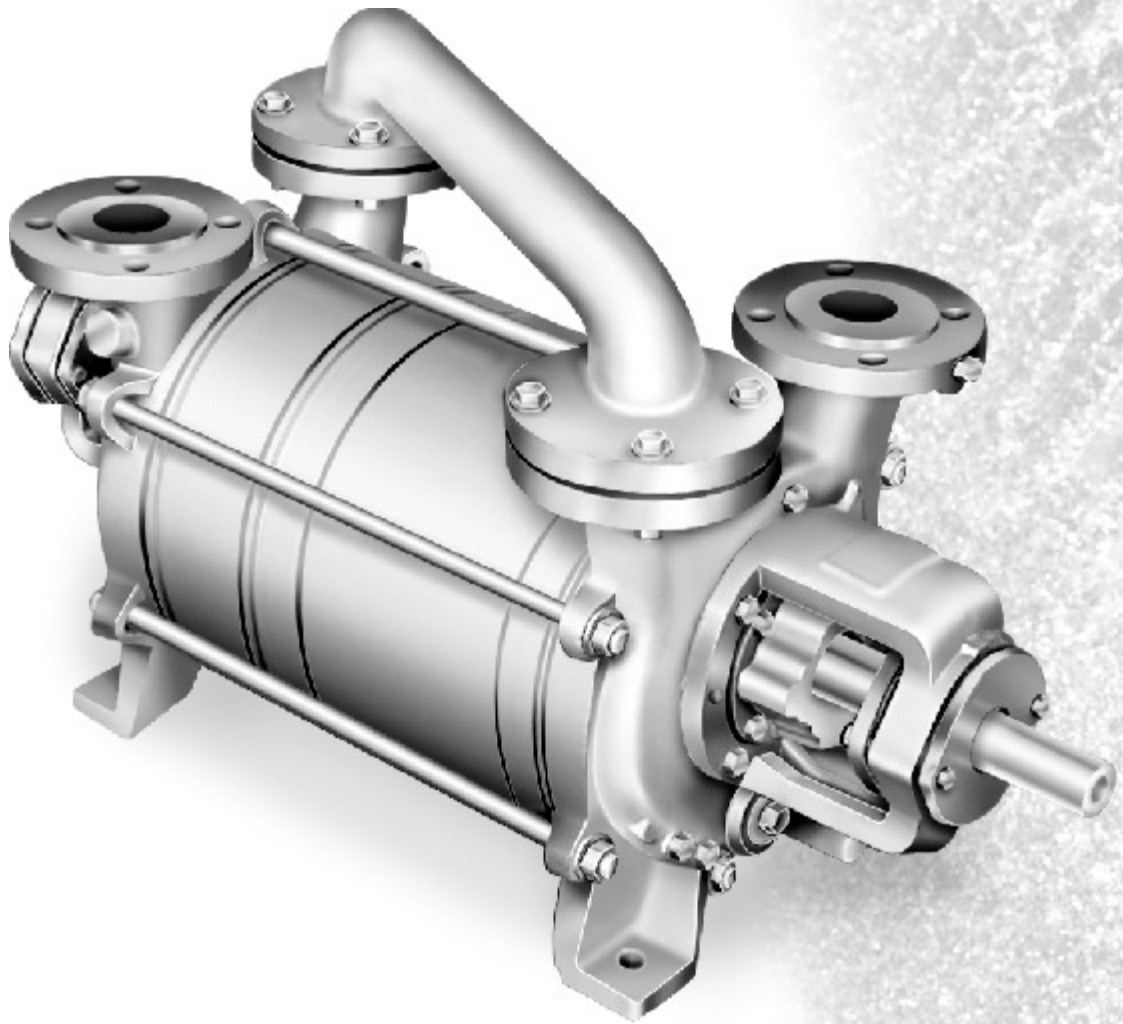


INSTRUCTION & OPERATION MANUAL

**Two Stage
Water Ring Vacuum Pump
VWS II Series**



PPI SYSTEMS

ISO 9001: 2008 CERTIFIED COMPANY

*Thank you for purchasing the PPI WATER RING VACUUM PUMP
Before using the pump, please read the operating instructions so you can
easily install, operate and maintain the pump.*

*This pump or this pump unit, respectively may be mounted and put into
operation by qualified technical personnel only and these operating
instructions and the effective regulations have strictly to be observed. If you
don't pay attention to these operating instructions,*

- 1. Danger may be created for you and your colleagues*
- 2. The pump or the pump unit may be damaged*
- 3. The manufacturer is not liable for damages resulting from this non-observance!*

*Please be aware of your responsibility for your fellow men when working at the
pump or the pump unit!*

CONTENTS

DATA SHEET	Page No.
1. SAFETY INSTRUCTIONS/WARNING	1
2. LOCATION OF ITEMS	2
3. ERECTION & INSTALLATION PROCEDURE	3-4
4 .CONNECTION OF VACUUM PUMP	5
5. WORKING INSTRUCTION	6
6. PARTS INFORMATION	7
7. DISASSEMBLY AND ASSEMBLY FOR MAINTENANCE	8-11
8. TROUBLE SHOOTING : PROBLEMS, CAUSES AND SOLUTIONS	12
9. BEFORE YOU CALL SERVICE PERSONNEL	13
10. MATERIAL OF CONSTRUCTION	14
11. LIST OF ACCESSORIES	15
12. RECOMMENDED SPARES	16
CROSS-SECTIONAL DRAWING	17
GENERAL ARRANGEMENT DRAWING	18
RANGE OF OTHER PRODUCT	19

DATA SHEET

CUSTOMER : _____

MODEL NO. : _____ TYPE: _____

PUMP SR. NO. : _____

CAPACITY : _____ m³/hr.

MAXIMUM VACUUM : _____ mm of Hg.

DUTY POINT CAPACITY : _____.

DRIVE DETAILS : Direct

MOTOR : _____ H.P.

MOTOR SPEED : 1440 RPM

PUMP SPEED : 1440 RPM

FRAME SIZE OF ELE. MOTOR : _____

WATER REQUIRED : _____ L.P.M.

