

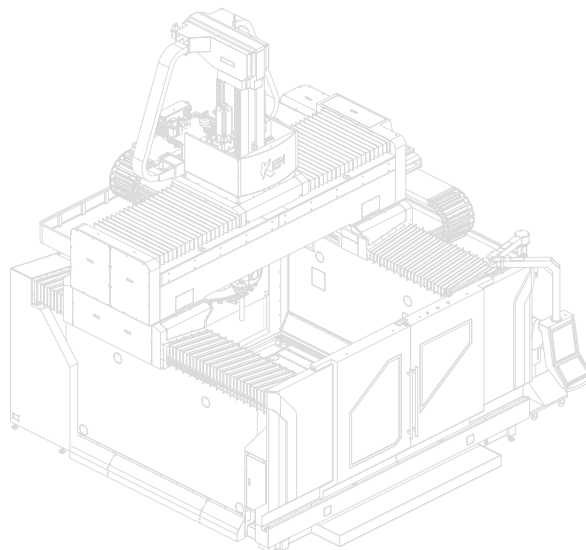
COMPACT B

LINEAR MOTOR SERIES



Focus On High Speed & 5-axis

- Stability
- Precision
- Strength



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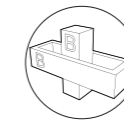
KEN ICHI MACHINE CO.,LTD

HIGH SPEED 5-AXIS MACHINE CENTER

HIGH-DYNAMIC

- Gantry type
- Linear Motor drivers
- Rapid feedrate: 60m/min
- One-piece structure design

Box in Box, Symmetrical design



Driven at the center of gravity

Minimize crossbeam deformation after long period of usage

Reliable and rigidity

Applications for:

Aerospace Aluminum Frame

Automotive Plastic Injection mold

Mechanical component



HIGH RIGIDITY STRUCTURE DESIGN

HIGH-PERFORMING structure

- Gantry type design, all axial components (X/Y/Z/A/C axis) is movement on the top of the column. The work piece is fixed on the table so that the weight of the work piece does not affect the machine performance.
- Optimal structural design for high-speed
- **Advanced FEM analysis** and design to optimize higher rigidity, response and provide stability of high speed cutting.

ONE PIECES STRUCTURE DESIGN

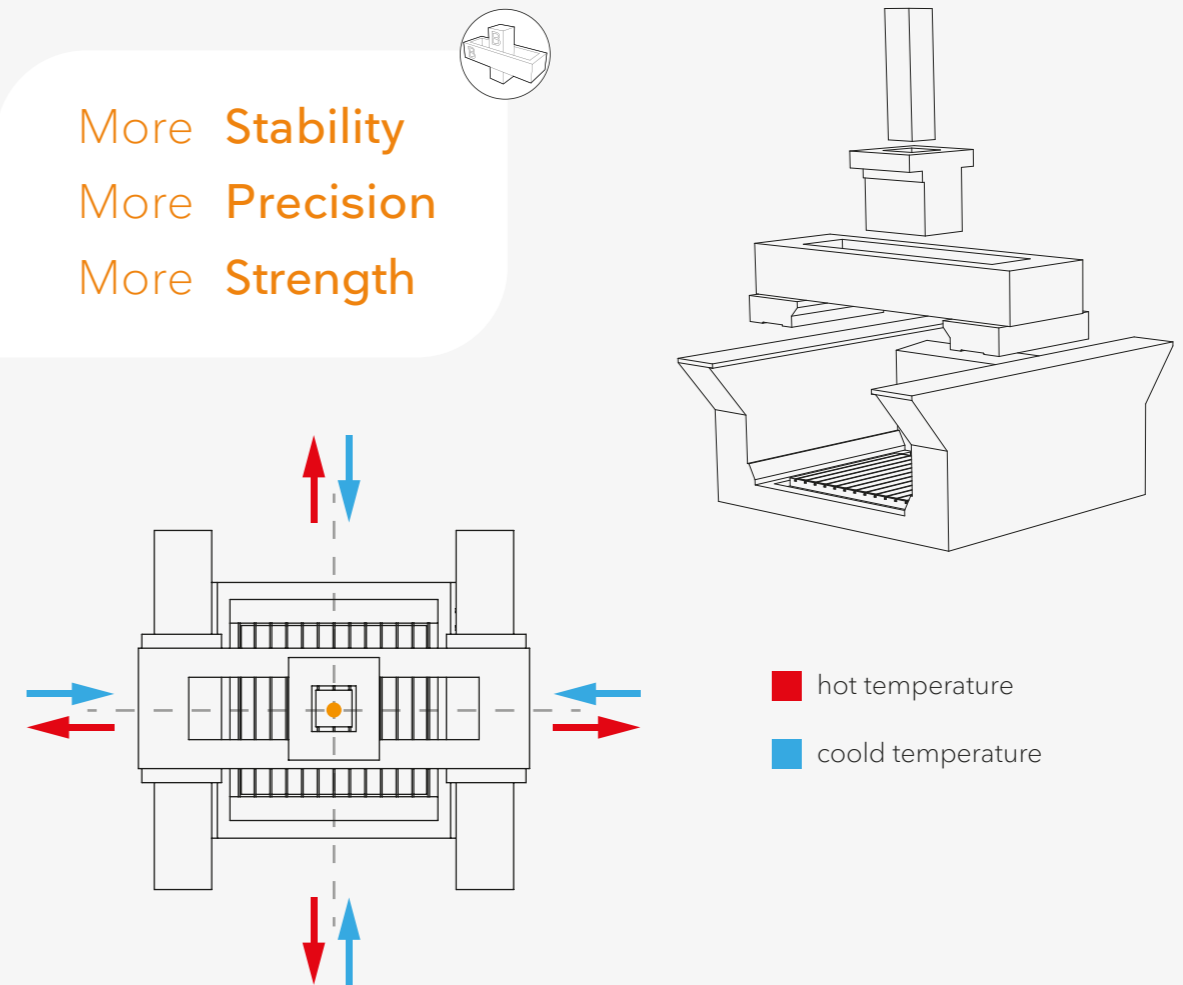
Improves the overall structural rigidity
Ensure the stability of precision
and mechanical performance



