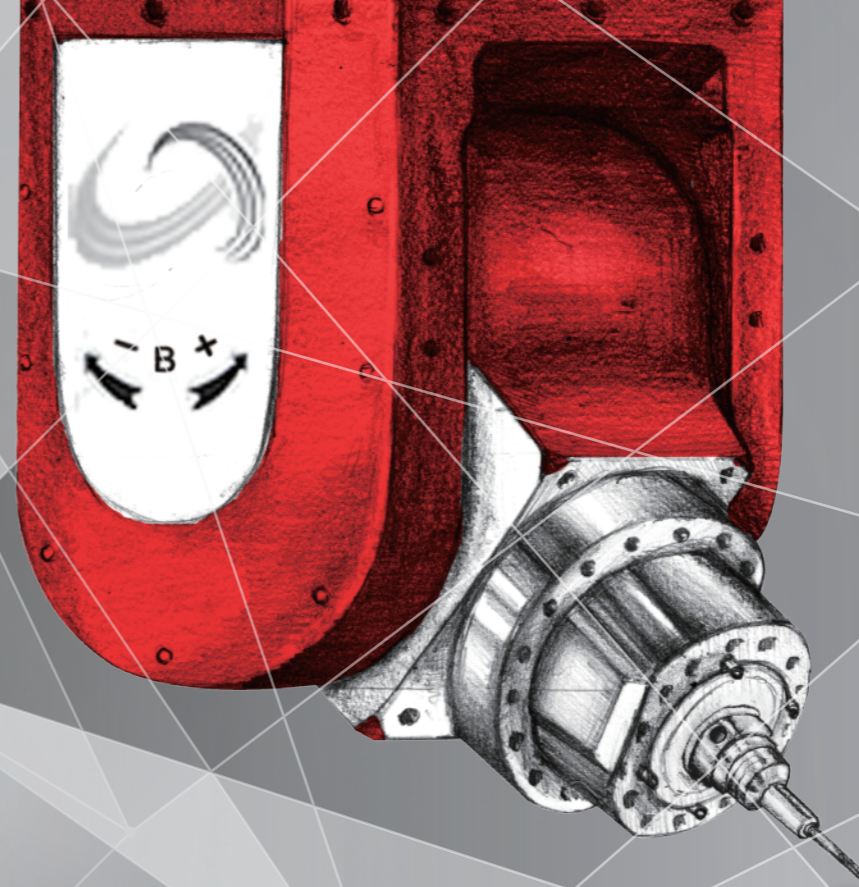


SOLUTION OF WORLDWIDE SALES NETWORK



UNIKA Series

Moving Gantry Type 5-axis Machining Center



Twinhorn

CHI-FA MACHINERY MANUFACTURER CO., LTD.

