

The Sunfab variable displacement pump with its rugged construction is designed for direct mounting at the auxiliary drive (P.T.O.) of commercial vehicles.

With a max. displacement of 130 cm³/rev. and a peak pressure of 450 bar it is suited for many applications. This is complemented by the high self priming rate and the low noise level. The pump delivery flow is dependent on the present drive speed and geometric displacement. The flow is adjustable in a range between 0 and Q_{max}.

Long service life is ensured due to the pressurized lubrication of the swash plate bearing shell.

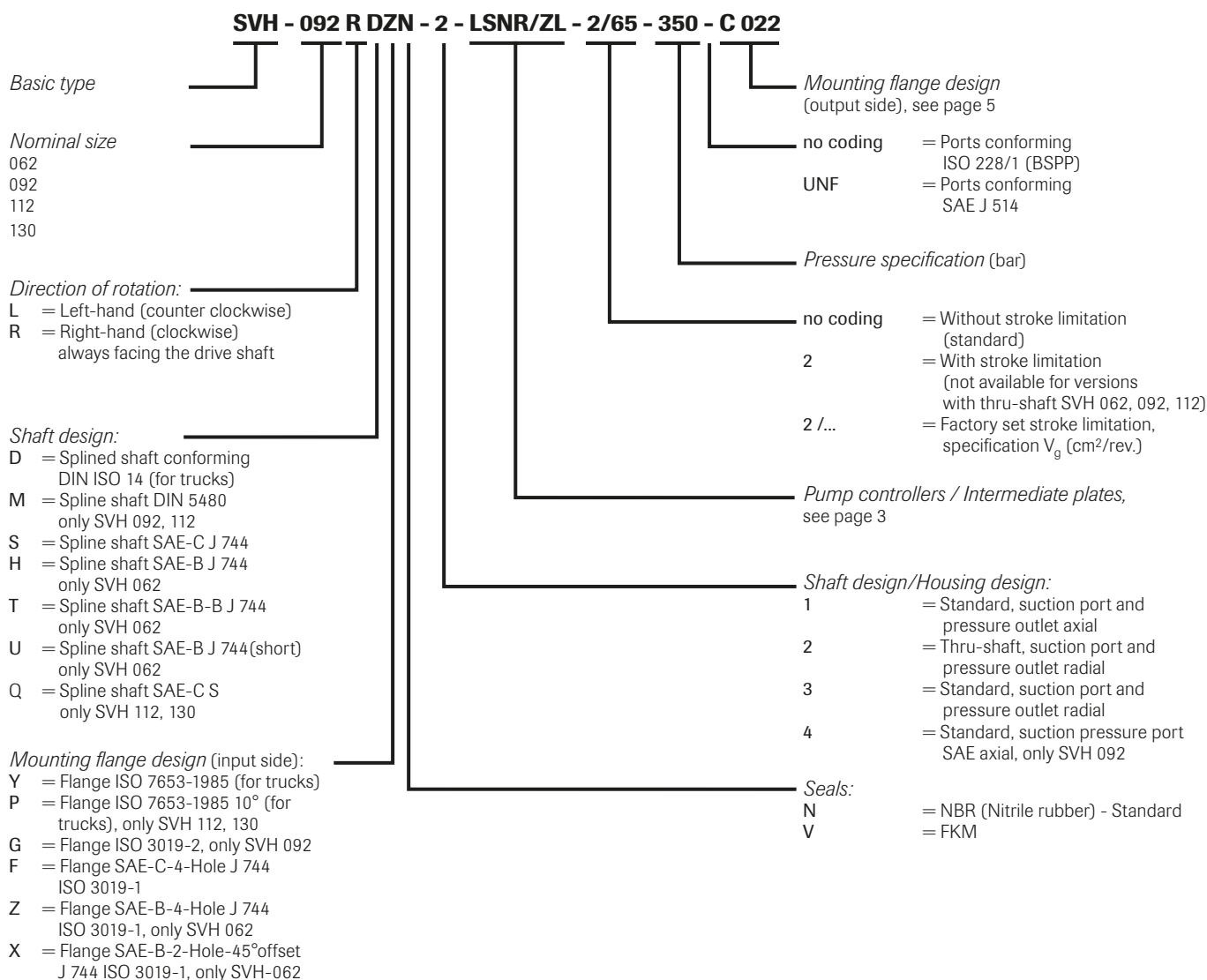
Sunfab SVH is rotation-direction dependent and should be ordered in either right-hand or left-hand designs.

Other advantages of Sunfab SVH:

- Short reaction time when resetting the flow
- Compact installation dimensions
- High pressure
- Externally drained for best cooling
- Rugged construction and long service life
- Low noise emission
- High power-to-weight-ratio



Versions, main data



| Type | | SVH 062 | SVH 092 | SVH 112 | SVH 130 |
|---|-----------------------|---------|---------|---------|---------|
| Geometric displacement V_g | cm ³ /rev. | 62.4 | 87.2 | 110.4 | 130 |
| Nom. pressure p_{nom} | bar | 350 | 350 | 350 | 400 |
| Pressure p_{max} | bar | 400 | 400 | 400 | 450 |
| Angle of the swash plate | | 21.5° | 21.5° | 21.5° | 21.5° |
| Required inlet pressure (absolute) for open circuit | bar | 0.85 | 0.85 | 0.85 | 0.85 |
| Max. permissible inlet pressure, absolute | bar | 2 | 2 | 2 | 2 |
| Max. permissible housing pressure, absolute | bar | 3 | 3 | 3 | 3 |
| Max. permissible drive torque (flange/shaft) | Nm | 430 | 530 | 900 | 900 |
| Max. torque for the pump (with power controller) | Nm | 430 | 530 | 600 | 700 |
| Max. permissible torque for the thru-shaft, dep. on flange | Nm | 100 | 530 | 600 | 700 |
| Max. rev. rating when self priming and max. angle of the swash plate at 1 bar absolute inlet pressure | rpm | 2500 | 2300 | 2200 | 2100 |
| Min. rev. rating for permanent running | rpm | 500 | 500 | 500 | 500 |
| Required torque at 100 bar | Nm | 100 | 151 | 184 | 230 |
| Drive power for 250 bar and 2000 rpm | kW | 53 | 79,5 | 97.2 | 120 |
| Mass (weight) complete with controller | kg | 24 | 27 | 30 | 30.8 |
| Tare weight torque | Nm | 30 | 35.3 | 40 | 40 |
| Inertia moment | kg m ² | 0.005 | 0.008 | 0.01 | 0.011 |
| Sound level at 250 bar, 1500 rpm and max. swash plate angle (Measured in a sound measuring room DIN ISO 4412, distance 1 m) | dB(A) | 75 | 75 | 75 | 75 |

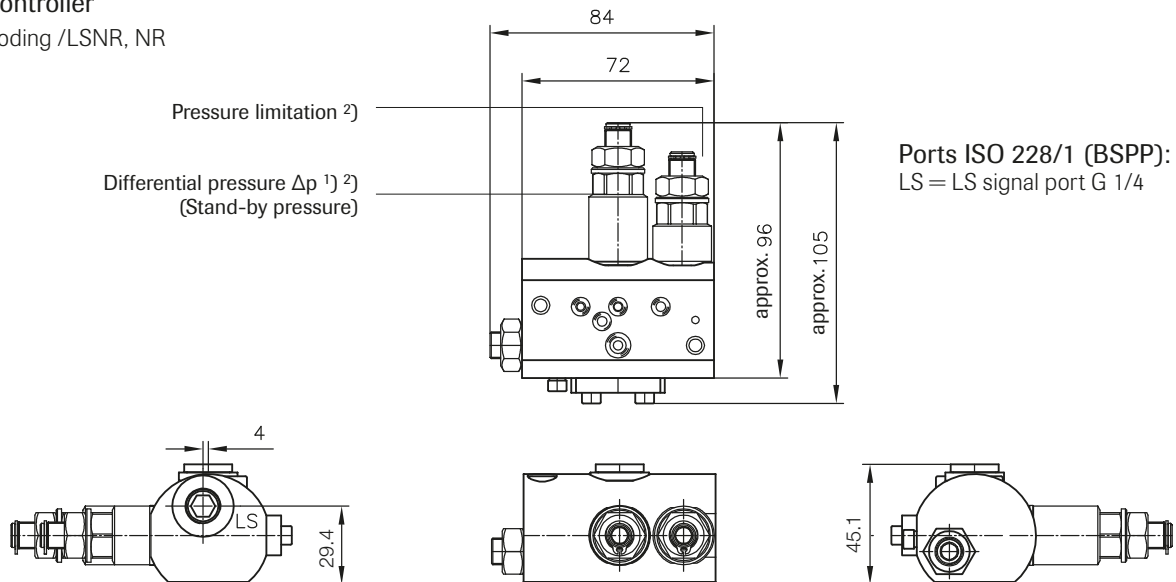


Description of the controllers

| | |
|---------------------|---|
| LSNR | Load-Sensing controller with integrated pressure limitation |
| NR | Pressure controller, adjustable directly at the pump. The Pressure controller automatically maintains a constant system pressure independent of the required flow. Therefore it is suited for constant pressure systems, where differing flow is required or as efficient pressure limitation of the hydraulic system |
| Intermediate plates | Intermediate plate only in combination with controllers LSNR or NR |
| /ZL | SVH 062, 092, 112: Intermediate plate with power controller (torque limitation) Product "Pressure x Displacement" = constant Adjustment range: 25...100% of max. drive torque |
| /ZW | Angled intermediate plate (45°) mandatory for mounting controllers at pumps with housing design -2, -3 |
| /L | SVH 130: Power controller (torque limitation), default option Adjustment range: 200-700 Nm Factory setting: 700 Nm |

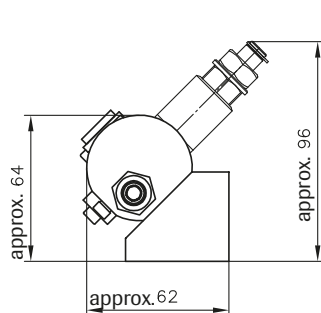
Controller

Coding /LSNR, NR



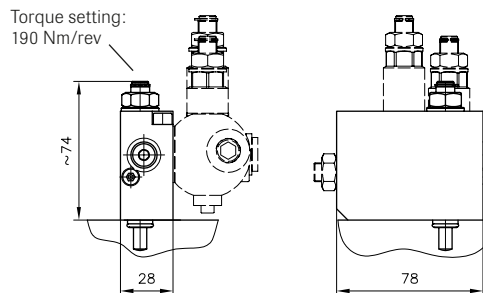
Intermediate plate

Coding /ZW version with thru-shaft



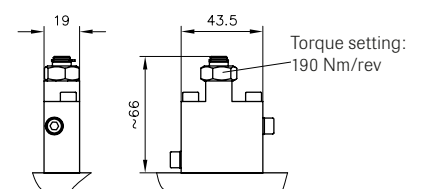
Controller

Coding /ZL intermediate plate version



Controller

Coding /L

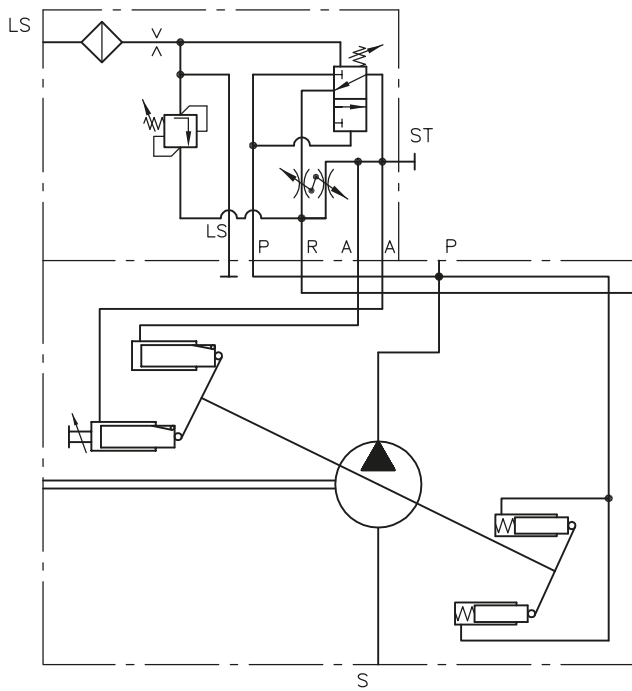


| Pressure adjustment | Pressure range (bar) | Δp (bar)/rev. | Pressure setting, factory set (bar) |
|----------------------------------|----------------------|-----------------------|-------------------------------------|
| Pressure limitation | 20 ... 400 | 50 | 350 |
| Differential pressure Δp | 20 ... 55 | 12.5 | 27 |

