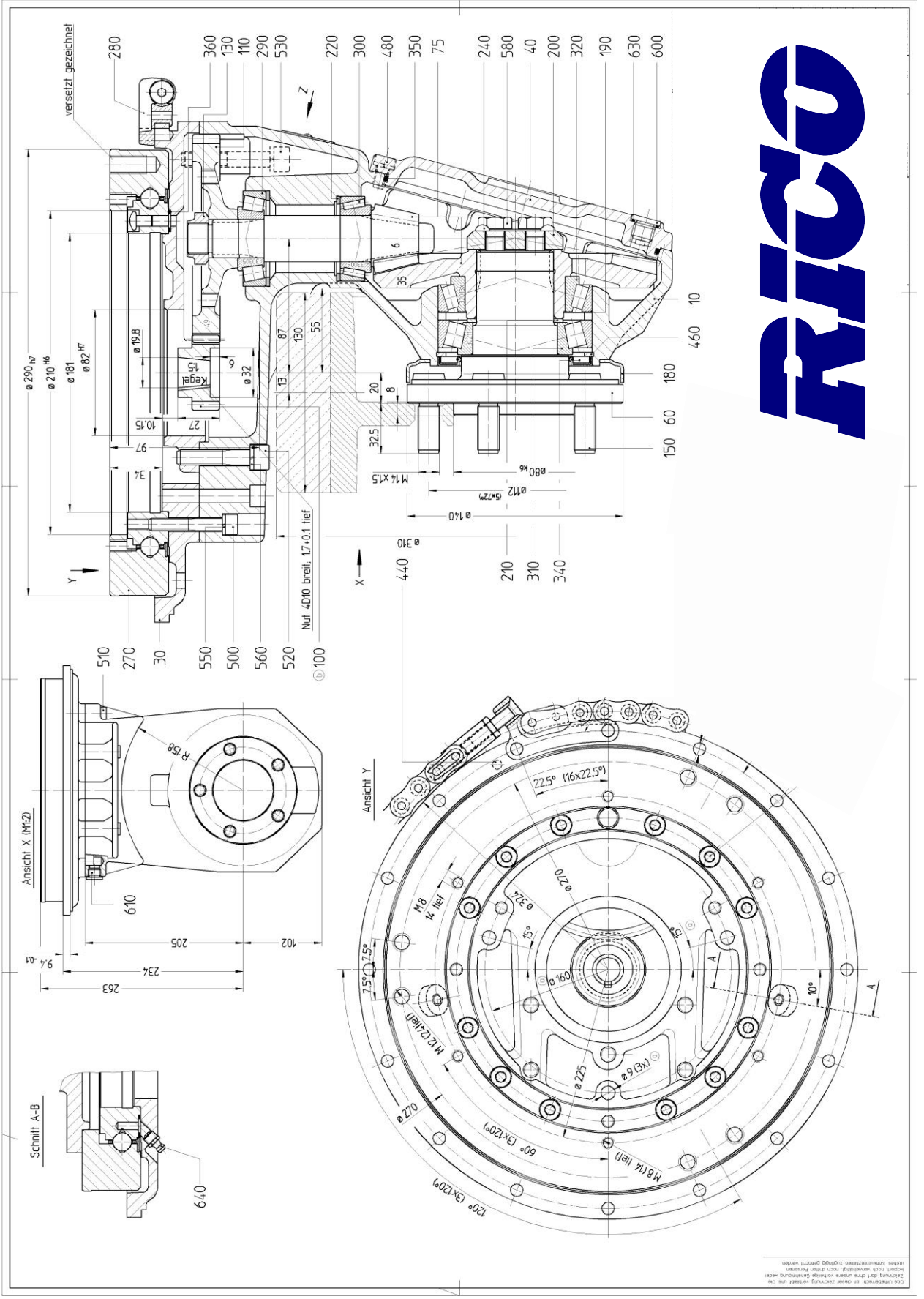
The M6x8 threaded pins must be removed from the gearbox cover (steering bearing) and replaced by the grease nipples (640), which are supplied loose with the gearbox.

Remove the protective plastic cap (690) from the 82 mm dia. bore.

The motor pinion (100) is supplied protected with a plastic cap (660).

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

5. Drawing 5.45.310.1



**RICO**

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 Zeichnung darf ohne unsere vorherige Genehmigung nicht  
 kopiert, weitergegeben, ausgedruckt, verändert oder  
 in irgendeiner Weise verwendet werden.





6. PARTS LIST

5.45.310.1

Pos.	Part #	Part Name	Qty
10	01.0820.1	Gearbox Housing	1
30	08.0266.1	Top Gearbox Cover	1
40	08.0214.2	Lower Gearbox Cover	1
60	12.0124.3	Axle Shaft	1
75	2802423+2902303	Spiral Bevel Gear Set	1
100	15001723	Helical Pinion	1
110	44.0226.4	Helical Gear	1
130	60.0050.4	Hex Nut	1
150	61.0011.4	Wheel Bolt	5
180	65.0671.4	String Guard	1
190	66.0140.4	Shim	1
200	66.0181.4	Washer Plate	1
210	66.0240.4	Shim	2
220	66.0319.4	Shim	1
240	68.0006.4	Locking Tab Washer	1
250	72.1837.4	Data Plate	1
270	7.05.18.2	Steering Bearing	1
280	7.71.05.3	Chain Tightener	1
290	106 0105900	Bearing, Roller	1
300	106 0706900	Bearing, Roller	1
310	106 0011100	Bearing, Roller	1
320	106 0313100	Bearing, Roller	1
340	200 0701016	Seal	1
350	211 1793000	O-ring	1
360	211 0092000	O-ring	3
440	463 0602400	Dowel Pin	1
460	232 0010002	Retaining Ring	1
480	309 0801640	Socket Head Screw	8
490	309 0803040	Socket Head Screw	12
500	307 0805040	Socket Head Screw	5
510	307 1003040	Socket Head Screw	2
520	307 1005040	Socket Head Screw	5
530	307 1006540	Socket Head Screw	2
550	411 0008000	Lock Washer	25
560	411 0010000	Lock Washer	9
580	311 5403550	Hex Bolt	2
600	341 0016015	Drain Plug, Magnetic	1
610	341 0016010	Fill Plug	1
630	215 1602000	Copper Sealing Ring	2
640	386 0000800	Grease Zerk	2
650	490 0081504	For packaging only	1
660	488 0635000	For packaging only	1
670	361 1415020	For packaging only	1
700	251 0005249	Thread Lock	1
710	250 0000307	Loctite	1
720	250 0000574	Loctite	1
730	250 0000603	Loctite	1
750	701 3000003	Black Paint	0.2