

Scope of Enquiry
Item Name: Duplex Filter (JO)
Projects: UKAI R&M Project

E-bids on GeM portal are invited from bidders for the supply of Duplex Filter (JO) as per Var-10 OF DOCUMENT 4-11934-87010 and Spec ST 46056 Rev-03 for UKAI R&M Project, as per requirement mentioned below:

Sl. No.	Material Code & Item Description	Total Quantity (set)	Lot No.	Date for Supply Completion
1	W90311934463 DUPLEX LIFTING OIL FILTER AS PER VARIANT 10 OF DOCUMENT 4-11934-87010 & Spec ST 46056 rev-03	2 Nos	1	06.02.2024
			2	06.02.2024
2	W90318103257 Spare: DP Switch (same as supplied with DUPLEX LIFTING OIL FILTER as item 1)	2 Nos	1	15.07.2024
			2	15.07.2024

Consignee Details:

CHIEF ENGINEER (Gen.) GUJRAT STATE ELECTRICITY CORPORATION LIMITED UKAI R&M STORE,
THERMAL POWER STATION UKAI, DIST-TAPI, P.O. UKAI DAM,
TAL-FORT-SONGADH PIN-394680, GUJRAT

Annexure-A

Buyers Specific Additional Terms & Conditions

1.	Terms	Description	Your confirmation
2.	Confirmation to compliance of General terms and conditions on GeM 4.0 (Version 1.12)	General terms and conditions on GeM 4.0 (Version 1.12) or subsequent rules/policies issued by GeM shall be applicable. Please confirm.	
3.	Public Procurement (Preference to Make in India)	For this procurement, the local content to categorize, a supplier as a Class-I local supplier/ Class-II local Supplier/Non-Local supplier and purchase preference to Class-I local supplier, is as defined in Public Procurement (Preference to Make in India), PPP-MII Order No. P-45021/ 2/ 2017-PP (BE-II) dtd. 04/06/2020 issued by DPIIT. In case of subsequent Orders issued by the respective Nodal Ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of Part-II bids against this NIT.	
		Vendor to submit tender specific self-certificate in line with PPP-MII Order No. P-45021/ 2/ 2017-PP (BE-II) dtd. 04/06/2020 clearly indicating percentage of local content. Please Confirm	
4.	Pre-Qualification Requirements (PQR)	The Pre-Qualification Requirements have been compiled and submit filled copy of Table -1 and supporting PO copy, customer acceptance, approved GA drawing etc. All the bidders should ensure submission of complete details and documents as called for in these requirements. The Offers submitted by the bidders would be scrutinized with respect to Pre-Qualification Requirements first. Techno-Commercial offer of only those bidders shall be evaluated who meet the Pre-Qualification Requirements.	

5.	Customer Approval	<p>Procurement shall be done from customer approved vendor. Bidder to submit their credentials (Company Profile, Supply experience with BHEL as well as other customer, End user certificate, Copy of ISO certification, Manufacturing and testing facilities etc.) for Customer approval.</p> <p>Part-2 (price bid) will be opened only for customer approved vendor.</p>	
6.	Special Instruction of Technical requirement	<ol style="list-style-type: none"> 1. Material shall be as per Var-10 of Spec ST46056 Rev-03 and addendum - 4-11934-87010. Vendor to submit endorsed copy of Spec ST46056 Rev-03 with filled datasheet (page-06 of spec). 2. NOISE LEVEL FOR CONTINUOUSLY OPERATING EQUIPMENT SHALL NOT BE MORE THAN 85 dBA AT A DISTANCE OF 1M AND HEIGHT 1.5 M FROM EQUIPMENT. 3. PAINTING SCHEME SHALL BE PRIMER 35 MICRON DFT, INTERMEDIATE 70 MICRON DFT FINAL 75 MICRON DFT. 4. Test and Guarantee certificates are required to be submitted. Please confirm. 5. One set mandatory spare i.e. Filter elements in one housing O ring/ gaskets/ seal ring of complete filter to be supplied with duplex filter. Please confirm 6. Operational Manual and instructions to be send to BHEL Haridwar in Hard and soft. 7. Vendor to insure proper and sturdy packing suitable for handling at port and during transportation up to site in healthy condition. Please confirm 8. Spare DP switch mat code W90318103257 shall be supplied as per BOM of Duplex filter main item. Please confirm 	
7.	Specification confirmation	Kindly confirm that quoted offer by you have been complied all technical requirements as given in tender documents and submit all documents to BHEL as per tender specifications and drawings without any deviations.	
8.	Quality Requirements	<p>Vendor to submit endorsed quality Plan "QP QA_BI_QP_021, Rev 02" for BHEL/ Customer approval.</p> <p>Vendor has to confirm inspection shall be done by BHEL nominated inspection agency "INTERTEK" and customer, as per Customer approved quality Plan.</p>	
9.	Price basis & Evaluation Currency	<p>Prices should be quoted on F.O.R. Destination up to UKAI R&M Project basis i.e. including freight, packing & forwarding charges, GST etc. Please mention here the applicable GST rate included in the price quoted by you.</p> <p>The evaluation currency for this tender shall be INR.</p>	
10.	Transit Insurance	Transit insurance shall be arranged by BHEL and not to be included in the prices.	
11.	Evaluation criteria	Evaluation will be done on the basis of total landed cost to BHEL, with cost involved for delivery up to BHEL Ukai project site (considering material cost, taxes & duties, Freight etc.	
12.	Payment Terms	<p>Payments shall be made to the Seller within 90 days of issue of consignee receipt-cum-acceptance certificate (CRAC) and on-line submission of bills. For Micro/ small & Medium (covered under MSME Act), payment will be made within 45 days & 60 days respectively after on-line submission of bills and issue of consignee receipt-cum-acceptance certificate (CRAC).</p> <p>Vendor to submit MSME certificate with offer in view of above.</p>	

