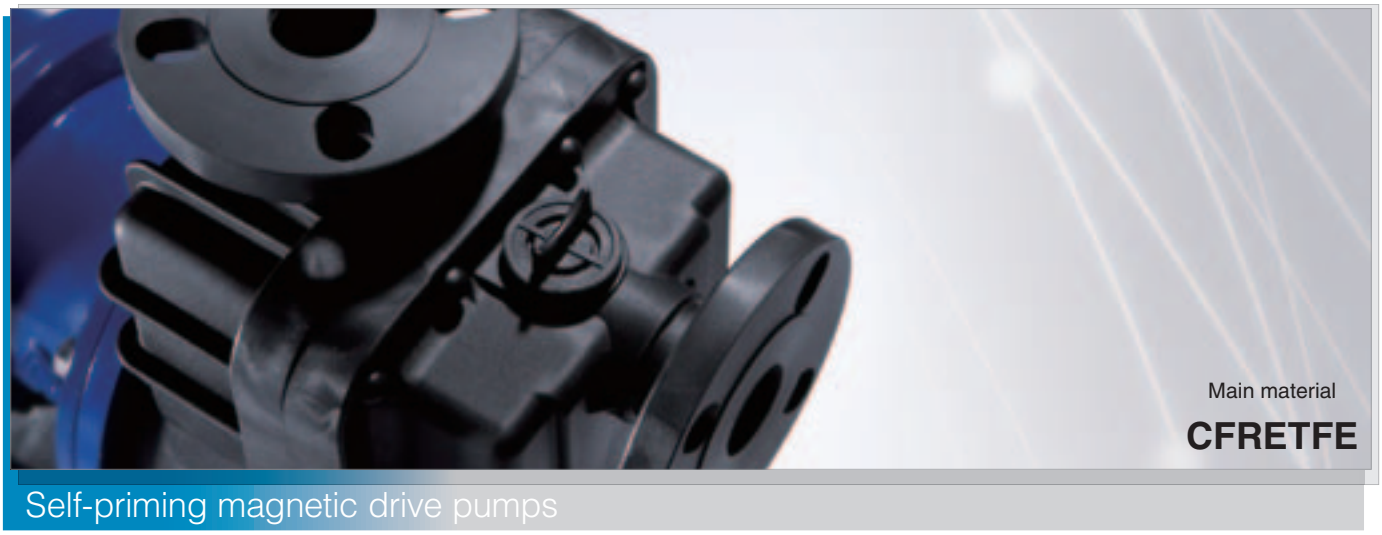
IWAKI

SMX-F
series

Self-priming magnetic drive pumps

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



Self-priming magnetic drive pumps

The SMX-F is a horizontal self-priming magnetic drive pump made from fluororesin.
Our original self-radiation structure enhances resistance to abnormal operations.

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

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

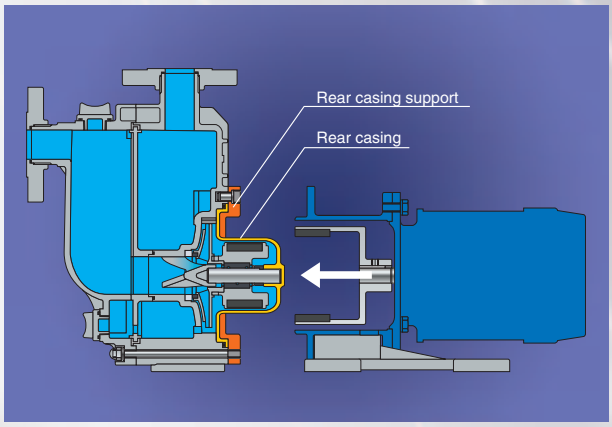
The casings, impeller assembly and magnet capsule are made of fluororesin(CFRETFE). Other wet-end parts are made of highly corrosion resistant materials such as carbon, ceramic and the like. The pumps can handle almost type of chemicals including strong acid/alkali.

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.

