# S2VP (DE) Series

Variable Displacement Axial Piston Pump
With Electrical two point Control
Displacement: 28 to 100cc/rev
Max. operating pressure: 280 bar

## Index

## Introduction

**Description:**

This product is an axial piston pump in swash plate design for hydrostatic drives in open circuit operation, with through-shaft structure and plane valve plate. The piston is paralled around the shaft . The flow is proportional to the drive speed and displacement . The stepless adiustment of the displacement can be materialized by regulating the swivel angle of its swash plate. Its rated pressure is up to 280 Bar

**Features**

- The capacity of the pump is in proportion to its rotating speed and displacement; the step less adjustment of displacement can be materialized by regulating the swivel angle of its swash plate.
- There are many variable control forms, Fast control response;
- Allows for continuous operating pressures up to 280 Bar;
- There are two shell discharge ports;
- High power/weight ratio;
- The drive shaft is able to bear the axial and radial load;
- With through-shaft structure, able to form combination pump;

## Ordering code details

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| S2VP | 28 | DE | 31 | R | P | P | A | 12 | N00 |

**1. Operating Medium**

| | |
|---|---|
| Axial piston, straight shaft, variable, used in industry | S2VP |
| Axial piston,straight shaft,variable used in mobile machinery | S2VPM |

**2. Size**

| | | | | | | |
|---|---|---|---|---|---|---|
| Nominal displacement mL/r | 28 | 32 | 45 | 71 | 100 | |

**3. Control Devices**

| | | | | | | |
|---|---|---|---|---|---|---|
| Nominal displacement mL/r | 28 | 32 | 45 | 71 | 100 | |
| Electrical 2 point control | ● | ● | ● | ● | ● | DE |

**4. Series**

| | |
|---|---|
| Series | 31 |

**5. Rotating Direction (View on Shaft End)**

| | |
|---|---|
| Clockwise | R |
| Counterclockwise | L |

## Ordering code details

### 6. Seals

| | |
|---|---|
| Nitrile rubber NBR, Axial fluororubber Shaftseal FKM | P |
| Fluorine rubber FKM | V |

### 7. Shaft End

| | | | | | | |
|---|---|---|---|---|---|---|
| Keyed shaft DIN6885 | ● | ● | ● | ● | ● | P |
| Splined shaft SAE | ● | ● | ● | ● | ● | S |
| Splined shaft SAE ( Higher torque for through drive ) | ● | ● | ● | ● | ● | R |
| Splined shaft SAE ( Smaller diameter ) | ○ | ○ | ● | ● | ● | U |
| Splined shaft SAE ( Similar to U-shaft, higher through drive torque) | ○ | ○ | ● | ○ | ● | W |
| Keyed shaft DIN6885 | ● | ● | ● | ● | ● | K |

### 8. Mounting Flang

| | | | | | | |
|---|---|---|---|---|---|---|
| ISO 2 holes | ● | ● | ● | ● | ● | A |
| SAE 2 holes | / | / | / | ● | / | B |
| ISO 4 holes | ● | ● | ● | ● | ● | C |
| SAE 4 holes | / | / | / | ● | / | D |

### 9. Operating Port

| | |
|---|---|
| Suction port S and pressure port B located in the rear, metric (screw) thread | 11 |
| Suction port S and pressure port B located in both sidesmetric (screw) thread | 12 |
| Suction port S and pressure port B located in the rear, English screw | 61 |
| Suction port S and pressure port B located in both sides, English screw | 62 |

Chart shows: ● Available , ○ Inpreparation, - Not available

## Ordering code details

**10. Through Drive**

| Nominal displacement mL/r | | | 28 | 32 | 45 | 71 | 100 | |
|---|---|---|---|---|---|---|---|---|
| Without through drive | | | ● | ● | ● | ● | ● | N00 |
| With through drive, the second pump connection dimension as follows | | | | | | | | |
| Mounting flange | Spline shaft | The second pump | | | | | | |
| SAE82,2 holes | U-axis 5/8 in 9T16/32DP | S2VP18/31 | ● | ● | ● | ● | ● | K01 |
| SAE82,2 holes | S-axis 3/4 in 11T16/32DP | S2VP18/31 | ● | ● | ● | ● | ● | K52 |
| SAE101,2 holes | S-axis 7/8 in 13T16/32DP | S2VPM28/31 | ● | ● | ● | ● | ● | K68 |
| SAE101,2 holes | S-axis 7/8 in 13T16/32DP | S2VPM28/31 | ● | ● | ● | ● | ● | K02 |
| SAE101,2 holes | S-axis 1 in 15T16/32DP | S2VPM45/31 | | | ● | ● | ● | K04 |
| SAE127,2 holes | S-axis 1 1/4 in 14T12/24DP | S2VPM71/31 | | | | ● | ● | K07 |
| SAE127,2 holes | S-axis 1 1/2 in 17T12/24DP | S2VPM100/31 | | | | | ● | K24 |
| SAE152,4 holes | S-axis 1 3/4 in13T8/16DP | S2VPM140/31 | | | | | | K17 |
| IS080,2 holes | S-axis 3/4 in11T16/32DP | S2VP18/31 | ● | ● | ● | ● | ● | KB2 |
| IS0100,2 holes | S-axis 7/8 in 13T16/32DP | S2VPM28/31 | ● | ● | ● | ● | ● | KB3 |
| IS0100,2 holes | S-axis 1 in 15T16/32DP | S2VPM45/31 | | | ● | ● | ● | KB4 |
| ISO125,2 holes | S-axis 1 1/4 in 14T12/24DP | S2VPM71/31 | | | | ● | ● | KB5 |
| ISO125,2 holes | S-axis 1 1/2 in 17T12/24DP | S2VPM100/31 | | | | | ● | KB6 |
| ISO180,4 holes | S-axis 1 3/4 in 13T8/16DP | S2VPM140/31 | | | | | | KB7 |
| ISO80,2 holes | Flat shaft key Ø18 | S2VP18/31 | ● | ● | ● | ● | ● | K51 |
| SAE82,2 holes | Flat shaft key Ø19.05 | S2VP18/31 | ● | ● | ● | ● | ● | K40 |
| SAE100,2 holes | Flat shaft key Ø19.05 | S2VPM28/31 | ● | ● | ● | ● | ● | K25 |
| SAE101,2 holes | Flat shaft key Ø22.225 | S2VPM28/31 | ● | ● | ● | ● | ● | K03 |
| ISO 100,2 holes | Flat shaft key Ø25 | S2VPM45/31 | | | ● | ● | ● | K26 |
| SAE101,2 holes | Flat shaft key Ø25.4 | S2VPM45/31 | | | ● | ● | ● | K05 |
| IS0 125,2 holes | Flat shaft key Ø32 | S2VPM71/31 | | | | ● | ● | K27 |
| SAE127,2 holes | Flat shaft key Ø31.75 | S2VPM71/31 | | | | ● | ● | K08 |
| ISO 125,2 holes | Flat shaft key Ø40 | S2VPM100/31 | | | | | ● | K37 |
| SAE127,2 holes | Flat shaft key Ø38.1 | S2VPM100/31 | | | | | ● | K38 |
| ISO 180,4 holes | Flat shaft key Ø45 | S2VPM140/31 | | | | | | K59 |
| SAE152,4 holes | Flat shaft key Ø44.45 | S2VPM140/31 | | | | | | K21 |

