

EU-TYPE EXAMINATION CERTIFICATE



Component intended for use on/in Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

EU-Type Examination Certificate Number: **DEMKO 19 ATEX 2244U Rev. 0**

Component: **Flexible Conduit Fittings, type EXMM, EXMUM, EXMUF, EXUM, EXUMUF and EXUF**

Manufacturer: **Haenke Tubos Flexíveis Ltda.**

Address: **Rua João Corrêa de Sá, 97 - Galpão 01 - Vila Nogueira, 09960-320 - Diadema/SP - Brazil**

This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

UL International Demko A/S, notified body number 0539 in accordance with Article 17 of the Council Directive 2014/34/EU of the European Parliament and the Council, dated 26 February 2014, certifies that this component has been found to comply with the Essential Health and Safety Requirements relating to design and construction of components intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. **OPP-122018-102269292.2.3**

Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012 + A11:2013

EN 60079-1: 2014

EN 60079-31:2014

The sign "U" is placed after the certificate number. It indicates that this certificate must not be mistaken for a certificate intended for an equipment or protective system. This partial certification may be used as a basis for certification of an equipment or protective system.

This EU-Type Examination Certificate relates only to the design and construction of the specified component. Further requirements of the Directive apply to the manufacturing process and supply of this component. These are not covered by this certificate.

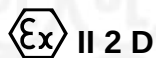
The marking of the component shall include the following:



II 2 G

Ex db IIB+H₂ Gb (for Brass version, only)

Ex db IIC Gb (for Stainless Steel version, only)



II 2 D

Ex tb IIIC Db

Certification Manager

Jan-Erik Storgaard

This is to certify that the sample(s) of the Component described herein ("Certified Component") has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the ATEX Product Certification Program Requirements. This certificate and test results obtained apply only to the component sample(s) submitted by the Manufacturer. UL did not select the sample(s) or determine whether the sample(s) provided were representative of other manufactured component. UL has not established Follow-Up Service or other surveillance of the product. The Manufacturer is solely and fully responsible for conformity of all products to all applicable Standards, specifications, requirements or Directives. The test results may not be used, in whole or in part, in any other document without UL's prior written approval.

Date of issue: 2020-03-13



Notified Body

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Schedule

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Description of Component:

The types EXMM, EXMUM, EXMUF, EXUM, EXUMUF and EXUF are flexible conduit fittings made of stainless steel (AISI 321, AISI 304, AISI 304L, AISI 316L, or AISI 316) or a combination of stainless steel and Brass (UNS-C36000, UNS-C23000) in the sizes of 1/2", 3/4", 1", 1.1/4", 1.1/2", 2", 2.1/2", 3", and 4". They comprise of threads NPT and/or BSPT and are used to mechanically protect conductors/cables to path through. The brass version is manufactured with a stainless steel corrugated core (AISI 321, AISI 304, AISI 304L) and externally coated with a braided wires in Tombac alloy (UNS-C36000, UNS-C23000) and it may have or not an insulating coating braided synthetic on inner side.

The stainless steel version is manufactured with a stainless steel corrugated core (AISI 321, AISI 304, AISI 304L, AISI 316L, or AISI 316) and externally is coated with a braiding wires of the same material and it may have or not an insulating coating braided synthetic on inner side.

The end fittings are secured to both ends of the corrugated core with outer braid assembly by a gas tungsten arc welding (for stainless steel) or brazing (for brass).

Model Designation:**a = EX**

EX

b = End fittings

MM - fixed male x fixed male
MUM - fixed male x male union
MUF - fixed male x female union
UM - male union x male union
UMUF - male union x female union
UF - female union x female union

c= Material Type

L - Brass
I - Stainless Steel

a b c LEX^a MM^b L^c

a = Ex

b = fixed male x fixed male

c = Brass

EX^a MUM^b L^c

a = Ex

b = fixed male x male union

c = Brass

EX^a MUF^b L^c

a = Ex

b = fixed male x female union

c = Brass

EX^a UM^b L^c

a = Ex

b = male union x male union

c = Brass

EX^a UMUF^b L^c

a = Ex

b = male union x female union

c = Brass

EX^a UF^b L^c

a = Ex

b = female union x female union

c = Brass

a b c IEX^a MM^b I^c

a = Ex

b = fixed male x fixed male

c = Stainless Steel

EX^a MUM^b I^c

a = Ex

b = fixed male x male union

c = Stainless Steel

EX^a MUF^b I^c

a = Ex

b = fixed male x female union

c = Stainless Steel

EX^a UM^b I^c

a = Ex

b = male union x male union

c = Stainless Steel

EX^a UMUF^b I^c

a = Ex

b = male union x female union

c = Stainless Steel

EX^a UF^b I^c

a = Ex

b = female x female union

c = Stainless Steel

The length of the flexible conduit fittings can be from 198 mm up to 3000mm, taking into account, table 1 and 2 as below:

Table 1 – Applicable for the types: EXMUM, EXMUF, EXUM, EXUMUF, and EXUF

Size	Minimum length	Maximum length	Note
1/2"	198 mm	3000 mm	For both materials (brass and stainless steel) with union assembly on the ends.
3/4"	198 mm	3000 mm	
1"	198 mm	3000 mm	

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Table 2 – Applicable for the Type: EXMM

Size	Minimum length	Maximum length	Note
1/2"	198 mm	3000 mm	For all diameters and materials (brass and stainless steel) with fixed ends.
3/4"	198 mm	3000 mm	
1"	198 mm	3000 mm	
1.1/4"	198 mm	3000 mm	
1.1/2"	198 mm	3000 mm	
2"	198 mm	3000 mm	
2.1/2"	198 mm	3000 mm	
3"	198 mm	3000 mm	
4"	198 mm	3000 mm	

Minimum bend radius for each size, independently of the material (stainless steel or brass) are as follows:

Size	Flexible Conduit with coating	Flexible Conduit without coating
1/2"	270 mm	200 mm
3/4"	280 mm	200 mm
1"	310 mm	200 mm
1.1/4"	320 mm	250 mm
1/2"	400 mm	250 mm
2"	500 mm	350 mm
2.1/2"	600 mm	405 mm
3"	750 mm	450 mm
4"	900 mm	560 mm

Routine tests

Routine overpressure tests in accordance with EN 60079-1:2014 clause 16 shall be conducted by using the applicable pressures below:

Table 1 – Minimum Test Pressure – Applicable for union assembly (types: EXMUM, EXMUF, EXUM, EXUMUF and EXUF) up to 3000 mm length

Diameters	Manufacturer's Testing Pressure Brass	Manufacturer's Testing Pressure Stainless Steel
1/2"	30 bar	30 bar
3/4"	30 bar	30 bar
1"	30 bar	30 bar

Table 2 – Minimum Test Pressure – Applicable for fixed ends (Type EXMM) up to 3000 mm length

Diameters	Manufacturer's Testing Pressure Brass	Manufacturer's Testing Pressure Stainless Steel
1/2"	50 bar	80 bar
3/4"	50 bar	80 bar
1"	50 bar	80 bar
1.1/4"	50 bar	80 bar
1.1/2"	50 bar	60 bar
2"	50 bar	60 bar
2.1/2"	40 bar	60 bar
3"	40 bar	60 bar
4"	35 bar	55 bar

There shall be no sign of permanent deformation of the joints or damage to the enclosure that will invalidate the concept of protection.

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Descriptive Documents

The scheduled documents are listed in the report no. provided under item no. 8 on page 1 of this EU-Type Examination Certificate.

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Schedule of limitations:

- This component shall be only installed together with certified conduit sealing device entries.
- This component is intended to mechanically protect conductors/cables to path through.
- It is not allowed to increase the length of the flexible conduit by doing amendment on it with other flexible conduit or any other accessory.
- Operating Service temperature: -20°C up to +80°C.
- This Ex component shall be installed in accordance with the manufacturer's instructions during the final installation.
- Flamepaths shall not be repaired.
- BSPT threads in accordance with NBR NM ISO 7-1 shall be considered in final application for compliance with end equipment certification.
- Flexible conduits have been considered for a maximum explosion pressure as given on tables below:

Applicable for fixed ends (type: EXMM)

Diameters	Maximum Explosion Pressure Brass	Maximum Explosion Pressure Stainless Steel
1/2"	33.33 bar	53.33 bar
3/4"	33.33 bar	53.33 bar
1"	33.33 bar	53.33 bar
1.1/4"	33.33 bar	53.33 bar
1.1/2"	33.33 bar	40 bar
2"	33.33 bar	40 bar
2.1/2"	26.66 bar	40 bar
3"	26.66 bar	40 bar
4"	23.33 bar	36.66 bar

Applicable for union assembly (types: EXMUM, EXMUF, EXUM, EXUMUF, and EXUF)

Diameters	Maximum Explosion Pressure Brass	Maximum Explosion Pressure Stainless Steel
1/2"	20 bar	20 bar
3/4"	20 bar	20 bar
1"	20 bar	20 bar

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Essential Health and Safety Requirements

The Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9. The manufacturer's Declaration of Conformity declares compliance with other relevant Directives.

Additional information

The type EXMM has in addition passed the tests for Ingress Protection to IP66 (with fixed ends) and the types EXMUM, EXMUF, EXUM, EXUMUF, and EXUF to IP64 (with unions assembly) in accordance with EN60529:1991+A1:2000+A2:2013.

The manufacturer shall inform the notified body concerning all modifications to the technical documentation as described in Annex III to Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014.