

AGC



ACC Series Precision Column Type Surface Grinding Machines

The ACC Series is available with three control options to meet specific grinding applications. Choose from Automatic, MDI Control (Manual Data Input) or full 2-axis simultaneous CNC in a wide range of capacities. In all, there are 45 models.

Whether the application is small lot, high-precision parts, or rigorous high-volume production, these rugged machines provide true precision, long-term reliability and broad application flexibility.

ACC Column DX Series

- This fully automatic grinder uses the DX Control that has a 35 year record of proven performance. Precise AC servo driven downfeed with 0.00005" minimum increments is displayed on the built-in digital display.



ACC Column iQ Series

- When grinding conditions change and fast turn-over is important, the iQ Series delivers. This model has fully controllable vertical and cross-feed through precise AC servo drives. An overhead wheel dresser provides automatic wheel dress/dress compensation. A table mount type wheel dresser is also available.



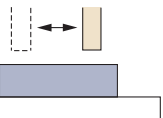
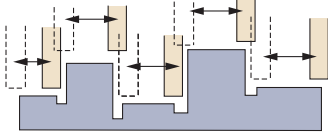
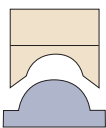
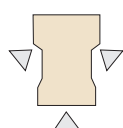
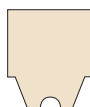
ACC Column DXNC Series

- Precise, productive, easy to learn - that's the DXNC Series. This model features built-in grinding cycles with powerful conversational software. Single surface, multi-surface (step, step with convex shape, step with concave shape and templates) for wheel forming are standard. The standard 2-point table mounted wheel dresser affords increased tolerances by establishing dresser point as datum. When the application calls for form grinding (G-code) and contour grinding (G-code) choose the optional 7-step swing type or rotary type wheel dressers.



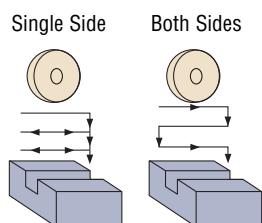
Choose the model that's right for the job

Grinding Cycle

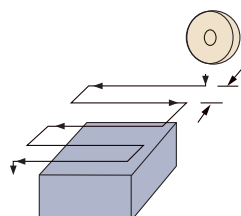
WORKPIECE SHAPE	DX SERIES (Full Auto.Type)	iQ SERIES (PLC Type)	DXNC SERIES (CNC Type)
SURFACE  <i>Workpiece surface is bigger than grinding wheel surface</i>	Traverse, Step Plunge	Traverse, Step Plunge Shift Plunge	Traverse, Step Plunge Shift Plunge
MULTI-SURFACE  <i>Vertical plunge depths and cross feed positions are not the same</i>	—	Traverse, Step, Crisscross Multi-Step	Groove - Traverse, Step Pitch - Constant, Irregular Multi-Step
FORM 	—	—	Plunge Contouring
Dress FLAT 	Overhead Semi-Automatic	Overhead Fully Automatic Table Mount Single Point Dresser (Optional)	Table Mount Single Point Dresser
SIDE 	—	—	Table Mount Three Point Dresser (Optional)
FORM DRESS 	—	—	Table Mount Three Point Dresser (Optional) Swing Type Dresser (Optional) Rotary Type Dresser (Optional)
Grinding and Dress Software	Automatic Infeed and Crossfeed	iQ Software	Conversational Software

Grinding Cycles

STEP INFED

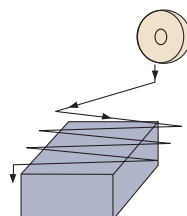


TRAVERSE

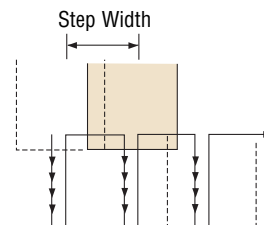


Wheel Infeed by both ends of cross stroke.

CRISSCROSS



HIGH-PRODUCTIVITY SHIFT PLUNGE



Dramatically reduces cycle time by automatically executing rough grinding in plunge mode then fine grinding in traverse mode. Available on ACC-iQ and ACC-DXNC models.

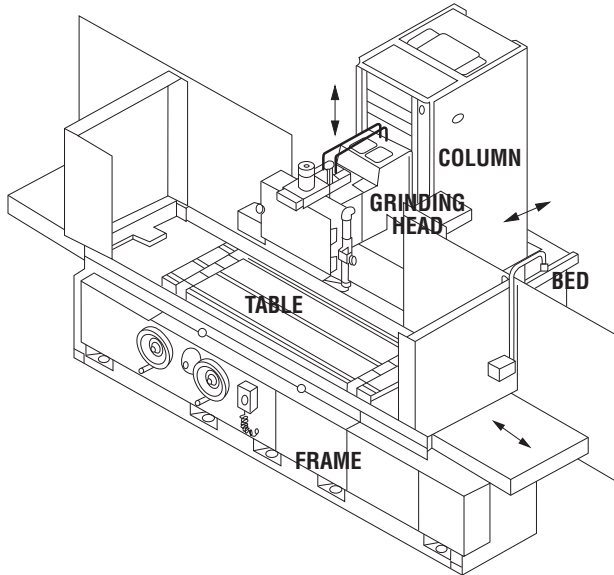
Superior design and construction for the heaviest grinding applications

Okamoto Column Types design assures superior Rigidity, Accuracy and Reliability -

Work Envelope Access for simplified large work set-up and in-process inspection

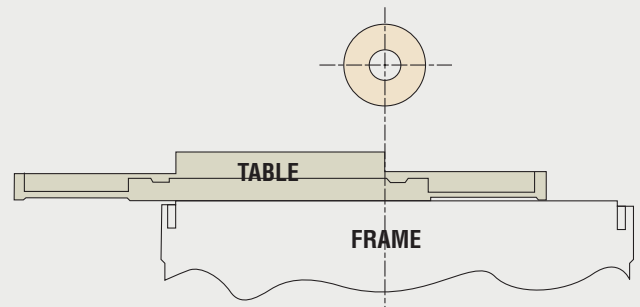
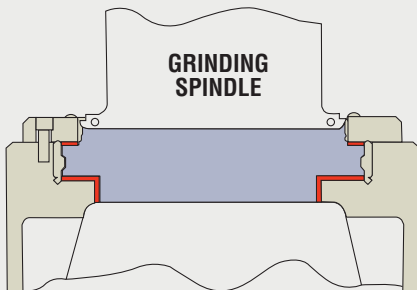
Why Column Type Design is Better

The grinding wheel is part of the column assembly, both move simultaneously. The table travels longitudinally on the machine bed. Crossfeed is executed by column travel so chuck/workpiece to operator distance remains constant. The result is optimum operator convenience, safety and operation.



