



# ROAD TESTED

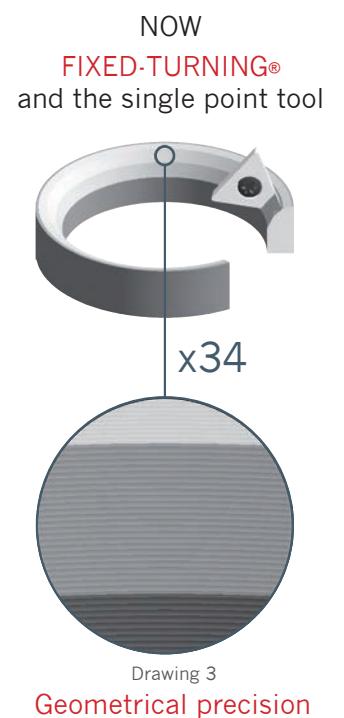
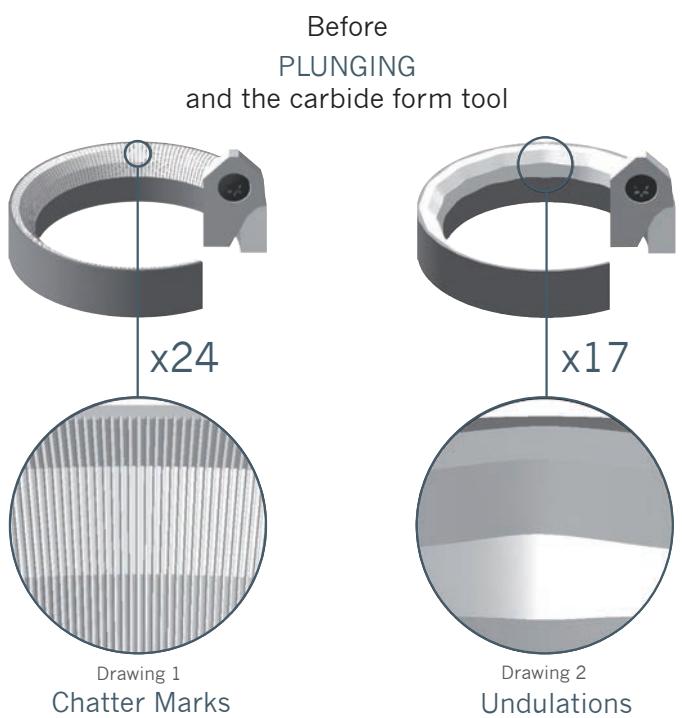
They machined, they outclassed --- and then they reviewed.  
See why professionals like you are loving them.



CNC valve seat machining by interpolation of axes

VISION™  
SERIES™

## Valve seat machining, one century of evolution and ... the solution!



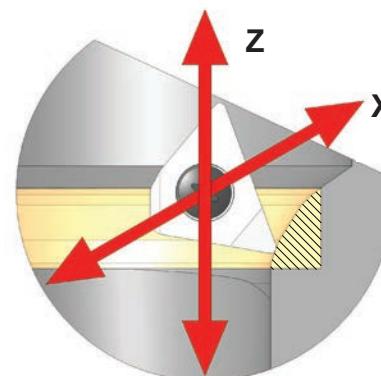
The lapping of powder metal valve seats, or of some cast iron valve seats, brings about unavoidable chatter marks. Chatter marks are very harmful to a valve since gases escape through them while the valve is shut.

The machined valve seat will consequently deform rapidly and its seal will never be adequate. Chatter marks result from carbide form tools scrapping a large surface of a material with a grainy structure made of different materials (such as powder metals, nodular cast irons...).

Traditional valve seats machined with the lapping technique (form tools), all present undulations measuring hundredths of millimeters that are the direct result of irregular cutting efforts on a 360 degree rotation. The resultants of changing cutting efforts transmit irregular forces on machine spindles that will flex more or less depending on the machine and will yield irregular shapes. This phenomenon, well known by operators of manual machines, is compensated for, when large visible defects appear, with quick and forceful pressure on the spindle command.

The above results in considerable spindle efforts and, while it can help smooth out small defects, it can in no way rectify the geometry.

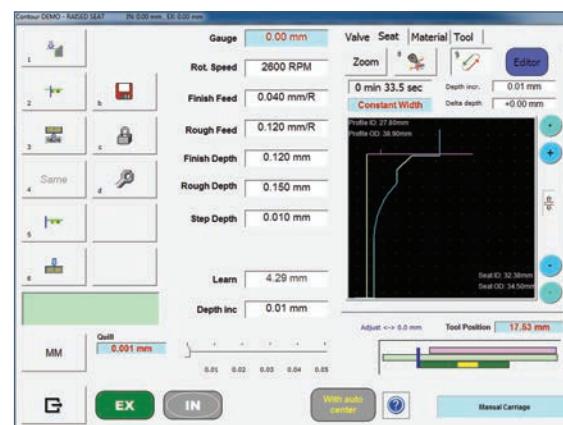
These undulations, inherent to the very principle of machining by lapping, have unquestionable consequences on valve sealing and require further lapping of each valve on its valve seat to obtain an acceptable seal. Valve lapping, so far accepted out of necessity by engine builders and their customers, has long been banished by engine manufacturers and anyone seeking the minimum quality required by todays engine generations.



