The Heart of Industry

IWAKI

Main material

CFRETFE

IWAKI SELF-PRIMING MAGNETIC DRIVE PUMPS

SMX-F

PATENT

JAPAN / U.S.A. / EU / CHINA / TAIWAN

Solutions for chemical handling applications

Chemically resistant self-priming magnetic drive pumps which can tolerate abnormal operation

The SMX-F is a horizontal self-priming magnetic drive pump made from fluororesin.
Our original self-radiation structure (Patented) enhances resistance to dry running, cavitation, and closed-discharge operation. In addition, the use of standard motors extends the range of application.

SMX-F543 SMX-F441 SMX-F221

Excellent corrosion resistance

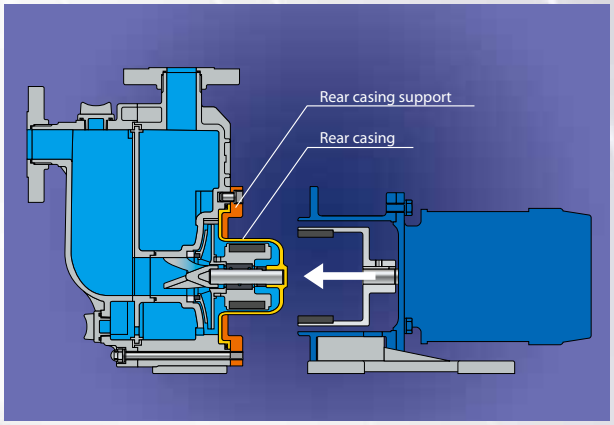
The casings, impeller assembly and magnet capsule are made of fluororesin(CFRETFE). Other wet-end parts are made of highly corrosion resistant materials such as carbon, ceramic and the like. The pumps can handle almost type of chemicals including strong acid/alkali.

Expanded versatility

The SMX-F has a modular structure to handle liquids with high specific gravities. Use of standard motors extends the range of liquid application.

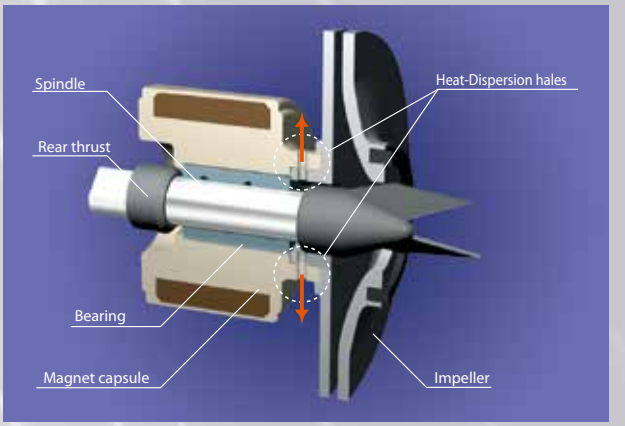
Easy maintenance

The pump wet end can be removed from the motor as a complete assembly without dismantling, thanks to an additional rear casing support. The pump wet end comprises the minimum number of parts for easy maintenance.



Enhanced durability under abnormal operation

Our original self-radiation structure (Patented) efficiently disperses bearing friction heat to protect the pump under abnormal operating conditions. In addition, our non-contact structure prevents contact between rear thrust face and bearing, to eliminate heat buildup during dry running.



Fast self-priming

The SMX-F requires no external self-priming chambers or valves. The gas-liquid separation design ensures fast self-priming. An exceptional self-priming duration of up to 4m in only 90 seconds is now possible.

Rear casing support
The pump wet end is easily removed from the motor by removal of 4 mounting bolts on the motor bracket. The rear casing support performs easy maintenance and draining of any residual liquid at other place.

