Hazardous Location

Horsepower: 1/4 through 200 HP, Single and Dual Label

Phase: Single and Three Phase

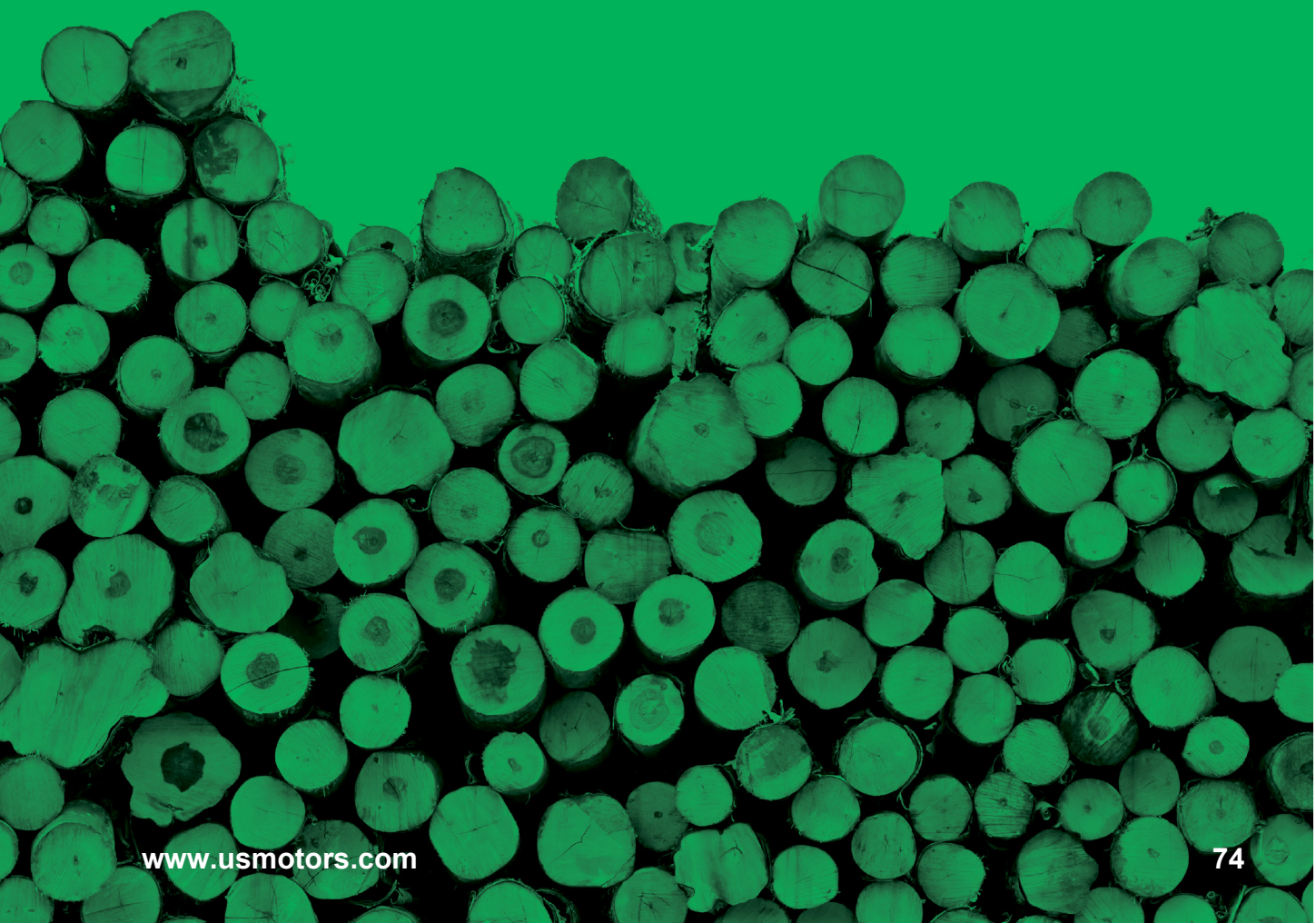
RPM: 1200, 1800 and 3600

Voltage: 115/208 - 230, 115/230, 230/460, 208-230/460 and 460

Efficiency: NEMA Premium

Mounting: Footed, Footless C-Face

Agency: UL®† Recognized and CSA®† Certified



Horizontal A.C. Motors

Totally Enclosed Fan Cooled, Hazardous Location Motors

Horsepower: 1/2 – 700 HP

Enclosure: Totally Enclosed Fan Cooled (TEFC), Hazardous Location Duty

Voltage: 230 Volts to 6900 Volts

Frame Sizes: 56 – 5811

Poles: 2, 4, 6 and 8

Recognition: E10336

Certification: LR13009

Label: Single and Dual, Division I and II

Product Overview and Features

U.S. MOTORS® brand totally enclosed fan cooled hazardous location motors are designed for use on pumps, compressors, fans, conveyors and tools for hazardous location applications. These motors are built to contain explosions inside the motor casing and prevent ignition outside the motor by containing sparks, flashing and explosions. Ideal for applications typically found in petroleum and chemical, industrial paint and coating, and grain processing operations.

