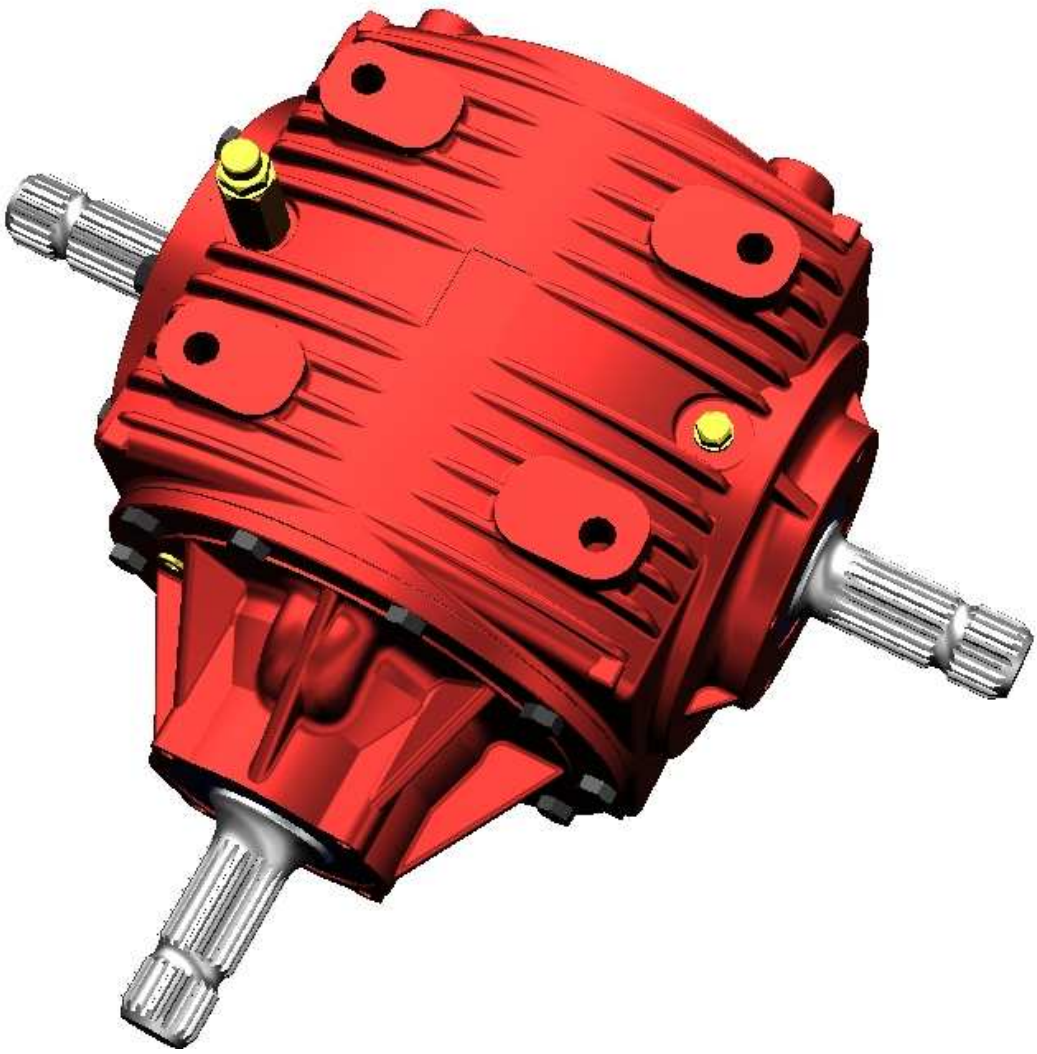
comer industries

SERVICE MANUAL

COMER INDUSTRIES Code : 9.331.019.00



JANUARY 2012

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Index

	Page
- Introduction ……	2
- Spare part drawing ……	3
- Disassembly ……	5
- Assembly ……	8
- Technical specifications ……	11
- Maintenance ……....	12

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.

