

Nidec

All for dreams

INTERNAL GEAR GRINDING MACHINE

ZI20A-G

SERIES



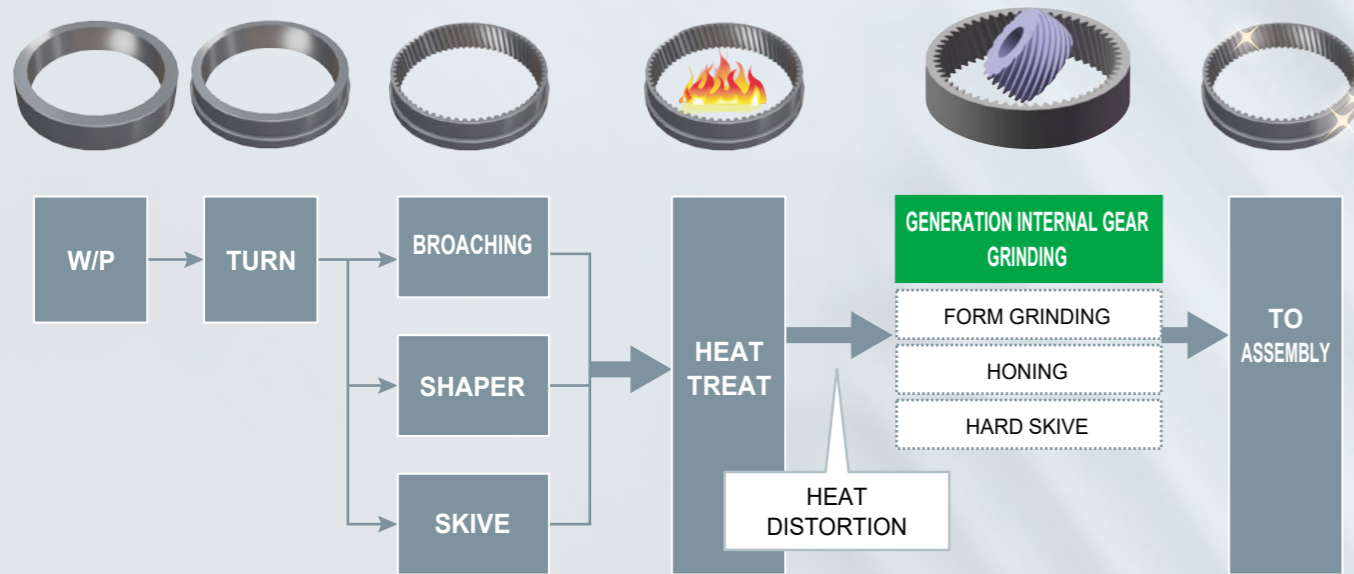
NIDEC MACHINE TOOL CORPORATION

www.nidec.com/en/nidec-machinetool/

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

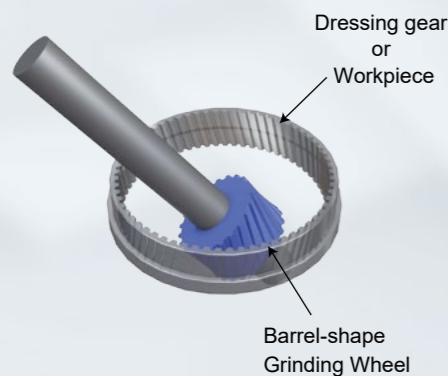
DEMANDS FOR HIGH GEAR ACCURACY / GEAR NOISE REDUCTION

Post Heat Treatment Generative Internal Gear Grinding for Large Stock Removal / No Tool Marks



- ✓ Accurate correction of pitch error post heat treatment
- ✓ Precise lead adjustment of taper and crown
- ✓ High precision (ISO CLASS 4)

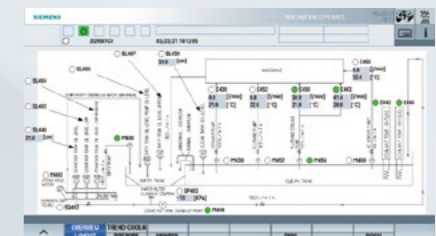
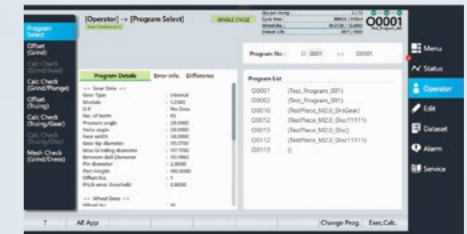
MECHANISM



- ✓ High sliding velocity barrel shaped grinding wheel with optimized crossing angle (PATENTED)
- ✓ Grinding wheel shares dressing gear geometry for low variation of profile error

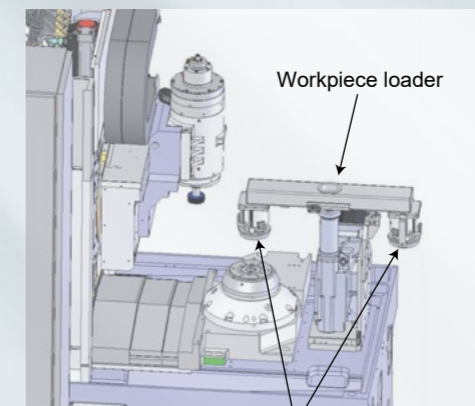
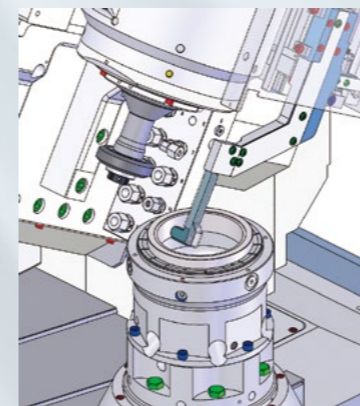
USER FRIENDLY

- ✓ High-visibility (15 inch) monitor for easy data accessibility
- ✓ On-screen display of sensor data for easy confirmation of machine status
- ✓ Clear and timely notices / alarms to solve or prevent machine stoppages



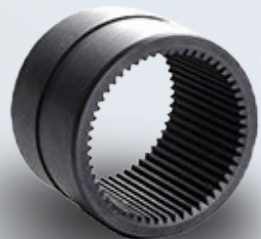
AUTOMATION

Automated load / unload



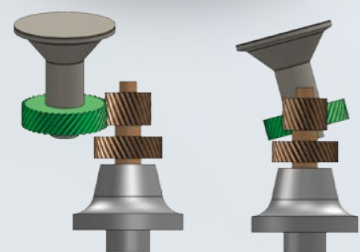
- ✓ High-speed work changer for shorter cycle times
- ✓ Non-contact sensor facilitates parts meshing and stock division

APPLICATIONS



RING GEAR IN PLANETARY SET

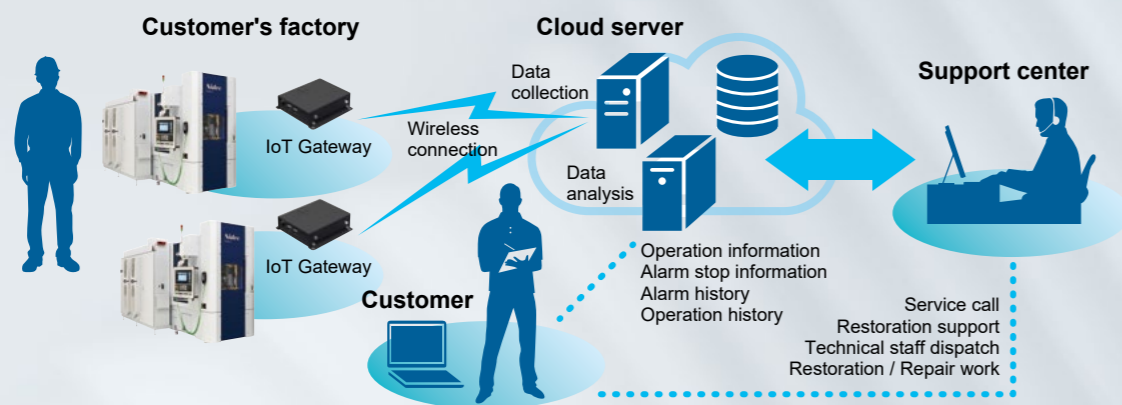
Even thin-walled workpieces with a large amount of heat treatment distortion can be corrected by grinding.



EXTERNAL STEP GEAR

Threaded grinding wheel enables grinding of stepped external gears with no interference.

DIASCOPE [Machine Tool Monitoring System]



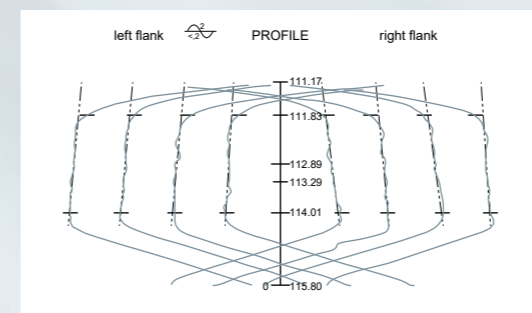
Intelligence, autonomy, and machine tool optimization through a combination of IoT and cloud computing. We support optimization of the customer's value chain network and production activities.



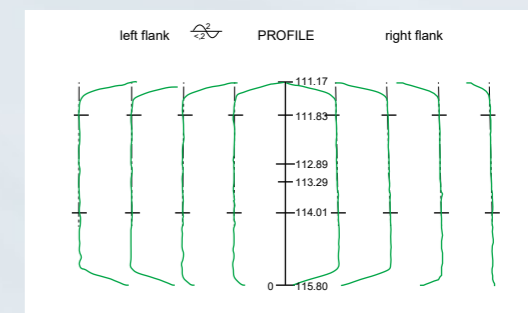
GROUND GEAR EXAMPLES

Tooth profile: ISO Class 4 achieved
Surface finish: Rz 0.8/Ra 0.1 achieved

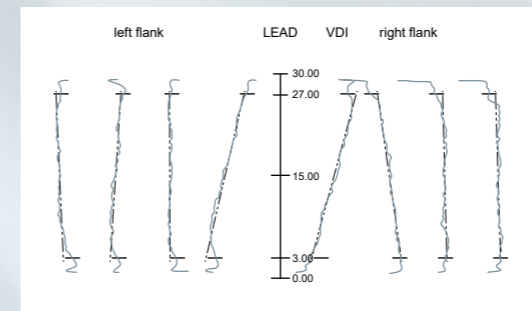
Gear Profile (Before)



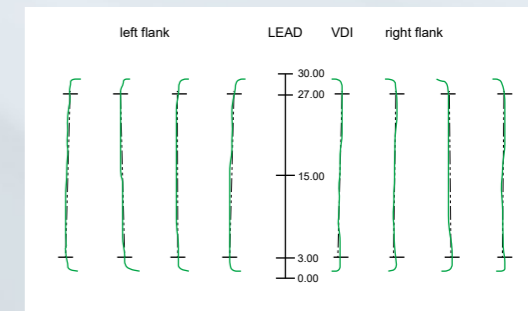
Gear Profile (After)



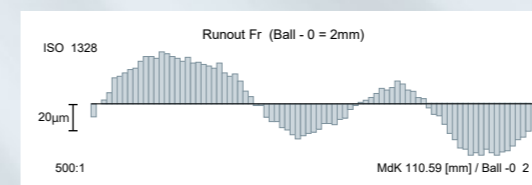
Gear Lead (Before)



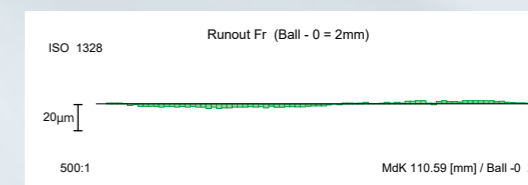
Gear Lead (After)



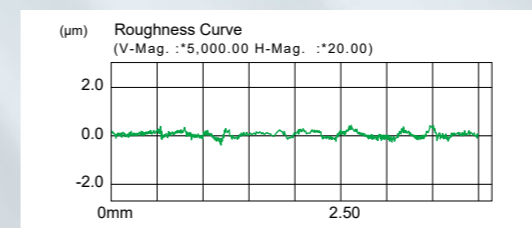
Tooth Runout (Before)



Tooth Runout (After)



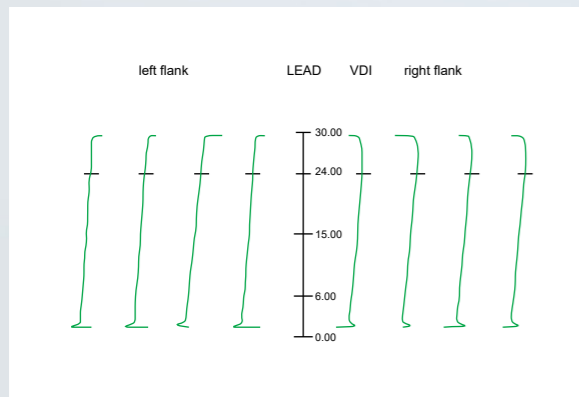
Surface finish



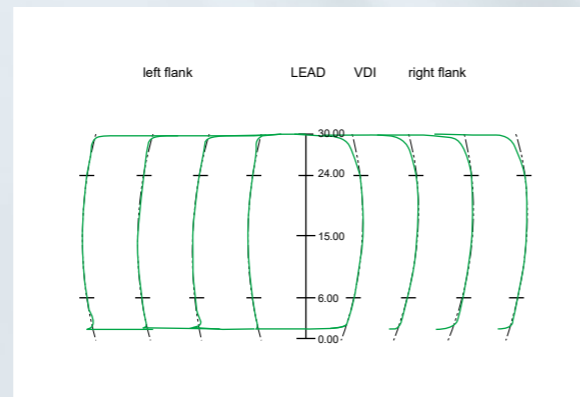
Ra	0.10 µm
Rz	0.63 µm
Rk	0.30 µm
Rpk	0.13 µm
Rvk	0.11 µm

CORRECTION IN LEAD

TAPER LEAD

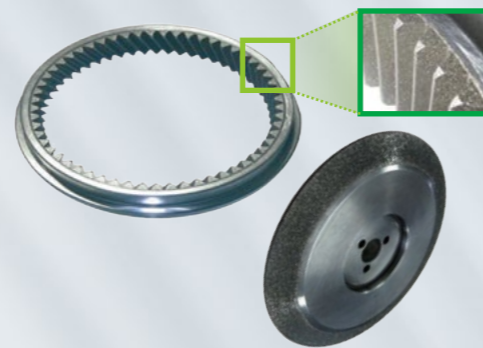


CROWN LEAD



- ✓ Correction of input for tooth profile, tooth lead, tapering/crowning are available through interactive screen.

GRINDING TOOL



- ✓ Vitrified CBN wheel has excellent tool life and minimizes machine down time: far fewer wheel changes and more parts between wheel dressing.
- ✓ Ceramic wheel has superior performance and sharpness, suitable for small batch production.

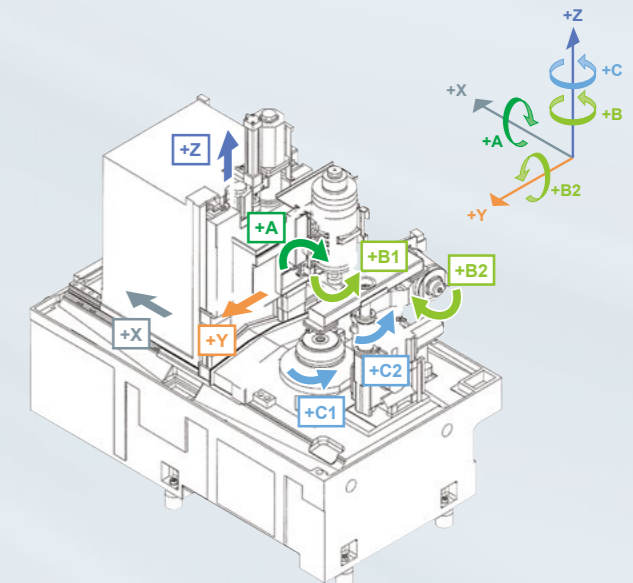
MACHINE SPECIFICATIONS

Item		ZI20A-G
Part	MAX OD (clamping part)	mm in $\phi 200$ $\phi 7.9$
	MAX Module	diametral pitch 1-3 25.4-8.47
Wheel	Grinding wheel OD	mm in $\phi 50-120$ $\phi 2.0-47.2$
	Grinding wheel head swivel angle	$\pm 40^\circ$
	MAX spindle rotation	min ⁻¹ 15,000
Table	Table diameter	mm in $\phi 200$ $\phi 7.9$
	MAX table rotation	6,000
Dresser	Spindle motor (cont.)	kW HP 25 34
	Dresser type	Dressing gear (Rotary dresser optional)
NC axes		7 (8)
Size		mm in W 4747/D 5200/ H 2835
		W 186.9/D 204.7/ H 111.6
Total power consumption	kVA	120
Machine weight	kg lb	12,000 26,500

*Condition may allow cutting parts which has OD larger than $\phi 200\text{mm}$ 7.9in

Standard Equipment

- ☐ Coolant supply unit (Paper filter style with 1 paper filter roll)
- ☐ Hydraulic system and Lubrication
- ☐ Spindle Cooling and Lubrication
- ☐ Spindle lub. oil line filter (with 1 spare filter element)
- ☐ Pneumatic system
- ☐ Door interlock system
- ☐ Wheel arbor power clamping device
- ☐ Wheel dresser contact detection device
- ☐ Meshing device
- ☐ Auto work changer
- ☐ Dressing gear shifting device
- ☐ Work piece clamping device
- ☐ Work piece seat detection device
- ☐ Area sensor for shutter cover at work piece load/unload position
- ☐ Work Light/Machine status light
- ☐ Oil mist collector
- ☐ Coolant gun
- ☐ Maintenance tool set
- ☐ NC unit (SINUMERIK 840D SL)
- ☐ Change transformer from 440V to 220V
- ☐ High efficiency motor control
- ☐ Control box chiller
- ☐ Manual pulse handle (with display screen)
- ☐ Sub control panel for manual pulse handle (with display screen)
- ☐ Dual hand operation
- ☐ Retract device for power failure (Protection purpose)
- ☐ Lamp check circuit



- ☐ Multi software counter
- ☐ Spindle load meter
- ☐ Power outlet (100V 1A)
- ☐ USB Memory for back up
- ☐ Ethernet, USB interface

Special Options

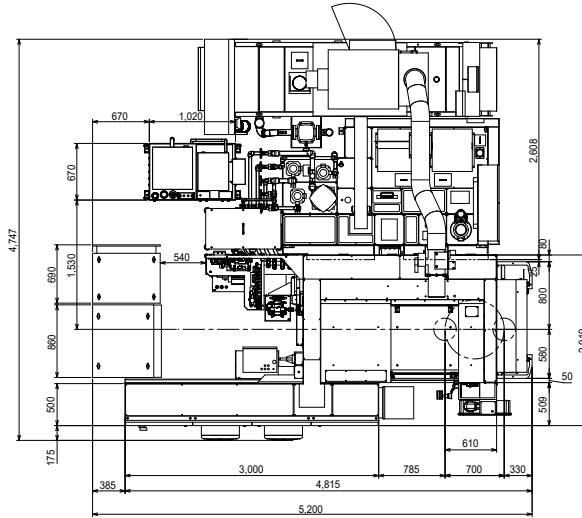
- ☐ Work piece ejection prevention device
- ☐ Rotary Dresser unit
- ☐ Spare grinding wheel arbor
- ☐ Spare collet for work piece clamping
- ☐ Wheel dresser contact detection device
- ☐ Lifting device for maintenance
- ☐ Additional electrical outlet

Tooling Options

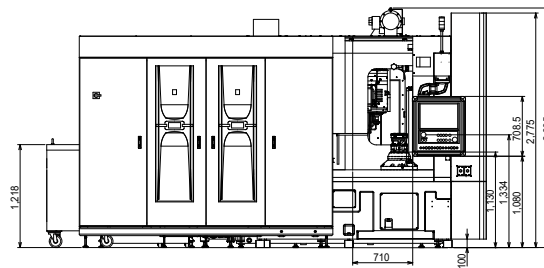
- ☐ Work piece fixture (Collet type)
- ☐ Collet (Spare)
- ☐ Work piece changer Grippers
- ☐ Work piece stand at load/unload position
- ☐ Diamond electroplated rotary dresser
- ☐ Diamond electro plated dressing gear
- ☐ Grinding wheel
- ☐ Grinding wheel arbor (Spare)
- ☐ Automatic fire suppression device, Fire prevention damper
- ☐ Master Gear for set up

MACHINE DIMENSIONS

Foot Plan



Front View



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.