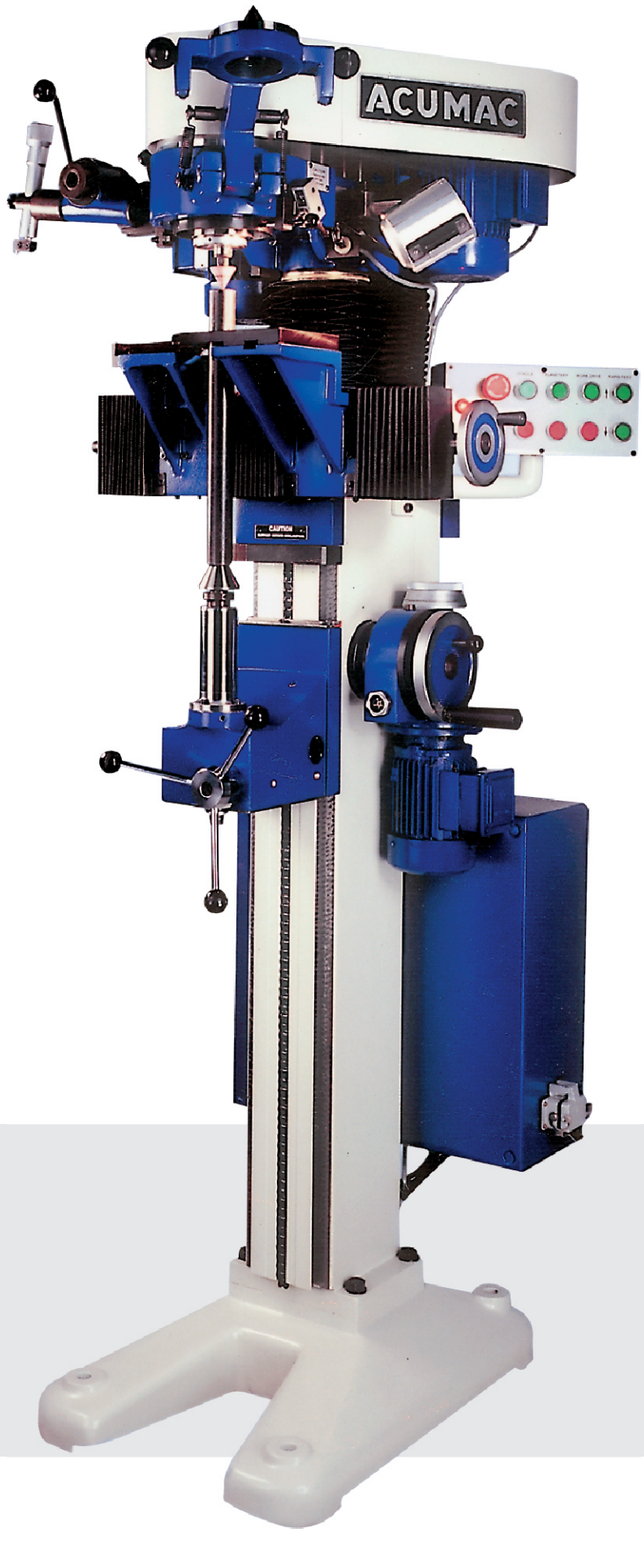
CGP 165

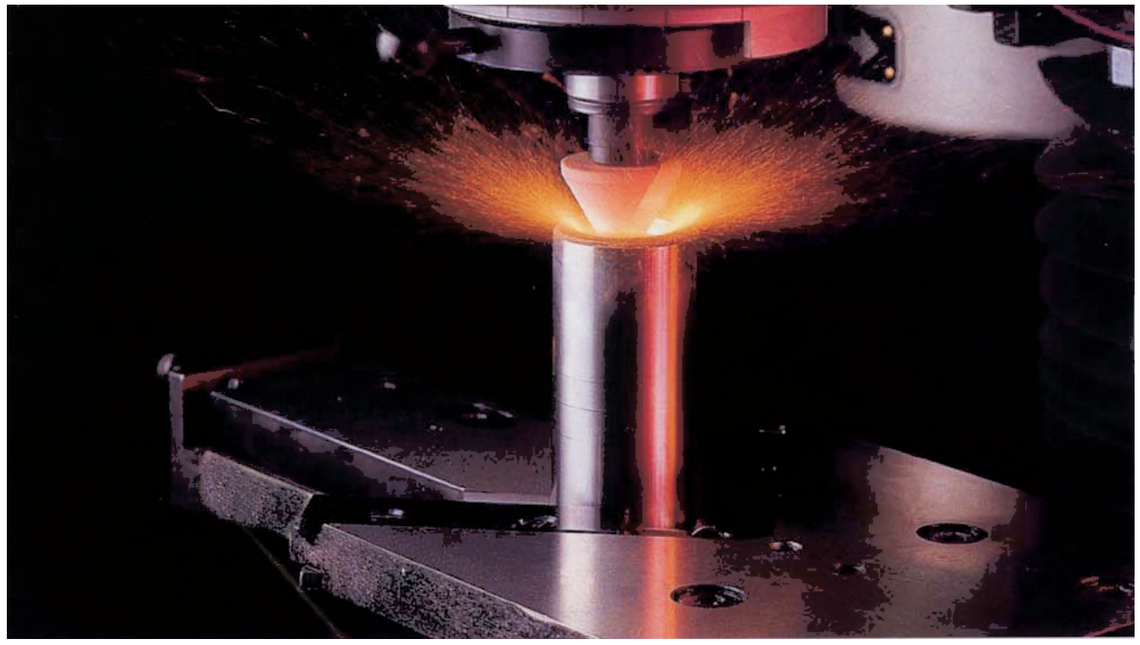


Technical Specifications:

Description	Standard
Centre hole ground	
Minimum dia	2 mm
Maximum dia	90 mm
with accessories	upto 130 mm
Workpiece length	
Minimum	130 mm
Maximum	1200 mm
Workpiece dia (Clamping ranges of vices)	
Minimum	5 mm
Maximum	160 mm
Max weight of workpiece	145 Kgs
Spindle speeds with Standard spindle dia. 52	
Grinding wheel spindle speed	11700/23400 RPM
Grinding wheel special spindle speed	16500/33000 RPM
Cone angle of center hole	45-120°
Collet Mounting	3,4,6,8 mm
Diameter to be ground with special spindle	1 - 5 mm
Grinding wheel Head Stroke	150 mm
Eccentric motor rotational speed	50 RPM
1 rev of head wheel	5 mm
Fine feed through small wheel 1 rev	0.125 mm
1 div on fine feed wheel	0.005 mm
Max. Eccentricity of grinding cone	8.00 mm
Electricals	
Grinding spindle motor	330 Watt
Eccentric motor power	180 watt
Eccentric motor power rotational speed	1370 rpm
Power Supply	415 ± 10%,50 ± 3Hz 3 Phase AC supply
