



4.2

# HM3V SERIES

## Axial Piston Variable Displacement Motor

HM3V series swash plate axial piston motor adopts disassembling type design, small volume, light weight, Compact installation space, applied to the open or closed hydraulic transmission circuits.

Apply to open or close circuit

Size:	25	38	45
Nominal pressure (bar):	210	210	175
Max pressure (bar):	415	415	350



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### Features

- Swash plate axial piston motor for open or close circuit.
- Cartridge design, compact installation space, convenient and wheel installed applications.
- Integration of two variable motor, servo variable piston, can set the minimum displacement of the motor.
- Motor oil mouth concentrate in a side, easy to install and oil circuit layout.
- High cliometric efficiency

## Technical Data

Size		25	38	45
Max displacement (cc/rev)		25	38	45
Min displacement (cc/rev)		Can be adjusted according to the requirements		
Direction of rotation		Clockwise, Counter clockwise		
Rotation speed (at max displacement)	Rated (rpm)	3400	3600	3500
	Max (rpm)	3950	4000	3900
Rotation speed (at min displacement)	Rated (rpm)	4400	4650	4500
	Max (rpm)	5000	5200	5050
Pressure	Rated (bar)	210	210	175
	Max (bar)	415	415	350
Control Pressure	Min (bar)	14		
	Max (bar)	69		
Casting pressure	Rated (bar)	2		
	Max (bar)	6		
Weight (Kg)		15.4		
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		

## Type introduction

HM3V	38	N	S1	R	N	N	F1513	
①	②	③	④	⑤	⑥	⑦	⑧	⑨

### Product series

①	Swash plate axial piston motor	HM3V
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### Displacement

②	Displacement (cc/rev)	25	38	45
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### Speed sensor

③	Without	N
	With 45 pulse/ring	S

### The input shaft

④	13T 16/32 pitch ANSI B92.1-1970	S1
	15T 16/32 pitch ANSI B92.1-1970	S2
	1: 8 Conical axis	D

### Back cover port type

⑤	Lateral port, 1-1/16-12UN-2B	R
	Lateral port, 1-1/16-12UN-2B	Y

### Flush valve

⑥	None (standard, If you want to flush valve please contact with us)	N
	Flow=option 1, open pressure 10.3bar (to be developed)	1

### Adjustable min displacement limiter

⑦	None	N
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### Minimum displacement set

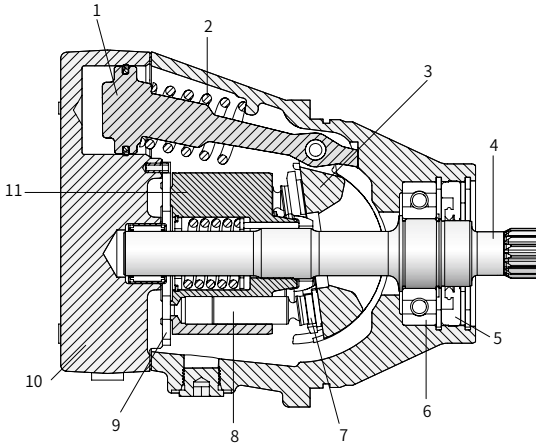
⑧	9.5 cc/rev	F0950
	14.3 cc/rev	F1430
	15.13 cc/rev	F1513
	38 cc/rev(reverse) only HM3V38	F3800
	45 cc/rev(reverse) only HM3V45	F4500

### Paint and nameplate

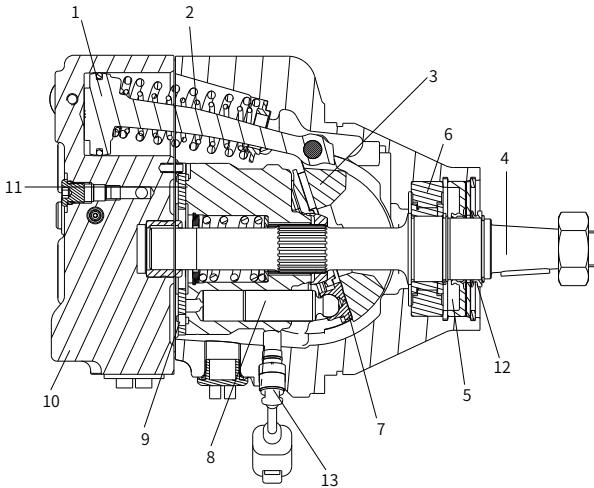
⑨	HL nameplate and black paint	Blank
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## Section view