13.	Document submission for approval from BHEL	Drawings/Data sheets, Quality Plan etc. as called for in the specifications shall be submitted for approval to BHEL for BHEL/customer approval within 15 days of purchase order . Approved documents/QP are to be followed by the supplier without any price implication. Any delay in delivery on account of late submission of drawings/data sheets/QAP/documents shall be to vendors account. BHEL will arrange the approval of the drawings/data sheets/ documents within 15 days of their receipt provided those are complete in all respect. Delays in approval shall be dealt on merit basis.	
14.	Manufacturing Period	Kindly quote your minimum delivery period in no. of weeks . From the date of Manufacturing Clearance.....	
15.	MDCC clause	Material shall be dispatched only after issue of material dispatch clearance certificate (MDCC) by BHEL. All test certificates and relevant documents are to be sent to BHEL before dispatch of material for issue of MDCC, which will be issued after review of test certificates etc. MDCC will be issued within 07 days of receipt of these documents once found complete in all respects. In case of any delay on account of BHEL in issuing MDCC, delivery shall be extended by no. of days in excess of 7 days taken by BHEL in issuing MDCC and delays shall be dealt on merit basis. Material is to be dispatched within 07 days of receipt of MDCC from BHEL without waiting for PO amendment.	
16.	Guarantee	Kindly confirm that all equipment shall be guaranteed for trouble free & satisfactory operation for minimum period of 18 months from the date of delivery or 12 months from date of commissioning, whichever is earlier. Please note that offers with guarantee period lesser than above mentioned guarantee period may result in rejection of the offer.	
17.	Liquidated Damages	If the Seller/Service Provider fails to deliver any or all of the Goods/Services within the original/re-fixed delivery period(s) specified in the contract, the Buyer will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered under Force Majeure conditions aforesaid, @ 0.5% of the contract value of delayed quantity per week or part of the week of delayed period as pre-estimated damages not exceeding 10% of the contract value of delayed quantity without any controversy/dispute of any sort whatsoever. The date of dispatch mentioned on LR/GR would be treated as the date of delivery for penalty purposes.	
18.	Arbitration:	In case of any dispute arising out of as in connection with this contract, the same shall be referred to arbitration under Arbitration & Conciliation Act 1996 of a sole arbitrator who shall be appointed by mutual consent of the parties. The seat & venue of arbitration shall be Haridwar. The proceedings shall be conducted in English. The Governing law of contract shall be the substantive law of India.	
19.	Risk Purchase:	In case of abnormal delays (beyond the maximum late delivery period as per Penalty clause) in supplies /defective supplies or non-fulfillment of any other terms and conditions given in Purchase Order, BHEL may cancel the Purchase Order in full or part thereof, and may also make the purchase of such material from elsewhere /alternative source at the risk and cost of the supplier. BHEL will take all reasonable steps to get the material from alternate source at optimum cost. If bidder does not agree to the above Risk Purchase Clause, BHEL reserves the right to reject the offer. In case for compelling reasons BHEL accepts the offer without acceptance of this clause by the bidder and in the eventuality of Risk Purchase, appropriate action will be taken as per BHEL extant rules. This will be without prejudice to any other right of BHEL under the contract.	

20.	Firm prices	Price will remain firm and fixed during entire execution of tender/supply.	
21.	BID to RA	Applicable as per GeM NIT	
22.	Contact details	Please provide 2 nos of contact details (email id and contact no.) for clarifications. 1..... 2.....	

SPECIAL NOTE FOR BIDDERS:

Following documents are an integral part of this tender enquiry and endorsed copies of these documents (duly signed and stamped on each page, as a token of acceptance) are to be uploaded along with offer on GeM procurement portal.

1. Please submit signed & Stamped copy (each page) of duly filled of confirmation column of “Buyers Specific Terms & Conditions (Annexure-A)” and its clause wise supporting documents where required.
2. Please submit signed & stamped copy (each page) of PQR documents with proper filled information and related supporting documents as mentioned in PQR.
3. Please submit endorsed copy of quality plan “QP QA_BI_QP_021, Rev02”.
4. Please submit MSE certificate (if have) and self-declaration of MII class certificate.
5. Please provide details of offering equipment.
6. Bidder firm credentials for vendor approval by customer.

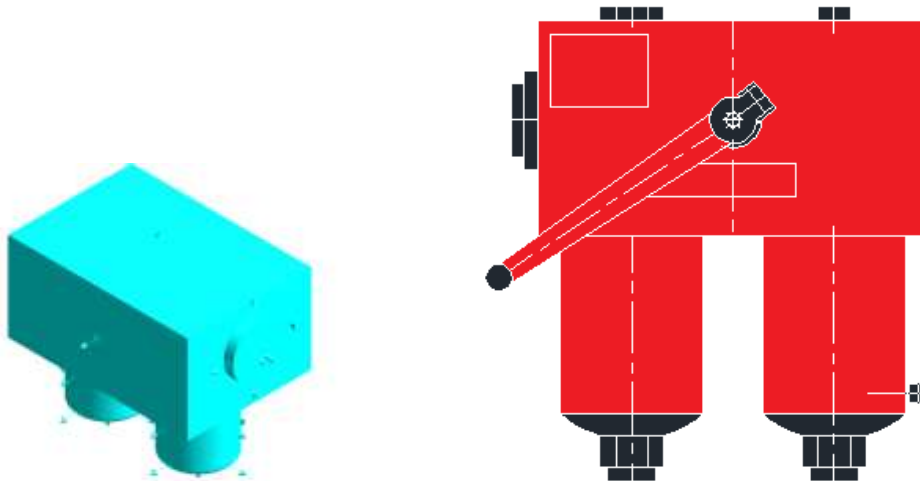
**PRE-QUALIFICATION REQUIREMENT
 DUPLEX FILTER JACKING OIL**

DOCUMENT NO.
PED/JOP/PQR/001
 Rev:00 Dt:26.09.2023

Brief Introduction: - Duplex Filter Jacking Oil is used to filter oil (ISO VG 46) that is used for lifting Turbine rotor.