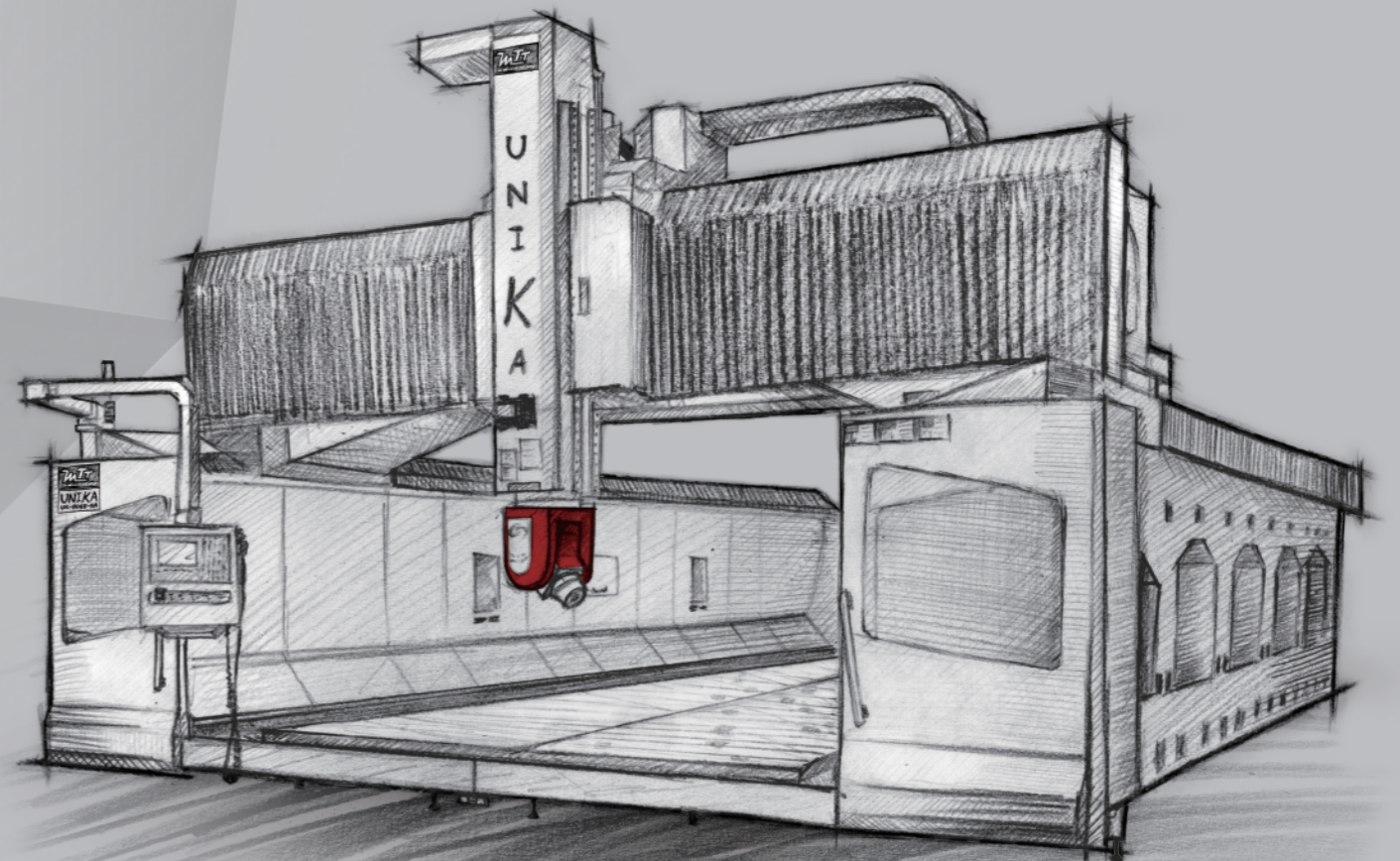
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Widely used in various fields

- Aerospace, structural components, high speed and high torque machining
- Aerospace molds, fixture, jigs
- Composite material (CFRP) machining
- Aluminum alloy structural parts, high speed machining with efficient material removal rate
- Automotive stamping die, plastic injection mold
- Shipbuilding Industry
- Green energy industry