WATER PRESSURE : 1.0 kg/cm²

BEARING NO. : _____

MANUFACTURING DATE : _____

INSTALLATION DATE : _____

COUPLING : Tyre SIZE : _____

1. SAFETY INSTRUCTION / WARNING

This operating manual gives basic instructions which are to be observed during installation, operation and maintenance of the pump. It is therefore imperative that this manual is read by the responsible personnel/operator prior to installation and commissioning. It is always to be kept available at the installation site.

WARNING

- | DO NOT CARRY OUT ANY MAINTENANCE WHILE THE PUMP IS CONNECTED TO THE MOTOR.
- | NEVER START OR STOP THE PUMP WITHOUT WATER.
- | NEVER INCREASE HEIGHT OF WATER OUTLET FROM PUMP SILENCER IT WILL ABSORBS MORE POWER & TRIPPING OF ELECTRIC MOTOR.
- | IT IS ADVISABLE TO CHECK THE WATER HARDNESS AND, IN CASE OF THIS EXCEED AND TOLERANCE LIMITS (50 to 150 PPM) A PROPER PURIFICATION SYSTEM SHOULD BE PROVIDED.
- | IN CASE OF CALCAREOUS WATER, IT IS NECESSARY TO DISASSEMBLE FROM TIME TO TIME THE PUMP DESCALE IT.
- | DO NOT LOOSE OR TIGHTEN BEARING COVER BOTLS WITHOUT ANY INSTRUCTION

SAFETY INSTRUCTIONS RELEVANT FOR MAINTENANCE, INSPECTION AND ASSEMBLY WORK

Any work on the pump shall only be performed when it is at a standstill. It is imperative that the procedure for shutting down the machine described in this manual is to be followed.

Pumps and pump units which convey hazardous media must be decontaminated.

On completion of work all safety and protective facilities must be reinstalled and made operative again.

Close the isolating valves at pump inlet, outlet and seal water. Let the pump cool down to ambient temperature if it has been handling hot fluid. Adopt safety measures if the pump has been handling hazardous fluids.

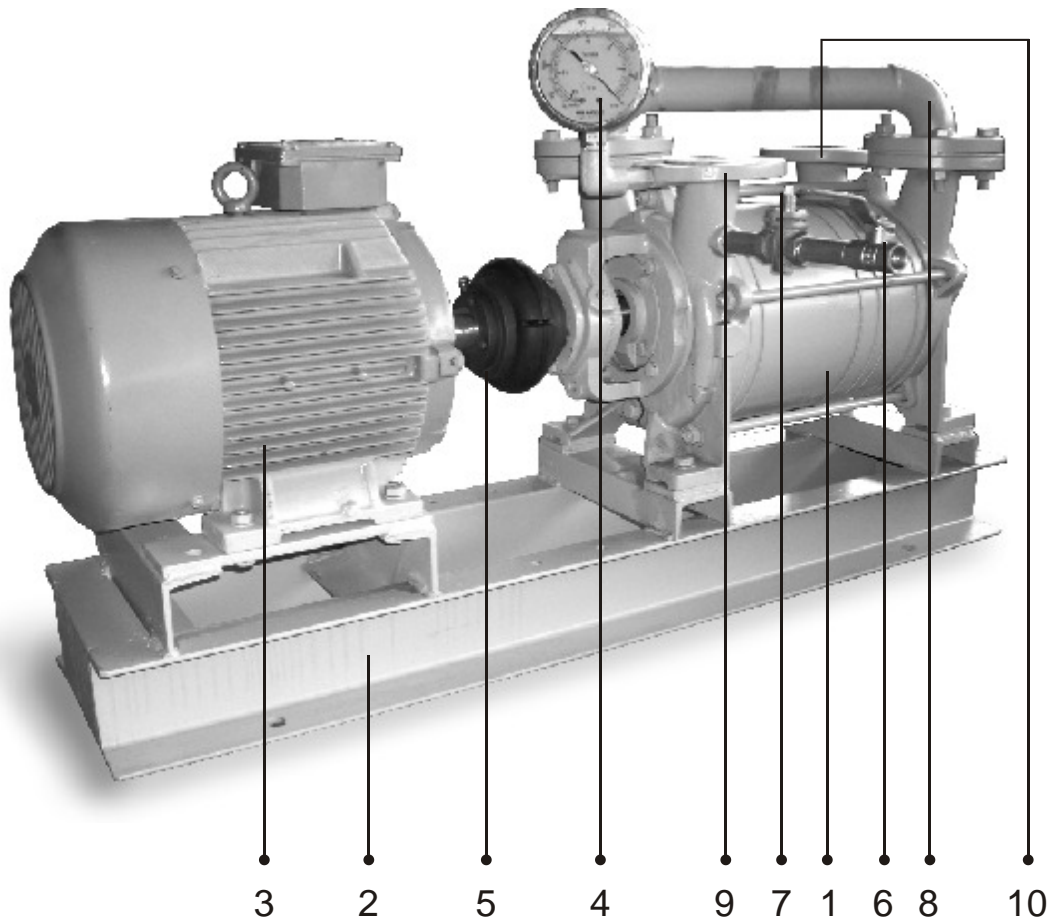
UNAUTHORIZED ALTERATIONS AND PRODUCTION OF SPARE PARTS

Any modifications may be made to the vacuum pump only after consultations with the manufacturer. Using spare parts and accessories authorized by the manufacturer is in the interest of safety. Use of other parts may exempt the manufacturer from any liability.

UNAUTHORIZED MODE OF OPERATION

The reliability of the vacuum pump delivered will only be guaranteed if it is used in the manner intended and in accordance with the instructions of this manual. The limit values specified in the data sheet must under no circumstances be exceeded.

2. LOCATION OF PARTS



1. Vacuum Pump

2. Base Frame

3. Electric Motor

4. Vacuum Gange

5. Tyre Coupling

6. Ball valve

7. Stop Cock (Water Regulating Valve)

8. Inter Connecting Pipe

9. Suction

10. Dishcharge

3. ERECTION & INSTALLATION PROCEDURE

PROPER ERECTION IS VERY IMPORTANT FOR SMOOTH RUNNING & LONG SERVICE OF THE PUMP. (REFER G. A. DWG.)

