ENGINEERING TOMORROW

Data sheet

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

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_2)
- 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:
  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 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

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 10 valves	DSV 1 valves	DSV 2 valves
Nominal bore	DN 15 mm (½ in.)	DN ≤ 25 mm (1 in.)	DN 32 mm (1¼ in.)
Classified for	Fluid group I		
Category	A4/P3		II

Design

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.

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.

Technical data

- Refrigerants
  Applicable to HCFC, non flammable HFC, R717 (Ammonia) and R744 (CO_2).
  Flammable hydrocarbons are not recommended.
  The valve is only recommended for use in closed circuits.

  For further information please contact Danfoss
- Temperature range:
  -50 °C to 100 °C (-58 °F to 212 °F)
- Pressure
  The valves are designed for:
  Max. operating pressure:
  DSV 10: 65 bar (942 psig)
  DSV 1 and 2: 40 bar (580 psig)
- Capacity

Type	K_v-value	C_v-value
	m^3/h	Usgal/min
DSV 10	5.5	6.4
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

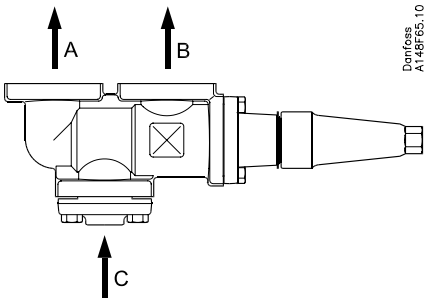
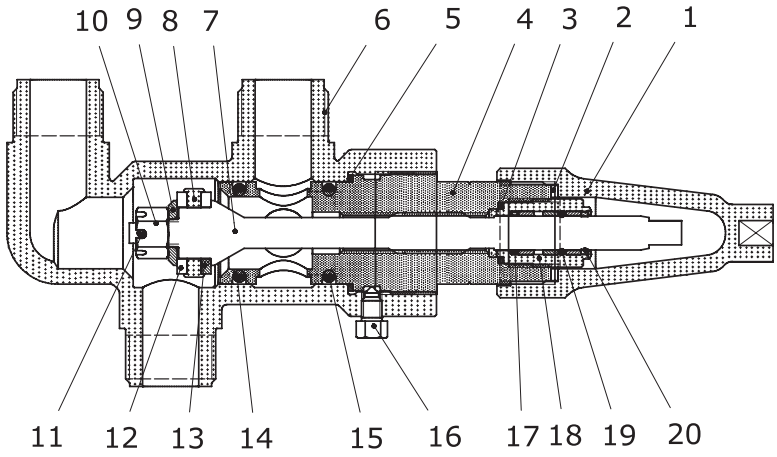


Fig. 1 Flow sketch

Material specification

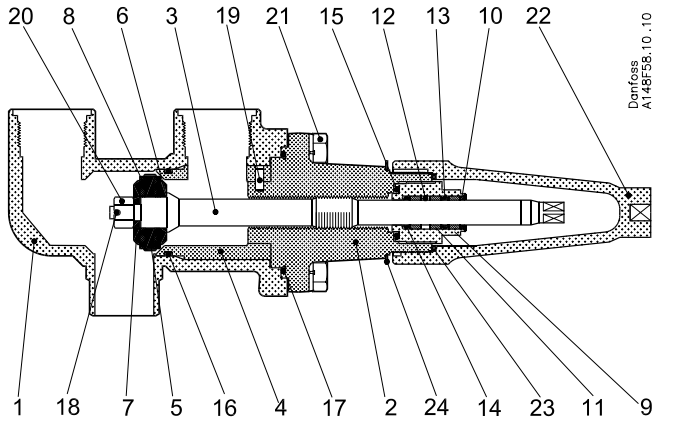
DSV 10



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			

Material specification

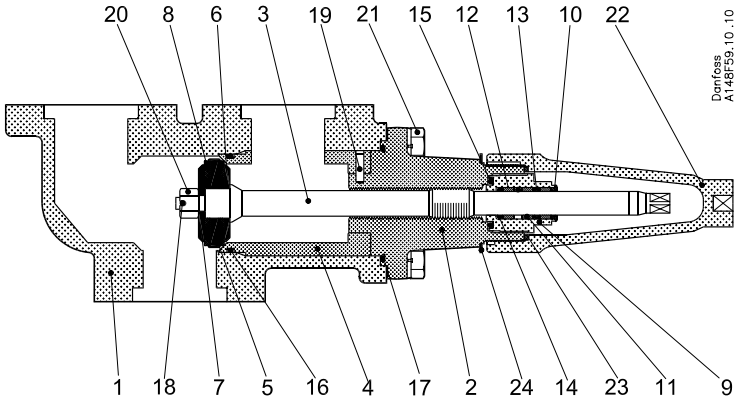
DSV 1



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	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
13-17	O-ring	Chloroprene (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

