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NEMA MOTORS

# Explosion proof

## AC and DC motors







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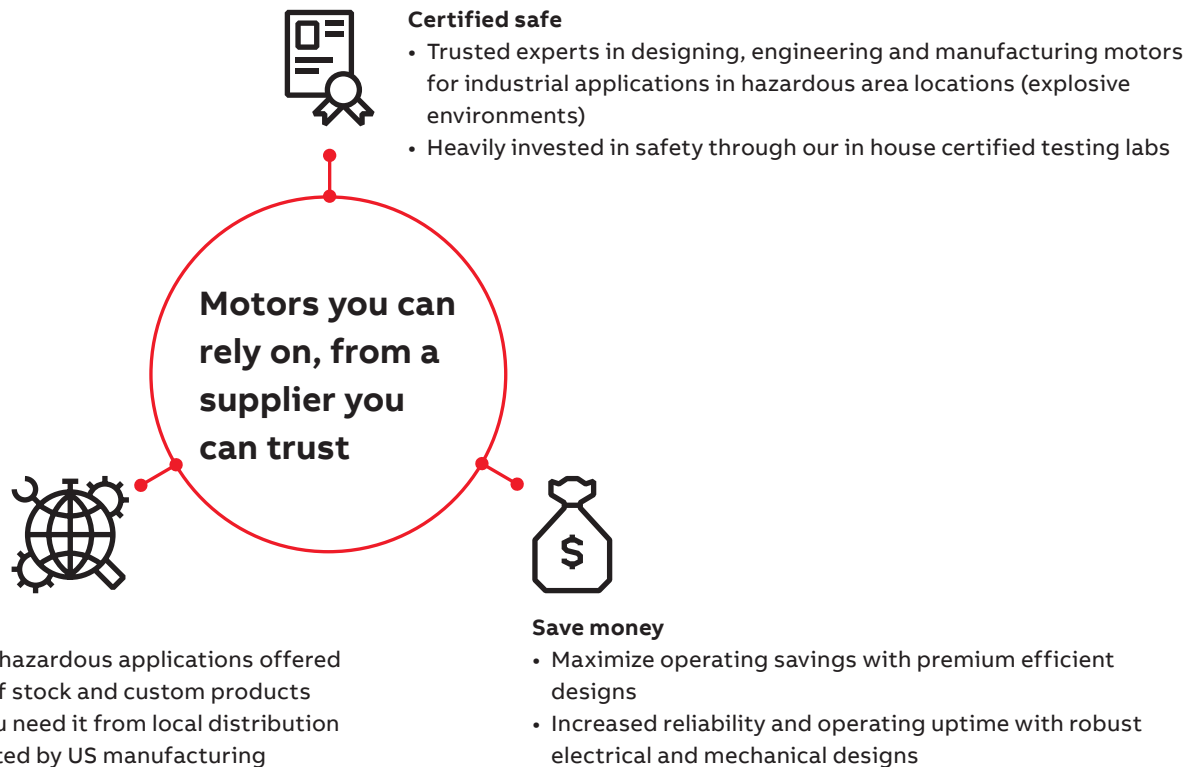
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# Safe, reliable, available

## Baldor-Reliance® explosion proof motors

When you specify a Baldor-Reliance explosion-proof motor, you can trust that it meets your specifications, and more. ABB follows the specs to the letter, and then takes it a step further. We work with you, applying our know-how and experience to find the best possible solution to fit your needs. From initial design to manufacture, we are committed to building motors that deliver high performance, efficiency and reliability without compromising safety throughout their entire life cycle.





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# Designed and built in the US for North American standards

## Certified safe solutions

ABB is the Market Leader in North American explosion proof motor standards, offering the broadest portfolio of solutions across all industries with hazardous location. Underwriters Laboratories (U.L.) and the Canadian Standards Association (CSA) are the certifying bodies that approve and label our electric motors for use in Division based hazardous locations per NFPA70 National Electric Code (NEC) and C22.1, the Canadian Electric Code. Baldor-Reliance explosion proof motors may be marked with one or more of the following:



UL Listing mark for use in the United States. Products with this mark have been evaluated to U.S. safety requirements.



