

Tapping Center

EZ-II Series



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EZ-II Series



- EZ-II series is a compact machine with outstanding production efficiency. It improves production capacity in per unit of space.
- Compared with conventional belt-driven spindles, EZ-II series is standardly equipped with a direct-drive spindle for better rigid tapping performances. Furthermore, it solves the problem of short usage life in the belts.
- EZ-II series is standardly equipped with a servo-driven tool magazine, which is able to save idle time obviously.
- Adopts A-shape column and trapezoid structure to ensure the dynamic stability under the rapid traverse 60m/min with the 1.2G acceleration.



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Main specifications

Item	Unit	EZ-5II	EZ-7II
X/Y/Z axis travel	mm	510/400/300	710/400/300
Spindle	rpm	12,000 (24,000)	
Max. tapping speed	rpm	6,000	
Rapid traverse	m/min	60/60/60	
Cutting feedrate	m/min	1-20,000	
Table size	mm	600x400	850x400
Max. loading capacity	kg	300	
Servo motor	kW	7.5/3.7 (3.7/1.5)	

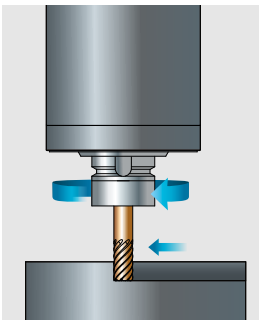
Industrial application/Machining capacity

Industrial application

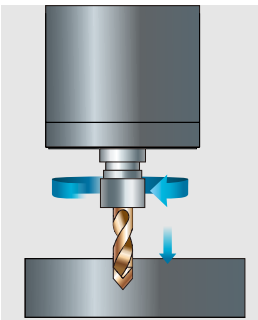


Machining capacity

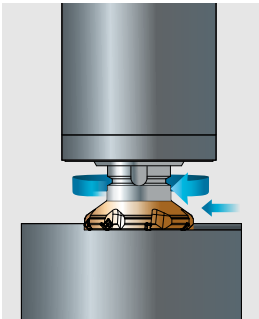
※Note: This test data belongs to EZ-5II with 12,000rpm (7.5/3.7 kW) spindle.



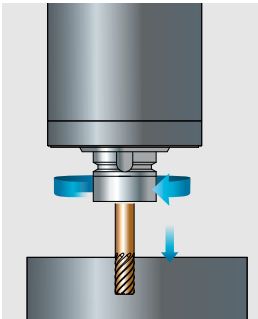
End mill Ø20 mm	
Material	S45C
Cutting depth/width	2/20 mm
Spindle speed	3,182 rpm
Feedrate	1,273 mm/min
Material removal rate	51 cm ³ /min



Drill Ø22 mm	
Material	S45C
Spindle speed	580 rpm
Feedrate	58 mm/min



Face mill Ø80 mm	
Material	S45C
Cutting depth/width	1/70 mm
Spindle speed	1,200 rpm
Feedrate	1,200 mm/min
Material removal rate	84 cm ³ /min



Tap	
Material	S45C
Max. M hole	M20x2.5
Min. M hole	M2x0.5

Main structure

Machine structure is optimized by Finite Element Analysis (FEA) and the anti-deforming capacity on X axis is improved by 25%, which brings excellent machining precision and extends tool life.

