



# Axial Piston Variable Pump HP3VO Series 01

Size: 40/45/63/72/85 mL/r  
Rated pressure: 28 MPa  
Max. pressure: 32 MPa



## Features



- Axial variable pump of swashplate design for hydrostatic drives in open circuits
- The flow is proportional to the drive speed and displacement and is infinitely varied
- The drive shaft allows axial and radial loading  
Various control options to satisfy different operating requirements
- High power to weight ratio
- Excellent suction characteristics
- Diverse control options, short control response time
- Compact structure, small size, low noise

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> Model Code

	b	c	A	B		I	J	K	M	N	P	R	S	X	Z
HP3V		O			/	01			-						-

**Axial Piston Unit**

—	Swashplate design, variable piston pump	HP3V
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**Pressure Rating**

b		40	45	63	72	85	
	Conventional (without code)	●	●	●	●	●	
	Rated pressure: 21 MPa Max. pressure: 25 MPa	○	○	●	○	○	N

**Operation**

c	Open circuit	O
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**Displacement**

A	Geometric displacement, in mL/r	40	45	63	72	85	
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**Variable Control Method**

B					40	45	63	72	85			
	Pressure control					●	●	●	●	●	DR	
		load sensitive control	X-T open			●	●	●	●	●	DRF	
			X-T plugged	with flushing		●	●	●	●	●	DRS	
				without flushing		○	○	○	○	○	DRSC	
		remote control				●	●	●	●	●	DRG	
	Power control With pressure cut-off	Beginning of control			10-35bar	●	●	●	●	—	LA5D	
					36-70bar	●	●	●	●	—	LA6D	
					71-105bar	●	●	●	●	—	LA7D	
					106-140bar	●	●	●	●	●	LA8D	
					141-230bar	●	●	●	●	●	LA9D	
		remote control			Beginning of control	see LA.D	○	○	●	●	●	LA.DG
		load sensitive X-T plugged				see LA.D	●	●	●	●	●	LA.DS
			Negative proportional power override	U=12V		see LA.D	○	○	●	●	○	LE1.DS
				U=24V		see LA.D	○	○	○	○	●	LE2.DS
	Electro proportional displacement control	pressure cut-off		positive proportional control	U=12V	○	○	●	●	○	EP1D	
					U=24V	○	○	○	○	○	EP2D	
	Electro proportional Pressure control	remote pressure control		negative proportional control	U=12V	○	○	○	○	○	ED71	
U=24V					○	○	○	○	●	ED72		



➤ Model Code

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HP3V		O			/	01			-						-

Series

I		40	45	63	72	85	
	Series 01	●	●	●	●	●	01

Oil Port Type

J		40	45	63	72	85	
	UN/UNF,O-ring seal,with standards SAE J1926	●	●	●	●	●	S
	Drain Port: BSPP,O-ring seal,with standards JIS B2351-1G Control Por: BSPP,ED seal,with standards ISO 1179-1	●	●	●	●	●	G
	Metric,ED seal,with standards ISO 9974-1	●	●	●	●	○	I

Direction of Rotation (viewed on drive shaft)

K		40	45	63	72	85	
	CW	●	●	●	●	●	R
	CCW	●	●	●	●	●	L

Sealing Material

M		40	45	63	72	85	
	NBR seal + FKM shaft seal	○	○	●	●	○	N
	NBR seal	○	○	●	●	●	P
	FKM shaft	●	●	●	●	○	V

Drive Shaft

N		40	45	63	72	85	
	7/8" 13T 16/32DP	●	●	● <sup>1)</sup>	—	—	S1
	1" 15T 16/32DP	●	●	●	●	—	S2
	1 1/4" 14T 12/24DP	—	—	●	●	●	S3
	1 1/2" 17T 12/24DP	—	—	—	—	○	S4

Mounting Flange

P		40	45	63	72	85	
	ISO 3019-2,2 hole	●	●	○	○	○	A
	SAE J744,2 hole	●	●	●	●	●	C
	SAE J744,2 hole(second series)	○	○	●	●	○	C2
	SAE J744,4 hole	○	○	○	○	●	D

Working Ports

R		40	45	63	72	85			
	SAE port flange, metric fastening thread	rear	not used for through drive	●	●	● <sup>2)</sup>	○	○	11
		side	used for through drive	●	●	●	●	●	12
		side, 90 ° offset	not used for through drive,for CCW	○	○	○	○	○	13
	SAE port flange, UNC fastening thread	side	used for through drive	○	○	○	○	●	62

1):63cc for "HP3VNO" 2):63cc for "HP3VNO"



> Model Code

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HP3V		O			/	01			-						-

Through Drive

	Flange SAE J744			Splined shaft			40	45	63	72	85	
	S	Without through drive						●	●	●	●	●
82-2(A)		5/8"	9T	16/32DP			●	●	●	●	●	K01
		3/4"	11T	16/32DP			●	●	●	●	●	K52
101-2(B)		7/8"	13T	16/32DP			●	●	●	●	●	K68
		1"	15T	16/32DP			●	●	●	●	●	K04
127-4(C)		1 1/4"	14T	12/24DP			○	○	○	○	●	K15
		1 1/2"	17T	12/24DP			○	○	○	○	○	K16
127-2(C)		1 1/4"	14T	12/24DP			○	○	○	○	●	K07
		1 1/2"	17T	12/24DP			○	○	○	○	○	K24

Solenoid Connector

	40	45	63	72	85							
X	Without connector (without solenoid, only for hydraulic control(without code))						●	●	●	●	●	
	DEUTSCH DT04-2P, 2-pin plastic connector, without diode suppressor (electric control)						○	○	●	●	○	P
	AMP 17454-2, 2-pin plastic connector						○	○	●	●	○	A

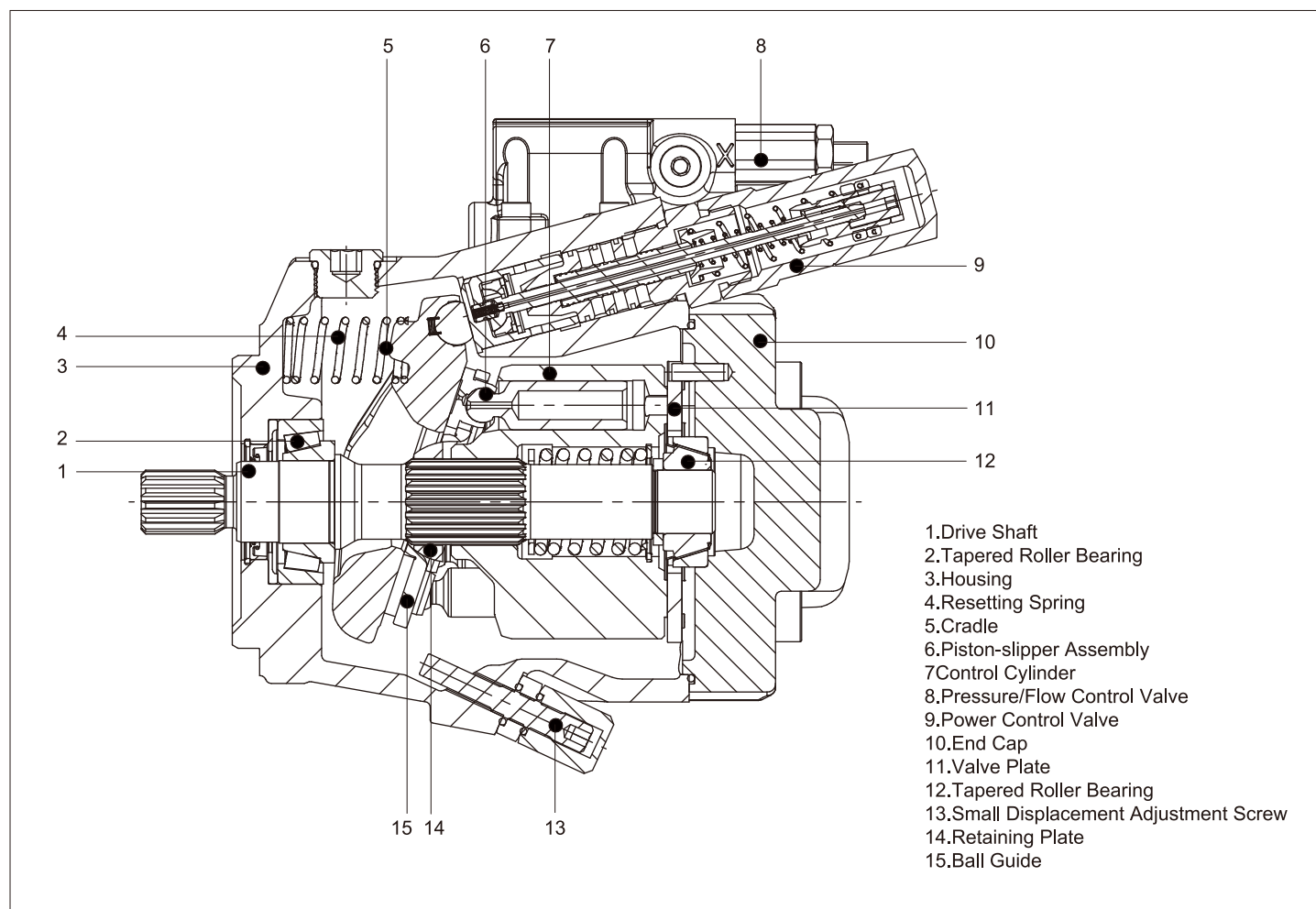
Special Configuration

	40	45	63	72	85							
Z	Without special configuration (without code)						●	●	●	●	●	
	Special configuration						○	○	○	○	○	***

● Available    ○ On request    — Not available    ■ Recommended model



> Structure





### > Hydraulic Fluid

Mineral oil

### > Working Viscosity

In order for the optimum efficiency and service life, it is recommended to select the working viscosity at working temperature within the range below:

$$V_{opt} = \text{optimal working viscosity } 16 \dots 36 \text{ mm}^2/\text{s}$$

It is subject to the reservoir temperature of an open circuit.

### > Limit Viscosity

Limit viscosity:

$$V_{min} = 10 \text{ mm}^2/\text{s}$$

Short-term operation, at permissible maximum leakage temperature of 90 °C

$$V_{max} = 1000 \text{ mm}^2/\text{s}$$

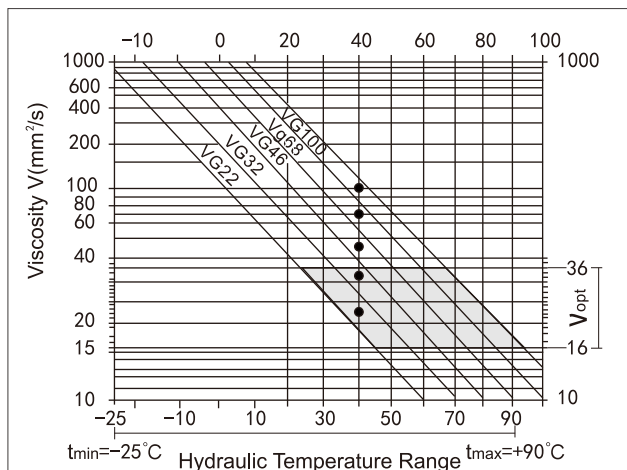
Short-term operation, cold start

### > Temperature Range

$$t_{min} = -25^\circ\text{C}$$

$$t_{max} = 90^\circ\text{C}$$

### > Selection Diagram



### > Instructions on Selection of Hydraulic Fluid

The working temperature dependent on the ambient temperature is required for correct selection of hydraulic fluid. It refers to the circuit temperature of a closed circuit and the reservoir temperature of an open circuit.

The hydraulic fluid should be so selected that the working viscosity in the working range is within the optimum range ( $V_{opt}$ , the shaded area on the selection diagram). The higher viscosity is recommended under the same conditions.

For example:

At an ambient temperature of X °C, the working temperature of the circuit is 60 °C. The viscosity within the optimum range ( $V_{opt}$ , shaded area) is VG46 or VG68 and the latter should be selected.

