



# Packed with power

Powerbit Underground





# It has arrived

It's finally here! Powerbit Underground. The drill bit for miners who want to push it to the limit. Drill more meters every day and between regrinds, while enjoying longer bit service life. It's simply a drill bit for miners who won't settle for anything but the fastest, most productive underground drilling imaginable.

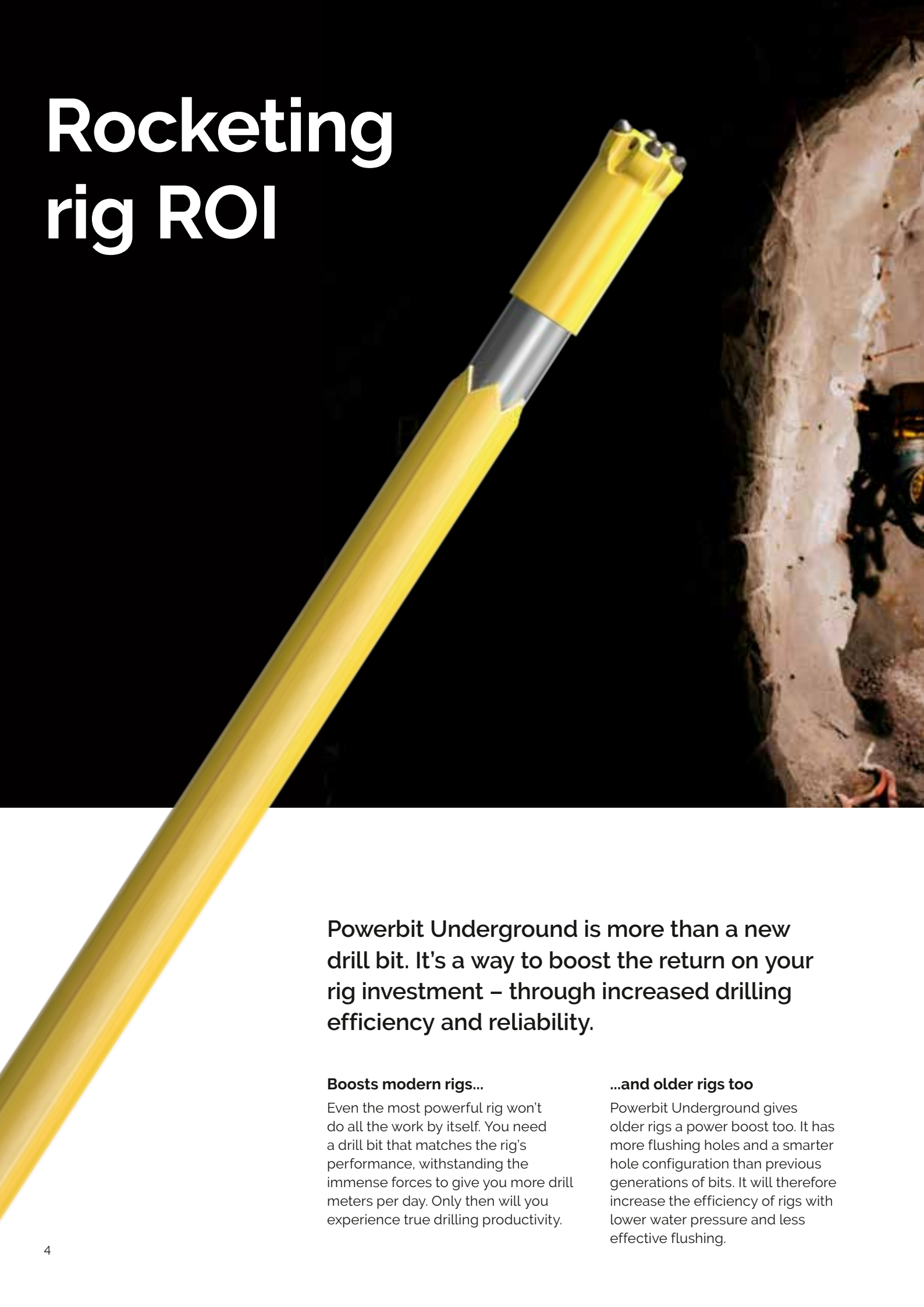
**Is Powerbit Underground for you too?**







# Rocketing rig ROI



**Powerbit Underground is more than a new drill bit. It's a way to boost the return on your rig investment – through increased drilling efficiency and reliability.**

## **Boosts modern rigs...**

Even the most powerful rig won't do all the work by itself. You need a drill bit that matches the rig's performance, withstanding the immense forces to give you more drill meters per day. Only then will you experience true drilling productivity.

