Model A4VSO
Axial piston, swashplate design
Sizes 40 to 250, Series 1 and 3
Nominal pressure up to 5100 PSI
Maximum pressure up to 5800 PSI
- 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
- Good power to weight ratio

Ordering Code

<table>
<thead>
<tr>
<th>Version</th>
<th>A4VSO</th>
<th>Size</th>
<th>Displ. Vg max</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAE</td>
<td></td>
<td>40</td>
<td>2.44 (40)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>71</td>
<td>4.33 (71)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>125</td>
<td>7.63 (125)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>180</td>
<td>10.9 (180)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>250</td>
<td>15.2 (250)</td>
</tr>
</tbody>
</table>

Control devices
- Pressure control = DR
- Remote pressure control = DRG
- Pressure and flow control = DFR

Series
- Series 10 =
- Series 30 =
- Series 31 =

Direction of rotation
As viewed from drive shaft – clockwise = R

Seals
Buna-N (NBR per DIN ISO 1629); shaft seal FPM (Fluorocarbon) = P

 Shaft end
SAE parallel keyed shaft = K

 Mounting flange
SAE 4-bolt = D

Service ports
Connections B and S; SAE on side 90° offset, UNC mounting bolts = 63
With dual outlet ports at 180°, one side with coverplate (250) = 75

Through drive
Without through drive, without auxiliary pump = N00
With universal through drive mount, with coverplate (250) = K99

Note: Limited selection of through-drive kits available to fit K99 pump.
- = not available
Please inquire with the Industrial Axial-Piston Product Group in Bethlehem. • = available
## Technical data