Column assembly and table frame

Outstanding infeed accuracy with high rigidity design



Over 60 years of grinding machine experience go into every grinder. Robust cast iron has the thickness and strategically located ribbing to ensure maximum long-term rigidity. The wheelhead is fully supported by 6 slideways. The column assembly incorporates a unique ventilation port to evacuate hot air from the column interior resulting in enhanced thermal stability.

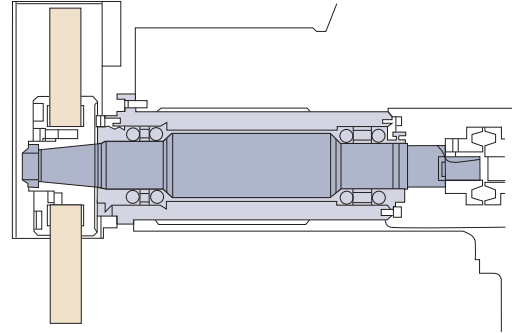
Okamoto Column Type Surface Grinders are renowned for their large and heavy workpiece capacities.

At no point during table reciprocation does the chuck work zone overhang the machine frame. This eliminates deflection due to weight stresses and assures consistent accuracy throughout the full grinding stroke.

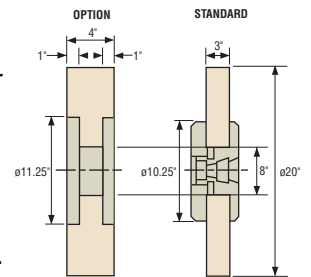
The combination of a V-F slideway and hydraulic cylinder provides for stable table movement and speed even with heavy workpieces or slow table speeds.



Precise heavy grinding conditions demand an exceptional spindle.

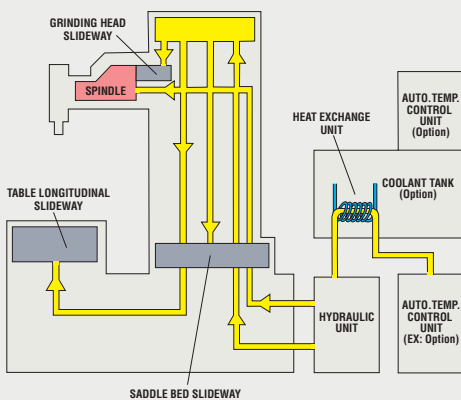


The cartridge type ACC Column wheel spindle is designed to deliver peak accuracy even under the heaviest grinding demands. A specially designed, precision balanced spindle motor drives the spindle through a flexible coupling that absorbs vibration while transmitting full horsepower. An impeller mounted on the motor shaft expels heat away from the spindle out the column vents. Bearings are sealed and lubed for life.



Reliable Hydraulic / Lubrication System

Consistent, dependable lubrication is the lifeblood of any machine. ACC Column Grinders utilize a reliable gravity feed system that provides critical lubrication to all slideways and positioning screws.



Optimum Thermal Stability means Optimum Accuracy.



The hydraulic units / temperature regulating systems are designed to be positioned away from the grinding machine. This eliminates the transmission of accuracy robbing heat and vibration to the machine.

ACC-DX Series: Oil Temperature Regulator standard

ACC-iQ Series: Oil Temperature Regulator standard. Spindle housing temperature controlled by hydraulic oil.

ACC-DXNC Series: Oil Temperature Regulator standard. Spindle housing temperature controlled by hydraulic oil. If desired, a heat exchange unit can be connected to grinder's coolant tank.



Machines may be pictured with options.

ACC-DX Models deliver rugged performance, superb precision and long-term dependability at an affordable price. They utilize Okamoto's exclusive MDI control system that assures consistent precise infeed. Minimum increment is 0.000050". Total stroke is also displayed. This easy-to-use control simplifies touch down and minimizes air cut time.

Optimum Convenience

The DX Series lets today's progressive machinists enjoy the convenience, flexibility and safety of Okamoto column type design. The traveling column assures unobstructed access to the work envelope even with extra-large workpieces. Parts loading/unloading and in-process inspection is also simplified. All handwheels, switches and control buttons are conveniently located on the front control panel. An interlock system during the auto cycle and protective covers for table dogs and other machine components promotes operator safety.

