KAO MING
ONE MORE STEP TO EXCELLENCE

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KAO MING 50
1968-2018

SAVING NATURE IS TECHNOLOGY INNOVATING.

KMC-HIS

KAO MING SCIENTIFIC AND TECHNOLOGICAL GIANT OF THE MOST HUMANE INTENTION!

KAO MING MACHINERY INDUSTRIAL CO., LTD

DESPITE HUMMINGBIRDS ARE TINY, THEY'RE EQUIPPED AN EXTRAORDINARY FLYING TECHNOLOGY- WHICH CAN PROPEL THEM MORE THAN 50 KILOMETERS PER HOUR.

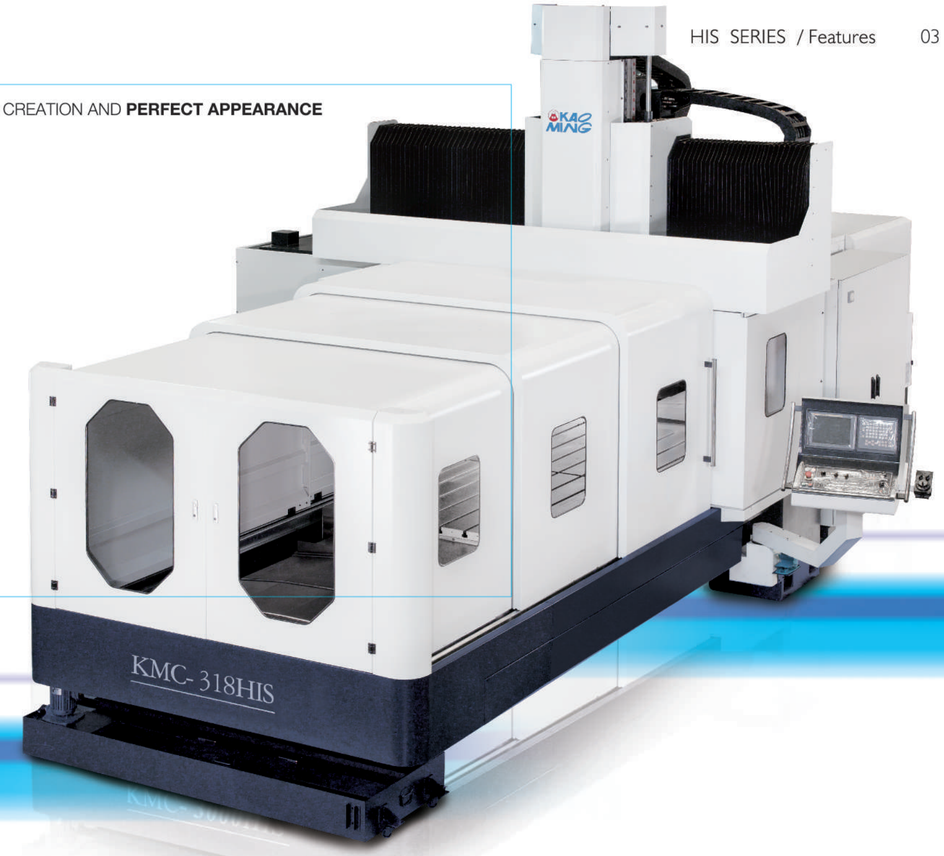
In Emily Dickinson's verse, the brisk image of hummingbird is depicted as a vivid part of nature wonders.
As hummingbirds, Kao-Ming machinery Industrial emphasize on brisk service: establishing service depots extensively and increasing stock points densely to response clients at the first time, Kao-Ming machinery Industrial always provide best solution to clients' impossibility. Meanwhile, the innovative technology Kao-Ming machinery Industrial applied matches its commitment to a greener, decenter environment: to maximize the efficiency of energy consumed and therefore to minimize the pollution as production happened.

