

Main material

GFRPP

IWAKI
Self-priming
Magnetic Drive Pumps

SMX



Patent

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

Solutions for chemical handling applications

Versatile self-priming magnetic drive pump with enhanced durability under abnormal operation



The SMX is a horizontal self-priming magnetic drive pump made from reinforced plastic. 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-543

SMX-441

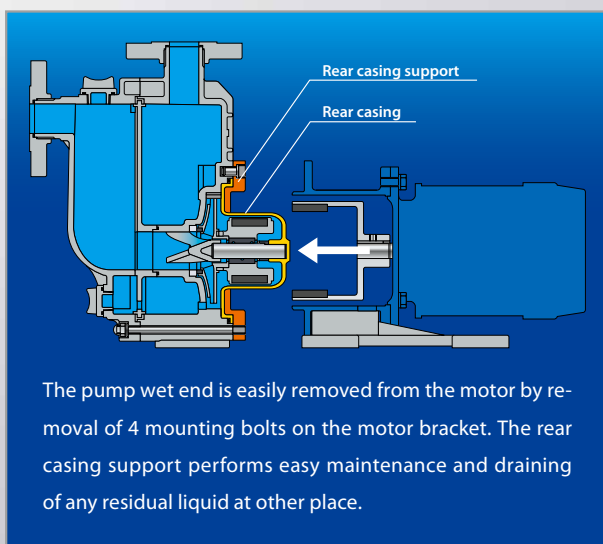
SMX-220

Expanded versatility

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

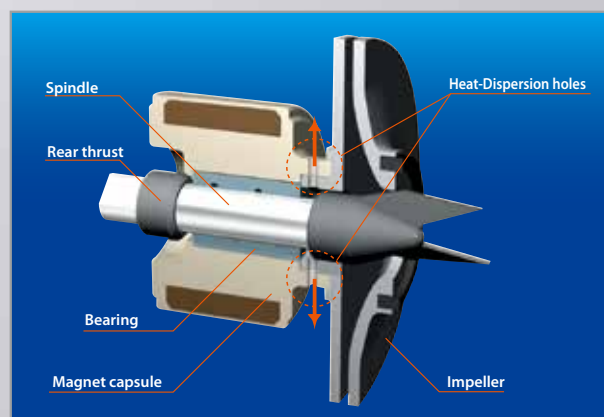
Easy maintenance

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.



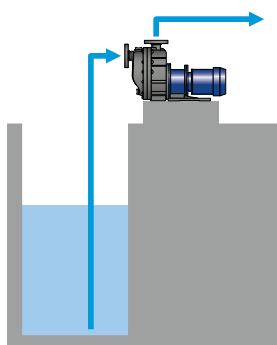
Fast self-priming

The SMX 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.

Examples of application

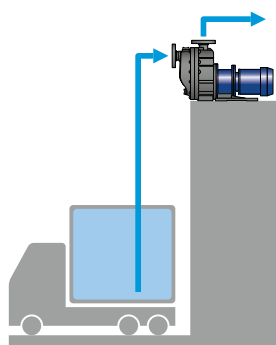
Pumping up from underground tank

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



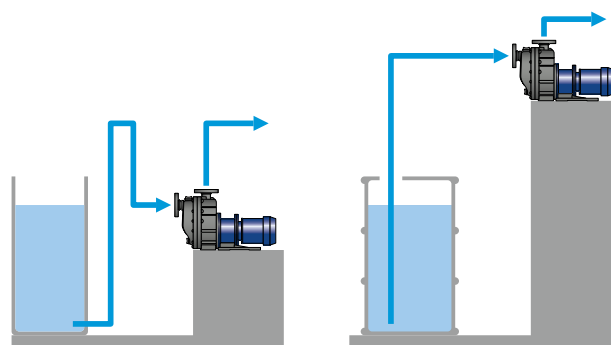
Pumping up and out from top of tank and tanker truck