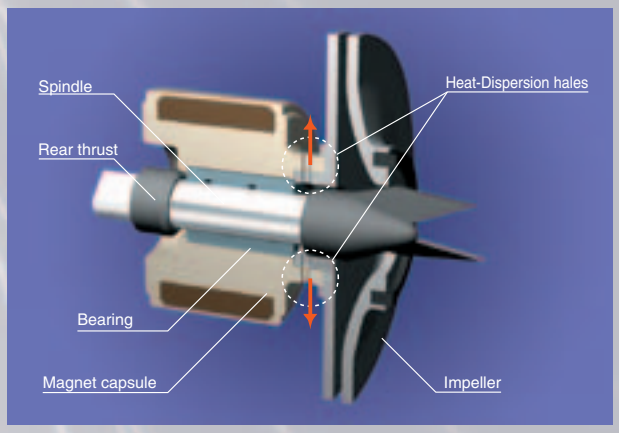
Easy maintenance

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

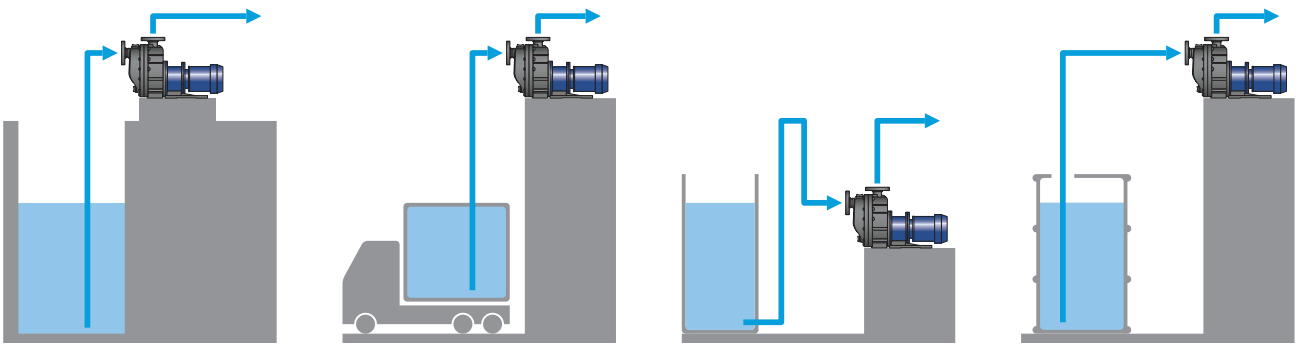
- Underground tank at chemical plant.
- Underground tank or pit of waste plant.

