

# Repair Manual



*MF45 - MF50 - MF55*



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## 1. INTRODUCTION

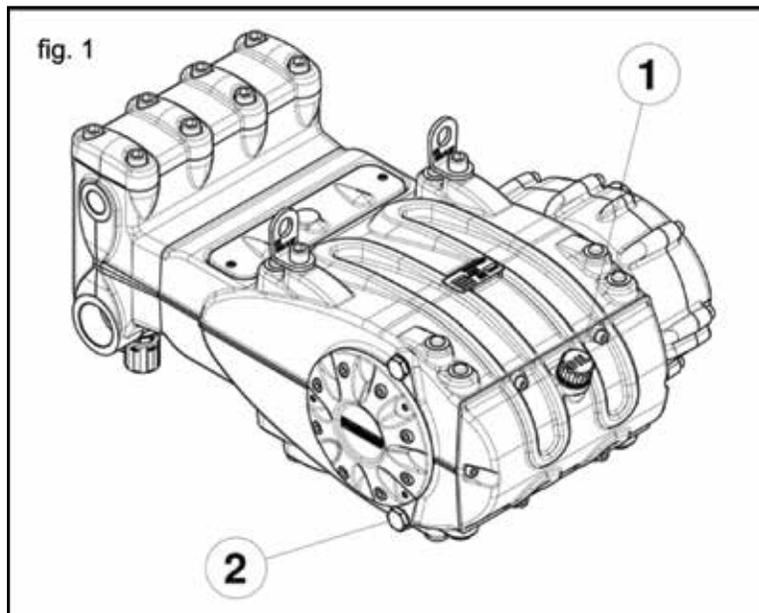
This manual describes the instructions for Repairing MF Series pumps, and must be carefully read and understood before performing any repair intervention on the pump. Proper pump operation and longevity depend on the correct use and maintenance. General Pump declines any responsibility for damage caused by the misuse or the non-observance of the instructions described in this manual.

## 2. REPAIR INSTRUCTIONS



### 2.1 Repairing Mechanical Parts

Mechanical parts repair must be performed after removal of oil from the casing. To drain the oil, remove the oil dipstick, (1, fig. 1) and then the draining plug (2, fig. 1).



The oil must be placed in a suitable container and disposed of in special centers. It absolutely must not be discarded into the environment.

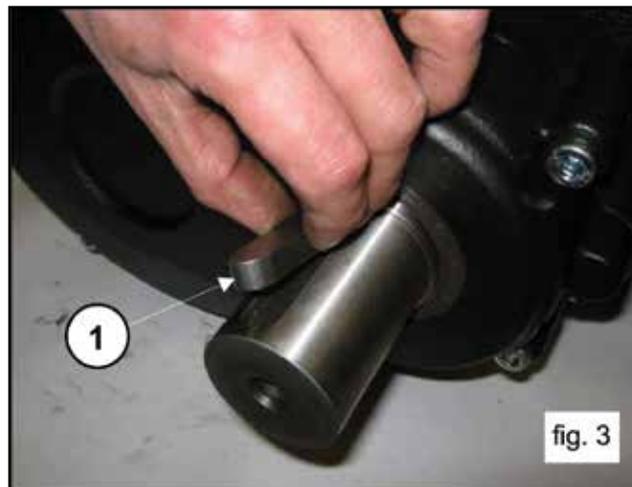
## 2.1.1 Disassembly of Mechanical Parts

The correct sequence is the following:

Completely drain the oil from the pump, then disassemble the casing cover (and relative o-ring), unscrewing the 6 M10 screws (1, fig. 2).



Remove the tab from the PTO shaft (2, fig. 3).



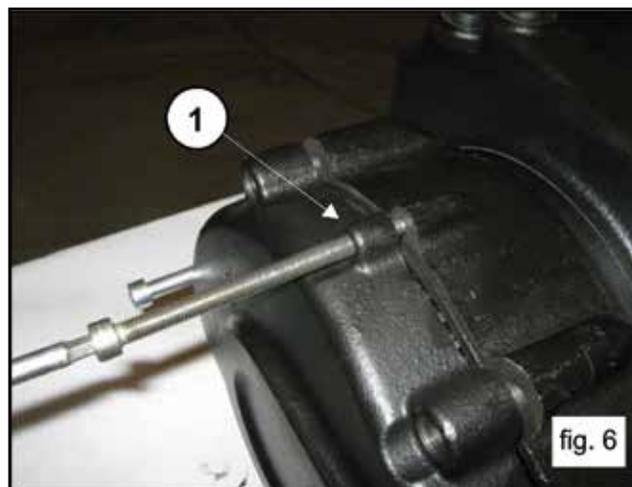
Unscrew the reduction gear cover fixing screws (1, fig. 4).



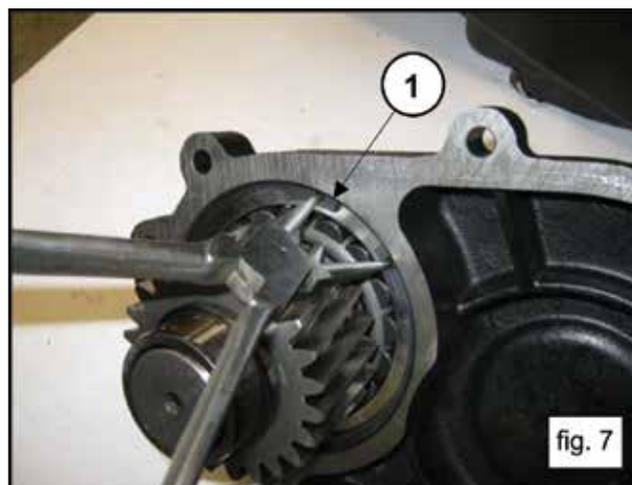
Position the 3 grub screws or M8 threaded screws (1, fig. 5) with the function of extractors in the holes and two sufficiently long M10 screws with the function of supporting the cover (2, fig. 5).



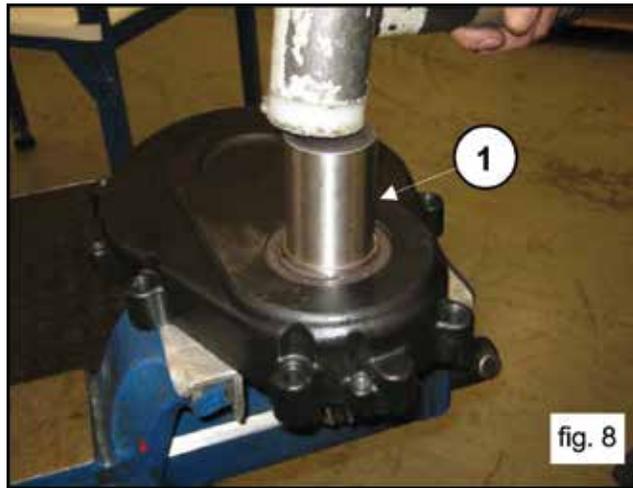
Slowly screw in the 3 M8 screws (1, fig. 6) with the function of extractors to fully remove the cover unit and pinion.



Complete disassembly of the reduction gear cover from the pinion is possible following these steps:  
Remove the retaining ring Ø120 (1, fig. 7)



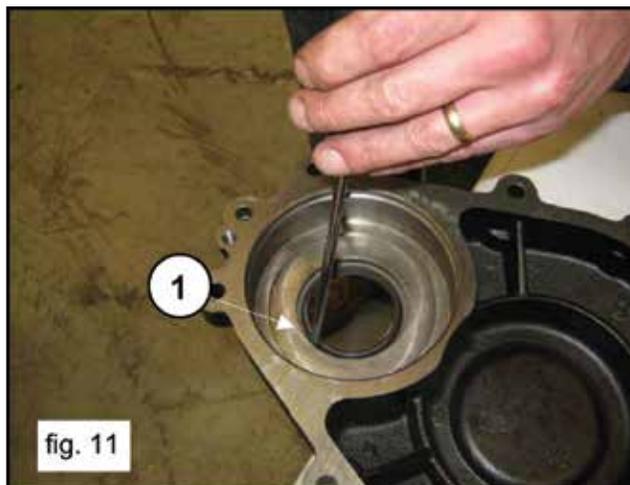
Separate the pinion from the cover, working with an extractor hammer on the pinion itself (1, fig. 8).



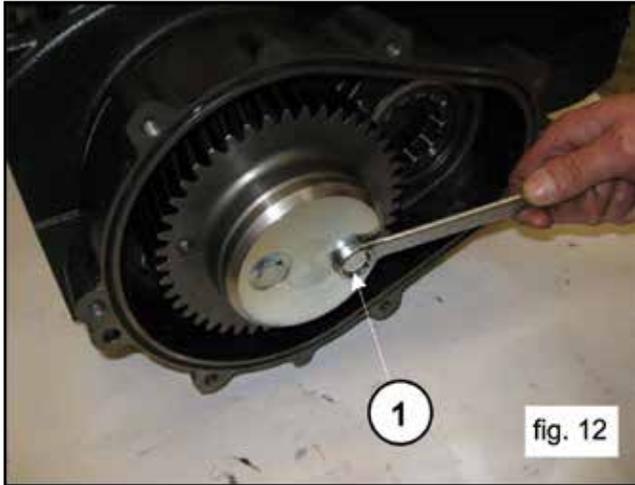
Remove the retaining ring Ø55 (1, fig. 9) and the bearing support ring (1, fig. 10) from the pinion.



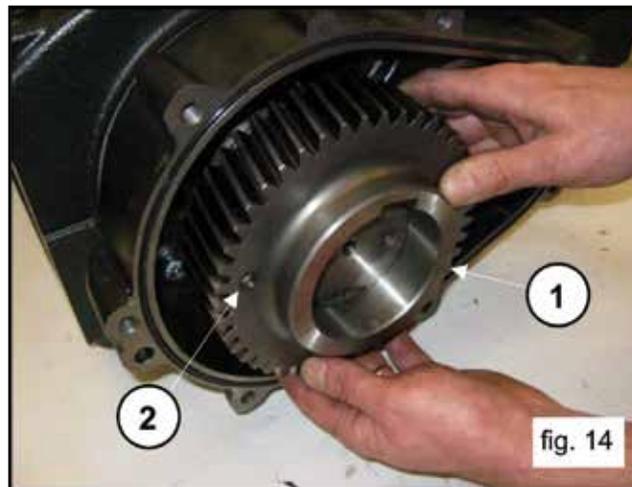
Extract the seal ring from the reduction gear cover, working from the inner side of the cover (1, fig. 11).



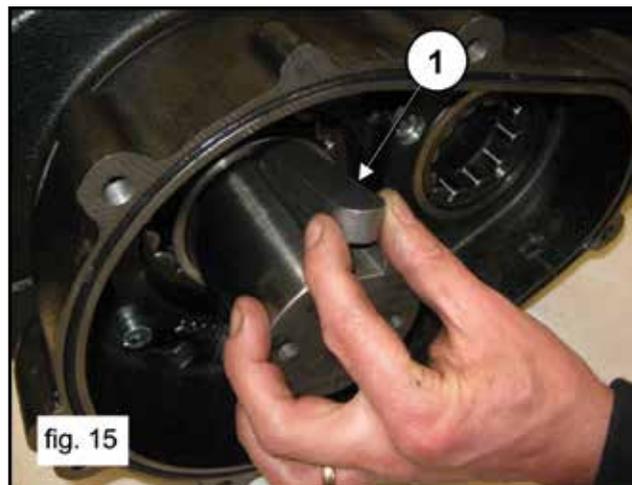
Unscrew the screws holding in the ring gear (1, fig. 12) and remove it (1, fig. 13).



Remove the ring gear (1, fig. 14). Where necessary, it is possible to utilize an extractor hammer to be applied on the 2 M8 holes (2, fig. 14).



Remove the key from the shaft (1, fig. 15).



Remove the ring gear support ring (1, fig. 16).



Unscrew the connecting rod screws (1, fig. 17).



Remove the connecting rod caps with the lower semi-bearings, taking special care of the disassembly sequence during disassembly.

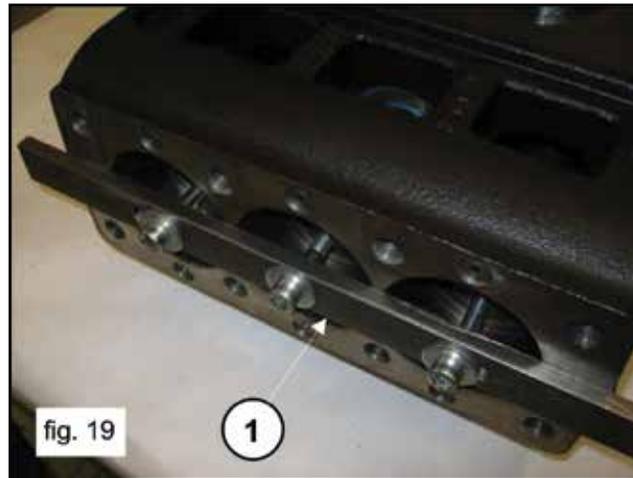


**The con-rod caps and their relative half supports must be reassembled in exactly the same order and coupling with which they were disassembled.**

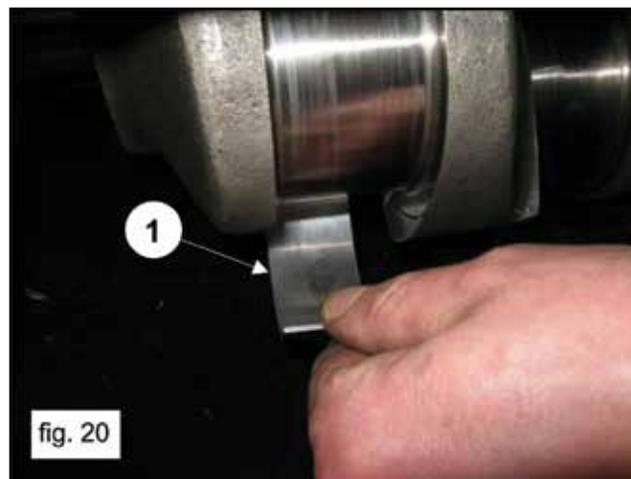
To avoid possible errors, caps and half-supports have been numbered on one side (1, fig. 18).