NEW STANDARD OF QUALITY

SYMMETRICAL DESIGN

More **Stability**
More **Precision**
More **Strength**



- The expansion of hot or cold temperature does not interfere with the center, so this system can be ensured to have the excellent precision during machining.

Advantage of BOX IN BOX Structural design:

- Crossbeam and Saddle by box in box design, its reliable and high rigidity will minimize the environment temperature affection.
- Y-axis with 4 linear guide ways, the two tracks on XY plan and YZ plan to support Ram & Saddle, which could reach optimize dynamic characteristics.
- Z-axis equipped with 4 linear guide ways on two side of the slider, each side undertake the same cutting force, which balance design would enhance the machine lifetime and accuracy.
- Dual ball screw and dual counterbalance system in Z axis, its stable structure for high speed cutting purpose.

LINEAR MOTOR DRIVE

The inevitable trend in the future



- Backlash free offer high positioning accuracy
- Direct transmission
Reduce ball screw/nut, bearings couplings those components
- Free of wear due to friction free drive concept
- Simple structure / long-term accuracy / easy maintenance.



Excellent Design For 5-axis High Speed Machine

X-Axis

The Column for the X-axis use the linear motor without the belt and coupling to increase high accuracy and high-speed movement.

X axis is supported by the left and right box column each side use two roller linear guideways, each guideway has three Block, increase rigidity and keep excellent accuracy for long time.

Brakes are immediately clamping the axes in case of an emergency stop or power failure.



Y-Axis

Y axis by symmetrical box-in box design crossbeam , Reduce the thermal deformation and minimal the effects of environment temperature.

Y axis use linear motor without coupling, its directly transmit force for saddle movement. Can produce a high-speed response and high-positioning accuracy.

Y-axis crossbeam equipped with four roller type guide way, each guide way enclose two slider blocks. (Total eight blocks) can reach the high-rigidity.



Z-Axis

Z axis by symmetrical design to remain the center of gravity. Ensure force evenly during cutting and movement.