Pumping up and out from top of tank and tanker truck

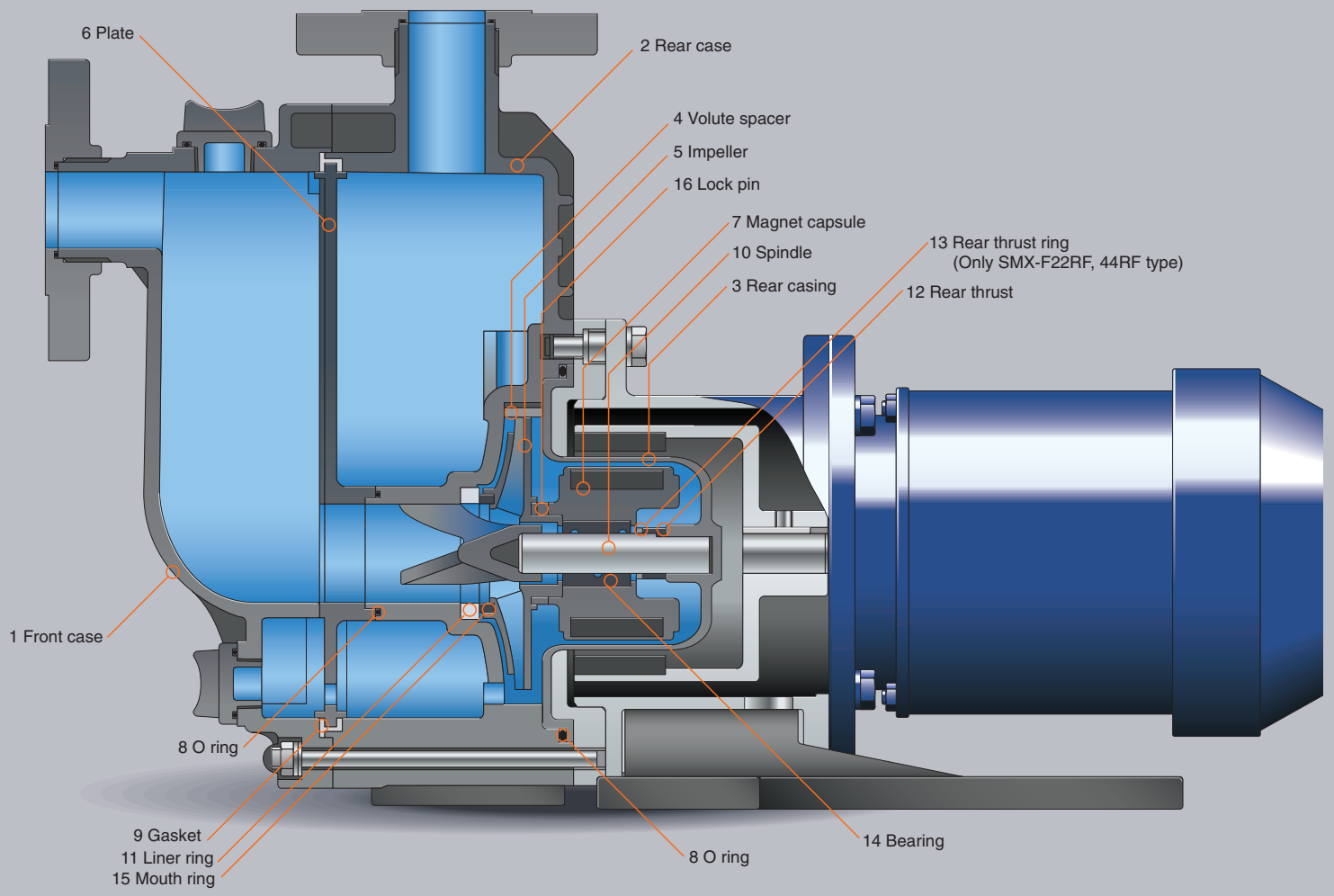
- Transferring etching and plating chemical from chemical bath.
- Sucking up chemical from truck.
- Pumping up from top of tank.

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

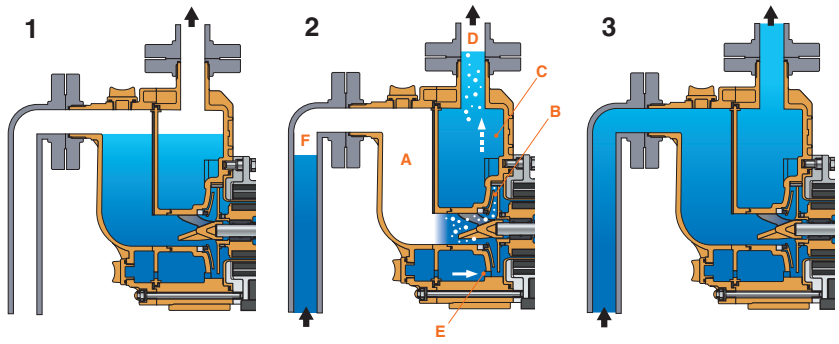


Wet-end materials

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 (mm)	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	90	0.4	0.28	23
		Y	60		80 - 6.8	90			
SMX-F221		T	50		100 - 12.5	155	0.75		29.5
		V	50		80 - 7.5	125			
		X	60		100 - 12.0	160			
		Y	60		80 - 6.8	130			
SMX-F222		T	50		100 - 12.5	155	1.5		34
		X	60		100 - 12.0	160			
SMX-F441	40A×40A	T	50	10	150 - 11.8	190	0.75	0.33	31
		Y	60		150 - 10.6	200			
SMX-F442		T	50		150 - 11.8	280	1.5		35.5
		X	60		200 - 17.0	310			
		Y	60		150 - 10.6	280			
SMX-F443		X	60		200 - 17.0	340	2.2		37.5
SMX-F542	50A×40A	V	50	20	200 - 16.0	230	1.5	0.40	45.0
SMX-F543		T	50		250 - 16.0	440	2.2		46.0
		V	50		200 - 16.0	410			
		Z	60		250 - 18.0	420			
SMX-F545		T	50		250 - 16.0	440	3.7		64.0
		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
22 : 25(Suction) X 25(Discharge)
44 : 40(Suction) X 40(Discharge)
54 : 50(Suction) X 40(Discharge)