## **...and older rigs too**

Powerbit Underground gives older rigs a power boost too. It has more flushing holes and a smarter hole configuration than previous generations of bits. It will therefore increase the efficiency of rigs with lower water pressure and less effective flushing.



### **Faster, more reliable drilling**

Powerbit Underground drills up to 15 percent faster than previous Epiroc models, reducing the total cost of ownership considerably.

Even so, the true gain comes from what Powerbit Underground will do to your availability and productivity. How about 20 percent more drill meters before the first regrind and 15 percent more drill meters between regrinds?

With this innovative bit, you will experience a whole new “flow” at work. Enjoying the satisfaction of trouble-free, uninterrupted drilling that spells more money in your pocket. All thanks to the bit’s extreme ruggedness.

### **Full utilization of your rig**

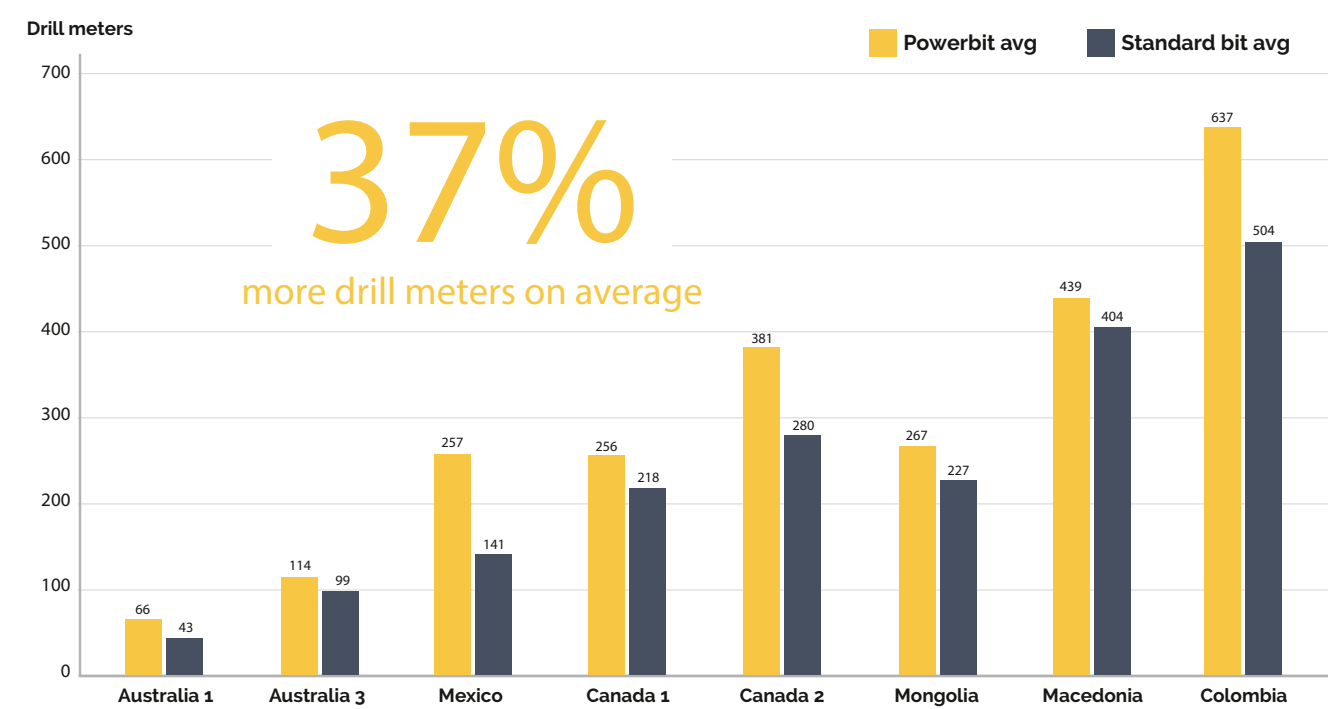
Drill rigs get most of the attention in mining – and perhaps rightly so. After all, they do provide the necessary

brute force. But smart miners also realize how to best make use of their rig’s full capacity.

Powerbit Underground allows you to complete more drill meters per day. Experience faster and more reliable drilling. Improve efficiency. Capitalize fully on your rig investment. All thanks to Powerbit Underground.

