

ASM

SERIES
ASM/ASM FD



VISION WIDE TECH CO., LTD.

No. 1126-2, Bishan Rd., Caotun Township, Nantou 542, Taiwan
Tel: +886-49-2338888
Fax: +886-49-2330083

E-mail: info@visionwide.com.tw
www.visionwide-tech.com

VISION WIDE (AH) TECH CO., LTD.

No. 1049, Dongcheng Road, Bowang District, Ma'anshan City,
Anhui Province 243131, China
Tel : +86-05552908886



ASM-E-202306

ASM

SERIES
ASM/ASM FD

5-axis Universal Machining Center



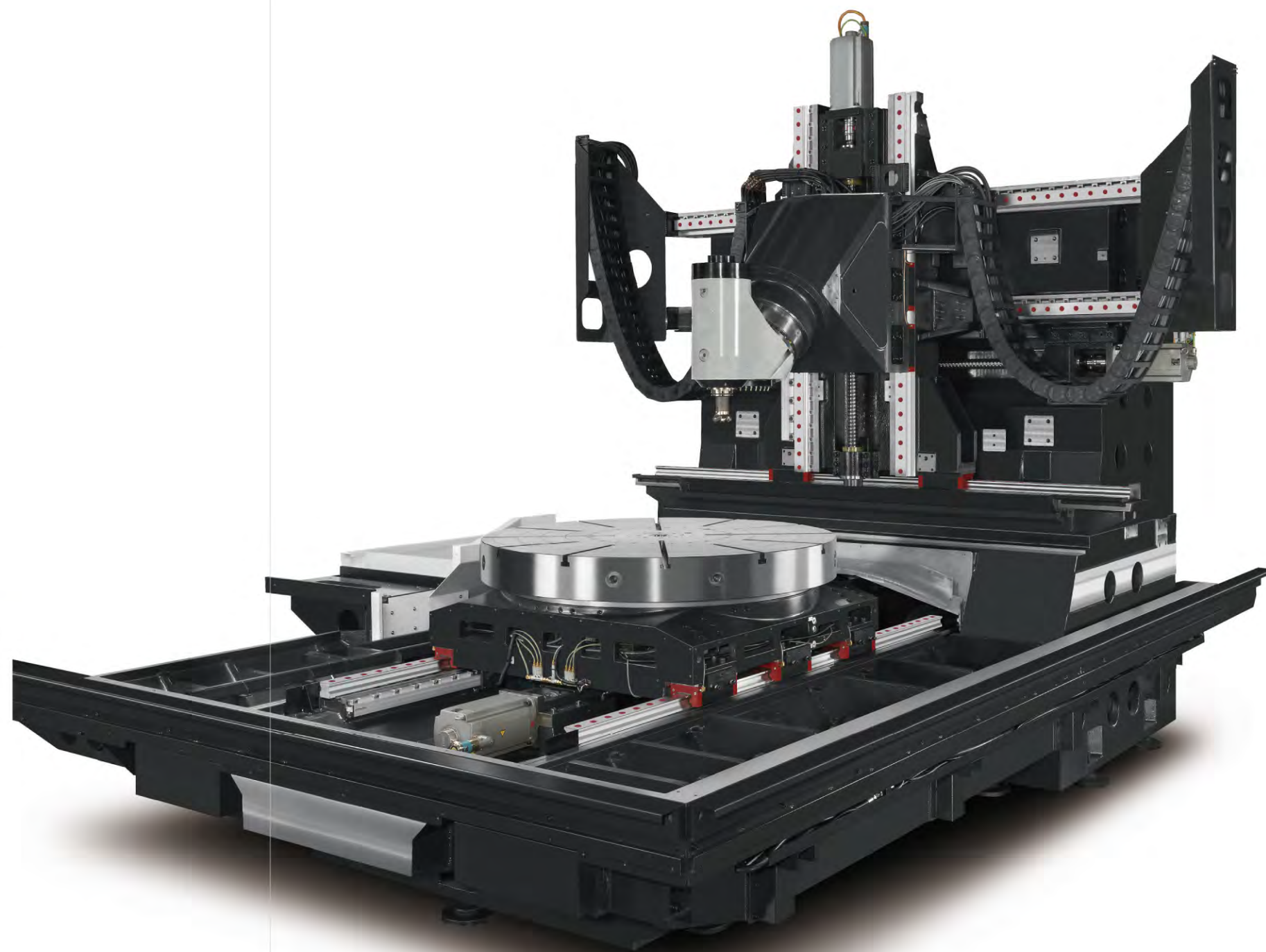
5-axis Universal Machining Center - ASM series

Extraordinary 5-axis dynamic synchronizing motion capability, along with mill-turn functions, match with rotary table, satisfy various machining demands with multi-processes in one machine.

Special designed machining center for cylindrical workpiece with high acceleration, high feedrate and 5-axis synchronizing motion.

Apply on various machining demands and industries

- Cylindrical and precision components machining
- Multi-axial drilling
- Apply to semiconductor, aerospace, green power, or automotive industries.



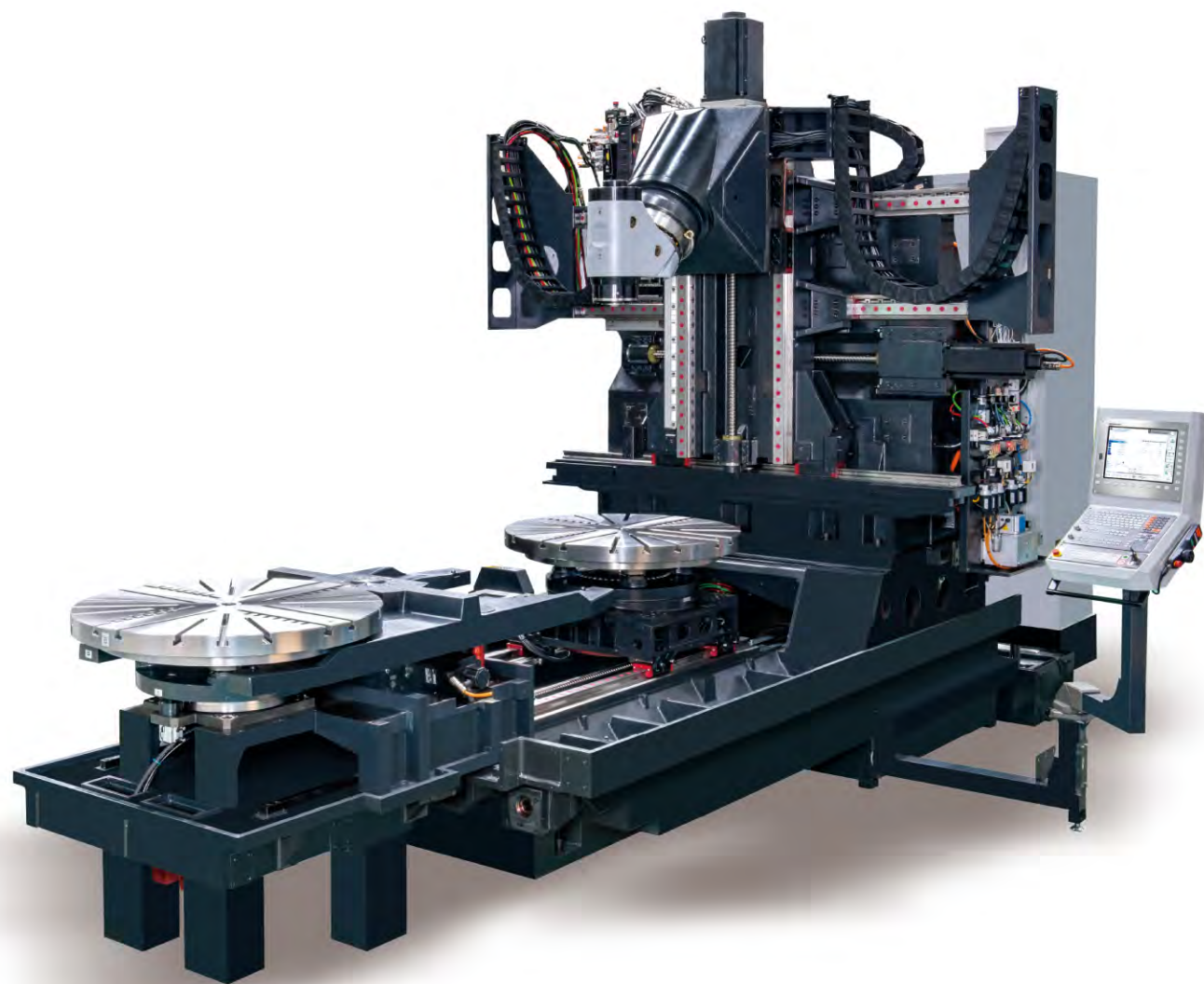
High Speed.
High Precision.
High Efficiency.