Note:

The case drain temperature depends on the pressure and speed, and it is always higher than the circuit temperature. The temperature at any point within the system should not exceed +90 °C. Please contact us if the above condition cannot be maintained due to extreme working conditions.

### > Filtration

Finer filtration improves the cleanliness level of the hydraulic fluid, thus increasing the service life of the axial piston unit. To ensure normal operation of the axial piston unit, a cleanliness level of at least 20/18/15 according to ISO 4406 is to be maintained.

When the hydraulic fluid has a high temperature (+90 °C to +115 °C), the cleanliness level should at least reach 19/17/14 according to ISO 4406. Please contact us if the above cleanliness level cannot be maintained.

### > Working Pressure Range

Input

Absolute pressure at port S

$$p_{abs \text{ min}} \text{ _____ } 0.8 \text{ bar}$$

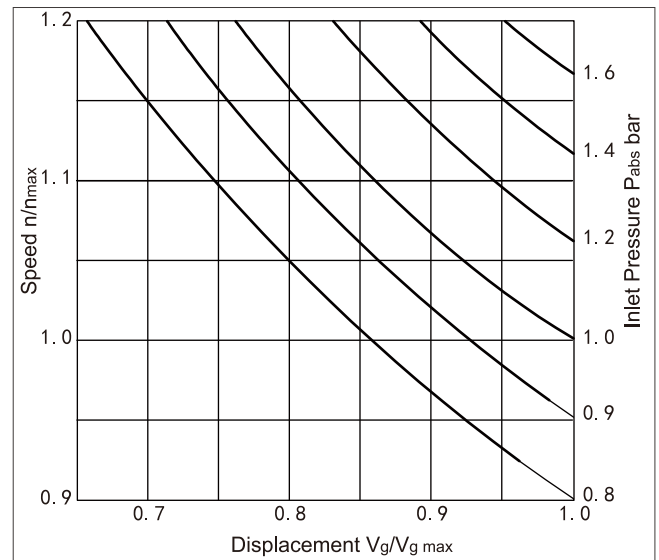
$$p_{abs \text{ max}} \text{ _____ } 5 \text{ bar}$$

Output

Absolute pressure at port B

$$p_{nom} \text{ _____ } 280 \text{ bar}$$

$$p_{max} \text{ _____ } 320 \text{ bar}$$



### > Case Drain Pressure

Maximum permissible pressure at drain port (L1, L2, L3)

Maximum 0.5 bar higher than inlet pressure at port S

No higher than 2 bar absolute pressure

### > Flow Direction

From port S to B



## > Technical Data

Size				40	45	63	72	85	
Displacement	Variable pump	$V_{g \max}$	mL/r	40	45	63	72	85	
Pressure	Rated pressure	$P_{\text{nom}}$	MPa	28	28	28	28	28	
	Maximum pressure	$P_{\text{max}}$	MPa	32	32	32	32	32	
Speed <sup>1)</sup>	$V_{g \max}$	$n_{\text{nom}}$	rpm	2600	2600	2600	2600	2500	
	$V_g < V_{g \max}$	$n_{\text{max}}$	rpm	3120	3120	3140	3140	3000	
Flow	$n_{\text{nom}}$ and $V_{g \max}$	$q_v$	L/min	104	117	163.8	187.2	212.5	
Power	$n_{\text{nom}}$ and $V_{g \max}$ , $\Delta p=28\text{MPa}$	$n_{\text{min}}$	KW	48.5	54.6	76.4	87.4	99.2	
Torque	$V_{g \max}$ , $\Delta p=28\text{MPa}$	$T_{\text{max}}$	Nm	178	201	281	321	379	
Case volume				L	0.5	0.5	0.8	0.8	1
Weight				KG	18	18	22	22	36
Hydraulic oil temperature range				°C	-25°C-110°C				
Hydraulic oil viscosity range				mm <sup>2</sup> /s	16-36mm <sup>2</sup> /S				

1) The above data is valid only when the inlet pressure at port S is 0.1 MPa absolute pressure.

## > Specification Calculation

Flow	$q_v = \frac{V_g \cdot n \cdot \eta_v}{1000}$	[L/min]	$V_g$ = Displacement, mL/r
			$\Delta p$ = Differential pressure, MPa
Torque	$T = \frac{V_g \cdot \Delta p}{2 \cdot \pi \cdot \eta_{mh}}$	[Nm]	$n$ = Speed, rpm
			$\eta_v$ = Volumetric efficiency
Power	$P = \frac{2 \pi \cdot T \cdot n}{60000} = \frac{q_v \cdot \Delta p}{60 \cdot \eta_t}$	[KW]	$\eta_{mh}$ = Mechanical-hydraulic efficiency
			$\eta_t$ = Total efficiency

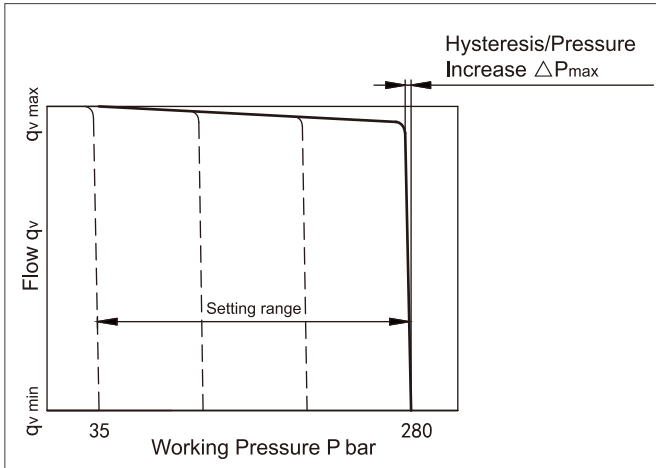


### DR-Pressure Control

The pressure controller can maintain constant pressure of the hydraulic system within its control range despite changes in the flow. The variable pump only supplies as much hydraulic fluid as required by the actuator. If the working pressure exceeds the set point of the integrated pressure control valve, the pump will automatically swivel back until the pressure deviation is corrected.

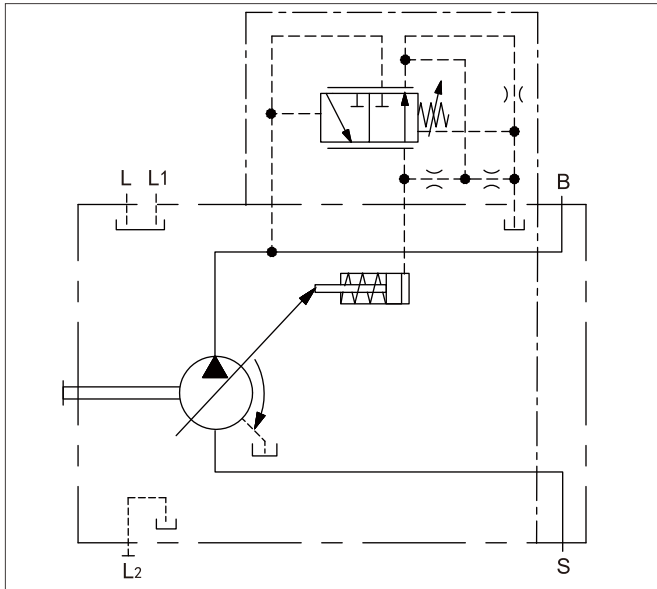
Start position of depressurized state:  $V_{g \max}$   
 Setting range from 35-320bar(standard:280bar).

#### Characteristic Curve



Characteristic curve valid for  $n_1=1500\text{rpm}$  and  $t_{\text{fluid}}=50^\circ\text{C}$

#### Circuit Diagram



### DRG-Remotely Pressure Control

For the remote controlled pressure controller, the pressure limitation is performed using a separately arranged pressure relief valve. Any pressure control value under the pressure set on the pressure controller can be regulated.

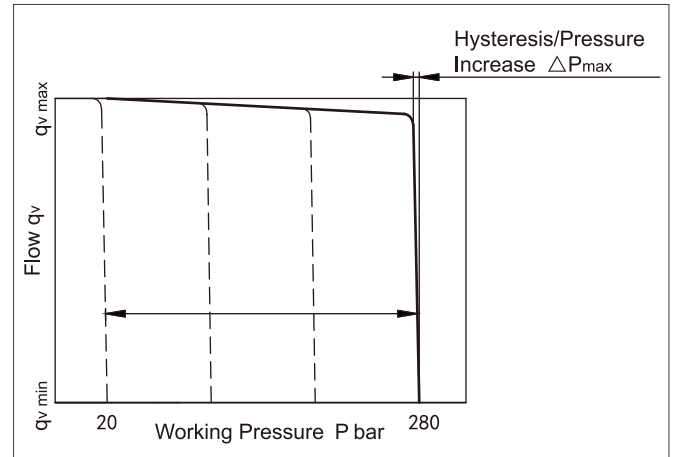
A pressure relief valve is externally piped up to port X for remote control. This relief valve is not included in the scope of delivery of the DRG control. A differential pressure of 20bar  $\Delta p$  (standard setting) results in a control fluid quantity of approx. 1.5 l/min at port X.

If another setting is required (range from 14-22bar) please state in plain text.

Directly operated, hydraulically or electrically proportional, suitable for the control fluid quantity mentioned above. The maximum line length should not exceed 2m.

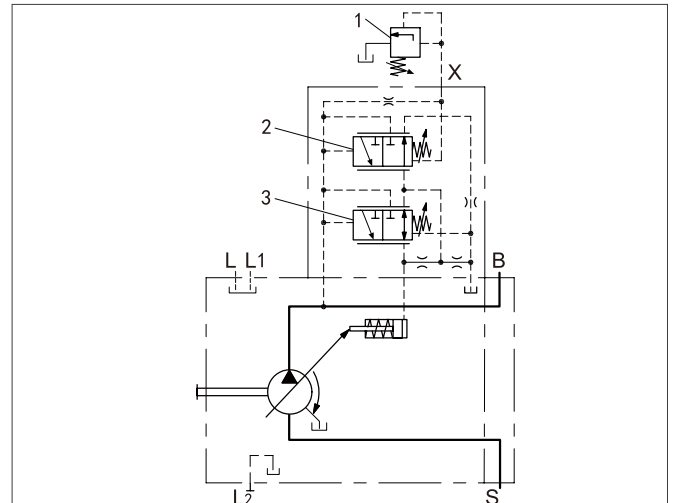
Basic position in depressurized state:  $V_{g \max}$   
 Setting range for pressure control 35-320bar(standard:280bar).  
 Setting range for differential pressure 14-22bar(standard:20bar).

#### Characteristic Curve



Characteristic curve valid for  $n_1=1500\text{rpm}$  and  $t_{\text{fluid}}=50^\circ\text{C}$

#### Circuit Diagram



1. The separate pressure relief valve and the line are not included in the scope of delivery.
2. Remote controlled pressure cut-off (G)
3. Pressure controller (DR)

In order to prevent damage to the pump and the system, the permissible setting range must not be exceeded. The range of possible settings of the valve is higher.



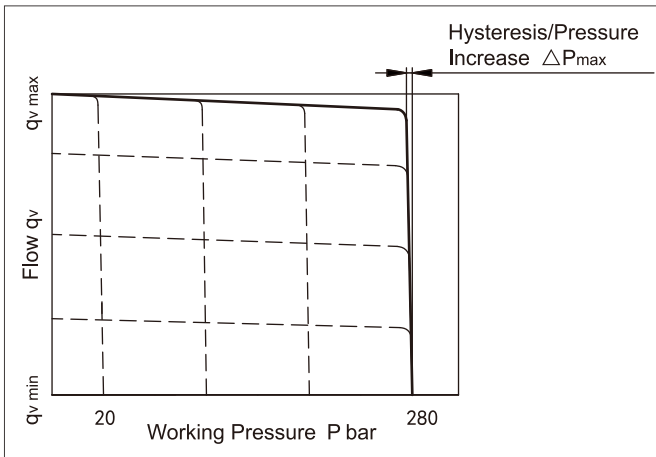
## DRF/DRS-Pressure/Flow Control

In addition to the pressure controller function, an adjustable orifice is used to adjust the differential pressure upstream and downstream of the orifice. This is used to control the pump flow. The pump flow is equal to the actual hydraulic fluid quantity required by the consumer. With all controller combinations, the  $V_g$  reduction has priority.

