Nidec HD15P1E

Nidec HD15P1E Electric Motor Instruction Manual

Model: HD15P1E | Brand: Nidec

1. Introduction

This instruction manual provides essential information for the safe and efficient installation, operation, and maintenance of your Nidec HD15P1E 15 hp 3600 RPM TEFC Electric Motor. Please read this manual thoroughly before attempting to install or operate the motor. Retain this manual for future reference.

2. Safety Information

WARNING: Failure to follow these safety instructions could result in serious injury, death, or property damage.

- Always disconnect power before performing any installation, maintenance, or repair work on the motor.
- Ensure all electrical connections are made by a qualified electrician and comply with local and national electrical codes.
- Proper grounding is essential to prevent electrical shock.
- Keep hands, clothing, and tools clear of rotating parts during operation.
- Do not operate the motor in environments exceeding its specified temperature or humidity ratings.
- Ensure adequate ventilation around the motor to prevent overheating.
- Wear appropriate personal protective equipment (PPE) such as safety glasses and gloves.
- The motor can become hot during operation. Avoid direct contact.

3. Product Overview

The Nidec HD15P1E is a robust 15 horsepower, 3600 RPM, three-phase electric motor designed for hostile duty applications. It features a Totally Enclosed Fan Cooled (TEFC) enclosure, a durable cast iron frame, and a rigid base mount. This motor is suitable for continuous duty and offers a 1.15 service factor. Its construction includes corrosion-resistant paint, a stainless steel nameplate, and zinc-plated hardware for enhanced longevity in demanding environments.
Key features include:

- 15 hp, 3600 RPM, 208-230/460 Volts, Three Phase
- NEMA 254T Frame with 1-5/8" Diameter x 4" Keyed Shaft
- TEFC (Totally Enclosed Fan Cooled) enclosure
- Rigid Base Mount, Reversible operation
- Ball Bearings, Class F Insulation
- Suitable for 20:1 variable torque; 5:1 constant torque on inverter power

Figure 1: Nidec HD15P1E 15 hp Electric Motor. This image shows the general appearance of the Nidec HD15P1E electric motor, highlighting its robust construction and fan-cooled design.

4. Setup

4.1 Mounting

The motor features a rigid base mount. Ensure the mounting surface is flat, stable, and capable of supporting the motor's weight (approximately 250 lbs) and operational forces. Secure the motor firmly using appropriate bolts through the four mounting holes. Refer to the specifications section for mounting dimensions.

4.2 Electrical Connection

This is a three-phase motor operating at 208-230/460 Volts. The wiring diagram is located on the motor's nameplate. Connect the motor to a power supply that matches the specified voltage and phase. Ensure proper

wire sizing, circuit protection, and grounding according to all applicable electrical codes. Overload protection is not built into the motor and must be provided externally.

4.3 Shaft Alignment

When coupling the motor to driven equipment, ensure precise shaft alignment to prevent excessive vibration and premature bearing wear. The motor has a keyed shaft with a diameter of 1-5/8 inches and a length of 4 inches.

5. Operating Instructions

Before starting the motor, verify all connections are secure and that no obstructions are present around the shaft or fan. The motor is designed for continuous duty. It can be operated in a reversible direction. For variable speed applications, the motor is suitable for 20:1 variable torque and 5:1 constant torque when used with an inverter power supply.
Monitor the motor during initial startup for unusual noises, vibrations, or excessive heat. If any anomalies are detected, immediately shut down the motor and investigate the cause.

6. Maintenance

Regular maintenance ensures the longevity and optimal performance of your Nidec electric motor.

6.1 Routine Checks

- **Periodically inspect:** The motor for dirt, dust, or debris accumulation, especially on the fan and cooling fins. Clean as necessary to maintain efficient cooling.
- **Check for:** Loose connections, damaged wiring, or signs of corrosion.
- **Listen for:** Unusual noises from bearings or other components.
- **Monitor:** Motor temperature during operation.

6.2 Condensation Drains

The motor is equipped with condensation drains with plastic plugs. Periodically check and clear these drains to prevent moisture buildup inside the motor, which can lead to insulation breakdown and corrosion.

6.3 Bearings

This motor uses ball bearings. Refer to the motor's nameplate or Nidec's official documentation for specific lubrication requirements and schedules, if applicable. Over-lubrication can be as detrimental as under-lubrication.

7. Troubleshooting

If the motor exhibits abnormal behavior, refer to the following basic troubleshooting guide. For complex issues, contact a qualified service technician.

Problem	Possible Cause	Solution
Motor does not start	No power, incorrect wiring, tripped breaker/fuse, seized bearings, open circuit.	Check power supply, verify wiring against nameplate diagram, reset breaker, inspect for mechanical binding, test windings.

Problem	Possible Cause	Solution
Motor overheats	Overload, insufficient ventilation, high ambient temperature, incorrect voltage, bearing issues.	Reduce load, clear obstructions from fan/fins, ensure proper ambient conditions, verify voltage, inspect bearings.
Excessive vibration	Misalignment, loose mounting, unbalanced load, worn bearings.	Check shaft alignment, tighten mounting bolts, balance load, inspect and replace bearings if necessary.
Unusual noise	Worn bearings, foreign objects, loose components.	Inspect bearings, remove foreign objects, tighten loose parts.

8. Specifications

The following table details the technical specifications for the Nidec HD15P1E electric motor:

Brand	Nidec
Model Number	HD15P1E
Horsepower (HP)	15 hp
Speed (RPM)	3600 RPM
Voltage	208-230/460 Volts
Amperage	35.0/17.4 amps
Phase	Three Phase
Frame Size	NEMA 254T
Shaft Dimensions	1-5/8" Diameter x 4" Length, Keyed
Enclosure Type	TEFC (Totally Enclosed Fan Cooled)
Service Factor	1.15
Overload Protection	None (External required)
Mounting	Rigid Base
Bearings	Ball Bearings
Insulation Class	Class F
Reversible	Yes
Duty Cycle	Continuous Duty
Ambient Temperature	40°C (Maximum)
Item Weight	250 Pounds
UPC	786382121358

Dimensional Information (Frame 254T)

All dimensions are in inches and millimeters. Refer to the diagram for visual representation of these measurements.

Unit	A	B	C	D (-.06)	E	2E (+.03)	G	H (+.05)	J	K	N	O	P²
IN	12.50	12.00	24.94	6.25	5.00	10.00	.75	.53	2.44	4.25	4.38	12.63	13.47
MM	318	305	633	159	127	254	19	13	62	108	111	320	342

Unit	T (-.001)	U (MIN)	V (MIN)	W	AA	AB	AC	AF	BA	BS	EV	ES (MIN)	SQ KEY
IN	2.03	1.625	3.75	.38	1.25	11.38	8.91	2.63	4.25	5.00	1.00	2.91	.375
MM	52	41.28	95	10		289	226	67	108	127	25	74	9.53

Frame	Unit	2F (+.03)
254T	IN	8.25
	MM	210
256T	IN	10.00
	MM	254

9. Warranty and Support

This Nidec electric motor comes with a **Year Manufacture Warranty**. For specific terms and conditions of the warranty, please refer to the documentation provided with your purchase or contact Nidec customer support directly.
For technical assistance, parts, or warranty claims, please contact Nidec customer service. You may also visit the official Nidec website for additional resources and support information.
Note: Unauthorized repairs or modifications may void the product warranty.