

HORIZONTAL MACHINING CENTER

SINGLE PALLET
OR PALLET CHANGER

24, 28, 33, 41, and 48" Cube Sizes

*LARGE
PARTS
MACHINING*



WORLD CLASS
CINCINNATI
QUALITY

**CINCINNATI
MACHINES**

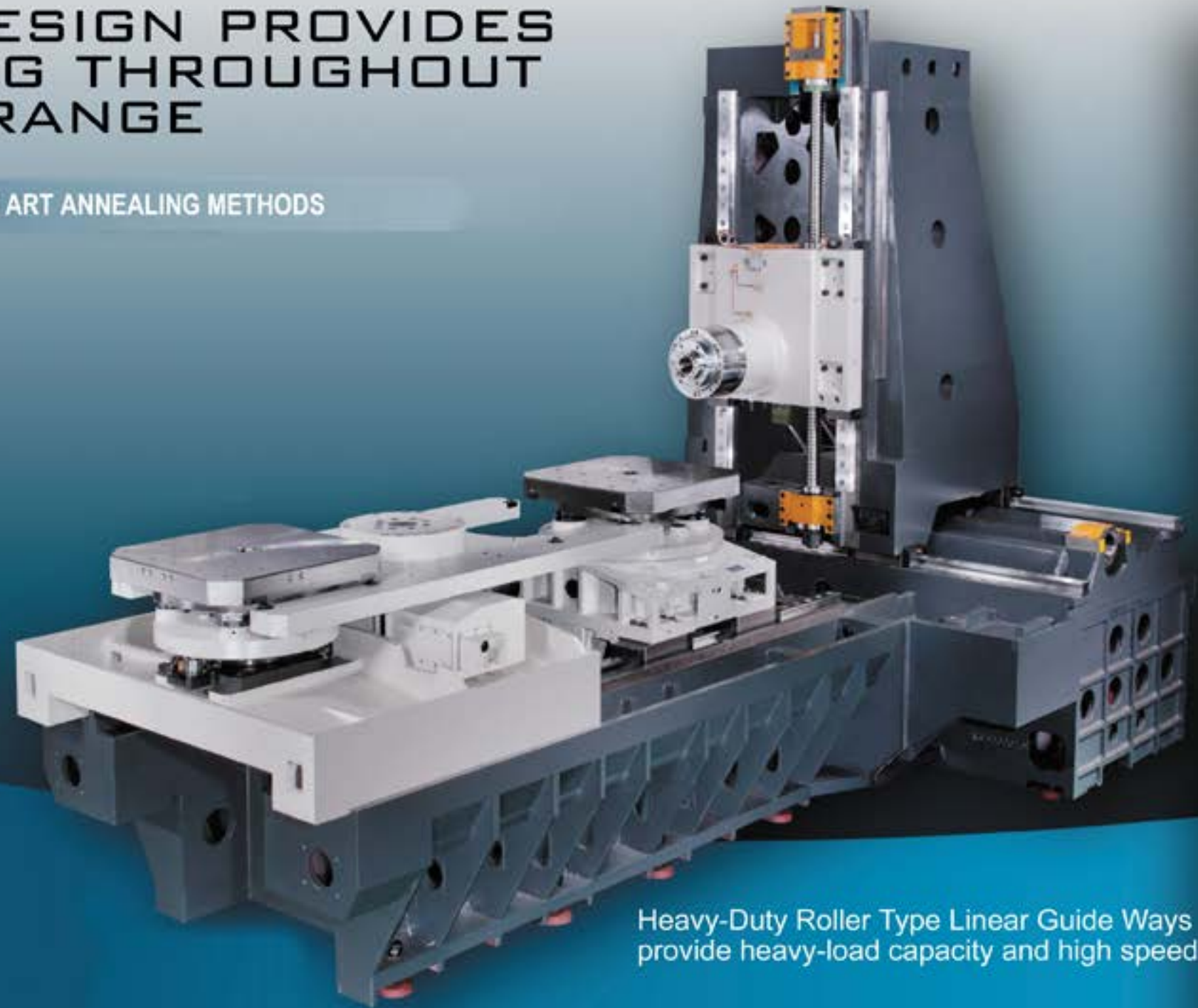
UNIQUE STRUCTURE DESIGN PROVIDES ROCK SOLID MACHINING THROUGHOUT THE ENTIRE MACHINE RANGE

CAST IRON CASTINGS ARE STRESS RELIEVED USING STATE-OF-THE ART ANNEALING METHODS

FEATURES

High quality castings are designed to provide maximum rigidity and strength, while using the optimum amount of cast iron to produce rock solid machining. Extensive Advanced Finite Element Analysis Software is utilized to develop and test through CAD simulations to insure maximum machine rigidity, stability, and damping while making heavy cuts

WORLD-CLASS
CINCINNATI
QUALITY



Heavy-Duty Roller Type Linear Guide Ways provide heavy-load capacity and high speed

CINCINNATI
MACHINES

SMART-1

AUTOMATIC PALLET CHANGE

COLUMN

> Extra strong column construction greatly increases column rigidity. The special structure effectively solves the rigidity displacement problem caused by spindle head vibration.

