

## Data Sheet

Check & stop valve, type **SCA-X SS**  
Check valve, type **CHV-X SS**

Assures precision in harsh operating surroundings



In certain specific areas such as outdoor applications and corrosive atmospheres, such as coastal installations, there is a need for high surface protection to prevent failure due to corrosion.

Today's food safety standards often call for daily treatment with detergents to protect against bacteria growth, again producing a need for high surface protection.

SCA-X SS are check valves with a built-in stop valve function. CHV-X SS are check valves only.

The valves are designed to open at very low differential pressures, allow favourable flow conditions and are easy to disassemble for inspection and service.

The valve cone has a built-in flexibility to ensure a precise and tight closing towards the valve seat.

A well balanced dampening effect between the piston and the cylinder gives an optimal protection during low loads and against pulsations.

## Features

- Applicable to HCFC, HFC, R717 (Ammonia), R744 (CO<sub>2</sub>), Propane, Butane, Iso-Butane and Ethane.
  - R717 Heat Pump and Propylene applications with replaced O-ring.
- Designed to give favourable flow conditions.
- Internal backseating enables replacement of the spindle seal whilst the valve is active, i.e. under pressure (SCA-SS)
- Housing is made of special cold resistant stainless steel approved for low temperature operations.
- Easy to disassemble for inspection and service.
- Butt-weld DIN and ANSI connections.
- Max. operating pressure: 52 bar g (754 psig)
- Temperature range: -60/+150 °C (\*76 +302 °F).
- Compact and light valves for easy handling and installation.
- Classification: DNV, CRN, BV, EAC etc. To get an updated list of certification on the products please contact your local Danfoss Sales Company.

## Media

### **Refrigerants**

Applicable to HCFC, HFC, R717 (Ammonia), R744 (CO<sub>2</sub>), Propane, Butane, Iso-Butane and Ethane. R717 Heat Pump and Propylene applications with replaced O-ring.

For further information refer to the installation guide for SCA-X SS/CHV-X SS.

### **New refrigerants**

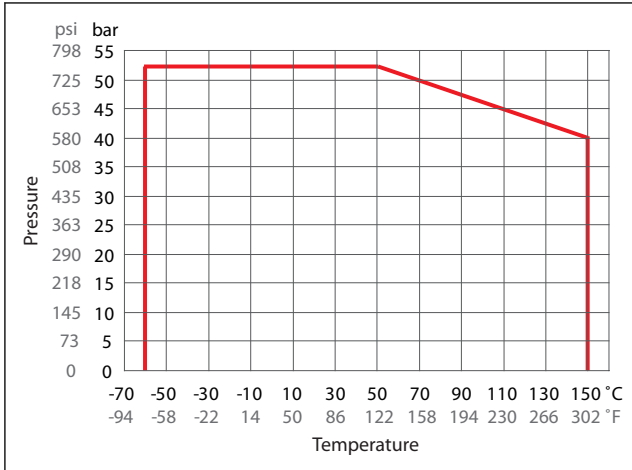
Danfoss products are continually evaluated for use with new refrigerants depending on market requirements.

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 range**

Figure 1: Pressure and temperature range graph



**SCA-X SS/CHV-X SS DN 15 - DN 65**

Table 1: Pressure and temperature

Description	Values
Temperature range	-60 °C/+150 °C (-76 °F/+302 °F)
Max. working pressure	52 bar (754 psig)

**Design**

**Housing**

Made of stainless steel approved for low temperature operations.

**Valve cone**

Valve cone with built in metallic stop - prevents damage to teflon ring in case of overtightening.

**Damping chamber**

The chamber is filled with refrigerants (gas or liquid), which provides a damping effect when the valve opens and closes.

**Spindle (SCA-X SS)**

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

**Packing Gland (SCA-X SS)**

The “full temperature range” packing gland is the standard for the entire SVL platform.

This ensures perfect tightness throughout the whole temperature range: -60 °C/+150 °C (-76 °F/+302 °F).

**Installation**

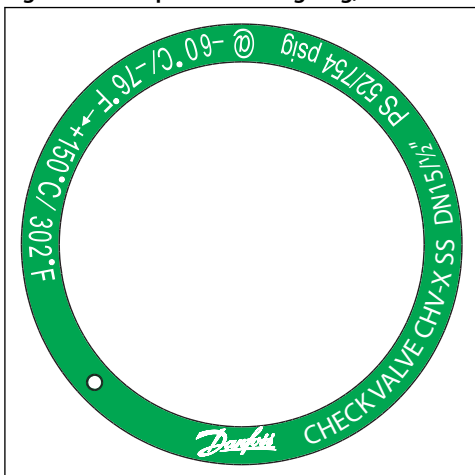
The valve must be mounted vertically with the cone downwards.

The valve is designed to resist very 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 guides for SCA-X SS/CHV-X SS.

If cold refrigeration oil having low viscosity enters and settles in the damping chamber, problems with the check valve may arise. Consequently, it may be necessary to modify the valve for more viscous liquids by enlarging the hole to the damping chamber.

Figure 2: Example of marking ring, CHV-X SS



## Connections

Available with the following connections:

- Butt-weld DIN (EN 10220) DN 15 - 40 (½ - 1½ in.)
- Butt-weld ANSI (B 36.19M) DN 20 - 65 (¾ - 2½ in.)

Figure 3: DIN

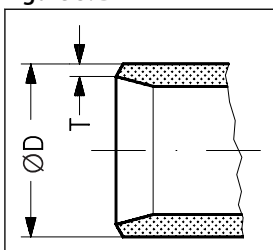


Table 2: Butt-weld DIN (EN 10220)

Size		ØD	T
15	mm	21.3	2.3
½	in.	0.839	0.091
20	mm	26.9	2.3
¾	in.	1.059	0.091
25	mm	33.7	2.6
1	in.	1.327	0.103
32	mm	42.4	2.6
1¼	in.	1.669	0.102
40	mm	48.3	2.6
1½	in.	1.902	0.103

Figure 4: ANSI

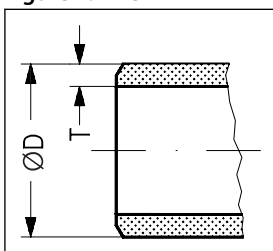


Table 3: Butt-weld ANSI (B 36.19M, SCHEDULE 40)

Size		ØD	T
20	mm	26.9	2.9
¾	in.	1.06	0.11
25	mm	33.7	3.5

## Check & stop valve, type SCA-X SS and Check valve, type CHV-X SS

Size		ØD	T
1	in.	1.33	0.14
32	mm	42.4	3.6
1¼	in.	1.67	0.14
40	mm	48.3	3.7
1½	in.	1.9	0.15
65	mm	73.0	5.2
2½	in.	2.87	0.20

### Material specification

#### SCA-X SS 15 - 40 and CHV-X SS 15 - 40

Figure 5: SCA-X SS 15 - 40 and CHV-X SS 15 - 40

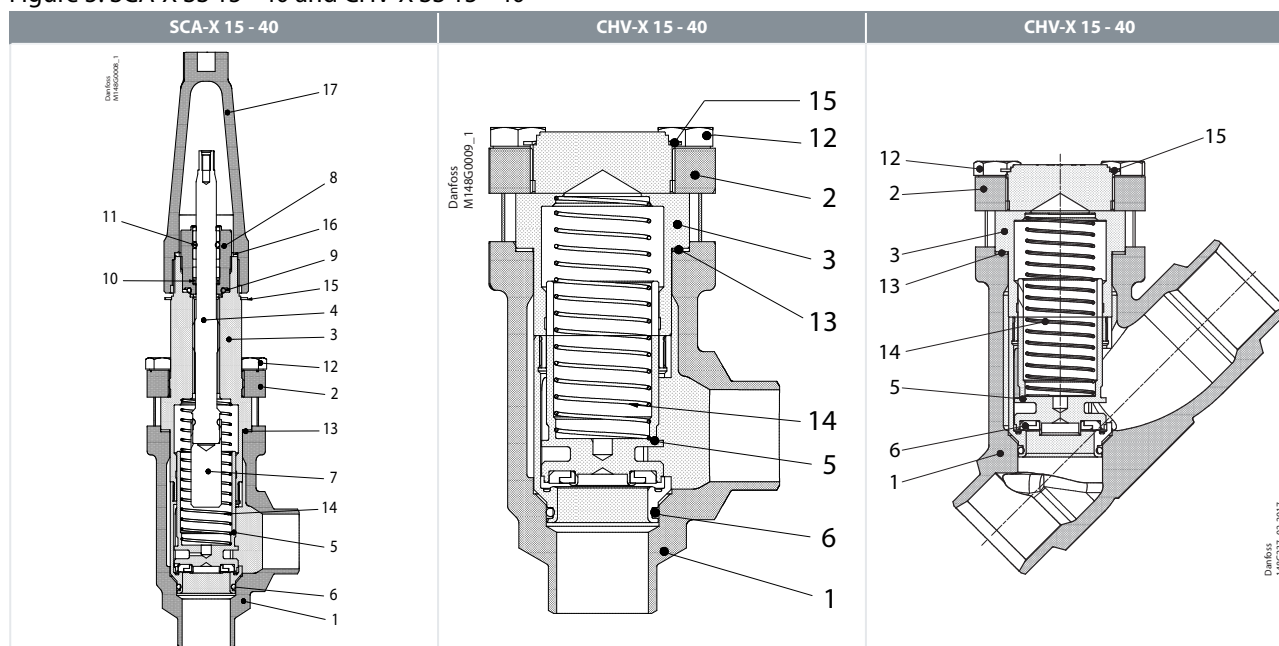


Table 4: Parts list and materials

No.	Part	Material	DIN/EN	ISO	ASTM
1	Housing	Stainless steel	GX5CrNi19-10 EN10213-4		AISI 304
2	Bonnet, Flange	Stainless steel	X5CrNi18-10 EN10088		AISI 304
3	Bonnet, Insert	Stainless steel	X8CrNiS18-9 DIN 17440		
4	Spindle	Stainless steel	X8CrNiS18-9 DIN 17440	Type 17, 17440	AISI 303
5	Cone	Steel Teflon (PTFE)			
6	O-ring	Cloroprene (Neoprene)			
7	Spindle extension	Steel			
8	Packing gland O-rings	Cloroprene (Neoprene)			
9	Packing washer	Aluminium			
10	Spring loaded seal	Teflon (PTFE)			
11	O-ring	Cloroprene (Neoprene)			
12	Bolts	Stainless steel	A2-70	A2-70	Type 308
13	Gasket	Fiber, non-asbestos			
14	Spring	Steel			
15	Identification ring	Stainless steel			
16	Seal cap gasket	Nylon			
17	Spindle seal cap	Aluminium			

