



3.3

# HM5X SERIES

**Swash-plate Type  
Axial Piston Fixed Displacement Motor  
(Containing Gearbox)**

Primarily suitable for use in mobile machinery such as excavators and rotary drilling rigs

Apply to open circuit

Size :	45	80	130	180	250
Peak pressure (bar):	240	324	324	324	324



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## Features

- ★ Swashplate type piston motor, integrated with mechanical brake, relief valve, charge valve and anti-reaction valve;
- ★ Compact structure design with the motor's rotating group, integral mechanical brake element and the attached valve options are neatly packaged together.
- ★ Special design of the mounting flange, can be directly connected with the reducer.
- ★ Structure is improved of light weight and compact based on the mature technology, increased the output power.
- ★ Applied in the rotation condition of Medium large-sized excavators, etc.

## Technical Data

Motor	Feature	45	80	130	180	250	
	Normal displacement (cc/rev)	44.1	79.9	129.2	180.1	250.1	
	Direction of rotation	Clockwise, Counter clockwise					
	Max rotation speed (rpm)	1750	2200	1850	1680	1520	
	Peak pressure (bar)	240	324	324	324	324	
	Torque	Rated output torque (N·m)	168.5	410	670	930	1290
		Max. brake torque (N·m)	178	475	874	1210	1770
	Barking Pilot Pressure	Min (bar)	15	22	34	34	34
		Max (bar)	49	49	49	49	49
	Casting pressure	Rated (bar)	1	2	2	2	2
		Max (bar)	3	6	6	6	6
Reducer	Reducer type	RGSS35A	RGSL06E	RGSL12E	RGSL16E	RGSL23E	RGSL27E
	Reduction ratio	20.615	20.01	20.01	20.01	25.2	25.2
	Weight (Kg)	82	120	225	310	420	600
Oil viscosity (mm <sup>2</sup> /s)		7~1600, Best range: 12~80					
Oil Temperature (°C)		-40~100, Best range: 60~85					
Oil Cleanliness		ISO 4406 20/18/15					

When the viscosity is within 200 ~ 1000mm<sup>2</sup>/s, need to preheat before formal running.

Note: The HM5X45 series hydraulic motor is delivered with reducer. The above mentioned data represents the motor data only. For the assembly data the reducer data shall be considered.

## Type introduction

HM5X	130	0	0	265	-	RGSL12E
①	②	③	④	⑤		⑥

### Product series

①	Swashplate piston fixed motor	HM5X
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### Displacement

②	Size	45	80	130	180	250
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### Time delay valve

③		45	80	130	180	250	Code
	With Time delay valve	●	●	●	●	●	1
	Without Time delay valve						0

### Anti-reaction valve

④		45	80	130	180	250	Code
	With Anti-reaction valve	●	●	●	●	●	1
	Without Anti-reaction valve						0

### Relief valve setting

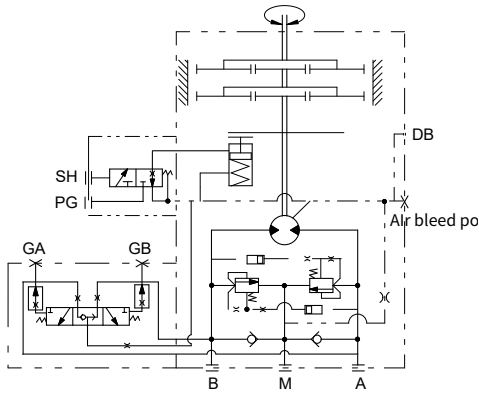
⑤	Relief valve setting	
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### Reducer type

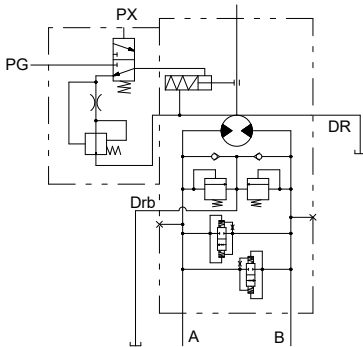
⑥		45	80	130	180	250	Code
	Without reducer	●	●	●	●	●	None
	RGSS35A	●					RGSS35A
	RGSL06E		●				RGSL06E
	RGSL12E			●			RGSL12E
	RGSL16E				●		RGSL16E
	RGSL23E				●		RGSL23E
	RGSL27E					●	RGSL27E

