

# 661 PLUS® Motors

## Horizontal A.C. Motors, Totally Enclosed Fan Cooled



**Horsepower:** 5 – 75 HP

**Frame Sizes:** 184T – 365T

**RPM:** 1800

**Design Voltages:** 460 Volts at 60 Hz

**Requirements:** Meets or exceeds Energy Independence and Security Act of 2007 (EISA);  
Meets or exceeds IEEE 841 Standard-2009;  
Meets vibration requirements of GM7E-TA

**Warranty:** 5-year limited warranty



### Product Overview and Options

Designed to exceed the industry's most stringent IEEE 841- 2009 Standard, the U.S. MOTORS® brand 661 PLUS® motors are used in severe duty environments for API 661 heat exchanger applications. These rugged motors are ideal for constant speed or inverter duty fan services typically found in the petroleum and chemical industries.

U.S. MOTORS brand 661 PLUS® motors are rated NEMA Premium® efficient. Low-loss silicon steel construction and streamlined design enables the motor to operate at lower temperatures resulting in lower energy costs. This motor is designed to operate in ambient temperatures of -30°C to 40°C, in altitudes of up to 1,000 meters above sea level and with NEMA Design B torque-current characteristics. Inertia-load acceleration capabilities for the 661 PLUS® motor meet the stringent requirements of NEMA MG 1-2009, Section 12.54.

#### Product Features:

- NEMA Premium® efficient
- 1.15 Service Factor on sine wave power; 1.0 Service Factor on Inverter Duty
- Class B temperature rise at 1.0 Service Factor by resistance with sine wave power
- Class F insulation materials to increase motor life
- Exceeds NEMA MG1 Part 31 Inverter Duty
- Drive end roller bearing on 210 frame and larger
- Polyurea grease
- Stainless-steel nameplate and breather/drains
- Variable frequency drive or full voltage, across-the-line starting
- RTV sealant on bolt holes and register fits
- Division 2 suitable per NEC article 500 (NFPA 70)

- AFBMA bearing numbers on nameplate
- Protective coating on each rotor and shaft from bearing journal to bearing journal

#### Inverter Duty

Nidec Motor Corporation's patented INVERTER GRADE® insulation system allows the U.S. MOTORS brand 661 PLUS® motor to withstand spike and transient voltages induced by insulated bipolar gate transistor drives, making it fully compliant with NEMA MG-1, Part 31. This is made possible through:

- Pulse-resistant magnetic wire that provides protection against high-voltage spikes
- Additional lacing on the end turns improve coil rigidity
- Multiple bake cycles to help prevent coil-to-coil circuits
- Phase paper to help prevent phase-to-phase arcs
- Adjustable frequency of 5:1 constant torque or 10:1 variable torque for the full product line.



661 PLUS®



## Product Overview and Options *continued*

### Typical 661 PLUS® Motor Construction:

1. Corrosion resistant zinc dichromate-plated hardware
2. Heavy duty cast-iron enclosure for long life and reduced vibration
3. Inverter grade insulation
4. Inpro/Seal™ “VBXX” on both ends provides IP56 protection and prolongs motor life by shielding bearings from contaminants in even the harshest environments
5. Special shaft runout of 0.0010 inches for ball bearing motors; 0.0020 inches for roller bearing motors
6. Drive end roller bearing on 210 and larger and drive end ball bearing on 180 frame. Cast iron inner bearing caps
7. Stainless steel breather/drains
8. Oversized, double-gasketed and rotatable conduit box to protect against contaminants and correctly position non-braided, non-wicking motor leads
9. Foot flatness machined to within 0.005 inch tolerance ensures easy installation and proper alignment
10. Corrosion-resistant mill and chemical duty paint capable of withstanding a 500-hour salt spray test
11. RTV sealant on bolt holes and register fits



### Options and Accessories

Nidec Motor Corporation offers the following custom-design options on the U.S. MOTORS brand 661 PLUS® motor:

- Horizontal or vertical mounting
- Vibration detectors
- Winding thermal protection
- Inpro/Seal™ MGS grounding shaft ring  
(Not available on Division 2 labeled motors)

#### Catalog Model Motors

- 5-75 HP
- 4 pole designs
- 460 Volts
- Constant or variable torque
- F-1 assembly position

#### Custom and Conversion Motors

- 5-75 HP
- 2, 4, 6, 8 pole designs
- 200, 230, 460 Volts
- Drip cover kits available
- Multi-speed design
- Alternate assembly positions

### Testing and Inspection

Nidec Motor Corporation conducts extensive testing and inspections on each of its U.S. MOTORS brand 661 PLUS® motors.

- No load current, power and speed
- High-potential test on stator windings

- Insulation resistance test by megohmmeter
- Vibration test
- Optional complete test, including full load test

For additional information, please refer to [www.usmotors.com](http://www.usmotors.com) or contact your Nidec Motor Corporation representative.

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**Nidec**  
NIDEC MOTOR CORPORATION

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