

GEMÜ Operating conditions and explosion protection markings of the butterfly valves R481 and R488 with special function Y

EN

Technical information

Version 1.0



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1 Standards

The following standards were applied:

- EN IEC 80079-36 authorization 1:2024
- EN IEC 80079-36:2016
- EN IEC 80079-37:2016

2 Operating conditions

The following conditions must be complied with for safe operation of the butterfly valves:

1. If the butterfly valves are operated internally as devices within the meaning of Directive 2014/34/EU, the conditions internally must not exceed the following conditions: Temperature -20 °C to +60 °C, pressure 0.8 bar (abs) to 1.1 bar (abs), oxygen content ≤ 21%.

Conditions outside of this range are no longer within the area of validity of Directive 2014/34/EU.

Very high or low temperatures and/or high pressures or raised oxygen content within the interior of the piping or of the butterfly valves affect the safety-relevant parameters of the occurring substances. If conditions occur internally in the non-atmospheric range, the operator must check for themselves what effect these conditions have on the safety-relevant parameters of the occurring substances and which direct ignition hazards result from them. This type of examination must be carried out case by case following the Machinery Directive or the applicable regulatory codes.

2. The actuation of the butterfly valves themselves does not cause an increase in temperature in correct operation. The maximum surface temperature of the butterfly valves to be considered depends on the maximum temperature of the medium in the piping and the maximum temperature of the respective actuator. The surface temperature of the actuator can be taken from the actuator marking as well as from the supplied operating instructions for this actuator.

The highest of the two values must be assumed as the maximum butterfly valve surface temperature to be considered.

Dependent on the temperature class of the occurring gases or vapours outside of the piping, the maximum temperature of the medium in the pipe or in the butterfly valve must not exceed the following values:

Temperature class of the occurring gases or vapours	Maximum permissible temperature of the medium in the pipe or in the butterfly valve
T6	80 °C
T5	95 °C
T4	130 °C
T3	195 °C

3. The glow temperature (minimum ignition temperature of the deposited 5 mm layer of dust) of the occurring dust must be at least 75 K above the maximum surface temperature. The ignition temperature (minimum ignition temperature of the dust cloud) must be at least 1.5 times the maximum surface temperature.
4. When operating within a potentially explosive atmosphere under atmospheric pressure internally, the maximum temperature of the medium in the pipe or in the butterfly valve must not exceed the following values:

Temperature class of the occurring gases or vapours	Maximum permissible temperature of the medium in the pipe or in the butterfly valve
T6	68 °C
T5	80 °C
T4	108 °C
T3	160 °C

When operating within a potentially explosive atmosphere under raised pressure internally, the permissible temperatures must be checked case by case, see information 1.

5. The butterfly valves must be included in the potential equalisation of the entire system. The supplied earthing set must be used for this. Observe the instructions in the operating instructions.
6. Dust deposits > 5 mm on the butterfly valves must be prevented with appropriate measures (e.g. regular cleaning).
7. If gases and vapours of explosion group IIC are present, butterfly valves marked with IIB must not be used.
8. If gases and vapours of explosion group IIB or IIC are present, butterfly valves marked with IIA must not be used.
9. The butterfly valves must not have insulating layers with a total thickness of more than 0.2 mm.
10. The butterfly valves must not be used as end-of-line valves.
11. Maintenance requirements: In order to maintain the status of "permanently technically leak-proof", the requirements of TRGS 722 Section 4.5.2 (11) and (12) must be strictly complied with:
 - Leakage check: After the installation (commissioning) as well as after each time the liner or the O-rings are replaced, a leak test must be carried out in accordance with TRGS 722 Section 4.5.2 (2).
 - Recurring test: As part of the plant inspection, the valve must be checked regularly for external signs of leakage (e.g. product deposits, odour formation).
12. The operating instructions of the mounted actuators must also be observed.

3 Explosion protection markings

GEMÜ butterfly valve R481 with pneumatic actuators

R481 with GDR or GSR actuator

Sealing materials	Explosion protection marking with actuator
Codes E, F, N, W and Z	ExII 2G Ex h IIC/IIB T6...T3 Gb X ExII 2D Ex h IIIC T85 °C...150 °C Db X -10 °C ≤ Ta ≤ +40 °C

R481 with actuator DR or SC

Sealing materials	Explosion protection marking with actuator
Codes E, F, N, W and Z	ExII 2G Ex h IIC/IIB T6...T3 Gb X ExII 2D Ex h IIIC T85 °C...150 °C Db X -10 °C ≤ Ta ≤ +60 °C

GEMÜ butterfly valve R488 with motorized actuators

R488 with actuator VRX or VSX (designs with 400 V actuator voltage)

Sealing materials	Explosion protection marking with actuator
Codes E, F, N, W and Z	ExII 2G Ex h IIC/IIB T5...T3 Gb X ExII 2D Ex h IIIC T85 °C...150 °C Db X -10 °C ≤ Ta ≤ +54 °C

