CHRISTEN

Precision Drill Point and Step Drill Grinding Machine

CHRISTEN 1-32

1-32 / 100 A equipped with special accessories

Main Features

Universal design for standard and special grinding operations

Continuous work spindle rotation prevents from dividing errors in respect of flute inaccuracies

Point grinding, web thinning, step drill grinding and cutting edge corrections can be done in one clamping

Grinding of right and left hand tools with two or more flutes

Universal setting possibilities of work head for special grinding operations

Maximum concentricity achieved by clamping the drill on the lands

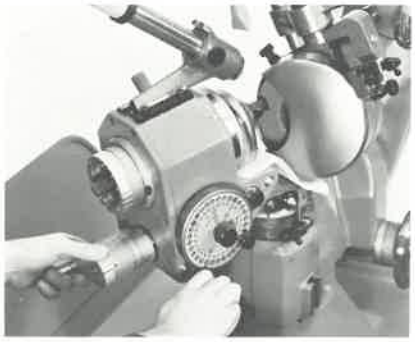
Stepless clamping range from 1 – 15 mm (.040 – .600") with reduction jaws and from 14 – 32 mm (.550 – 1.250") with main jaws

No limitation to drill length due to open ended chuck arrangement

Fast grinding wheel change without the use of tools

Well-designed range of accessories including optical setting and measuring attachments

Design Details



a b

Drill Point Grinding

a) Radial relief grinding

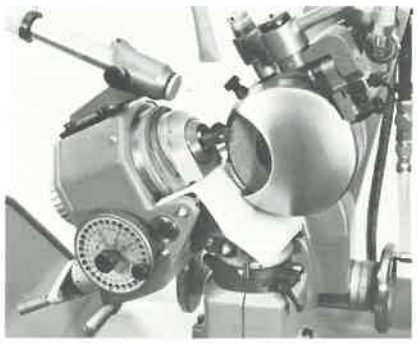
The drill is clamped in position with the help of the length setting gauge and then orientated. By turning the workhead handwheel with the right hand the drill is made to perform the following movements:

- Rotation
- Horizontal swivel
- Vertical lift

With the left hand, the workhead is pressed against the swivel mechanism, and infeed is effected by turning the feed drum. Left-hand drills can also be ground, and for this purpose the workhead is according to the point angle positioned to the right-hand side of the wheel head.

b) Four-facet grinding

Clamping to correct length and orientation of the drill is as for radial relief point grinding. The actual grinding movement however is effected by the wheelhead. The drill is indexed to four setting positions by means of the hand wheel. The index movements are controlled by stops.



c d

Chisel Edge Thinning and Cutting Edge Correction

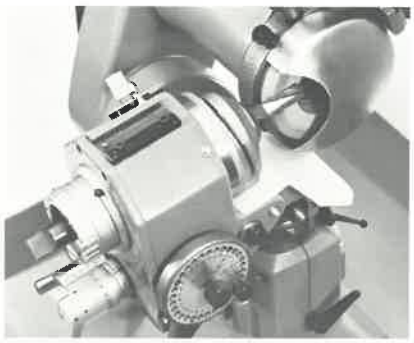
Following the point grinding and in the same setting, the point can be thinned on the chisel edge and, if required, the cutting edge corrected.

c) Thinning of chisel edge

The workhead is lowered and swivelled round to be in line with the face of the grinding wheel. After releasing the clutch, the angle positioning of the drill can be reset. By means of the cross feed, the drill is brought into the grinding position. For thinning the second cutting edge, the wheel head is retracted and the workhead indexed by 180°, the wheel head is then brought forward to the same depth.

d) Cutting edge correction

For correcting the cutting edge or front rake, the procedure is as for point thinning, except for the angle positioning of the workhead, which is set to give the required front rake, max. front rake 20°.
Drills with corrected cutting edges are mainly used for critical drilling operations. The cutting edges on corrected drills are exactly concentric, i. e. irregularities of the flutes are removed.



Grinding of Step Drills

Step drills may be produced from standard twist drills, or alternatively existing step drills reground. With the help of the pilot relieving attachment, available as additional equipment, cylindrically ground pilots can be relieved.

The illustration shows the machine set up for cylindrical pilot grinding or relief grinding of step drills.

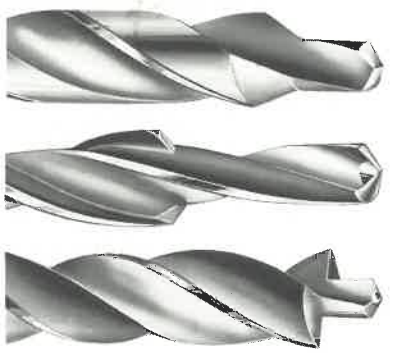
The workhead axis is set and secured parallel to the grinding wheel face. The pilot diameter is ground to size with the workhead displaced laterally by means of the cross-feed arrangement. For cylindrical pilot grinding the horizontal swivel and vertical lift movements are disengaged. For relieving step drills the vertical lift is brought into operation, and for counterbore angles under 180° the grinding wheel chamfered to correspond.

For accurate length and angle measuring, a special length and angle measuring attachment is available as additional equipment. This attachment permits optical grinding of step drills to close limits.

