TYPE APPROVAL CERTIFICATE

Certificate no.:
TAP0000001
Revision No:
2

This is to certify:

that the Valves for Refrigerants

with type designation(s)
SCA-X, CHV-X, SCA-X SS CHV-X SS, KDC

issued to
Danfoss A/S
Nordborg, Syddanmark, Denmark

is found to comply with
DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV class programme DNV-CP-0186 – Type approval – Valves

Application:

Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV.

Type:	Temperature range:	Sizes:	Design pressure:
SCA-X, CHV-X	-55°C to 150°C	DN15 - DN125	see page 2
SCA-X SS CHV-X SS	-55°C to 150°C	DN15 - DN40	65 bar
KDC	-55°C to 150°C	DN65 - DN200	65 bar

Issued at **Høvik** on **2025-12-09**

This Certificate is valid until **2029-10-12**.
DNV local unit: **Fredericia Fleet In Service**

Approval Engineer: **Jane Lozanov**

for **DNV**
Digitally signed by Bosman van der Merwe

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

SCA-X / SCA-X SS – check and stop valves intended for use in refrigerant systems.
CHV-X / CHV-X SS – check valves intended for use in refrigerant systems.
KDC – pressure control valve.

Designs approved according to burst test reports.

Valve design standard: ISO 21922

Welding connections according to: DIN EN 10220 or ANSI/ASME B36.10

Materials – Type SCA-X, CHV-X, KDC

Part	Material	Grade and Standard	
		European	North American
Body	Carbon steel	G20Mn5QT EN 10213-3	ASTM A352 LCC
		P285QH EN 10222-4	ASTM A350 LF2
Cover	Carbon Steel	G20Mn5QT EN 10213-3	ASTM A352 LCC
		P285QH EN 10222-4	ASTM A350 LF2
		P275NL1 EN 10028-3	ASTM A662 A
Bonnet insert	Carbon steel	11Smn30 EN 10087	AISI 1213 UNS G12130
Spindle	Stainless steel	X10CrNiS18-9 EN 17440	AISI 303 UNS S30300
Bolt	Stainless steel	A2-70 ISO 3506	Type 308 UNS S30900

Materials – Type SCA-X SS, CHV-X SS

Part	Material	Grade and Standard	
		European	North American
Body & Bonnet	Stainless steel	X5CrNi18-10 EN 10222	ASTM A182 F304
		GX5CrNi19-10 EN 10213	ASTM A743 CF8
Bonnet insert	Stainless steel	X8CrNiS18-9 EN 10088	AISI 303 UNS S30300
Spindle	Stainless steel	X10CrNiS18-9 EN 17440	AISI 303 UNS S30300
Bolt	Stainless steel	A2-70 ISO 3506	Type 308 UNS S30900

Application/Limitation

Valves covered by this certificate may be used in refrigerant piping systems containing Group 1 or Group 2 refrigerants as defined in DNV-RU-SHIP Pt.4 Ch.6 Sec.6 [3.1].

Models	Sizes	Pressure rating	
		Standard	Special
SCA-X	DN15, DN20, DN25, DN32, DN40, DN50, DN65, DN80, DN100, DN125	65 bar	PN65
CHV-X	DN15, DN20, DN25, DN32, DN40, DN50, DN65, DN80, DN100, DN125	52 bar	PN65
SCA-X SS CHV-X SS Stainless Steel	DN15, DN20, DN25, DN32, DN40 DN15, DN20, DN25, DN32, DN40	65 bar	N/A
KDC	DN65, DN80, DN100, DN125, DN150, DN200	65 bar	N/A

Minimum design temperature: -55 °C
Maximum design temperature: 150 °C

For determination of allowable pressure at elevated temperatures (+50°C to 150 °C) the pressure reduction factors in accordance with ISO 21922 Annex C shall be applied.

No reduction in allowable pressure is required provided that impact testing is undertaken at -55 °C and shows 27 J impact energy. See ISO 21922 Annex D.

