

Data Sheet

# Change-over valve Type **DSV 10**, **DSV 1** and **DSV 2**

Highly reliable safety valves provides  
lower capacity and more flexibility



DSV 10, DSV 1 and DSV 2 are change-over 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 (CO<sub>2</sub>)
- 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 10: 65 bar (943 psig)
  - DSV 1 and DSV 2: 40 bar (580 psig)
- Temperature range:
  - Temperature range: DSV 10, DSV 1 and DSV 2: -50 °C to 100 °C (-58 °F to 212 °F)
- **DSV 10** when fitted with 2 x SFA 10/SFA 10H or **DSV 1** when fitted with 2 x SFA 15/BSV 8 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: EAC etc. To get an updated list of certification on the products please contact your local Danfoss Sales Company

## Media

### **Refrigerants**

Applicable to HCFC, non flammable HFC, R717 (Ammonia) and R744 (CO<sub>2</sub>). Flammable hydrocarbons are not recommended. The valve is only recommended for use in closed circuits.

For further information please contact Danfoss.

### **New refrigerants**

Danfoss products are continually evaluated for use with new refrigerants depending on market requirements.

When a refrigerant is approved for use by Danfoss, it is added to the relevant portfolio, and the R number of the refrigerant (e.g. R513A) will be added to the technical data of the code number. Therefore, products for specific refrigerants are best checked at [store.danfoss.com/en/](https://store.danfoss.com/en/), or by contacting your local Danfoss representative.

**Product specification**

**Design**

**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.

**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 °C to 100 °C (-58 °F to 212 °F). The packing gland is equipped with a scraper ring to prevent penetration of dirt and other foreign bodies.

**Pressure and temperature**

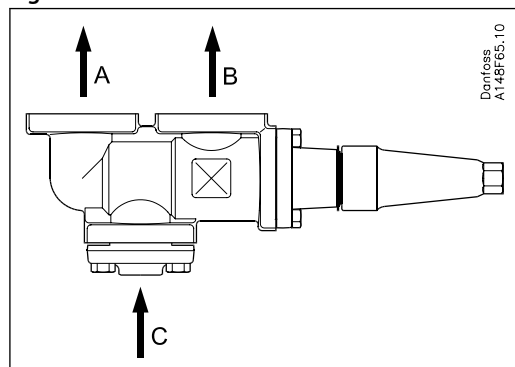
Table 1: Pressure and temperature

Description	Values
Temperature range	-50 °C to 100 °C (-58 °F to 212 °F)
Max. operating pressure	DSV 10: 65 bar (942 psig) DSV 1 and 2: 40 bar (580 psig)

**Installation**

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

Figure 1: Flow sketch



## Material specification

### DSV 10

Figure 2: DSV 10

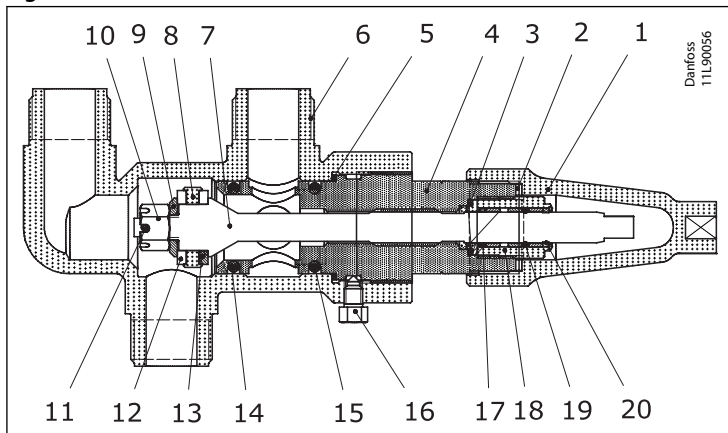
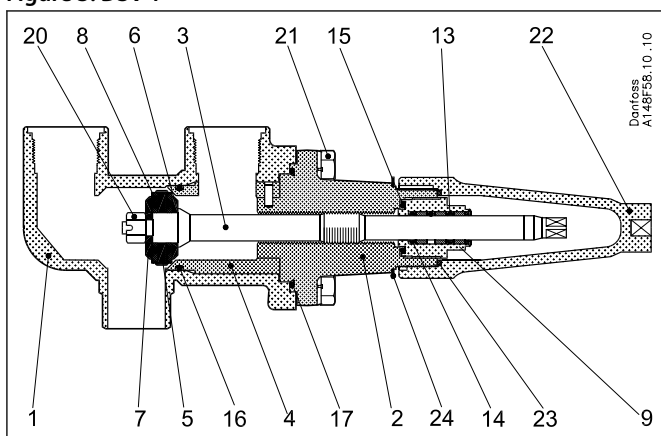


