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**QUALITY ASSURANCE PLAN FOR
ELASTIC RAIL CLIPS**

Phone No.-----

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1. COMPANY PROFILE

A) GENERAL

B) COMMITMENT: Elastic rail clips manufactured by our firm for use on Indian Railways will conform to the requirements of latest IRS specification T-31-92 and STR for ERC. This Quality Assurance Programme (QAP) is intended to manufacture Elastic Rail clips, in-house testing of raw material and product so as to avoid non conformity during manufacturing and final inspection and testing. We shall also abide by the stipulations of "General Guidelines for Vendor Approval".

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2. ORGANISATION CHART

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3. FACTORY KEY PLAN ALONG WITH OUTER DETAILS

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4. FACTORY LAYOUT WITH DETAILS

5. QUALITY CONTROL PERSONNEL

SN	Name	Designation	Qualification	Experience	Remarks

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6. LIST OF PLANT & MACHINERY

Sl. No.	Name of the Equipment/ Machine	Manufactured By/ Model No.	Quantity/Nos.	Capacity	Unique Sl. No. of Machine	Year of procurement	Documents establishing Ownership	Year of Manufacture

Undertaking:

1. We undertake to inform RDSO through FAX followed by confirmation copy through courier / Speed post if any machinery is removed from firm's premises even for repair. We shall inform RDSO when machine is brought back and made operational.
2. We undertake that if at any time after approval is accorded, some machinery is found deficient without intimation to RDSO action against our firm can be taken by RDSO as per extant policy.

Signature

Name in full of Signing Authority

Status in the Firm

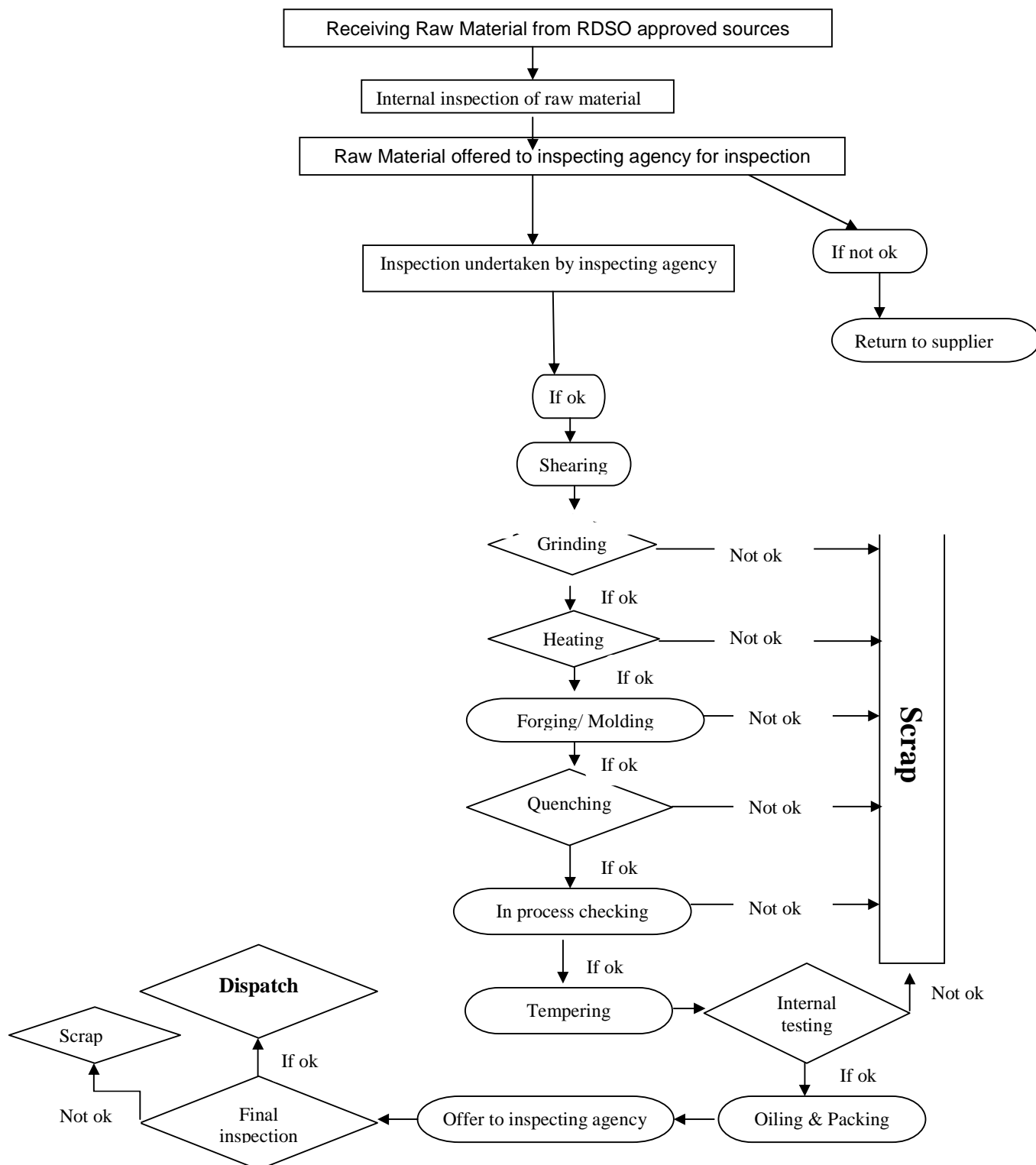
Place :

