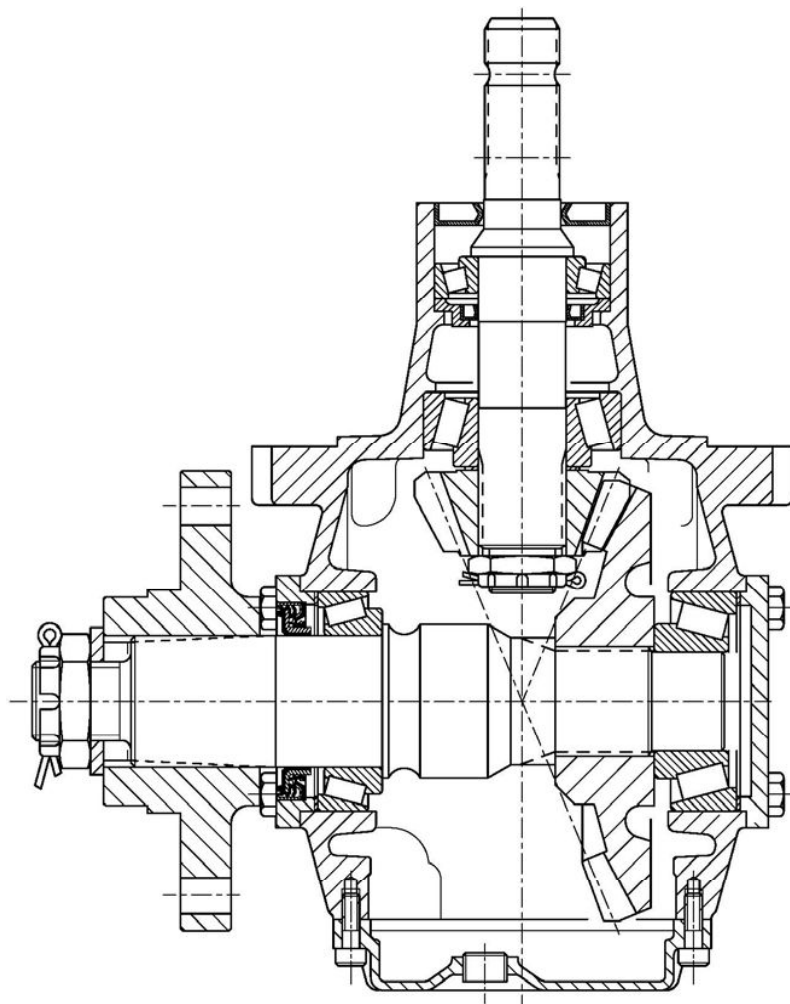


VERMEER

SERVICE MANUAL

COMER INDUSTRIES Code : 9.262.344.20



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Introduction

The information contained in this manual is only a general information.