Advance the half supports completely in the direction of the pump head to allow the crankshaft to come out. To facilitate this operation, use special tool (p/n F27566200) (1, fig. 19).



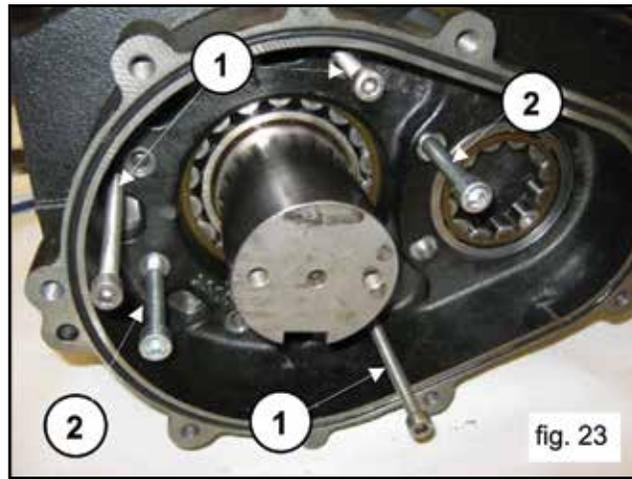
Remove the three upper half-bearings of the half supports (1, fig. 20).



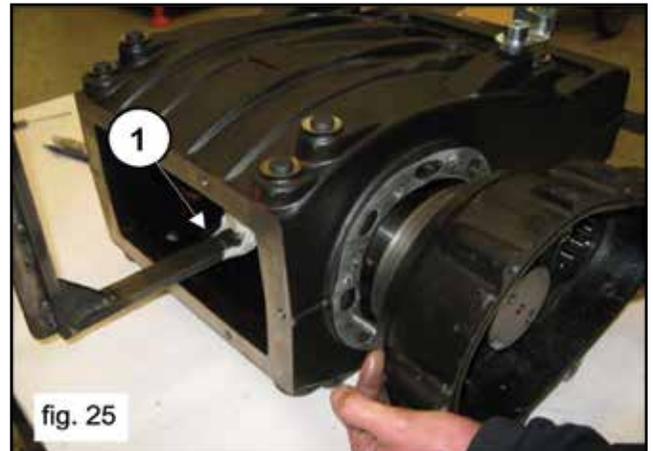
Unscrew the reduction gear box fixing screws (1, fig. 21 and fig. 22).



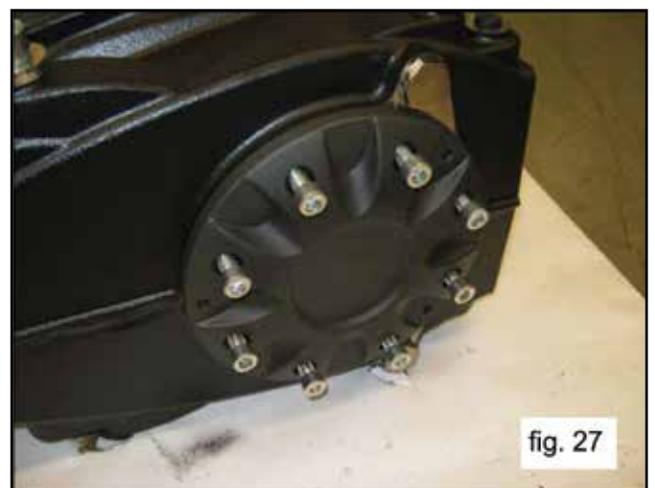
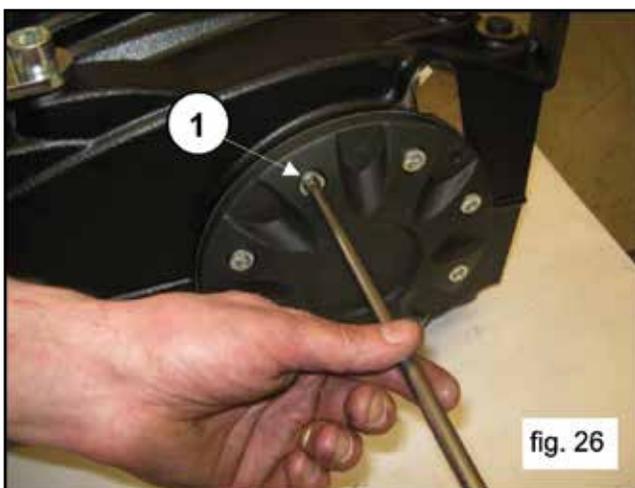
Position the 3 grub screws or M8 threaded screws (1, fig. 23) with the function of extractors in the holes and two sufficiently long M10 screws with the function of supporting the reduction gear box (2, fig. 23).



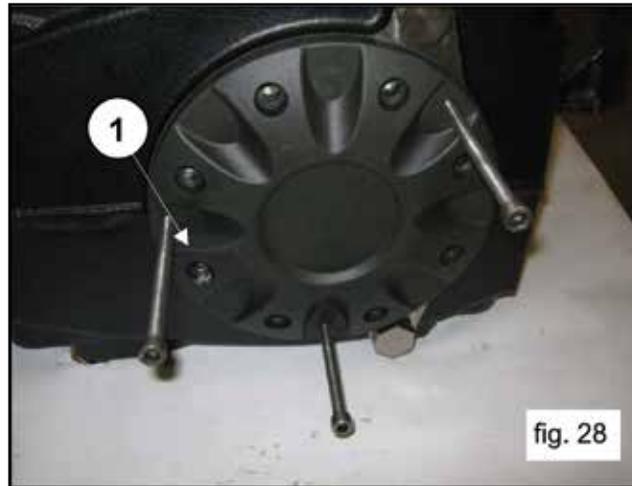
Slowly screw in the 3 M8 screws (1, fig. 24) to prevent the box from tilting too far and getting locking in the housing. Remove the box while supporting the shaft to prevent damage (1, fig. 25)



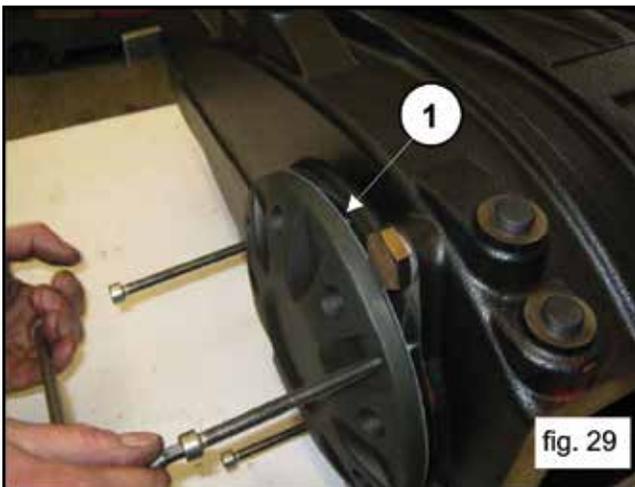
Unscrew the bearing cover fixing screws from the opposite side (1, fig. 26 and fig. 27).



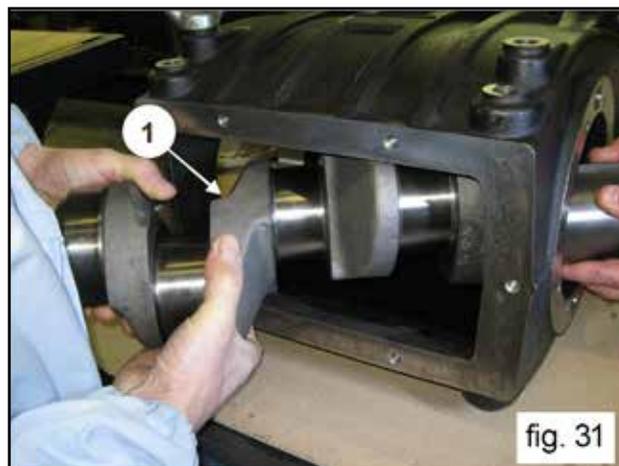
Position the 3 grub screws or M8 threaded screws (1, fig. 28) with the function of extractors in the holes.



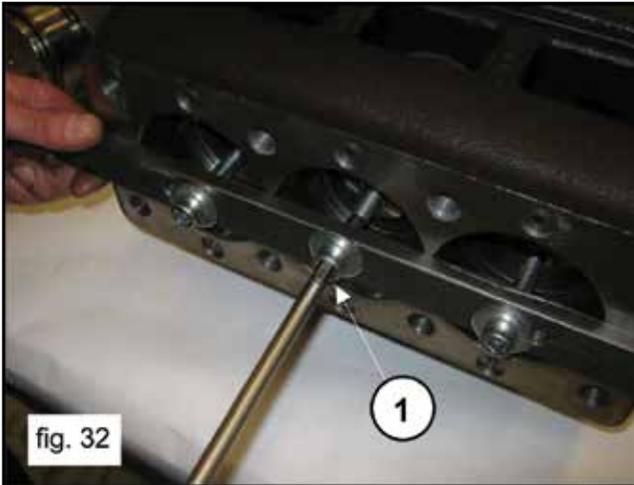
Slowly screw in the 3 M8 screws (1, fig. 29) to prevent the cover from tilting too far and getting locked in the housing. Remove the bearing cover while supporting the shaft to prevent damage (1, fig. 30).



Remove the crankshaft from the rear opening (1, fig. 31)



In the event that it is necessary to replace one or more con-rods or plunger guides, operate as follows: Unscrew the screws with tool #F27566200 to unlock the con-rods (1, fig. 32) and then extract the con-rod plunger guide units from the back casing opening (1, fig. 33).

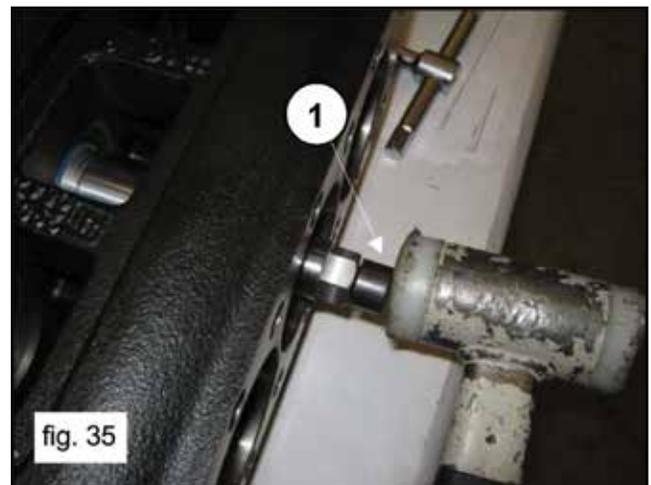


It is now possible to disassemble the plunger guide seal rings, taking care to not damage the plunger guide sliding rod.

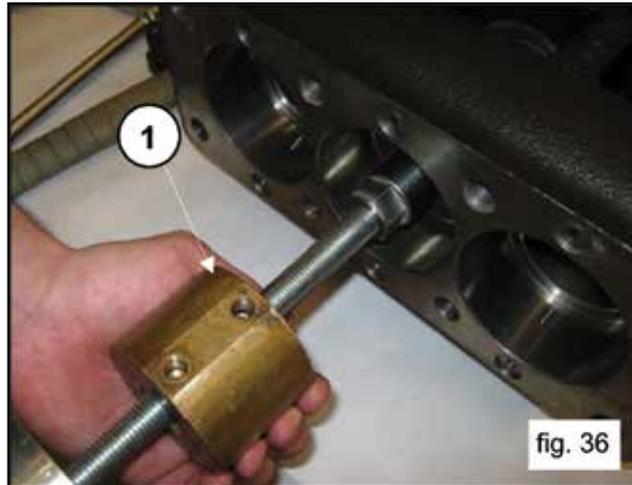


**Whenever it becomes necessary to replace the plunger guide seal rings without dismantling the entire mechanical part, it is possible to extract the seal rings with the use of tool #F27918500 operating as follows:**

Insert the tool between the rod and the seal ring (1, fig. 34) and, with the extractor hammer, complete insertion of the tapered section inside the seal ring (1, fig. 35).



Extract the seal ring using the tool extractor hammer (1, fig. 36).



