STronik XL

Machine working by interpolation between the cutting tool radius and spindle axis. The single point cutting tool generates the profile of the valve seat.

Machine specifically appropriate for mass production machining of medium and large size cylinder heads. The most versatile machine on the market as it can be operated fully automatic for large batches or manually for a single job.

Machining capacity from 14mm to 124mm / 0.55'' to 4.88''.

Patented lightweight workhead : built-in spindle motor and triple air-float centering system. Minimal workhead inertia and maximal floatation for unmatched centering sensitivity.

Built-in hollow shaft spindle motor, variable speed from 0 to 2000 RPM. High machining accuracy even at low speed due to total lack of mechanical transmission.

U axis controlled by induction motor can reach a cutting feed rate up to 300 mm/min. Intake and exhaust seats can be performed simultaneously without tool holder changes.

Mechanical clamping of the work head on the machine bed with pneumatic clamping jack.

Modern modular machine bed design for improved rigidity.

PCT Patent 2011/147770
Patent U.S.A. N° 5,769,576
European Patent N° 0833711

www.STronik.com
www.SERDI.com

SERVICE QUALITY RELIABILITY

World Class Technology

SERDI

SPINDLE SPECIFICATIONS

Built-in motor-spindle with maximum torque from 0 to 2000 rpm generated by a CNC spindle machine tool type with rotor «rare earth» magnets.

This spindle includes the U axis Komtronic system by Komet, powered by a induction driven brushless motor with no backlash and minimum temperature rise. The whole weight is equally divided above and below the sphere, which keeps the self-centering light and accurate.

The 310 mm (9.64") stroke allows the combined machining of the seat and guide with lengths exceeding 100mm.

The most powerful single point spindle on the market (4 KW - 5.5 HP) allows both rough (cutting depth up to 0.5 mm) and finishing machining.

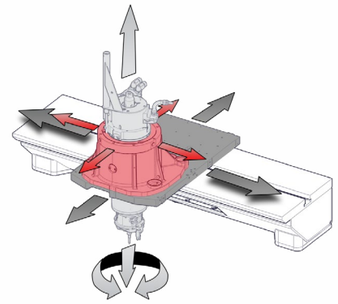
COOLING SYSTEM

Optional system with removable front covers for loading and un-loading of cylinder heads. Useful when guide reaming is necessary and when cutting tools lifespan needs to be extended. The coolant flow is filtered in the removable tank and a pump sends it back to the machine head.

TRIPLE AIR CUSHION

Our triple air cushion and built-in motor spindle decreases dramatically the free floating parts weight during centering which improves speed and accuracy.

It automatically alignes each valve guide regardless of any misalignment or angular deflection.
Self leveling spindle into head guide.

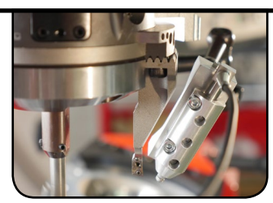


CONVERSATIONAL CNC

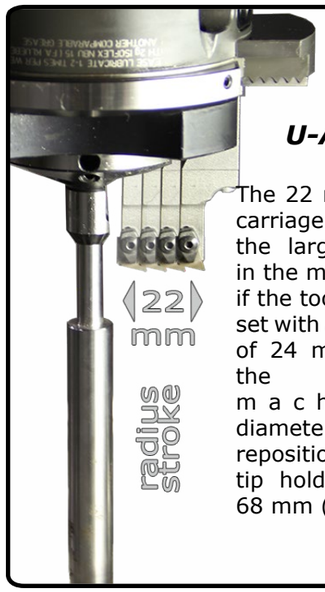
U, X, Y and Z axes are digitally controled by a standard CNC Siemens 828D. Single point cutting allows to machine any profile you want.
The collaboration between Serdi and Siemens will ensure a continuous development of the product and a worldwide customer service.

