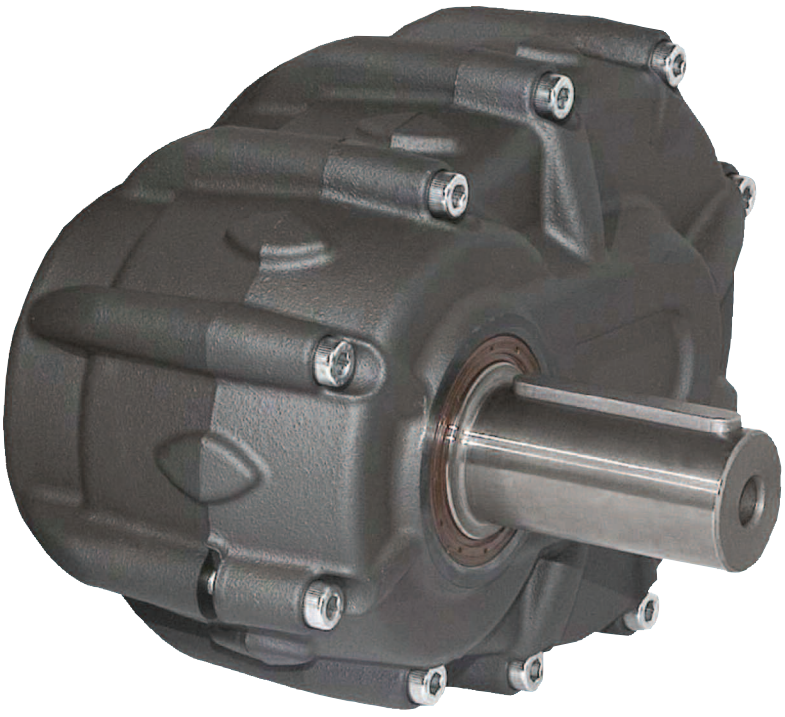
GENERAL PUMP

GEARBOX-71 & 72 SERIES

Owner's Manual

- *Installation*
- *Use*
- *Maintenance*



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General Pump is a member of the Interpump Group

CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2008 DNV

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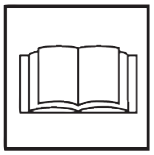
1. INTRODUCTION

This manual provides instructions for use, maintenance and repair of the speed reduction unit for 71 and 72 Series pumps and must be read carefully before the gearbox is installed and used. Unless otherwise stated, reference should be made to the specific manual for each pump. The regular functioning and working life of the pump require that the latter be used and maintained correctly. General Pump will accept no responsibility for damage caused by negligence or by failure to abide by the specifications given in this manual.

On receiving the reduction gear unit, check that it is complete and report any irregularities before installing on the pump.

2. SYMBOL DESCRIPTIONS

Warning
Potential Danger



Read carefully and understand the manual before operating the pump

3. SAFETY

Improper use of pumps and high pressure systems, and refusal to comply with regulations for installation and maintenance, may lead to serious damage to persons and/or objects. Personnel who either install or use high pressure systems must have the required qualifications, must know the characteristics of the components to be assembled or used and, finally, must adopt all precautions necessary to ensure maximum safety under any type of operating conditions. In the interests of safety, no reasonable precaution should be omitted either by the installer or the operator.

4. CHOICE OF REDUCTION GEAR UNIT

4.1 Identification of the pump

Note the RPM given on the plate in **Fig. 1**, position 2.

The plate also gives the model, version and serial number which, together with the serial number to be found the side of the crankcase (Fig. 1, position 1), must always be specified when ordering parts.

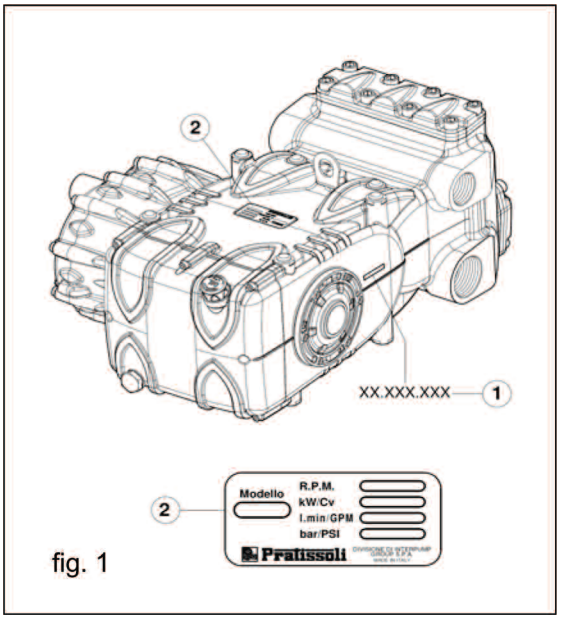


fig. 1

4.2 Identification of the gear unit

The unit can be identified by the symbol on the outside of the housing. The plates indicating the gear ratio and the direction of rotation are affixed (see **Fig. 2**).

The plate giving the direction of rotation is present if the gear unit is supplied with the pump. Conversely, it must be affixed by the user and include the direction of rotation given in section 6.3.