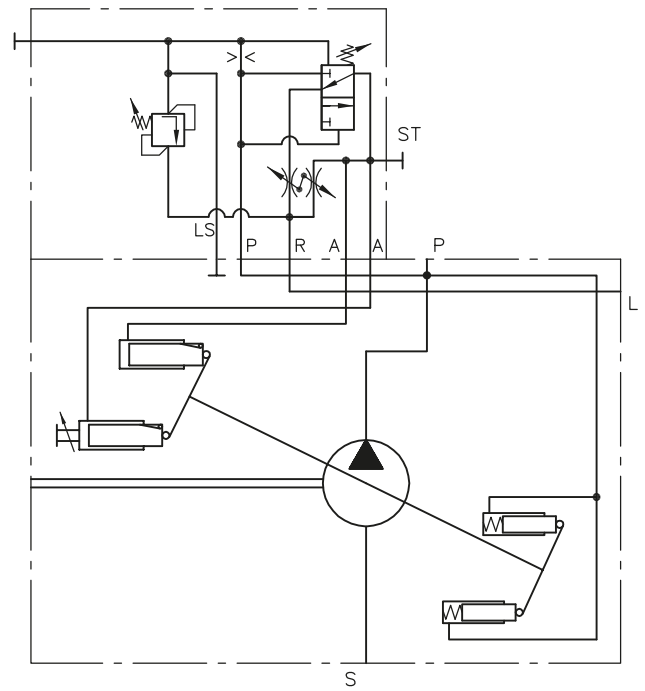
¹⁾ Applies only coding LSNR. ²⁾ The adjustment range is limited by a mechanical stop. Attention: Always use a pressure gauge when changing the pressure setting!

Controller symbols

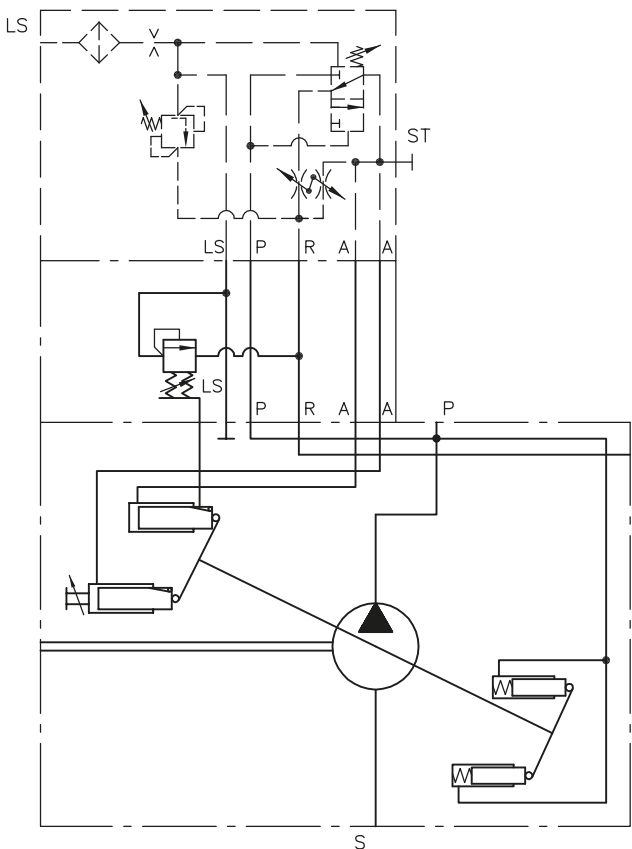
Coding **LSNR**



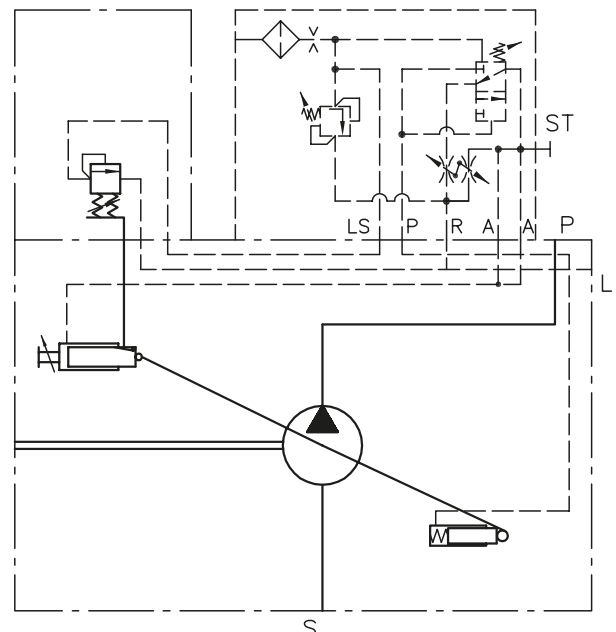
Coding **NR**



Coding **.../ZL**



Coding **.../L**
for SVH 130





Additional parameter, general

Calculation of the nom. sizes:

Flow rate

$$Q = \frac{V_g \times n \times \eta_v}{1000} \text{ (lpm)}$$

Torque

$$M = \frac{1,59 \times V_g \times \Delta p}{100 \times \eta_{mh}} \text{ (Nm)}$$

Power

$$P = \frac{2\pi \times M \times n}{60000} = \frac{M \times n}{9549} = \frac{Q \times \Delta p}{600 \times \eta_t}$$

V_g Displacement (cm³/rev.)

η_v = Volumetric efficiency

Δp Differential pressure (bar)

η_{mh} = Mechanical-hydraulic efficiency

n Speed (rpm)

η_t = Total efficiency ($\eta_t = \eta_v \times \eta_{mh}$)

Nomenclature

Axial piston pump according to the swash plate principle

Mounting

At the auxiliary drive of commercial vehicles
(flange ISO 7653-1985 for trucks) or flange assembly
(flange ISO 3019-2 or SAE/ISO 3019-1)

Surface

Gas nitrocarburized SVH 062, 092, 112. Painted SVH 130

Direction of rotation

Right or left

Changing the rotation direction

Turn the end plate and replace the port plate, only SVH 062, 092, 112

Installed position

Any (observe the installation instructions)

Hydraulic fluid

Hydraulic oil acc. to DIN 51524 part 1 to 3; ISO VG 10 to 68 acc. to DIN 51519

Viscosity range: min. approx. 10; max. approx. 1000 mm²/sec

Optimal operation range: approx. 20...50 mm²/sec. Also suitable are biologically degradable pressure fluids type HEES (synth. Ester) at operation temperatures up to approx. +70 °C.

Temperature

Ambient: approx. -40...+60 °C

Fluid: -25...+80 °C, pay attention to the viscosity range!

Start temperature down to -40 °C is allowable (Pay attention to the viscosity range during start!),

as long as the operation temperature during subsequent running is at least 20 °C higher.

Filtration

Should conform to ISO standard 4406 code 21/18/15 ...19/17/13

Mounting flange design (output side)

Available, incl. coupling sleeves

Coupling flange for universal joint shafts

| Coding, SVH | | | Flange | Shaft |
|-------------|---------|-------|----------------|---------------------------|
| 062 | 092-112 | 130 | | |
| C 011 | C 021 | C 031 | SAE A-2-Hole | 9T 16/32 DP |
| C 012 | C 022 | C 032 | SAE A-2-Hole | 9T 16/32 DP ¹⁾ |
| C 013 | -- | -- | SAE A-2-Hole | 11T 16/32 DP |
| C 014 | C 024 | C 034 | SAE B-2-Hole | 13T 16/32 DP |
| C 015 | C 025 | C 035 | SAE B-4-Hole | 13T 16/32 DP |
| -- | -- | -- | SAE B-B-2-Hole | 15T 12/24 DP |
| -- | C 027 | -- | SAE C-2-Hole | 14T 12/24 DP |
| -- | C 028 | C 038 | SAE C-4-Hole | 14T 12/24 DP |
| -- | -- | -- | SAE C-C-2-Hole | 17T 12/24 DP |

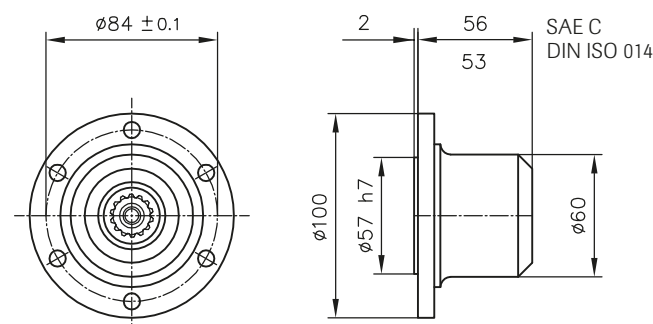
Attention: Observe the max. drive torque rating!

Note: An additional support has to be provided in case of pump combinations.

Additional versions on request!

¹⁾ ANSI B 92.1, FLAT ROOT SIDE FIT

The spline width is not conforming the industrial standard. $s = 2.357_{-0,03}$



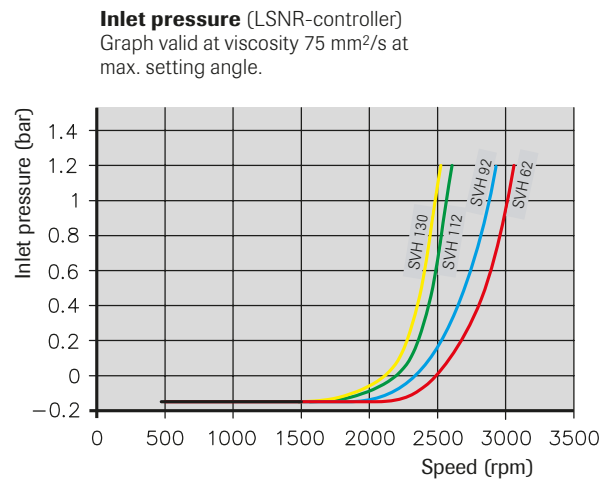
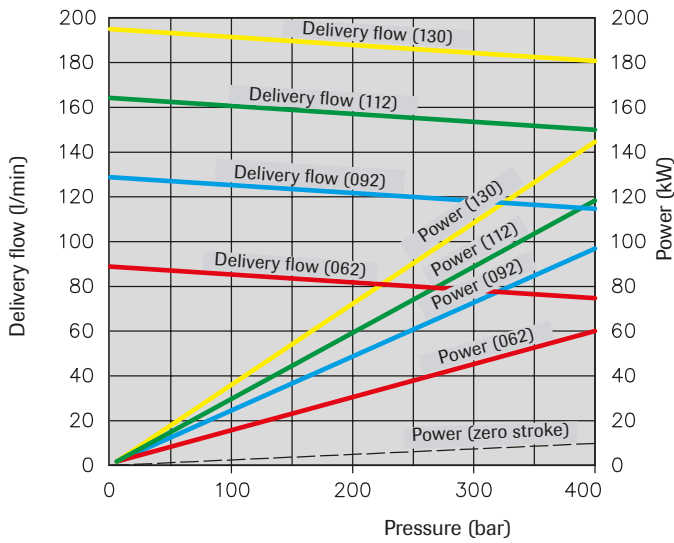
| Coding | Spline profile |
|-------------|----------------|
| SAE C | 14T 12/24 DP |
| DIN ISO 014 | B8x32x36 |