MACHINING DEPTH MEASUREMENT

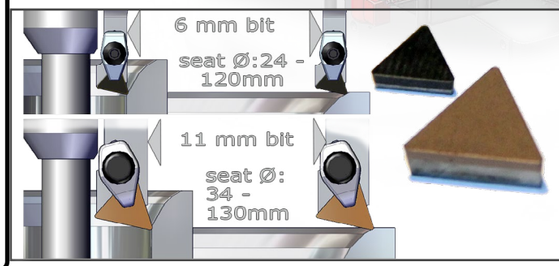
Depth measurement made by an analogic LVDT (Linear Variable Distance Transformer) gauge to guarantee the same accurate machining depth on all the seats.



U-AXIS



The 22 mm (.86") carriage travel is the largest range in the market:
if the tool holder is set with a diameter of 24 mm (.95"), the maximum machining diameter without repositionning the tip holder will be 68 mm (2.7").



Our standard tooling allows a seat diameter machining range from Ø 14 to 124 mm.

Seats with hardness over 60 HRC, which is especially common in gas application, can be easily machined thanks to full CBN cutting bits.

SUPPORT TABLE

The support table is mounted on two guiding rails. It can move cylinder heads up to 850 kgs (1870 lbs) back and forth. The translation is ensured by a ballscrew and a planetary gearbox for a perfect accuracy and repeatability without backlash.

STronik XL
INTERPOLATION TECHNOLOGY
co-developed with KOMET
driven by SIEMENS

Applications:

Heavy diesel:

Stationary engines:

Marine:

Racing:

Motorcycle:

Automotive:

SERDI cutting system «STK» tooling range for STronik single point seat machining

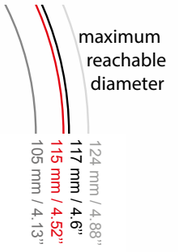
Bit holder

STK-115 Designed for heads with deep valve seats, such as hemispheric heads or heads with important canted valve angles.

