



1.3

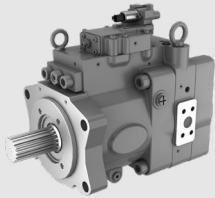
# HP3V-S SERIES

**Heavy-Duty Swash-plate Type  
Axial Piston Variable Displacement Pump**

Designed for open loop applications. Shorter pump suitable for limit installation space. The HP3V-75S series pump is capable of tandem pump to work with other pumps. The developed various controllers can meet requirements of all kinds of applications.

Apply to open hydraulic circuit

|                         |     |     |     |
|-------------------------|-----|-----|-----|
| Size:                   | 75  | 280 | 300 |
| Rated pressure (bar):   | 350 | 350 | 370 |
| Maximum pressure (bar): | 400 | 400 | 420 |



## Contents

|                     |       |
|---------------------|-------|
| Technical Data      | 02    |
| Type introduction   | 03-04 |
| HP3V 75S series     |       |
| · Control principle | 05    |
| · Installation size | 06    |
| · Port Details      | 07    |
| · Flywheel flange   | 08    |
| · Input shaft       | 08    |
| HP3V 280S series    |       |
| · Control principle | 09    |
| · Installation size | 10    |
| · Port Details      | 11    |
| · Flywheel flange   | 12    |
| · Input shaft       | 12    |
| HP3V 300S series    |       |
| · Control principle | 13    |
| · Installation size | 14    |
| · Port Details      | 15    |
| · Flywheel flange   | 16    |
| · Input shaft       | 16    |

## Features

- Higher working pressure, rated working pressure up to 370 bar.
- Higher efficiency, improved by 2% ~ 3% than similar products.
- Compact design to meet tight installation space requirements, optimized axial structure with 10% shorter total length than the last generation HP3V series.
- Optimized port plate, lower noise.
- Heavy-duty bearings and increased drive shaft dimension for higher load and longer life time.
- Various controllers suitable for requirements of all kinds of applications.

Technical data

|                                                      |                                   |                                                            |          |           |
|------------------------------------------------------|-----------------------------------|------------------------------------------------------------|----------|-----------|
| Size                                                 |                                   | HP3V 75S                                                   | HP3V280S | HP3V 300S |
| Displacement (cc/rev)                                |                                   | 75                                                         | 280      | 300       |
| Speed                                                | Rated speed (rpm) <sup>*1</sup>   | 2450                                                       | 2000     | 2000      |
|                                                      | Maximum speed (rpm) <sup>*2</sup> | 3000                                                       | 2000     | 2100      |
| Pressure                                             | Rated pressure (bar)              | 350                                                        | 350      | 370       |
|                                                      | Maximum pressure (bar)            | 400                                                        | 400      | 420       |
| Maximum torque (N•m)                                 |                                   | 415                                                        | 1570     | 1750      |
| Case volume (L)                                      |                                   | 1.3                                                        | 3.2      | 3.5       |
| Suction port pressure (abs bar)                      |                                   | 0.8                                                        |          | 0.9       |
| Drain pressure                                       | Rated pressure (bar)              | 1                                                          |          |           |
|                                                      | Maximum pressure (bar)            | 3                                                          |          |           |
| Hydraulic fluid viscosity range (mm <sup>2</sup> /s) |                                   | 10~1000 <sup>*3</sup><br>(optimum viscosity range 16 ~ 36) |          |           |
| Temperature range (°C )                              |                                   | -30~80                                                     |          |           |
| Mass (Kg)                                            |                                   | 59                                                         | 160      | 170       |

- 1 Steady state suction pressure should be 0 bar and above (at normal condition);
- 2 If suction pressure less than 0 bar, Boost pressure should be required;
- 3 In case of 200-1000mm<sup>2</sup>/s, please allow system to warm up before using machine.

