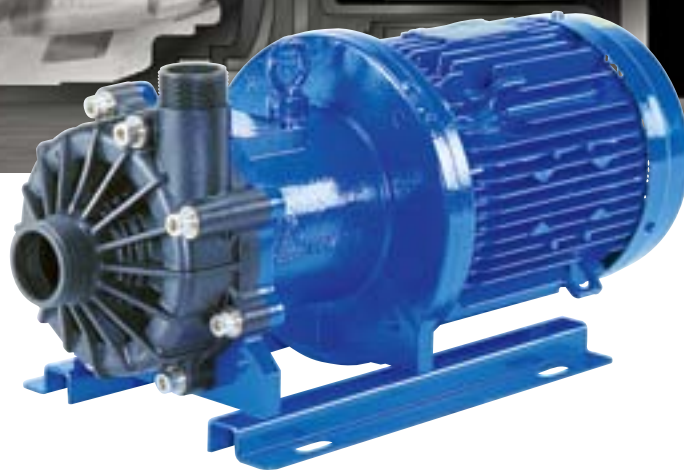


Magnetic drive pumps

## MDH series



# The patented pin point contact system gives dry running capabilities to the pump.

Iwaki's pump technology has produced an innovative magnetic drive pump which incorporates an extremely high resistance to dry running. By employing the newly developed pin point contact system, dry running which was unavailable with previous models is now a feature on the new magnetic drive pump series. The MDH/-F series, with its increased durability and reliability, will further demonstrate its usefulness and convenience as corrosion resistant pumps for the middle flow ranges.

## **Dry running is possible with a pin point contact system**

Up to one hour of continuous dry running is possible due to the pin point contact system which minimizes the heat generated by bearing surfaces during dry running.

Note: Dry running is possible with carbon bearing type (D type) only.

## **Excellent corrosion resistance**

The casings, impeller assembly and magnet capsule of MDH pump are made of polypropylene and those of MDH-F are made of fluororesin. Other wet-end parts are made of highly corrosion resistant materials such as carbon, ceramics and the like. The pumps can handle most types of chemicals including acids and alkalies.

## **Excellent durability**

The resin parts for MDH are reinforced with glass fiber and MDH-F is reinforced with carbon fiber for the purpose of enhancing durability. In addition, sufficient consideration was given to the mechanical strength and the safety of the spindle.

## **Simple structure**

The pump unit's simple structure consists of only a few parts. The assembly and disassembly procedures for maintenance purposes are very easy and simple.



MDH-F401

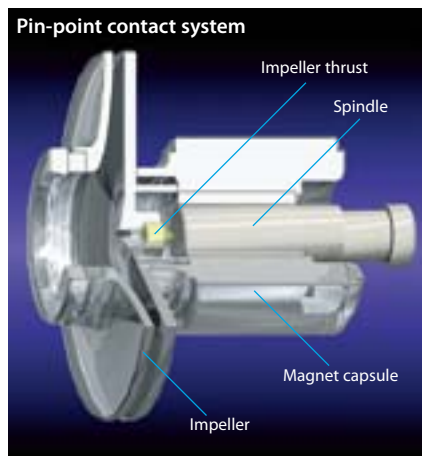
MDH-400



### Pin-point contact system

In a no-thrust condition due to dry run, only the impeller thrust surface and spindle fore edge come in contact. The magnet capsule never touches the rear casing.

This "pin point" contact between impeller and spindle thrust surfaces significantly minimizes friction, and therefore heat generation.



