बिहार सरकार

Govt. of Bihar

Department of Science & Technology

Government Polytechnic Vaishali

PRODUCTION PROCESS

Semester-IV (Mechanical Engineering)

Unit -5

SUPER FINISHING PROCESSS

by

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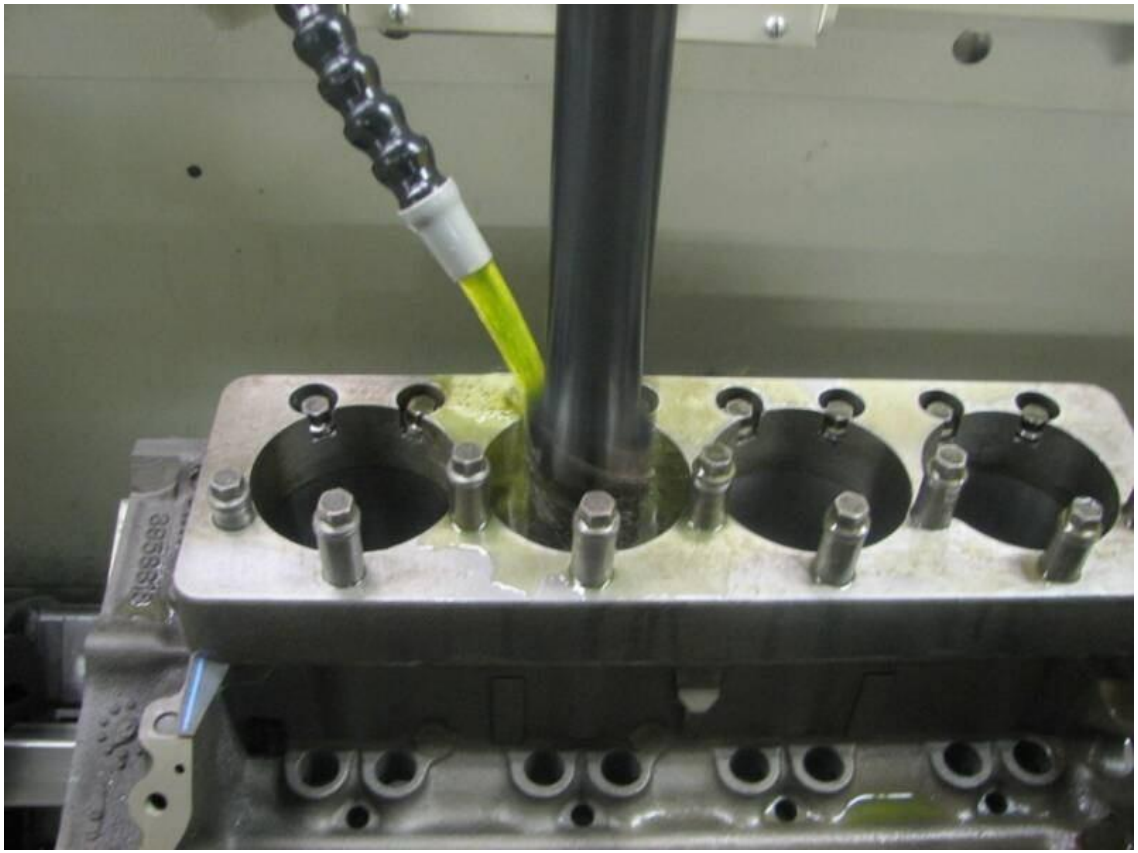
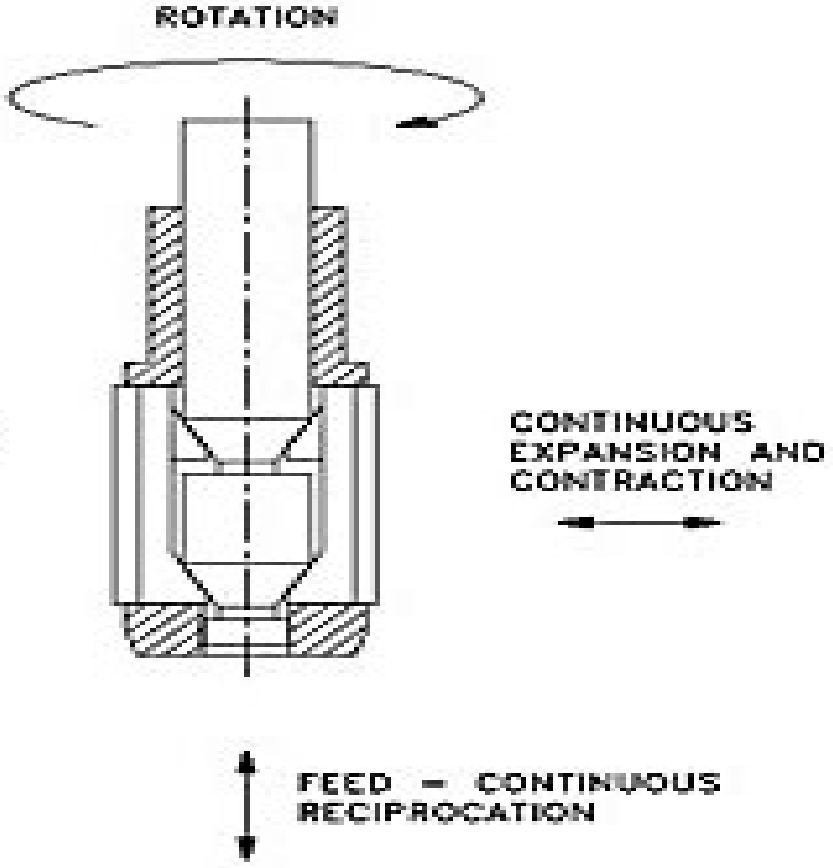
Honing

