CITIZEN

MC20IV

Multi Station Machining Cell

Even more evolved multi-station machining cell equipped with four modules

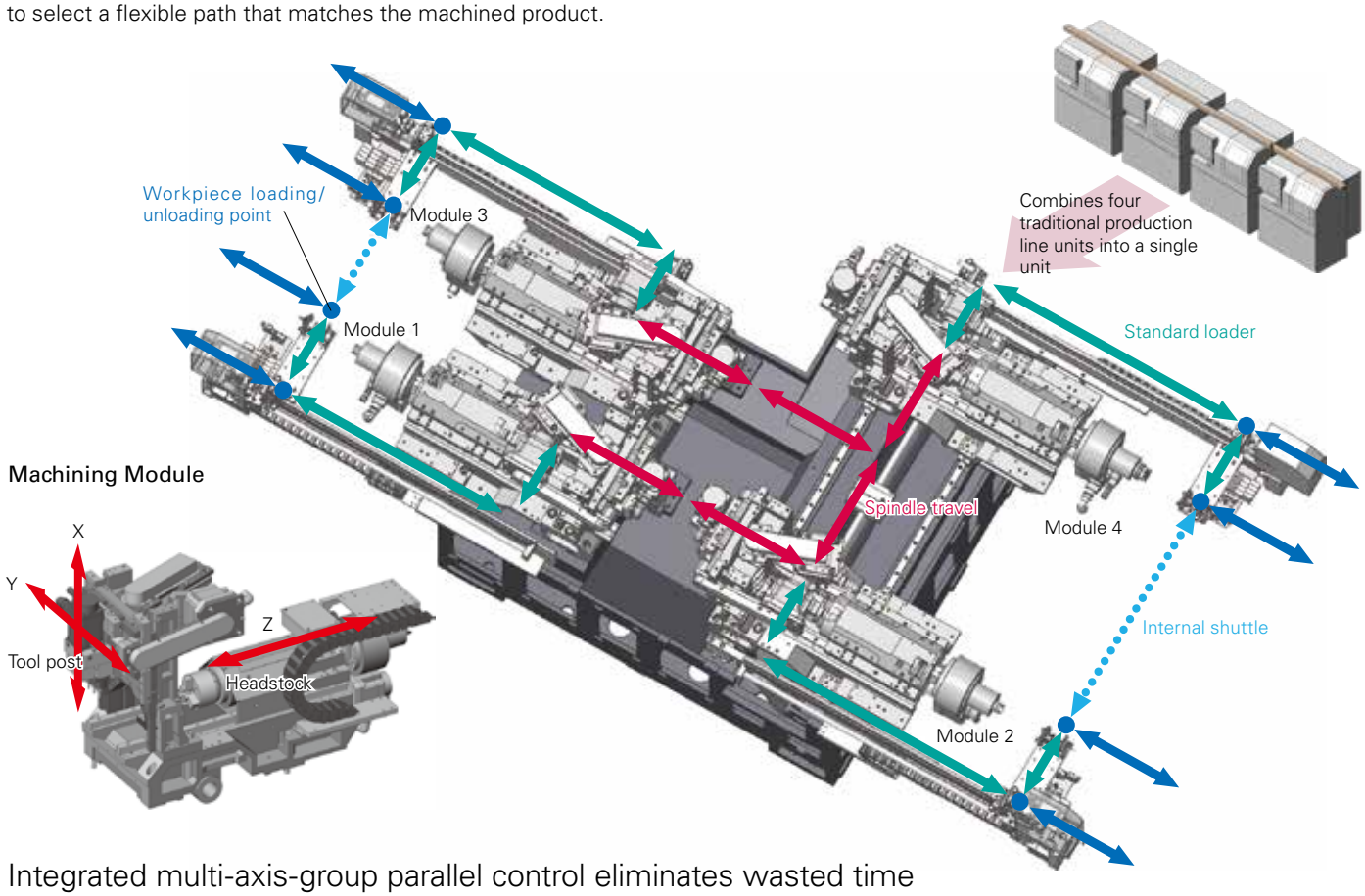
Based on the MC20 Series, this machining cell has a modular design to enable a multi-station configuration, and the four machining stations provide optimal allocation of machining processes and reduced takt time. It can perform mixed-flow production of various products at the same time.

Consisting of a headstock and tool post, the four identical machining modules have a machine configuration in which they are all located on a single head to dramatically improve per-unit area productivity in comparison with conventional production lines. Additionally, the individual modules can be easily set up once you become familiar with handling the lathe consisting of one spindle and one tool post.

Workflow with transfer between standard loaders and spindle

Standard loaders are equipped to all modules to provide omnidirectional transfer points to nearby units. Grip changing between centered spindles in between processes enables you to select a flexible path that matches the machined product.

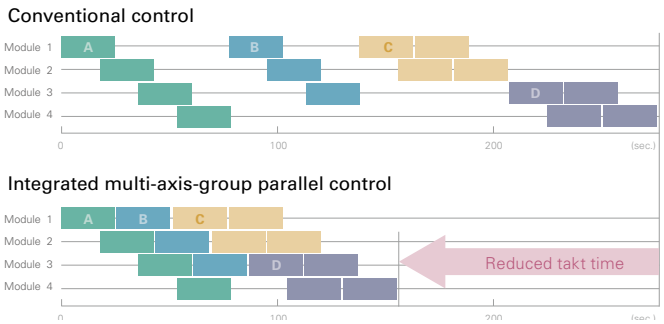
Modules can be made independent or linked as necessary to allocate the machining processes, thereby improving productivity.



Integrated multi-axis-group parallel control eliminates wasted time

If using a standard control method to perform continuous production with differing workpieces, previous Workpiece A must first be discharged from the machine before machining of next Workpiece B can begin.

Integrated multi-axis-group parallel control eliminates wasted time because it allows for machining of next Workpiece B without having to wait for previous Workpiece A to be discharged. This helps to reduce takt time.

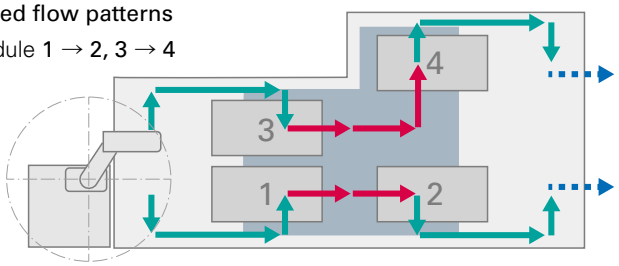


Workflow efficiently using multiple stations

The ability to select the necessary machining station for each workpiece, and flowing each one through different paths until completely machined can even be applied to mixed-flow production of various products in which similar workpieces are grouped together.

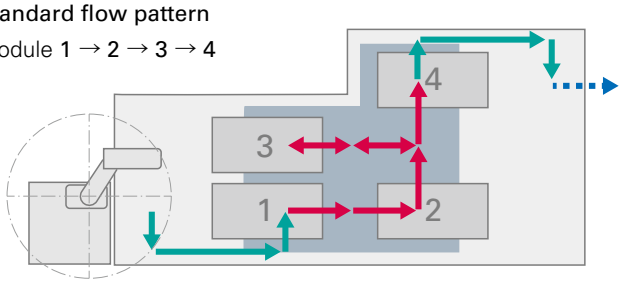
Varied flow patterns

Module 1 → 2, 3 → 4

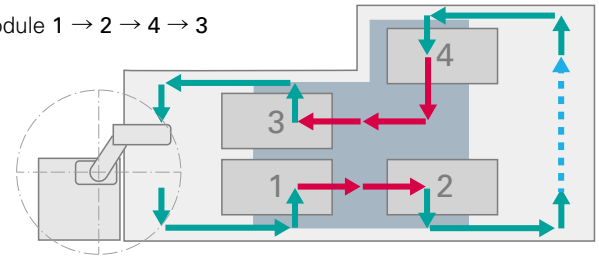


Standard flow pattern

Module 1 → 2 → 3 → 4



Module 1 → 2 → 4 → 3



Machine Specification

Item	**MC20 IV** (MC20-3M4)
Chuck size	4-inch chuck
Max. through spindle workpiece diameter	20 mm dia.
Max. workpiece length	70 mm
Max. drilling diameter with the spindle	7 mm dia.
Max. tapping diameter with the spindle (Cutting tap)	M6
Main spindle speed	Max. 8,000 min^{-1} (differs depending on the chuck type)
Gang rotary tools	
Max. drilling diameter	5 mm dia.
Max. tapping diameter (Cutting tap)	M5
Main spindle speed	Max.8,000 min^{-1}
Number of tools to be mounted (standard machining specification)	per module: 5
Turning tools	2
Cross drilling tools	3
Number of tools to be mounted (turning / cross machining / end-face machining specification)	per module: 6
Turning tools	2
Cross drilling tools	2
End-face drilling tools	2
Number of tools to be mounted (full tooling capability)	per module: 9
End-face sleeve	4
Cross drilling tools	1
End-face drilling tools	4
Tool size	
Tool (gang tool post)	□ 13 mm
Sleeve	19.05 mm dia., 20 mm dia.
Rapid feed rate	
X axis	32 m/ min
Y axis	32 m/ min
Z axis	32 m/ min
A axis	40 m/ min
Motors	
For spindle (built-in motor)	2.2/3.7 kW
For rotary tools on gang tool post	0.75 kW
For coolant oil	0.18 kW × 2, 0.25kW × 2
For medium-pressure coolant	0.75 kW × 3
Loader axis motor	0.2 kW × 2
Center height	1,060 mm
Rated power consumption	22 kVA
Full-load current	88 A
Main breaker capacity	125 A
Pneumatic unit / Required pressure	0.5 MPa
Required flowrate	310 Nl/min
Machine size	W 3,510 × D 2,110 × H 2,000 mm
Weight	5,000 kg

Main standard accessories

Main spindle chucking unit, Spindle cooling unit, Emergency stop box
Machine relocation detector, Gang rotary tool driving unit
Workpiece loading unit set (for Module 1 and Module 4)
Door lock

Special accessories

Work pusher, Pneumatic unit for checking spindle seating
Workpiece loading unit set (for Module 2 and Module 3)
Pneumatic unit for chuck air blow
Pneumatic unit for spindle rear air blow
Pneumatic unit for workpiece hand air blow
Pneumatic unit for tool air blow, Coolant unit (scraping type)
Coolant flow rate detector, Medium-pressure coolant unit
Foot switch, Tablet, 3-color signal tower
Automatic fire extinguishing unit, Fire damper
Material feeder interface (with cut-off check function), LFV

Standard NC functions

Preparing operation functions, Background edit function
On-machine program check function, High-speed program check function
Axis feed overlap function, Spindle speed change detector
Chamfering/Corner R, Nose radius compensation, Circular interpolation
Canned cycle for threading, Canned cycle for composite turning
Product counter indication (8 digits), Obstruction check function
Program storage capacity: 160m (Approx. 64KB)
15-inch touch panel
Automatic power-off function
Input/output I/F (RS232C, CompactFlash, USB)

Special NC functions

Program storage capacity: 1200 m (Approx. 480KB)
User macros, Submicron commands
Synchronized tapping function, Canned cycle for drilling
Constant peripheral speed control function, Differential speed rotary tool function
Tool life management I, Tool life management II, Milling interpolation function
External memory program driving, Polygon function
Hob function, Helical interpolation function, Inclined helical interpolation function
Geometric command function, Variable lead threading
Arc threading, 2-System simultaneous threading III
Coordinate rotation command function, User macro G-code call
High-speed synchronized tapping function, Optional block skip (9 sets)

CITIZEN MACHINERY CO., LTD.

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