IWAKI

Self-priming magnetic drive pumps

SMX

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

Main material

GFRPP

The Heart of Industry

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 enhances resistance to dry running, cavitation, and closed-discharge operation.
In addition, the use of standard motors extends the range of application.

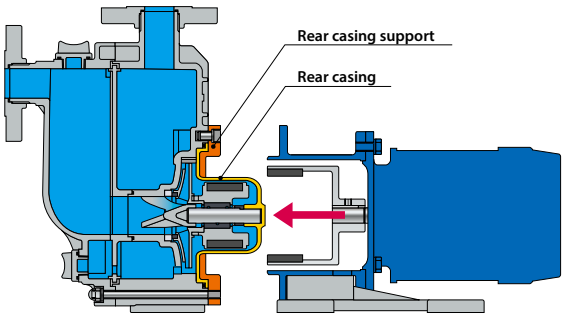
SMX-543 SMX-441 SMX-220

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

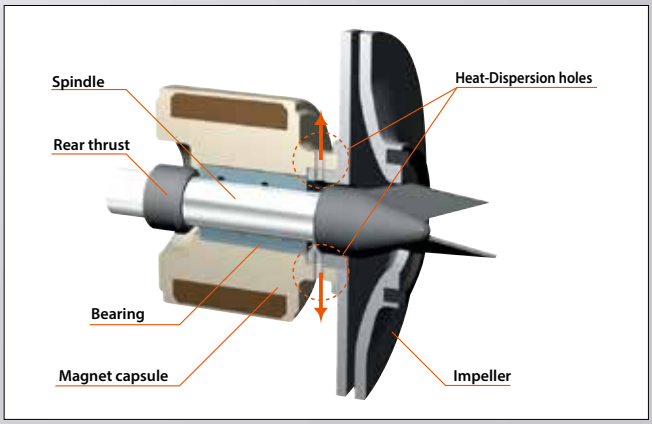
The pump wet end can be removed from the motor as a complete assembly without dismantling, thanks to an additional rear casing support. The pump wet end comprises the minimum number of parts for easy maintenance.



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.

Enhanced durability under abnormal operation

Our original self-radiation structure 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

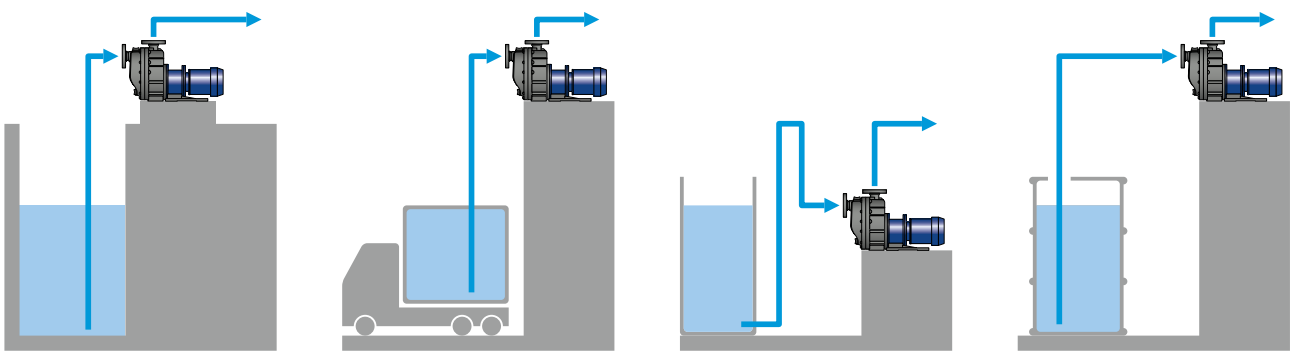
- Underground tank at chemical plant.
- Underground tank or pit of waste plant.