1. Prepare foundation as per drawing.
2. Generally vacuum pump supplied with Common Base frame for Pump & Motor & Coupling set. In this case, pump side coupling is supplied duly fitted on pump. You have to connect motor side coupling on your electric motor.

PROPER FOUNDATION

- | Correct foundations and installations are essential to assure a safe operation. A non compliance with the norms of correct foundation and installation could cause pump failures.
- | The pump must be installed on flat surface, rigid enough to withstand its weight and suitable to withstand the loads cause by the motor mechanism and by the pump operation.
- | In order to avoid vibration or wear of the coupling, it is necessary to keep a correct alignment during continuos operation conditions.

MOUNTING OF COUPLING

When assembling pump and motor both shafts must be centrally to each other and be easily turntable. The distance between both coupling halves shall have the specified measurement. (ref. Figure. 1)

TYRE COUPLING

- T5 M= 25MM VWS-50&75 TWO STAGE
- T6 M=30MM VWS-100 & 150 TWO STAGE
- T7 M=42MM VWS-200 & 250 TWO STAGE

3. ERECTION & INSTALLATION PROCEDURE

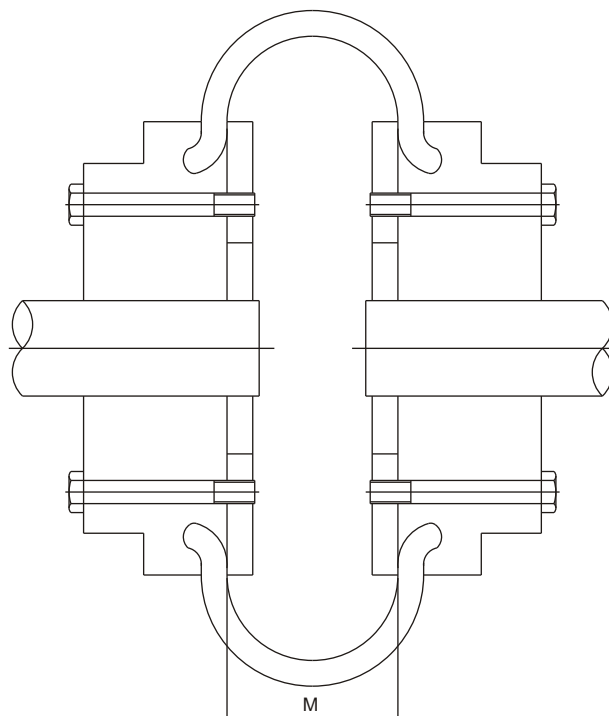


FIG. 5.1 MEASUREMENT TO BE SET BETWEEN BOTH COUPLING HALVES

TYPE COUPLING		
COUPLING SIZE	M	USED ON MODEL
T5	25 mm	VWS-50 & VWS-75 TWO STAGE
T6	30 mm	VWS-100 & VWS-150 TWO STAGE
T7	42 mm	VWS-200 TWO STAGE

MOUNTING OF THE PUMP AND INSTALLATION INTO THE PIPING SYSTEM

On delivery, suction and discharge branch as well as the service liquid connection are closed to prevent the entering of foreign bodies. The Blind Rubber Packing to be removed only immediately before connecting the pipelines. The weight of heavy pipelines must be supported in order to prevent distortions of the pump.

The pump has to be aligned with the pipelines.

The screws are to be tightened in the following order:

- Tightening of the flange connections of suction and discharge line
- Fastening of the service liquid line
- Tightening of the pump feet and of the motor feet

FINAL WORK

- The following final work must be carried out
- Check the tightness of the connecting flanges
- Check the easy running of the pump (for that purpose turn the coupling).

4. CONNECTIONS OF VACUUM PUMP

PIPELINES

- | Pay attention to the arrows at the pump pipe line indicating the flow direction.
- | The nominal widths of the pipelines must not be smaller than the nominal widths of the corresponding pump branches.
- | All pipelines must be cleaned prior to installation of the pump.
- | The pipelines must be supported in order to avoid distortions of the pump components (danger of breaking of the pump components).
- | The suction, discharge and service liquid lines must be as short as possible and their cross-section must be as least as the corresponding pump connections. For long pipelines larger cross sections are required.

identify first locations and dimensions of all connections required to interconnected the pump with the installation, then proceed with the actual piping.

SUCTION LINE

A non-return valve should be installed in the suction line. It prevents back flow of gas and liquid in the suction piping when the pump stopped.

If the pump shall be started-up or stopped with closed shutoff element, e.g. Valve in the suction line, cavitation occurs, too.

DISCHARGE LINE

The discharge line must not be led more than 1m vertically or diagonally upwards. If a shutoff element is installed in the discharge line behind the liquid separator, it must be ensured that the pump cannot be put into operation while this shutoff element is closed.

SEAL WATER LINE

For a good operation the watering vacuum pumps must be supplied with a seal water which is clean, non abrasive and of any solids. The service seal water should not exceed 30.31 degree centigrade and the gas handled should be maximum 90 degree centigrade.

5. WORKING INSTRUCTION

STARTING

1. Turn shaft by hand to ensure that pump runs freely.
2. Start electric motor, see the direction of rotation. It should be clockwise looking from the coupling side. **Never start pump without water, Always start the water first, then pump.**
3. Regulate the quantity of water supply as per pump data sheet by means of plug or stop cock. Excessive water quantity is also dangerous and may overload the motor.
4. Check the temperature rise of bearing housing at regular intervals of 15 minutes during the first two hours of operation.
5. If the temperature does not stabilize below 65 degree centigrade stop the pump and investigate the problem.

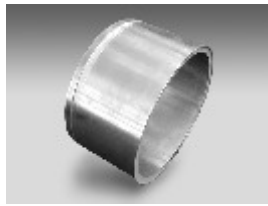
STOPPING

1. Always stop the pump first and then the water supply.
2. Close the water line ball valve without disturbing the cock valve.

