Axial piston variable displacement pump A4VSO is of swashplate design and is designed for open circuit operation.

Flow is proportional to input speed and displacement, and is infinitely variable by adjustment of the swashplate angle.

- Swashplate design
- Infinitely variable displacement
- Good self priming suction characteristics
- Continuous operating pressure of 5100 psi (350 bar)
- Low noise level
- Excellent service life
- Drive shaft able to accept axial and radial loading
- Low power to weight ratio
- Compact modular design
- Short control times
- Over-center design (swallow circuits)
- Through drive and pump combinations possible
- Swivel angle indicator standard
- Installation positional optional
- Operation on HF fluids permitted at derated parameters
### Ordering code

<table>
<thead>
<tr>
<th>Hydraulic fluid / version</th>
<th>40</th>
<th>71</th>
<th>125</th>
<th>180</th>
<th>250</th>
<th>355</th>
<th>500</th>
<th>750</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direction of rotation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Control and adjustment devices

- **Constant pressure control**
  - D1
- **Parallel pressure control**
  - D1
- **Constant flow control (load sensing)**
  - D1
- **Manual control**
  - MA
- **Electric motor control**
  - EM
- **Hydraulic control, with rotary servo**
  - HA
- **Hydraulic control, volume dependent**
  - HV
- **Hydraulic control with servo/proportional valve**
  - HS
- **Electronic control**
  - EC
- **Hydraulic control, pilot pressure dependent**
  - HD
- **Hydraulic control, speed dependent**
  - HS

### Part Connections

- **Mounting Range**
  - ISO 4-bolt
  - ISO 8-bolt

### Through drive

- **Without thru drive, without auxiliary pump**
  - B
- **With thru drive**
  - K

### Filtration (only for control device HS- and DS-)

- **Without filtration**
  - N
- **Sandwich plate filter**
  - Z

### Seals

- **SAE parallel keyed shaft**
  - S
- **SAE splined shaft**
  - K
- **Metric keyed parallel shaft DIN 6885**
  - P
- **Metric splined shaft DIN 5330**
  - A

### Direction of rotation

- **As viewed from drive shaft**
  - R

<table>
<thead>
<tr>
<th>Shaft end</th>
<th>10</th>
<th>20</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Seals

- **NBR (Nitrile rubber to DIN ISO 1629)**
  - P
- **FPM (Fluorocarbon rubber to DIN ISO 1629)**
  - V

### Series

- **Series 10**
  - 10
- **Series 20**
  - 20
- **Series 30**
  - 30

### Mode of operation

- **Pump, open circuit**
  - O

### Hydraulic fluid / version

- **Hydraulic fluid / version**
  - A4VS
  - O
  - M
  - H

### Shaft end

- **N**
  - Available
- **L**
  - Not available

### Order code

- **see RA 92064**
- **see RA 92076**
- **see RE 92055**
## Through drive ordering codes

<table>
<thead>
<tr>
<th>40</th>
<th>71</th>
<th>125</th>
<th>180</th>
<th>250</th>
<th>355</th>
<th>500</th>
<th>750</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Without auxiliary pump, without through drive

<table>
<thead>
<tr>
<th>Flange</th>
<th>Hub/shaft to accept</th>
<th>Ordering code</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 125, 4-bolt</td>
<td>Splined shaft 32x3x20x14x9g</td>
<td>A4VSO/H/G 40</td>
</tr>
<tr>
<td>ISO 140, 4-bolt</td>
<td>Splined shaft 40x2x30x18x9g</td>
<td>A4VSO/H/G 71</td>
</tr>
<tr>
<td>ISO 160, 4-bolt</td>
<td>Splined shaft 50x2x30x24x9g</td>
<td>A4VSO/H/G 125</td>
</tr>
<tr>
<td>ISO 224, 4-bolt</td>
<td>Splined shaft 60x2x30x28x9g</td>
<td>A4VSO/H/G 250</td>
</tr>
<tr>
<td>ISO 315, 8-bolt</td>
<td>Splined shaft 80x3x30x25x9g</td>
<td>A4VSO/G 500</td>
</tr>
<tr>
<td>ISO 400, 8-bolt</td>
<td>Splined shaft 90x3x30x28x9g</td>
<td>A4VSO/G 750</td>
</tr>
<tr>
<td>ISO 400, 8-bolt</td>
<td>Splined shaft 100x3x30x32x9g</td>
<td>A4VSO/G 1000</td>
</tr>
<tr>
<td>ISO 80, 2-bolt</td>
<td>Splined shaft 3/4&quot; 19-4 (SAE A-B)</td>
<td>A10VSO 18</td>
</tr>
<tr>
<td>ISO 100, 2-bolt</td>
<td>Splined shaft 7/8&quot; 22-4 (SAE B)</td>
<td>A10VSO 28</td>
</tr>
<tr>
<td>ISO 125, 2-bolt</td>
<td>Splined shaft 1 1/4&quot; 32-4 (SAE C)</td>
<td>A10VSO 71</td>
</tr>
<tr>
<td>ISO 125, 2-bolt</td>
<td>Splined shaft 1 1/2&quot; 38-4 (SAE C-C)</td>
<td>A10VSO 100</td>
</tr>
<tr>
<td>ISO 180, 4-bolt</td>
<td>Splined shaft 1 3/4&quot; 44-4 (SAE D)</td>
<td>A10VSO 140</td>
</tr>
<tr>
<td>127-4 (SAE C, 4-bolt)</td>
<td>Splined, 32-4 (SAE C)</td>
<td>A4VSG/G 40</td>
</tr>
<tr>
<td>127-4 (SAE C, 4-bolt)</td>
<td>Splined, 38-4 (SAE C-C)</td>
<td>A4VSG/G 71</td>
</tr>
<tr>
<td>152-4 (SAE D, 4-bolt)</td>
<td>Splined, 44-4 (SAE D)</td>
<td>A4VSG/G 125</td>
</tr>
<tr>
<td>152-4 (SAE D, 4-bolt)</td>
<td>Splined, 50-4 (SAE F)</td>
<td>A4VSG/G 180</td>
</tr>
<tr>
<td>165-4 (SAE E, 4-bolt)</td>
<td>Splined, 50-4 (SAE F)</td>
<td>A4VSG/G 250</td>
</tr>
<tr>
<td>82-2 (SAE A, 2-bolt)</td>
<td>Keyed, 19-1 (SAE A-B)</td>
<td>A10VSO 18</td>
</tr>
<tr>
<td>101-2 (SAE B, 2-bolt)</td>
<td>Keyed, 22-1 (SAE B)</td>
<td>A10VSO 28</td>
</tr>
<tr>
<td>101-2 (SAE B, 2-bolt)</td>
<td>Keyed, 25-1 (SAE B)</td>
<td>A10VSO 45</td>
</tr>
<tr>
<td>127-2 (SAE C, 2-bolt)</td>
<td>Keyed, 32-1 (SAE C)</td>
<td>A10VSO 71</td>
</tr>
<tr>
<td>127-2 (SAE C, 2-bolt)</td>
<td>Keyed, 38-1 (SAE C-C)</td>
<td>A10VSO 100</td>
</tr>
<tr>
<td>152-4 (SAE D, 4-bolt)</td>
<td>Keyed, 44-1 (SAE D)</td>
<td>A10VSO 140</td>
</tr>
<tr>
<td>82-2 (SAE A, 2-bolt)</td>
<td>Splined shaft 5/8&quot; 18-4 (SAE A)</td>
<td>G2 / GC2/GC3-1X</td>
</tr>
<tr>
<td>82-2 (SAE A, 2-bolt)</td>
<td>Splined shaft 3/4&quot; 19-4 (SAE A-B)</td>
<td>A10VSO 18</td>
</tr>
<tr>
<td>101-2 (SAE B, 2-bolt)</td>
<td>Splined shaft 7/8&quot; (SAE B)</td>
<td>G3</td>
</tr>
<tr>
<td>101-2 (SAE B)</td>
<td>Splined shaft 25-4 (SAE B-B)</td>
<td>GC4-1X, A10VO 45</td>
</tr>
<tr>
<td>127-2 (SAE C)</td>
<td>Splined shaft 32-4 (SAE C)</td>
<td>A10VO 71</td>
</tr>
<tr>
<td>101-2 (SAE B)</td>
<td>Splined shaft 32-4 (SAE C)</td>
<td>GC5-1X</td>
</tr>
<tr>
<td>127-2 (SAE C)</td>
<td>Splined shaft 38-4 (SAE C-C)</td>
<td>GC6-1X, A10VO 100</td>
</tr>
<tr>
<td>152-4 (SAE D)</td>
<td>Splined shaft 44-4 (SAE D)</td>
<td>A10VO 140</td>
</tr>
<tr>
<td>Ø 63, metric 4-bolt</td>
<td>Keyed shaft Ø 25</td>
<td>R4</td>
</tr>
<tr>
<td>101-2 (SAE B)</td>
<td>Splined shaft 22-4(SAE B)</td>
<td>G4, A10VO 28</td>
</tr>
<tr>
<td>101-2 (SAE B, 2-bolt)</td>
<td>Splined 7/8&quot;-R shaft (SAE B)</td>
<td>A10VO 28..R, PVV1/2</td>
</tr>
<tr>
<td>101-2 (SAE B, 2-bolt)</td>
<td>Splined 1&quot;-R shaft (SAE BB)</td>
<td>A10VO 45..R, PVV4/5</td>
</tr>
<tr>
<td>127-2 (SAE C, 2-bolt)</td>
<td>Splined 1-1/4&quot;-R shaft (SAE C)</td>
<td>A10VO 71..R, PVV4/5</td>
</tr>
</tbody>
</table>

### With through drive shaft, without hub, without adapter flange, with cover plate

With through drive for mounting of axial piston unit, gear or radial piston pump

Combination pumps

1. When ordering a second axial piston pump factory mounted, the "+" symbol must be used to join the ordering codes of each pump. Ordering code of 1st pump + Ordering code of 2nd pump.

   **Example:** AA4VSO 125 DR/22R – PKD63K08 + AA4VSO 71 DR/10R – PKD63N00.

2. When ordering a gear or radial piston pump factory mounted, please specify as a separate line item and "+" symbol.
Hydraulic Fluid
The A4VSO pumps in the standard design, should be used with good quality, petroleum oil based, anti-wear hydraulic fluids. More detailed information regarding the selection of hydraulic fluids and their application limits can be found in our Data Sheets RA 90 220 (Petroleum Oil), RA 90 221 (Biodegradable Fluids) and RA 90 223 (Type HF—Fire Resistant/Synthetic Fluids).