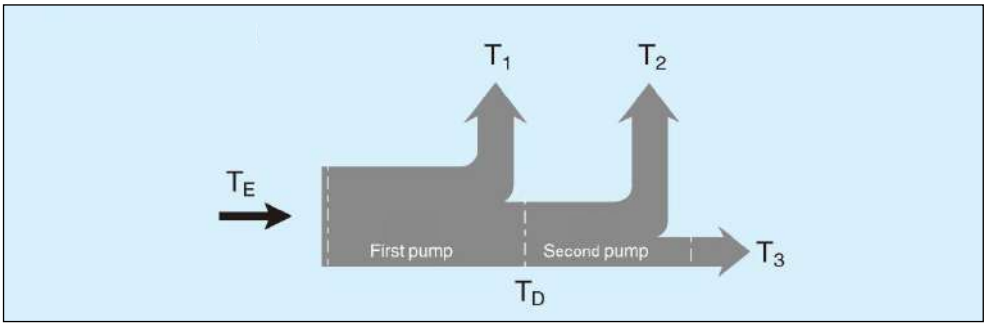
Description of combination pump: Two pumps can be connected in series by their head and end, namely integrated to be a combination pump. by the means of through-shaft, and the se cond pump of the series combination is called the subordinate pump.In case of placing an order, the combination pump model equals to the model of the first pump + the model of the second pump.
Illustration of combination pump model: A4VS045 DR/31RPPA12KB3+OS10VSO28DR/31R-PSA12N00

Chart shows: ● Available , ○ Inpreparation, - Not available

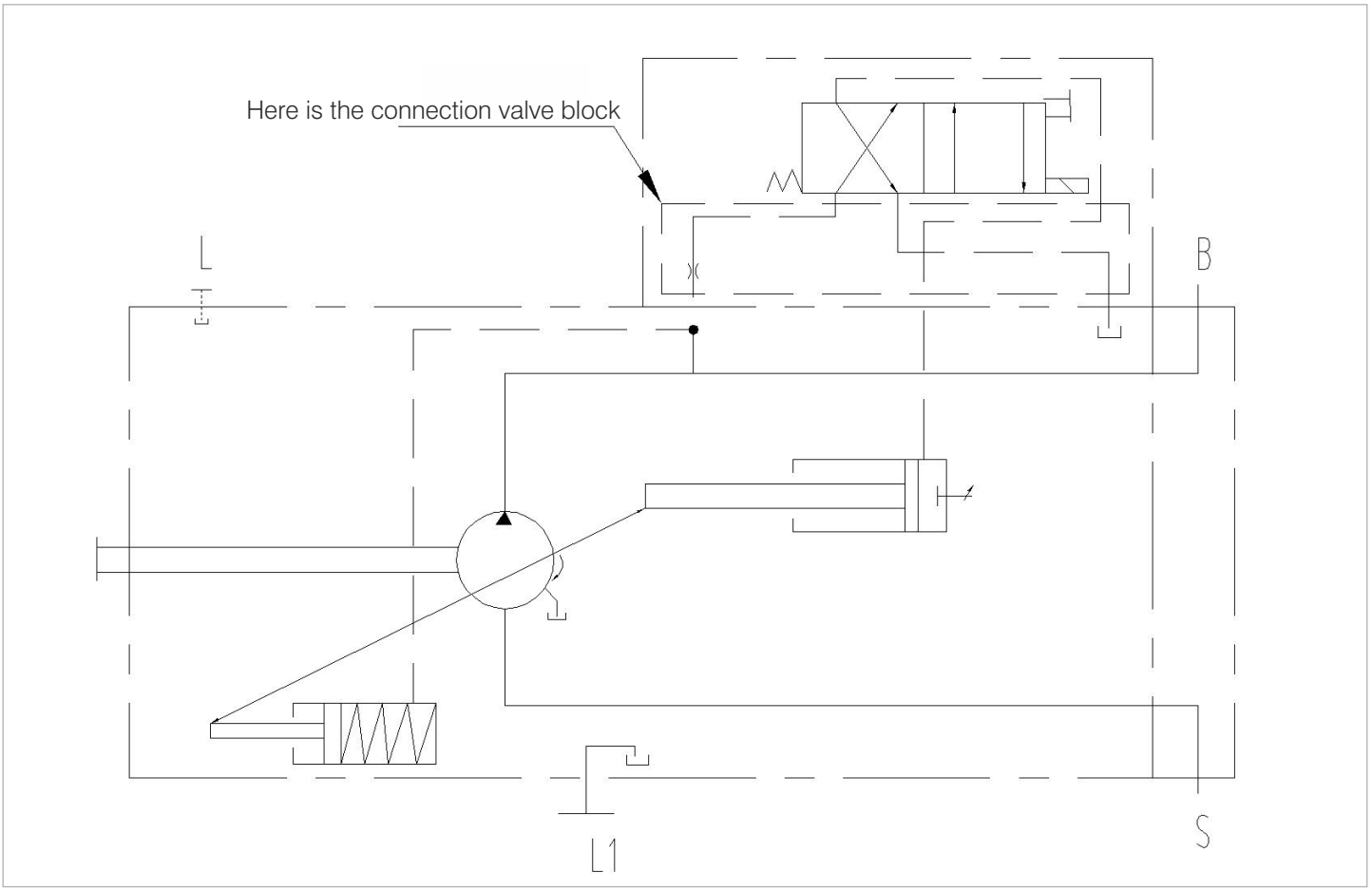
## Technical data

| Size | | | | 28 | 32 | 45 | 71 | 100 |
|---|---|---|---|---|---|---|---|---|
| Displacement | | Vgmax | mL/r | 28 | 32 | 45 | 71 | 100 |
| Pressure at suction port S (Absolute pressure) | Min. pressure | Ps min | bar | 0.8 | | | | |
| | Max. pressure | Ps max | bar | 10 | | | | |
| Pressure at Outlet port B (Absolute pressure) | Rated pressure | PN | bar | 280 | | | | |
| | Peak pressure | Pmax | bar | 350 | | | | |
| | Min. pressure | | bar | 10 | | | | |
| Rate of pressure change | | RA | bar/s | 16000 | | | | |
| Drain port L,Li pressure (Absolute pressure) | | PL | bar | ≤2 | | | | |
| Max. speed | Vg=Vg max | no max | r/min | 3000 | 3000 | 2600 | 2200 | 2000 |
| Ps= 1bar | Vg=Vg max | | r/min | 3600 | 3600 | 3100 | 2600 | 2400 |
| Max. flow | n =no max | qvo max | l/min | 84 | 96 | 117 | 156 | 200 |
| | n =1500 r/min | | l/min | 42 | 42 | 68 | 107 | 150 |
| Maximum power(Ap=280 bar) | n =no max | Po max | kw | 39 | 45 | 55 | 73 | 93 |
| | n=1500 r/min | | kw | 20 | 22.4 | 32 | 50 | 70 |
| Torque(Vg= Vgmax) | ΔP=280bar | Tmax | Nm | 125 | 125 | 200 | 316 | 445 |
| | ΔP=100bar | T | Nm | 45 | 45 | 72 | 113 | 159 |
| Torsionastiffness | Shaft extension P | | Nm/rad | 25656 | 25656 | 41232 | 80627 | 132335 |
| | Shaft extension S | | Nm/rad | 22317 | 22317 | 37500 | 71884 | 121142 |
| | Shaft extension R | | Nm/rad | 26360 | 26360 | 41025 | 76545 | - |
| | Shaft extension U | | Nm/rad | 16695 | 16695 | 30077 | 52779 | 91903 |
| | Shaft extension K | | Nm/rad | 26189 | 26189 | 43905 | 82112 | 135303 |
| Moment of inertia of the rotating assembly | J | | $kgm^2$ | 0.0017 | 0.0017 | 0.0033 | 0.0083 | 0.0167 |
| Max. angular acceleration | | | $rad/s^2$ | 5500 | 5500 | 4000 | 3300 | 2700 |
| Volume of case | | | L | 0.7 | 0.7 | 1.0 | 1.6 | 2.2 |
| Weight | | | Kg | 15 | 15 | 21 | 33 | 45 |
| Drive shaft Allowable load | Max.axial force | | N | 1000 | 1000 | 1500 | 2400 | 4000 |
| | Max. radial force | | N | 1200 | 1200 | 1500 | 1900 | 2300 |
| Torque ( Vg △P = 280bar ) | | Tmax | Nm | 125 | 125 | 200 | 316 | 445 |
| Max . input torque | Shaft extension P | TEmax | Nm | 137 | 137 | 200 | 439 | 857 |
| | | Ø | mm | 22 | 22 | 25 | 32 | 40 |
| | Shaft extension S | TEmax | Nm | 198 | 198 | 319 | 626 | 1104 |
| | | Ø | in | 7/8 | 7/8 | 1 | 1 1/4 | 1 1/2 |
| | Shaft extension R | TEmax | Nm | 250 | 250 | 400 | 644 | - |
| | | Ø | in | 7/8 | 7/8 | 1 | 1 1/4 | - |
| | Shaft extension U | TEmax | Nm | 105 | 105 | 188 | 300 | 595 |
| | | Ø | in | 3/4 | 3/4 | 7/8 | 1 | 1 1/4 |
| | Shaft extension W | TEmax | Nm | 140 | 140 | 220 | 394 | 636 |
| | | Ø | mm | 3/4 | 3/4 | 7/8 | 1 | 1 1/4 |