HIS SERIES

HIGH SPEED DOUBLE-COLUM MACHINING CENTER

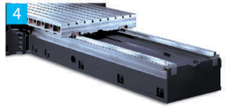
1. KMC-HIS Series are performance-driven, high speed double-column machining centers, and provide cost-effective solutions.
2. A combination of the high speed as KM DVs, high rigidity as SVs, and standardly equipped with Z-axis stroke of 850mm(1050mm-option)
3. 3 axes employ V3 grade, oversized and maximum-preloaded roller liner guideways.
4. Y-axis step design of the dual guideways, which are separately located on the lateral and top sides of the crossbeam, greatly increases sufficient rigidity for bending strength.
5. Main spindle features inline direct-drive spindle that is coupled directly to the motor. This provides super-smooth cutting performance and reduces operating heat for greater thermal stability.
6. The spindle head is symmetrically designed on the basis of the spindle center line to against Y-axis thermal displacement.
7. The capabilities for HIS are as varied as the machine capacities, with many configurations available, including 40 or 50-taper inline drive, built-in drive, geared-head, high speed mold making and more.
8. Our innovative 50-taper 10000-rpm inline direct-drive spindle that is coupled directly to the 22/26/30kw motor with extra amplifier can optionally provide 286Nm (max.) of cutting torque (S3 15%). A 40-taper 12000rpm spindle is also optionally available.
9. Our specially designed base, column and crossbeam structures are optimized using Finite Element Analysis(FEA).
10. A properly preloaded and pretensioned, large diameter ballscrew is used for three axes. X-axis has a hollow ballscrew with oil cooled and is equipped with a special design to cool the ballscrew bearings by air for getting the better positioning accuracy.
11. The Z-axis hydraulic counter-balance system is standardly equipped with dual cylinders, and the hydraulic accumulator system is optionally available to meet the Die/Mold machining
12. Strict multi stress-relief treatment during manufacturing process makes the main structures, such as table etc., keep stable.
13. Coolant through spindle system (Optional) can cool the tool tips during high speed cutting process and get the better machining accuracy.
14. With optional FANUC Data server, AICC II and Hi-speed processor to achieve Hi-speed and Hi-accuracy Die/mold machining.

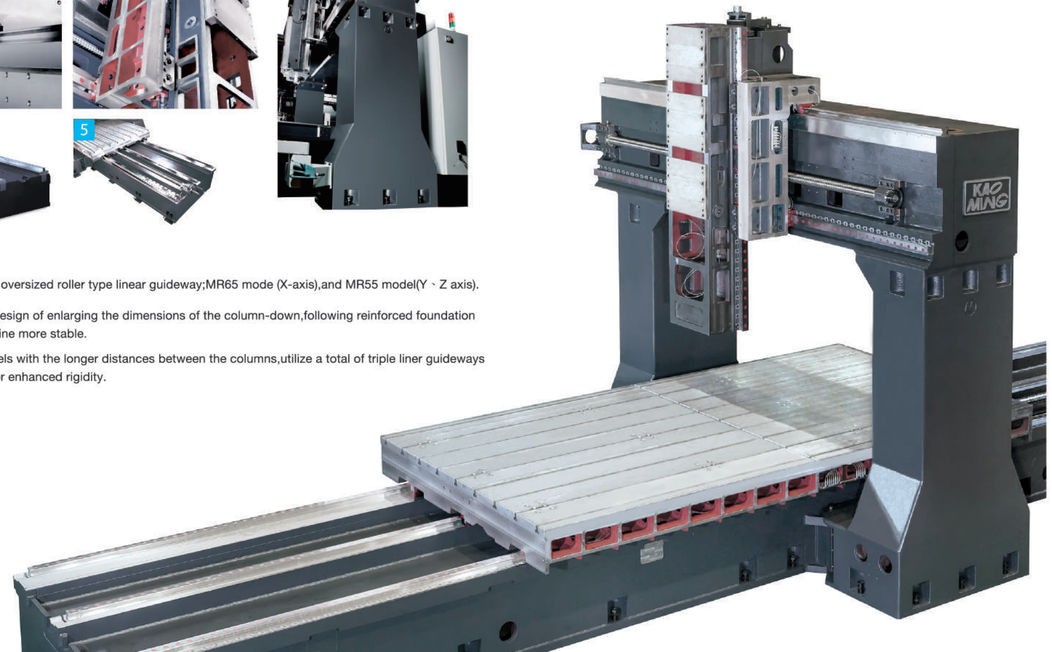
BREAKTHROUGH CREATION AND **PERFECT APPEARANCE**



Tow column and crossbeam is of meehanite cast iron, after annealing to have internal stress relief can provides optimum bending and torsion stress, giving the best rigid structure.



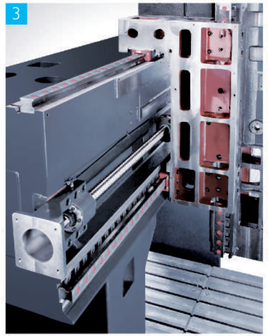
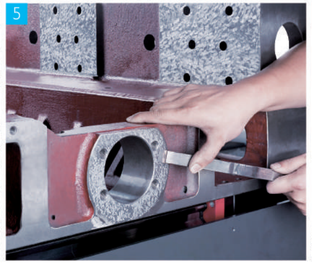
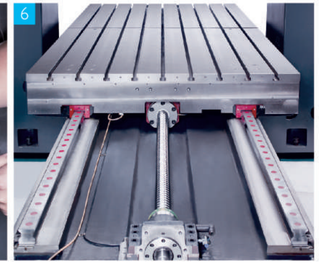



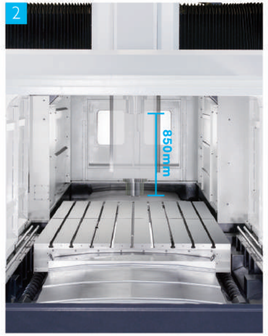


| 1 | | 2 | Using the most oversized roller type linear guideway;MR65 mode (X-axis),and MR55 model(Y、Z axis).

| 3 | Thanks to the design of enlarging the dimensions of the column-down,following reinforced foundation make the machine more stable.

| 4 | | 5 | The “and” models with the longer distances between the columns,utilize a total of triple liner guideways on the X-axis for enhanced rigidity.



| 1 | Z-axis hydraulic counterbalance system, Z axis employs dual hydraulic cylinders that may increase sensitivity for machining.

| 2 | A combination of the high speed as KM DVs, high rigidity as SVs, and standardly equipped with Z-axis stroke of 850mm(1050mm-option).

