

SPECIFICATIONS FOR Tender Notice No. IT/VTIP/RAC/PM/Patiala/Ludhiana/2010-11/1

Category-1		
1.1	Air Compressor, Two Stage For Oil Less - Dry Air, With Rust Proof Tank Assembly, Heater & Controls Max. Pr. 10kg/Sq. cm. Capacity 45 Liter. Motor 1hp.	Compression Load 10 Kgcm2, MS Tank, Suction Capacity 200Litre/m, Reservoir 200 Liter, Automotive Condensate drain. Noise Load up to 40 db (A) in a distance of 1 meter. Temperature- 0 to 60 degree. Air Supply Pipe Line With out let , With push- pull connector. Motor – 3 HP, V- Belt, Belt guard, Auto Cut Switch, Free Air Delivery (1pm 256-Cfm. 90), Reputed/Popular make with I.S.I. Certification
1.2	Air Compressor-stationary, compression (load 8 bar, Suction Capacity 200 liters/min, Reservoir 200 liters) / Air compressor suitable for air gauge	<p>Specification:</p> <p>Central air compressor. Compression load. MS Tank, Suction Capacity-200 Litter/minute Reservoir – 200 Litter. Auto Motive Condensate drain. Noise Load up to 40 db (A) in a distance of 1 meter. Temperature- 0 to 60 degree. Air Supply Pipe Line with out let, with push- pull connector. Motor – 3 HP V- Belt, Belt guard, Auto Cut Switch Free Air Delivery (ipm 256-Cfm. 90)</p> <p>General Requirements :</p> <ol style="list-style-type: none"> 1. Factory Standard : ISO 9001, ISO 14001 2. Standard Accessories being provided should be clearly mentioned 3. Complete onsite guarantee/Warranty for Two Years. 4. Availability of spare parts for 15 years, service centre, dealership etc in Punjab are must. Complete address of the same be clearly mentioned in the bid
1.3	Air Conditioning Direct & Indirect Water Chiller. Complete With All Control Including Humidity Control Ele Capacity 15000 Kcal/Hr.	<p>Air conditioning plant of 15000 K.Cal./Hr. direct cool with the following:</p> <ol style="list-style-type: none"> 1. Condenser fin & tube type induced or forced draft fan. 2. Cooling coil fin & tube type with appropriate three speed fan. 3. 15000 K/Cal Compressor Open type with R-22 refrigerant, suitable motor ISI mark. 4. High pressure/Low pressure cut out. 5. All electrical controls fitted in a suitable MS box in such a position that it can be demonstrated perfectly to students. 6. The plant will be put on test for 72 hours on site after installation & commissioning.
1.4	Cold Storage Plant Complete With All Controls & Accessories Including Cooling Tower & Water Treatment Plant Capacity 15000 Kcal/Hr. Or Working Trainer Model/ Simulator.	<p>15000 K Cal/hr. Good qualities insulated 6" in between in. Compressor with 7.5 HP motor with cooling tower treatment. with required LP+HP, Solenoid valve thermostat switch, High & Low pressure gauges etc.</p> <ol style="list-style-type: none"> 1. Compressor :- Open type reciprocating compressor (5 ton) with 7.5 h.p. motor 2. Storage room:- 10 feet X 10 feet X 8 feet with

		double wall insulated panel (60 mm) type. Suitable small insulated door for the cold storage. 3. Evaporator:- In the form of copper coil fins type fitted inside the cold storage room with evaporative fan motor forced draft with water drainage system
	Category-2	
2.1	Bottle cooler 110 litres 1/6 hp.	Bottle Cooler of 110 liters. Capacity horizontal shape, which can maintain minimum +ve temperature. The condenser fan must be covered with shrouds. The compressor capacity must be 1/6 HP. The deep freezer must be accompanied by 0.5 KVA stabilizer.
2.2	Water cooler instantaneous type	Water cooler instant type with reciprocating compressor with 1 KVA stabilizer. Capacity 40 Liters.
2.3	Juice Dispencer	Compressor 1/6 HP, Fan Motor 1/35 HP. Body Stainless Steel with two containers for different juices.
2.4	Ice Cuber	Ice Cube maker with bullet shaped ice in three sizes with rated capacity of 15 Kgs./24 hrs.. It must have the storage capacity of 1.3 Kgs. With water reservoir capacity of 4.5 liters. Electrically single phase 220V compressor.
	Category-3	
3.1	Condensing unit with open type compressor air-cooled condenser, controls cap.3000 k.cal/ hr.	Compressor: Open Reciprocating Type Belt Driven, Capacity 3000 Kcal/hr Refrigerant R-22, R-134a or CFC Free Valve Suction & discharge service valve Compressor Motor 2 HP, 230 V AC, Single Phase (As per IS Standard) Condenser Size : 16" x 16" – 4 Row – Internally Grooved Copper 3/8" □ tubing with Aluminum air fins – Side, Top and Bottom plates of 16 SWG Aluminum Condenser Fan Motor 1/5 HP, 230 V AC, 50 Hz, Single Phase Condenser Fan Blade 14" Diameter of Aluminum Receiver Suitable with Angle Valve of 1/4" – 2 Nos. (Inlet & Outlet) Cooling Coil Size: 13" x 13" – 3 Row – Internally Grooved Copper 3/8" □ tubing with Aluminum air fins – Side, Top and Bottom plates of 16 SWG Aluminum. Or Suitable for AC type cooling coil with metering device-thermostatic expansion valve. Acrylic Duct 14" x 14" – 4 ft long – 8 mm thick, with orifice plate, inclined manometer, axial fan, air heater, steam inlet facility, Dry bulb and wet bulb temperature sensors at inlet, & outlets. Suitable Insulation of Armocol provided wherever necessary. Rotameter To measure the flow rate of liquid refrigerant and bypass the rotameter – 1 nos. Air Flow measurement Digital Anemometer Control Panel It consists of the following items mounted on it: 8 channel programmable digital scanner for temperature indication of various points. Temperature controlling thermostat DOL starter switch for compressor Switches and Indication Lamps for Steam Generator, Axial Flow Fan, Heater, Mains. HP cut off switch LP cut off switch Digital Ammeter, Voltmeter – 1 nos. each Pressure Gauges – 4 nos. Process line diagram The unit enables to perform the following measurements / Practical in Trade. (a) Dry Bulb & Wet bulb Temperature of Air Inlet &

