



# Railway

## Re-profiling

CERATIZIT is a high-technology engineering group specialised in cutting tools and hard material solutions.

Tooling a Sustainable Future

[ceratizit.com](http://ceratizit.com)



# CERATIZIT – The Number One in Wheel and Brake Disc Machining.

We have specially developed tools and cutting materials for your application.

Our tools, cartridges, and indexable inserts are largely interchangeable 1:1 with your existing system, offering enhanced performance, improved chip control, and significantly easier handling.

Our approach is to make tool replacement and working on the machine easier with existing specifications, such as tool dimensions and programs. Less intervention to remove chips, easier insert replacement, more stable clamping and carbides specifically developed for the application.

For the most part, tool solutions with tangential inserts as "LNUX..." indexable inserts have been used for over 50 years. Of course, we also offer this option, but we would suggest an optimized, contemporary solution, such as the WNMG ... inserts.

Here, you have the option of simply replacing the cartridges in your existing holders or using the entire holder with a more stable and easier clamping system (see image below). The external dimensions of our tools match your current solution 1:1, so no changes to your machining program are necessary.

Our "-M23" geometries with short chip breakage are available in the various new systems and are the first choice. For very heavily stressed wheels and flat spots, we recommend the more stable "-R33" geometry.

We are convinced that you will find the best solution for your cutting process.



# Overview

## Process

4

**Cartridge system CNMX 190740/WNMG 121040/  
WNMG 121740 + 80°-insert CNMX 190740/  
WNMG 121040/121840**

5

**Cartridge system SNMG 191040/211040  
+ 90°-insert SNMG 191040 / SNMG  
211040**

6

**Cartridge system LNUX 191940/LNUX 301940  
+ 90°-Wendeschneidplatten LNUX 191940 /  
LNUX 301940 / LNMR 31**

7

## Insert geometry

8 - 9

## Carbide grade

10 - 11

## Tool holder, Tools on request, Cartridge system

12 - 15

# Re-profiling

## The process

Wheel post-processing is carried out as dry machining in two variants: Underfloor machining – here the wheelset lathe is located below the train/wagon in a working pit. The wheels can be machined without removal. The upper floor machining – here the wheelsets are removed, which is much more complex, but allows twice as fast processing times.

## Requirements for wheel post-processing

The wheels of rail vehicles are exposed to severe wear due to the long distances and long running times. Material removal and deformation are the result. The loads are particularly high during strong braking maneuvers and winding routes. In the case of locking wheels, the material is compacted, very hard flat spots are formed, the wheel runs unevenly. In addition to the condition of the rail, the wheel profile is the decisive factor for safety and comfort. The intervals of post-processing vary depending on the requirements. For freight trains, they can be a few years, for high-speed trains it is often only a few months.

The post-processing of wheels and wheelsets places high demands on the cutting tools: The task is to process changing materials under a wide variety of conditions at different cutting depths reliably – and this in the shortest possible time.

The challenge for tool manufacturers in the reprofiling of the wheels is to develop tools and indexable inserts that are hard, wear-resistant and at the same time tough enough to achieve the required long service lives when machining the wheel flange, tread and hard brake points. The CERATIZIT grades offer the best conditions to meet these high requirements.

## Reprofiling of wheel flange and tread

### Requirements:

Dry cutting with high feed and low speed



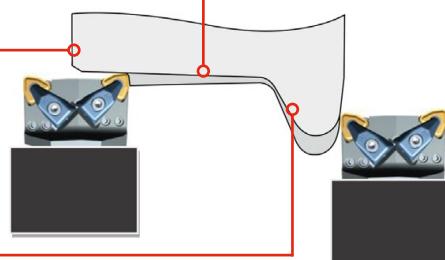
- ▲ The tool's dimensions are identical (1:1) to the existing tool
- ▲ No program modification needed
- ▲ Cutting depth up to 12 mm
- ▲ Cartridge: RK 3223D-W12. With Insert: WNMG 121040SN-...

