Technical brochure

Double stop valves
Type DSV 1 and DSV 2

DSV 1 and DSV 2 are 3-way valves, which are designed to meet all industrial refrigeration application requirements.

DSV valves are designed specifically for use with double safety valve systems.

The valves are designed to give favourable flow characteristics and are easy to dismantle for servicing. The valve cone is designed to ensure perfect closing, even with minimum torque the valve will close effectively. All valves are equipped with vented cap and nipple/flange connections, which permit easy inspection or replacement of safety valves.

Features

- Applicable to HCFC, non flammable HFC, R717 (Ammonia) and R744 (CO₂).
- Each valve type is clearly marked with type, size and performance range.
- The valves and caps are prepared for sealing, to prevent operation by unauthorised persons, using a seal wire.
- Can accept flow in both directions.
- Housing and bonnet are made from low temperature steel according to requirements of the Pressure Equipment Directive and other international classification authorities.
- Max. operating pressure: DSV 1 and DSV 2: 40 bar g (580 psi g)

Temperature range:

DSV 1 and DSV 2: -50/+100°C (-58/+212°F)

DSV 1 when fitted with 2 x SFA 15 or DSV 2 when fitted with a combination of either 2 x SFA 15, or 2 x SFV 20, or 2 x SFV 25, meet the requirements according to EN13136 “Safety Valves Calculations” regarding max. 3% pressure drop in upstream line.

Classification:

To get an updated list of certification on the products please contact your local Danfoss Sales Company.

Pressure Equipment Directive (PED)

DSV valves are approved and CE-marked in accordance with Pressure Equipment Directive - 97/23/EC.

For further details / restrictions - see Installation Instruction.

<table>
<thead>
<tr>
<th>Nominal bore</th>
<th>DSV 1 valves</th>
<th>DSV 2 valves</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN ≤ 25 mm (1 in.)</td>
<td>DN32 mm (1¼ in.)</td>
<td></td>
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</table>

Classified for

Fluid group I

Category

Article 3, paragraph 3
Double stop valves, type DSV 1 and DSV 2

Design

Connections
Available with the following connections: - Weld branch/nipples/flanges - DIN 2448
Note: DSV valves are supplied c/w DSV inlet connection fittings, DSV outlet connection fittings, and SFA/SFV outlet connection fittings. Please refer to ordering section.

Housing and bonnet
Made from special, cold resistant steel approved for low temperature operation.

Valve cone
A Teflon tightening ring provides perfect sealing with a minimum closing torque.

Technical data

Refrigerants
Applicable to HCFC, non flammable HFC, R717 (Ammonia) and R744 (CO₂).
Flammable hydrocarbons are not recommended.
The valve is only recommended for use in closed circuits.

For further information please contact Danfoss.

Temperature range
–50/+100°C (–58/+212°F).

Pressure
The valves are designed for:
Max. operating pressure: 40 bar g (580 psig)

Capacity

<table>
<thead>
<tr>
<th>Type</th>
<th>K-v value</th>
<th>C-v value</th>
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<tbody>
<tr>
<td></td>
<td>m³/h</td>
<td>Usgal/min</td>
</tr>
<tr>
<td>DSV 1</td>
<td>17.5</td>
<td>20.3</td>
</tr>
<tr>
<td>DSV 2</td>
<td>30.0</td>
<td>34.8</td>
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Spindle
Made of polished stainless steel, which is ideal for O-ring sealing.

Packing gland
The “full temperature range” packing gland ensures perfect tightness in the whole temperature range: –50/+100°C (–58/+212°F).
The packing gland is equipped with a scraper ring to prevent penetration of dirt and other foreign bodies.

Installation
DSV are used as changeover valves between two SFA/SFV safety valves. When the spindle is turned clockwise (fig. 1) the inlet port C is connected to B. When the spindle is turned anticlockwise (fig. 1) the inlet port C is connected to A. For further information refer to installation instruction for DSV.

Fig. 1
### Material specification

#### DSV 1

<table>
<thead>
<tr>
<th>No.</th>
<th>Part</th>
<th>Material</th>
<th>DIN/EN</th>
<th>ISO</th>
<th>ASTM</th>
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<tbody>
<tr>
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<td>Housing</td>
<td>Steel</td>
<td>P285QH, EN10222-4</td>
<td>LF2A350</td>
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</tr>
<tr>
<td>2</td>
<td>Bonnet</td>
<td>Steel</td>
<td>P285QH, EN10222-4</td>
<td>LF2A350</td>
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<tr>
<td>3</td>
<td>Spindle</td>
<td>Stainless steel</td>
<td>X10CrNiS 18 9 17440</td>
<td>Type 17 683/13</td>
<td>AISI 303</td>
</tr>
<tr>
<td>4</td>
<td>Seat</td>
<td>Steel</td>
<td>9 SMn28, 1651</td>
<td>Type 2, R683/9</td>
<td>1213, SAEJ 403</td>
</tr>
<tr>
<td>5</td>
<td>Cone, Middle</td>
<td>Steel</td>
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<td>1213, SAEJ 403</td>
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<tr>
<td>6</td>
<td>Cone, Back</td>
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<td>7</td>
<td>Cone, Front</td>
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<td>9 SMn28, 1651</td>
<td>Type 2, R683/9</td>
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<tr>
<td>8</td>
<td>Cone seal</td>
<td>Teflon (PTFE)</td>
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<tr>
<td>9</td>
<td>Packing gland</td>
<td>Steel</td>
<td>95Mn28, 1651</td>
<td>Type 2, R683/9</td>
<td>1213, SAE J403</td>
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<tr>
<td>13-17</td>
<td>O-ring</td>
<td>Chloroprene (Neoprene)</td>
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<tr>
<td>20</td>
<td>Slotted nut</td>
<td>Steel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Screw</td>
<td>Steel</td>
<td>A2-70</td>
<td>A2-70</td>
<td>Type 308</td>
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<tr>
<td>22</td>
<td>Seal cap</td>
<td>Aluminium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Gasket for seal cap</td>
<td>Nylon</td>
<td></td>
<td></td>
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<tr>
<td>24</td>
<td>Identification ring</td>
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### Material specification

#### DSV 2

<table>
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<tr>
<td>3</td>
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<td>Type 17 683/13</td>
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<td>1213, SAEJ 403</td>
</tr>
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<td>Steel</td>
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<td>Type 2, R683/9</td>
<td>1213, SAEJ 403</td>
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<tr>
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<tr>
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<td>Cone, Front</td>
<td>Steel</td>
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<td>Teflon (PTFE)</td>
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<td>Packing gland</td>
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<tr>
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<td>Gasket for seal cap</td>
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<tr>
<td>24</td>
<td>Identification ring</td>
<td>Stainless steel</td>
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</table>
Dimensions and weights for double safety valve systems

### DSV 1 + SFA 15

<table>
<thead>
<tr>
<th>Valve size</th>
<th>DN</th>
<th>ØOD</th>
<th>ØOD1</th>
<th>T</th>
<th>T1</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>Weight</th>
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<tbody>
<tr>
<td>DSV 1</td>
<td>25</td>
<td>33.7</td>
<td>26.9</td>
<td>2.6</td>
<td>2.3</td>
<td>339</td>
<td>174</td>
<td>50</td>
<td>40</td>
<td>82.5</td>
<td>80</td>
<td>4.55 kg</td>
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<tr>
<td></td>
<td>1</td>
<td>1.33</td>
<td>1.06</td>
<td>0.10</td>
<td>0.09</td>
<td>13.35</td>
<td>6.85</td>
<td>1.97</td>
<td>1.58</td>
<td>3.25</td>
<td>3.15</td>
<td>10.03 lb</td>
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</table>

### DSV 2 + SFA 15

<table>
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<th>Valve size</th>
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<th>T</th>
<th>T1</th>
<th>ØD</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSV 2</td>
<td>20</td>
<td>26.9</td>
<td>26.9</td>
<td>2.3</td>
<td>2.3</td>
<td>82.5</td>
<td>351</td>
<td>186</td>
<td>73.5</td>
<td>10</td>
<td>82.5</td>
<td>80</td>
<td>9.3 kg</td>
</tr>
<tr>
<td></td>
<td>¾</td>
<td>1.06</td>
<td>1.06</td>
<td>0.09</td>
<td>0.09</td>
<td>3.25</td>
<td>13.82</td>
<td>7.32</td>
<td>2.89</td>
<td>0.39</td>
<td>3.25</td>
<td>3.15</td>
<td>20.5 lb</td>
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</table>

### DSA 15

<table>
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<th>ØOD1</th>
<th>T</th>
<th>T1</th>
<th>ØD</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSV 2</td>
<td>25</td>
<td>33.7</td>
<td>26.9</td>
<td>2.6</td>
<td>2.3</td>
<td>82.5</td>
<td>351</td>
<td>186</td>
<td>73.5</td>
<td>10</td>
<td>82.5</td>
<td>80</td>
<td>9.3 kg</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1.33</td>
<td>1.06</td>
<td>0.10</td>
<td>0.09</td>
<td>3.25</td>
<td>13.82</td>
<td>7.32</td>
<td>2.89</td>
<td>0.39</td>
<td>3.25</td>
<td>3.15</td>
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### DSA 15

<table>
<thead>
<tr>
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<th>DN</th>
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<th>ØOD1</th>
<th>T</th>
<th>T1</th>
<th>ØD</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>DSV 2</td>
<td>32</td>
<td>42.4</td>
<td>26.9</td>
<td>2.6</td>
<td>2.3</td>
<td>82.5</td>
<td>351</td>
<td>186</td>
<td>73.5</td>
<td>10</td>
<td>82.5</td>
<td>80</td>
<td>9.3 kg</td>
</tr>
<tr>
<td></td>
<td>1¼</td>
<td>1.67</td>
<td>1.06</td>
<td>0.10</td>
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<td>3.25</td>
<td>13.82</td>
<td>7.32</td>
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<td>0.39</td>
<td>3.25</td>
<td>3.15</td>
<td>20.5 lb</td>
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</table>

Specified weights (incl. all fittings and excl. SFA / SFV) are approximate values only.
Double stop valves, type DSV 1 and DSV 2

Dimensions and weights for double safety valve systems

<table>
<thead>
<tr>
<th>Valve size</th>
<th>DN</th>
<th>ØOD</th>
<th>ØOD1</th>
<th>T</th>
<th>T1</th>
<th>D</th>
<th>D1</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>Weight</th>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSV 2</td>
<td>25</td>
<td>33.7</td>
<td>33.7</td>
<td>2.6</td>
<td>2.6</td>
<td>82.5</td>
<td>82.5</td>
<td>412</td>
<td>197</td>
<td>73.5</td>
<td>10</td>
<td>85</td>
<td>80</td>
<td>11.9 kg</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1.33</td>
<td>1.33</td>
<td>0.10</td>
<td>0.10</td>
<td>3.25</td>
<td>3.25</td>
<td>16.22</td>
<td>7.76</td>
<td>2.89</td>
<td>0.39</td>
<td>3.35</td>
<td>3.15</td>
<td>26.23 lb</td>
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<td>SFV 20</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>DSV 2</td>
<td>32</td>
<td>42.4</td>
<td>33.7</td>
<td>2.6</td>
<td>2.6</td>
<td>82.5</td>
<td>82.5</td>
<td>412</td>
<td>197</td>
<td>73.5</td>
<td>10</td>
<td>85</td>
<td>80</td>
<td>11.9 kg</td>
</tr>
<tr>
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<td>1¼</td>
<td>1.67</td>
<td>1.33</td>
<td>0.10</td>
<td>0.10</td>
<td>3.25</td>
<td>3.25</td>
<td>16.22</td>
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<td>412</td>
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<td>85</td>
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<td>1.67</td>
<td>0.10</td>
<td>0.10</td>
<td>3.25</td>
<td>3.25</td>
<td>16.22</td>
<td>7.76</td>
<td>2.89</td>
<td>0.39</td>
<td>3.35</td>
<td>3.15</td>
<td>26.23 lb</td>
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Specified weights (incl. all fittings and excl. SFA / SFV) are approximate values only.
### Dimensions and weights

**DSV 1**

<table>
<thead>
<tr>
<th>Valve size</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>B₁ (mm)</th>
<th>C (mm)</th>
<th>ØOD (mm)</th>
<th>E (mm)</th>
<th>ØF (mm)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSV 1</td>
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<td>56</td>
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<td>255</td>
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**DSV 2**

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<th>A (mm)</th>
<th>B (mm)</th>
<th>B₁ (mm)</th>
<th>C (mm)</th>
<th>ØOD (mm)</th>
<th>E (mm)</th>
<th>ØF (mm)</th>
<th>Weight (kg)</th>
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<tbody>
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<td>DSV 2</td>
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<td>70</td>
<td>82.5</td>
<td>281</td>
<td>77</td>
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Specified weights are approximate values only.
Double stop valves, type DSV 1 and DSV 2

Ordering

How to order
The table below is used to identify the valve required.

Please note that the type codes only serve to identify the valves, some of which may not form part of the standard product range. For further information please contact your local Danfoss Sales Company.

Example

DSV 2 FD20 SFA15 = 148F3006

DSV2 = Valve type
FD20 = DSV inlet connection
SFA15 = Safety valve combination

Important!
Where products need to be certified according to specific certification societies or where higher pressures are required, the relevant information should be included at the time of order.

Fittings and gaskets

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<tr>
<th>Type</th>
<th>Code No.</th>
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</tr>
<tr>
<td>Flanges + gaskets set for FD20/ND20 DSV2/SFA 15</td>
<td>148F3038</td>
</tr>
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<td>Flanges + gaskets set for FD25/ND20 DSV2/SFA 15</td>
<td>148F3039</td>
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