

DISASSEMBLY & ASSEMBLY INSTRUCTIONS MAGNETIC DRIVEN SINGLE STAGE CENTRIFUGAL PUMPS

TCK



INTRODUCTION

These instructions are for the maintenance personnel in the event of maintenance and/or repair of the above pump series. Disassembly and assembly of the pumps require a full understanding of the procedures, therefore the work must be carried out by qualified personnel. These instructions must be studied before starting any work on the pumps and are to be used in conjunction with the section drawings and tables given on pages 3 & 4. Any work on the pumps should be carried out by a team of at least two people. For safety, installation and maintenance instructions consult the manual "INSTALLATION & OPERATING INSTRUCTIONS FOR CENTRIFUGAL PUMPS" attached to the pump at time of shipment.

CAUTION!



Pumps type TCK, TBK and TBAK create a high magnetic field. Personnel should take proper precautions if they are wearing pace-makers or if they are using instrumentation sensitive to magnetic fields.

The listed below minimum distances must be kept:

- When the magnetic rotor parts are disassembled:
 - users of pace-maker = 2 meters
 - floppy disk; magnetic cards, etc. = 1 meter
- When the magnetic rotor is mounted in the pump:
 - users of pace-maker = 1 meter
 - floppy disk; magnetic cards, etc. = 0,5 meter

Before operating or working on the pump it is recommended to adopt safety precautions wearing safety attire (hat, glasses, gloves, shoes, etc.) and have ready the necessary tools required for the work to be done.

Do not subject the pump or its components to sudden mechanical impacts and /or distortions. Do not damage or scratch the sealing faces. Pay particular attention not to damage flat gaskets and O-Rings. Be careful not to leave in the pump foreign matters such as bolts, screws, washers, rags, etc.

When requesting spare parts or technical information for the pump, always quote the pump model number and serial number which is printed on the pump nameplate: therefore it is recommended not to remove the pump nameplate or, in case this action will be necessary, write the serial number on the pump (for example on the flange).

Should additional information be required, please do not hesitate to contact POMPETRAVAINI or the closest representative. Should there be any difficulties in repairing the pump, it is recommended to send the pump for repair to POMPETRAVAINI or the local authorised representative.

Pump repairs and/or service carried out by customer or unauthorised personnel are not guaranteed by POMPETRAVAINI or by its subsidiaries.

Note: Pump parts list identify all pump components by VDMA number (VDMA) in connection with the sectional drawings. Drawings are not certified for construction but are for reference purpose only, should additional information be required, contact POMPETRAVAINI or its closest representative.

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The liquids handled by the pumps and also their parts could be potentially dangerous for persons and environment: provide their eventual disposal in conformity with the laws into force and a proper environment management.



The present manual is not assigned for pumps subjected to the ATEX 94/9/CE directive. In case the pump is assigned in environments subjected to the application AT EX 99/92/CE directive or in case the pump is provided with a nameplate indicating the AT EX stamp, it is strictly forbidden to proceed to start up the pumps but necessary to consult POM PETRAVAINI for clarifications.

For pumps subjected to the AT EX 94/9/CE directive it is available a dedicated integrative manual.

In preparing this manual, every possible effort has been made to help the customer and operator with the proper installation and operation of the pump. Should you find errors, misunderstandings or discrepancies please do not hesitate to bring them to our attention.

1 - STEPS TO BE FOLLOWED PRIOR TO PUMP DISASSEMBLY

It is important to adhere to the following before working on the pump:

- Wear the safety clothing (hard hat, safety glasses, gloves, safety boots, etc.).
- Use the appropriate steps to stop the pump.
- Close the isolating valves at suction and discharge piping.
- Disconnect the electrical power to the motor and all the electrical instrumentation and, if necessary disconnect the electrical cables.
- If the pump is handling hot liquids, let it cool down to ambient temperature.
- Drain the pump casing through by removing the drain plugs, rinse the pump with neutral liquid, if required.
- Adopt all safety precautions when the pump handles hazardous, pollutant or toxic liquids. These liquids, as well as the liquid used for rinsing the pump, must be collected and disposed of with the maximum caution and in compliance with the local safety regulations.
- Disconnect piping and auxiliary instruments if attached to the pump.
- Remove coupling guard and, if present, the spacer coupling.
- Remove the pump foot VDMA 183 and, if necessary, remove the pump casing from the system piping and from the base plate and/or move the electric motor.