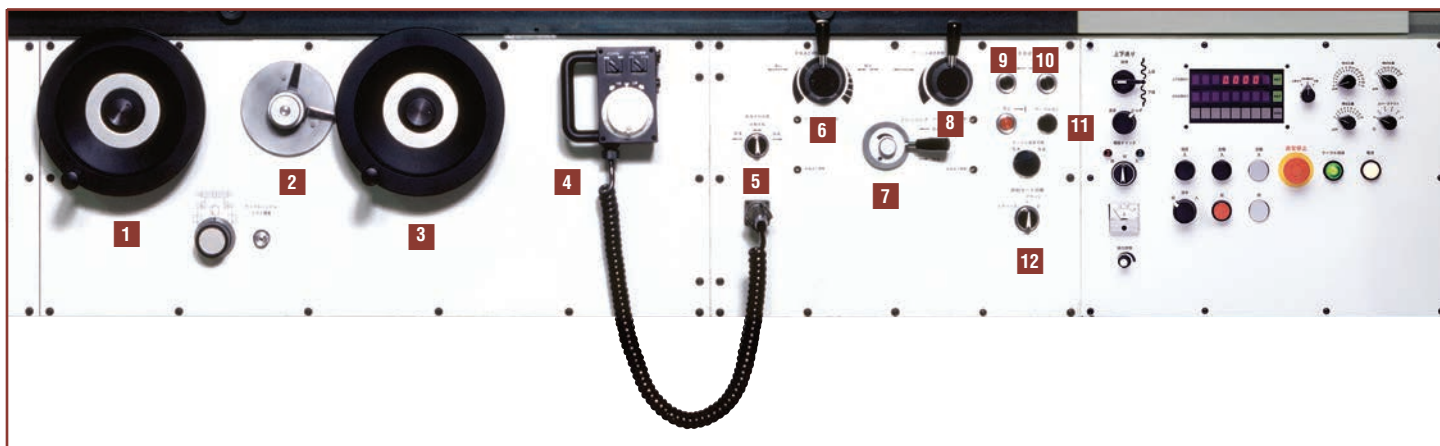
High Precision

The best components make for the best machine. The combination of a high resolution AC servo motor and fine pitch ballscrew delivers outstanding infeeds of 0.00005". Okamoto's LSI Control System allows operators to select infeeds from 0.00005" to 0.0025" through simple switch operation.

Simple Operation

Okamoto's DX control system simplifies the grinders' fully automatic cycle. Coarse grinding, Fine Grinding, Spark-out and Table Stop are all part of the machines' integrated grind cycle. Vertical wheelhead positions are always displayed on the vertical digital display.

Operation Panel



- 1 Table Longitudinal Feed Handwheel
- 2 Crossfeed Reversing Limit Selector
- 3 Crossfeed Handwheel
- 4 Manual Pulse Generator for Vertical Feed
- 5 Crossfeed Direction Control Switch
- 6 Crossfeed Speed Adjusting Lever
- 7 Wheel Dressing Speed Adjusting Knob and Direction Change Lever
- 8 Table Speed Adjusting Lever
- 9 Table Start Left Pushbutton

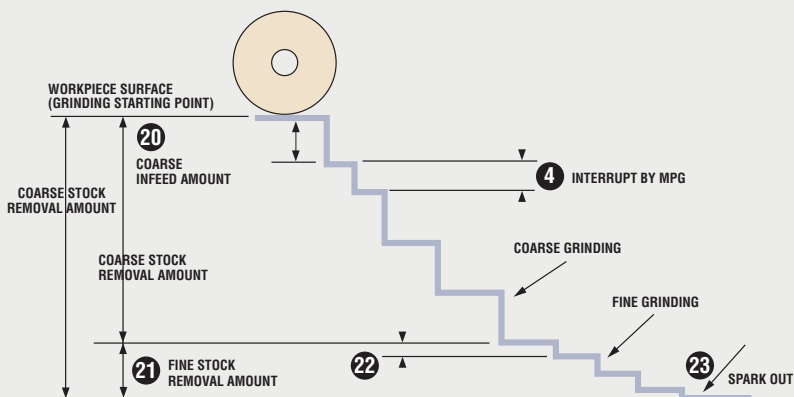
- 10 Table Start Right Pushbutton
- 11 Table Right End Stop Pushbutton
- 12 Grinding Mode Selector Switch
- 13 Wheelhead Rapid Traverse Switch
- 14 Rapid/Jog Infeed Switch
- 15 Vertical Positioning Display (during auto mode : Stock removal amount display)
- 16 Reset Switch
- 17 Crossfeed Positioning Display (Option)

- 18 Reset Switch
- 19 Grinding Mode Selector Switch
- 20 Coarse Grinding Infeed Selector Switch
- 21 Fine Grinding Stock Removal Set up Switch
- 22 Fine Grinding Infeed Selector Switch
- 23 Spark-out Counter Switch (0 - 5 times)



4 Manual Pulse Generator

All Column DX models are equipped with a Vertical Feed Manual Pulse Generator as standard. This gives the operator necessary mobility for wheelhead positioning during set-up. Fine feed increments of 0.00005" and 0.005" per handwheel revolution enables precise wheel to work positioning. If desired, an optional vertical feed handwheel is available on all models.



12 Grinding Mode Select Switch

Traverse: Downfeed signal at the end of each Crossfeed reversal

Plunge 1: Downfeed signal at right end of the table stroke

Plunge 2: Downfeed signal at both ends of the table stroke

Self Diagnostic Function

Simply press "DGN" key LED aided troubleshooting.

Stock Removal Set-Up

Total stock removal amount is input and displayed through simple key input. The Fine Grinding Stock Amount Selector Switch enables the operator to switch between Coarse and Fine grinding input modes.