SCA-X SS 65

Figure 6: SCA-X SS 65

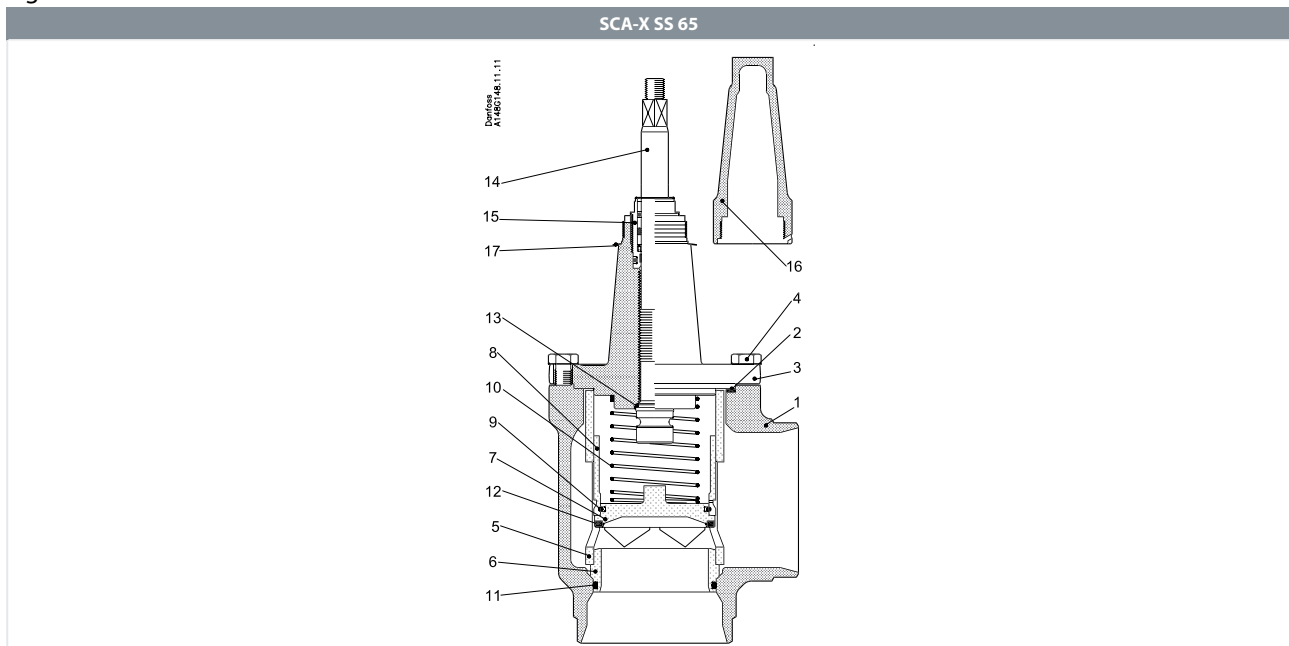


Table 5: Parts list and materials

No.	Part	Material	DIN/EN	ISO	ASTM
1	Housing	Stainless steel	GX5CrNi19-10 EN10213-4		AISI 304
2	Gasket	Fiber, Non-asbestos			
3	Bonnet	Stainless steel	X5CrNi18-10 EN10088		AISI 304
4	Bolts	Stainless steel	A2-70	A2-70	A-276
5	Tube	Steel			
6	Seat	Steel			
7	Valve plate	Steel			
8	Guide sleeve	Steel			
9	Spring ring	Steel			
10	Spring	Steel			
11	O-ring	Chloroprene (Neoprene)			
12	Teflon ring	Teflon (PTFE)			
13	Soft back seal	Teflon (PTFE)			
14	Spindle	Stainless steel	X8CrNiS18-9 17440	Type 17 R 683/13	AISI 303
15	Packing gland	Steel	9Mn28, 1651	Type 2 R 683/9	1213, SAE J403
16	Spindle seal cap and gasket	Aluminium			
17	Marking label	Aluminium			

