

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

Piping Centre, 80, G. N. Chetty Road, CHENNAI – 600 017 Phone: 91 (044) 2815 8821, Fax: 91 (044) 2815 8869

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REF: ENQ NO:PC:9002

DT: 27.05.2009

Sub: Procurement of forged fittings.

Ref: Enquiry No:PC:9002 dt 27.05.09

Please find the following tender documents for reference.

1. List of items

- 2. Tech. delivery condition TDG: 104:03
- 3. Sample drawing and Edge preparation drawing.
- 4. Terms and conditions.

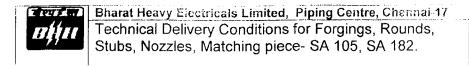
Pre qualification is the criteria for consideration for other than BHEL approved vendors. After qualifying for registration, the new vendors may be considered for future requirements, in line with BHEL system and policy. Such vendors will not be considered for this enquiry.

This is a limited tender and only vendors who are contacted though e-mail/courier may submit their offers.

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

Dy Manager / Purchase BHEL / Piping Centre 80,GN Road, T.Nagar Chennai-600017 LIST OF ITEMS FOR ENQ No PC9002

			בופן פן יובויופן פון בויק ייפן כפפב			
SI no	SI no Material	Drawing	Short text	Total	unit price Euro /Rs	Delivery
1	925164030000	·	STUB OD 300 ID 130 L 830 SA182F22CL3	2		4 months
2	925164100000		STUB OD 347 ID 147 L 700 SA182F22CL3	2		4 months
ε	925166060000		FORGED STUB OD170 / ID90 L=150 SA105	H		4 months
4	925166610000		STUB OD 120/ ID 60 L=250 MM SA182F22CL3	2		4 months
2	925179130000	48031160830	BWCONRED813X50/660X36L=500 SA182F22CL3	9		4 months
9	925179140000	48031160831	BWCONRED813X60/660X36L=500 SA182F22CL3	4		4 months
4	925179150000	48032060917	MAT PIECE OD864X35/OD864X27 L=500 SA105	10		4 months
8	925271320004	48032160835	MPCE645X31.5/355.6X32L=600 SA182F22CL3	17		4 months
6	925271390000	48032060834	BW CON RED 660 X 20 / 558.8 X 23 SA105	26		4 months
10	925279270000	48031060828	MPCEID800MXX55MN/OD711.2X40 SA182F22CL3	9		4 months
11	925279290000	48032160836	MPCEOD645X31.5/OD508X25L=500 SA182F22CL3	18		4 months
12	921174380000	48031063827	MACHINED RED OD 711X25/OD660X35 SA182F91	16		4 months
13	921174400000	48031163825	MACHINED RED OD 786X38/OD711X25 SA182F91	16		4 months
14	921174410000	48031163824	MACHINED RED OD814X52/OD711X25 SA182F91	16		4 months
15	921174430000	48031063822	MAT.PCEID800MAX X 43MIN/OD711X25SA182F91	12		4 months
16	925166040000		STUB ID85 X THK 50 MIN L=3000 SA182F91	3		4 months
17	925178940000		M.PIEID262MAX X THK 59 MIN L=420SA182F91	46		4 months
18	925179420000	48030162568	M.PCE ID400X100MIN/OD406.4X38-SA182F91	16		4 months
19	925279240100		STUB OD 120 ID 35 L= 3000 SA182F91	- 5		4 months



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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

- (a) The raw material used shall meet the respective specification and the test certificate shall be furnished.
- (b) 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.
- (c) Carbon content of Carbon steel fittings (SA 105) shall be restricted to 0.25% max

3.0 PROCESS

- (a) Process of manufacture shall conform to applicable standards.
- (b) Unless otherwise specified in the P.O, SA182 F11/12 fittings shall be supplied as per class 2 and SA182 Γ 22 shall be of Class 3 only.

4.0 HEAT TREATMENT

4.1 All fittings shall be heat treated as below:

SA 105

- Normalised

SA182 F11/ F12/ F22

- Normalised & Tempered
- 4.2 Fittings confirming to SA182 F91shall be normalised at1040 to1070deg C (for wall thickness larger than 75 mm, accelerated cooling may be done to obtain a fully martensitic structure) and tempered at 760 ± 10 deg C

5.0 TESTING

- (a) Product analysis shall be carried out on One piece / Heat / HT lot / Size.
- (b) Corrosion test (IGC) shall be carried out on one piece / Heat / HT lot / Size for SS fittings.
- (c) All CS & AS items shall be tested by MPI as per ASTM E-709 & SS items by as per E 165.
- (d) Tension test shall be carried out on one Test piece for each specification, heat, heat treatment lot and size.
- (e) 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.
- (f) 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.

