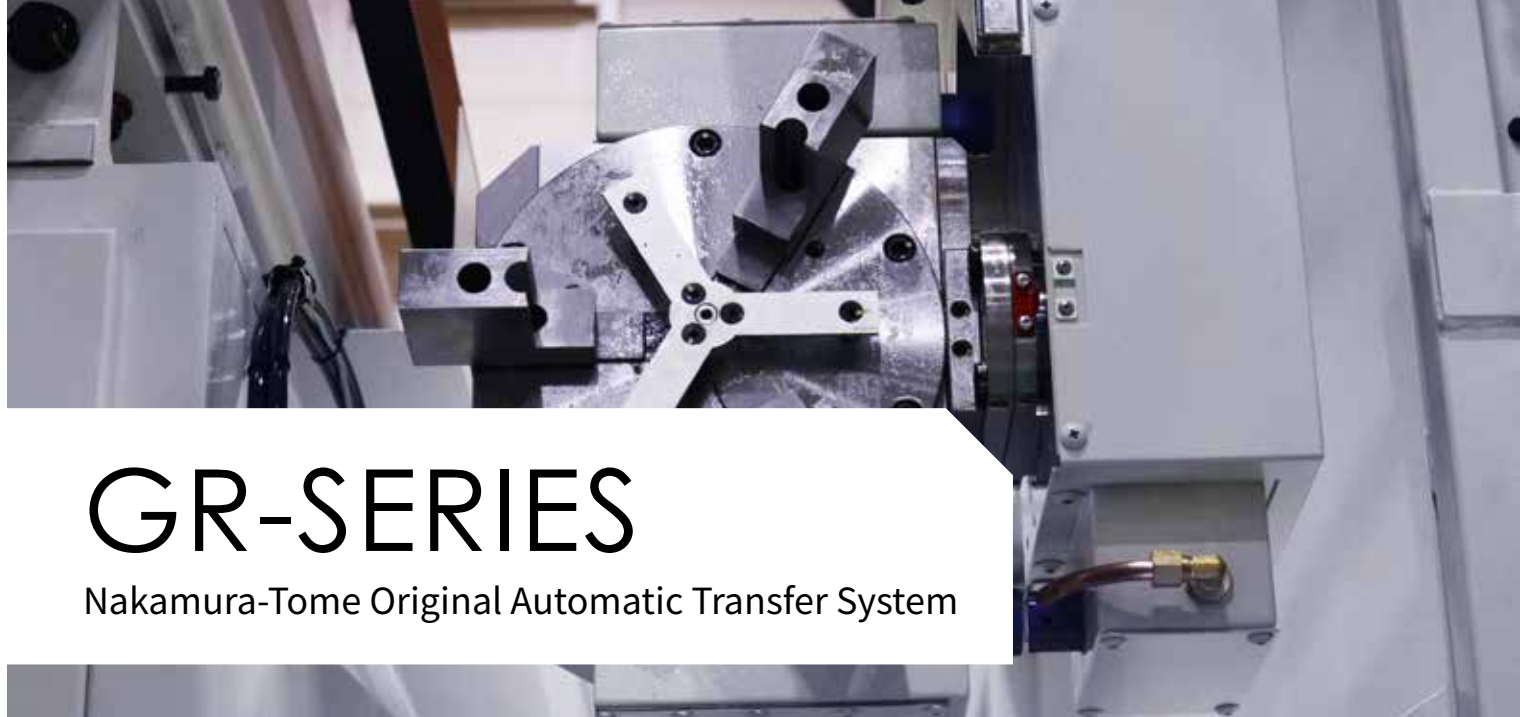


Automation

Gantry Loader/Compact Loader/Shaft Loader/Stocker/HAKO-BEI
Automation General Catalog

NAKAMURA-TOME
PRECISION INDUSTRY CO.,LTD.



GR-SERIES

Nakamura-Tome Original Automatic Transfer System

Easy Operation

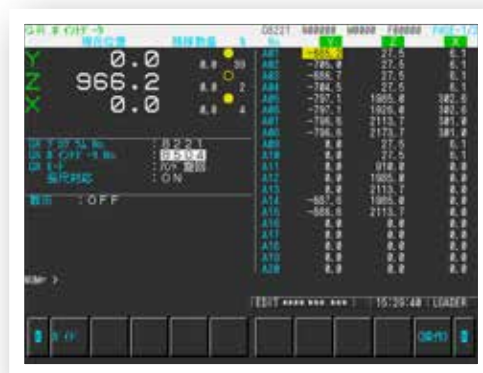
Easy setup by teaching the moving points from the NT NURSE screen.
The GR program can be executed with only one line command.