CSA Listing mark for use in Canada and the United States. The product is certified to the applicable American and Canadian standards



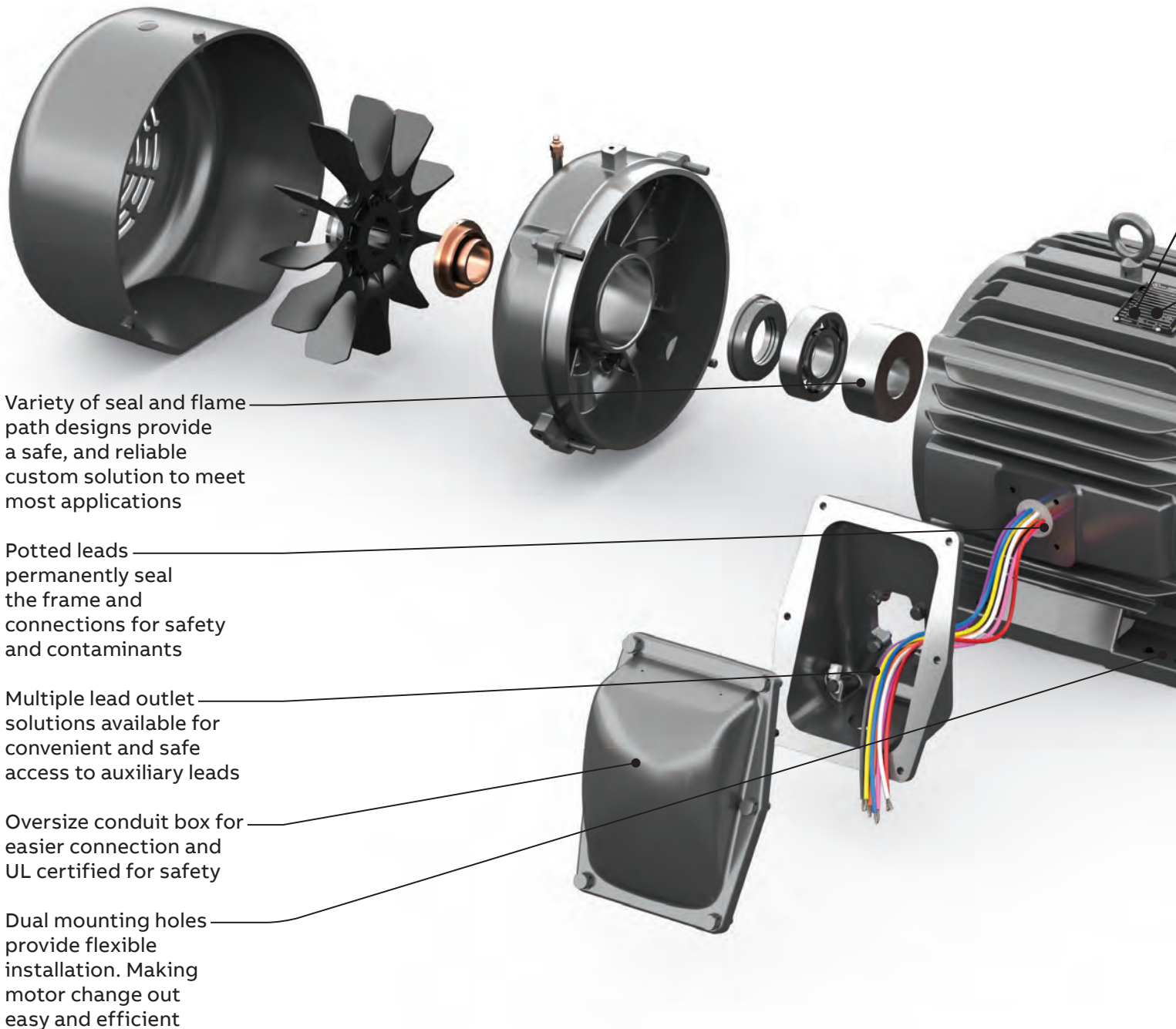
CSA Listing mark for use in Canada. The product is certified to the applicable Canadian standards



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## Safety and quality you require