STORAGE

If the pump is required to be storage for long time, drain water completely by opening two plugs at the bottom of casing cover. Fill the lubrication oil from suction flange. To avoid rust deposition inside the pump.

6. PARTS INFORMATION



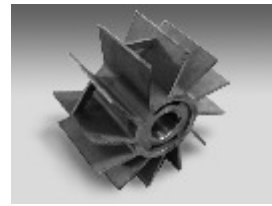
Casing 1st Stage



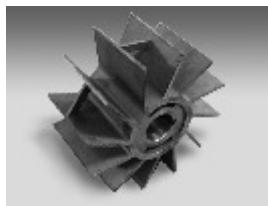
Casing 2nd Stage



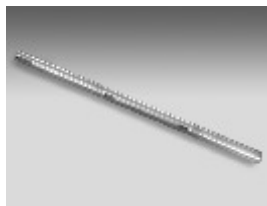
Cover



Rotor 1st Stage



Rotor 2nd Stage



Shaft



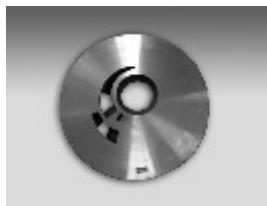
C Side Control Plate (NDE)



D Side Control Plate (DE)



C Side Control Plate with Between Rotor



D Side Control Plate Between Rotor



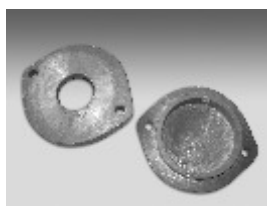
Bearing Bracket



Stuffing Box



Lock nut for Rotor



Bearing Cover outer C & D



Bearing Cover inner Drive / Non Drive End



Bearing



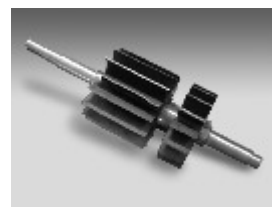
Inter Connection pipe



Tyre Coupling



Mech Seal



Rotor with Shaft

7. DISASSEMBLY & ASSEMBLY FOR MAINTENANCE

BEFORE STARTING THE PUMP DISASSEMBLE ENSURE THE FOLLOWING THINGS

- When assembly and disassembly the pump especially observe that no toxic or aggressive media can escape from open lines. Secure the shut off organs against unauthorized operations.
- Drain the pump before the disassembly out of the plant. After draining, residuals of liquid will remain in the pump which must be removed by flushing the pump with a suitable liquid.
- The electrical connections must be fixed or separated respectively only after removal of the corresponding fuse.

MAINTENANCE

The pump requires only little maintenance. However, the following points must be observed.

- The bearings shall be lubricated after approximately 10,000 service hours.
- The mechanical seals do not require any maintenance. With normal operation, leakage's occur only after several 1000 service hours if parts subject to wear are used up.
- In case of risk of freezing, the pump, the liquid separator and the pipelines are to be drained if necessary, the pump is to be preserved.
- If the pump is required to be storage for long time, drain water completely by opening two plugs at the bottom of casing cover. Fill the lubrication oil from suction flange.
- In case strongly calcareous water is used as service liquid, the pump has to be opened at least in a period of six months in order to remove the calcareous(scale) deposits.
- The calcareous deposits can be avoided if the service liquid is prepared with a suitable agent. The measures to be taken depend on operation time and water quality.
- In case the pump has not been in operation for a longer period of time, it must be drained.

DISASSEMBLY

Proceed according to the following order:

- Switch off the power supply
- Disconnect the motor
- Drain the installation within the pump area, i.e. between the slides at suction and discharge side.

7. DISASSEMBLY & ASSEMBLY FOR MAINTENANCE

- | If necessary disconnect measuring probes and control instruments and dismount them.
- | Drain liquid out of the pump.
- | Dismount the pump out of the installation.
- | If necessary, flush the pump.
- | Remove coupling half

DISMANTLING OF THE VACUUM PUMP

Please proceed as follows:

- | Remove key. Release hex bolt and remove outer bearing covers from drive side. Remove the hex bolts from the bearing bracket. With the help of bearing puller remove the bearing safely.
- | Unscrew the hex bolt of the stuffing box and remove it. Pull the mechanical seal out from the shaft.
- | Unscrew the nuts and remove the studs from the body. Take off the casing cover. Remove the casing of the first stage.
- | Open the lock nut of the rotor and pull out the rotor from the shaft. Remove the key of rotor.
- | After removing the rotor, take off the two control plates so the second stage casing can be remove. Remove the second stage casing.
- | Remove the spacer between rotor and than second stage rotor. Remove key of the rotor.
- | Repeat the step 1 to remove bearing from the non drive side end.

ASSEMBLY

Preparation for assembly:

- | Clean all pump parts carefully. Observe that the sealing have no grooves and that the guide disc is plane. Possibly the guide disc must be smoothed by means of abrasive cloth on a leveling plate.
- | Coat the running surface of guide disc (except sealing fittings) with Anabond 610 (sealing gasket).
- | When mounting no foreign substances and no superfluous sealing mass must enter the pump.

ASSEMBLY OF THE PUMP

Proceed as follows:

- | All marks must be in perfect alignment. If one or several parts are replaced, which may effect the position of the rotor by their axial length, the rotor must be

7. DISASSEMBLY & ASSEMBLY FOR MAINTENANCE

mounted again. The spacer has to be machined in such a way that the length becomes about 0.20 mm greater than the width of the control plates when pressed together and the depth of the recess in impeller.

