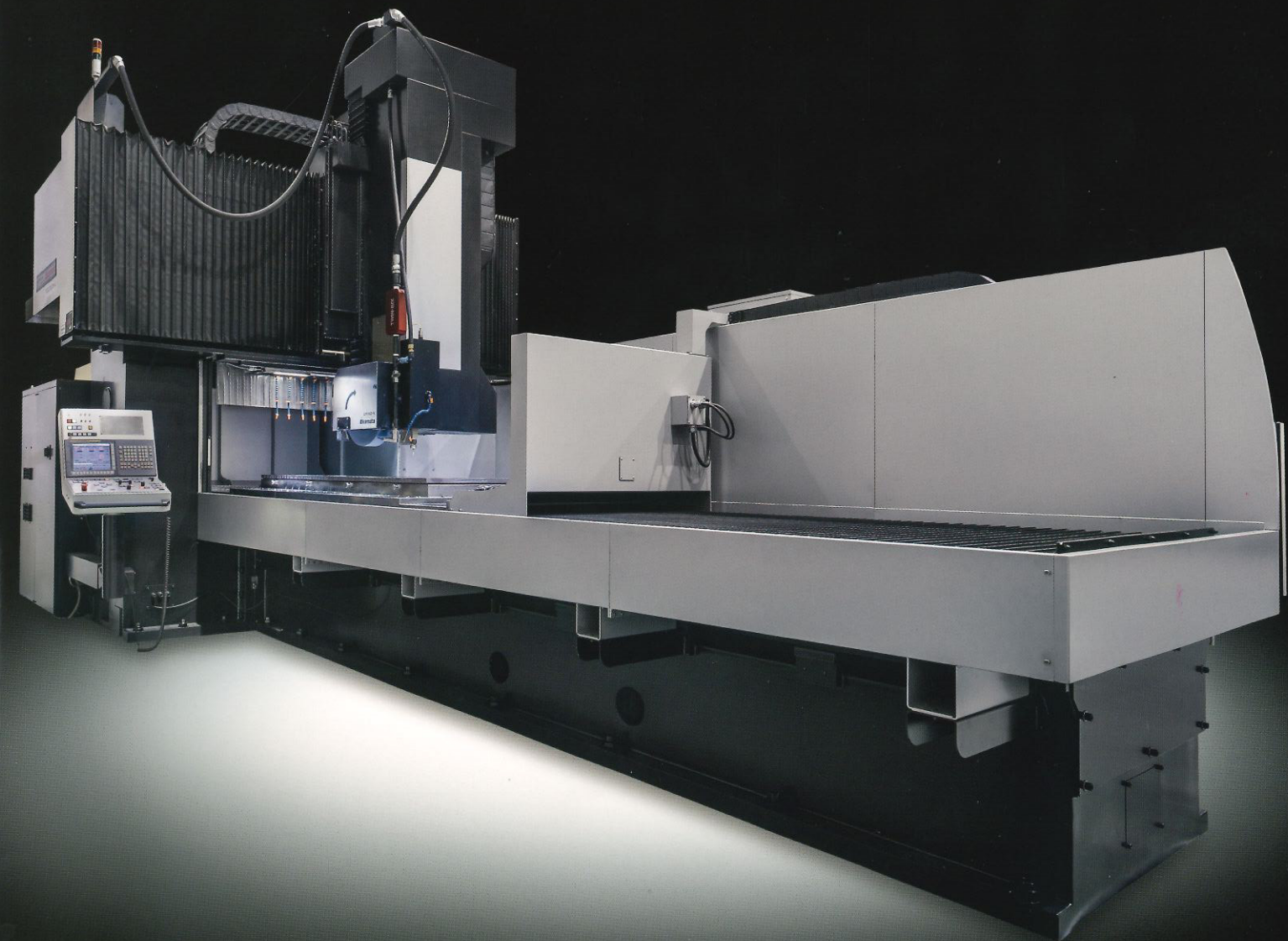


Okamoto

Double Column Type NC Precision Surface Grinding Machine PSG-CH-iQ

Double Column Type CNC Precision Surface Grinding Machine UPG-CHLi



OKAMOTO MACHINE TOOL WORKS, LTD.

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URL : www.okamoto.co.jp



*Prior to and while using our products you are requested to thoroughly go through the articles on danger, warning and attention for the sake of safety described in operation manual attached to the machine and also in the warning plates mounted on the machine.
*When the products fall under the export controlled goods stipulated in "Foreign Exchange and Foreign Trade Act", it requires the license or approval of Government of Japan when exporting out of Japan.
*Specifications subject to change without notice.



JQA-QMA10960
Annaka Factory

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Industry-Leading Double Column Grinding Machine Series

Towards a new era of high efficiency and automation for large grinding machines

Okamoto challenges the size lineup with the double column type, that the conventional column type was mainly targeting.

We achieved various optional lineups with the additional values of high rigidity, ultra precision, high efficiency, space-saving, and operability that has been our advantageous features.

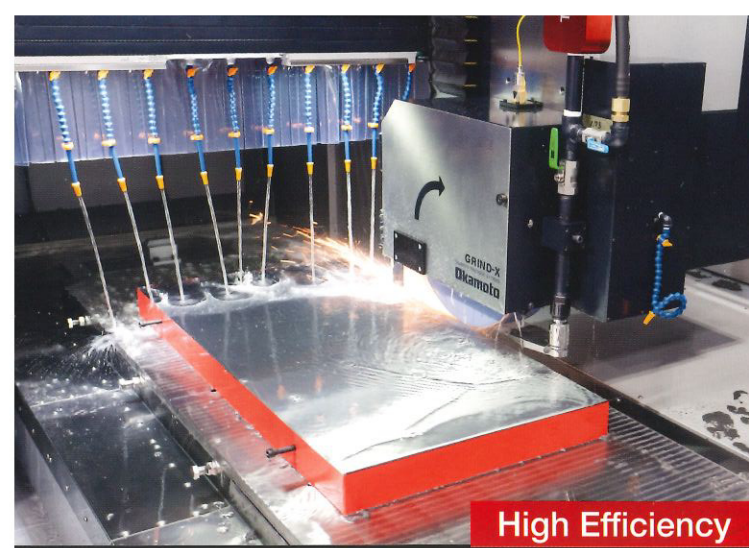
CH series has two series lineup, CH-iQ for high efficiency, and CHLi for ultra precision and automation.

We propose customers to meet their demand of high efficiency and ultra precision, that are the demand from the motor core progressive dies, LCD parts, machine tools, precision measuring instruments, semiconductor production equipment and various parts machining industries that are increasing in size and in demand.

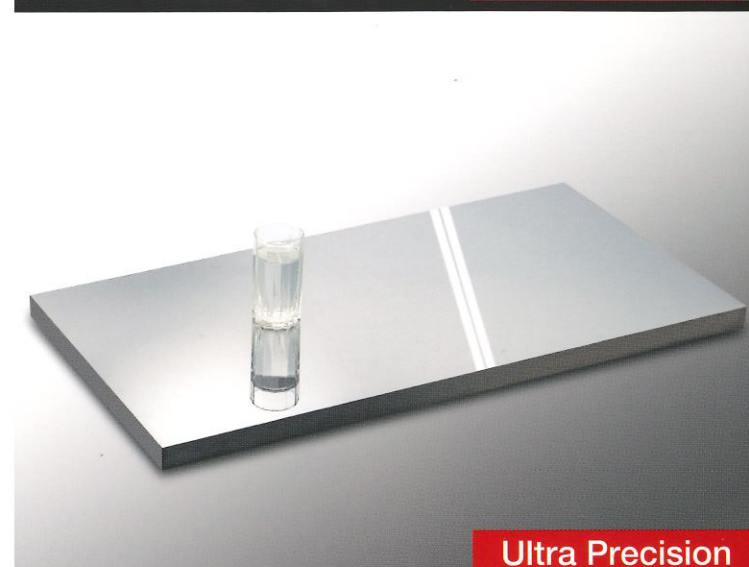
Okamoto contributes the improved productivity of the grinding machines of new era with the proposal of high efficiency, ultra precision and automation that meet the grinding purpose.

