

MANUFACTURING SOLUTIONS FOR COMMERCIAL VEHICLES



Wheel Hubs and Brake Drums



COMPACT SOLUTION FOR MANUFACTURING TRUCK BRAKE DRUMS

With their large machining areas, powerful driven spindles and option for live tooling, VL series modular machines can successfully manufacture truck brake drums. This compact solution benefits from short transportation distances, and complete automation from the blank to the finished part.

AUTOMATION

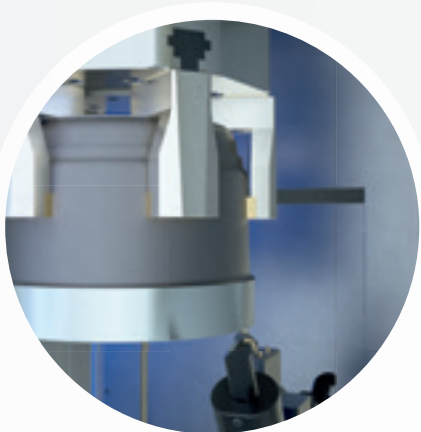
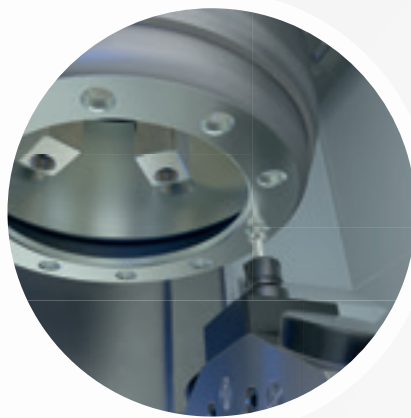
Robot track system

This extremely flexible automation system performs all of the part handling work for this production line. This includes unloading blanks from pallets, feeding the machines, and stacking finished brake drums onto pallets.

OP 20 I 1 x VL 8

Soft turning

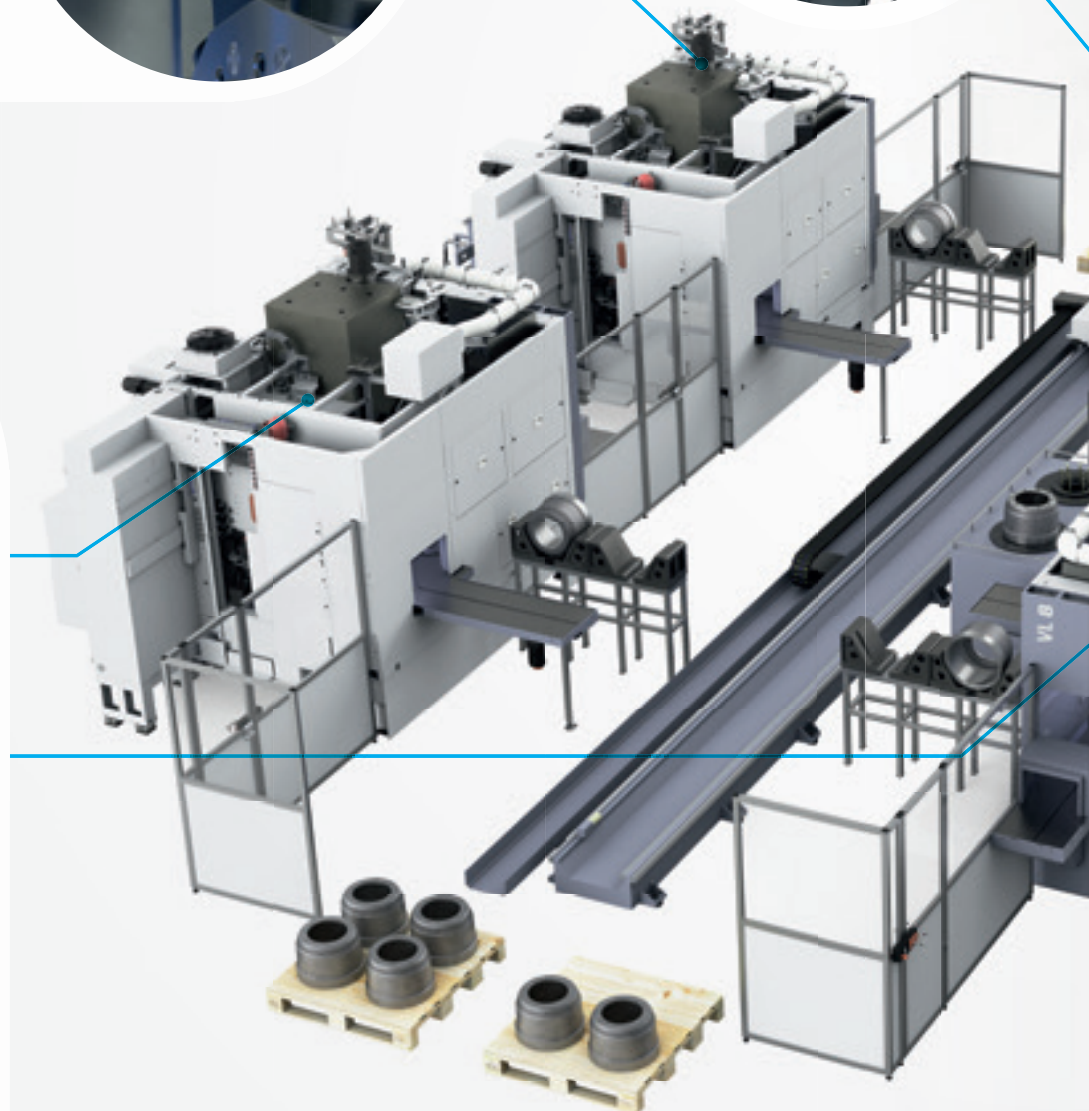
After turning the part, the screw ring for the brake drum is machined. This includes the drilling of the screw holes with a live tool turret.



