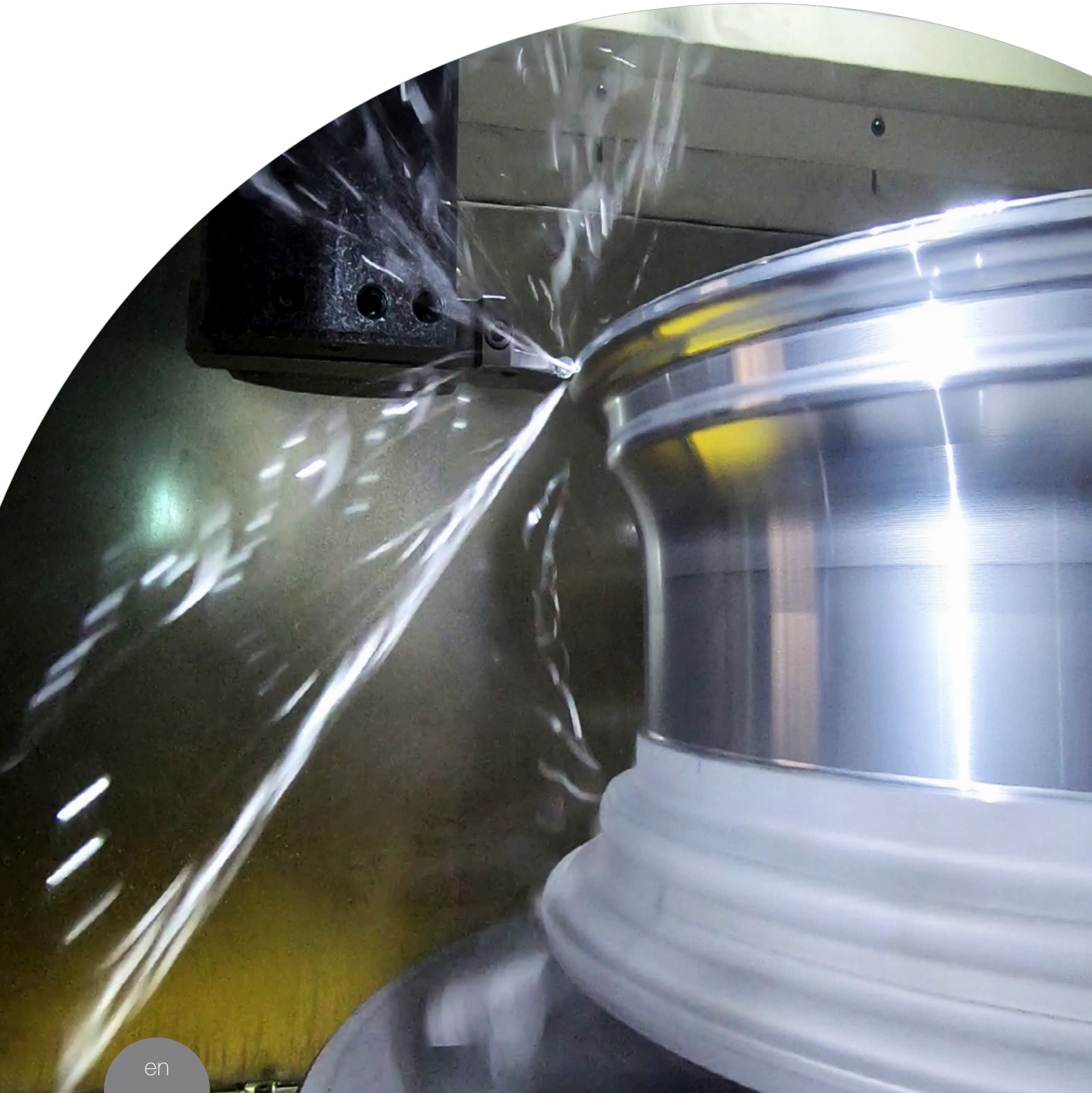
INTERMATO
ALPINE METAL TECH

AW SERIES

High performance vertical CNC lathes for aluminum wheel machining



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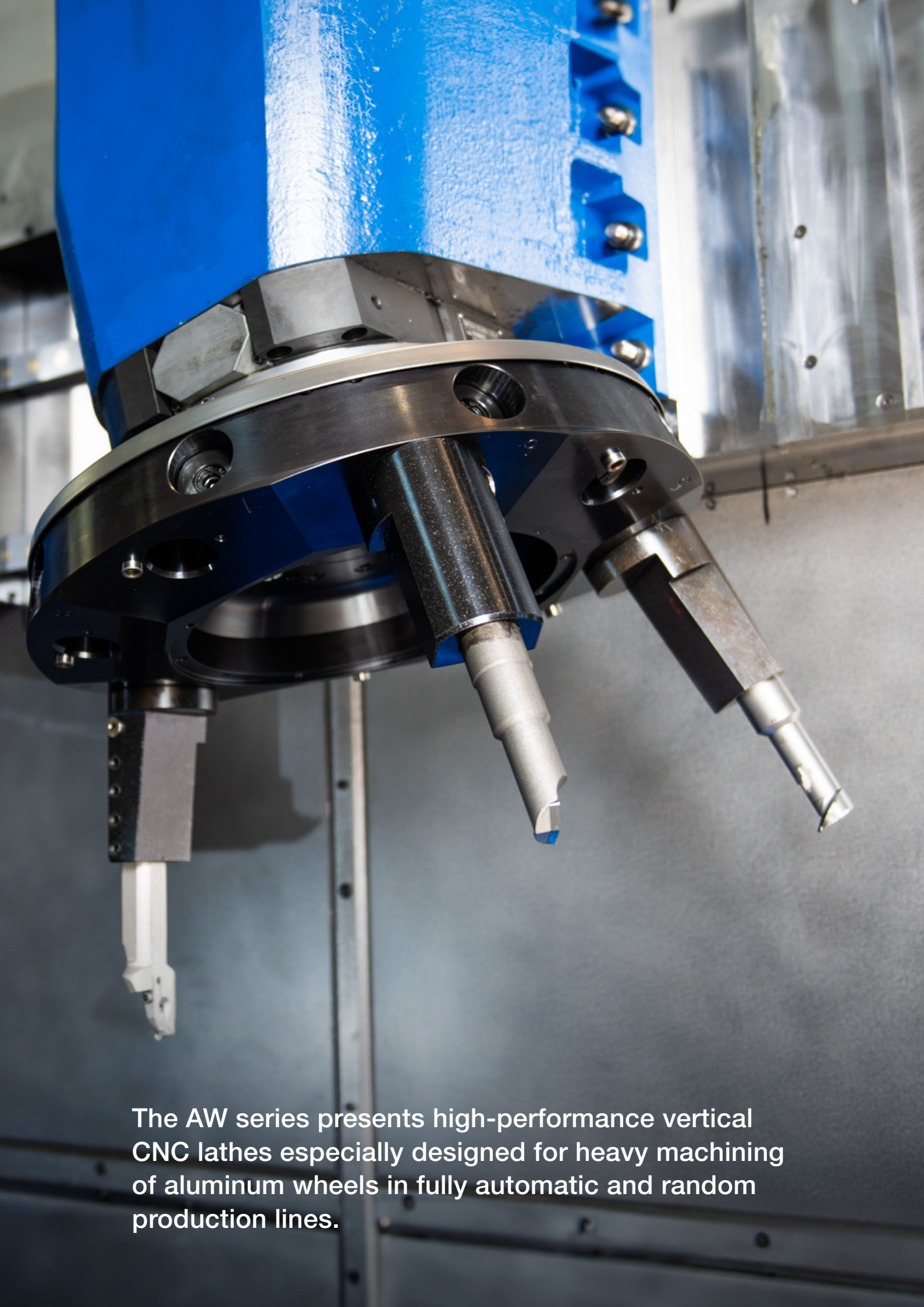


The AW series presents high-performance vertical CNC lathes especially designed for heavy machining of aluminum wheels in fully automatic and random production lines.

AW SERIES

High performance vertical CNC lathes for aluminum wheel machining

The AW series presents the latest development of Intermato especially designed for high-performance aluminum wheel machining.