Materials and material protection chosen for the specific system shall be suitable for the intended medium and environmental conditions. Valves of austenitic stainless steel shall not be used in direct contact with seawater, reference is made to DNV Rules for Ships Pt.4 Ch.6 Sec.2.

The approval does not include actuator and/or other equipment for remote control of the valves.

The valves covered by this certificate are not to be considered fire safe and therefore shall not be installed wherever fire safe application is required, e.g. as shut off or quick closing valves.

Valves with screwed-on bonnet shall only be used in piping systems according to limitations in DNV Rules for Ships Pt.4 Ch.6 Sec.9 [3.1.3] and [3.1.4].

Type Approval documentation

Document No.	*Rev.*	*Title*
148B1431	04	Valve House, Angle SVA DN15 DIN
148B1435	04	Valve house, Angle SVA DN20 DIN
148B0558	04	Valve house, angle SVA/REG 15-25
148B1448	06	Valve house, straight SVA DN15 DIN
148B1452	06	Valve house, straight SVA DN20 D
148B0559	05	Valve house, straight SVA/REG 15-25
2436-243	13	Flange SVA 15-20
148G1119	04	Valve bonnet SCA 15-20
148B2036	02	Bonnet SVA/REG 15-20
148B1740	1	SVA SS DN25 DIN, valve house angle
148B1741	1	SVA SS DN32 DIN valve house angle
148B1742	1	SVA SS DN40 DIN valve house angle
148B0648	0	SVA/REG SS 25-40 Valve House, angle
148B1747	1	SVA SS DN25 DIN valve house straight
148B1748	1	SVA SS DN32 DIN Valve house straight
148B1749	1	SVA SS DN40 DIN valve house straight
148B0652	0	SVA/REG SS 25-40 Valve House, straight
148B2284	0	SVA-SS 25-40 flange
148B2271	0	SVA/REG SS 25-40 Valve Bonnet
148G1291	02	Valve bonnet SCA-SS 25-40
148G1303	03	Guide top CHV-SS 25-40
148B1409	04	SVA 50 D Valve House, angle
148B0554	03	SVA 50 Valve House, angle
148B1382	04	SVA 50 D Valve House, straight
148B0555	04	SVA 50 Valve House, straight
148B1131	03	SVA-HS 50 Valve Bonnet
148B0522	08	SVA 50 Valve Bonnet, long neck
148B1411	04	SVA 65 D Valve House, angle
148B0556	04	SVA 65 Valve House, angle
148B1427	05	SVA 65 D Valve House, straight
148B0557	03	SVA 65 Valve house, straight
148B1132	04	SVA-HS 65 Valve Bonnet
148B0523	12	SVA 65 LN Forged valve bonnet
148H1307	02	FIA 65 Top Cover
148B1043	06	SVA 80 DIN Valve house angle
148B0512	09	SVA 80 ANG Valve housing, blank
148B2106	02	SVA 80 D Valve housing, straightway
148B0711	03	SVA 80 Straightway valve housing blank
148B1133	05	SVA-HS 80 Valve bonnet
148B0524	11	SVA 80 LN Forged valve bonnet
148H1308	01	FIA 80 Top Cover
148B1044	07	SVA 100 DN Valve house angle
148B0513	8	SVA 100 angle
148B2107	02	SVA 100 D STR Valve housing
148B0712	03	SVA 100 straightway valve housing blank
148B0712	03	SVA 100 straightway valve housing blank
148B1134	05	SVA-HS 100 Valve bonnet
148B0525	08	SVA 100 LN bonnet