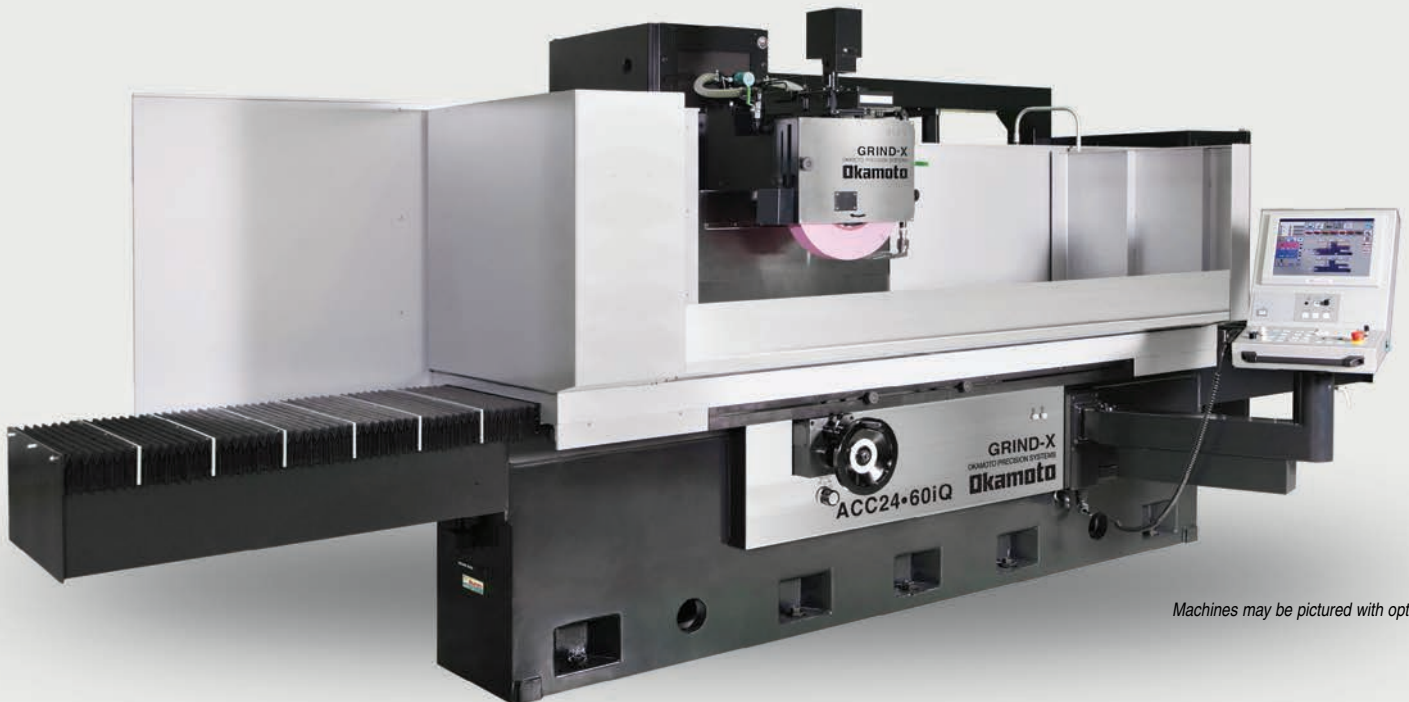
ACC-iQ Series

ACC-iQ Models provide all the performance, precision and dependability of the DX Series plus a new degree in convenience. Their easy-to-use Touch-Screen Interactive Graphical Software simplifies set-up, change-over and boosts productivity.

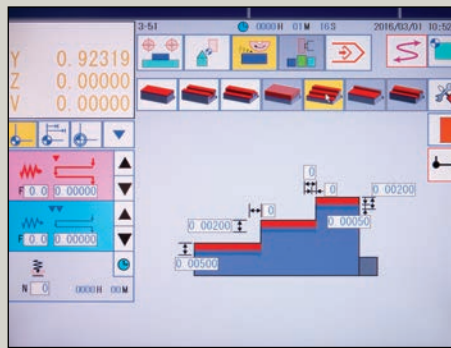
ACC-iQ Series Column Grinders use Okamoto's "user-friendly" grinding software. This proven software simplifies all phases of the grinding operation while giving the operator the "feel" of conventional machine operation. This simple "teach function" simplifies vertical sizing position, crossfeed point and dressing position. Vertical and Cross movement, Automatic Downfeed (Traverse or Plunge) are programmable in selected user increments from 0.00001" to 0.004". The minimum Crossfeed increment is 0.00001".



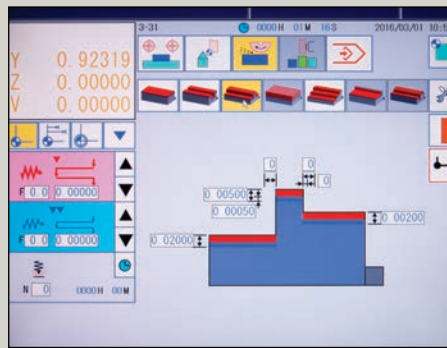
Okamoto's state-of-the-art iQ Control delivers a new degree in programming simplicity. Simply input total stock removal, fine stock removal and grinding wheel data - the control then automatically selects the optimum grinding and dress conditions.



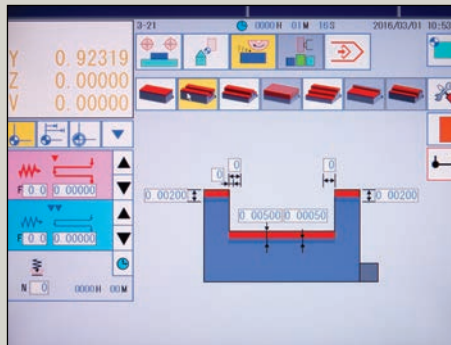
Machines may be pictured with options.



