

# Pinnacle

Since 1976

Founded in 1976, Pinnacle is specialized in manufacturing all kinds of machining centers with excellent experience in technology, quality and service. Pinnacle machining centers range from 5-axis, double column, vertical and horizontal types, to CNC lathes as well as conventional milling machines.

Well-trained service engineers are familiar with each step of assembly to ensure our quality service works and keep all machines running in the best status. The sales and service departments provide customers pre-sale and after-sale services. Prompt reaction is just our basic attitude to all customers only, accurate and effective technical solutions are provided within the shortest time.

**Product, Quality and Service, Pinnacle exceeds your expectations!**



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Twin Pallets for  
**Double Efficiency**





# Double Up Your Productivity with Minimum Investment

## The Choice for Superior Quality and Efficiency VERTICAL MACHINING CENTER

With Pinnacle LV85APC machine, the Automatic Pallet Changing system eliminates workpieces' loading and unloading time. The production efficiency is nearly doubled.

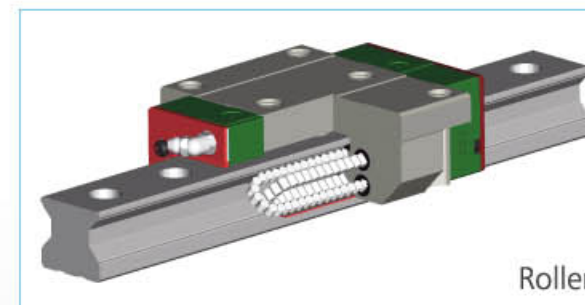
## Outstanding Structure Design To Achieve Greater Rigidity

One of the most important factors that affect machining accuracy and capacity is the rigidity of the machine's structure. Pinnacle's LV85APC machine is designed according to Finite Element Analysis method, this gives the machine a high level of rigidity and stability.

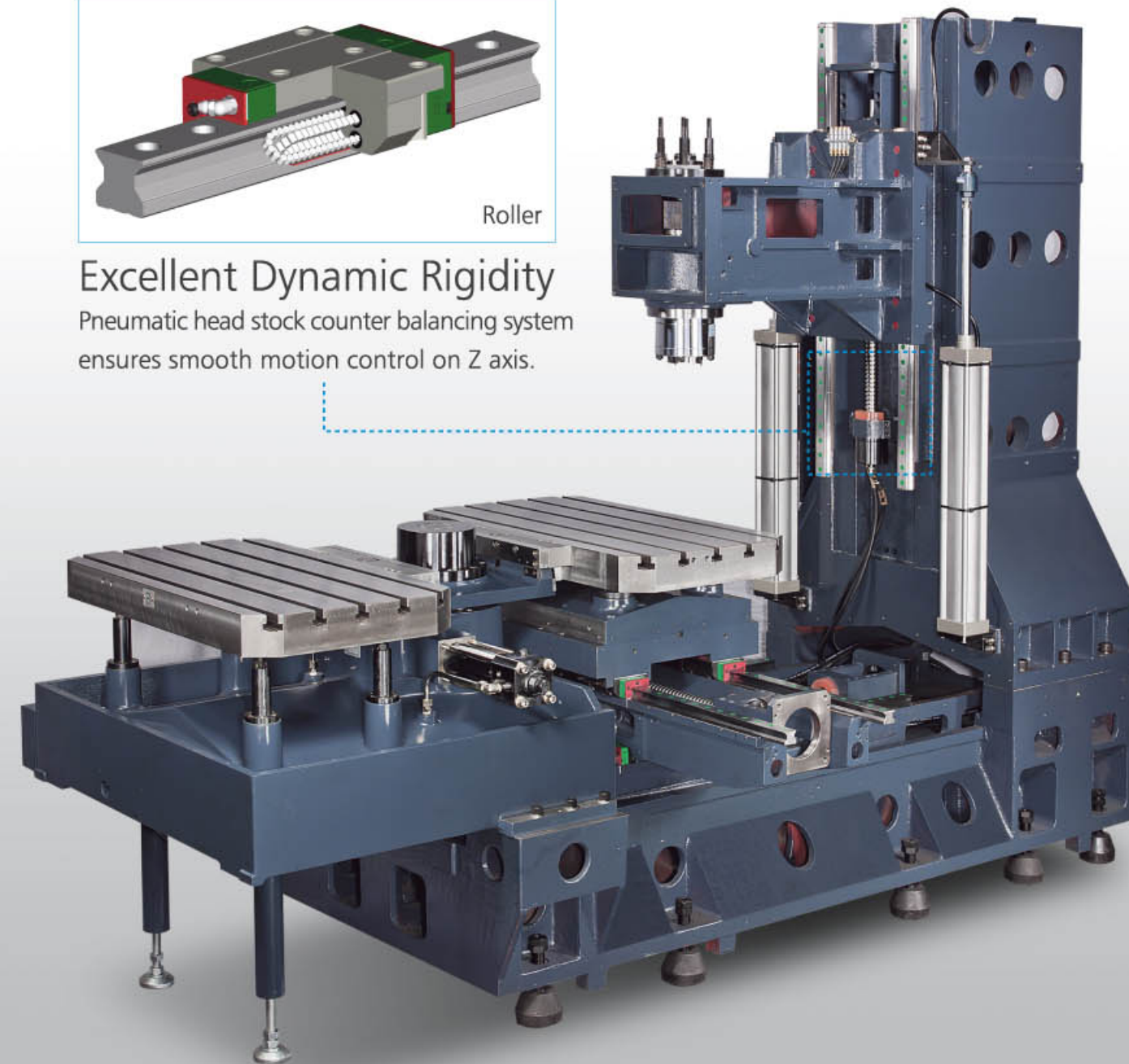


### Direct Coupled

The X, Y and Z-axis servo motors are directly coupled with the pretensioned ball screws via german made rotex precision flexible couplings, keeping the linear movement accuracy to the optimum condition.



## Excellent Dynamic Rigidity Pneumatic head stock counter balancing system ensures smooth motion control on Z axis.



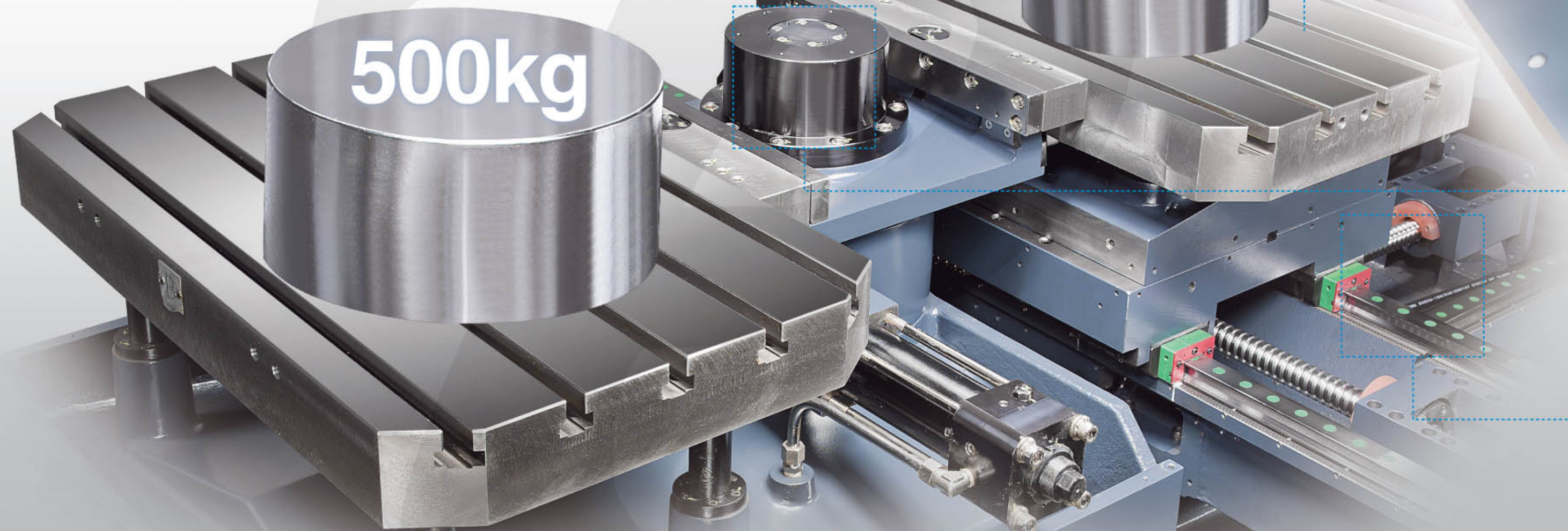
# 4 Main Reasons to Choose Pinnacle LV85APC:

1

## Reason 1: Reliability

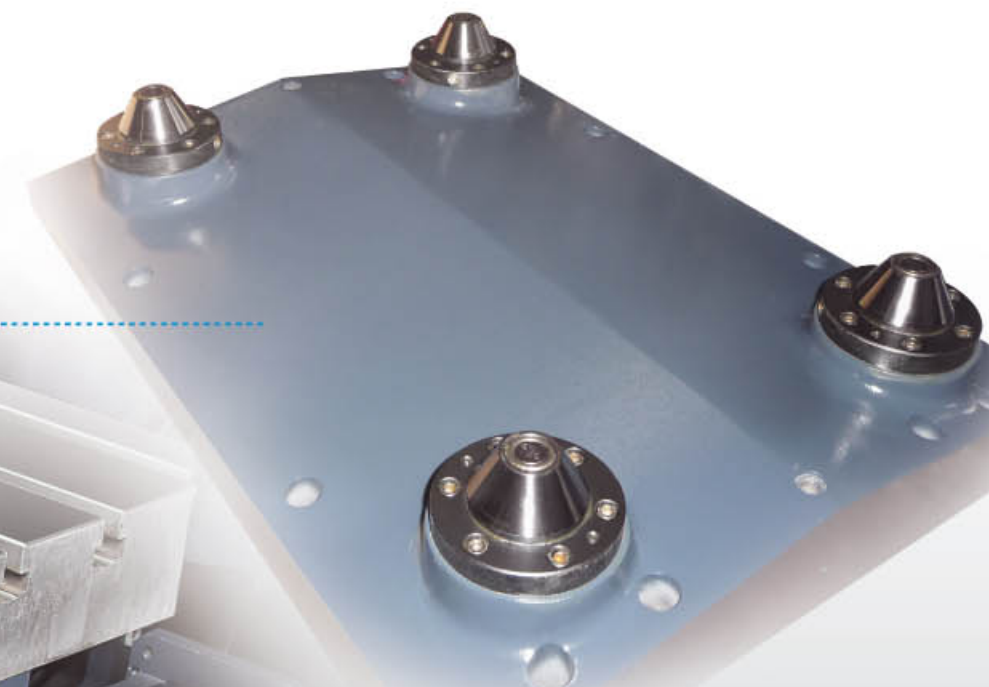
### Without Reliability, Speed is Meaningless

High reliability, non-stop cutting is essential to the mass production machine. The hydraulic-powered Auto Pallet Changing system features high reliability for long time operation.



500kg

500kg



### Positioning Taper Cone

The pallets are positioned and clamped via taper cones, featuring high repeatability accuracy. The clamping area is well protected from chips entering.

At the end of taper pin, air blast tubes are deployed. The air blast is activated during APC cycle, ensuring the taper cone is clean and free from chips.

### Heavy Duty Pallet Actuation

The pallet changing mechanism offers extraordinary power to support 500kg work piece on each pallet.



### Hollow Type Ball Screws

The Ball Screws on 3 axes are hollow type with oil throughout, bringing out the heat from ball screw surface for minimum thermal deformation.

## 4 Main Reasons to Choose Pinnacle LV85APC:

2

### Reason 2: Compact Floor Space Extremely Space Saving

For a machine with pallet changer, the machine efficiency is nearly twice that of a single pallet machine. The Pinnacle pallet changer is anchored on the machine base, it increases pallet changer's stability, and it saves precious floor space.

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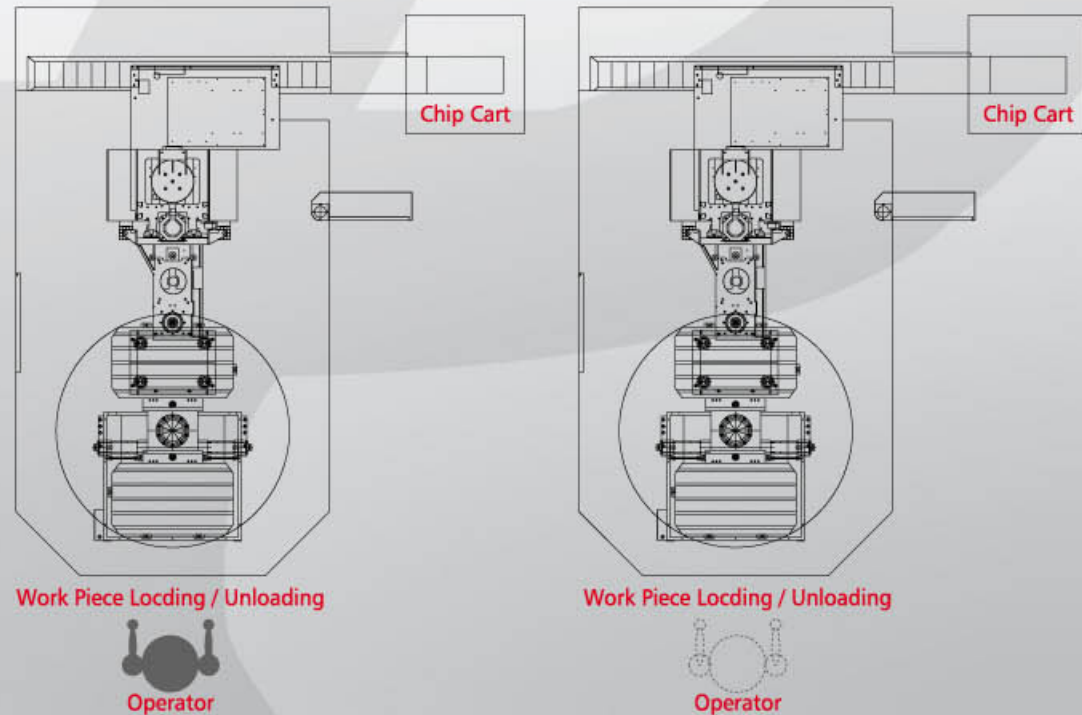
### Reason 3: Easy Chip Collection Uni-direction for Chip Disposal

The Chip Conveyers are arrayed in one direction, easy to collect cutting chips within the minimum time.

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### Reason 4: Short Access Distance Ergonomics

Easy to install the work piece and test run the machine with the swivel control panel. The distance from operator to the standby table is minimized, offering comfortable conditions for operator to load and unload work pieces.



## High Performance Spindle

The **BT40** spindle employs P4 grade bearings, which are capable of supporting high speed or high power output.



### Gear Box

For customers who require high cutting torque for heavy duty cutting, the gearbox is the best option. The gearbox features high speed, low vibration, low temperature rising and low noise.

### Coolant Through Spindle

Coolant circulates through spindle to offer direct cooling on tools, removing heat that occurs during machining. Combined with filter tank system. (optional)

# Arm Type ATC / Chain Type ATC (Opt.)

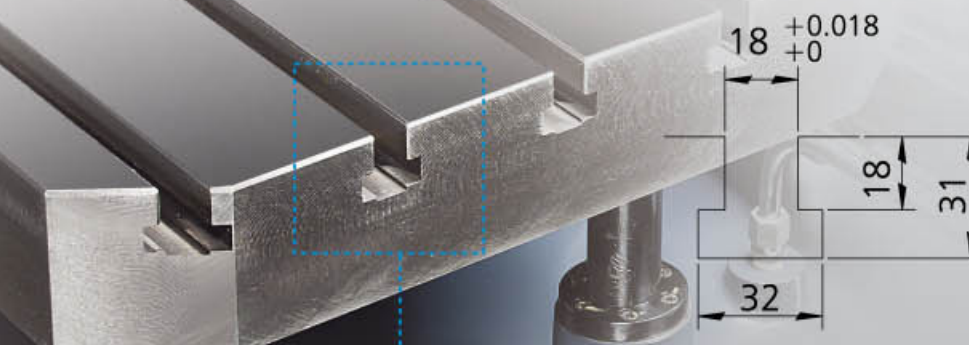
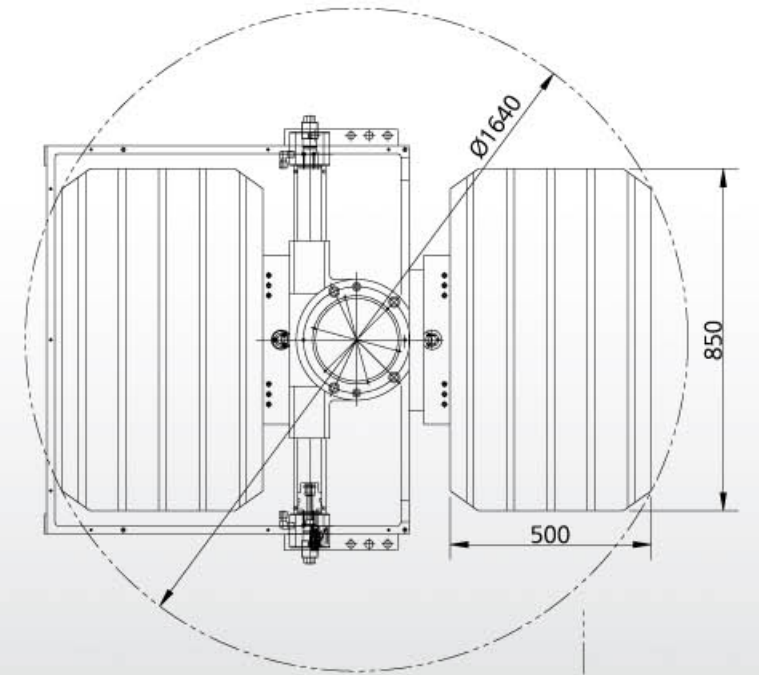
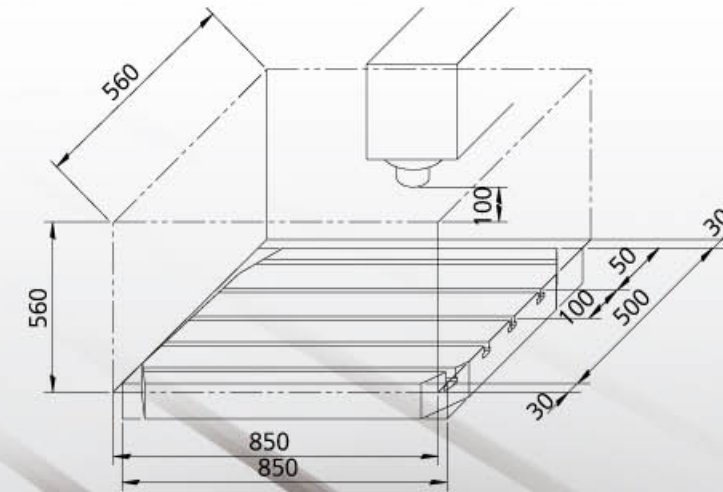


**Magazine: Arm Type**  
**Capacity: 24 / 40 Tools**

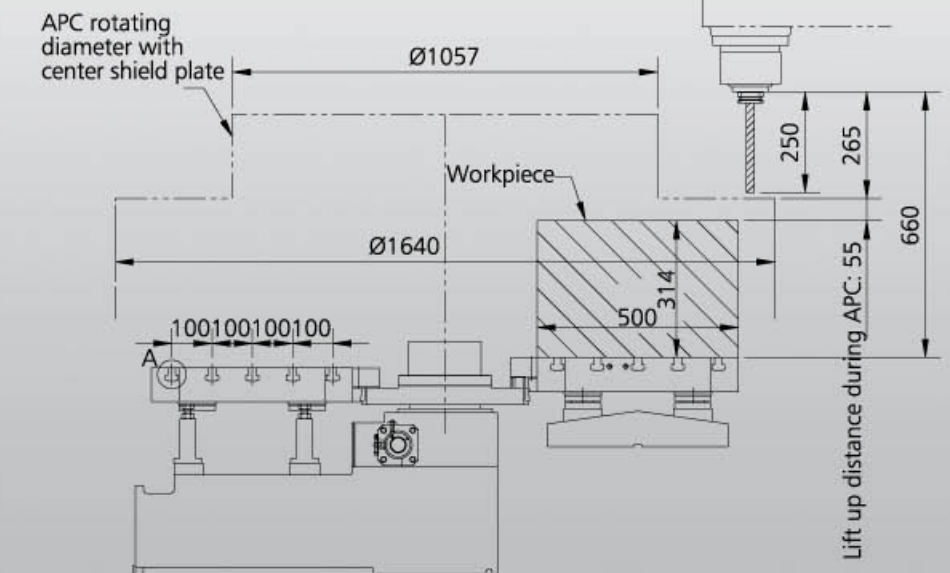
The LV85APC is fitted with Arm type automatic tool changer; the rapid tool changing performance supports the high efficient pallet changer for maximum productivity.

# Automatic Pallet Changer

- Swing Type pallet changer features space saving.
- Rapid pallet changing speed, it takes only 9 seconds to exchange pallets.
- T-Slot type pallet is easy for work piece calibration.

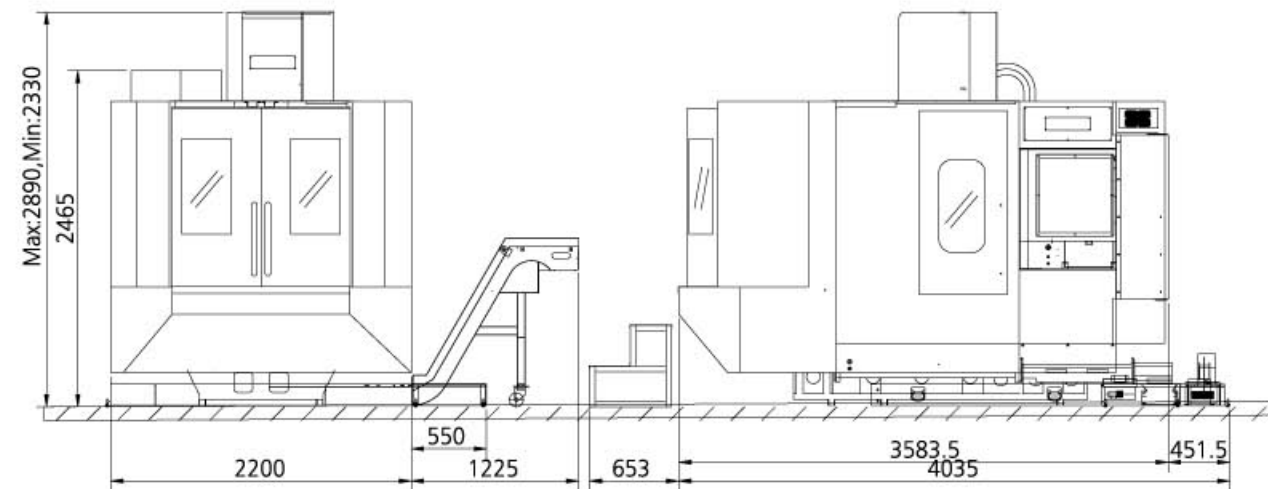
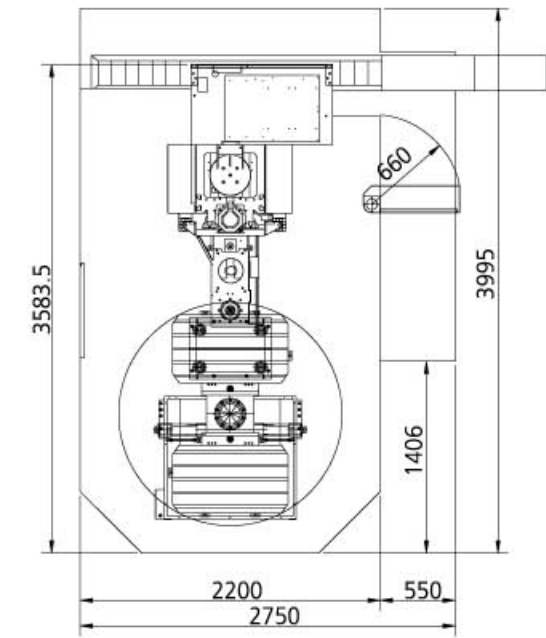


T-slotted pallets offer better workpiece setup datum base.



**FLOOR SPACE:**

# LV85APC Machine Dimension



**Automatic Tool Measurement**  
Automatic measuring and data setting for tool diameter and length.(optional)



**20 Bar Hi-pressure Pump And Tank**  
20  $\mu$  m filter and extra large coolant tank to assure CTS system offers the highest efficiency.(optional)



**Chip Conveyor**  
Chip conveyor device in the front side of machine removes chips efficiently.(optional)



**Coolants Jets Around Spindle**  
Improved cooling efficiency on workpiece.



**Chips Flushing Nozzles**  
Coolant flushing nozzles on rear inner wall of guard prevent jam of chips during operation.



**Twin Chip Augers**  
Chip Augers are deployed on the two sides of machine base to evacuate cutting chips efficiently.

**SPECIFICATIONS:**

MODEL	LV85APC
<b>TABLE</b>	
TABLE SIZE (mm)	850 x 500
TRAVEL RANGES (X x Y x Z mm)	850 / 560 / 560
MAX. TABLE LOAD (Kgs)	500
SPINDLE NOSE TO TABLE SURFACE (mm)	100~660
T-SLOT (Width x Distance x Number (mm))	18 x 5 x 100
Pallet Change Time(sec)	9
Pallet Exchange Method	+180° Rotation
Locking Strength	1500kg @ 20kg/cm <sup>2</sup>
<b>SPINDLE</b>	
TOOL SHANK & PULL STUD	ISO40
SPINDLE INNER DIAMETER (mm)	Ø 70
SPINDLE CENTER TO COLUMN (mm) 600	600
SPINDLE SPEED (rpm) Belt	60-8000 (10000)
SPINDLE SPEED (rpm) Gear	L40~2000, H2001~8000
SPINDLE SPEED (rpm) Direct drive	12000 (15000)
DRAW BAR FORCE (Kgf)	950
MAIN MOTOR (con/30min kW)	5.5 / 7.5
<b>FEED RATE</b>	
RAPID FEED RATE (X / Y / Z m/min)	32 / 32 / 32
FEED RATE (X / Y / Z mm/min)	10000
<b>AXIS SERVO MOTOR</b>	
MITSUBISHI kW	HF353 (3.5)
FANUC kW	$\beta$ 22 / 2000i 2.5 ( $\alpha$ 12 / 3000i 3.0)
SIEMENS kW	1FK7 063 2.9
FAGOR kW	FXM53.3 3.1
HEIDENHAIN kW	QSY155B 2.47
<b>AUTO TOOL CHANGER</b>	
MAG TYPE	DISK / chain
CAM TYPE	DAUL ARM
TOOL SELECTION (Bi-direction)	RANDOM
TOOL STORAGE CAPACITY (PCs)	24 / 40T (Opt.)
MAX. TOOL DIAMETER (mm)	Ø90 / Ø76 (Opt.)
MAX. TOOL LENGTH, WEIGHT	250 mm, 8 KGs
<b>MISCELLANEOUS</b>	
AIR REQUIREMENT (Kg/cm <sup>2</sup> )	6
VOLTAGE	220
POWER REQUIREMENT (KVA)	15
COOLANT TANK CAPACITY (L)	200
MACHINE WEIGHT (KGs)	5200
FLOOR SPACE (L x W x H mm)	3500 x 2200 x 2650
PACKING SIZE (L x W x H mm)	3600 x 2300 x 2550

● ALL SPECIFICATIONS AND DESIGNS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

**Standard Accessories:**

- Cutting Air Blast
- Cutting Coolant System
- 3 Axes Telescopic Covers
- Full Chip Enclosure
- Automatic Lubrication System
- Pilot Lamp
- Working Lamp
- Air Gun & Coolant Gun
- MPG
- Heat Exchanger for Electrical Cabinet
- RS-232 Interface
- Rigid Tapping
- Spindle Cooler
- Tool Box
- Leveling Bolts and Pads
- Operator and Programming Manuals

**Control System:**

- Mitsubishi: M70/ M720
- Fanuc: Oi-MD / 31i-MB
- Heidenhain: iTNC530
- Siemens: 828D
- Fagor: 8055i Plus