

Technical Specification of EOT Crane Cap 5 Ton (Qty.01 No) of Dahod work shop (W.Rly)

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COFMOW Specification No. COFMOW/IR/EOTC/2025, Rev-2

Leading Parameters :-

Sr. No.	Item No.	Details
01	Consignee	SSE-CMRS shop/DHD
02	No. of Cranes required	1 No. (One No.)
03	Crane Nos.	To be filled by COFMOW
04	Location (Sub Shop Name with Bay No)	CMRS shop (CMRS shop Bay) of Dahod Workshop
05	Type	Conventional Double Girder
06	Capacity	
6.1	Main Hoist (Tonnes)	5 Ton
6.2	Auxiliary Hoist (Tonnes)	2 Ton
07	Class of Duty	IV (Four)
08	Crane Controls From	Cabin ,Pendant & RRC
09	Speeds {Meter/ Minute}	
9.1	Main Hoist	6.3
9.2	Auxiliary Hoist	20
9.3	Long Travel	60
9.4	Cross Travel	30
9.5	VVVF Drive (Stepless speed for all motion) required	VVVF Drive Required
9.6	Creep Speed of MH (Meter/Min)	1.0 mtr/min
10	Structural details {Refer COFMOW Sketch No. COFMOW/IR/EOTC/X/Y/Z/86 (Double Girder), COFMOW/IR/EOTC/X/Y/Z/92-1(Under slung Girder)}	All dimensions are in meters unless otherwise indicated.
10.1	Weight/Unit Length of rail	----
10.2	Rail Head Width (B)	60 mm
10.3a	Span (Center to Center of Gantry Rail) (S)	18.236 M
10.3b	Gauge (Inner face to Inner face of rail) W= (S-B)	18.176 M
10.4	Top of Gantry Rail (Or Bottom Flange of I-Beam) to lowest overhead obstruction (C)	2.134 M
10.5	Top of Gantry Rail (Or Bottom Flange of I-Beam) to floor level (L+J=D)	7.162 M
10.6	Lift of Hook above floor level {MH} H1(MH)	7.162 M
10.7	Drop of Hook below floor level {MH} H2(MH)	2.463 M
10.8	Lift of Hook above floor level (AH) H1(AH)	7.162 M
10.9	Drop of Hook below floor (AH) H2(AH)	2.463 M
10.10	Center distance between Hooks MH & AH (R)	0.900 M
10.11	Side clearance from center line of Gantry Rail/I-Beam to nearest side obstruction {A-1}	0.203 M
10.12	Side clearance from center line of Gantry rail/I-Beam to nearest side obstruction {A-2}	0.203 M
10.13	Vertical clearance from floor level to lowest structural member of Crane{K}	6.858 m
10.14	Vertical clearance from floor to bottom of cabin {L}	5.486 M

SSE/M&P

SSE/MW

SSE/Electric Loco(P)

SSE/CMRS

For CMW/DHD

Cont..2

10.15	Runway I-Beam section (For under slung single girder crane only, not required for other cranes)	Top Flange (mm) Bottom Flange (mm) Web Height (mm) Web Section (mm)	Not Applicable	
11	Bay Length & DSL			
11.1	Length of Gantry on which crane is to operate meters	198 M		
11.2	Type of DSL required (Meters)	Shrouded Type DSL		
11.3	Length of DSL required (Meters)	198 M		
11.4	Type of existing DSL to be indicated	M.S. Angle type		
12	Type of control station	Cabin (Fixed & open) ,Pendant& RRC		
13	Crane has to work in	Indoor		
14	Working environment	General workshop Dusty		
15	Other requirements	---		
15.1	Type of Hook required	MH = "C" Type (With safety latch) AH = Not Applicable		
15.2	Spare motors for main hoist, aux. Hoist, LT and CT	1 no each set		
15.3	The following Slings/Chains have to be supplied along with the crane. The bidder shall indicate the cost of Slings/Chains separately in the order.			
Sr.No	Item Description	Capacity	Length	Qty
1	Two Legged Chain sling with 'O' ring at one end and Hooks at other (along with test certificate)	3.5 T	4.5 M	01 Set
2	Two legged Chain sling with 'O' ring at one end and Hooks at other (along with test certificate)	10 T	4.5 M	01 Set
3	Two legged Chain sling with 'O' ring at one end and Hooks at other (along with test certificate)	5 T	4.5 M	01 Set

- **Inspection** :- RITES Inspection should be done.