		<p>Outlet of Cooling Coil Duct. (b) Suction & Discharge Pressure of Compressor (c) Inlet & Outlet Pressure of Cooling Coil (d) Flow rate of Refrigerant at liquid line (e) Pressure drop at duct inlet (Orifice) Note:- The unit complete with Gas Charging & Working Condition of AC System. The above unit mounted on SS Angle 35 x 35 x 5mm.</p>
3.2	Condensing unit with open type compressor evaporate condenser, controls cap.3000 k.cal/ hr.	<p>Compressor: Open Reciprocating type Belt Driven. Capacity : 3000 Kcal/hr (1 TR) Refrigerant : R-22, R-134a or CFC Free Valve : Suction & Discharge Service Valve Compressor Motor : 2 HP 230 V Single Phase (as per IS standard) Condenser : 14" * 14" – 4 Row - Internally Grooved Copper 3/8" Φ tubing with Aluminium air fins - Side , Top and Bottom plates of 16 SWG Aluminium. Receiver: Suitable with Angle Valve of 1/4" – 2 Nos. Cooling Coil : 13" * 13" – 3 Row - Internally Grooved Copper 3/8" Φ tubing with Aluminium air fins - Side , Top and Bottom plates of 16 SWG Aluminium. or Suitable for AC type cooling coil with metering device - thermostatic expansion valve Cooling Coil Motor : 1/10 HP, Single Phase, 230 V AC, 50 Hz with 15" Aluminum Blade. Evaporative type : Suitable Evaporative Condenser Cooling Tower made of Cooling Tower FRP or 8 mm thickness Transparent Acrylic with Drift Eliminator, Spray Nozzle, Inlet & Outlet wet bulb, dry bulb temperature sensors. Evaporative Blower : 1/2 HP, 230 V AC, 50 Hz, Single Phase (Cooling Tower - Forced Draft Type)</p>
Category-4		
4.1	Cut section of Dx chiller	Original Dx Chiller small 1 ton capacity with inlet & outlet valve . With transparent fibers 2mm sheet . Cover.
4.2	Cut section of Hermatic Reciprocating compressor	Cut section of sealed Hermatic reciprocating compressor 1 ton capacity shows the centrifugal motion and reciprocating motion . With transparent fiber 2mm sheet cover.
4.3	Cut section of Hermatic Scroll comp	Cut section of Hermatic Scroll one ton capacity shows the function of compressor. With transparent fiber 2mm sheet cover
4.4	Cut section of semi-harmatic screw compressor	Cut section of semi-harmatic screw compressor one ton capacity shows the fuction of compressor. With transparent fiber 2mm sheet cover.
Category-5		
5.1	Cut section of screw compressor	Cut section of screw compressor one ton capacity shows the function of compressor. With transparent fiber 2mm sheet cover.
5.2	Cut Section Of Scroll Compressor.	Cut section of Scroll compressor three ton capacity shows the function of compressor. With transparent fiber 2mm sheet cover
5.3	Cut section of Shell & tube type condenser	Cut section of shell & tube type condenser one ton capacity with water inlet and outlet, refrigerant inlet and outlet with safety valve shows the function of condenser. With transparent fiber 2mm sheet cover.
Category-6		
6.1	Deep Freezer 165 LIT.S -18° C. 1/4 HP	Deep freezer of 165 ltrs. Capacity horizontal shape, which can maintain minimum -18° C temperature. The condenser fan must be covered with shrouds. The deep freezer must be