> The fastening surfaces between the column and the base are specially designed with "Front Low Rear High". This combines with rib reinforcement in the structure to enhance structural strength and dampening capability.



**CAT/BT 50
GEAR HEAD SPINDLE**
(HMC-630/800/1000 Std.)

The spindle is directly transmitted by gears, featuring extraordinary rigidity that provides high torque during low speed range, suitable for heavy duty cutting. Low noise and low vibration.



**CAT/BT 40 50
DIRECT DRIVE SPINDLE**
(HMC-400/500 Std.)

> The spindle is directly driven by a servo motor that upgrades spindle rigidity, reduces spindle vibration and increases machining accuracy.
> The spindle is equipped with air blast through spindle to prevent the accumulation of dust.
> Coolant curtain.
> Upon request, belt type or built-in type spindle is available.



**RIGID ROLLER TYPE
LINEAR WAY**

Mounted with the highly rigid roller type linear guide ways combined with the use of roller retainer. These special linear guide ways feature low friction coefficient, smooth movement and maintenance-free performance for long periods of operation.



**VOLUMETRIC
OIL DISTRIBUTOR**

The machine is equipped with an 8 liter large capacity volumetric oil distributor combined with uniform lubrication points to assure uniformity of sideway lubrication. Permits specific point lubrication for saving oil. Upon request, pressure sensor feedback is available.



**EXTRA POWERFUL CHIP
FLUSHING EFFECT -
(33% MORE FLUSH)**

The chip flushing system has 3 flushing areas with 30 nozzles to provide extra powerful flushing effect. With this specially designed chip flushing system, the thermal deformation on workpiece is minimal.



**CTS COOLANT THROUGH
SPINDLE DEVICE**
(CTS-20 / 30 / 50 bar Opt.)

20-bar coolant through spindle with filtration unit features mighty performance that the cutting efficiency is increased, and the tool life time is extended. The 50-bar coolant through spindle is option.

HORIZONTAL MACHINING Center

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MACHINES

SMART-1

AUTOMATIC PALLET CHANGE

HMC-400

- X / Y / Z Travel: 630 / 630 / 630 mm
- Work Table: 400 x 400 mm
- BT-40 Spindle speed: 10,000 rpm
- Direct Drive Spindle
- ATC: 40T (60 / 90 / 120 opt.)
- Rotary APC



HMC-630

- X / Y / Z Travel: 1,020 / 850 / 890 mm
- Work Table: 630 x 630 mm
- BT-50 Spindle / 6,000 rpm
- Gear Driven Spindle
- ATC: 40T (60 / 90 / 120 opt.)
- Rotary APC /



HMC-800

- X / Y / Z Travel: 1,270 / 1,050 / 1,050 mm
- Work Table: 800 x 800 mm
- BT-50 Spindle / 6,000 rpm
- Gear Driven Spindle
- ATC: 40T (60 / 90 / 120 opt.)
- Rotary APC



HMC-500

- X / Y / Z Travel: 800 / 725 / 725 mm
- Work Table: 500 x 500 mm
- BT-40 Spindle / 8,000 rpm or BT-50 Spindle / 6,000 rpm
- Direct Drive Spindle
- ATC: 40T (60 / 90 / 120 opt.)
- Rotary APC



FEATURES

- > Traveling column construction
- > Reciprocating automatic pallet change
- > Roller type linear ways on X, Y, Z axes
- > Full HMC performance by servo motor package
- > BT-40 / BT-50 spindle taper
- > 60 / 90 / 120 tool chain-type magazine (Opt.)
- > Table divide angle: 0.001° / 5° (Opt.)
- > High torque performance.
- > Ball Screw Coolant System (630 / 800 Std.)



