

P15 - P25 - P40 - P60

Vanes pumps

Stainless steel

INSTALLATION

OPERATION

MAINTENANCE

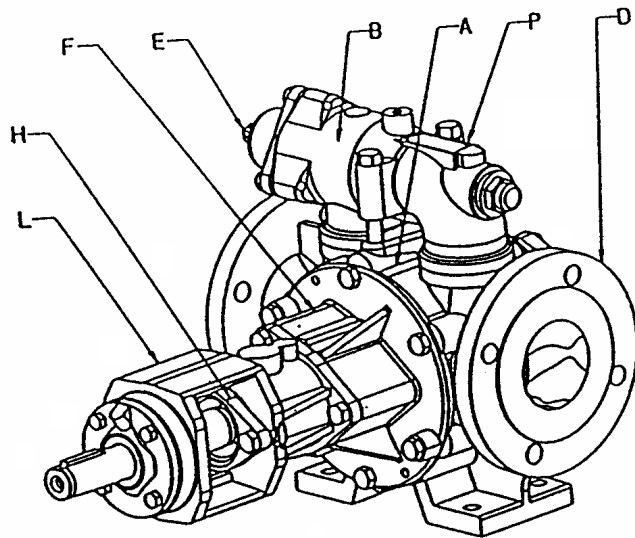


Before any disassembly, makes sure that the pump has been drained and all the necessary precautions to prevent it from starting up. The pump must not start up, even accidentally.

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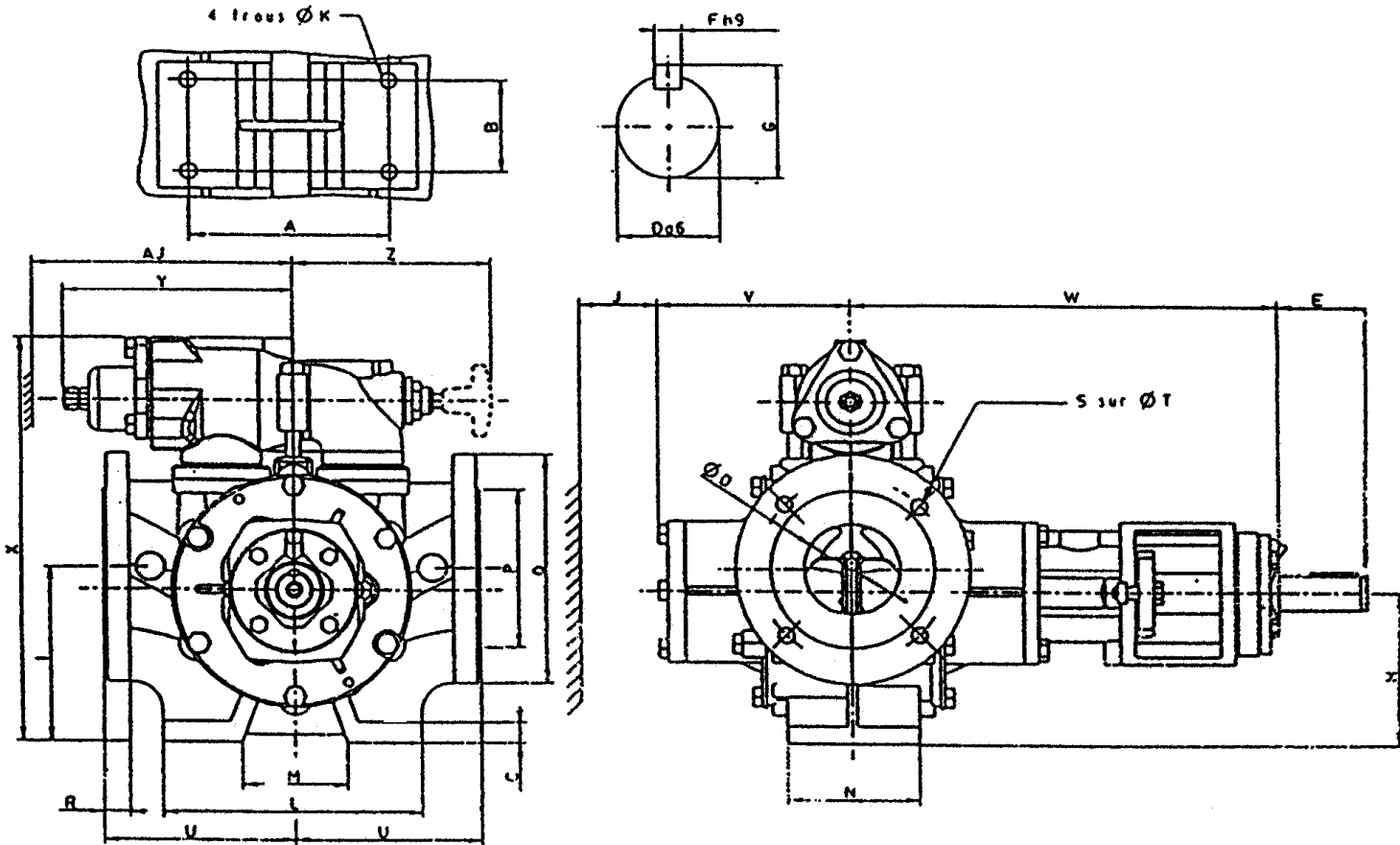
MECHANICAL SHAFT SEAL See specific Instructions

BYPASS See specific Instructions



- A - Pump cylinder
- B - Bypass
- D - PN16
- E - Bypass adjustment
- F - Cover
- H - Shaft seal casing
- L - Outboard bearing
- P - Pump plate

1 OVERALL DIMENSIONS - mm



Bypass positioned for anticlockwise rotation pump. For clockwise rotation, re-position the bypass.

