DMG MORI

HIGH-PRODUCTIVITY MILL-TURN MACHINE

NZ-FORMULA

NZ DUE

dmgmori.com

NZ-FORMULA

Two-turret package for high efficiency mass production & automation

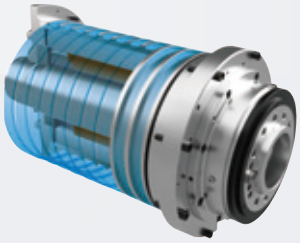
NZ-FORMULA features includes

NZ DUE (Short bed version)

+ Max. turning diameter: ϕ250 mm (ϕ9.8 in.)
+ Max. turning length: 740 mm (29.1 in.)
+ Bar work capacity: ϕ72 mm (ϕ2.8 in.)
+ Travel (X / Y / Z): 210 / ±40 / 740 mm (8.3 / ±1.6 / 29.1 in.)
+ Max. spindle speed: 5,000 min^{-1} (Left / Right spindle)
+ Spindle output: 23 / 20 kW (30.7 / 26.7 HP)
+ Turret: 2 units (Bottom Left, Top Right), BT40/78 (12-station Turret)
+ Max. milling spindle speed: 12,000 min^{-1}
+ Milling Spindle output: 16 / 11 kW (21.3 / 15 HP)

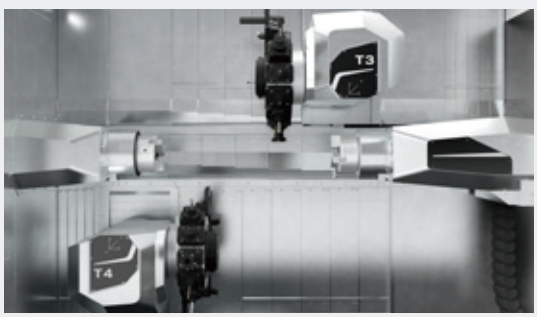
1 turnMASTER spindle (Left / Right spindle)

Same cartridge system on both spindles - same performace, easy maintenance



2 Turret

High milling performance with built-in-motor.
Gantry loader system available, thanks to top right turret position.



3 Bar feeder interface

Automation ready for high volume production by adding bar feeder.

● Bar feeder is not included

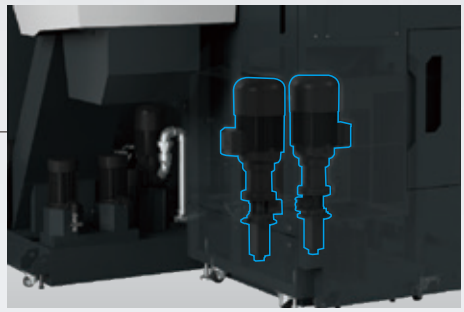
Next Generation of two turret two spindle machine

4 New control panel ERGO*line* X

Large touch screen for high visibility and intuitive operation

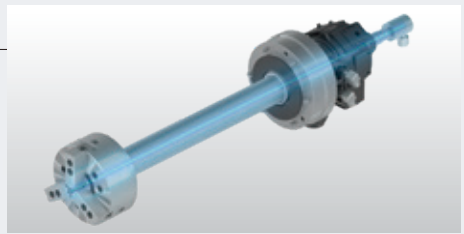
5 Chip conveyor

Equipped with a hinge type chip conveyor + box filter with 500 µm filtration level. Right discharge



6 Super-high pressure coolant system & coolant chiller

Up to 8 MPa high pressure coolant for both turrets – variable pressure
Coolant chiller located on the same cabinet to minimize floor space.



7 Through-spindle coolant for right spindle

Coolant applied through the spindle center:
efficient chip removal during automated machining

8 *zero-sludge*COOLANT tank

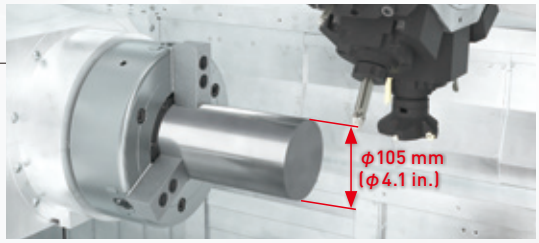
Stirs up the coolant with multiple nozzles and efficiently collects fine sludge through a high-accuracy cyclone filter

Find a video about *zero-sludge*COOLANT tank here.

Option

turnMASTER10in. S Only in USA

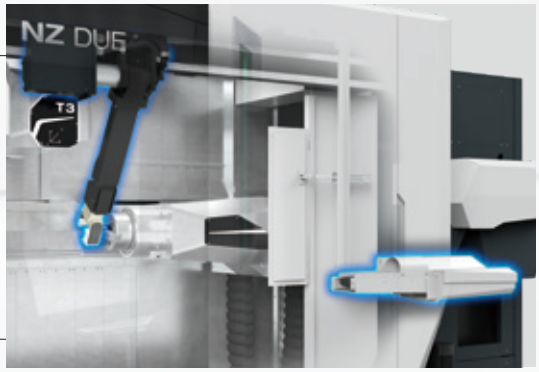
The large through-hole spindle, which can supply bar work capacity of ϕ105 mm (ϕ4.1 in) or allows the machining of large-diameter workpieces to be integrated into a single process.



In-machine traveling workpiece unloader

+ Device to promptly and securely unload a workpiece.
+ The unloader can access both Left and Right Spindle.

Diameter: 30 - 80 mm (ϕ1.2 – 3.1 in.)
Max Length: 300 mm (11.8 in.)
Max Weight: 6 kg (13.2 lb)



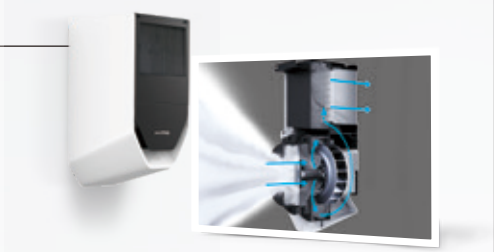
Workpiece unloading conveyor on the right

Width: 100 mm (3.9 in.)

*zero*FOG

A clean & compact mist collector for excellent maintainability, power saving and CO_2 reduction.

Find detailed information about *zero*FOG here.



*zero-sludge*COOLANT *pro*

The newly developed vertical coolant tank is compact in size, energy-saving and offers high capacity. This makes it the optimal coolant solution for continuous operation of highly productive automation systems.

Access here for the video

Gantry Loader package (GX-10T)

Includes: peripheral equipment

+ Workpiece stocker 10 station
+ GX-10T Back end hands
+ Air blow for chuck (Left spindle)
+ Ceiling shutter (Required Option / Retrofittable)

Standard & optional features

● Any additional configurations aside from below standard and option for NZ FORMULA, please refer to NZ Platform.
Please consult with your DMG MORI representative for details

●: Standard ○: Option

			NZ-FORMULA
Left Spindle			
5,000 min^{-1}, 23 / 20 kW (30.7 / 26.7 HP), through-spindle hole diameter ϕ83 mm (3.3 in.)			●
5,000 min^{-1}, 28 / 26 / 22 kW, through-spindle hole diameter ϕ115 mm (4.5 in.)			○*
Right Spindle			
5,000 min^{-1}, 23 / 20 kW (30.7 / 26.7 HP), through-spindle hole diameter ϕ83 mm (3.3 in.)			●
Chuck			
Hydraulic chuck (Left Spindle)	8-inch hollow chuck (KITAGAWA BR08A621)		○
	8-inch hollow chuck (KITAGAWA HGGH83-210)		○
	Power chuck (Hainbuch SPANNTOP mini chuck Deadlength SIZE 65)		○
	Collet chuck (RIKEN SAD-65MSP)		○
	10-inch hollow chuck (KITAGAWA HGGH52-254)		○*
Hydraulic chuck (Right Spindle)	8-inch hollow chuck (KITAGAWA BR08A621)		○
	8-inch hollow chuck (KITAGAWA HGGH83-210)		○
	Power chuck (Hainbuch SPANNTOP mini chuck Deadlength SIZE 65)		○
	Collet chuck (RIKEN SAD-65)		○
Cylinder set			
Hollow Cylinder Set for NZ-FORMULA	Bar work capacity (Left spindle without chuck body)	72 mm (2.8 in.)	●
		105 mm (4.1 in.)	○*
	Bar work capacity (Right spindle without chuck body)	72 mm (2.8 in.)	●
Chuck Option			
Clamping pressure adjustment at the control		Left spindle / Right spindle	●
Chuck foot switch (2 foot switches)		Left spindle / Right spindle	●
Check of the chuck cylinder stroke (Detection of the linear position)		Left spindle / Right spindle	●
Chuck inching function		Left spindle / Right spindle	●
Turret			
XYZ slide unit 3 (Upper right)	Milling unit 16 kW (21.3 HP), 24 N·m (17.7 ft·lbf), 12,000 min^{-1}	12-station turret (compatible with NZX holders, BMT40/78)	●
XYZ slide unit 4 (Lower left)	Milling unit 16 kW (21.3 HP), 24 N·m (17.7 ft·lbf), 12,000 min^{-1}	12-station turret (compatible with NZX holders, BMT40/78)	●
Direct Scale Feedback			
Full-closed Loop Control	X3-axis		●
	X4-axis		●
Coolant			
Chip conveyor	Right discharge, hinge type + box filter		●
Ultra-high-pressure coolant system (Separate type)	8 MPa (Variable pressure type, for 2-turret specification only)		●
Ultra-high pressure coolant interface	2-turret specifications		○
Coolant chiller (Separate type)	For 2-turret specification only		●
Through-spindle coolant system (Center through)	Right spindle		●
Mist collector	*zero*FOG#2 (Built-in type)		○
Coolant gun			○
*zero-sludge*COOLANT Tank	600 L		●
*zero-sludge*COOLANT *pro*	900 L		○
Oil Skimmer	Screw type		○
Measuring			
Manual type in-machine tool presetter	Left spindle (Removable)		●
	Right spindle (Removable)		●
Automation			
Signal lamp	4 colors (LED type: red, yellow, green, blue)		●
Bar feeder interface (Connector type)	LNS, IRCO, IEMCA, Edge Technologies, ALPS TOOL		●
Workpiece unloader	Hand type (In-machine traveling workpiece)		○
	Conveyor on the right type		○
Gantry Loader	GX-10T Package (1 machine, Stocker left side)		○
Ceiling shutter specification			○
Other			
Internal light			●
Water-glycol chiller for spindle cooling			●
Water-glycol heat exchanger for spindle cooling	Central cooling system interface, cooling chiller prepared by customer		○
Danger sensing device interface			○