Examples of application

Pumping up from underground tank

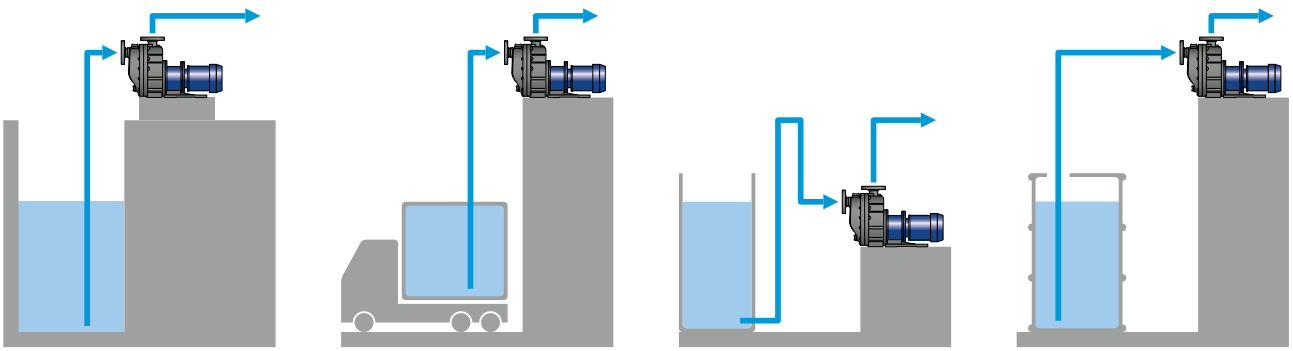
- Underground tank at chemical plant.
- Underground tank or pit of waste plant.

Pumping up and out from top of tank and tanker truck

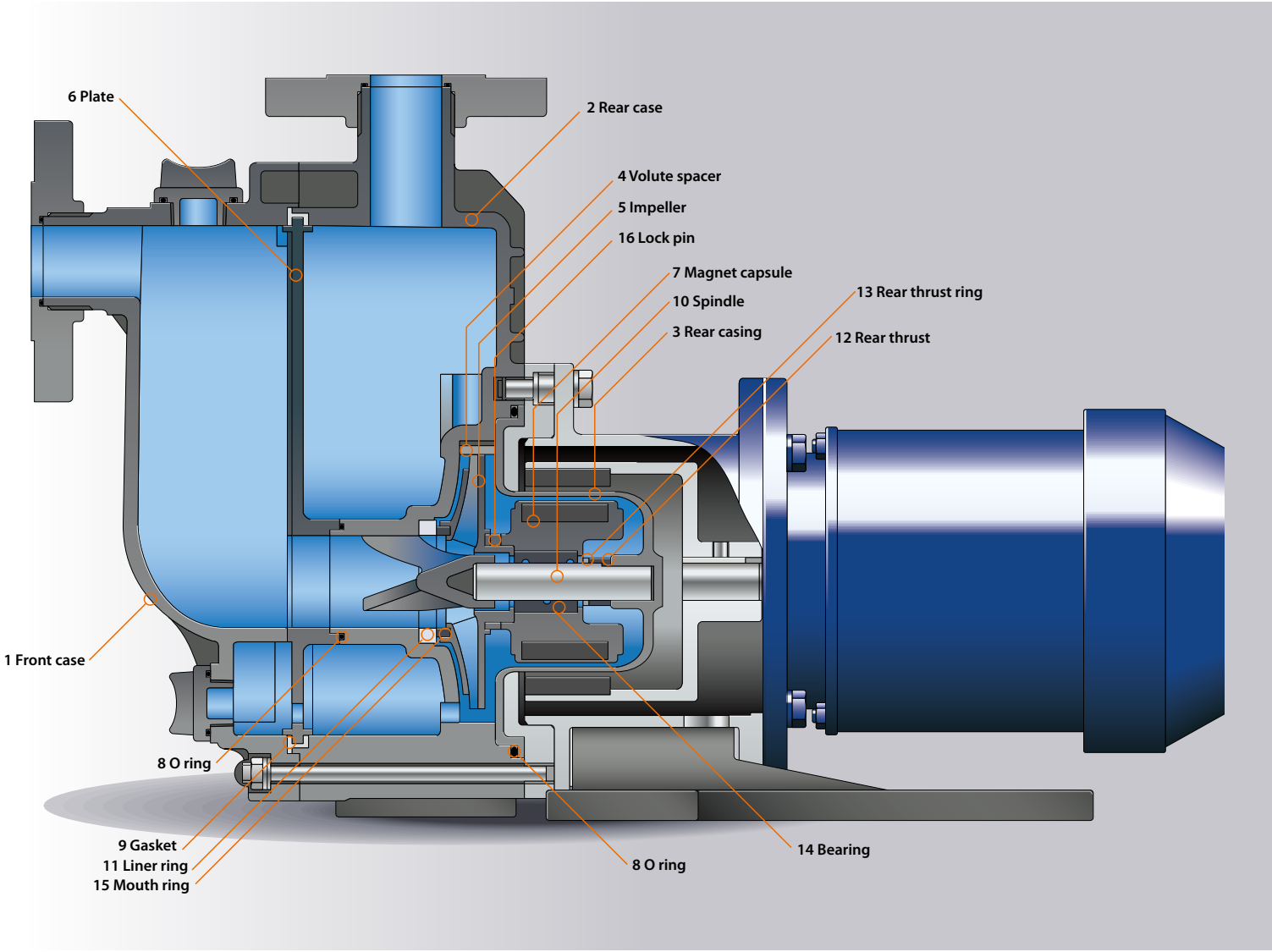
- Transferring etching and plating chemical from chemical bath.
- Sucking up chemical from truck.
- Pumping up from top of tank.

