TRANSLATION

1 # EU-Type Examination Certificate

2 **Equipment or Protective System intended for use in potentially explosive atmospheres Directive 2014/34/EU**

3 EU-Type Examination Certificate Number: **BVS 15 ATEX H 031 X**

4 Product: Knife gate valves
Series XV, MV, MP, HG (HP), HL, WB (WB11, 12, 14), HX, RKO, JTV, D2G

5 Manufacturer: Stafsjö Valves AB

6 Address: Störnings väg 3
61895 Stafsjö
Sweden

7 This product and any acceptable variations thereof are specified in the appendix to this certificate and the documents referred to therein.

8 DEKRA EXAM GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in the confidential Report No. PP 15EXAM 10446 EU.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

DIN EN 13463-1:2009 **DIN EN 13463-5:2011** **IEC/TS 60079-32-1:2013**

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified product.
Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

Ⓔx II 1/1D c TX
-20°C ≤ T_a ≤ +60°C

DEKRA EXAM GmbH
Bochum, Germany, dated 2017-03-08

Signed: Koch
Certifier

Signed: Hesener
Approver

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TRANSLATION

13 **Appendix to**

14 **EU-Type Examination Certificate**

BVS 15 ATEX H 031 X

15 **Description of the Product**

15.1 **Subject and Type**

Knife gate valves of series XV, MV, MP, HG (HP), HL, WB (WB11, 12, 14), HX, RKO, JTV, D2G.

Parameters

The main components of the knife gate valves are made of stainless steel.

The materials combined for the gate, gland, box packing, valve body and retainer ring can vary depending on the valve series. All possible combinations are listed in Table 1. The sealings used in each case are listed in Tables 2 and 3.

Table 1: series-relevant material combinations of the gate valve components

Valve-series	Components				
	Gate	Gland	Box packing	Valve body	Retainer ring
MV	1.4301 1.4404 1.4462 1.4547 1.4529 1.4410 1.4438 Hastelloy C276	JS1050 JS1020 1.4408 1.4470 Hastelloy C276 254 SMO	Twin Pack™, Graphite, PTFE [1)]	1.4408 1.4470 JS1020 1.4581 Hastelloy C276 1.0619 ASTM A216 WCC JS1050 JL1030 254 SMO	1.4408 1.4470 254 SMO 1.0619 Hastelloy 276 1.4581 1.4438
MP	1.4404 1.4462	1.4408 1.4470	Twin Pack™, Graphite, PTFE	1.4408 1.4470	1.4408 1.4470
HG	1.4404 1.4462 1.4547 1.4529	JL1050 1.4408 1.4470 254 SMO	Twin Pack™, Graphite, PTFE [1)]	1.4408 1.4470 JS1020 254 SMO 1.4581 Hastelloy C276 ASTM A216 WCC JL1030	1.4408 1.4470 254 SMO Hastelloy C276 1.4581 1.4438
HL	1.4404 1.4462	1.4408 1.4470	Twin Pack™, Graphite, PTFE [1)]	1.4408 1.4470	1.4408 1.4470
HP	1.4462 1.4547 1.4529	1.4408 1.4470 254 SMO	Twin Pack™, Graphite, PTFE [1)]	1.4408 1.4470 JS1020 254 SMO	1.4408 1.4470 254 SMO
HX	1.4404 1.4462 1.4547 1.4529	1.4408 1.4470 254 SMO	Twin Pack™, Graphite, PTFE [1)]	1.4408 1.4470 254 SMO	1.4408 1.4470 254 SMO
XV	1.4404 1.4462	1.4408 1.4470	Twin Pack™, Graphite, PTFE [1)]	1.4408 1.4470 ASTM A216 WCC 1.4581	1.4408 1.4470 1.4438 1.4581
WB WB11 WB12	1.4301 1.4404 1.4462	1.0619 JS1020	Twin Pack™ [1)]	JS1050 JS1020	-
WB14	1.4301 1.4404	JS1020 1.0619	Twin Pack™ [1)]	JS1050 JS1020	-

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Valve-series	Components				
	Gate	Gland	Box packing	Valve body	Retainer ring
	1.4462	1.4408 1.4470		1.4408 1.4470	
RKO [2]	1.4462	1.4408	Twin Pack™, Graphite, PTFE [1]	1.4408 JS1020 JL1030 ASTM 216 WCC,	1.4408 JS1050 JL1030
JTV [2]	1.4462	1.4408	Twin Pack™	1.4408	1.4408
D2G [3]	1.4404, 1.4462	1.4408	Twin Pack™	1.4408	1.4408

[1] scraper: PTFE, UHMW-PE
[2] RKO, JTV with additional guide strip made of POM-C
[3] D2G with additional gliding support made of POM-C

The operating data of the knife gate valves that are relevant for matters of explosion protection are listed in the Tables below:

Table 2: list of relevant operating data of the knife gate valves of series XV, MP, HG (HP), HL, HV, WB (WB, WB11, WB12, WB14), RKO, JTV, D2G

Valve series	Operating data				
	Max. permitted operating pressure at 20 °C		Maximum differential pressure Δp at 20 °C		Max. relative speed of gate
	DN	bar	DN	bar	$m \cdot s^{-1}$
MP	400	6	400	6	< 1
	500–600	4	500–600	4	
HG	80–250	10	80–250	10	
	300–800	6	300–800	6	
	900–1200	4	900–1200	4	
HL	400	6	400	6	
	500–800	4	500–800	4	
HP	300–800	10	300–800	10	
	900	6	900	6	
HX	200–500	20	200–500	20	
XV	80–150	16	80–350	10	
	200–600	10	400–600	6	
	700–900	6	700–1000	4	
	1000	4			
WB	350–400	6	350–400	6	
	500–600	4	500–600	4	
	700–1200	4 or 6	700–1200	4 or 6	
	1400	2 or 4	1400	2 or 4	
WB11	50–300	10	50–300	10	
WB12	150–200	4	150–200	4	
WB14	50–600	10	50–300	10	
			350–450	6 or 10	
			500–600	4 or 10	
RKO	100–450	10	100–450	6.2	
	500–600	6	500–600	4	
JTV	250 x 250	6	250 x 250	6	
D2G	100–400	10	100–400	6	
	500–600	6	500–600	4	