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



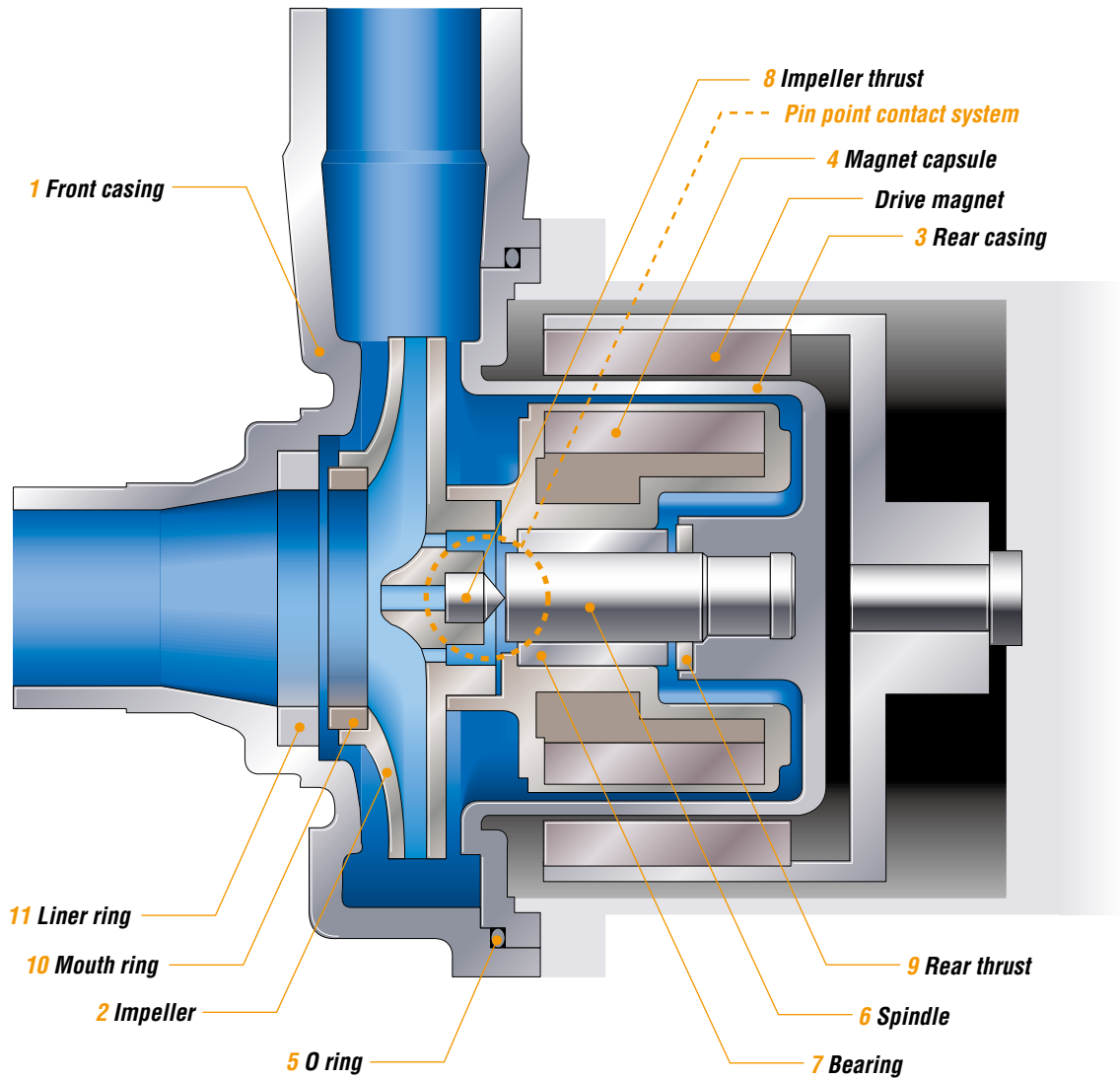
Actual pumps may differ from the photos.



MDH-425

MDH-F422

# Construction and materials



## Wet-end materials

Name of part	Model	MDH-400, 401, 422, 423, 425			MDH-F400, 401, 422, 423	
		CV-D	RV-E	FE-D	CFV-D	AAV-E
1 Front casing		GFRPP			CFRETFE	
2 Impeller						
3 Rear casing						
4 Magnet capsule						
5 O ring	Note 1	FKM		EPDM	FKM	
6 Spindle		Alumina ceramic		High purity alumina ceramic		High purity alumina ceramic
7 Bearing		Carbon	PTFE	Carbon	High density carbon	
8 Impeller thrust		Alumina ceramic		High purity alumina ceramic	High purity alumina ceramic	
9 Rear thrust		High purity alumina ceramic				
10 Mouth ring		PTFE			PTFE	
11 Liner ring		Alumina ceramic		High purity alumina ceramic		Alumina ceramic

Note 1. AFLAS® and EPDM O ring can be included upon request. For more details, inquire at your nearest Iwaki representative or dealer.

Note 2. The material for MDH-F400,401AA is alumina ceramic.

**Impeller thrust**

When dry running happens, the impeller thrust and the spindle front face come into contact.



Alumina ceramic High-purity Alumina ceramic

**Spindle**

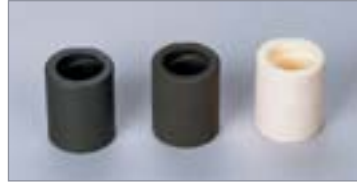
The spindle is integrally molded with the rear casing to form a cantilever structure. Without any supporting boss in the suction port, the operational efficiency of the pump is increased and the NPSHR is reduced.