Transferring chemical from tank to tank

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



Reliability and performance are enhanced by our unique design

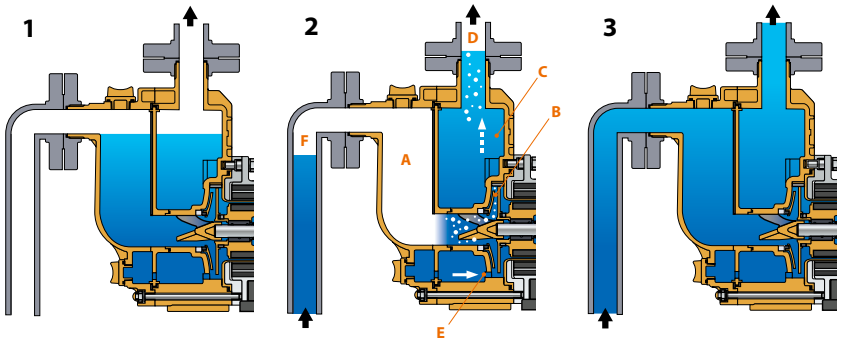


Wet-end materials

Model / Name of part		CF	RF	KK
1	Front case	CFRETFE		
2	Rear case			
3	Rear casing			
4	Volute spacer			
5	Impeller			
6	Plate			
7	Magnet capsule			
8	O ring	FKM/EPDM		
9	Gasket			
10	Spindle	High purity alumina ceramic		SiC
11	Liner ring			
12	Rear thrust SMX-F22,44	CFRETFE		
	Rear thrust SMX-F54	High purity alumina ceramic		SiC
13	Rear thrust ring Note:2	–	High purity alumina ceramic	–
14	Bearing	High density carbon	PTFE (With filler)	SiC
15	Mouth ring	PTFE (With filler)		
16	Lock pin Note:1	CFRETFE		

Note1: 54 type only
Note2: Exclusive for SMX-F22RF, 44RF

Principles of Self-Priming:



1 Prime the pump with liquid.

2 On starting, the pump will suck both gas and liquid into its inlet. This mixture moves through front case **A** to the front casing, where it is agitated by the impeller. The mixture is discharged through pump chamber **B** to rear case **C**, where gas and liquid separation then occurs. Gas is bled from the discharge port **D** while some liquid is retained. Liquid in the rear case **C** is fed back through circulation hole **E** to the front casing, where it is again mixed with entrained gas by the impeller. This recirculation & bleeding process continues until gas from the suction side **F** is completely expelled.

3 Once all gas is expelled, normal centrifugal pump operation is resumed. Sufficient liquid remains in the casing for subsequent self-priming once the pump is stopped.

