

CORRIGENDUM -5



रामागुण्डम फर्टिलाइजर्स एण्ड केमिकल्स लिमिटेड

E-TENDER NO-RFCL -11

PROCUREMENT OF WORKSHOP EQUIPMENTS / ITEMS (MECH)

Ref. No. RFCL/C&P/Workshop/Mech/2020

REVISED TENDER SCHEDULE

<i>Sr. No.</i>	<i>Tender Stage</i>	<i>Date & Time</i>
1	Start Tender Document Download	20.02.2020 at 11:00 hrs.
2	End Tender Document Download	08.05.2020 at 15:00 hrs.
3	Due/ last date of submission Bids	08.05.2020 at 15:30 hrs.
4	Techno-commercial Bids Opening	08.05.2020 at 15:45 hrs.
5.	Price Bid Opening	To be intimated
6	Reverse Auction	To be intimated

THE REVISED SPECIFICATIONS (ANNEXURE-VIII) OF NIT ARE HEREBY AUTHORIZED AND ARE AS UNDER AS ANNEXURE-I:

All other terms & conditions of tender document remain unaltered. For further details, visit website: <http://rfcl.co.in/opentender.php> & www.tenderwizard.com/RFCL. Any Corrigendum / Addendum (s) to this Notice shall be published on RFCL's website / e-tender portal only. The tenders will be submitted online on the web site www.tenderwizard.com/RFCL only.

For & behalf of RFCL

**(Shashi Prakash)
Manager (C&P)**

SPECIFICATION FOR CYLINDRICAL GRINDING MACHINE

S.N	Description	Unit	Specification for indent
1	Height of centres	mm	Not less than 225mm
2	Maximum Grinding dia	mm	Not less than 250 mm
3	Swing over bead	mm	Not less than 450 mm
4	Maximum Grinding Length	mm	Not less than 1200 mm
5	Distance between centres	mm	Not less than 1200 mm
6	Distance between centres with extended tailstock	mm	Not less than 1300 mm
7	Maximum Collet Dia	mm	Not less than 35 mm
8	Table travel		
	a. Maximum travel	mm	Not less than 1150 mm
	b. Minimum Travel	mm	Not more than 2.5 mm
9	Maximum Swivel	Degrees	Not less than 14 degrees
10	Grinding Wheel		
	i. Grinding Wheel Diameter		
	a. Maximum Diameter	mm	Not less than 450 mm
	b. Minimum diameter	mm	Not more than 2.5 mm
	ii. Width of the grinding wheel	mm	Not less than 70 mm
11	Grinding wheel speed	rpm	1060/1320
12	Wheel head rapid approach	mm	Not less than 45 mm
13	Manual Movement	mm	Not less than 40 mm
14	Automatic infeed at table reversal		
	a. Minimum	mm	Not more than .00125 mm
	b. Maximum	mm	Not less than .0125 mm
15	Pluge Feed		
	a. Pluge Feed Type		Infinitely variable
	b. Minimum Pluge Feed	mm/sec	Not more than 0.001 mm/sec
	c. Maximum Pluge Feed	mm/sec	Not less than 0.05 mm/sec
16	Speeds of work head		
	a. No of speeds of Work head	No	Not less than 8
	b. Minimum Speed	rpm	Not more than 23 rpm
	c. Maximum Speed	rpm	Not less than 350 rpm
17	Motor's requirement		
	a. Wheel Head Motor Power	kW	Not less than 5.0 kW
	b. Work head motor power	kW	Not less than 0.3 kW
	c. Oil pump	kW	Vendor to specify
	d. Coolant pump	kW	Vendor to specify
	e. Acceptable Motor make		ABB, Grompten Greaves, Bharat Bijlee, BHEL, Marathon,
18	Centre Taper		Vendor to specify
19	Swivel		
	a. Towards Wheel Head	Degrees	90 degrees
	b. Away from Wheel Head	Degrees	Not less than 30 degrees
20	Power Supply		3 Phase, 415 V, 50 Hz,
21	Wiring & Other electrical components		Suitable to above power supply
22	Standard Accessories		
	a. Complete Hydraulic System		Required
	b. Complete Coolant Equipment		Required
	c. Set of Standard Wheel Flanges		Required
	d. Set of Balancing blocks		Required
	e. One grinding wheel		Required
	f. Balancing mandrel		Required
	g. Two Carbind tipped centres suitable to centre taper of the machine		Required
	h. Driving Pin,		Required
	i. Hinged Driving dog,		Required
	j. Wheel dresser		Required

