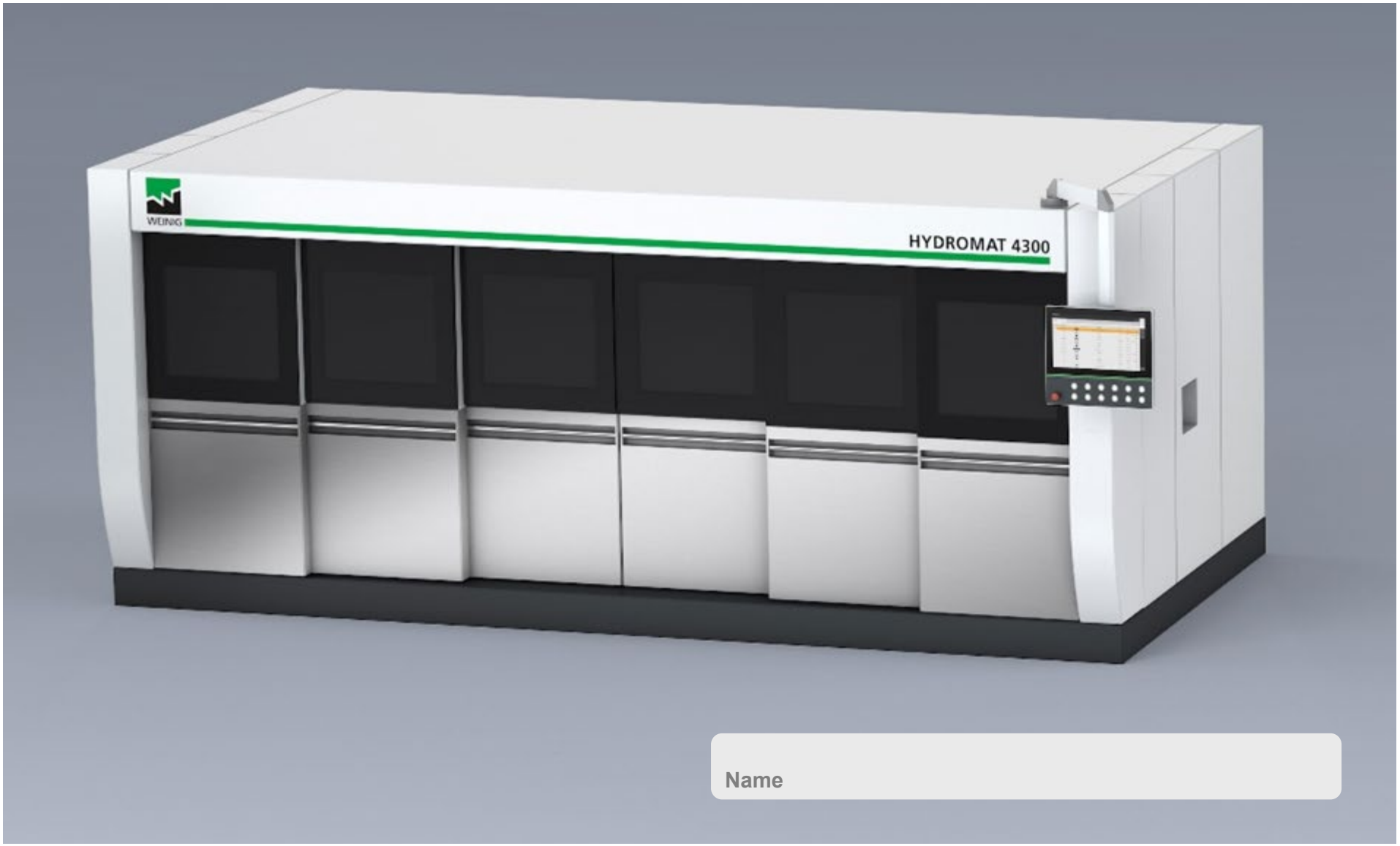
Hydromat 4000 – The heavy-duty moulder for high-speed applications



Content

- **Specifications**
- Spindle configuration
- Feed system
- Machine control
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- Machine table
- Spindle and tooling technology
- Pressure elements and guides
- Feeder

Technical data

Working height	10 - 120 mm (0.39” - 4.72”)
Working width	30 - 230 mm (1.18” - 9.05”)
Maximum working dimensions	300 x 160 mm (11.81” - 6.30”)
Spindle speed 6,000 rpm	●
Feed speed Hydromat 4120	12 - 120 m/min (39 - 390 fpm)
Feed speed Hydromat 4200	20 - 200 m/min (65 - 650 fpm)
Feed speed Hydromat 4250	25 - 250 m/min (82 - 820 fpm)
Feed speed Hydromat 4300	30 - 300 m/min (98 - 980 fpm)
Feeding from the left side (H4250/ H4300)	○
WEINIG Machine Control	●
Start and stop of all spindle drives via frequency convertor	●
Spindle diameter 50 mm incl. HydroLock outboard bearing (top, bottom)	●
Straight jointers/ profile jointers, fully-automatic	○ / ○

● Standard ○ Option

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Technical data

Maximum motor power at infeed (bottom - top)	(H4200/ H4250/ H4300)	75 kW (100 HP)
Maximum motor power on horizontal spindles		55 kW (75 HP)
Maximum motor power on vertical spindles		37 kW (50 HP)
Tool diameter 1st bottom spindle	(H4120/ H4200)	163 - 210 mm (6.41“ - 8.26“)
Tool diameter (except 1st bottom spindle)	(H4120/ H4200)	163 - 260 mm (6.41“ - 10.23“)
Max. tool diameter for straight cutterheads	(H4120/ H4200)	235 mm (9.25“)
Tool diameter 1st bottom spindle	(H4250/ H4300)	203 - 250 mm (7.99“ - 9.84“)
Tool diameter (except 1st bottom spindle)	(H4250/ H4300)	203 - 260 mm (7.99“ - 10.23“)
Max. tool diameter for straight cutterheads	(H4250/ H4300)	250 mm (9.84“)
Short infeed table 1.5 m with 4 roller infeed		●
MarathonPowerCoating for machine table and fence		●
Heavy pressure rollers from above		○
Safety and sound protection cabin		●

● Standard ○ Option

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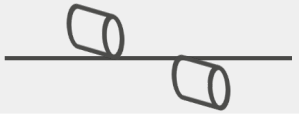
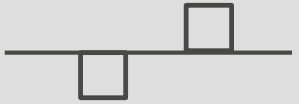
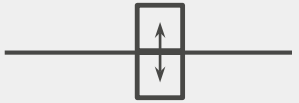
Available spindle units

Bottom - Top at infeed	
Bottom - Top 30° slanted at infeed (H4120)	
Right - Left	
Right - Left opposing, floating	
Top - Bottom	
Horizontal bottom spindle for ripping	
Right - Left vertical spindles for splitting	
Four-sided portal chamfer unit	

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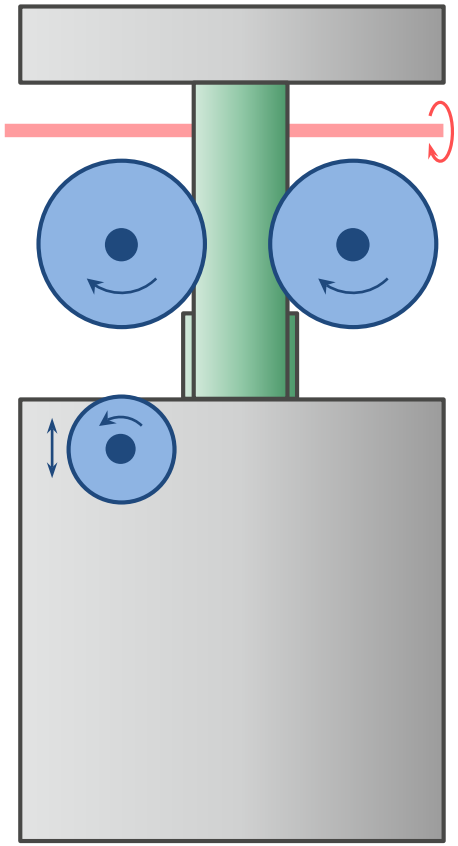
Hydromat 4120 with max. feed speed 120 m/min (390 fpm)