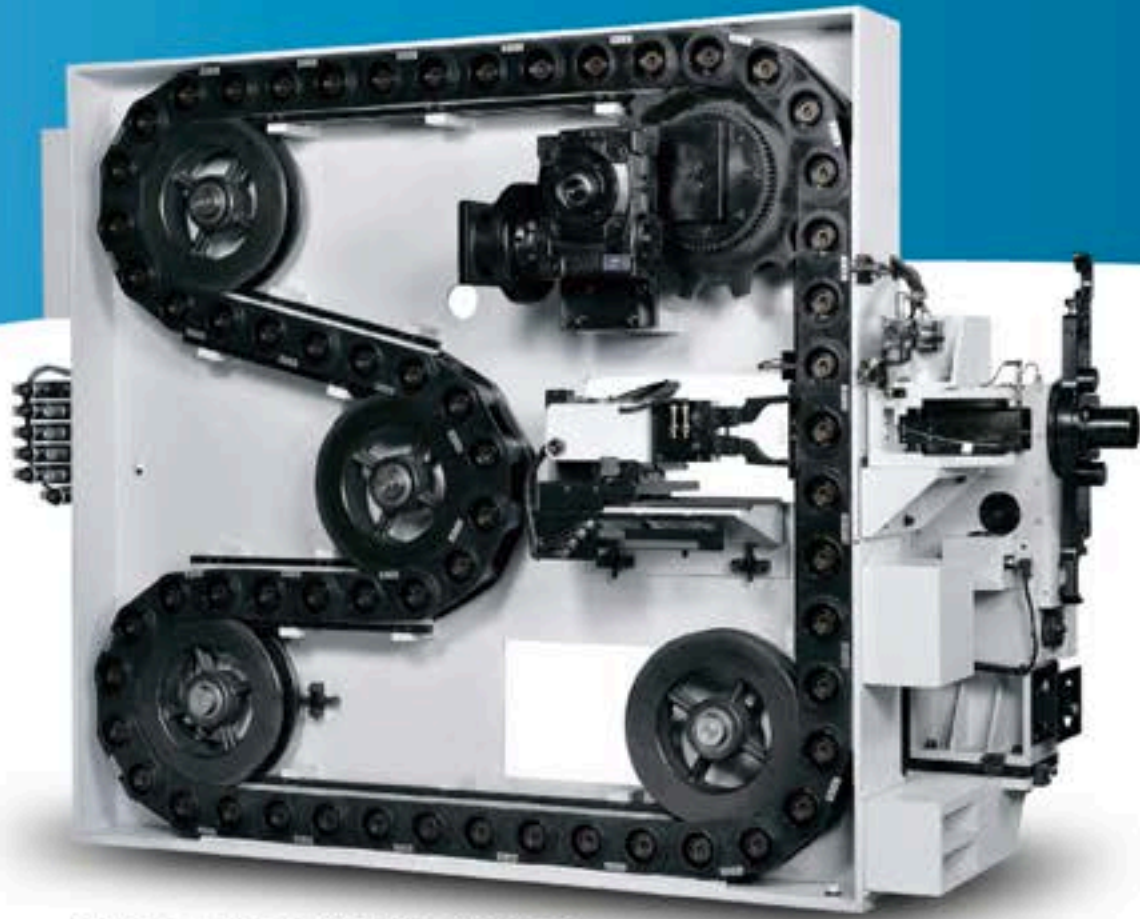
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AUTOMATIC TOOL CHANGER

Fast and stable tool change motions save non-cutting time and increases efficiency. The spindle features floating tool release to extend the service life of the spindle bearings.

CHOOSE UP TO 120 TOOLS

WIDE VARIETY OF
TOOL CHANGER OPTIONS
AND CAPACITIES



HMC-500/630/800

TOOL STORAGE CAPACITY:
60 #50 Taper Tools



TOOL STORAGE CAPACITY:
40 #40 Taper Tools

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40 #40 Taper Tools

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SMART-t

AUTOMATIC PALLET CHANGE

THE COMBINATION OF FLEXIBILITY,
HIGH PRODUCTIVITY AND PROFITABILITY

ROTARY TYPE - APC

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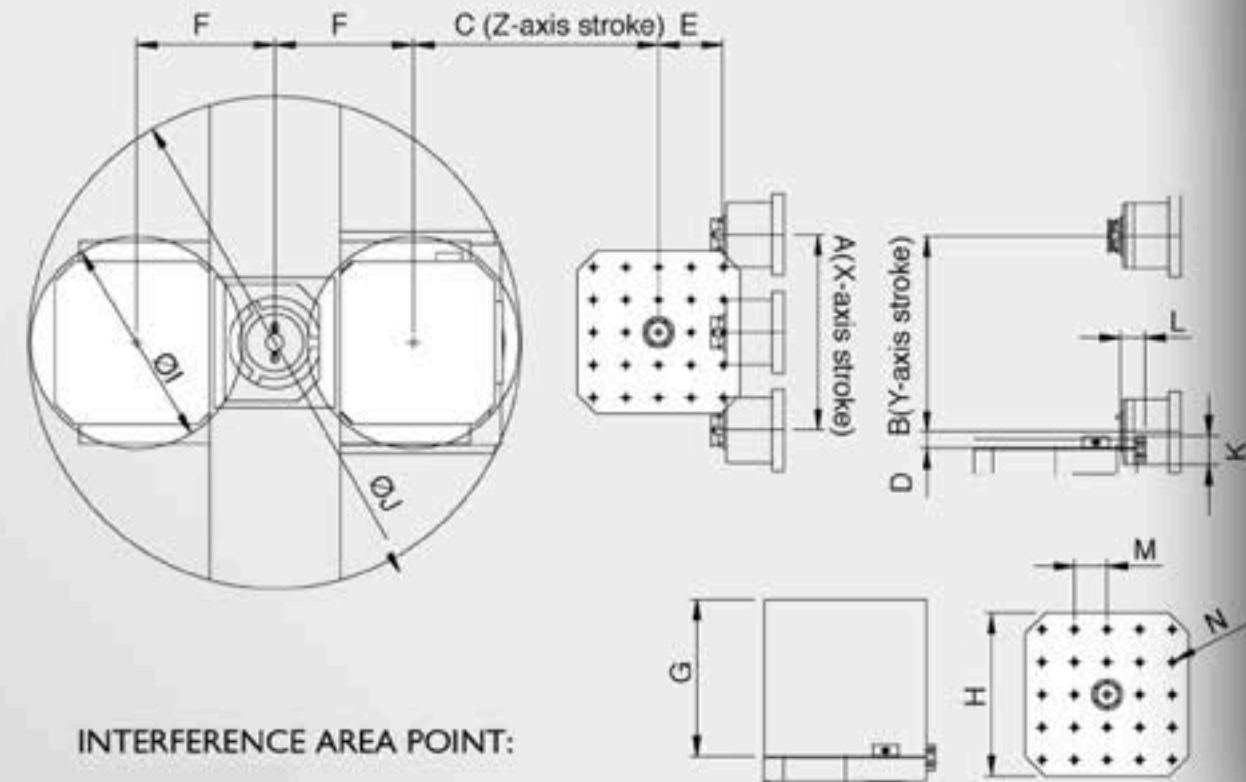
SMART-1