CONTENTS

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High Efficiency



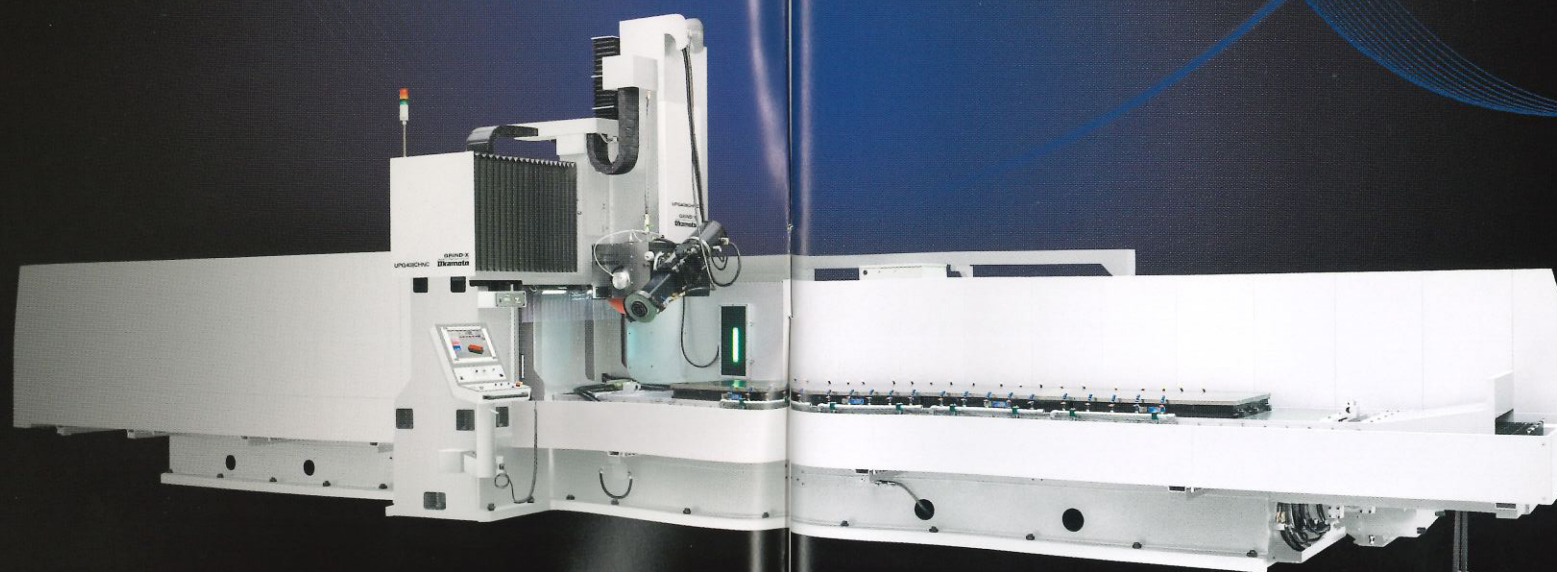
Ultra Precision



On-Machine Measurement



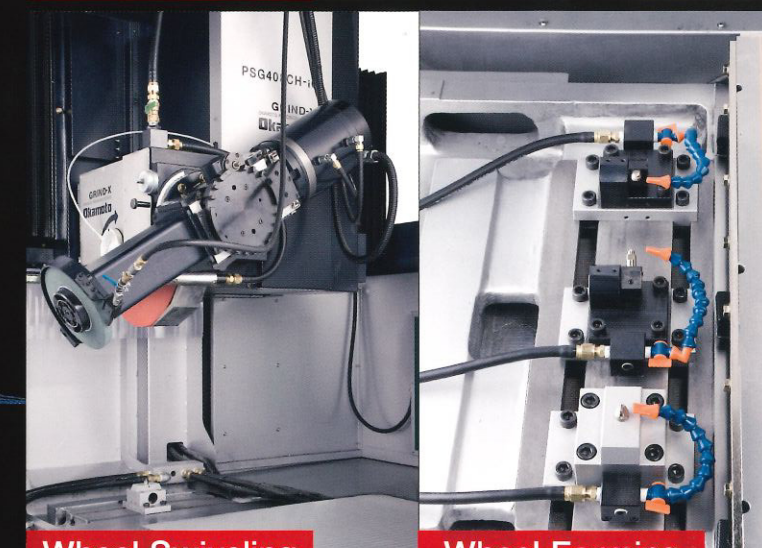
Operability



Sales Achievement

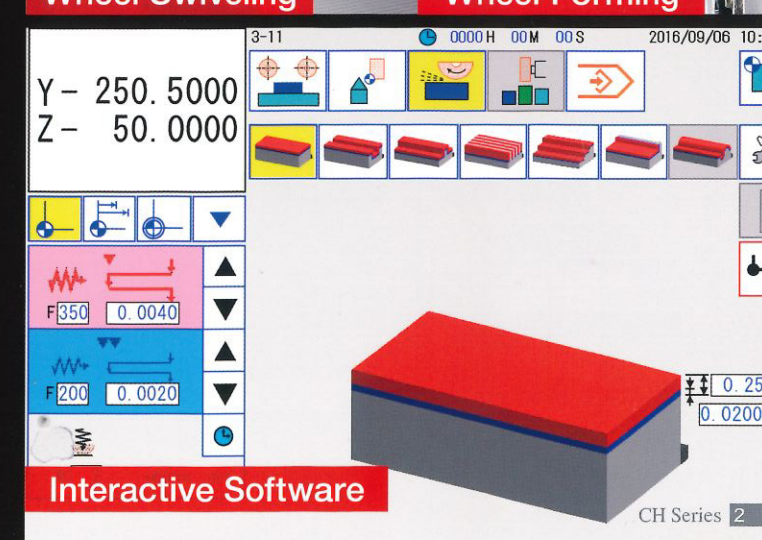


Trend Grinding



Wheel Swiveling

Wheel Forming



Interactive Software

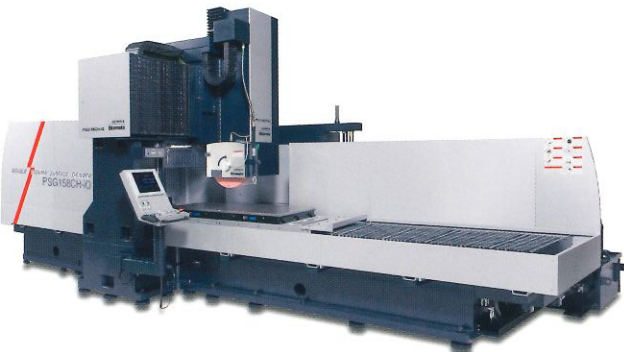
Select by grinding accuracy, shape, size, and

Interactive Software

NC Precision Double Column Surface Grinding Machine

PSG-CH-iQ Series

- Best-selling double column surface grinding machine. Extensive lineup from 1,500 × 800 mm to 4,000 × 800 mm.
- Text-free user-friendly interactive iQ software is installed. The operation is simple for the data input completes by touching only 2 pages.
- The machine footprint is the same level with the conventional column series. With the high rigidity of the double column type, it contributes the improved productivity.



The photo includes optional accessories.

Special Macro

NC Precision Double Column Surface Grinding Machine

PSG-CH-iQ Series
[Dedicated keyboard model] (CHNC)

- Standard iQ software can be changed as OP. Dedicated operation panel with the keyboard enables the special macro cycles. (CHNC)
 - Okamoto has abundant experience of optional accessories and the dedicated macro cycle that meets your grinding profile.
- ※iQ software is the standard, but we may select the optimum software in the meetings with the customers to meet your grinding profiles.



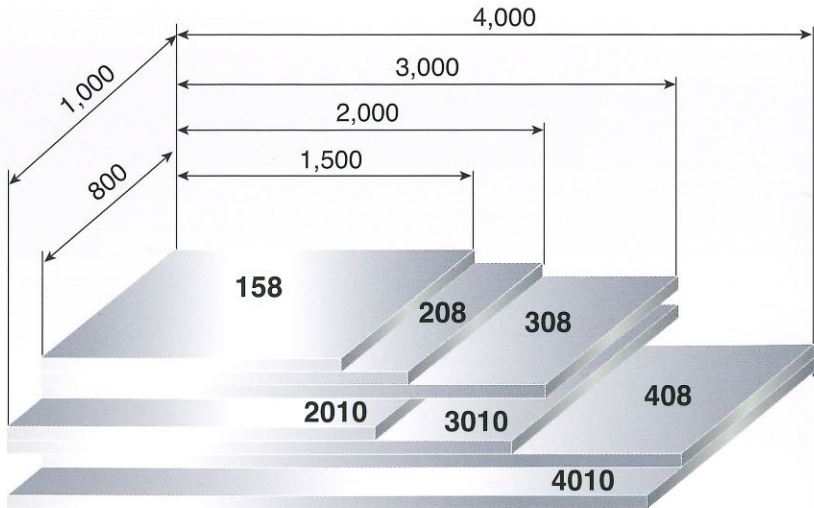
The photo includes optional accessories.

Size lineup

The size is supported from longitudinal 1,500 mm × cross 800 mm for each series.

	Chuck size (longitudinal x cross mm)						
	1,500×800	2,000×800	2,000×1,000	3,000×800	3,000×1,000	4,000×800	4,000×1,000
PSG-CH-iQ Series	158CH-iQ	208CH-iQ	—	308CH-iQ	—	408CH-iQ	—
UPG-CHLi/Li2 Series	158CHLi	208CHLi	2010CHLi	308CHLi	3010CHLi	408CHLi	4010CHLi

※Different sizes are also available. Please contact Okamoto sales representative.



PSG 208 CH-iQ

Series name

Chuck size: 2,000×800mm

Precision Surface Grinding Machine

UPG 3010 CHLi

Series name

Chuck size: 3,000×1,000mm

Ultra Precision Surface Grinding Machine

software - extensive lineup

Multi-purpose Ultra Precision

CNC Ultra Precision Double Column Surface Grinding Machine

UPG-CHLi Series

- It uses the variable hydrostatic slide system on the longitudinal slideway to achieve ultra precision surface grinding. Driving system is the linear motor drive, enabling the high positioning accuracy, high speed stroke, and high precision measurement.
- Unique 6-face supporting sliding method achieved 4 times rigidity of general hydrostatic machine.
- Non-contact grinding on the slideway minimizes the wear on the slideway and contribute to longer machine life.



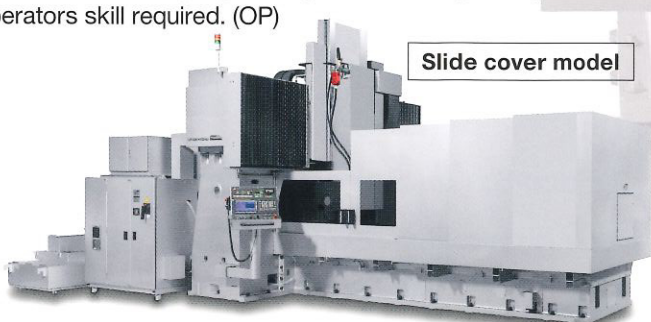
The photo includes optional accessories.

Multi-purpose Ultra Precision

CNC Ultra Precision Double Column Surface Grinding Machine

UPG-CHLi2 Series

- Ultra precise grinding is achieved by adopting the variable hydrostatic slide system on the longitudinal & cross feed slideways. The highest quality of grinding surface and highest precision positioning is realized.
- With the linear motor drive on crossfeed axis, it achieved the highly repeatable positioning. The combination of on-machine measurement and the automatic correction grinding contributes the improved productivity. (OP)
- Various grinding & measuring software are available to be installed, such as the Fully automatic surface grinding CAM and Okamoto NC gauge that performs the grinding with no operators skill required. (OP)



The photo includes optional accessories.