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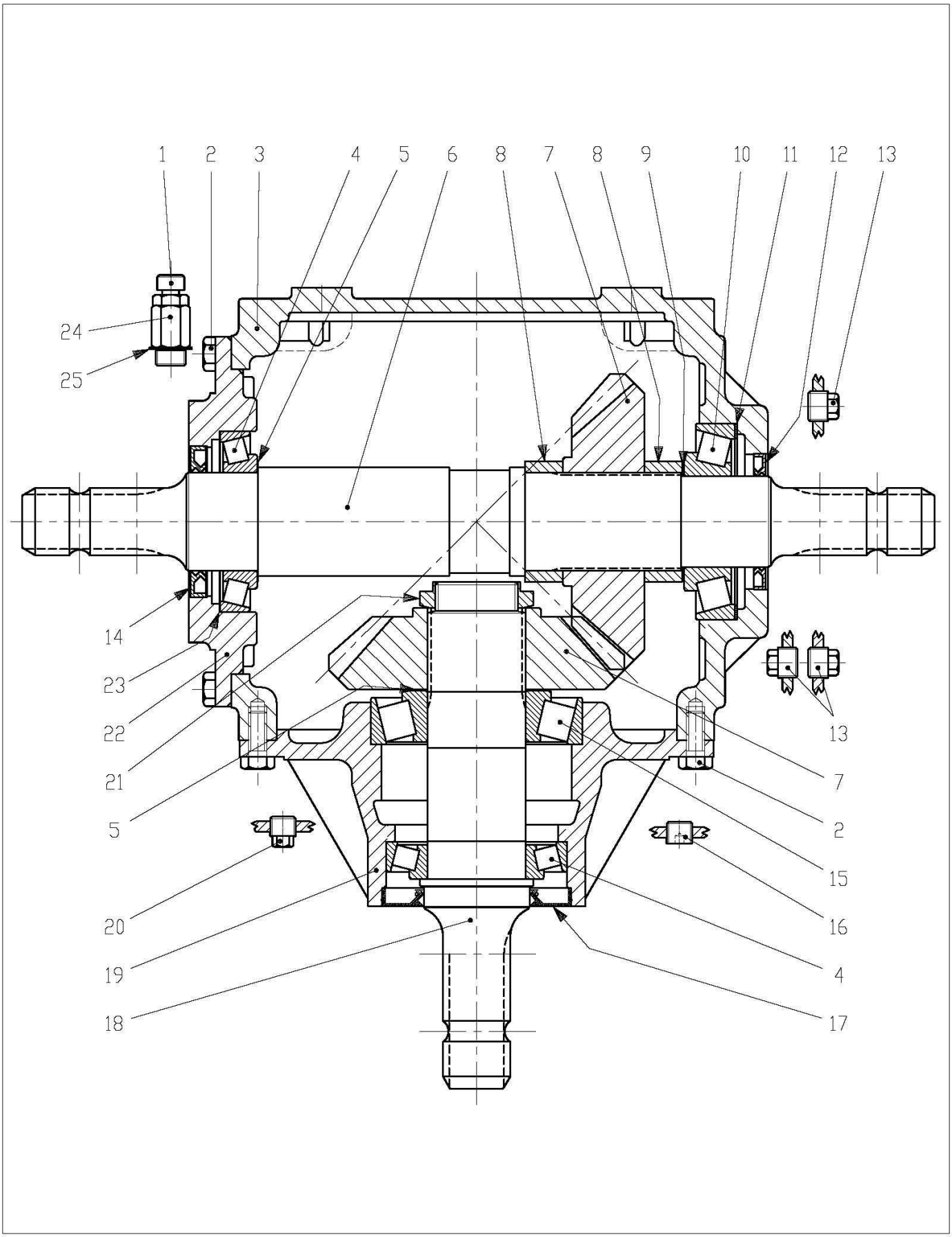
Spare part drawing



