

**Information Sheet # 05**

Your Reliable Guide for Power Solutions

# ELECTRIC MOTOR STORAGE

## Proper Storage of Spare Motors

**1.0 Introduction:**

When an electric motor is expected to be stored for an appreciable time before it is placed into service, certain steps should be taken to ensure that it will be suitable for operation when it is needed. Improper motor storage will result in seriously reduced reliability and failure.

*This information sheet discusses the storage and maintenance of an electric motor for both short-term (weeks or months) and long-term (years).*

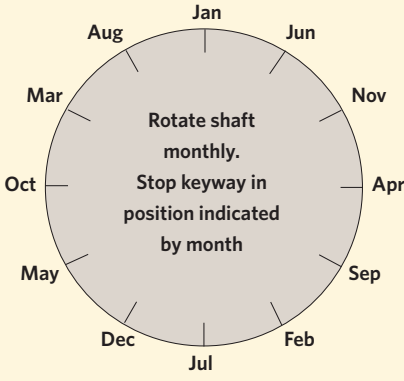
**2.0 Record Keeping:**

One aspect of motor storage that is easy to overlook is the importance of keeping a good record that can be retrieved readily. A good method is to attach a form to each motor for recording the date it was placed in storage when all maintenance procedures were completed, and the results of all tests that were performed during the storage period (Figure 1). For motors in long-term storage, a good practice is to replace the form annually (or at other designated intervals) and then file the previous form (or an electronic copy) for future reference.

Customer: \_\_\_\_\_  
 Date placed in storage: \_\_\_\_\_  
 Bearing type:  Ball/Rolling Element  Sleeve

Year: \_\_\_\_\_

Insulation resistance (megohmmeter) test results					
	IR Value	Initials		IR Value	Initials
Jan			Jul		
Feb			Aug		
Mar			Sep		
Apr			Oct		
May			Nov		
Jun			Dec		



	Initials
Jan	
Feb	
Mar	
Apr	
May	
Jun	
Jul	
Aug	
Sep	
Oct	
Nov	
Dec	



Figure 1

To fulfill our commitment to be the leading supplier, the Layco Electric Innovations team ensures they are always up-to-date with the current industry standards as well as industry trends. As a service, our **Information Sheets** are circulated on a regular basis to existing and potential power customers to maintain their awareness of changes and developments in standards, codes and technology within the power and motor control industry.

### 3.0 Suitable Storage Areas:

Where possible, motors should be stored indoors in a clean, dry area with minimal ambient vibration. Motors should be stored in accordance with their intended use. Store horizontal motors in a horizontal position and vertical motors in a stable vertical position. Precautions should be taken to prevent rodents, snakes, birds, or other small animals from blocking ventilation or drain openings; loosely wrap the motor, covering openings. If the storage area is not climate controlled, heating should be used to prevent condensation inside the motor. The winding temperature must be kept above the dewpoint (this is usually accomplished by maintaining the winding temperature at 5-10°C (10-20°F) above ambient).

**Chart 1**

Storage Environment	Shaft Rotation Frequency
Indoor – Wholly Controlled Atmosphere	Every two (2) months
Indoor – Partially Controlled Atmosphere	Once per month
Outdoor – Inland Dry Climate	Once per month
Outdoor – Inland Humid Climate	Once per week
Outdoor – Salty and Industrial Atmosphere	Once per week

### 4.0 Prepare Motor Surfaces:

There should be some sort of rust preventative coating on the exposed machined surfaces of the motor. A viscous corrosion inhibitor should remain in place for the duration of the storage period. In humid and rainy/snowy environments, it is a good idea to routinely paint as much of the interior surface as practical.

### 5.0 Bearing Protection:

For long-term storage, completely fill the bearing cavities with compatible grease to prevent rust and corrosion staining that can occur should moisture collect between the balls and races.

### 6.0 Winding Protection:

Windings must maintain a temperature of 10° F to 20° F above ambient temperatures to prevent degradation of the winding insulation. You can use either space heaters if supplied with the motor, or a dehumidifier in the same room as the motor.

Take a baseline insulation resistance (IR) measurement before storing the motor then a second measurement before installing the motor. Any decrease in the measurement can be addressed before installation, saving time and labor.

Take a baseline polarization index of form coil windings before storage then again before installation. The PI should be taken once each year the motor is in storage, if applicable.

### 7.0 Carbon Brush Protection:

To prevent a chemical reaction in DC machines, some synchronous machines, and wound rotor machines, lift the brushes away from the commutator and/or slip rings.

To prevent weakening the springs, place them in a relaxed position, if possible.

### 8.0 Placing the Motor In Service:

To ensure proper operation when the motor is removed from storage and put in service, perform the following:

- Motors should be thoroughly inspected and cleaned to restore to an “As Shipped” condition.
- Motors that have been subjected to vibration must be disassembled and each bearing inspected for damage.
- Oil and/or grease must be completely changed using lubricants and methods recommended on the motor’s lubrication plate.
- The winding must be tested to obtain insulation resistance and dielectric absorption ratio.
- Record vibration levels.
- Evaluate the spectra on motors with rolling element bearings for any signs of bearing fault frequencies.
- Perform a vibration analysis during start-up.
- Document uncoupled baseline vibration levels.



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