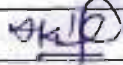




ASNT/ISNT Level II certified operator for Magnetic Particle Testing shall be deployed. Alternatively, magnetic particle testing of the springs for crack detection may be carried out in accordance with DIN EN ISO 9934-1, DIN EN ISO 9934-2, DIN EN ISO 9934-3, DIN EN ISO 3059 & DIN EN ISO 9712.

- (4) The Pre-determined temperatures at which the ends of the ground bars of various springs are to be heated, along with their heating/soaking times shall be clearly mentioned in the QAP, and also displayed at the work place. Similarly, the temperatures and soaking times for different types of springs for bar heating, as well as tempering operations shall also be mentioned in QAP, and displayed at the work place.
- (5) Checking of oil in Quenching Tank and topping up / replenishment as required shall be done compulsorily at pre-decided periodic intervals, and the records for the same shall be available.
- (6) The traceability of the product from raw material stage to finished product stage shall be maintained. The system shall help in identifying the raw material details – Heat No., Supplier, Inspection details from the finished product stage.
- (7) There shall be proper stacking of raw material heat wise and the record detailing Dispatch Memo No., Quantity, Heat No., Inspection, the Purchase Order details of the products against which the raw material has been procured shall be available.
- (8) A Quality Assurance Plan for the product detailing various aspects shall be available:
 - Organization Chart
 - Flow Process Chart
 - Stage Inspection details
 - Various parameters and to ensure control over it.
- (9) There shall be at least one full time technical expert having a minimum bachelor's degree in relevant field with 5 years experience or a person with diploma in relevant field with 12 years experience. He shall be free from day-to-day production, testing & quality control responsibility. He shall be mainly responsible for development for product, analysis of products, analysis of stage rejections, failure analysis, planning corrective and preventive action, control over raw material, devising actions in case of difficulties in achieving the parameters etc.
- (10) The in-charge of the Quality Control Section shall have a minimum bachelor's degree in the relevant field & have minimum 5 years experience or a diploma holder with minimum 12 years experience. He shall be actively involved in day-to-day activities of quality control / stage inspection / compliance of QAP etc.
- (11) The Quality Manual of the firm shall clearly indicate at any stage the control over manufacturing and testing of Hot Coiled Cylindrical Springs for use in suspension of I.R. coaches having FIAT Design Bogies.
- (12) There shall be a system of statistical quality control. There shall be a system of monitoring of rejections at various stages of manufacture, and corrective and preventive actions for containing those rejections, and redressal of customer complaints.
- (13) Proper record of complaints received from users (Railways) and corrective and preventive actions taken, shall be maintained.
- (14) The latest versions of EN/ASTM / IS / UIC Specifications given in the specification shall be available with the firm.

Signature			
Name & designation	Prepared by: Akil Haider, SSE/VDG/Carriage	Checked by: Praveen Kumar, Dy. Director/VDG/Carriage	Approved by: Shobhit Pratap Singh Director/VDG/Carriage

19.0 QUALITY ASSURANCE PLAN:

- (1) The firm shall submit two copies of Quality Assurance Plan (QAP) for manufacture of Hot Coiled Cylindrical Springs to RDSO for approval.

The QAP shall include the following:

- (i) Organization Chart emphasizing Quality Control Setup.
- (ii) Qualification of key personnel and the officials deployed in Quality Control Cell.
- (iii) Calibration Policy for Testing Equipments, Gauges, Measuring Devices etc.
- (iv) Process Flow Chart indicating process of manufacture for an individual product or for a family of products if the process is same.
- (v) Stage wise details of spring Manufacture, Testing & Inspection.
- (vi) Record of finished product as per Identification Markings & Quality Assurance System - Inspection & Testing Plan.
 - This shall cover the following:
 - Incoming material
 - Process control
 - Product control
 - System control
- (vii) Policy of disposal of rejected product




- (2) The manufacturer shall proceed for manufacturing of Hot Coiled Cylindrical Springs only after approval of QAP. The firm shall strictly follow the stipulations of QAP.

The firm shall maintain a record of QAP implementation for documentary evidence.

- (3) Renewal of QAP shall be required after three years. Any changes in the manufacturing procedure/Machinery and Plants associated with the manufacture of Hot Coiled Cylindrical Springs shall be duly incorporated in QAP and approved by RDSO.


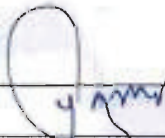

20.0**PROFORMA FOR FIELD TRIAL SCHEME:**

Field performance of hot coiled helical spring used in FIAT Bogies of LHB Coaches shall be monitored for 06 months as per proforma at Annexure -V.

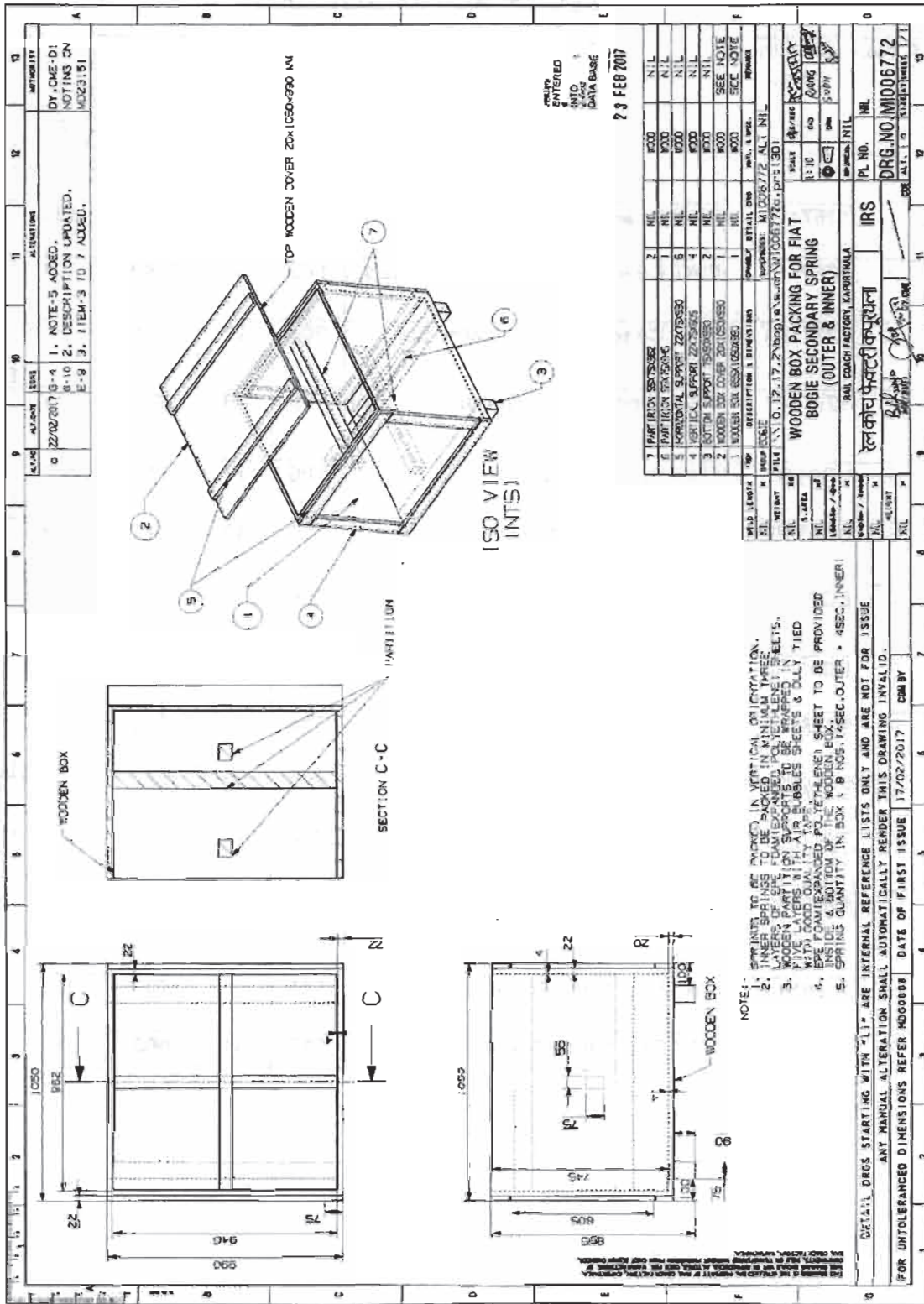
Signature			
Name & designation	Prepared by: Akil Haider, SSE/VDG/Carriage	Checked by: Praveen Kumar, Dy. Director/VDG/Carriage	Approved by: Shobhit Pratap Singh Director/VDG/Carriage

ANNEXURE- I**LIST OF FIAT SPRINGS DRAWINGS**

S. No.	Drawing No.	Description	Code	Wire Dia.	Free Height	Mean Dia. of Spring	Outer Dia. of Spring
1.	1267412	FIAT Coach Pri. Chair Car (Inner)	F02	26	324.5	138	164
2.	1267411	FIAT Coach Pri. Chair Car (Outer)	F03	38	324.5	219	257
3.	1277143	FIAT Coach Pri. Generator Car (Inner)	F04	27	337	138	165
4.	1277142	FIAT Coach Pri. Generator Car (Outer)	F05	40	337	219	259
5.	LG01101	FIAT Primary GS (Inner)	F06	27	313	138	165
6.	LG01100	FIAT Primary GS (Outer)	F07	40	313	219	259
7.	LG05100	FIAT Coach Sec. GS (Inner)	F08	36	593	245	281
8.	LG05101	FIAT Coach Sec. GS (Outer)	F09	55	637	376	431
9.	1277146	FIAT Sec. Gen Side -1 (Outer)	F14	57	708	372	429
10.	1277145	FIAT Sec. Gen Side -1 (Inner)	F15	38	664	243	281
11.	1268836	FIAT Sec. Gen Side -2 (Outer)	F16	55	702	372	427
12.	1268837	FIAT Sec. Gen Side -2 (Inner)	F17	37	658	243	280
13.	1269514	FIAT Sec. Chair Car (Outer)	F18	50	707	368	418
14.	1269513	FIAT Sec. Chair Car (Inner)	F19	34	663	246	280

Signature			
Name & designation	Prepared by: Akil Haider, SSE/VDG/Carriage	Checked by: Praveen Kumar, Dy. Director/VDG/Carriage	Approved by: Shobhit Pratap Singh Director/VDG/Carriage

ANNEXURE - II



Signature			
Name & designation	Prepared by: Akil Haider, SSE/VDG/Carriage	Checked by: Praveen Kumar, Dy. Director/VDG/Carriage	Approved by: Shobhit Pratap Singh Director/VDG/Carriage