

Performance Tests

All the units made by INDAR pass strict material and process quality controls established under the ISO-9001 and ISO-14001 quality systems.

Additionally, our pump sets are tested in compliance with ISO 9906 grade II before dispatch; grade I testing also available upon request, as well as witnessed load tests with Clients or Third Parties.

Currently the capacity of the 6 pits in INDAR's hydraulic lab allows performance tests up to 7800 m³/h, 1000 m and 1600 HP.

Motors are tested according to IEC 60034 or BS 4999 standards. Other standards are also possible under request.



Ranges & Materials of Construction



Poles	Flows (m ³ /h)	Heads (m)
2	36 - 720	20 - 670
4	300 - 2400	15 - 200
6	1500 - 4000	20 - 100
8	3600 - 7800	20 - 60

UGP hydraulic end	Standard	Stainless Steel
Pump body	GG-20 Cast Iron	AISI 316
Impellers	AISI 316	AISI 316
Pump shaft	AISI 416	AISI 316
Bearings	Rubber	Rubber
Spacer sleeves	AISI 416	AISI 316
Wear rings	Rubber or Bronze (acc. To type)	Rubber
Bolts and nuts	AISI 304	AISI 316

ML motor	Standard	Stainless Steel
Frame	St-52 steel	AISI 316
Bearing housing	GG-20 Cast Iron	AISI 316
Rotor shaft end	AISI 416	AISI 316
Radial bearings	Bronze + Graphite	Bronze + Graphite
Axial bearings	Graphite	Graphite
Seal	Mech. Seal CSI	Mech. Seal CSI
Bolts and nut	AISI 304	AISI 316
Cooling jacket	St-44	AISI 316

Other materials available under request.

Indar



PUMPS & MOTORS FOR CLEAN WATER



Indar

An **Ingeteam** brand



INDAR MÁQUINAS HIDRÁULICAS, S.L.

Bº Altamira - Pol. Txara s/n
Apartado 200 · 20200 BEASAIN
Gipuzkoa (España)

Tel. +34 943 028200 · Fax. +34 943 028203
indarmh@indar.ingeteam.com · www.indarpump.com

SPECIAL
CONFIGURATIONS

Introduction

INDAR MH designs, manufactures and supplies special configurations based on its wide range of submersible clean water multistage and centrifugal pumps and water filled submersible motors.

They are the result of the most advanced computational design processes, involving the use of CFD (Computational Fluid Dynamics) tools and FEM (Finite Elements Method) mechanical and electrical calculation software applications. All this, combined with a refined industrial technique, makes our pumping units robust and reliable.



Our wide range of pumps will meet extremely varied needs in terms of outputs up to 7800 m³/h and heads up to 670 m. Motors are currently available with power ratings up to 1600HP, from 2 to 8 poles and working voltages up to 6,6kV. As standard, the winding comes with class Y insulation and Pt-100 type thermal sensors in windings. They can be suitable for Variable Frequency Drive operation.

Special, customised units can be manufactured for out-of-standard duties, subject to previous individual and personalised study.

Special Configurations

■ "M" Configuration. Low Suction Submersible Sets

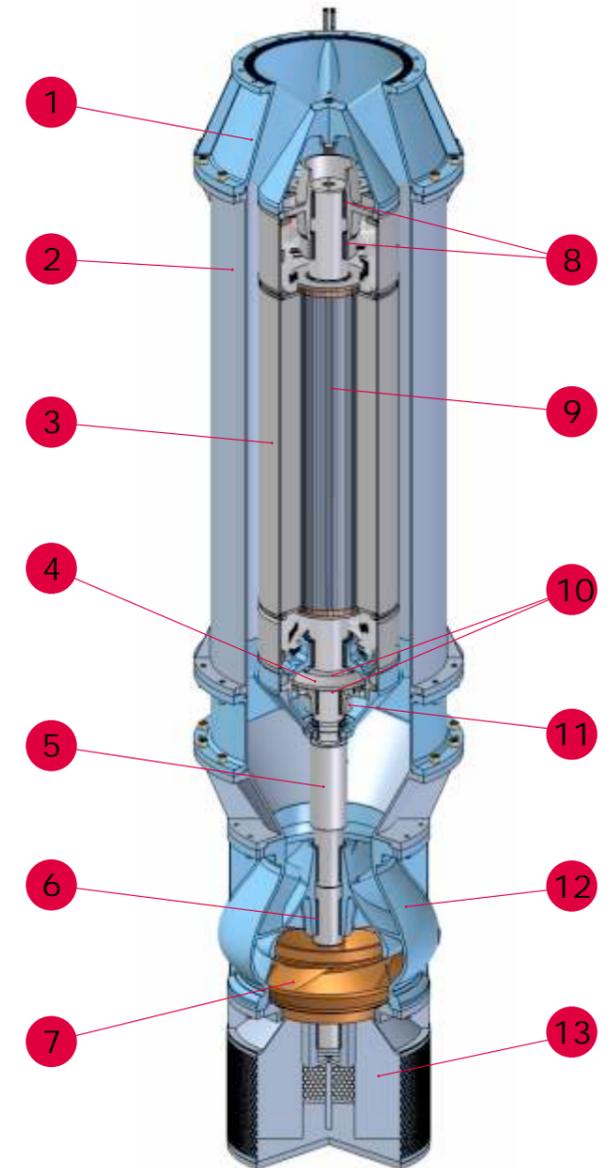
Standard submersible pump sets for operation in a vertical position come with the motor below and the pump above. However, there are situations where the dynamic water level is so low that water either will not reach the suction grille of a standard unit or will remain at a level too low to prevent cavitation.



For such cases of application, INDAR has developed submersible pump sets with the relative position of motor and pump inverted.

Their major advantage is that water suction takes place at the lower part of the set instead of at the middle (as occurs with standard equipment). The motor, being above, is cooled by means of a hermetic cooling hood, using discharged fluid. This configuration not only allows increasing submergence, it also permits maximum pumping of the film of water.

1. Outlet flange
2. Cooling jacket
3. Motor frame
4. Thrust bearing disc
5. Pump shaft
6. Radial pump bearing
7. Impeller
8. Radial motor bearings
9. Rotor shaft
10. Axial thrust bearings
11. Mechanical seal
12. Pump body
13. Suction body



■ "P" and "P-H" Booster configuration

Used for applications where no well is available for pumping water out of a dam, swimming pool or similar body of water. These types of pump sets serve to correct pressure and flow rate deficiencies in water pipelines. Mounted in a tubular jacket and serially or parallel mounted to the pipes of a water supply system. They can be installed in a vertical or horizontal position.

INDAR sets can work in a horizontal position, provided that the following points are given due consideration:

- The length of the motor must be within specific limits (rotor deflection); as a result, in some cases it will be necessary to opt for a higher-rated motor than as specified in catalogue.
- The number of stages in the pump is limited, due to deflection problems. In some cases, intermediate supports will have to be added.
- The pump must be at least one meter under water, to prevent surface air being sucked. This level of submergence also depends on turbulence, flow rate and cavitation conditions.