Wide column design
The rigidity of the X axis direction increases by 25%

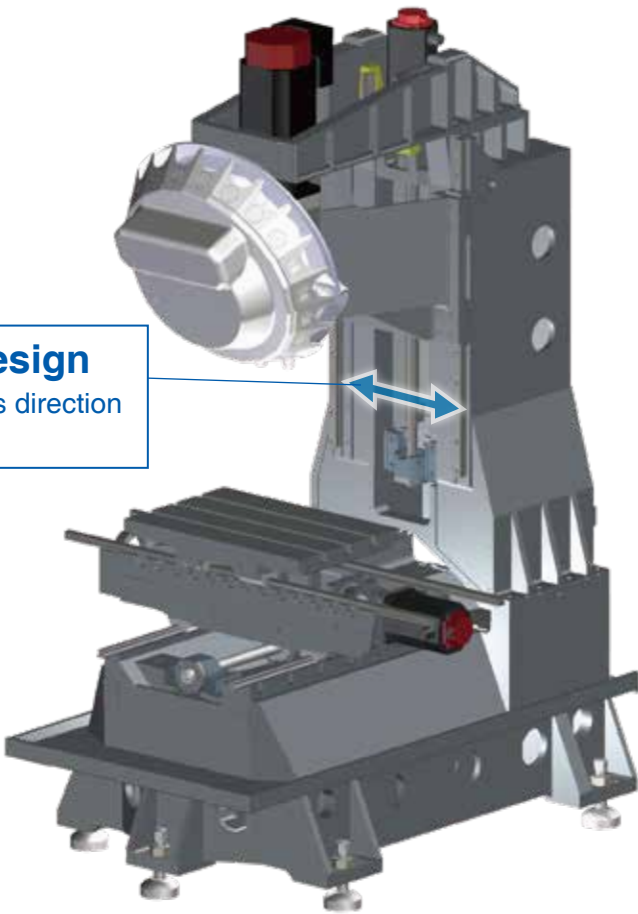
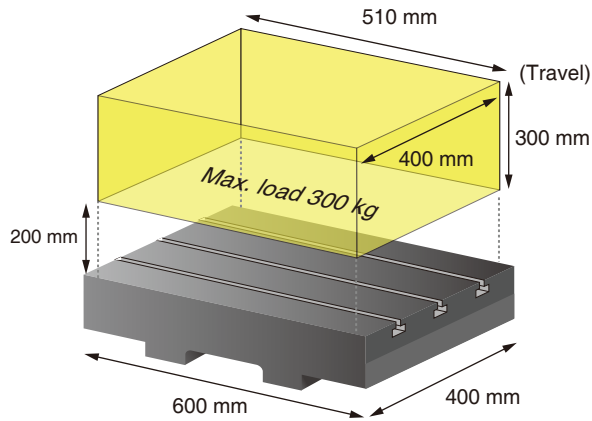
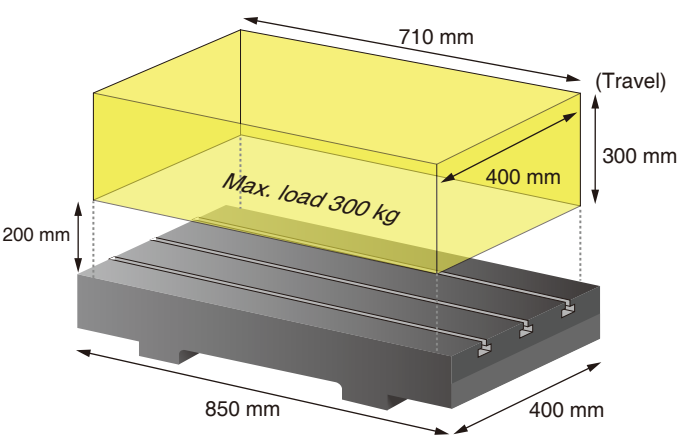


Table size

EZ-5II



EZ-7II



Automatic tool changer (ATC)

Servo-driven tool magazine

New low backlash tool changing system performs fast and stable tool changing with low noise.

T to T time	1.2 sec
Index time (opposite tool)	1.1 sec
Tool capacity	21
Max. tool weight	3 kg
Max. tool length	200 mm
Max. tool diameter	80 mm

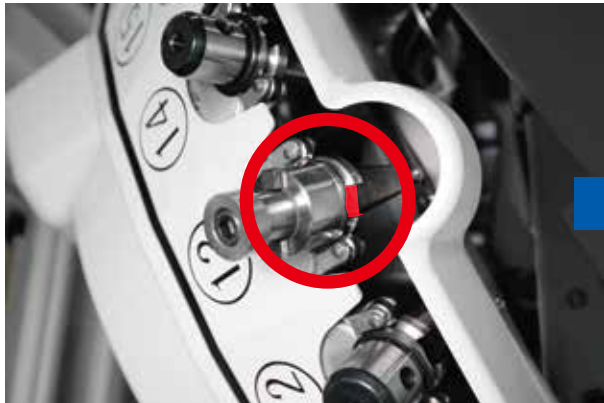


Chip to Chip = 2 sec

※The test was performed by the regulations of JIS B6013.