AUTOMATIC PALLET CHANGE



- > One to one synchronized pallet change permits workpiece loading and unloading during machining.
- > The pallet change system will save waiting time for loading and unloading workpieces, achieving 100% machining operation efficiency.
- > Upon request, customers may order extra pallets.
- > Fast pallet change time is 8 - 12 seconds.
- > The pallet is positioned on 4 tapered cones for high positioning accuracy.

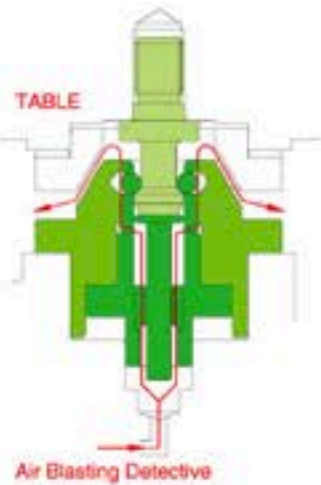
APC SPECIFICATIONS - Excellant Working Space



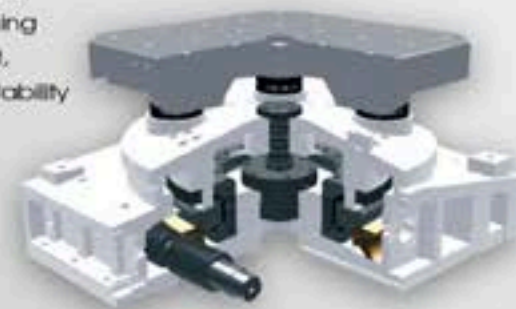
INTERFERENCE AREA POINT:

INTERFERENCE DIAGRAM	630	800	800	1020 (40°)	1270 (50°)	1530 (60°)
A	630	800	800	1020 (40°)	1270 (50°)	1530 (60°)
B	630	725	725	850	1050	1250
C	630	725	725	890	1050	1250
D	50	50	50	70	50	50
E	130	150	200	200	230	230
F	400	475	475	615	800	800
G	750	825	825	950	1150	1350
H	400 x 400	500 x 500	500 x 500	630 x 630	800 x 800	1000 x 1000
I	560	630	630	870	1110	1300
J	1360	1580	1580	2100	2710	2950
K	85	85	110	90	110	110
L	90	125	75	140	195	305
M	80	100	100	125	160	160
N	24-M10 x P1.5 x 20	24-M16 x P2.0	24-M16 x P2.0	24-M16 x P2.0	24-M16 x P2.0	24-M16 x P2.0

AIR BLAST ON POSITIONING CONES



The Pallet is fitted on 4 positioning cones. Before pallet positioning, the 4 positioning cone surfaces are cleaned by air blast, allowing the pallet to achieve higher stability and positioning accuracy.



1° INDEXING TABLE HIRTH COUPLING

MODEL	500 x 500 mm	630 x 630 mm	800 x 800 mm
Pallet size	500 x 500 mm	630 x 630 mm	800 x 800 mm
Accuracy	± 5 sec	± 5 sec	± 5 sec
Repeatability	± 1.5 sec	± 1.5 sec	± 1.5 sec
Tilting moment	7,800 Nm	15,000 Nm	28,000 Nm
High clamping force	5,500 N	8,000 N	10,000 N

- JMH-500 four cones clamping system clamping force at 35,000N.
- JMH-630/800 4 large size taper cones provide 70,000N clamping force.
- Dual-lead 0.001° worm shaft worm wheel set. (high positioning & repeatability accuracy)



4th AXES

0.001° NC ROTARY TABLE 0.001°

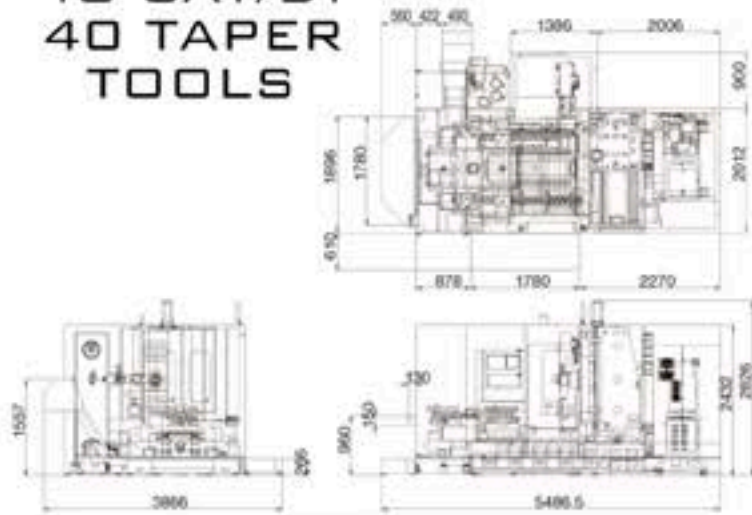
MODEL	500 x 500 mm	500 x 500 mm	630 x 630 mm	800 x 800 mm
Pallet size	500 x 500 mm	500 x 500 mm	630 x 630 mm	800 x 800 mm
Indexing accuracy	± 15 sec	± 15 sec	± 15 sec	± 15 sec
Repeatability	± 3 sec	± 3 sec	± 3 sec	± 3 sec
Tilting moment	4,000 Nm	4,000 Nm	9,000 Nm	19,000 Nm
High clamping force	2,500 N	3,000 N	5,000 N	8,000 N
	(Std.)	(Opt.)	(Opt.)	(Opt.)