Features:

- **Drive via main shaft**
- **Height adjustment of feed system via feed beam slides with dovetail guide**
- **Two feed rollers per module (Ø 220 mm/ 8.6“)**
- **One table roller per module (Ø 140 mm/ 5.5“)**
- **Table rollers adjustable in height**

WEINIG

Hydromat 4120 with max. feed speed 120 m/min (390 fpm)

Customer benefits:

- ☺ **Reliable and cost-efficient solution for the feed system (1 motor and 1 frequency convertor)**
- ☺ **High energy efficiency due to one motor supplying the required power to each roller**
- ☺ **Constant feed speed throughout the complete moulder due to consistent drive of all rollers by one main shaft**

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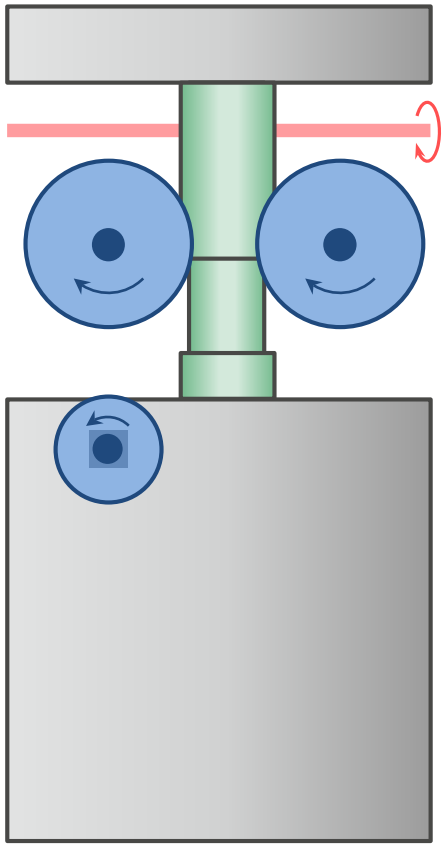
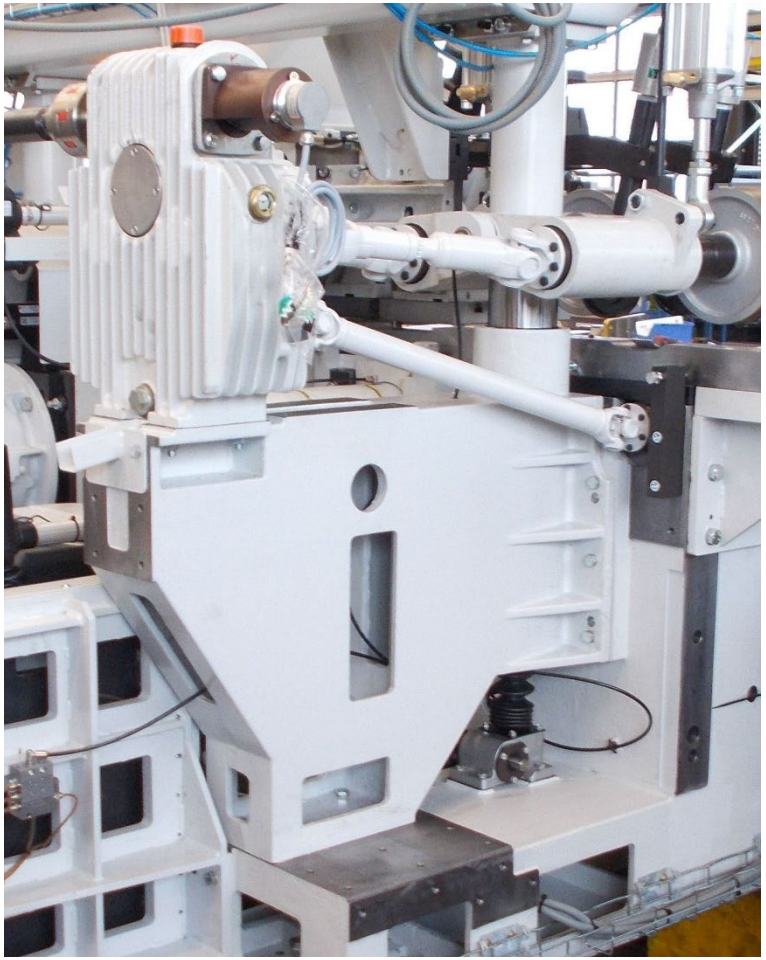
Hydromat 4200 with max. feed speed 200 m/min (650 fpm)



Features:

- **Drive via main shaft**
- **Height adjustment of feed system via column guide**
- **Two feed rollers per module (Ø 220 mm/ 8.6“)**
- **One table roller per module (Ø 143 mm/ 5.6“) with bearing on the front side**
- **Fixed table rollers**

Hydromat 4200 with max. feed speed 200 m/min (650 fpm)



Customer benefits:

- ☺ **Reliable and cost-efficient solution for the feed system (1 motor and 1 frequency convertor)**
- ☺ **High energy efficiency due to one motor supplying the required power to each roller**
- ☺ **Constant feed speed throughout the complete moulder due to consistent drive of all rollers by one main shaft**
- ☺ **Strong feed system with heavy-duty column guide and robust feed pendulums**
- ☺ **Maintenance-friendly design of table rollers for simple change of bearings**

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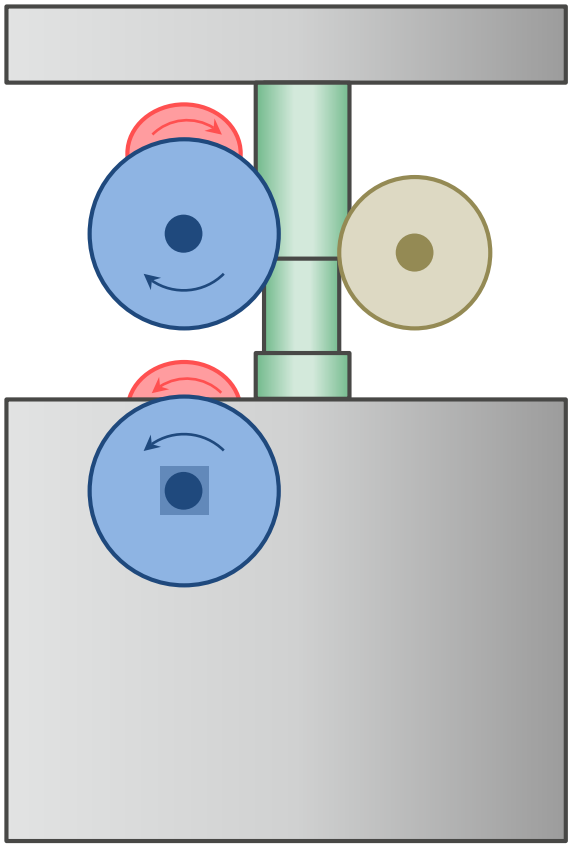
Hydromat 4300 with max. feed speed 300 m/min (980 fpm)

(also Hydromat 4250 up to 250 m/min, 820 fpm)



Features:

- **Single drive per roller with reinforced cardan shafts**
- **Height adjustment of feed system via column guide with hydraulic clamping**
- **One feed roller per module (Ø 250 mm/ 9.8”)**
- **One table roller per module (Ø 250 mm/ 9.8”) with bearing on the front side**
- **One pressure roller per module (Ø 200 mm/ 7.9”)**
- **Fixed table rollers, width 300 mm (11.8”)**

Hydromat 4300 with max. feed speed 300 m/min (980 fpm)

(also Hydromat 4250 up to 250 m/min, 820 fpm)

Customer benefits:

- ☺ **Continuous transport of workpieces with reduced friction on the table as the table rollers and the feed rollers capture the workpiece at the same time (rolling mill)**
- ☺ **Separate control of feed speed within the moulder to run the workpieces butt to butt or with a gap**
- ☺ **Smooth running of workpieces and very good power transmission from the feed system due to large roller diameter**
- ☺ **Strong feed system with heavy-duty column guide and robust feed pendulums**
- ☺ **Maintenance-friendly design of table rollers for simple change of bearings**

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Resulting knife mark spacing depending on feed speed and tooling

n = 6,000

v_f =	*300*				3.13	2.78	2.50
v_f =	*250*			3.47	2.60	2.31	2.08
v_f =	*200*		3.33	2.78	2.08	1.85	1.67
v_f =	*150*	3.13	2.50	2.08	1.56		
v_f =	*120*	2.50	2.00	1.67			
v_f =	*100*	2.08	1.67				

	z =	*8*	*10*	*12*	*16*	*18*	*20*

Tool cutting circle [mm]	Planing	163 203	203	203	203	235* 250**	235* 250**
	Profiling (tool body)	176 (163)	208 (195)	228 (215)	228 (215)	248 (235)	-

n = spindle speed [rpm]
v_f = feed speed [m/min]
z = number of knives
f_z = knife mark spacing [mm]

* thin planer knives
** knives with corrugated back

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Resulting cutter marks per inch depending on feed speed and tooling

n = 6,000

v_f =	*980*				8.1	9.1	10.1
v_f =	*820*			7.3	9.7	11.0	12.2
v_f =	*650*		7.6	9.1	12.2	13.7	15.2
v_f =	*500*	8.1	10.1	12.2	16.2		
v_f =	*390*	10.1	12.7	15.2			
v_f =	*330*	12.2	15.2				
	z =	*8*	*10*	*12*	*16*	*18*	*20*
Tool cutting circle [mm]	Planing	163 203	203	203	203	235* 250**	235* 250**
	Profiling (tool body)	176 (163)	208 (195)	228 (215)	228 (215)	248 (235)	-

n = spindle speed [rpm]
v_f = feed speed [fpm]
z = number of knives
cmpi = cutter marks per inch

* thin planer knives
** knives with corrugated back

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WEINIG Machine Control (WMC)

Features:

- Management of profile and tool data
- Touch screen with diagonal of 21.5“ and multi touch function
- Individual dashboard for central display of all relevant data at a glance, e.g.
  - current profile
  - current job
  - linear meter counter
  - etc.
- Connection with OptiControl measuring stand
- Direct import of scale profile and tool drawings from Moulder Master
- Notepad function to assist the setup process

Customer benefits:

- ☺ Very good legibility even from far away
- ☺ Significant reduction of the navigation within the machine control due to central dashboard
- ☺ Individual adaption of dashboard for each operator profile
- ☺ Simplification of setup process due to individual descriptions and pictures
- ☺ Failure prevention due to simplification of operation and setup

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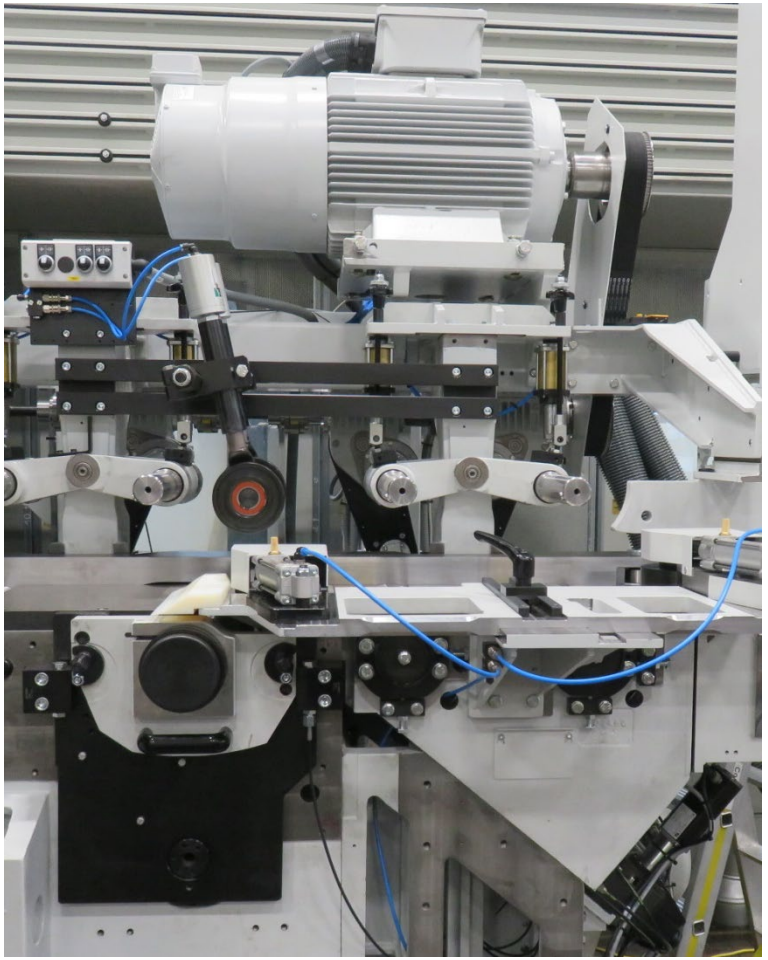
Infeed table for feed speed up to 120 m/min (390 fpm)



Features and customer benefits:

- ➢ **4 roller infeed with feed roller diameter of 220 mm (8.6“) and table roller diameter of 140 mm (5.5”)**
- ➢ **Fixed table rollers with bearings on the front side**
- ➢ **Machine frame open on the bottom side near the table rollers**
- ➢ **Feed drive with U-turn design**
- ➢ **Heavy-duty edge jointing fence with hydraulic clamping**
- ☺ **High rigidity due to robust design of the infeed table**
- ☺ **Maintenance-friendly design of table rollers for simple change of bearings**
- ☺ **Prevention of wood chips sticking to the table rollers**
- ☺ **Position of feed motor with minimum space requirements (for feeding of shorter pieces)**

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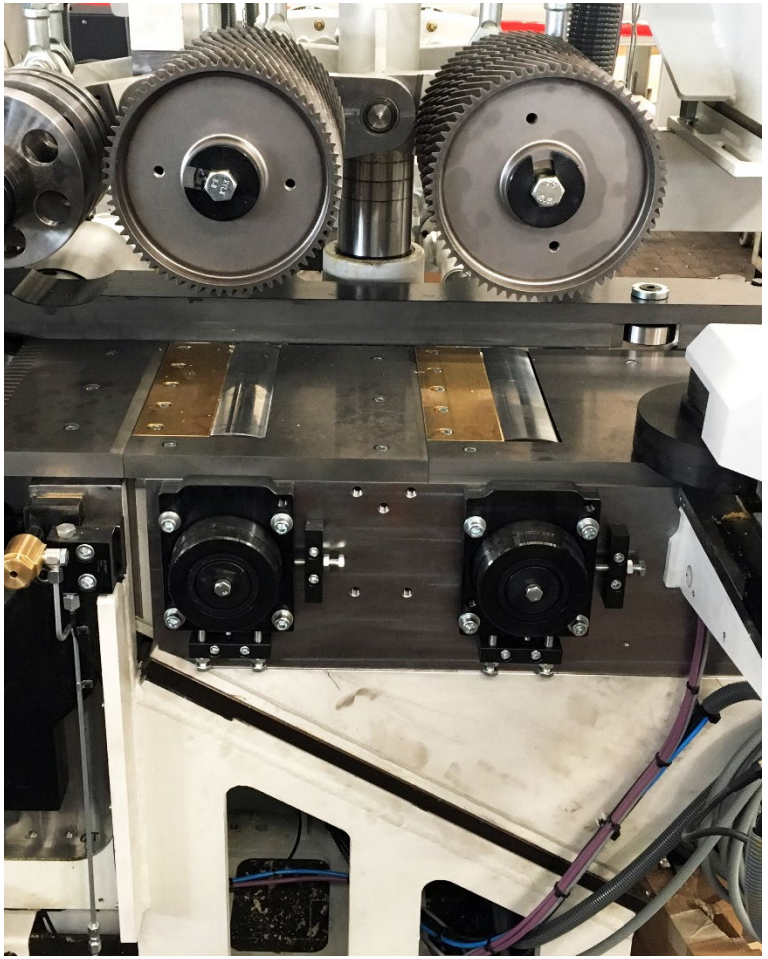
Infeed table for feed speed > 120 m/min (390 fpm)



