



**Bharat Heavy Electricals Limited
(A Govt. of India Undertaking)**

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REF: ENQ NO:PC:8006

DT: 17.04.2008

Sub: Procurement of pipe fittings.

**Ref: Enquiry No:PC:8006 dt 15.04.2008
Rate Contract**

Please find the following tender documents for reference.

1. Annexure to Enquiry
2. Tech. delivery condition TDG: 104:02

Pre qualification is the criteria for consideration for other than BHEL approved vendors. After qualifying for registration, the new vendors may be considered for future requirements, in line with BHEL system and policy. Such vendors will not be considered for this enquiry.

The New vendors may download vendor registration forms from BHEL web site www.bhel.com and relevant data for formal registration.

Sr. Manager / Purchase
BHEL / Piping Centre
80,GN Road, T.Nagar
Chennai-600017

ANNEXURE - LIST OF ITEMS - FORGINGS

| SL NO | Material code | DESCRIPTION | SPECIFICATION | Tentative qty | UNIT RATE | Drawing no |
|-------|---------------|--|---------------|---------------|-----------|------------|
| 1 | 925161770000 | H.FORGEOD415+3-0/ID265+0-3 L=360SA105 | SA105 | 10 | | |
| 2 | 925161800000 | STUB OD 250 ID 140 L = 200 SA105 | SA105 | 18 | | |
| 3 | 925164060000 | STUB OD 220 ID 140 L = 175 SA105 | SA105 | 10 | | |
| 4 | 925164650400 | FORGED STUB OD250 / ID140 L=200 SA105 | SA105 | 20 | | |
| 5 | 925166060000 | FORGED STUB OD170 / ID90 L=150 SA105 | SA105 | 10 | | |
| 6 | 925166150000 | HOL.FORG OD205/ID130 L=180SA105 | SA105 | 10 | | |
| 7 | 925166160000 | HOL.FORG OD250/ID140 L=160SA105 | SA105 | 10 | | |
| 8 | 925166170000 | HOL.FORG OD165/ID85 L=180SA105 | SA105 | 10 | | |
| 9 | 925166180000 | HOL.FORG OD125/ID40 L=150SA105 | SA105 | 10 | | |
| 10 | 925166190000 | HOL.FORG OD155/ID65 L=160SA105 | SA105 | 10 | | |
| 11 | 925166550000 | HOLLOWFORGOD813/ID760L=285 SA105 | SA105 | 10 | | |
| 12 | 925163990500 | STUB OD 230 ID 150 L = 320 SA182F11CL2 | SA182F11CL2 | 28 | | |
| 13 | 925165950000 | HOLLOWFORGOD280/ID190L=500 SA182F11CL2 | SA182F11CL2 | 10 | | |
| 14 | 925165990000 | HOLLOWFORGOD813/ID760L=450 SA182F11CL2 | SA182F11CL2 | 10 | | |
| 15 | 925166010000 | HOLLOWFORGOD813/ID760L=300 SA182F11CL2 | SA182F11CL2 | 10 | | |
| 16 | 925166020000 | HOLLOWFORGOD330/ID300L=400 SA182F11CL2 | SA182F11CL2 | 10 | | |
| 17 | 920840940000 | FORGING OD220XID60-200L SA182F22CL3 | SA182F22CL3 | 10 | | |
| 18 | 920840950000 | FORGING OD150XID50-200L SA182F22CL3 | SA182F22CL3 | 10 | | |
| 19 | 920841060000 | FORGING OD 170 X ID 40- 200L SA182F22CL3 | SA182F22CL3 | 10 | | |
| 20 | 925057390003 | FRGID1000X80MIN/ID851X57MINSA182F22CL3 | SA182F22CL3 | 10 | | |
| 21 | 925161350000 | HF OD355.6 ID 251.6 L400 SA182F22 CL3 | SA182F22CL3 | 10 | | |
| 22 | 925161450000 | STUB OD 180 ID 40 L 200SA182F22CL3 | SA182F22CL3 | 10 | | |
| 23 | 925161520000 | STUB OD 225 ID 115 L = 600 SA182F22CL3 | SA182F22CL3 | 10 | | |
| 24 | 925161780000 | H.F.OD605+3-0/ID495+0-3L=500SA182F22CL3 | SA182F22CL3 | 15 | | |
| 25 | 925161930000 | STUB OD 370 ID 150 L = 335 SA182F22CL3 | SA182F22CL3 | 10 | | |
| 26 | 925163960000 | STUB OD 260 ID 140 L = 200 SA182F22CL3 | SA182F22CL3 | 25 | | |
| 27 | 925164030000 | STUB OD 300 ID 130 L 830 SA182F22CL3 | SA182F22CL3 | 10 | | |
| 28 | 925164100000 | STUB OD 347 ID 147 L 700 SA182F22CL3 | SA182F22CL3 | 10 | | |
| 29 | 925164120000 | STUB OD 290 ID 152 L 650 SA182F22CL3 | SA182F22CL3 | 10 | | |
| 30 | 925164480000 | STUB OD 170 ID 50 L = 220 SA182F22CL3 | SA182F22CL3 | 10 | | |
| 31 | 925164520000 | STUB OD 225 ID 80 L = 1000 SA182F22CL3 | SA182F22CL3 | 10 | | |
| 32 | 925164690000 | STUB OD 250 ID 120 L = 200 SA182F22CL3 | SA182F22CL3 | 10 | | |
| 33 | 925166000000 | FG.OD225+3-0/ID110+0-3L=700SA182F22CL3 | SA182F22CL3 | 10 | | |
| 34 | 925166050000 | HOLLOWFORGINGOD220/ID50L=200 SA182F22CL3 | SA182F22CL3 | 10 | | |
| 35 | 925166090000 | HOL.FORG OD224/ID103 L=200SA182F22CL3 | SA182F22CL3 | 15 | | |