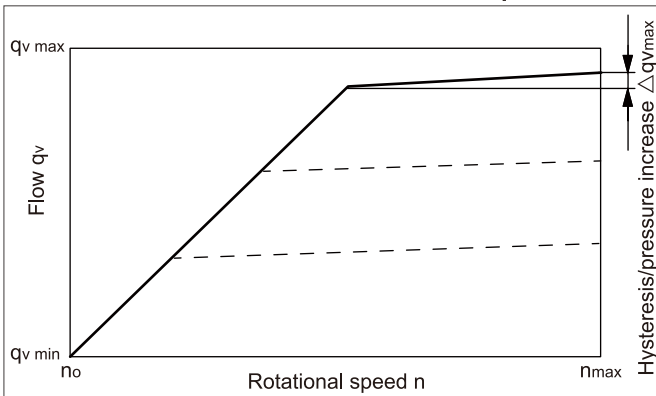
Basic position in depressurized state:  $V_{g \max}$

Setting range for pressure control 35-320bar(standard:280bar).

### Characteristic Curve

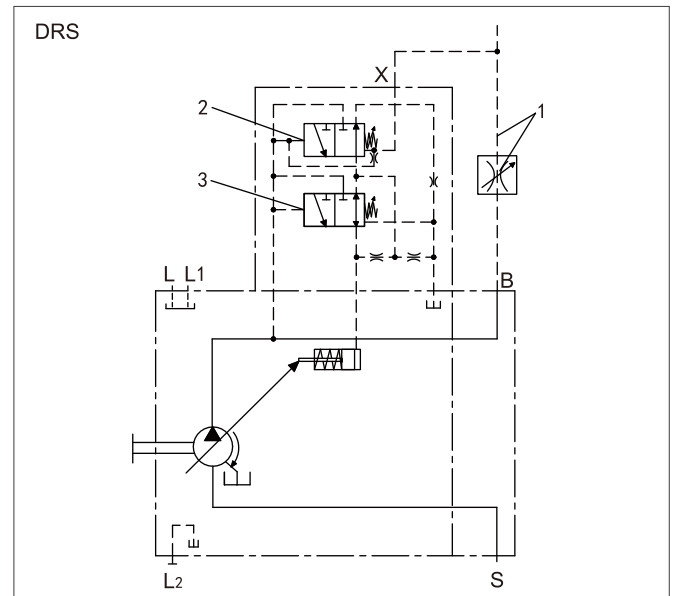
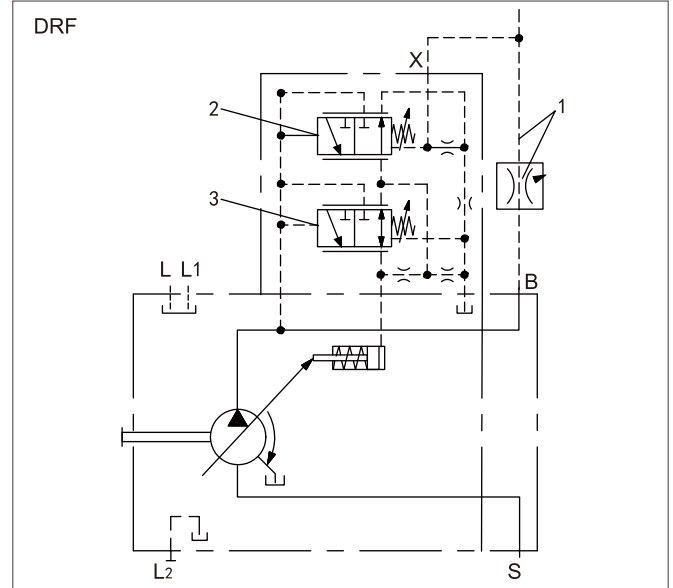


### Characteristic curve at variable rotational speed



Characteristic curve valid for  $n_1=1500\text{rpm}$  and  $t_{\text{fluid}}=50^\circ\text{C}$

### Circuit Diagram



1.The metering orifice (control block) and the line is not included in the scope of delivery.

2.Flow controller(FR)。

3.Pressure controller(DR)。

In order to prevent damage to the pump and the system,the permissible setting range must not be exceeded.The range of possible settings at the valve is higher.

#### Notice

The DRS version has no unloading between X and the reservoir. The LS must therefore be unloaded in the system. Because of the flushing function of the flow controller in the DRS control valve, sufficient unloading of the X line must also be ensured.

#### Differential pressure $\Delta p$

Standard setting: 14bar, If another setting is required, please state in the plain text.

Setting range: 14-22bar

Unloading port X to the reservoir results in a zero stroke pressure which is approx.1-2bar higher than the defined differential pressure  $\Delta p$ , in which system influences are not taken into account.

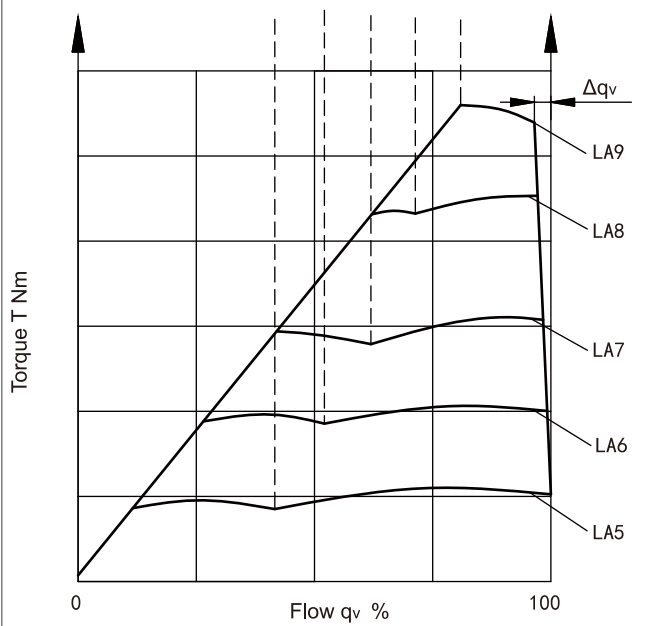
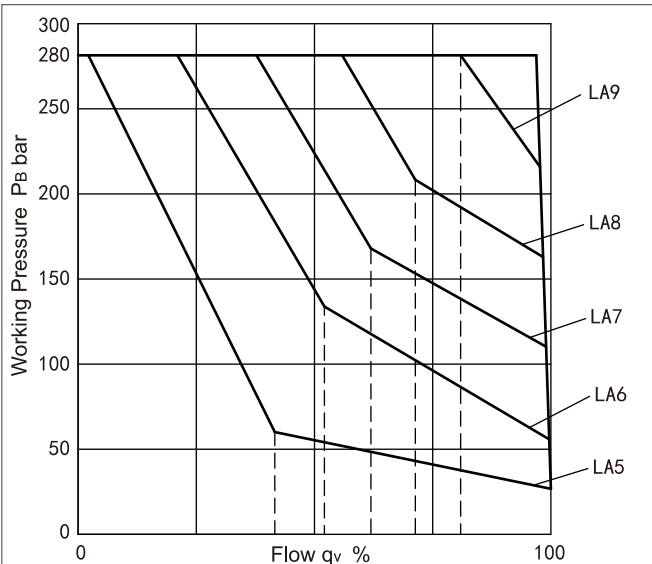


### LA...-Power Control

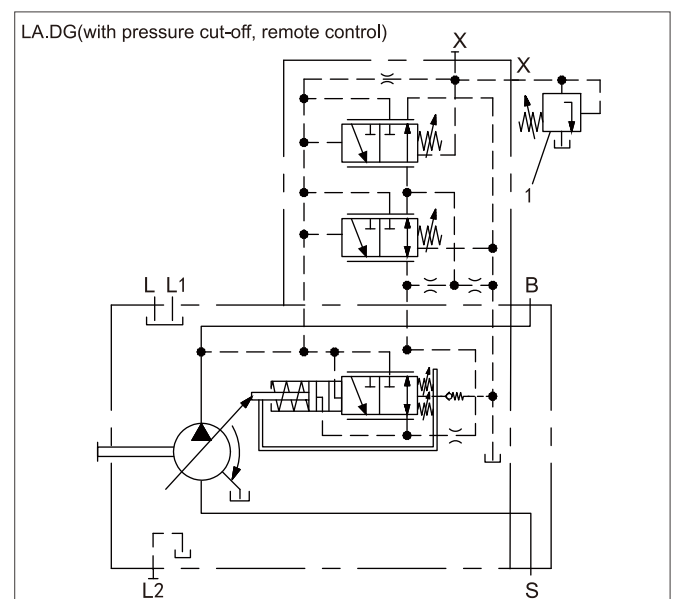
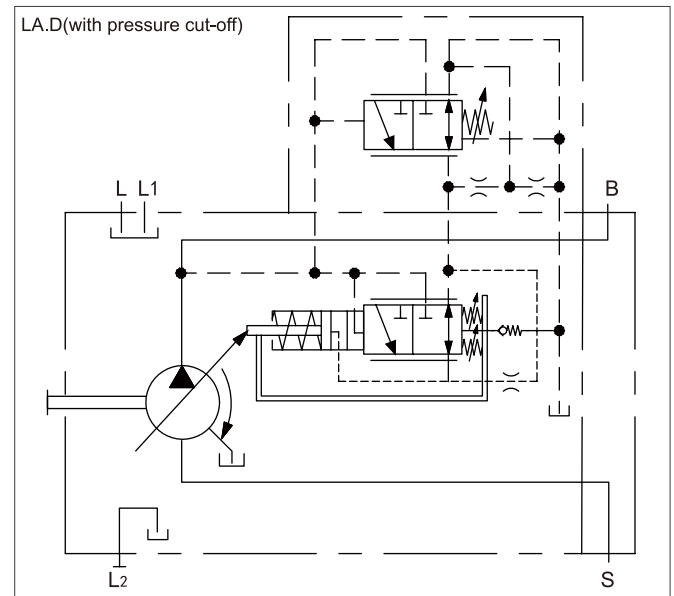
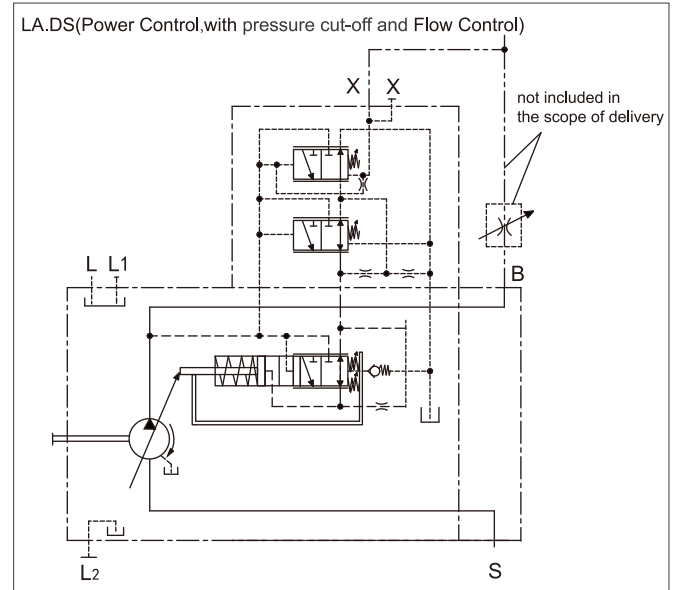
In order to achieve a constant drive torque with varying working pressures, the swivel angle and also the output flow from the axial piston pump is varied so that the product of flow and pressure remains constant. Flow control is possible below the power control curve. When ordering please state the power characteristics.

	Torque (Nm)					Type code
Beginning of control	40	45	63	72	85	
10–35bar	10–30	10–30	15–43	17–49.2	–	LA5
36–70bar	30.1–59	30.1–59	43.1–83	49.3–94.9	–	LA6
71–105bar	59.1–84	59.1–84	83.1–119	95–136	–	LA7
106–140bar	84.1–112	84.1–112	119.1–157	136.1–179.4	160.1–212	LA8
141–230bar	112.1–189	112.1–189	157.1–264	179.5–301.7	212.1–357	LA9

### Characteristic Curve



### Circuit Diagram



"1" The pressure relief valve is not included in the scope of delivery.