Curves

Flow and Power

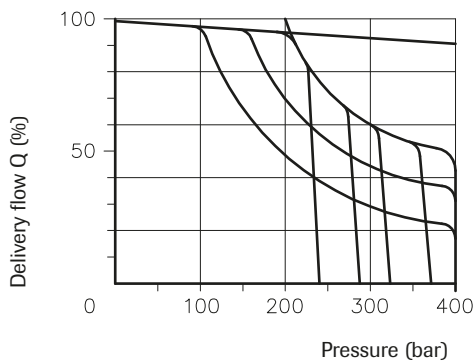
Charts show flow/pressure (without controller). Power at max. setting angle and power at min. setting angle and 1500 rpm



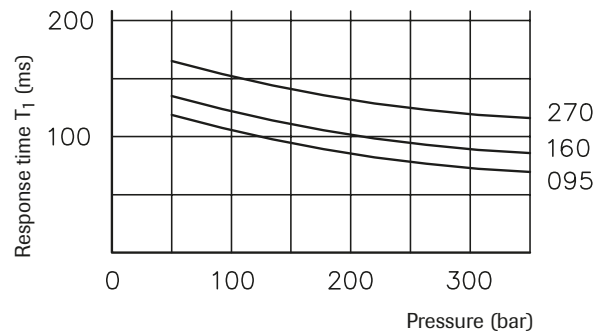
Controller curve

Coding **L**

Pressure / Delivery flow

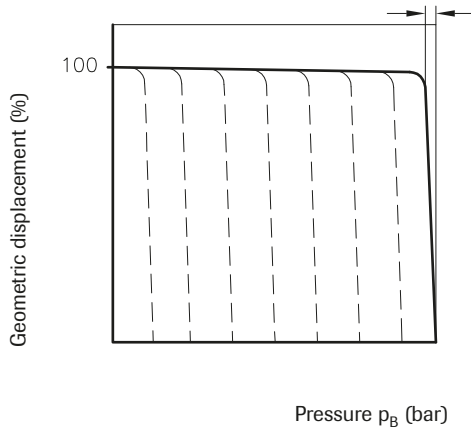


Response time T_1 (LSNR-controller)

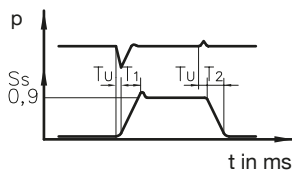
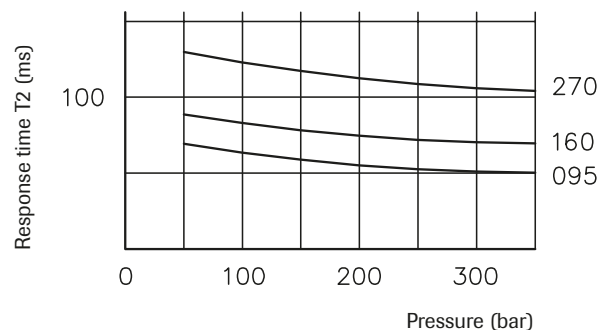


Coding **LSNR**

approx. 4 bar



Response time T_2 (LSNR-controller)

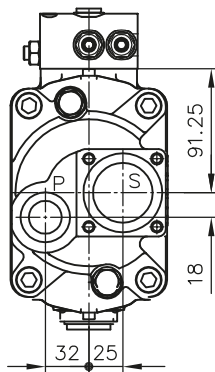
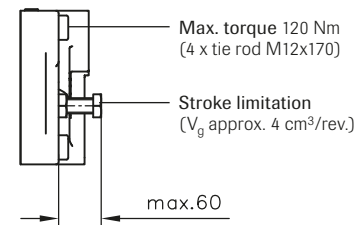
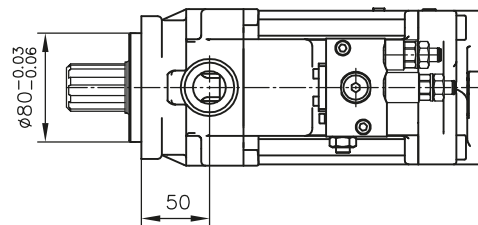
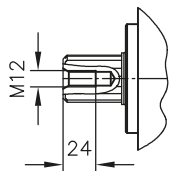
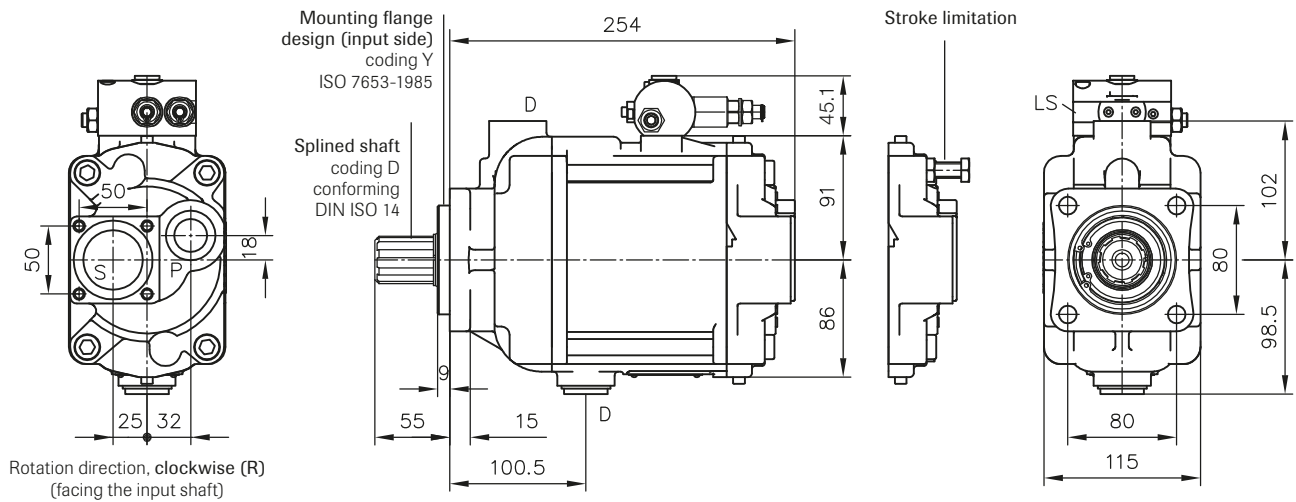


- Ss = Regulating distance actuator
- Tu = Delay < 3 ms
- T1 = Response time min to max
- T2 = Response time max to min
- p = Pressure

LS-line min. length 1.5 m, min. internal diameter 12 mm



Basic pumps: SVH 062



Rotation direction, counter clockwise (L) (facing the input shaft)

Coding UNF ports conforming SAE J 514:

P = 1 5/16-12 UN-2B

S = Flange, suction port

D = 1 1/16-12 UN-2B

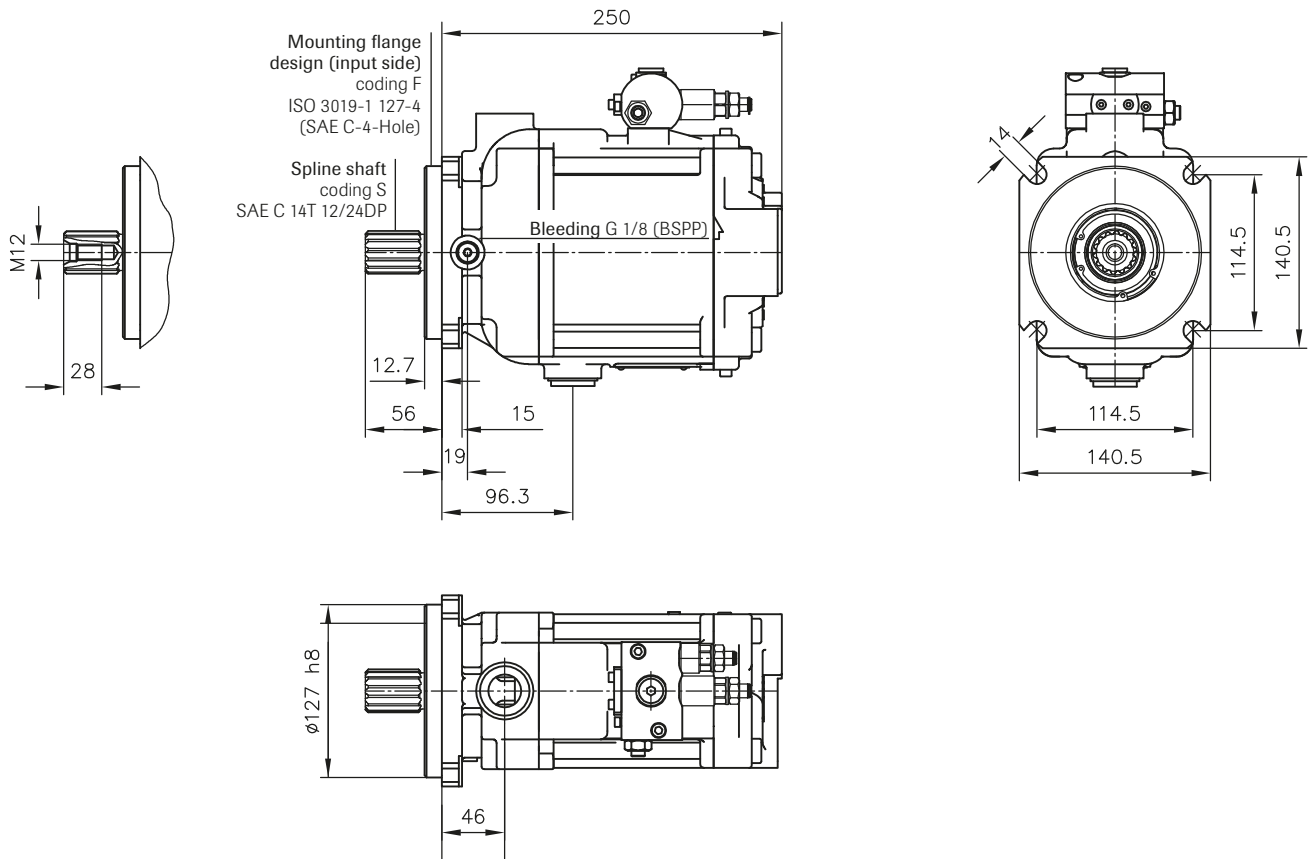
LS = G 1/4 (ISO 228/1 (BSPP)) with adaptor for 7/16-20 (SAE-4)

Ports (ISO 228/1 (BSPP)):