# Principle

## • HM5X 45



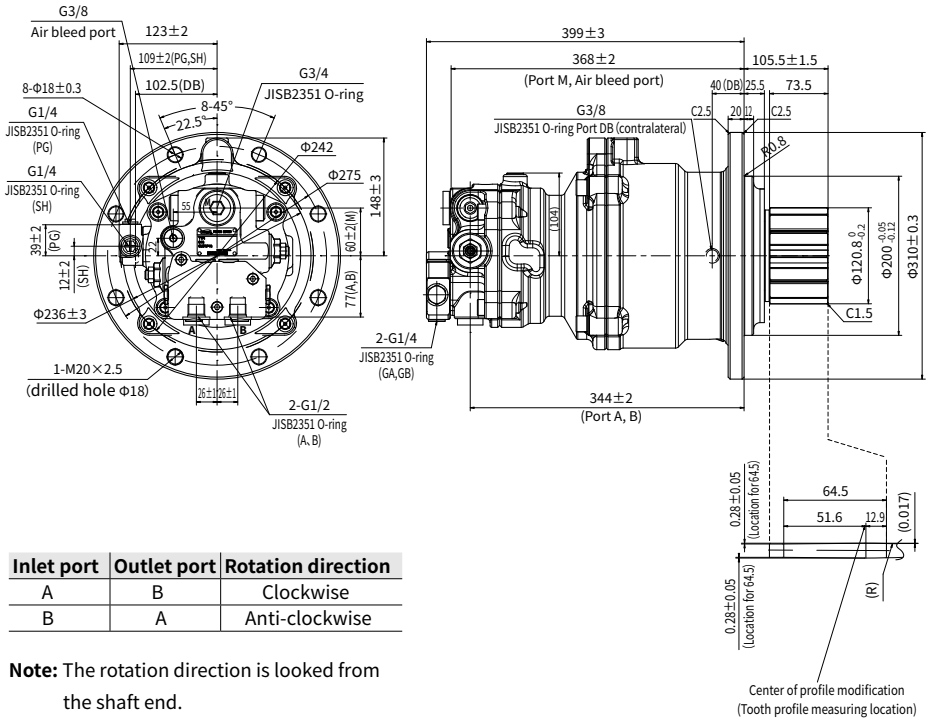
## • HM5X 80 / 130 / 180 / 250



03

# Installation size

## • HM5X 45 Installation size



Inlet port	Outlet port	Rotation direction
A	B	Clockwise
B	A	Anti-clockwise

**Note:** The rotation direction is looked from the shaft end.

## Installation size

### · HM5X 45 Port details

	Port Name	Port Size and Description	Tightening Torque (N-m)
A B	Inlet port and Delivery port	G1/2 ( depth 16mm )	109
M	Charge port	G3/4 ( depth 17 mm )	200
DB	Housing drain port	G3/8 ( depth 12 mm )	70
PG	Braking pilot port	G1/4 ( depth 12 mm )	39.2
SH	Braking release control port		
GA、GB	Gauge port	G1/4 ( depth 12 mm )	39.2

