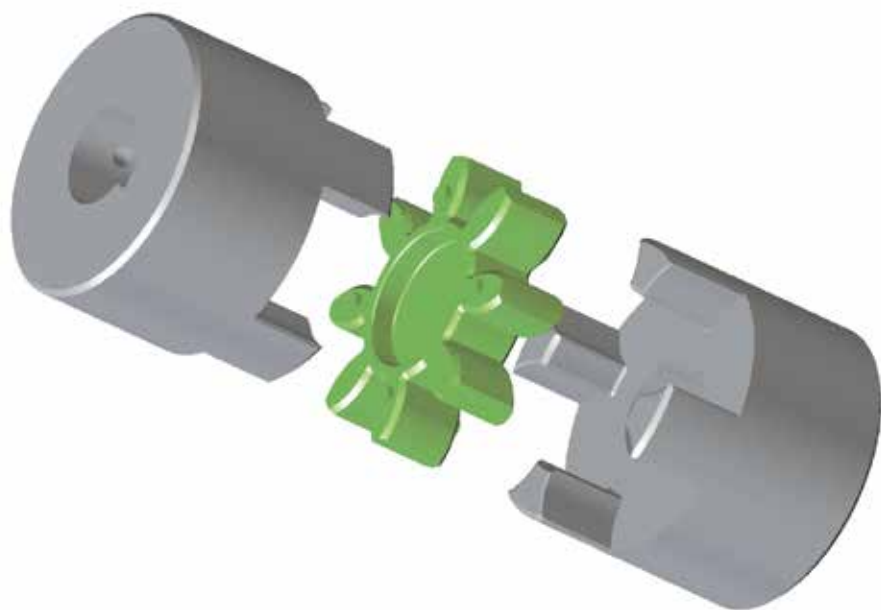


# TRASCO® ES ATEX Couplings



## ATEX Annex

This Annex is an integral part of the sale of the SIT TRASCO® ES coupling according to the ATEX Directive 2014/34/EU, contains the Declaration of Conformity, and, therefore, is delivered together with the coupling.

The User and Maintenance Manual, may be downloaded in electronic format on the website [www.sitspa.com](http://www.sitspa.com).

The analysis of the coupling machining process was carried out by SIT S.p.A.



### CAUTION!

**These instructions must be complied with in addition to the warnings provided in the technical specifications.**

## ATEX zone classification

Below is the cross reference between hazardous zones, substances and categories according to the ATEX Directive 2014/34/EU.

*ATEX zone classification*

SUBSTANCE	ZONE	ZONE DESCRIPTION	ATEX CATEGORY/MARKING
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
	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
	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
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
	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
	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

## ATEX equipment classification

Below is the classification of equipment and protection systems according to the ATEX Directive 2014/34/EU.

*ATEX groups and categories classification*

GROUP	CATEGORY	RISK LEVEL	PROTECTION CHARACTERISTICS	OPERATING CONDITIONS
<b>GROUP I</b> (mining industry)	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.
	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.
<b>GROUP II</b> (industry, except mining industry)	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 (G) and/or 20, 21, 22 (D).
	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 (G) and/or 21, 22 (D).
	3	Normal	Suitable for normal operation.	The equipment remains connected to the power supply and in operation in zones 2 (G) and/or 22 (D).

## Appropriate use of TRASCO® ES couplings in ATEX zones

The analysis carried out by SIT S.p.A. led to the conclusion that the couplings can be used in the presence of flammable gases, vapours, mists or combustible dusts according to the following scheme:

- Gases, vapours or mists in zones 1 and 2 (not suitable for zone 0)
- Dusts in zones 21 and 22 (not suitable for zone 20)
- Equipment in group II and categories 2 and 3 (not suitable for category 1. See the table "Hubs work classification")
- Explosion group IIC, including groups IIA and IIB
- Equipment in group I and categories M2 (not suitable for category M1)

Depending on the presence of the keyway, the hubs can work in particular risk category.

In the table "**Hubs work classification**" there is the working category for each type of hub.