When operating with environmentally compatible fluids (Biodegradable) or Fire Resistant (Type HF synthetic fluids) possible reduction of the operating specifications may be required. Please consult with us and your fluid supplier.

Operating Viscosity Range
In order to obtain optimum efficiency and service life, we recommend that the operating viscosity (at normal operating temperature) be selected from within the range.

| Optimum Viscosity (νopt) | 80...170 SUS (16...36 mm²/s) |

Limits of Viscosity Range
The limiting values for viscosity are as follows:

- Absolute Minimum Viscosity (νmin): 45 SUS (10 mm²/s)
  - Only for short periods at max. permissible leakage oil temperature tmax = 195°F (90°C)
- Maximum Viscosity (νmax): 4600 SUS (1000 mm²/s)
  - Respectively 1380 SUS (300 mm²/s) with auxiliary pump.
  - Only for short periods during cold start-up

Temperature range (See Selection Diagram)

- tmin = −13°F (−25°C)
- tmax = +195°F (+90°C)

Selection Diagram
Hydraulic Fluid (continued)

Bearing flushing
For a reliable continuous operation bearing flushing is required with the following operating conditions:
- Applications with special fluids (non mineral) due to limited lubricity and narrow temperature range
- operation with mineral oils, however with marginal conditions for temperature and viscosity
- with vertical mounting (shaft up). In order to ensure lubrication of front bearing and shaft seal, we recommend bearing flushing.

The bearing flushing port “U” is located in the mounting flange area of the pump. The flushing oil flows through the pump’s front bearing and leaves via the case drain.

We recommend the following flushing flows:

<table>
<thead>
<tr>
<th>Size</th>
<th>Qp GPM (L/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>0.8 (3)</td>
</tr>
<tr>
<td>71</td>
<td>1.0 (4)</td>
</tr>
<tr>
<td>125</td>
<td>1.3 (5)</td>
</tr>
<tr>
<td>180</td>
<td>1.8 (7)</td>
</tr>
<tr>
<td>250</td>
<td>2.6 (10)</td>
</tr>
<tr>
<td>355</td>
<td>4.0 (15)</td>
</tr>
<tr>
<td>500</td>
<td>5.3 (20)</td>
</tr>
<tr>
<td>750</td>
<td>7.9 (30)</td>
</tr>
<tr>
<td>1000</td>
<td>10.6 (40)</td>
</tr>
</tbody>
</table>

For the given flushing flows there will be a pressure difference of ~29 psi (2 bar) (Series 1 and 2) and ~44 psi (3 bar) (Series 3) between port “U” (including screwed fitting) and the pump case.

Note regarding series 30
When using external bearing flushing at port “U”, the throttle screw, which is found at port “U”, has to be screwed in completely. With throttle screw back out, the U-port is connected to case. In this position and with U-port plugged, a patented impeller provides lubrication flow through the front bearing and shaft seal area.

Filtration of the Hydraulic Fluid (Axial Piston Unit)
In order to guarantee reliable operation, the hydraulic fluid must be maintained to a cleanliness level of minimum:
- 9 to NAS 1638
- 6 to SAE, ASTM, AIA
- 18/15 to ISO/DIS 4406

This may be achieved, for example, with filter elements type…D 020… (see RA 31 278)

Hence the following filtration ratio is achieved

\[ \beta_{20} \text{ ratio} \geq 100. \]

Technical Specifications
(Valid for operation on petroleum oil based fluids)

Operating pressure range – Inlet Port
Absolute pressure at port S (suction inlet)
- \( p_{\text{abs min}} \) 12 psi (0.8 bar)
- \( p_{\text{abs max}} \) 435 psi (30. bar)

Operating pressure range – Outlet Port
Pressure at port B
- Nominal pressure \( p_n \) 5100 psi (350 bar)
- Peak pressure \( p_{\text{max}} \) 5800 psi (400 bar)

(Pressure specification per DIN/DIS 24312)

Direction of flow: S to B

Case drain pressure
The permissible case drain pressure is dependent on the drive speed. (see diagram)

Max. case drain pressure (housing pressure)
- \( p_{\text{L abs max}} \) 60 psi (4 bar)

These are approximate values. Under certain operating conditions a reduction in these values may be necessary.

Determination of inlet pressure \( p_{\text{abs}} \) at the suction port S, or the reduction in output flow when increasing rotational speed

\[ \frac{V_p}{V_{g,\text{max}}} \]

The inlet pressure is the static fill pressure i.e. the min. dynamic charge pressure.

Caution: Max. permissible speed \( n_{0,\text{max perm}} \) (speed limit)
### Table of values (theoretical values, without considering $\eta_{mh}$ and $\eta_{v}$; values rounded)

<table>
<thead>
<tr>
<th>Size</th>
<th>40</th>
<th>71</th>
<th>125</th>
<th>180</th>
<th>250/H*</th>
<th>355/H*</th>
<th>500/H*</th>
<th>750</th>
<th>750*</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement $V_{g,max}$ in $^{3}$/rev</td>
<td>2.44</td>
<td>4.33</td>
<td>7.63</td>
<td>11.0</td>
<td>15.26</td>
<td>21.7</td>
<td>30.51</td>
<td>45.8</td>
<td>45.8</td>
<td>61.02</td>
</tr>
<tr>
<td>Max. speed at $p_{abs}$ 14.5 psi</td>
<td>2600</td>
<td>2200</td>
<td>1800</td>
<td>1800</td>
<td>1500/1900</td>
<td>1500/1700</td>
<td>1320/1500</td>
<td>1200</td>
<td>1500</td>
<td>1000</td>
</tr>
<tr>
<td>Max. perm. speed (speed limit)</td>
<td>3200</td>
<td>2700</td>
<td>2200</td>
<td>2100</td>
<td>1800/2100</td>
<td>1700/1900</td>
<td>1600/1800</td>
<td>1500</td>
<td>1500</td>
<td>1000</td>
</tr>
<tr>
<td>Max. flow at $n_{o,max}$</td>
<td>27.5</td>
<td>41.2</td>
<td>59.4</td>
<td>85.6</td>
<td>99/125</td>
<td>140/159</td>
<td>174/198</td>
<td>237.9</td>
<td>297.2</td>
<td>264.1</td>
</tr>
<tr>
<td>Max. perm. speed (speed limit)</td>
<td>81</td>
<td>122</td>
<td>176</td>
<td>254</td>
<td>294</td>
<td>419</td>
<td>518</td>
<td>708</td>
<td>885</td>
<td>781</td>
</tr>
<tr>
<td>Max. torque at $V_{g,max}$ T</td>
<td>165</td>
<td>292</td>
<td>516</td>
<td>744</td>
<td>1032</td>
<td>1467</td>
<td>2063</td>
<td>3097</td>
<td>4027</td>
<td>4104</td>
</tr>
<tr>
<td>Moment of inertia about drive axis J</td>
<td>0.116</td>
<td>0.287</td>
<td>0.712</td>
<td>1.305</td>
<td>2.276</td>
<td>4.509</td>
<td>7.890</td>
<td>1193</td>
<td>1193</td>
<td>1590</td>
</tr>
<tr>
<td>Filling volume (case)</td>
<td>135</td>
<td>180</td>
<td>225</td>
<td>315</td>
<td>405</td>
<td>450</td>
<td>450</td>
<td>495</td>
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<td>495</td>
</tr>
<tr>
<td>Approx. weight</td>
<td>86</td>
<td>117</td>
<td>194</td>
<td>225</td>
<td>406</td>
<td>456</td>
<td>705</td>
<td>1014</td>
<td>1080</td>
<td>1333</td>
</tr>
</tbody>
</table>

### Calculation of size

\[
\begin{align*}
\text{Flow} & \quad Q = \frac{V_{g} \cdot n \cdot \eta_{v}}{231} \quad \text{gpm} \\
\text{Torque} & \quad T = \frac{V_{g} \cdot \Delta p}{24 \cdot \pi \cdot \eta_{vh}} \quad \text{lb-ft} \\
\text{Power} & \quad P = \frac{Q \cdot \Delta p}{1714 \cdot \eta_{t}} \quad \text{HP}
\end{align*}
\]

\[V_{g} = \text{Geometric displacement per rev. - in}^{3} \quad (\text{cm}^{3})\]
\[n = \text{Speed rpm (rpm)}\]
\[\Delta p = \text{Pressure differential - psi (bar)}\]
\[Q = \text{Flow - gpm (L/min)}\]
\[T = \text{Torque - lb-ft (Nm)}\]
\[P = \text{Power - HP (kW)}\]
\[\eta_{v} = \text{Volumetric efficiency}\]
\[\eta_{mh} = \text{Mechanical-hydraulic efficiency}\]
\[\eta_{t} = \text{Total efficiency (}\eta_{t} = \eta_{v} \cdot \eta_{mh})\]

### Application of force

\[\pm F_{ax} \quad F_{q}\]

\[X/2 \quad X/2\]
Variable displacement pump A4VSO, Series 1, 2, and 3

**Drive power and output flow**

(Fluid: petroleum oil to ISO VG 46 DIN 51519, \( t = 122^\circ F (50^\circ C) \))

Total efficiency: \( \eta_t = \frac{Q \cdot p}{P_{Q_{max}} \cdot 1714} \)

\( Q = \text{gpm} \quad p = \text{psi} \)

Volumetric efficiency: \( \eta_v = \frac{Q_{eff}}{Q_{theor}} \)

\( Q = \text{L/min} \quad p = \text{bar} \)

\( P = \text{kW} \)

**Size 40**

\[ \eta_t = \frac{Q \cdot p}{P_{Q_{max}} \cdot 1714} \]

\( Q = \text{gpm} \quad p = \text{psi} \)

\( P = \text{HP} \)

**Size 180**

\[ \eta_t = \frac{Q \cdot p}{P_{Q_{max}} \cdot 1714} \]

\( Q = \text{gpm} \quad p = \text{psi} \)

\( P = \text{HP} \)

**Size 71**

\[ \eta_t = \frac{Q \cdot p}{P_{Q_{max}} \cdot 1714} \]

\( Q = \text{gpm} \quad p = \text{psi} \)

\( P = \text{HP} \)

**Size 250**

\[ \eta_t = \frac{Q \cdot p}{P_{Q_{max}} \cdot 1714} \]