Specifications

Model	Connection Suction X Discharge	Impeller	Cycle (Hz)	Min. capacity (L/min)	Standard specification (L/min-m)	Max. capacity (L/min)	Motor (kW 2p)	Resisting pressure limit (MPa)	Mass (kg)
SMX-F220	25A×25A	V	50	10	80 - 7.5	125	0.4	0.28	23
		Y	60		80 - 6.8	90			
SMX-F221		T	50		100 - 12.5	115	0.75		32.5
		V	50		80 - 7.5	125			
		X	60		100 - 12.0	115			
		Y	60		80 - 6.8	130			
SMX-F222		T	50		100 - 12.5	155	1.5		41.5
		X	60		100 - 12.0	160			
SMX-F441	40A×40A	T	50	10	100 - 13.5	135	0.75	0.33	34
		Y	60		150 - 10.6	220			
SMX-F442		T	50		150 - 11.8	280	1.5		43
		X	60		200 - 17.0	340			
		Y	60		150 - 10.6	280			
SMX-F443		X	60		200 - 17.0	340	2.2		47
SMX-F542	50A×40A	V	50	20	100 - 19.8	155	1.5	0.40	52
SMX-F543		T	50		250 - 16.0	440	2.2		56
		V	50		200 - 16.0	410			
		Z	60		250 - 18.0	420			
SMX-F545		T	50		250 - 16.0	440	3.7		74
		V	50		200 - 16.0	410			
		X	60		300 - 24.0	520			
		Y	60		300 - 21.0	500			
		Z	60		250 - 18.0	420			

- The self-priming height limit noted above refers to a liquid equivalent to fresh water at 20°C. The self-priming height limit varies with the liquid temperature and the type of liquid.
- Temperature range of handled liquid: 0 to 80°C (The self-priming height limit decreases at high temperatures.)
- Mass weight includes a outdoor motor.

Pump identification

SMX-F 22 0 CF V V C

Series symbol
SMX-F : CFRETFE type

Pump size (Suction x Discharge)
22 : 25A X 25A
44 : 40A X 40A
54 : 50A X 40A

Material of O-ring
V : FKM
E : EPDM

Motor specifications
No symbol : TEFC indoor
C : TEFC outdoor
A : Increased safety type, outdoor (Except SMX-F443)

Motor output
0 : 0.4kW
1 : 0.75kW
2 : 1.5kW
3 : 2.2kW
5 : 3.7kW

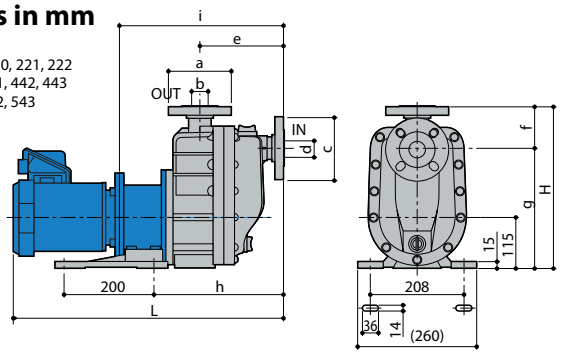
Materials of Bearing/Spindle/Liner ring
CF : High density carbon/High purity alumina ceramic/High purity alumina ceramic
RF : PTFE (with filler)/High purity alumina ceramic/High purity alumina ceramic
KK : SiC/SiC/SiC

Impeller
T : 50Hz
V : 50Hz
X : 60Hz
Y : 60Hz
Z : 60Hz

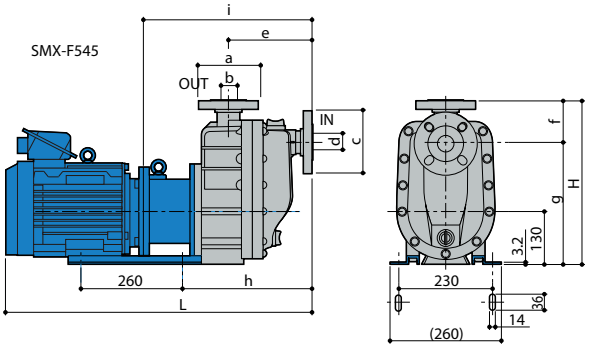
Note: All combination of impeller and motor size are not available. Please contact Iwaki for detail.

