



भारत सरकार - रेल मंत्रालय  
अनुसंधान अभिकल्प और मानक संगठन

Government of India - Ministry of Railways  
RESEARCH DESIGNS & STANDARDS ORGANISATION

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**ITEM SPECIFIC GUIDELINES  
FOR SINGLE COIL SPRING WASHER**

*Price: Rs.600/-*

गुणवत्ता आश्वासन सिविल निदेशालय

अनुसंधान अभिकल्प और मानक संगठन  
मानक नगर, लखनऊ -226011

QUALITY ASSURANCE CIVIL DIRECTORATE

RESEARCH DESIGNS & STANDARDS ORGANISATION  
MANAK NAGAR, LUCKNOW – 226011

**A. A. ITEM SPECIFIC GUIDLINES**

In addition to the procedure for vendor approval given in the “General Guidelines for Vendor Approval” the following guidelines shall also be applicable to vendors seeking approval for manufacture of Single Coil Spring Washer.

1. After assessment of the works in accordance to the ‘General Guidelines for Vendor Approval’ is found acceptable, two sets of inspection gauges have been checked and approved by this office & internal test results have been found satisfactory, sample washers shall be drawn from the works of the firm.
2. A total 20 numbers of preliminary sample of washers shall be drawn from the works of the firm by R.D.S.O. representative & shall be sealed. This sealed bag shall be sent to R.D.S.O./National Test House by the firm’s representative for testing at the risk & cost of the firm. The samples shall be subjected to various civil Engineering tests stipulated in I.R.S.T.-42 (such as Flattening test, Decompression test, Chemical analysis, Hardness test, Decarburization test). All the samples shall be subjected to ‘Application Test’ (may be done during collection of the samples). The dimensional check of the samples shall be done at R.D.S.O. (for this purpose 10 nos. samples may be collected separately & sealed properly as sample bag No.2 for dimensional check at R.D.S.O.).
3. If the samples pass all the tests stipulated above, the firm shall be allowed for manufacture of initial quantity of 10,000 nos. ‘Single Coil Spring Washers’ with the raw material procured from approved/reputed source.
4. The inspection of this initial quantity of washers shall be done by R.D.S.O. in at least two installments (preferably of equal size). If found unsatisfactory, further more quantity in the multiple of 5000 Nos. shall be inspected by R.D.S.O. till stabilization of the product is achieved by the firm (in such cases the purchasing authority would be advised accordingly). If found satisfactory, the inspection of balance quantity of washers shall be arranged by the consignee Zonal Railway/RITES.
5. Based on the firm’s satisfactory manufacture & supply of washers as per (4) above, the firm will be considered for inclusion in the list of Part-II suppliers as per the criteria laid in the general guidelines.
6. It shall be the responsibility of the firm to submit both sets of gauges for re-approval at the time of initiating renewal of approval.

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

Firms intending to develop themselves, as manufacturers of “Single Coil Spring 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 washer testing machine for preliminary loading & load testing & for storing finished products should be marked clearly.

### **Raw Material:–**

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

### **Spring washer forming machine:**

Spring 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 washers, so formed.

### **Gauge for checking accuracy of 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 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 degree centigrade. The oil tank shall be fitted with temperature recorder preferably of continuous type.

#### **Tempering furnace–**

The tempering furnace may be oil 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 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 washers in the furnace suitable arrangement which permits free air circulation around the washers shall be used.

#### **Testing Equipment and Laboratory:-**

A separate laboratory room, which 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 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.

**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 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.

**PROFORMA FOR TECHNICAL CAPABILITY ASSESSMENT FOR MANUFACTURE AND  
SUPPLY OF SINGLE/DOUBLE COIL SPRING 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.
  - (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 washers.
- 2.1.1 Spring 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.
  - (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 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 washers heat wise and capacity to store 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.

2.2 Infrastructure for testing of Single/Double coil spring 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 washer.	
2.2.2 Chemical phosphorus elements.	(a) Carbon Sulphur apparatus with suitable Composition 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 well lit, clean an properly ventilated laboratory room with easily maintainable 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	
2.2.8 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  
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 latest "General Guidelines for Vendors  
Approval" effective from ..... 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.