SERVICE INSTRUCTION

For

15001604
Transmission

LIST OF CONTENTS

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.

Install the twine shield ring (180) and peen it to secure.

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 the 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 ring (630) into the cover.

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

Assemble the bearing to the cover (30) with 10 screws (480) and spring washers (550). Note vent plug boring alignment and seal the boring with o-ring (360).

1.7 Assembly of the gearbox

Feed the assembled spiral 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) 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 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) and secure with locking tab washer (240) and screws (580). The tightening torque is ***110Nm***.

Re-check the breakaway torque at nut (130). It must now be ***1.3 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.

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 (420) 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 (470) and spring washers (550).

Insert Dowel Pin (440) into the Gearbox housing.

Assemble the steer ring (50) with 4 spring pins (450) and 4 screws (490) to the gearbox cover and steering bearing assembly, from Step 1.6. Please note that 2 screws (490) have to be sealed from the inner side of the gearbox with sealing rings (540).

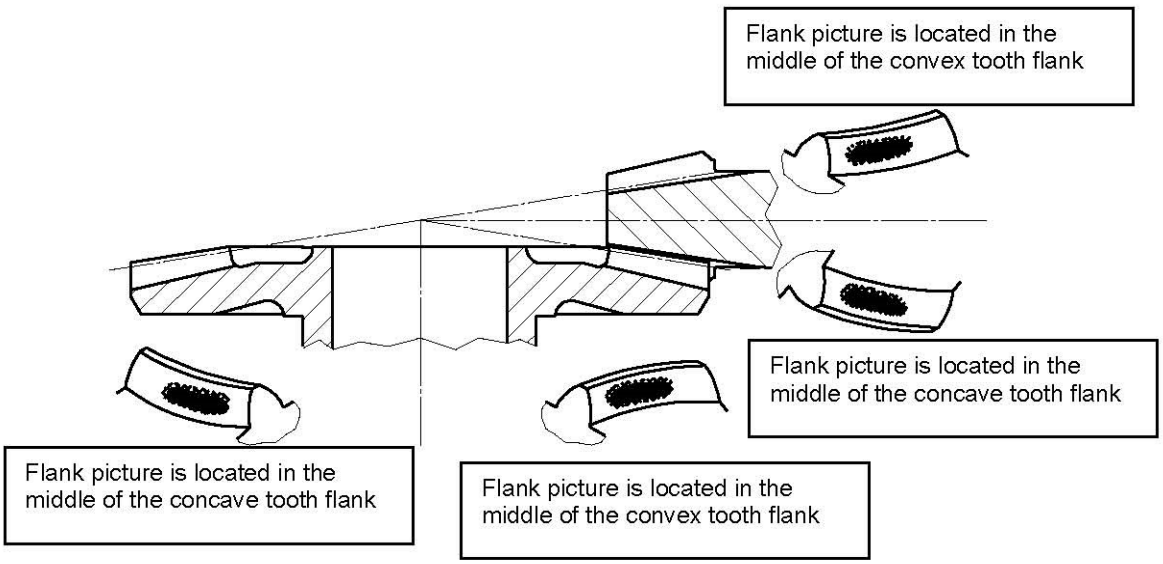
Clean and remove any oil from the mounting faces of the upper gearbox cover and the gear housing. Apply ***Weicon Silimate*** (Gasket Eliminator) to the mounting faces and fit the upper cover to the housing. Secure with socket screws (520 & 530) and spring washers (560). Please note to torque screws (520 and 530) to 33Nm. Install 3 screws (500) and spring washers (550) to complete the assembly of the steering ring to the gearbox

