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Safety instructions
Rev.10
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Safety instructions VIS II Brakes ATEX – IECEx

Introduction:
These safety instructions refer to the installation, operation and maintenance of the VIS II flameproof brakes, certified for use in areas where there is a presence of potentially explosive atmospheres.
They consist in a case and a terminal box in cast iron or steel in some cases.
The VIS II brakes are explosion proof made and they are manufactured in the following versions/frames:

Types VIS II: 63-71-80-90-100-112-132-160-180-200-250-280-315-P25-P150-P350-P750

Description:
The VIS II electromagnetic brakes are built in various models described in the dedicated chart of this document.
They consist of a brake compartment and a junction box compartment both defining a single enclosure.
Inside the enclosures it is possible to insert electronic devices suitable to drive the brakes, a rectifier, an encoder, switches and heaters.
For Atex and IECEx zones are 1, 2, 21, 22 .
The enclosures are made of cast iron.
The VIS II 315 frame is made of steel and its terminal Box is made of cast iron;
VIS II P25/P150/P350/P750 are made of cast iron; the rear part is made of steel.
The VIS II brakes can be equipped with hand lever for releasing the brakes (hand opening).
The VIS II brakes are negative disc brakes. Inside the brake there is a disc brake axially free mounted on the shaft and dragged by the same, an electromagnet and a mobile anchor. In absence of power supply the mobile anchor is pressed by the springs on the disc locked by an additional friction track mounted on the opposite side. When the magnet is energized, the mobile anchor is attracted releasing the disc and allowing the rotation of the shaft.

The VIS II Brakes series is built for ATEX-IECEx in conformity with:

ATEX:
EN IEC 60079-0:2018
EN 60079-1:2014
EN 60079-31:2014

IECEx:
IEC 60079-0:2017
IEC 60079-1:2014-06
IEC 60079-31: 2013

Directive:
ATEX is in conformity with 2014/34/EU ; 2014/35/EU (LVD).

Marking and Nomenclature VIS II ATEX:

GAS
II 2 G Ex db P 1 T P 2 Gb Tamb. : -50°C ÷ +55(for T5 Tamb:+60°C) or -20°C ÷ +55(for T5 Tamb: +60°C).

DUSTS
II 2 D Ex tb IIIC T P 3 Db IP66 Tamb. : -50°C ÷ +55(for classe T100°CTamb: +60°C) or -20°C ÷ +55(for class T100°C Tamb: +60°C).

GAS and DUST
II 2 GD Ex db II P 1 T P 2 Gb
Ex tb IIIC T P 3 Db IP66
Tamb. : -50°C ÷ +55(for class T5 or T100°C Tamb: +60°C) or -20°C ÷ +55(for class T5 or T100°C Tamb: +60°C).

MINE gr I
I M2 Ex db I Mb Tamb. : -50°C ÷ +55°C oppure -20°C ÷+55°C (not applicable for VIS II P25-P150-P350-P750) – (-50°C not applicable for VIS II 250/280).

Marking and Nomenclature VIS II IECEx:

Marking for gas
Ex db II P_1 T P_2 Gb $T_{amb.}$: -50°C ÷ +55(for the class T5 Tamb: +60°C) or -20°C ÷ +55(for the class T5 Tamb: +60°C).

Marking for dust
Ex tb IIIC T P_3 Db IP66 $T_{amb.}$: -50°C ÷ +55(for the class T100°C Tamb: +60°C) or -20°C ÷ +55(for the class T100°C Tamb: +60°C).

Marking of gas and dust
Ex db II P_1 T P_2 Gb Ex tb IIIC T P_3 Db IP66
$T_{amb.}$: -50°C ÷ +55(for the class T5 or T100°C Tamb: +60°C) or -20°C ÷ +55(for the class T5 o T100°C Tamb: +60°C).

Marking mine gr I
Ex db I Mb $T_{amb.}$: -50°C ÷ +55°C oppure -20°C ÷+55°C (not applicable for VIS II P25-P150-P350-P750)-(-50°C not applicable for VIS II 250/280).