High-purity Alumina ceramic Alumina ceramic

**Bearing**

The bearing is a one-piece and press-fit type.



PTFE Carbon High-purity Alumina ceramic

**Magnet capsule**

High-power magnets are totally encased in the resin to provide sufficient corrosion resistance and torque.

**Impeller**



For MDH For MDH-F

impeller is a closed type designed for maximum efficiency. Three different impeller sizes are designed as standard for MDH-F, which adds greater latitude in handling liquids of high specific gravity.



For MDH For MDH-F

The

**Pump identification**

**MDH-F 422 CFV T - C D**

**Pump size (Suction side X Discharge side) / Motor output**  
**400:** 40(G1 1/2) X 40(G1 1/2) / 0.4kW  
**401:** 40(G1 1/2) X 40(G1 1/2) / 0.75kW  
**422:** 50(G2) X 40(G1 1/2) / 1.5kW  
**423:** 50(G2) X 40(G1 1/2) / 2.2kW  
**425:** 50(G2) X 40(G1 1/2) / 3.7kW

**Series symbol**  
**MDH:** Casing material-GFRPP  
**MDH-F:** Casing material-CFRETFE

**Material of parts**  
**MDH:** (Bearing/Spindle/O ring)  
**CV:** Carbon/Alumina ceramic/FKM  
**RV:** PTFE/Alumina ceramic/FKM  
**FE:** Carbon/High purity alumina ceramic/EPDM  
**MDH-F:** (Bearing/Spindle/O ring)  
**CFV:** High-density carbon/High-purity alumina ceramic/FKM  
**AAV:** Alumina ceramic/Alumina ceramic/FKM (For 400 and 401 types)  
**:** High-purity alumina ceramic/High-purity alumina ceramic/FKM (For 422 and 423 types)

