

UGE 180 N, 2 UGE 180 N UNDERFLOOR WHEEL LATHE



BASIC SPECIFICATIONS

Range of wheel tread diameters:	350 to 1,270 mm
Maximum axle load:	18 × 10 kN

PURPOSE

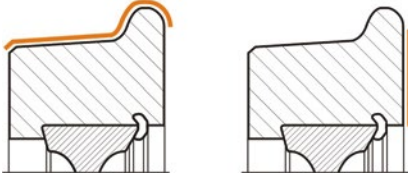
The **UGE 180 N** Underfloor Wheel Lathe is a CNC double-saddle special-purpose lathe, designed for the machining of wheelsets used in rail vehicles. Its main application is reconditioning of wheel profiles and brake discs of light rail transit system vehicles (trams, metro, commuter) and facing of brake discs without dismantling of wheelsets from the vehicles. This significantly shortens the shutdown time of vehicles and thus increases the efficiency of their exploitation. Refiling of single wheelsets or bogies dismantled from vehicles is also possible.

The machine tool is also available in the tandem configuration – **2 UGE 180 N**, which is capable of machining two wheelsets of the same bogie.

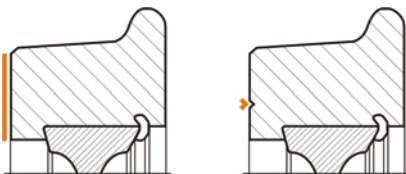
The machine is installed on a pit-type foundation (below the traffic rails), which ensures its operation in a roll-through system.

The UGE 180 N Underfloor Wheel Lathe is capable of performing the following operations:

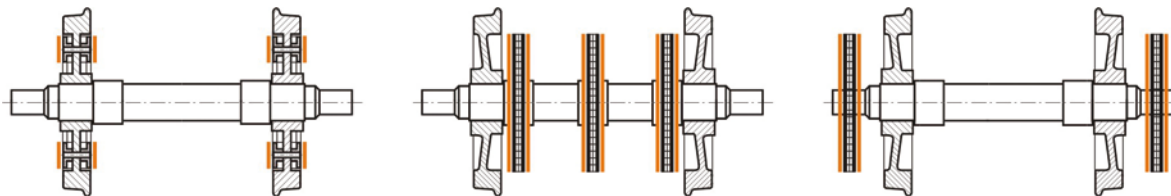
- Turning of wheel profile according to technological program
- Wheel rim inner facing



- Wheel rim outer facing
- Turning of limit machining groove



- Wheel-mounted brake disc facing
- Axle-mounted brake disc facing (fixed between the wheels)
- Axle-mounted brake disc facing (fixed outside the wheels)



MAIN FEATURES

- Compact and extremely rigid design based on a single-piece high-grade grey iron casting, which guarantees both the machine tool high geometrical stability and the most efficient vibration damping;
- Unique system of wheelset lifting and driving realized by four independent drives ensuring flexible pressure of rollers and constant contact between driving rollers and wheels;
- Automatic and wheel profile wear measurement using touch-type measuring heads (laser-based measurement as option);
- Productive machining of narrowed (economical) profiles;
- Versatile equipment and wide programming capabilities facilitate easy machining of unusual wheel profiles.

STANDARD EXECUTION

- Machine tool main structure made as single-piece iron casting
- Machine tool rails – fixed and movable
- Wheelset clamping and centering system:
 - Supports for wheelset inner axle boxes
 - Wheelset axial locators
 - Four (4) flexible wheelset lifting and driving units
- Saddles and quick change tool holders with cassettes and cutting plates for profile cutting
- Touch-type wheel wear measuring heads
- Four (4) motors of infinitely variable rotation rates with digital controllers for main drive
- Four (4) motors of infinitely variable rotation rates with digital controllers for feed drives
- Latest SIEMENS SINUMERIK 840D sl computer numerical control system with PLC
- Anti-slip system for friction roller drive
- Main control panel
- Remote diagnostics system, fault diagnostics with text messages in user's language and Help function
- Program for machining of one type of basic or economical wheel profile
- Profile gauge and master gauge for one type of basic wheel profile
- HMI screen pages – operator guidance during machining process
- Electrical equipment and control cabinet
- Hydraulic power system and lubrication system
- Stack light and buzzer indicating machine tool working condition
- Chip covers, chip chute and chip conveyor
- Lighting of working zone
- Spanners for machine tool operation and installation
- Equipment for setting and fixing the machine tool on foundation
- Calibration wheelset for machine tool measuring system
- Operation and Maintenance Manuals
- CE mark and EC declaration of conformity