ANNEXURE - LIST OF ITEMS - FORGINGS

| SL NO | Material code | DESCRIPTION | SPECIFICATION | Tentative qty | UNIT RATE | Drawing no |
|-------|---------------|--|---------------|---------------|-----------|-------------|
| 36 | 925166100000 | HOL.FORG OD240/D145 L=160SA182F22CL3 | SA182F22CL3 | 50 | | |
| 37 | 925166110000 | HOL.FORG OD605/D495 L=500 SA182F22CL3 | SA182F22CL3 | 10 | | |
| 38 | 925166120000 | HOL.FORG OD200/D115 L=120SA182F22CL3 | SA182F22CL3 | 10 | | |
| 39 | 925166130000 | HOL.FORG OD150/D65 L=150SA182F22CL3 | SA182F22CL3 | 10 | | |
| 40 | 925166140000 | HOL.FORG OD210/D130 L=160SA182F22CL3 | SA182F22CL3 | 10 | | |
| 41 | 925166200000 | HOL.FORG OD323/D183 L=700SA182F22CL3 | SA182F22CL3 | 16 | | |
| 42 | 925166220000 | HOL.FORG OD140/D60 L=90SA182F22CL3 | SA182F22CL3 | 50 | | |
| 43 | 925166250000 | H.F. OD725+3-0/D560+0-3L=500SA182F22CL3 | SA182F22CL3 | 10 | | |
| 44 | 925166370000 | FRGOD324/D224 L=400 - SA182F22CL3 | SA182F22CL3 | 10 | | |
| 45 | 925166430000 | FGOD410/D360 L=450(-3+0/OD+3-0/SA182F22 | SA182F22CL3 | 10 | | |
| 46 | 925166610000 | STUB OD 120/ ID 60 L=250 MM SA182F22CL3 | SA182F22CL3 | 10 | | |
| 47 | 955164280000 | STUB OD 600 ID 450(+0-2) L 510 SA182F22 | SA182F22CL3 | 10 | | |
| 48 | 955164700000 | FORG STUB OD230/D120 L=250SA182F22CL3 | SA182F22CL3 | 10 | | |
| 49 | 925179150000 | MAT PIECE OD864X35/OD864X27 L=500 SA105 | SA105 | 10 | | 48032060917 |
| 50 | 925195560000 | BW END CAP 60.3X5.54 SA105 | SA105 | 10 | | |
| 51 | 925271390000 | BW CON RED 660 X 20 / 558.8 X 23 SA105 | SA105 | 10 | | 48032060834 |
| 52 | 925271400000 | BW CON RED 508 X 71 / 355.6 X 50 SA105 | SA105 | 10 | | 48042360977 |
| 53 | 921174330000 | MATCHINGPIECE ID 260X68 MIN SA182F22CL3 | SA182F22CL3 | 10 | | |
| 54 | 921174340000 | MATCHINGPIECE ID 495X40 MIN SA182F22CL3 | SA182F22CL3 | 10 | | |
| 55 | 925178950000 | M.PIEID260MAXXTHK59MINL=420SA182F22CL3 | SA182F22CL3 | 25 | | |
| 56 | 925179130000 | BWCONRED813X50/660X36L=500 SA182F22CL3 | SA182F22CL3 | 15 | | 48031160830 |
| 57 | 925179140000 | BWCONRED813X60/660X36L=500 SA182F22CL3 | SA182F22CL3 | 15 | | 48031160831 |
