

## Data Sheet

# Shut-off valve Type **SVA DH** and **SVA DL** 250 – 300

Designed to meet all industrial refrigeration application requirements



SVA-DL and SVA-DH are angleway shut-off valves designed to meet all industrial refrigeration application requirements.

**SVA-DL (Delta pressure Low)**

is designed with a restriction in the opening function. High differential pressure can be applied from the side port and reduced pressure can be applied from bottom port. SVADL is a twostep valve for pressure relief.

**SVA-DH (Delta pressure High)**

is designed without restriction in the opening function. As a result of its balanced design this valve is able to open at all differential pressures with limited torque. The angleway shut-off valves are carefully designed to give favourable flow conditions. Easy to dismantle for inspection and repair.

Both SVA-DL & SVA-DH shut-off valves have internal backseating enabling the spindle seal to be replaced with the valve still under pressure.

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.

## Features

- Applicable to HCFC, HFC, R717 (Ammonia) and R744 (CO<sub>2</sub>) and all flammable refrigerants
- Optional accessories:
  - Heavy duty industrial handwheel for frequent operation
  - Vented cap for infrequent operation
- Available in angleway version with extended bonnet for insulated systems
- The valve caps can be wire-sealed, to prevent operation by unauthorised persons
- Internal PTFE backseating
- The bonnet is suitable for installation in insulated low temperature applications
- The housing and bonnet are made from low temperature steel in accordance with the requirements of the Pressure Equipment Directive and other international classification authorities
- Classification: DNV, CRN, BV, EAC etc.

## Portfolio overview

Figure 1: SVA-DL & SVA-DH



Table 1: Portfolio overview

Description	Features
Valve body/connection material	Steel
Equipment	Handwheel/Cap
Connection standard	EN 10220 ASME B 36.10M SCHEDULE 40/STD DIN 2448
Connection type	Butt weld
Max. temperature range	-60 °C – 150 °C (-76 °F – +302 °F)
Max. working pressure [bar/psig]	40 bar (580 psig) at -60 °C – +60 °C (-76 °F – +140 °F) 36 bar (522 psig) at +60 °C – +80 °C (+140 °F – +176 °F) 32 bar (464 psig) at +80 °C – +120 °C (+176 °F – +248 °F) 28 bar (406 psig) at +120 °C – +150 °C (+248 °F – +302 °F)
Packing format	Single pack

## Functions

### SVA-DL

The **SVA-DL** shut-off valve is designed with a restriction in the flow direction (differential pressure). To ensure the most favourable valve performance the flow must be directed from the side port towards the valve cone. Operation of the valve with flow in this direction is made possible by the two-step opening valve cone as illustrated below.

### SVA-DH

The **SVA-DH** shut-off valve is designed without restrictions in either flow direction or differential pressure. Due to the balanced valve cone design the torque required to operate the valve is minimized and the valve can be opened and closed against high pressure with flow in any direction.

## Pressure

Table 2: Pressure SVA-DL and SVA-DH

SVA-DL	SVA-DH
<p> <math>\Delta P_{\max} = 40 \text{ bar}</math>            SVA 250: <math>\Delta P_{\max} = 9 \text{ bar}</math>            SVA 300: <math>\Delta P_{\max} = 6 \text{ bar}</math> </p>	<p> <math>\Delta P_{\max} = 40 \text{ bar}</math> </p>

## Flow

Table 3: Flow SVA-DL and SVA-DH

SVA-DL	SVA-DH

### **NOTE:**

Above pressures indicates the maximum pressures at which the the valve can be operated manually and tightness can be achieved.

## Media

### Refrigerants

Applicable to HC, HCFC, HFC, R717 (Ammonia) and R744 (CO<sub>2</sub>). For further information please see installation guide for SVA-DL and SVA-DH.

