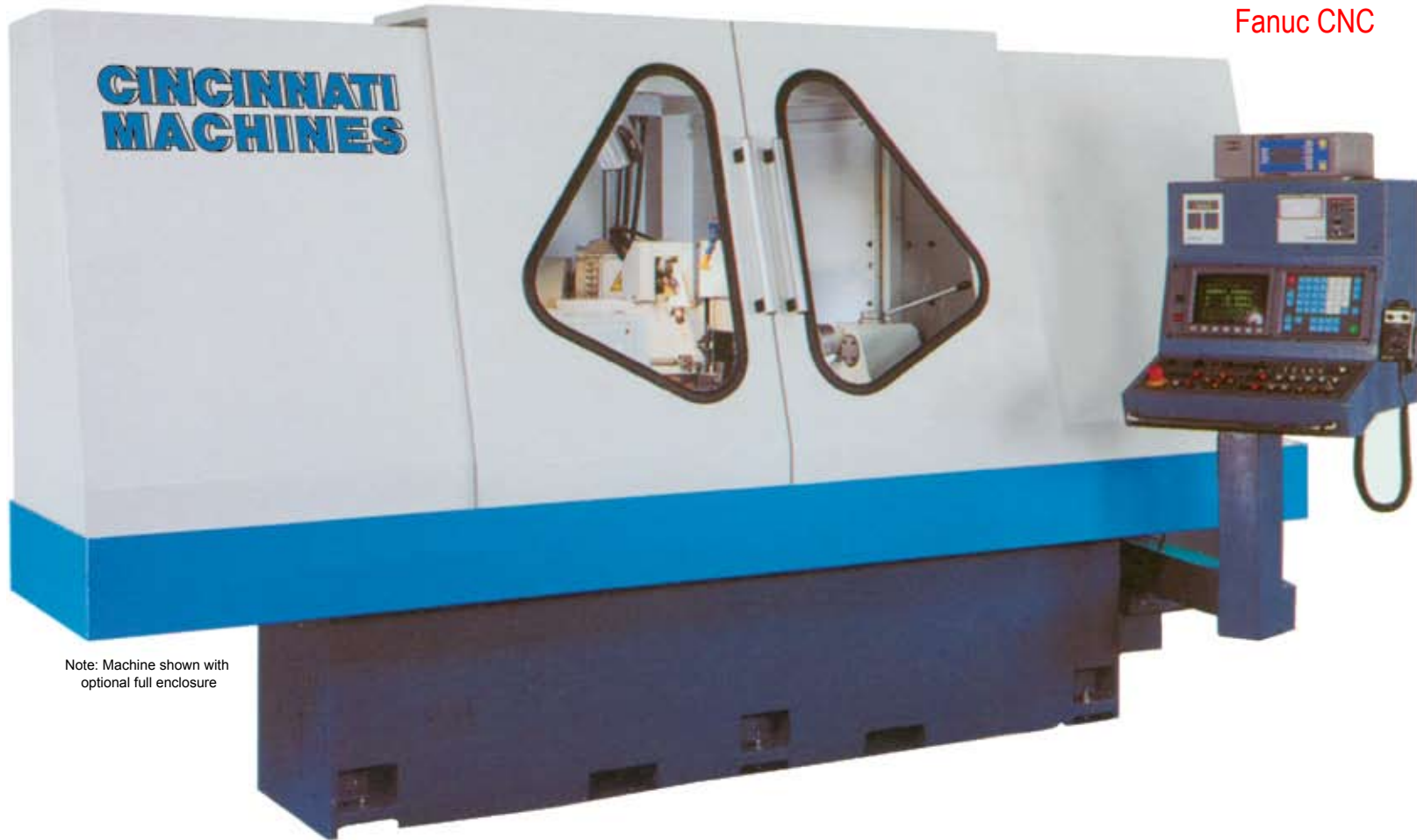


# CINCINNATI MACHINES

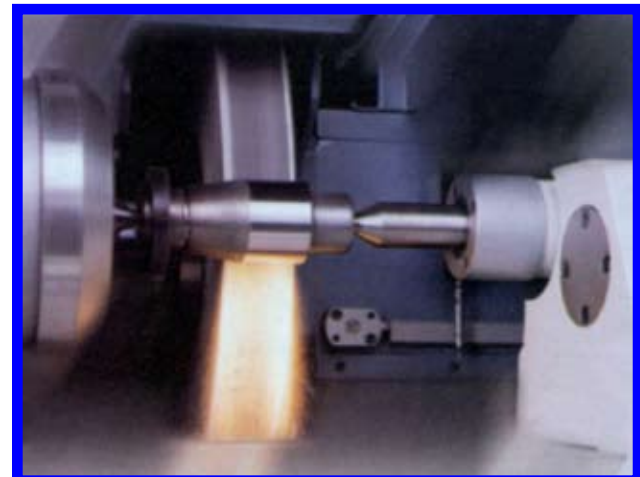
## CNC MULTI-SURFACE & ANGULAR STEP GRINDER

Fanuc CNC

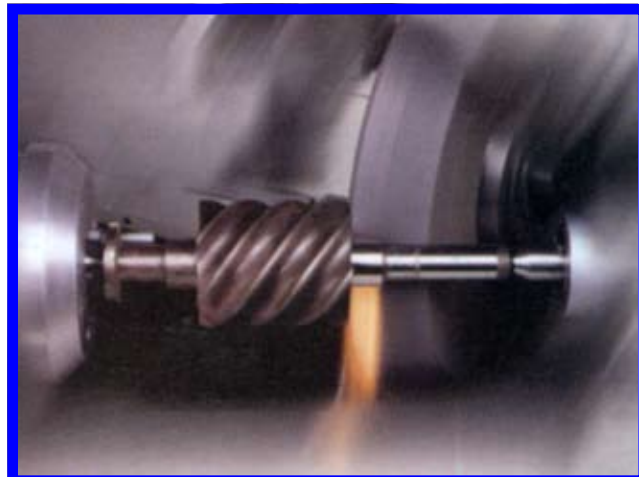


Note: Machine shown with optional full enclosure

CINCINNATI MACHINES CNC Multi-Surface and Angular Step Grinders are designed and manufactured from