- Press control plates in the centering of the casing and tighten with screws.
- Put on the shaft, at the non-driven side, a the lock washer and screw on slightly the shaft nut. Put key into groove of shaft. Slip rotor on shaft. Adjust a distance between the chamfer of the shaft and the front surface of the rotor. Put the second key into the groove of shaft, slip the rotor on to the shaft against control plates and spacer. Put on slightly the lock washer and fasten it by the lock nuts. The vanes of both rotor must be inclined to the sense of rotation.
- Lay down the pre assembled casing, control disk upward. Center the central body on the control plate. Insert the pre assembled shaft, drive side upward and center control plate on to the central body. Center the central body on to the control plate. Center the pre assembled casing, control disk first, on the central body. Tighten the tie bolts only manually.
- Push on the shaft the spacer and the rotating parts of the mechanical seal. Observe the correct sense of rotation of pumping screw clockwise. Press stationary seal ring of mechanical seal in the shaft sealing casing and fasten by the screws to casing. Pay attention that the cast on the rear side of the shaft seal casing points toward the casing feet.
- Center the bearing bracket on the casing in such a way that the drain opening points to the casing feet, then tighten by the screws. Press in the cleaned or new anti friction bearing. Fasten the bearing covers and with the screws to the bearing bracket.
- Turn the pump carefully by 180° so that the drive side points downward. Push on the shaft the spacer and the rotating parts of the mechanical seals. Observe the correct sense of rotation of pumping screw clockwise. Press stationary seal ring of mechanical seal in the shaft sealing casing and fasten by the screws to casing. Pay attention that the cast on the rear side of the shaft seal casing points toward the casing feet.
- Slip on the shaft the bearing cover and the thrower. Center the bearing bracket on the casing in such a way that the drain opening points to the casing feet, then tighten by the screws. Press in the spacer and the cleaned or new anti friction bearing tighten by the shaft nut and secure by the safety tab washer. Put on the bearing cover. Screw on slightly the screws for fastening of the bearing cover and do not tighten.
- Put the pump horizontally, align the pump feet on a plane base and tighten crosswise the tie bolts.
- The total play of the rotor is measured by alternating tightening of the bearing covers and until the rotor stop. When doing the cover in direction of the

7. DISASSEMBLY & ASSEMBLY FOR MAINTENANCE

movement has to be completely loosened before. The degree of displacement can be determined at the shaft end by means of a dial gauge. The rotor adjustment to the middle of the measured play is also achieved by means of the bearing covers and by loosening the cover tightened at last and by re-tightening the counter cover until the dial gauge indicates the correct value. Then tighten the loosened cover evenly.

- Put connecting pipe 1 with sealing on pump branches and tighten with screws, studs and nuts. Insert ruff key in the groove of shaft, put on coupling half and the pump can now be reinstalled into the system.

TEST WORK

After assembly the following test work has to be carried out:

1. Check the easy running of pump by rotating at the free shaft end. In case the pump should be stuck, probably the vane-wheel impeller has been wrongly adjusted. The trouble has to be eliminated.
2. Carry out a hydrostatic pressure test with 4 kg/cm² (hydraulic test) Drain pump.
3. Carry out a leakage test (with foaming agents).

8. TROUBLE SHOOTING : PROBLEMS, CAUSES & SOLUTIONS

PROBLEM	List of possible causes
Pump does not create or the vacuum is too low	1-2-3-4-9-11-18-19-22-23-24-25
Excessive noise	1-4-5-6-7-10-24
High Power Consumption	1-5-6-8-9-15-24-25
Vibration	5-6-7-8-10-12-13-24
Mechanical Seal Leaking	11-24, 5, 6, 14
Pump loses liquid	11-19-23
Bearing Failure	5-6-7
Pump does not start	1-6-20-21
Shaft Partially or totally locked	6-10-15-16-21
Cavitation	3-4-8-9-17-24
SR. NO.	CAUSES SOLUTIONS
1 Defective motor OR wired wrong	Check the voltage, the frequency, motor type, power consumption, rotation, connection, phase consistency
2 Leakage in suction piping	Repair piping, check valves for leakage
3 Seal water high temperature	Lower the seal water temperature, check the level of seal water, adjust the cooling water flow.
4 Low seal water flow	Increase the seal water flow
5 Coupling misalignment	Re-align the coupling and the pump/motor assembly
6 Faulty bearing	Replace the bearing
7 cavitation	Open the anti-cavitation valve or set the relief valve to a lower vacuum.
8 High seal water flow	Reduce the seal water flow, adjust the by-pass valve
9 High back pressure	Check the discharge line for obstructions or high friction losses, reduce the back pressure to 0.1 bar.
10 Wrong pump / motor assembly	Verify that the base surface is level and that all pump feet are resting on the surface, add spacer
11 Mechanical seal failure	Change the mechanical seal
12 Wrong pump mounting	Remount the pump
13 Piping weight resting on pump	Support the piping with hangers.
14 Inadequate seal lubrication	Check flushing liquid temperature, flow and pressure
15 Minerals deposits from hard water	Clean the pump
16 Foreign particles in pump	Disassembly the pump to remove the foreign particles.
17 Low suction pressure	Open the vacuum regulating valve and /or the vacuum relief valve
18 Wrong pump rotation	Reverse the rotation
19 Bad gaskets	Replace the defective gasket
20 Wrong motor connections	Check the electric connections.
21 Pump jammed	Disassemble and repair the pump
22 Pump undersized	Select a pump with higher capacity
23 Pump worn-out	Disassemble and repair the pump
24 Excessive liquid flow through suction line	Reduce the liquid flow through the pump suction; install a centrifugal separator (cyclone) before the pump
25 Instrumentation out of calibration	Check working characteristics, replace if required

9. BEFORE YOU CALL SERVICE PERSONNEL

- | READ instruction manual carefully and thoroughly.
- | ALWAYS start water first and then pump.
- | NEVER start pump without water.

IF PUMP GOT JAMMED

First fill pump with diesel / kerosene and leave it 24 hours. Most probably pump will be free. If not then. Check for Mechanical Rubbing or Touching.

IF PUMP DOES NOT DEVELOP SUFFICIENT VACUUM

- | Check the vacuum gauge against master gauge.
- | Check for back pressure and make sure that discharge line is open to the atmosphere.
- | Check & see that outlet of silencer is not choked.
- | Check quantity of water. Make sure it is as per given in manual. Also check inlet water pressure which should be 1.0 kg/m² max.

IF PUMP MAKES NOISE

- | If rattling continues to be heard at low vacuum, open the pump and check for entry of foreign particle and also check for broken rotor blade because of that particles.
- | Check the alignment to rotor with the pump and distance between two coupling.