- **ANNUAL MAINTENANCE CONTRACT**

Tenderers are required to quote for a comprehensive Annual Maintenance Contract for the machine supplied against this specification for a period of five years on yearly basis giving the rates for each year i.e. first year, second year so on, which should be inclusive of all spares, material and labour costs.

The duties and taxes as applicable should be indicated separately. All consumables spares and material should form a part of the scope of comprehensive AMC.

NOTE:-

- 1) Sufficient lighting 4 to 8 points should be provided below the structure.
- 2) Sufficient light, fans, Fire Extinguisher etc should be provided in the operator cabin with safety items.
- 3) Spares Mech. & Elect. both should be supplied by the firm along with the crane. Aforesaid Two years normal maintenance including spares Hoist L.T & C.T Motors is required.

SSE/M&P

SSE/MW

SSE/Electric Loco(P)

SSE/CMRS

FOR CWM/DHD
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- 4) The EOT Crane should be installed on non turnkey basis at Dahod workshop.
(G.A Drawing approval from this office is required for the same before supply the EOT Crane with all accessories.
- 5) Hydraulic Thrusters Brakes and Limit Switches should be provided for all the operations.
Festoon Cables for supply to the trolley & Hoist Motors should be provided adequate manner on the foot board.
- 6) Both the sides foot board should be provided with chequered plates and adequate fencing.
- 7) Master controller system of control is required for each operation with push button safety features. Long travelling wheel (LT Wheel) diameter should be minimum 500 mm Diameter to negotiate the old rail line of MEMU shop (old Mill Wright shop) very easily.
- 8) All the motors should be protected with cover provided with operated and single phasing preventer and also arrangement of overload tripping system. Crane Motors, contactors & other equipment should be standard make.
- 9) Fire retard copper cable / wire of suitable size should be used in crane wiring.
- 10) Provision of Anti Collision device should be incorporated in EOT Crane.
- 11) Provision of lifting load indicator should be incorporated in EOT Crane.
- 12) Chain testing certificates are to be submitting along with supply being safety related items.
- 13) Supplier should be visit & check the existing dimensions of rail & structure of shop to avoid the further complications in design of EOT Crane 5 ton.
- 14) Four sets of operating & maintenance manuals covering specification/technical details of Mechanical & Electrical parts and circuit details & Drawing.
- 15) All safety arrangement including limit switches, buffer etc should be incorporated in EOT Crane Cap-5 ton to ensure safety.
- 16) The warranty period of machine should be minimum 2 years.

Encl:- 1)Drg No. WR/DHD/DRG/4/ M-8022 (1 Page)


SSE/M&P


SSE/MW


SSE/Electric Loco(P)


SSE/CMRS


For CMW/DHD

Technical Specification of EOT Crane Cap 5 Ton (Qty-01 No)

Description of M&P :- EOT Crane Cap 5 Ton

Purpose :- For Material handling work across section of Dahod workshop.

Likely suppliers :- (1) M/s HYT ENGINEERING COMPANY PVT LTD Pune

(2) M/s Cranex Ltd Ghaziabad UP

(3) Electromech Material Handling system Pune

1. Other conditions of M&P :-

1.1 TECHNICAL LITERATURE:

1.2 One copy of the printed illustrative catalogue showing features of the machine and its elements must be enclosed with each copy of the bid.

1.3 The technical literature shall be provided for the complete machine, including imported and indigenously purchased components / sub- assemblies. The successful tenderer will have to furnish 4 (four) copies each of the following manuals directly to the consignee along with the machine. Out of these 04 sets, the bidder shall be required to submit one set of all documents in best available condition one month prior to the training for the machine. One set of technical literature should cover the following details:

- i. Operational & Maintenance manual of the Machine-04 Sets
- ii. **Electric Circuit diagram hard copies in A-II size as well as soft copy in PDF format.**
- iii. Spare part manual including part lists no., hard copies in A-4 size as well as in PDF format.

Note: All manual and literature should be in English/Hindi.

