TENDER SPECIFICATION OF MOBILE CRANE (LIGHT)

1. **Name of the Equipment.** Mobile Crane (Light) (Capacity: 10 tons).

2. **Purpose.** The Mobile Crane will be used for lifting/shifting of heavy machinery/equipment at Naval Base.

3. **Quantity.** 01 (One) in number complete set.

4. **Manufacturer, Principal Supplier & Local Supplier.** Name and full address to be mentioned.

a.	Manufacturer	To be mentioned
b.	Principle Supplier	To be mentioned
c.	Local Supplier	To be mentioned

5. **Year of Manufacture.** 2023 or later.

6. **Country of Origin.** USA, UK, EU Countries, Canada, Japan, Australia, South Korea, Turkey, and New Zealand.

7. **Manufacturing Country.** USA, UK, EU Countries, Canada, Japan, Australia, South Korea, Turkey, and New Zealand.

8. **Standard.** The Mobile Crane is to be designed and constructed fulfilling the requirement of international standards. The standards to which the quoted Mobile Crane complies with are to be specified in details (ISO or class certificate).

9. **Ambient Condition.**

a.	Air Temperature	5°C to 45°C
b.	Relative Humidity (RH)	Upto 95%
c.	Location	Close to the sea shore or hilly area

10. **Certificate/ Document of Authentication.** The local supplier must provide following original certificate(s)/ document(s) with the offer/ quotation of the crane as regard to the genuinity of source and item(s) in order to establish chain of links from the original source to supply items:

a. One certificate/ document by the manufacturer in favour of the supplier (in case of manufacturer as direct source).

b. Two certificates/ documents, one by the manufacturer to authorized agent and other by the authorized agent to supplier (in case of authorized agent as immediate source).

c. Three certificates/ documents, first one by manufacturer to authorized agent, second one by authorized agent to sub-agent and third one by sub-agent to supplier (in case sub-agent as immediate source). If the supplier is unable to obtain the first certificate (by manufacturer to authorized agent), then it has to produce relevant document to prove agency-ship of its claimed agent of the recognized manufacturer.

11. **Scope of Supply.** The scope of supply is to include the followings:

a. Main item (01 x Mobile Crane), complete with all items necessary for immediate operation without the requirement of any other items (attachments, accessories, consumables etc) (as per paragraph 15 to 19).

b. Optional Items and spare parts (as per paragraph 20 and 21).

c. Tools anc special tools (as per paragraph 22 and 23).

d. Documents (user manual, maintenance manual, spare parts catalogue, drawings etc; as applicable) and Certificates (as per paragraph 24 and 25).

e. Inspection, Test, Trial and Acceptance (as per paragraph 26).

f. Training (as per paragraph 28).

g. Warranty and Guarantee (as per paragraph 29 and 30).

h. Any other issue relevant (if any).

12. **Chassis.** Mobile Crane should be constructed with high tensile steel, all welded mono-box construction. Detailed description of construction of the chassis is to be provided with the quotation.

13. **Load Rating Charts.** Load Rating Charts at different radius/height are to be provided with the offer.

14. **Cab Control and Instruments.**

a. The crane and drive operation can be performed from one cab mounted on rotating superstructure. One sided one man type, steel construction with sliding door access and tinted safety glass windows opening at side. Door window is powered control. The cab is to be air conditioned. The instrument panel in front of the driver should include the following:

Ser	Description
(1)	Lighting switches
(2)	Engine low oil pressure light
(3)	Air pressure gauge (if applicable)
(4)	Fuel content gauge
(5)	Speedometer
(6)	Flashing indicator light
(7)	Safe load indicator and load meter
(8)	Inclinometer

b. Following controls are to be conveniently located:

Ser	Description
(1)	Hand brake and emergency brake
(2)	Gear lever
(3)	Stability lock control lever
(4)	Slew parking brake
(5)	Operating levers spring centred for hoist, derrick, slew and jib telescoping

c. Standard equipment which are to be fitted with the crane is:

Ser	Description
(1)	Over head fan
(2)	Windscreen
(3)	Wiper with washer
(4)	Warning horns
(5)	Different lights including Spotlight and Floodlight

(6)	Complete spare wheel with tyre
(7)	4 set Pad and wear side/side wear pad

15. **Technical and Operational Data.** Following items are mandatory to be supplied with the cranes. Detail technical and operational data are to be provided as follows:

a.	Type	:	Mobile Hydraulic Crane
b.	Model	:	To be mentioned
c.	Capacity	:	10 ton (see paragraph 13 also)
d.	Overall Dimension of the crane		
	(1) Length	:	To be mentioned
	(2) Width	:	To be mentioned.
	(3) Height	:	To be mentioned
e.	Weight of the crane		
	(1) Gross weight	:	To be mentioned.
	(2) Front axle weight	:	To be mentioned.
	(3) Rear axle weight	:	To be mentioned.
f.	Performance		
	(1) Max. Travelling Speed (Should be at least 50 km/hr)	:	To be mentioned.
	(2) Economic Travelling Speed	:	To be mentioned.
	(3) Gradeability (tan θ)	:	To be mentioned.
g.	Boom		
	Four section full power partially synchronized telescoping boom of round hexagonal box construction with 3 sheaves at boom head.		
	(1) Fully retracted length	:	To be mentioned.
	(2) Fully extended length (minimum 30 m)	:	To be mentioned.
	(3) Extension speed	:	To be mentioned.
h.	Jib		
	Two stage swing around boom extension. Triple offset type. Box type top section telescopes from lattice type base section which stows alongside base boom section. Single sheave at jib head.		
	(1) First Stage Jib Length	:	To be mentioned.
	(2) Second Stage Jib Length	:	To be mentioned.
	(3) Offset angle	:	To be mentioned.
j.	Elevation		
	(1) Boom angle (at least 0^0 to 81^0)	:	To be mentioned.
	(2) Boom raising speed	:	To be mentioned.
k.	Hoist – Main Winch		
	Variable speed type with grooved drum driven by hydraulic axial piston motor through which speed reduces. Power load lowering and hoisting. Equipped with automatic brake (Neutral brake) and counterbalance valve. Spin resistant type wire rope of minimum dimension (Diameter x Length) 16 mm x 170 m. Details are to be mentioned as follows:		
	(1) Single line Pull	:	To be mentioned.
	(2) Single line speed	:	To be mentioned.
	(3) Wire rope diameter x length	:	To be mentioned.
l.	Hoist – Auxiliary Winch		
	Variable speed type with grooved drum driven by hydraulic axial piston motor through which speed reduces. Power load lowering and hoisting. Equipped with automatic brake (Neutral brake) and counterbalance valve. Spin resistant type wire rope of minimum dimension (Diameter x Length) 16 mm x 90 m. Details are to be mentioned as follows:		

