METALDRIVE® ATEX Couplings

ANNEX ATEX
GMD-CERT-EX-EN

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ATEX Annex

This Annex is part of the sale of the SIT coupling according with the Directive 2014/34/EU, encloses the Declaration of Conformity and, therefore, is delivered together with the coupling.
With the Operating and Assembly Instructions, can be downloaded from the website www.sitspa.com.

The analysis of the process about these coupling was made by SIT S.p.A.

CAUTION!
These instructions have to be followed together with the indications of the Technical Specifications.

Classification of the hazardous areas

Below the relation among the hazardous areas, the substances and the explosion groups according with the ATEX Directive 2014/34/EU.

Table 5.1 - Classification of the hazardous areas

SUBSTANCE	ZONE	DESCRIPTION OF THE ZONE	EXPLOSION GROUP/MARKING ATEX
GASES, FOGS, STEAMS	Zone 0	Hazard environment with a mix of gases, fogs or steams permanent or for long periods (> 1000 hours/year).	1G
	Zone 1	Place where it is likely that there is an explosive atmosphere consisting of a mix of air, gas, steams or fogs during the normal operating conditions (10 - 1000 hours/year).	2G or 1G
	Zone 2	Place where it is unlikely that there is an explosive atmosphere consisting of a mix of air, gas, steams or fogs during the normal operating conditions or, if it's happen, infrequent and for short period (<10 hours/year).	3G, 2G or1G
DUSTS	Zone 20	Hazard area with presence of a cloud of combustible dust for a long period or frequently (> 1000 hours/year).	1D
	Zone 21	Place where it is likely that there is an explosive atmosphere consisting of a cloud of combustible dusts during the normal operating conditions (10 - 1000 hours/year).	2D or 1D
	Zone 22	Place where it is unlikely that there is an explosive atmosphere consisting of a cloud of combustible dusts during the normal operating conditions or, if it's happen, infrequent and for short period (<10 hours/year).	3D, 2D or 1D

Classification of ATEX groups and categories

Below the classification of ATEX groups, categories and protection devices according with ATEX Directive 2014/34/EU.

Table 5.2 - Classification of ATEX groups and categories

GROUP	CATEGORY	LEVEL OF RISK	PERFORMANCE OF PROTECTION	CONDITIONS OF OPERATION
GROUP I **(mining industry)**	M1	Very high	Two independent means of protection or safe even when two faults occur independently of each other.	Equipment remains energised and functioning when explosive atmosphere present.
	M2	High	Suitable for normal operation and severe operating conditions. If applicable also suitable for frequently occurring disturbances or for faults which are normally taken into account.	Equipment de-energised when explosive atmosphere is recognised.
GROUP II **(industry, except mining)**	1	Very high	Two independent means of protection or safe even when two faults occur independently of each other.	Equipment remains energised and functioning in Zones 0,1,2 (G) and/or 20, 21, 22 (D).
	2	High	Suitable for normal operation and frequently occurring disturbances or equipment where faults are normally taken into account.	Equipment remains energised and functioning in Zones 1, 2 (G) and/or 21, 22 (D).
	3	Normal	Suitable for normal operation.	Equipment remains energised and functioning in Zone 2 (G) and/or 22 (D).

Proper use of METALDRIVE® couplings in ATEX environments

Below the results of the SIT S.p.A. analysis for the use of METALDRIVE® couplings in environments with combustible gases, fogs and steams:

- Gases, fogs or steams in zones 1 and 2 (not suitable to zone 0)
- Dusts in zones 21 e 22 (not suitable to zone 20)
- Products of group II and categories 2 and 3 (not suitable to category 1)
- Gas explosion group IIC, including groups IIA and IIB
- Products of group I and category M2 (not suitable to category M1)

Temperature class for gases for products of Group II

Table 5.3 - Temperature class for gas

TEMPERATURE CLASS	MAXIMUM SURFACE TEMPERATURE [°C]	AMBIENT OR OPERATING TEMPERATURE [°C]
T1, T2	280	**-30 °C < Ta < 280 °C**
T3	200	**-30 °C < Ta < 190 °C**
T4	135	**-30 °C < Ta < 125 °C**
T5	100	**-30 °C < Ta < 90 °C**
T6	85	**-30 °C < Ta < 75 °C**

Over the temperature indicated in the table above the gases fire, everyone according with its class.
The ambient and operating temperature for the couplings was defined by SIT basing on the technical characteristic of the couplings and considering a safety factor of 10 K.

Temperature class for products of Group I

Coupling for machines of Group I Category M2 can work within the following range of temperature:

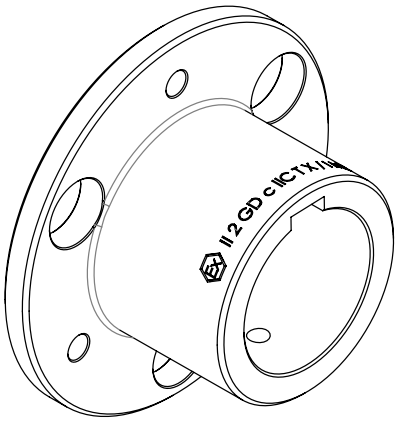
-30 °C < Ta < 140 °C

METALDRIVE® coupling is **not** suitable for product of category M1.

Marking

METALDRIVE® couplings are marked according with ATEX Directive 2014/34/EU for products that operate in potentially explosive environments.

The marking is indelible and, at SIT own discretion, on a proper place on the hub.



