

motive

manual addendum
brake motors
DELPHI AT... Ex





II 3G Ex nA IIB T4 Gc
II 3D Ex tc IIIB T135°C Dc
Tamb=-20 +40 °C

Reference list:

Norm (last issue)	Title
Dir. 2014/34/EU	Equipment and Protective systems intended for use in Potentially Explosive Atmospheres. Safety requirements
EN60079-0:2018	Explosive atmospheres - Part 0: Equipment - General requirements
EN60079-15:2010	Electrical apparatus for explosive gas atmospheres - Part 15: Construction, test and marking of type of protection, "n" electrical apparatus
EN 60079-31:2014	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

Field of application

The person authorized to do the work is responsible for the zones sharing. He must follow the norms EN 60079-31 and EN60079-14 (whenever their application is possible) when choosing the suitable motor.

Motive Delphi AT.. Ex brake motors are designed to be used in the zone 22 (II 3 D T135°C) and/or zone 2 (II 3 G T4), according to the classification stated in the plate, and for the voltage and frequency field A described by the norm EN 60034 part 1 Cap. 6.3.

The eventual dust deposits mustn't have a thickness > 5mm.

Conformity declaration

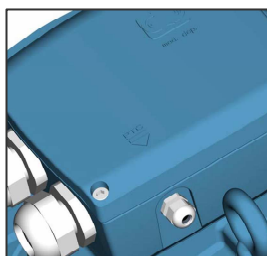
The conformity declaration reported in this addendum, is the document that testifies the product conformity to the Directive 2014/34/EU.

The validity of such certificate is related to the respect of the instructions specified in the use and maintenance manual, together with the following additional instructions.

Additional instructions

The persons authorized to do the work in an ambient exposed to explosion risk must be instructed about the right procedure for the use of the motor, respecting all norms related to safety, installation and use.

Motors must be protected against over-heating by suitable control means that must be chosen, considering the working conditions, according to the norm EN60079-15, EN60079-0 and EN60079-31.



All Motive Delphi AT.. Ex brake motors are standard equipped with temperature probes (up to size 132, included, 3 PTO 130°C probes; from size 160, included, 3 PTC 130°C thermistors), to be connected to a suitable release device as reported in EN 50495 standard.

It is forbidden to open the terminal box to connect electric wires or make any intervention in presence of explosive atmosphere.

Before any of such operations, disconnect the motor from the electric power supply and avoid the possibility of any *accidental* switching on of the motor.

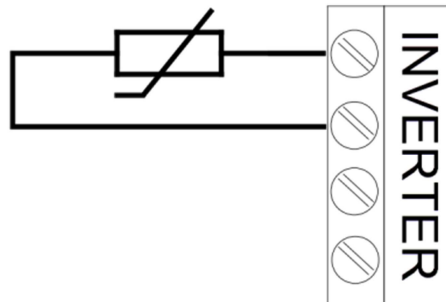
ATDC, AT24 and ATTD motors with brakes can be used in potential explosive atmospheres in the zone 22 (II 3 D T135°C) and/or zone 2 (II 3 G T4) only if used as a parking brake.

Maintenance warnings: clean the motor only with a wet or antistatic cloth.

Use with converters

When Delphi AT.. Ex brake motors are used with converters, in addition to the general selection criteria (limit values: rated voltage <830V, peak voltage <2,2kV, voltage gradients <2,2kV/1µs), consideration should be given the following points:

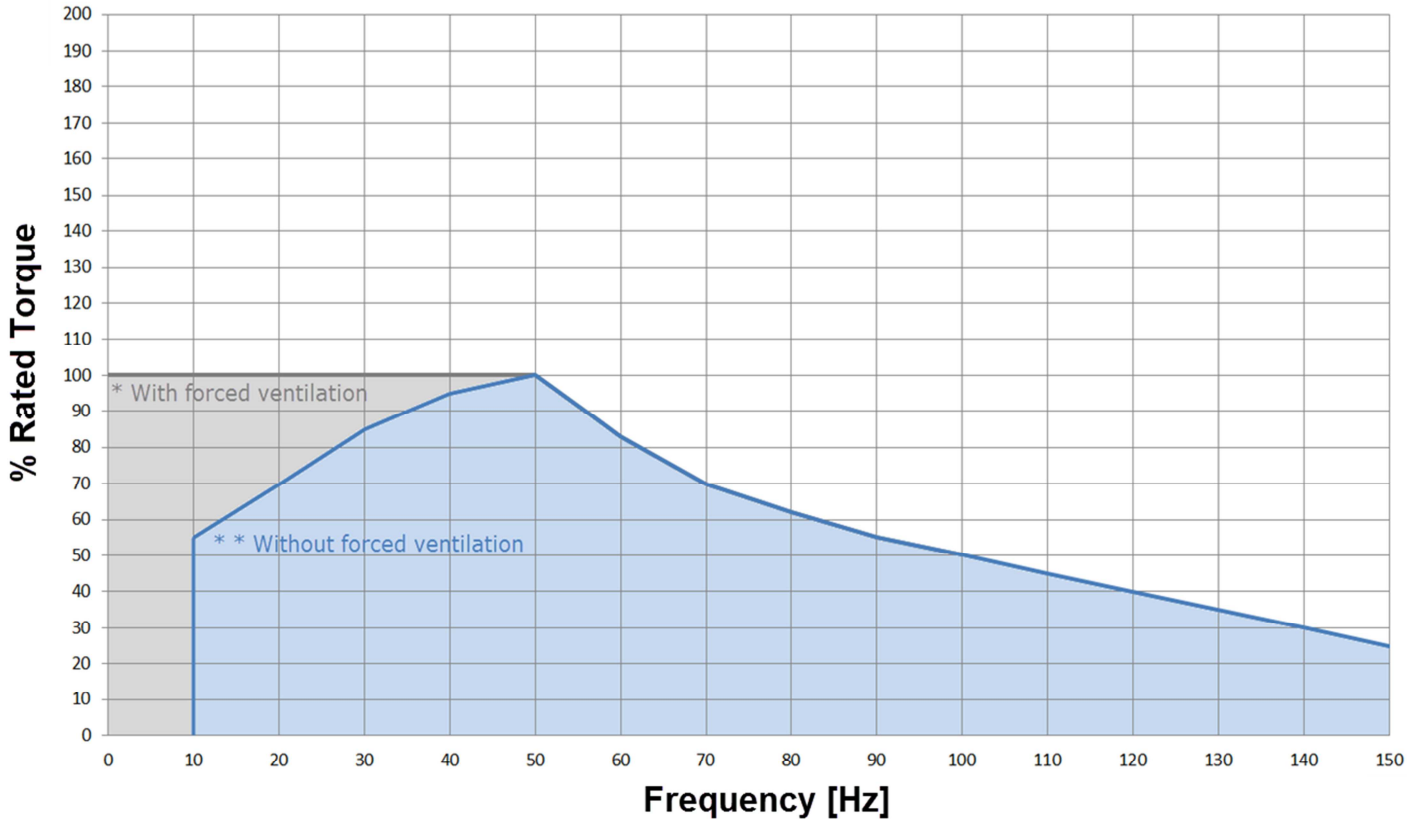
- Motors powered by inverter have a voltage (or current) which is not purely sinusoidal. This leads to an increase in losses, vibration, noise, and a different temperature rise.
- Possibility of spikes is linked to the value of the converter power supply voltage and the length of the motor power cable. To limit the phenomenon, it's advisable to use specific filters connected between the converter and the motor (mandatory for motor power cables over 50 mt). All Delphi AT.. Ex brake motors are equipped as standard with a reinforcing Nomex film between phases to protect against the voltage peaks.
- The correct grounding of the motor and the driven machine is very important to avoid voltage and stray currents in the bearings. To prevent the current circulation in the bearing if the motor it is not equipped with an insulated bearing, use a proper filter to reduce the high frequency harmonic voltage above 50kHz.
- It's mandatory connect thermal probes to the converter to safeguard the motor from the overheating which could be generate by a misuse.



These probes have two terminals for connection marked with a label and located inside the main terminal box.

- For inverter power supply the switching frequency must be higher than 4kHz (PWM type), output frequency range 0=150Hz.

- Atex forced ventilation assembly is mandatory if the motor is used at frequencies lower than 50Hz at constant torque load.
- If the motor is used at frequencies lower than 50Hz at quadratic torque load, please refer to the following graph for the maximum percentage of torque load admitted.



For motor Speed/Torque curves, refer to following link: <https://www.motive.it/en/rapporti.php>

Electrical and thermal protections

Protections must be chosen based on the specific running conditions, according to standards EN60079-14 and EN61241-14.

External protections:

- Protection against overcurrent and short-circuits; this protection can be made with the magnetothermic circuit breaker or with fuses; these must be calibrated on the motor current.
- Protection against overload by thermal relay that controls a power line contactor upstream the motor.
- If the application requires, protection against excessive speed of the electric motor, for example if the mechanical load may drive the electric motor itself and thereby create a hazardous situation.
- If special conditions or synchronised operation with other machines or parts of machines require it, protection against power failures or dips by means of a minimum voltage relay that controls an automatic power knife switch.

Internal protections:

The electrical protections on the motor power supply may not be sufficient to protect against overloads.

Connecting built-in protections on the windings solves this problem:

- PTO bimetallic probe (normally-closed electromechanical device that becomes open when the threshold temperature is reached).