MACHINE DIMENSIONS

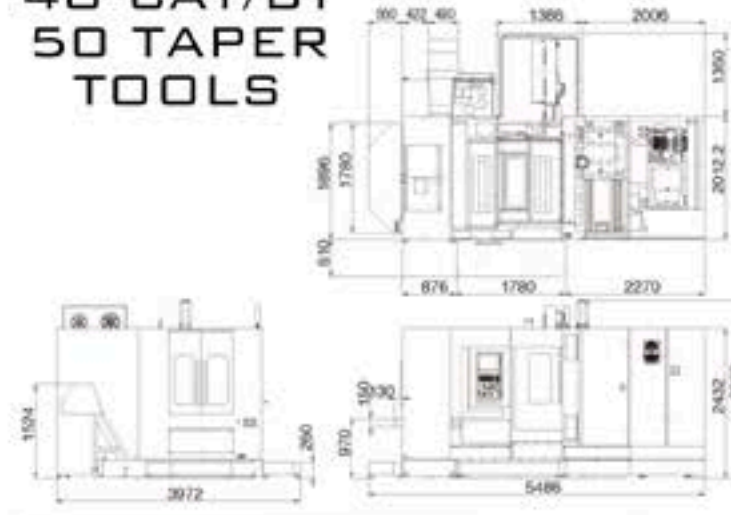
HMC-400

40 CAT/BT
40 TAPER
TOOLS



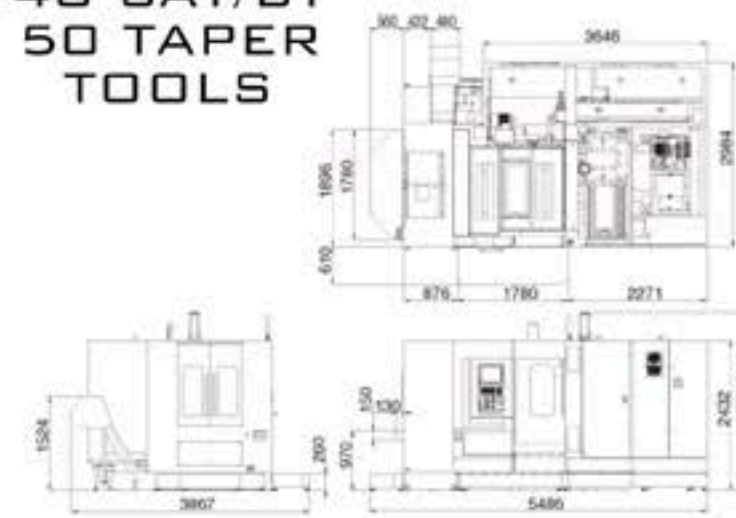
HMC-500

40 CAT/BT
50 TAPER
TOOLS



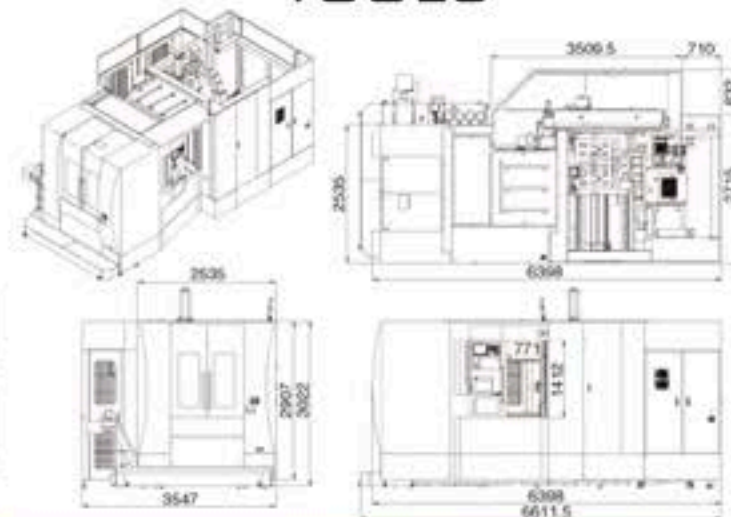
HMC-500

40 CAT/BT
50 TAPER