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Spare part list

DESIGNATION	GEAR BOX	T-331A	CODE N°	9.331.019.00

POS.	DRG. N.	PIEC	DESCRIPTION	
1	0.707.7102.00	1	PLUG	1/2"GAS
2	8.1.1.00060	18	BOLT	M12X30 8,8
3	0.331.0300.00	1	CASING	
4	8.0.9.00074	2	BEARING	30213
5	0.719.7500.00	1	SHIM	108.0
6	0.331.3001.00	1	SHAFT	1"3/4Z20-1"3/4Z20
7	0.331.6002.00	2	CROWN WHEEL	Z28 M7 R.1
8	0.331.7100.00	2	SPACER	
9	0.248.7500.00	1	SHIM	71.7
10	8.0.9.00179	1	BEARING	30312
11	0.126.7500.00	1	SHIM	129
12	8.7.1.01382	1	OIL SEAL	60X90X8
13	8.6.5.00203	3	PLUG	1/2"GAS
14	8.7.3.00948	1	OIL SEAL	65X100X10
15	8.0.9.01375	1	BEARING	30313
16	8.6.6.00201	1	PLUG	3/8"GAS
17	8.7.1.02388	1	DOUBLE LIP SEAL	
18	0.331.2000.00	1	SHAFT	1"3/4 Z20
19	0.331.1300.00	1	EXTENSION	
20	8.6.5.00006	1	PLUG	3/8"GAS
21	0.267.7107.00	1	NUT	M55X2
22	0.331.1302.00	1	COVER	
23	0.110.7500.00	1	SHIM	79,7
24	8.6.0.01113	1	OIL PLUG EXTENSION	1/2"GAS
25	8.3.3.01114	1	COPPER WASHER	21,46X28X1