### ➤ LE-Electro Proportional Power Control

The LE1/2DS electro-proportional power controller regulates the input torque of the pump by receiving different levels of electric current, enabling the torque requirements under various operating conditions to be met on construction machinery.

Setting range for load sensitivity valve : 14-22bar(standard:14bar)

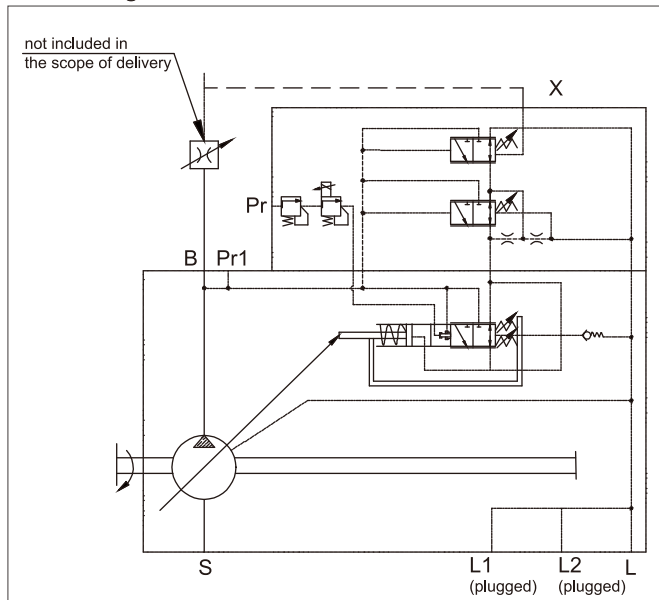
Setting range for pressure control valve : 35-320bar(standard:280bar)

Setting range for Pr port pressure : Connect the oil outlet, enter the pressure reducing valve for secondary pressure reduction.

#### Technical Data, Solenoids

Voltage(V)	Current limit(A)	Nominal resistance( $\Omega$ )	Insulation level
12	0.85	7.3 $\pm$ 10%(20°C)	H(180°C)
24	0.75	21.2 $\pm$ 10%	UP to IPK6/IPX9K

#### Circuit Diagram



### ➤ EP-Electro Proportional Displacement Control

Electro proportional control makes a continuous and reproducible setting of the pump displacement possible directly via the cradle. The control force of the control piston is applied by a proportional solenoid. The control is proportional to the current .

In a depressurized state, the pump is swiveled to its initial position ( $V_{g \max}$ ) by an adjusting spring.

If the working pressure exceeds a limit value of approx. 14bar, the pump starts to swivel from  $V_{g \max}$  to  $V_{g \min}$  without control by the solenoid (control current < start of control).

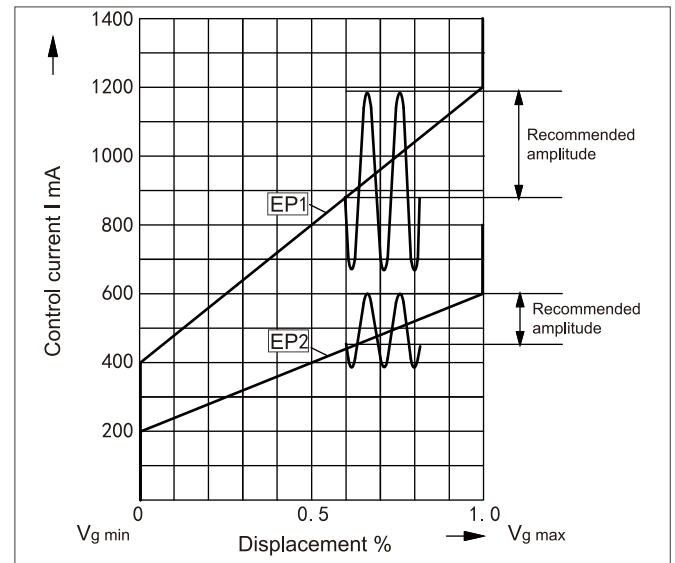
With a minimum swivel angle  $V_{g \min}$  and de-energized EP solenoids, a minimum pressure of 10bar must be maintained.

A PWM signal is used to control the solenoid.

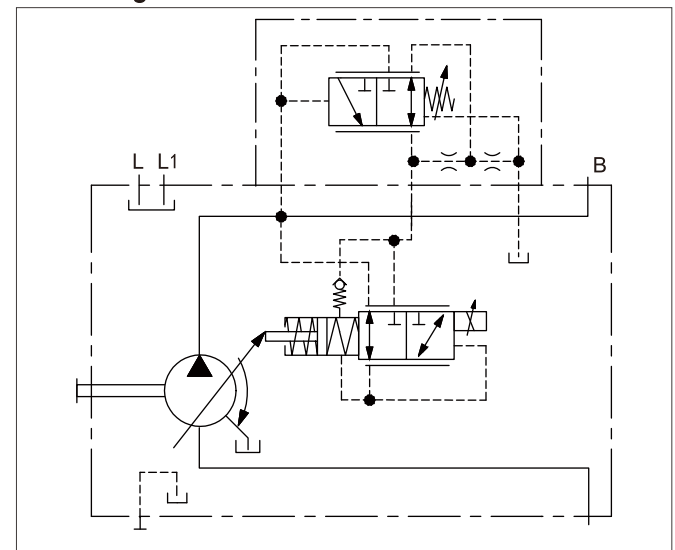
EP.D: The pressure control regulates the pump displacement back to  $V_{g \min}$  after the pressure command value has been reached.

A minimum working pressure of 14bar is needed for safe and reproducible control. The required control fluid is taken from the high pressure.

#### Characteristic Curve



#### Circuit Diagram



Technical Data-Solenoid		EP1	EP2
Voltage		12V ( $\pm$ 20%)	24V ( $\pm$ 20%)
Control current Start $V_{g \min}$		400mA	200mA
Control current End $V_{g \max}$		1200mA	600mA
The minimum working stroke to control current flutter is within the control range		352mA	176mA
Dither frequency		100-200Hz	100-200Hz
Current limit		1.54A	0.77A
Rated resistance at 20°C		5.5 $\Omega$	22.7 $\Omega$
Duty cycle		100%	100%
Control valve operating temperature range -20°C~115°C			



## ED-Electro Proportional Remote Pressure Control

The maximum output pressure of the pump depends on the current through the solenoid.

If the pump pressure falls below the set pressure, the pump will increase its displacement to raise the flow rate and meet system demand.

When the pressure reaches the set pressure, the pump will adjust its displacement to supply only the flow required by the system.

Adjusting the solenoid current allows stepless regulation of the maximum system pressure. In inverse proportional control, when the pump solenoid current is at its maximum, the pump is in standby mode; when the current is zero, the pump delivers its maximum pressure (fault protection function is active during fan drive applications).

The adjustable hydraulic-mechanical setting of the maximum pressure overrides the current signal.

The hydraulically set maximum output pressure has priority over the electrically set signal.

Technical Data-Solenoid	ED71	ED72
Voltage	12V (±20%)	24V (±20%)
Initial pressure control setpoint P <sub>max</sub>	100mA	500mA
Initial pressure control setpoint P <sub>min</sub>	1200mA	600mA
Rated resistance at 20°C	5.5 Ω	22.7 Ω
Current limit at U <sub>max</sub>	1.54A	0.77A
Duty cycle	100%	100%
Nominal resistance (20°C)	5.5 Ω	22.7 Ω
Duty cycle	100%	100%
Temperature range	-20°C~115°C	
Dither frequency	100~200Hz	
Solenoid material grade	H(T <sub>max</sub> =180°C)	

Resistance calculation formula

At T > 20°C:  $R_w = R_{20} \times (235 + T) / 255$

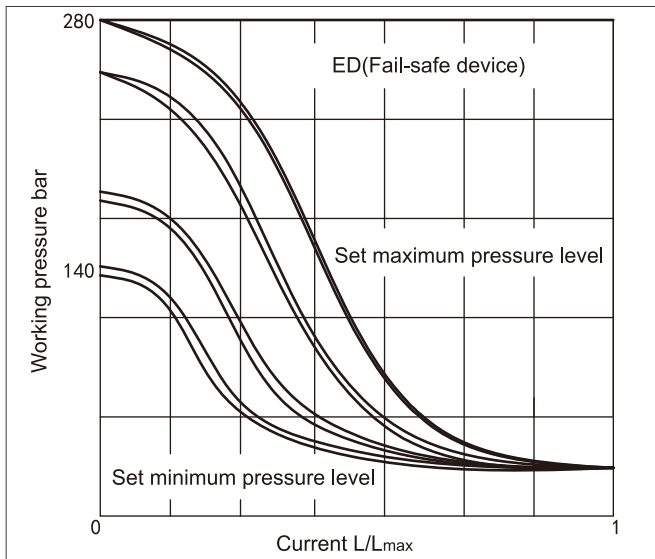
Note:

The valve becomes extremely hot during and after operation.

Take protective measures accordingly.

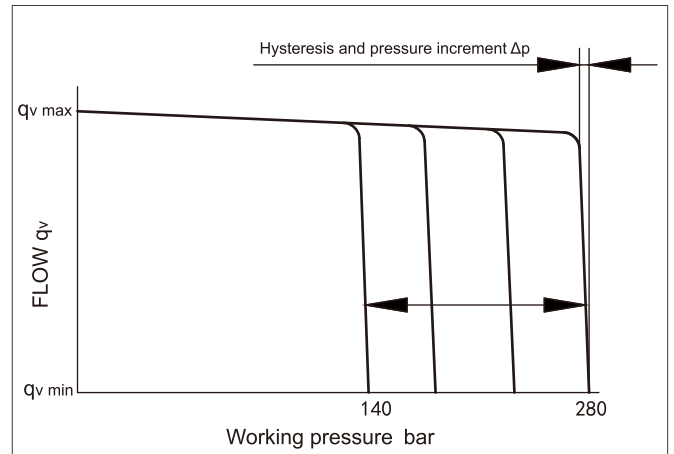
### Steady-State Current-Pressure Characteristic (inverse proportional control)

(Measurement of the pump at zero stroke position)



Static current-pressure characteristic hysteresis < 3bar

### Static Operating Curve (n=1500min<sup>-1</sup>, toil=50°C)

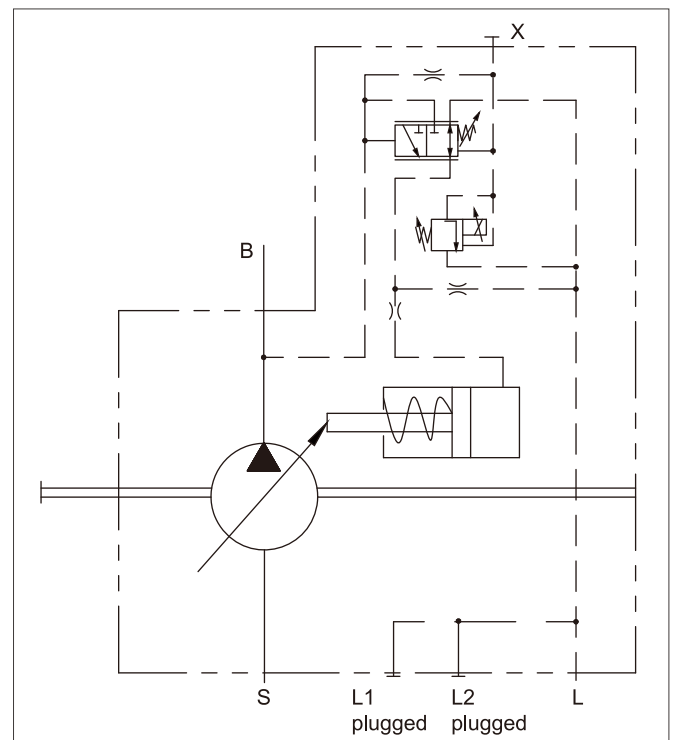


### Controller

Standby pressure standard setting is 20bar (range 14–22bar)