		accompanied by 1KVA stabilizer.
6.2	FORST FREE RAFRIGIRATOR 230 LIT. CAPACITY USING HFCS - 134A REFRIGERANT	Frost free refrigerator 230 Litres capacity using 134a refrigerant using reciprocating compressor along with one voltage stabilizer of 0.5 KVA
6.3	frost free Refrigerator 260 liters use in H.C. Refrigerant	Frost free refrigerator 260 Litres capacity using 134a refrigerant using reciprocating compressor along with one voltage stabilizer of 0.5 KVA
Category-7		
7.1	No Frost Refrigerant 300 Lit. Capacity Using Hc Refrigerant	No frost refrigerator 300 litre capacity using HC refrigerant along with one voltage stabilizer of 1.0 KVA
7.2	Refrigerator 170 Lit. Using 134a Refrigerant	Refrigerator 170 lit. or closer to 170 ltr. (higher side) Using 134a refrigerant with 0.5 KVA stabilizer.
7.3	Refrigerator, compression type 300 litres double door, double compressor system.	No frost refrigerator 300 litre capacity Double compressing system.
7.4	Thermoelectric Refrigerator	Small refrigerator operatable with battery/220V to show the function of P-N-P junctions.
Category-8		
8.1	De-scaling Pump Set With Stainless Steel Impeller & Housing Complete With Motor 1 Hp & Accessories	Descaling pumpset with stainless steel impeller as per relevant specification of ISI make with 1" size all parts comprising in contact of liquid are of stainless steel & suitable to be coupled with 1 HP 1440 RPM single phase motor with starter & main switch both pump & motor are mounted on a common base plate through a set of flexible coupling along with a stainless shell/barrel 20 or 22 SWG thickness heaving the capacity App. 100 lts. for acid solution capable of giving following performance. Reputed/Popular make with I.S.I. / ISO Certification.
8.2	Dry N2 in cylinder with 2 stage regulator or commercial N2 in cylinder with drier unit and 2 stage regulator.	Nitrogen Cylinder of 7 cu. Ft. capacity filled and ISI mark and double stage regulator make ESAB. 10 mtrs hose pipe of good quality with clamps.
Category-9		
9.1	Hermetic Compressor 3 Ton Capacity.	Hermetic compressor 3 ton capacity 440 volts three phase 50 HZ with inlet & outlet service valves
9.2	Hermetic compressors 1.5 (AC)	Hermetic Compressor (Sealed)1.5 ton capacity make kinioskar/ Carrier/Voltas
9.3	Screw compressor (open type)	Screw compressor 5 ton capacity with suction & discharge valves.
9.4	Hermetic compressors 1/8hp and 1/2hp for use in repair work of appliances for CFCs and HFCs Hermetic compressor for 134a	a) Hermetic compressors 1/8hp (134a) b) Hermetic compressors 1/2hp (134a) (one no. each)
Category-10		
10.1	I) Evacuating & refrigerant charging station, compression. a) Rotary two stage vacuum pump & motor (with gas ballast & anti suck back) manifold with gauges & valves & capable of pulling vacuum upto 50 microns of Hg & with provision of connecting to a microns level vacuum gauge b) Graduated charging cylinder with provision for temperature correction & all necessary isolating valves. II) Evacuating & charging station as above but fitted with weighing scale (upto 2 kg. In lieu of (b) above & with accuracy of +/-1g for charging hydrocarbons	Evacuating & refrigerant charging rotary two stage vacuum pump & motor (with ballast & anti suck back) manifold with gauges & valves and capable of pulling vacuum upto 50 microns (blank off) of hg and with provision of connecting to a micron level vacuum gauge graduated charging cylinder with provisions for temperature correction and all necessary isolating valves. Weighing scale (upto 5 kg) & capacity & Accuracy of +1-1 gm. For charging hydrocarbon.
10.2	Ice candy unit complete with stainless steel tank, mould box, thermocol insulated	Motor Circuit : CSR, Power : 1300 Watt, Supply Voltage : 230 V 50 Hz. A/C single phase, Outer Body with Condensing

