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 400 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
- Low power-to-weight-ratio
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**
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**
Controller for SVH 130  
Adjustment range: 200-700 Nm
### Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>SVH 062</th>
<th>SVH 092</th>
<th>SVH 112</th>
<th>SVH 130</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geometric displacement $V_g$ (cm³/rev.)</td>
<td>62.4</td>
<td>87.2</td>
<td>110.4</td>
<td>130</td>
</tr>
<tr>
<td>Nom. pressure $p_{nom}$ (bar)</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>400</td>
</tr>
<tr>
<td>Pressure $p_{max}$ (bar)</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>450</td>
</tr>
<tr>
<td>Angle of the swash plate</td>
<td>21.5°</td>
<td>21.5°</td>
<td>21.5°</td>
<td>21.5°</td>
</tr>
<tr>
<td>Required inlet pressure (absolute) for open circuit (bar)</td>
<td>0.85</td>
<td>0.85</td>
<td>0.85</td>
<td>0.85</td>
</tr>
<tr>
<td>Max. permissible drive torque (flange/shaft) (Nm)</td>
<td>430</td>
<td>530</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>Max. torque for the pump (with power controller) (Nm)</td>
<td>430</td>
<td>530</td>
<td>600</td>
<td>700</td>
</tr>
<tr>
<td>Max. rev. rating when self priming and max. angle of the swash plate at 1 bar absolute inlet pressure (rpm)</td>
<td>2500</td>
<td>2300</td>
<td>2200</td>
<td>2100</td>
</tr>
<tr>
<td>Min. rev. rating for permanent running (rpm)</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Required torque at 100 bar (Nm)</td>
<td>100</td>
<td>151</td>
<td>184</td>
<td>230</td>
</tr>
<tr>
<td>Drive power for 250 bar and 2000 rpm (kW)</td>
<td>53</td>
<td>79.5</td>
<td>97.2</td>
<td>120</td>
</tr>
<tr>
<td>Mass (weight) complete with controller (kg)</td>
<td>24</td>
<td>27</td>
<td>30</td>
<td>30.8</td>
</tr>
<tr>
<td>Tare weight torque (Nm)</td>
<td>30</td>
<td>35.3</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Inertia moment (kg m²)</td>
<td>0.005</td>
<td>0.008</td>
<td>0.01</td>
<td>0.011</td>
</tr>
<tr>
<td>Sound level at 250 bar, 1500 rpm and max. swash plate angle (Measured in a sound measuring room DIN ISO 4412, distance 1 m)</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>

### Notes

1) Applies only type 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:

\[
Q = \frac{V_g \times n \times \eta_v}{1000} \quad \text{(lpm)}
\]

\[
M = \frac{1.59 \times V_g \times \Delta p}{100 \times \eta_{mh}} \quad \text{(Nm)}
\]

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

- \( V_g \): Displacement (cm³/rev.)
- \( \Delta p \): Differential pressure (bar)
- \( n \): Speed (rpm)
- \( \eta_v \): Volumetric efficiency
- \( \eta_{mh} \): Mechanical-hydraulic efficiency
- \( \eta_t \): 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

Direction of rotation
- Right or left

Changing the rotation direction
- Turn the end plate and change the port plate

Installed position
- Any (observe the installation instructions)

Hydraulic fluid
- Hydraulic oil acc. to DIN 51524 table 2 and 3: ISO VG 10 to 68 acc. to DIN 51519
- Viscosity range: min. approx. 10; max. approx. 1000 mm²/sec
- Optimal operation range: approx. 10...35 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 19/16/13

Max. perm. housing pressure
- 1 bar

Mounting flange design (output side)