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

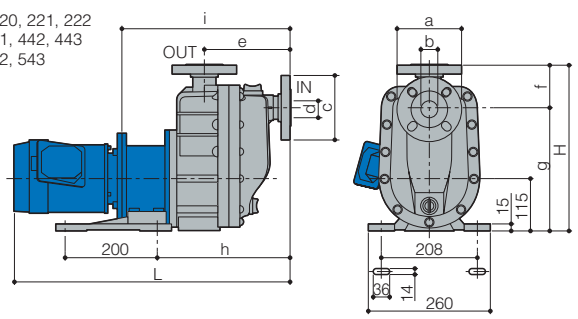
Materials of Bearing/Spindle/Liner ring
CF : High density carbon/High purity alumina ceramic/High purity alumina ceramic
RF : PTFE (with filler)/High purity alumina ceramic/High purity alumina ceramic
KK : SiC/SiC/SiC

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

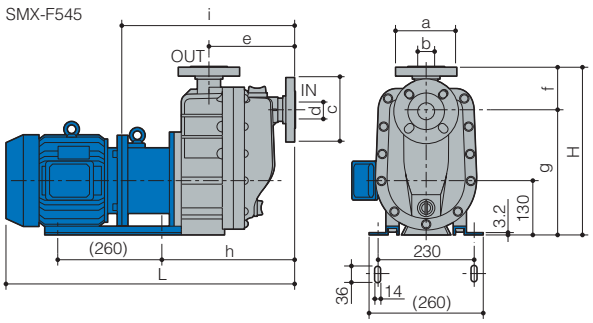
Note: All combination of impeller and motor size are not available. Please contact Iwaki for detail.

Dimensions in mm

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



SMX-F545

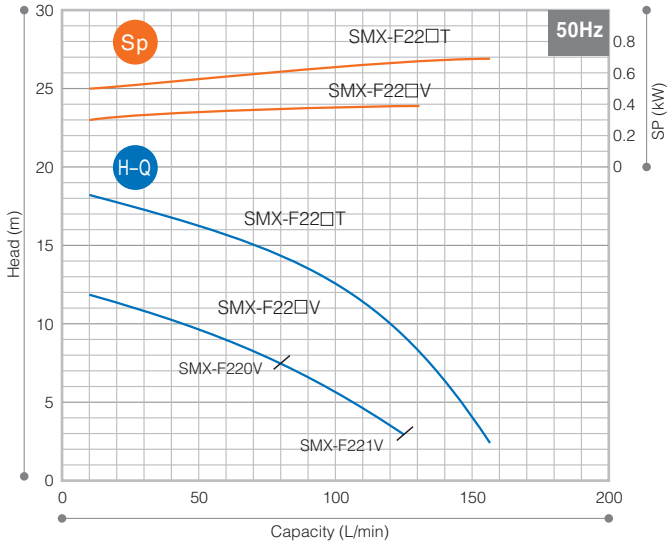


Model	H	L	a	b	c	d	e	f	g	h	i
SMX-F220	(329)	(539)	ø125	ø25	ø125	ø25	(162)	(74)	255	(240)	(308)
SMX-F221	(329)	(553)	ø125	ø25	ø125	ø25	(162)	(74)	255	(240)	(320)
SMX-F222	(329)	(607)	ø125	ø25	ø125	ø25	(162)	(74)	255	(240)	(332)
SMX-F441	(364)	(599)	ø140	ø40	ø140	ø40	(188)	(93)	271	(285)	(366)
SMX-F442	(364)	(652)	ø140	ø40	ø140	ø40	(188)	(93)	271	(285)	(378)
SMX-F443	(364)	(652)	ø140	ø40	ø140	ø40	(188)	(93)	271	(285)	(378)
SMX-F542	(389)	(663)	ø140	ø40	ø155	ø50	(204)	(100)	289	(310)	(388)
SMX-F543	(389)	(663)	ø140	ø40	ø155	ø50	(204)	(100)	289	(310)	(388)
SMX-F545	(389)	(731)	ø140	ø40	ø155	ø50	(204)	(100)	289	(310)	(408)

