

PRECISION SURFACE GRINDING MACHINE

ACC-SA, SA-*i*Q
SERIES

ACC-CA, CA-*i*Q
SERIES



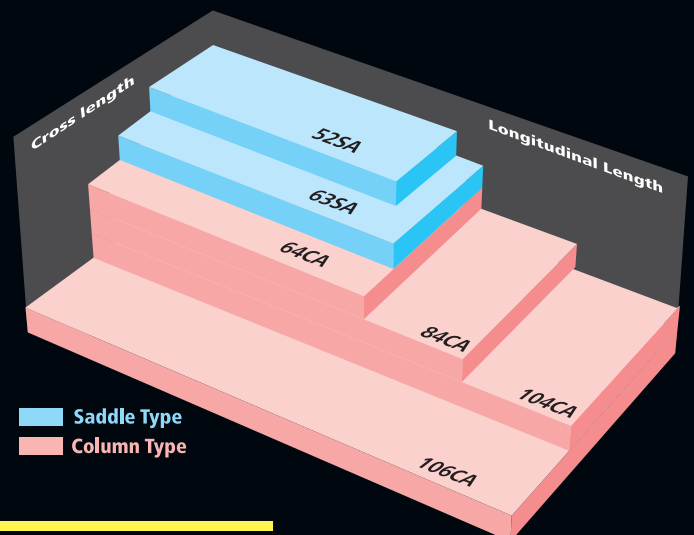
Okamoto

LAUNCHING A NEW SERIES OF MEDIUM SIZE SURFACE GRINDING MACHINES

New functions are adapted to our new medium sized surface grinding machines. The series line up has also been extended. We are offering a wide range of machines where elements have been modified to guarantee higher precisions, improved operability and updates configuration.

Increased series line-up

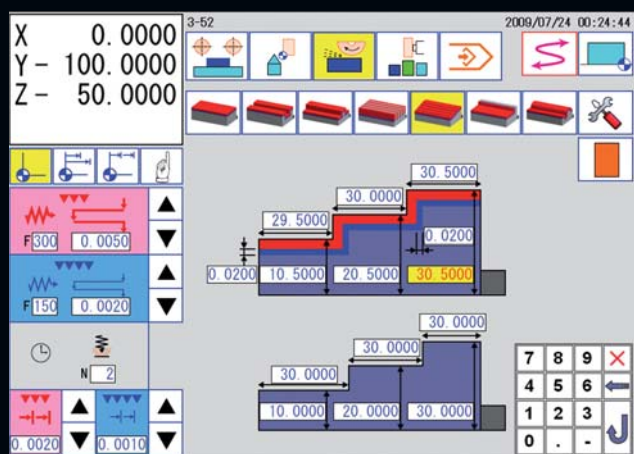
- Better operability and repeatable accuracy are considered as the most important factor. The 400 mm wide models are redesigned to column moving system.
- The new 600 mm wide range are developed to meet the market requirements for larger work piece sizes.



Model name

ACC63SA

- The grinding area is represented by the number (e.g. 63 = 600 x 300 mm)
- The basic construction is indicated by the following letters (SA = Saddle, CA = Column cross movement).
- If there is no following specification the machine is a conventional type employing automatic grinding cycle (dress compensation function as option).
- The indication iQ represents 2 controlled NC axis with easy to use conversational input system.



iQ Software Grinding Data(Step)

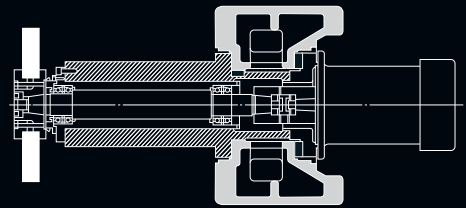
Increased functions

- SA · CA series are conventional machines, with the ability of automatic dress cycles (fixed or overhead mounted dresser) as option.
- iQ software is the most advanced software meeting most work piece and grinding wheel shapes.
- Automatic set up of the optimal in-feed and dress amount to condition by just entering wheel specification (iQ function).

SA SERIES

Increased rigidity

- The extended vertical slides ensures most precise in feed and is capable to receive strong grinding forces.



Improved operability

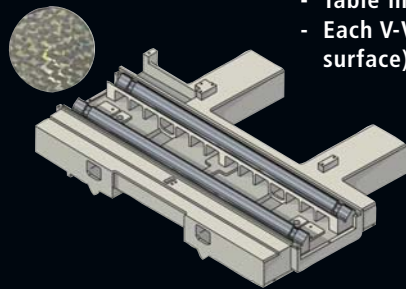
- The design was completely renewed to allow improved operability as a general purpose machine.
- The front panel levers have been completely removed and integrated into the control panel to guaranty easy set up and control.
- The height of the control panel has been increased for more ergonomic working.

Automatic operation

- Cross reversing position can be set by teaching as standard.
- Automatic grinding cycle.
- Automatic dress cycle (table dresser) is available a option.

V-V structural table sliding surfaces considering the straight table run

- Table imbalance due to uneven oil distribution is controlled.
- Each V-V sliding rail surface has 20 scraping points (50% of entire surface) to maintain optimum sliding performance.



The accuracy, reliability and operation of our best selling DX series has been further increased.



ACC42SA-iQ

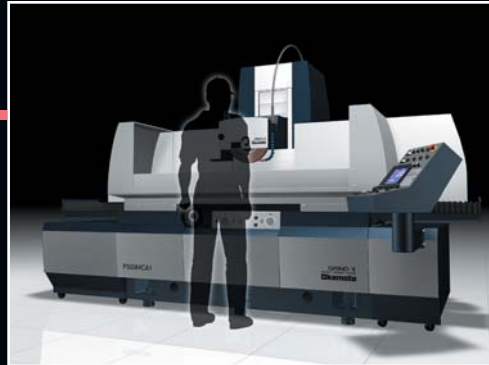


ACC52SA

Column moving series suitable for larger work pieces

Easy access to working area

- Column type design gives easier access for loading and unloading the work pieces.
- For the same reason the distance between floor and work table has been reduced.
- * On the 84 size model it is 915 mm. This is 87 mm lower than existing machines of the same size.



T shaped main casting

- Extremely rigid single piece T shaped main casting.
 - Machine table supported on both sides at all times.
- Additional table mounted devices, and fixtures are supported across the full table length.

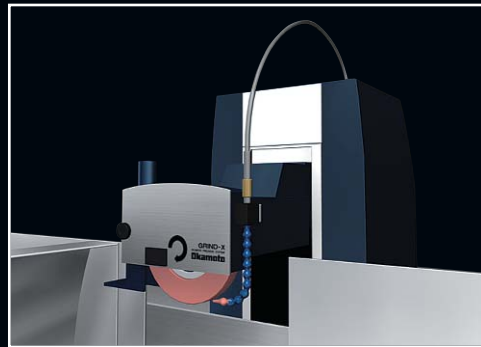
Improved Covering

- Standard cover designed for the use of high pressure coolant systems.
- Draining system to meet the increased amount of coolant.
- High quality sheet metal cover (powder coated) with new design.
- Two tone colour painting and ergonomic design.



CA SERIES

To ensure the highest accuracy and best ergonomic layout of surface grinders with tables greater in width than 400 mm, Okamoto has continually developed the moving column design. This design features an extremely rigid single piece T shaped main casting with fully supported table slide ways to guarantee the highest stability and accuracy. The moving column type design also gives easier access for work loading and unloading. To improve ease of loading even more the height from floor to table has also been kept to a minimum.



High rigid structure

- The cross feed movement is supported on very rigid guide ways. This design of the column has been developed to guarantee very accurate cross movement.



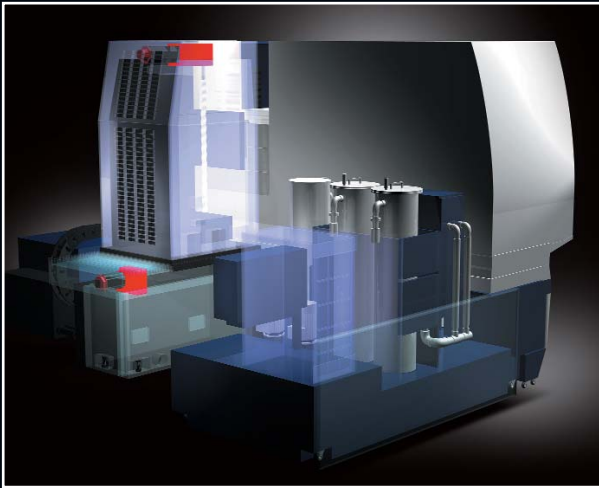
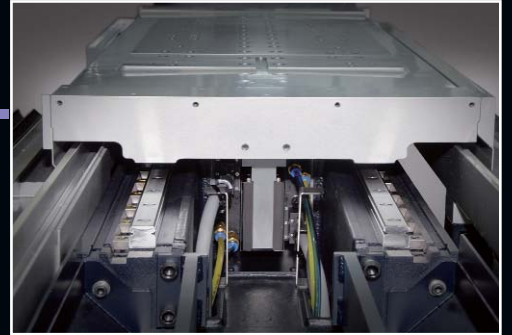
V-V slide way

- The double V (V-V) longitudinal slideway ensures accurate straightness.
- Controls the amount of the lubricating oil layer.

High performance for the future of everyone

Latest technologies

- Improved straightness and positioning accuracy of the table longitudinal axis by linear motor drive.
- Wheel spindle 15 kW, 100 mm wide wheel (option) and linear motor (maximum speed 40 m/min) brings up the productivity 40% comparing existing machine.



Maintenance free for the sake of everyone


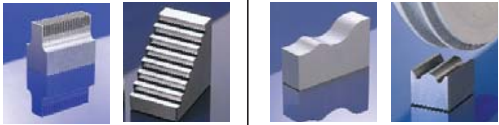
- Unique innovative filter system without paper filter and original coolant system. Maintenance free, next generations coolant system. Reduces the amount of waste produced.
- No oil is used with these advanced next generation surface grinding machines, OKAMOTO cares about the environment.



ACC64 Li I

CONTROLS and CYCLES

Control modes and grinding cycles

		SA / CA		SA-iQ / CA-iQ		
		Standard	Option	Standard	Option	
Function		Vertical automatic grinding	Dress automatic/ full automatic cycle	2 axes NC		
Software		Automatic surface grinding		Interactive graphical software	UPCAM, G code input	
Dress	Type	Portable table type dresser	-Table top dresser (with dress compensation) -Overhead wheel dresser (with dress compensation)	-Table top dresser (with dress compensation)	-Overhead wheel dresser (with dress compensation) *it is possible to select the rough dress by the overhead dresser or the fine dress by the table dresser. -Rotary dresser -Swing type dresser	
	Cycle	—	-Straight dress	-Straight dress -Side dress	-Radius dress -Full Radius dress -V dress -Free form (ISO G-code) -UPCAM	
Grinding	Cycle	Grinding with automatic down feed	Grinding with automatic down feed and automatic dressing	Straight shape, U shape, T shape, Step Pitch, Side, Multi position (SA:Hydraulic servomotor)	Contouring, ISO G-code, Multi position (CA:Linear motor)	
	Grinding condition, alteration/manual grind intervention during the grinding cycle		●	●	●	●
	Traverse grinding	Step	●	●	●	●
		Bias	●	●	●	●
	Plunge grinding	Selective feed at table reversal	●	●	●	●
	Shift plunge		—	—	●	●
Standard		—	Work standard	Chuck/work standard selection		
Teaching function		▲ Longitudinal reverse point cross reverse point	▲ Longitudinal reverse point Dress point, cross rev. point	●	●	
Applicable work						

SA, CA Type (General purpose type)

Control Panel

The position of the panel gives easy access to the controls, with the switches ergonomic positioned.

Mode selector switch

Automatic cycle position setting, rapid and manual feed rate to be set. All function are interlocked.

Stock removal set

The remaining stock removal is displayed (0,1). Rough and fine infeed amount are set by selector switches (0.5, 1, 2, 5, 10, 20, 30 µm).

Position display

The actual vertical and cross position is displayed (0.1).

Electronically hand wheel vertical feed

This handwheel moves the vertical axis in manual mode (0.1, 1 or 10 per division to be set).

Feed rate selector switches

Infeed amount (rough/fine) & spark-out amount can be adjusted during running cycle.

Dress interrupt button

Simple one touch operation for precise dressing at specified depth. To be used for manual dress interruption during grinding cycle.

CA Series control panel



SA-iQ, CA-iQ Type

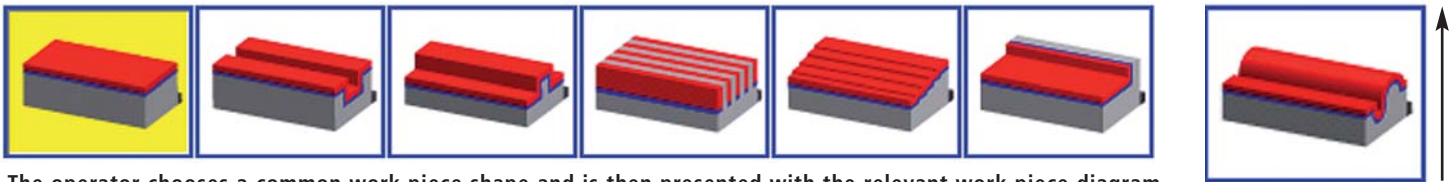
Until now complex tasks in precision grinding depended very much on the experience of a skilled operator. The development of the new Okamoto iQ touch screen control and its easy to use software, coupled with an inherent mechanical accuracy, allows everyone to achieve impressive results. The breakdown of complex tasks into simple basic operations, enables even unskilled operators to use the machine with maximum efficiency.

Setting of the machine is divided into 2 parts, wheel dressing and grinding. A logical graphical representation of each of these operations serves to guide the operator through the setting process. This setting process is made even easier by the use of easy to understand icons displayed on a generously sized colour screen.



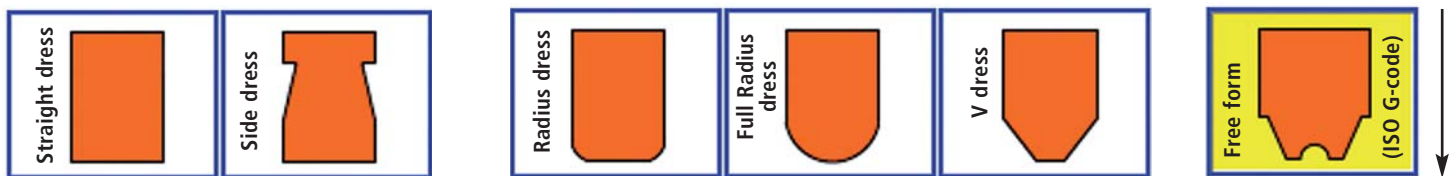
Operation panel

Work piece shape selection



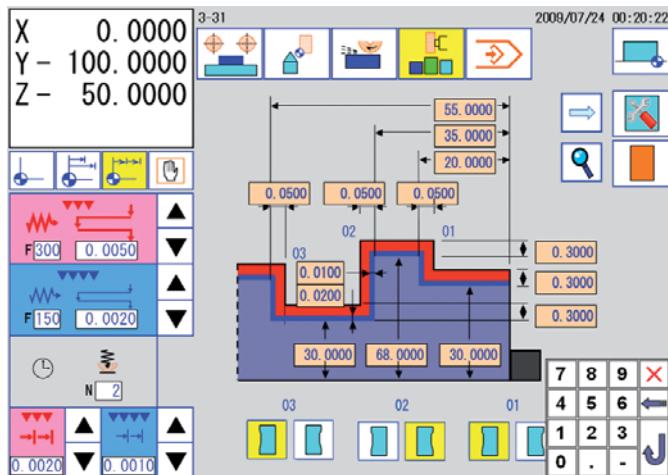
The operator chooses a common work piece shape and is then presented with the relevant work piece diagram into which the necessary data is entered.

Dress shape select



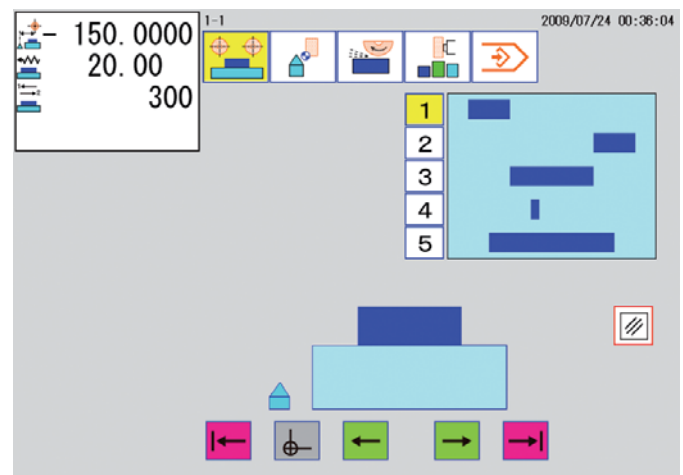
For commonly used wheel shapes, there is no need for complicated programming. Once the choice of wheel shape has been made, relevant parameters are simple entered into a wheel shape diagram.

Combined Grinding Menu



For more complex work pieces, several simple shapes can be combined.

ACC42SA-iQ High Speed Grinding



Along with fast reciprocation, this function allows up to 5 simultaneous table reverse position to be set.

Grinding Data (Surface)

The grinding method and all other parameters including wheel shape are set-up using the touch screen panel.

Mode select (Grind menu selected)

Table setting · Dress data · Grind data · Combined grinding · File operation

Dynamic menu (Grind menu selected)

Surface shape · U-shape · T-shape · Pitch · Step · Side face · Contouring

The screenshot shows a control panel with the following elements:

- Coordinates:** X 0.0000, Y 0.0000, Z 10.0000, V 0.0000
- Feed Rates:** F300 0.0050 (vertical), F100 0.0020 (cross)
- Sparks:** N 3
- Graphical grinding cycle progress indicator:** A 3D model of a grinding wheel on a workpiece with a red top surface.
- Dynamic menu icons:** A row of icons representing different grinding shapes and operations.

Dynamic menu (Grind parameters)

Datum method selected (picture show work datum)

Setting parameters:

- 1 Select step or continuous feed
- 2 Chuck/Word datum select
- 3 Set up air-cut amount

Selected wheel shape for current grind cycle (Press this icon to alter dress conditions)

Feed rates can be changed in-cycle

Grinding Feed Rates

Vertical feed
Intelligence Quotient function:
 By entering the wheel mesh size, optimal grinding condition automatically set.

Cross feed
 1 Speed (F)
 2 Infeed amount

Spark out passes / times
Estimated remaining time to cycle finish

Work datum – Intelligence Quotient function

Choose the way you want to work.

The set-up screen changes according to Work or chuck datum.

The numeric key pad appears only when required.

Work Datum:
 Input stock removal

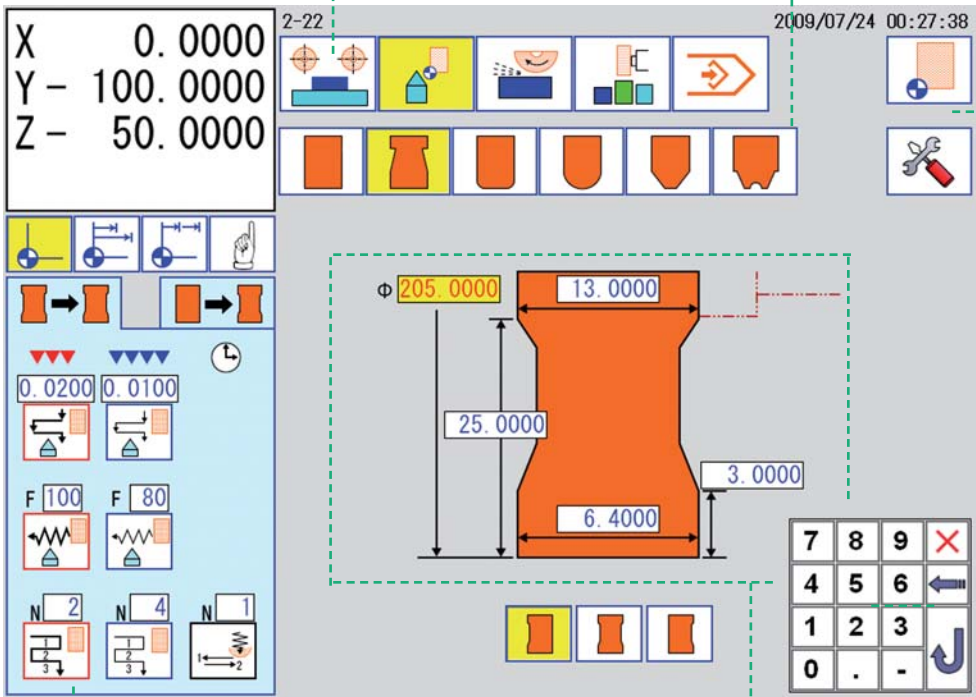
Chuck Datum:
 Input finished height

Dressing Data (Side Dress)

Different wheel shapes and other dressing data are easily set-up directly on the touch screen panel.

Mode select (Dress menu selected)
 Table setting · Dress data · Grind data · Combined grinding · File operation

Dynamic menu (Dress menu selected)
 Straight dress · Side dress · Radius dress · Full radius dress · V dress · Free form (ISO G-code)



Dynamic menu (Dress parameters)

Diamond setting icon – press to enter teach-in screens

- Setting parameters:
- 1 Fixed diamond, rotary disk or overhead dressing device
 - 2 Dress direction – push / pull diamond
 - 3 Minimum wheel diameter
 - 4 Dress speed parameter for radius

Numerical key board

Setting dress conditions

Rough dress parameters

Fine dress parameters

Intelligence Quotient function:
 By entering the wheel grit size (#40 or #60), optimal dress conditions (in-feed amount and speed) are automatically set.

Dress shape – Intelligence Quotient function

Choose the wheel shape you want.

Common wheel shapes require only parameter input.

More complicate wheel shape using conventional ISO G-Code can also be set-up using the touch screen.

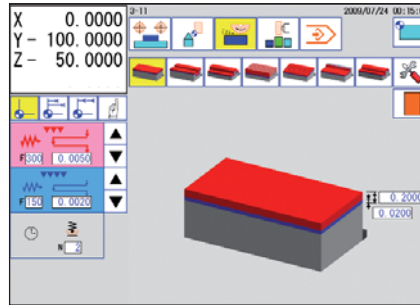
Setting Examples

Easy set-up for all types of work can be carried out by choosing the relevant work piece shape or combination of patterns.

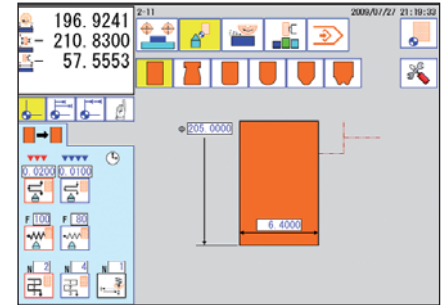
Surface



Grinding data (Surface)



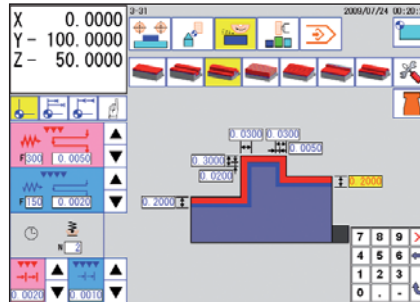
Dress data (Straight)



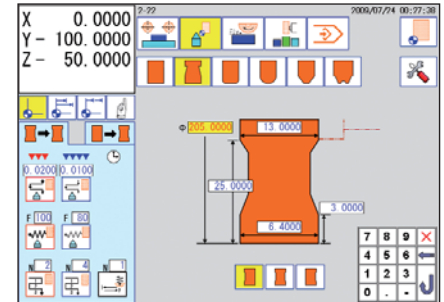
T shape



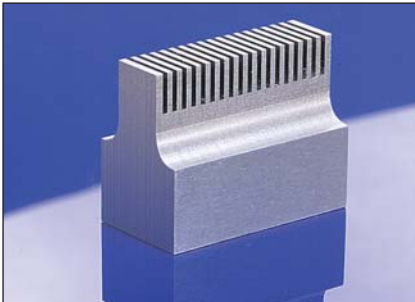
Grinding data (T shape)



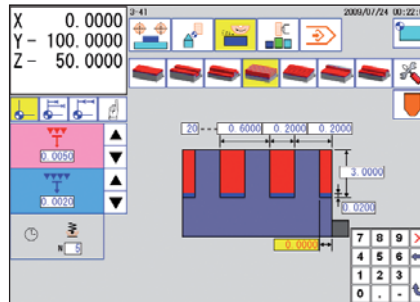
Dress data (Side)



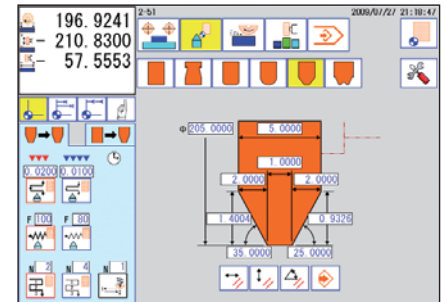
Pitch Shape



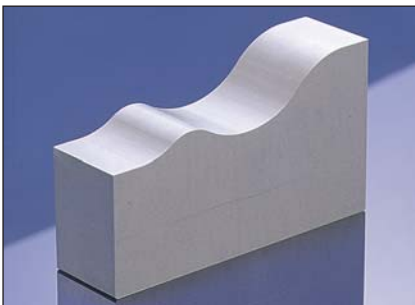
Grinding data (Pitch shape)



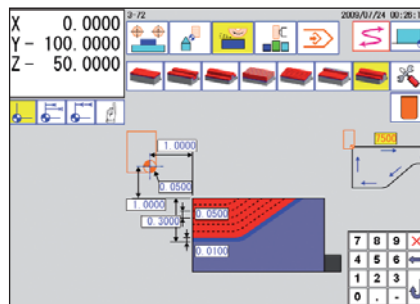
Dress data (V shape)



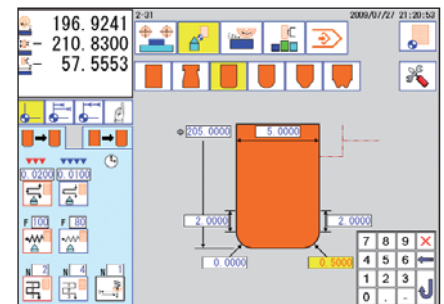
Contouring



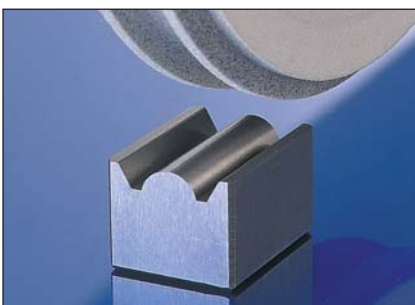
Grinding data (Contouring)



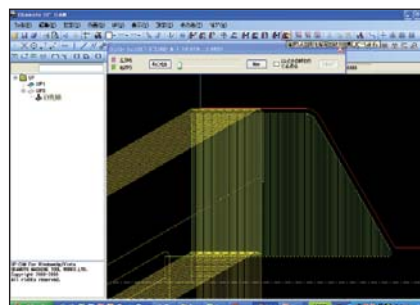
Dress data (Radius)



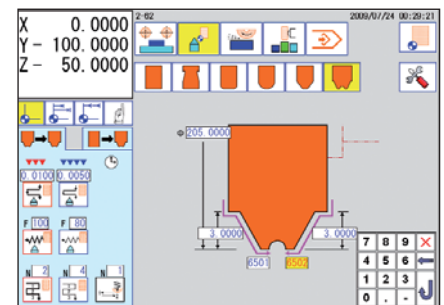
UPCAM



Rapid pre-profil dressing

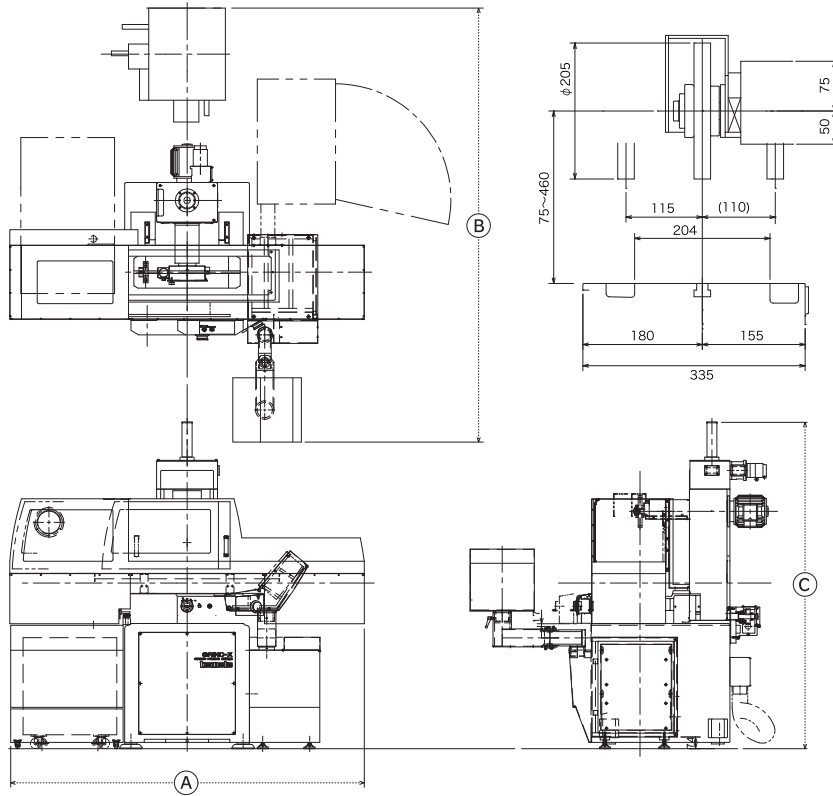


Dress data (Free Form)

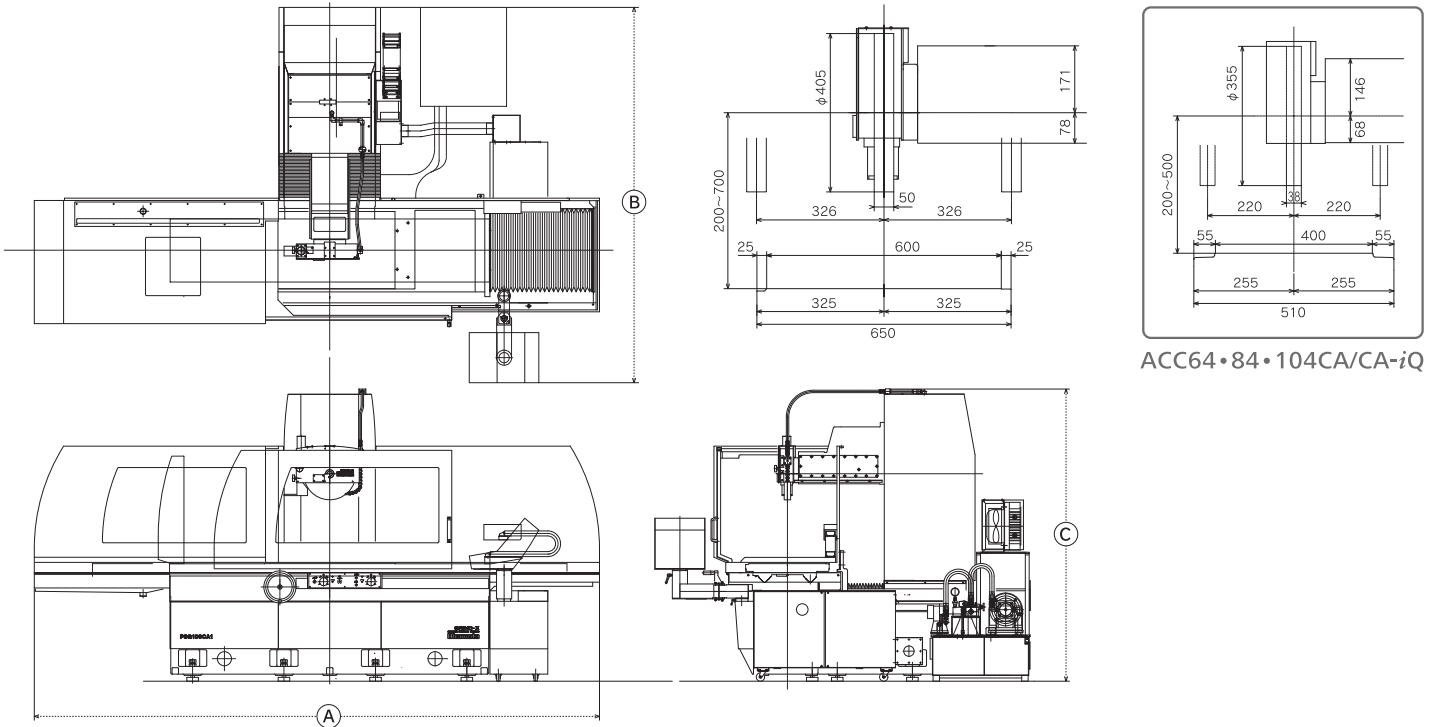


OUTLINE DRAWING

ACC 42 SA-iQ



ACC 64 · 84 · 104 · 106 CA/CA-iQ



ACC64·84·104CA/CA-iQ

unit: mm

	(A) Width	(B) Depth	(C) Height
ACC42SA-iQ	2270	2781	2093
ACC52SA	2502	1774	1845
ACC63SA	2827	1937	1845
ACC64CA/CA-iQ	3595	2900	2203

	(A) Width	(B) Depth	(C) Height
ACC84CA/CA-iQ	3980	2900	2203
ACC104CA/CA-iQ	4479	2900	2203
ACC66CA/CA-iQ	3990	3350	2275
ACC106CA/CA-iQ	4479	3350	2275

ACCESSORIES

Standard accessories

Item	SA	CA	SA-iQ	CA-iQ
1 Grind X grinding wheel	○	○	○	○
2 Wheel balancing arbor	○	○	○	○
3 Air Exchange cooler	–	○	–	○
4 Spindle speed inverter	–	○	○	○
5 Wheel flange	○	○	○	○
6 Wheel guard 400 mm	–	○	–	○
7 Portable table dresser	○	○	–	–
8 3 point dresser	–	–	○	○
9 Flexible nozzle	○	○	○	○
10 Standard tools	○	○	○	○
11 Leveling bolts and plates	○	○	○	○
12 Splash cover	○	○	○	○
13 Chuck controller MA5	○	○	○	○
14 Earth leakage breaker	–	–	○	○
15 Grinding time estimate function	–	–	○	○

Item	SA	CA	SA-iQ	CA-iQ
Grinding Cycle				
1 Surface grinding cycle	–	–	○	○
2 U shape cycle	–	–	○	○
3 T shape cycle	–	–	○	○
4 Step cycle	–	–	○	○
5 Pitch cycle	–	–	○	○
6 Side grinding cycle	–	–	○	○
Dressing Cycle				
1 Straight dressing	○	○	○	○
2 Side dressing	–	–	○	○
High speed grinding	–	–	○	–



3 point dresser

Optional accessories

Item	SA	CA	SA-iQ	CA-iQ
1 Coolant system				
1 Coolant tank with paper	○	○	○	○
2 Coolant tank with ECO filter, magnetic dust Separator and temperature controller	○	○	○	○
2 Chuck				
1 Electro magnetic chuck	○	○	○	○
2 Electro permanent chuck and microcontroller	○	○	○	○
3 Grinding wheel adaptor				
1 Spare grinding wheel adaptor	○	○	○	○
4 Balancing apparatus				
1 Balancing apparatus with arbor	○	○	○	○
2 Micro Balancer semi automatic	○	○	○	○
3 Fully automatic wheel balancer	○	○	○	○
5 Work light				
1 LED Working light	○	○	○	○
6 Special paint				
7 Oil cooling system				
1 Air exchange	–	–	○	○
2 Oil cooling system	○	○	○	○
3 Temperature controlled grinding head	○	○	○	○

Item	SA	CA	SA-iQ	CA-iQ
8 Measuring instrument				
1 Calender time	○	○	○	○
9 Safety related options				
1 Postoperation power off	○	○	○	○
10 Dressing options				
1 Overhead wheel dresser with compensation	○	○	○	○
2 Swing dresser	–	–	○	○
11 Grinding cycles				
1 Contouring cycle	–	–	○	○
2 ISO code cycle	–	–	○	○
12 Dressing cycles				
1 Radius dress	–	–	○	○
2 Full radius dress	–	–	○	○
3 V form dress	–	–	○	○
4 ISO code dress	–	–	○	○
13 Programming software				
1 UP CAM	–	–	○	○



Swing type dresser



Rotary dresser, swing type



Overhead wheel dresser (with dress compensation)

ACC-CA Series / CA-iQ Series / Li I Series

Item		Unit	CA Series					CA-iQ Series			
			64CA	84CA	104CA	66CA	106CA	64CA-iQ	84CA-iQ	104CA-iQ	66CA-iQ
Capacity	Table working cap. (length x width)	mm	605 x 400	805 x 400	1016 x 400	605 x 600	1016 x 600	605 x 400	805 x 400	1016 x 400	605 x 600
	Maximum travel (manual : longitudinal x cross)	mm	800 x 440	1000 x 440	1200 x 440	800 x 652	1200 x 652	800 x 440	1000 x 440	1200 x 440	800 x 652
	Distance new wheel →table	mm	22.5 – 522.5			-2.5 – 497.5		22.5 – 522.5			-2.5 – 497.5
	Standard magnetic chuck size	mm	600 x 400 x 90	800 x 400 x 90	1000 x 400 x 90	600 x 600 x 90	1000 x 600 x 90	600 x 400 x 85	800 x 400 x 85	1000 x 400 x 85	600 x 600 x 85
	Table load capacity (incl. chuck weight)	kg	1000			1500		1000			1500
	Height on table (from floor)	mm	915								
Table	T-slots (width x No)	—	—								
	Hydraulic feed rate (Li : linear motor)	m/min	3 – 25								
Crossfeed	Manual cross feed	Hand feed per revolution	0.1 / 1.0 / 5.0					0.01 / 0.1 / 1.0 / 5.0			
		Graduation of handwheel	0.001 / 0.01 / 0.05					0.0001 / 0.001 / 0.01 / 0.05			
	Automatic cross feed	Intermittent feed	0.5 – 20								
		Continuous feed	mm/min	0 – 2000					0 – 1000		
Wheel head	Manual pulse feed	Hand feed per revolution	0.01 / 0.1 / 1.0								
		Graduation of handwheel	0.0001 / 0.001 / 0.01								
	Automatic downfeed (traverse & plunge)	Rough grinding	mm	0.0001 – 0.03 (15 steps)				0.001 – 0.03 (15 steps)			
		Fine grinding	mm					0.0001 – 0.01 (11 steps)			
	Feedrate (F-Command)	mm	—					1000			
	No. of sparkout	time	0 – 5					0 – 99			
	Rapid feed rate	mm/min	0 – 1000								
Grinding wheel	Size OD x W x ID	mm	ø355 x 38 x ø127			ø405 x 50 x ø127		ø355 x 38 x ø127			ø405 x 50 x ø127
	Speed (Invertor)	min ⁻¹	500 – 2500								
Motors	Grinding wheel spindle (reverse-ventilation)	kW	7.5								
	Hydraulic pump	kW/P	2.2 / 4								
	Vertical feed (AC servo)	kW	1.5								
	Cross feed (AC servo)	kW	0.75								
Desired power supply including electro mag, & coolant system		kVA	13			16		24			
Floor space	Length	mm	3600	3980	4478	4000	4480	3650	3980	4478	4000
	Width	mm	2900	2900	2900	3350	3350	2900	2900	2900	3350
	Height	mm	2203	2203	2203	2275	2275	2203	2203	2203	2275
Net weight		kg	4950	5500	7000	6300	7300	4950	5500	7000	6300

SPECIFICATIONS

ACC-SA Series / SA-iQ Series

Li I Series			
106CA-iQ	64LiI	84LiI	104LiI
1016 x 600	605 x 400	805 x 400	1016 x 400
1200 x 652	800 x 440	1000 x 440	1200 x 440
-2.5 – 497.5	-2.5 – 497.5 (ø405 wheel)		
1000 x 600 x 85	600 x 400 x 85	800 x 400 x 85	1000 x 400 x 85
1500	700		
0 – 35			
0.01 / 0.1 / 5.0			
0.001 / 0.01 / 0.05			
0.5 to 45 (100 mm wide wheel)			
0 – 2000			
0.01 / 0.1 / 1.0			
0.0001 / 0.001 / 0.01			
0.001 – 0.03 (15 steps)			
0.0001 – 0.01 (11 steps)			
2000			
0 to 5			
0 – 2000			
ø405 x 50 x ø127	ø405 x 100 x ø127		
500 – 2500			
15			
–			
34.6			
4478	3777	4100	4700
3350	2985	2647	2647
2275	2344	2203	2203
7300	5300	5800	7300

				SA Series		SA-iQ Series
				52SA	63SA	42SA-iQ
Capacity	Table working cap. (length x width)	mm	550 x 200	605 x 300	530 x 200	
	Maximum travel (manual : longitudinal x cross)	mm	650 x 230	750 x 340	530 x 230	
	Distance new wheel →table	mm	47.5 – 397.5	47.5 – 347.5	22.5 – 357.5	
	Standard magnetic chuck size	mm	500 x 200 x 70	600 x 300 x 80	400 x 200 x 70	
	Table load capacity (incl. chuck weight)	kg	200	420	120	
Table	T-slots (width x No)	mm	17 x 1	17 x 3	17 x 1	
	Hydraulic feed rate (Li : linear motor)	m/min	0.3 – 25		0.1 – 20	
Crossfeed	Manual cross feed	Hand feed per revolution	mm	0.1 / 1.0 / 5.0		0.01 / 0.1 / 1.0
		Graduation of handwheel	mm	0.001 / 0.01 / 0.05		0.0001 / 0.001 / 0.01
	Automatic cross feed	Intermittent feed	mm	0.5 – 12	0.5 – 20	0.5 – 12
		Continuous feed	mm/min	0.1 – 1000		0.1 – 1000
Wheel head	Manual pulse feed	Hand feed per revolution	mm	0.01 / 0.1 / 1.0	0.01 / 0.1 / 1.0	0.01 / 0.1 / 5.0
		Graduation of handwheel	mm	0.0001 / 0.001 / 0.01	0.0001 / 0.001 / 0.01	0.0001 / 0.001 / 0.05
	Automatic downfeed (traverse & plunge)	Rough grinding	mm	0.0001 – 0.03 (15 steps)	0.0001 – 0.03 (15 steps)	0.001 – 0.03 (15 steps)
		Fine grinding	mm			0.0001 – 0.01 (11 steps)
	Feedrate (F-Command)	mm	–		0 – 2000	
	No. of sparkout	time	0 – 5	0 – 5	0 – 99	
	Rapid feed rate	mm/min	0 – 600		0 – 1000	
	Grinding wheel	Size OD x W x ID	mm	ø205 x 19 x ø50.8	ø305 x 38 x ø127	ø205 x 6 to 25 x ø31.75
Speed (Invertor)		min ⁻¹	3000 / 3600	1500 / 1800	1000 – 3600	
Motors	Grinding wheel spindle (reverse-ventilation)	kW/P	1.5 / 2	3.7 / 4	2.2 / 2	
	Hydraulic pump	kW/P	0.75 / 4	1.5 / 4	0.75 / 4	
	Vertical feed (AC servo)	kW	0.4		0.75	
	Cross feed (AC servo)	kW	0.75		0.75	
Desired power supply including electro mag, & coolant system		kVA	5	10	14	
Floor space	Length	mm	2750	3020	2470	
	Width	mm	1980	2180	2900	
	Height	mm	1845	1845	2093	
Net weight		kg	2200	2900	2100	

GRIND-X

OKAMOTO PRECISION SYSTEMS

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Caution

When and before using our products, you are requested to well go through the articles on danger, warning and attention for the sake of safety described in operation manual attached to the machine and also the in warning plates mounted on the machine.

*Specifications subject to change without notice.

*When a product manufactured at our factory comes under the Foreign Exchange and Foreign Trade Control Law and is exported or carried overseas, it is necessary to receive permission or approval of the Japanese Government.

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