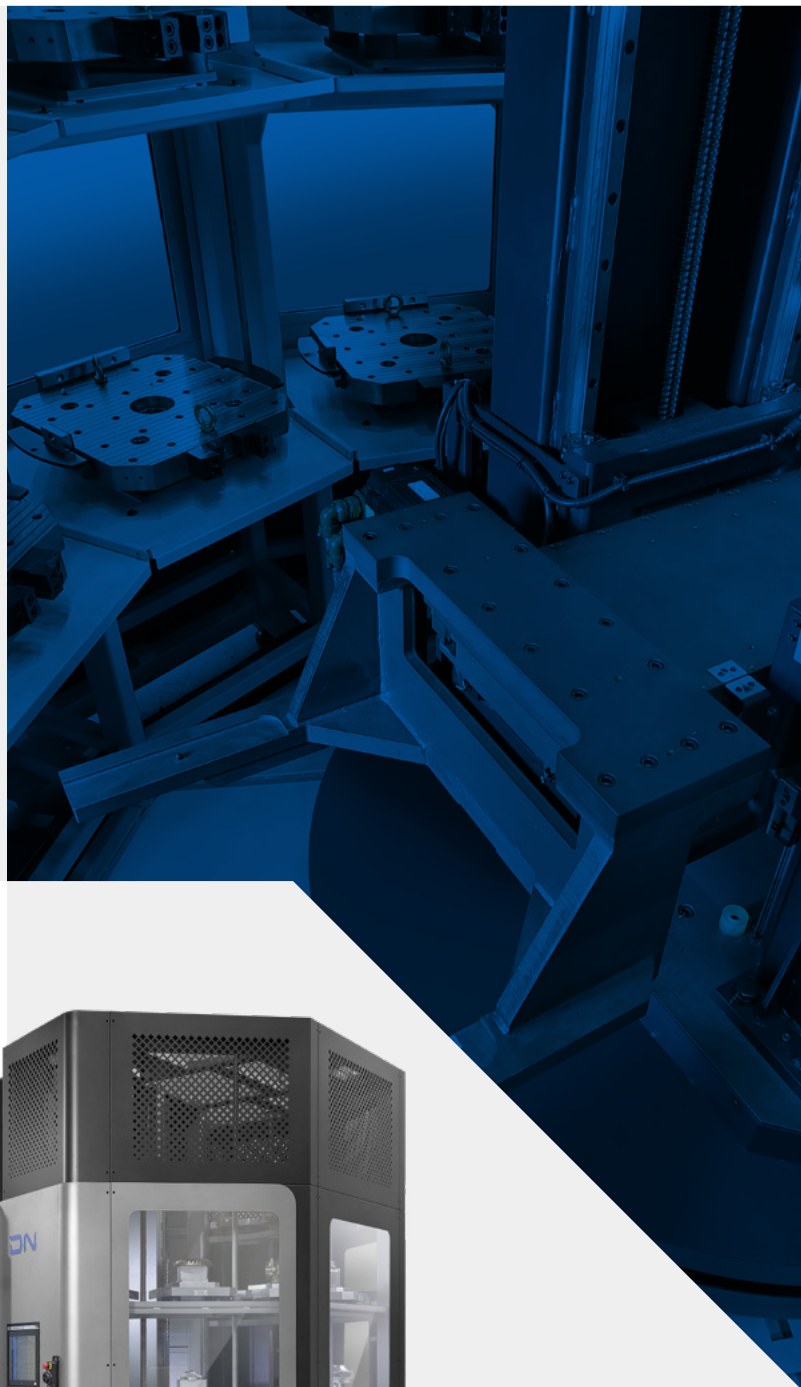


# AUTOMATION SOLUTION

ROBOSOL  
COBOSOL  
Bar Feeder  
Gantry Loader System  
LPS  
Round Pallet System  
APC  
AWC  
Round Magazine



# AUTOMATION FOR MANUFACTURING

## CONTENTS

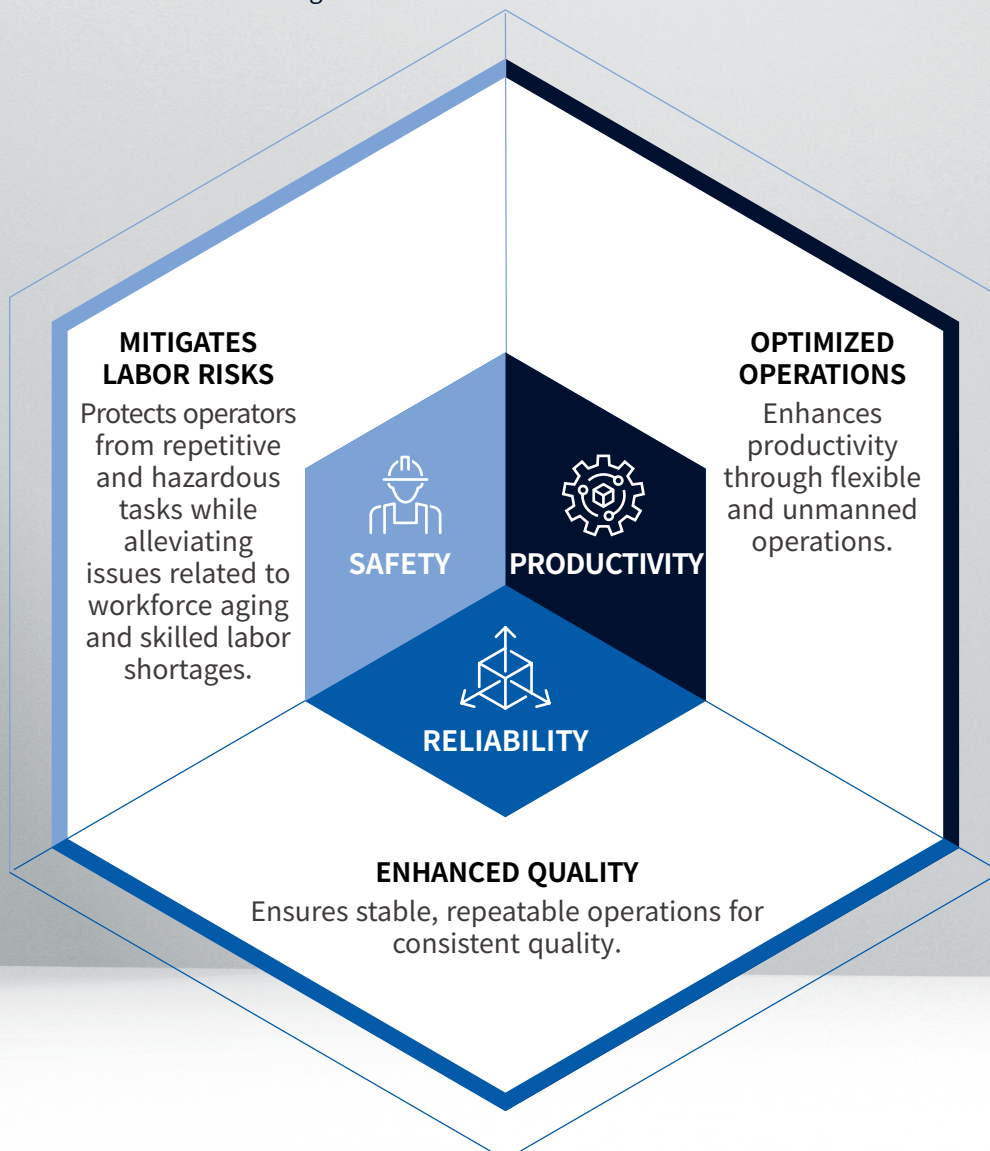
### Product Overview

### Product Full Line-up

### Introduction

- 04** Robot System
- 06** ROBOSOL
- 08** COBOSOL
- 12** Full-Customized Automation
- 14** Bar Feeder System
- 15** Gantry Loader System
- 20** LPS
- 22** Round Pallet System
- 27** APC
- 28** AWC
- 30** Round Magazine

- 31** Valuable Supports



## Workpiece handling

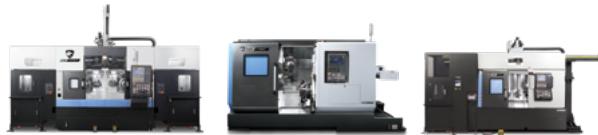
### Bar feeder

Basic type of automation  
Most cost-effective for small part  
production on turning centers



### Gantry

Fast installation and easy operation  
Apply to a variety of similar workpieces



### Robot

Flexible solution for multi-machine  
process and complex parts



## Pallet change

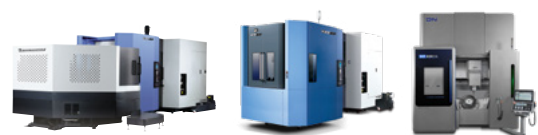
### Auto workpiece changer

Optimized for automatic handling  
of small parts in the minimum  
floorspace



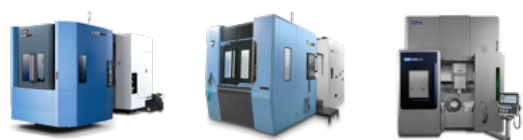
### Round pallet system

Efficient use of space by multi-pallets  
Highly flexible production management



### LPS (Linear pallet system)

Optimized for volume production of  
a variety of parts over a long period of time  
Easy expansion of production system



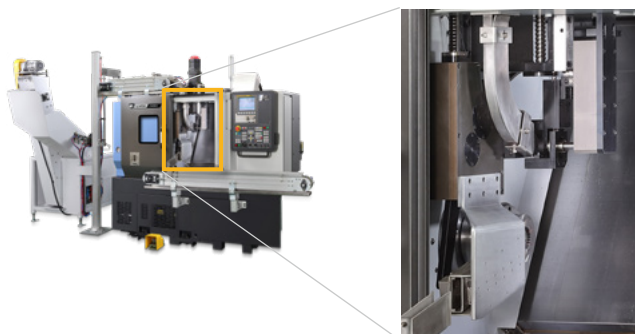
## All process

### Full-customized automation

Through consulting, We offer optimal solution for customer's needs



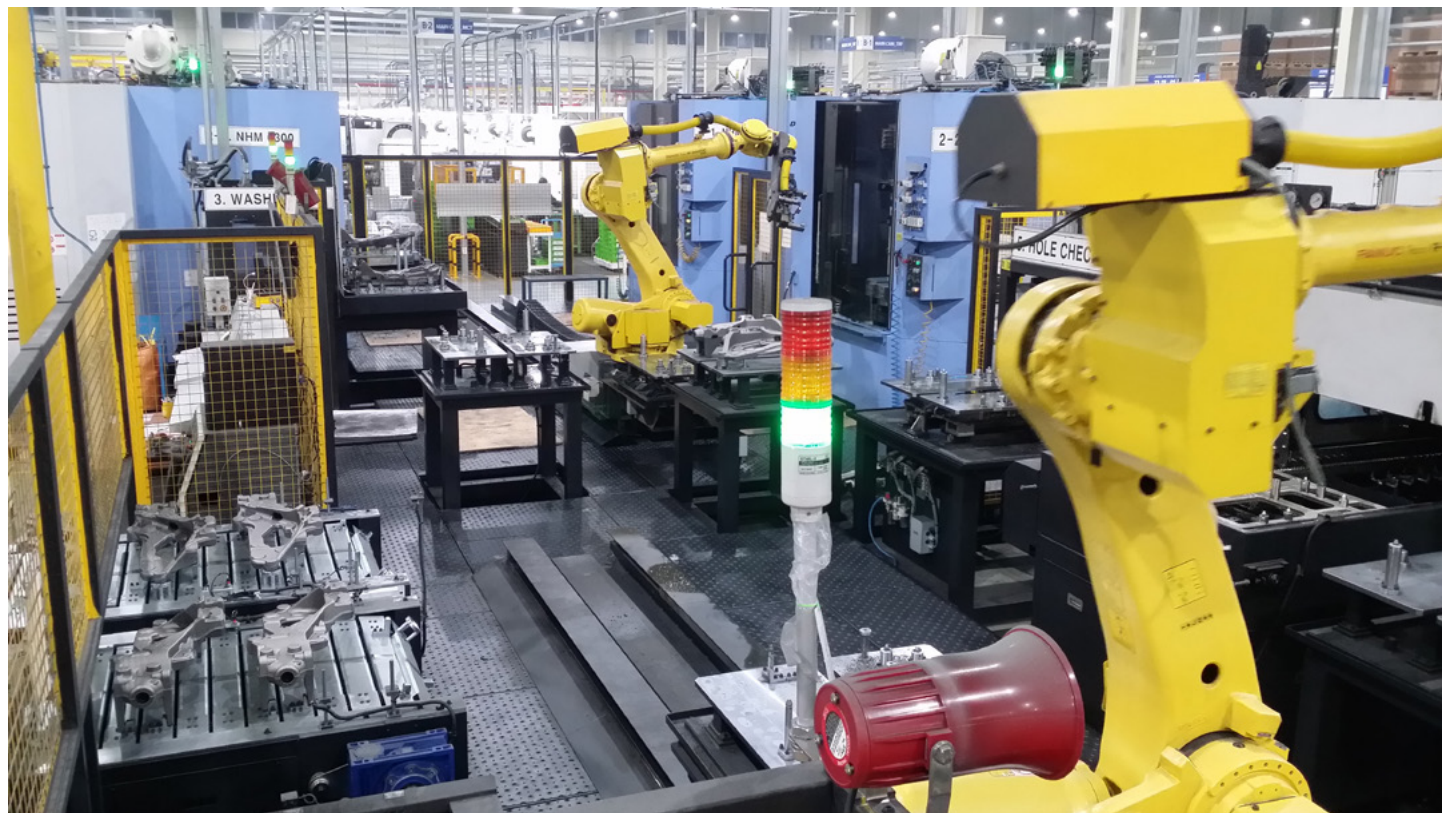
Bearing solution



Automation line



# ROBOT SYSTEM



## Features

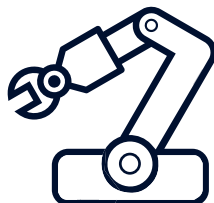
- Improved manufacturing flexibility to support both high-mix low-volume and low-mix high-volume production
- Increased productivity through 24-hour operation without wasting time or labor costs
- Enhanced quality through the systemization of all setup, machining, and inspection processes
- DN Solutions' turnkey solution is backed by a diverse lineup of machine tools and extensive expertise in system automation.

