

# 1 EU-Type Examination Certificate

2 **Equipment and Protective Systems intended for use  
in potentially explosive atmospheres - Directive 2014/34/EU**

3 No. of the EU-Type Examination Certificate: **BVS 15 ATEX H 036 X**

4 Equipment: Butterfly valves of type Z011 (A), Z014 (A), Z014 (WN), F012 (A), F012 (K1/WN)

5 Manufacturer: EBRO Armaturen Gebr. Bröer GmbH

6 Address: Karlstrasse 8  
D-58135 Hagen  
Germany

7 The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this type examination certificate.

8 The certification body of DEKRA EXAM GmbH, Notified Body No. 0158 according to Article 17 of Directive 2014/34/EU of the European Parliament and the Council of 26 February, 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective and systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.  
The examination and test results are recorded in the test and assessment report PP 15EXAM 10765 EU.

9 The Essential Health and Safety Requirements are assured by compliance with

**DIN EN 13463-1:2009**

**DIN EN 14460:2007**

**IEC/TS 60079-32-1:2013**

**DIN EN 13463-5:2011**

10 If the sign „X“ is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the appendix to this certificate.

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

12 The marking of the equipment of the not explosion pressure shock resistant design must include the following:

 II 1DG c TX  
-20°C ≤ T<sub>a</sub> ≤ +60°C

or

 II 1/2DG c TX  
-20°C ≤ T<sub>a</sub> ≤ +60°C

or

 II 1/2DG c IIB TX  
-20°C ≤ T<sub>a</sub> ≤ +60°C

or

 II 1D c TX  
-20°C ≤ T<sub>a</sub> ≤ +60°C

 II 1D/1DG c TX  
-20°C ≤ T<sub>a</sub> ≤ +60°C

or

 II 1D/2DG c TX  
-20°C ≤ T<sub>a</sub> ≤ +60°C

or

 II 1D/2DG c IIB TX  
-20°C ≤ T<sub>a</sub> ≤ +60°C



## TRANSLATION

The marking of the equipment of the explosion pressure shock resistant design must include the following:

$\text{Ex}$  II 1DG c TX

or

$\text{Ex}$  II 1/2DG c TX

or

$\text{Ex}$  II 1/2DG c IIB TX

or

$\text{Ex}$  II 1D c TX

$\text{Ex}$  II 1D/1DG c TX

or

$\text{Ex}$  II 1D/2DG c TX

or

$\text{Ex}$  II 1D/2DG c IIB TX

Additionally, concerning the pressure level (PS) and the design and operating temperature range ( $T_a$ ) in relation to the material combination, the marking of the explosion pressure shock resistant version of the equipment must include:

PS: 1 bar  
 $-20^{\circ}\text{C} \leq T_a \leq +160^{\circ}\text{C}$

or

PS: 1 bar  
 $-20^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$

or

PS: 1 bar  
 $-10^{\circ}\text{C} \leq T_a \leq +160^{\circ}\text{C}$

or

PS: 1 bar  
 $0^{\circ}\text{C} \leq T_a \leq +160^{\circ}\text{C}$

or

PS: 1 bar  
 $0^{\circ}\text{C} \leq T_a \leq +120^{\circ}\text{C}$

PS: 3 bar  
 $-20^{\circ}\text{C} \leq T_a \leq +160^{\circ}\text{C}$

or

PS: 3 bar  
 $-20^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$

or

PS: 3 bar  
 $-10^{\circ}\text{C} \leq T_a \leq +160^{\circ}\text{C}$

or

PS: 3 bar  
 $0^{\circ}\text{C} \leq T_a \leq +160^{\circ}\text{C}$

or

PS: 3 bar  
 $0^{\circ}\text{C} \leq T_a \leq +120^{\circ}\text{C}$

PS: 6 bar  
 $-20^{\circ}\text{C} \leq T_a \leq +160^{\circ}\text{C}$

or

PS: 6 bar  
 $-20^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$

or

PS: 6 bar  
 $-10^{\circ}\text{C} \leq T_a \leq +160^{\circ}\text{C}$

or

PS: 6 bar  
 $0^{\circ}\text{C} \leq T_a \leq +160^{\circ}\text{C}$

or

PS: 6 bar  
 $0^{\circ}\text{C} \leq T_a \leq +120^{\circ}\text{C}$

PS: 10 bar  
 $-20^{\circ}\text{C} \leq T_a \leq +160^{\circ}\text{C}$

or

PS: 10 bar  
 $-20^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$

or

PS: 10 bar  
 $-10^{\circ}\text{C} \leq T_a \leq +160^{\circ}\text{C}$

or

PS: 10 bar  
 $0^{\circ}\text{C} \leq T_a \leq +160^{\circ}\text{C}$

or

PS: 10 bar  
 $0^{\circ}\text{C} \leq T_a \leq +120^{\circ}\text{C}$

DEKRA EXAM GmbH  
 Bochum, den 20.07.2016

signed: Wiegand

signed: Dr. Hübner

Certification Body

Special services unit



## TRANSLATION

- 13 **Appendix to**  
14 **EU-Type Examination Certificate**

### **BVS 15 ATEX H 036 X**

- 15 **Description of the product**

- 15.1 **Subject and Type**

Soft sealing butterfly valves of type Z011 (A) DN 20 to DN 1200  
Z014 (A) DN 20 to DN 600  
Z014 (WN) DN 50 to DN 600  
F012 (A), (K1/WN) DN 150 to DN 2000

