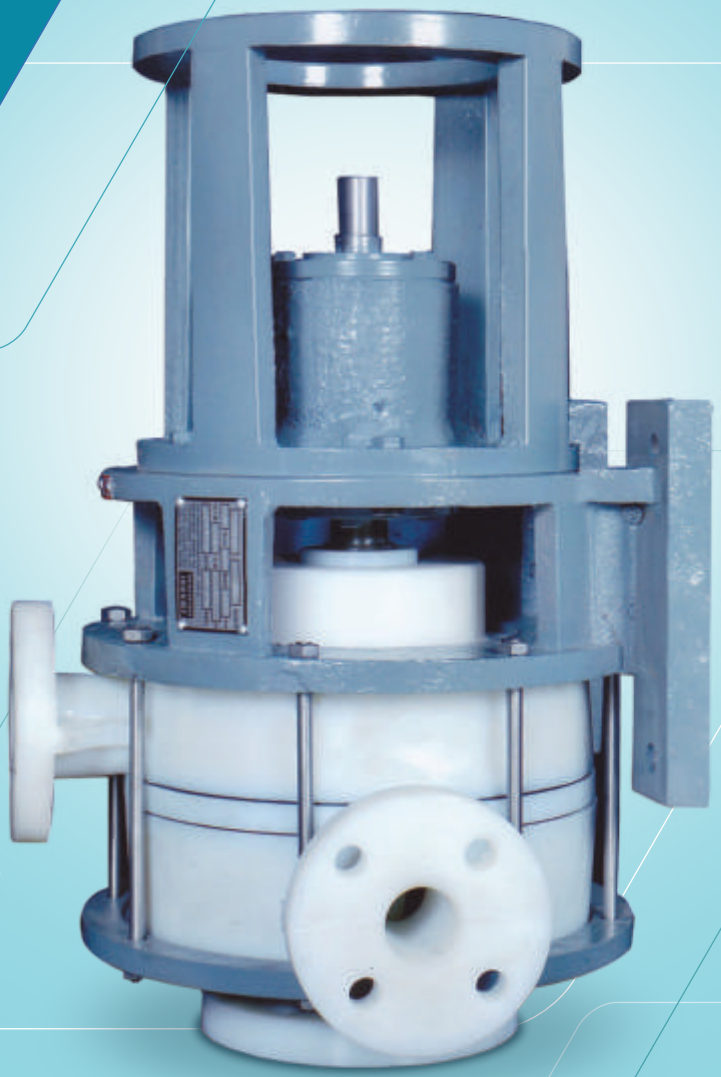
SWARAJ ENGINEERING

HOUSE OF INDUSTRIAL PUMPS



VGP SERIES
(SLURRY PUMP)

Vertical Sealless / Glandless Pumps
(VGP series)

SWARAJ ENGINEERING

HOUSE OF INDUSTRIAL PUMPS

About us

Swaraj is one of the leader in manufacturing corrosion resistant Non metallic End suction Horixantal / Vertical mounted Centrifugal pumps from India. Our Pumps deliver the most demanding chemicals with safety across various Chemical Industries, Pharmaceutical Industries, Scrubbing, Acid transfer, Water treatment plants and many more. Swaraj Pumps are efficient, trustworthy, safe and robust.

Vertical Sealless / Glandless Pumps (VGP series)

Product Description

VGP - series Vertical Glandless / Sealless Pumps are specially design to remove the problems arising from the use of Mechanical Seals, Stuffing Box Gland and Dry running in all types Centrifugal Process Pumps. These pumps have no Mechanical Seal or Gland. These pumps are absolutely Sealless and Glandless.

Design Features

The Pumps are having similar design to any conventional Centrifugal Pump. It differs in so far as, it is always mounted in the vertical position. A restriction is provided above the impeller and the need for any form of liquid seal is obviated by allowing a small leakage to escape by way of an overflow connection in the upper pump body and return to the suction vessel. The Volute Casing & Impeller are made from UHMWPE and also the Expeller & Over flow Casing Cover is made from UHMW.PE materials to give max. High Mechanical & Abrassion strength to pump. The Pump is supported by CI mounted bracket with SS Bolts & Nuts.

