

# 1 Operating Manual supplement “Ex”

If the DENTEX coupling is operated in or in connection with an explosive atmosphere, the following additional instructions must be followed as a supplement to the Operating Manual “BMA0008”:

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### 3 Specified normal operation (intended purpose)

The DENTEX coupling is a component as defined in Directive 2014/34/EU and may only be used in or in connection with an explosive atmosphere if the conditions below are met.

#### 3.1 Explosive atmosphere

Ambient pressure  $p_U$  0.8 to 1.1 bar

Must not be used in an explosive atmosphere caused by potentially explosive dusts or unstable substances.

#### 3.2 Instructions for use

The DENTEX coupling is designed to be free of ignition sources in accordance with the respective classes of standard DIN EN 13463-1. Use of the DENTEX coupling in connection with an explosive atmosphere is dependent on the material used and the spider size. Hubs intended for use in an explosive atmosphere are manufactured from sintered steel or steel only. The following classifications apply:

In equipment group I in category M2:

Series B up to size B65

Series FL up to size flange diameter 220 mm or up to 6 ½ “  
with the identification:

 IM2 X

Flange coupling FL must not operate in an accumulation of dust.

The permissible surface temperature limit of 150°C for couplings from category M2 for group I will not even be attained at the maximum permissible ambient temperature of  $T_a = 81^\circ\text{C}$ .

The operator of the coupling is responsible for determining its suitability in terms of its performance in case of fire. The following findings are available with regard to the polyamide material:

Test in accordance with UL Standard at  $d = 1.6$  mm thickness as defined in IEC 60695-11-10: class V-2

Test for installation inside a motor vehicle, with a thickness  $\geq 1$  mm as defined in FMVSS 302: passed

The weight of sleeves up to size B55 is  $<0.5$  kg. Flammability requirements do not apply to these sizes in group I; see DIN EN 1710:2008, Section 6.2.

In the equipment group II in category 3GD:

Series B, B3R, B4R and FL in all sizes  
with the identification:

 II3GD TX

Flange coupling FL must not operate in an accumulation of dust.

In equipment group II in category 2GD for gas category IIC and flammable dusts with an MIE >1 mJ:

Series B up to size B65  
 Series FL up to size flange diameter 96 mm  
 with the identification:

 II2GD IIC TX

Flange coupling FL must not operate in an accumulation of dust.

In equipment group II in category 2GD for gas category IIB and flammable dusts with an MIE >1 mJ:

Series FL from size flange diameter 125 mm up to size flange diameter 220 mm  
 or flange diameter 6 1/2“  
 with the identification:

 II2GD IIB TX

Flange coupling FL must not operate in an accumulation of dust.

Temperature class and maximum surface temperature, which are dependent on the sleeve or flange material used and on the maximum ambient temperature  $T_a$ , are as follows:

Material	Ambient temperature	Temperature class	Max. surface temperature
Series B, B3R and B4R 6.6 polyamide	$T_a \leq 81^\circ\text{C}$	T4	T101°C
	$T_a \leq 80^\circ\text{C}$	T5	T100°C
	$T_a \leq 65^\circ\text{C}$	T6	T85°C
Heat-stabilised polyamide	$T_a \leq 98^\circ\text{C}$	T4	T118°C
	$T_a \leq 80^\circ\text{C}$	T5	T100°C
	$T_a \leq 65^\circ\text{C}$	T6	T85°C
Series FL Fibre-reinforced polyamide	$T_a \leq 101^\circ\text{C}$	T4	T121°C
	$T_a \leq 80^\circ\text{C}$	T5	T100°C
	$T_a \leq 65^\circ\text{C}$	T6	T85°C

The minimum ambient temperature  $T_a$  is:

Material	Ambient temperature
6.6 polyamide	$-25^\circ\text{C} \leq T_a$
Heat-stabilised polyamide	$-25^\circ\text{C} \leq T_a$
Fibre-reinforced polyamide	$-25^\circ\text{C} \leq T_a$

The operator is responsible for ensuring compliance with all instructions concerning specified normal operation (intended purpose). The given configuration limits must be observed. Permissible displacement values must not be exceeded.

Check the clutch play regularly and replace sleeves and/or flanges before attainment of the maximum permissible play value. The inspection intervals are dependent on the operating conditions and must be assessed by the operator. If there is no empirical data as yet, the intervals set out in Section 6 below apply.

The exposed surface of the flange of Series FL is liable to static charging. Inadmissible charging can occur if the coupling is operated in an accumulation of dust, which the user must take steps to prevent.

Avoid contact with the rotating coupling to prevent the occurrence of mechanical ignition sources. This can be effected by means of a suitable coupling guard, for example.

The coupling materials used, especially plastic sleeves or flanges, may be affected by chemical influences in the ambient atmosphere. Possible risks or necessary measures must be assessed by the operator.