Pumping up and out from top of tank and tanker truck

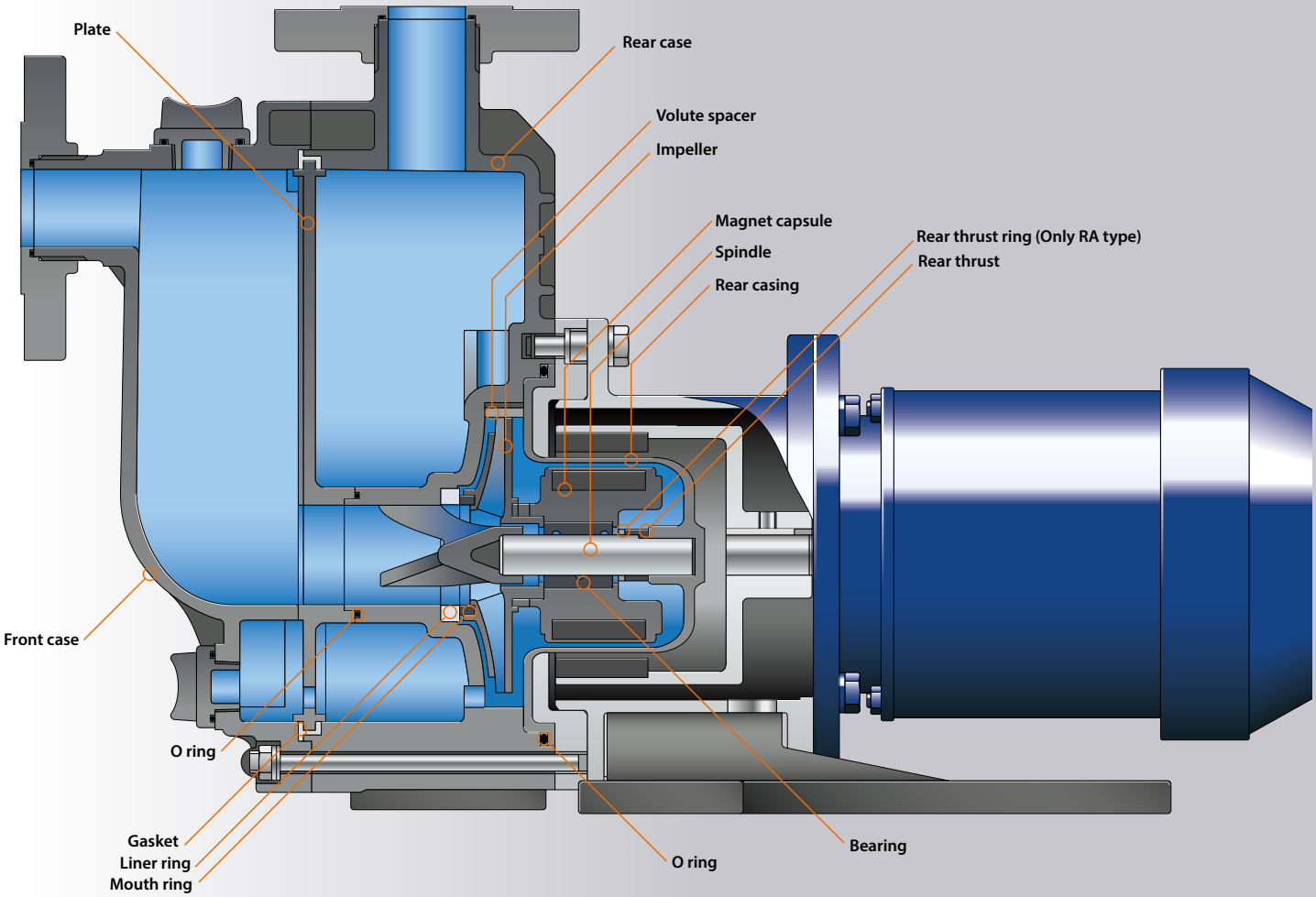
- Transferring etching and plating chemical from chemical bath.
- Sucking up chemical from truck.
- Pumping up from top of tank.