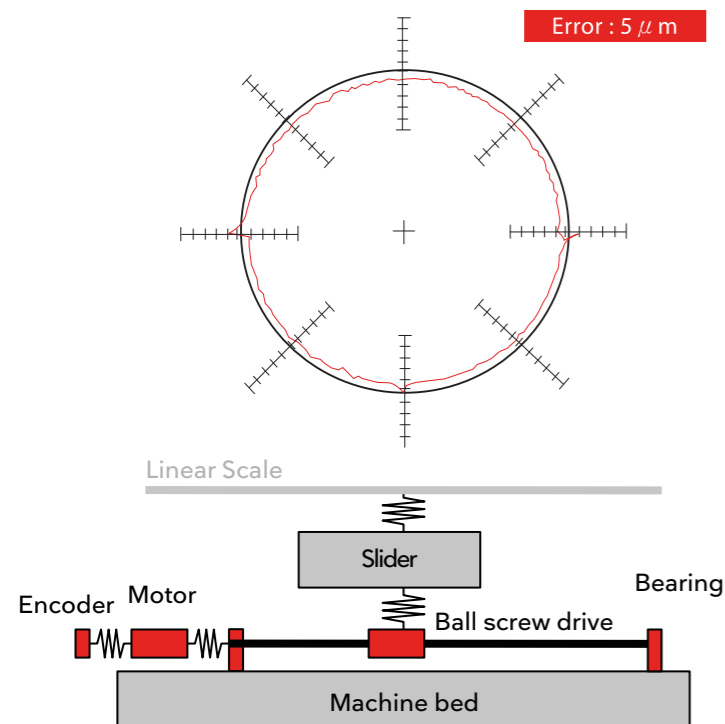
Z-axis equipped with Dual ball screw & dual counterbalance system, features high stability during high speed cutting

Z axis equipped with four roller type guide way, to provide the best cutting rigidity.

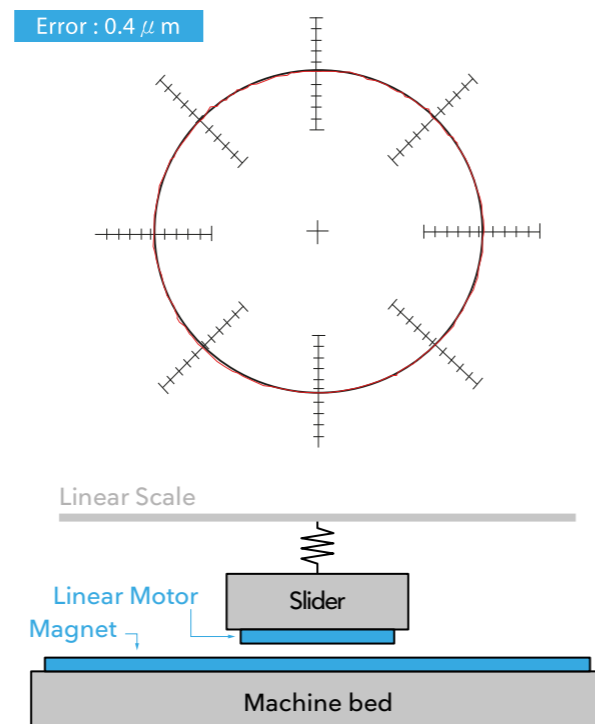
Reduce the thermal deformation and minimal the effects of environment temperature.



Ball Screw VS Linear motor



Transmission chain length, the error is larger
The path less accuracy
Existence of backlash



Direct transmission
System with higher KV value
Path of high precision
No backlash

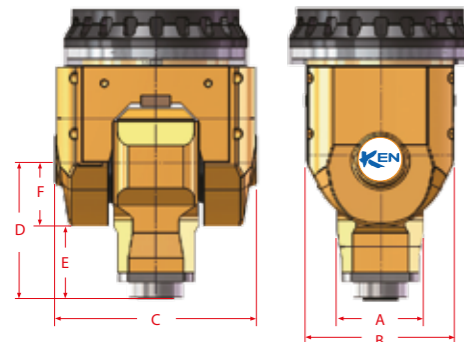
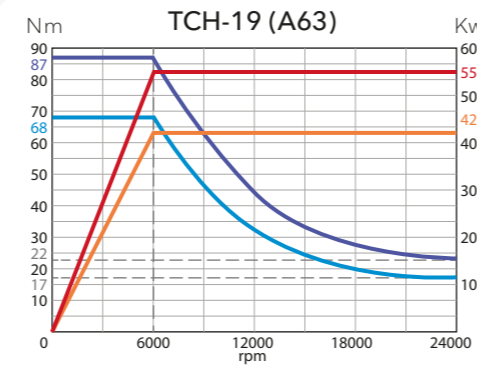
Source by: Siemens laboratory testing