the ground up to provide the maximum in machine stability, accuracy, and consistent performance.



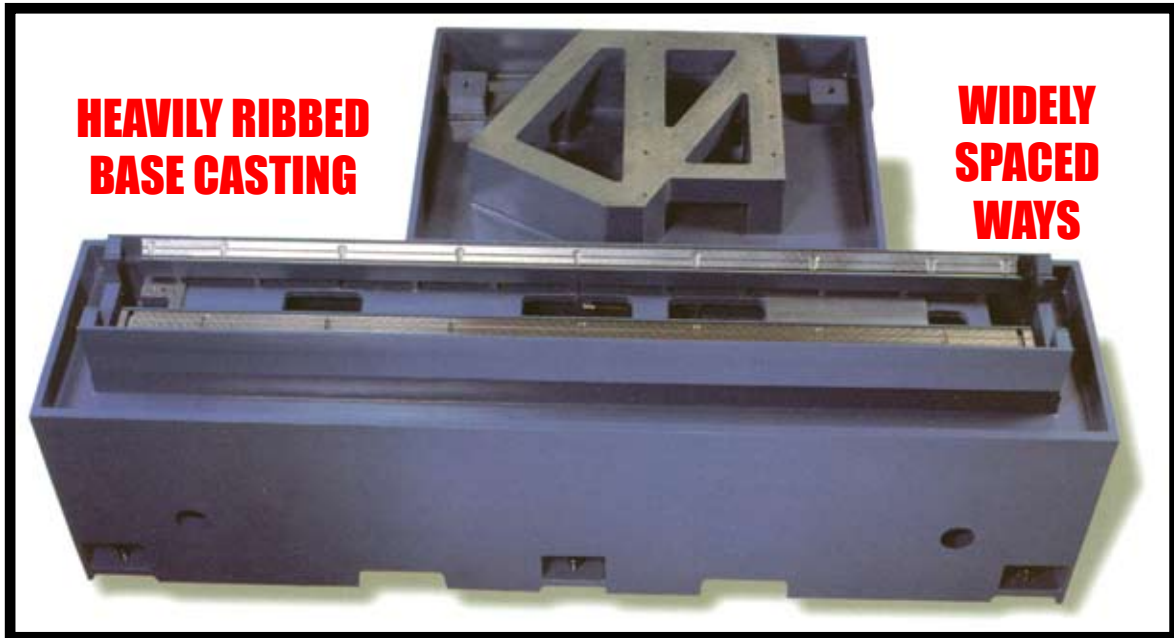
Heavily ribbed and seasoned meehanite castings, precision ballscrews, AC servo motors, precision linear feedback, & Fanuc CNC control system are combined to insure many years of reliable and accurate performance.