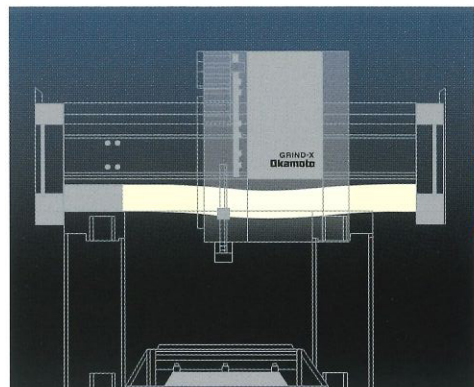
Machine specifications suitable for grinding profile

Machine series and specifications are selectable according to your grinding profile.

		PSG-CH-iQ Series	PSG-CH-iQ Series [Dedicated keyboard model] (CHNC)	UPG-CHLiSeries UPG-CHLi2 Series
Surface		●	●	●
Wheel forming		OP	OP	OP
Crowning & contouring		—	—	OP
On-machine measurement		Manual (OP)	Manual (OP)	Automatic (OP)
Swiveling wheel		OP	OP	OP

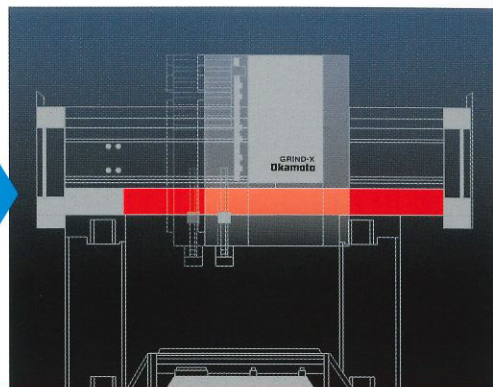
Structures and Features

Long-Life High-Precision Crossrail Mechanism (Patented)



General Structure

The deflection of the crossrail is corrected by NC, although the inclination of the grinding wheel must be adjusted by removing the crossrail.



Okamoto Structure

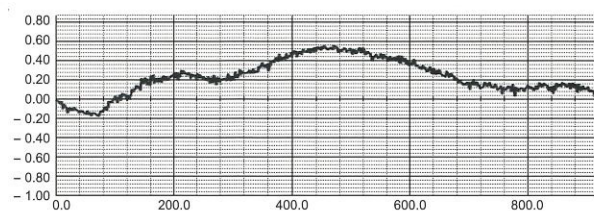
Okamoto adopted the structure that the mechanical correction is possible while the crossrail is kept attached.

The problem of the double column grinding machine was deflection of deteriorated crossrail over time. Okamoto developed an original crossrail adjusting mechanism. Even after several years after delivery, the adjustment is possible without removing the crossrail, and the high quality of flatness is maintained in entire width of the work surface.

Floor-Space Saving Design and Larger Workpiece Grinding

The footprint of the double column grinding machine is the same as Okamoto CNC column type machine. (158 size)

Spacious passage width can support grinding the workpiece of 1000 mm in max. in cross size by using the wheel width of 100 mm. Chuck size can be changed in OP.

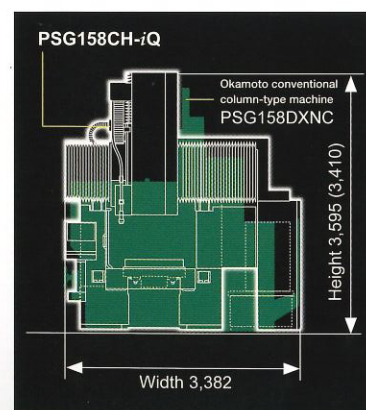


Grinding data for chuck grinding

Measured value 0.0008/900mm
Converted for 800 mm 0.00075/800mm



Cross 800 mm series



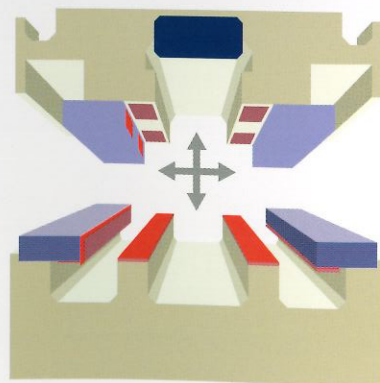
Unit: mm
In parentheses are from Okamoto CNC column-type machine.

Variable Hydrostatic Sliding Guideway and Unique 6-face Holding Slide System UPG-CHLi /Li2 Series

The variable hydrostatic sliding guideway is the ultra precision & energy-saving system that flexibly controls the oil flow to minimize the variation of the oil film on the guideway.

In comparison to the conventional oil hydrostatic slide, it stabilizes the oil film variation to 1/7 and also reduces the amount of hydrostatic oil.

The slide is held with the unique 6-face holding system, the surface rigidity of the slideway became 4 times than the previous ones, and the strong rigidity can minimize the bias loading on the table and the change by the stroke inertia.



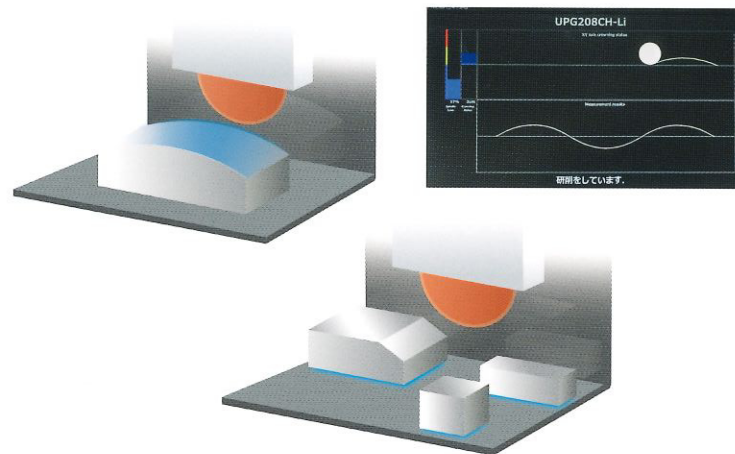
Shorten Process with On-Machine Measurement UPG-CHLi /Li2 Series OP



The measuring equipment is mounted on the grinding machine. The operation time is shortened and automated by measuring the workpiece on-machine, and corrective grinding is performed on-site.

UPG-CHLi series optionally supports the measurement & corrective grinding by high speed strokes. The combination with the "Okamoto NC gauge" the 3D measuring software (OP) enables the 3 dimension measurement other than the surface part.

Crowning, Contouring, Multi-Position Grinding UPG-CHLi /Li2 Series OP



Crowning grinding (longitudinal-vertical synchronization) NC software standard

To the surface grinding workpiece, the trend grinding is available with the crowning.

Counter grinding (cross-vertical synchronization) NC software optional

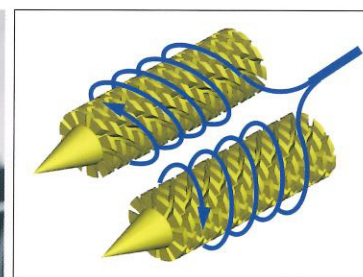
To the workpiece with profile, the machine can also perform the profile grinding by recognizing the shape.

Multi-position grinding NC software optional

Even when the workpieces of different size of length, width and height are loaded on the chuck, the multiple workpieces can be ground in one cycle.

* Dedicated macro program is to be prepared for each machine.

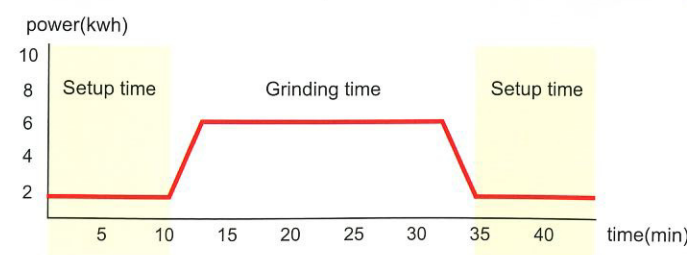
Fine Bubble Generator "TWIN-BIX" OP



Grinding efficiency is greatly improved by installing the fine bubble generator TWIN-BIX.

*The effect may vary depending on the grinding conditions and workpieces.

Save Power Consumption with ECO Mode ! Special OP



Eco mode can save the power consumption during grinding.

Precise grinding can be performed with the power-saving state.

(Meeting is required to decide the allocation of Eco-mode time.)

PSG-CH-iQ Series

Simplified Operation with text-free interactive software



Standard cover model



Open top slide cover model
※Full-closed cover model is also available as an OP.

Features

- Large size grinding machines could achieve high rigidity and precision with the double column structure.
- Globalization of production is realized with the text-free interactive iQ software.
- It supports the beginner operators with the functions to automatically calculating the grinding & dressing conditions.
- The factory is kept clean by adopting the slide cover over the open-top cover. (OP for all series)

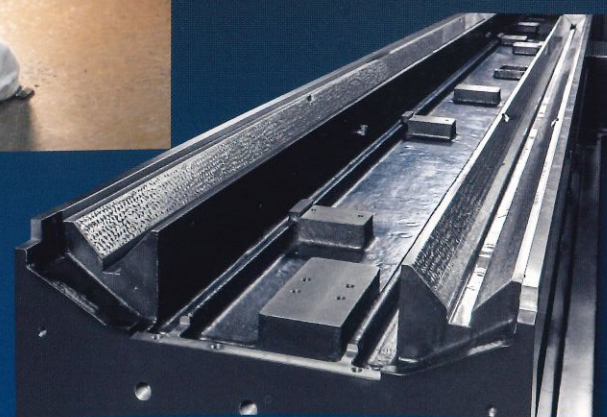
Improved Accessibility and Operability

The push buttons and handwheel are all equipped on the operation panel, so the operation is easy.



V-V Slideway that Realizes High Precision

V-V slideway with scraped surface is adopted for the longitudinal slideway. Highly precise surface grinding is realized.