2.0 SPECIAL FEATURES:

2.1 Special features incorporated in the machine, if any, shall be indicated separately in the bid clearly indicating the advantages.

3.0 DEVIATIONS:

3.1 The tenderer shall certify that the offered machine fully meets the specification. Various design features incorporated in the machine to fulfill different technical performance requirements shall be fully explained in the offer. However, minor deviations from these specifications which do not affect or in any way interfere with the stipulated performance standards or would result in improved safety/ reliability or would reduce recurring maintenance/operating cost of the machine, can be considered for acceptance. The tenderer in such eventuality shall clearly indicate the details of these deviations and their implications as per the following format:

3.2.2 All electrical and mechanical equipment shall be tested in accordance with the appropriate Indian Standard at either the machine maker's or equipment manufacturer's works and test certificates provided if required by the Purchaser or his representative.

4. TRAINING:

4.1 Technical experts from manufacturer will fully and adequately provide training to operation and maintenance staff nominated by consignee at the time of commissioning of machine. Minimum 4 man days of training at consignee premises will be provided. This training shall include machine architecture, systematic methods for quick diagnosis of problems and quicker methods to solve them, domain knowledge and safety procedures to be followed while working with machine.

5. DISPATCH OF MACHINE FROM MANUFACTURER'S WORKS

5.1 The supplier and consignee will ensure that facilities as defined in PO necessary at site for commissioning of machine e.g. clear site are ready before dispatch of machine. The machine shall be dispatched by the supplier only after all the on-site requirements from supplier side as well as consignee side, for commissioning the machine on arrival, have been made ready. The supplier and consignee shall record a joint note certifying this. This joint note shall accompany receipt note and the bill for 80% payment.

5.2 In case of delay on part of consignee in providing the clear site or any other facility as specified in the contract to the supplier, the supplier will report the matter to PCMM/CCG and consignee. In case of delay in the readiness of site on part of consignee, Store/Railway shall take up the matter with concerned Railway /PU.

6. INSTALLATION, COMMISSIONING AND PROVING TESTS:

The contractor or his agent would be required to carry out a joint check at consignee's end, along with the consignee, before unpacking is done, to avoid subsequent complaints regarding short shipment/transit damages. It is necessary that this joint receipt inspection be done immediately on receipt of the machine by consignee & bidder's representative to avoid commissioning delays due to shortages/transit damages. The firms representative indicating the tentative time schedule for various activities of installation and commissioning. The 100% payment after receipt and successful commissioning of machine and 10% bank guarantee of nationalized bank submitted by firm against 2 years warranty period.

7. RESPONSIBILITY OF CONSIGNEE AND BIDDER

7.1 Consignee's obligation with regard to erection & commissioning will be limited to the following:

- i) Supplying following free of cost at the site of work.
 - a) Electricity required for the purpose of erection/ lighting.
- ii) Safe storing of the material supplied by manufacturer until erection of machine.

7.2 Following items of work shall be performed by the Contractor

- iii) Unloading and transporting materials free of cost from the manufacturer premises to the work site.
- iv) Checking of site. Any rectification required, however, will be done by the purchaser.
- v) Installing of the machine structure and associated machinery in position.
- vi) Complete fitting and wiring of all electrical items
- vii) Commissioning of the equipment. The machine performance shall be demonstrated after successful commissioning.

7.3 The contractor shall arrange erection and commissioning of the machines. Adequate number of teams of technical experts will be made available so that erection and commissioning delays are eliminated. Such personnel will be required to be present immediately as soon as the machine has been received.

7.4 The contractor or his agent shall commission and prove out the machine as per time schedule.

7.5 In the interest of early commissioning, the supplier shall ensure that minimum amount of assembly is necessary at site. Site welding and riveting shall be avoided as far as possible. The supplier, before proceeding with design details, shall satisfy himself about the site conditions so as to avoid any difficulty at the time of erection.

7.6 Tenderer shall ensure that weights offered shall be as per information submitted vide schedule I. The bidder shall also ensure in its offer that range of variation in the total actual weight of the machine and quoted value in schedule II will be within $\pm 5\%$. Purchaser reserves the right to verify the total weight of the machine offered by the bidder against information submitted under schedule II.