Clamping error inspection function

This function avoids tool damage caused by human operating errors and guarantees machining quality.



Due to the incorrect tool placement, the drive block doesn't into the drive slot of the holder.



Controller displays alarming messages when the tool doesn't clamp completely.

Safety/Operation

Safety

The safety window adopts the PC board. It's capacity of impact strength is similar to tempered glass and also improves the operation safety.



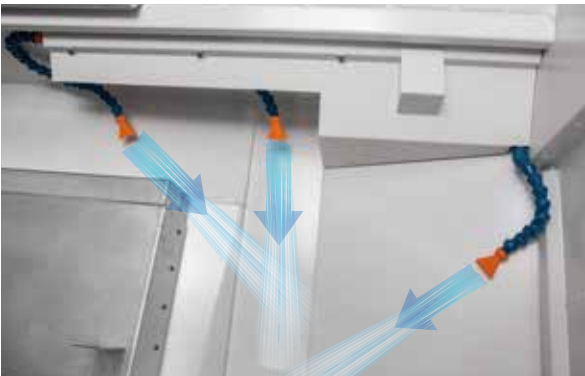
Taper shank cleaning (opt.)

Filtered high pressure water washes the taper shank during tool changing. It prevents attached chips from influencing the clamping precision.



Interior flushing system

Standardly equipped with the large flow machine bed flushing system to avoid chip accumulation in the machine.

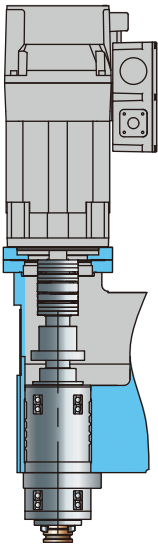


Easy coolant tank cleaning

Conventionally, the operator should remove the chip tray before the coolant tank cleaning. The bracket design of EZ-II can easily hold up the chip tray facilitating users to clean the bottom of the tank.



Spindle output and torque chart

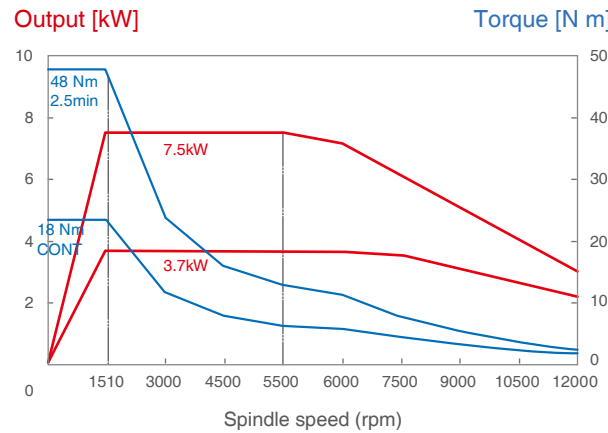


BBT direct-drive spindle (Std.)

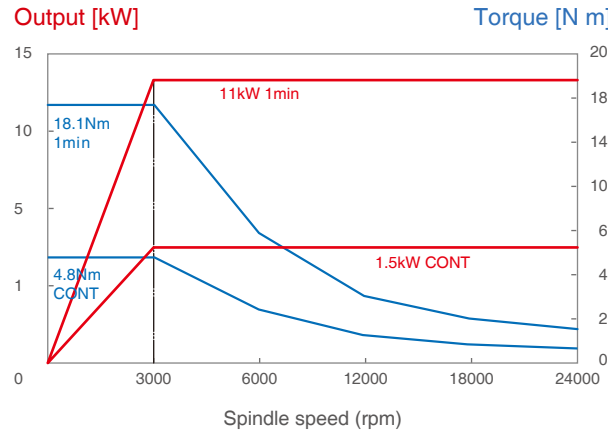
- Spindle with long-neck design prevents the interferences happening during machining.
- For providing high radial rigidity, the spindle adopts large-sized steel ball bearings and has the best span column design.