- Precision: positioning accuracy P 0.006mm, repeatability PS 0.0055mm.(Benefits of constant temperature plant)
- High speed: 40 m/min rapid traverse and 24 m/min feedrate 0.3G acceleration.
- Spindle power: 34/43kW

Multi-Task Solution Provider

Auto Pallet Change is available for **ASM/ASM FD** series.

- Enhanced production efficiency and reduced working hours via workpiece pre-set.
- Conical bottom nut is applied to worktable positioning to enhance rigidity and repeatability.
- Wide sliding doors for easy loading, broad and see-through acrylic window, and emergency stop setting to protect operators.



High Speed.
High Precision.
High Efficiency.

One-Step Machining

ASM / ASM FD series ▶ 1 Machines / 4 Steps



Single-function machining centers ▶ 3 Machines / 8 Steps



ASM series Various Industry Applications

5-axis Universal Machining Center-Vacuum Chamber Solution

Vertical and Horizontal Machining



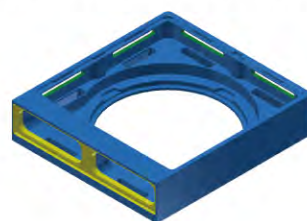
5-face machining completed chamber in one set up.

High Speed & High Power Spindle



The finest equipment for machining aluminum alloys

34/43kW, 10000RPM, 162/205 Nm
High speed rough machining
D63 Copy milling cutter
S9,500RPM, F6,000mm/min
Ap 10mm, Ae 40mm, Q2,400cc/min

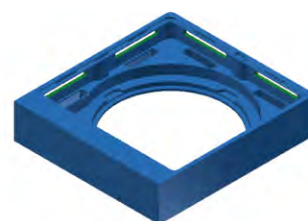


Powerful Spindle & Structure



Power T-slot Cutter Machining

D200 T-slot Cutter for cavity machining
S1,000RPM, F2,000mm/min
Ap25mm, Ae 20mm, Q 1,000cc/min



Mechanical Engineering Spiral Bevel Gear

- Effectively reduce processing time by 20%.
- D800xH160mm.
- 5-axis synchronized machining.



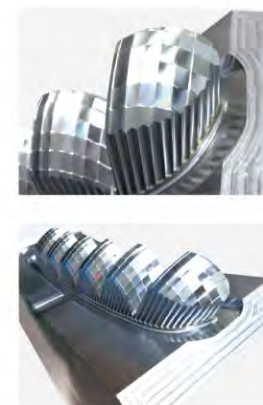
High Speed.
High Precision.
High Efficiency.

Pump Industry Vacuum Compressor Body

- W450 x L400 x H610mm
- FCD200
- Mill-Turning machining
- With APC function can offline setup, quick workpiece change, effectively reduce machining time by 20%

Mold Machining Car Light Mold

- L360 x W160 x H360mm
- 2311 Die steel
- Linear project cutting
- Multi inclined plan, oblique angle cutting, improve machining efficiency
- Surface roughness : Ra0.4 μ m
- 0.04mm contour accuracy



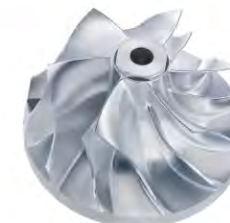
Aerospace Technology Engine Case

- D600 x H400mm
- Titanium Alloy
- 5-axis synchronized machining.
- Milling and turning machining.
- High-temperature alloy machining.



Turbine Blade

- D300 x H160mm
- Aluminum
- 5-axis synchronized machining.
- Surrounding machining.



Mold Machining Tire Mold (Segment Type)

- L660 x W600 x H260mm
- Steel
- Corner smooth flow cut via 5-axis synchronized machining.
- Multi-axis project machining.



Automotive Industry Engine

- W600 x L800 x H440mm
- Cast Aluminum
- 5 face machining.
- Auto parts machining.



High Rigidity and Lightweight Structure Design

High Dynamic Rigidity

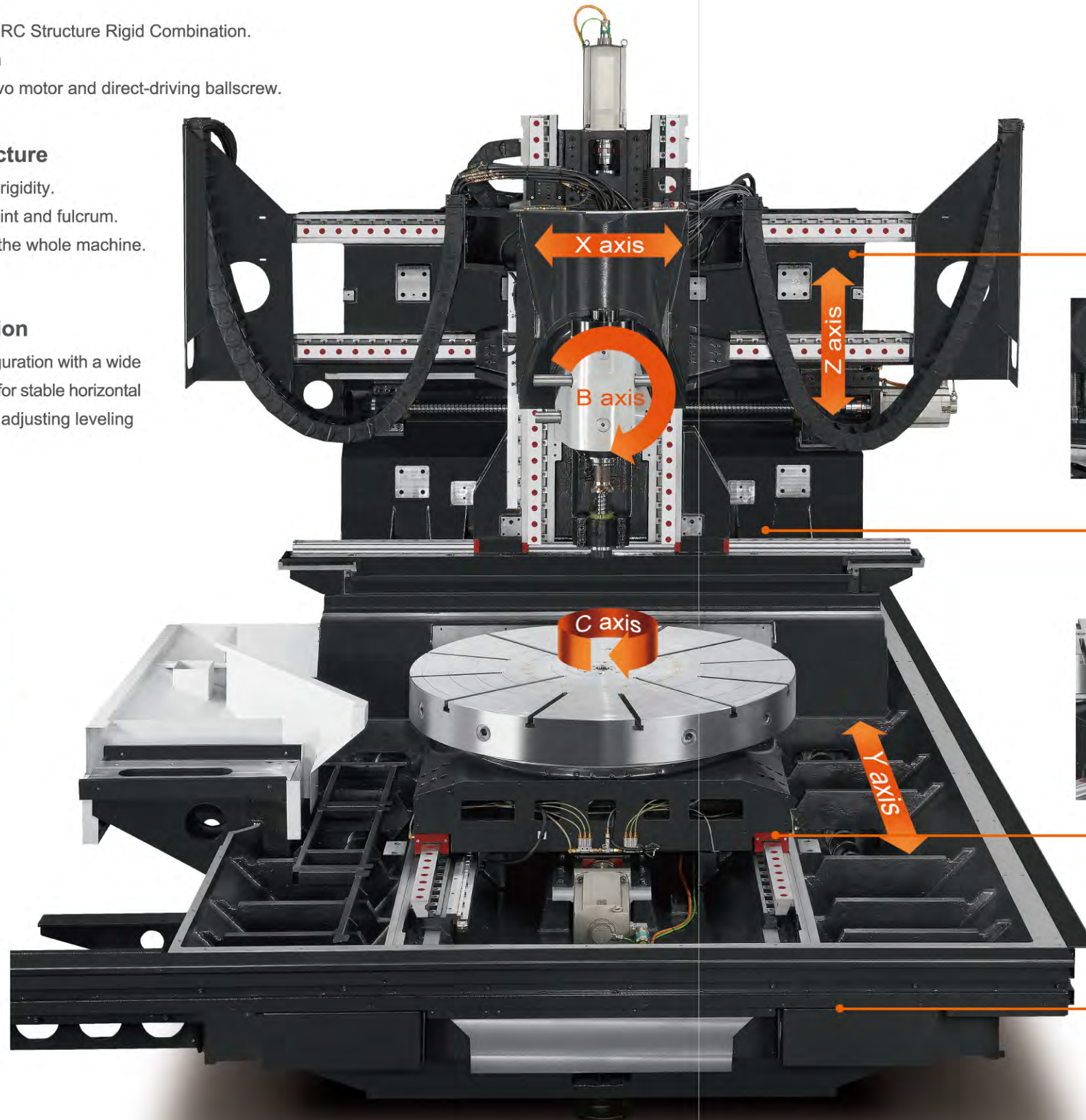
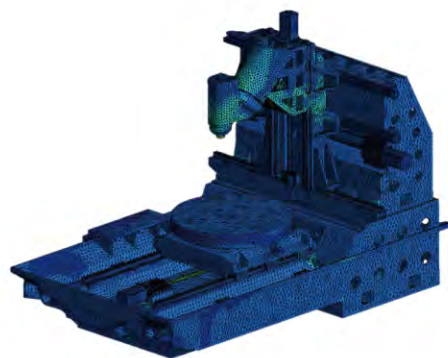
- MSS Multiple Support Structure and SRC Structure Rigid Combination.
- Box-shaped, wider and thicker column
- High dynamic rigidity with a 10kW servo motor and direct-driving ballscrew.

