INTERMATO
ALPINE METAL TECH

RAILWAY

Railway Wheels / Axles / Wheelsets

en

INTERMATO production lines offer a wide range of machine tools especially designed and built for the manufacturing & maintenance of rolling stock components.

RAILWAY

Railway Wheels / Axles / Wheelsets

Thanks to the development of increasingly complete and high-tech solutions, our machines dedicated to the RAILWAY sector have always distinguished themselves on the world market as a supplier of applications suitable for the most important manufacturers in the sector, retaining customers by supporting them step by step throughout the purchase, testing, installation and production phase.
Each of our machines is made for the specific productions of each department of the Railway sector such as, wheel production line of roughing and finishing, railway wheel maintenance shop and rough machining of railroad axles.

YOUR ADVANTAGES

- Modular design for fully automatic machining
- Direct drive table on request
- Customized in-process measuring solutions
- Tool breakage detection system
- Single supplier for the entire railway sector (wheel to axles)

VERTICAL LATHE VTLF 120

Vertical Lathe for Rail Wheel repairing

The VTLF 120 is a CNC Vertical Lathe with fixed cross rail, a powerful main spindle with high power and torque and one vertical slide RAM type with square section. The machine is suitable for all turning operations that are needed in the wheel factory shop. It can be used for:

- Finishing machining of railway wheels with strict machining tolerances, strict geometric accuracy and excellent quality of the machined surfaces
- Complete full profiling of new solid wheels and other ring-shaped workpieces
- Maintenance of railway wheels: The maintenance operation is supported by a specific software package, completely designed and developed in-house, capable of providing a friendly and easy-to-use working interface to the machine operator
- Dimensional control in process for the machining performed on railway wheels, with automatic generation of the report containing the processing data

Your advantages

» Possible integration of C-Axis and live tools, in order to perform drilling and milling operation in one machine only
» VTLF 120 can be equipped with a very comprehensive package of options such as, tool magazines from 16 to 60 positions, tool pre-setting, touch probe for dimensional measurement of the piece in the machine, system for tool integrity control
» Machining of internal diameters of railway machine tyre
» User-friendly interface software

FEATURES

Automatic self-centering chuck

» Hydraulically controlled
» 3 special jaws for rail wheel clamping

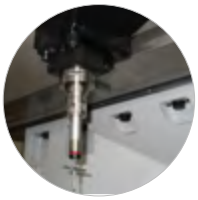
Special clamping

» for machining of internal diameter of railway machine tire

Control device

» Tool control device, during the measuring operation, the probe is reset through a master and it is automatically introduced into the working area

Workpiece control device



» used for the control of the machined work pieces in the machine in order to verify, through a screening programmed by the CNC machine

TECHNICAL DATA

Table diameter	1,200 / 1,400 mm
Max. turning diameter	1,500 mm
Max. swing diameter	1,600 mm
Max. admitted weight	10 t
Motor power	75 kW
Ranges number	2 no.
Rotation speed range with continuous variation	3/600 rpm
Max. torque to the table	10.600 Nm
Max. turning height	600 mm
Distance from tool attached to table surface	800 mm
Z axis vertical stroke (RAM)	800 mm
Extra stroke of X axis beyond the machine centre	300 mm
X axis stroke from table centre up to ATC	1,550 mm
Tool attachment	C8/C10 Capto
RAM slide section	230 x230 mm
Machine weight	28 t

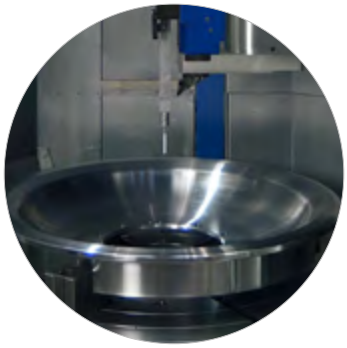
VERTICAL LATHE VL60

Vertical Lathe for Rail Wheel

The VL60 is a CNC Vertical Lathe with fixed cross rail, a powerful main spindle with high power and torque and one vertical slide with working head. The machine is suitable for all turning operations that are needed in the wheel factory shop. It can be used for:

Finishing machining of railway wheels with strict machining tolerances, strict geometric accuracy and excellent quality of the machined surfaces.
Complete full profiling of new solid wheels and other ring-shaped workpieces

Maintenance of railway wheels: The maintenance operation is supported by a specific software package, completely designed and developed in- house, Dimensional control in process for the machining performed on railway wheels, with automatic generation of the report containing the processing data.