Type introduction

|      |    |   |   |   |     |   |    |    |   |   |   |   |
|------|----|---|---|---|-----|---|----|----|---|---|---|---|
| HP3V | 75 | S | O | L | EPD | / | C2 | S3 | N | M | M | S |
| ①    | ②  | ③ | ④ | ⑤ | ⑥   |   | ⑦  | ⑧  | ⑨ | ⑩ | ⑪ | ⑫ |

Product series

|   |                |      |
|---|----------------|------|
| ① | Product series | HP3V |
|---|----------------|------|

Size

|   |      |    |     |     |
|---|------|----|-----|-----|
| ② | Size | 75 | 280 | 300 |
|---|------|----|-----|-----|

Structure type

|   |             |   |
|---|-------------|---|
| ③ | Single pump | S |
|---|-------------|---|

Charge pump

|   |                     |    |     |     |      |
|---|---------------------|----|-----|-----|------|
|   |                     | 75 | 280 | 300 | Code |
| ④ | without charge pump | ●  | ●   | ●   | O    |
|   | with charge pump    |    | ●   | ●   | H    |

Direction rotation

|   |                   |   |
|---|-------------------|---|
| ⑤ | Clockwise         | R |
|   | Counter-clockwise | L |

Control type

|   |                                                                                  |    |     |     |      |
|---|----------------------------------------------------------------------------------|----|-----|-----|------|
|   | Control type                                                                     | 75 | 280 | 300 | Code |
| ⑥ | Electric proportional displacement + Hyperbolic torque control +Pressure Cut-off | ●  |     |     | EPD  |
|   | Electric proportional displacement                                               | ●  | ●   | ●   | E0   |
|   | Electric proportional displacement (inverse proportion)                          | ●  |     |     | E2   |

## Type introduction

### Mounting flange

|   |                       | 75 | 280 | 300 | Code |
|---|-----------------------|----|-----|-----|------|
| ⑦ | SAE C 127-2           | ●  |     |     | C2   |
|   | Special 4-hole flange |    | ●   | ●   | G4   |

### Input shaft

|   |                           | 75 | 280 | 300 | Code |
|---|---------------------------|----|-----|-----|------|
| ⑧ | SAE J744-32-4 14T-12/24DP | ●  |     |     | S3   |
|   | JIS B1603 54×16×3         |    | ●   | ●   | J5   |
|   | JIS B1603 60×18×3         |    | ●   | ●   | J6   |

### Through drive and pilot pump

|   |                                                                                 | 75 | 280 | 300 | Code |
|---|---------------------------------------------------------------------------------|----|-----|-----|------|
| ⑨ | None                                                                            | ●  | ●   | ●   | N    |
|   | SAE B 101-2 SAE J744-22-4 13T 16/32DP                                           | ●  | ●   | ●   | B1   |
|   | SAE B 101-2 SAE J744-25-4 15T 16/32DP                                           | ○  | ●   | ●   | B2   |
|   | With pilot gear pump and pressure relief valve<br>(only for none through drive) | ●  | ●   | ●   | K0   |

### Connection type (except inlet and outlet port)

| ⑩ | UNC port, ISO11926       |  | ○ | A |
|---|--------------------------|--|---|---|
|   | Metric port, ISO 6149    |  | ○ | M |
|   | BSPP G thread, JIS B2351 |  | ● | G |

### Thread type of Flange Port

| ⑪ | UNC threads (only for UNC port) |  | ○ | A |
|---|---------------------------------|--|---|---|
|   | Metric thread                   |  | ● | M |

### Standard / special version

|   |                  | 75 | 280 | 300 | Code |
|---|------------------|----|-----|-----|------|
| ⑫ | Standard version | ●  | ●   | ●   | None |
|   | Special version  | ○  | ○   | ○   | S    |

Remark: ● = available; ○ = On request;

## HP3V 75S Control principle

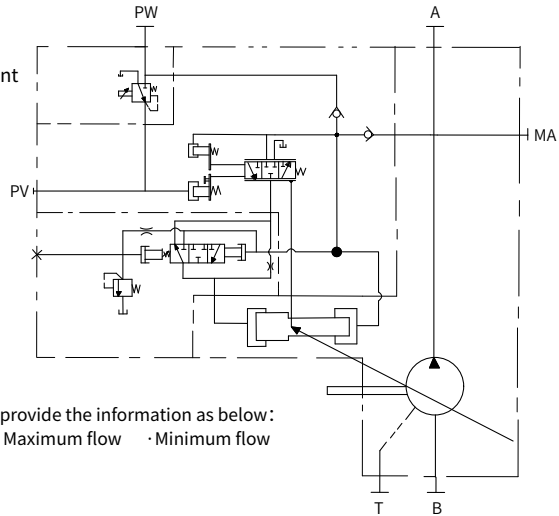
The torque limiting module is equipped with two springs to overcome the spool thrust generated by the system pressure; the appropriate input torque can be set by the adjusting screws of the inner and outer springs.