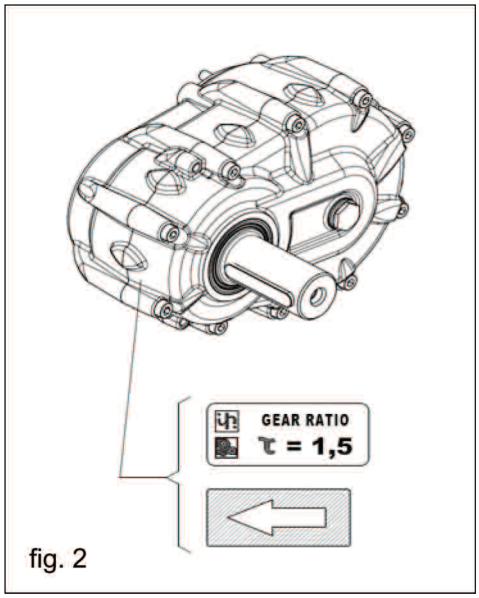


fig. 2

4.2.1 Gear ratio

The gearbox is available in three different ratios:

1.25:1

1.50:1

1.83:1

4.2. On the job test

The maximum rated RPM of the pump must never be exceeded

Example: Pump KF40A
Maximum Internal Pump Speed: 900 RPM
Input Shaft Speed: 1500 (set by the user)

Input Speed/Internal Speed = Gear Ratio or Input Speed/Gear Ratio = Internal Speed

In this case the only ratio possible which does not exceed the maximum pump rated RPM is 1.83:1, in as much as: **1500/1.25 = 1200 RPM Internal speed, 1500/1.5 = 1000 RPM Internal Speed and 1500/1.83 = 820 RPM Internal Speed. Therefore 1.83:1 is the only gear ratio permissable.**

5. DIMENSIONS AND WEIGHTS

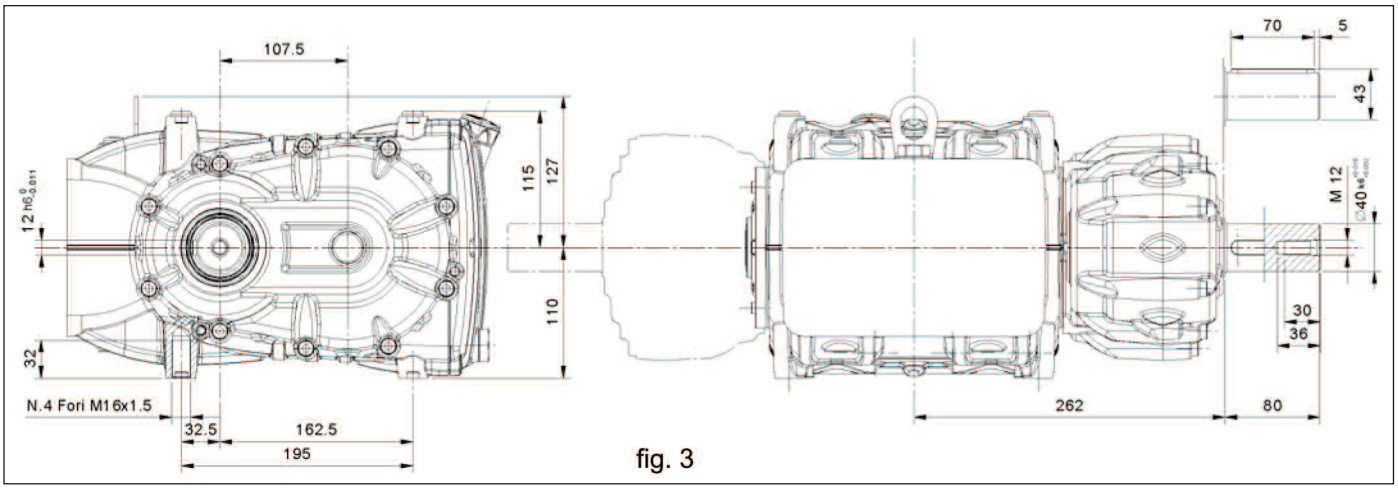


fig. 3

The dry weight of the gear unit is 30.8 lbs. (14 Kg).

6. INSTRUCTIONS FOR USE

6.1 Lubricating oil

After the gear unit has been installed, the prescribed volume of pump oil must be increased by ~ 15.5 ounces (0.5 L.). Check the level using the dipstick shown in Fig. 4, position 1.

Oil check are best carried out with the pump at room temperature and in a perfectly horizontal position. The oil must be changed when the pump is at operating temperature.

To drain the old oil, remove the dipstick (Fig. 4, position 1) and then the cap (Fig. 4, position 2).

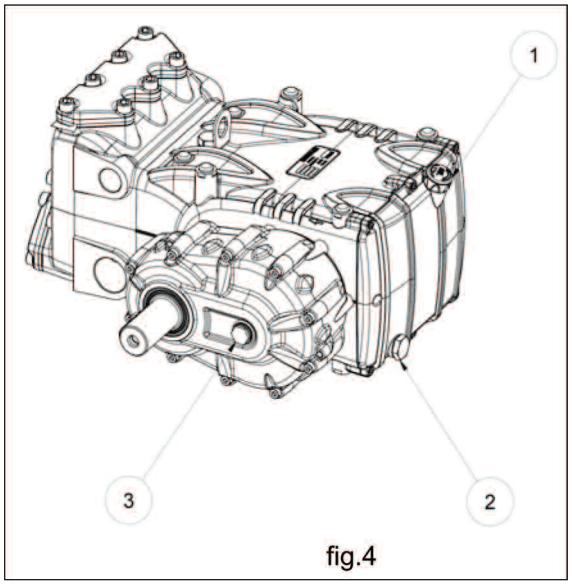


fig.4

The oil must be poured into an appropriate container and disposed of in the correct manner. Under no circumstances should it be dispersed into the environment.

In order to confirm the removal of the seal ring as shown below in section 7.2, Fig. 7 and Fig. 8, the oil level must also be visible on the gauge (Fig 4, position 3).

