ALL SERIES

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KEN ICHI MACHINE CO., LTD. - 2019-02

Worldwide Agents

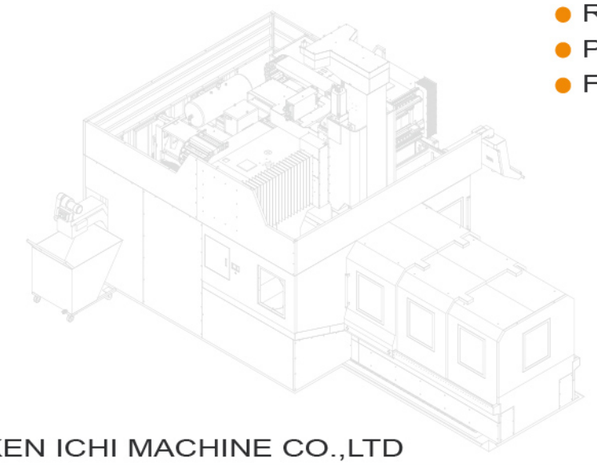
The only professional 5-axis machine center manufacture in Asia

Focus 5

LINEAR MOTOR DRIVE

KEN
Focus On High Speed & 5-axis

- Reliable
- Precise
- Faster



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KEN ICHI MACHINE CO.,LTD

5-Axis Double Column Machine Center

High-Speed Performance

Applications For:
Automotive Plastic Injection Mold Core, Lamp Mold
Aircraft Aluminum Structure, Wing Rib, Floor Beam
Mechanical Component and Electronic Component Mold

- High rigidity one-piece column and crossbeam structure
- X/Y - axis linear motor drive
- Feed rate: 60 m/min
- Direct-drive motor with two-axis milling head

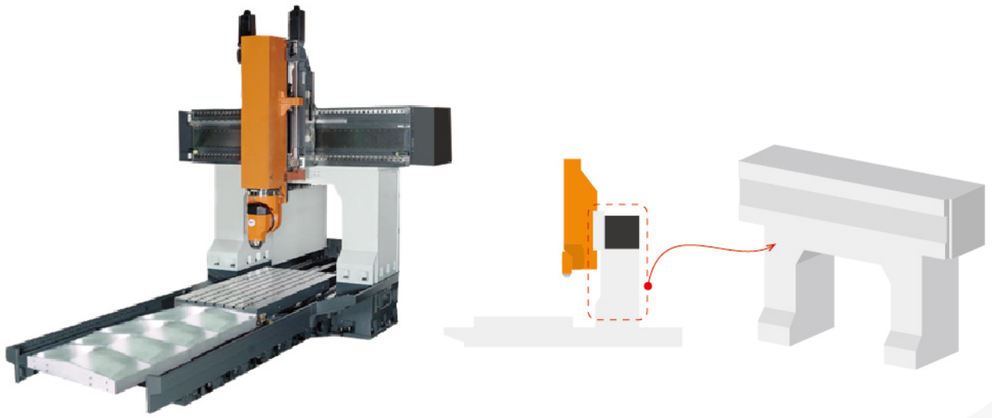
Optimize Structural Design

High-Rigidity Structure

A Solid Bridge

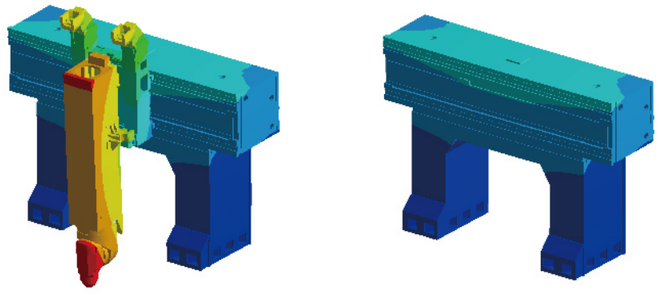
One-piece base and column with high rigidity to ensure the best structural rigidity and stability of high-speed cutting.

