

	Standard	Asset Management
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Title: **Transport of Power Station Electric Motors Standard**

Unique Identifier: **240-56361435**

Alternative Reference Number: **N/A**

Area of Applicability: **Generation**

Documentation Type: **Standard**

Revision: **3**

Total Pages: **7**

APPROVED FOR AUTHORISATION

☒ GENERATION ENGINEERING
DOCUMENT CENTRE ☎ x4962

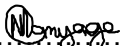
Next Review Date: **September 2025**

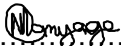
Disclosure Classification: **CONTROLLED DISCLOSURE**

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PCM Reference : **240-53459028**

SCOT Study Committee Number/Name : **Rotating Electrical Machines**

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1. INTRODUCTION

This document contains information regarding the Transportation of Power Stations Electric Motors.

2. SUPPORTING CLAUSES

2.1 SCOPE

2.1.1 Purpose

- A. This standard specifies the minimum Eskom's requirements for pre-shipping preparation and transportation of all Power Station electrical motors.
- B. The correct preparation, transporting and offloading of motors that are returned after repairs is important to ensure that motors are not damaged during transportation. If these motors are prepared and handled incorrectly, damage that compromises the serviceability of the motor can occur during transportation.

2.1.2 Applicability

The requirements of this standard are applicable to all Eskom Generation motors.

2.1.3 Exclusions

This standard excludes the storage requirements for boiler water circulation pump.

2.2 NORMATIVE/INFORMATIVE REFERENCES

2.2.1 Normative

- [1] 240-50237155 New MV Motor Procurement Standard
- [2] 240-97049386 New MV Synchronous Motor Procurement Standard
- [3] 240-57617975 New LV Motor Procurement Standard
- [4] 240-141142125 New DC Motor Technical Schedule AB Template
- [5] 240-56360387 Storage of Power Station Electric Motors
- [6] 240-89217674 Refurbishment and Repair of Power Station Electrical Motors Work Instruction

2.2.2 Informative

None

2.3 DEFINITIONS

Abbreviation	Description
OEM	Original Equipment Manufacturer
PT	Platinum

2.3.1 Classification

Controlled Disclosure: Controlled Disclosure to External Parties (either enforced by law, or discretionary).

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2.4 ABBREVIATIONS

None

2.5 ROLES AND RESPONSIBILITIES

- A. The Lead Design Engineer or System Engineer shall be responsible to ensure that this standard is implemented in the existing plant and new projects.
- B. The Design Review Team checks compliance to this standard during the various stages of review as part of the project lifecycle model (PLCM).
- C. The Motor Care Group reviews and updates this standard.

2.6 PROCESS FOR MONITORING

- A. The document shall be updated in accordance with the Eskom document review process or as business needs change.

2.7 RELATED/SUPPORTING DOCUMENTS

None

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3. TRANSPORT OF POWER STATION ELECTRIC MOTORS

3.1 PREPARATION FOR TRANSPORT

Prior to motor loading onto shipping transport, the following requirements shall be met:

- A. All shaft extensions, exposed key-ways, half couplings, jacking screws and any other unpainted surfaces must be protected with anti-rust preparation.
- B. The oil in the housings of the white metal bearings must be drained. The power station shall specify of the following two options for the preparation of sleeve bearings
 - i. The bearing shells shall be replaced with wooden dummy bearings, dried and put into sealed storage boxes that shall be marked, with the motor Serial Number & Bearing Identification, and fixed onto the motor.
 - ii. The bearing shells shall remain fitted.
- C. Where lubricant is fed from an external source, the inlet and the outlet flanges must be sealed to prevent ingress of contaminants.
- D. Bearing lubrication openings, terminal boxes which do not have covers, and openings without terminal boxes or gland plates shall be suitably sealed off with a plastic covering.
- E. The thermocouple/PT100 entries must be sealed off to prevent ingress of contaminants.
- F. A suitable shaft-locking device must be used to block the shaft from axial and radial movement during transportation.
- G. Water heat exchanges, having had tubes drained and dried-out, shall have all inlets and outlets sealed.
- H. Unless otherwise stated, motors with enclosure less than IP44 shall be enclosed in a wire mesh so that vermin may not enter.

