

TECHNICAL SPECIFICATIONS OF VERTICAL MILLING MACHINE		
	MACHINE SPECIFICATION	
1	PURPOSE	
	The machine shall be used for milling parts of Super Rapid Gun Mounting (SRGM) in Defence block. Machine will be use for machining of ferrous and non-ferrous components.	
2	MACHINE SPECIFICATION	
2.1	SPINDLE	
2.1.1	Spindle position	Swiveling type vertical , Swiveling angle $\pm 45^\circ$ or more
2.1.2	Spindle taper	ISO 50
2.1.3	Spindle motor power	7.5 kw or more
2.1.4	Spindle speed range	Minimum : 50 rpm or less Maximum : 1500 rpm or more
2.1.5	Vertical quill movement	70 mm or more
2.1.6	No's of speed	10 or more
2.1.7	Minimum distance from lower face/mounting face for tool adopter of milling spindle to table top surface	100 mm (approx.)
2.1.8	Distance from spindle centre to column face	vendor to specify
2.1.9	Distance from inner face of table to vertical column guide ways	vendor to specify
2.1.10	Distance from either end of table end to centre of spindle	vendor to specify
2.1.11	Dia. of front bearing	vendor to specify
2.1.12	Dia. of quill	vendor to specify
2.2	TABLE	
2.2.1	Overall dimesion of table (L X W)	vendor to specify
2.2.2	Overall clamping area (LXW)	L=1600 mm or more W=355 mm or more
2.2.3	Permissible load on the table	500 kg minimum
2.2.4	T-slots number / width / Centre distance	vendor to specify
2.2.5	POWER OPERATED TRAVERSE	
2.2.5.1	Longitudinal traverse	1200 mm or more
2.2.5.2	Vertical traverse	400 mm or more
2.2.5.3	Cross traverse	320 mm or more
2.3	FEED RATES	
2.3.1	No. of Feeds	vendor to specify
2.3.2	Rapid traverse rate	
a.	Longitudinal & Cross	4000 mm/min or more
b.	Vertical	800 mm/min or more
2.3.3	Feed rate	
a.	Longitudinal & Cross	Minimum : 20 mm/min or less Maximum : 1500 mm/min or more
b.	Vertical	Minimum : 5 mm/min or less Maximum : 300 mm/min or more

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3	GENERAL FEATURES OF MACHINE
3.1	The guideways of all axis should have protective covers with adequate sealing on joints to prevent seepage of oil, coolant, foreign material etc. into guideways. Guideways should be hardened steel with hardness HRC60 or more.
3.2	The machine should be capable of high stock removal with precision finish machining on work piece.
3.3	The machine must be of rigid and vibration free construction. All gears must be case hardened and ground. All the slides should be rigid to withstand heavy stock removal. It should have independent main drive and feed drive motors.
3.4	A suitable centralized lubricating system for lubrication of all moving / rotating elements should be there.
3.5	Each axis should have mechanical limit switches interlocked with feed/rapid drive.
4	ATTACHMENT & ACCESSORIES
4.1	Coolant equipment with pump and motor (coolant pipe upto tool tip - vendor to confirm)....1 no.
4.2	Round table hand operated dia. 400 mm....1 no.
4.3	Automatic Lubrication System
4.4	Machine lamp of 220 volts for working area.....1 no.
5	POWER SUPPLY / ENVIRONMENT CONDITION
	The machine should be suitable for operation in the following conditions:
5.1	Power supply for the machine : 415 V + 10%/-15%, 3 phase, 50 Hz +/- 3%
5.2	Temperature : 5 to 45 deg. C
5.3	Relative humidity : 95% max
5.6	Power supply shall be provided by BHEL at single point near the machine. All types of equipment, cables, connections circuit breakers required to connect to BHEL's power supply point shall be supplied by vendor.
6	FIRST FILLING OF OIL
	First filling of all required oils, lubricants & Grease etc., for the machine and auxiliary system to be supplied by vendor.
7	ANCHORING MATERIAL
	Complete set of anchoring materials including foundation bolts, nuts, washers, fixators, leveling shoes etc for alignment and fixing of the machine on the floor shall be supplied by vendor. Details to be submitted with the offer.
8	NOISE LEVEL
	Noise level of the machine during operation should be less than 85 Db (A) at one meter away from the machine.
9	SPARES (Each type as used on offered machine)
9.1	Notched Pin - 12 nos. of each type
9.2	Split Pin - 12 nos. of each type
9.3	Spl. Washer - 12 nos. of each type
9.4	Wiper - 1 no. of each type
9.5	Oil Seal - 2 nos. of each type
9.6	Angle Joint - 2 nos. of each type
9.7	Limit Switch - 2 nos. of each type
9.8	Rectifier - 1 no. of each type
9.9	MCB - 1 no. of each type
9.10	Electro-Magnetic Clutch - 1 no. of each type
9.11	Drive Shaft - 2 nos. of each type
9.12	Itemized price list of all spares is to be submitted by vendor.
9.13	NOTE: Vendor shall ensure the availability of the spares with them for at least 10 year from the date of commissioning of machine - Vendor to confirm

