

Product line of
Underfloor Wheel Lathes >>

TUP 650/H/SH



easy to learn,
easy to use,
easy to maintain...

KOLTECH

Application

The underfloor wheel lathes, TUP 650, TUP 650 H, TUP 650 SH are designed for reconditioning of wheel profiles of all ranges of rail vehicles.

The machining process is carried out without the necessity of dismantling the wheelsets from the vehicle. TUP 650 is designed for light rail vehicles like tramways where axle load does not exceed 10000 daN whereas TUP 650 H is for e.g. traction units of subways where axle load does not exceed 17000 daN and TUP 650 SH is for railway applications where axle load does not exceed 30000 daN.



The TUP lathes are also able to machine individual wheelsets and bogies dismantled from vehicles, as well as coupled wheelsets, active surfaces of brake discs and wheelsets of vehicles, which do not have bogies.

It is worth mentioning that TUP 650 is a unique machine, designed by KOLTECH only for the reconditioning of wheel profiles of light rail vehicles like tramways e.g. provided with: rubber inserts, or having chassis, provided with specific design features, especially related to the design of motor and trailer bogies.

The above features of tramways cause that TUP 650 is subject to many adaptations, directed for the final user's satisfaction, but due to its simple design, easy service and flexibility of functions, it perfectly fits our range of production.

The models TUP 650/H/SH, taking into account different designs of rail vehicles and their bogies, can be adapted for three kinds of centering:

- in centres (in case of access to centre holes of axle) and/or inner axle box supports – TUP 650,
- in outer and/ or inner axle box supports – TUP 650H,
- in outer axle box supports – TUP 650SH.

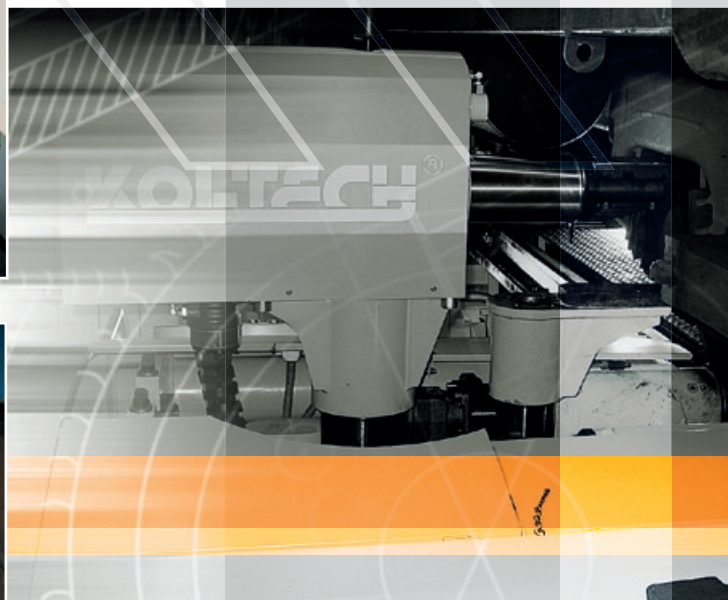
Modern technical solutions >>

In Koltech-tailored underfloor wheel lathes **TUP**, modern technical solutions are applied, worked out during years of practice in design and production of this kind of wheel lathes. Some of them are listed below:

- Application of CNC control system **SINUMERIK 840D, SIEMENS** make,
- Input-Output System (PLC), based on **PROFIBUS** solution, thus reducing the volume of standard wiring by almost 50%,
- Connection of the machine to the external computer network and transmission of control system data to the external data base,



- Simple and efficient dialogue between the operator and the machine by means of **TOUCH AND GO** Operator's Panel of **SIEMENS** make, complying to the requirements of HMI philosophy, ensuring full control over the machine, supported by visualization of technological cycles in operation.
- Application of frictionless linear guideways with needle bearing cages for saddle and slide travels, designed especially for solutions, featured by high loads – the guideways are greased practically for life,
- Application of hydraulic drive motors for rollers drive, applied in such a way that they allow for differing the speeds of particular driving rollers with simultaneous preservation of equal distribution of torque – perfect synchronization,



- Simple design of driving mechanisms and systems eliminate the need of the use of built up kinematic chains,
- Application of universal measuring laser heads for:
 - » positioning of saddles in relation to wheels of the same axle,
 - » measurement of wheel tread diameter,
 - » measurement of height and thickness of flange
 - » measurement of wheel back to back distance,
 - » wear measurement and optimization of cutting depth.

Technical specification

» Geometry of wheelsets:	TUP650	TUP650H	TUP650SH
Track gauge standard or according to Customer's need	1 435 mm		
Wheel tread diameter: min – max	500 – 800 mm	500 – 1 250 mm	600 – 1 500 mm
Width of wheel tyre	70-125 mm	70 – 150 mm	110-150 mm
Brake disc diameter	300 – 500 mm		
Max load on single axle	10 000 daN	17 000 daN	30 000 daN
» Technical parameters of machine:			
Infinitely variable cutting speed	30 – 130 m/min		
Main drive motor power	30 kW		55 kW
Total installed power	50 kW	60 kW	100 kW
Rapid travel speed of saddles	1 – 6 000 mm/min		
Range of working feeds	0,01 – 1,0 mm/rev	0,01 – 1,5 mm/rev	0,01 – 2,5 mm/rev
Max. cross-section of cutting layer	5 mm ²	8 mm ²	10 mm ²
» Achieved machining accuracy:			
Radial run out	≤ 0,15 mm		
Ovality	≤ 0,10 mm		
Accuracy of profile representation	≤ 0,15 mm		
Difference of diameters wheels of single axle	≤ 0,20 mm		
Roughness of surface Rz	≤ 40 μm		
» Overall dimensions and weight:			
Height	1 500 mm		2 360 mm
Width	1 300 mm		1 530 mm
Length	4 400 mm		4 900 mm
Approx.occupied area for the machine	7 500 x 5 500 mm	8 600 x 5 500 mm	10 000 x 7 500 mm
Total weight	ca 10 000 kG	ca 12 000 kG	ca 20 000 kG

Standard Equipment

- SIEMENS CNC SYSTEM SINUMERIK 840D and TOUCH AND GO operator's panel
- Feed drive motors, infinitely variable with control units
- Control cabinet with apparatus
- Machining program for one wheel profile
- Gauge and master gauge for above profile
- Set of foundation keys and bolts
- Saddles for turning of wheel profiles
- Fixed and movable rails
- Universal measuring heads
- Anti slip system for driving rollers
- Tools for final acceptance
- Hydraulic power pack and hydraulic apparatus
- Oil cooler
- Swarf protecting guards and swarf chute
- Covers, railings and balustrades
- Holding down devices (only for TUP 650H, TUP 650SH)
- Telecommunication modem of SIEMENS make for remote service
- Operation and Maintenance Manual
- Diagnostics of disturbances in operation
- Audio-visual warning and signalling system
- Pattern wheelset

Optionally the machines can be equipped with:

Saddle for brake disc facing, additional machining programs, economical programs, holding down device (only for TUP650), swarf disposal system (mechanical swarf conveyor, swarf crusher, two swarf bins), dust exhaust system, vehicle shunting system (rope winching device, rail shunter of Koltech make), data transmission system to host computer, device for turning the coupled wheelsets.

■ PN EN ISO 9001:2001