Dimensions in mm

SMX-F220, 221, 222
-441, 442, 443
-542, 543



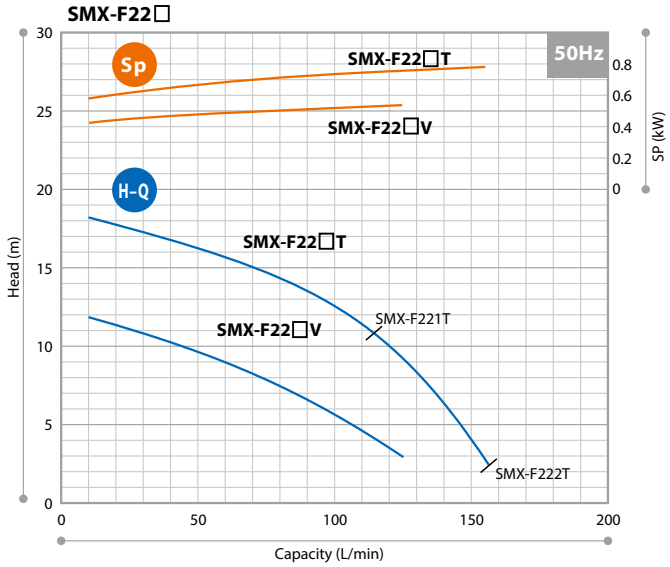
SMX-F545

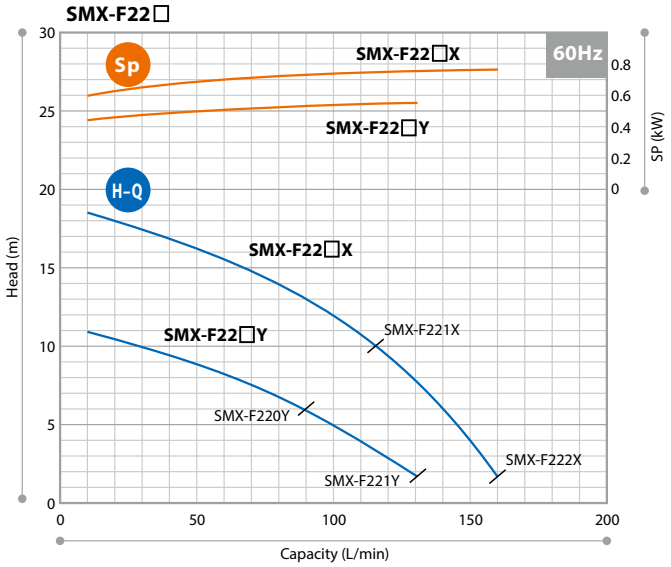


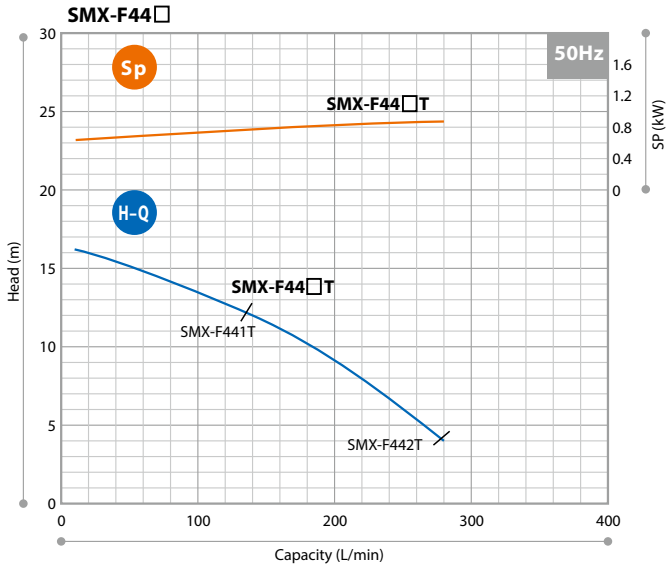
Model	(H)	(L)	a	b	c	d	(e)	(f)	g	(h)	(i)	j
SMX-F220	329	539	ø125	ø25	ø125	ø25	162	74	255	240	308	115
SMX-F221		556									320	
SMX-F222		605									332	
SMX-F441	364	602	ø140	ø40	ø140	ø40	188	93	271	285	366	115
SMX-F442		651									378	
SMX-F443		680										
SMX-F542	389	661	ø140	ø40	ø155	ø50	204	100	289	310	388	130
SMX-F543		690										
SMX-F545		734									408	

