DMG MORI

Compact Pallet Pool System

CPP SYSTEM

CPP SYSTEM

Compact and Sophisticated Package System

The Compact Pallet Pool (CPP) is a compact package system easy to introduce at your shop floor.
For the system configuration, the customer can select the optimum specifications from 8 packages.
CPP contributes to improving customers' productivity.

Easy to order

You can choose your system from a wide range of pre-set options to suit your type of production.
This allows you to construct the system quickly.

Space-saving

It allows you to establish an efficient automation system in far less space than other automation systems.

Reduced personnel costs

Since the system allows long-term automatic operation, you can reduce personnel costs, for example by conducting unmanned operation at night.

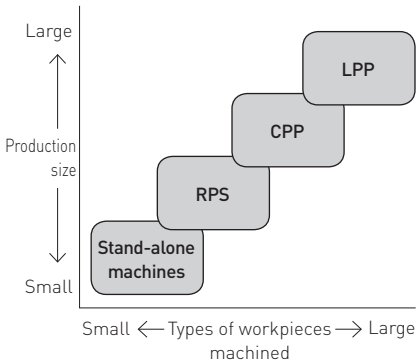
Reduction in setup time

By placing multiple fixtures on the pallets in advance, no setup is needed when you receive repeat orders.

CPP's features

Among all the various systems which are available, the CPP system is the most suitable for multi-item, small to medium-lot production.

Characteristics of each system

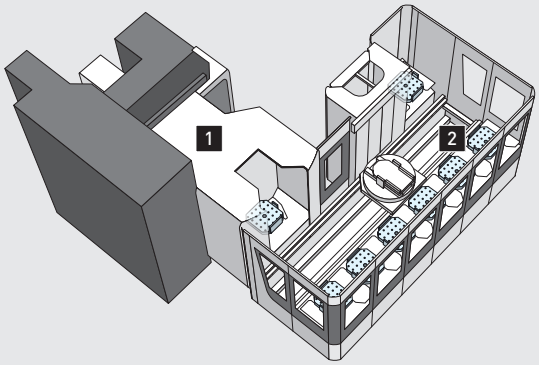


Key points when selecting a system

	RPS	CPP	LPP
Number of machines	1 unit	1 unit	Up to 8 units
Number of workpiece setup stations	1 station	1 station	Up to 5 stations
Number of pallet stations	4 stations	4—11 stations	Up to 99 stations
Number of pallet shelves	1 level	1 level	2 levels

RPS: Rotary Pallet Storage CPP: Compact Pallet Pool LPP: Linear Pallet Pool

Easy to select your best system



The package system consists of a combination of a machining center and one of the eight pallet pool specifications. With your choice of spindle taper, the number of pallets and the machine installation arrangement, the system optimal for your production is complete.

1 Please select your machine.

No. 40 taper

Machine (e.g. NHX Series)	NHX 4000 3rd Generation	NHX 5000 3rd Generation
Pallet size	☐ 400 mm (15.7 in.)	☐ 500 mm (19.7 in.)

No. 50 taper

Machine (e.g. NHX Series)	NHX 5500 2nd Generation	NHX 6300 2nd Generation	NHX 8000	NHX 10000
Pallet size	☐ 500 mm (19.7 in.)	☐ 630 mm (24.8 in.)	☐ 800 mm (31.5 in.)	☐ 1,000 mm (39.4 in.)

2 Please select number of pallets.

Machine installation arrangement: Right angle arrangement

+ Number of pallets: 6, 8, 10, 12
+ Number of machines: 1

Machine installation arrangement: Straight line arrangement

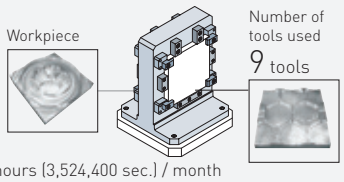
+ Number of pallets: 5, 7, 9, 11
+ Number of machines: 1

Advanced system suitable for your shop and production available in various specifications

Comparison of operating rates and productivity

In order to help you understand the CPP's features, we have conducted a simulation comparing operating ratios and productivity under the same production conditions.

■ **Assumptions:**
We are making the comparison under the following operating conditions.



<cycle time / 1 pc.>
881 sec. × 4,000 pcs. ≒ 979 hours (3,524,400 sec.) / month
● When machining 4 kinds of workpieces at the same time.
Material <JIS>: A5052 (Aluminum)

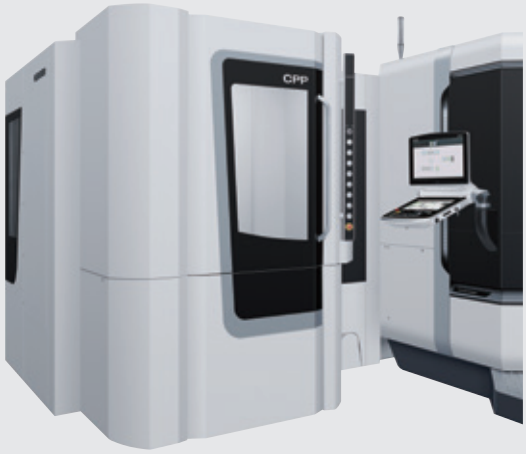
JIS: Japanese Industrial Standard

Items compared	Stand-alone machines <NHX 5500> (with 2-station APC)	CPP (12CPP)
		
Number of machine operating days / month A	24 days	24 days
Machine operating time (manned + unmanned) B	9 hours (8 hours + 1 hour)	19 hours (8 hours + 11 hours)
Machine operating rate C	0.85	0.85
Actual operating time / day B × C = D	7.65 hours	16.2 hours
Actual operating time / month D × A = E	183.6 hours	388.8 hours
Number of machines required to run 4,000 pcs. / month (total)	6 machines	12CPP (1 machine) × 3 sets
Comparison of equipment costs	100%	74%
Number of operators required	3	2
Comparison of personnel costs	100%	67%

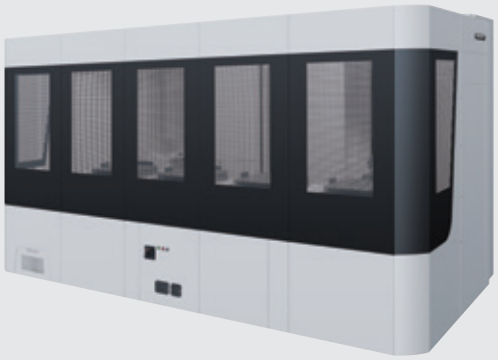
CPP SYSTEM

New Design with Beauty and Usability

The CPP system is designed in pursuit of usability, aiming at reduction of operators' everyday burden. The system with a beautiful new design cover provides operators a joy of machine operation.



+ Smoother door opening / closing to reduce operators' burden



+ Improved visibility inside the CPP

PALLET MANAGER*

Setups can be performed not only with the conventional handy controller, but with CELOS on the machine. The use of CELOS also allows for operation and management of both machine and CPP. CELOS featuring a large touch screen ensures hassle-free setup operations.

*This is a MAPPS V function.
For machines not equipped with MAPPS V, only the handy controller is available.

+ Intuitive operation, just like a smartphone
+ Shorter setup times

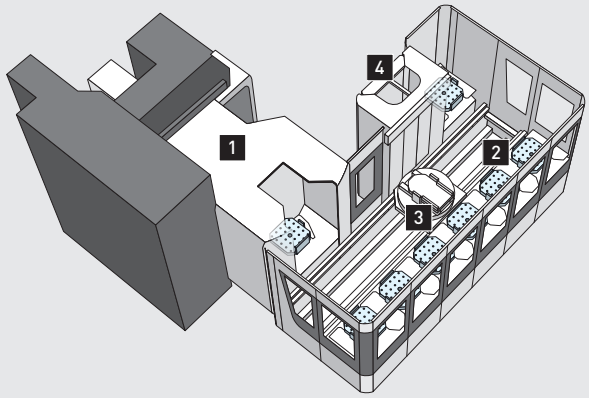
Handy controller

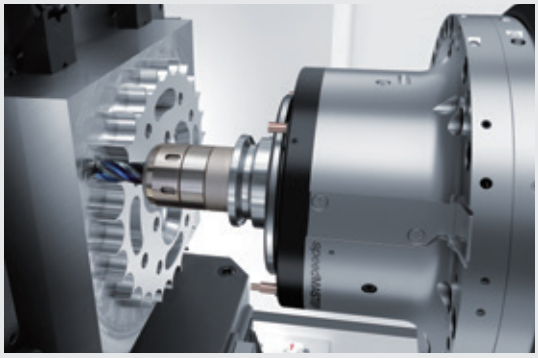
CELOS: Control Efficiency Lead Operation System
MAPPS: Mori Advanced Programming Production System

CPP SYSTEM

System Components for Highest Reliability

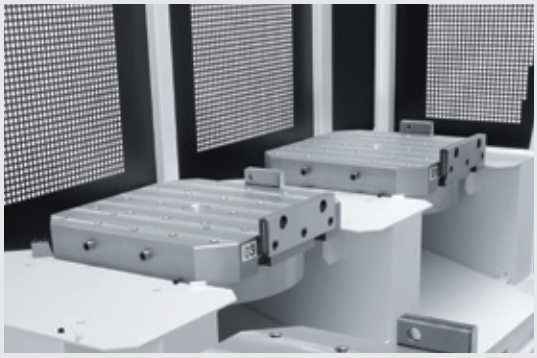
Each structure of the CPP consists of high-quality, durable components. You can select the ideal specifications for your production from the packages.





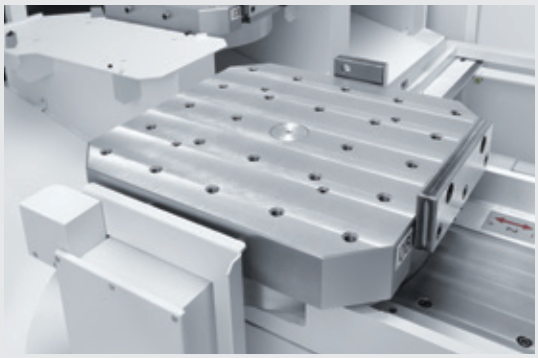
1 Machine

+ Uses the NHX Series horizontal machining centers



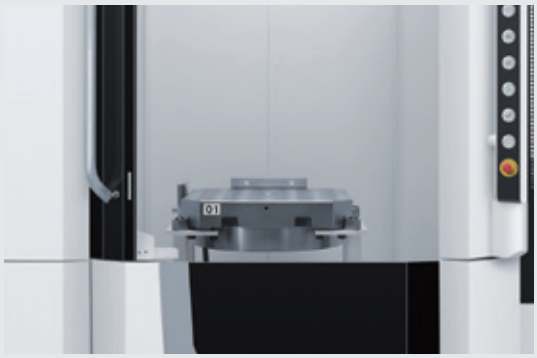
2 Pallet racks

+ The pallets are transferred using the random access method (number of pallets = number of pallet stations + number of machines)
+ The open frame offers excellent visibility



3 Transfer AGV (Automatic Guided Vehicle)

+ The pallet direct calling function calls pallets quickly
+ The NC control achieves highly accurate positioning, high reliability and easy maintenance by ensuring smooth axis travel and transfer
+ High-speed travel is possible by using a rack & pinion and a guide rail



4 Workpiece setup station (WSS)

+ Manual pallet indexing is possible in 45° increments up to 360°, offering easier setup
+ Hydraulic and pneumatic units for automatic fixture clamping*, an air gun* and a coolant gun can be installed (option)

* Consultation is required

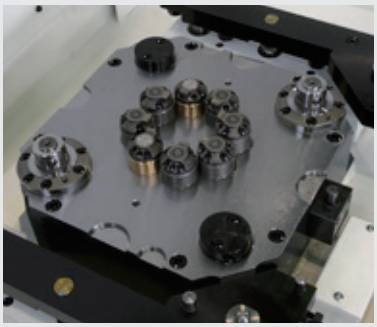
CPP SYSTEM

A Wide Variety of Peripherals to Meet Your Needs

The combination of the high-performance system and the excellent peripheral equipment helps significantly improve operating efficiency and accuracy.

Auto-coupler (option) <Consultation is required>

Compressed air is supplied to the setup station. Hydraulic fluid is supplied to both the setup station and the machining table. High pressure can be used with the anti-rising mechanism.

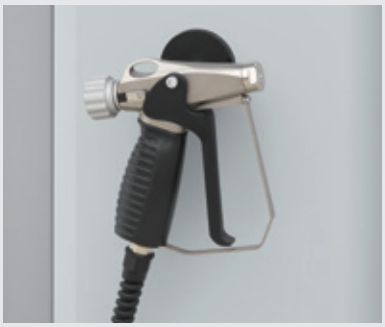


Setup station

Machining table

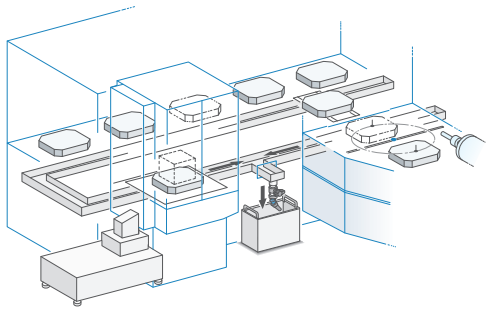
Coolant gun

Use the high-pressure coolant gun to flush the chips from the machine and fixtures.



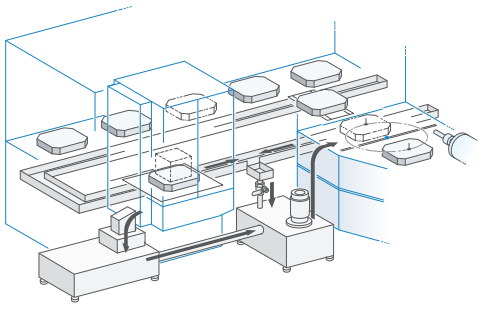
Coolant collection unit

The coolant collection unit installed around the CPP system.



Standard features

- Collection of coolant from the gutter inside the CPP must be arranged by the customer.



Internal collection type (option) <Consultation is required>

- This will be available as customized specifications.
- Coolant from inside the workpiece setup station is collected in the chip bucket.

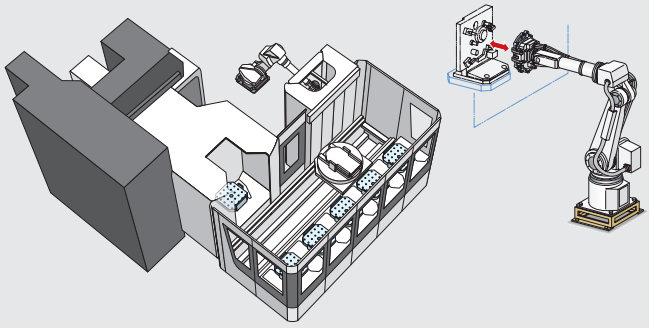
Tool ID* (option) <Consultation is required>

This system calls tool data, and automatically processes registered information to improve ease of setup.

* A separate tool presetter is required
- When using this, both MCC-LPS III and MCC-TMS are required.

Robot (option) <Consultation is required>

The robot automates workpiece handling.



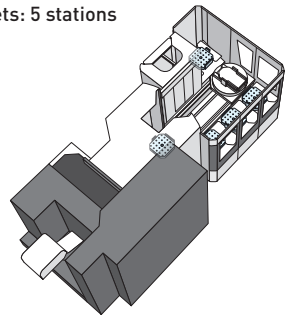
+ For mass production workpieces, this improves work efficiency by automatically attaching / removing unusually shaped or heavy workpieces

System Component Specifications

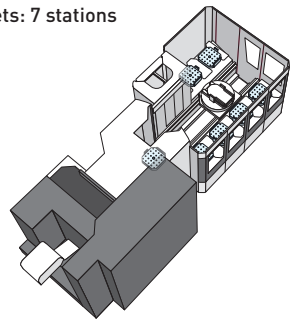
Straight line arrangement

With these specifications, the machine is set up horizontally in relation to the pallet shelves.

Number of pallets: 5 stations



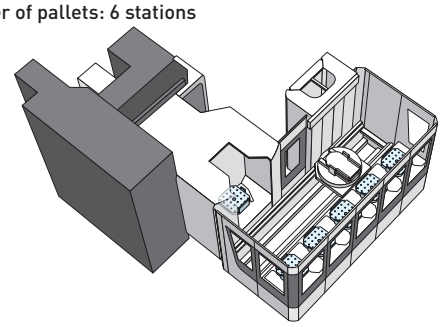
Number of pallets: 7 stations



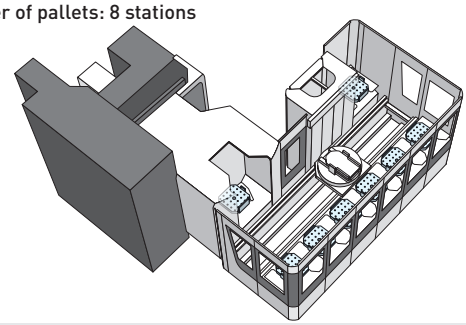
Right angle arrangement

With these specifications, the machine is set up vertically in relation to the pallet shelves.

Number of pallets: 6 stations



Number of pallets: 8 stations



	CPP 40	CPP 50	CPP 63	CPP 80	CPP 100
Machine and pallet specifications					
Applicable machining centers	NHX 4000	NHX 5000 NHX 5500	NHX 6300 NH6300 DCG NHC 6300	NHX 8000	NHX 10000
Number of pallets controlled	Right angle arrangement: 6, 8, 10, 12 Straight line arrangement: 5, 7, 9, 11				Right angle arrangement: 6
Carrier travel specifications					
Speed (with / without pallet) m/min (fpm)	52 / 42 (170.6 / 137.8)	48 / 38 (157.5 / 124.7)	80 / 53 (262.5 / 173.9)	35 / 25 (114.8 / 82.0)	35 (114.8)
Workpiece transfer specifications					
Speed (with / without pallet) m/min (fpm)	50 / 40 (164.1 / 131.2)	45 / 35 (147.6 / 114.8)	40 / 25 (131.2 / 82.0)	35 / 25 (114.8 / 82.0)	12 / 8.5 (39.4 / 27.89)
Carrier hoist specifications					
Drive system	Hydraulic cylinder				Servo motor
Carrier turn specifications					
Drive system	General-purpose geared motor				—
Turn speed min^{-1}	7.34	6.73	4.63	3.7	—
Workpiece setup station specifications					
Setup system	45° indexing turn table system				Fixed

<Precautions for Machine Relocation>

This product is deemed regulated cargo when exported under the Japanese government's Foreign Exchange and Foreign Control Trade Law. Government authorization is required when exporting this product.
The product shipped to you (the machine and accessory equipment) has been manufactured in accordance with the laws and standards that prevail in the relevant country or region. If it is exported, sold, or relocated to a destination in a country with different laws or standards, it may be subject to export restrictions of that country.

This product detects machine relocation. Once the machine is relocated, it is not operable unless its legitimate relocation is confirmed by DMG MORI or its distributor representative.
If the restart of the machine can result in unauthorized export of cargo or technology or will violate legitimate export controls, DMG MORI and its distributor representative can refuse to restart the machine.
In that case, DMG MORI and its distributor representative do not assume any loss due to the inability to operate the machine or any liability during the warranty period.

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+ If you have any questions regarding the content, please consult our sales representative.

+ The information in this catalog is valid as of June 2020. Designs and specifications are subject to changes without notice.

+ The machines shown in the catalog may differ from the actual machines. The location and the size of the nameplates may also differ from the actual machines, or the nameplates may not be attached to some machines.

+ DMG MORI is not responsible for differences between the information in the catalog and the actual machine.

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