# Heavy-Duty Meehanite Castings

## MACHINE BASE

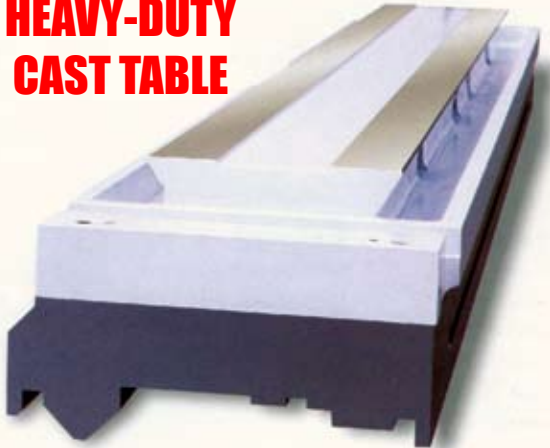
The machine base is a heavily ribbed box-type Meehanite casting to insure maximum rigidity and stability for those tight tolerance jobs. The base design features extra-wide guideway spacing on both ways slide sets that provides the optimum in stability, accuracy, and repeatability.



**HEAVILY RIBBED  
BASE CASTING**

**WIDELY  
SPACED  
WAYS**

## HEAVY-DUTY CAST TABLE



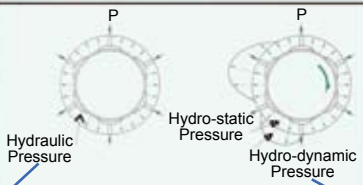
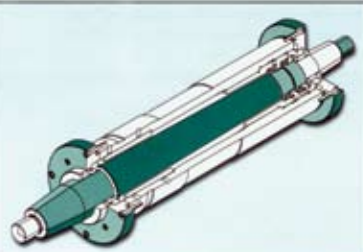
## HEAVY-DUTY CAST TABLE

The machine table is a heavy-duty box-type cast meehanite structure that rides on Hydro-static ways providing maximum rigidity and accuracy. The table is driven by a precision ballscrew and AC servo motor, and is fully supported over the entire table travel to avoid wear and inaccuracy.

## ACCURATE WHEELHEAD SPINDLE

A combination of hydrostatic and hydrodynamic bearings, surrounded by a high pressure oil film, eliminates metal-to-metal contact to provide high rigidity as well as high damping performance.

This design insures high accuracy and longer spindle life.



**SPINDLE AT REST**  
Static pressure keeps spindle centered

## HEAVY-DUTY CAST SADDLE

The heavy-duty meehanite cast saddle features V and flat precision hand-scaped Turcite coated guideways, an automatic lube system, precision ballscrew, AC servo motor, and a 0.000020" linear feedback system. These features combine to insure smooth accurate wheelhead movement.