Date :

Stamp of the firm

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8. FLOW CHART OF MANUFACTURING PROCESS



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9. REFERENCE I.S. CODES:

IS Code NO	Title
1. IS: 77-1976	Linseed oil, boiled for paints
2. IS: 228 (Pt.1, 2, 3, of 1987 & 8, 9 of 1975)	Method of chemical analysis of steel
3. IS: 1500-1983	Method for Brinell Hardness test for metallic materials (second revision)
4. IS: 1501-1968	Method for Vickers hardness test for metallic materials
5. IS: 1586-1968	Method for Rockwell Hardness test (B&C scale for steel)
6. IS: 2500(Pt.I) - 1973	Sampling inspection tables – Part I Inspection by attributes and by count of defects (First revision)
7. IS: 2853-1964	Method of determining austenitic grain size of steel (amendment No. 1)
8. IS: 3195-1992	Steel for the manufacture of volute and helical pumps for the oil & gas industry specification (Third revision)
9. IS: 4163-1982	Method of determination of inclusion content in steel by microscopic method (First revision)
10. IS: 6396-1983	Method of measuring decarburised depth of steel (First revision)
11. IS: 7739 (Pt.V) 1976	Code of practice for preparation of metallographic specimen part V Iron and steel and their examination

All the above standards are available for reference at our works.

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10. CALIBRATION AND INSPECTION OF TESTING EQUIPMENT.

10.1 All the test equipment mentioned below are periodically checked/calibrated:

SN	Equipment/instrument	Range	ID No.	Location
1.	Hardness tester (i)			
2.	Hardness tester (ii)			
3.	Proving ring (i)			
4.	Proving ring (ii)			
5.	Surface plate (i)			
6.	Surface plate (ii)			
7.	Recorder Heating furnace			
8.	Recorder Quenching tank			
9.	Recorder Tempering furnace			
10	Thermocouple H.F.			
11	Thermocouple Q.T.			
12	Thermocouple T.F.			
13	Thermocouple T.F.			
14	Auto Tem. Cont. T. F.			
15	Tem. Indicator Q.T.			
16	Bevel Protector			
17	Height Gauge			
18	Vernier Caliper			
19	Microscope			
20	Gauges			
21	Other equipments			

- Note: 1) Calibration certificates for the hardness tester and the proving ring are maintained in a separate folder and the date of calibration due shall be displayed on the equipment. Calibration is got done from National Physical Laboratory (NPL) or from a Govt. approved test house. or through labs approved by NABL/NTH.
- 2) Inclusion rating charts are framed in glass panel and displayed in the laboratory room.
- 3) RDSO drawings relevant to the clip under production are also available for reference.
- 4) Laboratory room is well lit clean and properly ventilated and provided with easily maintainable floor and platform.

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11. RAW MATERIAL IDENTIFICATION AND STORAGE

- 11.1 Raw material procured from RDSO approved sources only.
- 11.2 Raw material received at work premises is identified by matching the details provided in the original invoice and the details available on the tag provided on the bundles.
- 11.3 After proper identification of raw material the raw material unloaded at the work premises.
- 11.4 The unloaded raw material stacked in raw material stock yard heat wise.
- 11.5 To ensure that the different heats of raw material do not get mixed up, following information is displayed on each bays of raw material:
 - a) Heat No. :
 - b) Quantity :
 - c) Source of Raw material :
 - d) P.O. placing Railway :
 - e) Colour Code :

12. INSPECTION OF RAW MATERIAL

- 12.1 To demonstrate the achievement of desired quality of the raw materials, the as rolled bars are checked for each heat separately for the following:
 - (i) Chemical composition
 - (ii) Grain size
 - (iii) Inclusion rating
 - (iv) Hardness
 - (v) Depth of decarburisation
 - (vi) Freedom from defects
- 12.2 Two Nos. of bars per heat are checked for the above properties results of observations are recorded in a pro-forma given in **Annexure-I** and same are seen for their acceptability as per specification and also compared with the test certificates.
- 12.2 In respect of dimensions (diameter) of the rod at least 20 bars are checked for each heat and the observations are recorded in a proforma given in the **Annexure-II** and same seen for their acceptability as per specification.
- 12.3 After internal inspection of raw material, the raw material will be offered to consignee/Zonal Railway for inspection before manufacturing is undertaken.

13. MANUFACTURING OF ELASTIC RAIL CLIPS

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13.1 Shearing Operation:

- 13.1.1 Only those rods which are acceptable in terms of clause 12 above are cut into pieces.
- 13.1.2 The rods are cut to the required length for the clips and same are stored heat wise.
- 13.1.3 For storing cut rods of different heats, separate pigeonholes racks made with marking on each hole with different colours similar to those as on the rods used for colour coding.
- 13.1.4 The cut bars of a particular colour code are stacked in the pigeonhole of the corresponding colour.
- 13.1.5 The length of the cut bars are maintained within + 1.5, – 0.0 mm of the nominal length and the squareness at the end is within 1.0 mm.
- 13.1.6 To demonstrate the achievements required quality at least three bars are checked every hour during the cutting operation and the data are recorded as per pro-forma given in the Annexure-III

13.2 Grinding Operation:

- 13.2.1 The cut bars are ground at the ends to removes any burrs / sharp edges.

13.3 Heating Operation:

- 13.3.1 The heating furnace is indirect heating walking beam type.
- 13.3.2 The furnace is fitted with automatic temperature control device and continuous temperature recorder, which is always, in working order.
- 13.3.3 It is Ensure that the temperature recording device and the temperature control device are synchronised and in working order.
- 13.3.4 The temperature of the heating furnace is adjusted as per requirement of the raw material.
- 13.3.5 During the heating it is ensure that the over heating not take place to avoid burning of rods.

13.4 Clip formation/Forging:

- 13.4.1 The dies fitted in the power presses which have an arrangement for blowing off scaling from the dies.
- 13.4.2 Suitable templates are used for checking the wear and tear of the dies.

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13.4.3 The drawings of the templates are prepared by our firm and preserved. One set of templates is used as master templates.

13.4.4 Blowing off scaling from the dies after every clip is formed is ensured.

13.4.5 The time period between taking out bars from the heating furnace to the forming stage of the clip and to dipping in oil quenching bath is maintained as minimum as possible but within 20 seconds.

13.5 Oil Quenching bath Operation:

13.5.1 The oil quenching bath is of adequate length, width and depth and it is fitted with conveyor belt passing through the oil.