Three-axis use high-speed and heavy-duty roller linear guideway. Machine can achieve excellent high-speed cutting dynamic and long-lasting accuracy.



Structural Analysis Software with Numerical Technique FEM

Advanced FEM analysis and design to optimize higher rigidity, response and provide stability of high-speed cutting.



Wide and spacious door

Interference free with a large door.
Easy for loading and unloading.

Closed

Open

Linear Motor Drive

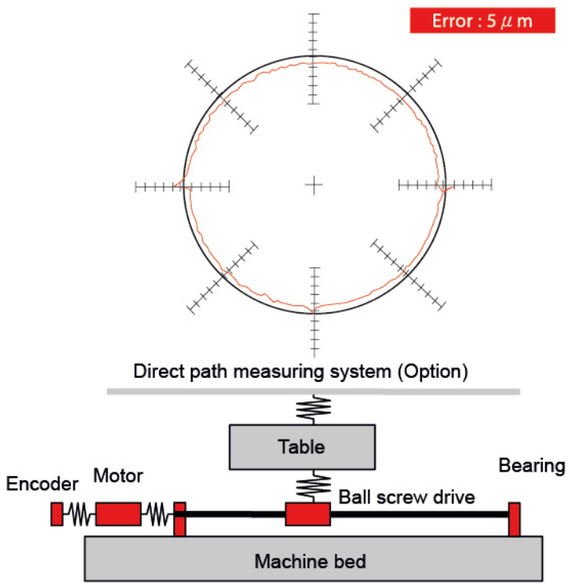
From Germany

The inevitable trend in the future

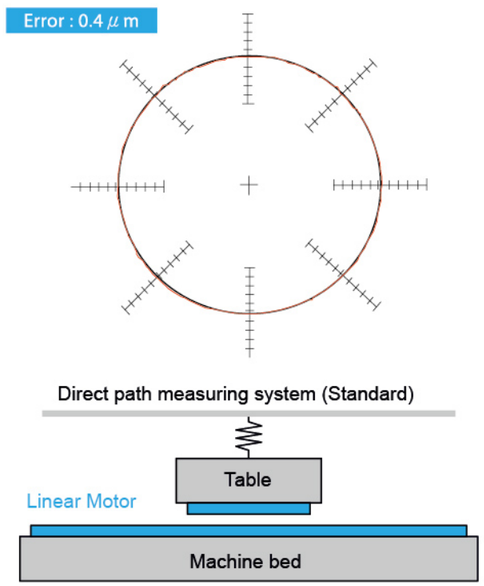
- Backlash free offers high positioning accuracy
- Direct transmission

  Reduced number of ball screw/nut, bearings and couplings
- Free of wear due to friction free drive concept
- Simple structure / long-term accuracy / easy maintenance

Ball Screw VS Linear motor



- Transmission chain length, the error is larger
- The path is less accurate
- Backlash exists



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

Source by: Siemens laboratory testing

Excellent Design For 5-Axis High Speed Machine

X-Axis

X-axis have two high-speed and heavy-duty roller type linear guide ways.

Machine has large span design to provide high rigidity. The base and column by one-piece design can reach high rigidity with Direct Drive linear motor. It can improve the efficiency and stability during milling process and excellent control over gravity.

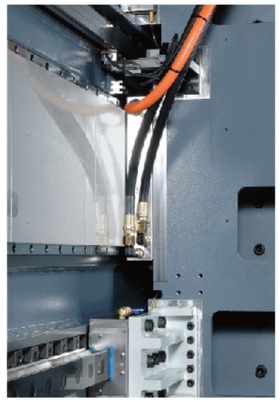
Table for the X-axis for linear motor tech. European direct drive without the belt and coupling to increase the responsiveness of the high-speed movement.

Y-Axis

Y-axis for the saddle to move on the crossbeam. Crossbeam uses roller bearing and linear guideways to ensure high rigidity and support for the saddle to increase rigidity.

Y axis uses linear motor movement without coupling for direct drive driven saddle.

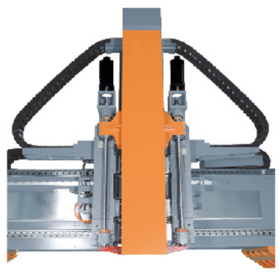
Can produce high-speed response and high-precision machining.



Z-Axis

Z-axis moves up and down the crossbeam. It is equipped with two roller-bearings and linear guideways, each with three sliders to support the crossbeam.

Z-axis is equipped with dual ball screw to achieve high speed response, process requirements and achieve high precision. It has spindle in the center of the 2-axis milling head to prevent uneven stress, thermal deformation and shift phenomenon.

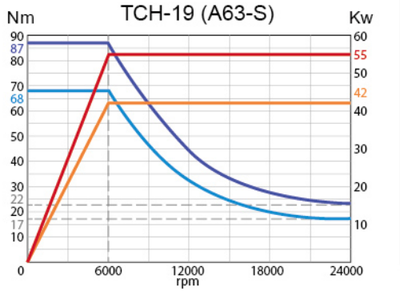


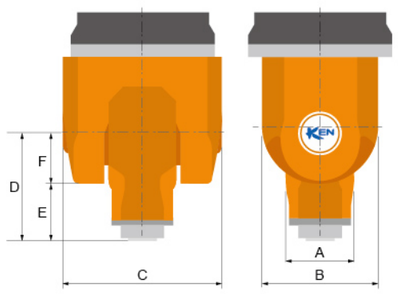
TCH-19

Fork Type Milling Head

Modular Design for Two-Axis Milling

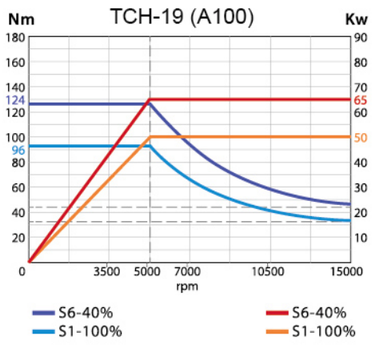
- Fork type modular design. B & C axis use rigid roller-bearing support to achieve excellent rigidity and accuracy.
- B & C axis uses torque motor directly driven with high-speed, high torque, no backlash and no wear out to achieve long lasting accuracy.
- With the hydraulic disc brake system and tightly locked rotational axes, machine can satisfy milling in any position.
- Spindle type HSK-A63 with max speed 24,000 rpm have more efficacy for machining aluminum components.





TCH-19

	A63-S	A100
A	235	235
B	405	405
C	519	519
D	323	358
E	148	185
F	173	173

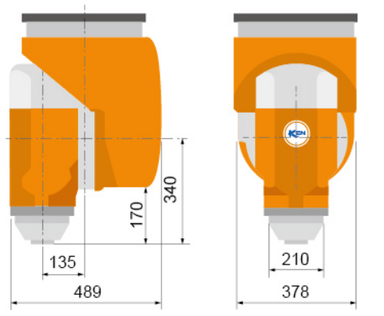


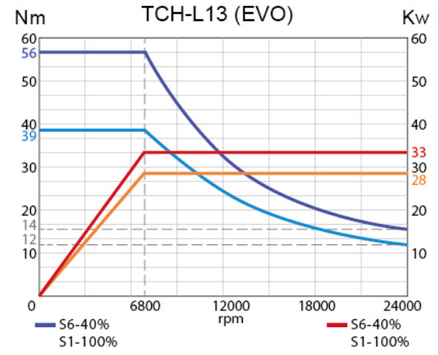
TCH-L13 EVO

Side Type Milling Head

Small Size with less Interference Range Suitable for Plastic Injection Mold

- A & C axis uses torque motor directly driven with high-speed and high-torque
- Removed the traditional parts with potential wear such as belts, worm, worm gears, etc. No backlash and no wear to achieve long lasting accuracy.
- Longer spindle extension of 170mm with reduced interference range.
- Maximum spindle speed of 24,000 rpm which optimizes the use of smaller cutting tools.



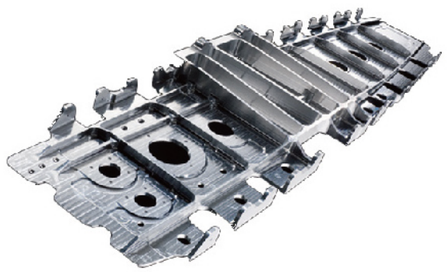


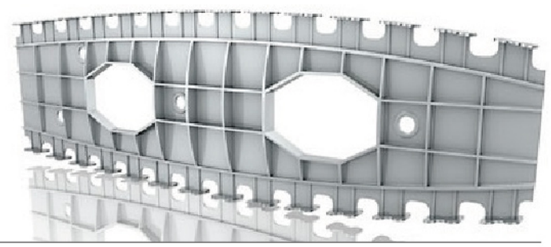
MILLING HEAD B&C-AXIS(TORQUE MOTOR DRIVE)		TCH-19 (A63-S)	TCH-19 (A100)
Rotation speed : B &C	rpm (360º/ s)	50 / 50	50 / 50
Max. acceleration : B &C	rad / s²	30 / 30	30 / 30
Max. torque : B &C	Nm	1,100 / 900	1,100 / 900
Clamping torque : B &C	Nm	4,000 / 4,000	4,000 / 4,000
Positioning accuracy: B &C	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)
Rotation speed : B &C	rpm (360º/ s)	50 / 50
Max. acceleration : B &C	rad / s²	20 / 20
Max. torque : B &C	Nm	312 / 442
Clamping torque : B &C	Nm	1,500 / 1,500
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

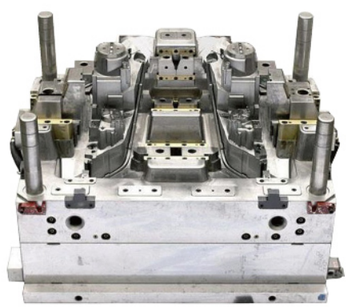
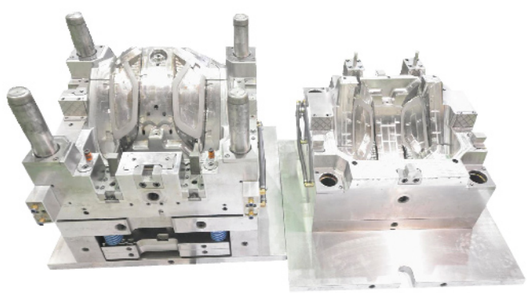
Aircraft (Floor beam, Wing rib structure)



Automotive (Plastic mold, Lamp mold)



Machine Specifications

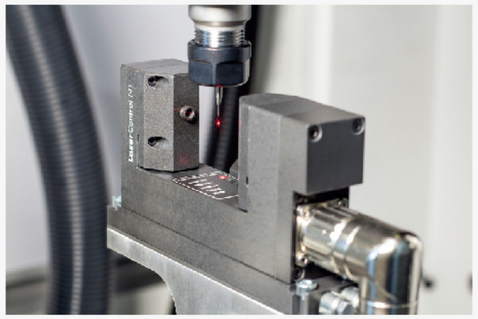
Specifications /Model	Unit	Focus5 - 2022 / 2032 / 2040
Travel		
X-axis travel	mm	2,200 / 3,200 / 4,000
Y-axis travel	mm	2,000
Z-axis travel	mm	1,000
Distance between column	mm	1,650
Table length	mm	2,200 / 3,200 / 4,000
Table width	mm	1,300
T-slot size (Width)	mm	18
Table load	kg	5,000
T-slot spacing	mm	125
Milling head		**TCH-L13(EVO)**
Distance between spindle nose to table surface	mm	-150-850
Rotation speed A/C	rpm(360°/S)	50 / 50
Max. acceleration:A/C	rad/s^2	30 / 30
Max. torque A/C	Nm	312 / 447
Clamping torque:A/C	Nm	2,000 / 2,000
Positioning accuracy: A/C	arc sec	±3 / ±3
Rotation angle:A/C	deg	±105° / ±250°
Spindle		
Tool shank	Type	HSK-A63
Spindle Max.speed	rpm	2,4000
Spindle power S1-100% (S6-40%)	kw	28 (33)
Spindle torque S1-100% (S6-40%)	Nm	39 (56)
Freed rare		
X/Y/Z-axis drive mode	X/Y/Z	Linear motor/ Linear motor / Dual ball screws
X/Y/Z-axis rapid feedrate	m/min	60/60/50
Auto tool changer		
Tool shank		HSK-A63
Tool magazine capacity	pcs	30
Max. tool weight	Kgs	8
Max. tool length	mm	350
Max. tool dimensions	mm	Ø 75

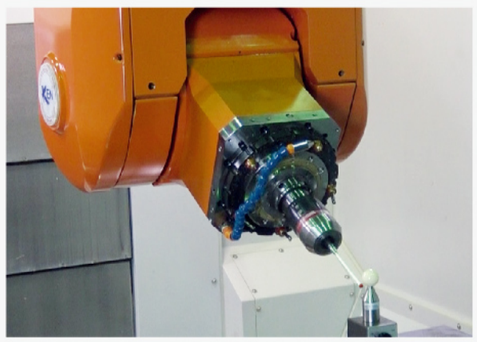
Standard

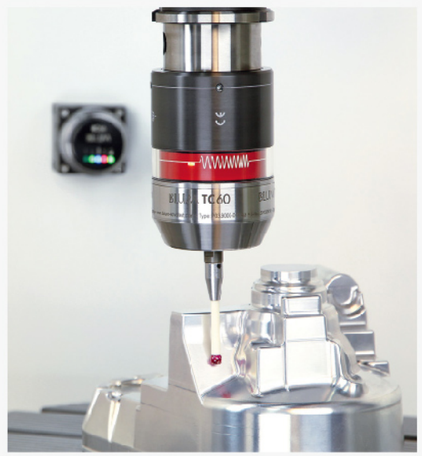
- Heidenhain TNC-640 controllers
  (X, Y, Z, A, C - five-axis continuous)
- Heidenhain handwheel – HR520
- European 2-axis milling head TCH-L13 (Evo)
- European spindle HSK A63 with 24,000 rpm
- HSK A63 32 tools magazine
- Z-axis by the servo motor dual ball screw drive
- 6 Roller linear guideways (X/Y/Z axis each 2)
- 3 Heidenhain linear scale (X/Y/Z axis each1)
- Electrical cabinet temperature control device
- X/Y linear motor - SPINDLE - D.D. motor cooler
- Cutting oil-mist device
- Spiral-type chip conveyor and rear-type chip
  Conveyor containing iron filing cars with each 1 style
- Front and rear door with safety interlock system (each type)
- Waterproof work light
- All measurement of machine parts is adopted by
  international system of unit (SI) standard
- Complete workspace with security
  Following ISO 12100-1 & -2 1992
- Electrical cabinet with a variety of electrical protection, filtration, ventilation installations and air-conditioning systems
- Standard color

Option

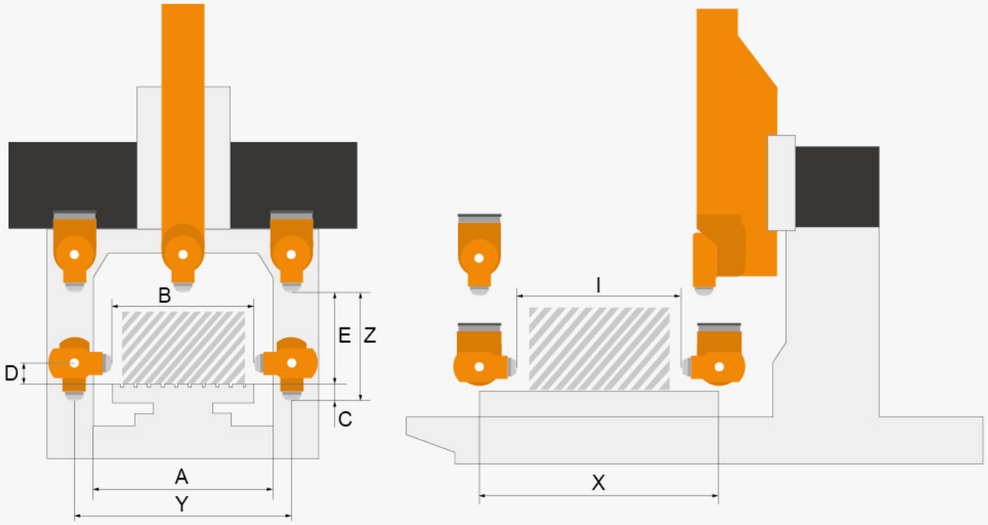
- TCH-19(A63) modular 2-axis milling head +24,000 rpm spindle
  TCH-19(A100) modular 2-axis milling head +15,000 rpm spindle
- Siemens-840D CNC controllers
- ATC system magazine capacity
  40 tools
  60 tools
- Blum laser tool measuring system
- Blum touch probe for workpiece measurement
- GPS (Global Program Settings) hand wheel function
  for moving direction by normal vector.
- Automatic kinematics compensation system
- Coolant through spindle (CTS)
  20 / 30 / 40 Bar
- Transformer
- Voltage stabilizer

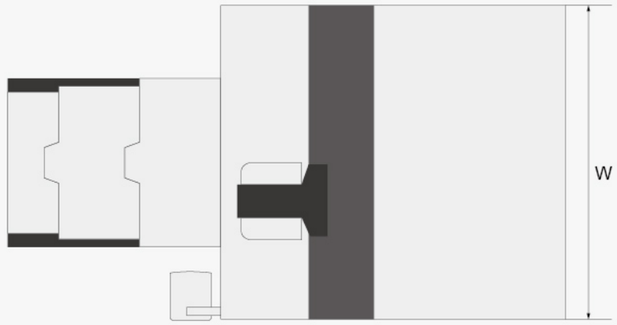






Working Area and Layout





Regional (mm)		Milling Head	Focus5		
	Model		2022	2032	2040
A	Distance between column			1,650	
B	Distance between spindle nose to spindle nose	TCH-L13 (EVO)		1,320	
		TCH-19 (A63-S)		1,354	
		TCH-19 (A100)		1,284	
C	Distance between spindle nose to spindle surface	TCH-L13 (EVO)		-150	
		TCH-19 (A63-S)		-130	
		TCH-19 (A100)		-165	
D	Swing axis 90⁰ spindle nose to table surface	TCH-L13 (EVO)		190	
		TCH-19 (A63-S)		193	
		TCH-19 (A100)		198	
E	Z-axis opening height	TCH-L13 (EVO)		850	
		TCH-19 (A63-S)		870	
		TCH-19 (A100)		835	
X	X - axis travel		2,200	3,200	4,000
Y	Y - axis travel			2,000	
Z	Z - axis travel			1,000	
I	Swing axis90°	TCH-L13 (EVO)	1,520	2,520	3,320
		TCH-19 (A63-S)	1,554	2,554	3,354
		TCH-19 (A100)	1,484	2,484	3,284

Unit (mm)	Focus5		
Model	2022	2032	2040
L (Length)	6,800	9,400	11,000
W (Width)		3,837	
H (Height)		4,710	