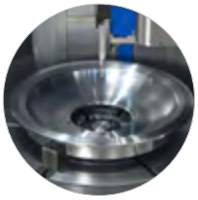


Your advantages

- Possible integration of C-Axis and live tools, in order to perform drilling and milling operations in one machine only
- VL60 can be equipped with a very comprehensive package of options such as: tool magazines from 24 positions, tool pre-setting, touch probe for dimensional measurement of the piece in the machine, system for tool integrity control
- Reduction of cycle time thanks to the of workpiece measurement system integrated in the work head

FEATURES

Automatic self-centering chuck



» Hydraulically controlled
» 3 special jaws for rail wheel clamping

Tool magazine

» 24-position tool magazine Capto C8 and head with double automatic tool attachment

Control device

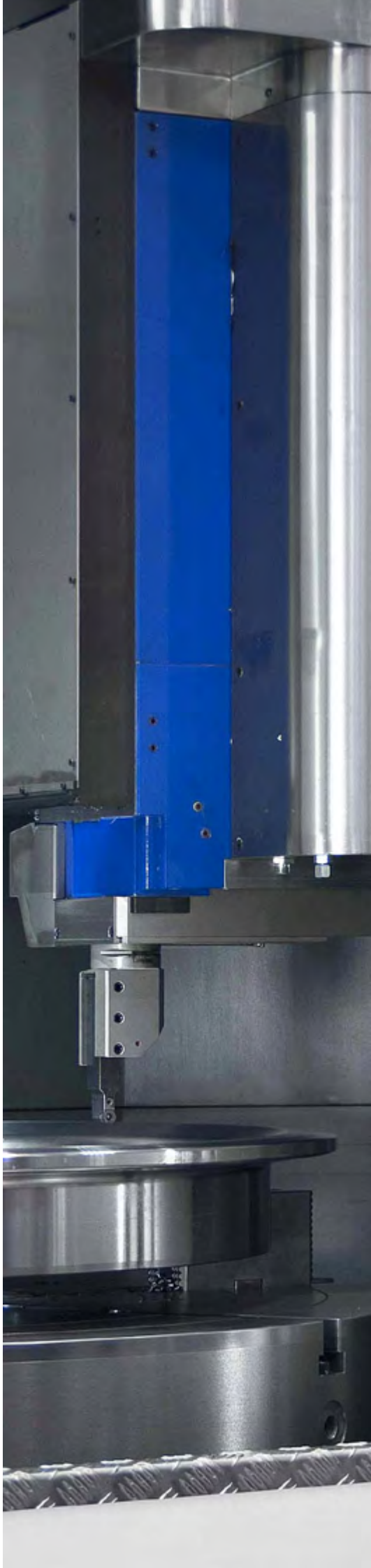
» Tool control device, during the measuring operation, the probe is reset through a master and it is automatically introduced into the working area

Workpiece control device

» used for the control of the machined work pieces in the machine in order to verify, through a screening programmed by the CNC machine

TECHNICAL DATA

Table diameter	1,200 mm
Max. turning diameter	1,200 mm
Max. swing diameter	1,300 mm
Max. admitted weight	5 t
Motor power	75 kW
Ranges number	2 no.
Rotation speed range with continuous variation	3/450 rpm
Max. torque to the table	10.600 Nm
Max. turning height	600 mm
Distance from tool attached to table surface	800 mm
Z axis vertical stroke (RAM)	1,000 mm
Extra stroke of X axis beyond the machine centre	170 mm
X axis stroke from table centre up to ATC	1,100 mm
Tool attachment	C8 Capto
Machine weight	30 t