	sunmica body, agitator, compressor, motor ele. Temperature, pressure, refrigerant control gauges, motor, pipe fitting ele 3000kcal/hr. working trainer model/ simulator.	unit : SS 304 G 22 SWG – Buffing finish, Size : 1500 mm (L)*750 mm (W)*750mm(H) With condensing unit and Door Capacity (inner storage) : 2 mold candy-30 min (Each mould contain 50 candy) and small storage compartment 1000 candy(500+500 each) Mold : Brass OR S.S 304 Grade, Insulation : PUF-75 mm thick (40 density) /thermocool-75 mm thick Temperature Control setting condenser : Digital temp. controller Condenser Fan Motor : 1/10 HP 230V 50Hz Single Phase Evaporator : Copper tubing -1/2" dia-50 ft long/ or Suitable size tube – dia. and length. Condenser Size : 14"*14"* 4 Row –inner grooved 3/8" size Tube top and bottom plates of 16 SWG Aluminum Door: Two door with gasket and SS or Brass handle and hangs with locking arrangement. Agitator Motor : ½ HP 230 V 50 Hz Single Phase Control Panel : It should consist of the following items mounted on it: 1. ELCB switch for mains 2. HP cut off switch 3. LP cut off switch 4. Digital Ammeter, Voltmeter -1 nos. each 5. Digital energy meter 6. Pressure Gauges-62 mm Diameter 0-500 psi- 2 nos. 7. Compounds Gauges-62 mm Diameter 0-500 psi- 2 Nos. 8. Dial type thermometer 4" dia., Range: -30 °C + 50 °C, 02 Nos. 9. Hand shut off valve ¼" 01 No in charging line 10. Process line diagram 11. Six zone digital temp indicator Note: Body base trolley should be made from S.S. angle 50*50*6 mm with four or six heavy caster wheel. The unit should be able to perform the following measurements/Practical in Trade. Suction and Discharge Pressure of Compressor Inlet and Outlet Pressure of cooling coil Measurement of temperature at different indicating point.
10.3	Reverse cycle AC/Heat pump 3000 kcal/hr.or 4500kcal/hr	REVERSE CYCLE Air Conditioner (HEAT PUMP) 4500KCAL/HR. with reciprocating/rotary compressor, electronic controls etc. along with 4 KVA stabilizers.
Category-11		
11.1	Reciprocating compressor with provision of capacity control etc. for demonstration. Capacity 9000kcal/hr. semi hermetic open type.	Provision of capacity control etc. for demonstration. Capacity 9000kcal/hr. semi hermetic open type.
11.2	Recovery machine one each for CFC & 134a refrigent with recovery cylinder	Recovery unit for 134A. The sealed compressor capacity can be 1/6 or 1/8/hp,with air cooled condenser , HP & LP cut out or duel pressure cut out liquid line indicator, two hand shut of valves,R-134 A Danfoss make drier filled with molecular sieves two oil separators etc complete in all respect
11.3	RECYCLING UNIT	a. Recovery Unit for R-134a. The sealed compressor capacity can be 1/6 or 1/8 HP, with air cooled condenser, HP & LP cut out or dual pressure cut out, liquid line indicator, two hand shut off valves, R-134a Danfoss make drier filled with molecular sieves, two oil separators etc. complete in all respect. b. Recovery Unit for R-12.The sealed compressor capacity can be 1/6 or 1/8 HP, with air cooled condenser, HP & LP cut out or dual pressure cut out, liquid line indicator, two hand shut off valves, Compatible drier, two oil separators etc. complete in all respect. c. Four cylinders for recovered refrigerant
Category-12		
12.1	See through model of Direct cooled refrigerator	165/185 ltrs. Refrigerator with all sides transparent with Perspex sheet giving a look to see inside the cabinet with lower half insulated with puff & upper half without insulation. The Perspex sheet must be double. The design is

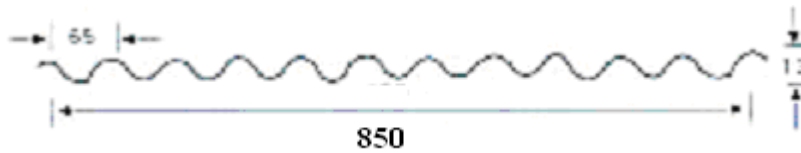
		enclosed.
12.2	See through model of Frost free refrigerator	230/250 ltrs. Refrigerator with all sides transparent with Perspex sheet giving a look to see inside the cabinet with lower half insulated with puff & upper half without insulation. The Perspex sheet must be double.
12.3	Shell & tube type Dx chiller (Small)	Shell & tube type Dx chiller (horizontal type) Capacity 5 ton (15000 Kcal/hr)
12.4	Small capacity shell & tube condenser.	Shell & tube type condenser. (horizontal type) Capacity 5 ton (15000 Kcal/hr)
	Category-13	
13.1	Table model of vapour absorption system.	Table model of vapour absorption system 1) Working fluid - ammonia , Water & hydrogen 2) Heating - By any heater 3) Cabinet - with absorber, condenser, generator, evaporator Capacity 45 ltrs
13.2	Working Model of Vapour Absorption System.	Refrigerator (Absorption System) noiseless volume 45 ltrs.(Approx) To be run on 220/240 volts AC having electrical rating 80 watts. Nominal consumption 1.4 KWH/24 hours with the following features. • Ice cube making facility. • Height adjustable shelves. • All around magnetic seal. • Sturdy metal housing. • Door can be hung right or left. • Fully automatic defrost with evaporation of defrosted water.
13.3	Working model of absorption system of Refrigeration cap. 3000 k.cal/hr.	Working model of absorption system of Refrigeration cap. 3000 k.cal/hr.
13.4	Testing machine for calibration & testing fo electrical starter, relay, contractor, solenoid valve. LP, HP, Oil pressure cut out.	Electrical instrument for electrical testing chamber for the pressure testing of components , Automatic oil feeding system ,testing under high vacuum All the components & instruments would be fitted on a heavy duty panel & mounted on steel tubular frame.
13.5	Two stage rotary vacuum pump capacity approx. 60 - 100 rpm, capable of evacuating to 50 microns of Hg & fitted with gas ballast, anti suck back valve & single phase motor.	Two stage rotary vacuum pump of capacity approx. 60-100 LPM, capable of evacuating to 50 microns of hg & fitted with gas ballast, anti suck back above valve & single phase motor.
	Category-14	
14.1	Variac input 230 V output 400 Va portabel complet with metere and controls	Input :- 230v AC, Single Phase, 50Hz. Out put: 230v to 400v AC, Single Phase, 50Hz,
14.2	Micron vaccum gauge capable of reading upto 20 microns.	Micron Gauge Digital with four segment display capable of reading 20 microns.
14.3	Spray outfit, 'V' twin motor ½ hp. Delivery upto 120 litre free air pressure upto 3 Kgs/sq. cm. With spray gun and fitting	1) Air compressor : Reciprocating Type A) No. of piston -2 B) Air pressure -120 Lit force air presure 2) Elect motor A) 0.5 HP single phase Standard or ISI mark 230v AC , 50 Hz B) Elect. main three core suitable wire - 3mm with top in C) Elect. : starter suitable for Elect. motor D) Safety Switch for pressure & pressure safety valve E) Pressure gauge - 4" Dia 5Kg/ cm2 3) Air- tank A) Suitable air tank capacity 150 Lit.