TOOLS



HMC-630

50 CAT/BT50 TAPER
TOOLS



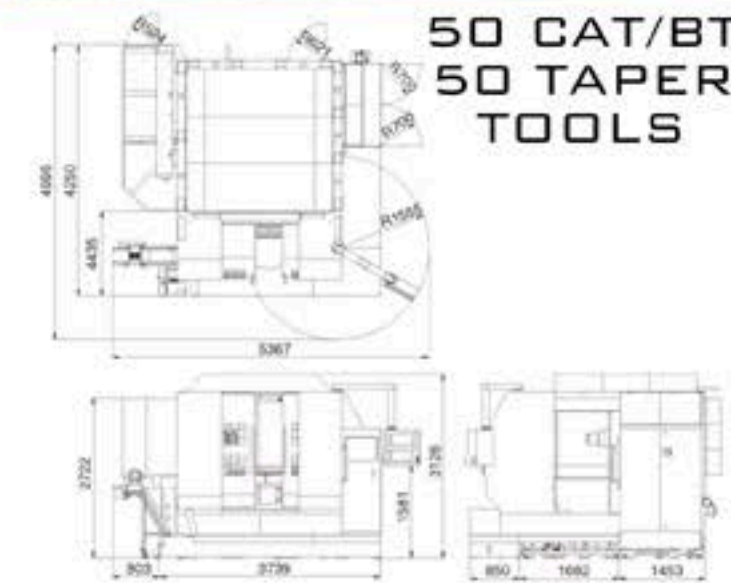
HMC-500S

50 CAT/BT
50 TAPER
TOOLS



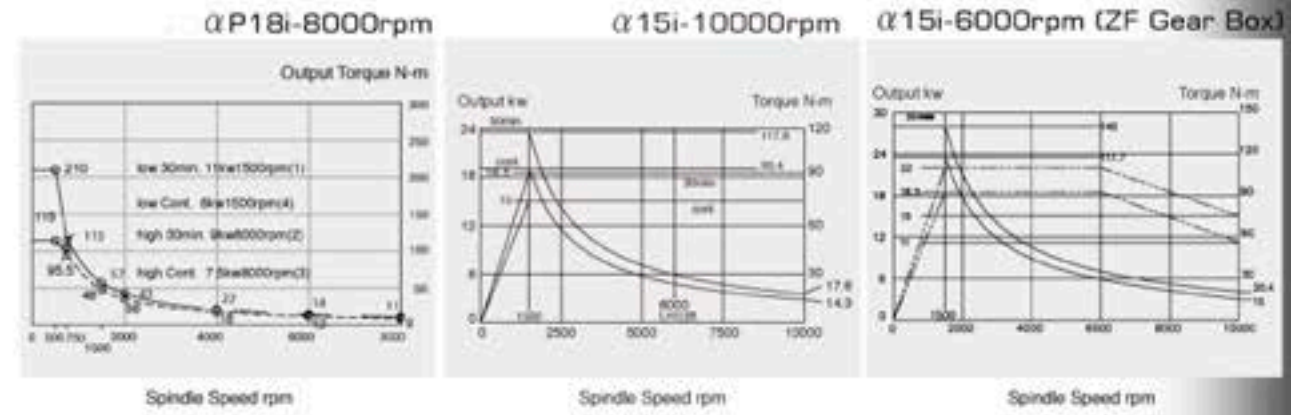
HMC-630/800S

50 CAT/BT
50 TAPER
TOOLS

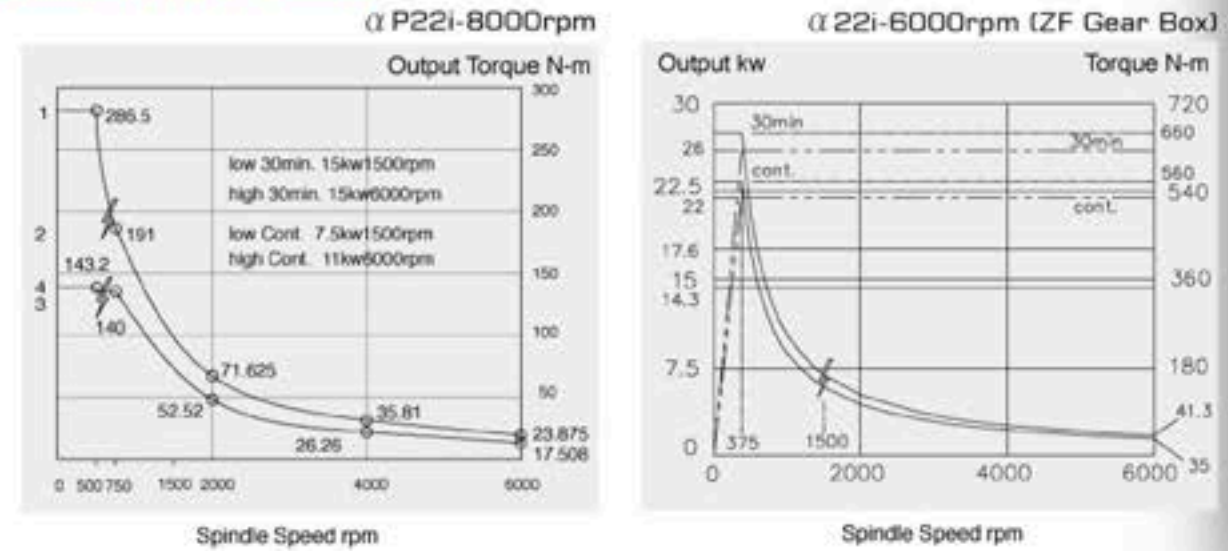


SPINDLE SPEED / OUTPUT DIAGRAM

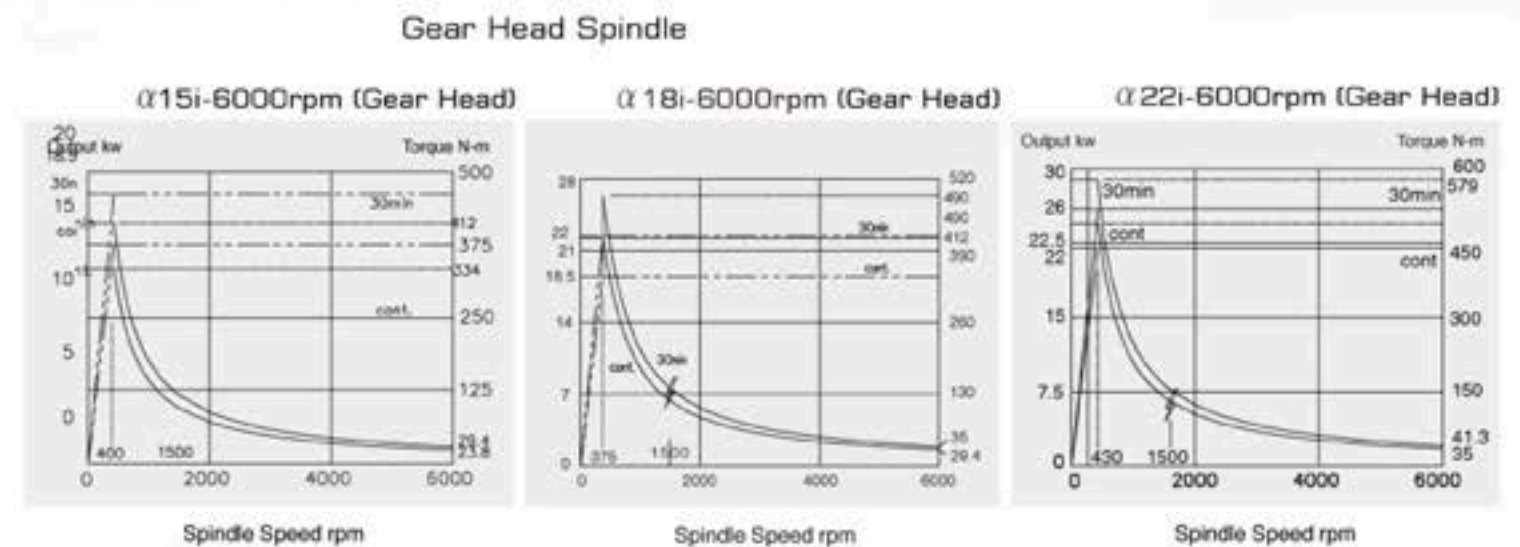
NO.40



NO.50



NO.50



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 AUTOMATIC PALLET CHANGE

SMART-1

SPECIFICATIONS (INCH DIMENSIONS SHOWN IN BLUE)

MODEL		HMC-400 (40T)	HMC-500 (40T)	HMC-500 (50T)	HMC-600	HMC-800	HMC-1000
TRAVEL	X - axis travel	mm 630 24.8	800 31.4	800 31.4	1020 40.1	1270 50	1530 60
	Y - axis travel	mm 630 24.8	725 28.5	725 28.5	850 33.4	1050 41.3	1250 49.2
	Z - axis travel	mm 630 24.8	725 28.5	725 28.5	890 35	1050 41.3	1250 49.2
	Spindle center to work table surface	mm 50 ~ 680 2-26.7	50 ~ 775 2-30.5	50 ~ 775 2-30.5	70 ~ 920 2.7-36.2	50 ~ 1100 2-43.3	50 ~ 1300 2-51.1
	Spindle nose to work table center	mm 130 ~ 760 5.1-29.9	150 ~ 875 5.9-34.4	200 ~ 925 5.9-36.4	200 ~ 1090 5.9-42.9	230 ~ 1280 9-50	230 ~ 1480 9-58.2
TABLE	Table surface to floor	mm 1100 43.3	1100 43.3	1100 43.3	1300 51.1	1320 51.9	1370 53.9
	Table size	mm 400 x 400 15.7x15.7	500 x 500 19.6x19.6	500 x 500 19.6x19.6	630 x 630 24.8x24.8	800 x 800 31.4x31.4	1000 x 1000 39.3
	T - slot / Bolt Spec.	mm 24-M10 x P1.5 x 20	24-M16 x P2.0	24-M16 x P2.0	24-M16 x P2.0	24-M16 x P2.0	24-M16 x P2.0
	Max. loading	kg 400 880 lbs	500 (OPT. 800) 880 lbs	500 (OPT. 800) 880 lbs	1200 2640 lbs	2000 4400 lbs	2000 4400 lbs
	Divide angle	deg 0.001°	1° (OPT. 0.001° / 5°)	1° (OPT. 0.001° / 5°)	1° (OPT. 0.001° / 5°)	1° (OPT. 0.001° / 5°)	1° (OPT. 0.001° / 5°)
SPINDLE	Spindle taper	BT-40 CAT40	BT-40 CAT40	BT-50 CAT50	BT-50 CAT50	BT-50 CAT60	BT-50 CAT60
	Spindle drive	DDS	DDS	DDS	Gear Head	Gear Head	Gear Head
	Spindle diameter	mm Ø70	Ø70	Ø100	Ø100	Ø100	Ø100
	Spindle speed	rpm 10000	8000	6000	6000	6000	6000
FEEDRATE	Spindle motor (cont / 30 min)	kw 15/18.5 20/26hp	7.5/11 (15/18.5) (22/26) or P18 10-35hp	11/15 (22/26) or P22 16-36hp	15/18.5 (18.5/22) (22/26) 10-36hp	15/18.5 (18.5/22) (22/26) 10-36hp	15/18.5 (18.5/22) (22/26)
	3 - axes cutting feedrate	M/min 1 ~ 10000 400ipm	1 ~ 10000 400ipm	1 ~ 10000 400ipm	1 ~ 6000 240ipm	1 ~ 6000 240ipm	1 ~ 6000 240ipm
	3 - axes rapid feedrate	M/min 36 (48 Opt.) 1400/1900	30 (36 Opt.) 1400/1400	30 (36 Opt.) 1400/1400	24 (30 Opt.) 1400/1400	15 / 15 / 12 1400/1400	15 / 15 / 12
ATC	3 - axes min. setting unit	mm 0.001 0.000039	0.001 0.000039	0.001 0.000039	0.001 0.000039	0.001 0.000039	0.001 0.000039
	Tool selection	pcs 40 (60, 90)	40 (60, 90, 120)	40 (60, 90, 120)	40 (60, 90, 120)	40 (60, 90, 120)	40 (60, 90, 120)
	Max. tool diameter x length	Ø80 x 300 3-12	Ø85 x 300 3-12	Ø125 x 400 3-12	Ø125 x 500 3-12	Ø125 x 600 3-12	Ø125 3-12
	Max. tool weight	mm 10 22 lbs	10 22 lbs	20 44 lbs	20 44 lbs	20 44 lbs	20 44 lbs
	Tool shank	type P40T-1 CAT 40	P40T-1 CAT 40	P50T-1 CAT 50	P50T-1 CAT 50	P50T-1 CAT 50	P50T-1 CAT 50
APC	Tool change time (t - t)	1.6 (60 HZ)	1.6 (60 HZ)	2.9 (60 HZ)	2.9 (60 HZ)	2.9 (60 HZ)	2.9 (60 HZ)
	Number of pallets	sec 2	2	2	2	2	2
	Method of pallet change	type ROTARY	ROTARY	ROTARY	ROTARY	ROTARY	ROTARY
OTHER	Pallet change time	sec 8 SEC	8 SEC	8 SEC	10 SEC	12 SEC	
	Floor space	mm 3600 x 4600 141x181	3835 x 4835 151x190	3835 x 4835 151x190	3847 x 6398 151x251	3880 x 8100 153x319	
	Machine weight (N.W.)	kg 10500 23,500 lbs	13500 30,000 lbs	16000 35,200 lbs	27000 60,000 lbs	30000 66,000 lbs	

STANDARD ACCESSORIES

- Rotary type automatic pallet changer
- 1° indexing rotary table (HMC-400 Std. 0.001°)
- Chain type chip conveyor with cart
- 40 tools chain type ATC
- BT-40, HMC-400: 10,000 rpm direct drive
- BT-40, HMC-500: 8,000 rpm direct drive
- BT-50, HMC-500: 6,000 rpm direct drive
- BT-50, HMC-630/800/1000: 6,000 rpm Gear head spindle
- Japan THK Ball screw coolant system (HMC-630/HMC-800 Std.)
- Spindle coolant curtain
- Spindle oil cooler
- Heat exchanger for electrical cabinet
- 3 areas powerful chip flushing system
- Automatic lubrication system
- Fully enclosed splash guard
- Mitsubishi or Fanuc control
- Leveling bolts and pads
- Tool box with tools
- Operation and maintenance manual
- Transformer

OPTIONAL ACCESSORIES

- 0.001° or 5° indexing rotary table
- 60, 90 or 120 tools chain type magazine
- BT-40, 10,000 ~ 24,000 rpm direct drive (HMC-400 / HMC-500)
- BT-50, 8,000 ~ 12,000 rpm direct drive (HMC-500)
- Coolant through spindle (CTS-20/30/50 bar)
- 3 axes linear scales
- Oil skimmer
- Air conditioner for electrical cabinet
- Automatic tool length measuring device
- Automatic workpiece measuring device
- Coolant through tool holder 20/50 bar (without tool holder)
- CE standards
- SIEMENS, HEIDENHAIN, FAGOR controller
- Pallet automation system
- ZF gear box (HMC-400 / HMC-500)
- Hiwin Ball screw coolant system (HMC-630/HMC-800 Std.)

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