Remove the two spindle locking retaining rings Ø120 (1, fig. 37).



Remove the spindle (1, fig. 38) and extract the con-rod (1, fig. 39).



Couple the half supports to the previously disassembled caps, referring to the numbering (1, fig. 40).



To separate the rod from the piston guide, unscrew the round head M6 screws (1, fig. 41)



### 2.1.2 Assembly of Mechanical Parts

Proceed with assembly following the reverse order indicated in point 2.1.1. The proper sequence is as follows:

Assemble the rod to the plunger guide. Insert the piston guide rod into its seat on the piston guide (1, fig. 42) and join the rod to the piston guide by means of M6 x 20 screws (1, fig. 43).



Lock the piston guide in a vice (1, fig. 44) and proceed with calibration with a torque wrench (1, fig. 45) as indicated in paragraph 3 "Screw Tightening Calibration".



Insert the con-rod in the piston guide (1, fig. 39) and then insert the piston pin (1, fig. 38). Apply the two spindle locking retaining rings (1, fig. 37).



**Assembly has been carried out properly if the con-rod small end, piston guide and spindle rotate freely.**

Separate the caps from the con-rods. Proper coupling can be verified by the numbering on the side (1, fig. 40).

After having checked casing cleaning, proceed with assembly of half support-piston guide unit inside casing rods (1, fig. 33).



**Insertion of the conrod-plunger guide unit in the casing must be made with the half bearings set in the direction in which numbers are visible from above.**

Block the three units with the use of special tool #F27566200 (1, fig. 32).

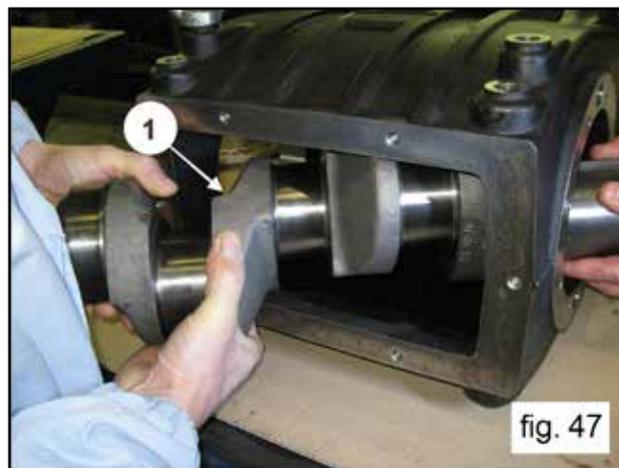
Pre-assemble the ring inside the crankshaft bearings (on both sides of the shaft down as far as possible) using special tool #F27604700 (1, fig. 45)(1, fig. 46).



**The inner and outer rings of the bearings must be reassembled keeping the same coupling with which they were disassembled.**

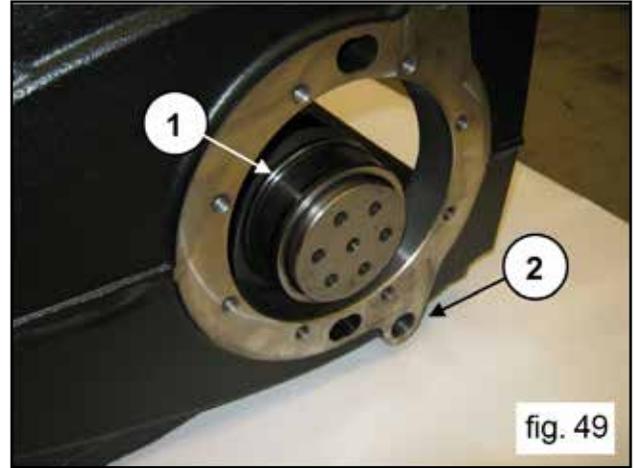
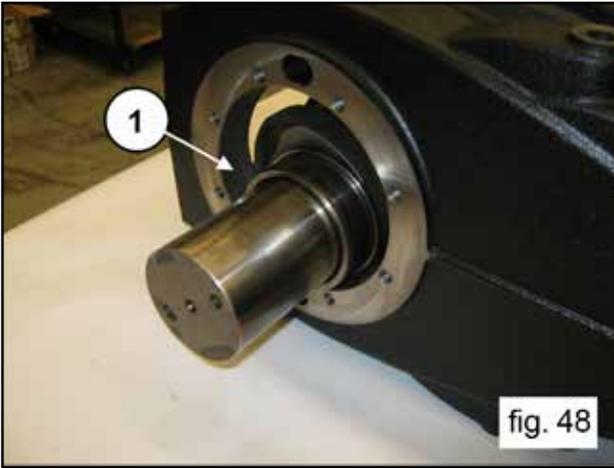


Insert the shaft from the casing rear opening, taking care not to hit the previously assembled con-rod shanks (1, fig. 47).

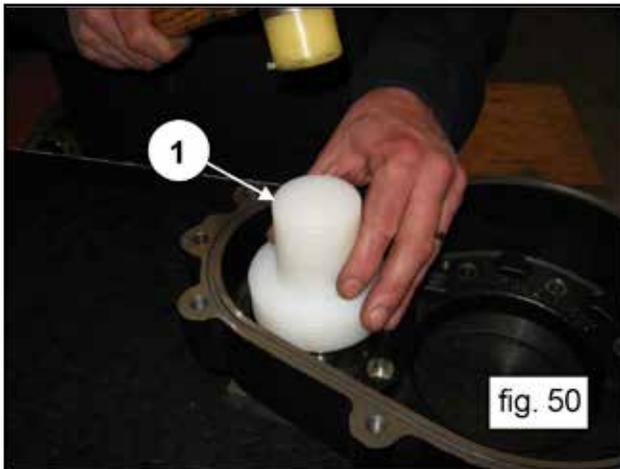


**The crankshaft must always be assembled with the PTO on the opposite side with respect to the G1/2" holes for the oil discharge plugs on the pump casing (2, fig. 49).**

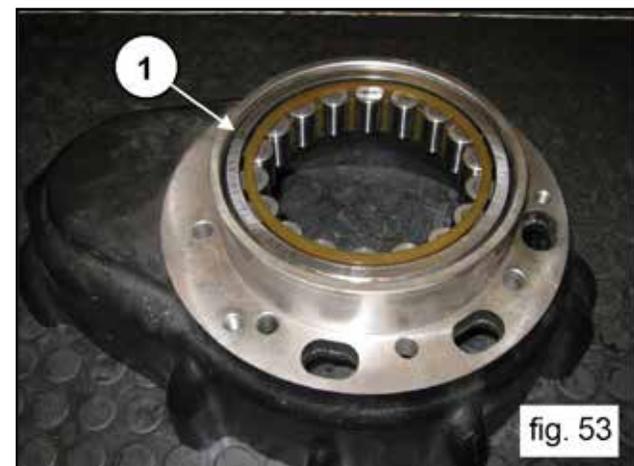
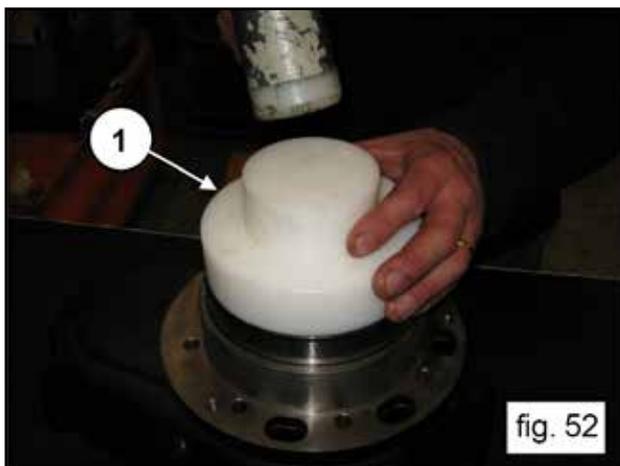
Fully insert the shaft in the casing (1, fig. 48 and fig. 49).



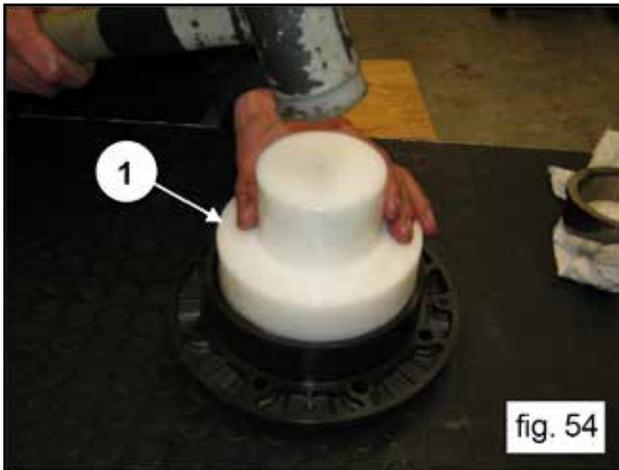
Pre-assemble the outer ring of the pinion bearing on the reduction gear with the aid of special tool #F27604900 (1, fig. 50), inserting fully down to end stroke (1, fig. 51).



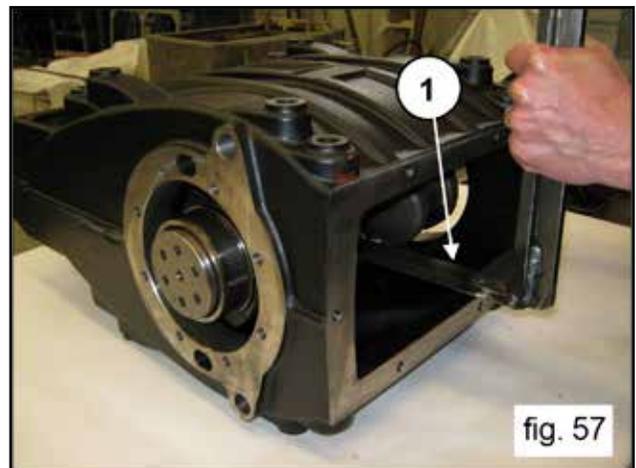
From the opposite side of the reduction gear box, pre-assemble the external ring of the crankshaft bearing with the use of tool #F27605000 (1, fig. 52), inserting fully down to end stroke (1, fig. 53).



Repeat this operation on the bearing cover, pre-assembling the external crankshaft bearing ring with the help of special tool #F27605000 (1, fig. 54), inserting fully down to end stroke (1, fig. 55).



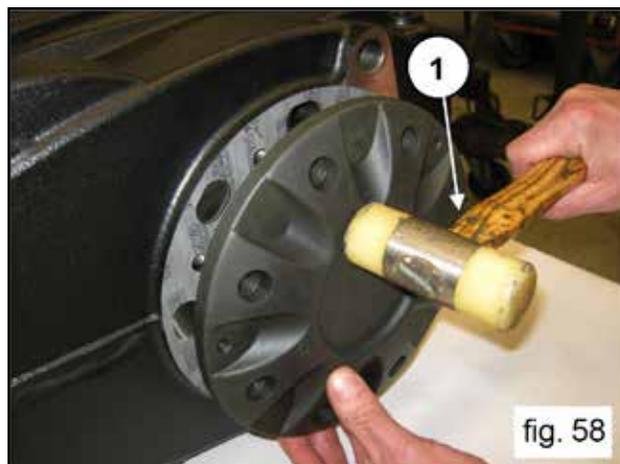
Insert the side seal on the bearing cover (1, fig. 56) and lift the crankshaft to favor cover insertion (1, fig. 57).



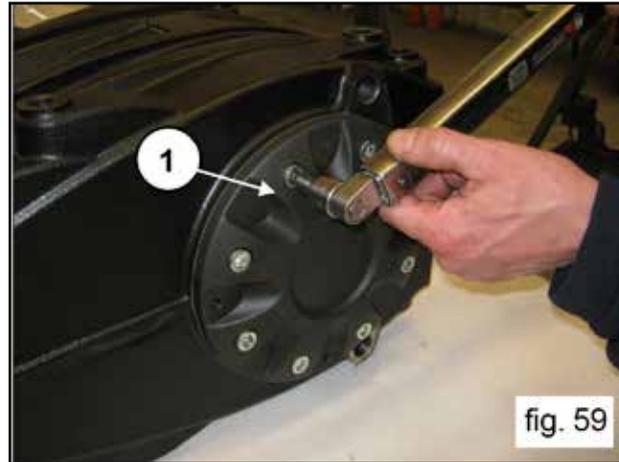
Assemble the bearing cover (and relative seal) using an extractor hammer (1, fig. 58).