A compact and highly rigid double column grinding machine that meets the demands for super efficiency

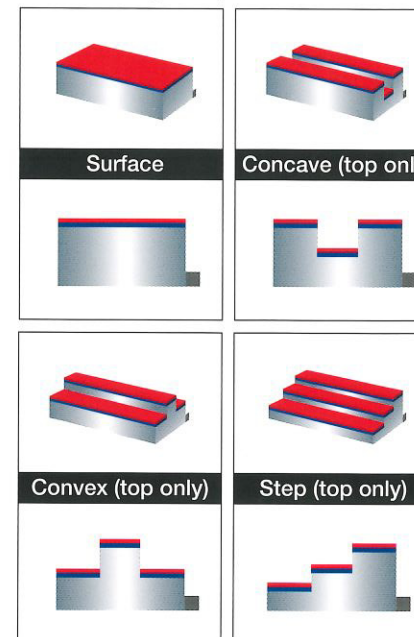
Text-free Touch Panel



iQ software screen

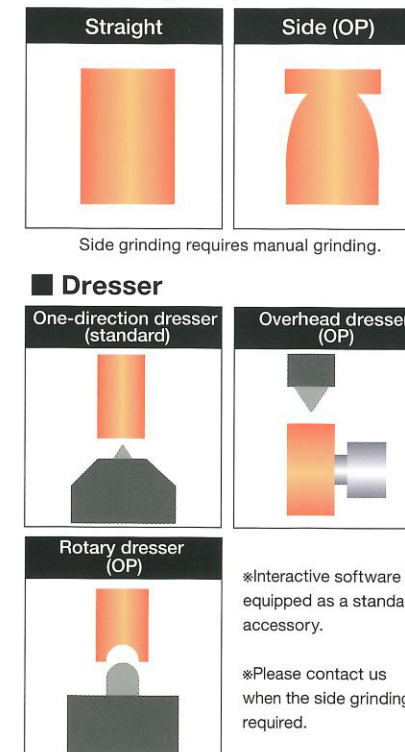
Interactive Cycle Supporting iQ Software

Grinding shape



Please contact us when the side grinding is required.

Dressing shape



※Interactive software is equipped as a standard accessory.

※Please contact us when the side grinding is required.

iQ Software Facilitates the Grinding of Large Workpieces

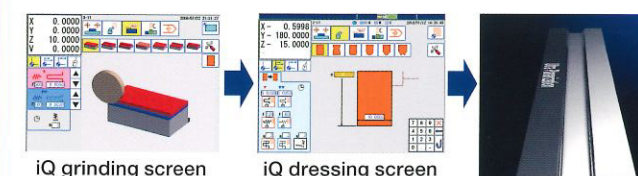
The innovative iQ software simplifies data input. Cycle time has been dramatically shortened.

iQ automatic data creation function by inputting wheel grain size

Input the total grinding allowance and fine grinding allowance, and then, just input the wheel grain size, the optimum wheel conditions and dressing conditions are created by adding Okamoto's know-how values to the grinding theoretical values.

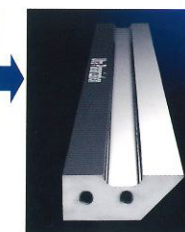
Data input is completed with only 2-screen touches.

No text is shown on the screen. Everything from surface grinding to the complicated grinding are handled by touching the screen while watching the panel buttons.



iQ grinding screen

iQ dressing screen



Automatic setting of grinding conditions

Select either the general wheel or ultra abrasive wheel, and input the grain size in the value boxes below. The optimum grinding and dressing conditions are set automatically according to the grain size.

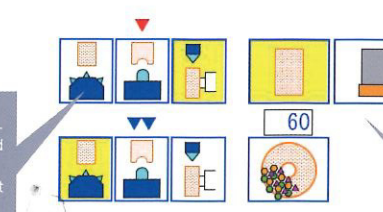
Diversified iQ functions

Keys to shorten cycle time (selection function of the fine-rough dressing method)

You have optimum selection of the overhead dresser for rough dressing, and the table-mounted dresser for finish dressing. Overhead dresser with dressing cycle function (OP) has the automatic diamond tracking function. It is possible to further shorten the cycle time by using the shift plunge grinding as the grinding method.

Automatic setting of grinding conditions

Grinding operation has been relying on the skill and intuition of the operators. To the grinding conditions which used to be almost like the 'gray-zone', the equipped function can automatically set the recommended grinding conditions by adding Okamoto know-how values to the grinding theoretical values. The base data of the automatic setting is the grain size of the wheel. It supports both the Alundum-type wheels and ultra abrasive wheels. It also supports user-specific condition settings.

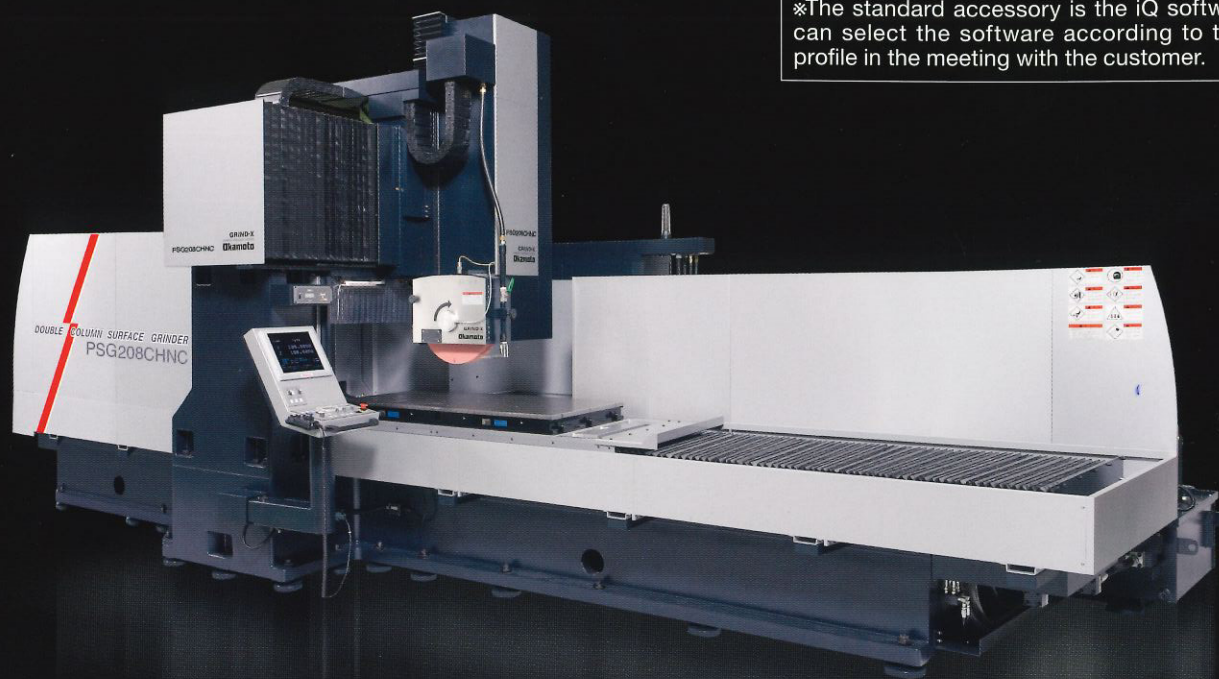


Fine-rough dressing method setting

The optimum combination the overhead dresser (with compensation function) for rough dressing, and the table-mounted dresser for fine dressing became possible.

PSG-CH-iQ Series [dedicated keyboard model] (CHNC)

Operation panel for easy operation of dedicated macro programs



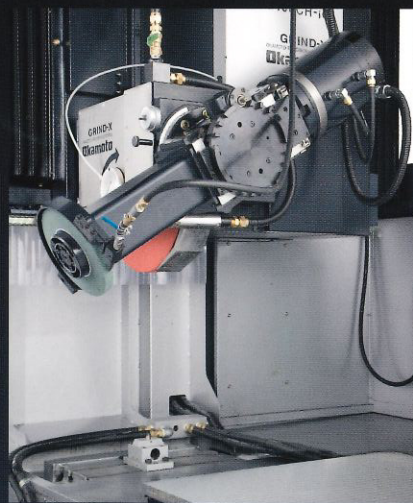
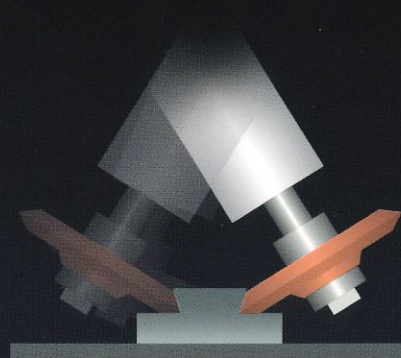
※The standard accessory is the iQ software, but we can select the software according to the grinding profile in the meeting with the customer.

Features

- The operation panel and software are also changeable when the special macro programs and G code programs are needed in operation.
- When the groove grinding is performed, the swiveling wheel spindle model should be selected. Complicated and difficult grinding such as dovetail groove grinding becomes possible. (OP)

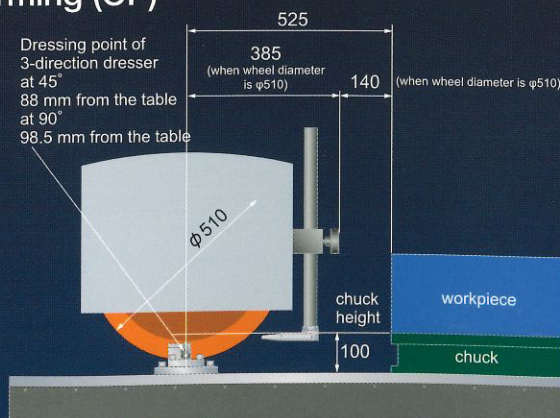
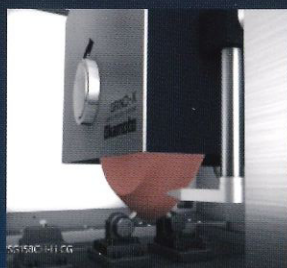
Swiveling Wheel Spindle (OP)

To perform groove grinding, a swiveling wheel spindle can be added.



Spacious Longitudinal Stroke and Easy Wheel Forming (OP)

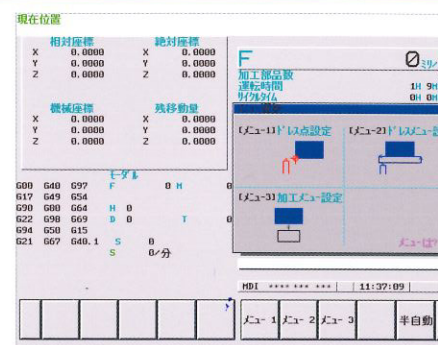
Tall workpieces do not interfere with the dresser.



Please consult Okamoto when the side grinding is required.

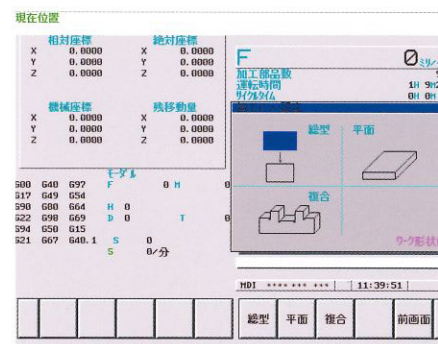
Interactive software dedicatedly equipped for Special Macro Programs

Standard Interactive Software



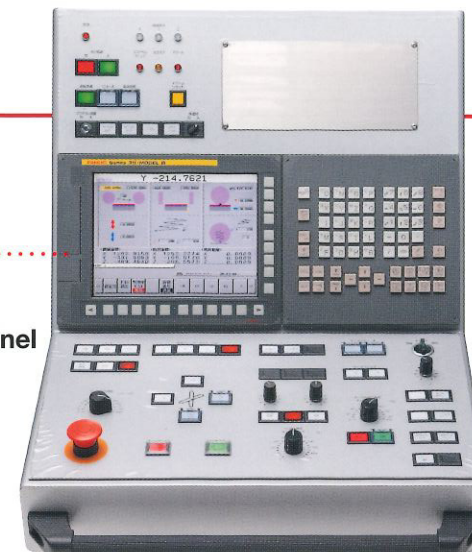
[Initial Screen]

The dressing methods & grinding methods can be input in the easy-to-operate interactive style.

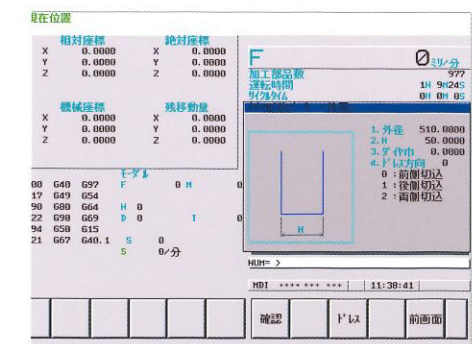


[Input Screen of Grinding Conditions]

Grinding conditions can be input in the patterns of surface & step, etc.



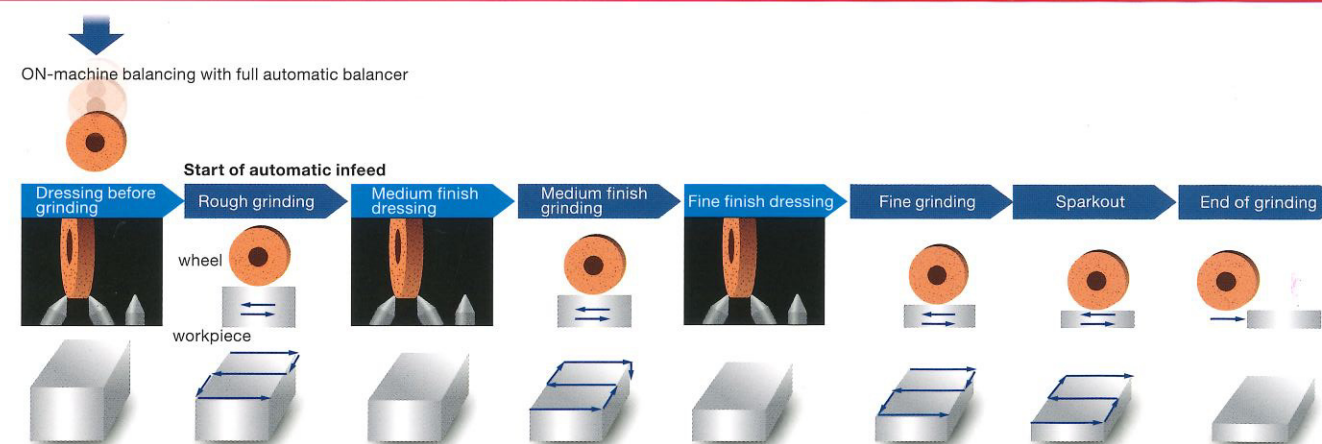
Keyboard Model
NC Operation Panel
(model: CHNC)



[Dressing Screen]

Peripheral dressing input function is installed as a standard accessory.

Cycle Sample with Special Macro Program



[Detailed setting of grinding conditions]

In NC, the table speed, wheel rotation speed, and infeed method, etc. in each process can be set in detail. When the operator finds the stock removal is not enough, the manual intervention is also available.

[Labor saving with automatic dressing]

Automatic dressing interruption is available before the rough, middle and fine grinding during cycle. Wheel forming can be done automatically, and the trend grinding is available for groove grinding and side grinding.

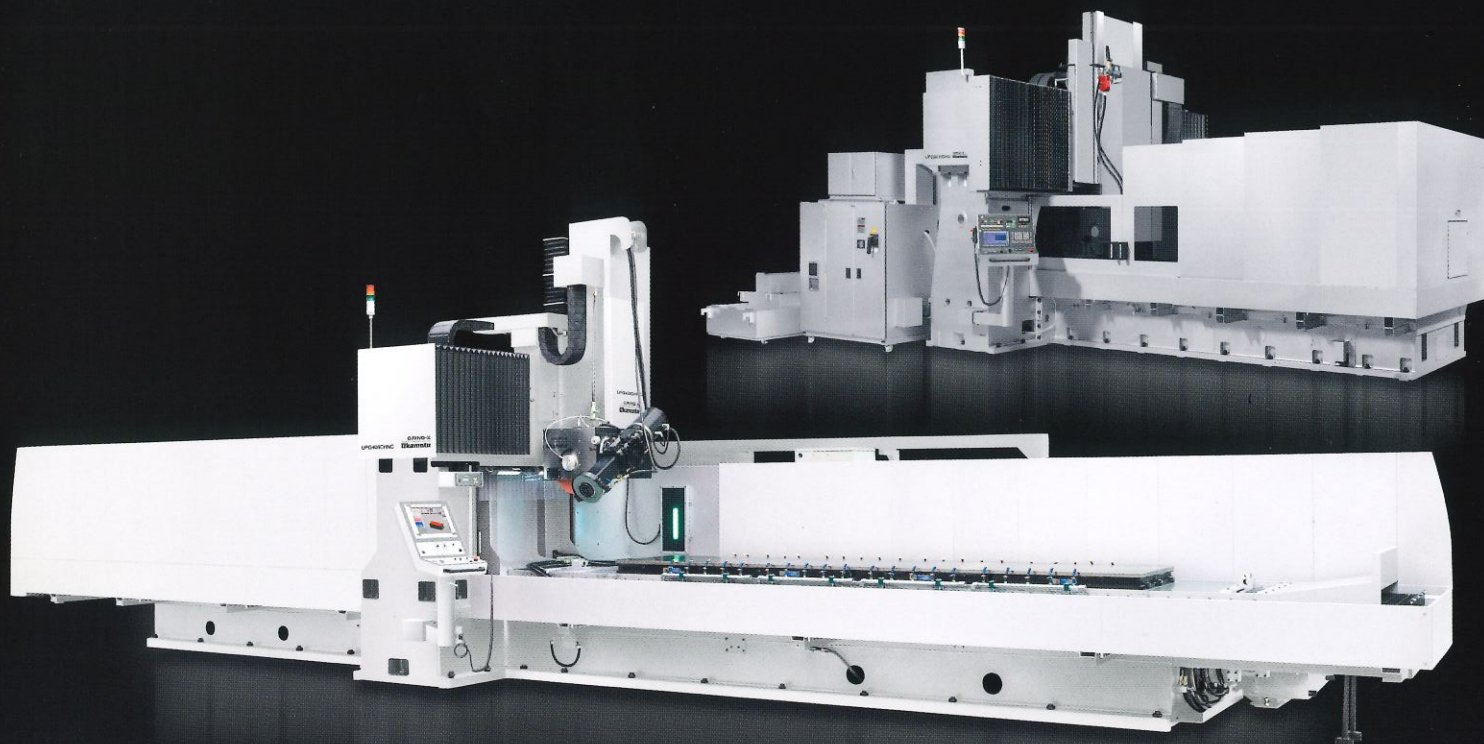
[Full-auto balancer supported]

You may think balancing operation of large-diameter wheels is difficult, but Okamoto's full automatic balancer performs the balancing operation easily on machine. (OP)

Please contact us when the side grinding is required.

UPG-CHLi/ CHLi2 Series

Ultra Precise Double Column Grinding Machine with Variable Hydrostatic Slide System



Features

- Precise positioning is realized with linear motor drive. It supports on-machine measurement and crowning grinding.
- High straightness is achieved by hydrostatic slide system. Surface grinding on a large workpiece and mirror-face grinding is performed in high-precision.

iQ software or keyboard model NC software is selectable.

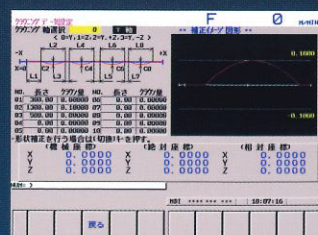
High-Speed Stroke & Precise Positioning by Linear Motor Drive



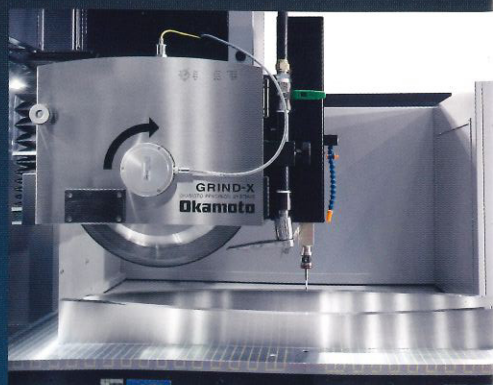
It realizes high-speed and precise grinding from the small parts to large parts. The teaching function improves work efficiency and supports multi-position grinding.

Crowning Grinding Software (supported with NC software only)

Ultra precise crowning grinding system
Ample lineup of software supports the crowning grinding of the large plates or sliding surfaces.



ON-Machine Measurement Function for High Accuracy and Improved Productivity (OP)

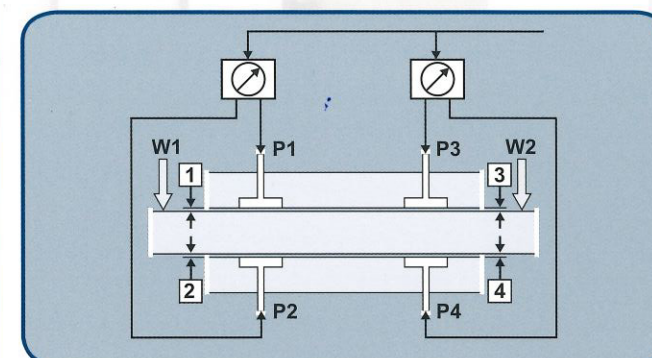


Ultra precise grinding realized with the variable hydrostatic slide system and 6-face holding slide system

Variable Hydrostatic Slide System

What is Okamoto's original variable hydrostatic slide system?

Ultra Precise surface grinding is achieved this way; the pair of ①&② controls the flowrate of the oil hydrostatic pocket constant in real time, and the gap amount between slides ③&④ is also maintained constant.

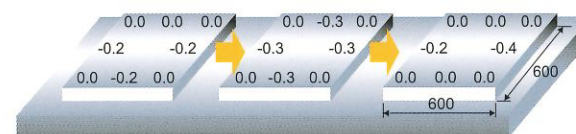


Oil film thickness is controlled flexibly.

Flatness

The same accuracy is achieved at any position on the chuck.

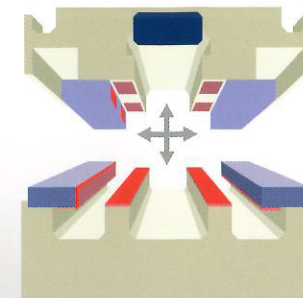
Dimension	600×600×100mm
Workpiece Material	SUS304
Weight	approx. 280 kg
Required accuracy	Flatness 1.0μm
Actual value	Flatness 0.5μm



Move the workpieces to left, center and right respectively and grind, and the all values are within 0.5 μm. (not always guaranteed)

6-face holding slide system

The surface rigidity became 4 times with the 6-face holding system including the direct holding on the frame, and the bias loading and the orientation change in the straight motion by the stroking inertia are suppressed.



Straightness and accuracy

The impact of the shock is minimized to within 1μm at the longitudinal and crossfeed strokes, and the accuracy on the chuck top becomes ultra precise. It achieved the straightness within 0.5 μm/1,000 mm for longitudinal direction, and 0.4 μm/800mm for cross direction. (not always guaranteed)

Surface Roughness

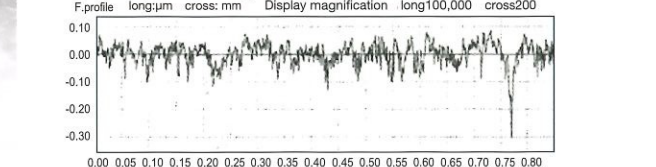
Stable table height when moving right and left

The amount of shift-up is always stable, so the surface quality is excellent.

Workpiece: Slot die Material: SUS630 Surface Roughness: 0.0291μm

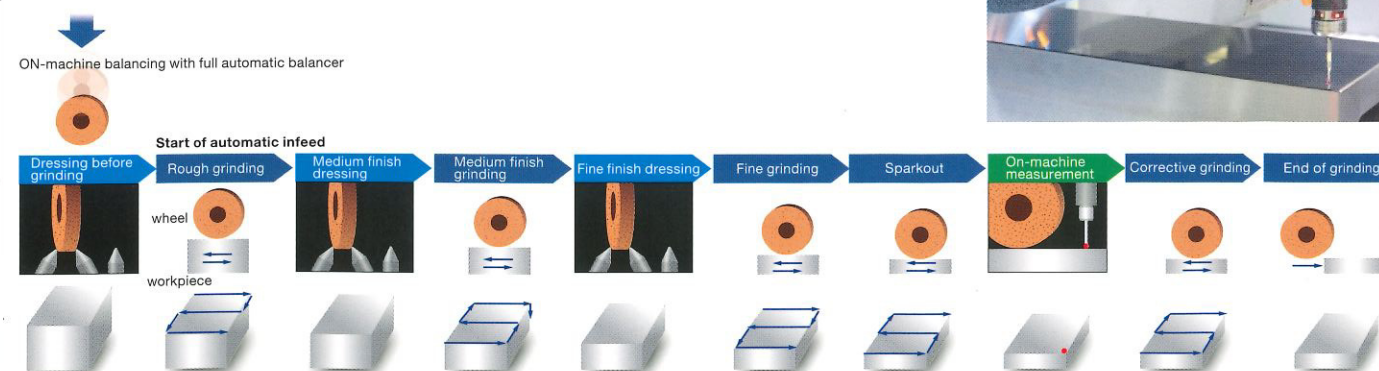
Inspection data measurement magnification long 200,000 cross 100

Grinding surface (before polishing) Display magnification long 100,000 cross 200



Cutoff	0.25mm	Diagnosed parameter
Filter	Gauss	Ra(1994) 0.0291μm
E. length	1,250mm	Ry(1994) 0.0239μm
Levelling	Linear (all range)	Rz(1994) 0.1730μm
Data	7,500 points	
Drive speed	0.1mm/s	

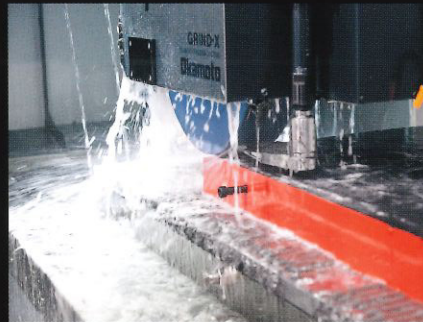
Cycle Sample by Special Macro Program (on-machine measurement)



Please contact us when the side grinding is required.

Grinding sample by double column grinding machine

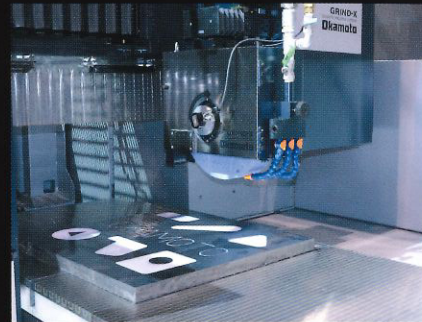
High efficiency



PSG158CH-iQ

Size : 1,200×600×300mm
Material : FC250
Dimensional accuracy : $\pm 3\mu\text{m}$
Infeed amount : 50 μm

Die plate



PSG208CH-iQ

Size : 1,200×700×200mm
Material : SKD11
Flatness : 3 μm
Infeed amount : 20 μm

Mirror-face grinding



UPG208CHLi

Size : 650×400×80mm
Material : S45C
Flatness : 3 μm
Surface roughness : Ra0.08 μm

Crowning



UPG208CHLi

Size : 1,200×500×200mm
Material : S55C
Contour deviation : $\pm 3\mu\text{m}$

Ceramics



UPG158CHLi

Size : 800×400×100mm
Material : alumina ceramics
Flatness : 2 μm
Surface roughness : Ra0.1 μm

Slideway of machine tool by swiveling spindle model



UPG208CHLi (swiveling spindle model)

Size : 600×400×300
Material : FCD250
Dimensional accuracy : within $\pm 3\mu\text{m}$
Parallelism : within 2 μm (Flat part and groove part)

Inclined grinding



UPG208CHLi

Size : 1,200×400×650
Material : FCD300
Contour deviation : $\pm 3\mu\text{m}$
Crowning amount : 100 μm

Grinding efficiency will be UP with the coming new OPs !

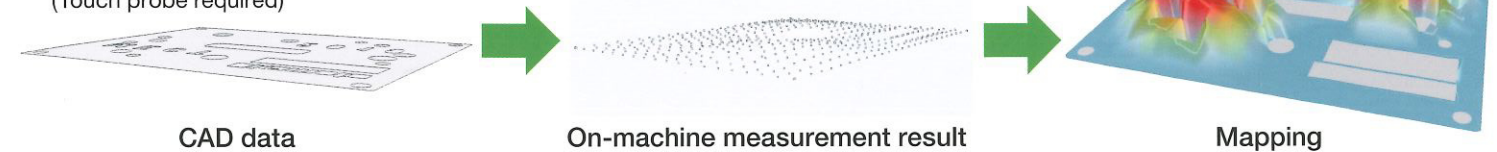
Contact Okamoto sales representative.

Fully Automatic Grinding System - MAP Grinding Software

The CAM, dedicated program for grinding machine, can automatically create the dedicated macro program by reading the CAD data.

The productivity is improved and the ultra precise grinding is realized by simplifying the warpage removing and shortening the grinding time.

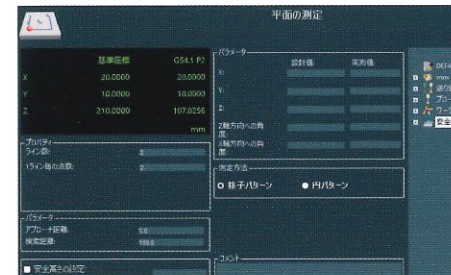
(Touch probe required)



3D measurement software OKAMOTO NC gauge

It is an interactive style software that creates the NC program enabling the motion of 3D measurement with the ultra precise grinding machine driven with longitudinal & crossfeed linear motors.

