



General Note: **BHARAT HEAVY ELECTRICALS LIMITED**

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(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

PHONE : 2577359
GRAMS : BHARATELEC
FAX NO: 2520719
E-mail :
Web :

429-002/A

	Collective No.	Enquiry Date	Due Date For Quotation
	1801501367	05.12.2015	30.12.2015
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order			

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	A180914201001001 LDO SUCTION STRAINER NB150; 150LBS(Duplex Type 6-Port Integral Change Over Cock Strainer without Steam jacketing)as per specification TOS:400/1809/00 and Drg No: 2-42-000-02118	NO	2.000	2.00	31.12.16
20	A180914202001001 HFO SUCTION STRAINER NB300; 150LBS(Duplex Type 6-Port Integral Change Over Cock Strainer) WITH STEAM JACKETING as per specification TOS:400/1809/00 and Drg No: 2-42-000-02116	NO	2.000	2.00	31.12.16
30	A180914203001001 HFO DISCHARGE STRAINER (HEATER OUTLET)NB150; 300LBS(Duplex Type 6-Port Integral Change Over Cock Strainer) WITH STEAM JACKETING as per specification TOS:400/1809/00 and Drg No: 2-42-000-02115	NO	2.000	2.00	31.12.16
40	L180914220001001 HFO DISCHARGE STRAINER (BOILER FRONT) NB100; 300LBS (Duplex Type 6-Port Integral Change Over Cock Strainer) WITH STEAM JACKETING AS PER SPECIFICATION TOS:400/1809/00 and Drg No: 2-42-000-02115	NO	1.000	1.00	31.12.16
50	L180914220002001 DRAIN OIL SUCTION STRAINER (ONE FOR PUMP HOUSE & ONE FOR BOILER AREA) NB50; 150LBS(Duplex Type 6-Port Integral Change Over Cock Strainer) WITH STEAM JACKETING, AS PER SPECIFICATION TOS:400/1809/00	NO	2.000	2.00	31.12.16

General Note:

01.The Tender will be operated on TWO PART BID basis i.e.
Techno-commercial bid and Price bids in separate sealed envelopes.

The offers should reach us 30 minutes before the time of opening of tenders.
The offers will be opened at 14.30 hrs on the due date of tender in the presence of
tenderers who have submitted their offer and who may like to be present for the tender
opening.Late and delayed offers are liable to be rejected.

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

MANAGER / PURCHASE
(FOSSIL BOILERS)

S. KANNAN
Sr. Engineer

Materials Management / BOI
BHEL, TIRUCHY - 620 014.



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02. The supply shall be as per our specification TOS: 400/1809/00 and Drg Nos 2-42-000-02115, 2-42-000-02116, 2-42-000-02118, enclosed with this enquiry.

03. Your offer shall accompany with details of Data Sheet and Drawings and your pointwise confirmation to our specification is to be submitted for evaluation. Incomplete offer will lead to rejection, Please be noted.

04. The materials are required for Wanakbori project site (Cust No.1809) and are to be dispatched on the basis of FOR/BHEL Trichy Stores after inspection and clearance.

05. The items covered in this enquiry shall be considered as Single Package for evaluation and ordering.

06. Specific confirmation is required for the Annexure -A (commercial terms and conditions) which is to be filled and submitted along with techno-commercial offer for evaluation.

07. Please take note of Annexure-B (loading factors for commercial deviations). The same will be applicable for evaluation of net cost to BHEL basis and is to be filled and submitted along with techno-commercial offer.

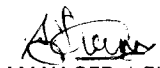
08. Please take note of Annexure-C (Special provisions for MSEs). The applicable documents shall be submitted along with techno-commercial offer to avail the same.

09. Please take note of Annexure-D (Pre-qualification criteria) attached herewith. Vendor has to necessarily meet the PQR for consideration. Offers not meeting the PQR will lead to rejection. The applicable documents shall be submitted along with techno-commercial offer.

10. For vendors who are not registered with BHEL Trichy for supply of Duplex strainers In addition to above, vendor have to submit all the documents duly filled in "Supplier Registration Forms" through online (available in <http://www.bheltry.co.in/>- On line Vendor Registration-Material Management). Duly filled in Supplier Registration Forms, along with all credentials and supporting documents, Certificate of Rating from D& B (Dun & Brad) or equivalent agencies (For Foreign Vendors), Financial Performance / Profit & Loss Account / Balance sheet for last three years etc. (With Techno-Commercial Bid). Availability of minimum manufacturing, handling, testing and measuring facilities, to be detailed are to be mentioned clearly. All the documents to be uploaded. Apart from qualifying the Techno-Commercial requirements of the enquiry and PQR, BHEL has the right for spot assessment of the

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Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**


MANAGER / PURCHASE
(FOSSIL BOILERS)
Sr. Engineer
Materials Management / 101
BHEL TIRUCHY - 620 014.



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facilities for evaluation, approval and for registration. Apart from online submission, Hard copy has to be forwarded to SM/SDC/MM/BHEL/TRICHY. Also vendor has to indicate the registration no in their offer. Further their offer will be subject to evaluation and approval by BHEL as permanent vendor.

11. All the tenders shall be addressed to the following address:

THE TENDER OPENING CELL/MM
ROOM NO:26, BUILDING-24, GROUND FLOOR
BHARAT HEAVY ELECTRICALS LIMITED
TRICHIRAPPALLI-620 014

In case personal delivery of the offer, it shall be dropped into the respective box kept in room no:26, after duly entering the data in the system.

Offers will be accepted only up to 14.00 hours on the due date. Therefore vendors shall ensure to submit the offers well before this time. All due date extension requirements should be addressed to the respective Purchase mail IDs. All the due date extension requests from will be considered only up to 48 hours before the due date and time.

Vendors are requested to avoid of offers through e-mail/fax. In case of any unavoidable situation, offers shall be sent through e-mail to the following mail ID only tender_cell@bheltry.co.in.

As tenders are being opened by common Tender Opening Cell, offers covers should be sealed with tenderer's distinctive seal and super scribed with correct Tender No., item of supply and due date of opening.

The offers will be opened at 14.30 hrs on the due date of the tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers will not be accepted.

Enclosures:

- 1) General Terms and Conditions
- 2) Annexure - A, B, C & D
- 3) Spec: (a) TOS: 400/1809/00
(b) Drg No: 2-42-000-02115
(c) Drg No: 2-42-000-02116
(d) Drg No: 2-42-000-02118

"LD clause has to be confirmed without fail."

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

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Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED

S. KANNAN
(FOSSIL BOILERS)
Sr. Engineer
Materials Management / BC
BHEL, TIRUCHY - 620 014.



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<http://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.

PR Links

Material.	PR.No	PR.Item.	Quantity	Acc. Assign	Customer Number
A180914201001001	113123960	00010	2.000	U8/1809-LU-589-1-42-010	U8/1809
A180914202001001	113124096	00010	2.000	U8/1809-LU-590-1-42-020	U8/1809
A180914203001001	113627156	00010	2.000	U8/1809-LU-591-1-42-030	U8/1809
L180914220001001	113627155	00010	1.000	U8/1809-LU-592-1-42-200	U8/1809
L180914220002001	113636215	00010	2.000	U8/1809-LU-592-1-42-200	U8/1809

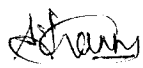
list of suppliers

RFQ-5200004530

Open Tender Dummy Code

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Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED


MANAGER PURCHASE
(FOSSIL BOILERS)
THIRUCHIRAPALLI
Yours faithfully,
Materials Mgt. Dept. No: 201
DATE: 05.12.2015

**SPECIFICATION FOR FO DUPLEX TYPE 6-PORT INTEGRAL
CHANGE OVER COCK STRAINER**

1. BINDING DOCUMENTS:

This specification TOS: 400/1809/00 shall form part of the purchase order and be fully complied with.

2.0 SPECIFICATIONS

2.1 Scope

This specification covers design, manufacture, inspection, testing, marking, identification, packing and supply of FUEL OIL DUPLEX TYPE 6-PORT INTEGRAL CHANGE OVER COCK STRAINER as per the specification that follows. Technical parameters for equipment design are furnished in Section-1 to 4. For quantity, scope of supply and special requirements refer Section-5.

This is a general specification dealing with technical requirements as specified under scope. Contract requirements and special requirements (if any) for a particular project are specified in Section-5.

The extent of supply stated herein is not necessarily exhaustive and shall not relieve the vendor from his responsibility to provide goods and services necessary to satisfy the performance criteria and guarantees specified.

2.2 Codes & Standards

The equipment shall be designed to meet the governing standards as applicable and also meet with the local standards where the equipment is installed. In case of any information not specified in this technical delivery conditions these standards will be binding.

2.3 Technical Requirements:

- a) The fuel oil strainer procured for HFO application shall be suitable for HFO & Drain oil. The fuel oil strainer procured for LFO application shall be suitable for LFO/LDO.
- b) Duplex, basket type of compact design with preferably 6-Port integral changeover cock.
- c) The net free flow area of filter element shall not be less than six times the specified line size, per section. In case of pleated element design, the foldings shall be properly spaced and guided at the end plates, so that they do not cluster and they do not make the free flow area ineffective.
- d) There shall not be flow interruption while manipulating the changeover cock.
- e) The changeover cock shall offer good seat closure tightness and the idle section shall be serviceable when the other is working.
- f) The changeover cock shall be of single lever and of 90° operation. The changeover operation shall be smooth and easy to operate. Vendor shall provide suitable gear arrangement, if required to reduce the manual effort during changeover operation.