TYPE	PATTE DE FIXATION							BOUT D'ARBRE					BRIDE ISO PN 16										Kg						
	A	B	C	K	L	M	N	D	E	F	G	O	P	Q	R	S	T	U	H	I	J	V		W	X	Y	Z	AJ	
P15-P25	50	80	15	14	80	79	15	25	64	8	28	65	122	185	18	40	18	145	125	12	125	100	150	315	327	192	200	250	46
P 40	170	80	18	14	220	90	10	30	75	8	33	80	138	200	22	80	18	160	160	132	152	150	166,5	359	354	195	170	250	65
P 60	170	80	18	14	220	99	10	30	75	8	33	100	158	220	22	80	18	180	180	160	185	160	181,5	374	409	180	180	210	85

2. NECESSARY TOOLS

- Flat spanners 13 - 17
- Flat 17
- Opening circlip pliers
- Screwdriver
- Extractor (FACOM U-35L for example)
- Torque wrench (eventually)

TIGHTENING TORQUES

M 10	3347 Nmm
M 8	1684 Nmm
M 6	687 Nmm

3. DISASSEMBLY

Before any disassembly, makes sure that the pump has been drained and take all the necessary precautions to prevent it from starting up. The pump must not start up, even accidentally.

3.1 OPENING UP OF THE PUMP AT NON-DRIVE SIDE

Loosen the 4 bolts **410**.

Loosen the 2 bolts **411** and place them in the 2 tapped holes **T**.

Detach the cover of the cylinder by screwing the 2 bolts **411** at the same time.

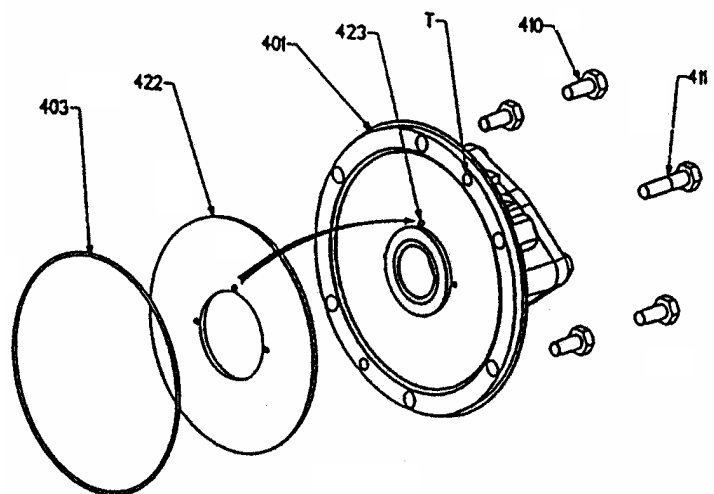
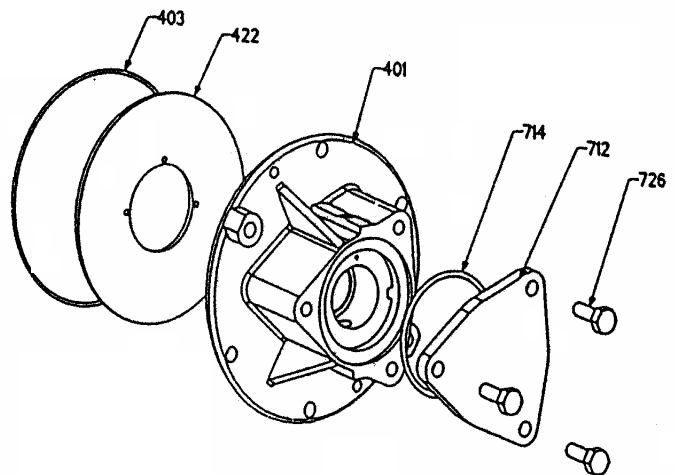
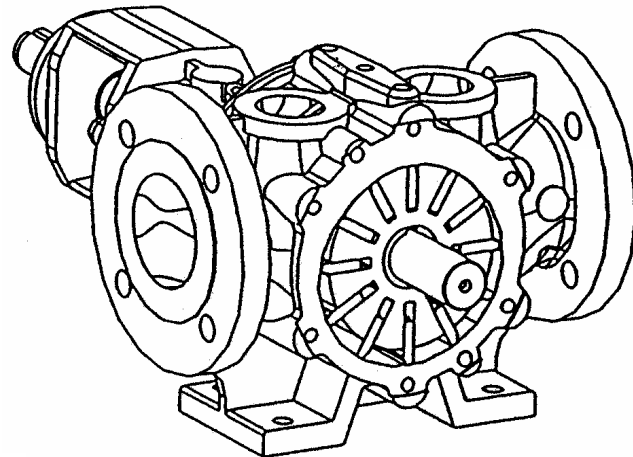
When the cover is free on the shaft, withdraw it manually while supporting it.

⚠ **Caution** : Wearing carbon disks **422** are only positioned in the covers, hold them by hand while the dismantling process is taking place (fragile parts susceptible to shock).

Take out the disk **422**.

Unscrew the 3 bolts **726**.

Remove the cover **712** and its seal **714**.



3.2 OPENING UP OF THE PUMP AT DRIVE SIDE

Uncouple the pump by removing the coupling sleeve.