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

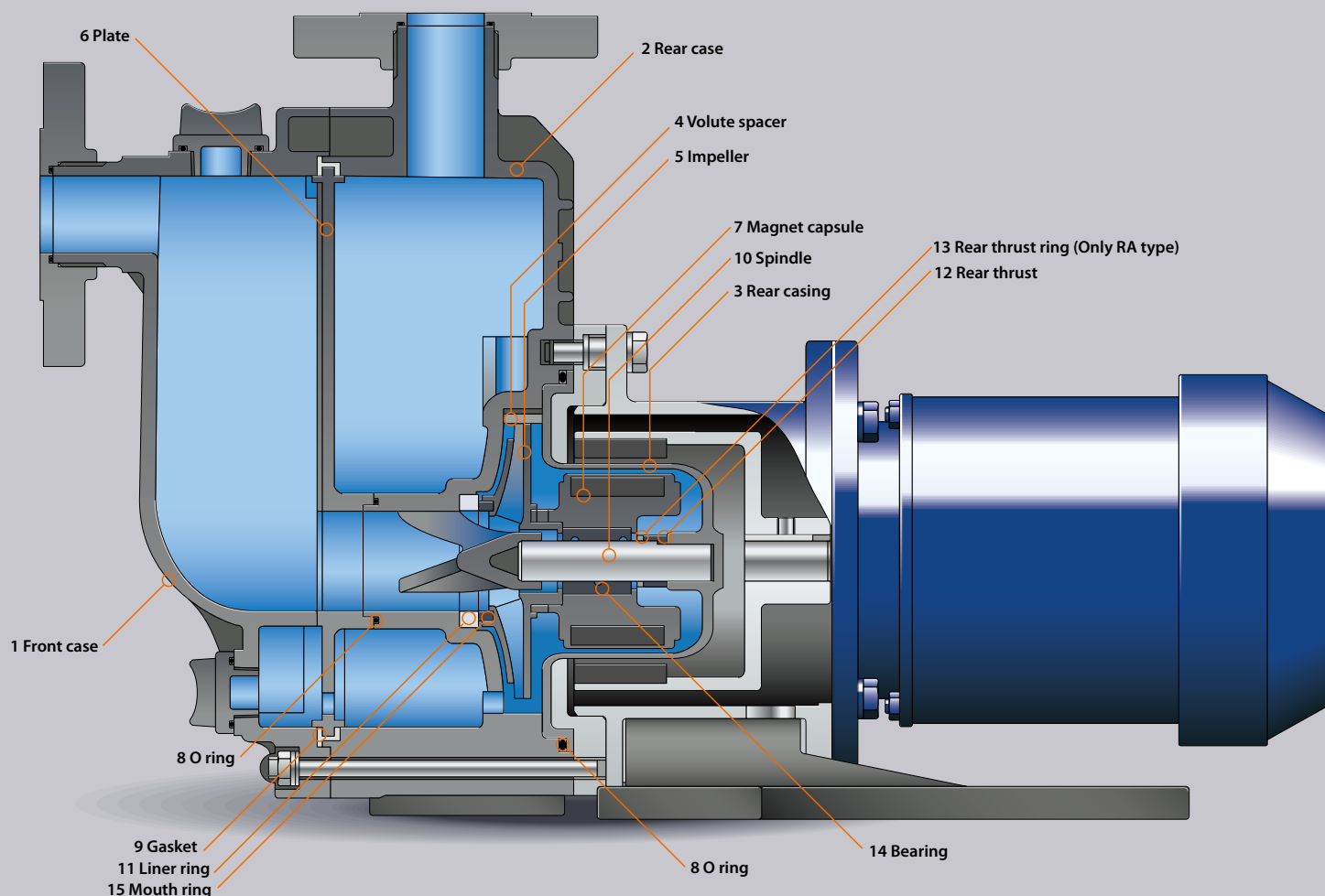


Transferring chemical from tank to tank

- 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

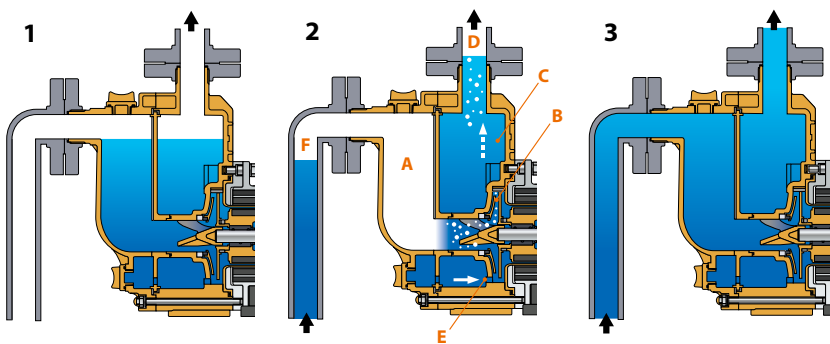
Name of part	Model		
	CA	RA	KA
1 Front case	GFRPP	PP	FKM/EPDM
2 Rear case			
3 Rear casing			
4 Volute spacer Note1			
5 Impeller			
6 Plate	High purity alumina ceramic	Alumina ceramic	SiC
7 Magnet capsule			
8 O ring			
9 Gasket			
10 Spindle			
11 Liner ring	CFRPPS	CFRPPS	SiC
12 Rear thrust SMX-22, 44 SMX-54			
13 Rear thrust ring Note2	-	Alumina ceramic	-
14 Bearing	Carbon	PTFE (With filler)	SiC
15 Mouth ring		PTFE (With filler)	