#### Tread

- ▲ Braking surfaces/flat spots
- ▲ Hardening of >70HRC

#### Bleed

- ▲ Bur on chamber level

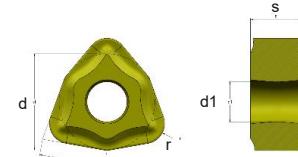
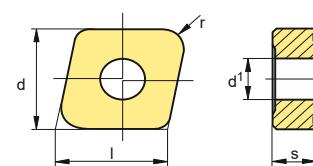


#### Pull up the wheel flange

- ▲ Pulling cut, chip breaking problem

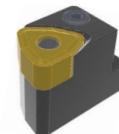
# Tool systems

## Cartridge CNMX 190740.. / WNMG 121040... / WNMG 121740..



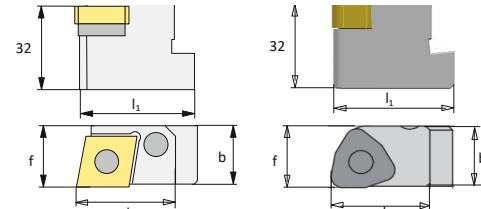
Geometry Inserts page 8/9; Grades page 11

Designation	Article	IC d	Corner radius r	Thickness s	Hole d <sub>1</sub>	Length l
CNMX 190740SN CTC115-P	7410826100	19	4,0	7,94	7,94	19
CNMX 190740SN CTC10RW1	7410836100	19	4,0	7,94	7,94	19
WNMG 121040SN-M23 CTC10RW1	7410984000	19	4,0	10	7,94	12
WNMG 121040SN-M23 CTC15RW1	7410954000	19	4,0	10	7,94	12
WNMG 121040SN-M23 CTCP125-P	7410964000	19	4,0	10	7,94	12
WNMG 121040SN-R33 CTCP115-P	7411024000	19	4,0	10	7,94	12
WNMG 121740SN-M23 CTC15RW1	7410954100	19	4,0	17	7,94	12
WNMG 121740SN-R33 CTCP115-P	7411024100	19	4,0	17	7,94	12



RK 3223-C19R RK 3223D-W12R RK 3223-W12R

Picture shows right hand tool



Designation: Knee level cartridge	Artikelnummer	L = Links R = Rechts	l <sub>1</sub> [mm]	l <sub>2</sub> [mm]	b [mm]	f [mm]		
RK 3219-C19R	7461201900	R	43	35	18	19	CNMX 190740	E01
RK 3219-C19L	7461201901	L	43	35	18	19	CNMX 190740	E01
RK 3223-C19R	7461202300	R	43	35	22	23	CNMX 190740	E01
RK 3223-C19L	7461202301	L	43	35	22	23	CNMX 190740	E01
RK 3223-W12R	7461602300	R	43	35	22	23	WNMG 121040	E01
RK 3223-W12L	7461602301	L	43	35	22	23	WNMG 121040	E01
RK 3223-W1217R-95°	7461612300	R	43	35	22	23	WNMG 121740	E01
RK 3223-W1217L-95	7461612301	L	43	35	22	23	WNMG 121740	E01

Cartridge for new tool system, without knee lever clamping / only for claw clamping!

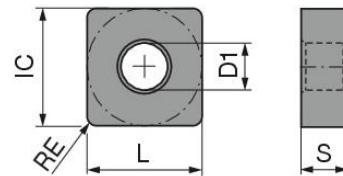
RK 3223D-W12R	7461502300	R	43	35	22	23	WNMG 121040	E02
RK 3223D-W12L	7461502301	L	43	35	22	23	WNMG 121040	E02
RK 3223D-W1217R	7461512300	R	43	35	22	23	WNMG 121740	E02
RK 3223D-W1217L	7461512301	L	43	35	22	23	WNMG 121740	E02



E01	70950389	7095089900	70950392	70950386	70950395	80397040		
E02							80397050	7095093700

# Tool systems

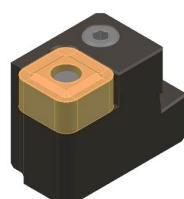
## Cartridge SNMG 211040.. /SNMG 191040...