**Table of values** (theoretical values, without considering $h_{mh}$ and $h_v$; values rounded)

<table>
<thead>
<tr>
<th>Size</th>
<th>10</th>
<th>18</th>
<th>28</th>
<th>45</th>
<th>71</th>
<th>100</th>
<th>140</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Displacement</strong> $V_g$ max</td>
<td>in³</td>
<td>0.64</td>
<td>1.10</td>
<td>1.71</td>
<td>2.75</td>
<td>4.33</td>
<td>6.10</td>
</tr>
<tr>
<td></td>
<td>(cm³)</td>
<td>(10.5)</td>
<td>(18)</td>
<td>(28)</td>
<td>(45)</td>
<td>(71)</td>
<td>(100)</td>
</tr>
<tr>
<td><strong>Max. speed</strong> 1) at $V_g$ max $\rho_{o,\text{max}}$ rpm</td>
<td></td>
<td>3600</td>
<td>3300</td>
<td>3000</td>
<td>2600</td>
<td>2200</td>
<td>2000</td>
</tr>
<tr>
<td><strong>Max. permissible speed</strong> (speed limit) dependent on inlet pressure $\rho_{\text{abs}}$ or reduced displacement $V_g &lt; V_g$ max</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max. flow</strong> at $\rho_{\text{max}}$</td>
<td>gpm</td>
<td>9.77</td>
<td>15.7</td>
<td>22</td>
<td>31</td>
<td>41</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>(L/min)</td>
<td>(37)</td>
<td>(59.4)</td>
<td>(84)</td>
<td>(117)</td>
<td>(156)</td>
<td>(200)</td>
</tr>
<tr>
<td><strong>Max. flow</strong> at $n = 1800$ rpm $Q_o$ max</td>
<td>gpm</td>
<td>4.78</td>
<td>8.56</td>
<td>13.3</td>
<td>21.4</td>
<td>33.8</td>
<td>47.6</td>
</tr>
<tr>
<td></td>
<td>(L/min)</td>
<td>(18)</td>
<td>(32)</td>
<td>(50)</td>
<td>(81)</td>
<td>(128)</td>
<td>(180)</td>
</tr>
<tr>
<td><strong>Max. power</strong> at $\rho_{\text{max}}$</td>
<td>Hp</td>
<td>21</td>
<td>36.6</td>
<td>51</td>
<td>72</td>
<td>96</td>
<td>124</td>
</tr>
<tr>
<td></td>
<td>(kW)</td>
<td>(16)</td>
<td>(27.7)</td>
<td>(39)</td>
<td>(55)</td>
<td>(73)</td>
<td>(93)</td>
</tr>
<tr>
<td><strong>Max. power</strong> at $n = 1800$ rpm $P_o$ max</td>
<td>Hp</td>
<td>10</td>
<td>20</td>
<td>31</td>
<td>50</td>
<td>79</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>(kW)</td>
<td>(7.8)</td>
<td>(16)</td>
<td>(24)</td>
<td>(38)</td>
<td>(60)</td>
<td>(84)</td>
</tr>
<tr>
<td><strong>Max. Torque</strong> at $V_g$ max $T_{\text{max}}$ lb-ft</td>
<td></td>
<td>34</td>
<td>58.3</td>
<td>91</td>
<td>146</td>
<td>230</td>
<td>324</td>
</tr>
<tr>
<td></td>
<td>(Nm)</td>
<td>(46)</td>
<td>(80.1)</td>
<td>(125)</td>
<td>(200)</td>
<td>(316)</td>
<td>(445)</td>
</tr>
<tr>
<td><strong>Max. Torque</strong> at $V_g$ max $\Delta p = 4000$ PSI (280 bar) at $n = 1800$ rpm $T_{\text{max}}$ lb-ft</td>
<td></td>
<td>12.3</td>
<td>21.15</td>
<td>33</td>
<td>53</td>
<td>83</td>
<td>117</td>
</tr>
<tr>
<td></td>
<td>(Nm)</td>
<td>(16.7)</td>
<td>(28.7)</td>
<td>(45)</td>
<td>(72)</td>
<td>(113)</td>
<td>(159)</td>
</tr>
<tr>
<td><strong>Torque</strong> at $V_g$ max $\Delta p = 1500$ PSI (100 bar)</td>
<td></td>
<td></td>
<td>33</td>
<td>53</td>
<td>83</td>
<td>117</td>
<td>164</td>
</tr>
<tr>
<td><strong>Moment of inertia about drive axis</strong> $J$ lb-ft²</td>
<td>(kgm²)</td>
<td>0.014</td>
<td>0.022</td>
<td>0.0403</td>
<td>0.0783</td>
<td>0.1970</td>
<td>0.3963</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.0009)</td>
<td>(0.0017)</td>
<td>(0.0033)</td>
<td>(0.0083)</td>
<td>(0.0167)</td>
<td>(0.0242)</td>
</tr>
<tr>
<td><strong>Filling volume (case)</strong></td>
<td>gal</td>
<td>0.05</td>
<td>0.1</td>
<td>0.2</td>
<td>0.26</td>
<td>0.4</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>(L)</td>
<td>(0.2)</td>
<td>(0.4)</td>
<td>(0.7)</td>
<td>(1.0)</td>
<td>(1.6)</td>
<td>(2.2)</td>
</tr>
<tr>
<td><strong>Approx. weight (without fluid)</strong></td>
<td>lbs.</td>
<td>17.6</td>
<td>26.5</td>
<td>33</td>
<td>46</td>
<td>73</td>
<td>99</td>
</tr>
<tr>
<td></td>
<td>(kg)</td>
<td>(8)</td>
<td>(12)</td>
<td>(15)</td>
<td>(21)</td>
<td>(33)</td>
<td>(45)</td>
</tr>
<tr>
<td><strong>Max. force on drive force</strong></td>
<td></td>
<td>90</td>
<td>157</td>
<td>225</td>
<td>337</td>
<td>540</td>
<td>900</td>
</tr>
<tr>
<td></td>
<td>(N)</td>
<td>(400)</td>
<td>(700)</td>
<td>(1000)</td>
<td>(1500)</td>
<td>(2400)</td>
<td>(4000)</td>
</tr>
<tr>
<td><strong>Max. permissible axial force</strong> $F_{ax}$ max</td>
<td>lbs.f.</td>
<td>56</td>
<td>79</td>
<td>270</td>
<td>337</td>
<td>427</td>
<td>517</td>
</tr>
<tr>
<td></td>
<td>(N)</td>
<td>(250)</td>
<td>(350)</td>
<td>(1200)</td>
<td>(1500)</td>
<td>(1900)</td>
<td>(2300)</td>
</tr>
</tbody>
</table>

