

BHARAT HEAVY ELECTRICALS LIMITED

HIGH PRESSURE BOILER PLANT, TIRUCHIRAPALLI 620 014.

CONTROLS AND INSTRUMENTATION / FB



TECHNICAL SPECIFICATION

FOR

SENSOR ASSEMBLY & SONIC TUBE ASSEMBLY (AUTO PURGE)

OF
BHELSONIC SYSTEM

SPEC. REF:- CI:BS10:AUTOPURGE:STASA

REVISION HISTORY

Rev. No.	DATE	DESCRIPTION	PREPARED MVR	CHECKED MVR	APPROVED AKP
00	08.04.2014	Initial Release	-sd/MVR	-sd/MVR	-sd/AKP
01	28.06.2016	Sonic tube assembly drawing revised	-sd/mvr	-sd/mvr	-sd/AKP
02	02.03.2017	Sonic tube assembly accessories added	Ramany.	Ramany.	Apanth.

CONTENTS:

1. GENERAL INSTRUCTIONS TO VENDORS
2. DRAWING & DATA SHEET LIST
3. QUALITY PLAN & INSPECTION
4. DOCUMENTATION
5. PACKING
6. SPECIAL INSTRUCTIONS TO VENDORS

Annexure:

1. Drg. No. 3-97-585-21634/03 - Sensor assembly.
2. Drg. No. 1-97-585-01335/01- Sonic Tube assembly.

Note:-

Clarification required, if any, on the enclosed specification shall be referred to the purchaser within 10 days from the date of enquiry.

1.0 GENERAL INSTRUCTIONS TO VENDORS:

- 1.1 In the event of order, the entire specification will form part of purchase order for compliance during execution.
- 1.2 Deviation if any shall be clearly brought out in the "Deviation schedule". Otherwise it will be construed that the vendor is fully complying with the specification.

2.0 DRAWING & DATA SHEET LIST:

- 2.1 Vendor shall supply all the items as indicated in the following drawings as loose supply.
 - a) Drg. No. 3-97-585-21634/03 – STLD - Sensor assembly.
 - b) Drg. No. 1-97-585-01335/01 – STLD - Sonic Tube assembly.
 - c) Refer project specific datasheet for Air filter regulator & solenoid valve.
- 2.2 Vendor shall submit detailed Bill of Material, indicating break up prices for all items.
- 2.3 15 meter length of pig tail cable will be supplied for each sensor assembly. BHEL will provide the same as a "free issue" item in one length to the vendor for cutting & soldering with the cable connector.

3.0 QUALITY PLAN & INSPECTION

- 3.1 Quality plan BHEL SQP ref QA:CI:STD:QP:73 shall be followed.
- 3.2 Advance information shall be intimated to BHEL, 7 days ahead from the date of Inspection for clearance/acceptance of material.

4.0 DOCUMENTS REQUIRED

A. Along with offer:

- i) Vendor to duly signed and stamped for compliance/confirmation for the BHEL specification

B. After Placement of Purchase Order:

Vendor shall manufacture sonic tube assembly and sensor assembly as per BHEL drawings.

5.0 PACKING:

Materials shall be packed as per packing procedure ref. No. QA:CI:STD:PR:04, Rev. 02 shall be followed.

Solenoid valve (SV) & Air filter regulator (AFR) shall be individually wrapped with bubbled polythene sheet, packed in moulded thermocole boxes, filled with tightly with thermocole beads and further packed suitable to avoid transport and storage damages.

6.0 SPECIAL INSTRUCTIONS TO VENDORS

6.1 Warranty: 18 months from the date of supply and 12 months from the date of commissioning.

6.2 Nothing in this specification shall be construed to relieve the vendor from his responsibility. This specification covers briefly the requirements of the system. It is the responsibility of the vendor to take care of other basic and essential requirements to manufacture a quality product and complete system.

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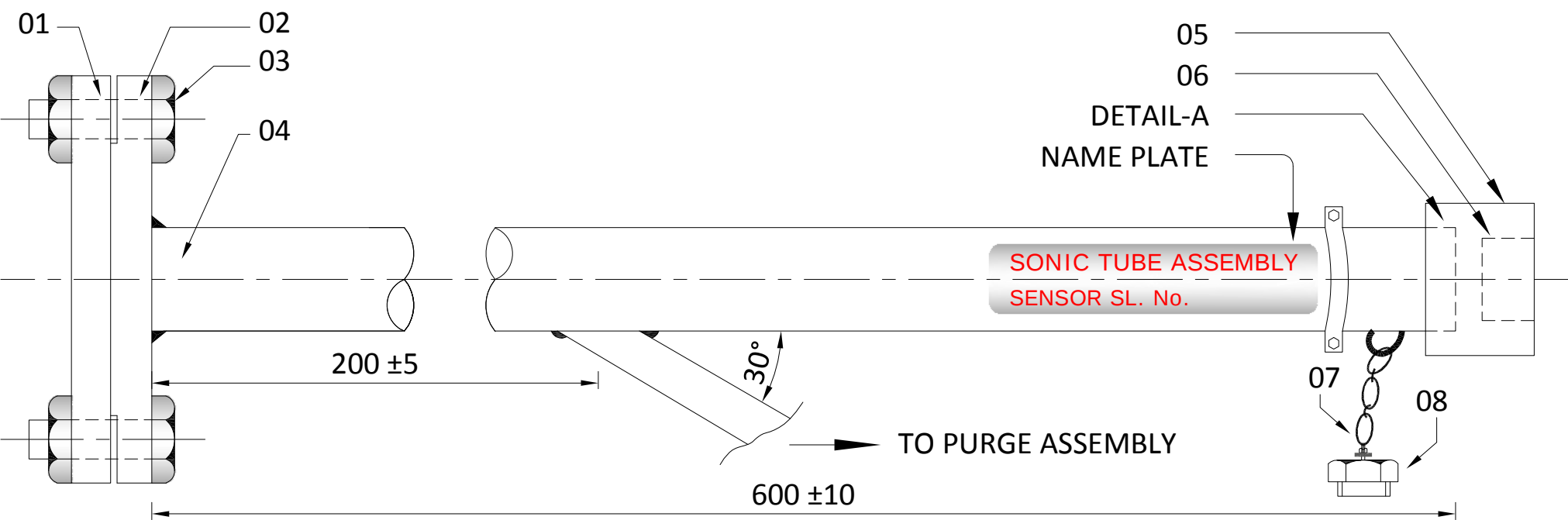
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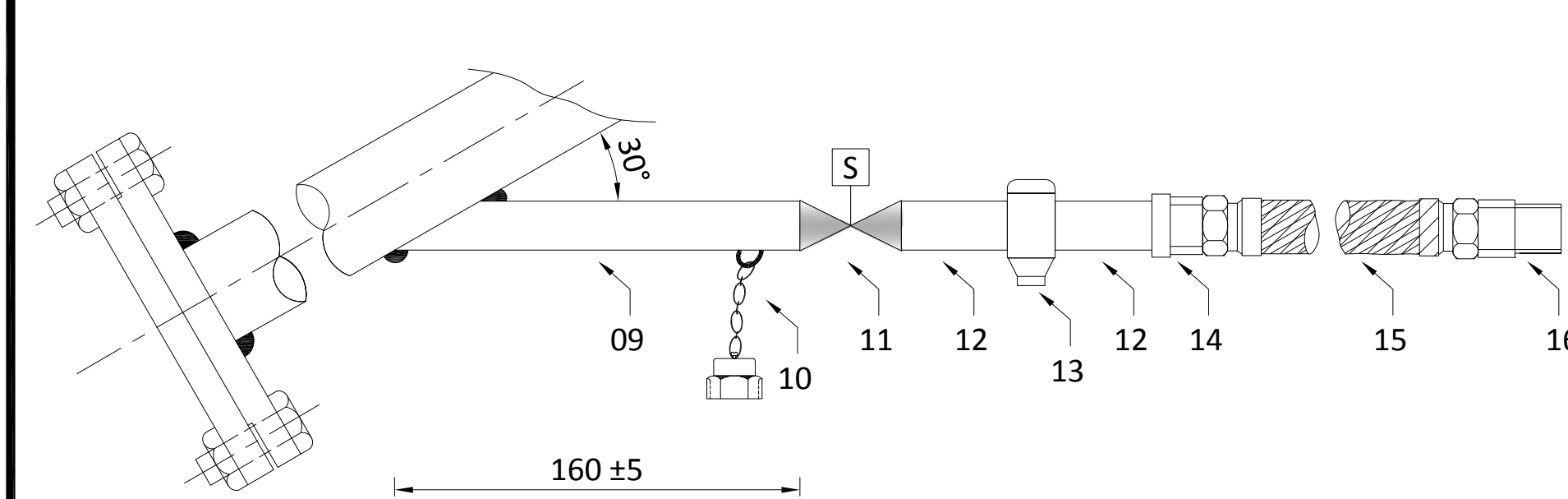
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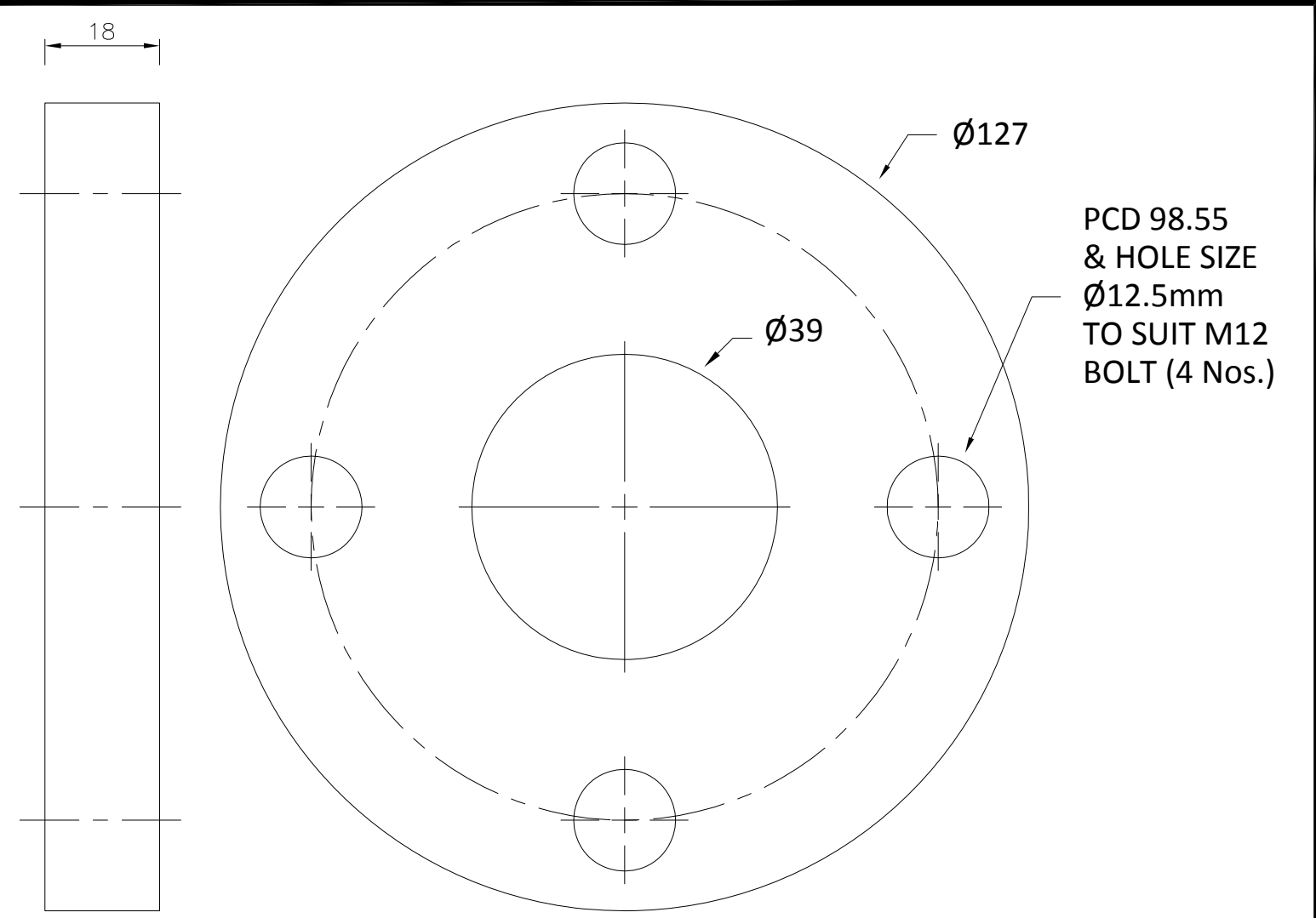
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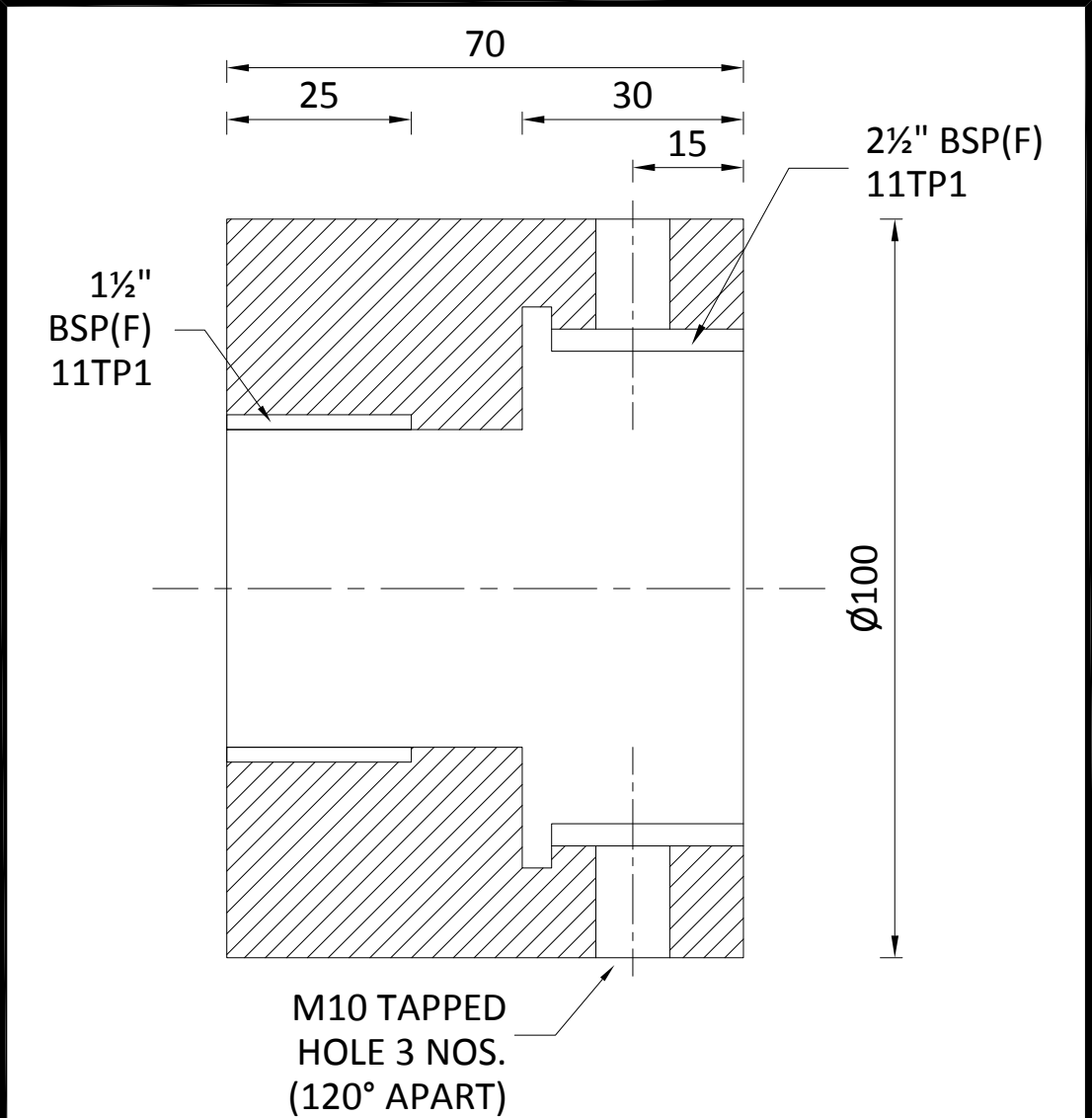
SONIC TUBE ASSEMBLY



