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PROVIDENCE
TECHNOLOGY CO.,LTD

Linear ways series / Box ways series
VERTICAL MACHINING CENTER



GrilGla

New Arrival



Outstanding Performance with High Accuracy

Ruggedly built, Providence GiGa series vertical machining centers offer structural rigidity and extra-high stability when performing high speed and heavy cutting operations. Providence GiGa series help increase efficiency and are ideal for mold machining and precision parts machining. No matter which Providence GiGa series you select, it will provide all the performance, precision and minimum trouble you require.

MVL



VERTICAL MACHINING CENTER

MVC

MVL | MLC | MCV — *GiGa series*



MVL-650/MVL800

X,Y,Z-axis travel 650x450x510mm
BT40. 8000/10000 rpm belt-drive spindle.

Three axes linear ways — **MVL-650**

X,Y,Z-axis travel 800x500x510mm
BT40. 8000/10000 rpm belt-drive spindle.

Three axes linear ways — **MVL-800**



MVL-1166 / MVL966

X,Y,Z-axis travel 1100x600x600mm
BT40. 8000/10000 rpm belt-drive spindle.

Three axes linear ways — **MVL-1166**

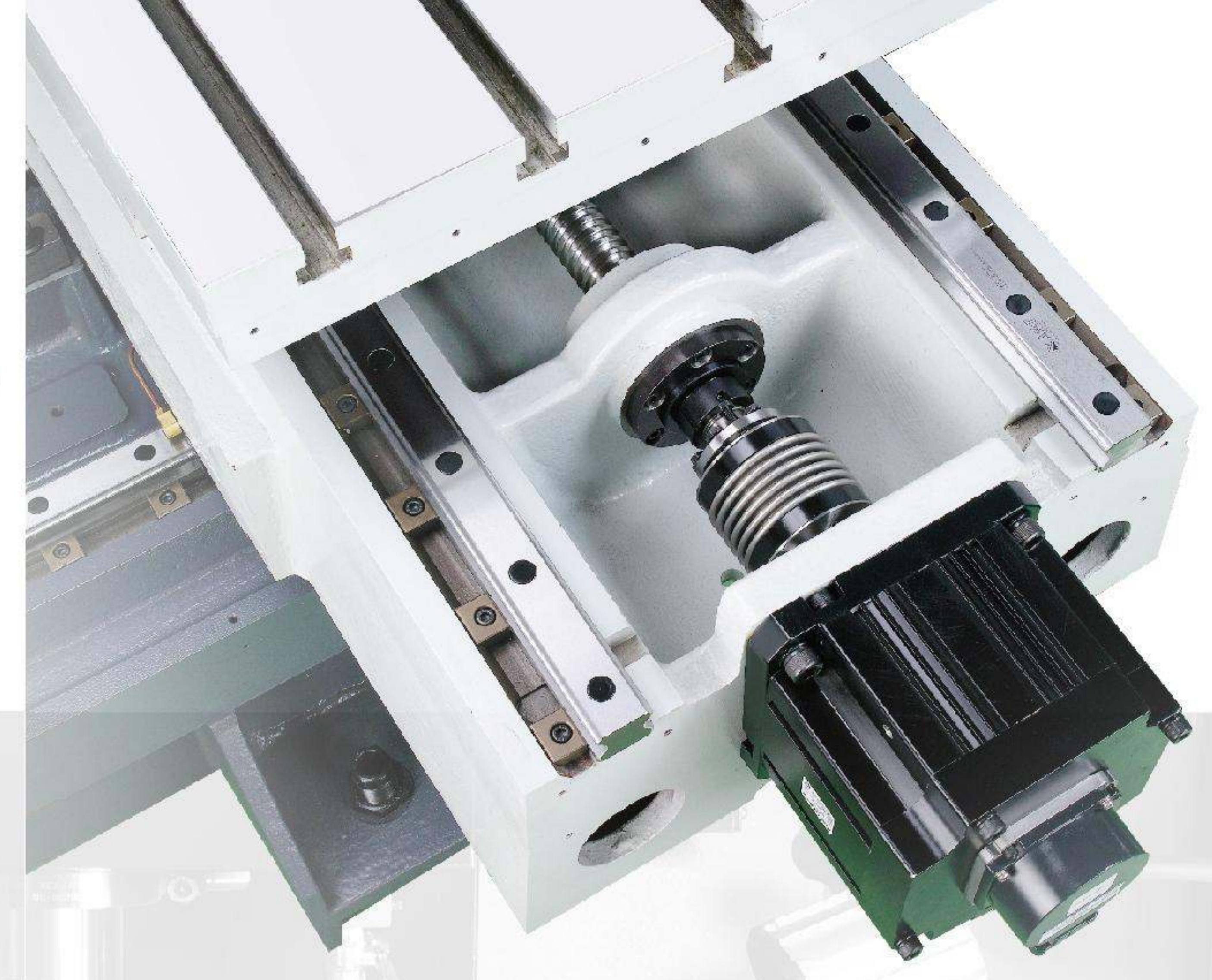
X,Y,Z-axis travel 900x600x600mm
BT40. 8000/10000 rpm belt-drive spindle.

Three axes linear ways — **MVL-966**

MVL 3 AXES LINEAR WAYS

▶ **OPTIONAL CHOICE: MLC** 2 AXES LINEAR WAYS
1 AXIS BOX WAYS

- ▶ 3 axes adopt high precision liner guideway, travel lightly and smoothly, suitable for the needs of high-speed precision machining.
- ▶ Spindle with ring sprinkler design, to improve cooling needed during cutting, to avoid workpiece deformation errors.
- ▶ MVL series is designed for high-speed, high-precision mold making, can be optional with high-speed direct spindle or built-in spindle.




MVL-855

X,Y,Z-axis travel 850x550x550mm
BT40. 8000/10000 rpm belt-drive spindle.
Three axes linear ways **MVL-855**

MVL-1266/ MLC1266

X,Y,Z-axis travel 1200x600x600mm
BT40. 8000/10000 rpm belt-drive spindle.
Three axes linear ways **MVL-1266**

X,Y,Z-axis travel 1200x600x600mm
BT40. 8000/10000 rpm belt-drive spindle.
X,Y axes linear ways
Z- axis box ways **MLC-1266**