	(1) Single line Pull	:	To be mentioned.
	(2) Single line speed	:	To be mentioned.
	(3) Wire rope diameter x length	:	To be mentioned.
m.	Hook Block		
	1 x Hook Block of at least 30 tonne capacity for use with the main winch and 1 x Hook Block of at least 4 tonne capacity for use with the auxiliary winch are to be provided. Sheaves, Swivel type hook with safety latch are to be provided.		
	(1) 1 x Hook Block of at least 30 ton capacity	:	To be mentioned.
	(2) 1 x Hook Block of at least 4 ton capacity	:	To be mentioned.
n.	Slewing		
	Continuous 360^0 full circle slewing on ball bearing slew ring.		
	(1) Slewing speed	:	To be mentioned.
p.	Outriggers		
	Hydraulically operated H-type outriggers. Each outrigger controlled simultaneously or independently from the cab equipped with sight level gauge. Crane operation with different extended length of each outrigger.		
	(1) Maximum extended width	:	To be mentioned.
	(2) Minimum extended width	:	To be mentioned.
q.	Ground clearance (High ground clearance will be preferable).	:	To be mentioned.
r.	Minimum Turning Radius		
	The turning radius should be maximum 10 meters at 2 wheels steering and maximum 6 meters at 4 wheels steering.		
	(1) Minimum turning radius at 2 wheels steering	:	To be mentioned.
	(2) Minimum turning radius at 4 wheels steering	:	To be mentioned.
s.	Tires		
	(1) Front size	:	To be mentioned.
	(2) Rear size	:	To be mentioned.
t.	Axles		
	(1) Front axle type	:	To be mentioned.
	(2) Rear axle type	:	To be mentioned.
u	Transmission		
	Electronically controlled full automatic transmission. Transmission details are to be specified	:	To be mentioned.
v.	Suspension		
	(1) Front	:	To be mentioned.
	(2) Rear	:	To be mentioned.
w.	Steering System		
	Hydraulic power steering controlled by steering wheel. Following steering mode to be specified:		
	(1) 2-wheel front	:	To be mentioned.
	(2) 4-wheel coordinated	:	To be mentioned.
	(3) 4-wheel crab	:	To be mentioned.
x.	Emergency Steering System		
	Type and detail of emergency steering system are to be specified	:	To be mentioned.
y.	Brake System	:	To be mentioned.
z.	Electric System		
	(1) Number of Batteries	:	To be mentioned.
	(2) Each battery capacity	:	To be mentioned.

aa.	Pad Out Rigger		
	Minimum 2 pair pad out riggers are to be supplied with the crane	:	To be mentioned.
ab	Pump Details:		
	(1) Name of the pump	:	To be mentioned.
	(2) Number of Pump	:	To be mentioned.
	(3) Type	:	To be mentioned.
	(4) Model	:	To be mentioned.
	(5) Maker	:	To be mentioned.
	(6) Capacity	:	To be mentioned.
ac.	Oil Motors Details:		
	(1) Name of the oil Motor	:	To be mentioned.
	(2) Number of oil Motor	:	To be mentioned.
	(3) Type	:	To be mentioned.
	(4) Model	:	To be mentioned.
	(5) Maker	:	To be mentioned.
	(6) Power	:	To be mentioned.
ad.	Covers		
	Crane water proof cover is to be provided.	:	To be mentioned.

16. **Engine.** Detail description of the engine is to be provided which should include the following:

a.	Type	Four stroke diesel engine.
b.	Model	To be mentioned.
c.	Maker	To be mentioned.
d.	No of cylinders	6 cylinders or above.
e.	Stroke and bore of the cylinders	To be mentioned.
f.	Maximum continuous rating	To be mentioned.
g.	RPM	To be mentioned.
h.	Specific fuel consumption of the engine	To be mentioned.
j.	Piston displacement	To be mentioned.
k.	Cooling system	Water cooled.
l.	Starting system	Battery operated.
m.	Fuel used	High Speed Diesel Oil (HSDO).
n.	Lubricating oil used (Shell or Equivalent)	To be mentioned.
p.	Overhauling period (Not less than 30,000 hours)	To be mentioned.
q.	Fuel tank capacity	To be mentioned.
s.	Power - Engine rated output	To be mentioned
t.	Power - Engine rated torque	To be mentioned

17. **Safety Device.** All required safety devices as per standard classification society must be included in the Mobile Hydraulic Crane. List of safety devices in the mobile hydraulic crane are to be provided with the offer.

18. **Hydraulic Equipment.** A detailed description of the construction and function of the hydraulic systems are to be provided with the quotation. The standard to which the equipment conforms is to be specified. Capacity of the oil reservoirs, rpm and discharge rate of the pump, circuit pressure etc, are to be specified.

19. **Standard Accessories.** Standard accessories must include all items and accessories, which are essential to operate the Mobile Hydraulic Crane whether those are mentioned in the specification or not. The price of standard accessories is to be included in FOB value. However, item wise price list of standard accessories is to be provided with the offer for reference value only.

20. **Optional Items.** A list of optional items (if any) which may be required to operate Mobile Hydraulic Crane is to be provided with the quotation with item wise price. The prices will not be added with total price while evaluating the comparative price of the suppliers.

21. **Spare Parts.** A recommended list of spare parts required for 05 years or 3000 hrs satisfactory operation of Mobile Hydraulic Crane is to be provided indicating item wise price. The prices will be added with total price while evaluating the comparative price of the suppliers.

22. **Tools.** 01 (one) set of standard tools for maintenance of Mobile Hydraulic Crane is to be provided indicating item wise price. Quantity and size of these tools are to be mentioned in the quotation. That price will be added with total price while evaluating the comparative price of the suppliers.

23. **Special Tools.** A recommended list of special tools required for carrying out maintenance of Mobile Hydraulic Crane is to be submitted with the quotation indicating item wise price. That price will be added with total price while evaluating the comparative price of the suppliers.

24. **Documents.** 02 (Two) sets of following documents in English language are to be supplied with Mobile Hydraulic Crane (free of cost):

a. Instruction manual including technical specification, installation, operation and maintenance.
b. Spare parts catalogue and its components.
c. Factory test certificate/performance certificate.

25. **Certificates.** The manufacturer must give a certificate, which will form a part of the contract that all the mechanical, electrical and electronic components of the crane and its control system are currently in production. Following certificates should be provided with the crane as per ISO/DIN standard:

a. Load certificates.
b. Rope certificates.
c. Safety certificate.
d. Certificates for hook's load.
e. Certificate for the jib.
f. Others as per standard practice and classification rules.

26. **Inspection, Test, Trial and Acceptance.**

a. The manufacturer shall carryout inspection and test of the relevant components as per ISO/DIN rules before shipment and provide certificate to that effect.

b. The supplier's representative will carryout test and trial of the cranes at the purchaser's premises in SHER-E-BANGLA at PATUAKHALI in presence of the buyer's representative and handover the Mobile Hydraulic Crane in fully operational condition to the buyer. After satisfactory test, trial and commissioning of the Mobile Hydraulic Crane, it will be handed over to BN in fully operational condition. A test/ trial report, in this regard, will be signed jointly by the representative of supplier and the representative of buyer and to be forwarded to CINS office.

c. The cost of airfare, boarding, lodging, man-hour cost etc, for the manufacturer's engineer during his stay in Bangladesh, is to be borne by the manufacturer/supplier.

27. **Record of sales.** Record of sales of the quoted model of the Mobile Hydraulic Crane indicating year and buyer with full address is to be submitted with the quotation.