Document No.	*Rev.*	*Title*
148H1309	02	FIA 100 Top Cover
148B0514	10	SVA 125 ANG valve housing
148B1045	08	SVA 125 DN Valve house angle
148B2108	02	SVA 125 D STR valve housing
148B0713	03	SVA 125 straightway valve housing blank
148B0713	03	SVA 125 Straightway valve housing blank
148B1135	04	SVA-HS 125 valve top
148B0526	13	SVA 125 LN forged valve bonnet
148H1310	01	FIA 125 Top Cover
148B1046	08	SVA 150 DN valve house angle
148B0515	09	SVA 150 ANG Valve housing blank
148B2109	02	SVA 150 D STR valve housing
148B0714	01	SVA 150 Straightway valve housing blank
148B1136	03	SVA-HS 150 valve bonnet
148B0527	14	SVA 150 forged valve bonnet
148H1311	01	FIA 150 Top cover
148B1062	07	SVA DN 200 valve house angle
148B0518	06	SVA 200 ANG valve housing blank
148B2010	03	SVA 200 D STR valve housing
148B0715	02	SVA 200 straightway valve house blank
148B0715	02	SVA 200 Straightway valve house blank
148B1137	04	SVA-HS 200 valve bonnet
148B0528	11	SVA 200 valve bonnet
148H1303	02	FIA 200 Top Cover
148B1738	1	SVA SS DN15 DIN Valve house, angle
148B1739	1	SVA SS DN20 DIN Valve house, angle
148B0647	0	SVA/REG SS 15-20 Valve House, angle
148B1745	1	SVA SS DN15 DIN Valve house, straight
148B1746	1	SVA SS DN20 D valve house, straight
148B0651	0	SVA/REG SS 15-20 Valve House, straight
148B2270	0	SVA/REG SS 15-20 Valve Bonnet
148B2283	0	SVA-SS 15-20 flange
148G1302	02	CHV-SS 15-20 guide top
148G1290	01	SCA-SS 15-20 valve bonnet
148H1233	0	FIA SS 15-20 top cover
148B0657	02	FIA SS 15-20 top cover blank
148H1080	03	FIA SS 15-50 top cover
148B1740	1	SVA SS DN25 DIN valve house, angle
148B1741	1	SVA SS DN32 DIN valve house angle
148B1742	1	SVA SS DN40 DIN valve house angle
148B0648f	0	SVA/REG SS 25-40 Valve House, angle
148B1747	1	SVA SS DN25 DIN valve house straight
148B1748	1	SVA SS DN32 DIN Valve house straight
148B1749	1	SVA SS DN40 DIN valve house straight
148B0652	0	SVA/REG SS 25-40 Valve House, straight
148B2284	0	SVA-SS 25-40 flange
148B2271	0	SVA/REG SS 25-40 Valve Bonnet
148G1291	02	SCA-SS 25-40 valve bonnet
148G1303	03	CHV-SS 25-40 guide top
148H1234	01	FIA SS 25-40 top cover
148B0658	02	FIA SS 25-40 tope cover blank
148H1081	03	FIA SS 25-40 top cover
		TEST REPORTS
-	-	Burst test report SCA DN20 PN65 Angle
-	-	Burst test report FIA/CHV DN50 PN65 straight