BFS Best Force Transfer Structure

Thick and wide column enhances X-axis rigidity.
Shortest distance between tool center point and fulcrum.
The broad base provides full support for the whole machine.

TRC Topology Rib Configuration

The base is designed in the best rib configuration with a wide span linear guideway and slider allocation for stable horizontal accuracy, which can be adjusted only by adjusting leveling bolts.



HRT High Response Transmission

With a 10kW servo motor and direct driving ballscrew, it maintains the best positioning accuracy and best-running rigidity.
Without counterweight, Z axis design benefits enhancing responsive speed.

Precision and Stability under high-Speed Movement

The linear guideway is distributed on a ladder-shaped X axis to enhance positioning accuracy about the beam track and limit whole travel straightness error within 0.02mm.
The allocation of linear guideway increases stability and torsion strength on the X axis.

Heavy-Loading Dynamic Rigidity

High rigidity heavy-loading roller type linear guideway on the Y axis increases 30% rigidity.
4~6 heavy-loading sliders enhance cutting rigidity and loading.
A thick and wide base equips linear guideways arranged in the best supportive span to fulfill the heavy load demand.

High Rigidity Base BFS Best Force Transfer Structure

3-Leveling points achieve high accuracy.

Productivity Increased by 2 Times Above

5-axis synchronizing motion provides multi-angle machining to reduce manufacture process.

Reduced working hours and enhanced availability efficiency via exchange table.

High speed and high response performance: 24 m/min feedrate 0.3G acceleration.

High rigidity structure design ensures machine accuracy and stability under high speed machining.

45° Universal Head Minimize Interference Space

- 1.Shortest span from tool point and structural supporter realizes maximal cutting rigidity.
- 2.Rotation surface of 45°B axis head reduces torque loading from all directions and ensures stable cutting performance.

Various Spindle for Multiple Application Spindle Temperature Protection Function

Central monitoring system provides spindle vibration sensor and temperature sensors for spindle bearing and coils to extend their lifespan.

C Axis Uses Heavy Loading Rotary Table to Fulfill Milling and Turning Demands.

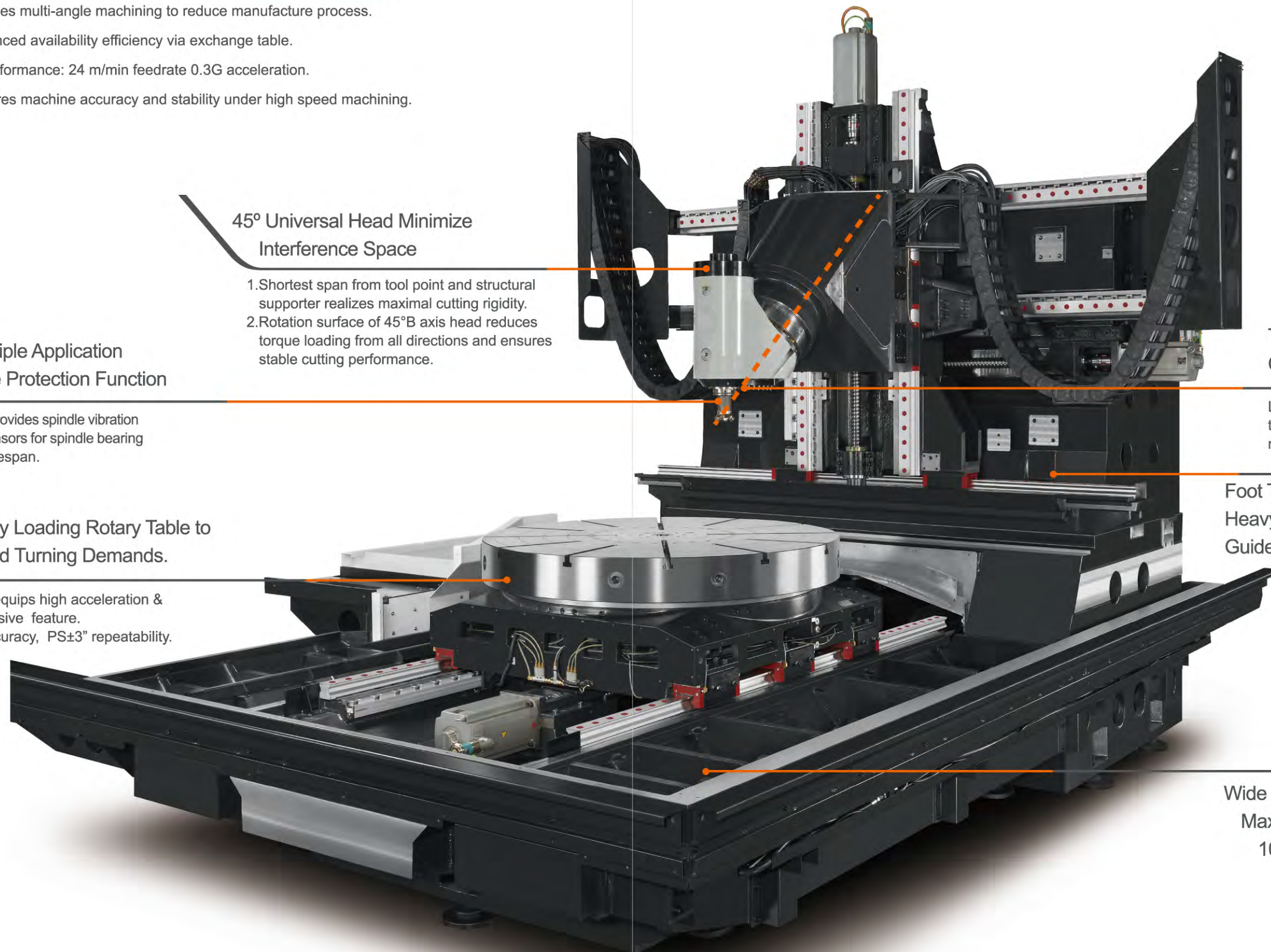
Built-in D.D. motor equips high acceleration & deceleration responsive feature.
P±5" positioning accuracy, PS±3" repeatability.