6.2 Connection to the gear unit

The gear unit PTO drive shaft must not be rigidly attached to the engine.
The following types of drives are recommended:
• with flexible joint;
• cardan (please follow the maximum operating angles recommended by the manufacturer);
• hydraulic, by means of a flange (for correct installation, request assistance from the **Customer Service Department**).

Belt transmission is prohibited.

6.3 Direction of rotation

The direction of rotation of the pump is indicated by an arrow found on the crankcase and should always be followed:

When facing the pump head, the direction of rotation of the drive should be:
• as per Fig. 5 for versions without gear reduction unit;
• as per Fig. 5a for verions with gear reduction unit.

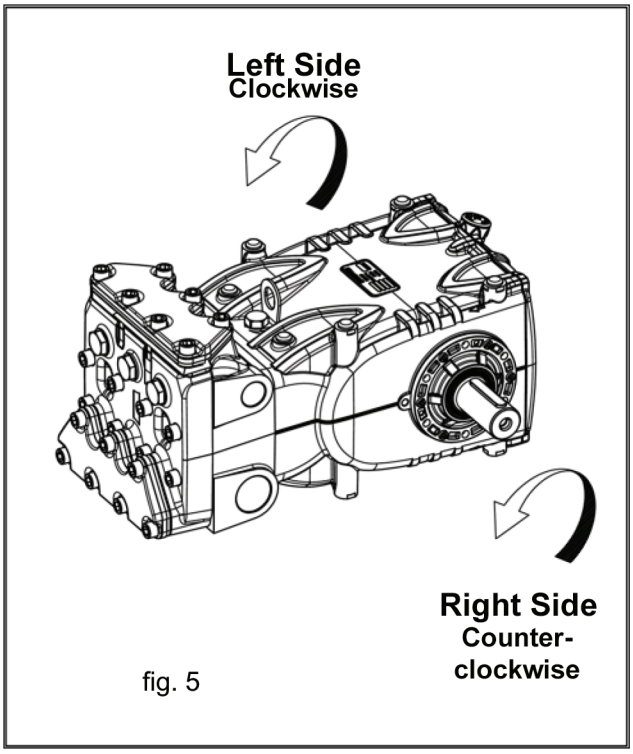


fig. 5

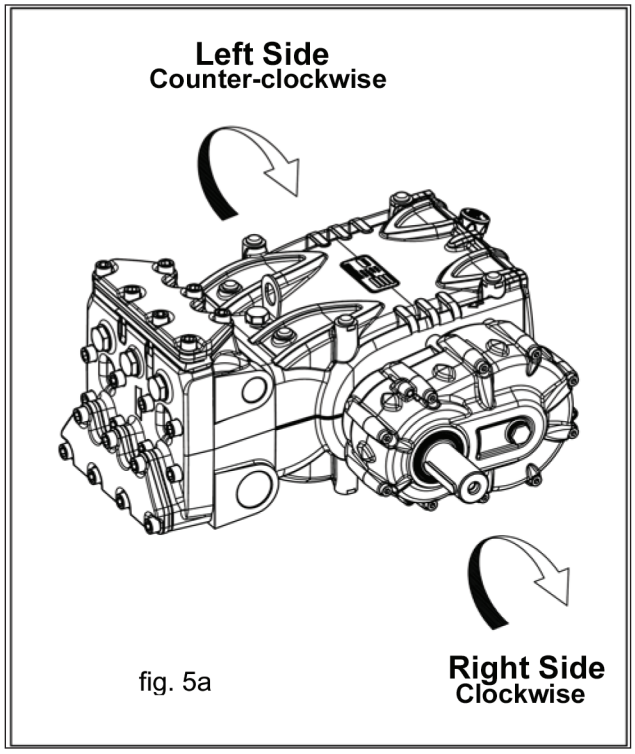


fig. 5a

7. INSTALLING THE REDUCTION GEAR UNIT

The pump version can be modified only by qualified personnel.

7.1 Choice of drive position

Depending on specific needs, before installing the gear unit it is wise to define the drive position, choosing from among the four available (D1, D2, D3, D4 for right-hand pumps, or S1, S2, S3, S4 for left-hand pumps), as shown in Fig. 6.

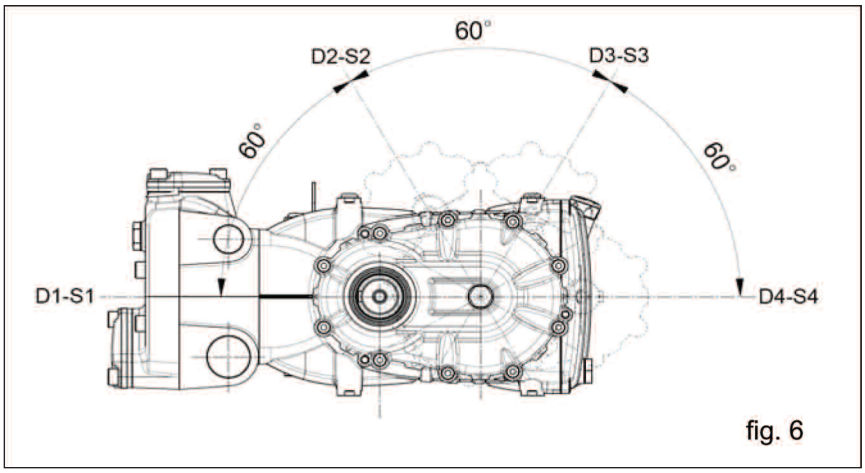


fig. 6

7.2 Installing the reduction gear unit

Before installing the reduction gear unit, remove the pump shaft oil seal (Fig. 8, position 1) and insert the Ø8 pin into the crankcase (Fig. 8, position 2). See also the drawing given in Fig. 7. Then proceed with the operations described:

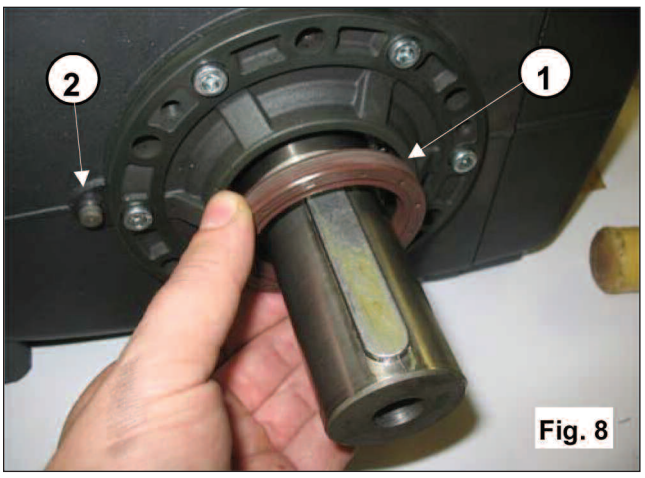


Fig. 8

Omission of the operations described may compromise pump performance and operator safety.

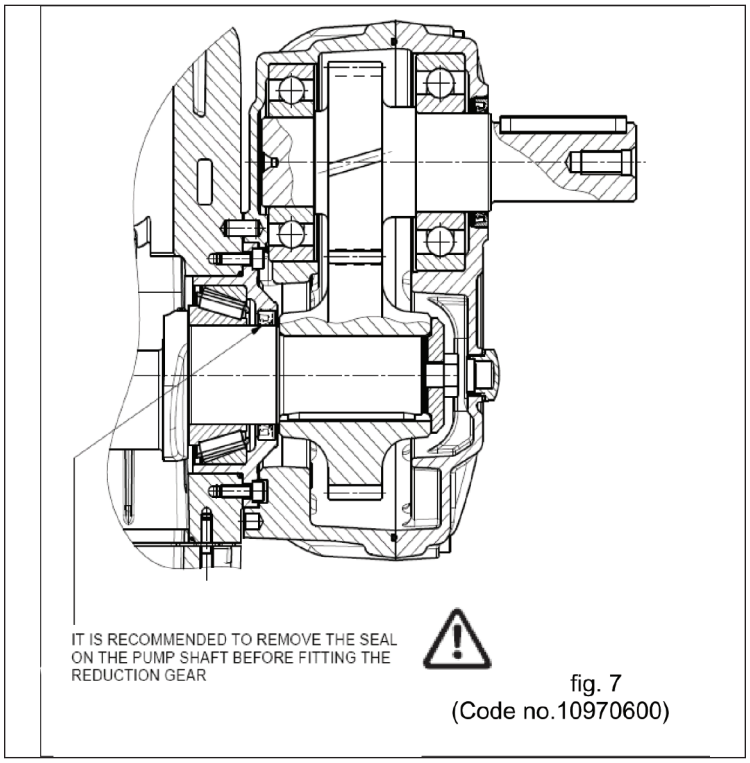


fig. 7
(Code no.10970600)

Insert the packing (Fig. 9) and assemble the gear housing, taking care to fit the hole onto the correct pin present on the crankcase (Fig. 10, position 1).

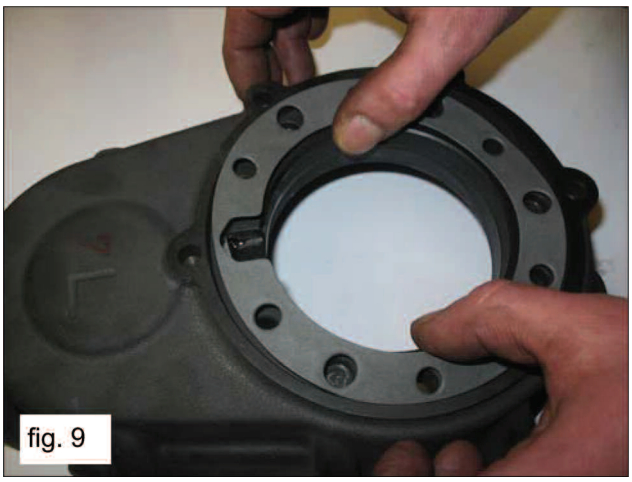


fig. 9

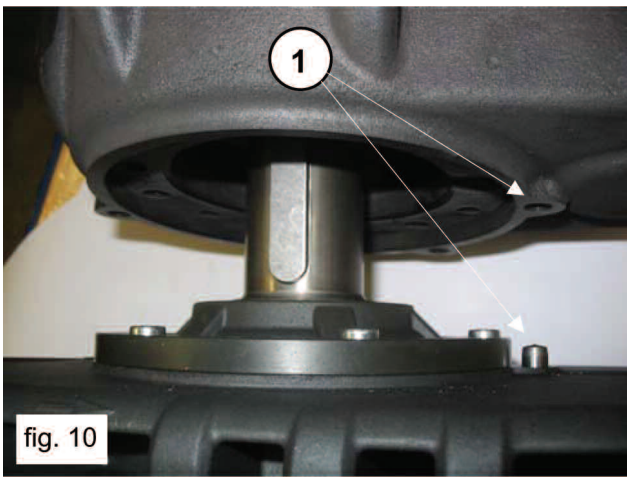


fig. 10

Fasten the gear housing with the 6 M8 x 50 screws and tighten the latter with a torque wrench (Fig. 11 and 12) as indicated in section 9.