Weight of machine	
Net	750 kgs
Gross (full packing)	1083kgs
Packing dimensions	
L x W x H (inside dimensions)	1000x1000x1850 mm
High frequency spindle with frequency converter max.Speed	70000 rpm

Centre Hole Grinding Machine

CGP 165



Please consult us if the standard machine does not suit your job requirments, We can build a special machine to cater to your special needs .

ACUMAC MACHINE TOOLS PRIVATE LIMITED

472-A, 12th Cross, IV Phase, Peenya Industrial Area
Bangalore- 560 058 (India)
PH: 91-80-28362719/28360016/28361515
FAX: 91-80-28362015 E-MAIL : acumac@vsnl.com
WEBSITE : www.acumacmachines.com

CAT/MKT/04/05 CADPHO - 9845291082

ACUMAC

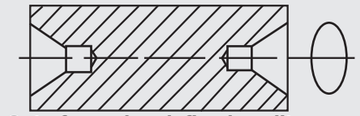
..the accurate ones...

Why Grind Centres....?

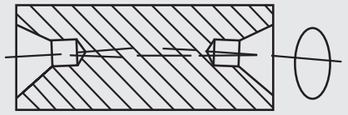
.....because precision begins at the Centre! In precision cylindrical grinding operations, one very often comes across problems of poor finish and inaccurate geometric forms in the ground work which are beyond acceptable limits.