Housing materials: G-AISI9Cu3, G-AISI10Mg, EN-GJL-250 (GG25),  
EN-GJS-400-15 (GGG40), EN-GJS-400-18-RT (GGG40.3),  
EN-GJS-400-18-LT (GGG40.3),  
GP-240GH (GS-C25), 1.4408

Housing materials of explosion pressure shock resistant valves G-AISI9Cu3, G-AISI10Mg, EN-GJS-400-15 (GGG40), EN-GJS-400-18-RT (GGG40.3), EN-GJS-400-18-LT (GGG40.3), GP-240GH (GS-C25), 1.4408

Valve disc materials: 1.0570, 1.4301, 1.4408, 1.4404, 1.4571, 1.4469, 2.4883, 2.0975, EN-GJS-400-15 (GGG40)

Valve disc materials of explosion pressure shock resistant valves: 1.0570, 1.4301, 1.4408, 1.4404, 1.4571, 1.4469, 2.4883, EN-GJS-400-15 (GGG40)

Shaft materials: 1.4104, 1.4122, 1.4401, 1.4462, 1.4404, 1.4418, 2.4883, 2.0975

Shaft materials of explosion pressure shock resistant valves: 1.4122, 1.4401, 1.4462, 1.4404, 1.4418, 2.4883

Sealing collar elastomers: NBR black (mixtures C633-01, C739-01), EPDM black (mixtures D732-01, D735-01, D744-01), NBR white, EPDM white, FKM white  
with a shore hardness of 65 – 90° Shore

- 15.2 **Description**

The soft sealing butterfly valves of types Z011 (A), Z014 (A), Z014 (WN), F012 (A) and F012 (K1/WN) are designed for blocking, passing through or regulating media flows inside the pipes within determined pressure and temperature ranges. Inside the valve housing which is flanged to both ends, a valve disc with bearings on one or on both sides rotates. The soft sealing butterfly valves are powered electrically or pneumatically by a drive mounted on a shaft end, which is not part of this EU-Type Examination. The maximum drive torque and the maximum drive power are stated in the operating manual. The upper pressure and temperature limits for the equipment comply with the housing material and the fixing material used. They are listed in the technical documentation and on the marking. The elastomers listed in Table 1 are used as sealing collars.



## TRANSLATION

Table 1: Overview of the sealing collars and the upper temperature limit

Elastomer	Mixture	Upper temperature limit	Scope of application
NBR (black)	C633-01	90°C	Explosive gas atmosphere / explosive dust atmosphere
NBR (black)	C739-01	90°C	Explosive gas atmosphere / explosive dust atmosphere
EPDM (black)	D732-01	120°C	Explosive gas atmosphere / explosive dust atmosphere
EPDM (black)	D735-01	120°C	Explosive gas atmosphere / explosive dust atmosphere
EPDM (black)	D744-01	120°C	Explosive gas atmosphere / explosive dust atmosphere
NBR (white)	-	80°C	Explosive dust atmosphere
EPDM (white)	-	110°C	Explosive dust atmosphere
FKM (white)	-	160°C	Explosive dust atmosphere

Soft sealing butterfly valves are designed for operation in dust or gas explosive atmospheres. Depending on the design of the sealing collar and the housing materials, the soft sealing butterfly valves comply with the requirements of equipment category 1D or 1G.

The housings of the soft sealing butterfly valves can be made of an aluminum alloy. Then they comply with the requirements of equipment category 2DG for the outside of the valves.

The soft sealing butterfly valves of types Z011 (A), Z014 (A) and Z014 (WN) can also be designed as explosion pressure shock resistant valves for pressure levels 1 bar, 3 bar, 6 bar and 10 bar according to DIN EN 14460:2007 in nominal diameters according to Table 2.

Table 2: Design variants of the explosion pressure shock resistant valves

Valve type	Pressure levels			
	1 bar	3 bar	6 bar	10 bar
Z011 (A)	DN 50 – DN 600			
Z014 (A)	DN 50 – DN 600			
Z014 (WN)	DN 50 – DN 500		DN 50 – DN 300	DN 50 – DN 80

The effectiveness against flame propagation and the explosions pressure shock resistance are guaranteed as functions of the material design for a design and operating temperature range according to Table 3.