| 58 | 925195280000 | BW END CAP 60.3 X 12.5 SA182F22CL3 | SA182F22CL3 | 40 | | |
| 59 | 925271300000 | BWCONRED660X36/323.9X20L=620 SA182F22CL3 | SA182F22CL3 | 10 | | 48031260833 |
| 60 | 925271320004 | MPCE645X31.5/355.6X32L=600 SA182F22CL3 | SA182F22CL3 | 25 | | 48032160835 |
| 61 | 925271460000 | BWCONRED720X45/660X36L=500 SA182F22CL3 | SA182F22CL3 | 10 | | 48031260832 |
| 62 | 925279230000 | MATPIECEID400MAXX100MINL=448 SA182F22CL3 | SA182F22CL3 | 20 | | 48030160824 |
| 63 | 925279260000 | MPCE711.2X40/ID590.4MAXX35MI SA182F22CL3 | SA182F22CL3 | 15 | | 48031060827 |
| 64 | 925279270000 | MPCEID800MXX55MN/OD711.2X40 SA182F22CL3 | SA182F22CL3 | 15 | | 48031060828 |
| 65 | 925279270004 | MPCEID800MXX55MN/OD711.2X40 SA182F22CL3 | SA182F22CL3 | 10 | | |
| 66 | 925279290000 | MPCEOD645X31.5/OD508X25L=500 SA182F22CL3 | SA182F22CL3 | 25 | | 48032160836 |

ANNEXURE - II

SPECIAL TERMS AND CONDITIONS FOR RATE CONTRACT ENQUIRY COMMON TO INDIGENOUS / FOREIGN VENDORS

1) This is a **Rate Contract Enquiry**. The quantity mentioned are tentative. The rate agreed upon in Rate Contract shall be firm for a period of minimum **one year** from the date of agreement. No revision of rates are allowed after finalization of the Rate Contract.

2) The Fittings shall be manufactured as per our TDC:TDG:102:3-for **Butt-welded fittings** / TDC:TDG:103:01-for **Socket Welded fittings**/ TDC:TDG:104:02-for **Forgings, stub etc.**/TDC:TDG:12:0-for **IS1239 Black & Galvanised fittings**. . Compliance to all the clauses of TDC shall be specifically indicated and deviation if any shall be indicated.

3) Payment terms(Indigenous) - 100% payment within 45 days with 10% PBG against presentation of documents to BHEL/PC-finance with a copy of invoice alone to purchase department.**DOCUMENTS TO BE DIRECTLY SUBMITTED TO BHEL/PC.**

INVOICE IN TRIPLICATE

DELIVERY CHALLAN IN DUPLICATE.

C GUARANTEE CERTIFICATE IN DUPLICATE.

D LORRY WAY BILL COPY- ONE COPY (ORIGINAL COPY OF LWB SHOULD BE SENT THROUGH THE CARRIER)

E INSPECTION REPORT COPY – ONE COPY

F IBR FORM III-C- ONE COPY

G ED GATE PASS ORIGINAL OR COPY WITH A CONFIRMATION THAT THE ORIGINAL IS SENT WITH THE GOODS.