One side of duplex filter comes in operation with start of any one of the jacking oil pumps and remains in service as long as any one of the jacking oil pumps runs. The other side of the Duplex filter remains as a Stand-by and is brought into operation when the running side gets saturated with dirt and other contaminants. This saturation is reflected by the differential pressure read across the inlet and outlet of filter. The stand by filter is kept in primed condition (by equalizing valve) to facilitate the immediate change over. The change over device must prevent both the filters being off at the same time. The change over should be possible by the operation of single hand wheel/lever.

An Indicative Drawing of Duplex Filter (jacking Oil) is shown below.



Acceptance Criteria for vendor

1. Vendor/its principal should have experience of engineering, manufacturing, testing and supply/execution in at least 1 project (not before 9 years of date of enquiry) satisfying the minimum acceptance criteria mentioned against each row in Table-1. Filter should have been supplied in power plants (gas, thermal or nuclear with rating ≥ 150 MW).
2. Vendor to furnish the details against each column in Table-1, of the projects executed by them satisfying clause-1 above.

From the experience list furnished in Table-1

- a. Vendor to furnish customer certificate / contact details (Name, email, phone No, designation etc) of authority where work executed, for at least any one of the executed project.
- b. Vendor to submit PO copy / copies and a letter on his letter head that he has successfully executed the project.

Table-1



BHARAT HEAVY ELECTRICALS LIMITED, HARIDWAR
Turbine Layout Group

**PRE-QUALIFICATION REQUIREMENT
DUPLEX FILTER JACKING OIL**

DOCUMENT NO.
PED/JOP/PQR/001
Rev:00 Dt:26.09.2023

	Minimum acceptance criteria	Project 1 (to be filled by Vendor)	Project 2 (to be filled by Vendor) (optional)	Project 3 (to be filled by Vendor) (optional)
End customer Name	-			
Inlet- Outlet Size	Min 25 NB			
Design Pressure	Min 250 kg/cm ²			
Design Temp.	40-70 °C			
Type of fluid	Turbine oil VG46			
Differential pressure Switch cum Indicator Across filter	DP range 0 -4.2 Kg/Cm ²			
Material of construction of body	ASTM A 105 or equivalent or better			
Material of Filter element	Stainless Steel			
Application	To filter jacking oil, that is used for lifting rotors of steam/gas/nuclear turbines.			
Year of Execution	Within 9 years of date of enquiry.			
No. of PO copies	Min 1 No			
Quality of Filtration	25 microns			
Flow	Min 7 m ³ /hr			
Contact details, Telephone no's & Email id of End User	-			

Note:-

1. All documents should be self-certified by vendor.
2. BHEL reserves the right to verify the information submitted by vendor. Submission of false/incorrect information shall lead to rejection of offer and shall be taken seriously by BHEL.
3. BHEL reserves the right to ask for more pertinent information /documents / clarifications. Vendor shall provide this information to BHEL in a timely manner so that project schedule doesn't hamper.
4. All the documents furnished to BHEL shall be in English language only. If the documents are not in English, then they must be accompanied with duly certified English translations of the same.

Deptt	Worked By	26.09.23	Approved By
	<i>rajeev kumar</i>		<i>Anuj Jain</i>
TLG	RAJEEV KUMAR (MGR)		ANUJ JAIN (SDGM)

सामग्री सूची संख्या को अधिकृत करता है
SUPERSEDES INVENTORY NO.

TECHNICAL SPECIFICATION OF DUPLEX OIL FILTER

1.0 INTENT OF SPECIFICATION :- The specification is intended to cover design, manufacturing, assembly, testing and supply of Duplex filter complete with commissioning spares(including one set of filter element and one set of all seal gaskets), special tools & tackles & differential pressure switch cum indicator(as per specification given in Anexure-1). The duplex filter is intended for operation in conjunction with Steam Turbines and should be suitable for operation at an ambient temperature of 60°C & 95% humidity.

2.0 FUNCTION :- One side of duplex filter comes in operation with the start of any one of the lubricating oil pumps and remains in service as long as any one of the lubricating oil pump runs. The other side of the duplex filter remains as a stand-by and is brought into operation when the running side gets saturated with dirt and other contaminants which is reflected by the differential pressure read across the inlet and outlet of filter.
The stand by filter is kept in primed condition to facilitate the immediate change over. The change over device must prevent both the filters being off at the same time. The change over should be possible by the operation of single hand wheel.

3.0 OIL SPECIFICATION :- The specification of oil to be filtered complies with IS : 1012 or ISO VG 46. The equivalent grades of various oil suppliers are servoprime 46 of M/s Indian Oil Corporation and Turbinol – 47 of M/s Hindustan Petroleum Corporation.

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- Kinematic viscosity at 50°C : 28 CS
- Specific gravity at 50°C : 0.852
- Flash point : 200°C (Min.)
- Operational temperature : 40°C
- Pour point : -6.0°C (Max.)