## FIXED-TURNING®, the tool that increases one's skills tenfold...

Like the principle of the turning lathe, FIXED-TURNING® is based on the simultaneous shifting of a single-point cutting tool around two axes (x, z). Unlike the lathe where the piece rotates, FIXED-TURNING® sees the tool rotating beyond its two axes (x, z) while the piece (cylinder head) remains still.

The tool, piloted by a numerical system, has the capacity to describe the longest profiles (within the limit of the spindle) together with the most complex ones, including radii, straight lines and diverse concave or convex curves. Like a precision lathe, the FIXED-TURNING® tool machines the most complex shapes with the highest precision.



FIXED-TURNING® carries out different operations, including curves, straight lines, inclined in all directions. The NEWEN® numerical control pilots the shifting of the tool so that the cutting section remains identical regardless of the portion of the machined profile. A powerful computer continuously calculates the optimal trajectory of the tool so that the cutting efforts are consistent and reduced to a minimum. Every single shaving, calculated within fractions of a second, is produced in such way that no fluctuation of the cutting efforts can disrupt the balance and the flexibility of the spindle.

FIXED-TURNING® performs a perfect operation and ensures the air-tightness of the valve seats.

The custom-developed NEWEN® electronic board pilots the numerical axes with an extreme precision and guarantees total uniformity. The computer and its flat touch-screen represent the most user-friendly interface for an operator who shall be freed-up of the programming constraints using the NEWEN® software that enables him to carry out the most complex operations without necessarily having any programming skills. The machining programs are automatically optimized and memorized for the operations to follow one another while the precision repeats itself endlessly.



As in many other domains,  
the NEWEN® numerical control  
frees-up the operator and guarantees  
the excellence of a professional





# CONTOUR-BB™

a technology concentrate!

**FIXED-TURNING®** numerically controlled axes driven by satellite roller screws and servo-motors of the latest generation. A precision of the tool travelling by interpolation is measured in thousandths of mm.

Z-axis ( 250 mm / 9.84'') mounted on linear ways authorizing any cylinder head position while guaranteeing systematic balancing of the spindle. Increased work capacity and increased machining precision. A NEWEN® exclusive.

The spindle is built into in the machine head moving on the x,y axis owing to an air cushion. Automatic centering with programmable temporization. Automatic re-centering of the spindle with pneumatic jacks.

Control panel fitted with push-buttons, protected by an interchangeable lexan, and a multifunctional electronic wheel. Precision. Reliability.

Machining spindle mounted on special high precision bearing, greased for life. Powerful transmission via machined high precision spiral-bevel pinion set.

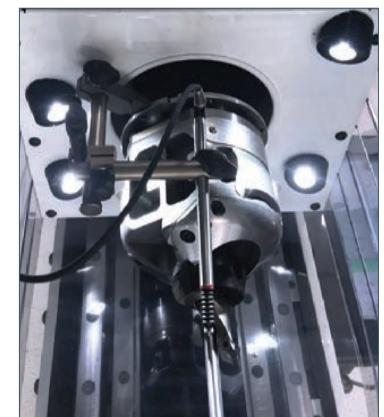
SGC200M , palletizable™, 360° double-angle manual rollover clamping fixture. Allows quick positioning of most cylinder heads regardless of the valve guide angles. Also allows to simply raise cylinder heads to any desired level and to roll them over for various jobs. This patented system is quick, universal, very rigid, user friendly and does not put any stress on cylinder heads owing to its independant jaws and spherical collet clamping system.

Machine parallels mounted on linear ways, greased for life, entirely protected. Simple, fast and efficient mechanical lock to ensure effortless positioning of any cylinder head.

Stress relieved welded frame coated with industrial resin, resistant to any chemical agent (High frequency stabilization during welding).



Machine head, pressurized by constant air flow for protection of all the precision mechanical components against metallic operating dusts.



Built-in low-voltage multipoint lighting (LEDs) -- cold light. The work area is particularly well lit, the control of the finished work is improved and, consequently, the operator's fatigue is reduced.

NEWEN FIXED-TURNING® machining head featuring patented friction-free, pinion-free and maintenance-free kinematics, capable of machining with the highest degree of precision, year after year. Pilot centered and held by an original and particularly efficient crush sleeve system.

15" Fanless Industrial PC of the latest generation, IP65, with built-in flat touch-screen. A user-friendly and intuitive dialogue between the machine and the operator. Unlimited memory capacity.

Solid honeycomb-design machine upper ways confers stability, longevity and precision to the machine.

Electronic and electric components interconnected with quick plugs. Electronics entirely protected with stand alone suspended shock-proof cabinet. Electronics conceived and produced by NEWEN®.