The marking provided for the brakes series VIS II is the following:

0051	= *number organism notified surveillance* ATEX (IMQ)
II	= group II (surface)
III	=zone 21

Pn are subjected to the following variations:

P1 for GAS groups if:
- P1 = B : gas group IIB.
- P1 = C : gas group IIC.

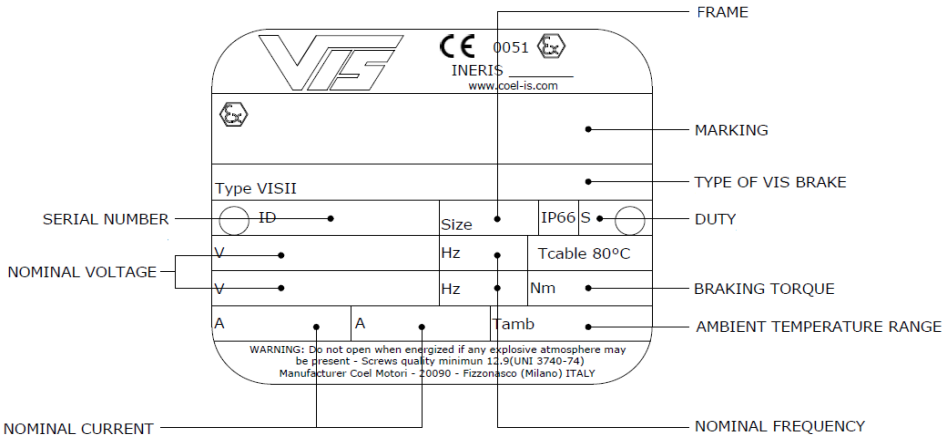
P2/P3 for temperature classes/surface temperature:

- P2 = T3	(not applicable for VIS II P25-P150-P350-P750)	P3 = T200°C	(not applicable for VIS II P25-P150-P350-P750)
- P2 = T4		P3 = T135°C	
- P2 = T5		P3 = T100°C	

- -20°C or -50°C/50°C ÷ +55°C (for class T5 o T100°C Tamb: +60°C) = Amb Temp. for VISII 63/71 , VISII 80/90, VISII 100/112, VISII 132/160, VIS II 180/200,VIS II P25,VIS II P150,VIS II P350,VIS II P750.
- -20°C÷+55°C (for class T5 o T100°C Tamb: +60°C)=Amb Temp. for VISII 250/280,VIS II 315.

T.cable : 80°C= Cable temperature.

Name plate is made of steel and placed on the brakes by rivets; (the Ex, INERIS,0051 mark is not stamped on the IECEx plate).



Performance:
The brakes are suitable to be coupled to motors or any transmission unit and are suitable to be used in service S1 (continuous) ÷ intermittent S2, S3 or S4.

In case of dynamic application, please contact us in order to evaluate the applied inertia to the brake and so define the admissible work cycle.
Limit duty cycles in case of sliding of the brake disk for a maximum 0,5 second for 1 time :

TYPE VIS II	***CYCLE TIMES OF BRAKING (n/h)***	***BRAKING TORQUE max. (Nm)***
63/71	1.800	8
80/90	1.800	22
100/112	1300	60
132/160	900	180
180/200	600	460
250/280	600	1200 (S1), 2000 (S2, S3, S4)
315	280	2200 (S1), 3600 (S2, S3, S4)
P25	1800	25
P150	900	150
P350	600	350
P750	600	750

Limit duty cycles in case of sliding of the brake disk for a maximum 0,8 second for 1 time :

TYPE VIS II	***CYCLE TIMES OF BRAKING (n/h)***	***BRAKING TORQUE max. (Nm)***
63/71	900	8
80/90	900	22
100/112	650	60
132/160	450	180
180/200	300	460
250/280	300	1200 (S1), 2000 (S2, S3, S4)
315	100	2200 (S1), 3600 (S2, S3, S4)
P25	900	25
P150	450	150
P350	300	350

P750	300	750

Joins and safety issues:
They are in conformity to EN 60079-1:2014 IEC 60079-1:2014.
The joints between the box and lid are made of threaded joints in accordance with ISO 965-3 and ISO 965-1.
The joint between the box and the housing of the brake is a spigot joint and are covered with white lithium grease.
This grease does not contain any solvent and does not harden over time.