\( Q = \text{gpm} \quad p = \text{psi} \)

\( P = \text{HP} \)

**Size 125**

\[ \eta_t = \frac{Q \cdot p}{P_{Q_{max}} \cdot 1714} \]

\( Q = \text{gpm} \quad p = \text{psi} \)

\( P = \text{HP} \)

n = 2600 rpm

n = 1200 rpm

n = 2200 rpm

n = 1200 rpm

n = 1800 rpm

n = 1200 rpm

n = 1800 rpm

n = 1200 rpm
Drive power and output flow
(Fluid: petroleum oil to ISO VG 46 DIN 51519, t = 122°F (50°C)

Total efficiency: \( \eta_t = \frac{Q \cdot p}{P_Q \cdot 1714} \)

Volumetric efficiency: \( \eta_v = \frac{Q_{\text{eff}}}{Q_{\text{theor}}} \)

Size 355

Size 750

Size 500

n = 1500 rpm
n = 1200 rpm
n = 1000 rpm
n = 1320 rpm
Variable displacement pump A4VSO, Series 1, 2, and 3

Drive power and output flow
(Fluid: petroleum oil to ISO VG 46 DIN 51519, t = 122°F (50°C)

Total efficiency:
\[ \eta_T = \frac{Q \cdot p}{P_{\text{Q max}} \cdot 1714} \]

Volumetric efficiency:
\[ \eta_v = \frac{Q_{\text{eff}}}{Q_{\text{theor}}} \]

\[ Q = \text{gpm} \quad p = \text{psi} \quad P = \text{HP} \]

\[ Q = \text{L/min} \quad p = \text{bar} \quad P = \text{kW} \]

Nominal Size 1000

Operating pressure, p PSI (bar)

Flow GPM (L/min)

\[ n = 1200 \text{ RPM} \]
\[ n = 1000 \text{ RPM} \]
Installation Notes

Installation position is optional. The pump housing must be filled with fluid both when commissioning and in operation. In order to achieve low noise levels, all connecting lines (suction, pressure and drain lines) are to be isolated from the tank by flexible members. A non-return line in the drain lines should be avoided. In individual cases, this may be possible, please enquire.

1. **Vertical installation** (shaft end upwards)
   The following installation conditions should be noted:
   
   1.1 **Installation within a tank**
   a) If the minimum fluid level is level with or above the pump mounting flange: Ports »R/L«, »T« and »S« are open (see fig. 1).
   
   ![Fig. 1](image1)

   b) If the minimum fluid level falls below the pump mounting flange: Ports »R/L«, »T« and possibly »S« must be piped, see fig. 2. The requirements then correspond to point 1.2.
   
   ![Fig. 2](image2)

   ![h_sub=32 in (800 mm)]

   ![h_sub=8 in (200 mm)]

   1.2 **Installation outside a tank**
   Fill the pump housing before installation, with the pump in a horizontal position. Pipe port »T« to tank and plug port »R/L«. For filling when already installed: fill via »R« and bleed port »T«. Then plug port »R«.
   
   **Requirement:** The minimum pump inlet pressure (suction pressure) is to be 12 psi (0.8 bar) abs. Mounting above the tank is to be avoided wherever possible if a low noise level is to be achieved.

   2. **Horizontal installation**
   The pump is to be filled through whichever port is uppermost »T«, »K«, »K2« or »R/L«, and this port is to be used as a drain port.

   2.1 **Installation within a tank**
   a) If the minimum fluid level does not fall below the upper point on the pump: The drain port and the suction port »S« remain open (see fig. 3)

   ![Fig. 3](image3)

   b) If the minimum fluid level falls below the upper point on the pump: The leakage port and possibly the suction port are to be piped according the fig. 4. The requirements in point 1.2. are to be met. Fill the pump housing before commissioning.

   2.2 **Installation outside a tank**
   Fill the pump housing before commissioning.
   a) For mounting above the tank install as fig. 4.
   The requirements of point 1.2. must be met.
   b) Below the tank.
   Pipe the drain port and the suction port »S« as fig. 5.

   ![Fig. 4](image4)

   ![Fig. 5](image5)
Unit Dimensions, Size 40, SAE Version

(Example: const. pressure control; exact dimensions of control devices see separate data sheets)

Port connections

- B: Pressure port
- B1: Additional port
- S: Suction port
- K1, K2: Flushing ports
- T: Case drain port
- M1, M2: Test ports
- R(L): Fluid fill and air bleed port
- U: Flushing port

Shaft S

- 1/4 Spline size; 30° Pressure angle
- 14 Teeth; 12/24 Pitch flat root
- Side fit tol. - Class 5; ANSI B.92.1a – 1976

Shaft K

- 1 1/4 Spline size; 30° Pressure angle
- 14 Teeth; 12/24 Pitch flat root
- Side fit tol. - Class 5; ANSI B.92.1a – 1976

Control valve mounting for clockwise rotation

Control valve mounting for counter-clockwise rotation

Control valve mounting for clockwise rotation

Control valve mounting for counter-clockwise rotation

Port connections

- B: Pressure port
- B1: Additional port
- S: Suction port
- K1, K2: Flushing ports
- T: Case drain port
- M1, M2: Test ports
- R(L): Fluid fill and air bleed port
- U: Flushing port

For exact location see control data sheet
Unit Dimensions, Size 40, Series 1, Metric Version

(Example: const. pressure control; exact dimensions of control devices see separate data sheets)

Connections for version 13
B Pressure port SAE 3/4" (high pressure range)
B1 Auxiliary port M 22x1.5; 14 deep (plugged)

Connections for version 25
B Pressure port SAE 3/4" (high pressure range)
B1 2nd pressure port SAE 3/4" (high pressure range) (closed)

Port connections
B Pressure port SAE 3/4" (high pressure series)
B1 Additional port M 22 x 1.5; 0.55 (14) deep (plugged)
S Suction port SAE 1 1/2" (standard pressure series)
K1, K2 Flushing ports M 22 x 1.5; 0.55 (14) deep (plugged)
T Case drain port M 22 x 1.5; 0.55 (14) deep (plugged)
M4, M5 Test ports M 14 x 1.5; 0.47 (12) deep (plugged)
R(L) Fluid fill and air bleed port M 22 x 1.5
for exact location see control data sheet
U Flushing port M 14 x 1.5; 0.47 (12) deep (plugged)

Splined shaft, Z
W 32x14x9g
DIN 5480

Parallel keyed shaft, P

Control valve mounting for clockwise rotation

Control valve mounting for counter-clockwise rotation

Before finalising your design, please request a certified drawing.
Dimensions in inches and millimeters ( ).
Unit Dimensions, Size 71, SAE Version
(Example: const. pressure control; exact dimensions of control devices see separate data sheets)

Port connections

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Pressure port</td>
<td>1&quot; SAE (high pressure series)</td>
</tr>
<tr>
<td>B1</td>
<td>Additional port</td>
<td>1 1/16-12 UN-2B</td>
</tr>
<tr>
<td>S</td>
<td>Suction port</td>
<td>2&quot; SAE (standard pressure series)</td>
</tr>
<tr>
<td>K1, K2</td>
<td>Flushing ports</td>
<td>1 1/16-12 UN-2B</td>
</tr>
<tr>
<td>M1, M2</td>
<td>Test ports</td>
<td>1 1/16-12 UN-2B</td>
</tr>
<tr>
<td>T</td>
<td>Case drain port</td>
<td>7/16-20 UNF-2B</td>
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<tr>
<td>R(L)</td>
<td>Fluid fill and air bleed port</td>
<td>1 1/16-12 UN-2B</td>
</tr>
<tr>
<td>U</td>
<td>Flushing port</td>
<td>7/16-20 UNF-2B</td>
</tr>
</tbody>
</table>

Control valve mounting for clockwise rotation

Control valve mounting for counter-clockwise rotation

Shaft S

Shaft K

Detail X

Detail Y

Shaft 38–4; SAE J744 OCT 83
1 1/2 Spline size; 30\(^\circ\) Pressure angle;
17 Teeth; 12/24 Pitch flat root, – Side fit tol. – Class 5; ANSI B.92.1a–1976
Unit Dimensions, Size 71, Series 1, Metric Version
(Example: const. pressure control; exact dimensions of control devices see separate data sheets)

Connections for version 13
B Pressure port SAE 1" (high pressure range)
B1 Auxiliary port M 27x2; 16 deep (plugged)

Connections for version 25
B Pressure port SAE 1" (high pressure range)
B1 2nd pressure port SAE 1" (high pressure range) (closed)

Port connections
B Pressure port SAE 1" (high pressure series)
B1 Additional port M 27 x 2; 0.63 (16) deep (plugged)
S Suction port SAE 2" (standard pressure series)
K1, K2 Flushing ports M 27 x 2; 0.63 (16) deep (plugged)
T Case drain port M 27 x 2; 0.63 (16) deep (plugged)
M1, M2 Test ports M 14 x 1.5; 0.47 (12) deep (plugged)
R(L) Fluid fill and air bleed port M 27 x 2
for exact location see control data sheet
U Flushing port M 14 x 1.5; 0.47 (12) deep (plugged)
Variable displacement pump A4VSO, Series 1, 2, and 3

Unit Dimensions, Size 125, SAE Version
(Example: const. pressure control; exact dimensions of control devices see separate data sheets)

Shaft 44–4 SAE J744 OCT 83
1 3/4 Spline size; 30° Pressure angle;
13 Teeth; 8/16 Ritt flat root, – Side fit tol. – Class 5; ANSI B.92.1a–1976

Port connections

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Pressure port</td>
<td>1 1/4&quot; SAE (High pressure series)</td>
</tr>
<tr>
<td>B&lt;sub&gt;1&lt;/sub&gt;</td>
<td>Additional port</td>
<td>1 5/16-12 UN-2B</td>
</tr>
<tr>
<td>S</td>
<td>Suction port</td>
<td>2 1/2&quot; SAE (Standard pressure series)</td>
</tr>
<tr>
<td>K&lt;sub&gt;s&lt;/sub&gt;, K&lt;sub&gt;t&lt;/sub&gt;</td>
<td>Flushing ports</td>
<td>1 5/16-12 UN-2B</td>
</tr>
<tr>
<td>T</td>
<td>Case drain port</td>
<td>1 5/16-12 UN-2B</td>
</tr>
<tr>
<td>M&lt;sub&gt;b&lt;/sub&gt;, M&lt;sub&gt;s&lt;/sub&gt;</td>
<td>Test ports</td>
<td>7/16-20 UNF-2B</td>
</tr>
<tr>
<td>R(L)</td>
<td>Fluid fill and air bleed port</td>
<td>1 5/16-12 UN-2B</td>
</tr>
<tr>
<td>U</td>
<td>Flushing port</td>
<td>7/16-20 UNF-2B</td>
</tr>
</tbody>
</table>
Variable displacement pump A4VSO, Series 1, 2, and 3