k.	Open steady		Required. The minimum size to hold is not more than 5 mm. The maximum size to hold is not less than 160 mm
l.	Service Tool kit		Required
m.	3 Jaw chuck		Required
n.	Face Plate		Required
o.	Side mounted dresser on tailstock		Required
p.	Dresser for inclined and square sides.		Required
q.	Radius dresser.		Required
r.	Wheel balancing stand		Required
s.	24 V Machine Lamp		Required
t.	Magnetic Filter for coolant		Required
u.	Extended Tail stock		Required
v.	Automatic work sizing device		Required
w.	Hydraulic operation for tailstock		Required
x.	Find hand feed attachment for table		Required
y.	Splash Guard		Required
23	Documents Required		
a.	Operation and Maintenance manual		Minimum Three copies Required
b.	Drawing including electrical circuit drawing		Minimum Three copies Required
c.	Spare Parts Catalogue		Minimum Three copies Required
24	Two years spares		Required
25	List of Lubricants and corresponding Lubricants of IOCL, BPCL etc		Required
26	Tool kit consisting of all tools required for operation and servicing of the equipment		Required

SPECIFICATION FOR HEAVY DUTY LATHE

S.N	Description	Unit	Specification for indent
1	Centre Height	mm	Not Less than 500 mm
2	Type of Bed		Gap with removable bridge piece
3	Total Bed length (Distance between Centres)	mm	Not less than 5000 mm
4	Head stock		
	a. Material of construction(MOC)		Cast Iron Grade 4 or superior material
	b. Gear material of construction		Alloy steel hardend with profile ground or superior
	c. Gears quality class		Class 5
4	Swing		
	a. Over Bed	mm	Not less than 1000 mm
	b. Over Cross slide	mm	Not less than 650 mm
5	Spindle		
	a. Nose Type		A2 -11
	b. Through Bore	mm	Not less than 110 mm
	c. Taper Nose		As per standard (Bidder to specify)
6	Speeds		
	i. Forward Speed		
	a. No of Speeds	Nos	Not less than 21 number or speeds
	b. Minimum Speed	rpm	Not more than 4.5 rpm
	c. Maximum Speed	rpm	Not Less than 450 rpm
	ii. Reverse Speed		
	a. No of Speeds	Nos	Not less than 6 speeds
	b. Minimum Speed	rpm	Not more than 9 rpm
	c. Maximum Speed	rpm	Not Less than 450 rpm
7	Feeds		
	i. Longitudinal		
	a. Minimum No of feeds	Nos	Not less than 76
	b. Minimum feed	mm/rev	Not more than 0.1 mm/revolution
	c. Maximum feed	mm/rev	Not less than 6.4 mm/revolution
	ii. Longitudinal		
	a. Minimum No of feeds	Nos	Not less than 70
	b. Minimum feed	mm/rev	Not more than 0.05 mm/revolution
	c. Maximum feed	mm/rev	Not less than 3.2 mm / revolution
8	Standard Thread Pitches (required)		
	i. Metric		
	a. No of Pitches	Nos	Not less than 51
	b. Minimum Pitch	mm	Not more than 1 mm
	c. Maximum Pitch	mm	Not less than 112 mm
	ii. English threads		
	a. No of Pitches	Nos	Not less than 56
	b. Minimum Pitch	TPI	Not more than 1/4 TPI
	c. Maximum Pitch	TPI	Not less than 28 TPI
9	With Change gears		
	i. Metric		
	a. No of Module Threads	Nos	Not less than 39
	b. Minimum Modules	Module	Not more than 0.5
	c. Maximum Modules	Module	Not less than 36
	ii. Diametrical Pitch		
	a. No of Diametrical Pitch	Nos	Not less than 51
	b. Minimum Diametrical Pitch	DP	Not more than 3/4 DP
	c. Maximum Diametrical Pitch	DP	Not less than 56 DP
10	Carriage & Tools Post		
	a. Tool Shank Size	mm	Suitable to hold of tool shank Not less than 40 x 40 mm
	b. Top slide traverse	mm	Not less than 225 mm
	c. Rapid Traverse	m/min	Not less than 3 m/min