## Applications

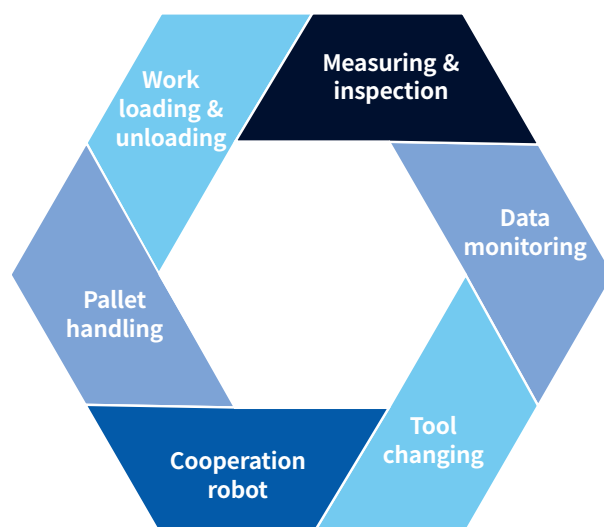


DN Solutions machines

+



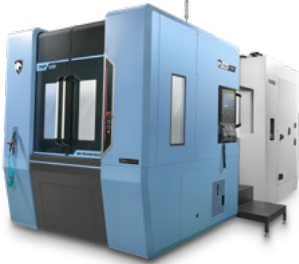
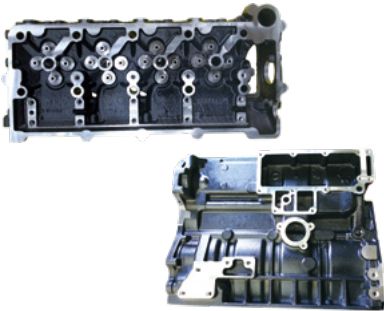
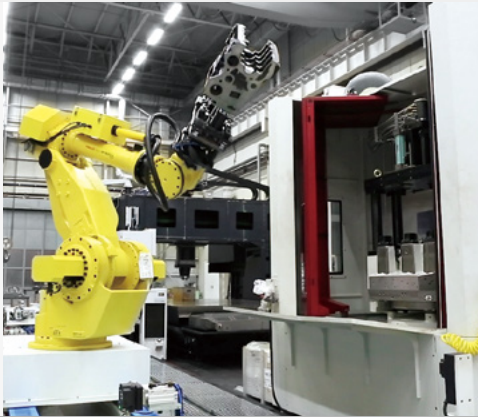
Robot system



# ROBOT SYSTEM

## Robot Automation Cases

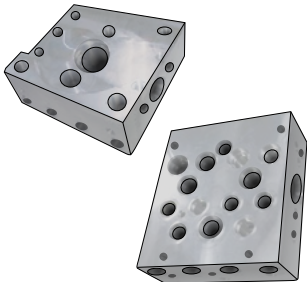
Ideal for manufacturing processes requiring flexible workflows and multi-equipment integration.

| Machine                                                                           | Machining component                                                               | Robot application                                                                    |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |  |
| NHP 5500, NHP 8000                                                                | Cylinder head & Cylinder Block                                                    |                                                                                      |

The NHP 5500 and NHP 8000 feature a fully automated turnkey machining system capable of handling diesel engine cylinder block roughing, semi-finishing, and precision finishing in a single workflow

| Machine                                                                             | Machining component                                                                 | Robot application                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |
| DNM series, PUMA VAW500                                                             | Aluminum Wheel                                                                      |                                                                                       |

The PUMA VAW7500 and DNM series are installed on an aluminum wheel mass production line

| Machine                                                                             | Machining component                                                                 | Robot application                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |
| NHP 4000                                                                            | Manifold Block                                                                      |                                                                                       |

NHP 4000 with RGV-based robot automation

# ROBOSOL

DN Solutions' Standard Turn-table Type Industrial Robot Automation

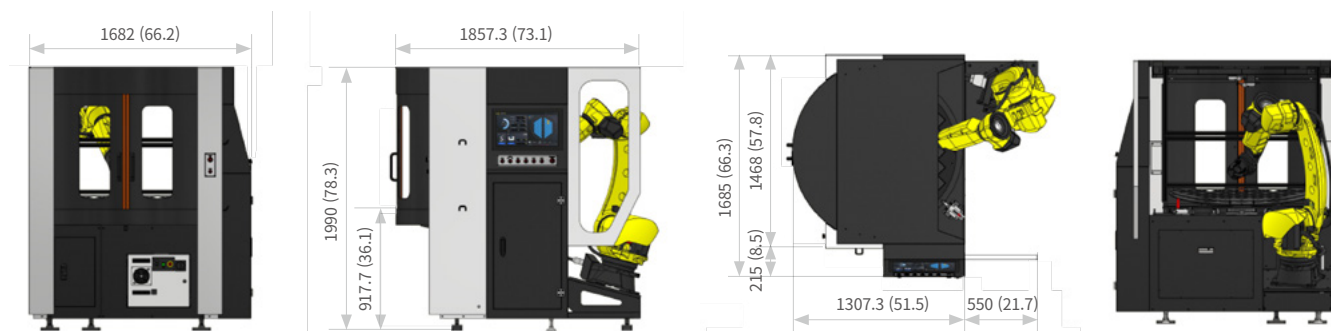
## Optimal Robot Automation Solution for High-Mix Variable-Volume Production

- Simple turntable-based structure offering outstanding cost-effectiveness
- Flexible system applicable to both the front and side of the machine
- Plug & Play solution that requires no programming for operation
- Equipped with an integrated control system featuring a user-friendly interface



## External dimensions

Unit : mm (inch)



## Machine specifications

| Description            | Unit                                                                                           | ROBOSOL T35 |
|------------------------|------------------------------------------------------------------------------------------------|-------------|
| Capacity               | Max. Workpiece Dia.                                                                            | mm (inch)   |
|                        | Max. Workpiece Length                                                                          | mm (inch)   |
|                        | Max. Workpiece Weight*                                                                         | kg (lb)     |
|                        | Max. Weight capacity for table                                                                 | kg (lb)     |
| Robot & Payload        | Fanuc Payload 35kg                                                                             | -           |
| Gripper                | 2Hand 3Jaws_Air type                                                                           | -           |
|                        | 1Hand 2Jaws_Air type                                                                           | -           |
| Turntable              | Number of Pallet                                                                               | EA          |
| Part tray              | Ø200*5ea/Tray, Ø160*7ea/Tray<br>Ø100*22ea/Tray, Ø75*33ea/Tray<br>Ø50*61ea/Tray, Ø30*145ea/Tray | -           |
| Optional Accessories   | Air Regulator for Gripper Pneumatic                                                            | -           |
|                        | Air Sol. valve for Gripper Pneumatic                                                           | -           |
|                        | Safety fence                                                                                   | -           |
|                        | Safety Laser scanner sensor                                                                    | -           |
| Communication Protocol | Ethernet/IP                                                                                    | -           |
|                        | Profibus                                                                                       | -           |
|                        | FL-net                                                                                         | -           |
| System Size            | L x W x H                                                                                      | mm (inch)   |

1685 x 1860 x 1990 (66.3 x 73.2 x 78.3)

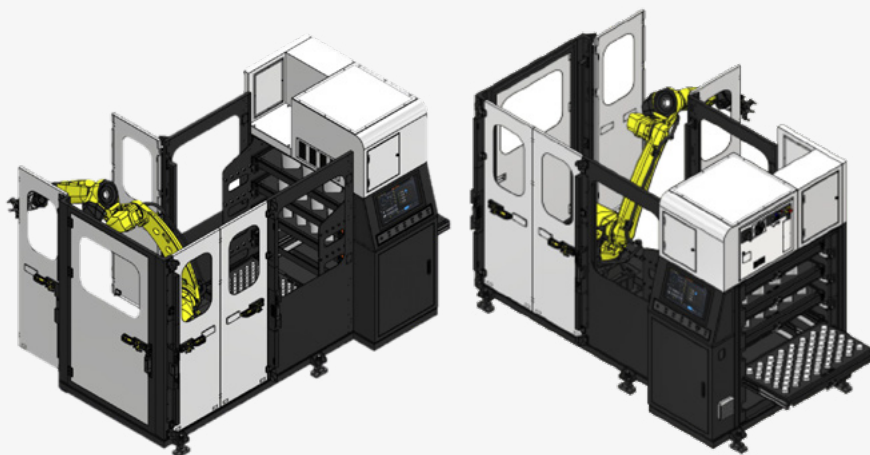
\* Please consider the maximum tray load capacity when in use.

# ROBOSOL

## DN Solutions' Standard Drawer Type Industrial Robot Automation

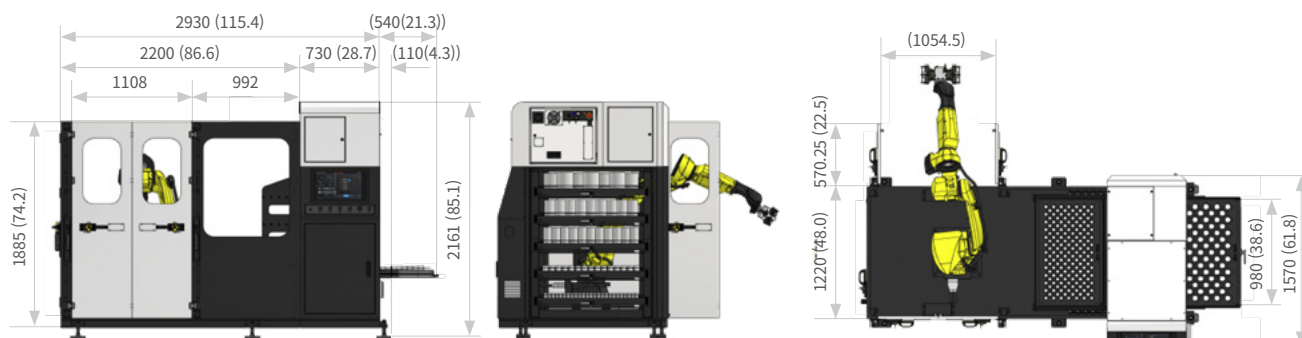
### Smart Automation for Material & Tool Management

- Integrated Robot Automation for Material and Tool Handling
- Smart Robot Solution for Material & Tool Control
- Material & Tool Integrated Automation
- Smart Handling Automation **OPTION**



### External dimensions

Unit : mm (inch)



### Machine specifications

| Description                   | Unit                                                                                            | ROBOSOL D35                              |
|-------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------|
| <b>Capacity</b>               | Max. Workpiece Dia.                                                                             | 30 ~ 200 (1.2 ~ 7.9)                     |
|                               | Max. Workpiece Length                                                                           | 20 ~ 150 (0.8 ~ 5.9)                     |
|                               | Max. Workpiece Weight*                                                                          | 10 (22.0)                                |
|                               | Max. Weight capacity for Drawer                                                                 | 130 (286.6)                              |
| <b>Robot &amp; Payload</b>    | Fanuc Payload 35kg                                                                              | ●                                        |
| <b>Gripper</b>                | 2Hand 3Jaws_Air type                                                                            | ●                                        |
|                               | 1Hand 2Jaws_Air type                                                                            | ○                                        |
| <b>Drawer</b>                 | Number of Drawers                                                                               | 5                                        |
| <b>Part tray</b>              | Ø200*5ea/Tray, Ø150*10ea/Tray<br>Ø100*22ea/Tray, Ø75*39ea/Tray<br>Ø50*68ea/Tray, Ø30*163ea/Tray | Choice of 1 (included as std)            |
| <b>Optional Accessories</b>   | Air Regulator for Gripper Pneumatic                                                             | ●                                        |
|                               | Air Sol. valve for Gripper Pneumatic                                                            | ●                                        |
|                               | Safety gate Switch                                                                              | ●                                        |
| <b>Tool management system</b> | ATC UNIT                                                                                        | ○                                        |
|                               | Tool gripper                                                                                    | ○                                        |
|                               | Tool stand                                                                                      | ○                                        |
|                               | Management Software                                                                             | ○                                        |
| <b>Communication Protocol</b> | Ethernet/IP                                                                                     | ●                                        |
|                               | Profibus                                                                                        | ○                                        |
|                               | FL-net                                                                                          | ○                                        |
| <b>System Size</b>            | L x W x H                                                                                       | 2140 x 2930 x 2160 (84.3 x 115.4 x 85.0) |

\* Please consider the maximum tray load capacity when in use.

● Standard ○ Optional 7

# COBOSOL

DN Solutions' Standard Compact Type Cobot Automation

## Optimal Robot Automation Solution for High-Mix Variable-Volume Production

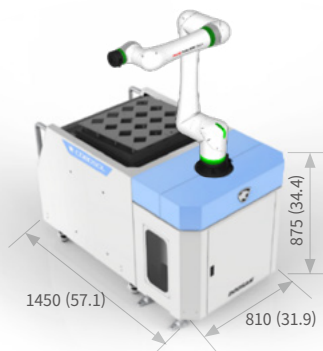
- Easy Interface and Fast Setup
- Compatible with Various Collaborative Robots
- Flexible Layouts to Fit Production Line Configurations
- Multiple Options Available : Standard, Expanded, and Lift Types
  - Standard Model : Compact structure with a single-level parts tray assembled on top of the frame.
  - Expanded Model : Designed with a 3-tier cart to increase setup capacity.
  - Lift Model : Standard frame equipped with In/Out lift structure, ideal for round plate materials.