		<p>B) Out let pressure tapet nozzle valve connection & drainage connections C) Castle Wheel : with stand 4) Hose Pipe :- 5 mtr long, 1/2" Dia, Standard Hose (Air pipe) pipe with air gun 5.) Spray gun A) 1/2 Lit. Spray Gun .completed for spraying standard make . B) 1/2" connection air gun</p>
	Category-15	
15.1	Air cooler/Desert cooler	<ul style="list-style-type: none"> * Heavy Gauge body and panels for long life * Staving Paint Big Grill with heavy louvers * Dynamically Balanced Aluminum Blade for better and efficient Air Delivery * Fully Covered Pump One Year Warranty * Sizes - 16" * Dimensions - L x B x H (mm) -16" - 560x660x864 * Water Tank Capacity -45 ltr. (App.) * Weight- 30 Kg(App.) * Speed control - Three * Cooling Medium - Wood Wool Cooling Area -180 SQ feet * RPM -1400 * Motor Wattage-250 w. 50 Hz. * Pump Wattage - 50 w.
15.2	Visi cooler 250ltrs	<p>250 Liter capacity outer body stainless steel, Inner body G.I. sheets compressor 1/5 HP. Fan motor 1/35 HP, Puff insulation Refrigerant 134 A. with reciprocating compressor and with 1KVA voltage stabilizer.</p>
15.3	Anemometer (Vane type)	<p>Anemometer Van type capable of reading air flow in two scales.</p>
15.4	Compressors testers for small hermetic compressors	<p>Compressors testers for small hermetic compressors for following tasks</p> <ul style="list-style-type: none"> · Earth connector efficiency · Insulation resistance - Winding resistance · Starting ability - Run-in · Pumping capacity · Leakage (for shell) with all necessaries controls and instruments
	Category-16	
16.1	Package A/C 3 ton capacity, Air cooled type	<p>Package type A/C plant 3 ton capacity with air cooled condenser with direct cooling system. Hermetic compressor three phase 440 Volts 50 HZ condenser water Motor 1/6 HP with all controls</p>
16.2	Package A/C 7.5 ton capacity, Water cooled type	<p>Package type A/C plant 7.5 ton capacity with water cooled condenser with ducting system. Hermetic compressor three phase 440 Volts 50 HZ condenser water Motor 1/2 HP with all controls</p>
16.3	Split type AC 4500Kcal/hr. with indoor unit and outdoor units and electronics remote control	<p>Split type Air Conditioner 4500 kcal/hr with indoor unit & outdoor units, with five meter copper piping of required size and electronic remote control (cordless) with Reciprocating Compressor. Along with stabilizer of 4 KVA capacity.</p>