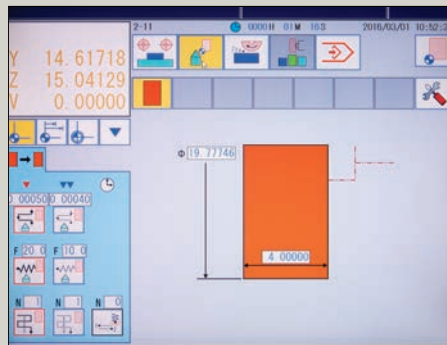
3-Step Form Set-Up Page



3-Step Convex Form Set-Up Page



3-Step Concave Form Set-Up Page



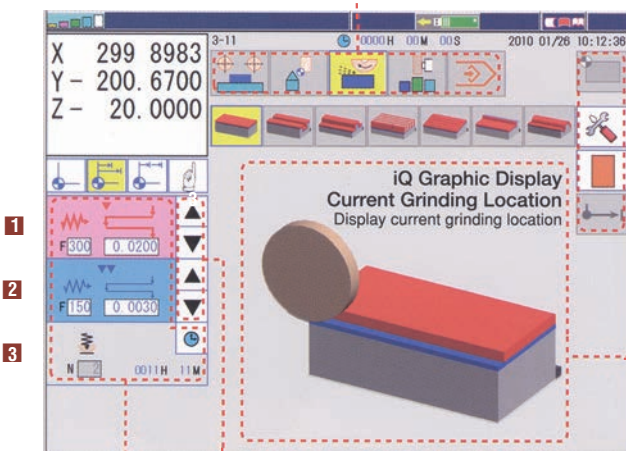
Dress Set-Up Page

High Performance iQ Functions

- Powerful Spindle Motor
- Overhead Wheel Dresser with Automatic Dress Compensation used for coarse and fine grinding cycles
- Shift/Plunge Grinding dramatically reduces cycle times
- iQ's cycle Time Calculation Function boosts productivity
- iQ automatically selects optimum shift amount during Shift-Plunge cycle for maximum grinding efficiency
- Standard Spindle Inverter, Hydraulic Oil Temperature Regulator and Grinding Head Oil Circulation assure continuous optimum accuracy

Grinding Data Screen

MODE SELECTION MENU				
Table Stroke Set Up	Dress Data Set Up	Grinding Data Set Up	Multiple Menu	Data Preserve Data Call, Data Edit



- 1 Coarse Grinding Infeed Amount & Cross Feed Speed (F-Key)
- 2 Fine Grinding Infeed Amount & Cross Feed Speed (F-Key)
- 3 Left Side Sparkout (Timer Setup)
Right Side iQ Cycle Time Calculation

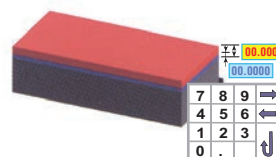
Coarse Grinding
Fine Grinding
Inching Key

Parameter

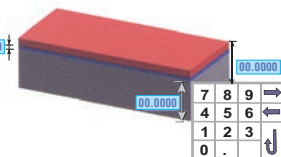
Datum Set Up (Screen shows Work Surface Datum)

- 1 Select for Step Infeed or Crisscross Continuous Infeed
- 2 Select for Chuck Surface Datum or Work Surface Datum
- 3 Set Up Air Cut Amount
- 1 Display Current Grinding Wheel Shape
- 2 Change Dress Condition During Cycle
- 3 Compensation Grinding

Datum Selection



Work Surface Datum



Chuck Surface Datum



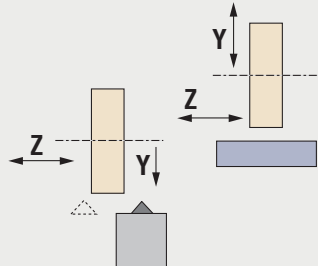
Machines may be pictured with options.

Various Dressing Units



Table Mount Single Point Dresser Unit

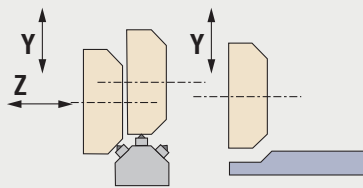
Wheel Forming Tracks



The Single Point Dresser Unit (located table left side) uses Column Crossfeed and Grinding Wheel vertical movement to generate flat dress or multi-flat grinding.



Table Mount 3-Point Dresser Unit (optional)

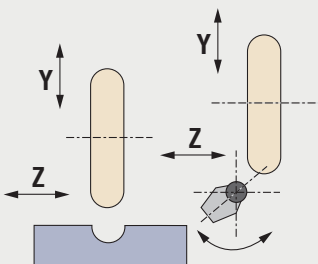


The 3-Point Dresser unit (located table left side) has a top and 2 side-mounted diamonds needed to prepare Angle Dress, Side Dress or Radius Wheel Forms.

- For Angle Dress (45 deg. divide)
For use wheel OD dress, Angle Dress (V-shape) form
- For Side Dress (90 deg. divide).
For use wheel OD dress, single side dress, both side dress form.



Optional Rotary and Swing Type Dresser (optional)



The Swing-Type Dresser Unit (located table right side). Dresser arm can be tilted ± 30 deg., ± 15 deg. and 0 deg. to avoid interference between diamond tool and shoulder, and make universal wheel forms with 2-axes simultaneous control for Cross and Vertical Infeed.

Easy operation with Operator Friendly Software

Minimum increment 0.00001" for [Grinding wheel Vertical & Crossfeed feed]

High Efficiency for Setting up time with 78 IPM for Vertical movement, 196 IPM for Cross movement.

High level of consistency to assure high accuracy tolerances

- Vertical Feed Slideway for Low Friction
- Crossfeed Slideway (V-V)
- Hydraulic Type Counter Balance Cylinder
- Oil Cool Type Spindle Housing for Thermal Control

CNC takes on complicated procedures

- Easy input sizing or positioning. Teaching function allows for easy position inputs
- No position reference needed for start. Eliminates useless air cuts or start positions.