## Dimensions and weights

### SCA-X SS/CHV-X SS 15 - 40 (1/2- 1 1/2 in.)

Figure 5: SCA-X SS 15 - 40

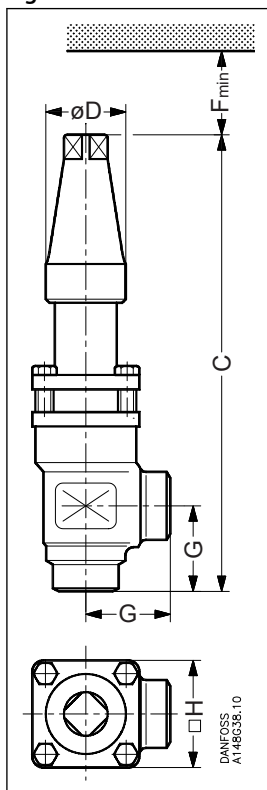


Table 6: SCA-X SS 15 - 40

Valve size	Units	C	G	ØD	F <sub>min</sub>	H	Weight
SCA-X SS 15 (1/2 in.)	mm	212	45	38	60	60	1.6 kg
	in.	8.35	1.77	1.50	2.36	2.36	3.53 lb
SCA-X SS 20 (3/4 in.)	mm	212	45	38	60	60	1.6 kg
	in.	8.35	1.77	1.50	2.36	2.36	3.53 lb
SCA-X SS 25 (1 in.)	mm	295	55	50	85	70	3.2 kg
	in.	11.61	2.17	1.97	3.35	2.76	7.05 lb
SCA-X SS 32 (1 1/4 in.)	mm	295	55	50	85	70	3.2 kg
	in.	11.61	2.17	1.97	3.35	2.76	7.05 lb
SCA-X SS 40 (1 1/2 in.)	mm	295	55	50	85	70	3.2 kg
	in.	11.61	2.17	1.97	3.35	2.76	7.05 lb



Figure 6: CHV-X SS 15 - 40

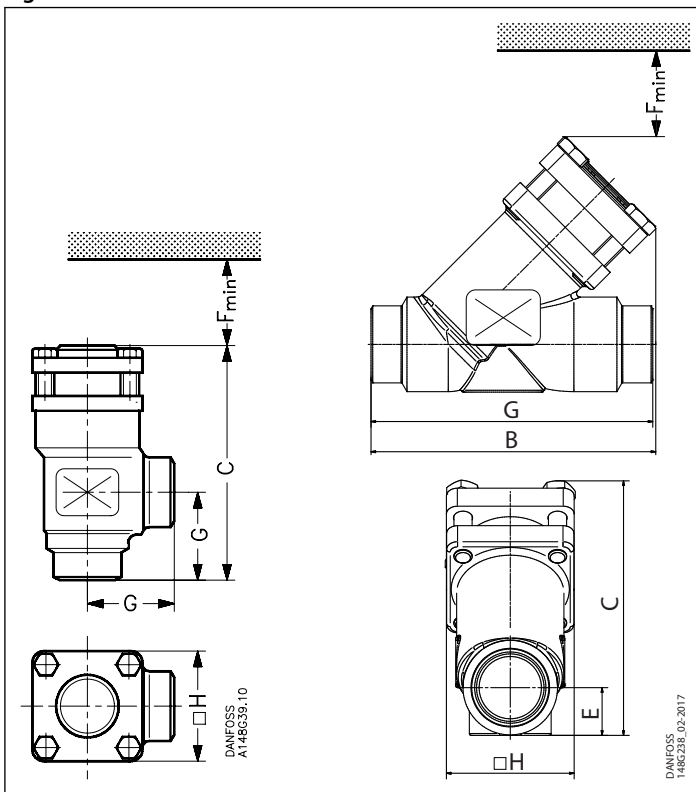


Table 7: CHV-X SS 15 - 40 Angleway

Valve size	Units	C	G	F <sub>min</sub>	H	Weight
CHV-X SS 15 (½ in.)	mm in.	103 4.06	45 1.77	60 2.36	60 2.36	1.2 kg 2.65 lb
CHV-X SS 20 (¾ in.)	mm in.	103 4.06	45 1.77	60 2.36	60 2.36	1.2 kg 2.65 lb
CHV-X SS 25 (1 in.)	mm in.	143 5.63	55 2.17	85 3.35	70 2.76	2.3 kg 5.07 lb
CHV-X SS 32 (1¼ in.)	mm in.	143 5.63	55 2.17	85 3.35	70 2.76	2.3 kg 5.07 lb
CHV-X SS 40 (1½ in.)	mm in.	143 5.63	55 2.17	85 3.35	70 2.76	2.3 kg 5.07 lb