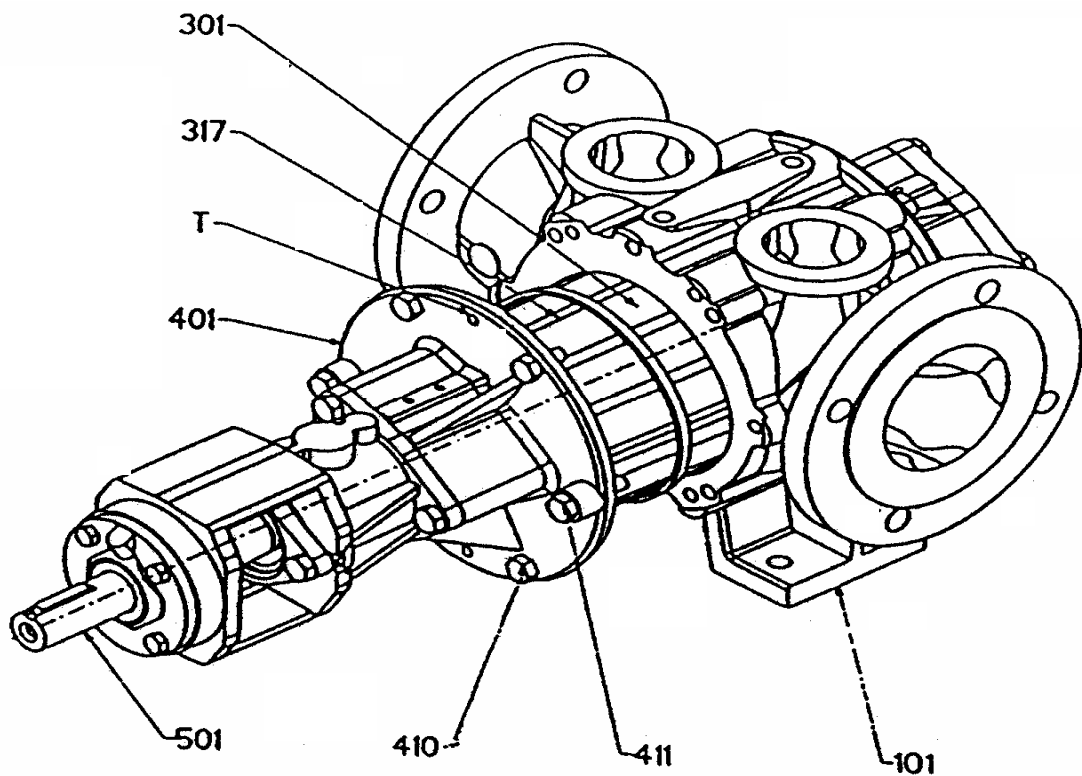
Loosen the 4 bolts **410** and the 2 bolts **411** and place them in the 2 tapped holes **T**.

Detach the cover of the cylinder by screwing the 2 bolts **411** at the same time.

Withdraw the cover **401** in such a way as to release the rotor **301** from a little more than half of the pump cylinder **101**.

Hold the vanes **317** in place by means of suitable straps (elastic, bracelets...).

Place the cover, rotor assembly on a bench, remove the straps and the vanes.



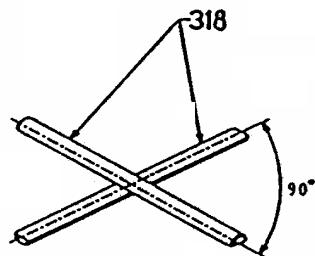
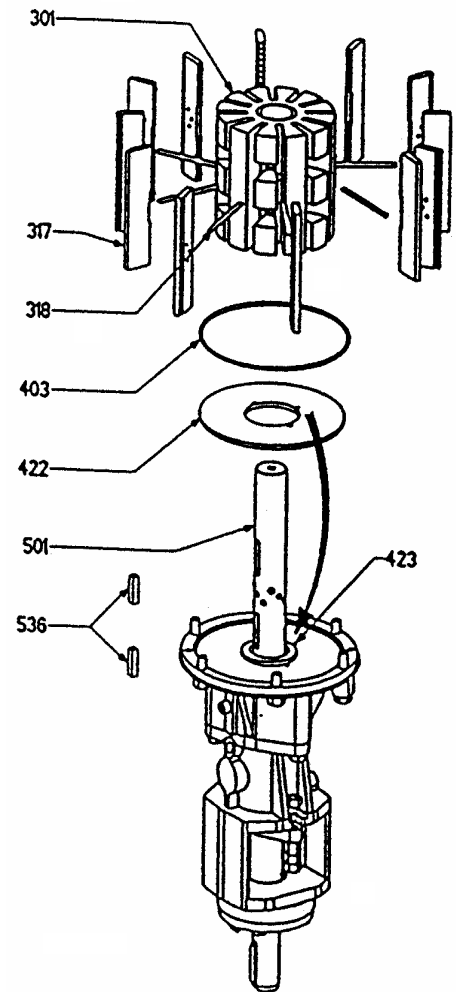
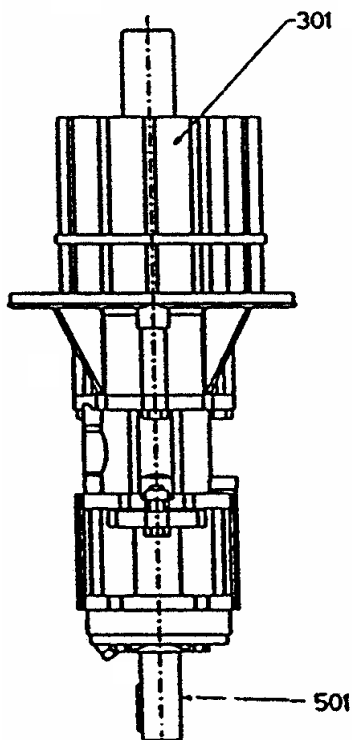
3.3 REMOVAL OF ROTOR

Pull out the pushrods **318** by pushing them, if necessary, with a screwdriver. (version with pushrods only).

Remove the rotor **301**.

⚠ **Caution :**

The wearing carbon disks **422** are only positioned in the covers, take care not to drop them when the rotor is being removed.