Complete marking

II 2GD c IIC T6/T5/T4/T3/ -30°<Ta<75°/90°/125°/190°/280 °C
I M2 c -30°<Ta<140 °C

SIMBOLO	DESCRIPTION
I/II	Group (I mining industry, II surface machine)
2	Category 2 (zone 1 / zone 21)
G	Explosive ambient with gases, fogs or steams
D	Explosive ambient with dusts
c	Protective solid device
IIC	Explosion groups for gases
T6	Temperature class corresponding to a maximum surface temperature
Ta	Range of ambient temperature

The row of gases indicates the temperature class and the range of operating temperature, considering the characteristic of the coupling and a safety factor of 10 K.
For dusts and Group I is reported only the maximum temperature, because there aren't classes.

Compact marking

If the dimensions of the coupling aren't enough for the complete marking, the ATEX Directive allows a compact version which refers to this Annex for a complete knowledge.

II 2GD c IIC T X / I M2 c X

The letter **C** at the end of the marking indicates the type of the protection device that the users has to mount around the coupling; with C is intended a solid device like a bellhousing according to the normative EN 13463-5.

The letter **X** refers to this annex, to the table of the temperature class (TEMPERATURE CLASS FOR GAS) and to the maximum environment temperature that has to be lower of 20 K, but always according to the technical characteristic of the spider.

Machining of the hubs for ATEX applications

The machining of bore and keyway has to follow the normative UNI-ISO 2768.
Every other machining in ATEX applications ha to be autorized by SIT.
The customer has to give a technical drawing to SIT with every machining he would to make.
SIT will evaluate and approval.

Check of the disk pack

The disk pack has to be check periodically to verify the torsional backlash and the wear.

The first check has to be made after 2000 operating hours or 3 months from the start.
If the first check didn't show any anomalous wear, the next check is after 4000 hours or 12 months.

By a visual inspection, verify that the screws are not loose; in this case, tighten them according with the TABLE 2.8.
The wear of the disk pack is to verify the absence of creeps: in this case, they have to be replaced independently from the periodical inspections.

ATTENTION!

Change the disk pack with a new one of the same size.
SIT S.p.A. disclaims every responsibility about wrong replacements.
For any information about the proper assembly, refer to the Operating and Maintenance Instructions available on SIT official website www.sitspa.com.

Internal production inspection

Before the marking and the selling approval, METALDRIVE® couplings passed inspections and tests according to the internal production planning and the Company Quality System.
SIT S.p.A. achieved the Certification about the Quality Management according to the international standard UNI EN ISO 9001.

Starting

ATTENTION!

Every operation should be made qualified personnel;
usages other than those indicated in these Instructions are forbidden.

Before starting up the coupling, check:
- The tightening torque of the setscrews
- The alignment
- The right distance between the two hubs

In really hazard areas, the tightening of the screws can be more safe using glue with Loctite (medium strength).

The user should check periodically, according to the type of usage and the substances in the area:
- The wear and id the coupling works properly
- Any vibrations or not common noises: in this case it's mandatory to understand the reasons and contact SIT S.p.A.

In hazard areas with combustible dusts, the machine has to be cleaned to avoid accumulation of dust; use suitable equipments for the classification of the area.
This maintenance operation has to be done with every component stopped and with no electrical tension.
Plan an ordinary maintenance according to the condition of the application, the environment and the temperature.
Nevertheless, some risks can occur during the normal operations if:
- The application is not submitted to regular maintenance according to the Usage and Maintenance Instructions
- The coupling works not in accordance with the design specifications

Different usages from the technical specifications are forbidden and SIT doesn't assume any liabilities or guarantees regarding any damages due to not proper use.

All the maintenance operations have to be done according to these instructions: no changes are allowed without SIT S.p.A. express authorization.

Not authorized replacements or without original spare parts voids the safe of the coupling: all the spare parts have to be supplied by SIT S.p.A.

Protection device for coupling in hazard areas

The protection devices for the couplings from no intentional contacts have to be rigidly fixed.
These devices have to be strong against the falling of objects.
Some openings have to be provided in order to permit the regular check.
The maximum dimensions are:
- Lateral parts: 8 mm
- Top side: 4 mm

The minimum distance between the mechanical protection and the rotating components has to be 5 mm in every direction.

The device has to conduct the electricity within the terms of the normative and can be remove only after the machine is stopped.
The device in aluminum or NBR can be used between pump and motor only if the percentage of magnesium (Mg) is lower than 7.5%..

Electrical continuity

METALDRIVE® coupling has to be installed and maintain according to the normatives and the technical suggestions for hazard areas with risk of explosion due to gases, steams or dusts.

ATTENTION!

METALDRIVE® coupling has never isolated from ground; verify the proper and continuous link to the ground.

The electrical continuity between the two metal parts of the coupling is ensured by the conductivity of the components on which they are mounted (e.g. motor and pump).
The test of the electrical resistance between the two metal parts of the coupling and the reference point has to be made at the first installation and periodically during the maintenance.

Declaration of Conformity

DECLARATION OF CONFORMITY

We

SIT S.p.A.
Viale A. Volta 2
20090 Cusago (MI)

we declare under our sole responsibility that the product:

METALDRIVE® Coupling

to which this declaration refers, is in conformity with the following European Directive

Directive ATEX 2014/34/UE

The conformity is under observance of the following standards or standards documents:

EN 13463-1 :2009 EN 13463-5 :2011

The technical documentation is deposited with the

DNV Nemko Presafe AS
P.O.Box 73 Blindem
0314 Oslo
Norway

Cusago, 18/05/2017

SIT S.p.A.
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