MACHINING CENTER VTE 180 FTD

Multitasking vertical machining center

The vertical machining center VTE 180 FTD is a five-axis machining center. It is study and built, in order to perform with high capability and accuracy, turning operation and drilling operation and also complex operations with interpolation of 5 axis simultaneously. The peculiarity of this machining center is to combine the high flexibility of a 5-axis machining machine with the cutting capacity of a CNC vertical lathe.

For turning operations:
The machine uses the direct drive spindle. The power transmission is not given by mechanical devices such as gears, reductor, belts, pinion and other, but is directly transmitted in the same spindle axes by the direct drive spindle.

This technology allows to obtain the following important advantage:
- High quality of the finished surface because the power transmission is free of any vibration thanks to the direct drive motor
- Saving of time; the machine doesn't need time to switch from turning mode to the C-axis mode
- No wear of the drive components and consequently reduced time for maintenance operation

Y-axis and C-axis for fast positioning in milling & drilling

Your advantages

» VTE 180 FTD is particularly suitable for finishing turning and drilling of railway wheels, gear wheels, complex shaped ring components
» Its particular direct drive motorization allows to work components made of hard steel where maximum torque is required at low table revolutions
» Thanks to the complete automation of the safety guards, VTE 180 FTD can be easily inserted into complex production lines with a fully automatic wheel handling system
» VTE 180 FTD can be equipped with a package of options such as, tool magazines from 24 to 200 positions, tool pre-setting, touch probe for dimensional measurement of the piece in the machine, system for tool integrity control, grinding possibility with automatic dressing device

FEATURES

Multifunctional tool head

» B axis multifunctional head
» Used for milling and drilling with its own electro spindle

» The head has a hydraulic system which locks the spindle and the bearings in order to obtain one strong turning tool holder

» Complete railway wheel machining, turning high-quality finishing machining, drilling operations and oil injection holes included

» Capto C10 tool magazines made in different configurations, equipped with a tool exchange shuttle on the head with double gripper

TECHNICAL DATA

Table diameter	1,500 mm
Max. turning diameter	1,800 mm
Max. swing diameter	1,800 mm
Max. admitted weight	12 t
Table direct drive motor power	100 kW
Rotation speed with continuous variation	1.5/400 rpm
Max. torque to the table	15,000 Nm
C axis precision positioning	7 sec.
Positioning repeatability	5 sec.
Z axis vertical stroke	1,200 mm
X axis total stroke	1,925 mm
Y axis stroke referred to the machine center	+/- 200 mm
Tool attachment	C10 Capto
Spindle driving motor power	56 kW
Max. rotation speed in continuous variation	6,000 rpm
Max. rotary spindle torque	306 Nm
Spindle skewing angle B axis	+/- 120 grad.
Indexing precision B axis	+/- 4 sec.
Positioning precision B axis	+/- + sec.
Machine weight	55 t

VERTICAL LATHE SRE 150 HD

Double-support heavy duty vertical lathe for wheels

SRE-150-HD is a heavy-duty double support vertical lathe particularly suitable for the machining operations of railway wheels and for shaped rings in general; due to its particular design the machine is able to combine power to perform heavy roughing operations and the maximum accuracy and stability to perform finishing operations, with tight dimensional tolerances and satisfactory surface roughness.