Table 3: Design and operating temperature range as functions of the material

Part	Material	Design and operating temperature range
Housing	G-AISI9Cu3	$-20^{\circ}\text{C} \leq \text{Ta} \leq +70^{\circ}\text{C}$
	G-AISI10Mg	$-20^{\circ}\text{C} \leq \text{Ta} \leq +70^{\circ}\text{C}$
	EN-GJS-400-15 (GGG40)	$-10^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	EN-GJS-400-18-RT (GGG40.3)	$-10^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	EN-GJS-400-18-LT (GGG40.3)	$-20^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	GP-240GH (GS-C25)	$0^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	1.4408	$-20^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
Valve disc	1.0570	$0^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	1.4301	$-20^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	1.4408	$-20^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	1.4404	$-20^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	1.4571	$-20^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	1.4469	$0^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	2.4883	$0^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	EN-GJS-400-15 (GGG40)	$-10^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
Shaft	1.4104	$0^{\circ}\text{C} \leq \text{Ta} \leq +120^{\circ}\text{C}$
	1.4122	$0^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	1.4401	$-20^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	1.4462	$0^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	1.4418	$0^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$
	2.4883	$0^{\circ}\text{C} \leq \text{Ta} \leq +160^{\circ}\text{C}$

When closed, i.e. when the valve disc engages the seal seat, the soft sealing butterfly valves of explosion pressure shock resistant design are proofed against flame propagation in case of explosions of combustible gases with an explosion characteristics of which does not exceed that of propane explosions and also of dusts of dust explosion classes St 1 and St 2 up to the explosion pressures listed in Table 2 and in dependence on the design.

### 15.3 Parameters

Max. relative speed:	$< 1 \text{ m}\cdot\text{s}^{-1}$
Max. torque dusts:	$< 125 \text{ Nm}$
Max. torque gases/vapors:	$< 60 \text{ Nm}$
Max. power:	$< 3 \text{ kW}$
Pressure levels:	1 bar / 3 bar / 6 bar / 10 bar

### 16 Test and Assessment Report

PP 15EXAM 10765 EU, as of 20.07.2016



## TRANSLATION

### 17 Special Conditions for Safe Use

The soft sealing butterfly valves have to be integrated in the potential equalisation of the system by earthing. The value of the leakage resistance must be  $< 10^6 \Omega$ .

The maximum surface temperature of the soft sealing butterfly valves depends on the temperature of the media transported. The user has to ensure that the maximum media temperature  $T_F$  does not exceed the permitted limit temperatures according to the safety-related parameters of gases, vapours or dusts and the upper temperature limits given in Table 1.

The gases or vapours handled must have the following parameters relevant to safe use:  
Ignition temperature  $\geq 1.25 \cdot T_F$  according to DIN EN 14522

The handled dusts handled must have the following parameters relevant to safe use:  
Ignition temperature  $\geq 3/2 \cdot T_F$  according to DIN EN 50281-2-1  
Smoldering temperature  $\geq T_F + 75 \text{ K}$  according to DIN EN 50281-2-1

No substances shall be used that are hybrid or – with regard to incendivity or explosiveness – sensitive to impact or friction (e.g. according to class 4.1 ADR). Principally, the equipment is not suitable for the transport or dosing of self-decomposing substances.

While being operated no potential ignition sources (e.g. smoldering or burning particles, smoldering nests or foreign particles) may enter the butterfly valves.

The use of the soft sealing butterfly valves in hazardous areas is only allowed when operated with suitable equipment placed in the market in accordance with Directive 2014/34/EU. An additional risk assessment with regard to additional ignition hazards is necessary for assembling the soft sealing butterfly valves with equipment (e.g. drive motor) that has not been examined in this EU-Type Examination.

The explosion pressure shock resistance of the explosion resistant valves must be proved by a routine test according to DIN EN 14460 for every produced product in dependence on the materials used and the necessary explosion pressure shock resistance.

It has to be ensured that explosions in upstream or downstream plant sections do not result in the explosion pressure in relation to the designed pressure level of the butterfly valve of 1 bar, 3 bar, 6 bar or 10 bar higher than specified in Table 2 within the soft sealing butterfly valve of explosion pressure shock resistant design. Depending on the concept of explosion protection, suitable protection systems (e.g. explosion isolation systems acc. to EN 15089) have to be provided where necessary.

### 18 Essential Health and Safety Requirements

The Essential Health and Safety Requirements (GSA) are covered by the norms listed in item 9 above.

### 19 Drawings and Documents

The drawings and documents are listed in the test and assessment report.


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

44809 Bochum, Germany, dated 04.08.2016  
15EXAM 10765

**DEKRA EXAM GmbH**

  
\_\_\_\_\_  
Certifier

  
\_\_\_\_\_  
Approver