



Bharat Heavy Electricals Limited

Industrial Valves Plant
Goindwal Sahib (Punjab)

Enquiry No.
2223-015E


Date:
16.06.2022

NOTICE INVITING TENDER (NIT)

Dear Sir / Madam,

BHEL Goindwal Sahib (Punjab) invites offers from interested bidders / suppliers for submission of their offer **through e-procurement mode** at <https://eprocurebhel.co.in/>. Offers in any other mode will not be accepted. In case of any difficulty faced while registering on BHEL e-Procurement portal developed by NIC, queries may be addressed to 0120-4001002, 0120-4001005 and 0120-6277787; email: support-eproc@nic.in. These details are also available on 'Contact Us' page of the portal.

| | |
|--|--|
| Tender Enquiry No. | 2223-015E Dt 16.06.2022 |
| Form of Contract | Supply |
| Tender / Item Description | Springs |
| Location(s) of Supply / Work | BHEL, Industrial Valve Plant, Goindwal Sahib, Dist. Tarn Taran -143422 (Punjab) |
| Tender Download / Bid Submission Start Date | 16.06.2022 (12:00 PM IST) |
| Tender Download / Bid Submission End Date | 27.06.2022 (02:00 PM IST) |
| Tender / Bid Opening Date | 27.06.2022 (03:30 PM IST) |
| Quotation Parts | Two Part Bid |
| Integrity Pact (IP) | Not applicable |
| Contact Person Details | Sh. Sumeet Bansal, Sr. Manager 01859-224 628, sbansal@bhel.in Sh. Achin Goyal, Sr. Engineer 01859-224 617, achingoyal@bhel.in Sh. Akash Sharma, Dy. Engineer 01859-224 616, akash@bhel.in |

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|--|---|
|  IVP- GOINDWAL | <h2 style="text-align: center;">SPECIAL TERMS AND CONDITIONS</h2> <p style="text-align: center;">Tender enquiry no. 2223-015E Dated 16.06.2022 due date 27.06.2022 Item: Springs</p> |
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| Quotation Parts | Two-part Bid |
| Item Description | Springs |
| Item Specification | As per attached Drawings & TDC |
| Delivery schedule | Within 03 months from date of release of PO / LOI |
| Validity of offer (In days) | 60 days from the date of Part-I opening of tender |
| Quantity Variation | +/- 10% of tender quantity |

| Documents required along with supply of material | |
|--|------------------------|
| 1. Test Certificate | <u>Required</u> |
| 2. Guarantee certificate | <u>Required</u> |

PRE-QUALIFICATION CRITERIA

Bidders should be engaged in the manufacturing and supply of same / similar type of springs. The Bidder should have successfully supplied same or similar type of Springs against any customer purchase order(s) with minimum cumulative order value of Rs. 10,000 (Rupees Ten Thousand only). Relevant purchase order(s) along with Invoice(s) shall be enclosed to fulfil experience criteria. All mentioned values are net of taxes. Purchase Order(s) date & corresponding invoice(s) date should be from 01.06.2019 onwards till bid opening date.

Start-ups shall be exempted from the above PQC without any relaxation in quality standards or technical parameters as per D.O. No. 5(4)/2016-BE-I dated 15.02.2017. For claiming Start-Up exemption, vendors have to submit DPIIT (Dept. of Promotion of Industry and Internal Trade)/DIPP (Department for Industrial Policy and Promotion) recognition certificates.

SPECIAL TERMS

S1. QUOTATION SUBMISSION

This tender is through e-procurement mode for supply of “Springs” as per specifications mentioned in below tender terms. Bidder has to submit their offer on BHEL e-Procurement portal at <https://eprocurebhel.co.in/>. **Offer in any other mode will not be accepted.** Please refer clause no. 1.2 of General Contract Conditions of MM Tenders (GCC), regarding instructions to bidder for submission of offer on BHEL e-procurement portal.



IVP- GOINDWAL

SPECIAL TERMS AND CONDITIONS

Tender enquiry no. **2223-015E** Dated **16.06.2022** due date **27.06.2022**
Item: **Springs**

Tenders shall be submitted in Two parts on or before the due date and time indicated in the NIT

Part-I: Techno-Commercial Bid

Bid should contain all the documents/confirmations as per following details:

- a) Acceptance of Techno-Commercial terms and conditions shall be attached along with bid document (Duly filled Part-I Techno-Commercial Bid Questionnaire)

IF THE OFFER IS NOT ACCOMPANIED WITH ACCEPTANCE OF TERMS AND CONDITIONS, IT SHALL BE CONCLUDED THAT ALL THE TERMS AND CONDITIONS ARE ACCEPTABLE AND NO CLAIM WHATSOEVER SHALL BE ENTERTAINED LATER ON.

- b) Documents as per pre-qualification terms.
c) Duly filled Annexure-A (Declaration for RESTRICTIONS UNDER RULE 144(XI))
d) Any other document (if any)

Part-II: Price Bid

Price Bid as per the attached format.

S2. SCOPE OF SUPPLY

In addition to the clause no. 2 in GCC, all the items are to be supplied as per below mentioned drawing/TSB /standards:

| Sl. No. | Material Code | Material Description | Unit of Measure | Enquiry quantity | Drawing no. | BHEL specification no. |
|---------|---------------|----------------------|-----------------|------------------|----------------|------------------------|
| 01 | 963530560000 | VALVE SPRING | Nos. | 1000 | 42000103394/01 | TDC:5:082/05 |
| 02 | 963560360000 | E/CONICAL SPRING | Nos. | 1000 | 42000103391/00 | TDC:5:082/05 |

S3. LOADING CRITERIA CUM COUNTER OFFER

No counter-offer will be given in this tender enquiry.

S4. REVERSE AUCTION

Reverse auction will be not conducted in this tender enquiry.

S5. OTHER CONTRACT CONDITIONS

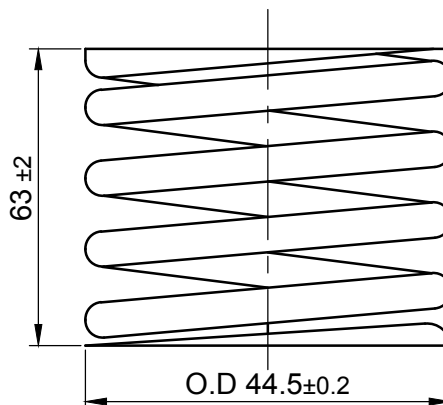
These Special terms & conditions and GCC collectively are the part of tender terms and conditions.

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

ALL DIMENSIONS ARE IN MILLIMETRES.

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP/QP

| REV | DATE | ALTERED | J.S |
|--|----------|------------|-----------|
| 01 | 21.09.17 | CHD & APPD | J.S & H.R |
| CADMIUM PLATING REMOVED. ZINC PHOSPATE COATING INCLUDED. | | | |
| DCN : SB : 802286 / 5023034 | | | |


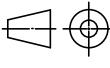


| | |
|------------------------|-----------------|
| No. OF EFFECTIVE COILS | - 3 |
| No. OF TOTAL COIL | - 5 |
| DIA. OF WIRE | - 4.5 |
| MATERIAL | - ASTM A227/228 |
| ZINC PHOSPATE COATING | - 30 MICRONS |
| SPRING CONSTANT | - 2.2 Kg/mm |
| TOLERANCE ON LOAD | - ±5% |

NOTES:

1. FOR QUALITY REQUIREMENTS REFER APPLICABLE LATEST QUALITY PROCEDURE.
2. SUPPLIER TO FURNISH MATERIAL T.C, DIMENSIONAL AND TEST REPORTS.

PART CODE: 963530560000

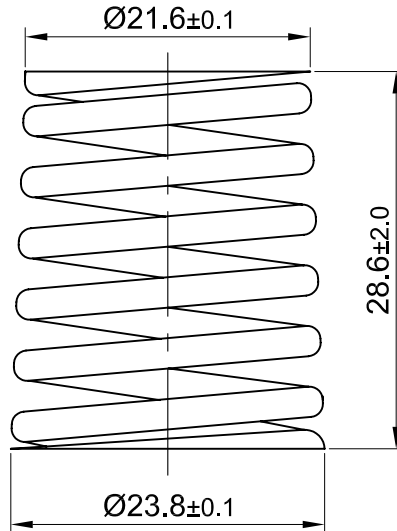
| | | | | | | | | | |
|--|---|-----------|------------|-------------------|---------------|-----------------------|---------------------|------------------|-----------------|
| | | | | | | | | | |
| NO OFF | DESCRIPTION | MATL CODE | MATL SPECN | HEAT TREATMENT | SCRAP SORT | NET WT (kg) | GROSS WT (kg) | DRAWING No | ITEM No |
| <div><div><div>BHARAT HEAVY ELECTRICALS LTD.,</div><div>UNIT: HIGH PRESSURE BOILER PLANT.</div><div>TIRUCHIRAPALLI 620014.</div></div></div> <div>365-122</div> | | | | | DRN | NAME S.THIRUMARAN | SIGN S.T. | DATE 12.02.08 | NO.OF VAR |
| | | | | | CHD | K.SRIDHARAN | K.S. | 12.02.08 | |
| | | | | | APPD | S.NATARAJAN | S.N. | 12.02.08 | |
| DEPT SB |  | SCALE | | WEIGHT (KG). | | REFERENCE INFORMATION | | | NO. OF ITEMS |
| CODE 330 | | NTS | | 0.15 | | 4-20-001-00061 | | | |
| TITLE | | | | | CARD CODE | DRAWING NO. | | | REV |
| VALVE SPRING | | | | | U 01 | 4-20-001-03394 | | | 01 |

Size A4

ALL DIMENSIONS ARE IN MILLIMETRES.

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP/QP

| REV | DATE | ALTERED |
|-----|------|------------|
| | | CHD & APPD |


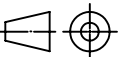



NO OF EFFECTIVE COILS - 5
 NO OF TOTAL COIL - 7
 DIA OF WIRE - 1
 MATERIAL - AISI 304
 SPRING CONSTANT - 0.023 Kg/mm
 TOLERANCE ON LOAD - ±5%

NOTES:-

1. FOR QUALITY REQUIREMENTS REFER APPLICABLE LATEST QUALITY PROCEDURE
2. SUPPLIER TO FURNISH MATERIAL T.C, DIMENSIONAL AND TEST REPORT.