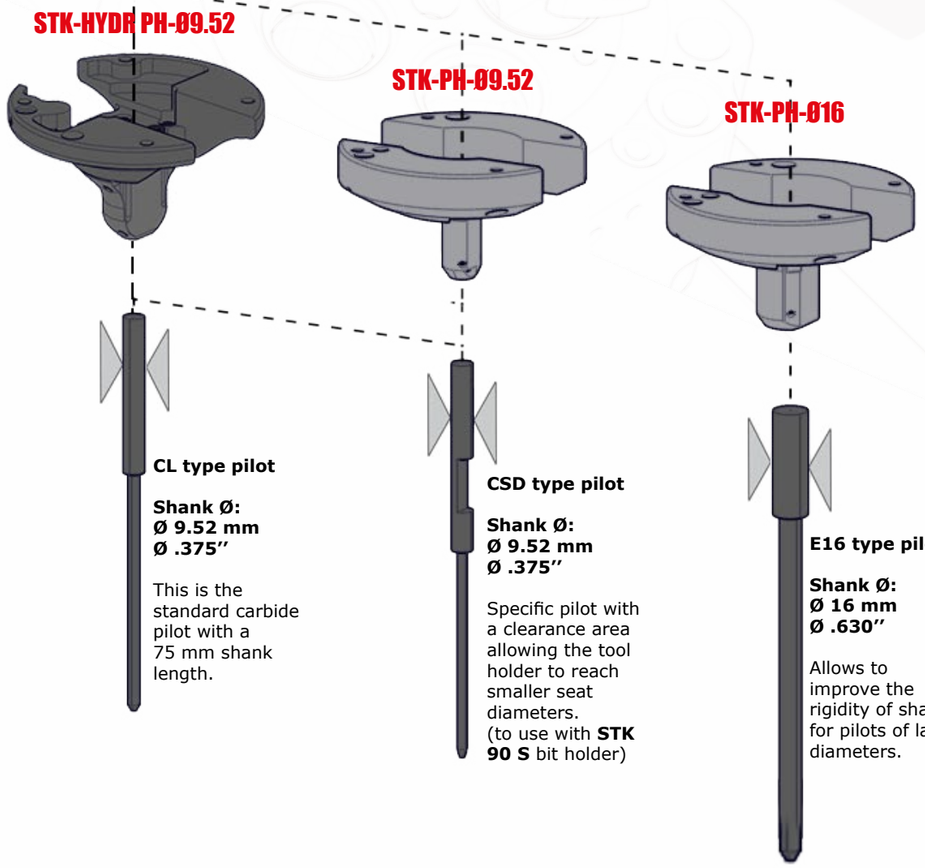
STK-90 To machine deep valve seats

STK-90S Designed for small seat diameter (until 14 mm).
To use with a CSD pilot when the diameter to machine is lower than 24 mm.

STK-75 To machine large valve seats



Pilot holder

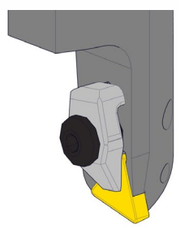


STK-HYDR PH-Ø9.52 Hydraulic clamping of standard Ø9.52 mm shank pilots.
The pilot is hold in a concentric way in its bore, allowing to reach an accurate concentricity without settings.

STK-PH-Ø9.52 Allows the mounting of standard Ø9.52 mm shank pilots. The pilot is hold firmly through six setting screws, allowing to reach a very accurate concentricity.

STK-PH-Ø16 Allows the mounting of Ø16 mm shank pilot for large guides. The pilot is hold firmly through six setting screws, allowing to reach a very accurate concentricity.

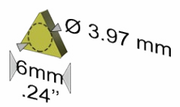
Pilot



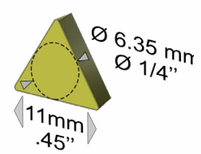
Machining is performed with a CBN bit, allowing to cut easily seats with hardness over 60 HRC.

The full face coating ensures a longer life span.

CBN 6 mm bit



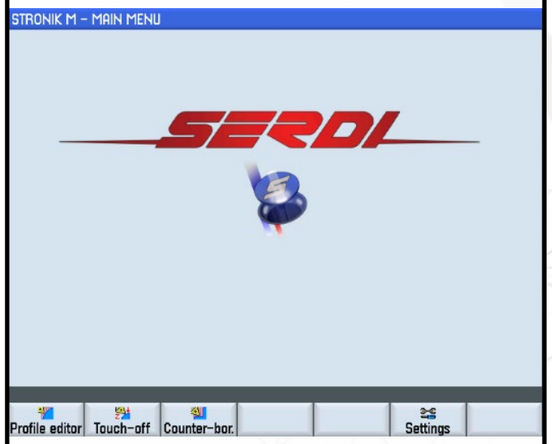
CBN 11 mm bit



Once the first tip is damaged, the bit can be flipped to pursue machining.

Full face coating obliges mounting with a small clamp. If you're using or want to use different bits that the one supplied by Serdi, the bit holder owns another tapped hole allowing mounting of 6 mm bit with a central through hole.

Have a quick access from the main menu to the application that best suits your needs:



Easy & intuitive profile editor – fully conversational. No CNC programming knowledges needed.

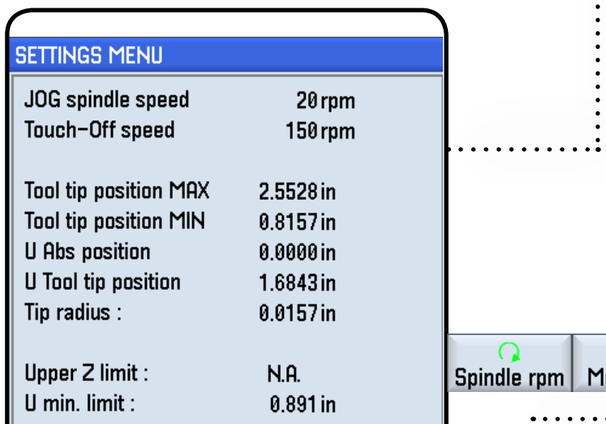
Profile editor

Interface for touching-off the seat and adjusting the LVDT probe. Must be done when changing from one project to the other.