Thanks to the Tool Center Point

Located on the B axis rotation center to achieve the minimal cutting resistance.

Foot Type Support and Heavy Loading Roller Type Guideways on 3 axes

Wide Chip Groove Max. Removal Rate 10,000 cc/min



High Performance on 45° Universal Head



- Built-in backlashless D.D. torque motor.
- High acceleration feature.
- Shortest span between tool point and structural fulcrum realizes maximal cutting rigidity.
- Minimum interference space.
- With protective and monitor system, spindle vibration sensor and temperature sensors for spindle bearing and coils.
- High accuracy design, $\pm 2''$ positioning accuracy, $\pm 2''$ Repeatability.

Specification	-	CM21X-01-10	CM21X-04-10T	CG30X-01-07	CG30X-02-07T	HF29X-01-24
Swiveling Range	°	-30~+180	-30~+180	-30~+180	-30~+180	-30~+180
B-axis Max. Speed	rpm	80	80	30	30	80
B-axis Min. Indexing Accuracy	°	± 0.001	± 0.001	± 0.001	± 0.001	± 0.001
B-axis Rated Torque	Nm	900	900	1,611	1,824	900
B-axis Max. Torque	Nm	1,679	1,679	3,136	3,548	1,679
B-axis Braking Torque	Nm	4,000	4,000	5,500	5,500	4,000
Spindle Application	-	Milling	Milling and Turning	Milling	Milling and Turning	Milling

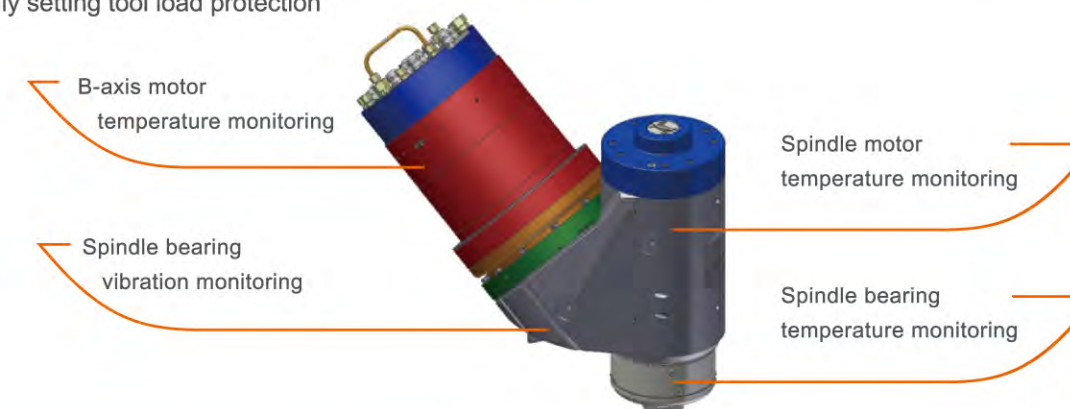
Central Monitoring Protection System

Spindle vibration protection

- Spindle bearing vibration monitoring
- Tool dynamical balancing error detection
- Spindle cutting loading software protection
- Arbitrarily setting tool load protection

Working temperature protection

- Spindle bearing temperature monitoring
- Spindle motor temperature monitoring
- B-axis motor temperature monitoring



Geometric Accuracy Compensation

Kinematic geometry calibration

The geometry error from spindle center line and centroid of rotation axes, which including rotary and tilted head, will be auto measured and compensated.

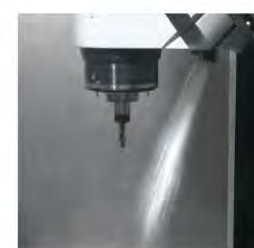
Auto workpiece measurement

With the same measurement device. Auto workpiece measurement is also available.

Thermal compensation(OPT.)

The compensation of spindle heat extension .

The compensation of ambient temperature difference .



● Spindle Side Cutting Coolant Device



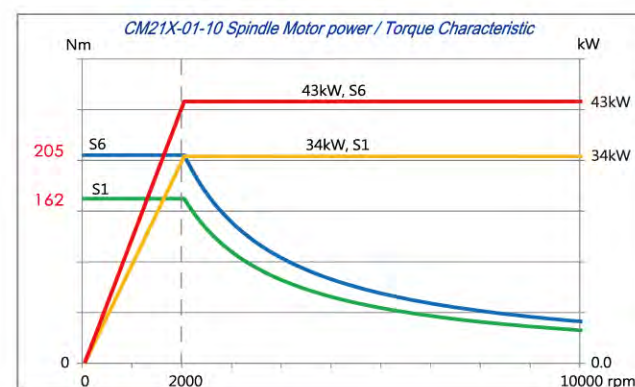
● Spindle Nose Ring Cutting Coolant Device



● Coolant Through Spindle System(OPT.)

Performance of Spindle

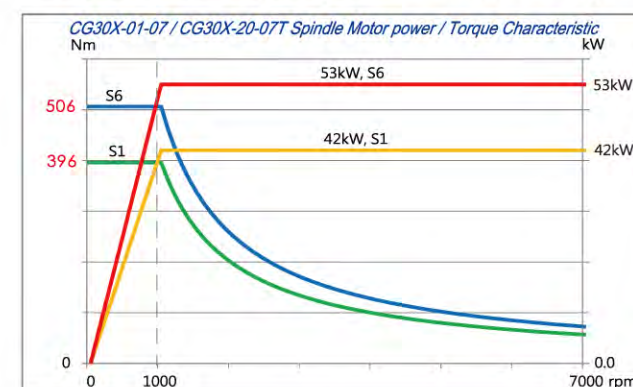
1. CM21X-01-10 / 10,000rpm / HSK-A100 Milling



Test items	Material	Tool	Cutting Condition	Cutting Ability
Heavy cutting	S45C	D80 Face mill tool	S1,600, F2,500, Ap2.5, Ae60	Q480cc/min
High speed cutting	Al6061	D80 Face mill tool	S7,500, F11,250, Ap3.5, Ae60	Q2,400cc/min
Drilling Performance	S45C	D40 Rapid drill	S1,200, F240	Q302cc/min
Tapping Performance	S45C	M30x3.5	S160, F560	M30x3.5

*S : Spindle speed(RPM) / F : Feed(mm/min) / Ap : Cutting width(mm) / Ae : Cutting depth(mm)

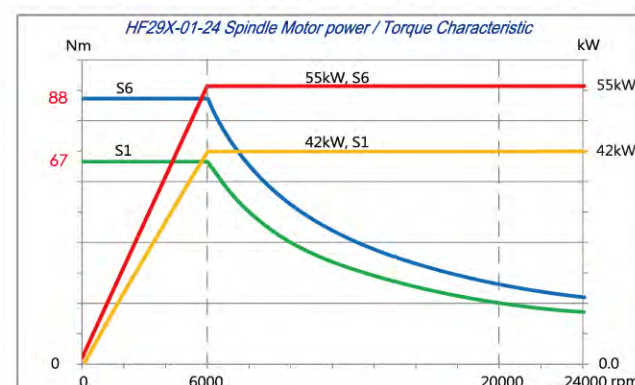
2. CG30X-01-07 / 7,000 rpm / HSK-A100 Milling
CG30X-02-07T / 7,000 rpm / HSK-T100 Turning



Test items	Material	Tool	Cutting Condition	Cutting Ability
Heavy cutting	S45C	D80 Face mill tool	S1,600, F2,500, Ap4.0, Ae60	Q768cc/min
High speed cutting	Al6061	D80 Face mill tool	S6,000, F9,000, Ap5.0, Ae60	Q2,700cc/min
Drilling Performance	S45C	D63 Rapid drill	S762, F152	Q475cc/min
Tapping Performance	S45C	M36x4	S125, F500	M36x4