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10	OPERATION AND MAINTENANCE MANUALS
10.1	Catalogues, maintenance Manual of all the OEM spares and bought out items including drawings, as available, to be offered.
10.2	Complete Detailed specifications of all rubber items and hydraulic/lube fittings items shall be provided.
10.3	Complete list of electrical and mechanical parts/items (Bill of materials) used in the machine must be supplied along with machine.
10.4	Drawing of lead screws, box but, ball screws, gears, shafts used in the machine.
10.5	Drawings of pulleys and soft material parts (Bushes, wedges etc) used in the machine.
10.6	Details of all specifications/grade of oils and greases used / required in the machine.
10.7	Complete bearing list along with sizes, Clutches used in machine.
10.8	Kinematic diagram, electrical circuit diagram of the machine must be supplied.
10.9	Complete assembly drawing of speed and feed gear box must be supplied.
10.10	All the above documents are required in 3 sets in hard copy as well as one set on CD-ROM / Pen drive.
11	INFORMATION TO BE FURNISHED WITH THE OFFER
11.1	General arrangement drg. is to be submitted.
11.2	Total power requirement of the machine to be specified by the supplier.
11.3	Overall space required for instalation of the machine to be specified by the supplier.
11.4	Overall weight of the machine.
11.5	Vendor should submit clause wise information along with the offer.
12	COLOUR OF THE MACHINE
	The machine should be painted apple green (polyurethan paint) as per IS:5.
13	PRE-ACCEPTANCE OF THE MILLING M/C AT VENDOR'S WORKS
13.1	The vertical milling m/c will be preliminary inspected at the vendor's works by BHEL Engineers before dispatch. Test to be carried at vendor's works.
13.2	During pre-despatch inspection vendor shall demonstrate specification compliance and accuracy as per test chart : IS 2200 (Part 3) : 2002 ISO 1701-3 : 1997 (Superseding IS 2201 : 1994)
14	ERRECTION AND COMMISSIONING OF THE VERTICAL MILLING M/C AT BHEL WORKS
14.1	Foundation drawing is to be submitted by supplier within 4 weeks of placement of purchase order/LOI. Foundation shall be constructed by BHEL as per foundation design given by vendor.
14.2	Machine will be erected & commissioned by the vendor's representative deputed for commissioning.
14.3	Vendor will carryout the accuracy test at BHEL works as per the test chart : IS 2200 (Part 3) : 2002 ISO 1701-3 : 1997 (Superseding IS 2201 : 1994)
14.4	Vendor to carryout milling operations on the jobs maintaining accuracies as per drg. no. i) 17820518910 - Structural Steel ii) 17822318201 - Aluminium Alloy
14.5	Vendor to provide operation training during errection and commissioning of the machine.
15	GUARANTEE
	The machine shall be guaranteed for 24 month from date of commissioning at BHEL works.