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

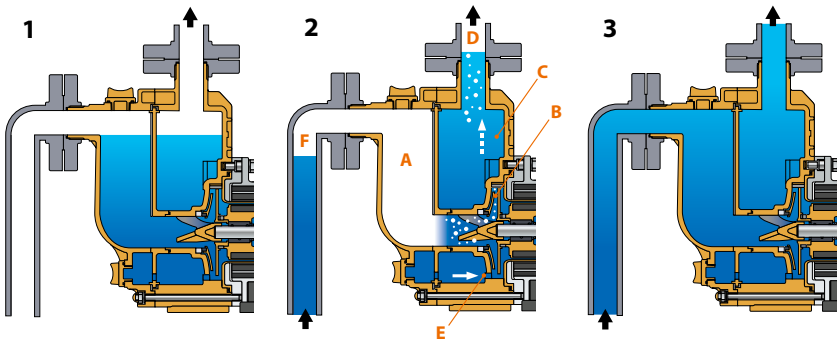


Wet-end materials

Name of part		Model		
		CA	RA	KA
Front case		GFRPP		
Rear case				
Rear casing				
Volute spacer	Note1			
Impeller				
Plate				
Magnet capsule		PP		
O ring		FKM/EPDM		
Gasket				
Spindle		High purity alumina ceramic		SiC
Liner ring		Alumina ceramic		
Rear thrust	SMX-22, 44	CFRETFE		
	SMX-54	High purity alumina ceramic		SiC
Rear thrust ring	Note2	-	Alumina ceramic	-
Bearing		Carbon	PTFE (With filler)	SiC
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×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×25A	V	50	10	80 - 8.5	90	0.4	0.28	22
		Y	60		80 - 8.0	85			
SMX-221		T	50		100 - 13.0	105	0.75		31
		V			80 - 8.5	140			
		X	60		100 - 13.0	170			
		Y			80 - 8.0	135			
SMX-222		T	50		100 - 13.0	160	1.5		40
		X	60			170			
SMX-441	40A×40A	T	50	10	100 - 14.0	115	0.75	0.33	31.5
		Y	60		150 - 11.5	200			
SMX-442		T	50		150 - 12.4	280	1.5		40.5
		X	60		200 - 18.0	335			
		Y			150 - 11.5	290			
SMX-443		X			200 - 18.0	345	2.2		44.5
SMX-542	50A×40A	V	50	20	100 - 20.5	210	1.5	0.43	48
SMX-543		T			250 - 18.0	440	2.2		52
		V			200 - 17.0	410			
		Z	60		250 - 18.0	440			
SMX-545		T	50		250 - 18.0	440	3.7		70
		V			200 - 17.0	410			
		X	60		300 - 26.0	520			
		Y			300 - 22.3	500			
		Z			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

SMX - 22 0 CA V V C

(1) (2) (3) (4) (5) (6) (7)

(1) **Series symbol**
SMX : GFRPP type

(2) Pump size (Suction×Discharge)
22 : 25A×25A
44 : 40A×40A
54 : 50A×40A

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

(4) Materials of Bearing / Spindle / Liner ring)
CA : Carbon / High purity alumina ceramic / Alumina ceramic
RA : PTFE (with filler) / High purity alumina ceramic / Alumina ceramic
KA : SiC/SiC/ Alumina ceramic

(5) Materials of O-ring
V : FKM
E : EPDM

(6) Impeller
T, V : 50Hz
X, Y, Z : 60Hz

(7) Motor specifications
C : TFEC outdoor
A : Increased safety type, outdoor
(Except SMX-443)

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-22□: 10L/min
SMX-44□: 10L/min
SMX-54□: 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 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,
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.

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

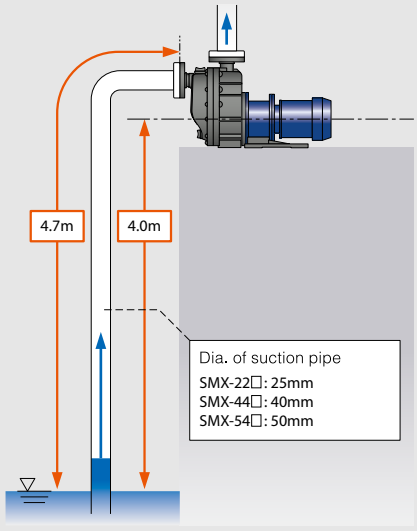
3.Always perform priming before first operation, and start the pump only after the pump chamber has been filled with the handled liquid.

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

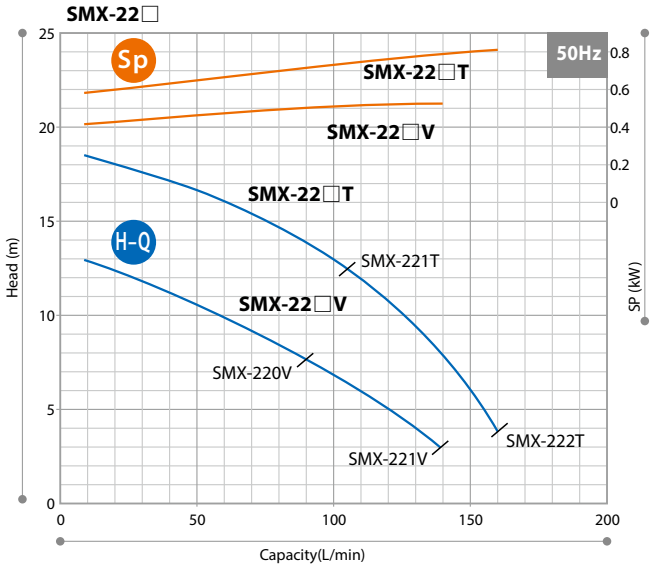
5.If a foot valve is installed on the suction pipe, pipe resistance may increase so that the pump cannot suck liquid enough.