Abundant Configurations

Lineup of stocker left placement, right placement, and passage type.
Various configurations are possible according to the layout of your factory.

Built-in Gantry

Built-in type for loading and unloading parts.
The machine footprint is small and we have succeeded in saving space.



High-Speed

Fastest Gantry in Its class "High-Speed Series"

- Unmanned driving

- Automation

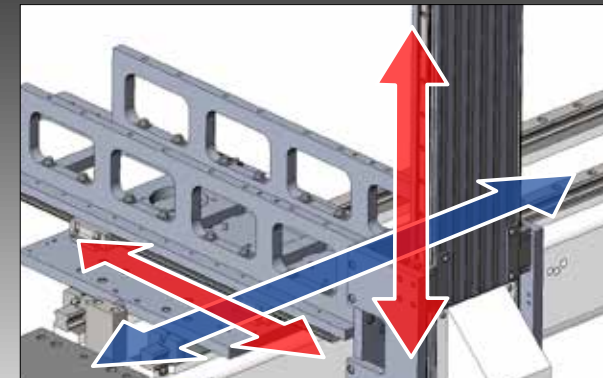
- Speed



GR-201 High-Speed
GR-203 High-Speed
GR-210 High-Speed



Easy position teaching with 3-axis configuration



* Only GR-201 High-Speed has 2 axes.

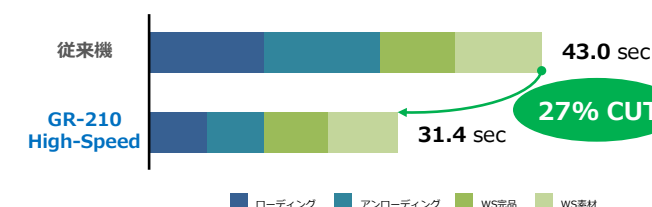
World's fastest transport speed!

Improve productivity by reducing time



Transport time reduced by 27%

Shorter transport time due to increased signal transmission speed



Gantry Loader①

GR-210 High-Speed 3 axes

SC-300II + GR-210 High-Speed

GR-210 NEW 3 axes

WT-300 + GR-210 NEW + WS-445W

		GR-210 High-Speed		GR-210 NEW	
※1	Unit	10kg	20kg (op.)	10kg	20kg (op.)
■ Speed					
Loading/Unloading time ※2	sec	6.0/6.0	10.5/10.5	10.5/10.5	
■ Hand					
Workpiece diameter	Flange	mm	Φ20~ Φ220		Φ20~ Φ220
	Shaft		Φ20~ Φ100		Φ20~ Φ100
Workpiece length	Flange	mm	20~100		20~100
	Shaft		50~200		50~200
Hand turning	Flange	-	0.75sec/180°	3.0sec/180°	1.8sec/180°
	Shaft		1.8sec/180°		3.0sec/180°
Hand back turning			-		-
Workpiece weight	Flange		kg	10×2	20×1
	Shaft	20×1		20×1	
Jaw stroke	Flange	mm	Φ40	Φ32	Φ40
	Shaft		Φ30		Φ30
■ Work Stocker List					
Multi-layer work stocker	WS-221	-	-	-	-
	WS-231	-	-	-	-
	WS-442W	○	○	○	○
	WS-445W	○	○	○	○
Single-layer work stocker	WS-121	-	-	-	-
	WS-122	-	-	-	-
	WS-124	-	-	-	-
	WS-132	-	-	-	-
HA KO-BEI Rail extension is required when B type is selected.		-	-	-	-

※ 1 Specifications may differ for each model to be installed.
※ 2 Loading/unloading time are approximate. It varies for each model to be installed.