Hysteresis and pressure increment  $\Delta p$  < 4bar

### Circuit Diagram



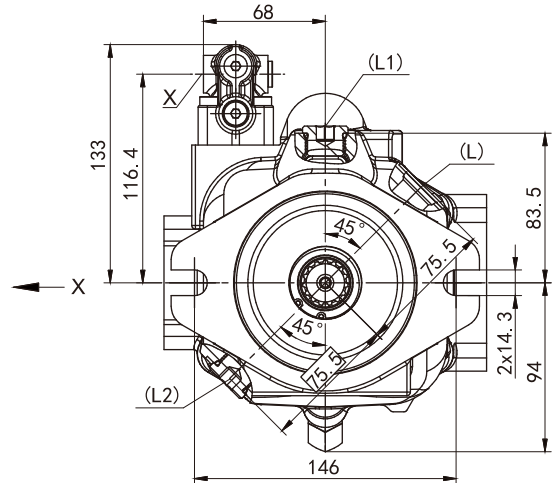
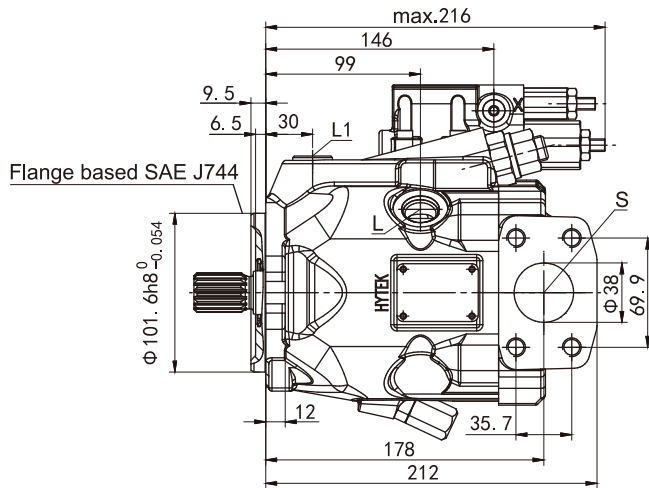
Port  
 B \_\_\_\_\_ Pressure port  
 S \_\_\_\_\_ Inlet port  
 L/L1/L2 \_\_\_\_\_ Housing drain port(L1/L2 plugged)  
 Pilot oil consumption \_\_\_\_\_ 3-4.5L/min



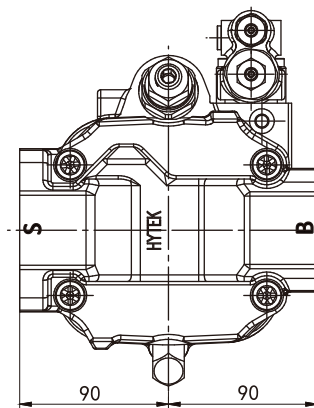
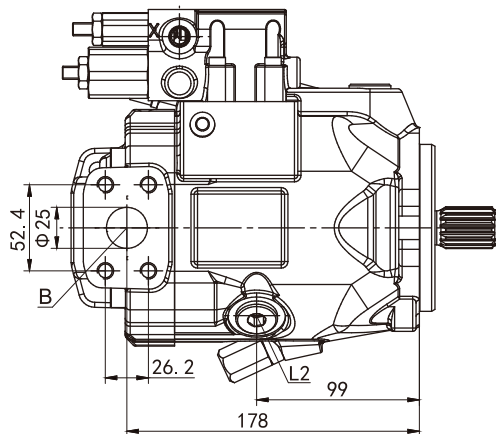
► Installation Dimensions, 40/45, NO63

DRF/DRS-Pressure/Flow Control, clockwise rotation, mounting flange C

SAE flange working oil port 12

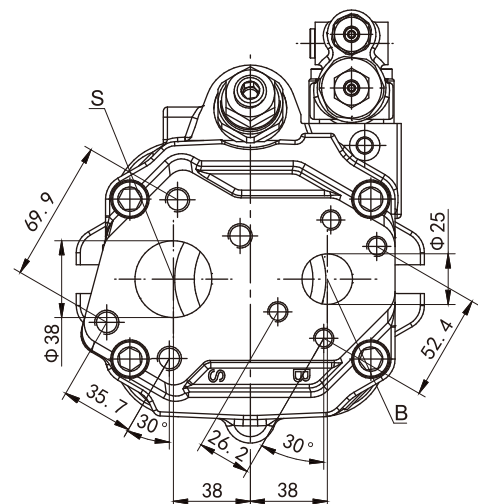
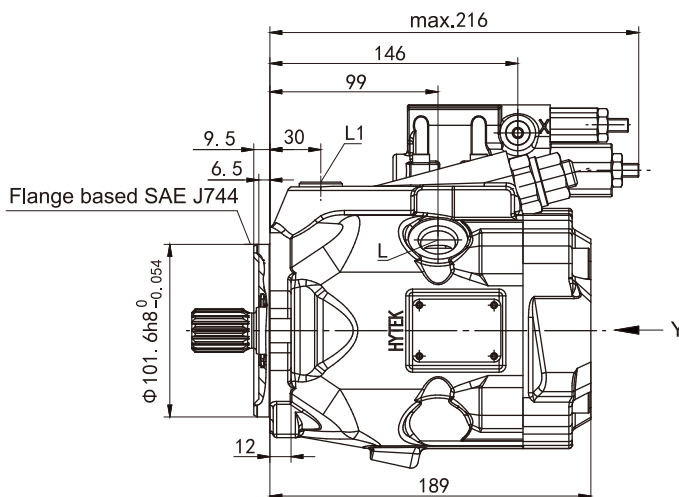


View X



View Y

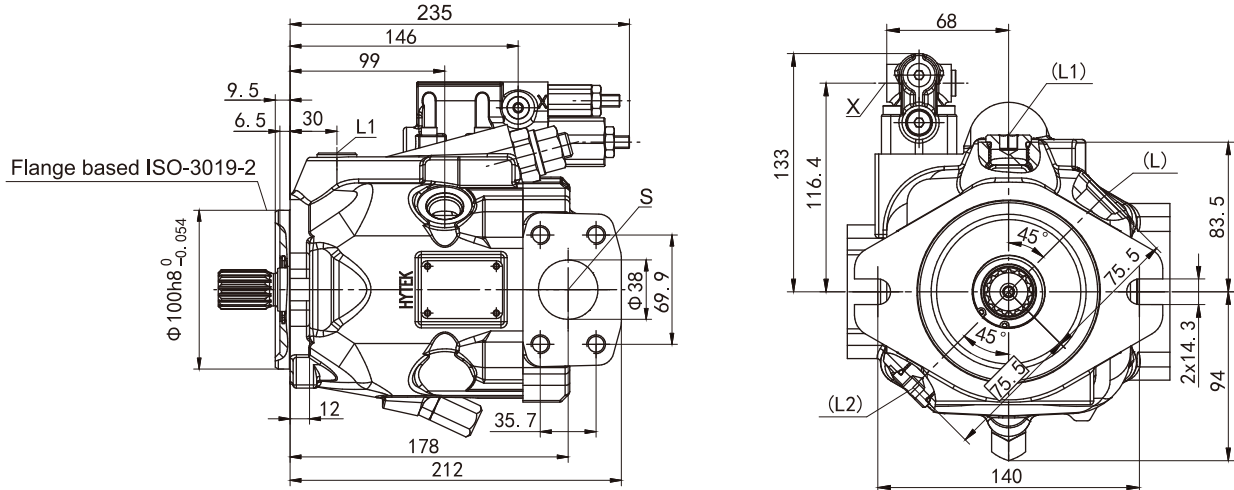
SAE flange working oil port 11



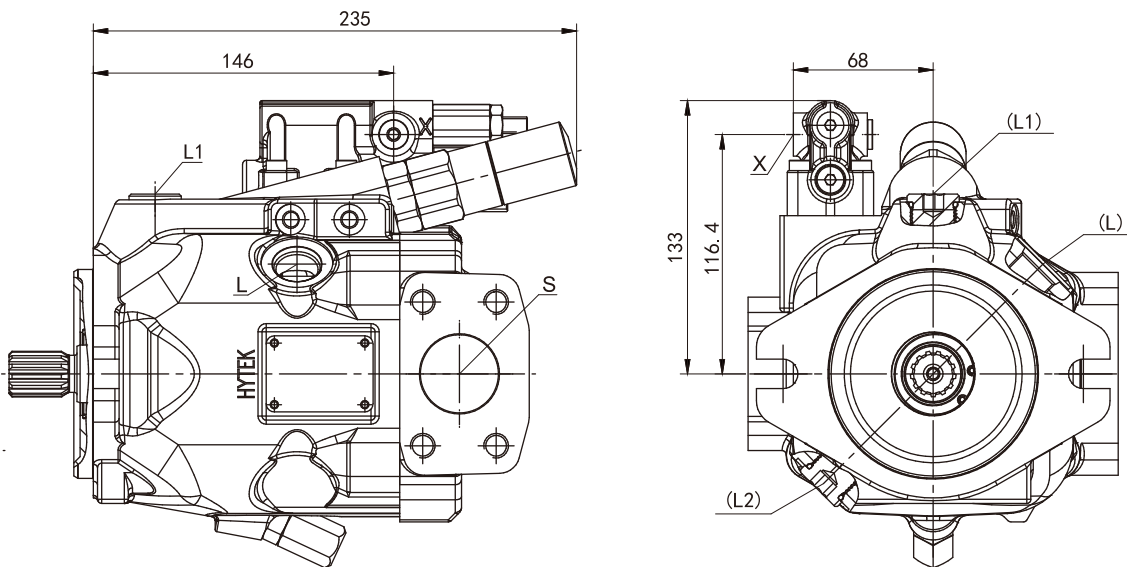


► Installation Dimensions, 40/45, NO63

LA.DS-Pressure/Flow/Power Control, clockwise rotation, mounting flange A



LA.DS-Pressure/Flow/Power Control, clockwise rotation, mounting flange C

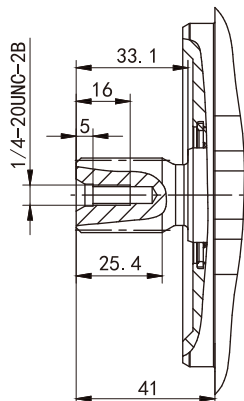




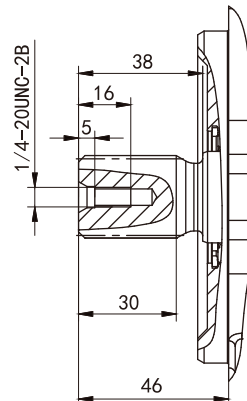
➤ Installation Dimensions, 40/45, NO63

Drive shaft

Splined shaft  
Maximum allowable  
input torque 198Nm  
7/8" SAE J744  
S1-13T 16/32DP



Splined shaft  
Maximum allowable  
input torque 319Nm  
1" SAE J744  
S2-15T 16/32DP



Port type

Port		Standard	Size	Code
L/L1/L2	Drain port	SAE J1926-1	7/8-14UNF-2B,17deep,O-ring seal	S
X	Pilot pressure	SAE J1926-1	7/16-20UNF-2B,11.5deep,O-ring seal	
L/L1/L2	Drain port	JIS B2351-1G	G1/2,20.5deep,O-ring seal	G
X	Pilot pressure	ISO 1179-1	G1/4,12deep,ED seal	
L/L1/L2	Drain port	ISO 9974-1	M22×1.5,17deep,EDseal	I
X	Pilot pressure(M)	ISO 9974-1	M14×1.5,12deep,EDseal	