PART CODE: 963560360000

| | | | | | | | | | |
|--|---|--------------|-----------------------|-------------------|--------------------------|-----------------------------------|---------------------|------------------|---------------|
| | | | | | | | | | |
| NO OFF | DESCRIPTION | MATL CODE | MATL SPECN | HEAT TREATMENT | SCRAP SORT | NET WT (kg) | GROSS WT (kg) | DRAWING No | ITEM No |
| <div> 365-122</div> <div>BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI 620014.</div> | | | | | DRN | NAME S.THIRUMARAN | SIGN S.T. | DATE 12.02.08 | NO.OF VAR |
| | | | | | CHD | K.SRIDHARAN | K.S. | 12.02.08 | |
| | | | | | APPD | S.NATARAJAN | S.N. | 12.02.08 | |
| | | | | | REFERENCE INFORMATION | | | | |
| DEPT SB |  | SCALE NTS | WEIGHT (KG). 0.003 | 4-20-001-00220 | | | | | |
| CODE 330 | | | | | | | | | |
| TITLE CONICAL SPRING | | | | | CARD CODE U 01 | DRAWING NO. 4-20-001-03391 | | | REV 00 |

| | | |
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|  | BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS | DOC No: TDC:5:082 Rev: 05 Effective Date: 24/06/2016 Page: 1 of 16 |
| Product: Safety and Safety Relief Valve Springs | | |

Record of Revisions:

| Rev. No. | Clause No. | Details of revision | Remarks |
|----------|--|---|---------|
| 01 | | Editorial correction | |
| 02 | 7.4.1.3 Fig. 1 Fig. 2 | Introduced Charted average deflection changed as average deflection. Final deflection changed as Test deflection | |
| 03 | 3.1.2 5.3.1 9.1 | Heat treatment condition added Wire dia increased from 10 to 16 mm for cold Coiling based on IBR amendment. Point No.7 added. Point No.3 and 5 clarity brought in Annexure II. Point no 9.24 added. | |
| 04 | -- | Modified in entirety. UT on bars of dia > 40 mm added. New materials added. | |
| 05 | 3.1.2 5.2.1 5.2.11 7.5 8.2 Tables I,II,III,IV & V Annexure II | <i>Mechanical tests as applicable</i> <i>Coiling process</i> <i>Modified</i> <i>Removed</i> <i>Modified</i> <i>Modified</i> <i>Revised</i> | |

1.0 SCOPE

- 1.1 This Technical Delivery Condition specifies the technical and inspection requirements for circular section wire, helical compression springs used in safety/safety relief valves. Primary considerations are for a spring designed to remain under static load with a compression load defined by (seat area X set pressure) for the major portion of its life. Load is intermittently added by virtue of the spring being compressed by the valve travel when the system pressure exceeds the valve set pressure and the valve opens. Approximately 10,000 cycles of intermittent valve openings are expected. It is the responsibility of the supplier to design, manufacture, test, certify and supply the springs as per this TDC.

2.0 APPLICABLE STANDARDS (Latest on the date of PO)


2.1 CODE REQUIREMENTS

ASME Sec-I (Boiler & Pressure Vessel Code)
ASME Sec-IV (Rules for Construction of Heating Boilers)
ASME Sec-VIII Div-1 & 2 (Rules for Construction of Pressure Vessels)
Indian Boiler Regulations: Regulation Nos: 307 to 314.
Dresser Specn MA 16.

2.2 REFERENCE STANDARDS

ASTM A-125 : Standard Specification for Steel Springs, Helical, Heat-Treated.
ASTM A-370 : Standard Test Methods and Definitions for Mechanical Testing of Steel Products.
ASTM E-6 : Standard Terminology Relating to Methods of Mechanical Testing.
ASTM E-10 : Standard Test Method for Brinell Hardness of Metallic Materials.
ASTM E-18 : Standard Test Methods for Rockwell Hardness of Metallic Materials
ASTM E-140 : Standard Hardness Conversion Tables for Metals Relationship among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness
ASTM B-456 : Standard Specification for Electrodeposited Coatings of Copper plus Nickel Plus Chromium and Nickel Plus Chromium.
IS: 7906 : Part I, II, III & IV for Hot and Cold rolled springs.

Even though the reference standards are given, the supply condition shall be in line with this TDC.

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| Product: Safety and Safety Relief Valve Springs | | |

3.0 SPRING DRAWING

3.1 For each type of springs BHEL will provide a spring drawing which will be the basis for spring manufacturer. This drawing shall provide details of dimension, material and process.

3.1.1 The steel (raw material) shall be procured from Well-known Steel makers indicated by IBR with Mill TC. If the steel maker is not approved as a well known steel maker by IBR, then the raw material (wire/bar) shall be inspected and Mill Test certificates shall be countersigned by the concerned State DOB/CIB (if indigenously procured), or by the Inspecting Authorities approved by IBR (if imported).

3.1.2 Springs shall be made from steels made by basic oxygen, open-hearth process or electric furnaces. Mechanical tests shall be conducted for raw materials used for springs and shall meet the material specification requirements and these test values (YS, UTS, % Elongation, hardness *as applicable/specified in the material specification*) shall be reported in the raw material TC along with chemistry & heat treatment condition. Also, test certificate for the spring shall be furnished as per Annexure-II by the Spring Manufacturer.

4.0 DESIGN PARAMETERS

4.1 Each Spring Design shall be analyzed by the spring vendor. Calculations shall be submitted to BHEL for approval, if any change in design parameters.

4.2 SPRING RATE

4.2.1 BHEL requires springs that demonstrate the spring rate as specified in the spring drawing. If no tolerance specified in the drawing it shall not vary more than 5% of the nominal rate specified. This requires that the operating range of the spring be in the linear portion of the spring rate curve (fig 1). For a given carbon steel or low alloy spring, the linear region of the spring is generally defined to be between 15% and 85% of the total average deflection. The spring drawing is developed on the basis of an initial loading of approximately 15% deflection, then compressing the spring a given deflection (defined as test deflection) from which the load is measured. All springs shall have a load at test deflection within the limits specified in the spring drawing (See fig 2).

4.3 SPRING RATE MEASUREMENTS

4.3.1 Hysteresis as applied to a helical spring can be defined as that characteristic which causes a spring to follow a different load Vs deflection curve during a compression operation than during a relaxation operation. It is important that all load readings for the purposes of determining rate shall be made during a compression operation. If, for example a spring is inadvertently compressed beyond the 85% test load value, it is necessary to remove the load completely to zero (0) and recommence the test in order to obtain accurate results.

4.4 SPRING RATE CALCULATION

4.4.1 The Spring rates have been calculated using the following equation:

$$K = \frac{Gd^4}{8ND^3}$$

K = Spring rate (kg/mm)

d = Normal wire size (mm)

D = Mean Coil diameter (mm)


N = Active coils.

= Total coils - 2 for wire size < 12.7 mm.

= Total coils - 1.5 for wire size ≥ 12.7 mm

G = Torsional modulus of material (Kg/sq mm)

4.4.2 Springs shall be tested for spring rate in accordance with the requirements of Clause 6.8 of this TDC.

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4.5 PERMANENT SET / SCRAGGING TEST

- 4.5.1 It is essential that springs be furnished in accordance with the requirements of the ASME Codes & IBR. The permanent set of the spring (defined as the difference between initial free height and free height measured 10 minutes after the spring has been compressed to its solid height 3 additional times) shall not exceed 0.5 % of the free height. Compressed solid height is defined in Annexure-I. If required, manufacturer may change the design with the approval of BHEL to meet the conditions.

4.6 FREE HEIGHT

- 4.6.1 The free height is a fixed parameter controlled by assembly physical considerations and subject only to the tolerance consideration as per Clause. 6.5.

4.7 INSIDE & OUTSIDE DIAMETERS

- 4.7.1 Assembly and machined part considerations determine whether the inside or outside diameter of the spring are critical, the spring drawing indicates the limits on the spring diameter within which a vendor can supply springs. Suggested bar size is also noted in drawing to assist in checking spring designs. It is suggested that the inside diameter be held if possible, however, a larger inside diameter is permissible. Vendors are cautioned that eccentricities, bowing, and other factors that cause an apparent change in spring dimension must be considered by the vendor in the diameter limits specified on the spring drawing.

4.8 LOAD LOSS

- 4.8.1 Manufacturer shall be responsible for ensuring that spring fabrication, heat treatment, stress relieving etc., are adequate to ensure proper spring manufacturing at an ambient temperature of 35 Deg C. Because of load loss characteristic non pre-stressed springs are preferred.

4.9 DE-CARBURISATION


- 4.9.1 The bars shall be free from defects so that springs produced shall be free from total de-carburisation and the depth of partial de-carburisation shall not exceed as follows:
For dia > 10 mm to ≤ 20 mm = 0.08 mm.
For dia > 20 mm to ≤ 80 mm = 0.13 mm.
- 4.9.2 The de-carburisation shall be examined at 100X on a test specimen suitably etched and cut from full cross section of the test spring showing at least one line inch of original bar circumference.

5.0 MANUFACTURE

- 5.1 Material shall conform to the requirements specified in the spring drawing.

5.2 COILING

- 5.2.1 *Unless specified in Drawing, springs may be manufactured by cold or hot coiling process.*
- 5.2.2 Springs shall be made out of machined and suitably finished bars to avoid surface defects and to minimize de-carburization.
- 5.2.3 The bar heating and subsequent heat treatments shall be done preferably in atmosphere controlled furnace. If not available, the same shall be done only in electric furnaces. Usage of oil-fired furnaces shall be mutually agreed prior to the placement of order.
- 5.2.4 The depth of partial de-carburisation shall not exceed the limits specified in Clause 4.9.
- 5.2.5 Springs shall be uniformly & suitably heat treated as per specification for developing the required physical properties specified in spring drawing.

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- 5.2.6 Unless otherwise agreed upon the direction of coiling shall be right hand only.
- 5.2.7 Pitch correction by wedging after coiling is prohibited. The correct pitches shall be obtained in the coiling process itself.
- 5.2.8 For transmitting axial loads on the connecting bodies the spring end shall be formed by grinding to provide smooth flat bearing surface of a minimum of 3/4 of the circumference as per fig.4.
- 5.2.9 The tip thickness 't' in fig.3, shall be between d/3 and d/4 approximately, where d is the diameter of wire.
- 5.2.10 The tips shall not protrude outside or inside of the spring. Such projections shall be ground smoothly to match the spring outside or inside diameter as the case may be. This is shown in fig.4.
- 5.2.11 The end coils shall have smooth consistent taper to minimize spring out of squareness under load. Common type of unacceptable and acceptable *ends* are shown in fig.5.

6.0 INSPECTION

- 6.1 All springs shall be 100% tested for conformance as per this TDC.

6.2 SURFACE FINISH INSPECTION

- 6.2.1 A visual inspection shall ensure that no projections on the inside or outside diameters exist that will exceed the nominal inner or outer spring diameters respectively. Manufacturers are responsible for ensuring that no laps, seams, folds, scaling or other defects which may act as stress risers or masked defects are present in any spring. Stress raisers are subject to evaluation by BHEL, however gas holes, pitting, or large sections where nominal spring wire diameter is reduced by more than (1.5 %) are considered unacceptable. The 1.5 % limitation also applies to surface ground flat for hardness readings.