Note1 : SMX-22□T, 54□T, 54□X do not have a Volute spacer

Note2 : Exclusive for SMX-22RA, 44RA



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.

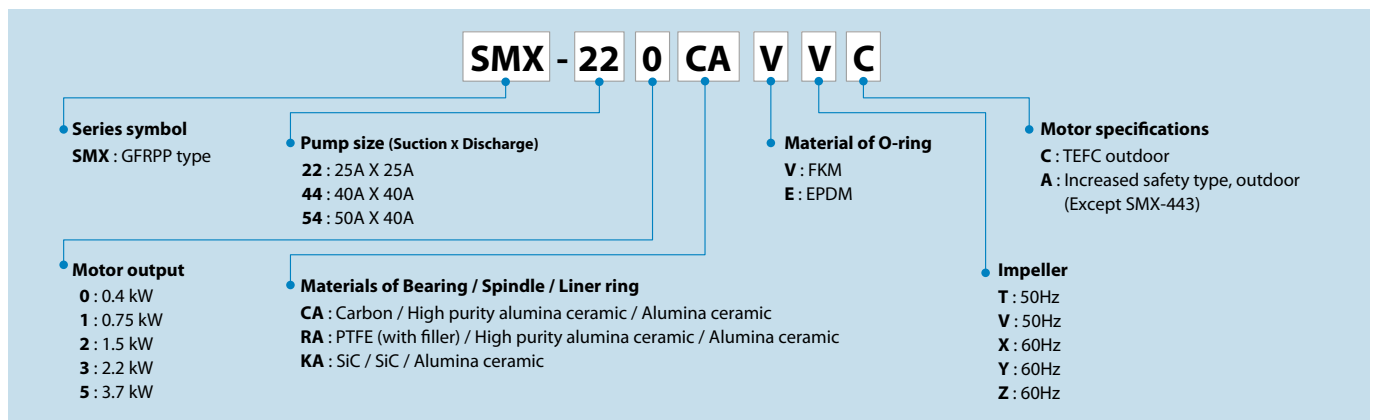
3 Once all gas is expelled, normal centrifugal pump operation is resumed. Sufficient liquid remains in the casing for subsequent self-priming once the pump is stopped.

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-220	25A X 25A	V	50	10	80 - 8.5	90	0.4	0.28	22
SMX-221		Y	60		80 - 8.0	90	0.75		31
		T	50		100 - 13.0	160			
		V	50		80 - 8.5	140			
		X	60		100 - 13.0	170			
		Y	60		80 - 8.0	135			
SMX-222		T	50		100 - 13.0	160	1.5		40
		X	60		100 - 13.0	170			
SMX-441	40A X 40A	T	50	10	150 - 12.4	190	0.75	0.33	31.5
SMX-442		Y	60		150 - 11.5	200	1.5		40.5
		T	50		150 - 12.4	280			
		X	60		200 - 18.0	310			
		Y	60		150 - 11.5	290			
		SMX-443	X		60	200 - 18.0			
SMX-542	50A X 40A	V	50	20	200 - 17.0	230	1.5	0.43	48
SMX-543		T	50		250 - 18.0	440	2.2		52
		V	50		200 - 17.0	410			
		Z	60		250 - 18.0	440			
		T	50		250 - 18.0	440			
SMX-545		V	50		200 - 17.0	410	3.7		70
		X	60		300 - 26.0	520			
		Y	60		300 - 22.3	500			
		Z	60		250 - 18.0	440			