Disassembly

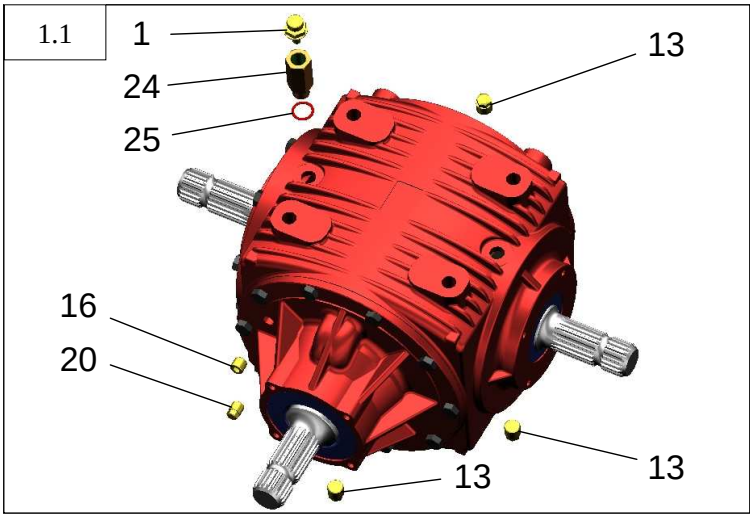
NOTES

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

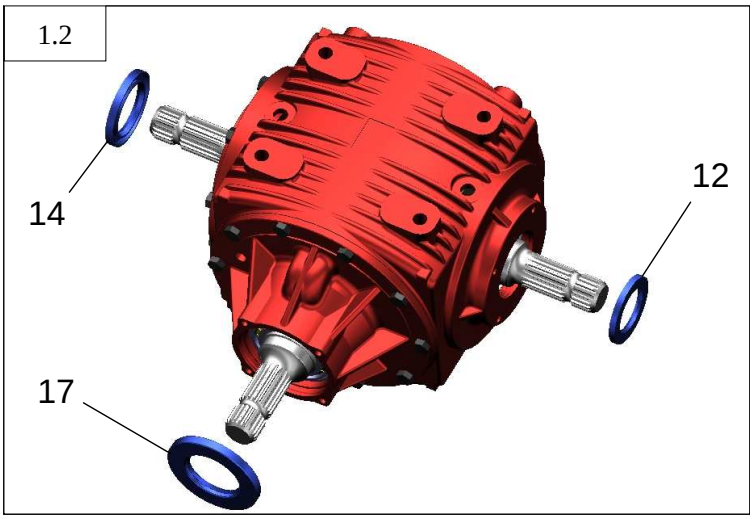
Disassembly

Tools : Allen screw wrench n°8 ,
fork wrench n°13-17-19-24-27, chisel, hammer.

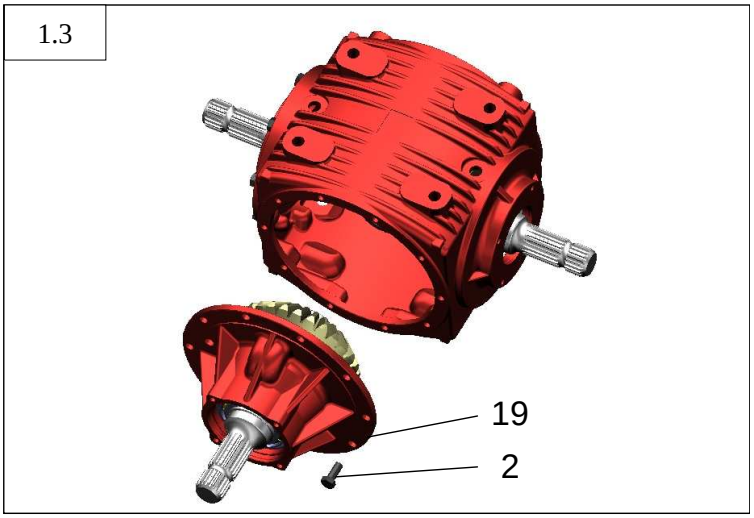
• Unscrew plugs (1),(13),(16),(20) and empty the oil from gearbox.
• Unscrew extension (24) and take away copper washer (25).



• Disassemble oil seals (12),(14),(17), using chisel and hammer.



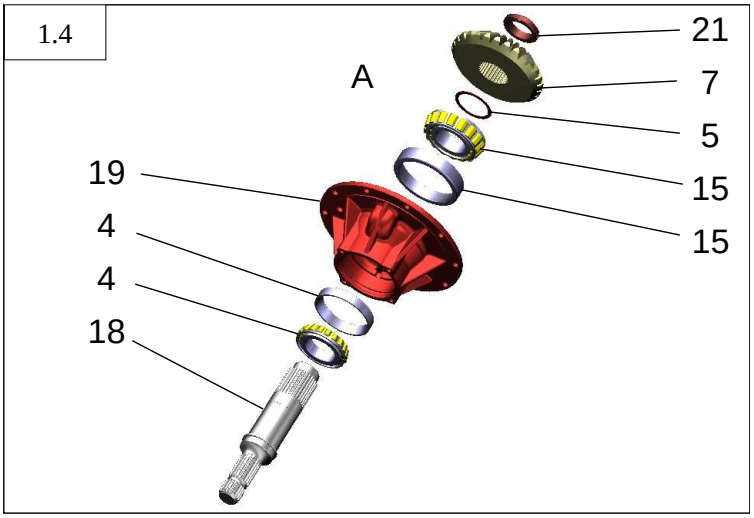
• Unscrew bolts (2) and disassemble extension (19) from housing.