- g) The pressure drop shall be less than 0.1 bar for suction strainer and 0.2 bar for the discharge strainer at specified maximum viscosity and flow rate, with clean element.
- h) The above figures shall be less than 0.35 bar and 0.7 bar respectively with 50% clogged element.
- i) Flow across the filter basket shall be from inside to outside and of sturdier construction to accept higher operating differentials.
- j) Body shall be of cast steel or fabricated steel.
- k) Filter mesh and support sheet shall be of SS 316.
- l) HFO & Drain oil strainer shall be with steam jacketing for maintaining the oil flow temperature. Steam operating pressure 24 kg/cm². Steam operating temperature 310 °C. Steam jacket shall cover the body so that the heat is dissipated to oil at maximum possible extent.
- m) LFO strainer shall be without steam jacketing.
- n) Design Parameters:

Flow temperature maximum shall be 50deg.C for LFO, 60deg.C for HFO suction, 145deg.C for HFO discharge strainers. Operating pressure maximum shall be 6bar for suction strainers and 30bar for delivery strainers. Pour point is 18deg.C for LFO and HFO fuels.

Degree of filtration shall be as follows:

 - i. HFO suction – 500 microns
 - ii. Drain oil suction – 500 microns
 - iii. HFO discharge – 250 microns
 - iv. LFO suction – 250 microns
- n) Flange gaskets provided shall be suitable for oil service and shall not have any damages. All gaskets shall be of non-asbestos, spiral wound type suitable for the intended service. Selected gaskets shall be of standard nature as per ASME B16.20
- o) Pressure equalizing valve shall be provided to equalize the pressure among the filter baskets during change over operation.
- p) Suitable support provision shall be given for the duplex strainer. Central basket with changeover cock shall also be suitably supported.

2.3.1 Connections and Nozzle Stubs

- a) Inlet/Outlet flanges as per ANSI to specified rating (150 class for suction strainers and 300 class for delivery strainers) and of size equal to the specified line size and arranged on either side of body.
- b) Drains - 100mm long 1" SCH40 pipe for HFO and ½" SCH40 pipe for LFO with plug at the body sides, on the outlet nozzle end.
- c) Vents - 100mm long ½" SCH40 pipe with plug on the cover top.
- d) Pressure taps - 1" SCH40 pipe with plug for HFO strainers and ½" SCH40 pipe with plug for LFO strainers. Pressure taps one each at suction pipe and delivery pipe shall be provided.
- e) Suitable maintenance provision shall be provided for six port change over cock.

2.3.2 Duplex strainer sizes

The technical requirements along with quantity are as per below table.

S.No.	Description	Flow (LPM) #	Quantity (nos)
1	Drain oil suction – NB50 – Class 150	80	2
2	HFO suction – NB300 - Class 150	1400	2
3	HFO discharge – NB100 – Class 300	1200	1
4	HFO discharge – NB150 – Class 300	1200	2
5	LFO suction – NB150 – Class 150	500	2

- Flow maximum value is furnished for calculation purpose.

3.0 DOCUMENTS TO BE SUBMITTED

3.1 Along with Offer.

- 3.1.1 Compliance to the specification TOS: 400/1809/00 shall be confirmed.
- 3.1.2 Point wise compliance or deviations to the project specific requirements of section-5 of the specification.
- 3.1.3 Overall dimensional assembly drawings for all the variants.
- 3.1.4 Cross sectional drawing with parts and materials identified with Basket assembly details.
- 3.1.5 Free flow area calculations for all the variants.
- 3.1.6 Pressure drop calculations for all the variants.
- 3.1.7 Filled in data sheet given in Section 5.
- 3.1.8 Installed reference for similar flow conditions and similar applications.

3.2 After Placement of Order/Along with the supply.

- 3.2.1 Following documents shall be submitted along with the supplies.
 - a. O&M instruction in soft version
 - b. Dimensional drawing
 - c. Cross section drawing with material identification and basket assembly details
 - d. Data sheets

4.0 TESTING, INSPECTION AND PACKING

1. Quality Plan in BHEL standard format shall be furnished..
2. Check all the dimensions.
3. Pressure drop results for clean and dirty conditions of similar strainers from other sites (two sites) shall be submitted for purchaser's review.
4. Body hydraulic test with 1.5 times the cold working pressure.
5. Witnessing & verifying hydraulic testing.
6. Diverting cock seat leak test done at the operating pressure.
7. Check locations of nozzles, stubs and foot and squares of nozzles & flanges and orientation of flange drillings.
8. Verification of shop records for material and stage inspections.
9. Certificates on Chemical composition and Mechanical properties shall be furnished.
10. Visual Inspection of weld quality and workmanship, welding shall be checked by dye penetrant test
11. Welding shall be carried out by qualified welders with qualified procedures for which records will be shown for verification.
12. Verify main name plate & name tags on all nozzles & stubs.
13. Clearance for painting after ascertaining surface preparation.
14. Inward Inspection:
 - a) Verify works inspection reports, workmanship, finish, marking particulars and scope of supply.
 - b) Watch for damages.
 - c) Check all the mounting dimensions and terminal connections.
 - d) Random check on internals.

4.1 Painting, Protection, Packing, Supply and Identification:

4.1.1 Surface Preparation

Weld slag & spatter shall be removed and the surfaces to be coated shall be free from contamination. Surface defects shall be removed by suitable methods. Sharp edges shall be smoothed by grinding. Prior to surface preparation oil, grease, drilling emulsions, cutting emulsions and preservative agents shall be carefully removed by suitable solvents. The surface shall be carefully dried with clean clothes to prevent the dissolved impurities from spreading over the entire surface.

The surface shall be cleaned by wire brush and shot blasting if required. Proper adhesiveness of paint to the surface shall be ensured.

4.1.2 Marking

- a) Stainless steel name plate with the following boldly engraved shall be firmly fixed to the body :
Maker's name and Production Serial No., Service, BHEL Material Code, Tag No., Size and Rating of the Strainer Body, Degree of filtration and maximum allowable DP.
- b) Inlet/Outlet Nozzles and the diverting cock handle positions shall be legibly identified by metallic labels.

4.1.3 Painting

- a) Following hydraulic test and drying, all the interior surfaces shall be applied with epoxy white over red primer.
- b) All exposed surfaces shall be degreased, derusted and epoxy coated over red oxide primer. Also refer section 5 for any special instruction on painting requirements.

4.1.4 Packing

- a) After completing painting and marking, Inlet and Outlet nozzles shall be properly capped to prevent ingress of water and dust and all the openings shall be firmly capped.
- b) Assemblies shall be packed in wooden grate with sufficient struts and packing materials and with water proof under-cover.

4.2 GUARANTEE

Vendor shall confirm guarantee for the products supplied for a period of 18 months from the date of supply or 12 months from the date of commissioning whichever is earlier.

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



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5.0 SECTION

5.1 PROJECT RELATED INFORMATION

Project Name : Wanakbori SCTPP 1 x 800 MW
 Customer No. : 1809
 Data sheet – STRAINER SIZE : 300 NB 150# HFO Suction

UNITS: Flow: liquids in LPM; Pressure: Kg/cm²(g); Temperature:°C;

	Description	BHEL requirement	Vendor confirmation
01	Service	HFO SUCTION	
02	Tag No.	HO01A,HO01B	
03	BHEL Matl. Code	A180914202001001	
04	Quantity	TWO	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	HFO	
09	Flow Maximum	1400 LPM	
10	Pour point	18	
11	Operating Pressure	6	
12	Flow Temperature	55-65	
13	Flow Sp. gravity	0.98	
14	Flow viscosity (max)	500 CST	
15	Line size	NB 300	
16	Body size	NB 600	
17	Body rating	ANSI 150LBS	
18	Body material	Cast steel/ fabricated steel (specify grade *) SA210 GrA1/ SA106 Gr B/ SA516 Gr 70	
19	Cover material	A105/IS2062 Gr B	
20	Cock material	SA 106 Gr B/ SA516 Gr70	
21	Gasket material	Non Asbestos, spiral wound	
22	Body test pressure	9 bar	
23	Cock seat test pressure	6 bar	
24	Cock leak rate	0	
25	No. of filter sections per basket		
26	Degree of filtration	500 Microns	
27	Filtering direction	IN TO OUT	
28	Total filter area/section	*	
29	Net filter area/section	*	
30	DP when clean	<0.1	
31	DP at 50% clogged	<0.35	
32	Max. allowable DP	*	
33	Mesh material	SS316	
34	Support gauze material	SS316	
35	Steam Jacketing	Required	
36	Equalising valve	Required, specify size	
37	IN / OUT nozzle	300 NB 150#	
38	Drain	1" SCH40,100mm	
39	Vent	½" SCH40,100mm	
40	Pressure gauge	1" SCH40, 100 mm	
41	Testing code	ASME SEC VIII & IX	
42	Dimensional Drawing	2-42-000-02116 Rev04	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



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5.2 PROJECT RELATED INFORMATION

Project Name : Wanakbori SCTPP 1 x 800 MW
Customer No. : 1809
Data sheet – STRAINER SIZE : LFO Suction 150 NB 150#

