

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

Ref.: TM12545 Rev. 07 Dt.06.08.22

QA 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***	Remarks
			TP (Supplier)	Inspection Agency **				
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) [Witness & Verification of RT reports & films for correlation with components, only record verification of material testing/checking parameters and verification of 3 test samples (keel blocks separately cast/integrally cast as per specification to be supplied along with consignment.) as per raw material QAP to be done by TPI. 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/18-19/01 (latest revision) [Only record verification of testing/checking parameters and verification of TC of plate used for fabrication of component (to be supplied along with consignment) as per raw material QAP to be done by TPI. 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 of testing/checking parameters and verification of 3 test samples to be supplied along with consignment) as per raw material QAP to be done by TPI. No inspection/record verification for forge/rough machined dimensions as per forging QAP.]						
2.	Dimensions	A) Critical to quality (CTQ) dimensions as marked in drawing	A) 100%	A) 20% (Min.)	3D CMM	As per relevant BHEL Drawing	As per relevant BHEL Drawing	\$- In case of TM 6FRA bearing components inspection on 3D-CMM, inspection agency shall be RDSO and for other cases inspection shall be carried out by agency mentioned in PO.
		B) Other dimensions (machined/ un-machined).	B) 100%	B) 20% (Min.)	3D CMM / Gauges & Instruments			
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उप प्रबंधक / Manager

कमल विभाग / QTM Division

बी.एस.एल. भोपाल / BHEL, BHOPAL

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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)	Inspection Agency				
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.	-
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.	Paint (Visual, Dry paint thickness and Adhesion test)	Epoxy primer paint (specification AA56113) on um-machined surfaces.	100%	100%(Visual) & 10% per lot (DFT and adhesion test)	Visual and Instruments	As per relevant BHEL Drawing/ specification TM94217 (Latest Rev)	As per relevant BHEL Drawing/ specification TM94217 (Latest Rev)	Report to be submitted for- • Visual • DFT • Adhesion

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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)	Inspection Agency				
6.	Packing	Packaging suitability for transit & storage	100%	-	Visual	-	-	Each component shall be suitably packed & wrapped to avoid any damage to components during transit and ingress of water. Note: In case any damage to machined surface found during inspection at BHEL, job will be liable to be rejected.

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Notes:

- 1) All test records checked by TP, Inspection agency (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 Inspection agency. (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 after meeting all QAP requirements to 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: T P – Task Performer (Supplier), Inspection Agency – Quality Control (QIX / BHEL appointed inspection agency), RDSO-

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

QA Plan for casting/ rough machined cast components no. : QTM/QAP/VENDOR/13-14/001 Rev.09 Dt.: 22.09.2022

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

Sl. No	Name of the process	Parameters for inspection	Quantum of check*		Mode of inspection/ equipment used	Drawing No./Spec./ Std.	Acceptance norms***	Requirement from supplier (See note 1)
			TP/Supplier	TP/IA/QC**				
1	Casting for magnet frame, stator housing, stator chamber DE & NDE, suspension tube, rotor components (commutator hub, commutator 'v' ring, rotor end ring etc.) and bearing assembly components (end shields, wipers, bearing cap/ covers etc.)	Source of casting	100%	100%	Proof of source of casting	-	<ul style="list-style-type: none"> Casting manufacturer (in-house/ outsourced) shall be class 'A' foundry (as per IS: 12117:1996) as listed in document no. TM22604. In case of outsourcing, quantity procured by supplier shall be verified from challan/ invoice for meeting the BHEL PO quantity. 	In case of outsourcing: 1. Proof of source of casting to be provided to BHEL. 2. Challan/ invoice to be provided to BHEL.
	Heat Treatment	Soaking temperature/ Soaking time	100%	100% TC to be verified	Temperature recorder/ Time	Heat treatment requirement as per BHEL specification mentioned in the drawing	Mechanical properties as specified in the BHEL specification	Heat treatment report and graph to be provided to BHEL
	Shot/Sand blasting	Casting surface finish	100%	20%	Instrument	As per BHEL drawing	Surface finish to be less than 50µm in 100% area except profile transition zone (Ref. IS: 3073)	Report of shot/sand blasting and surface finish to be provided to BHEL

235812/2024/HEP-TXM20500

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Sl. No	Name of the process	Parameters for inspection	Quantum of check*		Mode of inspection/ equipment used	Drawing No./Spec./ Std.	Acceptance norms***	Requirement from supplier (See note 1)
			TP/Supplier	TP/IA/QC**				
4	Melt Analysis	Chemical composition mentioned in the BHEL specification /drawing	One sample per heat/ per heat treatment batch	100% TC to be verified	Spectrometer / Wet analysis method	As per BHEL drawing/ specification	As per BHEL drawing/specification	TC (from casting manufacturer or NABL accredited lab) to be provided to BHEL. Three test samples \$ per heat / per heat treatment batch is to be verified by TPIA (for heat & heat treatment batch punched by supplier matching with test certificate reports above) to be provided to BHEL.
5	Mechanical Testing	Mechanical properties mentioned in the BHEL specification /drawing	One sample per heat/ per heat treatment batch	100% TC to be verified	Mechanical testing equipment	As per BHEL drawing/ specification	As per BHEL drawing/specification	
\$: 1) In case item manufactured is by sand casting, 3 keel blocks (separately cast/integrally cast as per specification) to be supplied. 2) In case item manufactured is by investment casting, 3 test pieces of size Ø30 X 260 ±10 to be supplied.								

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Sl. No	Name of the process	Parameters for inspection	Quantum of check*		Mode of inspection/ equipment used	Drawing No./Spec./ Std.	Acceptance norms***	Requirement from supplier (See note 1)
			TP/Supplier	TP/IA/QC**				
6	Hardness checking on casting	Hardness limit mentioned in the BHEL specification/ drawing	20% of components/ Heat treatment batch / Lot	100% of components / Heat treatment batch / Lot	Hardness testing equipment	As per BHEL drawing/ specification	As per BHEL drawing/specification	Hardness test report to be provided to BHEL
7	Identification Marking	Identification marking of casting manufacturer by embossing on castings on the location shown in drawing or location may be taken from BHEL Engg. Dept.	100%	100%	Visual	As per BHEL drawing/ specification TM12548	Identification marking as per BHEL drawing/specification TM12548	-
381/2024/HEP-TXM20500	Dimensional Inspection	Cast dimensions	All drawing dimension of 100% component	All drawing dimension of 10% component	Instrument	As per BHEL drawing	1) a) In case order is as per casting drawing: As per BHEL drawing. b) In case order is as per rough m/cd drawing: As per BHEL drawing along with concentricity less than 1mm. c) In case order is from finish machined drawing: 4(+/-0.5) mm machining allowances on each tool point along with concentricity less than 1mm.	Dimensional witness report to be provided to BHEL

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Sl. No	Name of the process	Parameters for inspection	Quantum of check*		Mode of inspection/ equipment used	Drawing No./Spec./ Std.	Acceptance norms***	Requirement from supplier (See note 1)
			TP/Supplier	TP/IA/QC**				
8	Dimensional Inspection	Rough machined dimensions	All drawing dimension of 100% component	All drawing dimension of 20% component	Instrument	As per BHEL drawing	2) Centre line on each job should be marked to ensure the cast, rough m/cd dimensions as per the casting, rough m/cd drawing requirement or machining allowance on each tool point of finish machined drawing.	Dimensional witness report to be provided to BHEL
9	Non Destructive Tests (NDT) (DP/MPI/UT)	DP/MPI/UT tests as mentioned in the BHEL drawing/ specification	100% (DP) or Sampling percentage as mentioned in the BHEL drawing / specification	20% (DP)	NDT equipment	As per BHEL drawing/ specification	As per BHEL drawing/ specification	NDT (DP/MPI/UT) report of 100% components or sampling percentage as mentioned in the BHEL drawing / specification shall be submitted along with consignment. Report issuing inspector shall be ISNT/ASNT level-II in respective NDT test and reports shall be duly signed & stamped by inspector.

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Sl. No	Name of the process	Parameters for inspection	Quantum of check*		Mode of inspection/ equipment used	Drawing No./Spec./ Std.	Acceptance norms***	Requirement from supplier (See note 1)
			TP/Supplier	TP/IA/QC**				
10	Non Destructive Tests (NDT) (Radiography)	Radiography tests as mentioned in the BHEL drawing/ specification	10% (Radiography) or Sampling percentage as mentioned in the BHEL drawing/ specification/ PO (whichever is higher)	Witness & Verification of radiography report & films for correlation with components Note: In case of suspension tube & steel ventilators, TP/IA/BHEL QC to identify the cast/rough machined suspension tube/steel ventilator serial nos. (embossed on casting) for radiography test. Radiography report & films during casting/ rough machining stage of suspension tube/steel ventilator (identified by	NDT equipment	As per BHEL drawing/ specification	As per BHEL drawing/ specification	Radiography report & films of 10% components or sampling percentage as mentioned in BHEL drawing / specification shall be submitted. Report issuing inspector shall be ISNT/ASNT level-II in radiography and reports shall be duly signed & stamped by inspector. Note: In case of suspension tube & steel ventilator, radiography report & films shall be submitted during casting/ rough machining

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Sl. No	Name of the process	Parameters for inspection	Quantum of check*		Mode of inspection/ equipment used	Drawing No./Spec./ Std.	Acceptance norms***	Requirement from supplier (See note 1)
			TP/Supplier	TP/IA/BHEL QC**				
10				TP/IA/BHEL QC) shall be provided to BHEL for verification & approval.				stage to BHEL for verification & approval. Supplier shall also submit filled checklist as per page 3 of radiography process spec. no. BHEL/BPL/ QNDT/26 in compliance of the said spec. along with above.
Note: 1. BHEL reserve the right to carry out radiography test at BHEL Bhopal on randomly selected jobs or jobs for which radiography report & films have been submitted by the supplier for ensuring radiography requirement. 2. Delay in supply due to non-clearance of castings/rough-machined castings because of any non-conformity observed in radiography report/films during verification at BHEL shall not be considered as reason for delay in supplies as per PO delivery requirement.								
11	Visual Inspection	Component to be free from any abnormality such as blow hole, pin hole, dent etc.	100%	100%	Visual	As per BHEL drawing/ specification	Free from visual defect	
12	Paint (Visual, Dry paint thickness and Adhesion test)	Inorganic ethyl zinc silicate primer paint (specification AA56113) on cast surfaces	100%	100% (Visual) & 10% per lot (DFT and adhesion test)	Visual and Instruments	As per relevant BHEL drawing/ specification TM94217 (latest revision)	As per relevant BHEL drawing/ specification TM94217	Report to be submitted for: • Visual • DFT • Adhesion

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Sl. No	Name of the process	Parameters for inspection	Quantum of check*		Mode of inspection/ equipment used	Drawing No./Spec./ Std.	Acceptance norms***	Requirement from supplier (See note 1)
			TP/Supplier	TPIA/QC**				
13	List of Calibration records of used measuring & Testing Equipments	Calibration due date, accreditation status of master instruments	100%	100%	Verification	-	-	List of Calibration records of measuring and Testing instruments is to be provided to BHEL as per annexure-A.

Notes:

- 1) All test records checked by TP, TPIA/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 TPIA 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.


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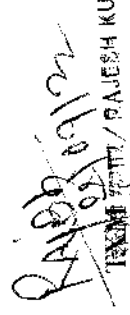

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Part II: Requirement of clearance of 1st lot from BHEL:

- 1) First lot of item shall be supplied after meeting all QAP requirements to 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.

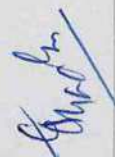
Abbreviation: TPJA –BHEL appointed third Party Inspecting Agency, T P – Task Performer (vendor), QC- Quality Control (QIX / BHEL appointed inspection agency)

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

QA Plan for fabricated/ rough machined fabricated components no.: QTM/QAP/FABRICATED ITEMS/VENDOR/18-19/01 REV.01 Dt.: 26.02.2019

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.	Melt analysis	Chemical Composition	One sample per heat /heat treatment batch (TC from NABL accredited Lab)	100% TC to be verified	Spectrometer / Wet analysis method	As per BHEL drawing/ specification	As per BHEL drawing/ specification	One sample per heat/per heat treatment batch is to be verified by TPIA (for heat & heat treatment batch punched by supplier matching with TC) for chemical and mechanical testing at BHEL Works
2.	Mechanical Testing	Mechanical properties mentioned in the BHEL drawing/ specification	One sample/ heat/ Heat treatment batch (TC from NABL accredited Lab)	100% TC to be verified	Mechanical testing Equipment	As per BHEL drawing/ specification	As per BHEL drawing/ specification	SR report to be provided to BHEL
3.	Stress Relieving	Soaking temperature/ soaking time	100%	100% TC to be verified	Temperature recorder/ Time Temperature charts	As per BHEL drawing/ specification	As per BHEL drawing/ specification	Report of shot/ sand blasting to be provided to BHEL
4.	Shot/Sand Blasting	Uniformity of cleaning	100%	-	Visual	As per BHEL drawing	Surface free from extraneous material and deposits	Report of shot/ sand blasting to be provided to BHEL
5.	Non Destructive Tests (NDT)	NDT tests (DP/MPI/UT) as mentioned in the BHEL drawing/ specification	100% or Sampling percentage as mentioned in the BHEL drawing/ specification	20%	NDT equipment 	As per BHEL drawing/ specification	As per BHEL drawing/ specification	NDT report to be provided to BHEL along with consent

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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**				
6.	Identification marking	Identification marking by punching on component on the location shown in drawing or location may be taken from BHEL Engg. Dept.	100%	100%	Visual	As per BHEL drawing/ specification TM12548	Identification marking as per BHEL drawing/spec. TM12548	-
7.	Dimensional Inspection	Fabrication Dimensions Rough machined dimensions	All drawing dimension of 100% component All drawing dimension of 100% component	All drawing dimensions of 10% component All drawing dimensions of 20% component	Instrument	As per BHEL drawing 	1) a) In case order is as per fabrication drawing: As per BHEL drawing. b) In case order is as per rough m/cd drawing: As per BHEL drawing along with concentricity less than 1mm. 2) Centre line on each job should be marked to ensure the fabricated rough m/cd dimensions as per the fabrication rough m/cd drawing requirement.	Dimensional witness report to be provided to BHEL

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	TP/IA/QC**				
8	Paint	Epoxy primer paint (specification AA56113) on cast surfaces.	100%	-	Visual	As per relevant BHEL Drawing/ specification TM94217	As per relevant BHEL Drawing/ specification TM94217	-

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 / Supplier.

Prepared by:		Approved by:		Issued by:	
	QTM		TME		QTM
			TXM		QTM

QA Plan for forging/ rough machined forge components No : QTM/QAP/VENDOR/13-14/002 REV.03 Dt:26.02.2019

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

Sl. No.	Name of the process	Parameters for inspection	Quantum of Check*		Mode of inspection/ equipment used	Drawing No./Spec./ Std.	Acceptance norms***	Requirement from supplier (See note 1)
			TP/Supplier	TP/IA/QC**				
1	Heat treatment	Soaking temperature/ soaking time	100%	100% TC to be verified	Temperature recorder/ Time Temperature charts	Heat treatment requirement as per BHEL specification mentioned in the drawing	Mechanical properties as specified in the BHEL specification	Heat treatment report and graph to be provided to BHEL
2	Melt analysis	Chemical Composition	One sample/ heat / Lot	100% TC to be verified	Spectrometer / Wet analysis method	As per BHEL drawing/ specification	As per BHEL drawing/specification	1. TC (as per specification format) from NABL approved Lab for shaft forging. 2. TC (as per specification format) for other forging. 3. Test sample duly approved by TPIA to be provided to BHEL for chemical & mechanical testing at BHEL works.
3	Mechanical Testing	Mechanical properties mentioned in the BHEL specification/ drawing	One sample/ Heat treatment batch / Lot	100% TC to be verified	Mechanical testing equipment	As per BHEL drawing/ specification	As per BHEL drawing/specification	
4	Reduction Ratio	Reduction ratio from Ingot to bloom & bloom to blank	100%	100% TC to be verified	Dimensional measuring instruments		Stage wise reduction ratio calculation & its measurement on actual job	Dimensional measurement report for reduction ratio

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Sl. No.	Name of the process	Parameters for inspection	Qualification of Check*		Mode of inspection/ equipment used	Drawing No./Spec./Std.	Acceptance norms***	Requirement from supplier (See note 1)
			TP/Supplier	TPIA/QC**				
5	Identification marking	Identification marking by punching/engraving on the location shown in drawing or location may be taken from BHEL Engg. Dept.	100%	100%	Visual	As per BHEL drawing/specification TM12548	Identification marking as per BHEL drawing/specification TM12548	-
6	Dimensional Inspection	Forge Dimension	All drawing dimension of 100% component	All drawing dimension of 10% component	Instrument	As per BHEL drawing	1) a) In case order is as per forging drawing: As per BHEL drawing. b) In case order is as per rough m/cd drawing: As per BHEL drawing along with concentricity less than 1mm. c) In case order is from finish machined drawing: 4 (+/-0.5) mm machining allowances on each tool point along with concentricity less than 1mm. 2) Centre line on each job should be marked to ensure the forge, rough m/cd dimensions as per the forging, rough m/cd drawing requirement or machining allowance on each tool point of finish machined drawing.	Dimensional witness report to be provided to BHEL
		Rough machined dimension	All drawing dimension of 100% component	All drawing dimension of 20% component				

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Sl. No.	Name of the process	Parameters for inspection	Quantum of Check*		Mode of inspection/ equipment used	Drawing/ No./Spec./ Std.	Acceptance norms***	Requirement from supplier (See note 1)
			TP/Supplier	TP/IA/QC**				
7	Non Destructive Tests (NDT)	NDT tests (DP/MPI/UT) as mentioned in the BHEL drawing/ specification	100% or Sampling percentage as mentioned in the BHEL drawing/ specification	20%	NDT equipment	As per BHEL drawing/ specification	As per BHEL drawing/ specification	NDT report to be provided to BHEL along with consignment
8	Visual Inspection	Component to be free from any abnormality such as blow hole, pin hole, dent etc.	100%	100%	Visual	As per BHEL drawing/ specification	Free from visual defect	-

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.


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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: TPIA –BHEL appointed third Party Inspecting Agency, T P – Task Performer (vendor), QC-QIX.

Prepared by:	Approved by:	Issued by:
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