3.1 COMPLIANCE WITH NATIONAL STANDARD ——— NIL ———

4.0 FILTER DATA :-

- Type : Duplex
- Inlet/Outlet Nozzles : Flanged

Variant no.	01	02	03	04	05	06	07	08
Capacity (M ³ /hr)	40	130	250	7	60	170	6	130
Nozzle size Nb(mm)	100	125	200	25	125	150	25	150
Design Pr. (Kg/cm ²)	12		250		12		250	12

- Design Temperature : 50° C
- Actual pressure drop cleaned condition : 4000 mm wc(Including change over valve)
- Actual pressure drop saturated condition : 12000 mm wc for var. 01 to 06 and 08
42000 mm wc for var. 04 and 07
- Quality of filtration : 37 micron

स्वत्वाधिकार एवं गोपनीय
इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है इसका प्रकाश एवं आलेख रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो म किया जाए।

हस्ताक्षर एवं दिनांक
SIGN & DATE
13.8.07

				नाम NAME	दिनांक एवं हस्ताक्षर SIGNATURE & DATE
MEMBER PSC	R.PANJA	13/8/07	अनुवादक TRANSLATED BY		
QAX	N.K. Manwani	13/8/07	निर्माणकर्ता WORKED BY	M.SINGH	13/8/07
TSX	V.K. CHAUHAN	13/8/07	जांचकर्ता CHECKED BY	S.D.ROY	13/8/07
सहमत विभाग AGREED DEPTT.	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	पर्यवेक्षणकर्ता SUPERVISED BY	S.C.A.	13/8/07
			स्वीकृति APPROVED :	A.K. JAIN	13/8/07 8:20
REV. NO. 03			निर्माण PREPARED :	STE	जारी ISSUED :
Dt 30.10.09				STE (TL)	दिनांक DATE :
					02.02.1993

सामग्री सूची संख्या
INVENTORY NO.
P-5136

5.0 DESIGN, MATERIAL & CONSTRUCTION OF FILTER :-

a) Filter element	: Wire cloth of 25 micron to 40 micron	
	: Material Stainless Steel	
	: Pleated type filter Elements are not acceptable	
	: Elements shall be cleanable type for reuse.	
b) Filter body	: Seamless pipe ASTM A 106 Gr. B or equivalent for var .01, 02, 03, 05,06, 08 and ASTM A 105 or equivalent for var. 04 & 07.	
c) Change over Valve	: Type	Ball valve
	: Body Material	ASTM 216 Gr. B or equivalent
	: Internals	Stainless Steel
d) Sealings	: VITON	

Materials of other components shall be selected by the bidder. The materials of construction of filter shall be such as to resist corrosion & erosion and shall give a long trouble free service. No cast iron components shall be acceptable. BHEL/owner reserves the right to ask for changes in material.

At suitable points on filter, lifting lugs shall be provided for ease of transportation & erection. Their locations must be shown on the dimensional drawings.

Each side of the filter shall be provided with a vent connection suitable for pipe thread R1/4" and a drain connection suitable for pipe thread R1/2" for var. 01, 04 & 07 and R1" for var.02, 03, 05, 06 & 08. Vent connections should necessarily be provided on the sides of each filter chamber top flange to facilitate removal of filter cover for cleaning / maintenance without removal of vent piping connected to this connection.

Priming line with a valve shall be provided between two filter chambers. The filter as per var. 01, 02, 03, 05, 06, 08 is envisaged to be mounted in a tray and the distance between legs of filter shall be above inlet connection. Other dimensions shown in the sketch are binding.

The filter as per var. 04 & 07 shall be provided with suitable arrangement to support it with Main Oil Tank /steel structure.

6.0 QUALITY ASSURANCE, INSPECTION AND TESTINGS :

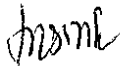
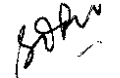
- 6.1 The bidder shall submit quality plan along with his offer format for BHEL/Owner's approval.
- 6.2 The particulars of the proposed shop tests and procedures for the tests shall be submitted to BHEL/Owner for approval along with Quality Plan.
- 6.3 The filter shall be dispatched only after inspection, approval of test certificates and clearance from BHEL/Owner.
- 6.4 Wherever welding is involved, it is to be carried out by qualified welders and weld procedures are to be qualified as per ASME code section-IX.
- 6.5 The minimum tests/checks to be carried out on the Duplex Oil Filter are given below. BHEL/Owner reserves the right to ask for any more checks at the time of Quality Plan finalisation.

6.5.1 **Testing of materials:** The material of body, spindle, disc seat, filter elements etc. shall be tested as per relevant standard for its chemical composition, mechanical properties viz. YS. UTS, impact, %age elongation, reduction in areas etc and NDT . The test certificates for all the tests indicating actual test results should be furnished. Supplier shall give the type and details of NDT to be carried out along with the offer. Material certificate of conformance & acceptable in case of M/s hydac & M/s EPE & BOLL & KIRCH.
 * Ductile cast iron (EN-GJS-400-10)

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स्वाधिकार एवं गोपनीय
 इस दस्तावेज में दी गई सूचना भारत भारी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रयोग केवल इस दस्तावेज में ही किया जा सकता है अन्यथा इसका उपयोग किसी भी रूप में किये जाने पर कानून की कार्यवाही की जायेगी।

संशोधन संख्या: 13/8/07
 SIGN: & DATE

संशोधन संख्या INVENTORY NO P-5136	REV. NO. 03		निर्माणकर्ता WORKED BY M.SINGH		31/7/07
			जांचकर्ता CHECKED BY SDR.		31/7/07

उत्पाद मानक

ST46056



**STEAM TURBINE ENGINEERING
PRODUCT STANDARD**

पृष्ठ का

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दिनांक एवं हस्ताक्षर
SIGN & DATE

सुपरसेड्स
INVENTORY NO

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इस दस्तावेज में की गई सूचना भारत भारत इलेक्ट्रिक लिमिटेड की संपत्ति है। इस दस्तावेज को किसी भी प्रकार में सीधे या अप्रत्यक्ष रूप से किसी भी प्रकार में उपयोग करने से बचना चाहिए।

दिनांक एवं हस्ताक्षर
SIGN & DATE

सुपरसेड्स
INVENTORY NO

6.5.2 All butt welds shall be subjected to 10% RT and all fillet welds to 100% MPI. All welding shall be carried out by qualified procedures and welders.