*S : Spindle speed(RPM) / F : Feed(mm/min) / Ap : Cutting width(mm) / Ae : Cutting depth(mm)

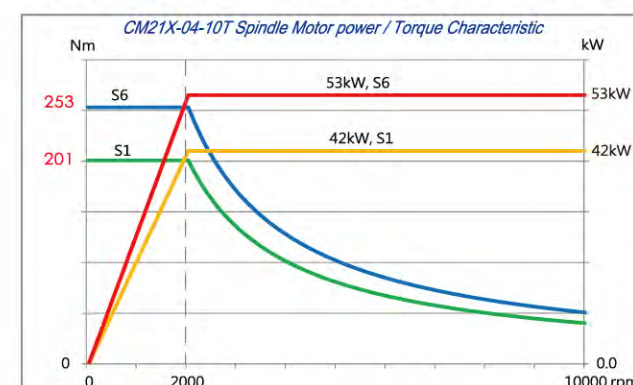
3. HF29X-01-24 / 24,000 rpm / HSK-A63 Milling



Test items	Material	Tool	Cutting Condition	Cutting Ability
Heavy cutting	S45C	D40 High feed mill tool	S3,125, F9,375, Ap1.25, Ae32	Q375cc/min
High speed cutting	Al6061	D80 Face mill tool	S7,500, F11,250, Ap4.0, Ae60	Q2,700cc/min
Drilling Performance	S45C	D27 Rapid drill	S1,778, F356	Q204cc/min
Tapping Performance	S45C	M24x3.5	S160, F560	M30x3.5

*S : Spindle speed(RPM) / F : Feed(mm/min) / Ap : Cutting width(mm) / Ae : Cutting depth(mm)

4. CM21X-04-10T / 10,000 rpm / HSK-T100 Turning



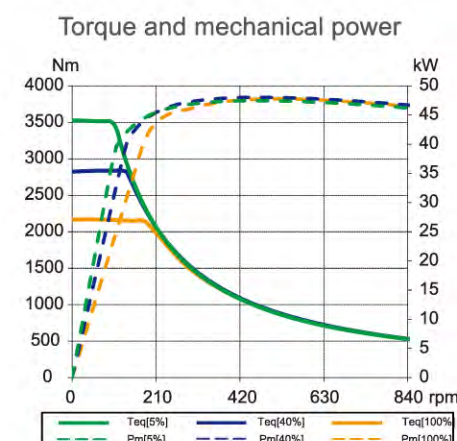
Test items	Material	Tool	Cutting Condition	Cutting Ability
Heavy cutting	S45C	D80 Face mill tool	S1,600, F2,500, Ap3.0, Ae60	Q576cc/min
High speed cutting	Al6061	D80 Face mill tool	S7,500, F11,250, Ap4.0, Ae60	Q2,700cc/min
Drilling Performance	S45C	D45 Rapid drill	S1,067, F213	Q340cc/min
Tapping Performance	S45C	M33x3.5	S150, F525	M33x3.5

*S : Spindle speed(RPM) / F : Feed(mm/min) / Ap : Cutting width(mm) / Ae : Cutting depth(mm)

High Torque and High Feedrate of Rotary Table

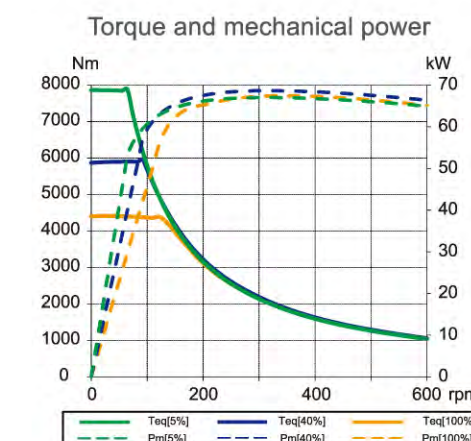
ASM-1012FD / 1212FD
ASM-1012FD / 1212FD with APC

Max. speed	rpm	500
Min index accuracy	°	0.001
Rated torque	Nm	2,150
Max. torque	Nm	3,520
Brake torque	Nm	6,900



ASM-1612FD
ASM-1612FD with APC

Max. speed	rpm	500
Min index accuracy	°	0.001
Rated torque	Nm	4,490
Max. torque	Nm	7,890
Brake torque	Nm	10,000



Turning Capability



Removal Rate: 1,120cc/min

Dimension: D275mm

Material: S45C

Cutting Depth (Ae) : 8mm

Feedrate per Revolution: 0.8mm/rev

Spindle Speed: 200rpm

Spindle Load: 90%



Cylindricity: 0.012mm

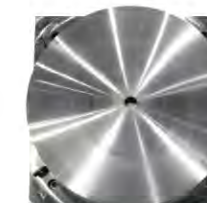
Dimension: H700 x D265mm

Material: S45C

Cutting Depth (Ae) : 0.5mm

Feedrate per Revolution: 0.15mm/rev

Spindle Speed: 240rpm



Flatness: 0.012mm

Dimension: D800mm

Material: S45C

Cutting Depth (Ae) : 0.5mm

Feedrate per Revolution: 0.15mm/rev

Tool Speed: 200m/min

Spindle Speed: 80~350rpm

Rotary Table

Driving by a built-in D.D motor that has excellent positioning and repeatability accuracy.

Backlashless transmission mechanism, high acceleration, and deceleration properties.

Both milling and turning requirements are accomplished, which reduces the time of transferring workpieces.

Series	-	ASM-1012(FD)	ASM-1212(FD)	ASM-1612(FD)/ASM-1612G(FD)
Table Diameter	mm	Ø1,000	Ø1,200	Ø1,500
Table Speed (Milling / Turning)	rpm	50(500)	50(500)	40(500)
Min. Indexing Accuracy	°	0.001°	0.001°	0.001°
Table Load	kg	2,000	2,000	3,000



Parallel T-slot
(Milling, STD)

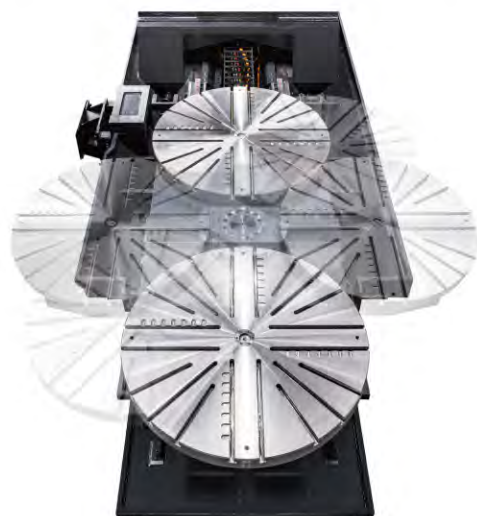


Radial T-slot
(Mill-Turning, STD.)



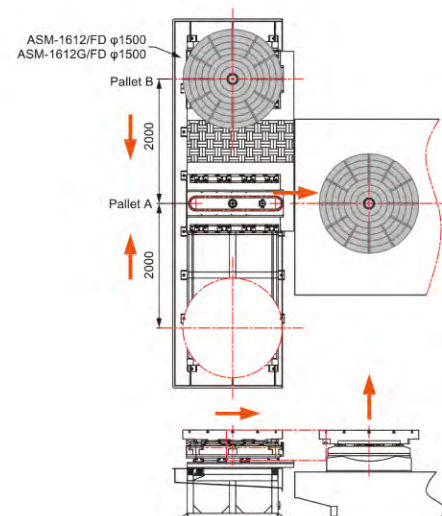
Compound T-slot
(Mill-Turning, OPT.)