**Torque Distribution**



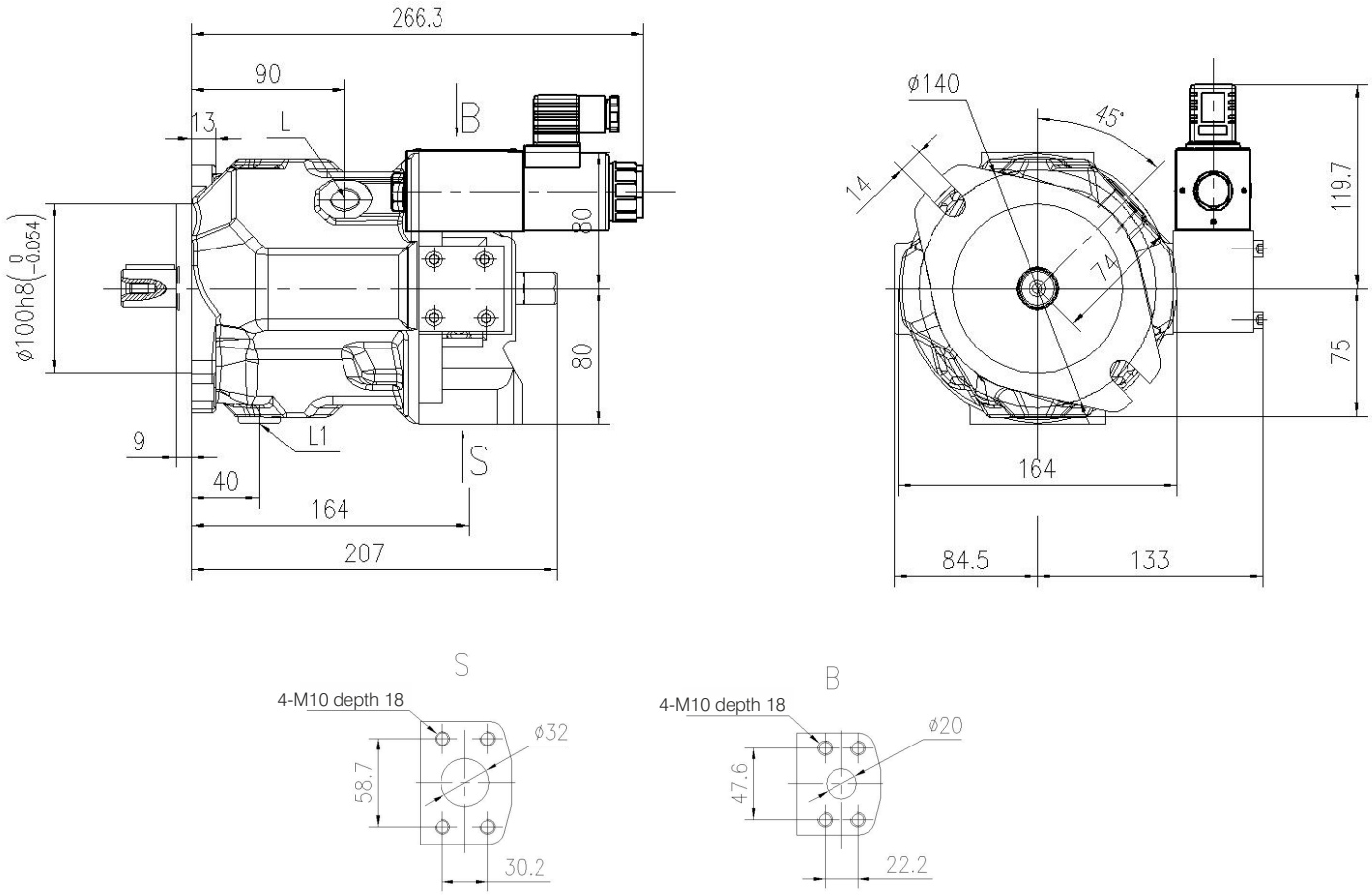
## Control Device




**DE-Electrical Two-Point Control :** The variable displacement unit is set to the minimum swing angle through the drive switch solenoid valve. Control pressure originates from the high-pressure side. The system requires a minimum pressure to adjust the pump, which depends on operational data (please contact us). The axial piston unit can only switch between Vg max and Vg min. Please specify the preset in plain text.

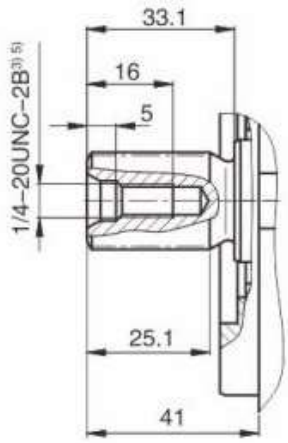
## Dimensions size 28/32 Flange A(Control devices DE)

**Port 12 (Control devices DE)**

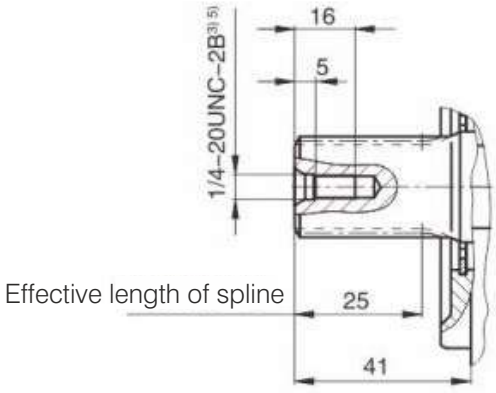



**Shaft Options:**

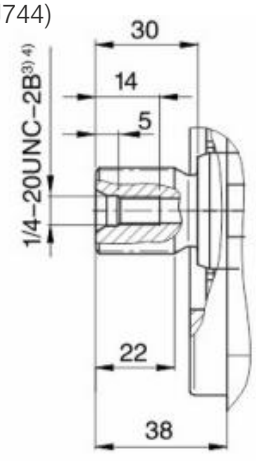
S Spline, 7/8 in 13T 16/32DP[1)]
(SAE J744)




R Spline, 7/8 in 13T 16/32DP[1)2)]
(SAE J744)




U Spline, 3/4 in 11T 16/32DP[1)]
(SAE J744)