UNITS: Flow: liquids in LPM; Pressure: Kg/cm²(g); Temperature:°C

	Description	BHEL requirement	Vendor confirmation
01	Service	LFO SUCTION	
02	Tag No.	LO01A,LO01B	
03	BHEL Matl. Code	A180914201001001	
04	Quantity	TWO	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	LFO	
09	Flow Maximum	500 LPM	
10	Pour point	9	
11	Operating Pressure	6	
12	Flow Temperature	50	
13	Flow Sp. gravity	0.83	
14	Flow viscosity	2-20 CST	
15	Line size	NB 150	
16	Body size	NB 450	
17	Body rating	ANSI 150LBS	
18	Body material	Cast steel/ fabricated steel (specify grade *) SA210 GrA1/ SA106 Gr B/ SA516 Gr 70	
19	Cover material	A105/IS2062 Gr B	
20	Cock material	SA 106 Gr B/ SA516 Gr70	
21	Gasket material	Non Asbestos, spiral wound	
22	Body test pressure	9 bar	
23	Cock seat test pressure	6 bar	
24	Cock leak rate	0	
25	No. of filter sections per basket	*	
26	Degree of filtration	250 Microns	
27	Filtering direction	IN TO OUT	
28	Total filter area/section	*	
29	Net filter area/section	*	
30	DP when clean	<0.1	
31	DP at 50% clogged	<0.35	
32	Max. allowable DP	*	
33	Mesh material	SS316	
34	Support gauze material	SS316	
35	Steam Jacketing	Not Required	
36	Equalising valve	Required, specify size	
37	IN / OUT nozzle	150 NB 150#	
38	Drain	½ " SCH40,100mm	
39	Vent	½" SCH40,100mm	
40	Pressure gauge	½ " SCH40, 100 mm	
41	Testing code	ASME SEC VIII & IX	
42	Dimensional Drawing	2-42-000-02118 Rev 04	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



TOS:400/1809/00
SHEET: 8 of 11

5.3 PROJECT RELATED INFORMATION

Project Name : Wanakbori SCTPP 1 x 800 MW
Customer No. : 1809
Data sheet – STRAINER SIZE : 150 NB 300# HFO heater outlet Discharge

UNITS: Flow: liquids in LPM; Pressure: Kg/cm²(g); Temperature:°C

	Description	BHEL requirement	Vendor confirmation
01	Service	HFO Delivery	
02	Tag No.	HO21A,HO21B	
03	BHEL Matl. Code	A180914203001001	
04	Quantity	TWO	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	HFO	
09	Flow Maximum	1200 LPM	
10	Pour point	18	
11	Operating Pressure	30	
12	Flow Temperature	145	
13	Flow Sp. gravity	0.925	
14	Flow viscosity	20 CST	
15	Line size	NB 150	
16	Body size	NB 450	
17	Body rating	ANSI 300 LBS	
18	Body material	Cast steel/ fabricated steel (specify grade *) SA210 GrA1/ SA106 Gr B/ SA516 Gr 70	
19	Cover material	A105/IS2062 Gr B	
20	Cock material	SA 106 Gr B/ SA516 Gr70	
21	Gasket material	Non Asbestos, spiral wound	
22	Body test pressure	45 bar	
23	Cock seat test pressure	30 bar	
24	Cock leak rate	0	
25	No. of filter sections per basket	*	
26	Degree of filtration	250 Microns	
27	Filtering direction	IN TO OUT	
28	Total filter area/section	*	
29	Net filter area/section	*	
30	DP when clean	<0.2	
31	DP at 50% clogged	<0.7	
32	Max. allowable DP	*	
33	Mesh material	SS316	
34	Support gauze material	SS316	
35	Steam Jacketing	Required	
36	Equalising valve	Required, specify size	
37	IN / OUT nozzle	150 NB 300#	
38	Drain	1" SCH40,100mm	
39	Vent	½" SCH40,100mm	
40	Pressure gauge	1" SCH40, 100 mm	
41	Testing code	ASME SEC VIII & IX	
42	Dimensional Drawing	2-42-000-02115 Rev 04	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



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 SHEET: 9 of 11

5.4 PROJECT RELATED INFORMATION

Project Name : Wanakbori SCTPP 1 x 800 MW
 Customer No. : 1809
 Data sheet – STRAINER SIZE : HFO Discharge (operating floor) 100 NB 300#

UNITS: Flow: liquids in LPM; Pressure: Kg/cm²(g); Temperature:°C

	Description	BHEL requirement	Vendor confirmation
01	Service	HFO Delivery	
02	Tag No.	HO27A	
03	BHEL Matl. Code	A180914220001001	
04	Quantity	one	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	HFO	
09	Flow Maximum	1200 LPM	
10	Pour point	18	
11	Operating Pressure	30	
12	Flow Temperature	145	
13	Flow Sp. gravity	0.925	
14	Flow viscosity	20 CST	
15	Line size	NB 100	
16	Body size	NB 300	
17	Body rating	ANSI 300 LBS	
18	Body material	Cast steel/ fabricated steel (specify grade *) SA210 GrA1/ SA106 Gr B/ SA516 Gr 70	
19	Cover material	A105/IS2062 Gr B	
20	Cock material	SA 106 Gr B/ SA516 Gr70	
21	Gasket material	Non Asbestos, spiral wound	
22	Body test pressure	45 bar	
23	Cock seat test pressure	30 bar	
24	Cock leak rate	0	
25	No. of filter sections per basket	*	
26	Degree of filtration	250 Microns	
27	Filtering direction	IN TO OUT	
28	Total filter area/section	*	
29	Net filter area/section	*	
30	DP when clean	<0.2	
31	DP at 50% clogged	<0.7	
32	Max. allowable DP	*	
33	Mesh material	SS316	
34	Support gauze material	SS316	
35	Steam Jacketing	Required	
36	Equalising valve	Required, specify size	
37	IN / OUT nozzle	100 NB 300#	
38	Drain	1" SCH40,100mm	
39	Vent	½" SCH40,100mm	
40	Pressure gauge	1" SCH40, 100 mm	
41	Testing code	ASME SEC VIII & IX	
42	Dimensional Drawing	2-42-000-02115 Rev 04	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



TOS:400/1809/00
 SHEET: 10 of 11

5.5 PROJECT RELATED INFORMATION

Project Name : Wanakbori SCTPP 1 x 800 MW
 Customer No. : 1809
 Data sheet – STRAINER SIZE : Drain oil suction 50 NB 150#

UNITS: Flow: liquids in LPM; Pressure: Kg/cm²(g); Temperature:°C

	Description	BHEL requirement	Vendor confirmation
01	Service	HFO Delivery	
02	Tag No.	HO63A, HO63A1	
03	BHEL Matl. Code	A180914220002001	
04	Quantity	Two	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	Drain Oil	
09	Flow Maximum	80 LPM	
10	Pour point	18	
11	Operating Pressure	6	
12	Flow Temperature	55-65	
13	Flow Sp. gravity	0.98	
14	Flow viscosity	500 CST	
15	Line size	NB 50	
16	Body size	NB 150	
17	Body rating	ANSI 150 LBS	
18	Body material	Cast steel/ fabricated steel (specify grade *) SA210 GrA1/ SA106 Gr B/ SA516 Gr 70	
19	Cover material	A105/IS2062 Gr B	
20	Cock material	SA 106 Gr B/ SA516 Gr70	
21	Gasket material	Non Asbestos, spiral wound	
22	Body test pressure	9 bar	
23	Cock seat test pressure	6 bar	
24	Cock leak rate	0	
25	No. of filter sections per basket	*	
26	Degree of filtration	500 Microns	
27	Filtering direction	IN TO OUT	
28	Total filter area/section	*	
29	Net filter area/section	*	
30	DP when clean	<0.1	
31	DP at 50% clogged	<0.35	
32	Max. allowable DP	*	
33	Mesh material	SS316	
34	Support gauze material	SS316	
35	Steam Jacketing	Required	
36	Equalising valve	Required, specify size	
37	IN / OUT nozzle	50 NB 150#	
38	Drain	1" SCH40,100mm	
39	Vent	1/2" SCH40,100mm	
40	Pressure gauge	1" SCH40, 100 mm	
41	Testing code	ASME SEC VIII & IX	
42	Dimensional Drawing	2-42-000-02116 Rev04	

* Vendor to specify

**Bharat Heavy Electricals Limited**

(High Pressure Boiler Plant)

Tiruchirappalli-620 014, Tamil Nadu,

India

An ISO 9001
Company

Dept : PURCHASE-MATERIALS MANAGEMENT/BOI

ANNEXURE-A**ACCEPTANCE OF TECHNO - COMMERCIAL TERMS AND CONDITIONS BY THE BIDDERS****(This techno-commercial sheet should be duly filled and signed, and should be the part of Bid part no-1)**