13.5.2 The system is so adjusted that it permits the clip to be in oil for at least 12 minutes.

13.5.3 The oil bath is also fitted with suitable heat exchanger and cooling tower.

13.5.4 It is ensured that the temperature of the oil bath does not exceed 70⁰ C. The bath is rejected if the temperature of the bath exceeds 70⁰ C.

13.5.5 The oil bath is fitted with continuous temperature recorder, and records of the temperature are maintained.

13.5.6 Oil bath is also fitted with a mechanical stirrer to increase the efficiency of quenchant.

13.5.7 It is checked visually that the clips produced are free from harmful die marks. In case clips with the die marks are noticed, production is stopped and dies rectified.

13.5.8 The clips found with die marks are rejected.

13.5.9 We check two clips after hardening in the oil bath, for dimensions in the gauges every one-hour, from the running production, and observations recorded in the proforma given in the **Annexure-IV**.

13.5.10 We check hardness of the above two clips every one-hour and record the observation in the proforma given in the **Annexure -V** and see that the results are consistent.

13.5.11 It is also checked that the stamping on the product is clearly and readable.

13.5.12 The quenching oil bath is cleaned and the oil is filtered at regular interval of time preferably after production of every one lakh clips.

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13.6 Tempering operation:

13.6.1 The tempering furnace is oil fired tunnel type fitted with a conveyor system.numbers of clips can be accommodated per feet length of conveyor belt.

13.6.2 The furnace is fitted with thermo-couples to sense the temperature at three points along its length to ensure the constant temperature zone length of the furnace.

13.6.3 The furnace is fitted with an automatic temperature control device and continuous temperature recorder.

OR

13.6.1 The tempering furnace is electrical batch type.

13.6.2 It is having an arrangement of free circulation of hot air and fitted with automatic temperature control device and continuous temperature recorder.

13.6.3 For loading the clips into the furnace, only tree type bucket arrangement, of size.....clips, which permits free air circulation around the clips, is used.

13.6.4 The clips are heated in raw material of the second heat only when the clips of the first heat have been fully consumed. Clips from the first heat are stacked separately for subsequent processing (tempering).

13.6.5 Heat wise tempering of the clips is ensured.

13.6.6 In case of electrical tempering furnace, proper air circulation of hot air is ensured. The clips shall be put on hangers only in the tree type bucket.

13.6.7 The chart of the continuous temperature recorder is preserved and the temperature and the time of constant temperature is marked on the recording chart and tabulated in the **Annexure-VI** along with the quantity of the clips tempered.

13.6.8 The tempered clips from the same heat of the raw material are stacked separately and a board is displayed near the stack indicating heat no. till the material is put into the bags.

13.7 Oiling/Rust preventive:

13.7.1 A rust preventive compound as specified in the IRS-T-31-1992 is applied to the all finished elastic rail clips and dried before putting them in bags.

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14. QUALITY ASSURANCE SYSTEM – INSPECTION & TESTING PLAN

SN	Subject/ Product/ Process	Sample size & its frequency of inspection	Parameters for inspection	Mode of inspection/ equip. used	Acceptance limits/Criteria/ specified Value	Rejection details Reprocessed/ Scraped	Annexure No.
1	After raw material received at work premises	02 samples per heat	i) Chemical analysis,	Through wet analysis or spectrographic analysis	As per IRS-T-31-1992	Return to supplier	Annexure-I
		02 samples per heat	ii) Grain size, inclusion rating, hardness, depth of decarb, freedom from surface defects	At work premises through microscope	As per IRS-T-31-1992	Return to supplier	Annexure-I
		20 bars per heat	iii) Dimensions	By working gauges/RDSO approved gauges	As per RDSO approved gauges	Return to supplier	Annexure-II
	Manufacturing						
	a) Shearing	Min. 03 bars per hour during shearing operation	Length of cut bar	By Go-No Go gauge	Within nominal length +1.5 mm & -0.0 mm	Scrap	Annexure-III
			End squareness	By tri-square, filler gauge & surface plate	Within 1.0 mm	Scrap	Annexure-III
	b) After ERC formation & quenching	02 samples every hour Daily of running production	Dimension,	By working gauges/RDSO approved gauges	As per RDSO approved gauges	Scrap	Annexure-IV
			Die marks	Visual,	As per IRS-T-31-1992	Scrap	
			Quench hardness	By Hardness tester	Check for consistency	Scrap	
	C) After tempering	Sampling as per IS: 2500, daily as per days production	Hardness of ERC	By Hardness tester	By Hardness tester	Scrap	Annexure-V