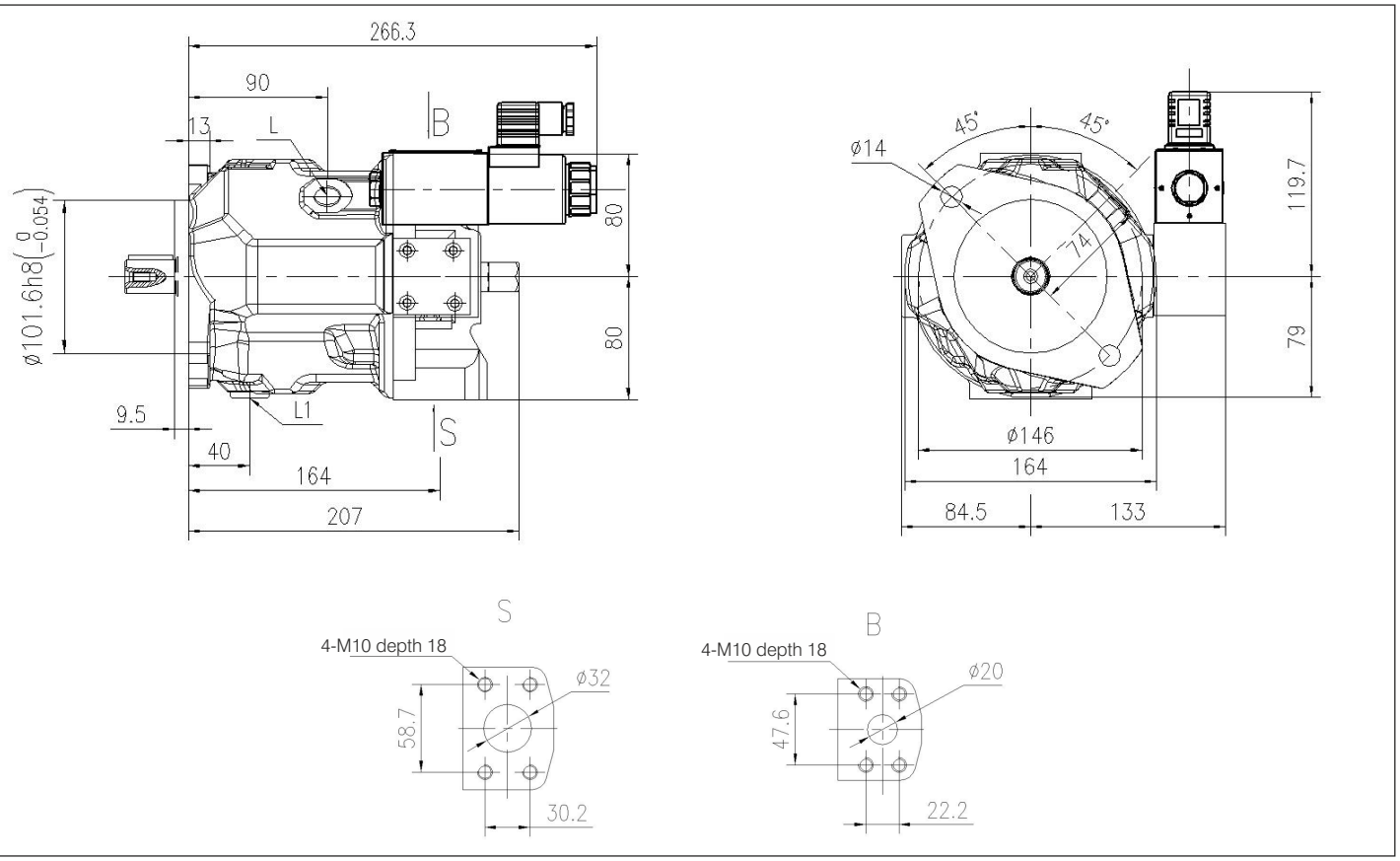



**Ports**

| | | |
|---|---|---|
| B | Outlet port | Flange SAE J518 3/4 in (Standard series) Fixing thread M10 depth 17 |
| S | Suction port | Flange J518 1 1/4 in (Standard series) Fixing thread M10 depth 17 |
| L | Drain port | M18x1.5, depth12 |
| L1 | Drain port | M18x1.5, depth12 |

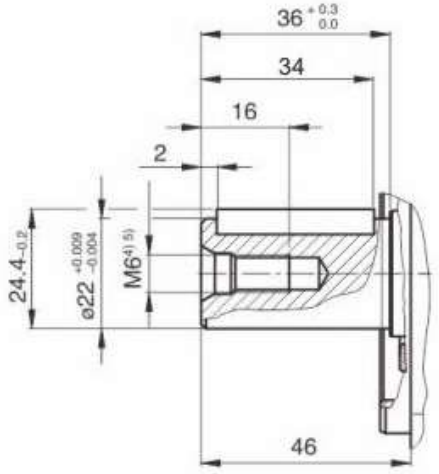
## Dimensions size 28/32 Flange C(Control devices DE)

**Port 12(Control devices DE)**

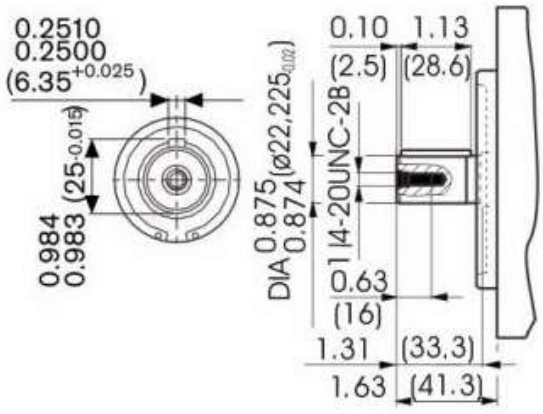



**Shaft Options:**

P Parallel, DIN6885, A6x6x32




K Parallel with key , ISO 3019-1 22-1

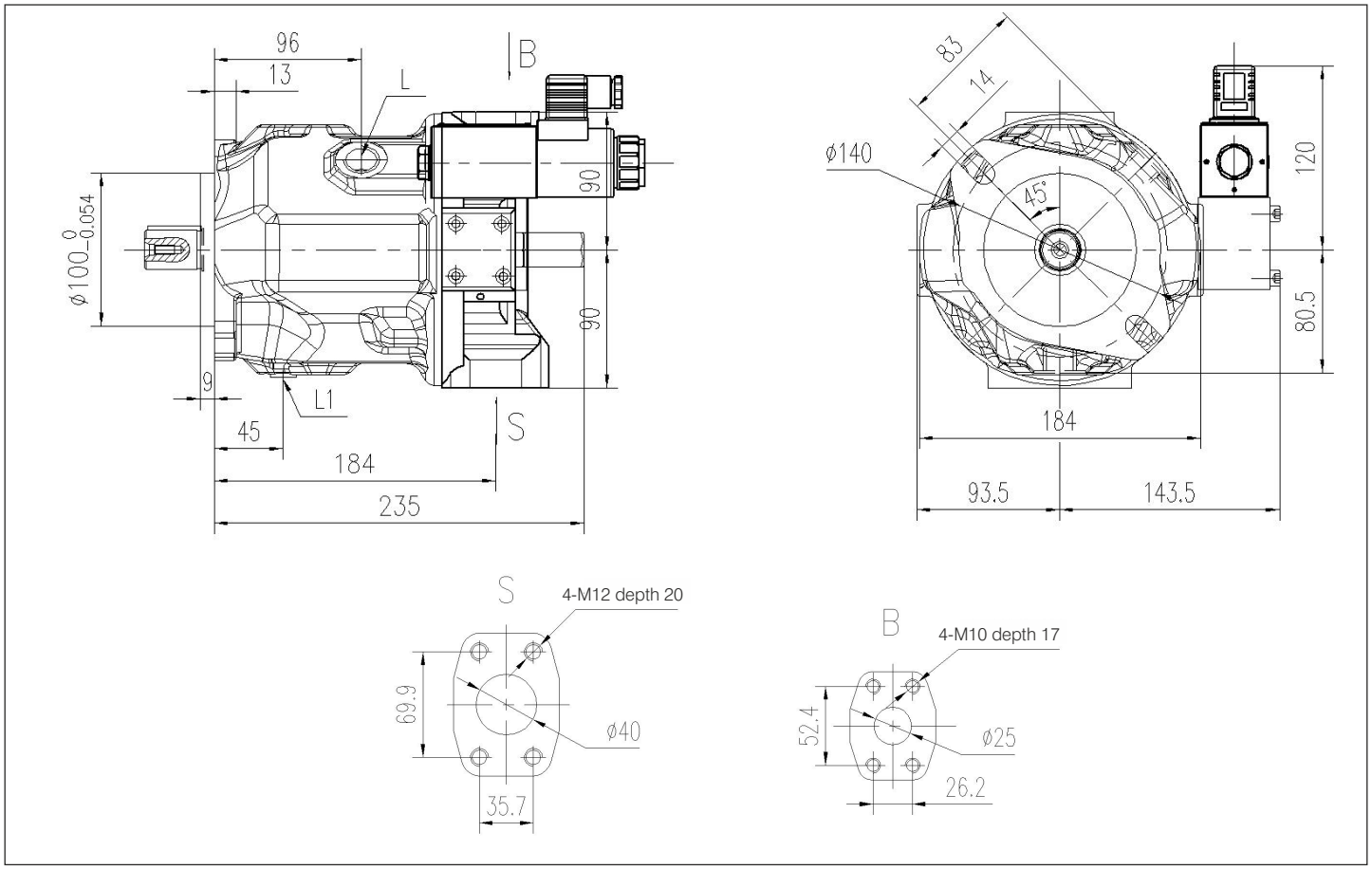



Ports

| | | |
|---|---|---|
| B | Outlet port | Flange SAE J518 3/4 in (Standard series) Fixing thread 3/8-16UNC;20 deep |
| S | Suction port | Flange J518 1 1/4 in (Standard series) Fixing thread 7/16-14UNC;24 deep |
| L | Drain port | M18x1.5, depth12 |
| L1 | Drain port | 3/4-16UNF-2B depth 14 |