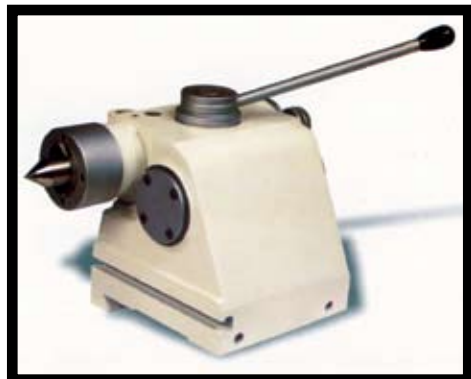
**SPINDLE RUNNING**  
Static and dynamic pressure combine to provide high rigidity and high damping performance

## HEAVY-DUTY WORKHEAD



The Heavy-duty Meehanite cast workhead features an 8 piece precision angular contact bearing set and state-of-the-art electronic variable speed spindle drive. The combination live and dead type spindle allows for quick change from chuck to live center setup or vice-versa. The workhead swivels 90° counterclockwise and 30° clockwise for versatility.

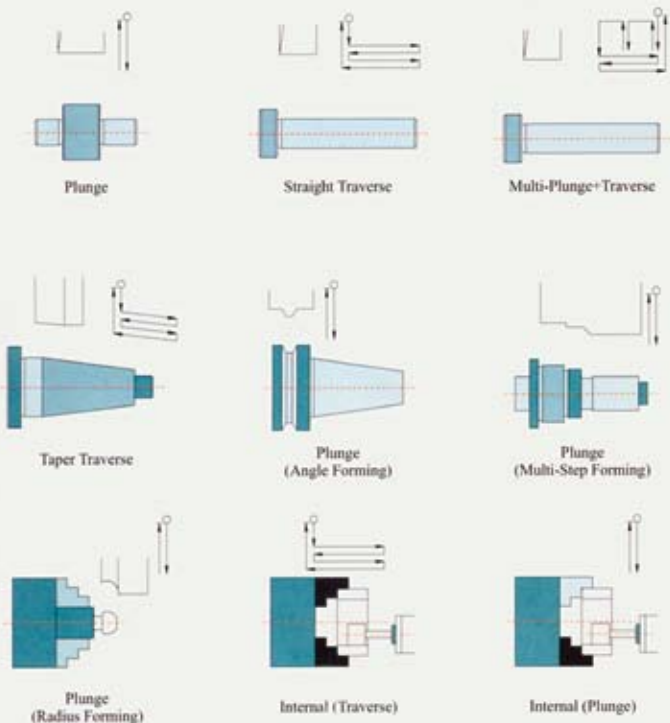
## HEAVY-DUTY TAILSTOCK



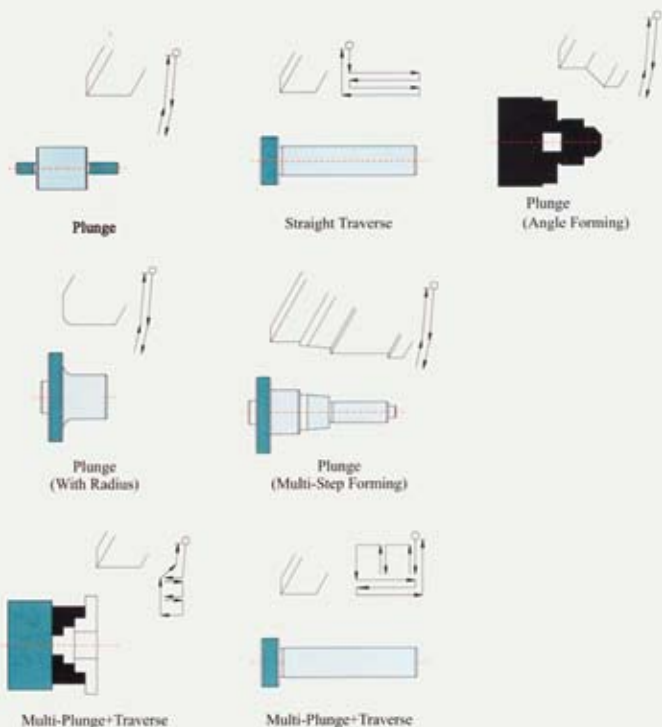
The Heavy-duty Meehanite cast tailstock is heavily-ribbed for maximum rigidity. The hardened nitralloy steel sleeve is designed to hold an #4MT center for all size machines except the 8 x20 which uses a #3MT center. A hydraulic tailstock is available as an option.