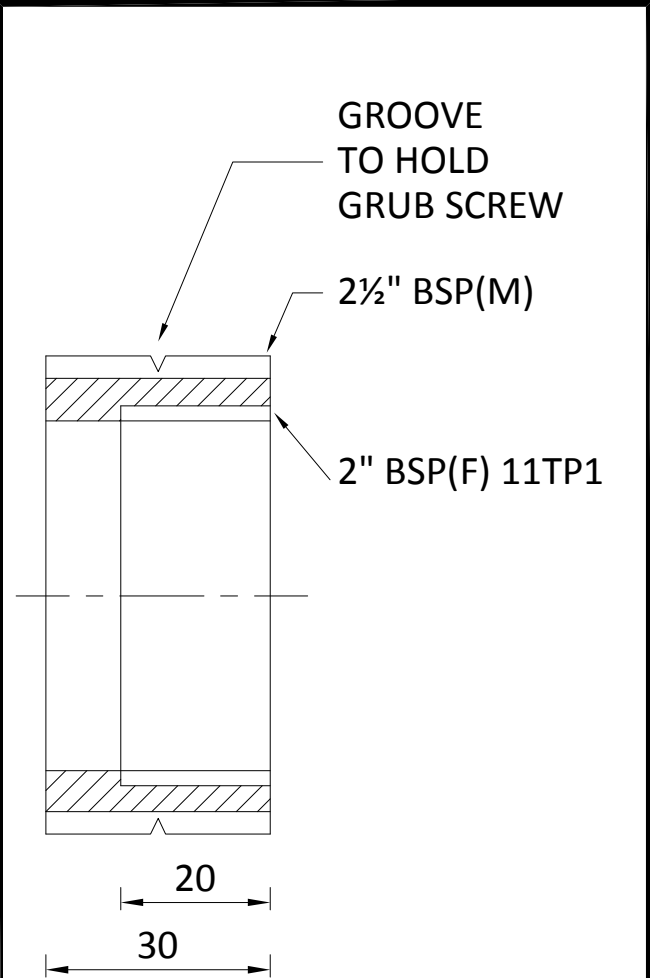
PURGE ASSEMBLY



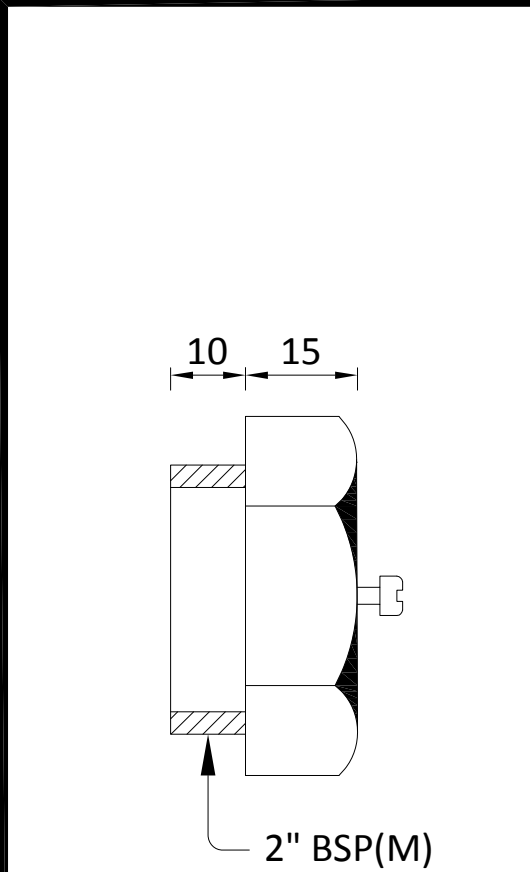
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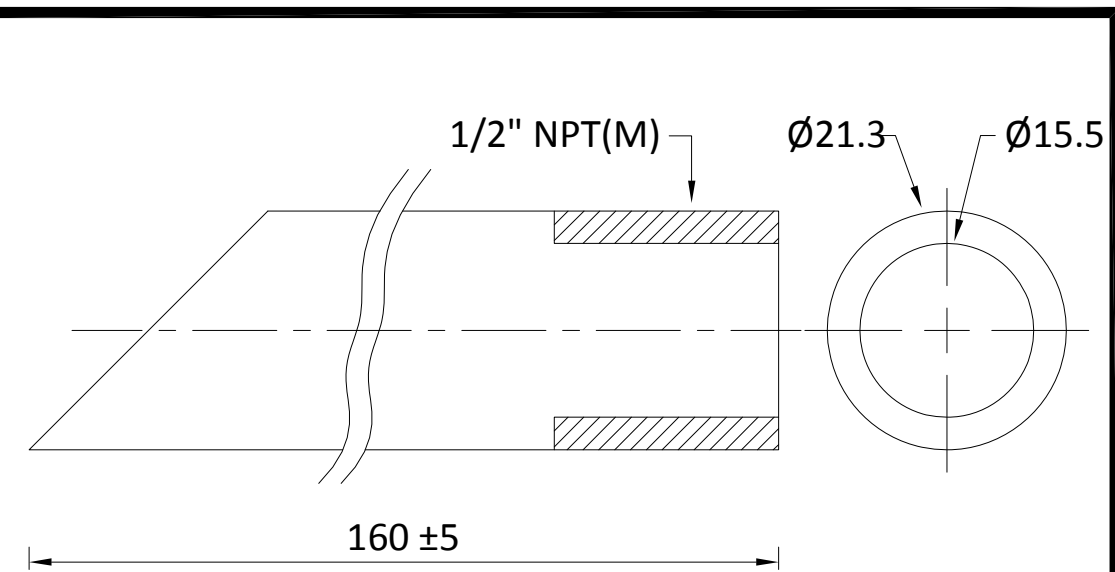
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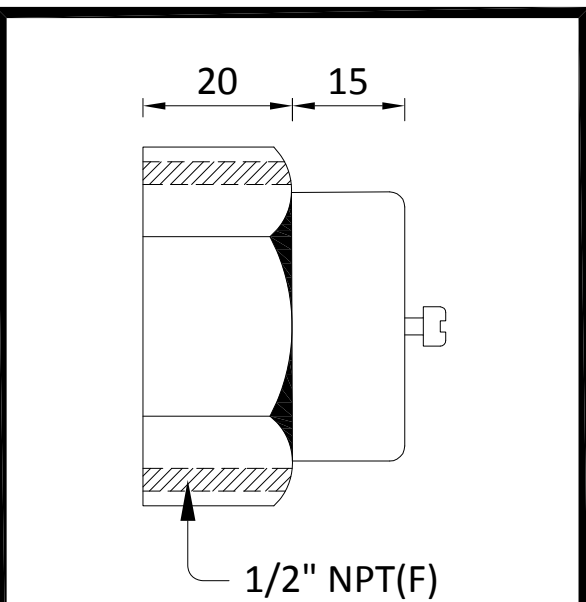
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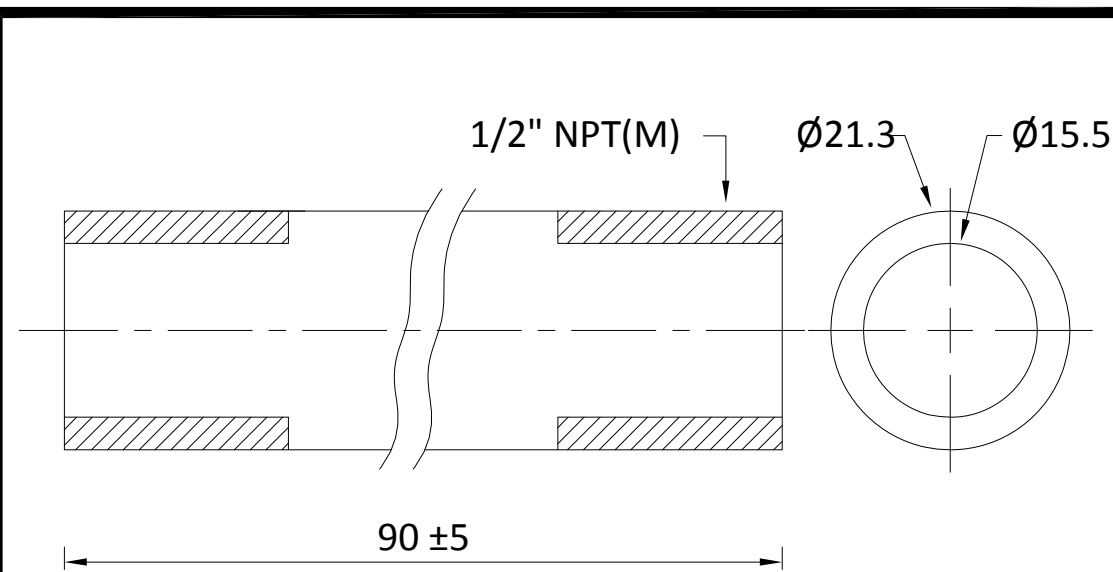
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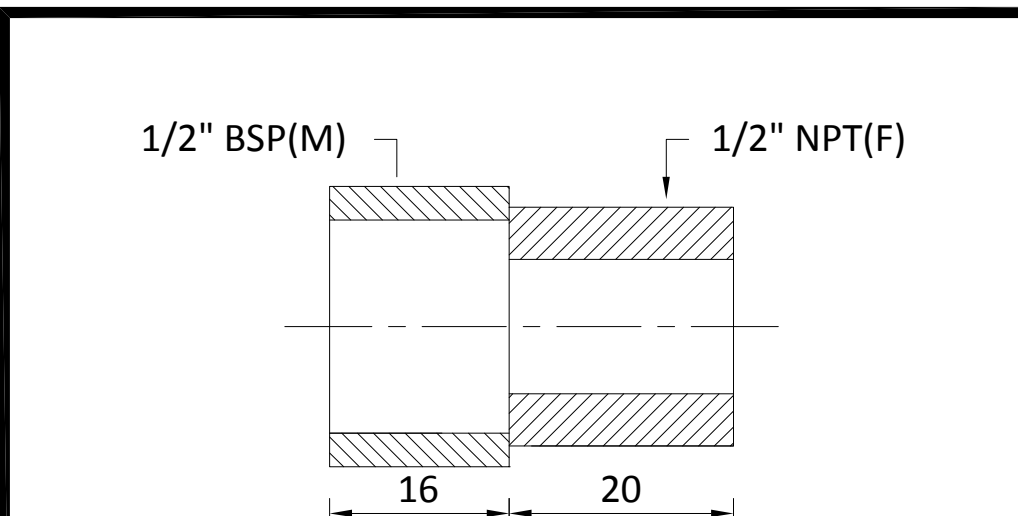
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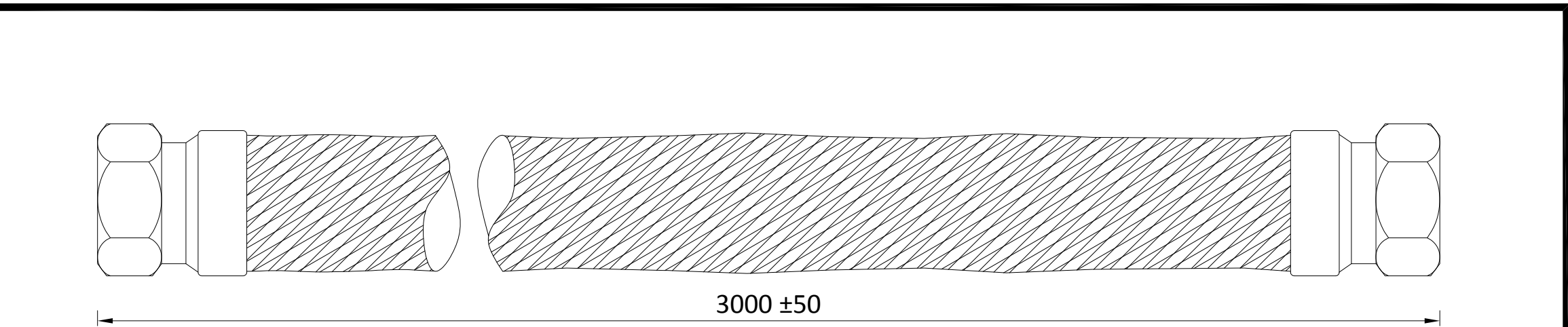
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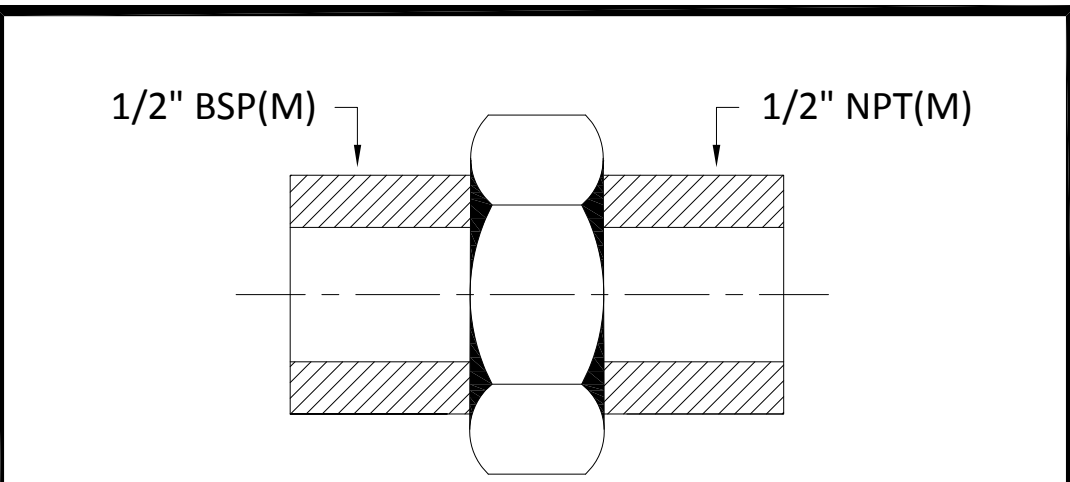
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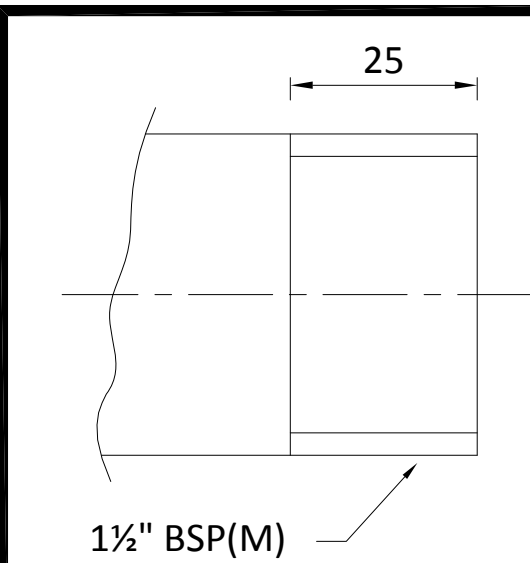
ITEM NO. - 14



ITEM NO. - 15



ITEM NO. - 16



DETAIL - A

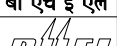
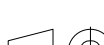
NOTE

1. ALL DIMENSIONS HAVE ±1mm TOLERANCE, IF NOT MENTIONED IN THE DRAWING.
2. ALL ITEMS ARE IN VENDOR SCOPE.
3. DURING INSPECTION, THE SAME DRAWING SHALL ONLY BE REFERRED.
4. PAINT COLOUR SHADE RAL-5012 & THICKNESS 70-80 MICRONS.
5. SENSOR LOCKING ARRANGEMENT IS PROVIDED BY MEANS OF GRUB SCREWS.
6. VENDOR CODE SHALL BE PUNCHED/ENGRAVED ON SONIC TUBE ASSEMBLY.

ITEM No.	DESCRIPTION	MATERIAL	QTY.
1.	TEFLON FLANGE	TEFLON	1 No.
2.	F L A N G E	SA106 GR.-B	1 No.
3.	M12x100mm(L) BOLTS, NUTS & WASHER	MS ZINC. PASSIVATED	4 SETS
4.	P I P E Ø48.3 x 3.68	SA106 GR.-B	1 No.
5.	TEFLON COUPLING WITH 3 Nos. OF HIGH SPEED STEEL MATERIAL GRUB SCREWS.	TEFLON	1 No.
6.	SS SLEEVE	SS304	1 No.
7.	250MM LENGTH CHAIN.	SS304	1 No.
8.	END CAP ADAPTER - 2" BSP(M) SUITABLE FOR ITEM-06.	TEFLON	1 No.
9.	160MM LONG PIPE WITH ONE SIDE SOCKET WELD & 1/2" NPT(M) ON OTHER SIDE (OD 21.3 x 3.15mm THICKNESS)	SA106 GR.-B	1 No.
10.	END CAP ADAPTER - 1/2" NPT(F) SUITABLE FOR ITEM-09 WITH 350MM LENGTH CHAIN.	SS304	1 No.
11.	SOLENOID VALVE, 1/2" NPT(F) ON BOTH SIDES	SS304	1 No.
12.	90MM LONG PIPE 1/2" NPT(M) ON BOTH SIDES (OD 21.3 X 3.15MM THICKNESS)	SA106 GR.-B	2 Nos.
13.	AIR FILTER REGULATOR 1/2" NPT(F) ON BOTH SIDES.	DIE CAST ALUMINIUM	1 No.
14.	ADAPTER 1/2" NPT(F) & 1/2" BSP(M)	SS304	1 No.
15.	1/2" SS BRAIDED HOSE OF 3 METER LENGTH WITH END FITTINGS OF 1/2" BSP(F) ON BOTH SIDES WITH FEMALE THREADED SWIVEL NUT, WORKING PR. = 7 KG/SQ.CM.	SS304	1 No.
16.	ADAPTER 1/2" NPT(M) & 1/2" BSP(M)	SS304	1 No.

REV	DATE	ALTERED :
01	280217	CHD./APPD. :
ZONE	REVISED END CAP ADAPTER MATERIAL FOR ITEM NO-08 & 16.	

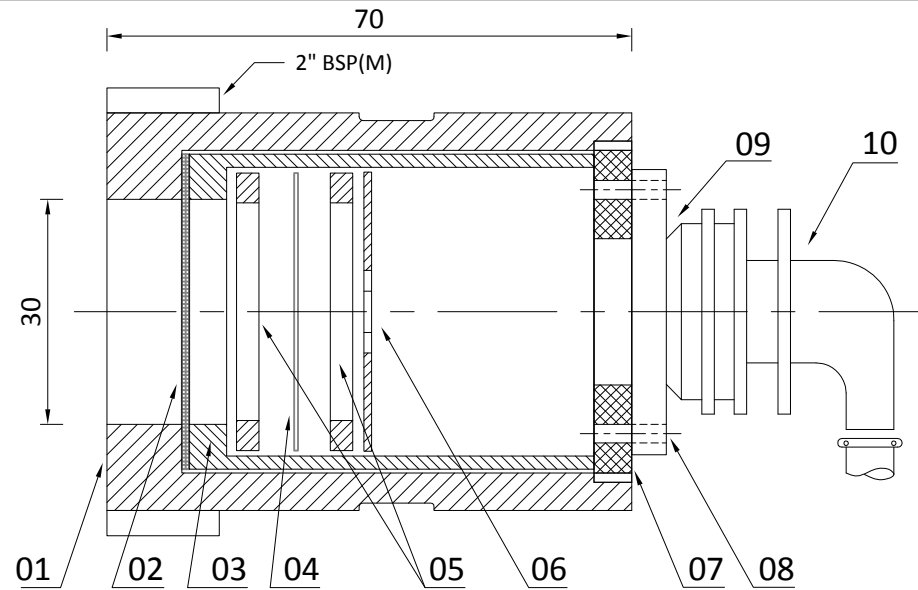
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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				STANDARD				
बी एच ई एल  Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPPALLI - 620014				DRN	NAME	SIGNATURE	DATE	NO. OF VAR
				CHD	M.Venkataramana	Sd. / MV	29-02-16	
				APPD	A.K.Panda	Sd. / AKP	07-03-16	
DEPT. : C & I			ALL DIMENSIONS ARE IN MM	SCALE NTS	WEIGHT (Kg)	REF TO ASSY / OLD DWG		ITEM NO
CODE : 392								No OF ITEMS
TITLE					CARD CODE	DRAWING NO :		REV
BHELSONIC - ACOUSTIC STEAM LEAK DETECTION SYSTEM SONIC TUBE ASSEMBLY					U 01	1-97-585-01335 01/01		01

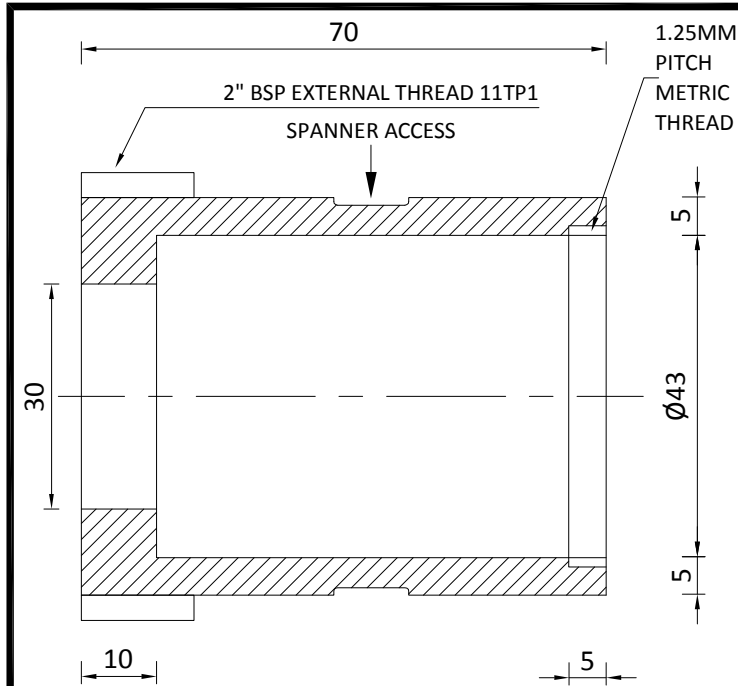
STCSTGP2

3-97-585-21634

DRAWING NO.:



SENSOR ASSEMBLY

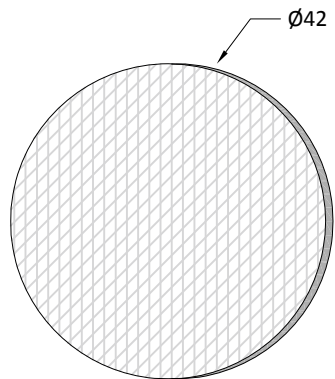


ITEM NO-01 (SENSOR HOUSING)

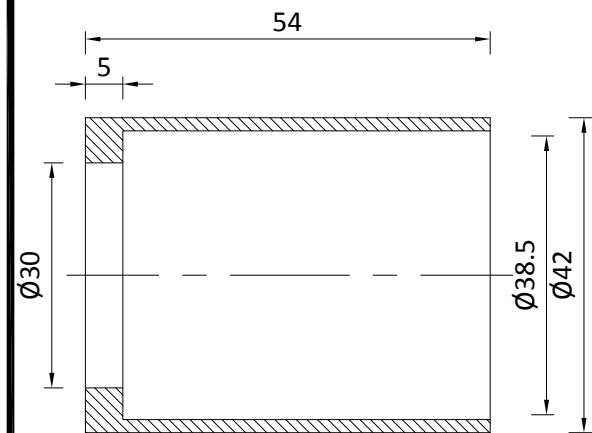
ITEM No.	DESCRIPTION	QTY.
01.	SENSOR HOUSING (SS 304)	1 No.
02.	WIRE MESH Ø42 (SS 304)	1 No.
03.	INNER SHIELD (TEFLON)	1 No.
04.	POLYESTER FILM, 1MIL THICKNESS (POLYESTER 100x100mm)	2 Nos.
05.	RUBBER BUSH (NEOPRENE)	2 Nos.
06.	PLASTIC DISC (TEFLON)	1 No.
07.	SS LID (SS 304)	1 No.
08.	SUITABLE FIXING SCREW, SS	4 SETS
09.	ALLIED CONNECTOR MS 3102R-14S-6S(FM)	1 No.
10.	ALLIED CONNECTOR MS 3108F-14S-6P(M)	1 No.

NOTE

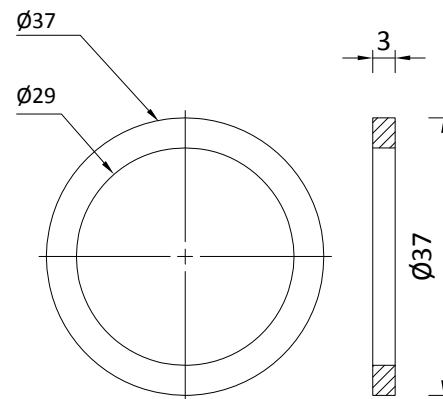
- PCD TO SUIT CONNECTOR.
- ALL DIMENSIONS HAVE $\pm 1\text{mm}$ TOLERANCE.
- SUITABLE SPANNER ACCESS TO BE PROVIDED AT 180° APART.
- VENDOR CODE SHALL BE PUNCHED/ENGRAVED ON SONIC TUBE ASSEMBLY.



