1.2

HP5VS SERIES

Swash-plate Type
Axial Piston Variable Displacement Pump

HP5VS series piston pump is high pressure open circuit axial piston pump specially designed with a new structure, light weight, high power density, and long life .

Apply to open hydraulic circuit			
Displacements (cc/rev):	45	63	85
Rated pressure (bar):	210	210	210
Peaking pressure (bar):	250	250	250

Contents

Technical Data	02
Type introduction	03-04
Regulators introduction	05-06
Installation size	
· HP5VS45 Installation size	07-08
· HP5VS63 Installation size	09-10
· HP5VS85 Installation size	11-12

Features

- Variable pump in swash-plate design for open circuit.
- High continuous pressure.
- Exceptional self-priming capability.
- Available with American (SAE) and Japanese (JIS) mounting flanges and shafts.
- Excellent reliability and long life.
- High power to weight ratio.
- Variety of control options.
- Optional through drive.
- Quick control response.
- Low pressure pulsation and low noise.

Technical Data

Size		45	63	85
Displacement (cc/rev)		45	63	85
Pressure	Rated pressure (bar)	210	210	210
	Peak pressure (bar)	250	250	250
Rotation speed	Max for self-priming[*1] (rpm)	2900	2700	2700
Weight (Kg)		15	30	-
Quantity of oil to fill pump case (L)		0.3	0.6	0.8
Temperature Range (°C)		-20~95		
Viscosity Range (mm^2/s)		10-1000[*2] (The best use of viscosity range 16~36 mm^2/s)		

Permissible through drive torque		
Input shaft code	S1	S2
Input torque rating (Nm)	250	400

1. Steady state suction pressure should be 0 bar and above(at normal condition);
2. In case of 200-1000mm^2/s, please allow system to warm up before using machine.

Type introduction

HP5VS	45	/	B	V	00	R	B2	S1	M	G	DR	S
①	②		③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫

Product series

	Compact product series	HP5VS

Displacement

②	Displacement cc/rev	45	63	85

Design series

		45	63	85	Code
③	High speed unboost	●	●	●	B
	High speed boost	●	●		C

Seals

④	Seals	FKM (Viton rubber: DIN ISO 1629)	V
		NBR (Nitrile rubble :DIN ISO 1629)	N

Through Drive

		45	63	85	Code
⑤	Without through drive	●	●	●	00
	Without through drive, SAE flange ports, rear	●	●	●	N1
	Without through drive, Thread ports, rear		●		N2

Direction of Rotation

⑥	Viewed on drive shaft	Clockwise	R
		Counter-clockwise	L

Input Mounting flanges

		45	63	85	Code
⑦	Mounting flanges size				
	SAE B 101-2	●	●	●	B2

Type introduction

Input Shaft

	Shaft size	45	63	85	Code
⑧	SAE J744-22-4 13T 16/32DP	●	●		S1
	SAE J744-25-4 15T 16/32DP			●	S2

Remark：If you have any other needs, please contact us.

Thread type of Flange Fixing Port

⑨	Thread type	Metric threads	M
		UNC threads	S

Connection type (except inlet and outlet port)

⑩	UNC port, ISO 11926	A
	BSPPG thread, JIS B2351	G
	Metric port, ISO 9974	M

Control type

	Control type		45	63	85	Code
⑪	Pressure cut-off	Only pressure control	●	●	●	DR
		+Load sensing	●	●	●	L1
	Power Control	Pressure cut-off+ Load sensing	●			LP1

Standard / special version

		45	63	85	Code
⑫	Standard version	●	●	●	None
	Special version	○	○	○	S

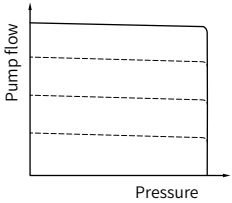
Remark：● = available； ○ = On request；

Regulators introduction

Code: **L1(DR)**

Control Type :

