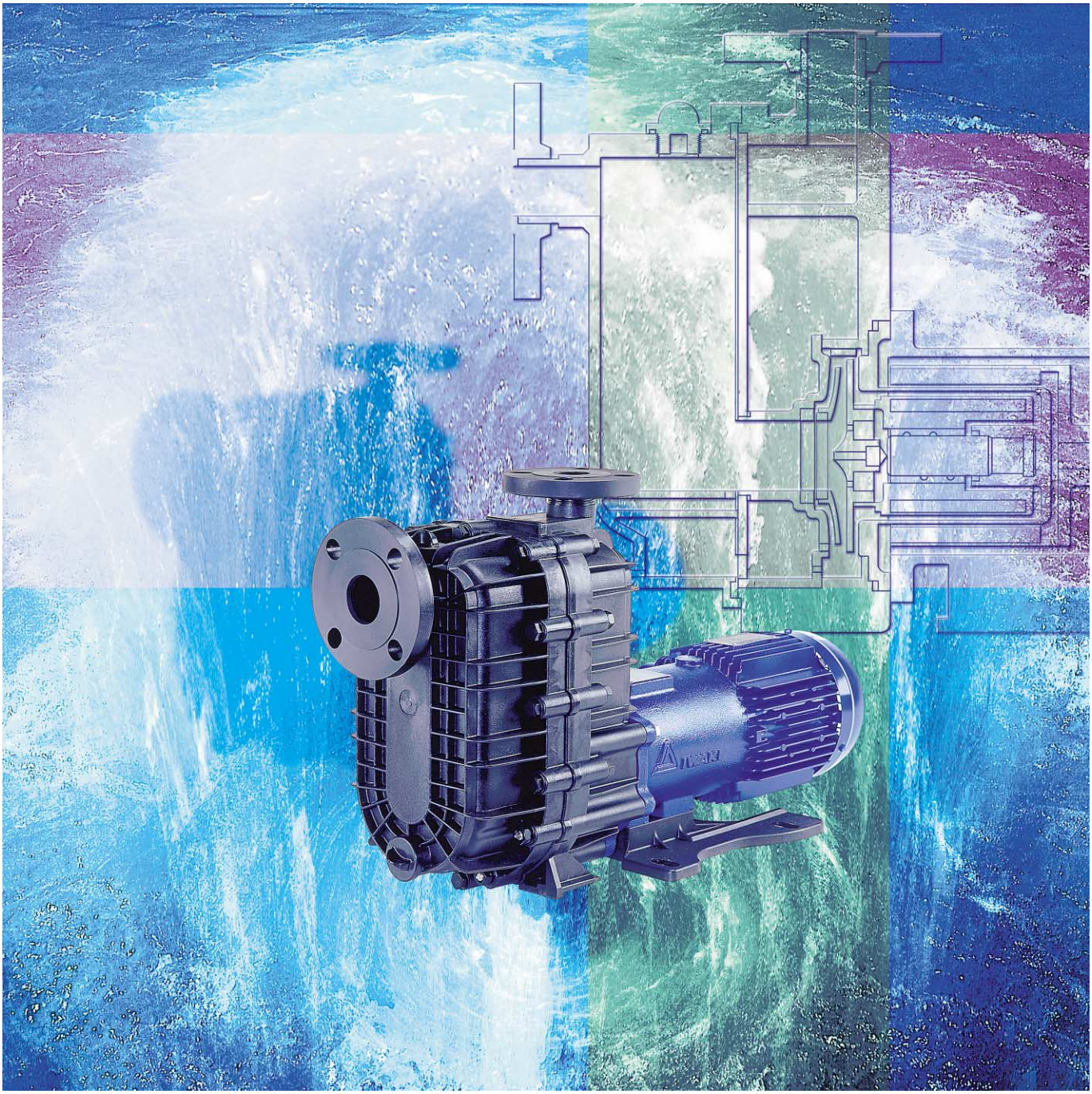
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SMD SERIES

Iwaki magnetic drive pumps

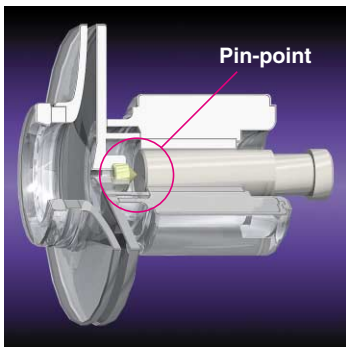


advanced pump technology



Self-priming magnetic drive pumps that are resistant to dry running.

The SMD series is horizontal type self-priming magnetic drive pumps made of reinforced plastic. Since these pumps are of the gas-liquid separation type and do not require the use of a chamber or self-priming valve, they provide high self-priming speeds and perform self-repriming efficiently. Their pumping sections incorporate our patented pin-point contact system, which has already gained an outstanding reputation through its use in the MDH series pumps. These pumps offer significantly improved durability during dry running operations when compared to conventional self-priming pumps.



Patents
Europe/Japan/Taiwan/U.S.A./Korea

• Gas-liquid separation type

The gas-liquid separation design ensures high self-priming speeds, and is capable of self-priming of 4m height within three minutes.

(Note: For self-priming capability, refer "Precautions on the selection and handling of pumps" on back side of this catalogue.)

• Pin-point contact system

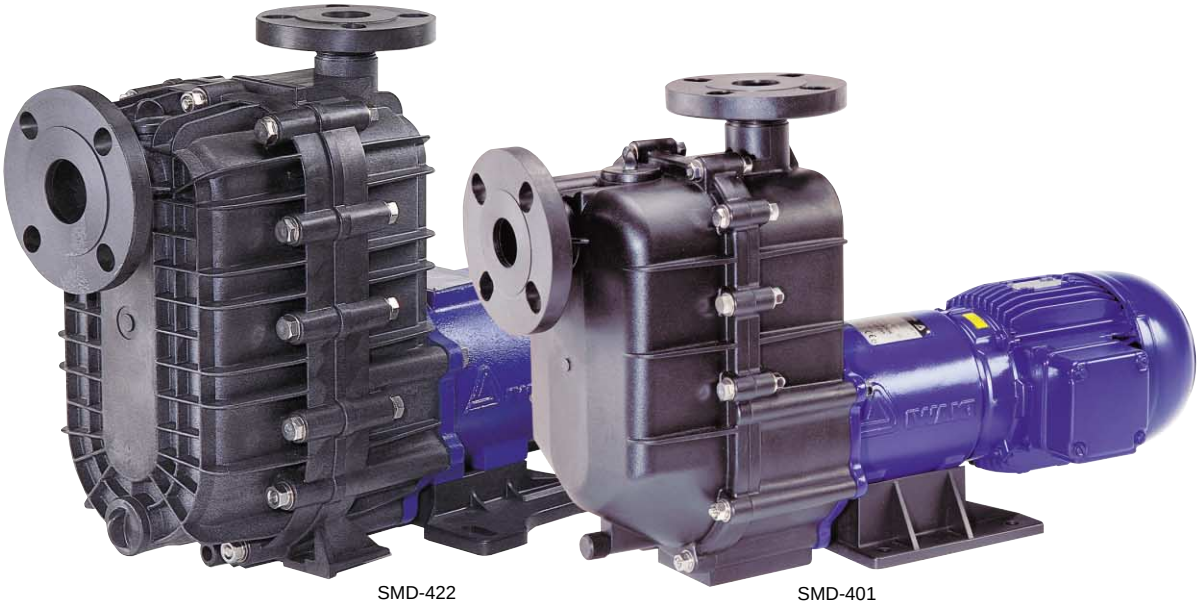
The pin-point contact system already used in the MDH series pumps has been incorporated. This is a construction that tolerates dry running operations, which can often be experienced with self-priming pumps.

• Chemical resistance

The casings, impeller assembly and magnet capsule of SMD pump are made of polypropylene and those of SMD-T pump are made of fluororesin. Other wet-end parts are made of highly corrosion resistant materials such as carbon, ceramic and the like. The pumps can therefore be used on many different types of chemicals.

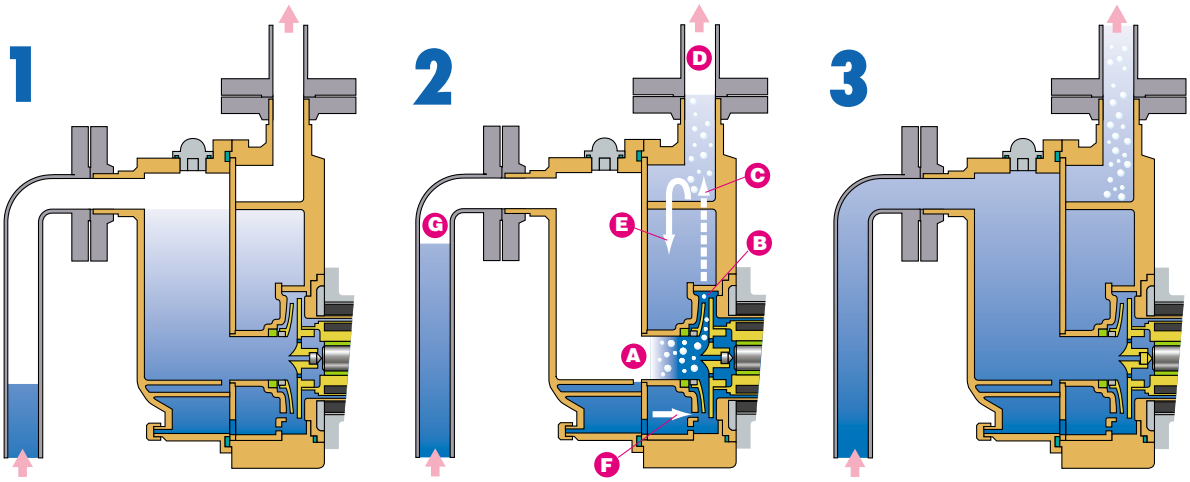
• Simple construction

The principal parts of this series are made in common with the field-proven MDH series. The small number of component parts increases efficiency of maintenance and parts management.



SMD-422 SMD-401

Principles of Self-Priming:



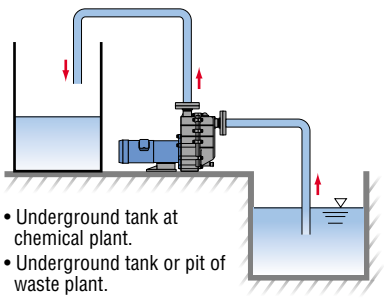
1 The pump is primed with the handled liquid.

2 When the operation is started, the liquid and the gas on the suction side are taken in through inside the front case **A** to be mixed together by the impeller. The mixture is discharged from pump chamber **B** and sent to inside rear case **C**, where the gas and the liquid are separated from each other. The liquid remains there and proceeds in direction **E**, while the gas is discharged through discharge port **D**. Then the liquid goes back to the pump chamber **B** through circulation hole **F** located below the rear case, where it is mixed again with the gas on the suction side. The process described above is repeated until the gas on suction side **G** is completely exhausted.

3 Once the gas has been completely removed and the pump is filled with the liquid, it works as an ordinary centrifugal pump. Even if the pump is stopped, it retains a sufficient quantity of liquid inside to perform self-priming again.

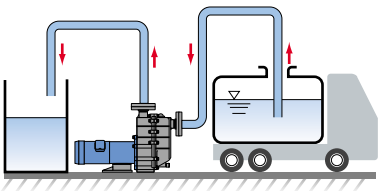
Examples of application

Pumping up from underground tank



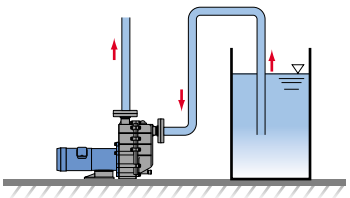
- Underground tank at chemical plant.
- Underground tank or pit of waste plant.

Pumping up and out from top of tank and tanker track



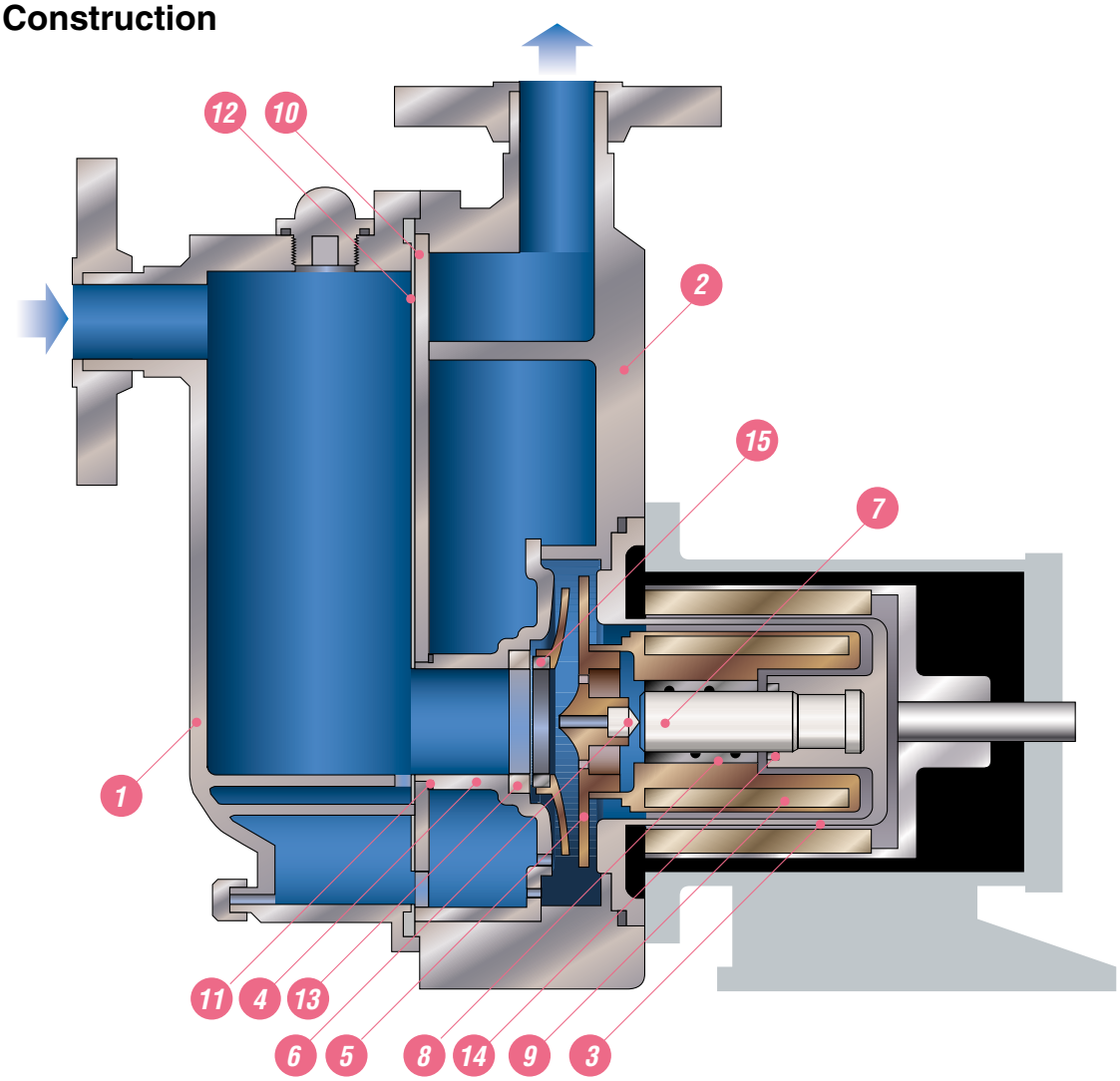
- Transferring etching and plating chemical from chemical bath.
- Sucking up chemical from truck.
- Pumping up from top of tank.

Transferring chemical from tank to tank



- Transferring from main tank to daily tank.
- Refilling chemical from drum to tank.

Construction



4 Inner case

This is a component corresponding to the front casing of an ordinary centrifugal pump, and comes with a circulation hole opened at the lower part. Since it is fitted into the rear case by insertion, it is quite easy to disassemble and reassemble.
(For SMD-401 only)

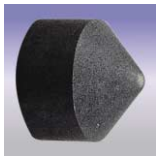
5 Impeller

High-efficiency closed impeller with the thrust cone fitted into the rear face.

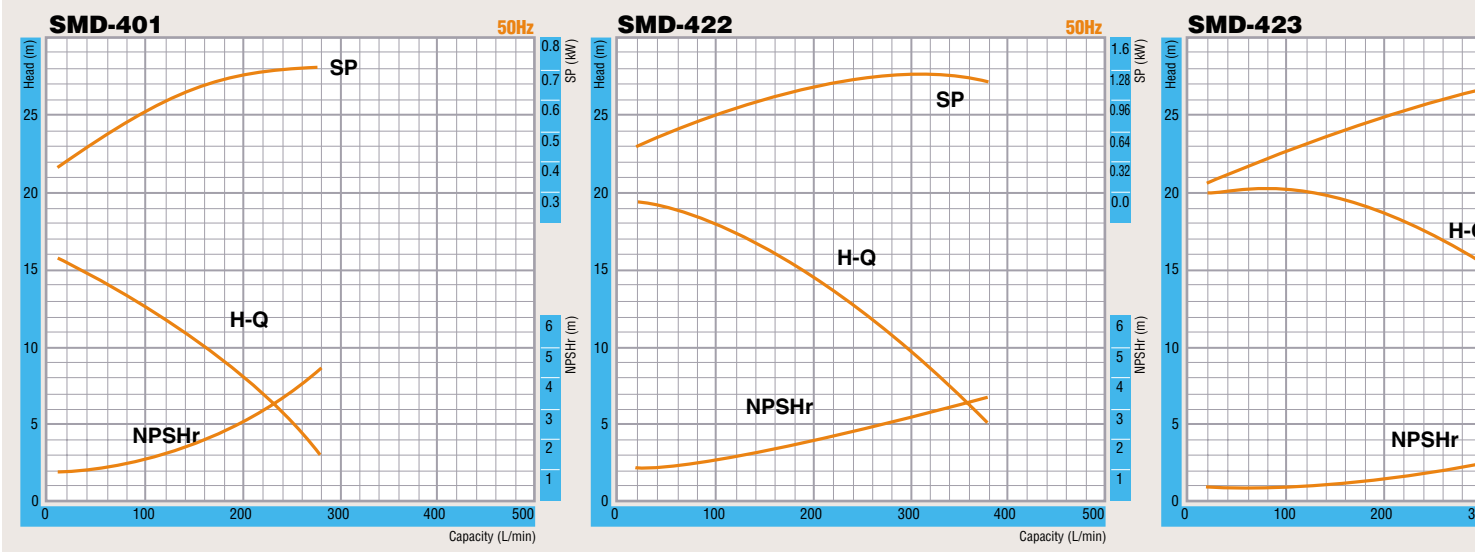


6 Impeller thrust

If the pump begins to operate under no load ie. dry run, the impeller thrust comes into contact with the spindle's front end face at the pin-point, thus preventing the rear of the bearing and the rear casing from touching each other.



Performance curves 2900min^{-1}



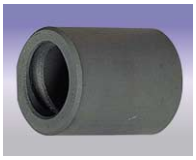
7 Spindle

Has a cantilever type construction integrally molded together with the rear casing. Elimination of the support boss from the suction port has resulted in an increased pumping efficiency.



8 Bearing

A single-piece bearing is press fitted and fixed. Bearing can be individually replaced.



9 Magnet capsule

A strong magnet, which is completely encapsulated in plastic, provides excellent corrosion resistance and torque.



Wet-end materials

Name of part \ Model	SMD-401, 422, 423-D		SMD-401-D	SMD-T422, 423-D
	CV	CE	FE	CFV
1 Front case 2 Rear case	GFRPP			CFRPVDF
3 Rear casing				CFRETFE
4 Inner case (401 only)				———
5 Impeller				CFRETFE
6 Impeller thrust	Carbon			Carbon
7 Spindle	Alumina ceramic		High purity alumina ceramic	High purity alumina ceramic
8 Bearing	Carbon			High density carbon
9 Magnet capsule	PP			CFRETFE
10 Plate	PP			PTFE
11 O ring 12 Gasket	FKM	EPDM		FKM
13 Liner ring	Alumina ceramic		High purity alumina ceramic	High purity alumina ceramic
14 Rear thrust	Alumina ceramic (422, 423 : High purity alumina caramic)			
15 Mouth ring	PTFE			PTFE

Specifications 50Hz

Model	SMD-401-D	SMD-422-D	SMD-423-D	SMD-T422-D	SMD-T423-D
Connection sizes Suction X Discharge	40 X 40	50 X 40			
Limit of specific gravity Note 1	1.0	1.1			
Minimum capacity L/min	10	20			
Maximum capacity L/min	280	380	470	370	470
Maximum head m	16	19.5	20	19.5	20
Motor output	0.75kW, 2P	1.5kW, 2P	2.2kW, 2P	1.5kW, 2P	2.2kW, 2P
Self-priming height limit	4 m				

• The self-priming height limit noted above refers to a liquid equivalent to fresh water at 20˚C. • Limit of specific gravity shows at the maximum flow. • Temperature range of handled liquid: 0 to 80˚C (The self-priming height limit decreases at high temperatures.)
• Note 1: When viscosity of liquid is 1mPa・S.

Pump identification

SMD-T - 422 CFV 5 - D
a b c d e

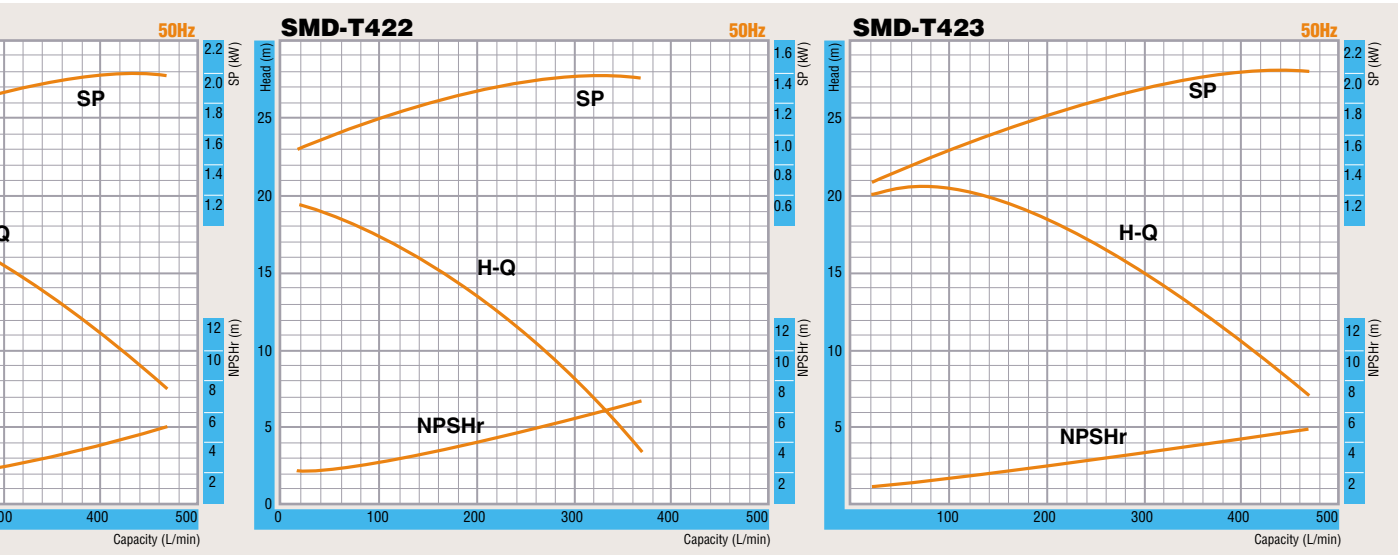
a Series symbol
SMD : GFRPP
SMD-T : Fluororesin (422,423 only)

b Pump size/Motor output
401 : 40 (Suction) X 40(Discharge) / 0.75kW
422 : 50 (Suction) X 40(Discharge) / 1.5kW
423 : 50 (Suction) X 40(Discharge) / 2.2kW

c Material of Bering/Spindle/O-ring
SMD CV : Carbon/Alumina ceramic/FKM
CE : Carbon/Alumina ceramic/EPDM
FE : Carbon/High purity alumina ceramic/EPDM (401 only)
SMD-T CFV : High density carbon/High purity alumina ceramic /FKM

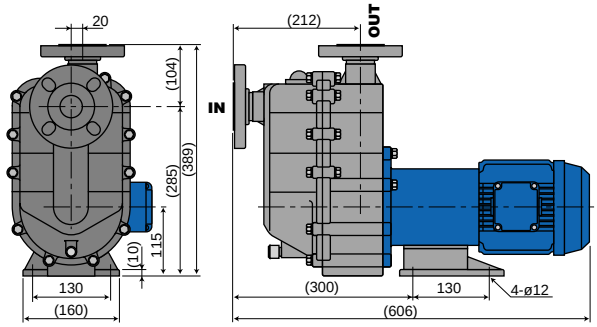
d Impeller
5 : For 50Hz

e Pinpoint contact system
D : Dry running operation for one hour is permissible

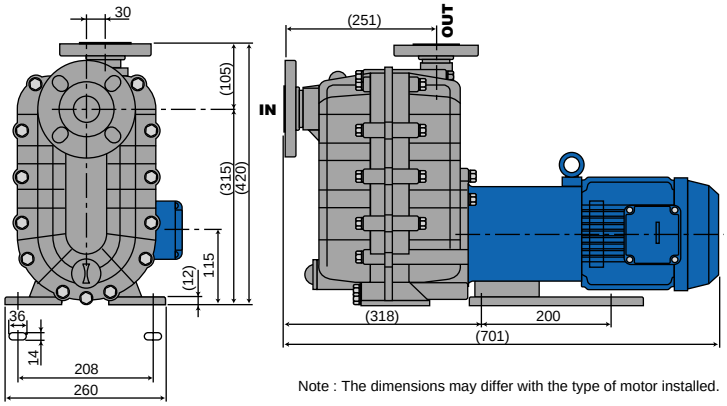


Dimensions in mm

SMD-401-D



SMD-422-D, T422-D, 423-D and T423-D



Note : The dimensions may differ with the type of motor installed.

Precautions on the selection of pumps

1.The performance curve shown in this catalogue represents the data on pressure feed operations using fresh water at 20˚C.

2.Magnetic drive pump can not be run continuously against a closed discharge valve, and a minimum flow rate (401:10L/min, 422/423:20L/min) should be maintained.

3.The self-priming performance of these pumps (self-priming of 4 m within 3 minutes) represents the data acquired in operation with fresh water at 20˚C and under the piping conditions illustrated (Sample installation). The self-priming performance varies with the liquid temperature, type of liquid, piping conditions, and other factors. To determine the maximum self-priming height of different specific gravity liquids refer to the following equation :

- Self-priming height of different specific gravity liquid = Self-priming height of fresh water (m) / Specific gravity of liquid

4.Try to ensure the following suction conditions are met to prevent cavitation:

- NPSHa ≧ NPSHr + $\frac{0.5\ \text{m}}{\text{Margin}}$

Self-priming considerations

1.The diameter of the piping on the suction side should be the same as that of the pumps inlet port (401:40mm, 422/423:50mm), and the length of the piping should be limited to less than 4.7m. A larger pipe diameter or longer piping could adversely affect the self-priming performance, or could even hinder the self-priming process itself.

2.In cases where the liquid level fluctuates, take the height from the lowest liquid level as the maximum self-priming height.

3.Always perform priming before first operation, and start the pump only after the pump chamber has been filled with the handled liquid.
- Priming water volume: Approx. 401:4.5L, 422/423:7.5L

4.To prevent early deterioration, avoid frequent start/stop of the pump.