*Hubs work classification*

EXECUTION	KEYWAY	CATEGORY
<b>GESF</b>	NO	3
	YES	2
<b>GESM</b>	NO	3
	YES	2
<b>GESA</b>	-	2
<b>GESAP</b>	-	2
<b>GES2M</b>	NO	3
	YES	2

## Gas temperature classes for Group II equipment

*Gas temperature classes*

TEMPERATURE CLASS	MAXIMUM SURFACE TEMPERATURE [°C]	AMBIENT OR OPERATING TEMPERATURE [°C]
T1, T2, T3	150	-30°C < Ta < 120°C
T4	135	-30°C < Ta < 115°C
T5	100	-30°C < Ta < 80°C
T6	85	-30°C < Ta < 65°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.

### Temperature classes for Group I equipment

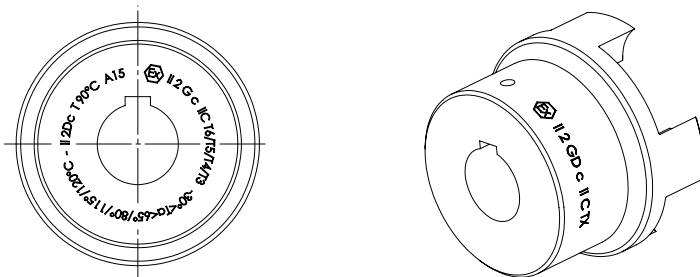
Couplings mounted on Group I Category M2 equipment can operate in environments with the following temperature range:

$$-30^{\circ}\text{C} < T_a < 90^{\circ}\text{C}$$

The coupling is **not** suitable for Category M1 equipment.

### Marking

SIT TRASCO® ES couplings are marked as required by Directive ATEX 2014/34/EU for equipment operating in zones classified for the presence of a potential hazardous atmosphere. The marking is indelible and positioned, at SIT's discretion, in a suitable area of the hub surface.



### Complete marking



II 2G c IIC T6/T5/T4/T3 -30°<Ta<65°/80°/115°/120°C  
 II 2D c T 120°C  
 I M2 c -30°<Ta<90°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
c	Constructional safety
IIC	Explosion group for gases
T6	Temperature class corresponding to a maximum surface temperature
Ta	Ambient temperature range

The line regarding gases shows the temperature classes and the related admissible ambient temperature range, given the coupling characteristics and a safety factor of 20 K.

With regards to that for dusts and for Group I, only the maximum temperature is indicated, since there are no subdivisions into classes.

## Compact marking

Where the size of the coupling does not allow complete marking, the Directive allows a reduced version which refers to this manual for its comprehension.



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

The letter **X** refers to this manual which includes a summary table of the temperature class and the resulting maximum permissible ambient temperature that must be at least 20 K less, in accordance with the elastic spider's ability to resist.

## Hub machining in ATEX environment

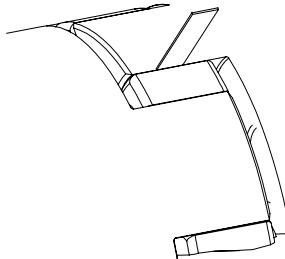
The machining of the bore, the seat of the keyway and the threaded bore for the fixing screw must follow the instructions provided in the UNH-SO 2768 standard. Any other machining on couplings to be used in hazardous zones must obtain the express consent of SIT. The customer must provide SIT with a technical drawing showing the machining to be carried out. It is the responsibility of SIT to evaluate and approve it.

## Elastic spider check

The elastic spider must undergo periodic checks for wear.

The first check must be made after 2000 hours of operation or after 3 months from the start of use.

The next check should be made after 4000 hours or 12 months, provided that the first inspection did not show excessive wear values that led to replacement of the elastic spider. The check is performed using a feeler gauge to assess the wear of each element of the spider.



If the measured value (Z value) is higher than that indicated in the Z VALUE FOR CHECKING SPIDER WEAR, it is recommended to replace the spider with an equivalent one.