Your advantages

- High production machine, designed to operate over three working shifts each day with or without human supervision
- Maximum ergonomics with free access that does not involve long stops for maintenance
- SRE 150 HD can be equipped with a very comprehensive package of options, such as tool magazines from 16 to 60 positions, tool pre-setting, touch probe for dimensional measurement of the piece in the machine, system for tool integrity control
- Thanks to the complete automation of the safety guards, SRE 150 HD can be easily integrated in complex production lines with a fully automatic wheel handling system

FEATURES

Various solutions for automatic self-centering chuck

» 3+3 jaws for wheel clamping from inner diameter
» 3 jaws with “u” design for wheel clamping from inner and outer diameter
» 3 jaws for wheel clamping from outer diameter for the first and the second operation

Double RAM vertical lathe

» performs the turning of railway wheels included in a range of products corresponding to smallest wheel machining diameter and largest wheel machining

Production line of high-performance wheels

» The mission is to provide complete solutions and turnkey systems enabling the customer highest production performance of railway rolling stock components in accordance with the current applicable standards

TECHNICAL DATA

Table diameter	1,450 mm
Max. processing wheel diameter	1,350 mm
Max. swing diameter	1,800 mm
Max. load capacity	10 t
Max. spindle revolution	2/410 rpm
Max. spindle power	190 kW
Max. turning height	600 mm
Distance from tool attached to table surface	675 mm
Z axis vertical stroke (RAM)	800 mm
X axis stroke from table centre up to ATC	1,550 mm
Tool attachment	C10 Capo
RAM cross section	260 x 260 mm
Machine weight	60 t

VERTICAL DRILLING SRE 150 WBM

Vertical rail wheel drilling machine

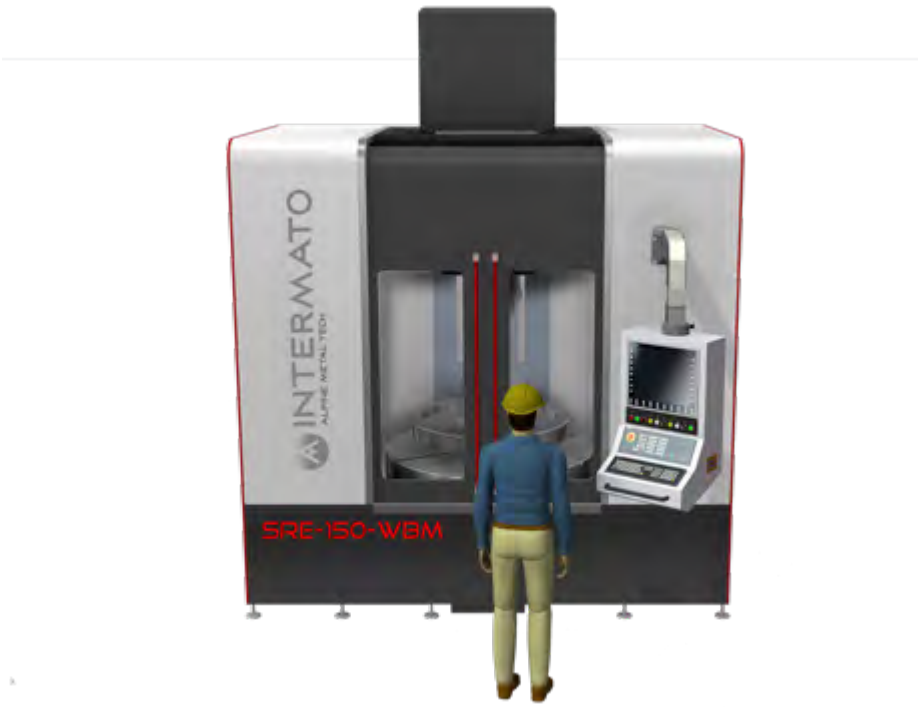
The vertical wheel borer SRE 150 WBM has been designed and built with the experience matured in over twenty years in the construction of machine tools for the railway & metro sector.

Thanks to its heavy duty features, a specially designed self-centering chuck, special tools that allow the processing of the hub bore with a single placement of the wheel, the SRE 150 WBM is able to achieve the minimum machining cycle time.

The machine design includes a boring head with vertical displacement and a fixed non-rotary table. The vertical wheel borer fully meets the requirement of maintenance workshops and railway wheel producers who want to increase their production standard in precision and quantity.