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

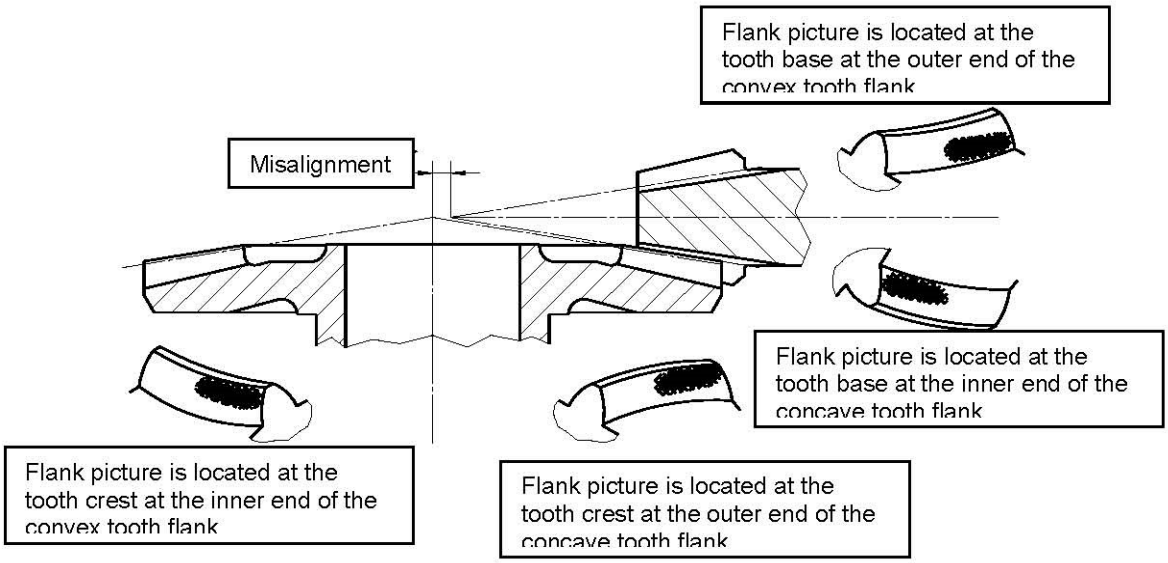
The recommended flank picture looks like as follows:



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.

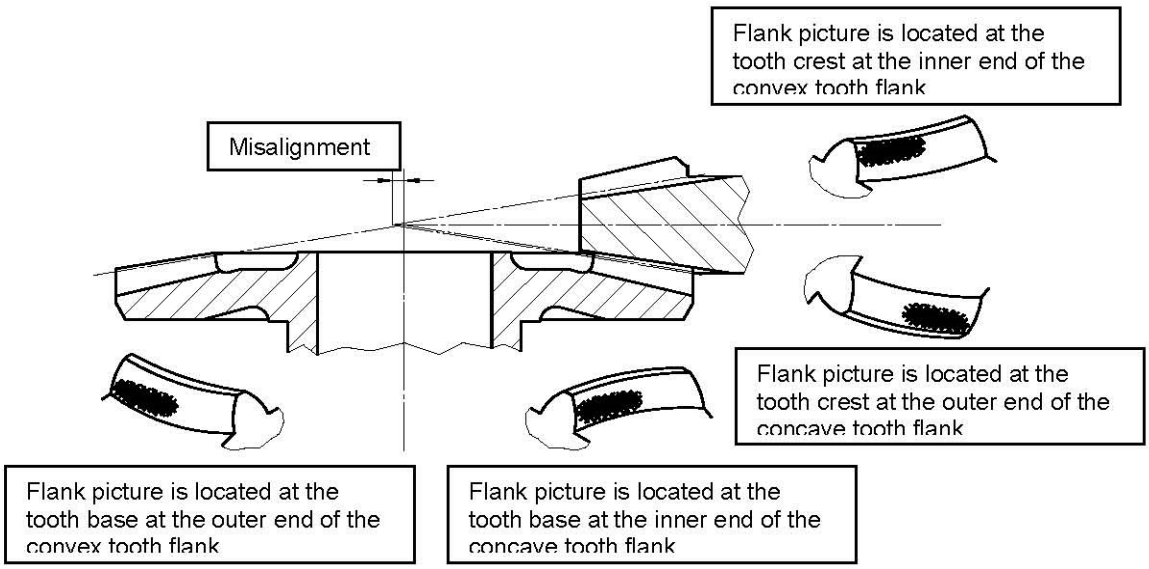
Possibility 1: Assembly distance reduction of the bevel pinion

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

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

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

4. SPARE PARTS ORDERING

In order to process your order for spare parts successfully we need to know the following:

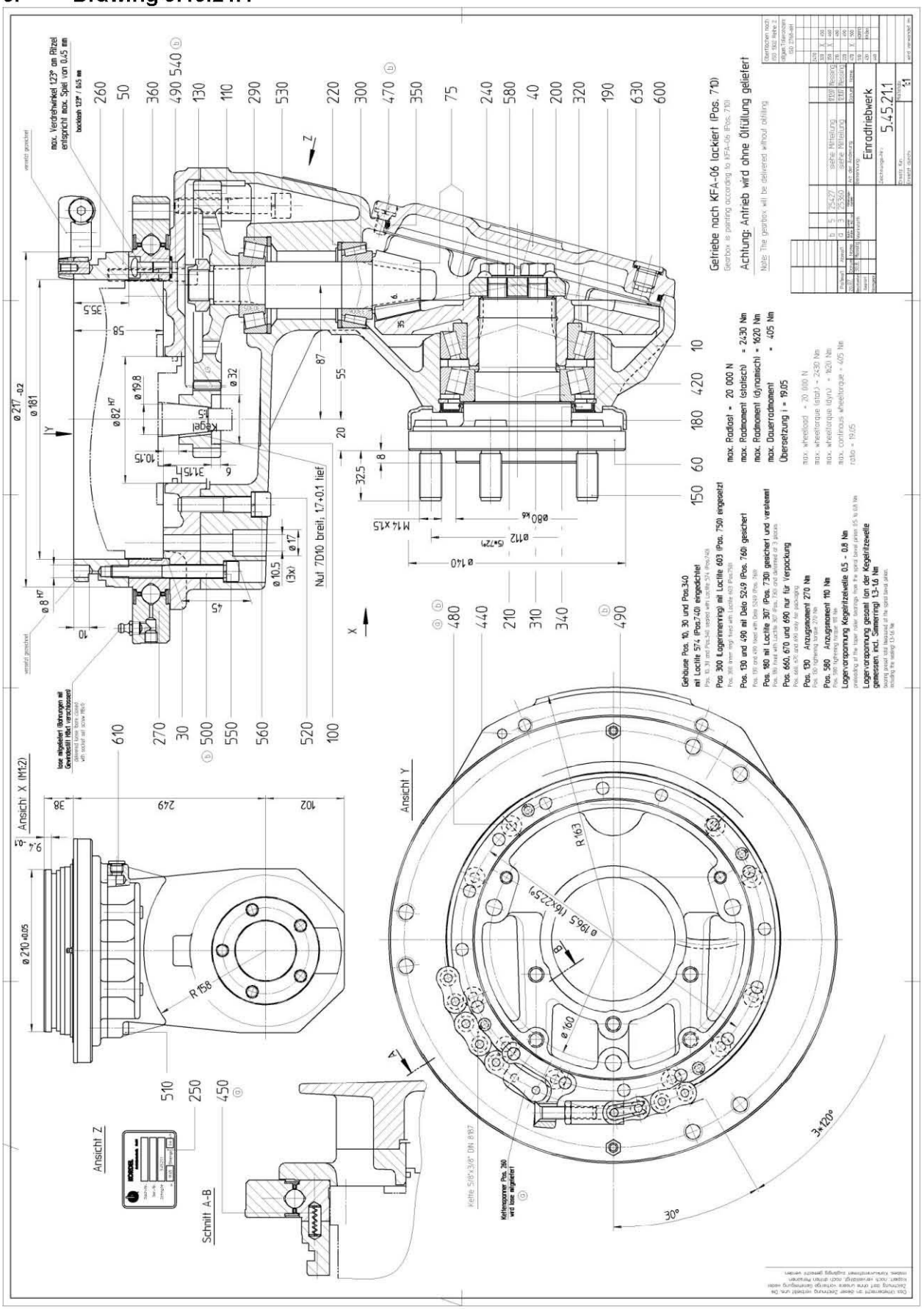
1. Description of the gearbox
2. Part number of the gearbox
3. Description of the required component
4. Part number of the required component
5. Quantity required

EXAMPLE

Order 5 wheel studs for the gearbox 5.45.21.1

1. one-wheel-drive-unit
2. 5.45.21.1 **the required data appears**
3. Wheel stud **also in the Parts List**
4. 61.0011.4
5. 5