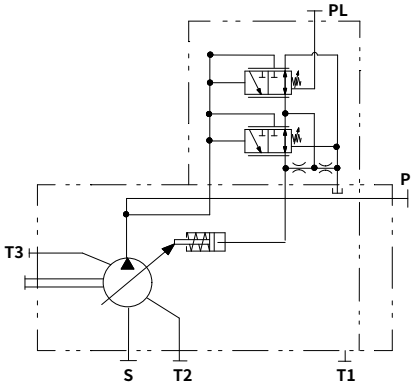
1. Load sensing
Standard setting: 15bar
Adjustment range: 10bar-21bar
(It can be set to 35 bar at most, but it is not recommended to set it too high. If you need other settings, please consult our company.)
2. Pressure Cut-off
Standard setting: 320bar
Adjustment range: 21bar-320bar



Function and Features:

Load sensing + Pressure Cut-off
The load sensing control is a flow control option that operates as a function of the load pressure to regulate the pump displacement to match the actuator flow requirement.
The load sensing control compares pressure before and after the sensing orifice and maintains the pressure drop across the orifice (differential pressure Δp) and with it the pump flow constant.
If the differential pressure Δp increases, then the pump displacement decreases, and if the differential pressure Δp decreases, then the pump displacement increases until the pressure drop across the sensing orifice in the valve is restored.
$\Delta p=Pp-P_L$
Pump displacement is controlled to match the flow requirement as a function of the system differential pressure(load pressure vs delivery pressure).In addition, there is a pressure cut off function incorporated into the control.
The pressure cut off control keeps the pressure in a hydraulic system constant within its control range even under varying flow conditions, the variable pump only moves as much hydraulic fluid as is required by the actuators. if the operating pressure exceeds the set point set at the pressure control valve, the pump displacement is automatically swivelled back until the pressure deviation is corrected.
"DR" control is on the basis of "L1" control, tighten the load sensitive valve adjust screw, and the load sensitive valve doesn't work.

Hydraulic Circuit:

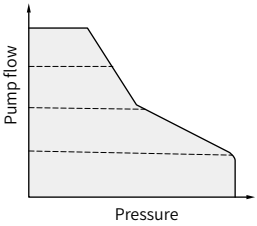


Regulators introduction

Code: LP1

Control Type :

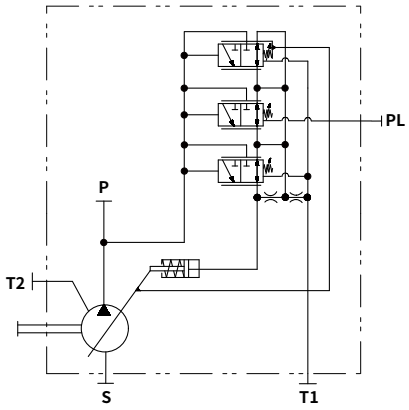
1. Load sensing
Standard setting: 15bar
Adjustment range: 10bar-21bar
(It can be set to 35 bar at most, but it is not recommended to set it too high. If you need other settings, please consult our company.)
2. Pressure Cut-off
Standard setting: 210bar
Adjustment range: 21 bar-210 bar
3. Torque limiting



Function and Features:

LP1 Load Sense and Pressure Cut-off with Torque limiting
The L1 control functions as previously noted. In response to a rise in delivery pressure the swash plate angle is decreased, restricting the input torque. This regulator prevents excessive load against the prime mover.
The torque limit control module is comprised of two springs that oppose the spool force by the system pressure. By turning an outer and inner spring adjustment screw, the appropriate input torque limit can be set.