CNC valve seat machining by interpolation of axes

World Patents: 6,086293; 6,382883B1; 6,382,884B1...



## Technical Characteristics

**NEWEN® CONTOUR-BB™ :**  
2-Axis Single Point CNC Valve Seat & Guide Machine.  
NEWEN FIXED-TURNING® MACHINING PROCESS (PATENTED)

X-Axis, machine head travel, longitudinal head travel (distance from guide to guide - X) 760mm (29.92")

Y-Axis, machine head travel 60mm (2.36")

Y'-Axis, machine parallels travel, mounted on linear ways 200mm (7.87")

Z-Axis, machine head travel (vertical travel) , mounted on linear ways 250mm (9.84")

Z'-Axis, spindle sheath travel (for machining purposes only) 80mm (3.15")

X-Axis, carriage travel, automatic carriage displacement radius 22 mm in diameter  
(ex : if tool set with a diameter of 20 mm, max machining dia without repositioning tip holder 42mm)

Machining capacity 13.5mm - 100+mm (.53" - 3.94")

Valve guide reaming capacity 65mm (2.56")

Possible Profiles unlimited

Material to be machined Any material, from aluminum to tempered steels

Spindle rotation speed 300-2500 Rpm

Spindle motor 1.5 HP

Spindle, Feed and Carriage motors Servo Motors

Hydraulic unit 200 Bars (2,900psi)

PC 15 "Industrial type with touch screen

Connections RS232 – Ethernet Centronics – USB

Operating System Windows 7 Pro

Electronic suspended cabinet with interchangeable filter

Built-in low-voltage multipoint lighting (LEDs)

Electronic depth gauge LVDT

Numerical control NEWEN®

Software NEWEN®

## CYLINDER HEAD DIMENSIONS

Maximum height (w/o removing pilot) 315mm (12.40")

Maximum length unlimited

Maximum width Approx. 450mm (17.72")

## MACHINE DIMENSIONS

Maximum machine height 2205mm (86.81")

Maximum machine width 1460mm (57.48")

Maximum machine depth 1327mm (52.24")

Machine net weight 800 Kg (1764 Lbs)

Machine gross weight 980 Kg (2160 Lbs)

Voltage 220V Single Phase, 50-60 Hz

Air Pressure Mini 6 bars, 90 Psi

## PACKING DIMENSIONS

Height 2090 mm

Depth 1380 mm

Length 1390 mm

**FIXED-TURNING**  
*Unmistakably the best!*





# CONTOUR™

the extra comfort!

**FIXED-TURNING®** numerically controlled axes driven by satellite roller screws and servo-motors of the latest generation. A precision of the tool travelling by interpolation is measured in thousandths of mm.

Z-axis ( 250 mm / 9.84") mounted on linear ways authorizing any cylinder head position while guarantying systematic balancing of the spindle. Increased work capacity and increased machining precision. A NEWEN exclusive.

The spindle is built-in the machine head moving on the x,y axis owing to an air cushion. Automatic centering with programmable temporization. Automatic re-centering of the spindle with pneumatic jacks.

Control panel fitted with push-buttons and protected by interchangeable lexan, multifunctional electronic wheel. Precision. Reliability.

Machining spindle mounted on special high precision bearing, greased for life. Powerful transmission via machined high precision spiral bevel pinion set.

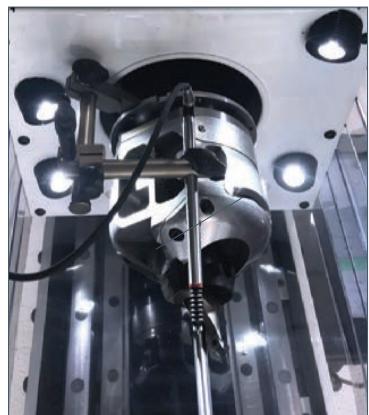
SGC200M , palletizable™, 360° double-angle manual rollover clamping fixture. Allows quick positioning of most cylinder heads regardless of the valve guide angles. Also allows to simply raise cylinder heads to any desired level and to roll them over for various jobs. This patented system is quick, universal, very rigid, user friendly and does not put any stress on cylinder heads owing to its independant jaws and spherical collet clamping system.

Machine parallels mounted on linear ways, greased for life, entirely protected. Simple, fast and efficient mechanical lock to ensure effortless positioning of any cylinder head.

Stress relieved welded frame coated with industrial resin, resistant to any chemical agent (High frequency stabilization during welding).



Machine head, pressurized by constant air flow for protection of all the precision mechanical components against metallic operating dusts.



Built-in low-voltage multipoint lighting (LEDs) -- cold light. The work area is particularly well lit, the control of the finished work is improved and, consequently, the operator's fatigue is reduced.

NEWEN FIXED-TURNING® machining head featuring patented friction free, pinion free and maintenance free kinematics, capable of machining with the highest degree of precision, year after year. Pilot centered and held by an original and particularly efficient crush sleeve system.