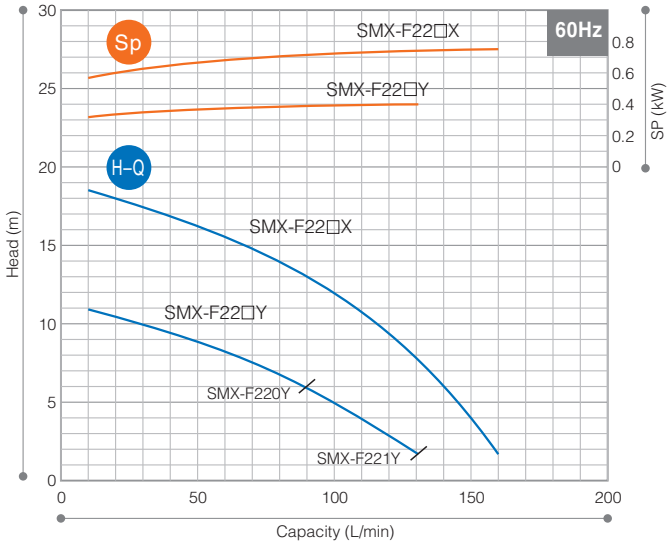
Note: The dimensions may differ with the type of motor installed.

Performance curves

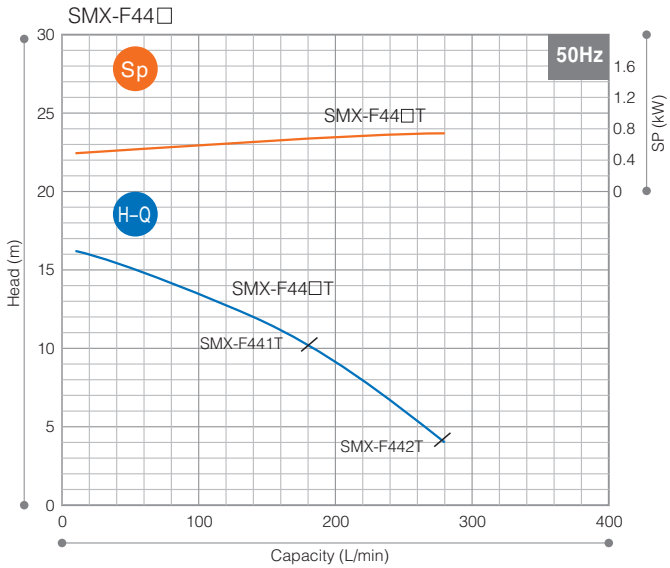
SMX-F22□



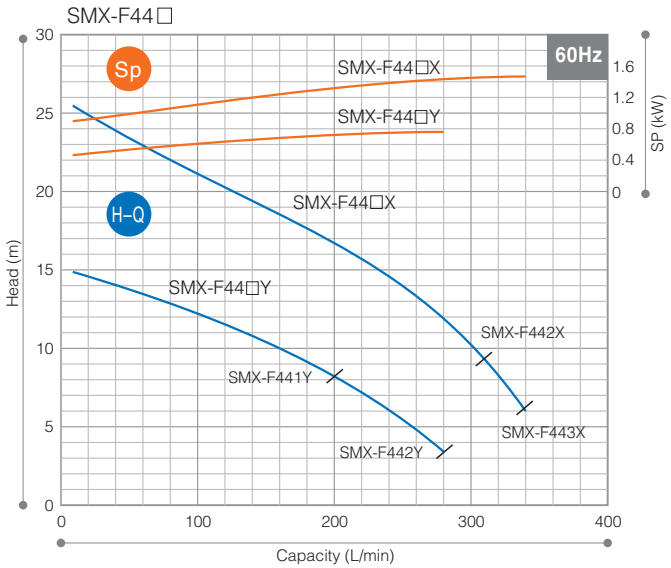
SMX-F22□



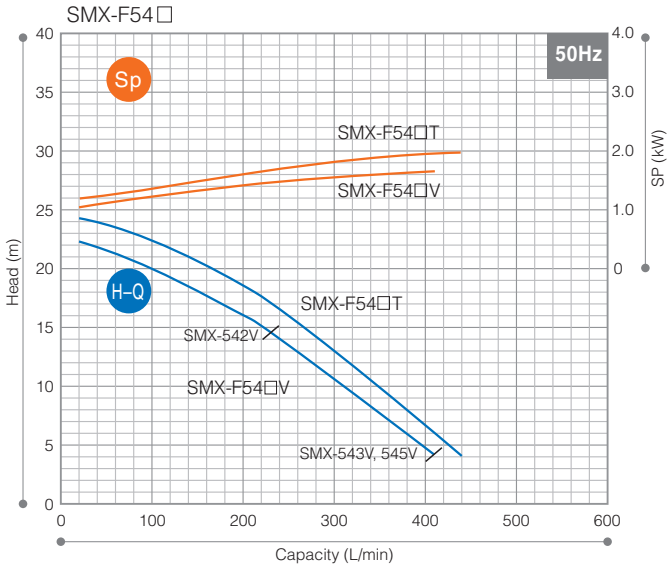
SMX-F44□



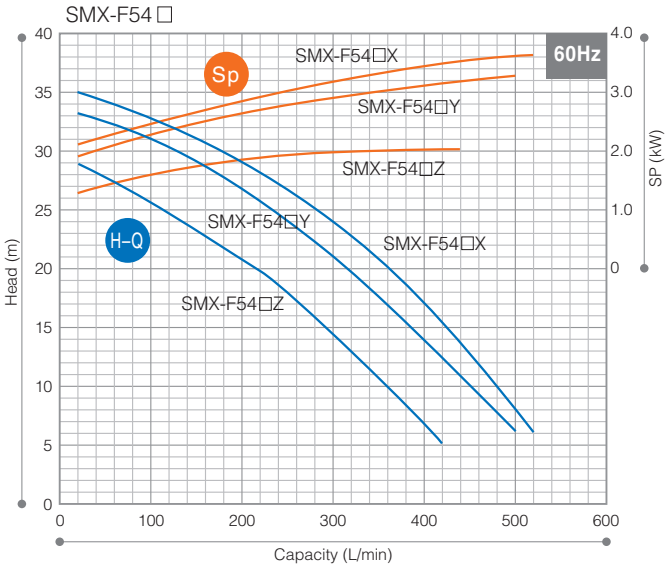
SMX-F44□



SMX-F54□



SMX-F54□



Precautions on the selection of pumps

1. The performance curves on this catalogue are based on the operation with 20°C 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. Keep a margin (5% or more) for motor output.
Pump shaft power Sp x Specific gravity x 1.05 or more (margin)≦Motor output

4. The self-priming performance (4m in 90 seconds) is based on the operation with 20°C 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

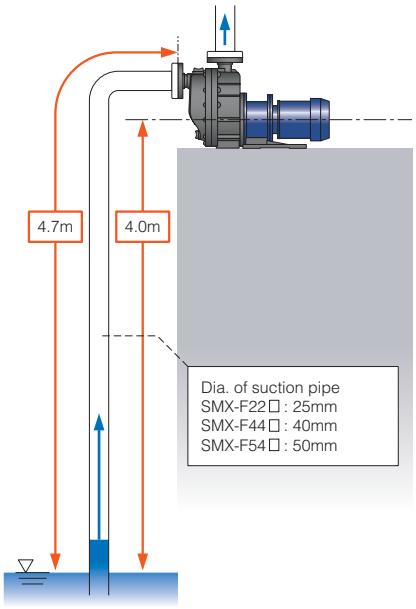
1. The diameter of the piping on the suction side should be the same as that of the pumps inlet port (22□ : 25mm, 44□ : 40mm, 54□ : 50mm), and the length of the piping should be limited to less than 4.7m. A larger pipe diameter or longer piping could adversely affect the self-priming performance, or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

- 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
- It is unable to use DR when inverter is employed in the system.

DR-20

Specification

50/60Hz

Model		DR-10, DR-20	
Motor power (50/60Hz)		200 to 240V three phase	380 to 440V three phase
Applied motor (50/60Hz)		0.4kW to 0.75kW	0.75kW to 15kW
Power control (50/60Hz)		100V to 240V single phase	
Power	V	100V ±10%single phase(DR-10), 200V to 240V ±10%single phase(DR-20)	
	Input	3.5W	
Detective current		0.5A to 32.0A	
Current transformar (CT)		Built-in	
Outer dimension		D80 X W153 X H122	

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