Explosion Proof Brakes

Compact Line

5 to 16000 Nm

2013 rev 0

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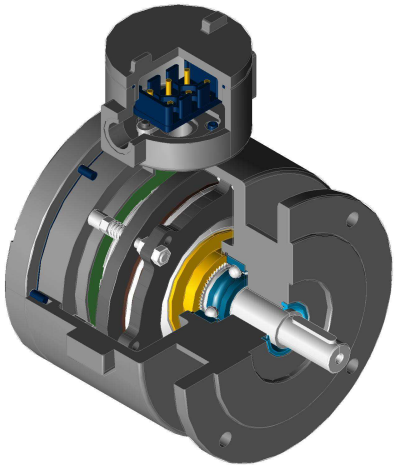
Explosion proof Brakes

A product invented and produced by Coel Motori, Milano, Italy



About VIS

VIS is a product of COEL, specialized manufacturer of brake motors located in Italy.
Since 1976 COEL designed and munufactured brake motors making all the components including the brake units in its facilities (see www.coelmotori.it for further details).

Thanks to this large experience, on 2005 we invented VIS, the modular ATEX brake system.
Our idea was based on the market demand of a easy solution to make a brake motor without modification of the motors or extension of the certificates.

With more than 30 years of experience in manufacturing brakes, we defined a new oversized standard, able to guarantee a range of modular brakes designed for heavy duty.
More than 35 controls made in the production process make each VIS brake as a master piece.
All the components are tested 100%, all the working parameters controlled with functional tests made on each brake.

The VIS brakes range is in continuous development in order to make the quality and performance better and better.

For hoisting, travelling, positioning in Hazardous location the VIS brakes are the safe and reliable solution.

What's VIS?

The VIS Atex brake is an **innovative** modular flameproof spring applied disc brake unit.
The new concept is to apply an independent brake unit to a standard flanged explosion proof motor or to a transmission unit. The flanges input and output follow both IEC or NEMA standards. The VIS brakes are certified as independent components. It means that there are not coupling procedures in order to define the certification. Beside the face to face line, it is also available the **COMPACT LINE** version, suitable to be applied to the NDE of an electric motor or to any transmission unit.

Why VIS?

The VIS brake is available in B5 flange face to face version (IEC 63 to 280), NEMA standards (56 to 405) and COMPACT version for mounting in the rear part of a motor or to a transmission unit. *This catalogue is related to the* **COMPACT LINE VERSION.**

The assembling is very **fast**.

The performance of VIS brakes is particularly high and the **strong** structure makes them suitable for very heavy duty and for every kind of application (hoisting, travelling, positioning...).
VIS brakes **don't need periodical maintenance** such as adjustment of gap on work site.

The braking torque values of the **COEMPACT LINE VERSION** cover the range 5 to 16000 Nm.

Main Characteristics

- DC electromagnet
-Totally closed
-IP66
-Power supply VDC 24 to 300.
-F class insulation
-Thermally protected with dual metal protectors as standard
-Large terminal box with terminal board and fitted in rectifier
-Very high resistance structure
-Designed for S1 duty without ventilation

Standards

The VIS series brakes are designed and approved for the following directives:

- ATEX Directive *ATEX 94/9/CE-ATEX 95,*Group II 2GD category - in compliance with the norms*EN 60079-1:2007, EN 60079-0:2009, EN 60079-31:2009*

- IEC Ex Directive IEC 60079-0 : 2007-10 IEC 60079-1 : 2007-04 IEC 60079-31 : 2008 Groups I, II, III

COMPACT LINE VERSION BRAKES ARE AVAILABLE WITH THE FOLLOWING PROTECTION LEVELS

GAS
II 2 G Ex d II 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°C
Tamb: +60°C) or -20°C ÷ +55(for class T100°C Tamb: +60°C).

GAS and DUST
II 2 GD Ex d 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).

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 P3 = T200°C
- P2 = T4 P3 = T135°C
- P2 = T5 P3 = T100°C

- 50°C ÷ + 60°C (for class T5 o T100°C Tamb: +60°C)= Amb temp

T.cable : 80°C= Cable temperature

Options

- Hand release (LEVER type for frames 25, 150, 350, 750 and SCREW type for 14, 18, 216 frames)
- Ready for hand release kit
- PTC thermistors
- Anti condensation heaters
- Switch on brake opening or on hand release
- Special flange coupling
- Encoder application (sizes 14, 18 and 216 only)
- Double shaft end (sizes 14, 18 and 216 only)
- Controlled emergency braking device (types E14, E18 and E216 only - see related part of this catalogue for further information)

Ordering a VIS brake

For ordering a VIS brake it's necessary to supply the following information:

1) Type of certification required and protection classes needed
2) Input and output flange / shafts dimensions
3) Voltage needed
4) Brake torque required
5) Options required

All the brakes are available in different voltages and brake torque values
Please see the performance data in order to correctly identify the brake

Technical data

General information
The spring-applied brake VIS is a single-disk brake with two friction surfaces.
The compression springs create the braking torque by friction locking. The brake is released electromagnetically.
The spring-applied brake is designed for the conversion of mechanical work and kinetic energy in heating.
For operation characteristics see related paragraph.