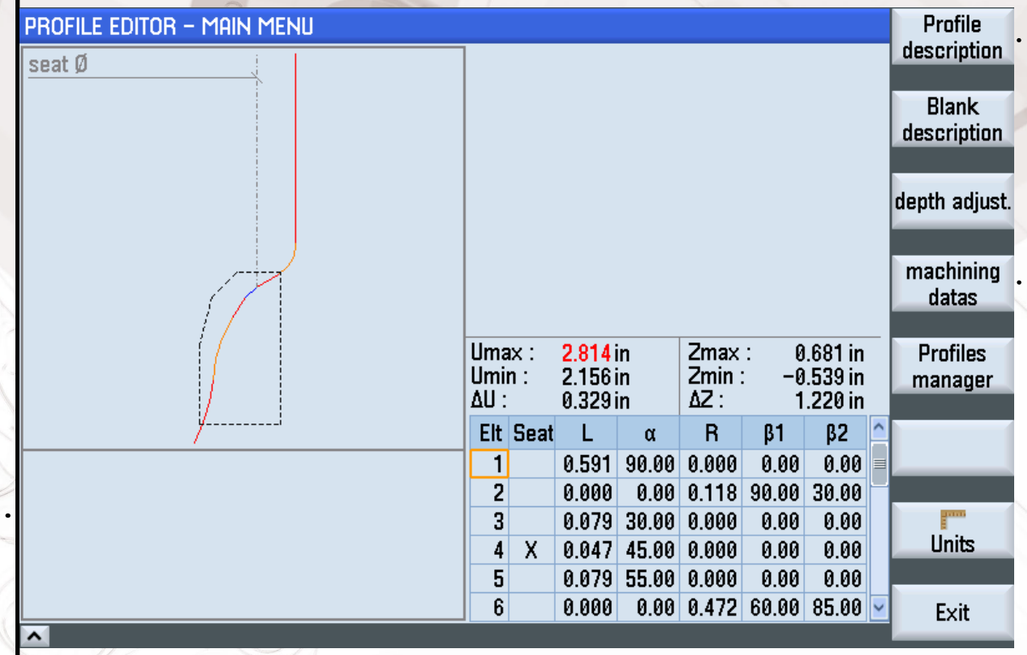
Touch-off

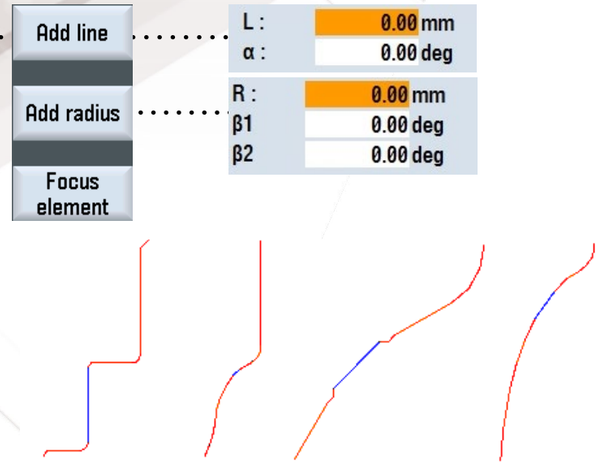
Settings interface

Settings



A much simplified Settings interface where only the necessary features are available.

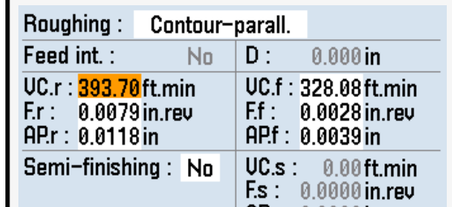




Endless profile possibilities !

Profiles manager — To store previously created profiles

Units — Regardless of the current machine measuring system, the profiles can be built using inches or metric.



