

**BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL**  
**QUALITY CONTROL TRANSPORTATION**  
**QUALITY ASSURANCE PLAN (QAP)**

Ref.: TM12546 Rev. 03

**QA Plan of fully finished components with no mandatory requirement of checking on 3D CMM, supplied on fully finish basis or labour basis**

**Part 1: Final inspection of the component before dispatch from vendor works (#)**

| Sl. No. | Name of the Process                          | Parameters of Inspection                                                                                                                                                                                                                    | Quantum of Check* |           | Mode of Inspection/ Equipment used | Drawing No./Spec./Std.        | Acceptance Norms***                                                              | Requirement from supplier                 |
|---------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------|------------------------------------|-------------------------------|----------------------------------------------------------------------------------|-------------------------------------------|
|         |                                              |                                                                                                                                                                                                                                             | TP/Supplier       | TPIA/QC** |                                    |                               |                                                                                  |                                           |
| 1.      | Raw material                                 | Applicable only in case order is executed on fully finish basis                                                                                                                                                                             |                   |           |                                    |                               |                                                                                  |                                           |
|         | a. If the raw material is casting.           | Applicable QAP No.: QTM/QAP/VENDOR/13-14/001 (latest revision) [Only record verification by TPI as per raw material QAP. No inspection/record verification for cast/rough machined dimensions as per casting QAP.]                          |                   |           |                                    |                               |                                                                                  |                                           |
|         | b. If the raw material is fabrication/plate. | Applicable QAP No: QTM/QAP/FABRICATED ITEMS/VENDOR/17-18/01 (latest revision) [Only record verification by TPI as per raw material QAP. No inspection/record verification for fabricated/rough machined dimensions as per fabrication QAP.] |                   |           |                                    |                               |                                                                                  |                                           |
|         | c. If the raw material is forging.           | Applicable QAP No.: QTM/QAP/VENDOR/13-14/002 (latest revision) [Only record verification by TPI as per raw material QAP. No inspection/record verification for forge/rough machined dimensions as per forging QAP.]                         |                   |           |                                    |                               |                                                                                  |                                           |
| 2.      | Dimensions                                   | Critical to quality (CTQ) dimensions as marked in drawing or else tolerated dimensions if CTQ dimensions are not marked in drawing                                                                                                          | 100%              | 10%       | 3D CMM / Gauges & Instruments      | As per relevant BHEL drawing  | As per relevant BHEL drawing                                                     | Dimensional report to be provided to BHEL |
|         |                                              | Other machined & un machined dimensions                                                                                                                                                                                                     | 100%              | 5%        |                                    | 3D CMM / Gauges & Instruments | As per relevant BHEL drawing                                                     |                                           |
| 3.      | Visual Inspection                            | Free from visual defect                                                                                                                                                                                                                     | 100%              | 100%      | Visual                             | -                             | Component to be free from any abnormality such as blow hole, pin hole, dent etc. | -                                         |
| Sl. No. | Name of the Process                          | Parameters of Inspection                                                                                                                                                                                                                    | Quantum of Check* |           | Mode of Inspection/                | Drawing No./Spec./Std.        | Acceptance Norms***                                                              | Requirement from supplier                 |

*Signature*

|    |                        |                                                                                                                           | TP/Supplier | TP/IA/QC** | Equipment used |                                                     |                                                          |                                                                          |
|----|------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------|------------|----------------|-----------------------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------|
| 4. | Identification marking | Identification marking at machining stage on the location shown in drawing or location may be taken from BHEL Engg. Dept. | 100%        | 10%        | Verification   | As per relevant BHEL drawing/ specification TM12548 | Identification marking as per BHEL drawing/spec. TM12548 | -                                                                        |
| 5. | Painting               | TRP on machined surfaces & epoxy primer paint (specification AA56113) on other surfaces                                   | 100%        | -          | Visual         | As per relevant BHEL Drawing/ specification TM94217 | As per relevant BHEL Drawing/ specification TM94217      | -                                                                        |
| 6. | Packing                | Packaging suitability for transit & storage                                                                               | 100%        | -          | Visual         | -                                                   | -                                                        | Packaging shall be such that during transit components should not damage |

**Notes:**

- 1) All test records checked by TP, TP/IA/QC (dully signed & sealed) as per above QAP requirement shall be submitted along with consignment.
- 2) Final acceptance will be based on inspection at BHEL, Bhopal.
- 3) (\*) Quantum of inspection shall be in line with QAP unless otherwise mentioned in the drawing.
- 4) (\*\*) Job shall be randomly selected from offered lot, the quantum of check (min. 1 no.) from the offered lot to be checked by TP/IA or QC. (e.g.: If lot size is 2 then minimum one no. is to be checked).
- 5) (\*\*\*) Sample inspection of component does not mean that the supplier will not meet drawing & specification requirements in remaining components. In case any defect / non-conformance is observed at any stage (during processing or before and after fitment in any job), the same is liable to be rejected and same shall be replaced immediately by the supplier at BHEL or BHEL Customer site (wherever deficiency is observed and necessary penal action will be taken as per BHEL norms.

**Part II: Requirement of clearance of 1<sup>st</sup> lot from BHEL:**



1) First lot of item shall be supplied for quality inspection at BHEL Bhopal and supply of subsequent lots shall be undertaken only after clearance of first lot by BHEL Bhopal.

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.

3) Initial clearance of 1st lot of items does not absolve the supplier from supply of items as per drawing and specification requirement in subsequent lots.

**Meaning of Legends: '#' - Supplier to submit test certificates & reports of above mentioned parameters.**

**Abbreviation: TPIA –BHEL appointed third Party Inspecting Agency, T P – Task Performer / Supplier.**

| Prepared by:                                                                             | Approved by:                                                                             |                                                                                                       |                                                                                            | Issued by:                                                                                 |
|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| <br>QTM | <br>TME | <br>24/4/19<br>TXM | <br>QTM | <br>QTM |