28. **Training.** The supplier's/manufacturer's installation engineer will provide operation and maintenance training in Bangladesh to the Mobile Hydraulic Crane operators for 05 days after test, trial and commissioning of the Mobile Hydraulic Crane. Bidder is to quote the cost of training separately in their financial offer. Cost of air ticket, internal transportation, accommodation, food, medical support etc are to be borne by the supplier.

29. **Warranty.** Warranty for trouble free operation is to be given by the principal/manufacture for a period at least 01 year from the date of acceptance by the buyer. During the warranty period, if the Mobile Hydraulic Crane remains non-operational for any action pending by supplier, the warranty period will be extended for the same period. The warranty covers all parts and labor (including service engineer's cost) throughout the warranty period.

30. **Guarantee.** The manufacturer will guarantee to supply the spare parts for at least 05 (Five) years at reasonable price. Yearly increase of price of spares should not be more than 5% of the price list for spares provided with the quotation.

31. **Shipment.**

a. The supplier will arrange shipment of all items by sea to Chattogram port, Bangladesh.

b. All items are to be delivered in sea-worthy packing to ensure safe transportation by sea.

c. All packages are to have packing notes showing their contents in details and all packages shall be marked with the name and address of the consignee and gross weight.

d. The supplier will arrange transportation of all supplied items from Chattogram port to the NSD Chattogram.

e. **Port of Shipment.** Any port of the manufacturing country. In case of shipment through any port of manufacturer authorized dealer, relevant manufacturer certificate is to be provided as a proof of genuineness of the offered item.

32. **Delivery.**

a. The items are to be delivered within **09 (nine) months** from the date of signing the contract to the following consignee:

The Commanding Officer
Naval Stores Depot Chattogram
New Mooring, Chattogram, Bangladesh

b. **Place of delivery.** NSD Chattogram.

c. Incase of CFR, the supplier will carry the items from Chattogram sea port to NSD Chattogram at the cost and risk of supplier.

33. **Terms of Payment.** Letter of credit (LC) for full purchase amount will be opened in favour of the principal supplier under the following payment terms:

a. 80% of total CFR value will be paid on delivery of the items described under the scope of supply and on production of necessary shipping documents.

b. Remaining 20% of CFR value will be paid on producing 'Acceptance Certificate' after satisfactory test and trial jointly carried out by the buyer's and supplier's representatives.

34. **Validity of offer.** The offer should remain valid till **180 days** from the date of tender opening.

35. **Currency**. Foreign Currency.

36. **Condition for Acceptance of Quotation**. Quotation has to have supporting documents (booklets, leaflet, catalogue, brochure etc) having detailed particulars of the Mobile Hydraulic Crane. If detailed information regarding specifications, maker's books and catalogue about the same model of the Mobile Hydraulic Crane quoted, spare parts accessories, scope of supply, etc are not provided; the quotation will not be accepted.

37. **Compliance Statement**. A compliance statement fulfilling all the requirement of the tender is to be submitted for evaluation of the quotations. Stating mere 'Yes' or 'No' will not suffice and detailed description/information as required is to be given. An incomplete compliance statement may attribute to cancellation of the offer. If any clause of this specification does not commensurate the with offered Mobile Hydraulic Crane, the deviation has to be spelt out clearly.

ANNEX E TO
DGDPTENDER NO: 221.450.22
DATED: 28 SEPTEMBER 2022

TECHNICAL SPECIFICATION OF CNC AUTOMATIC HONING MACHINE

Ser	Description	Specification	Must be filled up by the Principal/manufacturer
1.	Name and complete address of Local Agent	Details to be mentioned	
2.	Name and complete address of Principal	Details to be mentioned	
3.	Name and complete address of Manufacturer	Details to be mentioned	
4.	Year of production	Not before the year of contract	
5.	Brand	To be mentioned	
6.	Model	To be mentioned	
7.	Country of origin	**Group A countries**	
8.	Country of Manufacturer		
9.	Country of Assembly		
10.	**Machine Capacity**		
	a. Type	Vertical Honing Machine	
	b. Honing diameter (Min range)	45-180 mm	
	c. Honing length (Min)	400 mm	
	d. Cylinder length to be honed (Min)	400 mm	
	e. Max work piece length	To be mentioned	
	f. Stroke length-vertical axis (Min)	400 mm	
	g. Work head horizontal travel (Min)	800 mm	
	h. Spindle/Honing speed (Min)	40-120 rpm	
	j. Spindle stroke speed (Min)	5-30 m/min	
	k. Accuracy (Min)	0.01 mm	
	l. Torque at hone head (Min)	50 NM	
	m. Spindle motor-Torque (Min)	15 NM	
	n. Spindle motor-Power (Min)	2.5 KW	
	p. Stroker motor-Torque (Min)	8 NM	
	q. Stroker motor-Power (Min)	1.25 KW	
	r. Stroke acceleration	5 m/Sec^2	
	s. Stone trays (Min)	4 Stone holder	
	t. Job clamping	To be mentioned	
	u. Lower crash protection system	Automatic Type	
	v. Honing stone retract at end of cycle	Automatic Type	
	w. Cross hatch angle system	Automatic Type	
	x. Roughing and finishing load sensing system	Automatic Type	

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Ser	Description	Specification	Must be filled up by the Principal/manufacturer
	y. Stone feed out system	Automatic Type	
	z. Brush finish program	Automatic Type	
11.	**Control Unit**		
	a. Con and Programing	CNC touch screen control (Min 12″ display)	
	b. Operating system	CNC controlled with latest version of FUNUC/Equipment.	
	c. USB flash drive and port to transfer file	To be provided.	
	d. Stroking system	CNC Servo controlled	
	e. Spindle rotation system	CNC Servo Controlled	
12.	Skype and Webcam	To be mentioned for video chat and instant messaging	
13.	Power Source	220 VAC, 50 Hz, 3 Ph 440 VAC, 50 Hz, 3 Ph	
14.	**Coolant Supply**		
	a. Pump motor (KW)	To be mentioned	
	b. Tank capacity	To be mentioned	
	c. Operating temperature	0-55° C	
	d. Operating pressure	To be mentioned	
15.	**Dimension and Weight**		
	a. Floor space required (LxWxH)	To be mentioned	
	b. Weight (Kg)	To be mentioned	
16.	Field test	(1) Necessary field test to be done for all types of possible operation. (2) Necessary attachment, tools, accessories, gauges and machines to be given for field test.	
17.	Software (If any)	a. Software name, version and other details to be mentioned. b. Software must work at offline mode without upto the time of contractual obligation. c. It must have option through internet protocol upto the time of contractual obligation. d. Suppliers must inform any update of relevant software in due time.	
18.	Any other (Vital for proper operation, maintenance and safety)	To be mentioned.	

DIRECTORATE GENERAL DEFENCE PURCHASE
DGDP
MINISTRY OF DEFENCE

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TENDER SPECIFICATION OF RESCUE BOAT CRANE (SAFE WORKING LOAD 3.5 TON)

1. **Name of the Equipment**. Rescue Boat Crane (Safe Working Load 3.5 Ton).