6.3 INSIDE DIAMETER INSPECTION

- 6.3.1 Inside diameter shall be checked as per the spring drawing. For all springs the following tolerances apply to the diameters specified on spring drawing.

| Inside diameter | Tolerance |
|------------------------------|-------------------|
| ----- | ----- |
| 25mm and smaller | + 0.8 mm / - 0 mm |
| over 25mm to 50mm inclusive | + 1.6 mm / - 0 mm |
| over 50mm to 100mm inclusive | + 2.4 mm / - 0 mm |
| over 100mm | + 3.2 mm / - 0 mm |

- 6.3.2 The suggested wire diameters are indicated in the spring drawing.

6.4 END COIL INSPECTION

- 6.4.1 End coils should be wound closed against the adjacent full pitch coils. Deviation from this closure shall not exceed the following (Ref. Fig.3.)

| Wire Size | Max. Opening |
|------------------|--------------|
| ----- | ----- |
| Less than 11.1mm | 0.8 mm |
| Over 11.1 - 31.8 | 1.6 |
| Over 31.8 - 44.5 | 3.2 |
| Over 44.5 - 57.2 | 4.0 |
| Over 57.2 | 4.8 |



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6.4.2 Maximum Tip thickness shall be in accordance with Cl. 5.2.10 (Ref. Fig.3)

6.4.3 The end coils shall be in accordance with Cl.5.2.9 & Cl.5.2.12.

6.5 FREE HEIGHT INSPECTION

6.5.1 The free height is determined by placing a straight edge across the top of the spring and measuring the perpendicular distance from the plate on which the spring stands to the bottom of the straightedge at the approximate centre of the spring. Tolerances are shown below:-

| Free height ----- | Tolerance ----- |
|------------------------------------|--------------------|
| 75mm and smaller | ± 0.8mm |
| over 75mm to 165mm inclusive | ±1.6mm |
| over 165mm to 254mm incl. | ±2.4mm |
| Over 254mm to 356mm incl. | ±3.2mm |
| Over 356mm to 559mm incl. ----- | ±4.8mm |

6.5.1.1 Springs which "Rock" in their free standing position are considered acceptable under the following conditions:-

(a) A reasonable determination of free height of the centre line can be made, and variation in free height is within the tolerances specified above. A spring out of square by more than 2 Deg as measured in Cl.6.6 & Cl.6.7 is considered unacceptable (This applies for springs larger than 12mm diameter wire).

(b) Check wire diameter of spring ends are within the limits specified in fig.6.

6.5.2 Permanent Set/Scragging test shall be carried out for each spring as per Cl 4.5.1. Following the three deflection tests, the free height shall be measured. The spring shall be within tolerances as specified in Clause.6.5.1. Furthermore, loss in its free height (i.e., permanent set) shall not exceed 0.5% of the free height.

6.6 SQUARENESS AND CONCENTRICITY FOR SPRINGS LARGER THAN 14 MM WIRE SIZE.

6.6.1 A centrally located ball and washer mechanism, as shown in fig.7 shall be used for testing. The end plates shall be centrally fixed and not movable during test. When under final load, the ends of the spring shall sit squarely on the test plates with the ground surface in full contact with the test plates.

6.6.2 Deflect spring to 85% of the total deflection three times prior to taking tilt measurement.

6.6.3 The total included angle of the tilted washers at final load shall not be more than 3 deg. Angular tilt at one end of the spring shall not exceed 1 - 1/2 Deg.


6.6.4 The effects of bowing, eccentricities, etc., shall be limited to the tolerances specified in Clause 6.3.

6.6.5 Tilt measurement shall be taken when the spring is loaded to 85 % of total deflection as in spring drawing.

6.7 SQUARENESS AND CONCENTRICITY FOR SPRINGS 14 MM AND LESS WIRE SIZE

6.7.1 Springs shall be checked in accordance with Fig.8. "Y" values when measured with a scale not to exceed $\tan 1.5 \text{ deg.} \times \text{spring length (FL : free height)}$.

6.7.2 To accurately determine the spring end coil concentricity the actual inside diameter of either end coil must be measured. The smaller end should be placed against the surface plate. The difference between

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either inside diameter must be divided by 2 and this amount subtracted out of measured "Y" value.

(i.e) Condn

$$\frac{\{Y - (ID_1 - ID_2)\}}{2} < (\tan 1.5 \text{ Deg}) \times FL$$

6.8 SPRING RATE VERIFICATION

6.8.1 Springs shall be checked to verify spring rate between initial load and final load values specified. The spring drawing indicates load and deflection values required. Springs larger than 14mm wire will be checked with washers and bearing in accordance with Fig.7. Other springs may be checked between flat end plates. The testing procedure shall be as follows:

(a) Spring shall be installed and tested with the stamped code facing the tester and at the upper side of the spring. This is to ensure consistency in testing.

(b) Apply initial load specified in spring drawing, set deflection recorder to zero.

(c) Apply test deflection specified in spring drawing, observe the load at test deflection. This load should be within the limits specified in spring drawing.

6.9 NON-DESTRUCTIVE EXAMINATION

6.9.1 UT shall be done on bars (used for springs) of dia. > 40mm as per ASTM A388 & with acceptance as per ASME Sec VIII Div 2 cl 3.3.4

6.9.2 Unless and otherwise specified, each Carbon & Low alloy Springs with wire size $\geq 25\text{mm}$ and Tungsten springs with wire size of $\geq 19\text{mm}$ shall be wet magnetic particle tested & accepted at manufacturer's works as per ASME Sec VIII Div 1 Mandatory Appendix 6. Non-ferromagnetic springs shall be Penetrant tested & accepted as per ASME Sec VIII Div 1 Mandatory Appendix 8.

6.9.3 All Non-Destructive examination shall be done after heat treatment, and prior to Spring Testing.

7.0 SURFACE TREATMENT

7.1 All springs shall be shot blasted before MPI/PT. This blasting procedure to be approved.

7.2 Unless specified otherwise, carbon steel and low alloy steel springs shall be furnished by the manufacturer in the phosphated condition.

7.3 All tungsten alloy springs shall be aluminized, using either baked-on paint or molten aluminum.

7.4 Springs will be given special coating when specified in spring specification sheet/drawing.

8.0 IDENTIFICATION

8.1 All springs of wire size 5mm and below shall be tagged individually to show the details of spring number given in drawing, unique number of individual spring, supplier code, specification and heat no of actual material.

8.2 All springs of wire size above 5mm and below 12mm should be vibro etched/ *laser marked* to indicate the spring number given in drawing, unique number of individual spring, supplier code, specification and heat no of actual material.

8.2.1 The Purchase order number should be tagged on individual spring.



Product: Safety and Safety Relief Valve Springs

8.3 All springs of wire sizes $\geq 12\text{mm}$ should be punched with the following details on the outside diameter of an inactive coil : Spring number given in drawing, material specification, supplier code (& supplier's symbol, if available), heat number, unique number of individual spring and spring marking as per applicable table.

9.0 RECORDS

9.1 The following records shall be furnished for each spring.

- a) Spring Raw Material Test certificate (Mill TC) including UT results as per cl 6.9.1
- b) Coiling and heat treatment temperature, soaking time, cooling media.
- c) Dimensional report.
- d) Test report of spring rate.
- e) Test Report for scragging test.
- f) Hardness
- g) Spring Test Certificate for each spring shall be as per typical test record indicated in Annexure II duly approved by Chief Inspector of Boilers/ Director of Boiler of the respective State or by Inspecting Authorities approved by IBR.
- h) Compliance certificate to IBR.



Product: Safety and Safety Relief Valve Springs

Table 1

Material: Carbon & Alloy Steels

Reference Specification ASTM A689 Carbon and Alloy Steel Bars for Springs

| Material Specification | Torsional Modulus at 70°F (x 10 ⁶ psi) | Hardness (HRC) | Spring Marking |
|---|--|----------------|----------------|
| ASTM A231, ASTM A232 | 11.5 | --- | CR |
| ASTM A322 GRADE 6150 & 5160 | 10.5 | 46-50 | |
| ASTM A304 GRADES 4161H, 5160H, 51B60H, 6150H, 9260H | | | |
| ASTM A401 | | | |
| BS970 Pt2 GRADES 735A51,735H51 | | | |
| BS 2803 GRADES 735A50, 685A55 | | | |
| DIN 17221 GRADE 51CrMoV4 | | | |
| DIN 17225 GRADE 50CrV4 | | | |
| EN 10089 GRADES 51CrV4, 52CrMoV4 | | | |
| EN 10270-2 | | | |
| IS 4454-2 | | | |

Table 2

Material: Tungsten Alloy Steel

| Material Specification | Torsional Modulus at 70°F (x 10 ⁶ psi) | Hardness (HRC) | Spring Marking |
|---------------------------|--|----------------|----------------|
| ASTM A681 Type H-12, H-21 | 11.0 | 44-48 | E |
| BS 4659 TYPE BH-12, BH-21 | | | |

Table 3

Material: Stainless Steel

| Material Specification | Torsional Modulus at 70°F (x 10 ⁶ psi) | Hardness (HRC) | Spring Marking |
|------------------------|--|----------------|----------------|
| ASTM A313 TYPE 316 | 10.0 | --- | SY |
| ASTM A276 TYPE 316 | 9.8 | --- | |

Table 4

Material: Non-Ferrous

| Material Specification | Torsional Modulus at 70°F (x 10 ⁶ psi) | Hardness (HRC) | Spring Marking |
|---|--|----------------|----------------|
| ASTM B164 CLASS A (MONEL 400 FULL HARD, Spring Temper) | 9.2 | 23-26 | MO |
| MONEL K-500 (AMS 4676) | 9.2 | 34-38 | KM |



Product: Safety and Safety Relief Valve Springs

Table 5
Material: High Temperature

| Material Specification | Torsional Modulus at 70°F (x 10 ⁶ psi) | Hardness (HRC) | Spring Marking |
|--|--|----------------|----------------|
| ASTM A564 TYPE 631 17-7PH CONDN C | 11.0 | 42-46 | NC |
| ASTM A 564 TYPE 630 17-4 PH | 10.5 | 40-44 | PH |
| ASTM A638 GRADE 660 | 10.5 | 40-44 | C7 |
| ASTM B166 (INCONEL 600 AND 601) | 11.0 | 34-38 | I |
| ASTM B637 GRADE 688 OR AMS 5699 Heat treated to AMS 5699D PARA 1.2.1 | 11.5 | 40-44 | IX |
| ASTM B637 GRADE 688 OR AMS 5699 heat treated to AMS 5699D PARA 1.2.2 | 11.5 | 36-40 | IXS |
| ASTM B446 GRADE 625 INCONEL 625 ROD & BARS (UNS NO: 6625) | 11.5 | 88 HRB | I6X |
| AMS 5844 (MP35N UNS R30035) | 11.5 | 44-55 | MP |



Product: Safety and Safety Relief Valve Springs

ANNEXURE I

DEFINITIONS

TOTAL DEFLECTION:-- The amount of deflection achieved when the Spring is compressed to its solid height.

COMPRESSED SOLID HEIGHT:-- The perpendicular distance between the plates of the testing machine when the spring is compressed with a test load sufficient to bring all coils into contact.