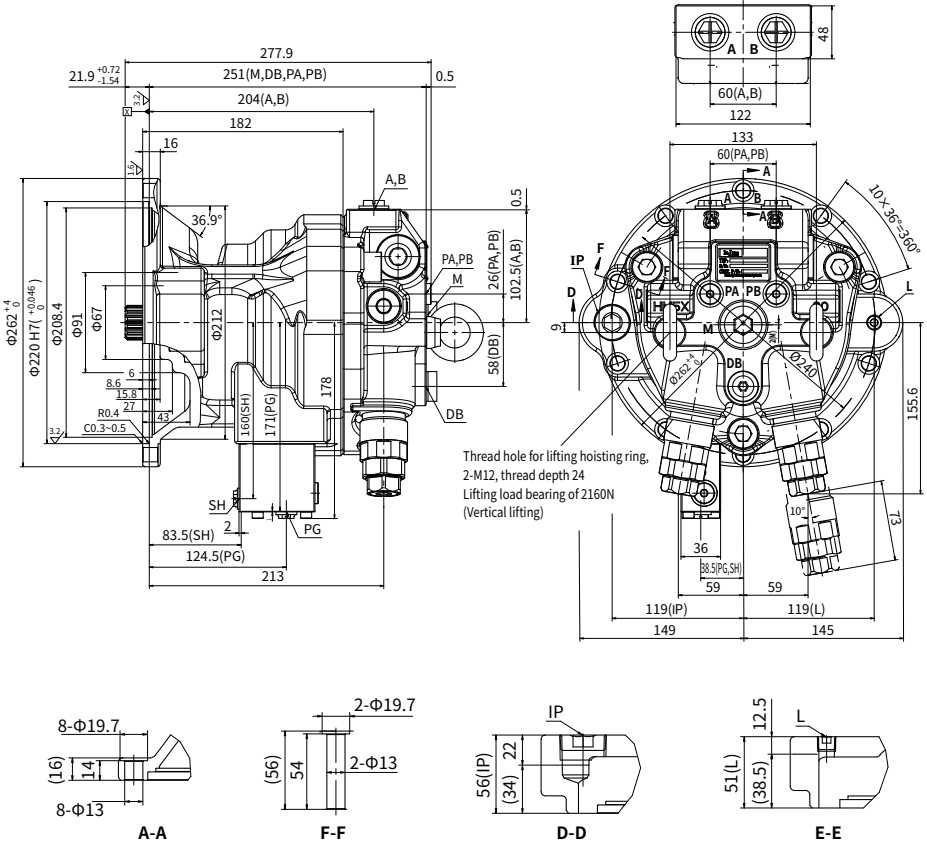
### · Specifications of output pinion

#### Spar gear

Tooth	Tooth profile	Standard gear
	Module	8
	Pressure angle	20°
No. Of teeth		12
Pitch diameter		Φ96
Addendum mod.		4.4 ( X=+0.55 )
Tooth thickness	Displacement over teeth	39.780 <sup>-0.093</sup> <sub>-0.189</sub> (Measurements with two teeth)
Reduction in tooth thickness		0.088 ~ 0.201
Precision class		JIS B 1702-1976 Class 5
Tooth surface roughness		3.2 ✓

# Installation size

## • HM5X 80 Installation size



Inlet port	Outlet port	Rotation direction
A	B	Clockwise
B	A	Anti-clockwise

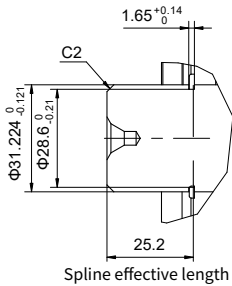
**Note:** The rotation direction is looked from the shaft end.

## Installation size

### • HM5X 80 Port details

	Port Name	Port Size and Description	Tightening Torque (N·m)	Plug type
A, B	Inlet port and Delivery port	G1/2 ( depth 19mm )	108	G1/2 Plastic plug
M	Charge port	G3/4 ( depth 20mm )	167	G3/4 Plastic plug
PA, PB	Gauge port	G1/4 ( depth 15 mm )	36	G1/4 Steel plug
DB	Housing drain port	G3/8 ( depth 15 mm )	74	G3/8 Plastic plug
PG	Braking release port	G1/4 ( depth 12 mm )	36	G1/4 Plastic plug
SH	Braking pilot port	G1/4 ( depth 12 mm )	36	G1/4 Plastic plug
L	Oil level port	Rc1/4-12.5	22	Steel plug
IP	Gear oil filling port	Rc1-22	127	Steel plug