2. **Purpose**. The Rescue Boat Crane will be used to replace the existing crane of BNS ANUSHANDHAN. It will be installed on board the ship and will be used for lifting/shifting of the rescue boat of the ship at open sea (up to sea condition of sea state 4).

3. **Quantity**. 01 (One) in number complete set.

4. **Manufacturer, Principal Supplier & Local Supplier**. Name and full address to be mentioned.

a.	Manufacturer	To be mentioned
b.	Principle Supplier	To be mentioned
c.	Local Agent	To be mentioned

5. **Country of Origin**. USA, UK, EU Countries, Canada, Australia, Japan, South Korea and Turkey.

6. **Manufacturing Country**. USA, UK, EU Countries, Canada, Australia, Japan, South Korea and Turkey.

7. **Year of Manufacturer**. 2023 or later.

8. **Certificate/ Document of Authentication**. The supplier must provide following original certificate(s)/ document(s) with the offer/ quotation of items as regard to the gentility of source and item(s) in order to establish chain of l nks from the original source to supply items:

a. One certificate/ document by the manufacturer in favour of the supplier (in case of manufacturer as direct source).

b. Two certificates/ documents, one by the manufacturer to authorized agent and other by the authorized agent to supplier (in case of authorized agent as immediate source).

c. Three certificates/ documents, first one by manufacturer to authorized agent, second one by authorized agent to sub-agent and third one by sub-agent to supplier (in case sub-agent as immediate source). If the supplier is unable to obtain the first certificate (by manufacturer to authorized agent), then it has to produce relevant document to prove agency-ship of its claimed agent of the recognized manufacturer.

9 **Scope of Supply**. The scope of supply is to include the followings:

a. Main items {(01 set of Rescue Boat Crane (Safe Working Load 3.5 Ton)} must have all items necessary for immediate operation without the requirement of any other items (attachments, accessories, consumables, etc) (as per paragraph 15, 18 and 19).

b. Optional Items (as per paragraph 20).

c. Tools and Special Tools (as per paragraph 21 and 22).

d. Spare parts (as per paragraph 23).

e. Documents (user manual, maintenance manual, spare parts catalogue, drawings etc; as applicable) and Certificates (as per paragraph 24 and 25).

f. Installation of the Crane (as per paragraph 26).

g. Pre Shipment Inspection (PSI) and Factory Acceptance Test (FAT) (as per paragraph 27).

h. Training (as per paragraph 29).

j. Warranty services and Guarantee (as per paragraph 30 and 31).

k. Any other items necessary for immediate operation.

10. **Ambient Condition.**

a.	Air Temperature	+5°C to + 50°C
b.	Relative Humidity (RH)	Up to 95% (non-condensing)
c.	Location	At sea & coastal area

11. **Proposed Arrangement Drawing**. The Bidder(s) is to submit preliminary installation drawings with the offer. After award of contract, final installation drawings will have to be submitted by the supplier well in advance for approval.

12. **Record of Sales**. Record of sales of the quoted (or similar) model of the Rescue Boat Crane for last 3 years, indicating year and buyers' name, is to be included with the quotation.

13. **Standards, Code, and Regulations**. The Rescue Boat Crane shall be designed, constructed/ built and equipped in conformity with internationally recognized standardisation organisation/ society/ equivalent standards, codes and regulations. The standards, code and regulations to which the quoted Rescue Boat crane conforms are to be mentioned in the offer.

14. **Strength and Stability Criteria**. The strength and stability criteria to which the crane conforms are to be clearly specified.

15. **Safety Rules and Devices**. The quoted crane is to conform to any internationally accepted safety rules. The safety rules to which the crane conforms are to be clearly specified. The Rescue Boat Crane shall be provided with mechanical and electrical safety devices to avoid damage to the crane and operators/ including (but not limited to) the followings:

Ser no	Protecting/Safety Devices
a.	Surge Protection mechanism
b.	Sudden fluctuate of Voltage
c.	Switch Board
d.	Static current earthlings protection
e.	Spark or siege minimum

16. **Design and Material**. The Rescue Boat Crane and all other items should be of new construction, latest model and up-to-date design, conforming international regulation.

17. **Available Power Supply for Crane Operation:**

a.	Power Supply	440V, 60Hz, 3Phase. The motor should have the tolerance of ± 10% voltage fluctuation
b.	All electrical equipment including transformer, rectifier or converter/ stabilising equipments (if necessary) which are essential for crane operation are to be supplied and clearly mentioned in the offer.	

18. **Technical Specification:**

a. **Crane**. Followings are the crane's technical specification:

(1)	Type	Rescue Boat Crane
(2)	Model	To be mentioned
(3)	Maker	To be mentioned
(4)	Safe Working Load (SWL)	Not less than 3.5 tonnes
(5)	Running Test Load	Minimum 1.5 times of SWL
(6)	Static Test Load	Minimum 2.2 times of SWL
(7)	Working Radius	2.9m to 5.3m or more
(8)	Hoist Speed	Minimum 18 m/min
(9)	Weight	Not exceeding 7.5 tons
(10)	Slewing Operating Arc	Approximately 210^0
(11)	Movement Axis	Both upward/downward and side wise movement
(12)	Average Running Hour	Not less than 5 hours/day
(13)	Slewing Speed	To be mentioned
(14)	Slew Drive & Gearing	As Required
(15)	Jib & Frame Luffing Cylinder	Time to fully luff frame up or down is not more than 15 sec
(16)	Powerpack Main Pump Output	To be mentioned
(17)	Boost Pump Output (if any)	To be mentioned
(18)	Working winch & wire rope	As required (Wire rope length not less than 30 m)
(19)	Location	Crane will be at Deck No-1 between frame no 60-64 and Hydraulic unit on Deck-3 (sea art 28 also)

b. **Rescue Boat Crane Functional Detail**.

(1) Intended Rescue Boat Crane will be used for boat handling (launch, recovery and lowering etc.).

(2) Rescue Boat Crane will be designed, constructed and manufactured considering the above mentioned parameter. Certificate of compliance in this regard will be provided by the supplier that the crane is suitable to be used in sea-going vessels.

(3) The Rescue Boat Crane will be installed in existing ship's base plate. However, minor modification of the base may be accepted. The bidder is to provide drawing of base during submission of the quotation. The crane should be capable of operating at sea state – 4.

c. **Hydraulic Unit.** Integrated hydraulic power unit along with pump and other accessories should be installed within the dimension of (960 mm X 560 mm X 1740 mm). Hydraulic Unit should be placed on Deck no-3 (Beside MCR; Frame no: 49-50). The total pipeline and system arrangement should be provided for 31 mtr (approximate) or as required.

d. **Control System**. Suitable electric or electro hydraulic control system is to be installed and configured with new supplied crane. Required local and remote control console are to be installed. Remote control console is to be preferably installed on deck 1 in existing location.

e. **Basement**. Basement should be provided with the dimensions not more than 2m x 2.5m.

f. **Cabling and Hydraulic Piping**. Required piping for hydraulic system and cable arrangement is to be provided and installed by the supplier (see also 18 C).

g. **Motor**. Following are the crane's motor specification:

(1)	Type	To be mentioned.
(2)	Motor Power (kW)	To be mentioned.
(3)	Power Supply	440V, 60Hz, 3 Phases. The motor should have the tolerance of 10% voltage fluctuation.
(4)	Motor RPM	To be mentioned.
(5)	Ingress Protection	IP 55 or better
(6)	Electrical Attachments	All necessary electrical accessories are to be provided.
(7)	Motor Protection/ safety devices from dry running, overload, overheating and over/ under voltage	Details to be mentioned.