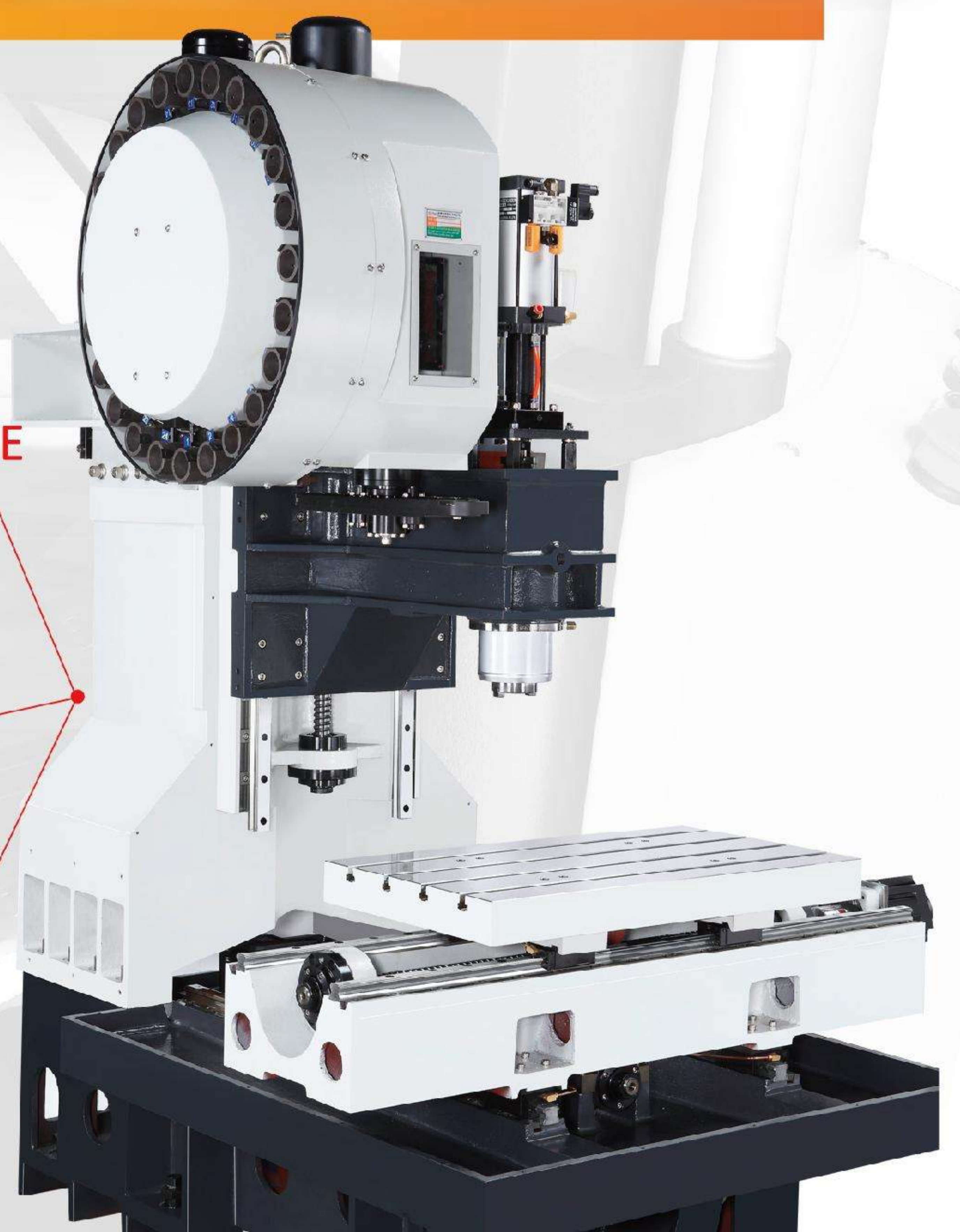
MLC-1166/MLC-966

X,Y,Z-axis travel 1100x600x600mm
BT40. 8000 rpm belt-drive spindle.
X,Y axes linear ways
Z- axis box ways **MLC-1166**

X,Y,Z-axis travel 900x600x600mm
BT40. 8000 rpm belt-drive spindle.
X,Y axes linear ways
Z- axis box ways **MLC-966**

HIGH-RIGIDITY BODY STRUCTURE DESIGN FOR HIGH STABILITY

The 3 axes are mounted with high precision linear ways, featuring extremely smooth movements. With these linear ways, the machine is ideal for high speed machining.



MCV

3 AXES HIGH RIGIDITY
BOX WAYS

► Focusing for Heavy Machining

MCV-1066

X,Y,Z-axis travel 1050x600x600mm
BT40.
8000 rpm belt-drive spindle.
Three axes box ways **MCV-1066**



MCV-1480 / MLC-1480

X,Y,Z-axis travel 1400x800x700mm
BT40.BT50(opt.)
8000 rpm belt-drive spindle.
Three axes box ways **MCV-1480**

X,Y,Z-axis travel 1400x800x700mm
BT40.BT50(opt.)
8000 rpm belt-drive spindle.
X,Y axes linear ways
Z-axis box ways **MLC-1480**