Description of the Items:	Supply of LFO and HFO Strainers as per Spec TOS:400/1809/00 and Drawing Nos: 2-42-000-2115, 2-42-000-2116 & 2-42-000-2118	
Enquiry Ref:	1801501211/03 dated 09.11.2015	
Sl No.	Description	Vendor's confirmation
1	The tender will be operated on Two-Part Bid basis and the vendors are requested to submit offer i.e. techno-commercial bid and price bid in two separately sealed covers.	
2	Technical: Supply shall be as per BHEL's Specification TOS: 400/1809/00 and Drg No: 2-42-000-2115, 2-42-000-2116 & 2-42-000-2118, as indicated in the item description. Vendor shall provide the technical details in the offer.	
3	Firm Price: The quoted/Finalised rates shall be Firm till execution of the supplies.	
4	Price Basis: Materials are to be despatched to BHEL Trichy Stores, after the inspection and clearance. Prices quoted should be FOR – BHEL Trichy basis inclusive packing & Forwarding charges. Break up for freight and insurance to be indicated in the offer.	
5	Payment terms: Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials. BHEL reserves the right to demand bank guarantee from vendor.	
6	Liquidated damages: Liquidated damages shall be 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value.	
7	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.	
8	Delivery Period: Delivery shall be 12 weeks from document approval / as per enquiry.	
9	Validity: Price Validity of your offer shall be Minimum 120 days from the date of Techno-Commercial Bid opening.	
10	Guarantee: Guarantee clause 18 months from the date of supply or 12 months from the date of actual put in use, whichever is earlier.	
11	In addition to above, vendor have to submit all the documents duly filled in "Supplier Registration Forms" through online (available in http://www.bheltry.co.in/ - On line	

	<p>Vendor Registration-Material Management). Duly filled in Supplier Registration Forms, along with all credentials and supporting documents, Certificate of Rating from D & B (Dun & Brad) or equivalent agencies (For Foreign Vendors), Financial Performance / Profit & Loss Account / Balance sheet for last three years etc. (With Techno-Commercial Bid). Availability of minimum manufacturing, handling, testing and measuring facilities, to be detailed are to be mentioned clearly. All the documents to be uploaded. Apart from qualifying the Techno-Commercial requirements of the enquiry, BHEL has the right for spot assessment of the facilities for evaluation, approval and for registration.</p> <p>Apart from online submission, Hard copy has to be forwarded to SM/SDC/MM/BHEL/TRICHY. Also vendor has to indicate the registration no in their offer. Further their offer will be subject to evaluation and approval by BHEL as permanent vendor.</p>	
--	--	--

(Please refer Annexure-B duly enclosed for the loading factors that will be considered for commercial terms deviations in arriving net cost to BHEL).

Date:

Signature with seal

ANNEXURE-B**Loading factors for the tender enquiry for requirement of Strainers- Wanakbori project**

SI No.	BHEL Commercial terms	Vendor Confirmation to BHEL Commercial terms	Loading Criteria for Deviations
1	Payment terms: Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials.		Any deviation in the above payment term will attract loading as mentioned below. "Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.
2	Liquidated damages: Liquidated damages shall be 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value.		Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value).
3.	Guarantee: Guarantee clause 18 months from the date of supply or 12 months from the date commissioning, whichever is earlier.		No deviation permitted and the deviated offers are liable for rejection.
<u>Important Note:</u> <ul style="list-style-type: none"> i) Payment through Bank is not preferred. In case of Payment through Bank is opted by Supplier, BHEL prefers documents submission through bank with copy of LR and door delivery of Goods to Stores with Consignee copy attached. In this case Loading will be 3% on the offered value. ii) BHEL will evaluate the offers and consider the ranking after the loading is applied as referred above wherever deviations are observed. iii) LC/Advance payment will not be operated for indigenous vendors. Offers of indigenous vendors with payment term as LC/Advance payment are liable for rejection. 			

ANNEXURE-C**Clause: Special provisions for Micro & Small Enterprises (MSE)**

1. In case MSE vendor participating in the tender quotes within the price band of L1+15%, they will be allowed to supply the complete package requirement subject to acceptance of L1 price by MSE vendor.
2. In case of more than one such MSE, the counter offering will be to the lowest quoted MSE vendor subject to fulfilment of Point No.1
3. MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (Two years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with CA certificate (Format enclosed) applicable for the year, certifying quantum of investment in plant and machinery within the permissible limit as per the act for relevant status (Micro or small) where the deemed validity of EM II is over. Date to be reckoned for determining the deemed validity will be the last date of technical bid submission. Non submission of such documents will lead to consideration of their bids at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier till the supplier submits these documents.

Annexure – D – Pre-Qualification Criteria (PQR)

1. The vendor shall be an established fuel oil duplex type 6-port integral change over cock strainer (henceforth referred as strainers) manufacturer having adequate Engineering, Manufacturing and testing facilities.
2. The strainers offered shall be from the existing regular manufacturing range of the supplier. Vendor shall provide the manufacturing catalogue or general reference list for the offered strainers along with offer.
3. The supplier shall have experience of having supplied strainers for HFO (Heavy Fuel Oil) and LDO (Light Diesel Oil) applications in thermal power plants or for the application of similar severity and to meet the technical parameters of size, pressure, degree of filtration, differential pressure and temperature as per technical specification or high. Supplier shall submit documents in proof of the same for the fullest satisfaction of BHEL.

Annexure - I

Certificate by Chartered Accountant on letter head

This is to Certify that M/S
(hereinafter referred to as 'company') having its registered office at
..... is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-II) dtd:.....
Category: (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per the latest audited financial year as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.S.O.1722(E) dated October 5, 2006 :
Rs.....Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:
Rs.....Lacs

(Strike off whichever is not applicable)

The above investment of Rs.....Lacs is within permissible limit of Rs.....Lacs forMicro / Small (**Strike off which is not applicable**) Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/ Small) (**Strike off which is not applicable**) and the date of graduation of such enterprise from its original category is (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide S.O. No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:

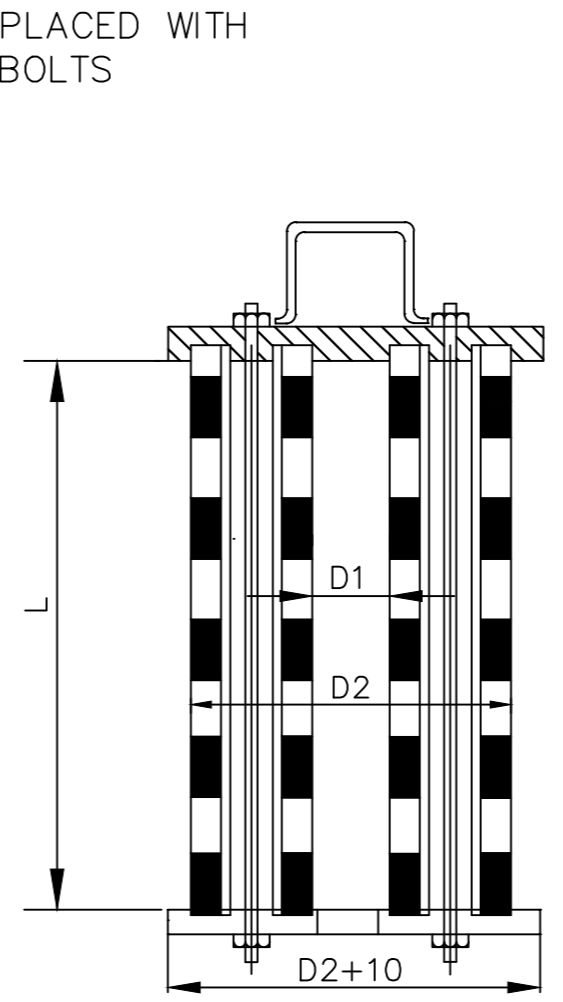
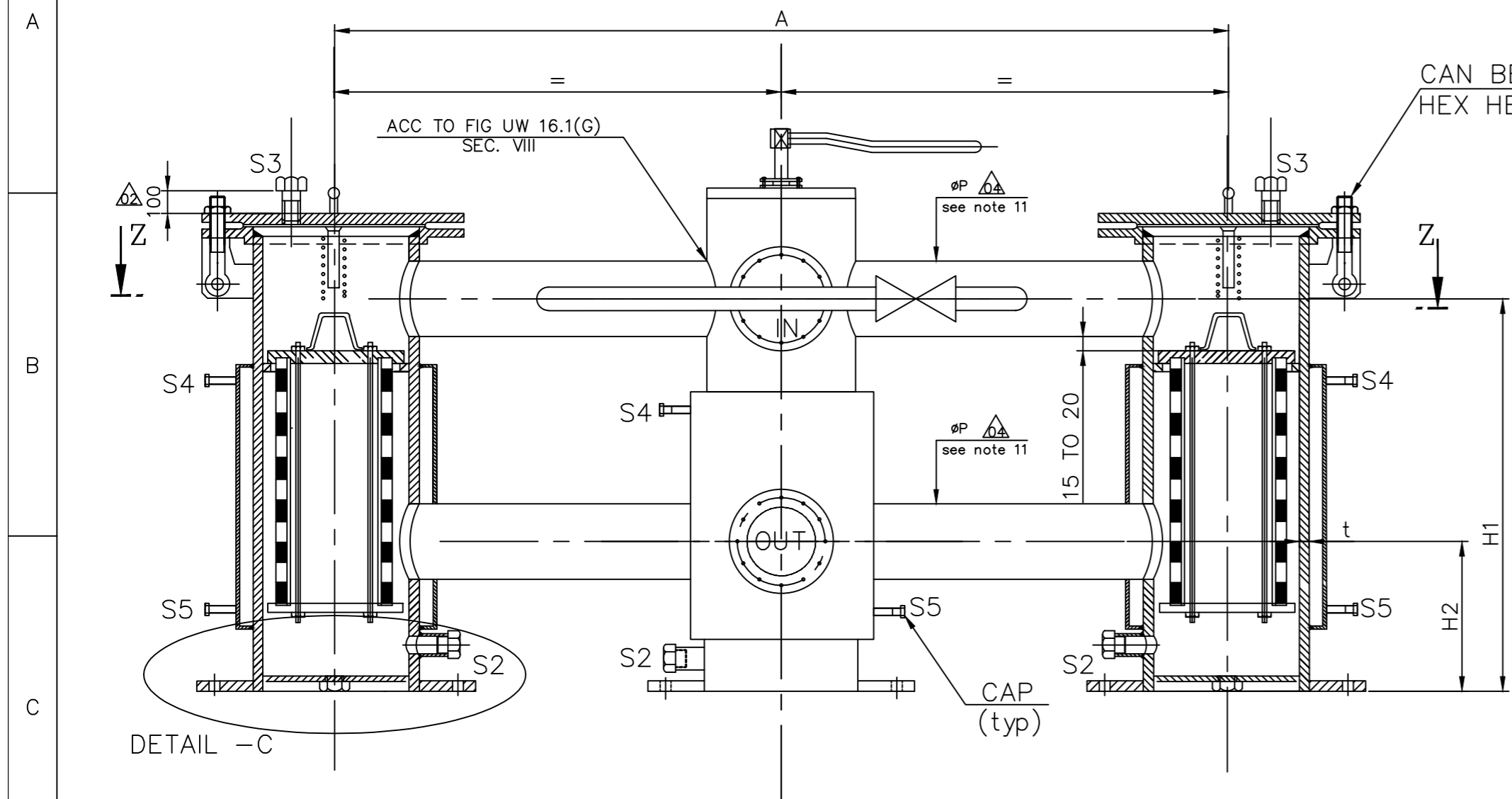