Auto Pallet Change (APC)



ASM-1012/FD Ø2,600-Swivel Diameter
ASM-1212/FD Ø2,800-Swivel Diameter

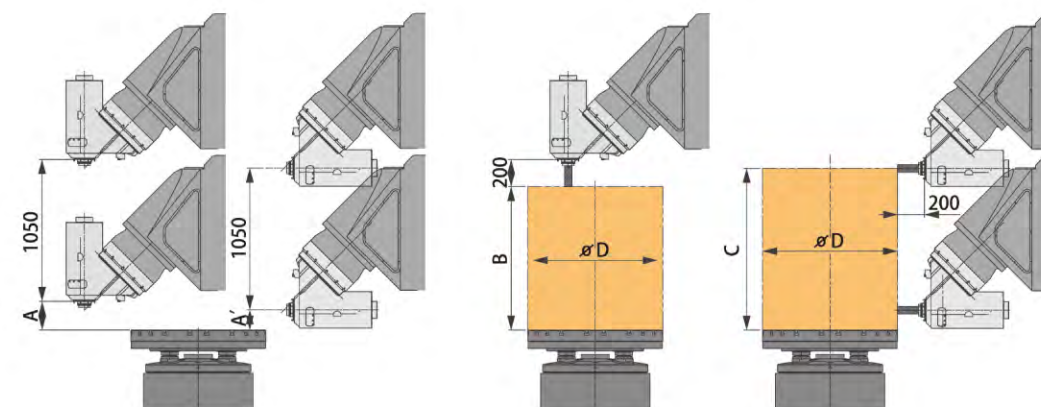
Swivel Type



Linear Translate Type

※ For the change of multi table, please contact our sales representatives.

Maximal Workpiece Dimension



Without APC

Model	Max Diameter of Workpiece, D	Height of Workpiece for Milling, B	Height of Workpiece for Turnin , C	Distance from spindle nose to table (Vertical) A	Distance from spindle center to table (Horizontal), A'	Max. Weight (kg)
ASM-1012	Ø1,250	1,060	1,200	210	150	2,000
ASM-1212	Ø1,250	1,060	1,200	210	150	2,000
ASM-1612	Ø1,500	965	1,100	115	50	3,000
ASM-1612G	Ø1,500	950	1,100	100	50	3,000
ASM-1012FD	Ø1,250	970	1,200	120	150	2,000
ASM-1212FD	Ø1,250	970	1,200	120	150	2,000
ASM-1612FD	Ø1,500	870	1,100	20	50	3,000
ASM-1612G FD	Ø1,500	950	1,100	100	50	3,000

With APC

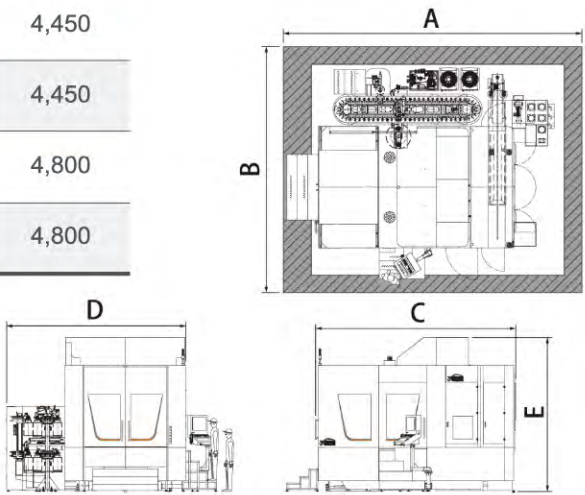
Model	Max Diameter of Workpiece, D	Height of Workpiece for Milling, B	Height of Workpiece for Turnin , C	Distance from spindle nose to table (Vertical) A	Distance from spindle center to table (Horizontal), A'	Max. Weight (kg)
ASM-1012	Ø1,250	1,060	1,200	210	150	2,000
ASM-1212	Ø1,250	1,060	1,200	210	150	2,000
ASM-1612	Ø1,500	765	900	-85	-150	3,000
ASM-1612G	Ø1,500	750	900	-100	-150	3,000
ASM-1012FD	Ø1,250	970	1,200	120	150	2,000
ASM-1212FD	Ø1,250	970	1,200	120	150	2,000
ASM-1612FD	Ø1,500	670	900	-180	-150	3,000
ASM-1612G FD	Ø1,500	750	900	-100	-150	3,000

High Speed.
High Precision.
High Efficiency.

Machine Dimension

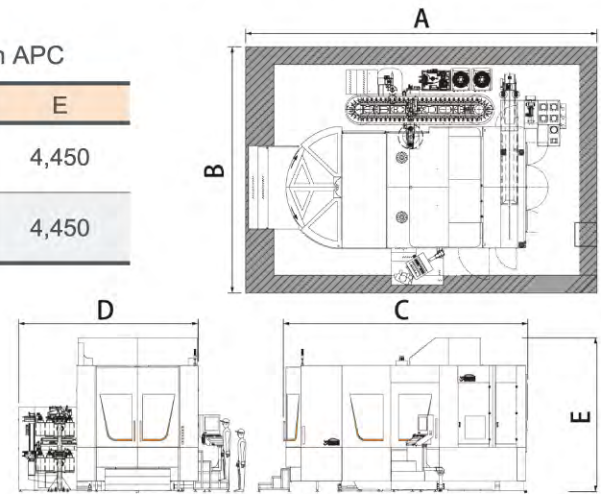
Standard

Model	A	B	C	D	E
ASM-1012/ ASM-1012 FD	8,500	7,000	5,700	5,150	4,450
ASM-1212/ ASM-1212 FD	8,500	7,250	5,700	5,400	4,450
ASM-1612G/ ASM-1612G FD	9,600	7,800	5,900	5,800	4,800
ASM-1612G/ ASM-1612G FD	9,600	7,800	5,900	5,800	4,800



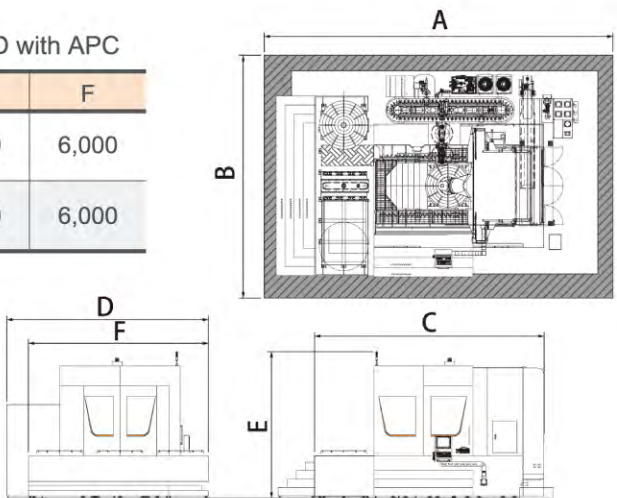
Option, ASM-1012 / ASM-1012 FD / ASM-1212 / ASM-1212 FD with APC

Model	A	B	C	D	E
ASM-1012/ ASM-1012 FD	10,000	7,000	7,000	5,150	4,450
ASM-1212/ ASM-1212 FD	10,000	7,250	7,000	5,400	4,450



Option, ASM-1612 / ASM-1612 FD / ASM-1612G / ASM-1612G FD with APC

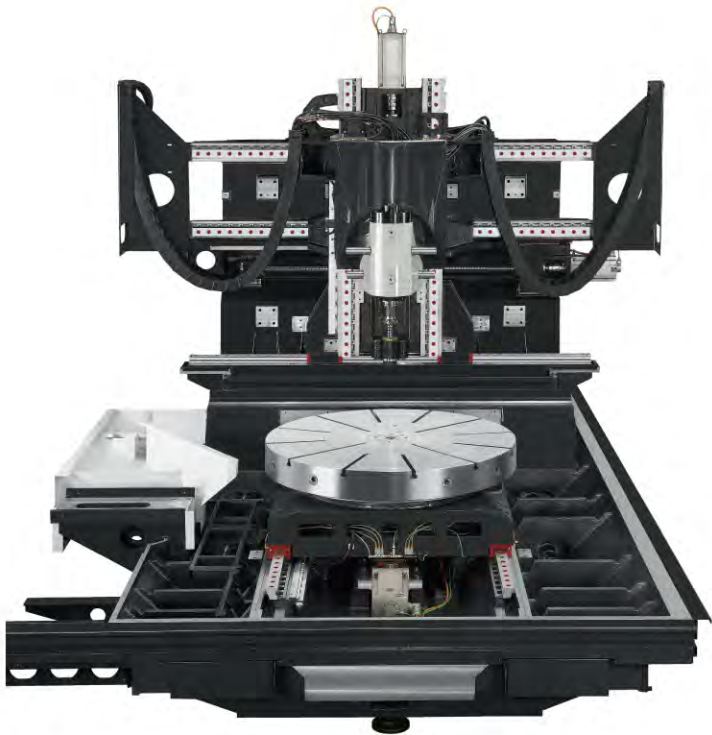
Model	A	B	C	D	E	F
ASM-1612 ASM-1612 FD	12,000	8,000	8,570	6,700	4,800	6,000
ASM-1612G ASM-1612G FD	12,000	8,000	8,570	6,700	4,800	6,000



High Speed.
High Precision.
High Efficiency.

Chip Removal Performance

Wide and large chip grooves on table sides along with sloping sheet metal and chip clean flushing devices remove chips to chip conveyor to reach high removal efficiency.



Wide and large chip grooves on table sides



Chip conveyor



Dual belt type chip conveyor for mass aluminum chips removing. (Opt.)

ASM Series | Specification

Model	Unit	ASM-1012	ASM-1212	ASM-1612	ASM-1612G
Travel					
X travel	mm	1,000	1,250	1,620	1,620
Y travel	mm	1,260	1,260	1,260	1,260
Z travel	mm	1,050	1,050	1,050	1,050
Distance from spindle nose to table (vertical)	mm	210~1,260	210~1,260	115~1,165	100~1,150
Distance from spindle nose to table (horizontal)	mm	150~1,200	150~1,200	50~1,100	50~1,100
Universal Head					
Milling Table					
Table diameter	mm	Ø 1,000	Ø 1,200	Ø 1,500	Ø 1,500
Table load (central area)	kg	2,000	2,000	3,000	3,000
Table speed	rpm	50	50	40	40
Min. division accuracy	°	0.001	0.001	0.001	0.001
Rated torque	Nm	2,120	2,120	2,120	2,120
Max. torque	Nm	3,460	3,460	3,460	3,460
Braking torque	Nm	6,900	6,900	10,000	10,000
Max. workpiece dimension	mm	Ø 1,250	Ø 1,250	Ø 1,500	Ø 1,500
45° Universal Head					
Product No.	-	CM-21X-01-10	CM-21X-01-10	CM-21X-01-10	CG-30X-01-07
Swiveling range	°	-30~+180	-30~+180	-30~+180	-30~+180
Max. speed	rpm	80	80	80	30
Min. division accuracy	°	±0.001	±0.001	±0.001	±0.001
Rated torque	Nm	900	900	900	1,611
Max. torque	Nm	1,679	1,679	1,679	3,136
Braking torque	Nm	4,000	4,000	4,000	5,500
Spindle					
Spindle speed	rpm	10,000	10,000	10,000	7,000
Spindle power (cont. / 30 min.)	kW	34/43	34/43	34/43	42/53
Spindle torque (cont. / 30 min.)	Nm	162 / 205	162 / 205	162 / 205	396 / 506
Spindle taper	-	HSK-A100	HSK-A100	HSK-A100	HSK-A100
Feed					
Cutting feed rate (X/Y/Z)	mm	24 / 24 / 24	24 / 24 / 24	24 / 24 / 24	24 / 24 / 24
Rapid traverse (X/Y/Z)	mm	40 / 40 / 40	40 / 40 / 40	40 / 40 / 40	40 / 40 / 24
Feeding acceleration (X/Y/Z)	m/s ²	3 / 3 / 4	3 / 3 / 4	3 / 3 / 4	3 / 3 / 4
ATC					
Tool magazine capacity	pcs	40 / 60 (Opt.) / 119 (Opt.)	40 / 60 (Opt.) / 119 (Opt.)	40 / 60 (Opt.) / 119 (Opt.)	40 / 60 (Opt.) / 119 (Opt.)
Max. tool size (full / next pockets empty)	mm	Ø125 / Ø 250	Ø125 / Ø 250	Ø125 / Ø 250	Ø125 / Ø 250
Max. tool length	mm	400	400	400	400
Max. tool weight	kg	20	20	20	20
Tool change time (C to C)	sec	25	25	25	25
Tool change time (T to T)	sec	9	9	9	9
Accuracy					
Positioning accuracy (ISO-230-2 & VDI 3441)	X/Y/Z	mm	P 0.006	P 0.006	P 0.006
	B	sec	±2	±2	±2
	C	sec	±5	±5	±5
Repeatability (ISO-230-2 & VDI 3441)	X/Y/Z	mm	Ps 0.0055	Ps 0.0055	Ps 0.0055
	B	sec	±2	±2	±2
	C	sec	±3	±3	±3
General					
Power requirement	kVA	130	130	130	130
Pneumatic requirement	kg/cm ²	6	6	6	6
Machine net weight	kg	33,000	34,000	40,000	41,000
Floor space (L x W x H)	m	8.5 x 7.0 x 4.45	8.5 x 7.25 x 4.45	9.6 x 7.8 x 4.8	9.6 x 7.8 x 4.8
Opt. for APC					
Distance from spindle nose to table (vertical)	mm	210~1,260	210~1,260	-85~965	-100~950
Distance from spindle nose to table (horizontal)	mm	150~1,200	150~1,200	-150~900	-150~900
Machine net weight	kg	38,000	39,000	50,000	50,000
Floor Space (L x W x H)	m	10 x 7.0 x 4.45	10 x 7.25 x 4.45	12 x 8.0 x 4.8	12 x 8.0 x 4.8

※ All specifications and designs are subject to change without notice.



High Speed.
High Precision.
High Efficiency.