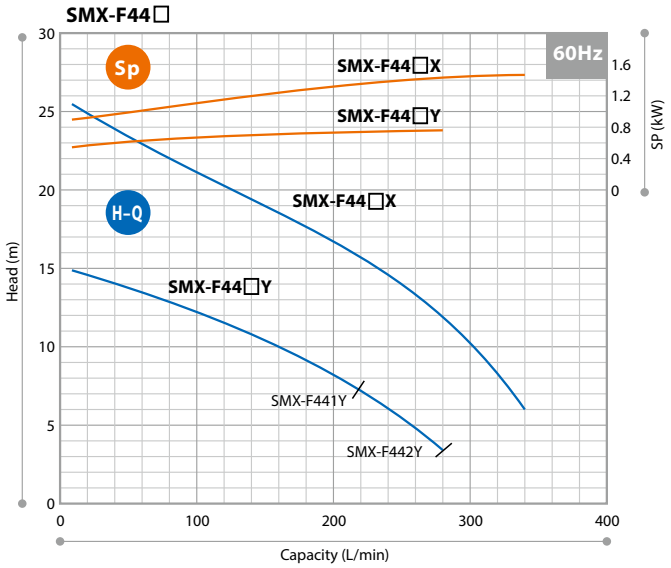
Note: The dimensions may differ with the type of motor installed.

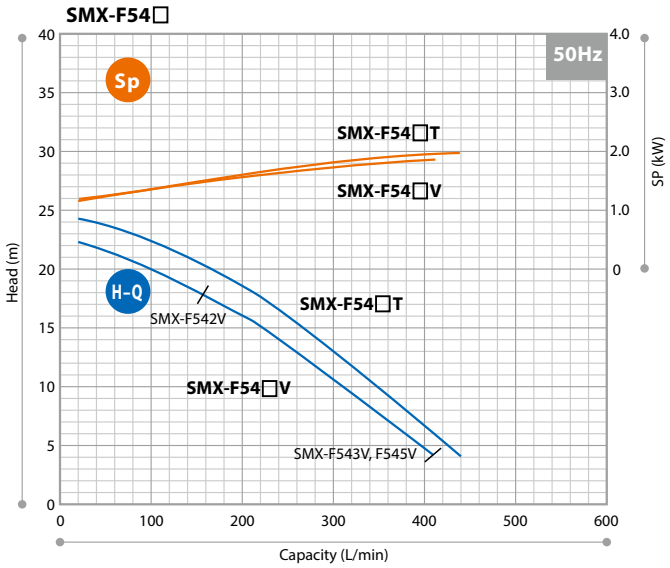
Performance curves

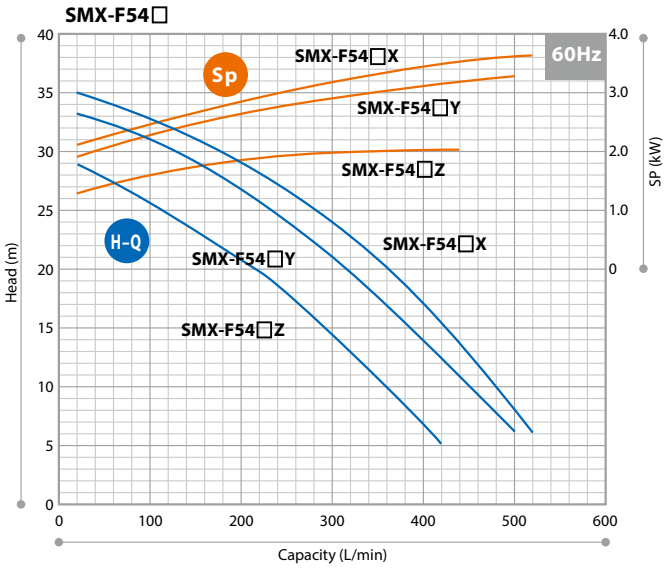












• The shaft power curves shown above are calculated by using our standard test motor. Contact us for detail.