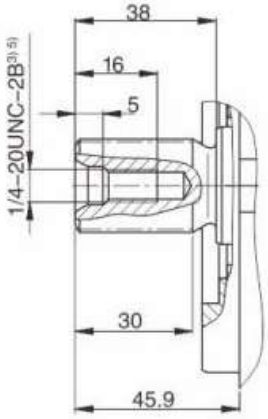
## Dimensions size 45 Flange A(Control devices DE)

### Port 12(Control devices DE)

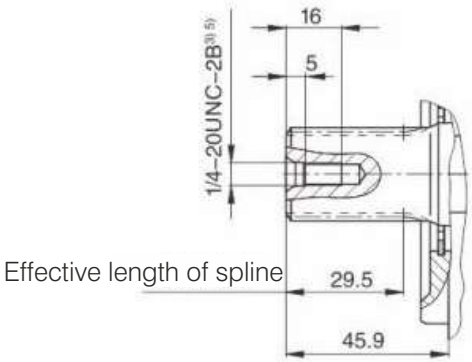



### Shaft Options:

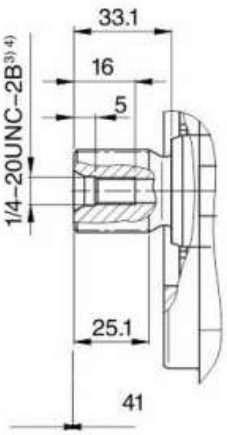
S Spline, 1 in 15T 16/32 DP[1)]
(SAE J744)




R Spline, 1 in 15T 16/32 DP[1)]
(SAE J744)




U Spline, 7/8 in 13T 16/32 DP[1)]
(SAE J744)

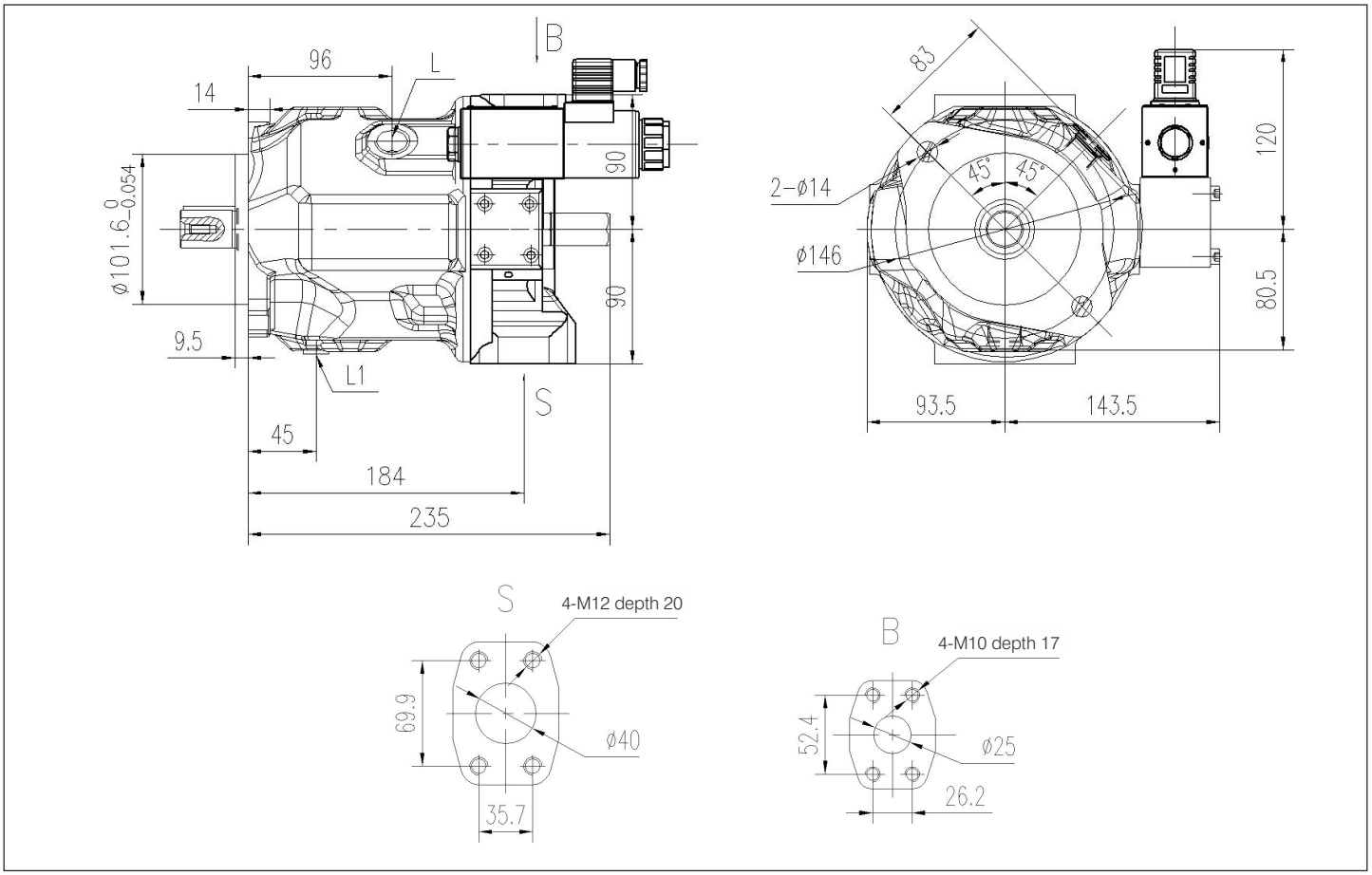



**Ports**

| | | |
|---|---|---|
| B | Outlet port | Flange SAE J518 1 in (Standard series) Fixing thread M10 depth17 |
| S | Suction port | Flange J518 1 1/4-1 1/2 in (Standard series) Fixing thread M12 depth20 |
| L | Drain port | M22x1.5 depth14 |
| L1 | Drain port | M22x1.5 depth14 |

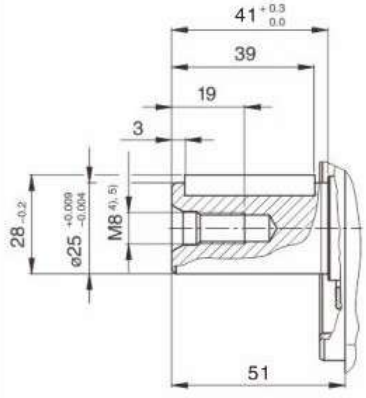
# Dimensions size 45 Flange C(Control devices DE)