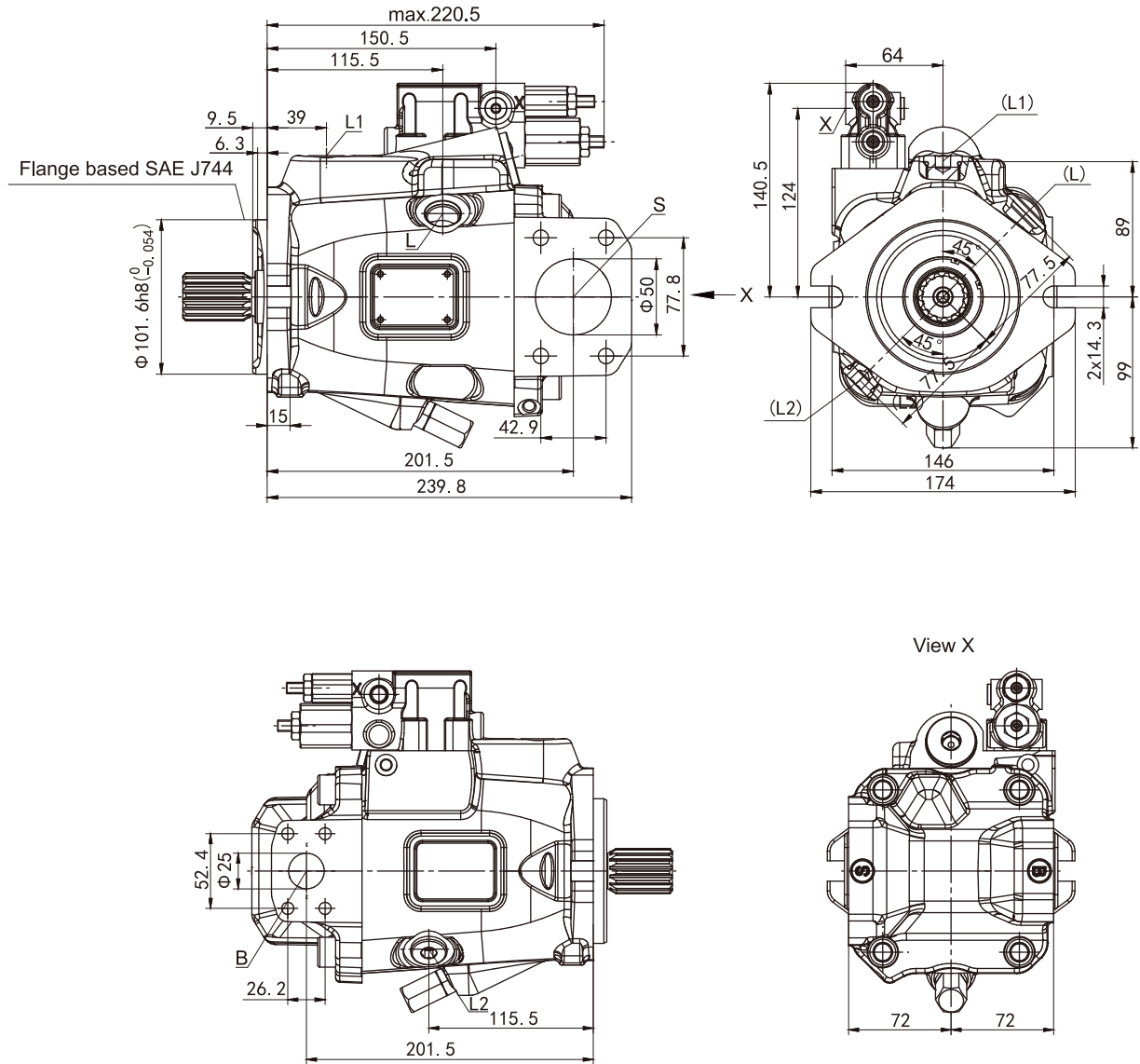
Working port

Port		Standard	Size	Code
B	Working port	SAE J518C	Φ25	12
	Fastening thread		M10,19deep	
S	Suction port		Φ38	
	Fastening thread		M12,22deep	



➤ Installation Dimensions, 63/72

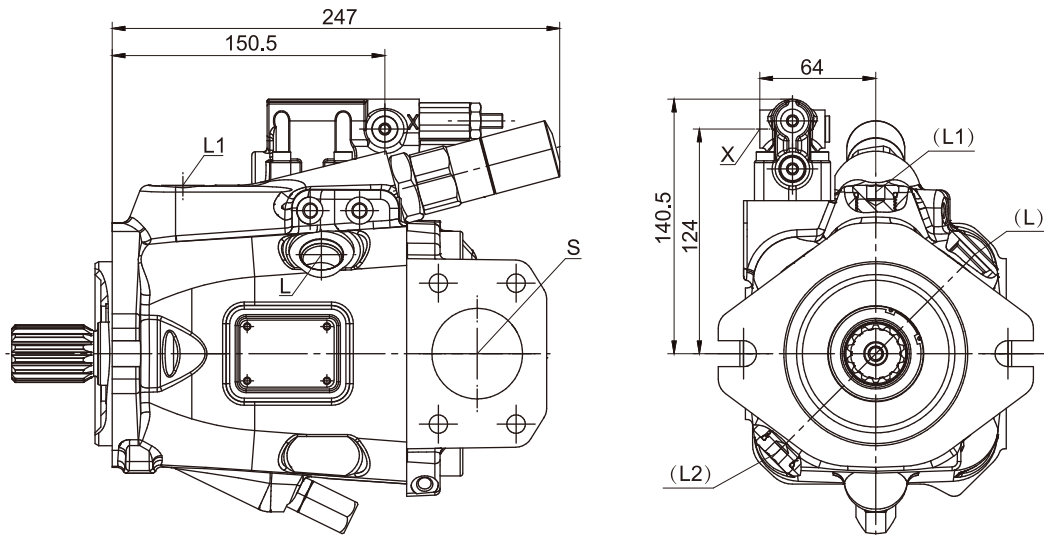
DRF/DRS-Pressure/Flow Control, clockwise rotation, mounting flange C



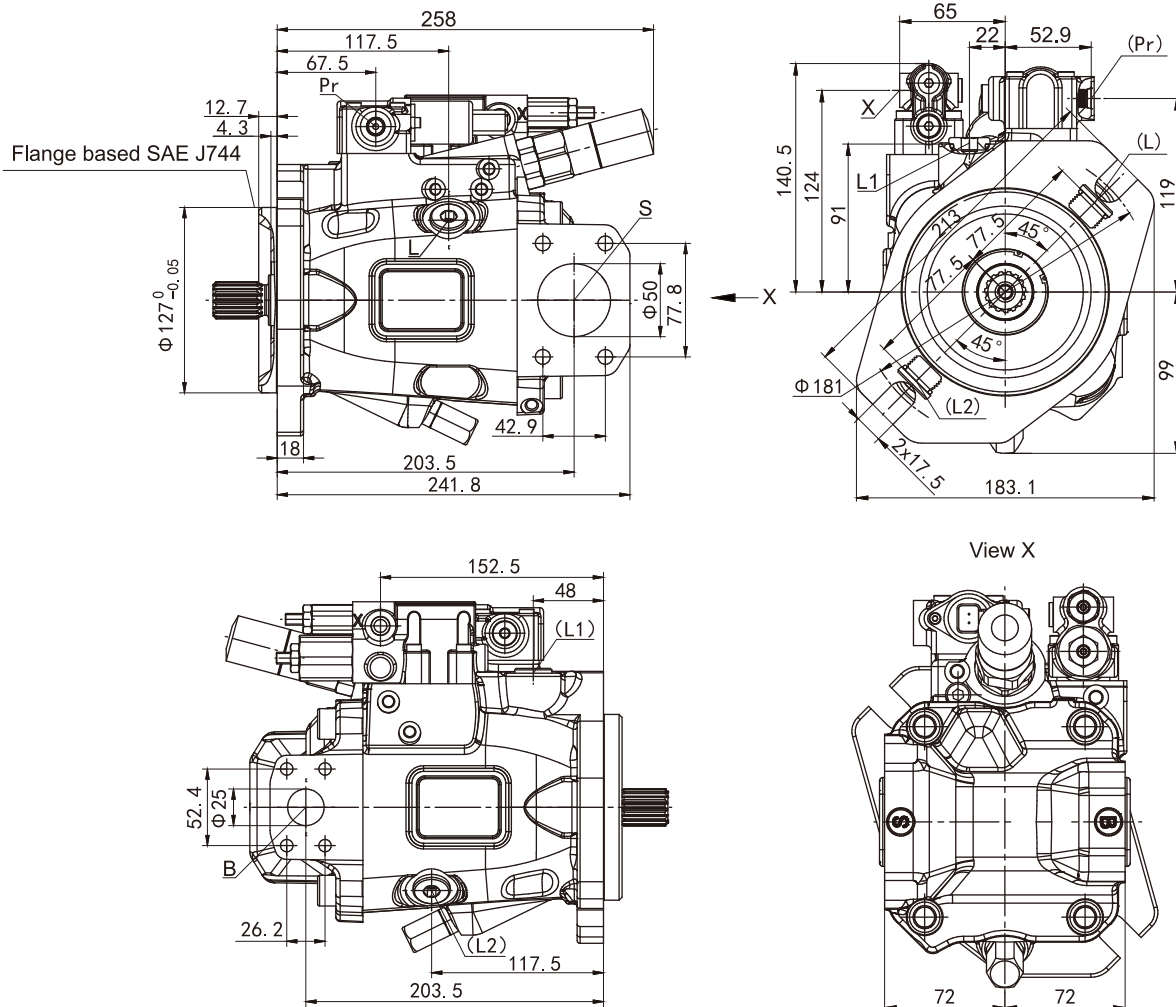


► Installation Dimensions, 63/72

LA.DS-Pressure/Flow/Power Control, mounting flange C



LE.DS-Electrically Proportional Power Control, clockwise rotation, mounting flange C2

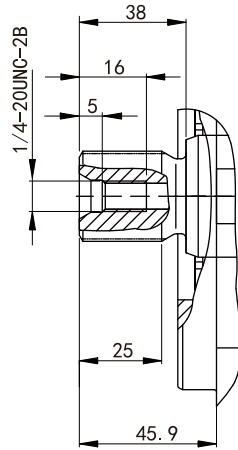




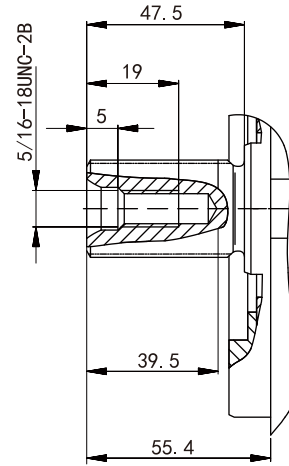
➤ Installation Dimensions, 63/72

Drive shaft

Splined shaft  
Maximum allowable  
input torque 319Nm  
1" SAE J744  
S2-15T 16/32DP



Splined shaft  
Maximum allowable  
input torque 630Nm  
1 1/4" SAE J744  
S3-14T 12/24DP



Port type

Port		Standard	Size	Code
L/L1/L2	Drain port	SAE J1926-1	7/8-14UNF-2B,13deep,O-ring seal	S
X	Pilot pressure	SAE J1926-1	7/16-20UNF-2B,11.5deep,O-ring seal	
L/L1/L2	Drain port	JIS B2351-1G	G1/2,20,5deep,O-ring seal	G
X	Pilot pressure	ISO 1179-1	G1/4,12deep,ED seal	
L/L1/L2	Drain port	ISO 9974-1	M22×1.5,17deep,EDseal	I
X	Pilot pressure(M)	ISO 9974-1	M14×1.5,12deep,EDseal	