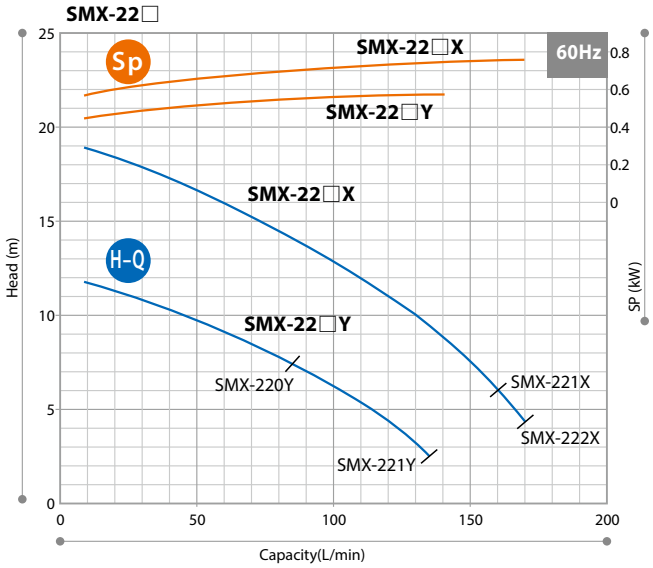
6.When installing a check valve, install an air vent line to release the air.

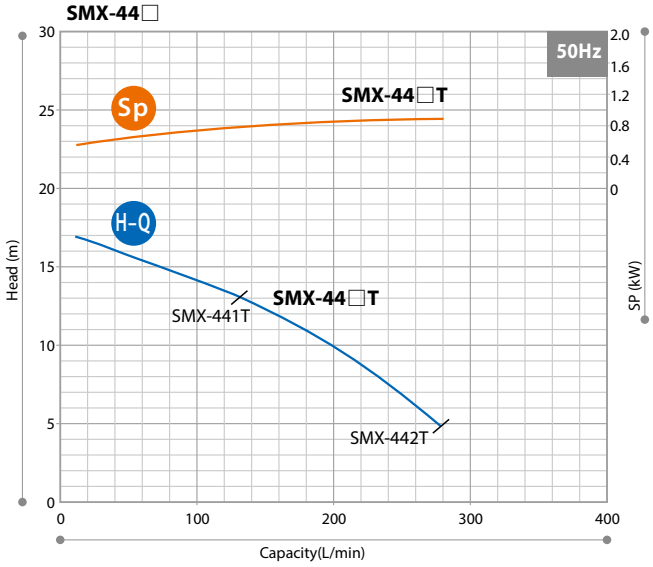
7.Pipe support
If piping weight loads the pump, plastic parts are deformed. Be sure to install a pipe support.