**Port 12(Control devices DE)**

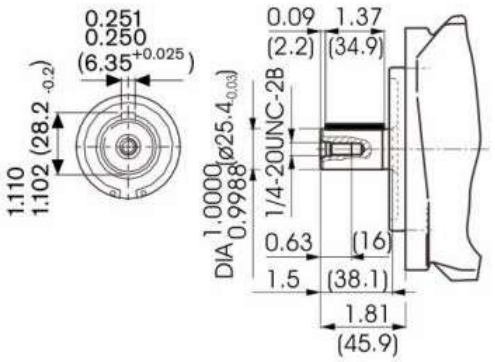



**Shaft Options:**

P parallel key shaft
DIN6885, A8 x 7 x 36




K flat key shaft,
ISO 3019-1 25-1

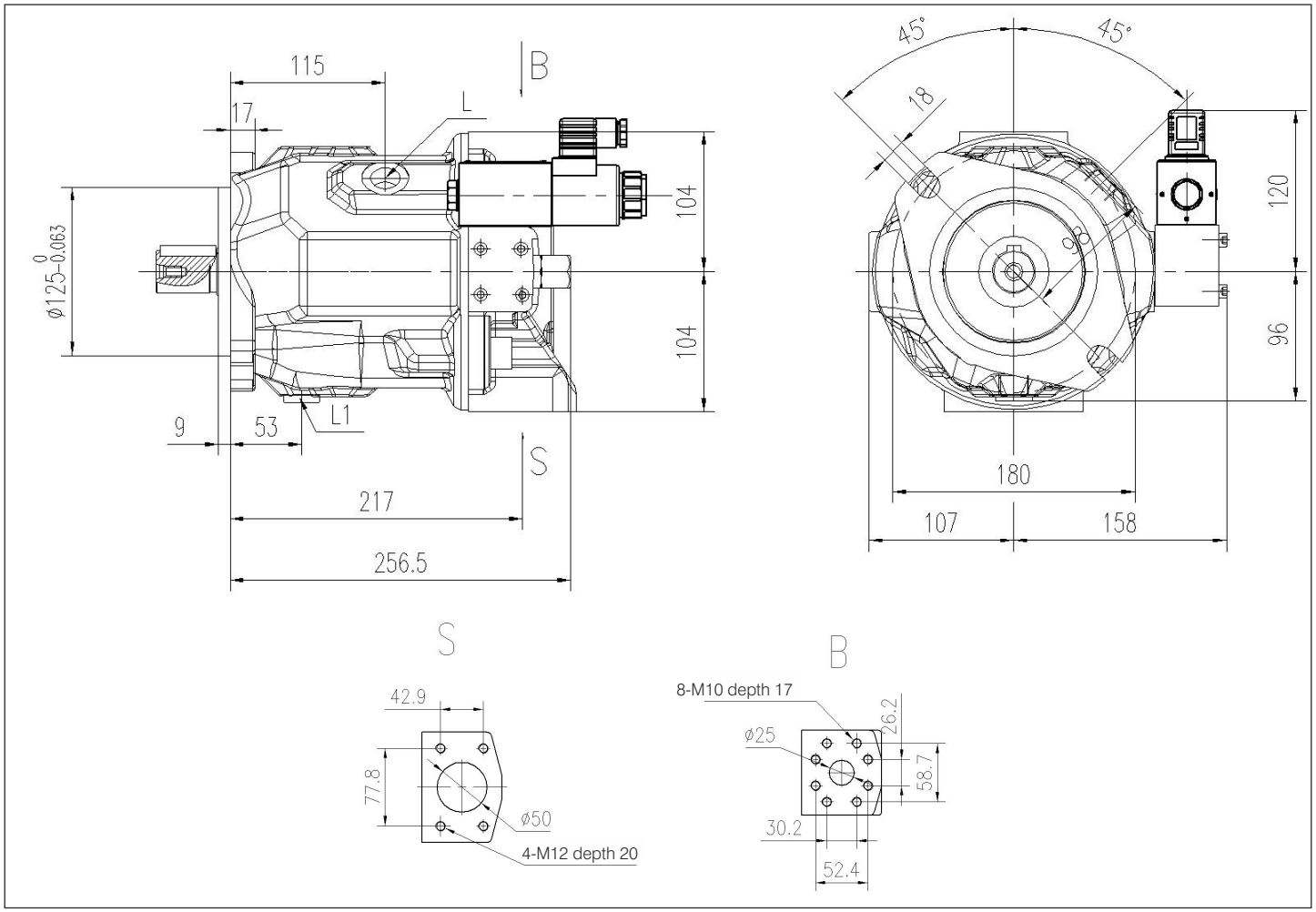



**Ports**

| | | |
|---|---|---|
| B | Outlet port | Flange SAE J518 1 in (Standard series) Fixing thread 3/8-16UNC; depth 18 |
| S | Suction port | Flange SAE J518 1 1/2 in (Standard series) Fixing thread 1/2-13UNC; depth 22 |
| L | Drain port | M22x1.5 depth 14 |
| L1 | Drain port | 7/8-14unf-2B depth 16 |

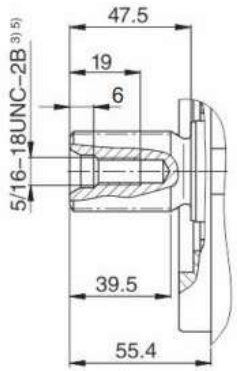
## Dimensions size 71 Flange A(Control devices DE)

### Port 12(Control devices DE)

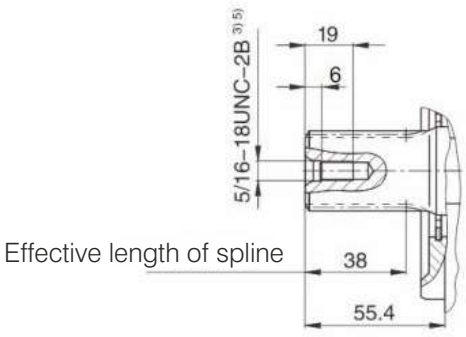



### Shaft Options:

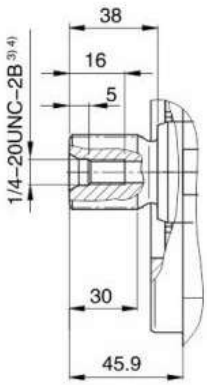
S Spline, 1 1/4in 14T 12/24 DP[1)]
(SAE J744)




R Spline, 1 1/4 in 14T 12/24 DP[1)2)]
(SAE J744)




U Spline, 1 in 15T 16/32 DP[1)]
(SAE J744)