Precautions on the selection of pumps

1.The performance curves on this catalogue are based on the operation with 20ºC clean water in flooded suction. Keep a margin (3% of the curves) when selecting the pump.

2.The magnetic pump cannot run continuously with a closed-discharge. Be sure to observe the minimum flow rate.
The minimum flow rate SMX-F22□: 10L/min
SMX-F44□: 10L/min
SMX-F54□: 20L/min

3.Select a pump model according to liquid specific gravity. Always keep 10% allowance to motor output.
Pump shaft power Sp x Specific gravity x 1.1
(margin) ≦ Motor output

4.The self-priming performance (4m in 90 seconds) is based on the operation with 20ºC clean water on the right piping condition. Self-priming performance varies with liquid temperature, characteristics and piping conditions. Obtain a rough guide of the highest possible self-priming height at each liquid specific gravity by the following formula.
The highest possible self-priming height[m] = Self-priming height with clean[m] / Liquid specific gravity

Self-priming considerations

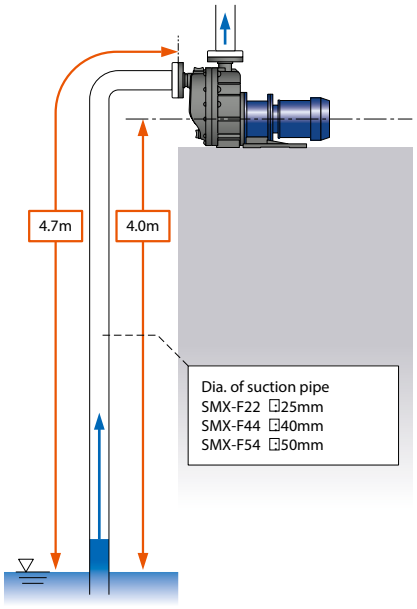
1.The diameter of the piping on the suction side should be the same as that of the pumps inlet port (22□: 25mm, 44□: 40mm, 54□: 50mm), and the length of the piping should be limited to less than 4.7m. A larger pipe diameter or longer piping could adversely affect the self-priming performance, or could 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.

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

5.If a foot valve is installed on the suction pipe. pipe resistance may increase so that the pump cannot suck liquid enough.



Optional accessories

Iwaki pump protector DRN series

Detects unusual pump operating conditions including dry-running and overload

The DRN model protects equipment (including pumps) from damage!
Minimizes production downtime.
Identifies possible causes of alarms so they can be investigated and addressed.

Multiple Input	Two analog, one digital, one temperature input and one current input
Easy operation	Equipped with EASY setup mode to remember the operation status and set the lower/upper limit values, as well as AUTO setup mode
Bar graph	Visible indication of current operating status
Logging capability	Data log feature for preventative maintenance scheduling
Communication	RS485 external communication capability

Specifications

Model	DRN-01	DRN-02
Amperometric range	0.5-30.00A	5.0-200.0A
Unit's source voltage	AC100–240V 50/60Hz 10VA	
Operating temperature	0–40ºC	
Operating humidity	35–85%RH	

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Holland	**: IWAKI Europe GmbH** (Netherlands Branch)	TEL: (31)74 2420011	FAX: (49)2154 925448
Italy	**: IWAKI Europe GmbH** (Italy Branch)	TEL: (39)0444 371115	FAX: 0444 335350
Spain	**: IWAKI Europe GmbH** (Spain Branch)	TEL: (34)93 37 70 198	FAX: 93 47 40 991
Belgium	**: IWAKI Belgium N.V.**	TEL: (32)13 67 02 00	FAX: 13 67 20 30
Denmark	**: IWAKI Nordic A/S**	TEL: (45)48 24 2345	FAX: 48 24 2346
Finland	**: IWAKI Suomi Oy**	TEL: (358)9 2745810	FAX: 9 2742715
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⚠ 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.

⚠ Legal attention related to export.

Our products and/or parts of products fall in the category of goods contained in control list of international regime for export control. Please be reminded that export license could be required when products are exported due to export control regulations of countries.