Category-17		
17.1	Welding plant Oxy-Acetylene complete (high pressure) with regulator	Oxy-Acetylene Welding set/ plant complete with cylinder regulators both, Welding Torches with different nozzle (3to 7 Nos.) 15 meter pipes, Reputed/Popular make with I.S.I Certification.
17.2	Welding Transformer (200 to 400 amps)	<p>WELDING TRANSFORMER 400 AMPS. WITH STANDARD ACCESSORIES</p> <p>Technical Specification</p> <p>A) POWER SOURCE</p> <ol style="list-style-type: none"> 1. Input supply :415± 10%, 50 Hz, 3 Phase four wire system 2. Input Power @ 100% Max. 12 KVA 3. Input Switch fuses rating 55 Amps. 4. Recommended capacitor for power factor improvement 6 KVAR 5. Output characteristics CC Type 6. Operating Arc voltage 22-32 Volt 7. Open circuit voltage 66 Volt 8. Welding current range 40-400 Amps. 9. Maximum continuous @ 60% \225 Amps. 10. Maximum Intermittent welding Current 300 Amps. 11. Welding electrode range Max.: Diameter 2 mm to Diameter 5 MM 12. Class of insulation H 13. Protection class IP 23 14. <p>Type of cooling Forced Air</p> <p>ACCESSORIES</p> <ol style="list-style-type: none"> 1. Welding cable section (CU) 50 MM² 5 Meter (Minimum). (As per IS 9875-1990) 2. Earth Cable section (CU) 50 MM² 5 Meter (Minimum). (as per IS 9875-1990) 3. Electrode holder fully insulated 400 Amps. (as per BS-EN 60974-II) One 4. Earth clamp (copper/brass jaws) 400 Amps. (as per BS-638) One 5. Chipping hammer One 6. Moulded type hand/helmet screen (glass size : 108 x 80 MM) One 7. Instructional manual with Two circuit diagram <p>General Requirements :</p> <ol style="list-style-type: none"> 1. Factory Standard : ISO 9001, ISO 14001/ISI Certification 2. Lether hand gloves 3. Steel wire brush 4. Complete onsite guarantee for Two Years. 5. The bidder will be certified that the spare parts of the machine will be made available by bidder/manufacturer for five years from the date of delivery of equipment to the consignee. 6. Mention service centers in Punjab..
Category-18		
18.1	Granite Surface Plate 1000x630 mm Grade-1	<p>Specification:</p> <p>Granite Surface plate grade -1, Size : 1000x630x120 mm</p> <p>General Requirements :</p> <ol style="list-style-type: none"> 1. Factory Standard : ISO 9001, ISO 14001 2. Standard Accessories being provided should be clearly mentioned 3. Complete onsite guarantee/Warranty for Two Years. 4. Dealership in Punjab are must. Complete address of the same be clearly mentioned in the bid
18.2	Pedestal grinder, double ended wheel dia 200mm. 3000rpm.	3 Phase 440 V, 50hz with starter, Motor- 1 H.P.,2800 r.p.m. double ended, Rough & Fine wheel. Wheel Dia 8" X ¾" X 1". Reputed/Popular make with I.S.I Certification.

18.3	Pedestal grinder	Single phase 220 V, 50hz with starter, Motor-1 H.P.,2800 r.p.m. double ended, Rough & Fine wheel.Wheel Dia 6" x ½" x ¾". Reputed/Popular make with I.S.I Certification.	
Category-19			
19.1	Pillar drilling machine 200 rpm to 2500rpm capacity 20mm.	Capacity 20mm with pillar base & work table support accuracy 0.01mm Spindle Size Mt-3, 3 Phase 440v 50 Hz 200 rpm to 2500rpm 1 To 1.5 H.P. Motor 5 To 20mm Drill Chuck & Key Drill Drift Required Make With I.S.I. Certification.	
19.2	SENSITIVE DRILLING MACHINE PILLAR 12MM CAPACITY WITH ACCESSORIES / BENCH TYPE PILLAR DRILLING MACHINE 12MM		
	Capacity	:	m.m.
	Drilling in Steel	:	13
	Spindle		
	Spindle travel	:	80
	Spindle taper	:	Solid
	No. of spindle speed	:	04
	Range of spindle speed	:	500-2825
	Working Range		
	Column diameter	:	46.80
	Max. dist. between spindle centre to column face	:	152
	Max. dist. between spindle nose to working table	:	280
	Max. dist. between spindle nose to Base Plate	:	495
	General		
	Size of Square Table	:	210x215
	Size of Base Plate	:	235x360
	Electric Motor	:	3 Phase 0.5 H.P. 1440 RPM
	'V'-Belt Size	:	M-2360
	Weight of machine in Kgs. (Approx.)	:	48
	Overall dimension of machine H x W x L	:	750x335x375
	STANDARD ACCESSORIES	:	Motor Pulley, Drill Drift
	EXTRA ACCESSORIES	:	Electric Motor, 'V' Belt, Reversible Switch, Drill chuck

19.3
Slip Roll former 1.6 mm x 1000mm



TECHNICAL SPECIFICATIONS:		
Effective Width (mm)	:	850
Feeding Width (mm)	:	1000
Wave Height (mm)	:	13
Wave Length(mm)	:	65
For Roof panel, Wall panel		

Category-20

20.1 Hydraulic Trainer kit

with Power pack – consisting of Cylinders, Different types of Direction control valves, Pressure control valves and flow control valves with accessories for construction and application of different type of Hydraulic circuits.FESTO

Specification:

Operating pressure -100 bar (10 MPa) P-max - 150 bar (15MPa).
Hydraulic Power unit
Pump – Vane Pump operating Pressure 100 bar. Delivery – 4 litter/minute.
Pressure relief / Pressure sequence valve. Pressure relief valve, Pilot actuated.
Pressure gauge 0 to 150 bar (0-15 MPa) Shut off valve.
Non return valve – 1 bar. Non return valve – 10 bar.