Port connections

B  Pressure port  SAE 1 1/4" (high pressure range)
B₁  Auxiliary port  M 33 x 2; 0.71 (18) deep (plugged)
S  Suction port  SAE 2 1/2" (standard pressure series)
K₁, K₂  Flushing ports  M 33 x 2; 0.71 (18) deep (plugged)
T  Case drain port  M 33 x 2; 0.71 (18) deep (plugged)
Mₛ, Mₛ  Test ports  M 14 x 1.5; 0.47 (12) deep (plugged)
R(L)  Fluid fill and air bleed port  M 33 x 2
U  Flushing port  M 14 x 1.5; 0.47 (12) deep (plugged)

Connections for version 13
B  Pressure port  SAE 1 1/4" (high pressure range)
B₁  Auxiliary port  M 33 x 2; 0.71 (18) deep (plugged)

Connections for version 25
B  Pressure port  SAE 1 1/4" (high pressure range)
B₁  2nd pressure port  SAE 1 1/4" (high pressure range) (closed)
Unit Dimensions, Size 180, SAE Version
(Example: const. pressure control; exact dimensions of control devices see separate data sheets)

Port connections
B Pressure port 1 1/4” SAE (High pressure series)
B Additional port 1 5/16-12 UN-2B
S Suction port 3” SAE (Standard pressure series)
K, K Flushing ports 1 5/16-12 UN-2B
T Case drain port 1 5/16-12 UN-2B
M, M Test ports 7/16-20 UNF-2B
R(L) Fluid fill and air bleed port 1 5/16-12 UN-2B
for exact location see control data sheet
U Flushing port 7/16-20 UNF-2B
Variable displacement pump A4VSO, Series 1, 2, and 3

Unit Dimensions, Size 180, Series 2 and 3, Metric Version
(Example: const. pressure control; exact dimensions of control devices see separate data sheets)

Connections for version 13
B Pressure port SAE 1 1/4" (high pressure range)
B1 Auxiliary port M 33 x 2; 18 deep (plugged)

Connections of version 25
B Pressure port SAE 1 1/4" (high pressure range)
B1 2nd pressure port SAE 1 1/4" (high pressure range) (closed)

Port connections
B Pressure port SAE 1 1/4" (high pressure series)
B1 Additional port M 33 x 2; 0.71 (18) deep (plugged)
S Suction port SAE 3" (standard pressure series)
K1, K2 Flushing ports M 33 x 2; 0.71 (18) deep (plugged)
T Case drain port M 33 x 2; 0.71 (18) deep (plugged)
M16, M8 Test ports M 14 x 1.5; 0.47 (12) deep (plugged)
R(L) Fluid fill and air bleed port M 33 x 2
for exact location see control data sheet
U Flushing port M 14 x 1.5; 0.47 (12) deep (plugged)
Unit Dimensions, Size 250
(Example: const. pressure control; exact dimensions of control devices see separate data sheets)

Shaft S
- 2 Spline size: 30° Pressure angle;
- 15 Teeth; 8/16 Pitch flat root; -- Side fit tol. -- Class 5; ANSI B.92.1a -- 1976

Port connections
- B Pressure port
- B Additional port
- S Suction port
- K1, K2 Flushing ports
- T Case drain port
- M6, M6 Test ports
- R(L) Fluid fill and air bleed port
- U Flushing port

For exact location see control data sheet.
**Unit Dimensions, Size 250, Series 3**

(Example: const. pressure control; exact dimensions of control devices see separate data sheets)

Connections for version 13

- **B** Pressure port SAE 1 1/2" (high pressure range)
- **B₁** Auxiliary port M 42 x 2; 0.79 (20) deep (plugged)

Connections for version 25

- **B** Pressure port SAE 1 1/2" (high pressure range)
- **B₁** 2nd pressure port SAE 1 1/2" (high pressure range) (closed)

Port connections

- **B** Pressure port SAE 1 1/2" (high pressure series)
- **B₁** Additional port M 42 x 2; 0.79 (20) deep (plugged)
- **S** Suction port SAE 3" (standard pressure series)
- **K₁, K₂** Flushing ports M 42 x 2; 0.79 (20) deep (plugged)
- **T** Case drain port M 42 x 2; 0.79 (20) deep (plugged)
- **M₁, M₂** Test ports M 14 x 1.5; 0.47 (12) deep (plugged)
- **R(L)** Fluid fill and air bleed port M 42 x 2
- **U** Flushing port M 14 x 1.5; 0.47 (12) deep (plugged)

Control valve mounting for clockwise rotation

Control valve mounting for counter-clockwise rotation

Splined shaft, Z

Parallel keyed shaft, P

Before finalising your design, please request a certified drawing.

Dimensions in inches and millimeters ( ).
Unit Dimensions, Size 355, SAE Version

(Example: const. pressure control; exact dimensions of control devices see separate data sheets)

Port connections

B  Pressure port  1 1/2" SAE (High pressure series)
B1 Additional port  1 5/8-12 UN-2B
S  Suction port  4" SAE (Standard pressure series)
K1, K2 Flushing ports  1 5/8-12 UN-2B
T  Case drain port  1 5/8-12 UN-2B
M1, M2 Test ports  7/16-20 UNF-2B
R(L) Fluid fill and air bleed port  1 5/8-12 UN-2B
for exact location see control data sheet
U  Flushing port  3/4-16 UNF-2B

Control valve mounting for clockwise rotation
Control valve mounting for counter-clockwise rotation

Shaft S on demand

Shaft K

Detail X

Detail Y

SAE 4"
Standard pressure series
5/8-11 UNC-2B
1.14 deep

SAE 1 1/2"
High pressure series
5/8-11 UNC-2B
1.14 deep
Unit Dimensions, Size 355, Series 2 and 3, Metric Version
(Example: const. pressure control; exact dimensions of control devices see separate data sheets)

Connections for version 13
B Pressure port SAE 1 1/2" (high pressure range)
B1 Auxiliary port M 42x2; 20 deep (plugged)

Connections for version 25
B Pressure port SAE 1 1/2" (high pressure range)
B1 2nd pressure port SAE 1 1/2" (high pressure range) (closed)

Port connections
B Pressure port SAE 1 1/2" (high pressure series)
B1 Additional port M 42 x 2; 0.79 (20) deep (plugged)
S Suction port SAE 4" (standard pressure series)
K1, K2 Flushing ports M 42 x 2; 0.79 (20) deep (plugged)
T Case drain port M 42 x 2; 0.79 (20) deep (plugged)
M1, M2 Test ports M 14 x 1.5; 0.47 (12) deep (plugged)
R(L) Fluid fill and air bleed port M 42 x 2;
for exact location see control data sheet
U Flushing port M 18 x 1.5; 0.47 (12) deep (plugged)
Unit Dimensions, Size 500, Series 3
(Example: const. pressure control; exact dimensions of control devices see separate data sheets)

Connections for version 13
B  Pressure port  SAE 2" (high pressure range)
B1 Auxiliary port  M 48x2; 0.87 deep (plugged)

Connections for version 25
B  Pressure port  SAE 2" (high pressure range)
B1 2nd pressure port  SAE 2" (high pressure range) (closed)

Port connections
B  Pressure port  SAE 2" (high pressure series)
B1 Additional port  M 48 x 2; 0.87 (22) deep (plugged)
S  Suction port  SAE 5" (standard pressure series)
K1, K2 Flushing ports  M 48 x 2; 0.87 (22) deep (plugged)
T  Case drain port  M 48 x 2; 0.87 (22) deep (plugged)
M1, M2 Test ports  M 18 x 1.5; 0.47 (12) deep (plugged)
R(L) Fluid fill and air bleed port  M 48 x 2;
for exact location see control data sheet
U  Flushing port  M 18 x 1.5; 0.47 (12) deep (plugged)
Unit Dimensions, Size 750, Series 3
(Example: const. pressure control; exact dimensions of control devices see separate data sheets)

Connections for version 13
B  Pressure port   SAE 2" (high pressure range)
B1  Auxiliary port  M 48x2.20 deep (plugged)

Connections for version 25
B  Pressure port   SAE 2" (high pressure range)
B1  2nd pressure port   SAE 2" (high pressure range)
                  (closed)

Port connections
B  Pressure port   SAE 2" (high pressure series)
B1  Additional port  M 48 x 2; 0.79 (20) deep (plugged)
S  Suction port     SAE 5" (standard pressure series)
K1, K2  Flushing ports  M 48 x 2; 0.79 (20) deep (plugged)
T  Case drain port   M 48 x 2; 0.79 (20) deep (plugged)
MIB, MIB  Test ports  M 18 x 1.5; 0.47 (12) deep (plugged)
R(L)  Fluid fill and air bleed port  M 48 x 2;
for exact location see control data sheet
U  Flushing port     M 18 x 1.5; 0.47 (12) deep (plugged)
Unit Dimensions, Size 750 with charging pump (A4VSLO 750)
(Example: const. pressure control
exact dimensions of control devices
see separate data sheets)

Port connections

- **B**: Pressure port SAE 2" (high pressure series)
- **B**: Additional port SAE 2" (plugged)
- **S**: Suction port SAE 5" (standard pressure series)
- **K₁, K₂**: Flushing ports M 48 x 2; 0.87 (20) deep (plugged)
- **T**: Case drain port M 48 x 2; 0.87 (20) deep (plugged)
- **M₁**: Test port (operating press.) M 18 x 1.5; 0.47 (12) deep (plugged)
- **M₂**: Test port (suction press.) M 18 x 1.5; 0.47 (12) deep (plugged)
- **M₃**: Test port (charging press.) M 18 x 1.5; 0.47 (12) deep (plugged)
- **R(L)**: Fluid fill and air bleed port M 48 x 2;
  for exact location see control data sheet
- **U**: Flushing port M 18 x 1.5; 0.47 (12) deep (plugged)

Before finalising your design, please request a certified drawing.
Dimensions in inches and millimeters ( ).
Unit dimensions A4VSO 1000, series 3
(Example: Pressure control; for exact dimensions of control devices see separate RE sheets)

Connections – version 25
B  Pressure port  SAE 2" (high pressure range)
B1  2nd pressure port  SAE 2" (high pressure range)
S  Suction port  SAE 5" (standard series)
K1, K2  Flushing ports  M 48x2; 20 deep (plugged)
T  Oil drain  M 48x2; 20 deep (plugged)
M3  Test point operating pressure  M 18x1.5;12 deep (plugged)
M4  Test point suction pressure  M 18x1.5;12 deep (plugged)
R(L)  Oil filling + air bleed  M 48x2;
U  Flushing port  M 18x1.5;12 deep (plugged)
M1, M2  Test points for adjustment pressure  M 18x1.5 (plugged)
Variable displacement pump A4VSO, Series 1, 2, and 3

**Summary of controls**

**Pressure control DR (see RE/RA 92 060)**

Maintains a max. pressure level in a hydraulic system.