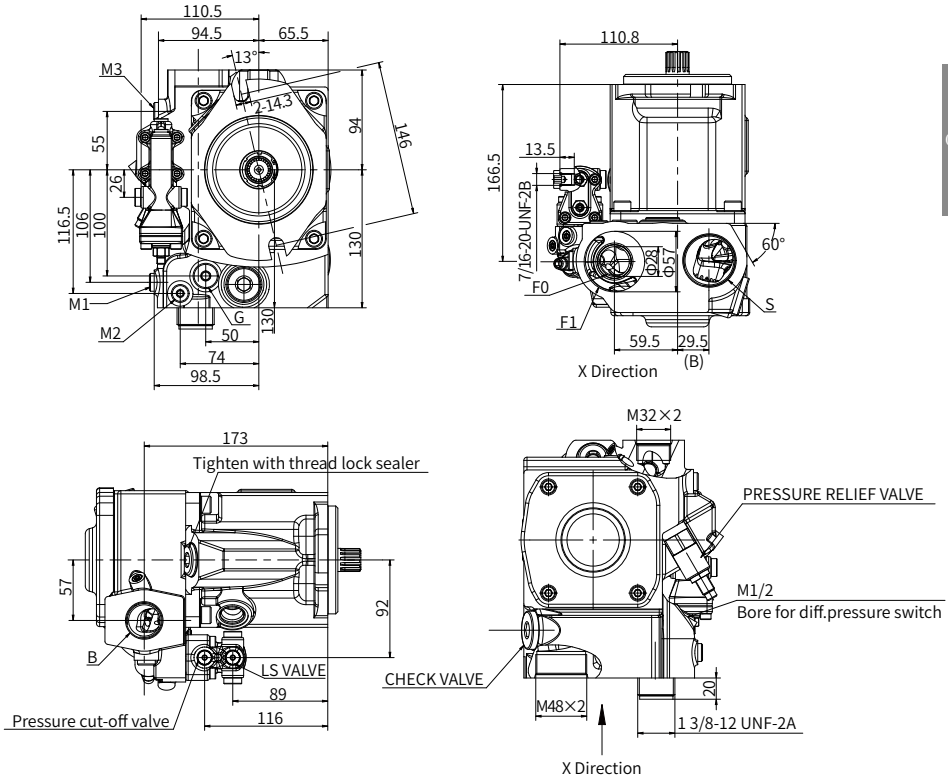
Hydraulic Circuit:



Installation size

HP5VS45 installation size

HP5VS45 with Cut-off/Load Sense Control

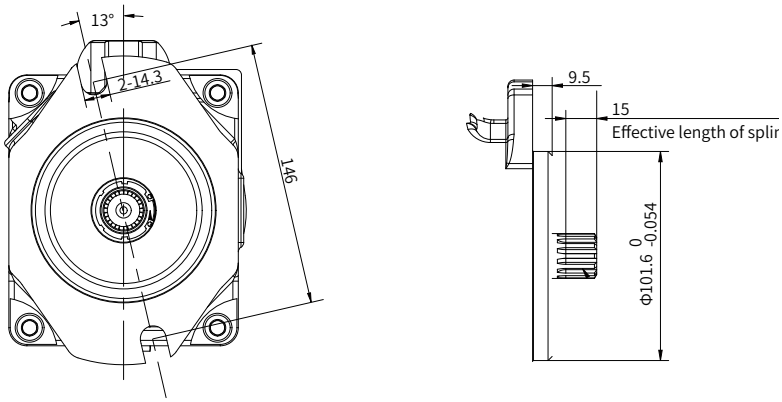


Port Details

	Port Name	Port Size and Description	Tightening Torque (N-m)
P	Working port	M33×2 (ISO 6149)	310
S	Suction port	M48×2 (ISO 6149)	420
T1	Case drain port	M22×1.5	100
PL	LS Control port	7/16-20-UNF-2B	20

