

Submersible Motor Pumps

Application

For pumping of clean, cold water, non corrosive and non abrasive to the pumpset material, irrigation, urban & rural drinking water supply, pressure boosting, air-conditioning systems, industrial plants, cooling water systems, fountains, sea water desalination works, mine dewatering etc.

Design

Submersible pumpset is a compact unit made up of a submersible pump & a submersible motor with shafts connected by a sleeve and operates beneath the surface of water. This maintenance-free pumpset is suspended vertically from raising main when installed.

Submersible Pumps are single or multistage centrifugal pumps with radial or mixed flow impellers. The casings of the radial flow impeller pumps are clamped together by flat steel hook bolts, whereas that of mixed flow impeller pumps by studs.

Between the pump & the motor is the suction casing. A non-return valve is in-built and fitted at the pump discharge end.

Submersible motors are water filled, water lubricated squirrel cage type. The axial thrust generated by the pump is absorbed by a thrust bearing fitted at the bottom of the motor. The diaphragm below the thrust bearing compensates the over-pressure which arises as a result of the thermal expansion of the water filled, when the temperature of the winding rises.

3 phase submersible motors are available up to 110 kW, 2 pole, and voltage 380 to 420 V, 50 Hz. Motors for other voltages & 60 Hz. can be supplied on request.

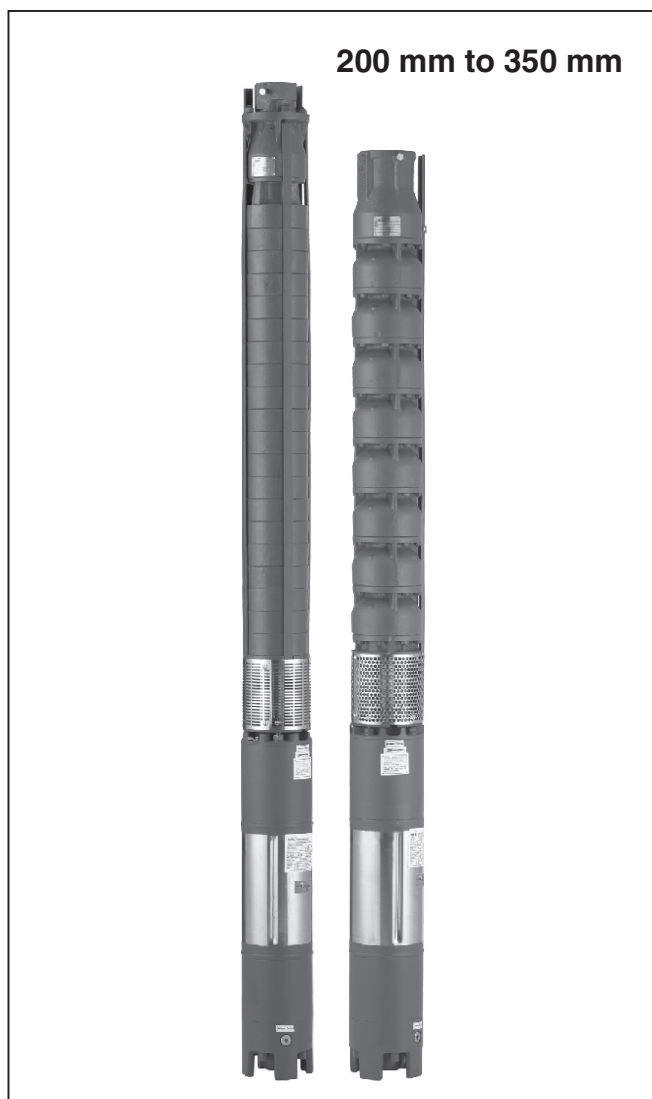
Bearings : The pump is provided with radial bearings. The motor has radial as well as axial thrust bearings. All the bearings are water lubricated and protected to a large degree against the ingress of sand of by suitable structural elements.

Shaft seal : The motor is sealed by radial seal rings to avoid mixing of well water and the fill water. Mechanical seals can be provided on request.