This is used for finishing the inside surface of a hole. It can also be used for finishing external surfaces. Here abrasives are in the form of sticks which are mounted on a mandrel which is given a reciprocating motion along the hole axis super imposed on a uniform rotary motion. The grit size is b/w 80 to 600 mesh size. Honing finds special application for cylinder bores as it produces a cross hatched pattern useful for lubrication. Special cutting fluids like sulphurised oils are used. Honing can also be used for finishing gears where tool is made in plastic or any bonding material impregnated with abrasives.

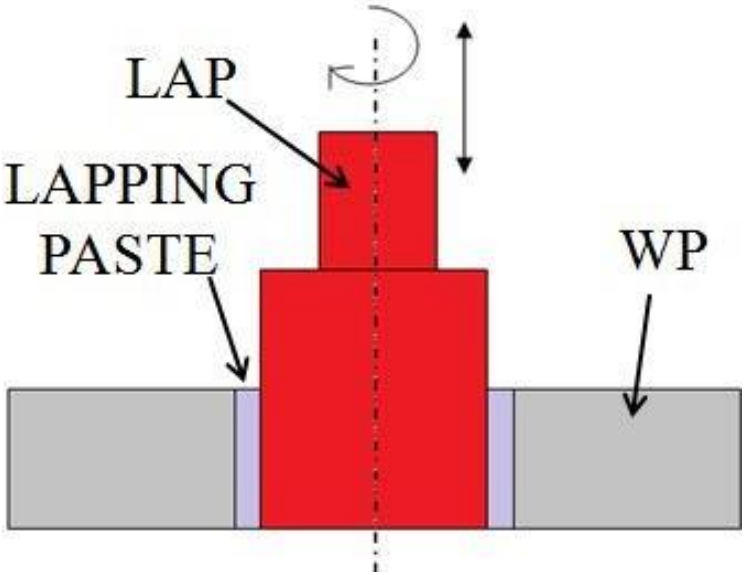



ROTATION
CONTINUOUS EXPANSION AND CONTRACTION
FEED = CONTINUOUS RECIPROCATION

Lapping

This is another operation for improving accuracy and finish. A lap is generally made of material softer than work and has the same shape of the opposed mating part. Straight narrow grooves are cut at 90^{o} on the lap surface and abrasive powder is sprinkled on the surface. The W.P. is then held against the lap and moved in unrepeated paths. A suitable fluid (carriers) is also applied like M/C oil, grease etc. In hand lapping, the work / lap is moved along a path in the form of '8'. C.I. is the mostly used lap material, other material are soft steel Cu, Brass, hardwood etc. Abrasives are oxides of Al, Si, Cr and diamond etc. The grit size is b/w 120 to 1200 mesh size. This process has wide applications like Gauges, Measuring wires, M/c Spindles, Threads, Gears, bearing races etc.