8. Joint Commissioning Note :-

8.1 A Joint Commissioning Note (JCN) to this effect shall be made as per the format at Annexure-D. If some minor breakdowns are noticed after the issue of JCN, these shall be attended as per warranty obligations and suitable extension of the warranty period, under intimation to Store/Railway. If no intimation is given to Store/Railway, then the issue will be discussed in a meeting between CME/Plg and the consignee.

8.2 If an assembly/sub-assembly requires to be taken back to the manufacturer's premises for

repair/replacement either before commissioning or during warranty, the manufacturer or his agent would be required to submit BG of suitable amount. In case the entire machine has to be taken back, a Bank Guarantee for the cost of the machine would have to be submitted. The bank guarantee should be of adequate value so as to cover the cost of the assembly/sub-assembly/paid up cost of the machine.

9. WARRANTY Period

The following conditions regarding Maintenance and reliability shall also apply:-

9.1 The warranty period of machine should be at least for 2 years and it shall be designed for a life of 10 years with regular maintenance and all the structural members of the machine and the foundation shall be guaranteed for 10 years against cracks breakages and etc. during the course of normal operations. Tenderer would submit suitable undertaking and submission of 10% bank guarantee/FDR certificate of nationalized bank against 2 years of warranty period.

9.2 The machine shall at all times give contractual out-put and accuracy. Any deficiency or break down for a total of 02 hr. or more for a day would be treated as failure for the day, for the purpose of extending warranty period.

9.3 The tenderer shall ensure that in case a failure is reported by a consignee qualified service engineers shall visit the site within two days from the date of complaint on calendar day's basis. The period of three days (excluding date of complaint) after the failure reported shall be treated as grace period, which will not count towards breakdown time for up to one failure per month and a maximum of 3 failures per quarter. In case the number of failure exceeds one failure per month or three during any quarter of warranty, grace period of only 1 day will be permissible for such additional failure. Complaints shall be lodged by consignee by fax phone, e-mail or per bearer at address given by the tenderer.

9.4 Maximum permissible down time till it is restored back to the contractual output and accuracy levels, in any quarter of the year during the warranty period, shall be 150 hrs. in case the total break down period in any one of year during warranty period, exceeds 500 hrs., the consignee shall inform the same to store/Railway to ensure of first this a record of breakdown (duly signed by shop incharge) in hours on quarterly basis should be maintained by the consignee and joint report with the contractor shall be made for each breakdown attention. At the end and second year of warranty, these details of breakdown hours during warranty period should be advised to store/Railway as per performance appraisal report given in Annexure – E. The firm will then request store/Railway for release of WBG annexing the performance appraisal report as per Annexure-E and the breakdown details mentioned above. Penalty will be levied on the bidder for breakdown period on working days basis (excluding holidays) after discounting for the grace period. Penalty will be calculated as percentage of annual preventive maintenance charges and will be deducted from the respective annual payments as under

Breakdown period	Applicable penalty
Up to 150 hours in each quarter and not exceeding 500 hours annually	Nil
Exceeding 150 hours - up to 200 hours in any quarter and not exceeding 500 hours annually	5 % of Bank guarantee which has submitted against warranty period
Exceeding 500 hours - up to 750 hours annually	10% of Bank guarantee which has submitted against warranty period
Exceeding 750 hours - up to 1000 hours annually	25% of Bank guarantee which has submitted against warranty period
Exceeding 1000 hours annually	50% of Bank guarantee which has submitted against warranty period and Encashment of Warranty Bank Guarantee besides other action like noting adverse performance of the bidder and/or agent for future tenders and their offer in the subsequent tenders will not be considered for placement of any order.

ANNEXURE -D

JOINT COMMISSIONING NOTE

Date:.....

Sub: Commissioning of (name of machine).....

Ref: PCMM contract No.....

1.	Name of consignee/Railway	
2.	Machine name	
3.	Quantity	
4.	Name of supplier	
5.	Machine received on	

6. All the parameters of the machine are found okay. The proving test on the machine was conducted from toand machine is working satisfactorily.
7. Machine has finally been commissioned on.....The machine has been handed over for regular use and kept under one month observation to watch its performance.
8. Following minor deficiencies (if any) found during joint observation trials are to be attended/rectified by the firm during one month observation and before issuing the PTC for the machine:
 - a.
 - b.
 - c.