# Proven performance

Powerbit Underground has been put to the test in numerous drill tests. Before launch, we carried out thousands of drillings across the globe in collaboration with selected customers. The tests were made independently and offer strong evidence of the new bit's superior performance. See for yourself!



Test results show that Powerbit Underground provides 37 percent more drill meters on average before bit discard than a standard drill bit. The chart shows the location of the test mines used for testing.





# A closer look at our tests

So how did we test Powerbit Underground? Let's have a closer look at two of our test sites, specifically. Here we present some crucial test characteristics including typical rock type and equipment used.

## Mexico

### Site characteristics

The test mine is located in northern Mexico, in a district well-known for mining. The main mineral is zinc followed by lead and copper. The rock offers challenging conditions due to the presence of quartz, pyrite and magnetite.

### Method

The test was conducted in development drilling, both in waste rock and in the ore itself. Ten drillings were made to measure both drilled meters and penetration rate. The results are in comparison with a standard 45 mm bit.

### Equipment

- Drill rig: **Tamrock Axera**
- Rock drill: **Sandvik HLX5**
- Flushing pressure: **2–6 bar at 30–35 liters/min**
- Drill bit: **Powerbit Underground 45mm**
- Buttons: **Trubbnos trapezoid-shaped buttons**

### Results

#### Penetration rate

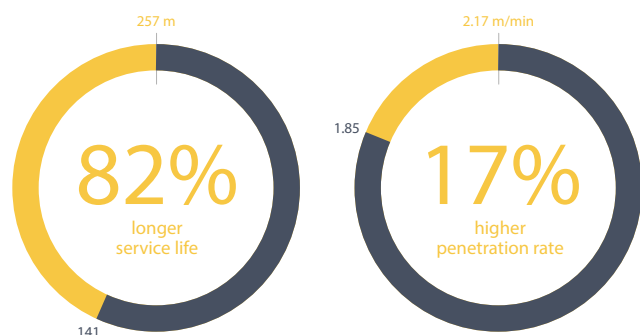
Standard bit: **1.85 meters/min**

Powerbit Underground: **2.17 meters/min**

#### Service life

Standard bit: **141 meters**

Powerbit Underground: **257 meters**



The average service life was 82% longer with Powerbit Underground, which has a direct impact on the cost per metre for the bit.

The average penetration rate was 17% higher with Powerbit Underground, which has a direct impact on the energy consumption of drilling.

## South Korea

### Site characteristics

Powerbit Underground was tested at a tunnelling project for a road construction, outside Seoul, South Korea. The test was conducted in excellent collaboration with the customer.

### Method

The test was conducted in igneous formations, which consists of medium to hard rock with pockets of clay. Powerbit Underground was benchmarked against a standard model 39 semi-ballistic bit.

### Equipment

- Drill rig: **Epiroc Rocket Boomer E3**
- Rock drill: **Epiroc COP 3038 rock drills**
- Drill bit: **Powerbit Underground 45mm**
- Buttons: **Trubbnos trapezoid-shaped buttons**
- Grinding equipment: **Epiroc Grindmatic BQ3**

### Results

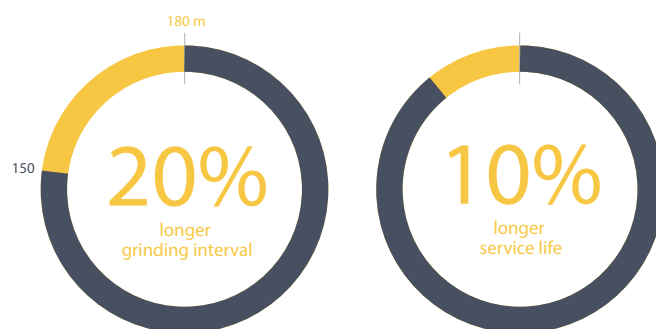
#### Grinding interval

Standard bit: **150 meters**

Powerbit Underground: **180 meters**

#### Service life

**10% longer**



The average grinding interval was almost 20% longer with Powerbit Underground. The bit proved highly effective on mixed rock, performing well in the igneous formations on site. The high flushing capacity was effective on soft clay pockets.



# All is new

Powerbit Underground may look like just another drill bit. It's not. Everything about it is new. The steel it's made of. The shape and design of its buttons. Its hole configuration. One factor just as important for your drilling efficiency as the other. Add all these benefits together, and you have the perfect recipe for successful drilling.



