

General Note: **BHARAT HEAVY ELECTRICALS LIMITED**

(A Government of India Undertaking)

HIGH PRESSURE BOILER PLANT

PURCHASE DEPARTMENT - FOSSIL BOILERS

THIRUCHIRAPALLI - 620014

TAMILNADU (INDIA)

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PHONE : 0431-2574111

GRAMS : BHARATELEC

FAX NO: 0431-2520719

E-mail :

Web :

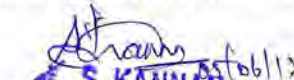
429-002/A

OFFICE COPY	Collective No.	Enquiry Date	Due Date For Quotation
	1801700702	05.06.2017	29.06.2017
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	A172314201001001 LFO STRAINER LDO SUCTION STRAINER NB150; 150LBS (Duplex Type 6-Port Integral Change Over Cock Strainer with out Steam jacketing)As per Specification TOS:400and Material specific Data sheet	NO	3.000	3.00	30.09.17
20	A172314202001001 HFO SUCTION STRAINER HFO SUCTION STRAINER NB200; 150LBS(Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet	NO	3.000	3.00	30.09.17
30	A181614201005001 LFO SUCTION STRAINER LFO SUCTION STRAINER NB150; 150LBS(Duplex Type 6-Port Integral Change Over Cock Strainer without Steam jacketing)As per Specification TOS:400 and Material specific Data sheet	NO	2.000	2.00	30.09.17
40	A181614202001001 HFO SUCTION STRAINER HFO SUCTION STRAINER NB300; 150LBS (Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet	NO	2.000	2.00	30.09.17
50	A181614203001001 HFO DISCHARGE STRAINER Duplex HFO DISCHARGE STRAINER NB150; 300LBS(Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet	NO	2.000	2.00	30.09.17
60	A181714201005001 LFO SUCTION STRAINER LDO SUCTION STRAINER NB150; 150LBS(Duplex Type 6-Port Integral Change Over Cock Strainer without Steam jacketing)As per Specification TOS:400and Material specific Data sheet	NO	2.000	2.00	30.09.17
70	A181714202001001	NO	2.000	2.00	30.09.17

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**


S. KANNAN
MANAGER / PURCHASE
(FOSSIL BOILERS)
Materials Management / BOI
BHEL, TIRUCHY - 620 014.

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(A Government of India Undertaking)

HIGH PRESSURE BOILER PLANT

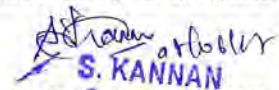
PURCHASE DEPARTMENT - FOSSIL BOILERS

THIRUCHIRAPALLI - 620014

TAMILNADU (INDIA)

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	HFO SUCTION STRAINER HFO SUCTION STRAINER NB300; 150LBS(Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
80	A181714203001001	NO	2.000	2.00	30.09.17
	HFO DISCHARGE STRAINER Duplex HFO DISCHARGE STRAINER NB150; 300LBS (Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
90	A181814201001001	NO	2.000	2.00	30.09.17
	LFO SUCTION STRAINER HSD SUCTION STRAINER NB150; 150LBS(Duplex Type 6-Port Integral Change Over Cock Strainer without Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
100	A181814202002001	NO	2.000	2.00	30.09.17
	HFO SUCTION STRAINER HFO SUCTION STRAINER NB300; 150LBS(Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
110	A181814203001001	NO	2.000	2.00	30.09.17
	HFO DISCHARGE STRAINER Duplex HFO DISCHARGE STRAINER AFTER HEATER NB150; 300LBS (Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
120	A181914201001001	NO	3.000	3.00	30.09.17
	LFO STRAINER LDO SUCTION STRAINER NB300; 150LBS WITHOUT STEAM JACKETING (Duplex Type 6-Port Integral Change Over Cock Strainer without Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
130	A182114201005001	NO	3.000	3.00	30.09.17
	LFO SUCTION STRAINER HSD SUCTION STRAINER NB150; 150LBS(Duplex Type 6-Port Integral Change Over Cock Strainer without Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
140	A182114202001001	NO	3.000	3.00	30.09.17
	HFO SUCTION STRAINER HFO SUCTION STRAINER NB300; 150LBS((Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per				
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 tenders 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  S. KANNAN MANAGER, PURCHASE FOSSIL BOILERS BHEL, THIRUCHIRAPALLI TAMILNADU - 620014	

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	Specification TOS:400and Material specific Data sheet				
150	L172314220004001	NO	1.000	1.00	30.09.17
	HFO DISCHARGE STRAINER Duplex HFO DISCHARGE STRAINER NB100; 300LBS (Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
160	L172314220008001	NO	2.000	2.00	30.09.17
	DRAIN OIL SUCTION STRAINER DRAIN OIL SUCTION STRAINER NB50; 150LBS(Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
170	L172414220004001	NO	1.000	1.00	30.09.17
	HFO DISCHARGE STRAINER Duplex HFO DISCHARGE STRAINER NB100; 300LBS (Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
180	L172414220008001	NO	1.000	1.00	30.09.17
	DRAIN OIL SUCTION STRAINER DRAIN OIL SUCTION STRAINER NB50; 150LBS (Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
190	L181614220001001	NO	1.000	1.00	30.09.17
	HFO DISCHARGE STRAINER Duplex HFO DISCHARGE STRAINER NB100; 300LBS(Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
200	L181614220002001	NO	2.000	2.00	30.09.17
	DRAIN OIL SUCTION STRAINER DRAIN OIL SUCTION STRAINER NB50; 150LBS(Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
210	L181714220001001	NO	1.000	1.00	30.09.17
	HFO DISCHARGE STRAINER Duplex HFO DISCHARGE STRAINER NB100; 300LBS(Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
220	L181714220002001	NO	2.000	2.00	30.09.17
	DRAIN OIL SUCTION STRAINER DRAIN OIL SUCTION STRAINER NB50; 150LBS				
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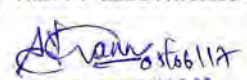


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	(Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
230	L181814220001001 HFO DISCHARGE STRAINER Duplex HFO DISCHARGE STRAINER (BOILER FRONT) NB100; 300LBS((Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet	NO	1.000	1.00	30.09.17
240	L181814220002001 DRAIN OIL SUC. STRN WITH STEAM JACKET DRAIN OIL SUCTION STRAINER FOR PUMP HOUSE NB50 CLASS150 (Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet	NO	1.000	1.00	30.09.17
250	L181814220002002 DRAIN OIL SUC. STRN WITHOUT STEAM JACKET DRAIN OIL SUCTION STRAINER FOR BOILER FRONT NB50 CLASS150 (Duplex Type 6-Port Integral Change Over Cock Strainer without Steam jacketing)As per Specification TOS:400and Material specific Data sheet	NO	1.000	1.00	30.09.17
260	L181914220008001 DRAIN OIL SUCTION STRAINER DRAIN OIL SUCTION STRAINER NB50; 150LBS((Duplex Type 6-Port Integral Change Over Cock Strainer without Steam jacketing)As per Specification TOS:400and Material specific Data sheet	NO	2.000	2.00	30.09.17
270	L181914220010001 LFO DISCHARGE STRAINER (DUPLEX) LFO DISCHARGE STRAINER NB100; 300LBS(Duplex Type 6-Port Integral Change Over Cock Strainer without Steam jacketing)As per Specification TOS:400and Material specific Data sheet	NO	1.000	1.00	30.09.17
280	L182014220008001 DRAIN OIL SUCTION STRAINER DRAIN OIL SUCTION STRAINER NB50; 150LBS((Duplex Type 6-Port Integral Change Over Cock Strainer without Steam jacketing)As per Specification TOS:400and Material specific Data sheet	NO	1.000	1.00	30.09.17
290	L182014220010001 LFO DISCHARGE STRAINER (DUPLEX)	NO	1.000	1.00	30.09.17
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  S. KANNAN MANAGER / PURCHASE (FOSSIL BOILERS) Purchase Department / BOI BHEL, TIRUCHY - 620 014					



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	LFO DISCHARGE STRAINER NB100; 300LBS((Duplex Type 6-Port Integral Change Over Cock Strainer without Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
300	L182114220001001	NO	2.000	2.00	30.09.17
	HFO DISCHARGE STRAINER Duplex HFO DISCHARGE STRAINER NB100; 300LBS((Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet				
310	L182114220002001	NO	2.000	2.00	30.09.17
	DRAIN OIL SUCTION STRAINER DRAIN OIL SUCTION STRAINER NB50; 150LBS(Duplex Type 6-Port Integral Change Over Cock Strainer with Steam jacketing)As per Specification TOS:400and Material specific Data sheet				

General Note:

01. The Tender will be operated on TWO PART BID basis and you are requested to submit Techno-commercial bid and Price bids thru e-procurement. Standard guidelines for registration and offer submission thru EPS is attached as Annexure-E of enquiry.

02. Pre-Qualification criteria for this enquiry is furnished in Annexure-A. Potential suppliers meeting the PQR has to submit the supporting documents for same in the technical bid for evaluation.

03. The supply shall be as per Specification TOS 400/Duplex/00 and respective material code wise datesheets enclosed in the enquiry. Following documents has to be submitted along with technical bid for technical valuation,

- Compliance to the specification TOS: 400/DUPLEX/00 shall be confirmed.
- Overall dimensional assembly drawings for all the sizes.
- Cross sectional drawing with parts and materials identified with Basket assembly details.
- Free flow area calculations for all the sizes.
- Pressure drop calculations for all the sizes.
- Filled in data sheet for each material code

04. The items covered in the enquiry are required as per following

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

S. Kannan
MANAGER / PURCHASE
(FOSSIL BOILERS)

Yours faithfully,
Materials Management / BOI
BHEL, TIRUCHY - 620 014.



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details:

(a) Enq SI No 10,20,150,160,170&180 - Ennore SEZ Project (1723 & 1724)/Tamilnadu state

(b) Enq SI No 30,40,50,190&200 - Krishnapatnam Project(1816) /AP state

(c) Enq SI No 60,70,80,210&220 - Vijayawada Project(1817) /AP state

(d) Enq SI No 90,100,110,230,240&250 - North chennai project(1818) /Tamilnadu state

(e) Enq SI No 120,260,270,280&290 - NTPC Telangana Project (1819 & 1820)/AP state

(f) Enq SI No 130,140,300&310 - Uppur Project (1821 & 1822)/Tamilnadu state

Evaluation & ordering will be on projectwise package basis.

05. Quantity splitting is applicable as per Cl. No:12 of Annexure-B (commercial terms and conditions).

06. The item sl no 10 to 140 are to be despatched to BHEL Trichy Stores and item sl no 150 to 310 are despatched to respective project site on FOR/Destination basis and you are requested to quote the rates accordingly.

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

08. Annexure-C - loading factors for commercial deviations will be applicable for evaluation of net cost to BHEL basis and is to be filled and submitted along with techno-commercial offer.

09. Annexure-D - Special provisions is applicable for MSE suppliers . The applicable documents shall be submitted along with techno-commercial offer (Part-I) to avail the same.

10. Final consideration of your offer for price bid opening is subject to your registration with BHEL PMD as a permanant vendor as mentioned in Annexure-A and also customer approval as applicable.

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Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED

Shanmugam
MANAGER, PURCHASE
(FOSSIL BOILERS)
S. Engineer

Materials Management / BOI
BHEL, TIRUCHY - 620 014.