3.2 MOTOR TRANSPORTATION

The following requirements shall be met for motor shipment:

- A. Motors shall be placed and secured on suitable packers e.g. wooden slats, rubber matting (conveyor belting), to prevent steel on steel contact and to absorb shock.
- B. Vertical motors must be transported in the vertical position and must be mounted onto suitable wooden transport stands or the OEM transport cradle.
- C. The motors must be secured using the proper lifting points to prevent movement or chafing. Under no circumstances may securing ropes, belts or chains chafe against the units. If securing equipment does push up against the unit, suitable padding shall be inserted at this point to prevent damage to the unit or its paint work.
- D. Motors, which are shipped without a cooler, must have the exposed top securely covered with a hard plastic sheeting or cardboard. Openings for lifting lugs must be made on the cover. The motors must be covered with tarpaulin when in transit.
- E. Regardless of weather conditions, drip proof motors or open ventilated or $\leq$ IP44 motors must be covered with plastic or cardboard and then a tarpaulin to prevent the ingress of dust or water during transportation. When a tarpaulin is used, the motor must first be covered with plastic sheeting or cardboard to prevent it from dirtying or marking the paintwork.

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3.3 TRANSPORT OF LOOSE COMPONENTS

3.3.1 Shafts, rotors and armatures

- A. When a shaft, rotor, or armature is to be shipped independently, the shaft extensions, bearing journals and any other important or ground journals must be painted with an anti-rust preparation.
- B. Prior to transport, such journals must be protected by securely wrapping them in rubber or gasket sheeting.
- C. During transport, a shaft, rotor or armature must be placed on a suitable pallet, cradle or stand which must prevent any movement, rolling, chafing or banging of parts against each other. They must then be covered with a suitable tarpaulin.
- D. During transport of shaft, rotor or armature on a suitable pallet, cradle or stand, ensure that it is strapped at the position where the shaft is supported to prevent bowing.

3.3.2 Stator Cores

- A. During transport, wound or unwound stator cores must rest on the back of the core on a suitable pallet, cradle or stand that must prevent damage being done to the laminations or machined surfaces. They must be secured to prevent movement, rolling, chafing or banging against each other. Under no circumstances are the overhangs of wound stator cores to be damaged in any way. The wound stator cores must be placed or secured in such a way as to prevent contact between the windings and any other object or part of the vehicle.
- B. Stator cores must be covered with clean plastic or cardboard and then a tarpaulin to prevent ingress of dust or water during transportation under all circumstances.

3.3.3 Stator frames and frame carcasses

- A. During transport, stator frames and frame carcasses must be placed on suitable packers e.g. wooden slats or rubber matting, to prevent steel on steel contact and to prevent shock.
- B. Stator frames and frame carcasses must be secured by the proper lifting points to prevent movement or chafing.
- C. Under no circumstances may securing ropes, belts or chains be allowed to chafe the stator frame and frame carcasses.
- D. If securing equipment does push up against the stator frame and frame carcase, suitable padding must be inserted at this point to prevent damage to the stator frames and frame carcasses or its paintwork.

3.3.4 Other loose components

- A. Bearing housings must be suitably sealed with a plastic sheet to prevent ingress of dirt or moisture.
- B. Bearings must be wrapped in their original plastic and boxes and must be packed flat to prevent false brinelling damage to the bearing.
- C. If many small loose components are to be transported, they must be individually and suitably wrapped in a packing material and then packed into a suitable crate or box.

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4. AUTHORISATION

This document has been seen and accepted by:

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5. REVISIONS

Date	Rev.	Compiler	Remarks
November 2012	0.1	MJ Manyage	Prepare for TDAC from 36-397
May 2013	1	MJ Manyage	Final Document for Publication
July 2016	1.1	MJ Manyage	Revision date extension Only no changes to document, Changes in title page signatories from TDAC to SCOT, Inclusion of abbreviations table. Final Draft Document
July 2016	2	MJ Manyage	Final Rev 2 document for Authorisation and Publication
August 2020	2.1	MJ Manyage	Revision update
August 2020	2.2	MJ Manyage	Draft revision after Motor Care Group review
September 2020	2.3	MJ Manyage	Draft revision after REM SC review
September 2020	3	MJ Manyage	Final Rev 2 document for Authorisation and Publication

6. DEVELOPMENT TEAM

The following people were involved in the development of this document:

- MJ Manyage

7. ACKNOWLEDGEMENTS

None

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