

Annexure-I
CENTRAL ORGANISATION FOR MODERNISATION OF WORKSHOPS
QUALITY ASSURANCE PLAN FOR EOT CRANE

SL NO.	COMPONENT & OPERATION	TYPE OF CHECK	QUANTAM OF CHECK	ACCEP TANCE NORM	FORMAT OF RECORD	SOURCE	REMARK	OTHER REMARKS
1	2	3	4	5	6	7	8	9
01.	RAW MATERIAL							
1.1	Structural material for Bridge Girders, End Carriage, Crab. Platform,	Chem. & Mech.	1 Sample per size of plate and Other Structural	IS: 2062-2011, Grade E-250 BR or BO	T.C. & Inv.	SAIL TISCO IISCO, ESSAR Jindal Steel, RIN vendor appd. lab	CHP	Identification and Tests to be carried out in the absence of Mill T.C and proper Co-relation chalk mark
1.2	Rope Drum Plate	Chem. & Mech.	1 Sample per size of plate	IS: 2062-2011, Grade E-250 BR or BO	T.C. & Inv	-do-	CHP	-do-
	Seamless Steel Tubes of Gr. A106/ A53 of Gr. 'A', 'B', 'C' ASTM Standard	Acid Etching of end	100%	ASTM A-106	IR	Vendor	CHP	Check whether welded or seamless
1.3	Brake-Drum	Chem.	1 Sample	IS:1875 Class 3A or above IS:1030 Grade 280-520W	T.C	Manfr.	V	Forging or Cast steel
1.4	Gears	Chem.	1 per size per lot	DIN17210 DIN 10084 IS: 9175 EN-353 SAE-8620	T.C.	Vendor Appd. Lab	CHP	Case casburising low carbon alloy steel
1.5	Pinions	Chem.	-do-	-do-	-do-	-do-	CHP	-do-
1.6	Sheave/Pulleys	Chem.	1/lot	IS: 2062-2011 Gr.E-250 BR or BO IS: 1030 GR 230-450 (for Cast Steel) IS: 1875 Class 2 or above (for Forged Steel) BM 320 of IS: 14329 (for Malleable Iron Casting)	T.C.	Vendor/	V Lab Approve	-do-
1.7	Wheels	Chem.	1 Sample	IS:1570	-do-	-do-	CHP	C ₅₅ Mn ₇₅

1	2	3	4	5	6	7	8	9
1.8	Hooks	U.T.	100%	IS: 3664 ASTM A 388	T.C. and Inv.	Vendor/ appd. agency	CHP	U.T. on shank portion only
1.9	Wire rope	Examination of reports for breaking load	100%	IS: 2266	T.C. and Inv.	Manf./ auth. Stockist	V	Wire ropes of Usha Martin Fort Stokst Williams & South India Bombay wire rope to be used
2.0	Rails	Visual	100%	Rail	Inv.	Manf./ auth. stockist	V	
2.1	Bearings	Visual	100%	Mfrs. Standard	Inv.	Manf./ auth. stockist	CHP	For Bearing mfd. in the country
02	IN PROCESS INSPECTION							
2.1	Welding Procedure/ Welder qualification	WPS PQR WQTR	TYPE test	As per IS:7318 IS:817 AWS D14.1 ASME Sec IX		Vendor	V	Proper welding / welders records maintained by as per ASME ix AWS D14.1 Inspecting Engineer to carry out the type test if he is not satisfied
2.2	Welding of Rope drum	MPI/DPT RT of Joint	100%	IS:4853	I.R.	Qualified/auth radiography Agency	V	To be conducted by ISNT/ASNT qualified personnels
a)	Rope drum (for seamless tube)	Flattening test	100%	ASTM-A-106 IS 2328	TC	Vendor	V	
2.3	Welding of Box- girder, crab, End carriage etc.	Visual DPT	100% Random	IS: 822 AWSD 14.1 IS: 3658 ASTM E-165	I.R. I.R.	Vendor Vendor	CHP CHP	Check of blow holes, size and waviness
2.4	Welding (Soundness)	R.T. of Butt welds in tension	100%	IS: 4853 ASME SEC. V & VIII ASTM-A-388	I.R.	auth. Radtophagic agency	CHP	(Review of RT films - weld no. to be given by Inspector)
2.5	Gear & Pinions							
a)	U.T.	Ultrasonic testing	100%	IS:3664 when backwall echo set to 100% (a) defect shall not exceed 20% (b) Backwall echo	I.R.	IS:3664	CHP	for thickness >50 mm