Designation	Article	IC d	Corner radius r	Thickness s	d <sub>1</sub>	Length l
<b>SNMG 191040SN-M23 CTC10RW1</b>	7411234000	19	4,0	10	7,94	19
<b>SNMG 191040SN-M23 CTC15RW1</b>	CT14910920	19	4,0	10	7,94	19
<b>SNMG 191040SN-M23 CTCP125-P</b>	7408360200	19	4,0	10	7,94	19
<b>SNMG 191040SN-R33 CTC10RW1</b>	7411334000	19	4,0	10	7,94	19
<b>SNMG 191040SN-R33 CTCP115-P</b>	7411324000	19	4,0	10	7,94	19
<b>SNMG 191040SN-R33 CTCP125-P</b>	7411360200	19	4,0	10	7,94	19
<b>SNMG 211040SN-R70 CTC10RW1</b>	7411434000	21	4,0	10	7,94	21
<b>SNMG 211040SN-R71 CTC10RW1</b>	7411534000	21	4,0	10	7,94	21

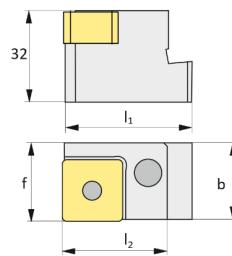


RK 3226-S21R



RK 3223-S19R

Pictures show right hand



Designation	Article	Left / Right	l <sub>1</sub> [mm]	l <sub>2</sub> [mm]	b [mm]	f [mm]	O
<b>RK 3223-S19R</b>	7461402300	R	43	35	22,5	23	SNMG 191040 E03
<b>RK 3223-S19L</b>	7461402301	L	43	35	22,5	23	SNMG 191040 E03
<b>RK 3219-S19R</b>	7461201900	R	43	35	18,6	19	SNMG 191040 E03
<b>RK 3219-S19L</b>	7461201901	L	43	35	18,6	19	SNMG 191040 E03
<b>RK 3223-S21R</b>	CT15153215	R	43	35	22,5	23	SNMG 211040 E04
<b>RK 3223-S21L</b>	CT15153213	L	43	35	22,5	23	SNMG 211040 E04
<b>RK 3226-S21R</b>	7461402600	R	43	35	25	26	SNMG 211040 E04
<b>RK 3226-S21L</b>	7461402601	L	43	35	25	26	SNMG 211040 E04



Only for montage



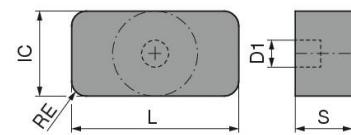
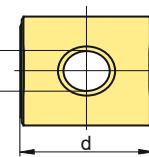
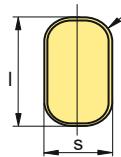
Across flats 4mm



E03	70950389			70950386			80397040
E04	70950389	7095090000	70950392	70950386	70950395		80397040

# Tool systems

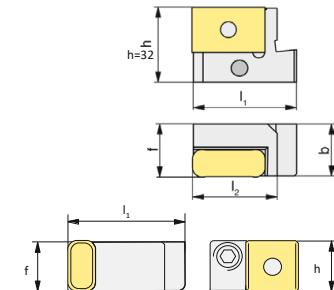
## Cartridge LINUX ... / LNMR ...



Designation	Article	IC d	Corner radius r	Thickness s	d <sub>1</sub>	Length I
LINUX 191940SN-R70 CTC10RW1	7407830200	19	4,0	10	6,35	19
LINUX 191940SN-R70 CTCP115-P	CT14873822	19	4,0	10	6,35	19
LINUX 191940SN-R74 CTC10RW1	7407930200	19	4,0	10	6,35	19
LINUX 191940SN-R74 CTCP115-P	CT14873421	19	4,0	10	6,35	19
LINUX 191940SN-R74 CTCP125-P	7408260200	19	4,0	10	6,35	19
LINUX 301940SN-R70 CTC10RW1	7407830400	19	4,0	12	6,35	30
LINUX 301940SN-R74 CTC10RW1	7407930400	19	4,0	12	6,35	30
LINUX 301940SN-R74 CTCP115-P	7408220400	19	4,0	12	6,35	30
LNMR 311248SN-R75 CTC10RW1	7408030600	19	4,8	12,7	7,94	31,75
LNMR 311248SN-R75 CTC15RW1	Request	19	4,8	12,7	7,94	31,75



Pictures show right hand



Designation	Article	Left / right	l <sub>1</sub> [mm]	l <sub>2</sub> [mm]	b [mm]	f [mm]	
RK 3223-L19R	7461302300	R	43	35	22,5	23	LINUX 191940
RK 3223-L19L	7461302301	L	43	35	22,5	23	LINUX 191940
RK 3219-L19R	7461301900	R	43	35	18,5	19	LINUX 191940
RK 3219-L19L	7461301901	L	43	35	18,5	19	LINUX 191940
RK 3223-L19L-Q	7461342301	L	43	35	22,5	23	LINUX 191940
RK 3223-L19R-Q	7461342300	R	43	35	22,5	23	LINUX 191940
RK 3223-L30R	7461322300	R	43	35	22,5	23	LINUX 301940
RK 3223-L30L	7461322301	L	43	35	22,5	23	LINUX 301940

Allen key 3 mm, Article number: 80397030

# Inserts

## Geometry

### CNMX190740-SN

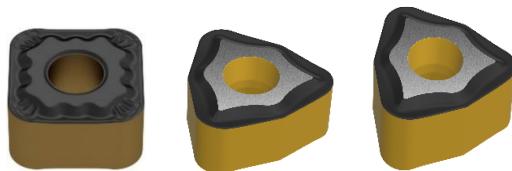
- ▲ Special geometry and insert for wheel profiling
- ▲ Good chip control
- ▲ System is used individually



Alternative system is WNMG 121040...

### -R33

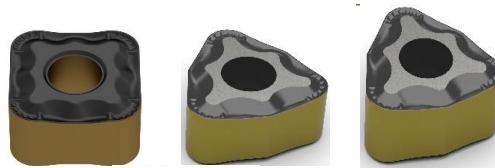
SNMG 191040SN-R33  
WNMG 121040SN-R33  
WNMG 121740SN-R33



- ▲ Roughing, stable geometry
- ▲ Good chip control with higher feet
- ▲ For flat spot and very used wheel

### -M23

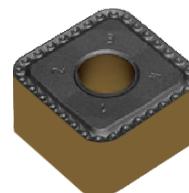
SNMG 191040SN-M23  
WNMG 121040SN-M23  
WNMG 121740SN-M23



- ▲ "Sharp" geometry and first choice!
- ▲ Very soft cut for high surface quality
- ▲ Special chip breaker for good chip control
- ▲ Short chipping even at low feed speeds
- ▲ For stressed wheels

### -R71 SNMG 211040SN-R71

- ▲ "Sharp" geometry like "-M23"
- ▲ Very soft cut for high surface quality
- ▲ Special chip breaker for good chip control
- ▲ Short chipping even at low feed speeds
- ▲ For stressed wheels



## **-R70 SNMG 211040SN-R70**

- ▲ Roughing geometry like „-R33“
- ▲ Stable geometry
- ▲ Good chip control with higher feet



## **-R70 LNUX 191940SN-R70**

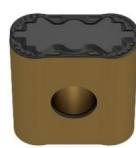
- ▲ Roughing geometry like „-R33“
- ▲ Stable geometry
- ▲ Good chip control with higher feet



**Recommended alternative system WNMG 121040SN-R33.**

## **-R74 LNUX 191940SN-R74**

- ▲ "Sharp" geometry and first choice!
- ▲ Very soft cut for high surface quality
- ▲ Special chip breaker for good chip control
- ▲ Short chipping even at low feed speeds



**Recommended alternative system WNMG 121040SN-M23.**

## **-R70 LNUX 301940SN-R70**

- ▲ Roughing geometry like -R33
- ▲ Stable geometry
- ▲ Good chip control with higher fee



**Recommended alternative system WNMG 121740SN-R33.**

## **-R74 LNUX 301940SN-R74**

- ▲ "Sharp" geometry and first choice!
- ▲ Very soft cut for high surface quality
- ▲ Special chip breaker for good chip control
- ▲ Short chipping even at low feed speeds



**Recommended alternative system WNMG 121740SN-M23.**

# Tools

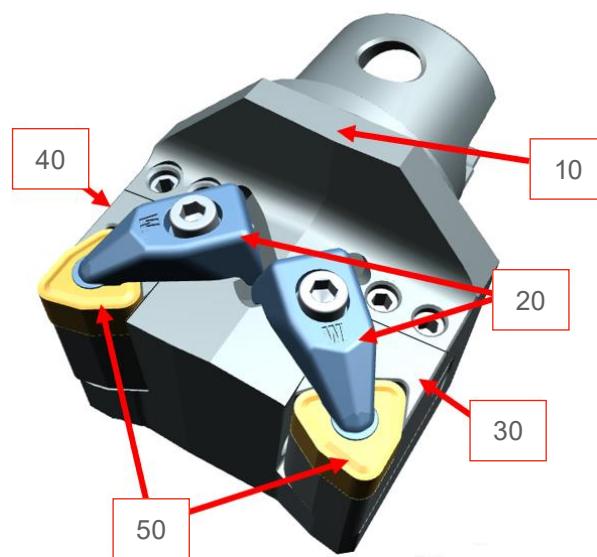
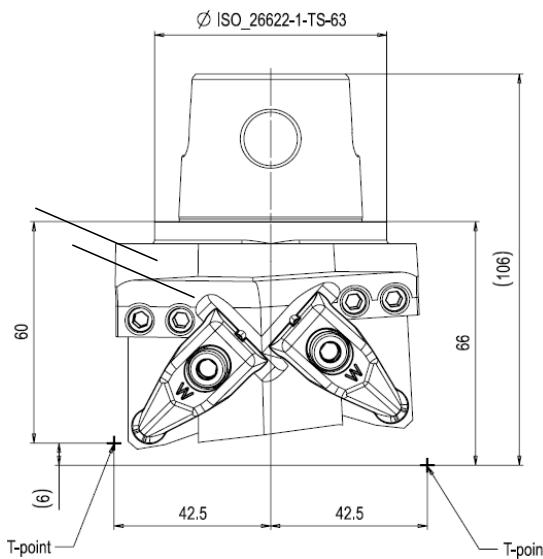


Image **10** Base holder left

Position	Description	Article
<b>10</b> Base holder left	UT63-RKH-L-43066-RK 3223 Basic holder delivery incl. 2x clamping set (20) and 4x clamping screws ISO4026 M8x16 (60), without cassettes (30 and 40) and indexable inserts (50)	7461716331
<b>10</b> Base holder right	UT63-RKH-R-43066-RK 3223 Basic holder delivery incl. 2x clamping set (20) and 4x clamping screws ISO4026 M8x16 (60), without cassettes (30 and 40) and indexable inserts (50)	7461706331
<b>20</b> Clamping Claw Set	SET-D-Rail-W 50208599	7095093700

Clamping claw set consists of: claw, screw ISO 4762 M6x25 and spring DIN 2098



System with 10mm strong insert:

<b>30</b> Cassette right	RK 3223D-W12R	7461502300
<b>40</b> Cassette left	RK 3223D-W12L	7461502301
<b>50</b> Indexable Insert 1 choice	WNMG 121040SN-M23 CTC15RW1	7410954000

Indexable insert for hard flats: WNMG 121040SN-R33 CTCP115-P / 7411024000



System with 17mm strong insert

<b>30</b> Cassette right	RK 3223D-W1217R	7461512300
<b>40</b> Cassette left	RK 3223D-W1217L	7461512301
<b>50</b> Indexable Insert 1 choice	WNMG 121740SN-M23 CTC15RW1	7410954100

Indexable insert for hard flats: WNMG 121740SN-R33 CTCP115-P / 7411024100

# Grades

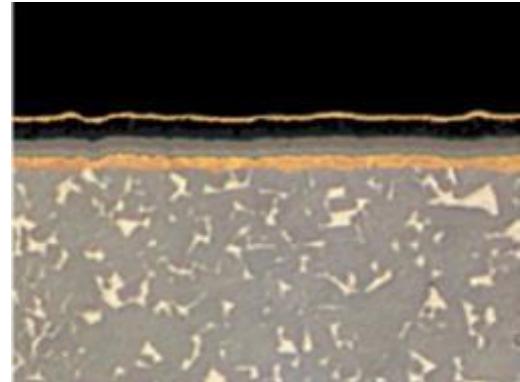
Grade: CTC10RW1, CTCP115-P, CTC15RW1, CTCP125-P

## CTC10RW1 (Formula 1)

- ▲ CVD multilayer coating  
Ti(C,N) + Al<sub>2</sub>O<sub>3</sub>; ca. 10 µm (yellow/black)
- ▲ Binder, 6% Co
- ▲ Special developed for wheel turning, ER4-ER9

### ISO P5-P10

- ▲ Very heat resistant
- ▲ High wear resistant
- ▲ For high cutting data
- ▲ Very good resistant to thermo cracks



## CTCP115-P / CTC15RW1 (the universal)

- ▲ CVD multi layer coating  
CTCP115-P = Ti(C,N) + Al<sub>2</sub>O<sub>3</sub>; ca. 18 µm (yellow/black)  
CTC15RW1 = Ti(C,N) + Al<sub>2</sub>O<sub>3</sub>; ca. 10 µm(yellow/black)
- ▲ Fring zone grade
- ▲ Material for R2-R8, R9 possible

### ISO P5-P10

- ▲ Heat resistance
- ▲ Good wear resistance
- ▲ Stable also on flat spot

## CTCP125-P (the safety)

- ▲ CVD multilayer coating  
Ti(C,N) + Al<sub>2</sub>O<sub>3</sub>; ca. 15 µm (yellow/black)
- ▲ Fring zone coating
- ▲ For wet and dry
- ▲ Material R2-R8

### ISO P25

- ▲ For safety machining, ISO P25 grade newest technology.
- ▲ Good resistance to breaking.
- ▲ Stabil, universal grade

# Special design

CERATIZIT has been a partner to the railway industry in the field of sophisticated machining technology for over 50 years. Thanks to our expertise in all areas of hard metal production for over 100 years, we can guarantee our customers exceptional quality.

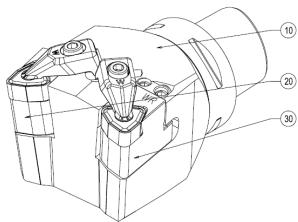
We are one of the few providers who can produce everything from the ore to the finished products in our own group of companies and can therefore offer perfectly coordinated products and consistent quality and delivery reliability. Sustainability is our focus. In dialogue with our customers and machine manufacturers, we look for innovative solutions in wheel set machining and develop tools that exactly meet your needs and requirements.

## Benefits

- ▲ Competent contact persons on site and in the CERATIZIT machining center
- ▲ Analysis of the requirements
- ▲ Development of innovative solutions
- ▲ Reduction of service life and increase of production through CERATIZIT complete solutions
- ▲ Individual tailor-made solutions
- ▲ Competitive advantage through innovation
- ▲ Individually manufactured, high-performance tools and matching indexable inserts

## Break disk re-turning:

PSC63-RKH-L-40103-RK3223  
50209548



UT63-RKH-N-45150-RK3223  
50208654



UT63-RKH-R-50150-RK3223  
50208264



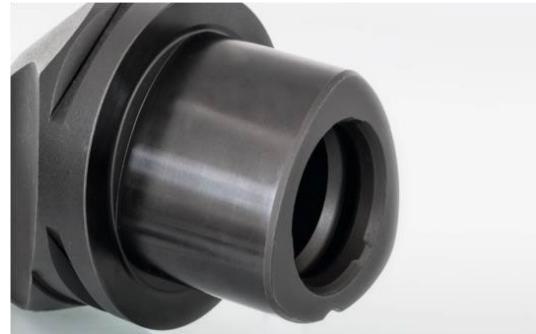
# Tool holder

## Machine connections

CERATIZIT offers tool holders in common machine connections, such as polygonal shaft cones (PSC Capto<sup>TM</sup>), HSK-T, UTS and square shaft.

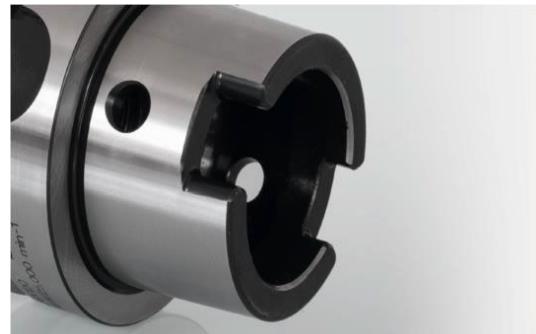
### Polygonal shaft cone (PSC Capto<sup>TM</sup>)

The advantages of the new CERATIZIT polygonal shaft cones (PSC Capto<sup>TM</sup>) lie in their high stiffness and flexural strength. They offer the highest precision, high repeatability and high transferable



### HSK-T

HSK-T turning tools for complete machining are characterized by high radial positioning accuracy and precise tip height. HSK-T tool holders can be used on machines with HSK-T and HSK-A spindles, can be clamped overhead and have an optimized coolant supply.



### UT (KM)

With the universal tool systems (UT), tool change times are minimized, while adhering to the highest quality and safety standards, with the result of increased productivity.



### Square

The CERATIZIT shaft holder for used conventional tension.





## Standard program

Of course, you also get tools and clamping devices from our "standard program". We offer you over 70,000 items from the world of machining.