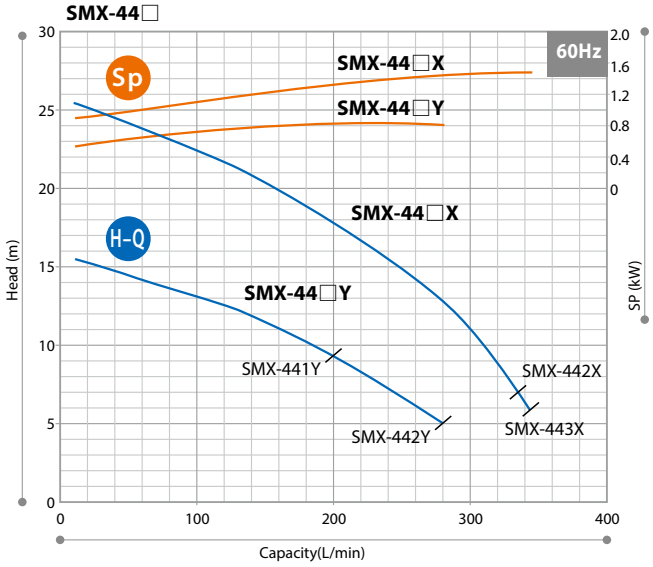


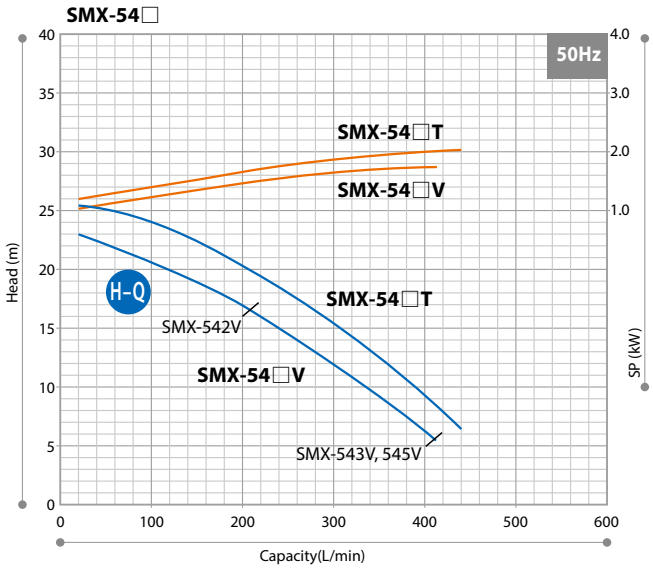
Performance curves

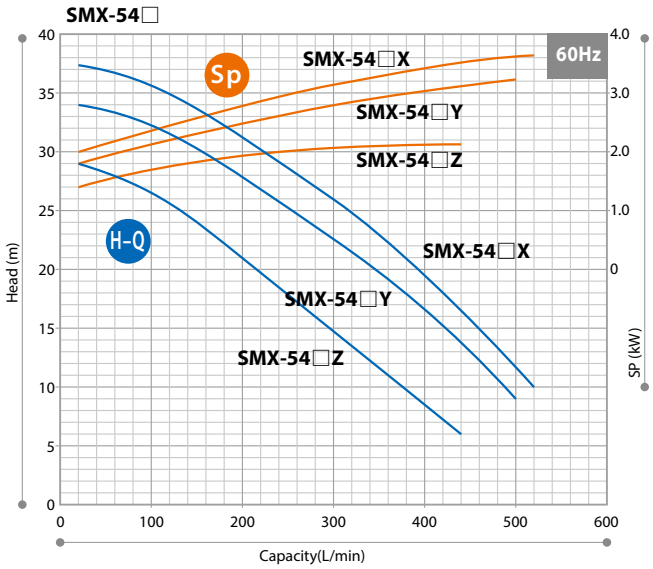








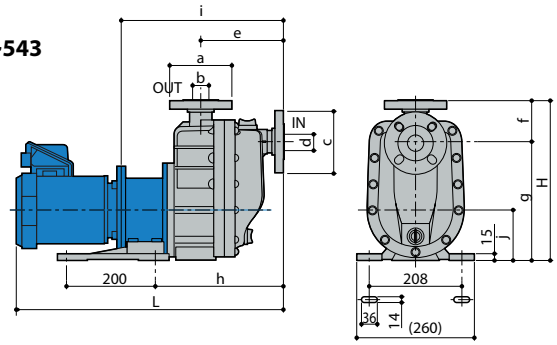




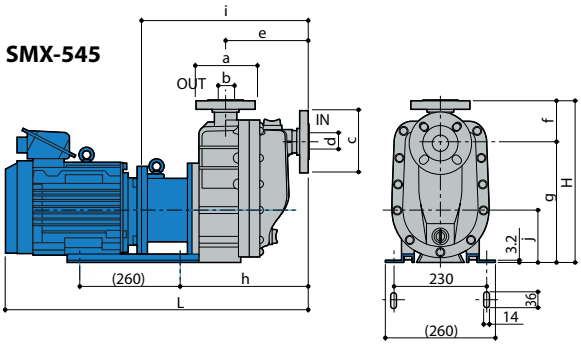
・The shaft power curves shown above are calculated by using our standard test motor. Contact us for detail.

Dimensions (mm)

SMX-220~543



SMX-545



Model	(H)	(L)	a	(b)	c	(d)	(e)	(f)	g	(h)	(i)	j
SMX-220	329	539	Ø125	Ø25	Ø125	Ø25	162	74	255	240	308	115
SMX-221		556									320	
SMX-222		605									332	
SMX-441	364	602	Ø140	Ø40	Ø140	Ø40	188	93	271	285	366	115
SMX-442		651									378	
SMX-443		680										
SMX-542	390	666	Ø140	Ø40	Ø155	Ø50	205	100	290	315	393	130
SMX-543		695										
SMX-545		739									413	

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	0.5-30.00A	5.0-200.0A
Unit's source voltage	AC100–240V 50/60Hz 10VA	
Operating temperature	0–40°C	
Operating humidity	35–85%RH	

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Italy (Italy Branch)	**IWAKI Europe GmbH**	TEL: (39)0445 561219	FAX: (39)0445 569088
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Poland (East Europe Branch)	**IWAKI Europe GmbH**	TEL: (48)12 347 0755	FAX: (48)12 347 0900
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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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