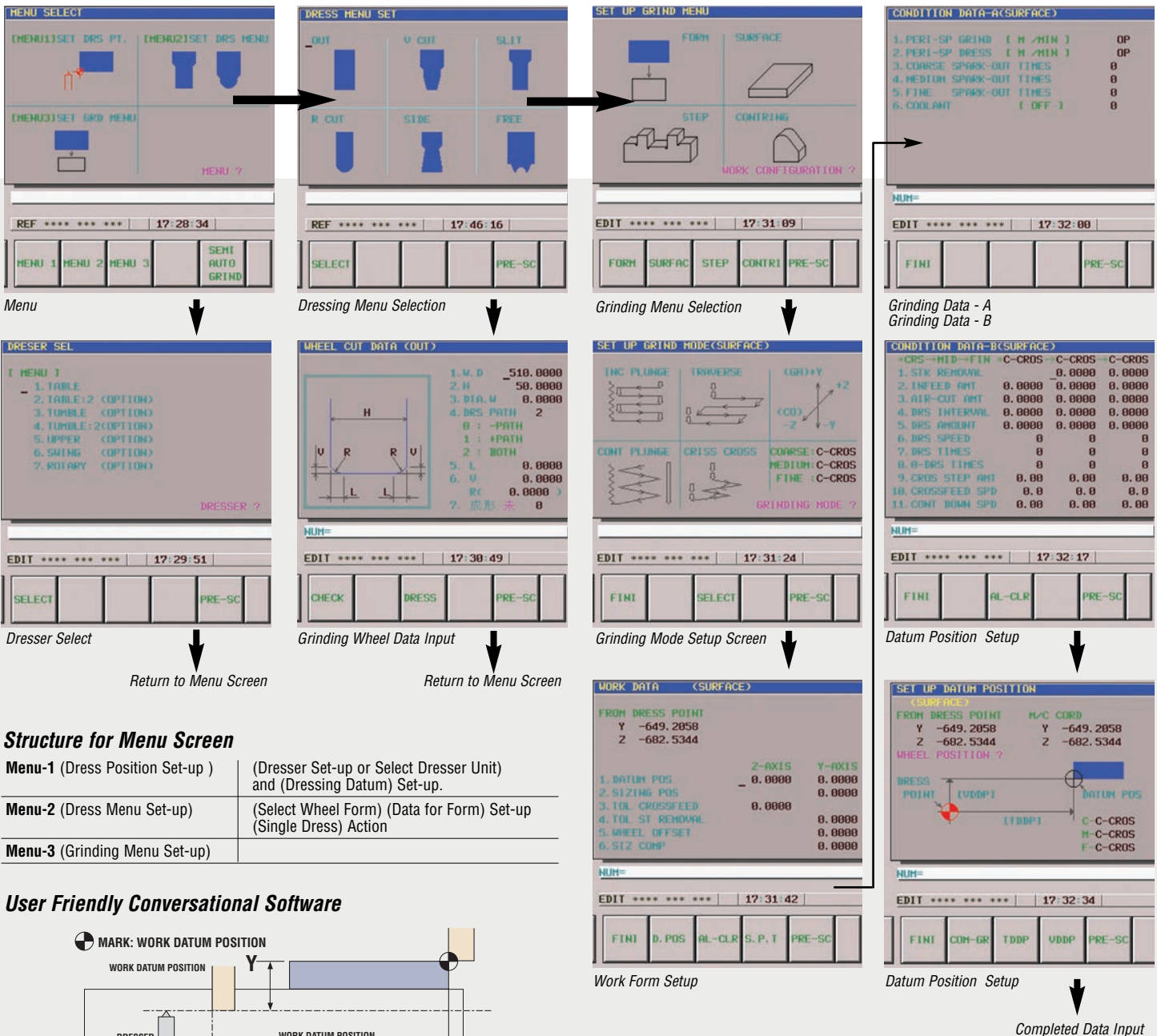
Dress Interruption during Auto Cycle

- Dress button can be pushed at any time during auto cycle. Upon dress completion, cycle resumes at last grinding datum position.

Coarse Grinding Cycle included as standard

- High Efficiency Shift Plunge grinding mode for coarse plunge grinding to fine traverse grinding incorporated in one easy-to-use cycle

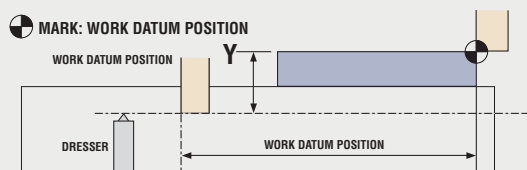
User Friendly Conversational Software



Structure for Menu Screen

Menu-1 (Dress Position Set-up)	(Dresser Set-up or Select Dresser Unit) and (Dressing Datum) Set-up.
Menu-2 (Dress Menu Set-up)	(Select Wheel Form) (Data for Form) Set-up (Single Dress) Action
Menu-3 (Grinding Menu Set-up)	

User Friendly Conversational Software



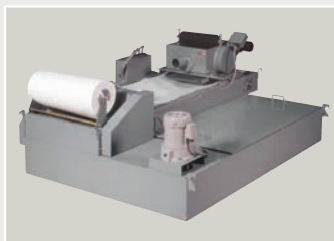
Standard and Optional Accessories to meet any demand

Standard Accessories

No	Items	DX	iQ	DXNC
1	Grinding Wheel	○	○	○
2	Wheel Adapter	○	○	○
3	Hydraulic Type Over-the-Wheel Dresser	○	○	-
4	Automatic Dress Compensation Type	N/A	○	○
5	Table Mount Type Diamond Dresser Tool with Holder	N/A	Option	○
6	Hand Held Vertical & Cross Manual Pulse Generator	-	○	○
7	15hp Wheel Spindle Motor	○	○	○
8	Spindle Inverter	Option	○	○
9	Wheel Guard + Magnet Stand Base	○	○	○
10	Splash Cover with Coolant Nozzle & Pipe	○	○	○
11	Hydraulic Oil Temperature Controller	○	○	○
12	Hydraulic Oil Cool Type Spindle Housing	Option	○	○
13	Signal Tower (3-Color Type)	Option	Option	○
14	Table Lifting System By Hydraulic System	○	○	○
15	Controller System	Okamoto	Okamoto	Fanuc
16	Graphic Type Conversational Software	-	○	○
17	G-Code Program Capability	-	-	○
18	Hydraulic Cylinder Type Weight Balance System	-	-	○
19	Leveling Bolts with Plates	○	○	○
20	Necessary Tools & Tool Box	○	○	○

Optional Accessories

Coolant System with Magnetic Dust Separator
 Coolant System with Magnetic Dust Separator and Paper Filter System
 Coolant Temperature Regulator
 Electro Magnetic Chuck
 Chuck Controller for Normal Electro-Magnetic Chuck
 Electro-Permanent Magnetic Chuck
 Chuck Controller for Electro-Permanent Magnetic Chuck
 Oil Cooling Type Electro Magnetic Chuck
 Oil Cooling Type Spindle Housing
 Grinding Wheel Balancing Stand with Arbor
 Balancing Test Arbor
 Grinding Wheel Adapter
 Grinding Wheel Adapter for Micro Balancer
 Micro Balancer System
 Hydraulic Oil Temperature Regulator
 Vertical Spindle Attachment with Dressing Device
 Grinding Wheel Adapter for Vertical Spindle Unit
 Frequency Inverter for Wheel Spindle (DX only)
 Signal Light (3-Color Type)
 Calendar Timer
 Table Enclosure