SOLID CAPACITY:

$$P = Gd^4 F / 8 ND^3$$

Where,

G = Effective torsional modulus of elasticity (Kg/sq.mm)

d = Nominal bar diameter (mm)

D = Mean Coil or helix diameter (mm)

F = Spring deflection = free to solid (mm)

N = Active turns.

P = Solid capacity (kgf)

UNCORRECTED SOLID STRESS -

$$S = 8 PD / 3.1416 d^3$$

FINAL DEFLECTION: - A distance specified on the SD sheet for a particular spring which reflects a percentage of the average deflection. The value is used for rate measuring purpose only, within the linear region.

LINEAR REGION:-- The part of the load /deflection curve of a particular spring in which deflection increases linearly with increased load. For this purposes of this specification of this range is defined as between 15% and 80% of nominal solid deflection for carbon and low alloy springs.

FREE HEIGHT:-- The perpendicular height of the spring measured along the centerline after pressing to solid once and releasing.

PERMANENT SET/ SCRAGGING:-- The difference between the free heights measured before and after the spring has been compressed to its solid height and released, 3 times.



Product: Safety and Safety Relief Valve Springs

ANNEXURE II

TEST CERTIFICATE FOR SAFETY VALVE /SAFETY RELIEF VALVE SPRINGS

Inspection Report No :

Date:

- 1 Name of Manufacturer :
- 2 PO Number and Date :
- 3 Quantity :
- 4 Drawing No :
- 5 Type of spring :
- 6 Spring Number :
- 7 Coiling Practice :
- 8 Spring record :

| Sl. No | Description | Required | Actual | Remarks |
|--------|--|----------|--------|---------|
| 9.1 | Unique number of spring | | | |
| 9.2 | Material Specn. of Raw Material Used | | | |
| 9.3 | Melt no | | | |
| 9.4 | Raw Matl TC No | | | |
| 9.5 | Wire dia | | | |
| 9.6 | Outside dia | | | |
| 9.7 | Inside dia | | | |
| 9.8 | No of Active turns | | | |
| 9.9 | Solid Height | | | |
| 9.10 | Squareness | | | |
| 9.11 | Spring Rate | | | |
| 9.12 | Free Height | | | |
| 9.13 | Final Load | | | |
| 9.14 | Permanent set/Scragging | | | |
| 9.15 | Hardness | | | |
| 9.16 | MPI Results for Springs | | | |
| 9.17 | MPI Report to be submitted | | | |
| 9.18 | Surface Coating | | | |
| 9.19 | Depth of De-Carburisation | | | |
| 9.20 | Others PI Specify | | | |
| 9.21 | Note to be added to verify compliance to IBR | | | |

Inspected by

NOTE: THE ABOVE CERTIFICATE SHALL BE APPROVED BY CHIEF INSPECTOR OF BOILERS/DIRECTOR OF BOILERS IN THE STATE OF MANUFACTURER/ IBR APPROVED INSPECTING AUTHORITY.