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SN	Subject/ Product/ Process	Sample size & its frequency of inspection	Parameters for inspection	Mode of inspection/ equip. used	Acceptance limits/Criteria/ specified Value	Rejection details Reprocessed/ Scraped	Annexure No.
3	Finished ERC Before offering for inspection	Min. 02 samples per lot	Chemical analysis	Through wet analysis or spectrographic analysis	As per IRS-T- 31-1992	Scrap	Annexure-VI
		As per IS: 2500, daily as per days production	Hardness	By Hardness tester	As per IRS-T- 31-1992	Scrap	Annexure-VIII
		-do-	Dimensions	By working gauges/RDSO approved gauges	As per RDSO approved gauges	Scrap	Annexure-IX
		-do-	Application deflection test	Through power press or manually by working Block/RDSO approved Block	As per RDSO approved Block gauges	Scrap	Annexure-X
		-do-	Toe load test	Through UTM or toe load testing arrangement by Proving ring	As per IRS-T- 31-1992	Scrap	Annexure-XI
		5% of -do- min. 2 samples.	Inclusion rating, depth of decarb, freedom from surface defects	At work premises through microscope	As per IRS-T- 31-1992	Scrap	Annexure-XII

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15. INTERNAL INSPECTION AND DOCUMENTATION

- 15.1 For the purpose of testing the number of clips manufactured from the same heat and heat treated in similar manner will form one 'lot'.
- 15.2 For chemical composition, test two samples per lot. The results of testing are recorded in a proforma as per **Annexure- VI**.
- 15.3 For the hardness test, dimensional check, application and deflection test and toe load test, the sample size are chosen depending upon the production per day as given in **Annexure- VII**, and the acceptance number (a) and the rejection number (r) corresponding to inspection level IV and acceptable quality level (AQL) of 1.5% as per IS: 2500 (part 1) –1973 given in the above referred **Annexure -VII**.
- 15.4 The results of testing are recorded in the proforma as per **Annexure –VIII, IX, X, & XI**.
- 15.5 For dimensional check there are separate set of gauges for use by the internal quality control person and separate set of gauges for use by the inspecting officials.
- 15.6 For inclusion testing test, 5% of the sample size (minimum two samples of day's production) used for hardness test are considered. The test is conducted as per IS: 4163-1982 and the inclusion rating is not be worse than 2.5 A, B, C, D both for thick and thin series given in figure 2 of the IS code for acceptance of the lot.
- 15.7 The results of testing are recorded in a pro-forma as per **Annexure -XII**.
- 15.8 For depth of decarburisation test, 5% of the sample size (minimum two samples of day's production) used for hardness test is considered. The test is conducted as per IS: 63396-1983. The average total depth of decarburisation (partial + complete) of 5 deepest decarburised zones of each sample is not more than 0.25 mm.
- 15.9 The results of testing are recorded in a pro-forma as per **Annexure XII**.
- 15.10 For freedom from defects, 5% of the sample size (minimum two samples of day's production) used for hardness test is considered. The test is done by macro etching.
- 15.11 The results of testing are recorded in a pro-forma as per **Annexure XIII**.

16. CONSUMPTION OF RAW MATERIAL

- 16.1 We maintain details of consumption of raw material on a daily basis vis-à-vis the production of clips as per **Annexure-XIII**.

17. PACKING

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- 17.1 Each lot of clips which satisfy the final inspection requirements is put into double gunny/plastic bags as per requirement of IRS-T-31-92.
- 17.2 The clips are packed in double gunny/plastic bags, each bag containing 50 clips.
- 17.3 In the consignment to be sent by our firm, not more than one gunny/plastic bag is filled with less than 50 clips which is clearly mentioned by our firm in the dispatch particulars giving the bag number (as painted there-on) and number of clips.
- 17.4 It is ensured the packing is sound to ensure that there is no loss or damage to the clips during transit.
- 17.5 It is also ensured that the bags of different lots are not mixed up.
- 17.6 It is ensure the gunny/plastic bags should not have any exterior stitching whatsoever, except for the edge to be used for sealing.
- 17.7 The Hessian thread used for stitching the gunny/plastic bag edge for sealing purposes are free from any knots except at the sealing point.
- 17.8 For ascertaining the weight of each packed bag, if so required by the Inspecting Officer, a platform weighing machine (platform type) is kept available for this purpose, which can weigh up to a minimum of 60Kg. with an accuracy of ½ Kg.

18. DISPOSAL OF REJECTED CLIPS

- 18.1 The rejected/substandard clips are gas cut and disposed off as scrap as directed by inspecting agency/RDSO.

19. MANAGEMENT AND ENVIRONMENTAL CONTROL

- 19.1 There are separate supervisors for production and for quality control.
- 19.2 Separate room/space is provided/allocated for inspection purposes.
- 19.3 Adequate number of exhaust fans and air circulators are provided to dispel fumes expeditiously.

20. GENERAL

Any change in manufacturing process/plant or equipment and change of place of manufacture from that which was initially approved by RDSO will be brought to the notice of QA/Civil Dte., Lucknow for necessary Clearance /approval.

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ANNEXURE-I
ERC-QAP

CHECKING OF RAW MATERIAL

NAME OF THE FIRM:

SL. NO.	DATE	SOURCE OF RAW MATERIAL NAME & TRADE MARK	CERTIFICATE NO.	CAST/HEAT NO.	COLOUR CODE (HEATWISE)	QTY.	SAMPLE NO.
1	2	3	4	5	6	7	8
1					Yellow or any other colour	1 2 Remarks	
2.					Red	1 2 Remarks	
					Green	1 2 Remarks	

CHEMICAL ANALYSIS (%)					GRAIN SIZE	INCLUSION RATING	HARDNESS	DEPTH OF DECARB.	FREEDOM FROM DEFECTS	Remarks ACCEPTED OR NOT ACCEPTED	SING. OF SUPERVISER
C	Si	Mn	S	P							
9					10	11	12	13	14	15	

Note: To be checked in terms of Clause 12

Date:

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ANNEXURE-II

CHECKING OF RAW-MATERIAL – DIMENSIONS

NAME OF THE FIRM:

SL. NO	DATE	SOURCE OF RAW MATERIAL NAME & TRADE MARK	CERTIFICATE NO.	CAST/HEAT NO.	COLOUR CODE (HEAT WISE)	QTY.	SAMPLE	DIA. (MM)	SAMPLE
1	2	3	4	5	6	7	8	9	10
1				A	Yellow		1 2 3 4 5 Remarks		6 7 8 9 10
2.					Red		1 2 3		6 7 8 9
							5 Remarks		10

DIA (mm)	SAMPLE NO.	DIA (mm)	SAMPLE NO.	DIA (mm)	Remarks: ACCEPTED OR NOT ACCEPTED	SIGN. OF SUPERVISOR
11	12	13	14	15	16	17
	11 12 13 14 15	16 17 18 19 20				
	11 12 13 14 15	16 17 18 19 20				

Note: To be checked in terms of Clause 12.3

Date:

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ANNEXURE-III
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SHEARING OPERATION:

Name of the Firm:

Nominal Length of bar:

Cross mark (x) if not okay:

Tick mark (✓) if okay:

Date	Length		End Squareness		Remarks
	Time of Checking	Measured length: Go No Go	Time of checking	Observation satisfactory/ unsatisfactory	
1	2	3 4	5	6	7

Note: To be checked at the rate of 3 Nos. per hour.

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ANNEXURE-IV
QAP-ERC

Name of the Firm:

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**STAGE INSPECTION REPORT: DIMENSIONS, VISUAL, QUENCH HARDNESS FOR
DIMENSIONAL AND VISUAL CHECK:**

- Cross mark (x) if not okay
- Tick mark (✓) if okay :

Date:	Time	Sample Number	Gauge acceptance Yes/No	Toe gap: Go/No Go:	Height	Length	Application block
1	2	3	4	5	6	7	8

Major/Minor Axis of flat :	VISUAL CHECK		Quench hardness:	Remarks Accepted / Not Accepted
	Firm's	Free from		
	Month	marks		
9	10	11	12	13

Note: To be done on two sample of every hour's production.

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ANNEXURE-V
QAP-ERC

NAME OF THE FIRM:

TEMPERING RECORD: (WELL TYPE)
(CONTINUOUS TYPE)

Date	Batch No.	Qty. per batch	Loading time	Unloading time	Soaking period	Temp. during soaking/NA
		Temp. zone-I	Temp zone-II	Temp. zone-III		
1	2	3	4	5	6	7

HARDNESS TEST			REMARKS
No. of Clips Checked	Values		Accepted/ Not Accepted
	RC	HB HV	
8		9	10

Note: Refer clause 13.5.10 for sample size

Date:

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ANNEXURE-VI
QAP-ERC

INTERNAL INSPECTION REPORT
CHEMICAL ANALYSIS

NAME OF THE FIRM:

SL. NO	CAST/ HEAT NO	COLOUR CODE (HEAT WISE)	LOT NO.	QUAN TITY (NOS)	SAM PLE NO.	CHEMICAL ANALYSIS (%)					REMAR KS Accepted or Not Accepted
						C 0.47- 0.63	Si 1.47- 2.03	Mn 0.76- 1.04	S 0.045 Max	P 0.045 Max	
1	2	3	4	5	6	7	8	9	10	11	12
1	A	Yellow	P		1						
					2						
2.											

Signature of Quality Incharge

Date:

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ANNEXURE-VII
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DOUBLE SAMPLING AQL PLANS
INSPECTION LEVEL –IV

(Ref: Table 3 of IS: 2500 Part 1 –1973)

Lot Size	Sample size code letter	Sample	Sample Size	Cumulative sample size	Accepted quality level percent defectives-1.5	
					Acceptance Number (a)	Rejection number (r)
301-500	H	First	32	32	0	3
		Second	32	64	3	4
501-1000	J	First	50	50	1	4
		Second	50	100	4	5
1001-3000	K	First	80	80	2	5
		Second	80	160	6	7
		Second	125	250	8	9

Notes :

- (i) For any other lot size less than 301, reference may be made to Table 2 of IS: 2500 Part 1-1973 for sample size, acceptance and rejection numbers.
- (ii) In the first sample if the number of failed pieces are equal to the acceptance number (a), the lot shall be accepted.
- (iii) If the failed pieces exceed the acceptance number (a) but is less than the number given under column (r), the second sample should be considered.
- (iv) If the cumulative failed pieces equal or exceed the rejection number (r), the lot shall be rejected. The cumulative failed pieces are the total number of failed pieces in the first and second samples.

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ANNEXURE-VIII
QAP-ERC

**INTERNAL INSPECTION REPORT
(HARDNESS)**

NAME OF THE FIRM:

SL. No.	DATE OF PRODUCTION	CAST/ HEAT NO.	LOT NO.	COLOUR CODE (HEATWISE)	QTY.	SAMPLE SIZE
1	2	3	4	5	6	7
1		A (e.g.)	P (e.g.)	Yellow (e.g)	2000	80
2						

44 RC (375-415 BHN)	DEFECTIVE ERC	OF DEFECTIVE ERC	
8	9	10	11
44, 42, 43, 44, 45, 46 Upto 80 values	2		Accepted/ Not accepted

Note: To be done on sample size in accordance with annexure VII based on day's production.