Mitsubishi

12,000 rpm (Std.) ○ Coolant Through Spindle (C.T.S.) is available

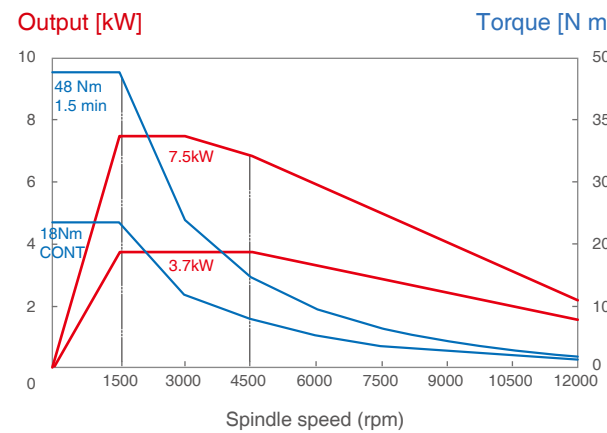


24,000 rpm (Opt.) ○ Coolant Through Spindle (C.T.S.) is available

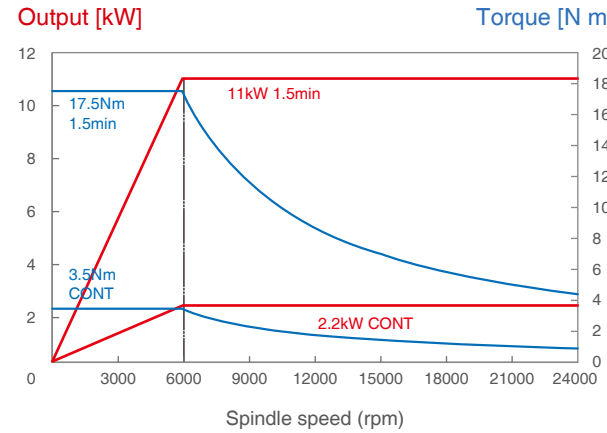


FANUC

12,000 rpm (Opt.) ○ Coolant Through Spindle (C.T.S.) is available



24,000 rpm (Opt.) ○ Coolant Through Spindle (C.T.S.) is available



MITSUBISHI controller specification

CPU Processor, control axes and related specification

Function	Specification	Std.	Opt.
Max. control axis (Max. NC+ SP+ PLC axis)	11	●	
Max. number of simultaneous contouring control axes(in one system)	4	●	
Max. number of part systems	2	●	
Least control increment	1nm	●	
Max. memory capacity (1m=0.4KB)	500KB	●	
Max. sets of variable command	700	●	
Max. workpiece coordinate system selection	54 Sets	●	
Max. sets of tool compensation	400 Sets	●	
Maximal number of PLC axis	6	●	
Maximal number of NC axes	8	●	
Max. number of NC axes in a part system	8	●	

High speed & high accuracy machining control related functions

Function	Specification	Std.	Opt.
High accuracy control(G8P1/G61.1)		●	
High speed & high accuracy machining control mode 1 (G05.1Q1)		●	
High speed & high accuracy machining control mode 2 (G05P10000)	(33.7kBPM)	●	
High speed & high accuracy machining control mode 3 (G05P20000)	(67.5kBPM)	●	
SSS control(Super Smooth Surface)	(135kBPM)	●	
Tolerance Control		●	
Spline interpolation		●	
Spline interpolation2		●	
Max. blocks in pre-read buffer	1350(G05P20000)	●	
Rapid traverse block overlap		●	
Front IC card mode (same as Data Server)	SD	●	
High-speed Program Server in NC unit(Data Server)		●	
Real time Turning		●	

Graphic related function

Function	Specification	Std.	Opt.
3D solid graphic and program check		●	
2D graphic check and trace		●	

Operation and programming support related functions

Function	Specification	Std.	Opt.
Workpiece position measurement (Surface/Hole/ Width/Rotation)		●	
Buffer correction		●	
Manual speed command		●	
Program restart easily after power down or tools broken		●	
Scaling (G50/G51)		●	
Coordinate rotation by G program (G68/G69) & parameter		●	
Mirror image by parameter, G code and external input		●	
Pecking Tapping Cycle/Deep-hole tapping cycle		●	
Spiral/Conical interpolation(G02.1/G03.1)		●	
Polar coordinate command(G15/G16)		●	
Polar coordinate interpolation(G12.1/G13.1)		●	
Helical interpolation(G17~19+G02/G03)		●	
Inclined surface machining(G68.2/G53.1/G53.6)		●	
GOO Feedrate Designation (F Command)		●	
Manual Speed Clamp		●	
3-dimensional Manual feed		●	
R-Navi		●	
Manual Arbitrary Reverse Run (Program Check Operation)		●	
Tool center point control	C0(Support 4 axes)	●	
Interactive Cycle Insertion	C4	●	

NC axis/PLC axis switchover	C4	●	
Fixed cycle for turning machining	C6	●	
Synchronous tapping with analog I/F spindle	D1	●	

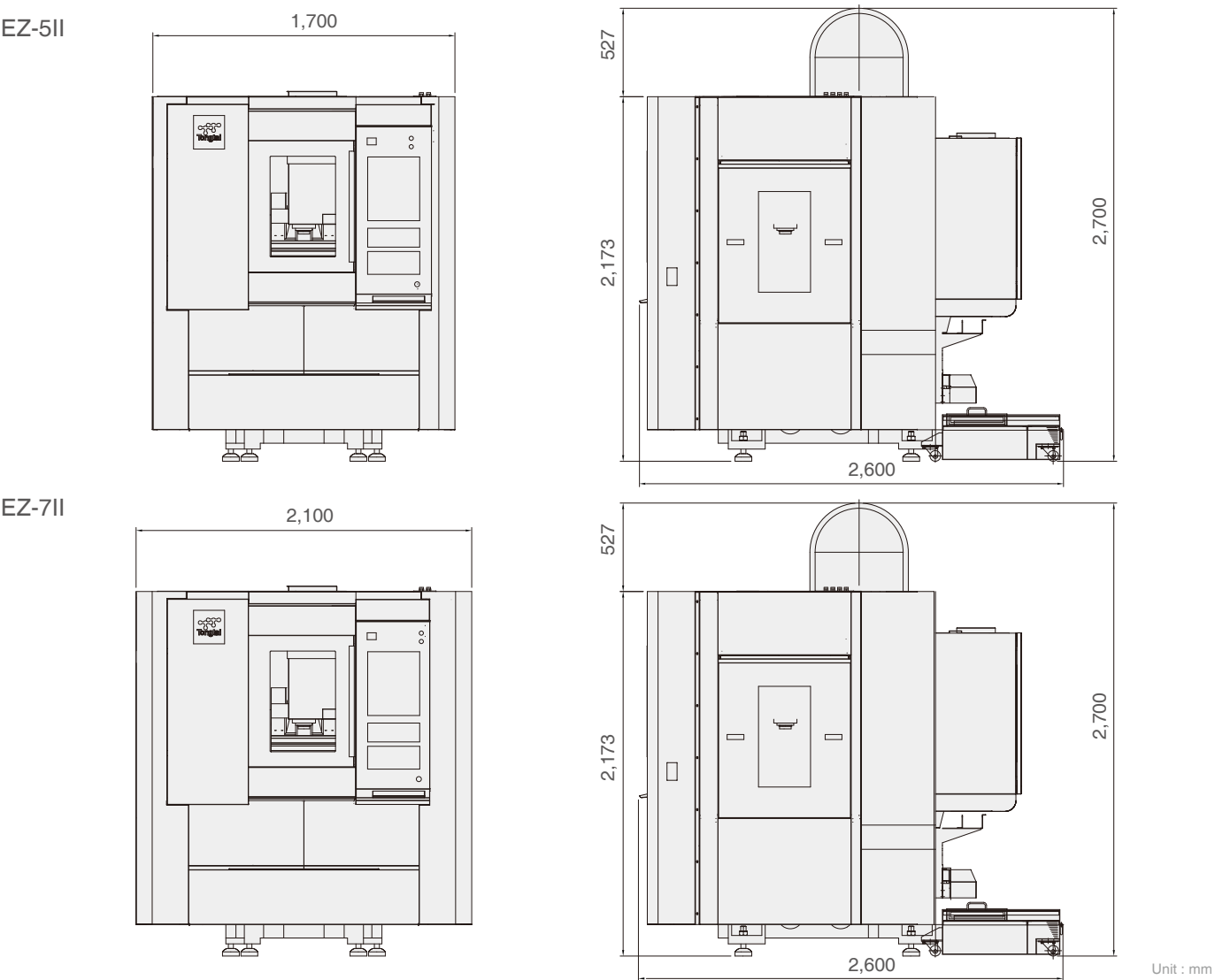
Maintenance & others related functions

Function	Specification	Std.	Opt.
USB memory I/F		●	
Ethernet Interface	2	●	
NC-Explorer(Data transfer tool)	Ver.C2	●	
Operation & G-Code guidance		●	
Alarm & Parameter guidance		●	
Simple programming	Navi-Mill	●	
NC data backup(Automatic & Manual)		●	
Menu selection		●	
MES Interface Library		●	
EcoMonitorLight Connection		●	

Servo and spindle drive system

Function	Specification	Std.	Opt.
Communication type between controller and drives		●	
Encoder specification of servo motor(HG Series)	1000Kp/rev	●	
Vertical axis drop prevention while power down		●	

Machine dimensions/Accessories



Standard/optional accessories

	Standard	Optional
LED work light	●	
Manual pulse generator	●	
Workpiece counter	●	
Tri-color warning light	●	
Tool magazine	●	
Flushing system	●	
Spindle air-blow	●	
Interlock	●	
Coolant around spindle	●	
Clamping error inspection function	●	
Coolant through spindle		○
Disc type oil skimmer		○
Air gun set		○

	Standard	Optional
Coolant gun set		○
Automatic door		○
Oil-mist collector		○
Coolant tank with chip conveyor		○
Spindle cooling device		○
Transformer / Stabilizer		○
Tool breakage detector		○
Standard 4 th axis (available to D210)		○
Hydraulic units and interface		○
A/C for electrical cabinet		○
CE standards		○
Automatic power off system		○
Automatic tool taper washing		○

Specifications

Item	Specification	Unit	EZ-5II	EZ-7II
Table	Table size (L×W)	mm	600×400	850×400
	Max. loading capacity	kg	300	
	Table height from floor	mm	850	
	T-slot (size×No.)	mm	18×3	
Spindle	Spindle taper		7/24 Taper No. 30	
	Spindle speed	rpm	12,000 (24,000)	
	Max. speed of rigid tapping	rpm	6,000	
Travel	X/Y/Z axis travel	mm	510/400/300	710/400/300
	Spindle nose to table	mm	200-500	
Feed	X/Y/Z axis rapid traverse	m/min	60/60/60	
	Cutting feedrate	mm/min	1-20,000	
ATC	Tool shank		BBT-30	
	ATC driving method		Servo-driven	
	Tool magazine type		Servo type	
	Tool pick-up		Fixed position	
	Tool capacity	pc	21	
	Max. tool diameter	mm	Ø80	
	Max. tool length	mm	200	
	Max. tool weight*	kg	3	
Motor	Spindle motor	kW	7.5/3.7 (3.7/1.5)	
	X/Y/Z servo motor	kW	1.5/2.2/2.2 [1.8/1.8/2.7]	
	Coolant motor	kW	0.18	
Machine size	Width×Depth×Height	mm	1,700x2,600x2,700	2,100x2,600x2,700
	Weight	kg	2,850	3,150
Controller			Mitsubishi M80VA [Fanuc Oi-MF]	

*The max. tool weight is provided for reference. Different shapes and centers of gravity will influence the results.
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