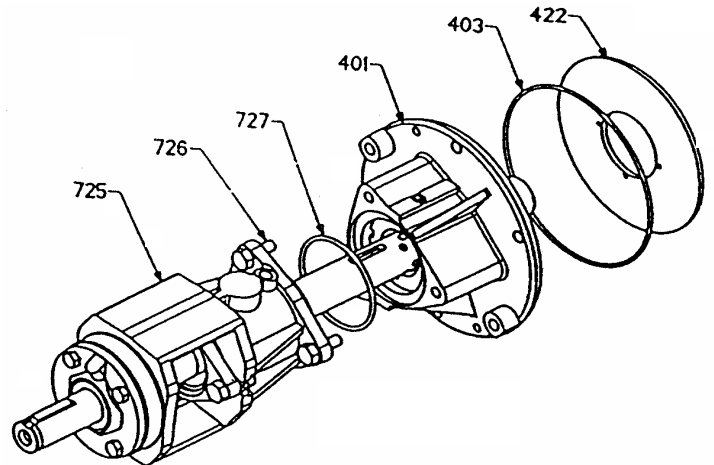


3.4 REMOVAL OF OUTBOARD BEARING

Take out the disk **422**.

Take out the 2 keys **536** (only 1 for version without pushrods).

Unscrew the 3 bolts **726** and remove the base **401** from the outboard bearing **725** ; this will then be placed on its small face.



4. MAINTENANCE

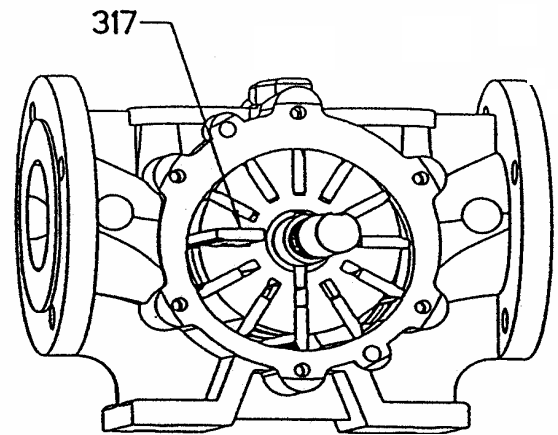
4.1 INSPECTION OF THE VANES

Necessary disassembly phase : 3.1.

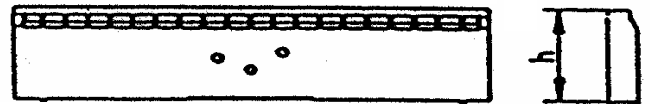
It is recommended that the condition of the vanes should be checked every 700 hours.

Remove a vane **317** situated in an horizontal plane.

Check it for wear.



PUMP TYPE	DIMENSIONS OF THE VANES mm	
	Original height « h »	Change when « h » < to
P 15 – P25	26,3	24,3
P 40	31	29
P 60	35,3	33,3

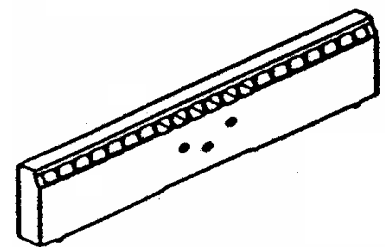


In the case of abnormal wear, check the surface state of the cylinder and cover faces.

Replace the vane (with a new one if necessary) making sure it is fitted in the right direction and making sure it slides properly in its slot.

Then proceed in the same way for each vane.

It is imperatively to replaced by a complete set.

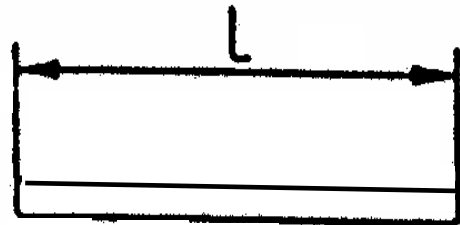


4.2 INSPECTION OF THE PUSHRODS (version with pushrods)

Necessary disassembly phases : § 3.2 and 3.3.

Check the pushrods **318** for wear and change them as necessary.

PUMP TYPE	DIMENSIONS OF PUSHRODS	
	Original length « L »	Change when « L » < to
P 15	62,5	62
P 25	66,55	66,05
P 40	82,5	82
P 60	85,4	84,9



4.3 CHANGING THE BEARINGS

Necessary disassembly phases : § 3.1 to 3.4.

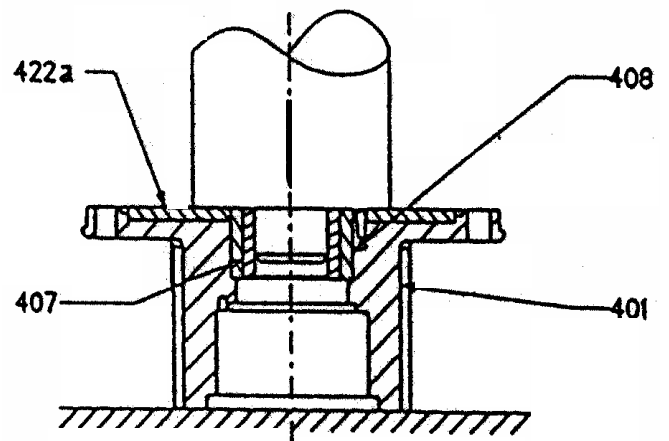
Extract the ring **407** with its insert **408** by pressing it home with a sleeve-tube.

Raise the temperature of the cover assembly **401** + insert assembly **408** to 120°C (induction unit or controlled furnace).

Position it vertically on its small side, insert a dummy **422a** in the place of the disk **422**.

Mount the ring **407** by pressing the latter home with a sleeve-tube.

Take out the dummy disk **422a** and replace the disk **422**.



NOTA - The sides of the ring and insert must be offset by 0,1 mm relative to the cover disk 422.