6.5.3 Following tests shall be carried out during various stages of manufacturing at bidder's works :-

- a) Check for dimensions of all the component.
- b) **Hydraulic Test** : The body of filters shall be tested at one and half times the design Pressure in fully assembled condition for 5 mts.
- c) **Seat leakage test** : It shall be carried out at the design pressure for 5 minutes. Acceptance norms shall be nil leakage.
- d) **Functional Test** : It shall demonstrate smooth operation of change over valve.
- e) **Verification of mesh size of element** : By recognised lab.
- f) **Collapsibility Test** : A type test at a differential pressure of 5.0 kg/cm² for var 01,02,03,05,06 & 160.0 kg/cm² for variant 04 & 07. This test shall be conducted as per ISO : 2941.
- g) **Pressure Drop Test** : As per ISO 3968. The pressure drop in clean condition should not exceed 0.4kg/cm² including change over valve. This is type test.

7.0 DOCUMENTS:

A. Along with offer :

- i) Detailed catalogue with electrical contact rating.
- ii) Assembly drawing with part lists, material of each part, nozzle sizes & their coordinates, leg spacing, cross sectional arrangement incorporating overall dimensions.
- iii) Pressure loss curve for normal flow at different flow areas.
- iv) Details of priming connection, change over valve, differential pressure switch, flow direction indicator, etc.
- v) Quality plan.
- vi) Testing procedures.
- vii) List of commissioning spares which will include one set of all type of seals/gaskets & one filter element.
- viii) List of spares for 5 years of operation.
- ix) List of special erection/maintenance tools.
- x) Type test certificate for collapsibility test and pressure drop test shall be submitted alongwith the offer.

B. After Placement of order

- i) Documents listed at 7.0(A) above (for approval) 4 weeks
- ii) O & M instructions 12 weeks
- iii) Instruction on conservation and deconservation. 12 weeks

No. of copies shall be specified at the time of ordering. However if not specified, 10 copies shall be furnished by the bidder.

C. Along with Dispatch

- i) Detailed catalogue
- ii) Calibration & test certificates
- iii) Guarantee certificate
- iv) Type test certificate for degree of protection

REV. NO.

03

निर्माणकर्ता

M.SINGH

WORKED BY

[Signature]

31/7/07

जांचकर्ता

SDR.

[Signature]

31/7/07

P-5136
23/10/07

सामग्री सूची संख्या को
SUPERSEDES
INVENTORY NO.

8.0 IDENTIFICATION : The name plate of filter shall have following information

- i) Type/Designation : Duplex filter
 ii) Tag no.

Var.	01 & 05	02,03,06&08	04 & 07
Tag no.	MAV43 BT001	MAV42 BT001	MAV35 BT001

- iii) Nominal size of inlet / outlet nozzles
 iv) Press loss (in cleaned condition)
 v) Manufacturer's name
 vi) Medium
 vii) Purchase order no.
 viii) Month & year of manufacture

9.0 CLEANING, PAINTING, CONSERVATION & PACKING : The bidder shall give exact and precise details about the measures envisaged by him for surface protection. Painting of interior surface coming in contact with oil is prohibited. After testing of filter its internals shall be thoroughly cleaned, dried and conserved before packing. conservation shall be suitable for storing in saline atmosphere & for a period of 2 years before use. Filter shall be suitably packed for transportation. Instruction should be issued regarding reconsevation, deconsevation and storage of package

10.0 GENERAL : The bidder can make suitable offers even if there are minor deviations which do not effect the efficient functioning of the equipment. However the deviation must be clearly spelt the same along with the offer. The offer may not be considered if all the technical particulars and information called for in the specification are not submitted along with the offer.

11.0 GUARANTEE :

- i) The supplier shall guarantee trouble free and satisfactory operation of the equipment for a period of 18 months after delivery or 12 months after commissioning whichever is earlier.
 ii) The bidder shall guarantee the quality of filtration & pressure loss in cleaned and saturated conditions.
 iii) If during erection / commissioning at site and deficiency in parts is detected. BHEL site office shall prepare the assessment report and copy of the same shall be forwarded to the bidder. The bidder shall replace / rectify the concerned items free of charge. The bidder if he so desires may depute his representative to site at his own cost with in one week after receipt of the above report, shall be final & binding on bidder of Duplex filter.



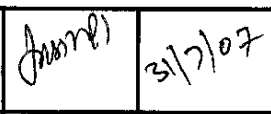
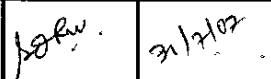
12.0 DESPATCH : The equipment along with all accessories shall be dispatched to a destination to be specified after the placement of order.