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Enclosures:

- 1) General terms and Conditions
- 2) Annexure-A Pre Qualification Criteria(PQR)
- 3) Annexure-B Commercial Terms and Conditions)
- 4) Annexure-C Loading factors
- 5) Annexure-D-Special provisions for Micro & Small Enterprises MSE
- 6) Annexure- E - General Guidelines for E-procurement
- 7) Annexure- F - Third Party Non-Closure Agreement
- 8) Specification:
 - a) TOS:400
 - o) Material Codewise Datasheets (For 31 Items)
- (C) General Layout Drawing

"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

<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
A172314201001001	118087267	00010	3.000	U6/1723-LU-584-1-42-010	U6/1723
A172314202001001	118087270	00010	3.000	U6/1723-LU-585-1-42-020	U6/1723
A181614201005001	118094227	00010	2.000	U8/1816-LU-950-1-42-010	U8/1816
A181614202001001	118094228	00010	2.000	U8/1816-LU-948-1-42-020	U8/1816
A181614203001001	118094229	00010	2.000	U8/1816-LU-947-1-42-030	U8/1816
A181714201005001	118094232	00010	2.000	U8/1817-LU-613-1-42-010	U8/1817
A181714202001001	118094233	00010	2.000	U8/1817-LU-614-1-42-020	U8/1817
A181714203001001	118094234	00010	2.000	U8/1817-LU-615-1-42-030	U8/1817
A181814201001001	118054612	00010	2.000	U8/1818-LU-636-1-42-010	U8/1818
A181814202002001	118054613	00010	2.000	U8/1818-LU-637-1-42-020	U8/1818
A181814203001001	118054614	00010	2.000	U8/1818-LU-638-1-42-030	U8/1818
A181914201001001	118044092	00010	3.000	U8/1819-LU-674-1-42-010	U8/1819
A182114201005001	118027037	00010	3.000	U8/1821-LU-429-1-42-010	U8/1821
A182114202001001	118027038	00010	3.000	U8/1821-LU-430-1-42-020	U8/1821
L172314220004001	118087271	00010	1.000	U6/1723-LU-587-1-42-200	U6/1723
L172314220008001	118087666	00010	2.000	U6/1723-LU-587-1-42-200	U6/1723

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


MANAGER, PURCHASE
(FOSSIL BOILERS)
Yours faithfully,
Materials Management / BOI
BHEL, TIRUCHY - 620 014.



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 PURCHASE DEPARTMENT - FOSSIL BOILERS
 THIRUCHIRAPALLI - 620014
 TAMILNADU (INDIA)

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Material.	PR.No	PR.Item.	Quantity	Acc. Assign	Customer Number
L172414220004001	118087667	00010	1.000	U6/1724-LU-587-1-42-200	U6/1724
L172414220008001	118087668	00010	1.000	U6/1724-LU-587-1-42-200	U6/1724
L181614220001001	118094230	00010	1.000	U8/1816-LU-466-1-42-200	U8/1816
L181614220002001	118094231	00010	2.000	U8/1816-LU-466-1-42-200	U8/1816
L181714220001001	118094235	00010	1.000	U8/1817-LU-616-1-42-200	U8/1817
L181714220002001	118094286	00010	2.000	U8/1817-LU-616-1-42-200	U8/1817
L181814220001001	118054616	00010	1.000	U8/1818-LU-639-1-42-200	U8/1818
L181814220002001	118054618	00010	1.000	U8/1818-LU-639-1-42-200	U8/1818
L181814220002002	118054618	00020	1.000	U8/1818-LU-639-1-42-200	U8/1818
L181914220008001	118043642	00010	2.000	U8/1819-LU-675-1-42-200	U8/1819
L181914220010001	118044029	00010	1.000	U8/1819-LU-675-1-42-200	U8/1819
L182014220008001	118043643	00010	1.000	U8/1820-LU-675-1-42-200	U8/1820
L182014220010001	118044036	00010	1.000	U8/1820-LU-675-1-42-200	U8/1820
L182114220001001	118027039	00010	1.000	U8/1821-LU-486-1-42-200	U8/1821
L182114220001001	118027040	00010	1.000	U8/1822-LU-486-1-42-200	U8/1822
L182114220002001	118027080	00010	2.000	U8/1821-LU-486-1-42-200	U8/1821

list of suppliers

RFQ-5200005995

Open Tender Dummy Code

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Yours faithfully,
 For BHARAT HEAVY ELECTRICALS LIMITED

S. KANNAN
S. KANNAN
 MANAGER, PURCHASE
 HIGH PRESSURE BOILER PLANT
 PURCHASE DEPARTMENT - FOSSIL BOILERS
 THIRUCHIRAPALLI - 620014.



An ISO 9001
Company

Enquiry No: 1801700702 dt 05.06.2017

Bharat Heavy Electricals Limited
(High Pressure Boiler Plant)
Tiruchirappalli-620 014, Tamil Nadu, India
Dept : PURCHASE-MATERIALS MANAGEMENT/BOI

Annexure – A – Pre-Qualification Criteria (PQR)

Pre-Qualification requirement for Duplex Strainers

(This techno-commercial sheet should be duly filled and signed, and should be the part of Bid part no-I)

1. The vendor shall be an established Fuel oil Duplex strainer (henceforth referred as strainers) manufacturer having adequate Engineering, Manufacturing and testing facilities.

Vendor response and attached doc ref:_____

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.

Vendor response and attached doc ref:_____

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 higher. Supplier shall submit documents in proof of the same for the fullest satisfaction of BHEL. BHEL will verify the authenticity of the documents submitted by the bidders for prequalification if required and vendor to furnish the contact details of customer. Sample format for furnishing the credentials is attached in the enquiry. Vendor to submit the duly filled format.

Vendor response and attached doc ref:_____

4. The supplier shall offer a proven change over mechanism of 6-port integral change over cock type. If alternate change over mechanism is offered, supplier shall demonstrate the changeover operation without flow interruption. The demonstration exercise will be witnessed by BHEL to qualify the supplier. In addition, the offered changeover mechanism shall be proven and be in successful operation in similar application. Supplier shall produce documents in proof of the same to the fullest satisfaction of BHEL.

Vendor response and attached doc ref:_____

5. In addition to above, vendor have to submit all the documents duly filled in "Supplier Registration Forms" through online (available in <http://supplier.bhel.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

Enq No: 1801700702 dt 05.06.2017

Performance / Profit & Loss Account / Balance sheet for last three years etc. 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. Apart from online submission, Hard copy has to be forwarded to DGM/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.

Vendor response and attached doc ref:_____

EXPERIENCE LIST

Item : Heavy Fuel Oil / Light Fuel Oil Strainers

Supplier:[illegible]

Enq No: 1801700702 dt 05.06.2017

ANNEXURE-B**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-I)**

Description of the Items:		Supply of Light Fuel Oil (LFO) and Heavy Fuel Oil (HFO) Strainers as per Specification.
Enquiry Ref:		1801700702-03 dated 05.06.2017
Sl No.	Description	Vendor's confirmation
1	The tender will be operated on Two-Part Bid basis and the vendors are requested to submit Techno-Commercial bid and Price Bids through e-procurement with complete documents as per enquiry terms.	
2	Technical: Supply shall be as per BHEL's specification: TOS 400, BHEL General layout drawings & respective material code-wise datasheet. Vendor to submit the technical documents confirming this specification requirement.	
3	Firm Price: The quoted/Finalised rates shall be Firm till execution of the supplies.	
4	Price Basis: Materials are to be despatched to Respective project site / BHEL Trichy Stores on FOR – Destination basis as per enquiry terms after the BHEL QC/BHEL TPI inspection and clearance. Prices quoted should be inclusive packing & Forwarding charges. Freight & Insurance scope up to destination break up is to be clearly indicated in the price bid. Vendor to confirm the same.	
5	Payment terms: Payment term for dispatches to project site is 100% direct payment after 45 days from the date of dispatch against site acknowledgement and 10% PBG. For dispatch against BHEL/Trichy stores Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials and 10% PBG.	
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. Vendor to indicate the shortest possible delivery period from document approval.	
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 commissioning, whichever is earlier.	
11	MSE Applicability: Vendor to confirm whether they are eligible for MSE special provision and documents as per Annexure-D to be submitted for availing the special provision for MSE vendors.	
12	Quantity splitting: In case single vendor becomes L1 for more than four projects even after considering the MSE special provision / splitting, quantity splitting will be operated as mentioned below. For projects exceeding four no (approximately 60%), L1 rates (FOR Value) shall be counter offered to vendors (In the order of L2, L3 & so on) in succession. Respective project will be awarded to vendor on acceptance of L1 rates. In case of Non acceptance of L1 rates on counter offering, project will be awarded to original L1 vendor. Individual items of one project shall not be split and will be placed on single vendor only as package basis.	

ANNEXURE-C

Loading factors for the tender enquiry for requirement of LFO & HFO Strainers

SI No.	BHEL Commercial terms	Vendor Confirmation to BHEL Commercial terms	Loading Criteria for Deviations
1	Payment terms: For dispatches to Project sites, Payment term is 100% direct payment after 45 days from the date of dispatch against site acknowledgement and 10% PBG For dispatches to BHEL Trichy stores, Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials and 10% PBG		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 of delay 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> 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-D

Special provisions for Micro & Small Enterprises (MSE)

1. In case MSE vendor participating in the tender quotes within the price band of L1+15% for any project package, they will be allowed to supply the respective project package 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 fulfillment 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 - 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

ANNEXURE-E – General Procedures for E-Procurement

a. Interested bidders / Suppliers shall submit their offer through e-Procurement mode at <https://bheleps.buyjunction.in> Offers in any other mode will not be accepted. For Enterprise Procurement System (EPS) Bidders/Suppliers are requested to follow these steps.

REQUIREMENTS:

1. A PC with Internet connectivity.
2. DSC (Digital Signature Certificate) (Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION)
3. The site is best viewed in Internet Explorer 9.0. If you are using Internet Explorer 10 or above then enable compatibility view available under Tools menu
4. Install Java 1.8 Update 67/72/79/77 (32 OR 64 Bit)

DIGITAL SIGNATURE REQUIREMENT:

Suppliers interested for registration for BHEL Open Tenders should have a valid DSC (Digital Signature Certificate) before Proceeding forward for Registration. Herein a Valid DSC refers to an Active and unexpired Signing and Encryption Certificate, with specification Class III SHA 2 2048 bit.

UNREGISTERED SUPPLIER IN EPS:

Procedure for Online Registration in EPS for Open Tender Suppliers for BHEL

Unregistered Supplier: Supplier visits EPS at <https://bheleps.buyjunction.in>

Please follow the below steps for registration

1. Click Register Button (Top of the Screen)
2. Please input your organization PAN No (in case of Indian supplier) or click “Foreign” in case you are an overseas Supplier.
3. Click on INTERESTED Button against the respective BHEL Unit
4. Key in your desired login id (Login Code should be 8 - 24 characters in length and can only use numeric values) If you have registered by keying in PAN No. then your desired login id will be prefixed by “OTI”, In case of overseas suppliers it will be prefixed with “OTF”
5. Fill in the other details.
6. Fill in the Captcha code and click next
7. Register your Signing certificate and click next
8. Select atleast one procurement category you may be dealing in.

Once the above steps are completed, your profile will be activated by mjunction within 2 business hours. After registering follow the steps provided in “For Registered Supplier” to view RFQ.

In case of any assistance, please call the following nos for support: 033-6601 1717 (From 9:30am to 5:30pm)

Enq No: 1801700702 dt 05.06.2017

1 -- BHEL Administrator or user will have no role for approving Registration and Open Tenders and DSC for Any supplier who has registered himself from the front END which is in case of OT.

FOR REGISTERED SUPPLIER IN EPS:

- a. Supplier visits EPS home page
- b. Supplier signs in with their user id and password
- c. Selects the RFQ Code and views it.
- d. Attaches themselves to the RFQ by clicking the interested button
- e. Supplier fills the bid template and makes necessary attachments
- f. Supplier submits their bid by clicking CONFIRM.