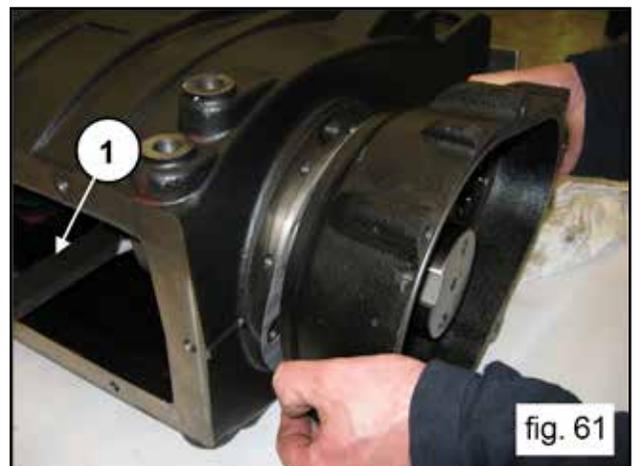
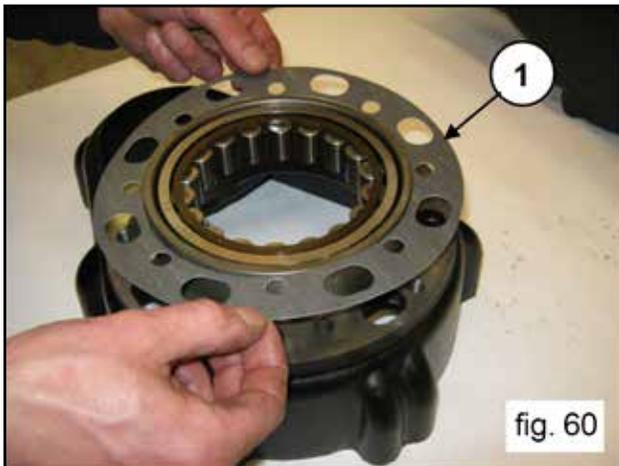
**Position the bearing cover in such a way that the “Pratissoli” logo is perfectly horizontal.**



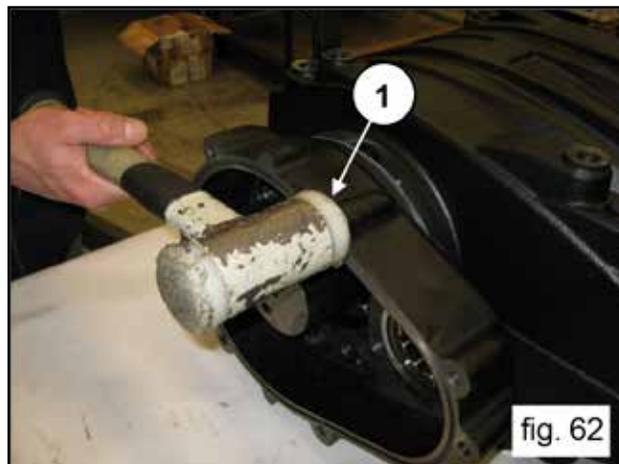
Tighten the 8 M10 x 30 screws (1, fig. 59). Calibrate the screws with a torque wrench as indicated in paragraph 3 "Screw Tightening Calibration".



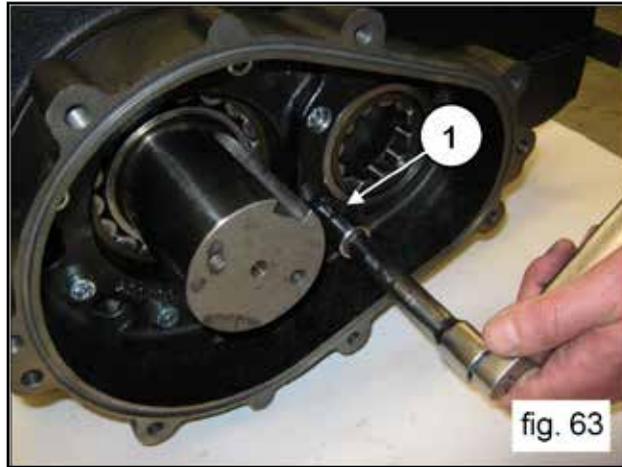
From the opposite side, insert the side seal on the reduction gear box (1, fig. 60) and lift the crankshaft to favor cover insertion (1, fig. 63).



Assemble the reduction gear box (and relative seal) using an extractor hammer (1, fig. 62).



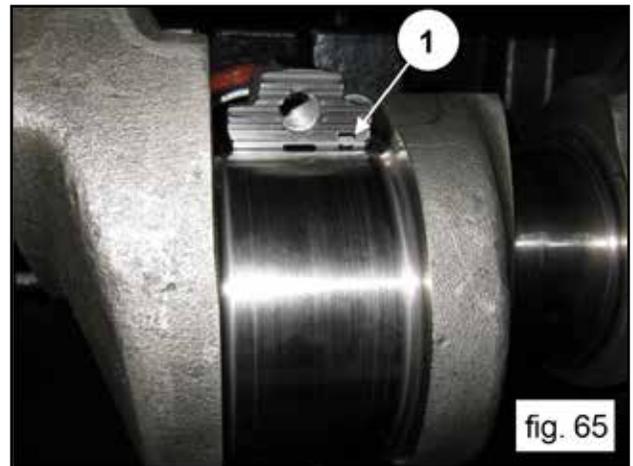
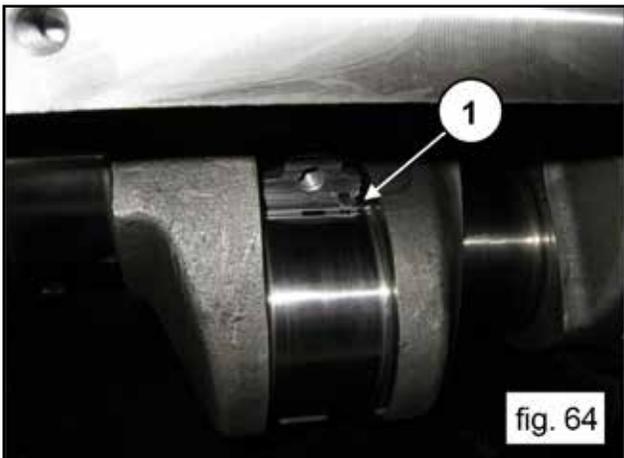
Tighten the 8 M10 x 40 screws (1, fig. 63). Calibrate the screws with a torque wrench as indicated in paragraph 3 “Screw Tightening Calibration”.



Remove the tool for blocking the con-rods #F27566200 (1, fig. 32). Insert the upper half-bearings between the con-rods and the shaft (1, fig. 64).



**For proper assembly of the half-bearings, ensure that the reference tab on the half-bearings are positioned in their housing on the half support (1, fig. 65).**



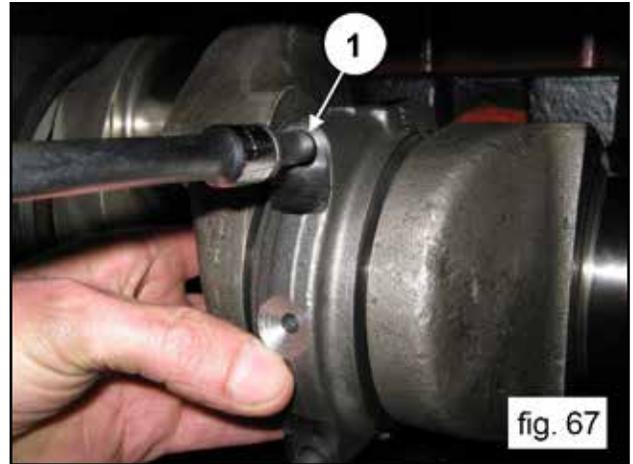
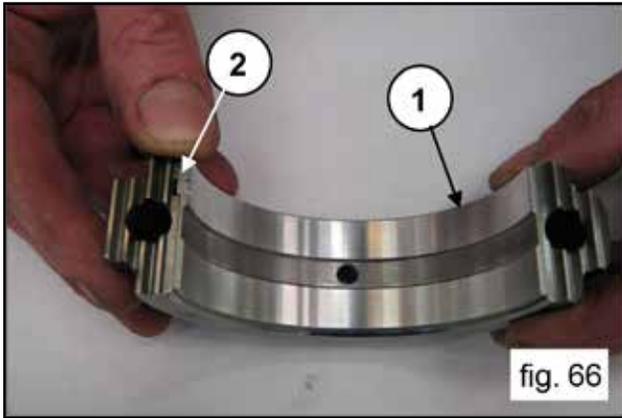
Apply the lower half-bearings to the caps (1, fig. 66) ensuring that the half-bearing reference notches are positioned in their housing on the cap (2, fig. 66).

Fasten the caps to the half supports by means of M10 x 1.5 x 80 screws (1, fig. 67).



**Note the correct assembly direction of the caps. Numbering must be turned upward.**

Calibrate the screws with a torque wrench as indicated in paragraph 3 “Screw Tightening Calibration”, bringing the screws to tightening torque at the same time.

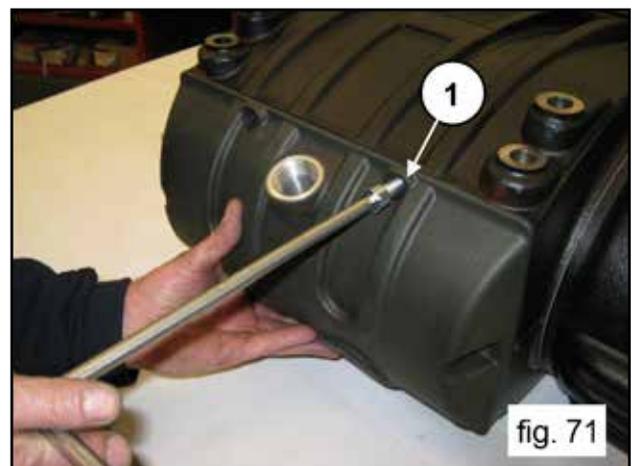


After finishing this operation, verify that the con-rods have axial clearance in both directions.

Insert the piston guide seal rings in their casing housing by means of a special tool #F27605300 (1, fig. 68) and (2, fig. 69).



Insert the O-ring on the rear cover (1, fig. 70) and assemble the cover on the casing with the aid of 6 M10 x 30 screws (1, fig. 71).





Take care to fully and properly insert the O-ring in its housing on the cover to prevent damage during screw tightening.

Calibrate the screws with a torque wrench as indicated in paragraph 3 “Screw Tightening Calibration”.

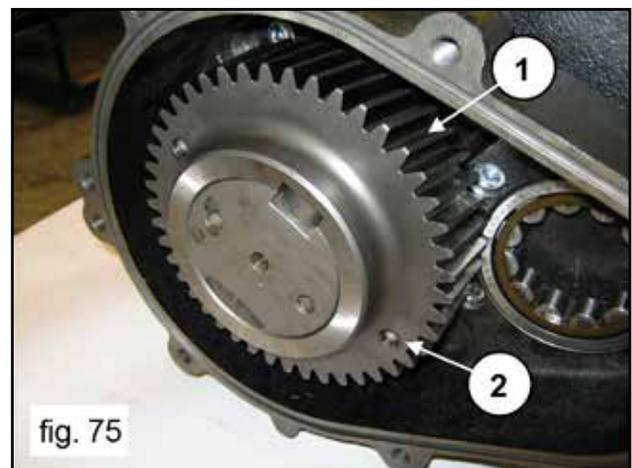
Insert the ring gear support ring in the crankshaft shank (1, fig. 72) to end stroke (1, fig. 73).



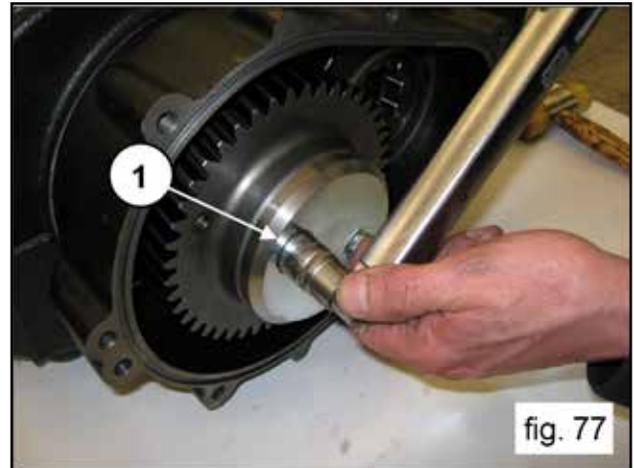
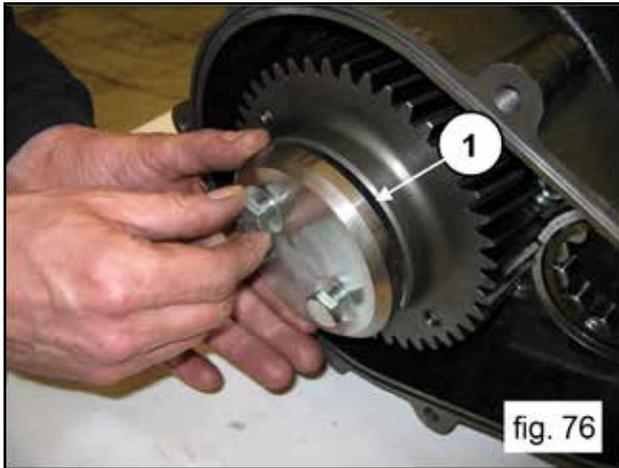
Apply key 22 x 14 x 80 in the shaft housing (1, fig. 75) and insert the ring gear on the shaft (1, fig. 76).