## 4 Industrial health and safety



If the DENTEX coupling is used as a component in a device or as a sub-assembly as defined in Directive 2014/34/EU, the manufacturer must ensure and confirm that the device or sub-assembly complies with the Directive before the device or sub-assembly is operated for the first time.

If the DENTEX coupling is installed as part of a plant, the user of the plant is obliged to ensure compliance with the requirements of Directive 1999/92/EC and, where applicable, any additional national requirements.

The user is responsible for determining whether or not, based on the instructions for use, the DENTEX coupling is suitable for operation in the explosive atmosphere actually present.

Under normal operating conditions, the DENTEX coupling does not present any effective ignition sources. The user is responsible for ensuring normal operating conditions by carrying out regular checks, servicing and repair in accordance with the Operating Manual.

The user must take out of service any coupling that is not functioning correctly. The coupling may not be used again until appropriate repairs have been carried out.

Maintenance or servicing work on the DENTEX coupling should not be carried out in the presence of an explosive atmosphere.

No heating, welding or cutting is required prior to maintenance or servicing work.

The precautionary steps defined in standard DIN EN 1127-1, Annex A must be taken for work in an explosive atmosphere. Smoking, fire and naked lights are prohibited.

Only tools suitable for the given operating conditions may be used, as defined in standard DIN EN 1127-1, Annex A.

## 5 Assembly and installation



The coupling hubs must be assembled with the specified clearance “E” to rule out the possibility of metal-to-metal contact.

The coupling hubs must be secured against axial displacement. The tightening torque of the axial fixing screw must be observed.

If the coupling hubs are not mounted against a shaft shoulder, they must be secured with a radial fixing screw. The fixing screw must be treated with adhesive to prevent it from coming loose. The adhesive used must be heat resistant up to a temperature of at least 150°C.

Coupling guards / protective systems must be configured so as to definitely rule out the possibility of mechanical contact with the coupling. Precautions must be taken to ensure that this is also guaranteed when couplings are used in severe or harsh operating conditions.

The flange of Series FL is made of electrically insulating material that prevents direct potential equalisation between the attached or adjacent components. Potential equalisation must be achieved by appropriate configuration of the plant.

## 6 Checks, servicing and repairs



In order to prevent and identify faults, the following supplementary instructions must be carried out in addition to the servicing instructions in the Operating Manual.

Faults and malfunctions must be remedied immediately and in accordance with the repair instructions.

The equipment must be checked daily for unusual running noise. A change in running noise indicates the presence of inadmissible toothing backlash and/or loose components.

Friction can cause wear to the spider, which in extreme cases can result in the sleeve rotating against the hub and cause the surface to overheat. It is therefore necessary to check the spider for wear and/or excessive play for the first time after 1,000 operating hours and every 4,000 operating hours thereafter (or after 12 months at the latest), as described in the Operating Manual. The sleeve and/or flange must be replaced before they show signs of inadmissible wear.

In order to uphold the explosion protection strategy, only spare parts specified and approved by the manufacturer may be used.

## 7 Inspection



As specified in Directive 1999/92/EC, the correct installation and proper function of the DENTEX coupling must be checked before operating the coupling for the first time. This inspection must be carried out by a qualified person or an employee of Raja-Lovejoy GmbH, Werdohl and documented accordingly.

As specified in Directive 1999/92/EC, the proper function of the DENTEX coupling must be checked every 3 years at the latest. This inspection must be carried out by a qualified person or an employee of Raja-Lovejoy GmbH, Werdohl and documented accordingly.

## 8 Declaration of conformity with Directive 2014/34/EU

### Declaration of conformity

under the terms of the Equipment for explosive atmospheres (ATEX) Directive 2014/34/EU

We, R+L Hydraulics GmbH  
Friedrichstraße 6  
58791 Werdohl

hereby declare under our sole responsibility that the subject of the Operating Manual, the

Component: DENTEX coupling

fulfils the fundamental health and safety requirements of Directive 2014/34/EU, Annex II. The uses of the component are derived from its labelling/identification and the instructions for use contained in the Operating Manual Supplement “Ex”.

The following harmonised standards and/or normative documents were partly or wholly taken into account during the design and manufacture of this device:

European standards	National standards / normative documents
DIN EN 1127-1 :2011 DIN EN 1127-2 :2010 DIN EN 13463-1 :2009 DIN EN 1710 :2008 DIN EN 15198 :2007	

The special operating instructions contained in the supplement “Ex” must be followed.

The technical documentation in accordance with Annex VIII, No. 3 was created and has been deposited at the named location **IBExU** under deposit number **IBExU03ATEXB018X**

Werdohl, 20.04.2016  
Place / date

Joachim Nöh/ Qualitymanager/  
Name / function / signature