2 - PUMP DISASSEMBLY

To remove the pump frame VD MA 102, remove the nuts from the studs VD MA 902 or, for pump series 125, the bolts VDMA 914.5 and 914.4.

Lock the impeller VDMA 230 and remove the impeller nut Item 925, then remove the impeller and key Item 940.2.

Separate the frame VD MA 330 from the casing cover VD MA 161, a force greater than the magnetic field is required for this operation. Be sure not to damage the magnets on the exterior rotor Item 818.2.

Remove the bolts VDMA 914 and remove the sealing can VDMA 818.3 with the O-Ring VDMA 412.

Lock the shaft VDMA 210.1, loosen bolts VDMA 914.2, remove nut VDMA 901.2 and slide out the internal magnetic rotor VDMA 818.1 and the key VDMA 940.1.

Remove the bolts VDMA 914.1 and remove the sleeve bearing housing VD MA 818 together with the sleeve bearing VD MA 818.6. Then pull out the front sleeve bearing VD MA 818.4 paying attention to the anti-rotating pin VDMA 562.1.

If required, disassemble the bearing frame VD MA 330 and remove the wear ring VD MA 502.1 (where applicable), loosen the grub screw VD MA 904, remove the junk ring VDMA 550.1 removing the T.P.S.E.I. screw VDMA 900.1 and extract the fly wheel VDMA 132 and the external magnetic rotor VDMA 818.2.

Extract the drive end half coupling and disassembly the inner bearing cover VDMA 360.2.

Remove the outer bearing cover VDMA 360.1, the elastic ring VDMA 935, the snap ring VDMA 932.1 and push the shaft to the internal part of the housing to be able to pull out the external bearing VDMA 320.

To remove the internal bearing VDMA 320.1, it is necessary to extract also the other snap ring VDMA 932.1.

At this point every component has been disassembled.

Proceed with the inspection of all parts. Note the degree of wear and the integrity of every component. Replace the parts, if required, with original parts from POM PETRAVAINI. Particular attention should be given to the conditions of the sleeve bearings and bearings; they must be without scratches, grooves, wear and without seizing evidence.

It is good practice to replace gaskets and O-Rings.

3 - PUMP ASSEMBLY

Thoroughly clean all components. The bearings must be washed with a de-greaser (solvent), let them dry and after apply oil. If the bearings need replacement, see the specifications on table 1, page 4.

To facilitate the bearing assembly on the shaft, it is suggested to heat the bearings separately to approximately 80 C.

The clearance between the wear ring Item 502.1 and the impeller should be within the limits listed on table 3, page 4.

Replace the wear ring and/or impeller if the clearance tolerances are over the acceptable limits.

If there are no other problems and all parts are in good conditions the pump assembly should proceed with sequence reverse to that of disassembly.

Table 2 on page 4 lists the maximum torque values for the magnet's bolts.

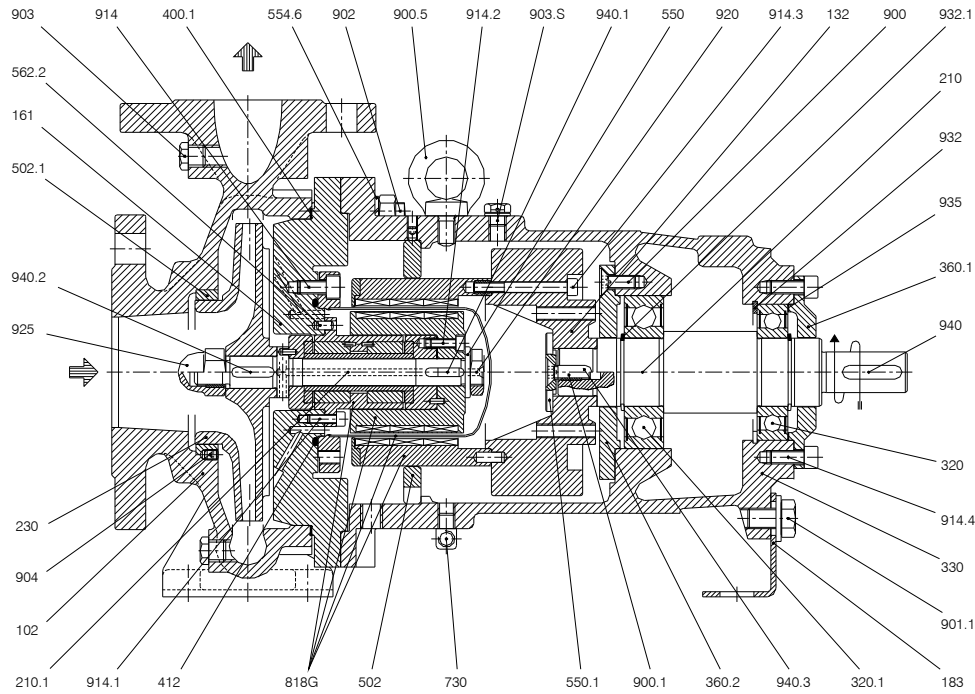
After assembly make sure that the rotor turns freely by hand. Follow the start-up instructions, previously supplied with the pump.