S. Jayakumar, Engg K. Vedaprasad, QC
G.Panneer Selvam, QA

K. Ganeshan, MPL



Bharat Heavy Electricals Limited, Piping Centre, Chemiai-17 Technical Delivery Conditions for Forgings, Rounds, Stubs, Nozzles, Matching piece- SA 105, SA 182. TDG:104 Rev 03 Date:10.03.2009 Page 2 of 3

- (g) Dimensions shall be as per Purchase Order.
- (h) Metallography:- Metallography shall be carried out on one per heat, per size, per heat treatment lot of WP91 / F91 fittings. Acceptance norms The Material shall be free from any micro fissures. Microstructure shall show tempered martensite and also to be examined for any grain growth. Photomicrograph with 500x (Min) magnification along with Metallography report to be provided. The actual magnification shall be indicated.
- (i) Hardness test shall be carried out on all items of F91, and 10% on other material grades.
- (j) All items shall be ultrasonically tested as per SA388 and acceptance norms shall be as per 3.3.4 of ASME Sec VIII Div .2

6.0 POSITIVE MATERIAL IDENTIFICATION (PMI) FOR ALLOY STEEL FITTINGS.

Each alloy steel fitting shall be checked for the correctness of the material during manufacturing and final inspection using X-ray fluorescence principle or spark emission spectrography.

7.0 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.

- 8.0 PAINTING, COLOUR CODING, MARKING, PACKING & END PROTECTION
- 8.1 **PAINTING**: All fittings except SS to be applied with resin type rust preventive coating with visibility to punched and stenciled details on outside and either with rust preventive coating or rust inhibitor inside. SS fittings to be surface treated as per ASTM A380 both inside and outside.
- 8.2 **COLOUR CODING**: All fittings shall be colour coded circumferentially at ends as given below

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

8.3 MARKING:

8.3.1 The fittings dispatched to **BHEL Stores** shall be <u>punched / etched</u> with Material code, Heat number, material specification, maker's emblem, Inspectors seal and Statutory authorities seal (an applicable).

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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.

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In addition, the above details along with size shall be <u>paint stenciled</u> on the fittings.

- 8.3.2 The fittings dispatched directly to project site as **DTS** shall be <u>punched and paint</u> stenciled with <u>DU code</u> (14 digit work order du detail) as given by purchase in addition to marking done as per para 8.3.1.
- 8.4 **PACKING AND END PROTECTION:** Machined ends of the fittings shall be well protected using end caps and fittings shall be suitably packed in box / crate to avoid transit & other damages.

9.0 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 along with photomicrograph with 500x (min) magnification.
- *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.

10.0 Records of Revisions:-

Revision 02: Material specification SA 182 F316 added.

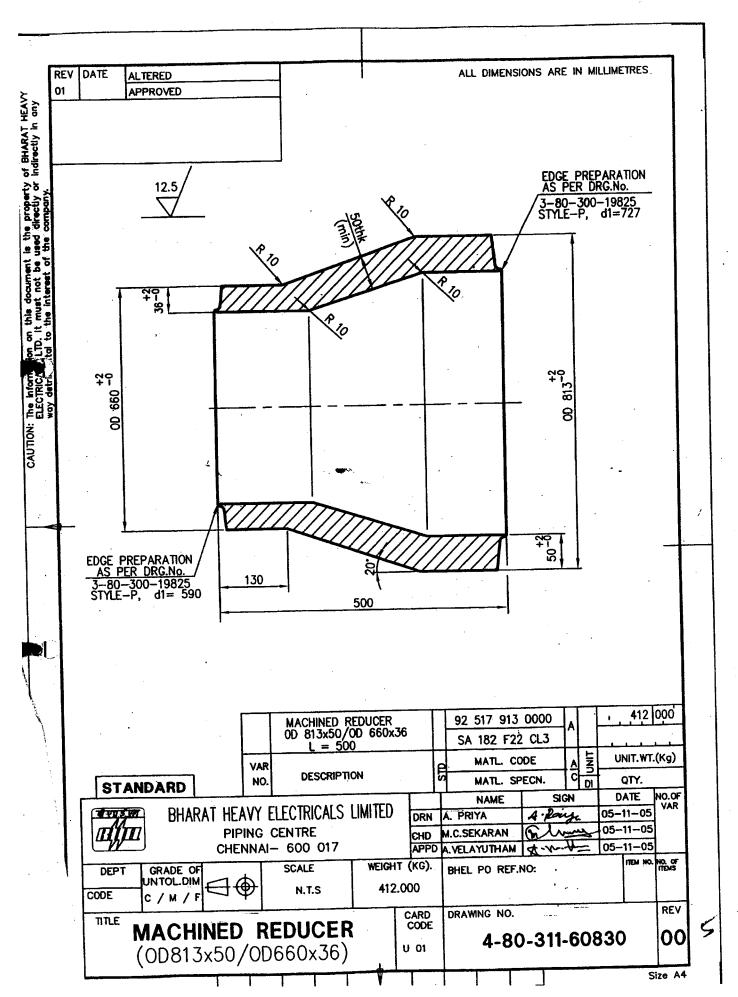
Revision 03: a) Para 4.0, 6.0 included.