**Impeller symbol**  
**MDH**  
**5:** 50Hz, **6:** 60Hz  
**MDH-F**  
**T, V, W:** For 50Hz  
**X, Y, Z:** For 60Hz

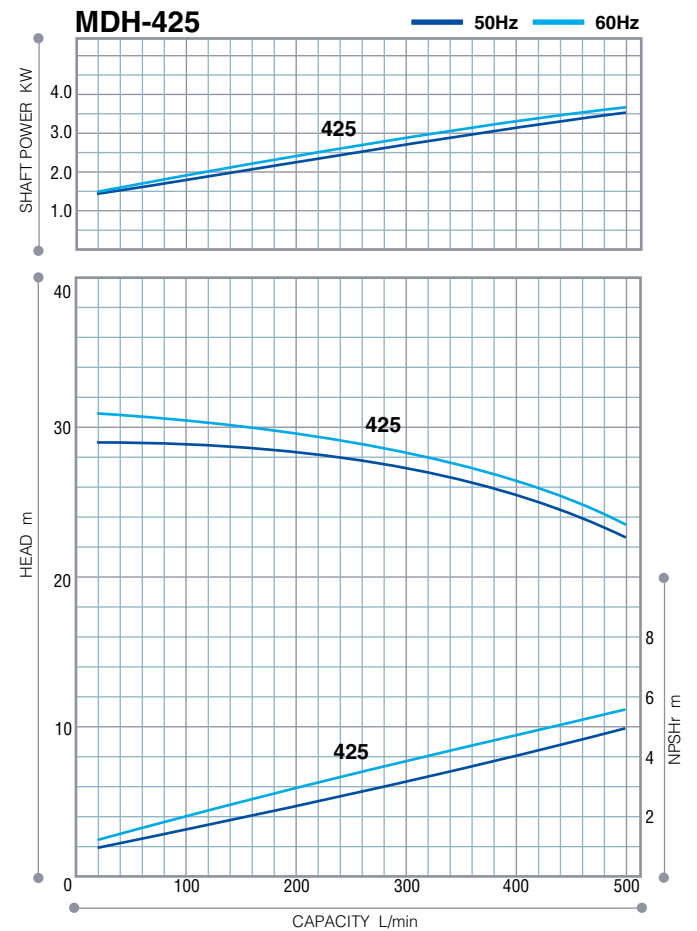
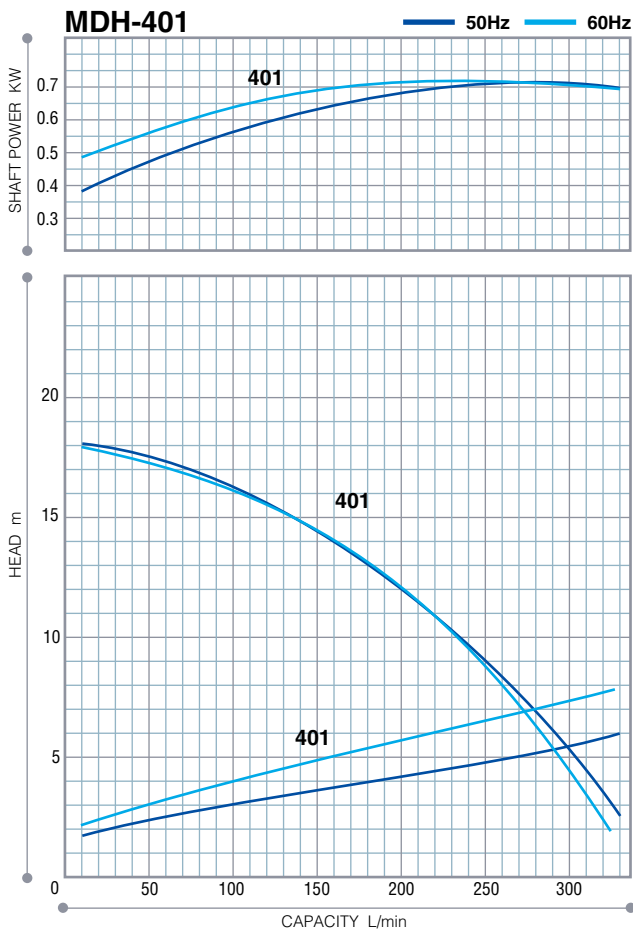
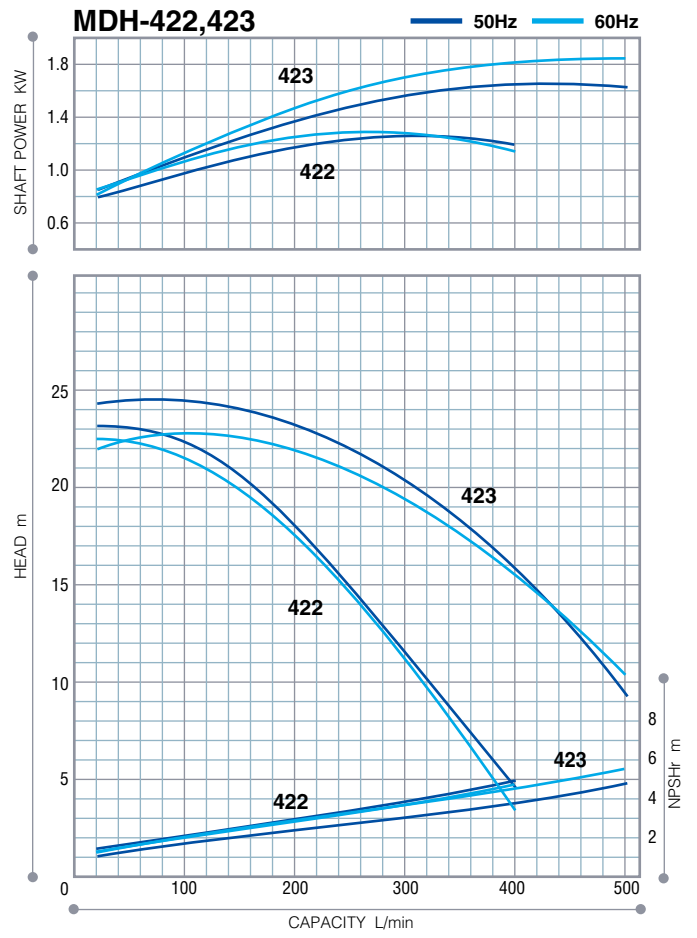
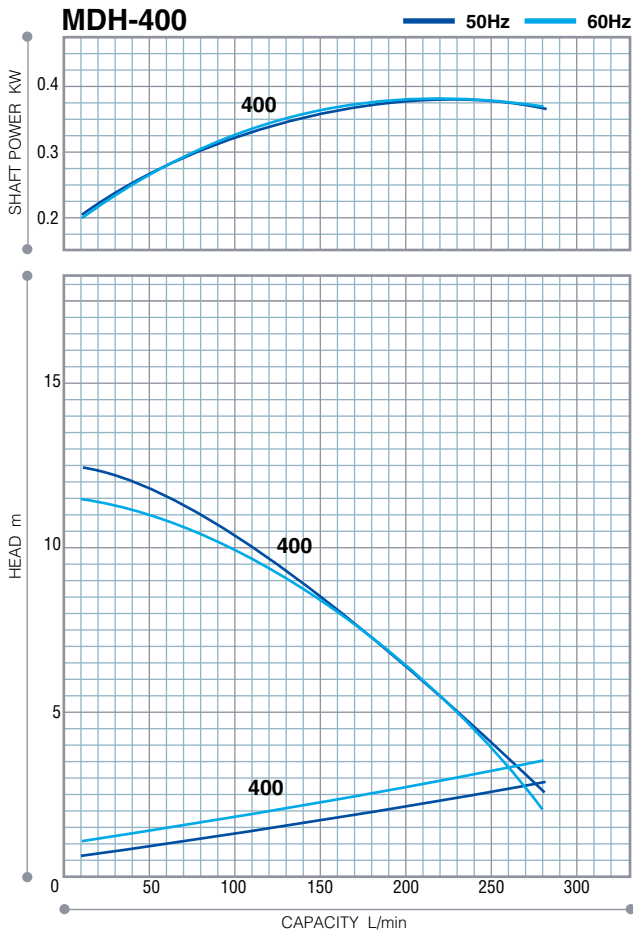
**Pin point contact system**  
**D:** Dry running operation for one hour is permissible. (MDH: CV type only, MDH-F: CFV type only)  
**E:** Dry run is not possible.  
**Type of motor**  
 No symbol: TEFC, indoor type  
**C:** TEFC, outdoor type  
**A:** Increased safety type (422 and 423 types do not have increased safety types)