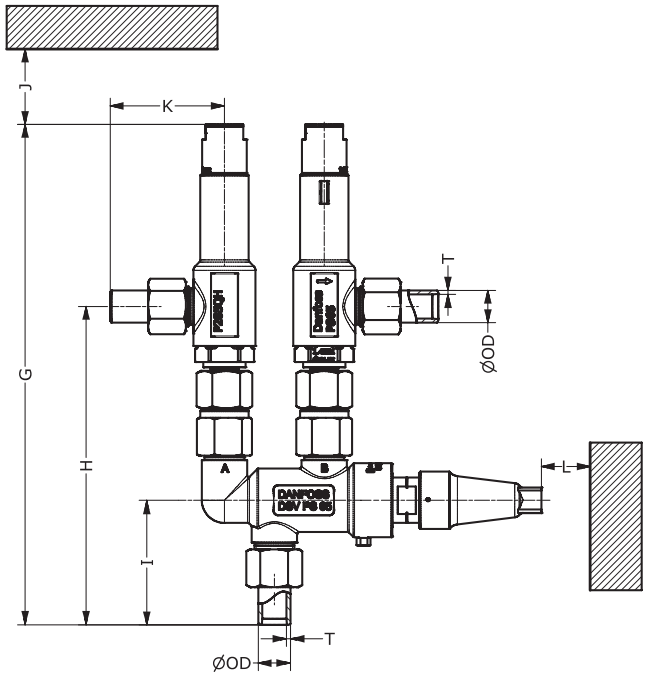
DSV 2



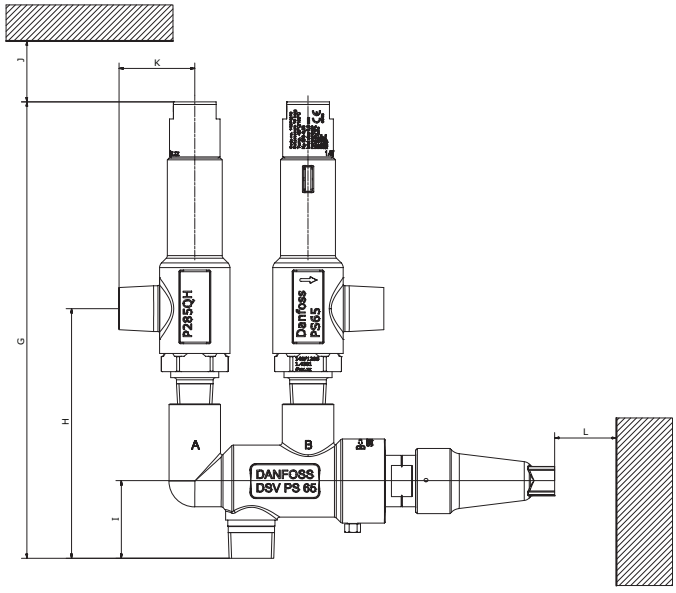
No.	Part	Material	DIN/EN	ISO	ASTM
1	Housing	Steel	P285QH, EN10222-4		LF2A350
2	Bonnet	Steel	P285QH, EN10222-4		LF2A350
3	Spindle	Stainless steel	X10CrNiS 18 9 17440	Type 17, 683/13	AISI 303
4	Seat	Steel	9 SMn28, 1651	Type 2, R683/9	1213, SAEJ 403
5	Cone, Middle	Steel	9 SMn28, 1651	Type 2, R683/9	1213, 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
13-17	O-ring	Chloroprene (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

DSV 10 G + SFA 10 T



DSV 10 NPT + SFA 10 NPT

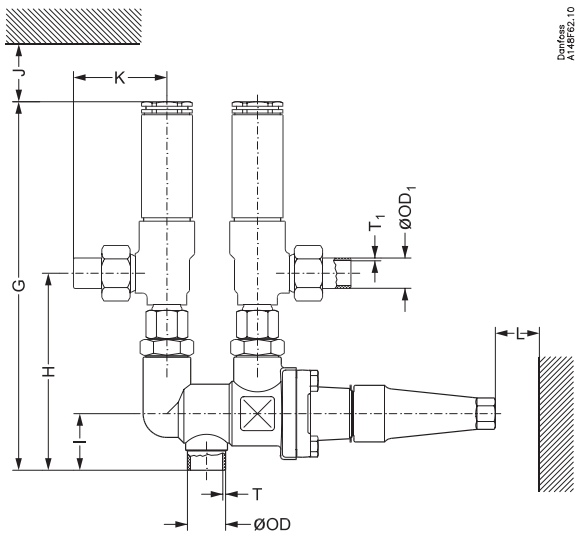


Valve size		DN	ØOD	T			G	H	I	J	K	L	Weight
DSV 10 G + SFA 10 T <=27 bar	mm	15	21.3	2.65			331.5	210.5	82.5	40	75.5	80	3.2 kg
	in.	½	0.84	0.10			13.05	8.29	3.25	1.57	2.97	3.15	7.1 lb
DSV 10 G + SFA 10 T >27 bar	mm	15	21.3	2.65			347.3	210.5	82.5	40	75.5	80	3.35 kg
	in.	½	0.84	0.10			13.67	8.29	3.25	1.57	2.97	3.15	7.4 lb
DSV 10 NPT + SFA 10 NPT <=27 bar	mm	15					266	145.5	45.3	40	44.2	80	2.5 kg
	in.	½					10.47	5.73	1.78	1.57	1.74	3.15	5.5 lb
DSV 10 NPT + SFA 10 NPT >27 bar	mm	15					282	145.5	45.3	40	44.2	80	2.5 kg
	in.	½					11.10	5.73	1.78	1.57	1.74	3.15	5.5 lb

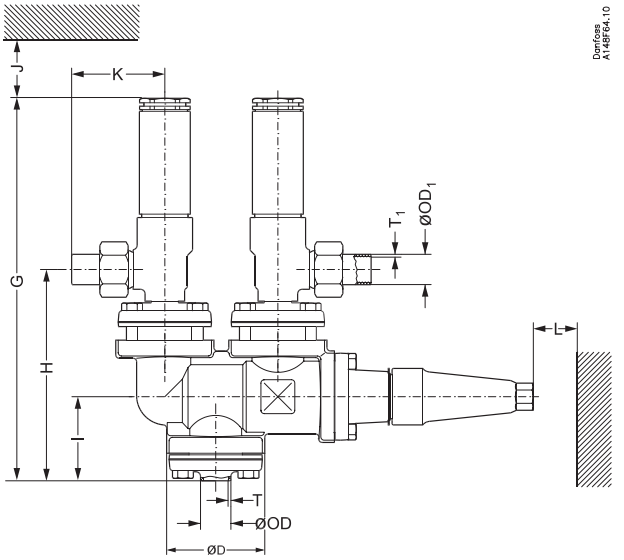
Specified weights (incl. all fittings and excl. SFA / SFV) are approximate values only.

Dimensions and weights for double safety valve systems

DSV 1 + SFA 15



DSV 2 + SFA 15



Valve size		DN	ØOD	$ØOD_1$	T	T_1			G	H	I	J	K	L	Weight
		SFA 15													
DSV 1	mm	25	33.7	26.9	2.6	2.3			339	174	50	40	82.5	80	4.55 kg
(D25)	in.	1	1.33	1.06	0.10	0.09			13.35	6.85	1.97	1.58	3.25	3.15	10.03 lb

Valve size		DN	ØOD	$ØOD_1$	T	T_1	ØD		G	H	I	J	K	L	Weight
		SFA 15													
DSV 2	mm	20	26.9	26.9	2.3	2.3	82.5		351	186	73.5	10	82.5	80	9.3 kg
(FD20)	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

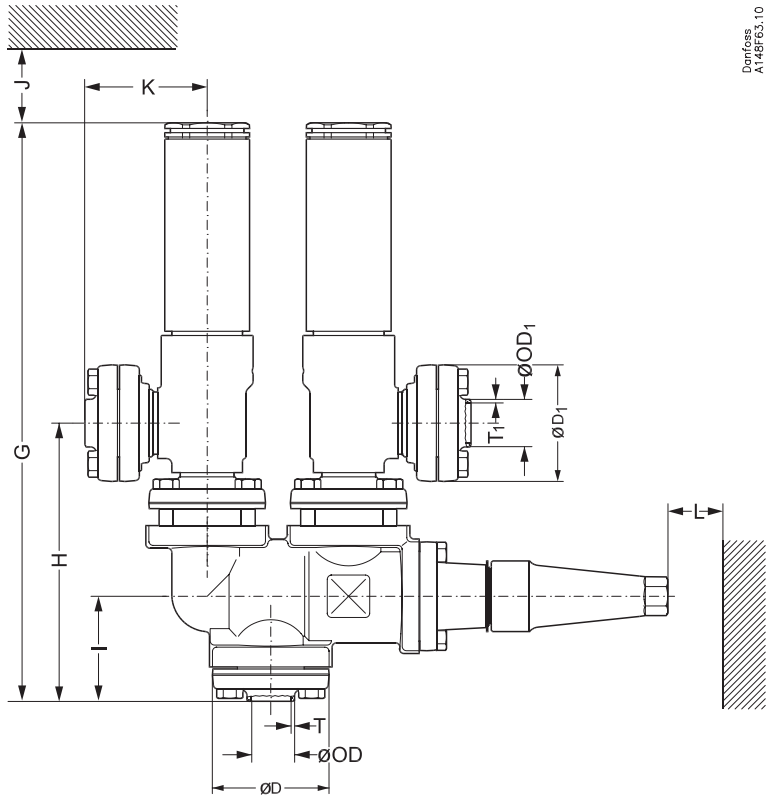
Valve size		DN	ØOD	$ØOD_1$	T	T_1	ØD		G	H	I	J	K	L	Weight
		SFA 15													
DSV 2	mm	25	33.7	26.9	2.6	2.3	82.5		351	186	73.5	10	82.5	80	9.3 kg
(FD25)	in.	1	1.33	1.06	0.10	0.09	3.25		13.82	7.32	2.89	0.39	3.25	3.15	20.5 lb

Valve size		DN	ØOD	$ØOD_1$	T	T_1	ØD		G	H	I	J	K	L	Weight
		SFA 15													
DSV 2	mm	32	42.4	26.9	2.6	2.3	82.5		351	186	73.5	10	82.5	80	9.3 kg
(FD32)	in.	1¼	1.67	1.06	0.10	0.09	3.25		13.82	7.32	2.89	0.39	3.25	3.15	20.5 lb

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

Dimensions and weights for double safety valve systems

DSV 2 + SFV 20 / SFV 25



Valve size		DN	ØOD	$ØOD_1$	T	T_1	ØD	$ØD_1$	G	H	I	J	K	L	Weight
		SFV 20													
DSV 2	mm	25	33.7	33.7	2.6	2.6	82.5	82.5	412	197	73.5	10	85	80	11.9 kg
(FD25)	in.	1	1.33	1.33	0.10	0.10	3.25	3.25	16.22	7.76	2.89	0.39	3.35	3.15	26.23 lb

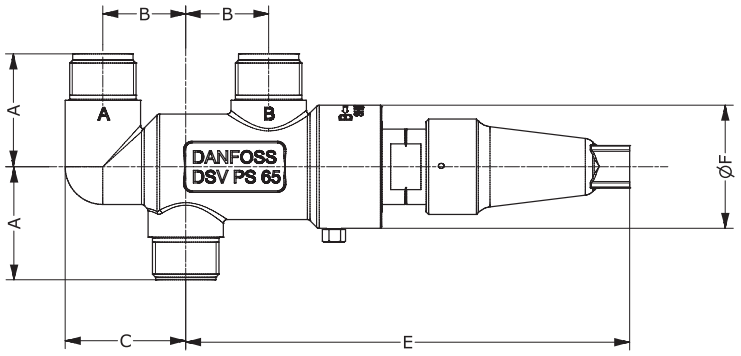
Valve size		DN	ØOD	$ØOD_1$	T	T_1	ØD	$ØD_1$	G	H	I	J	K	L	Weight
		SFV 20													
DSV 2	mm	32	42.4	33.7	2.6	2.6	82.5	82.5	412	197	73.5	10	85	80	11.9 kg
(FD32)	in.	1¼	1.67	1.33	0.10	0.10	3.25	3.25	16.22	7.76	2.89	0.39	3.35	3.15	26.23 lb

Valve size		DN	ØOD	$ØOD_1$	T	T_1	ØD	$ØD_1$	G	H	I	J	K	L	Weight
		SFV 25													
DSV 2	mm	32	42.4	42.4	2.6	2.6	82.5	82.5	412	197	73.5	10	85	80	11.9 kg
(FD32)	in.	1¼	1.67	1.67	0.10	0.10	3.25	3.25	16.22	7.76	2.89	0.39	3.35	3.15	26.23 lb

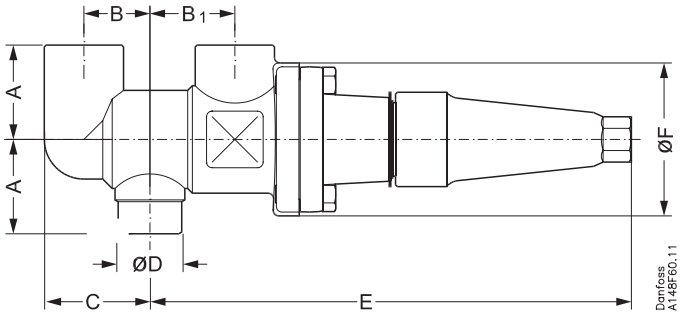
Specified weights (incl. all fittings and excl. SFA / SFV) are approximate values only.

Dimensions and weights

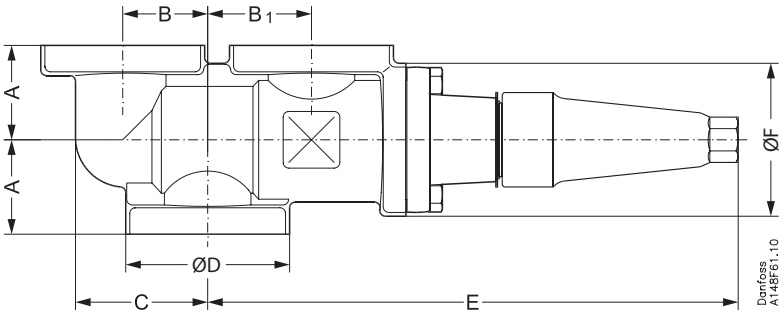
DSV 10 - G / NPT



DSV 1



DSV 2



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			7.00	1.93	5.1 lb
DSV 10 NPT	mm	45	33		48			178	49	1.5 kg
	in.	1.77	1.3		1.89			7.00	1.93	3.3 lb

Valve size		A	B	B_1	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	2.20		1.33	10.04	3.03	7.94 lb

Valve size		A	B	B_1	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

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.

Type codes

Example

DSV 2 FD20 SFA 15 = **148F3006**

DSV 2 = Valve type
FD20 = DSV inlet connection
SFA 15 = Safety valve combination

Valve type		DSV inlet connection	DSV outlet connection	SFA/SFV outlet connection	Safety valve combination	Code No.
DSV 10 G		ND20 (¾ in.) RH	G ½ in. Union	ND20 (¾ in.)	SFA 10 T	**148F3054**
DSV 10 NPT		NPT (¾ in.) Male	NPT (½ in.) Female	NPT (¾ in.) Male	SFA 10 NPT	**148F3055**
DSV 1		D25 (1 in.)	G ¾ in. Union	ND20 (¾ in.)	SFA 15/BSV 8	**148F3005**
DSV 2		FD20 (¾ in.)	G ¾ in. thread flange	ND20 (¾ in.)	SFA 15/BSV 8	**148F3006**
DSV 2		FD25 (1 in.)	G ¾ in. thread flange	ND20 (¾ in.)	SFA 15/BSV 8	**148F3007**
DSV 2		2 FD32 (1¼ in.)	G ¾ in. thread flange	ND20 (¾ in.)	SFA 15/BSV 8	**148F3008**
DSV 2		FD25 (1 in.)	G 1¼ in. thread flange	FD25 (1 in.)	SFV 20	**148F3009**
DSV 2		2 FD32 (1¼ in.)	G 1¼ in. thread flange	FD25 (1 in.)	SFV 20	**148F3010**
DSV 2		2 FD32 (1¼ in.)	G 1¼ in. thread flange	FD32 (1¼ in.)	SFV 25	**148F3011**
Connection fittings:	**T**	Thread branch ISO 228 male				
	NPT	Thread branch ANSI/ASME B1.20.1				
	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 ND20/ND20 DSV 10 G/SFA 10 T	**148F3067**
Nipples + gaskets set for 25D/ND20 DSV 1/SFA 15/BSV 8	**148F3037**
Flanges + gaskets set for FD20/ND20 DSV 2/SFA 15/BSV 8	**148F3038**
Flanges + gaskets set for FD25/ND20 DSV 2/SFA 15/BSV 8	**148F3039**
Flanges + gaskets set for FD32/ND20 DSV 2/SFA 15/BSV 8	**148F3040**
Flanges + gaskets set for FD25/FD25 DSV 2/SFV 20	**148F3041**
Flanges + gaskets set for FD32/FD25 DSV 2/SFV 20	**148F3042**
Flanges + gaskets set for FD32/FD32 DSV 2/SFV 25	**148F3043**

Accessories

DSV 10 G Cap and alu gasket for testing (1 set)	**148F3063**
DSV 10 T Plug 1/2" NPT for testing (1 set)	**148F3072**