UNIKA Series

Moving Gantry Type 5-axis Machining Center



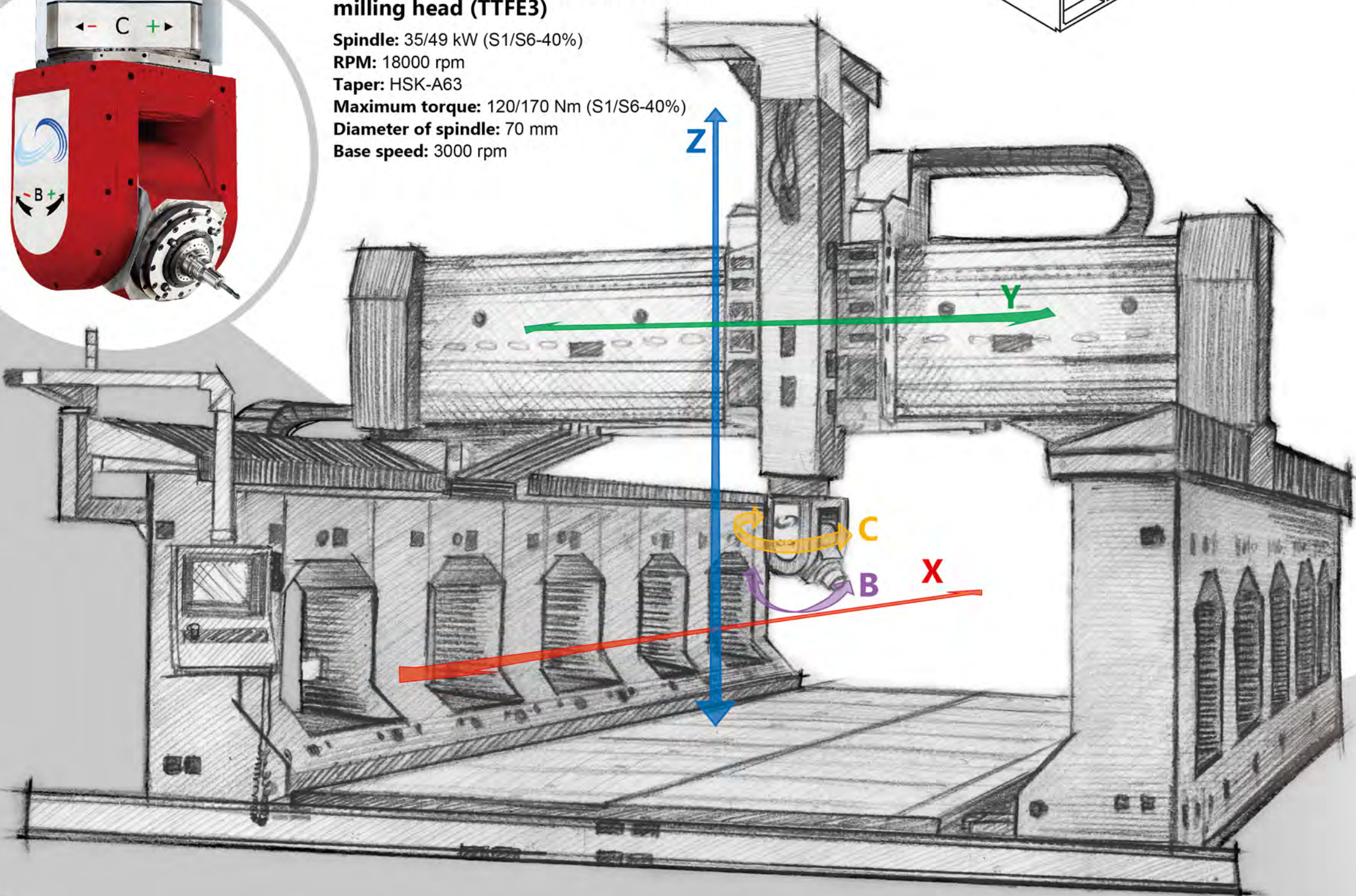
UK-8045-5A

UNIKA Series

- ▶ High rigidity and high dynamic strength structure design provides the essential stability for high acceleration.
- ▶ Large span of linear guide way paired with multiple sliding blocks ensures great strength and steady support over entire travel.
- ▶ Smooth and accurate linear motion reduces friction and enhances energy saving.

5-axis simultaneous movement control milling head (TTFE3)

Spindle: 35/49 kW (S1/S6-40%)
RPM: 18000 rpm
Taper: HSK-A63
Maximum torque: 120/170 Nm (S1/S6-40%)
Diameter of spindle: 70 mm
Base speed: 3000 rpm



Structural Features Special design

Strengthened round-tube cross-beam: By spreading out the stress evenly, it achieves excellent vibration suppression and exceptional rigidity while reducing the thermal deformation and dynamic loading.



High rigidity linear guide way

Rigid, accurate and smooth running guide ways ensure great static and dynamic loading capacity.



Large sliding block

Enlarged sliding blocks guarantee excellent linear accuracy and durable service life.

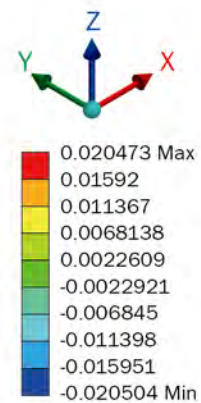


Dual servo motor for each power package

- Rack and Pinion transmission is adopted when X-axis travel exceeds 5000 mm or when Y-axis travel exceeds 3500 mm.
- The X-axis and Y-axis are driven by 4 and 2 servo motors respectively.
- Electrically pre-loaded drive train eliminates backlash.
- Rack and pinion transmission paired with specialized cleaning and lubricating system.