AGK

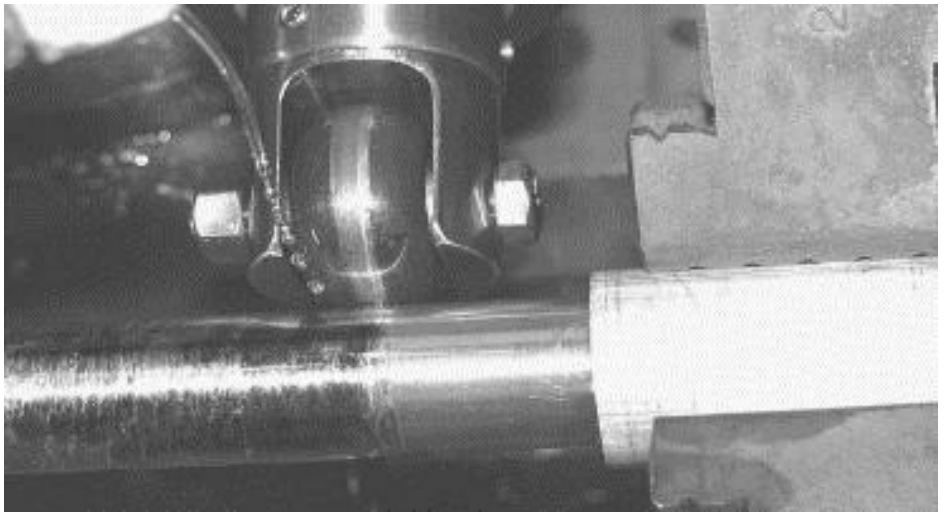

LAP
LAPPING
PASTE
WP

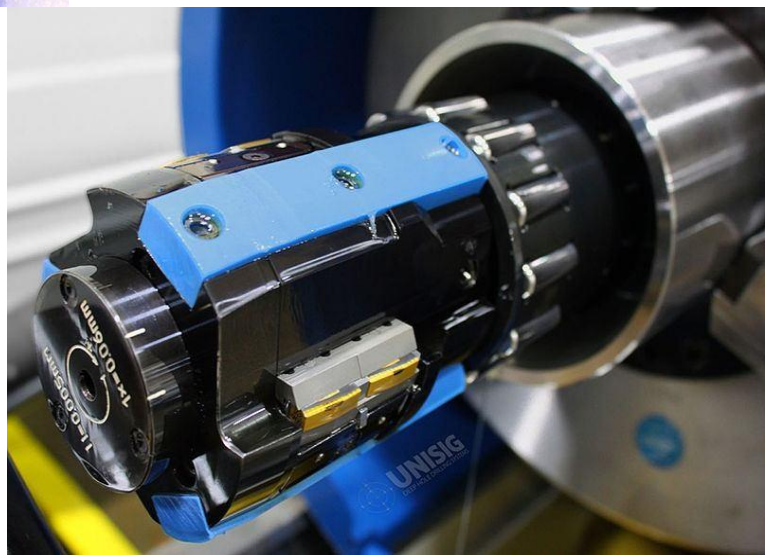
Burnishing

It consists of pressing hardened steel balls or rolls on to the surface of W.P. and also imparting feed motion to the same so that it causes plastic flow of minute irregularities like dents, projections etc.

Eg: Burnishing of shafts.

Shaft burnished on lathe





Hydraulic cylinders roller burnished on lathe

SUPER FINISHING PROCESSES

The surface finish produced by various processes are:

PROCESS	SURFACE FINISH (μm)	TYPE OF PROCESS
Turning, boring	0.05 to 25	Machining Process
Milling	0.25 to 25	Machining Process
Planning, shaping	0.375 to 25	Machining Process
Drilling	0.75 to 12.5	Machining Process
Reaming, Broaching	0.5 to 6.25	Machining Process
Grinding	0.025 to 6.25	Finishing Process
Honing	0.025 to 1.5	Super Finishing Process
Lapping	0.013 to 0.75	Super Finishing Process
Burnishing	0.01 to 0.25	Super Finishing Process