## The steel

We put our metallurgists to work with a simple request – invent the most durable steel we've ever used in a drill bit (and our history dates back to 1873...) They came up with 15 percent higher wear resistance and 10 percent higher fatigue strength.





### **The face**

We put a lot of engineering into optimizing the bit's face, since it is key to a high penetration rate. More flushing holes and a smarter hole configuration to maximize flushing efficiency and we paid special attention to make sure cuttings are removed as fast as possible.



### **The buttons**

The durability of the buttons is crucial to high drilling productivity. The Enduro Extra patented treatment, used on our spherical and Trubbnos buttons, makes them tougher and more wear resistant. For you, that means more drill meters between regrinds.



### **Trubbnos**

The drillbit can be delivered with both spherical buttons and Trubbnos. Trubbnos is our new and innovative trapezoid-shaped buttons, which offer longer service life and improved penetration rate than semi-ballistic buttons. (Trubbnos, by the way, is Swedish for flat nose, an indication of the geometry of the new buttons.)

# Unbeatable drill string

Every part of the drill string must perform optimally. That's why we pay equal attention to shank adapters, drill rods, couplings and drill bits. For you, it means that you can get a complete, unbeatable drill string from a single supplier – Epiroc.

## The best shank adapters and drill rods

Shank adapters and drill rods from Epiroc have long been the equipment of choice for drillers looking for high quality and long service life. We put all our 100 years of rock drilling experience and know-how into making the best adapters and rods. A proven and tested combination of material choice, heat treatment and the unique T-WiZ threads gives you high uptime and effective drilling.

## For any rock conditions

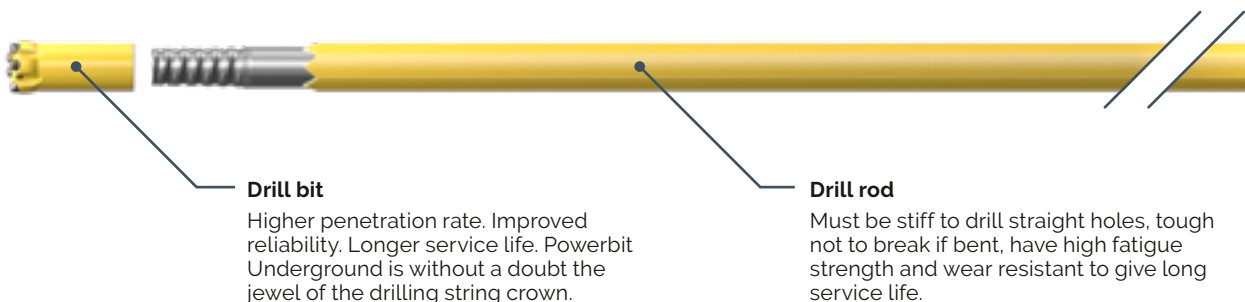
With Powerbit Underground, we can now add even more to the performance of your drill string. As tests show, these new bits work outstandingly well in any rock formation and outperform previous generations of bits. For greatly increased service life – use Powerbit Underground.

## An unbeatable drill string...

No detail has been overlooked when creating the perfect drill string. Our shank adapters, drill rods and powerful bits are tough and wear resistant. And the pieces work perfectly together. For an unbeatable drill string, you need to look no further than Epiroc.

## ...key to tomorrow's automated drilling

A reliable drill string is key to automated rock drilling. As a leading rock drill and rig provider, Epiroc not only offers complete drill strings, but total rock drilling technology solutions. In us, drillers find the only true one-stop shop for tomorrow's fully automated, seamlessly integrated underground drilling solutions.



### Drill bit

Higher penetration rate. Improved reliability. Longer service life. Powerbit Underground is without a doubt the jewel of the drilling string crown.

### Drill rod

Must be stiff to drill straight holes, tough not to break if bent, have high fatigue strength and wear resistant to give long service life.





#### **Coupling**

Manufactured to close tolerances, especially in threads, to minimize energy loss in this critical component (3 percent energy lost in each thread on average).

#### **Shank adapter**

With one of the market's most comprehensive range of shank adapters produced for virtually all rock drill types, Epiroc knows how to deliver the necessary wear resistance, fatigue strength and resilience.