ASM FD Series | Specification

Model	Unit	ASM-1012 FD	ASM-1212 FD	ASM-1612 FD	ASM-1612G FD
Travel					
X travel	mm	1,000	1,250	1,620	1,620
Y travel	mm	1,260	1,260	1,260	1,260
Z travel	mm	1,050	1,050	1,050	1,050
Distance from spindle nose to table (vertical)	mm	120~1,170	120~1,170	120~1,070	100~1,150
Distance from spindle nose to table (horizontal)	mm	150~1,200	150~1,200	50~1,100	50~1,100
Universal Head					
Milling Table					
Table diameter	mm	Ø 1,000	Ø 1,200	Ø 1,500	Ø 1,500
Table load (central area)	kg	2,000	2,000	3,000	3,000
Table speed	rpm	500	500	500	500
Min. division accuracy	°	0.001	0.001	0.001	0.001
Rated torque	Nm	2,150	2,150	4,490	4,490
Max. torque	Nm	3,520	3,520	7,890	7,890
Braking torque	Nm	6,900	6,900	10,000	10,000
Max. workpiece dimension	mm	Ø 1,250	Ø 1,250	Ø 1,500	Ø 1,500
45° Universal Head					
Product No.	-	CM21X-04-10T	CM21X-04-10T	CM21X-04-10T	CG-30X-02-07T
Swiveling range	°	-30~+180	-30~+180	-30~+180	-30~+180
Max. speed	rpm	80	80	80	24
Min. division accuracy	°	±0.001	±0.001	±0.001	±0.001
Rated torque	Nm	900	900	900	1,824
Max. torque	Nm	1,679	1,679	1,679	3,548
Braking torque	Nm	4,000	4,000	4,000	5,500
Spindle					
Spindle speed	rpm	10,000	10,000	10,000	7,000
Spindle power (cont. / 30 min.)	kW	42/53	42/53	42/53	42/53
Spindle torque (cont. / 30 min.)	Nm	201/253	201/253	201/253	396 / 506
Spindle taper	-	HSK-T100	HSK-T100	HSK-T100	HSK-T100
Feed					
Cutting feed rate (X/Y/Z)	mm	24 / 24 / 24	24 / 24 / 24	24 / 24 / 24	24 / 24 / 24
Rapid traverse (X/Y/Z)	mm	40 / 40 / 40	40 / 40 / 40	40 / 40 / 40	40 / 40 / 24
Feeding acceleration (X/Y/Z)	m/s ²	3 / 3 / 4	3 / 3 / 4	3 / 3 / 4	3 / 3 / 4
ATC					
Tool magazine capacity	pcs	40 / 60 (Opt.) / 119 (Opt.)	40 / 60 (Opt.) / 119 (Opt.)	40 / 60 (Opt.) / 119 (Opt.)	40 / 60 (Opt.) / 119 (Opt.)
Max. tool size (full / next pockets empty)	mm	Ø125 / Ø 150	Ø125 / Ø 250	Ø125 / Ø 250	Ø125 / Ø 250
Max. tool length	mm	400	400	400	400
Max. tool weight	kg	20	20	20	20
Tool change time (C to C)	sec	25	25	25	25
Tool change time (T to T)	sec	9	9	9	9
Accuracy					
Positioning accuracy (ISO-230-2 & VDI 3441)	X/Y/Z	mm	P 0.006	P 0.006	P 0.006
	B	sec	±2	±2	±2
	C	sec	±5	±5	±5
Repeatability (ISO-230-2 & VDI 3441)	X/Y/Z	mm	Ps 0.0055	Ps 0.0055	Ps 0.0055
	B	sec	±2	±2	±2
	C	sec	±3	±3	±3
General					
Power requirement	kVA	130	130	130	130
Pneumatic requirement	kg/cm ²	6	6	6	6
Machine net weight	kg	33,000	34,000	40,000	41,000
Floor space (L x W x H)	m	8.5 x 7.0 x 4.45	8.5 x 7.25 x 4.45	9.6 x 7.8 x 4.8	9.6 x 7.8 x 4.8
Opt. for APC					
Distance from spindle nose to table (vertical)	mm	120~1,170	120~1,170	-180~870	-100~950
Distance from spindle nose to table (horizontal)	mm	150~1,200	150~1,200	-150~900	-150~900
Machine net weight	kg	38,000	39,000	50,000	50,000
Floor Space (L x W x H)	m	10 x 7.0 x 4.45	10 x 7.25 x 4.45	12 x 8.0 x 4.8	12 x 8.0 x 4.8

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Standard & Optional Accessories

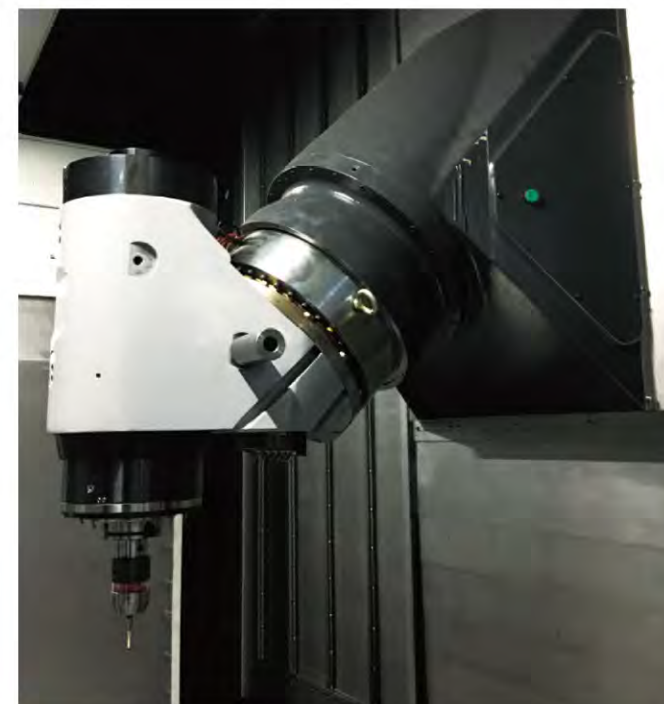
Standard

- 1 HEIDENHAIN TNC 640 Controller
- 2 Z axis travel 1,050 mm
- 3 CM21X-01-10 / 10,000 rpm / HSK-A100
- 4 Dynamic collision monitoring
- 5 45° universal head central monitoring protection system:
B/C axis rotating motor overloading protection
Spindle and motor overloading protection
Spindle overloading protected by software
- 6 45° universal head rotation error mechanism chain correction
- 7 Spindle and structure thermal compensation system
- 8 Air blast through spindle
- 9 Spindle cooling system
- 10 Button for tool clamping
- 11 Spindle nose ring cutting coolant system
- 12 Universal head external cutting coolant system
- 13 Wash gun and pneumatic interface
- 14 Cutting fluid cooling system
- 15 Centralized auto lubrication system
- 16 Independent lubrication oil collector for 3 axes
- 17 Enclosed sheet metal guard (with roof)
- 18 Horizontal chain type magazine 40 tools
- 19 Screw type chip conveyor on table sides
- 20 Steel belt chip conveyor / water tank
- 21 Swiveling operation panel
- 22 Movable manual pulse generator
- 23 Air conditioner for electrical cabinet
- 24 X/Y/Z axis linear scale
- 25 CNC simulation
- 26 Auto power off function
- 27 Tool axis retract function at power failure
- 28 RJ45 interface
- 29 Working lamp
- 30 Operation cycle finish and alarm light
- 31 Remote monitoring software (standard)
- 32 Foundation pads and bolts kits
- 33 Adjustment tool and tool kits
- 34 Technical manuals
(operation, maintenance manual and circuit diagram)

Optional

- 1 SIEMENS ONE Controller
- 2 CG30X-01-07 / 7,000 rpm / HSK-A100
- 3 HF29X-01-24 / 24,000 rpm / HSK-A63
- 4 CM21X-04-10T / 10,000 rpm / HSK-T100
- 5 CG30X-02-07T / 7,000 rpm / HSK-T100
- 6 Spindle cutting vibration protection device
- 7 Air through spindle ring
- 8 Coolant through spindle system 20 / 60 bar
- 9 Coolant through spindle system 20 / 60 bar
and air through spindle 6 bar
- 10 The interface of coolant through spindle
- 11 Oil skimmer
- 12 Oil mist cooling device (MQL)
- 13 Chip clean flushing device at roof
- 14 Coolant chiller
- 15 Horizontal chain type magazine 60 / 119 tools
- 16 Helical blade screw conveyor on table sides
- 17 Chip clean flushing device on table side grooves
- 18 Drum filter chip conveyor / water tank
- 19 Dual belt type chip conveyor / water tank
- 20 Chip cart
- 21 Auto workpiece measurement
- 22 Auto tool length measurement
- 23 Adaptive feed control (AFC)
- 24 Auto warm up
- 25 Oil mist recycle device
- 26 Remote monitoring software (professional)
- 27 Spin window
- 28 CE regulation

※ For the specification of each model, please contact our sales representatives.



● Auto Workpiece Coordinate Measurement & Spindle Clamping / Unclamping Switch



● Auto Tool Length Measurement (OPT.)



● Pedal Above Chip Groove