### • HM5X 80 Shaft specification



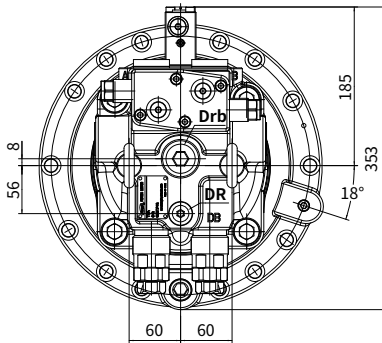
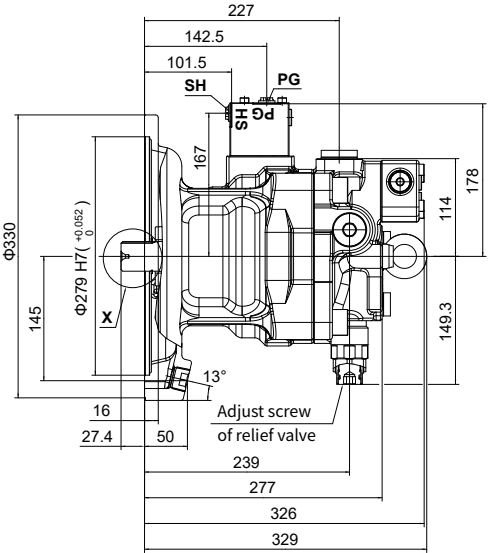
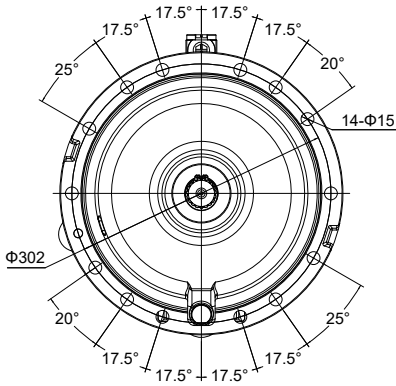
#### Involute spline 14-12/24DP

##### Side fit

Spline pitch	12/24
No. Of teeth	14
Pressure angle	30°
Major diameter	Ø31.224 <sup>0</sup> <sub>-0.16</sub>
Minor diameter	Ø26.993 <sup>0</sup> <sub>-0.2</sub>
Pitch diameter	Ø29.634
Base diameter	Ø25.663
Diameter of pina	Ø4.064
Spacing of pina	Ø35.719 ~ Ø35.783
Reference tooth thickness	3.230 ~ 3.273
Lead tolerance	0.015
Spline standard	SAE J498B

# Installation size

## • HM5X 130 Installation size



Inlet port	Outlet port	Rotation direction
A	B	Clockwise
B	A	Anti-clockwise

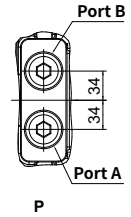
**Note:** The rotation direction is looked from the shaft end.

03

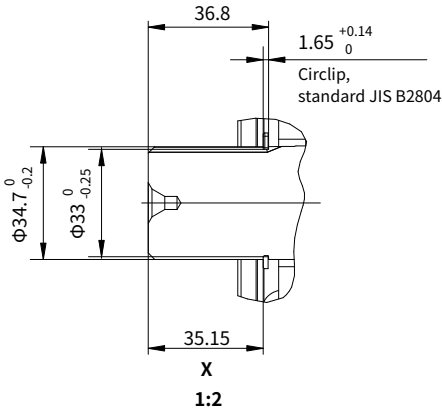
## Installation size

### • HM5X 130 Port details

	Port Name	Port Size and Description	Tightening Torque (N-m)
A	Inlet port and Delivery port	G3/4 (depth 20mm)	320
B			
Drb	Charge port		200
DR	Housing drain port	G3/8 (depth 15 mm)	70
PG	Braking release port	G1/4 (depth 12 mm)	45
SH	Braking release control port		