(Signature)

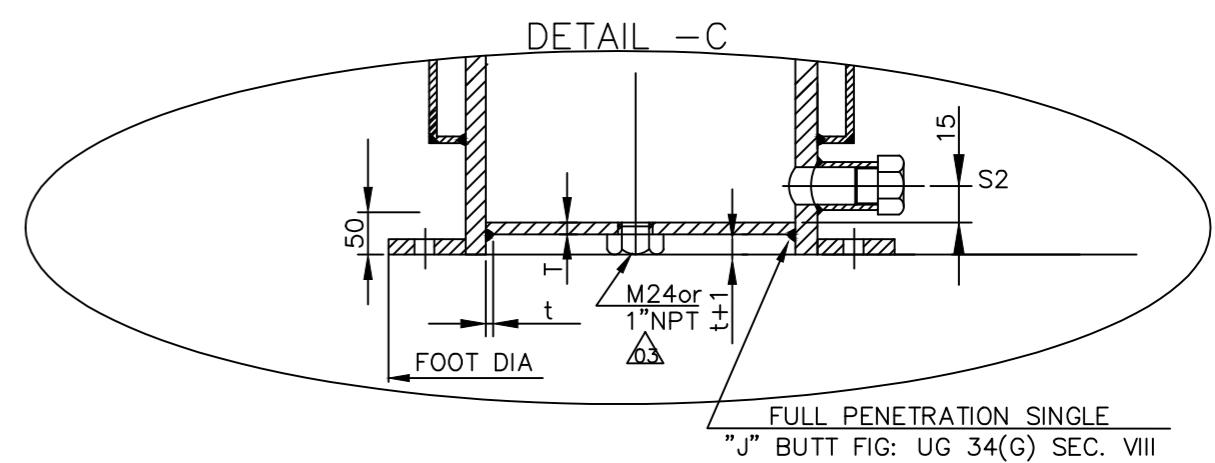
Name -

Membership number -

Seal of Chartered Accountant



FLANGE DIA	NOZZLE/COVER									
	TO ANSI B16.5 CL 150 LBS									
NOMINAL SIZE	40	50	80	100	150	200	250	300	350	400
FLANGE DIA	125	150	190	230	280	343	405	485	535	595
THICKNESS T	17.5	19.1	23.9	23.9	25.4	28.6	30.2	31.8	35.0	36.6
RASIED FACE OD	65	78	108	135	192	246	305	365	400	457
PCD	98.4	120.7	152.4	190.5	241.3	298.5	362.0	431.8	476.3	539.8
NO.OF BOLTS N	4	4	4	8	8	8	12	12	12	16
BOLT HOLE DIA	15.9	19.05	19.05	19.05	22.2	22.2	25.4	25.4	28.57	28.57



SUGGESTED BASKET ASSEMBLY

DESIGN & FABRICATION

ASME SEC.VII & XI
(FINAL INSPECTION & VERIFICATION OF SHOP RECORDS FOR STAGE INSPECTION BY THIRD PARTY)

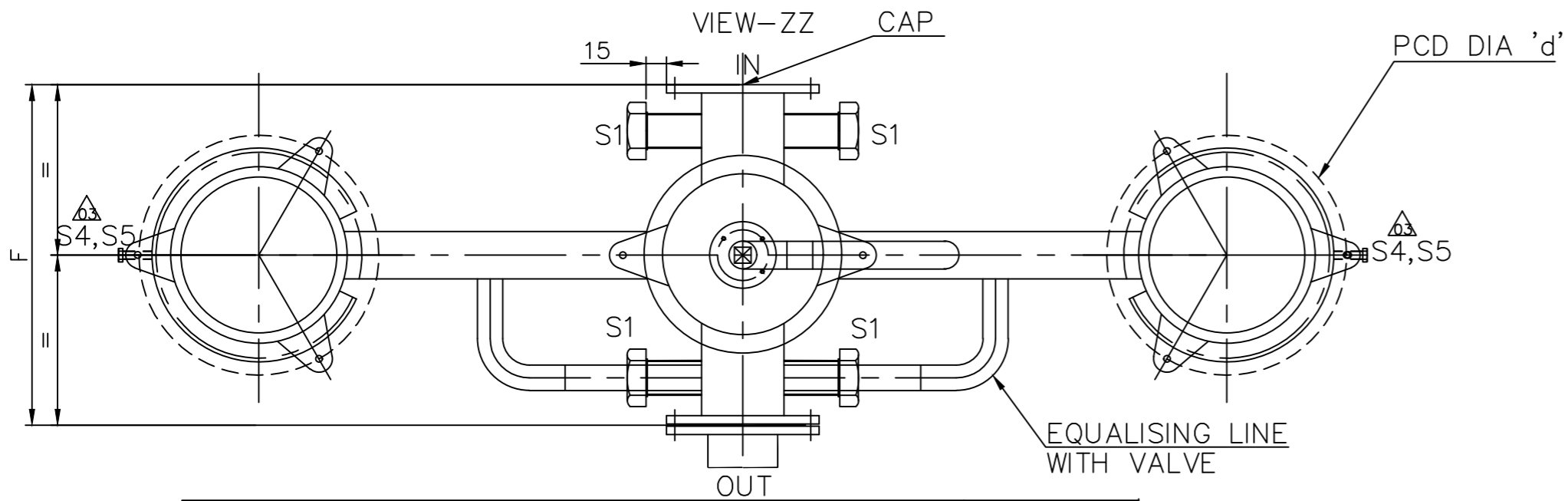
MATERIALS (OR EQVT)

- FILTER MESH - AISI 316/304/321 ~ 35% FREE OPENING
- SUPPORT SHEET - AISI 316/304/321 ~ 60% FREE OPENING
- PIPES - SA210GRA1 ; SA106GR.B
- FLANGES & COVERS - SA181GR1 ; SA105 ; IS2062
- PLATES & SHEETS - SA299 ; SA515GR70 ; SA516GR70 ; IS2062
- SPRING - SPRING STEEL EN42
- BOLTS & NUTS - SA193GRB7 & SA194GR2H GALVANISED IS1363 GR 8.8 OR HIGHER
- GASKETS - NON ASBESTOS TYPE GASKETS (WITH APPROPRIATE THICKNESS SUITABLE FOR FUEL OIL APPLICATION)

NOTES

- MATING FACES OF BASKET TOP PLATE SHALL BE FLAT AND FINE MACHINED.
- BASKET SHALL BE OF STURDIER CONSTRUCTION.
- PAINT EPOXY BLUE OVER RED PRIMER ON OUTSIDE & EPOXY WHITE OVER RED PRIMER ON INSIDE SURFACES.
- RIVET NAME TAGS ON NOZZLE & STUBS
- ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE NOTED.
- THE NET FREE FLOW AREA OF FILTER ELEMENT SHALL BE ATLEAST SIX TIMES THE SPECIFIED LINE SIZE, PER SECTION.
- THE CHANGE OVER COCK ARRANGEMENT IS FOR REFERENCE ONLY.
- STUB LENGTH SHALL BE 100MM
- VENDOR SHALL ENSURE SMOOTH OPERATION OF SIX PORT COCK VALVE AND PROVIDE APPROPRIATE GEAR UNIT / LEVER FOR EASE OF OPERATION
- THIS DRAWING SHALL BE REFERRED FOR DIMENSIONAL ARRANGEMENT ONLY THE RESPONSIBILITY OF DESIGN & PROPER FUNCTIONING OF THE STRAINER LIES WITH THE VENDOR.
- THE INTER CONNECTING PIPE DIAMETER (ØP) SHALL NOT BE LESS THAN THE INLET PIPE SIZE.