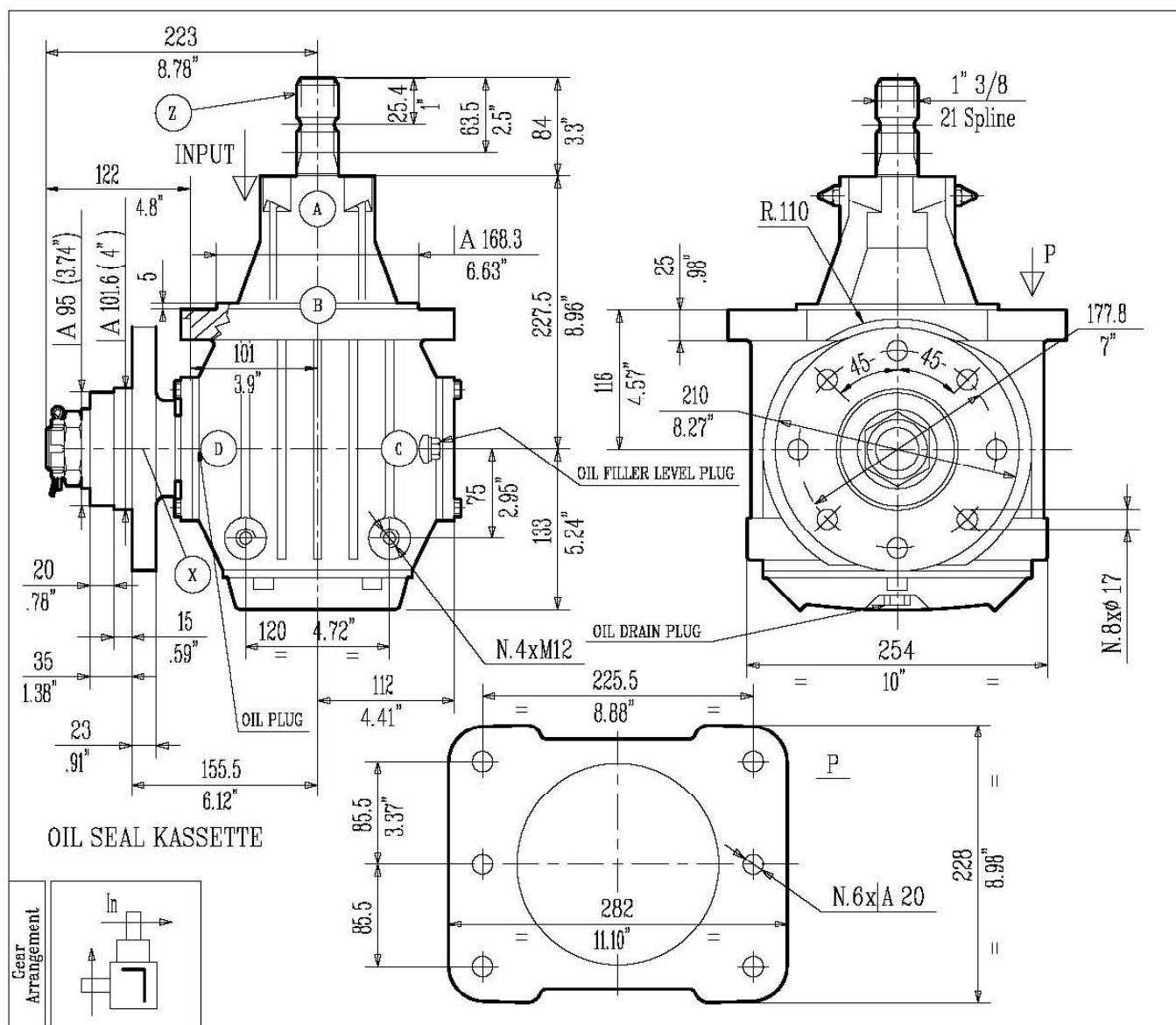
Comer Industries maintains the right of modifying or updating the content of this manual when requested without need of previous information.

In consideration of the attention and care needed for disassembly/re-assembly operations, the success and the safety of the intervention are exclusively under operator's responsibility.