Available, incl. coupling sleeves

<table>
<thead>
<tr>
<th>Coding, SVH</th>
<th>Flange</th>
<th>Shaft</th>
</tr>
</thead>
<tbody>
<tr>
<td>062</td>
<td></td>
<td></td>
</tr>
<tr>
<td>092-112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C 011</td>
<td>C 021</td>
<td>C 031</td>
</tr>
<tr>
<td>C 012</td>
<td>C 022</td>
<td>C 032</td>
</tr>
<tr>
<td>C 013</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>C 014</td>
<td>C 024</td>
<td>C 034</td>
</tr>
<tr>
<td>C 015</td>
<td>C 025</td>
<td>C 035</td>
</tr>
<tr>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>--</td>
<td>C 027</td>
<td>--</td>
</tr>
<tr>
<td>--</td>
<td>C 028</td>
<td>C 038</td>
</tr>
<tr>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

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. \( s = 2.357 \pm 0.03 \)

Coupling flange for universal joint shafts

<table>
<thead>
<tr>
<th>Coding</th>
<th>Spline profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAE C</td>
<td>14T 12/24 DP</td>
</tr>
<tr>
<td>DIN ISO 014</td>
<td>B8x32x36</td>
</tr>
</tbody>
</table>

5 (20)
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

Coding LSNR
approx. 4 bar

Inlet pressure (LSNR-controller)
Graph valid at viscosity 75 mm²/s at max. setting angle.

Controller curve
Coding L
Pressure / Delivery flow

Coding LSNR
approx. 4 bar

Inlet pressure (LSNR-controller)
Graph valid at viscosity 75 mm²/s at max. setting angle.

Controller curve
Coding L
Pressure / Delivery flow

Coding LSNR
approx. 4 bar

Inlet pressure (LSNR-controller)
Graph valid at viscosity 75 mm²/s at max. setting angle.

Controller curve
Coding L
Pressure / Delivery flow

Coding LSNR
approx. 4 bar

Inlet pressure (LSNR-controller)
Graph valid at viscosity 75 mm²/s at max. setting angle.

Controller curve
Coding L
Pressure / Delivery flow

Coding LSNR
approx. 4 bar

Inlet pressure (LSNR-controller)
Graph valid at viscosity 75 mm²/s at max. setting angle.
Basic pumps: SVH 062

Rotation direction, clockwise (R) (facing the input shaft)

Mounting flange design (input side)
coding Y ISO 7653-1985

Splined shaft coding D conforming DIN ISO 14

Stroke limitation

Max. torque 110 Nm (4 x tie rod M12x170)

Stroke limitation (V_g approx. 4 cm³/rev.)

Max. torque 110 Nm (4 x tie rod M12x170)

Stroke limitation (V_g approx. 4 cm³/rev.)

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

Spline shaft coding U
SAE B 13T 16/32DP short
31 35
Spline shaft coding H
SAE B 13T 16/32DP
37 41
Spline shaft coding T
SAE BB 15T 16/32
42 46

(with mounting flange design coding Y)
(with mounting flange design coding F, Z, X)
For missing dimensions, see coding Y

Additional mounting flange design

Mounting flange design (input side)
coding Z
ISO 3019-1:101-4
(SAE B-4-Hole)
9.6 71.3
\( \Phi 101.6 \)
90 118

Mounting flange design (input side)
coding F
ISO 3019-1:127-4
(SAE C-4-Hole)
12.7 56
15 96.3

Mounting flange design (input side)
coding X
ISO 3019-1:101-2
(SAE B-2-Hole)
140.5 114.5

Bleeding G 1/8 (BSPP)
SVH 062 with thru-shaft

Mounting flange design (output side)
coding C 011, C 012 (SAE A-2-Hole), (see page 5)

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

For missing dimensions, see coding Y
For available mounting flange designs (output side) and coupling sleeves, see page 5
SVH 092

Rotation direction, clockwise (R)
(facing the input shaft)

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

Mounting flange design (input side)
coding Y
ISO 7653-1985

Splined shaft
coding D
conforming
DIN ISO 14

Spline shaft
coding M
DIN 5480
W30x2x14x9g

Mounting flange design coding G, F
ISO 3019-2-125 B4 HW

Max. torque 150 Nm
(4 x tie rod M14x190)

Stroke limitation
(Vg approx. 5 cm³/rev.)

Max. torque 150 Nm
(4 x tie rod M14x190)

Stroke limitation
(Vg approx. 5 cm³/rev.)

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

10 (20)
SVH 092

Mounting flange design (input side)
coding F
ISO 3019-1 127-4
(SAE C-4-Hole)

Spline shaft
coding S
14T-12/24 DP
(SAE C)

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 10

SVH 092 with thru-shaft

Mounting flange design (output side)
coding C 021, C 022
(SAE A-2-Hole)
(see page 5)

Stroke limitation
M10, 15 deep

310.5 (mounting flange design coding Y)
307 (mounting flange design coding F, Z, X)

Bleeding G 1/8 (BSPP)

For port sizes, see page 10
M12, M16

Mounting flange design (output side)
coding C 024
(SAE B-2-Hole)
(see pos. page 5)

Mounting flange design (output side)
coding C 025
(SAE B-4-Hole)
(see pos. page 5)

Mounting flange design (output side)
coding C 028
(SAE C-4-Hole)
(see page 5)

Mounting flange design (output side)
coding C 027
(SAE C-2-Hole)
(see page 5)

Housing design
Coding 3

For available mounting flange designs (output side) and coupling sleeves, see page 5
SVH 112

Ports (ISO 228/1 (BSPP)):
P = Pressure outlet G 3/4
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 112 with thru-shaft

Mounting flange design (output side) coding C 021, C 022 (SAE A) (see page 5)

Housing design Coding 2

Right hand
A Suction port
B Pressure outlet

Left hand
A Pressure outlet
B Suction port

For port sizes, see page 13
SVH 112 SAE

Mounting flange design (output side) coding C 025 (SAE B-4-Hole) (see page 5)

Mounting flange design (output side) coding C 027 (SAE C-2-Hole) (see page 5)

Housing design Coding 3

M12, 15 deep

M12, 15 deep

M16

120

90

80

11

44

148

181

213

59

32

12

114.5

114.5

140

140

127

127

14

14
SVH 130

Rotation direction, clockwise (R) (facing the input shaft)

Mounting flange design (input side) coding Y
ISO 7653-1985

Splined shaft coding D
DIN ISO 14

ISO 3019-1 127-4 (SAE C-4-Hole) 14T-12/24 DP (SAE C)

SAE CS

C

D

E

Max. torque 150 Nm
(4 x tie rod M14x190)

Stroke limitation
(Vg approx. 6 cm³/rev.)

max. 60

Ports (ISO 228/1 (BSPP)):
P = Pressure outlet G 1
S = Flange, suction port
D = Case drain G 3/4

Bleeding G 1/8 (BSPP)

Mounting flange design (input side) coding F
ISO 3019-1 127-4 (SAE C-4-Hole)

Splined shaft coding S
14T-12/24DP (SAE C)

DIN ISO 14

Splined shaft coding S
14T-12/24DP (SAE C)

DIN ISO 14

DIN ISO 14

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

Splined shaft coding SAE-C S kod Q

Mounting flange design ISO 7653-1985 kod P

ISO 3019-1 127-4 (SAE C-4-Loch) 14T-12/24 DP (SAE C)

ISO 7653-1985

Flanschausführung (abtriebsseitig)

Kennzeichen

C 31, C 34, C 35, C 38

Abbildung 58: Flanschausführung C31, C34, C35, C38
SVH 130 with thru-shaft

Mounting flange design (output side)
coding C 031 (SAE A), C 034, C 035 (SAE B), C 038 (SAE C)
(see page 5)

Housing design
Coding 2

Mounting flange design (output side)
coding C 024
(SAE B-2-Hole)
(see page 5)

Bleeding G 1/8 (BSPP)

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 13
Mounting flange design (output side) coding C031 (see page 5)

Mounting flange design (output side) coding C034 (see page 5)

Mounting flange design (output side) coding C035 (see page 5)

Mounting flange design (output side) coding C038 (see page 5)

15 deep
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