15" Fanless Industrial PC of the latest generation, IP65, with built-in flat touch-screen. A user-friendly and intuitive dialogue between the machine and the operator. Unlimited memory capacity.

Solid honeycomb-design machine upper ways confers stability, longevity and precision to the machine.

Electronic and electric components interconnected with quick plugs. Electronics entirely protected with stand alone suspended shock-proof cabinet. Electronics conceived and produced by NEWEN®.

## Technical Characteristics

NEWEN® CONTOUR™ :	
2-Axis Single Point CNC Valve Seat & Guide Machine.	
NEWEN FIXED-TURNING® MACHINING PROCESS (PATENTED)	
X-Axis, machine head travel, longitudinal head travel (distance from guide to guide - X)	1240mm (48.82")
Y-Axis, machine head travel	70mm (2.75")
Y'-Axis, machine parallels travel, mounted on linear ways	200mm (7.87")
Z-Axis, machine head travel (vertical travel), mounted on linear ways	250mm (9.84")
Z'-Axis, spindle sheath travel (for machining purposes only)	80mm (3.15")
X-Axis, carriage travel, automatic carriage displacement radius 22 mm in diameter (ex : if tool set with a diameter of 20 mm, max machining dia without repositioning tip holder 42mm)	11mm (.43")
Machining capacity	13.5mm - 100+mm (.53" - 3.94"+)
Valve guide reaming capacity	65mm (2.56")
Possible Profiles	unlimited
Material to be machined	Any material, from aluminum to tempered steels
Spindle rotation speed	300-2500 Rpm
Spindle motor	1.5 HP
Spindle, Feed and Carriage motors	Servo Motors
Hydraulic unit	200 Bars (2,900psi)
PC	15 "Industrial type with touch screen
Connections	RS232 – Ethernet Centronics – USB
Operating System	Windows 7 Pro
Electronic suspended cabinet with interchangeable filter	
Incorporated low-voltage multipoint lighting (LEDs)	
Electronic depth gauge LVDT	
Numerical control	NEWEN®
Software	NEWEN®
<b>CYLINDER HEAD DIMENSIONS</b>	
Maximum height (w/o removing pilot)	315mm (12.40")
Maximum length	unlimited
Maximum width	Approx. 450mm (17.72")
<b>MACHINE DIMENSIONS</b>	
Maximum machine height	2205mm (86.81")
Maximum machine width	1923mm (75.71")
Maximum machine depth	1421mm (55.94")
Machine net weight	1200 Kg (1653 Lbs)
Machine gross weight	1410 Kg (3108Lbs)
Voltage	220V Single Phase, 50-60 Hz
Air Pressure	Mini 6 bars, 90 Psi
<b>PACKING DIMENSIONS</b>	
Height	2145 mm
Depth	1264 mm
Length	1948 mm





# CONTOUR-CS™

reach for the extreme!

**FIXED-TURNING®** numerically controlled axes driven by satellite roller screws and servo-motors of the latest generation. A precision of the tool travelling by interpolation is measured in thousandths of mm.

Z-axis ( 250 mm / 9.84") mounted on linear ways authorizing any cylinder head position while guaranteeing systematic balancing of the spindle. Increased work capacity and increased machining precision. A NEWEN exclusive.

The spindle is built-in the machine head moving on the x,y axis owing to an air cushion. Automatic centering with programmable temporization. Automatic re-centering of the spindle with pneumatic jacks.

Control panel fitted with push-buttons and protected by interchangeable lexan, multifunctional electronic wheel. Precision. Reliability.

Machining spindle mounted on special high precision bearing, greased for life. Powerful transmission via machined high precision spiral bevel pinion set.

Machine parallels mounted on linear ways, greased for life, entirely protected. Simple, fast and efficient mechanical lock to ensure effortless positioning of any cylinder head.

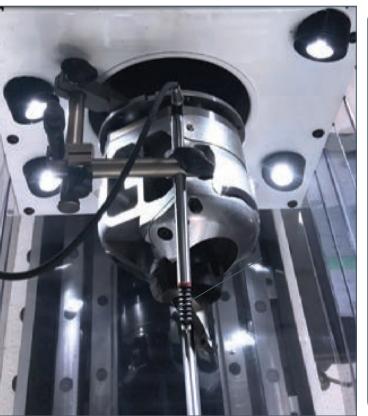
Stress relieved welded frame coated with industrial resin, resistant to any chemical agent (High frequency stabilization during welding).

- High output centrifugal pump controlled automatically by the software of the machine.
- Coolant circuit including an anti return bypass of the lubricant, flow adjustment valves and flexible tubing.
- Three level decanting tank with filtration basket for an efficient below 10 micron filtration.
- Clamping system and sealed /watertight tank mounted on bearing rails with pneumatic lock system.
- safety feature prohibiting the machine use when the part holding tank is not in a locked position.
- Double lexan doors open entirely, while traveling on play free bearing rails for unlimited life and highly comfortable use.
- Easy loading and unloading regardless of the dimension of the cylinder head.