S.N	Description	Unit	Specification for indent
11	Tail stock		
a.	Spindle Taper		MT 6
b.	Spindle travel		Not less than 325 mm
c.	Cross traverse from centre		Not less than 10 mm
12	Power		
a.	Main Motor	kW	Not less than 24 kW
b.	Rapid Traverse Motor	kW	Vendor to specify
c.	Coolant Pump Motor	kW	Vendor to specify
d.	Make of the motor		BHEL/ABB/Grompten/Bharat Bijilee
13	Weight of the machine	Tonnes	Vendor to specify
14	Weight of the Job that can be hod between centres		
a.	Without Steady	Tonnes	Not less than 3.5 Te
b.	With one steady	Tonnes	Not less than 4.5 Te
c.	With Two Steady	Tonnes	Not less than 5.5 Te
d.	Weight of the job mounted overhung in face plate	Tonnes	Not less than 2.0 Te
15	Power Specification		
a.	Type of supply		Three Phase Alternate Current
b.	Voltage	Volts	415 V
c.	Frequency of the AC	Cycles	50 Cycles
16	Wiring & Other electrical components		Should be suitable to above power supply
17	Tool Post		Quick change type, 4 Way Tool Post
18	Minimum accessories required		
a.	Power traverse for top slide		Required
b.	Rapid Traverse for carriage movement		Required
c.	One reduction sleeve socket Metric 120 to MT6		Required
d.	One Plain Steady rest		Required
e.	Two Roller type Steady Rest		Required
f.	One Follow rest		Required
g.	Two Dead Centre suitable to tail stock taper		Required
h.	One Revolving Centre suitable to tail stock taper		Required
i.	One set of Three Jaw self centering chuck with one set of hardend jaws reversible for internal and external chucking		Required
j.	One set of Four Jaw chuck with one set of handerned reversible Jaws, suitable for internal and external		Required
k.	One Universal Face Plate		Required
l.	One Precision Face plate		Required
m.	Chip Tray		Required
n.	Coolant equipment with separate coolant tank, swaf tray		Required
o.	24 V Machine Lamp Perferably halogen		Required
p.	Splash Guard		Required
q.	Longitudinal stop		Required
r.	Thread chasing indicator for multistart threading		Required
19	Minimum Features/Attachments Required		
a.	Taper Turning		Required
b.	Tool post grinder for External grinding		Required
c.	Tool post grinder for Internal grinding		Required
d.	Taper Threading		Required
e.	Radius Turning		Required
f.	Multi start Threading		Required
20	Documents Required		
a.	Operation and Maintenace manual		Minimum Three copiesRequired
b.	Drawing including electical circuit drawing		Minimum Three copiesRequired
c.	Spare Parts Catalogue		Minimum Three copies Required

SPECIFICATION FOR HIGH SPEED LIGHT DUTY PRECISION LATHE

S.N	Description	Unit	Specification for indent
1	Centre Height	mm	Not Less than 220 mm
2	Type of Bed		Gap with removable bridge piece
3	Total Bed length (Distance between Centres)	mm	Not less than 1500 mm
4	Head stock		
a.	Material of construction(MOC)		Cast Iron Grade 4
b.	Gear material of construction		Alloy steel hardend with profile ground
c.	Gears quality class		class 5
5	Swing		
a.	Over Bed	mm	Not less than 500 mm
b.	Over Cross slide	mm	Not less than 270 mm
c.	Swing in Gap	mm	Not less than 700 mm
d.	Swing over carriage wings	mm	Not less than 475 mm
6	Spindle		
a.	Nose Type		A2 -6
b.	Through Bore	mm	Not less than 75 mm
c.	Taper Nose		Metric 60/ 53 mm bore
d.	Main spindle MOC		Forged steel hardend
e.	surface finish of spindle		0.8 Micron
f.	main spindle bearings		NTN/TIMKEN/SKF
g.	bearing precision class		not less than P6
7	Speeds		
i.	Forward Speed		
a.	No of Speeds	Nos	Not less than 16 number or speeds
b.	Minimum Speed	rpm	Not more than 40 rpm
c.	Maximum Speed	rpm	Not Less than 2040 rpm
ii.	Reverse Speed		
a.	No of Speeds	Nos	Not less than 7 speeds
b.	Minimum Speed	rpm	Not more than 60 rpm
c.	Maximum Speed	rpm	Not Less than 1430 rpm
8	Feeds		
i.	Longitudinal		
a.	Minimum No of feeds	Nos	Not less than 60
b.	Minimum feed	mm/rev	Not more than 0.04 mm/revolution
c.	Maximum feed	mm/rev	Not less than 2.24 mm/revolution
ii.	Cross		
a.	Minimum No of feeds	Nos	Not less than 60
b.	Minimum feed	mm/rev	Not more than 0.02 mm/revolution
c.	Maximum feed	mm/rev	Not less than 1.12 mm / revolution
9	Standard Thread Pitches (required)		
i.	Metric		
a.	No of Pitches	Nos	Not less than 48
b.	Minimum Pitch	mm	Not more than 0.5 mm
c.	Maximum Pitch	mm	Not less than 28 mm
ii.	English threads		
a.	No of Pitches	Nos	Not less than 60
b.	Minimum Pitch	TPI	Not more than 56 TPI
c.	Maximum Pitch	TPI	Not less than 1 TPI
10	With Change gears		
i.	Metric		
a.	No of Modules	Nos	Not less than 40
b.	Minimum Modules	Module	Not more than 0.25
c.	Maximum Modules	Module	Not less than 14
ii.	DP		