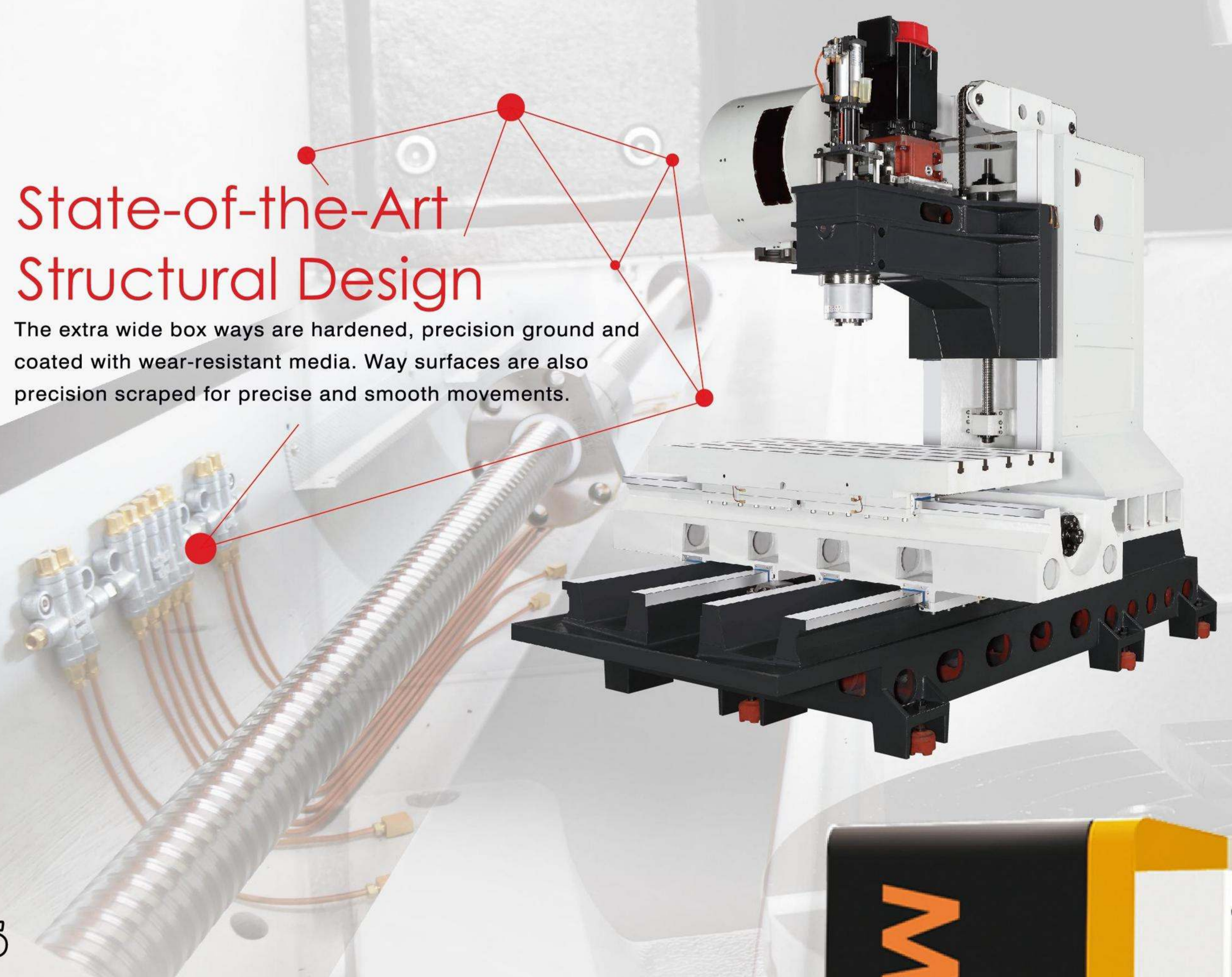
MCV-1680 / MLC-1680

X,Y,Z-axis travel 1600x800x700mm
BT40. BT50(opt.)
8000 rpm belt-drive spindle.
Three axes box ways **MCV-1680**

X,Y,Z-axis travel 1600x800x700mm
BT40. BT50(opt.)
8000 rpm belt-drive spindle.
X,Y axes linear ways
Z-axis box ways **MLC-1680**

State-of-the-Art Structural Design

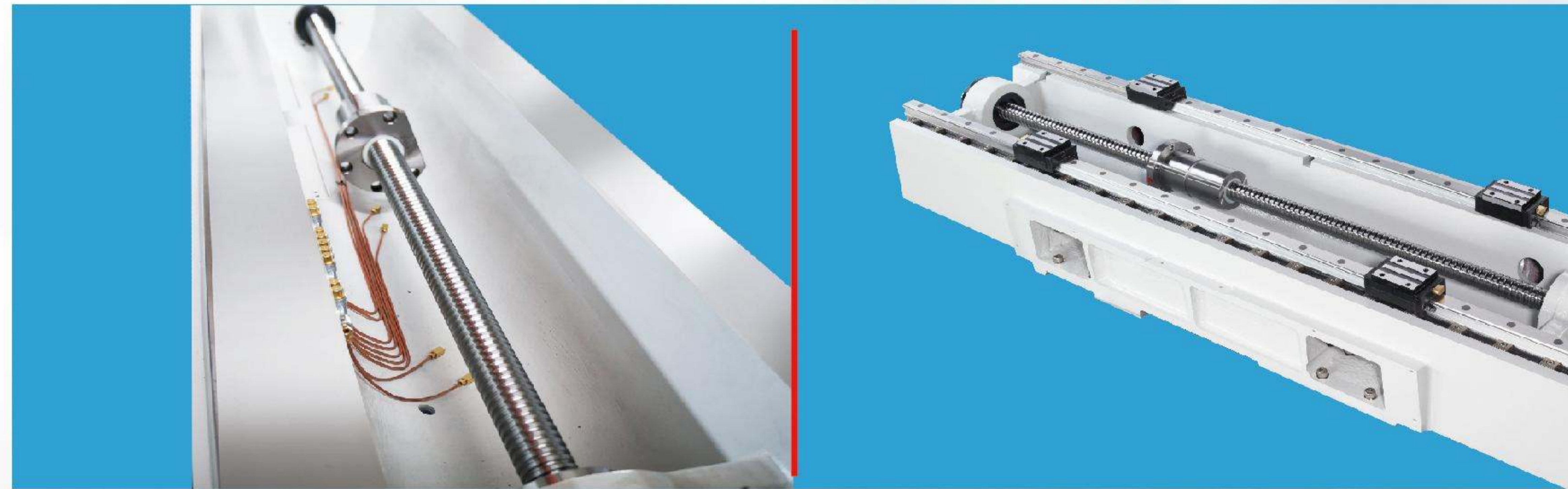
The extra wide box ways are hardened, precision ground and coated with wear-resistant media. Way surfaces are also precision scraped for precise and smooth movements.



THE PERFECT BODY DESIGN, FOR MULTI-FUNCTION MACHINING

STRUCTURAL FEATURES

BOX WAYS LINEAR WAY



The extra wide box ways are hardened, precision ground and coated with wear-resistant material. Way surfaces are also precision scraped for precise and smooth movements.