In case of any assistance, please call the following Nos for support:

033-6601 1717 (From 9:30am to 5:30pm)

Vendors are requested to go through seller manual available on www.bheleps.buyjunction.in

Annexure – F

THIRD PARTY NON-DISCLOSURE AGREEMENT

I, _____, on behalf of the _____ (Name of Company), acknowledge that the information received or generated, directly or indirectly, while working with BHEL, Trichy on contract is confidential and that the nature of the business of the BHEL, Trichy is such that the following conditions are reasonable, and therefore:

I warrant and agree as follows:

I, or any other personnel employed or engaged by our company, agree not to disclose, directly or indirectly, any information related to the BHEL, Trichy Without restricting the generality of the foregoing, it is agreed that we will not disclose such information consisting but not necessarily limited to:

- Technical information: Methods, drawings, processes, formulae, compositions, systems, techniques, inventions, computer programs/data/configuration and research projects.
- Business information: Customer lists, project schedules, pricing data, estimates, financial or marketing data,

On conclusion of contract, I, or any other personnel employed or engaged by our company shall return to BHEL, Trichy all documents and property of BHEL, Trichy, including: drawings, blueprints, reports, manuals, computer programs/data/configuration, and all other materials and all copies thereof relating in any way to BHEL, Trichy's business, or in any way obtained by me during the course of contract. I further agree that I, or any others employed or engaged by our company shall not retain copies, notes or abstracts of the foregoing.

This obligation of confidence shall continue after the conclusion of the contract also.

I acknowledge that the aforesaid restrictions are necessary and fundamental to the business of the BHEL, Trichy and are reasonable given the nature of the business carried on by the BHEL, Trichy I agree that this agreement shall be governed by and construed in accordance with the laws of country.

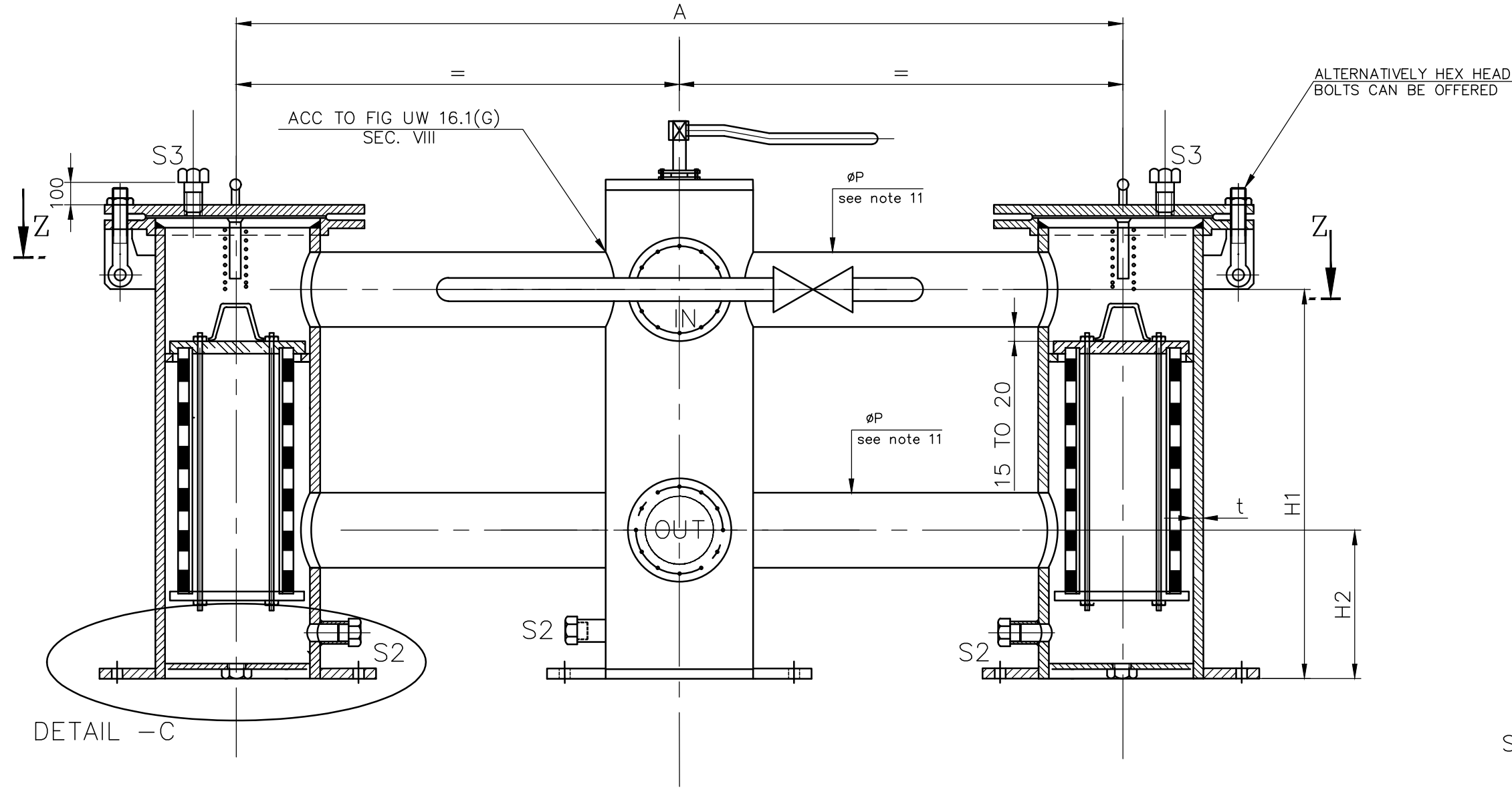
I enter into this agreement totally voluntarily, with full knowledge of its meaning, and without duress.

Dated at _____, this ____ day of _____, 20__.

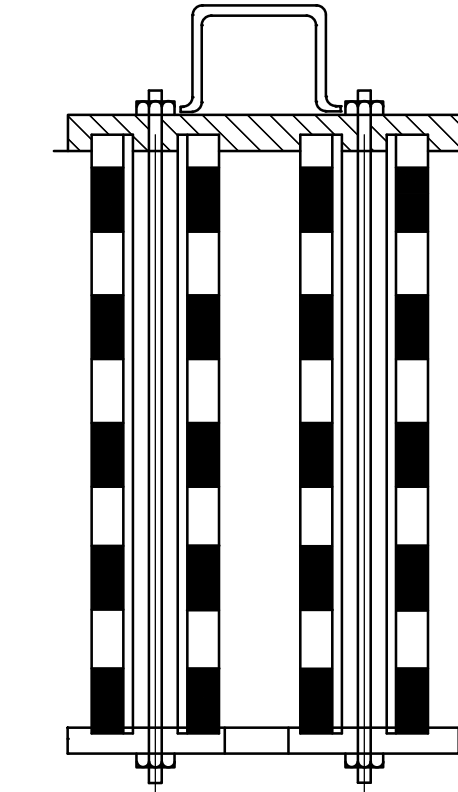
Name
Company
Signature

2-42-000-02297
DRAWING NO.

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



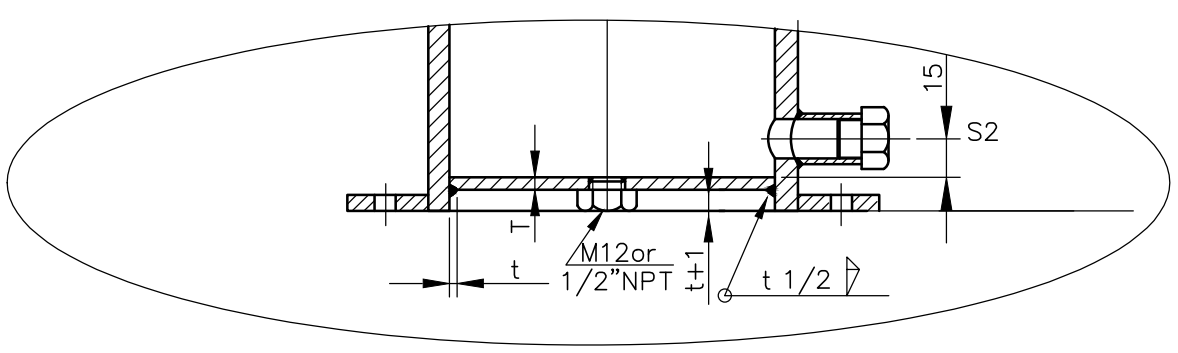
DETAIL -C



SUGGESTED BASKET ASSEMBLY

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

DETAIL -C



DESIGN & FABRICATION

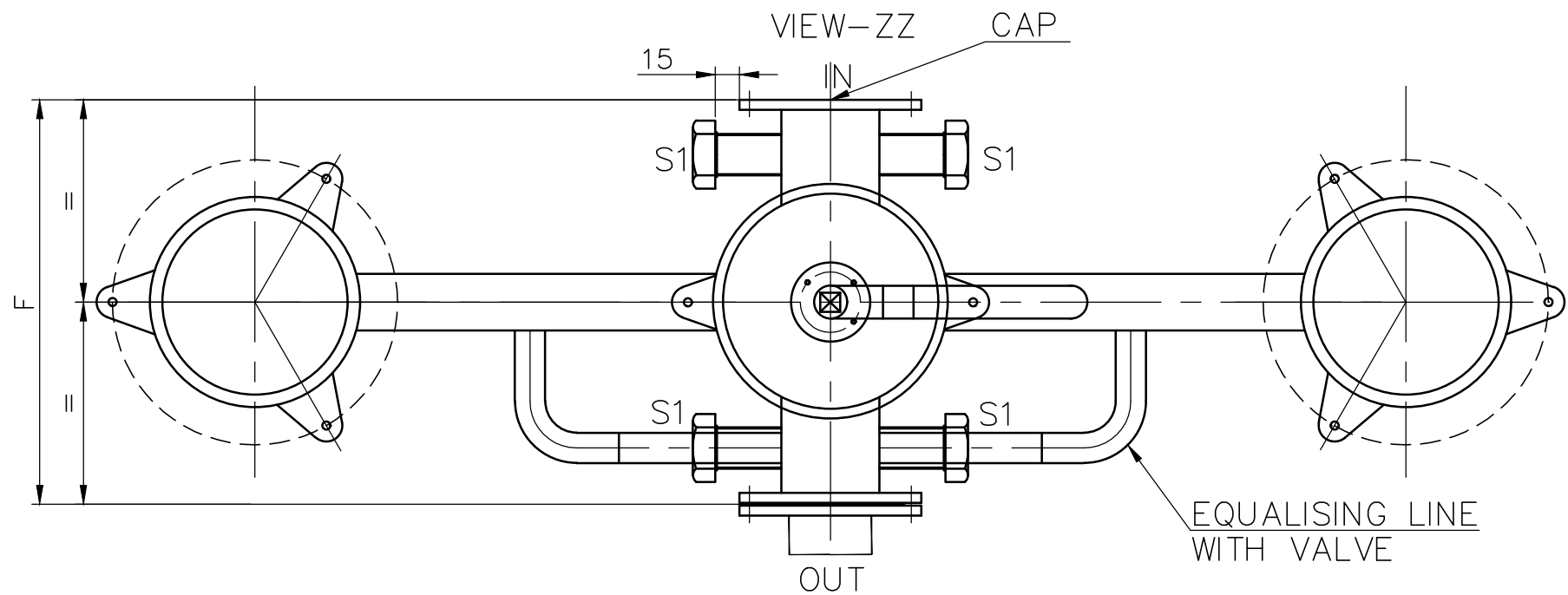
ASME SEC.VIII & XI
(FINAL INSPECTION & VERIFICATION OF SHOP RECORDS
FOR STAGE INSPECTION BY THIRD PARTY)

MATERIALS (OR EQVT)

- FILTER MESH - AISI 316 ~ 35% FREE OPENING
- SUPPORT SHEET - AISI 316 ~ 60% FREE OPENING
- PIPES - SA210GR1 ; SA106GR.B
- FLANGES & COVERS - SA181GR1 ; SA105; IS2062
- PLATES & SHEETS - SA299 ; SA515GR70; SA516GR70 ; IS2062
- SPRING - SPRING STEEL EN42
- BOLTS & NUTS - SA193GRB7 & SA194GR2H GALVANISED
- GASKETS - IS1363 GR 8.8 OR HIGHER
- NON ASBESTOS TYPE SPIRALWOUND GASKETS (WITH APPROPRIATE THICKNESS SUITABLE FOR FUEL OIL APPLICATION)

NOTES

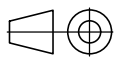
- MATING FACES OF BASKET TOP PLATE SHALL BE FLAT AND FINE MACHINED.
- BASKET SHALL BE OF STURDIER CONSTRUCTION.
- PAINT EPOXY BLUE OVER RED PRIMER ON OUTSIDE & EPOXY WHITE OVER RED PRIMER ON INSIDE SURFACES.
- RIVET NAME TAGS ON NOZZLE & STUBS
- ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE NOTED.
- THE 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 CHANGE OVER 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.