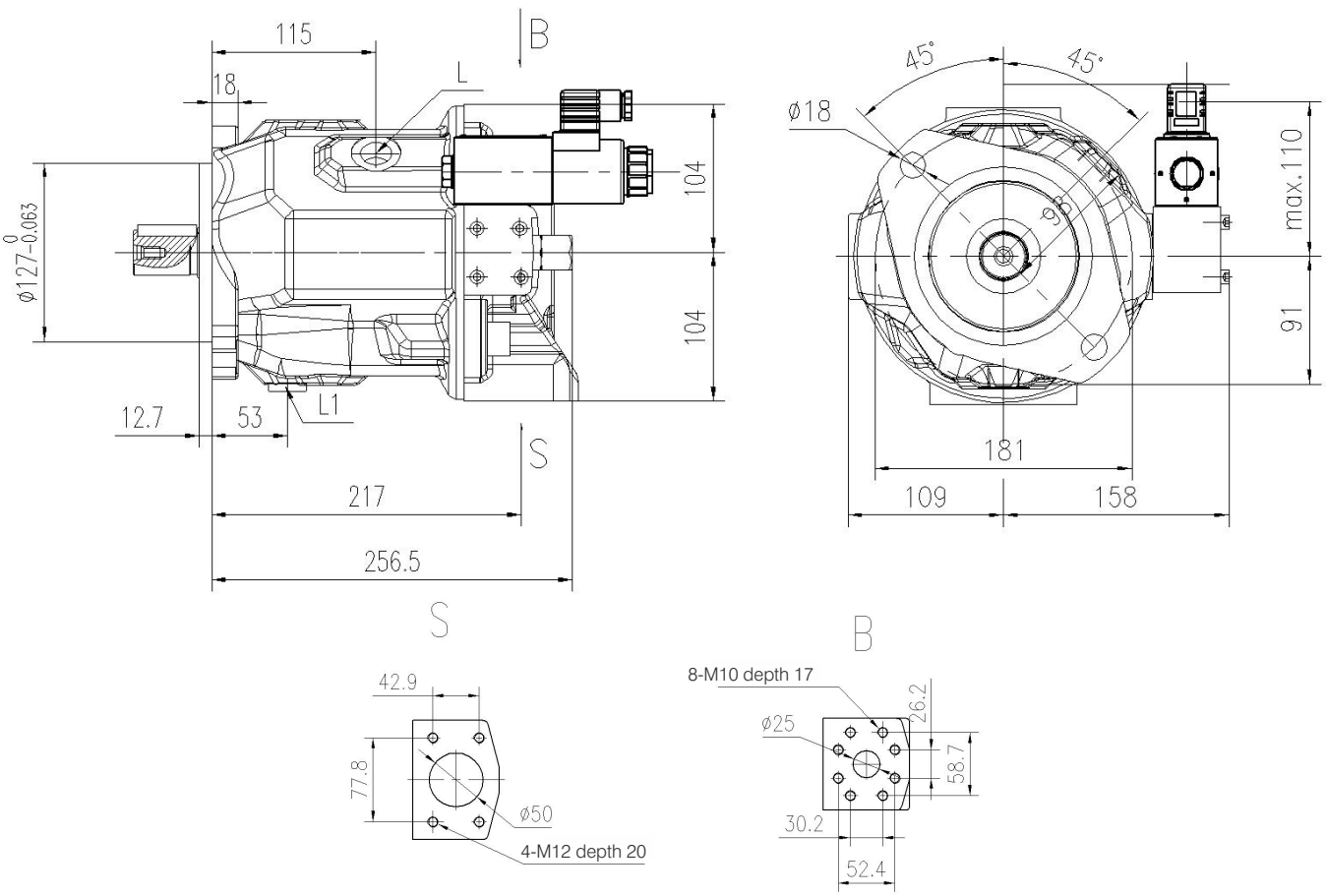



**Ports**

| | | |
|---|---|---|
| B | Outlet port | Flange SAE J518 1 in (Standard series) Fixing thread M10 depth17 |
| S | Suction port | Flange J518 1 1/4-1 1/2 in (Standard series) Fixing thread M12 depth20 |
| L | Drain port | M22x1.5 depth14 |
| L1 | Drain port | M22x1.5 depth14 |

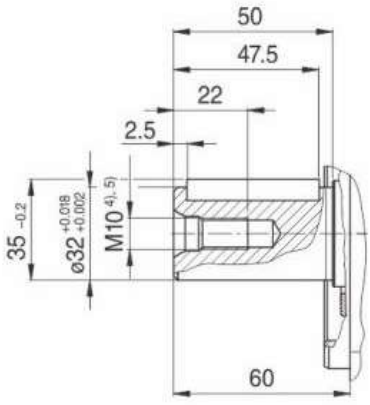
## Dimensions size 71 Flange C(Control devices DE)

**Port 12(Control devices DE)**

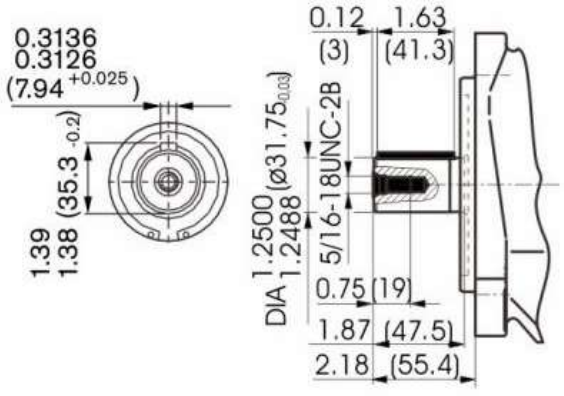



**Shaft Options:**

P Parallel, DIN6885, A10x8x45




K Parallel with key , ISO 3019-1 32-1

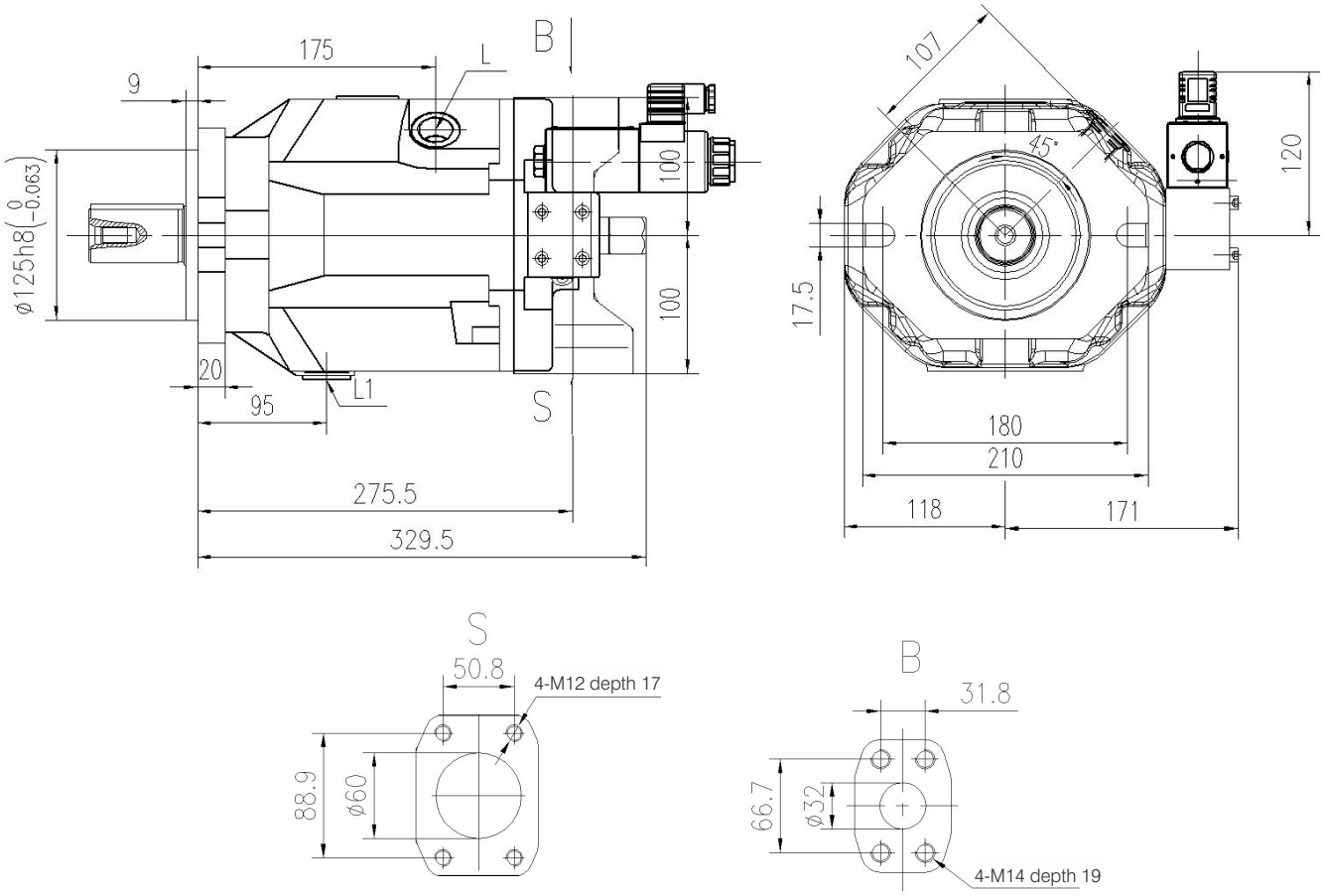



**Ports**

| | | |
|---|---|---|
| B | Outlet port | Flange SAE J518 1 in (Standard series) Fixing thread 3/8-16UNC,18 deep |
| S | Suction port | Flange J518 2 in (Standard series) Fixing thread 1/2-13UNC,22 deep |
| L | Drain port | M22x1.5 depth14 |
| L1 | Drain port | 7/8-14UNF-2B depth 16 |