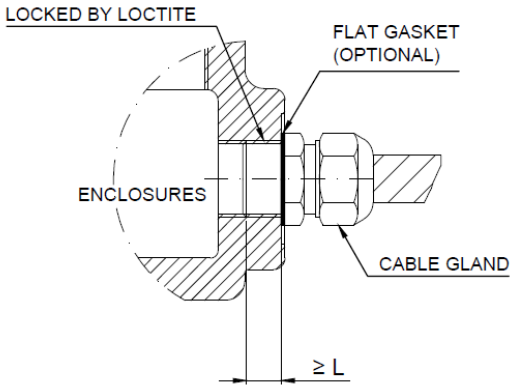
Main characteristics:
The electromagnetic brake VIS II is negative type disc. Inside the brake assembly is located a braking disc capable of sliding axially on the shaft and dragged from the tree itself, an electromagnet and a mobile anchor. In the absence of current, the armature is pushed by the springs to the brake disc that the other side is another surface friction, causing the brake locking.
The winding wires are connected to the terminal by means of lugs.
The terminal board is available in three versions: standard six terminals for normal use and eight terminals or ten terminals when are required in the case of auxiliaries, such as PTC or heating elements.

Ground terminals:
There are two ground connections, one inside the terminal box and one outside on the housing of the brake. The system of internal and external grounding is made of stainless steel and provided with washer. Both must be connected to the ground of the conductor with a suitable section.
Section of cable must be in conformity with EN/IEC 60079-0.

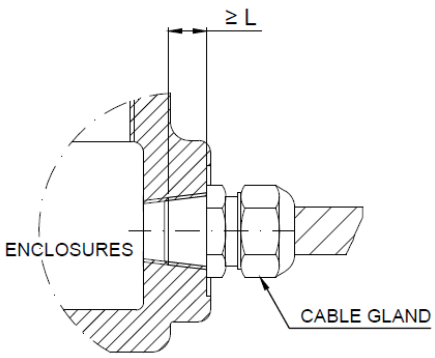
Cable entry:
VIS II brakes are supplied with 1 or 2 cable entry.
All the devices for cable entry (cable gland, adapters) must be certified with minimum certification level as per valid certification of the brakes.

Threading must guarantee minimum 5 complete threads. Entry cable must be in conformity with EN/IEC 60079-0, 60079-1, (Ex-db EN/IEC 60079-31)
A label or a stamp nearby the hole will indicate the type of threading.

CABLE GLAND WITH CILINDRICAL THREAD:
M20X1,5-M25X1,5 TOLLERANCE MEDIUM 6H/6g
AS PER ISO965-3 AND ISO965-1.



CABLE GLAND WITH CONICAL THREAD:
NPT 1/2 OR 3/4 ANSI/ASME B1.20.01.



Safety instructions:
VIS II brakes are intended for operation in hazardous areas (Zones 1, 2, 21, 22); user must verify that installation area group and the temperature class comply with the area rating.
The brakes are supplied ready for use, according to the specifications indicated in the purchase order. If any braking torques, work cycles, or inertia applied are different than those indicated in the purchase order are, please contact us.
VIS II brakes must be installed and maintained following the norms of maintenance in explosive location: **IEC/EN 60079-14, IEC/EN 60079-17.**
The electromagnets can be wound for three-phase AC between 24 V and 690 V 50/60Hz , or DC single-phase voltages between 24 V to 300 V, insulation class F .
Brakes are supplied with a thermal protector that must be connected to the control panel to prevent overheating.
Use cable with temperature range of 80°C and cable glands with separated IECEX/ATEX certification only-we recommend to use cable glandes with internal compound seal.

USE SCREWS OF MINIMUM QUALITY A12.9.