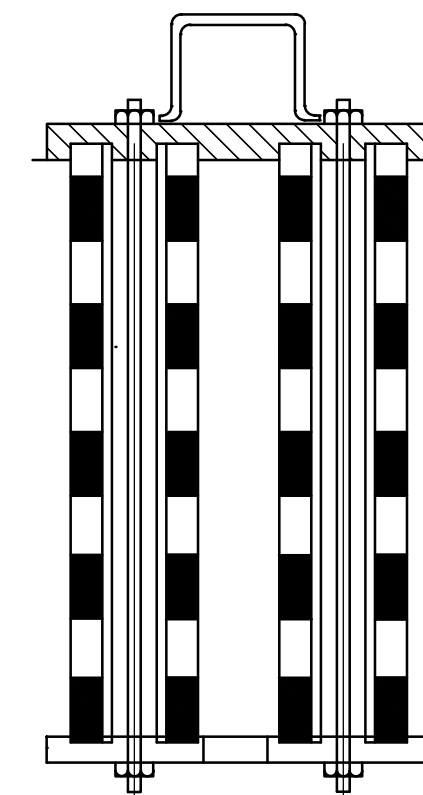
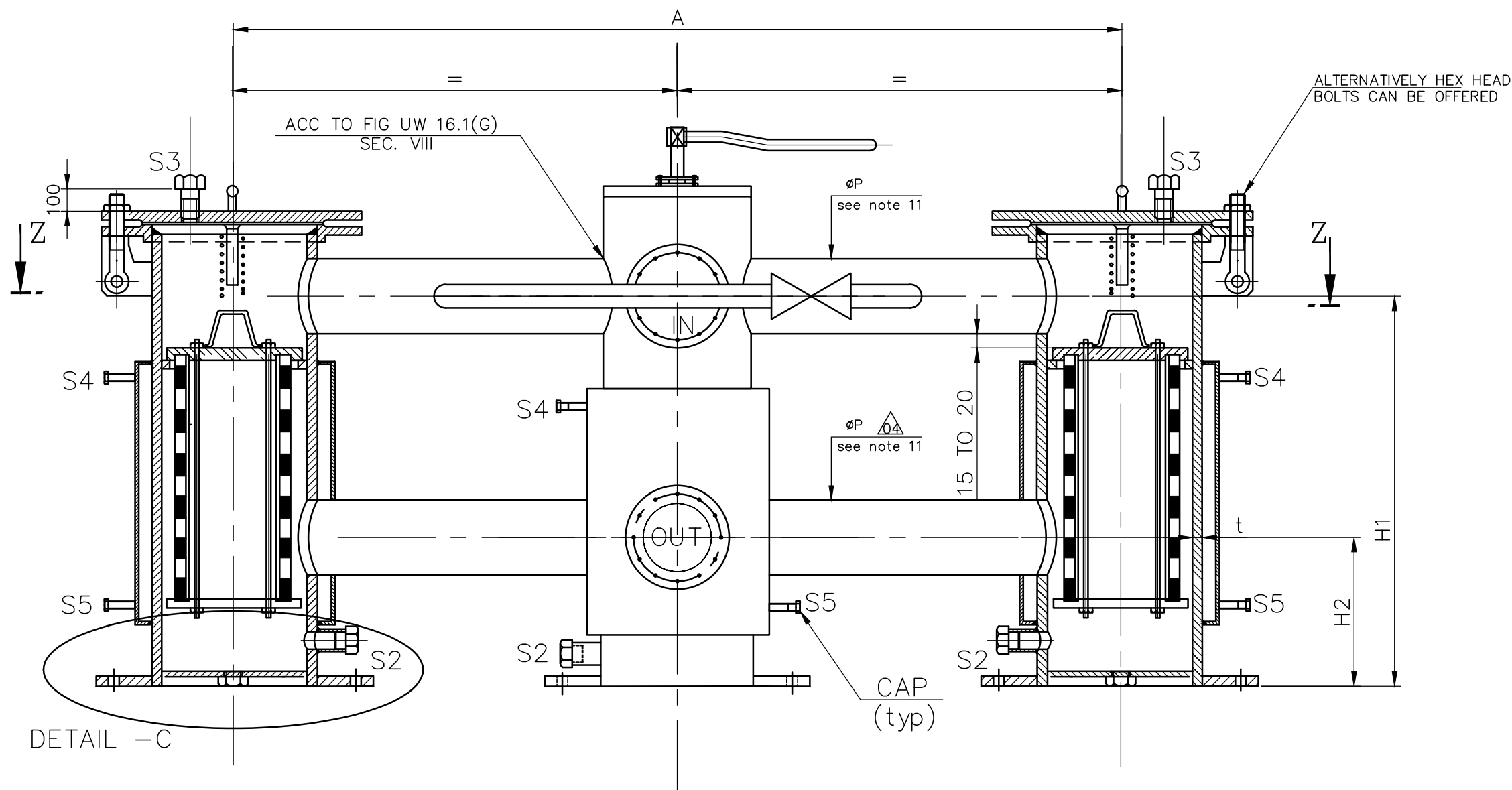


OVERALL DIMENSIONS

NB	BODY				NOZZLE	
	INCH	SCH	F	A	H1	H2
50	6	40	400	950	500	200
80	12	40	800	1100	500	250
100	12	40	800	1100	600	250
150	18	40	1000	1400	600	300
200	18	40	1000	1400	800	300
250	24	40	1200	1800	1000	400
ALL STUBS - 21.3 OD STUB WITH M12 PLUG OR 1/2"NPT						

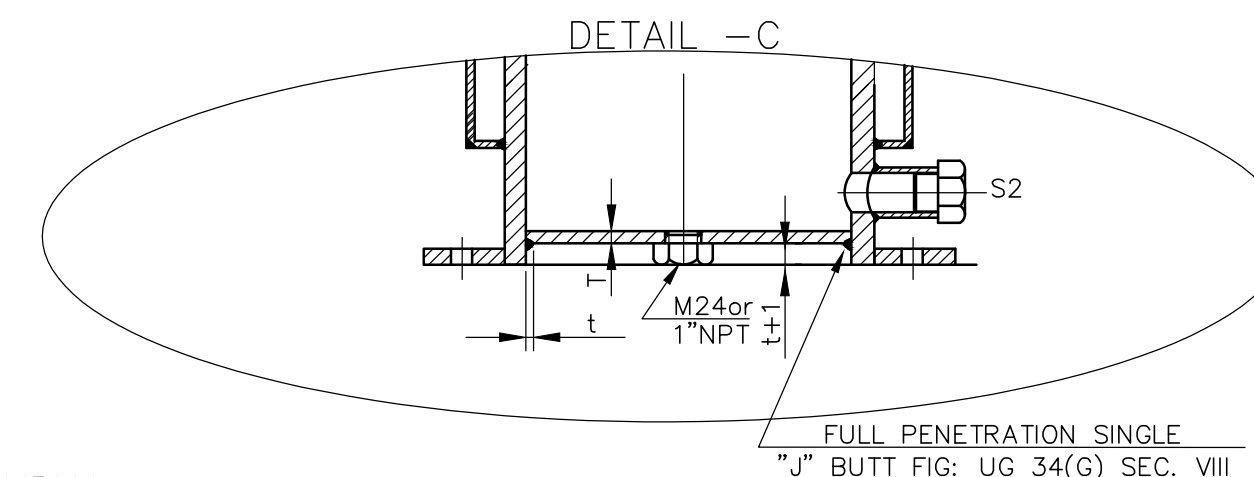
PERFORMANCE DATA		
FLOW MAXIMUM LIT/MIN	NB50	325
	NB80	715
	NB100	1400
	NB150	2875
	NB200	5000
	NB250	8000
VISCOSITY CST		
SP.GRAVITY		
FILTRATION MICRONS		
Δ P CLEAN BASKET		
Δ P 50% CLOGGED		
DESIGN PR. OIL SIDE		
TEST PR. OIL SIDE		
PR.& ΔP IN KG / SQ .CM		

 355-055	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN	NAME -sd-	SIGNATURE -sd-	DATE 03.06.2017
			CHD	G. SARAVANA KUMAR	-sd-	03.06.2017
			APPD	M.THANDAPANI	-sd-	03.06.2017
DEPT FS/PE	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE NTS	WEIGHT (Kg) -	REF TO ASSY / OLD DWG 2-42-000-02117	
CODE 129	TITLE LFO DISCHARGE STRAINER (DUPLX BASKET)				DRAWING NO : 2-42-000-02297	REV 00



SUGGESTED BASKET ASSEMBLY

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	36.1
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	533.8
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



DESIGN & FABRICATION

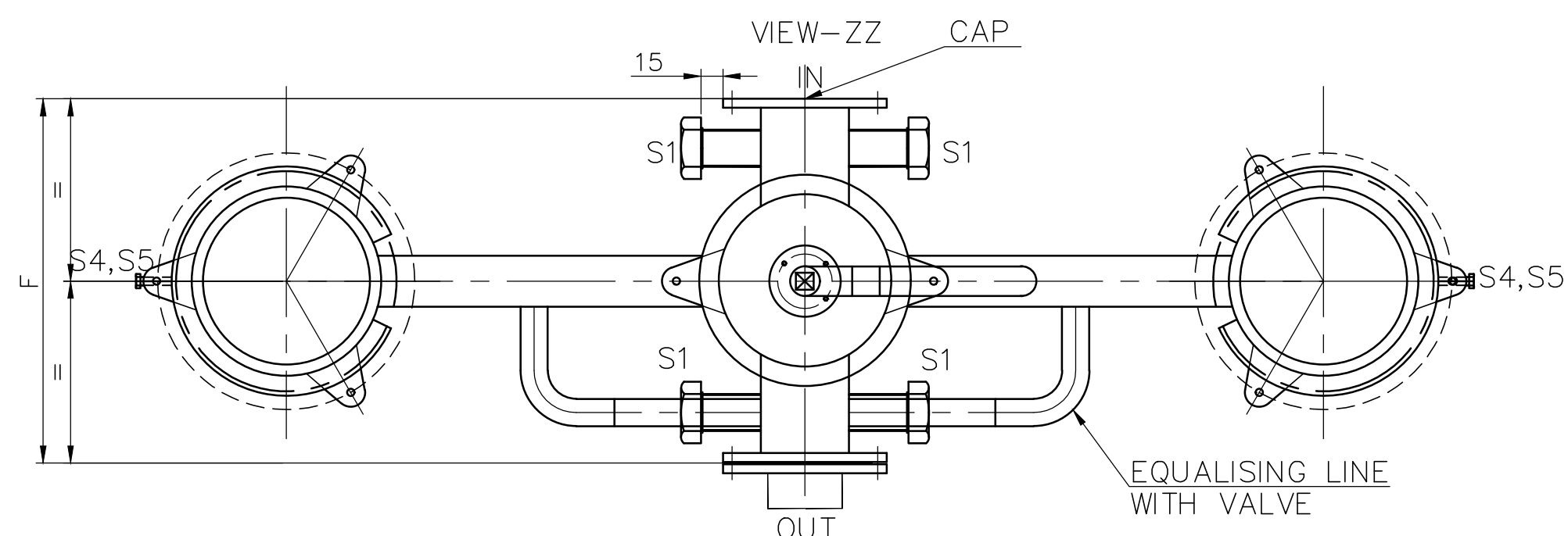
ASME SEC.VIII & XI
(FINAL INSPECTION & VERIFICATION OF SHOP RECORDS
FOR STAGE INSPECTION BY THIRD PARTY)