### · Large and small displacement



### · Reversal function



1. Servo piston

2. Bias spring

3. Swash plate

4. Output shaft

5. Shaft seal

6. Bearing

7. Slipper

8. Piston

9. Valve plate

10. Endcap

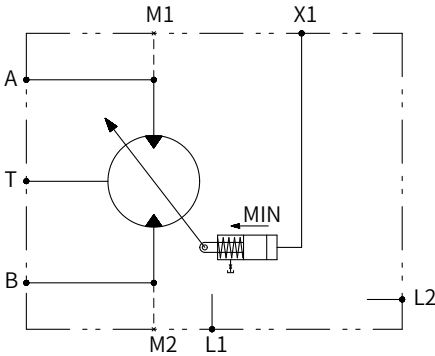
11. Cylinder block

12. Dust ring

13. Speed sensor

## Principle

### · Large and small displacement

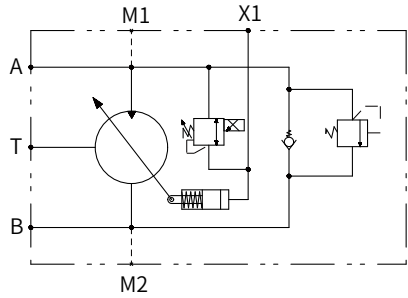


1) Two position variable motor, motor initial work location is maximum displacement location maintained by the bias spring and pressure oil to the motor control can switch the motor to minimum displacement.

2) On the housing there is an oil channel, which is independent with pressure relief oil line of the brake, this kind of design enables external brake control oil line through the oil duct connection to the brake relief port of the gear reducer brake.

3) In open loop, the motor output port maintains a back pressure to ensure lubrication and normal work of the motor internal components. System low side pressure should be 3 bar higher than the housing pressure.

### · Reversal function



1) Two position variable motor, motor initial work location is maximum displacement location maintained by the bias spring and pressure oil to the motor control can switch the motor Reverse large displacement.

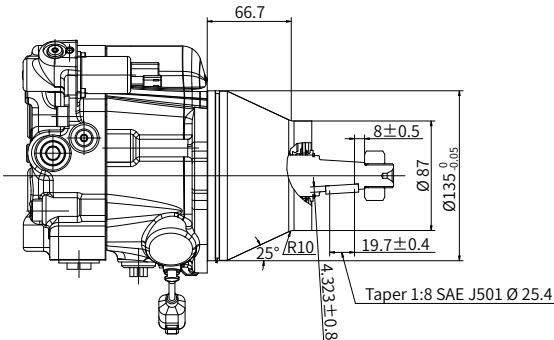
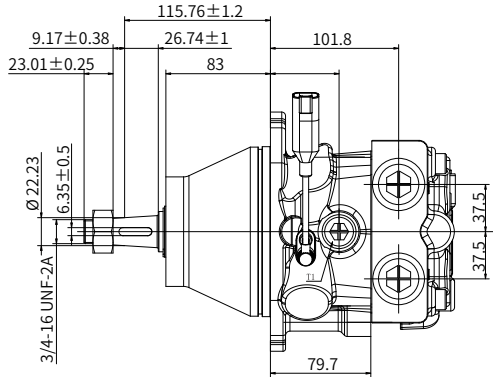
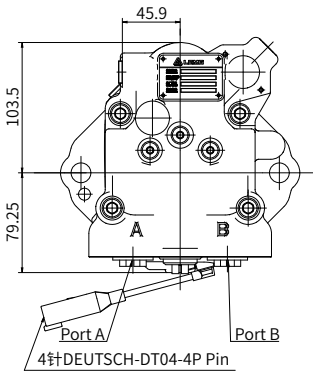
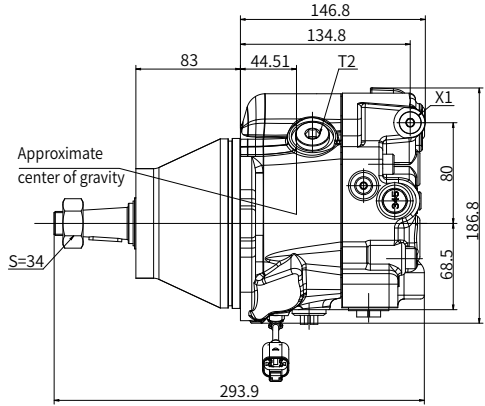
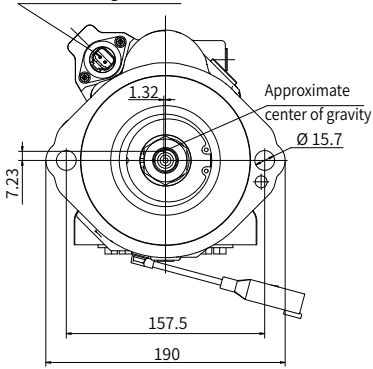
2) In open loop, the motor output port maintains a back pressure to ensure lubrication and normal work of the motor internal components. System low side pressure should be 3 bar higher than the housing pressure.