Setting range: 290 – 5100 psi (20 – 350 bar)

Optional:
Remote control (DRG)

**Pressure control for operation in parallel DP (see RE/RA 92 060)**

Suitable to maintain max. pressure in a system with multiple pumps in parallel operation.

Optional:
Flow control (DPF)

**Flow control FR (see RE/RA 92 060)**

This control maintains a fixed pressure drop over a flow valve, installed in the service line, thus maintains a constant flow.

Optional:
Remote pressure control (FRG), Orifice in X-chamber closed (FR1, FRG1)

**Pressure- and flow control DFR (see RE/RA 92060)**

This control maintains a constant flow through a flow valve regardless of operating conditions. Overriding this flow control is a mechanically adjustable pressure control.

Optional:
Orifice in X-chamber closed (DFR1)
Summary of controls

Power control LR2 (RE/RA 92 064) with hyperbolic curve

The power control holds the preset drive power constant at a constant drive speed.

Optional:
- Pressure control (LR2D),
- remotely adjustable (LR2G),
- flow control (LR2F, LR2S),
- hydraulic stroke limiter (LR2H)
- mech. stroke limiter (LR2M);
- hydr. two-point adjustment (LR2Z);
- elec. relief valve (LR2Y).

Power control LR3 (RE/RA 92 064) with remote adjustment of control curve

This hyperbolic power control holds the preset drive power constant; the power control curve is remotely adjustable.

Optional:
- Pressure control (LR3D),
- remotely adjustable (LR3G),
- flow control (LR3F, LR3S)
- hydr. stroke limiter (LR3H)
- mech. stroke limiter (LR3M);
- hydr. two-point adjustment (LR3Z).

Hydraulic control LR2N (RE/RA 92 064) pilot pressure dependent, normally at $V_g \min$

With overriding power control. The displacement is proportional to the pilot pressure in $P_{St}$. The hyperbolic power control is overriding the pilot pressure signal and holds the preset power constant.

Optional: Pressure control (LR2DN),
- remotely adjustable (LR2GN)
- power control curve remotely adjustable (LR3N, LR3DN, LR3GN)
Summary of controls

**Manual control MA (RE/RA 92 072)**

Stepless adjustment of displacement by means of handwheel.

**Diagram:**
- Diagram showing manual control MA with handwheel.

**Electrical motor control EM (RE/RA 92 072)**

Stepless flow adjustment via an electric motor. With a programmed sequence control, various intermediate displacements can be selected by means of built-on limit switches or a potentiometer.

**Diagram:**
- Diagram showing electrical motor control EM with electric motor.

**Hydraulic control HW (RA 92 068; in preparation) with rotary servo**

Infinite adjustment of the pump flow as a function of the angle position (sin β) of the pivot.

Optional:
- with hyperbolic horse power control (HWP)

**Diagram:**
- Diagram showing hydraulic control HW with rotary servo.

**Hydraulic control HD (RE/RA 92 080) pilot pressure dependent**

Stepless control of displacement dependent on pilot pressure signal. The displacement is proportional to the pilot pressure.

Optional:
- Pilot characteristics (HD1, HD2, HD3)
- Pressure control (HD B):
  - remotely adjustable (HD.GB)
- Power control (HD1P)
- electr. pilot pressure control (HD1T)

**Diagram:**
- Diagram showing hydraulic control HD with pilot pressure.
Summary of controls

Hydraulic displacement control HM1 / HM2 / HM3 (see RE/RA 92 076)
flow related
The pump displacement is infinitely adjustable, dependent on
the control volume in port X1 and X2.
Application:  
- 2 point control
- basic control device for servo- or
  proportional controls

Hydraulic displacement control HS / HS1 (see RE/RA 92 076)
HS3 (see RE 30021)
with servo or proportional valve
The stepless displacement control is accomplished by means of a servo or proportional
valve with electric feedback of swivel angle.
Electronic control
Optional:
Servo valve (HS/HS1), Proportional valve (HS3)
Bypass valve (HS1K/HS3K);
without valves (HSE/HS1E/HS3E)
The HSSP-control is equipped with built-on pressure
transducer, which makes it suitable for pressure-
and power control

Hydraulic displacement control EO1/EO2 (see RE/RA 92 076)
The stepless displacement control is accomplished with a proportional valve with electrical
feedback of swivel angle.
Electronic control
Optional:
Bypass valve (EO1K/EO2K)
Without valves (EO1E/EO2E)

Speed control DS1 (see RA 92 055)
secondary controlled
The speed control DS1 controls the
secondary unit (the motor) in such a manner,
that this motor supplies sufficient torque to
maintain the required speed. Hooked up to a
system with constant pressure, this torque is
proportional to displacement, thus to swivel
angle.
Through-drive
Model A4VSO can be supplied with a through-drive capability, as shown in the ordering code on page 3. It is recommended, that no more than three individual pumps are coupled in series.

Included in the supply are: Coupling, fixing screws, seal and an intermediate flange (if required).

Combination pumps
Two or more independent circuits are available to the user when combination pumps are used.

1. If the combination pump consists of 2 units and if it is supposed to be delivered as an assembled unit, the two ordering codes are to be combined with the “+” symbol.

Example:
A4VSO 125 DR/22R – PB13K33 + A4VSO 71 DR /10 R – PZB13 N00

1.1 Please see data sheet RA 90 139 (in preparation) if a gear pump or radial piston pump is to be mounted as a combination pump at the factory. This data sheet lists the pumps which can be mounted and they are included in the ordering code of the first pump.

When planning a pump combination with equal pump sizes (i.e. 125+125) and controls HD.P, HD.T and HD.U it is necessary to consult us.

Permissible through drive torque

\[
T_{D1} = \frac{m_1}{l_1} + \frac{m_2}{l_2} \quad \text{[lb-ft]}
\]

\[
\left( T_m = m_1 \cdot l_1 \cdot \frac{1}{102} + m_2 \cdot l_2 \cdot \frac{1}{102} \quad \text{[Nm]} \right)
\]

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<th>180</th>
<th>250</th>
<th>355</th>
<th>500</th>
<th>750</th>
<th>1000</th>
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<td>1475</td>
<td>3098</td>
<td>3098</td>
<td>6859</td>
<td>6859</td>
<td>11506</td>
<td>14382</td>
</tr>
<tr>
<td>T_{m_{perm}}</td>
<td>lb-ft</td>
<td>132</td>
<td>448</td>
<td>310</td>
<td>310</td>
<td>686</td>
<td>686</td>
<td>1151</td>
<td>1438</td>
</tr>
<tr>
<td></td>
<td>Nm</td>
<td>(180)</td>
<td>(200)</td>
<td>(420)</td>
<td>(420)</td>
<td>(930)</td>
<td>(930)</td>
<td>(1560)</td>
<td>(1950)</td>
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</tbody>
</table>

Permissible bending moment related to mounting flange of main pump

Permissible bending moment referred to main pump at 10 g = 98.1 m/sec²

<table>
<thead>
<tr>
<th>Size</th>
<th>40</th>
<th>71</th>
<th>125</th>
<th>180</th>
<th>250</th>
<th>355</th>
<th>500</th>
<th>750</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>lbs</td>
<td>86</td>
<td>117</td>
<td>194</td>
<td>225</td>
<td>406</td>
<td>456</td>
<td>705</td>
<td>1014</td>
</tr>
<tr>
<td></td>
<td>kg</td>
<td>(39)</td>
<td>(53)</td>
<td>(88)</td>
<td>(102)</td>
<td>(184)</td>
<td>(207)</td>
<td>(320)</td>
<td>(460)</td>
</tr>
<tr>
<td>Center to center distance l</td>
<td>mm</td>
<td>(120)</td>
<td>(140)</td>
<td>(170)</td>
<td>(180)</td>
<td>(210)</td>
<td>(220)</td>
<td>(260)</td>
<td>(290)</td>
</tr>
</tbody>
</table>
### Unit dimensions for combination pumps

#### SAE Version

<table>
<thead>
<tr>
<th>main pump</th>
<th>AA4VSO 125</th>
<th>AA4VSO 250</th>
</tr>
</thead>
<tbody>
<tr>
<td>A4VSO 125</td>
<td>12.28 (312)</td>
<td>15.04 (382)</td>
</tr>
<tr>
<td>A4VSO 250</td>
<td>12.28 (312)</td>
<td>15.04 (382)</td>
</tr>
</tbody>
</table>

Other combination pumps in SAE-version on request.

#### Metric Version

<table>
<thead>
<tr>
<th>main pump</th>
<th>A4VSO 40</th>
<th>A4VSO 71</th>
<th>A4VSO 125</th>
<th>A4VSO 180</th>
<th>A4VSO 250</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd pump</td>
<td>A1</td>
<td>A2</td>
<td>A3</td>
<td>A4</td>
<td>A1</td>
</tr>
<tr>
<td>A4VSO 40</td>
<td>8.94 (227)</td>
<td>2.40 (61)</td>
<td>8.94 (227)</td>
<td>21.93 (557)</td>
<td>10.00 (254)</td>
</tr>
<tr>
<td>A4VSO 71</td>
<td>10.00 (254)</td>
<td>2.44 (62)</td>
<td>10.00 (254)</td>
<td>24.17 (614)</td>
<td>12.20 (310)</td>
</tr>
<tr>
<td>A4VSO 125</td>
<td>12.20 (310)</td>
<td>2.72 (69)</td>
<td>12.20 (310)</td>
<td>28.90 (734)</td>
<td>12.52 (318)</td>
</tr>
<tr>
<td>A4VSO 180</td>
<td>12.20 (310)</td>
<td>2.72 (69)</td>
<td>12.20 (310)</td>
<td>31.09 (810)</td>
<td>12.52 (318)</td>
</tr>
<tr>
<td>A4VSO 250</td>
<td>15.04 (382)</td>
<td>3.90 (99)</td>
<td>15.04 (382)</td>
<td>36.30 (922)</td>
<td>16.62 (418)</td>
</tr>
</tbody>
</table>

#### Notes
- Dimensions in inches and millimeters (   ).
- Other combination pumps in SAE-version on request.
- Main pump
- 2nd pump
- **AA4VSO 125**
- **AA4VSO 250**

---

Variable displacement pump A4VSO, Series 1, 2, and 3

Before finalizing your design, please request a certified drawing.