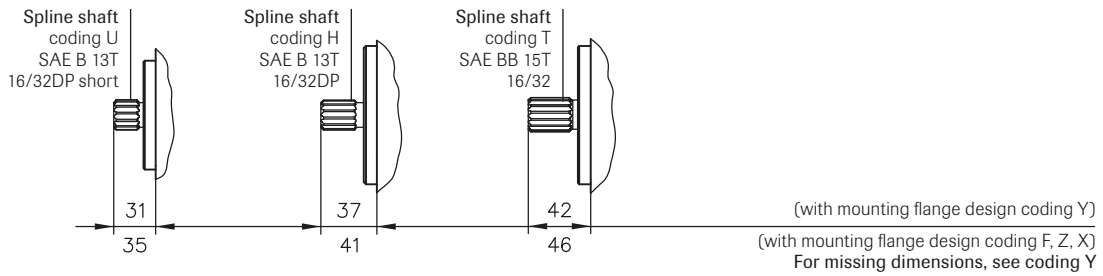
P = Pressure outlet G 3/4

S = Flange, suction port

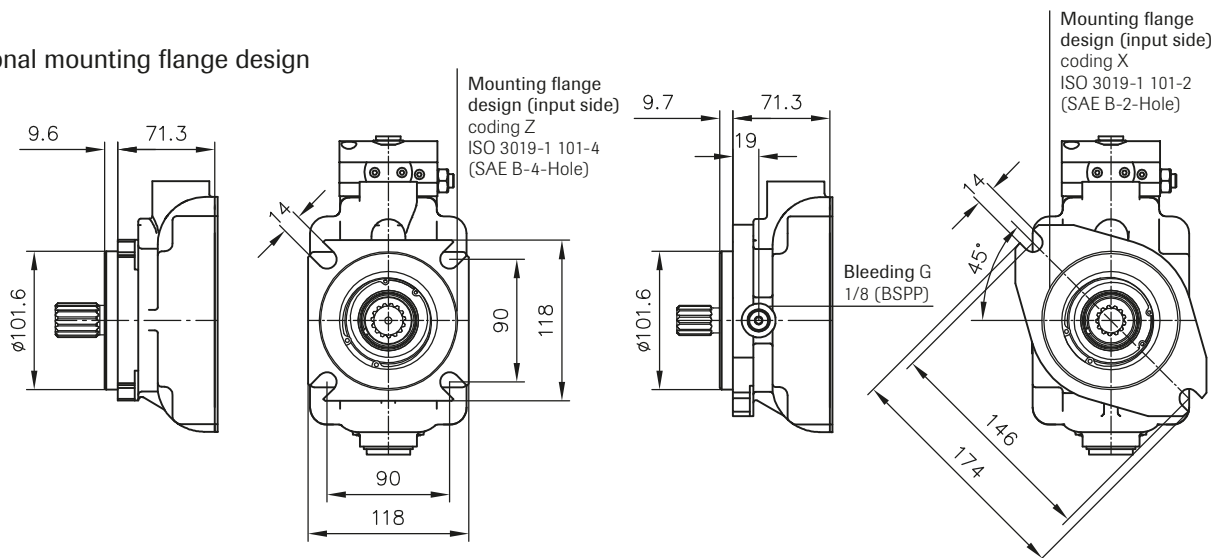
D = Case drain G 3/4



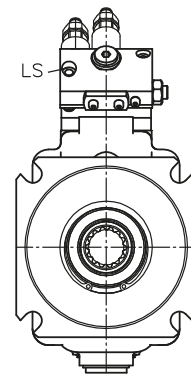
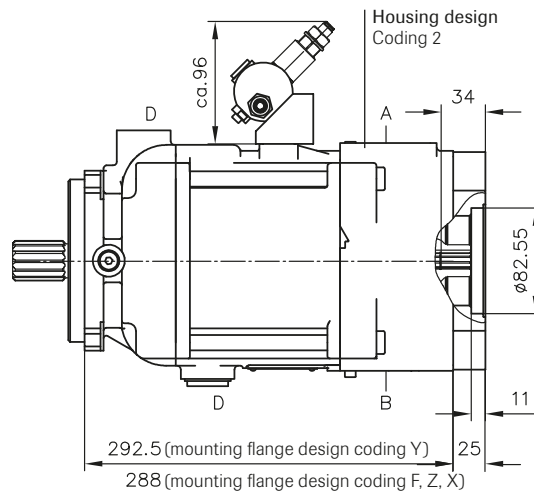
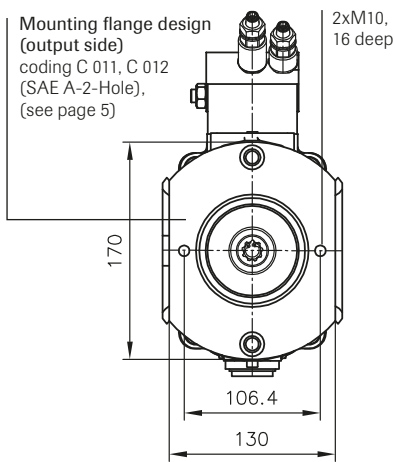
Additional input shaft designs



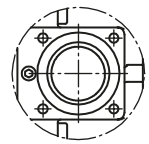
Additional mounting flange design



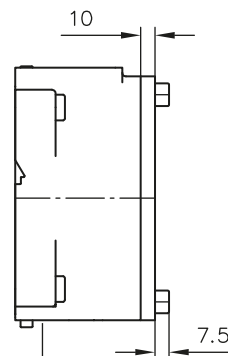
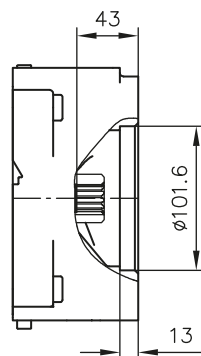
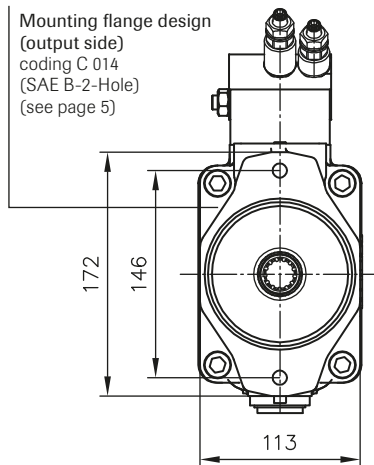
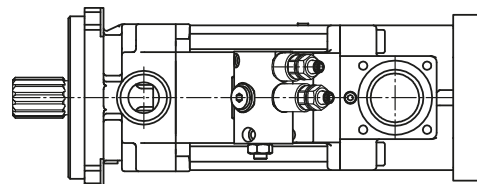
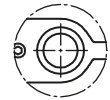
SVH 062 with thru-shaft



Suction port A



Pressure outlet B



Right hand

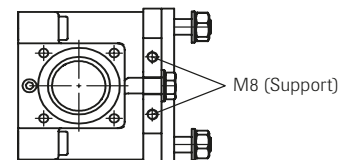
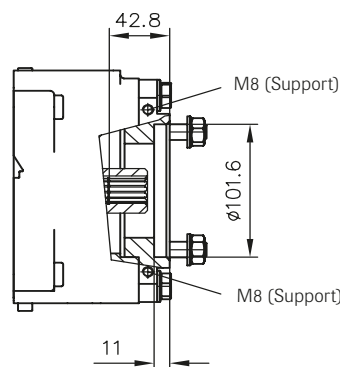
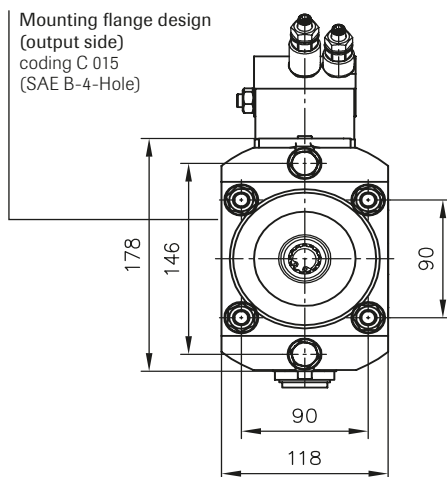
- A Suction port
- B Pressure outlet

Left hand

- A Pressure outlet
- B Suction port

For port sizes, see page 7

Housing design Coding 3

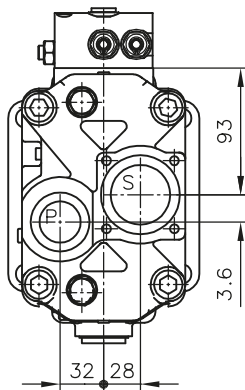
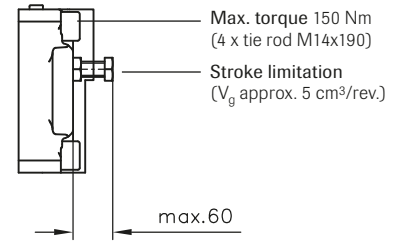
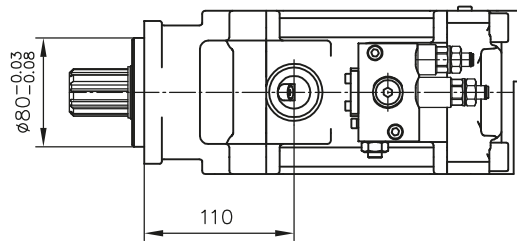
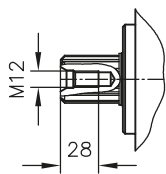
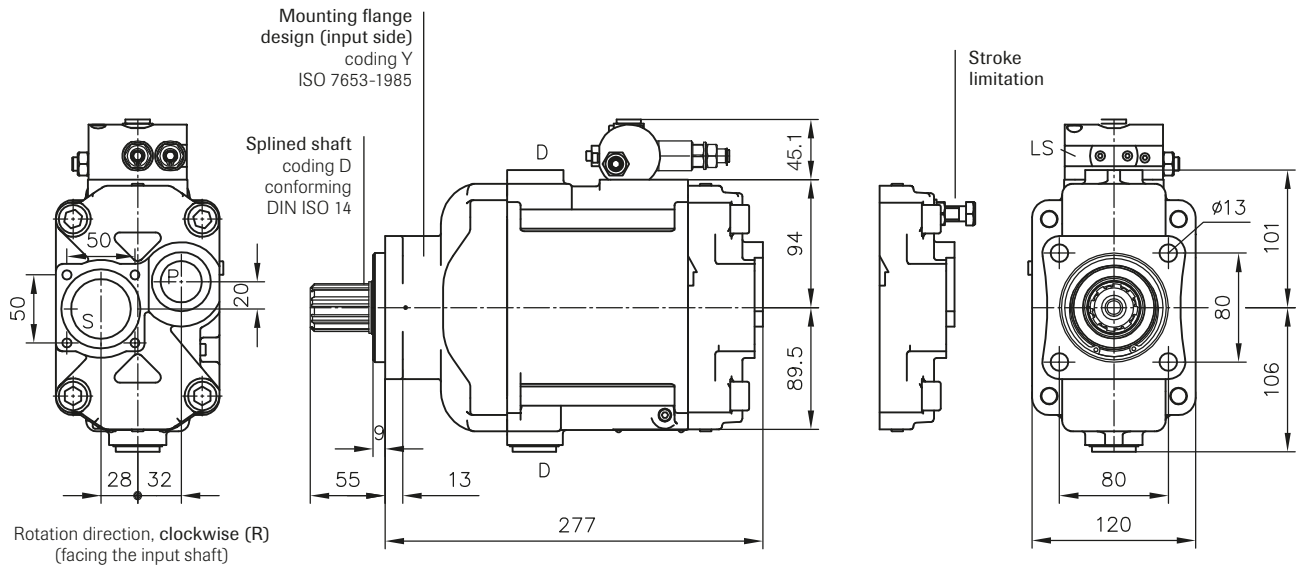


For missing dimensions, see coding Y

For available mounting flange designs (output side) and coupling sleeves, see page 5



SVH 092



Rotation direction, counter clockwise (L) (facing the input shaft)

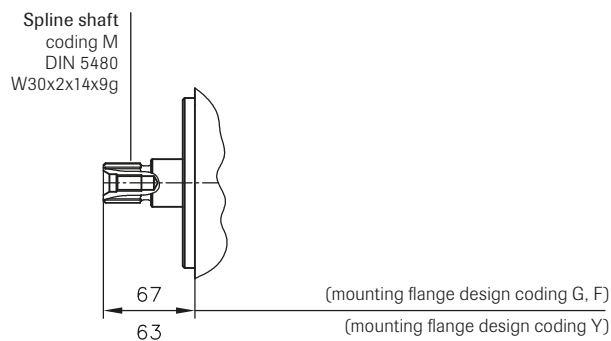
Coding UNF ports conforming SAE J 514:

- P = 1 5/16-12 UN-2B
- S = Flange, suction port
- D = 1 1/16-12 UN-2B
- LS = G 1/4 (ISO 228/1 (BSPP)) with adaptor for 7/16-20 (SAE-4)