Electro-proportional displacement control: With pilot-pressure-related control, the pump displacement is adjusted in proportion to the pilot pressure. With increasing pilot pressure the pump swivels to a larger displacement. The necessary control power is taken from the operating pressure or the external control pressure applied to port P. If the pump is to be adjusted from the zero basic setting or from a low operating pressure, port P must be supplied with an external control pressure of at least 30 bar, maximum 50 bar.

When the pressure set value is reached, the pressure cut-off valve adjusts the displacement of the pump back to  $V_{min.}$

### •EPD

Electric proportional displacement  
+ Hyperbolic torque control  
+ Pressure Cut-off



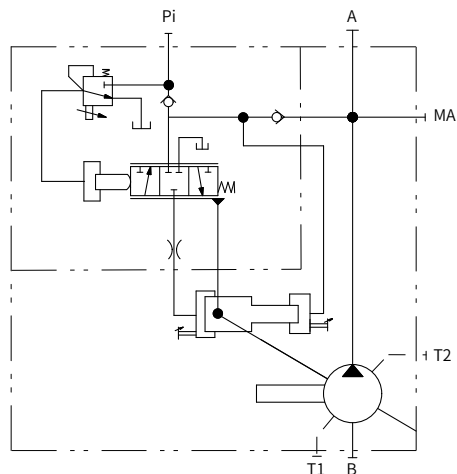
### Note:

When ordering, please provide the information as below:

· Working pressure · Maximum flow · Minimum flow

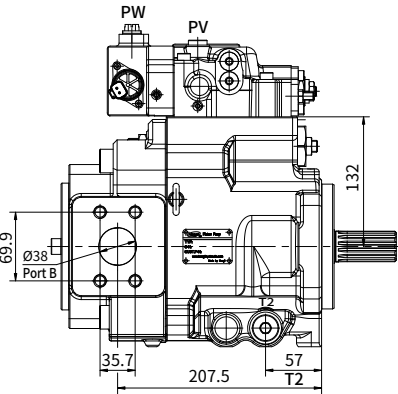
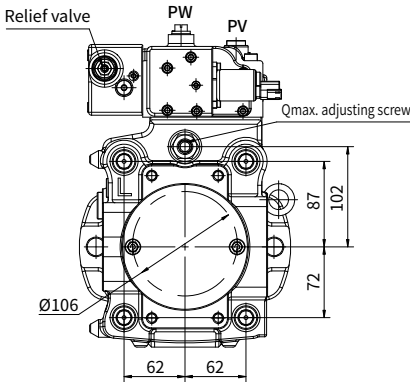
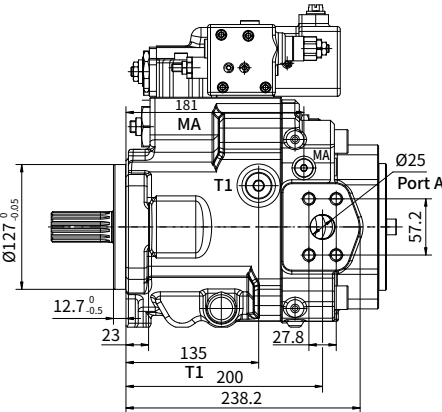
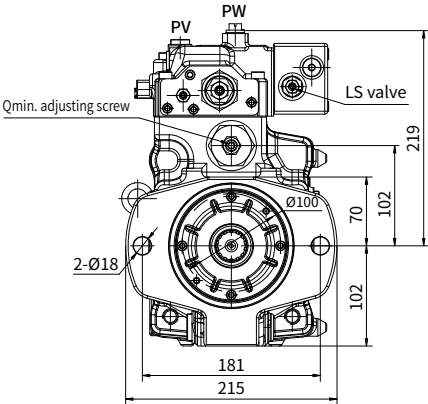
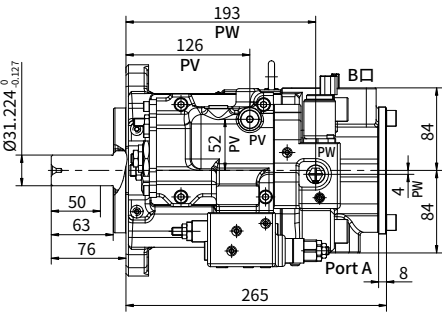
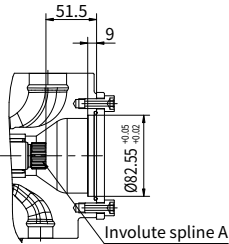
### •E0