Coolant System



Grinding Wheel Balancing Stand with Arbor



Electro-magnetic Chuck



Dynamic Wheel Balancing System



Indexing System



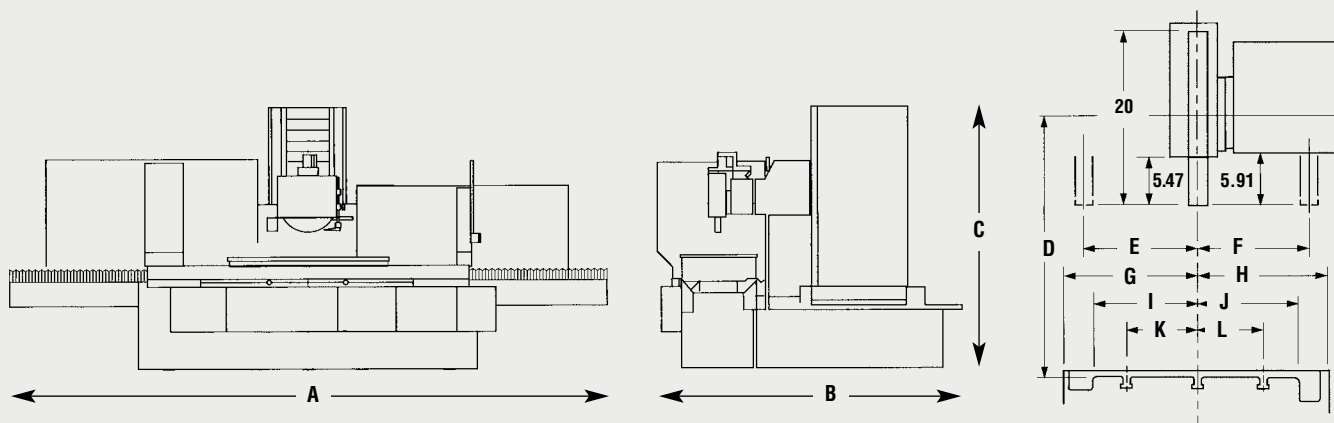
Overhead Wheel Dresser



Micro Balancer System



Vertical Spindle Attachment



ACC DX SERIES (Dimensions in Inches)

	24•48	24•60	28•60	32•80
A	213	216	216	263
B		106	119	125
C		86	94	94
D		33.46	37.4	37.4
E / F		12.99	14.96	16.93
G / H		15.16	17.13	19.09
I / J		11.81	13.78	15.75
K / L		7.87	11.81	11.81
WEIGHT (in Lbs.)				
	17,200	18,520	23,370	26,900

ACC iQ SERIES (Dimensions in Inches)

	24•48	24•60	28•60
A	213	216	216
B	142	142	152
C		87	95
D		33.07	37.4
E / F		12.99	14.96
G / H		15.16	17.13
I / J		11.81	13.78
K / L		7.87	11.81
WEIGHT (in Lbs.)			
	16,760	18,100	22,880

ACC DXNC SERIES (Dimensions in Inches)

	24•48	24•60	28•60	32•80
A	229	231	231	263
B		116	126	132
C		125	134	134
D		32.67	36.61	36.61
E / F		13.58	14.96	16.92
G / H		13.19	17.12	19.09
I / J		9.84	13.77	15.74
K / L		7.87	11.81	11.81
WEIGHT (in Lbs.)				
	17,200	18,520	23,370	26,660

Specifications

MODEL	Unit	ACC-24•48*	ACC-24•60*	ACC-28•60*	ACC-32•80
CAPACITY					
Grinding Capacity (W x L)	in.	24 x 48	24 x 60	28 x 60	32 x 80
Max. Movement (W x L)	in.	26 x 57	26 x 69	30 x 69	34 x 89
Table Working Surface (W x L)	in.	24 x 48	24 x 60	28 x 60	32 x 80
Max. Dist. Under Wheel	in.	27.3 (26.5 iQ Models)			
Magnetic Chuck Size (W x L x H)	in	24 x 47 x 4.3	24 x 59 x 4.3	28 x 59 x 4.3	32 x 79 x 4.3
Table Load Capacity (Incl. Chuck)	lbs	5,510 (1,170)	5,260 (1,330)	5,640 (1,700)	6,170 (3,910)
T-Slots (W x No.)	in.	0.78 x 3			
GRINDING WHEEL					
Dimensions (D x W x B)	in.	20 x 3 x 8 (20 x 3 x 5 optional)			
Speed	rpm	1,100 (60Hz)			
MOTORS					
Grinding Wheel Spindle	hp	20			20 (30 optional)
Vertical Feed (AC Servo)	hp	1.07 for ACC-DX Models		1.7 for ACC-iQ Models	
Cross Feed (AC Servo)	hp	N/A for ACC-DX Models		1.7 for ACC-iQ Models	
Hydraulic Oil Pump	hp	5		7.3	
POWER	V	230/460			

* ACC-iQ Models available in these three sizes only

Specifications subject to change without notice.

