

Code:-3151912

(Mechanical Department, ACET)



WHAT IS LAPPING ?

- **Lapping** is a machining operation, in which two surfaces are rubbed together with an abrasive between them, by hand movement or by way of a machine.
- This can take two forms. The first type of lapping (traditionally called grinding), typically involves rubbing a brittle material such as glass against a surface such as iron or glass itself (also known as the "lap" or grinding tool) with an abrasive such as aluminum oxide, jeweller's rouge, optician's rouge, emery, silicon carbide, diamond, etc., in between them. This produces microscopic conchoidal fractures as the abrasive rolls about between the two surfaces and removes material from both.

The other form of lapping involves a softer material such as pitch or a ceramic for the lap, which is "charged" with the abrasive. The lap is then used to cut a harder material—the work piece. The abrasive embeds within the softer material which holds it and permits it to score across and cut the harder material. Taken to a finer limit, this will produce a polished surface such as with a polishing cloth on an automobile, or a polishing cloth or polishing pitch upon glass or steel.



Electronic Industries

Pump Industries

Air Compressor Industries

Automotive Industries

Planetary Lapping Machine





ALL DIMENSIONS ARE IN mm

SI.No.	Description		Model 24-01
1.	Lap plate OD		362
2.	No. of carrier plates		5
3.	Size of carrier plate		144
4.	Max. size of job that can be lapped in Ø		105
5.	Max. thickness of the job		40
6.	*Main motor AC	(Kw/HP)	1.5/2
7.	Pump motor (Kw/HP)		0.2/0.26
8.	Stirrer motor (Kw/HP)		0.37/0.5
9.	Max. speed of carrier plates	RPM	75
10.	Timer range		1-30
11.	Standard power supply		
12.	Working height of the mach from floor level	nine in mm	1042
13.	Overall machine size Length Width Height	mm (approx.) mm (approx.) mm (approx.)	2100 1650 1500
14.	Net weight	Kgs	700





Automatic Lapping Machine Model SPL15T



correction ring (Alumina ceramics)	I.D. 5.57 X O.D. 7 (141.5X178mm)
Drive unit for correction ring	2
Speed	18-280 rpm
motor	25 W
Lapping table (Platen)	1 platen
Diameter	15" (Ø380 mm)
Diameter	10 - 60 rpm
Speed	Ball bearing
Type of Bearing	0.4 Kw AC
Motor	SUS 420 (Alumina ceramics is Option)
Material of table	
Slurry supply system	Micro Tube Pump
Slurry stirrer unit	Magnetic stirrer unit
Sharry Stirrer anne	2 liters
Slurry Tank capacity	10 liters
Waste vessel	
Utility for electricity	3P, 200V, 10A

FLAT LAPPING MACHINE



Specially Design For Mechanical seal Component Lapping Like : Silicon Carbide, Tungsten Carbide, Ceramic, Carbon, Chrome Cast etc.

Specifications :

Lapping Plate outside Diameter	:- 14"	356mm
Lapping Plate Speed	:- 60 rp	m
No. of Conditioning Rings	:- 3	
Conditioning Ring inside Diameter	:- 5.3"	135mm
Height of Working Face	:- 35"	889mm



Double Side Lapping Machine

- The Double Side Lapping Machines are capable to lap and polish less than 40 micron parts to get extreme flatness and surface quality say nanometer level. These are available in various specifications that can also be customized to suit the varied requirements of the clients within committed time frame.
- Features:
- Durable operation
- Easy to operate
- Durable performance



Valve Body Lapping Machine

- D-HONER DHL machine can mechanize the operation as well as overcome all the draw-back that are associated with Manual lapping.
- Due to simultaneous lapping of 4 or 6 valves at optimum lapping speed, production is high as 5 to 6 times can be achieved with remarkable degree of consistency. The operational simplicity of the machine enable use of unskilled labour. All these factors result in considerable reduction in operational cost.
- Specially designed heavy-duty compact geared motor of ample capacity with an output speed that is optimum for valve lapping operation. The mechanism of the machines is the machine is fairly simple and hence requires practically no maintenance.