The AW machines are capable to handle aluminum wheels up to 24" x 14" with perfect dimensional accuracy and surface quality. The direct driven motor spindle offers a maximum power of 98 kW in S1, pared with an iron casted machine frame and cross slides. The high performance vertical lathes are the perfect choice for heavy, fast and continuous wheel machining.
All Intermato CNC lathes of the last generation are prepared to be integrated in fully automatic and random wheel machining lines, although the single machines can also be used in manual mode.

AW24-T4

This is a four axes vertical CNC lathe with two turrets for simultaneous machining of aluminum wheels. It is equipped with a full automated pallet change table, which significantly reduces the wheel-to-wheel cycle time. The machine is mainly used for first wheel machining operation at big and complex wheels, but especially with the automated pallet change table it offers the opportunity to finish both turning operations (OP1 & OP2) at the same lathe.

AW24-T4sp

The machine version with two turrets but without change table. It is mainly used for first and second operation and for pre-machining of special wheel designs for diamond cut. This new powerful vertical lathe generation is also the right machine for pre-machining at the flow forming process.

AW24-T2

Presents the final machine in the AW series. It is equipped with just one turret and has no change table. The mounted motor spindle has a power of 62 kW in S1. The AW24-T2 is the perfect economical solution in machining lines for OP2 machining.

YOUR ADVANTAGES

» Short chip to chip cycle time due to direct-driven motor spindle
98 kW at S1 for fast acceleration and deceleration and heavy wheel machining

» Easy maintenance
Rational design of the plant for reduction of maintenance time

» Compact design of the machine
Low space required and easy positioning in the plant, chips conveyor position changeable acc. layout

» High wheel quality
Low machine vibrations lead to high surface quality and dimensional accuracy

» High production flexibility
A pallet change table offers perfect set-up of individual machining line in accordance with customer production needs

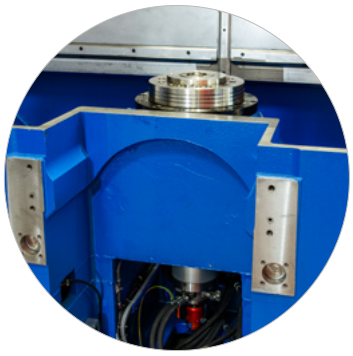
FEATURES

Base and main frame

The two frames are realized in casted iron. The base is manufactured in a manner that allows the assembly onto the upper side of the main frame. In the base is obtained the housing for the assembly of the spindle. On the upper front face of the main frame there are the linear roller slideways.

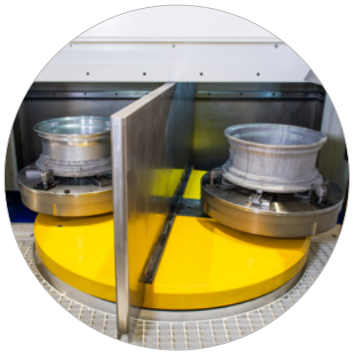
Direct driven motor spindle

The spindle is an independent unit, previously assembled and enclosed in an interchangeable cartridge. In addition to the basic elements, such as the electro-spindle axis, the angular contact bearings, the containment cup, etc., the spindle is also completed with the movement actuation elements for the opening and closing of the equipment of locking. The entire spindle unit, including the control cylinder for moving the clamping equipment, can be removed from the cartridge holder support. The spindle is lubricated with special grease, long life system.



Pallet group

The pallet group of the machine version AW24-T4 consists of a semiautomatic device for piece loading and unloading. The clamping and unclamping is automatically activated by means of a pneumatic cylinder built into the clamping fixture. The loading & unloading entails the automatic transfer of the work-piece from the loading area to the machining station at the end of each cycle.



Machining unit

The machining unit consists of cross slides made in cast iron. The horizontal movement and vertical movement are obtained by travelling on the roller guide applied on the main frame. All axis movements are powered by AC servo motors and ball screws. Positioning control of the axis is achieved using of encoders integrated into AC servo motors. The slides are equipped with eight positions automatic turrets.

