Load sensing hydraulic system

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Load sensing hydraulic system

Sauer-Danfoss Series 45 pumps and PVG proportional valves are a perfect combination for optimized, low noise, highly responsive hydraulic systems. Both products work together using the load sensing principle for maximum efficiency and conservation of energy. Load sensing controls match pump outlet flow with system demand. This increases efficiency and life over pressure compensated systems. State of the art machinery requires highly efficient hydraulics to reduce fuel consumption, engine emissions, and heat dissipation.

System features:
- For open circuits
- Load sensing and pressure compensated flow controls
- Perfect combination with Sauer-Danfoss PVG valves
- Designed to lower installation costs

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### Key features and benefits:

- High efficiency
- High reliability
- Variety of control system options
- Simple, compact design
- Low noise level
- Through-drives capability for multi-circuit systems
- Range of mounting flanges, shafts and porting options for ease of installation

Series 45 today covers 5 frames (L, K, J, E and F) with a total of 14 displacements from 25 cm³/rev to 147 cm³/rev [from 1.53 in³/rev to 8.97 in³/rev]. Each single displacement is optimized for a continuous pressure rating.

**Type code in the example below:**

<table>
<thead>
<tr>
<th>Pressure rating</th>
<th>Maximum displacement (cm³/rev [in³/rev])</th>
<th>Pump design type</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>25 [1.53]</td>
<td>L25C</td>
</tr>
<tr>
<td>300</td>
<td>30 [1.83]</td>
<td>L30D</td>
</tr>
<tr>
<td>350</td>
<td>35 [2.11]</td>
<td>K38C</td>
</tr>
<tr>
<td>400</td>
<td>40 [2.44]</td>
<td>K45D</td>
</tr>
<tr>
<td>450</td>
<td>45 [2.75]</td>
<td>F74B</td>
</tr>
<tr>
<td>500</td>
<td>50 [3.05]</td>
<td>F90C</td>
</tr>
<tr>
<td>600</td>
<td>60 [3.66]</td>
<td>J60BJ51B</td>
</tr>
<tr>
<td>700</td>
<td>70 [4.27]</td>
<td>J45B</td>
</tr>
<tr>
<td>800</td>
<td>80 [4.88]</td>
<td>J65C</td>
</tr>
<tr>
<td>900</td>
<td>90 [5.49]</td>
<td>J75C</td>
</tr>
<tr>
<td>1000</td>
<td>100 [6.10]</td>
<td>J90C</td>
</tr>
<tr>
<td>1100</td>
<td>110 [6.71]</td>
<td>J100B</td>
</tr>
<tr>
<td>1200</td>
<td>120 [7.32]</td>
<td>J120B</td>
</tr>
<tr>
<td>1300</td>
<td>130 [7.93]</td>
<td>J130B</td>
</tr>
<tr>
<td>1400</td>
<td>140 [8.54]</td>
<td>J140B</td>
</tr>
<tr>
<td>1500</td>
<td>150 [9.15]</td>
<td>J150B</td>
</tr>
</tbody>
</table>

**Frame L**

- Displacement (cm³/rev [in³/rev]): 25 [1.53]
- Maximum pressure (bar [psi]): 350 [5075]
- Continuous pressure (bar [psi]): 260 [3771]
- Speed (min⁻¹ [rpm]): 3200
- Theoretical flow (l/min [US gal/min]): 80 [21.1]
- Weight (kg [lb]): 19 [41.9]
- Axial port dimensions (mm [in]): 314.9 [12.398]
- Radial port dimensions (mm [in]): 275 [10.827]

**Frame K**

- Displacement (cm³/rev [in³/rev]): 30 [1.83]
- Maximum pressure (bar [psi]): 300 [4350]
- Continuous pressure (bar [psi]): 210 [3046]
- Speed (min⁻¹ [rpm]): 3200
- Theoretical flow (l/min [US gal/min]): 96 [25.4]
- Weight (kg [lb]): 22 [48.5]
- Axial port dimensions (mm [in]): 302.7 max [11.92]
- Radial port dimensions (mm [in]): 196 [7.72]