OP 10 I 2 x VL 8

Soft turning

The large machining area of the VL 8 enables all the turning work, both internal and external, on the first side of the brake drum to be completed. Two machines are used here to improve the cycle time.



ALL FROM A SINGLE SOURCE!

Machines, robotic material handling, automation, peripherals, clamping equipment, tools, and technology support.



**CYCLE
TIME
109 SEC.**

OP 30 | BALANCING

Balancing system

Finally, the brake drums are balanced on an EMAG system designed for this application.



EMAG VIDEO

Check out this animation to see brake drum machining process in action.



PRODUCTION LINE FOR TRUCK WHEEL HUBS

VL Series machines, particularly the VL 6 and VL 8 models, are perfect for machining large components, such as truck wheel hubs, thanks to their powerful working spindles and large machining areas. The use of a Live tool turret means that drilling tools can also be used. This production line features short transport distances, sophisticated automation, and simple part handling.



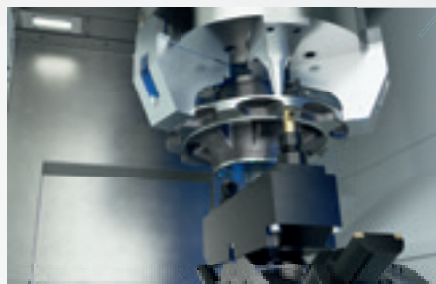
BLANK
SUPPLY



OP 10 | VL 8

Soft turning

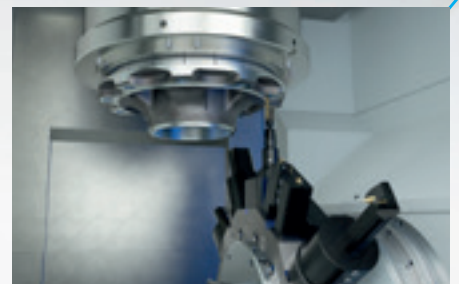
The external and internal contours of the wheel hub are turned in the first operation. The roughing and dressing of the side take place in a single clamping cycle.