Table 2: DSV 10

No.	Part	Material	DIN/EN	ISO	ASTM
1	Cap	Aluminum			
2	Cap gasket	Nylon			
3	Gasket for packing gland	Aluminum			
4	Bonnet insert	Steel	P285QH, EN10222-4		LF2A350
5	Gasket for bonnet	Aluminum			
6	Housing	Steel	G20Mn5QT, EN10231		
7	Spindle	Stainless steel	X10CrNiS18-9, EN17440	Type 2, R683/13	AISI 303
8	Cone, Middle	Steel	11SMn30, EN10087		
9	Cone, Front	Steel	9 SMn28	Type 2, R683/9	1213, SEAJ 403
10	Slotted nut	Steel			
11	Slotted pin	Steel			
12,13	Cone seal	Teflon (PTFE)			
14,15,19	O ring	Chloroprene (Neoprene)			
16	Screw	Steel			
17	Flexiseal	Teflon+stainless steel			
18	Packing gland body	Stainless steel	X8CrNiS18-9, EN10088-3		AISI 303
20	Scraper ring	Nylon			

### DSV 1

Figure 3: DSV 1



## Change-over valve, Type DSV 10, DSV 1 and DSV 2

Table 3: DSV 1

No.	Part	Material	DIN/EN	ISO	ASTM
1	Housing	Steel	P285QH, EN10222-4		LF2A350
2	Bonnet	Steel	P285QH, EN10222-4		LF2A350
3	Spindle	Stainless steel	X10CrNiS 18 9 17440	Type 17, 683/13	AISI 303
4	Seat	Steel	9 SMn28, 1651	Type 2, R683/9	1213, SAEJ 403
5	Cone, Middle	Steel	9 SMn28, 1651	Type 2, R683/9	1213, SAEJ 403
6	Cone, Back	Steel	9 SMn28, 1651	Type 2, R683/9	1213, SAEJ 403
7	Cone, Front	Steel	9 SMn28, 1651	Type 2, R683/9	1213, SAEJ 403
8	Cone seal	Teflon (PTFE)			
9	Packing gland	Steel	9 SMn28, 1651	Type 2, R683/9	1213,SAEJ 403
13, 15-17	O-ring	Chloroprene (Neoprene)			
14	Spring loaded Teflon ring	PTFE			
20	Slotted nut	Steel			
21	Screw	Steel	A2-70	A2-70	Type 308
22	Seal cap	Aluminium			
23	Gasket for seal cap	Nylon			
24	Identification ring	Stainless steel			

## DSV 2

Figure 4: DSV 2

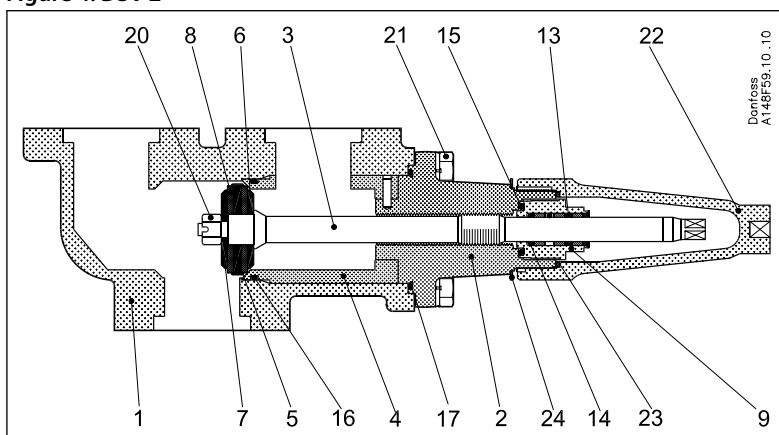


Table 4: DSV 2

No.	Part	Material	DIN/EN	ISO	ASTM
1	Housing	Steel	P285QH, EN10222-4		LF2A350
2	Bonnet	Steel	P285QH, EN10222-4		LF2A350
3	Spindle	Stainless steel	X10CrNiS 18 9 17440	Type 17, 683/13	AISI 303
4	Seat	Steel	9 SMn28, 1651	Type 2, R683/9	1213, SAEJ 403
5	Cone, Middle	Steel	9 SMn28, 1651	Type 2, R683/9	1213, SAEJ 403
6	Cone, Back	Steel	9 SMn28, 1651	Type 2, R683/9	1213, SAEJ 403
7	Cone, Front	Steel	9 SMn28, 1651	Type 2, R683/9	1213, SAEJ 403
8	Cone seal	Teflon (PTFE)			
9	Packing gland	Steel	9SMn28, 1651	Type 2, R683/9	1213,SAEJ 403
13, 15-17	O-ring	Chloroprene (Neoprene)			
14	Spring loaded Teflon ring	PTFE			
20	Slotted nut	Steel			
21	Screw	Steel	A2-70	A2-70	Type 308
22	Seal cap	Aluminium			
23	Gasket for seal cap	Nylon			
24	Identification ring	Stainless steel			

## Connections

### Available with the following connections:

Pipe thread (ISO 228/1)

DSV 10 only: NPT (ANSI/ASME B1.20.1)

Weld branch/nipples/flanges - DIN 2448

### NOTE:

DSV valves are supplied c/w DSV inlet connection fittings, DSV outlet connection fittings, and SFA/BSV/SFV outlet connection fittings. Please refer to ordering section.

## Capacity

Table 5: Capacity

Type	K <sub>v</sub> -value	C <sub>v</sub> -value
	m <sup>3</sup> /h	U <sub>s</sub> gal/min
DSV 10	5.5	6.4
DSV 1	17.5	20.3
DSV 2	30	34.8

## Dimensions and weights for double safety valve systems

Figure 5: DSV 10 G + SFA 10(H) T

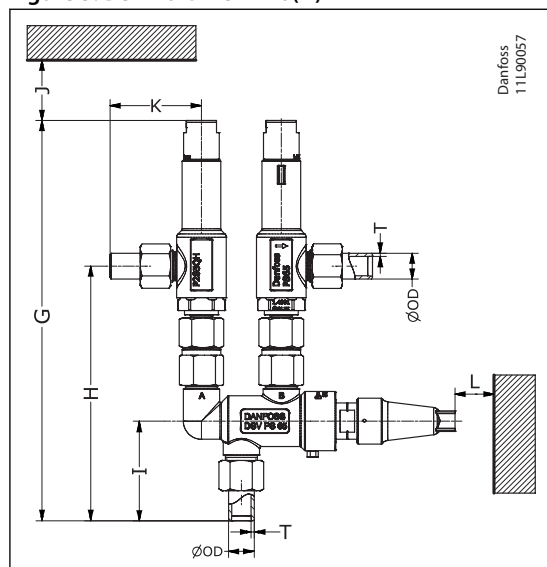


Figure 6: DSV 10 NPT + SFA 10(H) NPT

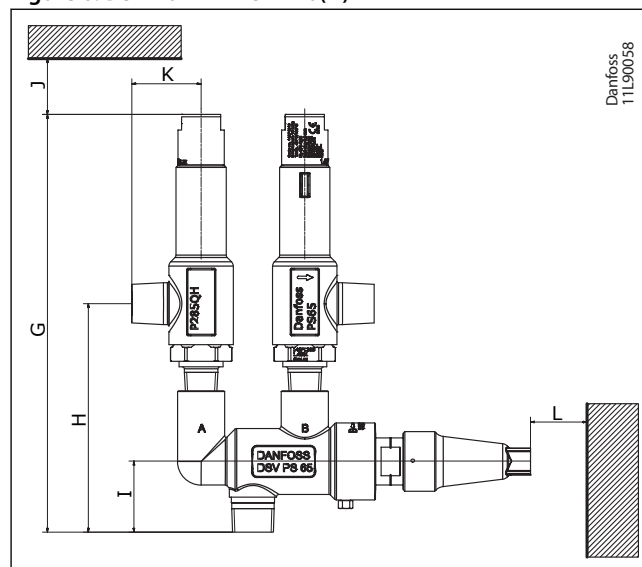


Table 6: DSV 10 G + SFA 10(H) T and DSV 10 NPT + SFA 10(H) NPT

Valve size	Thread	DN	ØOD	T	G	H	I	J	K	L	Weight	
DSV 10 G + SFA 10 T	mm	-	15	21.3	2.65	331.5	210.5	82.5	40	75.5	80	3.2 kg
	in.	3/4"	1/2	0.84	0.1	13.05	8.29	3.25	1.57	2.97	3.15	7.1 lb
DSV 10 G + SFA 10H T	mm	-	15	21.3	2.65	347.3	210.5	82.5	40	75.5	80	3.35 kg
	in.	3/4"	1/2	0.84	0.1	13.67	8.29	3.25	1.57	2.97	3.15	7.4 lb
DSV 10 NPT + SFA 10 NPT	mm	-			266	145.5	45.3	40	44.2	80	2.5 kg	
	in.	3/4"			10.47	5.73	1.78	1.57	1.74	3.15	5.5 lb	
DSV 10 NPT + SFA 10H NPT	mm	-			282	145.5	45.3	40	44.2	80	2.5 kg	
	in.	3/4"			11.1	5.73	1.78	1.57	1.74	3.15	5.5 lb	

### NOTE:

Specified weights (incl. all fittings and excl. SFA / SFV) are approximate values only.

Change-over valve, Type DSV 10, DSV 1 and DSV 2

Figure 7: DSV 1 + SFA 15

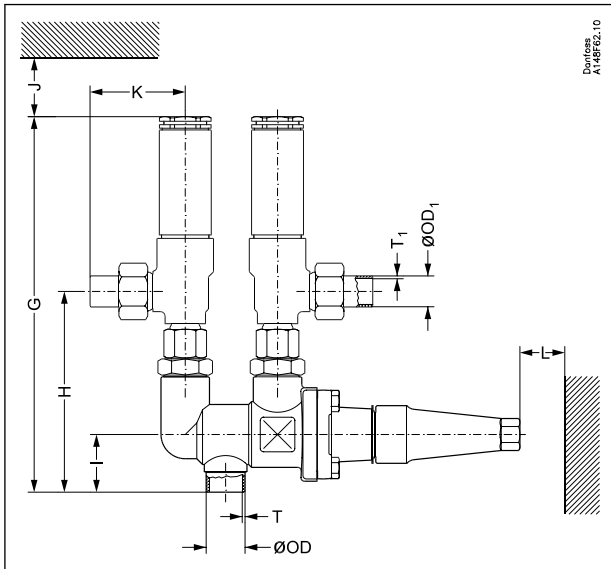


Figure 8: DSV 2 + SFA 15

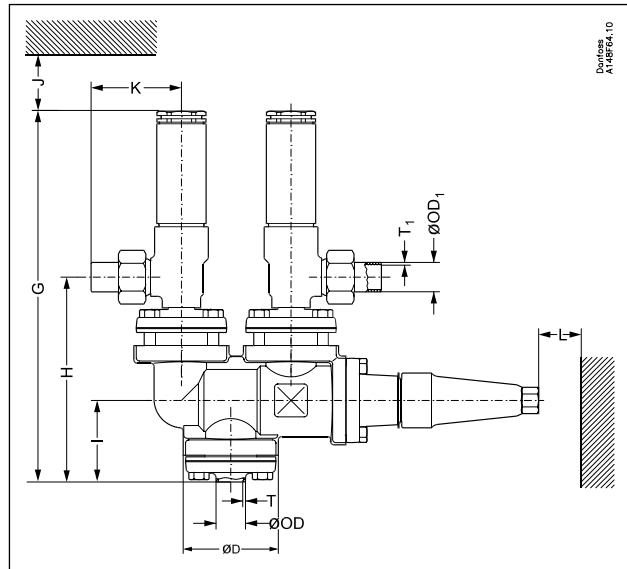


Table 7: DSV 1 + SFA 15

Valve size		DN	ØOD	ØOD <sub>1</sub>	T	T <sub>1</sub>	G	H	I	J	K	L	Weight
DSV 1 (D25) + SFA 15	mm	25	33.7	26.9	2.6	2.3	339	174	50	40	82.5	80	4.55 kg
	in.	1	1.33	1.06	0.1	0.09	13.35	6.85	1.97	1.58	3.25	3.15	10.03 lb