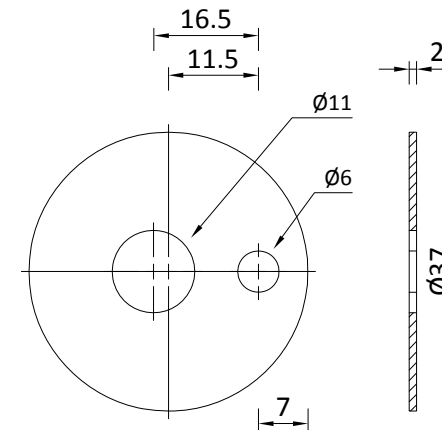
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(WIRE MESH)



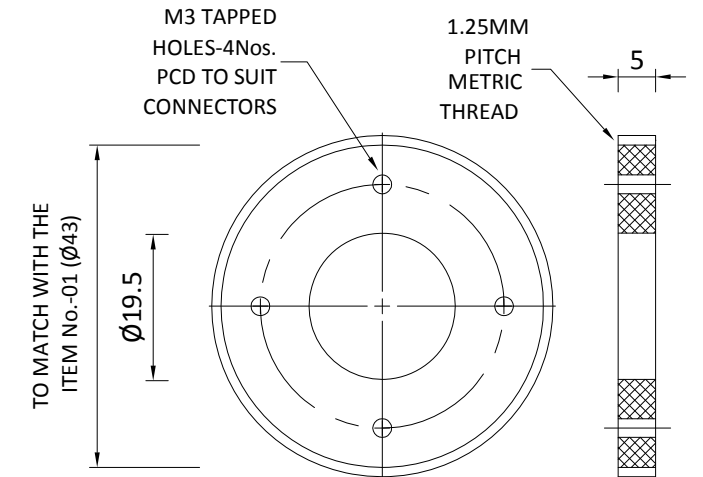
ITEM NO-03
(INNER SHIELD)



ITEM NO-05
(RUBBER BUSH)



ITEM NO-06
(PLASTIC DISC)



ITEM NO-07
(SS LID)

REV	DATE	ALTERED : <i>280416</i>
02	140915	CHD./APPD. : Sd./MV-AKP
ZONE	GENERAL REVISION	

REV	DATE	ALTERED : <i>280416</i>
03	280416	CHD./APPD. : <i>280416</i>
ZONE	REVISED AS PER FES FEED BACK LETTER REF. CI:FE:FB:2015-2016:002	
REV	DATE	ALTERED : <i>061213</i>
01	061213	CHD./APPD. : Sd./MV-AKP
ZONE	GENERAL REVISION	

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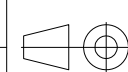
TYPE OF PRODUCT
OR NAME OF
CUSTOMER / PROJECT



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

DEPT. : C & I

CODE : 392



ALL
DIMENSIONS
ARE IN MM

SCALE
NTS

WEIGHT (Kg)

REF TO ASSY / OLD DWG

ITEM
NO

No OF
ITEMS

TITLE

**BHELSONIC - ACOUSTIC STEAM LEAK
DETECTION SYSTEM - SENSOR ASSEMBLY**

CARD
CODE
U 01

DRAWING NO.:

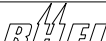
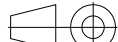
3-97-585-21634

Sheet 01 Of 01

REV

03

STANDARD

वी च ए ई एल 		Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPPALLI - 620014			DRN	NAME A . T h a m b u R a j	SIGNATURE 	DATE 19-07-13	NO. OF VAR	
					CHD	M.Venkataramana	Sd. / MV	20-07-13		—
					APPD	A.K.Panda	Sd. / AKP	20-07-13		—
DEPT. : C & I		ALL DIMENSIONS ARE IN MM	SCALE NTS	WEIGHT (Kg) —	REF TO ASSY / OLD DWG —			ITEM NO —	No OF ITEMS —	
CODE : 392										
TITLE BHELSONIC - ACOUSTIC STEAM LEAK DETECTION SYSTEM - SENSOR ASSEMBLY				CARD CODE U 01	DRAWING NO : 3-97-585-21634 Sheet 01 Of 01				REV 03	

PRE-QUALIFICATION REQUIREMENT

The BIDDER has to compulsorily meet the following requirements to get qualified for considering the technical Offer:

Sl.No.	REQUIREMENTS	VENDOR'S RESPONSE
1.	Vendor shall manufacture 01 set of sonic tube assembly & sensor assembly (prototype) during enquiry stage.	
2.	After approval to above said prototype, Vendor shall be provided final recommendation.	
3.	Vendor should have in-house facilities to manufacture, welding, Painting and assemble the items of sonic tube assembly and sensor assembly. Also, the similar items should have been supplied to any of the Industry and reference list for the same shall be submitted in PQR bid.	
4.	Vendor to have in-house provisions for Hydro-testing of the assembly at 11 Bar. [1.5 x Operating Pressure 7 Bar].	

Signature with Company Seal

ANNEXURE - A

TECHNO - COMMERCIAL TERMS AND CONDITIONS

Description of the Material:		Sensor and Sonic Tube Assembly
BHEL Tender No. & Date		1702000310 dated 07.08.2020
GENERAL INFORMATION		
QUOTATIONS: Interested bidders / Suppliers shall submit their offer through e-Procurement mode at https://bhel.abcprocure.com Offers in any other mode will not be accepted. For Enterprise Procurement System (EPS) Bidders/Suppliers are requested to follow these steps. In case of any assistance, please contact for support in this link: https://bhel.abcprocure.com/EPROC/contactus		
The bidder has to keep track of any changes by viewing the addendum / Corrigendum's Issued by the Purchaser on time-to- time basis in the E-Procurement platform. The Company calling for tenders shall not be responsible for any claims/problems arising out of this.		
Sl. No.	Terms and conditions	Vendor's confirmation
1	Technical Offer: The Offer shall be as per following technical documents attached in the Enquiry. 1) Specification: CI:BS10:AUTOPURGE:STASA Rev.02 2) Quality Plan: QA:CI:STD:QP:73 Rev.00 3) Packing Procedure: QA:CI:STD:PR:04 Rev.03 4) Specification: CI:BS10:STD:STASA Rev.00 5) Drawing: 2-97-585-01398 Rev.07 6) Drawing: 3-97-585-12409 Rev.06 7) Spec: CI:BS10:AutoPurge:STASA Rev.00 8) 3-97-585-21633 Rev.01 9) Spec: CI:BS10:Non-Autopurge:STASA Rev.00 Deviations, if any, may be indicated in the sub-delivery enquiry deviation format attached with the enquiry.	Accepted
2	Firm Price: The quoted / finalised rates shall be Firm till execution of the supplies. Vendor has to quote price according to the requirement as detailed in the attached technical documents. Unless there is a change in technical specification from BHEL side, impact price will not be allowed. ➤ BHEL will finalize the rates through price bid opening. Hence, Tenderers are requested to give their best prices at the first instant itself. ➤ In the event of the final L1 prices are not reasonable/ acceptable to BHEL; BHEL also may resort to short closure of this Tender. ➤ In case of more than one L1 bidders, BHEL will get fresh revised reduced price bids from all such L1 bidders & ranking will be decided based on these revised bids. The new rates quoted should be lower than their previous L1 rates. If L1 could not be decided by this process, ranking will be decided by draw of lots in the presence of all such L1 bidders Any pre-bid query, kindly contact: Mr. Bimal Kanta Sethi, Manager/Materials Management /BOI Tel: 0431-2574175, email: bksethi@bhel.in ; Mr. G. Murugesan, Sr. Engineer/Materials Management/BOI Tel: 0431-2577072, email: gmuru@bhel.in ; Mr. K. Saravanakumar, SAO Gr.1/Materials Management/BOI, email: sbpurdd@bhel.in and get your queries cleared before submitting the offer in EPS. Rates/ other price elements once quoted in the Enterprise Procurement System (EPS) cannot be changed after due date shall remain final.	Accepted
3	Offer will be evaluated on item wise package for ranking & ordering. L1 finalisation will be done on item wise on total cost to BHEL basis after loading against deviation	Accepted
4	Delivery term: F.O.R BHEL/Trichy/Stores Basis: The quoted Rate shall be inclusive of Packing, Forwarding and Freight. (Ex-Works, Freight to pay basis is not acceptable to BHEL.) Insurance will be on BHEL scope.	Accepted
5	Indigenous Vendor Payment terms (Non-MSE): <u>For despatches to Trichy Stores:</u> 100% direct EFT payment after 60 days from date of receipt & acceptance of material.	Accepted / Not Accepted
6	Deviation in Payment Terms: Any deviation in the above Payment Terms, any other conditions in payment terms or any other payment term will not be accepted and offers are liable to be commercially rejected.	Noted

7	Liquidated damages: Delivery of the goods specified in the purchase order should be made within the time prescribed. Failure to dispatch the materials in time as per the delivery quoted in our Purchase Order would make the supplier liable to an un-conditional LD at the rate of 0.5% of the Total order value per week of the delay or part thereof subject to a maximum of 10% of the total order value.	Accepted / Not Accepted
8	Loading Criteria LD / Penalty: Any deviation on BHEL LD / Penalty clause, loading (Basic material Value) will be applied to the extent to which it is not agreed by the bidder. LD is for Total Order Value and not for undelivered goods. If LD for undelivered portion is only acceptable then a loading of 10% on Basic Material Value will be applied.	Noted
9	Warranty Clause: 18 months from the date of supply and 12 months from the date of Commissioning.	Accepted
10	Deviation in Warranty Clause: No Deviation is permitted. If still vendor offered any deviation on the warranty period, their offer will be rejected.	Noted
11	Delivery Period: BHEL standard delivery is Eight weeks from date of PO or as mentioned in the enquiry delivery schedule, whichever is earlier. Vendor quoted delivery period shall include all activities i.e. manufacturing / production, Inspection, Packing, Forwarding and dispatch.	Accepted / Not Accepted
12	Validity: 120 days from techno commercial bid opening date	Accepted
13	Deviation in Validity: Non-compliance of the same will result in offer being liable for rejection.	Noted
14	RISK PURCHASE: In case of abnormal delays (beyond the maximum late delivery period as per LD clause) or non-fulfilment of any other terms and conditions given in work order, BHEL may cancel the work order in full or part thereof, and may also make a contract of such work/service from elsewhere / alternative source at the risk and cost of the original contractor. BHEL will take all reasonable steps to complete the contract obligations 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. Risk & cost clause, in line with conditions of contract may be invoked in any of the following cases: 1. Contractor's poor progress of the work vis-à-vis execution timeline as stipulated in the contract, backlog attributable to contractor/ supplier including unexecuted portion of work/ supply does not appear to be executable within balance available period (#) considering its performance of execution. 2. Withdrawal from or abandonment of the work by contractor before completion of the work as per contract. 3. Non completion of work / Non-supply by the contractor within scheduled completion/delivery period as per contract or as extended from time to time, for the reason attributable to the contractor. 4. Termination of contract on account of any other reason (s) attributable to contractor. 5. Assignment, transfer, subletting of contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL. 6. Non-compliance to any contractual condition or any other default attributable to contractor. Risk and Cost amount against balance work will be calculated as follows: $\text{Risk \& Cost Amount} = [(A-B) + (A \times H/100)]$ Where, A= Value of Balance scope of Work/ Supply (*) as per rates of new contract B= Value of Balance scope of Work/ Supply (*) as per rates of old contract being paid to the contractor/ supplier at the time of termination of contract i.e. inclusive of PVC & ORC, if any. H = Overhead Factor to be taken as 5 In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero). *(Balance scope of work/ supply) Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Work/ Supply for calculating risk & cost amount. Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities. Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities. Substitute/ extra items whose rates have already been approved would form part of contract quantities for this purpose. Substitute/ extra items which have been executed but rates have not been approved, would also form part of contract quantities for this purpose and rates of	Accepted

	such items shall be determined in line with contractual provisions. However, increase in quantities on account of additional scope in new tender shall not be considered for this purpose. NOTE: In case portion of work is being withdrawn, contract quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work/supply' for calculating Risk & Cost amount.	
15	GST DETAILS, BHEL TRICHY GST No. 33AAACB4146P2ZL	Noted
16	Please mention your GSTIN Number	
17	HSN Codes for Quoted Material:	
18	Applicable GST Rate:	
19	Implementation of GST 1. Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GST registration no which should clearly mentioned in the offer. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer. 2. Supplier shall mention their GSTIN registration number in all their invoices and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice no, commercial invoice no., then the Invoice No which is linked/uploaded in GSTN network shall be clearly indicated), item description as per PO, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, SGST, CGST & UTGST) separately, HSN/ SAC Code, etc. 3. All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code). 4. A declaration to the effect that all invoice particulars are/were uploaded in the GSTN network/ portal & all tax liability as per GST rules and regulations have been and will be discharged, shall be mentioned in the invoice. If not mentioned in the invoice, a separate declaration shall be submitted as per the requirement of BHEL. 5. All documents like Mill Test Certificate, LR copy, Guarantee/Warranty certificate, work completion certificate, any other document mentioned in PO, shall be sent along with the vehicle/consignment. For all consignments received within the calendar month, input credit will be availed within that month in line with monthly returns filing cycle. In case of any discrepancy in the document or non-submission of documents mentioned in the PO, then BHEL will not be able to accept or account the material, in such case availing of tax credit will be deferred to next month or so. 6. In case of discrepancy in the data uploaded by supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note (details to be uploaded in GSTN portal) for the shortages or rejections in the suppliers, within the calendar month notified by BHEL. For any such delay in availing of tax credit for reasons attributable to supplier (as mentioned above), interest (calculated @ SBI Base Rate + 6%) along with penalty if any will be deducted for the delayed period i.e. from the month of receipt till the month tax credit is availed, from the running bills.	Noted
20	Document Submission: Along with the offer: 1. All the technical documents which have been attached along with our enquiry i.e., Specification, Drawings, QP, Packing Procedure, Data Sheet etc., signature to be endorsed on all pages with company seal. 2. Filled-in/signed & sealed Sub-delivery enquiry deviation format. 3. Pre-Qualification Requirement (Mandatory to get qualified for considering the technical Offer) 4. Filled-in/signed & sealed Annexure-A - Commercial terms and conditions. (Mandatory for Commercial evaluation) 5. If MSE vendor, please attach UAM registration copy along with CA Certificate.	Submitted/ Not Submitted
21	Any deviation on technical/QP/packing requirements shall specifically be indicated in the "sub-delivery enquiry deviation format" attached along with the enquiry. Deviations / clarifications declared elsewhere will not be evaluated. <u>Also, any deviations from the commercial terms and conditions shall be clearly spelt out in this format itself.</u> Deviations / clarifications declared elsewhere will not be evaluated. Deviations taken, if any, by vendor as per our requirement above shall be clearly got accepted by BHEL in writing during enquiry stage itself. In the event of an order no deviations, unless accepted clearly by BHEL in writing during enquiry stage will be entertained and all other techno-commercial requirements will be binding on successful bidder and failure to execute the terms will lead to disciplinary action by BHEL against the said bidder.	Accepted

22(a)	MSE Status : Whether vendor belongs to MSE category	Yes / No
22(b)	BENEFITS TO MSE VENDOR: MSE suppliers can avail the intended benefits only if they submit along with the offer, attested/notarized copies of either - Valid NSIC certificate or EM II certificate along with CA certificate applicable for the year, certifying quantum of investment in plant and machinery within the permissible limits as per the act for relevant status (MICRO or SMALL) where the deemed validity of EM II is over. OR Udyog Aadhaar Memorandum No. & CA Certificate applicable for the year, certifying quantum of investment in plant and machinery within the permissible limits as per the act for relevant status. Date to be reckoned for determining the deemed validity will be the last date of technical bid submission (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry, in case of any deficiency in the above required documents or in case the documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal even if submitted earlier. Documents should be notarized or attested by a Gazetted officer. For Package basis (Non-Splitable): i. If L1 vendor is an MSE vendor entire project package will be ordered on L1 vendor. ii. If a Non MSE vendor is coming as L1, then L1 prices will be counteroffered on MSE vendor who is quoting price within the price band L1+15% and if they are agreeing, purchase order will be awarded for full/complete supply of total tendered value to MSE. iii. If more than one MSE vendors are available in the L1+15% price band then lowest of the MSE vendor will be selected for counteroffering. If lowest MSE vendor is not accepting it will be counteroffered to the next MSE vendor in the price band and so on. iv. Finally if none of the MSE vendor in the price band is not accepting, it will be ordered on L1 non MSE vendor. For Item wise evaluation (Splitable): If a Non MSE vendor is coming as L1, then L1 prices will be counteroffered on MSE vendor who is quoting price within the price band L1+15% and if they are agreeing, purchase order will be awarded for 25% of the tendered quantity. ➤ 3% reservation for women owned MSEs, within the above mentioned 25% reservation. ➤ 6.25% reservation from MSE owned by SC / ST entrepreneurs, within the above mentioned 25% reservation. In case of more than one such MSE, the supply shall be shared proportionately. Definitions of MSEs owned by SC/ST is under: - In case of proprietorship firm, proprietor must be SC/ST. - In case of partnership firm, the SC/ST partners must be holding at least 51% shares in unit. In case of private limited companies, at least 51% share must be held by SC/ST promoters. Authorised Offices to Issue SC/ST certificate. The caste/Tribe/Community certificate issued by the following authorities in the prescribed form for SCs/STs can be considered. - District Magistrate / Additional District Magistrate / Collector / Deputy Commissioner / Additional Deputy Commissioner / Deputy Collector / 1st class stipendiary magistrate / Sub divisional Magistrate / Taluka Magistrate / Executive magistrate - Chief Presidency magistrate / Additional chief presidency magistrate/Presidency magistrate. - Revenue Officer not below the rank of Tehsildar. - Sub-Divisional officer of the area where the individual and / or his family normally resides. To avail the benefits of MSE under SC/ST category, the related documents as stated above should be submitted along with tender documents. Payment for MSE indigenous vendors will be as per MSMED Act, 2006.	Accepted
22(c)	Vendors who have registered themselves as MSE, cannot claim the benefits unless they submit the CA Certificate & UAM Registration copy along-with the EPS offer for each tender; failing which vendor shall not claim MSE benefits. As per Gazette Notification no. S.O. 2119(E) dated 26.06.2020 issued by Ministry of MSME regarding change in definition of Micro, Small & Medium Enterprises (MSMEs) applicable w.e.f. 01.07.2020 as follows: - Udyam Registration is a new process of MSME Registration launched by the Ministry of Micro, Small and Medium Enterprises on July 1, 2020. - All existing enterprises registered under EM-Part-II or UAM or any other registration issued by	Accepted

	any authority under the Ministry of MSME are required to register again on the Udyam Registration portal (https://udyamregistration.gov.in). Such enterprises are required to apply and obtain Udyam Registration on or after 1st July 2020. - On registration, an enterprise is assigned with a permanent identity number, known as "Udyam Registration Number". An e-certificate, namely, "Udyam Registration Certificate" will be issued on completion of the registration process. - The MSE status of existing enterprises registered prior to 30th June 2020 shall be valid only till 31st March 2021. (i.e.) Udyam Registration Certificate is mandatory for all MSME enterprises from 1st April 2021.	
23	While submitting price bid in the EPS, vendor shall not quote different prices for identical items listed in enquiry (main boilers & spares). In case different prices are quoted for same / identical items/ materials, lowest of the two will be considered for ordering.	Accepted
24	Vendor to submit unpriced bid along with the Part-I Bid in the EPS.	Noted
25	Any pre-bid queries / clarification / document requirement etc. shall be asked within 3-4 days of floating tender in EPS. Tender due date extension will not be given without valid reason. Tender due date extension request has to be given before due date / time along-with a valid reason.	Noted
26	It has been observed that vendor gives confirmation to commercial terms & conditions specified in this Annexure and gives different terms & conditions in the unpriced bid / offer documents, which will not be accepted. Only Annexure-A will be considered	Noted
27	"Sub-Delivery Enquiry Deviation Format" is important document which has to be filled, (signed & sealed) with all the technical reference document detail and attached along with the offer in the EPS. In case of no deviations. Please mention NIL DEVIATION.	Noted
28	All the technical documents, if attached by BHEL along with the enquiry/ RFQ (Specification / Drawing / QP / Datasheet / Packing Procedure etc.) which are part of this e-tender, should bear your conformation / confirmation and sign with seal on each page. The same shall be scanned & attached as PDF files along with the offer for technical evaluation. (In case of Spares, reference PO is mentioned in the tender general notes, then technical documents need not be submitted, however, Deviation format mentioning the reference PO needs to be submitted)	Technical Docs Submitted / Not Submitted
29	Technical / commercial clarification, if any, will be initiated through EPS / email. Vendor to respond to the clarifications within 3 working days. If the vendor fails to respond, even after three reminders, then the vendor will be considered as non-responsive and is liable to be rejected. Please note that EPS generates auto email whenever clarification / tender event is scheduled. Vendor to keep track and respond immediately.	Noted
30	PO Acknowledgement: Within 5 days from the date of receipt of scanned PO copy through email.	Accepted
31	Inspection notice period: Vendor shall raise inspection call to Third Party Inspection Agency / BHEL at least FOUR working days, prior to the proposed date of inspection.	Accepted
32	FORCE MAJEURE CLAUSE: If, at any time during the continuance of Contract the performance in whole or in part by either party of any obligations under the Contract shall be prevented or delayed by reason of any War, Hostile acts of the public enemy Civil Commotion, Epidemics, or Acts of God (Floods, Storm/Cyclone, Hurricane, Earth Quake etc.) then provided notice of happening of any such event is given by either party to other within 7 days from the date of occurrence therefor neither party shall by reason of such event be entitled to terminate this Contract nor shall either party have any claim for damages against the other in respect of such non-performance and delay in performance under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist. If the performance in whole or part of any obligation under the Contract is prevented or delayed by reason of any such event, claims for extension of time shall be granted for periods considered reasonable by BHEL, subject to prompt notification by the contractor.	Accepted
33	Fraud Prevention Policy Suppliers involving in fraudulent practices or delayed supply (or) non-Supply will be dealt with provision as indicated in "Guidelines for Suspension of Business Dealings with Suppliers / Contractors" which is hosted in website www.bhel.com. The offers of the bidders who are under suspension as also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site www.bhel.com. 1.0 Integrity commitment, performance of the contract and punitive action thereof: 1.1 Commitment by BHEL: BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the contract. BHEL will during the tender process treat all Bidder(s) in transparent and fair manner, and with equity. 1.2 Commitment by Bidder / Supplier / Contractor: 1.2.1. The bidder / supplier / contractor commit to take all measures to prevent corruption and will	Noted