PERFORMANCE DATA	
FLOW	NB50 65
MAXIMUM	NB80 140
LIT/MIN	NB100 275
	NB150 575
	NB200 1000
	NB250 1600
	NB300 2300
	NB350 2670
	NB400 3420
VISCOSITY CST	500
SP.GRAVITY	0.98
FILTRATION MICRONS	500
Δ P CLEAN BASKET	0.1
Δ P 50% CLOGGED	0.35
DESIGN PR. OIL SIDE	6
TEST PR. OIL SIDE	9
DESIGN PR. STM.SIDE	24
TEST PR. STM . SIDE	36
PR.&ΔP IN KG / SQ .CM	



NB	OVERALL DIMENSIONS												
	BODY			BASKET			NOZZLE			FOOT		JACKET SHELL	
	INCH	SCH	F	A	D1	D2	L	H1	H2	DIA	PCD	d	INCH
50	6	40	400	950	60	120	300	500	200	280	250	14	8
80	12	40	800	1100	120	240	300	500	250	450	420	18	14
100	12	40	800	1100	120	240	400	600	250	450	420	18	14
150	18	40	1000	1400	120	360	400	600	300	580	550	18	20
200	18	40	1000	1400	180	360	600	800	300	580	550	18	20
250	24	40	1200	1800	240	480	600	1000	400	750	720	22	26
300	24	40	1200	2000	240	480	800	1000	400	750	720	22	26
350	30	40	1600	2000	300	600	800	1200	500	910	870	22	32
400	30	40	1600	2200	300	600	1000	1200	500	910	870	22	32

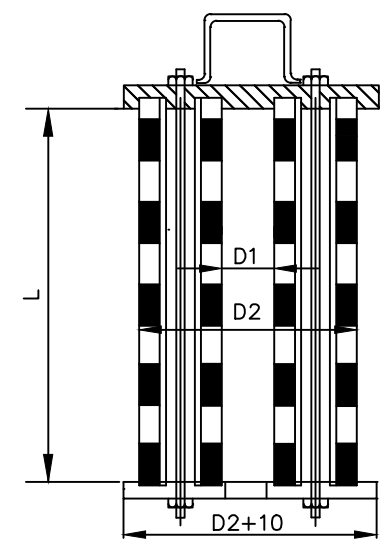
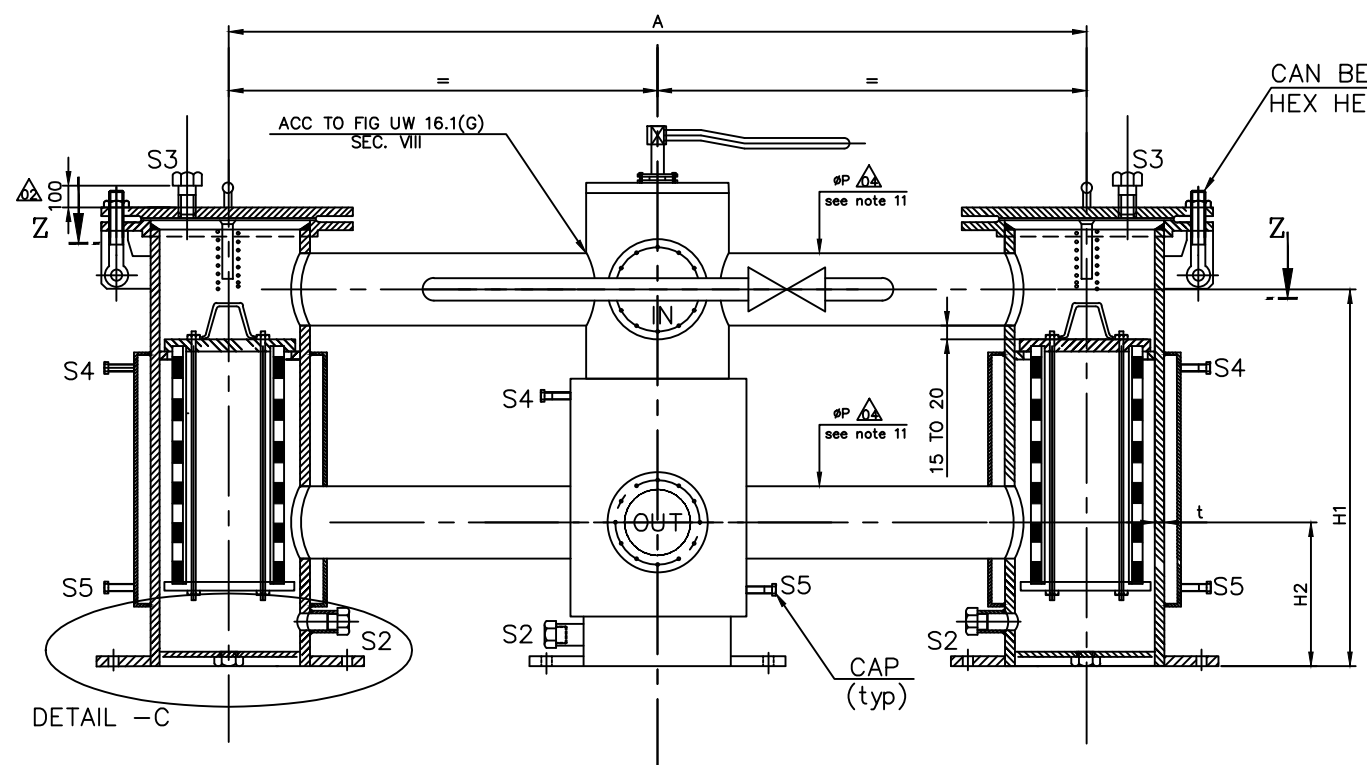
STUB S1 & S2 - 33.4 OD STUB WITH M24 PLUG OR 1" NPT
S3, S4 & S5 - 21.3 OD STUB WITH M12 PLUG OR 1/2" NPT

REV	DATE	ALTERED	BY	REV	DATE	ALTERED	BY
04	24.11.15	CHD & APPD:ESARAVNA KUMAR	REVISD AS SHOWN	03	19.03.14	CHD & APPD:ESARAVNA KUMAR	REVISD AS SHOWN
02	05.03.14	CHD & APPD:ESARAVNA KUMAR	REVISD AS SHOWN	01	14.02.14	CHD & APPD:ESARAVNA KUMAR	REVISD AS SHOWN

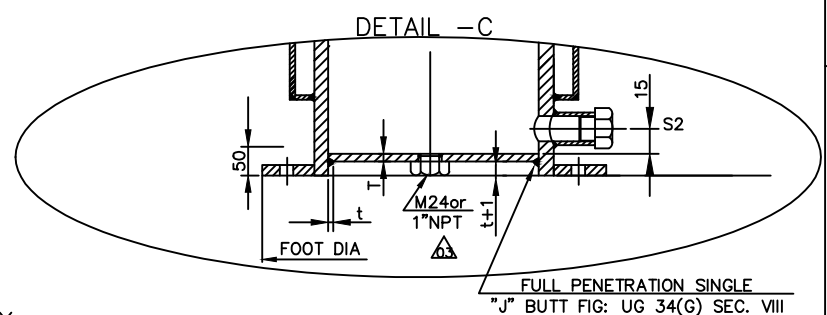
		Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN VIKAS SETHI	SIGNATURE -sd-	DATE 28.03.2013
DEPT 355-055		SCALE NTS		WEIGHT (Kg)		REF TO ASSY / OLD DWG
TITLE HFO SUCTION STRAINER (DUPLX BASKET)		DRAWING NO : 2-42-000-02116		REV 04		

DRAWING NO. 2-42-000-02115

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



FLANGE DIA	NOZZLE/COVER					
	TO ANSI		B16.5 CL 300 LBS			
NOMINAL SIZE	50	80	100	150	200	250
FLANGE DIA	165	210	255	320	380	445
THICKNESS T	22.3	28.6	31.8	36.6	41.3	47.7
RASIED FACE OD	84	117	146	206	260	321
PCD	127	168.3	200	269.9	330.2	387.4
NO.OF BOLTS N	8	8	8	12	12	16
BOLT HOLE DIA	19.1	22.2	22.3	22.3	25.4	28.6



DESIGN & FABRICATION

ASME SEC.VIII & XI
(FINAL INSPECTION & VERIFICATION OF SHOP RECORDS FOR STAGE INSPECTION BY THIRD PARTY)

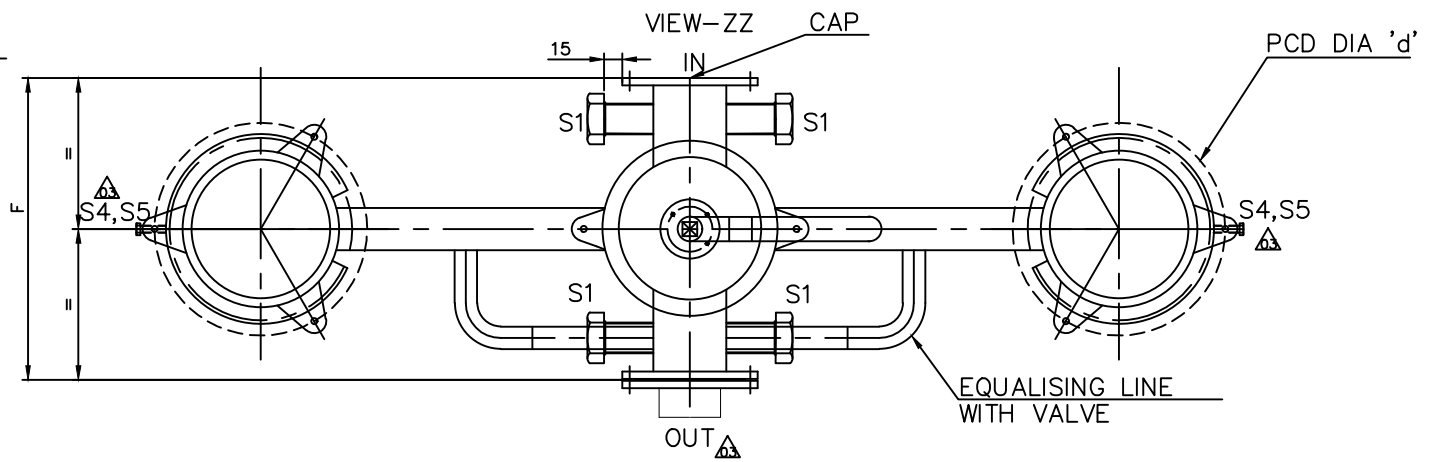
MATERIALS (OR EQVT)