CNC control

The main control consists of a flat screen, interface buttons, an alphanumeric keypad, a machine and pallet control panel, a safety button and a customized keypad. Optionally, the control unit can be equipped with a safety handwheel.
For visual inspection of the machine mode, light column signalling devices are mounted on the control unit and on the top of the machine.

Electrical cabinet

The electrical equipment consists of a sealed cabinet installed on the machine complete with a push-button board with all general controls and a heat exchanger. The cabinet contains all power units and AC servo motor controls and is connected with the CNC system. The main functions of the machine are located in a diagnostic system connected to the CNC. Messages are clearly written with a reference code allowing an easy reading on the operator's manual.

Safety protection guards

The safety protection guards consist of easily removable panels, to allow a complete accessibility of the working area in case of needs. The guards are built in accordance with the International Safety Standards. Proper lamps light the working area.

Chips conveyors

The large amount of water delivered by the coolant pumps and the inclination of the frame allow an easy evacuation of chips. The chips are transported out of the lathe via metal conveyors, usually located at the back side of the machine.
At the new AW series also versions with chip conveyor exit on the left or right side are available to support different customer plant layouts. Standard discharge height is 1350 mm and the coolant tank volume contains 200 liters.

FEATURES

Slide ways lubrication

The lubrication is automatic, controlled by progressive system and with lubrication control. A fault at any part of the lubrication network or in the control unit stops automatically the machine at the end of the cycle.

Hydraulic plant

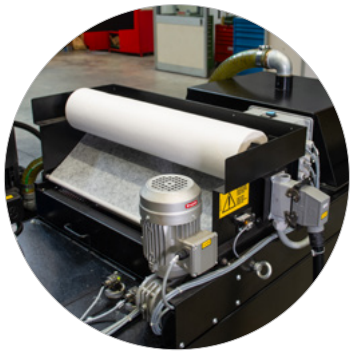
The hydraulic equipment consists of a hydraulic unit connected to the machine through flexible pipes, dedicated to the command of the hydraulic cylinder movement, the clamping equipment command, the pallet rotation and turrets clamping/unclamping.

Motorspindle chiller

The cooling circuitry, which is responsible for cooling the electro spindle, is located at the back side of the machine. The chiller has a capacity of 65 liters and is equipped with a sensor to verify the fill level of the coolant.

Coolant plant

The coolant liquid, a mixture of oil and water, not only ensures that the heat generated during the machining phase is dissipated, but also lubricates the contact surface between the tool and the workpiece. It also ensures that the lathe is cleaned of machining residues.
The coolant system consists of a tank with a capacity of 800 liters (optional until 1000 liters) and a 220 l/min pump (max. 4.5 bar).



Pneumatic cabinet

All pneumatic equipment is located in the well accessible pneumatic cabinet to guarantee easy maintenance.
The cabinet is completely closed to avoid any kind of dirt and damages. Additionally, a full visible door is installed to grant easy check on pressure settings and manometers without access tools to the cabinet.

Workholding cleaning system

After the machining cycle when the wheel is removed manually or by robot from the workholding, a fully automated cleaning system removes all chips. This process ensures safe and smooth loading and precise fault-free clamping of the next wheel. During washing process, the safety panel is closed to avoid pollution of the machine surrounding.

Workpiece blow-off station

The blow-off station of the machine version AW24-T4 ensures that the wheel leaves the lathe free of chips.
The robot places the workpiece on the shelf bar where the internal side of the wheel is cleaned by a cleaning nozzle. While the robot lifts the wheel out of the machine, the top side is also blown off.

Maintenance door

For tool changing and maintenance work, the AW lathes are equipped with maintenance doors. The turrets can be moved directly to the door for a comfortable working position.
When the door is closed, the machining process can be safely monitored through the viewing window.