Table 8: CHV-X SS 15 - 40 Straightway

Valve size	Units	C	B	E	G	F <sub>min</sub>	H	Weight
CHV-X SS 15 (½ in.)	mm in.	99 3.90	114 4.49	19 0.75	120 4.72	60 2.36	60 2.36	1.3kg 2.87lb
CHV-X SS 20 (¾ in.)	mm in.	99 3.90	114 4.49	19 0.75	120 4.72	60 2.36	60 2.36	1.3kg 2.87lb
CHV-X SS 25 (1 in.)	mm in.	141 5.55	157 6.18	26 1.02	155 6.10	85 3.35	70 2.76	2.6kg 5.73lb
CHV-X SS 32 (1¼ in.)	mm in.	141 5.55	157 6.18	26 1.02	155 6.10	85 3.35	70 2.76	2.6kg 5.73lb
CHV-X SS 40 (1½ in.)	mm in.	141 5.55	157 6.18	26 1.02	155 6.10	85 3.35	70 2.76	2.6kg 5.73lb

**NOTE:**

Specified weights are approximate values only.

SCA-X SS 65 (2½ in.)

Figure 7: SCA-X SS 65

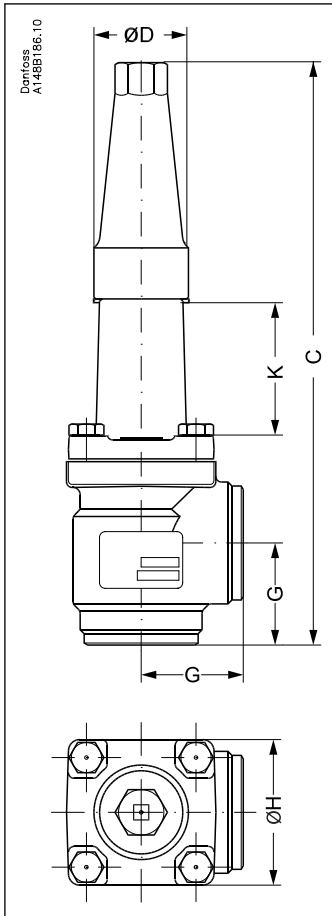


Table 9: SCA-X SS

Valve size	K		C		G		$\varnothing D$		$\varnothing H$		Weight	
	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	kg	lb
SCA-X SS 65	70	2.76	335	13.19	70	2.76	50	1.97	90	3.54	5.5	12.16
SCA-X SS (2½)												

**NOTE:**

Specified weights are approximate values only.

## Ordering

### Ordering complete valves

#### 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 from part of the standard product range.

Table 10: Valve type

Valve type	SCA-X SS CHV-X SS	Stop Check Valve Check Valve	D	A
(valve size measured on the connection diameter)	15	DN 15	x	
	20	DN 20	x	x
	25	DN 25	x	x
	32	DN 32	x	x
	40	DN 40	x	x
	65	DN 65		x
Connections	D A	Butt-weld connection: DIN EN 10220 Butt-weld connection: ANSI B 36.19M		
Valve housing	ANG STR	Angle flow Straight flow		

#### ! IMPORTANT:

Where products need to be certified according to specific certification societies the relevant information should be included at the time of order.