OP 20 | VL 8

Soft turning

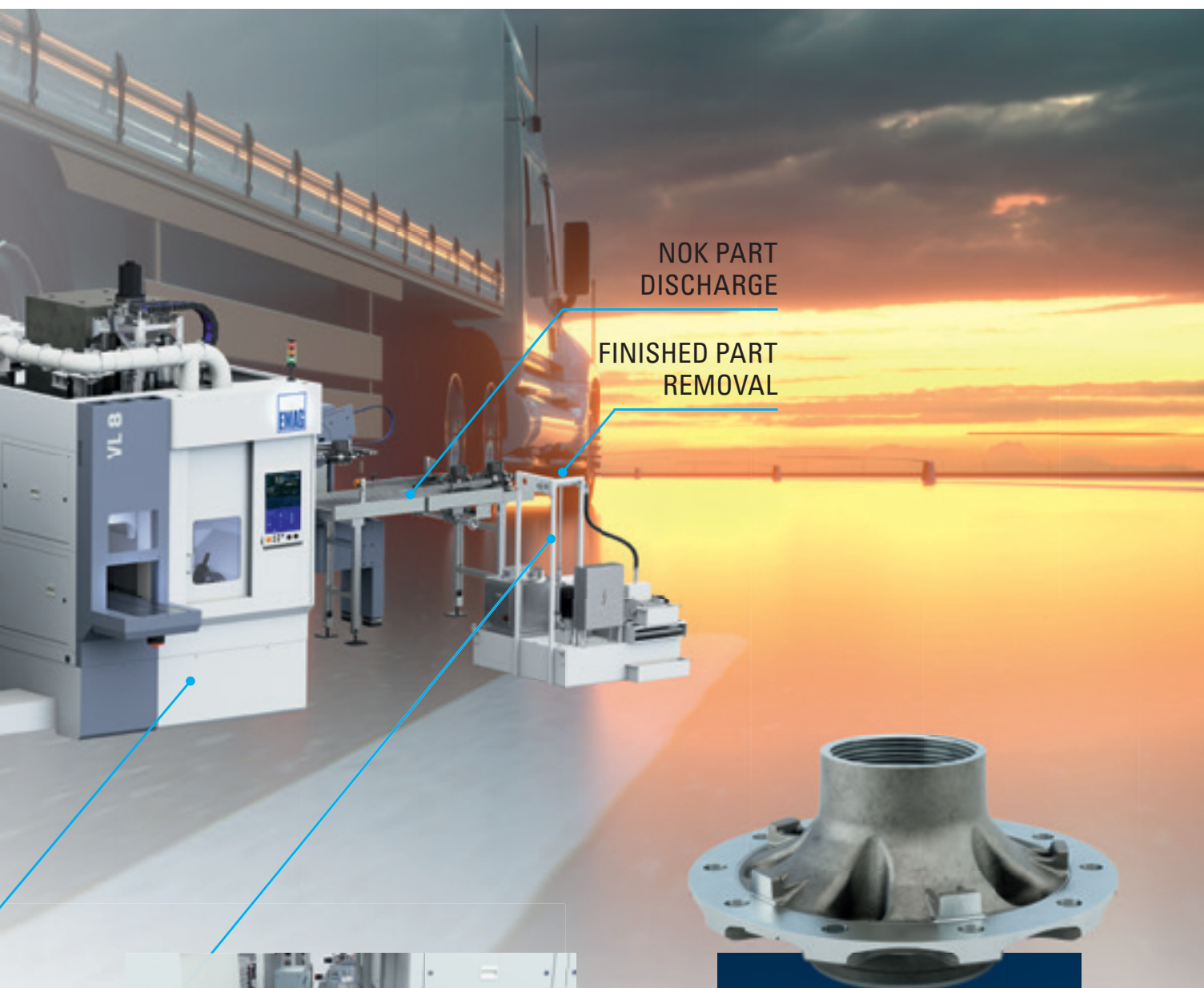
The second side is then machined after the wheel hub has been turned. The use of a Live tool turret means that drilling operations for the screw holes can also be completed at this point.



OP 30 | VL 8

Finishing

Finally, the component is dressed and the grooves are milled. Once again, a Live tool turret is used to tap the threads in the boreholes.



NOK PART
DISCHARGE

FINISHED PART
REMOVAL



AUTOMATION

TrackMotion

TrackMotion is an automation solution which combines the previous concept of conveyor belts, pick-and-place units, and changers in a single system. The "TransLift" gripper system features a Z- and a B-axis for this purpose, allowing a stroke of up to 650 mm and enabling the parts to be turned in full.

EMAG VIDEO

Manufacturing System for Wheel Hubs



VL MACHINES IN OPERATION

VL 2 and VL 4 for small and medium-sized workpieces

The VL 2 and VL 4 pick-up turning machines are ideal for workpieces with a maximum diameter of 4 and 8 inches. The machines feature an integrated automation system and a parts storage area that allows them to operate completely autonomously, relieving the strain on production personnel. Efficient mass production of various batch sizes is possible with these machines and, thanks to their flexible clamping systems, they can also easily machine entire part families.

VL 6 and VL 8 for large workpieces

If you want to efficiently machine larger workpieces, or are striving to achieve maximum flexibility in production, look no further than the VL 6 and VL 8 pick-up turning machines. The integrated conveyor belt makes loading the machines with heavy parts a breeze; the parts are simply placed on the conveyor belt by crane and the machine takes care of the rest.



