



[1] **TYPE EXAMINATION CERTIFICATE - Translation**

[2] for non-electrical products of equipment-groups I and II,  
equipment-categories M2 and 2 plus products of equipment-category 3

[3] Type examination certificate number **IBExU03ATEXB002 X** | Issue 2

[4] Product (equipment / component):

**ROTEX® GS Backlash-free shaft couplings**

**a) Hubs with feather keyway or clamping ring hubs**

- 1.0 Hub with feather keyway and set screw thread
- 2.1 Clamping hub single slotted with feather keyway
- 2.6 Clamping hub double slotted with feather keyway
- 2.9 Clamping hub axially slotted with feather keyway
- 6.0 Clamping ring hub light (hub incl. ring made of semi-finished aluminium)
- 6.0 P Precision clamping ring hub
- 6.5 Clamping ring hub, clamping ring hub light (hub incl. ring made of semi-finished aluminium)
- 7.6 Split clamping hub with feather keyway for double-cardanic joints
- 7.9 Split clamping hub with feather keyway for single-cardanic joints

**b) Hubs without feather keyway**

- 1.1 Hub without feather keyway, set screw thread
- 2.0 Clamping hub single slotted without feather keyway
- 2.5 Clamping hub double slotted without feather keyway
- 2.8 Clamping hub axially slotted without feather keyway
- 7.5 Split clamping hub without feather keyway for double-cardanic joints
- 7.8 Split clamping hub without feather keyway for single-cardanic joints

**c) Hubs with feather keyway or clamping ring hub**

- 4.1 with CLAMPEX® clamping set KTR 200
- 4.2 with CLAMPEX® clamping set KTR 250

The manufacturer calls the 6.0 P precision clamping ring hub also ROTEX® GS P.

[5] Manufacturer: KTR Systems GmbH

[6] Address: Carl-Zeiss-Straße 25  
48432 Rheine  
GERMANY

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] IBExU Institut für Sicherheitstechnik GmbH 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 Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014.

The examination and test results are recorded in the confidential test report IB-20-2-0145.

[9] Compliance with the essential health and safety requirements has been assured by compliance with:  
EN ISO 80079-36:2016 EN ISO 80079-37:2016 EN ISO/IEC 80079-38:2017  
except in respect of those requirements listed at item [18] of the schedule.

[10] If the sign "X" or "U" is placed after the certificate number, it indicates that the product is subject to the specific conditions of use specified in the schedule to this certificate.

[11] This type examination certificate relates only to the design of the specified equipment and not to specific items of equipment subsequently manufactured or supplied.

[12] The marking of the product shall include the following:

Design as per a) and c) without aluminium, with feather keyway

⊕ I M2 Ex h I Mb  
⊕ II 2G Ex h IIC T6 ... T4 Gb  
⊕ II 2D Ex h IIC T80°C ... T110°C Db  
-30°C ≤ Ta ≤ +60°C ... +90°C

Design as per b) without aluminium, without feather keyway

⊕ I M2 Ex h I Mb  
⊕ II 3G Ex h IIC T6 ... T4 Gc  
⊕ II 3D Ex h IIC T80°C ... T110°C Dc  
-30°C ≤ Ta ≤ +60°C ... +90°C

Design as per a) and c) with aluminium, with feather keyway

⊕ II 2G Ex h IIC T6 ... T4 Gb  
⊕ II 2D Ex h IIC T80°C ... T110°C Db  
-30°C ≤ Ta ≤ +60°C ... +90°C

Design as per b) with aluminium, without feather keyway

⊕ II 3G Ex h IIC T6 ... T4 Gc  
⊕ II 3D Ex h IIC T80°C ... T110°C Dc  
-30°C ≤ Ta ≤ +60°C ... +90°C

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By order

Dipl.-Ing. Willamowski

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Certificates without signature and stamp are not valid. Certificates may only be duplicated completely and unchanged. In case of dispute, the German text shall prevail.

