

Duly filled Technical Pre-Qualification Requirements to be submitted along with the offer by vendor

Ref No: TME/PQR/Brg. Assy. Comp. Kit_IM3302/001 Rev.01

Dated: 08/05/2024

Technical Pre-Qualification Requirements (PQR) for “Kit of Bearing Assembly Components”**Vendor should comply with the following clauses in order to qualify for supply of Kit of Bearing Assembly Components (duly filled PQR shall be submitted along with the offer by vendor):**

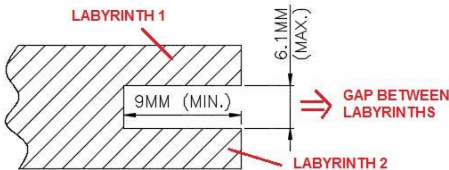
Cl. No.	Description	Vendor to comment	
		Complied / Not complied	Supporting relevant document to be submitted along with offer
1	Vendor shall supply “Kit of Bearing Assembly Components” as per drawing no. mentioned in enquiry, without any deviation. Vendor shall ensure that “Kit of Bearing Assembly Components” supplied confirms to quality requirements as per drawing & specification.	Yes/No	Not required.
2	Vendor should be a machinist with in-house CNC machining & CMM (coordinate measuring machine) facility and not a trader.	Machinist with in-house facility/ Trader	Not required.
3	Vendor to confirm that casting manufacturer shall meet following criteria: (a) Casting manufacturer should be Class- ‘A’ foundry (as per IS: 12117: 1996) listed in document no. TM22604. OR (b) Casting manufacturer should meet requirement of SG iron casting/ Carbon steel casting (as per material of enquired item) as per Annexure-1 (copy attached).	(a) Yes/No OR (b) Yes/ No	(a) Not required OR (b) (i) Name of casting manufacturer to be specified. (ii) Vendor to submit Casting manufacturer’s clause wise compliance and supporting relevant document for Annexure-1 with seal and sign of casting manufacturer and vendor on each page.
4	a) Vendor to confirm having CNC machine for turning operation suitable for holding job of min. 860 mm dia. and CNC machine for milling operation suitable for holding job upto length 683 mm (min.) available at its works.	Yes/No	Vendor to highlight details (i.e. machining operation, model, make, year of commissioning, range, accuracy etc.) of CNC machine for turning operation suitable for holding job of min. 860 mm dia. and CNC machine for milling operation suitable for holding job upto length 683 mm (min.) available at its works.
	b) Vendor to confirm having 3D-CMM facility with min. accuracy of 20 microns , at its works, suitable for measuring indented items (all components of kit).	Yes/No	Vendor to highlight details (i.e. model, make, year of commissioning, range, accuracy etc.) of 3D-CMM facility with min. accuracy of 20 microns , available at its works, suitable for measuring indented items (all components of kit).
5	a) Vendor shall confirm compliance of QA plan no. TM12545 rev.07 (or latest).	Yes/No	Not Required
	b) Vendor to confirm submission of 3D CMM report of Bearing Assembly Components along with the consignment as per QA plan (TM 12545 rev.07 or latest) requirement.	Yes/No	Not Required

