

Nidec

All for dreams

INTERNAL GEAR GRINDING MACHINE

ZI20A



NIDEC MACHINE TOOL CORPORATION

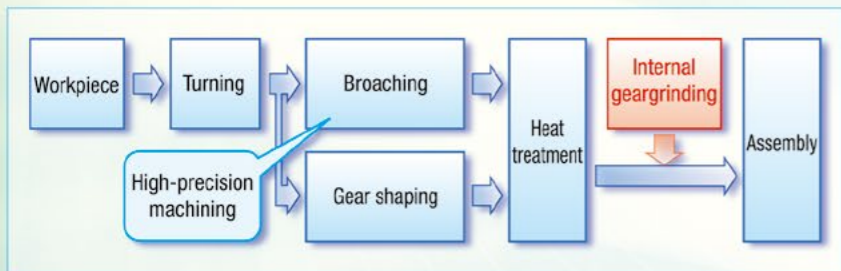
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High-efficiency, high-precision grinding of mass-produced internal and external gears

Internal gear grinding for planetary gear systems

- High-speed, high-precision internal gear grinding after heat treatment
- Vitrified CBN grinding wheel for lower tool costs
- Automation (mass production) compatible

High-speed, high-precision internal gear grinding



- High-efficiency generating grinding with barrel-shaped threaded grinding wheel

Honing velocity 5 m/s or less

Sliding velocity: 5 m/s or less
Crossed-axis angle: 5 to 10 degrees

Internal gear honing

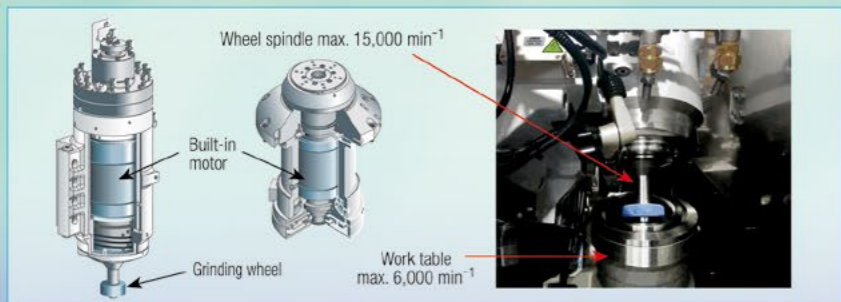
Grinding velocity up to 40 m/s

Sliding velocity: 20 to 40 m/s
Crossed-axis angle: 20 to 35 degrees

Internal generating grinding

Barrel-shaped threaded grinding wheel offers larger crossed-axis angles for greater sliding velocity
 Sharper cutting edge = Higher performance in tooth flank modification (improved pitch accuracy)
 Improved grinding ratio = Longer wheel life (lower tool costs)
 Gear grinding = Process capability and stability

- Generating grinding achieved by high-speed, high-precision synchronous rotation of wheel and work spindles



Vitrified CBN wheel for lower tool costs

- Vitrified CBN grinding wheel contributes to longer grinding wheel life
 - In addition to general grinding wheels, a vitrified CBN wheel has been introduced to prolong the dressing interval (allowing in-process dressing)
 - Longer tool life and lower tool costs
 - Both conventional and vitrified CBN grinding wheels can be utilized. CBN wheels produce more parts between dressing intervals for higher productivity.

- Supports both dressing gear and disk dresser methods

Dressing gear method

Dressing gear (identical geometry to finished workpiece, electroplated with diamond abrasive grain on tooth flanks)