4.4 CHANGING OF THE BALL BEARING - The roller bearing is lubricated for life

Disassembly :

Remove the key **508**.

Carefully clean the shaft end to remove any traces of paint, oxidation, burrs.

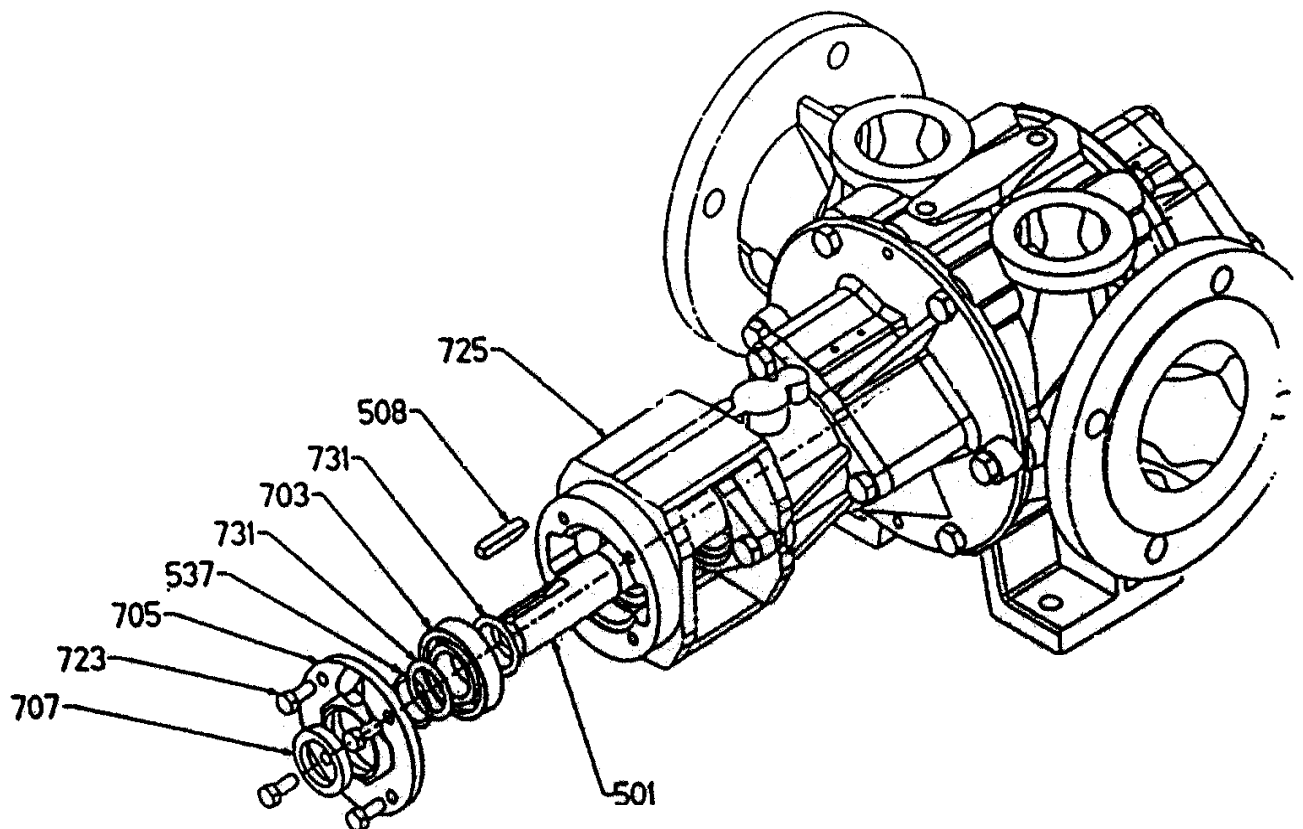
Loosen the bolts **723** and remove the cover **705** taking care not to damage the seal **707**.

Remove the circlips **537**.

Remove the washer **731**.

Remove the ball bearing **703** using the extractor :

Pass the grippers behind the ball bearing while sliding them into the holes of the strainer **725**, using the shaft end **501** as a support.



Reassembly :

It is very important to respect this :

Check that washer **731** is present.

Fit the roller bearing **703** on to the shaft by hand. Fit the mounting bush **739**. Fit the nut **739b** on to the stop screw **739a** under the screw head. Screw this assembly, by hand, to the end of the shaft **501** (at the thread root).

Bring the nut **739b** into contact with bush **739**, then tighten with a key to mount the thrust bearing on to the washer **731**. Then remove parts **739**, **739a**, **739b**.

In no case must the ball bearing be pushed on to the shaft without support for the shaft.

Place the second washer **731** against the ball bearing.

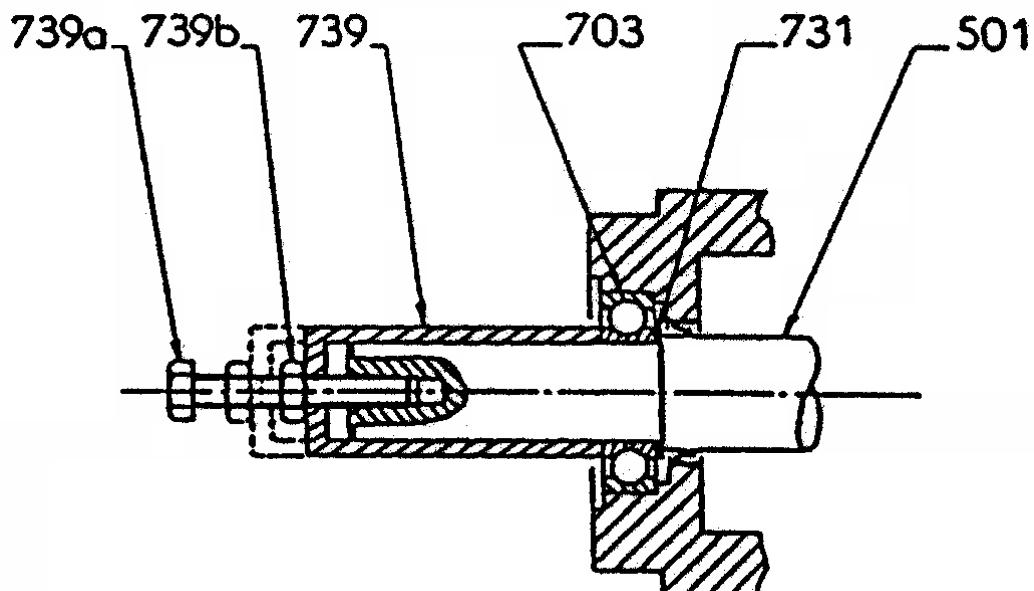
Fit the circlips **537**.