GR-203 High-Speed 3 axes

NTY³-150 + GR-203 High-Speed

GR-203II 3 axes

WT-150II + GR-203II + WS-231

		GR-203 High-Speed		GR-203II	
※1	Unit	3kg	5kg (op.)	3kg	5kg (op.)
Speed					
Loading/Unloading time ※2	sec	4.7/4.6	6.7/6.7	7.8/7.8	8.1/8.1
Hand					
Workpiece diameter	Flange	mm	φ20~ φ130		φ20~ φ130
	Shaft		φ15~ φ30		φ15~ φ30
Workpiece length	Flange	mm	20~110		20~110
	Shaft		35~200		35~200
Hand turning	Flange	-	0.9~1.1sec/90°		1.4~1.6sec/90°
	Shaft		1.2sec/180°		1.2sec/180°
Hand back turning			-		-
Workpiece weight	Flange	kg	3.0×2	5.0×2	3.0×2
	Shaft		1.0×2		1.0×2
Jaw stroke	Flange	mm	φ16		φ16
	Shaft		φ25		φ25
Work Stocker List					
Multi-layer work stocker		WS-221	○	○	○
		WS-231	○	○	○
		WS-442W	-	-	-
		WS-445W	-	-	-
Single-layer work stocker		WS-121	○	○	○
		WS-122	○	○	○
		WS-124	○	○	○
		WS-132	○	○	○
HA KO-BEI Rail extension is required when B type is selected.		○	○	○	○

Gantry Loader②

GR-201 High-Speed

2 axes



SC-100 + GR-201 High-Speed

GR-201

Tilt

WT-100
+
GR-201
+
WS-221



GR-103

Tilt

SC-250
+
GR-103
+
WS-121

		GR-201 High-Speed		GR-201		GR-103		
※1	Unit	1kg	3kg (op.)	1kg	3kg (op.)	3kg	5kg (op.)	MATA-BEI(op.)
Speed								
Loading/Unloading time ※2	sec	3.2/4.0	6.0/6.5	6.0/6.0	8.0/8.0	8.5/8.5		
Hand								
Workpiece diameter	Flange	mm	φ20~ φ60	φ20~ φ80	φ20~ φ60	φ20~ φ80	φ20~ φ130	φ20~ φ80
	Shaft		φ15~ φ30		φ15~ φ30		φ15~ φ30	-
Workpiece length	Flange	mm	20~50	20~75	20~50	20~75	20~100	20~60
	Shaft		35~200		35~200		35~200	-
Hand turning	Flange	-	1.8sec/270°		1sec/90°		1.2sec/180°	1.2sec/180°
	Shaft		* Varies depending on specifications.		1.2sec/180°			-
Hand back turning			-		-		-	1.5sec/180°
Workpiece weight	Flange	kg	1.0×2	3.0×2	1.0×2	3.0×2	3.0×2	5.0×2
	Shaft		1.0×2		1.0×2		1.0×2	
Jaw stroke	Flange	mm	φ12		φ15		φ15	
	Shaft		φ25		φ25		φ25	
Work Stocker List								
Multi-layer work stocker	WS-221		○	○	○	○	○	○
	WS-231		○	○	-	-	○	○
	WS-442W		-	-	-	-	-	-
	WS-445W		-	-	-	-	-	-
Single-layer work stocker	WS-121		-	-	○	○	○	○
	WS-122		-	-	○	○	○	○
	WS-124		-	-	○	○	○	○
	WS-132		-	-	-	-	○	○
HA KO-BEI Rail extension is required when B type is selected.			○	○	○	○	○	○

※ 1 Specifications may differ for each model to be installed.
※ 2 Loading/unloading time are approximate. It varies for each model to be installed.

Gantry Loader Installation table	GR-210 High-Speed	GR-203 High-Speed	GR-201 High-Speed	GR-210 NEW	GR-203 II	GR-203	GR-201	GR-103
SC-100			○					
SC-200II		○						
SC-200L								○
SC-250				○				○
SC-300II	○							
TW-8						○		
WT-100							○	
WT-150II		○						
WT-250II				○	○			
WT-300	○							
WY-100II		○						
WY-150		○						
WY-250L				○	○			
NTY3-100		○						
NTY3-150		○						
NTY3-250				○	○			
JX-250	○							



● GR-210 Series hand



● GR-203 Series hand



● GR-201 Series hand



● GR-103 Hand(5kg SPEC.)



● GR-103 Hand(MATA-BEI SPEC.)

Gantry loader loading/unloading type

Standard, Left side,Right side,Left extension, Right extension, Passing.

* However, there are restrictions depending on the machine model and specifications.

Standard / Left side

NTY3-100 + GR-203 High-Speed



Right side / Extension

TW-8 + GR-203



* Right side, chip conveyor is rear discharge type.

Passing

WT-100 + GR-201



* Passing, chip conveyor is rear discharge type.