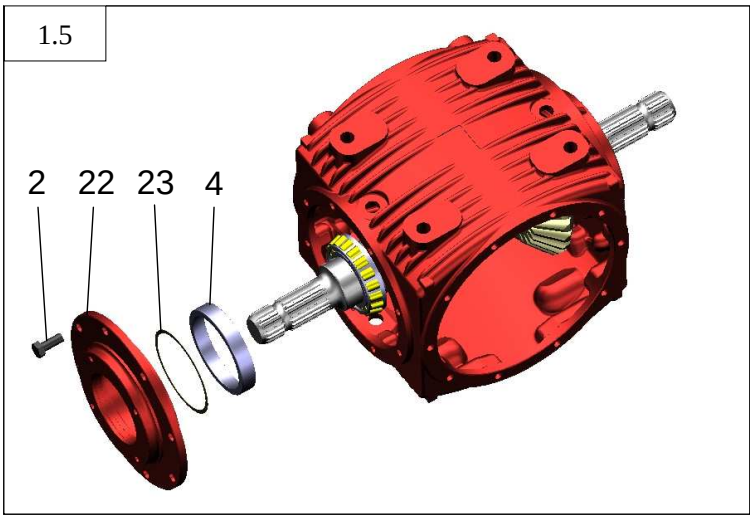
Disassembly

Tools :Pliers ,adjustable wrench, hammer, pipe, chisel, fork wrench n°19, extractor.

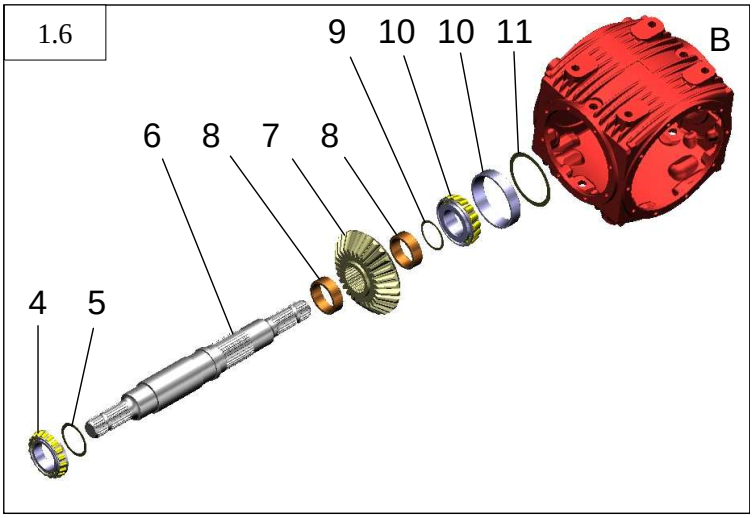
• Uncaulk the locknut (21), using a chisel and hammer.
• Unscrew locknut (21).
• Hit the shaft (18) from side (A), in order to extract it from extension (19).
• Pick up gear (7), shim (5), inner ring (15).
• Disassemble inner ring (4) from shaft (18) using a pipe and hammer.
• Disassemble outer rings (4),(15) from extension (19), using a chisel and hammer.



• Unscrew bolts (2) and take away cover (22), using a chisel and hammer.
• Disassemble outer ring (4) using an extractor from cover (22), take away shim (23).



• Hit the shaft (6) from side (B) in order to extract it from housing.
• Disassemble inner ring (4) shim (5), using a pipe and hammer.
• Disassemble inner ring (10) using an extractor from shaft (6).
• Disassemble shim (9), spacer (8), gear (7), spacer (8), from shaft (6).
• Extract outer ring (10) from housing, using an extractor, take away shim (11).



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.