comer industries

Dimensional drawing

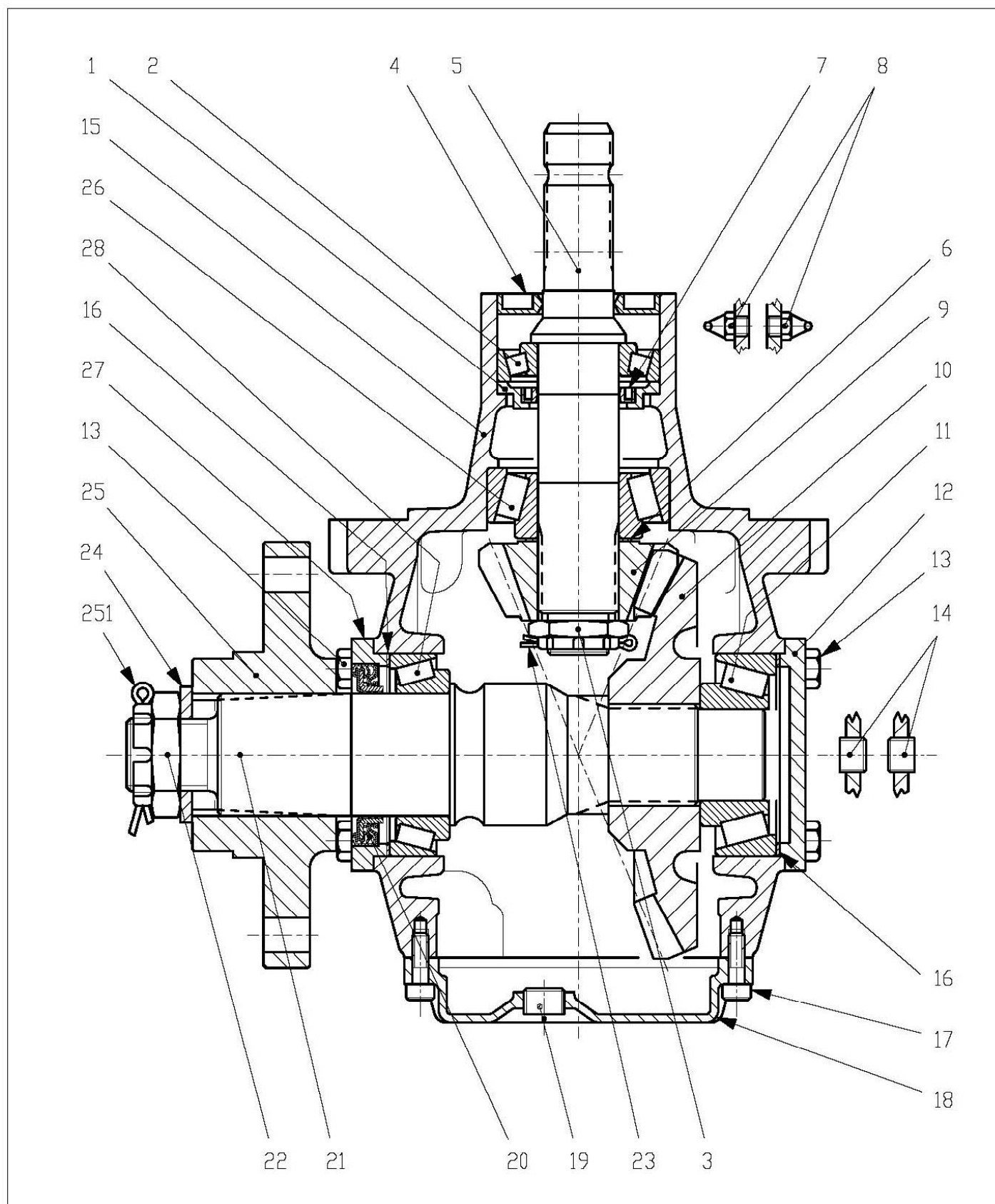


REDUCTION GEAR UNITS

Ratio		Rated Input		Rated Input Power		Rated Output torque		Weight		Oil ☒ Grease ☐					
i		r.p.m.		HP KW		da Nm		Kg		Type Quantity Kg					
2.42 : 1		2075		95 69.8		75.4				SAE.90EP					
Bevel Couplings							Cylindrical Couplings							Bearings	
Helicoidal	Straight	Teeth Number				Module	Helicoidal	Straight	Teeth Number				Module	A	
		Z 1	Z 2	Z 3	Z 4				m	Z 1	Z 2	Z 3			
	X	12	29			7								C	32309
														D	33112
														E	
														F	
														G	
														H	
Components Material															
Casing		Shaft X		Shaft Z		Bevel Gear		Spur Gear							
GS 400 ASTM 60.40.18		18 NiCrMo5 AISI 4320		18 NiCrMo5 AISI 4320		Z12=AISI 4320 Z29=AISI 3115									



Spare part drawing





List spare part drawing

DESIGNATION GEARBOX T-22A			CODE N° 9.262.344.20	
POS.	DRG. N.	PIEC	DESCRIPTION	
1	0.262.7108.00	1	BUSH	
2	8.0.9.01060	1	BEARING	30208
3	0.132.7106.00	1	NUT	M30X1.5
4	8.7.3.00081	1	OIL SEAL	35X80X10
5	0.262.2206.00	1	SHAFT	1"3/8 Z21
6	0.244.7500.00	1	SHIM KIT	40.3x51.5
7	8.7.3.00702	1	OIL SEAL	40X52X7
8	8.8.1.00675	2	GREASE NIPPLE	M10X1,5
9	0.262.5007.00	1	PINION	Z12 M7
10	0.262.6013.00	1	CROWN WHEEL	Z29 M7
11	8.0.9.02100	1	BEARING	32309
12	0.262.1310.00	1	COVER	
13	8.1.1.01895	8	BOLT	M10X25 10.9
14	8.6.6.00201	2	PLUG	3/8"GAS
15	0.262.0508.00	1	CASING	
16	0.703.7500.00	2	SHIM	99.7
17	8.1.2.00197	6	BOLT	M8X25 8,8
18	0.262.1302.00	1	COVER	
19	8.6.6.00088	3	PLUG	1/2"GAS
20	9020.445.200	1	DOUBLE LIP SEAL	RWDR-KASSETTE 30X40X7.5
21	0.262.3220.00	1	SHAFT	
22	8.2.2.00560	1	CASTLE NUT	M36X3
23	8.4.7.01111	1	COTTER PIN	B4X55
24	0.288.7101.00	1	BLANK WASHER	
25	0.262.7019.00	1	FLANGE	
26	8.0.9.02182	1	BEARING	32308
27	0.262.1312.00	1	COVER	
28	8.0.9.01851	1	BEARING	33112
251	8.4.7.01045	1	COTTER PIN	