TCH-19

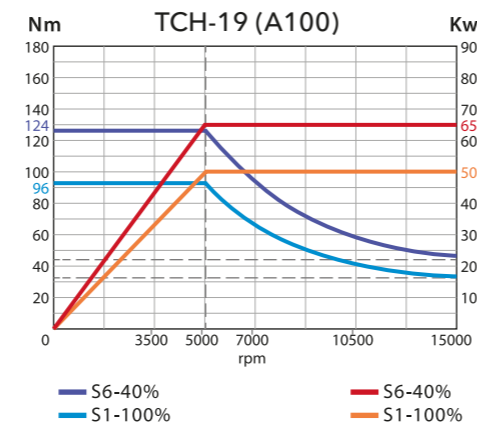
FORK TYPE MILLING HEAD

Modular design for two-axis milling

- Fork type modular design, B & C axis use rigidity roller bearing support achieving excellent rigidity and accuracy.
- B & C axis use Torque motor direct drive with high speed, high-torque, no backlash, no wear out, achieve long lasting accuracy.
- With hydraulic disc brake system with tightly locked rotation axis can satisfy any position milling.
- Spindle type HSK-A63 with max speed 24,000rpm, have more efficiency in machining aluminum material components.



TCH-19		A63	A100
A		235	235
B		400	400
C		565	565
D		373	358
E		198	183
F		175	175

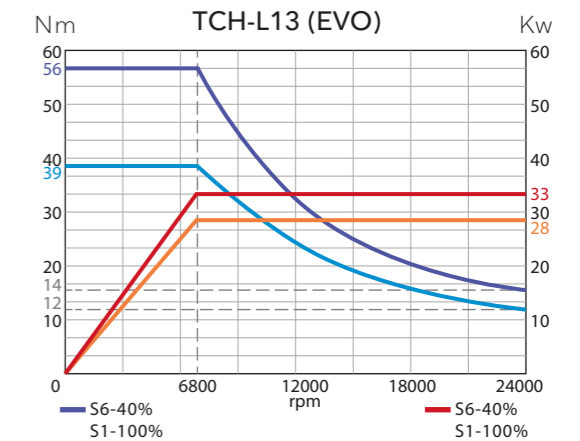
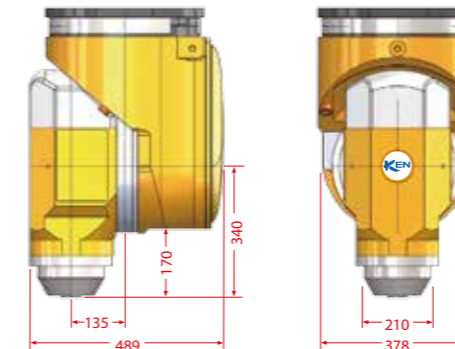


TCH-L13 EVO

SIDE TYPE MILLING HEAD

Small size, Less interference range Suitable for plastic injection mold

- A & C axis use Torque motor direct drive with high-speed, high-torque
- Remove the traditional wear parts, (worm and worm gears, belts...) no backlash no wear and achieve long lasting accuracy.
- Longer spindle extension 170mm, reduce interference range.
- Maximum spindle speed of 24,000 rpm optimizes the use of smaller cutting tools.



MILLING HEAD B&C-AXIS(TORQUE MOTOR DRIVE)	TCH-19 (A63)	TCH-19 (A100)
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Rotation speed : B & C	rpm (360°/ s)	50 / 50	50 / 50
Max. acceleration : B & C	rad / s ²	30 / 30	30 / 30
Max. torque : B & C	Nm	1,100 / 900	1,100 / 900
Clamping torque : B & C	Nm	4,000 / 4,000	4,000 / 4,000
Positioning accuracy: B & C	arc.sec	± 3 / ± 3	± 3 / ± 3
Rotation angle : B & C	deg	± 100° / ± 240°	± 100° / ± 240°

SPINDLE

Spindle Power S1-100% (S6-40%)	kw	42 (55)	50 (65)
Spindle Torque S1-100% (S6-40%)	Nm	67 (87)	96 (124)
Max. Speed	rpm	24,000	15,000
Tool Shank	type	HSK-A63	HSK-A100

MILLING HEAD B&C-AXIS(TORQUE MOTOR DRIVE)	TCH-13 (EVO)
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Rotation speed : B & C	rpm (360°/ s)	50 / 50
Max. acceleration : B & C	rad / s ²	20 / 20
Max. torque : B & C	Nm	312 / 447
Clamping torque : B & C	Nm	2,000 / 2,000
Positioning accuracy: B & C	arc.sec	± 3 / ± 3
Rotation angle : B & C	deg	± 105° / ± 250°