a.	No of DP	Nos	Not less than 40
11	Carriage & Tools Post		
a.	Cross slide travel	(mm)	Not less than 300 mm
b.	Tool Shank Size	mm	Suitable to hold of tool shank Not less than 25 x 25 mm
c.	Top slide traverse	mm	Not less than 150 mm
d.	Rapid Traverse	m/min	Vendor to specify
e.	Carriage travel	mm	not less than 1700
12	Tail stock		
a.	Spindle Diameter/Taper		Not less than 90mm /MT 5
b.	Spindle travel		Not less than 200 mm
13	Power		
a.	Main Motor	kW	Not less than 11 kW
b.	Rapid Traverse Motor	kW	Vendor to specify
c.	Coolant Pump Motor	kW	Vendor to specify
d.	Make of the motor		ABB, Grompten Greaves, Bharat Bijlee,BHEL, Marathon,
14	Weight of the machine	Tonnes	Vendor to specify
15	Weight of the Job that can be hod between centres		
a.	Without Steady	Tonnes	Vendor to specify
16	Power Specification		
a.	Type of supply		Three Phase Alternate Current
b.	Voltage	Volts	415 V
c.	Frequency of the AC	Cycles	50 Cycles
17	Wiring		Should be suitable to above power supply and electrical insturments of the machine
18	Tool Post		Quick Change type, 4 Way Tool Post
19	Minimum accessories required		
a.	Power traverse for top slide		Required
b.	Rapid Traverse for carriage movement		Required
c.	One reduction sleeve socket Metric 120 to MT6		Required
d.	One Plain Steady rest(8-145mm)		Required
e.	Two Roller type Steady Rest(8-145mm)		Required
f.	One Follow rest(8-80mm)		Required
g.	Two Dead Centre suitable to tail stock		Required
h.	One Revolving Centre suitable to tail stock		Required
i.	One set of Three Jaw self centering chuck dia 250 mm with one set of hardend jaws reversible for internal and external chucking		Required
k.	One Universal Face Plate		Required
l.	Chip Tray		Required
m.	Coolant equipment with separate coolant tank, swaf tray		Required
n.	24 V Machine Lamp Perferably halogen		Required
o.	Splash Guard		Required
p.	Longitudinal stop		Required
q.	Steady rest 8 - 145 mm		Required
r.	Follow rest 8 - 80 mm		Required
20	Minimum Features/Attachments Required		
a.	Taper Turning		Required
b.	Tool post grinder for External grinding		Required
c.	Tool post grinder for Internal grinding		Required
d.	Taper Theading		Required
21	Two years spares		Required
22	Tool kit consisting of all tools required for operation and servicing of the equipment		Required
23	Operation and Maintanace manual		Required
24	Spare Parts Catalogue		Required
25	List of Lubricants and corresponding Lubricants of IOCL, BPCL etc		Required
26	Tool kit consisting of all tools required for operation and servicing of the equipment		Required