Electric proportional displacement



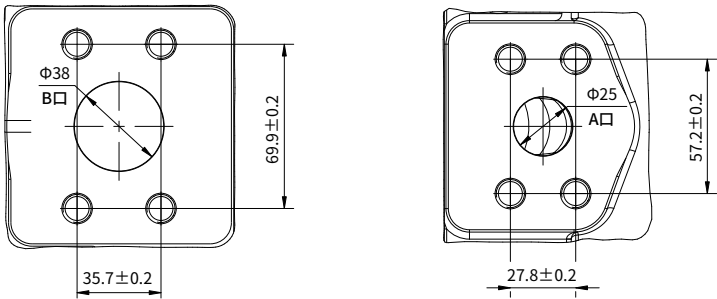
Installation size

HP3V 75S Installation size



Installation size

• HP3V 75S Description of oil port

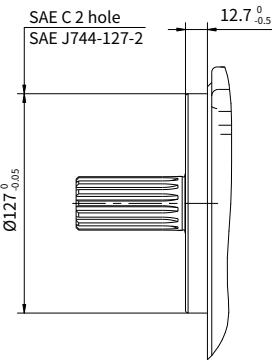
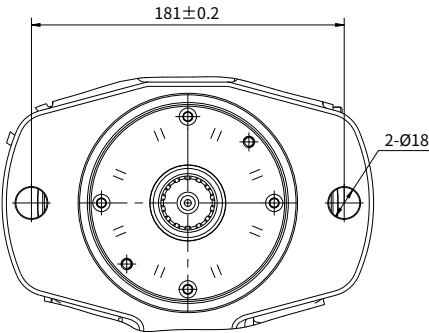


• Port Details

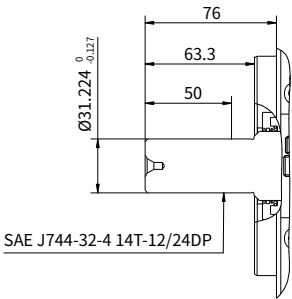
|        | Port Name           | Port Size and Description   |
|--------|---------------------|-----------------------------|
| A      | Output Port         | SAE 1" 4-M12 depth 19mm     |
| B      | Input Port          | SAE 1-1/2" 4-M12 depth 19mm |
| T1, T2 | Drain Port          | G1/2 depth 19mm             |
| Pw     | Pilot Port          | G1/4 depth 12mm             |
| MA     | Pressure Measureing | G1/4 depth 15mm             |
| Pv     | Pressure Measureing | G1/4 depth 12mm             |

Installation size

• HP3V 75S Flywheel flange



• HP3V 75S Input shaft

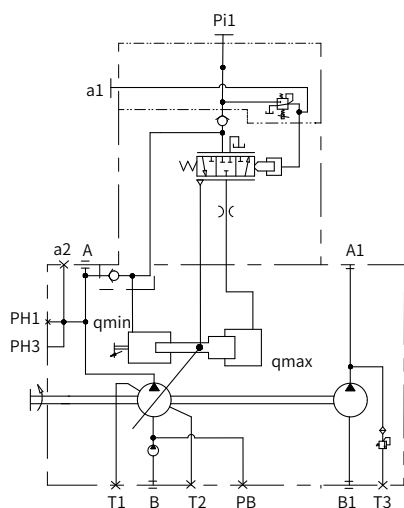


"S3" type spline shaft

## HP3V 280S Control principle

- **E0 Electro-proportional displacement control principle**

Electro-proportional displacement control: With pilot-pressure-related control, the pump displacement is adjusted in proportion to the pilot pressure. Basic position without pilot signal is  $V_g$  min, which includes the mechanically depressurized basic position  $V_{gmin}$ . With increasing pilot pressure the pump swivels to a larger displacement. The necessary control power is taken from the operating pressure or the external control pressure applied to port P. If the pump is to be adjusted from the zero basic setting or from a low operating pressure, port P must be supplied with an external control pressure of at least 30 bar, maximum 50 bar.



