

BHEL	PURCHASE SPECIFICATION	
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SIMPLEX FILTER FOR LUBE OIL SERVICE		
1.0.0	SCOPE: This standard specifies the requirement of Simplex filter used in Emergency lube oil system as per BHEL Standard. The construction of Simplex filter shall be as per ASME Section VIII Div 1 .	
2.0.0	ARRANGEMENT: The Simplex filter shall consist of one filter with inlet & outlet branch connections, vent & drain connections with valves	
2.1.0	DESIGN PHILOSOPHY/CRITERIA-GENERAL: Selection of rotating equipment shall be based upon the following consideration	
2.1.1	Suitability for the specified duty conditions.	
2.1.2	Standard models under vendor's regular range of manufacture	
2.1.3	Proven track record in similar service.	
2.1.4	Optimum operating and maintenance costs	
2.1.5	Maximum interchangeability of parts	
2.1.6	Ease of operation and maintenance.	
2.2.0	THE ORDER OF PRECEDENCE IS TO BE FOLLOWED.	
2.2.1	Customer / Consultant's pump data sheets	
2.2.2	Engineering design basis	
2.2.3	Applicable codes, standards	
2.2.4	For design aspects not specifically covered by data sheets, specifications, codes and standards or regulations, the design shall be based on good engineering practices.	
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3.0	<u>TECHNICAL REQUIREMENTS:</u>		
3.1	Flow	:	As per Enquiry
3.2	Operating pressure	:	6 Kg/cm ² (g)
3.3	Design Temperature	:	80 °C
3.4	Operating Temperature	:	50 °C
3.5	Pressure drop for complete unit	:	0.35 Kg/cm ² clean at design condition of at 40°C (46CST) 1.5 Kg/cm ² Dirty condition (Element to be changed). Collapsible min. pr. 10 Kg/cm ² (g).
3.6	Design	:	As per ASME Sec VIII Div. I. The design shall be at 40 °C (46CST)
3.7	Fluid handled	:	Turbine Oil type ISO VG46 /Servo prime 46
3.8	Kinematic Viscosity	:	30 CST at 45°C (operating) 18 CST at 65 °C (Design)
3.9	Specific Gravity	:	0.88
3.10	Filtration	:	10 Microns (Absolute), β 10 = 200(R02)
3.11	Cleanliness Level Requirement	:	ISO 4406 17/14 grade or NAS-8 grade (R02)
3.12	Filtration Area Requirement in CM ²	:	Vendor has to specify
3.13	Inlet / outlet connections	:	Raised face Flanged ends (With 150/300 class rated flanges as per ANSI)
3.14	Vent connections	:	Required with valve NPT ¾" screwed
3.15	Drain connections	:	Required with valve NPT ¾" screwed
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3.16 Leakage : Not allowed during operation. 3.17 Differential Pressure indicator : Required. 3.18 Magnet : Required to collect the solid contamination. 3.19 Inlet / outlet connections : Raised face Flanged ends (With 150/300 class rated flanges as per ANSI) 3.20 Terminal points : All terminal points shall be flanged ANSI B 16.5, RF smooth finish. 3.21 Material : Carbon steel for Filter housing and valve body; Vent & drain valve internals shall be stainless steel. 3.22 Hydro static test pressure : 1.5 times of design pressure or as specified in ASME Section VIII Div 1 3.23 Filter element material : Disposable Type, Resin impregnated fiber. (Free water resistance organic paper) 3.24 Performance required : Vendors shall provide the following information. 1. Flow Vs Pr. drop curves for housings. 2. Flow Vs Pr. drop curves for elements (cartridges) of each type. 3. Actual area of filtering media. 4. Dirt retention capacity. 5. Number of elements per housing.		