SPECIFICATION FOR HIGH SPEED MEDIUM DUTY PRECISION LATHE

S.N	Description	Unit	Specification for indent
1	Centre Height	mm	Not Less than 260 mm
2	Type of Bed		Gap with removable bridge piece
3	Total Bed length (Distance between Centres)	mm	Not less than 2000 mm
4	Head stock		
a.	Material of construction(MOC)		Cast Iron Grade 4
b.	Gear material of construction		Alloy steel hardend with profile ground
c.	Gears quality class		class 5
5	Swing		
a.	Over Bed	mm	Not less than 575 mm
b.	Over Cross slide	mm	Not less than 350 mm
c.	Swing in Gap	mm	Not less than 800 mm
d.	Swing over carriage wings	mm	Not less than 540 mm
6	Spindle		
a.	Nose Type		A2 -6
b.	Through Bore	mm	Not less than 75 mm
c.	Taper Nose		Metric 60/ 53 mm bore
d.	Main spindle MOC		Forged steel hardend
e.	Surface finish of spindle		0.8 Micron
f.	Main spindle bearings		NTN/TIMKEN/SKF
g.	Bearing precision class		Not less than P6
7	Speeds		
i.	Forward Speed		
a.	No of Speeds	Nos	Not less than 16 number or speeds
b.	Minimum Speed	rpm	Not more than 40 rpm
c.	Maximum Speed	rpm	Not Less than 2040 rpm
ii.	Reverse Speed		
a.	No of Speeds	Nos	Not less than 7 speeds
b.	Minimum Speed	rpm	Not more than 60 rpm
c.	Maximum Speed	rpm	Not Less than 1430 rpm
8	Feeds		
i.	Longitudinal		
a.	Minimum No of feeds	Nos	Not less than 60
b.	Minimum feed	mm/rev	Not more than 0.04 mm/revolution
c.	Maximum feed	mm/rev	Not less than 2.24 mm/revolution
ii.	Cross		
a.	Minimum No of feeds	Nos	Not less than 60
b.	Minimum feed	mm/rev	Not more than 0.02 mm/revolution
c.	Maximum feed	mm/rev	Not less than 1.12 mm / revolution
9	Standard Thread Pitches (required)		
i.	Metric		
a.	No of Pitches	Nos	Not less than 48
b.	Minimum Pitch	mm	Not more than 0.5 mm
c.	Maximum Pitch	mm	Not less than 28 mm
ii.	English threads		
a.	No of Pitches	Nos	Not less than 60
b.	Minimum Pitch	TPI	Not more than 56 TPI
c.	Maximum Pitch	TPI	Not less than 1 TPI
10	With Change gears		
i.	Metric		
a.	No of Modules	Nos	Not less than 40
b.	Minimum Modules	Module	Not more than 0.25
c.	Maximum Modules	Module	Not less than 14
ii.	DP		

a.	No of DP	Nos	Not less than 40
11	Carriage & Tools Post		
a.	Cross slide travel	(mm)	Not less than 300 mm
b.	Tool Shank Size	mm	Suitable to hold of tool shank Not less than 25 x 25 mm
c.	Top slide traverse	mm	Not less than 150 mm
d.	Rapid Traverse	m/min	Vendor to specify
e.	Carriage travel	mm	not less than 1700
12	Tail stock		
a.	Spindle Diameter/Taper		Not less than 90 mm/MT 5
b.	Spindle travel		Not less than 200 mm
13	Power		
a.	Main Motor	kW	Not less than 11 kW
b.	Rapid Traverse Motor	kW	Vendor to specify
c.	Coolant Pump Motor	kW	Vendor to specify
d.	Make of the motor		ABB, Grompten Greaves, Bharat Bijlee, BHEL, Marathon,
14	Weight of the machine	Tonnes	Vendor to specify
15	Weight of the Job that can be hod between centres		
a.	Without Steady	Tonnes	Vendor to specify
16	Power Specification		
a.	Type of supply		Three Phase Alternate Current
b.	Voltage	Volts	415 V
c.	Frequency of the AC	Cycles	50 Cycles
17	Wiring		Should be suitable to above power supply and electrical instruments of the machine
18	Tool Post		Quick Change type, 4 Way Tool Post
19	Minimum accessories required		
a.	Power traverse for top slide		Required
b.	Rapid Traverse for carriage movement		Required
c.	One reduction sleeve socket Metric 120 to MT6		Required
d.	One Plain Steady rest(8-145mm)		Required
e.	Two Roller type Steady Rest(8-145mm)		Required
f.	One Follow rest(8-80mm)		Required
g.	Two Dead Centre suitable to tail stock		Required
h.	One Revolving Centre suitable to tail stock		Required
i.	One set of Three Jaw self centering chuck dia 250 mm with one set of hardend jaws reversible for internal and external chucking		Required
k.	One Universal Face Plate		Required
l.	Chip Tray		Required
m.	Coolant equipment with separate coolant tank, swaf tray		Required
n.	24 V Machine Lamp Perferably halogen		Required
o.	Splash Guard		Required
p.	Longitudinal stop		Required
q.	Steady rest 8 - 145 mm		Required
r.	Follow rest 8 - 80 mm		Required
20	Minimum Features/Attachments Required		
a.	Taper Turning		Required
b.	Tool post grinder for External grinding		Required
c.	Tool post grinder for Internal grinding		Required
d.	Taper Threading		Required
e.	Radius Turning		Required
21	Two years spares		Required
22	Tool kit consisting of all tools required for operation and servicing of the equipment		Required
23	Operation and Maintenance manual		Required
24	Spare Parts Catalogue		Required
25	List of Lubricants and corresponding Lubricants of IOCL, BPCL etc		Required
26	Tool kit consisting of all tools required for operation and servicing of the equipment		Required