	not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India. 1.2.2. The bidder / supplier / contractor will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to relevant guidelines issues from time to time by Govt. of India / BHEL. 1.2.3. The bidder / supplier / contractor will perform / execute the contract as per the contract terms & Conditions and will not default without any reasonable cause, which causes loss of business / money / reputation, to BHEL. If any bidder / supplier / contractor during pre-tendering / tendering / post tendering / award / execution / post-execution stage indulges in mal-practices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the price or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then action may be taken against such bidder / supplier / contractor as per extant guidelines of the company available on www.bhel.com and / or under applicable legal provisions.	
34	In the event of PO, the reference date for LD calculation will be date of final inspection Agency's signed Inspection report / Test certificates for Ex-Works & FOB contracts. The reference date for F.O.R contracts will be Invoice date / Lorry way bill date LR date/ Railway Receipt date, whichever is later.	Accepted
35	Inspection & testing requirements: Inspection and testing requirements are to be carried out as per the specification and BHEL/customer approved QAP and all test certificates are to be submitted in complete set as indicated in our specification /QAP. In case of Vendor QP the same shall be submitted for approval along with the offer.	Noted
36	Repair & replacements: Within the guarantee period vendor has to replace / rectify the defective/ damaged items on free of cost within a reasonable time of reporting from our end. All incidental charges like freight, insurance and customs duty / GST are to vendor account only. The defective parts and components shall be collected by your Indian agent or / authorized person, only after completing the replacement / repairs. The defective parts / components will not be returned back to vendor works by us due to procedural problems.	Accepted
37	BHEL reserves the right to cancel / modify the tender, if the need so arises, without assigning any further notice or reason therefore.	Accepted
38(a)	Preference to Make in India: "For this procurement, the local content to categorize a supplier as Class I local supplier/ Class II supplier /Non- Local supplier and purchase preference to Class I local supplier, is defined in Public Procurement (Preference to Make in India), Order 2017 dated 04.06.2020 issued by DPIIT. In case of subsequent orders issued by the 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".	Noted
38(b)	Indigenous vendors to submit Self-certification in Letterhead indicating the percentage of Local content as per given format.	Submitted / Not Submitted
39	The present tender is not for ordering. This enquiry is for finalizing Rate Contract (RC). PO will be released within the validity of RC as per BHEL requirement. Delivery will be calculated from the date of individual purchase orders.	Accepted
40	Rate Contract will be valid for one year from the date of finalizing the contract (MOU Date). Delivery shall be from the date of PO.	Accepted
41	FIRM Price is only applicable, Offer with PVC will not be considered.	Accepted
42	The indicated quantity in the tender is tentative and a tolerance of +/- 20% will be applicable for each item.	Accepted

By signing this Annexure, the vendor consents that the terms & conditions accepted, in this Annexure-A alone, shall be binding between BHEL and the Vendor; and no other terms quoted / mentioned, elsewhere in the Offer / Quotation will be considered / accepted by BHEL.

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



/ On Bidder's office letter pad /

Self-Declaration

Enquiry No.	
Enquiry Date	

In line with Government public procurement order Number P-45021/2/2017-B.E-II dated 15.06.2017, and further modified order dt.04.06.2020 issued by DPIIT,

I / We hereby declare that I / We are a "Local Supplier" meeting the requirement of minimum local content (.....%) defined in the above government notification for the goods against above mentioned enquiry Number.

Details of location at which local value addition will be made is as follows:

Door No.	
Street / Address 1	
Street / Address 2	
District	
State	
Country	
PIN Code	

We also understand that the false declarations will be considered as breach of Integrity and liable for action.

For Company Name:

Seal:

Signature:

Date:

Place:

(Please fill all the yellow color field)

 BHEL - TRICHY	THIRD PARTY NON-DISCLOSURE AGREEMENT		Doc.No. : ISMS-04/TP/011	
			Ver. No: 3.0	Rev. No: 00
			Date : 27 - 10 - 14	

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

**MATERIALS MANAGEMENT / BOI****SUB-DELIVERY ENQUIRY DEVIATION FORMAT**

Page : of

Schedule of deviation to
Sub-delivery Enquiry No. : **1702000310 dated 07.08.2020**Description : **Sensor and Sonic Tube Assembly**Documents :
1) Spec: CI:BS10:AUTOPURGE:STASA Rev.02
2) Spec: CI:BS10:STD:STASA Rev.00
3) Spec: CI:BS10:AutoPurge:STASA Rev.00
4) Spec: CI:BS10:Non-Autopurge:STASA Rev.00Drawing No. :
1) 2-97-585-01398 Rev.07
2) 3-97-585-12409 Rev.06
3) 3-97-585-21633 Rev.01

Quality Plan : QA:CI:STD:QP:73 Rev.00

Packing Procedure : QA:CI:STD:PR:04 Rev.03

Document reference	BHEL called for	Firm's alternative offer

Certified that other than the above deviations, we are accepting all the other specifications and requirements in full to your Enquiry.

Station :

Date : Signature of firm's representative Firm seal

Note :
1. Deviations should be taken only in the extreme case
2. If necessary, use additional sheets with page control number



BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI - 620014

QA:CI:STD:QP:73

Rev: 00

Page: 1 of 3

CONTROLS AND INSTRUMENTATION/QA/FB

STANDARD QUALITY PLAN FOR

SENSOR, SONIC TUBE ASSEMBLY AND PURGE ACCESSORIES

REV	DATE	PREPARED	REVIEWED	APPROVED	REVISION HISTORY
00	15/06/2013	RM.VAIRAVAN 	N.SRIDHAR 	K.PALANIVEL 	Initial release.



BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI - 620014

QUALITY PLAN FOR
SENSOR, SONIC TUBE ASSEMBLY AND
PURGE ACCESSORIES

QA:CI:STD:QP:73

Rev: 00

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Sl. No	Component & Operation	Characteristics	Class	Type of Check	Quantum of check		Ref Doc. & Acceptance STD	Format of record	AGENCY			Remarks
					M	B/C			M	B	C	
A	Finished Product Inspection											
1.	Sensor Assembly	a. Material	Major	CHEM	Sample	Sample	IS 2062 & IS 1079	TC	V	V	-	
		b. Over all Dimension	Major	MEAS	100%	20%	BHEL Specification & BHEL Approved Drawings	TR	P	W	-	
		c. Verification of BOM	Major	VISU	100%	100%	-Do-	TR	P	W	-	
2	Sonic Tube Assembly	a. Material	Major	CHEM	Sample	Sample	IS 2062 & IS 1079	TC	V	V	-	
		b. Over all Dimension	Major	MEAS	100%	20%	BHEL Specification & BHEL Approved Drawings	TR	P	W	-	
		c. Verification of BOM	Major	VISU	100%	100%	-Do-	TR	P	W	-	
		d. Straightness of Assembly	Major	VISU	100%	20%	-Do-	TR	P	W	-	
		e. Bend Alignment	Major	VISU	100%	20%	-Do-	TR	P	W	-	
		f. Hydro test on Pipe Line	Major	ENVI	100%	100%	-Do-	TR	P	W	-	1.5 Times of rated pressure
		g. Paint shade & Surface Finish	Major	VISU	100%	20%	-Do-	TR	P	W	-	
3	Purge accessories	a. Material	Major	CHEM	Sample	Sample	IS 2062 & IS 1079	TC	V	V	-	
		b. Over all Dimension	Major	MEAS	100%	20%	BHEL Specification & BHEL Approved Drawings	TR	P	W	-	
		c. Alignment	Major	VISU	100%	20%	-Do-	TR	P	W	-	

M- MANUFACTURER/ SUB-VENDOR; B - BHEL / TPI ; C - CUSTOMER / TPI
P - PERFORM; W - WITNESS V - VERIFICATION;



BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI - 620014

QUALITY PLAN FOR
SENSOR, SONIC TUBE ASSEMBLY AND
PURGE ACCESSORIES

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B.NOTES:

1.LEGENDS:

TR	:	Test Report	MEAS	:	Measurement
VISU	:	Visual	TC	:	Test Certificate
ENVI	:	Environment	CHEM	:	Chemical

- The vendor shall arrange all testing facilities at their works. Tests for which facilities are not available are to be carried out at recognized National Test Houses like ETDC/CIL/NPL/ERTL etc., at vendor cost.
- Through Log Book / any other documents available at the vendor's works, it shall be possible to correlate the finished products with raw material and in process stage checks / inspection carried out.
- All Measuring and Testing Instruments shall be periodically calibrated from recognized test houses & certificates made available during inspection for verification.

- Test reports for routine test are to be furnished by the vendor.
- Vendor to give tentative inspection program in advance and confirm exact date two weeks in advance for arranging BHEL's inspection.
- Packing shall be as per the "PACKING PROCEDURE" indicated in the specification.

C. REFERENCE STANDARDS:

(For Indicated Standards Refer the Latest Version)

IS 2062	:	Hot Rolled Medium and High Tensile Structural Steel-Specification
IS 1079	:	Hot Rolled Carbon Steel Sheet and Strip Specification

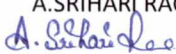
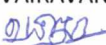
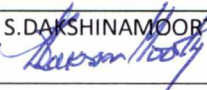
SQP73R0.DOC

M- MANUFACTURER/ SUB-VENDOR; B - BHEL / TPI ; C - CUSTOMER / TPI
P - PERFORM; W - WITNESS V - VERIFICATION;

**BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI**

**CONTROLS AND INSTRUMENTATION / FB
QUALITY ASSURANCE**

**STANDARD PACKING PROCEDURE
FOR
ALL INSTRUMENTS AND MISCELLENEOUS ITEMS
(ELECTRICAL, ELECTRONIC AND PNEUMATIC)**

Rev	Date	Prepared	Checked	Approved	Revision History
00	01.01.96	Sd/-	Sd/-	Sd/-	Initial History
01	28.03.02	Sd/-	Sd/-	Sd/-	Department name changed
02	26.02.07	Sd/-	Sd/-	Sd/-	Revised after discussion with Shipping Dept.
03	17.12.16	A.SRIHARI RAO 	RM.VAIRAVAN 	S.DAKSHINAMOORTHY 	Revised to suit all type of instruments.

1. Scope

This procedure gives minimum guidelines to be complied with for packing of Electrical, Electronic and pneumatic Instruments. This packing shall be suitable for different handling operations and for the adverse conditions during transportation and during indoor / outdoor storage for period more than one year.

2. Material for packing

The individual instrument shall be packed in carton box (specifically made for particular instrument) and grouped together inside a box made of wood or plywood as per National / International standard.

3. Packing

- Items shall be inspected for cleanliness immediately before packaging. Dirt, oil, residue, metal chips or other forms of contamination shall be removed.
- Adequate protection shall be provided against mechanical damage and atmospheric corrosion in transit and, for equipment suitable for outside storage, for prolonged storage at the site prior to installation.
- Water proof barrier material – high density polythene shall be used as a resistant to grease and water; it shall protect items from airborne and windblown soils.
- Desiccants like silica gel to be used inside the carton box. Silica gel shall conform to IS 3401. The gel is to be packed in sachets placed at different positions inside the components for absorbing moisture. The quantity of silica gel shall be adequate for storage period of one year.
- All tapped openings in equipment shall be plugged with plastic plugs to protect internal / external threads.
- Use a sturdy cardboard shipping carton, large enough for at least 3 inch foam padding around the instrument.
- Do not use loose plastic foam pieces, which can shift during transport.
- Secure the box flaps with packaging tape or box staples.

3.1) Marking & Labelling:

- Components and their containers shall be identified by marking. Shipping marks shall be on all sides of package. The shipping marks shall be at least 3 inches high where space permits. Markings are to be in black paint or ink depending on shade of the package surface.
- Cautionary symbols to be stenciled in red waterproof paint or ink.

QA:CI:STD:PR:04 / Rev 03

- The gap between job and the box shall be filled with suitable material like jute, coir, thermo coal, etc.
- For export packing additional care shall be taken as per contract requirements if applicable. Otherwise, suitable box made of seasoned wood and / or plywood sheets of required thickness shall be used with suitable sea worthy packing protection.

4. Marking

- After completing the packing, Stencil marking, as per dispatch instructions and symbol marking as per Annexure – I shall be made. Please ensure the box is stenciled with “FRAGILE ITEM”, “HANDLE WITH CARE”.

5. Packing Slip

- A copy of the packing slip, kept in a polythene cover shall be kept inside the box. Another copy of the packing slip, kept in a polythene cover shall be kept outside the box and firmly fixed to the case.

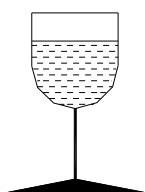
6. Caution

- Do not pack any other Mechanical items with this case.

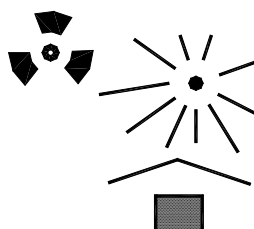
7. General

- These packing procedures are the minimum requirements in addition to the standard instructions mentioned in the Purchase Order and Specification.
- Deviation to meet the packing procedure requirements / non-clarity in packing approach in any quotation will be liable for rejection of offer.

ANNEXURE – 1



FRAGILE, HANDLE WITH CARE



PROTECT FROM HEAT AND RADIOACTIVE SOURCES



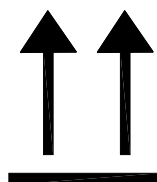
USE NO HOOKS

NOTE: The design of heavy goods packages cannot always resist top lifting by grabhooks.



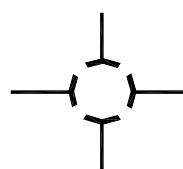
KEEP DRY

NOTE: Not all cases have waterproof internal liners: plywood used in the construction may not have a waterproof glue line.



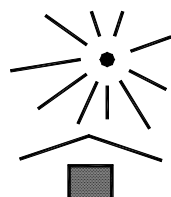
THIS WAY UP

NOTE: Certain designs of small cases make it difficult to distinguish top from bottom.

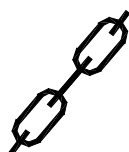


CENTRE OF GRAVITY

NOTE: This should be stencilled as a minimum on the two longest case sides (this information will normally be supplied by the manufacturer of the item(s) packed).

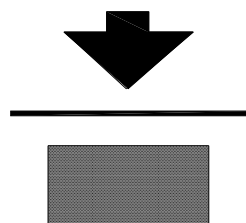


KEEP AWAY FROM HEAT



INTERNATIONAL "SLING HERE" SYMBOL

... kg max



STACKING LIMITATION

NOTE: The maximum load in kilograms should be marked above the arrow.

BHARAT HEAVY ELECTRICALS LIMITED

HIGH PRESSURE BOILER PLANT, TIRUCHIRAPPALLI 620 014.

CONTROLS AND INSTRUMENTATION / FB



TECHNICAL SPECIFICATION

FOR

SENSOR & SONIC TUBE ASSEMBLY

SPEC. REF:- CI:BS10:STD:STASA

REVISION HISTORY

Rev. No.	DATE	DESCRIPTION	PREPARED SR	CHECKED MVR	APPROVED AKP
00	28-04-16	Initial Release	S. Rajasweli	Ramant.	A. Ande

CONTENTS:

1. General Instructions.
2. Drawing & Data Sheet List.
3. Quality Plan & Inspection.
4. Documentation.
5. Packing.
6. Special Instructions.

Annexure:

1. Sensor assembly- Drg. No. 3-97-585-21634.
2. Sonic Tube Assembly- Drg. No. 1-97-585-01340
3. Deviation format
4. BHEL QP.

1.0 General Instructions.

- 1.1 In the event of order, the entire specification will form part of purchase order for compliance during execution.
- 1.2 Deviation if any shall be clearly brought out in the "BHEL Deviation Format". Otherwise it will be construed that the vendor is fully complying with the specification.

2.0 Drawing & Data Sheet List:

- 2.1 Vendor shall supply all the items as indicated in the following drawings as loose supply.
 - a) Sensor assembly -Drg. No. 3-97-585-21634.
 - b) Sonic Tube Assembly- Drg. No. 1-97-585-01340.

3.0 Quality Plan & Inspection

- 3.1 Quality plan BHEL SQP ref QA:CI:STD:QP:73 shall be followed.
- 3.2 Advance information shall be intimated to BHEL,7 days ahead from the date of Inspection for clearance/acceptance of material.

4.0 Documents Required

A. Along with offer:

- i) Vendor to duly signed and stamped for compliance/confirmation for the BHEL specification
- ii) Material certificate of all items mentioned shall be furnished along with offer.
- iii) Documents not required for engineering approval. BHEL Drawing shall be followed.

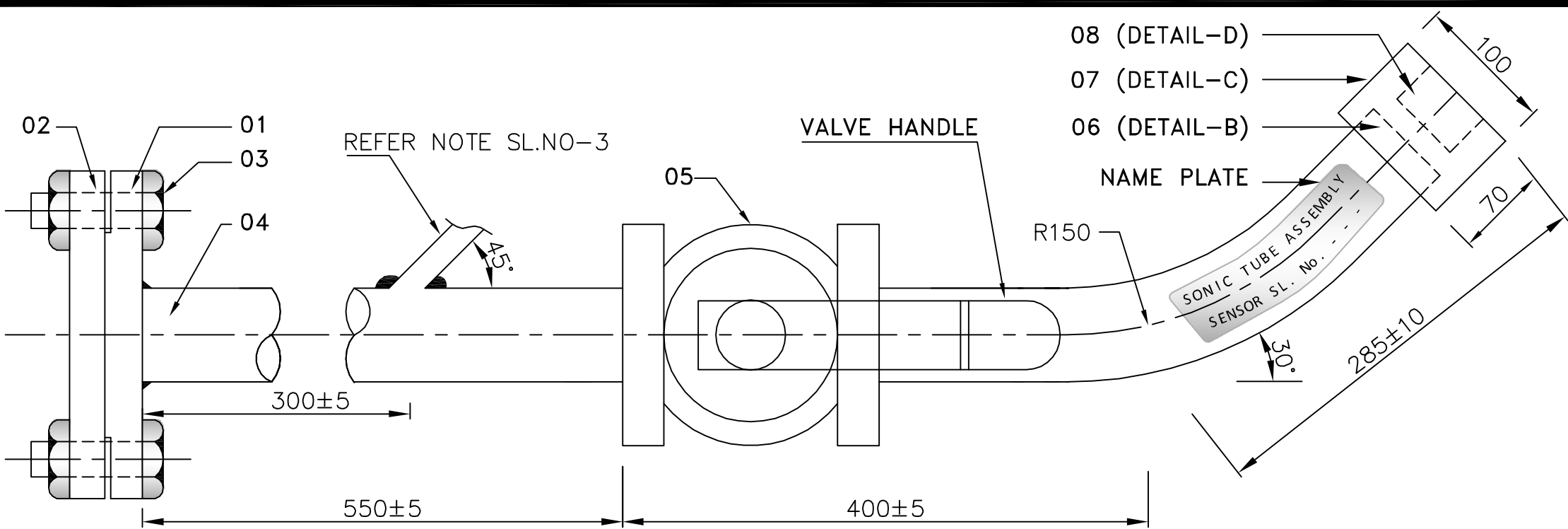
5.0 Packing:

Materials shall be packed as per packing procedure ref. No. QA:CI:STD:PR:04, Rev. 02 shall be followed.

