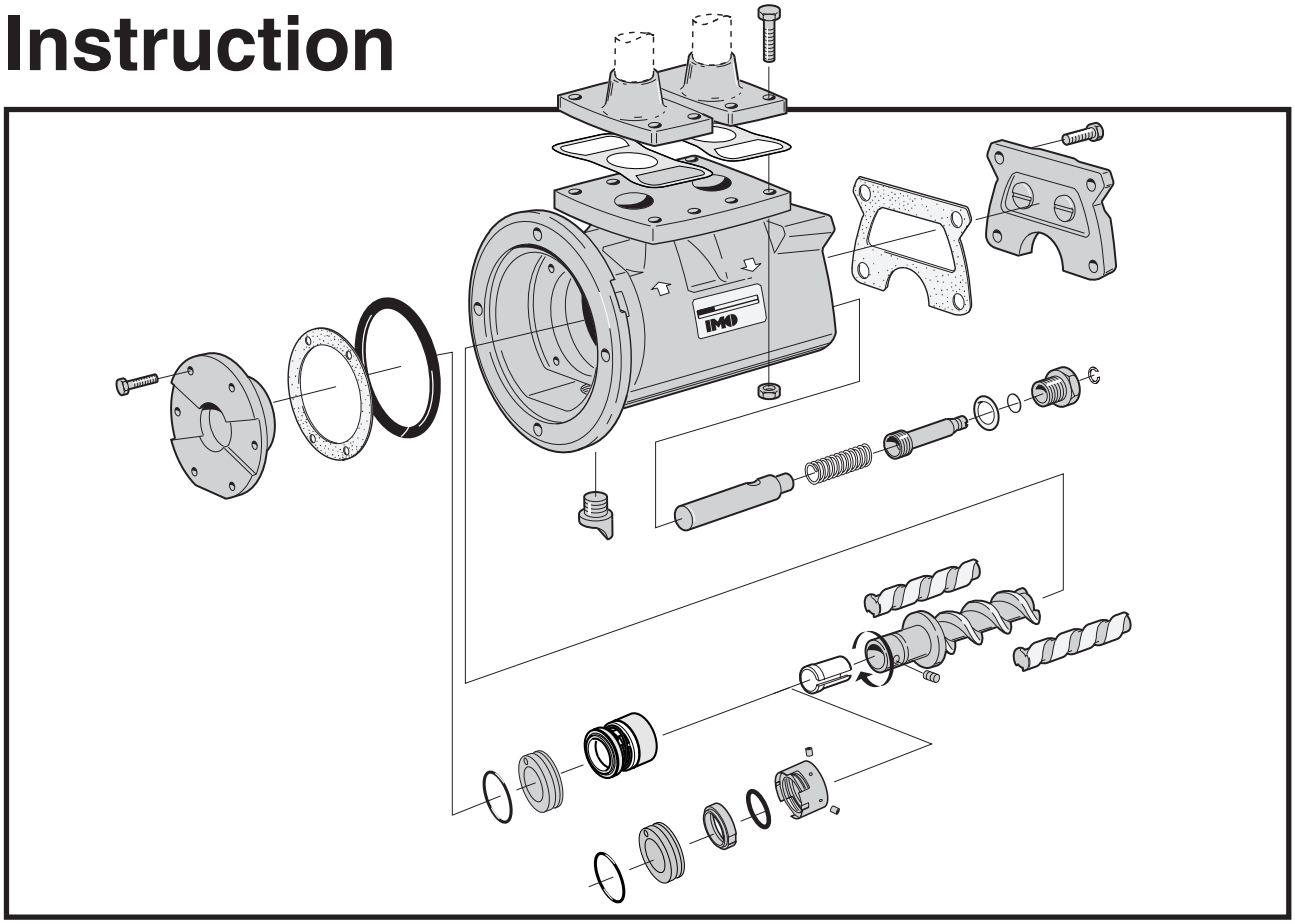
A Member of the
COLFAX PUMP GROUP

Screw pumps
ACD

Maintenance and Service Instruction



This instruction is valid for all ACD pump models shown on page 2	
Contents	Page

ACD6 0618.02 GB

⚠ Before commencing any work, read this instruction carefully!
Failure to comply with these instructions may cause damage and personal injury!

For more information about the pumps identification code, technical data and performance we refer to the ACD Product description.
Fore more information about the pumps installation, start-up and trouble shooting we refer to the IMO Installation and Start-up instruction for low pressure pumps.

List of components

Valid for all ACD pumps, size 025. Rotor lead and Generation: L6/N6

With version codes: I / N, T / V, B, P

The version code is composed of the letters in the 4 columns.
Example of pump designations std: ACD 025L6 IVBP

Pos No	Denomination	Quantity	Spare parts set: G012 Rotor set	G050 Shaft seal	G053 Minor kit	G054 Major kit	G057 Joint kit	Remarks
1020	Power rotor	1	x			x		1)
134	Locking screw	1	x		x	x	x	
162	Nylon sleeve socket	1	x		x	x	x	
202	Idler rotor	2	x			x		1)
401	Pump body	1						
416	Inlet flange	1						
417	Screw	8						
417A	Nut	8						
418	Gasket	1			x	x	x	
423	Gasket	1			x	x	x	
427	Outlet flange	1						
443	Drip nipple	1						
451	Screw	8						
501	Front cover	1						
506	O-ring alt. gasket	1			x	x	x	2)
509	Shaft seal	1		x	x	x		
551	Rear cover	1						
556	Gasket	1			x	x	x	
601	Valve cover	1						
602	Sealing washer	1			x	x	x	
605	O-ring	1			x	x	x	
612	Regulating screw	1						
612A	Retaining ring	1						
614	Valve piston	1						
615	Valve spring	1				x		

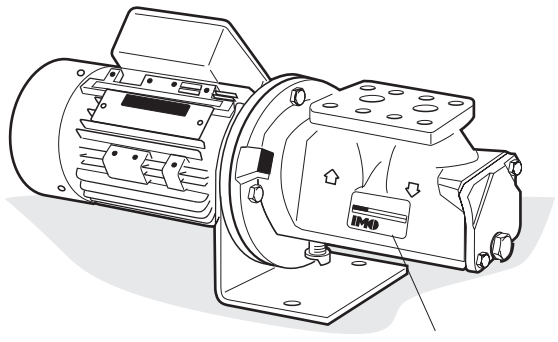
1) Delivered only as Rotor set G012.