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4.0	<u>SCOPE OF SUPPLY</u> 1 Simplex filter with vent & drain valves in C.S construction along with 5 microns of filter elements. The valves internals shall be in S.S construction 2 One set of S.S 40 microns filter element for flushing 3 Additional 2 sets of 5 microns filter elements other than elements fitted in the filter. The material shall be Fibre glass pleating material with S.S support 4 One set of gaskets & “O” rings for Simplex filter. The material shall be non-asbestos type. 5.Provision across filter for differential pressure indicator. Note: One set means number of elements for filter housing	
5.0	<u>QUALITY REQUIREMENTS</u> : 1 Material test certificates 2 Hydrostatic Test, witness 3 Design calculations as per ASME Sec VIII Div. I 4 Performance Test & type test certificate 5 Quality plan followed during manufacturing shall be provided to BHEL for review and approval. Inspection and testing as per Standard Quality plan to be submitted along with offer and the same to be approved by BHEL	
6.0	<u>TEST AND GUARANTEE CERTIFICATES:</u>	
6.1	<u>TEST CERTIFICATE:</u> 6 copies of Inspection and test certificates shall be supplied for each item of the consignment quoting BHEL STD Number, Purchase Order No. and manufacturer's identification serial numbers	
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6.2 6.2.1 8.1 8.1.1 8.1.2 8.1.3 8.1.4 8.1.5 8.1.6 8.1.7 <u>GUARANTEE CERTIFICATE:</u> A guarantee certificate for 18 months of trouble free performance from the date of shipment or 12 months from the date of commissioning whichever is earlier shall be supplied. If any malperformance or defects occur during the guarantee period, the vendor shall make all necessary alteration, repairs, or replacement free of charge. <u>DOCUMENTS REQUIRED DURING QUOTATION: (2 Copies)</u> The descriptive leaflets / Catalogues with complete details Nomenclature designation (model) for offered Simplex filter & filter elements Over all dimensional drawings along with filter element details Expected performance curves. Standard quality plan followed during manufacturing. Cross-sectional drawing of filter with bill of materials. Filled in data sheet should contain the following - Flow rate. - Working fluid: Turbine oil type ISO VG 46/ Servoprime 46. - Fluid viscosity: 18 CST at 65° C (Operating) - Fluid viscosity 46 CST at 40° C (Design) - Specific gravity of fluid:0. 88 - Operating pressure: - Design pressure: - Operating temperature: - Design temperature: - Design: As per API 614-2004 & ASME Section VIII Div I - Inlet & out let connection - Drain & Vent connections: - Provision of Magnet to collect contamination: - Material of construction: - Hydrostatic test pressure: - Maximum allowable pressure drop across filter elements - Pressure drop across filter housing. - Collapsible pressure of filter element - Corrosion allowance - Maximum allowable operating temperature. - Grade of filtration - Filtration ratio acc. to ISO 16889 - Filtration area - Scope of supply		
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8.1.9 Supplier’s painting program, including surface preparation, primer and paint material, and components affected, shall be described completely. 8.2 <u>DOCUMENTS TO BE SUBMITTED AFTER PLACEMENT OF ORDER FOR APPROVAL:</u> (Within 2 Weeks 3 Sets of hard copies & 1 Set of soft copy) 8.2.1 Over all dimensional drawings along with filter element details 8.2.2 Expected performance curves. 8.2.3 Standard quality plan followed during manufacturing. 8.2.4 Cross-sectional drawing of filter with bill of materials. 8.2.5 Filled in data sheet 8.2.6 Painting program as specified in clause 8.1.9 8.3 <u>DOCUMENTS TO BE SUBMITTED FOR FINAL APPROVAL:</u> (3 Sets of hard copies & 1 Set of soft copy) 8.3.1 Final Over all dimensional drawings along with filter element details 8.3.2 Final performance curves. 8.3.3 Final Standard quality plan followed during manufacturing. 8.3.4 Final Cross-sectional drawing of filter with bill of materials. 8.3.5 Final Cleaning & painting procedure (If required) adopted by vendor. 8.3.6 Operation & Instruction manuals 8.3.7 Filled in data sheet 8.4 <u>DOCUMENTS TO BE SUBMITTED ALONGWITH CONSIGNMENT:</u> (10 Copies each & 1 soft copy) 8.4.1 Test & Guarantee certificates 8.4.2 Tested performance curves. 8.4.3 Operation & Instruction manuals O& M Manuals shall be furnished in 3 ½” floppy / 1.44 MB compatible for using in M.S word		