6.0 Special Instructions.

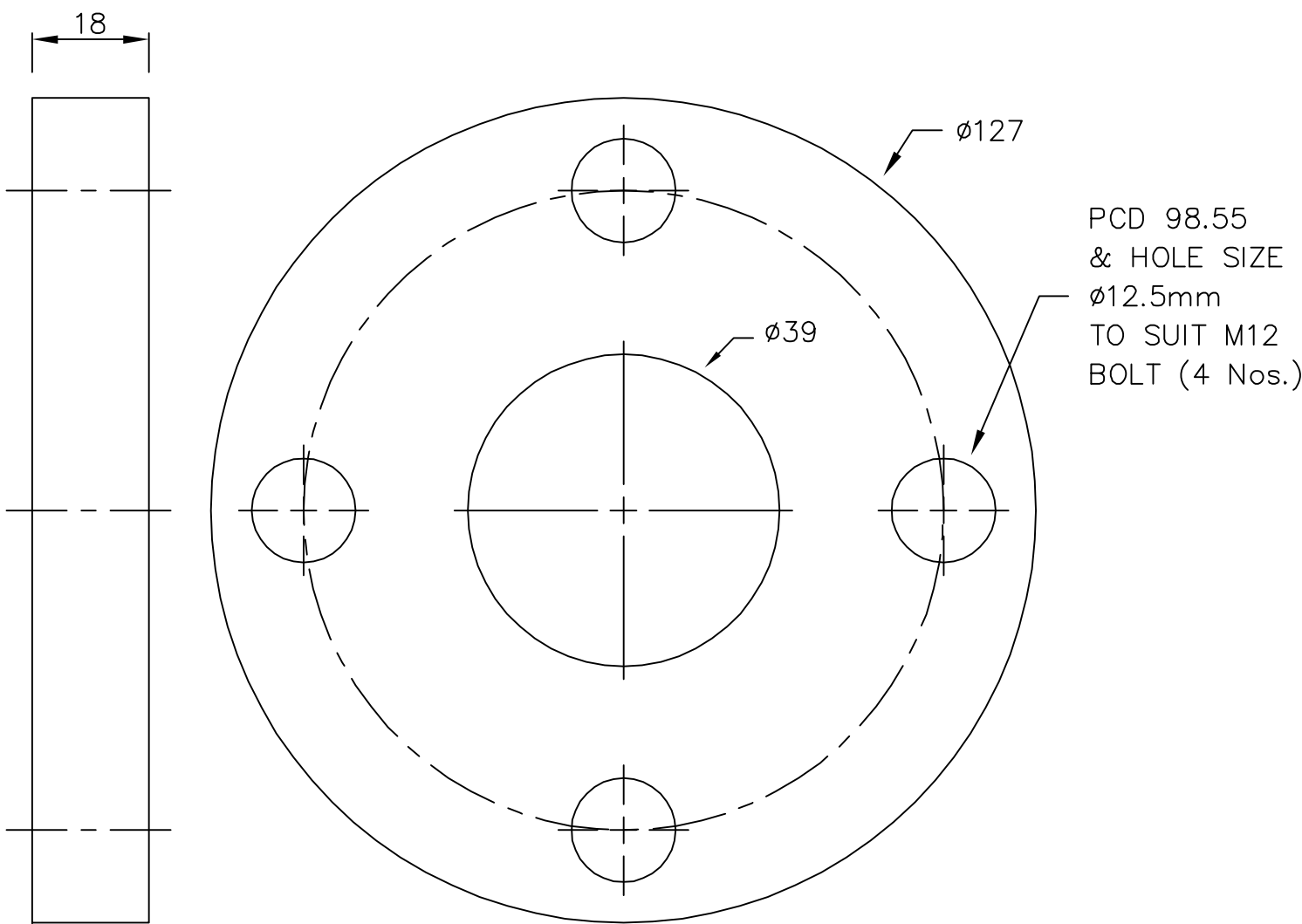
- 6.1 Warranty: 18 months from the date of supply and 12 months from the date of commissioning.

6.2 Nothing in this specification shall be construed to relieve the vendor from his responsibility. This specification covers briefly the requirements of the system. It is the responsibility of the vendor to take care of other basic and essential requirements to manufacture a quality product and complete system.

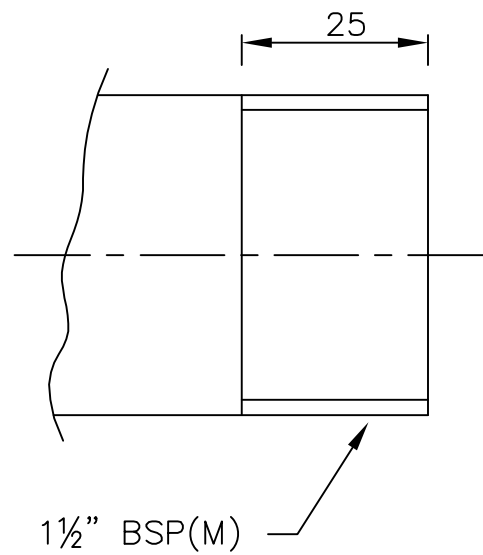


SONIC TUBE ASSEMBLY

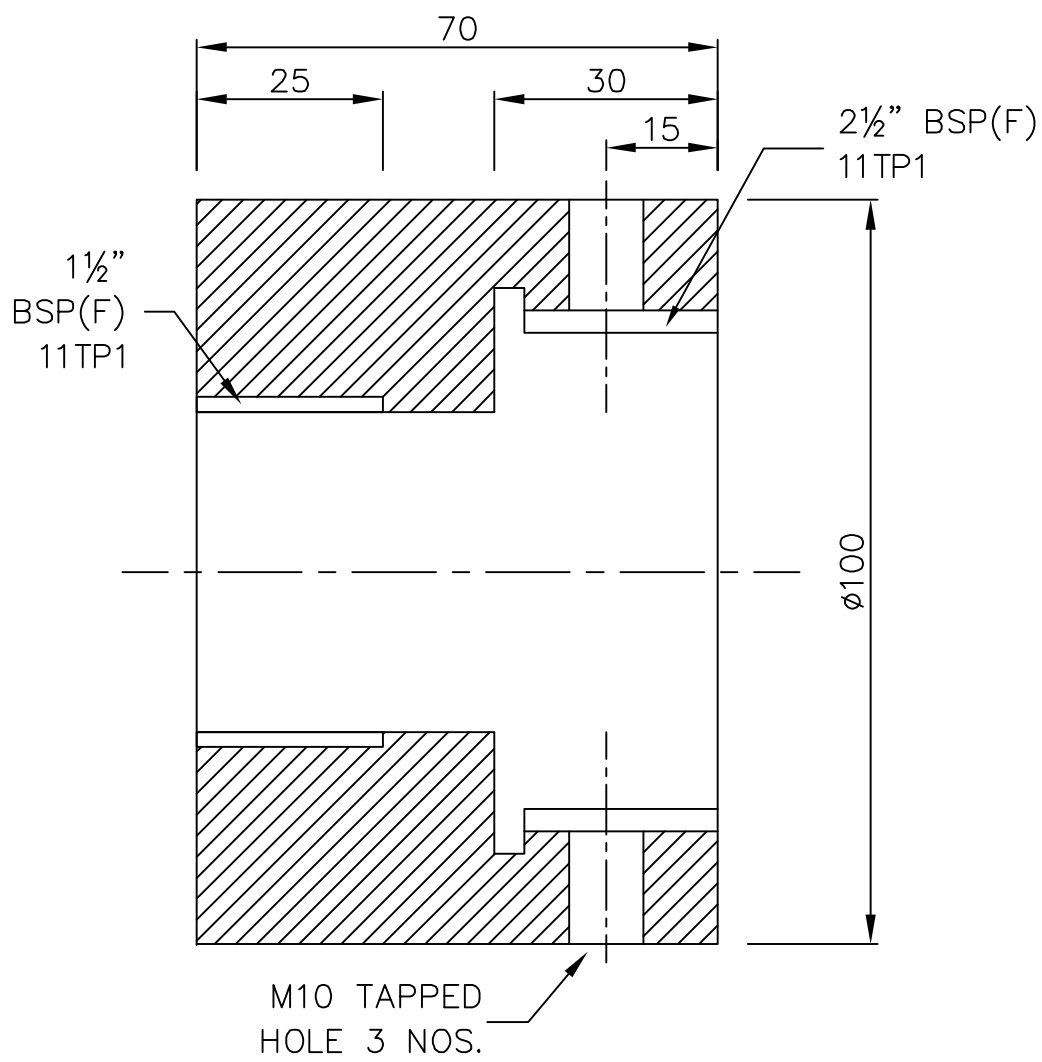
ITEM No.	DESCRIPTION	MATERIAL	QTY.
01	SS FLANGE – REFER DETAIL – A	SS304	1 No.
02	TEFLON FLANGE – REFER DETAIL – A	TEFLON	1 No.
03	M12x100mm(L) BOLTS, NUTS & WASHER	MS ZINC. PASSIVATED	4 SETS
04	PIPE $\varnothing$ 48.3 X 3.68	ASTM 335P22	1 No.
05	1½” BALL VALVE. REFER NOTE – A	–	1 No.
06	PIPE $\varnothing$ 48.3 X 3.68 WITH BEND	ASTM 335P22	1 No.
07	TEFLON COUPLING – REFER DETAIL – C.	TEFLON	1 No.
08	SS SLEEVE – REFER DETAIL – D	SS304	1 No.
09	GRUB SCREW M10 x 12 MM	HS	3 Nos.



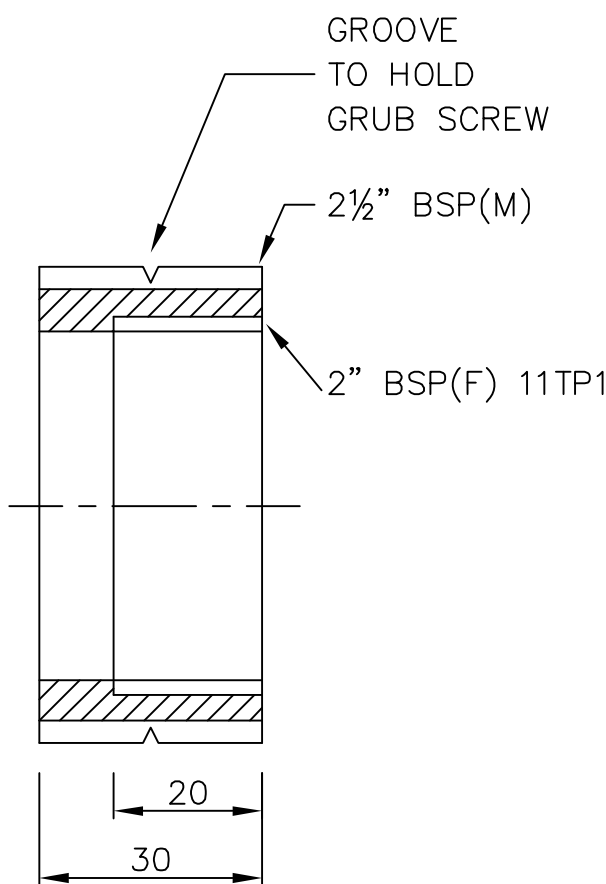
ITEM NO. - 01 & 02
DETAIL-A, FLANGE



ITEM NO. - 06
DETAIL-B



ITEM NO. - 07
DETAIL-C



ITEM NO. - 08
DETAIL-D

NOTE - A

BALL VALVE SIZE : 1½” BALL VALVE CLASS 150
SCREWED TYPE AS PER BHEL PMD
BALL MATERIAL : SS 410/304/316
SEAT GASKET : CFT
TEMP : 200°C
BODY MATERIAL : CS
LEVER MATERIAL : CS

NOTE

1. SENSOR LOCKING ARRANGEMENT IS PROVIDED BY MEANS OF GRUB SCREWS.
2. DURING INSPECTION, APPROVED VENDOR DRAWINGS SHALL ONLY BE REFERRED.
3. PURGE PORT. REFER : 3-97-585-12409 FOR DETAILS.
4. ALL DIMENSIONS HAVE ± 1 mm TOLERANCE, IF NOT MENTIONED IN THE DRAWING.

REV	DATE	ALTERED : <i>அ.தமிழ்</i>	REV	DATE	ALTERED : <i>அ.தமிழ்</i>	REV	DATE	ALTERED : <i>அ.தமிழ்</i>	REV	DATE	ALTERED : <i>அ.தமிழ்</i>	REV	DATE	ALTERED : <i>அ.தமிழ்</i>
05	010806	CHD./APPD. : Sd./PLP-SRC	04	150606	CHD./APPD. : Sd./PLP-SRC	03	140705	CHD./APPD. : Sd./PLP-SRC	07	071013	CHD./APPD. :	06	220908	CHD./APPD. : Sd./PLP-SRC
ZONE	TO INDICATE SENSOR LOCKING.		ZONE	GROOVE IS PROVIDED IN SS SLEEVE.		ZONE	REVISED DUE TO INCORPORATE ADDITIONAL DETAILS		ZONE	GENERAL REVISION		ZONE	AS BUILT DRAWINGS.	

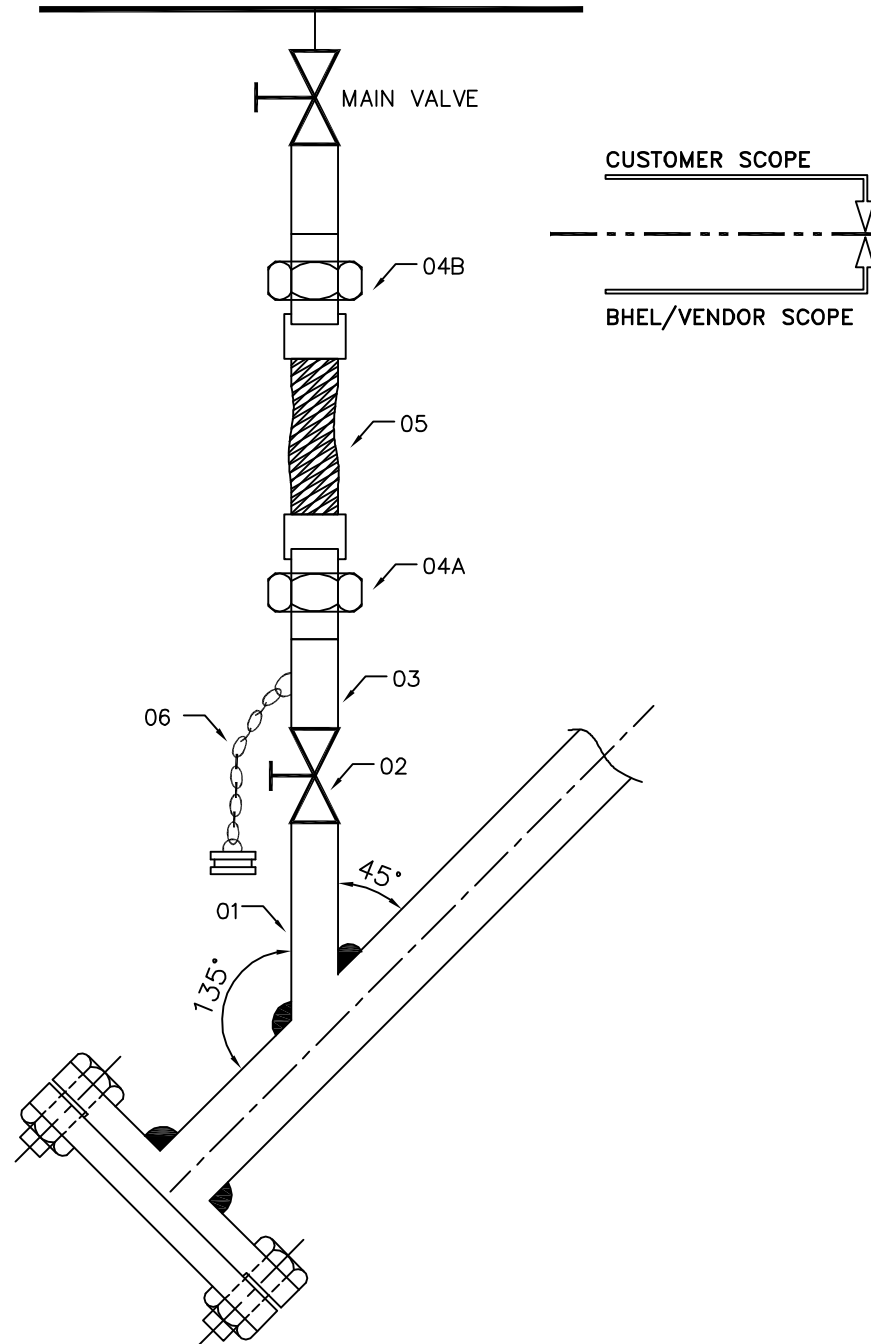
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
S T A N D A R D									
DEPT.: C & I		Bharat Heavy Electricals Ltd		UNIT: HIGH PRESSURE BOILER PLANT		TIRUCHIRAPALLI – 620014		DRAWING NO : 2-97-585-01398	
CODE : 392		ALL DIMENSIONS ARE IN MM		SCALE NTS		WEIGHT (Kg) —		REV 07	
TITLE		BHELSONIC – ACOUSTIC STEAM LEAK DETECTION SYSTEM SONIC TUBE ASSEMBLY		CARD CODE U 01		REF TO ASSY / OLD DWG		NO. OF ITEMS	

3-97-585-12409

DRAWING NO:

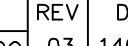
AIR HEADER (SERVICE AIR AT 5-7 KG/SQ.CM)



SL. No.	DESCRIPTION	MATERIAL	QTY.
01.	200MM LONG PIPE WITH ONE SIDE SOCKET WELD & 1/2" NPT(M) ON THE OTHER SIDE.	SS304	1 No.
02.	1/2" BALL VALVE, NPT(F) ON BOTH SIDES.	SS	1 No.
03.	100MM LONG PIPE WITH 1/2" NPT(M) ON BOTH SIDES.	SS304	1 No.
04A.	ADAPTER 1/2" NPT(F) & 1/2" BSP(M)	SS304	2 Nos.
04B.	ADAPTER 1/2" NPT(M) & 1/2" BSP(M)	SS304	1 No.
05.	1/2" SS BRAIDED SS HOSE OF 3 METER LENGTH WITH END FITTINGS OF 1/2" BSP(F) ON BOTH ENDS WITH FEMALE THREADED SWIVEL NUT, WORKING PR. = 7 KG/SQ.CM, TEST PRESSURE = 1.5 TIMES OF WORKING PRESSURE (11KG/SQ.CM)	SS	1 No.
06.	END CAP CHAIN WITH 1/2" BSP(F) SUITABLE FOR ADAPTER	SS	1 No.

NOTE

1. ALL ITEMS ARE OF VENDOR SCOPE.
2. THIS SCHEME IS SHOWN FOR SENSOR-1. TYPICAL FOR OTHER SENSORS.
3. REFER TO DRAWING NO. 2-97-585-01398 FOR OTHER DETAILS OF SONIC TUBE ASSEMBLY.
4. ANY OTHER ACCESSORIES LIKE UNION, REDUCER ETC. IF REQUIRED SHALL BE SUPPLIED BY VENDOR SO THAT AIR PIPING ERECTION IS COMPLETE IN NATURE.
5. ALL ABOVE INDICATED DIMENSIONS HAVE $\pm 1\text{MM}$ TOLERANCE.
6. PAINT COLOUR & THICKNESS WILL BE INFORMED AFTER PLACEMENT OF AN ORDER.

REV 04	DATE 150606	ALTERED :  CHD. / APPD. :Sd./PLP-SRC	REV 03	DATE 140705	ALTERED :  CHD. / APPD. : Sd./PLP-SRC
ZONE	ADAPTER DETAILS ARE CHANGED		ZONE	SS HOSE IS INDICATED	
REV 06	DATE 211013	ALTERED :  CHD. / APPD. :	REV 05	DATE 220908	ALTERED :  CHD. / APPD. Sd./PLP-SRC
ZONE	GENERAL REVISION		ZONE	AS BUILT DRAWINGS.	

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

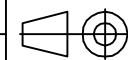
S T A N D A R D



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

DEPT. : C & I

CODE : 392



ALL
DIMENSIONS
ARE IN MM

SCALE
NTS

WEIGHT (Kg)

REF TO ASSY / OLD DWG

ITEM
NO

No OF
ITEMS

TITLE

BHELSONIC-ACOUSTIC STEAM LEAK
DETECTION SYSTEM - PURGE AIR SCHEME

Sheet 01 Of 01

CARD
CODE
U 01

DRAWING NO :

3-97-585-12409

REV

06

BHARAT HEAVY ELECTRICALS LIMITED

HIGH PRESSURE BOILER PLANT, TIRUCHIRAPPALLI 620 014.

CONTROLS AND INSTRUMENTATION / FB



TECHNICAL SPECIFICATION
FOR
SENSOR ASSEMBLY &
SONIC TUBE ASSEMBLY (AUTO PURGE)
OF
BHELSONIC SYSTEM

SPEC. REF:- CI:BS10:AUTOPURGE:STASA

REVISION HISTORY

Rev. No.	DATE	DESCRIPTION	PREPARED MVR	CHECKED MVR	APPROVED AKP
00	08.04.14	Initial Release	<i>Ramany</i>	<i>Ramany</i>	<i>AKP</i>

CONTENTS:

1. GENERAL INSTRUCTIONS TO VENDORS
2. DRAWING & DATA SHEET LIST
3. QUALITY PLAN & INSPECTION
4. DOCUMENTATION
5. PACKING
6. SPECIAL INSTRUCTIONS TO VENDORS

Annexure:

1. Drg. No. 3-97-585-21634 - Sensor assembly.
2. Drg. No. 2-97-585-01418 - Sonic Tube assembly.
3. Drg. No. 3-97-585-21633 - Purge air scheme.
4. Deviation format
5. BHEL QP format

Note:-

Clarification required, if any, on the enclosed specification shall be referred to the purchaser within 10 days from the date of enquiry.

1.0 GENERAL INSTRUCTIONS TO VENDORS:

- 1.1 Vendor shall check receipt of complete documents referred to in the 'Contents'.
In the event of order, the entire specification will form part of purchase order for compliance during execution.
- 1.2 Deviation if any shall be clearly brought out in the "Deviation schedule".
Otherwise it will be construed that the vendor is fully complying with the specification.

