



NHD SERIES
DESIGN D MOTORS
OPERATION AND
MAINTENANCE MANUAL

0LHD.412.5003 | 201506

Introduction

This manual introduces the motor's structure, requirements for storage, handling, transportation and installation, and the requirements of operation and maintenance.

NOTE: These instructions must be followed to ensure safe and proper installation, operation and maintenance of the machine. They should be brought to the attention of anyone who installs, operates or maintains the motor or associated equipment. The machine is intended for installation and use by qualified personnel, familiar with health and safety requirements and national legislation. Ignorance of the instructions may invalidate all applicable warranties.

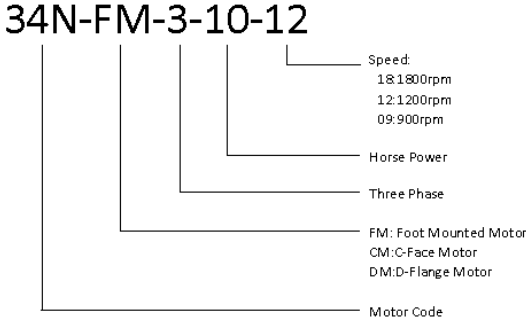
Features and Application

The motors are executed standard MG1-2011, and meet all requirements of IEC 60034-1 and Chinese GB 755-2008. The motors can operate as rated performance on the following conditions:

- The altitude is no more than 1000 m.
- Environment temperature $-15^{\circ}\sim+40^{\circ}$.
- No significant shaking and impact vibration.
- The installation gradient with the vertical is no more than 15 degree.
- Rated voltage 230V/460V/796V or 575V (some ratings adopt single voltage, please check the nameplates for details).
- Rated frequency is 60Hz.

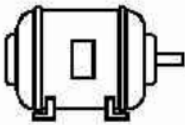
Model Codes and Meaning

Example of the model code for these high slip design D motors:

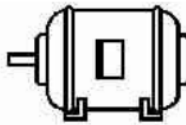


Machine assembly symbols

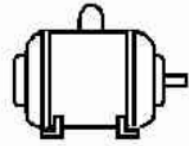
Floor mountings:



ASSEMBLY F-1

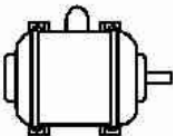


ASSEMBLY F-2

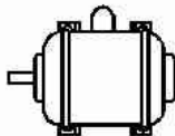


ASSEMBLY F-3

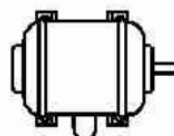
Wall mountings:



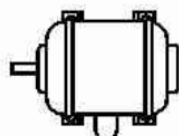
ASSEMBLY W-1



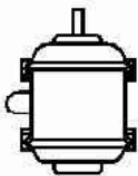
ASSEMBLY W-2



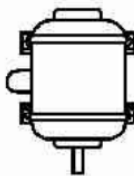
ASSEMBLY W-3



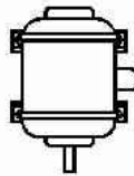
ASSEMBLY W-4



ASSEMBLY W-5



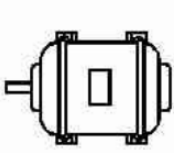
ASSEMBLY W-6



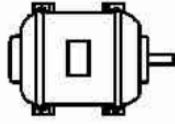
ASSEMBLY W-7



ASSEMBLY W-8



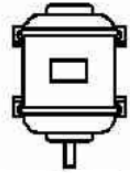
ASSEMBLY W-9



ASSEMBLY W-10

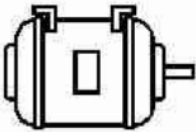


ASSEMBLY W-11

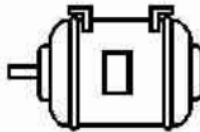


ASSEMBLY W-12

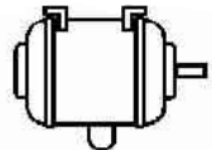
Ceiling mountings:



ASSEMBLY C-1



ASSEMBLY C-2



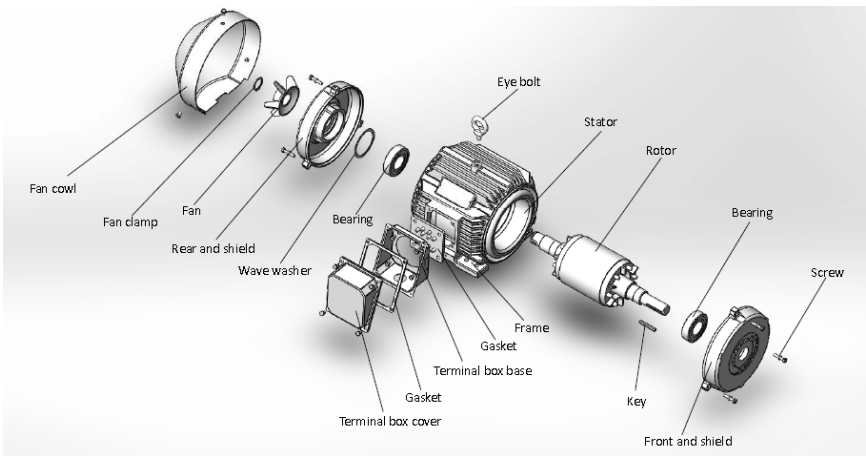
ASSEMBLY C-3

The cooling method is IC411.

The degree of protection is IP54.

Motor outline drawing and dimension sheet are provided upon requests.

Structure



Technical Parameters and Maintenance Instruction

power (HP)	Synchronous speed 1200
	FRAME
3	213T
5	215T
7.5	254T
10	256T
15	284T
20	286T
25	324T
30	326T
40	365T
50	404T
60	405T
75	444T
100	445T

Other technical parameters meet MG1-2011 for all motors. The performance data have been marked on the motors' nameplates.

Connection: Please connect wires according to the connecting diagram on the motor nameplate.

Bearings: The bearing sizes as showing on motor nameplate.

Installation and operation

WARNING: Disconnect and lock out before working on the motor or the driven equipment.

Preparation before installation:

1. Check the package if it is intact before unpacking.
2. Clear motor surfaces; remove moisture, rust and other contaminants from all uncovered metal surfaces (such as shaft extension, etc.).

Before installation, the motors should be checked according to following items, if the motor does not meet the requirements, the motor should not be used:

1. Check data on the motor nameplate, make sure the motor meets appliance requirements.
2. All parts are assembled correctly and securely.
3. Bearing grease injection and discharge devices are unblocked, bearings are greased correctly.
4. Under cold state (room temperature), check the stator windings' grounding insulation resistance, it should not be less than 10M Ω .
5. Under free state, the motor rotor can be manual rotated, it should be smooth and no obvious stagnation or noise.

The connection of motor and power cable

WARNING: Electrical work must be carried out only by skilled persons.

If user requires conduit box, the external diameter of cable should match cable entry diameter. The hole size of conduit boxes are given as following:

Frame Size	Steel Box(Dia.)(mm)	Cast Iron Box(Optional)
210T	2-24	NPT 1"
250T	2-36	2-NPT 1-1/4"
280T	2-36	2-NPT 1-1/4"
320T	2-44	2-NPT 1-1/2"
360T	2-44	2-NPT 1-1/2"
400T	2-64	2-NPT 2"
440T	2-64	2-NPT 2"

The motor should be grounded correctly. Groundings must be carried out according to local regulations before the machine is connected to the supply voltage.

The motor must be connected per the connection diagram. After motor wired, check all connections prior to turning on power for no-load test run. Observe whether the motor has abnormal situation. After idle to a normal state, the motor is ready for on-load run.

Transportation and Storage

The motor should be transported at appropriate packing situation. When packing, the motor must be fixed firmly on the bottom of crate or box. When transporting, mount the motor to prevent turning over to avoid damage.

Protect the shaft carefully; never noose the shaft to left motor.

Store motor in a dry, dust free and vibration free indoor location. Keep warehouse temperature above 3°C, the air in storage location should be dry and well ventilated.

Rotate the motor shaft and add grease every six months; test the stator windings' grounding insulation resistance, a minimum of 10MΩ is recommended.

Maintenance

It is strictly prohibited to open the conduit box, or dismantle motor parts when the motor is charged. Disconnect motor from power supply before opening conduit box or working on motor.

Frames 210T through 280T are furnished with double sealed or shielded bearings, pre-lubricated prior to assembly. The bearings are designed for average 100,000 hours operation under standard condition. Grease fittings are not supplied. Re-lubrication is not required.

Frames 320T through 440T are furnished with double/single shielded or open ball or roller bearings (Refer to nameplate information). The motor furnished with open bearings require relubrication periodically. These motors have been lubricated prior to test. Before start-up it is recommended to apply approximately 30 grams (1 oz.) of grease, because of possible settling of grease during storage and handling. However, oil leakage around bearing caps indicates excess grease should be purged out by operating motor temporarily with grease relief open.

Recommended Relubrication Intervals

Frame Size	Rated Speed (RPM)		
	3600	1800	1200
Over 210T to 280T incl.	3600 Hrs.	9600 Hrs.	15000 Hrs.
Over 280T to 360T incl.	2200 Hrs.*	7400 Hrs.	12000 Hrs.
Over 360T to 440T incl.	2200 Hrs.*	3500 Hrs.	7400 Hrs.

* Lubrication interval for 6312, 6313 or 6315 bearings that are used in 360T through 440T frames, 2 pole motors. If roller bearings are used, or operated for vertical motors, bearings must be lubricated more frequently, with the interval half of its original length.

WARNING: Beware of all rotating parts! Grease can cause skin irritation and eye inflammation. Follow all safety precautions specified by the manufacturer.

When change grease, exhaust waste grease first (try best to clean up). New grease should full fill bearing gap; 75% full in the space of inner bearing cap; and 30% full in the space of outer bearing cap.

If the shutdown period is long and in cold environment, it is necessary to check grease quality before restarting motor. Make sure they're all in good conditions. If the ambient temperature is too low, choose the low temperature resistance grease.

Recommended grease brand:

- Chevron Oil – SRI No.2 (Polyurea base)
- Exxon Mobil – Polyrex EM (Polyurea base)
- Shell Oil –Stamina Grease RLS 2 (Polyurea base)
- Texaco –Polystar RB2 (Polyurea base)

WARNING: Do not mix different types of grease. Incompatible lubricants may cause bearing damage. Lithium complex and Lithium base greases can't be mixed with polyurea base greases.

Do not bump, scratch, rust parts mounting surfaces.

When motor gets damped, the drying process must be done before powering on.

Use eyebolt to lift motor; do not hook at any other positions.