NEWEN FIXED-TURNING® machining head featuring patented friction free, pinion free and maintenance free kinematics, capable of machining with the highest degree of precision, year after year. Pilot centered and held by an original and particularly efficient crush sleeve system.

Machine head, pressurized by constant air flow for protection of all the precision mechanical components against metallic operating dusts.

*CONTOUR-CS™,  
it is all the capabilities  
and possibilities  
offered by  
the CONTOUR™,  
plus the  
advantages of an abundant  
lubrication of the  
machining operations.*



Built-in low-voltage multipoint lighting (LEDs) -- cold light. The work area is particularly well lit, the control of the finished work is improved and, consequently, the operator's fatigue is reduced.

15" Fanless Industrial PC of the latest generation, IP65, with built-in flat touch-screen. A user-friendly and intuitive dialogue between the machine and the operator. Unlimited memory capacity.

Solid honeycomb-design machine upper ways confers stability, longevity and precision to the machine.

Electronic and electric components interconnected with quick plugs. Electronics entirely protected with stand alone suspended shock-proof cabinet. Electronics conceived and produced by NEWEN®.



## Technical Characteristics

NEWEN® CONTOUR-CS™ :	
2-Axis Single Point CNC Valve Seat & Guide Machine.	
NEWEN FIXED-TURNING® MACHINING PROCESS (PATENTED)	
X-Axis, machine head travel, longitudinal head travel (distance from guide to guide - X)	1240mm (48.82")
Y-Axis, machine head travel	70mm (2.75")
Y'-Axis, machine parallels travel, mounted on linear ways	200mm (7.87")
Z-Axis, machine head travel (vertical travel), mounted on linear ways	250mm (9.84")
Z'-Axis, spindle sheath travel (for machining purposes only)	80mm (3.15")
X-Axis, carriage travel, automatic carriage displacement radius 22 mm in diameter (ex : if tool set with a diameter of 20 mm, max machining dia without repositioning tip holder 42mm)	11mm (.43")
Machining capacity	13.5mm - 100+mm (.53" - 3.94+")
Valve guide reaming capacity	65mm (2.56")
Possible Profiles	unlimited
Material to be machined	Any material, from aluminum to tempered steels
Spindle rotation speed	300-2500 Rpm
Spindle motor	1.5 HP
Spindle, Feed and Carriage motors	Servo Motors
Hydraulic unit	200 Bars (2,900psi)
PC	15 "Industrial type with touch screen
Connections	RS232 – Ethernet Centronics – USB
Operating System	Windows 7 Pro
Electronic suspended cabinet with interchangeable filter	
Incorporated low-voltage multipoint lighting (LEDs)	
Electronic depth gauge LVDT	
Numerical control	NEWEN®
Software	NEWEN®
<b>CYLINDER HEAD DIMENSIONS</b>	
Maximum height (w/o removing pilot)	315mm (12.40")
Maximum length	unlimited
Maximum width	Approx. 450mm (17.72")
<b>MACHINE DIMENSIONS</b>	
Maximum machine height	2205mm (86.81")
Maximum machine width	1923mm (75.71")
Maximum machine depth	1421mm (55.94")
Machine net weight	1200 Kg (1653Lbs)
Machine gross weight	1410 Kg (3108 Lbs)
Voltage	220V Single Phase, 50-60 Hz
Air Pressure	Mini 6 bars, 90 Psi
<b>PACKING DIMENSIONS</b>	
Height	2145 mm
Depth	1264 mm
Length	1948 mm



## EPOC-VISION™ objective no-limit!

**FIXED-TURNING®** numerically controlled axes driven by satellite roller screws and servo-motors of the latest generation. A precision of the tool travelling by interpolation is measured in thousandths of mm.

Z-Axis (327 mm / 12.87''): Pantograph™ system (Patented) allows to raise or lower the machine head and spindle at the level of the valve seat to machine. The Pantograph™ is balanced and its movements are pneumatically assisted in order to conserve maximum feel while introducing the centering pilot within the valve guide. The Pantograph™ gives added rigidity to the whole machining head and provides a lot of flexibility. Increased machining precision. A NEWEN exclusive.

Control panel fitted with push-buttons and protected by interchangeable lexan, multifunctional electronic wheel. Precision. Reliability.

The spindle glides through a spherical housing supported by a double air cushion, spherical and plane. The combination between the rotation of the sphere and its movement on the x and y axes allows the sphere to take any position in space, without any constraint, and to align itself perfectly with respect to the valve guide. Automatic centering with programmable temporization. Automatic re-centering of the spindle with pneumatic jacks.

Modular upper bench to accommodate smaller size cylinder heads. Featured with SGC200M, palletizable™, 360° double-angle manual rollover clamping fixture. Allows quick positioning of most cylinder heads regardless of the valve guide angles. This patented system is quick, universal, very rigid, user friendly and does not put any stress on cylinder heads owing to its independant jaws and spherical collet system. Heavy duty table to accomodate cylinder heads weighing up to 2 tons and more. Simple, fast and efficient pneumatic lock to ensure effortless positioning of any cylinder head.