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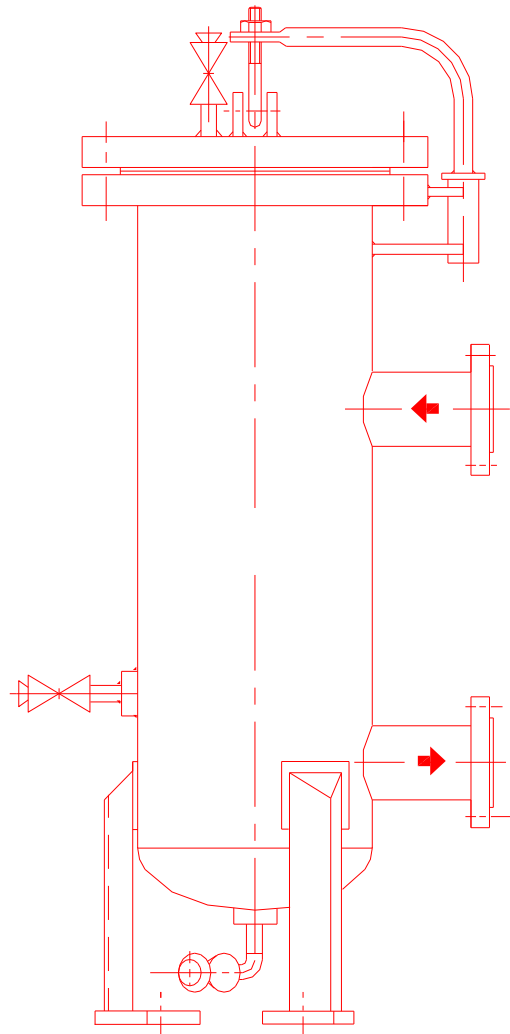
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9.0	<u>RATING PLATES</u> A rating plate of non-corrosive material upon which shall be engraved Manufacturer's name, Simplex filter type, Serial no. Of Simplex filter, Capacity, Operating pressure, Design pressure, Operating temperature, No of filter elements in each shell & model of filter element These rating plates shall be of White non-hygroscopic material with engraved black lettering. 10.0 <u>PROTECTION & PRESERVATIVE COATING REQUIREMENTS:</u> All coated surfaces shall be protected against abrasion impact, discoloration any other damages. All exposed threaded portions shall be suitably protected with either metallic or a nonmetallic protection device. All nozzles & threaded portions shall be properly sealed with suitable devices to protect them from damage The parts which are likely to get rusted due to exposure to whether, should also be properly treated and protected in a suitable manner. All primers / paints / coatings shall take into account the hot humid, corrosive & alkaline, subsoil or over ground environment as the case may be. Preservative shop coating: All exposed metallic surfaces subject to corrosion shall be protected by shop application of suitable coatings. All surfaces that will not be easily accessible after the shop assembly shall be treated before hand and protected for the life of the equipment All surfaces shall be thoroughly cleaned of all mill scales, oxides and other coatings and pre heated in the shop. The surfaces that are to be finish painted after installation or require corrosion protection until installation, shall be shop painted with at least two coats of primer. All other steel surfaces which are not to be painted shall be coated with suitable dust preventive compound subject to the approval of Customer / BHEL 11.0 <u>PAIN T AND FINISH</u> Simplex filter external parts shall be finished and painted to produce a neat and durable surface, which would prevent rusting, and corrosion. The equipment shall be thoroughly degreased, all rust, sharp edges and scale removed and treated with one coat of primer and finished with two coats of RAL 9002 Grey paint. Anti rust ban paint to be applied inside the filter housing.	
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13.0 <u>MARKING:</u> 13.1 The manufacturer's serial number and year of manufacturing shall be marked at suitable locations viz. name plate. 13.2 A tag bearing the relevant 12 digit material code shall be attached for each item 13.3 The nameplate of the Simplex filter shall contain the following information 13.3.1 Manufacturer's name or trademark and serial number. 13.3.2 Flow in LPM 13.3.3 Operating pressure. 13.3.4 Fluid handled. 13.3.5 Operating temperature. 13.3.6 Design pressure 13.3.7 No of filter elements in each shell 13.3.8 Filter element model 13.4 Following details shall be marked on the packing case. 13.4.1 Manufacturer's Name 13.4.2 B.H.E.L Purchase order number. 13.4.3 B.H.E.L Standard number 13.4.4 B.H.E.L Material code number 14.0 <u>SCHEDULE OF QUALITY CHECKS FOR LUBE OIL PUMP.</u> 14.1 Inspection &Testing: As per BHEL approved quality plan <table><tr><td>14.2</td><td>Checks</td><td>B</td><td>C</td><td>S</td></tr><tr><td>14.2.1</td><td>Material certification for filter & Filter elements</td><td>2</td><td>2</td><td>3</td></tr><tr><td>14.2.2</td><td>Shop Inspection</td><td>2</td><td>2</td><td>3</td></tr><tr><td>14.2.3</td><td>Dimensional check</td><td>1</td><td>1</td><td>3</td></tr><tr><td>14.2.4</td><td>Hydrostatic test pressure</td><td>1</td><td>1</td><td>3</td></tr><tr><td>14.2.5</td><td>Mechanical and performance test</td><td>1</td><td>1</td><td>3</td></tr><tr><td>14.2.5</td><td>Radiography test on weld joints</td><td>2</td><td>2</td><td>3</td></tr></table>					14.2	Checks	B	C	S	14.2.1	Material certification for filter & Filter elements	2	2	3	14.2.2	Shop Inspection	2	2	3	14.2.3	Dimensional check	1	1	3	14.2.4	Hydrostatic test pressure	1	1	3	14.2.5	Mechanical and performance test	1	1	3	14.2.5	Radiography test on weld joints	2	2	3
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TYPICAL SIMPLEX FILTER



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