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Safety instructions
Rev.2
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Safety instructions VIS N Brakes cCSAus

Master Contract: 186833

Introduction:

1. INTRODUCTIONS

These safety instructions refer to the installation, operation and maintenance of the VIS N flameproof brakes, certified for use in areas where there is a presence of potentially explosive atmospheres.
They are made up of a case and a terminal box in cast iron. The VIS N brakes are explosion proof made and they are manufactured in the following:

VIS N 143(56 to 145)-182(182 to 215)-254(254 to 256)-284(284 to 286)-324(324 to 405)

Description:

The electromagnetic brake VIS N is a negative disc brake type. Inside the brake group there is a braking disc in a position to slide axially on the shaft and to be dragged by the same shaft, an electromagnet and a mobile anchor. When there is no current, the mobile anchor is pushed against the brake disc from the springs, this brake disc is pushed to another friction surface on the other side, in this way the shaft cannot rotate. In current presence, the electromagnet attracts to himself the mobile anchor freeing the disc and allowing rotation.

The VIS N Brakes series is built for cCSAus in conformity with:

APPLICABLE REQUIREMENTS	
FM 3600:2011	Approval Standard for Electrical Equipment for use in Hazardous (Classified) Locations General Requirements
FM 3616:2011	Dust-Ignition proof Electrical Equipment General Requirements
FM 3615: 2006	Explosion proof Electrical Equipment
FM 3810: 2005	Approval Standard for Electrical Equipment for Measurement, Control, and Laboratory
UL 508: Ed.18: 2018	UL Standard for Safety for Industrial Control Equipment
UL/ CSA 12.12.01-2017	Non incendive electrical equipment for use in Class I and II, Division 2 and Class III, Divisions 1 and 2 hazardous (Classified) Locations
CSA C22.2 No. 14:18 (used as guide)	Industrial Control Equipment
CSA C22.2 No 25:1966 (R2014)	Enclosures for Use in Class II Groups E, F, and G Hazardous Locations
CSA C22.2 No 30:2020	Explosion-Proof Enclosures for Use in Class 1 Hazardous Locations
CSA C22.2 No 213:17	Non Incendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations

Marking and Nomenclature VIS N CLASS 4228 01***:***

MOTORS AND GENERATORS for Hazardous Locations

Class I, Division 1, Groups C, D;
Class II, Division 1, Group E, F and G; Class III;
Class I, Division 2, Groups B, C, D; Tcode;

Component Type Electromagnetic Brakes, Insulation Class F, Models VIS N 143-145, VIS N 182-184 and VIS N 254-256, rated 24 to 600Vac, 50 / 60 Hz or 24 to 300 Vdc, 15 A max.

Tcode for Class I Division 2 Gr. BCD for 3 models are as below:
VIS N 143-145, with T code (T4A or 120°C)
VIS N 182-184, with T code (T4 or 135°C)
VIS N 254-256, with T code (T4 or 135°C)

Ambient temperature range is -20°C… +55°C or -50°C… +55°C depending on the casting.

Marking and Nomenclature VIS N CLASS 4228 81***:***

MOTORS AND GENERATORS For Hazardous Locations - Certified to US Standards

Class I, Division 1, Groups C, D;
Class II, Division 1, Group E, F and G; Class III;
Class I, Division 2, Groups B, C, D; Tcode

Component Type Electromagnetic Brakes, Insulation Class F, Models VIS N 143-145, VIS N 182-184, VIS N 254-256, VIS N 284-286 and VIS N 324-326, rated 24 to 600Vac, 50 / 60 Hz or 24 to 300 Vdc, 15 A max.
Tcode for Class I Division 2 Gr. BCD for 5 models are as below:

VIS N 143-145, with T code (T4A or 120°C)
VIS N 182-184, with T code (T4 or 135°C)
VIS N 254-256, with T code (T4 or 135°C)
VIS N 284-286, with T code (T4 or 135°C)
VIS N 324-326. with T code (T4A or 120°C)

Ambient temperature range is -20°C… +55°C or -50°C… +55°C depending on the casting.

Notes:

-Equipment for use in Class II locations shall not exceed the ignition temperature of the specific rated dust or 165°C, whichever is lower, when installed in locations which are classified due to organic dusts that may dehydrate or carbonise.
-The automatic reset thermal protectors are to be used in a certified external control circuit.
-The brakes can be equipped with 2 cable entries. Threads can either NPT
or Metric (M20x1.5). In case of Metric threads, type and size of threads are specified next to the entry or on the nameplate of the product.
-Two ground connections are provided: one internal (inside the terminal box) and one external (on the brake housing)

Marking:

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with an adjacent indicator 'US' for US only or without either indicator for Canada only.
The following markings are applied on a metal nameplate, secured by rivets:
1. Manufacturer name, trade name or CSA Master Contract number “186833” adjacent to the CSA mark.
2. Complete electrical ratings in Volts (Vdc or Vac), frequency (Hz) and amperes (A).
3. Duty Service if different than 1
4. Model number
5. The CSA mark with adjacent indicator ‘US’
6. Serial number.
7. Hazardous locations designation
8. “Warning: Explosion hazard, Do not disconnect power unless power has been switched off or the area is known to be non-hazardous”.
9. “Warning: Seals shall be installed at the enclosure wall”.
10. Max ambient temperature is 55°C
11. Field wiring terminal are marked or a wiring diagram is provided
12. The field wiring temperature rating is: 75°C
13. “Warning: Cu Only” or “USE COPPER OR COPPER-CLAD ALUMINIUM CONDUCTORS”
14. The field wiring terminal torque value is 3Nm

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. Please contact the manufacturer for maximum applicable energy and allowed duty cycles.

GENERAL SAFETY WARNINGS:

Improper use, lack of inspection and maintenance can cause serious harm. The personnel must be informed of any danger caused by contact with live parts, rotating parts and hot surfaces. In normal working conditions the brake exceeds 50°C.
The VIS n brake must be moved, installed, put in service inspected, maintained and repaired only by qualified personnel.
The VIS brake is a component made to be mechanically connected to another machine. Consequently, it is the task of the person responsible for the installation to guarantee that during operation there is an adequate degree of protection for people or things against the danger of accidental contact with moving parts.

STORAGE:

The brakes are shipped ready for installation. Upon receipt remove packaging and turn the shaft to check the brake has not been damaged, also check all physical aspects of the machine for damage. In the case where the brake is damaged an immediate notification must be given to Coel within 3 days.
In storing case, the brakes must be conserved in dry place, lacking in powders, vibrations, gas and corrosive smoke, with uniform 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 be longer than 18 months.

INSTALLATION

WARNING: Work on the VIS N 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, avoiding overheating and/or drops in voltage. Connect the cables to terminals by following the instructions on the following 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.
Earthing Connections:
Two earthing 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 sectional 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.

PUTTING INTO OPERATION

It is the responsibility of the installer to establish the brake's fitness to be used in a certain plant, after analysing the characteristics of danger existing in the installation area with respect to current provisions of the law and to those issued for safety purposes.
Make sure that the brake 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 the technical documentation.

MAINTENANCE

VIS N brakes are designed in order to avoid difficult maintenance operations.
MODIFICATIONS NOT AUTHORISED 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 disc depends on various factors: load inertia, brake rotation speed, and frequency of engagement.

Anyway, please find the following instructions:
a) Periodically clean the external surface of the brakes and remove dust
in particular around the terminal box.
b) Check that nominal current consumption is respected.
c) In case of nonfunction of the brake, please supply to an authorised assistance workshop for repairing.

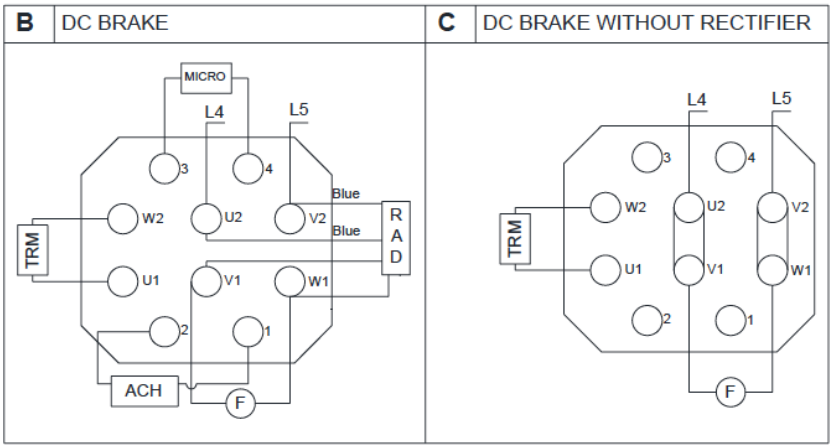
CONNECTIONS

Connect the brake according to the following connection diagrams:

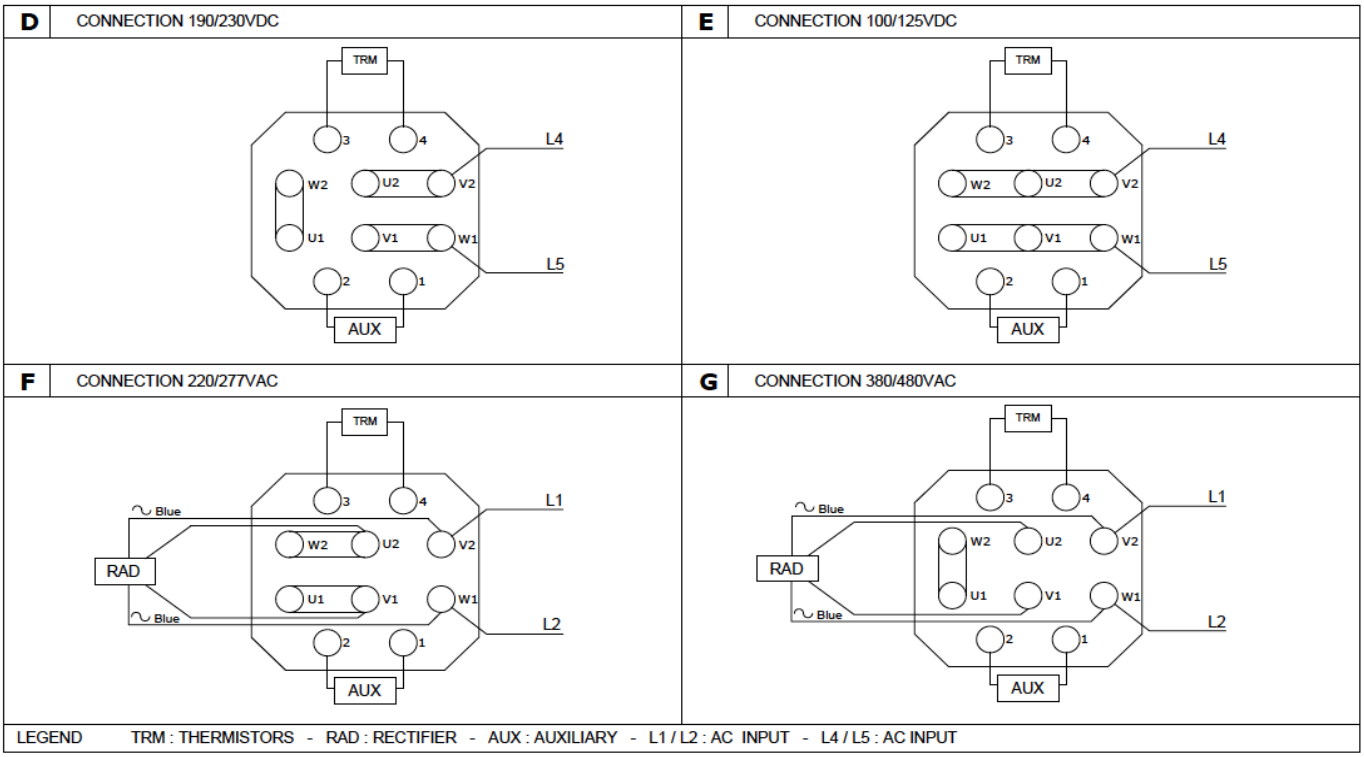
SINGLE VOLTAGE

LEGEND

TRM: THERMISTORS
F: MAGNET
RAD: RECTIFIER
MICRO:MICROSWITCH OR INDUCTIVE SENSOR
ACH: HEATER
L4 L5: RECTIFIER AC 1PH INPUT



MULTI VOLTAGE



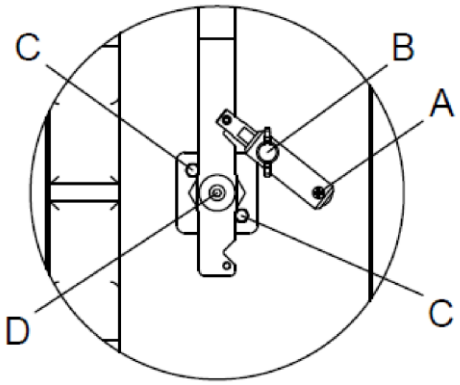
HAND RELEASE

VIS N 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

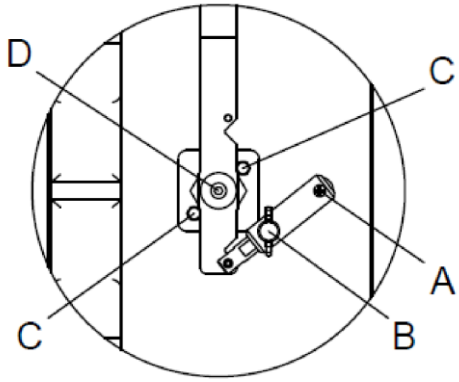
hand release lever. Releasing force on the mechanism the brake automatically returns to the fail safe position.
When the brake is fitted with a manual brake release lever it must be installed so as to avoid any accidental activation of the release unit and ensures that it is easy to release when necessary.

SPECIAL HAND RELEASE

Drawing A – Release to Output Flange Side



Drawing B - Release to Motor Side



Assembly hand release and fix the screws D
Assemble the release lever and fix the screw
Fix A type screw and position C screws
Remove screw B
Release manually the brake operating on the lever
Fix B screws

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