4 - SPARE PARTS

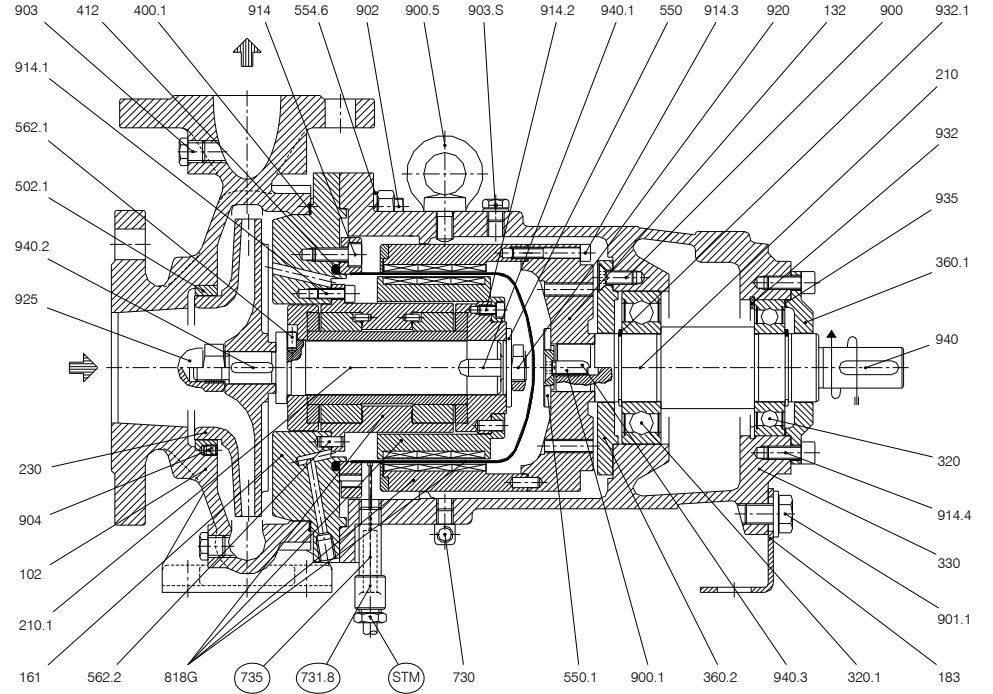
Please provide following information when ordering the spare parts:

- Pump model.
- Serial number.
- Part Item number (VDMA) and description of the part from the sectional drawing.
- Quantity.