# Installation size

## • HM3V 38/45 Installation size (reversible)

Deutsch conn: DT04-2P  
 voltage: 24V  
 Resistance: 24Ω  
 Flutter frequency: 100~200  
 Current range: 0~750mA



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## Installation size

### • Direction of rotation and oil flow direction

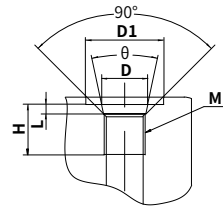
Installation	Rotation
Flow A → B	Clockwise
Flow B → A	Counter-clockwise

### • Direction of rotation and oil flow direction (reversible)

Installation	Rotation
Flow A → B	Clockwise (The electromagnet loses power)
	Counter-clockwise (The electromagnet gets electricity)

### • Port details

	Port Name	Port Size and Description	Tightening Torque (N·m)
A	Inlet port and Delivery port	1-1/16-12UN-2B (depth 22mm)	147
B		1-1/16-12UN-2B (depth 22mm)	147
X1	Control port	9/16-18UNF-2B (depth 16 mm)	25
T	Case drain port	3/4-16UNF-2B (depth 17 mm)	62
Pf	Brake release port	7/16-20UNF-2B (depth 13.5 mm)	15



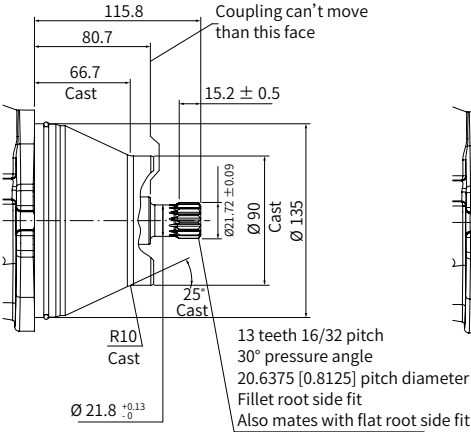
Port	H	L	M	D	D1	θ
A	22	3.3	1-1/16-12UN-2B	Φ29.2	Φ41	30°
B	22	3.3	1-1/16-12UN-2B	Φ29.2	Φ41	30°
X1	16	2.5	9/16-18UNF-2B	Φ15.7	Φ24.7	24°
T	17	2.5	3/4-16UNF-2B	Φ20.65	—	30°
Pf	13.5	2.4	7/16-20UNF-2B	Φ12.45	Φ21	24°



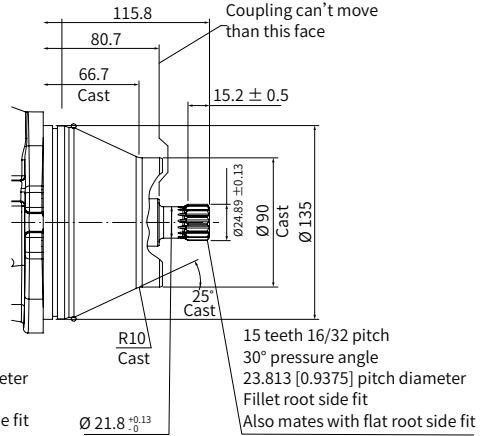
# Installation size

## HM3V 38/45 Input Shaft type

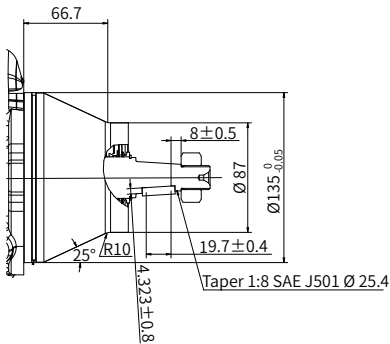
“S1” type shaft  
13 teeth spline



“S2” type shaft  
15 teeth spline



“D” type shaft  
1:8 conical axis



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