

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

Ref.: TM12545 Rev. 02

QAP Plan for fully finished components (with finish dimensions final machined on CNC machines) with mandatory requirement of checking on 3D CMM, supplied on fully finish basis or labour basis

Note: Components to be finished machined on CNC are Stator frame, Bearing assy. components (including end shields), Suspension tube & its assy. components

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	Dimensions critical to quality (CTQ) as marked in drawing and other dimensions (machined/ un-machined).	100% Note: 20% components to be checked on 3D CMM for machined dimensions. Un-machined dimensions may be checked by gauges & Instruments.	10% (Min.) Note: Dimensions measurable with gauges & instruments can be checked with gauges & instruments or on 3D CMM.	3D CMM and Gauges & Instruments	As per relevant BHEL Drawing	As per relevant BHEL Drawing	Dimensional report along with 3D CMM report to be provided to BHEL

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	TP/IA/QC**				
			Remaining 80% components may be checked on 3D CMM or with gauges & instruments.	Dimensions not measurable with gauges and instruments are to be checked on 3D CMM.				
4.	Visual Inspection	Free from visual defect.	100%	100%	Visual	-	Component to be free from any abnormality such as blow hole, pin hole, dent etc.	-
5.	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	-
6.	Painting	TRP on machined surfaces & epoxy primer paint (specification AA56113) on other surfaces	100%	100%	Visual	As per relevant BHEL Drawing/specification TM94217	As per relevant BHEL Drawing/specification TM94217	-
			Quantum of Check*					

No.	Name of the Process	Parameters of Inspection	TP/Supplier	TP/IA/QC**	Mode of Inspection/ Equipment used	Drawing No./Spec./Std.	Acceptance Norms***	Requirement from supplier
7.	Packing	Packaging for transit & storage as per PO/ spec. / drawing.	100%	-	Visual	-	-	Packaging shall be complied as per PO/ spec. / drawing.

Notes:

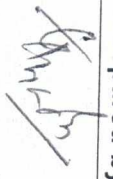
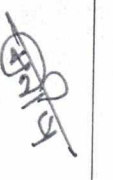
- 1) All test records checked by TP, TP/IA/QC (dully signed & sealed) as per above QAP requirement shall be submitted along with consignment.
- 2) Final acceptance will be based on inspection at BHEL, Bhopal.
- 3) (*) Quantum of inspection shall be in line with QAP unless otherwise mentioned in the drawing.
- 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 1st 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: TP/IA –BHEL appointed third Party Inspecting Agency, T P – Task Performer (Vendor), QC-QIX.

Prepared by:		Approved by:		Issued by:	
		 24/6/19			
QTM		TME		QTM	
		TXM		QTM	