TECHNICAL DATA

		VL 2	VL 4	VL 6	VL 8
Workpiece diameter, max.	mm inch	100 4	200 8	300 12	400 15.5
Chuck diameter	mm inch	160 6.5	260 10	400 15.5	500 19.5
Workpiece length, max.	mm inch	150 6	200 8	250 10	300 12
Travel distances X / Y (optional) / Z	mm inch	650 / ± 50 / 375 27.5 / ± 2 / 15	760 / ± 30 / 415 30 / ± 1 / 16.5	900 / ± 30 / 495 35.5 / ± 1 / 19.5	1110 / ± 30 / 595 43.5 / ± 1 / 23.5
Main spindle					
» Power rating, 40% / 100%	kW hp	18,1 / 13,9 24 / 19	25 / 18 34 / 24	39 / 28 52 / 38	44 / 34,5 59 / 46
» Torque, 40% / 100%	Nm ft-lb	77 / 59 57 / 44	280 / 202 207 / 148	460 / 340 339 / 251	775 / 600 572 / 443
» Max. number of revolutions	1/min	6.000	4.500	3.100	2.850
Turret					
» Turret tool positions	Anzahl	12	12	12	12
» Revolutions of driven tools	1/min	6.000	6.000	6.000	6.000
» Torque of driven tools at 30% / 100% duty cycle	Nm ft-lb	27 / 15 20 / 11	27 / 15 20 / 11	27 / 15 20 / 11	48 / 30 35 / 22
Rapid-traverse rate X / Y / Z	m/min ipm	60 / 30 / 30 2,363 / 1,181 / 1,181	60 / 15 / 30 2,363 / 591 / 1,181	60 / 15 / 30 2,363 / 591 / 1,181	60 / 15 / 30 2,363 / 591 / 1,181

THE TRACKMOTION AUTOMATION SYSTEM

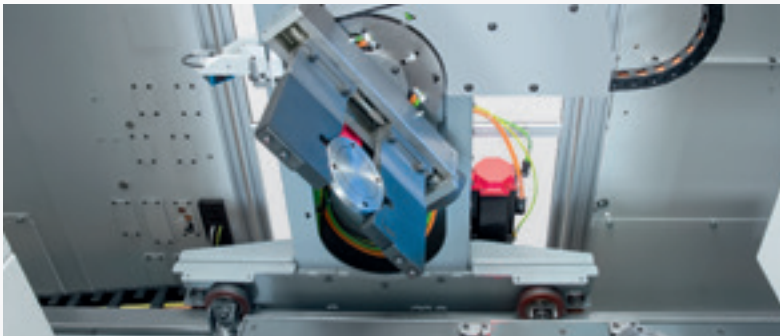
TrackMotion combines the concept of conveyor belts integrated with gantries into one single automation solution.

The TrackMotion is a track that runs through multiple machines with a TransLift unit attached. The TransLift will grip parts, even parts with different heights, correctly position them and, if necessary, turn the part over. With the way the TrackMotion is set up, it can link a variety of machines very easily. To decrease cycle times even further, multiple TransLift units can be added.

On the VL machines, the working spindle is not only used to machine workpieces, but also to load and unload them. Thanks to carrier prisms, the costs to change parts are extremely low. The prisms are simply installed onto the conveyor belt and the transport-related data are entered in the control unit.



The raw components are supplied by a parts storage area. This has a capacity to hold up to 400 parts, depending on the geometry of the workpiece.



From small to large with no retooling. The universal NC gripper ensures that the machine can be reset very quickly.

PERFECT SYMBIOSIS: MODULAR MACHINES AND TRACKMOTION AUTOMATION SYSTEMS

The design of the modular machines includes a tunnel immediately behind the machining area, created using the separate energy container. The track is then installed in this tunnel and includes the NC gripper (TransLift) to transport parts. To facilitate picking up and positioning the parts on stackable pallets, the gripper system also has a Z-axis. By using three different axes to position the parts, an extremely high number of raw workpieces and finished parts can be stored in a very small space (up to 400 parts). This automation system can also turn the parts between operations, replacing traditional systems such as belts, pick-and-place units and changers.

BENEFITS

- + Customized for modular machines
- + Replaces belts, pick-and-place units, and changers
- + Allows stackable pallets to be used (large parts buffer)



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