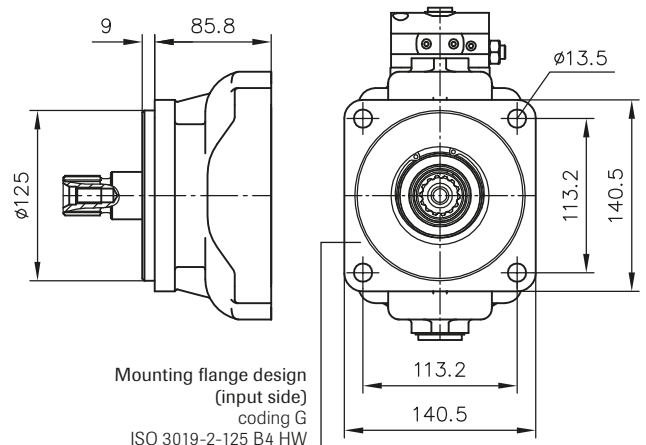
Ports (ISO 228/1 (BSPP)):

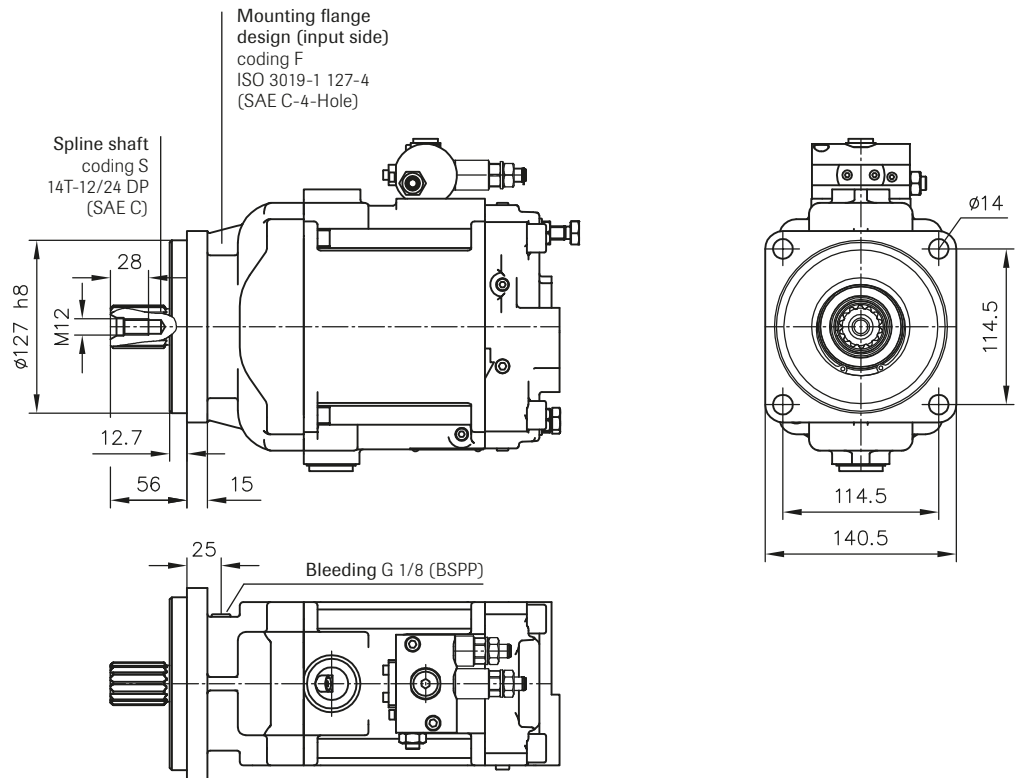
- P = Pressure outlet G1
- S = Flange, suction port
- D = Case drain G 3/4

Additional input shaft designs

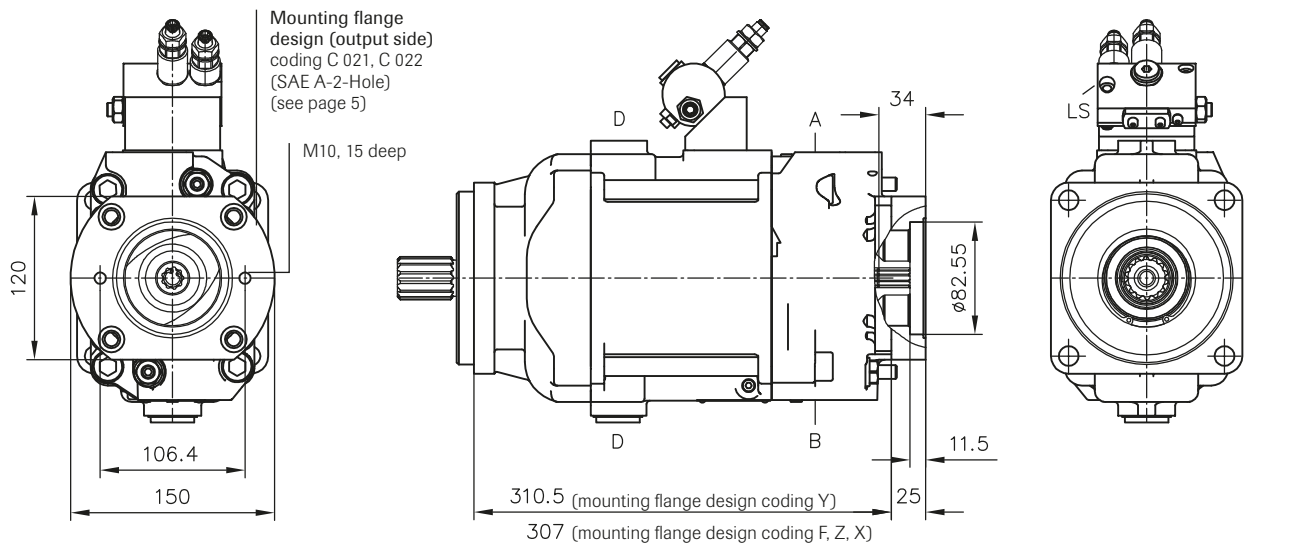


Additional mounting flange design



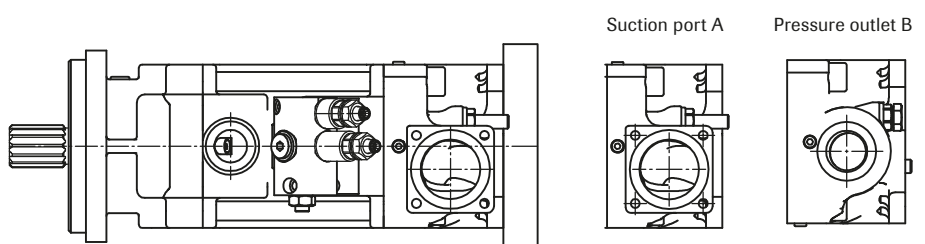


SVH 092 with thru-shaft

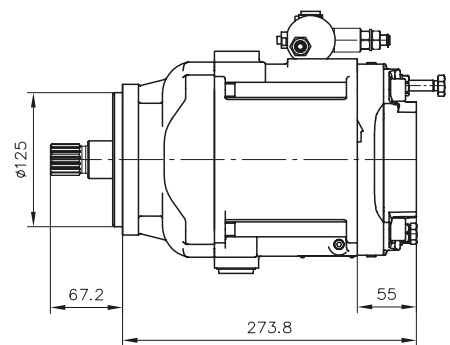
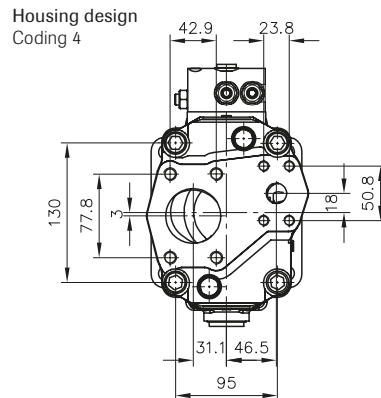
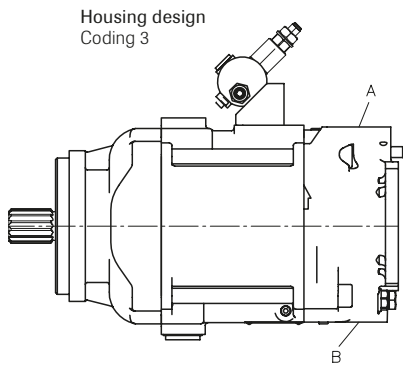
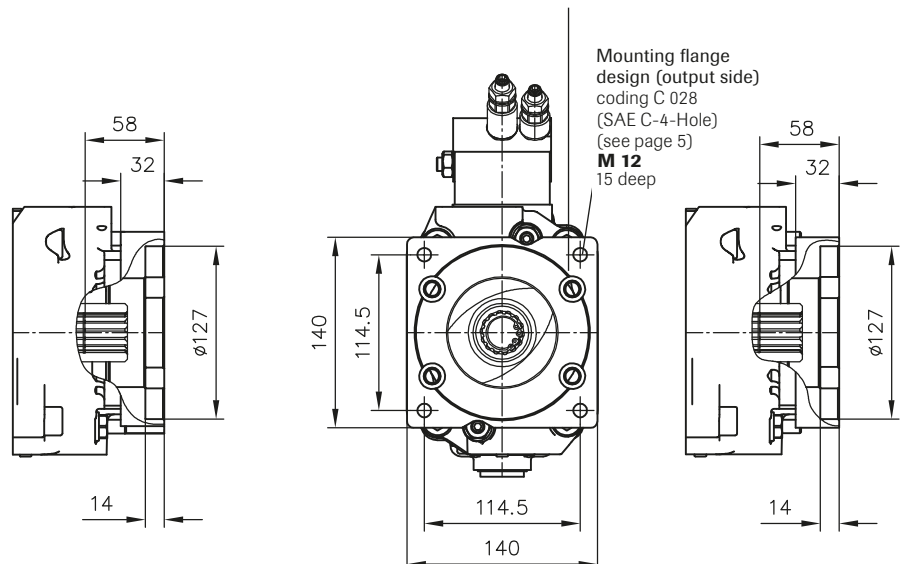
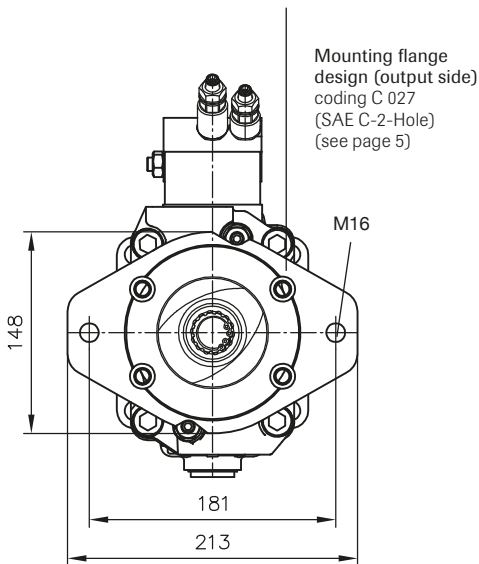
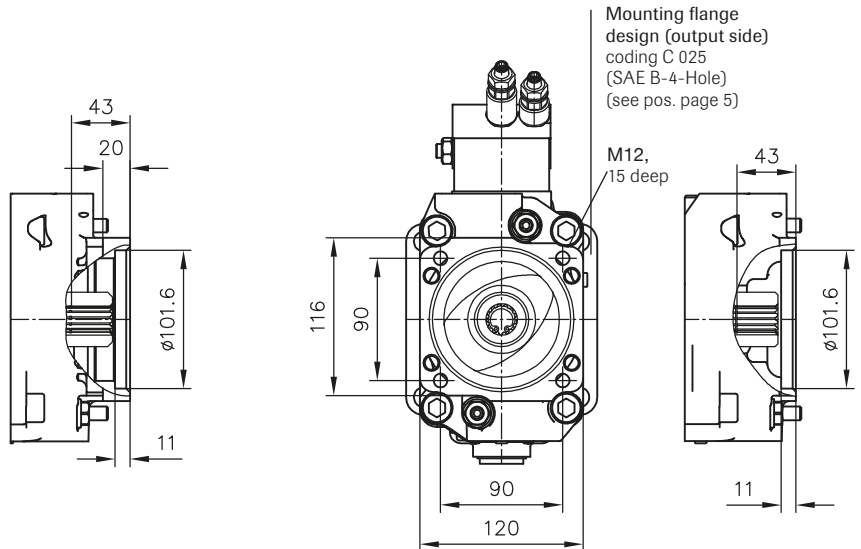
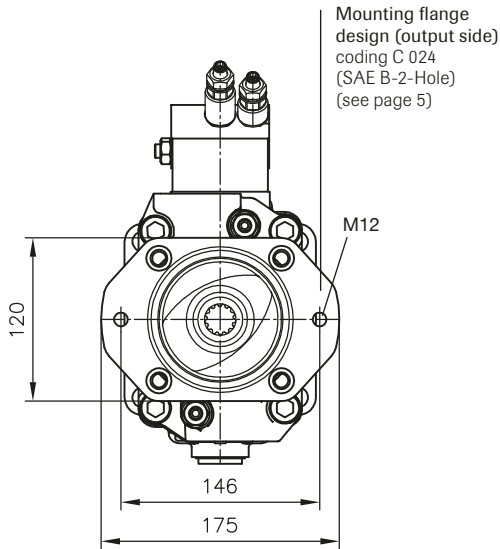