Even though the general condition of the machine is good, its bearings and slides contribute to such errors, the main culprit viz., the accuracy of centre holes is often overlooked. It has been proved beyond doubt that the center holes on which the job is supported while being ground, becomes a crucial factor affecting the end result. Inaccurate centers are bound to produce inaccurate work even if the best of grinding machine were to be used for the purpose.

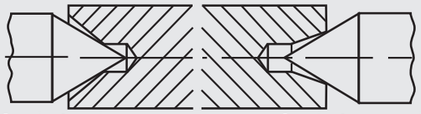
The centre holes could have any one or a combination of the following errors.



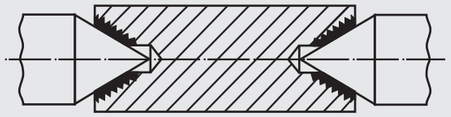
Out of round undefined ovality



Poor alignment



Angle too large Angle too small



Poor surface finish

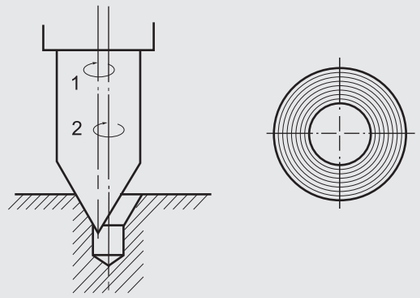
It is therefore of paramount importance to establish geometrically true and round centre holes with accurate alignment as a first step to precision cylindrical grinding.

Acumac Centre Hole Grinding Machine is designed and perfected to produce just this, truly circular, geometrically accurate and precisely aligned centre holes in components either in /soft or hardened condition.

Operating principle :

The grinding cone dressed accurately to 60° included angle is given two motions simultaneously to produce the desired result.

A Rotary motion of the grinding cone about its own axis coupled with a planetary motion in a true circle about an axis parallel with the spindle axis while the job is held stationery on a bottom dead centre and a 3-point self centering V-vice at the top. (the radius of the planetary motion is adjustable).



The main advantage of the unique planetary motion is that it eliminates work rotation which is used in the earlier less refined systems of centre grinding.

With Acumac planetary grinding principle you can grind accurate centres in

1. Non-symetrical jobs.
2.Heavy awkward jobs which cannot be easily rotated.

Grinding head feed Mechanism:

The entire grinding head is mounted on an accurately ground hardened steel ram which slides up and down in the cast iron machine column. The motion of the head is closely guided in the column bush and a separate guide bar at the rear of the machine.

Coarse feed is obtained by the large hand wheel placed at the right hand side of the machine column and fine feed is achieved through a worm and worm wheel reduction.

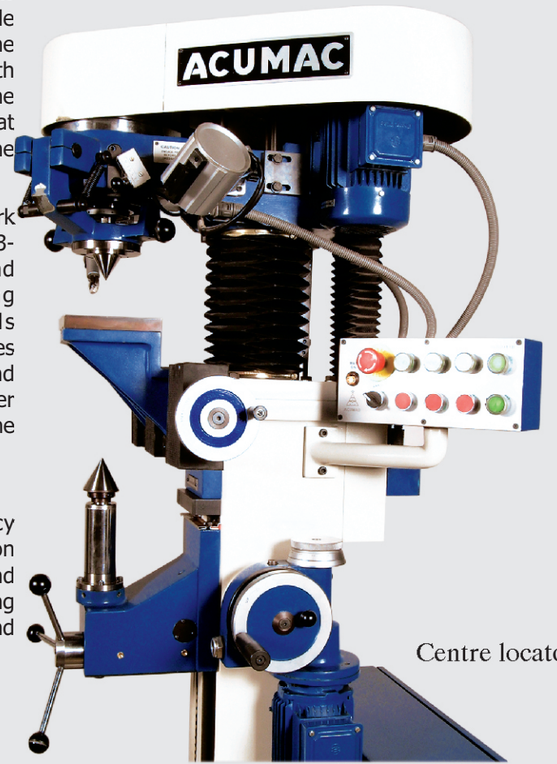
Work Holding: A precision self centering V-vice assembly is mounted on the upright dovetail guideways of the vertical column of the machine.

The V-vice grips the job on 3 points true to the axis of the spindle through out the clamping range of the vice. There is a provision to reset both jaws of the vice if necessary. The V-vice assembly can be clamped at any appropriate position on the column.

