

[1] **TYPE EXAMINATION CERTIFICATE**



[2] **for non-electrical equipment and components
of the Equipment Group I and II, Categories M2 and 2 as well as 3
(Translation)**

[3] Type Examination Certificate Number: **IBExU02ATEXB006_05 X**

[4] Equipment / Component: **POLY-NORM® couplings
designs**

**AR, ADR, ADR-K, AVR, AZR, AR/AZR, AZVR,
AR with taper clamping bush
and their combinations**

sizes 28 to 180

[5] Manufacturer: **KTR Kupplungstechnik GmbH**

[6] Address: **Rodder Damm 170
48432 Rheine
Germany**

[7] The design of the product mentioned under [4] and any permissible variations thereto are specified in the schedule to this Type Examination Certificate.

[8] IBExU Institut für Sicherheitstechnik GmbH, NOTIFIED BODY number 0637 in accordance with Article 9 of the Council Directive 94/9/EC of 23rd March 1994, certifies that the product mentioned under [4] has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of the product intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The test results are recorded in the Test Reports IB-02-4-124/1, Part 1, of 14th March 2002, IB-02-4-602 of 30th November 2002, IB-02-4-602/1 of 5th December 2002 and IB-04-4-016/1 of 7th November 2005.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 11271-1:1997, EN 1127-2:2002, EN 13463-1:2001 and EN 13463-5:2003.

[10] If the sign "X" is placed after the certificate number and / or the marking mentioned under [12], it indicates that the product is subject to special conditions for safe use specified under [17] in the schedule to this Type Examination Certificate.


[11] This Type Examination Certificate relates only to the design and construction of the product specified under [4]. If applicable, further requirements of this Directive apply to the production and supply of this product (for example see under [19]).


[12] The marking of the POLY-NORM® couplings of the designs mentioned under [4] can be performed as follows:

 **II 2GD c IIC T X**

 **I M2 c X**

With reference to maximum permissible ambient temperatures resp. operating temperatures T_a and Temperature Classes or maximum surface temperatures, the following marking can also be used in view of the temperature increase of $\Delta T = 20$ K explained under [16]:

 **II 2G c IIC T6 resp. T5 X**
 $-30\text{ °C} \leq T_a \leq +65\text{ °C}$ resp. $+80\text{ °C}$

 **II 2D c T 100 °C X**
 $-30\text{ °C} \leq T_a \leq +80\text{ °C}$

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IM2 c X
 $-30\text{ °C} \leq T_a \leq +80\text{ °C}$

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Freiberg, 8th November 2005

(Prof. Redeker)

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- Stamp -

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.

Schedule

[13] **Schedule**

[14] to Type Examination Certificate IBExU02ATEXB006_05 X

[15] **Description**

The POLY-NORM[®] couplings mentioned under [4] are plug-in jaw type couplings with flexible elastomer elements. The elastomer elements are arranged continuously on a ring (annular package). The couplings are fail-safe. The couplings are able to compensate for axial, radial and angular misalignment between driving and driven side within specified limits. The numerous designs of the couplings differ in the design of the hubs and the arrangement of various spacers. The coupling hubs are finish bored according to the documents of the manufacturer.

From the manufacturer the couplings are intended for use in a temperature range T_a from -30 °C to $+80\text{ °C}$ (permanent load).

Details are contained in the documents of the manufacturer, which are part of the Test Reports mentioned under [8] and [16].

[16] **Test Report**

The test results including the latest details about the temperature behaviour of the couplings as a basis for this Type Examination Certificate are recorded in the Test Report IB-04-4-016/1 dated 7th November 2005.

For specifying the maximum surface temperatures a temperature increase of $\Delta T = 20\text{ K}$ against the ambient temperatures resp. operating temperatures T_a have to be taken into account. This temperature increase results from the proved self-heating plus $+5\text{ K}$ safety factor.

Summary of test results:

The POLY-NORM[®] couplings of the designs mentioned under [4] meet the requirements for non-electrical equipment / components

- of the Equipment Group II, Category 2G.

In view of the temperature increase of $\Delta T = 20\text{ K}$ the couplings meet according to maximum permissible ambient temperatures resp. operating temperatures T_a the requirements for Temperature Class T6 (for $T_a = 65\text{ °C}$), for Temperature Classes T5 to T1 (for $T_a = 80\text{ °C}$, is also the maximum permissible temperature for permanent use).

They meet the requirements for use in the Explosion Group IIC. With it, the couplings meet also the requirements for the Explosion Groups IIB and IIA.

- of the Equipment Group II, Category 2D.

At the maximum permissible ambient temperature resp. operating temperature T_a of $+80\text{ °C}$ the maximum surface temperature is 100 °C .

- of the Equipment Group I, Category M2.

At the maximum permissible ambient temperature resp. operating temperature T_a of $+80\text{ °C}$ the maximum surface temperature, which is permissible for the Category M2, is not attained.

The following ambient temperatures resp. operating temperatures are permissible:

$-30\text{ °C} \leq T_a \leq +80\text{ °C}$.

The type of protection "c" (Protection by constructional safety) was used as protective measure.

Note:

This Type Examination Certificate IBExU02ATEXB006_05 X is a summary of Type Examination Certificate IBExU02ATEXB006 X of 15th March 2002 and 1st Addition to Type Examination Certificate IBExU02ATEXB006 X of 5th December 2002. The sizes as well as the temperature range T_a were extended.

Additionally, based on new results, the value for the temperature increase ΔT , which has to be considered as a result of the self-heating, was reduced to 20 K. Withdrawing the certificates issued up to now is not necessary. Products with markings according to the certificates issued up to now can be supplied furthermore.

[17] Special conditions for safe use

The marking with "T X" means, that for specification of the maximum surface temperature at the coupling the user has to take into account a temperature increase of $\Delta T = 20$ K compared to the ambient temperature resp. operating temperature T_a .

The POLY-NORM® couplings may only be used if their materials resist to the mechanical and/or chemical influences resp. corrosion under the actual operating conditions, in such a way, that the explosion protection is always ensured.

The POLY-NORM® couplings have to be provided with solid covers by the user to protect the couplings against falling objects. Openings for necessary heat dissipation can be arranged in these protective covers. Covers of couplings intended for use in the mining industry (Equipment Group I) must withstand higher mechanical loads than the covers of couplings intended for use in the other industries (Equipment Group II). Detailed notes for the design of the cover are stated in the operating-/installation instruction.

The cover must be electrically conductive. It must be included in the equipotential bonding.

If the couplings are used in dust explosion hazardous areas, the operator has to observe, that no dusts in dangerous quantities can accumulate between cover and coupling. The coupling must not run in a dust deposit.

For the assembly of screw connections only screws have to be used, which are specified by the manufacturer. When tightening the screws, the torque specified by the manufacturer has to be observed.

All screw connections to fasten the hub onto the shafts have to be protected against self-loosening.

For the use of the couplings in the mining industry, the user is obliged to observe the specifications of the national regulations for mining industry, which are valid for the respective operating area.

[18] Essential safety and health requirements

Confirmed by norms (see [9]).

[19] Confirmation of the deposit of documents according to Annex VIII of Directive 94/9/EC

It is confirmed, that the documents for the non-electrical product of the Category 2 mentioned under [4] are deposited under No IB-04-4-016/1 at the NOTIFIED BODY IBExU (EC-Identification No 0637). The deposit of the documents is carried out according to the regulations of Directive 94/9/EC, item 8 (1) b) ii).



(Prof. Dr. Redeker)

Freiberg, 8th November 2005