SPINDLE

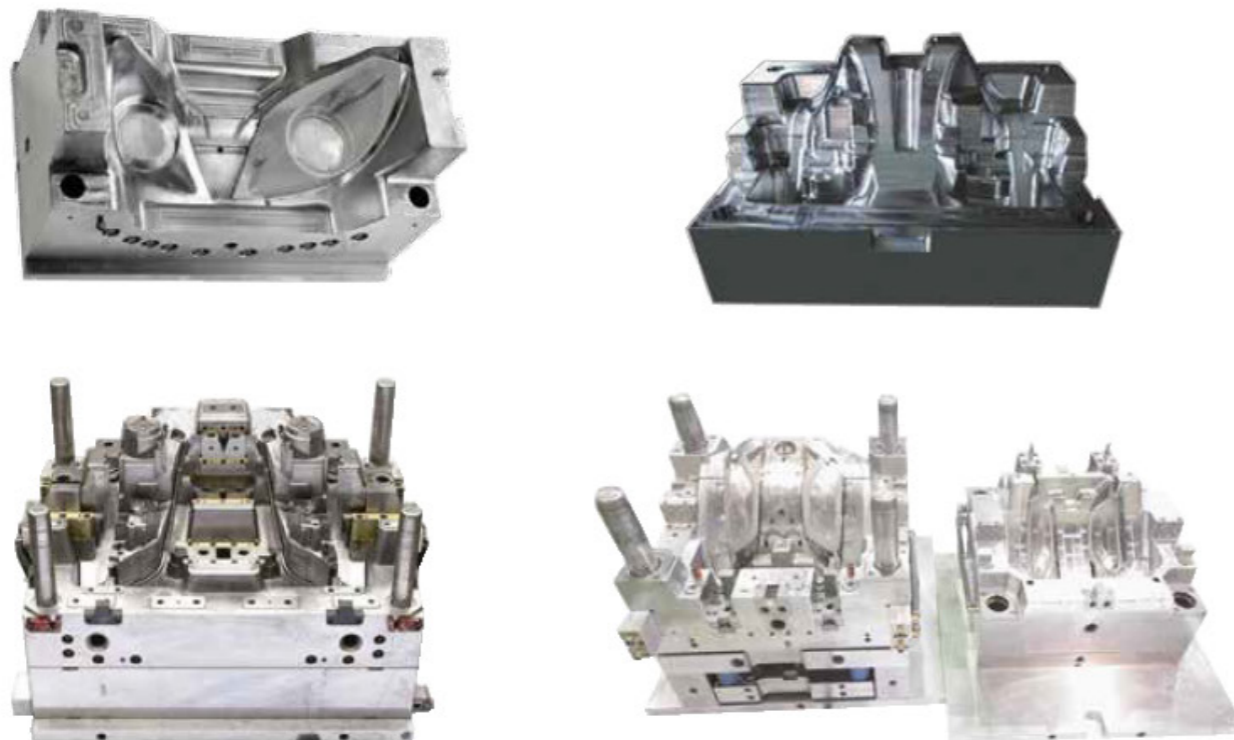
Spindle Power S1-100% (S6-40%)	kw	28 (33)
Spindle Torque S1-100% (S6-40%)	Nm	39 (56)
Max. Speed	rpm	24,000
Tool Shank	type	HSK-A63