Principle of Operation

The liquid entering through Suction via Impeller Eye of Impeller flows around the Impeller Casing and leaves through the Discharge under pressure. But some liquid escapes to the Overflow Chamber (Casing) through the annular gap between Impeller Casing and Impeller. The auxiliary Impeller (Known as Expeller) prevents the leakage liquid going further up and channelizes it through outlet in the Overflow chamber (casing) and hence there is no leakage through pumps avoiding the use of any mechanical seal or stuffing box gland.

Salient Features

- No gland or mechanical seal, Hence problems associated with gland packing or mechanical seal are completely eliminated.
- Zero safe minimum flow
- Pumps can run dry indefinitely due to absence of mechanical seal but only untill the melting point of (i.e.100°C) with no damage to the pump.

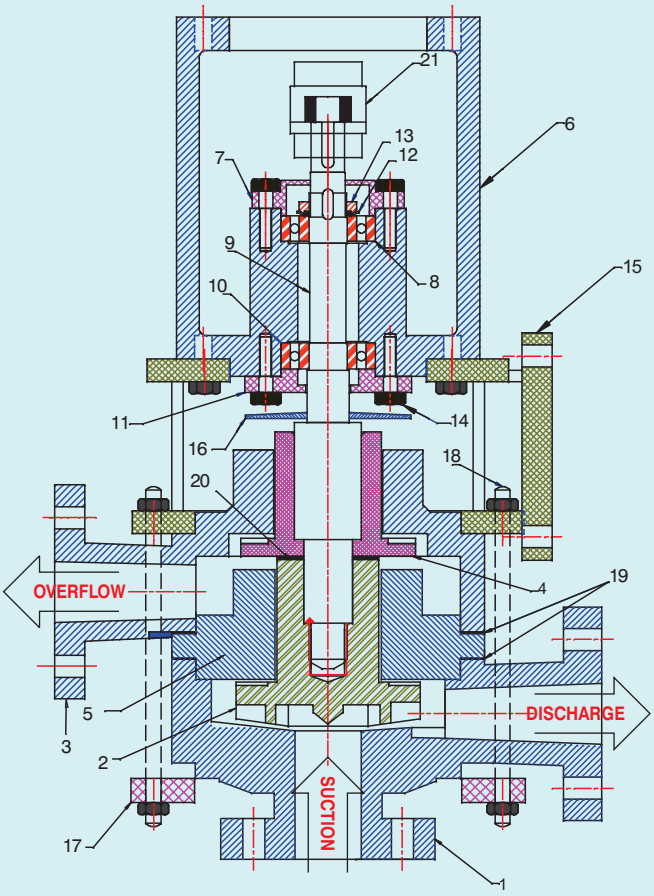
  Note:- as dry run of pumps leads to the heat generation in the pump when operated for longer period of time.
- Direct assembly with the motor also available to avoid issue of misalignment and eliminates the problem associated with maintenance of bearing housing(D type).

  Note:- coupled assembly are also available for easy maintenance of the equipment by having quick dismantling of motor and pump (L-type).
- Saves valuable floor space due to the vertical installation of the pumps.
- Ideally suited for continuous operation
- Suited for clear clean liquids, slurry application and mainly for the ETP Plants.
- Offered in 1440 and 2900 RPM.

Limitations

- Can operate only wherever negative suction exists.

  Note:- these pumps can also made operable for positive suction with some modifications in pump & also considering how the location/installation of pump at site will be. Specific solution shall be suggested.
- The suction lifts pose a limitation in the installation (not more than 4.5 m).
- Can be suitable for only those liquids where external priming is feasible
- Not recommended for high temperature application or inflammable organic liquids.
- One must have the provision to put back the overflow liquid in the suction tank.



Material of Construction.

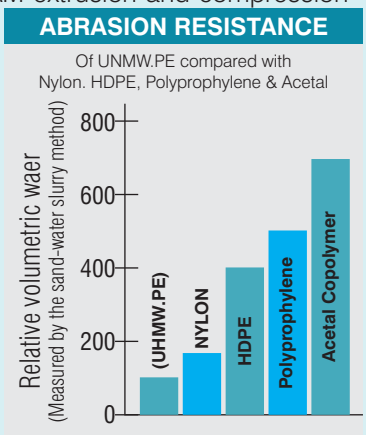
We basically offer these pumps with MOC as UHMWPE (Ultra High Molecular Weight Poly ethylene) due to its good abrasion and corrosion resistance properties. Alternatively, we offer these pumps with MOC as PP-H also. But we as manufacturer recommends UHMWPE as MOC, particularly for this type of pumps.