AW24-T4

Specifications

» Two turrets for simultaneous machining of aluminum wheels

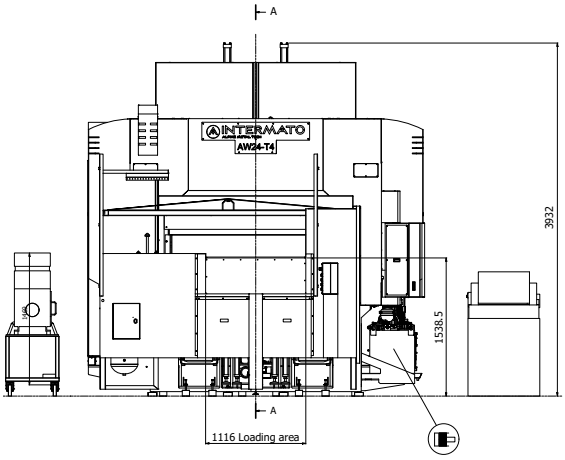
» Four axes

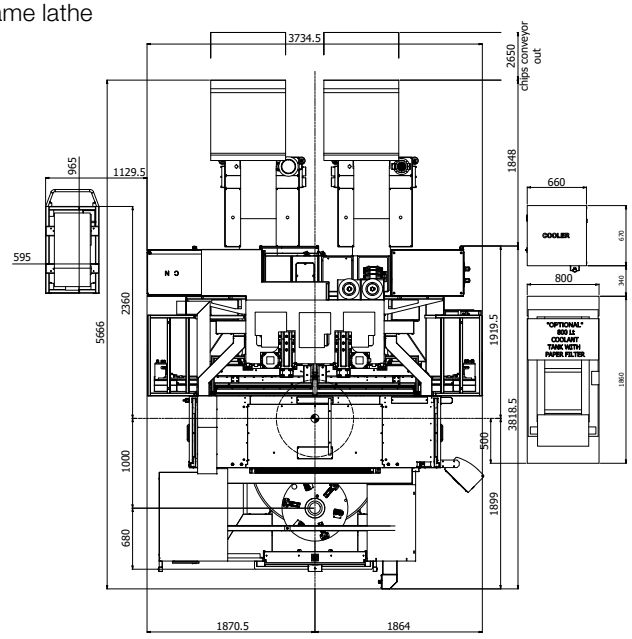
» Included full automated pallet change table, which significantly reduces the wheel-to-wheel cycle time

Application areas

» 1st wheel machining operation at big and complex wheels

» Finish both turning operations (OP1 & OP2) at the same lathe





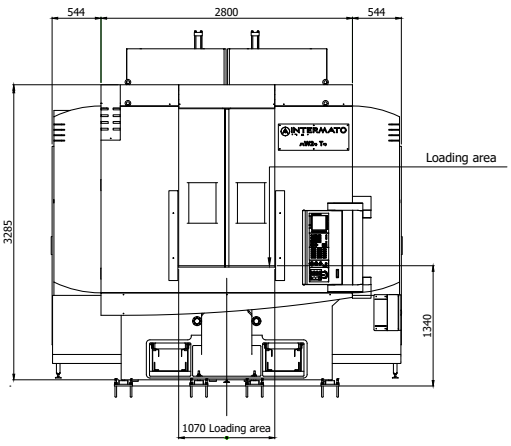
AW24-T4sp

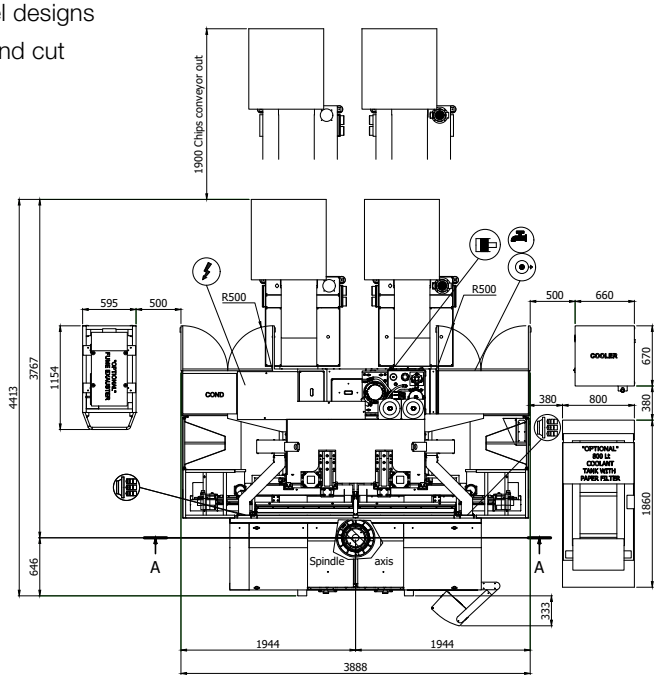
Specifications

» Two turrets for simultaneous machining of aluminum wheels
» Four axes
» Without pallet change table