**Specifications**

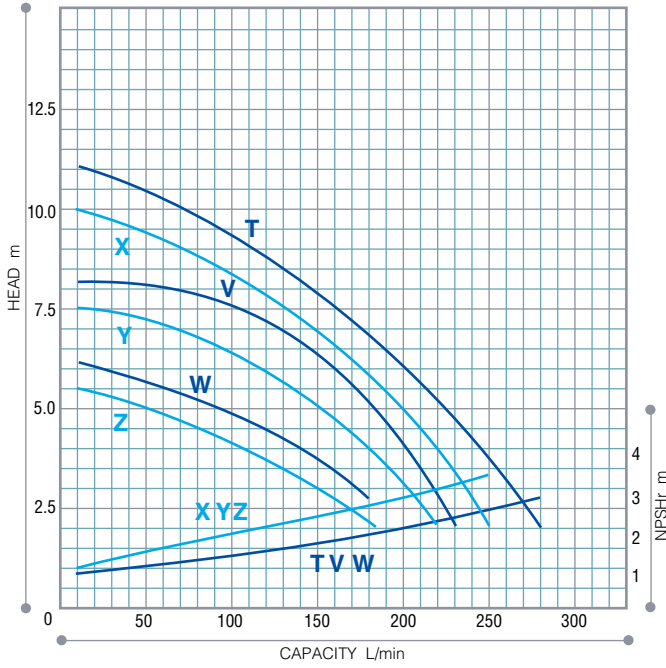
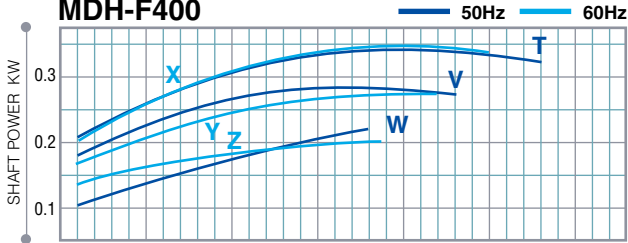
Model	Nominal bore size Suction X Discharge	Impeller size	Specific gravity limit	Min. capacity - Max. Head L/min - m		Standard capacity L/min - m		Max. capacity L/min		Motor output kW
				50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	
<b>MDH-400</b>	G 1 1/2 X G 1 1/2 (40 X 40)	5/6	1.0	10 - 12.5	10 - 11.5	150 - 8.5	150 - 8.5	280	280	0.4 2P
<b>MDH-401</b>			1.0	10 - 18.0	10 - 18.0	200 - 12.0	200 - 12.0	330	320	0.75 2P
<b>MDH-422</b>	G 2 X G 1 1/2 (50 X 40)		1.2	20 - 23.0	20 - 22.0	200 - 18.5	200 - 18.5	400	400	1.5 2P
<b>MDH-423</b>			1.2	20 - 24.0	20 - 22.5	300 - 20.5	300 - 19.0	500	500	2.2 2P
<b>MDH-425</b>			1.0	50 - 29.0	50 - 31.0	400 - 25.5	400 - 26.5	600	600	3.7 2P
<b>MDH-F400</b>	G 1 1/2 X G 1 1/2 (40 X 40)	T/X	1.2	10 - 11.0	10 - 10.0	150 - 8.0	150 - 7.0	280	250	0.4 2P
		V/Y	1.5	10 - 8.1	10 - 7.5	150 - 6.5	150 - 5.0	230	220	
		W/Z	2.0	10 - 6.3	10 - 5.5	150 - 4.0	150 - 3.0	210	185	
<b>MDH-F401</b>	G 1 1/2 X G 1 1/2 (40 X 40)	T/X	1.2	10 - 16.0	10 - 15.0	200 - 9.5	200 - 9.5	320	310	0.75 2P
		V/Y	1.5	10 - 13.2	10 - 12.0	200 - 8.0	200 - 6.5	280	280	
		W/Z	2.0	10 - 9.0	10 - 9.0	200 - 5.0	200 - 3.5	250	230	
<b>MDH-F422</b>	G 2 X G 1 1/2 (50 X 40)	T/X	1.2	20 - 23.0	20 - 23.0	200 - 17.5	200 - 17.0	400	360	1.5 2P
		V/Y	1.5	20 - 18.0	20 - 18.0	200 - 15.0	200 - 13.5	380	360	
		W/Z	2.0	20 - 12.5	20 - 12.5	200 - 10.0	200 - 9.5	370	340	
<b>MDH-F423</b>	G 2 X G 1 1/2 (50 X 40)	T/X	1.2	20 - 24.0	20 - 22.0	300 - 19.5	300 - 19.0	500	500	2.2 2P
		V/Y	1.5	20 - 19.0	20 - 18.0	300 - 15.5	300 - 14.5	500	500	
		W/Z	2.0	20 - 15.0	20 - 14.0	300 - 11.5	300 - 10.5	470	460	