The reset of this cut-out must be performed manually only, and not automatically. The user, in compliance with the norms, must use a tripping relay out in compliance with IEC 61508 standard (Fail Safe type).

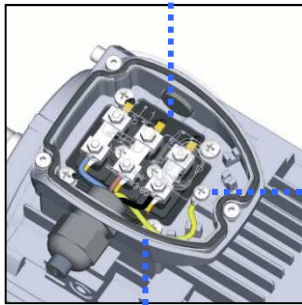
Motive Delphi AT.. Ex brake motors, up to size 132 included, are equipped as standard with 3 PTO 130°C bimetallic probes.

- PTC thermistor (device that suddenly changes positively its resistance when the threshold temperature is reached). Motive Delphi AT.. Ex brake motors, from size 160 included, are equipped as standard with 3 PTC 130°C thermistors.


PECULIAR FEATURES OF DELPHI AT.. Ex 3GD BRAKE MOTORS





User manual + addendum




- Reinforced t-box for high collision resistance
- Fan cover IP20 on entry air side and IP10 on exit
- Shock absorbing rubber IP65
- Certified anti-pulling cable gland and plug II 2GD
- Conductive material fans
- Limited surface temperature
- Low magnesium percentage
- Internal temperature <math>< 135^{\circ}\text{C}</math> checked by 3PTO/3PTC probe mounted as standard
- Earth connection inside the terminal box or on the housing
- Terminals protected against corrosion, unscrewing and rotation
- Dust exclusion IP65


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 www.motive.it
 MADE IN ITALY


 TROPICALIZED
 3-IEC 60034-1


 II 3G Ex nA IIB T4 Gc
 II 3D Ex tc IIIB T135°C Dc
 Tamb = -20 +40 °C



TYPE		IN*		
I.C.L.F	IP 65	S1	COSφ	
Δ-V-Y		Hz	kW	rpm
				A

- Manufacturer's mark
- Protection against explosion
- Motor type
- IP Protection index
- YYMM production date
- Serial number

DELPHI AT.. Ex 3GD CLASSIFICATION

For GAS **G (zone 2)**

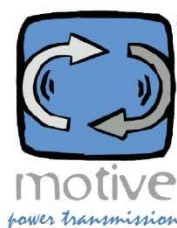
CE	Ex	II	3	G	Ex	nA	IIB	T4	Gc
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

①	CE marking
②	ATEX code for prevention of explosion
③	Surface industries
④	Infrequent, short-term danger
⑤	Protection against gas combustion (zone 2)
⑥	Explosion protection: International
⑦	Non-sparking
⑧	For instance, for Ethylene. Equipment marked as suitable for Group IIB is also suitable for IIA
⑨	T4 for maximum surface temperature of 135°C
⑩	Extended level of protection in hazardous zones with explosive gas mixtures

For DUST **D (zone 22)**

CE	Ex	II	3	D	Ex	tc	IIIB	T135°C	Dc
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

①	CE marking
②	ATEX code for prevention of explosion
③	Surface industries
④	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 does occur, it will persist for a short period only
⑤	Protection against dust combustion (zone 22)
⑥	Explosion protection: International
⑦	Enclosure protection
⑧	For non-conductive dust such as flour, grain, wood and plastic
⑨	Maximum surface temperature of 135°C
⑩	Extended level of protection in flammable dust atmospheres



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Declaration of EU conformity

Motive srl based in Castenedolo (BS) - Italy

declares as manufacturer, under its own exclusive responsibility, that its range of

asynchronous electric motors of the series "DELPHI AT.. Ex"

complies with the following directives:

- EC Directive **2014/34/EU**: concerning "equipment and Protective systems intended for use in Potentially Explosive Atmospheres"

Marking:



II 3G Ex nA IIB T4 Gc
II 3D Ex tc IIIB T135°C Dc
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as in accordance to the European Standards:

- **EN IEC 60079-0:2018** Explosive atmospheres – Part 0: Equipment – General requirements
- **IEC 60079-15:2010** Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
- **IEC 60079-31:2014** Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
- **IEC 60034-1:2010** Rotating electrical machines - Part 1: Rating and performance
- **IEC 60034-5:2020** Rotating electrical machines – Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) – Classification Internal methods Tests not related to standards, developed by laboratory or under client's specification

The machines are supplied without electrical connections to the control panels or any pneumatic and hydraulic supply connections.

It is therefore forbidden to use them until the plant into which they are incorporated has been declared as compliant with the provisions of the Machinery Directive **2006/42/EC** and Directive **2014/34/EU** and plant's analysis was not done as compliant with Directive **99/92/EC**.

Castenedolo, 1 April 2022
The legal Representative