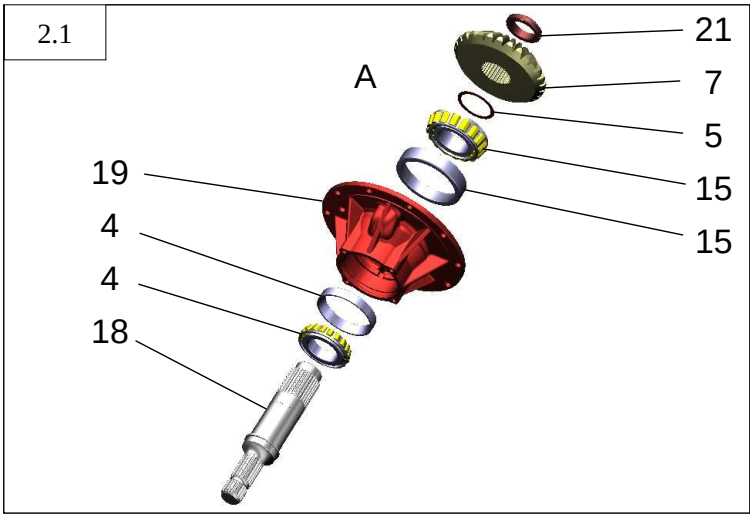
When assembling oil seals avoid contact with cutting parts in order to prevent any damage to the inner lip.

Assembly

Tools : Pipe, hammer, pliers, torquemeter, chisel, dynamometric wrench, fork wrench n°19.

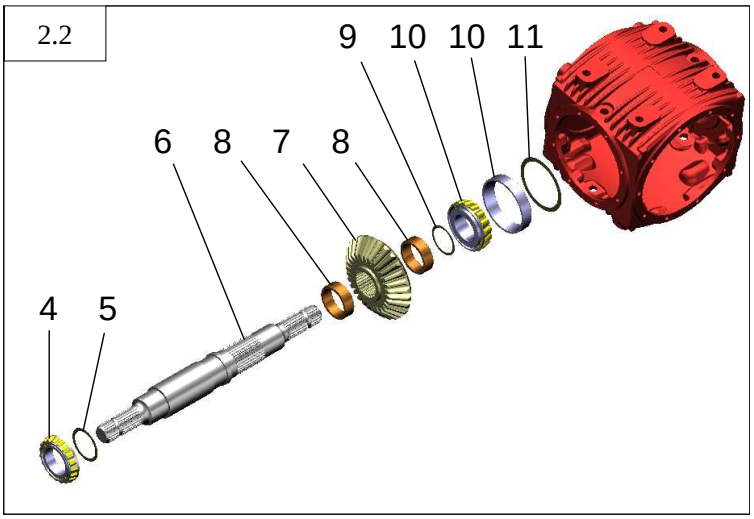
• Assemble outer rings (4),(15) inside extension (19), using a pipe and hammer.
• Assemble inner ring (4) on shaft (18) using pipe and hammer.
• Assemble pre-mounted shaft (18) inside the extension (19).
• Assemble inner ring (15) using a pipe and hammer.
• Assemble shims (5), gear (7).
• Put a Loctite 270 film on threads locknut (21).
• Assemble locknut (21) and tighten in order to obtain an preload axis superior to 10 kgcm.
• Hit the shaft (18) from both sides in order to set the axis.
• Check the axis preload bearings, if the value is major of 10 Kgcm, unscrew the locknut and hit the shaft from both sides, until the value 5÷10 Kgcm is obtained.
• Caulk the locknut (21), using chisel and hammer.

2.1



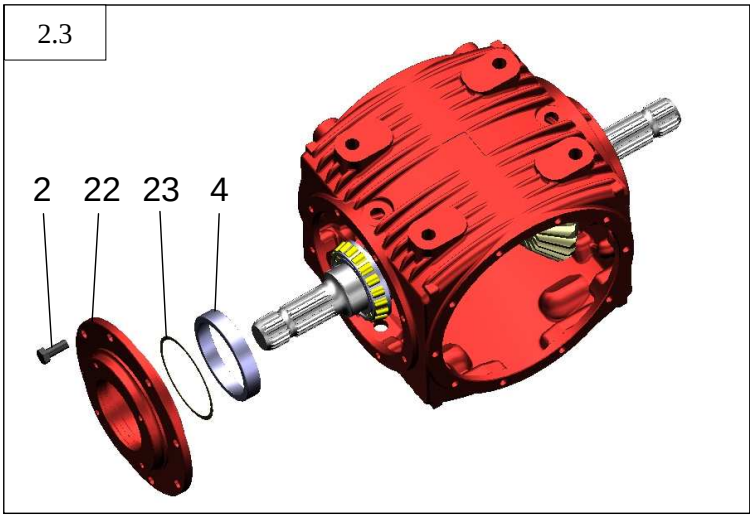
• Assemble shim (11),outer ring (10) inside housing, using a pipe and hammer.
• Assemble shim (5) and inner ring (4) on shaft (6) using a pipe and hammer.
• Assemble spacer (8), gear (7), spacer (8), shim (9) and inner ring (10) on shaft (6), using a pipe and hammer.
• Assemble pre-mounted shaft (6) inside housing.

