

ANNEXURE III - Technical delivery condition(TDC)

S. No.	Specification	Requirement	Vendor's Comments
1	Vendor shall supply the items in SL No. 1 (Supply & matching of internals for Mandrel Bar Extractor Gearbox) of tender as per Annexure IV - Technical Specifications & scope of supply	Bidder to comply	
2	Vendor shall supply the items in SL No. 2 (Supply of input pinion & its mating bull gear for Mandrel Bar Extractor gearbox) of tender as per Annexure V - Technical Specifications & scope of supply	Bidder to comply	
3	Vendor has to submit detailed part drawings as required in Annexure IV & V for approval. After approval of drawings by M/S BHEL , activities in Annexure IV & V can be started .	Bidder to comply	
4	Gears & Pinions shall be of forged 18CrNiMo6-7 hardened to 60±2 HRC. Reports of heat treatment (case hardening)shall be attached with supply .	Bidder to comply	
5	Pipeline with nozzles shall be provided for lubrication of all gears and pinions in	Bidder to comply	
6	Reports of Mill Test Certificate ,Chemical composition and material hardness from approved NABL lab shall be submitted.	Bidder to comply	
7	NDT Test Reports : UT test reports on raw material , MPI test reports for gears after profile grinding shall be submitted .	Bidder to comply	
8	Shafts have to be mounted on anti-friction bearings. All Bearings to be directly Purchased from OEM or its Authorized dealers. SKF and FAG make only is acceptable. For Authorised dealers , Pre- Dispatch inspection certificate from manufacturer shall be submitted .	Bidder to mention details	
9	Vendor shall ensure smooth mating of Pinion Gear and helical gear after assembly in gearbox.	Bidder to comply	
10	Oil seals shall be of SKF / Freudenberg /Maxspare / other reputed make acceptable to BHEL	Bidder to mention details	
11	Newly supplied gears shall be hardened and ground on profile grinder as per ISO 1328-1 Class VI accuracy . Reports of same shall be provided	Bidder to comply	
12	Existing gears in gearbox shall be ground on profile grinder as per ISO 1328-1 Class VI accuracy . Reports of same shall be provided	Bidder to comply	
13	Lubrication: Forced OIL Lubrication with flow of 20 LPM @ 5 bar pressure. Oil used is SP 220.	Bidder to comply	
14	Delivery period - Maximum 16 weeks from the date of PO.	Bidder to comply	
15	Pre dispatch Inspection: Vendor shall submit report of dimensional inspection, chemical composition , material hardness , heat treatment , UT& MPI test reports , gear profile report and bearing inspection certificate through mail before despatch of material. All test reports of material shall be from NABL accredited laboratory and NDT reports by Qualified personnel . Trial run of gearbox to be done with forced lubrication of 20 LPM @ 5 bar and noise level & vibration observed to be mentioned. Noise shall be less than 80DB from 1 metre.Test run will be witnessed by BHEL personnel .	Bidder to comply	
16	Post Dispatch Inspection: Inspection of material for dimensions ,chemical composition, hardness shall be carried out at BHEL Lab.	Bidder to comply	
17	Vendor shall give warranty for minimum 1 year of satisfactory performance from date of supply .	Bidder to comply	

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ANNEXURE IV - TECHNICAL SPECIFICATION & SCOPE OF SUPPLY FOR ITEMS IN SL NO. 1 OF TENDER

1. SUPPLY & MATCHING OF INTERNALS / MANDREL BAR EXTRACTOR GEARBOX:

EQUIPMENT: Mandrel Bar Extractor

REFERENCE DOCUMENT: Drg No. 2-7-1139-01-01774, 0-7-1139-01-00114, 3-7-1139-01-02632, 2-7-1139-01-01854, 3-7-1139-01-02508

SL No	SCOPE OF SUPPLY / WORK	VENDORS COMMENTS
1	SUPPLY & MATCHING OF INTERNALS :	
1.1	Dismantling of gearbox and its internals	
1.2	Bearing seating area bore rework if any	
1.3	<p>1.4.1 - Supply of input pinion shaft Part No. 2 (Z -21) - 1 no as per Drg No. 3-7-1139-01-02632</p> <p>1.4.2 -Supply of helical gear Part No.5 (Z – 74 & Module :6.5) - 1 no as per Drg No. 2-7-1139-01-01854.</p> <p>1.4.3- Supply of intermediate pinion shaft Part No. 3 (Z = 20) – 1 no as per Assy drg 2-7-1139-01-01774</p> <p>Note – 1) Existing Pinion shaft Part No. 2 is sheared . Hence new pinion (Part No.2) & bull gear (Part No. 5) to be manufactured and matched</p> <p>2) Intermediate pinion shaft Part No. 3 only to be manufactured new and matched with its mating existing bull gear (Part No .6)</p> <p>3) Dimensions mentioned in BHEL drawing alone to be followed . Material composition shall be 18CrNiMo6-7 & hardness : 60±2 HRC as per TDC.</p> <p>4) Submission of detailed manufacturing drawing for PART NO.2 , 3 , 4 , 5, 6 & 7 In AUTO CADD & PDF format .</p>	
1.4	Profile grinding of gears and blue matching with mating gears	
1.5	Supply of complete bearings (SKF/ FAG Make only) and oil seals (SKF/ Max Spare / Freudenberg / Any other reputed make acceptable to BHEL) shall be in scope of vendor. Bearings shall be procured from Manufacturer or their authorized dealers only . For authorized dealers , Pre – Dispatch Inspection certificate from Manufacturer is mandatory .	

1.6	Painting of inner and outer surface of gearbox casing as per standard requirements -Vendor to mention the details.	
1.7	Assembling of internals, Trial run of gearbox to be done with forced lubrication of 20 LPM @ 5 bar and noise level & vibration observed to be mentioned. Noise shall be less than 80DB from 1 metre.	
2	Transportation of Gearbox from BHEL site to vendors works and vice versa	

ANNEXURE V - TECHNICAL SPECIFICATION & SCOPE OF SUPPLY IN SL NO. 2 OF TENDER

SL No	SCOPE OF SUPPLY / WORK	VENDORS COMMENTS
1	<p>1.1 - Supply of input pinion shaft Part No. 2 (Z -21) - 1 no as per Drg No. 3-7-1139-01-02632</p> <p>1.2 -Supply of helical gear Part No.5 (Z – 74 & Module :6.5) - 1 no as per Drg No. 2-7-1139-01-01854.</p> <p>Dimensions mentioned in BHEL drawing alone to be followed . Material composition shall be 18CrNiMo6-7 & hardness : 60±2 HRC as per TDC.</p>	

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