MODEL	Unit	ACC-DX Models	ACC-iQ Models	ACC-DXNC Models
TABLE FEED (Longitudinal)				
Hydraulic Feedrate (Average)	ft./min.	6 ~ 82	6 ~ 82	10 ~ 82
Hand Feed per Revolution	in.	1		
COLUMN FEED (Crossfeed)				
Manual Infeed				
Handfeed per Revolution	in.	0.20	0.001 (x1) / 0.01 (x10) / 0.1 (x100) / 0.2 (x200)	0.001 (x1) / 0.01 (x10) / 0.1 (x100)
Handfeed per Graduation	in.	0.0008	0.00001 (x1) / 0.0001 (x10) / 0.001 (x100) / 0.002 (x200)	0.00001 (x1) / 0.0001 (x10) / 0.001 (x100)
VERTICAL FEED				
Manual Downfeed				
Handfeed per Revolution	in.	0.005 (x1) / 0.05 (x10)	0.001 (x1) / 0.01 (x10) / 0.1 (x100)	0.001 (x0.1) / 0.01 (x1) / 0.100 (x10)
Handfeed per Graduation	in.	0.00005 (x1) / 0.0005 (x10)	0.00001 (x1) / 0.0001 (x10) / 0.001 (x100)	0.00001 (x0.1) / 0.0001 (x1) / 0.001 (x10)
Rapid Feedrate	in./min.	14	23	79
Auto Infeed				
Coarse Grinding	in.	0.00005 - 0.0025 (Coarse: 15 Steps / Fine: 10 Steps)	0.00001 ~ 0.04	Programmed Through Conversational Software
Fine Grinding	in.	0.00005 - 0.0005 (Coarse: 15 Steps / Fine: 10 Steps)	0.00001 ~ 0.04	Programmed Through Conversational Software
Aircut Amount Coarse Grinding	in.	N/A	Programmed Through Conversational Software	Programmed Through Conversational Software
Aircut Amount Fine Grinding	in.	N/A	Programmed Through Conversational Software	Programmed Through Conversational Software
No. of Sparkouts		0 - 5	0 - 99	0 - 9

ACC-CHiQ SERIES

EXTRA-LARGE HIGH CAPACITY DOUBLE COLUMN SURFACE GRINDERS

If you're faced with high-precision surface grinding of extra large components consider the ACC-CHiQ Series Double Column Grinders. They deliver a new degree of accuracy and efficiency making them ideal for demanding mold and die-base production grinding, and other rigorous large component grinding applications.

Check out these value-driven performance features:

- Ultra-rigid, heavy-duty double column design and construction.
- Easy-to-use Okamoto iQ Touch Screen Control
- Powerful 30hp spindle motor
- Double-V slideways assure true tracking and greater table load support
- Shift-Plunge Cycle for fast efficient stock removal
- Multi-level grinding capability
- Available GRIND-BIX High Productivity Coolant System enables up to a 10 time increase in vertical infeed amounts
- Surprisingly small footprint

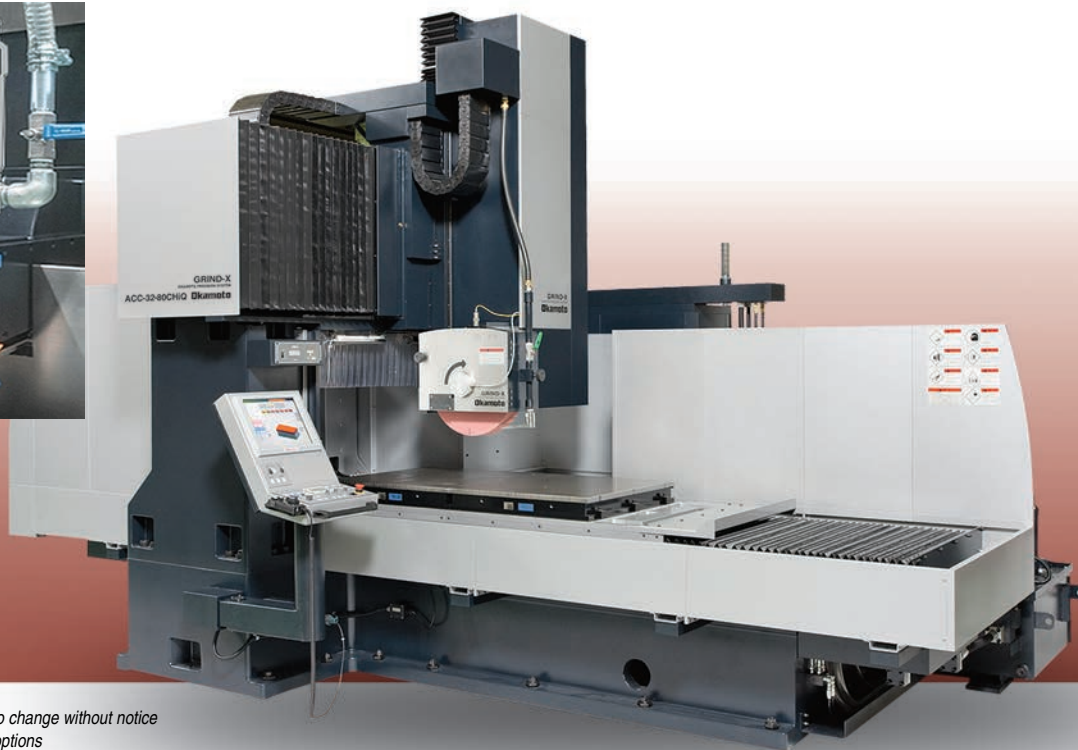
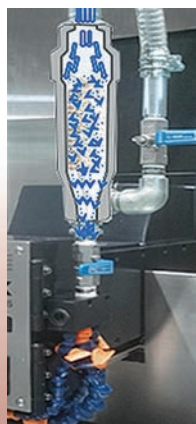
ACC-32-80CHiQ Double Column Grinding Machine

Specifications

Table Working Size (W x L):	32" x 80"
Max. Distance Under Wheel:	23.5"
Table Load Capacity (incl Chuck):	5,512 lbs
Grinding Wheel (D x W x B):	20" x 4" x 8"
Grinding Wheel Motor:	30 hp / 4P
Machine Weight:	34,200 lbs

*Other sizes available.
Contact your Okamoto Grinding Specialist for details.*

GRIND-BIX High Productivity
Coolant System



*Specifications subject to change without notice
Machine pictured with options*

Okamoto

Emerging Abrasives Technology

Okamoto Corporation

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