| MODEL | UNIT | HK-856L | HK-866L | HK-876L |
|---|---|---|---|---|
| | | Fanuc OiMF PLUS controller | | |
| **TABLE** | | | | |
| Table sizes | mm | 4000 / 5000 / 6000 / 7000 / 8000 x 500 | 4000 / 5000 / 6000 / 7000 / 8000 x 600 | 4000 / 5000 / 6000 / 7000 / 8000 x 700 |
| T-slots (No. x W x Dist.) | mm | 5 x 100 x 18 | 5 x 100 x 18 | 5 x 125 x 18(22) |
| Max. table load | kg | 1000 kg / m2 | 1000 kg / m2 | 1000 kg / m2 |
| **TRAVEL** | | | | |
| X-axis travel | mm | 4150 / 5150 / 6150 / 7150 / 8150 | 4150 / 5150 / 6150 / 7150 / 8150 | 4150 / 5150 / 6150 / 7150 / 8150 |
| Y-axis travel | mm | 500 | 600 | 700 |
| Z-axis travel | mm | 600 (St.), 800 (Opt.) | | |
| Distance from spindle nose to table | mm | 180 | | |
| **SPINDLE** | | | | |
| Spindle nose taper | | BBT40 (St.), BBT50 (Opt.), HSK (Opt.) | | |
| Spindle motor | kw | #40: 11/15(St.), 15/18(Opt.), 18.5/22(Opt.) #50:15/18.5(St.), 22/26(Opt.) | | |
| Spindle speed & transmission | rpm | #40: 12000. #50: 8000 (direct drive) | | |
| **FEED** | | | | |
| (X/X1/Y/Z) axis sevro motors | kw | #40: 4/4/4/4, #50: 4/4/4/7 | | |
| Rapid feed rate - X/Y/Z axis | m/min | 24(30) / 24 / 24 | | |
| 3-axis cutting feed rates (X/Y/Z) | mm/min | 15000 | | |
| Gear rack drive - X axis | | X axis travel : 4150~8150 (gear transmission) | | |
| Ballscrews class - Y/Z axis | | D40mm driven by ball screw C3 class, D50 (Opt.) | | |
| 3-axis roller type linear ways (X/Y/Z) | mm | 55 / 45 / 45 (St.), 55 / 55 / 55 (Opt.) | | |
| **ATC** | | | | |
| Tool storage capacity | | #40 & #50 & HSK63: 32, 40 (Opt.) | | |
| Max. tool length (with adjacent tool) | mm | #40: 250, #50: 300, HSK: 250 | | |
| Max. tool length (without adjacent tool) | mm | #40: 120, #50: 200, HSK: 120 | | |
| Max. tool weight | kg | #40: 7, #50: 15, HSK: 7 | | |
| **ACCURACY** | | | | |
| Positioning accuracy | mm | 0.016 | | |
| Repeatability | mm | 0.008 | | |
| **OTHER** | | | | |
| Power requirement | KVA | 4150~6150(40KVA), 7150~8150 (45KVA) | | |
| Air source required | Mpa | 0.65 | | |
| Coolant tank capacity | L | 660~880 | | |
| Machine dimensions (footprint size) (W x D) | mm | X axis: 4150mm, 8600 x 4500mm ; X axis: 5150mm, 9600 x 4500mm ; X axis: 6150mm, 10600 x 4500mm ; X axis: 7150mm, 11600 x 4500mm ; X axis: 8150mm, 12600 x 4500mm | | |
| Machine weight | kg | 23000 / 25000 / 27000 / 29000 / 31000 | 24000 / 26000 / 28000 / 30000 / 32000 | 25000 / 28000 / 31000 / 33000 |

*As the machine manufacturer constantly conducts machine research and improvements, the machine specifications are subject to change without prior notice.

## STANDARD EQUIPMENT

- 32 Tool carousel type tool magazine with fast tool selection
- High efficiency machining mode
- Heidenhain linear scale on X-axis
- Heat exchanger for electric cabinet
- Circular coolant jets system
- AICC (Pre-read single block 200) (Fanuc)
- Oil fluid separator
- LED projection lights at both sides of spindle head
- X-axis is driven by twin motors with rack transmission and German made speed reducer
- Environment-friendly grease lubrication system
- Foundation blocks
- Three-color warning lamp
- Working light


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ACW 2023.02.500

# TRAVELING COLUMN VERTICAL MACHINING CENTER

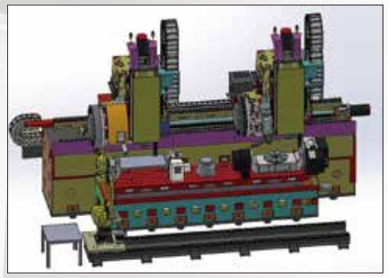
## The Best Choice in Large Parts Machining

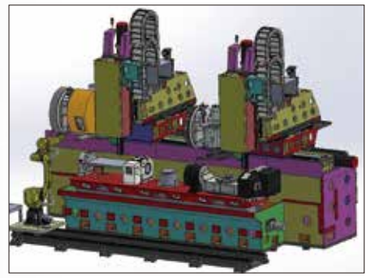
Designed for machining large or long workpieces, the Heake traveling column machining center features high efficiency and high rigidity. The table is fixed, while the machine body is designed with a traveling column, so that the workpiece weight does not affect machining efficiency and accuracy. The multi-section table makes the machine suitable for long workpiece machining, high volume machining for short workpieces, and multiple-process machining.

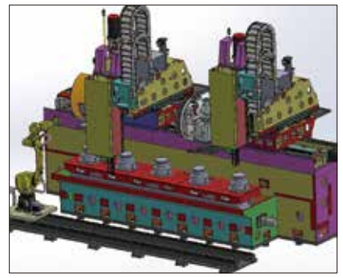

◀ HK-456L
(X-axis travel 4150mm)


▲ HK-576L

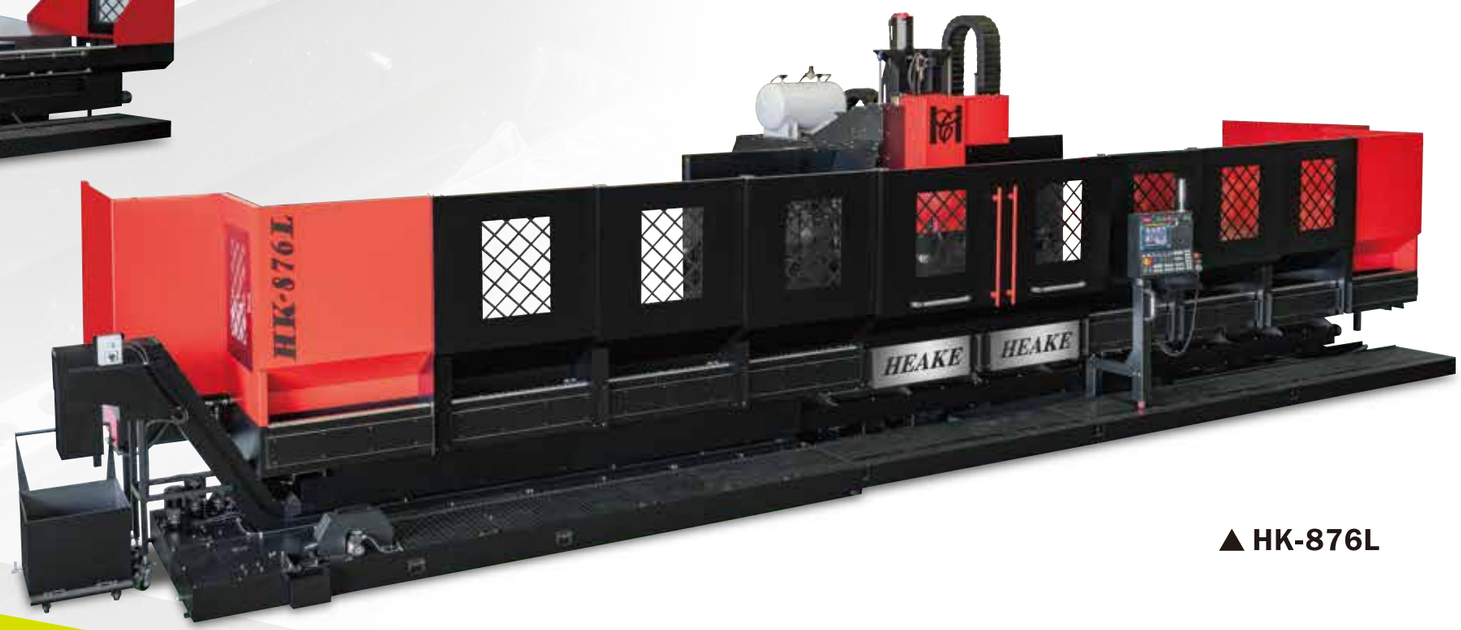
## VERSATILE MACHINING APPLICATIONS







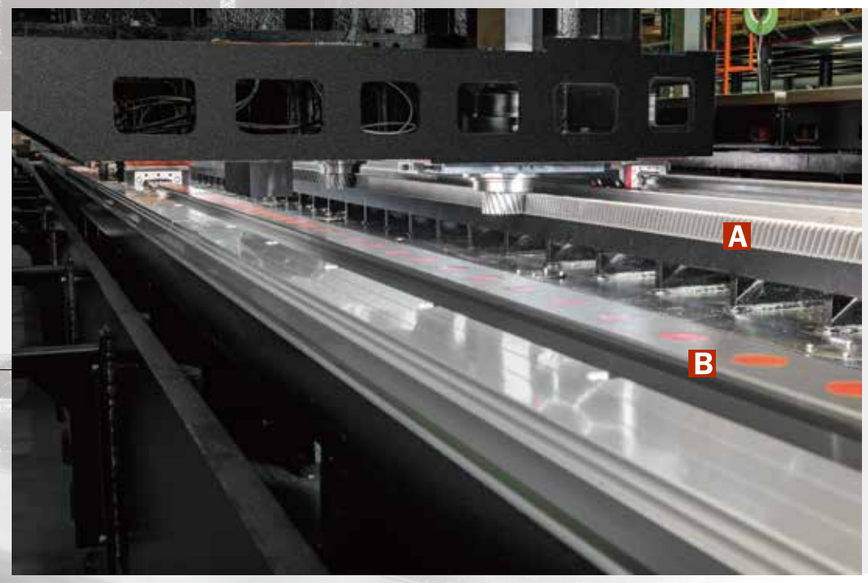

This machine is designed specifically for machining long workpieces. In addition, it is also ideal for other types of machining such as multi-section machining and 4th/5th axis machining.




▲ HK-876L

# TRAVELING COLUMN

The column moves in the direction of the X-axis and the table is fixed. This means that the workpiece weight does not affect the axial transmission system and dynamic machining accuracy, thus higher machining efficiency can be achieved.

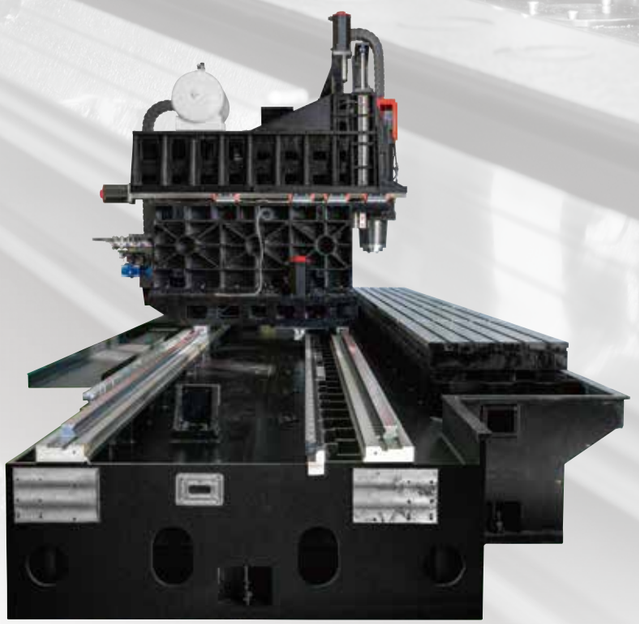



## A Rack Transmission on X-Axis

- X-Axis power is transmitting through the German racks, which feature outstanding transmission efficiency of axis feed. Additionally, X axis is equipped with linear scales (standard accesssories), which ensures positioning and repeatability accuracy is not affected by thermal expansion.

## B Roller Type Linear Ways on Three Axes

- Three axes are mounted with SP class roller type linear guideways, featuring high load resistance, high rigidity, low friction coefficient, and outstanding dampening capability.
- Each linear guideway is equipped with extended extra heavy-duty blocks for upgrading loading capacity and dynamic stability.
- Three axes are direct-drive to eliminate backlash, vibration, and noise, while providing great power output.
- Adopts class C3 ballscrews.



## One-Piece Fabricated Structural Parts

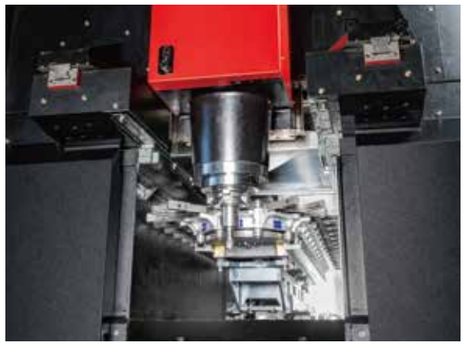
- The base and table support are one-piece fabricated, assisting to upgrade the structural rigidity and stability of the machine.
- This structure design provides a solid support for heavy workpieces.

## Extra Large Travel of Y-Axis

- The specially designed Y-axis travel can reach up to 700mm, providing an increased machining range.
- When comparing this machine with a double column milling machine under the same machining conditions, it has a smaller footprint and high accuracy.
- In order to avoid a pull-down force caused by the throat depth when the spindle is cutting, Heake has reinforced the thickness and structure of the column. In addition, each linear way on Y-axis is mounted with four blocks (total of 8 blocks). The blocks are deployed as three pieces at the front and one piece at the rear to enhance rigidity.

# GREAT MACHINING CAPACITY * MATERIAL: S45C

| | Motor: 18.5HP / 22kw | Motor: 22HP / 26kw |
|---|---|---|
|  FACE MILL | ■ Tool : Ø160 mm<br>■ Spindle Speed: 320 rpm<br>■ Feed Rate: 1080 mm/min<br>■ Cut: 140 mm x 4 mm<br>■ Material Removal: 604 cc/min | ■ Tool : Ø160 mm<br>■ Spindle Speed: 320 rpm<br>■ Feed Rate: 1220 mm/min<br>■ Cut: 140 mm x 4.5 mm<br>■ Material Removal: 768 Cc/min |
|  END MILL | ■ Tool : Ø40 mm<br>■ Spindle Speed: 1200 rpm<br>■ Feed Rate: 425 mm/min<br>■ Cut: 40 mm x 5.5 mm | ■ Tool : Ø40 mm<br>■ Spindle Speed: 1200 rpm<br>■ Feed Rate: 480 mm/min<br>■ Cut: 50 mm x 5.5 mm |
|  DRILL | ■ Tool : Ø75 mm<br>■ Spindle Speed: 645 $min^{-1}$<br>■ Feed Rate: 100 mm/min | ■ Tool : Ø75 mm<br>■ Spindle Speed: 705 $min^{-1}$<br>■ Feed Rate: 104 mm/min |
|  TAPPING | ■ Tool : M48 x P5 top<br>■ Spindle Speed: 28 rpm / min<br>■ Feed Rate: 140 mm/min<br>■ Load: 84% | ■ Tool : M48 x P5 top<br>■ Spindle Speed: 32 rpm / min<br>■ Feed Rate: 160 mm/min<br>■ Load: 72% |



## 32/40-Tool Armless Type Tool Magazine

- Tool loading capacity of #40 magazine: 32 tools (standard) 40 tools (optional).
- Tool loading capacity of #50 magazine: 32 tools (standard) 40 tools (optional).
- The tool magazine is installed in the column for fast tool change.

## 4th/5th Axis Machining

- This machine can be mounted with a tilting rotary table, allowing it to perform 4th/5th axis machining.
- It is especially ideal for high-precision machining on complex parts, which can be accomplished with only a single setup of workpiece.

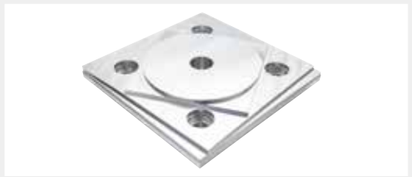
## Coolant Jets Around Spindle

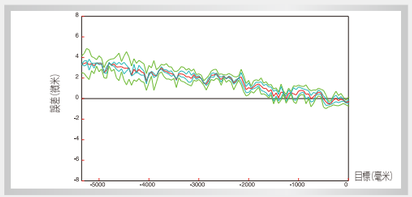
The function of the coolant jets around the spindle is to quickly remove heat from the cutting tool and workpiece during cutting, so as to upgrade machining accuracy and extend the tool life.

## Coolant Through Spindle Device (Optional)

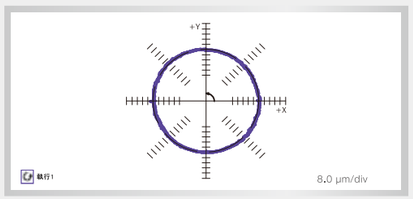
- The coolant through spindle device employs a high pressure and high flow rate pump that discharges cutting fluid to the cutting position.
- Especially when performing high speed machining, deep drilling, and deep milling, the coolant through spindle device helps to remove chips quickly, so as to upgrade machining accuracy and reduce machining time.

# ACCURACY





E.g. X Axis Laser Compensation under 5 microns.




E.g. XY Double Ball Bar Test Results under 5 microns.

HEAKE performs cutting tests in circle, square and diamond shapes to ensure a maximum tolerance under 0.009 mm.

| Linear X - Analysis features | VDI 3441 |
|---|---|
| **Name** | **Value (µm)** |
| Maximum reversal (U max) | 1.2 |
| Maximum scatter (Ps max) | 2.677 |
| Positional uncertainty (P) | 5.855 |
| Positional deviation (Pa) | 4.033 |
| Mean reversal | 0.434 |
| Mean scatter (Ps mean) | 0.787 |

| Ball Bar - Diagnostics (XY 360 degree 15 mm) | |
|---|---|
| 20% Reversal spike Y | ↑ 2.7 µm<br>↓ 2.6 µm |
| 17% Reversal spike X | ↑ 1.4 µm<br>↓ -2.1 µm |
| 12% Backlash Y | ↑ 0.9 µm<br>↓ -1.3 µm |
| 8% Straightness | 2.2 µm |
| Circularity | 7.7 µm |

## BT#40 (Standard: αII 12/12000)

## 8000/12000 RPM Direct-drive Spindle

- BT40, 12000 RPM direct drive spindle is standard.
- BT50, 8000 RPM direct drive spindle is standard.
- With motor directly driving the spindle, backlash, vibration, and noise can be reduced to a minimum.
- High efficiency of motor power transmission.
- The spindle runs on ceramic bearings that are lightweight, with low centrifugal force and low thermal expansion coefficient.