



Compact and Energy Efficient

- Pump cover with smooth curve for elegant outlook
- Brass-made casing cover and impeller are resistance to friction and high temperature that allow smoother water stream
- Nitrogen Gas is adopted in accumulator for stable and optimum performance (*1)
- Rubber Bladder made of pliable material Butyl that is strong enough to produce a more stable pressure (*1)

Reliable and Safe

- Equipped with Thermal Protector (130°C) enhances security against burning by turnning off the pump directly as temperature exceeds the limit
- Double stator protection being resistant to abrasion reduce the danger of short circuit

Durable

- High accurate rotor with anti-rust layer allows operation up to 8,000 hours without stopping
- Stainless aluminum motor body and brass casing cover allow high durability
- Auto system with platium equipped switch can operate 1 million on/off test without performance reduced (*2)
- (*1) For Auto Series only, except A-130JTX
- (*2) For Auto Series only



With Auto Series water pump, flow of water can be controlled by the automatic switch associated with water tap operation, that provides greater convenience.





- Accumulator is a compression space containing Nitrogen Gas which has characteristics of elasticity. The gas content will never deplete that always stay stable and optimum.
- Rubber Bladder is made of Butyl that is stainless and anti-leakage. It functions as water separator with the Nitrogen compression room.
- Automatic Switch equipped with a protector made of fire-retardant material and a Platinum-made Switch that is long-lasting. It functions to break the stream if the water stream is closed.

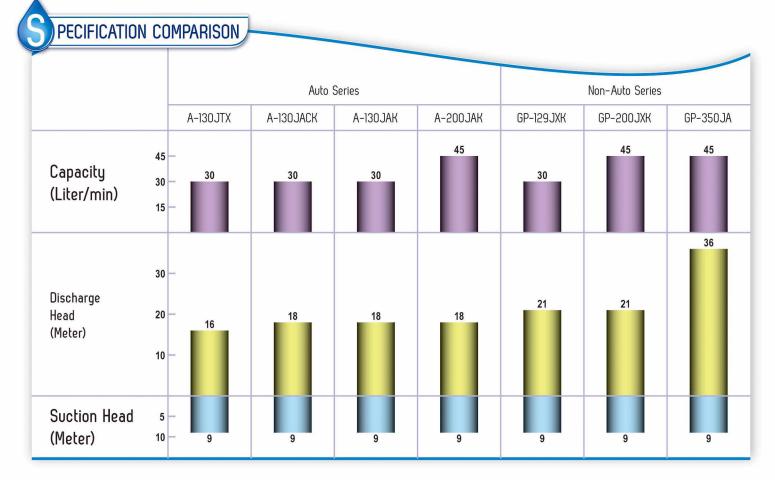
(*) Except A-130JTX





Compact-size and high performance of Non-auto Series allow easy installation and maintenance in different applications.







To get the right pump for the job, following criteria should be determined

- 1) Required amount of water
- 2) Suction Head

The vertical distance from water level to the centerline of the pump

3) Discharge Head

The vertical distance from the centerline of the pump to final discharge outlet

- 4) Friction Loss
 - Resistance and loss of pressure due to the flow of water pass through the pipes and fittings within the pump system
- * Friction loss can be found from reference table for standard pipe supplies and manufacturer-provided charts for particular parts respectively
- 5) Total Dynamic Head

Suction Head + Discharge Head + Friction Loss

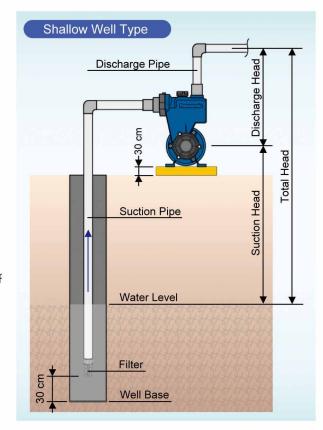
Once the values are determined, the pump can be sized according to Required Amount of Water and Total Dynamic Head from Pump Characteristic Chart.

Principle of Water Pump

The principal is same as a person drinks or sucks water where the pressure in the throat is lower than that in the glass, so the water could flow from high pressure region to lower.

In nature, normal pressure is 1 atmosphere or around 10 mH $_2$ 0. For smooth water flow, resistances should be minimized in pipe installation to reduce friction loss.







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Acutal colors may vary slightly from those shown.