2.0 DRAWING & DATA SHEET LIST:

- 2.1 Vendor shall supply all the items as indicated in the following drawings as loose supply.
 - a) Drg. No. 3-97-585-21634 – STLD - Sensor assembly.
 - b) Drg. No. 2-97-585-01418 – STLD - Sonic Tube assembly.
 - c) Drg. No. 3-97-585-21633 – STLD - Purge air scheme.
 - d) REF: CI:BS10:SVAFR:DS
(Latest revision of above drawings to be considered)
- 2.2 Vendor shall submit detailed Bill of Material, indicating break up prices for all items.
- 2.3 15 meter length of pig tail cable (outer diameter around 16mm) will be supplied for each sensor assembly. BHEL will provide the same as a "free issue" item in one length to the vendor for cutting & soldering with the cable connector.

3.0 QUALITY PLAN & INSPECTION

- 3.1 Quality plan BHEL SQP ref QA:CI:STD:QP:73 shall be followed.
- 3.2 Advance information shall be intimated to BHEL, 7 days ahead from the date of Inspection for clearance/acceptance of material.

4.0 DOCUMENTS REQUIRED

A. Along with offer: (3 sets):

- i) Vendor to duly signed and stamped for compliance/confirmation for the BHEL specification
- ii) Material certificate of all items mentioned shall be furnished along with offer.

B. After Placement of Purchase Order for Approval: (3 sets) (within 2 weeks from PO date)

Detailed dimensional drawings of sensor and sonic tube assembly and purge air scheme shall be furnished for review and approval by engineering before start of manufacturing.

5.0 PACKING:

Materials shall be packed as per packing procedure ref. No. QA:CI:STD:PR:04, Rev. 02 shall be followed.

Solenoid valve (SV) & Air filter regulator (AFR) shall be individually wrapped with bubbled polythene sheet, packed in moulded thermocole boxes, filled with tightly with thermocole beads and further packed suitable to avoid transport and storage damages.

6.0 SPECIAL INSTRUCTIONS TO VENDORS

- 6.1 Warranty: 18 months from the date of supply and 12 months from the date of commissioning.
 - 6.2 Nothing in this specification shall be construed to relieve the vendor from his responsibility. This specification covers briefly the requirements of the system. It is the responsibility of the vendor to take care of other basic and essential requirements to manufacture a quality product and complete system.
-

Bharat Heavy Electricals Limited

HPBP, TIRUCHIRAPPALLI 620 014.

CONTROLS AND INSTRUMENTATION / FB

REF: CI:BS10:SVAFR:DS:00

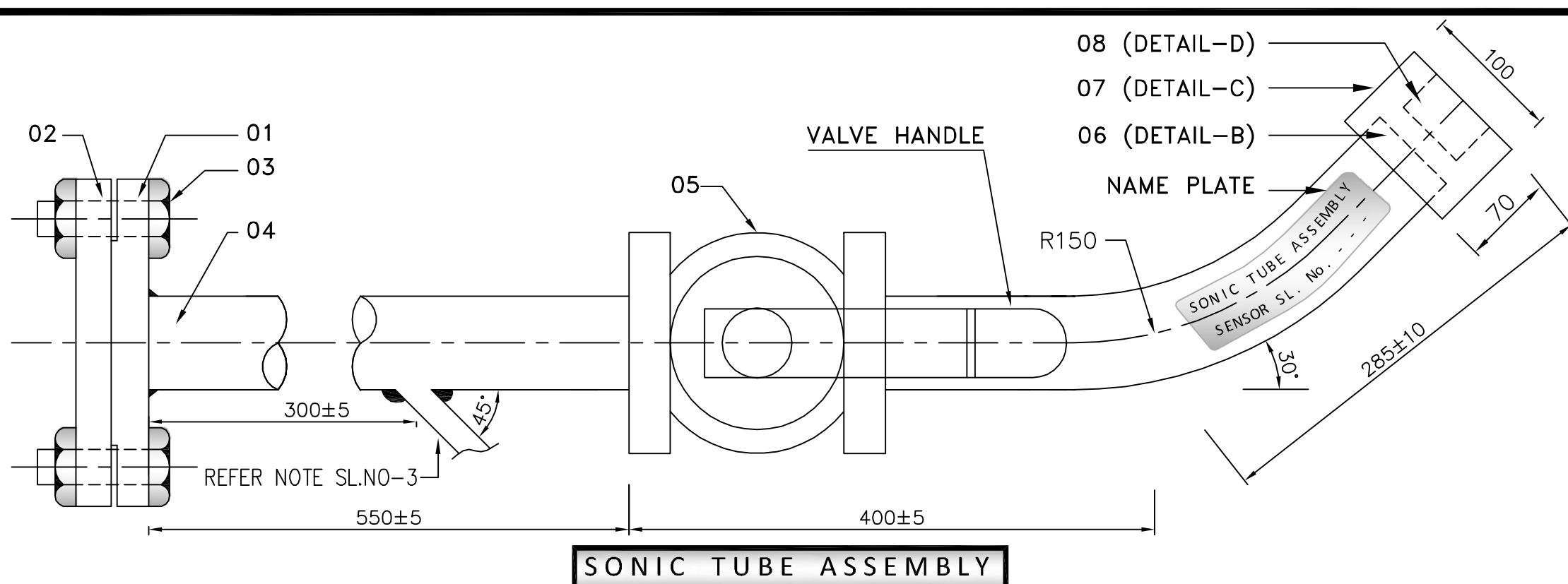
Data for Solenoid Valve

Sl.No.	Description	Requirement
1.	Operating Voltage	24V DC
2.	End Connection	1/2" NPT (F)
3.	Medium	Air
4.	Operating Pressure	0 – 10 Kg/cm ²
5.	Coil Enclosure	IP67 or better
6.	Cable Entry	1/2" NPT
7.	Seat Material	Viton
8.	Manual operation provision	yes
9.	Body material	SS316
10.	Valve type	Solenoid operated
11.	Temperature	80°C -10°C to 70°C
12.	Make	BHEL PMD VENDOR

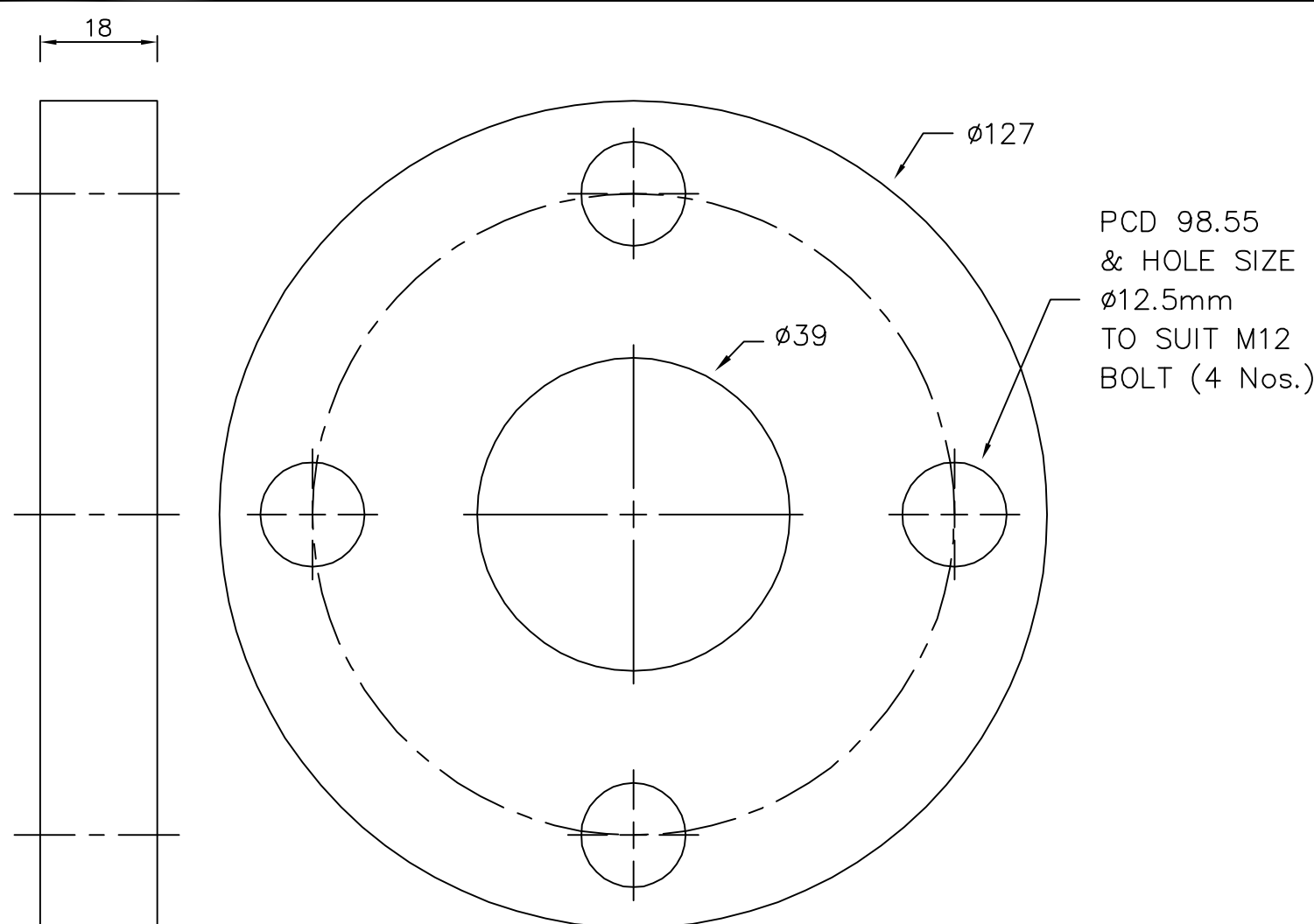
Data for Air Filter Regulator (AFR)

Sl.No.	Description	Requirement
General		
1	End Connection	1/2" NPT (F)
2	Application / Medium	Air for purging
4	Pressure range	0 – 10 Kg/cm ²
5	Temperature	80°C -10°C to 70°C
6	Make	BHEL PMD Vendor.
Material		
7	Body material	Die cast Aluminum
8	Drain valve	Manual
9	Main valve	SS316
Connection		
10	End Connection	1/2" NPT (F)
Pressure Gauge		
11	Range	0-10 Kg/cm ²
12	No of pressure gauge	1 No./AFR

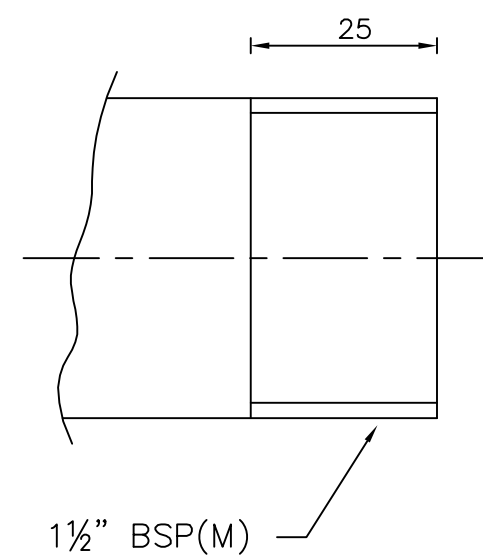
Accessories shall be provided for mounting.



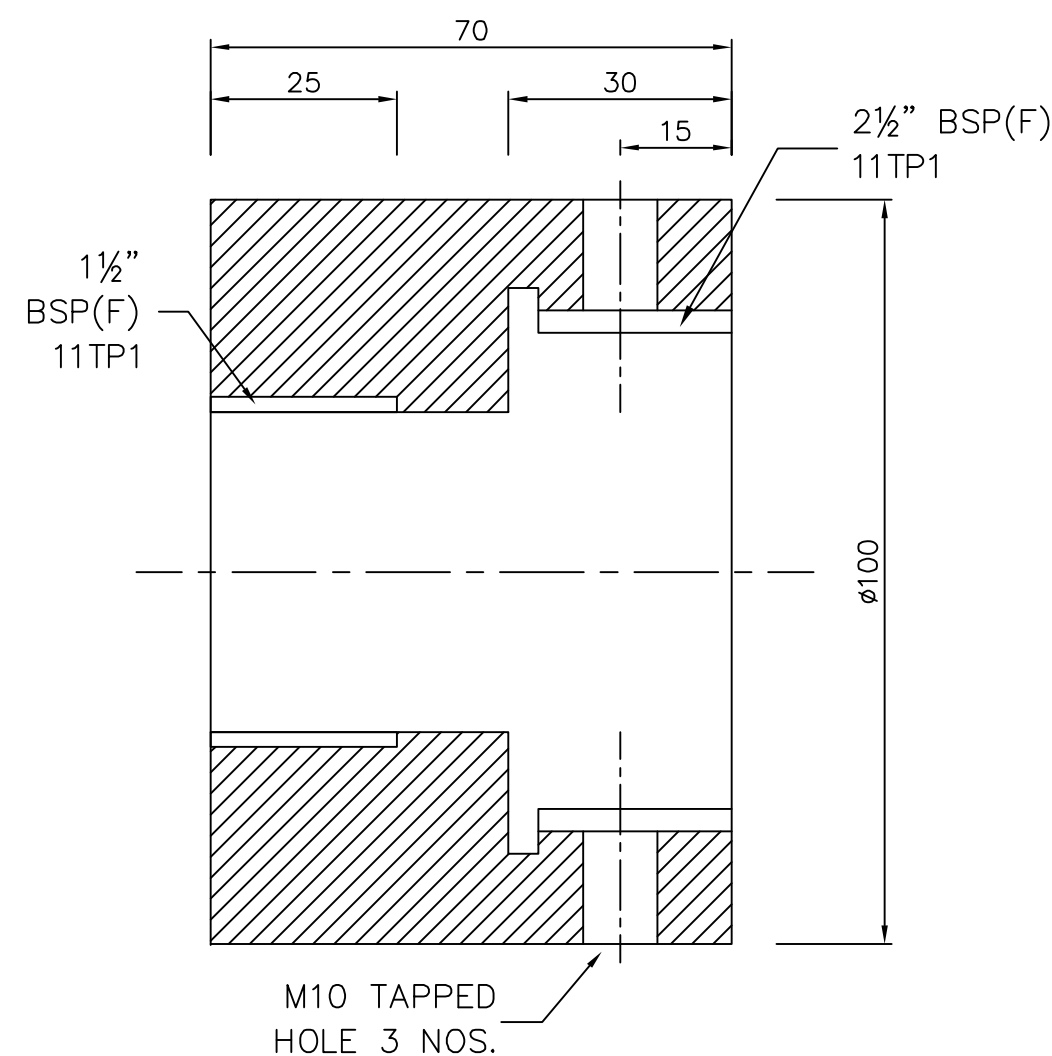
ITEM No.	DESCRIPTION	MATERIAL	QTY.
01	SS FLANGE – REFER DETAIL – A	SS304	1 No.
02	TEFLON FLANGE – REFER DETAIL – A	TEFLON	1 No.
03	M12x100mm(L) BOLTS, NUTS & WASHER	MS ZINC. PASSIVATED	4 SETS
04	PIPE Ø48.3 X 3.68	ASTM 335P22	1 No.
05	1½” BALL VALVE. REFER NOTE – A	–	1 No.
06	PIPE Ø48.3 X 3.68 WITH BEND	ASTM 335P22	1 No.
07	TEFLON COUPLING – REFER DETAIL – C.	TEFLON	1 No.
08	SS SLEEVE – REFER DETAIL – D	SS304	1 No.
09	GRUB SCREW M10 x 12 MM	HS	3 Nos.



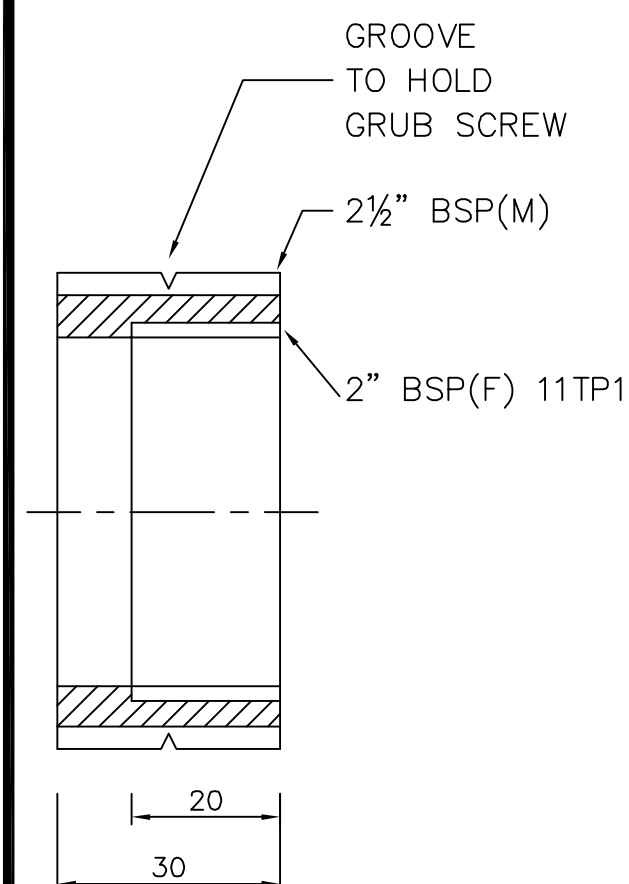
ITEM NO. - 01 & 02
DETAIL-A, FLANGE



ITEM NO. - 06
DETAIL-B



ITEM NO. - 07
DETAIL-C



ITEM NO. - 08
DETAIL-D

NOTE-A

BALL VALVE SIZE : 1½" BALL VALVE CLASS 150
SCREWED TYPE AS PER BHEL PMD

BALL MATERIAL : SS 410/304/316

SEAT GASKET : CFT

TEMP : 200°C

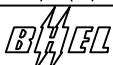
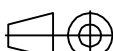
BODY MATERIAL : CS

LEVER MATERIAL : CS

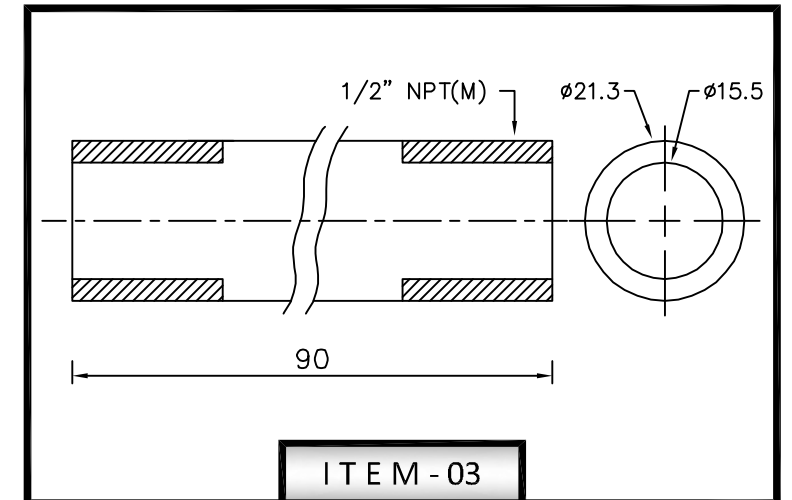
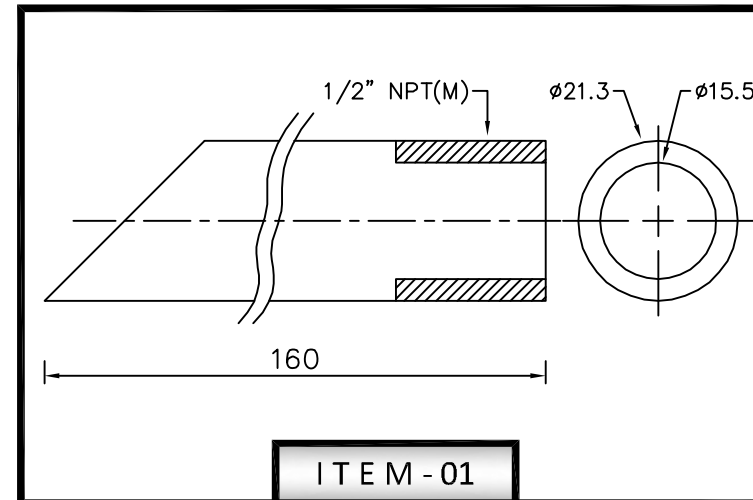
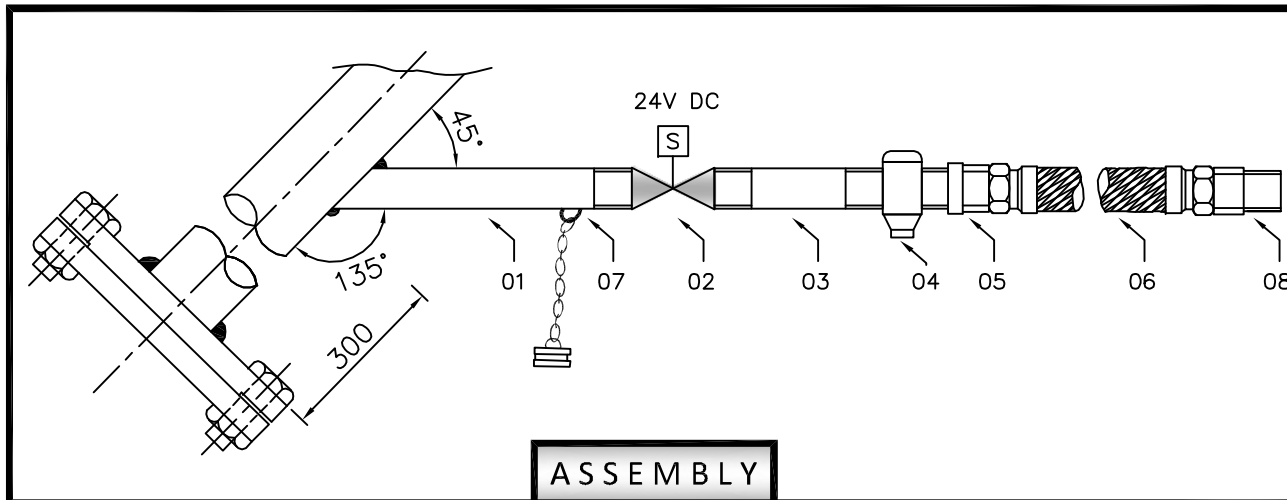
NOTE

1. SENSOR LOCKING ARRANGEMENT IS PROVIDED BY MEANS OF GRUB SCREWS.
2. DURING INSPECTION, APPROVED VENDOR DRAWINGS SHALL ONLY BE REFERRED.
3. PURGE PORT. REFER : 3-97-585-21633 FOR DETAILS.
4. ALL DIMENSIONS HAVE $\pm 1\text{mm}$ TOLERANCE, IF NOT MENTIONED IN THE DRAWING.