MATERIALS (OR EQVT)

- FILTER MESH – AISI 316 ~ 35% FREE OPENING
SUPPORT SHEET – AISI 316 ~ 60% FREE OPENING
PIPES – SA210GR1; SA106GR.B
FLANGES & COVERS – SA181GR1; SA105; IS2062
PLATES & SHEETS – SA299; SA151GR70; SA161GR70; IS2062
SPRING – SPRING STEEL EN42
BOLTS & NUTS – SA193GRB7 SA194GR2H GALVANISED
IS1363 8/ 8.8 OR HIGHER
GASKETS – NON ASBESTOS TYPE SPIRAL WOUND GASKETS
(WITH APPROPRIATE THICKNESS
SUITABLE FOR FUEL OIL APPLICATION)

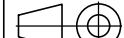
NOTES

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



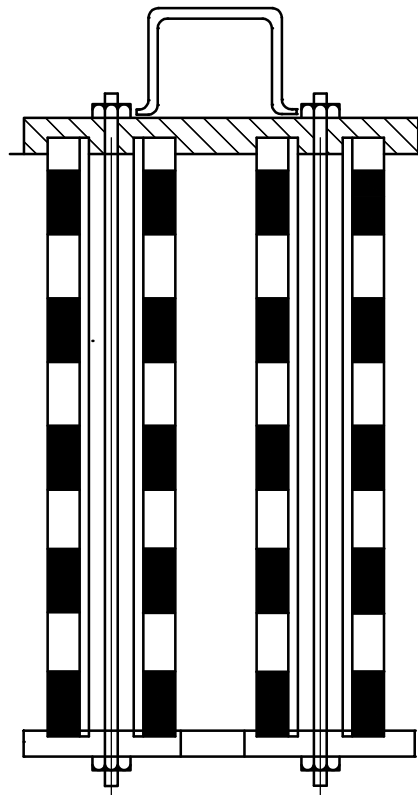
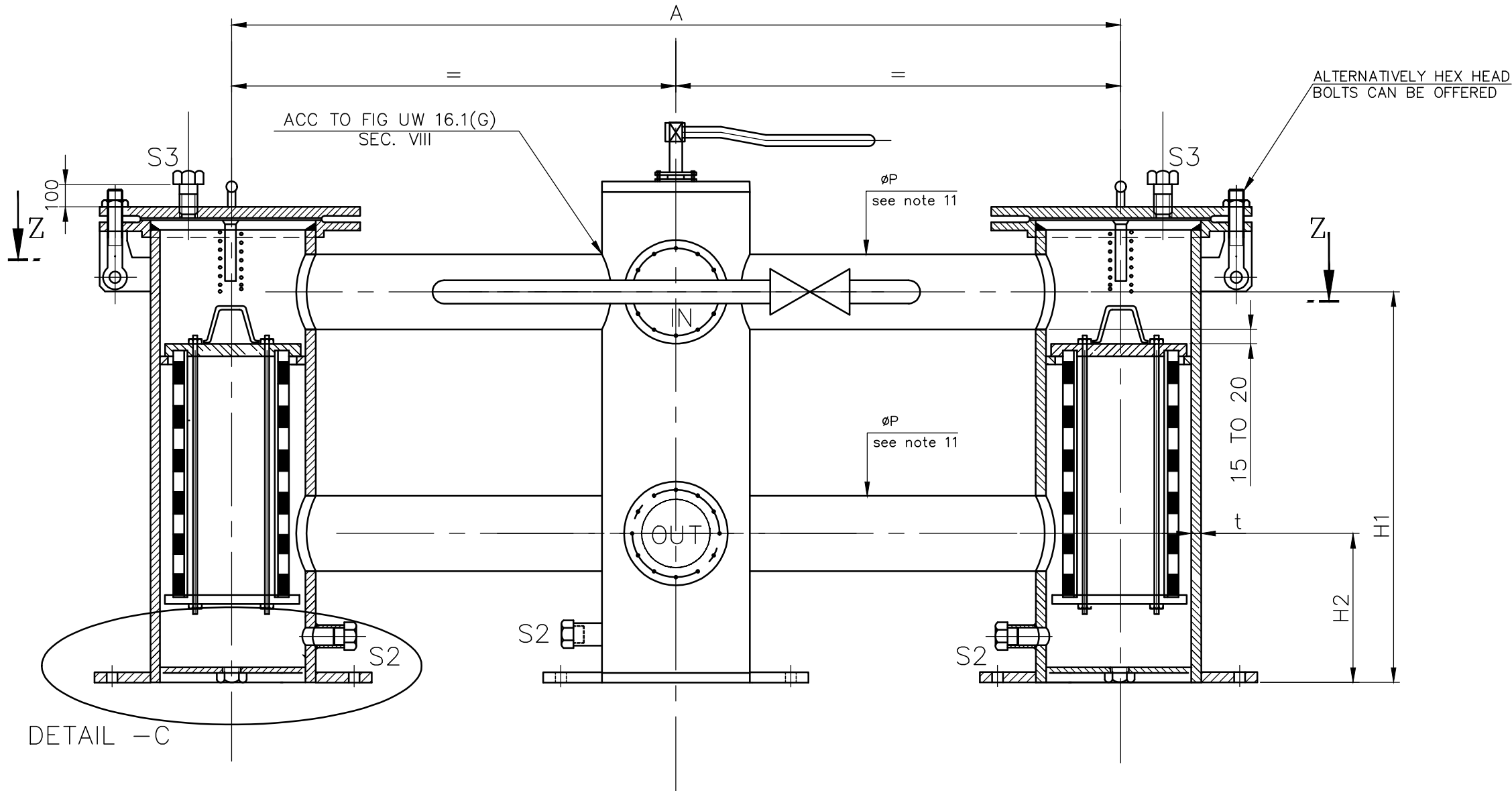
OVERALL DIMENSIONS						
NB	BODY				NOZZLE	
	INCH	SCH	F	A	H1	H2
50	6	40	400	950	500	200
80	12	40	800	1100	500	250
100	12	40	800	1100	600	250
150	18	40	1000	1400	600	300
200	18	40	1000	1400	800	300
250	24	40	1200	1800	1000	400
300	24	40	1200	2000	1000	400
350	30	40	1600	2000	1200	500
400	30	40	1600	2200	1200	500

PERFORMANCE		DATA
FLOW MAXIMUM LIT/MIN	NB50	65
	NB80	140
	NB100	275
	NB150	575
	NB200	1000
	NB250	1600
	NB300	2300
	NB350	2670
	NB400	3420
VISCOSITY CST		5000
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.& Δ P IN KG / SQ. CM		10

 355-055		Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN	NAME PREETAM KUMAR	SIGNATURE -sd-	DATE 03.06.2017
				CHD	G. SARAVANA KUMAR	-sd-	03.06.2017
				APPD	M.THANDAPANI	-sd-	03.06.2017
DEPT FS/PE	ALL DIMENSIONS ARE IN MM	 PROJECTION	SCALE NTS	WEIGHT (Kg) -	REF TO ASSY / OLD DWG 2-42-000-02116		
CODE 129							
TITLE HFO SUCTION STRAINER (DUPLX BASKET)					DRAWING NO : 2-42-000-02298		REV 00

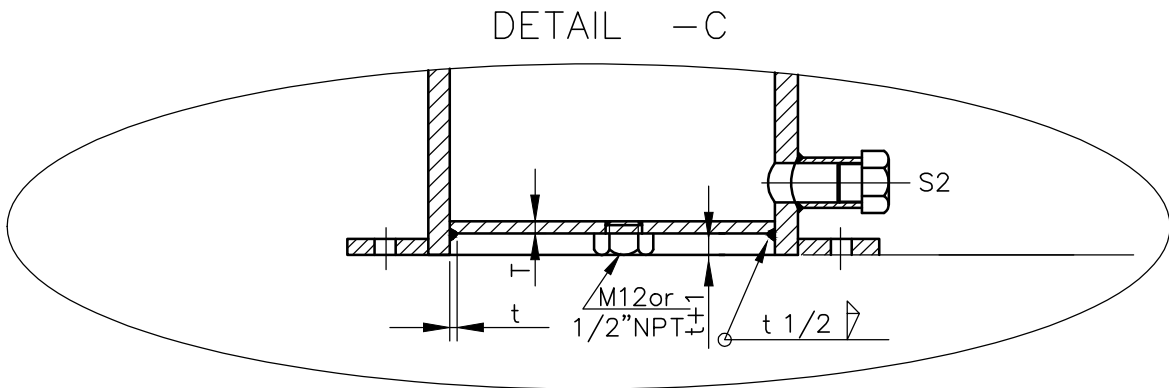
66220-000-24-2
DRAWING NO.

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



SUGGESTED BASKET ASSEMBLY

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



DESIGN & FABRICATION

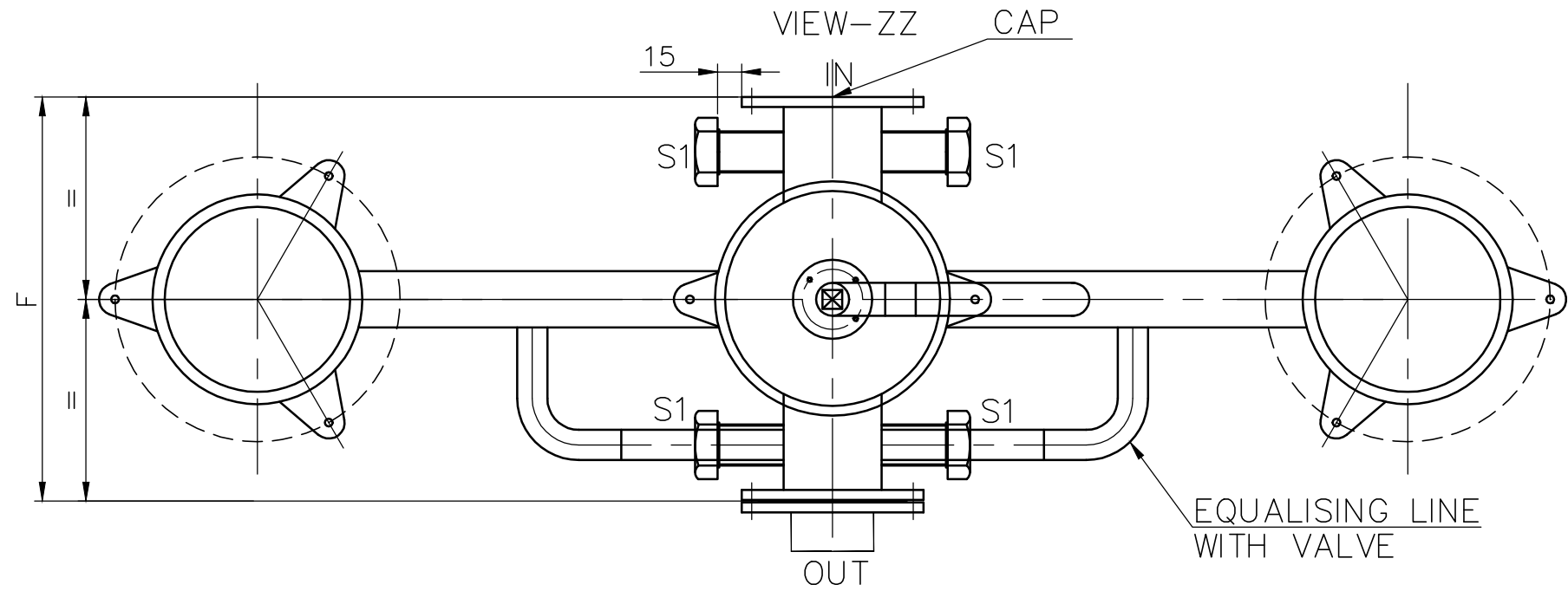
ASME SEC.VIII & XI
(FINAL INSPECTION & VERIFICATION OF SHOP RECORDS
FOR STAGE INSPECTION BY THIRD PARTY)

MATERIALS (OR EQVT)

- FILTER MESH - AISI 316 ~ 35% FREE OPENING
- SUPPORT SHEET - AISI 316 ~ 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 SPIRAL WOUND 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 CHANGE OVER 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.