Application

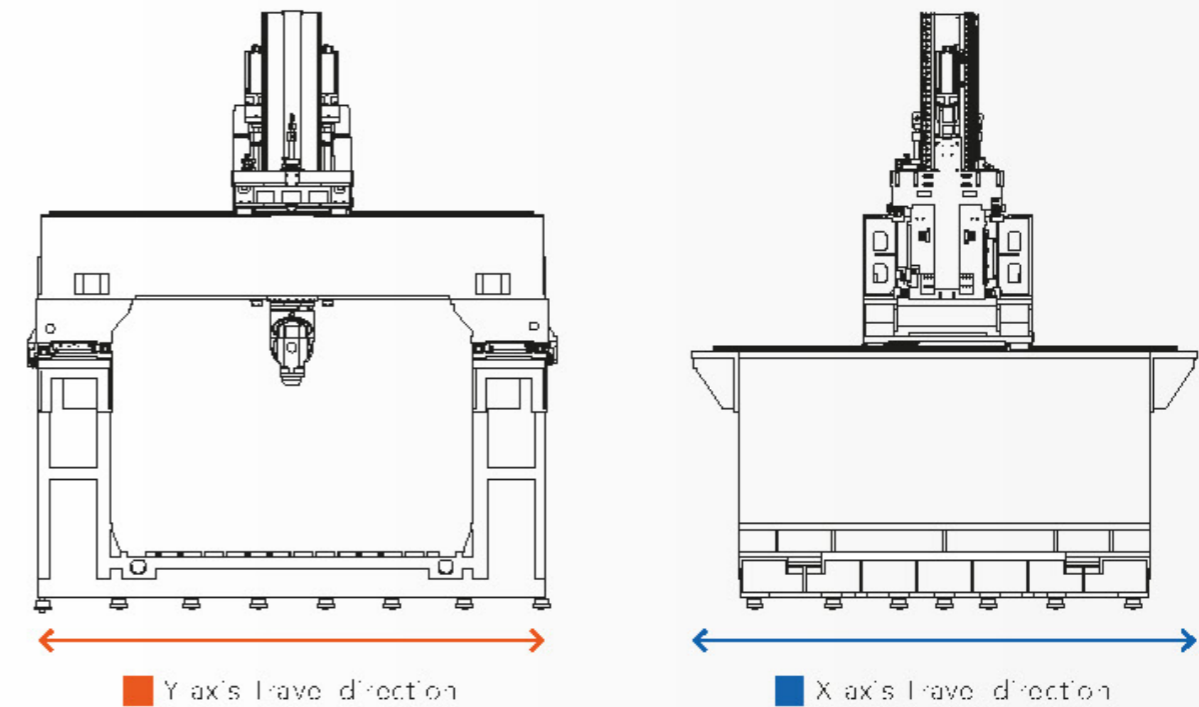
Aircraft (Floor beam, Wing rib structure)



Automotive (Plastic mold, Lamp mold)



Machine specifications



Specifications	Model: Compact B			
	2516	2522	3222	
Travel	Unit			
Y-axis Travel	mm	2500	2500	3200
X-axis Travel	mm	1600	2200	2200
Z-axis Travel	mm	1250	1250	1250
Distance between column	mm	3250	3250	3950
Distance between spindle nose to table surface	mm	250/1500	250/1500	250/1500
Table width	mm	2500	2500	3200
Table length	mm	1600	2200	2200
T-slot size (Width)	mm	22	22	22
Table load	kg/m ²	4000	4000	4000
X/Y/Z-axis rapid feedrate	m/min	50	50	50
X/Y/Z-axis acceleration	m/sec ²	5	5	5

Milling Head type	Unit	TCH-L13(EVO)	TCH-19(A63)	TCH-19(A100)
Tool Shank	Type	HSK-A63		HSK-A100
Tool magazine capacity	pcs	30		30
Max. tool weight	Kgs	8		15
Max. tool length	mm	350		350
Max. tool dimensions	Ømm	60		100

Auto Tool Changer

Standard

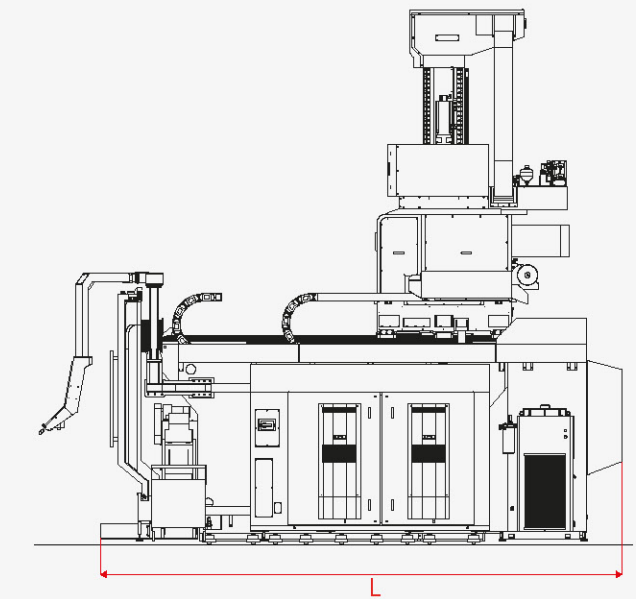
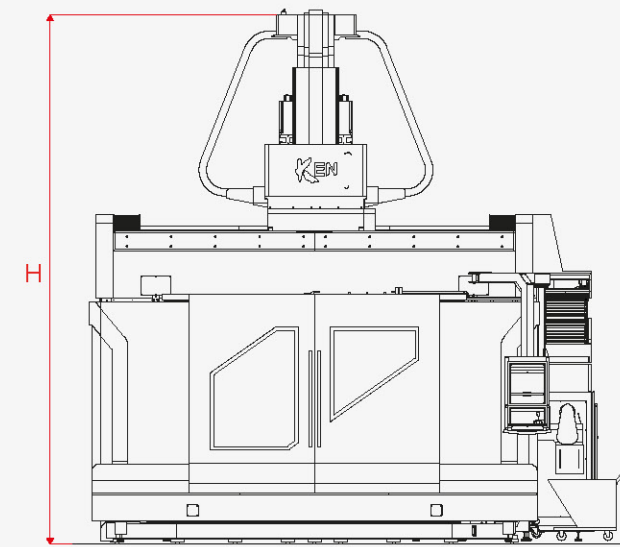
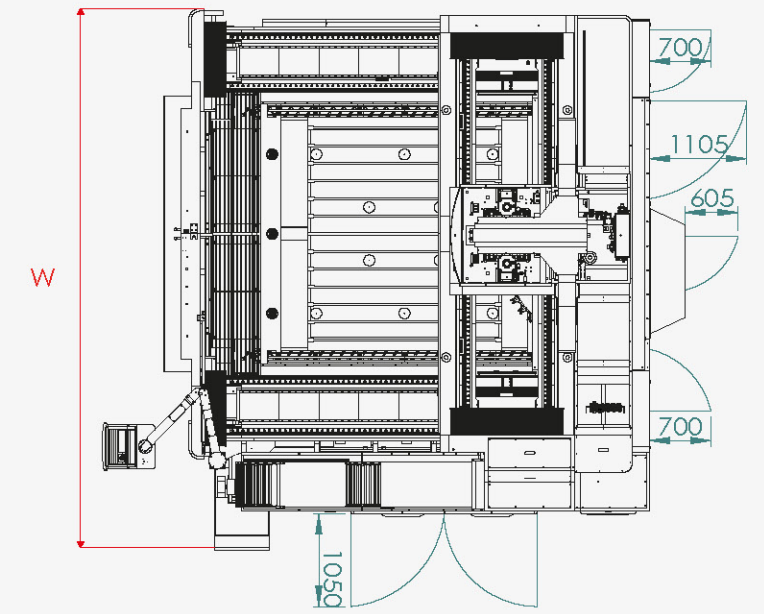
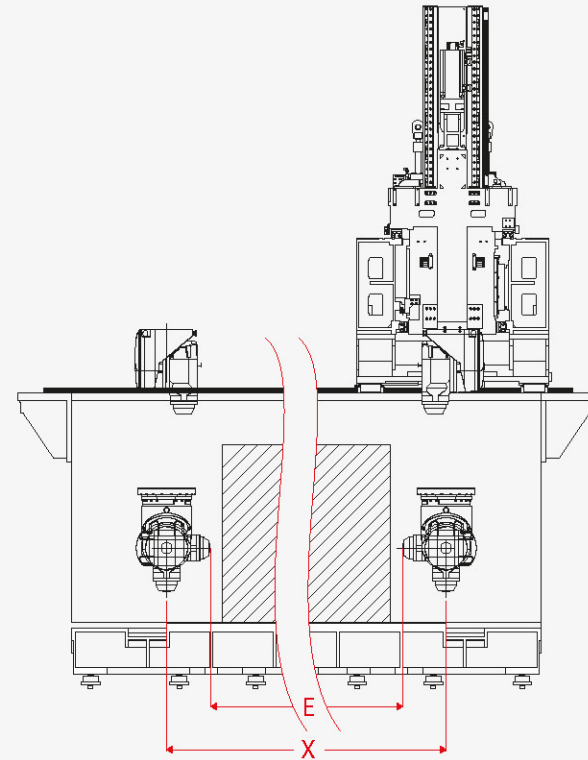
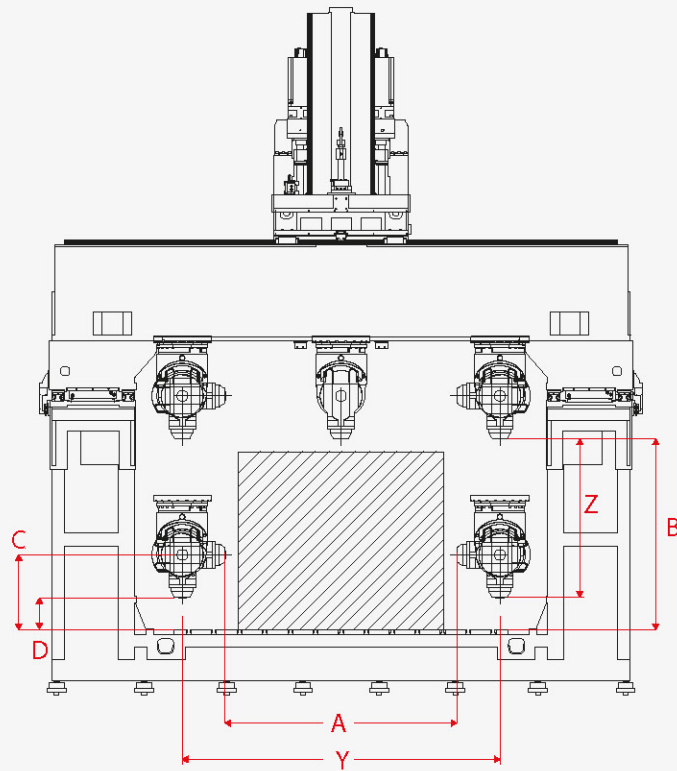
- HEIDENHAIN ITNC-530 controllers. (X, Y, Z, A, C-five axis continuous)
- HEIDENHAIN Handwheel-HR520.
- Europe 2-axis milling head- TCH13 (EVO).
- European system of vertical spindle HSK-A63 24,000rpm.
- HSK A-63 30 tools magazine.
- X/Y axis Linear motor coolant system.
- 12 Roller linear guideways. (4 sets for X/Y/Z axis)
- 4 HEIDENHAIN linear scale. (2 sets for X-axis, 2 sets for Y/Z axis)
- The spindle and milling head coolant system.
- Spindle oil mist lubrication system.
- Cutting oil mist device.
- Front-type chip conveyor containing iron filings cars each 1 style.
- Front and rear working door safety interlock. (each type)
- Waterproof work light.
- Used in all meta international system of units(si) standards.
- Protection devices complete and reliable, work area safety, according to ISO 12100-1&-2 1992.
- Electrical cabinet with air-conditioning system, filtration and ventilation installations and variety of electrical protection.
- Machine standard color.

Option

- TCH-19(A63) Modular 2-axis Milling Head+24,000rpm spindle.
- TCH-19 (A100) Modular 2-axis Milling Head+15,000rpm spindle.
- Siemens-840D CNC controllers.
- Laser tool measuring system.
- Touch probe for work piece measuring.
- Coolant through spindle 20/30/40 bar.
- Transformer.
- Voltage stabilizer.
- GPS(Global Pgm Setting) Hand wheel function.
- Blum form control comparison software.
- Automatic Kinematics 5-axis compensation function.



Working area and Layout



		Model - Compact B			
Regional	Milling heads	2516	2522	3222	
A	Distance between spindle nose to spindle nose (Y-Direction)	TCH-13 (EVO)	1820	1820	2520
		TCH-19 (A63)	1754	1754	2425
		TCH-19 (A100)	1784	1784	2484
B	Z-axis opening height		1500		
C	(Swing axis 90 °) Z-Direction	TCH-13 (EVO)		590	
		TCH-19 (A63)		623	
		TCH-19 (A100)		608	
D	Distance between spindle nose to table surface	TCH-13 (EVO)			
		TCH-19 (A63)		250	
		TCH-19 (A100)			
E	Distance between spindle nose to spindle nose (X-Direction)	TCH-13 (EVO)	920	1520	150
		TCH-19 (A63)	854	1454	1454
		TCH-19 (A100)	884	1484	1484
X	X-axis Travel	1600	2200	2200	
Y	Y-axis Travel	2500	2500	3200	
Z	Z-axis Travel		1250		

Axis	Model		
	Compact B 2516	Compact B 2522	Compact B 3222
L	5300	5900	6120
W	6137	6137	6837
H	5980	5980	5980

Unit: mm

ALL SERIES

JET

GIGANT

LOADER

LINMAXTWIN

TITAN

LINMAX

RHINO

COMPACT

FOCUS 5

KEN
Focus On High Speed & 5-axis

General machining
Aircraft High Torque
Aircraft Engine Casing
Automotive
Aircraft High Speed

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