



PRODUCT STANDARD
TME DIVISION, BHOPAL

TM 11486 Rev 03

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TME/2011

**General Specification for Carbon Steel Casting Components of 3 Phase
Traction Motor to Type 6FRA 6068 / 6FXA 7059**

1.0 Scope :

- 1.1 The material covered by this specification are required to be used in manufacture of 3-phase traction motor type 6FRA6068 / 6FXA7059. The materials shall comply with this specification instruction in chemical composition, mechanical properties and all other listed requirements.

2.0 Specification :

- 2.1 The material shall confirm to IS:1030'89 Gr. 230-450W. The chemical composition and mechanical properties shall conform to the above standard.

3.0 Manufacturing :

- 3.1 The steel casting shall be made from electric process only. Bessemer, basic oxygen or a combination of these processes are not acceptable. In case any other process is proposed to be employed by the tenderer, prior approval of the BHEL should be obtained.

4.0 Test and test method :

- 4.1 Quantum of inspection shall be as follows:

- a) Dimension (finished) - 20% of offered quantity
- b) Chemical analysis - 2 samples from each batch
- c) Tensile, yield, elongation - 2 samples from each batch and impact test
- d) Bend test - 2 samples from each batch
- e) Radiographic - 5% of offered qty. selected at random
(Only for stator chamber/DE & NDE, End frame / DE & NDE and Rotor End Ring)
- f) Magnetic particle or liquid Penetrant test (after finish) - 100% of offered qty.

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4.2 Non-Destructive Test

4.2.1 Castings shall be subjected to radiographic inspection (5% offered qty. selected at random).

4.2.2 Radiographic test shall be done as per ASTM E689-95 Radiograph shall be graded in accordance with ASTM E-446 and ASTM E-186 as per Table – 1.

TABLE -1	
Shrinkage	3
Inclusion	3
Gas Porosity	3
Crack	Not Allowed
Hot Tears	Not Allowed
Chaplets	Not Allowed

The casting having defects exceeding the above radiographic quality limits shall not be accepted.

4.2.3 The sampling of castings shall be in accordance with clause of relevant specification nominated on the relevant drawing.

4.2.4 Sample of the castings shall be inspected by the authorised representative of purchaser for its physical property test.

4.2.5 In case the radiographic test is not possible due to special shape or contour of the casting, it may be subjected to other non-destructive test.

5.0 Repair to Casting:

5.1 No repair to casting is acceptable without prior approval of the purchaser. The casting selected for repair (which is to be approved by purchaser) shall be done by welding in accordance with procedure laid down in IS: 5530' 1986.

6.0 Inspection :

6.1 For vendors supplying this item to BHEL Bhopal for the first time, first lot of item shall be supplied for quality inspection at BHEL Bhopal and bulk supply shall be undertaken only after clearance of first lot by BHEL Bhopal.

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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS IMITED It must not be used directly or indirectly in any way detrimental to the interest of the company		6.2 Vendor has to initiate the supplies as per PO delivery only. Delay in supply of first lot of components or rejection of components due to any non-conformity/ quality deficiency shall not be considered as reason for delay in supply of components in subsequent deliveries as per PO delivery requirement. 6.3 Initial clearance of 1st lot of items does not absolve the supplier from supply of items as per drawing and specification requirement during bulk supply. 7.0 Marking :- 7.1 Marking shall be done as per requirement mentioned in relevant QAP. 8.0 Packing:- 8.1 The components shall be suitably packed to prevent transit / long storing damage. 8.2 The components shall coated with antirust varnish / compound after inspection. 8.3 Varnished components shall be wrapped in polythene paper followed by corrugated paper. 8.4 The wrapped components shall finally be sealed in thick polythene bag. 8.5 The sealed components shall be finally packed in wooden box filled with saw dust to prevent transit damage of machine surface. 9.0 This specification is equivalent to CLW's specification no. 4TMS.096.059 Rev.03.	