### SCA-X SS Angleway

Table 11: Butt-weld DIN (EN 10220)

Size		Type	Code No.
mm	in.		
15	½	SCA-X SS 15 D ANG	148B5293
20	¾	SCA-X SS 20 D ANG	148B5381
25	1	SCA-X SS 25 D ANG	148B5490
32	1¼	SCA-X SS 32 D ANG	148B5585
40	1½	SCA-X SS 40 D ANG	148B5664

Table 12: Butt-weld ANSI (B 36.19M SCHEDULE 40)

Size		Type	Code No.
mm	in.		
20	¾	SCA-X SS 20 A40 ANG	148B6489
25	1	SCA-X SS 25 A40 ANG	148B6480
32	1¼	SCA-X SS 32 A40 ANG	148B6490
40	1½	SCA-X SS 40 A40 ANG	148B5687
65	2½	SCA-X SS 65 A40 ANG	148B7012

### CHV-X SS Angleway

Table 13: Butt-weld DIN (EN 10220)

Size		Type	Code No.
mm	in.		
15	½	CHV-X SS 15 D ANG	148B5294
20	¾	CHV-X SS 20 D ANG	148B5382
25	1	CHV-X SS 25 D ANG	148B5491
32	1¼	CHV-X SS 32 D ANG	148B5586
40	1½	CHV-X SS 40 D ANG	148B5665

## Check & stop valve, type SCA-X SS and Check valve, type CHV-X SS

**Table 14: Butt-weld ANSI (B 36.19M SCHEDULE 40)**

Size		Type	Code No.
mm	in.		
20	¾	CHV-X SS 20 A40 ANG	<b>148B6491</b>
25	1	CHV-X SS 25 A40 ANG	<b>148B6481</b>
32	1¼	CHV-X SS 32 A40 ANG	<b>148B6492</b>
40	1½	CHV-X SS 40 A40 ANG	<b>148B5688</b>

### CHV-X SS Straightway

**Table 15: Butt-weld DIN (EN 10220)**

Size		Type	Code No.
mm	in.		
15	½	CHV-X SS 15 D STR	<b>148B5678</b>
20	¾	CHV-X SS 20 D STR	<b>148B5679</b>
25	1	CHV-X SS 25 D STR	<b>148B5680</b>
32	1¼	CHV-X SS 32 D STR	<b>148B6544</b>
40	1½	CHV-X SS 40 D STR	<b>148B6566</b>

**Table 16: Butt-weld ANSI (B 36.19M SCHEDULE 40)**

Size		Type	Code No.
mm	in.		
20	¾	CHV-X SS 20 A40 STR	<b>148B6608</b>
25	1	CHV-X SS 25 A40 STR	<b>148B6609</b>
32	1¼	CHV-X SS 32 A40 STR	<b>148B6610</b>
40	1½	CHV-X SS 40 A40 STR	<b>148B6611</b>

ANG = Angleway

STR = Straightway

For further information please contact your local Danfoss Sales Company.

### **Replacement kit**

Replacement kit (O-ring replacement) for R717 Ammonia Heat Pump\* and Propylene applications (including ID tag)

**Table 17: O-ring kit**

Size		O-ring kit for	
mm	in.	R717 Heat pump	R1270 Propylene
15	½	<b>148B6070</b>	<b>148B6077</b>
20	¾		
25	1		
32	1¼	<b>148B6071</b>	<b>148B6078</b>
40	1½	<b>148B6073</b>	<b>148B6080</b>
65	2½		


\* Replacement kits for R717 Ammonia Heat Pump is applicable for continuous operating temperature between +100 °C to 150 °C (212 °F to 302 °F)

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

	The SCA-X SS/CHV-X SS valves are approved according to the European standard specified in the Pressure Equipment Directive and are CE marked.
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**Table 19: SCA-X SS/CHV-X SS valves**

SCA-X SS/CHV-X SS valves		
Nominal bore	DN = < 25 mm (1 in.)	DN 32-65 mm (1¼ - 2½ in.)
Classified for	Fluid group I	
Category	Article 4, paragraph 3	II

**Table 20: Certificates and declarations**

File name	Document type	Document topic	Approval authority
03709-F0 BV	Marine - Safety Certificate	-	BV
TAP0000001 Rev. 1	Marine - Safety Certificate	-	DNV GL
033F0685.AK	EU Declaration	EMCD/PED	Danfoss
033F0691.AE	Manufacturers Declaration	RoHS	Danfoss

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