UHMWPE Properties

UHMW-PE (ultra high molecular weight polyethylene) is an extremely tough and abrasion resistant thermoplastic that is used for applications that require durability and/or abrasive wear resistance. It is not possible to process through conventional methods such as injection, blow or extrusion molding, because this material does not flow even at temperatures above its melting point. It demands special processing techniques, being the most common RAM extrusion and compression molding.

Key Characteristics of UHMWPE

- Excellent Abrasion Resistance and Mechanical Strength
- Good Chemical Resistance.
- Extremely Tough and Durable.
- Low co-efficient of Friction (Self-lubricative)
- High Impact Strength.
- No absorption of liquid.



Sr No.	Part Name	MOC
1	Impeller Casing	UHMW.PE/PP-H
2	Impeller	UHMW.PE/PP-H
3	Overflow Chamber	UHMW.PE/PP-H
4	Expeller	UHMW.PE/PP-H
5	Casing Guide Plate	UHMW.PE/PP-H
	(Upper Rotor Casing)	
6	Bearing Housing	C.I.
7	Outboard Endcover	C.I.
8	Outboard Bearing	Steel
9	Shaft	EN 19/EN 24/ SS 316/ AISI 410
10	Inboard Bearing	Steel
11	Inboard End Cover	C.I.

Sr No	Part Name	MOC
12	Locknut Washer	EN 9
13	Bearing Locknut	EN 9
14	Bolt For Endcover	M.S./G.I./SS
15	Pump Frame (Adaptor)	C.I.
16	Deflector	P.P.
17	Cage Ring (Bottom plate)	C.I.
18	Tie Rod With Nut	SS
19	Pump Packing	PTFE
20	Impeller Packing	Champion
21	Coupling	C.I
22**	Baseframe (Fabricated)	M.S.

** Part not shown in cross-section

SWARAJ ENGINEERING

HOUSE OF INDUSTRIAL PUMPS

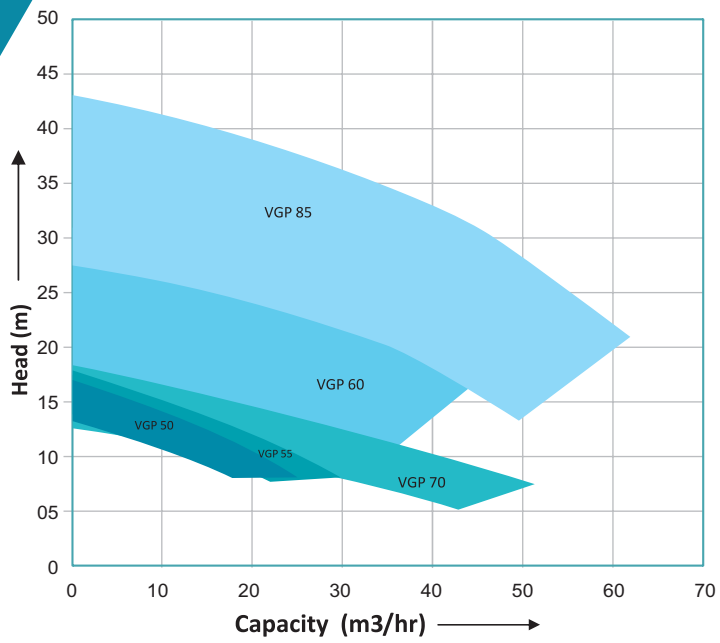
Application

- Mainly for handling Highly Corrosive & Abrasive Slurry (15%~20%)
- Best suited (No 1 choice) for Effluent Treatment Plants (ETP)
- Handling Alkalis like H3PO4, H2SO4, HF, ZnSO4, Na2SO4, HCL, NaoH, Silica etc
- Phosphoric Acid plants
- Gas Washing Plants
- Rayon Plants
- Pulp and paper industries
- Textile industries
- Caustic Soda Plants
- For Scrubbers, Filter press , Ejector systems