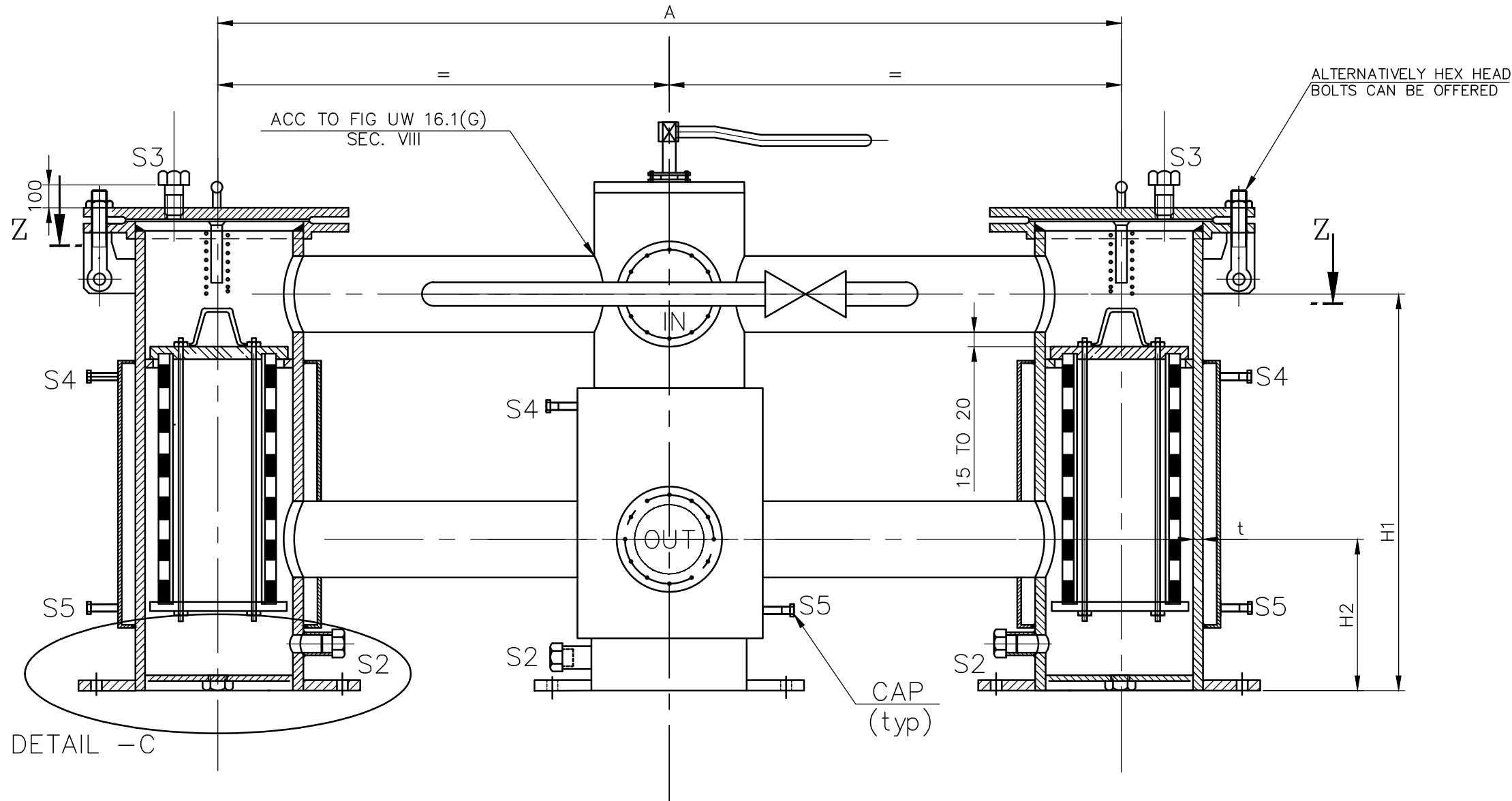
OVERALL DIMENSIONS						
NB	BODY				NOZZLE	
	INCH	SCH	F	A	H1	H2
50	6	40	400	950	500	200
80	12	40	800	1100	500	250
100	12	40	800	1100	600	250
150	18	40	1000	1400	600	300
200	18	40	1000	1400	800	300
250	24	40	1200	1800	1000	400
300	24	40	1200	2000	1000	400
350	30	40	1600	2000	1200	500
400	30	40	1600	2200	1200	500
STUB S1 & S2 -33.4 OD STUB WITH M24 PLUG OR 1" NPT						

PERFORMANCE DATA		
FLOW MAXIMUM LIT/MIN	NB50	65
	NB80	140
	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		

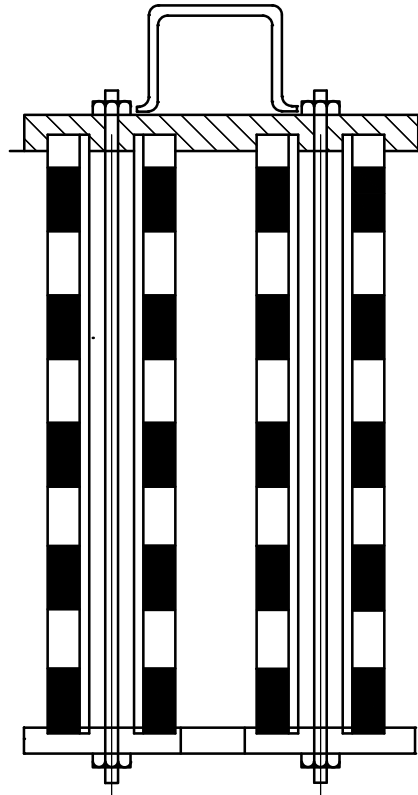
 355-055		Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN	NAME PREETAM	SIGNATURE -sd-	DATE 03.06.2017
				CHD	G. SARAVANA KUMAR	-sd-	03.06.2017
				APPD	M.THANDAPANI	-sd-	03.06.2017
DEPT	FS/PE	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE NTS	WEIGHT (Kg) -	REF TO ASSY / OLD DWG	
CODE	129					2-42-000-02118	
TITLE LFO SUCTION STRAINER (DUPLX BASKET)						DRAWING NO : 2-42-000-02299	REV 00

2-42-000-02300
DRAWING NO.

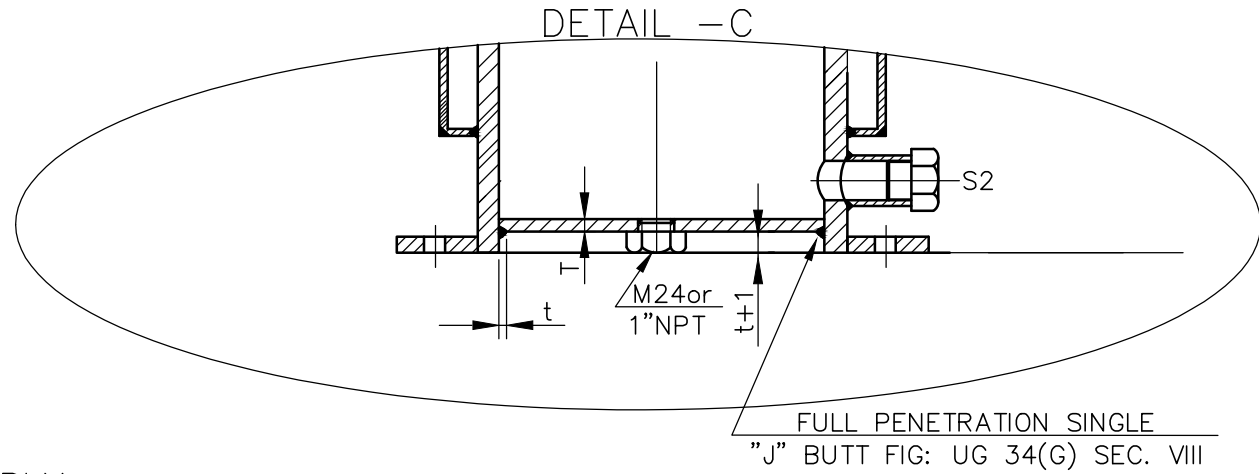
FOR TOLERANCES OF UNTOLERANCED
DIMENSIONS DURING MANUFACTURE
REFER PLANT STD. NO TP 023 0299



FLANGE DIA	NOZZLE/COVER					
	TO ANSI B16.5 CL 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



SUGGESTED BASKET ASSEMBLY



DESIGN & FABRICATION

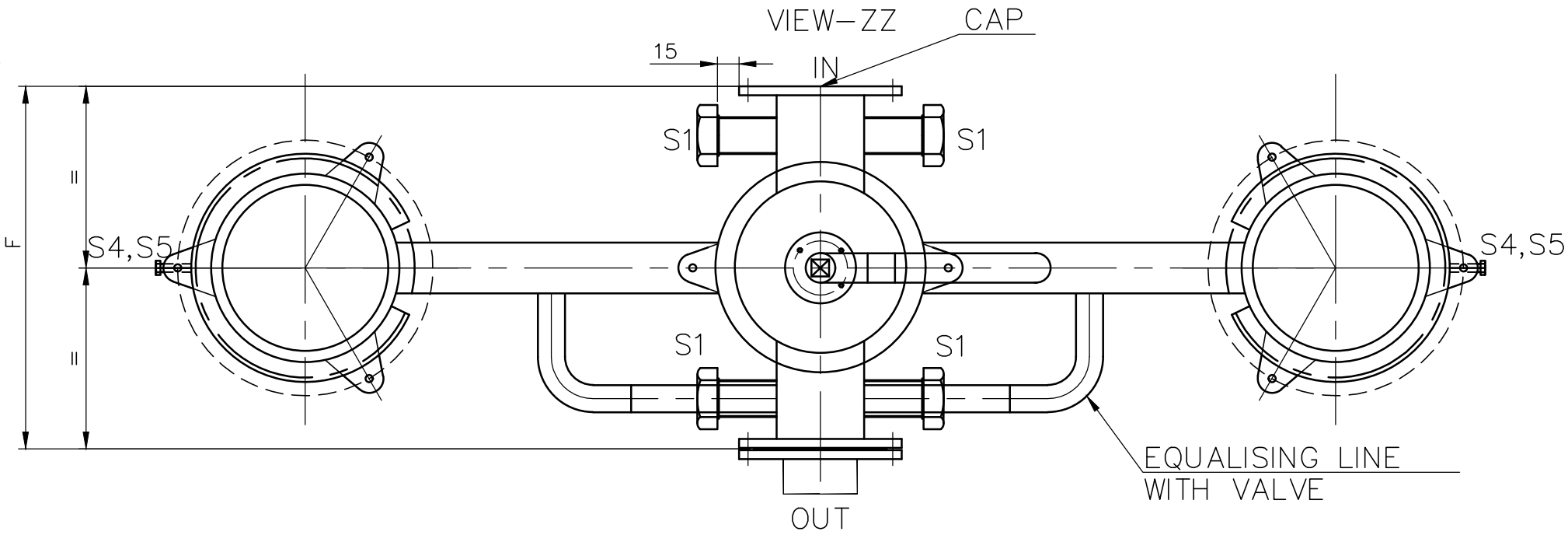
ASME SEC.VIII & XI
(FINAL INSPECTION & VERIFICATION OF SHOP RECORDS
FOR STAGE INSPECTION BY THIRD PARTY)

MATERIALS (OR EQVT)

- FILTER MESH - AISI 316 ~ 35% FREE OPENING
- SUPPORT SHEET - AISI 316 ~ 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 SPIRAL WOUND GASKETS
(WITH APPROPRIATE THICKNESS
SUITABLE FOR FUEL OIL APPLICATION)

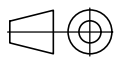
NOTES

- MATING FACES OF BASKET TOP PLATE SHALL BE FLAT AND FINE MACHINED.
- BASKET SHALL BE OF STURDIER CONSTRUCTION.
- PAIN EPOXY BLUE OVER RED PRIMER ON OUTSIDE & EPOXY WHITE OVER RED PRIMER ON INSIDE SURFACES.
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- THE INTER CONNECTING PIPE DIAMETER (øP) SHALL NOT BE LESS THAN THE INLET PIPE SIZE.