Disassembly

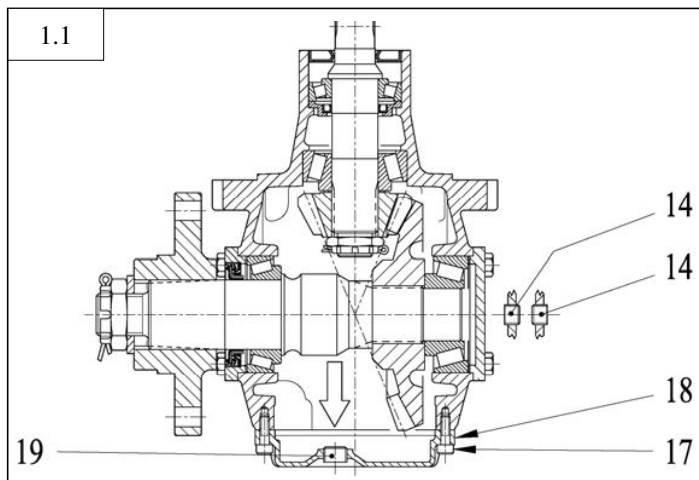
NOTES

Warning : Disassembled shims, must to be assembled in the same positions.

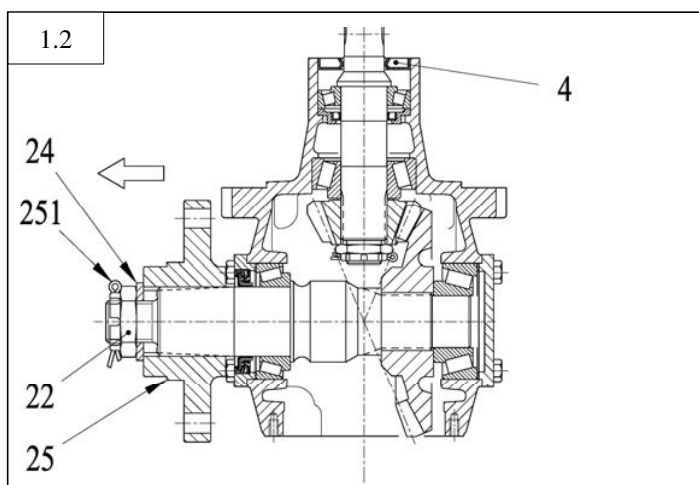
Disassembly

Tools : Allen wrench n°3/8", 5/16", 6,
pliers, chisel, hammer, wrench n° 17-55, pipe.

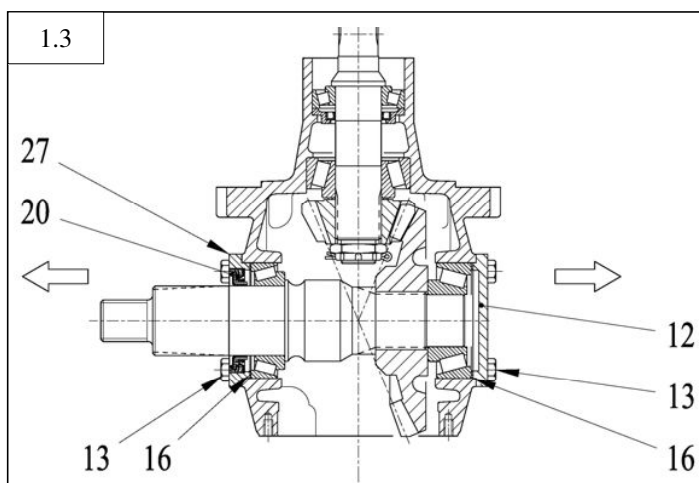
- Unscrew plugs (19), (14) and empty the oil from gearbox.
- Unscrew bolts (17) and take away cover (18).



- Take away cotter pin (251), unscrew castle nut (22).
- Disassemble blank washer (24) and flange (25).
- Disassemble oil seal (4), using chisel and hammer.