19. **Standard Accessories**. Standard accessories must include all items and accessories, which are essential to operate the Rescue Boat Crane whether those are mentioned in the specification or not. The price of standard accessories is to be included in FOB value. However, item wise price list of standard accessories is to be provided with the offer for reference value only.

20. **Optional Items.** A list of optional items (if any) which may be required to operate the Rescue Boat Crane is to be provided with the quotation with item wise price. The prices will not be added with total price while evaluating the comparative price of the suppliers.

21. **Tools**. One (1) set of standard tools for maintenance of the Rescue Boat Crane is to be provided indicating item wise price. Quantity and size of the tools are to be mentioned in details in the quotation. That price will be added with total price while evaluating the comparative price of the suppliers

22. **Special Tools**. A recommended list of special tools required for carrying out operation of Rescue Boat Crane is to be provided indicating item wise price. That price will be added with total price while evaluating the comparative price of the suppliers.

23. **Spare Parts**. A recommended list of spare parts required for 05 years satisfactory operation of the Rescue Boat Crane is to be provided indicating item wise price. The prices will be added with total price while evaluating the comparative price of the suppliers.

24. **Documents**. 02 (Two) sets of following documents in English are to be provided with the Rescue Boat Crane (free of cost):

a. **Instruction Manual**. It should contain the followings:

(1) Detailed particulars and specifications of the crane and its components.

(2) Operation and safety instructions.

(3) Maintenance instructions including maintenance schedule for the crane and its accessories.

(4) Instructions regarding periodical tests and trials.

b. Workshop level repair manual for the crane and its components.

c. Spare parts catalogue for the crane and its components.

d. All drawings of the crane and its accessories.

e. Hydraulic and electric circuit diagrams, fault finding flow chart, etc of the crane.

f. Installation instructions, drawings and wiring diagrams.

25. **Quality Assurance Certificate**. Quality assurance certificate in respect of the associated equipment in regards to its manufacturing and performance is to be provided at the time of delivery of the items.

26. **Installation, Test, Trail and Acceptance**.

a. Supplier's representative will carry out installation of the crane and its hydraulic, electrical and control system and carry out test and trial of the items in presence of BN representative and handover the items in fully operational condition. Necessary foundation/ base will be prepared/ made / installed by the purchaser. The supplier has to provide drawing for base/ foundation. All hot works related to installation will be carr ed out by BN DOCKYARD and material required for hot work will be supplied by purchaser.

b. Technical documents in the form of installation drawings, installation instructions, specifications, etc are to be supplied by the manufacturer with the equipment.

c. The manufacturer/supplier is to send at least one installation engineer for required duration to supervise the installation work and participate in test/trial. Cost of hotel accommodation, food and transpcrtation from hotel to work site will be borne by the manufacturer/supplier.

d. The manufacturer's/supplier's engineer is to supervise the installation works and ensure that the test and trials are carried out satisfactory in accordance with the instruction provided by the manufacturer. He is to ensure the proper functioning of the items and fulfilment of the contract requirements.

e. After satisfactory test and trial, an acceptance certificate will be signed jointly between the supplier's representative and the representative of buyer.

27. **Pre Shipment Inspection (PSI) and Factory Acceptance Test (FAT).**

a. Pre Shipment Inspection (PSI) and Factory Acceptance Test (FAT) will be carried out by two (02) BN Officers for a duration of total three (03) days excluding journey period, at the buyer's expenses. The bidder should inform the buyer about the date and schedule of PSI and FAT at least 08 (eight) weeks prior to the cate of commencement of the said PSI and FAT. After inspection a joint inspection report will be prepared and singed by both the seller and buyer's representatives.

b. On return from the country of supplier, the BN officers will submit a report to NHQ concerned directorate. NHQ concerned directorate will, in turn, forward final decision along with PSI and FAT report within one (01) week, basing on which DGDP will render clearance for shipment of stores to the bidder concerned. The bidder will not make shipment of any item of the contract without clearance from the DGDP.

c. All types of movement/ transportation (air, sea, road, rail) of the BN officers within the manufacturer/ bidder's country, reception and arrangement for entry into country/ concerned area for the PSI and FAT are to be arranged by the bidder without any extra cost.

d. Following test/ trial are to be carried out during FAT:

(1) Visual inspection and dimensional check up.

(2) Load test.

(3) Speed test (various).

(4) Different movement test.

(5) Limit test.

(6) Safety check/test.

(7) Overload safety test.

(8) Emergency stop test.

(9) Hydraulic, electrical and control system test (if possible).

28. **Site Visit.**

a. **Onboard Inspection/ Study.** The prospective bidder(s), after procurement of tender schedule from DGDP and on a prior written request (with submission of proof of purchase of tender schedule, and allowing at least 2 weeks to process the request), will be allowed to visit the ship (at Chattogram, Bangladesh) to carry out studies about existing Rescue Boat Crane and relevant technical matters.

b. **Security Clearance**. Necessary permission/security clearance will be arranged by BN upon request by bidders. Request should be given two weeks prior to such visit in order to enable BN to process necessary permission/security clearance.

c. **Location**. The Rescue Boat Crane is intended to be installed on board the BN ship at Chattogram (may change to Mongla due to operational requirement).

29. **Training**. The Supplier will intimate their intended date for the start of the training at least four weeks before the due date. The supplier will also intimate the number of instructors (for training) to BN in due time. The manufacturer's/ supplier's installation engineer will provide operation and maintenance (both mechanical and electrical) training in Bangladesh to **10 BN personnel** for **03 (Three) days** after test, trial and commissioning of the Rescue Boat Crane. Cost of air fare accommodation and food of the manufacturer's/ supplier's engineer are to be borne by the manufacturer/supplier.

30. **Warranty**.

a. Warranty for trouble free operation will be provided by the principal/ manufacturer for all the supplied items for a period of at least 12 months from the date of acceptance by the buyer.

b. During the warranty period, if the Rescue Boat Cranes remain non-operational for any action pending by the supplier the warranty period will be automatically extended by the same period.

c. The warranty should cover all parts and labour (including service engineer's cost) throughout the warranty period.

d. For warranty repair/ replacement, the supplier will collect the defective items from NSD Chittagong and re-supply the same to the collecting place after warranty repair/ replacement.

31. **Guarantee**. The manufacturer will give guarantee to supply spare parts of all the components for a period of at least 10 (Ten) years from the date of acceptance. Yearly increase of price of spares should not be more than 5% of the price list for spares to be supplied with the quotation.

32. **Shipment.**

a. The supplier will arrange shipment of all items by sea to Chattogram port.

b. All items are to be delivered in sea/air worthy packing to ensure safe transit by sea.

c. All packages are to have packing notes showing their contents in detail and all packages shall be marked with the name and address of the consignee and gross weight.

d. The supplier will arrange transportation of all supplied items from any sea port to the site of installation.

e. **Port of Shipment.** Any port of the manufacturing country. If port of shipment is other than manufacturing country due to some unavoidable reason, then a certificate from OEM is to be provided to prove genuinity of the equipments.

33. **Delivery.**

a. The items are to be delivered within **09 (Nine) months** from the date of signing the contract to the following **consignee**:

The Commanding Officer
Naval Stores Depot Chittagong
New Mooring, Chittagong, Bangladesh

b. **Place of delivery**. NSD Chattogram.

34. **Validity of Offer**. The offer will remain valid **06 months** from the opening date of the tender.

35. **Terms of Payment**. L/C for full purchase amount will be opened in favour of the principal supplier under the following payment terms:

a. 80% of total CFR value will be paid on delivery of the items described under the scope of supply and on production of necessary shipping documents.

b. Remaining 20% of CFR value will be paid on producing 'Acceptance Certificate' after satisfactory test and trial jointly carried out by the buyer's and supplier's representatives.

36. **Currency**. Foreign Currency.

37. **Condition for Acceptance of Quotation**. Quotation has to have supporting documents (booklets, leaflet, catalogue, brochure etc) having detailed particulars of the offered Rescue Boat Crane. If detailed information regarding specifications, maker's books and catalogue about the same model of the Rescue Boat Crane quoted, spare parts, accessories, scope of supply, etc are not provided, the quotation will not be accepted.

38. **Compliance Statement**. A compliance statement fulfilling all the requirement of the tender is to be submitted for evaluation of quotations. Stating mere 'Yes' or 'No' will not suffice and detailed description/information as required is to be given. An incomplete compliance statement may attribute to cancellation of the offer. If any clause of this specification does not commensurate with offered Rescue Boat Crane practically, the deviation has to be spelt out clearly.

Enclosures:

1. Particulars of Existing Rescue Boat Crane.
2. Deck Layout for Crane and Hydraulic Power Pack.

2/4/24

RAFIQUL ISLAM
Commander BN
Deputy Director (Repair)
Directorate of Naval Engineering
Naval Headquarters
Banani, Dhaka-1213

Enclosure- 01

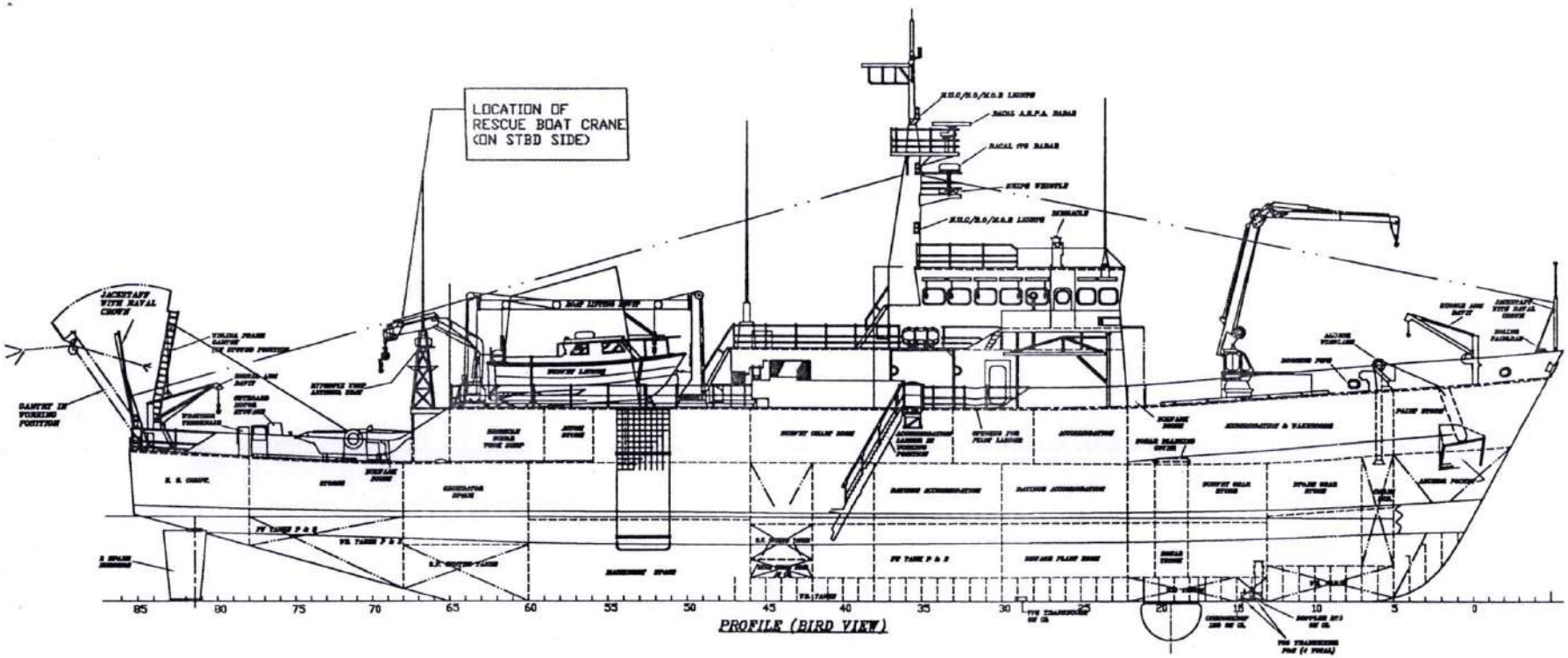
PARTICULARS OF EXISTING RESCUE BOAT CRANE

Ser	Characteristics/Parameter	Description/Value
a.	Type	Rescue boat crane (automatic rising/ lowering & side- wise movement)
b.	Safe working load (SWL)	3.5 ton
c.	Running test load	1.5 times of SWL
d.	Static test load	2.2 times of SWL
e.	Working radius	2.9 m-5.3 m
f.	Hoist speed	30 m/min
g.	Weight	7.5 tonners
h.	Ships main supply	440 volts, 3Phase, 60Hz
j.	Slewing operating ARC	210^0
k.	Expected lifetime	Minimum 20 years
l.	Slewing speed	1 RPM
m.	Jib & frame luffing cylinder	Time to fully luff frame up or down is 15 sec
n.	Power pack main pump output	280 bar
p.	Boost pump output (if any)	30 bar
q.	Classification regulations	Lloyd's class approved or similar
r.	Location	Deck No-01, Frame No: 60-64
s.	Basement	Not more than 2 m x 2.5m
t.	Movement axis	Upward and side wise movement