Dimensions in inches and millimeters (    ).
Unit dimensions of combination pumps

**SAE Version**

<table>
<thead>
<tr>
<th>2nd pump</th>
<th>A4VSO 40</th>
<th>A4VSO 71</th>
<th>A4VSO 125</th>
<th>A4VSO 180</th>
<th>A4VSO 250</th>
</tr>
</thead>
<tbody>
<tr>
<td>A10VSO 28</td>
<td>9.02(229)</td>
<td>2.48(63)</td>
<td>6.46(164)</td>
<td>19.61(498)</td>
<td>10.08(256)</td>
</tr>
<tr>
<td>A10VSO 45</td>
<td>10.08(256)</td>
<td>2.68(68)</td>
<td>7.24(184)</td>
<td>21.58(548)</td>
<td>12.28(312)</td>
</tr>
<tr>
<td>A10VSO 71</td>
<td>10.08(256)</td>
<td>2.64(67)</td>
<td>8.54(217)</td>
<td>22.84(580)</td>
<td>12.28(312)</td>
</tr>
<tr>
<td>A10VSO 100</td>
<td>12.28(312)</td>
<td>2.64(67)</td>
<td>10.83(279)</td>
<td>27.75(705)</td>
<td>15.04(382)</td>
</tr>
</tbody>
</table>

Other combination pumps in SAE-version on request.

**Metric Version**

<table>
<thead>
<tr>
<th>2nd pump</th>
<th>A4VSO 355</th>
<th>A4VSO 500</th>
<th>A4VSO 750</th>
</tr>
</thead>
<tbody>
<tr>
<td>A10VSO 18</td>
<td>15.47(393)</td>
<td>2.64(67)</td>
<td>5.70(145)</td>
</tr>
<tr>
<td>A10VSO 28</td>
<td>15.47(393)</td>
<td>2.64(67)</td>
<td>6.46(164)</td>
</tr>
<tr>
<td>A10VSO 45</td>
<td>15.47(393)</td>
<td>2.64(67)</td>
<td>7.24(184)</td>
</tr>
<tr>
<td>A10VSO 71</td>
<td>15.47(393)</td>
<td>2.64(67)</td>
<td>8.54(217)</td>
</tr>
<tr>
<td>A10VSO 100</td>
<td>15.47(393)</td>
<td>2.64(67)</td>
<td>10.83(279)</td>
</tr>
</tbody>
</table>

* on demand
Before finalizing your design, please request a certified drawing. Dimensions in inches and millimeters ( ).

Dimensions - Through drive
Flange ISO 125, 4-bolt; for mounting of axial piston pump A4VSO/H/G 40 - splined shaft “Z”
Ordering Code K31

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>A₁</th>
<th>A₂</th>
<th>A₃</th>
<th>A₄</th>
<th>A₅</th>
<th>A₆</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>7.44 (189)</td>
<td>3.90 (99)</td>
<td>–</td>
<td>2.28 (58)</td>
<td>M12; 0.94 (24) deep</td>
<td>–</td>
</tr>
<tr>
<td>71</td>
<td>8.30 (216)</td>
<td>3.94 (100)</td>
<td>–</td>
<td>2.17 (56)</td>
<td>M12; 0.94 (24) deep</td>
<td>–</td>
</tr>
<tr>
<td>125</td>
<td>10.43 (265)</td>
<td>3.23 (82)</td>
<td>0.31 (8)</td>
<td>1.46 (37)</td>
<td>M12; 0.71 (18) deep</td>
<td>5.91 (150)</td>
</tr>
<tr>
<td>180</td>
<td>10.43 (265)</td>
<td>4.17 (106)</td>
<td>–</td>
<td>1.46 (37)</td>
<td>M12; 0.71 (18) deep</td>
<td>6.30 (160)</td>
</tr>
<tr>
<td>250</td>
<td>12.87 (327)</td>
<td>4.09 (104)</td>
<td>0.06 (2)</td>
<td>1.89 (48)</td>
<td>M12; 0.71 (18) deep</td>
<td>7.87 (200)</td>
</tr>
<tr>
<td>355</td>
<td>12.87 (327)</td>
<td>5.24 (133)</td>
<td>–</td>
<td>1.89 (48)</td>
<td>M12; 0.71 (18) deep</td>
<td>8.66 (220)</td>
</tr>
<tr>
<td>500</td>
<td>14.37 (365)</td>
<td>5.51 (140)</td>
<td>0.55 (14)</td>
<td>2.36 (60)</td>
<td>M12; 0.71 (18) deep</td>
<td>9.45 (240)</td>
</tr>
</tbody>
</table>

Flange ISO 140, 4-bolt; for mounting of axial piston pump A4VSO/H/G 71 - splined shaft “Z”
Ordering code K33

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>A₁</th>
<th>A₂</th>
<th>A₃</th>
<th>A₄</th>
<th>A₅</th>
<th>A₆</th>
</tr>
</thead>
<tbody>
<tr>
<td>71</td>
<td>8.50 (216)</td>
<td>3.94 (100)</td>
<td>–</td>
<td>1.73 (44)</td>
<td>M12; 0.94 (24) deep</td>
<td>–</td>
</tr>
<tr>
<td>125</td>
<td>10.43 (265)</td>
<td>4.25 (108)</td>
<td>–</td>
<td>1.77 (45)</td>
<td>M12; 0.98 (25) deep</td>
<td>–</td>
</tr>
<tr>
<td>180</td>
<td>10.43 (265)</td>
<td>5.20 (132)</td>
<td>–</td>
<td>1.77 (45)</td>
<td>M12; 0.71 (18) deep</td>
<td>–</td>
</tr>
<tr>
<td>250</td>
<td>12.87 (327)</td>
<td>4.09 (104)</td>
<td>0.08 (2)</td>
<td>1.89 (48)</td>
<td>M12; 0.71 (18) deep</td>
<td>7.87 (200)</td>
</tr>
<tr>
<td>500</td>
<td>14.37 (365)</td>
<td>5.51 (140)</td>
<td>0.59 (15)</td>
<td>2.36 (60)</td>
<td>M12; 0.71 (18) deep</td>
<td>9.45 (240)</td>
</tr>
</tbody>
</table>
Variable displacement pump A4VSO, Series 1, 2, and 3

Flange ISO 160, 4-bolt; for mounting of axial piston pump A4VSO/H/G 125 or 180 - splined shaft "Z"
Ordering Code K34

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A4</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>10.43 (265)</td>
<td>4.49 (114)</td>
<td>2.28 (58)</td>
<td>M16; 1.22 (31) deep</td>
</tr>
<tr>
<td>180</td>
<td>10.43 (265)</td>
<td>5.43 (138)</td>
<td>2.09 (53)</td>
<td>M16; 1.26 (32) deep</td>
</tr>
<tr>
<td>250</td>
<td>12.87 (327)</td>
<td>5.59 (142)</td>
<td>2.36 (60)</td>
<td>M16; 1.26 (32) deep</td>
</tr>
<tr>
<td>355</td>
<td>12.87 (327)</td>
<td>6.73 (171)</td>
<td>2.36 (60)</td>
<td>M16; 1.26 (32) deep</td>
</tr>
<tr>
<td>500</td>
<td>14.37 (365)</td>
<td>5.51 (140)</td>
<td>2.36 (60)</td>
<td>M16; 0.94 (24) deep</td>
</tr>
</tbody>
</table>

Flange ISO 224, 4-bolt; for mounting of axial piston pump A4VSO/H/G 250 - splined shaft "Z"
Ordering Code K35

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A4</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>12.87 (327)</td>
<td>5.59 (142)</td>
<td>2.95 (75)</td>
<td>M20; 1.46 (37) deep</td>
</tr>
<tr>
<td>355</td>
<td>12.87 (327)</td>
<td>6.73 (171)</td>
<td>2.95 (75)</td>
<td>M20</td>
</tr>
<tr>
<td>500</td>
<td>14.37 (365)</td>
<td>6.93 (176)</td>
<td>2.91 (74)</td>
<td>M20; 1.42 (36) deep</td>
</tr>
</tbody>
</table>
Variable displacement pump A4VSO, Series 1, 2, and 3

Before finalizing your design, please request a certified drawing.
Dimensions in inches and millimeters (  ).

Flange ISO 224, 4-bolt; for mounting of axial piston pump A4VSO/G 355 - splined shaft "Z"
Ordering code K77

Flange ISO 315, 8-bolt; for mounting of axial piston pump A4VSO/G 500 - splined shaft "Z"
Ordering code K43

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>( A_1 )</th>
<th>( A_2 )</th>
<th>( A_3 )</th>
<th>( A_4 )</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>14.37 (365)</td>
<td>8.86 (225)</td>
<td>3.58 (91)</td>
<td>M20; 1.02 (26) deep</td>
<td></td>
</tr>
<tr>
<td>750</td>
<td>15.63 (397)</td>
<td>9.57 (243)</td>
<td>3.58 (91)</td>
<td>M20; 1.02 (26) deep</td>
<td></td>
</tr>
</tbody>
</table>

Section A-B to face of pump mounting flange

Sections A-B

Splined hub N7x0.2x2x8H DIN 5480
Variable displacement pump A4VSO, Series 1, 2, and 3

Before finalizing your design, please request a certified drawing.

Dimensions in inches and millimeters ( )

Flange ISO 400, 8-bolt; for mounting of axial piston pump A4VSO/G 750 - splined shaft "Z"
Ordering code K76
Main pump nominal size 750

ISO 400, 8-hole; for mounting a second A4VSO/G 1000 (splined shaft)
Ordering code K88
Main pump nominal size 1000
**Variable displacement pump A4VSO, Series 1, 2, and 3**

Before finalizing your design, please request a certified drawing. Dimensions in inches and millimeters ( ).