Representative of firm	SSE-Consignee	SSE-M&PSSE-MW	SSE-Elect	Representative of consignee
DHD	DHD	DHD	DHD	Designation
				(Minimum Gazetted level)

PERFORMANCE APPRAISAL FORM

APPRAISAL ON COMPLETION OF ____ YEAR OF WARRANTY PERIOD

To, M/s.

Dated:.....

1.	Consignee/Railway	
2.	Name of supplier	
3.	Machine Name	
4.	Machine received on	
5.	Machine commissioned on	
6.	PTC issued on	
7.	Warranty period expired on	
8.	Performance during warranty period:	
9.	Total number of breakdowns	
9(a)	Total downtime in number of days	
9(b)	Any warranty complaint pending on date	Yes/No
10(a)	If yes, then the date and nature of defect(s)	

11. In case, Reliability clause No 16 of the machine during warranty period is also given in Bid Document Pt.II, then following details of breakdown hours for preceding eight quarters may also be furnished.

Quarter	Period From..... To.....	Breakdown hours
1		
to		
8		

Signature

Name

Designation:

DY.CME/DHD

Office Stamp

1. PCMM/CCG/Western Railway
2. CME(Pig)/CCG/Western Railway
3. FA&CAO/CCG/Western Railway
4. AFA(W&S)/Dahod workshop/Western Railway

Note:

- i.) This appraisal may please be sent immediately on completion of warranty period. If any extension of warranty period required, may please also be mentioned with details
- ii) Sr. Scale Officer having independent charge is also authorized to sign.

Annexure-I

DELIVERY SCHEDULE CHART:

In the event of acceptance of the offer, the machine(s) shall be supplied as per the following Milestone Chart

Name of Machine : **EOT Crane Cap 5 Ton**

S. No.	Activity	Activity Code	Outer Limit of TimeSchedule
1.	Issue of LOA	D1	-
2.	Submission of PBG by successful bidder	D2	D1 + 30 days
3.	Issue of PO (after verification of PBG)	D3	D2+30 days
7.	Delivery of machine at site by supplier	D4	D3 + 90 days
10	Installation and Commissioning and Prove out of machine by supplier	D5	D4 + 60 days
11.	Issue of PTC by consignee	D6	D5 + 30 days
12.	Warranty	D7	D5 + 2 years
13.	Submission of performance appraisal report in form E by consignee	D8	D7 + 60 days

NOTE: Notwithstanding the delivery period indicated else where in the PO condition, the delivery indicated in this schedule should be taken as over ridding and final.

SCHEDULE - IV

SPARES FOR CRANE

S.NO.	DESCRIPTION OF ITEMS	QTY./NOS	TOTAL QTY. TO BE INDICATED BY THE BIDDER	REMARKS
01.	Fixed & moving contact tips for contactors	1 no of each size		
02.	For Contactors coils	1 set consisting		
03.	Overload relays	of 3 nos. of each size		
04.	Timers	1 set of each size (applicable for non VVVF drive crane)		
05.	Carbon brushes	1 no. of each size (applicable for non VVVF drive crane)		
06.	Carbon brush holders	2 sets of each size (applicable for non VVVF drive crane)		
07.	Limit switches	1 set of each size (applicable for non VVVF drive crane)		
		1 set of M.H		
		1 set of C.T		
		1 set of L.T		
08.	Current collectors	1 set of A.H (if applicable)		
09.	Fuse links	2 sets		
10.	Thrustors	1 set of each size		
11.	Brake Liners with rivets	1 of each size		
12.	Main spring for thrustor brakes used on crane	1 pair of each size		
13.	Brakes shoes complete with lining	1 of each size		
14.	Oil seals for gear cases	1 pair of each size		
		1 for each size of gear box and geared coupling on the crane		
15.	Spare cards for VVVF drive	1 no. each		
	For all drives viz. MH, AH, LT & CT			
16.	A set comprising of 2 nos	1 set of 2 nos. each		
	Each long travel and cross			
	Travel motion wheel in			
	Assembled condition with axle			
	Bearings housing			
17.	Any other items considered essential (Ref. Cl 1.4)			

Note 1 It is not necessary that all spares are ordered. Quoting of unit rate of each item is therefore necessary.