- FILTER MESH - AISI 316/304/321 ~ 35% FREE OPENING
- SUPPORT SHEET - AISI 316/304/321 ~ 60% FREE OPENING
- PIPES - SA210GRA1 ; SA106GR.B
- FLANGES & COVERS - SA181GR1 ; SA105 ; IS2062
- PLATES & SHEETS - SA299 ; SA515GR70 ; SA516GR70 ; IS2062
- SPRING - SPRING STEEL EN42
- BOLTS & NUTS - SA193GRB7 & SA194GR2H GALVANISED IS1363 GR 8.8 OR HIGHER
- GASKETS - NON ASBESTOS TYPE GASKETS (WITH APPROPRIATE THICKNESS SUITABLE FOR FUEL OIL APPLICATION)

NOTES

- MATING FACES OF BASKET TOP PLATE SHALL BE FLAT AND FINE MACHINED.
- BASKET SHALL BE OF STURDIER CONSTRUCTION.
- PAINT EPOXY BLUE OVER RED PRIMER ON OUTSIDE & EPOXY WHITE OVER RED PRIMER ON INSIDE SURFACES.
- RIVET NAME TAGS ON NOZZLE & STUBS
- ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE NOTED.
- THE NET FREE FLOW AREA OF FILTER ELEMENT SHALL BE ATLEAST SIX TIMES THE SPECIFIED LINE SIZE, PER SECTION.
- THE CHANGEOVER COCK ARRANGEMENT IS FOR REFERENCE ONLY.
- STUB LENGTH SHALL BE 100MM
- VENDOR SHALL ENSURE SMOOTH OPERATION OF SIX PORT COCK VALVE AND PROVIDE APPROPRIATE GEAR UNIT / LEVER FOR EASE OF OPERATION
- THIS DRAWING SHALL BE REFERRED FOR DIMENSIONAL ARRANGEMENT ONLY THE RESPONSIBILITY OF DESIGN & PROPER FUNCTIONING OF THE STRAINER LIES WITH THE VENDOR.
- THE INTER CONNECTING PIPE DIAMETER (ØP) SHALL NOT BE LESS THAN THE INLET PIPE SIZE.

PERFORMANCE DATA		
FLOW MAXIMUM LIT/MIN	NB50	325
	NB80	715
	NB100	1400
	NB150	2875
	NB200	5000
	NB250	8000
VISCOSITY CST	20	
SP.GRAVITY	0.925	
FILTRATION MICRONS	250	
Δ P CLEAN BASKET	0.2	
Δ P 50% CLOGGED	0.7	
DESIGN PR. OIL SIDE	30	
TEST PR. OIL SIDE	45	
DESIGN PR. STM.SIDE	24	
TEST PR. STM . SIDE	36	
PR.&ΔP	IN KG / SQ .CM	



OVERALL DIMENSIONS													
NB	BODY			BASKET			NOZZLE		FOOT		JACKET SHELL		
	INCH	SCH	F	A	D1	D2	L	H1	H2	DIA	PCD	d	INCH
50	6	40	400	950	60	120	300	500	200	280	250	14	8
80	12	40	800	1100	120	240	300	500	250	450	420	18	14
100	12	40	800	1100	120	240	400	600	250	450	420	18	14
150	18	40	1000	1400	120	360	400	600	300	580	550	18	20
200	18	40	1000	1400	180	360	600	800	300	580	550	18	20
250	24	40	1200	1800	240	480	600	1000	400	750	720	22	26

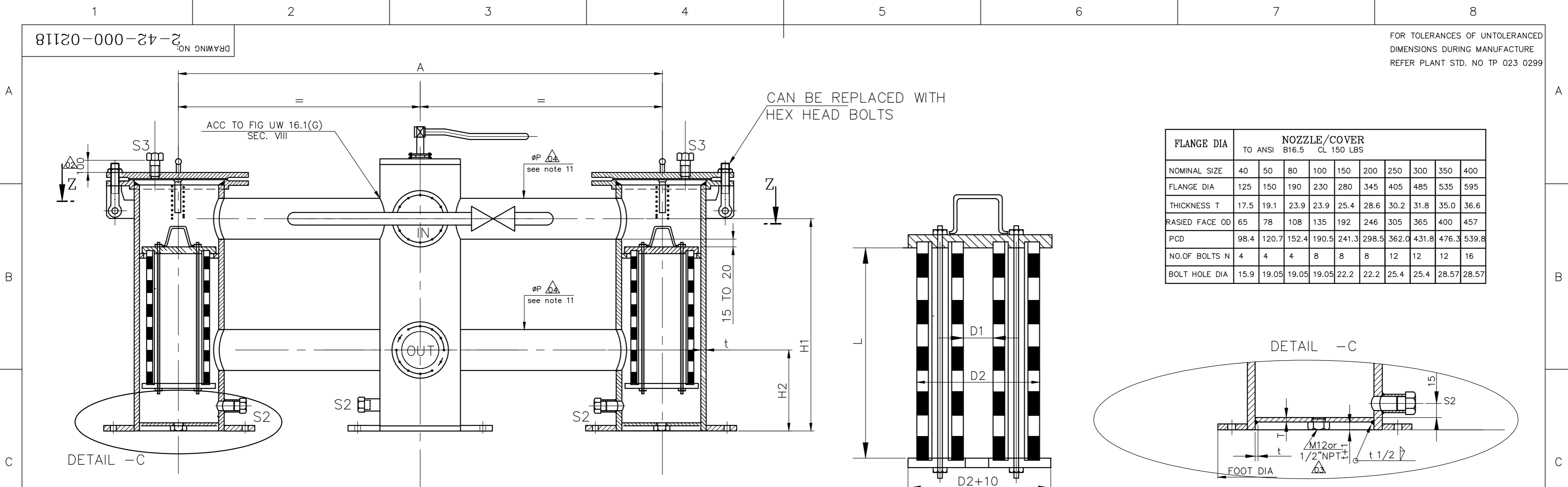
STUB S1 & S2 - 33.4 OD STUB WITH M24 PLUG or 1" NPT
S3, S4 & S5 - 21.3 OD STUB WITH M12 PLUG or 1/2" NPT

REV	DATE	ALTERED	BY	REV	DATE	ALTERED	BY
04	24.11.15	CHD & APPD	SSRINWA KUMAR	03	19.03.14	CHD & APPD	SSRINWA KUMAR
02	05.03.14	CHD & APPD	SSRINWA KUMAR	01	14.02.14	CHD & APPD	SSRINWA KUMAR

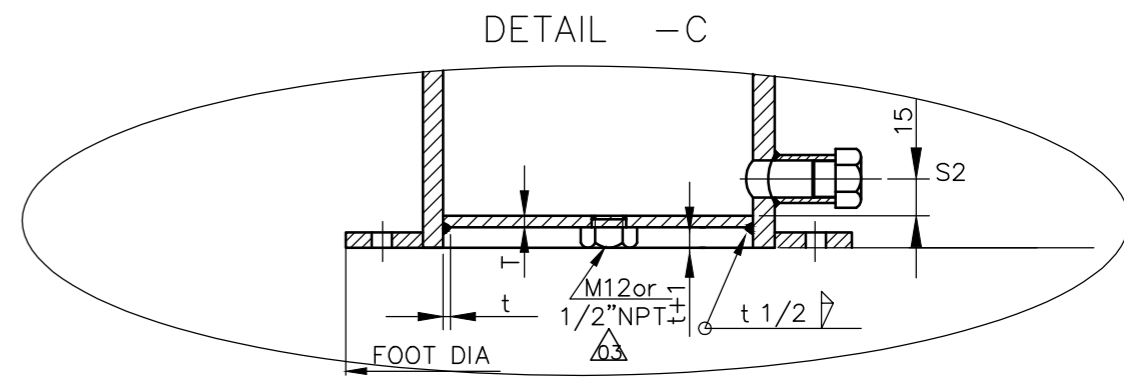
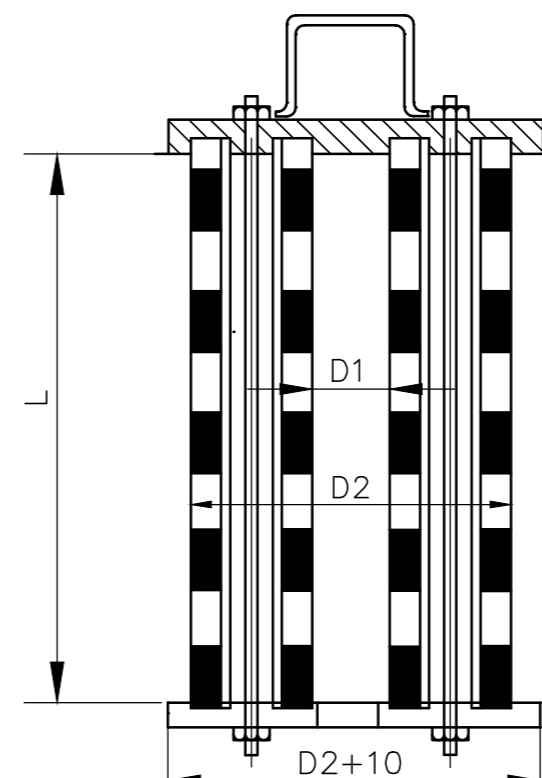
		Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		NAME VIKAS SETHI	SIGNATURE -sd-	DATE 28.03.2013
DEPT 355-055	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE NTS	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
TITLE HFO DISCHARGE STRAINER (DUPLX BASKET)				DRAWING NO : 2-42-000-02115		REV 04

81120-000-24-2-02118
DRAWING NO.