Clean the sides of the cover **705** and of the strainer **725** with a clean rag.

Fit the cover **705** with its seal **707** after applying sealing paste to the surface in contact with the strainer.

Tighten the 4 bolts **723**.

Check that the pump can be turned freely by hand.

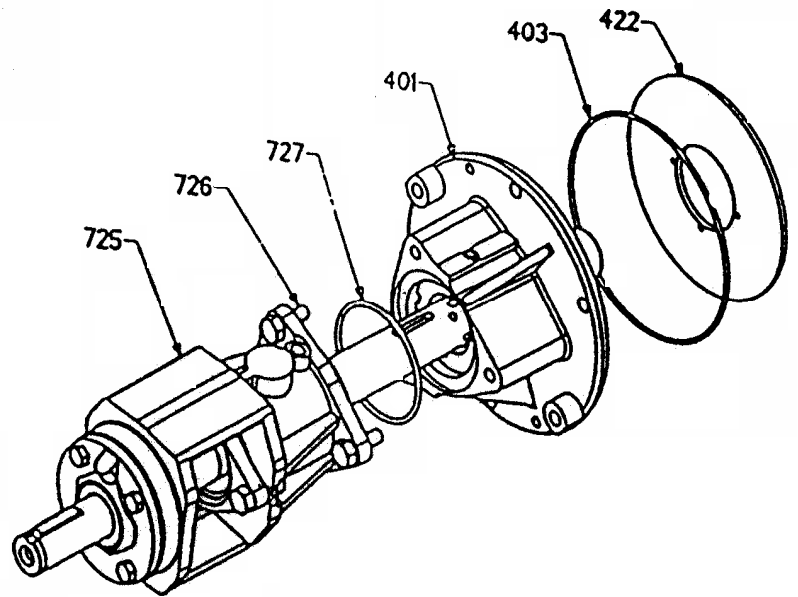


5. REASSEMBLY

5.1 RE-ASSEMBLY OF THE OUTBOARD BEARING

Refit the cover **401** on the outboard bearing **725** after replacing its seal **727** (a new if necessary).

Tighten the 3 bolts **726**.



5.2 RE-ASSEMBLY OF ROTOR

Position the shaft **501** vertically with the cover facing down.

Proceed, as necessary, to replace the wearing disk **422** (to remove the old disk, it may be necessary to break it. Clean its seating).

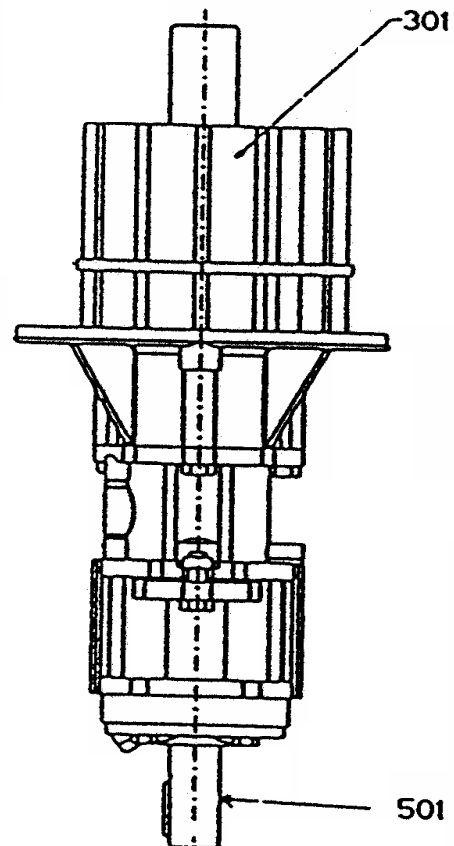
⚠ **Caution** : Take care with the positioning of the disk. The 3 holes must be opposite the 2 circulation holes of the cover and the pin **423** (P15-P25-P40 only).

Position the O-ring **401**, securing it if necessary with suitable lubricant.

Replace as necessary the cover O-ring **403** and fit it with a suitable lubricant.

Fit the keyways **536** (after checking their wear).