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Cl. No.	Description	Vendor to comment	
		Complied / Not complied	Supporting relevant document to be submitted along with offer
6	Vendor should have past experience of successfully machining & supplying any component, involving turning operation of diameter 626 mm or more , in preceding 5 years from enquiry opening date. (Vendor to ensure that documents submitted against b), c) shall correlate with the submitted P.O. copy). If desired, price details in PO, invoice may be hidden.	Yes/No	a. PO copies. b. Drawing of supplied item. (highlighted with max. turning diameter) c. Supply proof i.e. invoice.
7	Vendor should have past experience of successfully machining & supplying any component, having multiple concentric labyrinths of gap of 6.1 mm (max.) between the labyrinths and 9 mm depth of gap (min.), in preceding 5 years from enquiry opening date. (Vendor to ensure that documents submitted against b), c) shall correlate with the submitted P.O. copy). If desired, price details in PO, invoice may be hidden. 	Yes/No	a. PO copies. b. Drawing of supplied item. (highlighted with gap between labyrinths, depth of gap and geometrical tolerance (concentricity of labyrinths)) c. Supply proof i.e. invoice.
8	Vendor or its casting manufacturer should have past experience of successfully manufacturing & supplying any casted component having diameter 626 or more, with radiography qualification of level 3 (maximum) in preceding 5 years from enquiry opening date. Vendor to ensure that documents submitted against b), d) shall correlate with the submitted P.O. copy. Document submitted against c) shall correlate with item description/drawing no. mentioned in PO.	Yes/No	a. PO copies. b. Drawing of supplied item. (highlighted with max. diameter) c. Radiography report of supplied component (Maximum Level 3 qualified) d. Supply proof i.e. invoice.
9	For verification of information furnished by vendor, additional documents proofs etc. may be required by BHEL. Vendor to confirm providing the same.	Yes/No	Not required.

Notes:

1. Compliance of all the points in above T-PQR is mandatory. In absence of compliance of above, vendor's offer is liable to be rejected.
2. **Information / compliance / documents submitted by vendor shall be authentic in all aspects. In case any deviation / false information / forged documents are observed, BHEL is free to initiate appropriate punitive proceeding against the supplier.**

Important: This document is to be filled and submitted along with the offer. This document must be signed by authorized representative of the vendor and should contain the name of representative & seal of the company.

Annexure-1

The details of process & facility that shall be available with Carbon steel & SG Iron casting manufacturer are as given below. Supplier to furnish compliance/details as detailed below along with offer unless otherwise mentioned.

Sl. no.	Details of Process / Facility	Complied/ Not complied	Supporting relevant document to be submitted
1.0	General:		
1.1	A list of approved vendors or sub-contractors exists for all the important foundry inputs and the same is periodically up-dated.		Not required
1.2	There are comprehensive specifications for all the important bought-out materials.		Specification of sand, binder for mould sand and mould paint
1.3	Supplier to confirm use of sand of AFS 40-50 or fine.		Supporting documents along with consignment for use of AFS 40-50 sand or fine sand
1.4	There is an operating system of the important incoming materials and inputs being inspected and cleared prior to their issue to the floor and the authority for clearing such materials is defined and the results of such inspection are documented.		Not required
2.0	Process Engineering (Methods)/Patterns:		
2.1	There is a person working exclusively in this area satisfying the following requirement: a) At least a Bachelor's degree in Mechanical/Metallurgical/ Foundry Engineering, and having not less than 5 years relevant experience. or b) A Diploma in Mechanical/Metallurgical/ Foundry Engineering with at least 10 years relevant experience.		Details of persons in support shall be furnished
2.2	For each job (concerning each pattern number), the following exist duly documented: a) Pattern design b) Gating and risering design c) Molding materials and methods d) Pouring temperature e) Heat treatment cycle f) Applicable test piece, where relevant g) Casting identification h) Special instructions, where relevant, concerning shakeout, gas cutting, welding procedure etc.		Sample process sheet
2.3	A procedure exists providing for decision making and written instructions concerning corrective actions to be taken against deviations in dimensions and quality, after the sample or pilot		Not required

(Signature, name, designation & seal)
of vendor's representative

(Signature, name, designation & seal of
sub-vendor's representative in case
casting is outsourced) Page 1 of 4