2.6	b)	Dimensional accuracy	Measurement	Random	IS: 3681 (Grade- 8 DIN 8)	I.R.	Vendor	CHP	Min. 50% Qty. to be witnessed & other 50% to be verified.	
	c)	Hardness	Hardness	100%	pinion 50 – 60 HRC gears 2 to 3 HRC lower than pinion		I.R.	-do-	CHP	Difference in hardness of gears & pinion must not be less than 2-3 HRC
	d)	MPI	Crack Detection	Random	ASTM E-709 No Linear Indication	I.R.	-do-	V		
	e)	Surface finish	Surface	Random	1.6 microns max.	I.R.	-do-	CHP	1.6 microns max.	
	a)	Sound level	Sound	100%	COFMOW Specs. Sound Gear Box Practice	I.R.	-do-	CHP	85 db at a distance of 1 meter from Gear Box.	
	b)	Temp. rise	-do-	100%	Maximum 20 deg. “C” above ambient temperature after 2Hours continuous Running.	I.R	Vendor	CHP	Maximum 20 deg. C. above ambient.	
	c)	Leakage	-do-	100%		I.R.	Vendor	CHP	No Leakage	
	d)	Backlash	Measurement	Random		I.R.	Vendor	V		
	2.7	Hooks	Proof load	100%	IS: 15560 for ‘C’ Hook IS: 5749 for Ramshorn Hook		T.C.	Vendor/appd. Lab.	CHP	
		DPT after Proof load	100%	IS: 3658 ASTM E165	I.R.	-do-	CHP			

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03	FINAL INSPECTION							
3.1	Motors	Review of routine test certificate	100%	IS:325 IEC:60034	T.C. & inv.	Manfr./ auth. stockist	V	In case of purchase from auth.-stockist. manufacturers invoice to auth. stockist should be available for verification by inspector.
3.2	Cables	Review of Type test/ Routine test	100%	IS:694 IS:1554 IS:9968	T.C. & Inv.	Manuf./ auth. stockist	V	-do-
3.3	Control Panel & Pendant wiring, marking, continuity Input, Output, sequence operation	Visual check of fitting of components	100%	Electrical Diagram	I.R.	Vendor	CHP	Component type/routine test certificate to be reviewed.
3.4	Components	Visual/rating	100%	-do-	I.R.	Vendor	CHP	
3.5	Complete Assembled EOT	Visual & Checking over-all dimensions alignment & completeness	100%	Appd. drgs./Sch. II	I.R.	Vendor	CHP	
		Load test/ overload test, Deflection test, Hoisting speed measurements, for LT & CT current measurement	100%	IS:3177 IS:800 IS: 807 IS:3938	I.R.	Vendor	CHP	
3.6	Painting	Surface preparation	100%	COFMOW SPEC.	I.R.	Vendor	V	Sand blasting will be preferred.
3.7	Lubrication		100%	-do-	I.R.	Vendor	V	Ease of lubrication without dismantling any component.

V = Verification
CHP = Hold Point-to be got cleared before further processing
I.R. = Inspection Report
T.C. = Test Certificate
CR = Critical

M = Major
Vendor = Crane Mfr.
Appd. lab = Lab. approved by inspecting Engineer
Cot.7 = If test facility is not available with Vendor test must be done in an approved lab.