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स्वात्प्रतिकार एवं गोपनीय
 इस प्रलेख में दी गई सूचना भारत भारती इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रलेख एवं आलेख का से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए ।

हस्ताक्षर एवं दिनांक
SIGN & DATE
 13/8/07

सामग्री सूची संख्या INVENTORY NO. P-5136	REV. NO. 03		निर्माणकर्ता WORKED BY M.SINGH		31/7/07
			जांचकर्ता CHECKED BY SDR		31/7/07

दिनांक एवं हस्ताक्षर SIGN & DATE		उत्पाद मानक STEAM TURBINE ENGINEERING PRODUCT STANDARD	ST46056 पृष्ठ का Page 05 of 07	
सामग्री सूची संख्या को अधिकृत करना है SUPERSEDES INVENTORY NO.	ANNEXURE-1 <u>DIFFERENTIAL PRESSURE SWITCH CUM INDICATOR :</u>			
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	<p>1.0 The differential pressure switch shall consist of a calibrated indicator for indicating the differential pressure across each filter basket. Switch with electrical contacts shall be actuated when the differential pressure reaches preset value.</p> <p>2.0 The differential pressure switch shall be suitable for Ambient temperature : 0-60°C and Relative humidity : 95%</p> <p>3.0 Housing : Body material : Die cast aluminum alloy or stainless steel Degree of protection : IP 65 External surface : Finished with staving enamel</p> <p>4.0 Sensing element type : Diaphragm/piston</p> <p>5.0 Material of sensing element and other parts : Stainless steel AISI 304 or equivalent in contact with the service medium</p> <p>6.0 Differential pressure range : 0-1.2 kg/cm² for var. 01,02,03,05,06 & 08 0-6 kg/cm² for var. 04 & 07</p> <p>7.0 Max. static pressure : one and half times design pressure</p> <p>8.0 Set point adjustment : The switching point shall be adjusted to operate at 0.9 kg/cm² in pressure increasing direction for var. 01, 02, 03, 05, 06 & 08 .for var. 04 & 07 the switching shall be set at 4.2 kg/cm². However, the set point for variants shall be adjustable over the specified differential pressure range. There shall be proper facility with suitable lockable arrangement for set point adjustment.</p> <p>8.1 Switching repeatability : ± 1% of differential pressure range</p> <p>8.2 Accuracy : Equal or better than ± 2% at mid 50% of differential pressure range</p> <p>9.0 Electrical contact : Contact type : Snap action micro switch / Reed contact Contact material : Silver plated Contact rating : 0.25A / 120 V AC, 3W/ DC No. of Contact s : 1 No. change over type i. e. 1 SPDT Contact life : approx. (10)⁶ switching cycles.</p> <p>10.0 Electrical connection : Cable entry shall be provided with cable gland complete with neoprene grommet. Terminals shall be suitable for cable termination of 0.5 mm² cable core cross section.</p> <p>11.0 Identification Tag : In addition to the instrument name plate, one separate stainless steel tag punched with tag no. MAV 43 CP 011 for variants 01 & 05, MAV 42 CP 013 for var. 02, 03, 06 & 08 and MAV 35 CP 016 for var. 04 & 07 shall be fastened with the switch, if not possible to engrave on instrument name plate.</p>			
	स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है इसका प्रत्येक एवं अपरिच्छेद्य रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हासिलकराए हो न किया जाए।			
	दिनांक एवं हस्ताक्षर SIGN & DATE			
	सामग्री सूची संख्या INVENTORY NO.	REV. NO. 03	निर्माणकर्ता WORKED BY M.SINGH	
	P-5136		जांचकर्ता CHECKED BY SDR.	

उत्पाद मानक

ST46056



STEAM TURBINE ENGINEERING
PRODUCT STANDARD

पृष्ठ का

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दिनांक एवं हस्ताक्षर
SIGN & DATE

समूची सूची संख्या का
SUPERSEDES
INVENTORY NO

समूची सूची संख्या का
अधिकारित करता है

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स्वत्वाधिकार एवं गोपनीय

इस प्रलेख में दी गई सूचना भारत भारी इलेक्ट्रिकल्स लिमिटेड की संपत्ति है। इसका प्रयोग एवं प्रसारण केवल इस लिखित ही संज्ञा पर ही होना चाहिए। अन्य किसी भी संज्ञा पर प्रयोग, जो कि कंपनी के हित में अधिकारिक ही न किया जाए।

दिनांक एवं हस्ताक्षर
SIGN & DATE

समूची सूची संख्या
INVENTORY NO

12.0 Hydraulic impulse connection details = R1/4

DATA SHEET TO BE FURNISHED BY THE BIDDER OF DUPLEX FILTER

- | | | |
|------|--|-----------------|
| 1.0 | a) Differential pressure switch cum indicator | Yes/ No |
| | b) Connected piping & valve | Yes/ No |
| 2.0 | Priming valve & piping | Yes/ No |
| 3.0 | Legs, flange connections & other dimensions as per sketch | Yes/ No |
| 4.0 | Contract drawings & curves | Yes/ No |
| 5.0 | Commissioning spares , O & M spares for five years of operation | Yes/ No |
| 6.0 | Special erection/ Maintenance tools | Yes/ No |
| 7.0 | Quality of filtration | Micron's |
| 8.0 | Pressure loss at normal flow : | |
| | a) In cleaned condition | mm wc |
| | i) In the filter | |
| | ii) In the valve | |
| | b) In saturated condition (50% choked condition) | mm wc |
| 9.0 | Material of components as per clause-5 | Yes/ No |
| 10.0 | Weight of filter | kg |
| 11.0 | Tests to be carried out : | |
| | a) Chemical composition & Mechanical properties of components mentioned in clauses – 5 | Yes/ No |
| | b) NDT | Yes/ No |
| | c) Hydraulic test of body (filter & valve) | Yes/ No |
| | d) Functional test | Yes/ No |
| | e) Collapsibility test | Yes/ No |
| | f) Mesh size verification from recognized lab | Yes/ No |
| | g) Pressure drop test | Yes/ No |
| 12.0 | Gross filtering area | mm ² |
| 13.0 | Net filtering area | mm ² |

LIST OF CROSS REFERRED STANDARD ——— NEXT PAGE.