Application areas

» 1st operation
» 2nd operation to reduce cycle time at special wheel designs
» Pre-machining of special wheel designs for diamond cut
» Pre-machining at the flow forming process





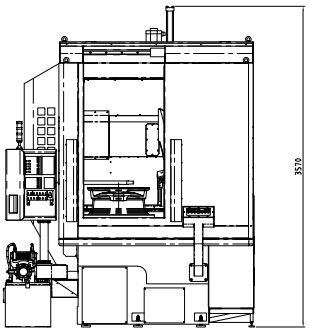
AW24-T2

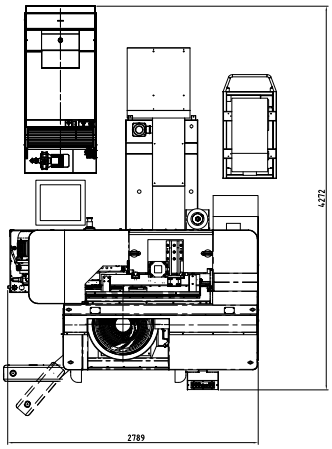
Specifications

» One turret
» Two axes
» Without pallet change table

Application areas

» 2nd wheel machining operation
» Diamond cut machining

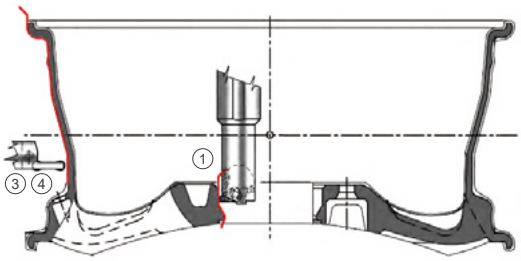




TURNING PROCESS

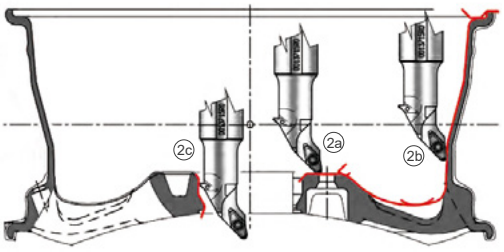
OP1 AW24-T4 | AW24-T4sp

Turret 1



① Pilot hole roughing
Tool change
③ Tire seat roughing
Tool change
④ Tire seat finishing

