NUMTEC
ALPINE METAL TECH

MARK100

Marking system for aluminum wheels

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The MARK100 marking machine is an all-in-one system for the automatic embossing of characters on the inside of aluminum wheel blanks. A wide range of different inspection stamps (day, shift, hour, x-ray stamp, etc.) can be applied fully automatically at predefined positions.

The system has been designed as a throughput version with closed housing. As a result, the need for an additional loading and unloading process (e.g. robots) is eliminated. All the necessary machine parts, including control cabinet, are integrated in the housing. This allows for the machine to be completely assembled and tested during installation and final inspection at Alpine Metal Tech. There is no longer any need to dismantle the completed machine for transport, which in turn shortens the commissioning time on the premises of the end customer. The MX01 embossing head developed by Alpine Metal Tech is used as the marking system. Due to its pneumatic drive, the MX01 offers more flexibility in terms of impact energy and marking distance (due to distortion on the wheel) in comparison with conventional electro-mechanical marking systems. The fed-in wheels are centered and lifted from the roller conveyor. By moving the in the gripper unit integrated rotating system the NUMTEC barcode can be read for type identification and the determination of the position. After type identification, the marking head is positioned from below into the wheel, and the marking process is carried out at the predefined position. Thanks to the slim design of the marking head, reliable marking up to a distance of approx. 30 mm from the drop center or into deep pockets is possible. With the use of the NUMTEC barcode system, the wheels can be fed completely chaotically and for each wheel a separate, independent marking position can be predefined.

YOUR ADVANTAGES

» Short cycle times
Fully automatic marking of up to 220 wheels per hour

» Reliable marking
Captive marking through NUMTEC MX01 technology; remains visible even after coating and painting

» Maximum availability
Reliable marking through automatic function control of the entire marking unit

» All-in-one system
Marking system is delivered to the customer as a prewired and tested unit

» NUMTEC barcode system
Type identification with the NUMTEC barcode system

FEATURES

Marking on the wheel

The selected marking is embossed into the inside of the wheels. Any graphic characters or special characters can be marked at the predefined positions in the spokes or in the compensation pockets of the wheel support. The marking is punched in approx. 0.8 mm deep and remains visible even after coating or painting.

Gripper unit

The extremely robust and reliable gripper unit aligns the wheel for marking. The wheels are centered and lifted pneumatically. For quick maintenance, the complete gripper unit can be replaced.

NUMTEC marking unit MX01

The marking head MX01 developed by Alpine Metal Tech is controlled pneumatically. The adjustable stamping pressure makes it possible to control the impact energy and the penetration depth. For an extra long service life, the head can be equipped with a hard metal needle.

XYZ axis system

The positioning of the marking unit is realized with an XYZ axis system. The axes move the marking head toward the wheel from below and then carry out the actual writing movement.

Wheel type identification

The wheel with the NUMTEC barcode is moved past the scanner by the integrated rotating unit; here the coding is read during the movement.

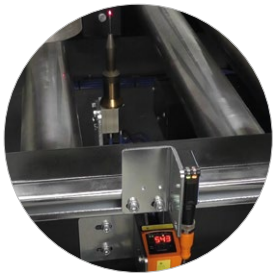
OPTIONS

Sprue check

Depending on the installation position, the sprue hole can be checked. Wheels without a hole can immediately be pushed onto a NOK conveyor. This way, expensive downtimes and collisions with the downstream CNC processing machines can be prevented.

Marking needle monitoring

An automatic needle monitoring unit is integrated in the MARK100. It checks the tip of the needle and the function of the marking head. Depending on company requirements, this checking cycle can be carried out after a configurable number of markings.



Adjustment gauge

A gauge for quick and easy adjustment of new wheel types in the control unit. The desired marking position can be read directly on the gauge in the necessary 3D coordinates.

Flow forming wheels

With an additional axis, flow forming wheels can also be identified and marked.

1 Control panel

» Intuitive software to operate and teach in new types of wheels
» Software available in various languages

2 Maintenance door

» Large access door to ensure excellent accessibility for maintenance purposes

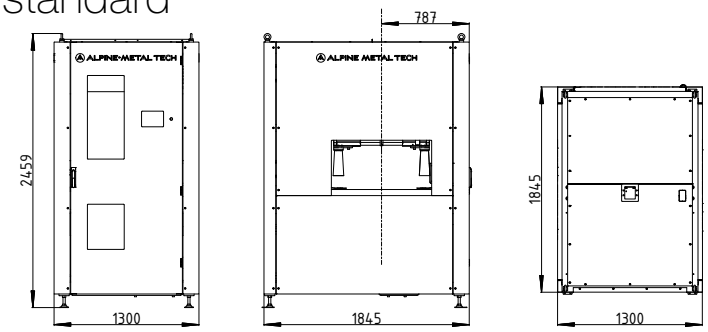
3 Control cabinet

» Integrated in the machine
» No cabling necessary during installation

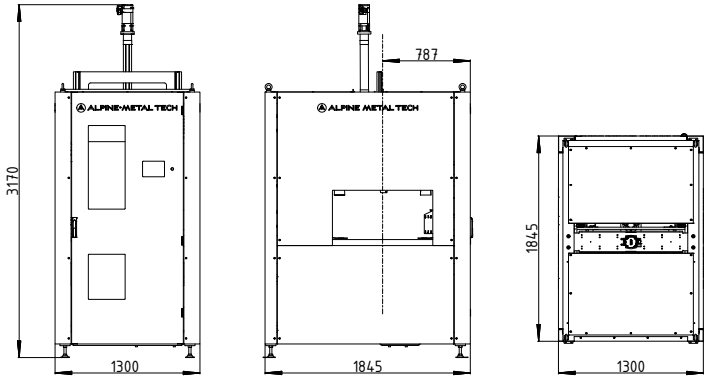
TECHNICAL DATA

Machine features	marking system	NUMTEC needle marking system MX01
	available marking characters	0 ... 9, A ... Z
		special characters according to customer specification
	font size	scalable, height: 6 – 10 mm
	type identification	NUMTEC barcode system
Wheel parameters	wheel size	14 – 24"
	wheel weight	max. 45 kg
Performance characteristics	machine capacity	220 wheels/hour (with 2 characters/wheel)
	marking speed	approx. 0.9 sec/character
		depending on character size and font size
	penetration depth of the marking	0.1 – 1.0 mm, freely adjustable due to stamping pressure
Technical components	HMI	Siemens touch display
	control system	Siemens MP177 series
Interfaces		Profibus, Profinet, EtherNet/IP, Parallel I/O
Media	electric connection	3 x 400 VAC, 50 Hz, 10 kVA
		optional 3 x 450 – 480 VAC, 50/60 Hz, 10 kVA
	pneumatic connection	at least 6 bar
Machine dimensions	L x W x H	1300 x 1845 x 2459 mm
Weight		1300 kg

MARK100 standard



MARK100 incl. option flow forming



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