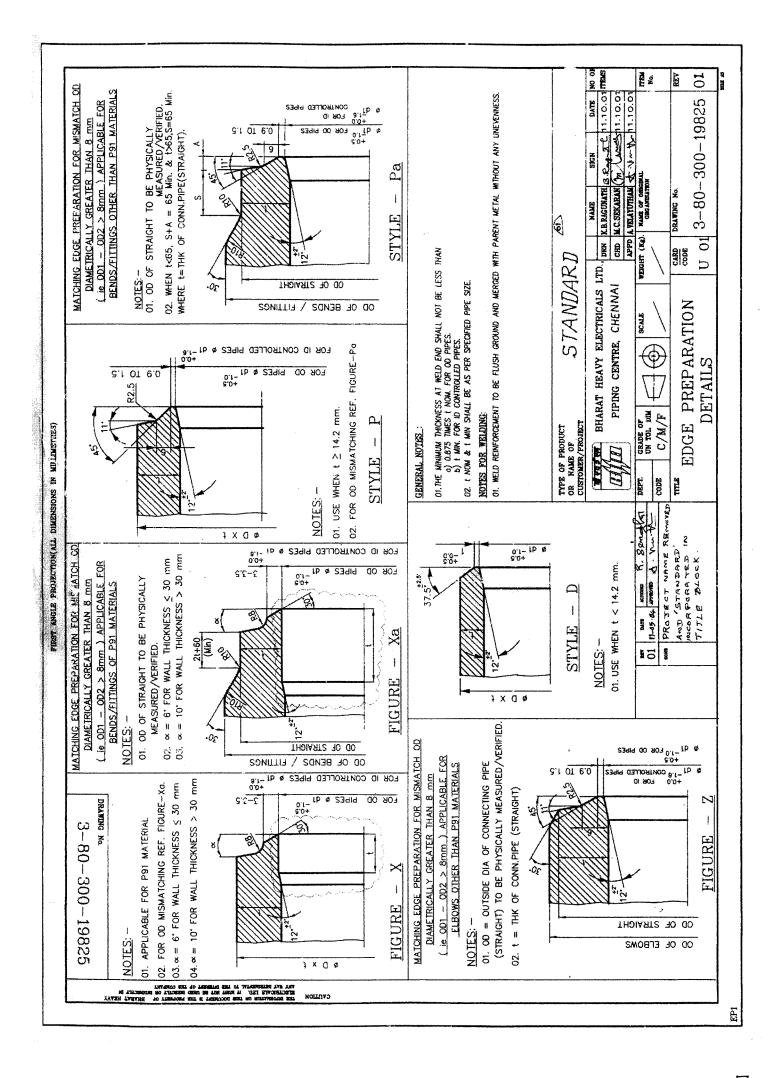
b) Para 5.0 (b),(c),(h),(j), 8.0 and 9.0 (17) are revised.