General Requirements :

1. Factory Standard : ISO 9001, ISO 14001
2. Standard Accessories being provided should be clearly mentioned
3. Complete onsite guarantee/Warranty for Two Years.
4. Availability of spare parts for 15 years, service centre, dealership etc in Punjab are must. Complete address of the same be clearly mentioned in the bid

20.2 Surface grinding machine,

**Wheel dia180 mm (or near) reciprocating table,
longitudinal table traverse 200 mm (or near) fitted with adjustable traverse stop,
magnetic chuck 250 mm x 120 mm. With set of grinding wheels,
diamond tool holders for dressing & set of spanner etc.**

Specification

Table Work Area	Up to 275x100 mm (nearby)
Longitudinal transverse	200 mm (nearby)
Reciprocating, table	200 mm (nearby)
fitted with adjustable traverse stop	
magnetic chuck	250 mm x 120 mm.
Cross Transverse	165 mm (nearby)
Feed : Longitudinal	1 to 20 m/min.
Cross	0.150 to 2 mm
Wheel head Vertical Transverse	280 mm (nearby)
Wheel Spindle Speed	2800 R.P.M.
Wheel Head Motor	7.5 KW
Grinding wheels	One set
Wheel Dressing Tool	Diamond
Hydraulic Pump Motor	0.375 KW

wheel dia.	180 mm (or near)
Service Tools Set	1 set

(With complete coolant cooling system)
Required make with I.S.I. Certification.

General Requirements :

5. Factory Standard : ISO 9001, ISO 14001
6. Standard Accessories being provided should be clearly mentioned
7. Complete onsite guarantee/Warranty for Two Years.
8. Availability of spare parts for 15 years, service centre, dealership etc in Punjab are must. Complete address of the same be clearly mentioned in the bid

20.3 Cylindrical grinder

with internal grinding attachment, center height- 130 mm with standard accessories including 3 jaw self centering chuck, 4 jaw independent chuck with set of grinding wheels, balancing equipments, mandrels, centers, tailstock etc.

Specification

Maximum Grinding Length	500 mm (nearby)
Center height	130 mm
Cutting Speed	30 m/sec.
wheel dia.	300x40 mm (nearby)
Rapid Approach	40 mm.
In Feed with hand wheel	45 mm.
Min. Feed	0.00125 mm (nearby)
Work Head Speed	56- 630 r.p.m.
Work Head Power	90 degree- 30 degree.
Tail Stock Taper	MT3
Internal Grinding Capacity	
Dia. Range	15 to 100 mm.
Depth	80 mm.
Service Tools Set	1 set
Complete Coolant Unit fitting	1 no.
(With complete coolant cooling system)	

General Requirements :

1. Factory Standard : ISO 9001, ISO 14001
2. Standard Accessories being provided should be clearly mentioned
3. Complete onsite guarantee/Warranty for Two Years.
4. Availability of spare parts for 15 years, service centre, dealership etc in Punjab are must. Complete address of the same be clearly mentioned in the bid

20.4 GUILLOTINE SHEARING MACHINE FOOT OPERATED

Specifications:

1. Shear Size	:	1000 - 1025mm
2. Length of Bed	:	1080 - 1120mm
3. Width of Bed	:	300 - 330mm
4. Shear M. Sheets upto	:	1mm
5. Length of Cut in One Stroke	:	1000 - 1025mm
7. Height of Machines	:	1050 - 1150mm

STANDARD ACCESSORIES :

- o One set of blades (fitted).
- o Front and back gauges.
- One set of return spring for pedal (Extra)

20.5 BUFFING & POLISHING MACHINE

Specifications:

1.	WHEEL SIZE	:	200 X 25mm (2 sets each of
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			Buffing & Polishing wheels)
2.	HORSE POWER	:	2 HP
3.	PHASE	:	3
4.	RPM	:	2800 RPM

General Requirements:

1. Standard Accessories being provided should be clearly mentioned
2. Complete onsite guarantee for Two Years.

Category 21.

21.1 FLY PRESS /BALL PRESS 4 SINGLE BODY(Approx. Price : 30,000/- Specifications:

1	Centre to Back	:	150-160mm
2	Base to Guide	:	200-250mm
3	Screw Diameter	:	60-70mm
4	Fly Wheel Diameter with two handle rods	:	650-750mm
5	Hole in Base (i) Without Ring (ii) With Ring	:	100-120 mm 50-60 mm
6	Stroke	:	150-160mm.
7	Hole in Ram (i) Diameter (ii) Depth	:	25mm (+/- 1mm) 50mm (+/- 1mm)

General Requirements:

1	Heavy cast frame & Ribs for strength.
2	Cast Tapered Central Ram and Machine Guideways. Easily adjustable against wear and tear.
3	Top end of screw with Hexagonal Tapered Reception for the wheel to ensure No-Slip.
4	Mild steel screw with Heavy duty square angular thread.
5	Bed provided with T-Slots and adjustable four steel die-holding clamps.
6	Base Hole adjustable with Bushing to suit different jobs.
7	Complete onsite guarantee for Two Years.

21.2 BEADING MACHINE WITH 380MM THROAT CLEARANCE (with crimping rollers)

SPECIFICATIONS:

1.	Capacity up to 13 ga.	2.	Taper rollers
3.	Throat 380mm	4.	Sheet stopper gauge
5.	Standard crimping rollers	6.	Set of service tool
7.	Concave & convex rollers	8.	Provision of manually Roller adjustable
9.	Ogee beading rollers		

21.3 SEAMING MACHINE

SPECIFICATIONS:

Hand operated grooving or side seaming machine, for closing side seams on rounder Irregular shaped bodies with detachable mandrel having full length groove for inside seams complete with a set of grooved two wheels for outside seams and one plain wheel for inside seam.

1.	Working Length	:	40"
2.	Capacity in Mild Steel	:	22 SWG
3.	Extra Accessories	:	Extra wheel set (for outside seams and inside seam)

General Requirements:

1. Standard Accessories being provided should be clearly mentioned

- Complete onsite guarantee for Two Years.

21.4 NIBBLING MACHINE

Specifications

	CAPACITIES	M. Steel 45 kg./mm ²
STRAIGHT CUTTING	From the edge	5mm
	Inside With starting hole	5mm
	Sheet Without starting hole	4mm
FIGURE CUTTING	Sheet thickness	2mm
LOUVER CUTTING	Sheet thickness	3mm
NIBBLING	From start edge	4mm
	Inside With starting hole	4mm
	Sheet Without starting hole	3mm
SLOT CUTTING	Sheet thickness/width of slot	4/10mm
RECT CUTTING	Sheet thickness/width of notch	3/10mm
FOLDING	Sheet thickness/depth of fold	2.5/8mm
BEADING	Sheet thickness/depth of bead	2.5/5mm
FLANGING	Sheet thickness/height of flange	3/12mm
Throat depth	:	1000mm
Minimum circle dia. Cut from square blanks	:	830mm
Length of stroke	:	1.5 to 9mm
No. of strokes per minute	:	1440
Maximum tool lift	:	15mm
Motor 3 Phase	:	3HP

General Requirements:

- Standard Accessories being provided should be clearly mentioned
- Complete onsite guarantee for Two Years.

21.5 Circle cutting machine 300mm die

Circle cutting machine 300mm die	Circle cutting Machine Cutting Capacity 300 mm dia. 16 gauge sheet
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Category-22

22.1	Portable Nibbler	Capacity- 2 mm in steel 2.5 mm in Aluminium. Rated Power- 500 W. 220 V AC 50 Hz. N/L. Stroke- 2400 per minute.
22.2	Portable Pneumatic shear	Cutting cap gauge 18, Stake / Min. - 2500
22.3	Hand press brake capacity (0.8 mm)	Material – Cast Iron. Blade- 300 mm Punch- Die steel. Capacity -0.8 mm. with standard accessories.

Category-23

	Specifications	
23.1	AutoCAD 2006 or latest	Education version
23.2	MS-Office XP or latest	Education version
23.3	SPC training software	Software SPC

Category-24

24.1	Digital Micrometer with SPC 0-25 mm	SPC 0-25 MM, LC-0.001 MM
24.2	Tube end Micrometer,	0-25 MM, LC-0.001 MM
24.3	Flange Micrometer	0-25 MM, LC-0.001 MM
24.4	Pitch Micrometer with 6 sets of Anvil (Metric)	0-25 MM, LC-0.001 MM Set of six pcs anvil
24.5	Height Gauge 0-300mm with adjust scale (L.C.0.02mm)	0-300 mm with fine adjustment LC-0.02mm and 0.001 inch And concave lens
24.6	Digital Height Gauge 0-300mm (L.C.0.01mm)	0-400 mm with fine adjustment LC-0.02mm and 0.001 inch

Category-25

25.1	Caliper checker 0-300 mm (with wooden case)	300mm series 515 order no 515-555
25.2	2D Micro Height 0-300 mm (Precision)	Series 518-904 Range 0-972mm
25.3	Profile Projector (Vertical type) 300 mm diameter with 10x20x magnification with Data Processor Profile projector	PV 5000 Series 304 with optional accessories
25.4	Digital Inclino Meter	Direct Reading 0-360 degree Range Optical Reading System Totally Enclosed Glass circles main scale micro meter scale

Category-26

26.1	Portable Surface Roughness Measuring Instruments with PC Cable and software	with PC Cable and software
26.2	Electronic Comparator	Resolution selectable one micro meter measuring range 10 measuring accuracy +/- one micro meter measuring pressure one Newton , digital display LCD power supply choice of batteries , or net connection
26.3	Dial Gauge Calibrator 0-25mm	0-25mm, Least count .0001 mm
26.4	Video Inspection system CCD (Charge Coupled Device),	Colored Camera, Color Monitor, light source and stand

Category-27

27.1	Vacuum cleaner	heavy duty
27.2	Slip gauge set (Tungsten carbide 5 Nos, Ceramic 5 Nos, Steel alloys 5 Nos.) any size	Tungsten carbide metric 30mm.-one no 50mm- one no 60mm.-one no 80mm-one no. 90mm- one no.