Manual release
The manual release is an option available, it gives the possibility to release the brake in absence of current.
It is a mechanical lever mounted on 2 fulcrums points moving the mobile anchor.

Microswitch
The VIS brakes can be equipped with a microswitch for air-gap or wear monitoring or for hand relase opening monitoring. The user must provide the corresponding electrical connection.

Thermistors
All the VIS brakes are equipped with a PTO thermal protection with temperature limit related to the temperature class of the brake required. It must always be connected when operating in order to prevent extra heating in hazardous areas.
In alternative, we can apply a PTC thermistor to have a constant monitoring of the brake temperature through an exthernal PLC.

Technical data

Performance Data

Size	Rated torque **Nm** min	Rated torque **Nm** max	Max speed S1 **RPM**	Rated power **W**	Engagement time* **ms**	Braking time* **ms**
25	10	25	4500	50	35	40
150	80	150	3600	85	50	90
350	180	350	3000	105	80	150
750	350	750	1800	160	110	180
D18	750	1200	1800	210	140	250
D216	2000	3600	1800	360	180	280

*values obtained with WR type rectifier

Installation

The VIS compact line is supplied with a hollow shaft with key suitable to be assembled to a keyed shaft.

The VIS input shaft is mounted on 2 bearings; it is important to avoid any axial load on the shaft.

Before positioning the brake, inserting the shaft to the VIS hub, we suggest to add grease on them.

Once the shaft is positioned, secure the VIS flange to the coupling flange checking the absence of air gap between them.

The surface must be a solid cast iron or steel or aluminum one.

AC power supply

The VIS connection diagrams are shown on the instruction manual supplied with them.

All the VIS of Compact line are supplied with WR type rectifier giving fast engagement and switching reaction as standard.

For special voltages or special rectifiers, pls contact us for further information.

Technical data

Dimensioning

The size of the brake is mainly determined by the braking torque and the relevant inertia of the load, braking time, speed, number of starts per hour.
The calculation of the brakes is generally related to the permissible friction energy. Since the VIS is an explosion proof unit, we simply defined a limit related to the maximum parmissible sliding time of the disc in dynamic application.
This solution gives a simple parameter to choose the brake in a correct, easy and safe way.

If the brake is used as parking brake (coupled with a motor used with inverter), the calculation is not relevant except the value of brake torque necessary; we suggest always to consider a brake torque between 1,5 and 2,3 times the motor torque.

For further information or exact brake calculation choice, please contact us.

Versions

The VIS brakes are available in 3 main construction executions:

- IEC dimension for front mounting on B5 motor and output B5 or B14 or reduced B5
- NEMA dimension for front mounting on nema motor (for dimensions please cotact us)
- Closed version for mounting in the rear side of a motor prepared for it or to any transmission unit

Except theese configurations, we can manufacture customized versions with output flanges and shafts made on specific request.

Voltages

DC Brakes

The DC brakes are supplied as standard rectifier inside the terminal box in order to supply the brake with 2x AC phases. The standard voltage is DC 195 with 400 VAC to the rectifier. We can produce different voltages on request with a maximum of 300VDC coil.
DC brakes are stard supplied with WR2008 half wave rectifier providing fast engagement and braking times.

Different rectifiers can be supplied for special applications.

High torque parking brakes type E

The brakes type 14, 18 and 216 can be manufactured so to be used as emergency brakes with very high braking torque values.

Such brakes are intended for emergency or parking service only and cannot be used in dynamic application.

Brakes can be ordered in the following possible configurations:

- Closed version
- With double shaft end
- Equipped with the exclusive **VIS Controlled emergency braking device**

Controlled emergency braking device

The **VIS Controlled emergency braking device** consists in a patent pending system able to monitor the rpm of the brake disc and able to generate the braking of it if such rotation speed exeeds a pre configurated value.
The brakes are so suitable to be used as emergency operation units with all in one built in control system.

The brakes are equipped with an electronic device, head of the system, and 2 encoders (one as operating device and one as safety device to control the firts one).

The user can set the maximum RPM allowed in normal operation condition and the “out of safe” RPM values.

If the speed of the load connected to the brake exeeds the set value, the braking operation will be automatically activated.

This device is suggested to be applied on HOISTS and MATERIAL HANDLING APPLICATION in general as safety feature and in any application where it is necessary to get an automatic emergency braking operation.

Brakes equipped with the **VIS Controlled emergency braking device** are also provided with hand release screw for manual brake release.