Performance and flexibility you need



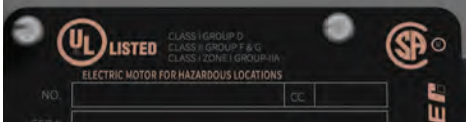
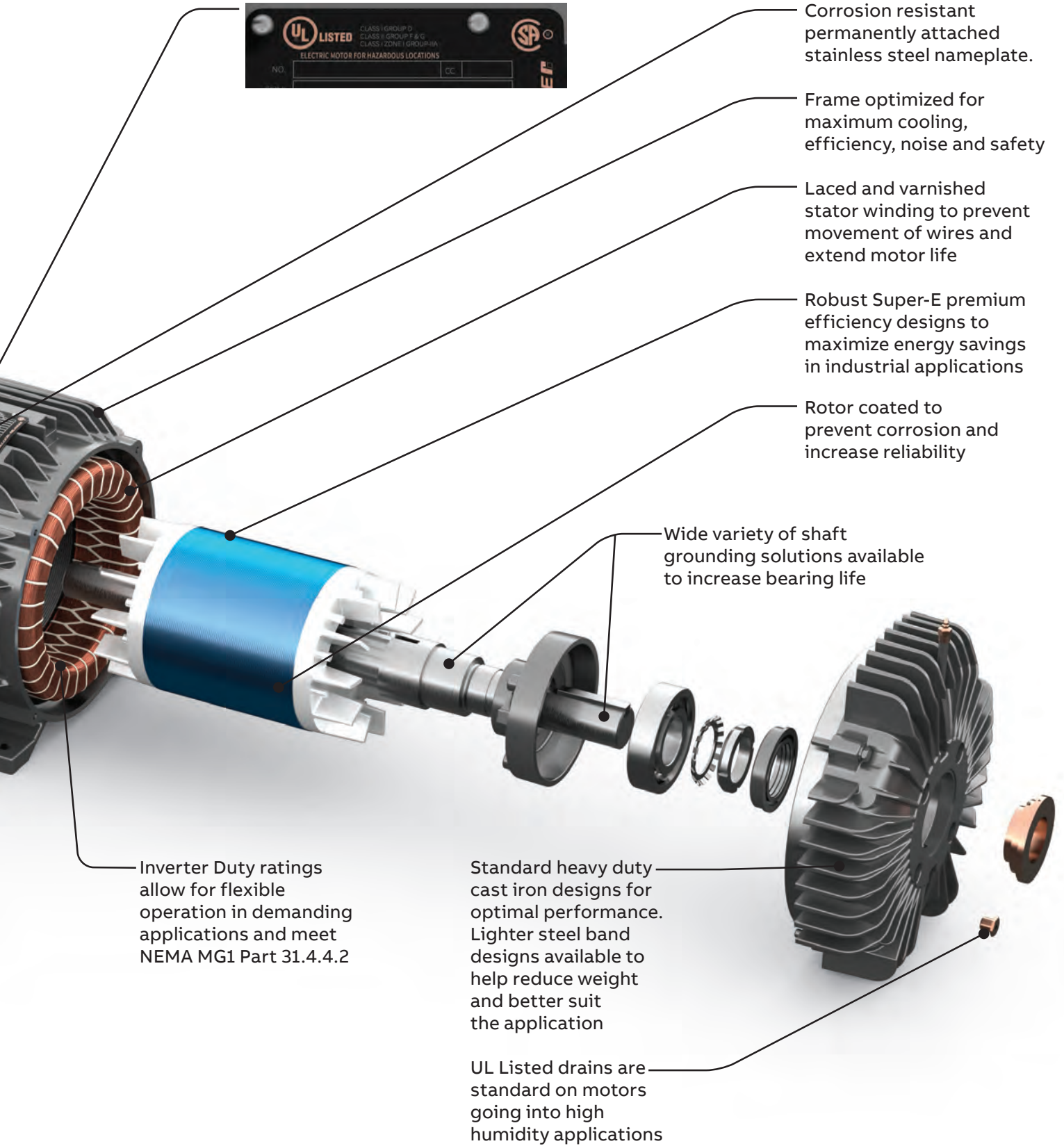
Variety of seal and flame path designs provide a safe, and reliable custom solution to meet most applications

Potted leads permanently seal the frame and connections for safety and contaminants

Multiple lead outlet solutions available for convenient and safe access to auxiliary leads

Oversize conduit box for easier connection and UL certified for safety

Dual mounting holes provide flexible installation. Making motor change out easy and efficient



Corrosion resistant permanently attached stainless steel nameplate.