OVERALL DIMENSIONS						
NB	BODY				NOZZLE	
	INCH	SCH	F	A	H1	H2
50	6	40	400	950	500	200
80	12	40	800	1100	500	250
100	12	40	800	1100	600	250
150	18	40	1000	1400	600	300
200	18	40	1000	1400	800	300
250	24	40	1200	1800	1000	400
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						

PERFORMANCE DATA		
FLOW MAXIMUM LIT/MIN	NB50	325
	NB80	715
	NB100	1400
	NB150	2875
	NB200	5000
	NB250	8000
VISCOSITY CST		
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		

 355-055	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN	NAME PREETAM	SIGNATURE -sd-	DATE 03.06.2017
			CHD	G. SARAVANA KUMAR	-sd-	03.06.2017
			APPD	M.THANDAPANI	-sd-	03.06.2017
DEPT FS/PE	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE NTS	WEIGHT (Kg) -	REF TO ASSY / OLD DWG 2-42-000-02115	
CODE 129	TITLE HFO DISCHARGE STRAINER (DUPLX BASKET)				DRAWING NO : 2-42-000-02300	REV 00

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



TOS:400/DUPLEX/00
SHEET: 6 of 9

5.0 SECTION

5.1 PROJECT RELATED INFORMATION

Project Name : Ennore SEZ 2x660MW TPS
Customer No. : 1723-1724
Data sheet – STRAINER SIZE : 200 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, HO01C	
03	BHEL Matl. Code	A172314202001001	
04	Quantity	THREE	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	HFO	
09	Flow Maximum	1050 LPM	
10	Pour point	25	
11	Operating Pressure	6	
12	Flow Temperature	55-60	
13	Flow Sp. gravity	0.98	
14	Flow viscosity (max)	500 CST	
15	Line size	NB 200	
16	Body size	* (minimum two times the line size)	
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 gasket	
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	200 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	2-42-000-02298	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



TOS:400/DUPLEX/00
SHEET: 7 of 9

5.2 PROJECT RELATED INFORMATION

Project Name : ENNORE SEZ 2X660MW TPS
Customer No. : 1723-1724
Data sheet – STRAINER SIZE : LDO Suction 150 NB 150#

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

	Description	BHEL requirement	Vendor confirmation
01	Service	LFO, HSD SUCTION	
02	Tag No.	LO01A, LO01B, LO01C	
03	BHEL Matl. Code	A172314201001001	
04	Quantity	THREE	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	LDO	
09	Flow Maximum	315 LPM	
10	Pour point	6	
11	Operating Pressure	6	
12	Flow Temperature	38	
13	Flow Sp. gravity	0.83	
14	Flow viscosity	2-15 CST	
15	Line size	NB 150	
16	Body size	* (minimum two times the line size)	
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 gasket	
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	2-42-000-02299	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



TOS:400/DUPLEX/00
SHEET: 8 of 9

5.3 PROJECT RELATED INFORMATION

Project Name : ENNORE SEZ 2X660MW TPS
Customer No. : 1723-1724
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.	HO27	
03	BHEL Matl. Code	A172314220004001	
04	Quantity	ONE	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	HFO	
09	Flow Maximum	760 LPM	
10	Pour point	25	
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	*(minimum two times the line size)	
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 gasket	
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	2-42-000-02300	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



TOS:400/DUPLEX/00
SHEET: 9 of 9

5.4 PROJECT RELATED INFORMATION

Project Name : ENNORE SEZ 2X660MW TPS
Customer No. : 1723-1724
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	Drain oil Delivery	
02	Tag No.	HO63A, HO63A1	
03	BHEL Matl. Code	A172314220008001	
04	Quantity	TWO	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	Drain Oil	
09	Flow Maximum	72 LPM	
10	Pour point	25	
11	Operating Pressure	6	
12	Flow Temperature	55-67	
13	Flow Sp. gravity	0.95	
14	Flow viscosity	500 CST	
15	Line size	NB 50	
16	Body size	*(minimum two times the line size)	
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 gasket	
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	½" SCH40,100mm	
40	Pressure gauge	1" SCH40, 100 mm	
41	Testing code	ASME SEC VIII & IX	
42	Dimensional Drawing	2-42-000-02298	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



TOS:400/DUPLEX/00
SHEET: 6 of 11

5.0 SECTION

5.1 PROJECT RELATED INFORMATION

Project Name : N.CHENNAI 1x800MW TPS
Customer No. : 1818
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	A181814202002001	
04	Quantity	TWO	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	HFO	
09	Flow Maximum	1480 LPM	
10	Pour point	57	
11	Operating Pressure	6	
12	Flow Temperature	67	
13	Flow Sp. gravity	0.95	
14	Flow viscosity (max)	500 CST	
15	Line size	NB 300	
16	Body size	* (minimum two times the line size)	
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 gasket	
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	2-42-000-02298	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



TOS:400/DUPLEX/00
SHEET: 7 of 11

5.2 PROJECT RELATED INFORMATION

Project Name : N.CHENNAI 1X800MW TPS
Customer No. : 1818
Data sheet – STRAINER SIZE : HSD Suction 150 NB 150#

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

	Description	BHEL requirement	Vendor confirmation
01	Service	LFO, HSD SUCTION	
02	Tag No.	LO01A, LO01B	
03	BHEL Matl. Code	A1818514201001001	
04	Quantity	Two	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	LFO, HSD	
09	Flow Maximum	435 LPM	
10	Pour point	6	
11	Operating Pressure	6	
12	Flow Temperature	38	
13	Flow Sp. gravity	0.83	
14	Flow viscosity	2-15 CST	
15	Line size	NB 150	
16	Body size	* (minimum two times the line size)	
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 gasket	
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	2-42-000-02299	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



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

5.3 PROJECT RELATED INFORMATION

Project Name : N.CHENNAI 1x800MW TPS
Customer No. : 1818
Data sheet – STRAINER SIZE : HFO Discharge (Heater set) 150 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.	HO21A,HO21B	
03	BHEL Matl. Code	A181814203001001	
04	Quantity	Two	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	HFO	
09	Flow Maximum	1480 LPM	
10	Pour point	57	
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	*(minimum two times the line size)	
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 gasket	
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	2-42-000-02300	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



TOS:400/DUPLEX/00
SHEET: 9 of 11

5.3 PROJECT RELATED INFORMATION

Project Name : N.CHENNAI 1x800MW TPS
Customer No. : 1818
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	A181814220001001	
04	Quantity	ONE	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	HFO	
09	Flow Maximum	1110 LPM	
10	Pour point	57	
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	*(minimum two times the line size)	
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 gasket	
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	2-42-000-02300	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



TOS:400/DUPLEX/00
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5.4 PROJECT RELATED INFORMATION

Project Name : N.CHENNAI 1x800MW TPS
Customer No. : 1818
Data sheet – STRAINER SIZE : Drain oil suction 50 NB 150#(Pump House)

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

	Description	BHEL requirement	Vendor confirmation
01	Service	Drain oil Delivery	
02	Tag No.	HO63A	
03	BHEL Matl. Code	A181814220002001	
04	Quantity	one	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	Drain Oil	
09	Flow Maximum	72 LPM	
10	Pour point	57	
11	Operating Pressure	6	
12	Flow Temperature	55-67	
13	Flow Sp. gravity	0.95	
14	Flow viscosity	500 CST	
15	Line size	NB 50	
16	Body size	*(minimum two times the line size)	
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 gasket	
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	½" SCH40,100mm	
40	Pressure gauge	1" SCH40, 100 mm	
41	Testing code	ASME SEC VIII & IX	
42	Dimensional Drawing	2-42-000-02298	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



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SHEET: 11 of 11

5.4 PROJECT RELATED INFORMATION

Project Name : N.CHENNAI 1x800MW TPS
Customer No. : 1818
Data sheet – STRAINER SIZE : Drain oil suction 50 NB 150#(Boiler Front)

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

	Description	BHEL requirement	Vendor confirmation
01	Service	Drain oil Delivery	
02	Tag No.	HO63A1	
03	BHEL Matl. Code	A181814220002002	
04	Quantity	one	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	Drain Oil	
09	Flow Maximum	72 LPM	
10	Pour point	57	
11	Operating Pressure	6	
12	Flow Temperature	67	
13	Flow Sp. gravity	0.95	
14	Flow viscosity	500 CST	
15	Line size	NB 50	
16	Body size	*(minimum two times the line size)	
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 gasket	
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	Not Required	
36	Equalising valve	Required, specify size	
37	IN / OUT nozzle	50 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	2-42-000-02298	

* Vendor to specify

FUEL SYSTEMS**PRODUCT ENGINEERING (FOSSIL BOILERS)****TOS:400/DUPLEX/00****SHEET: 6 of 8****PROJECT RELATED INFORMATION**

5.1 Project Name : TELANGANA STPP

5.2 Customer No. :1819 &1820

5.3 Data sheet – STRAINER SIZE : Drain Oil Suction NB50 150LBS

	Description	BHEL Requirement	Vendor Confirmation
01	Service	Drain Oil Suction	
02	Tag No.	LO63A & LO63A1	
03	BHEL Matl. Code	L181914220008001-2NO & L182014220008001-1NO	
04	Quantity	3 NO	
05	Make		
06	Production Sl. No.		
07	Model No.		
08	Line Fluid	DO	
09	Flow Maximum	67 LPM	
10	Pour point	12-21 Deg.C	
11	Operating Pressure max.	6 Bar	
12	Flow Temperature max.	50 Deg.C	
13	Flow Sp. gravity	0.83	
14	Flow viscosity max.	15.7cST(LFO)	
15	Line size	NB50	
16	Body size	NB150	
17	Body rating	ANSI 150LBS	
18	Body material		
19	Cover material		
20	Cock material		
21	Gasket material	Non Asbestos – Oil Grade	
22	Body test pressure	9 Bar	
23	Cock seat test pressure	6 Bar	
24	Cock leak rate		
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 Bar for given Flow & cST	
31	DP at 50% clogged	< 0.35 Bar for given Flow & cST	
32	Max. allowable DP		
33	Mesh material		
34	Support gauze material		
35	Steam Jacketing	Not Required	
36	Equalising valve	Required	
37	IN / OUT nozzle	NB 50 / 150LBS	
38	Drain	1/2" Sch 40, 100mm long	
39	Vent	1/2" Sch 40, 100mm long	
40	Pressure gauge	1/2" Sch 40, 100mm long	
41	Testing code	ASME SEC VIII	
42	Dimensional Drawing No.	2-42-000-02299	
5.4	Special requirements, if any		-

