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IWAKI

Self-priming magnetic drive pumps

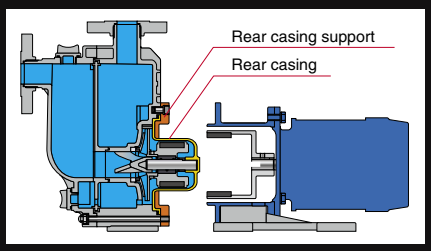
SMX series

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

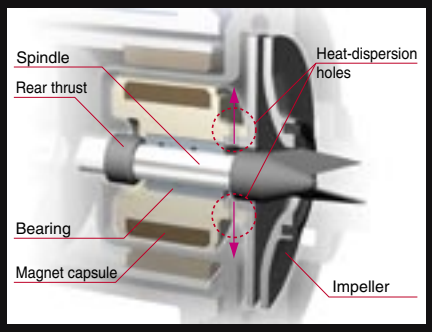
Expanded versatility
The SMX has a modular structure to handle liquids with increased specific gravities. Use of standard motors extends the range of liquid application.

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.



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.

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.



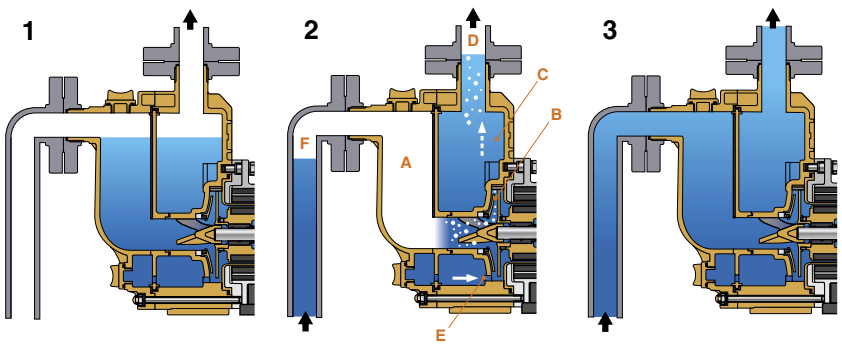
Fast self-priming
The SMX requires no external self-priming chambers or valves. The gas-liquid separation design ensures fast self-priming. An exceptional self-priming duration of up to 4m in only 90 seconds is now possible.

SMX-441

SMX-220

Reliability and performance are enhanced by our unique design

Principles of Self-Priming:

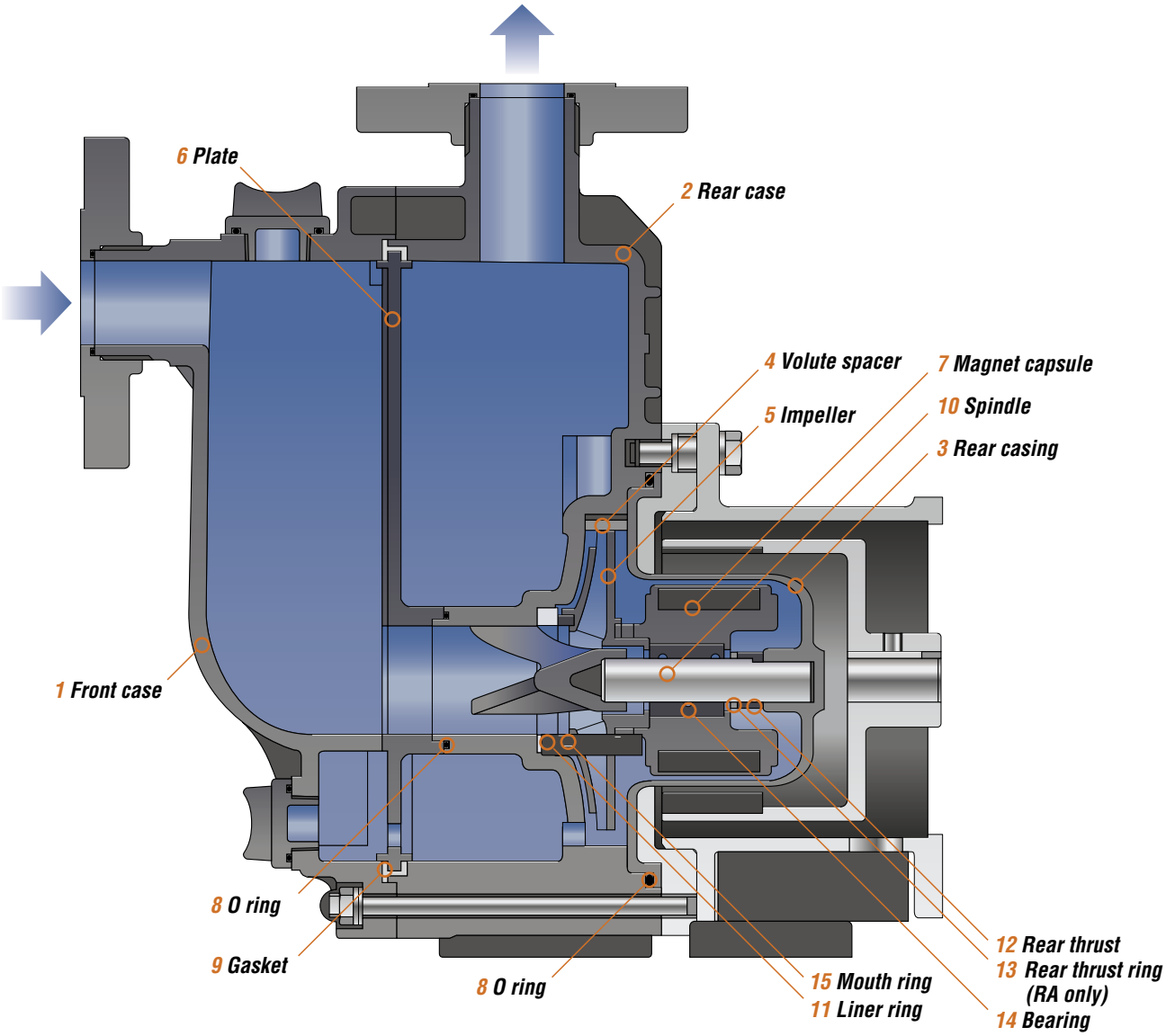


1 Prime the pump with liquid.

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.

Construction and materials



Wet-end materials

Model / Name of part	CA	RA	KA
1 Front case	GFRPP		
2 Rear case			
3 Rear casing			
4 Volute spacer			
5 Impeller			
6 Plate			
7 Magnet capsule	PP		
8 O ring	FKM/EPDM		
9 Gasket			
10 Spindle	High purity alumina ceramic		SiC
11 Liner ring	Alumina ceramic		
12 Rear thrust	CFRPPS		
13 Rear thrust ring Note 1	–	Alumina ceramic	–
14 Bearing	Carbon	PTFE Note 2	SiC
15 Mouth ring	PTFE Note 2		

Note 1: Exclusive for RA type
Note 2: PTFE (w/filler)

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	25 X 25	V	50	10	80 - 8.5	90	0.4	0.28	22
		Y	60		80 - 8	90			
SMX-221		T	50		100 - 14	160	0.75		28
		V	50		80 - 8.5	140			
		X	60		100 - 13	170			
		Y	60		80 - 8	135			
SMX-222		T	50		100 - 14	160	1.5		32.5
		X	60		100 - 13	170			
SMX-441	40 X 40	T	50	10	150 - 12.4	190	0.75	0.33	29
		Y	60		150 - 11.5	200	0.75		29
SMX-442		T	50		150 - 12.4	280	1.5		33
		X	60		200 - 18	310	1.5		33
		Y	60		150 - 11.5	290	1.5		33
SMX-443		X	60		200 - 18	345	2.2		35

- 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

Series symbol
SMX : GFRPP

Pump size
22 : 25(Suction) X 25(Discharge)
44 : 40(Suction) X 40(Discharge)

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

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

Material of O-ring
V : FKM
E : EPDM

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

Motor specifications
No symbol : TEFC indoor
C : TEFC outdoor
A : Increased safety type, outdoor (Except SMX-443)

Precautions on the selection of pumps

1. The performance curve shown in this catalogue represents the data on pressure feed operations using fresh water at 20˚C.