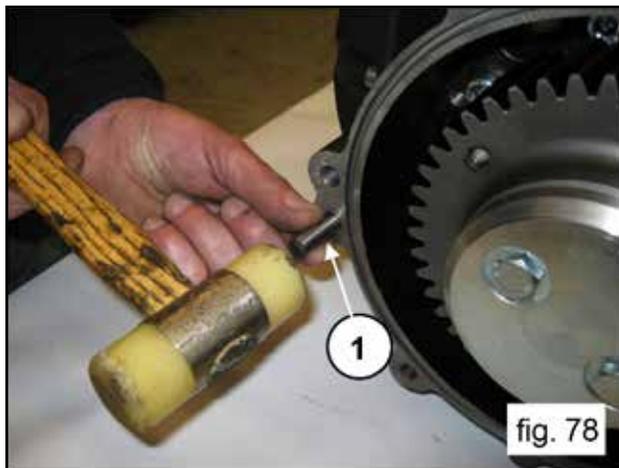
The ring gear must be assembled making sure that the two M8 holes (to be used for extraction) be turned outward of the pump (1, fig. 76).



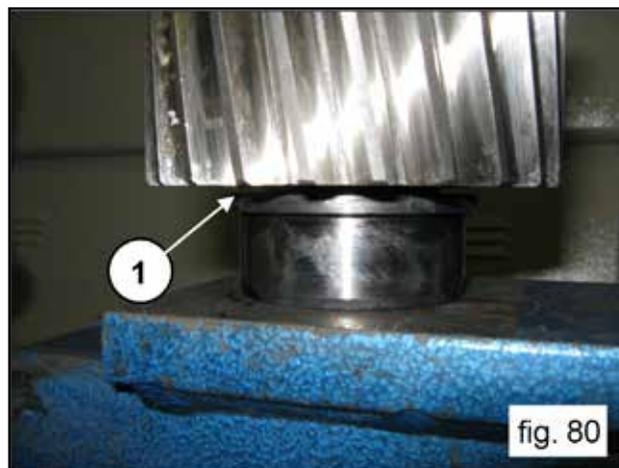
Fasten the ring gear stop (1, fig. 76) using 2 M10 x 25 screws. Calibrate the screws with a torque wrench as indicated in paragraph 3 "Screw Tightening Calibration" (1, fig. 77).



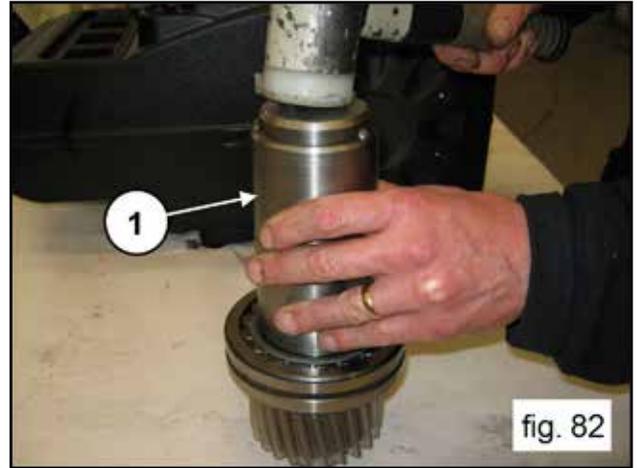
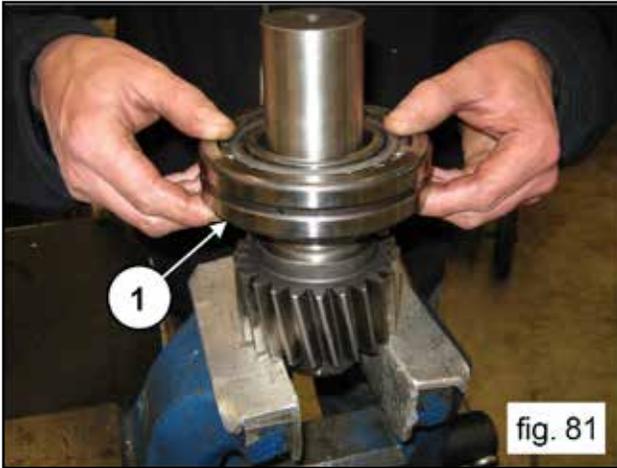
Apply the two Ø10 x 24 pins on the reduction gear box (1, fig. 78) and insert the O-ring (1, fig. 79).



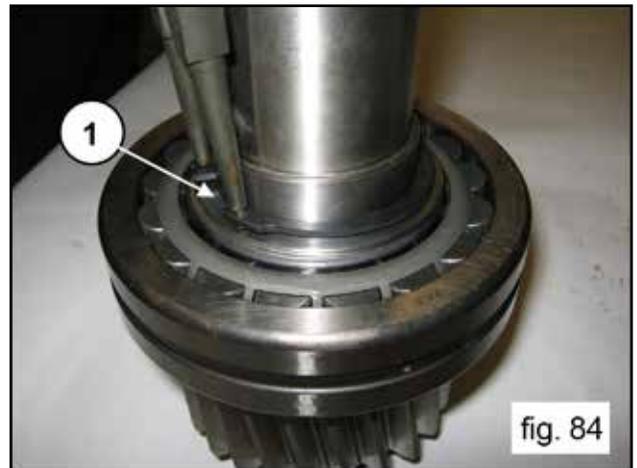
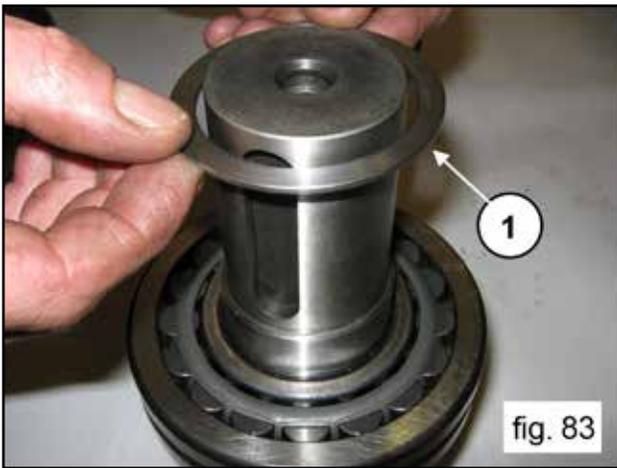
Complete assembly of the pinion on the reduction gear cover, proceeding as follows:  
Pre-assemble the inner bearing ring 40 x 90 x 23 on the pinion (1, fig. 80) positioning it to end stroke.



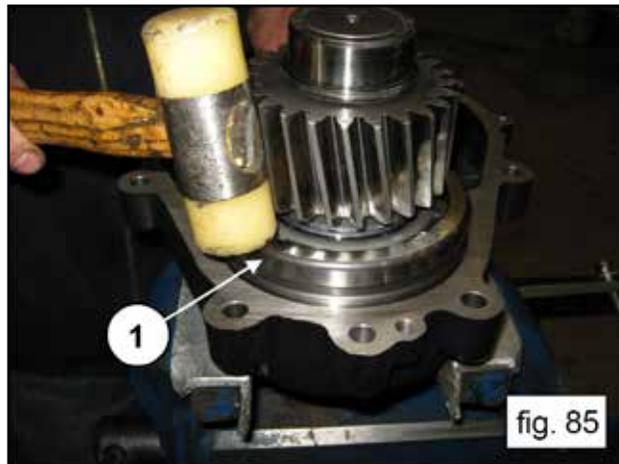
From the other side of the pinion, pre-assemble the bearing 55 x 120 x 29 (1, fig. 81) positioning it to end stroke using tool #F27604800 (1, fig. 82).



Insert the bearing support ring (1, fig. 83) and position the retaining ring Ø55 (1, fig. 84).



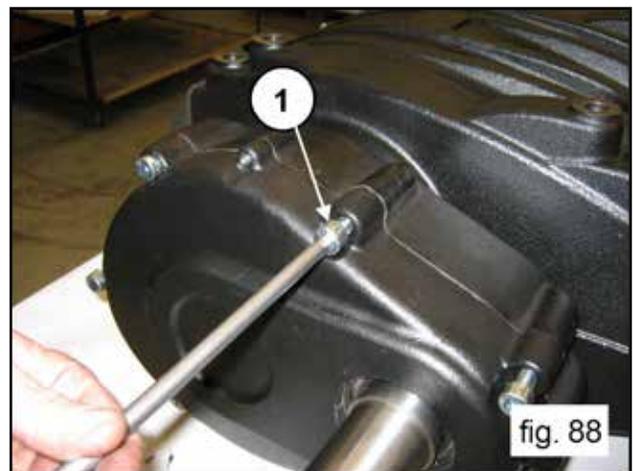
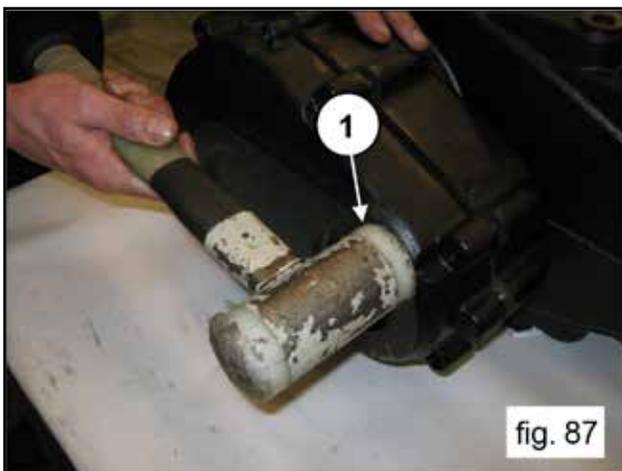
Insert the pinion pre-assembled inside its housing in the reduction gear cover, with the aid of an extractor hammer (1, fig. 85).



Insert the retaining ring Ø120 in the housing (1, fig. 86).



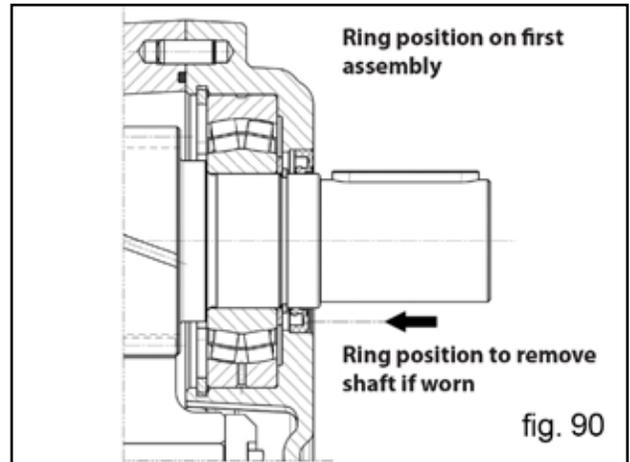
Assemble the reduction gear cover with the aid of an extractor hammer (1, fig. 87) and fasten them with 7 M10 x 40 screws (1, fig. 88). Take care to properly couple the two components on the bearing 40 x 90 x 23. Calibrate the screws with a torque wrench as indicated in paragraph 3 "Screw Tightening Calibration".



Insert the seal ring inside the reduction gear cover with the use of special tool #F27605200 (1, fig. 89). Before proceeding with seal ring assembly, check lip seal conditions. If replacement is necessary, position the new ring on the bottom of the groove as indicated in fig. 90.

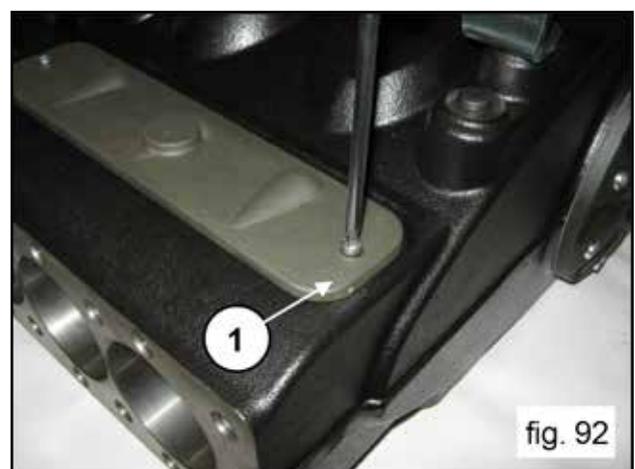


**If the shaft should present a diameter wear corresponding to the lip seal, to prevent grinding, position the ring in the second stroke as indicated in fig. 90.**



To prevent damage to the seal ring, take special care when inserting the seal ring on the pinion.

Apply O-rings on the inspection covers (1, fig. 91) and tighten with 2+2 M16 x 14 screws (1, fig. 92). Calibrate the screws with a torque wrench as indicated in paragraph 3 "Screw Tightening Calibration".



Insert the key 14 x 9 x 60 on the pinion. Apply plugs and lifting brackets with the use of M16 x 30 screws (1, fig. 93). Calibrate the screws with a torque wrench as indicated in paragraph 3 "Screw Tightening Calibration".



