

**RESEARCH DESIGNS & STANDARDS ORGANIZATION****Manaknagar, Lucknow – 226011****Document No: TDG 0007****Document Title : Item Specific guideline & Schedule of Technical Requirements for Vendor approval for manufacture and supply of single coil spring steel Washer****1.0 Amendment History:**

S. No.	Amendment Date	Version	Reasons for Amendment
1.	01.12.2001	0	First issue under new documentation system
2.	20.08.2020	1.0	Amendment in Specification and quality improvement

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## 2.0 Purpose:

This guideline is based on Indian Railway standard specification for Single Coil Spring Steel Steel Washers for use in railway track issued by **Track Design Dte.** of RDSO. The purpose is to specifically define the guidelines for vendor approval of Single Coil Spring Steel Steel Washers allotted to Quality Assurance Civil Directorate of RDSO as well as to specify technical and other Requirements in context with adequate space needed for storage of raw/finished material, manpower and plant/ machinery & equipment required for manufacture and supply of metal liners.

## 3.0 Scope of Application

This shall be applicable for initial **capability assessment, periodic Quality audit** for extension of approval, up-gradation of vendors and maintaining their approved list. In case of any variation between the procedure/provision given in work instruction and that in the 'Item- specific guidelines', the later shall prevail. The competent authority wherever referred to in this document shall mean Executive Director, Quality Assurance Civil Dte.

## 4.0 Procedure / Details

Procedure/details are annexed.

## 5.0 Referenced Documents:

1. **Indian Railway Standard specification for Single Coil Spring Steel Washers for Track S.No. T-42-1988**
2. **ISO Apex Documents of RDSO**

## 6.0 Referenced Documents of External Origin

None.

## 7.0 Associated Records

None.

## 8.0 Responsibility and Authority

Activity	Responsible	Approver	Supporting	Consulted	Informed
Creation, maintenance of this document	Director/QAC	ED/QAC	DD/XEN/AIE/ARO	Track Design Dte. & M&C Dte.	All approved vendors through website
Compliance of directives contained in this document	DD/XEN/AIE/ARO	Director/QAC	-	-	-
Requirement of deviation from this directive	Director/QAC	ED/QAC	DD/XEN/AIE/ARO	Track Design Dte. & M&C Dte.	-

## 9.0 Abbreviations

QA	Quality Assurance.
QAC	Quality Assurance Civil.
ED/QAC	Executive Director/Quality Assurance Civil
RDSO	Research Designs & Standards Organization
DD	Dy. Director
XEN	Executive Engineer
AIE	Assistant Inspecting Engineer.
ARO	Assistant Research Officer

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## A. ITEM SPECIFIC GUIDELINES

### 1.0 The process of approval will involve following steps / activities.

- i) Vendor seeking fresh registration shall register online on RDSO Website [www.rdsolndianrailways.gov.in](http://www.rdsolndianrailways.gov.in).
- ii) Submit duly filled-in **online** fresh application form along with **initial assessment vendor registration** charges as applicable at the time of submission.
- iii) **Upload the document as mentioned alongwith QAP and legal documents. Submit a key plan & layout plan, on Auto CAD (A 1/A 2 Size), for technical approval by this office. The layout plan should indicate the adjacent plot productions unit thereof, roads, boundaries etc.**
- iv) The specification & relevant drawings are **available on RDSO website and same can be downloaded from RDSO website. The charges of these documents are included in fresh registration charges and no need to deposit separate charges for these documents at the first time.** All payments should be made through RDSO payment portal of SBI “SB Collect” or through NEFT/RTGS.
- v) After **downloading application/proforma along with documents & charges verification**, it will be scrutinized by Quality Assurance Civil Directorate and if details are found satisfactory, the works unit of the firm will be visited for Technical Capability Assessment.
- vi) If any shortcomings are observed during the visit, the same will be conveyed to the firm for their compliance.
- vii) After satisfactory compliance by the firm, **the firm is advised to submit gauge checking charges and inspection gauges of the drawings of Single Coil Spring Washer applied for will be checked and approved during STR verification visit.**
- viii) After clearance / approval of two sets of inspection gauges as mentioned in para (vii) above, the firm would be advised to start trial production and to submit internal test results in formats as per QAP for manufacture and testing. If the internal test results are found satisfactory, the firm would be advised for drawl of samples manufactured in presence of RDSO official from their works. Charges of drawl of samples will be obtained from the firm as applicable.
- ix) The testing of the samples drawn will be carried out as per clause laid down in IRS specification for Single Coil Spring Steel Washer for track T-42-1988. If test report is found satisfactory and other conditions are fulfilled, the firm would be accorded approval in the **“List of RDSO Vendors for developmental order”**. The firm will be advised to start production of the product. First 10,000 nos. of Single Coil Spring Steel Washer will be inspected by RSDO in at least two installments in two visits. During the inspection the QAP adopted and records maintained by the firm will be verified. If the inspected quantity of 10,000 nos. of Single Coil Spring Steel Washer and implementation of QAP is found satisfactory, the purchaser may be advised to