Placing your order is quick and easy

### Customer Service Centre

#### Freephone Number

UK: 0800 073 2073

Ireland: 1800 93 22 55

#### Freefax Number

UK: 0800 073 2074

#### E-Mail

info.uk@ceratizit.com



It couldn't be easier

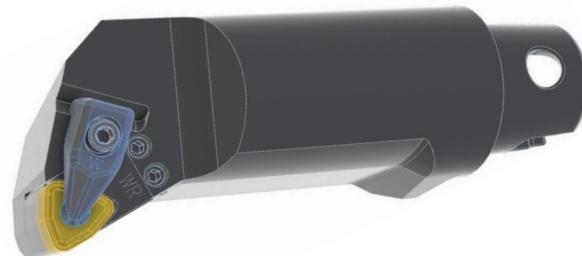
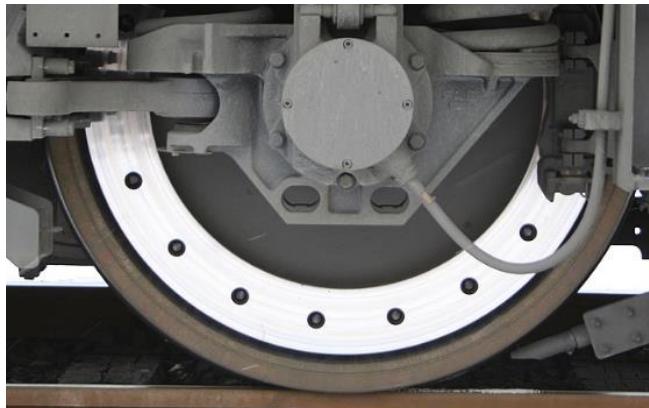
### Ordering via the Online Shop

<https://cuttingtools.ceratizit.com>

# Tools

## Re-tightening brake discs

Here we have a very stable solution where you can achieve double the feed values with just one cut using the same indexable insert as for re-turning and achieve the required specifications. This means you save three times as much work time when re-profiling brake discs.



E.g.: UT63-RKH-R-50150-RK 3223  
50268068

## Tool holder

Depending on the machine, the tools have different connections, and the clearance to get past the friction wheel and the wheel to be machined is also different. For this reason, the tools are manufactured on request. Sample tools are available, and drawings are stored with us for common machine types.

We have developed and improved the systems over the years. This means you have the advantage of getting "timely" tools from us. cassettes can also be exchanged 1:1 for the competitor tools they use.

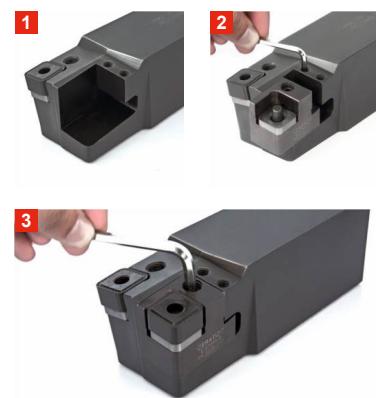
**Ask your CERATIZIT contact person.**



By using the CERATIZIT cassette systems, the tool life of the tool holders is significantly increased. If the insert seat is worn or damaged, the entire holder does not need to be changed, only the cassette needs to be replaced. We generally recommend that this be done within an appropriate period of time to ensure a stable and secure plate clamping. This offers you the advantage of longer service lives at reduced costs. The cassette systems for wheel finishing are available for different indexable inserts. Most are available from our warehouse as standard products.

Easy cassette change, you can exchange our new system (e.g.: RK 3223-S19L) via the cassette 1:1 with your existing LNUX system.

The advantage is the more stable clamping, larger clamping screw and better accessibility when changing insert and handling.



## Headquarters

CERATIZIT S.A.  
LU-8232 Mamer  
T. +352 31 20 85-1  
[ceratizit.com](http://ceratizit.com)

## Markus Krabichler

Your expert for cutting tools  
Railway / Cutting Tools  
**T.** +43 5672 200-192735 \ **M.** +43 664 815 2552  
**E.** [markus.krabichler@ceratizit.com](mailto:markus.krabichler@ceratizit.com)

CERATIZIT Austria GmbH  
Metallwerk-Plansee-Straße 71  
AT-6600 Reutte  
[www.cuttingtools.ceratizit.com](http://www.cuttingtools.ceratizit.com)