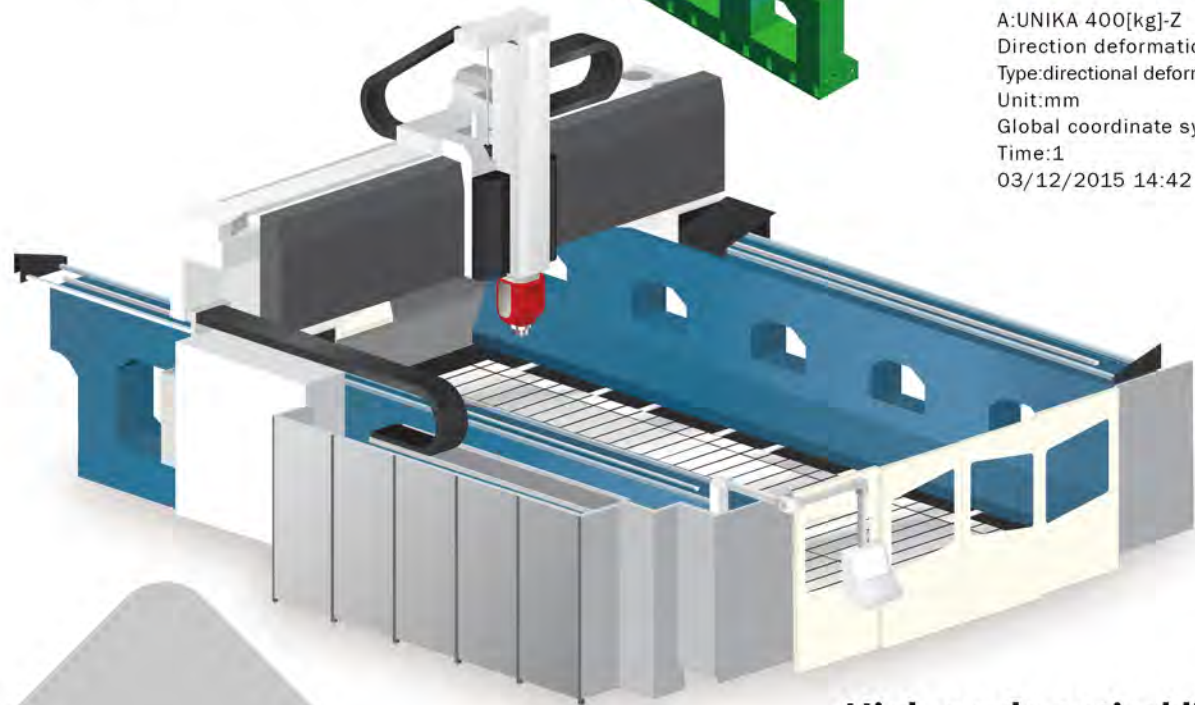


FEA (Finite Element Analysis) and 3D model



0 2.5e+003 5e+003 (mm)
1.25e+003 3.75e+003

A:UNIKA 400[kg]-Z
Direction deformation X
Type:directional deformation(X axis)
Unit:mm
Global coordinate system
Time:1
03/12/2015 14:42



High grade optical linear encoder for X, Y, Z, B, C axes.

APPLICATION SAMPLE PARTS



5-axis Machining Video of TTFE3



A wide range of milling heads all equipped with CTS



5-axis simultaneous movement control milling head (TTFE3)

Rigid, compact, agile and accurate design to ensure machining speed and efficiency.

C-axis travel	± 200°	450/700 Nm
B-axis travel	+120°~-95°	450/630 Nm
Resolution of B/C	0.001°(cont.)	
Spindle type	18000 rpm Built-in HSK-A63	
Base speed	3000 rpm	
Spindle power (S1/S6-40%)	35/49 kW (380V)	
Spindle torque (S1/S6-40%)	120/170 Nm	



4-axis simultaneous movement control 5-axis milling head (TTFG1)

Sturdy, accurate, efficient adaptable design.

C-axis travel	± 200°	1470/3670 Nm
B-axis travel	±95°	1470/3670 Nm
Resolution of B/C	0.001°(index), 0.001°(cont.)	
Spindle type	4000 rpm BT-50(DIN-50) Gear-driven	
Spindle power (S1)	34 kW (380 V)	
Spindle torque (S1/S6-40%)	860/1100 Nm	



Universal milling head (TT2i)

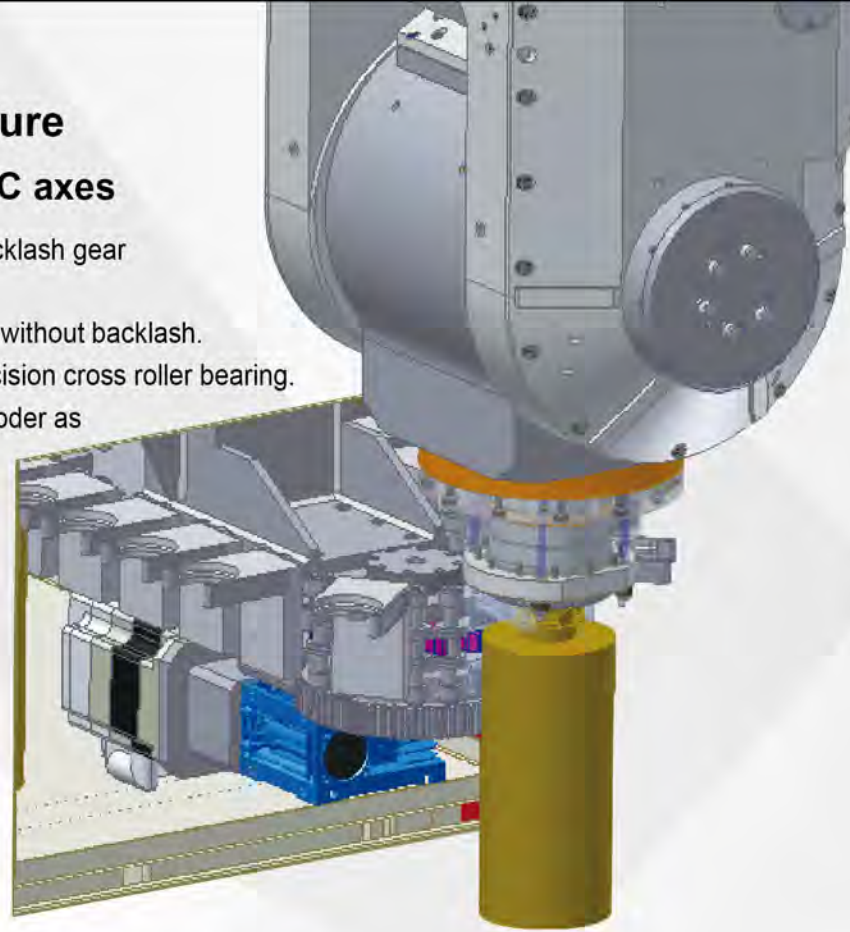
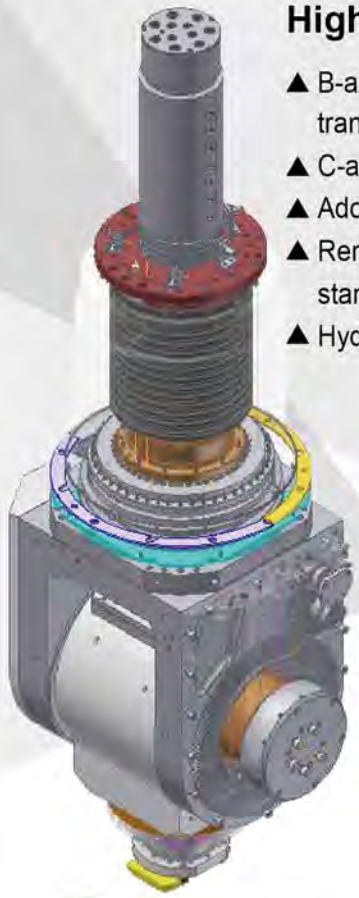
Simple, accurate and adaptable universal head.

B-axis	360°	
C-axis	±185°, 1200/1700 Nm	
B-axis resolution	2.5°(index), opt.0.001°(index)	
C-axis resolution	0.001°(cont.)	
Spindle type	5000 rpm BT-50(DIN-50) Gear-driven	
Spindle power (S1)	37 kW (380 V)	
Spindle torque (S1/S6-40%)	500/700 Nm(S1/S6-40%)	

Five axes head + C-axis structure

High Performance B/C axes

- ▲ B-axis is driven by a zero-backlash gear transmission.
- ▲ C-axis is driven by DD motor without backlash.
- ▲ Adopts high rigidity, high precision cross roller bearing.
- ▲ Renishaw high precision encoder as standard equipment.
- ▲ Hydraulic clamping system.



servo indexing tool magazine

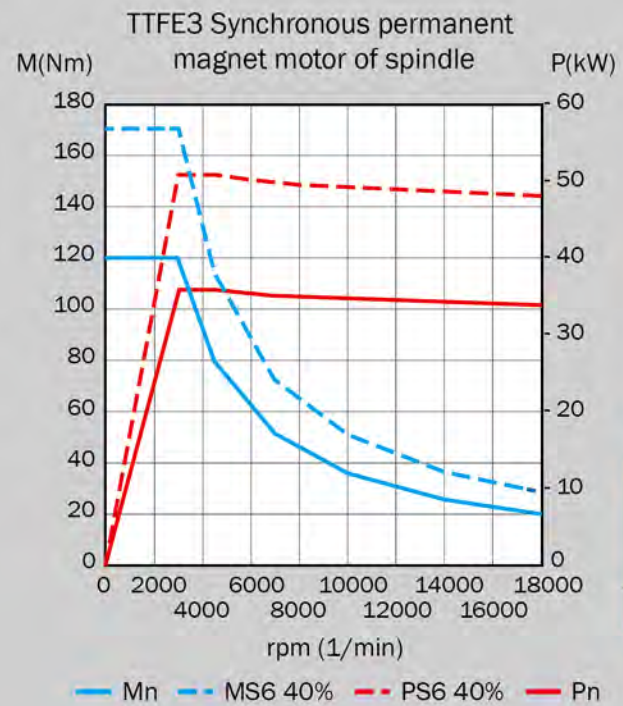
UNIKA Dimension drawing

	UK-2020-5A	UK-3020-5A	UK-4020-5A	UK-3025-5A	UK-4025-5A	UK-(5025~12025)-5A
A	2000	3000	4000	3000	4000	5000 +(per 1M)*
B/C	2000(Vertical) / 1295(Horizontal)			2500(Vertical) / 1795(Horizontal)		
D	800			1000 (Opt. 1200)		
E	2800			3300		
F1~F2	120 ~ 920			120 ~ 1120		
G1~G2	473 ~ 1273			473 ~ 1473		

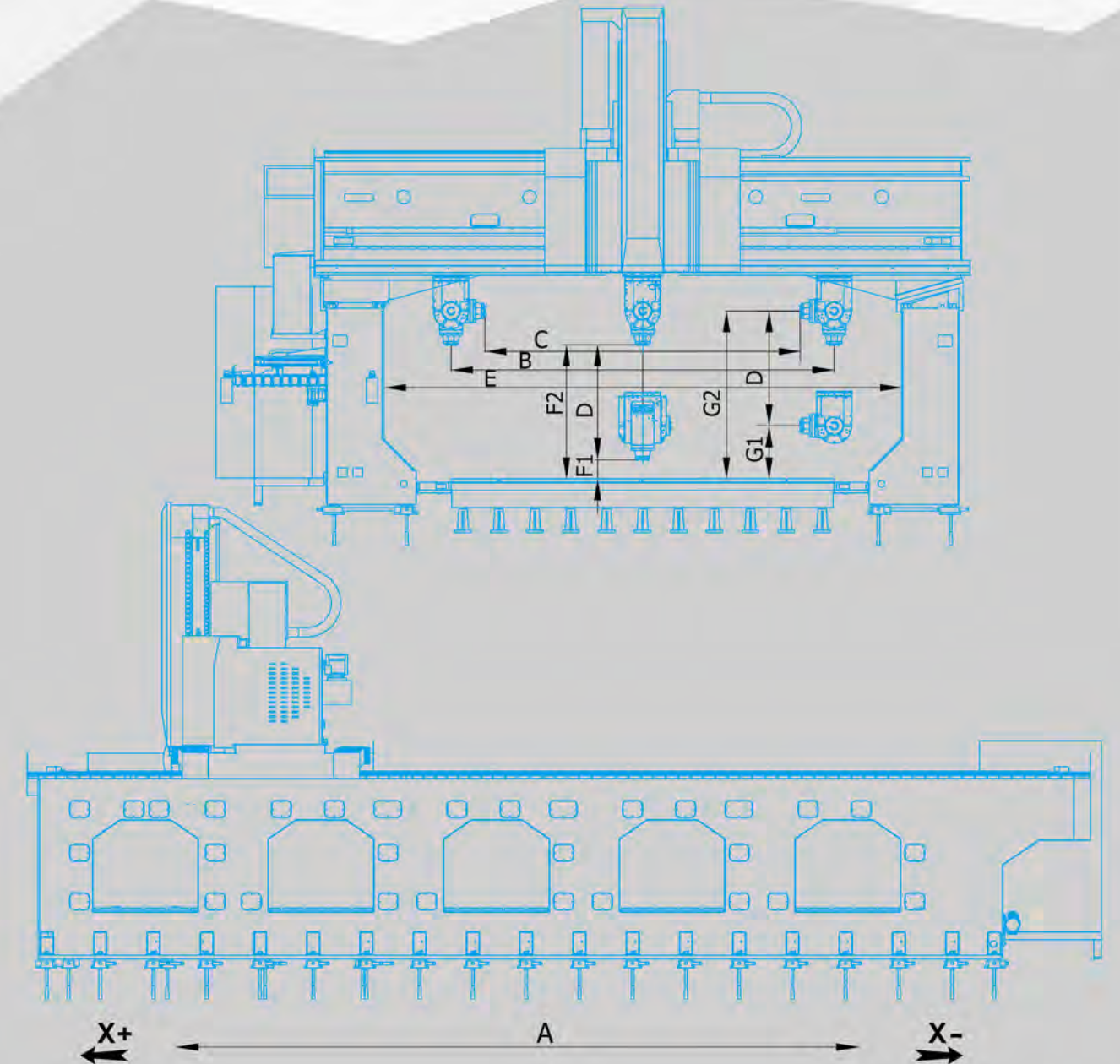
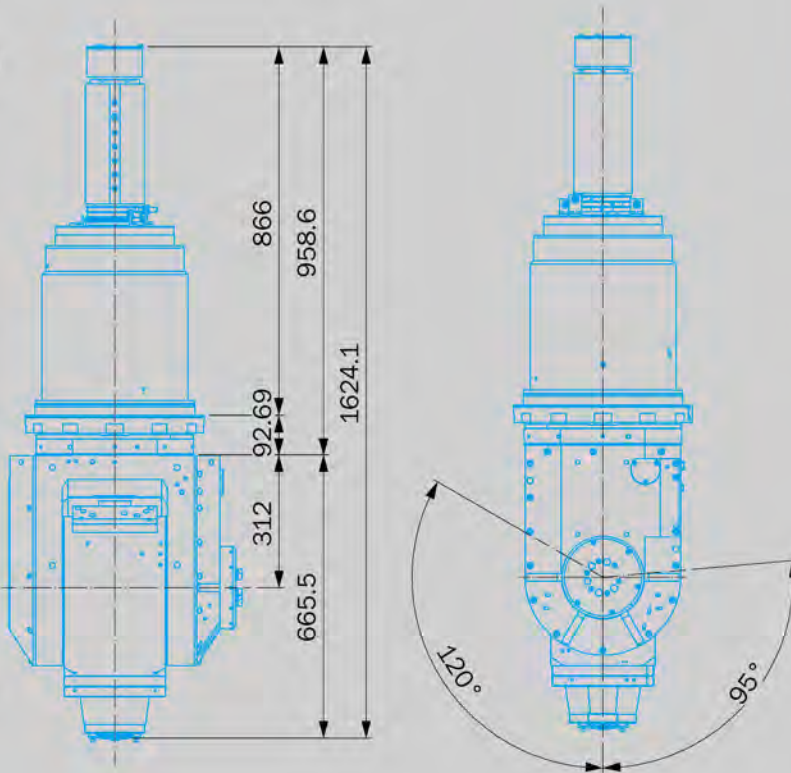
	UK-4030-5A	UK-(5030~24030)-5A	UK-(5035~24035)-5A	UK-(5040~24040)-5A
A	4000	5000 +(per 1M)*	5000 +(per 1M)*	5000 +(per 1M)*
B/C	3000(Vertical) / 2295(Horizontal)	3500(Vertical) / 2795(Horizontal)		4000(Vertical) / 3295(Horizontal)
D	1000 (Opt. 1200)	1000 (Opt. 1200)		1000 (Opt. 1200)
E	3800	4300		4800
F1~F2	120 ~ 1120	120 ~ 1120		120 ~ 1120
G1~G2	473 ~ 1473	473 ~ 1473		473 ~ 1473

Unit : mm

Spindle motor power-torque diagram



Five-axis simultaneous milling head (TTFE3) outline diagram



MACHINE SPECIFICATION

MODEL	UK-2020-5A	UK-3020-5A	UK-4020-5A	UK-3025-5A	UK-4025-5A	UK-(5025~12025)-5A	UK-4030-5A	UK-(5030~24030)-5A	UK-(5035~24035)-5A	UK-(5040~24040)-5A
Travel										
X-axis	mm	2000	3000	4000	3000	4000	5000 +(per 1M)*	4000	5000 +(per 1M)*	5000 +(per 1M)*
Y-axis	mm	2000(Vertical) / 1295(Horizontal)			2500(Vertical) / 1795(Horizontal)			3000(Vertical) / 2295(Horizontal)		3500(Vertical) / 2795(Horizontal) 4000(Vertical) / 3295(horizontal)
Z-axis	mm	800			1000(Opt. 1200)			1000(Opt. 1200)		1000(Opt. 1200)
Spindle nose to table surface	mm	120 ~ 920			120 ~ 1120			120 ~ 1120		120 ~ 1120
Distance from spindle 90° centerline to table surface	mm	473 ~ 1273			473 ~ 1473			473 ~ 1473		473 ~ 1473
Distance between two columns	mm	2800			3300			3800		4300 4800
Working Table										
Table size (X direction)	mm	3000	4000	5000	4000	5000	6000 +(per 1M)*	5000	6000 +(per 1M)*	6000 +(per 1M)*
Table size (Y direction)	mm	2000			2500			3000		3500 4000
T slot Size (W x D)	mm	18×200			28×250			28×250		28×250
Loading capacity	Kg/M ²	2500			2500			2500		2500
Spindle										
Spindle motor	kW	35/49(S1/S6-40%)			35/49(S1/S6-40%)			35/49(S1/S6-40%)		35/49(S1/S6-40%)
Spindle speed	min ⁻¹	12000(Opt. 15000)			12000(Opt. 15000)			12000(Opt. 15000)		12000(Opt. 15000)
Spindle taper		HSK-A63			HSK-A63			HSK-A63		HSK-A63
Spindle maximum torque	Nm	120/170(S1/S6-40%)			120/170(S1/S6-40%)			120/170(S1/S6-40%)		120/170(S1/S6-40%)
Spindle diameter	mm	70			70			70		70
2-axis head										
B-axis rotation angle	deg.	B= +120°~ -95°			B= +120°~ -95°			B= +120°~ -95°		B= +120°~ -95°
C-axis rotation angle	deg.	C= ±200°			C= ±200°			C= ±200°		C= ±200°
B/C axes min. division	deg.	0.001°(Continuously)			0.001°(Continuously)			0.001°(Continuously)		0.001°(Continuously)
B-axis working torque (S1/S6)	Nm	450/630			450/630			450/630		450/630
C-axis working torque (S1/S6)	Nm	450/700			450/700			450/700		450/700
B/C axis clamping torque	Nm	3750/2700			3750/2700			3750/2700		3750/2700
Feedrate										
Rapid feedrate X / Y / Z	m/min	20/20/12			20/20/12			20/15/12		20/15/12
B/C swing speed/rotation speed	deg./sec	B=50,C=180			B=50,C=180			B=50,C=180		B=50,C=180
Cutting rate (X, Y, Z)	mm/min	1-10000			1-10000			1-10000		1-10000
Tool magazine										
Tool number	pcs	24(Opt. 32,40)			24(Opt. 32,40)			24(Opt. 32,40)		24(Opt. 32,40)
Max. tool diameter/ Adjacent pot (full/empty)	mm	Ø75/Ø120			Ø75/Ø120			Ø75/Ø120		Ø75/Ø120
Max. tool length	mm	300			300			300		300
Max. tool weight	kg	8(Average tool weight 6kg, total weight 160kg)			8(Average tool weight 6kg, total weight 160kg)			8(Average tool weight 6kg, total weight 160kg)		8(Average tool weight 6kg, total weight 160kg)
Accuracy (VDI/DGQ 3441)										
Positioning accuracy P (X, Y, Z)	mm	0.020	0.025	0.030	0.025	0.030	0.035 +(0.005/1M)	0.030	0.035 +(0.005/1M)	0.035 +(0.005/1M)
Repeatability accuracy Ps (X, Y, Z)	mm	0.015	0.020	0.025	0.020	0.025	0.030 +(0.005/1M)	0.025	0.030 +(0.005/1M)	0.030 +(0.005/1M)
B/C-axis positioning accuracy P	arcsec	14			14			14		14
B/C repeatability accuracy Ps	arcsec	8			8			8		8
Transmission		X,Y,Z: Ball screw			Y, Z: Ball screw, X: Ball screw (travel≤4000mm), Rack & pinion (travel≥5000mm)			Y, Z: Ball screw, X: Ball screw (travel≤4000mm), Rack & pinion (travel≥5000mm)		X,Y: Rack & pinion,Z: Ball screw
Power capacity	kVA	80KVA(380±10%Vac,3phase 50/60Hz)			100KVA(380±10%Vac,3phase 50/60Hz)			100KVA(380±10%Vac,3phase 50/60Hz)		100KVA(380±10%Vac,3phase 50/60Hz)
Air pressure required	kg/cm ²	6			6			6		6
Coolant tank	L	600			720			830		900 1000
Machine length (L)	mm	6330	7330	8330	7330	8330	9330+(per 1M)*	8330	9330+(per 1M)*	9330+(per 1M)*
Machine width x high (W x H)	mm	5600×4900			5600×4900			6600×5100		7100×5100 7600×5100
Machine weight	kg	31000	36000	41000	37000	42500	49000(X:5m)	45000	50000(X:5m)	53000(X:5m) 55000(X:5m)

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Remark: 1. If X travel >=5000 mm, rack & pinion transmission system is adopted.
2. If Y travel >=3000 mm, rack & pinion transmission system is adopted.

Standard Accessories

- Siemens 840DSL/15 "LCD
- Centralized lubrication system
- Rigid tapping/program end M30 auto power off
- Three-axis linear scale(Heidenhain)
- Electric control box with air conditioner
- Tool clamp/unclamp foot pedal switch
- Front door safety interlock switch
- Coolant system
- Leveling bolts and pads
- Inspection chart
- Mechanical operation and instruction manual

Optional Accessories

- Spindle 15000 rpm
- Spindle 18000 rpm
- Coolant through spindle
- Tool magazine 32 tool, 40 tool
- Automatic tool length measurement
- Automatic work piece measurement
- Heidenhain TNC-640, Fagor, Fanuc 31i