1 Operating Manual supplement “Ex”

If the SPIDEX 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 “BMA0007”.

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3 Specified normal operation (intended purpose)

The SPIDEX 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 SPIDEX coupling is designed to be free of ignition sources in accordance with the respective classes of standard DIN EN 13463-1. Use of the SPIDEX coupling in connection with an explosive atmosphere is dependent on the material used and the spider size. The following classifications apply:

In equipment group I up to size ZK75 in category M2 with the identification:

Ⓔx I M2 X

In equipment group II up to size ZK65 in category 2GD with the identification:

Ⓔx II 2 GD IIC TX

Up to size ZK125 in category 2GD with the identification:

Ⓔx II 2 GD IIB TX

From size ZK140 in category 2D or 3G with the identification:

Ⓔx II 2D 3G TX

The spider materials can be identified by their colour.

The respective minimum ambient temperatures are as follows:

Colour of spider material	Ambient temperature
Blue	$-40°C \leq T_a$
White	$-40°C \leq T_a$
Green	$-20°C \leq T_a$
Red	$-30°C \leq T_a$

The maximum ambient temperature, temperature class and maximum surface temperature are as follows:

Colour of spider material	Ambient temperature	Temperature class	Surface temp.
Blue, white, green and red	$T_a \leq 40°C$	T6	T85°C
White, green and red	$T_a \leq 60°C$	T6	T85°C
White, green and red	$T_a \leq 70°C$	T5	T95°C
Green and red	$T_a \leq 75°C$	T5	T100°C
Green and red	$T_a \leq 80°C$	T4	T105°C

Design limits must be observed and the permitted misalignment values may not be exceeded.

Please refer to the Operating Manual for information on coupling types and materials available. Aluminium couplings are not available in group I.

The user must ensure that the coupling is not operated in its natural frequency range. Please refer to the Operating Manual for coupling-specific parameters for the calculation of natural frequency.

The exposed surface of the spider 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 must not be affected by any chemical influences in the ambient atmosphere.

The user is responsible for ensuring that all conditions for specified normal operation (intended purpose) are met.

4 Industrial health and safety

If the SPIDEX 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 SPIDEX 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 SPIDEX coupling is suitable for operation in the explosive atmosphere actually present.

Under normal operating conditions, the SPIDEX coupling does not give 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 SPIDEX 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 protective 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 two halves of the coupling must be secured against axial displacement. If the coupling halves are not mounted against a shaft shoulder, they must be secured with a 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 125°C.

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

Coupling hubs in category 2 are always with keyway. Coupling hubs without keyway may only be fitted as components in category 3.

Flange and clamping screws must be tightened with the specified torque.

Coupling guards / protective systems must be configured so as to definitely rule out the possibility of mechanical contact with the coupling.

The spider is made of electrically insulating material that prevents direct potential equalisation between the two halves of the coupling. Potential equalisation between the two halves of the coupling must be achieved by configuring the plant accordingly.

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 sound emissions or undue vibration.

Friction can cause wear to the spider, which may result in contact between the two halves of the coupling and cause ignitable impact sparking. The spider must therefore be checked for wear for the first time after 1,000 operating hours and every 4,000 operating hours thereafter (or after 12 months at the latest). The spider must be replaced if it shows signs of inadmissible wear.

In order to prevent undue wear, the machine in which the coupling is installed must be inspected regularly (every 6 months) for any inadmissible vibration.

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 SPIDEX 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 SPIDEX 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: SPIDEX 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 :2008 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 **IBExU03ATEXB017X**

Werdohl, 20.04.2016 — Joachim Nöh/ Qualitymanager/
Place / date — Name / function / signature