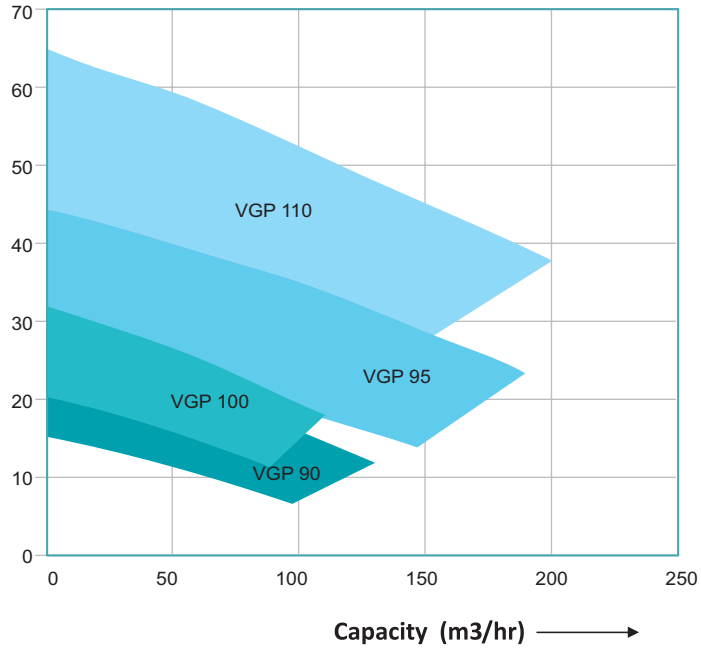
Technical Specifications

Capacity	: up to 200 m3/hr
Head	: up to 100 meters
Temperature	: Max. up to 100°C
Pump Speed	: 1440rpm , 2900 rpm
Maximum Sp. Gravity	: 1.2-2.0
Suction & Discharge Connections	: As per Table E
Gaskets / Pump Packings	: PTFE
Viscosity (upto)	: 150 mPas (cP)