FUEL SYSTEMS**PRODUCT ENGINEERING (FOSSIL BOILERS)****TOS:400/DUPLEX/00****SHEET: 7 of 8****PROJECT RELATED INFORMATION**

5.1 Project Name : TELANGANA STPP

5.2 Customer No. : 1819

5.3 Data sheet – STRAINER SIZE : LFO discharge NB100 300LBS

	Description	BHEL Requirement	Vendor Confirmation
01	Service	LFO /HSD delivery	
02	Tag No.	LO27A	
03	BHEL Matl. Code	L181914220010001& L182014220010001	
04	Quantity	2 NO'S	
05	Make		
06	Production Sl. No.		
07	Model No.		
08	Line Fluid	LFO/HSD	
09	Flow Maximum	1120 LPM	
10	Pour point	12-21 Deg.C	
11	Operating Pressure max.	25 Bar	
12	Flow Temperature max.	50 Deg.C	
13	Flow Sp. gravity	0.83	
14	Flow viscosity max.	15cST	
15	Line size	NB100	
16	Body size		
17	Body rating	ANSI 300LBS	
18	Body material		
19	Cover material		
20	Cock material		
21	Gasket material	Non Asbestos – Oil Grade	
22	Body test pressure	38 Bar	
23	Cock seat test pressure	25 Bar	
24	Cock leak rate		
25	No. of filter sections per		
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 Bar for given Flow &	
31	DP at 50% clogged	< 0.7 Bar for given Flow &	
32	Max. allowable DP		
33	Mesh material		
34	Support gauze material		
35	Steam Jacketing	Not Required	
36	Equalising valve	Required	
37	IN / OUT nozzle	NB 100 / 300LBS	
38	Drain	1/2" Sch 40, 100mm long	
39	Vent	1/2" Sch 40, 100mm long	
40	Pressure gauge	1/2" Sch 40, 100mm long	
41	Testing code	ASME SEC VIII	
42	Dimensional Drawing No.	2-42-000-02297	
5.4	Special requirements, if any		

FUEL SYSTEMS**PRODUCT ENGINEERING (FOSSIL BOILERS)**TOS:400/DUPLEX/00
SHEET: 8 of 8**PROJECT RELATED INFORMATION**

- 5.1 Project Name : TELANGANA STPP
5.2 Customer No. : 1819
5.3 Data sheet – STRAINER SIZE : LFO Suction NB300 150LBS

	Description	BHEL Requirement	Vendor Confirmation
01	Service	LFO /HSD Suction	
02	Tag No.	LO01A, LO01B, LO01C	
03	BHELMatl. Code	A181914201001001	
04	Quantity	3 NO'S	
05	Make		
06	Production Sl. No.		
07	Model No.		
08	Line Fluid	LFO/HSD	
09	Flow Maximum	1385 LPM	
10	Pour point	12-21 Deg.C	
11	Operating Pressure max.	6 Bar	
12	Flow Temperature max.	50 Deg.C	
13	Flow Sp. gravity	0.83	
14	Flow viscosity max.	15cST	
15	Line size	NB300	
16	Body size		
17	Body rating	ANSI 150LBS	
18	Body material		
19	Cover material		
20	Cock material		
21	Gasket material	Non Asbestos – Oil Grade	
22	Body test pressure	9 Bar	
23	Cock seat test pressure	6 Bar	
24	Cock leak rate		
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 Bar for given Flow &	
31	DP at 50% clogged	< 0.35 Bar for given Flow &	
32	Max. allowable DP		
33	Mesh material		
34	Support gauze material		
35	Steam Jacketing	Not Required	
36	Equalising valve	Required	
37	IN / OUT nozzle	NB 300 / 150LBS	
38	Drain	1/2" Sch 40, 100mm long	
39	Vent	1/2" Sch 40, 100mm long	
40	Pressure gauge	1/2" Sch 40, 100mm long	
41	Testing code	ASME SEC VIII	
42	Dimensional Drawing No.	2-42-000-02299	
5.4	Special requirements, if any		

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



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5.0 SECTION

5.1 PROJECT RELATED INFORMATION

Project Name : UPPUR 2x800MW TPS
Customer No. : 1821&1822
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,HO01C	
03	BHEL Matl. Code	A182114202001001	
04	Quantity	THREE	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	HFO	
09	Flow Maximum	1150 LPM	
10	Pour point	18	
11	Operating Pressure	6	
12	Flow Temperature	55-60	
13	Flow Sp. gravity	0.98	
14	Flow viscosity (max)	500 CST	
15	Line size	NB 300	
16	Body size	* (minimum two times the line size)	
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 gasket	
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	2-42-000-02298	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



TOS:400/DUPLEX/00
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5.2 PROJECT RELATED INFORMATION

Project Name : UPPUR 2X800MW TPS
Customer No. : 1821&1822
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, HSD SUCTION	
02	Tag No.	LO01A,LO01B,LO01C	
03	BHEL Matl. Code	A182114201005001	
04	Quantity	THREE	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	LFO, HSD	
09	Flow Maximum	320 LPM	
10	Pour point	12-21	
11	Operating Pressure	6	
12	Flow Temperature	50	
13	Flow Sp. gravity	0.83	
14	Flow viscosity	2-15 CST	
15	Line size	NB 150	
16	Body size	* (minimum two times the line size)	
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 gasket	
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	2-42-000-02299	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



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5.3 PROJECT RELATED INFORMATION

Project Name : UPPUR 2x800MW TPS
Customer No. : 1821&1822
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	A182114220001001	
04	Quantity	ONE	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	HFO	
09	Flow Maximum	960 LPM	
10	Pour point	18	
11	Operating Pressure	30	
12	Flow Temperature	145	
13	Flow Sp. gravity	0.950	
14	Flow viscosity	20 CST	
15	Line size	NB 100	
16	Body size	*(minimum two times the line size)	
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 gasket	
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	2-42-000-02300	

* Vendor to specify

FUEL SYSTEMS
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5.4 PROJECT RELATED INFORMATION

Project Name : UPPUR 2x800MW TPS
Customer No. : 1821&1822
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	Drain oil Delivery	
02	Tag No.	HO63A, HO63A1	
03	BHEL Matl. Code	A182114220002001	
04	Quantity	TWO	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	Drain Oil	
09	Flow Maximum	72 LPM	
10	Pour point	18	
11	Operating Pressure	6	
12	Flow Temperature	55-60	
13	Flow Sp. gravity	0.98	
14	Flow viscosity	500 CST	
15	Line size	NB 50	
16	Body size	*(minimum two times the line size)	
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 gasket	
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	½" SCH40,100mm	
40	Pressure gauge	1" SCH40, 100 mm	
41	Testing code	ASME SEC VIII & IX	
42	Dimensional Drawing	2-42-000-02298	

* Vendor to specify

FUEL SYSTEMS
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TOS:400/1816/1817/00
SHEET: 6 of 10

5.0 SECTION

5.1 PROJECT RELATED INFORMATION

Project Name : Krishnapatnam 1 X 800 MW and Vijaywada 1 X 800 MW
Customer No. : 1816 and 1817
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	A181614202001001, A181714202001001	
04	Quantity	FOUR (2+2)	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	HFO	
09	Flow Maximum	1255 LPM	
10	Pour point	18	
11	Operating Pressure	6	
12	Flow Temperature	55-60	
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 gasket	
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	2-42-000-02298	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



TOS:400/1816/1817/00
SHEET: 7 of 10

5.2 PROJECT RELATED INFORMATION

Project Name : Krishnapatnam 1 X 800 MW and Vijaywada 1 X 800 MW
Customer No. : 1816 and 1817
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, HSD SUCTION	
02	Tag No.	LO01A, LO01B	
03	BHEL Matl. Code	A181614201005001, A181714201005001	
04	Quantity	FOUR (2+2)	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	LFO, HSD	
09	Flow Maximum	435 LPM	
10	Pour point	12-21	
11	Operating Pressure	6	
12	Flow Temperature	50	
13	Flow Sp. gravity	0.83	
14	Flow viscosity	2-15 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 gasket	
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	2-42-000-02299	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



TOS:400/1816/1817/00
SHEET: 8 of 10

5.3 PROJECT RELATED INFORMATION

Project Name : Krishnapatnam 1 X 800 MW and Vijaywada 1 X 800 MW
Customer No. : 1816 and 1817
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	A181614203001001, A181714203001001	
04	Quantity	FOUR (2+2)	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	HFO	
09	Flow Maximum	1000 LPM	
10	Pour point	18	
11	Operating Pressure	30	
12	Flow Temperature	125	
13	Flow Sp. gravity	0.950	
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 gasket	
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	2-42-000-02300	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



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5.4 PROJECT RELATED INFORMATION

Project Name : Krishnapatnam 1 X 800 MW and Vijaywada 1 X 800 MW
Customer No. : 1816 and 1817
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	A181614220001001, A181714220001001	
04	Quantity	TWO (1+1)	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	HFO	
09	Flow Maximum	1000 LPM	
10	Pour point	18	
11	Operating Pressure	30	
12	Flow Temperature	145	
13	Flow Sp. gravity	0.950	
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 gasket	
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	2-42-000-02300	

* Vendor to specify

FUEL SYSTEMS
PRODUCT ENGINEERING (FOSSIL BOILERS)



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5.5 PROJECT RELATED INFORMATION

Project Name : Krishnapatnam 1 X 800 MW and Vijaywada 1 X 800 MW
Customer No. : 1816 and 1817
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	Drain oil Delivery	
02	Tag No.	HO63A, HO63A1	
03	BHEL Matl. Code	A181614220002001, A181714220002001	
04	Quantity	FOUR (2+2)	
05	Make	*	
06	Production Sl. No.	*	
07	Model No.	*	
08	Line Fluid	Drain Oil	
09	Flow Maximum	72 LPM	
10	Pour point	18	
11	Operating Pressure	6	
12	Flow Temperature	55-60	
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 gasket	
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	½" SCH40,100mm	
40	Pressure gauge	1" SCH40, 100 mm	
41	Testing code	ASME SEC VIII & IX	
42	Dimensional Drawing	2-42-000-02298	

* Vendor to specify

**SPECIFICATION FOR FUEL OIL INTERRUPTION FREE DUPLEX TYPE INTEGRAL
CHANGE OVER COCK STRAINER**

1. BINDING DOCUMENTS:

This specification TOS: 400/DUPLEX/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 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/HPS/Drain oil. The fuel oil strainer procured for LFO application shall be suitable for LFO/LDO/HSD.
- b) Duplex, basket type of compact design with 6-Port integral changeover cock. If alternate change over mechanism is offered, vendor shall furnish details of the mechanism including cross-section drawings and reference list. The change over mechanism shall facilitate easier, trouble free operation without any flow interruption.
- 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 or wheel with suitable mechanism. One lever / wheel operation shall ensure the change-over operation without flow interruption. The changeover operation shall be smooth and easy to operate. Vendor shall provide suitable gear arrangement, if required to reduce the manual effort during the 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. The type of strainer suction or discharge will be specified in section 5.
- 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 320°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
 - v. LFO discharge – 250 microns
- n) Flange gaskets provided shall be suitable for oil service and shall not have any damages. All gaskets shall be of spiral wound type suitable for the intended service. Selected gaskets shall be of standard nature as per ASME B16.20. . After hydraulic test of strainer assembly, the gaskets shall be replaced by a defect free new spiral wound gaskets.
- 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.

3.0 DOCUMENTS TO BE SUBMITTED

3.1 Along with Offer.

- 3.1.1 Compliance to the specification TOS: 400/DUPLEX/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 sizes.
- 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 sizes.
- 3.1.6 Pressure drop calculations for all the sizes.
- 3.1.7 Filled in data sheet given in Section 5.

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 smoothened 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, de-rusted 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 crate 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.