Features and customer benefits:

- ➢ **Long guide of the infeed table**
- ➢ **4 roller infeed with feed roller diameter of 220 mm (8.6“) and table roller diameter of 143 mm (5.6”) for H4200**
- ➢ **Heavy-duty 4 roller infeed with roller diameter of 250 mm (9.8“), starting from H4250**
- ➢ **Machine frame open on the bottom side near the table rollers**
- ☺ **High rigidity due to robust design of the infeed table**
- ☺ **Consistent transport due to table rollers and feed rollers with the same diameter**
- ☺ **Reliable transport through the moulder due to strong infeed system**
- ☺ **Prevention of wood chips sticking to the table rollers**

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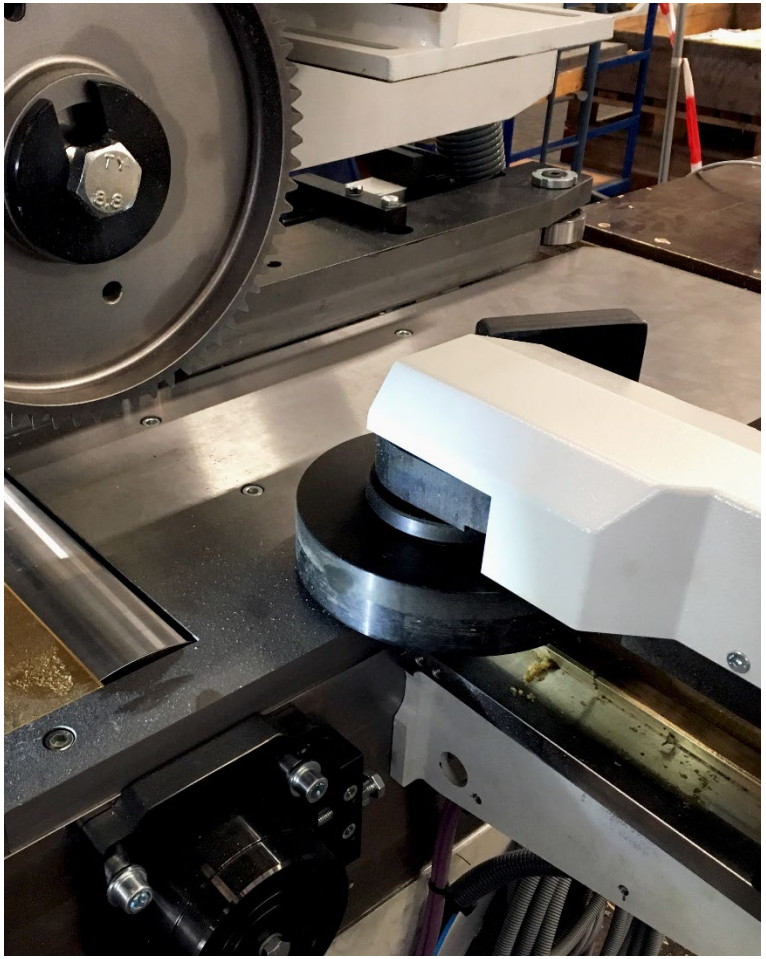
Lateral pressure roller(s) in front of 1st bottom spindle



Features and customer benefits:

- ➢ **Lateral pressure roller(s) at machine infeed**
  - **2 pressure rollers with diameter of 140 mm (5.5“) on H4120**
  - **1 pressure roller with diameter of 200 mm (7.9“) starting from H4200**
- ➢ **Pressure roller with protective plate**
- ➢ **Reinforced bearing of the pressure roller**
- ➢ **Optional positioning in width using a CNC-controlled axis**
- ☺ **Safe guiding of workpieces along the fence**
- ☺ **Protection of pressure roller from workpieces which are too wide**
- ☺ **High rigidity and wear resistance of pressure roller due to large diameter and reinforced bearing**
- ☺ **Automatic width adjustment of pressure roller**

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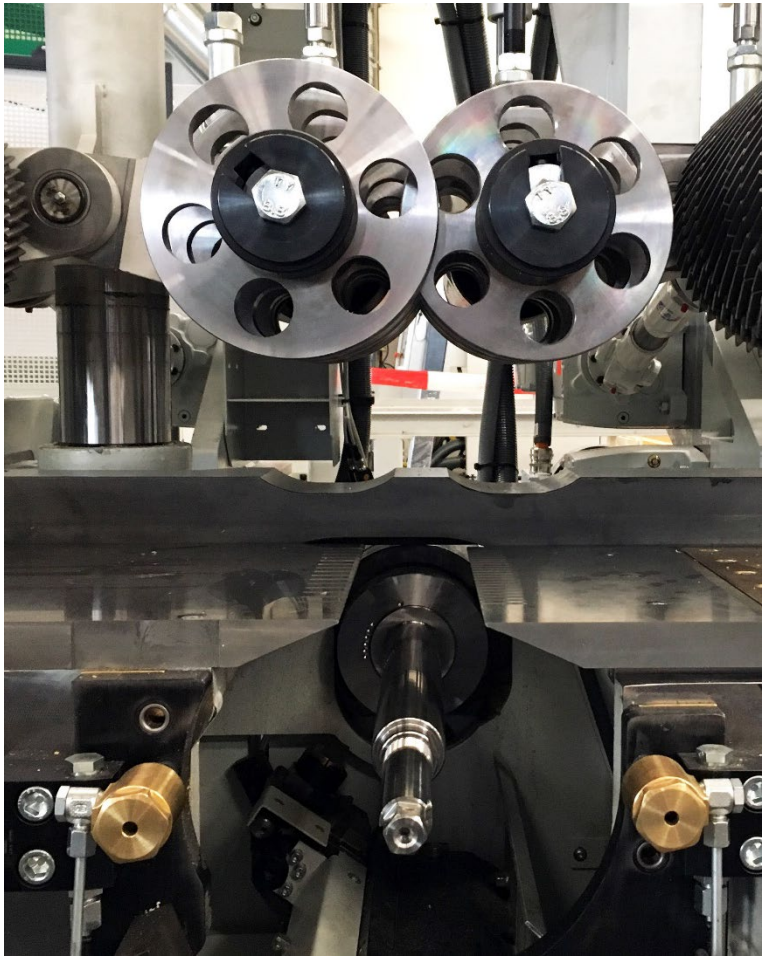
Top pressure rollers on 1st bottom spindle (starting from H4200)



Features and customer benefits:

- ➢ **2 top pressure rollers with a diameter of 200 mm (7.9“) in front of and after the first bottom spindle**
- ➢ **Pressure rollers geared into each other**
- ➢ **Pressure rollers with stable bearing (as feed pendulums)**
- ☺ **Safe guiding of workpieces at first bottom spindle**
- ☺ **Optimum pressure in front of and after the spindle due to short distance between the rollers**
- ☺ **High rigidity of the pressure system due to large diameter, stable bearing and pneumatic cylinders**