Payment terms(Foreign) - 100% payment through Letter of credit at site. with 10% PBG and all **Original** shipping documents, invoice and Test certificates to be routed through bank.

4) BHEL reserves the right to negotiate or re-float the tender opened if L1 price / or other details are not acceptable to them.

5) BHEL reserves the right to negotiate the L1 rate.


6) BHEL reserves the right to order on more than one vendor at the lowest acceptable price to BHEL.

7) Delivery should be 12 to 16 weeks from the placement of order-for Indigenous. and 16 to 24 weeks(FOB) - for foreign vendors.

8) LD - Supplier failing to deliver raw material / equipment / component within the period specified in the Contract, the Purchaser shall deduct Liquidated damages the same equivalent to **0.5% of the price for each week of delay up to a maximum of 15% of the price of delayed / undelivered goods** to be reckoned from the contract delivery date of Cargo readiness date (ie) final inspection agencies signed date in the Certificate, with reference to **foreign vendors (for FOB contracts only)** and with reference to **indigenous vendors (for Ex-works contracts only)**. For **'CFR Chennai sea port (foreign vendors) and FOR Trichy stores (for indigenous vendors)** LD will be reckoned from the B/L date and Lorry weigh bill date respectively.

9) Performance and Progress of the Vendor will be monitored and reviewed periodically and Purchase Order will be placed based on the Performance of the Vendor.

10) This being rate contract the negotiated L1 rates may be counter offered to other suppliers.

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|  | Bharat Heavy Electricals Limited, Piping Centre, Chennai-17 Technical Delivery Conditions for forgings,Rounds,Stubs, Nozzles, Matching piece- SA 105, SA 182. | TDG:104 Rev 02 04 .11. 2006 Page 1 of 3 |
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1.0 **CODES**

Materials shall meet Indian Boiler Regulations, (IBR) in addition to the latest Version of SA105 & SA182 as on date specified in the Purchase Order (PO).

2.0 **RAW MATERIAL**

Steel for SA 182 F11,F12 &F22 if indigenously procured, to be procured from following manufacturers i) Alloy Steel Plant , Durgapur, ii)Tata Iron & Steel company, Jamshedpur & iii) Mahindra UGINE Steel Company , Mumbai, who are approved by IBR for creep resistant steels.

2.1 **PROCESS**

Process of manufacture, Heat Treatment, Hardness Test etc., shall conform to applicable standards.

3.0 **FORGINGS.**

3.1 Carbon content of SA105 items shall be restricted to 0.25% max.

3.2 Product analysis shall be carried out on One piece / Heat / HT lot / Size.

3.3 Corrosion test (IGC)shall be carried out on one piece / Heat / HT lot / Size for SA 182 F 316.

3.4 All AS items shall be tested by MPI as per ASTM E-709 & SS items by LPI as per E 165.

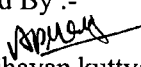

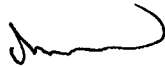
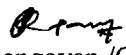

3.5 Tension test shall be carried out on one Test piece for each specification, heat, heat treatment lot and size.


3.6 Bend test for CS (SA 105) : One sample of 19 mm thick and 25mm width to be bent 180 deg around mandrel of radius 6.35mm.

3.7 Bend test for AS (SA182): One Sample of 25.4 mm width and thickness = t to be bent 180 deg around mandrel of radius =1.5 t. Test on representative sample is also acceptable.