- Advantages :
- Economical
- Labour saving
- High rate of Production
- High operational efficiency
- Less down time of engine
- Precision
- Longer life of valves
- Consistency in lapping & quality of work
- Skilled labour not required.



Bench Type Lapping Machine

•Range of bench type lapping machines are used for fine finishing of various components of automobile, bearing and others. These machines are precision engineered using the cutting edge technology that ensures high performance and efficiency. Available in various specifications, these can also be custom designed to suit the specific requirements of the clients.

Applications :

Hydraulic valves

Pneumatic valves

Fuel injection barrels

Gauges

Jig bushes

Connecting rods

Rocker arms



Manual OD Lapping Machines

- The company's range is at par with the industry standards and widely used in O.D.
 Lapping of plug gauges, special gauges, bars, shafts as well as component of automobiles, hydraulics, sewing machines, etc.
- Technical Specifications:
- Capacity: 3 mm to 150 mm
 Length: 250 mm or 500 mm
 Motor: 0.5 HP, 3 PHASE
 Accuracy: Less than 0.001 mm

Application Areas

- Tractor's lift pump and control valve
- Hydraulic and Pneumatic valves and pistons
- Sewing machine needle bar and shafts
- Two-three wheeler gudgun pins
- Sintered products tools
- Tool room
- Gauges and pins for measuring
- Automobile components
- Lubrication system



HONING

- Honing is a low velocity abrading process in which stock is removed from metallic or non metallic surfaces by bonded abrasive sticks.
- Honing improves the accuracy and finish of automobile cylinder bores, hydraulic cylinders, and similar parts. The honing machine consists of four fine-grain abrasive stones attached to an expandable tool that is then slowly revolved and oscillated inside the cylinder until the desired finish and diameter are obtained.



- Produce high finish
- To correct
 - Out of orderness
 - Taper
 - Axial distortion
- Employed very frequently for finishing of
 - Bores
 - Gear teeth
 - Roller bearings

EFFECTIVENESS

• It is effective on almost all ferrous or non ferrous material in a hardened or soft condition.

MATERIALS HONED

- Materials honed range from
 - Plastics
 - Silver
 - Aluminium
 - Brass
 - Cast iron
 - Hard steel
 - Cemented carbide

HONING STONES

- Honing stones are made from common abrasive and bonding materials, often impregnated with sulphur, resin, or wax to improve cutting action and tool life.
- Abrasive particles must withstand the cutting pressure for metal removal.
- Bond must be strong enough to hold the grit.
- Not so hard as to rub the bore and retard cutting.



- Size ranges from 36-600
- Most widely used size : 120-320
- Selection depends on
 - Material removal rate
 - Required finish

ABRASIVE

- Selection of abrasive depends on
 - Composition
 - Hardness of metal being honed.
 - Finish required
 - Cost.



• Simultaneous rotating and reciprocating motion is given to the stick.

• The surface produced will have a characteristic cross-hatch lay pattern.

Rotary motion Image: Reciprocating motion Image: Homing stone Homing stone Image: Note that the store st



MACHINES

- Honing operation can be performed on
 - drill press
 - lathe
- Simultaneous rotary and reciprocating motion.
- Work pieces are to be held on fixtures that can float.
- Production honing is done on honing machine.

METHODS OF HONING

- MANUAL STROKING
 - Preferred for large quantities when tolerances are extremely close.
 - Main advantage
 - Work pieces need not be fixtured.
 - This reduces tooling investment .
 - Permits immediate changeover from one job to another.

- Other advantages
 - End to end reversal of work pieces.
 - Change of stroke length for required accuracy.
 - Necessary corrections can be made as stroking proceeds.
 - Employed as final touch.

POWER STROKING

- More economical for mass production of small parts.
- Fixturing is required for work piece that exceeds size or weight.