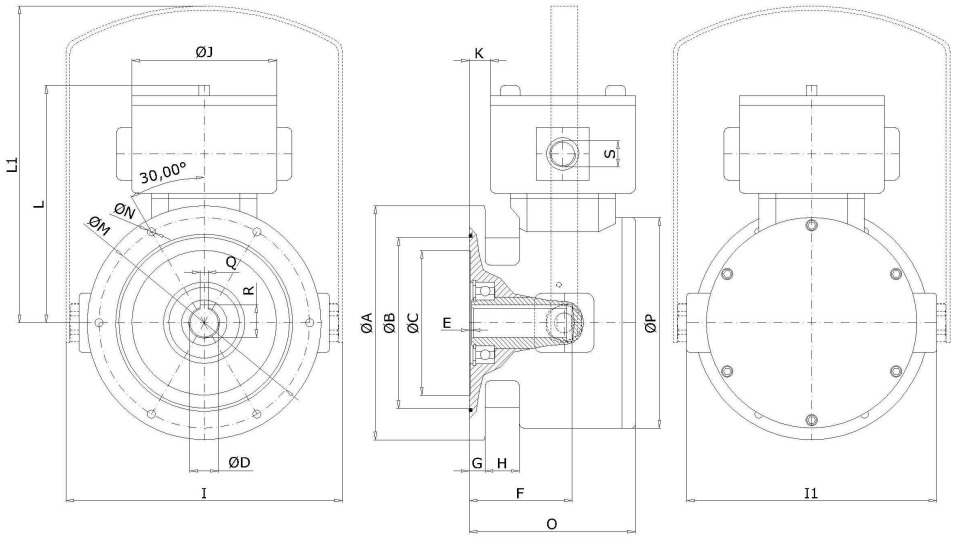
The **VIS Controlled emergency braking device** allows you to make your motion safe and reliable.

Performance

Size	*Rated torque* **Nm** *min*	*Rated torque* **Nm** *max*	*Max speed S1* **RPM**	*Rated power* **W**	*Engagement time** **ms**	*Braking time** **ms**
E14	1000	4000	300	160	110	150
E18	4000	8000	300	210	150	180
E216	8000	16000	300	360	240	310

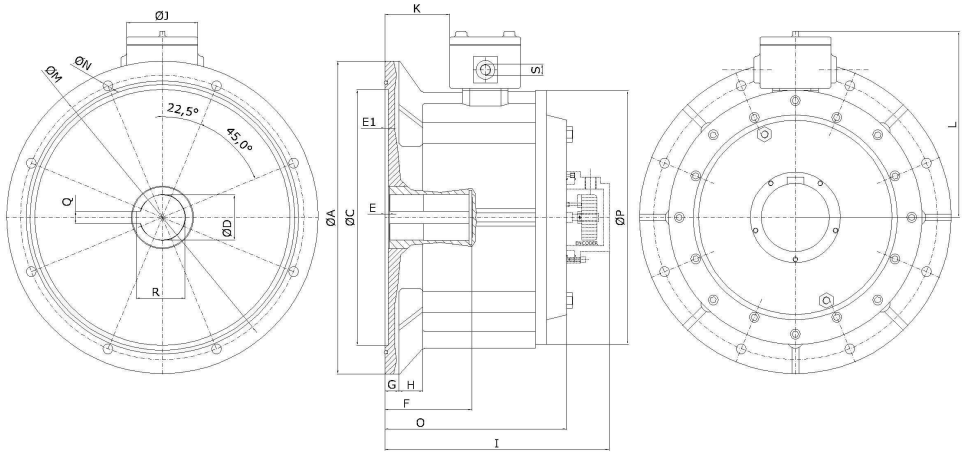
*values obtained with WR type rectifier

Overall Dimensions (mm)



TYPE	25	150	350	750
A(+/-1)	178	245	330	425
B	130	180	258	335
C	110	160	240	300
D (E6)	14 to 22	22 to 40	48 to 60	60 to 70
E	2	1	1	1
F	78	96	106	120
G	12	13	15	18
H	26	36	41	60
I	210	302	350	425
I1	190	282	330	405
EJ	110	110	110	110
K	16	34	41	63
L	181	226	249	286
L1	241	286	309	346
M	160	225	305	395
N	n°6x6,5	n°6x8,5	n°6x10,5	n°8x12,5
O	126	149	159	184
P	160	250	305	380
Q	*	*	*	*
R	24,8	38,3	74,9	85,4
S	1XM20	1XM20	1XM20	1XM20

*Key dimension related to shaft diameter



TYPE	14	18	216
A(+/-1)	300	400	550
C	230	300	450
D (E6)	50	65	80
E	6	8	8
E1	5	6	6
F	106	148	153
G	17	21	25
H	44	46	42
I	339	399	400
EJ	125	125	125
K	72	115	115
L	267	280	328
M	265	350	500
N	14,5	18	18
O	259	319	320
P	300	335	347
Q	14	18	22
R	53,8	69,4	85,4
S	M20	M20	M20

Note:
1) a second shaft end can be supplied on request instead of the encoder enclosure
2) dimensions are valid both for “D” and “E” versions

a product of coel motori, via Campania 36/40 - Fizzonasco di Pieve Emanele, Milano, Italy

Tel +39 02 90420039 Fax +39 0290420747

www.visbrakes.com info@visbrakes.com