**Note:**

When ordering, please provide the information as below:

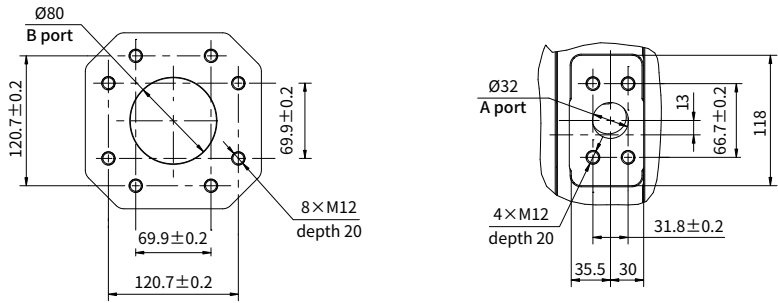
- Working pressure
- Maximum flow
- Minimum flow

### HP3V 280S Installation size



Installation size

• HP3V 280S Description of oil port

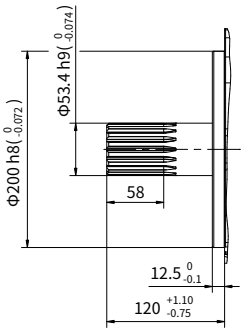
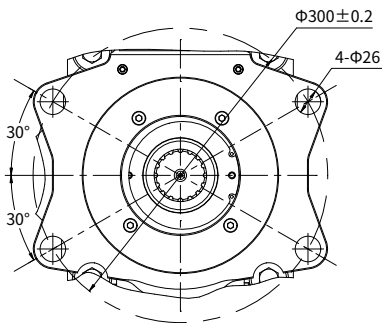


• Port Details

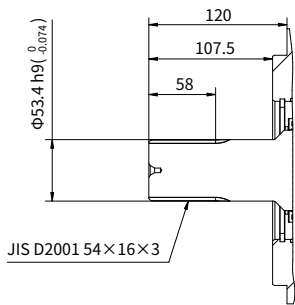
|        | Port Name           | Port Size and Description | Tightening Torque (N-m) |
|--------|---------------------|---------------------------|-------------------------|
| A      | Output Port         | SAE 6000psi 1 1/4"        | 98                      |
| B      | Input Port          | SAE 2500psi 3 1/2"        | 98                      |
| T1, T2 | Drain Port          | G3/4 depth 20mm           | 170                     |
| Pi1    | Pilot Port          | G 1/4 depth 15mm          | 16                      |
| Psv    |                     | G 1/4 depth 12mm          | 36                      |
| a2     | Pressure Measureing | G1/4 depth 12mm           | 36                      |
| a1     |                     | G1/4 depth 15mm           | 16                      |
| PB     |                     | G1/8 depth 12mm           | 12                      |
| PH1    |                     | G3/8 depth 15mm           | 74                      |