IF YOUR MOTOR IS OVERLOADED

- | Check that pump turns free by hand when stationary.
- | Check excessive seal water quantity and pressure.
- | Check alignment to motor with the pump and distance between two couplings.
- | Dismantle pump and check for any internal damages or for scale formation. Excessive scale formation can effect to the smooth operation of vacuum pump and overload the motor.

10. MATERIAL OF CONSTRUCTION

COMPONENT	QTY	MATERIAL		
		A	C	S
CASING (FIRST STAGE)	1	CAST IRON	CAST IRON	SS-304 / SS- 316
CASING (SECOND STAGE)	1	CAST IRON	CAST IRON	SS-304 / SS- 316
CASING COVER	2	CAST IRON	CAST IRON	SS-304/SS- 316
ROTOR (FIRST STAGE)	1	PH. BRONZE SS-304	SS-304/SS- 316	SS-304/SS- 316
ROTOR (SECOND STAGE)	1	PH. BRONZE SS-304	SS-304/SS- 316	SS-304/SS- 316
CONTROL DISC (DRIVE SIDE)	1	CAST IRON	SS-304/SS- 316	SS-304/SS- 316
CONTROL DISC (CLOSE SIDE)	1	CAST IRON	SS-304/SS- 316	SS-304/SS- 316
CONTROL DISC (D-SIDE BET'N FIRST AND SECOND ROTOR)	1	CAST IRON	SS-304/SS- 316	SS-304/SS- 316
CONTROL DISC(C-SIDE BET'N FIRST AND SECOND ROTOR)	1	CAST IRON	SS-304/SS- 316	SS-304/SS- 316
SHAFT	1	EN-8/SS-316	SS-304/SS- 316	SS-304/SS- 316
SPACER(BET'N TWO CONTROL DISC)	1	SS	SS	SS
SINGLE MECH. SEAL	2	CARBON Vs. BUME 5	CARBON Vs. BUME 5	CARBON Vs. BUME 5
STUFFING BOX.	2	CAST IRON	CAST IRON	SS-304/SS- 316
DEEP GROOVE BALL BEARING SINGLE ROW	2	STD.	STD.	STD.
BEARING BRACKET	2	CAST IRON	CAST IRON	CAST IRON
BEARING COVER (INNER SIDE)	2	CAST STEEL	CAST STEEL	CAST STEEL
BEARING COVER (DRIVE SIDE)	1	CAST IRON	CAST IRON	CAST IRON
BEARING COVER (NON DRIVE SIDE)	1	CAST IRON	CAST IRON	CAST IRON
ROTOR NUT FOR LOCKING ROTOR	2	SS	SS	SS
STUD FOR PUMP M12 X 365 LONG (for vws-75II) M16 X 420 LONG (for vws-100II, vws-150II, vws-200II)	6	MS	MS	SS
LOCK NUT M40 X 1.5, KM 8	1	STD.	STD.	STD.
LOCKING WASHER I.D. 40 mm X 1.5 mm THK., MB 8	1	STD.	STD.	STD.

SUBJECT TO CHANGE WITHOUT PRIOR NOTICE

11. LIST OF ACCESSORIES

- Vacuum Gauge - (0 to 760 mm of Hg. direct mounting.)
- Coupling Set - (Tyre Coupling)
- Ball Valve - (on/off Valve)
- Stop cock valve - (water regulating valve)
- Common base frame for pump and motor
- Matching flange - (Fitted with pump)
- Water strainer - (Brass for water line)

OPTIONAL ACCESSORIES

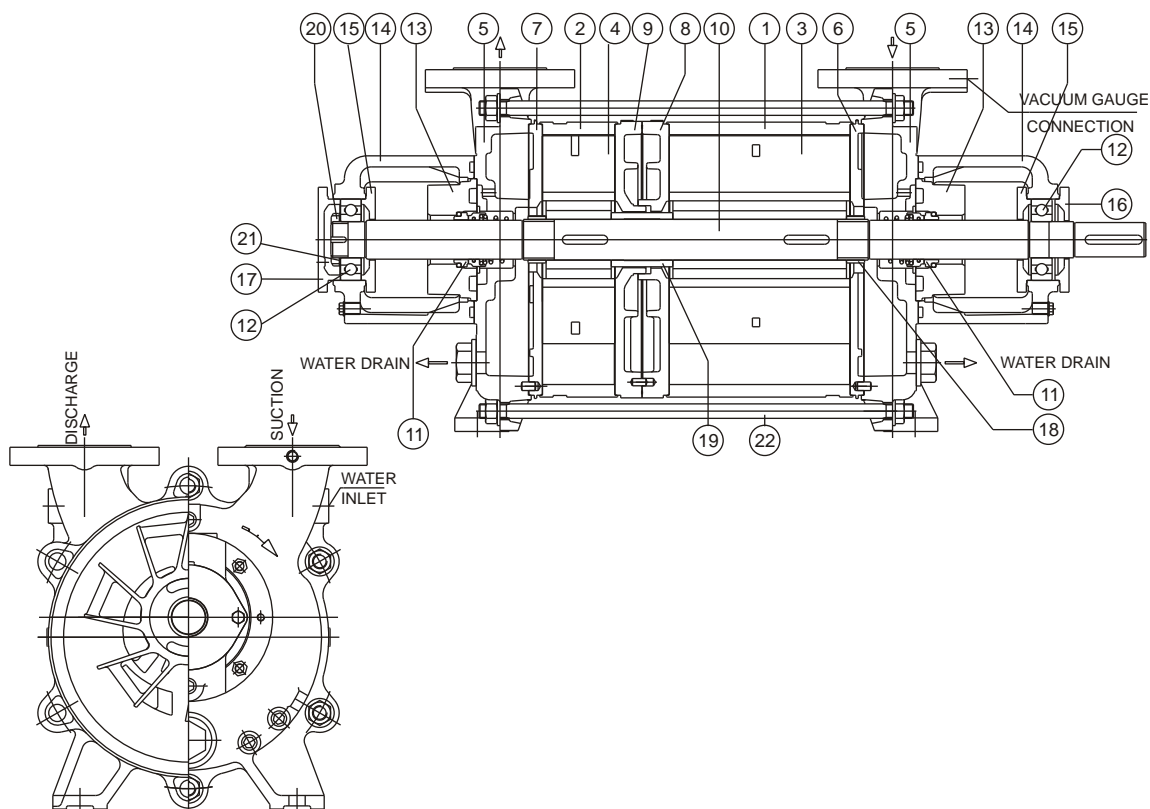
1. Non return valve
2. Coupling guard
3. Foundation bolt
4. Silencer

Carefully remove the pump from packing cartoon and examine for transportation damage. Check that all accessories are included, if you fin missing any item consult to our works.