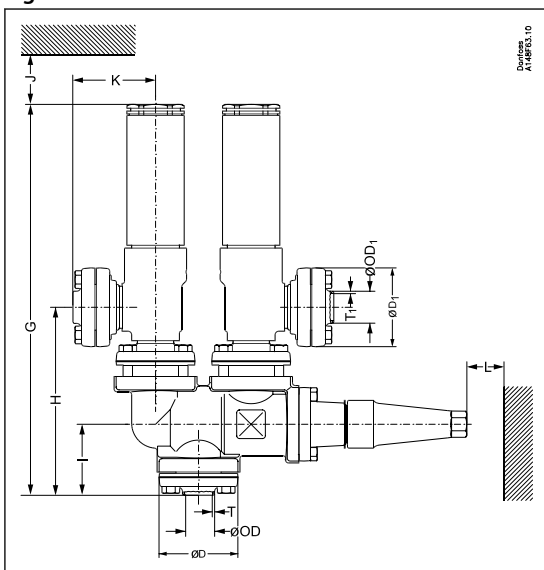
Table 8: DSV 2 + SFA 15

Valve size		DN	ØOD	ØOD <sub>1</sub>	T	T <sub>1</sub>	ØD	G	H	I	J	K	L	Weight
DSV 2 (FD20) + SFA 15	mm	20	26.9	26.9	2.3	2.3	82.5	351	186	73.5	10	82.5	80	9.3 kg
	in.	¾	1.06	1.06	0.09	0.09	3.25	13.82	7.32	2.89	0.39	3.25	3.15	20.5 lb
DSV 2 (FD25) + SFA 15	mm	25	33.7	26.9	2.6	2.3	82.5	351	186	73.5	10	82.5	80	9.3 kg
	in.	1	1.33	1.06	0.1	0.09	3.25	13.82	7.32	2.89	0.39	3.25	3.15	20.5 lb
DSV 2 (FD32) + SFA 15	mm	32	42.4	26.9	2.6	2.3	82.5	351	186	73.5	10	82.5	80	9.3 kg
	in.	1¼	1.67	1.06	0.1	0.09	3.25	13.82	7.32	2.89	0.39	3.25	3.15	20.5 lb

**NOTE:**

Specified weights (incl. all fittings and excl. SFA / SFV) are approximate values only.

Figure 9: DSV 2 + SFV 20 / SFV 25





## Change-over valve, Type DSV 10, DSV 1 and DSV 2

Table 9: DSV 2 + SFV 20 / SFV 25

Valve size		DN	ØOD	ØOD <sub>1</sub>	T	T <sub>1</sub>	ØD	ØD <sub>1</sub>	G	H	I	J	K	L	Weight
DSV 2 (FD25)	mm	25	33.7	33.7	2.6	2.6	82.5	82.5	412	197	73.5	10	85	80	11.9 kg
	in.	1	1.33	1.33	0.1	0.1	3.25	3.25	16.22	7.76	2.89	0.39	3.35	3.15	26.23 lb
DSV 2 (FD32)	mm	32	42.4	33.7	2.6	2.6	82.5	82.5	412	197	73.5	10	85	80	11.9 kg
	in.	1¼	1.67	1.33	0.1	0.1	3.25	3.25	16.22	7.76	2.89	0.39	3.35	3.15	26.23 lb
DSV 2 (FD32)	mm	32	42.4	42.4	2.6	2.6	82.5	82.5	412	197	73.5	10	85	80	11.9 kg
	in.	1¼	1.67	1.67	0.1	0.1	3.25	3.25	16.22	7.76	2.89	0.39	3.35	3.15	26.23 lb

**NOTE:**

Specified weights (incl. all fittings and excl. SFA / SFV) are approximate values only.

### Dimensions and weights

Figure 10: DSV 10 - G / NPT

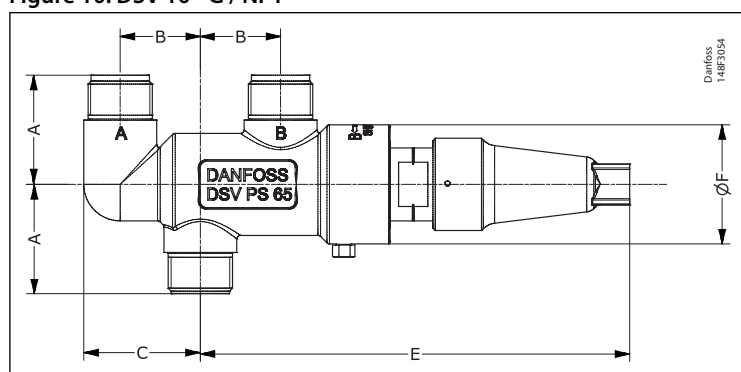


Table 10: DSV 10 - G / NPT

Valve size		A	B	C	E	ØF	Weight
DSV 10 G	mm	45	33	48	178	49	2.3 kg
	in.	1.77	1.3	1.89	7	1.93	5.1 lb
DSV 10 NPT	mm	45	33	48	178	49	1.5 kg
	in.	1.77	1.3	1.89	7	1.93	3.3 lb

**NOTE:**

Specified weights are approximate values only.