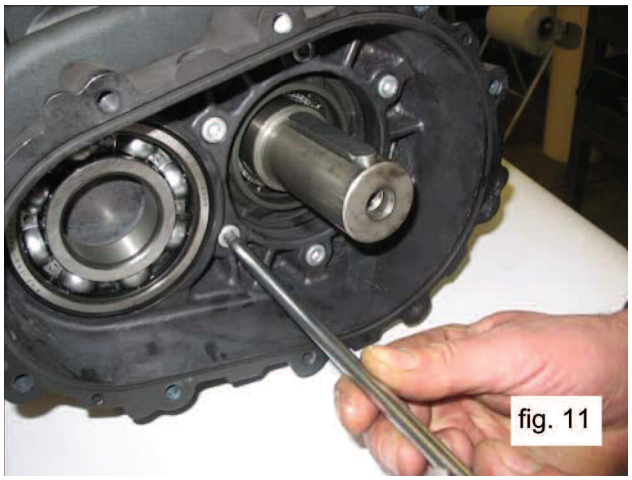


fig. 11

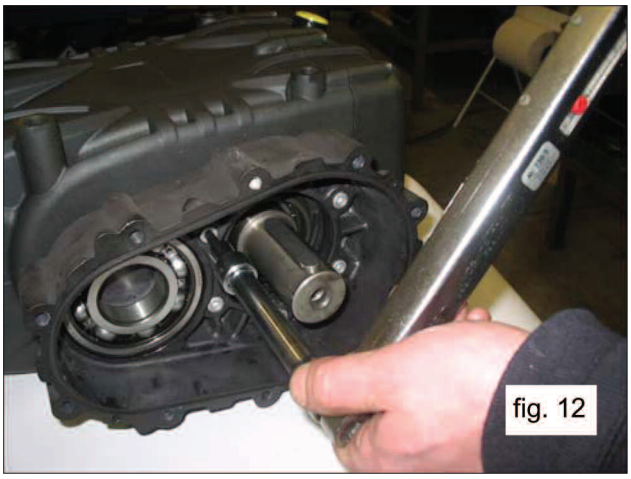


fig. 12

Insert the crown into the pump shaft, apply the washer and use the wrench (Fig. 13) to tighten the screws to the torque level indicated in section 9. Fix the two Ø5 pins to the gear housing (Fig. 14, position 1).

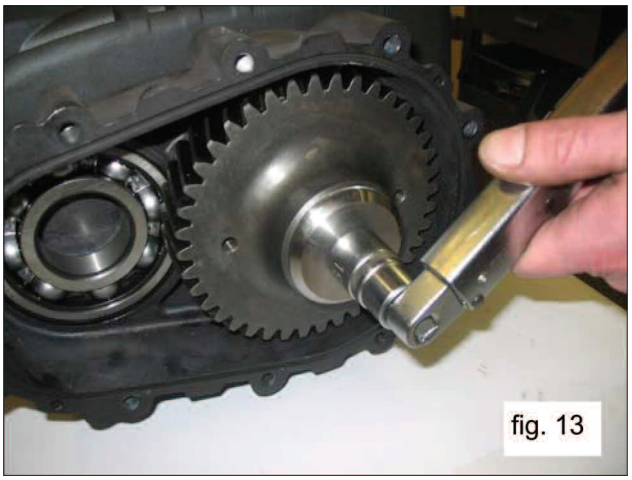


fig. 13

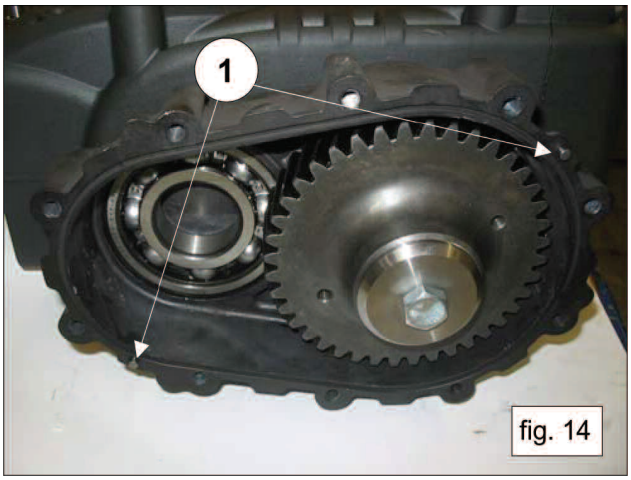


fig. 14

Mount the bearing onto the pinion, pushing it as far as possible into the housing socket using a striking hammer (Fig. 15). Bearings and crown can be cold-inserted (Fig. 15). The operation can be facilitated by heating the parts in question to a temperature of between 250° - 300°F (120° - 150°C), ensuring that the ring nuts are fitted snugly into their housings. Fix the o-rings into the appropriate slots in the reduction gear unit (Fig. 16).

