DNV·GL

Certificate No:
TAP0000003

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Valves for Refrigerants

with type designation(s)
SVA-S, SVA-L, SVA-DL, SVA-DH, SVA-S SS

Issued to
Danfoss A/S
KOLDING, Denmark

is found to comply with
Det Norske Veritas' Rules for Classification of Ships Pt.4, Ch.6 "Piping Systems"

Application :

Approved for use in refrigerant piping sytems containing Group 1 or Group 2 refrigerants as defined in DNV Ship Pt.4 Ch.6 Sec.6 C100.

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

Type:	Temperature range:	Sizes:	Design pressure:
SVA-S	**-55 to +150 °C**	**DN6 - DN200**	**See cert**
SVA-L	**-55 to +150 °C**	**DN15 - DN40**	**See cert**
SVA-DL, SVA-DH	**-55 to +150 °C**	**DN250 - DN300**	**40 bar**
SVA-S SS	**-55 to +150 °C**	**DN15 - DN125**	**See cert**

This Certificate is valid until **2019-10-13**.

Issued at **Høvik** on **2015-10-14**
DNV GL local station: **Fredericia** for **DNV GL**

Approval Engineer: **Simon Ratcliffe**

Marianne Spæren Marveng
Head of Section

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.

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Job Id: **262.1-018278-1**
Certificate No: **TAP0000003**

Product description

Adjustable stop valves intended for use in refrigerant systems. Angle and straight design, standard and long neck.

Designs approved according to burst test reports.

Valve design standard: EN 12284

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

Materials – Type SVA-S, SVA-L, SVA-DL, SVA-DH

Part	Material	Grade and Standard	
		European	North American
Body & Bonnet	Carbon steel	G20Mn5QT EN 10213-3	ASTM A352 LCC
		P285QH EN 10222-4	ASTM A350 LF2
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 SVA-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

Approved manufacturing locations:
Danfoss (Tianjin) Ltd.
No.9 Quanhui Road
Wuqing Development Area
301700 Tianjin
China

Application/Limitation

Models	Sizes	Pressure rating	
		Standard	Special
SVA-S	DN6, DN10, DN15, DN20, DN25, DN32, DN40, DN50, DN65, DN80, DN100, DN125, DN150, DN200	PN52	PN65
SVA-L	DN15, DN20, DN25, DN32, DN40	PN52	PN65
SVA-DL, SVA-DH	DN250, DN300	PN40	N/A
SVA-S SS Stainless Steel	DN15, DN20, DN25, DN32, DN40, DN65,	PN52	N/A
	DN80, DN100, DN125	50 bar	N/A

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

Screwed-on valve bonnets are normally not to be used for valves with nominal diameter exceeding 40 mm in Class I piping systems, for valves on ship's side and bottom and for valves in systems for flammable fluids. (DNV Ship Pt.4 Ch.6 Sec.8 C103).

Type Approval documentation

Tests carried out
Burst testing

Production testing
Each valve body shall be subjected to a hydrostatic pressure test at minimum 1.5 times the design pressure. The test pressure need not be more than 70 bar in excess of the design pressure.

Holding time: 2 min. for sizes up to 100 mm/4"
5 min. for sizes 125 - 250 mm/5" -10",
10 min. for sizes 300 mm - 450 mm/12" - 16",
No leakage is permitted.

Each valve assembly shall be subjected to a hydrostatic seat leakage test. The test pressure shall at least be equal to the design pressure. The test shall be performed with closed valve with the other end open to atmosphere. The pressure shall be applied independently on each side.

Holding time: 5 min. for all sizes.
Acceptable leakage range: Drop tight

Certification
DNV product certificates are required for valves with D N > 100 mm and PN > 16 bar and for ship side valves where DN > 100 mm regardless of pressure rating. For other valves manufacturer's certificate may be accepted.

Material certificates for the valve bodies are required in line with DNV Ship Pt.4 Ch.6 Sec.2 Table A2. Note that the complete refrigerant circuit, including both low and high pressure sides, shall be considered as pertaining to Class II piping systems except R744 (CO2) with design pressure above 40 bar which shall pertain to Class I (DNV Ship Pt.4 Ch.6 Sec.6 E103).

Marking of product
Each valve shall be clearly marked for identification. The identification marking may be performed on the body or on a plate of non-corrosive material. When a metallic plate is used, the plate shall be permanently fixed to the body.

Identification marking on the body shall be located to nonstressed areas and shall be clearly legible. The identification marking shall as a minimum include the following:
— manufacturer's name or trade mark
— valve type designation
— size
— maximum design pressure or pressure class
— arrow to indicate direction of flow on one way flow valves.

Periodical assessment
For retention of the Type Approval, a DNV GL Surveyor shall perform a survey - every second year and before the expiry date of this certificate - to verify that the conditions for the type approval are complied with.