Frame optimized for maximum cooling, efficiency, noise and safety

Laced and varnished stator winding to prevent movement of wires and extend motor life

Robust Super-E premium efficiency designs to maximize energy savings in industrial applications

Rotor coated to prevent corrosion and increase reliability

Wide variety of shaft grounding solutions available to increase bearing life

Inverter Duty ratings allow for flexible operation in demanding applications and meet NEMA MG1 Part 31.4.4.2

Standard heavy duty cast iron designs for optimal performance. Lighter steel band designs available to help reduce weight and better suit the application

UL Listed drains are standard on motors going into high humidity applications



# General purpose

## Explosion proof motors

Designed for safe operation in a wide variety of applications where hazardous gases or dust is or may be present. Inverter Duty electrical designs allow for flexible operations and energy savings. Robust cast iron or steel band designs maximizes reliability and decreases downtime.

### Class I Group D, Class II Group F&G Inverter Duty

#### Broadest selection for flexible application:

- Single and three phase
- Pump designs
- Brake motors
- Shaft ground
- Sinewave or inverter
- Cast Iron or steel band

#### Target applications:

- Pumps
- Compressors
- Fans and blowers
- Conveyors



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# Severe duty

## Explosion proof motors

Suitable to stand up against the most demanding industrial environments where protection against the elements and condensation is needed. Motors come equipped with UL Breather Drains that protect against condensation build up. These motors are designed to protect against hazardous gases, vapors and dusts that have explosive properties. Our highly engineered shaft sealing system protects against all three hazardous dust groups.

**Class I Group C&D, Class II Group E, F&G  
Inverter Duty**

**Typical industries:**

- Chemical, oil and gas
- Pulp and paper
- Water/waste water
- Metals

**Target applications:**

- Pumps
- Compressors
- Fans and blowers
- Conveyors





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# Drill rig

## Explosion proof motors

Designed for on and off shore drill rig service, bulk fuel terminals, and transfer stations. Designed to withstand hazardous-duty applications with demanding service factor needs. Labyrinth style recess shaft slinger increases bearing life and multiplies durability. Engineered to withstand high humidity environments with a special breather drain that prevents condensation built up.

### **Class I Group C&D Inverter Duty**

#### **Available today:**

- Single and three phase
- Diverse pump designs
- Footed or vertical configuration

#### **Target applications:**

- Driving pumps
- Compressors
- Blowers and fans





# Specialty

## Explosion proof motors

### Submersible motors

Designed for wet pit applications in the Water/Wastewater industry that require Continuous Duty in water/sewage and 15 Minute Duty in air. Single and three phase designs operating on Sine wave power are suitable for Division 1, Class 1, Group C & D, T3C. Three phase designs operating on Inverter power at 10:1 Variable torque are suitable for Division 1, Class 1, Group C & D, T2A. Single Phase designs are suitable for use on Sine wave power only.



### DC explosion proof motors

Permanent Magnet motors are available from stock in 1/4 hp through 1-1/2 hp, in NEMA frames 56C and 145TC. Shunt Wound motors are available from stock in 1/2 hp through 3 hp, in NEMA frames 182CZ to 215CY. Both types are UL and CSA approved for Division 1, Class I – Group D and Class II – Groups F and G, with a 1.0 Service Factor. Most models include a thermostat on the field winding.



### ATEX and IECEx motors

High and low voltage flameproof motors are available meeting all relevant international standards and the most important specification requirements for the oil and gas industry. Versions are available for both direct-on-line (DOL) and variable speed drive (VSD) operation.