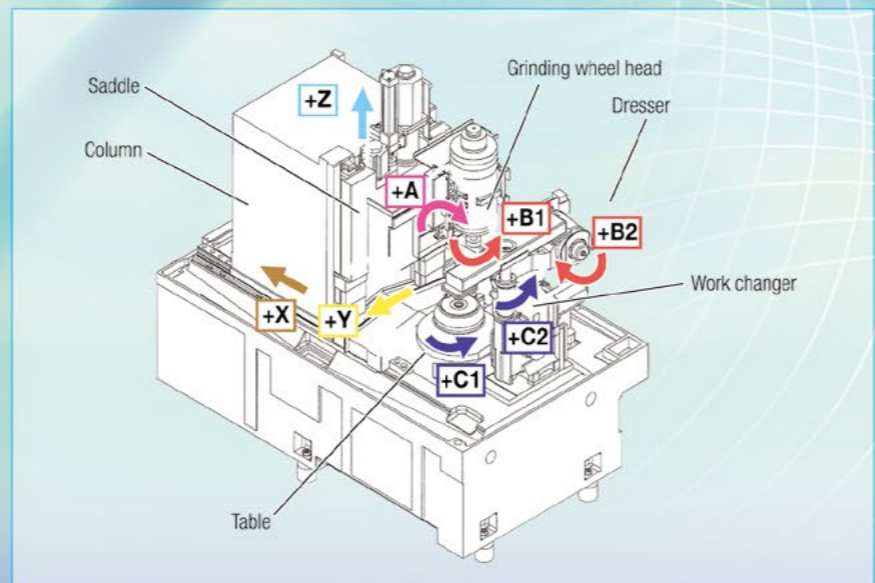
Disk dresser method

Disk dresser (cross section with identical tooth profile to finished workpiece)

Dressing gear and grinding wheel, positioned relative to each other in the same way as in the gear grinding cycle, are engaged during synchronous rotation so that the gear cuts into the wheel in the radial direction.

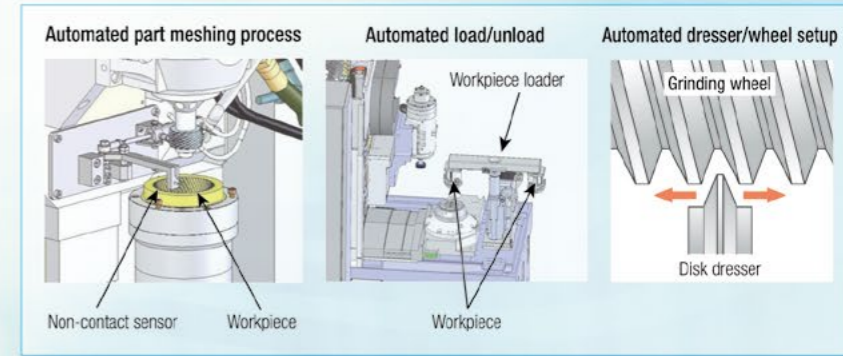
Single disk dresser provides wheel formation, making it possible to easily modify tooth flank profile (synchronous 5-axis control)

Fully automated 8-axis NC-controlled machine



Automation compatible

- Non-contact sensor facilitates part meshing and stock division
- High-speed part loader provides internal automation (option)
- Loader interfaces with virtually any part stocker/automation system
- Acoustic emission (AE) sensor allows automated setup for wheel changeover



Also supports external gear grinding

- Threaded grinding wheel enables generating grinding of external gears that usually cannot be machined due to interference (such as stepped gears)



Advantages for external gear grinding

- ✓ High performance in tooth flank modification
- ✓ Easy wheel replacement
- ✓ Easy workpiece transfer
- ✓ Grinding gears with interfering contours



Main Specifications

Item		Z120A	
Workpiece	Max. workpiece diameter	mm in	φ200 φ7.9
	Max. module Diametral pitch		1-3 25.4-8.47
Grinding wheel	Grinding wheel outer diameter	mm in	φ50-120 φ2.0-4.7
	Grinding wheel head swivel angle		±40°
	Max. grinding wheel speed	min ⁻¹	15,000
	Table diameter	mm in	φ200 φ7.9
	Max. table speed	min ⁻¹	6,000
Dresser	Spindle motor (cont.)	kW HP	25 34
	Dresser type		Rotary diamond disc or gear type
	Dresser diameter	mm in	φ110 φ4.3
	Dresser speed	min ⁻¹	3,260
NC axes			8
Width	mm in		3,860 152.0
Depth	mm in		4,520 178.0
Total power consumption	kVA		120
Machine weight	kg lb		12,000 26,500