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16	PACKING
	All the items and accessories of the machine shall be suitably packed in rigid wooden boxes to avoid any damage / loss in transit.
17	OPTIONAL ITEMS
17.1	3 Axes DRO (Make Haindehain) - 1 no. : Installed on machine for display of axes movement values.
17.2	Set of one lead screw/ball screw & one box nut , one worm shaft & one worm wheel, used on machine.

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DEFENCE PROJECT

**Pre - Qualification Requirement (PQR) for
Vertical Milling Machine of Indent No.: 20146394**

Only those vendors (OEMs) should quote who have supplied & commissioned in the past 5 years (period completing on the original date of opening of Tender) at least one no. of **Vertical Milling Machine** with ISO 50 taper & size (Table length : 1500 mm or more, Table width : 300 mm or more, Spindle power: 7 KW or more, Load capacity: 500 Kg or more) and referred **Vertical Milling Machine** is presently working satisfactorily for more than one year after commissioning (prior to the original date of opening of tender).

The following information/documents should be submitted by the vendor about the company where referred Vertical Milling Machine has been supplied. This is required from all the vendors for qualification of their offer.

1. Name & Address of the customer / company where referred machine has been supplied.
2. Month & Year of commissioning.
3. Name, designation, phone no. & email address of the contact person of the customer.
4. Performance Certificate from the referred customer company regarding satisfactory performance of machine on company's letter head pad bearing sign/name/designation of authorized signatory. Vendor shall submit original certificate for verification by BHEL, if required by BHEL. After verification, original may be take back by vendor.
5. BHEL reserves the right to verify the information provided by the Vendor for the referred machine which may include submission of documents (like copy of purchase order, commissioning certificate pertaining to referred machine) & also visit of BHEL's team to referred customer's works (to be facilitated by vendor). In case, the information provided by vendor is found to be false/incorrect, the offer shall be rejected.

