



# EV SERIES 50 HZ

VERTICAL MULTISTAGE PUMPS





# Performance Curves and Technical Data

## ErP REGULATION

### Information related to energy performance of the pump, according to Reg. 547/2012 CE:

1. Minimum efficiency index:  $MEI \geq 0.7$ ;
2. The benchmark for most efficient water pumps is  $MEI \geq 0.70$ ;
3. Year of manufacture: see nameplate or the label in the Instruction manual;
4. Manufacturer's name or trade mark, commercial registration number and place of manufacture: see nameplate or the label in the Instruction manual;
5. Product's type and size identificatory: see nameplate or the label in the Instruction manual;
6. Hydraulic pump efficiency with trimmed impeller: see nameplate or the label in the Instruction manual;
7. Pump performance curves for the pump, including efficiency characteristics: see technical datasheet (<http://franklinwater.eu/products/>);
8. The efficiency of a pump with a trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter;
9. The operation of this water pump with variable duty points may be more efficient and economic when controlled, for example, by the use of a variable speed drive that matches the pump duty to the system;
10. Information relevant for disassembly, recycling or disposal at end-of-life: see the Instruction manual;
11. ---;
12. ---;
13. ---;
14. Information on benchmark efficiency is available at <http://europump.net/uploads/Fingerprints.pdf>;
15. Benchmark efficiency graph for  $MEI = 0.7$  and for  $MEI = 0.4$  available at: <http://europump.net/uploads/Fingerprints.pdf>;

### Information related to energy performance of the motor, according to Reg. 2019/1781 CE and modifications:

1. nominal efficiency ( $\eta$ ) at the full, 75 % and 50 % rated load and voltage (UN): see motor nameplate or the catalogue (<http://franklinwater.eu/products/>);
2. efficiency level: see motor nameplate or the catalogue;
3. the year of manufacture: see motor nameplate
4. manufacturer's name or trade mark, commercial registration number and place of manufacturer: see the motor nameplate;
5. product's model number: see motor nameplate or the catalogue (<http://franklinwater.eu/products/>);
6. number of poles of the motor: see motor nameplate or the catalogue (<http://franklinwater.eu/products/>);
7. the rated power output(s) or range of rated power output (kW): see motor nameplate or the catalogue (<http://franklinwater.eu/products/>);
8. the rated input frequency(s) of the motor (Hz): see motor nameplate or the catalogue (<http://franklinwater.eu/products/>);
9. the rated voltage(s) or range of rated voltage (V): see motor nameplate or the catalogue (<http://franklinwater.eu/products/>);
10. the rated speed(s) or range of rated speed (rpm): see motor nameplate or the catalogue (<http://franklinwater.eu/products/>);
11. information relevant for disassembly, recycling or disposal at end-of-life: see the motor Instruction manual;
12. information on the range of operating conditions for which the motor is specifically designed (<http://franklinwater.eu/products/>):
  - a. altitudes above sea-level: 0-1000 m;
  - b. ambient air temperatures, including for motors with air cooling: max. 40°C;
  - c. ---;
  - d. maximum operating temperature: max. 60°C;
  - e. ---.

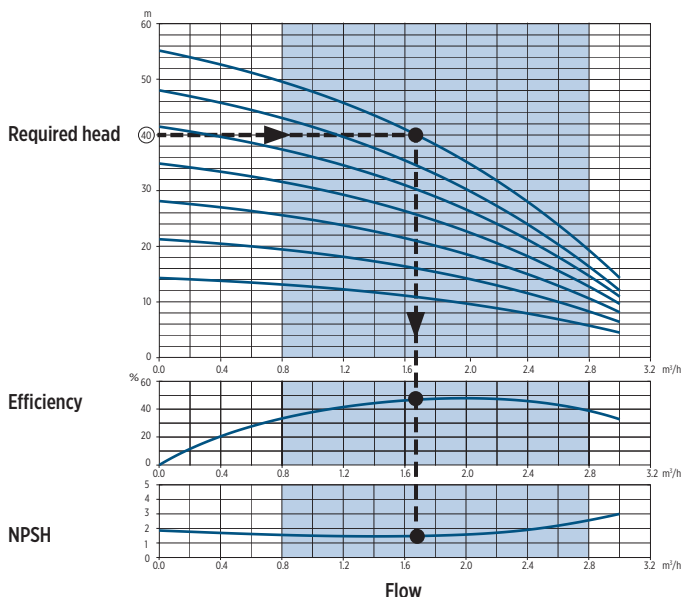
## PERFORMANCE SELECTION

This section describes **how to select the pump model that better suits your needs.**

The required information are:

- The required flow
- The input and output pressure
- The fluid features (density, viscosity, temperature, chemical aggressiveness and presence of abrasive particles)
- The connection type

Check if the pump piping type selected is able to withstand the maximum working pressure required (pump nominal pressure  $P_N \geq$  application nominal pressure).



The difference between the outlet required pressure and the input pressure allows to determine the head the pump must supply to the fluid. The duty point is determined crossing the values of flow and head.

For the best selection of multistage pump, proceed in this way:

1. Select the pump family according to the requested flow (close as much as possible to the best efficiency point).
2. Choose the number of stages nearest to the requested head.
3. Draw a vertical line from duty point to determine the absorbed power, the pump efficiency and the NPSH required.

If the viscosity of fluid is significantly different from clean water at ambient temperature, it's necessary to change the selection parameters (contact the manufacturer). Moreover, in case the density or viscosity are higher than water values, it will be necessary to consider a higher power sizing (contact the manufacturer).

NPSH check:

The available pump input NPSH value must be compared with the pump required value in order to avoid performance losses and wearing of the pump.

The maximum height of the pump from the liquid level (H) can be calculated with the following formula:

$$H = p_b \times 10.2 - NPSH - H_f - H_v - H_s$$

Where:

$p_b$ : Absolute barometric pressure or absolute pressure of the liquid on suction side [bar].

NPSH: Suction head at maximum duty flow rate [m]

$H_f$ : Pressure drop in the suction pipe at maximum flow rate [m]

$H_v$ : Vapour pressure [m] depending on the temperature of the liquid [m]

$H_s$ : Safety margin [m] (minimum 0.5)

If the calculated value is less than "0", the pump must be positioned below the liquid level by the value of H.

### Construction materials selection:

The mechanical seal and elastomers must be selected based on the chemical compatibility with the pumped fluid and the presence of abrasive particles.

In the same way, the pump materials (metal alloy) must be chosen according to the liquid aggressivity. The liquid aggressivity usually increases with the acidity or the basicity, the concentration of chlorides and salts dissolved, and the working temperature.

Use the table "Compatibility of fluids and materials" (page 18) for the right selection.







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10000007873 EN REV.02\_07-2021



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