Figure 11: DSV 1

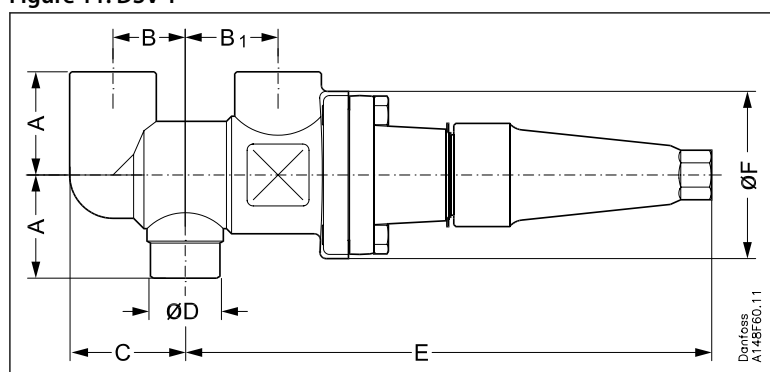


Table 11: DSV 1

Valve size		A	B	B <sub>1</sub>	C	ØOD	E	ØF	Weight
DSV 1	mm	50	35	45	56	33.7	255	77	3.6 kg
	in.	2	1.38	1.77	2.2	1.33	10.04	3.03	7.94 lb

**NOTE:**

Specified weights are approximate values only.

Change-over valve, Type DSV 10, DSV 1 and DSV 2

Figure 12: DSV 2

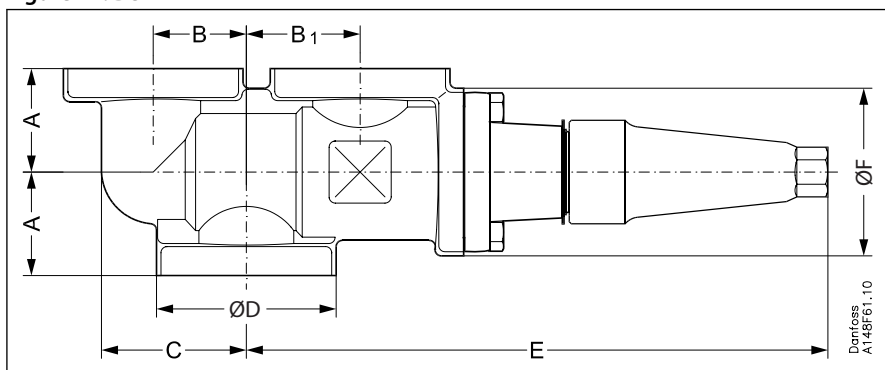


Table 12: DSV 2

Valve size		A	B	B <sub>1</sub>	C	ØD	E	ØF	Weight
DSV 2	mm	50	45	55	70	82,5	281	77	6.1 kg
	in.	2	1.77	2.17	2.76	3.25	11.06	3.03	13.45 lb

**NOTE:**

Specified weights are approximate values only.

## Ordering

### How to order

The table below is used to identify the valve required.

**NOTE:**

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 SFA 15 = **148F3006**

DSV 2 = Valve type

FD20 = DSV inlet connection

SFA 15 = Safety valve combination

**Table 13: Type codes**

Valve type	DSV inlet connection	DSV outlet connection	SFA/SFV outlet connection	Safety valve combination	Code No.
<b>DSV 10 G</b>	ND15 (1/2 in.) RH	G 1/2 in. Union	ND15 (1/2 in.)	SFA 10(H) T	<b>148F3054</b>
<b>DSV 10 NPT</b>	NPT (3/4 in.) Male	NPT (1/2 in.) Female	NPT (3/4 in.) Male	SFA 10(H) NPT	<b>148F3055</b>
<b>DSV 1</b>	D25 (1 in.)	G 3/4 in. Union	ND20 (3/4 in.)	SFA 15/BSV 8	<b>148F3005</b>
<b>DSV 2</b>	FD20 (3/4 in.)	G 3/4 in. thread flange	ND20 (3/4 in.)	SFA 15/BSV 8	<b>148F3006</b>
<b>DSV 2</b>	FD25 (1 in.)	G 3/4 in. thread flange	ND20 (3/4 in.)	SFA 15/BSV 8	<b>148F3007</b>
<b>DSV 2</b>	FD32 (1 1/4 in.)	G 3/4 in. thread flange	ND20 (3/4 in.)	SFA 15/BSV 8	<b>148F3008</b>
<b>DSV 2</b>	FD25 (1 in.)	G 1 1/4 in. thread flange	FD25 (1 in.)	SFV 20	<b>148F3009</b>
<b>DSV 2</b>	FD32 (1 1/4 in.)	G 1 1/4 in. thread flange	FD25 (1 in.)	SFV 20	<b>148F3010</b>
<b>DSV 2</b>	FD32 (1 1/4 in.)	G 1 1/4 in. thread flange	FD32 (1 1/4 in.)	SFV 25	<b>148F3011</b>
<b>Connection fittings:</b>	<b>T</b>	Thread branch ISO 228 male			
	<b>NPT</b>	Thread branch ANSI/ASME B1.20.1			
	<b>D</b>	Weld branches DIN 2448			
	<b>ND</b>	Weld nipples DIN 2448			
	<b>FD</b>	Weld flanges DIN 2448			

**Above code numbers include:**

DSV valve, DSV inlet connection fitting, DSV outlet connection fitting, SFA/BSV/SFV outlet connection fittings and necessary seals.

Safety valves SFA/BSV/SFV must be ordered separately (see SFA/BSV/SFV technical documentation).

### Fittings and gaskets

**Table 14: Fittings and gaskets**

Type	Code No.
Nipples + Gaskets set for ND15/ND15 DSV 10 G/SFA 10(H) T	<b>148F3067</b>
Nipples + gaskets set for 25D/ND20 DSV 1/SFA 15/BSV 8	<b>148F3037</b>
Flanges + gaskets set for FD20/ND20 DSV 2/SFA 15/BSV 8	<b>148F3038</b>
Flanges + gaskets set for FD25/ND20 DSV 2/SFA 15/BSV 8	<b>148F3039</b>
Flanges + gaskets set for FD32/ND20 DSV 2/SFA 15/BSV 8	<b>148F3040</b>
Flanges + gaskets set for FD25/FD25 DSV 2/SFV 20	<b>148F3041</b>
Flanges + gaskets set for FD32/FD25 DSV 2/SFV 20	<b>148F3042</b>
Flanges + gaskets set for FD32/FD32 DSV 2/SFV 25	<b>148F3043</b>

### Accessories

**Table 15: Accessories**

Type	Code. No
DSV 10 G Cap and alu gasket for testing (1 set)	<b>148F3063</b>
DSV 10 T Plug 1/2" NPT for testing (1 set)	<b>148F3072</b>

**Certificates, declarations and approvals**

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.


**Table 16: Valid Approvals**

File name	Document type	Document topic	Document topic
RU Д-DK.БЛ08.В.03634	EAC Declaration	Machinery & Equipment	EAC
RU Д-DK.РА01.В.72064_20	EAC Declaration	PED	EAC
033F0685.AK	EU Declaration	EMCD/PED	Danfoss
TS271067J-2023	Manufacturing Permission	TSG	AQSIQ
033F0691.AE	Manufacturers Declaration	RoHS	Danfoss
033F0686.AH	Manufacturers Declaration	PED	Danfoss
033F0473.AD	Manufacturers Declaration	ATEX	Danfoss
19.10327.266	Marine - Safety Certificate		RMRS
0045 202 1204 Z 00354 19 D 001(00)	Pressure - Safety Certificate		TÜV
19.10327.266	Marine - Safety Certificate		RMRS

**Table 17: Compliance**

	DSV 10 valves	DSV 1 valves	DSV 2 valves
<b>Nominal bore</b>	DN 15 mm (1/2 in.)	DN ≤ 25 mm (1 in.)	DN 32 mm (1 1/4 in.)
<b>Classified for</b>	Fluid group I		
<b>Category</b>	A4/P3		II

**Table 18: Pressure Equipment Directive (PED)**

	<p>DSV valves are approved and CE-marked in accordance with Pressure Equipment Directive - 97/23/EC. For further details / restrictions - see Installation guide.</p>
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