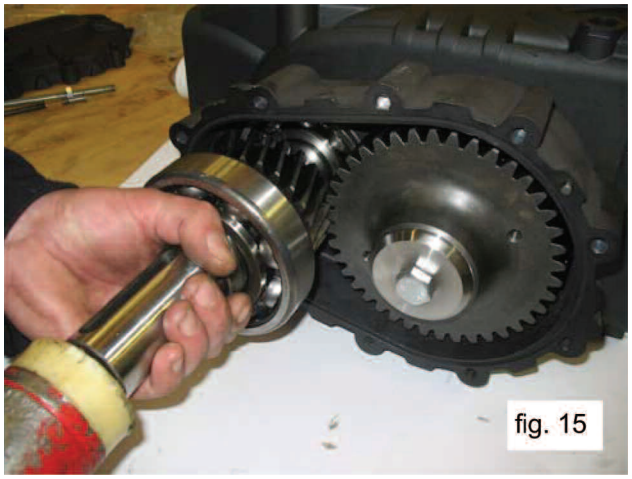


fig. 15

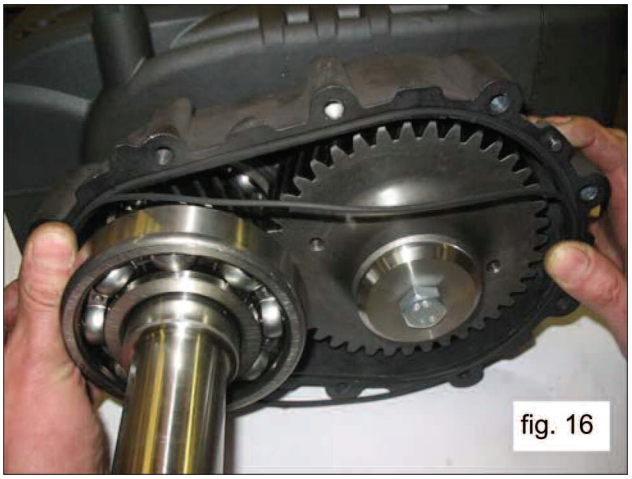


fig. 16

Place the cover over the pinion bearing using two M8 screws or grub screws to keep it in position during assembly (Fig. 17, position 1). Abut the cover with the housing using a buffer and pressing directly on the former. Alternatively, use tool par number F27517400 (Fig. 18). The operation can be made easier by tightening several screws at once (Fig. 17, position 2).

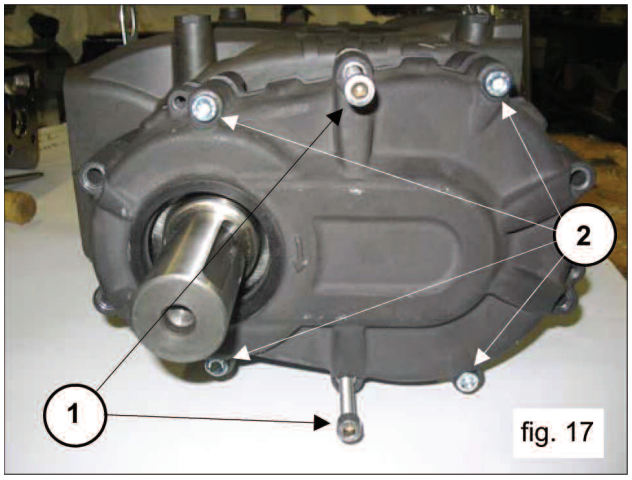


fig. 17


fig. 18

Affix the gear unit housing lid with 10 M8 x 50 screws and tighten with a torque wrench (Fig. 19), as shown in section 10.

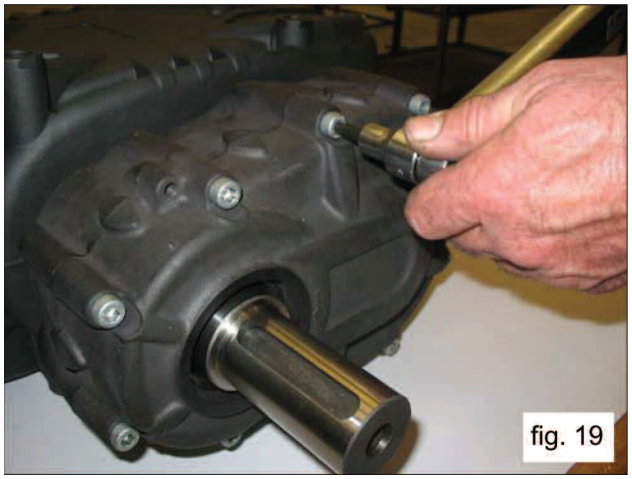


fig. 19

When the complete gear reduction unit has been installed, check that the pinion is turning correctly.

8. DISMANTLING THE REDUCTION GEAR UNIT

Remove the gear housing lid screws. Place 3 M8 grub screws or threaded screws (which will serve the function of extractors) into the holes and tighten (Fig. 20, position 1) and at the same time strike on the pinion so that the bearing remains attached to it during removal of the lid (Fig. 21).