• The specific gravity limit indicated above is the value at the max. shaft power level and the liquid viscosity of 1 mPa • s(1cP). • Liquid temperature range : 0 to 80°C • Slurry : Inquire of your nearest Iwaki representative or dealer. • Flange type is available on request. Nominal size(mm) is shown in ( ).

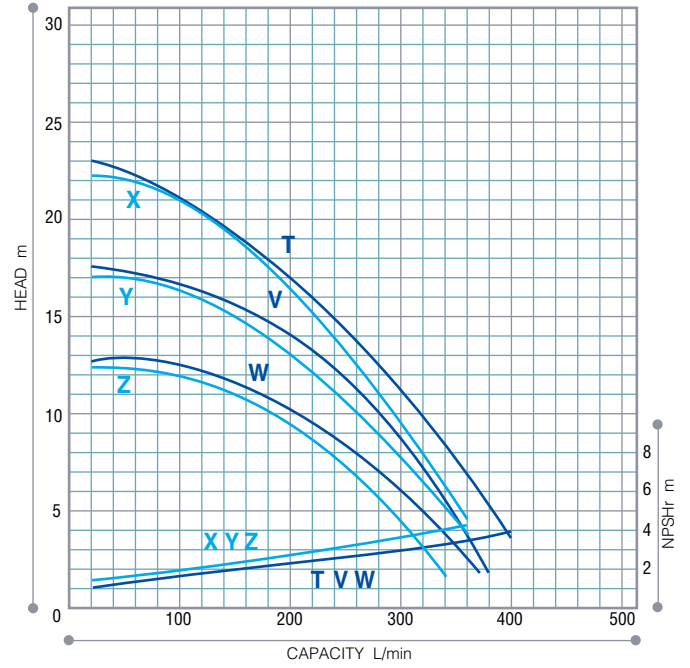
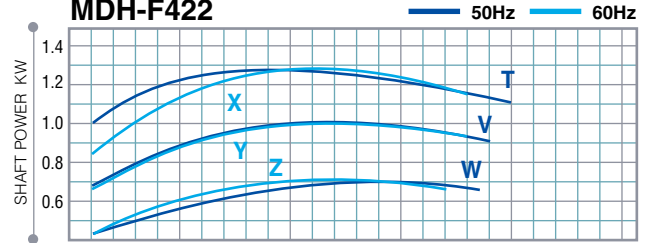
# Performance curves