Electronic and electric components interconnected with quick plugs. Electronics entirely protected with stand alone suspended shock-proof cabinet. Electronics conceived and produced by NEWEN®.



Built-in low-voltage multipoint lighting (LEDs) .. cold light. The work area is particularly well lit, the control of the finished work is improved and, consequently, the operator's fatigue is reduced.

15" Fanless Industrial PC of the latest generation, IP65, with built-in flat touch-screen. A user-friendly and intuitive dialogue between the machine and the operator. Unlimited memory capacity.

Solid honeycomb-design machine upper ways confers stability, longevity and precision to the machine.

Stress relieved welded frame coated with industrial resin, resistant to any chemical agent (High frequency stabilization during welding).

**EPOC-VISION™ The Most Universal Machine Ever Built**  
Machine seats ranging in diameter from 13.5mm (.52") to over 240mm (9.45"), from the smallest multi-valve motorcycle cylinder heads to the largest cylinder heads weighing up to 3 tons or more.

- machine stellite valve seats at high speeds with CBN inserts for unparalleled geometry - not permitted by any other system.
- adjust actual valve seat angles at will, every one hundredth of degree.
- incomparable precision, flexibility and user friendliness.
- attain PERFECT SEAL between the valve seat and its valve, the first time, WITHOUT LAPPING.
- guaranteed concentricity owing to NEWEN's Patented centering system.
- guaranteed circularity, within 3 microns per 100mm increment, even on valve seats as large as 200mm in diameter.
- unparalleled speed of execution: 1 to 3 minutes to machine a 170mm valve seat.
- constant speed guarantees perfection each and every time, particularly critical on large diameter valve seats - not permitted by any other system.

### Technical Characteristics

**NEWEN® EPOC-VISION™ :**  
3+1 Axis Single Point CNC Valve Seat & Guide Machine.  
NEWEN FIXED-TURNING® MACHINING PROCESS (PATENTED)

1320mm (51.97")

X-Axis, machine head travel, longitudinal head travel (distance from guide to guide · X)

80mm (3.15")

Y-Axis, machine head travel  
Y'-Axis, machine parallels travel, mounted on linear ways

340mm (13.39")

Z-Axis, PANTOGRAPH™ system with hydraulic lock

327mm (12.87")

Z'-Axis, spindle sheath travel (for machining purposes only)

95mm (3.74")

X-Axis, carriage travel, automatic carriage displacement radius 22 mm in diameter  
(ex: if tool set with a diameter of .20 mm, max machining dia without repositioning tip holder 42mm)

11mm (.43")

Machining capacity

13.5mm - 240mm (.53" - 9.45")

Valve guide reaming capacity

90mm (3.54")

Possible Profiles

unlimited

Material to be machined

Any material, from aluminum to tempered steels

Spindle rotation speed

10-3500 Rpm

Spindle motor

5 HP AC Servo

Spindle, Feed and Carriage motors

Servo Motors

Hydraulic unit

200 Bars (2,900psi)

PC

15 "Industrial type with touch screen

Connections

RS232 – Ethernet Centronics – USB

Operating System

Windows 7 Pro

Electronic suspended cabinet with interchangeable filter

Incorporated low-voltage multipoint lighting (LEDs)

Electronic depth gauge LVDT

Numerical control

Numerical control

NEWEN®

Software

NEWEN®

#### CYLINDER HEAD DIMENSIONS

Maximum height (w/o removing pilot)

810mm (31.89")

Maximum length

unlimited

Maximum width

unlimited

#### MACHINE DIMENSIONS

Maximum machine height

2300mm (90.55")

Maximum machine width

2500mm (98.43")

Maximum machine depth

2215mm (87.21")

Machine net weight

1750 Kg (3858Lbs)

Machine gross weight

2050 Kg (4519 Lbs)

Voltage

220V Single Phase, 50-60 Hz

Air Pressure

Mini 6 bars, 90 Psi

#### PACKING DIMENSIONS

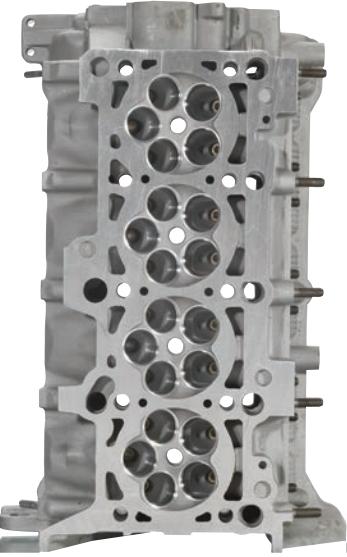
Height 2300 mm

2320 mm

Length 1800 mm



## FIXED-TURNING®, a New Era,



Machining the most difficult cylinder heads is achieved within mere minutes per valve seat for the longest profiles, specially made to enhance the output of the engine. The machining of a traditional "3-Angle" profile will be carried out within a few seconds.