2.2



• Assemble shim (23), outer ring (4) inside the cover 22).
• Put a silicone film between housing and cover contact faces.
• Assemble cover (22), bolts (2) and tighten to 8.5÷10.9 kgm.
• Hit the shaft in order to set the axis from both sides.
• Check the assembled axis preload, using a torquemeter, the value must be to 0÷3 Kgcm.
• If the value is not correct change the shim set (11),(23).(figures 2.2-2.3)

2.3

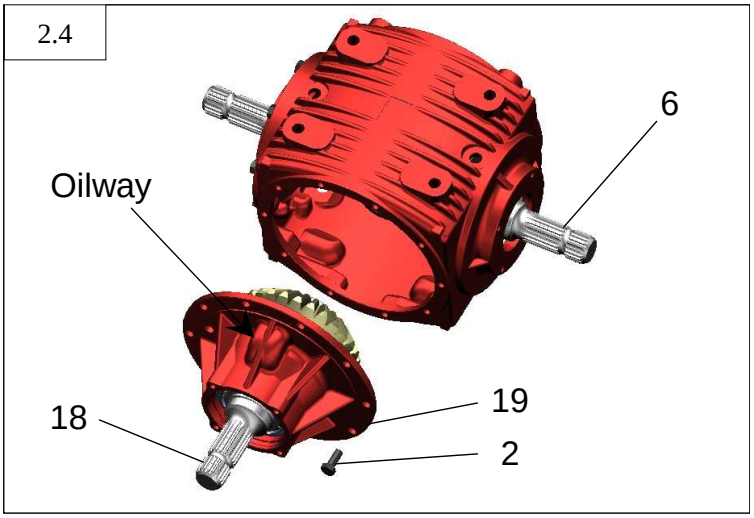


Assembly

Tools : Fork wrench n°13-17-19-24-27, caliper, dynamometric wrench, pipe, hammer, allen wrench n°8.

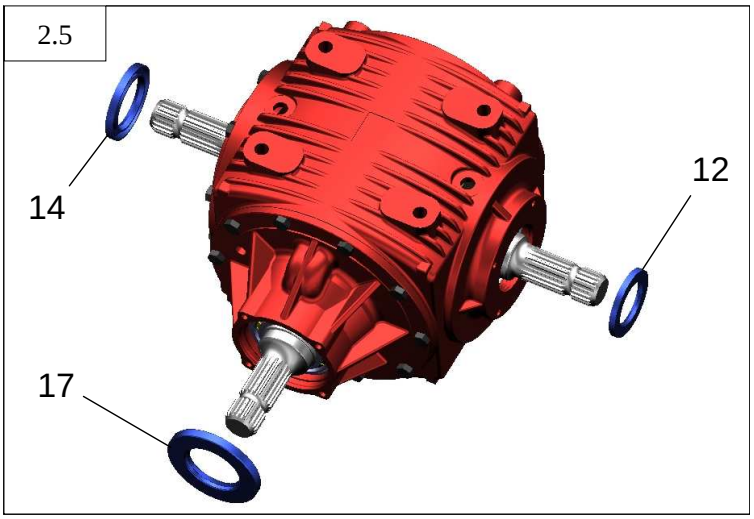
• In order to test the right mesh between the gears, use a colour like prussian blue on the gears teething.
• Assemble pre-mounted extension (19), bolts (2) and tighten manually.
• Lock the shaft (6) and rotate manually the shaft (18), in the work direction.
• Verify the right mesh between gears, (see the technical specifications on page 11), the value must be to 0.21÷0.56 mm.
• In order to have the correct backlash, change shims set (5), (figures 2.1-2.2), (please be aware that when you change the shims set you will also have to re-set the preload).
• Put a silicone film between housing and extension contact faces.
• Assemble extension (19) paying attention to oilway direction (see fig. 2.4), bolts (2) and tighten to 8.5÷10.9 kgm.