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get the inspection of the product done by RITES or themselves.

- 2.0 In the case of new Vendor/firms the process of approval will be initiated only if the firm is **applied on-line or** placed with developmental order from Zonal Railways/ Railway Board or given go ahead from RDSO as per instructions /guidelines of Railway Board from time to time. Rest of the procedure for approval will be the same as detailed in para1.0 above. The firm shall be approved in **“List of RDSO Vendors for Developmental Orders”** after the inspection of initial quantity of 10,000 nos. Single Coil Spring Steel Washer or after completion of developmental order whichever is earlier **in case developmental order from Zonal Railways/ Railway Board or given go ahead from RDSO.**
- 3.0 In case, firms approved for manufacturing of metal liner to one drawing, desires to develop the product to other drawings, the requisite inspection gauges will have to be approved by RDSO. After getting satisfactory internal test reports, the samples will be drawn and tested at RDSO. If test results on samples found satisfactory, the firm would be accorded approval to other drawings in **“List of RDSO Vendors for Developmental Orders”**.
- 4.0 **Up-gradation from List of RDSO Vendors for Developmental Orders” to “List of Approved Vendors” as per procedure mentioned in RDSO’s latest ISO apex document No. QO-D-8.1-11 Ver.1.0.**

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## **B. Schedule of Technical Requirement For development of a firm for Manufacture of Single Coil Spring Steel Washer**

Firms intending to develop themselves, as manufacturers of “Single Coil Spring Steel Washer” should meet the following minimum requirements:

### **Space: –**

Sufficient covered area with proper ventilation should be available for manufacturing & testing/inspection facilities. Storage of raw material, space of coiling machine, cutting machine, stamping machine, heating furnace for hardening, quenching tank, tempering furnace, automatic Steel Washer testing machine for preliminary loading & load testing & for storing finished products should be marked clearly.

### **Raw Material:–**

Raw Material for “Single Coil Spring Steel Washer” shall be stored in a covered area with stacking arrangement by heat wise & first come first go facility.

### **Spring Steel Washer forming machine:**

Spring Steel Washer forming/coiling machine of sufficient capacity shall be installed near the storage of raw material.

### **Power Press:–**

One power press with sufficient capacity to cut the coiled bar shall be installed near the coiling machine. Two or three supports depending upon length of coiled bar shall be provided near cutting press, to hold the coiled bar in proper position while cutting.

Power presses of sufficient capacity shall be installed near the cutting press for versine curve, screwing test & marking/stamping work.

### **Bench Grinder:–**

A Bench Grinder shall be provided near cutting press to remove the sharp edges/burrs from the Steel Washers, so formed.

### **Gauge for checking accuracy of Steel Washers:–**

One set of Go/No Go gauges should be available to check the correctness of inner/outer Diameter, coiled height & end gap.

### **Heating Furnace :–**

The heating furnace shall be indirect heating type. It may be rotary hearth or walking beam type. The furnace shall be fitted with automatic temperature control device & continuous temperature recorder.

### **Oil Quenching Tank:–**

The Oil Quenching Tank shall be of adequate length, width & depth, preferably be fitted with a conveyor belt passing through the oil. The speed of a conveyor belt shall be adjusted in such a way that the clip to be

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in oil for at least 6 mts. The oil tank shall be fitted with necessary cooling arrangement & the temperature of oil shall not exceed 70 degrees centigrade. The oil tank shall be fitted with temperature recorder preferably of continuous type.

