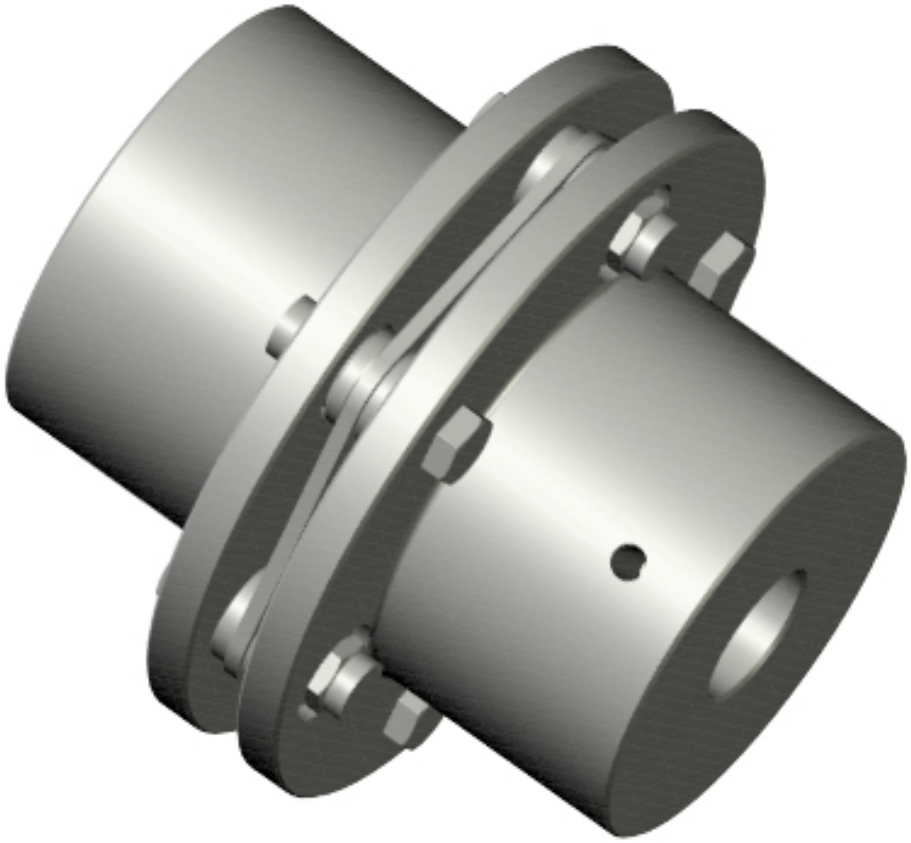
METALDRIVE® Couplings

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.

ATEX zone classification

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

ATEX zone classification

SUBSTANCE	ZONE	ZONE DESCRIPTION	ATEX CATEGORY/MARKING	EPL
GASES, VAPOURS, MISTS	Zone 0	A place in which an explosive atmosphere, consisting of a mixture with air of dangerous substances in the form of a gas, vapour or mist, is present continuously or for long periods or frequently (>1000 hours/year).	1G	Ga
	Zone 1	A place in which an explosive atmosphere, consisting of a mixture of air of dangerous substances in the form of a gas, vapour or mist, is likely to occur in normal operation occasionally (10 - 1000 hours/year).	2G or 1G	Gb or Ga
	Zone 2	A place in which an explosive atmosphere, consisting of a mixture of air of dangerous substances in the form of gas, vapour or mist, is not likely to occur in normal operation but, if it does occur, will persist for a short period only (<10 hours/year).	3G, 2G or 1G	Gc, Gb or Ga
DUSTS	Zone 20	A place in which an explosive atmosphere, in the form of a cloud of combustible dust in air, is present continuously or for long periods or frequently (>1000 hours/year).	1D	Da
	Zone 21	A place in which an explosive atmosphere, in the form of a cloud of combustible dust in air, is likely to occur in normal operation occasionally (10 - 1000 hours/year).	2D or 1D	Db or Da
	Zone 22	A place in which an explosive atmosphere, in the form of a cloud of combustible dust in air, is not likely to occur in normal operation but, if it occurs, will persist for a short period only (<10 hours/year).	3D, 2D or 1D	Dc, Db or Da

ATEX equipment classification

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

ATEX equipment classification

GROUP	EPL	CATEGORY	RISK LEVEL	PROTECTION CHARACTERISTICS	OPERATING CONDITIONS
GROUP I **(mining industry)**	Ma	M1	Very high	Two independent means of protection or safety ensured even in the event of two faults occurring independently of each other.	The equipment remains connected to the power supply and in operation even in the presence of explosive atmospheres.
	Mb	M2	High	Suitable for normal operation and for severe operating conditions. Where appropriate, also suitable for frequent disturbances or defects which normally need to be taken into account.	The equipment is disconnected from the power supply in the presence of explosive atmospheres.
GROUP II **GAS** **(industry, except mining industry**	Ga	1	Very high	Two independent means of protection or safety ensured even in the event of two faults occurring independently of each other.	The equipment remains connected to the power supply and in operation in zones 0, 1, 2.
	Gb	2	High	Suitable for normal operating conditions and for frequent disturbances or devices in which faults normally need to be taken into account.	The equipment remains connected to the power supply and in operation in zones 1, 2
	Gc	3	Normal	Suitable for normal operation.	The equipment remains connected to the power supply and in operation in zones 2.
GROUP III **DUSTS** **(industry, except mining industry**	Da	1	Very high	Two independent means of protection or safety ensured even in the event of two faults occurring independently of each other.	The equipment remains connected to the power supply and in operation in zones 20, 21, 22.
	Db	2	High	Suitable for normal operating conditions and for frequent disturbances or devices in which faults normally need to be taken into account.	The equipment remains connected to the power supply and in operation in zones 21, 22
	Dc	3	Normal	Suitable for normal operation.	The equipment remains connected to the power supply and in operation in zones 22.