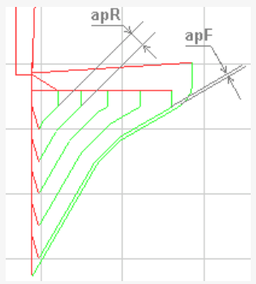
Features a chip breaking option as well as a semi-finishing option.

Constant cutting speed offer an even surface finish along the whole profile.

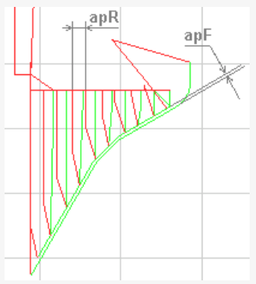
The LVDT (Linear Variable Distance Transformer) sensor can be disabled, for a "on the fly" cut.

3 roughing strategies available to match best any situation.

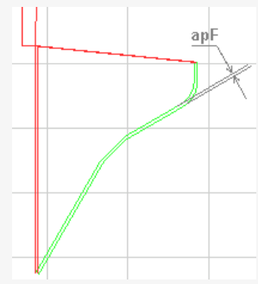
Contour-parallel



Longitudinal



Re-cut

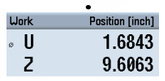


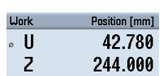
Caliper

Direct meas.

Tip radius

Tool position measurement. Shall be done whenever it was taken apart or a new insert style is used.





Display unit system switch over. Does not affect the profiles dimensions.

Some stroke limitation can be set for both the spindle and tool carriage to ease the manual moves and prevent any collision.

Preview simulation function, allowing to display and vizualise the toolpath to realise in order to prevent tool collisions.

TECHNICAL FEATURES

Space requirements		
Length	mm / inch	2765/109
Width	mm / inch	1150/45.3
Height	mm / inch	2320/91.4
Max cylinder head dimensions		
Length	mm / inch	1370/54
Width	mm / inch	500/19.7
Height	mm / inch	820/32.2
Table travel (Y-axis CNC driven)		
	mm/inch	300/11.8
Machining capacity Ø min - max		
	mm	14 to 124
	inch	0.55 to 4.88
Workhead travel (X-axis CNC driven)		
Lengthwise	mm / inch	1440/56.7
Crosswise	mm / inch	40/1.6
Sphere-cylinder travel	mm / inch	14/0.5
Spindle		
Max. spindle inclination	degrees	5
Spindle travel	mm / inch	310/12.2
Spindle motor power	KW / HP	4 / 5.5
Spindle rotation speed	RPM	0 to 2000
Connections		
Power supply	6.3kVA-3x400V-N+PE-50/60 Hz	
Pneumatic supply	bar / psi	6/87
Max. air flow	l/mn -CFM	400/15
Noise level at 400 RPM	Dba	72
Noise level at 1200 RPM	Dba	82
Net weight approx.	kg / lbs	1750/3439

AUTOMATIC / MANUAL MODE

The machine owns two driving mode:

- **Full automatic**: in this mode, the machine drives all the axis, this is useful for mass production when several batches of one type of cylinder head needs to be machined.

- **Manual mode**: in this mode, the operator moves the head manually from one seat to another and then the machine operates the machining automatically. This is useful when a single cylinder head needs to be machined by avoiding to create a program for X and Y positions.

OPTIONAL FEATURES

Cooling system

Allows to avoid excessive cutting heat damaging cutting bits on the hardest seats. Improves lubricity, increases tool life and the finishing level. Requires the installation of sealed metal sheet covers, removable decantation tank and hydraulic pump.

MACHINES SERDI S.A.

23, avenue des vieux moulins
B.P. 380
74012 Annecy Cedex
France
00 33 4 50 65 63 00
Fax: 00 33 4 50 52 99 92
www.serdi.com
Email: export@serdi.com

SERDI CORP.

1526 Litton Drive
Stone Mountain
Georgia 30083
USA
(770) 493 82 20
Fax: (770) 493 83 23

Your distributor: