



# VERTICAL MACHINING CENTERS

## RQX SERIES



○ RQ | RQQ | RMC | RQMC



THE NSH GROUP

## RQX-SERIES

The NILES-SIMMONS RQX series of vertical CNC turning-milling machining centers are designed to provide economical and accurate complete machining of ring-shaped, difficult-to-machine workpieces of various materials and sizes. The machines are mainly used in the railway sector for the production of new railway wheels and molds, but their solid design also makes them ideal for machining ring-shaped workpieces from the aviation, bearing, and other industries.

Based on, a stable and robust spheroidal cast iron structure, the machines are designed for high cutting forces and high accuracy. The turning centers are available in

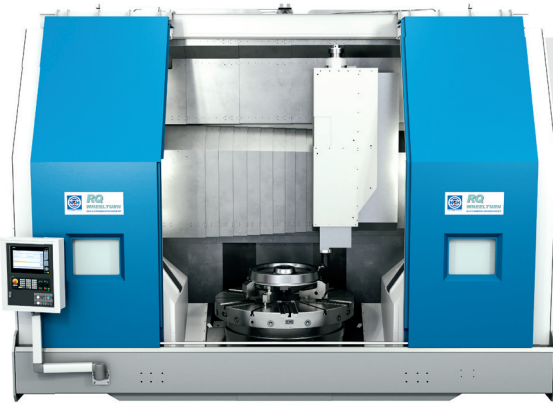
various configurations for heavy cutting and finishing with one or two tool supports.

Automatic tool and workpiece measurement and various process monitoring systems ensure unmanned (closed door) production. The modular design of the machines allows a wide range of technologies and machining concepts to be integrated for specific components, such as drilling, threading, or pocket milling. The turning centers are also characterized by high cutting performance, minimal non-productive time, and optimal automation, which can also be realized within the NSH Group

### Highlights

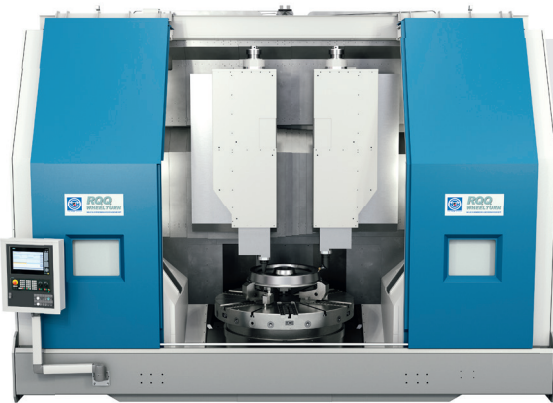
- **Efficient complete machining**  
For ring-shaped workpieces up to 1600mm in diameter with fully automatic loading, machining, and unloading
- **Optimized machining times**  
Thanks to tool changes parallel to machining time and simultaneous machining
- **Combination of heavy machining and finishing**
  - From vertical lathes to vertical machining centers --
  - From heavy cutting to precision machining
  - Vertical turning centers for heavy cutting and finishing
- **Innovative drive concept**  
Gearless direct drive with no maintenance or side loads for maximum dynamics and drive configuration of the face plate according to the technological task, as well as maximum positioning accuracy in the C-axis drive
- **Maximum stability and long-term accuracy**  
Stable basic construction and robust design as well as consistent use of high-strength spheroidal graphite cast iron enable minimum torsion and maximum vibration damping
- **Variable machine and machining concept**  
Design with one or two turning supports and B-axis including HSK100-T cutting position possible; for machining with driven tools and turning operations
- **Precisely fitting tool concept**  
Use of heavy-duty cutting turning tools with Capto C10 cutting point and HSK100-T tool holders with maximum feed force and therefore high rigidity for long tool life
- **Comprehensive tool management systems**  
Automatic tool change during machining with up to 20 tools per magazine and support as well as automatic tool measurement in the machine
- **Application-optimized clamping concepts**  
6-jaw chuck and 3-jaw chuck including quick change and jaw fine adjustment of concentricity via base jaws and/or top jaws
- **Ease of operation and service**  
Convenient operating concept based on SINUMERIK Operate with 15" TFT touch panel and NILES-SIMMONS HMI with customized software tools and integrated DNC functionality
- **Wide range of automation options**  
Machine integration into loading systems and production lines (e.g. gantry loading, robot loading)
- **Very high machine efficiency**

## MODEL VARIANTS



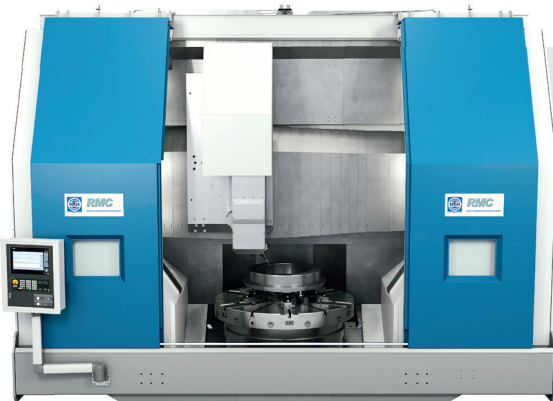
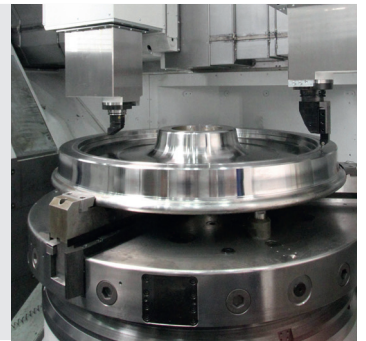
### RQ

- Equipped with one turning support
- Machining of railway wheels



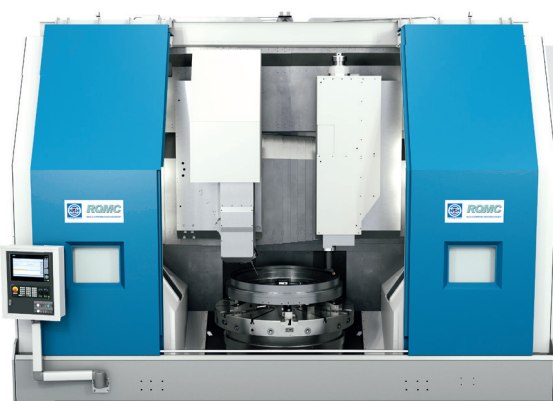
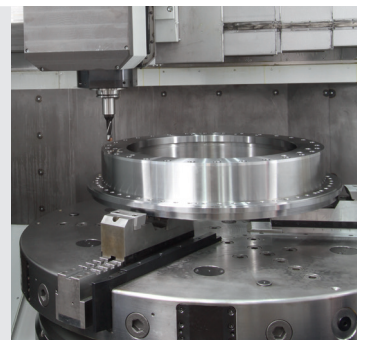
### RQQ

- Equipped with two turning supports
- Machining of railway wheels



### RMC

- Equipped with one turning-milling unit
- Machining of railway wheels and other rotationally symmetrical workpieces



### RQMC

- Equipped with one turning-milling unit and one turning support
- Machining of railway wheels and other rotationally symmetrical workpieces





# TURNKEY - PRODUCTION LINES WORLDWIDE

The NILES-SIMMONS-HEGENSCHEIDT Group (NSH) is the market leader in planning, design, modernization, and implementation of complete manufacturing lines for the railway sector and other industries. We are partners for lines in the field of highly productive new parts production, such as railway wheel and axle production, as well as for lines in the field of maintenance, such as automated repair workshop lines for wheels, axles, and wheelset maintenance. We also provide complete assembly lines for wheelsets, including wheel mounting and demounting. All lines can be designed to be highly automated, including automatic parts handling and integrated measuring and testing processes.

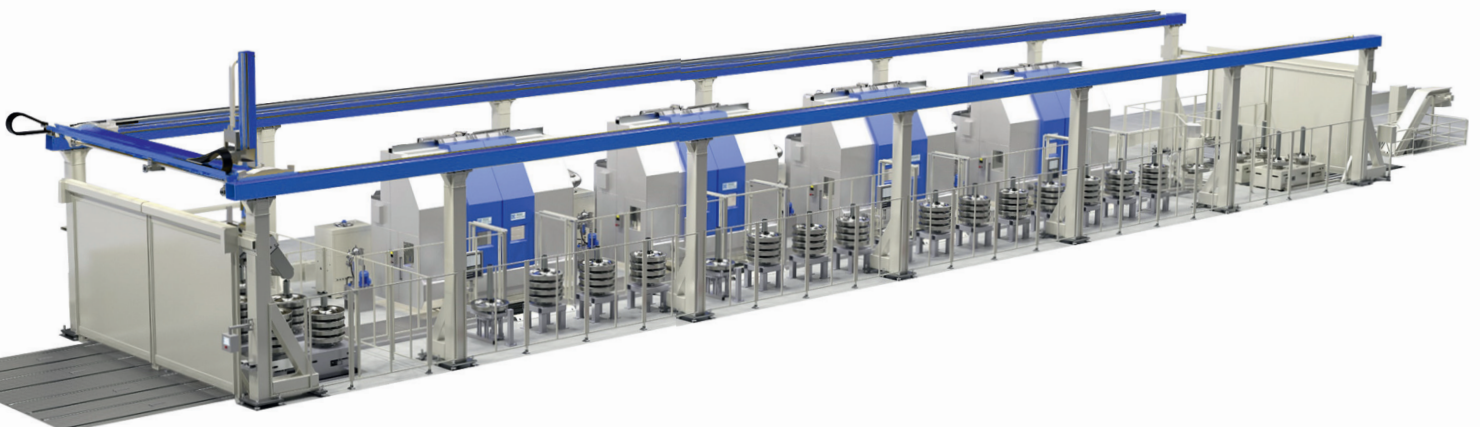
Based on your requirements, our specialists will work with you to develop the optimal solution for your production requirements. From the initial inquiry through to project planning and turnkey delivery, the NSH Group takes overall responsibility. We take care of the entire project management process from project control and financing, process simulation and equipment procurement to facility planning and installation support. As part of the project team, NSH engineers work together with leading international companies in the fields of machine tool construction, measuring and testing technology and supply engineering. However, we always offer the majority of machines and systems produced within the NSH Group, including integration and automation systems. This significantly simplifies the entire project planning process and the exchange of expertise within the project team, allowing projects to be completed with maximum efficiency in terms of time and quality.

## Your complete support

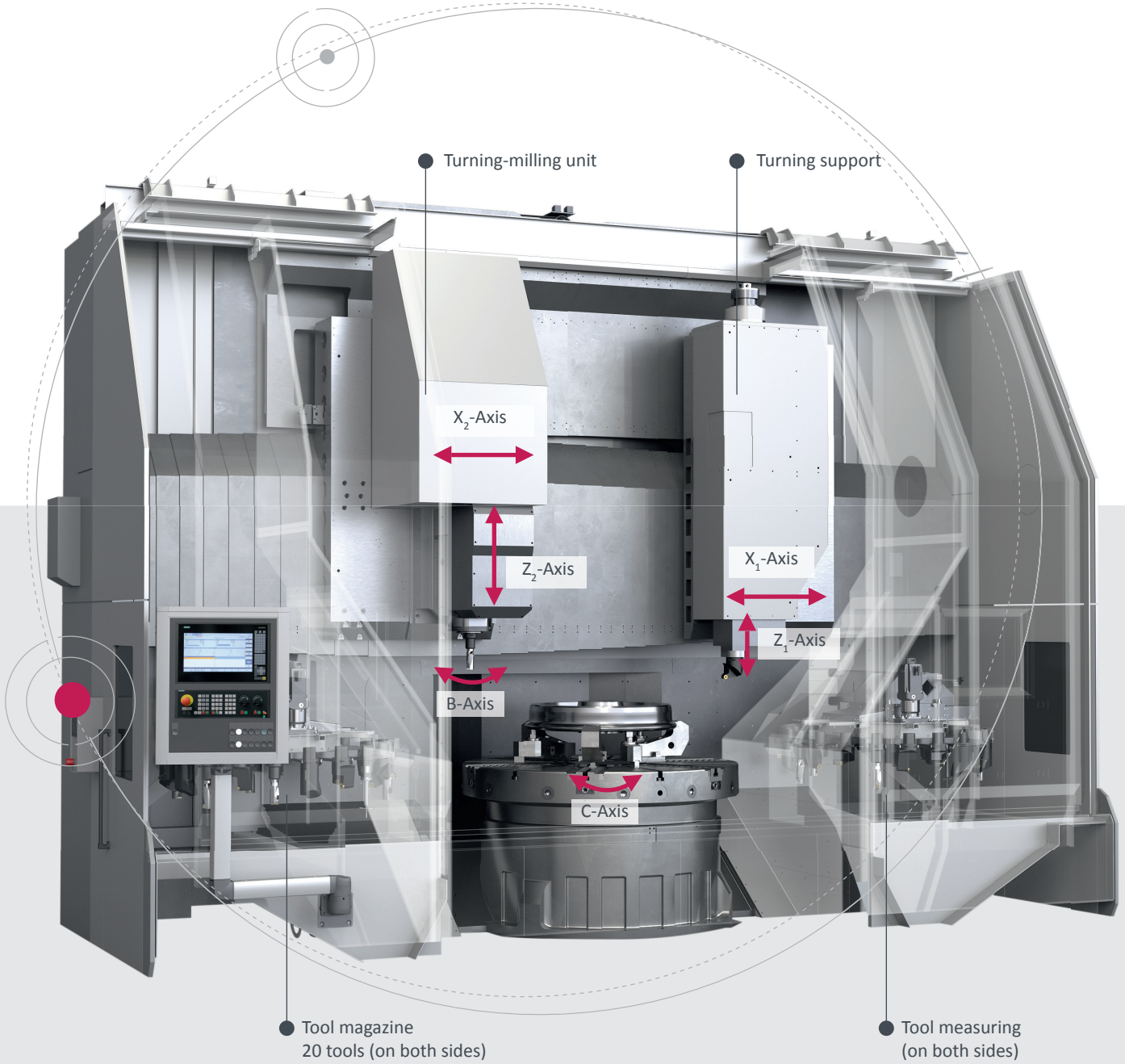
- Project management and project financing
- Part-related production and test planning
- Workpiece flow and automation design
- Process simulation and sequence control
- Layout and hall planning
- Equipment planning and procurement
- Media planning and media supply
- Shipping logistics
- Installation and commissioning support
- Performance test against confirmed parameters

## Your added value

- Overall project responsibility within the NSH Group
- High proportion of NSH machines
- A single point of contact for customers and suppliers throughout the entire project
- Extensive technical and technological experience of the NSH Group in the turnkey field
- Customized, modular, and highly flexible production concepts and systems
- Maximum productivity thanks to ideally matched systems
- Collaboration with leading companies in the machine tool, automation, test and measurement and utilities industries
- Turnkey service - on site support worldwide
  - Technology changes and retooling
  - Line conversions and expansions
  - Service calls and spare parts

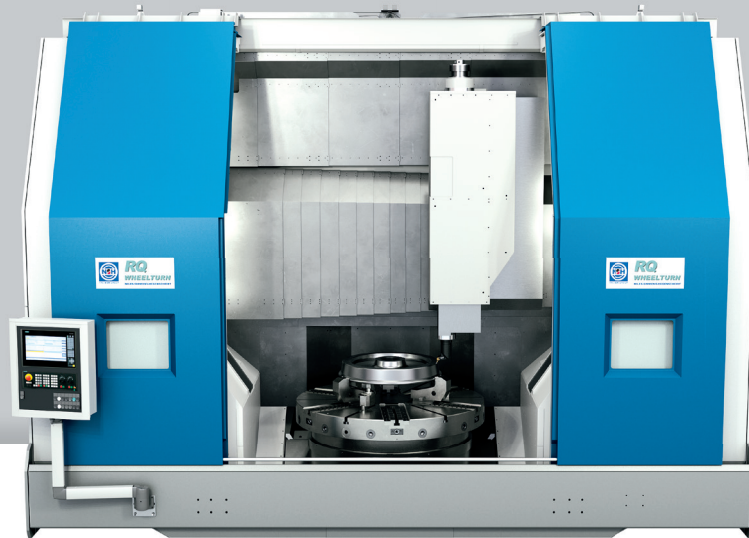




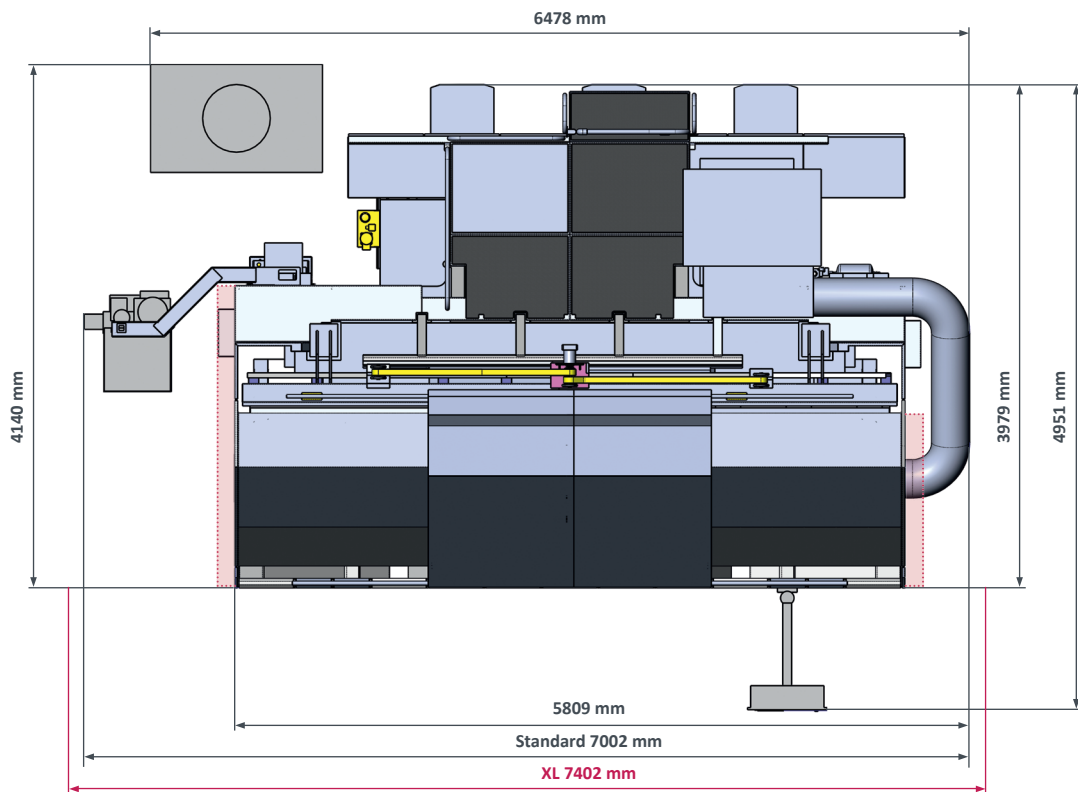




NILES-SIMMONS



# VERTICAL TURNING CENTER RQ



MODEL		Standard	XL
Machine length (L)	mm	7002	7402





## ADDED VALUE

- Machine with one turning support for small series and single part production
- Roughing and finishing in one machine
- Chuck with quick jaw change
- Integrated tool and part measurement
- Process monitoring
- Cutting force-dependent feed control (AC-Control)
- Chip breakage optimization through speed modulation (ACS)
- Optional cooling lubricant up to 120 bar for long insert service life
- Prepared for fully automatic loading and unloading
- Small footprint and low maintenance requirements

## MACHINE SPECIFICATIONS – RQ

### CAPACITY

Swing diameter	mm	1900
Part diameter max.	mm	1350 / 1500 / 1600

### MAIN DRIVE

Drive power max. (60/100% duty cycle)	kW	120 / 106	111 / 98
Speed range	min <sup>-1</sup>	1...400	1...400
Torque at table (60/100% duty cycle)	kNm	22,9 / 20,3	9,1 / 8,1

### TURNING-MILLING UNIT RIGHT

Rapid feed rates	m/min	24
Cutting force tool unit	kN	30
Tool holder	Size	Capto C10
Facing unit, diameter	mm	100
Feed force	kN	100

### TOOL MAGAZINE

Pockets	No.	20
Tool change time	sec	12



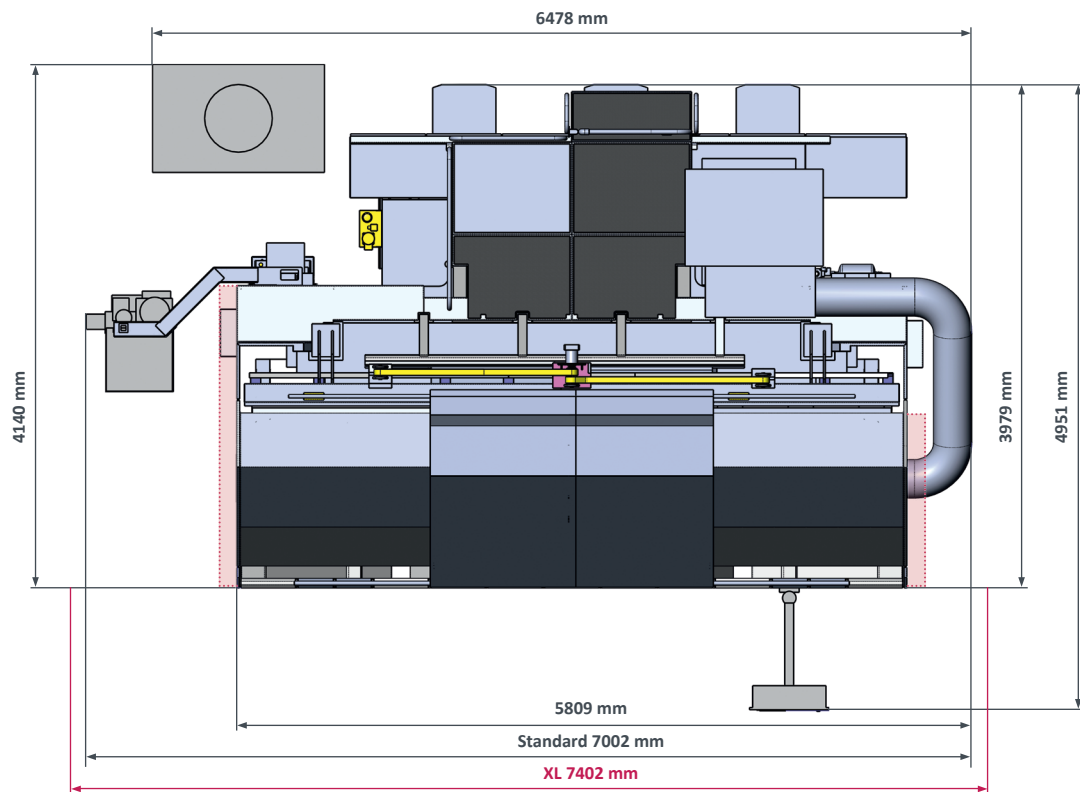




NILES-SIMMONS



# VERTICAL TURNING CENTER RQQ



MODEL		Standard	XL
Machine length (L)	mm	7002	7402





## ADDED VALUE

- Production machine with two turning supports for maximum efficiency
- Roughing and finishing in one machine
- Chuck with quick jaw change
- Integrated tool and part measurement
- Process monitoring
- Cutting force-dependent feed control (AC-Control)
- Chip breakage optimization through speed modulation (ACS)
- Optional cooling lubricant up to 120 bar for long insert service life
- Prepared for fully automatic loading and unloading
- Small footprint and low maintenance requirements

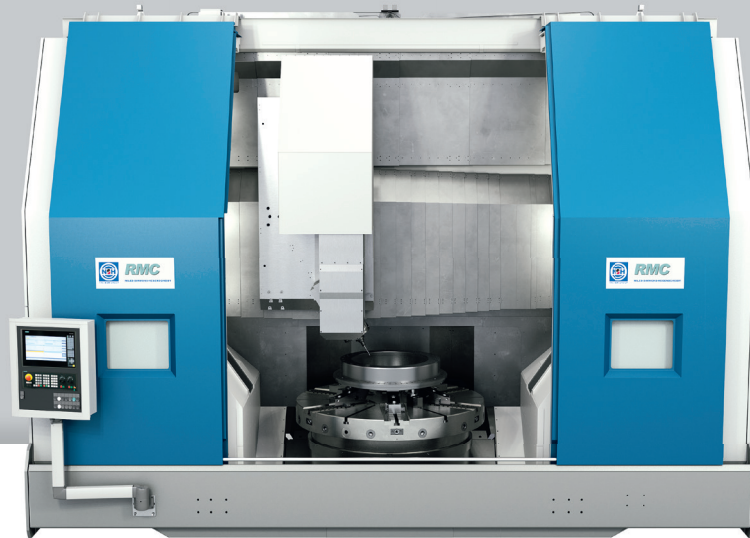
## MACHINE SPECIFICATIONS – RQQ

CAPACITY		
Swing diameter	mm	1900
Part diameter max.	mm	1350 / 1500 / 1600
MAIN DRIVE		
Drive power max. (60/100% duty cycle)	kW	207 / 192
Speed range	min <sup>-1</sup>	1...360
Torque at table (60/100% duty cycle)	kNm	33 / 30,5
TURNING SUPPORT LEFT AND RIGHT		
Rapid feed rates	m/min	24
Cutting force tool unit	kN	30 / 30
Tool holder	Size	each Capto C10
Facing unit, diameter	mm	100
Feed force	kN	100
TOOL MAGAZINE		
Pockets	No.	20 / 20
Tool change time	sec	12

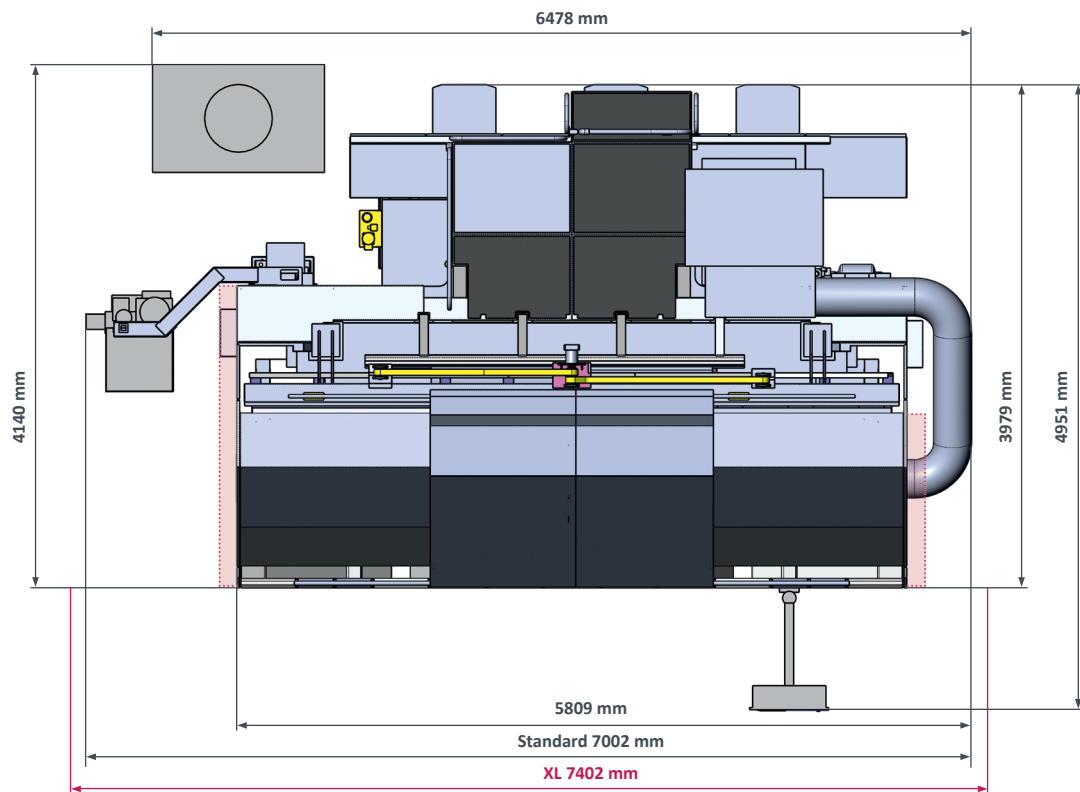




NILES-SIMMONS



# VERTICAL TURNING CENTER RMC



MODEL		Standard	XL
Machine length (L)	mm	7002	7402







## ADDED VALUE

- Machine with one turning-milling unit for finishing and complete machining
- Maximum accuracy thanks to direct measuring systems in all linear and rotary axes
- Process monitoring
- Integrated tool and part measurement
- Use of multitasking tools
- Cutting force-dependent feed control (AC-Control)
- Chip breakage optimization through speed modulation (ACS)

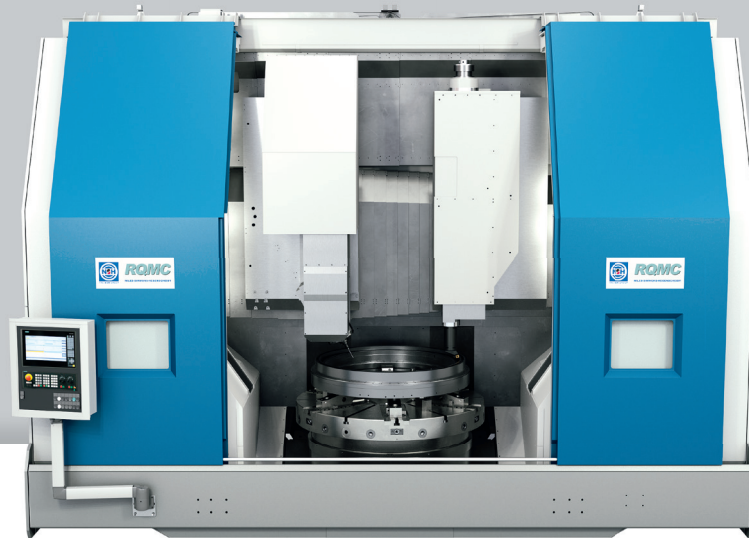
## MACHINE SPECIFICATIONS – RMC

CAPACITY		
Swing diameter	mm	1900
Part diameter max.	mm	1350 / 1500 / 1600
MAIN DRIVE		
Drive power max. (60/100% duty cycle)	kW	111 / 98
Speed range	min <sup>-1</sup>	1...400
Torque at table (60/100% duty cycle)	kNm	9,1 / 8,1
TURNING-MILLING UNIT LEFT		
Rapid feed rates	m/min	24
Cutting force tool unit	kN	10
Tool holder	Size	HSK100-T
Facing unit, diameter	mm	100
Feed force	kN	75
Drive power milling spindle (60/100% duty cycle)	kW	29,8 / 26,5
Speed max.	U/min	5000
Torque milling spindle (60/100% duty cycle)	Nm	328 / 261
TOOL MAGAZINE		
Pockets	No.	20
Tool change time	sec	15