Installation size

• HP3V 280S Flywheel flange



• HP3V 280S Input shaft

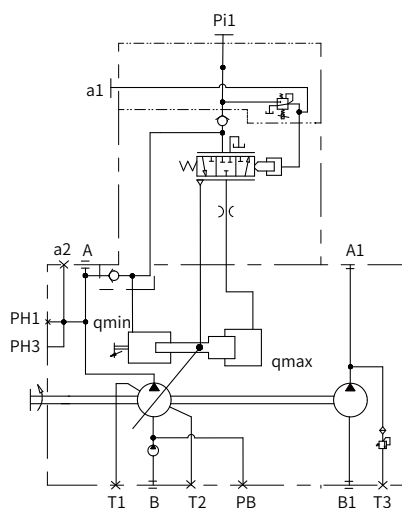


"J5" type spline shaft

## HP3V 300S Control principle

### ·E0 Electro-proportional displacement control principle

Electro-proportional displacement control: With pilot-pressure-related control, the pump displacement is adjusted in proportion to the pilot pressure. Basic position without pilot signal is  $V_{g\min}$ , which includes the mechanically depressurized basic position  $V_{g\min}$ . With increasing pilot pressure the pump swivels to a larger displacement. The necessary control power is taken from the operating pressure or the external control pressure applied to port P. If the pump is to be adjusted from the zero basic setting or from a low operating pressure, port P must be supplied with an external control pressure of at least 30 bar, maximum 50 bar.



#### **Note:**

When ordering, please provide the information as below:

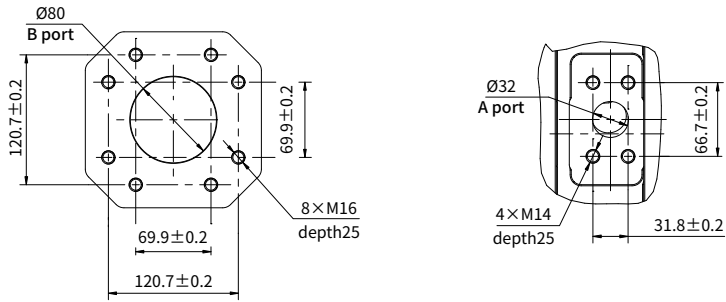
- Working pressure
- Maximum flow
- Minimum flow

### HP3V 300S Installation size



Installation size

• HP3V 300S Description of oil port

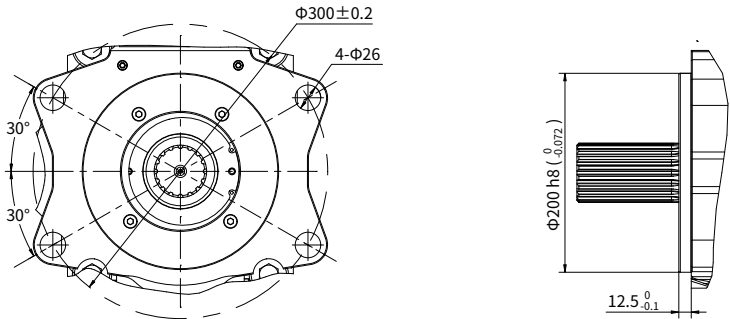


• Port Details

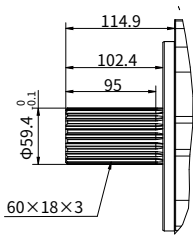
|         | Port Name           | Port Size and Description | Tightening Torque (N-m) |
|---------|---------------------|---------------------------|-------------------------|
| A       | Output Port         | SAE 6000psi 1 1/4"        | 156                     |
| B       | Input Port          | SAE 2500psi 3 1/2"        | 240                     |
| T1,, T2 | Drain Port          | G3/4 depth 20mm           | 170                     |
| Psv     | Pilot Port          | G 3/8 depth 15mm          | 74                      |
| a1      | Pressure Measureing | G1/4 depth 12mm           | 16                      |
| Pi1     | Pilot Port          | G1/4 depth 12mm           | 16                      |
| a2, PH2 | Pressure Measureing | G1/4 depth 15mm           | 36                      |
| PB      |                     | G1/8 depth 12mm           | 12                      |
| PH1     |                     | G3/8 depth 15mm           | 74                      |

# Installation size

## • HP3V 300S Flywheel flange



## • HP3V 300S Input shaft



"J6" type spline shaft

|                  |                  |
|------------------|------------------|
| China            | America          |
| +86 400 101 8889 | +01 630 995 3674 |
| Germany          | Japan            |
| +49 (30) 72088-0 | +81 03 6809 1696 |



© This brochure can be reproduced, edited, reproduced or transmitted electronically without the authorization of Hengli Hydraulic Company. Due to the continuous development of the product, the information in this brochure is not specific to the specific conditions or applicability of the industry, thus, Hengli does not take any responsibility for any incomplete or inaccurate description.