When ordering spare parts, please state the complete pump identification according to its name plate and required spare part set or the required parts position number.

2) The spare part set includes both O-ring and gasket see Fig. 21 and 22 page 9.

ATTENTION

The o-ring is to be used in the version with o-ring. The gasket is to be used in the version with gasket.
Never fit both o-ring and gasket in one pump!



Name plate of the pump

ACD6 0618.02 GB

Exploded view

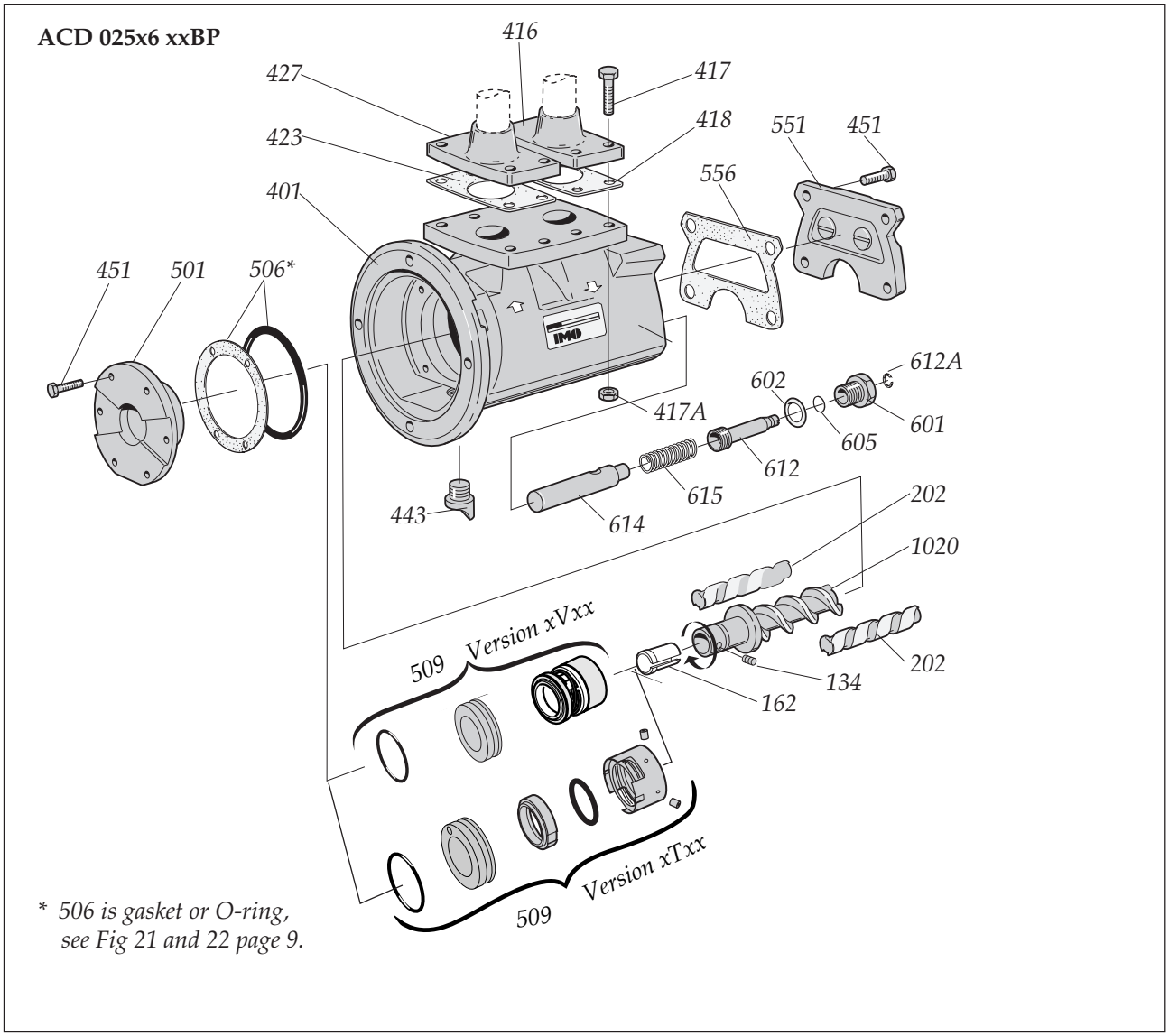


Fig. 1

Ordering code

Pos No	Spare parts sets		Pump size 025 Part no
G012	**Rotor set CW-rotation (std):** Normal lead Low lead	 - pump form N6 - pump form L6	 062885 062893
G050	Complete shaft seal	- version code xVxx - version code xTxx	190848 190810
G053	Minor kit	= G050+G057	
G054	Major kit	= G012+G053+615	
G057	Joint kit		183681
615	Valve spring		018523

Fig. 2

Recommendation:
For maintenance the following spare part sets are recommended:
Set: / To be used:

G057 Joint kit
For dismantling of the pump.

G053 Minor kit
For service

G054 Major kit
For repair after damage or greater wear.

Ordering example:
For IMO-pump ACD 025L6 IVBP, serial number 456789:

Shaft seal pos G050 p/n 190848
Valve spring pos 615 p/n 018523

Service intervals

The intervals for inspection and replacement of wear parts vary greatly with the properties of the pumped liquid and can only be determined by experience.
All internal parts of the ACD-pump are lubricated by the pumped liquid. Pumping liquid which contains abrasive materials, or liquid that is corrosive, will significantly reduce service life and call for shorter service intervals.
Wear in the pump may be indicated by:

- Vibration
- Noise
- Loss of capacity
- Reduction in flow/pressure
- Leakage

In installations where unplanned shut downs must be avoided, it is advisable to have a complete pump available for replacement, should any malfunction occur. Furthermore we recommend planned inspection and overhaul at regular intervals, not exceeding 3 years.
It is recommended always to have the spares included in minor spare part kit available.

⚠ If the pumps operating temperature exceeds 60°C let the pump cool off before any service, maintenance or dismantling work is commenced to avoid burn injury.

⚠ All work carried out on the pump has to be performed in such a manner that risks for personal injury are observed!

⚠ When handling liquids that may harm skin use gloves and/or protective clothing.

⚠ When handling liquids which may involve fire hazards appropriate precautions to avoid danger are to be taken.

⚠ In case of failure for a system with elevated pressure, fluid jets may cause injury and/or damage.

⚠ Oil leakage may make the floor slippery and cause personal injury.

Inspection of shaft seal

As the seal faces of a mechanical shaft seal are lubricated by the fluid a certain leakage will always be present. Ten drops per hour can be considered as acceptable.
An external visual inspection of the pump is advisable at least every two days to assure that the shaft seal is not leaking too much.
Excessively leaking shaft seals should be replaced without delay, as the leakage normally will grow worse and cause additional damage.
Follow the instructions in the dismantling/reassembly session.
When working with a shaft seal, cleanliness is of utmost importance. Avoid touching the seal faces. If necessary, the seal faces should be cleaned immediately prior to assembly, using a dustfree cloth and clean solvent.
Never use grease on the seal faces.

O-rings

All O-rings found to be hard or damaged shall be replaced.

Inspection of rotors

If an indication of a worn pump is noticed (see service intervals above), a brief inspection of the idler rotors is recommended.
A quick inspection of the idler rotors can be made simply by removing the rear cover. Note that the driver must be deenergized and the pump hydraulically isolated before the rear cover is removed.
Internal clearances in the pump, which are vital for its proper function, may have been affected by wear. Acceptable wear can be determined only by experience of the actual application. As a rule of thumb the following max clearance values may apply:

- Between rotor and bores or bushings: 0.2 mm
- Between rotor flanks: 0.4 mm

For light duties (low pressure, medium viscosity) even bigger clearances may be acceptable but for low visc./high pressure duties the limit will be lower.
Also check if there are major scratches on these parts.

If a more thorough investigation is needed, proceed as under ”Dismantling and reassembly”.

ACD6 0618.02 GB

Sectional view

Model code ACD 025 xxBP
Version with O-ring

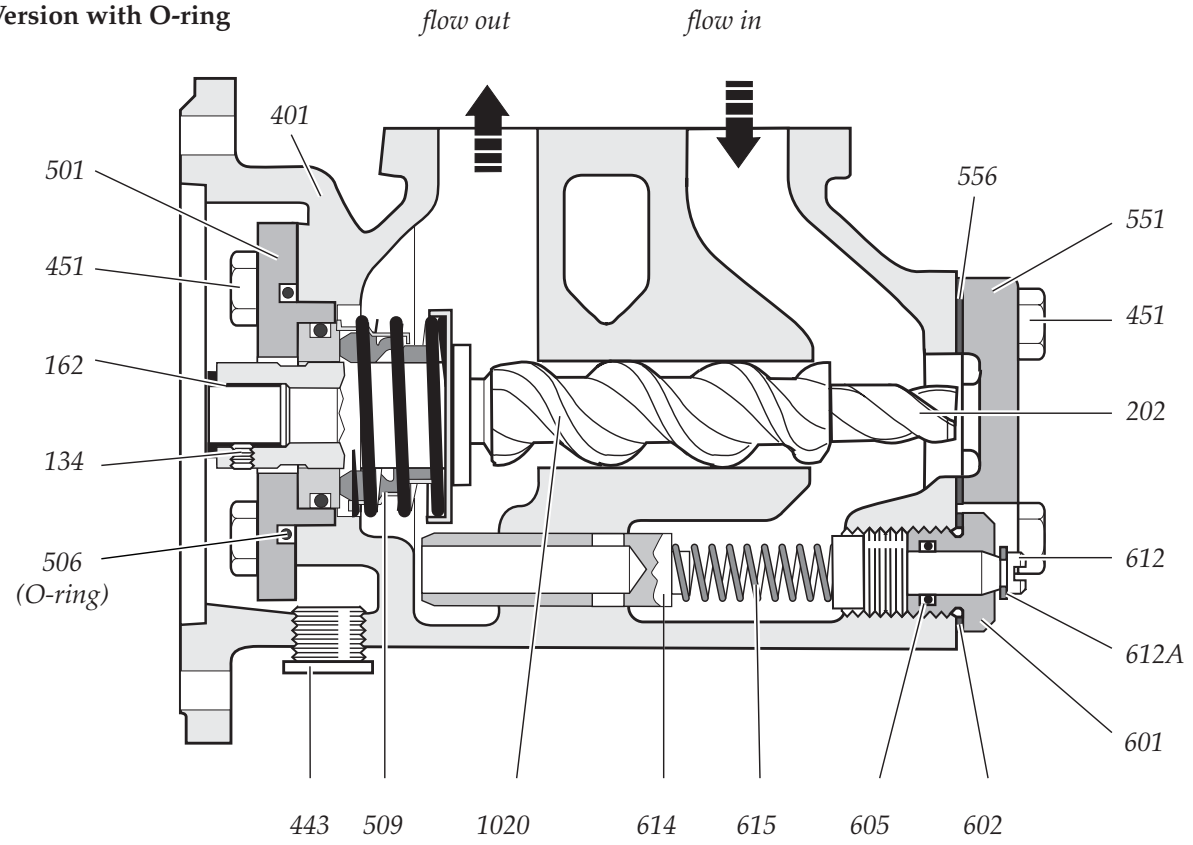


Fig. 3

Version with gasket (obsolete)

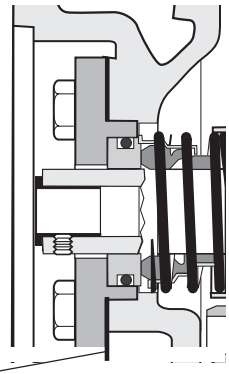


Fig. 4

Useful tools

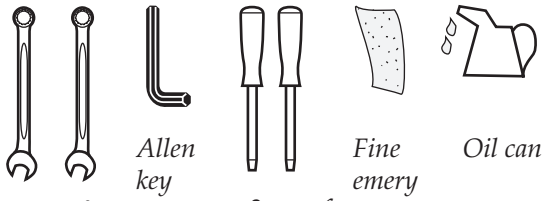


Fig. 5

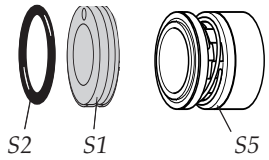
Before any maintenance work, ensure that the driver is deenergized and the pump hydraulically isolated.

Connecting and disconnecting of electric cables must be done only by personnel authorized to do such work.

Shaft seal – assembly drawing

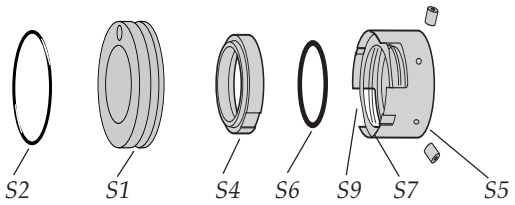
Shaft seal G 050 (509)

Version code xVxx



S1 Seat
S2 O-ring
S5 Bellows unit

Version code xTxx



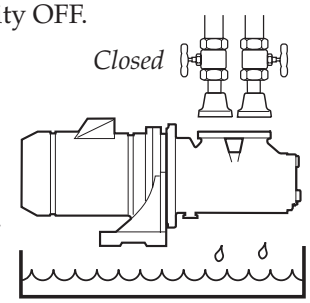
S1 Seat
S2 O-ring
S4 Seal ring
S5 Seal ring carrier
S6 O-ring
S7 Spring
S9 Stop washer

Fig. 6

Dismantling

A.

- Turn the electricity OFF.



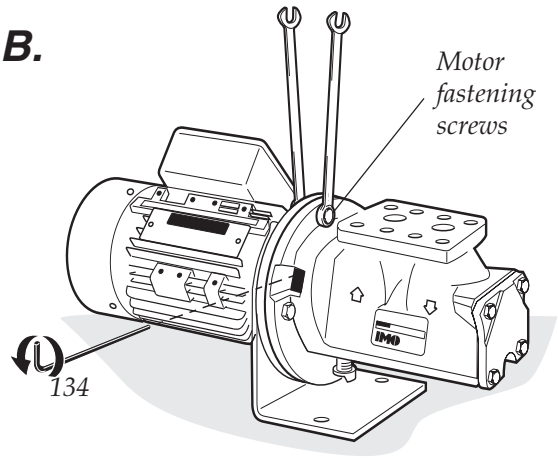
- Close the valves.
- Remove pump from the system.

ATTENTION

Use appropriate vessels to collect oil spillage when removing and opening the pump.

Fig. 7

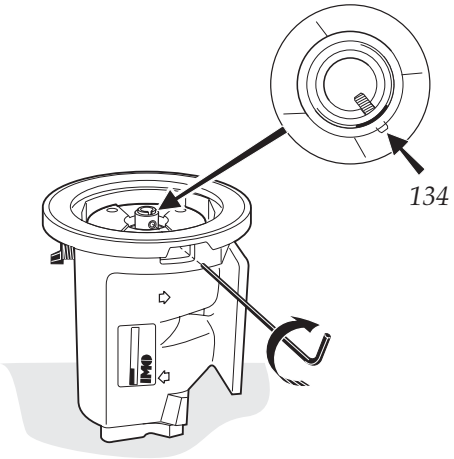
B.



- Untighten the locking screw 134.
- Remove the motor fastening screws.
- Remove the motor and the angle bracket.

Fig. 8

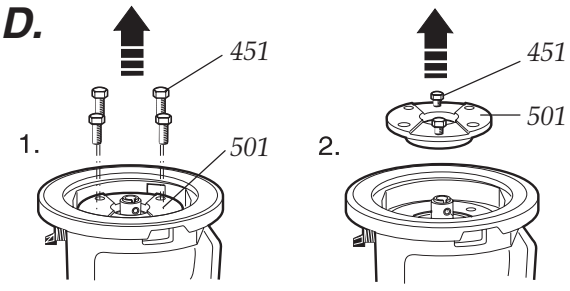
C.



- To ease dismantling hide the locking screw 134 into the shaft by turning it clockwise.