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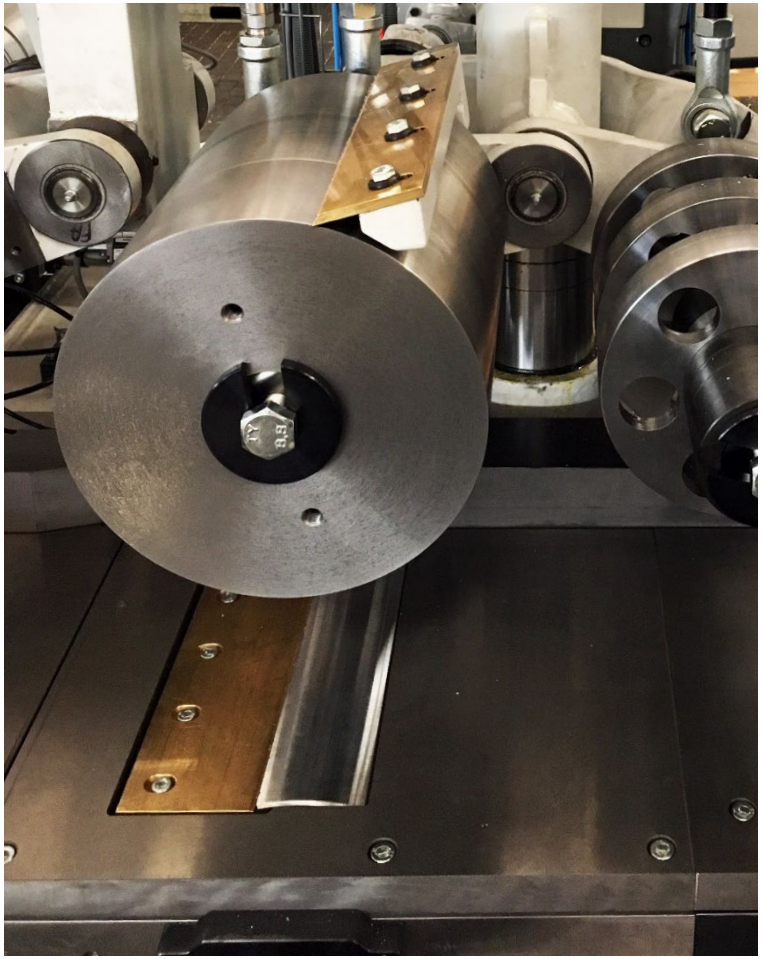
Scrapers on rollers



Features and customer benefits:

- ➢ **Scrapers screwed in a fixed position**
- ➢ **Contact-free scrapers for all table rollers and feed rollers (distance 0.2 mm/ 0.008”)**
- ☺ **Very good accessibility for the adjustment of the scrapers**
- ☺ **Prevention of friction and of heat development between scrapers and rollers**
- ☺ **Reduced risk of damage as a result of heat development, e.g. due to fire**

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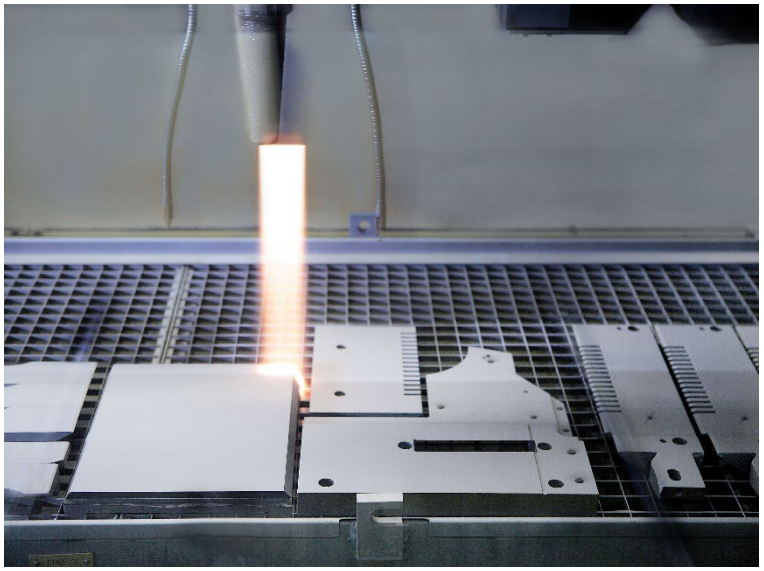
Coating of machine table and fence



Feature and customer benefits:

- ➢ **MarathonPowerCoating for machine table and fence**
- ☺ **High wear resistance of machine table and fence**
- ☺ **No spalling of the coating due to very strong bonding**

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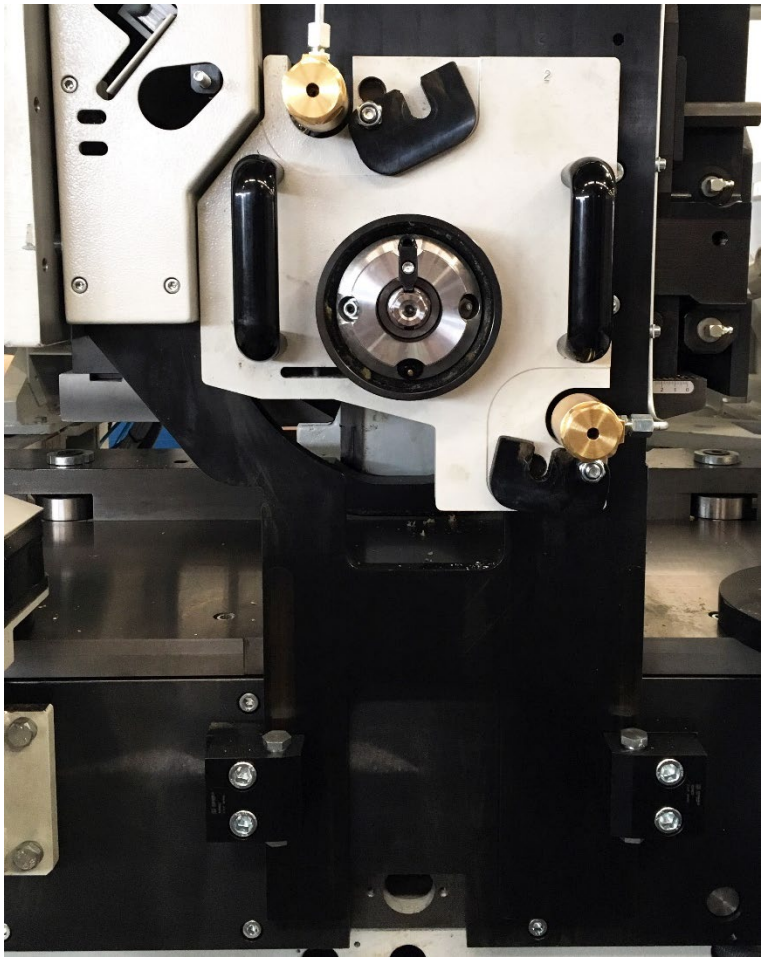
Front plate of top spindle



Features and customer benefits:

- ➢ **Enlarged front plate at top spindle to support the pressure shoe after the spindle**
- ➢ **Front plate with automatic clamping against the machine frame at two spots**
- ☺ **High rigidity of the support at the front side against the machine frame**
- ☺ **Reduction of setup times for radial spindle adjustment due to fully-automatic process**
- ☺ **High stability of the hood of the top spindle incl. flanges for outboard bearing and pressure elements**

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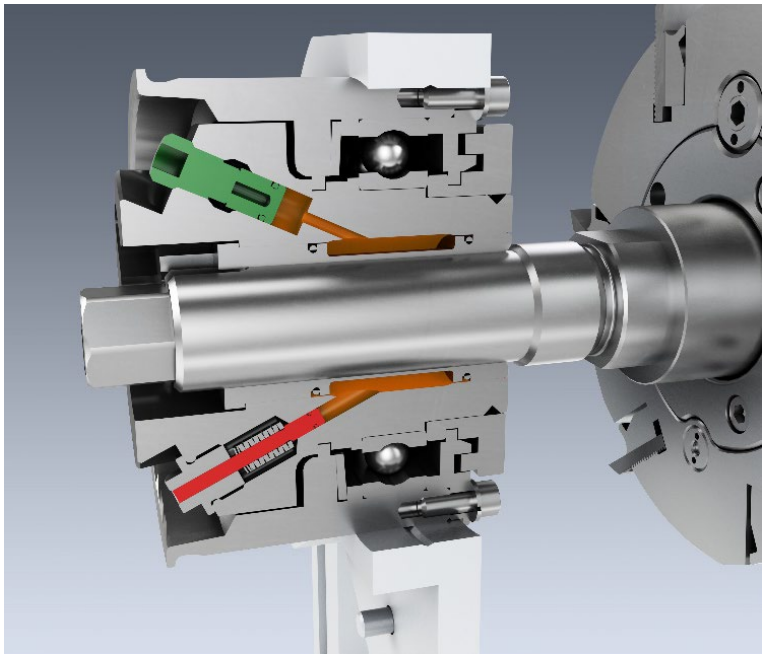
HydroLock outboard bearing



