


Attachment : Specific Protective Measures Taken for ESCODISC Couplings in case of use in explosive atmospheres.

0 Introduction

General assembly and maintenance instructions (called IM/... in this attachment), are established for standard ESCODISC couplings according to the following list:
 IM/A100-2 for ESCODISC DLC couplings - IM/A100-3 for ESCODISC DMU couplings
 IM/A100-4 for ESCODISC DPU couplings - IM/A100-5 for ESCODISC DMUCC couplings
 In case of use in potentially explosive atmospheres , further to the general assembly and maintenance instructions(IM/...), the specific measures described in this attachment must be taken.

1 Coupling Selection

The coupling must be selected according to the general assembly and maintenance instructions IM/... .

In explosive atmosphere, the following specific rules must apply:

A Service Factor of 1.5 must be applied on the max torque values for nominal torque (Tn) and peak torque (Tp) given in the charts in catalogue (see Selection chart A104 and A105).


2 Use of the coupling

The coupling is dedicated for use in potentially explosive atmospheres according to European Directive 94/9/EC (Atex 100 A).

Coupling is classified in equipment group II, equipment category 2 and 3, intended for use in areas in which explosive atmospheres caused by gases, vapors, mists of air/dust mixtures are likely to occur.

In function of the ambient temperature in the coupling proximity (85, 55, 45°C), the temperature classes have been defined (T4, T5, T6).

This is based on a temperature increase of the machine shafts (in regard of the ambient temperature) that will not exceed 50°C in operation.

The coupling is marked as follows: CE  II 2 G T4/T5/T6 D 120°C -20°C ≤ Ta ≤ 85°C / 55°C / 45°C

This marking covers the T3 temperature category. - This marking covers all gas categories: G IIA, G IIB and G IIC.

3. Warnings

The warnings mentioned in the general assembly and maintenance instructions IM/... must apply in any case.

In explosive atmosphere, the following specific warnings must apply:

- Complete machining of the coupling parts (bores, keyways, spacers, floating shafts etc...) must be performed by ESCO Couplings N.V. No modification shall be made on the supplied and marked product without the agreement of ESCO Couplings N.V.
- In case of supply by ESCO Couplings of couplings with a rough bore or a solid bore, the sole allowed operation that may be performed by the customer is the boring and keywaying of the coupling hubs. When machining the bore and the keyway, the following instructions must be followed:
 - This job must be performed by an authorised and adequately trained and informed operator.
 - The bore and keyway tolerances must be selected to insure the proper fit between shaft and bore. In case of loose fit, a set screw must be foreseen to locate the hub axially.
 - The max bore may not exceed the value stated in the catalogue. The tabulated values in the catalogue are based on key dimensions according to ISO R 773.
 - The reference used to centre the piece when boring, is the one referenced D in the figures of the catalogue.
- Before proceeding with any assembly, operation or maintenance operation on the coupling, make sure that the necessary measures have been taken to ensure safety, such as but not limited to:
 - Proper ventilation of the area
 - Proper lightening and electrical tools.
- If hub must be heated for assembly on the shaft, make sure heating source and surface temperature will not affect the safety of the working area.
- It is recommended to have a strong coupling guard, preferably in stainless steel with openings (if any) smaller than the smallest centrifugable part (nut is 10 mm dia). The coupling guard is intended to protect the environment from the centrifugation of any rotating part and the rotating coupling from any falling part. To limit ventilation effects, distance between cover and coupling outside surface should be at least 10 mm.

4. Assembly

The general assembly and maintenance instructions IM/... must apply in any case.

In explosive atmosphere, the following specific instructions must apply:

Alignment of the machine in cold condition must take into account the possible heat expansion to make sure that in continuous running conditions, max misalignment calculated on the base of selection chart A104 will not exceed 80% of the max allowed value: $Da/\Delta ka + \alpha/\Delta kw + dr/\Delta kr \leq 0.80$

5. Operation

The general assembly and maintenance instructions IM/... must apply in any case.

In explosive atmosphere, the following specific instructions must apply:

- Before Start-up
 - Make sure coupling is perfectly clean and properly aligned.
 - Coupling guard must be properly installed and fixed.
 - Make sure, screws, nuts are properly tightened.
 - Monitoring system, if any, must be tested to verify its effectiveness.
- During start up
 - Check for any abnormal noise and/or vibration. If any, immediate stop is mandatory and appropriate action must be taken.
- Checking intervals during operation
 - After the first 3000 hours or 6 months:
 - Inspect external disc for any fatigue crack.
 - Verify alignment
- Continuous checking
 - Immediately stop the machine if noise, vibrations or other abnormal phenomena are detected during operation.
 - Further more, if direct check is not possible for access or safety reasons, proper monitoring system has to be installed to follow up couplings behaviour

6. Maintenance

The general assembly and maintenance instructions IM/... must apply in any case.

In explosive atmosphere , the following specific instructions must apply:

- Every 8.000 hours or 18 month:
 - Dismount the coupling and inspect.
 - Proceed as indicated in point 4.

Esco Couplings N.V.

Kouterveld - Culliganlaan, 3
 B - 1831 Diegem
 (tel) + 32 (0)2 715 65 60
 (fax) + 32 (0)2 720 83 62 - 02 721 28 27
 e-mail: info@esco-couplings.be
 web site: www.esco-coupling.com

Esco Transmissions s.a.

Z.I. 34, rue Ferme Saint-Ladre
 Saint Witz
 F - 95471 Fosses Cedex
 (tel) + 33 (1) 34 31 95 95
 (fax) + 33 (1) 34 31 95 99
 e-mail: info@esco-transmissions.fr
 web site: www.esco-transmissions.fr

eugen schmidt und co getriebe und antriebs-elemente GmbH

Eugen Schmidt Postfach 1741 - D - 53827 Troisdorf
 Hausanschrift: Biberweg 10 - D - 53842 Troisdorf
 (tel) + 49 (0)2241 48 07 -0
 (fax) + 49 (0)2241 48 07 10 und 40 35 85
 e-mail: esco-antriebstechnik@t-online.de
 web site: www.esco-antriebstechnik.de

Esco Aandrijvingen b.v.

Ondernemingsweg, 19 - P.B. 349
 NL - 2404 HM Alphen A/D Rijn
 (tel) + 31 (0) 172 / 42 33 33
 (fax) + 31 (0) 172 / 42 33 42
 e-mail: info@esco-aandrijvingen.nl
 web site: www.esco-aandrijvingen.nl