ENGINEERING TOMORROW

Data Sheet

Shut-off valve SVA-140B
140 bar (2030 psi) series

The new 140 bar manual valve range for Industrial CO_2 Trans-critical Systems

The new 140 bar manual valve range for Industrial CO_2 Trans-critical Systems is based on the successful modular Standard SVL platform. The same flexibility, simplicity and efficiency are features offered in this new series.

The valves are available as parts program.

- From DN 50 (2") to 150 (6")
- In angle or straightway
- With DIN or ANSI butt-weld connections and DIN or ASME hard soldering (brazing) connections up to 64mm or 2 ⅛"

Features

- Applicable to: R744 (CO_2) Sub and Trans critical
- Modular Concept:
  - Each valve housing is available with several different connection types and sizes
  - Possible to convert FIA-140B strainers to other products in the Flexline™ SVL family (e.g. shut-off valve) just by replacing the complete top part
- Max. working pressure: 140 bar (2030 psi)
- Max. differential pressure: 110 bar (1595 psi)
- Temperature range: -40 °C to +150 °C (-40 °F to + 302 °F)
- Fast and easy valve overhaul service. It is easy to replace the top part and no welding is needed
- Available in angle and straightway versions
- Each valve type is clearly marked with type, size and performance range
- The valves and caps are prepared for sealing, to prevent operation by unauthorized persons, using a seal wire
- Balanced piston design providing smooth low torque opening of valve at high differential pressure
- Internal metal back seating
- Can accept flow in both directions
- Housing and bonnet material is low temperature steel according to requirements of the Pressure Equipment Directive and other international classification authorities
- Equipped with bolts in low temp steel with high tensile strength
- Classification: UL, CRN etc. To get an updated list of certifications on the products please contact your local Danfoss Sales Company

Media

Refrigerants

Applicable to R744 (CO_2).

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/, or by contacting your local Danfoss representative.

Product specification

Pressure and temperature data

Table 1: Temperature and pressure

Description	Values
Temperature range	-40 °C /+150 °C (-40 °F /+302 °F)
Max. working pressure	140 bar (2030 psi)
Max. differential pressure	110 bar (1595 psi)

Design

Housing
Made of special, cold resistant steel

Valve cone
A PEEK tightening ring provides perfect sealing with minimum closing force in the entire temperature range.

Spindle
Made of polished stainless steel.

Piston
An orifice through the cone and spindle equalizes the valve inlet pressure P1 with the pressure in the chamber above the piston when the spindle is operated. In this way, can the valve be operated smoothly by an appropriately sized wrench or handwheel(SVA-140B DN 125-150).

Packing gland
The low temperature packing gland ensures a perfect tightness in the range: -40 °C/+150 °C (-40 °F/+302 °F). The packing gland can be re-tightened with a wrench postponing the overhaul of the valve.

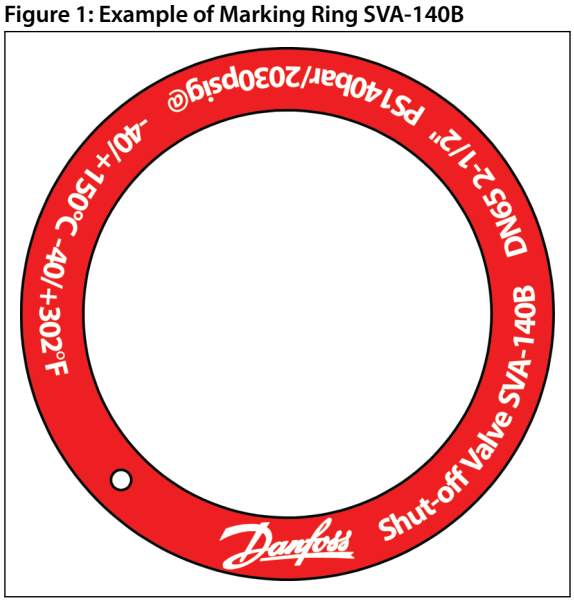
Installation

It is recommended that the valves be installed in the direction of flow indicated by the arrow on the valve body. The SVA-140B can be installed in the opposite direction, but this slightly reduces the k_v-value (C_v-value).

The valve is designed to withstand high internal pressure. However, the piping system in general should be designed to avoid liquid traps and reduce the risk of hydraulic pressure caused by thermal expansion.

For further information refer to installation instructions for SVA-140B.

Figure 1: Example of Marking Ring SVA-140B



Connections

Available with the following connections:

- Butt-weld DIN (EN 10216-2)
- Butt-weld ANSI (B 36.10 Schedule 80)
- Brazing EN 1254-5, 54 and 64mm
- Brazing ASME B16.50, 2 ⅛" and 2 ⅝"

The DN 50 Straight valve is machined from a normal DN 65 Straight sized valve house, but with DN 50 connections. The different geometry explains why the K_v/C_v value of the DN 50 Straight exceptionally is higher than DN 50 Angular.

Figure 2: DIN

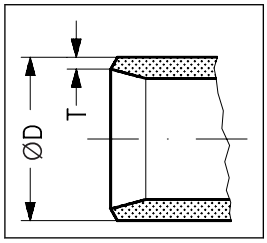


Table 2: Butt-weld DIN (EN 10216-2)

Size		ØD	T	ØD	T	k_v-angle	k_v-straight	C_v-angle	C_v-straight
mm	in.	mm	mm	in.	in.	m^3/h	m^3/h	$US_{gal/min}$	$US_{gal/min}$
50	2	60.3	5.0	2.37	0.20	67	79	77	91
65	2½	76.1	6.3	3	0.25	103	91	119	105
80	3	88.9	7.1	3.50	0.28	174	146	201	169
100	4	114.3	8.8	4.50	0.35	292	251	338	290
125	5	139.7	10	5.5	0.39	500	411	575	473
150	6	168.3	11	6.63	0.43	697	541	802	622

Figure 3: ANSI

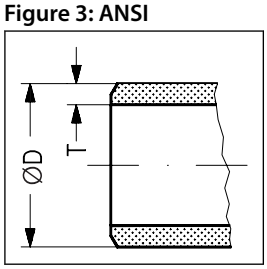


Table 3: Butt-weld ANSI (B 36.10 Schedule 80)

Size		ØD	T	ØD	T	k_v-angle	k_v-straight	C_v-angle	C_v-straight
mm	in.	mm	mm	in.	in.	m^3/h	m^3/h	$US_{gal/min}$	$US_{gal/min}$
50	2	60.3	5.6	2.37	0.22	67	79	77	91
65	2½	73.0	7.0	2.87	0.28	103	91	119	105
80	3	88.9	7.6	3.50	0.30	174	146	201	169
100	4	114.3	8.6	4.50	0.34	292	251	338	290
125	5	141.3	9.53	5.56	0.38	500	411	575	473
150	6	168.3	10.97	6.63	0.43	697	541	802	622

Figure 4: SD (DIN)

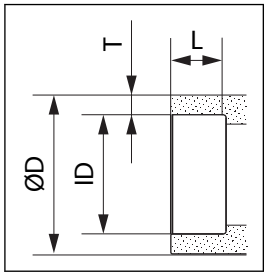


Table 4: Brazing EN 1254-5

Size		ID	L	ØD	T	ID	L	ØD	T	k_v-angle	k_v-straight	C_v-angle	C_v-straight
mm	in.	mm	mm	mm	mm	in.	in.	in.	in.	m^3/h	m^3/h	$US_{gal/min}$	$US_{gal/min}$
50	2	54	13.5	60.3	3.15	2.13	0.53	2.37	0.12	67	79	77	91
65	2½	64	13.5	73	4.5	2.52	0.53	2.87	0.18	103	91	119	105

Figure 5: SA (ASME)

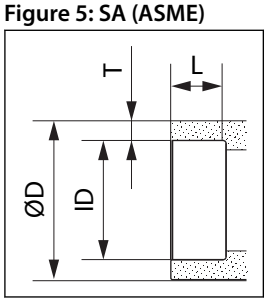


Table 5: Brazing ASME B16.50

Size		ID	L	ØD	T	ID	L	ØD	T	k_v-angle	k_v-straight	C_v-angle	C_v-straight
mm	in.	mm	mm	mm	mm	in.	in.	in.	in.	m^3/h	m^3/h	$US_{gal/min}$	$US_{gal/min}$
50	2	54	13.5	60.3	3.15	2⅛	0.53	2.37	0.12	67	79	77	91
65	2½	66.7	13.5	76.1	4.7	2⅝	0.53	3.00	0.19	103	91	119	105

Material specification

SVA-140B 50-65 (2 – 2½ in.)

Figure 6: SVA-140B 50-65 (2 – 2½ in.)

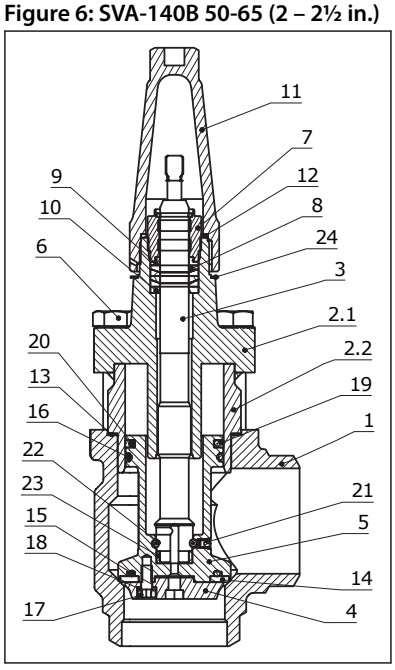


Table 6: Material and part list for DN 50-65

No.	Part	Material	EN	ISO	ASTM	GB/T
1	Housing	Steel	P285QH, 10222-4		LF2, A350	
2	Welded bonnet	Steel				
2.1	Bonnet	Steel	P285QH, 10222-4			
2.2	Distance ring	Steel	S355J2+N, 10025-2			Q355ND, 1591
3	Spindle	Stainless steel	X8CrNiS18-9, 10088-3		AISI 303	
4	Cone	Steel	11SMn30, 10087			
5	Piston	Steel	11SMn30, 10087			
6	Bolts	Steel	42CrMo4+QT, 10250-3		AISI 303	
7	Thread connection	Stainless steel	X8CrNiS18-9, 10088-3			
8	Teflon ring	PTFE				
9	External bushing	Steel				
10	Washer	Steel				
11	Cap	Aluminium				
12	Cap sealing	Nylon				
13	Gasket for top module	Grafilit-EM				
14	Cone sealing	PEEK				
15	O-ring cone sealing	EPDM				
16	O-ring Piston sealing	EPDM				
17	Cone screw	Steel				
18	Nord-Lock disc	Steel				
19	Glyd ring for main radial sealing	PTFE				
20	O-ring for main radial sealing	EPDM				
21	Expander	Steel				
22	Ball	Steel				
23	Bushing	Steel				
24	Identification wring	Aluminium				

SVA-140B 80-150 (3 – 6 in.)

Figure 7: SVA-140B 80-150 (3 – 6 in.)

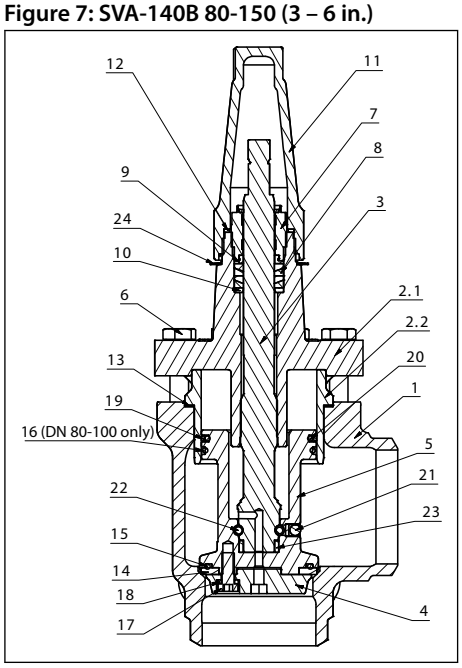


Table 7: Material and part list for DN 80-150

No.	Part	Material	EN	ISO	ASTM	GB/T
1	Housing	Steel	G20Mn5QT, 10213-3		LCC, A352	
2	Welded bonnet	Steel				
2.1	Bonnet	Steel	DN 125-150: P285QH, 10222-4			
2.2	Distance ring	Steel	DN 80-100: S355J2+N, 10025-2 DN 125-150: P285QH, 10222-4			DN 80-100: Q355ND, 1591
3	Spindle	Stainless steel	X8CrNiS18-10, 10088-3		AISI 304	
4	Cone	Steel	11SMn30, 10087			
5	Piston	Steel	11SMn30, 10087			
6	Bolts	Steel	42CrMo4+QT, 10250-3			
7	Thread connection	Stainless steel	X8CrNiS18-9, 10088-3		ANSI 303	
8	Teflon ring	PTFE				
9	External bushing	Steel				
10	Washer	Steel				
11	Cap	Aluminium				
12	Cap sealing	Nylon				
13	Gasket for top module	Grafilit-EM				
14	Cone sealing	PEEK				
15	O-ring cone sealing	EPDM				
16	O-ring Piston sealing	EPDM				
17	Cone screw	Steel				
18	Nord-Lock disc	Steel				
19	Glyd ring for main radial sealing	PTFE				
20	O-ring for main radial sealing	EPDM				
21	Expander	Steel				
22	Ball	Steel				
23	Bushing	Steel				
24	Identification wring	Aluminium				

Dimensions and weights

SVA 50-150 (2 – 6 in.) in angleway and straightway version with cap

Table 8: SVA 50 - 150 (2 – 6 in.) in angleway and straightway version with cap

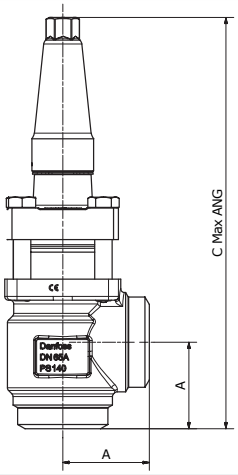
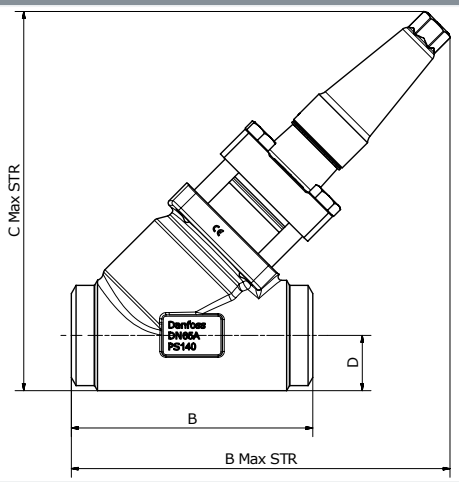
SVA-140B xx ANG CAP	SVA-140B xx STR CAP
	

Table 9: SVA 50 - 150 (2 – 6 in.) in angleway and straightway version with cap

Valve size		A	$C_{max. ANG}$	B	D	$B_{max. STR}$	$C_{max. STR}$	Weight [kg]
50	ANG	70	333					7.5
65	ANG	70	333					7.5
80	ANG	90	386					13
100	ANG	106	429					22.2
125	ANG	128	571.7					45.3
150	ANG	145	617.7					66.7
50	STR			176	40	276	276	8.5
65	STR			176	40	276	276	8.5
80	STR			216	48	318	320	14.5
100	STR			264	60	360	370	26.8
125	STR			322	77	470.5	485.5	54.0
150	STR			370	90	516.4	537.4	87.1

NOTE:
Specified weights are approximate values only.

Table 10: SVA 125-150 (5 – 6 in.) in angleway and straightway version with handwheel installed for operation purpose

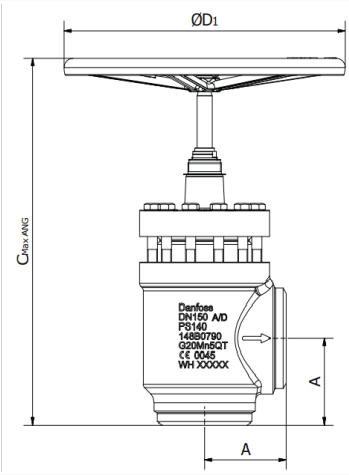
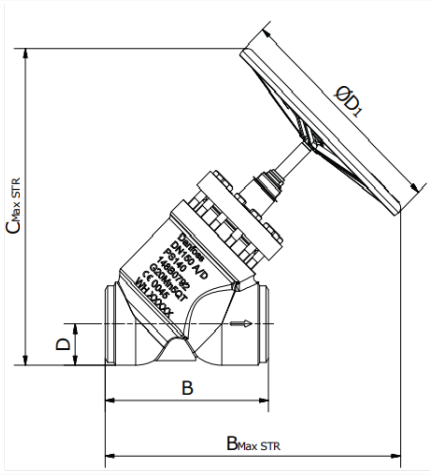
SVA-140B xx ANG	SVA-140B xx STR
	

Table 11: SVA 125-150 (5 – 6 in.) in angleway and straightway version with handwheel installed for operation purpose

Valve size		$C_{max, ANG}$	A	ØD1	D	B	$B_{max, STR}$	$C_{max, STR}$
125	ANG	552.1	128	500				
150	ANG	612.2	145	500				
125	STR				77	322	614	629
150	STR				90	370	669.6	690.6

Ordering

NOTE:
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: Type codes

Connection	A	Butt-weld ANSI (B 36.10 Schedule 80)
	D	Butt-weld DIN (EN 10216-2)
	SA	Brazing ASME B16.50, 2⅛" and 2⅝"
	SD	Brazing EN 1254-5, 54 and 64 mm
Valve housing	ANG	Angle flow
	STR	Straight flow

Ordering SVA-140B valves from the parts program

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.

Table 13: Ordering SVA-140B valves from the parts program

Size [DN]		Parts Program								
		Housing[2]								Top complete[1]
mm	in.	ANG				STR				SVA-140B
		ANSI	DIN	SA	SD	ANSI	DIN	SA	SD	
50	2	148B5861	148B5861	148B6861	148B6861	148B5862	148B5862	148B6862	148B6862	148B6927[3]
65	2½	148B6908	148B6910	148B6912	148B6914	148B6909	148B6911	148B6913	148B6915	148B6927[3]
80	3	148B5971	148B5971			148B5972	148B5972			148B6928
100	4	148B6918	148B6918			148B6919	148B6919			148B6929
125	5	148B6922	148B6920			148B6923	148B6921			148B6930
150	6	148B6924	148B6924			148B6925	148B6925			148B6931

[1] All SVA-140B top completes are supplied with cap assembled. A handwheel is available as spare parts for the DN 125-150.
[2] Code numbers may cover more connection types (e.g. A/D) where standards and tolerances allow for it.
[3] Same code number for DN 50-65

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 14: Certificates, declarations and approvals

File name	Document type	Document topic	Approval Authority
033F0685.AN	EU Declaration	PED	Danfoss
033F0691.AH	Manufacturers Declaration	RoHS	Danfoss

Table 15: Certificates and declarations

CE	SVA/FIA-140B valves are approved according to the European standard specified in the Pressure Equipment Directive and are CE marked.

NOTE:
For further details / restrictions - see Installation guide.

Table 16: PED Categorization

Nominal bore	DN 50-100	DN 125-150
Classified for	Fluid group 2	
Category	I	II

ENGINEERING TOMORROW

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