SPECIFICATION FOR RADIAL DRILLING MACHINE

S.N	Description	Unit	Specification for indent
1	Capacity		
i.	Drilling		
a.	Drilling in any type of Steel	mm	Not less than 75 mm
b.	Drilling in Cast Iron	mm	Not less than 95 mm
ii.	Tapping		
a.	Tapping in Steel		upto M 65 and equivalent british threads
b.	Tapping in Cast Iron		upto M 75 and equivalent british threads
iii.	Drill Head / Spindle		
a.	Spindle taper		MT6
b.	Vertical travel of spindle	mm	Not less than 450 mm
c.	Spindle reversal		Through clutch for tap withdrawl
iv.	Range of Spindle speed		Infinitely variable
a.	Minimum Speed	rpm	Not more than 10 rpm
b.	Maximum Speed	rpm	Not less than 1250 rpm
v.	No of spindle feed	No	not less than 15
vi.	Range of spindle feed		
a.	Minimum Feed	mm/ rev	Not more than 0.4 mm/rev
b.	Maximum Feed	mm/ rev	Not less than 2.8 mm/rev
2	Drilling Radius		
a.	Minimum Drilling Radius	mm	Not more than 700 mm
b.	Maximum Drilling Radius	mm	Not less than 2500 mm
3	Traverse of drill head on arm	mm	not less than 1700 mm
4	Trverse of arm on colum	mm	Not less than 1100 mm
5	Column		
a.	Column Construction		Robust construction should be with rigidity and suitable for effortless centering
b.	Column Diameter	mm	Vendor to specicy
c.	Column Clamping		Electrohydraulic clamping though singh push button
6	Clamping Surface on the base plate		
a.	Length	mm	Not less than 2300 mm
b.	Width	mm	Not less than 1000 mm
7	Arm		
a.	Arm Movement	Degrees	Not less than 300 degrees
8	Capacity of the motors		
a.	Main motor	kW	Not less than 14 kW
b.	Arm Elevating motor	kW	Not less than 5 kW
c.	Clamping motor	kW	Not less than 0.5 kW
d.	Coolant pump motor	kW	Not less than 0.25 kW
e.	Acceptable Motor make		ABB, Grompten Greaves, Bharat Bijlee,BHEL, Marathon,
9	Weight of the machine		Vendor to specify
10	Power Supply		AC 3 Phase, 415 V, 50 Hz,
11	Wiring & Other electrical components		Suitbale to above power supply
12	Accessories Required		
a.	24 V Machine Lamp		Required
b.	Service Tool Kit		Required
c.	Universal Tilting type table of size not less than 725 x 500 x 600 mm		Required
d.	Box Type Table for work clamping of size not less than 600 x 500 x 500 mm		Required
13	Features Required		

	a.	Automotive Spindle feed with precision depth stop		Required
	b.	Manual Feed		Required
	c.	Spindle reversal through clutch for tap withdrawal		Required
	d.	Column construction should be with rigidity and suitable for effortless centering		Required
	e.	Ergonomically grouped controls for operating convenience		Required
	f.	Electrohydraulic clamping provided for drill head, arm and Sleeve		Required
14		Documents Required		
	a.	Operation and Maintenance manual		Minimum Three copies Required
	b.	Drawing including electrical circuit drawing		Minimum Three copies Required
	c.	Spare Parts Catalogue		Minimum Three copies Required
15		Two years spares		Required
16		List of Lubricants and corresponding Lubricants of IOCL, BPCL etc		Required
17		Tool kit consisting of all tools required for operation and servicing of the equipment		Required