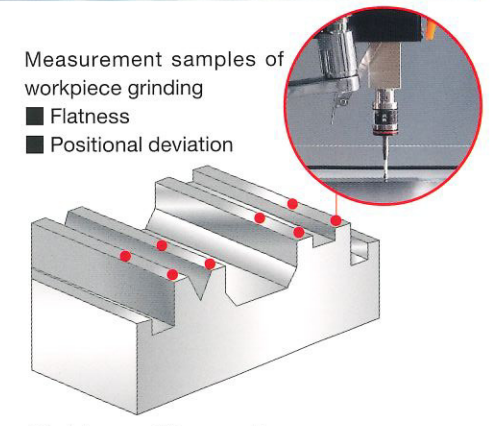
Large workpiece which is usually too large to be measured can be measured without changing the setup.



Operation screen



Hole diameter measurement of large dies



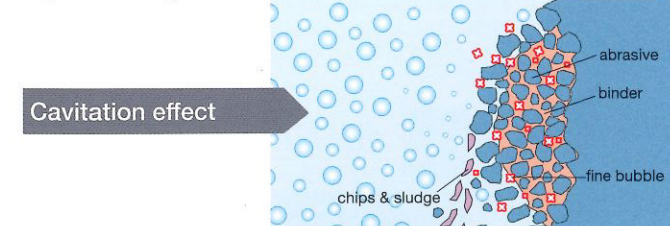
Guide position and squareness measurement for machine tools

Fine Bubble Generator TWIN-BIX

Grinding efficiency improvement by using bubble is getting popular in Machine tool industry. We have wealth of experience by using the bubble power on grinding from the early years. Okamoto can propose high-efficiency, ultra precision and environment improvement that meet the grinding purpose.

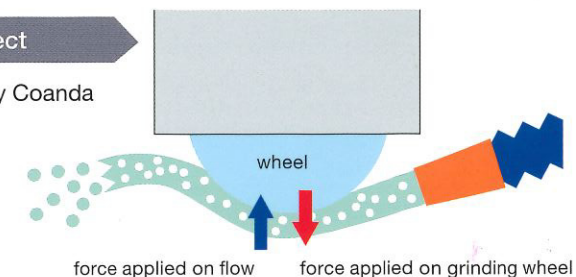
Mechanism of fine bubble cleaning

Fine bubble is so small that it can enter the gap between abrasives. The impact when the fine bubble bursts can remove fine chips and sludge.



Coanda effect

Flow is bent by Coanda effect



Sharp grinding wheel - Cubitron™ II grinding wheel

- It reduces the grinding heat generation in comparison to the conventional abrasive wheel, so deep infeed or high-speed feed becomes possible.
- The wheel service life becomes longer with the increased dressing interval and reduced dressing amount per cycle.
- Cubitron Wheel has the advantages with the workpiece materials that does not accept grinding with the general abrasive (HPC58 hardened steel or harder) or other difficult-to-grind materials, and also shows high efficiency in grinding general workpieces.



Texture image

PSG-CH-iQ Series Specifications

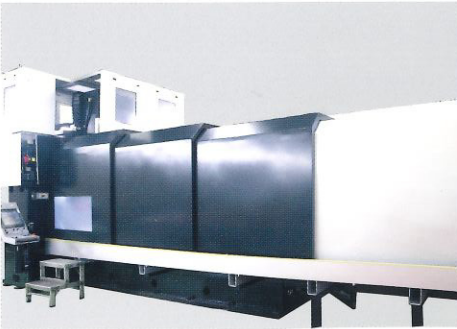
Item			Unit	158CH-iQ	208CH-iQ	308CH-iQ	408CH-iQ
Capacity	Maximum passage width		mm	1,050			
	Table working surface size (length x width)			2,050×850	2,550×850	3,550×850	4,550×850
	Distance from table top to wheel bottom (from chuck top to wheel bottom is shown in ())			600(500)			
	Optional chuck dimensions (length × width × height)			1,500×800×100	2,000×800×100	3,000×800×100	4,000×800×100
	Table load capacity (including chuck weight shown in ())		kg	2,500 (800)	3,200(1,180)	4,800(1,770)	6,400(2,400)
Table (longitudinal feed)	Maximum travel distance		mm	2,250	2,750	3,750	4,750
	Hydraulic feed rate (average)		m/min	2~30			
Crossrail (cross feed)	Cross manual feed	Feed per handwheel revolution	mm	0.01/0.1/1.0			
		Feed per handwheel graduation		0.0001/0.001/0.01			
	Automatic infeed (traverse & bias feed)	Traverse feed (also known as intermittent feed)	mm	0.1~40			
		Bias feed (also known as continuous feed rate)	mm/min	0~6,000			
	Maximum travel distance		mm	910			
	Rapid feed rate		mm/min	6,000			
	Feed rate (F code command)			0~6,000			
	Jog feed rate			0~3,000			
Wheel head (vertical feed)	Manual infeed amount	Feed per handwheel revolution	mm	0.01/0.1/1.0			
		Feed per handwheel graduation		0.0001/0.001/0.01			
	Automatic infeed amount (traverse & bias feed)	Rough grinding	mm	0.0001~0.9999			
		Fine grinding					
	Number of sparkout		times	0~99			
	Maximum travel feed		mm	620			
	Rapid feed rate		mm/min	2,000			
	Feed rate (F code command)			0~2,000			
Jog feed rate		0~2,000					
Grinding wheel	OD × W × B		mm	φ510×50×φ127 (OP: both-recess 100 width mountable) (OP: 610×50×127)			
	Spindle speed		min ⁻¹	400~1,600			
Motor	For wheel spindle		kW/P	15 (OP: 22kW mountable)			
	For vertical feed (AC servo motor)		kW	4			
	For cross feed (AC servo motor)			3			
	For hydraulic pumps		kW/P	5.5	7.5		
Power supply	Required power supply		-	AC200V, 50/60Hz 3-phase			
Machine space	Length × Width × Height		mm	7,800×4,600×3,600	8,500×4,600×3,600	11,000×4,600×3,600	12,000×4,600×4,200
Machine weight	Standard model		kg	15,500	17,000	20,000	25,000

※Please contact us for longitudinal length 4,000 mm series.
※Stroke speed may change depending on the load weight.
※Machine space can be changed by adjusting the layout of accessories.

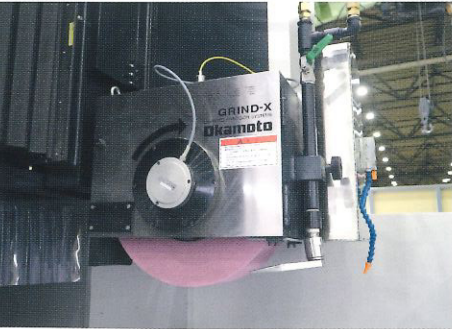
Standard Accessories

Standard grinding wheel φ510×50×φ127mm	
Wheel flange (adaptor)	
Table-mounted dresser	
Wheel spindle inverter	
Short circuit breaker	
iQ software	①Surface grinding software
	②Easy-to-operate correction function
	③Automatic data creation function
	④Grinding data storage function
NC unit 2-axis model	
Table front sliding doors	
Standard: 2-tone	
Drain bucket constant coolant flow	
Wheel spindle meter relay	

OP Automatic Open-Close Cover



OP Full Automatic Balancer



PSG-CH-iQ Series [dedicated keyboard model] Specifications (CHNC)

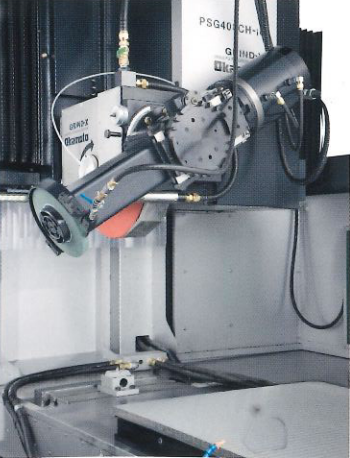
Item			Unit	158CHNC	208CHNC	308CHNC	408CHNC
Capacity	Maximum passage width		mm	1,050			
	Table working surface size (length x width)			2,050×850	2,550×850	3,550×850	4,550×850
	Distance from table top to wheel bottom (from chuck top to wheel bottom is shown in ())			600(500)			
	Optional chuck dimensions (length × width × height)			1,500×800×100	2,000×800×100	3,000×800×100	4,000×800×100
	Table load capacity (including chuck weight shown in ())		kg	2,500 (800)	3,200(1,180)	4,800(1,770)	6,400(2,400)
Table (longitudinal feed)	Maximum travel distance		mm	2,250	2,750	3,750	4,750
	Hydraulic feed rate (average)		m/min	2~30			
Crossrail (cross feed)	Cross manual feed	Feed per handwheel revolution	mm	0.01/0.1/1.0			
		Feed per handwheel graduation		0.0001/0.001/0.01			
	Cross automatic feed	Traverse feed (also known as intermittent feed)	mm	0.1~40			
		Bias feed (also known as continuous feed rate)	mm/min	0~5,000			
	Maximum travel distance		mm	910			
	Rapid feed rate		mm/min	6,000			
	Feed rate (F code command)			0~5,000			
	Jog feed rate			0~3,000			
	Wheel head (vertical feed)	Manual infeed amount	Feed per handwheel revolution	mm	0.01/0.1/1.0		
Feed per handwheel graduation			0.0001/0.001/0.01				
Automatic infeed amount (traverse & bias feed)		Rough grinding	mm	0.0001~0.9999			
		Fine grinding					
Number of sparkout		times	0~99				
Maximum travel feed		mm	620				
Rapid feed rate		mm/min	2,000				
Feed rate (F code command)			0~2,000				
Jog feed rate			0~2,000				
Grinding wheel	OD × W × B		mm	φ510×50×φ127 (OP: both-recess 100 width mountable) (OP: 610×50×127)			
	Spindle speed (inverter)		min ⁻¹	400~1,600			
Motor	For wheel spindle		kW/P	15 (OP: 22kW mountable)			
	For vertical feed (AC servo motor)		kW	4			
	For cross feed (AC servo motor)			3			
	For hydraulic pumps		kW/P	5.5	7.5		
Power supply	Required power supply		-	AC200V, 50/60Hz 3-phase			
Machine space	Length × Width × Height		mm	7,800×4,600×3,600	8,500×4,600×3,600	11,000×4,600×3,600	12,000×4,600×4,200
Machine weight	Standard model		kg	15,500	17,000	20,000	25,000

※Please contact us for longitudinal length 4,000 mm series.
※Stroke speed may change depending on the load weight.
※Machine space can be changed by adjusting the layout of accessories.