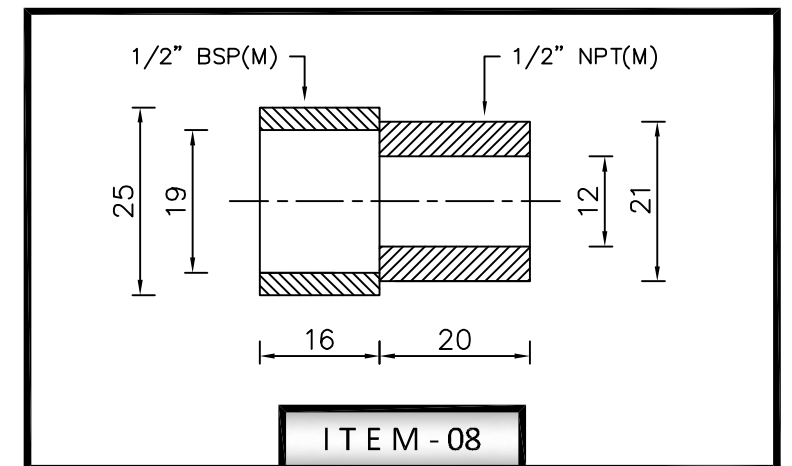
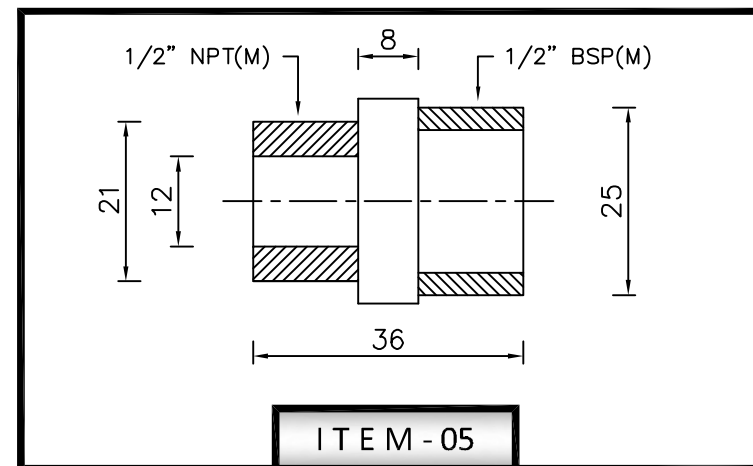
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT					STANDARD				
बी एच ई एल  Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPPALLI – 620014					DRN	NAME A. ThambuRaj	SIGNATURE <i>A. ThambuRaj</i>	DATE 19-07-13	NO. OF VAR
					CHD	M.Venkataramana	Sd. / MV	20-07-13	_____
					APPD	A.K.Panda	Sd. / AKP	20-07-13	_____
DEPT.: C & I		ALL DIMENSIONS ARE IN MM	SCALE NTS	WEIGHT (Kg) _____	REF TO ASSY / OLD DWG _____		ITEM NO _____	No OF ITEMS	
CODE : 392									
TITLE BHELSONIC – ACOUSTIC STEAM LEAK DETECTION SYSTEM SONIC TUBE ASSEMBLY					CARD CODE U 01	DRAWING NO : 2-97-585-01418 Sheet No. 01/01			REV 02

REV 02	DATE 061213	ALTERED : <i>Ar. D. S.</i> 061213 CHD./APPD. :	REV 01	DATE 051013	ALTERED : <i>Ar. D. S.</i> 051013 CHD./APPD. : <i>Sd./MV</i> - AKP
ZONE GENERAL REVISION			ZONE TO CORRECT THE PIPE DIMENSIONS.		

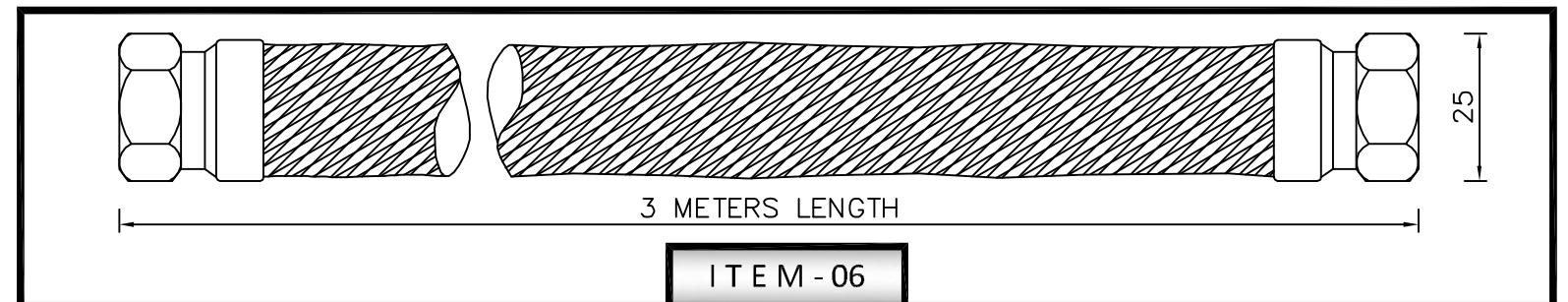


ITEM No.	DESCRIPTION	MATERIAL	QTY.
01.	160MM LONG PIPE WITH ONE SIDE SOCKET WELD & 1/2" NPT(M) ON THE OTHER SIDE (OD 21.3MM X 3.15MM THICKNESS)	SS 304	01
02.	1/2" SOLENOID VALVE, NPT(F) ON BOTH SIDES & AS PER CI:BS10:SVAFR:DS	SS 316	01
03.	90MM LONG PIPE 1/2" NPT(M) ON BOTH SIDES (OD 21.3 X 3.15MM THICKNESS)	SS 304	01
04.	AIR FILTER REGULATOR 1/2" NPT(F) ON BOTH SIDES AS PER CI:BS10:SVAFR:DS	DIE CAST ALUMINIUM	01
05.	ADAPTER 1/2" NPT(M) & 1/2" BSP(M)	SS 304	01
06.	1/2" SS BRAIDED HOSE OF 3 METER LENGTH WITH END FITTINGS OF 1/2" BSP(F) ON BOTH SIDES WITH FEMALE THREADED SWIVEL NUT, WORKING PR. = 7 KG/SQ.CM.	SS 304	01
07.	END CAP CHAIN WITH 1/2" NPT(F) SUITABLE ADAPTER (CHAIN LENGTH 250MM)	SS 304	01
08.	SUITABLE ADAPTER WITH ONE SIDE 1/2" BSP(M) AND OTHER SIDE 1/2" NPT(M)	SS 304	01



NOTE

- ALL ITEMS ARE OF VENDOR SCOPE.
- THIS SCHEME IS SHOWN FOR SENSOR-1. TYPICAL FOR OTHER SENSORS.
- REFER TO DRAWING NO. 2-97-585-01418 FOR OTHER DETAILS OF SONIC TUBE ASSEMBLY.
- ANY OTHER ACCESSORIES LIKE UNION, REDUCER ETC. IF REQUIRED SHALL BE SUPPLIED BY VENDOR SO THAT AIR PIPING ERECTION IS COMPLETE IN NATURE.
- ALL ABOVE INDICATED DIMENSIONS HAVE ± 1 MM TOLERANCE.
- PAINT COLOUR SHADE RAL-5012 & THICKNESS 70-80 MICRONS.
- HYDRO TEST SHALL BE DONE WITHOUT CONNECTING SOLENOID VALVE & AIR FILTER REGULATOR.



REV	DATE	ALTERED : 061213
01	061213	CHD./APPD. :
ZONE	GENERAL REVISION	

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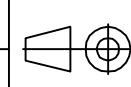
TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

STANDARD



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

DEPT. : C & I
CODE : 392



ALL
DIMENSIONS
ARE IN MM

SCALE
NTS

WEIGHT (Kg)
—

REF TO ASSY / OLD DWG
—

ITEM
NO
—

No OF
ITEMS
—

TITLE
BHELSONIC-ACOUSTIC STEAM LEAK
DETECTION SYSTEM - PURGE AIR SCHEME
Sheet 01 Of 01

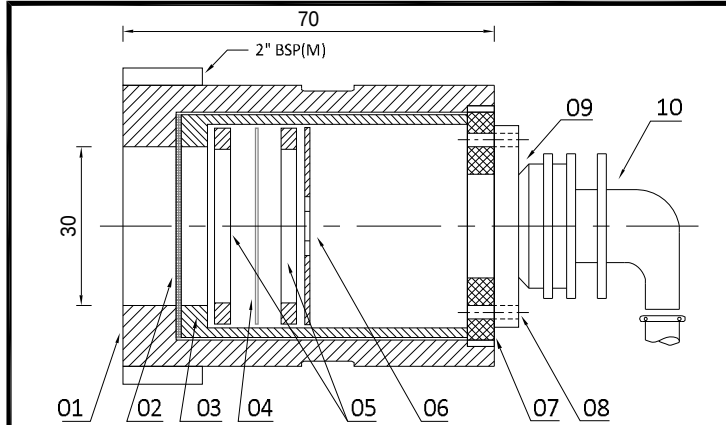
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CODE
U 01

DRAWING NO :
3-97-585-21633

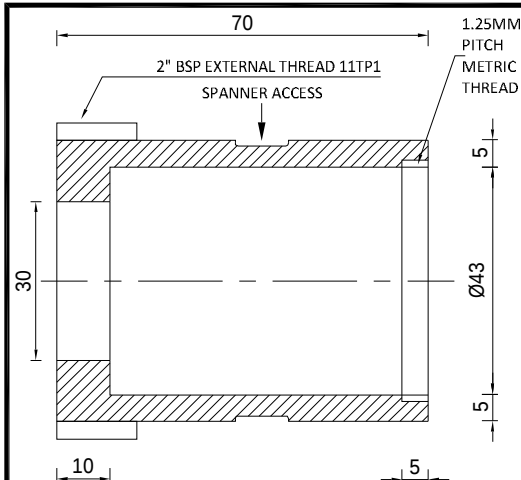
REV
01

3-97-585-21634

DRAWING NO:



SENSOR ASSEMBLY

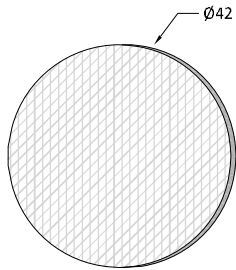
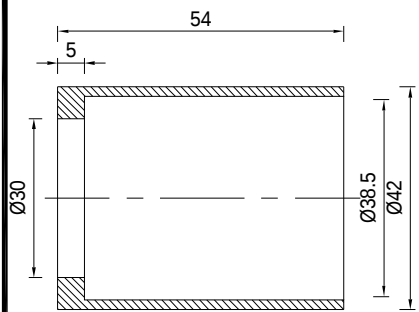
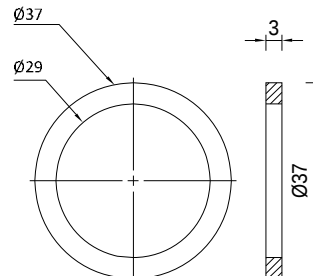
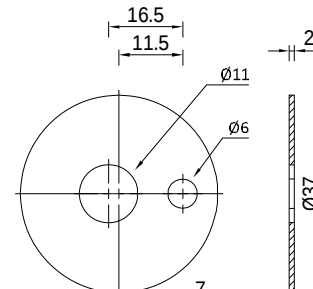
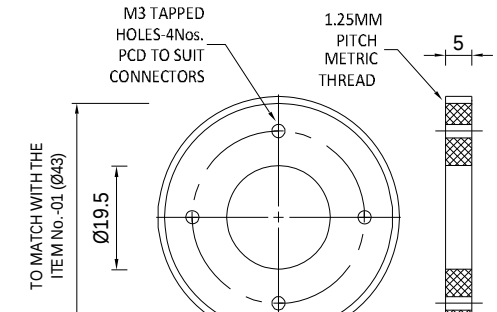


ITEM NO-01 (SENSOR HOUSING)

ITEM No.	DESCRIPTION	QTY.
01.	SENSOR HOUSING (SS 304)	1 No.
02.	WIRE MESH Ø42 (SS 304)	1 No.
03.	INNER SHIELD (TEFLON)	1 No.
04.	POLYESTER FILM, 1MIL THICKNESS (POLYESTER 100x100mm)	2 Nos.
05.	RUBBER BUSH (NEOPRENE)	2 Nos.
06.	PLASTIC DISC (TEFLON)	1 No.
07.	SS LID (SS 304)	1 No.
08.	SUITABLE FIXING SCREW, SS	4 SETS
09.	ALLIED CONNECTOR M5 3102R-14S-6S(FM)	1 No.
10.	ALLIED CONNECTOR M5 3108F-14S-6P(M)	1 No.

NOTE

1. PCD TO SUIT CONNECTOR.
2. ALL DIMENSIONS HAVE ± 1 mm TOLERANCE.
3. SUITABLE SPANNER ACCESS TO BE PROVIDED AT 180° APART.
4. VENDOR CODE SHALL BE PUNCHED/ENGRAVED ON SONIC TUBE ASSEMBLY.

ITEM NO-02
(WIRE MESH)ITEM NO-03
(INNER SHIELD)ITEM NO-05
(RUBBER BUSH)ITEM NO-06
(PLASTIC DISC)ITEM NO-07
(SS LID)

REV	DATE	ALTERED : <i>Ar. G. R. S.</i>
02	140915	CHD./APPD. : Sd./MV-AKP
ZONE	GENERAL REVISION	

REV	DATE	ALTERED : <i>Ar. G. R. S.</i>
03	280416	CHD./APPD. : <i>Ar. G. R. S.</i>
ZONE	REVISED AS PER FES FEED BACK LETTER REF. CI:FE:FB:2015-2016:002	

REV	DATE	ALTERED : <i>Ar. G. R. S.</i>
01	061213	CHD./APPD. : Sd./MV-AKP
ZONE	GENERAL REVISION	

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TYPE OF PRODUCT
OR NAME OF
CUSTOMER / PROJECT

STANDARD



Bharat Heavy Electricals Ltd

UNIT: HIGH PRESSURE BOILER PLANT
TIRUCHIRAPPALLI - 620014

DEPT. : C & I
CODE : 392



ALL
DIMENSIONS
ARE IN MM

SCALE
NTS

WEIGHT (Kg)
—

REF TO ASSY / OLD DWG
—

ITEM
NO
—

No OF
ITEMS
—

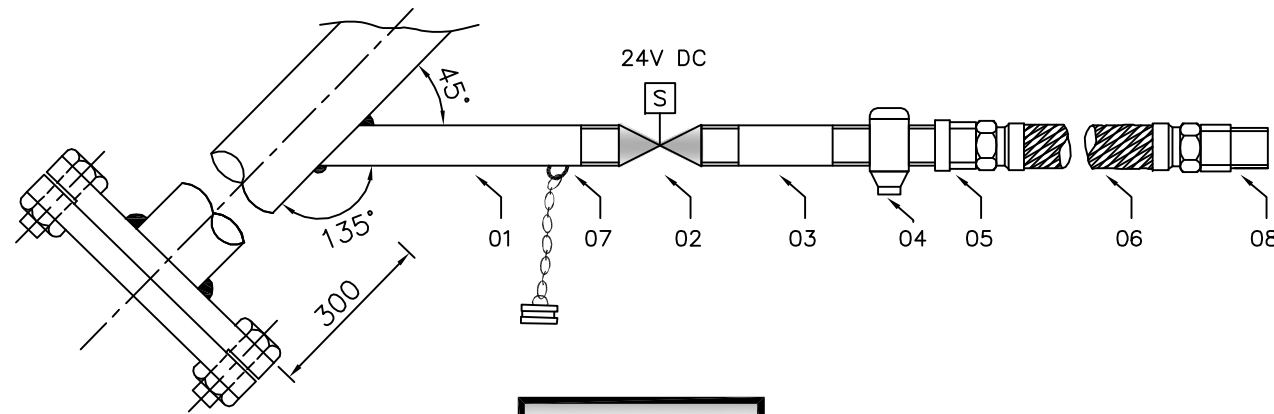
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BHELSONIC - ACOUSTIC STEAM LEAK
DETECTION SYSTEM - SENSOR ASSEMBLY

CARD
CODE
U 01

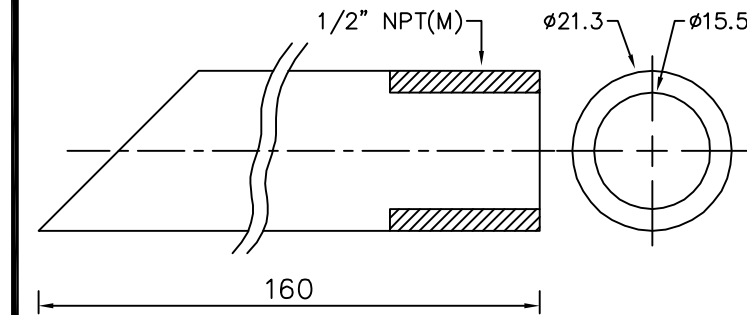
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3-97-585-21634

Sheet 01 Of 01

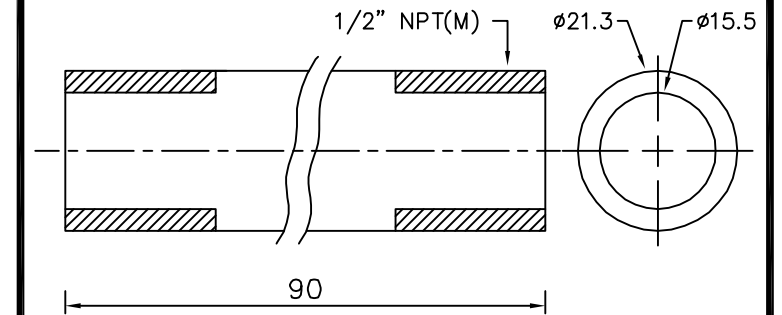
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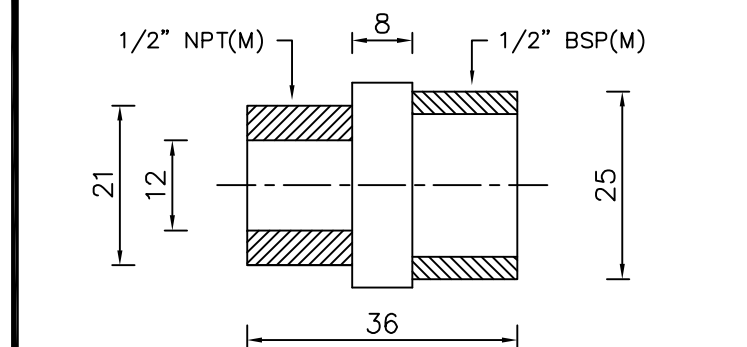
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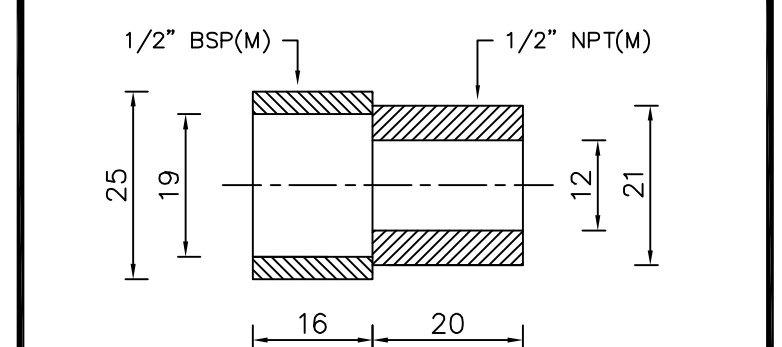
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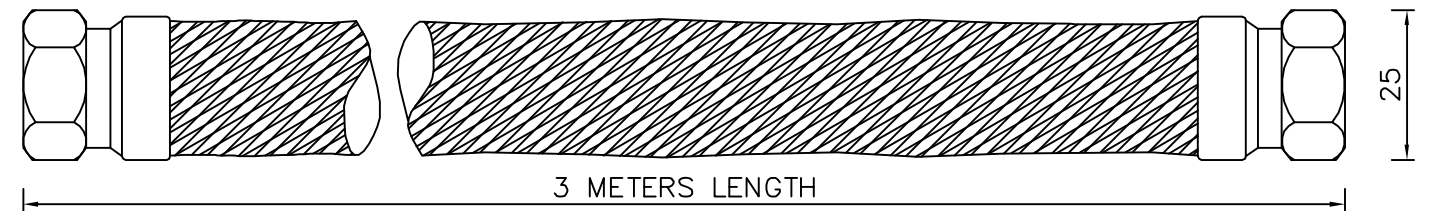
ITEM - 03



ITEM - 05



ITEM - 08



ITEM - 06

NOTE

1. ALL ITEMS ARE OF VENDOR SCOPE.
2. THIS SCHEME IS SHOWN FOR SENSOR-1. TYPICAL FOR OTHER SENSORS.
3. REFER TO DRAWING NO. 2-97-585-01418 FOR OTHER DETAILS OF SONIC TUBE ASSEMBLY.
4. ANY OTHER ACCESSORIES LIKE UNION, REDUCER ETC. IF REQUIRED SHALL BE SUPPLIED BY VENDOR SO THAT AIR PIPING ERECTION IS COMPLETE IN NATURE.
5. ALL ABOVE INDICATED DIMENSIONS HAVE ± 1 MM TOLERANCE.
6. PAINT COLOUR SHADE RAL-5012 & THICKNESS 70-80 MICRONS.
7. HYDRO TEST SHALL BE DONE WITHOUT CONNECTING SOLENOID VALVE & AIR FILTER REGULATOR.