Figure – 1

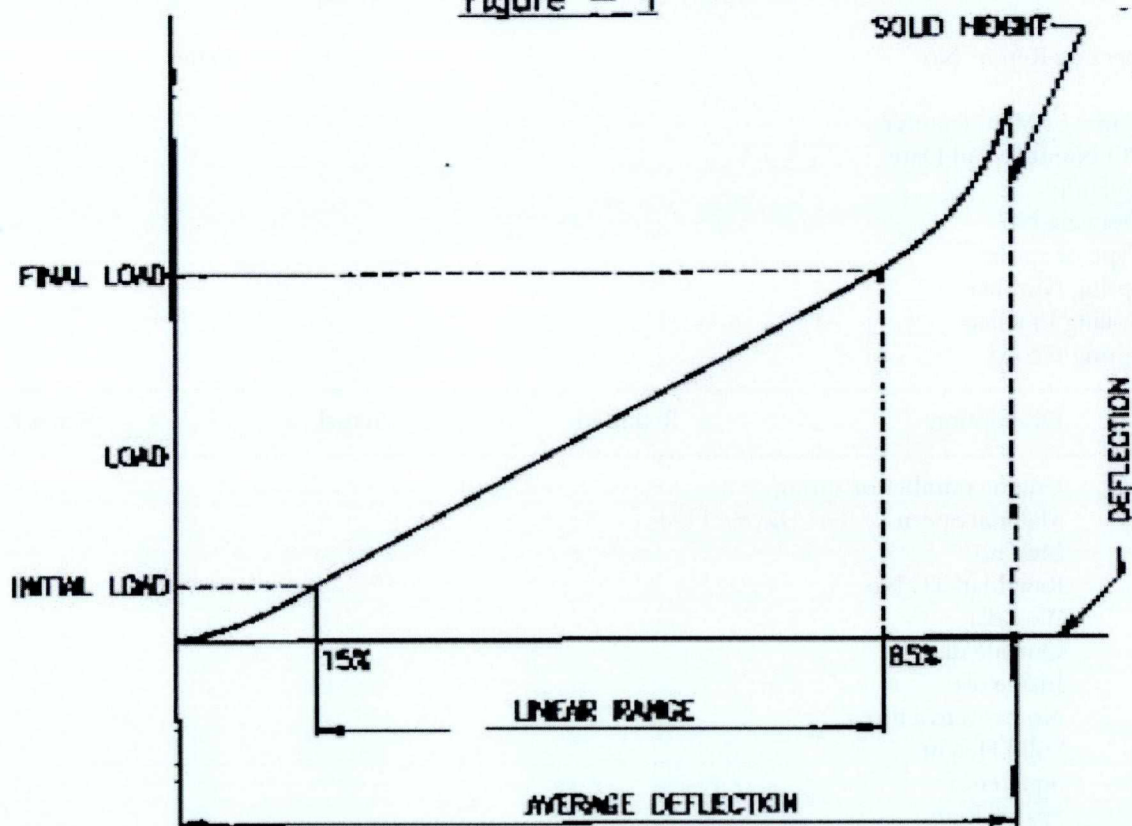


Figure – 2

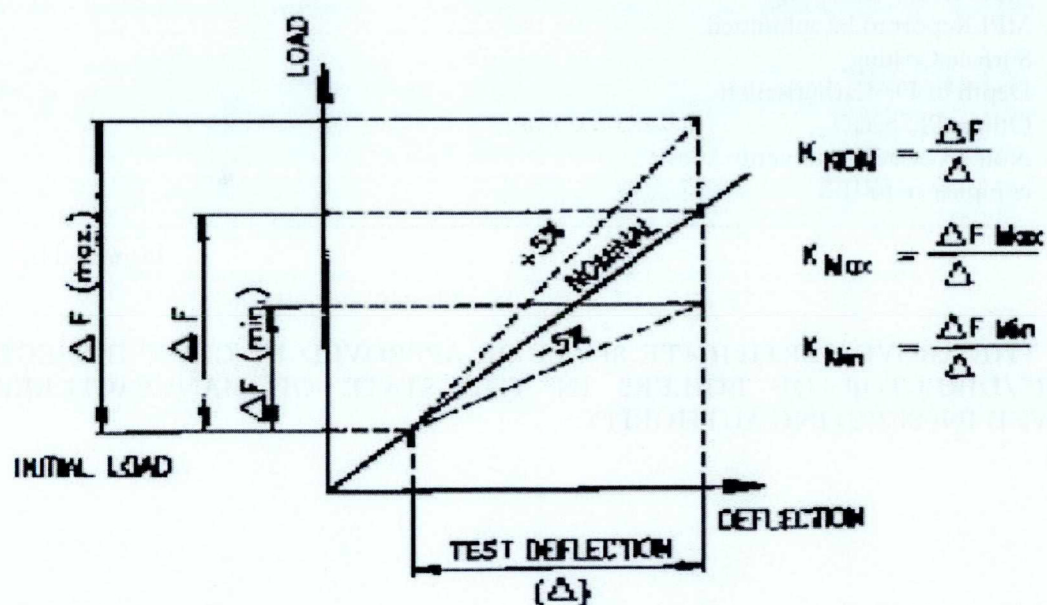


Figure - 3
SIDE VIEW OF SPRING

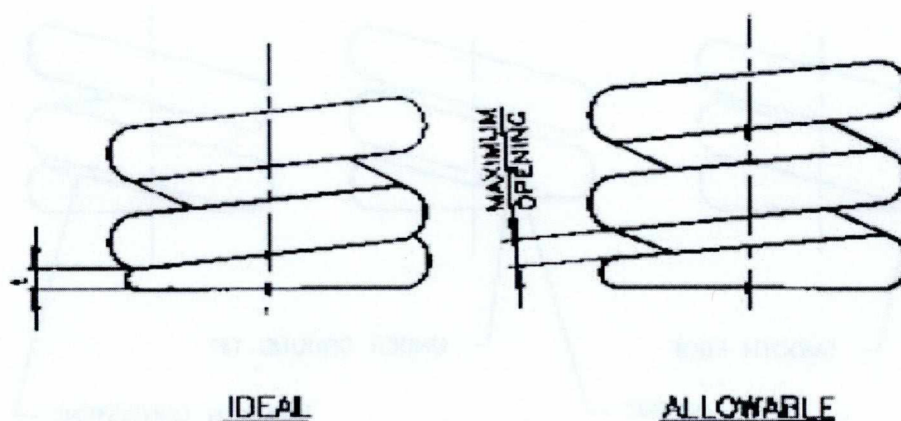


Figure - 4
END VIEW OF SPRING

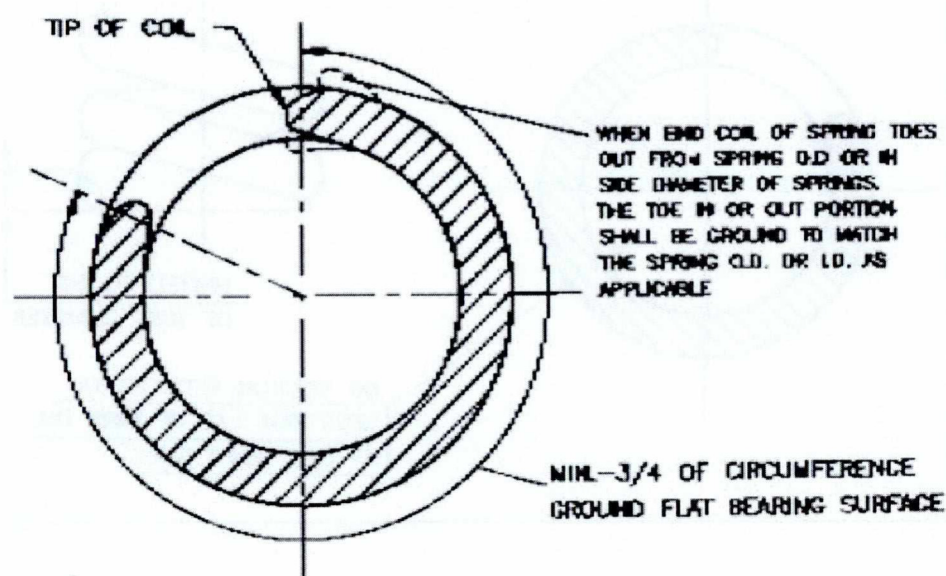


Figure – 5
SIDE VIEW OF SPRING

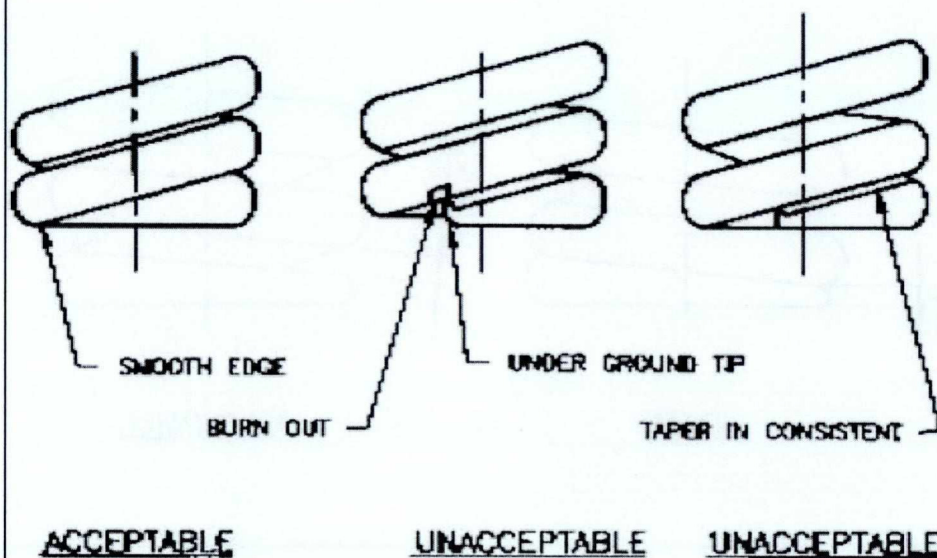


Figure – 6

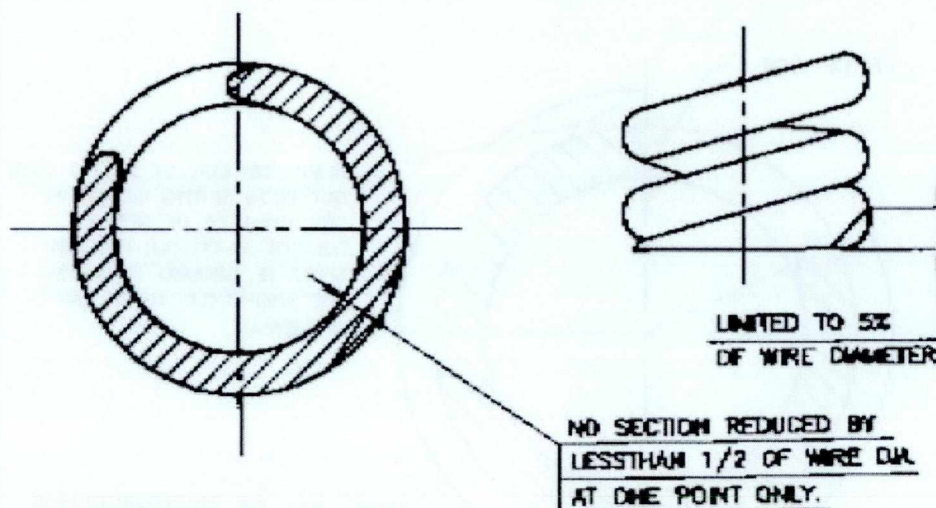
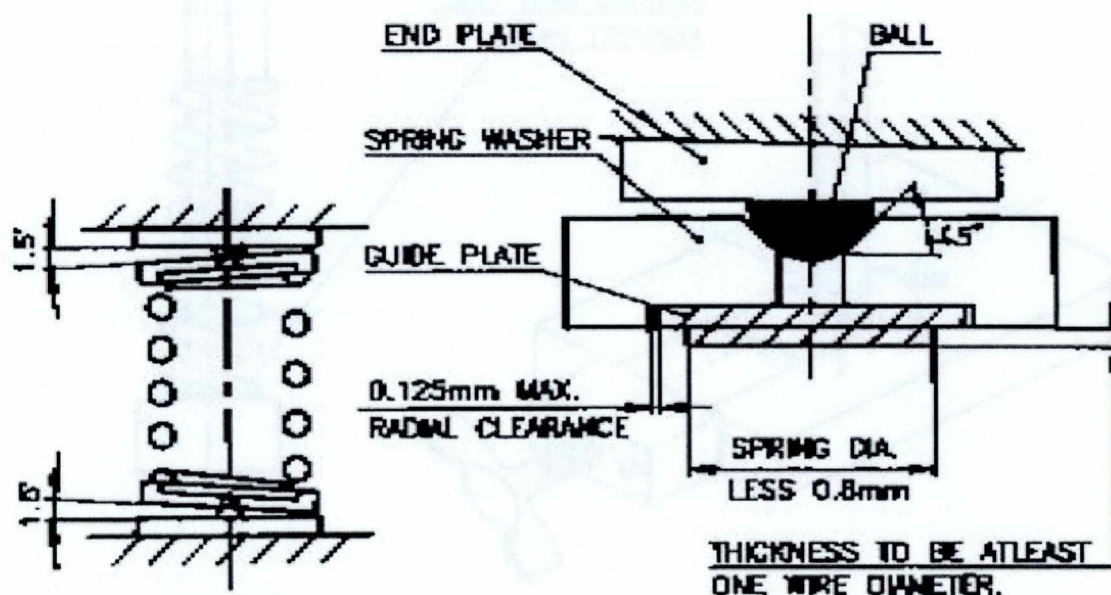


Figure – 7

FOR WIRE DIAMETER ABOVE 14MM



SQUARENESS CHECK
for WIRE DIA. 14mm
and ABOVE

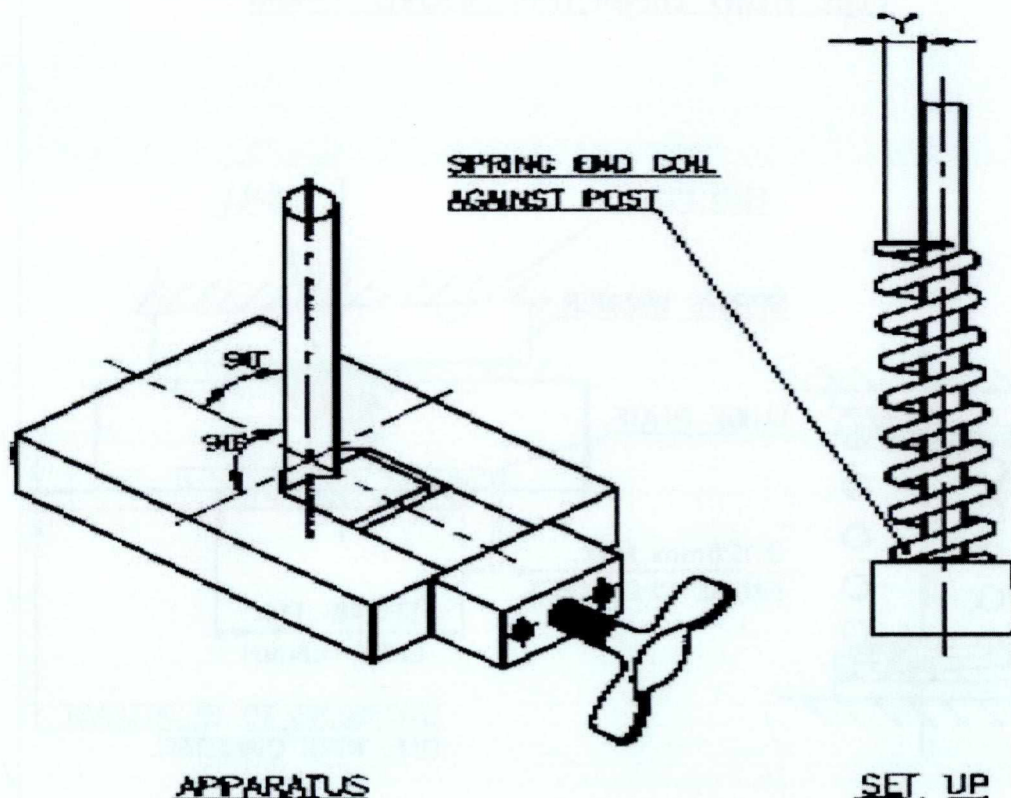
TYPICAL UPPER AND LOWER
ENDS OF SPRING TEST
WASHERS

NOTES:

1. ENDS PLATES TO BE CENTRALLY FIXED AND NOT MOVABLE DURING TEST.
2. SPRING WASHER AND BALL SIZES DEPEND ON LOADS BEING TESTED. SURFACES SHOULD BE ANTI-GALLING AND HAVE FINISH. LUBRICATE WITH MOLY-KOTE. IT IS SUGGESTED THIS BEARING SURFACES BE HARDENED.

Product: Safety and Safety Relief Valve Springs

Figure – 8

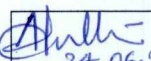
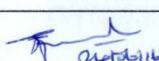
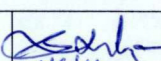
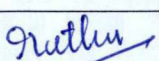
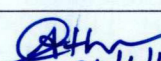
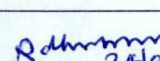
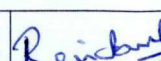


CHECKING CONCENTRICITY AND SQUARENESS
OF ENDCOILS

(WIRE DIA. 14mm AND BELOW)

NOTES:

1. "Y" VALUES WHEN MEASURED WITH A SCALE SHALL NOT EXCEED 1.5% MULTIPLIED BY SPRING LENGTH.
2. TO ACCURATELY DETERMINE SPRING END COIL CONCENTRICITY THE ACTUAL INSIDE DIAMETER OF EITHER END COIL MUST BE MEASURED. THE SMALLER END SHOULD BE PLACED AGAINST THE SURFACE PLATE.
3. THE DIFFERENCE BETWEEN EITHER INSIDE DIAMETER MUST BE DIVIDED BY 2 AND THIS AMOUNT SUBTRACTED OUT OF MEASURED "Y" VALUE.

| | | | | | | |
|--|--|--|--|---|--|--|
|  24.06.2016 |  24/6/16 |  24/6/16 |  24/6/16 |  24/6/16 |  24/6/16 |  24/6/16 |
| Abdur Rahman | G.Panneerselvam | S.Selvarajan | I.Muthu | E.Athiannavi | R.Dharmar | U.Revisankaran |
| Engr./QA | DGM/QA | SDGM/QA | Valves/Purchase | Valves/Engg | AGM / QC | AGM/QA&BE |
| Prepared By | Reviewed by | | | | Approved by | |



General Contract Conditions (GCC) of MM Tenders

BHARAT HEAVY ELECTRICALS LIMITED

Industrial Valve Plant: 433, Industrial Complex,
Goindwal Sahib, Dist. Tarn Taran,
Punjab-143422 (INDIA)

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General Contract Conditions (GCC) of MM Tenders

BHARAT HEAVY ELECTRICALS LIMITED

Industrial Valve Plant: 433, Industrial Complex,
Goindwal Sahib, Dist. Tarn Taran,
Punjab-143422 (INDIA)

1. INSTRUCTION TO BIDDER

Quotations shall be submitted before due date and time. Late offers are liable to be rejected, so please ensure to submit bid well within due date and time. Techno-commercial part will be opened on due date.