Motorcycle cylinder heads, the smallest valve seats around and to come (downsizing, at the heart of all the new engine development programs) can be machined with utmost ease and the optimum precision of competition engines...



**12** NEWEN® machines allow each engine rebuilder to position himself as a specialist in the machining of all engine types. The precision that is achieved systematically when using FIXED-TURNING® machines applies to all the engine types, one no longer has to refuse getting involved in such or such machining on such or such cylinder head type, all the difficult machining operations become a source of additional and significant profits.

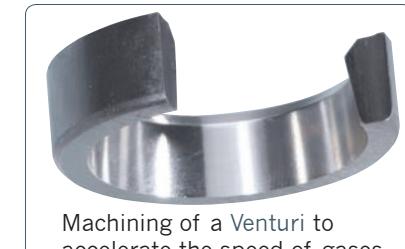


The high performance market, the mechanical leisure market, are within the reach of any engine rebuilder equipped with a FIXED-TURNING® machine.

All the precisions required in Formula 1 or any other demanding high performance mechanical sports can be attained automatically and systematically. Perfection is guaranteed.

High-Performance is a growing and lucrative market. The prestige of the high-level professional who gets involved in this specialty shines on his/her entire company.

Machine with precision all types of valve guides (cast irons, powdered metals, bronze, any alloys...).  
Ream valve guides with utmost precision, along with valve seat machining, or alone as a separate operation.



Machine all high-precision valve seat counterbores with one same cutting tool.

To prepare valve seat housings in all types of cylinder heads, cast iron or aluminum, a precise and profitable job for all the FIXED-TURNING® professionals.



## a New World of Opportunities...

The COGENERATION, also known as "Combined Heat and Power (CHP)", the transformation of engines to natural gas and bio-fuels (ethanol) requires rapid and precise machining operations of valve seat counter-bores and very hard valve seats.



The principles of cogeneration have long been known and put to use in a wide variety of applications.

Today, advances in ultra-clean natural gas fired reciprocating engine technology, heat exchangers and system controls, make cogeneration both practical and economical for applications in varying size range.



One aspect of power production that has influenced these advances is the ever increasing need for cleaner energy. Emissions control strategies that allow natural gas fueled internal combustion engines to be applied for CHP & ICHM applications at levels equal to or less than current large power plant standards, have further made Cogeneration more practical, economic and accessible for a broader range of commercial and industrial applications.

**13** FIXED-TURNING® is the ideal tool for these services which become easy, fast, precise and very profitable.

FIXED-TURNING® and its numerical control, it is the possibility to achieve the impossible in a profitable and repetitive fashion.  
A technology for all.



To machine all the cam bucket bore housings to oversize dimension in order to insert sleeves in the housings is a simple operation, precise and profitable with FIXED-TURNING®.



To machine the seats of Mercedes Actros decompressor valves, "it's child's play".



Another NEWEN exclusive:  
the machining of Spark Plug Housing.



Opt for FIXED-TURNING® Perfection,  
a technology for all  
and gain access to  
endless business  
opportunities...  
Your assurance of  
success!

KOMATSU Natural Gas Cylinder Head  
Valve Seat Hardness: 56/58HRC (573HB+ / 610HV50+)  
• Insert used: CNTR-FBN-1 • Cutting Speed: 180 m/min  
• Machining Mode: Dry Cut • Cutting Cycle: 28 sec/seat  
• Circularity : 1µ to 2.40µ • Surface Finish: 0.20Ra

## NO LIMIT

**Chatter Free**  
The untimely chatter marks destroying the surface finish of a valve seat has, for decades, been the engine rebuilders nightmare. No cutting tool design, no cutting method, no machine or tool brand have been able to solve this recurrent and fatal quality problem.

The origin of this misfortune lies in the very nature of the form-tools used. The highly developed profiles composed of multiple segments generate important and irregular cutting efforts giving life to more or less elevated frequency chatter marks.

Modern heads require minimum machining and very light cuts, making destructive chatter marks unavoidable. The very nature of modern sintered materials accentuate these harmful phenomena. In many instances, it is not possible to rework a valve seat in acceptable conditions.

With NEWEN® FIXED-TURNING® chatter marks are not only improbable, they are definitely eliminated. The shavings do not exceed 1/1000 of mm<sup>2</sup> and the cutting efforts cannot, in any case, give place to chatter marks and/or undulations. The most sensitive repairs can be carried out.

**Unparalleled Geometric Qualities**  
FIXED-TURNING® allows the lightest cuts. Refreshing a valve seat profile a fraction of one thousands is possible, all the cylinder heads can be re-machined while meeting the most stringent specifications.

**FIXED-TURNING®** guarantees geometric qualities never reached before. A perfectly round seat (circularity <3 microns) is the first condition to obtain a perfect seal. The optimum concentricity also obtained with this system, as well as the perfection of angles and radii will give to the engine its very optimum output, superior to its original condition.