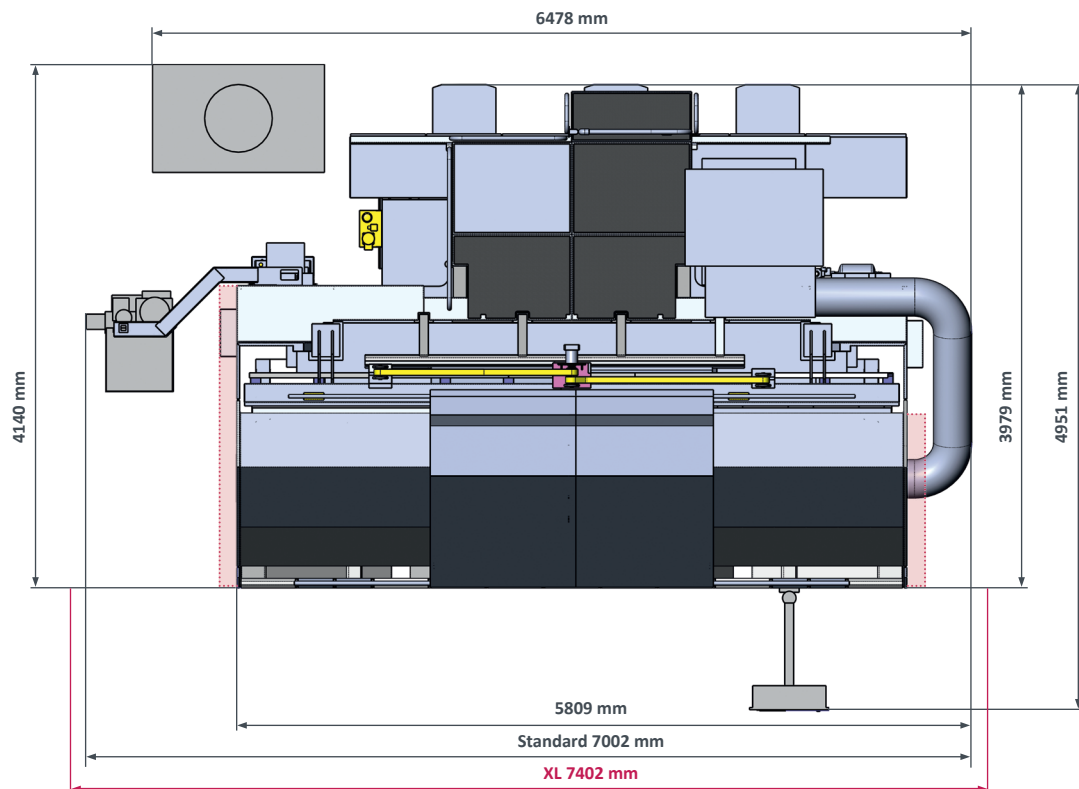




NILES-SIMMONS



# VERTICAL TURNING CENTER RQMC



MODEL		Standard	XL
Machine length (L)	mm	7002	7402





## ADDED VALUE

- Machine with one turning-milling unit and one turning support for complete machining for small and medium series
- Maximum accuracy thanks to direct measuring systems in all linear and rotary axes
- Separate supports for heavy-duty and precision machining
- Process monitoring
- Integrated tool and part measurement
- Cutting force-dependent feed control (AC-Control)
- Chip breakage optimization through speed modulation (ACS)

## MACHINE SPECIFICATIONS – RQMC

CAPACITY		
Swing diameter	mm	1900
Part diameter max.	mm	1350 / 1500 / 1600
MAIN DRIVE		
Drive power max. (60/100% duty cycle)	kW	120 / 106
Speed range	min <sup>-1</sup>	1...400
Torque at table (60/100% duty cycle)	kNm	22,9 / 20,3
TURNING-MILLING UNIT LEFT		
Rapid feed rates	m/min	24
Cutting force tool unit	kN	10
Tool holder	Size	HSK100-T
Facing unit, diameter	mm	100
Feed force	kN	75
Drive power milling spindle max. (60/100% duty cycle)	kW	29,8 / 26,5
Speed max.	U/min	5000
Torque milling spindle max. (60/100% duty cycle)	Nm	328 / 261
TURNING SUPPORT RIGHT		
Rapid feed rates	m/min	24
Cutting force tool unit	kN	30
Tool holder	Size	Capto C10
Facing unit, diameter	mm	100
Feed force	kN	100
TOOL MAGAZINE		
Pockets	No.	20 / 20
Tool change time	sec	15 / 12







THE NSH GROUP



NILES-SIMMONS-HEGENSCHEIDT GmbH

*The Technology Provider*