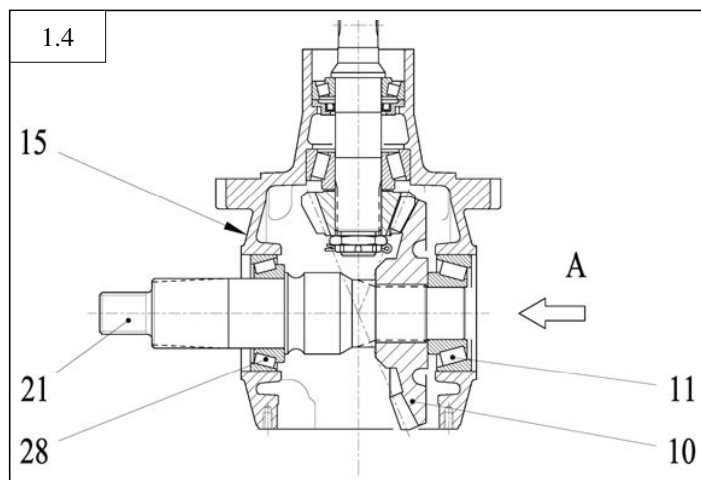
- Put adhesive tape on splined shaft, in order to protect oil seal (20).
- Unscrew bolts (13) and disassemble covers (12), (27) and shims (16).
- Disassemble from cover (27) oil seal (20), using pipe and hammer.



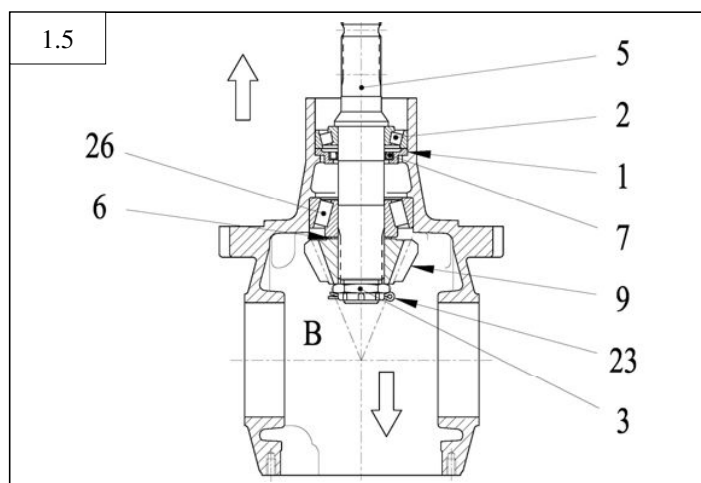
Disassembly

Tools : Hammer, pipe, pliers.

- Hit the shaft (21) from side (A), in order to extract it from housing (15).
- Pick up outer ring (28), take away crown wheel (10) and inner ring (11).
- Extract inner ring (28), from shaft (21), using pipe and hammer.
- Disassemble outer ring (11) from housing (15), using pipe and hammer.



- Take away cotter pin (23), unscrew castle nut (3).
- Disassemble pinion (9) and shim (6).
- Put adhesive tape on splined shaft (5) position B, in order to protect the oil seal (7).
- Hit the shaft (5) from side (B), in order to extract it from housing (15).
- Pick up inner ring (26).
- Extract inner ring (2), from shaft (5), using pipe and hammer.
- Disassemble outer ring (2), cover (1) and oil seal (7), using pipe and hammer.
- Disassemble outer ring (26), using pipe and hammer.



Assembly

NOTES

Clean all the components from remaining grease and silicone.

Replace any particular damaged.

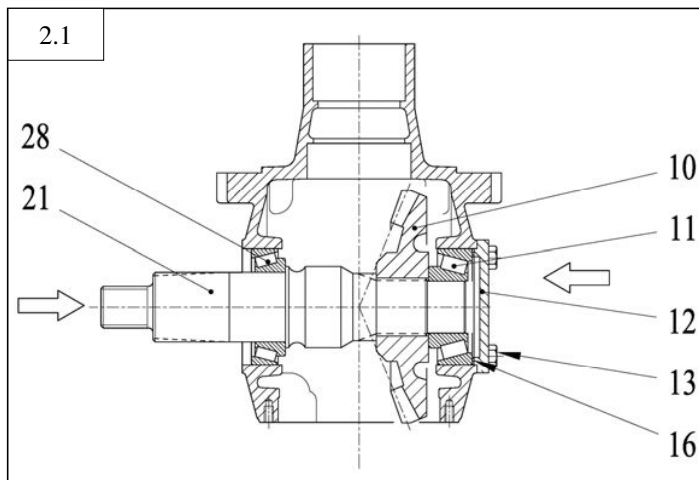
When assembling the taper roller bearings pay attention to not make any pressure on the cages in order to avoid any damage.