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TERMS & CONDITIONS FOR PROCUREMENT OF FITTINGS

SL NO	BHEL REQUIREMENT	SUPPLIER CONFIRMATION
1	TYPE OF BID – Offers are invited to submit in single/ Two parts	CONTINUATION
	In case of Single Part Bid no deviation shall be taken and bids will be	
	rejected if any deviation is taken. The order will be finalized based on price	
	/negotiation with all other conditions being accepted by the bidder.	
	In case of Two part bid, the following procedure shall be followed. Part-I TECHNICAL - CUM - COMMERCIAL PART:-	
	This part of the Bid shall contain following Technical and Commercial Points	
	only (Except Price Portion)	
	Acceptance to our TDC (Technical delivery condition) as given in	
	the tender. Deviation if any shall be clearly indicated. If there is nos specific indication about deviation it will be taken as totally accepted	
	and processed.	
	Copy of price bid without price part to know the items for which you are quoting against this tender.	
	For items which could not be manufactured in seamless construction,	
	vendor can give their offer for welded construction. Vendors who are	
	able to give both may quote for bothIf only one construction	
	offered it will be treated that they are not manufacturing the other one. However BHEL reserves the right to accept or reject the offer.	
	(Money values shall not be indicated i.e.un priced bid).	
	• ,	
	PART II PRICE PART:	
	The unit price on FOB Sea port (foreign vendors) / FOR Destination basis (indigenous vendors) and shall include all testing, inspection,	
	packing & Forwarding charges.	-
	This part of the Bid shall contain item-wise Price details against each Enquiry Sl.No. and the same shall be put in a sealed cover duly indicating	
	Tender No, Tender Opening date, and "Price Bid" on the Sealed cover.	
	Price quoted by the Supplier, element wise including Taxes & Duties	
	shall be as per the format enclosed. Soft copy of the same also to be	
	provided immediately after the price bid opening. Incase of difference between the two, hard copy will prevail and binding on the supplier.	
	Preconditions for price will not be accepted.	,
	Both the above referred parts of the Bid each sealed in a separate cover	
	shall be put in a sealed outer cover duly indicating Tender No.& Date,	
	Tender Opening date and to be sent to	
	SR MANAGER / MM	
	BHEL: PIPING CENTRE	
	80, G.N CHETTY STREET	
	T.NAGAR, CHENNAI 600 017	
2	If you are not interested / not in a position to participate in the tender, please	
3	send regret letter for not participating, before due date of the tender. You are requested to quote only for the sizes / spec for which you are	
	approved by BHEL, Piping Centre.	
4	Tolerances for dimensions other than edge preparation shall be as per	
5	ASME B 16.9/B 16.28/B 16.11: Quality Documents as listed below should be sent to Purchase / Piping centre	
3	BHEL Chennai immediately after the shipment / dispatch of items and not	
	through Bank.	
	i) Three sets of original certificates item-wise (ie) Works TC, IBR	,
	Form III C, UT Report, MPI report, Dimensional report, Raw Material TC	
	(Xerox copy)	
	ii) 3 copies of IBR Form III C for each item duly attested by the makers	
L	representative who has signed in IBR Form III C. The company seal shall be	

	affixed below the signature in case the ordered quantity of an item is 10 and above, (otherwise you can restrict the number of attested copies to the ordered quantity of an item). These certificates are to be dispatched along with the other TC and not through Bank. All the above documents are to be submitted in soft copy apart from the hard copies as above, if the materials are not ready on the date of visit by BHEL INSPECTOR against specific call for inspection by vendor, all the expenses incurred for the visit shall be liable for recovery from, the invoices of the vendor. Further, this will also have an adverse bearing on the performance rating of the vendor.	
6	Year of Code for Viz. the standards ASME B16.9, ASME B 28 & ASME B.16.11 etc. shall be latest and the specific year is to be mentioned in the Manufacturer's test certificates, as well as in IBR Form III-C. Also the relevant Year Code for material standard and the NDT standard (ie U.T/LPI/MPI) has to be mentioned.	
7	VALIDITY OF THE OFFER: - The quotation shall be valid at least for a	***
,	period of 90 days from the date of price bid opening date. Offer with lesser validity will not be considered.	
8	DELIVERY SCHEDULE: As indicated in the Enquiry	
9	TERMS OF DELIVERY: FOR SITE or Trichy – Indigenous vendors FOB loading sea port, India – Foreign vendors	
10	TAXES & DUTIES: Please indicate clearly the percentages of applicable taxes, duties like CST, Excise Duty or any other taxes / duties. See Pricing Format enclosed.	
	•.	-
11	TRANSPORT: For Indigenous suppliers: All the Items are to be dispatched to our Trichy Stores/Site as per PO through BHEL approved road carriers only .List of authorised transporters will be furnished at the time of entering in to contract. Changes if any, in the transporters list during contract period shall be communicated from time to time. For Foreign suppliers: All Items are to be shipped to Chennai Harbour – India	
12	PRESERVATION: - As per respective Technical Delivery Condition.	
13	INSPECTION:- A) IBR & Third Party inspection agency for CS & AS materials. B) Third Party inspection agency for SS Materials C)Lloyds Inspection / SGS/BV/BHEL approved agencies D)BHEL / QC Inspection.	