HORIZONTAL HONING MACHINE



Model HH-12 Dual-Spindle

Model HH-12 Single-Spindle

Specifications	HH-10	HH-12	HH-25
Maximum Bore Size and Outer Diameter	25.5" Bore, 28" Diameter	4.8" Bore, 5.5" Diameter (Twin Spindle) 25.5" Bore, 28" Diameter (Single Spindle)	39.4" Bore, 42" Diameter
Spindle Power (HP)	15.0 HP	25.0 HP	40.0 HP
Spindle Speeds (RPM)	0 - 500	50 - 500	20 - 200
Stroke Length	Up to 40'	Up to 40'	Up to 80'
Reciprocation Speed	10 - 90'/minute	10 - 70'/minute	10 - 70'/minute
Reciprocation Power (HP)	10.0 HP	15.0 HP	30.0 HP
Spindle Configuration	Single	Single or Twin	Single
Voltage Requirements	380 or 460V/50 - 60Hz	380 or 460V/50 - 60Hz	380 or 460V/50 - 60Hz
Stroke Control	Servo-Motor	Hydraulic or Servo-Motor	Hydraulic or Servo-Motor
Hone Expansion Method	Linear Actuator	Hydraulic or Linear Actuator	Hydraulic or Linear Actuator
Approximate Shipping Weight	15,000 lbs	30,000 lbs. (Twin)	45,000 lbs (Single)
Approximate Length	84' Maximum	84' Maximum	170' Maximum

VERTICAL HONING MACHINE



Maximum honing diameter	Ф170 mm	
Minimum honing diameter with	Φ35 mm	
automatic expansion honer		
Honer max. stoke	300 mm	
Cylinder bearing plate vertical stroke	200 mm	
Workpiece max. length	1200 mm	
Cylinder bearing plates width	400 mm	
Workpiece max. length	600 mm	
Spindle head longitudinal stroke	1100 mm	
Spindle head transversal stroke	80 mm	
Spindle head transversal stroke Spindle head motor	80 mm 2 HP	
Spindle head transversal stroke Spindle head motor Hydraulic plant motor	80 mm 2 HP 1.5 HP	
Spindle head transversal stroke Spindle head motor Hydraulic plant motor Electropump power	80 mm 2 HP 1.5 HP 0.30 HP	
Spindle head transversal stroke Spindle head motor Hydraulic plant motor Electropump power Spindle rotating speed	80 mm 2 HP 1.5 HP 0.30 HP 100-300 rpm	
Spindle head transversal stroke Spindle head motor Hydraulic plant motor Electropump power Spindle rotating speed Spindle alternative motion speed	80 mm 2 HP 1.5 HP 0.30 HP 100-300 rpm 0-18 m/min	
Spindle head transversal stroke Spindle head motor Hydraulic plant motor Electropump power Spindle rotating speed Spindle alternative motion speed Overall dimensions(L×W×H)	80 mm 2 HP 1.5 HP 0.30 HP 100-300 rpm 0-18 m/min 1800×1300×2200 mm	
Spindle head transversal stroke Spindle head motor Hydraulic plant motor Electropump power Spindle rotating speed Spindle alternative motion speed Overall dimensions(L×W×H) Packing dimensions(L×W×H)	80 mm 2 HP 1.5 HP 0.30 HP 100-300 rpm 0-18 m/min 1800×1300×2200 mm 2000×1500×2400 mm	

HONING CONDITIONS

SPINDLE SPEED

spindle speed is influenced by *Material being honed*- higher speeds used for materials that shear easily.

Hardness- harder the work piece, lower is the honing speed.

Surface finish- rough surfaces allow higher speeds.

Speed should be decreased as the area of abrasive per unit area of bore increases.

Higher speeds usually result in finer finish.

• RECIPROCATING SPEED

- Mainly depends on length of honing tool and depth of the bore.
- Expressed as (no. of strokes/min.) * (2*stroke length)
- Higher reciprocating speeds result in rougher finish.



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