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



FLANGE DIA	NOZZLE/COVER									
	TO ANSI B16.5 CL 150 LBS									
NOMINAL SIZE	40	50	80	100	150	200	250	300	350	400
FLANGE DIA	125	150	190	230	280	345	405	485	535	595
THICKNESS T	17.5	19.1	23.9	23.9	25.4	28.6	30.2	31.8	35.0	36.6
RASIED FACE OD	65	78	108	135	192	246	305	365	400	457
PCD	98.4	120.7	152.4	190.5	241.3	298.5	362.0	431.8	476.3	539.8
NO.OF BOLTS N	4	4	4	8	8	8	12	12	12	16
BOLT HOLE DIA	15.9	19.05	19.05	19.05	22.2	22.2	25.4	25.4	28.57	28.57



SUGGESTED BASKET ASSEMBLY

DESIGN & FABRICATION
ASME SEC.VIII & XI
(FINAL INSPECTION & VERIFICATION OF SHOP RECORDS FOR STAGE INSPECTION BY THIRD PARTY)

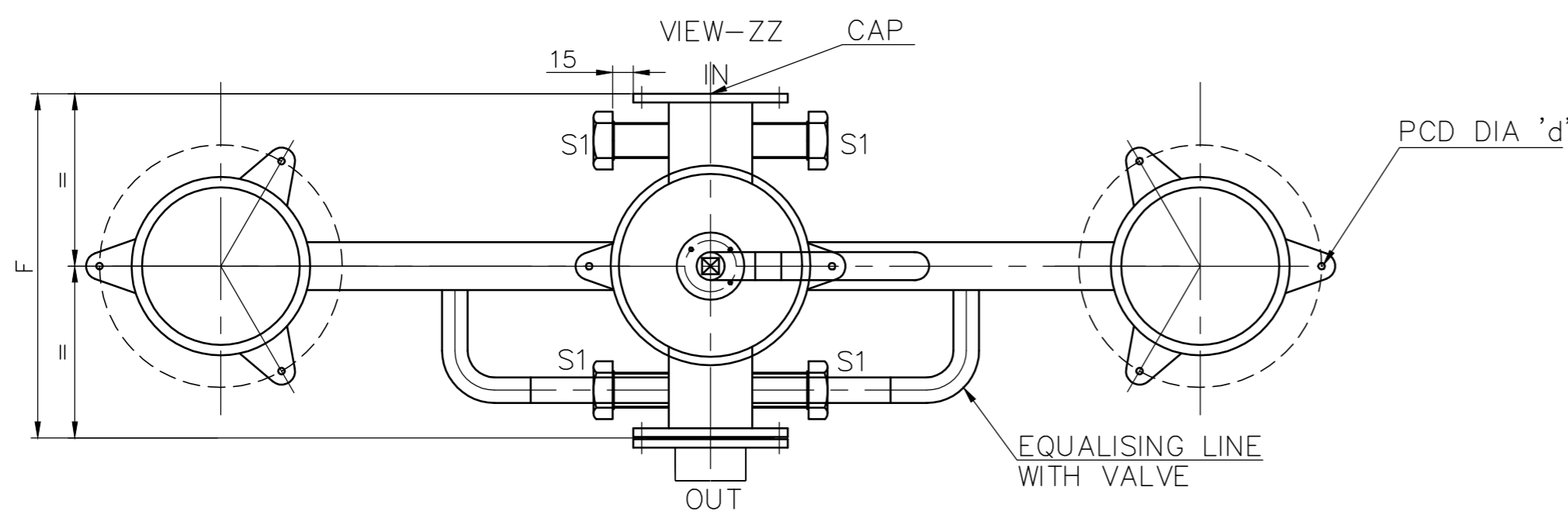
MATERIALS (OR EQVT)

- FILTER MESH - AISI 316/304/321 ~ 35% FREE OPENING
- SUPPORT SHEET - AISI 316/304/321 ~ 60% FREE OPENING
- PIPES - SA210GRA1 ; SA106GR.B
- FLANGES & COVERS - SA181GR1 ; SA105; IS2062
- PLATES & SHEETS - SA299 ; SA515GR70 ; SA516GR70 ; IS2062
- SPRING - SPRING STEEL EN42
- BOLTS & NUTS - SA193GRB7 & SA194GR2H GALVANISED IS1363 GR8.8 OR HIGHER
- GASKETS - NON ASBESTOS TYPE GASKETS (WITH APPROPRIATE THICKNESS) SUITABLE FOR FUEL OIL APPLICATION

NOTES

- MATING FACES OF BASKET TOP PLATE SHALL BE FLAT AND FINE MACHINED.
- BASKET SHALL BE OF STURDIER CONSTRUCTION.
- PAINT EPOXY BLUE OVER RED PRIMER ON OUTSIDE & EPOXY WHITE OVER RED PRIMER ON INSIDE SURFACES.
- RIVET NAME TAGS ON NOZZLE & STUBS
- ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE NOTED.
- THE NET FREE FLOW AREA OF FILTER ELEMENT SHALL BE ATLEAST SIX TIMES THE SPECIFIED LINE SIZE, PER SECTION.
- THE CHANGE OVER COCK ARRANGEMENT IS FOR REFERENCE ONLY.
- STUB LENGTH SHALL BE 100MM
- VENDOR SHALL ENSURE SMOOTH OPERATION OF SIX PORT COCK VALVE AND PROVIDE APPROPRIATE GEAR UNIT / LEVER FOR EASE OF OPERATION
- THIS DRAWING SHALL BE REFERRED FOR DIMENSIONAL ARRANGEMENT ONLY THE RESPONSIBILITY OF DESIGN & PROPER FUNCTIONING OF THE STRAINER LIES WITH THE VENDOR.
- THE INTER CONNECTING PIPE DIAMETER (ØP) SHALL NOT BE LESS THAN THE INLET PIPE SIZE.

PERFORMANCE DATA	
FLOW	NB50 65
MAXIMUM	NB80 140
LIT/MIN	NB100 275
	NB150 575
	NB200 1000
	NB250 1600
	NB300 2300
	NB350 2670
	NB400 3420
VISCOSITY CST	20
SP.GRAVITY	0.83
FILTRATION MICRONS	250
Δ P CLEAN BASKET	0.1
Δ P 50% CLOGGED	0.35
DESIGN PR. OIL SIDE	6
TEST PR. OIL SIDE	9
PR.&ΔP IN KG / SQ .CM	



OVERALL DIMENSIONS

NB	BODY				BASKET			NOZZLE		FOOT		
	INCH	SCH	F	A	D1	D2	L	H1	H2	DIA	PCD	d
50	6	40	400	950	60	120	300	500	200	280	250	14
80	12	40	800	1100	120	240	300	500	250	450	420	18
100	12	40	800	1100	120	240	400	600	250	450	420	18
150	18	40	1000	1400	120	360	400	600	300	580	550	18
200	18	40	1000	1400	180	360	600	800	300	580	550	18
250	24	40	1200	1800	240	480	600	1000	400	750	720	22
300	24	40	1200	2000	240	480	800	1000	400	750	720	22
350	30	40	1600	2000	300	600	800	1200	500	910	870	22
400	30	40	1600	2200	300	600	1000	1200	500	910	870	22

ALL STUBS -21.3 OD STUB WITH M12 PLUG OR 1/2"NPT

REV	DATE	ALTERED	BY	REV	DATE	ALTERED	BY
04	24.11.15	CHD & APPD:	SARAVANA KUMAR	03	19.03.14	CHD & APPD:	SARAVANA KUMAR
02	05.03.14	CHD & APPD:	SARAVANA KUMAR	01	14.02.14	CHD & APPD:	SARAVANA KUMAR

Bharat Heavy Electricals Ltd
UNIT: HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI - 620014

DRN	VIKAS SETHI	SIGNATURE	-sd-	DATE	28.03.2013
CHD	G. SARAVANA KUMAR	SIGNATURE	-sd-	DATE	28.03.2013
APPD	M.THANDAPANI	SIGNATURE	-sd-	DATE	28.03.2013

DEPT: 355-055
SCALE: NTS
WEIGHT (Kg):
REF TO ASSY / OLD DWG:

TITLE: **LFO SUCTION STRAINER (DUPEX BASKET)**

DRAWING NO : 2-42-000-02118
REV 04