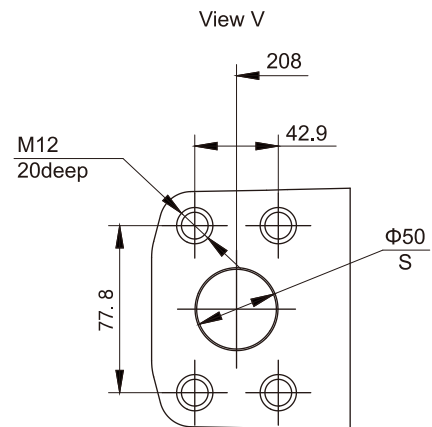
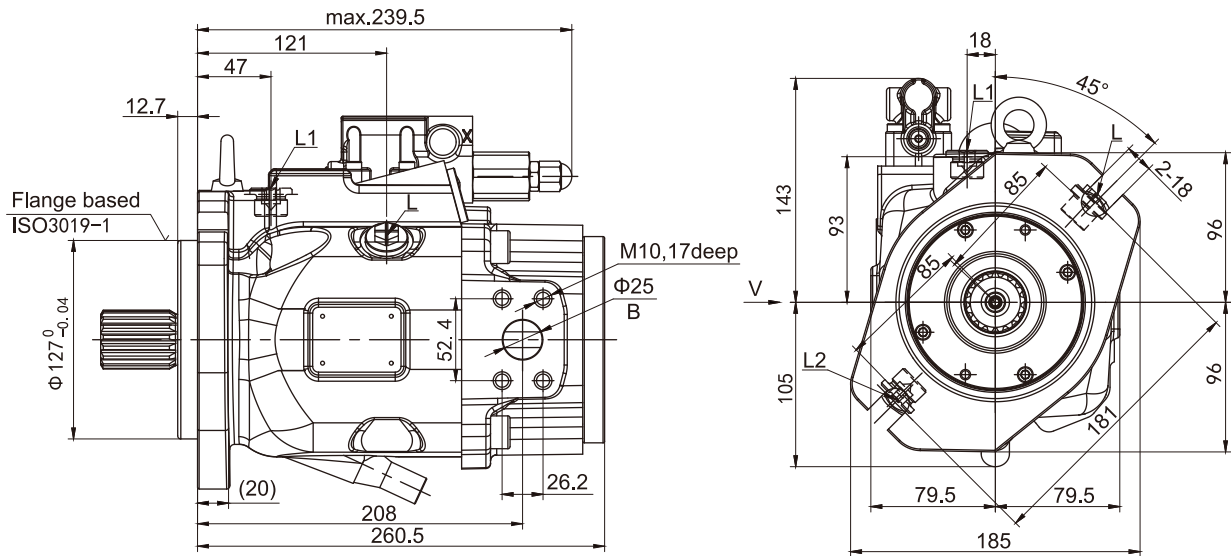
Working port

Port		Standard	Size	Code
B	Working port	SAE J518C	Φ25	12
	Fastening thread		M10,18deep	
S	Suction port		Φ50	
	Fastening thread		M12,22deep	



► Installation Dimensions, 85

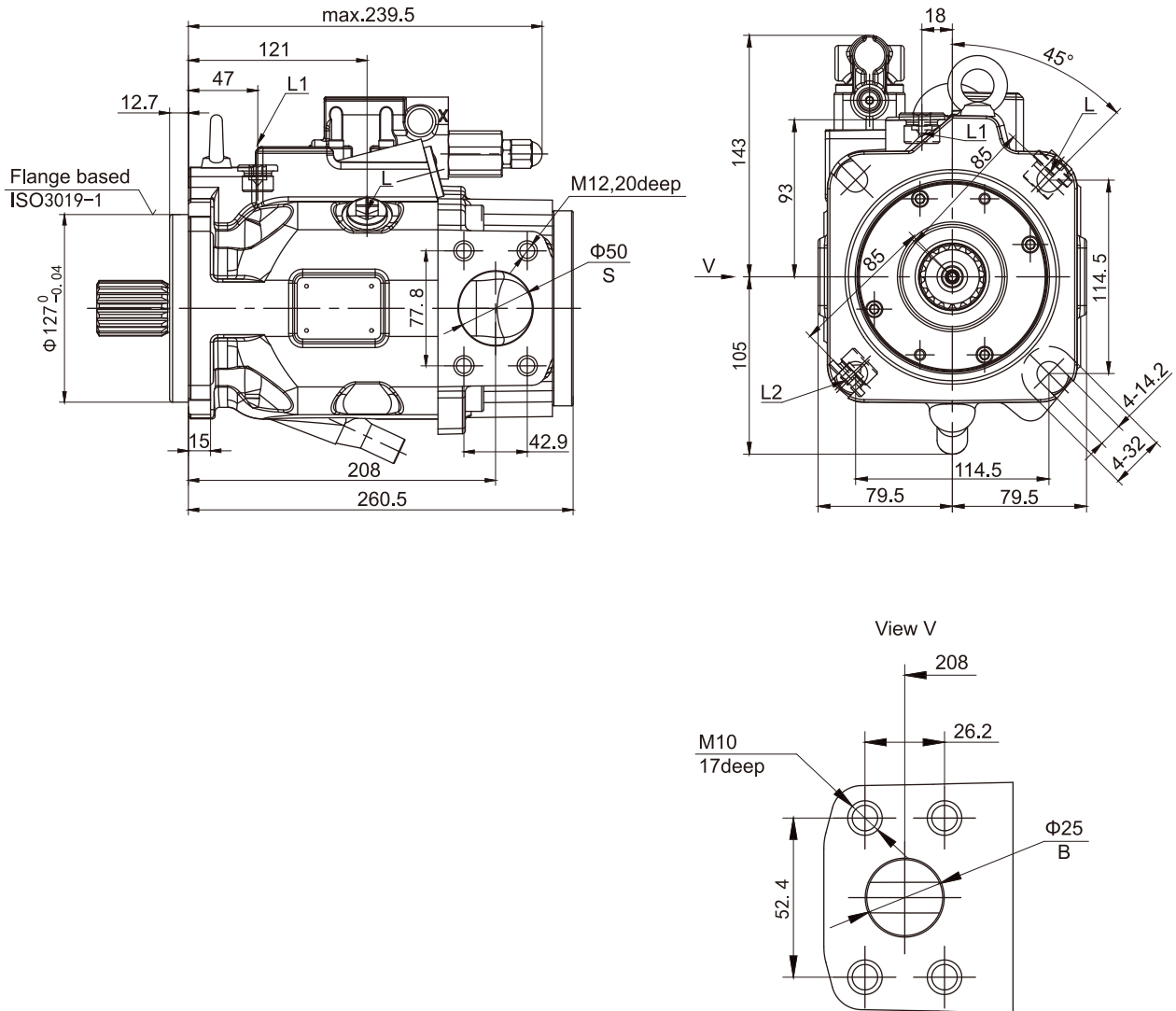
DR-Hydraulic Control, clockwise rotation, mounting flange C, series 01





➤ Installation Dimensions, 85

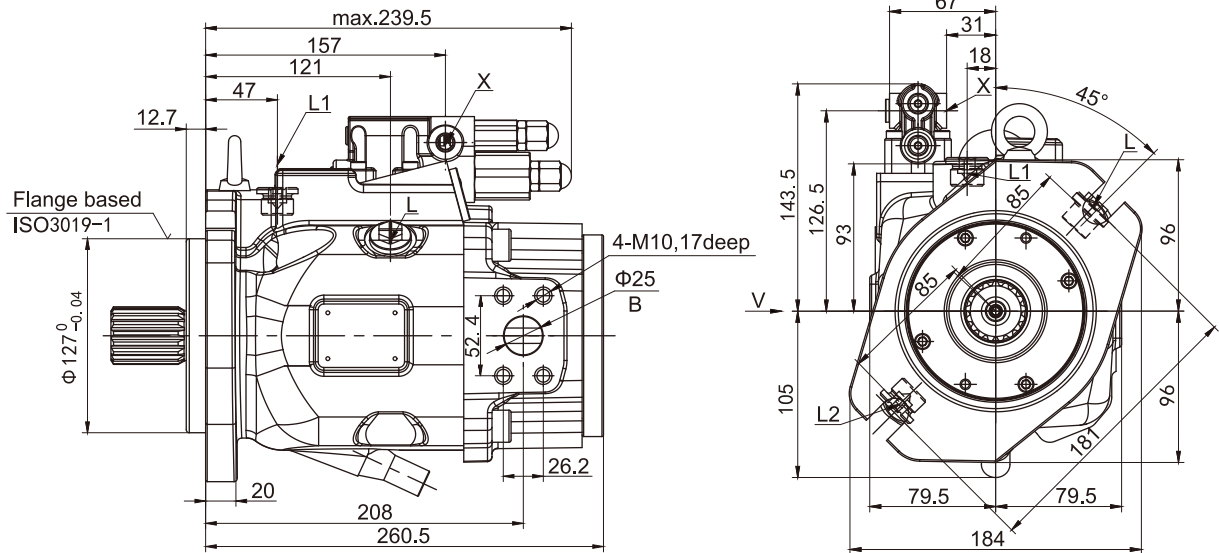
DR-Hydraulic Control, clockwise rotation, mounting flange D, series 01



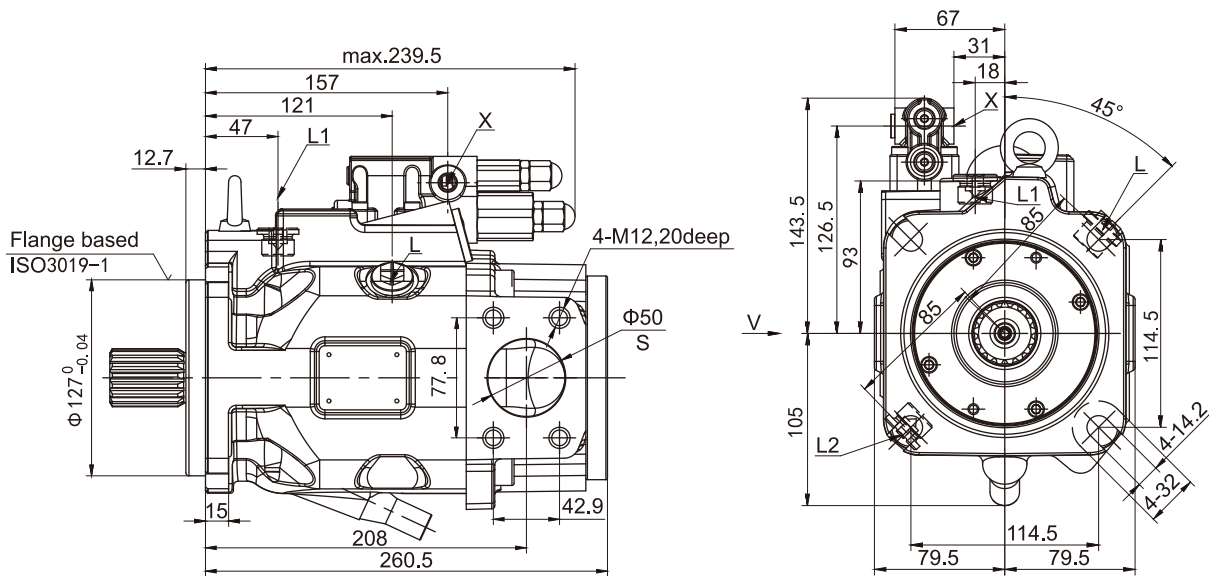


► Installation Dimensions, 85

DRF/DRS/DRSC-Pressure/Flow Control, mounting flange C, series 01



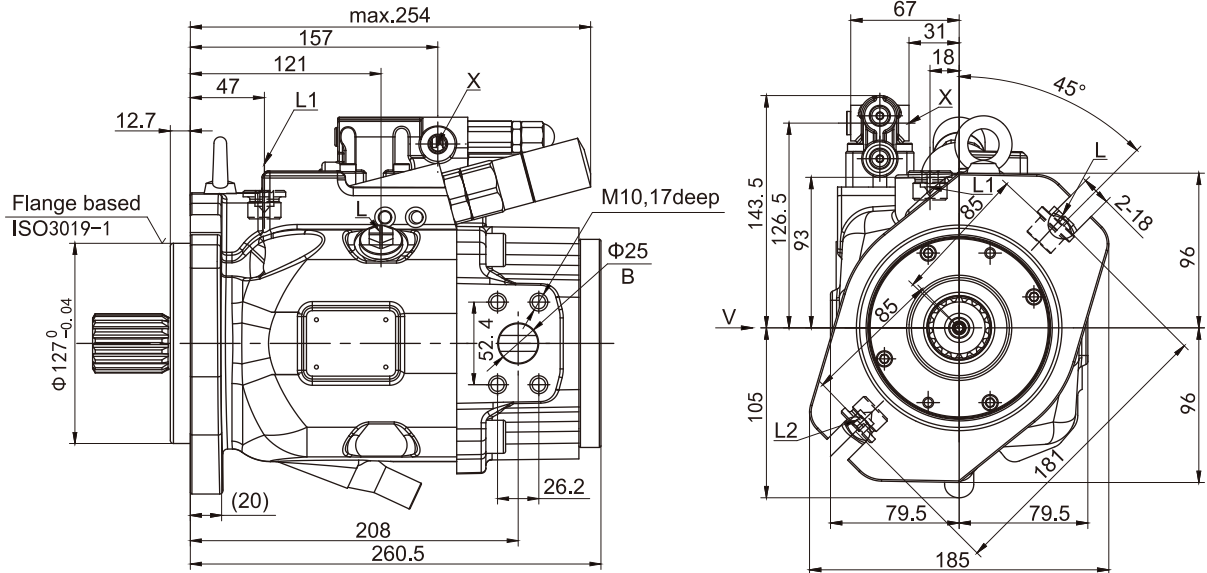
DRF/DRS/DRSC-Pressure/Flow Control, mounting flange D, series 01