Right hand
A Suction port
B Pressure outlet

Left hand
A Pressure outlet
B Suction port



For port sizes, see page 10



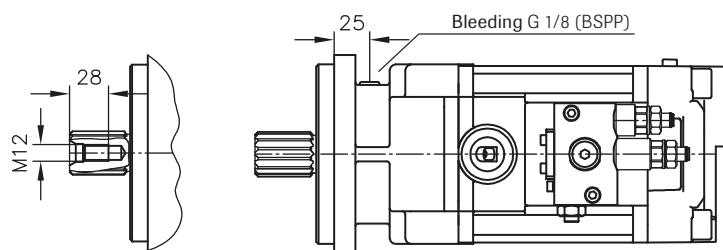
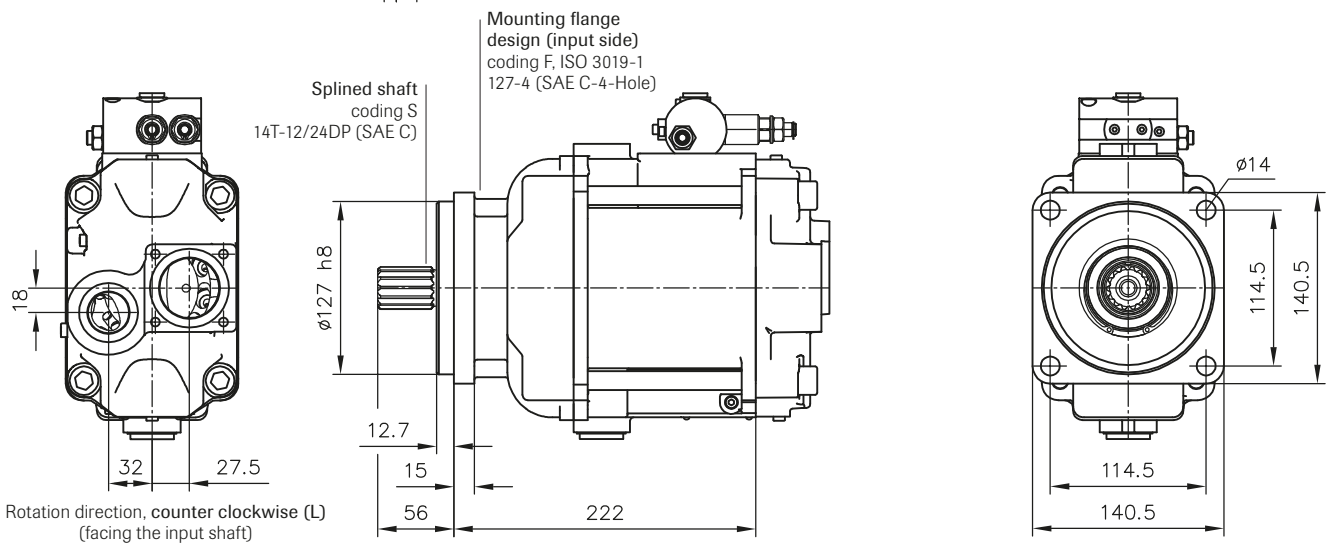
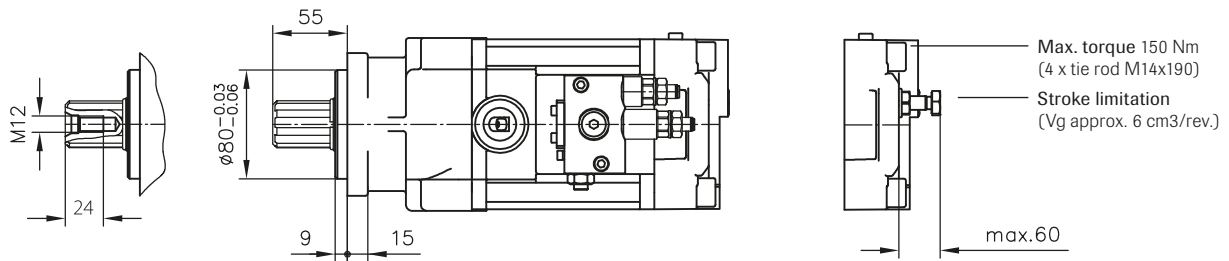
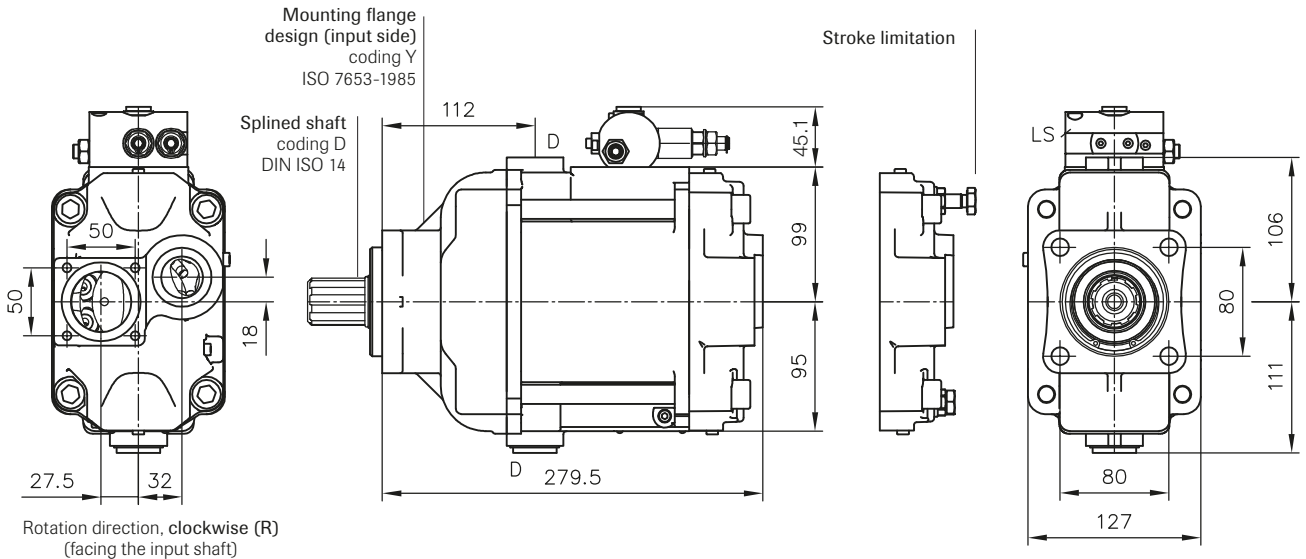
For available mounting flange designs (output side) and coupling sleeves, see page 5

Ports

| | |
|-----|---------------------|
| P = | SAE 3/4" (6000 psi) |
| S = | SAE 2" (3000 psi) |



SVH 112



Ports (ISO 228/1 (BSPP)):

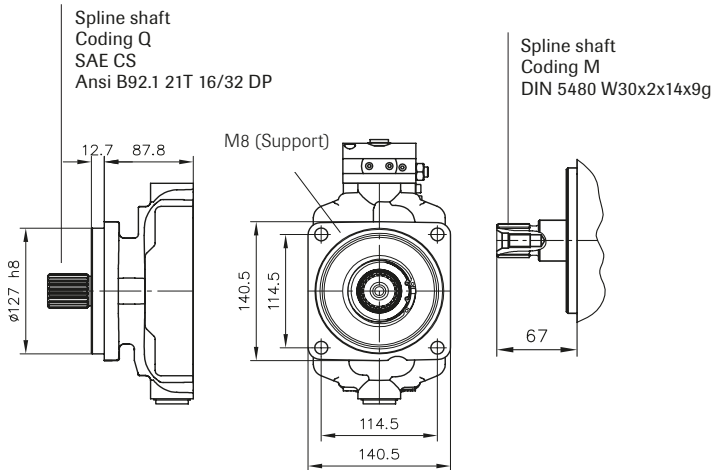
- P = Pressure outlet G1
- S = Flange, suction port
- D = Case drain G 3/4

Coding UNF ports conforming SAE J 514:

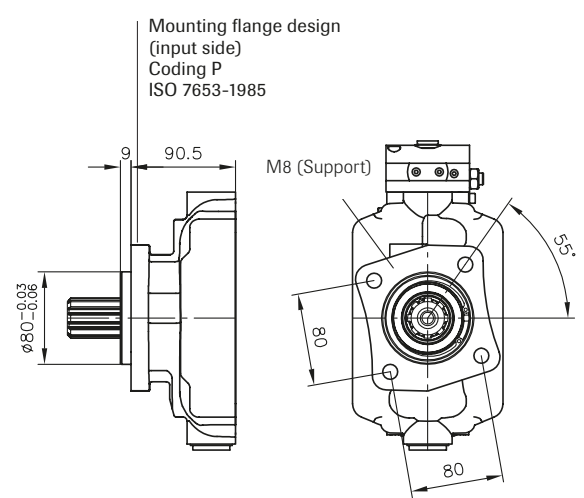
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- D = 1 1/16-12 UN-2B
- LS = G 1/4 (ISO 228/1 (BSPP)) with adaptor for 7/16-20 (SAE-4)



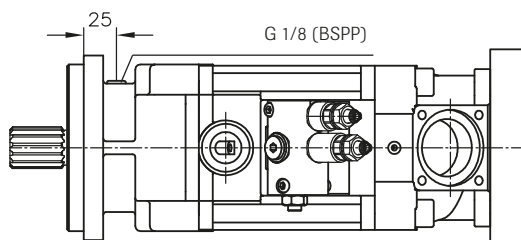
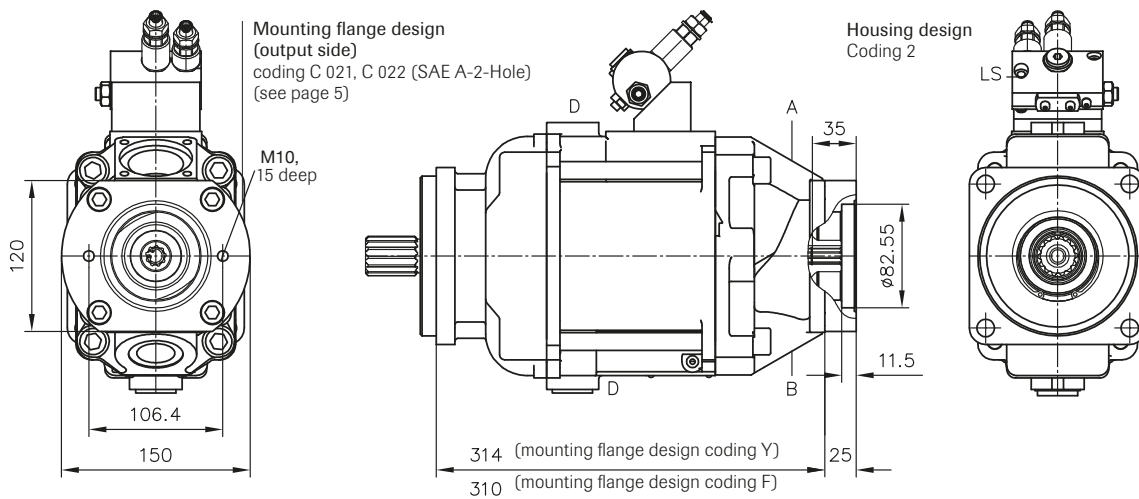
Additional input shaft designs