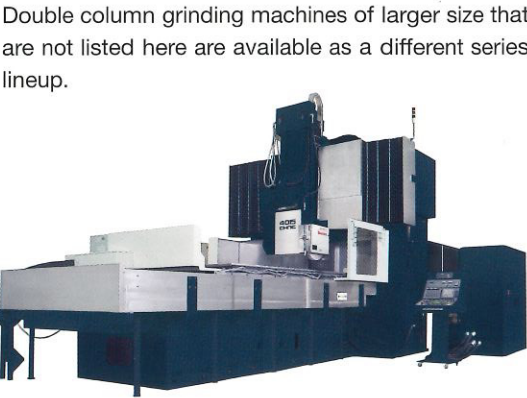
Standard Accessories

Standard grinding wheel φ510×50×φ127mm	
Wheel flange (adaptor)	
Table-mounted dresser	
Wheel spindle inverter	
Short circuit breaker	
NC unit 2-axis model	
Surface grinding graphic interactive software	
Table front sliding doors	
Standard: 2-tone	
Drain bucket constant coolant flow	
Wheel spindle meter relay	

OP Add 1 more swiveling spindle axis



PSG4015CHNC or larger size
(Chuck size 4,000 ×1,500 mm or larger)



Double column grinding machines of larger size that are not listed here are available as a different series lineup.

UPG-CHLi Series Specifications

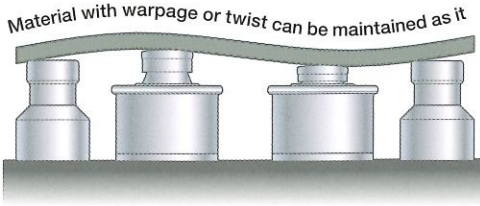
Item			Unit	158CHLi	208CHLi	308CHLi	408CHLi	2010CHLi	3010CHLi
Capacity	Maximum passage width		mm	1,050					
	Table working surface size (length x width)			1,550×850	2,550×850	3,550×850	4,550×850	2,050×1,250	3,050×1,250
	Distance from table top to wheel bottom (from chuck top to wheel bottom is shown in ())			600(500)					
	Optional chuck dimensions (length x width x height)			1,500×800×100	2,000×800×100	3,000×800×100	4,000×800×100	2,000×1,000×100	3,000×1,000×100
	Table load capacity (including chuck weight shown in ())		kg	2,500(800)	3,200(800)	4,800(1,770)	6,400(2,400)	4,500(1,400)	5,000(2,100)
Table (longitudinal feed)	Longitudinal manual feed	Feed per handwheel revolution	mm	0.01/0.1/1.0					
		Feed per handwheel graduation		0.0001/0.001/0.01					
	Maximum travel feed		mm	2,100	2,600	3,600	4,600	2,600	3,600
	Rapid feed rate		mm/min	35					
	Feed rate (F code command)		m/min	0~35					
Crossrail (cross feed)	Cross manual feed	Feed per handwheel revolution	mm	0.01/0.1/1.0					
		Feed per handwheel graduation		0.0001/0.001/0.01					
	Cross automatic feed	Traverse feed (also known as intermittent feed)	mm	0.1~40					
		Bias feed (also known as continuous feed rate)	mm/min	0~4,000					
	Maximum travel distance		mm	910				1,160	
	Rapid feed rate		mm/min	6,000					
	Wheel head (vertical feed)	Manual infeed	Feed per handwheel revolution	mm	0.01/0.1/1.0				
Feed per handwheel graduation			0.0001/0.001/0.01						
Automatic infeed (traverse & bias feed)		Rough grinding	mm	0.0001~0.9999					
		Fine grinding							
Number of sparkout		times	0~99						
Maximum travel feed		mm	620						
Rapid feed rate		mm/min	2,000						
Feed rate (F code command)			0~2,000						
Grinding wheel	OD×W×B		mm	φ510×50×φ127 (OP: both-recess, 100 mm width mountable) (OP: 610×50×127)					
	Spindle speed		min ⁻¹	400~1,600					
Motor	For wheel spindle		kW	15 (OP: 22 kW mountable)					
	For longitudinal feed (linear motor)			7.2×2					
	For cross feed (AC servo motor, Meeting required for OP linear motor model)			1.8					
	For vertical feed (AC servo motor)			4					
Power supply	Required power supply		-	AC200V, 50/60Hz 3-phase					

※Please contact us for longitudinal length 4,000 mm series.
※Stroke speed may change depending on the load weight.
※Machine space can be changed by adjusting the layout of accessories.

Standard Accessories

- Standard wheel φ510×50×φ127mm
- Wheel flange (adaptor)
- Table-mounted dresser
- Wheel spindle inverter
- Hydrostatic unit for table longitudinal guideway
- Short circuit breaker
- NC controlling unit - 3-axis model
- Surface grinding graphic interactive software
- Table front sliding doors
- Standard color: Titanium silver
- Drain bucket continuous coolant flow
- Wheel spindle meter relay
- Crowning grinding software (NC software only)

OP Solution for warpage removal of large workpiece !
Warpage correction jig – SG master



Grinding data																	unit : μm
● Shape : L600-W300-T20mm ● Material : S45C ● Hardness : No heat treatment																	
Surface grinding	Measuring point		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Maximum diameter
	Before grinding		0	-42	-84	-56	0	-1	-43	-54	-9	0	-43	-82	-48	-3	84
	Grinding conditions	0.010 mm infeed×8 times	0	-4	-4	-3	9	0	-11	-4	2	5	-4	-3	-3	12	23
		0.003 mm infeed×8 times + Zero grinding 2 times	0	0	1	0	-1	1	1	2	1	1	1	2	2	1	3
Backside grinding	Measuring point		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Maximum diameter
	Before grinding		0	58	114	59	-3	12	72	73	1	4	55	96	50	-8	122
	Grinding conditions	0.010 mm infeed×8 times	0	-2	-3	-2	-1	-1	-3	-1	-1	2	-1	-2	0	1	5
		0.003 mm infeed×8 times + Zero grinding 2 times	0	-1	0	0	1	-1	-1	-1	-1	2	-1	-2	0	1	2

Optional Accessories

Item		Specifications	Model	
			CH-iQ (CHNC)	CHLi
1) . Mist Dust Collector and Coolant Unit				
Coolant unit	Magnetic dust separator			○
	Automatic Coolant Temperature Regulator			○
	Automatic Paper Filter			○
	Various centrifuges	Meeting required		○
Oil mist dust collector & dust collection port				○
Constant coolant supply for table top				○
Injection nozzle for 100 mm width wheel				○
Splash gun for cleaning chuck top				○
2) . Chuck				
Electromagnetic chuck		Different sizes are supported for models.		○
Electro-permanent magnetic chuck		Different sizes are supported for models.		○
Electromagnetic chuck, oil-cooled type				○
Demagnetization controller				○
3) . Grinding Wheel				
Power up on wheel spindle motor		Meeting required		○
Oil bearing of hydrostatic wheel spindle		Meeting required		○
Swiveling vertical wheel spindle ※Meeting is required for grinding range		Manual swiveling model (wheel:φ250×25×φ76.2)		○
5-direction dresser for swiveling vertical spindle type		When the swiveling vertical wheel spindle is selected, meeting is required.		○
Overhead dresser		With automatic dressing correction function		○
Rotary dresser		Meeting required		○
Vertical rotary dresser		Meeting required		○
Table-mounted dresser stand				○
Wheel balancer		BW-5/BW-6		○
Micro balancer				○
Automatic wheel balancer		Full automatic balancer (dedicated wheel guard)		○
Spare wheel flange (for standard / for micro balancer / for full automatic balancer)		For wheel diameter φ510		○
		For wheel diameter φ610		○
Lifting fixture for wheel flange				○
4) .Machine Modification				
Self-supported operation panel		Meeting required		○
Open top cover		Meeting required		○
High column model		Vertical travel feed 200 mm up		○
Stainless steel table top cover				○
Custom color		Color sample required		○
5) . Oil Cooling Unit				
Hydraulic oil				○
Hydrostatic oil			-	○
Linear motor coolant			-	○
Grinding fluid		UK-46S2		○
6) . Electric / Software				
Auto shut down function				○
Electromagnetic chuck interlock		Select from wheel spindle motor/table startup/cycle		○
Door interlock		Select from table startup/cycle		○
Calendar timer				○
3-color signal tower light (continuous on type)		Red: alarm, Yellow: cycle complete, Green: cycle in progress		○
Work light		LED		○
Modified iQ software	Interactive dressing software		○	-
	G-code program		○	-
	Automatic programming	UP CAM - Please provide a PC. (Okamoto arrangement is also available.)	○	-
Dedicated keyboard & operation panel			○(CHNC)	○ (Select iQ software or CHNC)
Automatic programming software EDELAC Win		Please provide a PC. (Okamoto arrangement is also available.)		○
NC program creation & test		1 type		○
Workpiece measuring equipment, touch probe type (macro)		Select from flatness, dimension, shape, undulation, etc.		○(NC software only)
Contouring grinding software			-	○(NC software only)
3D measurement software OKAMOTO NC gauge		Please provide a PC. (Okamoto arrangement is also available.)	-	○(NC software only)
Full auto grinding system MAP grinding software		Please provide a PC. (Okamoto arrangement is also available.)	-	○(NC software only)
7) . GRIND-X Peripheral Equipment				
High-efficiency ceramic wheel		Cubitron™ II grinding wheel		○
Fine bubble generator TWIN-BIX		TWIN-BIX		○
GRIND-X warpage correction jig		SG Master		○