Electromechanical Resource Center

Motor + Data Verification

An essential step to ensuring a quality installation and reliable operation of a repaired or replacement motor is recording and verifying the motor data.

Use a motor data sheet to record the nameplate data and pertinent electrical and mechanical parameters at the time of installation and startup. These baseline values will be invaluable for determining the application's life-cycle cost and recognizing any changes in operating characteristics.

Here are eight steps you can take to document this data.

- Confirm that the motor is appropriate for the application by verifying that its mechanical and electrical characteristics are suitable for the intended application.
- For an adjustable-speed drive (ASD) or variable-frequency drive (VFD) application, use an "inverter-duty" motor (or provide suitable filtering) and keep the supply cable length within the motor manufacturer's guidelines. Use supply conductors designed for ASD circuits to reduce the risk of overvoltages and transient voltages at the motor terminals, and a shaft grounding system or insulated bearings to prevent damage from stray shaft currents.
- Record the nameplate data. Serial numbers are usually coded to indicate the month and year of manufacture. For extra assurance, attach a digital photo of the nameplate for reference in case of errors in the recorded data.
- Make sure the motor's bearings are suitable for the driven load (e.g., a drive end roller bearing for high radial load belted application).

Attach a digital photo of the nameplate for reference in case of errors in the recorded data.

- Review the manufacturer's lubrication specifications and ensure the lubrication points are accessible.
- Using a digital low-resistance ohmmeter (DLRO), record the temperature-corrected insulation resistance of the motor and the line-to-line resistance of the winding.
- Verify that the motor control and overload protection are sized properly for the motor rating.
- Inspect and test motors taken from storage to ensure they haven't degraded.

Use the sample data sheet on the next two pages as a baseline for the installation data to collect. Contact a member of EASA for guidance in completing this information and how to ensure you get the most from your electric motors.

Learn More

For more considerations regarding the installation process, see EASA's materials on:

- Basic system considerations
- Motor system baselines
- Safety & environment considerations
- Motor foundation & base
- Electrical connections

Content adapted from EASA's "Getting The Most From Your Electric Motors." Access the full publication at **go.easa.com/electricmotors**.

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Appendix A: Motor and baseline installation data

Sample data sheet

Motor ID no.	Facility		Date
Manufacturer	Model	Type	Serial no.
Frame size	Enclosure	Voltage	RPM
Hp / kW	Full-load amps	Full-load efficiency (%)	☐ 1 phase ☐ 3 phase
Code letter	Design letter	Insul. class	Motor weight
DE bearing no.	ODE bearing no.	Application(s)	
Date installed _____ No-load amps ____ watts ____	Baseline data ☐ Yes ☐ No	Vibration spectra ☐ Yes ☐ No	Alignment data ☐ Yes ☐ No
Motor condition / status ☐ New ☐ Repaired ☐ Storage		Motor location	
Reason for replacement			
Repair history			
Comments (if any)			

PHYSICAL INSPECTION (check applicable)

☐ Damaged or missing parts ☐ Exterior paint coating deficient ☐ Shaft blocking missing or inadequate

☐ Lubricant leakage ☐ Shaft protective coating deficient ☐ No visible defects

Description of any defects or anomalies _____

STATIC TESTS (MOTOR OFFLINE)

INSULATION RESISTANCE TEST ☐ N/A ☐ N/P

Result	Test voltage	Resistance (megohms)
☐ Pass ☐ Fail	_____ Volts DC	1-min _____ MΩ 10-min _____ MΩ

DIELECTRIC ABSORPTION RATIO TEST ☐ N/A ☐ N/P

Result	60:30 sec (DAR)	Condition
☐ Pass ☐ Fail	< 1.1	Poor
	1.1 to 1.24	Questionable
	1.25 to 1.3	Fair
	1.4 to 1.6	Good
	> 1.6	Excellent

Measure insulation resistance (IR) at 30 seconds and 60 seconds with a digital meter. Divide 60-second reading by 30-second reading.

HIGH-POTENTIAL TEST ☐ N/A ☐ N/P

Result	Test voltage (indicate AC or DC)
☐ Pass ☐ Fail	_____ Volts ☐ AC ☐ DC

SURGE TEST ☐ N/A ☐ N/P

Result	Test voltage
☐ Pass ☐ Fail	_____ Volts

SINGLE-PHASE ROTOR TEST ☐ N/A ☐ N/P

Result	Current (amps)	Ratio (max. / min.)
☐ Pass ☐ Fail	Max._____ Min. _____	_____

WINDING RESISTANCE TEST ☐ N/A ☐ N/P

Result	Resistance (indicate ohms or milliohms)		
	Leads 1 - 2	Leads 2 - 3	Leads 3 - 1
☐ Pass ☐ Fail	_____ ☐ Ω ☐ mΩ	_____ ☐ Ω ☐ mΩ	_____ ☐ Ω ☐ mΩ

If more than 3 leads, identify lead connections (e.g., 1-6, 2-4, 3-5, etc.)

ACCESSORIES TESTS ☐ N/A ☐ N/P

Working	Device type
☐ Yes ☐ No	Space heaters

OUTPUT SHAFT EXTENSION RUNOUT ☐ N/A ☐ N/P

Result	Shaft extension runout	
☐ Pass ☐ Fail	_____ (in or mm)	Measure with a dial indicator.

OUTPUT SHAFT EXTENSION DIAMETER ☐ N/A ☐ N/P

Result	Shaft extension diameter	
☐ Pass ☐ Fail	_____ (in or mm)	Measure with a micrometer.

Static test comments (if any) _____

Note: N/A means "not applicable; N/P means "not performed.

Sample data sheet – continued

ALIGNMENT DATA ☐ N/A ☐ N/P

		RPM	Installation Mils	Installation mm	In service Mils	In service mm
Short couplings	Parallel offset					
	Angular misalignment					
Soft foot		All				

		RPM	Installation Mils	Installation mm	In service Mils	In service mm
Couplings w/ spacers	Parallel offset per in of spacer length					
Soft foot		All				

DYNAMIC TESTS (MOTOR ONLINE)

NO-LOAD TESTS ☐ N/A ☐ N/P

Date	Amps	Watts
Comments		

Dynamic test comments (if any) _____

_____

VIBRATION ANALYSIS ☐ N/A ☐ N/P

Vibration spectra taken: ☐ Yes ☐ No
(If Yes, skip vibration measurements below.)

Vibration velocity measured in ☐ in/sec ☐ mm/sec

Result	Drive end/ bottom	Opposite drive end/top
☐ Pass ☐ Fail	Horizontal _____	Horizontal _____
	Vertical_____	Vertical_____
	Axial_____	Axial_____

Note: N/A means "not applicable; N/P means "not performed.

NOTES

EASA The Electro•Mechanical Authority