Based on evaluation of techno-commercial offers, Price bids of bidders who qualify from techno-commercial evaluation shall be opened. BHEL may decide to open the Price bid same day at 1700 hrs. If not opened on the same day, all qualifying bidders shall be notified for date of opening of Price bids by email/fax/post/courier/E-procurement system generated email.

1.1 Instruction to Bidder (In case of Non-E-Procurement / Paper/ Manual/ Hard Copy based tenders)

Sealed Tenders can be dropped in the tender box labeled as 'Tender box for MM contracts'. This tender box is located at the entrance of Admin block BHEL Goindwal. Quotations can also be submitted through e-mail at tendermm_ivp@bhel.in. Offers received in time shall be considered only when offers are complete in all respects. In case of bulky tenders, please handover quotation to Sh. Rakesh Kumar/ SDGM - Head-MM or Sh. Sumeet Bansal / Sr. Manager - MM [Contact: 01859 224 615 / 628]. Bid can be sent to following address:

**BHEL, Industrial Valve Plant,
#433, Industrial Complex,
Goindwal Sahib, Distt. Tarn Taran,
Punjab-143422.**

1.2 Instruction to bidder (In case of E-Procurement)

- Interested bidders / suppliers shall submit their offer through e-procurement mode at <https://eprocurebhel.co.in/>.
- Offers in any other mode will not be accepted.**
- Procedure for submission of tender is available in the "Bidder Manual Kit" at e-tender portal <https://eprocurebhel.co.in/>.
- In case of any difficulty faced while registering on BHEL's e-Procurement portal developed by NIC, queries may be addressed to 0120-4001002, 0120-4001005 and 0120-6277787; email: support-eproc@nic.in. These details are also available on 'Contact Us' page of the portal.
- Before uploading scanned documents if any, the bidders shall sign on all the statements, documents, certificates uploaded by him, owning responsibility for their correctness / authenticity.
- Disclaimer clause:** Neither the Organization (Bharat Heavy Electricals Ltd.) nor the service provider is responsible for any failure of submission of bids due to failure of internet or other connectivity problems or reasons thereof.

2. SCOPE OF SUPPLY

Material shall be supplied as per the applicable latest Technical Delivery Conditions (TDC)/ Material Standard requirements/BPS/Drawing and other requirement as given in the Tender Enquiry. National





General Contract Conditions (GCC) of MM Tenders

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& International material Standards shall have to be arranged by vendors themselves. Latest applicable revisions of standards/procedures to be referred.

All required tests as called in referred material standard/BHEL/TDC/drawing etc. shall be carried out by vendor at no extra cost. Material Test Certificates (MTC), inspection reports and Compliance/Guarantee Certificate are to be provided along with the supplies.

3. PRICE BASIS

1. Order of enquiry item sl. no. shall be maintained in the quotation.
2. The rates quoted shall be firm and fixed. No price variation is proposed and allowed.
3. Rates quoted should be FOR BHEL Goindwal basis. The offers quoted on other than FOR Goindwal basis are liable to be rejected.

In case bidder has quoted Ex-works prices, then he/she will be given an opportunity to accept price basis as FOR Goindwal either by accepting delivery as FOR Goindwal in same quoted price or by providing loading factor on his/her quoted ex-works prices to make them FOR prices.

Variation in GST or any other statutory levies during contractual delivery period shall be to BHEL's account.

4. DISCREPANCY IN WORDS AND FIGURES

1. If, in the price structure quoted for the required goods/ services/ works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity}, the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.
2. If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
3. If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject of (a) and (b) above.
4. If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date upto which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored.
5. Bids should be free from correction, overwriting, using corrective fluid, etc. Any interlineation, cutting, erasure or overwriting shall be valid only if they are attested under full signature(s) of person(s) signing the bid else shall be liable for rejection.
6. All overwriting/cutting, etc will be numbered by bid opening officials and announced during bid opening.

5. EVALUATION IN CASE OF MORE THAN ONE L-1 BIDDER

In the course of evaluation, if more than one bidder happens to occupy L1 status, effective L1 will be decided by soliciting discounts from the respective L1 bidders.





General Contract Conditions (GCC) of MM Tenders

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In case more than one bidder happens to occupy the L1 status even after soliciting discounts, the L1 bidder shall be decided by a toss / draw of lots, in the presence of the respective L1 bidder(s) or their representative(s).

Ranking will be done accordingly. BHEL's decision in such situations shall be final and binding.

6. REVERSE AUCTION

In case, it is declared in special terms & conditions of tender enquiry that RA is applicable for the NIT, then RA will be conducted as per following clause:

BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on <https://www.bhel.com/>) for this tender. RA shall be conducted among the techno-commercially qualified bidders as per RA guidelines.

Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered for RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.

7. VALIDITY OF OFFERS

The offers shall be kept open for acceptance 'for number of days mentioned in special terms and conditions' from the date of opening of the tender. In case of tender extension, the bid validity shall be considered from the date of tender opening.

8. SUPPLIED MATERIAL ADJUSTMENT

Item/s pending in previous PO has to be billed in previous PO only. Otherwise, BHEL will be free to adjust the supplies in previous PO. Any implication of tax will be on supplier's account. For this it is desirable that vendor should reconcile the pending PO statement every month/frequently with BHEL. Vendor can also view these details at Portal (<https://trichy.bhel.com/mm/index.jsp>).

9. DELIVERY SCHEDULE

Supplies shall be affected and completed as per schedule mentioned in special terms and conditions. **Further, BHEL may release delivery schedule from time to time based upon our requirement with mutual understanding.** Vendor shall be required to complete the order as per the BHEL schedule requested. Commencement of delivery period shall be reckoned from the date of PO / LOI or any other agreed milestone.

10. LIQUIDATED DAMAGES (LD) FOR LATE DELIVERY

Time is the essence of the contract'. As such, delivery of goods specified in the Purchase Orders released under the scope of this contract shall be made within the time limit prescribed therein. Penalty for late delivery will be applicable @0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the undelivered portion.





General Contract Conditions (GCC) of MM Tenders

BHARAT HEAVY ELECTRICALS LIMITED

Industrial Valve Plant: 433, Industrial Complex,
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In case of Ex-works delivery terms for indigenous supplies, the document date (Invoice/Challan date) in Goods Receipt (GR) document shall be reckoned for LD deduction. In case of FOR Delivery terms for Indigenous supplies, the posting date in GR document shall be reckoned for LD deduction.

If any vendor does not accept LD $\frac{1}{2}\%$ of the supply for each week of delay subject to a maximum of 5%, their offer is likely to be rejected by BHEL and the price bid shall not be opened. Bidders accepting for 10% LD shall not be loaded on account of LD. However, bidders who offer any other % LD [between 5% to 10%] shall be loaded @ % deviation from 10% and their accepted %. e.g. If a bidder accepts for a max of 7% LD only, their offer would be loaded @ 3% ($10 - 7 = 3$).

BHEL reserves the right to receive or not receive the material after the due date of PO. Applicable GST shall also be recovered from suppliers/contractors on LD amount. For this Debit note will be issued by BHEL indicating the respective supply invoice number.

11. PAYMENT TERMS

1. Due payment against supplies received shall be due after 30 days of receipt and acceptance of material and shall be paid within next 15 days' period. In case of any deviation from standard payment term mentioned, BHEL at its discretion may load on the item price at 'Base rate of SBI (as applicable on the date of bid opening; Techno-commercial bid opening) + 6%' shall be considered for loading for the period of relaxation sought by bidders.
2. Documents to be submitted (if applicable)
 - i) Tax invoice (Invoice shall be GST compliant and should contain all the required information such as GST No, HSN code etc.)
 - ii) Transporter copy along with material/consignment.
 - iii) Material Test Certificates (MTC) and
 - iv) Compliance Certificate.
3. GST registration number is to be submitted by qualified vendor as per GST law.
4. It is mandatory to mention proper material codes in the invoices and separate invoices to be raised for different POs.
5. **BHEL releases payment through EFT mode ONLY. Necessary details may please be submitted by filling required format before release of payment.**

12. TAXES & DUTIES

Payment of GST portion will be released to vendor only upon completion of statutory requirement and further subject to following:

- a) Vendor declaring such invoice in his GSTR-1 and
- b) Receipt of goods and Tax invoice by BHEL and
- c) Confirmation of payment of GST thereon by vendor on GSTN portal.
- d) Above is subject to receipt of goods/service and tax invoice thereof along with vendor declaring invoice in his return and paying GST within timeline prescribed for availing ITC by BHEL.

Following may please be noted for availing Input Tax Credit (ITC) by BHEL:





General Contract Conditions (GCC) of MM Tenders

BHARAT HEAVY ELECTRICALS LIMITED

Industrial Valve Plant: 433, Industrial Complex,
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Punjab-143422 (INDIA)

1. Since ITC can be availed only when BHEL is in possession of GST Tax invoice and after receipt of goods. Thus, vendor to ensure timely dispatch of goods and Tax invoice. It may be noted that in case of any delay in receipt of Tax Invoice and/or receipt of goods, the ITC availment by BHEL will get delayed thus entailing additional cash outflow & may even get denied if ITC availment timelines are breached.
2. Further ITC can be availed only when vendor has declared such invoice in his outward supply Return GSTR-1 and after GST thereon has been paid by him at the time of filing of monthly Return.
3. If GST credit is delayed/denied to BHEL due to non/delayed receipt of goods and/or tax invoice or expiry of timeline prescribed in GST law for availing such ITC, or any other reasons not attributable to BHEL, GST amount shall be recoverable from vendor along with interest levied/leviable on BHEL.
4. Further, in case vendor delays declaring such invoice in his return and GST credit availed by BHEL is denied or reversed subsequently as per GST law, GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from vendor/contractor along with interest levied/leviable on BHEL.

13. LIABILITY UNDER REVERSE CHARGE (RCM)

Any GST liability arising on BHEL under Reverse Charge (RCM) before actual receipt of goods and/or Invoice thereof would be subject to recovery of Interest leviable for the period between the date of such liability and actual date of eligibility of ITC based on receipt of goods, receipt of Invoices and other conditions specified in GST Law as applicable.

14. ACCESS TO MANUFACTURING PREMISES

While Purchase Orders placed on the vendor are under execution, authorized representatives of BHEL shall be allowed free access to the manufacturing facilities for the purpose of inspection or monitoring the progress of purchase orders. This access will also be extended to representatives of BHEL's customers accompanying the authorized representative/s of BHEL (which shall be intimated in advance), if our contractual requirements with our customers call for the same.

