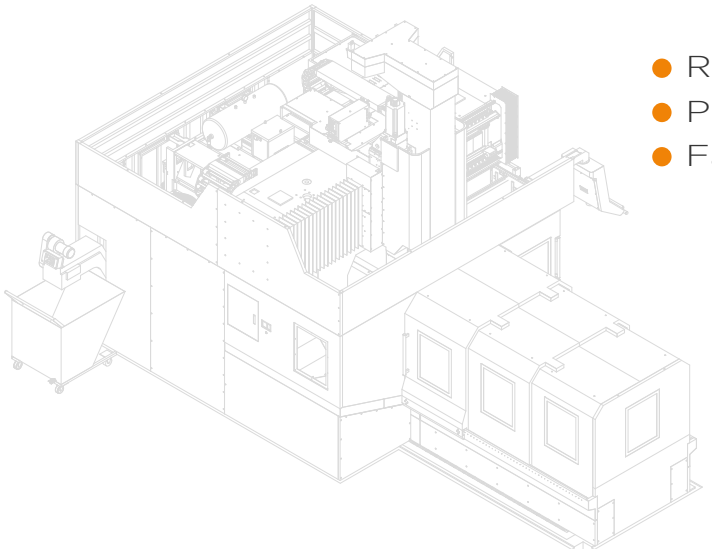
Focus5

LINEAR MOTOR SERIES

KEN

Focus 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 componrnt mold.

- **Linear motor drives**

  Reliable - Long Life expectancy

- **Rapid feedrate: 60m/min**

  Fast and accurate the best performance for our machine tools

- **Direct-Drive motor two-axis milling head**

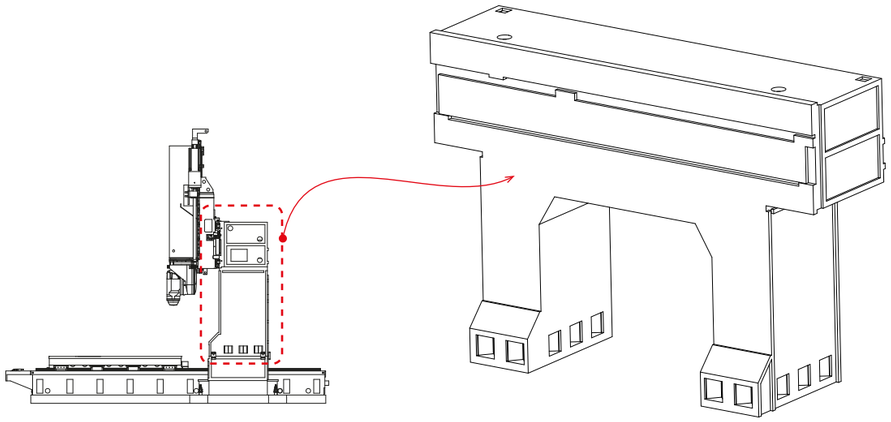
  Direct Drive tecnology for superior surface quality and highest dynamic.

OPTIMIZE STRUCTURAL DESIGN

HIGH-RIGIDITY structure

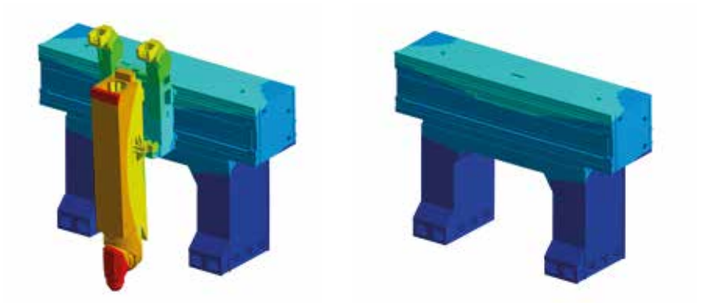
– A Solid Bridge

one-piece base and column
to show the best structural stiffness.



– 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 OPENING DOOR

Interference free by a large opening door.
It will be easy for loading and unloading.

Closed

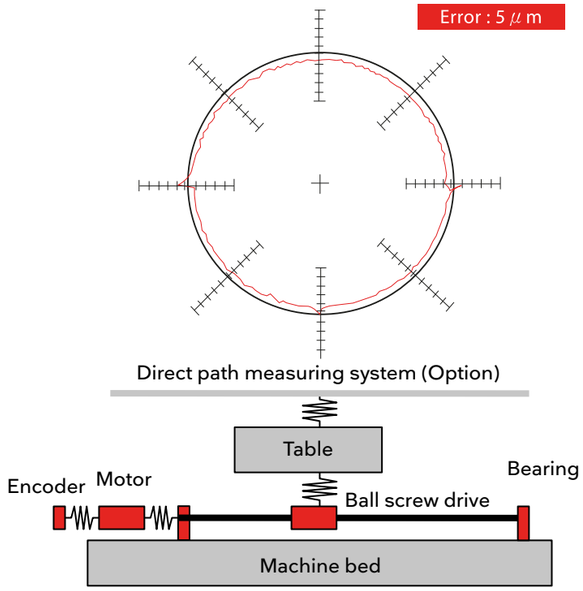
Open

LINEAR MOTOR DRIVE

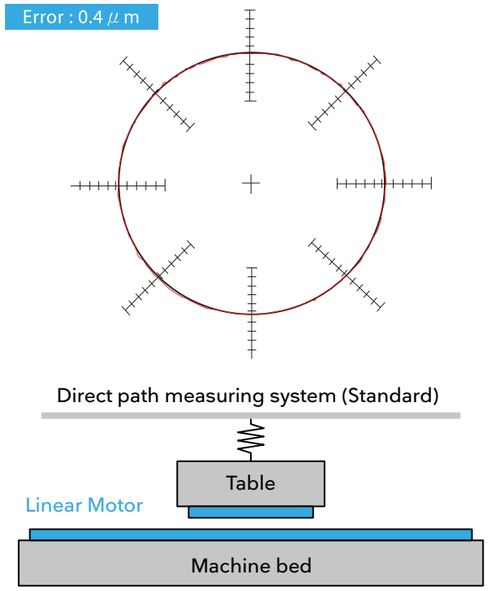
The inevitable trend in the future

- 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.

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

Excellent Design For 5-axis High Speed Machine

X-Axis

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

With large span design to provides high rigidity , The base and column by one piece design can reach high rigidity,By linear motor directly driven, can improve the efficiency and stability during the milling ,and excellent gravity control.

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

Y-Axis

Y-axis from the saddle to move on to the crossbeam, crossbeam use roller bearing and linear guideways, high rigidity and carriage support saddle to increase rigidity.

Y axis use linear motor movement without coupling, direct drive driven saddle run.

Can produce a high-speed response, high-precision machining efficacy.

Z-Axis

Z-axis move up and down from the crossbeam, equipped with two roller bearing and linear guideways, each have three slider supported in the crossbeam.

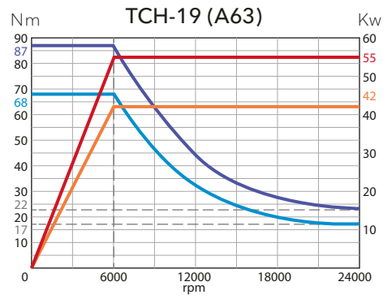
Z-axis equipped with dual ball screw, to achieve high speed response and processing requirements and achieve high-precision, spindle in the center of the 2 axis milling head, to prevent uneven stress and thermal deformation and shift phenomenon.

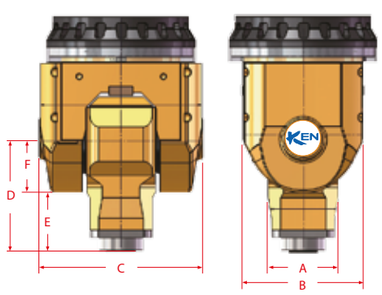
TCH-19

FORK TYPE MILLING HEAD

Modular design for two-axis milling

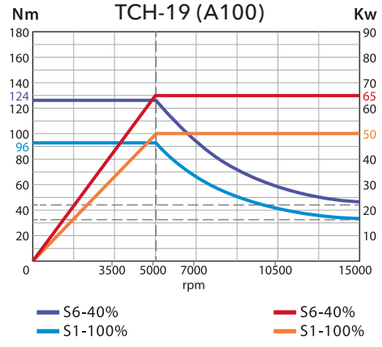
- Fork type modular design, B & C axis use rigidity roller bearing support achieving excellent rigidity and accuracy.
- B & C axis use Torque motor direct drive with high speed, high-torque, no backlash, no wear out , achieve long lasting accuracy.
- With hydraulic disc brake system with tightly locked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





TCH-19

	A63	A100
A	235	235
B	400	400
C	565	565
D	323	• 358
E	148	• 183
F	175	175



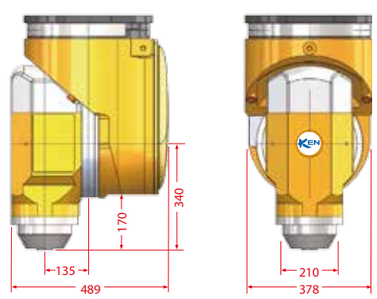
MILLING HEAD B&C-AXIS(TORQUE MOTOR DRIVE)		TCH-19 (A63)	TCH-19 (A100)
Rotation speed : B &C	rpm (360º/ s)	50 / 50	50 / 50
Max. acceleration : B &C	rad / s²	30 / 30	30 / 30
Max. torque : B &C	Nm	1,100 / 900	1,100 / 900
Clamping torque : B &C	Nm	4,000 / 4,000	4,000 / 4,000
Positioning accuracy: B &C	arc.sec	± 3 / ± 3	± 3 / ± 3
Rotation angle : B &C	deg	± 100º/ ± 240°	± 100º/ ± 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

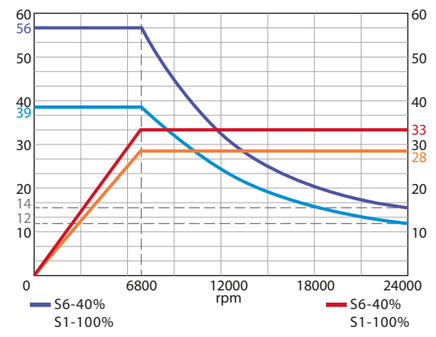
TCH-L13 EVO

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.

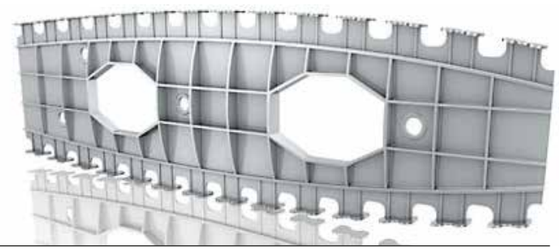




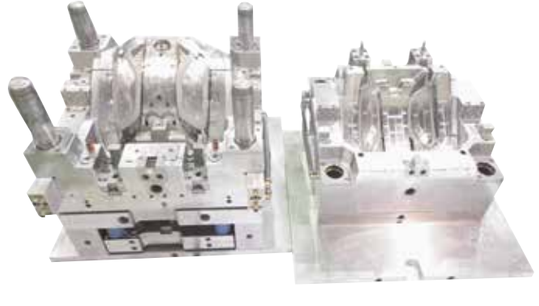
MILLING HEAD B&C-AXIS(TORQUE MOTOR DRIVE)		TCH-13 (EVO)
Rotation speed : B &C	rpm (360º/ s)	50 / 50
Max. acceleration : B &C	rad / s²	20 / 20
Max. torque : B &C	Nm	312 / 447
Clamping torque : B &C	Nm	2,000 / 2,000
Positioning accuracy: B &C	arc.sec	± 3 / ± 3
Rotation angle : B &C	deg	± 105º/ ± 250°
SPINDLE		
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	4,000
T-slot spacing	mm	125
Milling head		**TCH-L13(EVO)**
Application industry		**Automotive**
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)
Freedrare		
X/Y/Z-axis drive mode	X/Y/Z	Linear motor/ Linear motor / dual ball screws
X/Y/Z-axis rapid feedrate	m/min	60/60/48
XX/Y/Z-axis acceleration	m/sec2	5
Auto tool changer		
Tool shank		HSK-A63
Tool magazine capacity	pcs	32
Max. tool weightt	Kgs	8
Max. tool length	mm	300
Max. tool dimensions	mm	Ø 80

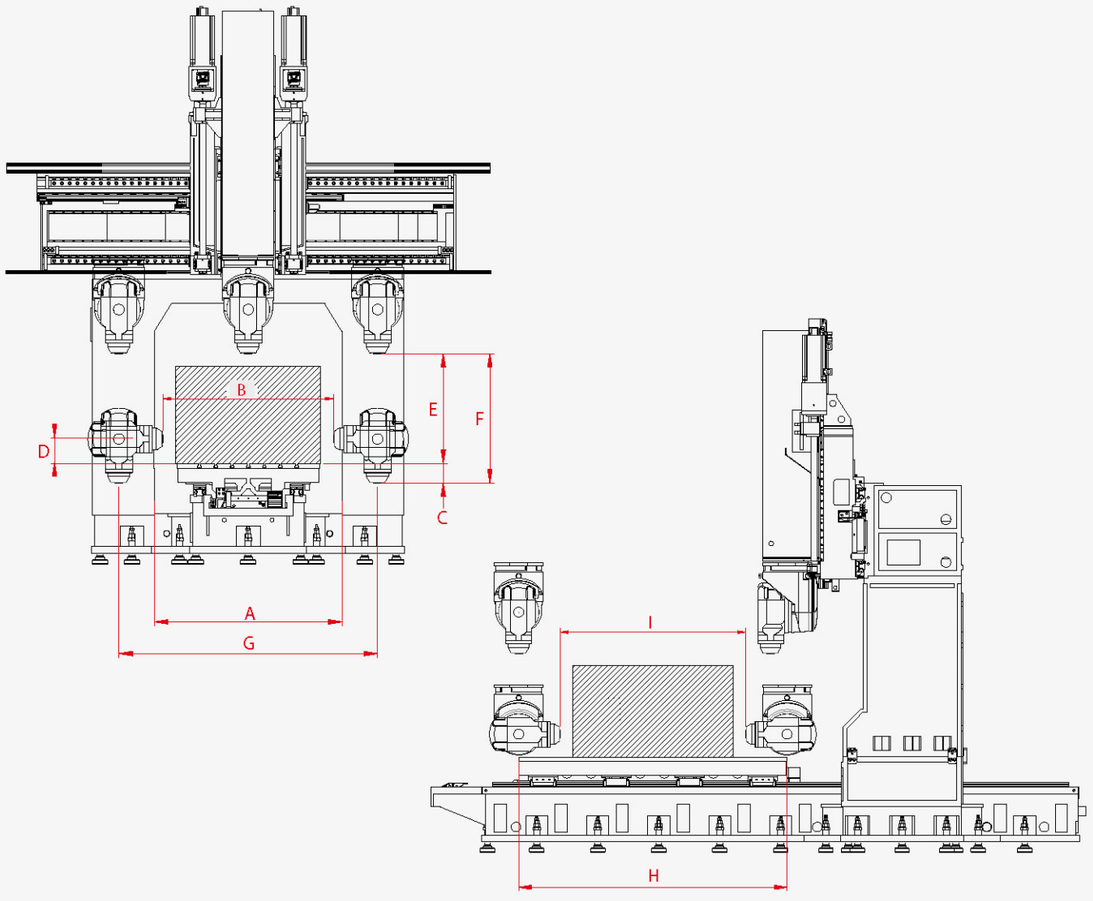
Standard

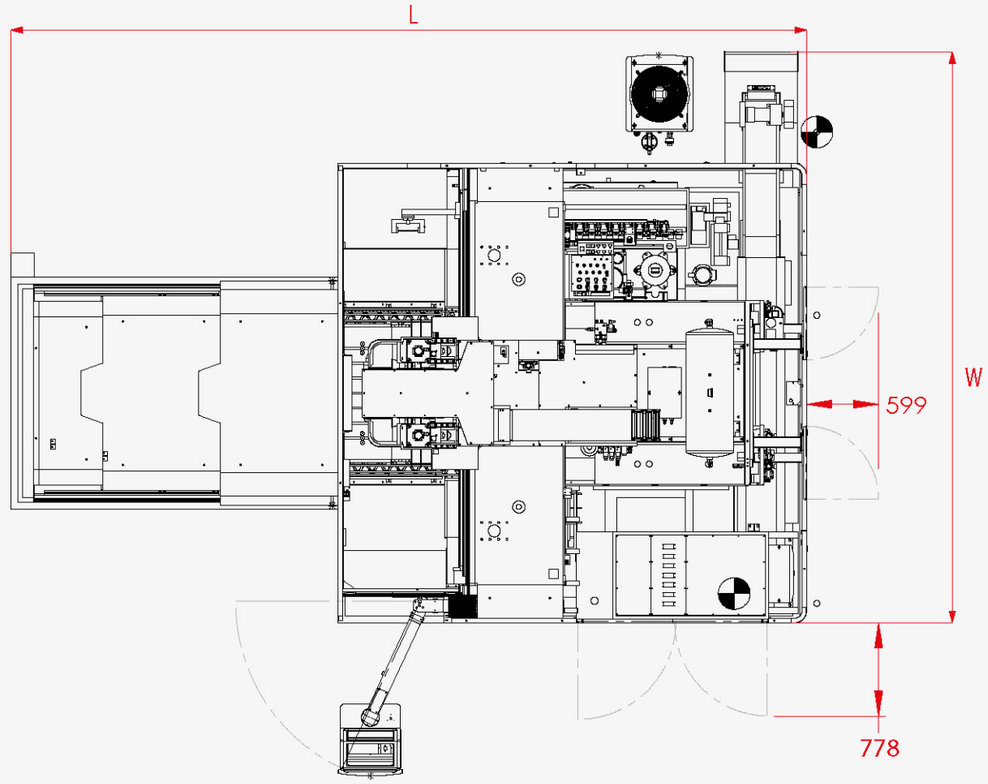
- Heidenhain ITNC-530 controllers
  (X, Y, Z, A, C - five-axis continuous).
- Heidenhain handwheel – HR520.
- European 2-axis milling head TCH-L13 (evo) european spindle
  HSK A63 24000rpm.
- HSK A63 32 tools magazine.
- Z-axis by the servo motor dual ball screw drive.
- 6 Roller linear guideways (X/Y/Z 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 filings cars each 1 style.
- Front and rear working door safety interlock (each type).
- Waterproof work said light.
- Machine all zero, parts and a variety of instrumentation unit of
  measurement used in all meta international system of units (si)
  standards.
- Guards complete workspace security concept, according to iso
  12100-1 & -2 1992.
- Electrical cabinet with a variety of electrical protection, filtration
  and ventilation installations and air-conditioning systems.
- Machine standard color.

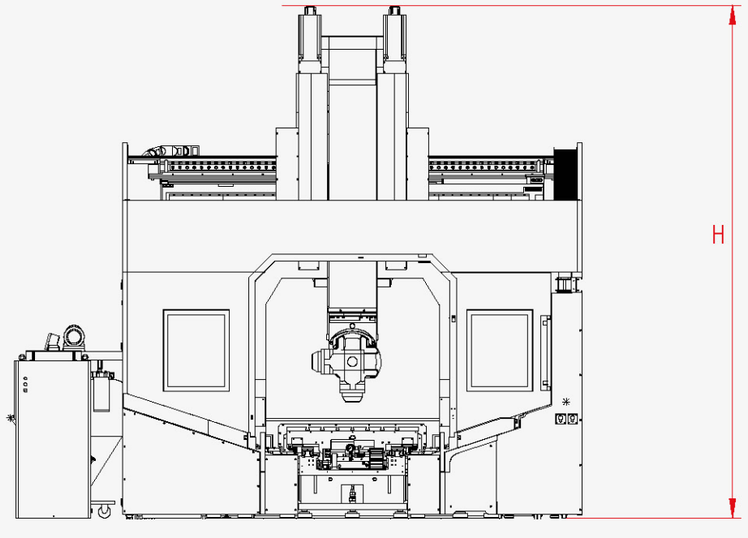
Option accessories

- Siemens-840D CNC controllers
- Blum laser tool measuring system
- Blum touch probe for workpiece measuring
- GPS (Global Pgm 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			1650	
B	Distance Between Spindle nose to spindle nose	TCII-L13 (EVO)		1320	
		TCII-19 (A63)		1254	
		TCII-19 (A100)		1284	
C	Distance Between Spindle nose to spindle surface	TCII-L13 (EVO)		-150	
		TCII-19 (A63)		-180	
		TCII-19 (A100)		-165	
D	Swing axis 90° spindle nose to table surface	TCII-L13 (EVO)		190	
		TCII-19 (A63)		193	
		TCII-19 (A100)		193	
E	Z-Axis opening height	TCII-L13 (EVO)		850	
		TCII-19 (A63)		820	
		TCII-19 (A100)		835	
F	Z - Axis Travel			1,000	
G	Y - Axis Travel			2,000	
H	X - Axis Travel		2,200	3,200	4,000
I	Swing axis90°	TCII-L13 (EVO)	1,520	2,520	3,320
		TCII-19 (A63)	1,454	2,454	3,254
		TCII-19 (A100)	1,484	2,484	3,284

Unit (mm)	Focus5		
Model	2022	2032	2040
L(Length)	6,860	7,860	8,660
W(Width)		4,948	
H(High)		4,739	

ALL SERIES

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