2/4/24

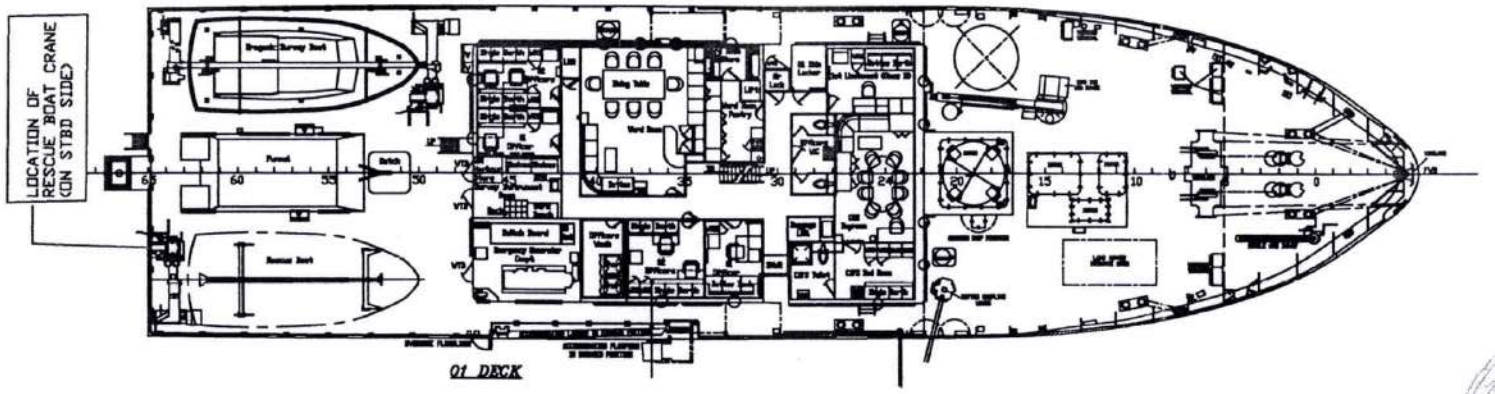
RAFIQUL ISLAM
Commander BN
Deputy Director (Repair)
Directorate of Naval Engineering
Naval Headquarters
Banani, Dhaka-1213

DECK LAYOUT FOR CRANE AND HYDRAULIC POWER PACK -BNS ANUSHANDHAN



PROFILE (BIRD VIEW)

LENGTH B. P.	57.00 M
LENGTH O. A.	64.00 M
BREADTH MLD	13.00 M
BREADTH EXT.	13.018 M
DEPTH LOWER DECK	3.50 M
DEPTH MAIN DECK	6.10 M
FRAME SPACING	700 MM



01 DECK

T.C. TİCARET BAKANLIĞI İHRACAT
GENEL MÜDÜRLÜĞÜ
Tarih: 09/05/2024
Sayı: E-68460249-724.01-00096639075

T.C.
TİCARET BAKANLIĞI
İhracat Genel Müdürlüğü

Sayı : E-68460249-724.01-00096639075
Konu : İşbirliği Talebi - Bangladeş

DAĞITIM YERLERİNE

Dakka Ticaret Müşavirliğimiz tarafında iletilen bir yazıda, Bangladeş'te farklı sektörlerde faaliyet gösteren ve ülkenin büyük gruplarından biri olan RFL Group (https://rflbd.com/) firmasının, Bangladeş ordusunun ihtiyaçları kapsamında Bangladesh Directorate General Defence Purchase (DGDP) tarafından satın alınmakta olan mobil vinç, kurtarma botu vinci ile CNC honlama ve torna makinalarının temini için Türk firmaları ile işbirliği yapma isteklerini Müşavirliğimize ilettiği bildirilmekte ve DGDP tarafından düzenlenen ihalelere, DGDP Certificate alarak bahsi geçen idare tarafından yetkilendirilen Bangladeşli firmaların katılabileceği ifade edilmektedir.

Bu kapsamda, firma tarafından iletilen teknik şartnameler ekte sunulmakta olup, söz konusu işbirliği teklifinin sektör üyelerinize e-posta ile duyurulması ve ilave bilgi için ilgili Ticaret Müşavirliğimize (dakka@ticaret.gov.tr) yönlendirme yapılmasının faydalı olacağı değerlendirilmektedir.

Bilgilerini ve gereğini rica ederim.

Koray Ali KONCA
Bakan a.
Daire Başkanı V.

Ekler:
1- Mobile Crane Specifications
2- Rescue Boat Crane Specifications
3- CNC Lathe Machine Specification
4- CNC Auto Honing Machine Specification
5- Firma İletişim Kişisi - RFL Group

Dağıtım:
Türkiye Odalar ve Borsalar Birliği Genel Sekreterliğine
Türkiye İhracatcılar Meclisi Genel Sekreterliğine

Bu belge güvenli elektronik imza ile imzalanmıştır.
Belge Doğrulama Kodu: 1E475C93-3102-4018-A4C6-B773B7533622 https://www.turkiye.gov.tr/ticaret-bakanligi-ebys

Adres: ,,,
Telefon No: 8750 Faks No: ..
e-Posta: t.akyol@gtb.gov.tr
İnternet Adresi: www.ticaret.gov.tr
KEP Adresi:

Ayrıntılı bilgi için:
Talat AKYOL
Veri Hazırlama ve Kontrol İşletmeni
Telefon No: 8750

ANNEX E TO
DGDPTENDER NO: 221.451.22
DATED: 28 SEPTEMBER 2022

TECHNICAL SPECIFICATION OF NIV, CNC LATHE MACHINE

Ser No.	Description	Specification	Must be filled by principal/manufacturer
	CNC Lathe Machine		
1.	Name and complete address of Local Agent	Details to be mentioned	
2.	Name and complete address of Principal	Details to be mentioned	
3.	Name and complete address of Manufacturer	Details to be mentioned	
4.	Brand	To be mentioned	
5.	Model	To be mentioned	
6.	Country of origin	Group A countries	
7.	Country of Manufactured		
8.	Country of Assembly		
9.	Year of production	Not before the year of contract	
	Machine Capacity		
10.	Maximum swing	220 mm – 240 mm	
11.	Distance between spindle nose and headstock cover	30 mm – 40 mm	
12.	Distance between spindle nose and turret face	530 mm – 540 mm	
13.	Collet	With B32 (20 mm – 25 mm)	
14.	Collet	With B45 (35 mm – 40 mm)	
15.	Clamping head	40mm - 45mm	
	Principal Spindle, by AC motor drive		
16.	Power, continuous/intermittent	24/30 to 25/35 KW	
	Spindle		
17.	Spindle nose	ISO-720/1/DIN 55026	
18.	Spindle speed, infinitely variable	To be mentioned	
19.	Power, continuous/ intermittent	24/30 to 25/35 kw	
20.	Continuous torque spindle/intermittent	72/90 to 65/80 Nm	
21.	Spindle ID (without chuck key)	40 mm ~ 45 mm	
22.	Max bar capacity	With B32 collect 20mm~25mm	
23.	Max bar capacity	With B35 collect 35mm~40mm	
24.	Max bar capacity of clamping head	40mm ~ 45mm	
25.	Max bar capacity of the automatic chuck	40 mm ~ 45 mm	
26.	Recommended max swing	170 mm ~ 200 mm	
	Hydraulic clamping for main spindle		
27.	Adjustable axial clamping force	500~33000 daN	
28.	Maximum spindle speed	6000 to 8000 rpm	
	Spindle interlock		
29.	Pneumatic spindle interlock, moment at 5 bar-7 bar	440 nm ~ 450 nm	
	C axis		
30.	Spindle drive	Integrated	
31.	Programmatic increment	0.001^0 - 0.002^0/min	
32.	Interpolation	X-Z-C	
33.	Rapid advance	35000 – 40000^0/min	
34.	**Top cross slide (X axis)**		
35.	Transverse stroke, X axis	200 mm - 210mm	