Insert oil in the casing as indicated in the use and maintenance manual point 7.6

### 2.1.3 Increase and Reduction Classes

TABLE OF REDUCTIONS FOR CRANKSHAFTS AND CON-ROD HALF-BEARINGS			
Recovery classes (mm)	P/N Half-bearing Upper	P/N Half-bearing Lower	Correction on the shaft pin diameter (mm)
0.25	F90928100	F90928400	Ø79.75 0/0.02 Ra 0.4 Rt 3.5
0.50	F90928200	F90928500	Ø79.50 0/0.02 Ra 0.4 Rt 3.5

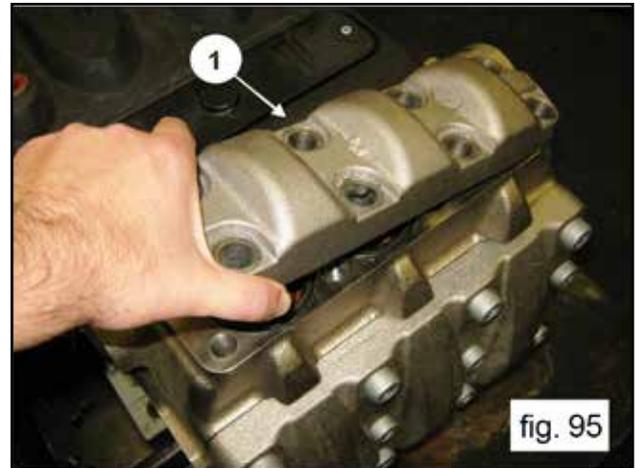
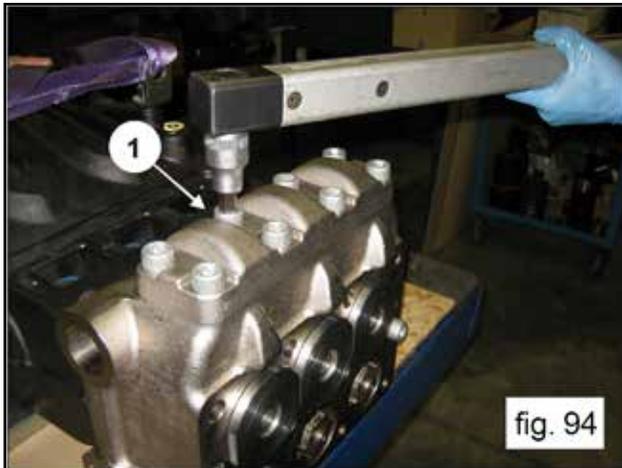
INCREASE TABLE FOR PUMP CASING AND PLUNGER GUIDE		
Recovery classes (mm)	P/N Plunger Guide	Adjustments on the Pump Casing housing (mm)
1.00	F79050543	Ø81 H6 +0.019/0 Ra 0.8 Rt 6

## 2.2 Repairing Hydraulic Parts

### 2.2.1 Disassembling manifold MF45, MF50, MF55: valve inserts

The manifold requires preventive maintenance as indicated in the use and maintenance manual. Operations are limited to inspection or replacement of valves, if necessary. Proceed as follows to extract valve groups:

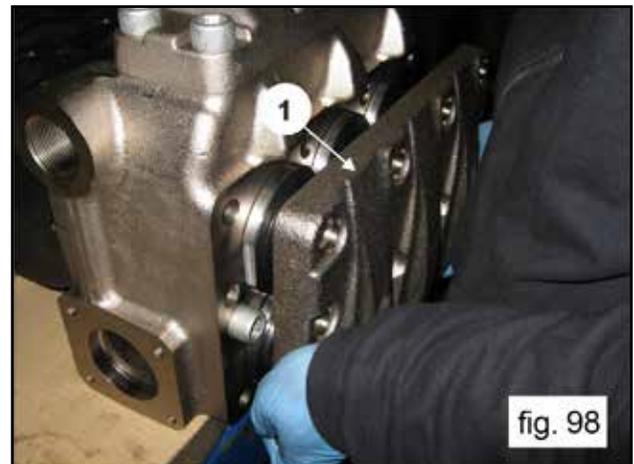
Unscrew the 8 M16 x 45 screws of the valve cover (1, fig. 94) and remove the cover (1, fig. 95).



Extract the outer valve unit with the use of an extractor hammer (#F27516400) to be applied on the M10 hole of the valve guide (1, fig. 96).



Unscrew the 6 M16 x 25 screws of the suction valve cover (1, fig. 97) and then undo the 6 M16 x 200 screws. Now remove the cover (1, fig. 98)



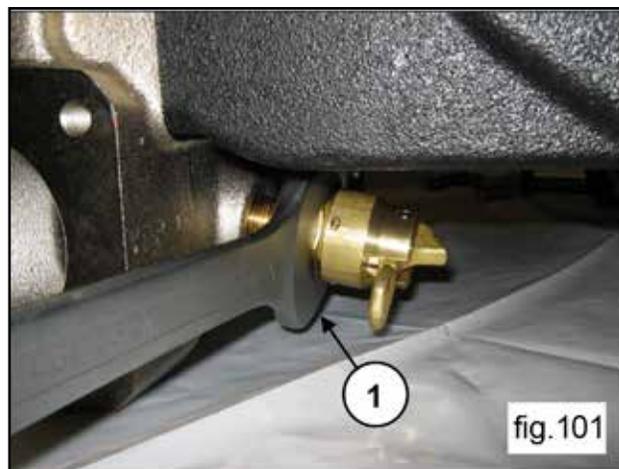
Remove the suction valve plugs using a slam hammer (#279291000), to be fitted to the M6 threaded holes (1, fig. 99)



Extract the suction valve unit with the use of a slap hammer(#27516400) to be applied on the M10 hole of the valve guide (1, fig. 100).



Unscrew the valve opening device by means of a 30 mm spanner (1, fig. 101)

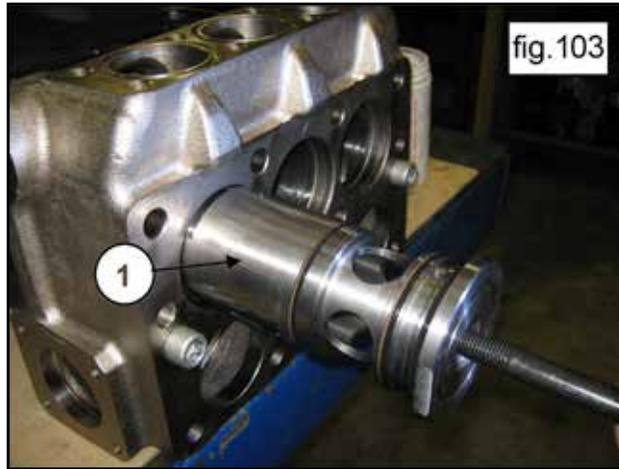


Remove the suction and outlet valve inserts, inserting and tightening an M10 screw in such a way to press on the inner guide and remove the valve guide from the valve housing (1, fig. 102).



## 2.2.2 Disassembling manifold MF45, MF50, MF55: sleeves containing seals

Remove the sleeves containing the seals from the manifold using a slap hammer (#27929400) to be fitted to the M16 hole on the end of the sleeves (1, fig. 103).



Remove the seal support from the sleeve (1, fig. 104).



Remove the high and low pressure seals from their seats (1, fig. 105 and 106).



Complete disassembly by removing the G1/2" plugs on the lower part of the manifold (1, fig. 107).



It is now possible to remove the manifold from the pump casting, unscrewing the 2 M16 x 180 screws (1, fig. 108). During disassembly of the manifold, pay special attention to avoid impact against the piston (fig. 109).



Remove the 3 manifold locating bushes from the casing.

### 2.2.3 Fitting the manifold

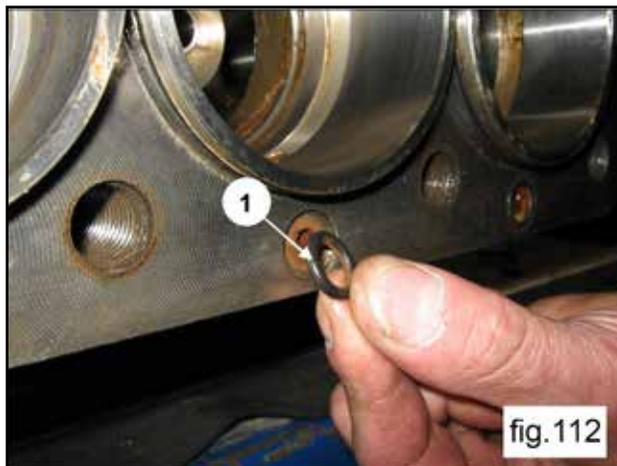
Insert the O-rings into the pump casing (1, fig. 110).



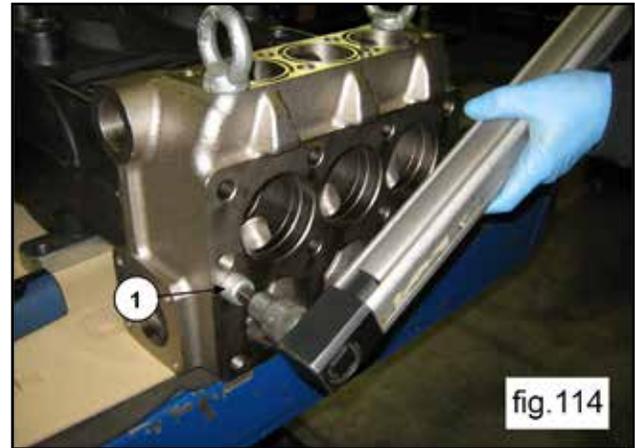
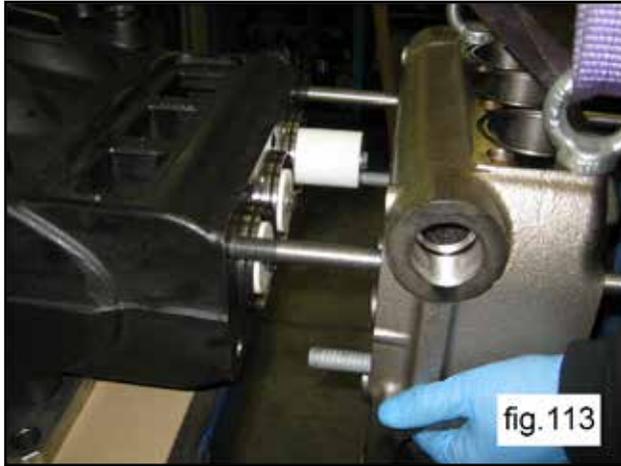
Fit the 3 manifold locating bushes (1, fig. 111).



Fit the 6 front O-ring in the pump casing (1, fig. 112).



Assemble the manifold to the pump casing (1, fig. 113) taking care not to strike the pistons and screw in the 2 M16 x 180 screws (1, fig. 114) with a torque wrench as indicated in paragraph 3 “Screw Tightening Calibration”.



#### 2.2.4 Fitting the manifold: sleeves containing seals

Proceed with reassembly following the reverse order indicated in par. 2.2.2.



Replace the pressure seals moistening the lips with silicone grease (without spreading it), taking extra care not to damage them during sleeve insertion.

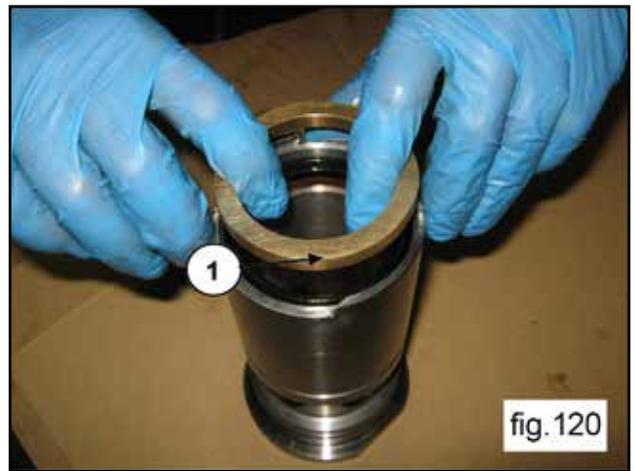
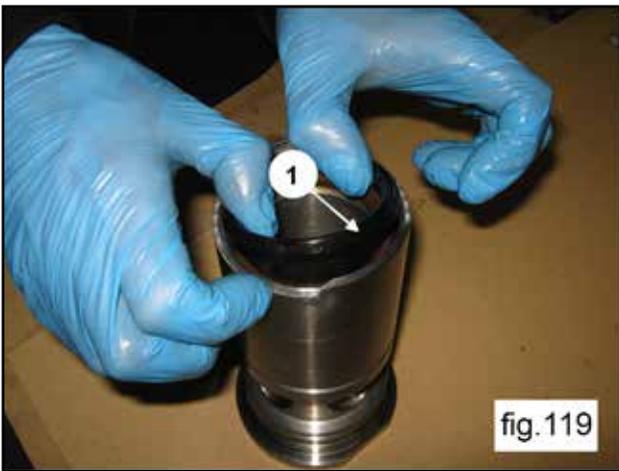
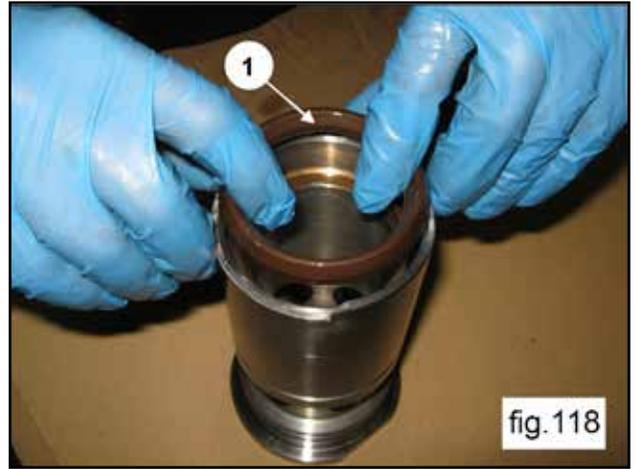


All O-rings and pressure seals must be replaced at each disassembly.

Insert the low pressure seal in the seal support (1, fig. 115) paying close attention to the mounting direction which requires that the sealing lip be set forward (towards the manifold). Fit the O-ring on the seal support (1, fig. 116).



Fit the head ring (1, fig. 117), the high pressure seal (1, fig. 118) the restop ring (1, fig. 119) and the center ring (1, fig. 120).



Fit the O-rings (1, fig. 121) and the associated back-up rings into the sleeve (2, fig. 121).



Assemble the bottom ring to the sleeve (1, fig. 122).



Insert into the manifold the 3 inserts containing the seals (1, fig. 123) and position the O-rings on the front of the insert (1, fig. 124).



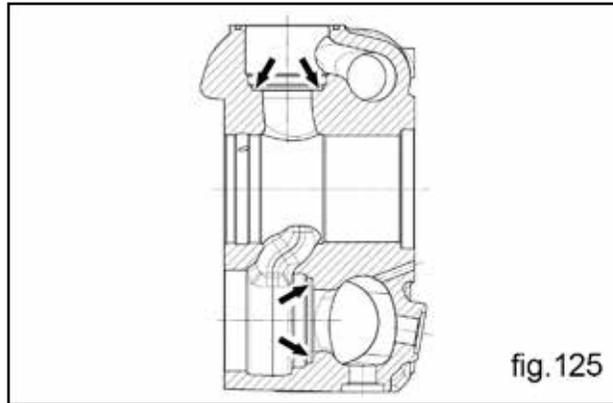
## 2.2.5 Assembling the valve units manifold



Pay particular attention to the conditions of the various components and replace if necessary. At every valve inspection, replace all O-rings both in the valve inserts and in the valve plugs.



Before repositioning the valve inserts, thoroughly clean and dry the relative housings in the manifold as indicated by the arrows (fig. 125).



Proceed with reassembly following the reverse order indicated in par. 2.2.1.

Assemble the inlet and outlet valve units (fig. 126).

To facilitate insertion of the valve guide in its housing, you can use a pipe resting on the horizontal guide planes (fig. 127) and use an extractor hammer acting on the whole circumference.





Proceed with insertion of the valve units (suction and outlet) in the manifold, taking care to follow the correct insertion sequence of O-rings and back-up rings.

The proper sequence of valve inserts in the manifold is as follows:

Fit the back-up ring in the suction housing, exploded view (1, fig. 128).



Fit the O-ring, exploded view item number 7 (1, fig. 129)

Ensure that the O-ring and back-up ring are perfectly lodged in their seat (1, fig. 130).



Fit the suction valve insert.

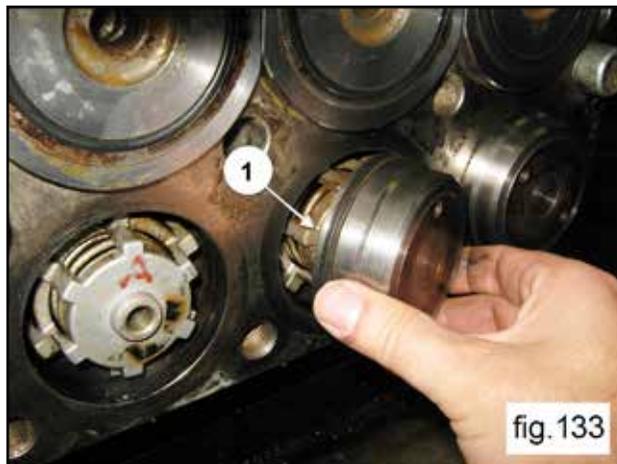
The complete valve must be driven fully home and appear as shown in (1, fig. 131).



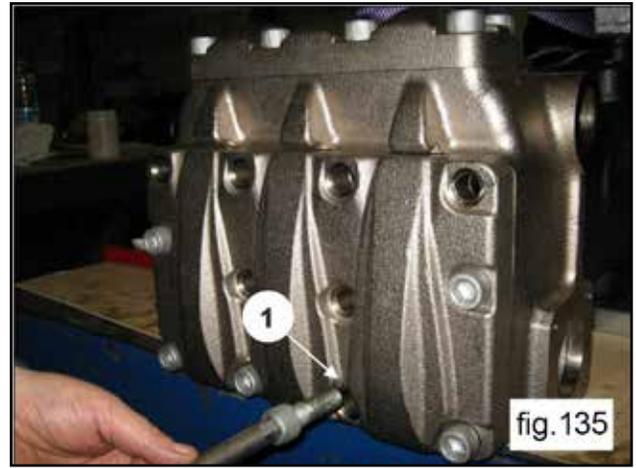
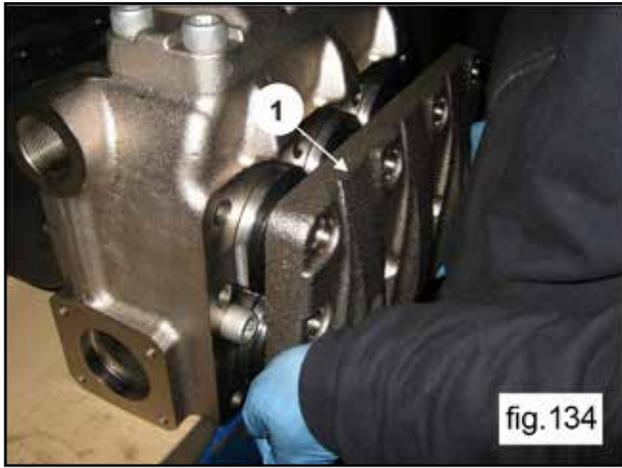
Fit the O-rings (1, fig. 132) and the associated back-up rings into the valve plug (2, fin. 132).



Fit the valve plug into the manifold (1, fig. 133).



After having completed assembly of the suction valve units and the sleeves containing the seals, fit the suction valves cover (1, fig. 134) and screw in the 6 M16 x 45 screws (1, fig. 135) as indicated in paragraph 3 “Screw Tightening Calibration”.



Proceed with outlet valve unit assembly:  
Insert the back-up ring, exploded view item number 21(1, fig. 136).



Fit the O-ring, exploded view item number 22 (1, fig. 137).



Ensure that the O-ring and back-up are perfectly lodged in their seats.

Insert the outlet valve unit (1, fig. 138).

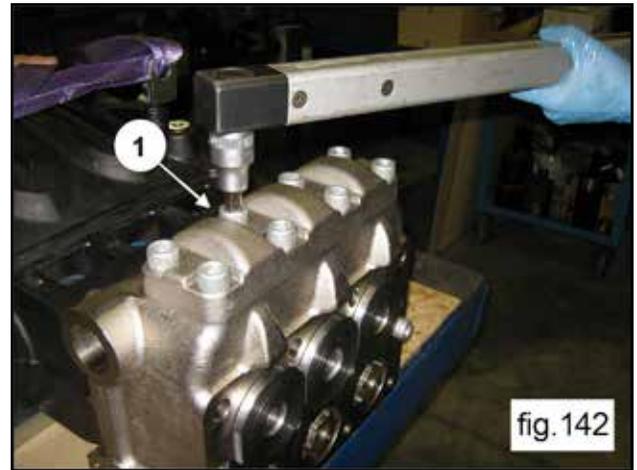
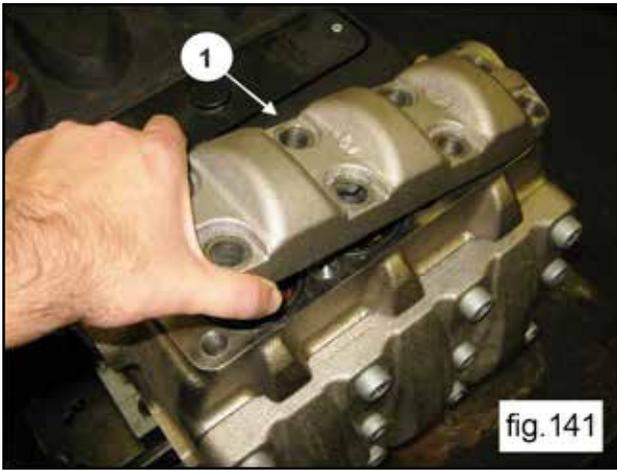
The complete valve insert must be driven fully home and should appear as shown in (1, fig. 139).



Insert the front O-ring in the outlet valves (1, fig. 140).



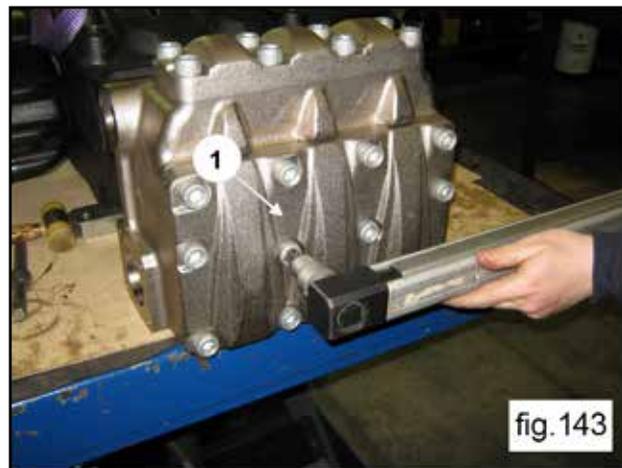
After having completed assembly of the outlet valve units, fit the outlet valve cover (1, fig. 141) and screw in the 8 M16 x 45 screws (1, fig. 142) as indicated in paragraph 3 “Screw Tightening Calibration”.



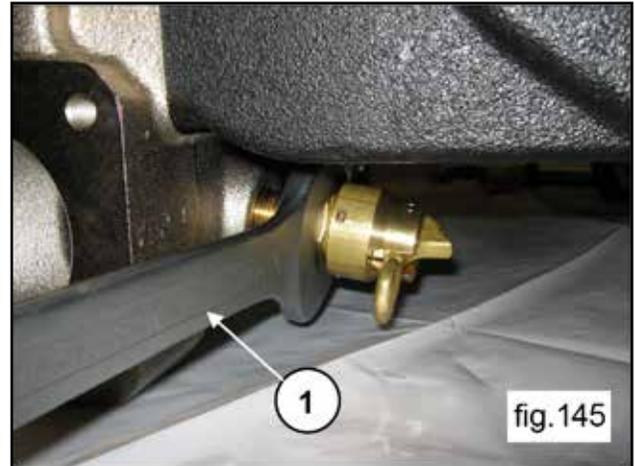
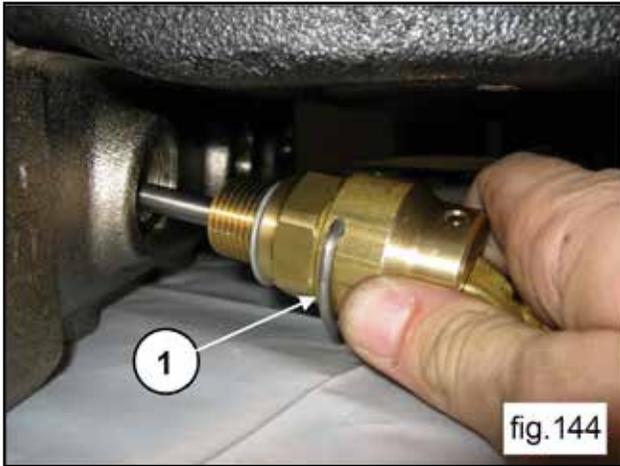
Proceed with calibration of the M16 x 200 screws with a torque wrench as indicated in paragraph 3 “Screw Tightening Calibration”.



**Tighten the 6 M16 x 200 screws starting crosswise from the 4 inner screws, to then proceed with the 2 outer screws, always tightening crosswise (1, fig. 143).**



Fit the valve lifters (1, fig. 144) and screw them in using a 30 mm wrench (1, fig. 145).



Apply the G1/2" plugs on the lower part of the manifold with associated washers.

Proceed with calibration of the G1/2" plugs with a torque wrench as indicated in paragraph 3 "Screw Tightening Calibration".

### 2.2.6 Dismantling the piston unit

The piston unit requires preventive checks as indicated in the preventive maintenance table in the **use and maintenance manual**.

Maintenance is limited to visual inspection of any drainage from the hole present on the lower inspection cover. If abnormalities / variations on the outlet pressure gauge or dripping from the drainage hole circuit are detected, the seal pack will have to be checked and replaced.

Proceed as follows to extract piston units:

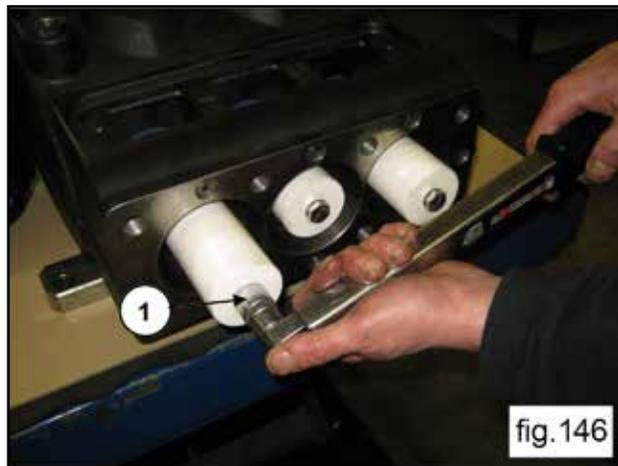
To access the piston unit, unscrew the M16 x 180 and M16 x 200 screws and remove manifold.



**Remove the manifold taking care to avoid striking the pistons.**

Disassemble the piston by unscrewing the fixing screws (1, fig. 146).

Withdraw the piston and check that its surfaces do not present any scratch, signs of wear or of cavitation.



Remove the upper inspection cover, unscrewing the 2 fixing screws (1, fig. 147).

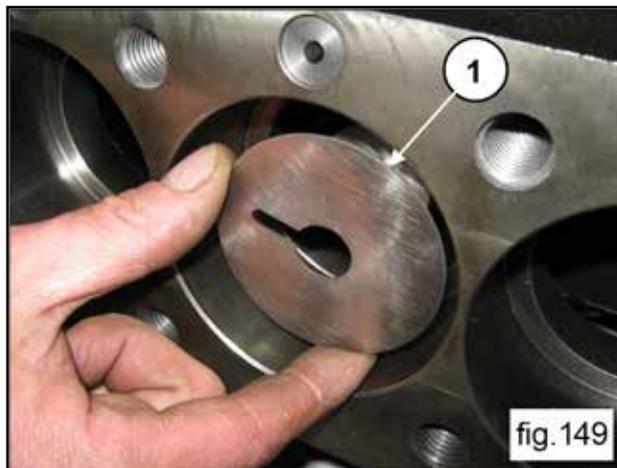


After removing the 3 manifold locating bushes.

Remove the seal support bottom O-rings (1, fig. 148).



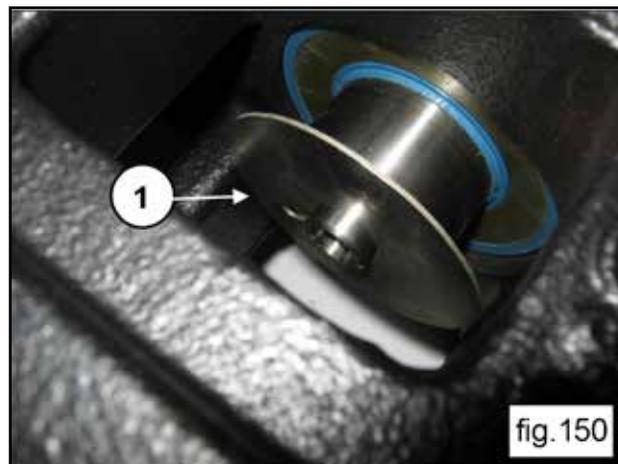
Remove the spray rings from the piston guide (1, fig. 149).



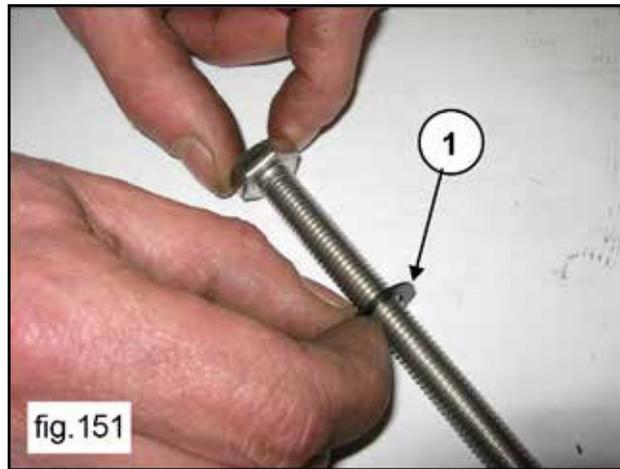
### 2.2.7 Assembling the piston unit

Proceed with reassembly following the reverse order indicated in par.2.2.6.

Position the spray hood in the piston guide housing (1, fig. 150).



Insert the  $\varnothing 10 \times 18 \times 0.9$  washer in the fixing screw (1, fig. 151).

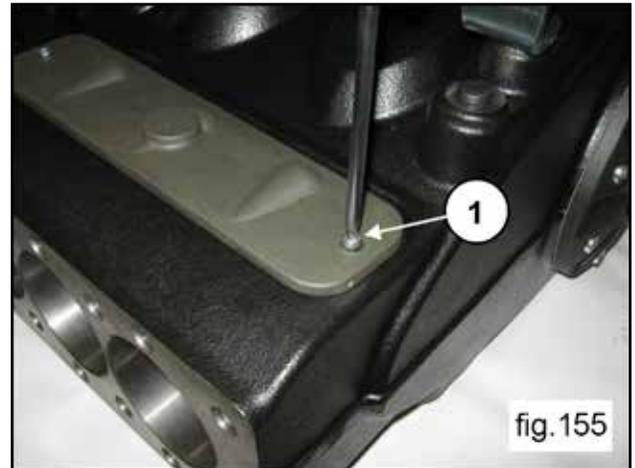
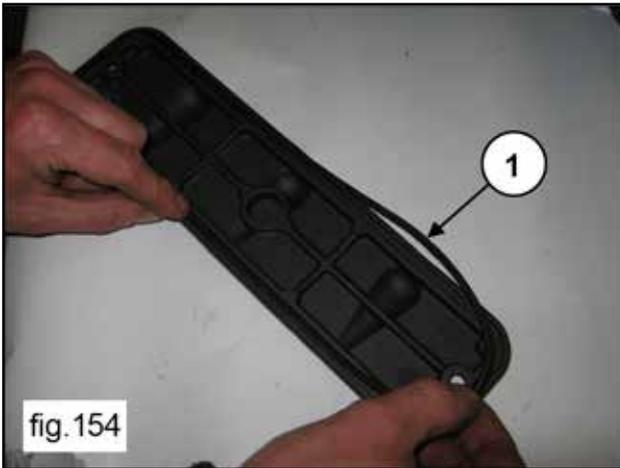


Install the piston on their respective guides (1, fig. 152) and fasten them as per (1, fig. 153).



Calibrate the screws with a torque wrench as indicated in paragraph 3 "Screw Tightening Calibration".

Insert the O-ring on the inspection covers (1, fig. 154) and assemble the covers with the use of 2+2 M6 x 14 screws (1, fig. 155).



Calibrate the screws with a torque wrench as indicated in paragraph 3 “Screw Tightening Calibration”.

**3. SCREW CALIBRATION**

Screws are to be fastened exclusively using a torque wrench.

Description	Exploded View Position (From Owner's Manual)	Fastening Ft. Lbs.	Fastening Nm
Casing cover screw M10 x 30	97	33.2	45
G1/2 x 10 casing plug	98	29.5	40
Lifting bracket screw M16 x 30	59	147.5	200
Reduction gear cover screw M10 x 40	88	33.2	45
Ring gear stop screw M10 x 25	83	33.2	45
Reduction gear box screw M10 x 40	88	33.2	45
Upper and lower cover screw M6 x 14	68	7.4	10
Bearing cover screw M10 x 30	97	33.2	45
Con-rod fixing screw M10 x 1.5 x 80	61	47.9	65*
Piston guide screw M6 x 20	55	7.4	10
Piston fixing screw M10 x 140	31	33.5	40
Valve cover screw M16 x 45	46	245.6	333
G1/2" manifold plug	4	29.5	40
M16 x 180 manifold screw	48	245.6	333
Manifold screw m16 x 200	47	245.6	333**
Valve opening device	2	29.5	40

\* Achieve coupling torque tightening screws at the same time.

\*\* Tighten the screws starting crosswise from the 4 inner screws, to then continue with the 2 outer screws, always tightening crosswise.

**4. REPAIR TOOLS**

Pump maintenance may be carried out using simple tools for assembling and disassembling components. The following tools are available:

**For Assembly:**

- Shaft (con-rods locking) . . . . . F27566200
- Bearing on crankshaft . . . . . F27604700
- Pinion bearing on reduction gear box . . . . . F27604900
- Crankshaft bearing on the reduction gear box. . . . . F27605000
- Crankshaft bearing on the bearing cover. . . . . F27605000
- Piston guide oil seal . . . . . F27605300
- Bearing on pinion . . . . . F27604800
- Pinion oil seal . . . . . F27605200

**For Disassembly:**

- Piston guide oil seal . . . . . F27644300
- Shaft (con-rods locking) . . . . . F27566200
- Suction valve plug . . . . . F27929100
- Suction and outlet valve unit . . . . . F27516400
- Inlet valve seat . . . . . F27929200
- Outlet valve seat . . . . . F27929300
- Seals sleeve . . . . . F27929400

## 5. REPLACING THE CON-ROD SMALL END BUSH

Preform cold-driving of the bushing and the subsequent work bearing in mind that dimensions and tolerances shown in fig. 156 below.

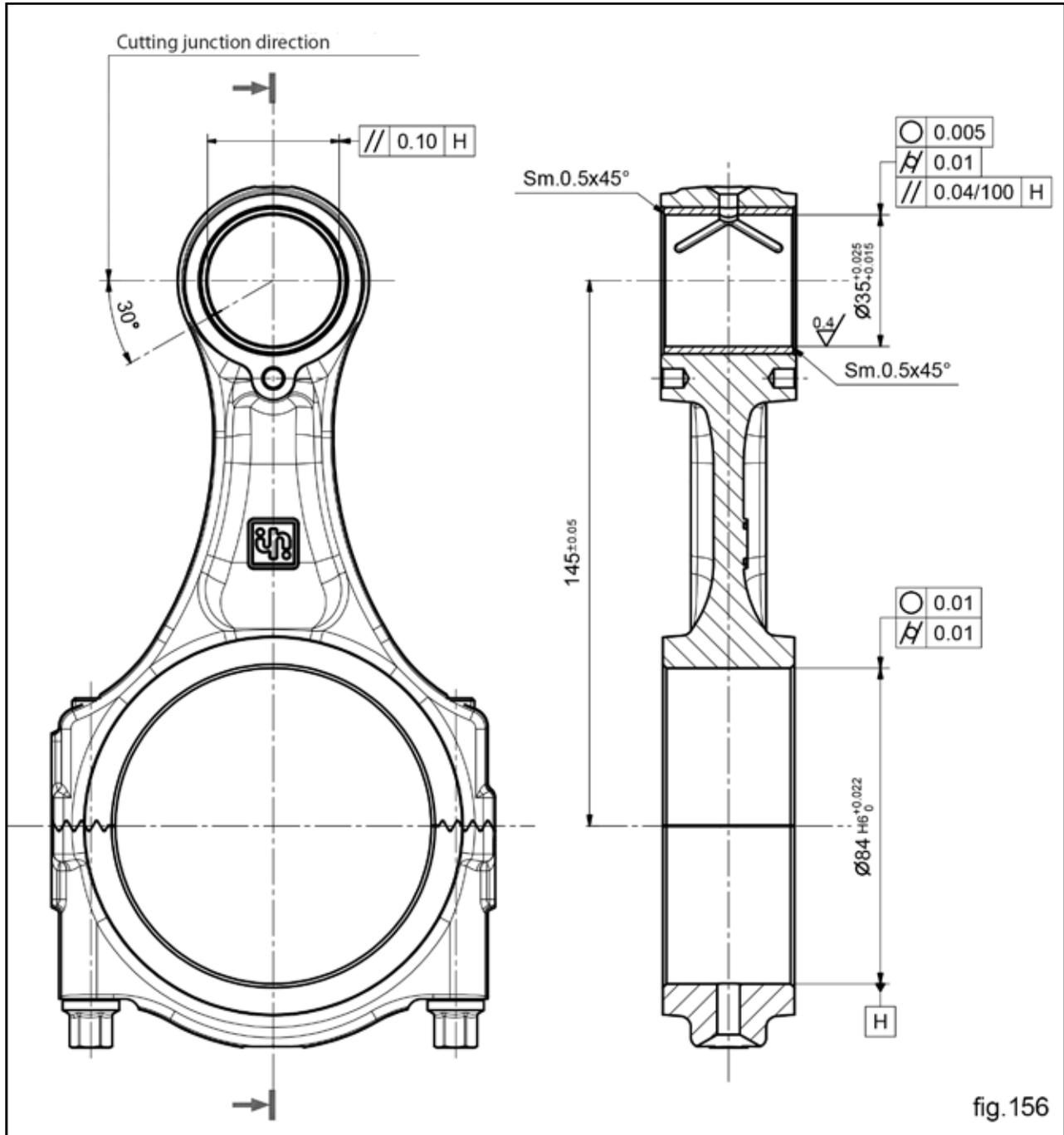


fig.156

## MAINTENANCE LOG

### HOURS & DATE

<b>OIL CHANGE</b>							
<b>GREASE</b>							
<b>PACKING REPLACEMENT</b>							
<b>PLUNGER REPLACEMENT</b>							
<b>VALVE REPLACEMENT</b>							



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