Features and customer benefits:

- ➢ **HydroLock outboard bearings with closed system**
- ➢ **Elimination of grease gun in the daily business**
- ☺ **Simple and quick mounting of outboard bearing with Allen key**
- ☺ **Control of clamping of outboard bearing by means of a pin**
- ☺ **No contamination of the working environment by leaking grease**
- ☺ **Reduction of setup times**
- ☺ **Coherent operating concept in combination with HydroLock tooling**

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Automatic clamping and release of HydroLock outboard bearing (option)

Features and customer benefits:

- ➢ **Automatic clamping of outboard bearing**
- ➢ **Use of swivel plates between adapter plate for outboard bearing and clamping**
- ☺ **Simplification of clamping and release of the HydroLock outboard bearing**
- ☺ **Secure clamping of the outboard bearing**
- ☺ **Wrench-free (dis-)mounting of the outboard bearing**

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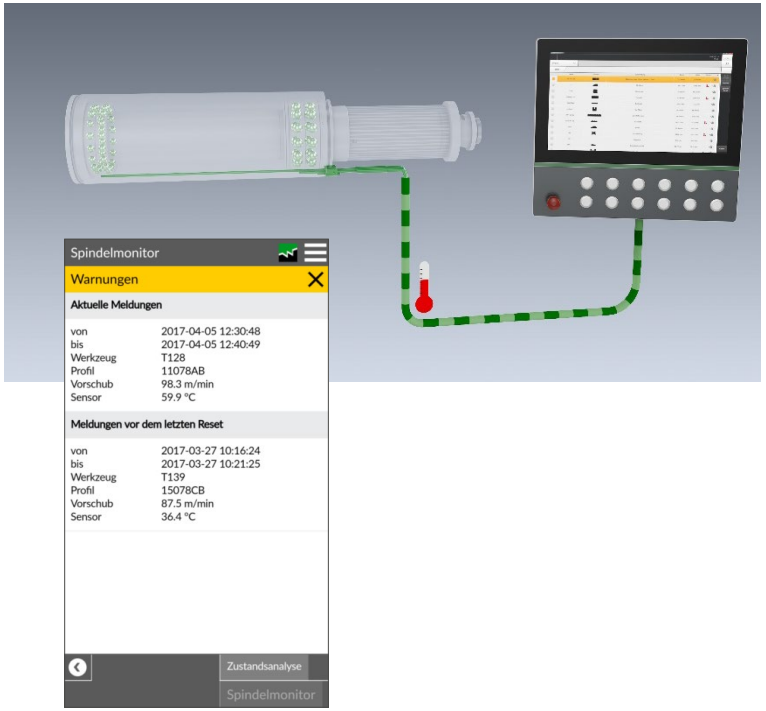
Temperature monitoring of spindle bearings (option)



Features and customer benefits:

- ➢ **Sensors at spindle bearings to detect the temperature**
- ➢ **Administration of boundary temperatures in WEINIG Machine Control for a warning or to stop the machine**
- ☺ **Early detection of bearing failure**
- ☺ **Reduction of cost for replacement**
- ☺ **Prevention of damages on the spindle and surrounding parts, e.g. due to fire**
- ☺ **Prevention of unscheduled downtime**
- ☺ **Increase of availability and productivity of the machine**
- ☺ **Planning of maintenance intervals and of purchase orders of spare parts**

Straight jointers with linear guide

Feature and customer benefits:

- ➢ **Straight jointer with linear guide**
- ☺ **Smooth-running guide for consistent movement of the jointer**
- ☺ **Consistent high quality of jointing process for high quality surface of the workpiece**
- ☺ **Less susceptible to dirt than dovetail guide**

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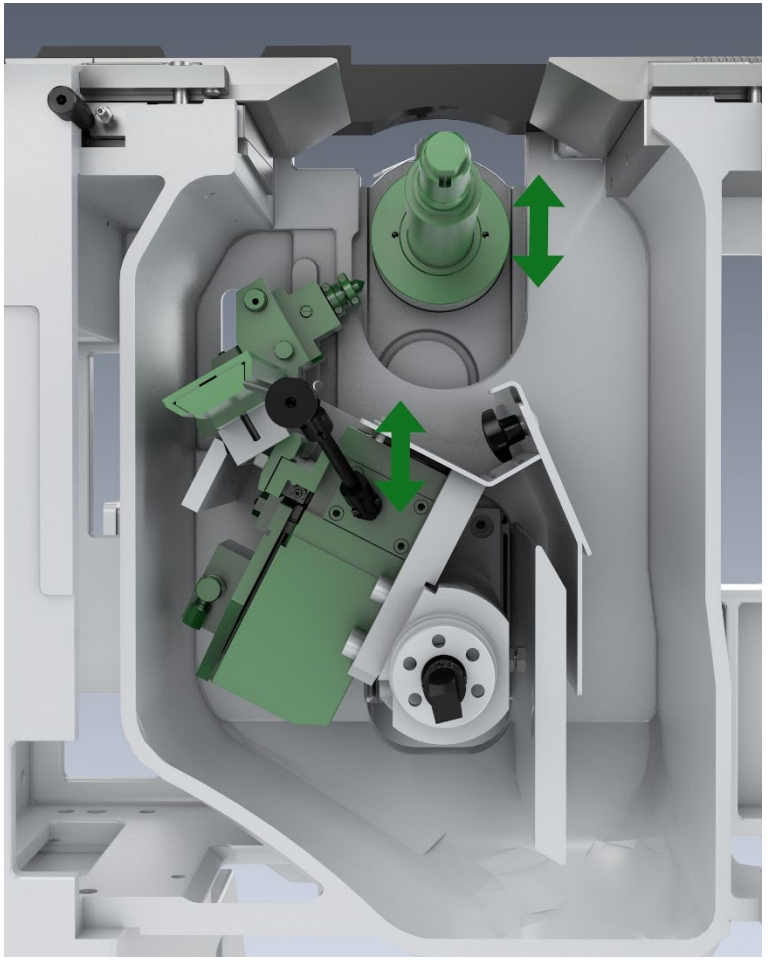
Jointer moving radially with the spindle



Feature and customer benefits:

- ➢ **Jointers are moving with the spindle in case of a radial adjustment on all spindles**
- ☺ **Simplification of machine setup due to elimination of re-adjustment of jointer when adjusting the spindle radially**
- ☺ **Prevention of operator error**
- ☺ **Reduction of setup times**
- ☺ **Positioning of jointer and spindle without opening the hood (= machine has to be stopped) possible**

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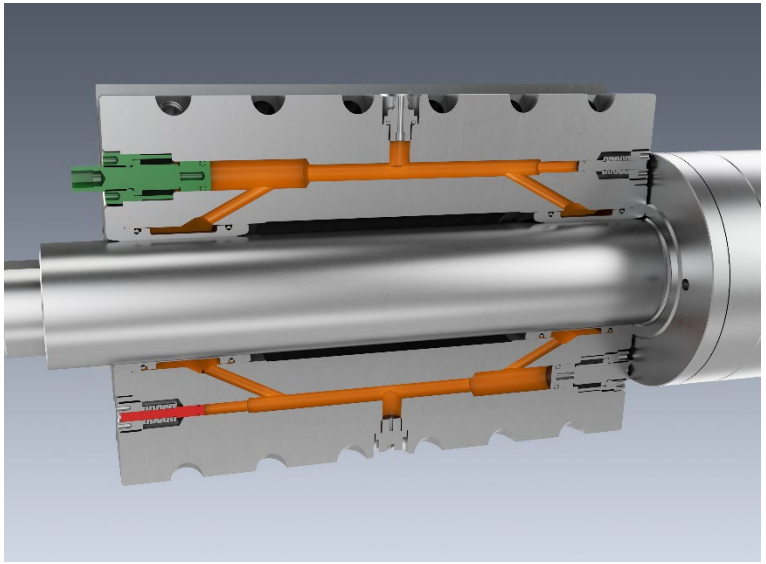
HydroLock tooling



Features and customer benefits:

- ➢ **Hydro tooling with closed system**
- ➢ **Elimination of grease gun in the daily business**
- ☺ **Simple and quick mounting of tools with Allen key**
- ☺ **Control of clamping of tool by means of a pin**
- ☺ **No contamination of the working environment by leaking grease**
- ☺ **Reduction of setup times**
- ☺ **Coherent operating concept in combination with HydroLock outboard bearing**

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Tool crane (only in combination with safety and sound protection cabin)

Features and customer benefits:

- ➢ **Swing crane mounted on guiding rails inside the safety and sound protection cabin**
- ➢ **Swivel range 270°**
- ➢ **Separate lifting devices for horizontal and vertical spindles**
- ☺ **Accessibility of all spindles by moving the crane inside the cabin**
- ☺ **Tools can be swivelled to a tool trolley outside of the cabin**
- ☺ **Simplification of tool change due to appropriate lifting devices**

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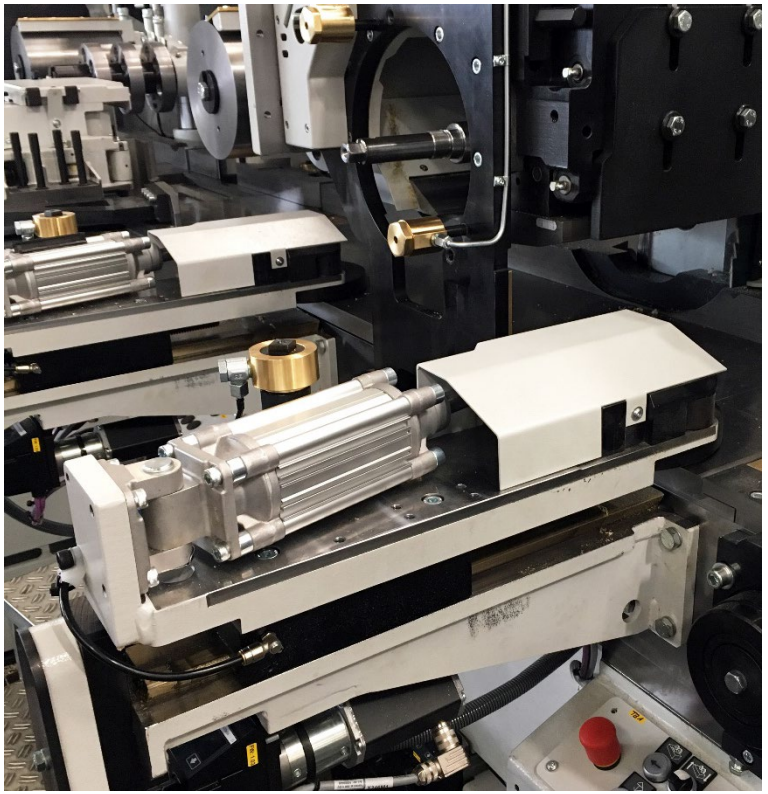
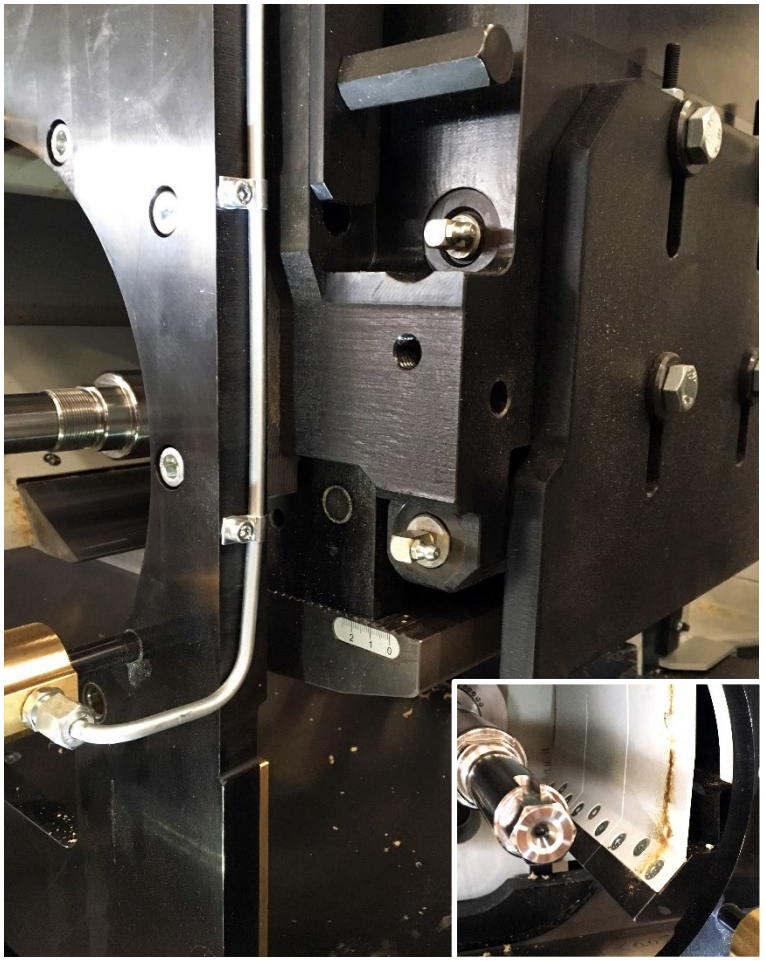
Lateral pressure rollers inside the moulder



Features and customer benefits:

- ➢ **Lateral pressure rollers**
  - **Pressure rollers with a diameter of 140 mm (5.5“) on H4120**
  - **Pressure rollers with a diameter of 200 mm (7.9“) starting from H4200**
- ➢ **Reinforced bearing of the pressure rollers**
- ➢ **Optional positioning in width using a CNC-controlled axis**
- ☺ **Safe guiding of workpieces along the fence**
- ☺ **High rigidity and wear resistance of pressure roller due to large diameter and reinforced bearing**
- ☺ **Automatic width adjustment of pressure roller**

Pressure shoe in front of top spindle



Features and customer benefits:

- ➢ Reinforced pressure shoe in front of top spindle, pneumatic and receding from the tool with horizontal plane of adjustment
- ➢ Clamping of the pressure shoe on the bottom side by a hexagonal bolt
- ➢ Massive protective plate in front of top spindle
- ➢ Reinforced frame of pressure shoe (H4250 and H4300)
- ➢ Metal sheet to guide the wood chips
- ☺ Heavy-duty pressure shoe for safe guiding of the workpieces
- ☺ Reduction of setup time due to simple and quick positioning according to tool cutting circle and cutting depth
- ☺ No collision between pressure shoe and tool
- ☺ Simple adjustment using ring wrench or ratchet
- ☺ Protection from workpieces running on top of each other

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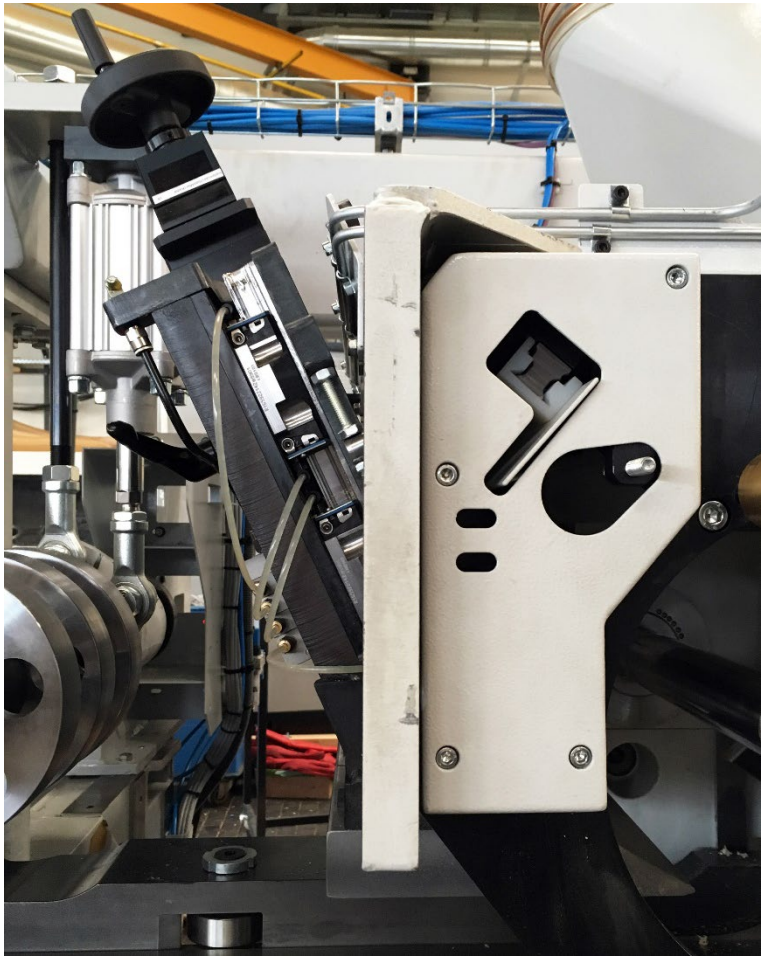
Pressure shoe after top spindle



Features and customer benefits:

- ➢ **Pressure shoe after top spindle with slanted guideway**
- ➢ **Stable guiding of the pressure shoe using**
  - **dovetail guide (H4120 and H4200)**
  - **linear guides (H4250 and H4300)**
- ☺ **Very good discharge of energy due to slanted assembly of the pressure shoe**
- ☺ **Heavy-duty pressure shoe with high rigidity for safe guiding of the workpieces**

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Pressure shoe above bottom spindle

Features and customer benefits:

- ➢ **Stable guiding of the pressure shoe using**
  - **dovetail guide (H4120 and H4200)**
  - **linear guides (H4250 and H4300)**
- ➢ **Pressure shoe above bottom spindle with slanted guideway (H4250 and H4300)**
- ➢ **Pressure shoe mounted to the hood of the top spindle**
- ☺ **Heavy-duty pressure shoe with high rigidity for safe guiding of the workpieces**
- ☺ **Very good discharge of energy due to slanted assembly of the pressure shoe**

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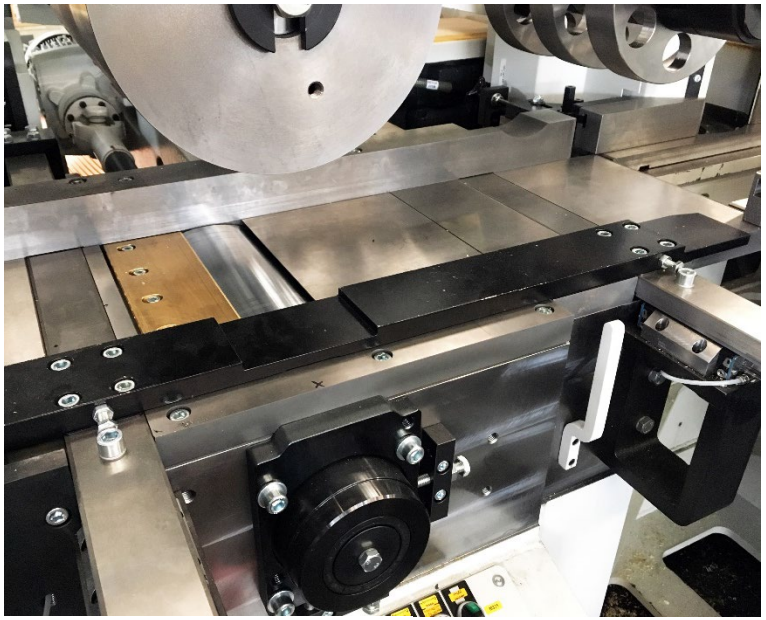
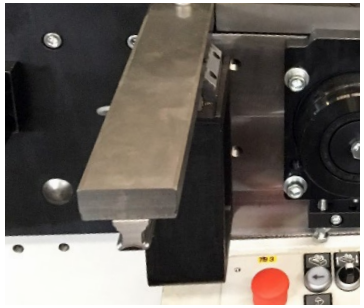
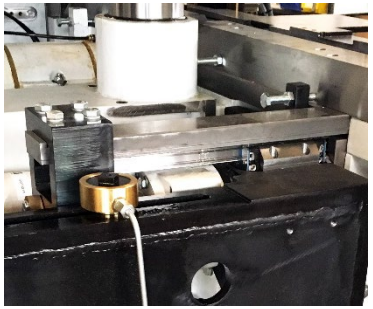
Lateral guiding fence (option for H4250 and H4300)







Features and customer benefits:

- ➢ **Lateral guiding fence with CNC-controlled adjustment**
- ➢ **Adjustment of guiding fence using linear guides integrated into the machine table**
- ➢ **Use of guides as table plate segments**
- ➢ **Automatic clamping of guiding fence behind the machine fence**
- ☺ **Automatic positioning of guiding fence in width**
- ☺ **Prevention from wood chips jamming under the guiding fence due to screwed joint on the table**
- ☺ **Protection of linear guides from wood chips and dirt**

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Content

- Specifications
- Spindle configuration
- Feed system
- Machine control
- Machine infeed
- Machine table
- Spindle and tooling technology
- Pressure elements and guides
- **Feeder**

Servo-Feeder SF 250

Features:

- Flat magazine with chain cross conveyor and servo-accelerator with 4 or 6 feed rollers
- Servo-motor accelerator with intelligence
- Online-linking of accelerator speed and of CNC-controlled axes with the moulder
- Integrated safety concept
- Max. feed speed of moulder 250 m/min (820 fpm)
- Feed roller diameter 300 mm (11.8”)
- Workpiece dimensions
  - length min. - max. 1,800 - 6,100 mm (5.9 - 20.0 ft)
  - width min. - max. 75 - 300 mm (2.9 - 11.8”)
  - thickness min. - max. 16 - 120 mm (0.63 - 4.7”)

Customer benefits:

- ☺ Damage-free material due to soft-butting to preceding workpiece
- ☺ Dynamic acceleration irrespective of the workpiece length
- ☺ Continuous feeding without gaps and ramming effect to the moulder
- ☺ Feeding workpieces with a defined gap as required for floating spindle operations
- ☺ Efficient use of moulder feed speed capability
- ☺ Automatic adjustment according to the information from the moulder
- ☺ Continuous flow of material due to buffering function of the cross conveyor

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Power-Feeder F 300M

Features:

- Flat magazine with chain cross conveyor and accelerator with 6 individually driven rollers
- Online-linking of accelerator speed and of CNC-controlled axes with the moulder
- Integrated safety concept
- Max. feed speed of moulder 300 m/min (980 fpm)
- Max. number of workpieces 100 pcs./min (up to a working width of 250 mm, 9.8”)
- Feed roller diameter 415 mm (16.3”)
- Workpiece dimensions
  - length min. - max. 1,800 - 6,100 mm (5.9 - 20.0 ft)
  - width min. - max. 60 - 300 mm (2.3 - 11.8”)
  - thickness min. - max. 20 - 120 mm (0.78 - 4.7”)

Customer benefits:

- ☺ Damage-free material due to soft-butting to preceding workpiece
- ☺ Dynamic acceleration of 3 pairs of feed rollers independently from each other
- ☺ Continuous feeding without gaps and ramming effect to the moulder
- ☺ Feeding workpieces with a defined gap as required for floating spindle operations
- ☺ Efficient use of moulder feed speed capability
- ☺ Automatic adjustment according to the information from the moulder
- ☺ Continuous flow of material due to buffering function of the cross conveyor

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