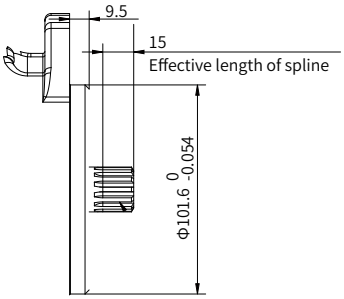
Installation size

HP5VS45 Mounting Flange



SAE "B2" type

HP5VS45 Input Shaft type

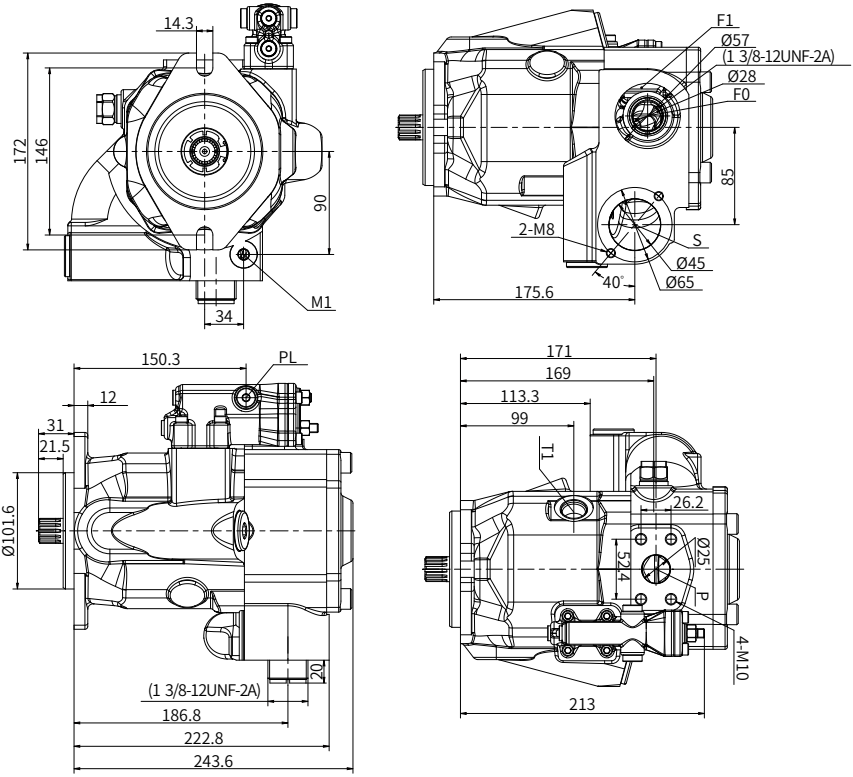


"S1" type spline shaft

Installation size

HP5VS63 installation size

HP5VS63 with Cut-off/Load Sense Control

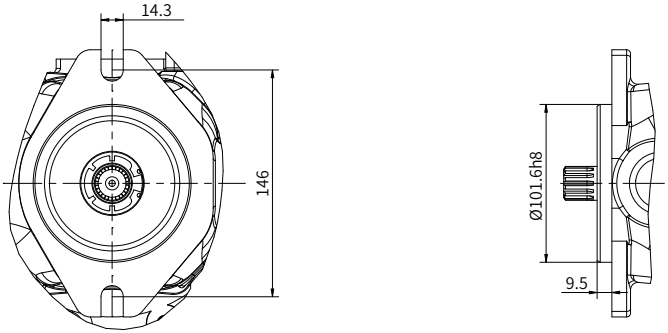


Port Details

	Port Name	Port Size and Description	Tightening Torque (N-m)
P	Working port	SAE 1" MAX.5000psi M10X1.5 (depth 17mm)	57
S	Suction Port	Φ 45；2×M8	29
T1	Case drain Port	ISO 11926 7/8"-14UNF-2B	120
PL	LS Control Port	ISO 11926 7/16"-20UNF-2B	12