Appropriate use of METALDRIVE® couplings in ATEX zones

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)
- Equipment in group I (mining) and categories M2 (not suitable for category M1)
- Equipment in group II and categories 2 and 3 (not suitable for category 1)
- Explosion group IIC, including groups IIA and IIB
- Equipment in group III (dust) and categories 2 and 3 (not suitable for category 1)
- Explosion group IIIC, including groups IIIA and IIIB

Gas temperature classes for Group II equipment and maximum surface temperature for equipment of Group III

Temperature class for gas

TEMPERATURE CLASS	MAXIMUM SURFACE TEMPERATURE [°C]	AMBIENT OR OPERATING TEMPERATURE T_s [°C]
T2	250	**-40 °C < Ta < 230 °C**
T3	195	**-40 °C < Ta < 175 °C**
T4	130	**-40 °C < Ta < 110 °C**
T5	95	**-40 °C < Ta < 75 °C**
T6	80	**-40 °C < Ta < 60 °C**

The table indicates the temperature above which the gases, belonging to the respective class, ignite.
The ambient or operating temperature of the couplings was determined by SIT according to the characteristics of the coupling and taking into account a safety factor equal to 20 K.
For every class of temperature, there is a safety factor of 5 K.
The maximum surface temperature of 230 °C refers to the applications with potential deposit of inflammable dust.
The environment and operating temperature are limited to 250 °C.

Temperature classes for Group I equipment

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

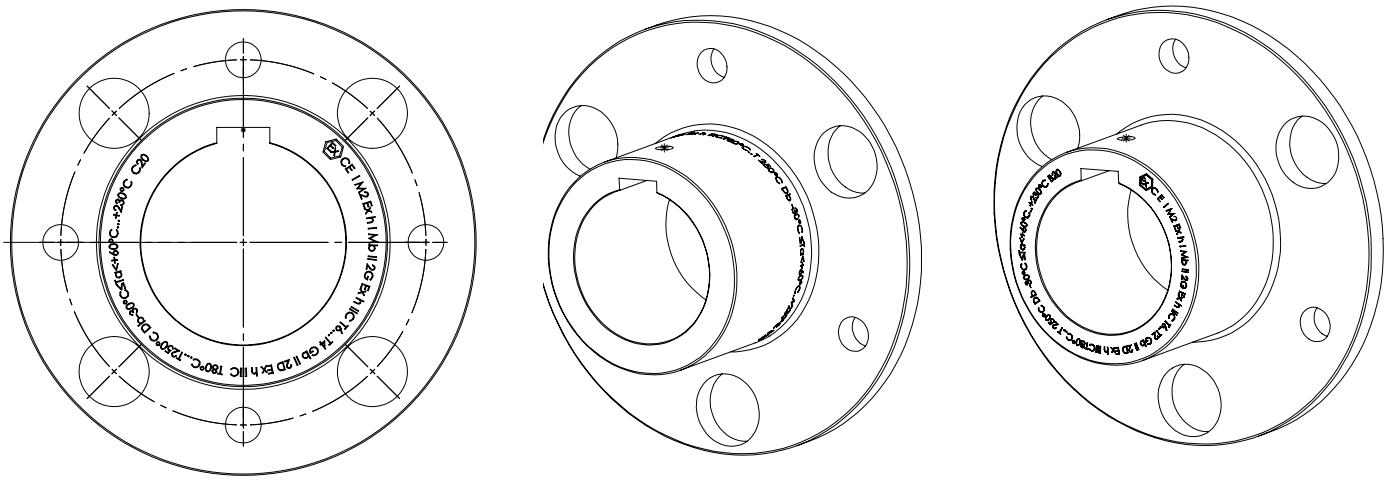
-40 °C < Ta < 130 °C

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

I M2 Ex h I Mb -40 °C < Ta < +130 °C
II 2G Ex h IIC T6...T2 Gb
II 2D Ex h IIIC T80 °C...T250 °C Db
-30 °C ≤ Ta < +60 °C...+230 °C

SYMBOL	DESCRIPTION
I/II	Group (I mining industry, II surface machine)
2	Category 2 (zone 1 / zone 21)
G	Explosive atmosphere with gases, vapours or mists
D	Explosive atmosphere with dust
Ex h	Type of protection - Constructional safety
IIC	Explosion group for gases
IIIC	Explosion group for dusts
T6...T4	Temperature class (gas)
T80...T110	Maximum surface temperature (dusts)
Mb, Gb, Db	EPL
Ta	Ambient and operating temperature range

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.

I M2 / II 2GD Ex h X

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.

Hub machining in ATEX environment

The machining of bore and keyway has to follow the normative UNI-ISO 2768. Every other machining in ATEX applications ha to be authorized 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 of User and Maintenance Manual available on SIT official website www.sitspa.com.
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 User and Maintenance Manual available on SIT official website www.sitspa.com.

Internal manufacturing check

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 safer 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 equipment 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 User and Maintenance Manual
- 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 hazardous atmosphere

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), titanium and zirconium 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 ISO 80079-36:2016 EN ISO 80079-37:2016

The technical documentation is deposited with the

DNV Nemko Presafe AS
Veristasveien 3
1363 HOVIK
Norway

Cusago, 04/03/2020

SIT S.p.A.
Riccardo Scaglia
Amministratore Delegato