Fig. 9

D.

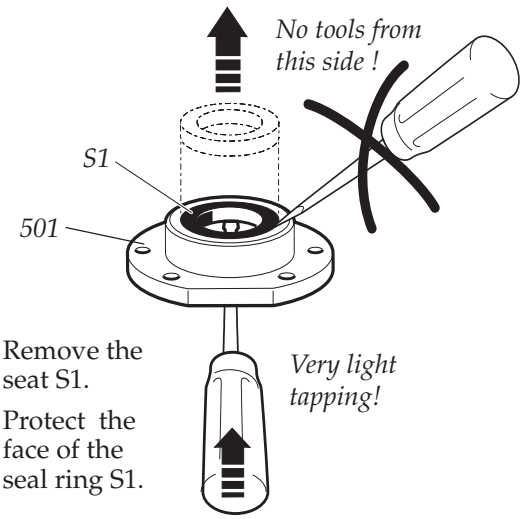


- Untight and remove the screws 451 in the front cover 501.
- Fit two of the screws 451 into the extraction holes in the front cover 501 in order to push it up.
- Remove the front cover 501.

Fig. 10

ACD6 0618.02 GB

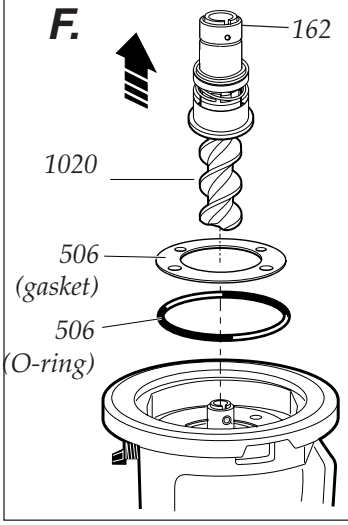
E.



- Remove the seat S1.
- Protect the face of the seal ring S1.

Fig. 11

F.

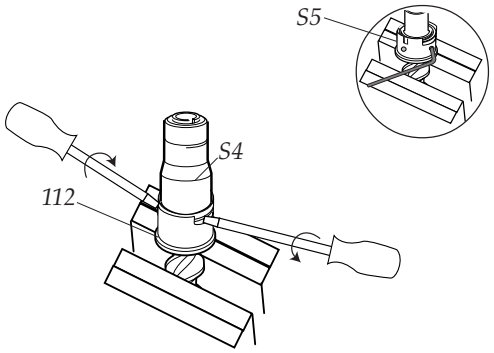


- Pull out the power rotor 1020.
- Remove the gasket 506 if applicable.
- Remove the O-ring 506 if applicable.
- Replace the nylon sleeve socket 162 if damaged.

Fig. 12

G.1

xTxx

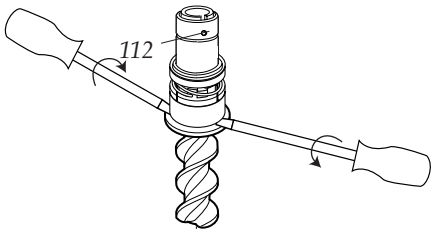


- Place the rotor into the jaw vice with soft jaws.
- Insert gently two screw drivers as shown on the sketch and carefully remove the seal ring S4 and O-ring S6.
- Release the two stop screws and remove the seal ring carrier S5.

Fig. 13 A

G.2

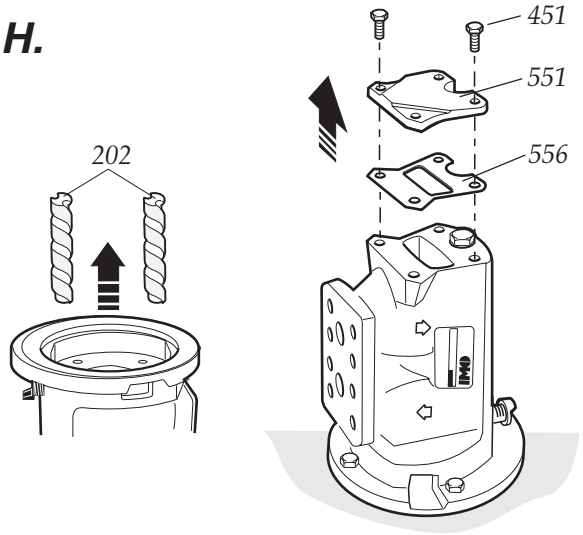
xVxx



- Place the rotor into the jaw vice with soft jaws.
- Pull off the bellows unit as shown.

Fig. 13 B

H.

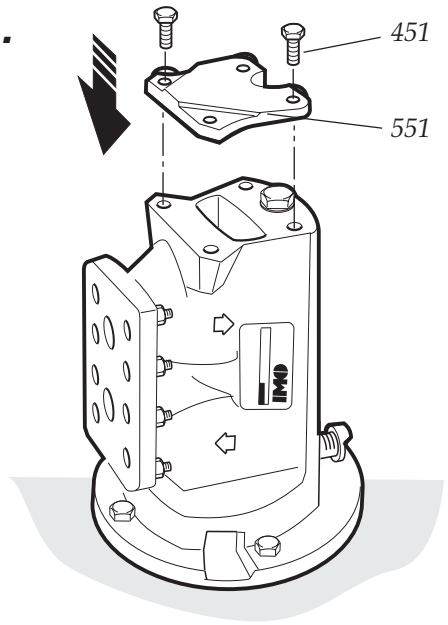


- Pull out the idler rotors 202 for inspection.
- Turn the pump upside down.
- Remove the screws 451.
- Remove rear cover 551.
- Remove the gasket 556.

Fig. 14

Reassembly

A.

