

Data sheet

# Change-over valve

## Type DSV 1 and DSV 2



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 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/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: DNV, CRN, BV, EAC etc.  
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.



	DSV 1 valves	DSV 2 valves
Nominal bore	DN ≤ 25 mm (1 in.)	DN32 mm (1¼ in.)
Classified for	Fluid group I	
Category	Article 3, paragraph 3	II

**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/BSV/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.

*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.

**Technical data**

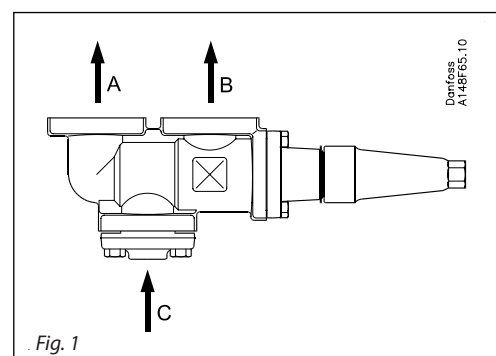
- Refrigerants  
 Applicable to HCFC, non flammable HFC, R717 (Ammonia) and R744 (CO<sub>2</sub>). Flammable hydrocarbons are not recommended.  
 The valve is only recommended for use in closed circuits.

For further information please contact Danfoss.

- Temperature range  
 -50/+100°C (-58/+212°F).
- Pressure  
 The valves are designed for:  
 Max. operating pressure: 40 bar g (580 psig)
- Capacity

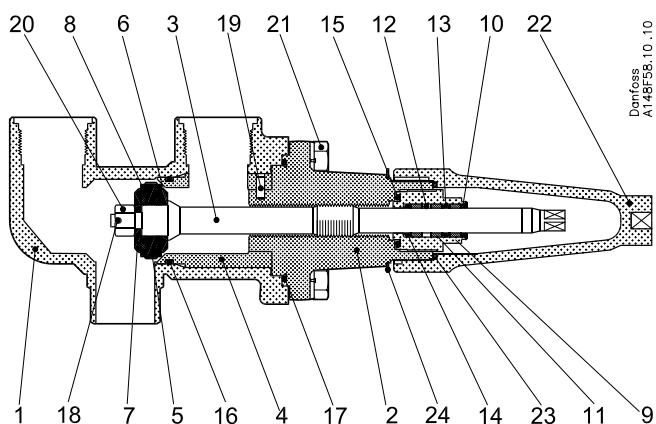
Type	K <sub>v</sub> -value	C <sub>v</sub> -value
	m <sup>3</sup> /h	Usgal/min
DSV 1	17.5	20.3
DSV 2	30.0	34.8

- Installation  
 DSV are used as changeover valves between two SFA/BSV/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.



Material specification

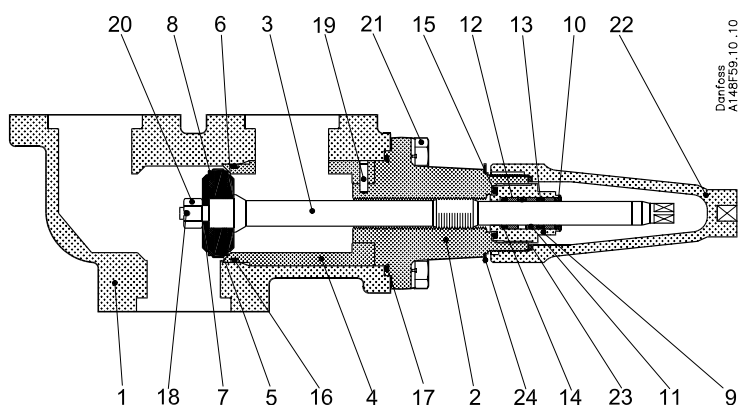
DSV 1



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	Type2, R683/9	1213, SAEJ 403
5	Cone, Middle	Steel	9 SMn28, 1651	Type2, R683/9	1213, SAEJ 403
6	Cone, Back	Steel	9 SMn28, 1651	Type2, R683/9	1213, SAEJ 403
7	Cone, Front	Steel	9 SMn28, 1651	Type2, R683/9	1213, SAEJ 403
8	Cone seal	Teflon(PTFE)			
9	Packing gland	Steel	9SMn28, 1651	Type 2, R683/9	1213,SAE J403
13-17	O-ring	Cloroprene (Neoprene)			
20	Slotted nut	Steel			
21	Screw	Steel	A2-70	A2-70	Type 308
22	Seal cap	Aluminium			
23	Gasket for seal cap	Nylon			
24	Idenfication ring	Stainless steel			

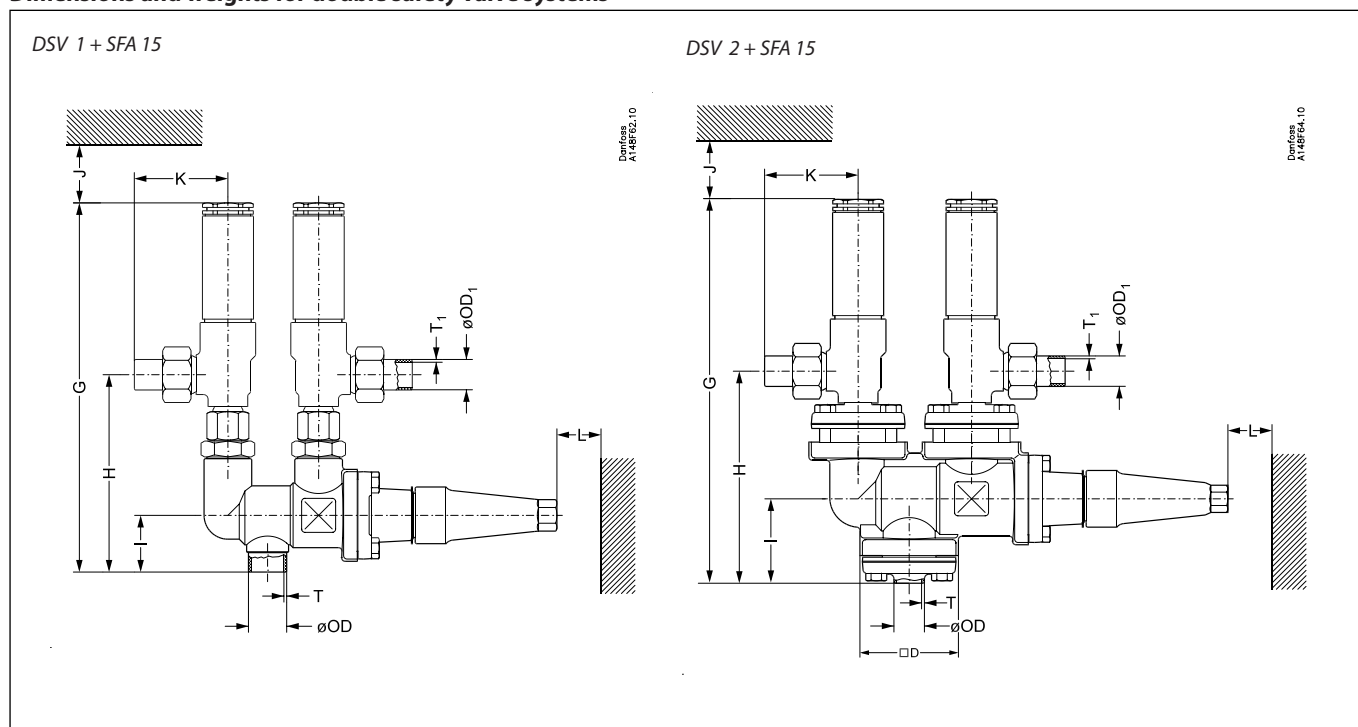
Material specification

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	Type2, R683/9	1213, SAEJ 403
5	Cone, Middle	Steel	9 SMn28, 1651	Type2, R683/9	1213, SAEJ 403
6	Cone, Back	Steel	9 SMn28, 1651	Type2, R683/9	1213, SAEJ 403
7	Cone, Front	Steel	9 SMn28, 1651	Type2, R683/9	1213, SAEJ 403
8	Cone seal	Teflon(PTFE)			
9	Packing gland	Steel	9SMn28, 1651	Type 2, R683/9	1213,SAE J403
13-17	O-ring	Cloroprene (Neoprene)			
20	Slotted nut	Steel			
21	Screw	Steel	A2-70	A2-70	Type 308
22	Seal cap	Aluminium			
23	Gasket for seal cap	Nylon			
24	Idenfication ring	Stainless steel			

Dimensions and weights for double safety valve systems



Valve size	DN	ØOD	ØOD1	T	T1		G	H	I	J	K	L	Weight
		SFA 15											
DSV 1 (D25)	mm in.	25 1	33.7 1.33	26.9 1.06	2.6 0.10	2.3 0.09	339 13.35	174 6.85	50 1.97	40 1.58	82.5 3.25	80 3.15	4.55 kg 10.03 lb

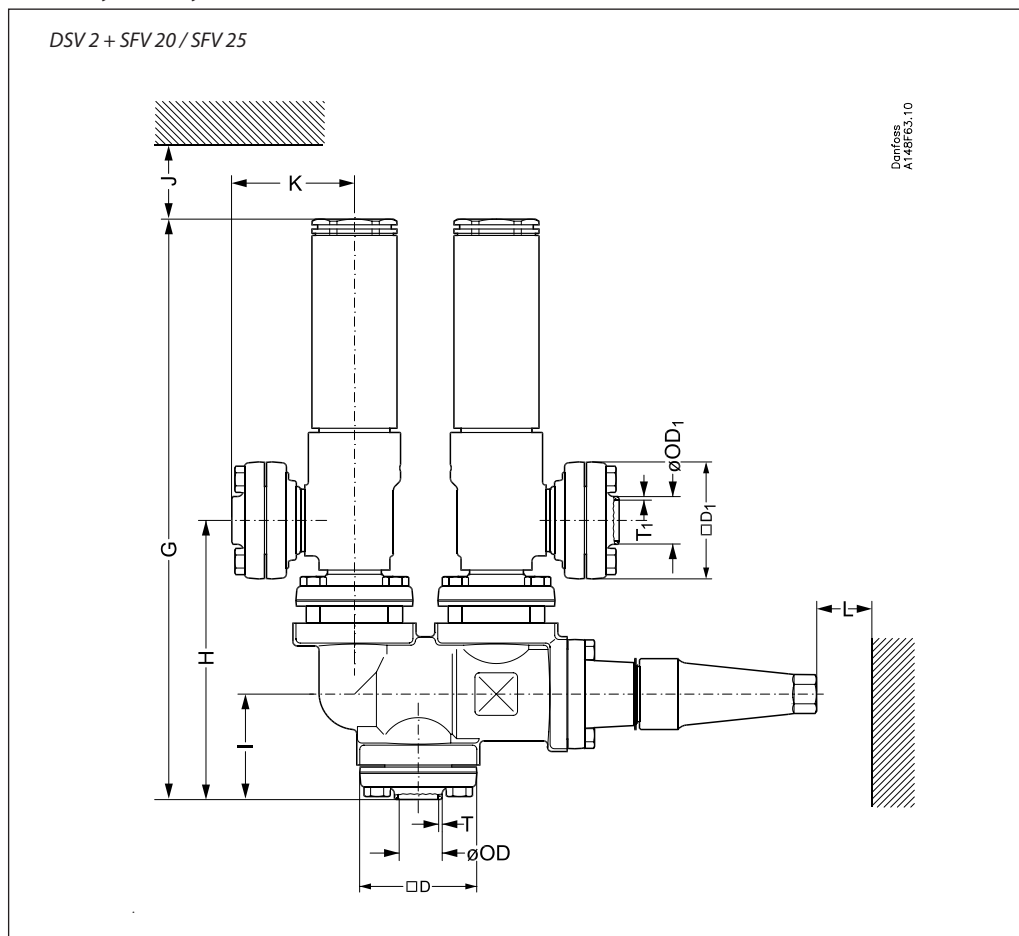
Valve size	DN	ØOD	ØOD1	T	T1	ØD	G	H	I	J	K	L	Weight	
		SFA 15												
DSV 2 (FD20)	mm in.	20 ¾	26.9 1.06	26.9 1.06	2.3 0.09	2.3 0.09	82.5 3.25	351 13.82	186 7.32	73.5 2.89	10 0.39	82.5 3.25	80 3.15	9.3 kg 20.5 lb

Valve size	DN	ØOD	ØOD1	T	T1	ØD	G	H	I	J	K	L	Weight	
		SFA 15												
DSV 2 (FD25)	mm in.	25 1	33.7 1.33	26.9 1.06	2.6 0.10	2.3 0.09	82.5 3.25	351 13.82	186 7.32	73.5 2.89	10 0.39	82.5 3.25	80 3.15	9.3 kg 20.5 lb

Valve size	DN	ØOD	ØOD1	T	T1	ØD	G	H	I	J	K	L	Weight	
		SFA 15												
DSV 2 (FD32)	mm in.	32 1¼	42.4 1.67	26.9 1.06	2.6 0.10	2.3 0.09	82.5 3.25	351 13.82	186 7.32	73.5 2.89	10 0.39	82.5 3.25	80 3.15	9.3 kg 20.5 lb

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

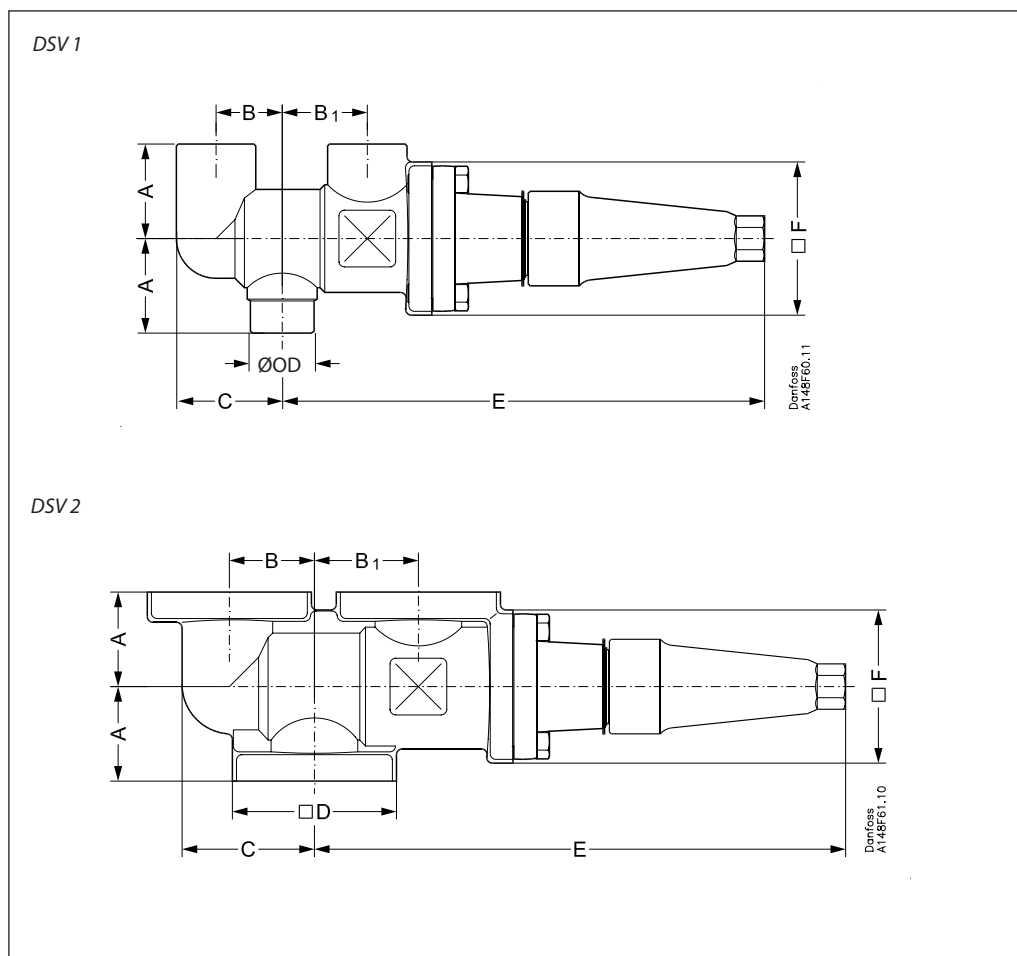
Dimensions and weights for double safety valve systems



Valve size	DN	ØOD	ØOD1	T	T1	□D	□D1	G	H	I	J	K	L	Weight	
		SFV 20													
DSV 2 (FD25)	mm 1	25 1	33.7 1.33	33.7 1.33	2.6 0.10	2.6 0.10	82.5 3.25	82.5 3.25	412 16.22	197 7.76	73.5 2.89	10 0.39	85 3.35	80 3.15	11.9 kg 26.23 lb
		SFV 20													
DSV 2 (FD32)	mm 1 1/4	32 1 1/4	42.4 1.67	33.7 1.33	2.6 0.10	2.6 0.10	82.5 3.25	82.5 3.25	412 16.22	197 7.76	73.5 2.89	10 0.39	85 3.35	80 3.15	11.9 kg 26.23 lb
		SFV 25													
DSV 2 (FD32)	mm 1 1/4	32 1 1/4	42.4 1.67	42.4 1.67	2.6 0.10	2.6 0.10	82.5 3.25	82.5 3.25	412 16.22	197 7.76	73.5 2.89	10 0.39	85 3.35	80 3.15	11.9 kg 26.23 lb

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

Dimensions and weights



Valve size	A	B	B <sub>1</sub>	C	ØOD	E	□F	Weight
DSV 1	mm 50	35	45	56	33.7	255	77	3.6 kg
	in. 2	1.38	1.77	2.20	1.33	10.04	3.03	7.94 lb

Valve size	A	B	B <sub>1</sub>	C	□D	E	□F	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

Specified weights are approximate values only.

**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

*Type codes*

Valve type	DSV inlet connection	DSV outlet connection	SFV outlet connection	Safety valve combination	Code No.
DSV 1	D25 (1 in.)	G ¾" Union	ND20 (¾ in.)	SFA 15/BSV 8	<b>148F3005</b>
DSV 2	FD20 (¾ in.)	G ¾" thread flange	ND20 (¾ in.)	SFA 15/BSV 8	<b>148F3006</b>
DSV 2	FD25 (1 in.)	G ¾" thread flange	ND20 (¾ in.)	SFA 15/BSV 8	<b>148F3007</b>
DSV 2	FD32 (1¼ in.)	G ¾" thread flange	ND20 (¾ in.)	SFA 15/BSV 8	<b>148F3008</b>
DSV 2	FD25 (1 in.)	G 1¼" thread flange	FD25 (1 in.)	SFV20	<b>148F3009</b>
DSV 2	FD32 (1¼ in.)	G 1¼" thread flange	FD25 (1 in.)	SFV20	<b>148F3010</b>
DSV 2	FD32 (1¼ in.)	G 1¼" thread flange	FD32 (1¼ in.)	SFV25	<b>148F3011</b>
Connection fittings:	D	Weld branches DIN 2448			
	ND	Weld nipples DIN 2448			
	FD	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*

Type	Code No.
Nipples + gaskets set for 25D/ND20 DSV1/SFA 15/BSV 8	<b>148F3037</b>
Flanges + gaskets set for FD20/ND20 DSV2/SFA 15/BSV 8	<b>148F3038</b>
Flanges + gaskets set for FD25/ND20 DSV2/SFA 15/BSV 8	<b>148F3039</b>
Flanges + gaskets set for FD32/ND20 DSV2/SFA 15/BSV 8	<b>148F3040</b>
Flanges + gaskets set for FD25/FD25 DSV2/SFV 20	<b>148F3041</b>
Flanges + gaskets set for FD32/FD25 DSV2/SFV 20	<b>148F3042</b>
Flanges + gaskets set for FD32/FD32 DSV2/SFV 25	<b>148F3043</b>





