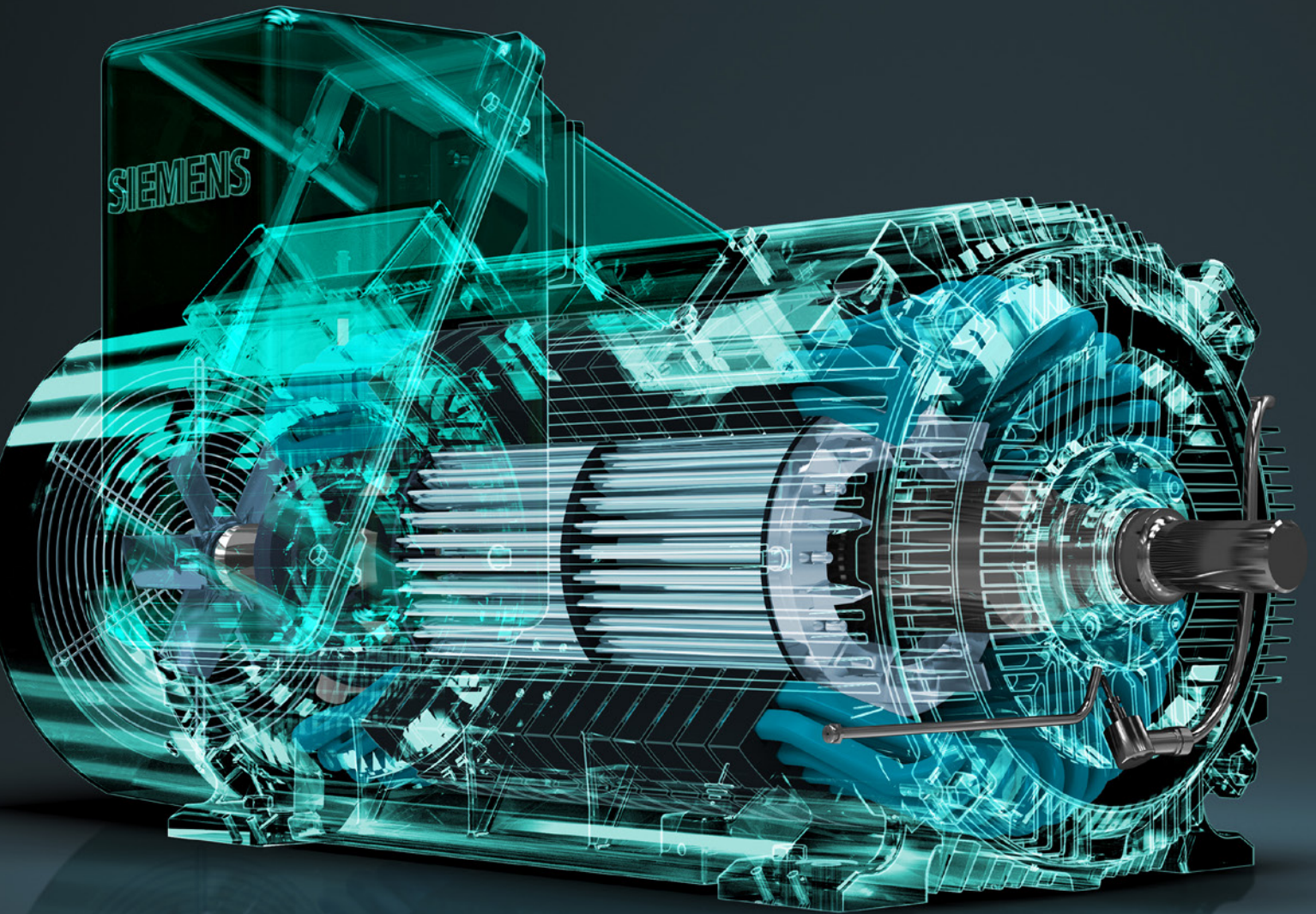


**SIEMENS**

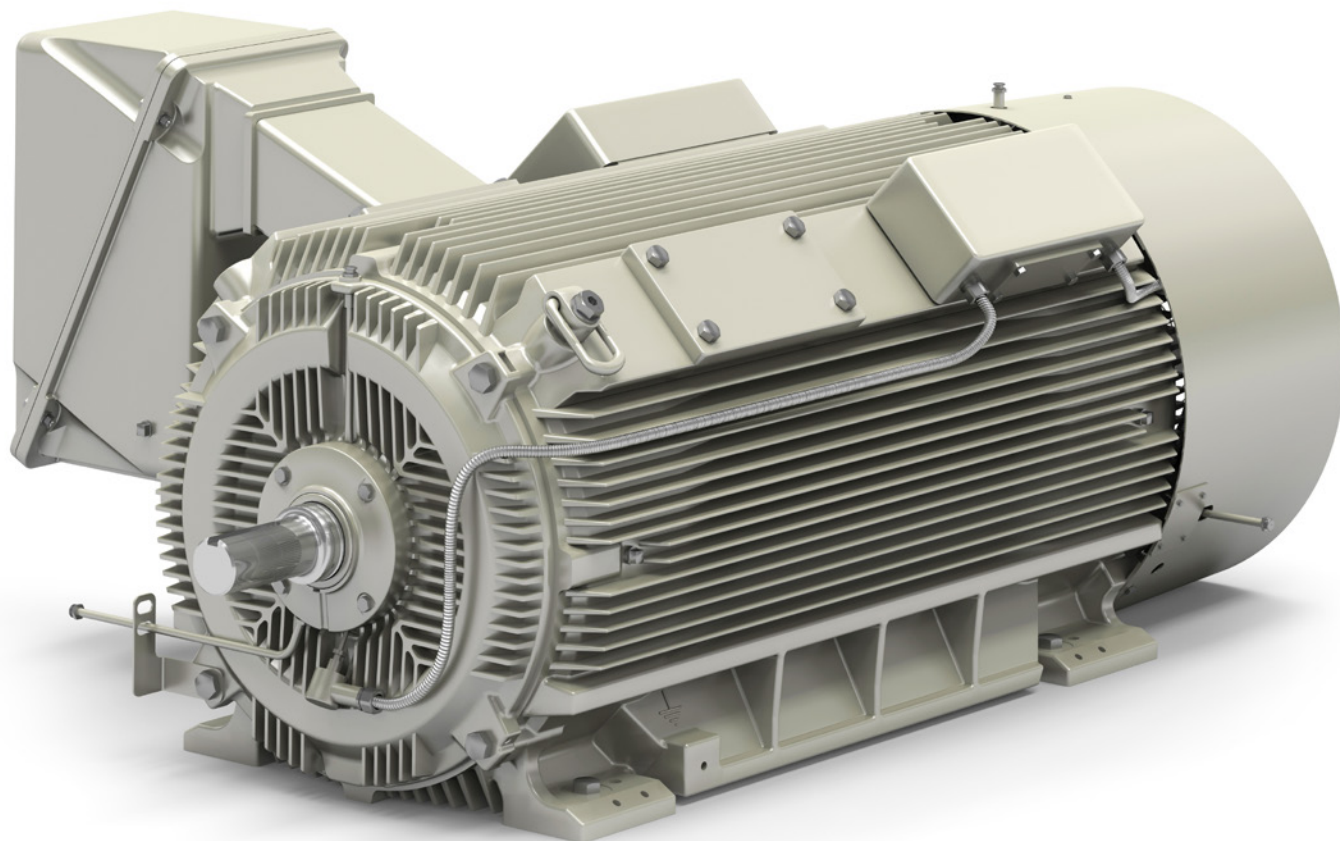
*Ingenuity for life*



# SIMOTICS Advantage™ Series

General Purpose MV Motors

[www.usa.siemens.com/abovenema](http://www.usa.siemens.com/abovenema)



**Advantage Series is a general purpose TEFC motor best suited for low specification applications in a wide range of industries.**

For over 120 years, Siemens has built large motors with a single objective in mind - to meet the exacting requirements of our customers' application needs. Today, our motors have earned a reputation for high performance, low maintenance, and long service life in the world's most demanding applications. It is this focus on delivering genuine performance value to our customers, combined with unmatched service and support, that has made Siemens the leading supplier of motors around the world.