SPECIFICATION FOR SURFACE GRINDING MACHINE

S.N	Description	Unit	Specification for indent
1	Table size		
a.	Table Length	mm	Not less than 1000 mm
b.	Table width	mm	Not less than 250 mm
2	Grinding Range		
a.	Table Length	mm	Not less than 1000 mm
b.	Table width	mm	Not less than 250 mm
3	Maximum Grinding height with new grinding wheel	mm	Not less than 330 mm
4	Distance between the table to Spinder Center		
a.	Minimum	mm	Not more than 82mm
b.	Maximum	mm	Not less than 500 mm
5	Maximum grinding width		
a.	with relief at the front and rear	mm	Not less than 250 mm
b.	With out relief at the front and rear	mm	Not less than 375 mm
6	Grinding Wheel size		
a.	Maximum Diameter	mm	Not less than 300 mm
b.	Minimum Diameter	mm	Not more than 180 mm
c.	Width	mm	Not less than 60 mm
d.	Bore	mm	Should be a standard one for the easy availability of wheel (not more than 76 mm)
7	Wheel spindle power requirement	kW	Not less than 4 kW
8	Vertical Slide		
a.	Stoke	mm	Not less than 460 mm
b.	Rapid Traverse	m/min	Not less than 1 m/min
c.	Minimum increament	mm	Not more than 0.001
9	Traverse Slide		
a.	Stroke	mm	Not less than 320
b.	Continuous feed rate	m/min	Shall in the range of 0.05 to 4
c.	Rapid traverse	m/min	Not less than 4 m/min
10	Table		
i.	No of T slots	No	Not more than Three
ii.	T slot size	No	Vendor to spicity
iii.	Max Longitudinal Traverse	mm	Not less than 1600 mm
iv.	Variation speed (Table)		
a.	Minimum Speed	m/min	Not more than 2.5
b.	Maximum Speed	m/min	Not less than 25
11	Maximum weight of the job		
a.	With Chuck	kg	Not less than 220 kg
b.	Without chuck	kg	Not less than 420 kg
12	Total Power requirement	kW	Vendor to specify
13	Net weight of the machine	kg	Vendor to specify
14	Minimum accessories required		Required
a.	Electromagnet chuck with power control unit		Required
b.	Coolant equipment with settling tank or automatic magnetic sparator		Required
c.	Dust exhausting unit		Required
d.	Isolation transformer		Required
e.	Indication lamps		Required
f.	Anugular wheel dressing attachment		Required
g.	Radius trueing device		Required
h.	Sivellable work holding device		Required
i.	Standard wheel flanges with balancing blocks		Required
j.	Balancing mandrel		Required
k.	24 V Halogen machine lamp		Required
l.	Weel balancing stand		Required
m.	Dial indication holder without indicator		Required

n.	Height measuring device without incation		Required
o.	Sine Plate - Longitudinal		Required
p.	Sine Plate - Cross		Required
q.	Hydraulic equipment with pump and motor		Required
r.	One Grinding Wheel		Required
s.	Tool kit consisting of all tools required for operation and servicing of the equipment		Required
15	Power Supply		3 Phase, 415 V, 50 Hz,
16	Wiring & Other electrical components		Suitable to above power supply
17	Documents Required		
a.	Operation and Maintenance manual		Minimum Three copies Required
b.	Drawing including electrical circuit drawing		Minimum Three copies Required
c.	Spare Parts Catalogue		Minimum Three copies Required
18	Two years spares		Required
19	List of Lubricants and corresponding Lubricants of IOCL, BPCL etc		Required

SPECIFICATION FOR UNIVERSAL MILLING MACHINE

S.N	Description	Unit	Specification for indent
I	Table		
1	Table size		
a.	Overall length of the table	mm	Not less than 1500 mm
b.	Overall width of the table	mm	Not less than 300 mm
2	Clamping area		
a.	Length of the clamping area	mm	Not less than 1350 mm
b.	Width of the clamping area	mm	Not less than 300 mm
3	T Slots		
a.	No of T slots	No	Not less than Three
b.	Width of the T Slots	mm	14 mm to 16 mm
c.	Centre distance between the slots	mm	Not less than 60 mm
4	Power operated Table movement (Traverse)		
a.	Longitudinal	mm	Not less than 800 mm
b.	Cross	mm	Not less than 260 mm
c.	Vertical	mm	Not less than 400 mm
5	Swivel of the table to the either side	Degrees	Not less than 45 degrees
II	Milling Spindle		
1	No of Speeds	No	Not less than 18
2	Speed range		
a.	Minimum Speed	rpm	Not more than 36 rpm
b.	Maximum Speed	rpm	Not less than 1800 rpm
3	Spindle Nose	ISO	Vendor to specify
4	Vertical quill movement	mm	Not less than 60 mm
5	Head Type		Swivel and Tilt
6	Vertical swivel Left to Right	Degrees	90 degrees
5	Feeds		
6	No of Feeds	No	Not less than 16
7	Feed Range		
i	Longitudinal & Cross		
i.a	Minimum feed	mm/min	Not more than 16 mm/min
i.b	Maximum feed	mm/min	Not less than 800 mm/min
ii	Vertical		
ii.a	Minimum feed	mm/min	Not more than 4 mm/min
ii.b	Maximum feed	mm/min	Not less than 200 mm/min
8	Rapid traverse		
a.	Longitudinal & Cross	mm/min	Not less than 3000 mm/min
b.	Vertical	mm/min	Not less than 800 mm/min
III	Capacity & Speed of Motors		
1	Main Motor		
a.	Power	kW	Not less than 5 kW
b.	Preferable speed	rpm	1500 rpm
2	Feed Motor		
a.	Power	kW	Not less than 1.5 kW
b.	Preferable speed	rpm	1500 rpm
3	Acceptable Motor make		ABB, Grompten Greaves, Bharat Bijlee,BHEL, Marathon,
IV	Weight of the machine		Vendor to specify
V	Power Supply		AC 3 Phase, 415 V, 50 Hz,
VI	Wiring & Other electrical components		Suitbale to above power supply
VII	Standard Accessories to be supplied by the vendor		
a.	Milling arbors		Required
b.	One Stub arbor		Required