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Table 3: List of relevant operating data for knife gate valves of series MV

Valve series	Operating data							
	Max. permitted operating pressure at 20 °C		Maximum differential pressure Δp at 20 °C					Max. relative speed of gate
			In flow direction		Against flow direction			
	DN	bar	DN	bar	DN	bar[1)]	bar[2)]	m·s^{-1}
MV	50–125	16.0	50–125	16.0	50–200	3.5	3.5	< 1
	150–300	10.0	150–300	10.0	250	3.0	3.0	
	350–600	6.0	350–600	6.0	300–450	3.0	3.0	
	700–1600	4.0	700–1000	4.0	500–1600	1.0	-	
			1200–1600	2.0 or 4.0				

[1)] Valve body made of steel
[2)] Valve body made of cast iron

The permitted transported temperatures of the substances that are conveyed through the knife gate valves depend on the technical design of the seat or body sealing which are listed in Tables 2 and 3. In each case it is the lower temperature value that determines the maximum permitted transport temperature T_F.

Table 4: seats and permitted transport temperatures

Type of seat	Valve type	Max. permitted transport temperature T_F of products transported
EPDM	MV, WB, WB11, WB12, WB14	120 °C
Nitrile	MV, WB, WB11, WB12, WB14	100 °C
Viton (FKM black)	MV	180 °C
PTFE with Nitrile O-ring	XV, MV, MP, HG, HP, HL, HX, RKO, D2G	100 °C
PTFE with Viton O-ring (FKM black)	XV, MV, MP, HG, HP, HL, HX, RKO, D2G	180 °C
PTFE with EPDM O-ring	XV, MV, MP, HG, HP, HL, HX, RKO, D2G	120 °C
Metal with Grafoil	MV, HG, RKO	300 °C
Polyurethane	JTV	90 °C

Table 5: body sealings and permitted transport temperatures

Type of body sealing	Valve type	Max. permitted transport temperature T_F of products transported
PTFE	RKO ≥ DN300 JTV, D2G	260 °C
Grafoil	RKO	550 °C

15.2 Description

The knife gate valves of series XV, MV, MP, HG (HP), HL, WB (WB11, 12, 14), HX, RKO, JTV, D2G are intended for shutting off, transmitting and regulating the flow of dust-like products in flanged pipes. Flammable gases are not transported. The flow is regulated by a gate, and the type of sealing used for the gate depends on the gate type. In order to integrate the gate, which is comprehensively insulated by the sealing, into the bonding, a conductive connection is established using two metallic springs between the gate and the valve body. For the purpose of bonding the gate, there is also an earthing lug installed at the valve body.

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The gate is driven by either a handwheel, a pneumatic piston drive or an electric drive; however, the drives are not subject of this EU-type examination. The electrical equipment used for regulating the drive, the position display and the drive as such are not subject of this EU-type examination, either. The requirements for the electrical equipment used depend on the intended specific use of the gate valves and are to be complied with according to Directive 2014/34/EU.

The knife gate valves meet the requirements of Category 1D equipment.

16 Report Number

PP 15EXAM 10446 EU, as of 08.03.2017

17 Special Conditions for Safe Use

The potentially explosive products to be processed must have the following safety-relevant parameters. The minimum ignition and smouldering temperatures permitted are directly related to the transport temperature T_F of the products transmitted:

Minimum ignition energy	≥ 1 mJ	as determined according to DIN EN 13821
Maximum transport temperature T_F	≤ as stated in Table 2	
Ignition temperature	$\geq {}^3/_2 \cdot T_F$	as determined according to DIN EN 50281-2-1
Smouldering temperature	$\geq T_F + 75$ K	as determined according to DIN EN 50281-2-1

No substances shall be used that are susceptible to ignition or explosion caused by sparks or friction (e.g. according to class 4.1 ADR); neither shall hybrid mixtures be transported. Principally, the knife gate valves are not suitable for shutting off, transmitting or regulating self-decomposing substances.

The knife gate valves have to be integrated into the equipotential bonding by an earthing lug installed at the valve body; here, the resistance to earth has to be of a value of $< 10^6\ \Omega$. The user has to ensure that the earthing is connected securely and permanently.

If the knife gate valves are to be used in hazardous areas, any apparatus the valves are operated in conjunction with have to be suitable for this purpose and supplied according to Directive 2014/34/EU. If the knife gate valves are assembled with apparatus that have not been subject of this EU-type examination (e.g. the drive), a separate risk assessment with regard to additional ignition hazards has to be carried out. The drives have to be selected in such a way that the maximum relative speed of the gate is $< 1\ m/s^{-1}$ and the drive power is 4 kW maximum.

When selecting and installing electrical equipment, the requirements of DIN EN 60079-14 have to be taken into account.

18 Essential Health and Safety Requirements

The Essential Health and Safety Requirements are covered by the standards listed under item 9.

19 Drawings and Documents

Drawings and documents are listed in the confidential report.

In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, Germany, dated 10.03.2017
15EXAM 10446E

DEKRA EXAM GmbH

Certifier

Approver

DAkkS Deutsche Akkreditierungsstelle D-ZE-12069-03-03

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