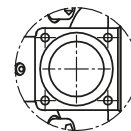
Additional mounting flange design



SVH 112 with thru-shaft

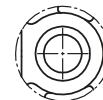


Suction port A



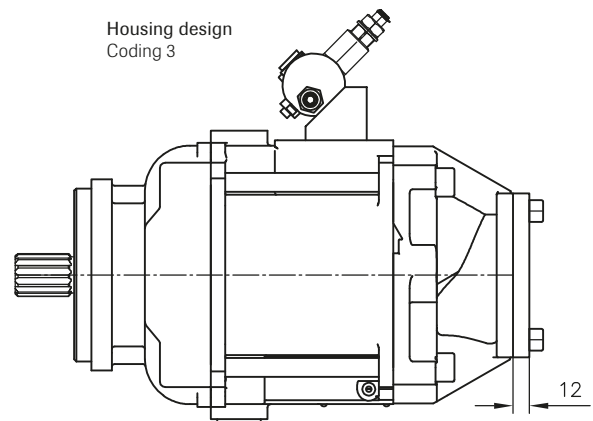
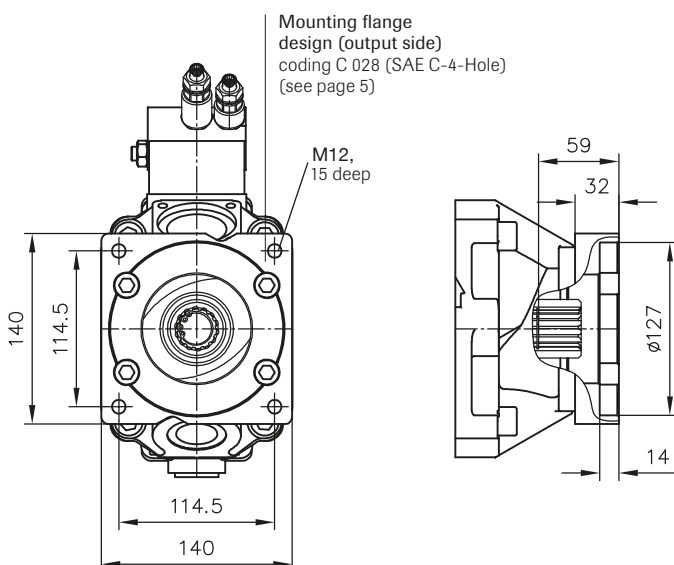
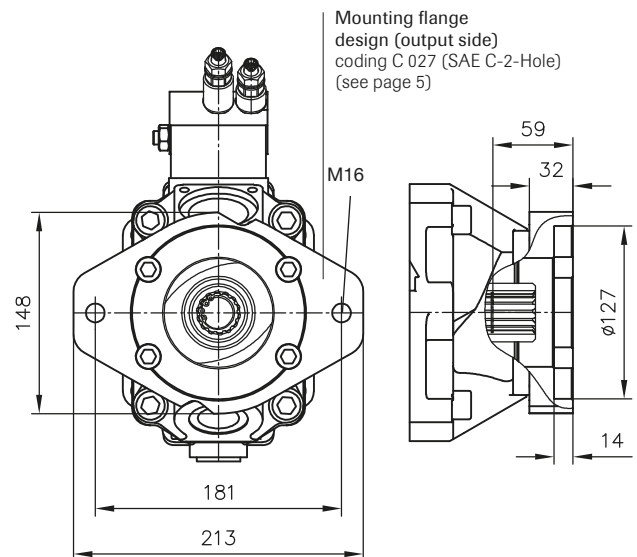
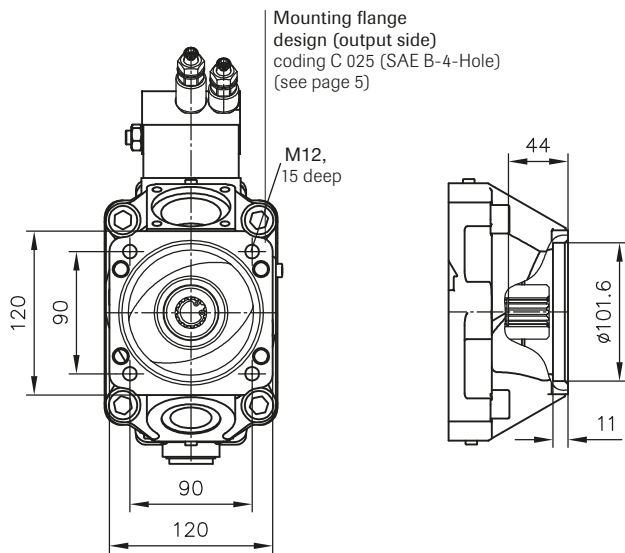
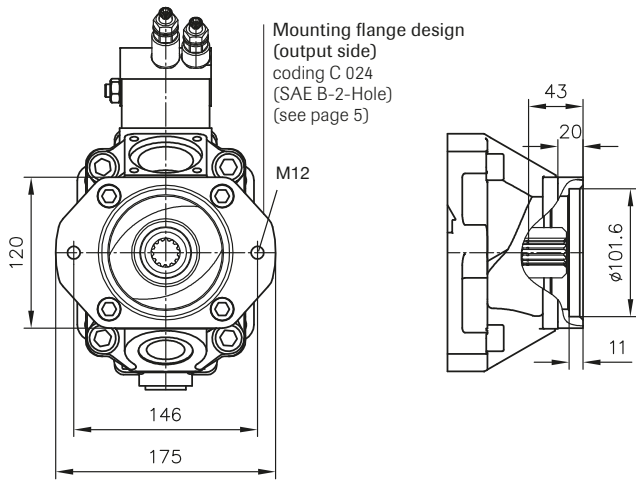
- Right hand
- A Suction port
- B Pressure outlet

Pressure outlet B



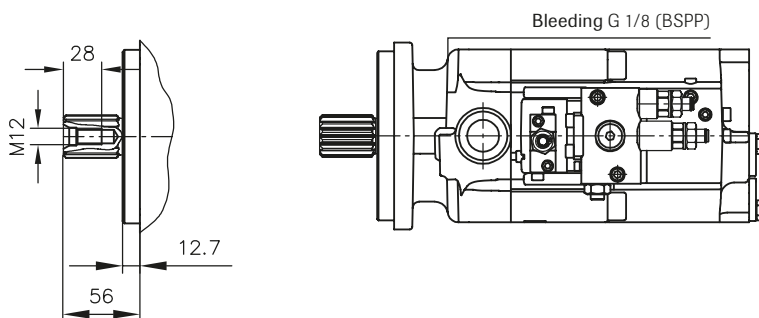
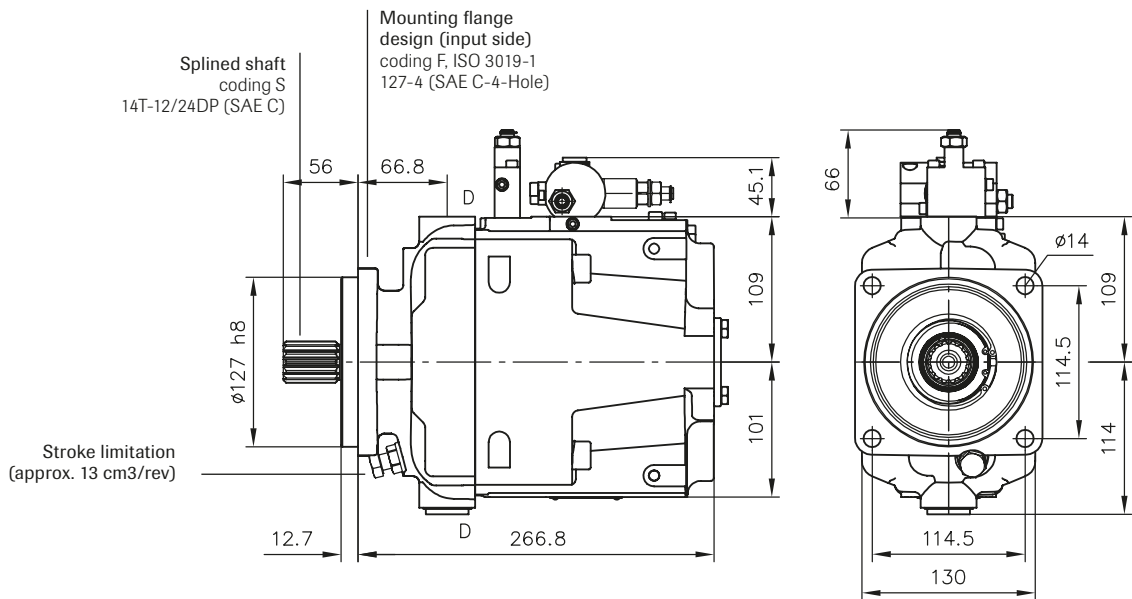
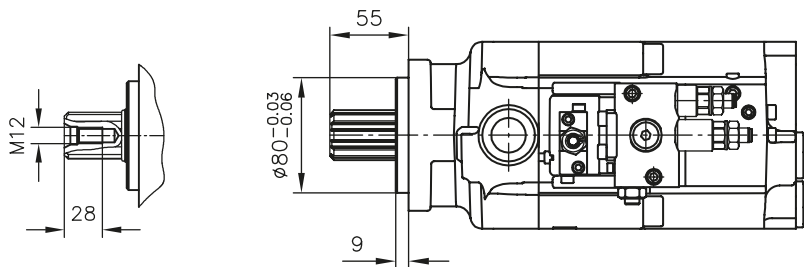
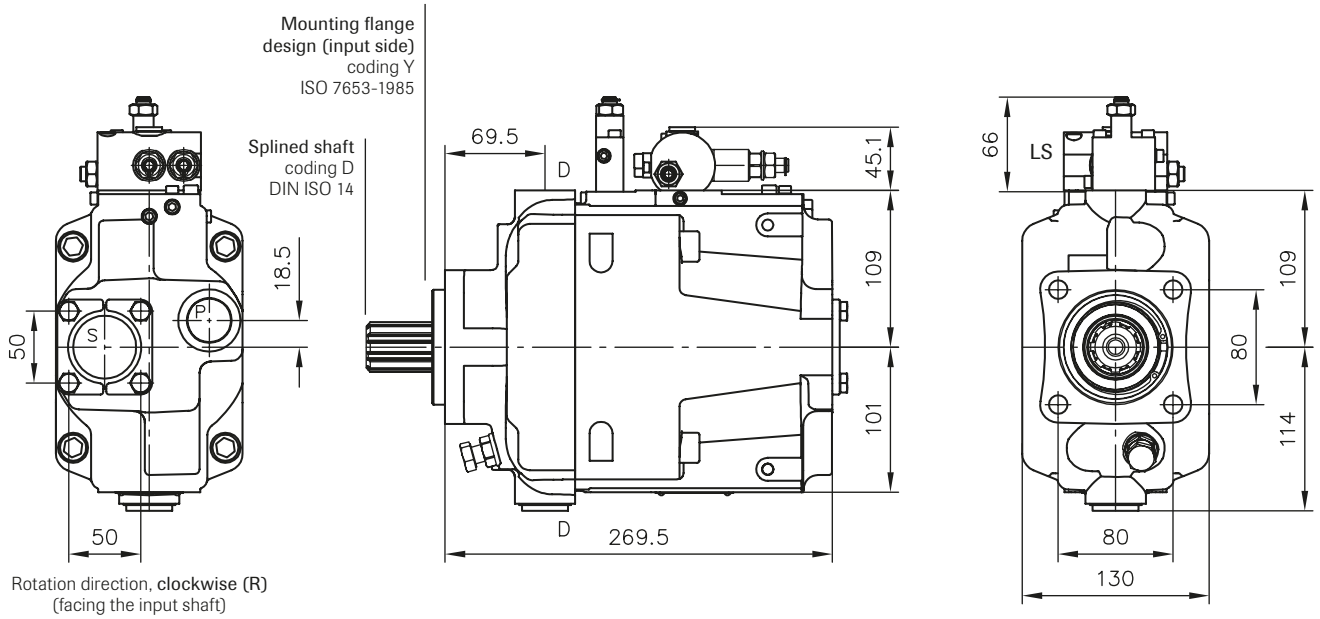
- Left hand
- A Pressure outlet
- B Suction port