- **Model A10VSO**
- Axial piston, swashplate design
- Sizes 18 to 140, Series 31; Size 10, Series 52
- Nominal pressure up to 4000 PSI (Sizes 10 & 18 up to 3600 PSI)
- Maximum pressure up to 5100 PSI (Sizes 10 and 18 up to 4600 PSI)
- SAE mounting flange and shaft
- Flange connections SAE
- 2 case drain connections
- Good suction characteristics
- Permissible continuous operating pressure 4000 psi (280 bar)
- Low noise level
- Long service life
- Axial and radial loading of drive shaft possible
- High power/weight ratio
- Wide range of controls available
- Short response times
- Optional through drive for combination pumps

---

**Variable Displacement Pump for Open Circuits Model A10VSO**

- Technically advanced with variable displacement
- Optimized for positive displacement of flows
- High power/weight ratio
- Wide range of controls available
- Short response times
- Optional through drive for combination pumps
### Variable Displacement Pump for Open Circuits
#### Model A10VSO

**Ordering Code**

<table>
<thead>
<tr>
<th>(A)A10VSO</th>
<th>/</th>
<th>31</th>
<th>R</th>
<th>-</th>
<th>P</th>
<th>K</th>
</tr>
</thead>
</table>

**Axial piston unit**
- Swashplate design, variable displ.
- Industrial design = A10VSO

**Size**
- 10 18 28 45 71 100 140

**Displ.**
- \( \text{in}^3/\text{rev} \) 0.64 1.10 1.71 2.75 4.33 6.10 8.54
- \( \text{cm}^3/\text{rev} \) 10.5 16.8 28 45 71 100 140

**Control devices**
- Pressure control = DR
- Remote pressure control = DRG
- Pressure and flow control = DFR

**Sizes**
- 18 to 140 = 31
- 10 = 52

**Direction of rotation**
- As viewed from drive shaft – clockwise = R

**Seals**
- Buna-N (NBR per DIN ISO 1629); shaft seal FPM (Fluorocarbon) = P

**Shaft**
- SAE parallel keyed shaft

**Mounting flange**
- SAE 2-hole: *
- SAE 4-hole: *
- SAE 2-hole: *
- SAE 4-hole: *

**Service ports**
- Ports B and S;
- Opposite side ports, SAE flange, standard series, UNF straight thread O-ring ports rear: *
- Through drive:
  - Without through drive: *

**Mounting flange**
- For mounting:

<table>
<thead>
<tr>
<th>(A)A10VSO</th>
<th>/</th>
<th>31</th>
<th>R</th>
<th>-</th>
<th>P</th>
<th>K</th>
</tr>
</thead>
</table>

- SAE A, 2-bolt: keyed SAE A-B
  - AA10VSO 18: *
  - AA10VSO 28: *
  - AA10VSO 45: *
  - AA10VSO 71: *
  - AA10VSO 100: *
  - AA10VSO 140: *
  - SAE A, 2-bolt: splined shaft 5/8", SAE A
    - G2, GC2/3, A10VO 18: *
    - G2, GC2/3, A10VO 28: *
    - G2, GC2/3, A10VO 45: *
  - SAE B, 2-bolt: splined shaft 7/8", SAE B
    - G3, A10VO 28: *
    - G3, A10VO 45: *
  - SAE C, 2-bolt: splined shaft 1", SAE C
    - G4, A10VO 71: *
  - SAE C, 2-bolt: splined shaft 1 1/4", SAE C
    - G4, A10VO 71: *
  - SAE C, 2-bolt: splined shaft 1 1/2", SAE C
    - A10VO 100, GC6: *
  - SAE D, 2-bolt: splined shaft 1 3/4", SAE D
    - A10VO 140: *

\( = \) not available  \( * = \) available