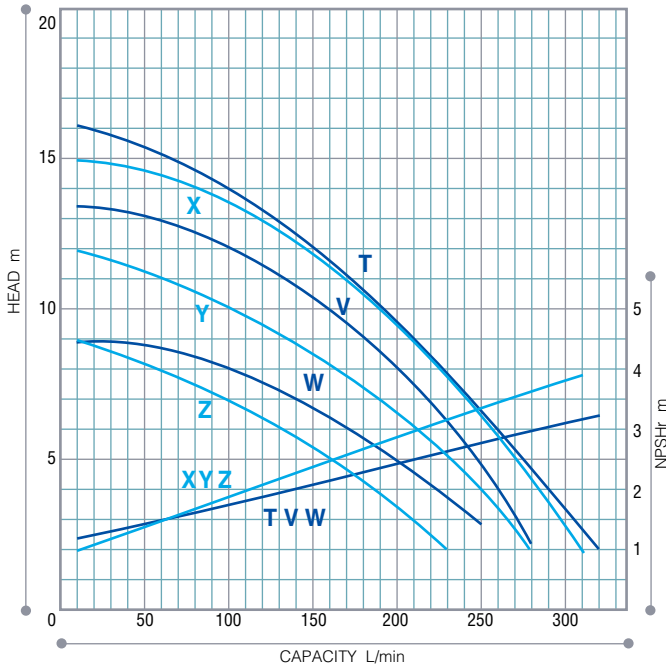
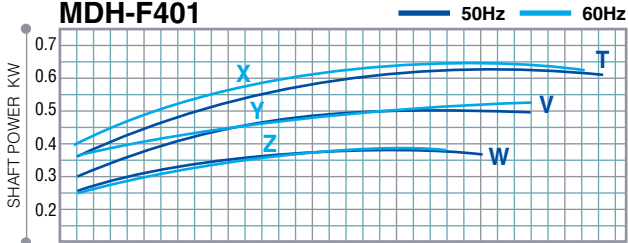
### MDH-F400



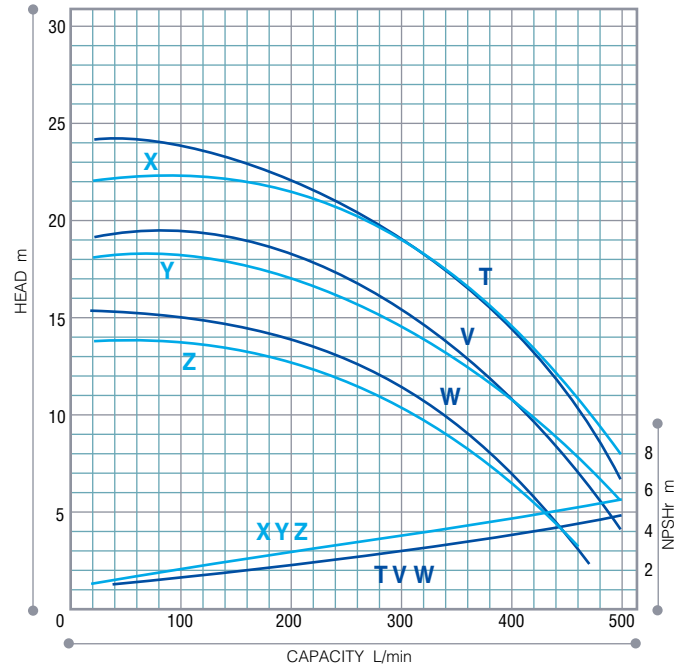
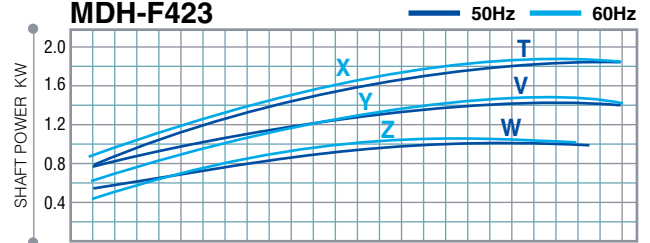
### MDH-F422