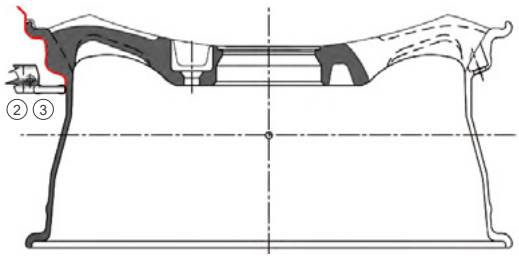
Turret 2



2a Internal machining
2b Plane machining
2c Cover seat and pilot hole machining

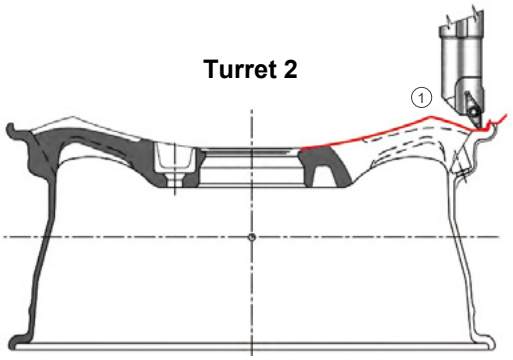
OP2 AW24-T4 | AW24-T4sp

Turret 1



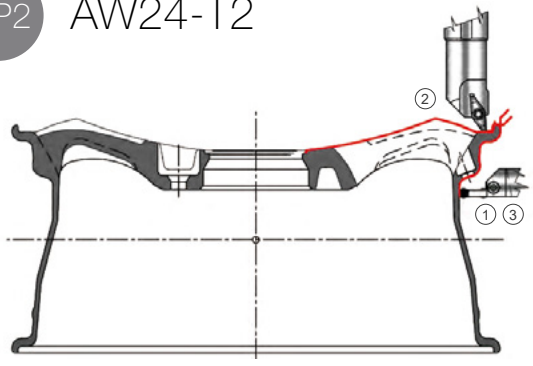
② Tire seat roughing
Tool change
③ Tire seat finishing

Turret 2



① Front face machining

OP2 AW24-T2



① Tire seat roughing
Tool change
② Front face machining
Tool change
③ Tire seat finishing

TECHNICAL DATA

	AW-T4	AW-T4sp	AW24-T2
Working capacity			
Admitted wheel size	max. 24" x 14"	max. 24" x 14"	max. 24" x 13"
Admitted diameter	max. 860 mm	max. 860 mm	max. 815 mm
Weight on spindle	max. 300 kg	max. 300 kg	max. 250 kg
Pallet stations distance betw. centers	1000 mm	–	–
Pallet station capacity	300 kg + 300 kg	–	–
Pallet swap time	<12 sec hydraulic <8 sec electromechanical cam option	–	–
Chip to chip pallet time	<20 sec hydraulic <16 sec electromechanical cam option	–	–
Spindle			
Type	electro spindle	electro spindle	electro spindle
Spindle motor power	98 kW (S1)	98 kW (S1)	62 kW (S1)
Spindle speed	max. 3000 rpm	max. 3000 rpm	max. 3000 rpm
Spindle nose	A11 DIN 55021 - ASA 11"	A11 DIN 55021 - ASA 11"	A11 DIN 55021 - ASA 11"
Stroke of clamping hydraulic cylinder	40 mm	40 mm	40 mm
Tie-rod strength	20.6 kN (20 bar) 41.2 kN (40 bar)	20.6 kN (20 bar) 41.2 kN (40 bar)	20.6 kN (20 bar) 41.2 kN (40 bar)
Slides			
Number of cross slides	2	2	1
Z axis vertical stroke	650 mm	650 mm	500 mm
X axis horizontal stroke	500 mm	500 mm	500 mm
X and Z axis motor torque	12 Nm (X) – 22 Nm (Z)	12 Nm (X) – 22 Nm (Z)	12 Nm (X) – 22 Nm (Z)
Axial load	6300 N (X) – 11500 N (Z)	6300 N (X) – 11500 N (Z)	6300 N (X) – 11500 N (Z)
Rapid feed	max. 36 m/min	max. 36 m/min	max. 30 m/min
Ball screws pitch	12 mm	12 mm	12 mm
Ball screws diameter	40 mm (X) – 50 mm (Z)	40 mm (X) – 50 mm (Z)	40 mm (X – Z)
Tool holder turrets			
Number of turrets	2	2	1
Number of tools per turret	8	8	8
Tool length	max. 370 mm	max. 370 mm	max. 335 mm
Tool connection	VDI50	VDI50	VDI50
General data			
X and Z axis precision	ISO 3655:1986	ISO 3655:1986	ISO 3655:1986
Total weight of machine	15 000 kg	14 500 kg	9 000 kg
Working temperature	10 °C – 40 °C	10 °C – 40 °C	10 °C – 40 °C
Chips conveyor	double rear discharge optional lateral discharge	double rear discharge optional lateral discharge	single rear discharge
Cutting depth	max. 8 mm	max. 8 mm	max. 8 mm
Utility			
Crash	self check/detection	self check/detection	self check/detection
Spindle vibration/thermal analysis	included	included	option
Fluidical and electrical systems	integrated on board	integrated on board	integrated on board
Safety guard	full closed	full closed	full closed

IMT Intermato S.p.A.
Via Caregò 14
21020 Crosio della Valle (VA), Italy
Tel.: +39 0332 966110
E-mail: intermato@alpinemetaltech.com
Web: www.alpinemetaltech.com

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