	casting is made and the implementation of such instructions is also recorded.		
2.4	The pattern to be used for the manufacturing of carbon steel & SG Iron castings shall be made from Aluminium/steel.		Photographs of pattern used shall be provided along with consignment
3.0	Melting:		
3.1	For Carbon steel castings: i) Inhouse melting facility for carbon steel.		Furnace make, model, capacity etc. along with photograph
3.2	For SG Iron castings: i) Inhouse melting facility for SG Iron.		Furnace make, model, capacity etc. along with photograph
	ii) Vendor shall have magnesium treatment facility like Tundish Ladle etc. Vendor to specify inhouse facility available for magnesium treatment.		Make, model, capacity etc. along with photograph
3.3	An immersion pyrometer exists for measuring temperature of liquid metal.		Photograph of facility
3.4	Temperature of the liquid metal is actually measured before tapping and is recorded for each melt.		Not required
3.5	The temperature measuring equipment is calibrated at least once in three months or more often.		Calibration record
3.6	Each melt is analysed and ensured to be in compliance with the specification before tapping.		Not required
4.0	Casting:		
4.1	A satisfactorily operating system of identifying each piece of casting, where relevant, so as to be able to trace it back to its melt number or heat-treatment batch number, exists.		Not required
5.0	Heat Treatment:		
5.1	Adequate capacity exists for in-house heat treatment of all the castings produced in the foundry.		Make, model, capacity etc. along with photograph
5.2	The heat-treatment furnaces are equipped with multi-point automatic continuous temperature recording arrangement, covering the different relevant furnace zones.		Not required
5.3	Each of the heat-treatment furnaces has been calibrated using a sufficient number of thermocouples to know the prevailing temperatures in different zones at different temperature ranges.		Calibration record
5.4	The thermocouples, temperature indicators and the recorders are calibrated at a frequency of at least once in 6 months.		Calibration record

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5.5	Test bars accompany the relevant castings during heat treatment, and the log sheet or other documents concerning each heat treatment batch reflect the particulars of such test bars accompanying the batch.		Log sheet / other supporting document
6.0	Fettling:		
6.1	Shot blasting equipment exists which has a size and capacity commensurate with the type and quantity of the product range handled.		Make, model, capacity etc. along with photograph
7.0	Final Inspection:		
7.1	The following in-house facilities exist for carrying out the necessary inspection/testing: a) Magnetic particle inspection in accordance with IS 10724 : 1990		Make, model, capacity etc. along with photograph of each facility
7.2	The inspection personnel conducting the above non-destructive testing is adequately trained and qualified by a recognized agency and has adequate experience.		Not required
7.3	Separate standardized forms exist for recording the results of different kinds of non-destructive tests carried out, including a provision for indicating the deviations on a sketch of the relevant part of the castings.		Sample NDT reports
8.0	Metallurgical & Laboratory:		
8.1	The person in-charge of the metallurgical area is at least a Graduate Metallurgical Engineer with not less than 5 years of relevant experience.		Details of persons in support shall be furnished
8.2	The staff conducting tests like chemical analysis, sand testing, testing of mechanical properties etc. have adequate skill and competence and have undergone sufficient training to give them reasonable reliability.		Not required
8.3	The following testing facilities exists: a) Direct reading vacuum emission spectrometer, or any other equipment with at least equivalent speed and accuracy. b) Tensile testing equipment with a minimum of 20 tonne of load capacity. c) Fixed bench type or other heavy type equipment for carrying out hardness testing, that is, BHN/ HRC/ VPN. d) Portable hardness tester of at least one type, other than Poldi. e) Satisfactory photomicrography equipment.		Make, model, capacity etc. along with photograph of each facility

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8.4	Adequate standard samples are available for daily calibration of the method of chemical analysis followed.		Photograph of samples
9.0	Past Experience:		
9.1	Supplier shall have past experience of manufacturing & supply of Carbon steel castings to Traction motor manufacturer / Indian Railways, in last 5 years.		a) PO copy. b) Drawing of supplied item. c) Material test certificate. d) Supply proof i.e. invoice.
9.2	Supplier shall have past experience of manufacturing & supply of SG Iron castings to Traction motor manufacturer / Indian Railways, in last 5 years.		a) PO copy. b) Drawing of supplied item. c) Material test certificate. d) Supply proof i.e. invoice.

Notes:

1. Compliance of all the points in above document is mandatory. In absence of compliance of above & non-submission of documents required against annexure-1, the vendor's offer is liable to be rejected.
2. Information / compliance / documents submitted by vendor shall be authentic in all aspects. In case any deviation / false information / forged documents are observed, BHEL is free to initiate appropriate punitive proceeding against the supplier.
3. BHEL reserves the right to visit vendor work's to ensure compliance of annexure-1.

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