**Frame J**

- Displacement (cm³/rev [in³/rev]): 38 [2.32]
- Maximum pressure (bar [psi]): 350 [5075]
- Continuous pressure (bar [psi]): 260 [3771]
- Speed (min⁻¹ [rpm]): 2650
- Theoretical flow (l/min [US gal/min]): 100.7 [26.6]
- Weight (kg [lb]): 29 [63.9]
- Axial port dimensions (mm [in]): 304 [11.969]
- Radial port dimensions (mm [in]): 201 [7.91]

**Frame F**

- Displacement (cm³/rev [in³/rev]): 45 [2.75]
- Maximum pressure (bar [psi]): 400 [5800]
- Continuous pressure (bar [psi]): 260 [3771]
- Speed (min⁻¹ [rpm]): 2800
- Theoretical flow (l/min [US gal/min]): 119.2 [31.5]
- Weight (kg [lb]): 51.3 [113]
- Axial port dimensions (mm [in]): 314.9 [12.398]
- Radial port dimensions (mm [in]): 198.8 [7.83]

**Frame E**

- Displacement (cm³/rev [in³/rev]): 51 [3.11]
- Maximum pressure (bar [psi]): 400 [5800]
- Continuous pressure (bar [psi]): 260 [3771]
- Speed (min⁻¹ [rpm]): 2700
- Theoretical flow (l/min [US gal/min]): 137.7 [36.4]
- Weight (kg [lb]): 54.9 [121]
- Axial port dimensions (mm [in]): 302.7 max [11.92]
- Radial port dimensions (mm [in]): 198.8 [7.83]

This chart shows how the displacements are arranged with respect to pressure rating.

For more information, see Sauer-Danfoss publication Series 45, Technical Information, BLN-10128/520L0519.
Load sensing hydraulic system

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System features:
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- Load sensing and pressure compensated flow controls
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- Designed to lower installation costs

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- Hydrostatic transmissions
- Hydraulic power steering
- Electric power steering
- Electrohydodynamic power steering
- Closed and open circuit axial piston pumps and motors
- Gear pumps and motors
- Best ax motors
- Orbital motors
- Transit mixer drives
- Planetary compact gears
- Proportional valves
- Directional speed valves
- Cartridge valves
- Hydraulic integrated circuits
- Hydrostatic transaxles
- Integrated systems
- Fan drive systems
- Electrohydraulics
- Microcontrollers and software
- Electric motors and inverters
- Joysticks and control handles
- Displays
- Sensors

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For open circuits

Load sensing and pressure compensated flow controls

Perfect combination with Sauer-Danfoss PVG valves

Designed to lower installation costs
### Technical data

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For more information, see Sauer-Danfoss publication Series 45, Technical Information, BLN-10128/520L0519.

#### Displacement

<table>
<thead>
<tr>
<th>Frame</th>
<th>Displacement (cm³/rev)</th>
<th>Maximum pressure (bar)</th>
<th>Continuous pressure (bar)</th>
<th>Speed (min⁻¹)</th>
<th>Theoretical flow (l/min)</th>
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<tbody>
<tr>
<td>L</td>
<td>25 (1.53)</td>
<td>350 (5075)</td>
<td>260 (3771)</td>
<td>3200</td>
<td>80 (21.1)</td>
</tr>
<tr>
<td>K</td>
<td>30 (1.83)</td>
<td>300 (4350)</td>
<td>210 (3046)</td>
<td>3200</td>
<td>96 (25.4)</td>
</tr>
<tr>
<td>J</td>
<td>38 (2.32)</td>
<td>350 (5075)</td>
<td>210 (3046)</td>
<td>2650</td>
<td>100.7 (26.6)</td>
</tr>
<tr>
<td>E</td>
<td>45 (2.75)</td>
<td>400 (5800)</td>
<td>310 (4496)</td>
<td>2800</td>
<td>119.2 (31.5)</td>
</tr>
<tr>
<td>F</td>
<td>45 (2.75)</td>
<td>400 (5800)</td>
<td>310 (4496)</td>
<td>2700</td>
<td>126 (33.3)</td>
</tr>
<tr>
<td>J</td>
<td>51 (3.11)</td>
<td>400 (5800)</td>
<td>310 (4496)</td>
<td>2600</td>
<td>137.7 (36.4)</td>
</tr>
<tr>
<td>J</td>
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<td>350 (5075)</td>
<td>260 (3771)</td>
<td>2500</td>
<td>156 (41.2)</td>
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<tr>
<td>J</td>
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<td>350 (5075)</td>
<td>260 (3771)</td>
<td>2400</td>
<td>162.6 (42.9)</td>
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<td>J</td>
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<td>260 (3771)</td>
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<td>180 (47.5)</td>
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<td>310 (4496)</td>
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<td>177.6 (47.4)</td>
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<tr>
<td>F</td>
<td>90 (5.49)</td>
<td>400 (5800)</td>
<td>310 (4496)</td>
<td>2100</td>
<td>198 (52.8)</td>
</tr>
<tr>
<td>E</td>
<td>100 (6.1)</td>
<td>350 (5075)</td>
<td>310 (4496)</td>
<td>2000</td>
<td>245 (64.7)</td>
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<tr>
<td>E</td>
<td>130 (7.93)</td>
<td>350 (5075)</td>
<td>310 (4496)</td>
<td>1900</td>
<td>286 (75.6)</td>
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<td>E</td>
<td>147 (8.97)</td>
<td>350 (5075)</td>
<td>310 (4496)</td>
<td>1800</td>
<td>308 (81.4)</td>
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#### Weight