The vertical wheel borer SRE-150-WBM is able to perform on railway and metro wheels, both for loco or freight/passenger type, the following machining operations:

- Hub Boring including upper/lower radius and internal groove
- Hub Facing on both sides without reversing the wheel



Your advantages

» Compact layout, minimum space required for installation
» Intuitive smart interface for easy machine use
» Possibility to include automatic / semiautomatic loading system
» Maximum ergonomics with free access that does not involve long stops for maintenance
» SRE 150 WBM can be equipped with a very comprehensive package of options, such as automatic tool changer, tool pre-setting etc ...

FEATURES

Chuck

» 3-jaws self-centering chuck
» Special jaws and clamping inserts, steel made designed for clamping of rail wheel from the outer diameter

Vertical slide and boring head

» The vertical slide on the column guide way
» Made of high-quality cast iron perfectly machined; the slide is robustly reinforced with ribs at the bottom and subjected to finite elements verifications

On request

» Tool changer
» Tool pre-setting
» Workpiece control device

TECHNICAL DATA

Table diameter	1,500 mm
Chuck jaws	3 nr.
Max. wheel diameter	1,250 mm
Max. swing diameter	1,500 mm
Max. admitted weight on the table	5 t
Motor power boring head	28 kW
Rotation speed range	2/500 rpm
Achieved boring tolerance	IT 7
Achieved boring roughness	0.8/1.2 Ra
Max. boring diameter	400 mm
Min. machining diameter	200 mm
Max. boring length	400 mm
Z axis vertical stroke	900 mm
X axis stroke	120 mm
Tool interface	C8 Capto
Machine weight	20 t

HORIZONTAL LATHE SRE 130 WST

Fully automatic machining of new / worn railway wheels

SRE 130 WST is a floor mounted reliable horizontal wheel lathe for the machining operations required on wheelsets disassembled from their bogies.
The re-profiling turning operation can be performed for solid wheels or tired wheel treads of worn or new railway and metro wheelsets. The machine can be equipped with double head stroke and two carriages for the simultaneous machining of two wheels. A special automatic lifting system is available to perform the loading and unloading of the wheelset in automatic cycle. The chuck system is realized with floating jaws and has been specially designed to avoid any marks on the wheels.
All the operation of the lathe are fully CNC controlled with automatic pre-loaded cycle.

Your advantages

» Pre & post measurement of profiles and diameters
» Electronic wear measurement system in order to determine the economical depth of cut
» Automatic or manual possibility to load the wheel-set
» Package of options such as, tool pre-setting, touch probe for dimensional measurement of the piece in the machine, system for tool integrity control, auto retraction of the tools at power failure

FEATURES

Chuck

» Automatic self-centering chuck

Productive process

» Turning of new and worn tires
» Turning of worn wheels
» Internal and external facing of tires
» Disc brakes facing
» Removing of rings
» Cutting of grooves
» Machining of rims
» Complete turning of axles

Automatic wheelset rotation unit

TECHNICAL DATA

Platform diameter	1,300 mm
Max. turning diameter	1,250 mm
Max. admitted load	6 t
Front bearing's diameter	340 mm
Tail diameter	80 mm
Tail angle	90°
Spindle nose	15 ASA
Nr. speed range	2
Spindle rotation speed in 1st range	1/100 rpm
Spindle rotation speed in 2nd range	4/400 rpm
Max. power spindle motor (each headstock)	71 kW
Max. spindle torque (each headstock)	30,500 Nm
Clamping force sliding head on bed	750,000 N
Nr. saddles	1
Z & X axis saddle feed force	50,000 N
Z axis saddle stroke	1,000 mm
X axis transversal slide stroke	400 mm
Machine weight	35 t

HORIZONTAL LATHE SRE 130 WST FP

Fully automatic machining of new / worn railway wheels

The machine is equipped with two saddles, provided with a vertical slide for turning the wheel profiles and brake disks mounted inside the wheels or on the axle. Each slide is equipped with a quick-change tools system. As an option, the automatic tool changer can be supplied for each slide.