Valve seat angles can be adjusted,



CNC valve seat machining by interpolation of axes

at will, every one hundredth of a degree. One will attain a PERFECT SEAL between the valve seat and its valve, the first time around, WITHOUT LAPPING.

**Unlimited Valve Seat Profiles**  
There are no impossible valve seat profiles for FIXED-TURNING®. All profiles are feasible, including Venturis, unimaginable with any other known machining systems on the market today.

One same single point cutter allows to machine all the valve seats, regardless of their shape and/or composition.

The machine has over 300 profiles stored in memory -- the most commonly used ones in the industry. An unlimited number of profiles can be added. Over 300 cutters totally free, always available, never to be renewed.

The single point cutter may be a coated tungsten carbide tool (TIN or ceramics coating) but may also be a Cermet, a CBN or a PCD tool, ideal to machine softer materials such as copper beryllium alloys, aluminum alloys or the toughest ones such as stellites materials, induction hardened seats, etc...

No more waiting periods, no more headaches to select the correct profile, no more expensive carbide tip inventory, you are always ready to serve your customers, all your customers, no matter what type of work they might be bringing you, all with 2 or 3 tip-holders and your pilots. Here starts the era of savings!

**Machining Capacity**  
The NEWEN's FIXED-TURNING® range stands as the most comprehensive range of machines dedicated to precision valve seat machining. From 13mm to over 200mm and beyond, the system guarantees circularities within 3 microns.

**New perspectives**  
Manufacturing processes have been revolutionized by computers, software and other new technologies. More than ever before, technological revolutions succeed one another, forcing aftermarket service suppliers to adapt at the same pace.

OEMs constantly use new materials, optimize designs thereby adding to the difficulty, they multiply cylinder heads models and shapes at a rate never seen before, while tightening machining specifications.

The engine rebuilders saw himself banned from the machining of small motorcycle cylinder heads, large industrial cylinder heads..., valve seats too hard, valve seats too soft, until its market got reduced further by numerous limits set forth by OEMs.

NEWEN® FIXED-TURNING® eliminates all the constraints and limits. The engine rebuilders are once again able to successfully provide its service to everybody.

*With NEWEN® FIXED-TURNING®, the toughest OEM challenges become "business as usual".*

## OEM Productivity, Job Shop Flexibility.

## QUALITY IS NOT ASSUMED! IT IS MEASURED AND PROVEN

Traditional measuring means are not sufficient to precisely control valve seats and valve guides machined with NEWEN® FIXED-TURNING® machines.

NEWEN® has equipped itself with a TALYROND 365XL control machine, especially conceived and dedicated to the measurement of shapes, coaxialities, surface finish...



This machine whose resolution is 1/100 of a micron allows to automatically control all geometric parameters that define the quality of a guide and of a valve seat: circularity, concentricity, runout, cylindricity, segment linearity, angle, surface finish...

The control reports and graphs resulting from the tests are indisputably recognized by the control departments of the most prestigious OEMs.

All NEWEN® FIXED-TURNING® machines automatically and regularly produce valve seats with form defects not exceeding 2 microns (0.002mm / 0.00008"). A quality envied by the most reputable and most avant-garde OEMs.



THE INDUSTRY  
BENCHMARK

Who is best able to guarantee OEM quality requirements on the following operations...	NEWEN FIXED-TURNING® machines		The best Form-Tool seat & guide machines in the market	
	YES	NO	YES	NO
Machine the hardest valve seats with a 100% guaranteed precision and, of course, chatter free	✓		X	
Machine round and concentric valve seats 100% of the time regardless of the material at hand	✓		X	
Machine round and concentric valve seats for a 100% seal regardless of the diameter of the seat ranging from 14 to 240mm (.55" to 9.45")	✓		X	
Machine perfectly round valve seat housings within a 0.005mm (.0002") circularity tolerance and perpendicularity of the resting face (OEM tolerance)	✓		X	
Machine valve guides with OEM "H7" tolerance automatically	✓		X	
Carry out all the machining operations in automatic mode with depth tolerances within a few hundredths of mm regardless of the diameters of the valve seats and their hardness	✓		X	
Guaranty optimum quality with an operator who only has a few days of training	✓		X	
Guaranty the same quality for decades to come regardless of the materials and precision levels required	✓		X	
Guaranty the machining of all the shapes and profiles with 1 standard single point cutting tool	✓		X	
Guaranty an inventory of the most complex profiles and make them available at any moment with a few simple touches on the screen	✓		X	
Guaranty the ability to machine all existing cylinder types including the ones featuring venturi type shapes (back cuts) below the seats	✓		X	





World Leader in CNC Valve Seat & Guide Equipment

1250 Pacific Oaks Pl • Ste 100 • Escondido, CA 92029 • USA  
T +1-760-233-0067 • F +1-760-233-0068 • E [fixed-turning@newen.com](mailto:fixed-turning@newen.com)  
[www.newen.com](http://www.newen.com) • [www.facebook.com/newenfixedturning](http://www.facebook.com/newenfixedturning)

Your Authorized Agent: