



BIHAR STATE POWER TRANSMISSION COMPANY LIMITED
MANUFACTURING QUALITY PLAN - HDG Bolt & Nut

Manufacturer's Details :-			Customer : BSPTCL	Vendor's Code :	Item : HDG Bolt & Nut	M.Q.P.No.: 046 Rev. No. : 00 Date: 07.01.2016	Valid From: 15.01.2016 Valid Up to: Till Revision						
Sr. No.	Components/ Operation & Description of Test	Type of Check	Quantum of Check / Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						Remarks
							1	2	3	4	5	6	

INSTRUCTIONS FOR CODE ALLOCATION

Code 1	Indicates place where testing is planned to be performed i.e. Inspection location	Code 2	Indicates who has to perform the tests i.e. Testing Agency
A	At Equipment Manufacturer's works (Fastener)	J	The Equipment Manufacturer
B	At Component Manufacturer's works (Wire Rod supplier)	K	The Component Manufacturer
C	At Authorized Distributor's place	L	The Third Party
D	At Independent Lab	M	The Turnkey Contractor
E	At Turn Key Contractor's location		
F	Not specified		
Code 3	Indicates who shall witness the tests i.e. Witnessing Agency	Code 4	Review of Test Reports/Certificates
P	Component Manufacturer itself	W	By Equipment manufacturer during raw material / bought out component inspection
Q	Component Manufacturer and Equipment Manufacturer	X	By Contractor during product/process inspection
R	Component Manufacturer, Equipment Manufacturer and Contractor	Y	By BSPTCL during product/process inspection
S	Equipment Manufacturer itself	Z	By Contractor and/or BSPTCL during product/process inspection
T	Equipment Manufacturer and Contractor		
U	Equipment Manufacturer, Contractor and BSPTCL		
V	Third Party itself		
Code 5	Whether specific approval of sub-vendor / Component make is envisaged?	Code 6	Whether test records required to be submitted after final inspection for issuance of Dispatch Clearances /Instructions ?
E	Envisaged	Y	Yes
N	Not Envisaged	N	No



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A. Raw Material Section- For Bolt-Nut and Step bolt

1.1.1	Steel For 4.6/5.6/5 grade	Chemical	1 Sample per heat/ lot of 10 MT or part thereof 2 Sample per heat/ lot of 25 MT or part thereof	IS 1367 Pt 3, Pt 6 & IS7887 (Mild steel wire rods for general engg. purposes)	As per TDC of raw material supplier & IS 1367 Pt 3, Pt 6	Test Certificate Manufacturer Format of record (BSPTCL REPORTS)	B A D	K J L	P S V	W W	E N	N N	Rounds shall be procured from BSPTCL approved sources like RINL, JSPL,JSW,NECO Jayswal, Bhushan Power. Records to be reviewed during final inspection.
1.1.2	Steel For 8.8/8 grade	Chemical	1 Sample per heat/ lot of 05 MT or part thereof 2 Sample per heat/ lot of 10 MT or part thereof	IS 1367 Pt 3, Pt 6	As per TDC of raw material supplier & IS 1367 Pt 3, Pt 6	Test Certificate Manufacturer Format of record (BSPTCL REPORTS)	B A D	K J L	P S V	W W	E N	N N	Records to be reviewed during final inspection.
1.1.3	UTS & Elongation	Mechanical	-do-	-do-	-do-	-do-	A	J	S	W		N	Records to be reviewed during final inspection.
1.1.4	Diameter	Measurement	10 samples per 25MT per heat or part thereof	IS 1852 /Plant Standard	Plant Standard	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection.
1.1.5	OVALITY	Measurement	10 samples per 25MT per heat or part thereof	IS 1852 /Plant Standard	Plant Standard	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection.
1.1.6	SURFACE INTEGRITY	Visual	10 samples per 25MT per heat or part thereof	IS 1852 Etching test	No Crack	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection.



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1.2	ZINC												Records to be reviewed during final inspection.
1.2.1	Chemical Composition	Chemical	One Sample per lot of 25 MT or Part thereof	IS:209 (Grade SHG)	99.95% Zinc	Test Certificate	B	K	P	W	E	N	Records to be reviewed during final inspection.
1.2.2	Chemical Composition	Chemical	One sample per quarter of a year and sample taken from bath	IS 2629	The molten metal in the Galvanizing bath shall not contain less than 98.5% by mass of Zinc	TPL Report	D	L	V	W	-	N	Records to be reviewed during final inspection.

B In-process Inspection-													
2.1	BOLT DIMENSIONS (4.6/5.6/8.8 grade)												For Step Bolt/ BSPTCL approved drawing
2.1.1	Diameter of Shank (ds)	Measurement	2 samples per two hours	IS 12427 IS 1363 pt 1&2	IS 12427 IS 1363 pt 1&2	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.1.2	Width Across Flat (S)	Measurement	2 samples per two hours	IS 12427 IS 1363 pt 1&2	IS 12427 IS 1363 pt 1&2 IS 10238 (for step bolt)	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.1.3	Width Across Comer (e)	Measurement	2 samples per two hours	IS 12427 IS 1363 pt 1&2	IS 12427 IS 1363 pt 1&2	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.1.4	Head Thickness (k)	Measurement	2 samples per two hours	IS 12427 IS 1363 pt 1&2	IS 12427 IS 1363 pt 1&2 IS 10238 (for step bolt)	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.1.5	Thread Length (b)	Measurement	2 samples per two hours	IS 12427 IS 1363 pt 1&2	IS 12427 IS 1363 pt 1&2 IS 10238	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.1.6	Pitch (P) (By Pitch Gauge)	Measurement	2 samples per two hours	IS 4218 IS 12427	IS 4218 IS 12427	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis



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2.1.7	Total Length (L)	Measurement	2 samples per two hours	IS 12427 IS 1363 pt 1&2 IS 10238 (for step bolt)	IS 12427 IS 1363 pt 1&2 IS 10238 (for step bolt)	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.1.8	Grip Length	Measurement	2 samples per two hours	IS 12427	IS 12427 or BSPTCL Drawing	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.1.9	Thread Fit	Measurement	2 samples per two hours	IS:4218 Part VI & IS:1367 Part II	IS:4218 IS:1367 Part II	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.1.10	Under head radius (r)	Measurement	-do-	IS 12427 IS 1363 pt 1&2	IS 12427 IS 1363 pt 1&2	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.1.11	Washer Diameter (dw)	Measurement	-do-	IS 12427 IS 1363 pt 1&2	IS 12427 IS 1363 pt 1&2	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.1.12	Concentricity	Measurement	-do-	IS 1367 pt 2	IS 1367 pt 2	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.1.13	Surface Discontinuity	Visual	-do-	IS 1369 pt 9	IS 1367 pt 9		A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.2	NUT Dimensions (5/8 grade)												
2.2.1	Width Across Flat (S)	Measurement	2 samples per two hours	IS 1363 Part 3 IS 3138 IS 14394	IS 1363 Part 3 IS 3138 IS 14394	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.2.2	Width Across Corner (e)	Measurement	-do-	IS 1363 Part 3 IS 3138 IS 14394	IS 1363 Part 3 IS 3138 IS 14394	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.2.3	Thickness (m)	Measurement	-do-	IS 1363 Part 3 IS 3138 IS 14394	IS 1363 Part 3 IS 3138 IS 14394	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis



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2.2.4	Thread Fit	Measurement	-do-	IS:4218 Part VI & IS:1367 Part II As per IS:1367 part XIII Table 1, Over size	IS:4218 Part VI & IS:1367 Part II As per IS:1367 part XIII Table 1, Over size	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.2.5	Surface discontinuity of Nut	Measurement	-do-	IS 1367 Part 10	IS 1367 Part 10 (No cracks/burns/voids etc)	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.4	Heat Treatment Process for 8.8/8 grade bolt-nut				IS 1367								
2.4.1	Hardening	Temp, Soaking time, Hardness.	2 samples per BATCH/LOT Or 2 samples/hr for continuous loading	1367 pt 3 & 6 / Plant Std	1367 pt 3 & 6 / Plant Std	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.4.2	Tampering	Temp/ Hardness	2 samples per BATCH/LOT Or 2 samples/hr for continuous loading	1367 pt 3 & 6 / Plant Std	1367 pt 3 & 6 / Plant Std	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.5	PHYSICAL PROPERTIES BOLTS (Black Stage) For 4.6, 5.6 Grade: Plan A for Ultimate Tensile load \geq 500 kN otherwise test Plan B shall be applicable For 8.8 Grade: Test Plan A is applicable												
2.5.1	UTS Under Wedge (with Universal Testing machine)	Mechanical	5 samples per lot per batch or part thereof	IS 1367	IS 1367 Pt 3	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
	Yield strength stress for test Plan A	Mechanical	5 samples per lot per batch or part thereof	IS 1367	IS 1367 Pt 3	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis



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2.5.2	Proof Load For test plan B	Mechanical	5 samples per lot per batch or part thereof	IS 1367	IS 1367 Pt 3	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.5.3	Hardness With Rockwell hardness Tester / With Vickers hardness tester	Mechanical	5 samples per lot per batch or part thereof	IS 1367	IS 1367 Pt 3	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.5.4	Shear Strength	Mechanical	5 samples per lot per batch or part thereof	12427	12427	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.5.5	Head Soundness	Mechanical	5 samples per lot per batch or part thereof	IS 1367	IS 1367	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.5.6	Reduction Area for 8.8 grade Plan A	Mechanical	5 samples per lot per batch or part thereof	IS 1367	IS 1367 Pt 3	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.5.7	Elongation after Fracture Test Plan A	Mechanical	5 samples per lot per batch or part thereof	IS 1367	IS 1367 Pt 3	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.5.8	MPI(Surface integrity test) (Only for 8.8 Grade)	Mechanical	100%	ASTM 709	ASTM 709	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.6	PHYSICAL PROPERTIES NUTS												
2.6.1	Proof Stress	Mechanical	5 samples in every two hours	IS 1367 IS 14394	IS 1367 IS 14394	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
2.6.2	Hardness	Mechanical	5 samples in every two hours	IS 1367 IS 14394	IS 1367 IS 14394	BSPTCL REPORTS	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis
3.0	GALVANISING												



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	(Surface Preparation Procedure)												
3.1	Degreasing	Chemical	One sample Per shift	IS 2629	Manufacturer's plant standard/IS	-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis
3.2	Pickling	Chemical	One sample Per shift	IS 2629	Manufacturer's plant standard/IS Iron contents 100 to 120 gram/litre. Max	-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis
3.3	Rinsing	Chemical	One sample Per shift	IS 2629	Manufacturer's plant standard/IS	-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis
3.4	Pre Fluxing	Chemical	One sample Per shift	IS 2629	IS 2629	-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis
3.5	Pre-heating	Measurement	Once in two hours	IS 2629	IS 2629	-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis
3.6	Dipping After drying is over the material is dipped in molten zinc. Following parameters are controlled					-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis
3.6.1	a) Zinc bath temperature Recording is done by graphical manner OR sensors with digital display	Measurement	Hourly check	IS 2629	450+/-10° C (iron tank) > 475° C (ceramic bath)	-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis
3.6.2	b) Immersion & Withdrawal time. Degree of immersion and withdrawal time is decided based on thickness and length of material.	Measurement		IS 2629	IS 2629	-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis
3.6.3	Quenching in Running Water: After dipping the material is quenched in running water	Measurement	Once in two hours	IS 2629	Temp should be less than 65° C.	-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis



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3.6.4	Centrifuging :												
3.6.5	Dichromating : After quenching, material is dipped in sodium dichromatic solution to avoid the white rust.	Measurement	Once in each shift	IS 2629	IS 2629	-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis
3.7	Galvanizing Checking												
3.7.1	Visual Checking	Visual	100%	IS 2629	Surface to be free from defects like bare / black spots, heavy ash & flux inclusions, lumps, pimples, runs etc	-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis
3.7.2	Thickness of Zinc coating	Measurement	8 samples / shift	IS 1367 pt 13	Min. Average 54 microns and min individual 43 microns	-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis
3.7.3	Weight of zinc coating	Measurement	3 samples / shift	IS 1367 pt 13	Min. Average 375 gm/sq mtr and min individual 300 gm/sq mtr	-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis
3.7.4	Uniformity of Zinc coating	Measurement	3 samples / shift	IS 2633	Material to withstand 4 dips of one minute each without showing signs of copper deposits	-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis
3.7.5	Adhesion Tests of Zinc coating	Knife Test	3 samples / shift	IS 1367 pt 13	No removal or lifting of coating in areas	-do-	A	J	S	Z	-	N	Records to be reviewed during final inspection. on surveillance basis
3.8	OILING OF INTERNAL THREAD FOR RUST PREVENTION OF NUTS		100%	IS:12427 IS:1367 (Part 13)	IS:12427 IS:1367 (Part 13)	-do-	A	J	S	W	-	N	Records to be reviewed during final inspection. on surveillance basis



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C: Final Inspection and testing

C.	Final Acceptance test (4.6/5.6/8.8 grade bolts)												
4.1	BOLT DIMENSIONS												All Non specified geometrical tolerances shall be derived from IS 1367 pt 2 Dimensions of step bolt/BSPTCL approved drawing
4.1.1	Diameter of Shank (ds)	Measurement	IS 1367 pt 17/IS 2500	IS 12427 IS 1363 pt 1&2	IS 12427 IS 1363 pt 1&2	Test Report	A	J	U	Z	-	Y	
4.1.2	Width Across Flat (S)	Measurement	IS 1367 pt 17/IS 2500	IS 12427 IS 1363 PT 1 & 2	IS 12427 IS 1363 PT 1 & 2 IS 10238 (FOR STEP BOLT)	Test Report	A	J	U	Z	-	Y	
4.1.3	Width Across Comer (e)	Measurement	IS 1367 pt 17/IS 2500	IS 12427 IS 1363 PT 1 & 2	IS 12427 IS 1363 PT 1 & 2	Test Report	A	J	U	Z	-	Y	
4.1.4	Head Thickness (k)	Measurement	IS 1367 pt 17/IS 2500	IS 12427 IS 1363 PT 1 & 2	IS 12427 IS 1363 PT 1 & 2	Test Report	A	J	U	Z	-	Y	
4.1.5	Thread Length (b)	Measurement	IS 1367 pt 17/IS 2500	IS 12427 IS 1363 PT 1 & 2 IS 10238	IS 12427 IS 1363 PT 1 & 2 IS 10238	Test Report	A	J	U	Z	-	Y	
4.1.6	Pitch (P) (By Pitch Guage)	Measurement	IS 1367 pt 17/IS 2500	IS 4218 IS 12427	IS 4218 IS 12427	Test Report	A	J	U	Z	-	Y	



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4.1.7	Total Length (l)	Measurement	IS 1367 pt 17/IS 2500	IS 12427 IS 1363 PT 1 & 2 IS 10238 or approved drawing	IS 12427 IS 1363 PT 1 & 2 IS 10238 or approved drawing	Test Report	A	J	U	Z	-	Y	
4.1.8	Bolt Nut assembly check	Measurement	IS 1367 pt 17/IS 2500.	IS 4218 IS 1367 part II	IS 4218 IS 1367 part II	Test Report	A	J	U	Z	-	Y	
4.1.9	Grip Range (Clamping Length)	Measurement	IS 1367 pt 17/IS 2500	IS 12427 or approved drawing	IS 12427 or approved drawing	Test Report	A	J	U	Z	-	Y	
4.1.10	Radius (r)	Measurement	IS 1367 pt 17/IS 2500	IS 12427 IS 1363	IS 12427 IS 1363	Test Report	A	J	U	Z	-	Y	
4.1.11	Washer (dw)	Measurement	IS 1367 pt 17/IS 2500	IS 12427 IS 1363	IS 12427 IS 1363								
4.1.12	Concentricity (Checking by vernier)	Measurement	IS 1367 pt 17/IS 2500	IS 1367 pt 2	IS 1367 pt 2	Test Report	A	J	U	Z	-	Y	
4.2	NUT DIMENSION												
4.2.1	Width Across Flat (S)	Measurement	IS 1367 pt 17/IS 2500	IS 1363 IS 3138 IS 14394	IS 1363 IS 3138 IS 14394	Test Report	A	J	U	Z	-	Y	
4.2.2	Width Across Corner (e)	Measurement	IS 1367 pt 17/IS 2500	IS 1363 IS 3138 IS 14394	IS 1363 IS 3138 IS 14394	Test Report	A	J	U	Z	-	Y	
4.2.3	Thickness (m)	Measurement	IS 1367 pt 17/IS 2500	IS 1363 IS 3138 IS 14394	IS 1363 IS 3138 IS 14394	Test Report	A	J	U	Z	-	Y	



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4.2.4	Bolt Nut assembly check.	Measurement	IS 1367 pt 17/IS 2500	IS:4218 Part VI & IS:1367 IS:1367 part XIII Table 1, Over size	IS:4218 & IS:1367 IS:1367 part XIII/ Table 1, Over size	Test Report	A	J	U	Z	-	Y	
4.2.6	Wrenching Height(m)	Measurement	IS 1367 pt 17/IS 2500	IS 14394 IS 1363	IS 14394 IS 1363	Test Report	A	J	U	Z	-	Y	
4.2.7	Pitch(P)	Measurement	IS 1367 pt 17/IS 2500	IS 4218 IS 1363	IS 4218 IS 1363	Test Report	A	J	U	Z	-	Y	
4.3	PHYSICAL PROPERTIES BOLT (4.6/5.6/8.8) For 4.6, 5.6 Grade: Plan A for UTS ≥ 500 kN otherwise test Plan B shall be applicable For 8.8 Grade: Test Plan A is applicable & following test.											Additional cantilever test is required for step bolt as per IS 10238	
4.3.1	UTS (with Universal Testing machine)	Mechanical	IS 1367 pt 17	IS 1367 pt 3	IS 1367 pt 3	Test Report	A	J	U	Z	-	Y	
4.3.2	Proof Load For Test Plan B	Mechanical	IS 1367 pt 17	IS 1367 pt 3	IS 1367 pt 3	Test Report	A	J	U	Z	-	Y	
4.3.3	Hardness With Rockwell hardnes Tester With Vickers hardness tester	Mechanical	IS 1367 pt 17	IS 1367 pt 3	IS 1367 pt 3	Test Report	A	J	U	Z	-	Y	
4.3.4	Shear Strength	Mechanical	IS 1367 pt 13	IS 12427	IS 12427	Test Report	A	J	U	Z	-	Y	
4.3.5	Head Soundness	Mechanical	IS 1367 pt 13	IS 1367 pt 3	IS 1367 pt 3	Test Report	A	J	U	Z	-	Y	
4.3.6	Reduction Area (only for 8.8)	Mechanical	IS 1367 pt 13	IS 1367 pt 3	IS 1367 pt 3	Test Report	A	J	U	Z	-	Y	
4.3.7	Elongation after Fracture Plan A	Mechanical	IS 1367 pt 13	IS 1367 pt 3	IS 1367 pt 3	Test Report	A	J	U	Z	-	Y	



BIHAR STATE POWER TRANSMISSION COMPANY LIMITED
MANUFACTURING QUALITY PLAN - HDG Bolt & Nut

Manufacturer's Details :-	Customer : BSPTCL	Vendor's Code :	Item : HDG Bolt & Nut	M.Q.P.No.: 046 Rev. No. : 00 Date: 07.01.2016	Valid From: 15.01.2016 Valid Up to: Till Revision
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Sr. No.	Components/ Operation & Description of Test	Type of Check	Quantum of Check / Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						Remarks
							1	2	3	4	5	6	

4.3.8	MPI (Only for 8.8)	Mechanical	MPI to be conducted before UTS on the selected samples as per IS for UTS	ASTM 709	ASTM 709	Test Report	A	J	U	Z	-	Y	Samples to be zinc strip off for MPI	
4.4	PHYSICAL PROPERTIES NUTS (5/04/8grade)													
4.4.1	Proof Stress	Mechanical	IS 1367 Pt 17	IS 1367 pt 6 IS 14394	IS 1367 pt 6 IS 14394	Test Report	A	J	U	Z	-	Y		
4.4.2	Hardness	Mechanical	IS 1367 pt 17	IS 1367 pt 6	IS 1367 pt 6	Test Report	A	J	U	Z	-	Y		
4.5	Chemical Test for Bolts & Nuts													
4.5.1	Chemical Analysis	Spectro	1 sample of each size of bolt and nut per inspection (offered) lot	IS 1367 Pt 3, Pt 6 &	IS 1367 Pt 3, Pt 6 &	Test Report	A	J	U	Z	-	Y		
4.6	Galvanizing test for BOLT and NUT												For Nuts mass of zinc coating shall be obtained by elcometer method only	
4.6.1	Galvanizing test for BOLT	Galvanizing test	IS 2629/IS 1367 Pt 13	PI refer clause no 3.7	PI refer clause no 3.7	Test Report	A	J	U	Z	-	Y		
4.6.2	Galvanizing test for NUT	Galvanizing test	IS 2629/IS 1367 Pt 13	PI refer clause no 3.7	PI refer clause no 3.7	Test Report	A	J	U	Z	-	Y		
5.0	Packing & Despatch	100%		All materials offered shall be packed in double gunny bags duly machine stitched and tagged with proper label for identification of inspection call number, size, grade, lot number, month				A	J	U	Z	-	Y	



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Sr. No.	Components/ Operation & Description of Test	Type of Check	Quantum of Check / Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						Remarks
							1	2	3	4	5	6	
					of manufacturing, embossing etc with wire lead seal for sealing purpose.								

NOTES/GENERAL REQUIREMENTS TO BE CHECKED/ENSURED

- 1) In case of any contradiction between Technical Specification / Approved Drawing and MQP, the details mentioned in the Technical Specification / Approved Drawing shall be final.
- 2) Prior approval of BSPTCL is required to be taken for any activity or process that is out sourced.
- 3) The bolts & nuts have BSPTCL embossing/indenting with grade apart from manufacturer own logo.
- 4) The raw materials wire rod and zinc are to be procured from BSPTCL approved sources only. The original test certificate and invoice copy needs to be available and properly documented at manufacturer works. The consumption records with reference to CIPs & balance materials available shall be maintained on a permanent register with hard cover.
- 5) If the agency is procuring raw material from other than BSPTCL approved sources for non BSPTCL material, the same should be kept separately in the yard to avoid any mix up i.e. there shall be separate identified yard for raw material for BSPTCL projects. Different colour coding need to be used by the manufacturer for fool proof segregation of BSPTCL approved and non BSPTCL approved raw material. Colour coding chart shall be displayed clearly on a large board.
- 6) The manufacturer should progressively align their Quality System to the requirements of ISO 9000 series Quality Standards and in due course of time should get their quality system certified to ISO 9001 and re-registration/renewal thereof.
- 7) Calibration: All the testing equipments (UTM, Hardness Testing Machine, Weighing machine, Verniers, Measuring tape etc.) must be calibrated by NABL accredited lab and the calibration certificate must be available in the testing lab so that same can be verified by IE, whenever required. Stickers of calibration should be pasted on the test equipment. Further, details of equipment and their calibration due date must be displayed in the lab. Calibration details (equipment name, no., calibration date and due date of the calibration) of testing equipment used during acceptance testing must be made part of testing results. UTM needs to be calibrated in presence of BSPTCL preferably within 3 months from the date of receiving of MQP and in each year subsequently.
- 8) Traceability: There should be traceability of material lot wise/ heat wise from raw material to finished stage and all the relevant documents must be maintained. In case traceability /co-relation is not found, material is liable to be rejected.

**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED****MANUFACTURING QUALITY PLAN - HDG Bolt & Nut**

Manufacturer's Details :-			Customer : BSPTCL	Vendor's Code :	Item : HDG Bolt & Nut	M.Q.P.No.: 046 Rev. No. : 00 Date: 07.01.2016	Valid From: 15.01.2016 Valid Up to: Till Revision						
Sr. No.	Components/ Operation & Description of Test	Type of Check	Quantum of Check / Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						Remarks
							1	2	3	4	5	6	

- 9) The finished nut & bolts to be stored under covered shed in packed condition and not directly on ground and stacking in such a way that it is easily identifiable and accessible for inspection.
- 10) Inspection by Main Contractor: All TLT manufacturers /main contractors who have placed order for BSPTCL projects should instruct their Inspection engineers to inspect the material thoroughly before clearing the material for inspection to BSPTCL.
- 11) Offering the Material for Inspection to BSPTCL: Details of the material being offered for inspection as per the following format :

Call No.	Contractor Name	Grade	Size	Std unit weight as per BOM	No of pieces	Weight as BOM	Actual unit weight	Total weight as per Actual	Source of Raw Material Used (Lot No)	Embossing

- 12) After inspection of material by BSPTCL, the manufacturer shall submit the inspection summary and test reports immediately to BSPTCL IE to enable the issue of Dispatch Clearances /Instructions. All test report should mention minimum/maximum pass values/conforming requirement of the test.
- 13) The material cleared by BSPTCL shall be dispatched at the earliest, however in no case later by one month. Any material inspected one month before cannot be dispatched without revalidation of Dispatch Clearances /Instructions and same shall be done only after getting approval from BSPTCL for despatch clearance/re-inspection approval. BSPTCL inspection engineer to check despatch register & LR copy for the despatch of quantity, date & previous cleared material irrespective of Dispatch Clearances /Instructions by any IE.
- 14) Manufacturer is strictly instructed not to use BSPTCL embossing for non BSPTCL material and not to sell BSPTCL embossed material as commercial/non-BSPTCL purposes.
- 15) For Level II calls, BSPTCL may come and inspect the material after receipt of test certificate for counter verification of test certificates.
- 16) In case of rejection of the offered lot after testing as per MQP/Technical Specification/IS, the offered lot shall be scrapped and strictly disposed off as follows:
- The rejected lot/tested samples shall be clearly identified and stored separately to avoid any mix up with any in-process/finished lot till the same is disposed off.
 - The supplier shall dispose of (sold) the rejected lot as scrap
 - In case supplier intends to dispose off rejected material through any other mode, the same shall be done with approval of Corporate QA&I Department
 - Necessary supporting documents in regard to (b) and (c) above, shall be submitted for verification of BSPTCL and record shall be maintained at manufacturer's work.