When assembling oil seals avoid contact with cutting parts in order to prevent any damage to the inner lip.

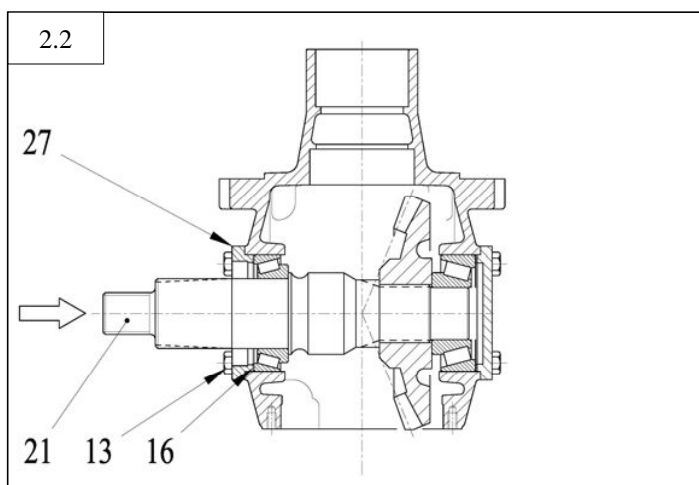
Assembly

Tools : Pipe, hammer, wrench n° 17, torque meter.

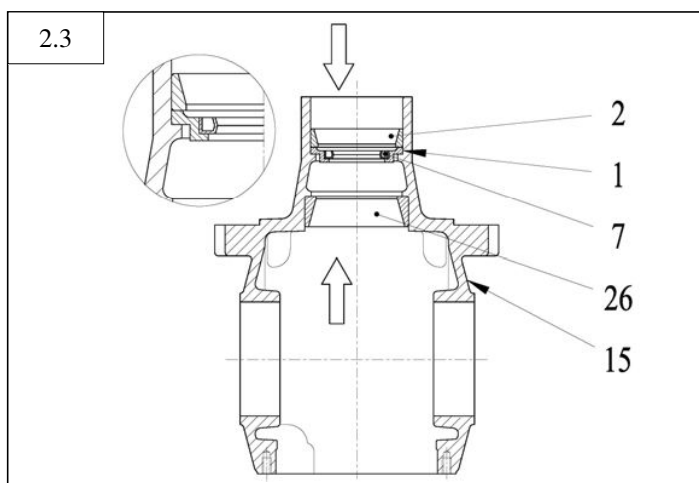
- Assemble crown wheel (10) inside housing.
- Assemble shaft (21) and fit to the crown wheel (10).
- Assemble taper roller bearing (11), using pipe and hammer, shim (16).
- Assemble cover (12), bolts (13) and lock manually.
- Assemble taper roller bearing (28), using pipe and hammer.



- Assemble shim (16), cover (27), bolts (13) and lock manually.
- Pay attention, not assemble oil seal
- Hit the shaft (21) in order to set the axle.
- Check the preload bearings that must be to $4 \div 10$ kgcm, using a torque meter.
- If the preload bearings is not correct, change shim (16) set.
- Disassemble the whole axle.