REV	DATE	ALTERED : 061213
01	061213	CHD./APPD. :
ZONE	GENERAL REVISION	

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TYPE OF PRODUCT
OR NAME OF
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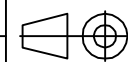
STANDARD



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

DEPT. : C & I

CODE : 392



ALL
DIMENSIONS
ARE IN MM

SCALE
NTS

WEIGHT (Kg)
—

REF TO ASSY / OLD DWG
—

ITEM
NO
—

No OF
ITEMS
—

TITLE

BHELSONIC-ACOUSTIC STEAM LEAK
DETECTION SYSTEM - PURGE AIR SCHEME
Sheet 01 Of 01

CARD
CODE
U 01

DRAWING NO :

3-97-585-21633

REV

01

BHARAT HEAVY ELECTRICALS LIMITED

HIGH PRESSURE BOILER PLANT, TIRUCHIRAPALLI 620 014.

CONTROLS AND INSTRUMENTATION / FB



TECHNICAL SPECIFICATION

FOR

SENSOR ASSEMBLY & SONIC TUBE ASSEMBLY

(NON-AUTO PURGE)

OF

BHELSONIC SYSTEM

SPEC. REF:- CI:BS10:NON-AUTOPURGE:STASA

REVISION HISTORY

Rev. No.	DATE	DESCRIPTION	PREPARED SR	CHECKED MVR	APPROVED AKP
00	24.06.2016	Initial Release	<i>S. Rajeswarar</i>	<i>Ramany</i>	<i>Aande</i>

CONTENTS:

1. GENERAL INSTRUCTIONS TO VENDORS
2. DRAWING & DATA SHEET LIST
3. QUALITY PLAN & INSPECTION
4. DOCUMENTATION
5. PACKING
6. SPECIAL INSTRUCTIONS TO VENDORS

Annexure:

1. Drg. No. 3-97-585-21634/03 - Sensor assembly.
2. Drg. No. 1-97-585-01340/00 - Sonic Tube assembly.

Note:-

Clarification required, if any, on the enclosed specification shall be referred to the purchaser within 10 days from the date of enquiry.

1.0 GENERAL INSTRUCTIONS TO VENDORS:

- 1.1 In the event of order, the entire specification will form part of purchase order for compliance during execution.
- 1.2 Deviation if any shall be clearly brought out in the "Deviation schedule". Otherwise it will be construed that the vendor is fully complying with the specification.

2.0 DRAWING & DATA SHEET LIST:

- 2.1 Vendor shall supply all the items as indicated in the following drawings as loose supply.
 - a) Drg. No. 3-97-585-21634/03 – STLD - Sensor assembly.
 - b) Drg. No. 1-97-585-01340/00 – STLD - Sonic Tube assembly.
- 2.2 Vendor shall submit detailed Bill of Material, indicating break up prices for all items.
- 2.3 15 meter length of pig tail cable will be supplied for each sensor assembly. BHEL will provide the same as a "free issue" item in one length to the vendor for cutting & soldering with the cable connector.

3.0 QUALITY PLAN & INSPECTION

- 3.1 Quality plan BHEL SQP ref QA:CI:STD:QP:73 shall be followed.
- 3.2 Advance information shall be intimated to BHEL, 7 days ahead from the date of Inspection for clearance/acceptance of material.

4.0 DOCUMENTS REQUIRED

A. Along with offer:

- 4.1 Vendor to duly signed and stamped for compliance/confirmation for the BHEL specification

B. After Placement of Purchase Order:

- 4.2 Vendor shall manufacture sonic tube assembly and sensor assembly as per BHEL drawings.

5.0 PACKING:

5.1 Materials shall be packed as per packing procedure ref. No. QA:CI:STD:PR:04, Rev. 02 shall be followed.

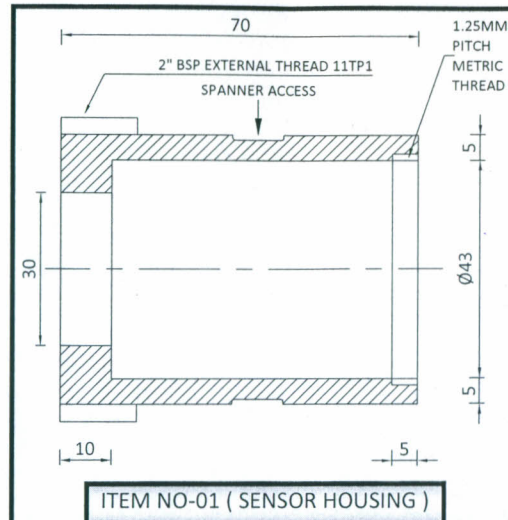
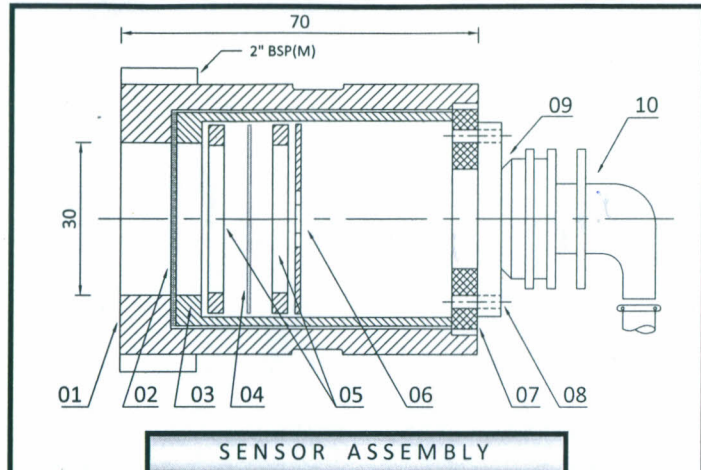
6.0 SPECIAL INSTRUCTIONS TO VENDORS

6.1 Warranty: 18 months from the date of supply and 12 months from the date of commissioning.

6.2 Nothing in this specification shall be construed to relieve the vendor from his responsibility. This specification covers briefly the requirements of the system. It is the responsibility of the vendor to take care of other basic and essential requirements to manufacture a quality product and complete system.

3-97-585-21634

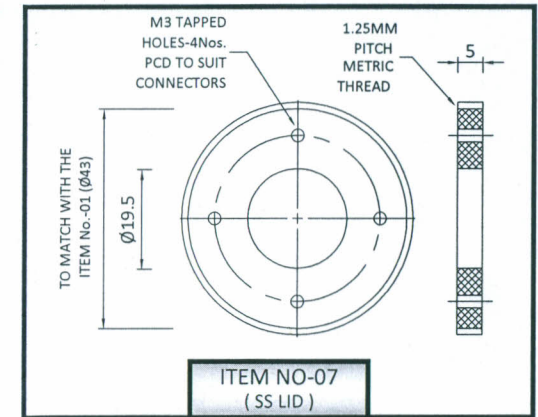
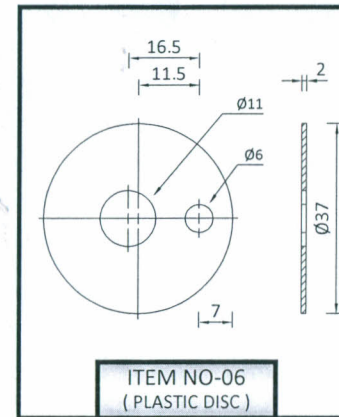
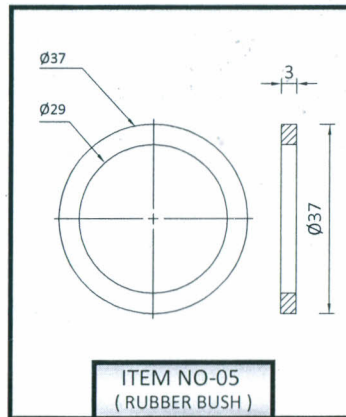
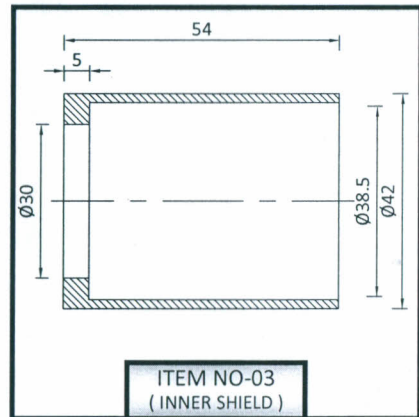
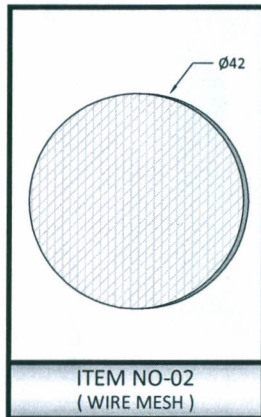
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ITEM No.	DESCRIPTION	QTY.
01.	SENSOR HOUSING (SS 304)	1 No.
02.	WIRE MESH Ø42 (SS 304)	1 No.
03.	INNER SHIELD (TEFLON)	1 No.
04.	POLYESTER FILM, 1MIL THICKNESS (POLYESTER 100x100mm)	2 Nos.
05.	RUBBER BUSH (NEOPRENE)	2 Nos.
06.	PLASTIC DISC (TEFLON)	1 No.
07.	SS LID (SS 304)	1 No.
08.	SUITABLE FIXING SCREW, SS	4 SETS
09.	ALLIED CONNECTOR MS 3102R-14S-6S(FM)	1 No.
10.	ALLIED CONNECTOR MS 3108F-14S-6P(M)	1 No.

NOTE

- PCD TO SUIT CONNECTOR.
- ALL DIMENSIONS HAVE ± 1 mm TOLERANCE.
- SUITABLE SPANNER ACCESS TO BE PROVIDED AT 180° APART.
- VENDOR CODE SHALL BE PUNCHED/ENGRAVED ON SONIC TUBE ASSEMBLY.



REV	DATE	ALTERED :	REV	DATE	ALTERED :
02	140915	CHD./APPD. : Sd./MV-AKP	01	061213	CHD./APPD. : Sd./MV-AKP
ZONE GENERAL REVISION			ZONE GENERAL REVISION		

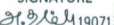
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LETTER REF. CI:FE:FB:2015-2016:002

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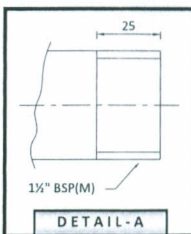
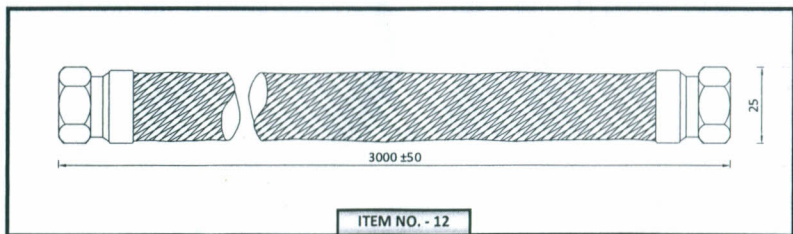
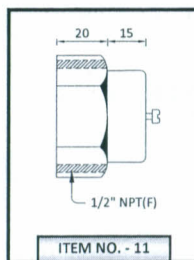
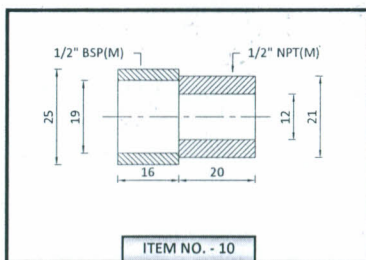
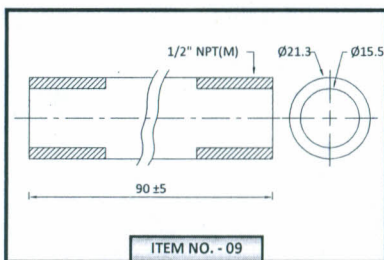
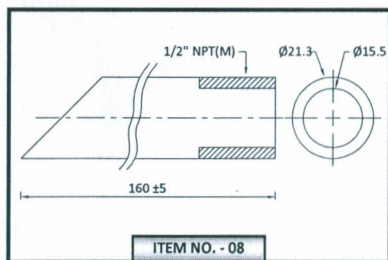
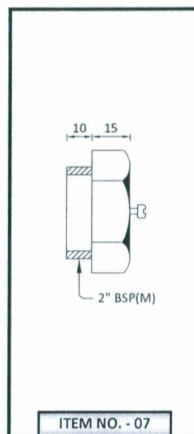
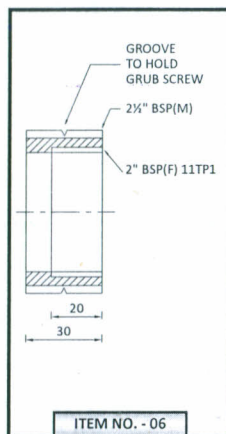
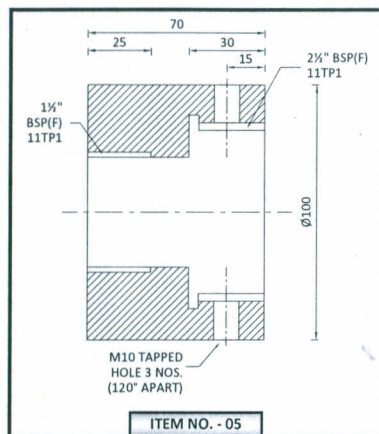
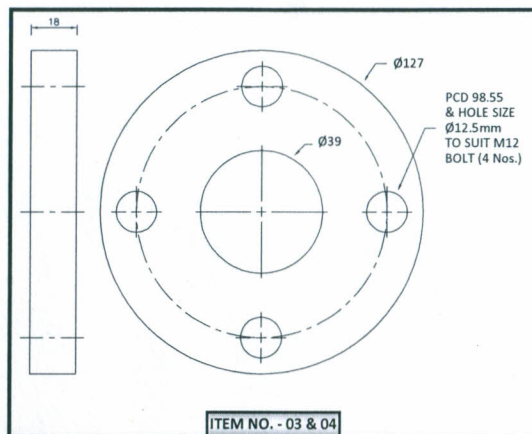
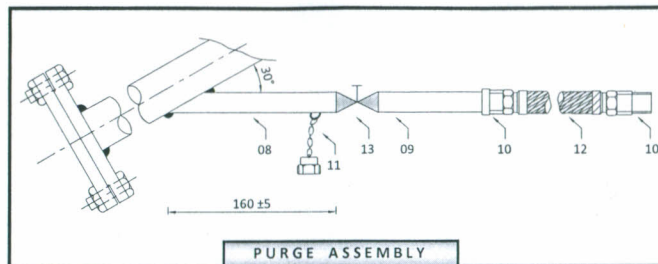
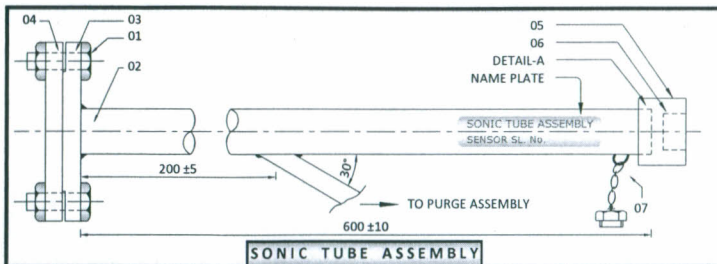
TYPE OF PRODUCT
OR NAME OF
CUSTOMER / PROJECT

STANDARD

	Bharat Heavy Electricals Ltd			DRN	NAME	SIGNATURE	DATE	NO. OF VAR	
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				APPD	M.Venkataramana	Sd. / MV	20-07-13		
UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPPALLI - 620014					A.K.Panda	Sd. / AKP	20-07-13		
DEPT. : C & I		ALL DIMENSIONS ARE IN MM	SCALE NTS	WEIGHT (Kg)	REF TO ASSY / OLD DWG			ITEM NO	No Of ITEMS
CODE : 392				—	—			—	—
TITLE				CARD CODE	DRAWING NO:				REV
BHELSONIC - ACOUSTIC STEAM LEAK DETECTION SYSTEM - SENSOR ASSEMBLY				U 01	3-97-585-21634				03
									Sheet 01 Of 01

FILE NAME : STCSTA1

DRAWING NO. 1-97-585-01340



NOTE

1. ALL DIMENSIONS HAVE ±1mm TOLERANCE, IF NOT MENTIONED IN THE DRAWING.
2. ALL ITEMS ARE IN VENDOR SCOPE.
3. DURING INSPECTION, THE SAME DRAWING SHALL ONLY BE REFERRED.
4. PAINT COLOUR SHADE RAL-5012 & THICKNESS 70-80 MICRONS.
5. SENSOR LOCKING ARRANGEMENT IS PROVIDED BY MEANS OF GRUB SCREWS.
6. VENDOR CODE SHALL BE PUNCHED/ENGRAVED ON SONIC TUBE ASSEMBLY.

ITEM No.	DESCRIPTION	MATERIAL	QTY.
01.	M12x100mm(L) BOLTS, NUTS & WASHER	MS ZINC. PASSIVATED	4 SETS
02.	PIPE Ø48.3 x 3.68	SA106 GR-B	1 No.
03.	FLANGE	SA106 GR-B	1 No.
04.	TEFLON FLANGE	TEFLON	1 No.
05.	TEFLON COUPLING WITH 3 NOS. OF HIGH SPEED STEEL MATERIAL GRUB SCREWS.	TEFLON	1 No.
06.	SS SLEEVE	S5304	1 No.
07.	END CAP ADAPTER - 2" BSP(M) SUITABLE FOR ITEM-06 WITH 250MM LENGTH CHAIN.	S5304	1 No.
08.	160MM LONG PIPE WITH ONE SIDE SOCKET WELD & 1/2" NPT(M) ON OTHER SIDE (OD 21.3 x 3.15MM THICKNESS)	SA106 GR-B	1 No.
09.	90MM LONG PIPE 1/2" NPT(M) ON BOTH SIDES (OD 21.3 x 3.15MM THICKNESS)	SA106 GR-B	1 No.
10.	ADAPTER 1/2" NPT(M) & 1/2" BSP(M)	S5304	2 Nos.
11.	END CAP ADAPTER - 1/2" NPT(F) SUITABLE FOR ITEM-08 WITH 250MM LENGTH CHAIN.	S5304	1 No.
12.	1/2" SS BRAIDED HOSE OF 3 METER LENGTH WITH END FITTINGS OF 1/2" BSP(F) ON BOTH SIDES WITH FEMALE THREADED SWIVEL NUT, WORKING PR. = 7 KG/SQ.CM.	S5304	1 No.
13.	BALL VALVE, 1/2" NPT(F) ON BOTH SIDES	S5304	1 No.

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Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPPALLI - 620014		NAME A. Thangaraj		SIGNATURE A. Thangaraj	
DEPT.: C & I		DATE 02-05-16		REV. NO. 00	
CODE: 392		SCALE 1:1		WEIGHT (Kg) NTS	
TITLE BHELSONIC - ACOUSTIC STEAM LEAK DETECTION SYSTEM SONIC TUBE ASSEMBLY		DRAWING NO.: 1-97-585-01340		REV. 00	
		SHEET NO. 01/01			

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