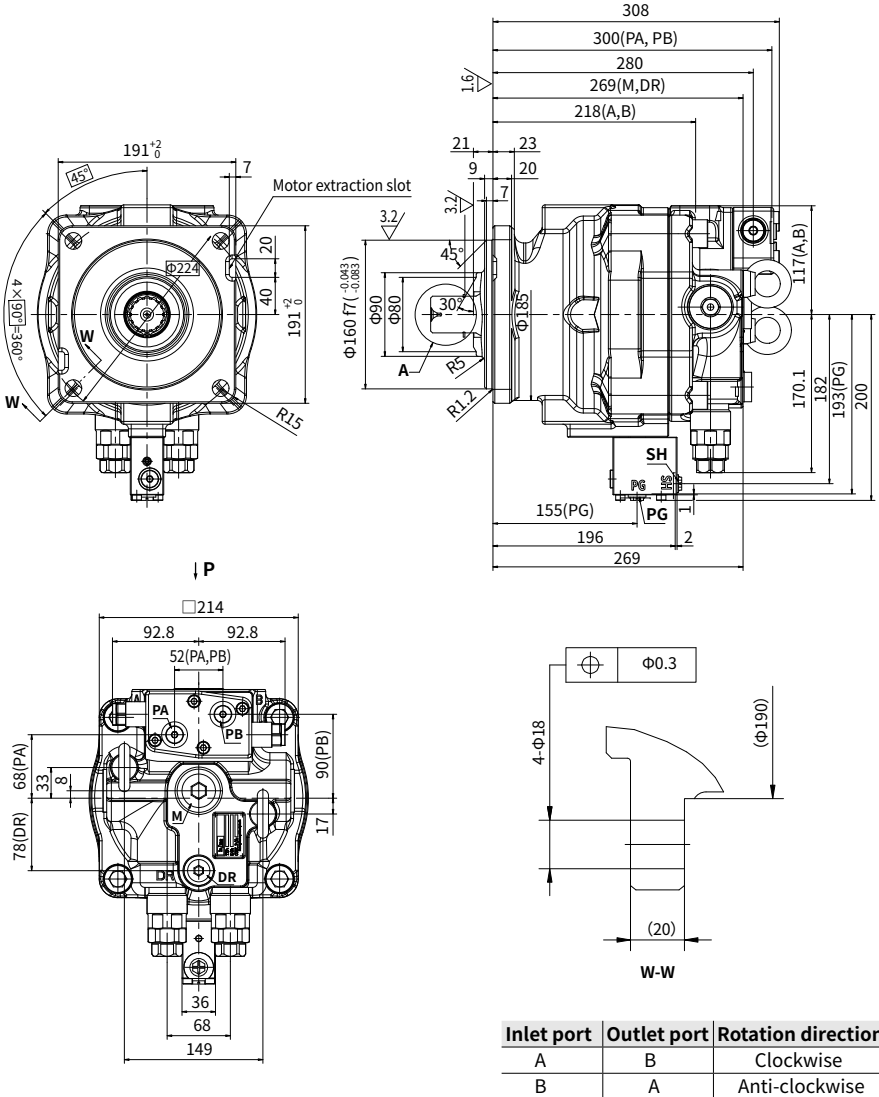
### • HM5X 130 Shaft specification



Spline standard	JIS D2001
Number of teeth	19
Module	1.667

# Installation size

## • HM5X 180 Installation size



Inlet port	Outlet port	Rotation direction
A	B	Clockwise
B	A	Anti-clockwise

**Note:** The rotation direction is looked from the shaft end.

03

## Installation size

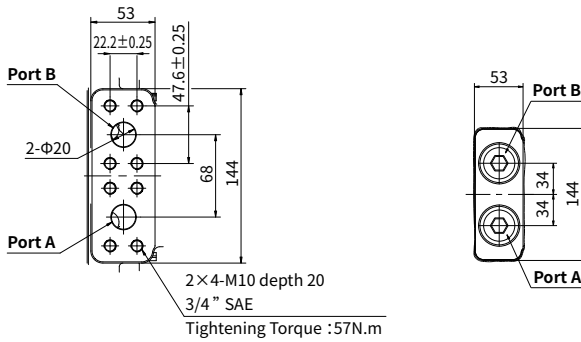
### • HM5X 180 Ports size

(Exclude Inlet and Delivery ports)