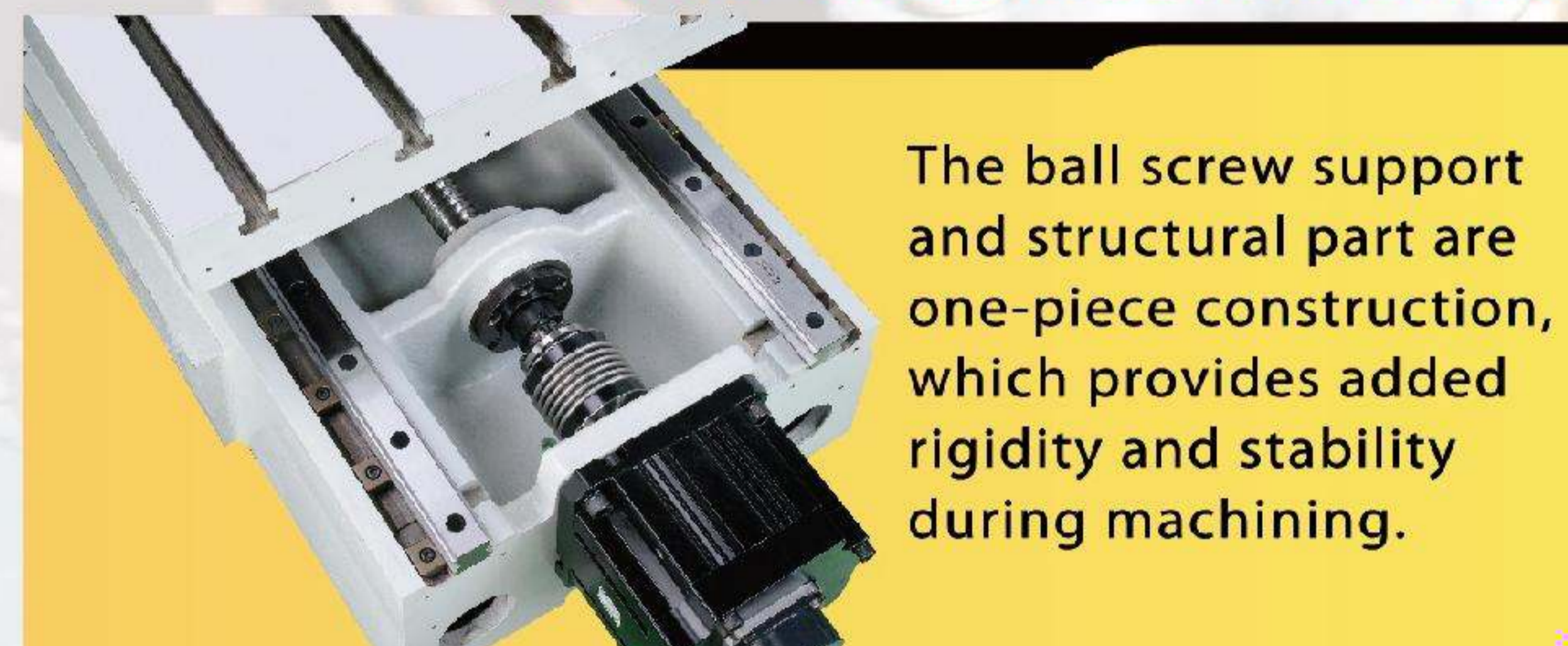
The 3 axes are mounted with high precision linear ways, featuring extremely smooth movements. With these linear ways, the machine is ideal for high speed machining.

FEM ANALYSIS

The structural parts are analyzed by using the Finite Element Analysis (FEM). This analysis will ensure the best rigidity of the machine, excellent resistance for high speed machining and low gravity center of the machine structure.



INTEGRATED BALL SCREW SUPPORT AND STRUCTURAL PART



The ball screw support and structural part are one-piece construction, which provides added rigidity and stability during machining.

COUNTRY-SHAPE COLUMN

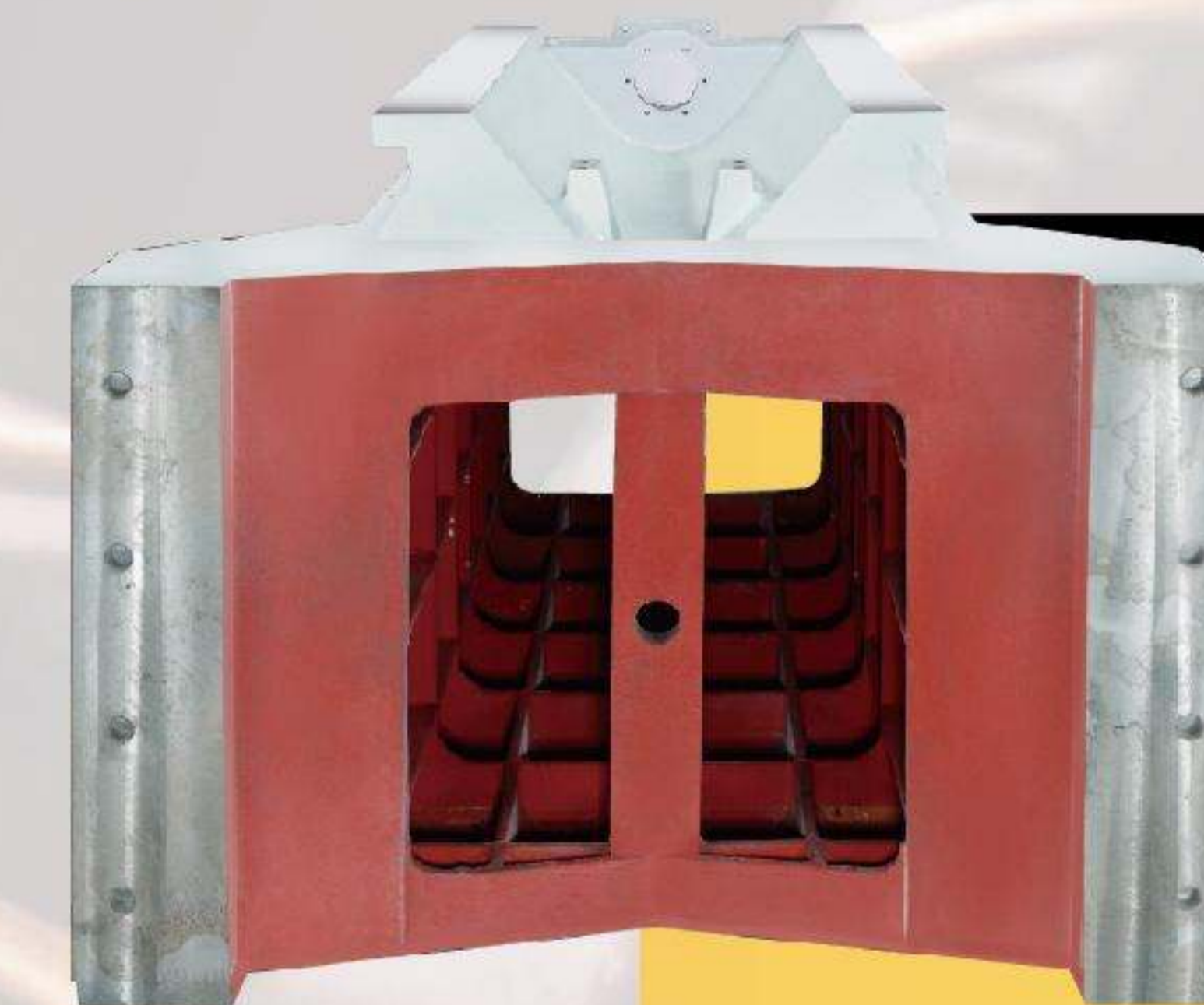
The column is designed with a counter Y-shape construction to ensure outstanding rigidity and stability.

ONE-PIECE CONSTRUCTED MOTOR BASE AND BEARING HOUSING

The motor bases and bearing housings on column and saddle are a one-piece construction. This results in higher structural rigidity, stability and machining accuracy.



DEFORMATION-FREE STRUCTURE



All structural parts of the machine are manufactured from high quality Meehanite cast iron, tempered and stress relieved for deformation-free performance. The structural parts are scientifically rib reinforced to increase the machine rigidity and stability and assure lifetime accuracy of the machine.

BUILT-IN TYPE SPINDLE FEATURES

- 24,000 / 30,000 rpm, 17kW HSKE50(oil air lubrication)
- Compact construction, powerful and minimum thermal displacement.
- Low noise, backlash-free.
- High dynamic running accuracy and minimum vibration.
- Convenient and easy to install and maintain.
- Circulated high efficiency cooling ensures long bearing life.
- Greatly upgrades machining efficiency and product value.
- Effectively reduces spindle running inertia and reduces spindle vibration.



COOLANT JETS AROUND SPINDLE

The coolant jets around the spindle are designed to eliminate interference in the machining area resulting from conventional coolant nozzles. Another benefit is that they increase the cooling effect on the work piece.

DIRECTLY COUPLED SPINDLE

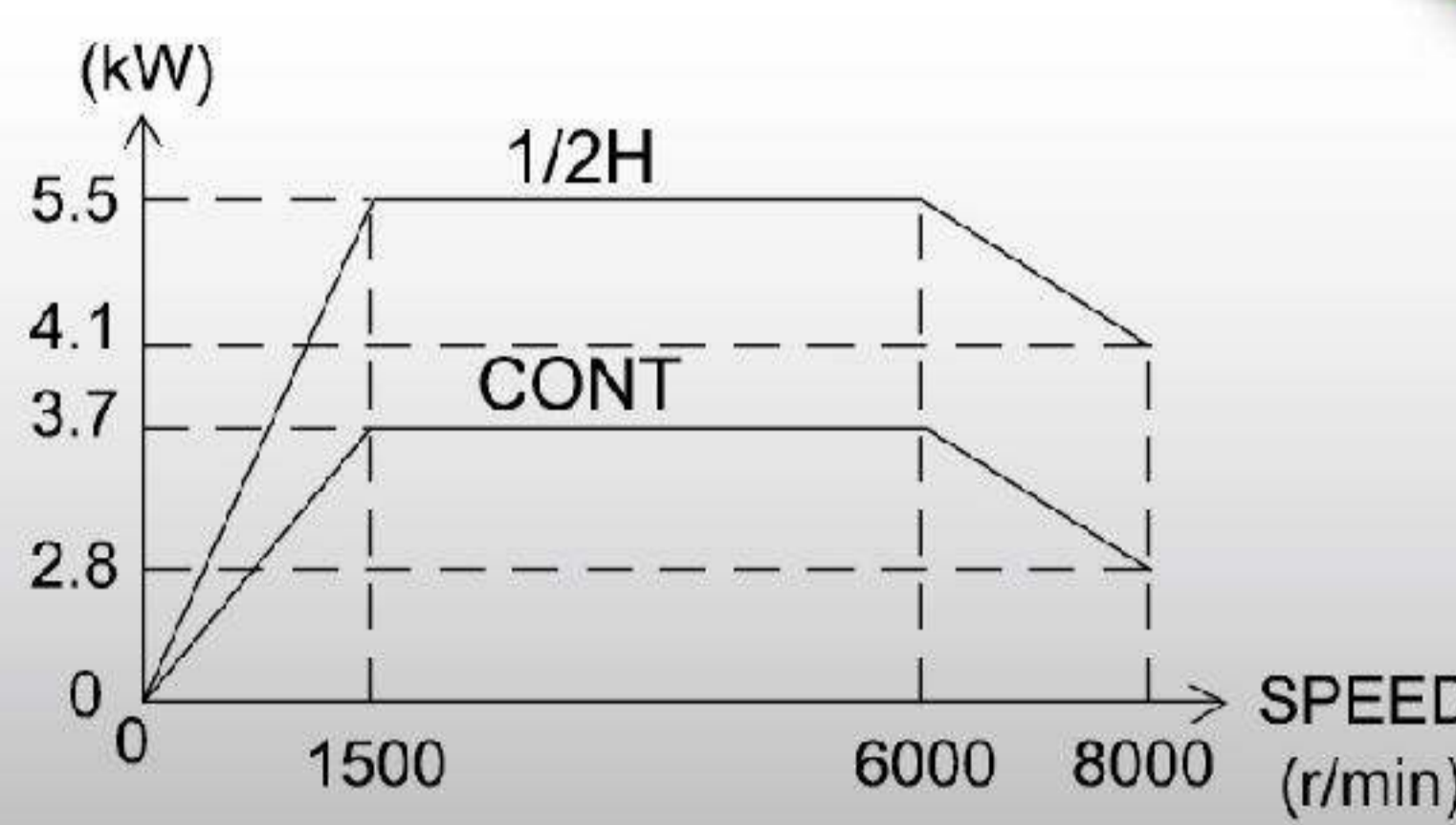
- Standard spindle speed is 12,000 rpm. 15,000 rpm is optional.
- Suitable for IT parts machining and mold engraving.
- Floating locking feature.
- Designed with labyrinth circuit to prevent coolant or other objects from entering into the spindle.
- Specially designed integrated tool knocking cylinder saves time for spindle installation and dismantling.
- Coolant through spindle is optional.



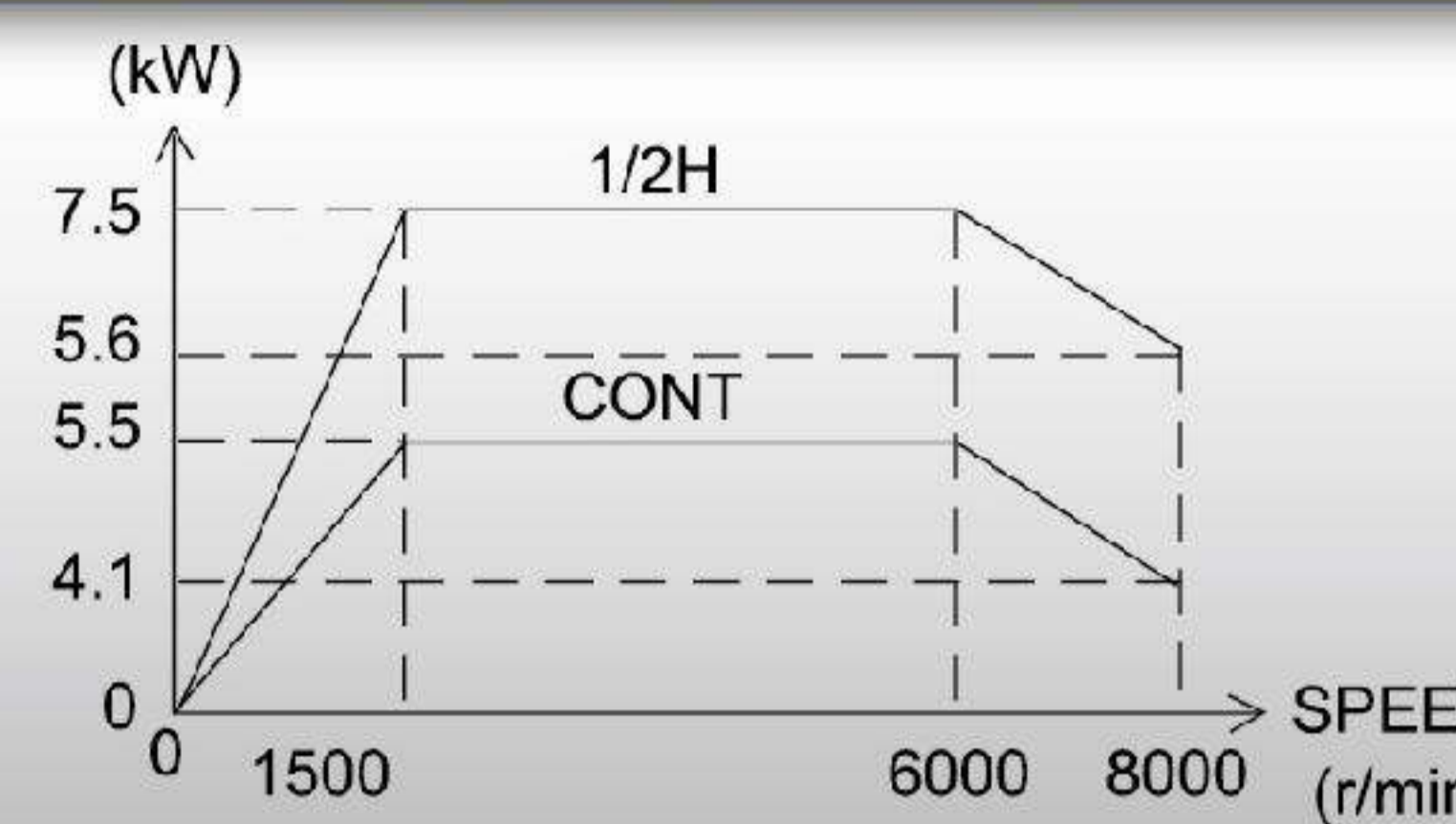
GiGa SERIES TO MEET THE REQUIREMENTS OF EFFICIENCY AND ACCURACY

SPINDLE TORQUE OUTPUT DIAGRAM

SJ-V5.5-01T OUTPUT POWER



SJ-V7.5-01T OUTPUT POWER



SJ-V11-01ZT OUTPUT POWER

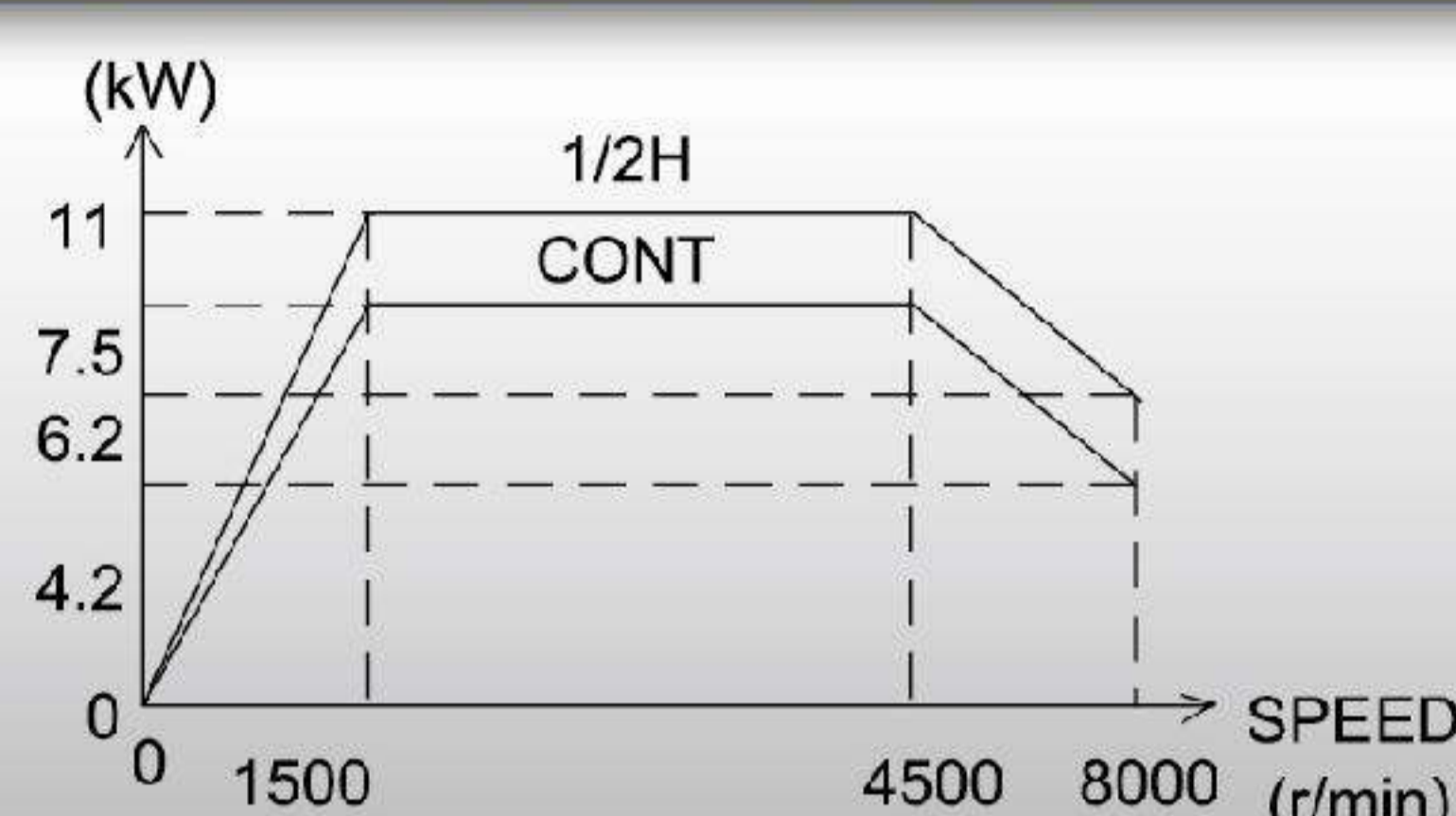
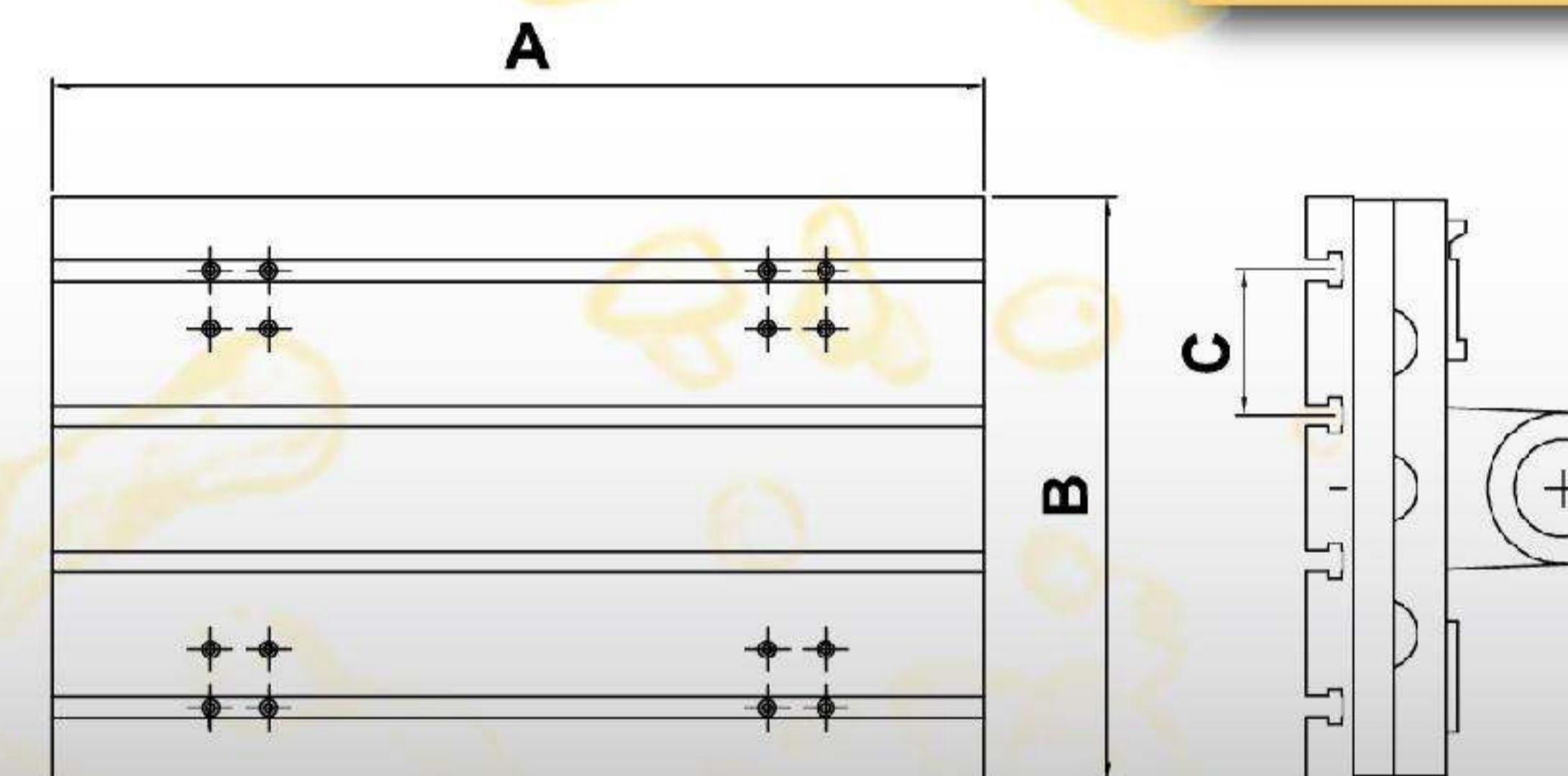


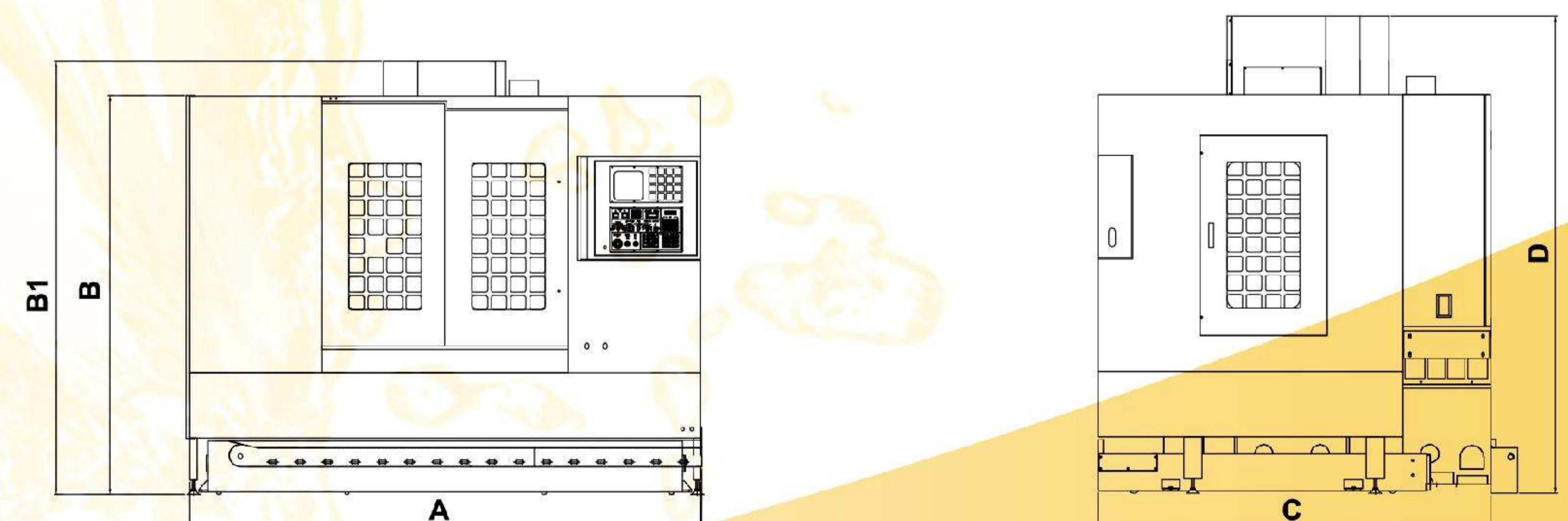
TABLE SIZE



Model	MVL-650	MVL-800	MVL-855	MVL-966	MVL-1166
A	800	900	1000	1000	1200
B	450	450	510	550	550
C	18x4x100	18x4x100	18x4x100	18x4x125	18x4x125

Model	MVL-1266	MCV-1066	MCV-1480	MCV-1680
A	1400	1200	1600	1600
B	610	550	750	750
C	18x5x100	18x4x125	22x5x150	22x5x150

FLOOR SPACE



Model	MVL-650	MVL-800	MVL-855	MVL-966	MVL-1166	MVL-1266	MCV-1066	MCV-1480	MCV-1680
A	3100	3100	3130	3400	3400	3200	3400	3800	4050
B	1900	1900	2070	2190	2190	2190	2190	3819	3819
B1	2200	2200	2250	2380	2380	2380	2380	4050	4050
C	2000	2000	2100	2200	2200	2200	2200	2850	2850
D	2400	2400	2440	2600	2600	2600	2600	4600	4600

QUALITY ASSURANCE



BALL BAR TEST FOR CIRCULARITY

After assembly, each machine is inspected by a sophisticated ball bar tester to check the machine's servo accuracy, static and dynamic geometric accuracy.



ACCURACY ADJUSTMENT

In order to guarantee the highest accuracy, careful scraping is followed by positive inspections to eliminate alignment deviation.



LASER INSPECTION ON THREE AXES

Each machine is subject to laser inspection on three axes. By using the laser unit, positioning accuracy and repeatability can be inspected. The laser inspection is conducted according to German VDI3441 standards.

MACHINE SPECIFICATIONS

MODEL	UNIT						MVL-1266	BOX GUIDE WAY		
		MVL-650	MVL-800	MVL-855	MVL-966	MVL-1166		MCV-1066	MCV-1480	MCV-1680
TRAVEL										
X-axis	mm	650	800	850	900	1100	1200	1050	1400	1600
Y-axis	mm	450	500	550	600	600	600	600	800	800
Z-axis	mm	510	510	550	600	600	600	600	700	700
Spindle noes to table	mm	100-610	100-610	120-670	120-720	120-720	120-720	120-720	150-850	150-850
Distance between spindle center & column Slideway	mm	550	550	600	680	680	680	680	910	910
SPAN										
X-axis span / width	mm	260 / 30	260/30	340 / 35	325 / 35	325 / 35	350 / 35	415	500	500
Y-axis span / width	mm	500 / 35	500/35	605 / 45	650 / 45	650 / 45	650 / 45	790	1280	1280
Z-axis span / width	mm	334 / 35	334/35	450 / 45	450 / 45	450 / 45	450 / 45	540	660	660
SCREW										
X / Y / Z size	mm	Ø36	Ø36	Ø40	Ø40	Ø40	Ø45 / Ø40 / Ø40	Ø40	Ø50	Ø50
Pitch	mm	12	12	12	12	12	12	12	12	12
TABLE										
Size	mm	800 x 450	900x450	1000 x 510	1000 x 550	1200 x 550	1400 x 610	1200 x 550	1600x750	1600x750
T-slot (width x no x distance)	mm	18x4x100	18x4x100	18x4x100	18 x 4 x 125	18 x 4 x 125	18 x 5 x 100	18 x 4 x 125	22 x 5 x 150	22 x 5 x 150
Max. table load	kgs	350	500	500	600	700	800	700	1500	1500
SPINDLE										
Spindle speed	rpm	35 -8000	35 -8000	35 -8000	35 -8000	35 -8000	35-8000	35-8000	8000, 10000 / 10000 / ZF	8000, 10000 / 10000 / ZF
Transmisson of spindle	type	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt / DDS / Gear	Belt / DDS / Gear
Spindle motor	kw	5.5 / 7.5	5.5 / 7.5	7.5 / 11	7.5 / 11	7.5 / 11	7.5 / 11	7.5 / 11	11 / 15 / 18	11 / 15 / 18
X / Y / Z Axis servo motor	kw	1.5x1.5x2.5	1.5x1.5x2.5	2 / 2 / 3.5	2 / 2 / 3.5	2 / 2 / 3.5	2 / 2 / 3.5	2 / 2 / 2	3 / 3 / 3	3 / 3 / 3
Spindle nose taper	type	BT40	BT40	BT40	BT40	BT40	BT40	BT40	BT40 / BT50 (OPT)	BT40 / BT50 (OPT)
Bearing diameter at front first of spindle	mm	60	60	70	70	70	70	70	70 / 90	70 / 90
FEED RATE										
Rapid feed rate of X / Y / Z	m/min	30/30/24	30/30/24	30/30/24	36 / 36 / 30	36 / 36 / 30	36 / 36 / 30	15/15/16	15 / 15 / 12	15 / 15 / 12
Cutting feed rate	m/min	1-10	1-10	1-10	1-10	1-10	1-10	1-10	1-10	1-10
ATC										
ATC Type		Carousel / Arm Type	Carousel / Arm Type	Carousel / Arm Type	Carousel / Arm Type	Carousel / Arm Type	Carousel / Arm Type	Carousel / Arm Type	Arm Type	Arm Type
Tool capacity	pcs	20 / 24	20 / 24	20 / 24	20 / 24	20 / 24	20 / 24	20 / 24	24 / 32 / 40	24 / 32 / 40
Max.tool weight	kgs	7	7	7	7	7	7	7	7 / 15	7 / 15
Max.tool lenght	mm	250	250	250	250	250	250	250	300	300
Max.tool diameter	mm	100/160(80/140)	100/160(80/140)	100/160(80/140)	80/140	80/140	80 / 140	80 / 140	80 / 140	80 / 140
Reciprocating time/Tool change time	sec	2.5 / 1.8	2.5 / 1.8	2.5 / 1.8	2/1.8	2 / 1.8	2 / 1.8	2 / 1.8	2.5 / 1.8	2.5 / 1.8
MISCELLANEOUS										
Air source	kgs/cm ²	6	6	6	6	6	6	6	6	6
Occupied space(L x W x H)	mm	3100x2000x2400	3100x2000x2400	3130x2100x2500	3400x2100x2600	3400x2200x2600	3200x2200x2600	2800 x 2200 x 2600	3850 x 2950 x 2900	4050 x 2950 x 2900
Machine weight	kgs	4800	5500	5500	5800	6000	6800	6400	12800	14200

STANDARD ACCESSORIES

- Carousel type
- Full-chip enclosures
- Spindle air blast system
- Spindle BT40 8,000 rpm
- Heat exchange in control box
- Working light
- Coolant pump
- Operator indication lamp
- Spindle arbor cleaning
- Tool box

• Design and specifications are subjective to change without prior notice.

OPTIONAL ACCESSORIES

- Spindle automatic oiling device
- Arm type tool changer
- 4th axis NC rotary table
- Chip conveyor
- Spindle speed 10,000 / 12,000 rpm
- Direct drive spindle 10,000 / 12,000 / 15,000 rpm
- Built-in 16,000 / 24,000 / 30,000 rpm
- FANUC 0I-MD controller
- Transformer
- PL waterproof fluorescent worklight
- BED shower
- Optical scale