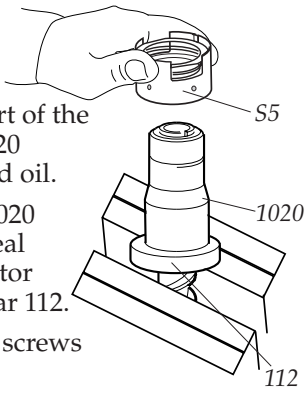


- Fit the rear cover 551. No gasket yet! (This way of reassembling will result in a good adjustment for the shaft seal mounting!)
- Fit two of the screws 451.

Fig. 15

B.

xTxx

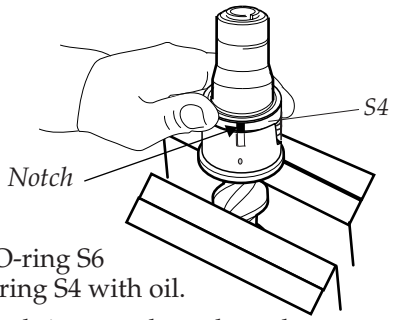


- Polish the thicker part of the power rotor shaft 1020 with a fine emery and oil.
- Lubricate the shaft 1020 with oil and fit the seal ring carrier on the rotor tight against the collar 112.
- Tight firmly the lock screws (3 mm Allen key).

Fig. 16

C.

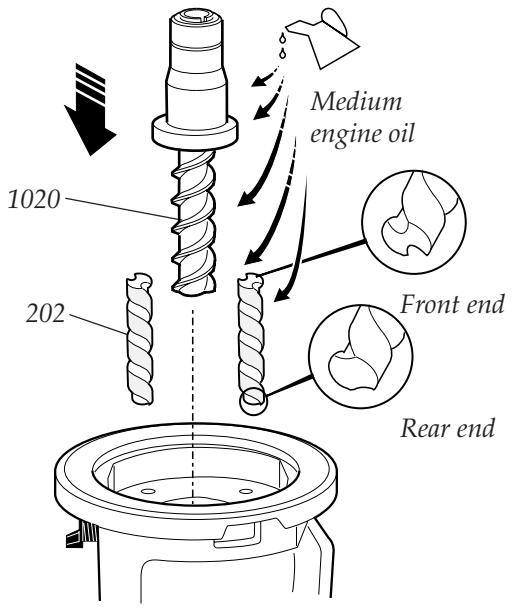
xTxx



- Lubricate O-ring S6 in the seal ring S4 with oil.
- Press the seal ring evenly and gently on to the shaft and make sure the notches enters the carrier.

Fig. 17

D.

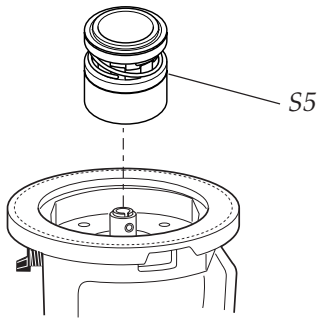


- Lubricate the idler rotors 202.
- Place the idler rotors 202 back into the pump. Rear end first.
- Lubricate the power rotor 1020.
- Place the power rotor 1020 back into the pump.

Fig. 18

E.

xVxx



- Unpack the mechanical seal.

ATTENTION

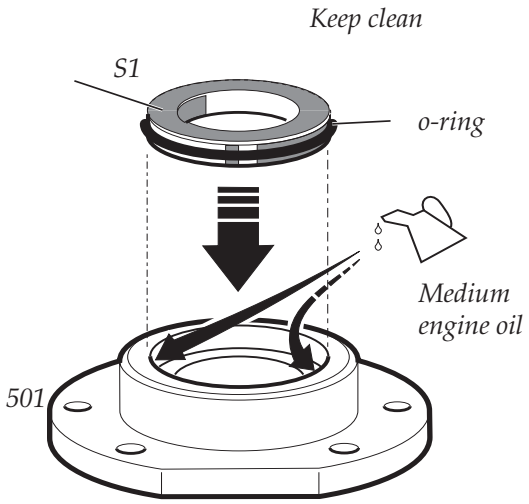
Protect the seal faces and keep them clean.

- Lubricate the inner diameter of the bellows unit S5 and the shaft 1020.
- Place the bellows unit S5 on the shaft 1020. Do not push yet.

Fig. 19

ACD6 0618.02 GB

F.

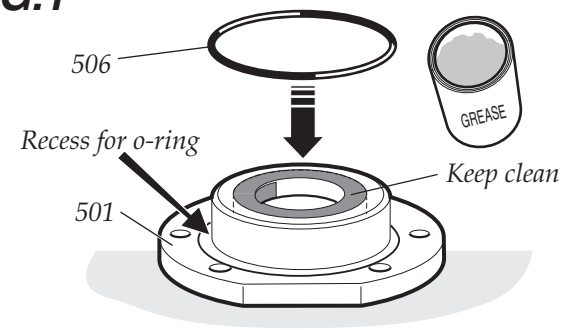


- Lubricate the front covers 501 seat recess.
- Fit the seat into the front cover 501.

Fig. 20

G.1

Version with o-ring.

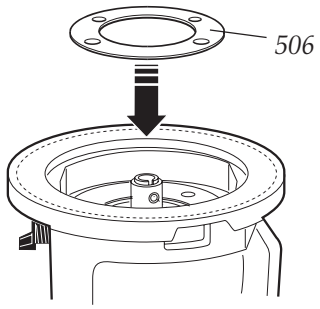


- Fit a new o-ring 506 in replacement for the old o-ring (see fig. 3A). Lubricate the o-ring with grease in order that it is remaining in the front cover when turning it upside down.

Fig. 21

G.2

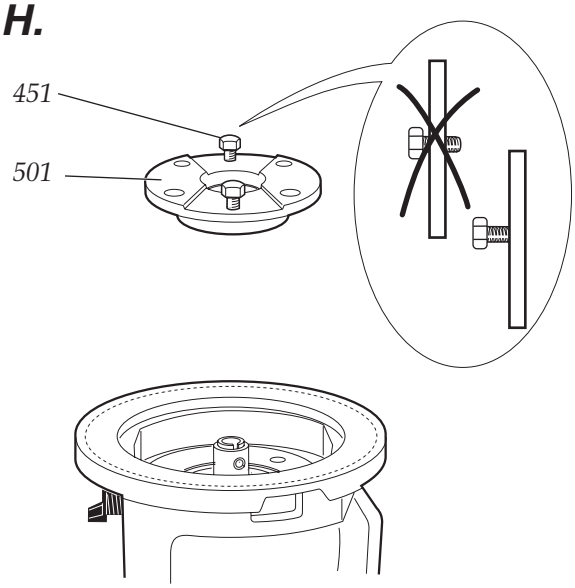
Version with gasket.



- Fit a new gasket 506 into place in replacement for the old gasket.

Fig. 22

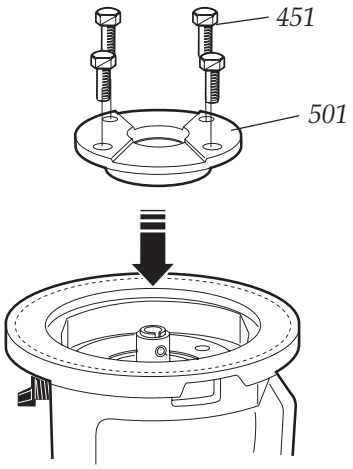
H.



- Untight the screws 451 until the end is inside the front cover 501 in order to not to damage the gasket 506 if applicable.

Fig. 23

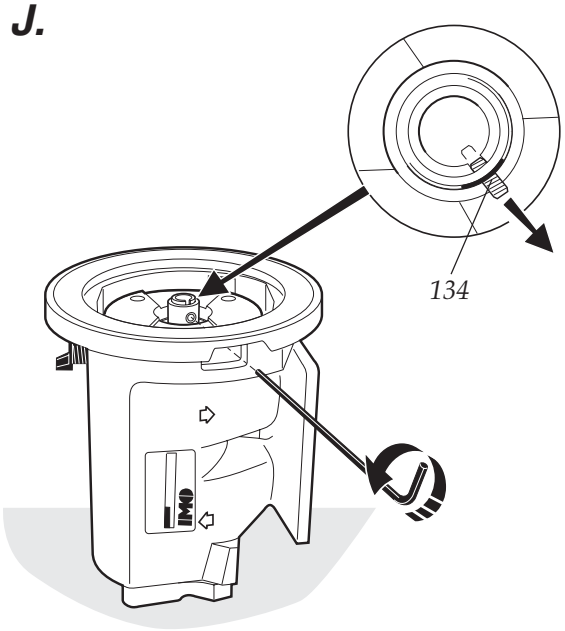
I.



- Place the front cover 501 on top of the bellow unit S5 and push the cover tight against the pump body.
- Fit the screws 451 and tighten them crosswise.

Fig. 24

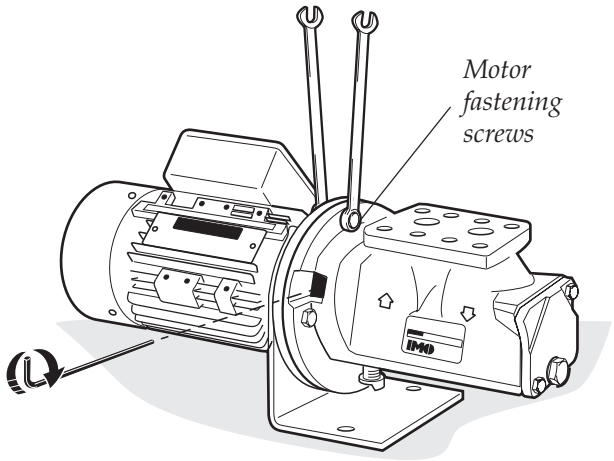
J.



- Adjust location of the locking screw 134 to the opening in the pump body 401.
- Turn the locking screw 134 so it fits into the motor shaft key slot.

Fig. 25

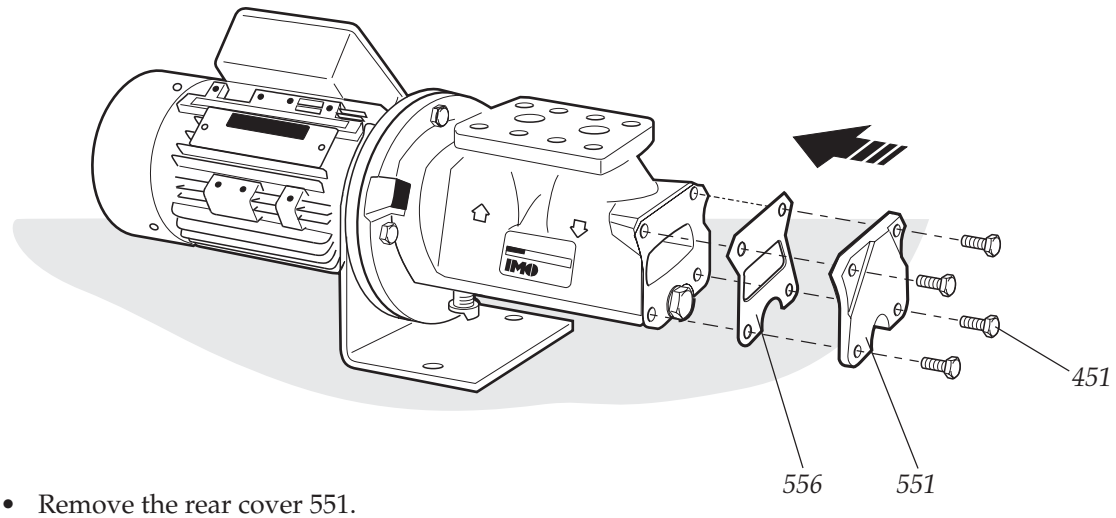
K.