2 Spares at sno 3, 4, 5 and 6 above will be applicable for non VVVF cranes only. Remaining spares will be applicable for both VVVF as well as non VVVF cranes.

3. One set of above spares is required with each crane. Wherever more than one cranes are covered in one schedule-I, the bidder shall quote for one set of above spares with each crane.

SCHEDULE-V

LIST OF MAINTENANCE TOOLS AND TACKLES

S.NO.	DESCRIPTION	QTY.
01.	Tool box	
02.	D/E Spanners required sizes	1 Set
03.	Grease gun	1 No.
04.	Oil can	1 No.
05.	Screw Driver of required sizes	1 Set
06.	Nose plier	1 No.
07.	Insulated plier	1 No.
08.	Hammer 2 lbs	1 No.
09.	Allen Key required sizes	1 Set
10.	Hydraulic jack	1 No.

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 Carriages, Crab platform	Chem & Mech	1 Sample per size of plate and other Structural	IS 2062	T C &	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 with hot chalk mark
1.2	Rope Drum plate	Chem & Mech.	1 Sample per size of plate	IS 2062	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 IS 1030 Gr. 40	T C	Manfr vendor	V	Forging or Cast steel
1.4	Gears	Chem	1 per size per lot	IS 1570 DIN EN10084 BS 970	T C	Vendor Appd. Lab	CHP	Case carburising low carbon alloy steel
1.5	Pinions	Chem	-do-	-do-	-do-	-do-	CHP	-do-
1.6	Sheave/Pulleys	Chem	1/lot	IS 2062 Gr B M 310 of IS 2108 Superseded by IS14329	T C	Vendor/ Lab Approved	V	
1.7	Wheels	Chem	1 Sample	IS 1570 DIN 17210 BS 970	-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/ appt. 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%	C.R 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 AWS D14.1 IS 3658	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 IX	I.R	auth. Radiographic agency	CHP	(Review of RT films - weld no to be given by Inspector)
2.5	Gear & Pinions			ASTM-A-388				

1	2	3	4	5	6	7	8	9
a)	UT	Ultrasonic testing	100%	IS 3664 when backwall echo set to 100% (a) defect shall not exceed 20% (b) Backwall echo shall be minimum 80% in any area	I R	IS 3664	CHP	for thickness >50 mm
b)	Dimensional accuracy	Measurement	Random	IS 3681 (Gr 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	IS 3658 No Linear Indication	I R	-do-	V	
e)	Surface finish	Surface	Random	1.6 microns max	I R	-do-	CHP	1.6 microns max
2.6	Gear Boxes							
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 nse	-do-	100%	20 deg C	I R	Vendor	CHP	20 deg C. above ambient
c)	Leakage	-do-	100%		I R	Vendor	CHP	No Leakage
d)	Backlash	Measurement	Random	Din 8 GR 8 IS 4509	I R	Vendor	V	
2.7	Hooks	Proof load	100%	IS 15560	T C	Vendor/appd Lab	CHP	
		LPT after Proof load	100%	IS 3658	I R	-do-	CHP	
1	2	3	4	5	6	7	8	9
03	FINAL INSPECTION							
3.1	Motors	Review of	100%	IS 325	T C &	Manfr /	V	In case of purchase from

		routine test certificate			inv	auth stockist		auth -stockist. manufacturers invoice to auth. stockist should be available for verification by inspector
32	Cables	Review of Type test/ Routine test	100%	IS 694 IS 554 IS 9968	T C & Inv	Manuf / auth stockist	V	-do-
33	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
34	Components	Visual/rating	100%	-do-	I R	Vendor	CHP	
35	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	I R	Vendor	CHP	
36	Painting	Surface preparation	100%	COF-MOW SPEC	I R	Vendor	V	Sand blasting will be preferred
37	Lubrication		100%	-do-	I R	Vendor	V	Ease of lubrication without dismantling any component.

V	=	Verification	M	=	Major
CHP	=	Hold Point-to be got cleared before further processing	Vendor	=	Crane Mfr
I R	=	Inspection Report	Appd. lab	=	Lab. approved by inspecting Engineer
T C	=	Test Certificate	Col 7	=	If test facility is not available with Vendor test must be done in an approved lab.
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