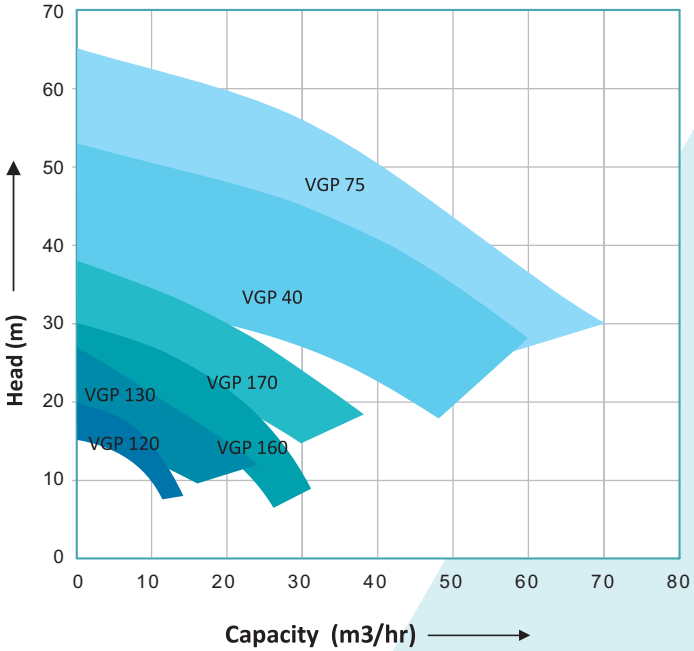
VGP Series Family Curves at 1440 RPM



VGP Series (High Flow Pumps) Family Curves at 1440 RPM



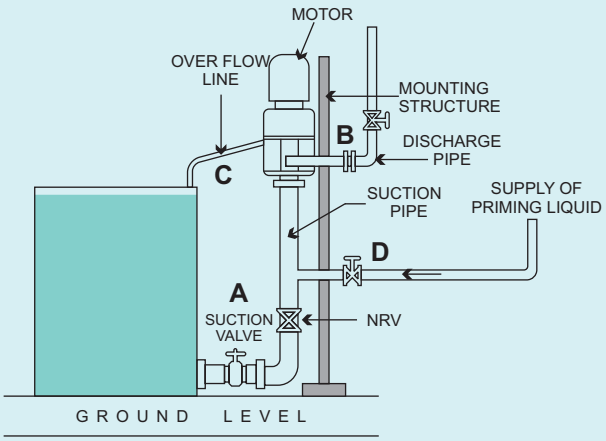
VGP Series Family Curves at 2880 RPM

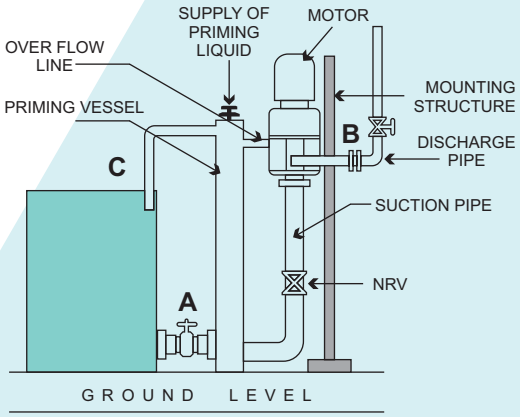


Installation scheme 1

(For Scrubber and Ejector Application)

1) Close valves 'A' and 'B'
2) Open Valve 'D'
3) Fill priming through 'D' till over flow through 'C'
4) Start Pump and immediately open valve 'A'
5) Close Valve 'D'
6) Open Valve 'B' gradually for required flow.





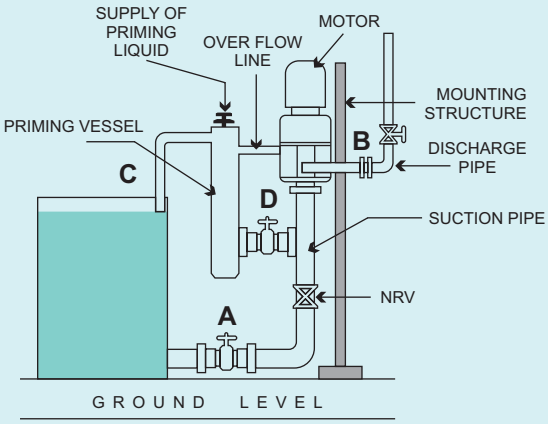
Iinstallation Scheme 2

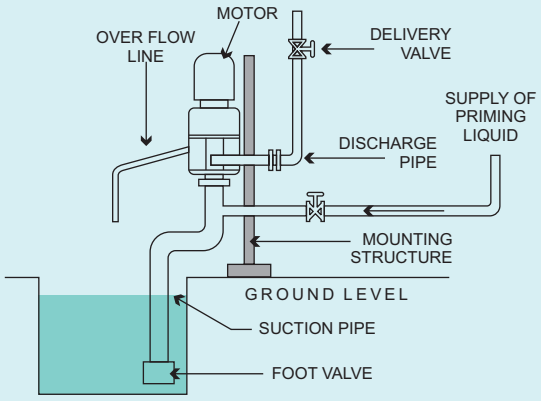
(with Priming Pot-1)

1) Close valves 'A' and 'B'
2) Fill Priming Vessel
3) Start Pump
4) Open valve 'A' gradually until full open
5) Open Valve 'B' gradually for required flow.

Installation Scheme 3 (with Priming Pot-2)

1) Close valves 'A' and 'B'
2) Open Valve 'D'
3) Fill priming vessel till over flow through 'C'
4) Start Pump and immediately open valve 'A'
5) Close Valve 'D'
6) Open Valve 'B' gradually to required flow.





Installation Scheme 4 (for ETP or Negative suction)

1) Pump to be mounted on the raised column above ground level as shown in the figure
2) Mandatorily install the Foot Valve in the suction line as shown in the figure.
3) Prime the pump by means of filling the liquid through priming line 'D' until the liquid comes from the overflow line.
4) Start Pump and immediately open the delivery valve

SWARAJ ENGINEERING

HOUSE OF INDUSTRIAL PUMPS

HO: VAPI
Plot no. 165/B/7, Near Tata Motors Service Station,
2nd Phase, GIDC Vapi 396195
Tel (O) : 0260-2424502 / 2424504 / 9978977607 Mobile : 9978977602
E: sales@swarajmetallicpumps.com Web: www.swarajmetallicpumps.com

Mfg. ANKLESHWAR :
Plot no. 1705, Near Crystal Chokdi, Behind J.P. Industries,
GIDC Ankleshwar 393002. Tel (O) : 02646-224038 / 9978977609
Mobile : 9426116205 / 9978977605
Email: sales@swarajpolypumps.com Web: www.swarajpolypumps.com