Hazardous location motors are specifically designed for:

Petroleum and Chemical Applications

- Single Label Hazardous Location
- Division I and II, Class I, Group D
- 1.15 Service Factor
- Where flammable liquids or vapors are present

Industrial Paint and Coating Applications

- Single Label Hazardous Location
- Division I and II, Class I, Group D
- 1.15 Service Factor
- Where flammable liquids or vapors are present

Grain Processing Applications

- Dual Label Hazardous Location
- Division I and II, Class I, Group D
- Division I and II, Class II, Groups F and G
- Where combustible dusts are present
- Service Factor, Class F insulation, Class B temperature rise

Electrical and Mechanical Features:

The ALLGUARD® motor quality system featured on U.S. MOTORS® brand hazardous location motors ensures reliability, long life and superior performance. Zinc-plated hardware, regreasable ball bearings, polyurea grease and a stainless steel nameplate are standard on each motor.

Cast-iron inner bearing caps are on all motors except the 140 frame. These motors are designed to operate in ambient temperatures of 40°C, in maximum altitudes of 3,300 feet above sea level and with NEMA®† Design B torque-current characteristics.

- 1.0 Service Factor where combustible dusts are present; 1.15 Service Factor where flammable liquids or vapors are present
- Class B temperature rise at 1.0 Service Factor by resistance
- Class F insulation materials
- Thermal protection on dual label products
- CORRO-DUTY® corrosion protection on single label products
- Insulife 1000, consisting of one dip and bake of 100 percent solid polyester resins, on motors up to 350 HP 449 frame and below
- One cycle of 100 percent VPI solid epoxy resins on motors above 200 HP 5000 frame and higher

CORRO-DUTY®

NEMA Premium

Hazardous Location Specifications

Division I, Class I – Flammable Gases or Vapors

Hazardous locations are characterized by an atmosphere which does or may contain gas, vapor or dust in sufficient quantities to cause an explosion. The National Electrical Code (NEC®†) divides these locations into classes and groups according to the type of explosive agent which may be present. Listed are some of the agents in each classification. For a complete list, see National Fire Protection Association (NFPA®†) publication 497M.

Underwriters Laboratories (UL®†) tests motors and other devices for safety in explosive atmospheres and publishes a list of motors meeting its standards for each Class and Group. Use of UL Listed devices does not necessarily make an installation conform to the NEC or local codes. Consult Chapter 5 of the NEC local building codes, OSHA requirements and insurance inspectors for detailed data on proper procedures.

Gases and vapors are grouped by severity of expected explosion pressure and extent of flame propagation between parts. For Class I applications, Nidec Motor Corporation offers hazardous location products for:

- **Group C** – ethyl-ether, ethylene and cycle propane
- **Group D** – gasoline, hexane, naptha, benzene, butane, propane, alcohol, lacquer solvent vapors and natural gas

Division I, Class II – Combustible Dusts

Dusts are grouped by combustibility, penetrability between parts, blanketing effect, ignition temperature and ability to contribute to creation of an ignition source through abrasiveness or electrical conductivity. For Class II applications, Nidec Motor Corporation offers hazardous location products for:

- **Group F** – carbon black coal or coke
- **Group G** – flour, starch or grain

Temperature

Hazardous location motors are classified by temperature code. This code indicates the maximum surface temperature for all conditions including burnout, overload, single phasing and locked rotor. The maximum surface temperature, or "T" code, must be identified on the nameplate.

All hazardous location motors have a temperature code that defines the maximum allowable frame temperature.

Maximum Temperature (For All Conditions)		
Celsius	Fahrenheit	T-Code
280*	536	T2A***
260*	500	T2B***
230**	446	T2C***
215**	419	T2D***
200**	392	T3
180**	356	T3A
165**	329	T3B
160**	320	T3C
135**	275	T4
120**	248	T4A
100**	212	T5

*Class I, Group D only, requires caution statement

**Requires thermostats

***Not applicable to motors for use in Class II locations

Options and Accessories

Following is a sampling of 4-pole, dual-label horizontal motors:

				Class, Group Available			
HP	Frame	Voltage	Winding Type	I, C	I, D	II, F	II, G
1/2–3/4	56	230/460	random-wound		X	X	X
1–2	143T–145T	230/460	random-wound		X	X	X
3–10	182T–215T	230/460	random-wound		X	X	X
15–100	254T–405T	230/460	random-wound	X	X	X	X
125–300	444T–449T	230/460	random-wound		X	X	X
up to 500	5807	460/575	random-wound	X	X	X	X
up to 600	5809–5811	460/575	random-wound		X	X	X
up to 150	5004	2300/4000	form-wound		X	X	X
up to 350	5008	2300/4000	form-wound		X	X	X
up to 400	5807	2300/4000	form-wound	X	X	X	X
up to 500	5809	2300/4000	form-wound	X	X	X	X
up to 800	5811	2300/4000	form-wound	X	X	X	X

Additional sizes and specifications are available and can be found in the Full Line Standard Motor Catalog (FL600) and NEMA Horizontal Custom Motor Catalog (PB202). When inquiring about motors, please have the following parameters on hand:

- Horsepower and poles
- Frequency and voltage
- Class and group of all contaminants that will or may be present in the motor's operating environment
- Temperature code defining the motor's maximum allowable frame temperature

Additional Accessories:

Nidec Motor Corporation offers the following options for U.S. MOTORS® brand hazardous location motors:

- Premium efficient, energy efficient and standard efficient
- UL-listed metal breather located near the drain to allow for condensation release
- Multiple mounting configurations available for 180 frame and larger

Inverter suitable motors for Class I, Single label, temperature code T2B applications with 10:1 variable torque, 2:1 constant torque are also available.

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NIDEC MOTOR CORPORATION

8050 W. Florissant Avenue | St. Louis, MO 63136
Phone: 888-637-7333 | Fax: 866-422-7758