c.	Climb milling attachment		Required
d.	Draw bolt and nuts		Required
e.	Two arbor support bearing brackets and one overarm brace		Required
f.	Machine vice without swivel base with minimum jaw width of 200 mm and opening of 175 mm		Required
g.	Machine vice with swivel base with minimum jaw width of 200 mm and Opening of 175 mm.		Required
h.	Self centering vice		Required
i.	Universal dividing head		Required
j.	Height adjustable tail stock		Required
k.	Cross plate		Required
l.	Hand operated horizontal / vertical indexing head		Required
m.	Hand operated indexing round table of 400 mm dia		Required
n.	Collet chuck		Required
o.	Collets of size 5,6,8,10,12,16,20,25 and 32		Required
p.	Coolant Equipment		Required
q.	24 V machine lamp		Required
r.	Vertical milling head		Required
s.	universal milling head		Required
t.	Slotting attachment		Required
u.	Rack milling attachment		Required
v.	Motorised over arm		Required
w.	Tool kit consisting of all tools required for operation and servicing of the equipment		Required
x.	Machine Guards		Required
VIII	Features Required		
a.	Spindle Brake		Required
b.	3 Axes simultaneous power feed with rapid traverse		Required
c.	Hardened and ground ways		Required
d.	Pendant Controls		Required
IX	Documents Required		
a.	Operation and Maintenance manual		Minimum Three copies Required
b.	Drawing including electrical circuit drawing		Minimum Three copies Required
c.	Spare Parts Catalogue		Minimum Three copies Required
X	Two years spares		Required
XI	List of Lubricants and corresponding Lubricants of IOCL, BPCL etc		Required

SPECIFICATION FOR VERTICAL LATHE

S.N	Description	Unit	Specification for indent
1	Table diameter	mm	Not less than 1500 mm
2	Maximum Swing Diameter	mm	Not less than 1750 mm
3	Maximum Turning Diameter	mm	Not less than 1600 mm
4	Maximum Turning height	mm	Not less than 1500 mm
5	Table speed Range		
a.	Minimum Speed	rpm	Not more than 10 rpm
b.	Maximum Speed	rpm	Not less than 250 rpm
6	Table motor power	kW	not less than 25 kW
7	Cross rail		
a.	Cross rail vertical movement	mm	Not less than 1000 mm
b.	Minimum height under corss rail and table surface	mm	Not more than 900 mm
c.	Vertical travel of Ram head	mm	Not less than 900 mm
d.	Harizontal travel of Ram Head	mm	-100 mm to not less than 900 mm
e.	Tool shank	mm	32 x 32 mm
8	Feeds of Ram head		
a.	Number of feeds of Tool head		
b.	Cross rail elevating speed	mm/min	Not less than 250 mm / min
c.	Feed rate Z axis	mm/min	0 mm /min to the maximum not less than 4500 mm/min
d.	Feed rate X axis	mm/min	0 mm /min to the maximum not less than 4500 mm/min
e.	Rapid Traverse Rate both Z and X axis	mm/min	Not less than 4500 rpm
9	Control system		Preferably PLC control system of standard make like Siemens
10	Acceptable Motor make		ABB, Grompten Greaves, Bharat Bijlee,BHEL, Marathon,
11	Features required		
a.	Taper Turning attachment		Required
b.	Centralized Lubrication system		Required
c.	Machine Lamp		Required
d.	Hydraulic system		Required
e.	Air and Coolant Gun		Required
f.	Machine Guard		Required
g.	Four Jaw build in Manual Chuck into rotary table		Required
h.	Set of standard jaws		Required
12	Power Supply		3 Phase, 415 V, 50 Hz,
13	Wiring & Other electrical components		Suitbale to above power supply
14	Documents Required		
a.	Operation and Maintenace manual		Minimum Three copiesRequired
b.	Drawing including electical circuit drawing		Minimum Three copiesRequired
c.	Spare Parts Catalogue		Minimum Three copies Required
15	Two years spares		Required
16	List of Lubricants and corresponding Lubricants of IOCL, BPCL etc		Required
17	Tool kit consisting of all tools required for operation and servicing of the equipment		Required