**Tempering furnace–**

The tempering furnace may be oil/~~oil-fired~~ gas fired tunnel type fitted with conveyor system or it may be electrical well type. The ~~oil-fired~~ furnace shall be fitted with thermo-couples to sense the temperature at three points along its length to ensure constant temperature zone along length of the furnace. The speed of the conveyor shall be adjusted in such a way that the Steel Washers should be in tempering furnace for minimum period of 45 mts. The furnace fitted with an automatic temperature control device and continuous temperature recorder. For holding the Steel Washers in the furnace suitable arrangement which permits free air circulation around the Steel Washers shall be used.

**Testing Equipment and Laboratory: -**

A separate laboratory room, witch shall be well lit, clean and properly ventilated and provided with easily maintainable floor and platform should be available at the works.

**Load Testing Machine: -**

Load testing machine of sufficient capacity shall be installed for conducting flattening tests, decompression test and residual load test.

**Chemical Testing:-**

Necessary equipment shall be procured for laboratory to analyse Carbon, Sulphur, Phosphorous, Silicon, and Manganese etc.

**Hardness Tester: -**

Hardness testing machine to test the hardness of raw material and finished product along with standard block shall be available in the laboratory.

**Gauge and application test fixture: -**

Valid dimension checking gauges and application test fixtures for Steel Washer shall be available at the firm’s premises.

**Polishing Machine: -**

Polishing Machine with all necessary items shall be available to prepare samples for decarb testing.

**Protective Coating Arrangement: -**

Proper arrangement for protective oil coating should be available at the firms premises.

**Tool room cum die making/repair shop facility: -**

Grinding machine, cutting machine, lathe machine and necessary tools with measurement gauges such as surface plate, height gauge and vernier with a least count of 0.02 mm should be available in the tool room.

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**General: -**

The firm should possess experienced and sufficient man power like manager, supervisors, laboratory in-charge, quality controller and workmen. The necessary qualification of the work force should depend upon their job requirements. The firm should maintain approved QAP, copy of which should be available at the firm's premises. The specification and drawings of Steel Washers along with all the IS/BIS specifications mentioned in IRS/T-42 should be available at site for reference. The firm should preferably possess a valid ISO certification.

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**C. PROFORMA FOR TECHNICAL CAPABILITY ASSESSMENT/ QUALITY AUDIT FOR  
MANUFACTURE AND SUPPLY OF SINGLE/DOUBLE COIL SPRING STEEL WASHERS  
(To be filled in duplicate)**

**Section-1: GENERAL INFORMATION**

- 1.1 Name of the firm
- 1.2 Address
- (a) Head Office
- (b) Work
- (c) Location of work-----Km.  
From-----Railway Station.
- 1.3 Factory Area (Sq. m) [Attach layout plan for factory premises]
- (a) Covered
- (b) Uncovered
- (c) Is the factory site in your name or on rental basis ?  
Support with documents.
- (d) Telephone No.
- (i) Head Office
- (ii) Works
- (e) Telegraphic address/Telex Address/ FAX address.
- (i) Head Office
- (ii) Works
- 1.4 SSIC/NSIC Registration No.  
(Enclose Copy)
- 1.5 Power availability (KVA)
- (a) General allotted capacity
- (b) Standby generator and its capacity.  
If available.

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- (c) Name the party/person in whose name the power is sanctioned your agreement with part/person.  
(Support with documents)

1.6 Name of any other units located in the above premises.

1.7 Man Power Management :

- (a) Managerial staff
- (b) Shop floor Engineers/Supervisors  
(Their Nos. with their qualifications and service experience).
- (c) Laboratory Incharge whether full time or part time. Indicate their names.  
Qualification and service experience.
- (d) Inspection & quality control staff, give their name, qualification and Service experience.
- (e) Workmen
- (i) Highly skilled
- (ii) Semi-skilled
- (iii) Un-skilled.

2. **SECTION- II: TECHNICAL INFORMATION** [Availability of plant and machinery as indicated by manufacturer should be verified by the assessing official]

Indicated the availability of following against each item parawise.

2.1 Infrastructure for production and production capability of single/double coil spring Steel Washers.

2.1.1 Spring Steel Washer forming machine

- (a) Their numbers
- (b) Capacity
- (c) Make

2.1.2 Continuous shaker hearth, Electric fired hardening furnace.

- (a) Their nos.
- (b) Capacity
- (c) Make
- (d) Is the furnace provided with automatic temperature control panel.

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- (e) Is the furnace provided with continuous temperature recorded for sensing temp.
- (f) Range of temperature indicator

2.1.3 Tempering facilities :

- (a) Type of tempering furnace
- (b) No. and size
- (c) No. of zones
- (d) Is the furnace conveyerised
- (e) Is the furnace provided with temp. Control panels.
- (f) Is the furnace provided with continuous temperature recorder/sensing temp. At 3 zones.
- (g) Capacity of temp. Indicators.

2.1.4 Oil quenching bath conveyor

- (a) Size of tank
- (b) Volume /capacity for oil
- (c) Provision for recording of Temperature of oil.

2.1.5 Automatic Steel Washer testing machine for preliminary loading.

- (a) Make
- (b) Capacity (tones)

2.1.6 Load testing machine

- (a) Make
- (b) Capacity

2.1.7 Tool room cum repair shop facilities.

2.1.8 Source of raw material.

2.1.9 Arrangement for storing the raw material, heat wise. Describe briefly the arrangements.

2.1.10 Arrangements for storing the finished Steel Washers heat wise and capacity to store Steel Washers in numbers at a time.

2.1.11 Rated production capacity Planned per shift

2.1.12 Experience in manufacture of heat treated products.

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2.2 Infrastructure for testing of Single/Double coil spring Steel Washers.

<u>Name of test</u>	<u>Facilities As required</u>	<u>Facilities as available with the firm (to be filled by the firm with drg. No as applicable)</u>
2.2.1 Dimensional checks	Inspecting gauges as per RDSO/firm's drg. Relevant for the type of Steel Washer.	
2.2.2 Chemical phosphorus elements.	(a) Carbon Sulphur apparatus with suitable chemicals for analysing C, Si, Mn, S and Test  (b) Muffle furnace  (c) Analytical balance  (d) Other apparatus for the chemical/ metallurgical test lab.	
2.2.3 Hardness test	Hardness test apparatus on RC, BHN or HV Scale with standard test blocks and its working literature.	
2.2.4 Surface defects	(i) Microscope X 100 magnification.  (ii) Polishing machine.	
Laboratory cum room with easily maintainable	well lit, clean and properly ventilated laboratory floor and platforms.	Inspection room
2.2.6 Other facilities	(i) Height Gauge  (ii) Dial Gauge	
2.2.7 Indian Standard Codes.	As mentioned in specification	
2.28 Quality assurance Programme	Give the necessary write up on QAP Which the firm propose to follow.	

3. **SECTION-III: EXPERIENCE** [For record purpose only]

- 3.1 Indicate various types of items being Manufactured in your works and the Name of the agency/client for whom it Is being manufactured.
- 3.2 Indicate important customers for the last three Years both Govt. and non Govt. if any, for information Furnished in your reply to 3.1
- 3.3 Indicate details (contract reference, item and quantity

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Manufactured and supplied of imported orders executed in the past three years for the following. Indicate the inspecting agency for each.

- (i) Govt. department, central, state & Govt. undertaking other than railway.
- (ii) Directly to the railways.
- (iii) Outside important firms.

3.4 Pleas specify current orders in hand on your firm (contract reference, client, item, quantity under manufacture & supply)

3.5 Whether you are already registered with RDSO for other P.Way items. If so, name the item supported by documents

3.6 Indicate annual turnover of your company.

#### 4 DECLARATION

- 4.1 We do hereby declare that the above that the above particulars are correct and no discrepancy shall be found during actual investigation before and during execution of order on our firm.
- 4.2 Any change in the plant and machinery and change of place of office and of works site shall be brought to the notice of RDSO for clearance and approval.
- 4.3 We also declare that our concern has not been black-listed by Railway / Railway Board/RDSO for business with the Railways.
- 4.4 We hereby undertake that all our equipments for manufacturing and testing as listed above shall be maintained in good working order at all times.
- 4.5 We hereby declare that the contents and the instructions of " **ISO Apex Documents of RDSO** have been read and understood by us and our firm shall agree abide by all the stipulations laid therein.

Signature

Name in full of Signing Authority

Status in the Firm

Place :  
Date :

Stamp of the firm.

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