Assembled to each side of the portal type bed are the headstocks, with integrated drivers, centers and friction roller driving system. Both headstocks are movable for the loading and unloading functions. The guideways are pre-loaded, which ensures precise positioning and a stable stroke of the cutting tools, as well as a very good dumping of the vibrations generated during the cutting process.

The lathe operates in a roll-in roll-off system. The wheel sets are rolled to the machine tool from the operator's side and are rolled out after machining towards the machine tool's rear. The roll-through system enables the lathe to be set in an automated system of several machines for rolling stock maintenance, decreasing considerably the time necessary for wheel set manoeuvring.

Your advantages

» Heavy duty machine with high material removal capacity
» Electronic wear measurement system to determinate the economical depth of cut
» Equipment installation on shop floor level
» Fully automatic machine control system

FEATURES

Catching and rolling device

» Its function is catching and ejecting the wheelset. The wheelset rolling into the unit is braked (hydraulic damping) and clamped between the two rollers of the pressing roller unit in the middle of the machine

Saddles

» The lathe is equipped with two saddles, which by means of a CNC system perform the turning operations in automatic cycles in order to profile both, wheelset wheels and brake disk at the same time

Weight relief device

» The weight-relief device compensates for the sagging of the wheelset caused by its own weight

TECHNICAL DATA

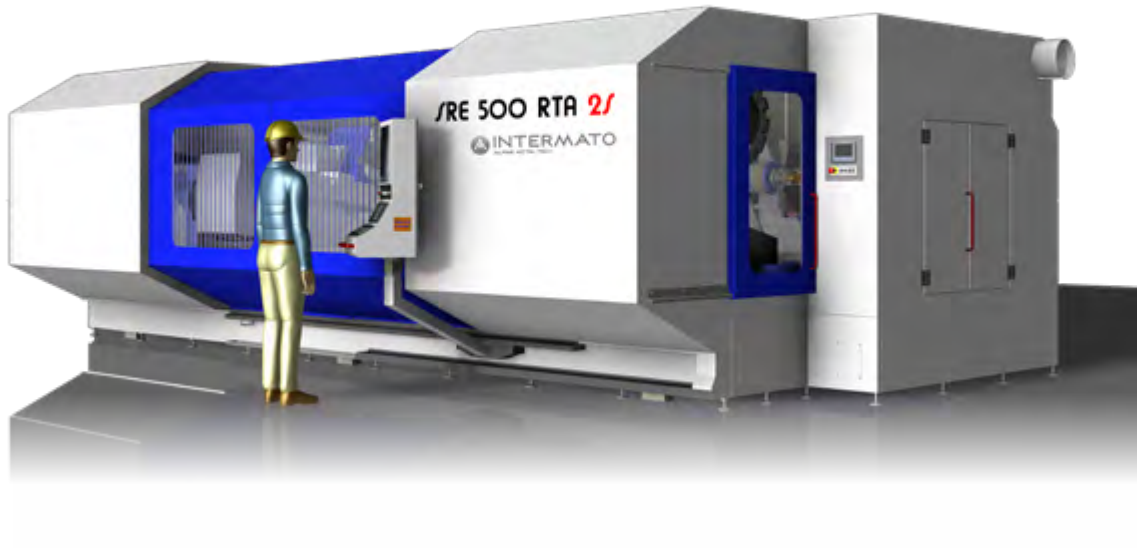
Track gauge	1,435 mm
Max. length wheelset axle	2,570 mm
Min. length wheelset axle	1,600 mm
Max. wheel turning diameter	1,350 mm
Min. wheel turning diameter	750 mm
Width of wheel tyre	135/150
Min. brake disk diameter	300 mm
Max. brake disk diameter	950 mm
Width of the wheel tyre	135/150 mm
Max. weight wheelset	6.5 t