DIRECTORATE GENERAL DEFENCE PURCHASE
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MINISTRY OF DEFENCE

Ser No.	Description	Specification	Must be filled by principal/manufacturer
36.	Resolution, X-axis (on radius)	0.0005 mm – 0.0010 mm	
37.	AC motor drive power	1.8 kw to 2.5 kw	
38.	Torque continuous/ intermittent	11/27 to 15/20 Nm	
39.	Ball screw, Ø x pitch	28x10 mm	
	Top cross slide(Z Axis)		
40.	Longitudinal stroke, Z axis	500mm~600 mm	
41.	Resolution, Z axis	0.00010 mm	
42.	AC motor drive, power	1.80 KW	
43.	Torque, continuous/ intermittent	11/27 Nm	
44.	Ball screw, Ø x pitch	28x10 mm	
	Tooling: Linear		
45.	Cutting feed, X- and Z- axis	10 m/min	
46.	Rapid feed, X- and Z- axis	30m/min	
47.	Feed force, X- and Z- axis, continue	622 daN	
	Tooling: Turret with driven tools		
48.	Number of fool stations	12+12	
49.	Number of stations for driven tools	12+12	
50.	Standardized mounting of tool holders	SAUTER	
51.	Drive of the driven tools	SAUTER	
52.	Max, cross section of tool shank	20x20 mm	
53.	Spindle speed, infinitely variable	12000 rpm	
54.	Power, continuous/ intermittent	6/6 KW	
55.	Torque rpm	9.50 Nm @ 6000	
	Counter-spindle		
56.	Spindle	Collets B32	
57.	Spindle speed, infinitely variable	50-5000 rpm	
58.	Continuous torque spindle/ intermittent	23/38 Nm	
59.	Spindle through bore	32.0 mm	
60.	C axis spindle drive	Belt	
61.	Recommended maximum turning diameter	Ø140 mm	
62.	Possibility to mount 3 Jaw chuck	To be mentioned	
63.	Max. longitudinal stroke, E axis	445 mm	
64.	Resolution, E axis	0.00010 mm	
65.	AC motor drive, power	1.80 KW	
66.	Torque, continuous/Intermittent	11/27 Nm	
67.	Ball screw, Ø x pitch	32x10 mm	
	Motor driven tailstock (Option)		
68.	Internal taper of the sleeve	Morse 3	
69.	Max. longitudinal stroke, E axis	445 mm	
70.	Resolution, E axis	0.00010 mm	
71.	AC motor drive, power	1.80 KW	
72.	Torque, continuous/Intermittent	11/27 mm	
73.	Ball screw, Ø x pitch	32 x 10 mm	
	Coolant Supply		
74.	Tank capacity	160 to 180 ltr	
75.	Pump power	0.55 KW	
76.	Pump capacity	46 ~ 50 ltr/min	
77.	Pressure of pump	10 bar	
	Pneumatic Consumption		
78.	Min/Max. pneumatic pressure	5 bar – 7 bar	
79.	Type of connection	¼" G	

DIRECTORATE GENERAL DEFENCE PURCHASE DGDP MINISTRY OF DEFENCE

Ser No.	Description	Specification	Must be filled by principal/manufacturer
80.	Quality of the air	Clean and moisture free	
81.	Average consumption	10 (m3/H)	
	Electrical power supply		
82.	Voltage	440 V ~ 450 V, 50/60 Hz	
83.	Tolerated Fluctuations	± 5 - ± 7 %	
84.	Other voltage	Option V (200 – 240 V)	
85.	Frequency	50 / 60 Hz	
86.	Rated current	40 amp	
87.	Protection at mains end	83 amp	
88.	Power consumption of the machine	28 KVA	
	Obstruction and weight		
89.	Overall dimensions : length x depth x height (mm)	To be mentioned	
90.	Approx net weight of the machine (including oil) (Kg)	To be mentioned	
91.	Floor load (between machine feet)	To be mentioned	
92.	Load per square meter for one machine	To be mentioned	
93.	Dimensions of the pallet	To be mentioned	
94.	Weight of the pallet	To be mentioned	
95.	Center height over floor	To be mentioned	
	Lubrication of slide ways and ball screws		
96.	Kind of X sideways lubrication	Automatic	
97.	Kind of Z sideways lubrication	Automatic	
98.	Kind of X ball screws lubrication	Automatic	
99.	Kind of Z ball screw lubrication	Automatic	
100.	Kind of grease or oil	Motorex superglass 68K	
101.	**Various**		
	a. Workplace collector	Option (workshop)	
	b. Color standard 4 color 1 gray	To be mentioned	
	c. Color standard 4 color 2 gray	To be mentioned	
102.	Color standard 4 color 3 white	To be mentioned	
103.	Color standard 4 color 4 Red	To be mentioned	
104.	Noise level under load at the operator's station	60-75 DBA	
105.	Operating temperature	+ 15^0 ~ +30^0 C	
106.	Relative humidity	10-75 %	
	Control Unit		
107.	Type of control unit	Fanuc Oi-TF	
108.	Screen	12 " LED Color	
109	Manual Guide	Required	
110.	Memory	128 KB ~ 256 KB	
111.	Number of programs	400 - 600	
112.	Tool offsets	60 – 65	
113.	Programmable increment	0.0001(mm)	
114.	Axis feed rate override	0-120(%)	
115.	Spindle override	50-120(%)	
116.	M codes in one block	3	
117.	Background editing	Required	

DIRECTORATE GENERAL DEFENCE PURCHASE DGDP MINISTRY OF DEFENCE

Ser No.	Description	Specification	Must be filled by principal/manufacturer
118.	Constant surface speed control	Required	
119.	Spindle positioning	Required	
120.	Rigid tapping (with spindle)	Required	
121.	Multiple threading	Required	
122.	Tapper thread cutting	Required	
123.	Continuous threading	Required	
124.	Variable lead threading	Required	
125.	Custom Macro B	Required	
126.	Polar coordinate interpolation	Required	
127.	Cylindrical interpolation	Required	
128.	Helical interpolation option	Required	
129.	Polygon turning	Required	
130.	Inch/metric	Required	
131.	Fanuc Picnic	Required	
	Interface Control Unit		
132.	Interface RS 232-C	RS 232 C	
133.	Interface PCM CIA	PCM CIA	
134.	Interface Ethernet	To be mentioned	
135.	Interface USB	To be mentioned	
136.	Data server	Wi-Fi/Broad band (Both)	
	Software		
137.	Software	All type of software required for the machine to be supplied and updated online free of cost for ever by manufacturer.	

DIRECTORATE GENERAL DEFENCE PURCHASE DGDP MINISTRY OF DEFENCE