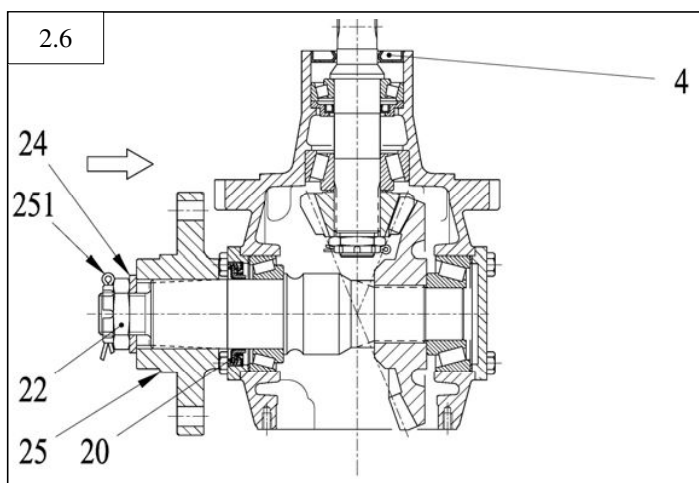
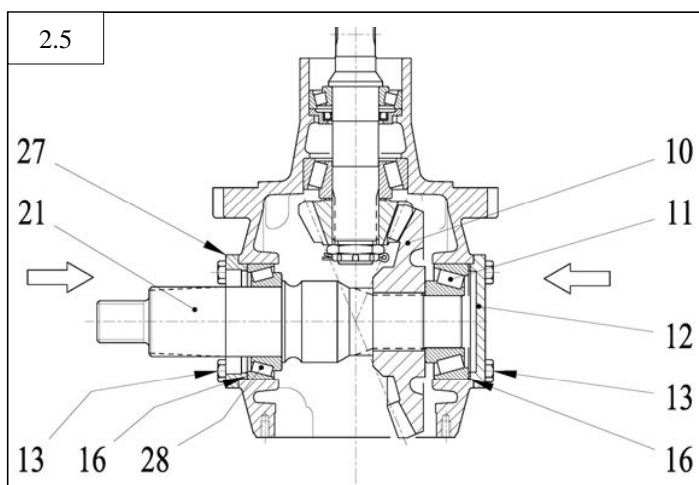
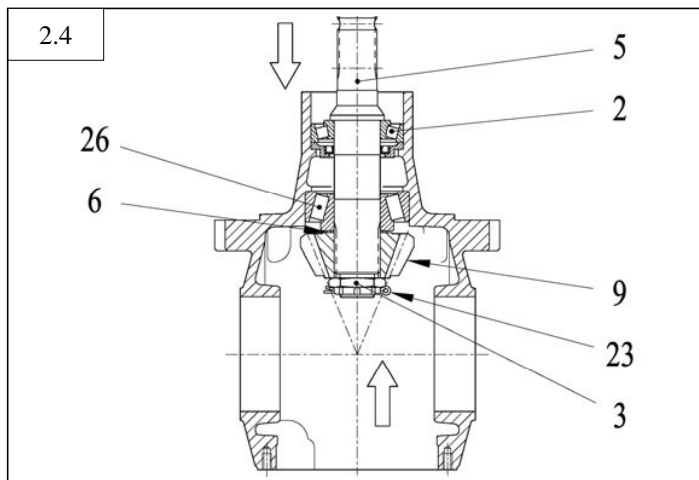
- Assemble outer ring (26), using pipe and hammer.
- Assemble oil seal (7) inside cover (1), using pipe and hammer, as shown in figure.
- Assemble pre-mounted cover (1), outer ring (2), using pipe and hammer.



Assembly

Tools : Pipe, hammer, torquimeter, dynamometric wrench, pliers, wrench n°17-55.

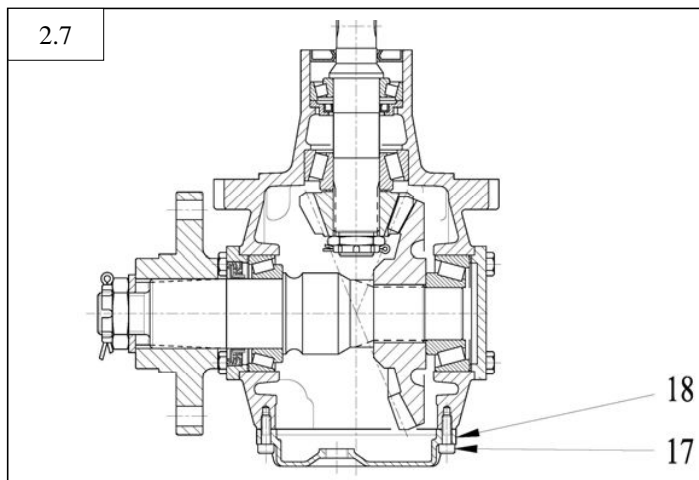
- Assemble inner ring (2) on shaft (5).
- Assemble pre-mounted shaft (5).
- Assemble inner ring (26), shim (6), pinion (9).
- Assemble castle nut (3) and tighten in order to obtain an preload to 3÷5 kgcm.
- Insert the cotter pin (23) in the nearest shaft's hole and than unscrew the castle nut (3) against cotter pin (23).
- Bend cotter pin (23).
- Assemble crown wheel (10) inside housing.
- Assemble shaft (21) and fit to the crown wheel (10).
- Assemble taper roller bearing (11), using pipe and hammer, shim (16).
- Assemble cover (12), bolts (13) and lock manually.
- Assemble taper roller bearing (28), using pipe and hammer, shim (16), cover (27), bolts (13) and lock manually.
- Put a colour like prussian blue on the crown wheel's (10) toothing.
- Lock the shaft (21) and rotate manually the pinion shaft, pay attention to right work direction.
- Verify the right mesh between gears, (see the technical specifications on page 13), the value must be to 0.21÷0.56 mm.
- In order to have the correct backlash, change shims set (16),(6), (please be aware that when you change the shims set you will also have to re-set the preload).
- Disassemble bolts (13) and covers (12),(27)
- Put a silicone film between housing and covers.
- Assemble covers (12),(27),bolts (13) and tighten to 7÷9 kgm
- Put adhesive tape on splined shafts, in order to protect oil seals (4),(20).
- Assemble oil seals (4),(20), using pipe and hammer.
- Assemble flange (25), blank washer (24).
- Assemble castle nut (22) and tighten to 131-138 kgm until if possible insert the cotter pin (251).
- Bend cotter pin (251)