For port sizes, see page 13





SVH 130



Ports (ISO 228/1 (BSPP)):

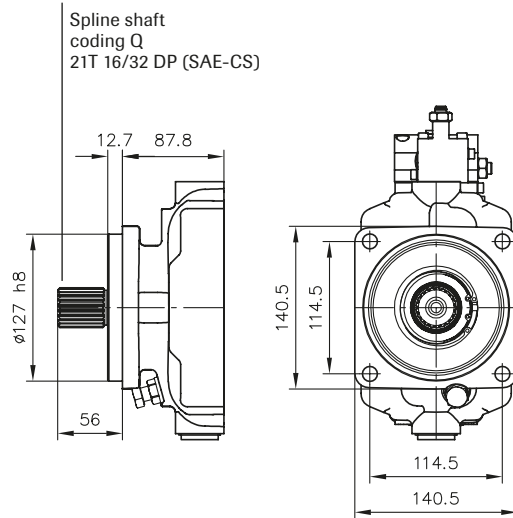
- P = Pressure outlet G 1
- S = Flange, suction port
- D = Case drain G 3/4

Coding UNF ports conforming SAE J 514:

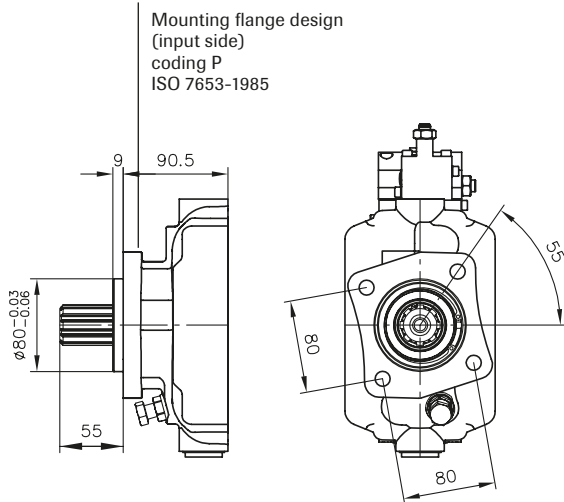
- P = 1 5/16-12 UN-2B
- S = Flange, suction port
- D = 1 1/16-12 UN-2B
- LS = G 1/4 (ISO 228/1 (BSPP)) with adaptor for 7/16-20 (SAE-4)

SVH 130

Additional input shaft designs

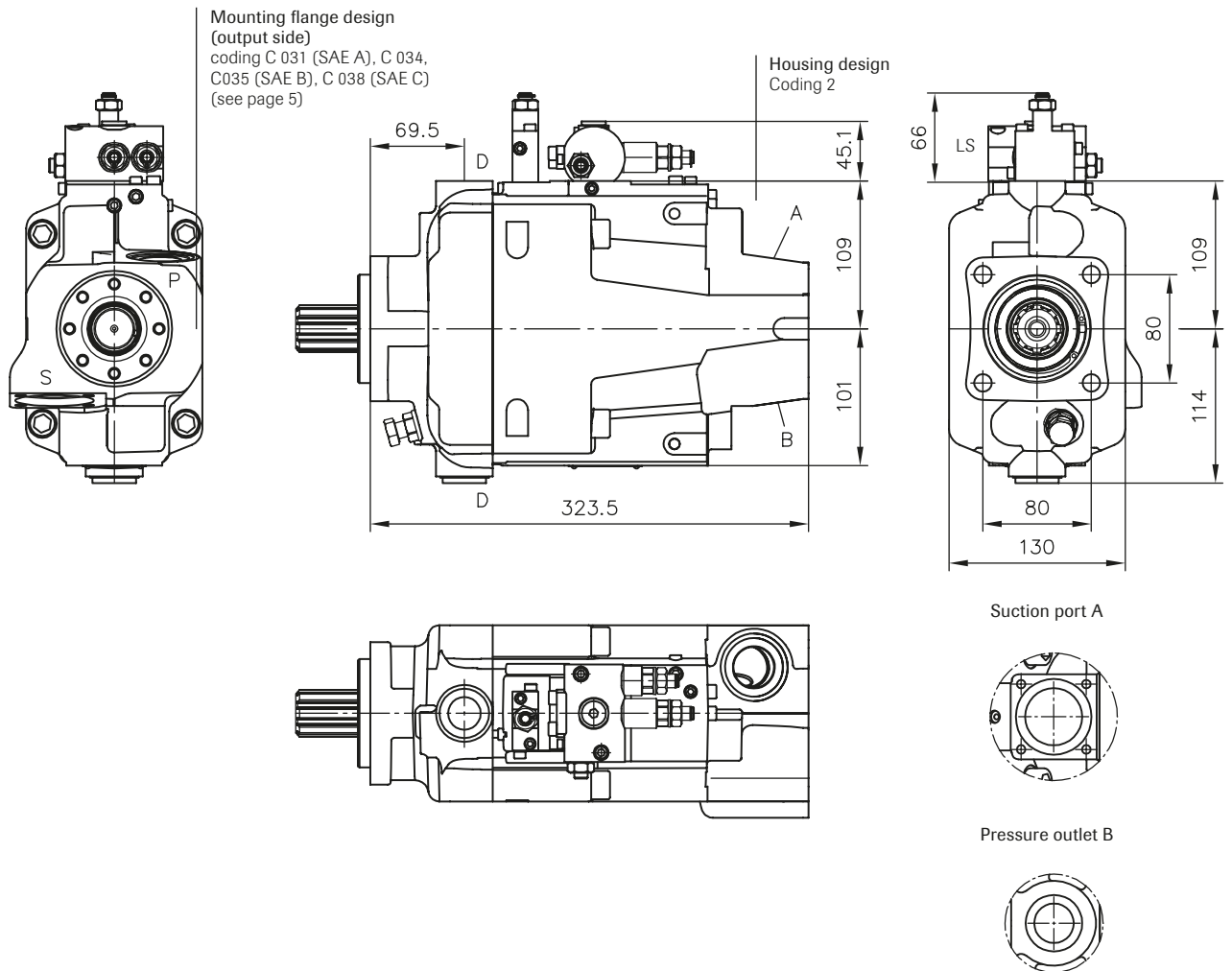


Additional mounting flange design





SVH 130 with thru-shaft



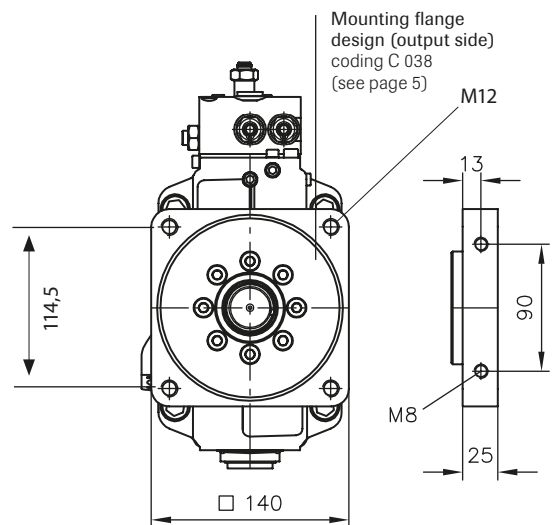
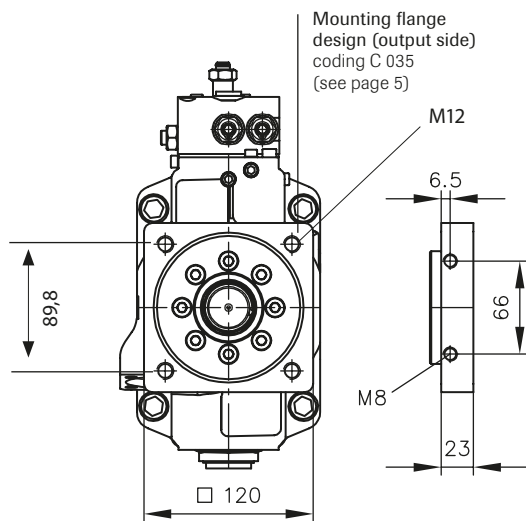
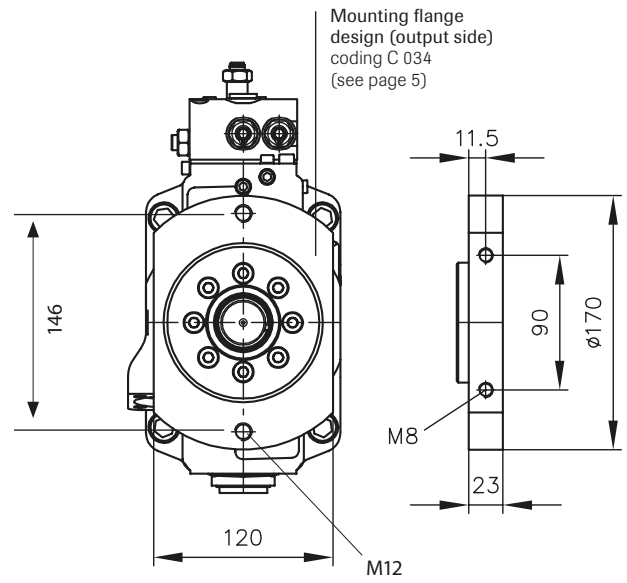
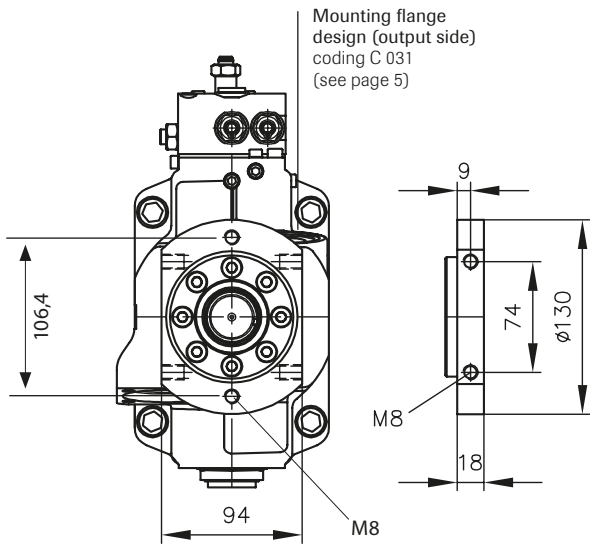
Right hand

- A Suction port
- B Pressure outlet

Left hand

- A Pressure outlet
- B Suction port

For port sizes, see page 13



**WARNING**

When the pump is running:

1. Do not touch the pressure hose
2. Watch out for rotating parts
3. The pump and hoses may be hot

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