3.8 Dimensions shall be as per Purchase Order.

3.9 Unless otherwise specified in the P.O, items of SA182 F11/12 shall be supplied as per class 2 and SA182 F22 shall be supplied as per class 3 only

| | | |
|--|--|---|
| Reviewed By :-  A.P.Madhavan kuttu/Engg  K.Ganeshan/MM |  T.R.Suchindrababu/OP&C  P.Elangovan /QA | Approved By  G.R.Srinivasan Quality |
|--|--|---|

| | | |
|---|--|--|
|  | Bharat Heavy Electricals Limited, Piping Centre, Chennai-17 Technical Delivery Conditions for forgings,Rounds,Stubs, Nozzles, Matching piece- SA 105, SA 182. | TDG:104 Rev 02 04 .11. 2006 Page 2 of 3 |
|---|--|--|

- 3.10 Metallography:- Metallography shall be carried out one per heat, per size, per heat treatment lot of F91 items.
- 3.11 Hardness test shall be carried out on all items of F91, and 10% on other material grades.
- 3.12 All items shall be ultrasonically tested as per SA388 and acceptance norms shall be as per AM 203.2 of ASME Sec VIII Div .2

4.0 WORK MAN SHIP, FINISH AND REPAIR

All items shall have smooth, workman like finish, and to be free from scale & defects like laps, seams, folds, cracks, etc. Surface defects can be removed by mechanical means and defective areas smoothly dressed up with the adjacent surface. Minimum dimension after repair shall meet drawing / Specification. **Repairs by fusion welding are prohibited.**

5.0 MARKING, COLOUR CODING & PACKING

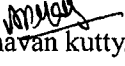
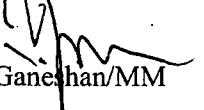



All items shall be PUNCHED OR ETCHED with specification, Grade, Heat No, maker's emblem and bear Inspection Authorities Seal.
The Colour Coding shall be as below.


COLOUR CODING:-

| | | |
|------------|---|---------------|
| SA105 | = | Blue |
| SA182 F11 | = | Green & White |
| SA182 F12 | = | Black & Red |
| SA182 F22 | = | Blue & Red |
| SA182 F91 | = | Brown & Red |
| SA182 F316 | = | Black & Blue |

6.0 PACKING

All items shall be suitably packed in boxes / crate to avoid transit / other damages.

| | | |
|---|---|--|
| Reviewed By :-  A.P. Madhavan kuty/Engg  K. Ganeshan/MM |  T.R. Suchindrababu/OP&C  P. Elangovan /QA | Approved By  G.R. Srinivasan Quality |
|---|---|--|

| | | |
|---|--|--|
|  | Bharat Heavy Electricals Limited, Piping Centre, Chennai-17 Technical Delivery Conditions for forgings,Rounds,Stubs, Nozzles, Matching piece- SA 105, SA 182. | TDG:104 Rev 02 04 .11. 2006 Page 3 of 3 |
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7.0 INSPECTION & CERTIFICATION :-

All items are to be Inspected at the manufacturer's works by the Inspection agencies / authorities as per IBR and as indicated in the P.O. Inspection certificate in IBR Form IIIC (for items under IBR purview) shall be submitted along with the Work Test Certificate countersigned by any of the above authorities and shall include the following.






1. Test Certificate Number & date.
2. BHEL P.O Number & Amendment Number(if any)
3. BHEL P.O. Serial Number
4. BHEL TDC Number
5. Size-wise Quantity
6. Specification, Grade & Year of code.
7. Heat/Melt Number
8. Steel making / forming process
9. Laddle and product Analysis of Raw Material.
- *10. Product analysis report.
- *11. Heat Treatment Chart.
- *12. NDE report. (VISUAL.MPI, LPI, UT)
- *13. Tensile Test report
- *14. Bend Test report.
- *15. Hardness Test report
- *16. Intergranular corrosion test report for SS
- *17. Metallography report for F 91.
- *18. Dimensional conformance.
- *19. Starting material details.

*20. Guarantee of HTP shall be given in the test certificate as follows if hydro test is not carried out :- "Forgings are capable of with standing without failure, breakage or impairment of their serviceability a hydrostatic test pressure equal to that prescribed for the specified matching pipe of equivalent material".

*Details furnished in the Tests certificate in lieu of chart/report is acceptable.

Records of Revisions:- Revision 02

Material specification SA 182 F316 added.

| | |
|--|---|
| Reviewed By :- | Approved By |
|  A.P.Madhavan kuttu/Engg |  G.R.Srinivasan |
|  K. Ganesan/MM |  T.R.Suchindrababu/OP&C  P.Elangovan /QA |
| | Quality |