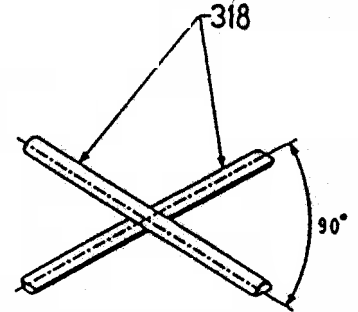
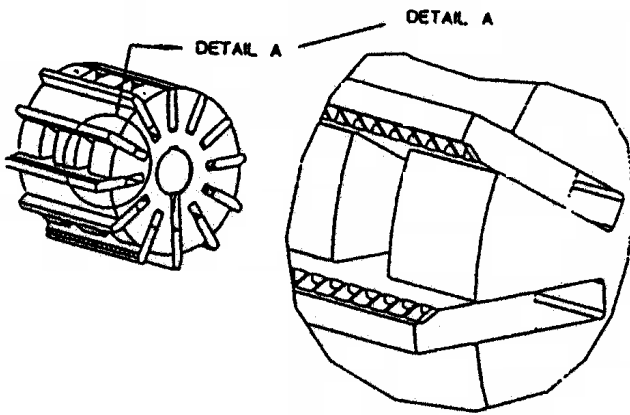
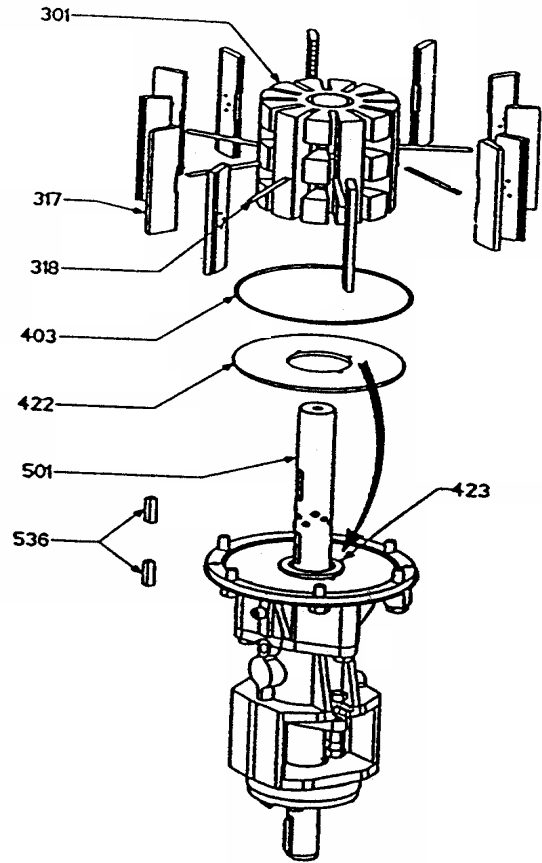
Insert the rotor **301** on to the shaft **501**.



5.3 REASSEMBLY OF THE PUSHRODS (version with pushrods) AND VANES

Insert the pushrods **318** using orthogonal matings, see figure opposite.

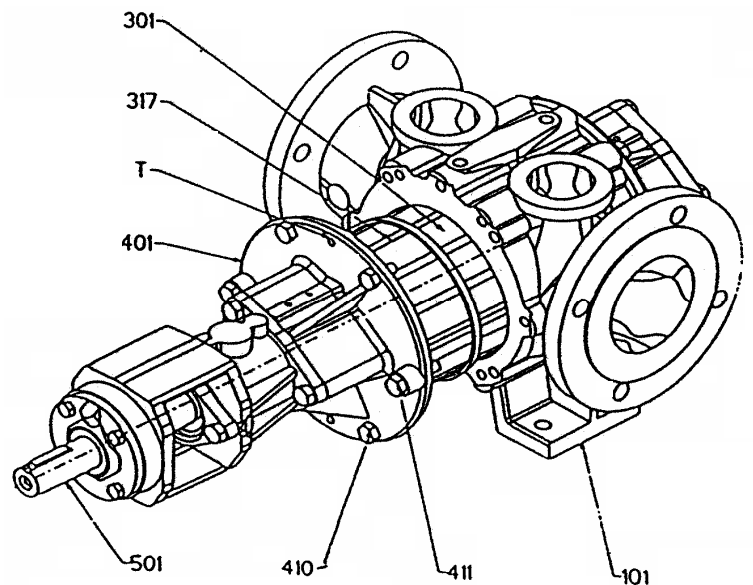
Insert the vanes making sure they are fitted in the right direction (see detail A) and check that they slide freely. Hold them in place using suitable straps (elastic, bracelets...).



