

**TURRET TRAVERSE MECHANISM OF T90 TANK**

Sl no.	Nomenclature & drawing No.	Manufacturing technology & Testing / Inspection Facilities required to produce the item		Must be possessed by the vendor in his premises (P&M list and testing / inspection equipment list to be submitted)	May be possessed by the vendor in his premises or out sourced (Self declaration to be submitted)	FIRM Compliance (Y/N)	Remarks	
1	176.23CB-3CB TURRET TRAVERSE MECHANISM	TECHNOLOGY-1	Raw material		Firm should be capable to arrange the raw materials like Forging, Castings, Bar material, brass moulding casting etc as per drawing specification and standard.			
			Bought out items		Electromagnet, Azimuth Indicator, Textolite material Gaskets, Electrical items, Bearings, Springs are to be procured from HVF approved sources. Firm should submit the undertaking in this regard.			
		TECHNOLOGY-2	Turning	CNC Turning centre suitable to accommodate components of diameter ranging from 10mm to 300mm may be with machines having clamping dia 200mm, 300mm with 0.025mm accuracy				
			Milling & Drilling	HMC and VMC suitable to the components of size from 300mm diameter & 500 X 500 X 300mm with 0.010 accuracy				
			Gear Hobbing	Gear Hobbing of Mod 5 x cutting $\phi$ 250mm with gear cutting accuracy of class of Din 7 or better accuracy.		Worm & Worm Gear machining facility of module 4 or more as per drg specification		
			Gear Shaping	Gear Shaping of Mod 5 x cutting $\phi$ 250mm with gear cutting accuracy of class of Din 7 or better accuracy.				
			Face Gear Machining			Face gear cutting facility for cam clutch of Profile size 1.5mmX45 Degree as per drg specification		
			Bevel Gear Machining			Spiral Bevel generator of face Module 4mm or more as per drg specification		
			Internal Grinding	Internal grinding machine to accommodate component dia 300mm dia with 0.005 accuracy				

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1	176.23CB-3CB TURRET TRAVERSE MECHANISM	TECHNOLOGY-2	External Grinding	External Grinding machine to accommodate component Dia 300mm with 0.005 accuracy				
			Surface grinding	Reciprocating surface grinder to accommodate component dia 250 with 0.005 accuracy				
			Gear Grinding		Generation type Gear grinding machine to accommodate Mod 5 x 250mm gear dia with gear grinding accuracy class of Din 5 or better accuracy			
			Broaching		Broaching dia 50mm as per drg specification			
		TECHNOLOGY-3	Assembly	Work Benches and standard tools for assembly				
				Material handling Equipment including crane, Forklifts etc for capacity of handling 200Kgs min.				
				Should develop/position the suitable fixtures required for assembly, Torque Wrenches, Lapping of cam clutch etc. as per process sheet & Ty Specification & Firm should submit the undertaking in this regard that they will create the required fixture facilities within 6 months from the date of receipt of order.				
			Experience	Firm should have experience in manufacturing the gear box assemblies. Proof to be submitted.				
		TECHNOLOGY-4	Gas Carburising		Gas carburising furnace			
			Hardening & Tempering		Hardening & Tempering furnace with Oil quenching facility			
			Induction Hardening		Electrical type Induction hardening furnace with induction softening cycles			
			Protection coating		Oxidising & Phospating Plant, Zinc Chromtising plant			

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1	176.23CB-3CB TURRET TRAVERSE MECHANISM	TEST / INSPECTION-1	Test bench for testing the assembly performance	Should develop/position Running in Test stand/ Torque test stand as per process sheet & Ty Specification & firm should submit the undertaking in this regard that they will create the Test stand / Torque test stand facilities within 6 months from the date of receipt of order			
		TEST / INSPECTION-2	3D CMM	3D CMM 400 x 400mm or More			
			Gear Profile Tester		Gear Profile Tester (Max module 5)		
			Gear Roll Tester		Gear Roll Tester (Max module 5).		
			Surface Roughness Tester	Surface Roughness Tester for Ra & Rz values			
			Gauges	Standard Gauges for checking Holes and threads suitable to the requirement of the components. Firm should submit the undertaking in this regard that they will create the facilities within 6 months from the date of receipt of order.			
			Measuring Instruments	Gear Teeth Micrometer, Vernier Caliper, Groove Vernier, Radius gauge, Feeler Gauge etc. suitable to the requirement of the components. Firm should submit the undertaking in this regard that they will create the facilities within 6 months from the date of receipt of order.			

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1	176.23CB-3CB TURRET TRAVERSE MECHANISM	TEST / INSPECTION-3	Coating Measurement		Coating Thickness measuring equipment	
			Hardness measurement		Brinell Hardness Tester Rockwell Hardness Tester Hardness Case depth testing facility(Microscope).	

**Note : Justification for alternate facilities may be shared to prove that alternate facilities can be utilised to manufacture the item wherever the facilities are mentioned above are not available, but vendor has alternate facilities.**

**Likely Sources: 1. MTPF, Ambarnath**