

	PRODUCT STANDARD HYDRO TURBINE ENGINEERING	HT 00205
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<u>PURCHASE SPECIFICATION FOR CS / SS BUTT WELDING PIPE FITTINGS</u>		

1.0 DESCRIPTION

1. **Construction-** Forged seamless (annealed) suitable for butt welding (*Formed / Welded construction is not acceptable*)
2. **Material specification-**
 - Carbon steel** as per ASTM A 234 Gr-WPB unless otherwise specified in the enquiry.
 - Stainless steel** as per ASTM A 403 WP304 unless otherwise specified in the enquiry.
3. **Dimensional standard:** As per ANSI B 16.9
4. **Schedule/ thickness-** As mentioned in the enquiry.
5. **End preparation:** As per Table 12 of ASME B 16.9.

2.0 PAINTING, PROTECTION & CLEANING

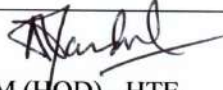
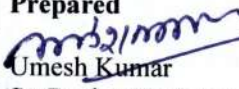
- a. If the enquiry calls for painting of carbon steel fittings the same is to be done after shot blasting as per BHEL's either drg. no. **32000049015 (fittings for water and air application)** or **3200049016 (fittings for oil application)**. Otherwise mill painted fittings are to be supplied.
- b. If enquiry calls for galvanizing, the same is to be done as per **IS 4736**.
- c. For stainless steel fittings painting is not required.

3.0 MARKING

Each fitting is to be permanently marked (by stamping) as per Clause 4 of ASME 16.9 indicating manufacturer's name, material identification, schedule no., size and compliance i.e standard fitting.

4.0 QA PLAN

Attached QA plan QA/HT/FITTINGS/01 is to be followed. Vendor to endorse the same with signature and stamp and submit along with the offer for BHEL's/BHEL customer's approval.

Rev. No.	Date of Rev.	Remarks	Approved 				
01	12.02.16	Clause no. 5 & Checklist modified.	A. Mandal, AGM (HOD) - HTE				
02	30.11.16	Clause 8.0 added Checklist point no. 13 added	Prepared  Umesh Kumar Sr. Design Engineer	Checked  Shivendra Kumar DGM - HTE	Date of issue 17.07.2015		
03	05.03.17	Clause 8.0 deleted Checklist point no. 13 deleted					
04	23.11.17	Clause 1.1 revised. Checklist point no. 7 revised.					
05	12.02.18	Clause no. 1.2 & 6 modified.					
06	17.04.18	Clause 1.1 revised.	Saved in server as no. 42009900205				
07	06.11. 19	QAP revised. Clause 5.2 deleted. Checklist point no. 5 revised.					

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5.0 TECHNICAL REQUIREMENTS:

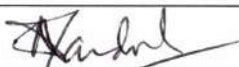
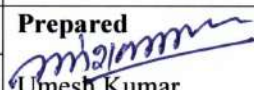
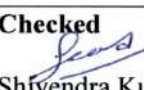
- Vendor shall furnish correlated mill TC for heat treatment, chemical composition, mechanical properties including hardness test. Mill TC of raw material for hydrostatic test/eddy current test is also required.
Lab TCs are not acceptable.
- Dimensional report is required to be furnished.

6.0 INSPECTION

Inspection shall be as per approved QA plan either by BHEL / BHEL appointed third party / BHEL's customer at vendor's works. Visual inspection shall be done on 100% quantity and dimensional inspection shall be carried out on 1/3rd of the total quantity unless otherwise stated in the enquiry. Outer diameter & Thickness measurement on fittings shall be performed by Ultrasonic examination /outside & stick micrometer in sections marked at a distance of 1/3rd of OD from either end of fitting. Material shall be verified for 100% quantity and marking (Clause 3.0).

7.0 LIST OF DEVIATIONS

If the vendor is unable to fulfill any requirements mentioned in this purchase specification then a list of deviations is to be prepared by the vendor & the same should be submitted along with the offer. Otherwise it will be understood that the vendor is meeting all the requirements specified in the spec. and no deviation will be allowed at the time of delivery. ***No deviation shall be allowed after placement of order***

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Name of Project: -

Enquiry No.:-

CHECKLIST

(to be filled and submitted by vendor along with the offer)

Sl. No.	Description	Vendor's reply	
1	Pipe fittings OD shall be as per enquiry	Yes / No	
2	Thickness shall be as per enquiry	Yes / No	
3	Total quantity shall be per enquiry	Yes / No	
4	Construction of fittings as per clause 1.0 (1)	Yes / No	
5	Applicable standard (✓ mark whichever is applicable)	ASTM A 234 Gr-WPB	ASTM A 403 WP304
6	Test certificates as per clause 5.0 shall be furnished	Yes / No	
7	Painting & protection as per clause 2.0	Yes / No	
8	Galvanizing as per specification	Yes / Not applicable	
9	Make of fittings (vendor to mention for each item of enquiry)		
10	Marking on fittings shall be as per ASME 16.9	Yes / No	
11	Attached QA plan shall be endorsed and followed.	Yes / No	
12	Deviations, if any	Yes / No	

Name of vendor

Authorized signature with stamp

Date:

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MAIN SUPPLIER'S NAME & ADDRESS		MANUFACTURING QUALITY PLAN					Project :				
BHARAT HEAVY ELECTRICALS LIMITED, Piplani, Bhopal - 462022 (AT SUB-VENDOR'S WORKS)		Item: PIPES FITTINGS (CS & SS)		QP No.: QA/HT/FITTINGS/01		PO/ Enquiry no:		Package : Electro-Mechanical			
		Sub- system: Hydro Turbine		Rev.no.: 03 : 04.11.2019		Main-Supplier: BHEL, Bhopal					
Sl. No.	Component	Characteristics	Class	Type of Check	Quantum of check by M B/C	Reference Document	Acceptance norms	Format of records	Agency M B C	Remarks	
1	2	3	4	5	6	7	8	*9. (See legend)	**10.	11	
1	PIPES FITTINGS (CS & SS)	Chemical composition	Major	Chemical	Sample	Specification HT 00205	Specification HT 00205	Mill TC	P	V	Co-related MTC to be furnished
		Mechanical properties	Major	Mechanical	Sample	-do-	-do-	Mill TC	P	V	
		Heat treatment	Minor	Review	Sample	-do-	-do-	Mill TC/Chart	P	V	
		Outside diameter & Thickness measurement	Major	Measurement	(Refer Clause 6.0 of Specn HT 00205)	-do-	-do-	IR	P	W	
		Hydro test / NDT (Eddy current test)	Major	Test / NDT	100%	100%	-do-	-do-	Mill TC	P	V
Legend: * Records, identified with (✓) shall be essentially included by vendor in QA documentation. **M: Manufacturer B:BHEL/BHEL's appointed Third party Inspection Agency C: BHEL's Customer P: Perform V: Verification W: Witness		ACCEPTED BY (Signature & stamp of vendor's QC representative)									

PREPARED & REVIEWED BY (BHEL QA & DESIGN)

Vendor to endorse the quality plan and submit along with the offer for approval by BHEL or BHEL's customer.