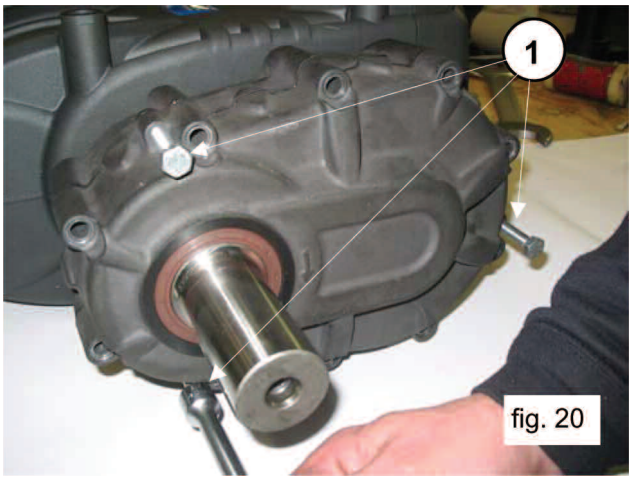


fig. 20

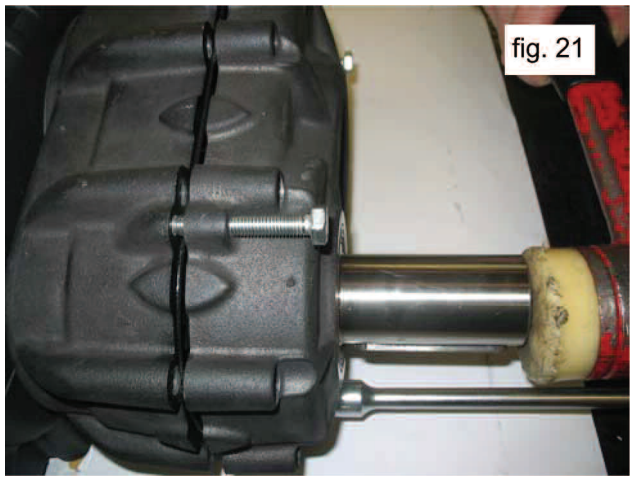


fig. 21

Using standard tools, remove the gear housing lid and take the bearing out of the pinion (Fig. 22). Remove the crown screws and washer and extract out the crown. If necessary, use a percussion extractor on the two M8 holes (Fig. 23) or a standard extraction tool (Fig. 23).

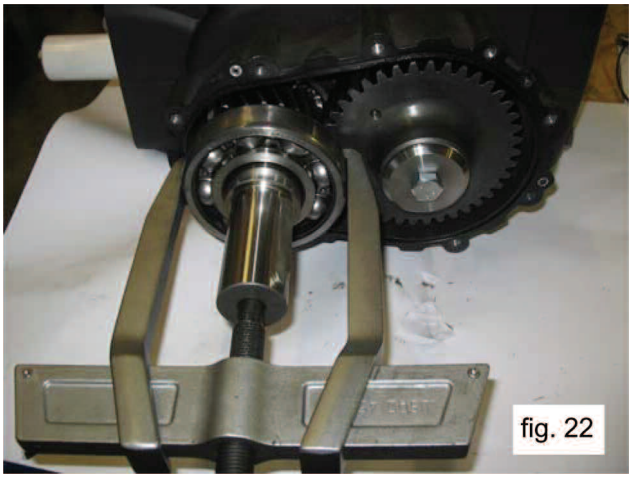


fig. 22

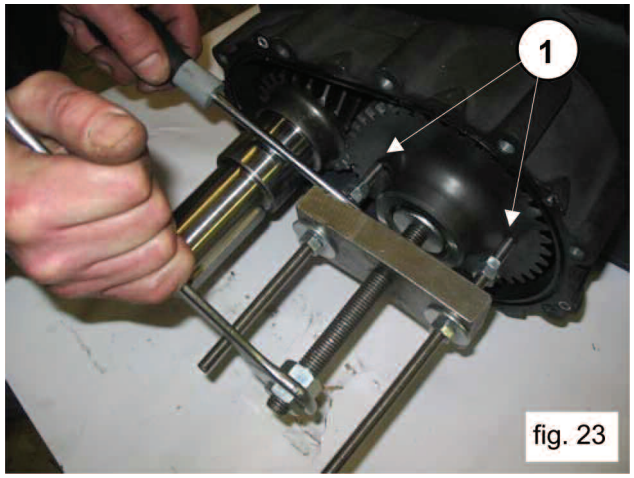


fig. 23

Remove the pinion using a percussion extractor on the M12 hole (Fig 24). Loosen the gear housing screws and remove the housing screws and remove the housing (Fig. 25).

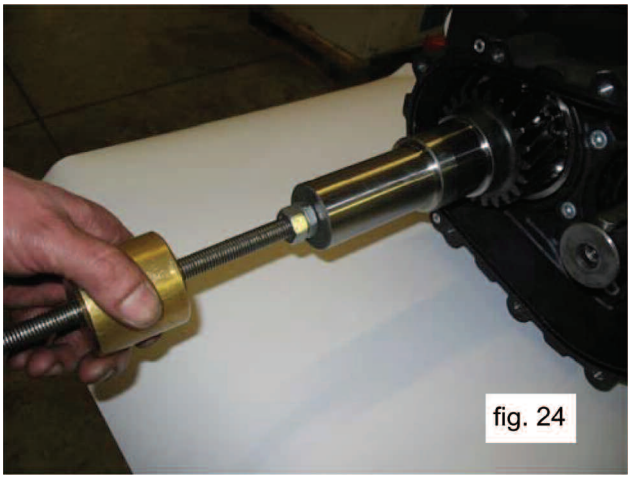


fig. 24

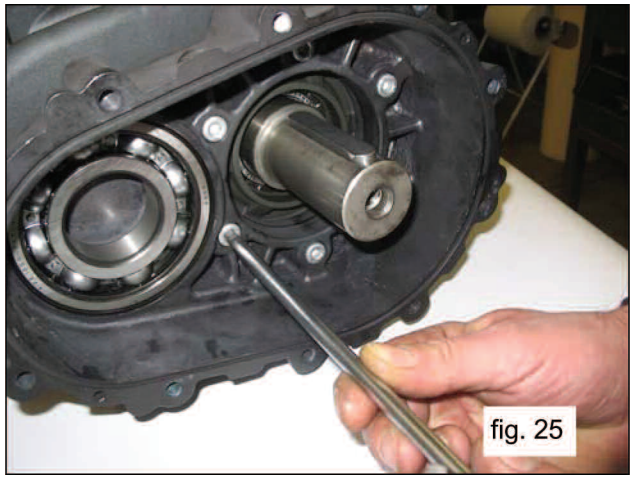


fig. 25

9. SCREW TIGHTENING TORQUES

DESCRIPTION	POSITION IN EXPLODED DRAWING (page 12)	TORQUE FT./LBS.	TORQUE (Nm)
Housing / lid screws	6	30	40
Crown screws	9	52	70