Friction drive transmission	by rollers
Wheelset centering	by tail
Nr. of upper friction roller	2+2
Nr. of lower friction roller	2+2
Max. total power	148 kW
Max. cutting cross section	2x18 mm^2
Infinitely variable cutting speed	0/300 m/min
Nr. saddles	2
Saddles feed speed	1/12,000 mm/1´
Machine weight	45 t

HORIZONTAL LATHE SRE 500 RTA

Horizontal Heavy Duty Lathe for Railway Axles

The horizontal lathe SRE 500 is a powerful heavy-duty horizontal turning lathe for machining railway axles. The application of this machine can be customized for roughing and finishing operations.
The design of the horizontal lathe includes a left and a right turning spindle with high power and torque, double saddle with turret head equipped with Capto C10 tools. The SRE 500 allows a high chip removal capacity thanks to the machine's heavy cast construction with flat guide design. It can be equipped with motorized tools and C-axis to be able to perform drilling and tapping operations with one single machine only.



Your advantages

- Maximum ergonomics with free access, therefore no long maintenance stops are needed
- Automatic tool changer for left and right turret
- Double steady rest
- Thanks to the complete automation of the safety guards the lathe can be easily integrated into complex production lines with a fully automatic wheel handling system
- SRE 500 can be equipped with a very comprehensive package of options such as, tool pre-setting, touch probe for dimensional measurement of the piece in the machine, system for tool integrity control etc

FEATURES

Clamping jaws

» Automatic self-centering chuck Ø 530 mm
» hydraulically controlled and self-compensating
» Two dimensions with air sensor

Automatic steady rests

» Self-centring hydraulic steady rest applied on a dedicated carriage sliding on the rear guide of the basement. Motorisation is executed through a rack and pinion system driven by a CNC brushless motor

Double turrets

» Two independent 8-positions turrets Capto C10
» Automatic change of C10 heads on tool-holder turrets by optional 12-positions tool-magazine