R488 with actuator VRX or VSX (designs with 230 V actuator voltage; each with T80 °C or T6 marking)

Sealing materials	Explosion protection marking with actuator
Codes E, F, N, W and Z	ExII 2G Ex h IIC/IIB T6...T3 Gb X ExII 2D Ex h IIIC T80 °C...150 °C Db X -10 °C ≤ Ta ≤ +40 °C

R488 with actuator PF

Sealing materials	Explosion protection marking with actuator
Codes E, F, N, W and Z	ExII 2G Ex h IIC/IIB T4...T3 Gb X ExII 2D Ex h IIIC T130 °C...150 °C Db X -10 °C ≤ Ta ≤ +60 °C

4 Explanations concerning the marking

Each explosion protection marking is composed according to the same principle. It is provided as a marking for gases and for dust. The explanations of the respective information are in the table below:

Application	Gas	Dust	Explanations
Ex marking	Ⓔ	Ⓔ	
Equipment group	II	II	Not suitable for mining
Equipment category	2	2	Equipment category 2/: Devices that ensure a high level of safety, suitable for zone 1 (internal) Equipment category 2/: Devices that ensure a high level of safety, suitable for zone 1 or 21 (external)
Danger of explosion	G	D	D: Danger of explosion due to combustible dust G: Danger of explosion due to combustible gases and vapours
Type of explosion protection	Ex h	Ex h	Non-electrical explosion protection
Suitable for	IIB / IIC	IIIC	IIIC: Suitable for electrically conductive dusts in Group IIIC (includes IIIA and IIIB) IIC: Suitable for gases and vapours in Group IIC (includes IIA and IIB) IIB: Suitable for gases and vapours in Group IIB (includes IIA) Specification of the explosion group, internal/external: Same as equipment category
Temperature class	T6 to T3		Temperature class dependent on the maximum media temperature and the temperature class of the respective actuator.
Max. surface temperature		T85 °C to 150 °C	Maximum surface temperature, dependent on the maximum media temperature and the maximum temperature of the respective actuator.
Equipment protection level	Gb	Da/Db	Equipment protection level indoor/outdoor, analogous to the equipment category
Perm. ambient temperature	-20 °C ≤ Ta ≤ +60 °C or -15 °C ≤ Ta ≤ +60 °C	-20 °C ≤ Ta ≤ +60 °C or -15 °C ≤ Ta ≤ +60 °C	Permissible ambient temperature

5 EU Declaration of Conformity

Version 1



EU-Konformitätserklärung
EU Declaration of Conformity

Wir, die Firma
GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
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Deutschland

We, the company

erklären hiermit in alleiniger Verantwortung, dass die nachfolgend bezeichneten Produkte den Vorschriften der genannten Richtlinien entspricht.

hereby declare under our sole responsibility that the below-mentioned products complies with the regulations of the mentioned Directives.

Produkt:	GEMÜ Absperrklappen	Product:	GEMÜ Butterfly valves
Produktname:	Pneumatisch und elektromotorisch betätigte Absperrklappen	Product name:	Pneumatically operated and motorized butterfly valves
Produktvarianten:	R481, R488, mit Sonderausführung Code Y	Product versions:	R481, R488, with special version Code Y
Richtlinien/Verordnungen:	Directives/Regulations:		

ATEX 2014/34/EU¹⁾

Folgende harmonisierte Normen (oder Teile hieraus) wurden angewandt:

The following harmonized standards (or parts thereof) have been applied:

EN IEC 80079-36 Berichtigung 1:2024; EN IEC 80079-36:2016; EN IEC 80079-37:2016

¹⁾ ATEX 2014/34/EU

Bemerkungen:

Besondere Bedingungen oder Einsatzgrenzen, siehe Dokument "GEMÜ Einsatzbedingungen und Explosionsschutzkennzeichnungen der Absperrklappen R481 und R488 mit Sonderfunktion Y".

Explosionsschutzkennung:

Siehe Dokument "GEMÜ Einsatzbedingungen und Explosionsschutzkennzeichnungen der Absperrklappen R481 und R488 mit Sonderfunktion Y" und die zugehörigen Betriebsanleitungen.

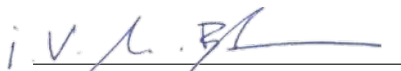
¹⁾ ATEX 2014/34/EU

Remarks:

Special conditions or operational limits, see document "GEMÜ Operating conditions and explosion protection markings of the butterfly valves R481 and R488 with special function Y".

Explosion protection designation:

See document "GEMÜ Operating conditions and explosion protection markings of the butterfly valves R481 and R488 with special function Y" and the associated operating instructions.


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Leiter Globale Technik
Kupferzell, 24.02.2026

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