WARNING: DO NOT OPEN IF EXPLOSIVE ATMOSPHERES ARE PRESENT.
AFTER OPENING PUT AGAIN GREASE ON THE JOINTS.
USE ONLY LITHIUM WHITE GREASE.

The user must keep the brake clean in order to avoid the dust storing up to max 5 mm thickness.

- The flameproof joints have different values from those specified in the tables of the IEC/EN 60079-1 standard, contact the manufacturer for any repair.
- For group I, the user shall take into consideration that the equipment underwent only a shock test corresponding to a low risk energy.

General Safety Warnings:
Improper use, lack of inspection and maintenance can create serious damages. The installer staff must be informed of any danger caused by contact dangerous parts, rotating parts and hot surfaces. In normal working conditions the brake exceeds +50°C.
The VIS II brake must be handled, installed, put in service, inspected, maintained and repaired only by qualified personnel.
The VIS II brake is a component made to be mechanically connected to another machine. It is responsibility of the person responsible for the installation to guarantee that during operation there is an adequate level of protection for people and things against the danger of accidental contact with moving parts.

Storage:
The brakes are shipped ready for installation. Upon receipt, remove packaging and control the shaft to check that the brake has not been damaged; also check all physical aspect of the machine to avoid damage. In the case where the brake is damaged an immediate notification must be given to COEL within 3 days. Brakes must be stored in dry place, lacking in powders, vibrations , gas and corrosive smoke, with constant temperature and held in normal position.
The temperature of the brakes stocking place must be between 5°C and 45°C, with relative humidity not over 60%; the storing time does not have to exceed 18 months.

Installation:

WARNING: Work on the VIS II brake must be carried out when the machine has stopped and been disconnected from the power supply (including auxiliary parts). Adequate precautions must be taken to avoid excess voltages or peak voltages. The cables must not be crushed or exposed to mechanical loading. Use cables with sufficient section to bear the maximum current absorbed, avoid overheating and/or drops in voltage.
Connect the cables to terminals by following the instructions on the connection diagrams. Check that terminal nuts are tightened.
Connections to the terminals must be made in order to guarantee safe distances between live uncovered parts. The area of contact of connections must be cleaned and protected against corrosion.

***Grounding Connections*:**
Two grounding connections are provided, one inside the terminal box, the other one on the brake case. Both of them must be connected to the plant earth with at least one conductor with an adequate cross section area.
Reassembling the terminal box it is necessary to replace the layer of grease. The terminal box cover must be tightened to ensure it is properly sealed.
THE AUXILIARY THERMAL PROBES MUST BE PRESENT TO ENSURE THE PROTECTION MODE

Putting into operation:
It is the responsibility of the installer to establish the brakes to be used in a certain plant, after analyzing the characteristics of danger existing in the installation area with respect to current provisions of the low and to those issued for safety purposes.
Make sure that the brakes is suited for use in the working conditions defined in order.
Before starting the brake it is important to check that:

-INSTALLATION HAS BEEN CARRIED OUT PROPERLY;
-THE BEARINGS HAVE NOT BEEN DAMAGED DURING INSTALLATION;
-THE DESIGN DATA CORRESPONDS TO THOSE GIVEN ON THE PLATE AND IN TECHNICAL DOCUMENTATION.

Maintenance:
VIS II brakes are designed in order to avoid difficult maintenance operations.
The inspections and maintenance of flameproof VIS II brakes shall be executed in compliance with the criteria of the IEC/EN 60079-17 standard, while repairs in compliance with the criteria specified in the IEC/EN 60079-19 standard.

“MODIFICATIONS NOT AUTHORIZED FROM THE CONSTRUCTOR ARE NOT ADMITTED. IN CASE OF MODIFICATIONS THE GUARANTEE AND THE RESPONSIBILITY OF THE CONSTRUCTOR IS NOT VALID”.

If repair work has to be performed on parts that influence the protection against explosions, the brake construction data must not be changed (for example: dimensions of joints, bearings characteristics, etc.) and if parts are replaced, this must be with original components.