- Fit the electric motor and the angle bracket and make sure that the locking screw 134 has entered the motor shaft key slot.
- Tighten the motor fastening screws.
- Tighten the locking screw 134.

Fig. 26

L.



- Remove the rear cover 551.
- Fit the gasket 556 and put the rear cover 551 back in place.
- Tighten the screws 451 crosswise (24 Nm).
- Put the pump back into the system. Proceed according to the instructions in the IMO AB Installation and Start up instruction for low pressure pumps.

Fig. 27

ACD6 0618.02 GB

Pressure relief valve

- The valve piston 614 and valve spring 615 can be pulled out by unscrewing the plug 601.
  Should the set screw 612 need to be removed, (for instance to change o-ring 605) the retaining ring 612A must be removed first.
- Readjust the valve pressure according to the installation and Start-up Instruction for IMO Low pressure pumps.

⚠ **Spring tension.**

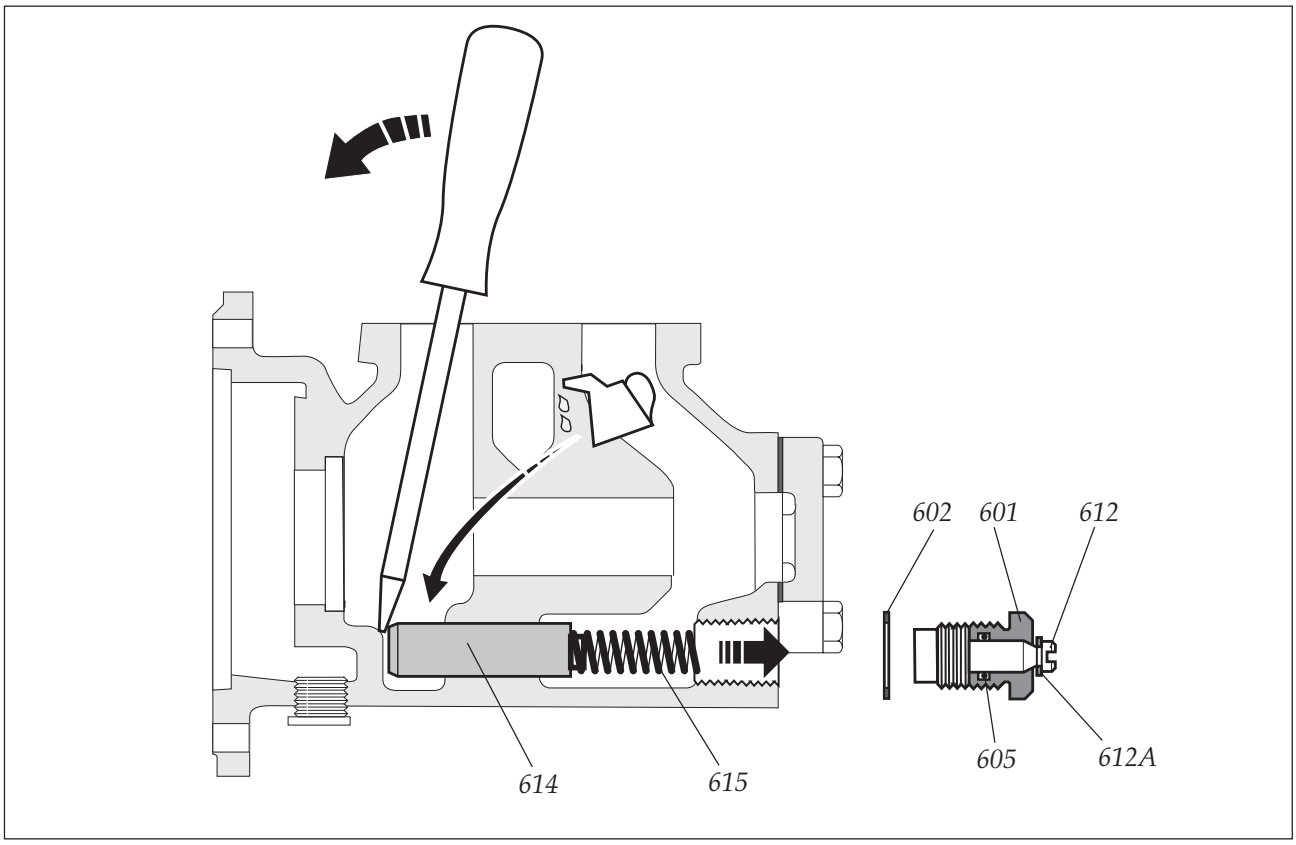


Fig. 28

- If the valve piston 614 does not come out by its own weight push it with a screw driver as far as possible and pull it out together with the valve spring 615.

  If it is not possible to pull out the valve piston with the spring push it back again, lubricate and push it back and forwards until it moves freely and can be pulled out with the spring.

A Member of the
COLFAX PUMP GROUP

www.imo.se

IMO AB: P. O. Box 42090, SE 126 14 Stockholm, Sweden
Telephone: +46 8 50 622 800, Telefax: +46 8 645 1509