Discharge connection : Threaded non-return valve is fitted at discharge end of the pumpset having sizes form G3" to G8" (75 to 200 mm).

Operating data

Capacity	Up to 900 m ³ / hr.
Total head	Up to 300 mtrs.
Motor rating	Up to 110 kW
Speed	2900 rpm
Frequency	50 Hz
Supply voltage	Up to 420 volts



Designation

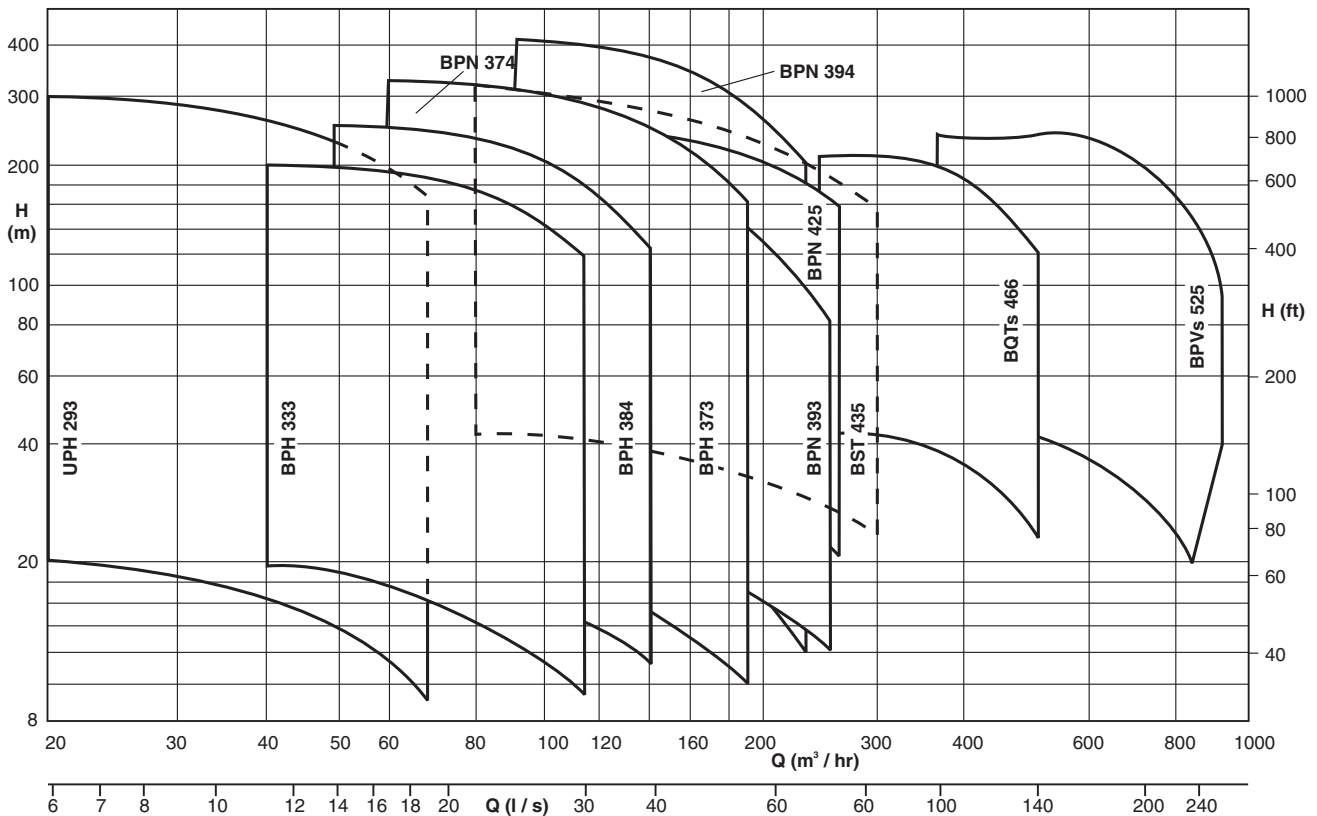
Pump

Type of Impeller (U= Radial flow) (B= Mixed flow)	U
Complementary letter	P
Min. borehole dia. in inches (H= 8", N= 10", T= 12", V=14")	H
Hydraulic reference no.	293 / 10
No. of stages	10

Motor

Min. bore hole dia. in inches	H
Motor ref. no.	B
Construction variant	C
Power in HP	20
No. of phases	3

Family Curves : 50 Hz - 2900 rpm



Material of construction

Radial flow pump

Part	Description	Material
106	Suction casing	C.I.
108	Stage casing	C.I.
143	Suction strainer	M.S. Gal.
171	Diffuser	Bronze**
211	Pump shaft	Cr.St.
232	Impeller	Bronze
355	Discharge brg. body	C.I.
75-9	Valve body	C.I.
752	Valve seat	C.I.
756	Valve spring	Spr. St.
759	Valve dish	C.I.

Mix flow pump

Part	Description	Material
106	Suction casing	C.I.
112	Stage bowl	C.I.
143	Suction strainer	M.S. Gal
211	Pump shaft	Cr.St.
232	Impeller	Bronze
502	Wearing ring	Bronze
75-9	Valve body	C.I.
752	Valve seat	C.I.
756	Valve spring	Spr. Steel
759	Valve dish	C.I.

Motor : 200 mm

Part	Description	Material
145	Adaptor	C.I.
160	Cover	C.I.
271	Sand guard	Bronze
354	Thrust brg. housing	C.I.
382	Bearing body	C.I.
384	Thrust brg. plate	Carbon*
387	Thrust brg. segments	Cr. St.*
388	Counter th. brg. plate	Bronze
392	Brg. segment carrier	C.I.
421	Oil seal	St. / Rubber
545	Bearing bush	Bronze
81-59	Stator	Steel
818	Rotor	Steel
823	Diaphragm	Rubber
849	Coupling sleeve	Cr. St.
384	Thrust brg. plate	Bz. / FerroAsb.®
387	Thrust brg. segments	Bronze®

Motor : 250 mm

Part	Description	Material
145	Adaptor	C.I.
160	Cover	C.I.
271	Sand guard	Bronze
354	Thrust brg. housing	C.I.
382	Bearing body	C.I.
384	Thrust brg. plate	Bz. / Ferro Asb.
387	Thrust brg. segments	Bronze
388	Counter th. brg. plate	Bronze
392	Brg. segment carrier	C.I.
421	Oil seal	St. / Rubber
545	Bearing bush	Bronze
81-59	Stator	Steel
818	Rotor	Steel
823	Diaphragm	Rubber
849	Coupling sleeve	Cr. St.

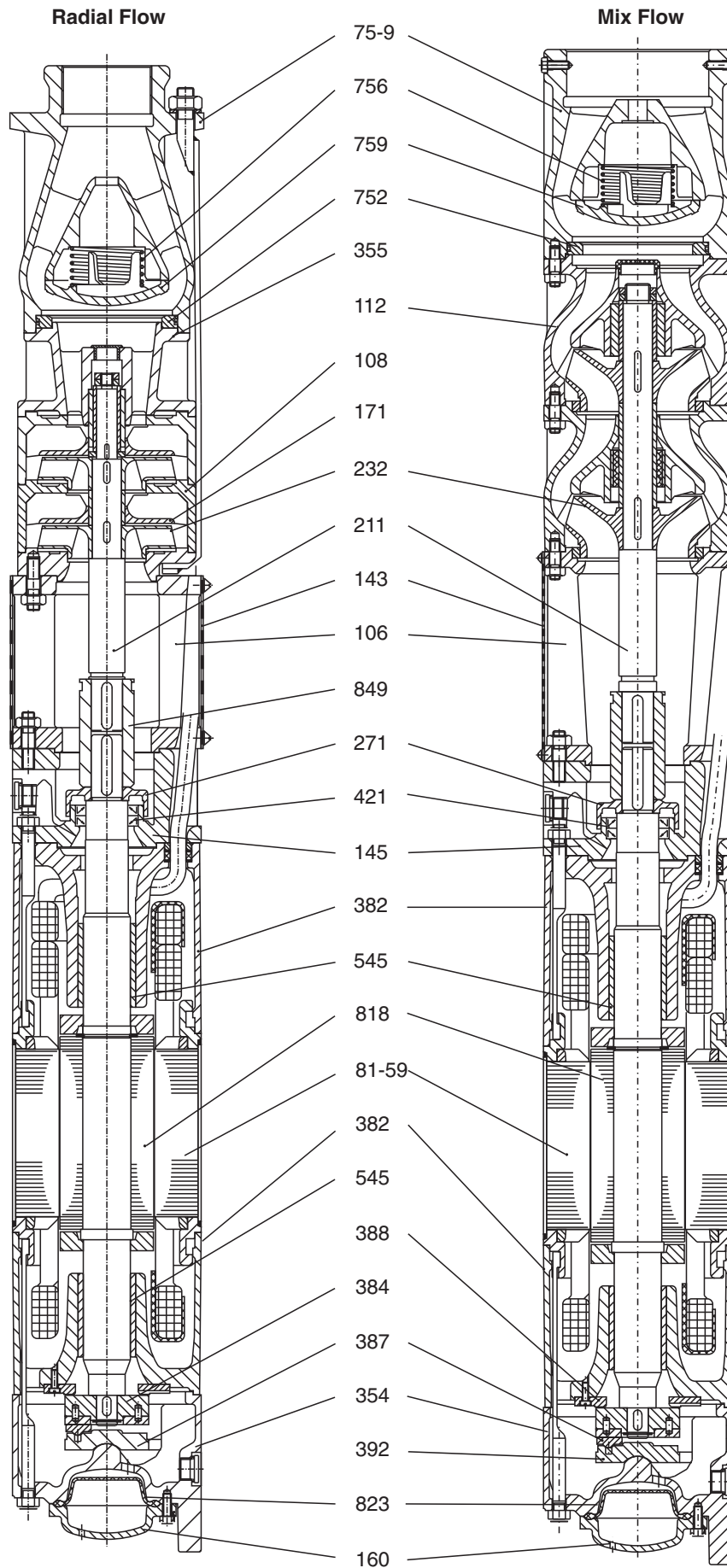
Note : For motors of 250 mm upto 85 HP the oil seal is in the pump. Above 85 HP it is in the motor.

** UPHA - Integral C.I. Diffuser

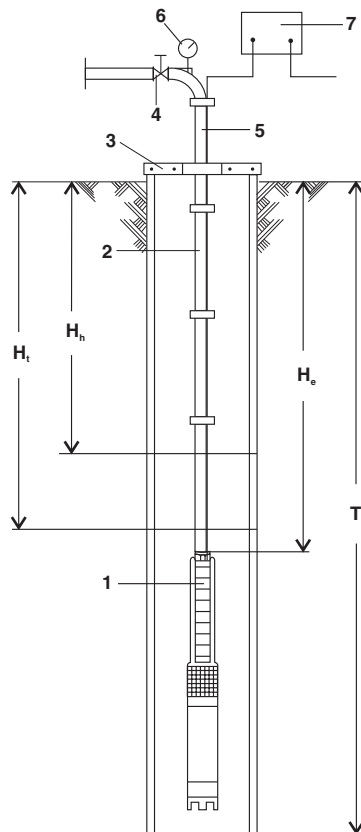
* Up to 41 HP

@ Above 41 HP

Sectional drawing & list of components



Deep Well Installation



- 1 Submersible pumpset
- 2 Riser pipe
- 3 Support clamps
- 4 Control Valve
- 5 Cable
- 6 Pressure gauge
- 7 Starter

Legend:

- T = Depth of well
 H_e = Installation depth
 H_h = Stationary water level
 H_l = Lowest water level

Note:

$H_e - H_l =$ at least 0.5m

It must be ensured that the unit is freely suspended from the riser pipe and does not touch the bottom of the sump !