# Wide Range of ID/OD or Combination Grinding

## Grinding application Straight type

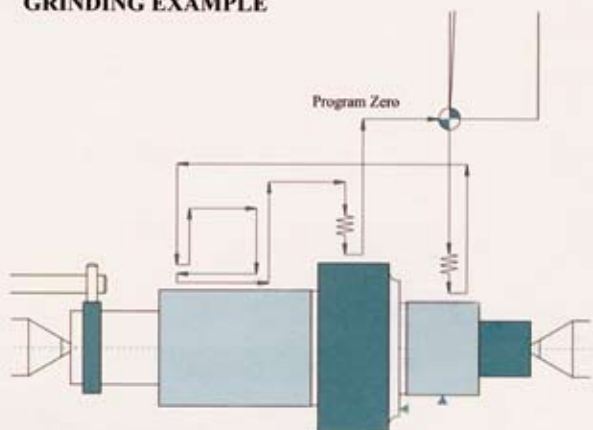


## Angular type



## CNC Multi-Surface Step Grinding

### GRINDING EXAMPLE



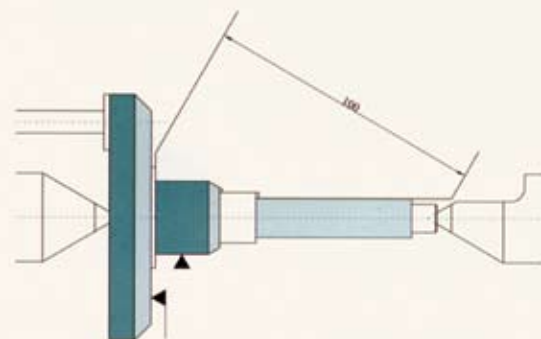
WORKPIECE	TEST WORKPIECE
MATERIAL	CARBON STEEL
REMOVED STOCK	0.25mm (0.01")
CYCLE TIME	6min 45sec

#### ● GRINDING ACCURACY

ROUNDNESS	0.45 $\mu$ m (0.000018")
CYLINDRICITY	1.0 $\mu$ m (0.000040")
ROUGHNESS	Ra 0.15 $\mu$ m (0.000006")
TOLERANCE	$\phi$ 5 $\mu$ m ( $\phi$ 0.00018")/20pcs.

## CNC Angular Step Grinding

### GRINDING EXAMPLE



WORKPIECE	CRANK SHAFT
MATERIAL	CARBON STEEL
REMOVED STOCK	0.25mm (0.01")
CYCLE TIME	27 sec

#### ● GRINDING ACCURACY

ROUNDNESS	0.5 $\mu$ m (0.000020")
CYLINDRICITY	1.0 $\mu$ m (0.000040")
ROUGHNESS	Ra 0.17 $\mu$ m (0.000007")
TOLERANCE	$\phi$ 3 $\mu$ m ( $\phi$ 0.0001")/20pcs.