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SL NO	BHEL REQUIREMENT	SUPPLIER CONFIRMATION
14	CERTIFICATION: - IBR TC in form III C, inspection report of BHEL Third Party inspection agency, Mfg TC, incorporating BHEL Specification requirement /ASME requirement. Mechanical / Hardness & Heat treatment and other Lab test reports to be furnished. Confirmation report to BHEL Specification to be furnished. Basic raw material (Mill) TC & other requirements as per TDC / Specns shall be submitted. Inspection Charges: - Inspection charges of BHEL/ Their representative are to BHEL A/c. Any other testing charges and IBR inspection charges should be included in the quoted prices. Inspection documents shall be furnished for each batch of dispatch / consignment. If entire P O quantity is manufactured in one lot but dispatched in phased manner, original IBR should be sent along with the first consignment and the attested Xerox copy of IBR shall be sent for subsequent consignments. IDENTIFICATION As per TDC	
16	GUARANTEE: Vendors shall guarantee the supplies for a period of 24 months from the date of dispatch of materials or 18 months from the date of their commissioning which ever is later	
17	PENALTY:- "If the supplier fails to deliver the Raw material / Equipment / Components within the period specified in the contract the purchaser shall deduct Liquidated Damages, a sum equivalent to 0.5% of the price for each week of delay upto a maximum of 15% of the price of delayed/undelivered goods to be reckoned from the contract delivery date to cargo readiness date (i.e., final inspection agency's signed date in the certificate)"	
18	TERMS OF PAYMENT: 90% payment against presentation of following documents to our Finance Departments Directly with a copy of Invoice alone to Purchase department. A. Invoice in Triplicate B. 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. Balance 10% will be paid on submission of Invoice along with GR reference. For Foreign Vendors: 100% through LC and PBG for 10% of PO Value.	
19	For all other Terms & Conditions,. If the offer is not confirmed for any other terms we will load highest offer submitted by any other supplier.	
20	 The PO copy with all details will be given to successful bidders in soft mode also. However Hard copy will be used for record purpose. The same soft copy should be utilized by the suppliers to furnish information as called for in the format. See attached format for details. This soft copy will go up and down between BHEL and the supplier for tracking the full process and smooth closing of the PO During the Contract period, any of our sister units of BHEL Piping Centre will be entitled to place order for this item on the same terms and conditions BHEL reserves the right to cancel this tender without assigning any reasons what so ever. Deviation taken after placement of order will not be accepted (Both technical & on delivery) Suppliers to analyze in detail, at the time of submission of offer with reference to our "delivery" requirement of fittings and confirm compliance or otherwise. To ensure correct & timely submission of all original test certificates including IBR Form III-C. There should not be any discrepancies in detail leading to time wastage in clarification and revisions. 	

- BHEL reserves the right to increase or decrease the tendered quantity which may vary by plus minus 15%.
- Lowest prices received against BHEL tenders does not mean order will be placed on that Supplier. BHEL reserves the right not to consider the same.
- BHEL reserves the right to negotiate or re-float the tender opened if L1 price /or other details are not acceptable to them
- BHEL reserves the right to negotiate the L1 rate.
- BHEL reserves the right to order on more than one vendor at the lowest acceptable price to BHEL
- Pre qualification is the criteria for consideration for other than the BHEL Approved Vendors. After qualifying for registration, the new Vendors, may be considered for future inline with their system and policy. Such Vendors will not be considered in this Enquiry.
- The new Vendors may download Vendor registration forms from BHEL Web site <u>www.bhel.com</u>. And submit all relevant data for formal registration.

Note: Please confirm your acceptance/other wise to all the points indicated above positively and submit this format duly filled, signed & stamped along with the technical bid.

VENDORS SIGNATURE