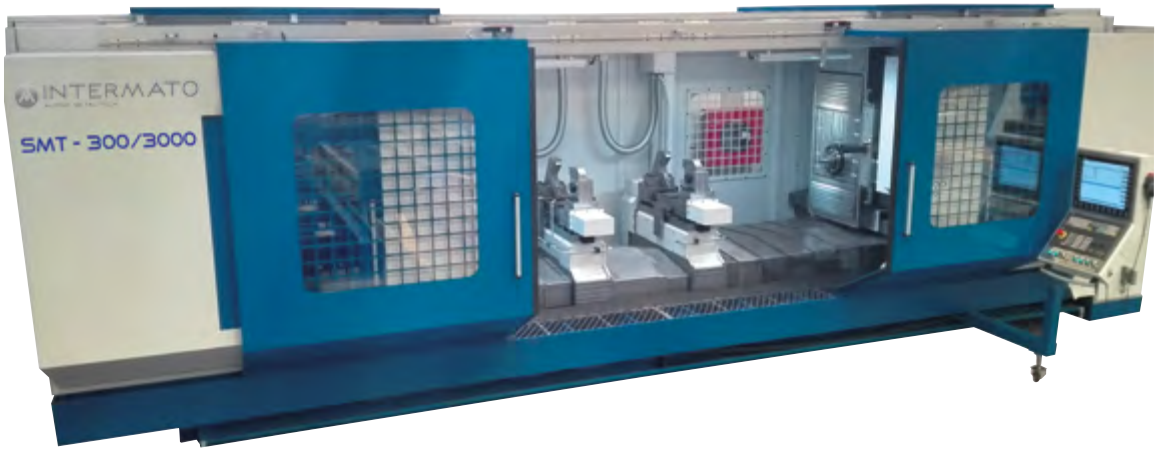
TECHNICAL DATA

Self-centering chuck diameter	530 mm
Max. turning diameter	550 mm
Max. swing diameter	650 mm
Max. admitted weight on drills	6 t
Axle working length	1,000/3,000 mm
Fixed drive head	
Spindle rotation speed	3/400 rpm
Max. spindle torque in S1	12,300 Nm
Max. spindle power in S1	103 kW
Mobile drive head	
Spindle rotation speed	3/400 rpm
Max. spindle torque in S1	12,300 Nm
Max. spindle power in S1	103 kW
Number of carriages	2
Carriage stroke axis Z1	2,700 mm
Carriage stroke axis Z2	2,700 mm
Min. distance between tool seats on turret	250 mm
Number of carriages	2 no.
Carriage stroke axis X1	500 mm
Carriage stroke axis X2	500 mm
No. of positions of the tool holder turret	8
Tool attachment	C10 Capto
Machine weight	40 t

HORIZONTAL LATHE SMT 300/3000

Horizontal facing lathe for machining railroad axles

The horizontal lathe SMT 300/3000 machine is designed and built for the butting and drilling of railway axles. The design of the machine includes two horizontal spindles which work simultaneously on both ends of the axle. Each operating head can perform milling, centering and drilling operations. Due to a touching probe it is possible to measure the position of the raw axle and obtain the axis of the finished axle.



Your advantages

- The machine is equipped with a suitable clamping system to accept asymmetrical axles
- Maximum ergonomics with free access, therefore no long maintenance stops are needed
- Thanks to the complete automation of the safety guards, the machine can be easily integrated into complex production lines with a fully automatic wheel handling system

FEATURES

Double working heads

» Two opposite units for the simultaneous machining of the axle heads, for boring and milling operations by belt-driven spindle, which guarantees high chip removal capacity

Double tool-magazine

» Two independent tool-magazines, one for each head, with automatic tool change by a double gripper. The magazine is positioned on the side of the column, outside the working area, eliminating all problems caused by chips

Independent steady rests

» Two steady rests for locking the piece, automatic variation of the gripping length of the piece

TECHNICAL DATA

Max. length of axles machining	1,000/3,000 mm
Max. clamping diameter in vices	350 mm
Max. workpiece weight in vices	2,500 kg
Max. machinable diameter (turning)	180 mm
Max. machinable diameter (turning)	100 mm
No. 2 spindles cone	50 ISO
Standard spindle rotation speed	3,000 rpm
Spindle power	33 kW
Max. torque	1,250 Nm
Horizontal X axis travel for each spindle	400 mm
Vertical Y axis travel for each spindle	400 mm
Longitudinal Z axis travel for each column	1,250 mm
No. 2 magazine capacity	20
Maximum tool diameter and length	160 / 250 mm
Tool exchange time (from tool to tool)	3 sec.
Tool exchange time (from chips to chips)	12 sec.
Maximum tool weight	10 kg
Machine weight	24 t

AUTOMATIC PRODUCTION LINE

High performance railway wheels

The mission is to provide complete solutions and turnkey systems enabling the customer highest production performance of railway rolling stock components in accordance with the current applicable standards. The wheel production line will be able to process the wheel for the freight train, high speed train, metro, standard train and other alloy steel wheels. Starting from the roughed wheel to finish the complete profile and web turning; hub hole boring will be performed also with the finishing operation.

Your advantages

- Automatic modular extensible line for processing, testing and marking of railway wheels
- Productivity from 25,000 up to 100,000 wheels/year
- This wheel line is the high accuracy, automatic CNC machining production line
- Line management software

AUTOMATIC PRODUCTION LINE

High performance railway axles

Full automated manufacturing lines for axles solution with handling system.

The loading and unloading of the axles is carried out by a portal system with double X and Z axis (longitudinal and vertical) complete with gripper for the manipulation of the axis between the various units of the line. The part programs will be tested and shared between INTERMATO and the customer and will also be used for the development of the Production Management System.

Your advantages

- Automatic modular extensible line for processing, testing and marking of railway axles
- Productivity from 20,000 up to 40,000 axles/year
- Machine INTERMATO for in process axle measurement
- Line management software

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