## CONSTRUCTION FEATURES

Heavy-Duty Meehanite Castings  
 Precision ballscrews  
 Combination hydrostatic/hydrodynamic spindle  
 AC servo drives  
 0.000020" linear feedback system  
 State-of-the-art VS workhead  
 Fanuc 0-GC CNC  
 Automatic lubrication system

## STANDARD EQUIPMENT

Semi-enclosed chip/splash guarding  
 Work illuminating attachment  
 Diamond Dresser  
 Grinding wheel mount  
 Balancing stand w/arbor  
 wheel extractor  
 Table dial gage  
 Carbide tip center  
 Coolant w/magnetic separator  
 Tool box/tools

## OPTIONAL ACCESSORIES

Hydraulic tailstock  
 Internal grinding attachment  
 Dynamic wheel balancer  
 Various gage/automation systems  
 Various 3&4 jaw chucks/ collet closers  
 Various coolant/filtration systems  
 2 and 3 point steady rests  
 Complete line of CINMAX grinding wheels  
 Full chip/coolant enclosure



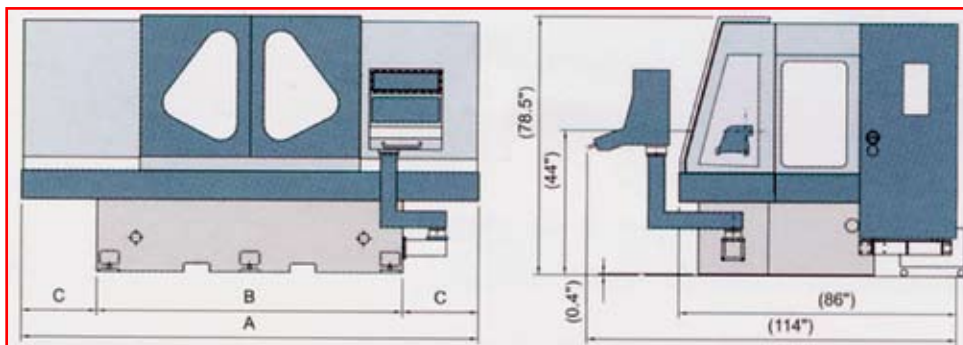
## MACHINE SPECIFICATIONS

MODEL	CNC MULTI-SURFACE STEP GRINDER							CNC ANGULAR STEP GRINDER					
	8x20	12x20	12x30	12x40	15x20	15x30	15x40	12x14	12x20	12x32	15x14	15x20	15x32
Size (Inch dimensions)	8		12.6			15			12.6			15	
Center distance	20	20	30	40	20	30	40	14	20	32	14	20	32
Max Grind Diameter	8		12			15			12			15	
Grinding wheel size	14x2x5		18x4x6			18x4x6			20x4x6			20x4x6	
Grind wheel speed	1940rpm		1390 rpm			1390 rpm			1390 rpm			1390 rpm	
Infeed travel	6		10			10			10			10	
Infeed feedrate ipm	.000-6		.0001-10			.0001-10			.0001-10			.0001-10	
Workhead speed rpm	50-500		30-350			30-350			30-350			30-350	
Tailstock Quill travel	1		1			1			1			1	
Tailstock center taper	#3MT		#4MT			#4MT			#4MT			#4MT	
Table feed ipm	.0001-8		.0001-10			.0001-10			.0001-10			.0001-10	
Table swivel ccw	7		9			7			9			7	
Main spindle hp	5		7.5			7.5			10			10	
Workhead motor hp	.25		2			2			2			2	
Machine weight lbs	4400	9240	10120	11000	9340	10220	11100	9240	10120	11000	9340	10220	11100
Shipping weight lbs	5500	10120	10940	11900	10220	10990	12000	10120	10940	11900	10220	10990	12000

## MACHINE DIMENSIONS

	8x20	12x20	12x30	12x40	15x20	15x30	15x40	12x14	12x20	12x32	15x14	15x20	15x32
<b>A</b>		113	141	169	113	141	169	113	141	169	113	141	169
<b>B</b>		87	95	104	87	95	104	87	95	104	87	95	104
<b>C</b>		24	24	24	24	24	24	24	24	24	24	24	24

## MACHINE DIMENSIONS



## DIMENSIONS 8x20 CNC Multi-Surface Step Grinder