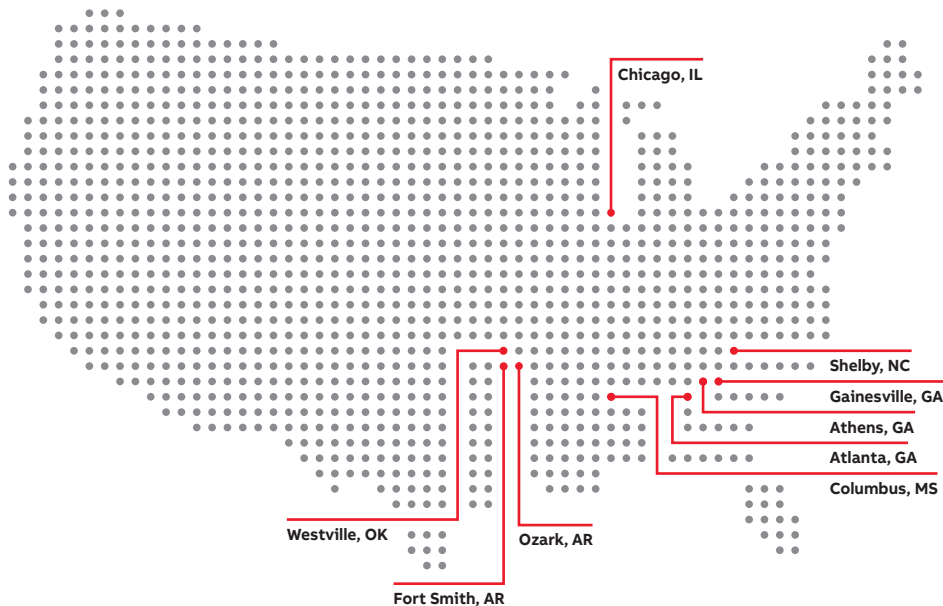
# Flexibility

## Custom capabilities, Mod Express & accessories

Modifying or designing a custom hazardous area motor is a specialized task because the motors must meet rigorous safety requirements when they are installed into service. Our network of manufacturing facilities and modification centers have been audited and certified to make changes to Baldor-Reliance explosion proof motors.

### Accessories

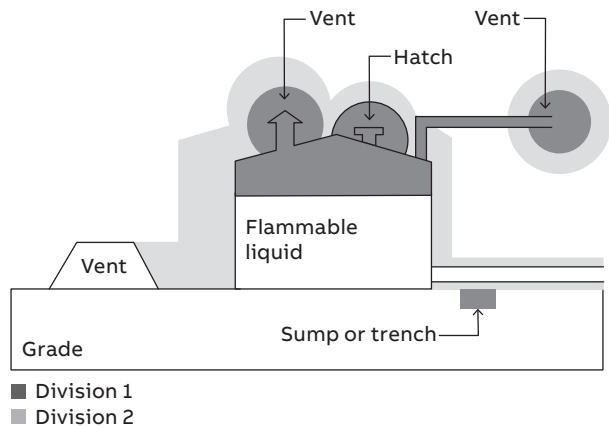
Wide variety of Div. 1 approved accessories for both exterior and internal mounting. Typical exterior accessories may include Brakes, Feedback devices, and other items that carry the same certification as the motor. Interior accessories may include Space heaters, thermostats, seals, and shaft ground systems.



**Manufacturing locations:** Fort Smith, AR; Ozark, AR; Athens, GA; Gainesville, GA; Columbus MS; Shelby, NC; Westville, OK  
**Modex centers:** Fort Smith, AR; Atlanta, GA; Chicago, IL

# Safety in hazardous locations

## Controlling your risks



T code	Maximum motor surface temperature	
	°C	°F
T1	450	842
T2	300	572
T2A	280	536
T2B	260	500
T2C	230	446
T2D	215	419
T3	200	392
T3A	180	356
T3B	165	329
T3C	160	320
T4	135	275
T4A	120	248
T5	100	212
T6	85	185

Hazard class	Groups per NEC 500	Substance
Class I Flammable gases / vapors / liquids	Group A	Acetylene
	Group B	Hydrogen
	Group C	Ethylene
	Group D	Propane
Class II Combustible dusts	Group E	Metal dust
	Group F	Coal dust
	Group G	Grain dust
Class III Ignitable fibers & flyings	Not divided into Groups. 165°C maximum temperature limit for all Class III equipment not subject to overloading. 120°C maximum temperature limit for all equipment subject to overloading	

### CAUTION

Motors misapplied in hazardous environments can cause a fire or explosion resulting in destruction of property, serious injury or death. Only the end user or a qualified underwriter is to identify and select the proper class, group, division, and temperature code motor to meet the requirements of each installation. ABB personnel, agents and distributors can advise what listings and approvals Baldor-Reliance motors carry, but cannot evaluate nor recommend what motors may be suitable for use in hazardous environments.

### Division

Defines how often the potentially explosive materials are present during normal operating conditions.

- Division 1: Ignitable concentrations are present all or most of the time.
- Division 2: Ignitable concentrations are not likely to be present during normal operation.

### Temperature codes

Identifies the maximum absolute motor surface temperature that will be developed under all conditions of operation.

### Classes

Defines the physical properties hazardous material.

### Groups

Designations assigned to combustible substances based on their behavior after ignition.











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