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<th>Frame</th>
<th>Axial</th>
<th>Radial</th>
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<tbody>
<tr>
<td>L</td>
<td>19 [41.9]</td>
<td>24 [52.9]</td>
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<tr>
<td>K</td>
<td>22 [48.5]</td>
<td>25 [55.1]</td>
</tr>
<tr>
<td>J</td>
<td>29 [63.9]</td>
<td>36 [79.4]</td>
</tr>
<tr>
<td>E</td>
<td>51.3 [113]</td>
<td>54.9 [121]</td>
</tr>
</tbody>
</table>

#### Axial port dimensions

<table>
<thead>
<tr>
<th>Frame</th>
<th>mm [in]</th>
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</thead>
<tbody>
<tr>
<td>L</td>
<td>314.9 [12.398]</td>
</tr>
<tr>
<td>K</td>
<td>275 [10.827]</td>
</tr>
<tr>
<td>J</td>
<td>302.7 max [11.92]</td>
</tr>
<tr>
<td>E</td>
<td>314.9 [12.398]</td>
</tr>
<tr>
<td>F</td>
<td>304 [11.969]</td>
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</table>

#### Radial port dimensions

<table>
<thead>
<tr>
<th>Frame</th>
<th>mm [in]</th>
</tr>
</thead>
<tbody>
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<td>L</td>
<td>155.2 [6.1]</td>
</tr>
<tr>
<td>K</td>
<td>62 [2.45]</td>
</tr>
<tr>
<td>J</td>
<td>121.9 [4.8]</td>
</tr>
<tr>
<td>E</td>
<td>175.1 [6.9]</td>
</tr>
<tr>
<td>F</td>
<td>155.2 [6.1]</td>
</tr>
<tr>
<td>L</td>
<td>190 [7.48]</td>
</tr>
<tr>
<td>K</td>
<td>207 [8.15]</td>
</tr>
<tr>
<td>J</td>
<td>178.2 [7.016]</td>
</tr>
<tr>
<td>E</td>
<td>257.8 [10.15]</td>
</tr>
<tr>
<td>F</td>
<td>239.8 [9.44]</td>
</tr>
<tr>
<td>L</td>
<td>262.24 [10.324]</td>
</tr>
<tr>
<td>K</td>
<td>256.4 [10.09]</td>
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<tr>
<td>J</td>
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<td>E</td>
<td>262.24 [10.324]</td>
</tr>
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<td>F</td>
<td>256.04 [10.08]</td>
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<tr>
<td>L</td>
<td>160.2 [6.3]</td>
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<tr>
<td>K</td>
<td>160.6 [6.323]</td>
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<tr>
<td>J</td>
<td>211.8 [8.339]</td>
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<tr>
<td>E</td>
<td>239.74 [9.44]</td>
</tr>
<tr>
<td>F</td>
<td>156.28 [6.15]</td>
</tr>
</tbody>
</table>

#### Series 45 pump type example:

- L 25 C  
- Pressure rating: 350 bar (5075 psi)  
- Maximum displacement: 25 cm³/rev (1.53 in³/rev)  
- Pump design type: C

**Note:**  
For more information, see the series 45 pump data sheet.
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- Axial piston pumps
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- Cartridge valves
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- Hydrostatic transmissions
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