5. Drawing 5.45.21.1



6. Spare parts list 5.45.21.1

Pos	Part No.	Komponentenbezeichnung	Bezeichnung 2	Part Name (English)	Qty
10	01.1389.1	GEHÄUSE	GGG40	Gearbox Housing	1
30	08.0794.1	GETRIEBEDECKEL	EN-GJS-400-15	Top Gearbox Cover	1
40	08.0214.2	GETRIEBEDECKEL	GGG40	Lower Gearbox Cover	1
50	09.0810.3	LAGERDECKEL	EN-GJS-400-15	Steering Ring	1
60	12.0124.3	FLANSCHWELLE	C45	Axle Shaft	1
75	2802423+2902303	KE-RITZEL 28.0242.3	KEGELRAD 29.0230.3	Spiral Bevel Gear Set	1
100	43.0777.4	STIRNRITZEL	16MNCR5	Spur Pinion	1
110	44.0226.4	STIRNRAD 87/15	16MNCR5	Spur Gear	1
130	60.0050.4	SECHSKANTM. M20X1.5	C45	Hex Nut	1
150	61.0011.4	RADBOLZEN M14X1.5X48	10.9	Wheel Bolt	5
180	65.0671.4	FADENSCHUTZRING	ST12-3	String Guard	1
190	66.0140.4	PAßSCH. 90/? STÄRKE	S. ZCHNG. 75141	Shim	1
200	66.0181.4	SCHEIBE	42CRMO4	Washer Plate	1
210	66.0240.4	STÜTZSCHEIBE 50/?	FEDERSTAHL 69638	Shim	2
220	66.0319.4	STÜTZSCHEIBE 45/?	FEDERSTAHL 75142	Shim	1
240	68.0006.4	SICHERUNGSBLECH	ST60	Locking Tab Washer	1
250	72.1836.4	TYPENSCHILD	BESCHR. ALUFOLIE/S.KL.	Data Plate	1
260	7.72.01.3	KETTENSPANNER		Chain Tightener	1
270	7.05.81.2	DREHKRANZLAGER	65.2070.2+65.2077.2	Steering Bearing	1
290	106 0105900	KEGELROLLENL 30305	NORMAL DIN 720	Bearing, Roller	1
300	106 0706900	KEGELROLLENL 33006	NORMAL DIN 720	Bearing, Roller	1
310	106 0011100	KEGELROLLENL 30211	NORMAL DIN 720	Bearing, Roller	1
320	106 0313100	KEGELROLLENL 32013	NORMAL DIN 720	Bearing, Roller	1
340	200 0701000	WEDI 70X100X6 BA	NORMAL A DIN 3760	Seal	1
350	211 1793000	O-RING 179X3	NORMAL	O-ring	1
360	211 0092000	O-RING 9X2	NORMAL	O-ring	1
420	232 0010002	SPRENGRING SB100	NORMAL	Retaining Ring	1
440	463 0602400	ZYLINDERST. 6M6X24	5.8 DIN 7	Dowel Pin	1
450	455 0800203	CONNEX-SPANNH. 8X20	50CRV4 SCHWER GESCHL	Spring Pin	4
470	309 0801640	ISKT.SCHR. M8X16	8.8 DIN 7984	Socket Head Screw	8
480	309 0803040	ISKT.SCHR. M8X30	8.8 DIN 7984	Socket Head Screw	10
490	307 0805040	ISKT.SCHR. M8X50	8.8 DIN 912	Socket Head Screw	4
500	307 0807540	ISKT.SCHR. M8X75	8.8 DIN 912	Socket Head Screw	3
510	307 1003040	ISKT.SCHR. M10X30	8.8 DIN 912	Socket Head Screw	2
520	307 1005040	ISKT.SCHR. M10X50	8.8 DIN 912	Socket Head Screw	5
530	307 1006540	ISKT.SCHR. M10X65	8.8 DIN 912	Socket Head Screw	2
540	225 0001800	USITR. 9.3X13.3X1	NORMAL FORM U	Seal Ring	2
550	411 0008000	FEDERRING 8	NORMAL DIN 7980	Lock Washer	25
560	411 0010000	FEDERRING 10	NORMAL DIN 7980	Lock Washer	9
580	311 5403550	SKT-SCHR.M12X1.5X35	10.9 DIN 961	Hex Bolt	2
600	341 0016015	MAGN.V.SCHR M16X1.5	5.8 VERZ. DIN 908	Drain Plug, Magnetic	1
610	341 0016010	VERSCHL.SCHR.M16X1.5	5.8 DIN 908	Fill Plug	1
630	215 1602000	DICHTR. A16X20X1,5	CU DIN 7603	Copper Sealing Ring	2
660	488 0483000	SCHUTZKAPPE 48.3	GPN250	For packaging only	1
670	361 1415020	SECHSKANTM. M14X1.5	8(17H) DIN 934	For packaging only	1
690	490 0081504	KEGELSTOPFEN B815	GPN 600	For packaging only	1
710	701 3000003	LACK RAL9005 SCHWARZ	ACRYL 2K. NR.5E2518R900500	Black Paint	0.2
730	250 0000307	LOCTITE 307		Loctite	1
740	250 0000574	LOCTITE 574		Loctite	5
750	250 0000603	LOCTITE 603		Loctite	1
760	251 0005249	DELO 5249		Thread Locker	0.001