### 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

### Pressure and temperature

Figure 2: Pressure and temperature graph

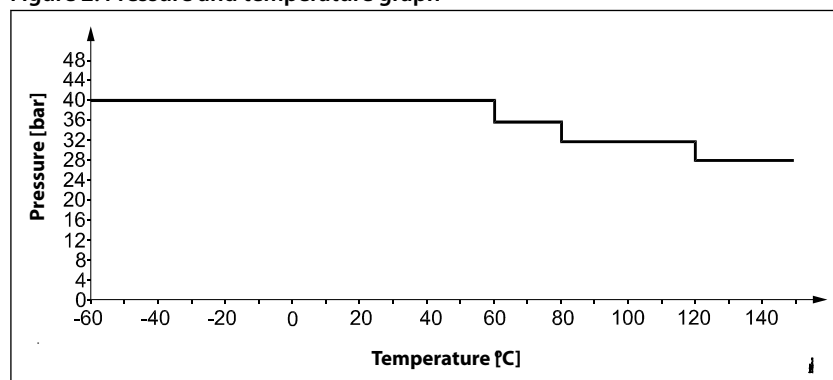


Table 4: Pressure and temperature

Temperature range	Max Working Pressure @ specific temperature range
-60 °C – +150 °C (-76 °F – +302 °F)	40 bar (580 psig) at -60 °C – +60 °C (-76 °F – +140 °F)
	36 bar (522 psig) at +60 °C – +80 °C (+140 °F – +176 °F)
	32 bar (464 psig) at +80 °C – +120 °C (+176 °F – +248 °F)
	28 bar (406 psig) at +120 °C – +150 °C (+248 °F – +302 °F)

### Design

#### Housing and bonnet

Made from special, cold-resistant steel approved for low temperature operations.

#### Bolts

Stainless steel, Quality A2-70.

#### Valve cone assembly

The valve cone assembly is turnable on the spindle, thus there is no friction between cone and seat when the valve is opened and closed. A Teflon tightening ring provides perfect sealing at a minimum closing torque.

#### Spindle

Made of polished stainless steel, ideal for O-ring sealing.

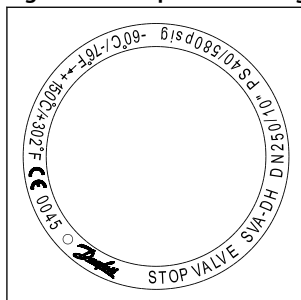
#### Packing gland

The packing gland comprises a spring loaded seal packing which ensures perfect tightness in the range: -60 °C – 150 °C (-76 °F – 302 °F). Furthermore, the packing glands incorporate a scraper ring to prevent the penetration of dirt and ice.

### Marking

**Each valve type is clearly marked with type, size and performance range**

**Figure 3: Example of marking ring, SVA-DH**



### Material specification

SVA-DL 250-300

**Figure 4: SVA-DL 250-300**

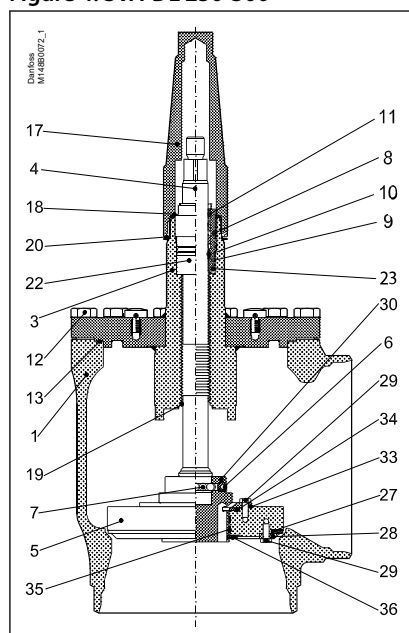


Table 5: SVA-DL 250 - 300

No.	Part	Material	EN	ASTM
1	Housing	Steel	G20Mn5 QT, EN 10213-3	LCC, A352
3	Bonnet	Steel	P275NL1, EN 10028-3 G20Mn5QT EN 10213-3	Grade A, A662 LCC, A352
4	Spindle	Steel	X5CrNi18-10, EN10088	AISI 304
5	Cone	Steel	P275NL1, EN 10028-3	Grade A, A662
6	Set screw	Steel	Quality 8.8	Grade 5
7	Balls	Stainless steel		
8	Packing Gland	Stainless steel	X8CrNiS18-9 10088	AISI 303
9	O-ring	Cloroprene (Neoprene)		
10	Spring loaded Teflon ring	PTFE		
11	O-ring	Cloroprene (Neoprene)		
12	Bolts	Stainless steel	A2-70	Type 308
13	Gasket	Fiber, Non-asbestos		
14	Handwheel	Steel		
15	Washer	Stainless steel		
16	Lock nut	Stainless steel+nylon		

## Shut-off valves, Type SVA DH and SVA DL 250 – 300

No.	Part	Material	EN	ASTM
17	Cap	Aluminium	AlMgSi1	
18	Gasket for cap	Nylon (PA 6)		
19	Soft backseat	Teflon (PTFE)		
20	Identification ring	Stainless steel		
22	Guide for spindle	Steel	11SMn30	Grade 1213, A29
23	O-ring	PTFE/FKM		
27	Gasket	Teflon (PTFE)		
28	Front for valve cone	Steel	S235JRG2, EN10025	Grade C, A283
29	Bolts	Steel	Quality 8.8	Grade 5
30	Insert, valve cone	Spheroidal graphite cast iron	EN-GJS-250	Class 40B
31	Lifting eye bolts	Steel		
33	Backing for valve cone	Steel	S235JRG2, EN10025	Grade C, A283
34	Gasket	Teflon (PTFE)		
35	Wear ring	Teflon (PTFE)		
36	Retaining ring	Spring steel		

### SVA-DH 250 - 300

Figure 5: SVA-DH 250-300

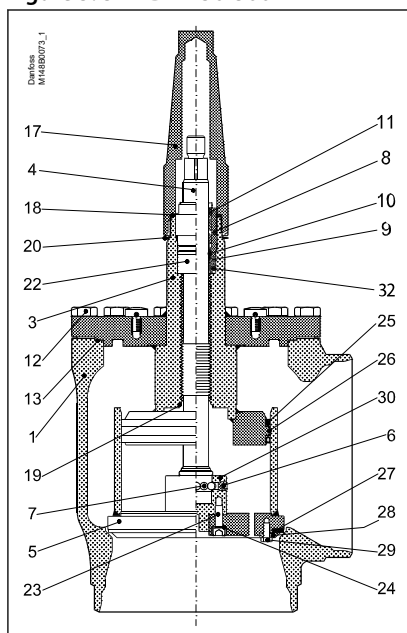


Table 6: SVA-DH 250 - 300

No.	Part	Material	EN	ASTM
1	Housing	Steel	G20Mn5 QT, EN 10213-3	LCC, A352
3	Bonnet	Steel	P275NL1, EN 10028-3 G20Mn5QT EN 10213-3	Grade A, A662 LCC, A352
4	Spindle	Steel	X5CrNi18-10 DIN 17440	
5	Cone	Steel	P275NL1, EN 10028-3	Grade A, A662
6	Set screw	Steel	Quality 8.8	Grade 5
7	Balls	Stainless steel		
8	Packing Gland	Stainless steel	X8CrNiS18-9 10088	AISI 303
9	O-ring	Cloroprene (Neoprene)		
10	Spring loaded Teflon ring	PTFE		
11	O-ring	Cloroprene (Neoprene)		
12	Bolts	Stainless steel	A2-70	Type 308
13	Gasket	Fiber, Non-asbestos		
14	Handwheel	Steel		
15	Washer	Stainless steel		
16	Lock nut	Stainless steel+nylon		

## Shut-off valves, Type SVA DH and SVA DL 250 – 300

No.	Part	Material	EN	ASTM
17	Cap	Aluminium	AlMgSi1	
18	Gasket for cap	Nylon (PA 6)		
19	Soft backseat	Teflon (PTFE)		
20	Identification ring	Stainless steel		
22	Guide for spindle	Steel	11SMn30	Grade 1213, A29
23	Bolts	Steel		
24	Washer	Steel		
25	U-sleeve sealing	Teflon (PTFE) +Stainless steel		
26	Wear ring	Teflon (PTFE)		
27	Gasket	Teflon (PTFE)		
28	Front for valve cone	Steel	S235JRG2, EN10025	Grade C, A283
29	Bolts	Steel	Quality 8.8	Grade 5
30	Insert, valve cone	Spheroidal graphite cast iron	EN-GJS-250	Class 40B
31	Lifting eye bolts	Steel		
32	O-ring	PTFE/FKM		

## Connections

Table 7: Available connections

DIN	ANSI

## Welding DIN (2448)

Table 8: Welding DIN (2448)

Type	Size		øD	T	øD	T	K <sub>v</sub>	C <sub>v</sub>
	mm	in.	mm	mm	in.	in.	m <sup>3</sup> /h	U <sub>s gal</sub> /min
SVA-DH	250	10	273	6.3	10.75	0.25	1405	1630
SVA-DL							1610	1868
SVA-DH	300	12	323.9	7.1	12.75	0.28	1870	2169
SVA-DL							2082	2415

## Welding ANSI (B 36.10)

Table 9: Welding ANSI (B 36.10)

Type	Size		øD	T	øD	T	K <sub>v</sub>	C <sub>v</sub>
	mm	in.	mm	mm	in.	in.	m <sup>3</sup> /h	U <sub>s gal</sub> /min
SVA-DH	250	10	273	9.3	10.75	0.25	1405	1630
SVA-DL							1610	1868
SVA-DH	300	12	323.9	9.5	12.75	0.28	1870	2169
SVA-DL							2082	2415

## Dimensions and weights

Table 10: Dimensions and weights

With handwheel	With vented cap
Danfoss A1148B240.10	Danfoss A1148B242.10

Table 11: SVA-DH, SVA-DL 250 -300, angleway version

Valve size		K	C <sub>max. 1</sub>	C <sub>max. 2</sub>	G	ØD <sub>1</sub>	ØD <sub>2</sub>	ØH	Weight
SVA-DL / SVA-DH									
<b>SVA 250</b>	mm	102	745	782	210	400	86	334	130 kg
<b>SVA (10)</b>	in.	4	29.33	30.79	8.27	15.75	3.39	13.14	287 lb
<b>SVA 300</b>	mm	102	852	842	240	500	86	384	190 kg
<b>SVA (12)</b>	in.	4	33.54	33.14	9.45	19.69	3.39	15.12	419 lb

### NOTE:

Specified weights are nominal, and may differ depending on actual configuration of the code number.



## Ordering

The table below can be 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.

**Table 12: Identify the valve**

Valve type Nominal size in mm	SVA-DL SVA-DH	Shut-off valve	(Δp Low) (Δp High)	
			Available connections	
			D	A
(Valve size measured on the connection diameter)	<b>250</b>	<b>DN250</b>	<b>X</b>	<b>X</b>
	<b>300</b>	<b>DN300</b>	<b>X</b>	<b>X</b>
Connections	<b>D</b>	Butt weld connection: DIN 2448		
	<b>A</b>	Butt weld connections: ANSI B 36.10 DN250: Schedule 40 and DN300: STD		
Other equipment	<b>CAP</b>	Aluminum cap		
	<b>H-WHEEL</b>	Steel handwheel		

**NOTE:**

Where products need to be certified according to specific certification societies or where higher pressures are required, contact your local Danfoss Sales Company.

**Table 13: Ordering**

Type	Size		Code number
	mm	in.	
<b>SVA-DL 250 D CAP</b>	250	10	<b>148B3760</b>
<b>SVA-DL 250 D H-WHEEL</b>	250	10	<b>148B3761</b>
<b>SVA-DL 250 A CAP</b>	250	10	<b>148B3762</b>
<b>SVA-DL 250 A H-WHEEL</b>	250	10	<b>148B3763</b>
<b>SVA-DH 250 D CAP</b>	250	10	<b>148B3764</b>
<b>SVA-DH 250 D H-WHEEL</b>	250	10	<b>148B3765</b>
<b>SVA-DH 250 A CAP</b>	250	10	<b>148B3766</b>
<b>SVA-DH 250 A H-WHEEL</b>	250	10	<b>148B3767</b>
<b>SVA-DL 300 D CAP</b>	300	12	<b>148B3770</b>
<b>SVA-DL 300 D H-WHEEL</b>	300	12	<b>148B3771</b>
<b>SVA-DL 300 A CAP</b>	300	12	<b>148B3772</b>
<b>SVA-DL 300 A H-WHEEL</b>	300	12	<b>148B3773</b>
<b>SVA-DH 300 D CAP</b>	300	12	<b>148B3774</b>
<b>SVA-DH 300 D H-WHEEL</b>	300	12	<b>148B3775</b>
<b>SVA-DH 300 A CAP</b>	300	12	<b>148B3776</b>
<b>SVA-DH 300 A H-WHEEL</b>	300	12	<b>148B3777</b>

**A** = ANSI butt-weld

**D** = DIN butt-weld

**H-WHEEL**: Handwheel

**CAP**: Vented cap

## 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](https://danfoss.com) or contact your local Danfoss representative if you have any questions.


**Table 14: Valid Approvals**

Type	File name	Document type	Document topic	Approval authority
<b>SVA-DL 250</b>	CRN.0C16578.523467890YTN	Pressure - Safety Certificate	CRN	TSSA
<b>SVA-DL 300</b>	0045 202 1201 Z 00423 19 D 001(00)	Pressure - Safety Certificate	PED	TÜV
	CRN.0C16578.523467890YTN	Pressure - Safety Certificate	CRN	TSSA
<b>SVA-DH 250</b>	CRN.0C16578.523467890YTN	Pressure - Safety Certificate	CRN	TSSA
<b>SVA-DH 300</b>	0045 202 1201 Z 00423 19 D 001(00)	Pressure - Safety Certificate	PED	TÜV
	CRN.0C16578.523467890YTN	Pressure - Safety Certificate	CRN	TSSA

**Table 15: Compliance**

Nominal bore	DN 250 mm (10 in.)	DN 300 (12 in.)
Classified for	Fluid group I	
Category	III	IV

**Table 16: Pressure Equipment Directive (PED)**

	SVA-DL and SVA-DH valves are approved and CE marked in accordance with the Pressure Equipment Directive - 97/23/EC. For further details / restrictions - see Installation guide.
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