12. RECOMMENDED SPARES : FOR ONE VACUUM PUMP

SR. NO.	PART NAME	QTY.
1	Gasket Sealant Anabond 610 (50 ml)	2
2	Mechanical Seal	2
3	Bearing (drive & non drive) 6306 for VWS 50 / 75 Two Stage	2
4	Bearing (drive & non drive) 6308 for VWS 100 / 150 / 200 Two Stage	2
5	Lock Nut for Rotor	2
6	Spacer	1
7	Stuffing box cover	2

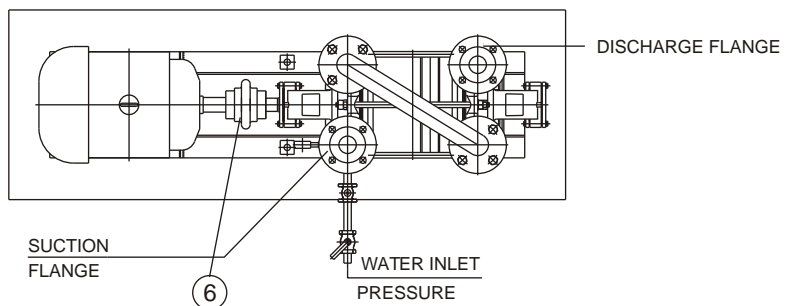
C. S. DRAWING



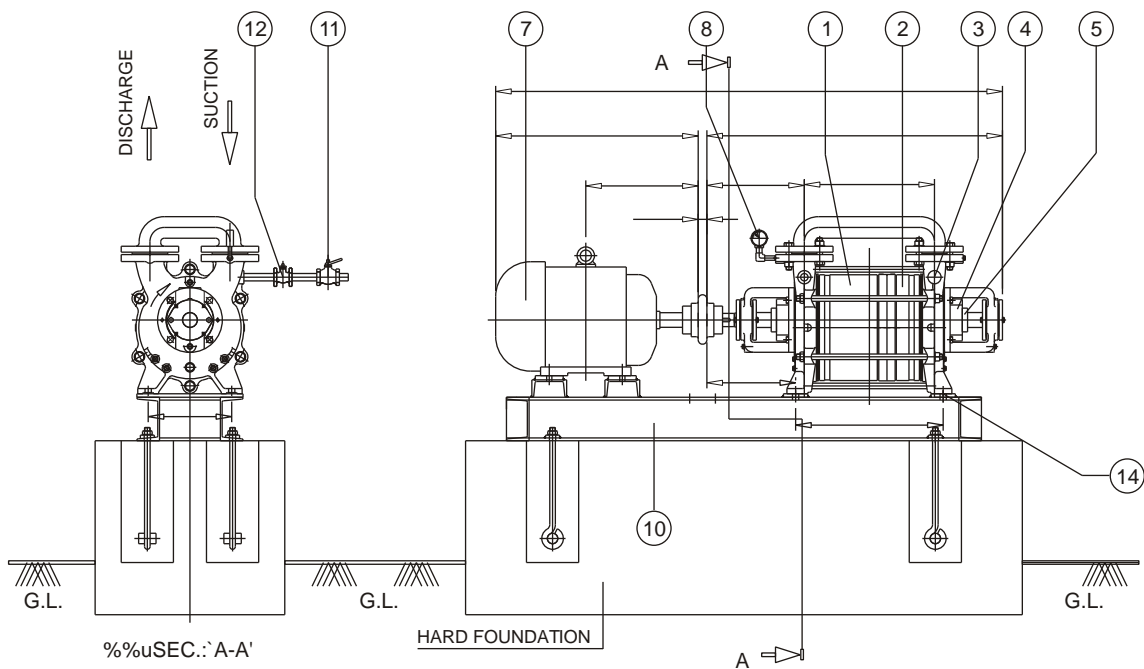
CLOCKWISE ROTATION FROM COUPLING END

22.	STUD FOR PUMP	6
21.	LOCKING WASHER I.	1
20.	LOCKING NUT	1
19.	SPACER (BET'N TWO CONTROL DISC)	1
18.	ROTOR NUT FOR LOCKING ROTOR	2
17.	BEARING COVER (CLOSE SIDE).	1
16.	BEARING COVER (DRIVE SIDE).	1
15.	BEARING COVER (INNER SIDE) - C S	2
14.	BEARING BRACKET. - C1	2
13.	STUFFING BOX.	2
12.	DEEP GROOVE BALL BEARING SINGLE ROW	2
11.	SINGLE MECH. SEAL	2
10.	SHAFT	1
9.	CONTROL DISC (C-SIDE BET'N FIRST & SECOND ROTOR)	1
8.	CONTROL DISC (D-SIDE BET'N FIRST & SECOND ROTOR)	1
7.	CONTROL DISC (CLOSE DISC)	1
6.	CONTROL DISC (DRIVE SIDE)	1
5.	CASING COVER	2
4.	ROTOR (SECOND STAGE)	1
3.	ROTOR (FIRST STAGE)	1
2.	CASING (SECOND STAGE)	1
1.	CASING (FIRST STAGE)	1
SR. NO.	DESCRIPTION	QTY.