The type of maintenance and frequency of checks depends on the ambient and working conditions. Especially wear on the brake disk depends on various factors: load inertia, brake rotation speed, and frequency of engaging.

Anyway, please find the following instructions:

-Periodically clean the external surface of the brakes and remove dust in particular around the terminal box.

-Check that nominal current consumption is respected.

-In case of non function of the brake, please supply it to an authorized assistance workshop for repairing.

Assembly:

VIS II brakes are designed to be connected to electric motors or any kind of transmission units already certified ATEX or IECEx. VIS II brakes can be made with variants of input or output coupling (flanges and shafts) or with other special unification mechanical (NEMA for example) not changing the flame joints and / or other features related to the type of protection Ex d or other internal features or mechanical key.

System release lever:

This system allows to rotate the shaft manually in the absence of power. Once lever is actuated, the disc is free to rotate; when the lever is put to the original position, the brake returns to lock state.

it consists of an operating lever that acts on two pivots release positioned on two opposite sides of the housing of the brake. The lever is made of stainless steel, while the pins of unlocking steel which rotates on a bearing bush made of brass.

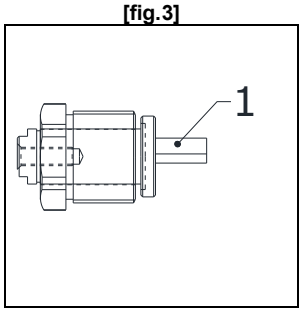
VIS II brakes can be supplied with (or ready for) hand release lever for the brake.

It allows the shaft to rotate even when the power is off. Pulling the hand release, when the end of the stroke is reached you have to increase the strain slightly until the shaft is released. Do not apply excessive force to the
hand release lever. Releasing force on the mechanism, the brake automatically returns to the fail safe position.

When the brake is fitted with a manual brake release lever it must be installed so as to avoid any accidental activation of the release unit.

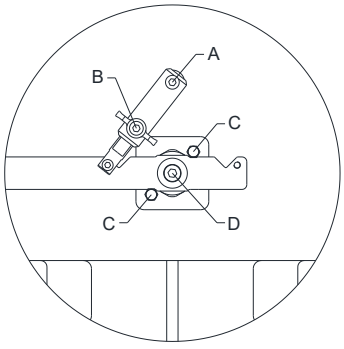
When the brake is ready for hand release lever **[fig.3]**, on the brake case there are two opposite housing for release device covered by two screw plugs (N.1). To install the levers, before removing the screw plugs then screwing the release hinges (N.1) through the hexagonal nut.

[fig.3]

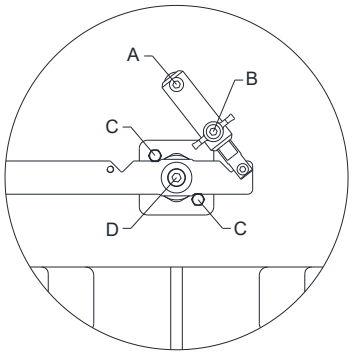


HAND RELEASE:

Drawing A - Output side release

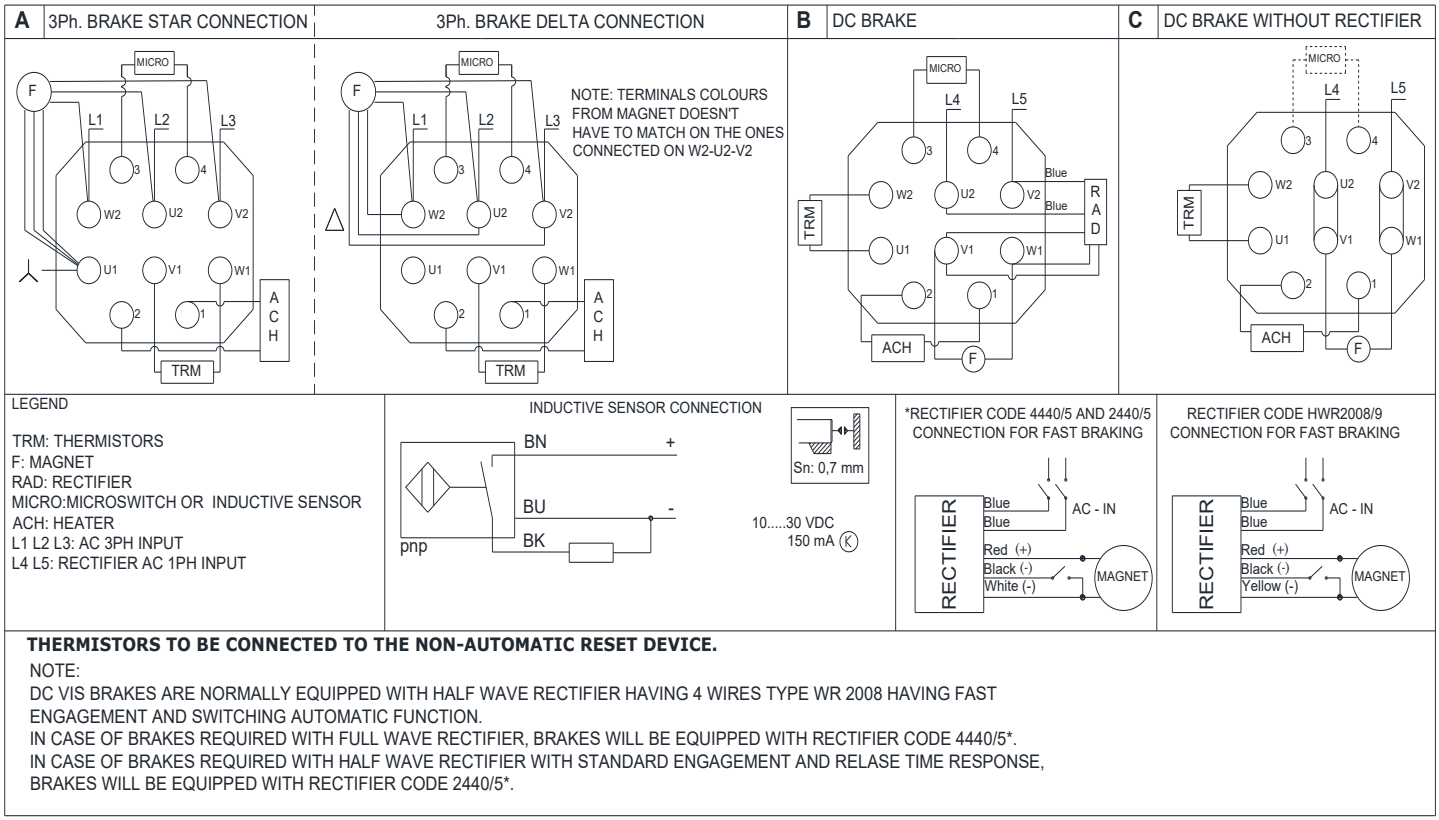


Drawing B - Input side release



1-Assemble hand release and fix the screws D
2-Fix A type screw and position C screws
3-Release screws B
4-Release manually the brake operating on the lever
5-Fix B screws

Connection systems:



THERMISTORS TO BE CONNECTED TO THE NON-AUTOMATIC RESET DEVICE.

NOTE:
DC VIS BRAKES ARE NORMALLY EQUIPPED WITH HALF WAVE RECTIFIER HAVING 4 WIRES TYPE WR 2008 HAVING FAST ENGAGEMENT AND SWITCHING AUTOMATIC FUNCTION.
IN CASE OF BRAKES REQUIRED WITH FULL WAVE RECTIFIER, BRAKES WILL BE EQUIPPED WITH RECTIFIER CODE 4440/5*.
IN CASE OF BRAKES REQUIRED WITH HALF WAVE RECTIFIER WITH STANDARD ENGAGEMENT AND RELASE TIME RESPONSE, BRAKES WILL BE EQUIPPED WITH RECTIFIER CODE 2440/5*.

Declaration of conformity *VIS II Brakes ATEX – IECEx*

The manufacturer COEL Motori Srl declares under own sole responsibility that the product Electromagnetic flameproof brakes types VIS II:

63-71-80-90-100-112-132-160-180-200-250-280-315-P25-P150-P350-P750

Certified: INERIS 06 ATEX 0047X /IECEx INE 11.0037X is built in conformity with:

ATEX:	**IECEx:**
EN IEC 60079-0:2018	IEC 60079-0:2017
EN 60079-1:2014	IEC 60079-1:2014-06
EN 60079-31:2014	IEC 60079-31: 2013

The VIS II product is not affected by the main technical changes of the standard **EN IEC 60079-0:2018.**

Directive:

ATEX is in conformity with 2014/34/EU ; 2014/35/EU (LVD).

Marking and Nomenclature VIS II ATEX:

GAS

II 2 G Ex db P1 T P2 Gb Tamb. : -50°C ÷ +55(for T5 Tamb:+60°C) or -20°C ÷ +55(for T5 Tamb: +60°C).

DUSTS

II 2 D Ex tb IIIC T P3 Db IP66 Tamb. : -50°C ÷ +55(for classe T100°CTamb: +60°C) or -20°C ÷ +55(for class T100°C Tamb: +60°C).

GAS and DUST

II 2 GD Ex db II P1 T P2 Gb
Ex tb IIIC T P3 Db IP66
Tamb. : -50°C ÷ +55(for class T5 or T100°C Tamb: +60°C) or -20°C ÷ +55(for class T5 or T100°C Tamb: +60°C).

MINE gr I

I M2 Ex db I Mb Tamb. : -50°C ÷ +55°C oppure -20°C ÷+55°C (not applicable for VIS II P25-P150-P350-P750) – (-50°C not applicable for VIS II 250/280).

Marking and Nomenclature VIS II IECEx:

Marking for gas

Ex db II P1 T P2 Gb $T_{amb.}$: -50°C ÷ +55(for the class T5 Tamb: +60°C) or -20°C ÷ +55(for the class T5 Tamb: +60°C).

Marking for dust

Ex tb IIIC T P3 Db IP66 $T_{amb.}$: -50°C ÷ +55(for the class T100°C Tamb: +60°C) or -20°C ÷ +55(for the class T100°C Tamb: +60°C).

Marking of gas and dust

Ex db II P1 T P2 Gb Ex tb IIIC T P3 Db IP66
$T_{amb.}$: -50°C ÷ +55(for the class T5 or T100°C Tamb: +60°C) or -20°C ÷ +55(for the class T5 o T100°C Tamb: +60°C).

Marking mine gr I

Ex db I Mb $T_{amb.}$: -50°C ÷ +55°C oppure -20°C ÷+55°C (not applicable for VIS II P25-P150-P350-P750)-(-50°C not applicable for VIS II 250/280).

The marking provided for the brakes series VIS II is the following:

0051 = number organism notified surveillance ATEX (QAN IMQ 05 ATEXQ 0002)
II = group II (surface)
III = zone 21

Pn are subjected to the following variations:

P1 for GAS groups if:
- P1 = B : gas group IIB.
- P1 = C : gas group IIC.

P2/P3 for temperature classes/surface temperature:

- P2 = T3 (not applicable for VIS II P25-P150-P350-P750)	P3 = T200°C (not applicable for VIS II P25-P150-P350-P750)
- P2 = T4	P3 = T135°C
- P2 = T5	P3 = T100°C

- -20°C or -50°C/50°C ÷ +55°C (for class T5 o T100°C Tamb: +60°C) = Amb Temp. for VISII 63/71 , VISII 80/90, VISII 100/112, VISII 132/160, VIS II 180/200,VIS II P25,VIS II P150,VIS II P350,VIS II P750.
- -20°C÷+55°C (for class T5 o T100°C Tamb: +60°C)=Amb Temp. for VISII 250/280,VIS II 315.

T.cable : 80°C= Cable temperature.

Date: 17/01/2025 Managing director: MORENO MOZZATI