15. INSPECTION

1. The seller shall give adequate notice, of 1 week or as mutually agreed period, in writing to the Purchaser about the date and place at which the goods will be ready for inspection/ testing, as provided for in the contract.
2. Purchaser or his authorized representative shall be entitled to carry out inspection of material and workmanship/Surveillance Audit at Seller's premises or at his sub-contractor's premises at all reasonable times during execution of contract; Such inspection, examination and testing, if made, shall not absolve the Seller from his obligations under the contract. No additional charges shall be claimed for such inspections. Moreover, all required infrastructure (testing, tools etc) have to be arranged by supplier.
3. Any inspection carried out before supply by vendor/incoming stage at BHEL notwithstanding, if any defect/non-conformity is noted during processing, the same shall be attended/replaced by vendor at no extra cost.
4. BHEL representative from unit or CQ is authorized to carry out audits along with TPIA at vendor's works before clearing the items for dispatch.





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5. Necessary tooling including thread gauges etc. have to be arranged by vendor. Only in exceptional cases, based on BHEL discretions item/nature, BHEL may consider request to provide gauges if available with BHEL. But in no case this shall be linked with delivery of material.

16. GUARANTEE / WARRANTEE AND CORRESPONDING REPAIR / REPLACEMENT OF GOODS

Goods shall comply with the specifications for material, workmanship and performance. Unless otherwise specified, vendor shall give a guarantee / warrantee for a period of 18 months from the date of receipt. In case of non-acceptance of this term, bid shall be liable for rejection.

If the delivery is found non-compliant during the warranty period, leading to rejection, the Seller shall arrange free replacement / repair of goods, within one month from the date of intimation or any mutually agreed period. Corresponding quantity shall be treated as unsupplied against respective purchase order till replacement is received at BHEL.. In the event of the Seller's failure to comply, Purchaser may take action as appropriate, including repair / replenish rejected goods, at the risk & cost of the Seller.

Lifting of rejected material is under Supplier's scope. BHEL will inform related invoice, quantity etc. to supplier. Supplier has to give advance intimation / plan (Transporter, Vehicle details) for the lifting of material. Further supplier has to provide requisite documents (such as Credit Note, e-Way Bill etc.) to lift the rejected material. Material should be lifted within one month from date of intimation. After one-month, BHEL will not be responsible for rejected material and BHEL shall have the right to dispose off such rejected material.

17. LOI (LETTER OF INTENT)

BHEL may issue LOI prior to the PO for any reason whatsoever. The LOI in such cases is to be treated as PO for all practical purposes and all the Terms & Conditions of the tender shall be applicable from the date of issue of LOI.

18. SUB-CONTRACT

The purchase order or any part thereof shall not be sub-contracted, assigned or otherwise transferred without previously obtaining the BHEL's consent in writing.

19. RISK PURCHASE

Risk & Cost Clause, in line with Conditions of PO may be invoked in any of the following cases:

- i) Supplier's poor progress of the supply vis-à-vis delivery/execution timeline as stipulated in the Contract, backlog attributable to supplier including unexecuted portion of supply that does not appear to be executable within balance available period
- ii) Withdrawal from or abandonment of the supply by contractor before completion as per contract.
- iii) Non-supply by the Supplier within scheduled completion/delivery period as per Contract or as extended from time to time, for the reasons attributable to the supplier.





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- iv) Termination of Contract on account of any other reason (s) attributable to Supplier.
- v) Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.
- vi) Non-compliance to any contractual condition or any other default attributable to Supplier.

The value shall be calculated as follows:

$$\text{Risk \& Cost Amount} = [(A-B) + (A \times H/100)]$$

Where,

A= Value of Balance scope of Supply (*) as per rates of new contract

B= Value of Balance scope of Supply (*) as per rates of old contract being paid to the supplier at the time of termination of contract i.e. inclusive of PVC, if any.

H = Overhead Factor shall be taken as 5

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

*** Balance Scope of Supply:** Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Supply for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Recoveries from the supplier on whom Risk & Cost has been invoked shall be made from following:

- (i) Dues available in the form of Bills payable to supplier, SD, BGs against the same contract.
- (ii) Dues payable to supplier against other contracts in the same Unit of BHEL.
- (iii) Dues payable to supplier against other contracts in the different Regions / Units of BHEL.
- (iv) Legal options for recovery of dues payable by the supplier.

20. FORCE MAJEURE

If at any time during the continuance of the contract, the performance in which or in any part by either party of any obligations under the contract are prevented or delayed by reason of any war, hostilities, acts of public enemy, civil commotion, sabotage, fires, explosions, epidemics, quarantine restrictions, or acts of God (hereinafter referred to "an events" then provided the notice of happening of any such event is given by either party to the other within 21 days of the occurrence thereof, neither party shall by reason of such event be entitled to terminate the contract nor shall either party have any claim for damages against the other in respect of such non-performance and delay in performance and delivery under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist. If the performance in whole or part of any obligation under the contract is prevented or delayed by reason of any such event, claims of extension of time shall be granted for periods considered reasonable by BHEL subject to prior notification by the vendor to BHEL of the particulars of the event and supply to BHEL, if required, of any supporting evidence. Any waiver of time in respect of partial installment shall not be deemed a waiver of time in respect of remaining deliveries.





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21. NON-DISCLOSURE AGREEMENT

All Drawing and technical documents relating to the product or it's manufacture submitted by one party to the other, prior or subsequent to the formation of contract, shall remain property of the submitting party. Drawing, technical documents or other technical information received by one party, shall not without the consent of the other party, be used for any other purpose than that, for which they were provided. Such technical information shall not without the consent of the submitting party, otherwise be used or copied, reproduced, transmitted or communicated to a third party. Patterns supplied by BHEL will remain BHEL's property which shall be returned by the bidder on demand to BHEL. Bidder shall in no way share or use such intellectual property of BHEL to promote his own business with others. ***BHEL reserves the right to claim damages from the bidder, or take appropriate penal action as deemed fit against the bidder, for any infringement of the provisions contained herein.***

22. CLARIFICATIONS

The correspondence exchanged against the tender from both tenderer and BHEL through email/e-procurement are considered as valid document legally though it is not signed. It is treated as valid confirmations made on behalf of the respective company and very much comes under the legal ambit of the business transaction and hence it is binding on both the parties to the business. Any transaction pertaining to the tender from both the parties of business done round the clock irrespective of the office or business hours of the companies, are valid legally and binding on both the parties. This applies to the extent only in such cases where deadline time for transaction is not specifically declared by either or both the parties to the business.

23. PREFERENCES FOR MICRO AND SMALL ENTERPRISES (MSEs)

Preferences as mentioned in “Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012” & “Public Procurement Policy for Micro and Small Enterprises (MSEs) Amendment Order, 2018”, or as per latest guidelines issued by government shall be given to Micro and Small enterprises.

Main points which are mentioned in the above orders are as follows:

- 25% Procurement of the tender value shall be made from MSE (Micro, Small Enterprises) firms.
- 25% of the 25% quantity (i.e. 6.25% of the tender quantity) offered to the MSE's shall be reserved for MSE's owned by SC/STs. Failure to participate by any MSE owned by SC/ST's; this 6.25% quantity shall be procured from other MSEs.
- 3% from within the 25% quantity offered to the MSE's shall be reserved for women owned MSE's. Failure to participate by any MSE owned by women; this 3% quantity shall be procured from other MSEs.
- EMD shall be exempted for MSE's. All these benefits are subject to production of all statutory documents





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- In tender, participating Micro and Small Enterprises quoting price within price band of L1+15 per cent shall also be allowed to supply a portion of requirement by bringing down their price to L1 price in a situation where L1 price is from someone other than a Micro and Small Enterprise and such Micro and Small Enterprise shall be allowed to supply up to 25 per cent of total tendered value. In case of more than one such Micro and Small Enterprise, the supply shall be shared proportionately (to tendered quantity).

MSE suppliers can avail the intended benefits only if they submit **Udyam Registration Certificate** along with the offer. No other document shall be considered for availing MSE benefits. Non-submission of such document will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents is not cleared before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required document is to be uploaded on the portal.

Note: It may however be noted that MSE guidelines as on date (Date of Technical Bid Opening Part-I) shall prevail.

24. PREFERENCE TO MAKE IN INDIA

This procurement shall be governed by notification no. P-45021/2/2017-PP (BE-II) dated 16.09.2020 of Government of India issued by DPIIT and subsequent circulars issued afterwards. Accordingly, the minimum local content, the margin of purchase preference and the procedure for purchase preference to make in India shall be adhered.

25. RESTRICTIONS UNDER RULE 144(XI) OF THE GENERAL FINANCIAL RULES (GFRs), 2017

All provisions of Order No. F.No.6/18/2019-PPD of Department of Expenditure (DoE) shall be applicable for this tender enquiry (Order copy is available at <https://doe.gov.in/procurementpolicy-divisions>). Accordingly, any bidder from a country which shares a land border with India (except the countries to which the Govt. of India has extended lines of credit or in which the Govt. of India is engaged in development projects for which list is available at <https://www.mea.gov.in/>) will be eligible to bid in this tender only if the bidder is registered with the Competent Authority as specified in Annex I of the said Order of DoE.

Updated list of the countries to which lines of credit have been extended or in which development projects are undertaken are available on the Ministry of External affairs website (<https://www.mea.gov.in/>)

For the purpose of this order, definition of Bidder from a country which shares a land border with India shall be same as defined in the Annex III of the said order.

Registration with the competent authority as stipulated in the said order is responsibility of bidder.
Bidder has to submit a certificate certifying following along with offer:

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country,





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has been registered with the Competent Authority. I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be Attached].”

26. DISPUTES

In the event of any dispute and/or difference arising between the Vendor and BHEL as to interpretation and/or execution of the contract and/or the respective rights and liabilities of the parties, such disputes and/or differences shall be referred to the sole arbitrator nominated by BHEL. The provisions of the Indian Arbitration Act and the rules there under shall apply to such arbitration. The award passed by the arbitrator shall be final and conclusively binding on all the parties.

27. JURISDICTION

The court of the place from where the purchase order is issued shall alone have jurisdiction to decide any dispute arising out of or in connection with the purchase order.

28. BANNED FIRMS

The offers of the bidders who are on the banned list as also the offer of the bidders, who engage in the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL website <https://www.bhel.com/>.

29. FRAUD PREVENTION POLICY

The Bidder along with its associate / collaborators / sub-contractors / sub-vendors / consultants / service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <https://www.bhel.com/> and shall immediately bring to the notice of BHEL management about any fraud or suspected fraud as soon as it comes to their notice.

30. PREVENTIVE CHECKS TO ELIMINATE SUSPECTED CARTEL FORMATION

The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.

31. SUSPENSION OF BUSINESS DEALINGS WITH DEFAULTERS

The offers of the bidders who are under suspension as also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site <https://www.bhel.com/>.