10. TOOLS TO BE USED FOR REPAIRS

Pump repairs can be facilitated by using the appropriate tools, part numbers of which are given below:

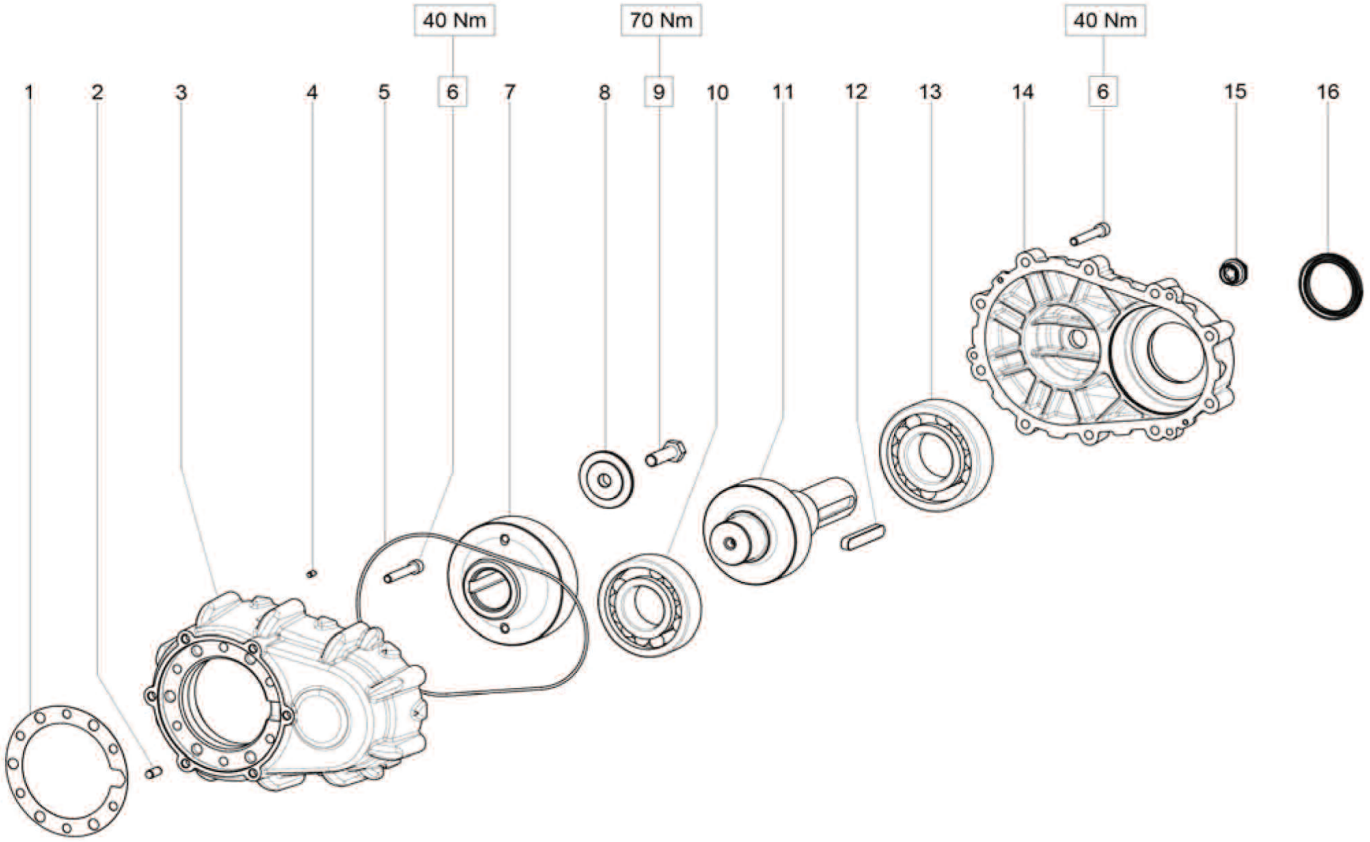
For assembly:

Pump shaft/gear pinion oil seal buffer	F27904800
Buffer for gear unit housing lid	F27517400

11. WARRANTY CONDITIONS

Warranty conditions for the gear reduction unit fall under the general warranty conditions for the pump.

12. EXPLODED VIEW AND PARTS LIST



POS.	PART NUMBER	DESCRIPTION	QTY.
1	F72210784	Gear Housing Packing	1
2	F97618500	Straight pin, Ø8 x 10	1
3	F72210820	Gear Housing	1
4	F97615200	Straight pin, Ø 5 x 10	2
5	F90394800	O-ring, Ø209.22 x 2.62	1
6	F99314600	Screw, TCEI, M8 x 50	16
7	F10071135	Z34 Gear, 1.25:1	1
	F10071235	Z37 Gear, 1.50:1	
	F10071335	Z40 Gear, 1.83:1	
8	F72211055	Crown Fixing Washer	1
9	F99430700	Screw, M12 x 40	1
10	F91857700	Ball Bearing, 45 x 100 x 25	1
11	F10070835	Z27 Pinion, 1.25:1	1
	F10070935	Z25 Pinion, 1.50:1	
	F10071035	Z22 Pinion, 1.83:1	
12	F91500000	Tongue, 12 x 8 x 70	1
13	F91859300	Ball Bearing, 50 x 110 x 27	1
14	F72210920	Gear Housing Lid	1
15	F97594000	Oil Level Gauge	1
16	90170000	Ring, Ø50 x 65 x 8	1

MAINTENANCE LOG

	HOURS & DATE						
OIL CHANGE							
GREASE							
PACKING REPLACEMENT							
PLUNGER REPLACEMENT							
VALVE REPLACEMENT							

GENERAL PUMP

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