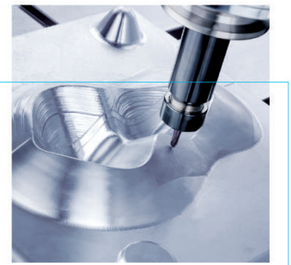
| 3 | Y axis utilizes a superior design whereby the lower slideway is offset a full 225mm forward from the upper slideway. This greatly enhances the rigidity of the headstock by bringing the center of gravity back into the upper support. Dual guide ways supported by step design, it allows for vertical and horizontal arrangement with higher rigidity than normal set-ups.

| 4 | Direct-drive spindle transmission, The spindle is directly driven by spindle motor without backlash or vibration problems. The spindle motor transmits high-horsepower and high-torque to the spindle, and also to the cutting tool：built-in spindle system (optional).

| 5 | Precision scraping：to ensure the assembly accuracy of the base, column and crossbeam and further to enhance the machine's overall rigidity and reliability.

| 6 | A properly preloaded and pretensioned, large diameter ballscrew is used for three axes. X-axis has a hollow ballscrew with oil cooled and is equipped with a special design to cool the ballscrew bearings by air for getting the better positioning accuracy.

SUPERIOR PERFORMANCE AND EFFICIENCY FOR SPINDLE



SUPERIOR PERFORMANCE AND EFFICIENCY FOR SPINDLE

1.HIGH PERFORMANCE INLINE DIRECT-DRIVE SPINDLE

• High speed and precision inline direct-drive spindle
1. 40-taper or 50-taper choose
2. Application areas are to automobile mold, plastic injection mold, die-casting mold, high speed machining, and also to fit for aerospace and machine precision parts with optional data server,64-bit RISC processor and NURBS interpolation to achieve hi-speed and hi-accuracy die/mold machining.
• Optimum symmetrically designed spindle head.
• The entire headstock assembly is counter - balanced by dual hydraulic cylinder. This ensures a consistent smooth and without overloading the servo drive motor during the movement of the Z-axis.

2.High Efficiency

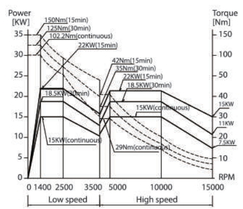
• 40-taper high speed & 50-taper large torque output D.D.S . 40-taper spindle provides high speed 12000rpm ; 50-taper spindle provides large of cutting torque for heavy material removal, depending on custom choose.

Cutting Test	FANUC αB 132L (Opt.)
Face milling (mm)	Ø100 Carbide
Workpiece material	S45C
Spindle speed (rpm)	720
Cutting width (mm)	100
Cutting depth (mm)	5
Feedrate (mm/min)	1000
Cutting capacity (cc/min)	500

• Built-in spindle & gear type spindle (option is available.). Built-in spindle can decrease vibration and get the better accuracy when spindle is at high speed transmission, that can improve the cutting marks; geared-head spindle can provide large torque output for stable heavy-duty cutting.
• Coolant through the spindle system(Optional). Coolant was flowed straightly through spindle achieved cutting edge by high pressure system for high speed cutting, high pressure up to 40kg/cm2.

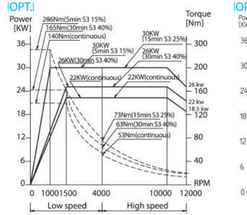
αilT15/15000 15/18.5/22KW(20/25/30HP)

15000RPM (ISO 40)



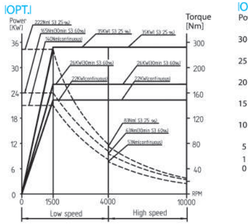
αilT22/12000+Extra Amp. 22/26/30KW(30/35/40HP)

12000RPM (ISO 40)



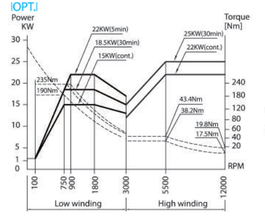
αilT22/10000 22/26/35KW(30/35/47HP)

10000RPM (ISO 50)



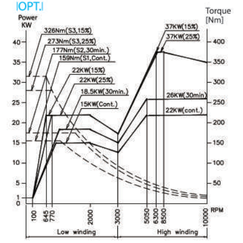
Bil 132L-22/25KW(33HP) (Built-in)

12000RPM (ISO 40)



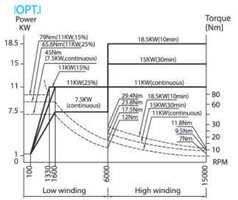
Bil 132L-22/26/37KW(50HP) (Built-in)

10000RPM (ISO 50)



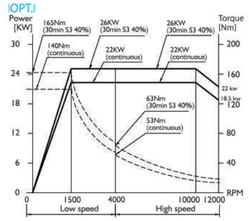
Bil 112S-11/18.5KW(25HP) (Built-in)

15000RPM (ISO 40)



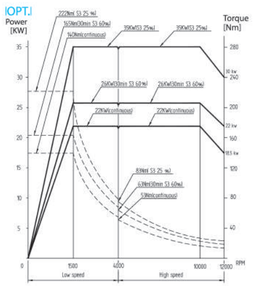
αil 22/12000 22/26KW(30/35HP) CTS:unavailable

12000RPM (ISO 40)



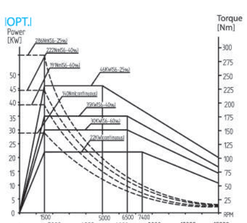
αil 22/12000 22/26/35KW (30/35/47HP) CTS:unavailable

12000RPM/10000RPM (ISO 40/ISO 50)



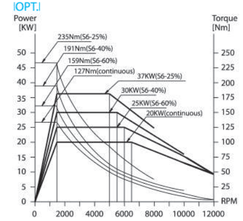
HEIDENHAIN QAN 260UH 22/30/35/46KW(S6-25%)

12000RPM/10000RPM (ISO 40/ISO 50)

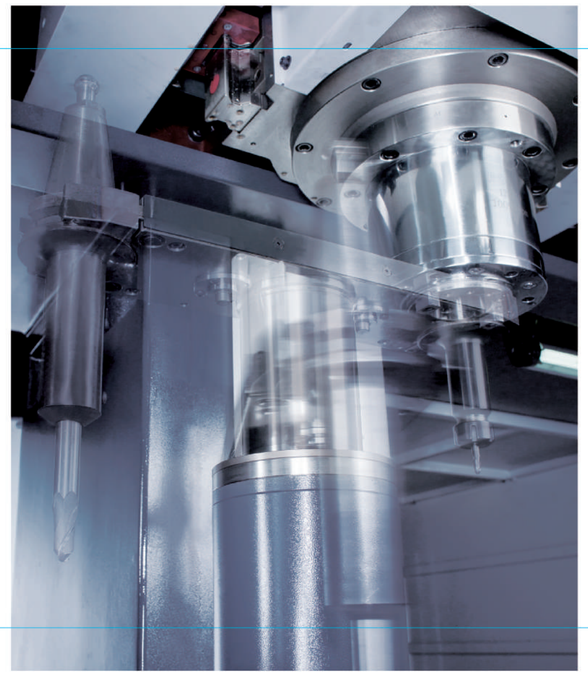


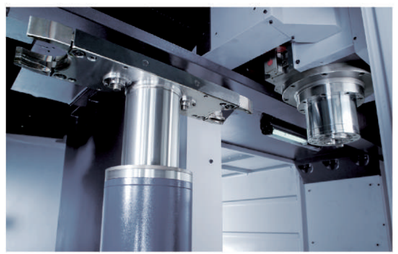
HEIDENHAIN QAN 260L 20/25/30/37KW(S6-25%) CTS:unavailable

12000RPM/10000RPM (ISO 40/ISO 50)



AUTOMATIC TOOL MAGAZINE DOOR
The tooling within the magazine is well protected from chips, coolant, and other debris by a fully programmable door. The door operates in conjunction with the ATC, eliminating the need to program it separately.





MULTI-CHOICE ATC SYSTEM
1.BT ; DIN ; CAT ; ISO ; HSK tool shank.
2.40-taper or 50-taper tools magazine.
3.Convenient tool loading and unloading system.
4.CTS coolant tank.

POWERFUL, HIGH SPEED ATC
The standard tool magazine is equipped with 30 tool capacity, and can be upgraded to a 40,50,60,or 90 tool capacity. The unique double-arm tool change design, powered by a durable, high speed motor, greatly reduces tool change time to less than 6 sec. (T to T), the tool change storage and retrieval system is accomplished by a high quality, high performance, bi-directional hydraulic index motor which further enhances the ATC.

CONVENIENT TOOL LOADING SYSTEM.
Too loading and unloading can be performed at either the spindle or tool storage magazine A foot pedal is provided at both locations allowing for easy handling of even larger tools.

1

2

3

4

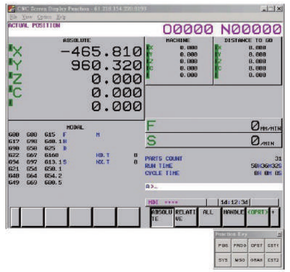
LUBE HYBRID LUBRICATION SYSTEM

| 1 | Spindle cooling system

| 2 | Electrical cabinet cooling system

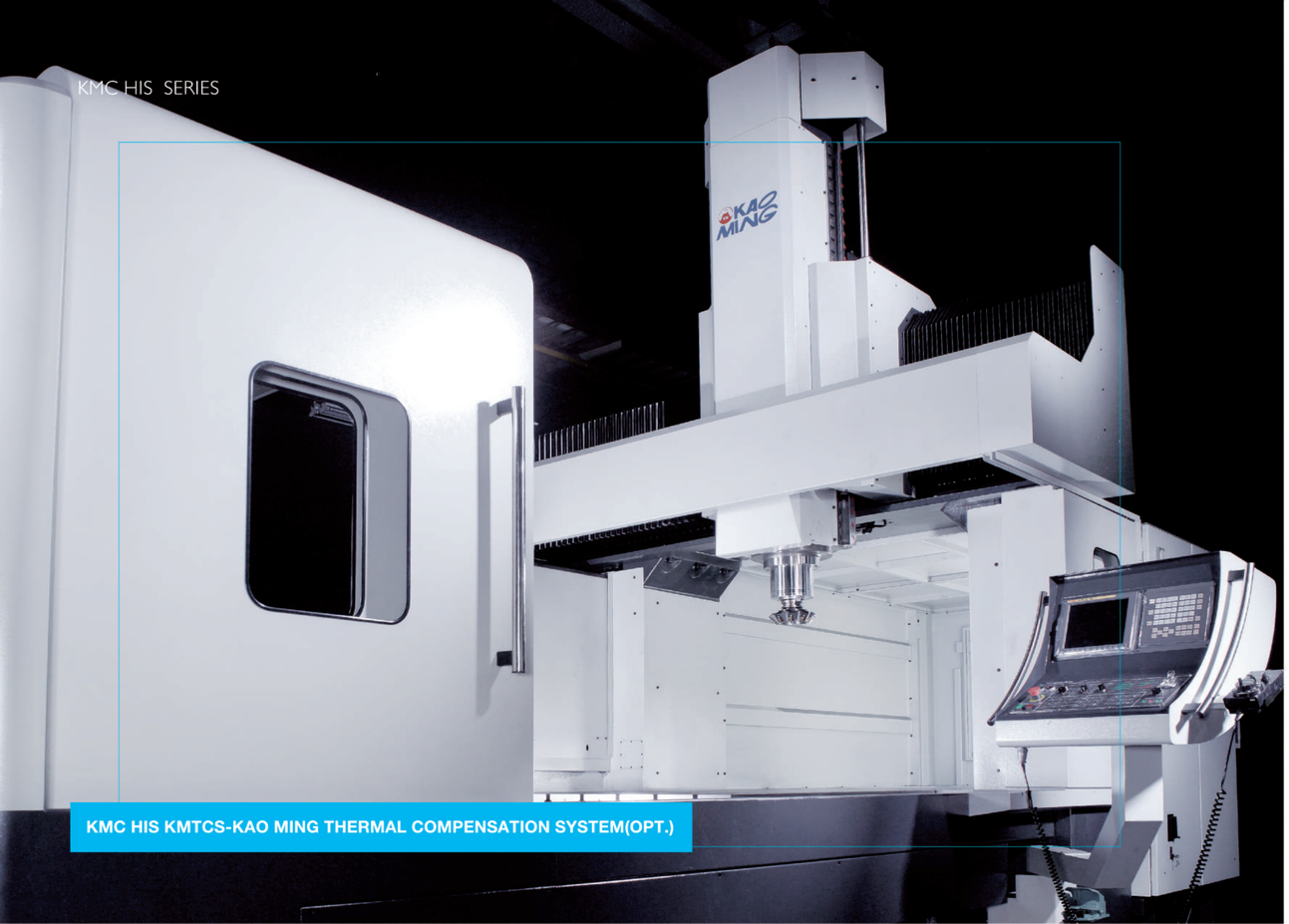
| 3 | Centralized Automatic Lubrication System

| 4 | Screw-type Chip Conveyor



CNC SCREEN MACHINE REMOTE DIAGNOSIS FUNCTION

Our company can confirm the machine through the IP address of PC when machine is breakdown. We will shift directly the user's screen from the far-end, and the controller can provide the connection of software to send "NC program", "PLC program" ,"Machine parameter" ,and " Cutting tool data table", etc. It can not only diagnose, operate, and detect data, but also rivise data to subscriber's premises from the far-end. This function ONLY uses through the PC (with network), it can NOT operate in MDI pattern.

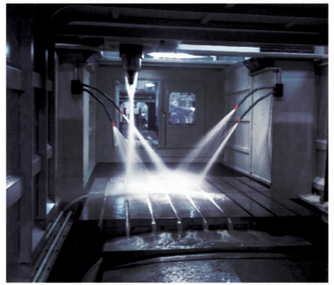


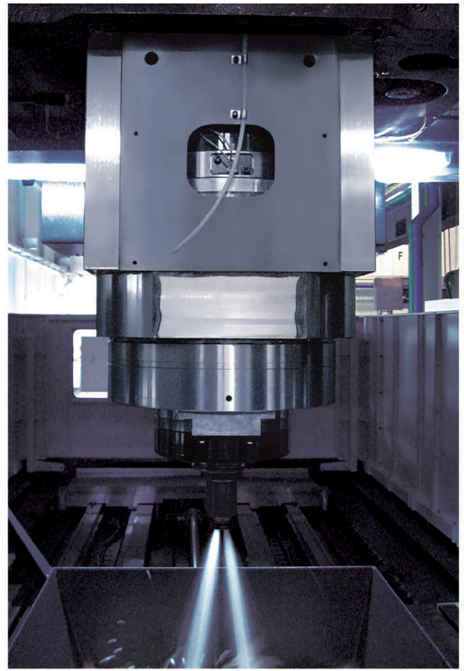
KMC HIS KMTCS-KAO MING THERMAL COMPENSATION SYSTEM(OPT.)

COOLANT THROUGH SPINDLE SYSTEM

The optional, Coolant Through the Spindle feature utilizes a complete pump/filtration system, rather than a single auxiliary pump as commonly used by our competition. This system is equipped with a large 600/1000L capacity reservoir, high pressure pump, and duplex filter unit, with a choice of various output pressures.

	Medium pressure	High pressure	
Pressure (kg/cm^2)	20bar (284psi)	40bar (568psi)	70 bar (994 psi)
Quantity (l/min)	30L/min (7.92gal/min)	30L/min (7.92gal/min)	30 l/min (7.92gal/min)

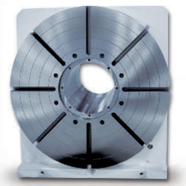




1

Auotmatic Touch Probe Centering System

3 NC Rotary Table



4 Link-Type Chip Conveyor

How to select a suitable conveyor according to different types of chips

	Curly Iron Chip	Metallic Chip	Non-Curly Chip	Foundry Chip	Aluminum Chip
Steelbelt Chip Conveyor	✓	✓			
Scraper type Chip Conveyor (Suitable for dry Chips under 60mm)	✓	✓	✓		

2

Automatic Tool Length Measuring System

Machining Range

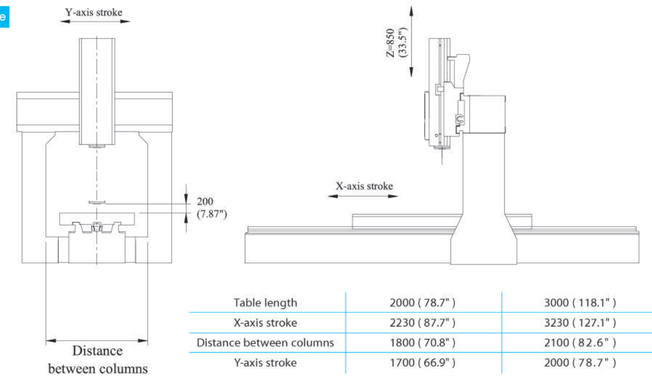
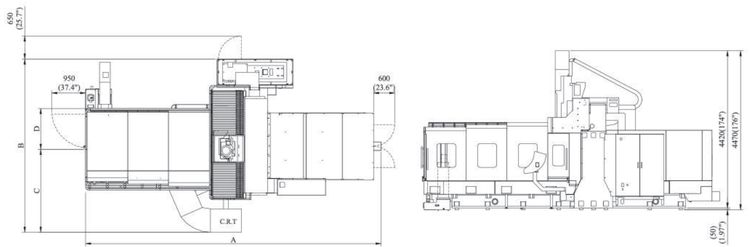


Table length	2000 (78.7")	3000 (118.1")	4000 (157.4")
X-axis stroke	2230 (87.7")	3230 (127.1")	4230 (166.5")
Distance between columns	1800 (70.8")	2100 (82.6")	2300 (90.5")
Y-axis stroke	1700 (66.9")	2000 (78.7")	2200 (86.6")

FLOOR SPACE



Unit:mm (inch)

	218 HIS	221 HIS	223 HIS	318 HIS	321 HIS	323 HIS	418 HIS	421 HIS	423 HIS
A	6200 (244")			8335 (328.1")			10335 (406.9")		
B	4868 (191.6")	5168 (203.5")	5466 (215.2")	4868 (191.6")	5168 (203.5")	5466 (215.2")	4868 (191.6")	5168 (203.5")	5466 (215.2")
C	2401 (94.5")	2551 (100.4")	2699 (106.3")	2401 (94.5")	2551 (100.4")	2699 (106.3")	2401 (94.5")	2551 (100.4")	2699 (106.3")
D	1160 (45.7")	1310 (51.6")	1460 (57.5")	1160 (45.7")	1310 (51.6")	1460 (57.5")	1160 (45.7")	1310 (51.6")	1460 (57.5")

HIS TABLE DIMENSIONS

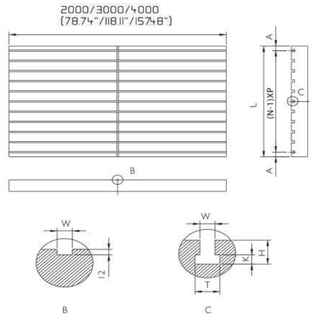


TABLE DIMENSIONS

Unit:mm (inch)

Distance Between Two Columns	1800(70.86")	2100(82.67")	2300(90.55")
L	1650(64.96")	1850(72.83")	2000(78.84")
A	145(5.70")	75(2.95")	80(3.14")
N	9	11	9
P	170(6.69")	170(6.69")	230(9.05")
W	22H8(0.86")	22H8(0.86")	24H8(0.94")
T	37(1.45")	37(1.45")	42(1.65")
H	42(1.65")	42(1.65")	42(1.65")
K	16(0.62")	16(0.62")	18(0.71")

ITEM			KMC-218HIS	KMC-221HIS	KMC-223HIS	KMC-318HIS	KMC-321HIS	KMC-323HIS	KMC-418HIS	KMC-421HIS	KMC-423HIS
Travels	X-axis(table longitudinal)		2230(87.8")			3230(127.16")			4230(166.53")		
	Y-axis (Spindle lateral)		1700(66.92")	2000(78.84")	2200(86.61")	1700(66.92")	2000(78.84")	2200(86.61")	1700(66.92")	2000(78.84")	2200(86.61")
	Z-axis (spindle vertical)		850(33.46") *1050(41.33")						850(33.46") *1050(41.33")		
	Distance from table surface to spindle nose		150~1000(5.90"~39.37")*150~1200(5.90"~47.24") , ISO40 / 200~1050(7.87"~41.34") *200~1250(7.87"~49.21") , ISO50						150~1000(5.90"~39.37")*150~1200(5.90"~47.24") , ISO40 / 200~1050(7.87"~41.34") *200~1250(7.87"~49.21") , ISO50		
Distance between two columns			1800(70.86")	2100(82.67")	2300(90.55")	1800(70.86")	2100(82.67")	2300(90.55")	1800(70.86")	2100(82.67")	2300(90.55")
Table	Table working area		1650×2000 (64.96"×78.74")	1850×2000 (72.83"×78.74")	2000×2000 (78.74"×78.74")	1650×3000 (64.96"×118.1")	1850×3000 (72.83"×118.1")	2000×3000 (78.74"×118.1")	1650×4000 (64.96"×157.4")	1850×4000 (72.83"×157.4")	2000×4000 (78.74"×157.4")
	Max. table load		8000kg (17600lb)	10000kg (22000lb)	10000kg (22000lb)	10000kg (22000lb)	12000kg (26400lb)	12000kg (26400lb)	12000kg (26400lb)	13000kg (28600lb)	15000kg (33000lb)
Spindle	Spindle speed range (DDS)		ISO 40 100~15000rpm , 15/18.5/22kw , 150Nm(Max.) *ISO 50 100~10000rpm , 22/26/35kw , 222Nm(Max.) *ISO 40 100~12000rpm , 22/26/30kw , 286Nm(Max.)[Extra Amp.] *ISO 40 (ISO 50)100~12000rpm(10000rpm) , 22/26/35kw , 222Nm(Max.)[CTS:unavailable] *ISO 40 100~12000rpm , 22/26kw , 165Nm(Max.)[CTS:unavailable]					ISO 40 100~15000rpm , 15/18.5/22kw , 150Nm(Max.) *ISO 50 100~10000rpm , 22/26/35kw , 222Nm(Max.) *ISO 40 100~12000rpm , 22/26/30kw , 286Nm(Max.)[Extra Amp.] *ISO 40 (ISO 50)100~12000rpm(10000rpm) , 22/26/35kw , 222Nm(Max.)[CTS:unavailable] *ISO 40 100~12000rpm , 22/26kw , 165Nm(Max.)[CTS:unavailable]		
	Spindle speed range (BUILT-IN)		ISO 40 100~15000rpm , 15/18.5kw , 79Nm(Max.) 、*ISO 40 100~12000rpm , 22/25kw , 235Nm(Max.) *ISO 50 100~10000rpm , 22/26/37kw , 326Nm(Max.)					ISO 40 100~15000rpm , 15/18.5kw , 79Nm(Max.) 、*ISO 40 100~12000rpm , 22/25kw , 235Nm(Max.) *ISO 50 100~10000rpm , 22/26/37kw , 326Nm(Max.)			
Feedrate	Rapid traverse (X,Y,Z-M/min)		(24,24,15)	(24,20,15)	(24,20,15)	(20,24,15)	(20,20,15)	(20,20,15)	(20,24,15)	(24,20,15)	(20,20,15)
	Cutting feed		1~10000 mm/min (0.1~393ipm)						1~10000 mm/min (0.1~393ipm)		
ATC	Tool shank shape		BT40(*BT50)						BT40(*BT50)		
	Pull stud		MAS P40T-1(*MAS P50T-1)						MAS P40T-1(*MAS P50T-1)		
	Tool magazine capacity		30(*40,*50,*60,*90) tools						30(*40,*50,*60,*90) tools		
	Max. tool diameter		ISO 40 ø75(ø2.95"),((ø150 / ø5.90")) ; [*ISO 50 ø130(ø5.11"),((ø200 /ø 7.87"))]						ISO 40 ø75(ø2.95"),((ø150 / ø5.90")) ; [*ISO 50 ø130(ø5.11"),((ø200 /ø 7.87"))]		
	Max. tool length		ISO 40 300 (1181"); [*ISO50 350(13.77")]						ISO 40 300 (1181"); [*ISO50 350(13.77")]		
	Max. tool weight		ISO 40 10kg (22 lb); [* ISO 50 20kg (44 lb)]						ISO 40 10kg (22 lb); [* ISO 50 20kg (44 lb)]		
Power sources	Electrical power supply		ISO 40 50KVA;(*ISO 50 60KVA)						ISO 40 50KVA;(*ISO 50 60KVA)		
	Compressed air supply		5~7kg/cm² (71~99.4 psi)						5~7kg/cm² (71~99.4 psi)		
Machine size	Machine height		4420(174.01")						4420(174.01")		
	Floor space		6130x4868 (241"x191.6")	6130x5168 (241"x201.5")	6130x5466 (241"x216.2")	8130x4868 (320.1"x191.6")	8130x5168 (320.1"x201.5")	8130x5466 (320.1"x216.2")	10130x4868 (398.8"x191.6")	10130x5168 (398.8"x201.5")	10130x5466 (398.8"x216.2")
	Machine net weight		20000kg (44000lb)	21500kg (47300lb)	23500kg (51700lb)	23000kg (50600lb)	24500kg (53900lb)	28000kg (61600lb)	27500kg (60500lb)	29500kg (64900lb)	33000kg (72600lb)
Accuracy	Positioning	JIS 6338	±0.008/ full travel(±0.0003"/full travel)						±0.008/ full travel(±0.0003"/full travel)		
		VDI 3441	P 0.020			P 0.025		P 0.025	P 0.03		
	Repeatability	JIS 6338	±0.002/ full travel(±0.0001"/full travel)						±0.002/ full travel(±0.0001"/full travel)		
		VDI 3441	Ps 0.015			Ps 0.020		Ps 0.020	Ps 0.025		
CNC controller			FANUC 0i(31i)series,*HEIDENHAIN						FANUC 0i(31i)series,*HEIDENHAIN		

*Option Design specifications are subject to change without notice. (())Max.tool diameter(without adjacent tools)

Unit:mm (inch)

KMC-HIS STANDARD ACCESSORIES

1	Coolant Equipment
2	Centralized Automatic Lubrication System
3	Rigid Tapping
4	Fully Enclosed Splash Guard
5	Adjusting Tools And Box (1 set)
6	Manual And Electrical Drawing (1 set)
7	Leveling And Foundation Fittings
8	Work Light
9	Spindle Cooling System (Chiller Unit)
10	Alarm Lamp
11	Air Blast
12	Automatic Power Off
13	Operation Finish Lamp
14	Screw-type Chip Conveyor
15	Transformer (Except 220v)
16	Inner Cooled Ballscrew
17	Slideway Covers
18	Magazine Safety Guard
19	Electrical Cabinet Light
20	Manual Tool Change And Foot Switch
21	Reinforced Foot-stand At Both Table-end
22	Electrical Cabinet Cooling System (Air Conditioner)

KMC-HIS OPTIONAL ACCESSORIES

1	Link-type Chip Conveyor
2	Mist Coolant Unit
3	NC rotary table
4	CAT50,DIN50,IS050,HSK-A100 too shank
5	CAT40,DIN40,IS040,HSK-A63 too shank
6	Oil Hole Drills Interface
7	Linear Scale Feedback System
8	Automatic Tool Length Measuring System
9	Automatic Touch Probe Centering System
10	Coolant Through Spindle System
11	KMTCS- Kao Ming Thermal Compensation System
12	Tracing/Digitizing System
13	Larger Capacity Coolant Tank
14	Coolant Purifying System
15	Coolant Cooling System
16	Hydraulic Cooling System
17	Paper(belt) Filter System
18	Oil Skimmer System
19	Specified Sub Table, T-slot, Machine Color
20	Extra Load Capacity
21	Anchoring Alignment System
22	Electrical Cabinet Cooling System (Up To 45°C Capacity)