G. A. DRAWING



NOTE : 1) ITEM MARKED WITH * IS NOT IN PPI SCOPE.
2) DIRECTION OF ROTATION : CLOCK-WISE



12.	STOP COCK (WATER REGULATING VALVE)	1
11.	BALL VALVE (WATER ON/OFF VALVE)	1
10.	BASE FRAME FOR PUMP & MOTOR	1
9.	MATCHING FLANCE	2
8.	VACUUM GAUGE 0-760 mm OF Hg. 4" DIA. DIAL 3/8" BSP	1
7.	TEFC ELE. MOTOR	1
6.	FLEXIBLE TYRE COUPLING	1
5.	SINGLE MECH. SEAL	2
4.	STUFFING BOX	2
3.	CASING COVER	2
2.	CASING SECOND STAGE	1
1.	CASING FIRST STAGE	1
SR. NO.	DESCRIPTION	QTY.

OUR RANGE OF OTHER PRODUCT

WATER RING VACUUM PUMP



WATER RING VACUUM PUMP
(CONE TYPE)



SINGLE CONE VACUUM PUMP



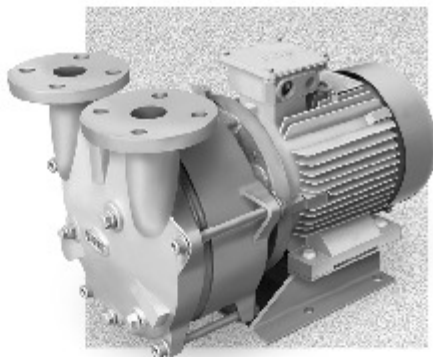
TWO STAGE VACUUM PUMP



ROOTS BLOWER

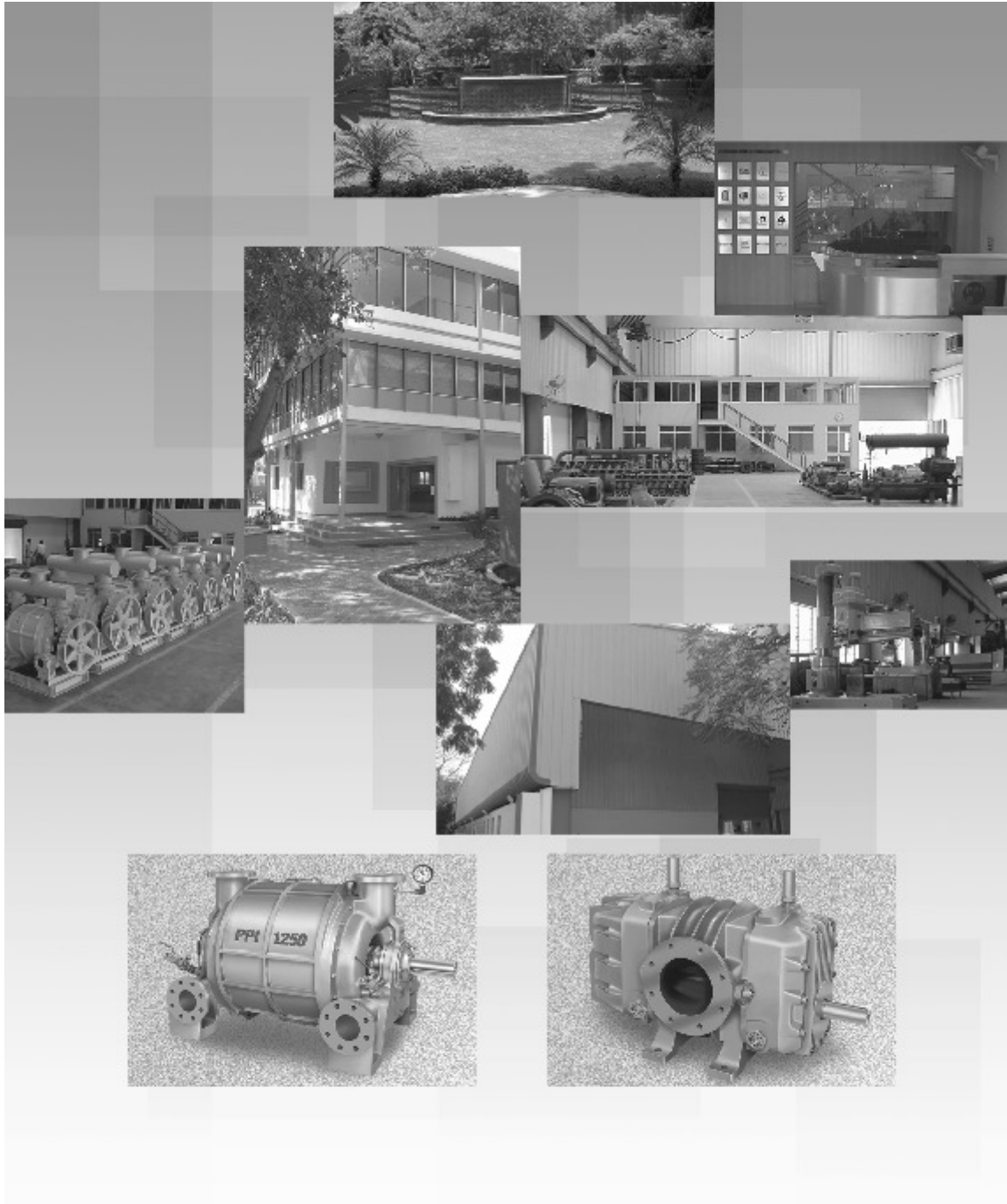


CLOSE COUPLE VACUUM PUMP



CHEMICAL PROCESS PUMP





PPI SYSTEMS

Green House -A, Phase-1, G.I.D.C. Estate, Vatwa Ahmedabad - 382445. India

Phone : +91 79 2583 2273 / 2583 2274, 2583 5698 Fax : +91 79 2583 0578

E-Mail : sales@pipumps.com

Website : www.ppipumps.com

BRANCHES SALES OFFICE :

- NEW DELHI : PH : 093129 94234 / 3090 7842
- CHENNAI : PH : 093801 99659 / 2361126
- INDORE : PH : 098270 70528 / 593060 / 668
- U. P. : PH : 093193 93897
- MUMBAI : PH : 093225 48175 / 2562 5473
- HYDERABAD : PH : 098480 38130 / 236160061
- KOLKATA : PH : 098304 62669 / 26512483
- BANGALORE : PH : 093798 67883