5 - TYPICAL SECTION DRAWINGS



With sealing can (VDMA 818G) Ø 75

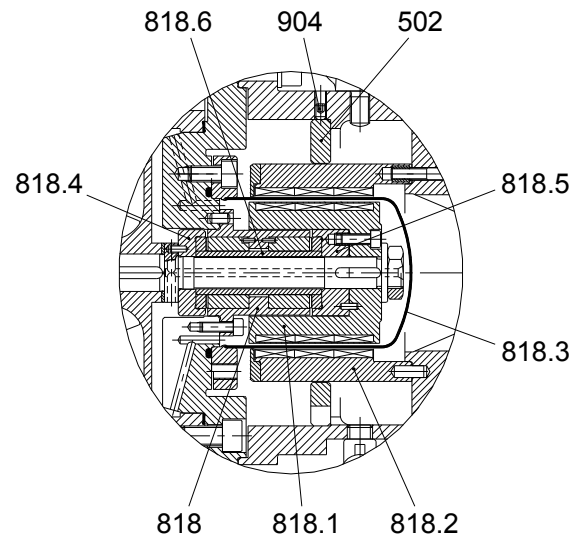


With sealing can (VDMA 818G) Ø 110



With Thermometric Feeler construction only

Auxiliary section drawing of magnetic assembly



6 – ENGINEERING TABLE

Table 1

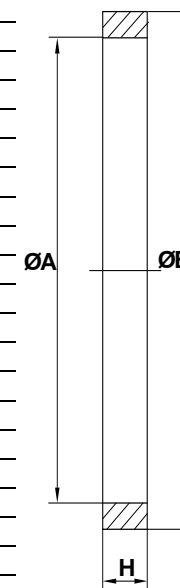
PUMP MODEL	BEARING TYPE		OIL Quantity Bearing Lubricant Kg
	STANDARD DESIGN (Sealed grease type)	COOLED DESIGN (Oil lubricated)	
25-125	Non Drive End N°1 6308-2R S (40x90x23)	Non Drive End N°1 6308-C 3 (40x90x23)	1
25-160			
32-125			
32-160			
32-200			
40-125			
40-160			
40-200			
50-125			
50-160			
50-200	Drive End N°1 6208-2R S (40x80x18)	Drive End N°1 6208-C 3 (40x80x18)	1
32-250			
40-250			
40-315			
50-250			
50-315			
65-160			
65-200			
65-250			
80-160			
80-200	N° 2 6308-2RS (40x90x23)	N° 2 6308-C3 (40x90x23)	2
80-250			
100-200			

Table 2 - Maximum torque for magnet's bolts.

Bolt diameter	Bolts in contact with the liquid	Dry bolts
M5	4 Nm	4,5 Nm
M6	7 Nm	7,5 Nm
M8	16 Nm	18 Nm
M10	32 Nm	
M12	55 Nm	
M16	65 Nm	

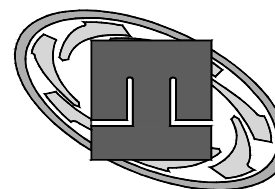
Table 3

PUMP MODEL	NOMINAL DIMENSIONS WEAR RINGS			DIAMETRAL CLEARANCE (mm) BETWEEN IMPELLER NECK AND WEAR RING		IMPELLER MINIMUM BALL SIZE mm
	A	B	H	CONSTRUCTION		
				F - RA	A3	
25-125	72	84	13	0,33 - 0,48	0,43 - 0,58	6
25-160	72	84	13	0,33 - 0,48	0,43 - 0,58	6
32-125	72	84	13	0,33 - 0,48	0,43 - 0,58	6
32-160	72	84	13	0,33 - 0,48	0,43 - 0,58	5
32-200	72	84	13	0,33 - 0,48	0,43 - 0,58	5
32-250	85	97	13	0,44 - 0,59	0,74 - 0,89	6
40-125	85	97	13	0,34 - 0,49	0,44 - 0,59	10
40-160	85	97	13	0,34 - 0,49	0,44 - 0,59	7,5
40-200	85	97	13	0,34 - 0,49	0,44 - 0,59	6
40-250	95	110	16	0,44 - 0,59	0,74 - 0,89	6,5
40-315	95	110	16	0,44 - 0,59	0,74 - 0,89	8
50-125	95	110	16	0,34 - 0,49	0,44 - 0,59	16
50-160	95	110	16	0,34 - 0,49	0,44 - 0,59	13
50-200	95	110	16	0,34 - 0,49	0,44 - 0,59	9
50-250	105	120	16	0,44 - 0,59	0,74 - 0,89	5
50-315	105	120	16	0,44 - 0,59	0,74 - 0,89	7,5
65-160	120	135	16	0,44 - 0,59	0,74 - 0,89	18
65-200	120	135	16	0,44 - 0,59	0,74 - 0,89	14
65-250	120	135	16	0,44 - 0,59	0,74 - 0,89	12
80-160	135	150	16	0,44 - 0,61	0,74 - 0,91	25
80-200	135	150	16	0,44 - 0,61	0,74 - 0,91	21
80-250	135	150	16	0,44 - 0,61	0,74 - 0,91	15
100-200	150	170	18	0,44 - 0,61	0,74 - 0,91	27



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POMPETRAVAINI's continuing research results in product improvement, therefore any specifications may be subject to change without notice.



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