And the major handicap of work rotation method is setting up of 3-point steady on an unground diameter (as centre grinding operation normally preceeds cylindrical grinding) while the centres are being ground. The form and surface errors of this diameter certainly affect the accuracies of the centres ground.

Form Accuracy:

An example of form accuracy obtainable in cylindrical grinding on work pieces with their centres ground on Acumac centre hole grinding machine is evident from the Talyrond chart illustrated.



Centre locator in position

Constructional details:

Grinding head: The grinding head assembly consists of a precision high speed grinding spindle housed in the hollow planetary quill. Two separate motors drive the grinding spindle and the planetary quill independently through flat endless belts. Both spindles are running on super precision angular contact bearings with lifetime grease lubrication, thus eliminating frequent lubrication of spindle bearings.

Dressing unit: The dressing unit is conveniently mounted on the left side of the grinding head with arrangement to adjust it laterally in relation to the grinding cone. The dresser can be swung out after dressing operation is over. Even though any angle upto 120° can be dressed with the help of this dresser, 60° position is accurately set by inserting a dowel pin in the dresser.

A flat button diamond eliminates inaccuracies in the dressed form arising out of errors in bringing the diamond point exactly in the plane passing through the centre line of the grinding cone.

Note: Planetary motion is arrested during the dressing cycle by inserting a cylindrical pin in the pulley driving the planetary spindle. It also prevents the planetary drive motor being switched on accidentally.

Planetary motion: The radius of the planetary circle can easily be adjusted and locked in setting to suit the job requirements.

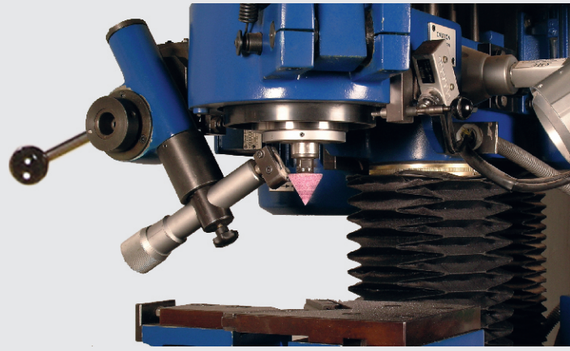
Centre Locator: A swing down center locator comes in handy to adjust the jaws of the self-centering V-vice to clamp different job configurations such as eccentric shafts, gears and other non-round profiles.

Tail stock: A tailstock unit carrying a dead centre slides on the machine column to support the lower end of the work-piece while the upper end is clamped in the V-vice when the centre is being ground.

Lubrication: The high speed grinding spindle and the planetary quill units are grease lubricated for life and need no further attention. Oil nipples are provided at conveniently accessible points on the machine to facilitate lubrication of various moving elements regularly.

Safety guards: The grinding area is provided with a plexiglass swivelling guard and metal guard protects the pulley drive mechanism at the top of the grinding head.

Protection bellows & Covers: The steel ram supporting the grinding head is protected by a neoprene rubber bellow and telescopic metal guard protects other sliding surfaces on the V-vice and guide bar.



Dressing unit in operation

Standard Accessories:

1 electrical panel with contactors, protection fuses and relays.
1 standard spindle dia. 52mm with pulley dia. 21mm mounted for 34000 rpm.
1 additional pulley dia. 32 mm for 22000 rpm
1 additional pulley dia. 60 mm for 12000 rpm
1 Grinding cone dia. 20
1 Grinding cone dia. 32
1 Grinding cone dia. 40
1 Dressing diamond with holder
1 long centre fitted to tailstock
1 set of service tools
1 Oil gun
3 Operators manual

Special Accessories:

- Tungsten carbide rollers for V-vice
- 3 point steady
- Motorised work drive unit
- Machine lamp with 24v
- Dust extraction unit full kit
- Rotating centre for tailstock
- Collet holder and collets for work drive unit
- Three jaw self centering dia. 165mm face plate
- Magnetic chuck dia. 160mm
- Special tailstock centre (custom made)
- Special V-vice jaws modified to suit the specific job Carrier arrangement
- Sparewheel arbors and cones
- Clamping arbor for short work piece
- Quick action tailstock
- High Frequency Spindle 70000 rpm with static converter

GRINDING ACCURACY