NUMTEC
ALPINE METAL TECH

ABV300

Inline sprue drilling machine

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ABV300 – a powerful high-tech drilling machine with automatic tool changer for drilling out sprue points on aluminum wheels

ABV300

Inline sprue drilling machine

The ABV300 was developed for drilling of sprue points on aluminum wheels after the casting process. The result is a powerful high-tech drilling machine that sets new standards in terms of cost-effectiveness and flexibility.

Compared to punching, drilling out the sprue points allows considerably more freedom in the design and size of the sprue cross-sections. This is an advantage that is becoming more important due to the ever-increasing trend toward larger wheels and thus greater material thicknesses in the hub area. Distortion, deformation and cracking, which can occur when punching out the sprue, are effectively prevented with drilling. Bore diameters of up to 100 mm are possible without problems. In contrast to all machines on the market, the ABV300 is equipped with a fully automatic tool changer. In combination with the integrated wheel detection system, each wheel type is individually machined with the optimum drill diameter for this design. With this adapted diameter, large savings in cycle time can be achieved in the subsequent turning operation. The various attachments and options (minimum quantity lubrication, chip conveyor, exhaust device, etc.) allow individual and optimal adaptation to the different circumstances of the individual production plants.

YOUR ADVANTAGES

» Inline machine

The ABV300 is installed directly in the conveyor line. The complete loading and unloading of the drilling unit is integrated in the machine. No external manipulator (e.g. robot) is necessary.

» Low material stress

Compared to punching, drilling causes a much lower material stress in the hub area. Even with large material thicknesses, there is no risk of distortion or cracking in the aluminum.

» Flexible production

With the built-in wheel detection system and the fully automatic tool changer with integrated 12-disc tool magazine, each wheel can be machined with its optimum drill diameter.

» Maximum throughput

Maximum production rates are achieved through consistent development for this application. With only one ABV300, more than 5000 wheels/day with different hole diameters can be drilled.

» Cycle time savings

The bore diameter can be better approximated to the finished hub diameter. This saves valuable cycle time in the turning operations for wheel machining.

FEATURES

Electric spindle with HSK100A tool holder

With the electric spindle (power 45 KW, torque 260 Nm), sufficient reserves are available for a wide range of tool sizes and tool diameters. Thanks to the HSK100A tool holder, a wide variety of standard tools can be used.

Tool changer with 12-disc magazine

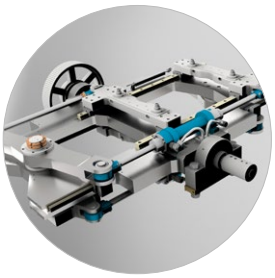
The built-in tool changer with disc magazine enables quick tool replacement without loss of cycle time. Up to 12 tools are available for use in different types of wheels. Owing to the maximum drill length of 350 mm, step tools can also be used.

Automatic wheel type identification

The wheel types are by default detected with a NUMTEC barcode scanner. The wheel is centered by a movable gripper unit and rotated in front of the scanner system. The same gripper unit subsequently takes over the quick wheel change. Optionally, the wheel type can also be detected with a camera system.

Hydraulic wide-range chucking system

The hydraulic chucking system enables flexible drilling of 14 – 24" wheels owing to the large clamping area. The hydraulic unit required for this is integrated in the machine frame and does not require any extra floor space.



Maximum throughput

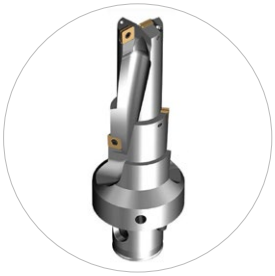
An extremely high wheel throughput is achieved with the integrated changing table system. During and in tandem with the drilling process, the already drilled wheel is unloaded on the second table and a new, still to be drilled wheel is loaded. With this optimization of the loading, an average capacity of more than 5000 wheels per day is reached.

Standard tools

Standard tools with cutting inserts can be used for the different bore diameters. In combination with an HSK100A adapter, the drills used can be replaced inexpensively.

Step tools

Due to the possibility of tools with a maximum length of 350 mm, step drills can also be used. In combination with the servo-controlled vertical axis (drilling feed) and a 2-step drill, it is thus possible to realize different bore diameters on the front (= cap diameter) and on the rear (= hub diameter) of the wheel.