5.4 RE-ASSEMBLY OF THE PUMP AT DRIVE SIDE

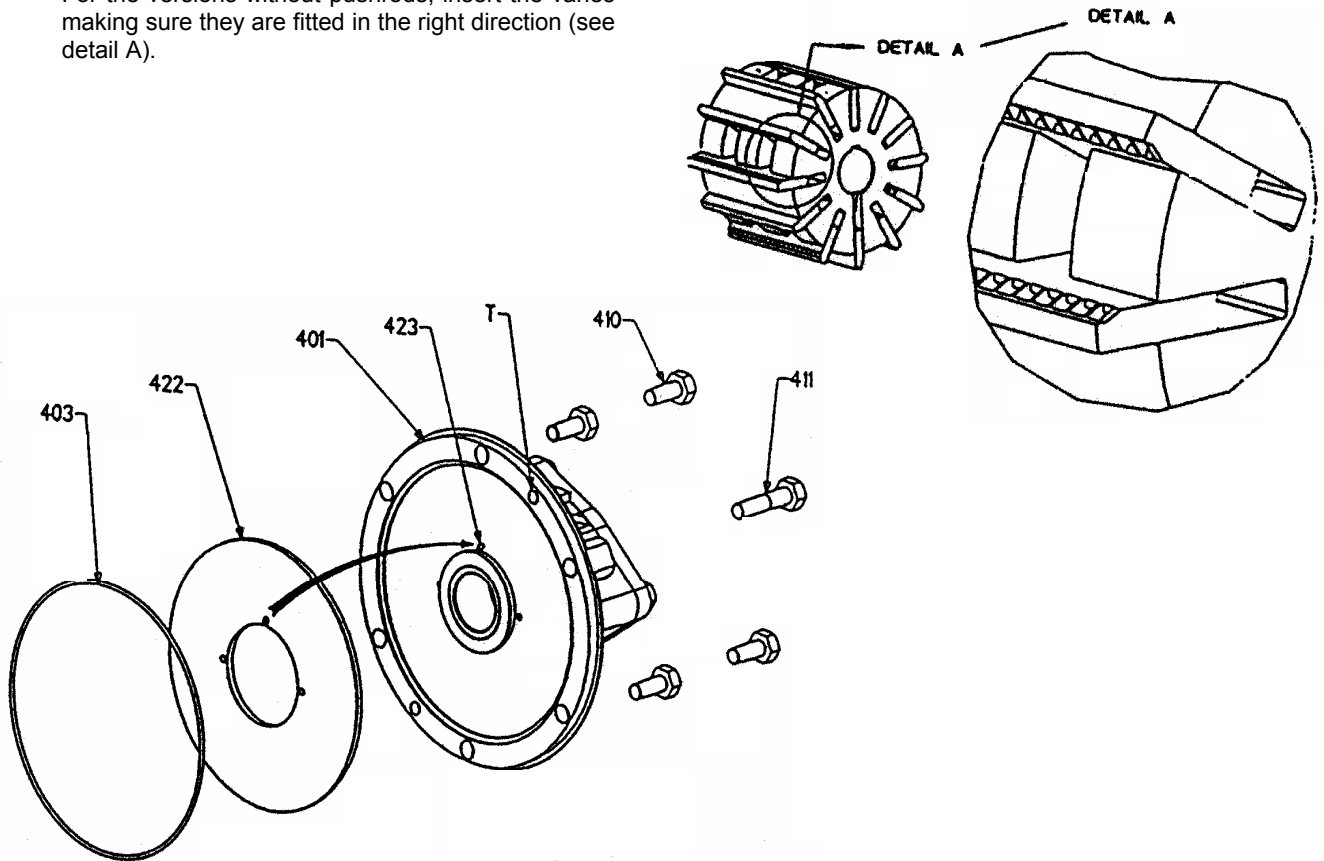
Insert this assembly into the cylinder **101**, removing the straps at an opportune moment. (version with pushrods only).

Orientate the cover **401**, pin **423** to the vertical, fix it to the pump body.



5.5 RE-ASSEMBLY OF THE PUMP AT NON- DRIVE SIDE

For the versions without pushrods, insert the vanes making sure they are fitted in the right direction (see detail A).



Proceed, as necessary, to replace the wearing disk **422** (to remove the old disk, it may be necessary to break it).

Clean its seating. Take care with the positioning of the disk. The 3 diameter 4 holes must be opposite the 2 circulation holes of the cover and the pin **423**.

In this assembly operation, check and replace, as necessary, the cover O-ring **403** and fit it with a suitable lubricant.

Orient the cover **401**, pin **423** to the vertical.

Tighten the 4 bolts **410**.

Screw the 2 bolts **411** into the 2 bosses of the cover **401**.

Check that the pump can be turned freely by hand.

Replace the cover **712** and its seal **714** (a new one if necessary).

Tighten the 3 bolts **726**.

6. SPARE PARTS LIST

* Assemblies and parts able to be supplied as spares.

The reference designates only one unit of the part or assembly

Example : 1 x ref. 317 = 1 vane - 1 x ref. 309 = 1 set of 12 vanes

REF.	NB.	DESIGNATION
*098	1	SET OF BOLTS (410+411+642+723+726+729+730)
*099	1	SET OF PUMP O-RINGS (403+602+707+714+716+727)
*101	1	BODY
*300	1	ROTOR, COMPLETE
301	1	Rotor
317	12	Vane
318	6	Pushrods
*309	1	SET OF 12 VANES 317
*325	1	SET OF 6 PUSHRODS 318
*400	2	COVER, COMPLETE
401	2	Cover
403	2	Cover O-ring(see 099 or 409)
407	2	Cover bushing.....(see 098)
408	2	Cover insert
410	8	Cover bolt(see 098)
411	4	Cover dismantling bolt(see 098)
422	2	Wearing disk(see 424)
423	2	Wearing disk indexing pin
*424	1	SET OF 2 WEARING DISK 422
*409	1	SET OF 2 COVER O-RINGS 403
*420	1	SET OF 2 COVER BUSHINGS 407
*500	1	SHAFT, COMPLETE
501	1	Shaft
508	1	Shaft end key
536	2	Sliding rotor
537	1	Retaining ring
*599	1	SET OF KEYS (508+536+537)
*600	1	MECHANICAL SHAFT SEAL, COMPLETE (see specific Instructions)
*609	1	MECHANICAL SHAFT SEAL HOLDER (see specific Instructions)
*700	1	COVER
712	1	Cover
714	1	Cover O-ring(see 715)
726	3	Cover bolt(see 098)
*715	1	SET OF OUTBOARD BEARING SEALS (511+537+602+646+647+707+716+727)
*720	1	OUTBOARD BEARING, COMPLETE
*703	1	Ball bearing of outboard bearing
716	1	Lip seal(see 099 or 715)
725	1	Outboard bearing
726	3	Outboard bearing bolt(see 098)
727	1	Outboard bearing seal(see 099 or 715)
731	2	Roller bearing support washer
*740	1	OUTBOARD BEARING COVER, COMPLETE
705	1	Outboard bearing cover
707	1	Lip seal(see 099 or 715)
723	4	Cover bolt
		V A R I A N T
*640	1	LUBRICANT RESERVOIR
643	1	Snifter valve
644	1	Lubricator
645	1	Shaftseal holder cover
646	1	Cover O-ring(see 715)
647	1	Lip seal(see 715)

To order spare parts, please indicate :

- The TYPE and SERIAL No. of the pump (stamped on pump plate).
- The REFERENCES and DESIGNATIONS of the desired parts. Only spares (complete assemblies or detail parts) identified by (*) can be supplied " * ".
- INSTRUCTIONS No 211