Freiberg, 2020-11-30



[13] **Schedule**

[14] **Certificate number IBExU03ATEXB002 X | Issue 2**

[15] **Description of product**

The ROTEX® GS Backlash-free shaft couplings mentioned in [4] are torsionally-flexible claw couplings, which transform torques in a form-fitting way. They are puncture-proof.

Two congruent coupling halves, which are provided with concave claws on the inside, are staggered against each other in circumferential direction by half a pitch. An involute gear rim is inserted in the space between them. The spacers arranged between two involute gear rims are electrically conductively connected to at least one hub.

The ROTEX® GS Backlash-free shaft couplings can compensate axial, radial and angular displacements of the shafts to be connected within specified limits.

The various coupling designs differ in the design of the hubs and the arrangement of different spacers.

Details on the design of the equipment or components can be found in the manufacturer's documentation and the test reports IB-02-4-815, IB-04-4-016/2, IB-06-4-008, IB-09-4-024, IB-18-2-0020 and IB-20-2-0145.

*Variations compared to issue 1 of this certificate:*

*Variation 1*

The following coupling designs are listed:

a) Hubs with feather keyway or CLAMPEX® clamping set or clamping ring hubs

- 1.0 Hub with feather keyway and set screw thread
- 2.1 Clamping hub single slotted with feather keyway
- 2.6 Clamping hub double slotted with feather keyway
- 4.0 with CLAMPEX® clamping set KTR 250
- 5.0 with CLAMPEX® clamping set KTR 200
- 6.0 Clamping ring hub
- 6.0 P Precision clamping ring hub
- 6.5 Clamping ring hub

b) Hubs without feather keyway

- 1.1 Hub without feather keyway, with set screw thread
- 2.0 Clamping hub single slotted without feather keyway
- 2.5 Clamping hub double slotted without feather keyway

[16] **Test report**

The test results are recorded in the confidential test report IB-20-2-0145 of 2020-11-26.

The test documents are part of the test report and they are listed there.

*Summary of the test results*

The equipment or components mentioned in [4] meet the requirements of explosion protection for equipment of Equipment Group II, Categories 2D or 2G or 3D or 3G or M2 in type of protection "c" (constructional safety, marking with "Ex h") for use with explosive dust and gas atmospheres and for underground use.

[17] **Specific conditions of use**

1. The temperature marking indicates that for determining the maximum surface temperature occurring on the coupling a temperature increase  $\Delta T$  to the ambient or operating temperature  $T_a$  must be considered. The temperature increase  $\Delta T$  is stated in the operating instructions.
2. The ROTEX® GS Backlash-free shaft couplings may only be used, if their materials resist, under the respective operating conditions, the mechanical and/or chemical effects and corrosion, so that the explosion protection is always maintained.

3. The users must provide the ROTEX® GS Backlash-free shaft couplings with fixed covers in order to protect the couplings against falling objects. The covers can have openings for the necessary heat dissipation. When used in the mining industry (Equipment Group I), the covers of the couplings must be able to withstand higher mechanical loads than for use in other industries (Equipment Group II). Detailed information on the cover design is given in the operating / assembly instructions.  
The covers must be electrically conductive and included in the equipotential bonding.
4. When using the couplings in potentially explosive dust atmospheres, the users must make sure that no dust in dangerous quantities accumulates between cover and coupling. The coupling must not run in a dust accumulation.
5. Only screws specified by the manufacturer may be used for the screw connections. When tightening the screws, the torque specified by the manufacturer must be observed.
6. All screw connections for mounting the hub onto the shafts must be secured against self-loosening.
7. For use of the couplings in the mining industry, the requirements of the national mining regulations valid for the respective area of application must be observed.

**[18] Essential health and safety requirements**

In addition to the essential health and safety requirements (EHSRs) covered by the standards listed at item [9], the following are considered relevant to this product, and conformity is demonstrated in the test report:

<i>Clause</i>	<i>Subject</i>
-	-

**[19] Drawings and Documents**

<i>Number</i>	<i>Sheet</i>	<i>Issue</i>	<i>Date</i>	<i>Description</i>
-	-	-	-	-

The documents are listed in the test report.

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Freiberg, 2020-11-30