- 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

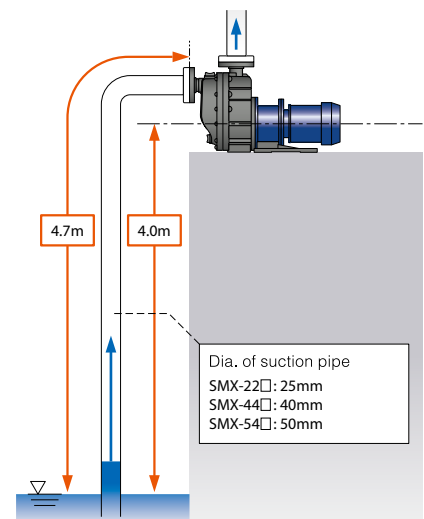


Precautions on the selection of pumps

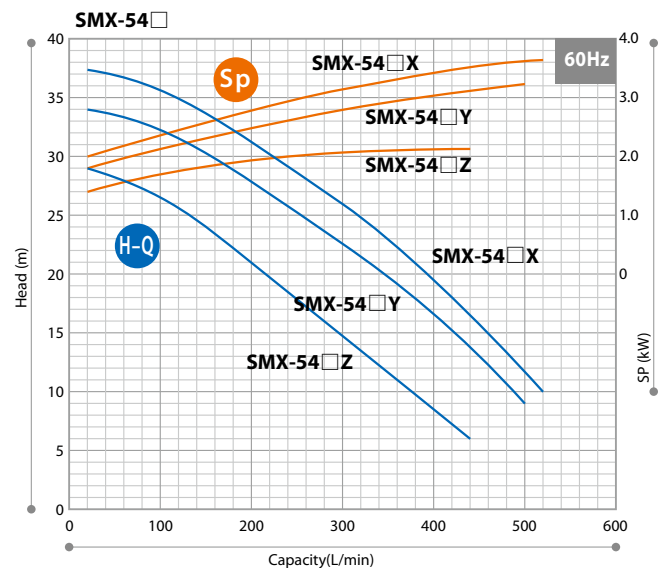
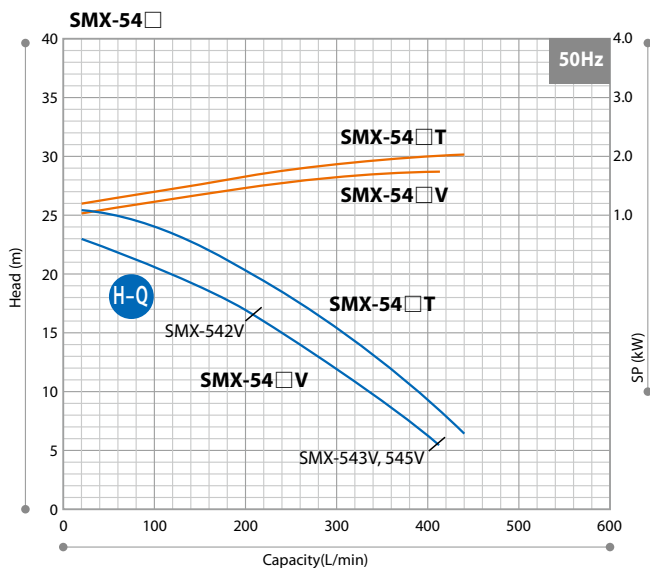
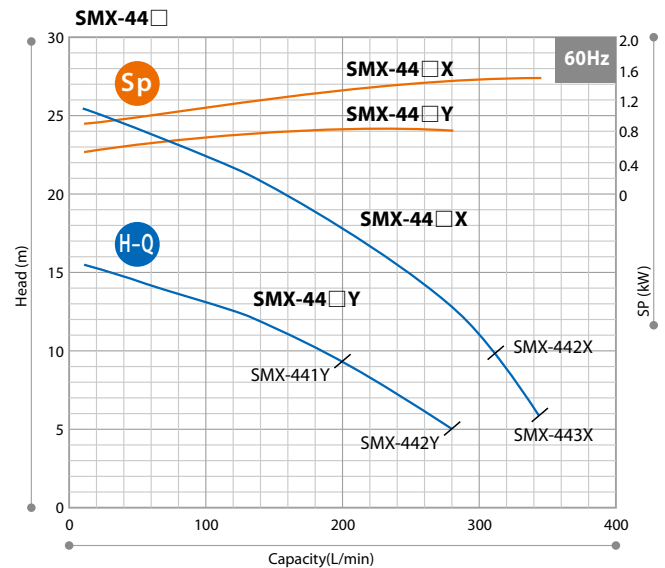
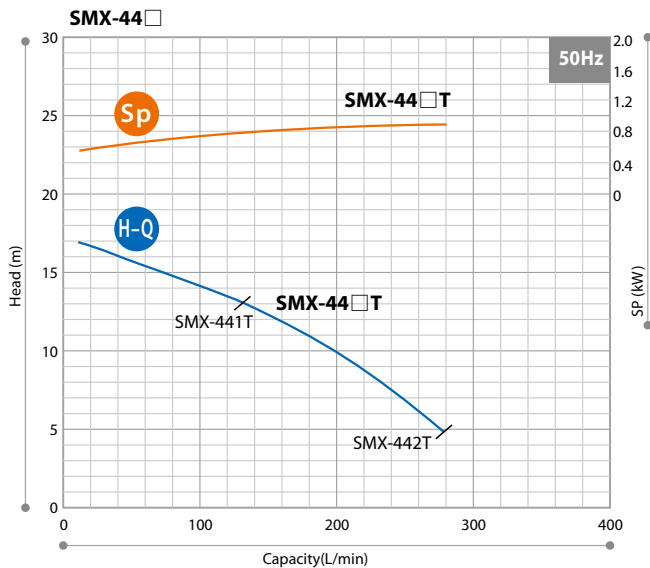
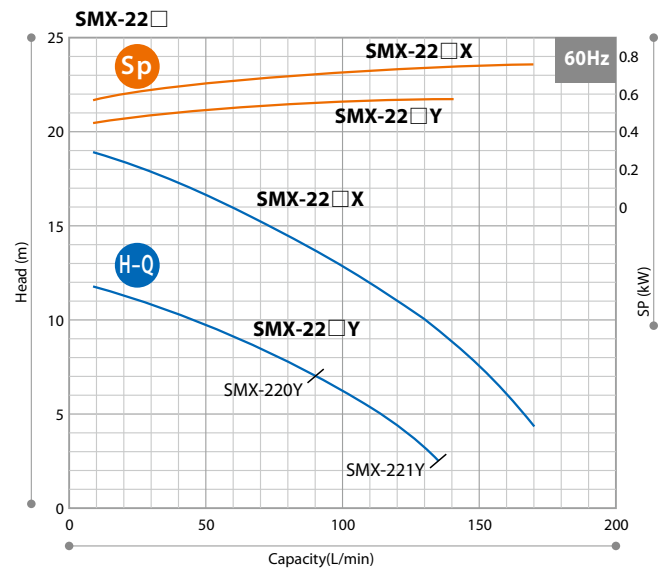
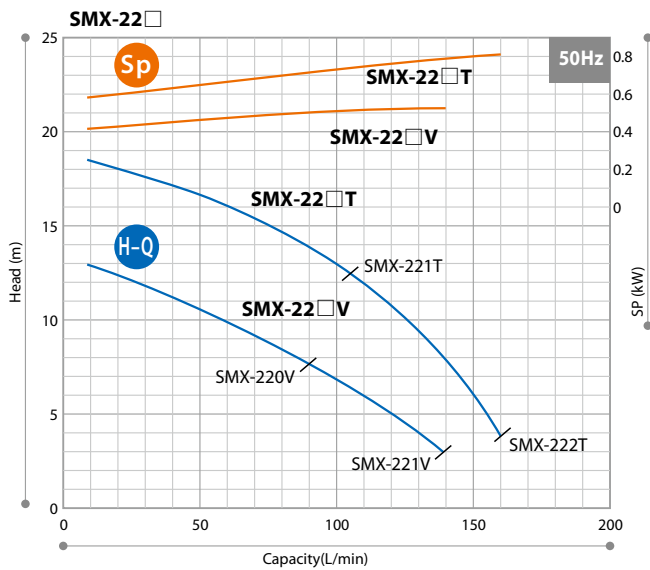
- The performance curves on this catalogue are based on the operation with 20°C clean water in flooded suction. Keep a margin (3% of the curves) when selecting the pump.
- The magnetic pump cannot run continuously with a closed-discharge. Be sure to observe the minimum flow rate.
The minimum flow rate SMX-F22□: 10L/min
SMX-F44□: 10L/min
SMX-F54□: 20L/min
- Select a pump model according to liquid specific gravity. Always keep 10% allowance to motor output.
Pump shaft power $Sp \times \text{Specific gravity} \times 1.1$ (margin) $\leq$ Motor output
- 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

- The diameter of the piping on the suction side should be the same as that of the pumps inlet port,
SMX-22□: 25mm
SMX-44□: 40mm
SMX-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.
- In cases where the liquid level fluctuates, take the height from the lowest liquid level as the maximum self-priming height.
- Always perform priming before first operation, and start the pump only after the pump chamber has been filled with the handled liquid.
- To prevent early deterioration, avoid frequent start/stop of the pump.
- If a foot valve is installed on the suction pipe, pipe resistance may increase so that the pump cannot suck liquid enough.