REV. NO.

03

निर्माणकर्ता
WORKED BY

M.SINGH

M.Singh 31/7/07

जांचकर्ता
CHECKED BY

SDR

SDR 31/7/07

13/8/07

P-5136

उत्पाद मानक

ST46056



STEAM TURBINE ENGINEERING
PRODUCT STANDARD

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दिनांक एवं हस्ताक्षर
SIGN & DATE

SUPERSEDES
INVENTORY NO.

सामग्री सूची संख्या को
अधिकृतित करता है

Cross referred standard:- IS:1012-1978
ISOV 46 ! ISO 2941, ISO 3968
AISI-321/316

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स्वत्वाधिकार एवं गोपनीय

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दिनांक एवं
SIGN & DATE

13/8/17

सामग्री सूची संख्या
INVENTORY NO.

P-5136

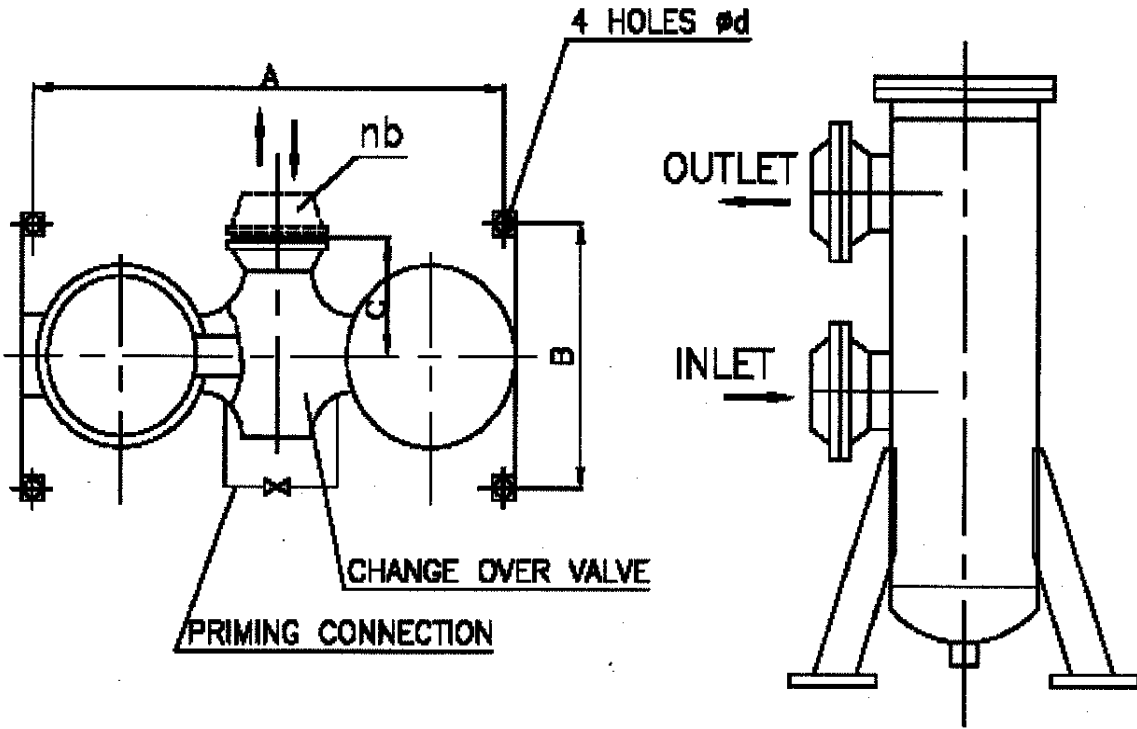
REV. NO.
03

निर्माणकर्ता
WORKED BY
M.SINGH

जांचकर्ता
CHECKED BY
SDR.

31/7/07

31/7/07



DIMENSIONS ARE INDICATIVE ONLY NOT BINDING

08	150	1120	560	255	23	DIN 2633
06	200	1180	560	285	23	
05	125	890	560	235	23	
03	200	1315	560	285	23	
02	125	890	560	235	23	
01	100	785	320	235	18	
VAR. NO.	nb	A	B	C	d	FLANGE DETAILS

DUPLEX FILTER

SUPERSEDES INVENTORY No.

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SIGN & DATE

INVENTORY

A. SCOPE OF THE DOCUMENT:
 1. This document lists down the specification and technical data to be followed for executing the order of Duplex Filters and is to be read along with ST46056.

B. VARIANT TABLE:
 Following are various variants

Variant no.	Variant 01 to 08	9	10	11	12
Material code		W90311934455	W90311934463	W90311934498	W90311934501
CBOM-VAR		81193487010-V09	81193487010-V10	81193487010-V11	81193487010-V12
Capacity		2.7 lps	3.4 lps	47.2 lps (170m3/h)	60 lps (216m3/h)
Nozzle Size		Inlet: NB40 Outlet: NB40	Inlet: NB40 Outlet: NB40	Inlet & Outlet: NB150	Inlet & Outlet: NB200
Design Pressure		250 bar	250 bar	12 bar	12 bar
Quality of Filtration (Micron rating)	For variants 1 to 8, data as per spec ST46056 shall be applicable.	25 Micron			
Pressure Drop* in bar (Clean condition)		3	3	0.4	0.4
Pressure Drop* in bar (Dirty condition)		4.2	4.2	1.2	1.2

*Pressure drop is Valid for complete unit (i.e. between inlet and outlet flange).
 Filters must be designed for twice the flow capacity which they have to withstand during flushing.