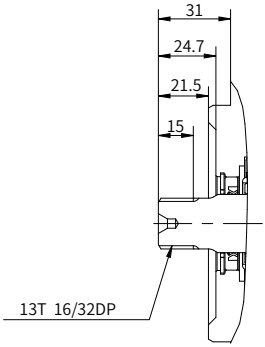
Installation size

HP5VS63 Mounting Flange



SAE "B2"type

HP5VS63 Input Shaft type

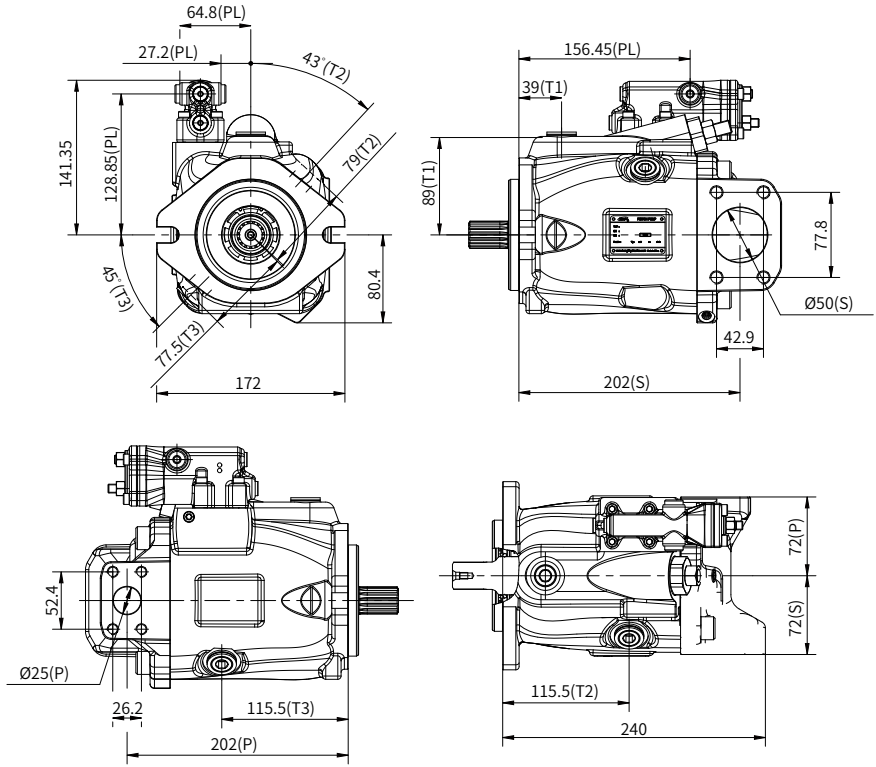


"S1"type spline shaft

Installation size

HP5VS85 installation size

HP5VS85 with Cut-off/Load Sense Control with torque limit (Clockwise Rotation)
For the CCW pump just reverse the inlet and outlet port.

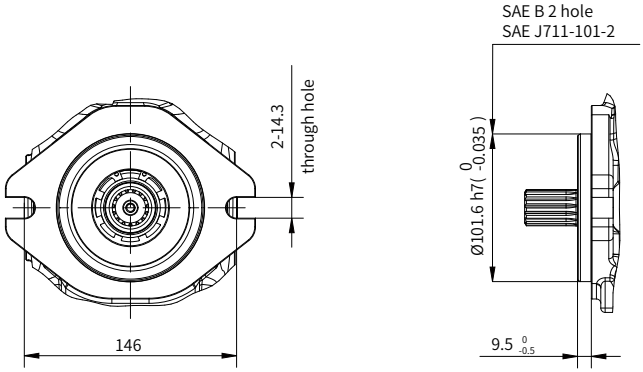


Port Details

	Port Name	油口尺寸和类型			拧紧力矩 (N-m)
P	Working port	1" SAE J518C Code 61 (5000psi)	M（公制）	M10×1.5(深 17mm)	57
S	Suction Port	2" SAE J518C Code 61 (3000psi)	M（公制）	M12×1.75 (深 20mm)	98
T1、T2、T3	Case drain Port	M22×1.5(ISO 6149-1)			60
PL	LS Control Port	M12×1.5(ISO 6149-1)			35

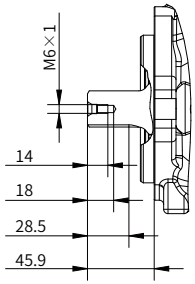
Installation size

HP5VS85 Mounting Flange



SAE "C2" type

HP5VS85 Input Shaft type



"S2" type spline shaft

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