**RA 92 050/10.97 (SAE and Metric)**

**ISO 80, 2-hole; for mounting an A10VSO 18 (splined shaft S) - see RA 92712**

Ordering code KB2

<table>
<thead>
<tr>
<th>Size, main pump</th>
<th>A₁</th>
<th>A₂</th>
<th>A₃</th>
<th>A₄</th>
<th>A₅</th>
<th>A₆</th>
</tr>
</thead>
<tbody>
<tr>
<td>T25</td>
<td>10.43 (265)</td>
<td>3.23 (82)</td>
<td>0.45 (11.5)</td>
<td>0.75 (19.1)</td>
<td>M10; 0.47 (12) deep</td>
<td>0.84 (21.4)</td>
</tr>
</tbody>
</table>

45° A₁ A₂ A₃

to face of pump mounting flange

**ISO 100, 2-hole; for mounting an A10VSO 28 (splined shaft S) - see RA 92711 (in preparation)**

Ordering code KB3

<table>
<thead>
<tr>
<th>Size, main pump</th>
<th>A₁</th>
<th>A₂</th>
<th>A₃</th>
<th>A₄</th>
<th>A₅</th>
<th>A₆</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>7.44 (189)</td>
<td>3.98 (101)</td>
<td>–</td>
<td>2.17 (55)</td>
<td>M12; 1.02 (26) deep</td>
<td>0.79 (20.3)</td>
</tr>
</tbody>
</table>

45° A₁ A₂ A₃

to face of pump mounting flange

Splined 19-4 (SAE A-B) 3/4", 16/32 DP; 11T

Splined 22-4 (SAE B) 7/8", 16/32 DP; 13T

MANNSMANN REXROTH 39
Variable displacement pump A4VSO, Series 1, 2, and 3

ISO 100, 2-hole; for mounting an A10VSO 45 (splined shaft S) - see RA 92711 (in preparation)
Ordering code KB4

ISO 125, 2-hole; for mounting an A10VSO 71 (splined shaft S) - see RA 92711 (in preparation)
Ordering code KB5

### ISO 100, 2-hole

<table>
<thead>
<tr>
<th>Size, main pump</th>
<th>( A_1 )</th>
<th>( A_2 )</th>
<th>( A_3 )</th>
<th>( A_4 )</th>
<th>( A_5 )</th>
<th>( A_6 )</th>
<th>( A_7 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>12.87 (327)</td>
<td>4.09 (104)</td>
<td>0.11 (3)</td>
<td>1.08 (27.5)</td>
<td>M12; 0.71 (18) deep</td>
<td>7.87 (200)</td>
<td>0.82 (20.9)</td>
</tr>
</tbody>
</table>

### ISO 125, 2-hole

<table>
<thead>
<tr>
<th>Size, main pump</th>
<th>( A_1 )</th>
<th>( A_2 )</th>
<th>( A_3 )</th>
<th>( A_4 )</th>
<th>( A_5 )</th>
<th>( A_6 )</th>
<th>( A_7 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>10.43 (265)</td>
<td>4.44 (113)</td>
<td>1.50 (38.1)</td>
<td>M16; 0.94 (24) deep</td>
<td>0.93 (23.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>180</td>
<td>10.43 (265)</td>
<td>5.39 (137)</td>
<td>1.50 (38.1)</td>
<td>M16; 0.94 (24) deep</td>
<td>0.93 (23.7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Variable displacement pump A4VSO, Series 1, 2, and 3

**ISO 180, 4-hole**: for mounting an A10VSO 140 (splined shaft S) - see RE 92711 (in preparation)

Ordering code KB7

Before finalizing your design, please request a certified drawing.

Dimensions in inches and millimeters ( ).

### Amplifier for valve Model 4WRA 6..., Series 1X

<table>
<thead>
<tr>
<th>Size, main pump</th>
<th>A₁</th>
<th>A₂</th>
<th>A₃</th>
<th>A₄</th>
<th>A₅</th>
<th>= 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>12.87 (327)</td>
<td>5.59 (142)</td>
<td>3.22 (82)</td>
<td>M16; 1.25 (32) deep</td>
<td>0.42 (10.8)</td>
<td></td>
</tr>
<tr>
<td>325</td>
<td>12.87 (327)</td>
<td>6.73 (171)</td>
<td>3.22 (82)</td>
<td>M16; 1.25 (32) deep</td>
<td>0.42 (10.8)</td>
<td></td>
</tr>
</tbody>
</table>

### Amplifier for valve Model 4WRA 10..., Series 1X

<table>
<thead>
<tr>
<th>Size, main pump</th>
<th>A₁</th>
<th>A₂</th>
<th>A₃</th>
<th>A₄</th>
<th>A₅</th>
<th>= 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>12.87 (327)</td>
<td>5.59 (142)</td>
<td>3.22 (82)</td>
<td>M16; 1.25 (32) deep</td>
<td>0.42 (10.8)</td>
<td></td>
</tr>
<tr>
<td>325</td>
<td>12.87 (327)</td>
<td>6.73 (171)</td>
<td>3.22 (82)</td>
<td>M16; 1.25 (32) deep</td>
<td>0.42 (10.8)</td>
<td></td>
</tr>
</tbody>
</table>

### Flange SAE 82-2 (SAE A, 2-hole): for mounting an external gear pump G2 (see RA 10030) or, of an internal gear pump 1 PF2GC2/3-1X/XXXXR07MU2 (see RA 10215)

Ordering code K01

### Pay attention to correct hydraulic fluid (see RA 10 030 or 10 215)
Variable displacement pump A4VSO, Series 1, 2, and 3

Flange 152-4 (SAE D, 4-bolt); for mounting of axial piston pump AA4VSO/G 125 - splined shaft "S"
Ordering Code K17

Size of main pump:
AA4VSO 125

Flange 165-4 (SAE E, 4-bolt); for mounting of axial piston pump AA4VSO/G 250 - splined shaft "S"
Ordering code K18

Size of main pump:
AA4VSO 250
## Variable displacement pump A4VSO, Series 1, 2, and 3

**Flange 101-2 (SAE B, 2-bolt); for mounting of axial piston pump AA10VSO 28 - parallel keyed shaft "K" (see RA 92 711)**

Ordering code K03

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>A₁</th>
<th>A₂</th>
<th>A₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>11.50</td>
<td>292.1</td>
<td>1.41</td>
</tr>
<tr>
<td>71</td>
<td>12.74</td>
<td>324</td>
<td>1.28</td>
</tr>
<tr>
<td>125</td>
<td>13.74</td>
<td>349</td>
<td>0.32</td>
</tr>
<tr>
<td>180</td>
<td>14.7</td>
<td>373</td>
<td>1.43</td>
</tr>
<tr>
<td>250</td>
<td>17.05</td>
<td>433</td>
<td>0.32</td>
</tr>
</tbody>
</table>

**Flange 101-2 (SAE B, 2-bolt); for mounting of axial piston pump AA10VSO 45 - parallel keyed shaft "K" (see RA 92 711)**

Ordering code K05

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>A₁</th>
<th>A₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>71</td>
<td>12.76</td>
<td>324</td>
</tr>
<tr>
<td>250</td>
<td>17.05</td>
<td>433</td>
</tr>
</tbody>
</table>
Variable displacement pump A4VSO, Series 1, 2, and 3

Flange 127-2 (SAE C, 2-bolt); for mounting of axial piston pump AA10VSO 71 - parallel keyed shaft "K" (see RA 92 711)
Ordering code K08

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>( A_1 )</th>
<th>( A_2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>71</td>
<td>12.72(323)</td>
<td>2.106(54)</td>
</tr>
<tr>
<td>125</td>
<td>14.92(379)</td>
<td>2.582(65)</td>
</tr>
<tr>
<td>180</td>
<td>15.87(403)</td>
<td>1.91(48)</td>
</tr>
<tr>
<td>250</td>
<td>17.05(433)</td>
<td>2.00(51)</td>
</tr>
</tbody>
</table>

Flange 127-2 (SAE C, 2-bolt); for mounting of axial piston pump AA10VO 100 - parallel keyed shaft "K" (see RA 92 711)
Ordering code K38

<table>
<thead>
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<th>Size of main pump</th>
<th>( A_1 )</th>
<th>( A_2 )</th>
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</thead>
<tbody>
<tr>
<td>125</td>
<td>14.92(379)</td>
<td>2.13(54)</td>
</tr>
<tr>
<td>250</td>
<td>17.83(453)</td>
<td>2.28(60)</td>
</tr>
</tbody>
</table>
Variable displacement pump A4VSO, Series 1, 2, and 3

Before finalizing your design, please request a certified drawing.
Dimensions in inches and millimeters ( ).

Flange SAE 82-2, (SAE A, 2-bolt); for mounting of axial piston pump A10VSO 18 - splined shaft "S" (see RA 92 712)
Ordering code K52

Flange SAE 101-2, (SAE B, 2-bolt); for mounting of gear pump G3 (see RA 10 039) or for mounting of axial piston pump A10VO 28 - splined shaft "S" (see RA 92 701)
Ordering code K02

Pay attention to correct hydraulic fluid for mounting of gear pump G3 (see RA 10 039)
Variable displacement pump A4VSO, Series 1, 2, and 3

Flange SAE 101-2, (SAE B, 2-bolt); for mounting of axial piston pump A10VO 45 - splined shaft "S" (see RA 92 701)
or for mounting of internal gear pump 1PF2GC4-1X/0XXXR07MU2 (see RA 10 215)

Ordering code K04

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<tr>
<th>Size of main pump</th>
<th>A₂</th>
<th>A₃</th>
<th>A₄</th>
<th>A₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>13.66</td>
<td>0.35</td>
<td>1.91</td>
<td>M12; 0.59 (15) deep</td>
</tr>
<tr>
<td>250</td>
<td>16.97</td>
<td>0.41</td>
<td>2.40</td>
<td>M12; 0.71 (18) deep</td>
</tr>
<tr>
<td>355</td>
<td>18.11</td>
<td>0.41</td>
<td>2.06</td>
<td>M12; 0.71 (18) deep</td>
</tr>
</tbody>
</table>

Pay attention to correct hydraulic fluid for mounting of internal gear pump (see RA 10 215)

Flange SAE 101-2, (SAE B, 2-bolt); for mounting of internal gear pump 1PF2GC5-1X/0XXXR07MU2 (see RA 10 215)