Date:

SIGNATURE OF QUALITY INCHARGE

Prepared by	Checked by	Approved by
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ANNEXURE – IX
QAP-ERC

**INTERNAL INSPECTION REPORT
(DIMENSIONS)**

NAME OF THE FIRM:

S . N O	DATE OF PRO- DUC TION	CAST / HEA T NO.	LO T NO.	COLOR CODE HEAT- WISE	QUA NTIT Y IN NOS.	SAM PLE SIZE	MAIN GAUG E ACCE P- TANC E YES/N O	FAILING IN GAUGES GO NO GO DIM. DIM.	NO. OF DEF ECTI VES	NO. OF CUMU LATIV E DEFEC -TIVE	REM ARK S
1	2	3	4	5	6	7	8	9	10	11	12
1		A	P	Yellow	2000	80			2	-	Acce pted

Note: To be done on sample size in accordance with annexure VII based on day's production.

Date:

SIGNATURE OF QUALITY INCHARGE

Prepared by	Checked by	Approved by
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ANNEXURE-XI

**INTERNAL INSPECTION REPORT
(TOE LOAD TEST)**

NAME OF THE FIRM:

SL. No.	Date of Production	CAST /HEAT NO.	LOT NO.	COLOR CODE (HEAT WISE)	QTY.	SAMPLE SIZE	NO. OF DEFEC-TIVES	TOE LOAD VALUES (Kg.)	No. OF CUMUL ATIVE DEFEC-TIVE	REMARKS
1	2	3	4	5	6	7	8	9	10	11
1		A	P	Yellow	2000	80	5	845, 890, 910, 835 upto 80 VALUES		REJECTED
2										

Note: To be done on sample size in accordance with annexure VII based on day's production

Date:

SIGNATURE OF QUALITY INCHARGE

Prepared by	Checked by	Approved by
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ANNEXURE-XII
QAP-ERC

INTERNAL INSPECTION REPORT
INCLUSION RATING, DEPTH OF DECARB. & FREEDOM FROM DEFECTS.

NAME OF THE FIRM:

SL. NO.	DATE OF PRODUCTION	CAST/ HEAT NO.	LOT NO.	COLOUR CODE (HEAT WISE)	QTY.	SAMPLE SIZE	SAMPLE NO.
1	2	3	4	5	6	7	8
							1 2 3 4 5 6

DEPTH OF DECARB. 0.25	INCLUSION RATING (NOT	FREEDOM FROM	REMARKS ACCEPTED OR	SIGN. SUPPER VISOR
	2.5 A,B,C,D)		ACCEPTED	
9	10	11	12	13

Note: To be done on 5% of sample size of day's production.

Date:

SIGNATURE OF QUALITY INCHARGE

Prepared by	Checked by	Approved by
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ANNEXURE-XIII
QAP-ERC

CONSUMPTION OF RAW MATERIAL

NAME OF FIRM:

DATE	OPENING BAL. OF RAW MATERIAL	QTY. OF RAW MATERIAL RECEIVED	SOURCE OF RAW MATERIAL	INVOICE NO.	CERTI- FICATE NO.	TOTAL QTY. OF RAW MATERIAL AT THE BEGINNING OF PRODUCTIO N	NOS. OF ERC MANUFA CTURED DURING THE DAY
1	2	3	4	5	6	7	8

QTY. OF RAW MATERIAL CONSUMED FOR PRODUCING ERC	QTY. OF RAW MATERIAL BALANCE AFTER THE DAY'S PRODUCTION	TOTAL STOCK OF ERC AVAILABLE AFTER THE DAY'S PRODUCTION	REMARKS
9	10	11	12

Note: To be filled regularly on production days/whenever raw material is received.

Date:

Signature of Quality incharge

Prepared by	Checked by	Approved by
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