Grinding Examples

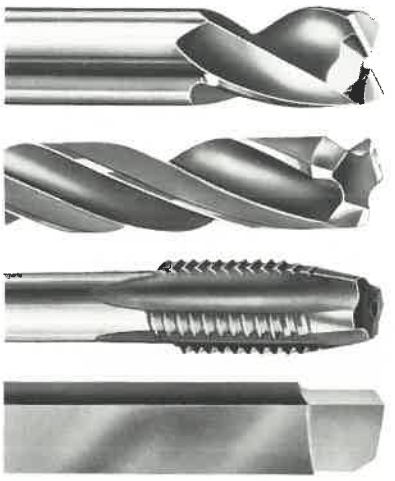
Point Grinding

Where in the past conventionally ground drills were adequate, special precision ground points are now required to meet the modern machining requirements.
Concentrically ground points with equal lip height permit drilling of accurate holes, whereby reaming operations can be saved or at least facilitated.
With the CHRISTEN 1-32 Drill Point and Step Drill Grinding Machine, these special and exacting requirements in respect of radial relief, self-centring 4-facet, 6-facet or special point grindling with corrected cutting edges are achieved. On the left, some drill point examples are illustrated.



Step Drills

By using step drills, drilling operations can be combined and production rates increased. On NC-machines, the tooling stations can be reduced and time consuming position movements eliminated.



Various Tools

The CHRISTEN 1-32 Drill Point and Step Drill Grindling Machine can also be used as an universal tool grinding machine.
Key-way milling cutters, core drills, taps and turning tools can be ground very efficiently.
The hand wheel is designed for dividing operations up to max. 60 divisions. The illustration shows some sample tools.

Technical Data

Drill Point and Step Drill Grinding Machine CHRISTEN 1-32/100A

Grinding capacity		
Tools with cylindrical shank, left and right hand cutting	0.040 – 1.250" (2")*	1 – 32 mm (52 mm)*
Tools with morse taper shank		0, 1, 2, 3
Tool length		unlimited
Number of flutes resp. possible divisions		2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
Point angle		60 – 180°
Relief angle		up to 15°
Position of chisel edge to cutting edge		standard 55°
Maximum pilot length		50 mm
Grinding wheel, special cup type outside-/inside-Ø x width x bore		150/82x40x50 mm 5.90/3.23x1.57x1.97"
Dimension of machine	31.5x31.5x50"	800x800x1250 mm
Net weight with standard equipment		255 kg/560 lbs.
Gross weight packed in case		400 kg/880 lbs.

* possible with additional grinding attachment 32 – 52 mm (1.250 – 2"), for radial relief point grinding on right hand cutting drills

Special executions

Drill Point and Step Drill Grinding Machine
CHRISTEN 1-32/101A with automatic grinding wheel oscillation
or
CHRISTEN 1-32/102A with automatic grinding wheel oscillation, work head spindle drive and automatic work head positioning

The advantages of these automatic machines are
- increased grinding efficiency
- even grinding wheel wear
- reduced downtime
- improved operating comfort

which is particularly valuable where a machine is in constant use and where the type of drills to be ground is suitable for automatic grinding.

Special accessories

According to application, the machine can be equipped with selected additional equipment and the range covers the following
- optical length and angle measuring attachment for accurate grinding of step drills
- setting and inspection microscope for point grinding
- grinding wheel dressing attachment
- dust extraction equipment
- pilot relieving attachments for step drill production
- flute grinding attachment
- additional grinding attachment 32 – 52 mm (1.250 – 2") for radial relief point grinding on right hand cutting drills
- coolant tank with magnetic- and paper-filter
- special reduction jaws for chuck arrangement
- grinding wheels in various forms, grit sizes and hardness grades
- handwheel for easy clamping of small drills
- additional handwheel to wheel head movement for left hand grinding range
- grinding wheel balancing device
- tool cabinet

For more details please ask for the 24-page catalogue.

We also supply Universal Tool and Cutter Grinding Machines AU-100 and AU-200 NC. Details available on request.

Other Drill Grinding Machines in the CHRISTEN line

Please request corresponding catalogues

Drill Grinding Machine CHRISTEN 01 – 2A

Designed for point grinding on right- and left-hand cutting twist anf flat drills in HSS or carbide within the range from 0,1 – 2 mm (.004 – .080")
Setting range: point angle for right- and left-hand cutting drills 60 – 180°, relief angle 0 – 16°
Grinding method: two-facet point grinding

Drill Grinding Machine CHRISTEN 05 – 10

Designed for point grinding and point thinning on right- and left-hand cutting twist and flat drills in HSS or carbide within the range from 0,5 – 10 mm (.020 – .394")
Setting range: point angle for right- and left-hand cutting drills 60 – 180°, relief angle primary 0 – 30° and secondary fix at 30°
Grinding method: two-facet or self-centring four-facet or six-facet point grinding and point thinning

Production Drill Point Grinding Machines SELECT-O-MATIC 01 – 6MC and 01 – 6AMC

Designed for point grinding on right- and left-hand cutting twist and flat drills in HSS or carbide within the range from 0,1 – 6,35 mm (.004 – .250")
Setting range: point angle for right-hand and for left-hand cutting drills 90 – 180°, primary relief angle 0 – 20° and secondary relief angle 20 – 40°
Grinding method: two-facet or self-centring four-facet point grinding

NEW: with Point Thinning Device

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Subject to modification in design

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