Compact Loader



WY-150
+Compact Loader+HAKO-BEI

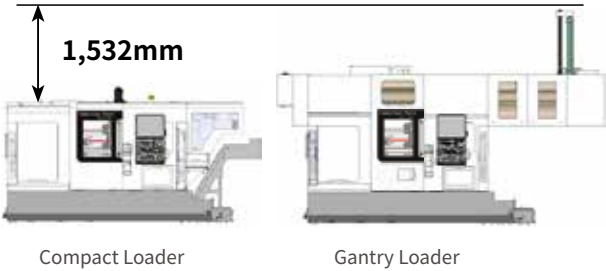
			MX-100		WY-100II / NTY ³ -100				WY-150			
					Standard		Travel axis extended by 150mm (op.)		Standard		Travel axis extended by 150mm (op.)	
			Unit	Hand 1 Material	Hand 2 Finish	Hand 1 Material	Hand 2 Finish	Hand 1 Material	Hand 2 Finish	Hand 1 Material	Hand 2 Finish	Hand 1 Material
Workpiece Size	Diameter	mm	φ20~φ130		φ32~φ100				φ32~φ100			
	Length	mm	20~110		20~100				20~100			
	Weight	kg	3.0×2		3.0×2				3.0×2			
Z-axis Travel	Drive	-	Servomotor		Servomotor				Servomotor			
	Stroke	mm	2,600		1,955		2,105		2,105		2,255	
	Rapid speed	m/sec	2		2				2			
Arm Advance/Retract	Drive	-	-		Air cylinder				Air cylinder			
	Stroke	deg.	-		50				50			
	Speed	sec./st.	-		1.7				1.7			
Hand Up/Down	Drive	-	Air cylinder		Air cylinder				Air cylinder			
	Stroke	mm	400		150				150			
	Speed	sec./st.	3.0		1.8				1.8			
Hand Swing	Drive	-	Air cylinder		Air cylinder				Air cylinder			
	Stroke	°	90°		90°				90°			
	Speed	sec./90°	2		1.7				1.7			
Hand	Drive	-	Air cylinder		Air cylinder				Air cylinder			
	Stroke	mm	20 (±10)		15 (±7.5)				15 (±7.5)			
	Speed	sec./st.	0.3		0.3				0.3			
Operating Time		sec	6.8		6.5				6.5			
Transport Device	Loading/unloading	-	Conveyor/Transfer		Conveyor/Transfer	Conveyor/Chute/Transfer	-		Conveyor/Transfer	Conveyor/Chute/Transfer	-	

* The combination of transfer devices is limited to IN conveyor/OUT conveyor, IN conveyor/OUT chute, and transfer device (material/finished part).

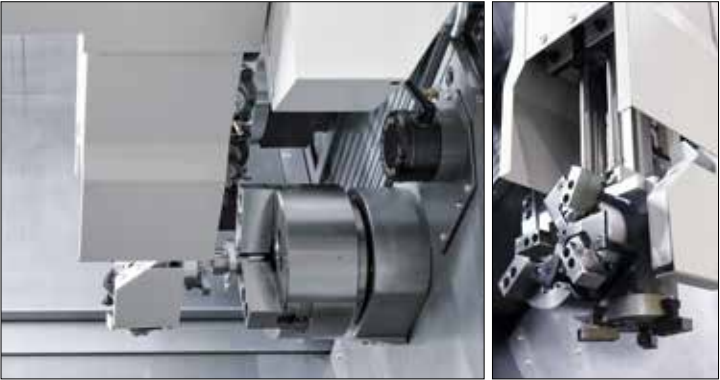
Space-saving, Multifunctional Automated System

"Compact Loader" developed with an emphasis on "Space saving" is a transfer device that performs loading/unloading inside the machine. The machine height is the same as that of standard machines, which has the advantage of being less subject to factory height restrictions.

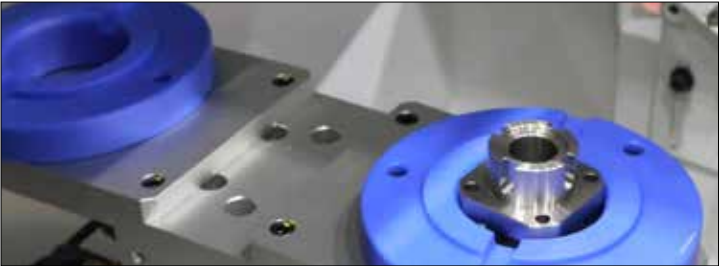
Compact Loader Height Comparison(WY-150)



"Compact Loader" Internal conveyor system



Transport Device
Transfer/Conveyor/Chute type is selectable.