2.4



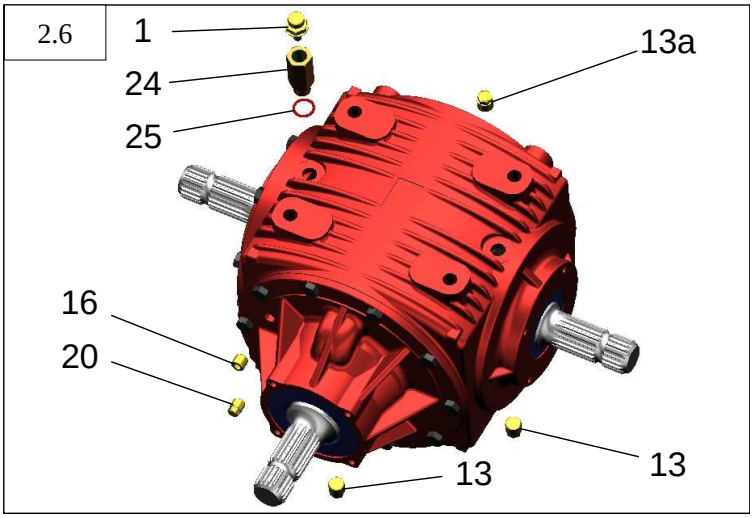
• Assemble oil seals (12),(14) and (17), using a pipe and hammer.

2.5



• Put a silicone film between housing and copper washer contact surfaces.
• Assemble copper washer (25), extension (24) and tighten to 8 Kgm.
•Assemble oil plugs (13),(16),(20) and tighten to 3 kgm.
• In order to prevent any leak of oil, make the following test: insufflate from the hole plug (1) to pressure bar 0.35 and put the gearbox in a tank; if you prefer you can verify any pressure drop with a manometer assembled on hole plug (13a),(scale about 0.6 bar) for 10 minute
• Dry the gearbox if necessary.
• Fill the gearbox with oil SAE-140EP.
• Assemble plug (1) and tighten to 3 kgm.

2.6



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.

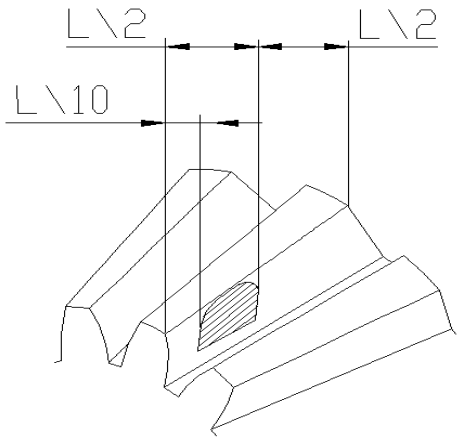


Fig. A

B) Gearbacklash must be respect the following relation:

(0.03 / 0.08) x 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.

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

E) Gearbox operators with lubricating oil.

Maintenance

Lubrication

- Gearbox operates with oil lubrication

- The type of oil recommended : SAE-140EP

- Quantity 6.5 Litres

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.