1.0 Integrity commitment, performance of the contract and punitive action thereof:

1.1. Commitment by BHEL:





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BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the contract. BHEL will during the tender process treat all Bidder(s) in a transparent and fair manner, and with equity.

1.2. Commitment by Bidder/ Supplier/ Contractor:

1.2.1. The bidder/ supplier/ contractor commits to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India.

1.2.2. The bidder/ supplier/ contractor will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to relevant guidelines issued from time to time by Govt. of India/ BHEL.

1.2.3. The bidder/ supplier/ contractor will perform/ execute the contract as per the contract terms & conditions and will not default without any reasonable cause, which causes loss of business/ money/ reputation, to BHEL.

If any bidder/ supplier/ contractor during pre-tendering/ tendering/ post tendering/ award/ execution/ post-execution stage indulges in mal-practices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the price or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then, action may be taken against such bidder/ supplier/ contractor as per extant guidelines of the company available on <https://www.bhel.com/> and/or under applicable legal provisions

32. GENERAL

1. BHEL will not be bound by any power of attorney granted by the vendors or by changes in the composition of the firm made subsequent to the execution of the contract. They may, however, recognize such power of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the vendor concerned.
2. BHEL reserves the right to extend the due date of opening, which shall be informed. Validity of offer shall be deemed to be revised accordingly.
3. BHEL reserves the right to accept or reject any part or whole of the tender of a bidder by assigning a valid reason thereof. BHEL reserves the right to cancel the tender without assigning any reason thereof and without any obligation before any commitment.
4. Acceptance of all terms and conditions, in the form of signed copy of T&C or confirmation separately written, shall be submitted along with quotation. If nothing is mentioned, it shall be concluded that terms and conditions are acceptable.
5. BHEL may increase/decrease item/s based on BHEL requirement before price bid opening. Suitable price implication may be asked from suppliers.
6. BHEL may drop item/items from tender at any stage of tender before placing PO. BHEL may also delete PO with consent with supplier within delivery date of PO.





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7. After releasing PO, it is assumed that supplier has accepted PO if we do not receive acknowledgement from supplier within 5 days of date of PO.
8. In case of unscheduled holiday on opening day of tender, the next working day will be treated as scheduled prescribed day of opening of tender.
9. On the due date of tender opening, only technical bids will be opened. The opened technical bids will be evaluated by us and clarifications required, if any, will be called for from the bidders on technical and commercial points. If no reply is received from the vendor for the clarification raised by BHEL with in the final cut-off date, those vendors offer will be processed with the documents available / submitted against this tender. Offers not meeting the required specification and technical condition will be summarily rejected. The price bids of technically suitable bidders will be opened on a later date with prior intimation to techno-commercially suitable bidders.
10. Ranking L-1, L-2 etc. shall be done for individual item for the techno-commercially acceptable offers on landed cost to BHEL, IVP Goindwal basis and BHEL reserves the right to place order for individual items with different vendors.
11. BHEL reserves the right to negotiate with L1 vendor or re-float the tender for items where, L1 price is not the lowest acceptable price; BHEL reserves the right to increase or decrease the tender quantity.
12. If supplier is mentioning delivery destination within state/ outside state depending upon his location of factory, Free on Road etc. these are assumed as on FOR Goindwal. If supplier is wishing to give delivery on Ex works basis, then he has to clearly mention about it.
13. The bidder has to keep track of any changes by viewing the addendum(s) / Corrigendum(s) issued by the Purchaser on time-to- time basis in the E-Procurement platform. The Company calling for tenders shall not be responsible for any claims/problems arising out of this.
14. Unregistered suppliers, who are techno-commercially qualified against the open tender, are requested to register with BHEL as permanent supplier by submitting the Supplier Registration Form (SRF). SRF is available at <https://www.bhel.com/supplier-registration>.
15. Any term in special tender terms and conditions will supersede the GCC.



ANNEXURE-A

RESTRICTIONS UNDER RULE 144(XI) OF THE GENERAL FINANCIAL RULES (GFRs), 2017

(The bidders are required to print this on their company's letterhead & sign, stamp and submit along with offer)

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered.

Note: If the bidder is from such country which shares a land border with India evidence of valid registration by the Competent Authority shall also be attached along with offer.

Authorized Signatory with seal

Place:

Date:

PART-I (TECHNO-COMMERCIAL BID)**(To be filled & signed by bidder & submit with offer as 'PDF' file only)**

| | |
|--------------------------------------|-----------------------------------|
| Tender Enquiry No. & Date | 2223-015E Dated 16.06.2022 |
| Tender Description | Supply of Springs |

Bidder must note following points:

1. This workbook is protected, except for cells where comments / confirmation is to be given by bidder.
2. Bidder is advised not to unprotect / tamper the sheet / alter the terms mentioned in the sheet.
3. Any alteration to terms mentioned by BHEL will be considered as tampering and bidder's offer shall be liable for rejection.
4. **Bidders are advised to only fill the unprotected cells (shaded cells) by dropdown or writing the comments as applicable as their confirmation. Bidders are advised to submit duly filled & signed 'PDF' file as techno-commercial (Part-I) bid'. Failure on the part of bidder in not returning this duly filled-up techno-commercial bid and / or submitting incomplete replies may lead to rejection of bidder's quotation.**
5. All the commercial terms and conditions shall be indicated by vendor in this format only and nowhere else in his quotation. However, in case the space for vendor's reply is not sufficient against a particular question, the vendor shall furnish same by way of separate annexure / sheet attached to this questionnaire, indicating cross-reference of respective clauses.

BIDDER's DETAILS

| Sr. No. | Elements | Remarks |
|----------------|--------------------------------|----------------|
| 1 | Bidder's Name | |
| 2 | Quotation reference no. & date | |
| 3 | Contact Person's Name (s): | |
| 4 | Email ID (s) | |
| 5 | Mobile No. (s) | |
| 6 | Tel. No. (s) | |
| 7 | Fax No. | |
| 8 | Office Address | |
| 9 | Works Address | |
| 10 | Order to be placed on, M/s. | |
| 11 | GST No. | |
| 12 | PAN No. | |

ITEM DETAILS

| Sl. no. | Description | Material Code | Quantity, Nos. | Response |
|----------------|--------------------|----------------------|-----------------------|--------------------------------|
| 10 | Valve Spring | 963530560000 | 1000 | Select from the drop down list |
| 20 | E/Conical Spring | 963560360000 | 1000 | Select from the drop down list |

TECHNICAL CONDITION DETAIL

| Sr. No. | Elements | Response | Remarks (if any) |
|---------|--|--------------------------------|------------------|
| 1 | Technical : Supply of Springs as per tender documents. In case of any deviation, please mention clearly. | Select from the drop down list | |

COMMERCIAL CONDITIONS & DETAILS

| Sr. No. | Elements | Response | Remarks (if any) |
|---------|---|--------------------------------|------------------|
| 1 | Delivery term: FOR Goindwal Sahib Basis | Select from the drop down list | |
| 2 | IGST supply (%) | Select from drop down list | |
| 3 | SGST supply (%) | Select from drop down list | |
| 4 | CGST supply (%) | Select from drop down list | |
| 5 | Payment term: Due payment against supplies received shall be due after 30 days of receipt and acceptance of material and shall be paid within next 15 days period. (refer tender terms & conditions) | Select from the drop down list | |
| 6 | Delivery period: Material shall be delivered within 03 Months from date of PO / LOI. (refer tender terms & conditions) | Select from the drop down list | |
| 7 | Validity: 60 days from techno-commercial bid (Part-I) opening date. (refer tender terms & conditions) | Select from the drop down list | |
| 8 | Firm Price: The quoted / finalised rates shall be firm till execution of the supplies. No PVC shall be applicabble | Select from the drop down list | |
| 9 | Warranty Period: Supplier shall give a warrantee for a period of 18 months from the date of receipt. In case of non-acceptance of this term bid will be rejected. (refer tender terms & conditions) | Select from the drop down list | |
| 10 | Risk purchase: If the supplier fails to deliver the goods within the delivery specified in the Purchase Order, BHEL will be entitled to terminate the contract and to Purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or despatch within the delivery period mentioned in the Purchase Order. (Refer tender terms & conditions) | Select from the drop down list | |
| 11 | Are you registered under MSMED act 2006 as micro or small. | Select from drop down list | |
| 12 | If you are registered under MSMED act 2006 as micro or smallr, please attach valid MSE certificate (Udyam Registration Certificate) as per tender terms & conditions | Select from the drop down list | |
| 13 | Compliance to RESTRICTIONS UNDER RULE 144(XI) OF THE GENERAL FINANCIAL RULES (GFRs), 2017. Bidder has to attach the undertaking along with offer as per annexure-A (refer tender terms & conditions) | Select from drop down list | |
| 14 | I have thoroughly gone through the attached tender terms & conditions (Including STC ,GCC ,ETC.) and understood the above techno-commercial requirements. | Select from the drop down list | |

We further, confirm that we have quoted the rates in the tender considering Inter-alia the

1. Tender Document(s)
2. Additional Document(s) (if any)
3. BOQ Document (Price Bid Format)
4. Corrigendum (if any)
5. Pre Bid Meeting Minutes (if any)

We hereby certify that we have fully read and thoroughly understood the tender requirements and accept all terms and conditions of the tender including all corrigendum/addendum issued (if any). Our offer is in confirmation to all the terms and conditions of the tender including all corrigendum / addendum (if any) and minutes of the pre-bid meeting (if any). In the event our offer is found acceptable and Order is placed / Contract is awarded to us, the complete tender document shall be considered for constitution of Order / Contract Agreement.

[Validate](#)[Print](#)[Help](#)

Item Wise BoQ

Tender Inviting Authority: BHEL IVP Goindwal Sahib

Name of Work: Supply of Springs

Contract No: 2223-015E Dated 16.06.2022

| Name of the Bidder/ Bidding Firm / Company : | | | | | | | | | | |
|--|------------------|------------------|----------|--------|--|-----------------------------------|---------------------|---------------------------------------|------------------------------------|-----------------------|
| <div>PRICE SCHEDULE</div> <div>(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)</div> | | | | | | | | | | |
| NUMBER # | TEXT # | TEXT # | NUMBER # | TEXT # | NUMBER # | NUMBER | NUMBER | NUMBER # | NUMBER # | TEXT # |
| Sl. No. | Item Description | Item Code / Make | Quantity | Units | BASIC RATE In Figures To be entered by the Bidder in Rs. P | GST (If applicable in Percentage) | GST Amount in Rs. P | TOTAL AMOUNT excluding taxes in Rs. P | TOTAL AMOUNT including taxes Rs. P | TOTAL AMOUNT In Words |
| 1 | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 11 | 12 | 13 |
| 10 | Valve Spring | 963530560000 | 1000.00 | Number | | | 0.00 | 0.00 | 0.00 | INR Zero Only |
| 20 | E/Conical Spring | 963560360000 | 1000.00 | Number | | | 0.00 | 0.00 | 0.00 | INR Zero Only |
| Total in Figures | | | | | | | | 0.000 | 0.000 | INR Zero Only |