Document No.	*Rev.*	*Title*
-	-	Burst test report FIA/CHV DN65 PN65
-	-	Burst test report SVA-S/SCA DN80 PN65
-	-	Burst test report FIA/CHV DN80 PN65
-	-	Burst test report FIA/CHV DN100 PN65
-	-	Burst test report SVA-S DN125 (covers SCA 125, KDC 125) PN65
-	-	Burst test report FIA/CHV DN125 PN 65 angle
-	-	Burst test report SVA-S 150 angle (covers KDC 150 angle) PN65
-	-	Burst test report SVA-S 200 angle (covers KDC 200 angle) PN65
-	-	Burst test report SCA-SS DN20 PN52 Angle, dated 2013-10-07, witnessed by TUV Nord.
-	-	Burst test report CHV-SS DN20 PN52 Angle, dated 2013-10-07, witnessed by TUV Nord
-	-	Burst test CHV-SS 25, 32, 40 Angle, PN52
-	-	Burst test SCA-SS 40 Angle PN52
-	-	Burst test report CHV-X SS 20 Angle (covers CHV-X SS 15, 65 design bar), witnessed by BV 2023-11-13, test pressure 390 bar, burst at 573 bar
-	-	Burst test report CHV-X SS 40 Angle (covers CHV-X SS 25, CHV-X SS 32 design 65 bar) witnessed by BV 2023-11-13, test pressure 390 bar, burst at 447 bar
-	-	Burst test report SCA-X 20 Angle (covers SCA-X 15, 65 design bar) witnessed by BV 2023-11-14, test pressure 390 bar, burst at 554 bar
-	-	Burst test report SCA-X 40 Angle (covers SCA-X 25, SCA-X 32 design 65 bar) witnessed by BV 2023-11-14, test pressure 390 bar, burst at 530 bar
-	-	Burst test report SCA-X SS 20 Angle (covers SCA-X SS 15 design 65 bar) witnessed by BV 2023-11-17, test pressure 390 bar, burst at 607 bar
-	-	Burst pressure test SCA-X SS 40 Angle (covers SCA-X SS 25, SCA-X SS 32 design 65 bar) witnessed by BV 2023-11-13, test pressure 390 bar, burst at 483 bar
-	-	Burst test report SVA-S 200 Angle (covers KDC 200, GVD 200, design 65 bar) witnessed by BV 2023-11-17, test pressure 390 bar, burst at 400 bar
-	-	Burst test report SVA-S 150 Angle (covers KDC 150, GVD 150 design 65 bar) witnessed by BV 2023-11-17, test pressure 390 bar, burst at 408 bar
-	-	Burst test report SVA-S 125 Angle (covers SCA-X 125, KDC 125, GVD 125 design 65 bar) witnessed by BV 2023-11-15, test pressure 390 bar, burst at 429 bar
-	-	Burst test report SVA-S 100 Angle (covers SCA-X 100, KDC 100, GVD 100 design 65 bar) witnessed by BV 2023-11-15, test pressure 390 bar, burst at 418 bar
-	-	Burst test report SVA-S 80 Angle (cover SCA-X80, KDC 80, GVD 80 design 65 bar) witnessed by BV 2023-11-13, test pressure 390 bar, burst at 452 bar
-	-	Burst test report SVA-S 65 Angle (covers REG-S 65, SCA-X 65, KDC 65, GVD 65 design 65 bar) witnessed by BV 2023-11-15, test pressure 390 bar, burst at 500 bar
-	-	Burst test report SVA-S 50 Angle (covers REG-S 50, SCA-X 50 DESIGN 65 BAR) witnessed by BV 2023-11-15, test pressure 390 bar, burst at 454 bar
		DATASHEETS
-	-	SCA 15, 20, 25, 32, 40 Angle, datasheet
-	-	CHV 15, 20, 25 Angle; CHV 32, 40 Angle
-	-	CHV 50, 65 Angle; FIA 50, 65
-	-	CHV 80, 100, 125 Angle; FIA 80, 100, 125, 150, 200 Angle
-	-	CHV-SS 15, 20, 25 Angle; CHV-SS 32, 40 Angle, datasheet
-	-	SCA-SS 15, 20, 25 Angle; SCA-SS 32, 40 Angle, datasheet
-	-	SVA-S 50, 65 Angle; SCA 50, 65 Angle; REG 50, 65 Angle; KDC 65 Angle, datasheet
-	-	SVA-S 50, 65 Straight, datasheet
-	-	SVA-S 80, 100, 125, 150, 200 Angle; SCA 80, 100, 125 Angle; KDC 80, 100, 125, 150, 200 Angle;
-	-	Datasheet & Burst test group, Carbon steel version
-	-	Datasheet & Burst test group, Stainless steel version

Tests carried out

Burst testing

Production Testing and Certification

Production Testing and Certification for the actual intended application shall follow the latest applicable edition of the Rules (as mentioned on the front page of this certificate) and ISO 21922.

Marking of product

Minimum marking requirements shall be as outlined in the valve design standard.

Periodical assessment

The certificate is only valid if required periodical assessments are carried out with satisfactory results.

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNV-CP-0338.

To check the validity of this certificate, please look it up in https://approvalfinder.dnv.com.

Manufactured by:

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