Shaft Loader/Unloader

Loading and Unloading of shaft work is fully automated by installing a set of ZEN-BEI and HAI-BEI. Our original automation equipment contributes to the improvement of customers' work efficiency.

Shaft Loader ZEN-BEI

	Unit	SL08W-800	SL10W-1000	SL20W-1000
Push rod stroke	mm	1,730	1,730	1,790
Workpiece diameter(φ)×Length	mm	φ10~φ34×100~800	φ10~φ42×100~1,000	φ10~φ51×100~1,000
Push rod bar, A size workpiece length	mm	100~500	100~400	100~400
Push rod bar, B size workpiece length	mm	500~800	400~700	400~700
Push rod bar, C size workpiece length	mm	-	700~1,000	700~1,000
Number of workpiece stock capacity		23	23	23
Loading time	sec	7	7	7
Machine Dimensions (L×W×H)	mm	2,135×879×1,151	2,135×879×1,176	2,235×879×1,269

Shaft Unloader HAI-BEI

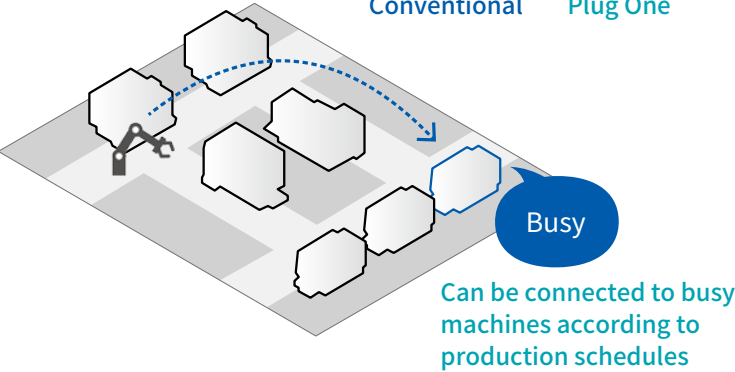
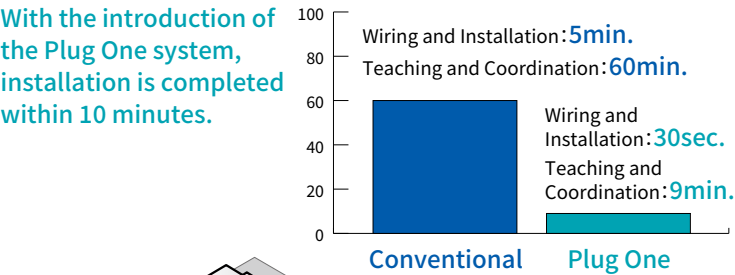
	Unit	SU08W-800	SU10W-1000	SU20W-1000
Pull out bar stroke	mm	1,830	1,830	1,950
Workpiece diameter(φ)×Length	mm	φ12~φ34×100~800	φ15~φ42×100~1,000	φ15~φ51×100~1,000
Pull out bar, A size workpiece length	mm	100~500	100~400	100~400
Pull out bar, B size workpiece length	mm	500~800	400~700	400~700
Pull out bar, C size workpiece length	mm	-	700~1,000	700~1,000
Number of workpiece stock capacity	本	20	20	20
Max. workpiece weight	kg	8	8	8
Unloading time	sec	7	7	7
Machine Dimensions (L×W×H)	mm	2,529×680×1,178	2,529×680×1,203	2,649×680×1,296



Plug One

One-touch connection system for one-touch connection and disconnection of machines and robot, robot and work stocker. This is a new style of automation proposed by Nakamura-Tome to solve these problems:
"The installed automation system is not operating well due to fluctuating demand."
"Robotic systems require safety fences, and the systems are large and take up a lot of space."

With the introduction of the Plug One system, installation is completed within 10 minutes.



One-touch

Equipped with a connection unit that consolidates electrical and air wiring.

No safety fence

Cooperative robots are used, so safety fences are not required.

Flexible

Flexible change the layout of the machine to respond to demand fluctuations.

Work Stocker

Multi-layer work stocker



WT-150+GR-203+WS-221
*写真のコソペアはオプションです。

【GR-203 High-Speed】【GR-203II】
【GR-201 High-Speed】【GR-201】【GR-103】

WS-221 ※1	Type	Multi-layer Pallet
	Workpiece diameter	φ15~φ100mm
	Number of pallets	10
	Stack height	300mm
	Max. loading weight	18kg/Pallet
WS-231 ※1	Type	Multi-layer Pallet
	Workpiece diameter	φ20~φ150mm
	Number of pallets	10
	Stack height	300mm
	Max. loading weight	32kg/Pallet

【GR-210 High-Speed】【GR-210NEW】

WS-442W ※2	Type	Multi-layer Pallet
	Workpiece diameter	φ20~φ220mm
	Number of pallets	20
	Stack height	450mm
	Max. loading weight	40kg/Pallet
WS-445W ※2	Type	Multi-layer Pallet
	Workpiece diameter	φ20~φ220mm
	Number of pallets	14
	Stack height	450mm
	Max. loading weight	40kg/Pallet

Single-layer work stocker



GR-203+WS-122

【GR-203 High-Speed】【GR-203II】
【GR-201】【GR-103】

WS-121	Type	Single-layer Pallet
	Workpiece diameter	φ20~φ80mm
	Number of pallets	30
	Max. loading weight	2kg/Pallet
WS-122	Type	Single-layer Pallet
	Workpiece diameter	φ20~φ80mm
	Number of pallets	60
	Max. loading weight	2kg/Pallet
WS-124	Type	Single-layer Pallet
	Workpiece diameter	φ20~φ80mm
	Number of pallets	120
	Max. loading weight	2kg/Pallet

【GR-203 High-Speed】【GR-203II】
【GR-103】

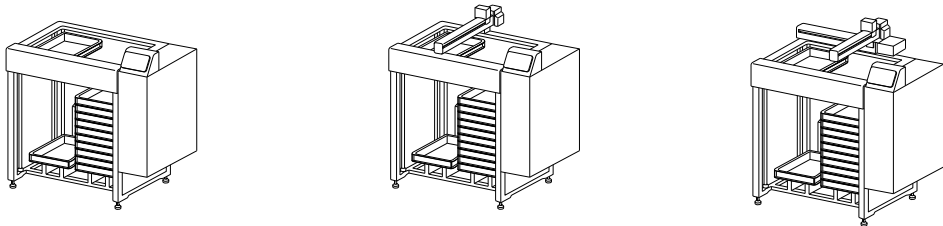
WS-132	Type	Single-layer Pallet
	Workpiece diameter	φ20~φ150mm
	Number of pallets	10
	Max. loading weight	10kg/Pallet

*1 GR-201 is only available with WS-221.
*2 There are 2 loading stations to shorten outboard service time.

If jigs are required, a meeting and a separate estimate will be required.

Work Stocker
"HAKO-BEI"





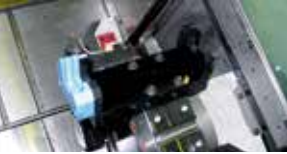
			Unit	B2 Type	C2 Type	HAKO-BEI Link	D Type
General	Machine dimensions		mm	1,385×1,020×1,342	1,385×1,215.5×1,630	1,466×1,750×1,523	1,673×1,152×1,675
	Tray exchange method		—	Pass-through type			
	Loading capacity on tray		kg	150	150	200	150
	Total weight		kg	200	215	215	100
	Workpiece loading height		mm	960 from the floor level			
Tray	Tray external dimensions	9 tier	mm	W600× D440× H79			
		4 tier		W600× D440× H150			
	Tray limit weight		kg	15 (Heavy duty specification: 15-20)		20	15 (Heavy duty specification: 15-20)
Drive Axis	Shuttle (Built-in)	Drive	—	AC servomotor	AC servomotor	AC servomotor	Special feed control
		Stroke	mm	500			
	Tray up/down drive	Drive	—	Chain drive (reversible motor)			
		Stroke	mm	769			
	Robot		—	—	1-axis (1-axis servo)	2-axis (2-axis servo)	2-axis (HAKO-ROBO)
	X-axis	Drive	—	—	—	—	AC servomotor
		Stroke	mm	—	—	—	650
		Drive	—	—	AC servomotor	AC servomotor	AC servomotor
	Y-axis	Stroke	mm	—	850	1,300	500
		Drive	—	—	Air cylinder	AC servomotor	Air cylinder
		Stroke	mm	—	175	200	150
	Z-axis	Carrying load	kg	—	0.3	1	0.3
Loading/unloading cycle time		s	—	8~20	8~20	8~20	
Tray exchange time			s	30			

Please select from the following specifications for bar feeders.

This is required when bar feeder is equipped.

Workpiece ejecting device
Parts catcher

Parts catcher	Shaft Unloader
Gantry Loader	Work Rest




A Parts catcher is a device to unload finished parts into a bucket and brings them out of the machine. Parts catcher specifications such as Maximum part diameter × Length × Weight vary from one model to another. (*1) If anti-scratch measures are required for finished parts for quality, select Parts catcher type G or Turret Servo Gripper type that grasps the workpiece by hand or a Gantry Loader+HAKO-BEI instead of the Parts catcher type A, drop type. (*2)

*1 Custom orders outside the standard specifications may also be available. Please ask our distributors for details.
*2 A workpiece discharge confirmation device is required for drop type unloaders.

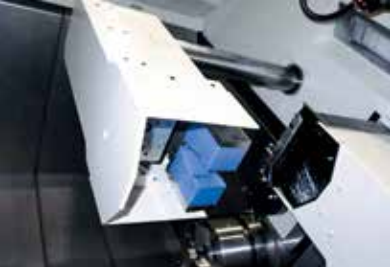
Parts catcher type A (Bucket type)

When a larger spindle's bar capacity is selected, a parts catcher with larger specifications is to be selected accordingly. (op.)




Part catcher type G (Gripper type)

It unloads the finished parts from R-side chuck. It is a one-gripper type parts catcher. The finished parts are pulled out by moving the R-spindle.



Turret Servo Gripper type

The milling motor can be used as a drive source to control the gripping force through torque control.




This is required when Parts catcher A or B is equipped.

Parts ejector and
Parts eject checker

Pneumatic parts ejector (Recommended)

The finished parts are ejected with a pneumatic cylinder. It includes parts ejection confirmation. Two limit switches are equipped on both stroke ends of the pneumatic cylinder: one on the front end, and one on the back end. Part ejection is confirmed when the switch at the forward end is turned ON. An ejecting head corresponding to the workpiece diameter and shape is necessary. (Engineering arrangement for each part is necessary).




Air-blow through the right hand side spindle

Parts ejector spring type

The finished parts are ejected by spring force. An ejecting head corresponding to the workpiece diameter and shape is necessary. (Engineering arrangement for each part is necessary) Ejecting heads with air blow holes are also available. In this case, air blow through the spindle (op.) is necessary.

Parts eject checker (necessary)

It prevents collision by mistake during workpiece transfer. We can offer two kinds of parts confirmation:
1. Check if there is a workpiece in the L-side chuck.
2. Check if the finished part was ejected from the R-side chuck



1. Detect no workpiece 2. Workpiece eject detection

Parts eject checker is necessary when parts eject conveyor is equipped.

Parts outlet
Door pocket shape

Stocker type

The finished parts are stocked into a door-mounted box.



Outlet chute type (Recommended)

The finished parts are unloaded through the door onto a conveyor or a bucket. To prevent scratching the finished parts during unloading, a conveyor is recommended. (op.) To prevent scratching the finished parts during unloading, additional plastic plates on the chute can be specified.

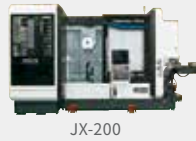


Line-up Multitasking Machine

ATC series



MX-100



JX-200



JX-250



NTRX-300



NTRX-300L

B-axis series 2-Turrets



NTJ-100



Super NTJ

NTY³ series 3-Turrets



NTY³-100



NTY³-150



NTY³-250

WY series 2-Turrets



WY-100II



WY-150



WY-250L

AS series 1-Turret



AS-200



AS-200L

WT series 2-Turrets



WT-100



WT-150II



WT-250II



WT-300

TW series 2-Turrets



TW-8



NEW TW-30

SC series 1-Spindle



SC-100X²



SC-100



SC-200II



SC-200L



SC-250



SC-300II



SC-300IIL



SC-450

Automation



Shaft Loader

ZEN-BEI

Shaft Unloader

HAI-BEI



Gantry Loader

GR-203 High-Speed



Built-in Automation

Compact Loader



Work stoker

HAKO-BEI Link



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