*Z value for checking spider wear*

SIZE	Z VALUE [mm]
7	0,5
9	0,5
14	1
19/24	1,5
24/28	1,5
28/38	1,5

SIZE	Z VALUE [mm]
38/45	1,5
42	2
48	2
55	2,5
65	2,5
75	3



**CAUTION!**

**Replace the elastic spider with an equivalent one of the same size. SIT S.p.A. does not accept any liability for incorrect replacements. For information on correct assembly, please refer to the User and Maintenance Manual which can be downloaded in electronic format from the website [www.sitspa.com](http://www.sitspa.com).**

**Internal manufacturing check**

Before marking and placing on the market, TRASCO® ES transmission couplings have been subjected to the checks and inspections provided for by the internal manufacturing system and by the company's quality system. SIT S.p.A. has in fact obtained Certification of the Quality Management System according to international UNI EN ISO 9001 standard.

**Starting**



**CAUTION!**

**All operations must be performed by trained and qualified personnel; different or additional uses to those envisaged in this User and Maintenance Manual are not permitted.**

Before placing the coupling into service, check:

- The tightening torque of the hub screws.
- The correct alignment has been achieved.
- The correct distance between the hubs.

Working in hazardous zones, tightening of the screws must be made even more securely by using Loctite (medium strength).

The user must periodically check, depending on the type of use and the substances used:

- the state of wear and correct functioning of the coupling
- the presence of vibrations and/or noise: in this case, the user must identify the causes and contact the manufacturer

For use in zones classified for the presence of combustible dust, ensure regular cleaning in order to avoid the formation of dust layers; for this purpose, use equipment suitable for the classification of the zone.

This operation must be performed with the elements tightly coupled and in the absence of electrical voltage.

Ensure routine maintenance, according to a frequency to be determined according to the operating conditions, environment and temperature. Nevertheless, residual risks can be present during normal operation of the coupling, if:

- it is not subjected to the normal maintenance plans provided from the user and maintenance manual
- it is not used as provided in the design specifications

Different or additional uses not included in the technical specification are not permitted and SIT shall not be liable for any damage related to unauthorised uses.

All maintenance operations must be carried out as indicated in the user and maintenance manuals: no modifications are permitted without the written consent of SIT.

Unauthorised replacements or those using non-original parts invalidate the safety of TRASCO® ES couplings; all spare parts must be obtained from SIT.

## Protection devices for couplings in hazardous atmospheres

Protection devices for couplings against unintended contact must be firmly attached.

Couplings for use in hazardous atmospheres must be protected by sturdy guards (if possible made of stainless steel) against falling objects. They must be able to be easily opened and the aperture size must not exceed the following limits:

- lateral aperture: 8 mm
- upper aperture: 4 mm

The minimum distance between the mechanical guard and the rotating parts must be equal to 5 mm in all directions.

The guard must be electrically conductive within the range allowed by law and can only be removed after having isolated the machine from the electrical supply.

Those in aluminium and NBR can be used between the pump and the electric motor only if the magnesium content is less than 7,5%.

## Electrical continuity

TRASCO® ES couplings must be installed and maintained in accordance with the standards and rules of good practice for classified environments against the risk of explosion due to gases, vapours and dusts.



### **CAUTION!**

**TRASCO® ES couplings must not be insulated from the earth; ensure that connection of the couplings with the earth is always guaranteed over time.**

The electrical continuity between the two metal parts of TRASCO® ES couplings is ensured by the conductivity of the components on which it is mounted (for example motor-pump).

The electrical resistance, measured between the various metallic parts of the coupling and the point of reference, must be verified at the time of initial installation and, subsequently, during periodic checks.

**Declaration of conformity**

**DECLARATION OF CONFORMITY**

**We**



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

**declare under our sole responsibility that the product:**

**TRASCO® ES Coupling**

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

**Directive ATEX 2014/34/UE**

**Such conformity has been verified based on the requirements of the following standards or standards documents:**

**EN 13463-1 :2009**

**EN 13463-5 :2011**

*The technical documentation is filed with*

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Cusago, 24/05/2016

SIT S.p.A.  
Riccardo Scaglia  
Managing Director