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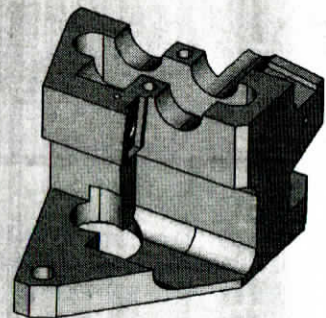
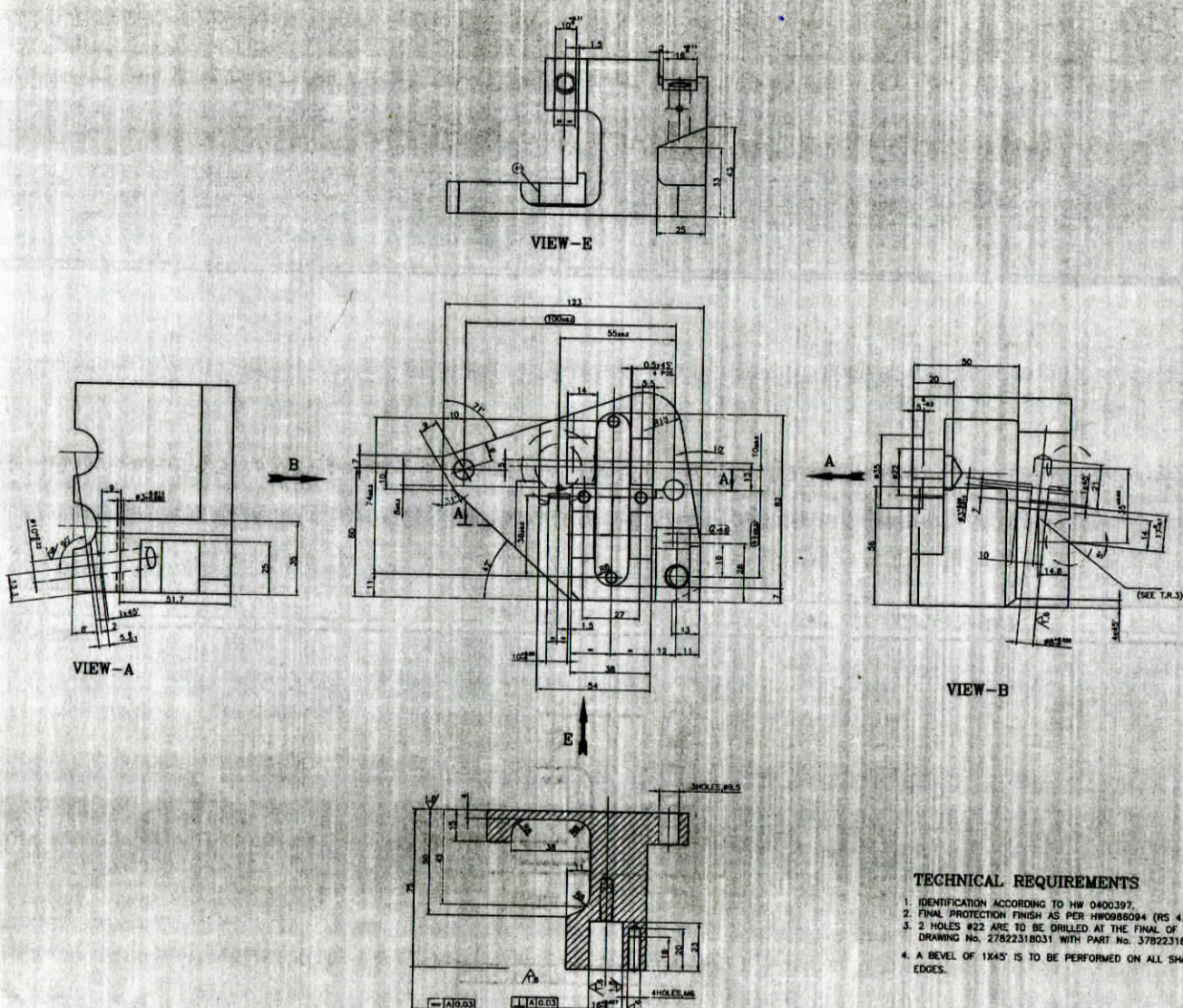
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(S. SARUPA)

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(Meena)



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INVENTORY NO. 1976-23-201-01
FORM & DATE REF. DRG. NO.



- TECHNICAL REQUIREMENTS**
1. IDENTIFICATION ACCORDING TO HW 0400397.
 2. FINAL PROTECTION FINISH AS PER HW0986094 (RS 4).
 3. 2 HOLES #22 ARE TO BE DRILLED AT THE FINAL OF ASSY. DRAWING No. 27822318031 WITH PART No. 37822318553.
 4. A BEVEL OF 1X45° IS TO BE PERFORMED ON ALL SHARP EDGES.

DESIGN TITLE	DESIGN NO.	DESIGN DATE	DESIGN BY	DESIGN CHECKED
TYPE OF PRODUCT	OR	NAME OF CUSTOMER/PROJECT	SRGM 76/62	
GRADE OF UNTOLO DIM	REV	DATE	BY	
REV DATE	REV DATE	REV DATE	REV DATE	
DRAWING IS REDRAWN.	DPE-08-F0124	SCALE	WEIGHT (KG)	REF TO ASSY DRG.
TITLE		SCALE	WEIGHT (KG)	REF TO ASSY DRG.
SUPPORT		1:200	27822318031	REV. NO. 01
DRAWING NO.		CARD CODE	SHEET NO. 01/00P SHEETS 01	
1-782-23-18201			SIZE A1	

SECTION A-A