ADDITIONAL EQUIPMENT

- Wheelset clamping and centering system (include auxiliary side control panels):
 - Holding down devices with claws for wheelset outer axle boxes
 - Tailstocks with quills and rotary centers
- Cutters for brake disc facing
- Hydraulic lifting jacks for machining of coupled wheelsets
- Touch screen for main control panel
- Additional programs for machining of basic and economical profiles
- Wheelset database
- Laser measuring heads for scanning of wheel profile
- Wheelsets diagnostic stand
- Equipment for tool retraction in case of power failure
- Mechanical chip crusher and chip bin
- Dust and fume extraction system
- CCTV system for monitoring of machining process
- Rail-road shunting vehicle / winching system for positioning of rail vehicles on machine tool
- Other upon request


TECHNICAL SPECIFICATIONS

MODEL Code:		UGE 180 N D-2	2 UGE 180 N D-2T
Wheelset geometry			
Track gauge	mm		1,435 ⁽¹⁾
Min. wheel tread diameter after machining:			
• Wheelset centered on axle boxes	mm		350 ⁽²⁾
• Wheelset centered in rotary centres	mm		400
Max. wheel tread diameter before machining:			
• Wheelset centered on axle boxes	mm		1,270
• Wheelset centered in rotary centres	mm		900
Max. width of wheel rim	mm		145
Max. axle load	× 10 kN		18
Machine tool parameters			
Min. wheel base	mm	–	1,700
Max. chip cross-section (for each saddle)	mm ²		6 ⁽³⁾
Infinitely variable cutting speed of main drive for wheel profile machining	m/min		20 to 90
Max. peripheral speed of drive rollers:			
• Profile machining	m/min		165
• Brake disc facing	m/min		265
Number of main drive motors	pcs	4	2 × 4
Power S1/S6-40% of each main drive motor	kW		9 / 13
Total power installed (standard execution)	kW	65	135
Machine tool overall dimensions and weight			
Machine tool overall dimensions:			
• Length	mm	2,300 ⁽⁴⁾	3,206 ⁽⁴⁾
• Width	mm		4,530 ⁽⁴⁾
• Height (measured from bottom of machine tool to floor level)	mm	2005	2005 ⁽⁵⁾
Machine tool weight	× 10 kN	18 ⁽⁴⁾	36 ^{(4), (5)}
Machining accuracies			
Difference in diameters between two wheels of the same wheelset	mm		≤ 0.15 ⁽⁶⁾
Difference in diameters of four wheels in the same bogie	mm		≤ 0.30 ⁽⁶⁾
Radial run-out of wheel tread	mm		≤ 0.10 ⁽⁶⁾
Axial run-out of wheel inner faces	mm		≤ 0.10 ⁽⁶⁾
Accuracy of profile machining	mm		≤ 0.15 ^{(6), (7)}
Roughness of wheel profile surface after machining, Ra	µm		≤ 16
Roughness of brake disc surface after machining, Ra	µm		≤ 4,5
<small>(1) Another track gauge - to be agreed upon (2) Additional equipment as rail brakes, sanders, etc. not considered. (3) At axle load ≥ 80 kN and wheelset holding down; Wheel material - Steel: Hardness ≤ 270 HB, Tensile strength ≤ 950 N/mm². (4) For track gauge of 1,435 mm and standard execution. (5) For wheel base 1,700 mm. (6) The tolerances concern the following conditions: machining process of steel solid wheels in two cutting passes and with intermediate measurement of wheel tread diameter; The cutting tools in good condition; the wheelsets equipped with outboard axle boxes of bearing slackness within tolerances by manufacturer. (7) Measured with machine tool measuring system or clearance between profile gauge and wheel profile surface.</small>			

Some of the above data can be altered to meet the Customer requirements.

Above data are subject to change due to product development, without prior notice.