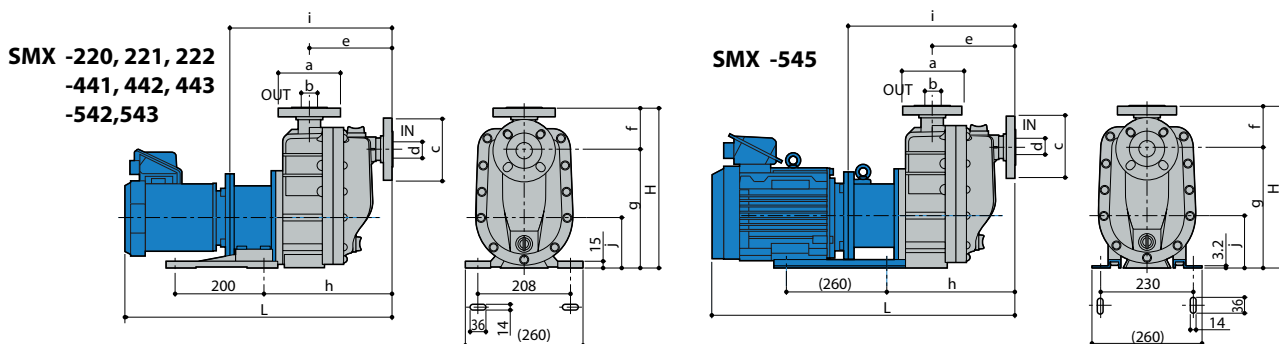


Performance curves



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

Dimensions in mm



model	(H)	(L)	a	(b)	c	(d)	(e)	(f)	g	(h)	(i)	j
SMX-220		539									308	
SMX-221	329	556	ø125	ø25	ø125	ø25	162	74	255	240	320	115
SMX-222		605									332	
SMX-441		602									366	
SMX-442	364	651	ø140	ø40	ø140	ø40	188	93	271	285	378	115
SMX-443		680										
SMX-542		666									393	130
SMX-543	390	695	ø140	ø40	ø155	ø50	205	100	290	315	413	
SMX-545		739										

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

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	0-30.00A	0-200.0A
Unit's source voltage	AC100-240V 50/60Hz 10VA	
Operating temperature	0-40°C	
Operating humidity	35-85%RH	

IWAKI CO., LTD. 6-6 Kanda-Sudacho 2-chome Chiyoda-ku Tokyo 101-8558 Japan TEL : (81)3 3254 2935 FAX : 3 3252 8892

IWAKI has global net work. Please find your distributor location at

www.iwakipumps.jp

European office : IWAKI Europe GmbH
 Germany : IWAKI Europe GmbH
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 Denmark : IWAKI Nordic A/S
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 Sweden : IWAKI Sverige AB
 U.K. : IWAKI Pumps (UK) Ltd.

TEL: (49)2154 9254 0 FAX: 2154 9254 48
 TEL: (49)2154 9254 50 FAX: 2154 9254 55
 TEL: (31)74 2420011 FAX: (49)2154 925448
 TEL: (39)0444 371115 FAX: 0444 335350
 TEL: (34)93 37 70 198 FAX: 93 47 40 991
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 TEL: (358)9 2745810 FAX: 9 2742715
 TEL: (33)1 69 63 33 70 FAX: 1 64 49 92 73
 TEL: (47)23 38 49 00 FAX: 23 38 49 01
 TEL: (46)8 511 72900 FAX: 8 511 72922
 TEL: (44)1743 231363 FAX: 1743 366507
 ()Country codes

U.S.A. : IWAKI America Inc.
 Argentina : IWAKI America Inc. (Argentina Branch)
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TEL: (1)508 429 1440 FAX: 508 429 1386
 TEL: (54)11 4745 4116 FAX: 19 3244 5900
 TEL: (55)19 3244 5900 FAX: 6316 3221
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Caution for safety use:
 Before use of pump, read instruction manual carefully to use the product correctly.

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