Ordering code K06

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>A₂</th>
<th>A₃</th>
<th>A₄</th>
<th>A₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>71</td>
<td>12.64</td>
<td>0.35</td>
<td>2.34</td>
<td>M12</td>
</tr>
<tr>
<td>125</td>
<td>14.89</td>
<td>0.35</td>
<td>2.23</td>
<td>M12; 0.71 (18) deep</td>
</tr>
</tbody>
</table>

Pay attention to correct hydraulic fluid for mounting of internal gear pump (see RA 10 215)
Variable displacement pump A4VSO, Series 1, 2, and 3

Flange SAE 127-2, (SAE C, 2-bolt): for mounting of axial piston pump A10VO 100 - splined shaft “S” (see RA 92 701) or mounting of internal gear pump 1PF2GC6-1X/XXXXR07MU2 (see RA 10 215)
Ordering code K24

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>A_1</th>
<th>A_2</th>
<th>A_3</th>
<th>A_4</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>14.84 (377)</td>
<td>0.35 (9)</td>
<td>2.91 (74)</td>
<td>M16; 0.94 (24) deep</td>
</tr>
<tr>
<td>180</td>
<td>15.79 (401)</td>
<td>0.39 (10)</td>
<td>2.83 (72)</td>
<td>M16; 0.94 (24) deep</td>
</tr>
<tr>
<td>250</td>
<td>17.76 (451)</td>
<td>0.41 (10.5)</td>
<td>2.99 (76)</td>
<td>M16; 0.79 (20) deep</td>
</tr>
</tbody>
</table>

Flange ø 63 (mm) metric, 4-bolt; for mounting of radial piston pump R4 - keyed shaft (see RA 11 263), Ordering code K57

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>A_1</th>
<th>A_2</th>
<th>A_3</th>
</tr>
</thead>
<tbody>
<tr>
<td>40*</td>
<td>7.44 (189)</td>
<td>3.94 (100)</td>
<td>2.40 (61)</td>
</tr>
<tr>
<td>71*</td>
<td>8.50 (216)</td>
<td>4.06 (103)</td>
<td>2.20 (56)</td>
</tr>
<tr>
<td>125</td>
<td>10.43 (265)</td>
<td>4.33 (110)</td>
<td>2.44 (62)</td>
</tr>
<tr>
<td>250</td>
<td>12.87 (327)</td>
<td>5.20 (132)</td>
<td>3.07 (78)</td>
</tr>
</tbody>
</table>

Pay attention to correct hydraulic fluid for mounting of radial piston pump (see RA 11 263)

* At main pump A4VSO, sizes 40 and 71 with control devices LR.D; LR.S or LR.G only possible mounting of a radial piston pump R4-3.
Variable displacement pump A4VSO, Series 1, 2, and 3

Before finalizing your design, please request a certified drawing.
Dimensions in inches and millimeters ( ).

With through drive shaft, without hub, without intermediate flange, covered.
Ordering code K99

Sizes of main pump 40…355

Sizes of main pump 500 (Drawing without cover)

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>O-Ring</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>99x3 78 SH A</td>
</tr>
<tr>
<td>71</td>
<td>PRP 245 7509</td>
</tr>
<tr>
<td>125</td>
<td>119x3 78 SH A</td>
</tr>
<tr>
<td>180</td>
<td>119x3 78 SH A</td>
</tr>
<tr>
<td>250</td>
<td>162x3 78 SH A</td>
</tr>
<tr>
<td>355</td>
<td>162x3 78 SH A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>Splined shaft DIN 5480</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>W25x1.25x18x9g</td>
</tr>
<tr>
<td>71</td>
<td>W30x1.25x22x9g</td>
</tr>
<tr>
<td>125</td>
<td>W35x1.25x26x9g</td>
</tr>
<tr>
<td>180</td>
<td>W35x1.25x26x9g</td>
</tr>
<tr>
<td>250</td>
<td>W42x1.25x32x9g</td>
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<tr>
<td>355</td>
<td>W42x1.25x32x9g</td>
</tr>
<tr>
<td>500</td>
<td>W55x1.25x42x9g</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>O-Ring (not included in supply)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>165x3 78SH A</td>
</tr>
<tr>
<td>71</td>
<td>0.39(10) 0.61(15.4) 0.71(18)</td>
</tr>
<tr>
<td>125</td>
<td>1.67(42.3) 1.77(45) 0.61(15.4) 0.71(18)</td>
</tr>
<tr>
<td>180</td>
<td>2.48(63) 2.48(63) 0.61(15.4) 0.71(18)</td>
</tr>
<tr>
<td>250</td>
<td>2.48(63) 2.48(63) 0.61(15.4) 0.71(18)</td>
</tr>
<tr>
<td>355</td>
<td>2.48(63) 2.48(63) 0.61(15.4) 0.71(18)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>O-Ring (included in supply)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>19.88(505) to face of pump mounting flange</td>
</tr>
<tr>
<td>71</td>
<td>20.47(520) to face of pump mounting flange</td>
</tr>
<tr>
<td>125</td>
<td>20.47(520) to face of pump mounting flange</td>
</tr>
<tr>
<td>180</td>
<td>20.47(520) to face of pump mounting flange</td>
</tr>
<tr>
<td>250</td>
<td>20.47(520) to face of pump mounting flange</td>
</tr>
<tr>
<td>355</td>
<td>20.47(520) to face of pump mounting flange</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>A₁₀</th>
<th>A₁₁</th>
<th>A₁₂_DIA (ø)</th>
<th>A₁₃_DIA (ø)</th>
<th>A₁₄_DIA (ø)</th>
<th>A₁₅_DIA (ø)</th>
<th>A₁₆</th>
<th>A₁₇</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>0.35(9)</td>
<td>0.39(10)</td>
<td>4.59(118)</td>
<td>4.1334(105)</td>
<td>3.84(97.6)</td>
<td>2.05(52)</td>
<td>1.73(44)</td>
<td>0.55(14)</td>
</tr>
<tr>
<td>71</td>
<td>0.35(9)</td>
<td>0.39(10)</td>
<td>5.12(130)</td>
<td>4.5665(116)</td>
<td>4.19(106.4)</td>
<td>2.48(63)</td>
<td>1.50(38)</td>
<td>0.63(16)</td>
</tr>
<tr>
<td>125</td>
<td>0.33(8.5)</td>
<td>0.39(10)</td>
<td>5.39(137)</td>
<td>4.8813(124)</td>
<td>4.57(116)</td>
<td>2.76(70)</td>
<td>1.81(46)</td>
<td>0.87(22)</td>
</tr>
<tr>
<td>180</td>
<td>0.33(8.5)</td>
<td>0.39(10)</td>
<td>5.39(137)</td>
<td>4.8813(124)</td>
<td>4.57(116)</td>
<td>2.76(70)</td>
<td>1.81(46)</td>
<td>0.87(22)</td>
</tr>
<tr>
<td>250</td>
<td>0.35(9)</td>
<td>0.39(10)</td>
<td>7.07(180)</td>
<td>6.4955(169)</td>
<td>6.18(157)</td>
<td>3.46(88)</td>
<td>2.52(64)</td>
<td>1.20(30.5)</td>
</tr>
<tr>
<td>355</td>
<td>0.35(9)</td>
<td>0.39(10)</td>
<td>7.07(180)</td>
<td>6.4955(169)</td>
<td>6.18(157)</td>
<td>3.46(88)</td>
<td>2.52(64)</td>
<td>1.34(34)</td>
</tr>
</tbody>
</table>
Variable displacement pump A4VSO, Series 1, 2, and 3

Flange SAE 101-2 (SAE B, 2-bolt); for mounting of gear pump G4 (see RA 10 042)

Ordering code K68

<table>
<thead>
<tr>
<th>Size of main pump</th>
<th>( A_1 )</th>
<th>( A_2 )</th>
<th>( A_3 )</th>
<th>( A_4 )</th>
<th>( A_5 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>11.42</td>
<td>0.41</td>
<td>0.39</td>
<td>1.85</td>
<td>M12</td>
</tr>
<tr>
<td>71</td>
<td>12.68</td>
<td>0.41</td>
<td>0.39</td>
<td>2.44</td>
<td>M12</td>
</tr>
<tr>
<td>125</td>
<td>13.98</td>
<td>0.39</td>
<td>0.35</td>
<td>1.93</td>
<td>M12; 0.59 (15) deep</td>
</tr>
<tr>
<td>180</td>
<td>14.61</td>
<td>0.41</td>
<td>0.39</td>
<td>1.93</td>
<td>M12; 0.71 (18) deep</td>
</tr>
<tr>
<td>500</td>
<td>19.88</td>
<td>0.41</td>
<td>0.39</td>
<td>3.07</td>
<td>M12</td>
</tr>
</tbody>
</table>

Pay attention to correct hydraulic fluid for mounting of gear pump (see RA 10 042)

Model list (short delivery times), in case of an order please state type and part no.

<table>
<thead>
<tr>
<th>Model</th>
<th>Ident. no.</th>
<th>Model</th>
<th>Ident. no.</th>
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<tbody>
<tr>
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<td>A4VSO180DFR/22R-PPB13N00 934730</td>
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<td>A4VSO40DR/10X-PPB13N00 955019</td>
<td>A4VSO180DR/22R-PPB13N00 934611</td>
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<td>A4VSO40DRG/10X-PPB13N00 901396</td>
<td>A4VSO180DRG/22R-PPB13N00 949541</td>
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<td>A4VSO40LR2/10R-PPB13N00 903578</td>
<td>A4VSO180LR2/22R-PPB13N00 939769</td>
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<td>A4VSO40LR2G/10R-PPB13N00 905023</td>
<td>A4VSO180LR2G/22R-PPB13N00 935375</td>
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<td>A4VSO71DFR/10X-PPB13N00 931535</td>
<td>A4VSO180DFR/22R-PPB13N00 934730</td>
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<td>A4VSO180DRG/22R-PPB13N00 949541</td>
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<td>A4VSO180LR2/22R-PPB13N00 939769</td>
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<tr>
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<tr>
<td>A4VSO125DFR/22R-PPB13N00 939924</td>
<td>A4VSO250DFR/30R-PPB13N00 985509</td>
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<tr>
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<tr>
<td>A4VSO125LR2/22R-PPB13N00 936376</td>
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<td>A4VSO250LR2N/30R-PPB13N00 978355</td>
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Variable displacement pump A4VSO, Series 1, 2, and 3

Notes