C. COMMISSIONING SPARES (to be supplied alongwith filter)

1. One set of filter elements (in one housing)
2. One set of gaskets/O rings/Seal rings (of complete filter)

D. OTHER REQUIREMENTS:-

1. Filter shall be supplied along with counter flanges.
2. Filter Variant No. 09 and 10 shall be supplied with a suitable arrangement so as to mount on an Oil Tank/steel structure.
3. Filter variant 11 and 12 shall be mounted on a tray. Legs of suitable height shall be provided.
4. Clause No. 8.2 of Annexure-1 of ST46056 is not applicable

E. The above requirements supersede suchlike requirement of ST46056. For rest of data/spec., ST46056 is applicable.

						NAME	SIGNATURE & DATE
			WORKED BY			RAJEEV/HSD	<i>[Signature]</i> 30.11.19
			CHECKED BY			A.JAIN	<i>[Signature]</i> 30.11.19
			APPROVED BY			R PANJA	<i>[Signature]</i> 30-01-19
CIE	Nirbhay Kr	<i>[Signature]</i> 30.11.19					
AGREED DEPTT	NAME	DATE & SIGNATURE					

MANUFACTURER'S NAME AND ADDRESS		STANDARD QUALITY PLAN				TO BE FILLED BY BHEL		TO BE FILLED BY BHEL				
BHEL	VENDOR'S NAME	ITEM	DUPLEX OIL FILTER (JACKING OIL)		QP NO.	QA/BI/QP/021						
					DATED	17.07.2023						
		DRG. NO.	AS PER PO		REV	02						
		SPEC.	ST46056									
		REV	AS PER PO		Page 1 of 2							
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY			REMARKS
									M	B	N	
1	2	3	4	5	6	7	8	9	D	10		11

1. MATERIAL

1.1	BODY, DISC COVER, FLANGE, SPINDLE, SEAT, MAGNETIC INSERTS	CHEMICAL COMPOSITION	MAJOR	CHEMICAL	1/HEAT	ORDERING SPEC. / BHEL APPD. DRG. & DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. & DATA SHEET	TC	✓	P	V		
		MECHANICAL PROPERTIES	MAJOR	MECHANICAL	1/HEAT	ORDERING SPEC. / BHEL APPD. DRG. & DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. & DATA SHEET	TC	✓	P	V		
1.2	FILTER ELEMENT	MESH SIZE	MAJOR	DIMENSIONS	100%	BHEL APPD DRAWING/SPEC	BHEL APPD DRAWING/SPEC	TC	✓	P	V		FROM RECOGNIZED LAB
		CHEMICAL COMPOSITION	MAJOR	CHEMICAL	1/HEAT	ORDERING SPEC. / BHEL APPD. DRG. & DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. & DATA SHEET	TC	✓	P	V		

2. IN-PROCESS INSPECTION

2.1	WELD QUALITY	RT	MAJOR	VISUAL	10% BUTT WELDS	BHEL APPD DRAWING/SPEC	BHEL APPD DRAWING/SPEC	TC	✓	P	V		
		DPT	MAJOR	VISUAL	100% FILLET WELDS	BHEL APPD DRAWING/SPEC	BHEL APPD DRAWING/SPEC	TC	✓	P	V		

3. FINAL INSPECTION

3.1	ASSEMBLY	DIMENSIONS	MAJOR	MEASUREMENT	100%	BHEL APPD DRAWING/BHEL SPEC.	BHEL APPD DRAWING/BHEL SPEC.	IR	✓	P	W		
3.2	FUNCTIONAL TEST	OPENING & CLOSING	MAJOR	VISUAL	100%	SMOOTH OPERATION OF CHANGEOVER VALVE		TC	✓	P	W		

		LEGEND: ! RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY N: CUSTOMER INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION ALL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER	FOR CUSTOMER USE	
MANUFACTURER/ SUBCONTRACTOR				APPROVED BY

MANUFACTURER'S NAME AND ADDRESS		STANDARD QUALITY PLAN				TO BE FILLED BY BHEL		TO BE FILLED BY BHEL				
BHEL	VENDOR'S NAME	ITEM	DUPLEX OIL FILTER (JACKING OIL)		QP NO.	QA/BI/QP/021						
					DATED	17.07.2023						
		DRG. NO.	AS PER PO		REV	02						
		SPEC.	ST46056									
		REV	AS PER PO		Page 2 of 2							
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY			REMARKS
1	2	3	4	5	6	7	8	9	D	10		11

3.3	BODY AND ASSEMBLED FILTER	LEAKAGE	CRITICAL	HYDRAULIC TEST	100%	BHEL APPD DRAWING/SPEC	NO LEAKAGE	TC	✓	P	W		
3.4	SEAT LEAKAGE	LEAKAGE	CRITICAL	HYDRAULIC TEST	100%	BHEL APPD DRAWING/SPEC	NO LEAKAGE	TC	✓	P	W		
3.5	COLLAPSIBILITY TEST		MAJOR	TYPE TEST		BHEL APPD DRAWING/SPEC	BHEL APPD DRAWING/SPEC	TC	✓	P	V		SHALL BE SUBMITTED ALONG WITH OFFER
3.6	PRESSURE DROP TEST		MAJOR	TYPE TEST		BHEL APPD DRAWING/SPEC	BHEL APPD DRAWING/SPEC	TC	✓	P	V		SHALL BE SUBMITTED ALONG WITH OFFER
3.7	PRESERVATION AND PACKING		MAJOR	VISUAL	100%	BHEL SPEC	BHEL SPEC	-	-	P	-		

		LEGEND: ! RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY N: CUSTOMER INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION ALL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER	FOR CUSTOMER USE	
MANUFACTURER/ SUBCONTRACTOR				APPROVED BY