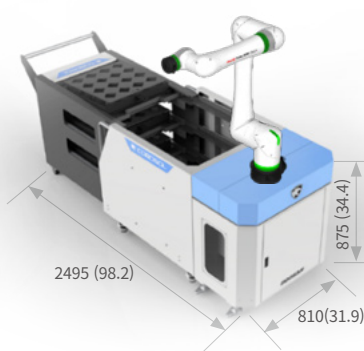
## External dimensions

Unit : mm (inch)

Basic



Expanded



Lift



## Machine specifications

| Description            | Unit                                                        | Basic     | Expanded                                 | Lift                                     |
|------------------------|-------------------------------------------------------------|-----------|------------------------------------------|------------------------------------------|
| Capacity               | Max. Workpiece Dia.                                         | mm (inch) | 20 ~ 70 (0.8 ~ 2.8)                      | 20 ~ 70 (0.8 ~ 2.8)                      |
|                        | Max. Workpiece Length                                       | mm (inch) | 10 ~ 250 (0.4 ~ 9.8)                     | 20 ~ 115 (0.8 ~ 4.5)                     |
|                        | Max. Workpiece Weight*                                      | kg (lb)   | 7 (15.4)                                 | 7 (15.4)                                 |
|                        | Max. Weight capacity for table                              | kg (lb)   | 120 (264.6)                              | 70 (154.3)                               |
| Robot & Payload        | Fanuc Payload 10kg                                          | -         | ○                                        | ○                                        |
|                        | Fanuc Payload 20kg                                          | -         | ●                                        | ●                                        |
| Gripper                | Air type                                                    | -         | ●                                        | ●                                        |
|                        | Electric type                                               | -         | ○                                        | ○                                        |
| Drawer                 | Number of Tray                                              | Tier      | 1                                        | 3                                        |
| Part tray              | Max. Ø70 4x4 Tray<br>Max. Ø50 5x5 Tray<br>Max. Ø30 6x6 Tray | -         | Choice of 1<br>(included as std)         | Choice of 1<br>(included as std)         |
| Optional Accessories   | Air Regulator for Gripper Pneumatic                         | -         | ●                                        | ●                                        |
|                        | Air Sol. valve for Gripper Pneumatic                        | -         | ●                                        | ●                                        |
|                        | Safety Laser scanner sensor                                 | -         | ●                                        | ●                                        |
| Communication Protocol | FOCAS interface                                             | -         | ●                                        | ●                                        |
|                        | Ethernet/IP                                                 | -         | ○                                        | ○                                        |
|                        | Profibus                                                    | -         | ○                                        | ○                                        |
|                        | FL-net                                                      | -         | ○                                        | ○                                        |
| System Size            | L x W x H                                                   | mm (inch) | 1450 x 810 x 875<br>(57.1 x 31.9 x 34.4) | 2495 x 810 x 875<br>(98.2 x 31.9 x 34.4) |

# COBOSOL

## DN Solutions' Standard Drawer Type Cobot Automation

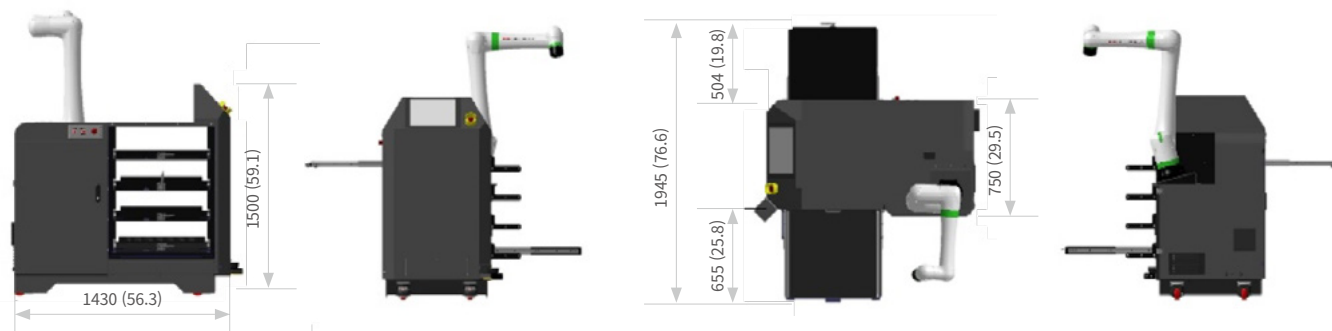
### Cobot Automation Solution with Easy Setup and Space Efficiency

- Efficient multi-level material storage system with 4-tier drawer design
- Plug & Play solution enabling operation without programming
- Integrated management system with user-friendly interface
- Compact size and manual mobility for flexible adaptation to various equipment



### External dimensions

Unit : mm (inch)



### Machine specifications

| Description            | Unit                                                                           | COBOSOL D10 | COBOSOL D20                                |
|------------------------|--------------------------------------------------------------------------------|-------------|--------------------------------------------|
| Capacity               | Max. Workpiece Dia.                                                            | mm (inch)   | 30 ~ 100 (1.2 ~ 220.5)                     |
|                        | Max. Workpiece Length                                                          | mm (inch)   | 10 ~ 120 (0.4 ~ 4.7)                       |
|                        | Max. Workpiece Weight*                                                         | kg (lb)     | 2 (4.4)                                    |
|                        | Max. Weight capacity for Drawer                                                | kg (lb)     | 70 (154.3)                                 |
| Robot & Payload        | Fanuc Payload 10kg                                                             | -           | -                                          |
|                        | Fanuc Payload 20kg                                                             | -           | ●                                          |
| Gripper                | 2Hand 3Jaws_Air type                                                           | ●           | ●                                          |
|                        | 1Hand 2Jaws_Air type                                                           | ○           | ○                                          |
| Drawer                 | Number of Drawers                                                              | Tier        | 4                                          |
| Part tray              | Ø100*13ea/Tray, Ø75*25ea/Tray<br>Ø52*41ea/Tray, Ø40*61ea/Tray<br>Ø30*85ea/Tray | -           | Choice of 1 (included as std)              |
| Optional Accessories   | Air Regulator for Gripper Pneumatic                                            | -           | -                                          |
|                        | Air Sol. valve for Gripper Pneumatic                                           | -           | -                                          |
|                        | Safety Laser scanner sensor                                                    | ●           | ●                                          |
| Communication Protocol | Ethernet/IP                                                                    | ●           | ●                                          |
|                        | Profibus                                                                       | ○           | ○                                          |
|                        | FL-net                                                                         | ○           | ○                                          |
| System Size            | L x W x H                                                                      | mm (inch)   | 1430 x 1945 x 1500<br>(56.3 x 76.6 x 59.1) |

\* Please consider the maximum tray load capacity when in use.

● Standard ○ Optional

# COBOSOL

DN Solutions' Semiconductor Focused Standard Cobot Automation

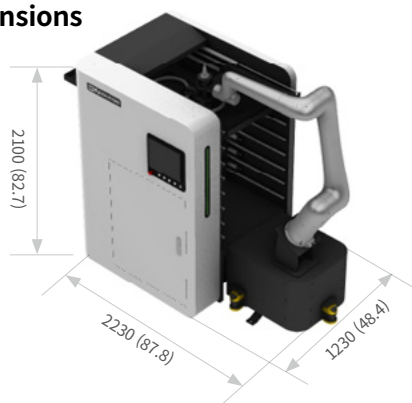
## Optimal Cobot Automation Solution for Semiconductor Ring Item Handling

- 8-tier drawer system for increased storage capacity and extended automated operation time
- Position accuracy correction system to shorten processing cycle time and reduce costs OPTION
- Plug & Play solution enabling operation without programming
- Integrated management system with user-friendly interface

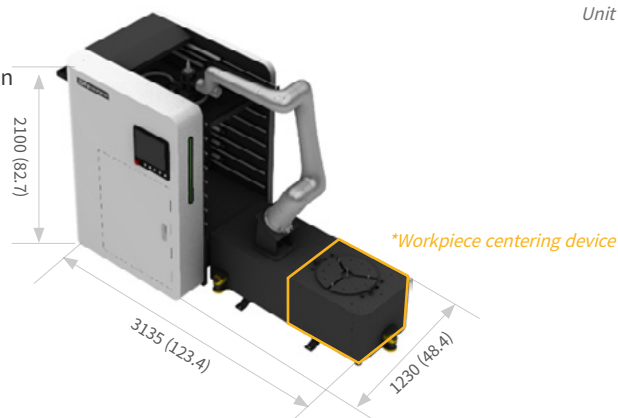


## External dimensions

Compact Model



High precision Model



Unit : mm (inch)

## Machine specifications

| Description            |                               | Unit      | Compact Model                           | High precision Model                     |
|------------------------|-------------------------------|-----------|-----------------------------------------|------------------------------------------|
| Capacity               | Max. Workpiece Dia.           | mm (inch) | 500 (19.7)                              | 500 (19.7)                               |
|                        | Max. Workpiece Length         | mm (inch) | 100 (3.9)                               | 100 (3.9)                                |
|                        | Max. Workpiece weigh*         | kg (lb)   | 4 (8.8)                                 | 4 (8.8)                                  |
| Robot & Payload        | FANUC Payload 10kg            | -         | ○                                       | N/A                                      |
|                        | FANUC Payload 20kg            | -         | ○                                       | N/A                                      |
|                        | NEUROMEKA Payload 12kg        | -         | ○                                       | N/A                                      |
|                        | NEUROMEKA Payload 20kg        | -         | ●                                       | ●                                        |
| Gripper                | Auto. Adjustable Vacuum pad   | -         | ●                                       | N/A                                      |
|                        | Suitable Single Gripper_3Jaw  | -         | ○                                       | N/A                                      |
|                        | Suitable Porous Gripper       | -         | ○                                       | ●                                        |
| Optional Accessories   | Workpiece Re-positioning Unit | -         | N/A                                     | ●                                        |
|                        | Safety Laser Scanner Sensor   | -         | ●                                       | ●                                        |
|                        | Safety Fence                  | -         | ○                                       | ○                                        |
|                        | Safety Light curtain          | -         | ○                                       | ○                                        |
| Communication Protocol | Ethernet/IP                   | -         | ●                                       | ●                                        |
|                        | Profibus                      | -         | ○                                       | ○                                        |
|                        | FL-net                        | -         | ○                                       | ○                                        |
| Utility                | Power Capacity                | KVA       | 5                                       | 5                                        |
|                        | Power Supply Voltage          | -         | AC220V<br>50/60Hz<br>1PH                | AC220V<br>50/60Hz<br>1HP                 |
| System Size            | System L x W x H              | mm (inch) | 2230 x 1230 x 2100 (87.8 x 48.4 x 82.7) | 3135 x 1230 x 2100 (123.4 x 48.4 x 82.7) |
|                        | Weight                        | kg (lb)   | 1000 (2204.6)                           | 1200 (2645.5)                            |
| Applicable Machine     | Turning Center                | -         | DNC 8060, 8050 (To be launched)         |                                          |
|                        | Machining Center              | -         | BVM5700 Ceramic package                 |                                          |

# APPLICABLE APPLICATIONS

Applications Applicable to Standard Robot Systems

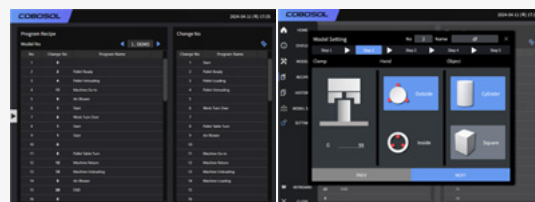
## Integrated Management and Operation System

This system supports equipment and robot status monitoring, job scheduling functions, and features an interactive GUI that allows easy configuration of complex robot programming.

### Condition Monitoring



### Interactive GUI



## 3D Measurement System OPTION

Provides an integrated system optimized for robot automation through standardized design ensuring compatibility with various measurement device manufacturers.

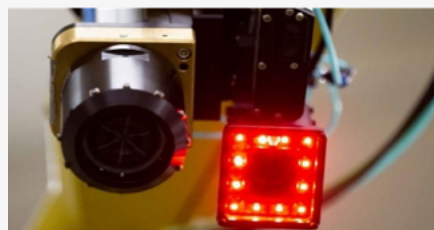


## Additional Devices OPTION

We provide customized automation solutions by applying various applications tailored to fit the customer's production processes.

### Vision camera

- Material Alignment and Position Correction
- Equipment Position Alignment



### Air Blow unit

- Cleaning of Workpieces



### Turn over unit

- Workpiece Orientation Change



# FULL-CUSTOMIZED AUTOMATION

In order to optimize the production of components with various shapes and materials, system engineering activities such as configuration of additional devices, process design and software are important based on high-performance machine tools. By using a wide range of DN Solutions's machine tools, we promise to provide optimized solutions that exceed the functions of machine tools itself through Full-customized automation.

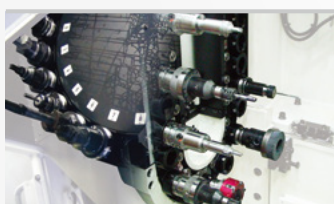
## Fixture



## Chuck



## Tool



## Gantry loader



## Robot



## LPS (Linear Pallet System)

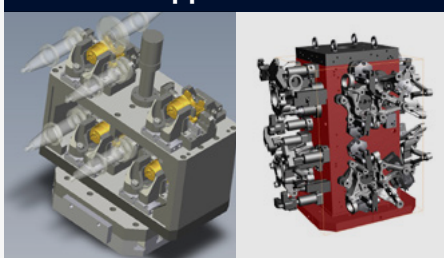


### Technical consultation



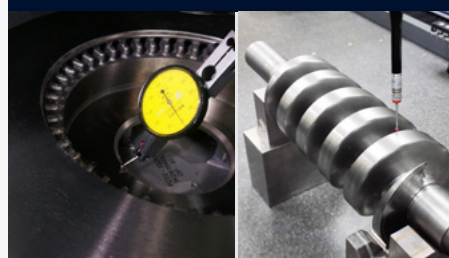
Advance Analysis of  
Investment Feasibility

### Application



Basic engineering such as process  
design, manufacturing, and test

### Technical validation



Differentiated engineering such as  
productivity and process reliability

## Customer Support Process



# FULL-CUSTOMIZED AUTOMATION

## Bearing automation solution

Optimized solution for bearing parts machining. loading and unloading system are fully optimized for bearing parts makes powerful productivity than any other solution.

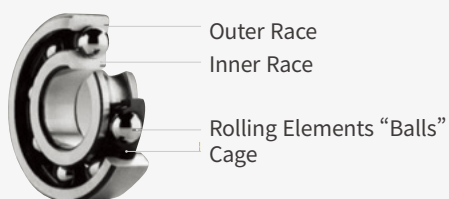


Ball Bearing

Taper Bearing

Thrust Bearing

Ball Bushing Bearing



Outer Race

Inner Race

Rolling Elements "Balls"  
Cage

### Improvement Bearing loading unloading time

Previous model

4 ~ 5 sec

**50% Improved**

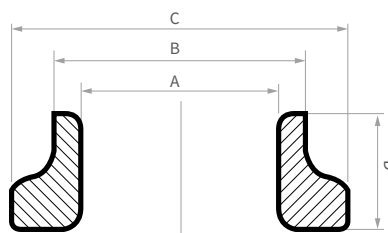
Lynx 2100G

2.99 sec



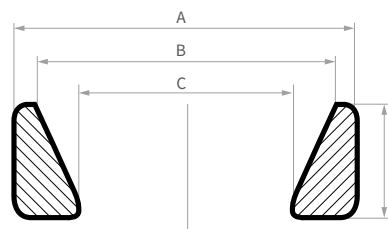
### Workpiece range

#### INNER



| Group | A (Ø)   | B (Ø)   | C (Ø)   | D (mm) |
|-------|---------|---------|---------|--------|
| A     | 25 ~ 49 | 15 ~ 41 | 10 ~ 34 | 10~25  |
| B     | 49 ~ 70 | 41 ~ 53 | 34 ~ 44 | 10~35  |
| C     | 70 ~ 90 | 63 ~ 72 | 53 ~ 62 | 25~50  |

#### OUTER

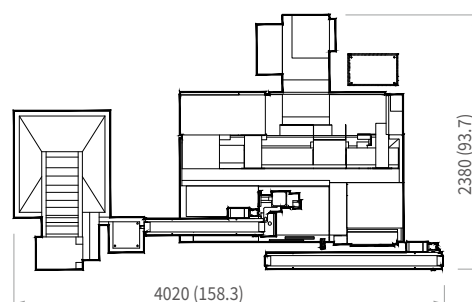


| Group | A (Ø)   | B (Ø)   | C (Ø)   | D (mm) |
|-------|---------|---------|---------|--------|
| A     | 25 ~ 49 | 20 ~ 41 | 15 ~ 35 | 10~25  |
| B     | 49 ~ 70 | 41 ~ 60 | 34 ~ 50 | 10~35  |
| C     | 70 ~ 90 | 63 ~ 70 | 60 ~ 69 | 25~50  |

### External dimensions

#### TOP VIEW

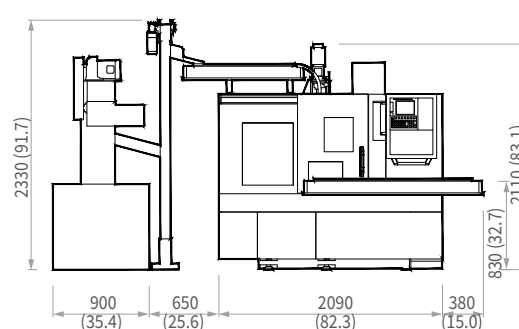
Unit : mm (inch)



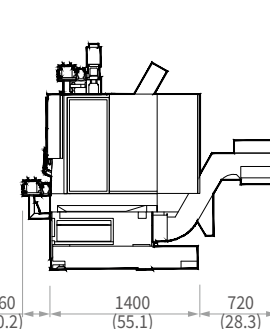
### System configuration

- 1 New Solution with Lynx 2100G
- 2 Chip conveyor
- 3 Transformer
- 4 Hopper
- 5 Elevator
- 6 Upper conveyor
- 7 Lower conveyor

#### FRONT VIEW



#### SIDE VIEW



# BAR FEEDER SYSTEM

Barfeeder system is one of basic automation system for turning center. Small size workpiece are suitable for bar feeder application and fulfill the best productivity.

## PUMA GT2100

+ barfeeder and parts catcher

## Lynx 2100

+ barfeeder and parts catcher

## PUMA ST series

+ barfeeder and Parts conveyor

## PUMA TT1800SY

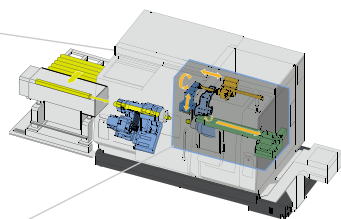
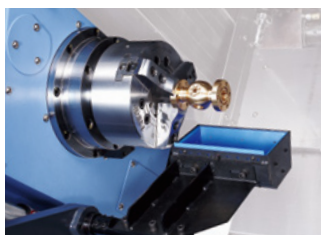
+ barfeeder and parts catcher /  
Parts unloader / Parts conveyor



## Peripheral equipments related with bar feeder system

### Left spindle parts catcher OPTION

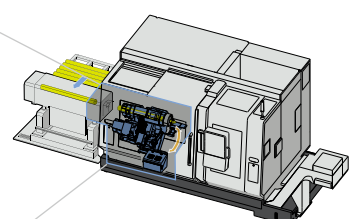
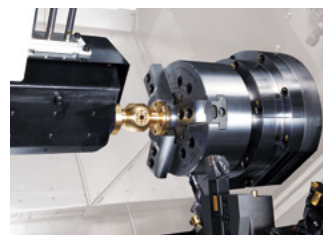
Single operation part produced on the left spindle, or bar remnant can be ejected into the bucket.



\* PUMA TT1800SY, PUMA TT1300SY/2100SY,  
PUMA SMX2600/3100ST

### Right spindle parts unloader and work ejector OPTION

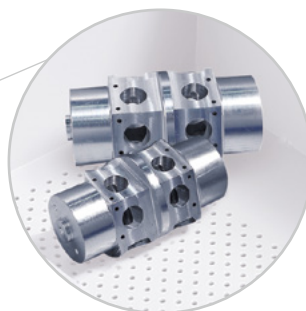
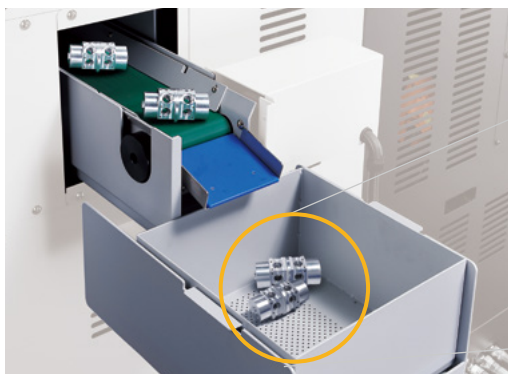
Work processed by the right spindle is delivered to the parts unloader by the work ejector and then discharged to the parts conveyor.



\* Lynx2100, PUMA GT2100, PUMA  
TT1300SY/2100SY, PUMA TT1800SY etc

### Parts conveyor OPTION

Finished workpieces are transferred to the indexable output belt conveyor which discharges them to a receiving container.



### Maximum material size for unloader / Conveyor system for PUMA TT1800SY

Max. work diameter

**ø65** mm 2.6 inch

Max. work length

**150** mm 5.9 inch

Max. work weight

**3** kg 6.6 lb

\* PUMA TT1300SY/2100SY, PUMA TT1800SY,  
PUMA ST series

# GANTRY LOADER SYSTEM

The DN Solutions gantry loader system is easy to install, operate, and supports quick turnkey systems. DN Solutions gantry system features faster loading / unloading times than competitor and offer easy function to control the motion of gantry loader. In addition, drum, rotary, pitch conveyor, push and conveyor type stockers are available for various types of automation.

## Optimized gantry loader system with various turning and machining center model



FM 200-5AX + Gantry loader



PUMA GT2100M + Gantry loader



TT2500SY + Gantry loader

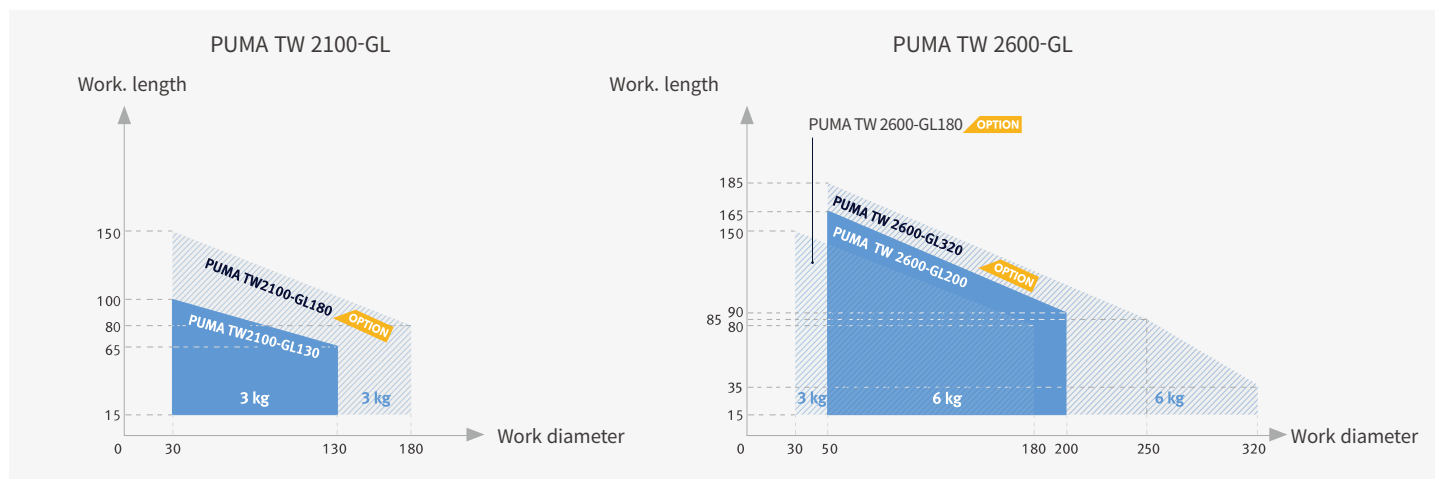
## PUMA TW series with high speed servo type gantry loader



PUMA TW2600-GL

# GANTRY LOADER SYSTEM

The 3-axis, servo-driven, high-speed gantry loader of the PUMA TW series model offers minimized work loading/unloading time an maximized productivity.



| Max. handling diameter | PUMA TW 2100-GL130 | PUMA TW 2100-GL180 | PUMA TW 2600-GL180 | PUMA TW 2600-GL200 | PUMA TW 2600-GL320 |
|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Ø130 x 65mm 3.0kg/ea   | ●                  |                    |                    |                    |                    |
| Ø180 x 80mm 3.0kg/ea   |                    | ○                  | ○                  |                    |                    |
| Ø200 x 90mm 6.0kg/ea   |                    |                    |                    | ●                  |                    |
| Ø320 x 35mm 6.0kg/ea   |                    |                    |                    |                    | ○                  |

## Gantry loader handling time (Enter Change Work Exit)

### Gantry loader handling time

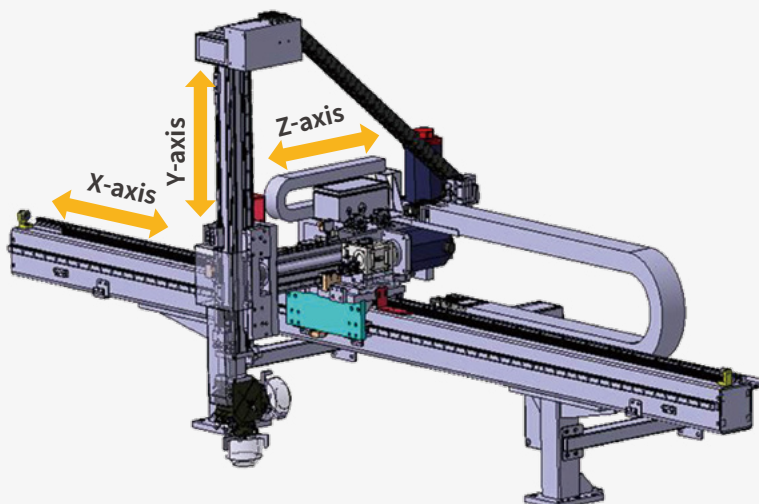
(Enter→Change→Work→Exit)

PUMA TW 2100-GL

**5.7 S**

PUMA TW 2600-GL

**7.9 S**



| Description                               | Unit   | PUMA TW2100/M-GL | PUMA TW2600/M-GL                            |
|-------------------------------------------|--------|------------------|---------------------------------------------|
| Rapid traverse                            | X axis | m/min (ipm)      | 210 (8267.7)                                |
|                                           | Y axis | m/min (ipm)      | 180 (7086.6)                                |
|                                           | Z axis | m/min (ipm)      | 55 (2165.4)                                 |
| Travel distance<br>(GL TYPE A1 / A2 / A3) | X axis | mm (inch)        | 1910 / 1910 / 3220<br>(75.2 / 75.2 / 126.8) |
|                                           | Y axis | mm (inch)        | 560 (22.0)(GL130),<br>610 (24.0) (GL180)    |
|                                           | Z axis | mm (inch)        | 200 (7.9)                                   |

# OPTIMIZED PERIPHERAL EQUIPMENT SOLUTION WITH GANTRY LOADER

Improve customer's convenience by providing a variety of standard/modular peripheral equipment.

## Peripheral equipment

### Standardization of variety option

Modular system with 26 types of stocker / measurement

### Price competitiveness

Reduce costs by up to 15% than previously

### Short delivery lead time

Estimated 80% faster delivery time and quicker maintenance

### Quality and stability

Quality assurance through standardization

### Improving operator convenience

Provide PLC control and motion control

## Stocker



## Measurement



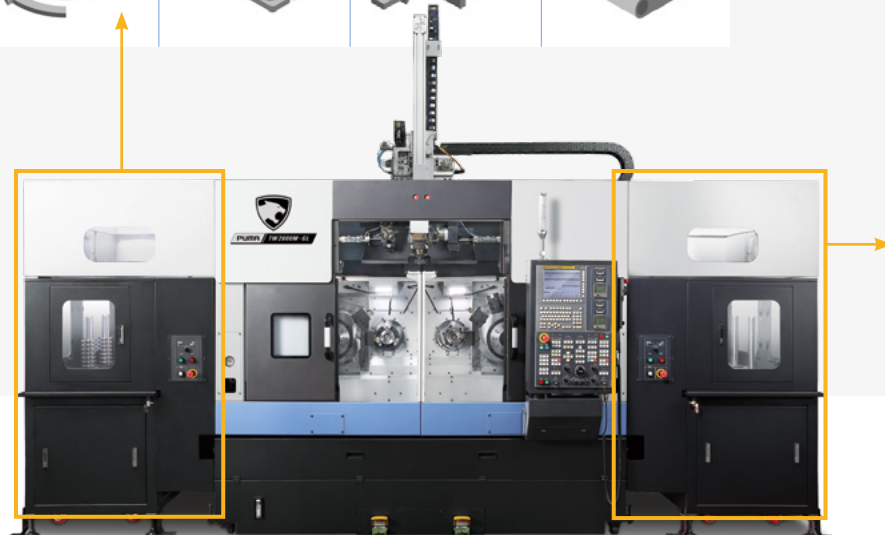
Inner dia.



Outer dia.



Difference gap



|   |   |  |   |    |    |   |     |   |    |   |   |   |     |     |
|---|---|--|---|----|----|---|-----|---|----|---|---|---|-----|-----|
| A | 1 |  | S | TR | 14 | - | 200 |   |    | M | O | B | 200 |     |
| A | 3 |  | S | PU | 30 | - | 100 | - | 2R |   | M | D | T   | 200 |

① Gantry type

② Stocker system define

③ Measuring system define

① Gantry type

- A1
- A2
- A3

②-1 Stocker type

- RotaryTrack
- RotaryRound
- ConveyorPitch
- Push type
- ConveyorPlate

②-2 Station

- 6/7/8/10/12/14/30/50 station or pitch

②-3 Size

- Max 100
- Max 125
- Max 200

②-4 Row

- 2Row
- 3Row

③-1 Measuring type

- Inner diameter
- Outer diameter
- Difference gap

③-2 Type

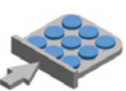
- Button
- Touch

③-3 Size

- Max 200

# OPTIMIZED PERIPHERAL EQUIPMENT SOLUTION WITH GANTRY LOADER

## Modular Peripheral equipment

|             |                                  | Stoker (5 Type)                                                                   |    |                                                                                                |    |                                                                                   |   |                                                                                   |               | Measurement (3 Type)                                                               |               |                                                                                                                                                                                                                 |         |                                                                                     |                   |                                                                                     |        |       |        |       |  |
|-------------|----------------------------------|-----------------------------------------------------------------------------------|----|------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------|--------|-------|--------|-------|--|
|             |                                  | Drum                                                                              |    | Rotary                                                                                         |    | Pitch Conveyor                                                                    |   | Push                                                                              |               | Conveyor                                                                           |               | Inner dia.                                                                                                                                                                                                      |         | Outer dia.                                                                          |                   | Difference gap                                                                      |        |       |        |       |  |
| Image       |                                  |  |    |               |    |  |   |  |               |  |               |                                                                                                                              |         |  |                   |  |        |       |        |       |  |
| Description |                                  | · Convenient space to stack workpieces<br>· Can handle different load capacities  |    | · Minimal installation space required<br>· Superior accuracy of loading / unloading operations |    | · Shaft types and asymmetric square shapes can be loaded                          |   | · No separate feeder required                                                     |               | · Can be used to transfer between each process                                     |               | · Data back-up function enables part dimension status and history to be checked<br>· Automatic offset function ensures machining accuracy<br>· Stability and cost-effectiveness provided through modularization |         |                                                                                     |                   |                                                                                     |        |       |        |       |  |
| Station     | Station                          | 8                                                                                 | 10 | 12                                                                                             | 14 | 6                                                                                 | 8 | 10                                                                                | 14 Pitch      |                                                                                    | 30 Stock      | 50 Stock                                                                                                                                                                                                        | 7 Stock |                                                                                     | Button            | Touch                                                                               | Button | Touch | Button | Touch |  |
|             |                                  |                                                                                   |    |                                                                                                |    |                                                                                   |   |                                                                                   | 2row (Max100) | 3row (Max100)                                                                      | 2row (Max100) | 3row (Max100)                                                                                                                                                                                                   |         |                                                                                     |                   |                                                                                     |        |       |        |       |  |
|             | Work size (Outer dia.) mm (inch) | 50~200 (2.0~7.9)                                                                  |    |                                                                                                |    |                                                                                   |   |                                                                                   |               | 50~100 (2.0~3.9)                                                                   |               |                                                                                                                                                                                                                 |         | 50~125 (2.0~4.9)                                                                    | 125~200 (4.9~7.9) | 50~200 (2.0~7.9)                                                                    |        |       |        |       |  |
| TW Type     | A1                               | ○                                                                                 | ○  | ○                                                                                              | ○  | ○                                                                                 | ○ | ○                                                                                 |               |                                                                                    |               |                                                                                                                                                                                                                 |         |                                                                                     |                   |                                                                                     |        |       |        |       |  |
|             | A2                               | ○                                                                                 | ○  | ○                                                                                              | ○  | ○                                                                                 | ○ | ○                                                                                 |               |                                                                                    |               |                                                                                                                                                                                                                 |         |                                                                                     |                   |                                                                                     |        |       |        |       |  |
|             | A3                               | ○                                                                                 | ○  | ○                                                                                              | ○  | ○                                                                                 | ○ | ○                                                                                 | ○             | ○                                                                                  | ○             | ○                                                                                                                                                                                                               | ○       | ○                                                                                   |                   |                                                                                     |        | ○     |        |       |  |
| Out stoker  |                                  | All                                                                               |    |                                                                                                |    |                                                                                   |   |                                                                                   |               | Only out stoker                                                                    |               |                                                                                                                                                                                                                 |         | All                                                                                 |                   |                                                                                     |        |       |        |       |  |

## Matrix

| Item                            |                |        |                  | Stoker                                 |                                        |                                        |                                        |                                        |                                        |                                        |  |
|---------------------------------|----------------|--------|------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|--|
| Type                            |                |        |                  | Drum                                   |                                        |                                        |                                        | Rotary                                 |                                        |                                        |  |
| Station                         |                |        |                  | 8                                      | 10                                     | 12                                     | 14                                     | 6                                      | 8                                      | 10                                     |  |
| Work size (outer dia.) mm(inch) |                |        |                  | 50~200 (2.0~7.9)                       |                                        |                                        |                                        |                                        |                                        |                                        |  |
| - (No measurement)              |                |        |                  | A1-STR08-50(~200)<br>A2-STR08-50(~200) | A1-STR10-50(~200)<br>A2-STR10-50(~200) | A1-STR12-50(~200)<br>A2-STR12-50(~200) | A1-STR14-50(~200)<br>A2-STR14-50(~200) | A1-SRO06-50(~200)<br>A2-SRO06-50(~200) | A1-SRO08-50(~200)<br>A2-SRO08-50(~200) | A1-SRO10-50(~200)<br>A2-SRO10-50(~200) |  |
| Measurement                     | Inner diameter | Button | 50~200 (2.0~7.9) | A3-STR08-50(~200)-MIB50(~200)          | A3-STR10-50(~200)-MIB50(~200)          | A3-STR12-50(~200)-MIB50(~200)          | A3-STR14-50(~200)-MIB50(~200)          | A3-SRO06-50(~200)-MIB50(~200)          | A3-SRO08-50(~200)-MIB50(~200)          | A3-SRO10-50(~200)-MIB50(~200)          |  |
|                                 |                | Touch  |                  | A3-STR08-50(~200)-MIT50(~200)          | A3-STR10-50(~200)-MIT50(~200)          | A3-STR12-50(~200)-MIT50(~200)          | A3-STR14-50(~200)-MIT50(~200)          | A3-SRO06-50(~200)-MIT50(~200)          | A3-SRO08-50(~200)-MIT50(~200)          | A3-SRO10-50(~200)-MIT50(~200)          |  |
|                                 | Outer diameter | Button |                  | A3-STR08-50(~200)-MOB50(~200)          | A3-STR10-50(~200)-MOB50(~200)          | A3-STR12-50(~200)-MOB50(~200)          | A3-STR14-50(~200)-MOB50(~200)          | A3-SRO06-50(~200)-MOB50(~200)          | A3-SRO08-50(~200)-MOB50(~200)          | A3-SRO10-50(~200)-MOB50(~200)          |  |
|                                 |                | Touch  |                  | A3-STR08-50(~200)-MOT50(~200)          | A3-STR10-50(~200)-MOT50(~200)          | A3-STR12-50(~200)-MOT50(~200)          | A3-STR14-50(~200)-MOT50(~200)          | A3-SRO06-50(~200)-MOT50(~200)          | A3-SRO08-50(~200)-MOT50(~200)          | A3-SRO10-50(~200)-MOT50(~200)          |  |
|                                 | Difference gap | Button |                  | A3-STR08-50(~200)-MDB50(~200)          | A3-STR10-50(~200)-MDB50(~200)          | A3-STR12-50(~200)-MDB50(~200)          | A3-STR14-50(~200)-MDB50(~200)          | A3-SRO06-50(~200)-MDB50(~200)          | A3-SRO08-50(~200)-MDB50(~200)          | A3-SRO10-50(~200)-MDB50(~200)          |  |
|                                 |                | Touch  |                  | A3-STR08-50(~200)-MDT50(~200)          | A3-STR10-50(~200)-MDT50(~200)          | A3-STR12-50(~200)-MDT50(~200)          | A3-STR14-50(~200)-MDT50(~200)          | A3-SRO06-50(~200)-MDT50(~200)          | A3-SRO08-50(~200)-MDT50(~200)          | A3-SRO10-50(~200)-MDT50(~200)          |  |

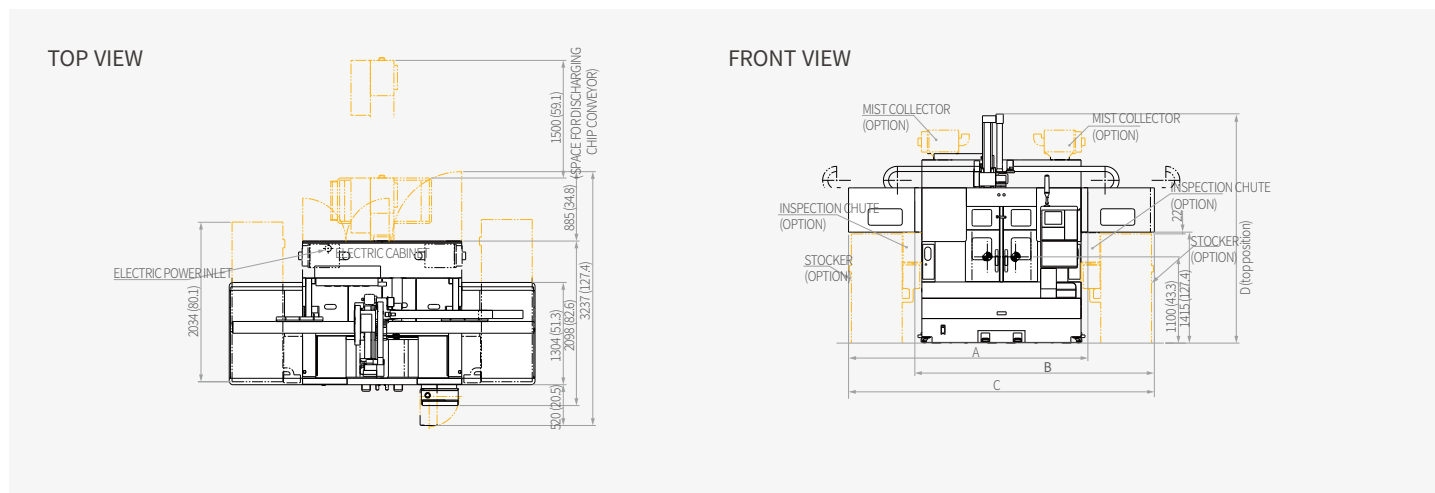
| Item        | Stoker                 |        |                                  |                                  |                                  |                                  |                               |                                |          |  |                   |  |
|-------------|------------------------|--------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------------|--------------------------------|----------|--|-------------------|--|
|             | Type                   |        | Pitch Conveyor                   |                                  | Push                             |                                  |                               |                                | Conveyor |  |                   |  |
| Measurement | Station                |        | 14                               |                                  | 30 stock                         |                                  | 50 stock                      |                                | 7 stock  |  |                   |  |
|             | Work size (outer dia.) |        | 2 row                            |                                  | 3 row                            |                                  | 2 row                         |                                | 3 row    |  |                   |  |
|             | mm(inch)               |        | 50~100 (2.0~3.9)                 |                                  |                                  |                                  | 50~125 (2.0~4.9)              |                                |          |  | 125~200 (4.9~7.9) |  |
|             | Inner<br>diamtent      | Button | A3-SPI14-2R-50(~100)-MIB50(~200) | A3-SPI14-3R-50(~100)-MIB50(~200) | A3-SPU30-2R-50(~100)-MIB50(~200) | A3-SPU50-2R-50(~100)-MIB50(~200) | A3-SPL07-50(~125)-MIB50(~200) | A3-SPL07-125(~200)-MIB50(~200) |          |  |                   |  |
|             |                        | Touch  | A3-SPI14-2R-50(~100)-MIT50(~200) | A3-SPI14-3R-50(~100)-MIT50(~200) | A3-SPU30-2R-50(~100)-MIT50(~200) | A3-SPU50-2R-50(~100)-MIT50(~200) | A3-SPL07-50(~125)-MIT50(~200) | A3-SPL07-125(~200)-MIT50(~200) |          |  |                   |  |
|             | Outer<br>diamtent      | Button | A3-SPI14-2R-50(~100)-MOB50(~200) | A3-SPI14-3R-50(~100)-MOB50(~200) | A3-SPU30-2R-50(~100)-MOB50(~200) | A3-SPU50-2R-50(~100)-MOB50(~200) | A3-SPL07-50(~125)-MOB50(~200) | A3-SPL07-125(~200)-MOB50(~200) |          |  |                   |  |
|             |                        | Touch  | A3-SPI14-2R-50(~100)-MOB50(~200) | A3-SPI14-3R-50(~100)-MOT50(~200) | A3-SPU30-2R-50(~100)-MOT50(~200) | A3-SPU50-2R-50(~100)-MOT50(~200) | A3-SPL07-50(~125)-MOT50(~200) | A3-SPL07-125(~200)-MOT50(~200) |          |  |                   |  |
|             | Difference<br>gap      | Button | A3-SPI14-2R-50(~100)-MDB50(~200) | A3-SPI14-3R-50(~100)-MDB50(~200) | A3-SPU30-2R-50(~100)-MDB50(~200) | A3-SPU50-2R-50(~100)-MDB50(~200) | A3-SPL07-50(~125)-MDB50(~200) | A3-SPL07-125(~200)-MDB50(~200) |          |  |                   |  |
|             |                        | Touch  | A3-SPI14-2R-50(~100)-MDT50(~200) | A3-SPI14-3R-50(~100)-MDT50(~200) | A3-SPU30-2R-50(~100)-MDT50(~200) | A3-SPU50-2R-50(~100)-MDT50(~200) | A3-SPL07-50(~125)-MDT50(~200) | A3-SPL07-125(~200)-MDT50(~200) |          |  |                   |  |

\* Please contact DN Solutions sales to discuss more detail consultation regarding material shape.

# GANTRY LOADER SYSTEM

## PUMA TW2100-GL

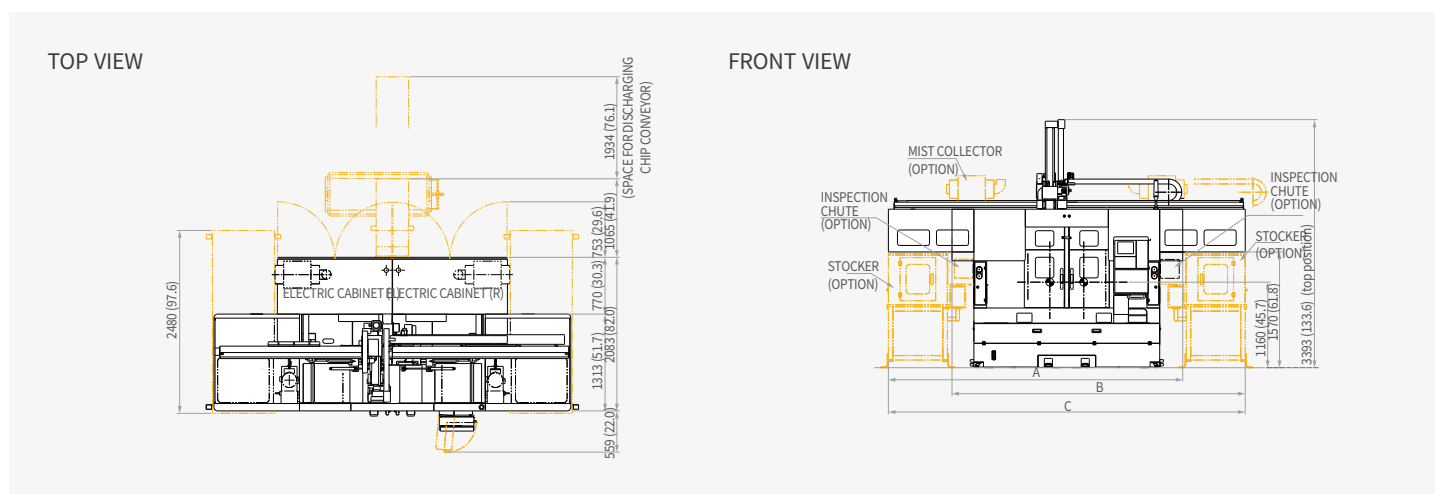
Unit : mm (inch)



|                             | A            | B            | C            | D            |
|-----------------------------|--------------|--------------|--------------|--------------|
| PUMA TW2100-GL130 (A1 type) | 3295 (129.7) | -            | -            | 3203 (126.6) |
| PUMA TW2100-GL130 (A2 type) | -            | 3295 (129.7) | -            | 3203 (126.6) |
| PUMA TW2100-GL130 (A3 type) | -            | -            | 3900 (153.5) | 3203 (126.6) |
| PUMA TW2100-GL180 (A1 type) | 3465 (136.4) | -            | -            | 3203 (126.6) |
| PUMA TW2100-GL180 (A2 type) | -            | 3465 (136.4) | -            | 3203 (126.6) |
| PUMA TW2100-GL180 (A3 type) | -            | -            | 4000 (157.5) | 3203 (126.6) |

## PUMA TW2600-GL

Unit : mm (inch)



|                             | A            | B            | C            |
|-----------------------------|--------------|--------------|--------------|
| PUMA TW2600-GL200 (A1 type) | 3980 (156.7) | -            | -            |
| PUMA TW2600-GL200 (A2 type) | -            | 3980 (156.7) | -            |
| PUMA TW2600-GL200 (A3 type) | -            | -            | 4840 (190.6) |
| PUMA TW2600-GL320(A1 type)  | 4120 (162.2) | -            | -            |
| PUMA TW2600-GL320(A2 type)  | -            | 4120 (162.2) | -            |
| PUMA TW2600-GL320(A3 type)  | -            | -            | 4940(194.5)  |



# LPS (LINEAR PALLET SYSTEM)

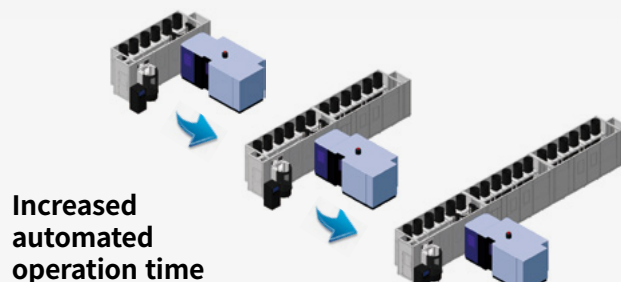
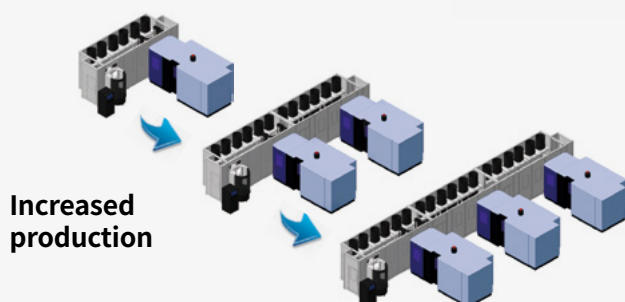
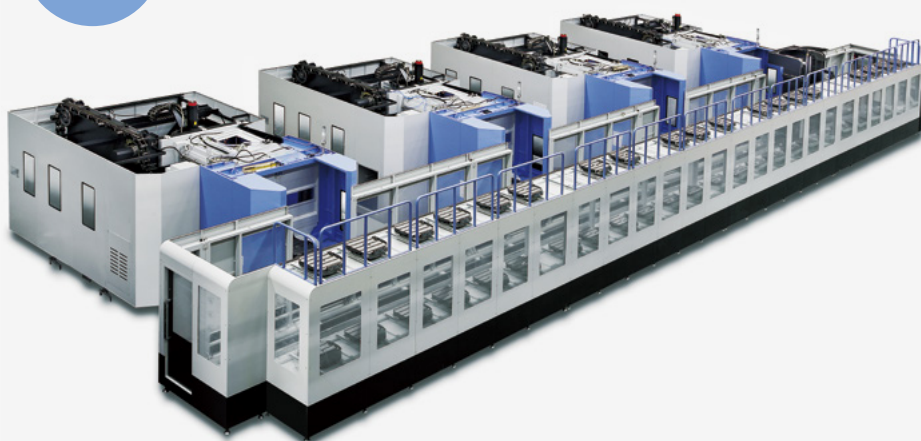
LPS 5500 / 6300 / 8000

LPS 5500 / 6300 / 8000 is designed to provide a high level of automation system for the customer wants high storage capacity.

EXPANDABLE

## Features

- Easy extension of system by modulated storage rack up to 7 machines & 72 pallets High efficiency of workpiece load space
- Auto-operation control by PC based OS
- Easy retrofit to old DN Solutions horizontal machining centers



## Machine specifications

| Available model          |           | LPS 5500                                            | LPS 6300                                            |                                   | LPS 8000                                       |             |
|--------------------------|-----------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------|------------------------------------------------|-------------|
|                          |           | NHM 5000 /<br>NHP 5500 /<br>NHP 5500 <sup>2nd</sup> | NHM 6300 /<br>NHP 6300 /<br>NHP 6300 <sup>2nd</sup> | DVF 8000 w/APC<br>DVF 8000T w/APC | NHM 8000 /<br>NHP 8000                         | DHF 8000    |
| Pallet dimension         | mm (inch) | 500 x 500 (19.7 x 19.7)                             | 630 x 630 (24.8 x 24.8)                             |                                   | 800 x 800 (31.5 x 31.5)                        |             |
| Number of pallet         | ea        | 12 - 72                                             | 10 - 72                                             |                                   | 8 - 72                                         |             |
| Workpiece diameter       | mm (inch) | 850 (33.5)                                          | 1050 (41.3)                                         | 960 (37.8)                        | 1450 (57.1)                                    | 1400 (55.1) |
| Workpiece height         | mm (inch) | 1100 (43.3)                                         | 1350 (53.1)                                         | 490 (19.29)                       | 1550 (61.0)                                    | 1400 (55.1) |
| Workpiece weight         | kg (lb)   | 800 (1763.7)                                        | 1200 (2645.5)                                       | 850 (33.46)                       | 2000 (4409.2)                                  |             |
| Axis control             |           | Servo                                               |                                                     |                                   |                                                |             |
| Forking type             |           | Twin Fork                                           |                                                     |                                   |                                                |             |
| Turntable Indexing       |           | 45°                                                 |                                                     |                                   |                                                |             |
| Power Supply(AGV)        |           | Trolley Bar                                         |                                                     |                                   |                                                |             |
| Communication            |           | Optical                                             |                                                     |                                   |                                                |             |
| Number of machines       |           | 1 ~ 7                                               |                                                     |                                   |                                                |             |
| Number of setup stations |           | 1 ~ 4                                               |                                                     |                                   |                                                |             |
| Dimension(Basic)         | mm (inch) | 7886 [L] x 2400 [W]<br>(310.5 [L] x 94.5 [W])       | 7958 [L] x 2785 [W]<br>(313.3 [L] x 30.9 [W])       |                                   | 8750 [L] x 3500 [W]<br>(344.5 [L] x 137.8 [W]) |             |

\* Please contact DN Solutions to select detail specifications.

# ROUND PALLET SYSTEM

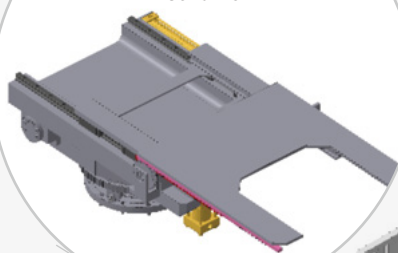
Round Pallet System 4000 / 5000 / 5500

**Compact size slim multi pallet system for new HMC taper #40 series.**

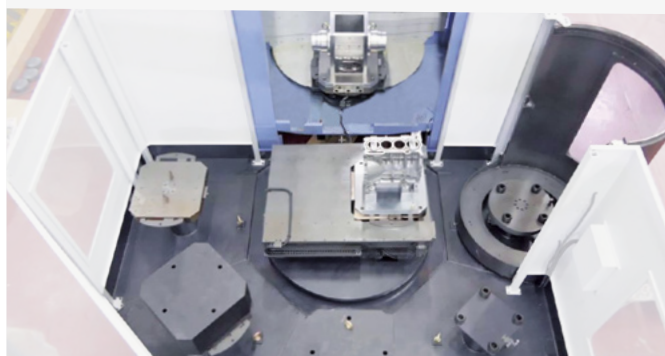
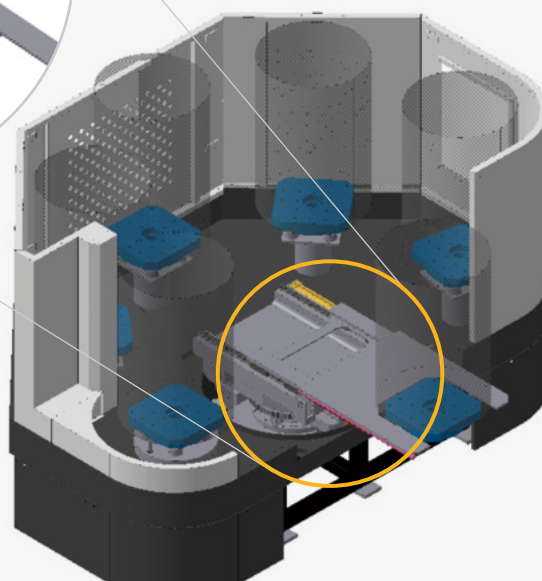
## Features

- Optimized slim design for space saving & minimal invest cost
- Telescopic mechanism fork like Linear Pallet System II
- Simple installation and easy maintenance
- Field retrofit available

**Optimized Carrier**  
Fork with Telescopic Mechanism



**Optimized Design for Space Saving**



## Machine specifications

| Available model    |               | Round Pallet System 4000         | Round Pallet System 5000                    | Round Pallet System 5500                               |
|--------------------|---------------|----------------------------------|---------------------------------------------|--------------------------------------------------------|
|                    |               | NHP 4000 / NHC 4000              | NHP 5000 / NHC 5000                         | NHP 5500 <sup>2nd</sup> / NHM 5000 / DHF 5500          |
| Pallet dimension   | mm (inch)     | 400 x 400 (15.7 x 15.7)          | 500 x 500 (19.7 x 19.7)                     |                                                        |
| Workpiece diameter | mm (inch)     | 630 (24.8) / 600 (23.6)          | 800 (31.5)                                  | 850 (33.5)                                             |
| Workpiece height   | mm (inch)     | 900 (35.4) / 800 (31.5)          | 1000 (39.4) / 900 (35.4)                    | 1100 (43.3)                                            |
| Workpiece weight   | kg (lb)       | 400 (881.8)                      | 500 (1102.3)<br>{700 (1543.2) : NHP 5000}*} | 800 (31.5)<br>{1000 (39.4) : NHP 5500 <sup>2nd</sup> } |
| Number of pallet   | ea            | 6                                |                                             |                                                        |
| Magazine type      |               | Buffer Station type with Carrier |                                             |                                                        |
| Operation          |               | PLC operation (Built-in Control) |                                             |                                                        |
| Driving mechanism  | Rotating Axis | Servo Motor & Reduction Gear     |                                             |                                                        |
|                    | Lifting Axis  | Hydraulic Cylinder               |                                             |                                                        |
|                    | Forking Axis  | Hydraulic Cylinder & Rack/Pinion |                                             |                                                        |
| Dimension(Basic)   | mm (inch)     | 3085 x 2015 (121.5 x 79.3)       | 3630 x 2415 (142.9 x 95.1)                  | 3680 x 2440(144.9 x 96.1)                              |

# ROUND PALLET SYSTEM

Round Pallet System 5500 / 6300 / 8000

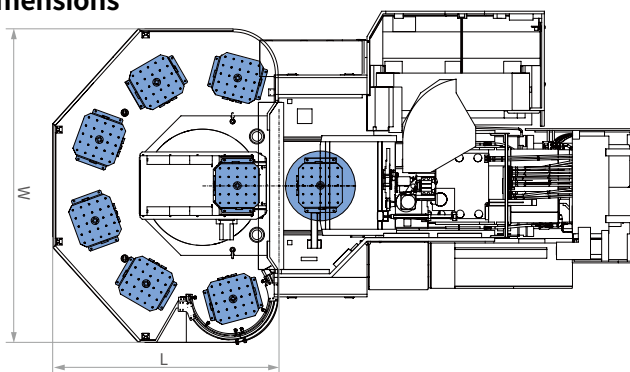
## Compact size Round Pallet System for BT 50 HMC

### Features

- Reliability from servo driven system
- Easy setting
- Easy retrofit in field



### External dimensions



### Machine specifications

| Available model |           | 7 Pallet |         | 9 Pallet |         |
|-----------------|-----------|----------|---------|----------|---------|
|                 |           | Width    | Length  | Width    | Length  |
| NHM 5000        | mm (inch) | 3848     | 2674    | 4222     | 3520    |
| NHP 5500        | mm (inch) | (151.5)  | (105.3) | (166.2)  | (138.6) |
| NHM 6300        | mm (inch) | 4706     | 3276    | 5513     | 4200    |
| NHP 6300        | mm (inch) | (185.3)  | (129.0) | (217.0)  | (165.4) |
| NHM 8000        | mm (inch) | 6462     | 4400    | 6706     | 5400    |
| NHP 8000        | mm (inch) | (254.4)  | (173.2) | (264.0)  | (212.6) |

### Machine specifications

| Available model      |           | NHM 5000 / NHP 5500                        | NHM 6300 / NHP 6300     | NHM 8000 / NHP 8000     | DHF8000                 |
|----------------------|-----------|--------------------------------------------|-------------------------|-------------------------|-------------------------|
| Pallet dimension     | mm (inch) | 500 x 500 (19.7 x 19.7)                    | 630 x 630 (24.8 x 24.8) | 800 x 800 (31.5 x 31.5) | 800 x 800 (31.5 x 31.5) |
| Workpiece diameter   | mm (inch) | 850 (33.5)                                 | 1050 (41.3)             | 1450 (57.1)             | 1400 (55.1)             |
| Workpiece height     | mm (inch) | 1100 (43.3)                                | 1350 (53.1)             | 1550 (61.0)             | 1400 (55.1)             |
| Workpiece weight     | kg (lb)   | 800 (1763.7)                               | 1200 (2645.5)           | 1600 (3527.3)           | 1700 (3747.8)           |
| Number of pallet     | ea        | 7 & 9                                      |                         |                         |                         |
| Magazine type        |           | Buffer station type with carrier           |                         |                         |                         |
| Operation            |           | Easy scheduling operation (2-Path control) |                         |                         |                         |
| Pallet drive device  |           | Servo motor & reduction gear               |                         |                         |                         |
| Hydraulic power unit | kW (Hp)   | 2.2 (3.0)                                  |                         |                         |                         |

\* Please contact DN Solutions sales representative for further information.

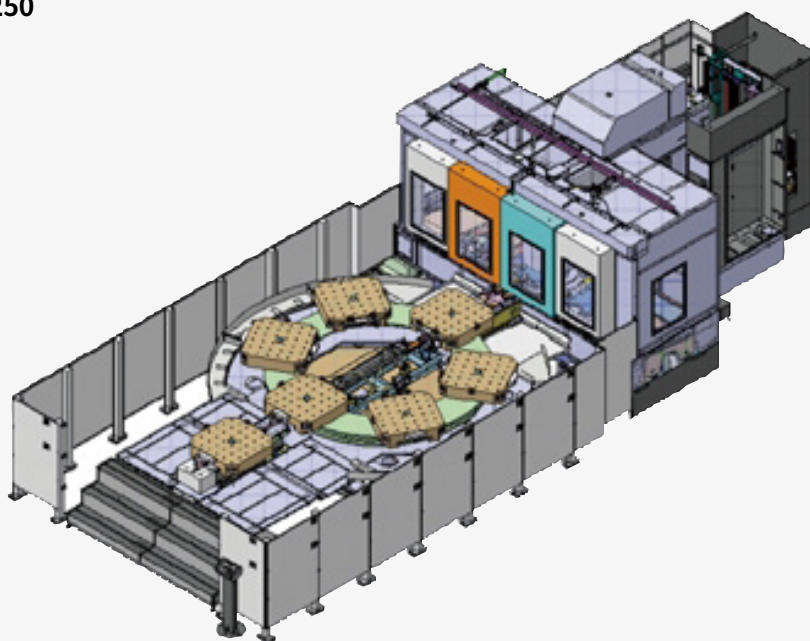
# ROUND PALLET SYSTEM

Round Pallet System 1000 / 1250

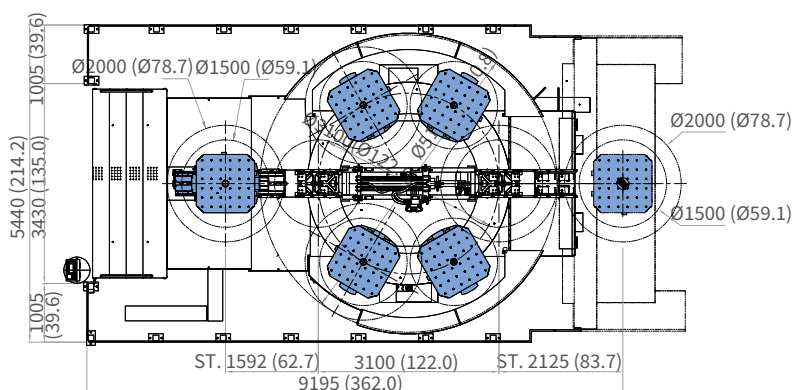
## Pallet automation solution for large machines – pallet size 1000 / 1250

### Features

- Available large volume workpiece
- Driven by hydraulic unit
- Stable pallet changing unit



### External dimensions



### Machine specifications

| Available model      |           | HM 1000                                                  | HM 1250     | HM 1250W |
|----------------------|-----------|----------------------------------------------------------|-------------|----------|
| Pallet dimension     | mm (inch) | 1000 x 1000 (39.40 x 39.4), 1250 x 1000 (49.2 x 39.4)    |             |          |
| Workpiece diameter   | mm (inch) | Cont. : 1500 (59.1) Adjacent Pallets Empty : 2000 (78.7) |             |          |
| Workpiece height     | mm (inch) | 1475 (58.1)                                              | 1725 (67.9) |          |
| Workpiece weight     | kg (lb)   | 3000 (6613.8)                                            |             |          |
| Magazine type        |           | Round type                                               |             |          |
| Operation            |           | Pallet scheduling operation (1-path, PMC control)        |             |          |
| Pallet drive device  |           | Hydraulic Motor & Chain                                  |             |          |
| Hydraulic power unit | kW (Hp)   | 7.5 (10.1)                                               |             |          |

# MULTI LEVEL ROUND PALLET SYSTEM

Round Pallet System 4000/ 5000/ 5500

## Slim round pallet system with multi level storage

### Features

- Optimized multi Layer storage system with outstanding space saving
- Minimal Invest cost for automation solution
- Further enhanced unmanned time, compared to six round pallet system



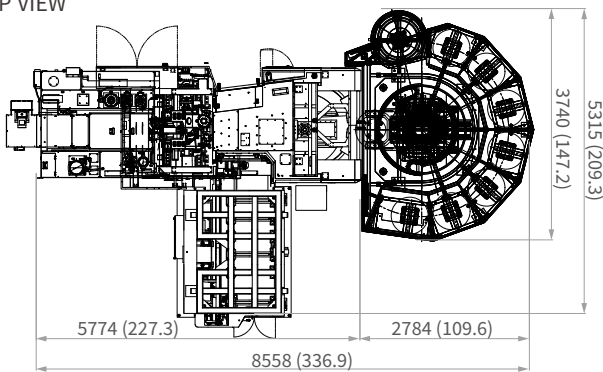
Enhanced automation system

Optimized multi level storage system

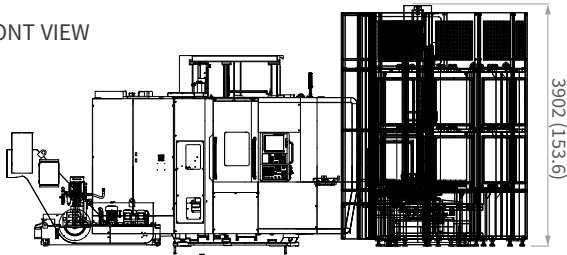
## NHP 4000 275T & Round Pallet System 4000\_21 Pallet external dimensions

Unit : mm (inch)

TOP VIEW



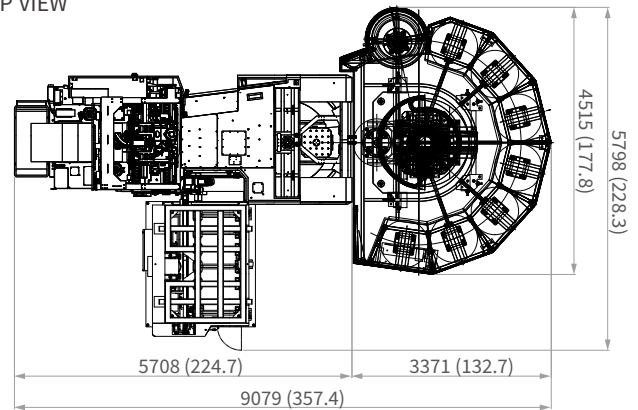
FRONT VIEW



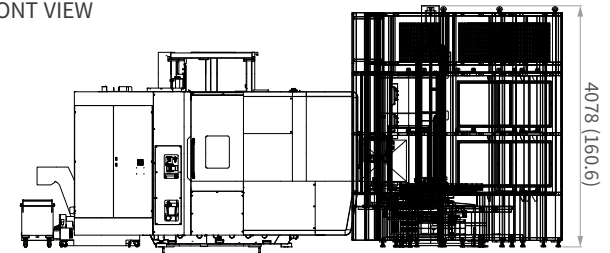
## NHP 5000 275T & Round Pallet System 5000\_21 Pallet external dimensions

Unit : mm (inch)

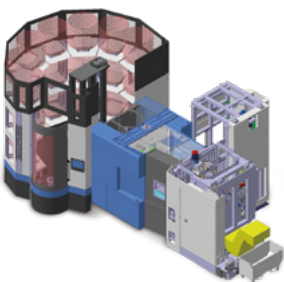
TOP VIEW



FRONT VIEW



## Machine specifications



| Available model         |           | Round Pallet System 4000<br>NHP 4000 / NHC 4000    | Round Pallet System 5000<br>NHP 5000 / NHC 5000    | Round Pallet System 5500<br>NHP 5500 <sup>2nd</sup> / NHM 5000 / DHF 5500 |
|-------------------------|-----------|----------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------------|
| Pallet dimension        | -         | 400 x 400 (15.7 x 15.7)                            | 500 x 500 (19.7 x 19.7)                            |                                                                           |
| Max. workpiece diameter | mm (inch) | 630 (24.8) / 600 (23.6)                            | 800 (31.5)                                         | 850 (33.5)                                                                |
| Max. workpiece height   | mm (inch) | 14P : 900 / 800 (35.4 / 31.5),<br>21P : 700 (27.6) | 14P : 1000 / 900 (39.4 / 5.4),<br>21P : 700 (27.6) | 12P : 1100 (43.3) , 18P : 750 (29.5),<br>24P : 350 (13.8)                 |
| Max. workpiece weight   | mm (inch) | 400 (15.7)                                         | 500 (19.7) (700 (27.6)<br>option for NHP 5000)     | 800 (31.5)<br>{1000 (39.4) : NHP 5500 <sup>2nd</sup> }                    |
| Number of pallet        | kg(lb)    | 14 / 21                                            |                                                    | 12 / 18 / 24                                                              |
| Magazine type           | ea        | Buffer Station type with Carrier                   |                                                    |                                                                           |
| Operation               | -         | PLC operation (Built-in Control)                   |                                                    |                                                                           |

\* Please contact DN Solutions to select detail specifications

\* {} : option

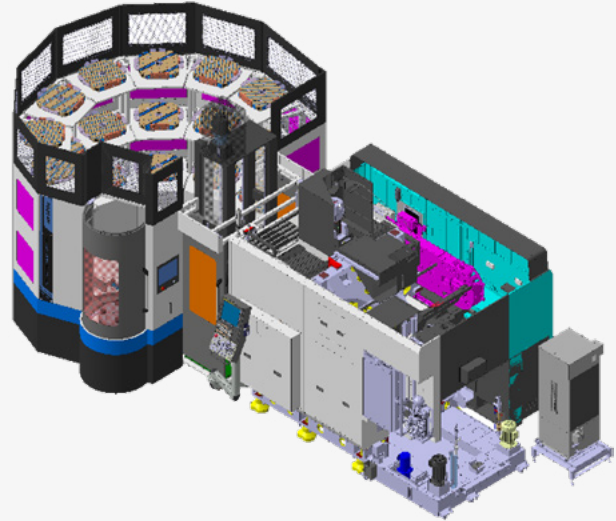
# MULTI LEVEL ROUND PALLET SYSTEM

Round Pallet System 6500 / 8000

**Multi-level pallet system with optimal machine tool accessibility.**

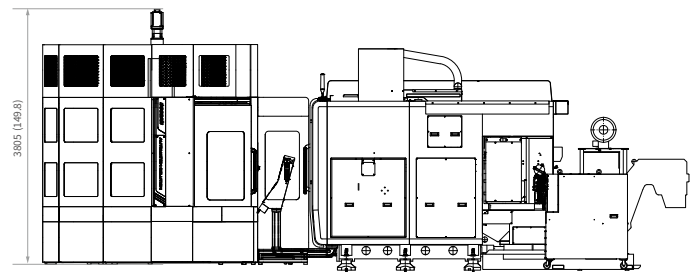
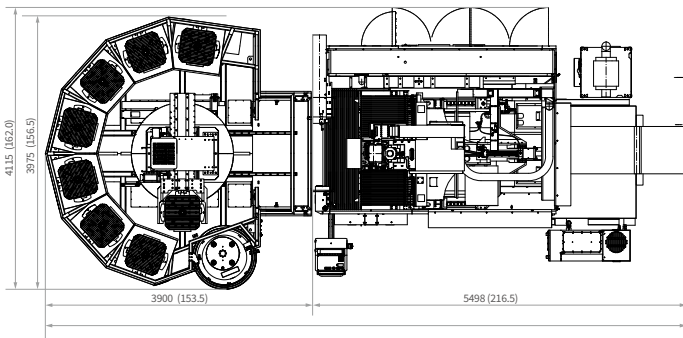
## Features

- Optimized Slim System with outstanding space saving
- Large maintenance space for optimal machine tool accessibility.
- Independent control system for 4axis
- Easy to install and maintenance



## DVF 6500 & Round Pallet System 6500\_21 Pallet external dimensions

Unit : mm (inch)



## Machine specifications

| Available model         |               | Round Pallet System 6500    | Round Pallet System 8000         |                |
|-------------------------|---------------|-----------------------------|----------------------------------|----------------|
|                         |               | DVF 6500 / 6500T            | DVF 8000(/50)                    | DVF 8000T(/50) |
| Pallet dimension        | mm (inch)     | 500 x 500 (19.7 x 19.7)     | 630 x 630 (24.8 x 24.8)          |                |
| Max. workpiece diameter | mm (inch)     | 630 (24.8)                  | 850 (33.5)                       |                |
| Max. workpiece height   | mm (inch)     | 430 (16.9)                  | 490 (19.3)                       |                |
| Max. workpiece weight   | kg(lb)        | 600/500 (1322.8/1102.3)     | 850 (1873.9)                     | 700 (1543.2)   |
| Number of pallet        | ea            | 7/14/21                     | 6/12/18                          |                |
| Magazine type           |               |                             | Buffer Station type with Carrier |                |
| Operation               |               |                             | PLC operation (Built-in Control) |                |
| Driving mechanism       | Rotating Axis |                             | Servo Motor & Reduction Gear     |                |
|                         | Transfer Axis |                             | Servo Motor & Rack / Pinion      |                |
|                         | Lifting Axis  |                             | Servo Motor & Ball Screw w/ LMG  |                |
|                         | Forking Axis  |                             | Servo Motor & Rack / Pinion      |                |
| Dimension(Basic)        | mm (inch)     | 3886 x 3974 (153.0 x 156.5) | 4758 x 4575 (187.3 x 180.1)      |                |

\* Please contact DN Solutions sales representative for further information.

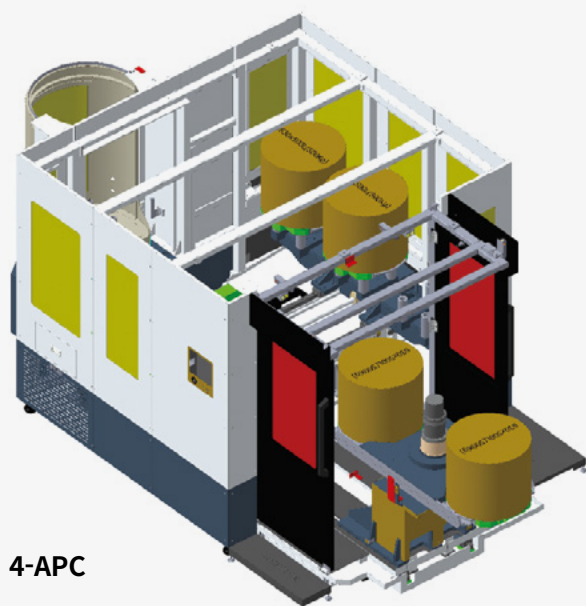
# APC (AUTO PALLET CHANGER)

## APC 6500 / 8000

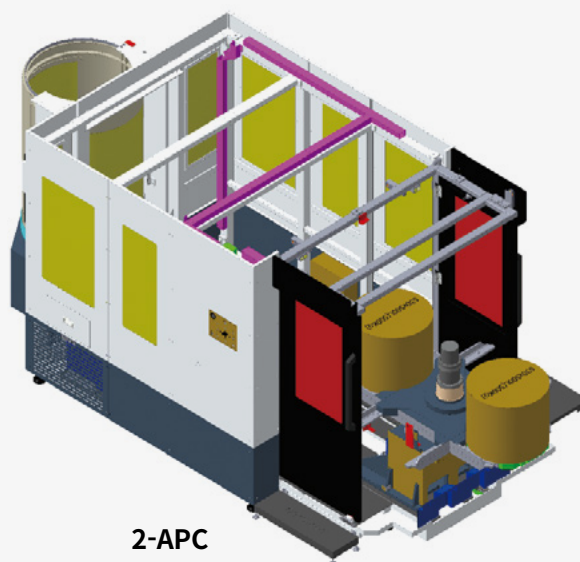
Automatic pallet changer optimized for 5-axis machine tools.

### Features

- Max. 4 pallets
- Servo-control
- Large maintenance space easily accessible to the operator.
- Easy to install and management



4-APC



2-APC

## Machine specifications

| Available model                    |           |           | APC 6500                                    | APC 8000                          |                         |
|------------------------------------|-----------|-----------|---------------------------------------------|-----------------------------------|-------------------------|
|                                    |           |           | DVF 6500 (T)                                | DVF 8000 (/50)                    | DVF 8000T (/50)         |
| Pallet Dimension                   | mm (inch) |           | 500 x 500 (19.7 x 19.7)                     | 630 x 630 (24.8 x 24.8)           | 630 x 630 (24.8 x 24.8) |
| Workpiece Diameter                 | mm (inch) |           | 630 (24.8)                                  | 850 (33.5)                        | 850 (33.5)              |
| Workpiece Height                   | mm (inch) |           | 430 (16.9)                                  | 490 (19.3)                        | 490 (19.3)              |
| Workpiece Weight (included pallet) | kg (lb)   |           | 500 (1102.3)                                | 850 (1873.9)                      | 700 (1543.2)            |
| Number of Pallets                  |           |           | 2P / 4P                                     |                                   |                         |
| Magazine Type                      | 2APC      | -         | APC type without Buffer Station             |                                   |                         |
|                                    | 4APC      | -         | APC type with 3-Buffer Station              |                                   |                         |
| Operation                          | 2APC      | -         | PLC operation (Built-in control)            |                                   |                         |
|                                    | 4APC      | -         | PLC operation (Built-in control)            |                                   |                         |
| Driving Mechanism                  | R Axis    |           | Servo Motor & Reduction Gear                |                                   |                         |
|                                    | X Axis    | -         | Servo Motor & Rack / Pinion                 |                                   |                         |
|                                    | Y Axis    | -         | Servo Motor & Ball Screw w/ LMG (4APC Only) |                                   |                         |
|                                    | UP/DOWN   | -         | Hydraulic Cylinder & LMG                    |                                   |                         |
| Dimension                          | 2-APC     | mm (inch) | 4210[L] x 2154[W] (165.7 x 84.8)            | 4740[L] x 2874[W] (106.3 x 113.1) |                         |
|                                    | 4-APC     | mm (inch) | 4210[L] x 2900[W] (165.7 x 114.2)           | 4740[L] x 3800[W] (106.3 x 149.6) |                         |

# AWC (AUTO WORK-PIECE CHANGER)

Slim design pallet system optimized for small work pieces

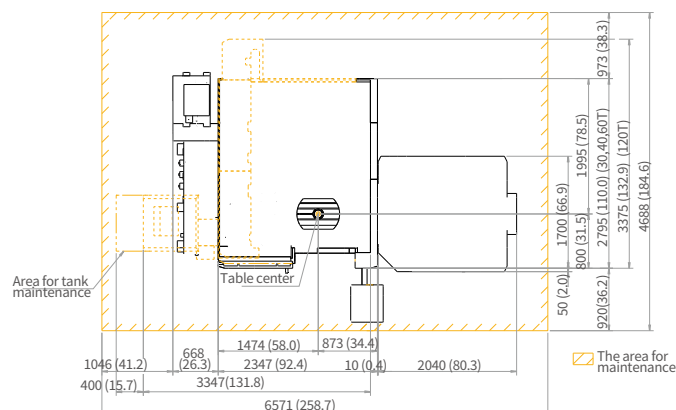


\* DVF 5000 with APC.

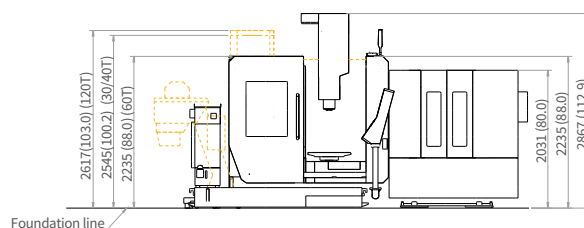
## External dimensions

Unit : mm (inch)

### TOP VIEW



### FRONT VIEW



## Machine specifications

| Available model                    |                  | DVF5000/DNM4500/5700/6700/MYNX6500/BVM5700 |                                          |                         |                         |                         |
|------------------------------------|------------------|--------------------------------------------|------------------------------------------|-------------------------|-------------------------|-------------------------|
| Pallet Dimension                   |                  | mm (inch)                                  | 250 x 250 (9.8 x 9.8)                    | 350 x 350 (13.8 x 13.8) | 400 x 400 (15.7 x 15.7) | 500 x 500 (19.7 x 19.7) |
| Workpiece Diameter                 |                  | mm (inch)                                  | 300 (11.8)                               | 400 (15.7)              | 450 (17.7)              | 550 (21.7)              |
| Workpiece Height                   |                  | mm (inch)                                  | 350 (13.8)                               |                         |                         |                         |
| Workpiece Weight (included pallet) |                  | kg (lb)                                    | 130 (286.6)                              | 300 (661.4)             |                         |                         |
| Number of Pallets                  |                  | ea                                         | 12                                       | 8                       | 6                       | 4                       |
| Magazine type                      |                  | -                                          | Rotatry Buffer Station type with Carrier |                         |                         |                         |
| Operation                          |                  | -                                          | PLC operation (Built-in control)         |                         |                         |                         |
| Driving Mechanism                  | Rotating Axis(R) | -                                          | Servo Motor & Reduction Gear             |                         |                         |                         |
|                                    | Transfer Axis(X) | -                                          | Servo Motor & Rack / Pinion              |                         |                         |                         |
|                                    | UP/DOWN          | -                                          | Air Cylinder & LMG                       |                         |                         |                         |
| Dimension                          |                  | mm (inch)                                  | 2100 X 1700 (82.7 X 66.9)                |                         |                         |                         |

# MULTI LEVEL AWC (AUTO WORK-PIECE CHANGER)

## Multi Level AWC

An unmanned machining system that offers improved spatial utilization compared to the singlelevel AWC and is optimized for small-medium quantity batch production.

## Features

- Increased unmanned operation hours compared to the single-level AWC.
- Optimal multi-layer loading system that saves space: up to 40 pallets.
- Easy to install and maintain in the field.
- Easy to grasp the current status of the system at glance.



## Machine specifications

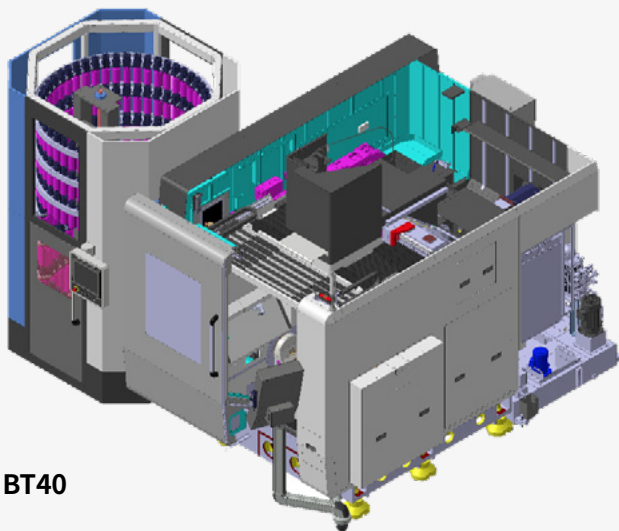
| Available model                         |               | DVF 5000 / DNM 4500/5700/6700 / Mynx 6500 / BVM 5700 |                                |                            |                            |                                |
|-----------------------------------------|---------------|------------------------------------------------------|--------------------------------|----------------------------|----------------------------|--------------------------------|
| Pallet Dimension                        | mm (inch)     | Ø160 (Ø6.3)<br>(HSK A100 Tool Type)                  | 250 x 250<br>(9.8 x 9.8)       | 350 x 350<br>(13.8 x 13.8) | 400 x 400<br>(15.7 x 15.7) | 500 x 500<br>(19.7 x 19.7)     |
| Max. Workpiece Diameter                 | mm (inch)     | 350<br>(13.8)                                        | 300<br>(11.8)                  | 400<br>(15.7)              | 450<br>(17.7)              | 550<br>(21.7)                  |
| Max. Workpiece Height                   | mm (inch)     | 315<br>(12.4)                                        | 350<br>(13.8)                  |                            |                            |                                |
| Max. Workpiece Weight (Pallet Included) | kg (lb)       | 80<br>(176.4)                                        | 130<br>(286.6)                 | 300<br>(661.4)             |                            |                                |
| Number of Pallets                       | ea            | 40(4x10=40)                                          |                                | 32(4x8=32)                 | 28(4x7=28)                 | 24(4x6=24)                     |
| Magazine Type                           | -             | Buffer Station type with Carrier                     |                                |                            |                            |                                |
| Operation                               | -             | PLC Operation (Built-in control)                     |                                |                            |                            |                                |
| Driving Mechanism                       | Rotating Axis | -                                                    | Servo Motor & Reduction Gear   |                            |                            |                                |
|                                         | Lifting Axis  | -                                                    | Servo Motor & Ball Screw w/LMG |                            |                            |                                |
|                                         | Forking Axis  | -                                                    | Servo Motor & Ball Screw w/LMG |                            |                            |                                |
| Dimension                               | mm (inch)     | 3300 x 2225<br>(129.9 x 87.6)                        |                                |                            |                            | 3600 x 2533<br>(141.70 x 99.7) |

# ROUND MAGAZINE

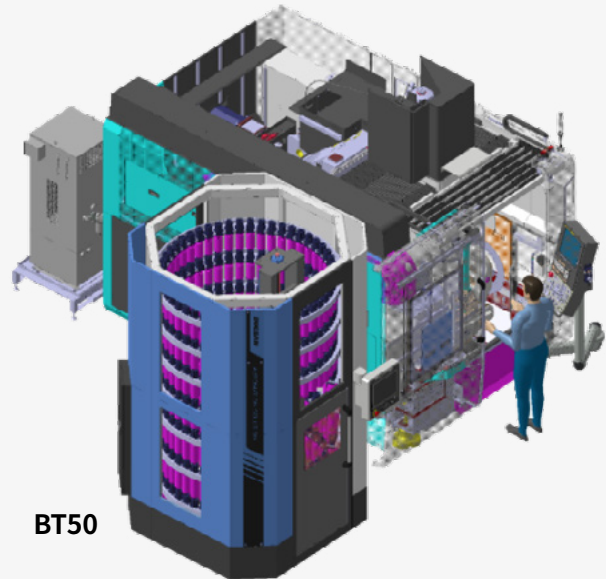
High-capacity tool Handling system for VMC with improved space efficiency and tool change time.

## Features

- Optimized solution for high-capacity vertical tool storage and handling
- Multiple waiting pots for reducing tool change time
- Up to 5 tools can be taken out and brought in simultaneously
- Easy installation for local environment
- Large touch screen provided
- Servo motor applied to all axis



BT40



BT50

## Machine specifications

| Available model           |              | BT40 Tool Magazine                                | BT50 Tool Magazine                                  |
|---------------------------|--------------|---------------------------------------------------|-----------------------------------------------------|
|                           |              | DVF4000/5000/6500(T)/8000(T)                      | DVF8000(T)/50/Mynx6500                              |
| Max. Tool Diameter        | mm (inch)    | 80 (3.1)(cont.)<br>125 (4.9) (Adjacen Pots Empty) | 125 (4.9) (cont.)<br>225 (8.9) (Adjacen Pots Empty) |
| Max. Tool Length          | mm (inch)    | 300 (11.8)                                        | 320 (12.6)                                          |
| Tool Storage Capacity     | ea           | 204/252/300                                       | 90/120/150/210/258                                  |
| Max. Tool Weight          | kg (lb)      | 8 (17.6)                                          | 20 (44.1)                                           |
| Max. Tool Moment          | N·m (ft·lbs) | 5.88 (4.3)                                        | 22 (16.2)                                           |
| Max. Tool Searching Time  | sec          | 26                                                | 30                                                  |
| Pull Out                  | ea           | 5                                                 |                                                     |
| Waiting Pot               | ea           | 4                                                 |                                                     |
| Tool                      | -            | Verticality                                       |                                                     |
| Structure                 | -            | Round Type                                        |                                                     |
| Control                   | -            | PLC operation (Built-in control)                  |                                                     |
| Carrier Drlving Mechanism | U-Axis       | Servo Motor & Rack / Pinion w / LMG               |                                                     |
|                           | V-Axis       | Servo Motor & Ball Screw w / LMG                  |                                                     |
|                           | R-Axis       | Servo Motor & Gear                                |                                                     |
| Dimension                 | mm (inch)    | 1875 x 2069 (73.8 x 81.5)                         | 2300 x 2300 (90.6 x 90.6)                           |

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