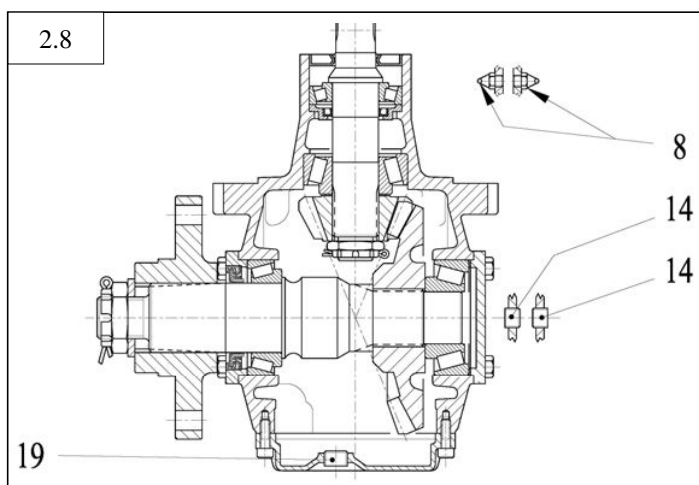
Assembly

Tools : Allen wrench n°6, 3/8", 5/16"
dynamometric wrench.

- Put a silicone film between cover and housing.
- Assemble cover (18), bolts (17) and tighten to 2.5÷3.2 kgm.



- Assemble only one oil plugs (14) and tighten to 3 kgm.
- Assemble oil plugs (19) and tighten to 1 kgm.
- In order to prevent any leak of oil, make the following test: insufflate from the hole plug (14) to pressure bar 0.35 and put the gearbox in a tank; if you prefer you can verify any pressure drop with a manometer (scale about 0.6 bar) for 10 minute.
- Dry the gearbox
- Fill the gearbox with oil SAE.90EP.
- Fill the gearbox with grease NLGI2-EP from nipple greaser (8).
- Assemble plug (14) and tighten to 3 kgm.



Technical specifications

ASSEMBLY AND MAINTANANCE

A) The contact of crown wheel and pinion must be located like in Fig. A (mark obtained without load on crown wheel and pinion)

Use the shims in order to obtain the right contact.

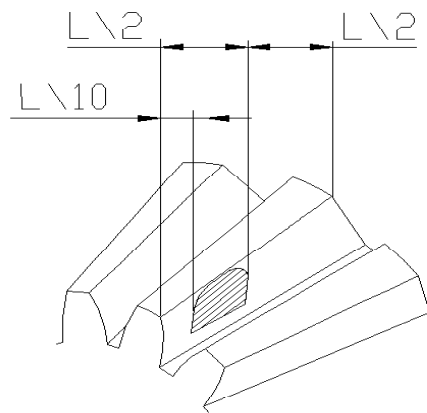


Fig. A

B) Gearbacklash must be respect the following relation:

$(0.03 / 0.08) \times \text{module}$

(if module $m=5$ gearbacklash must be $0.15 / 0.40$ mm)

C) Tightening of bolts must be carried out making use or torquemeter wrench.

Bolt must be tightened according to the following table :

D) Insert oil seals taking care or greasing the zone of contact between oil seal and shaft.

E) Gearbox operators with lubricating oil.

The first oil change is recommended after the first **50 working hours** and / or at least once per year.

Maintenance

Lubrication

- Gearbox operates with oil lubrication
- The type of oil recommended is : SAE 90EP

Oil change :

- First oil change is recommended after the first **50 hours of work** other change after 600 hours and / or once per year at least.