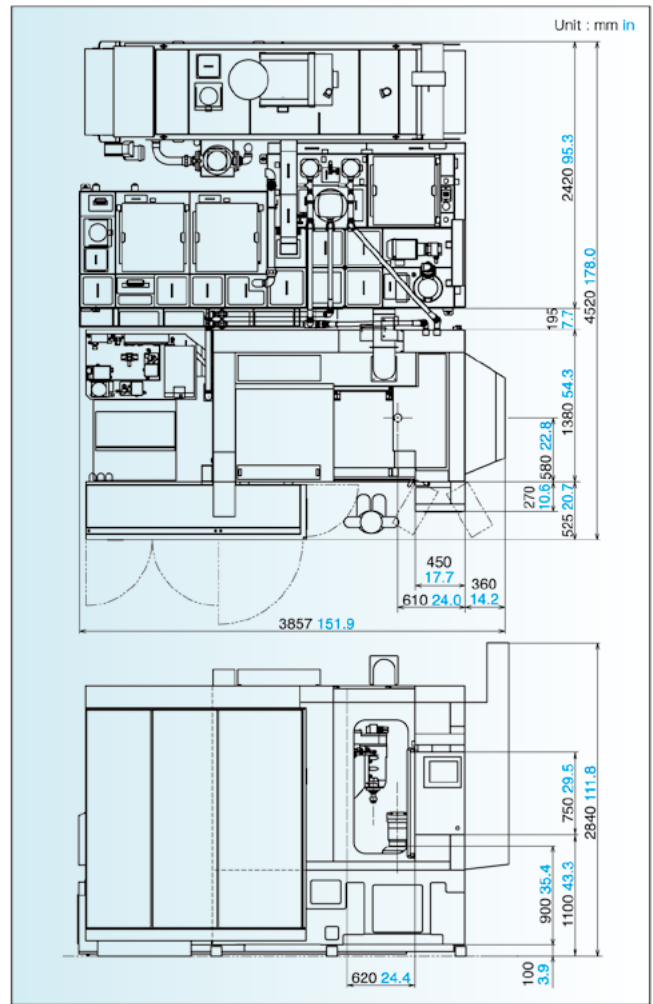
Standard Equipment

- Coolant supply unit (with 1 paper filter rol)
- Hydraulic and lubrication unit
- Pneumatic unit
- Splash guard (enclosed type)
- Front access door (side-opening, manual)
- Door interlock (electromagnetic locking type)
- Grinding wheel arbor
- Part clamping device
- Coolant gun
- Mist collector
- Fixture cleaning device
- Internal chip cover
- Work changer
- Dresser unit
- Transformer (for 440V step-up)
- Work light / Machine status light
- Control board internal lighting / Lamp check circuit
- Power saving circuit / Power outlet
- Dresser life software counter
- Workpiece counter
- NC device (FANUC 31i-B5)
- NC memory card
- Two-hand operation button / Circuit breaker with ground fault circuit interrupter
- Wheel load display function
- Ethernet, USB interface
- Maintenance tool set

Optional Equipment

- Part fixture
- Work changer grip
- Various types of automatic loaders
- Front access door (side-opening, automatic)
- Transfer unit / Part stacker
- Auxiliary operation panel
- Additional grinding wheel arbor
- Power failure countermeasures (column retract)
- Various programming software
- Grinding wheel
- Diamond dressing wheel (disk type)
- Diamond dressing wheel (gear type)
- RS232C interface
- Automatic fire extinguishing device

Machine Dimensions



Inquiry

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Machine specifications such as dimensions etc., are fixed using SI units including the metric system.
In case data are shown in other units in blue, such as inches, pounds and gallons etc. they are for reference only and the formal data in black supersedes any equivalent data given in blue when fractions caused by conversion become an issue.
Specifications are subject to change without prior notice.
The export of this product is subject to Japanese Governmental approval.