### MDH-F401

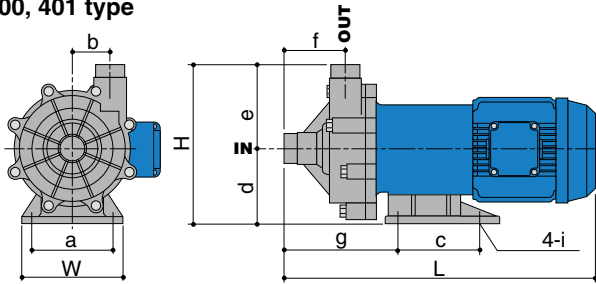


### MDH-F423



## Dimensions in mm

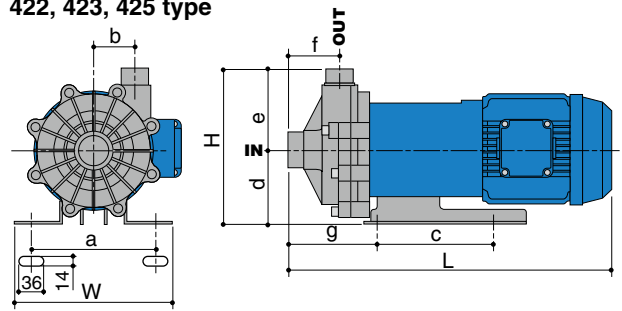
### 400, 401 type



L = The dimension with IWAKI original motor.

Model	W	H	L	a	b	c	d	e	f	g	i
MDH-F-400	140	210	388	110	51	98	95	115	81	136	O.D.12
MDH-F-401	160	248	482	130	57.5	130	115	133	97.5	178	O.D.12

### 422, 423, 425 type



L = The dimension with IWAKI original motor.

Model	W	H	L	a	b	c	d	e	f	g
MDH-F-422	260	249	533	208	65	200	115	134	83	148
MDH-F-423	260	249	533	208	65	200	115	134	83	148
MDH-425	260	269	601	230	65	261	135	134	83	150

Base for MDH-425 differs from the illustration above.

## Optional accessories

### Iwaki dry running protector DR series

Model DR is electric current sensing type dry running protector. It detects the decreased load current (lower limit) to stop the pump when it runs dry or runs with air sucking in. It can detect over-load, too.

#### Specification

Model	DR-10	DR-20
Motor power	200 to 240V	380 to 440V
Applied motor	0.4 to 7.5kW	0.75 to 15kW
Power	100V ±10% single phase	200 to 240V ±10% single phase
45-65Hz Input		3.5W
Detective current		0.5 to 32.0A
Current transformer(CT)		Built-in
Current range	Auto	4.4/17.6/32A
	Manual	2.2/4.4/8.8/11/17.6/26.4/32A
Ambient	Temperature: 0 to 40°C Humidity: RH40 to 85%	
Outer dimension	D80 X W153 X H122	



DR-20

- Current figure to be set is indicated on LCD.
- Both top/bottom figures can be set.  
Top: Over-load  
Bottom: Dry running, air sucking-in operation, operation with suction side closed
- Built-in current transformer
- DIN rail mounting

### Self-priming tank

A PVC self-priming tank is available as an option. Priming is not necessary once liquid is fed into the tank. Three sizes are available, based on the pump selection.



#### Specifications

Model	Applicable pumps	Connection port size INXOUT	Priming height	Suction pipe length
SC-400V	MDH-F-400	40AX40A	Max. 2.5m	Max. 3.8m
SC-401V	MDH-F-401			
SC-412V	MDH-F422/423 & MDH-425	50AX50A		

The self-priming height and suction pipe length differ with the piping conditions. Contact Iwaki or your dealer for details.

### MD-100R-FL type

The MD-100R-FL uses a flange connection with the small magnetic drive MD pump series. The pump design is similar to that of the MDH and MDH-F series. Since it is sealless, operation is free of leakage. The series can be used in a wide range of applications such as a system component or a stand alone unit.



- Max. capacity: 120/135L/min (50/60Hz)
- Max. Head: 8.5/11.9m (50/60Hz)
- Connection port: 25A X 25A (Suction X Discharge)
- Motor: Single phase AC100, 115, 200 or 220/240V  
Three phase AC200, 220/380 or 400/440V

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( )Country codes

**Caution for safety use:** Before use of pump, read instruction manual carefully to use the product correctly.  
Actual pumps may differ from the photos. Specifications and dimensions are subject to change without prior notice. For further details please contact us.

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