* Only in USA

- The information in this catalog is valid as of April 2024.
- Specifications, accessories, safety device and function are available upon request.
- Some options are not available in particular regions. For details, please consult our sales representative.

⚠ Flammable coolant such as oil-based coolant has a high risk of ignition, and will cause fire or machine breakage if ignited.
If you have to use a flammable coolant for any reason, please consult with our sales representative.

Numerical control unit specifications (FANUC 30iB Plus)

●: Standard ○: Option

		NZ-FORMULA F30iB Plus
Controlled axes		
Least input increment	0.001 mm (0.0001 in.), 0.0001°	●
Least command increment	0.001 mm (0.0001 in.), 0.0001°	●
Max. command value	±999,999.999 mm (±99,999.9999 in.)	●
Inch / Metric conversion	G20 / G21	●
Machine lock		●
Chuck and tailstock barrier		●
Chamfering	ON / OFF	●
Stored stroke check 2,3		●
Programming resolution multiplied by 1/10	0.0001 mm (0.00001 in.), 0.0001°	●
Abnormal load detection		●
Cutting feedrate		●
Stroke limit check before movement		●
Operation		
Automatic operation		●
Dry run		●
Single block		●
Jog feedrate	X, Y, Z: 0 — 1,000 mm/min (0 — 39.4 ipm) <23 steps> B: 10 min^{-1} C: 5 min^{-1}	●
Manual reference position return		●
Reference position shift		●
Manual pulse handle feed	× 1, × 10, × 50, × 100	●
Manual handle interruption		●
Program restart		●
Tool retract and recover		○
Sequence number comparison and stop		●
Interpolation functions		
Positioning	G00 (linear interpolation type positioning is possible)	●
Threading, synchronous cutting		●
Multiple thread cutting		●
Thread cutting retract		●
Continuous thread cutting		●
External high-speed skip (installation of high-speed skip terminal)		○
Variable lead threading	G34	○
Reference position return	G28	●
Reference position return check	G27	●
2nd reference position return	G30	●
3rd, 4th reference position return		●
Polar coordinate interpolation		●
Circular threading		○
Polygon turning		○
Floating zero return	G30.1	○
Feed functions		
Rapid traverse rate override	F0 — 100% (23 steps)	●
Feed per minute		●
Feed per revolution		●
Tangential speed constant control		●
Cutting feedrate clamp		●
Automatic acceleration / deceleration		●
Feedrate override	0 — 120% (23 steps)	●
Override cancel		●
Balance cutting		●
Feed stop		○
Program input		
Optional block skip	9 blocks	●
Max. command value	±9 digits	●
Program number	O4 digits	●
Sequence number	N8 digits	●
Absolute / incremental programming	X, Z, Y, C (B), U, W, V, H	●
Decimal point programming / Electronic calculator type decimal point programming	Decimal point programming or electronic calculator type decimal point programming can be set using parameters.	●
Diameter / radius programming (X-axis)	Standard: Diameter	●
Plane selection	G17, G18, G19	●
Rotary axis designation		●

●: Standard ○: Option

		NZ-FORMULA F30iB Plus
Program input		
Rotary axis roll-over		●
Coordinate system setting	G50	●
Automatic coordinate system setting		●
Workpiece coordinate system	G52, G53, G54 — G59	●
Chamfer corner radius		●
Programmable data input	G10	●
Sub-program call	Up to 10 nestings	●
Interruption type custom macro		●
Single canned cycle		●
Multiple canned cycle		●
Multiple canned cycle II	Pocket profile, zigzag thread cutting	●
FANUC Series 15 tape format		●
Additional workpiece coordinate systems	48 sets	●
Custom macro common variables	600 variables (#100 — #199, #500 — #999)	●
Custom macro		●
Circular arc radius command		●
3-D coordinate conversion		●
G code system	B / C	○
Miscellaneous functions / Spindle speed functions		
Miscellaneous function	4 digits M code	●
Auxiliary function lock		●
Multiple miscellaneous function commands	3 pcs. (this function is standard for the specified M codes)	●
Spindle speed function	S5 digits	●
Constant surface speed control		●
Spindle speed override	50 - 150% (10% increments)	●
Spindle orientation (Left spindle)		●
Load monitoring function		●
Synchronous tapping (Turning spindle)		○
Tool functions / Tool offset functions		
Tool functions	4 digits T code	●
Tool position offset		●
Tool nose radius offset	G40 — G42	●
Tool geometry offset/Tool wear offset		●
Tool life management	64 pairs × 10 pcs.	●
Tool offset measurement direct data input		●
Number of tool offsets	Total 400 pcs.	●
Editing functions		
Background editing		●
Expanded program editing		●
Part program storage length	4 Mbyte	●
Number of registerable programs	1,000 programs	●
Setting and display		
Status display		●
Clock function		●
Actual position display		●
Program comment display	Program name: 31 characters	●
Parameter setting display		●
Self-diagnosis function		●
Alarm display		●
Alarm history display		●
Operation history		●
Help function		●
Running time / Parts count display		●
Actual feedrate display		●
Display of actual spindle speed and T code		●
Operation panel: Display section	21.3-inch TFT color LCD	●
Regular interval maintenance screen		●
Data input / output		
I/O interface	USB	●
Fast data server		○

● The information in this catalog is valid as of April 2024.

Machine specifications

		NZ-FORMULA
Capacity		
Max. distance between centers	mm (in.)	1,000 (39.3)
Max. turning diameter	mm (in.)	ϕ250 (ϕ9.8)
Max. turning length	mm (in.)	740 (29.1)
Bar work capacity	mm (in.)	ϕ72 (ϕ2.8) [ϕ105 (ϕ4.1)]*
Travel		
X-axis	mm (in.)	210 (8.2)
Y-axis	mm (in.)	80 (3.1) <±40 (1.5)>
Z-axis	mm (in.)	740 (29.1)
Right spindle-axis	mm (in.)	730 (28.7)
Left spindle		
Max. spindle speed	min^{-1}	5,000
Chuck used		8-inch [10-inch]*
Through-spindle hole diameter	mm (in.)	ϕ83 (ϕ3.3) [ϕ115 (ϕ4.5)]*
Right spindle		
Max. spindle speed	min^{-1}	5,000
Chuck used		8-inch
Through-spindle hole diameter	mm (in.)	ϕ83 (ϕ3.3)
Turret		
Turret Type		BMT 40/78
Number of tool stations		12 <12-station Turret>
Max. milling spindle speed	min^{-1}	12,000
Feedrate		
Rapid traverse rate	mm/min (ipm)	X: 22,500 (885.8) Y: 10,000 (393.7) Z: 40,000 (1,574.8)
	min^{-1}	C：400
Motors		
Left spindle drive motor (40%ED / cont)	kW (HP)	23 / 20 (30.7 / 26.7)
Right spindle drive motor (40%ED / cont)	kW (HP)	23 / 20 (30.7 / 26.7)
Milling spindle drive motor (15%ED / cont)	kW (HP)	16 / 11 (21.3 / 15)
Machine size		
Machine height	mm (in.)	2,511 (98.9)
Floor space <Width × Depth>	mm (in.)	6,705 × 2,161 (264.0 × 85.1)

[ ] Option

＊ Only in USA

- Bar work capacity: Depending on the chuck / cylinder used and its restrictions, it may not be possible to reach full bar work capacity.
- Max. spindle speed, Max. milling spindle speed: Depending on restrictions imposed by the workpiece clamping device, fixture and tool used, it may not be possible to rotate at the maximum spindle speed.
- Machine size: The actual values may differ from those specified in the catalogue, depending on the optional features and peripheral equipment.
- 400V specification as standard. Transformer may be required depending on the power supply.
- The information in this catalog is valid as of April 2024.

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