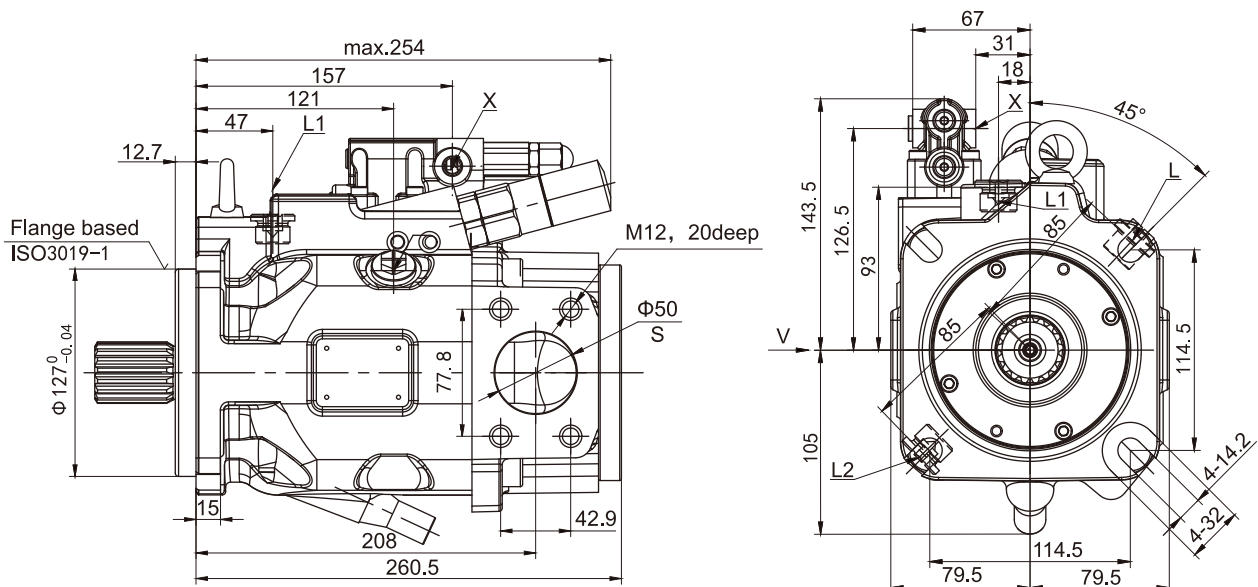


➤ Installation Dimensions, 85

LA.D.-Pressure/Flow/Power Control, mounting flange C, series 01



LA.D.-Pressure/Flow/Power Control, mounting flange D, series 01





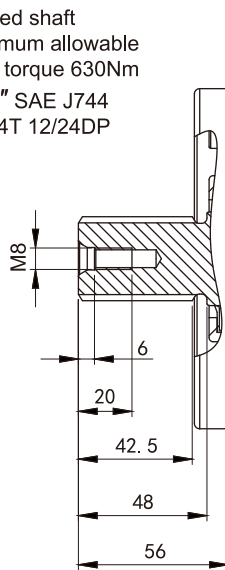




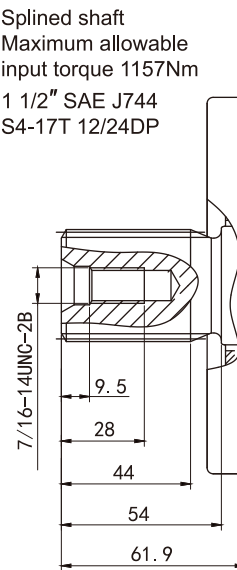
➤ Installation Dimensions, 85

Drive shaft

Splined shaft  
Maximum allowable  
input torque 630Nm  
1 1/4" SAE J744  
S3-14T 12/24DP



Splined shaft  
Maximum allowable  
input torque 1157Nm  
1 1/2" SAE J744  
S4-17T 12/24DP



Port type

Port	Standard	Size	Code	
L/L1/L2	Drain port	SAE J1926	7/8-14UNF-2B, 13deep, O-ring seal	S
X	Pressure control	SAE J1926	7/16-20UNF-2B, 11.5deep, O-ring seal	
L/L1/L2	Drain port	JIS B2351-1G	G1/2, O-ring seal	G
X	Pressure control	JIS B2351-1G	G1/4, 12deep, O-ring seal	

Working port

Port	Standard	Size	Code	
B	Drain port,metric thread flange SAE	SAE J518C	Φ25,M14,17deep	12
S	Suction port,metric thread flange SAE		Φ50,M12,20deep	
B	Drain port,UN thread flange SAE	SAE J518C	Φ25,3/8-16NUF-2B,18deep	62
S	Suction port,UN thread flange SAE		Φ50,1/2-13NUF-2B,19deep	



► Dimensions Through Drive

**K01**

Flange SAE J744-82-2(A)  
Hub for splined shaft  
ANSI B92.1a-1996  
5/8" 9T 16/32DP

K01	40/45	63/72	85
A1	229	254.5	271.5
A2	9.5	9.2	11.7
A3	53	59	46.2

**K68**

Flange SAE J744-101-2(B)  
Hub for splined shaft  
ANSI B92.1a-1996  
7/8" 13T 16/32DP

**K15**

Flange SAE J744-127-4(D)  
Hub for splined shaft  
ANSI B92.1a-1996  
1 1/4" 14T 12/24DP

**K07**

Flange SAE J744-127-2(C)  
Hub for splined shaft  
ANSI B92.1a-1996  
1 1/4" 14T 12/24DP

Flange SAE J744	Hub for splined shaft	Availability across sizes					Code
Diameter	Diameter	40	45	63	72	85	
82-2 (A)	5/8" 9T 16/32DP	●	●	●	●	●	K01
82-2 (A)	3/4" 11T 16/32DP	●	●	●	●	●	K52
101-2 (B)	7/8" 13T 16/32DP	●	●	●	●	●	K68
101-2 (B)	1" 15T 16/32DP	●	●	●	●	●	K04
127-4 (C)	1 1/4" 14T 12/24DP	○	○	○	○	●	K15
127-2 (C)	1 1/4" 14T 12/24DP	○	○	○	○	●	K07



➤ Allowable radial and axial forces on the drive shaft

Size		NG	40	45	63	72	85
Maximum radial force at a/2		$F_{q \max}(N)$	1500	1500	1700	1700	1700
Maximum axial force		$F_{ax \max}(N)$	1500	1500	2000	2000	3000

➤ Installation Instructions

General

The pump must be filled with hydraulic fluid during commissioning and operation.

To reduce noise, all connecting lines (inlet line, pressure line and case drain line) must be isolated from the reservoir with flexible components.

Do not install any check valve in the case drain line.

You must consult us before implementation in special cases.

➤ Vertical Installation (drive shaft upwards)

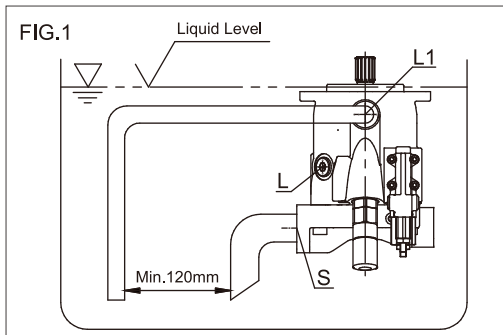
The installation below is for your reference:

a. Inside-reservoir installation

Fill the pump and lay it horizontal before installation.

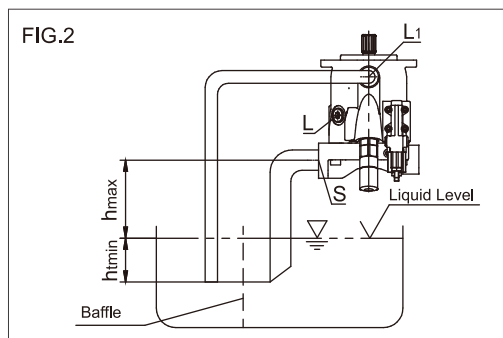
a) If the minimum fluid level of the reservoir is equal to or higher than the mounting flange surface of the pump, plug port L, and open ports L1 and S; connect pipes to ports L1 and S as shown in FIG. 1.

b) If the minimum fluid level of the reservoir is below the mounting flange surface of the pump, connect pipes to ports L1 and S as shown in FIG. 2.



b. Outside-reservoir installation

Fill the pump and lay it horizontal before installation. See FIG. 2 for above-reservoir installation.



Restriction: Minimum inlet pressure under static and dynamic conditions  $P_{absmin}=0.8bar$ .

Note: Do not install the pump above the reservoir as far as possible to reduce noise.

The permissible suction height h results from the total pressure loss, but it should not exceed  $h_{max}=800mm$  (pipe immersion depth  $h_{min}=200mm$ ).

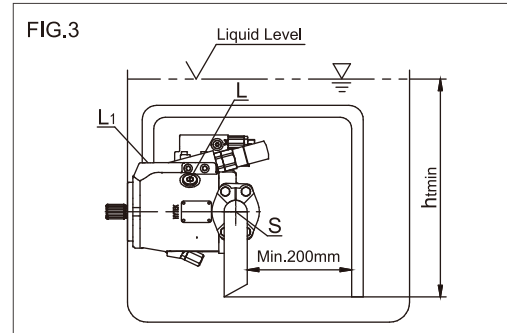
➤ Horizontal Installation

For horizontal installation, set port L or L1 on the top. The installation below is for your reference:

a. Inside-reservoir installation

1a) If the minimum fluid level of the reservoir is above the top of the pump, plug port L; you may open ports L1 and S, and connect pipes to the two ports (as shown in FIG. 3).

2a) If the minimum fluid level of the reservoir is below the top of the pump, plug port L; see FIG. 4 for pipe connection of port L1 and possibly port S.

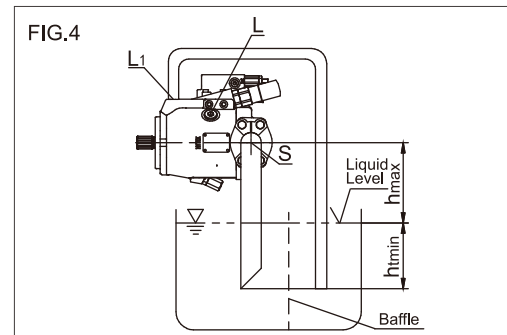


b. Outside-reservoir installation

Fill the pump before commissioning.

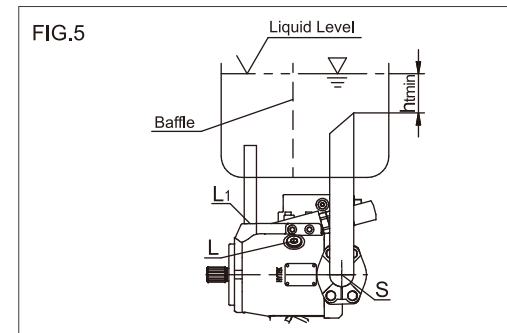
Connect pipes to port S and the top port L or L1.

1b) See FIG. 4 for above-reservoir installation.



2b) Below-reservoir installation

See FIG. 5 for pipe connection of ports L and S. Port L is plugged.





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HYTEK-REV1.0 04/2026

If there are any other modifications, no further notice will be given.