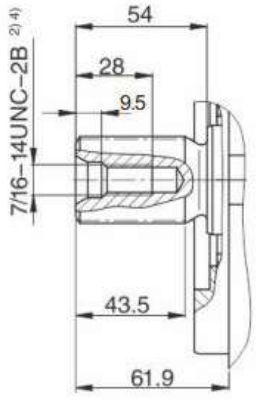
## Dimensions size 100 Flange A (Control devices DE)

**Port 12(Control devices DE)**

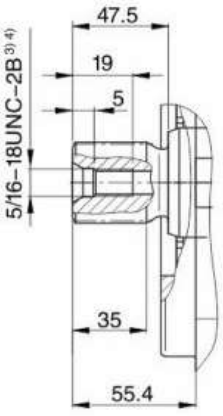



**Shaft Options:**

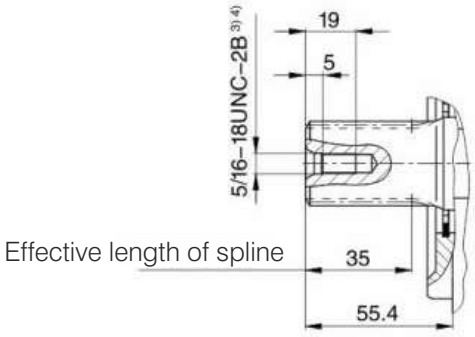
S Spline, 1 1/2 in 17T 12/24 DP[1)]
(SAE J744)




U Spline, 1 1/4 in 14T 12/24 DP[1)]
(SAE J744)




W Spline, 1 1/4 in 14T 12/24 DP[1)2)]
(SAE J744)

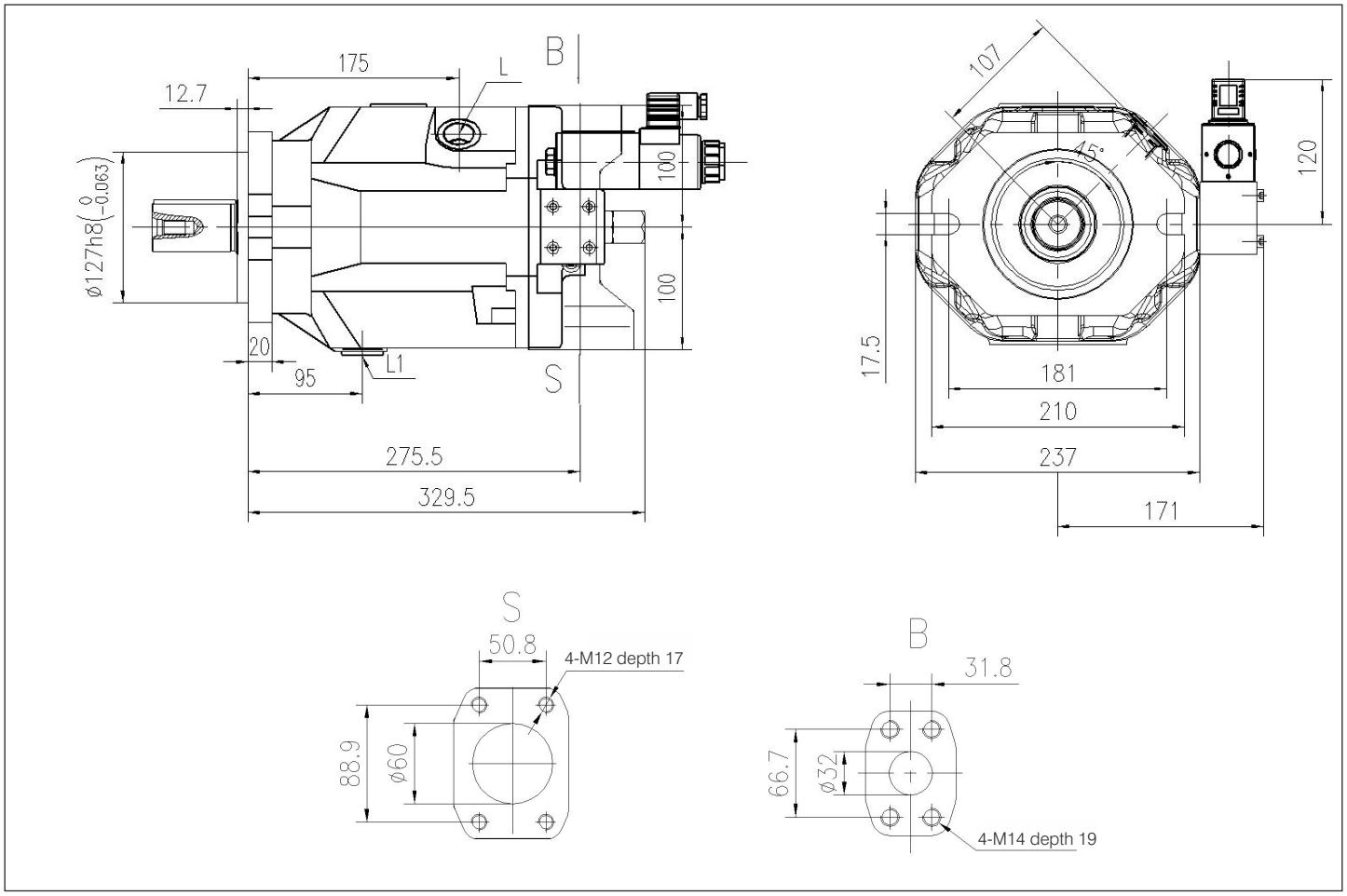



**Ports**

| | | |
|---|---|---|
| B | Outlet port | Flange SAE J518 1 1/4 in (High pressure series) Fixing thread M14 depth19 |
| S | Suction port | Flange J518 2 1/2 in (Standard series) Fixing thread M12 depth17 |
| L | Drain port | M27x2 depth16 |
| L1 | Drain port | M27x2 depth16 |

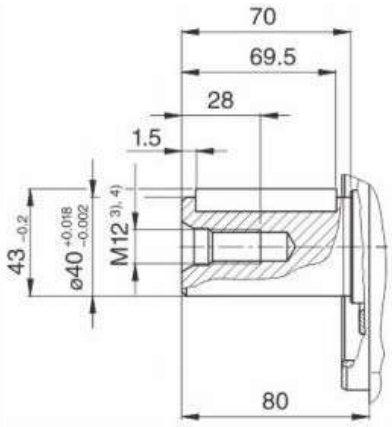
## Dimensions size 100 Flange C(Control devices DE)

**Port 12(Control devices DE)**

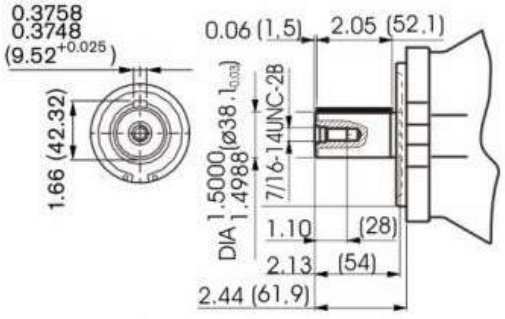



**Shaft Options:**

P Parallel, DIN6885, A12x8x68




K Parallel with key , ISO 3019-1 38-1




**Ports**

| | | |
|---|---|---|
| B | Outlet port | Flange SAE J518 1 1/4 in (High pressure series) Fixing thread 1/2-13UNC, deep19 |
| S | Suction port | Flange J518 2 1/2 in (Standard series) Fixing thread 1/2-13UNC; deep27 |
| L | Drain port | M27x2 depth14 |
| L1 | Drain port | 1/16-12UNF-2B depth18 |

The specified data is for product description purposes only and may not be deemed to be guaranteed unless expressly confirmed in the contract.

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