2. Magnetic drive pump cannot be run continuously against a closed discharge valve, and a minimum flow rate should be maintained.
22□: 10L/min, 44□: 10L/min

3. The self-priming performance of these pumps (self-priming of 4 m within 90 seconds) represents the data acquired in operation with fresh water at 20˚C and under the piping conditions illustrated (Sample installation). The self-priming performance varies with the liquid temperature, type of liquid, piping conditions, and other factors. To determine the maximum self-priming height of different specific gravity liquids refer to the following equation :

   - Self-priming height of different specific gravity liquid = Self-priming height of fresh water (m) / Specific gravity of liquid

Self-priming considerations

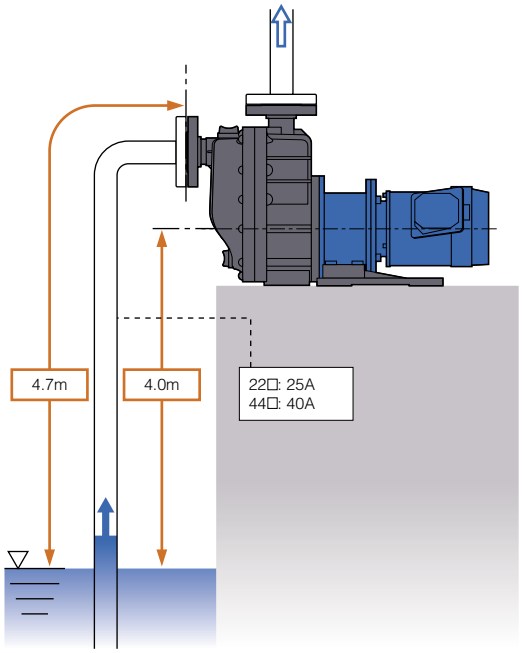
1. The diameter of the piping on the suction side should be the same as that of the pumps inlet port (22□: 25A, 44□: 40A), and the length of the piping should be limited to less than 4.7m. A larger pipe diameter or longer piping could adversely affect the self-priming performance, or could even hinder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

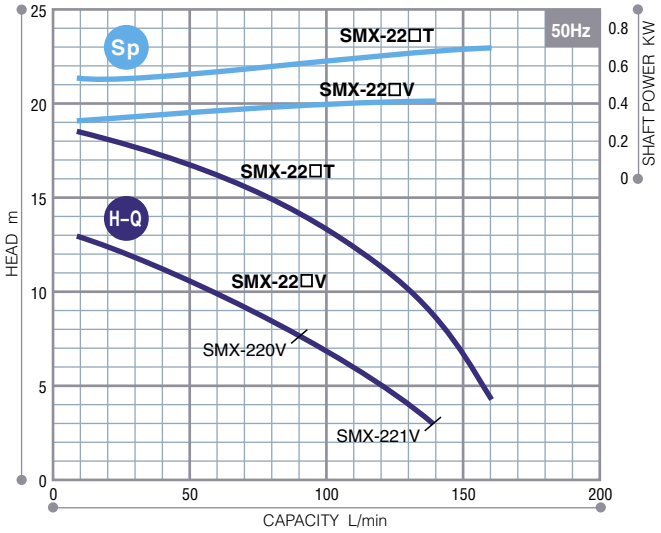
4. To prevent early deterioration, avoid frequent start/stop of the pump.

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

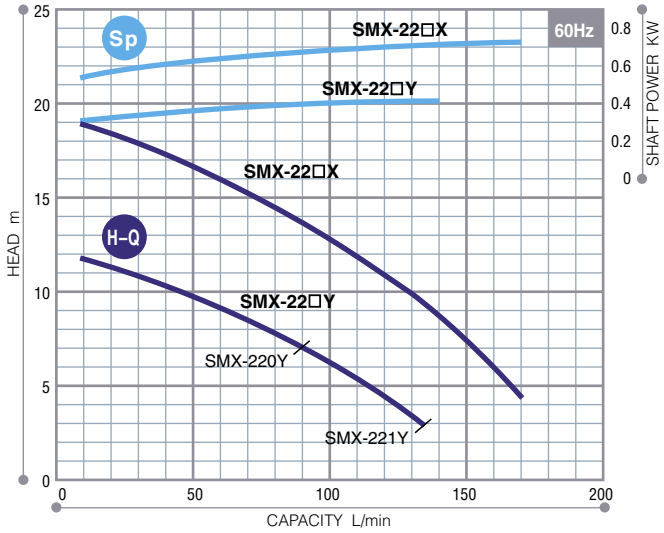


Performance curves

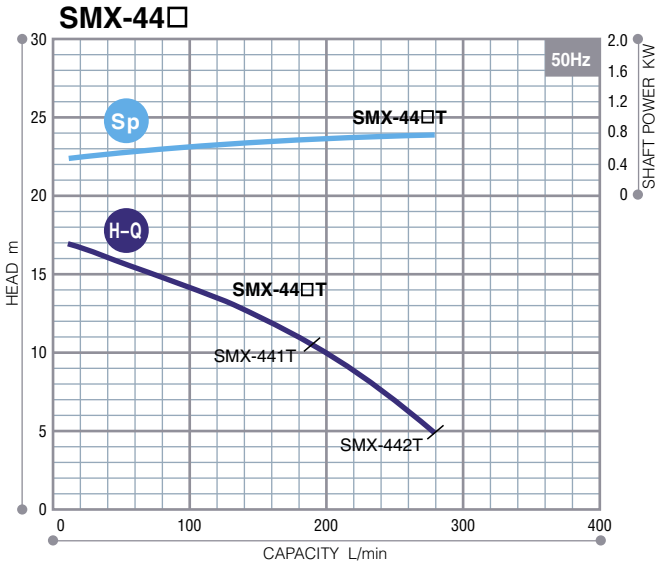
SMX-22□



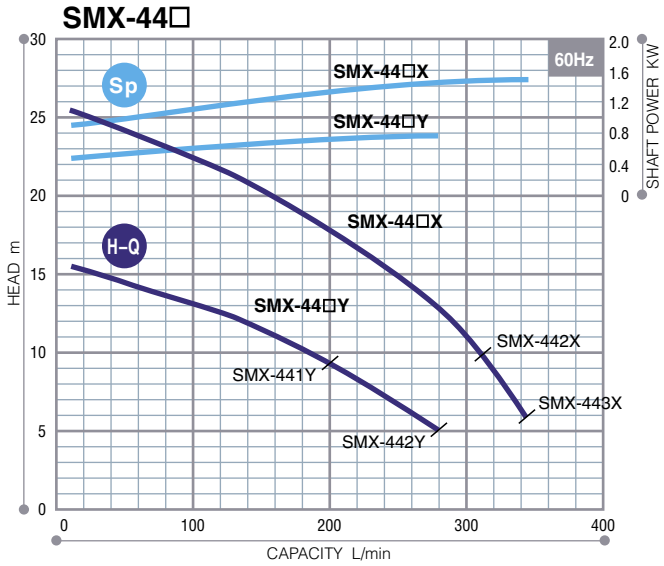
SMX-22□



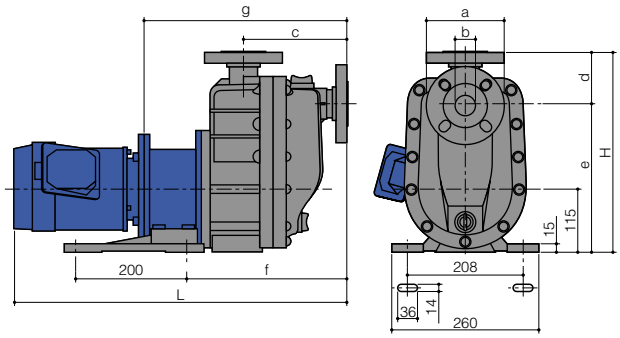
SMX-44□



SMX-44□



Dimensions in mm



Model	H	L	a	b	c	d	e	f	g
SMX-220	(329)	(539)	125	25	(162)	(74)	255	(240)	(308)
SMX-221	(329)	(553)	125	25	(162)	(74)	255	(240)	(320)
SMX-222	(329)	(607)	125	25	(162)	(74)	255	(240)	(332)
SMX-441	(364)	(599)	140	40	(188)	(93)	271	(285)	(366)
SMX-442	(364)	(652)	140	40	(188)	(93)	271	(285)	(378)
SMX-443	(364)	(652)	140	40	(188)	(93)	271	(285)	(378)

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.

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

Specification

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

Iwaki process magnetic drive pump series

MX/MX-F SERIES

Withstands difficult operating conditions and offers high efficiency

MX-F402 MX-401

Specifications (50/60Hz)

- Max.discharge capacity: 500 L/min
- Max.head: 35/37 m
- Main materials: GFRPP (MX-F: CFRETFE)
- Liquid temp. range: 0 to 80 °C (10 to 80 °C for Aflas® O ring.)

MXM SERIES

Magnetic drive pumps with an excellent balance of features and performance

MXM542

Specifications (50/60Hz)

- Max.discharge capacity: 400 L/min
- Max.head: 20.5/30.5 m
- Main materials: GFRPP
- Liquid temp. range: standard: -10 to 90 °C,
  High temp. version (with rear casing cover): -10 to 100 °C

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