	Port Name	Port Size and Description	Tightening Torque (N-m)
M	Charge port	G1( depth 24mm )	200
DR	Housing drain port	G1/2( depth 23mm )	109
PG	Braking release port	G1/4( depth 12mm )	36
SH	Braking pilot port	G1/4( depth 12mm )	36
PA, PB	Pressure measuring	G1/4( depth 15mm )	36

### • HM5X 180 Inlet and Delivery ports options

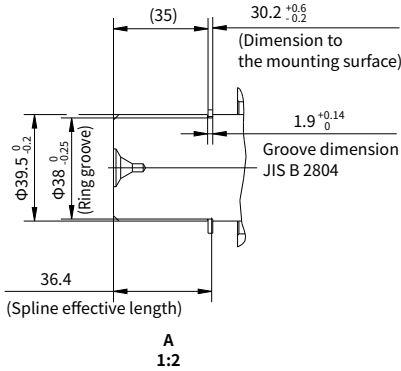
(P direction)



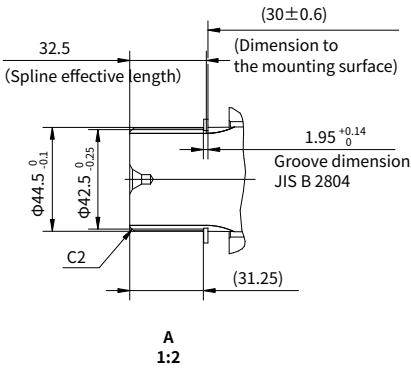
	Port Name	Port Size and Description	Tightening Torque (N-m)
Flanged type	A	Inlet port and Delivery port	SAE G3/4
	B		
Threaded type	A	Inlet port and Delivery port	G3/4( depth 20mm )
	B		

# Installation size

## • HMSX 180 Shaft specification



Spline standard	JIS D2001
Number of teeth	14
Module	2.5

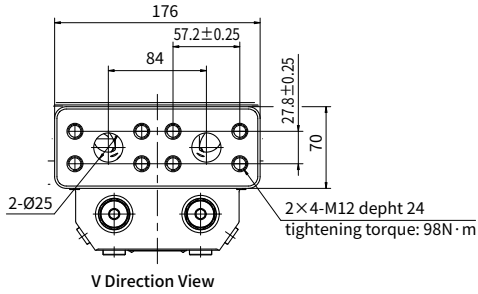


Spline standard	JIS D2001
Number of teeth	16
Module	2.5



## Installation size

### · HM5X 250 Port details



	Port Name	Port Size and Description	Tightening Torque (N·m)	Plug type
M	Charge port	G1 · 1/4	200	G1 Plastic plug
DR	Housing drain port	G3/4	109	G1/2 Plastic plug
PG	Braking release port	G1/4 ( depth 12 mm )	36	G1/4 Plastic plug
SH	Braking pilot port	G1/4 ( depth 12 mm )	36	G1/4 Plastic plug
PA , PB	Gauge port	G1/4 ( depth 15 mm )	36	G1/4 Steel plug

### · Specifications of output pinion

Shaft spline 49.5×18×2.5		
Flat root and Side fit		
stand-off error	0.8	
Tool	Tooth profile	Substandard gear
	Module	2.5
	Pressure angle	20°
No. Of teeth	18	
Pitch diameter	Φ45	
Major diameter	Φ49.4 <sup>0</sup> <sub>-0.1</sub>	
Minor diameter	Φ44 <sup>0</sup> <sub>-0.1</sub>	
Diameter of pina	Φ4.5	
Spacing of pina	Φ54.366 <sup>0.132</sup> <sub>-0.223</sub>	
Lead tolerance	0.04	
Precision class	Class a	
Spline standard	JIS D2001	



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