



HEGENSCHEIDT-MFD



## UNDERFLOOR WHEELSET-LATHE U2000-150

### APPLICATION AREAS AND USE

The modern underfloor wheelset lathe not only meets all currently known work and accuracy requirements, but its overall design is also oriented towards future developments.

The U2000-150 is a universally usable, dynamically rigid and particularly operator- and service-friendly wheelset lathe with automatic measuring system. It represents the current highest level in wheelset machining technology. The machine guarantees optimum economy through high utilisation, precision, long service life and low maintenance costs.

**For the simultaneous machining of wheelsets in bogies with mechanically uncoupled axles, a tandem version U2000-150D is also available.**

### OPERATION

With the CNC-controlled HEGENSCHIEDT-MFD universal wheelset lathes, wheelsets from transport companies (streetcars, subway railroads) are reprofiled with the highest accuracy when installed and removed.

The machine is operated from a central control centre so that the operator has constant access to all machine functions in an optimal working position. The operator is safely protected against flying chips during machining. The automatic processing system largely relieves the operator and thus enables simple operation of the machine.



## MACHINE SPECIFICATION

### MACHINE DIMENSIONS

Machine dimensions (L x W x H)	5.0m x 2.5m x 2.3m (for track gauge 1.435 mm)
Pit dimensions (L x W x H)	6.0m x 6.0m x 2.3m (for track gauge 1.435 mm)
Machine weight	16.000 kg

### GENERAL SPECIFICATION

Maximum difference in diameter between both wheels of a wheelset*	≤ 0.1 mm
Maximum diameter difference between the wheels of a bogie*	≤ 0.3 mm
Maximum radial runout*	≤ 0.1 mm
Maximum chip cross-section per support	6 mm <sup>2</sup>
Optional equipment	<ul style="list-style-type: none"> <li>▪ Machining of wheel brake discs</li> <li>▪ Machining of internal and external shaft brake discs</li> <li>▪ Smoke extraction</li> <li>▪ Machining of mechanically coupled wheelsets</li> <li>▪ Slip monitoring</li> <li>▪ Database management</li> <li>▪ Automatic lubrication</li> <li>▪ Shifting vehicle</li> </ul>

### CONNECTION DATA

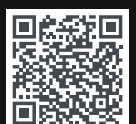
Power (per machine)	80 KVA
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### WHEELSET DIMENSIONS

Maximum running circle diameter**	1.250 mm
Minimum running circle diameter**	375 mm
Maximum axle load	180 kN

\* for solid wheels

\*\* other maximum diameters possible



# Underfloor wheelset lathe Typ U 2000 - 400



## CNC-controlled, with automatic measuring system

### Fields of application and uses

The modern underfloor wheelset lathe does not only meet all the working and precision requirements, but is also geared towards future developments.

The U2000-400 is a universally applicable, dynamically rigid and operator- and service-friendly wheelset lathe. Its design represents the state of the art in wheelset machining technology.

The machine's high degree of utilisation, precision, long service life and minimal maintenance costs guarantee ideal cost-effectiveness.

### Function

With CNC-controlled Hegenscheidt-MFD underfloor wheelset lathes, both wheelsets of high-speed trains of railway companies and wheelsets of local commuter trains in the installed and dismantled state are reprofiled to the highest degree of accuracy.

### The underfloor wheelset lathe is suitable for:

- overwinding the running surfaces up to the wheel flange cap and wheel flange back

- reprofiling of wheelsets
- partial reprofiling of wheelsets
- machining of inside and outside wheel faces
- one-sided reprofiling of wheelsets
- machining of shaft brake discs and/or wheel brake discs (optional)
- further options after technical consultation

The machine is operated by a means of a central control panel so that the operator has continuous access to all machine functions in an ideal working position.

During machining, the operator is protected from flying chips.

The automated machining takes most of the work out of the operator's hands, making the machine easy to operate.

A tandem version - U2000-400D - is also available for the simultaneous machining of bogies with mechanically non-coupled axles.

## Main dimensions and operating data

<b>Wheelset Data</b>	
Track gauge	1,000 - 1,676 mm
Smallest running surface diameter	** 350 mm
Largest running surface diameter	1,400 mm
Min. profile width	75 mm
Max. profile width	100 mm
Min. axle centre distance, coupled	1500 mm
Min. axle centre distance, uncoupled	1,000 mm
Max. axle length to be taken up for 1,435mm gauge	2,600 mm
Min. axle length to be taken up for 1,435mm gauge	1,600 mm
Max. axle load, machine	400 kN
Max. axle load rail system	150 / 300 / 400 kN
**) without taking into account structures such as rail brakes or cowcatchers	

<b>Machining accuracies 1)</b>	
1) Shape and position tolerances according to DIN / ISO 1101	
<b>Machining of the profile</b>	
Radial runout on the wheelset	≤ 0.1 mm 3) 5)
Axial runout on the internal wheel flange cap	≤ 0.2 mm 4) 5)
Shape deviation of the profile	≤ 0.2 mm
Max. measuring circle diameter difference of both wheels of a wheelset	≤ 0.1 mm 2)
Difference in diameter of the wheels on one bogie	≤ 0.3 mm
Surface quality of the profile	Rz ≤ 63 µm
Surface quality of the side surfaces of the wheel profile	Rz ≤ 100 µm
2) Requires the same measurements for both wheel sides, sharp tools as well as careful and rigid clamping of the wheel bearing housings. Cutting depth not more than 4 mm (two cuts).	
3) Requires a measuring cut, preliminary cut or concentric wheel, as well as cutting tools in perfect condition, normal cutting conditions and correct radial centring of the wheelsets.	
4) Requires axial run-out of the inner wheel face to be better than 0.5 mm.	
5) A value increase of up to 0.3 mm must be expected with rubber-sprung profiles.	
<b>Brake disc machining</b>	
Axial runout	≤ 0.2 mm
Flatness	≤ 0.1 mm / 100 mm
Surface quality	Rz ≤ 16 µm

## Benefits of the underfloor wheelset lathe

- The machine casing integrated into the machine with optimum chip disposal ensures improved safety conditions for the operator.
- Integrated chip guide plates and large openings to the chip mill and/or chip conveyor enable easy chip removal.
- The new design of the tool posts makes it possible to machine almost all types of brake discs easily.
- Permanent accuracy of the guide elements for the tool posts
- For environmental reasons, the oil-based loss lubrication of the tool posts has been replaced by greasing.
- All components relevant to accuracy (e.g. the tool post guide mechanisms are linear ball recirculating guide systems) are designed to be low-maintenance and low-wear.
- The machine is almost fully assembled upon delivery and can be transferred to the production department within a few days after delivery.
- A smaller foundation pit is required thanks to the compact machine layout.
- The pit can be of a simple design with a smooth surface, as the electrical cabinet is integrated into the machine, as a result of which virtually no cables or wires need to be routed within the pit.
- The modular structure enables the subsequent exchange of data with other computers or subsequent extension of the machine.