Automatic check of tool wear

During drilling operations, the ABV300 constantly monitors several critical parameters. From the combination of the current torque, speed and the vibrations of the drill spindle, the respective state of the active tool can be inferred.

OPTIONS

Chip conveyor

The machine frame is equipped with outlets for standard chip conveyors. On request, the necessary conveyor units can be included in the Alpine Metal Tech delivery scope. According to the information in the layout drawings, any local manufacturers can be used for this equipment.

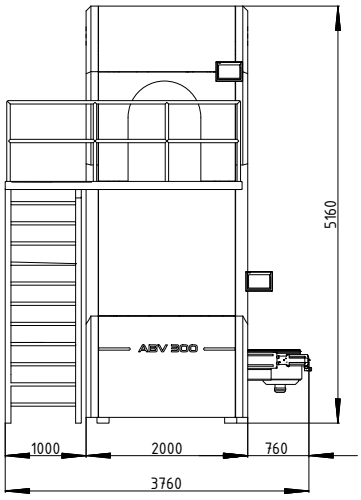
Camera system

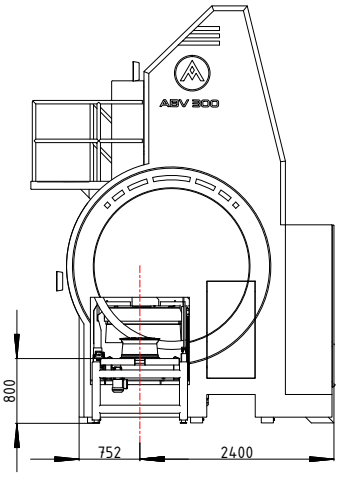
Type identification with the NUMTEC camera system for use in production lines without NUMTEC barcode system.

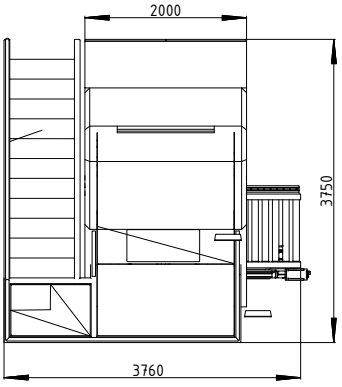
1 Infeed conveyor	» The wheels are transported to the infeed side of the drilling machine on a standard roller conveyor.
2 Outfeed conveyor	» After machining, the wheels are transported from the machine on a standard roller conveyor.
3 Access door, front side	» For maintenance and cleaning work, the front of the machine can be opened; the viewing window can be swung upward.
4 Operator platform	» On the platform accessible via a standard staircase, you have access to the 12-disc tool magazine.
5 Tool magazine	» The built-in tool changer is equipped with 12 tool bays. The changer is accessible for manual tool replacement during drilling operations; only automatic tool change is not possible during that time.
6 HMI devices	» The machine is operated via two identical HMI devices, installed on the platform (for the adjustment work in relation to the drilling tools) and on the front of the machine.
7 Control cabinets	» The entire electrical and media supply is housed in the control cabinets installed on the rear of the machine frame. The inlets for the electrical and pneumatic/ hydraulic systems are implemented separately.
8 Chip conveyor	» The drilling chips and sprue points are transported from the machining area by means of an optionally available chip conveyor.

TECHNICAL DATA

Machine features	machine designation	ABV300
	machine type	drilling machine for sprue points with automatic tool changer
	loading type	inline machine
Wheel parameters	wheel size	14 – 24"
	wheel height	3 – 14"
	wheel weight	max. 45 kg
Performance characteristics	machine capacity	5000 wheels/day, depending on the wheel design
	tool change cycle time	included in the standard cycle; no extension of the cycle time due to tool change
Drill spindle & tool changer	spindle type	electric spindle with HSK100A interface
	performance	45 KW, > 260 Nm torque
	tool changer	disc changer with 12 tool bays
Tool parameters	tool/drill Ø	max. 100 mm
	tool/drill length	min. 200 mm, max. 350 mm
	tool weight	max. 25 kg
	tool holder	HSK-100A
Interfaces		Profibus, Profinet, EtherNet/IP, Parallel I/O
Media	electric connection	3 x 400 VAC, 50 Hz, 70 kVA
		optional 3 x 450 – 480 VAC, 50/60 Hz, 70 kVA
	pneumatic connection	at least 6 bar
Machine dimensions	L x W x H	3760 x 3152 x 5160 mm
Weight		15 000 kg







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