**We meet or exceed industry preferred standards.**

Motor operators rely on standards to assure performance and Siemens has always been at the forefront of compliance with important industry standards.

- IEEE841 Features
- ANSI
- NEMA
- CSA
- CSA- US
- NEMA Premium® Efficiency

*“There is growing demand for large, low-spec, high quality, stocked motors with a robust set of standard features and pre-engineered modifications.”*

**Well suited for a wide range of industries and applications.**

We understand that many industries have common large rotating applications that are low-spec in nature. Users also prefer motor suppliers that are capable of delivering standard and customized equipment. We are one of the few manufacturers today that effectively do both.

- Petroleum & Chemical Processing
- Mining & Minerals
- Cement
- Marine
- Metal Producing and Processing
- Water & Wastewater
- Power Generation
- Fiber / Pulp & Paper
- Industrial Refrigeration

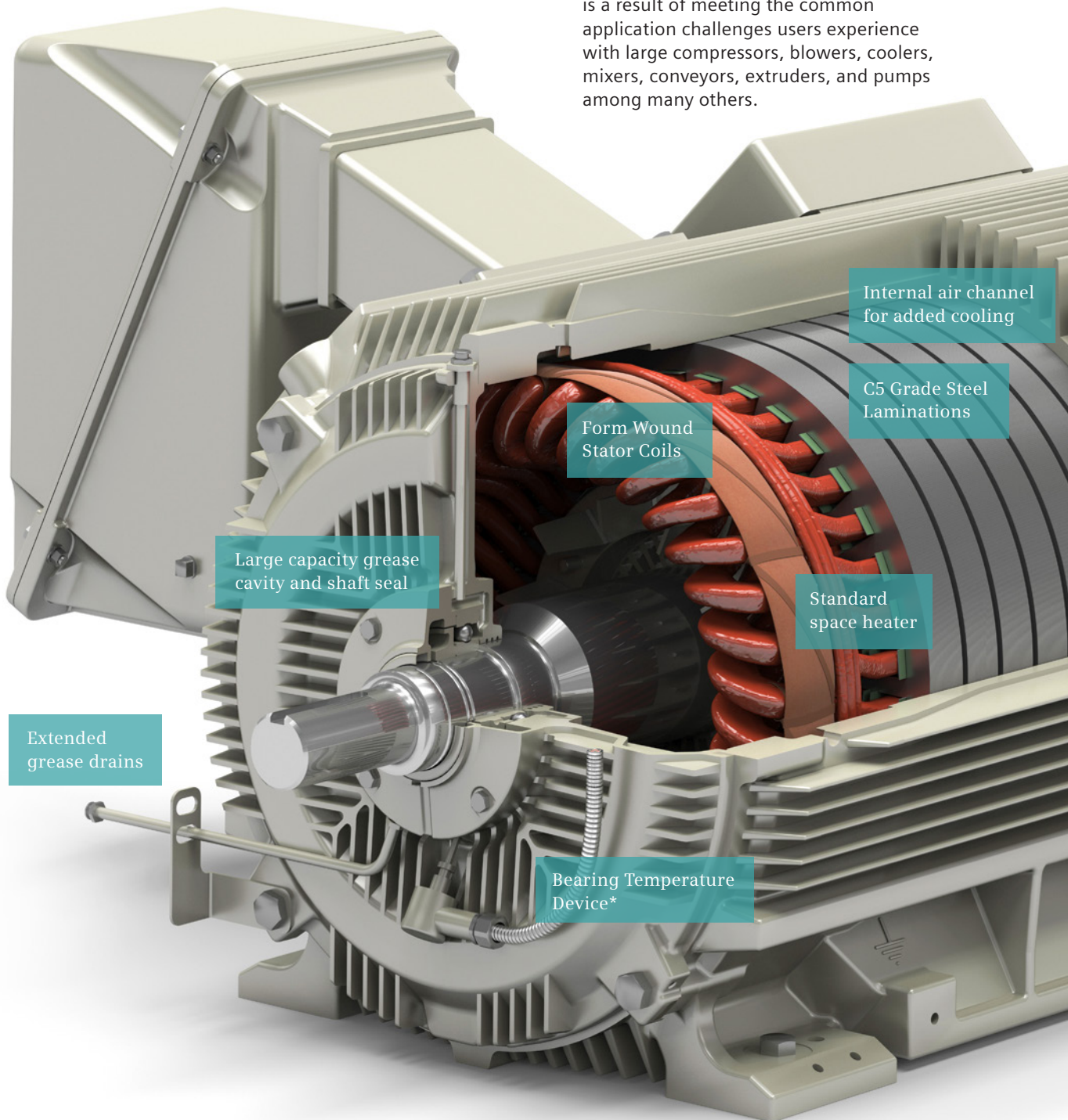


# Advantage Series

## General Purpose MV Motor Key Features

### Experience is built in.

The Advantage Series medium voltage totally enclosed fan-cooled motor design is a result of meeting the common application challenges users experience with large compressors, blowers, coolers, mixers, conveyors, extruders, and pumps among many others.



Internal air channel for added cooling

C5 Grade Steel Laminations

Form Wound Stator Coils

Standard space heater

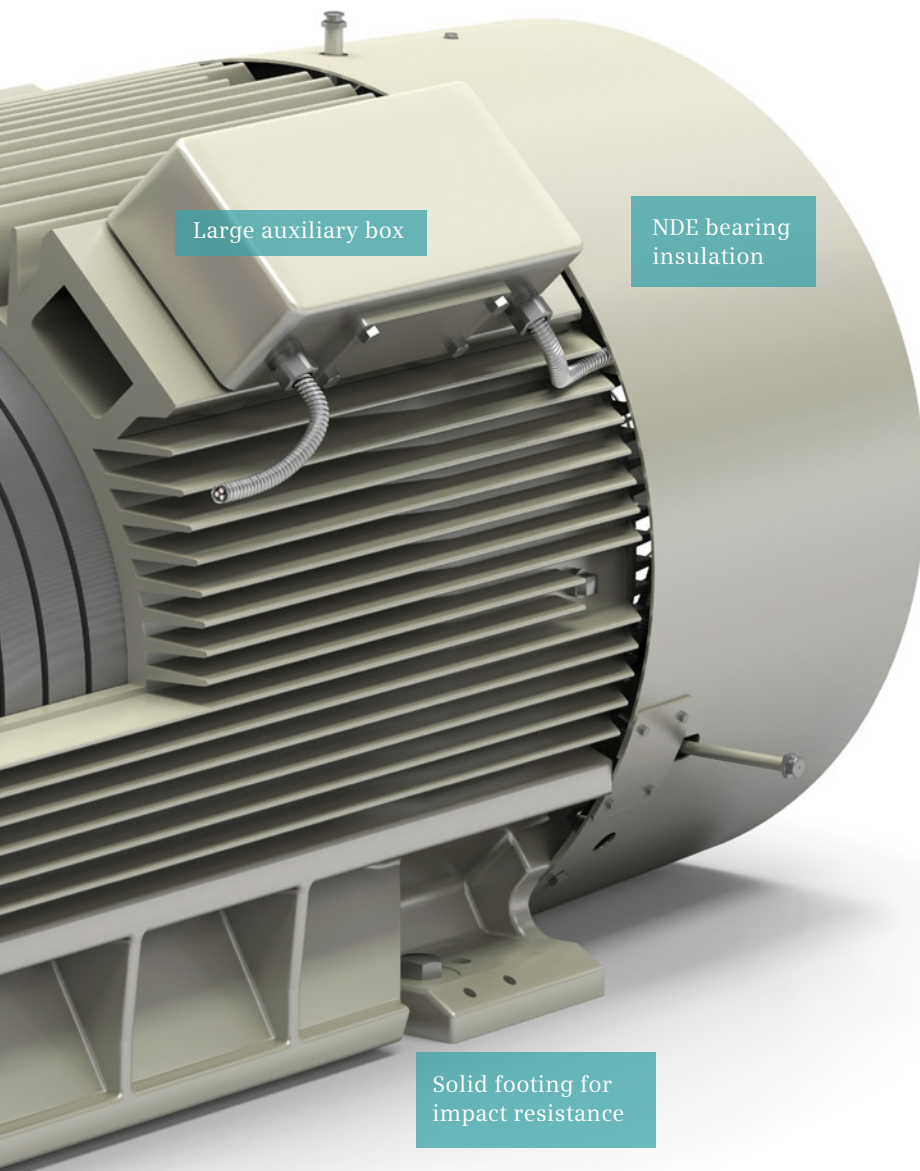
Large capacity grease cavity and shaft seal

Extended grease drains

Bearing Temperature Device\*

\*Standard or optional for different frames sizes. See page 7.

Siemens has engineered a cost-efficient design that offers users one of the most robust and reliable general-purpose MV motors in the industry.



### Frame and End Shields

Enclosed in a cast iron frame, end shields, and a durable main terminal box. Features high strength zinc-plated hardware, epoxy paint, and stainless-steel nameplates resistant to rust and corrosion for harsh environments.

### Rotor and Stator Windings

A high-strength carbon steel shaft holds a dynamically balanced die cast aluminum rotor assembly for maximum performance, efficiency and bearing life. The stator is manufactured with C5 grade steel lamination and copper magnet wire designed to minimize electrical losses.

### Insulation

The 449 frame utilizes a Class F non-hydroscopic MiCLAD™ form wound stator insulation system with a sealed epoxy mica design that meets or exceeds the NEMA MG1-20 standard. It also affords the user a high thermal margin with NEMA Class B temperature rise.

Other frames utilize MICALASTIC™ insulation system, a vacuum pressure impregnation (VPI) insulation free of gaps or voids. It meets the insulation requirements for MG1 Part 31 with a 6kV rated insulation system.

### Cooling System

All rotor fans are designed to meet most CSA Class II areas and are bi-directional except for S449 frame and larger 2 pole machines. Its fan design improves cooling while reducing windage losses and noise. It is protected by a cast iron fan cover on all frame sizes.

### Bearings

Single shielded with sealed bearings on both drive end and non-drive end are designed for easy serviceability and protection against contaminants.

# Technical Details

| Construction Features     |   |
|---------------------------|---|
| Enclosure                 | TEFC (IC411)  |
| Degree of Protection      | IP55  |
| HP Range                  | 150 - 1100 HP (2, 4 pole), 150 - 900 HP (6 pole)  |
| Frame Size / Shaft Height | 449, S449, 5011, 5810, SH400  |
| Voltage                   | 2300V/4000V   |
| Service Factor            | 1.15 @ 40°C   |
| Warranty                  | 36 months from date of manufacture  |
| Construction Materials    |   |
| Frame                     | Cast Iron   |
| Bearing Housings          | Cast Iron   |
| Main Terminal Box         | Fabricated Steel (449 frame), Cast Iron (5011+ frames)  |
| Auxiliary Boxes           | Cast Iron - NEMA 4X   |
| Shaft                     | AISI 1045 (449 frame) 4140 (S449-449T frames), S355J2+-N (5011+ frames)   |
| Rotor                     | Aluminum Die Cast   |
| Lamination Material       | C5 Core Plate   |
| External Cooling Fan      | Polyamide & Polypropylene (449) Bronze (S449)<br>Anti-Static Reinforced Polyamide (5011+ frames)                              |
| Fan Cover                 | Cast Iron   |
| Insulation                | MiCLAD™ Class F non-hydroscopic, NEMA Class B temp rise (449 frame), MICLASTIC™ VPI (5011+ frames)                            |
| Hardware                  | Zinc Plated Carbon Steel  |
| General Information       |   |
| Noise Level               | 85 dB(A)  |
| Vertical Mounting         | N/A   |
| Inverter Operation        | Meets NEMA MG1-20 (449 frame), Meets NEMA MG1-31 rated at 6kV (5011+ frames)<br>Variable Torque: 10:1<br>Constant Torque: 2:1 |
| Paint                     | Two-part Epoxy  |
| Paint Color               | RAL 7030 Gray   |
| Bearing Type              | Anti-friction ball  |
| Vibration                 | 0.12 IPS  |
| Hazardous Area            | CSA Class 1, Division 2, Groups B, C, D, Temp Class T3 (5011 frame on VFD Temp Class T2D)                                     |

| Frame Chart - 2300/4000V, 60Hz |        |       |       |
|--------------------------------|--------|-------|-------|
| HP                             | 2P     | 4P    | 6P    |
| 150                            | 449TS  | 449T  | 449T  |
| 200                            | 449TS  | 449T  | S449T |
| 250                            | 449TS  | 449T  | S449T |
| 300                            | S449TS | S449T | 5011  |
| 350                            | S449TS | S449T | 5011  |
| 400                            | 5011   | 5011  | 5011  |
| 450                            | 5011   | 5011  | 5810  |
| 500                            | 5011   | 5011  | 5810  |
| 600                            | 5810   | 5810  | 5810  |
| 700                            | 5810   | 5810  | SH400 |
| 800                            | SH400  | 5810  | SH400 |
| 900                            | SH400  | SH400 | SH400 |
| 1000                           | SH400  | SH400 | -     |
| 1100                           | SH400  | SH400 | -     |

## Additional Options

### Roller Bearings

Motors having roller bearings require a minimum radial load. Use of these motors in direct connected applications is discouraged to avoid excessive drive end bearing noise and/or reduced bearing life.

### Resistive Temperature Detectors (RTD)

Stick-type are available for anti-friction bearings. Available for 449 frame and standard on all other frames. The standard RTD is a tip sensitive device consisting of a probe with a hermetically sealed tip inside of which is a resistance element in the form of a coil.

### Couplings

Includes mounting only of shrink-fit, customer-supplied coupling which has been finish-bored and key-seated to Siemens standard shaft dimensions. For 449 frames only.

### Direction of Rotation

Ratings indicated as "Uni-directional" (2P S449) will be listed CW as standard. All other ratings are Bi-directional.

### IEEE 841 Standard - 2009

This standard applies to premium-efficiency TEFC's up to 500 horsepower and 4000 volts. It is used in petroleum, chemical, and other severe-duty applications. For 2 pole motors, exception is taken to sound power levels and data is offered in sound pressure.

### Nameplate Additions

Multiple options are available to include specific information on your nameplates.

### Shaft Seals

For IP56 and/or specific Inpro/Seal on the drive-end.

### Anti-Fungal Treatment

An Anti-Fungal Treatment is offered for the stator in humid areas, which utilizes a tropicalization moisture for protection. For 449 frames only.

### Protective Devices - Thermistors

Thermistors are positive temperature coefficient (PTC) sensors embedded in the end turns of the windings in the stator.

### Protective Devices - Thermostats

Thermostats use a snap-action, bi-metallic, disc type switch to open or close a circuit upon reaching a preselected temperature.

*For a complete listing of Advantage Series options, refer to the back cover.*

| Advantage Series Options |  | Frames |       |
|--------------------------|--|--------|-------|
|                          |  | 449    | 5011+ |
| 5                        | C-Face   | ✓      | ✓     |
| 6                        | D-Flange   | ✓      | ✓     |
| A15                      | Thermistors - (3) PTC - 1/Phase  | ✓      | -     |
| A16                      | Thermistors - (6) PTC - 2/Phase  | ✓      | -     |
| A25                      | KTY84 Thermistors (2)  | ✓      | -     |
| D44                      | Division 2 Nameplate   | ✓      | ✓     |
| K08                      | F-1, -2, -3 Assembly w/ Top-Mount Spacer   | -      | ✓     |
| K09                      | F-2 Assembly   | ✓      | ✓     |
| K20                      | Roller Bearings  | ✓      | ✓     |
| K44                      | Additional Replica of Main Motor Nameplate   | ✓      | ✓     |
| K51                      | IP56 Shaft Seal  | ✓      | ✓     |
| K91                      | INPRO / Seal® - Drive End  | ✓      | ✓     |
| K92                      | INPRO / Seal® - Opposite Drive End   | ✓      | ✓     |
| K97                      | Clockwise Viewed from Drive End  | ✓      | ✓     |
| K98                      | Counter-Clockwise Viewed from Drive End – 2 poles  | ✓      | ✓     |
| K98                      | Counter-Clockwise Viewed from Drive End – 4 poles +  | ✓      | -     |
| K99                      | Bi-Directional Rotation (when applicable)  | ✓      |       |
| L17                      | Mount Customer Supplied ½ Coupling*  | ✓      | -     |
| L18                      | Both Bearings Insulated, 2 poles   | ✓      | ✓     |
| L18                      | Both Bearings Insulated, 4 poles +   | ✓      | ✓     |
| L29                      | Low Noise Fan Housing  | -      | ✓     |
| L70                      | NEMA Type I, Fab Steel (FS1.5 – 13,900 cu.in.volume)                                       | -      | ✓     |
| L77                      | Sealed leads (Chico)   | ✓      | ✓     |
| R03                      | Robert Shaw vibration switch   | ✓      | ✓     |
| R05                      | Provision for vibration sensors, PMC/Beta  | ✓      | ✓     |
| R08                      | Provisions for Accelerometer/Velometer - Golf Tee  | ✓      | ✓     |
| R16                      | Thermostat - (2) TI Klaxon; normally closed contacts                                       | ✓      | -     |
| R30                      | Tachometer   | -      | ✓     |
| R39                      | Shaft Grounding, Ground Brush DE   | -      | ✓     |
| R45                      | Stainless Steel 304 Series Hardware  | -      | ✓     |
| R57                      | Breather-Drain, Stainless Steel  | -      | ✓     |
| R61                      | IEEE 841 Features  | ✓      | ✓     |
| R79                      | (2) 100 Ohm Platinum (0.00385 TCR) DIN Std, single-element RTDs, 3-wire, 1/brg, stick-type | ✓      | Std   |
| S00                      | Anti-Fungal Treatment, Tropicalization Moisture  | ✓      | -     |
| S98                      | Sea Freight Packaging  | ✓      | ✓     |
| Y80                      | Additional derate nameplate (SF, Altitude, or Ambient Temperature)                         | ✓      | ✓     |
| Y82                      | Auxiliary Nameplate (Max. 40 Characters)   | ✓      | ✓     |

### Comprehensive Service and Support

Siemens warranty, parts and service request call center is available 24/7, providing fast and efficient responses. Siemens service technicians take pride in finding the right solution, the first time, every time.

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