# Easy selection



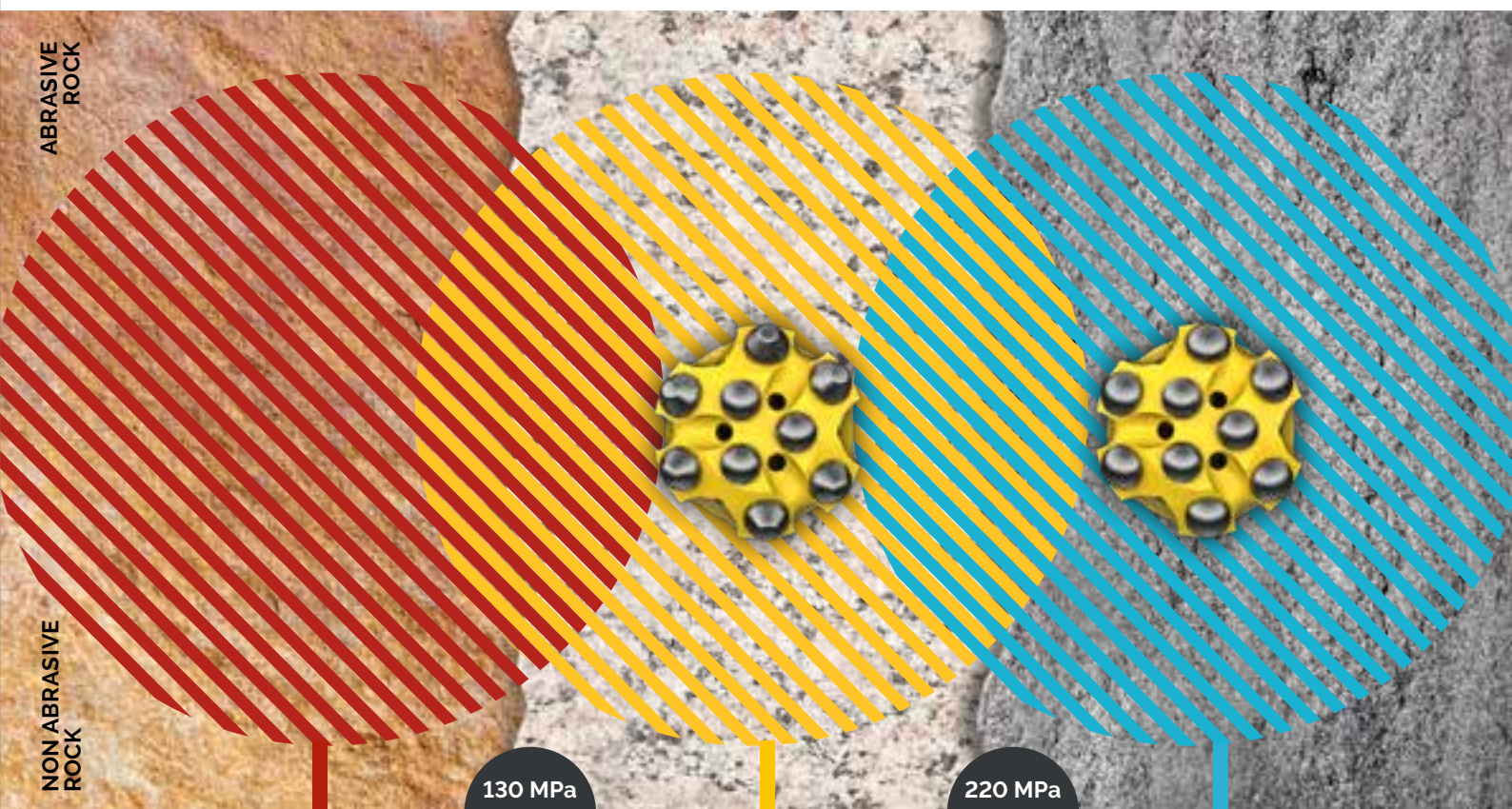


# Selection guide

SOFT ROCK

MEDIUM HARD ROCK

HARD ROCK



## SOFT ROCK

Will be released in June 2020.

## MEDIUM HARD ROCK

Trubbnos buttons (gauge) and spherical buttons (centre)

Ideal for abrasive, medium hard to hard rock. Larger Trubbnos buttons and flushing grooves give the ideal balance between service life and penetration rate. Available with a short retract for straight holes in broken rock.

## HARD ROCK

Spherical buttons

For tough conditions in hard and abrasive rock. Optimised face and body design and with large spherical buttons for long service life. Available with a short retract for straight holes in broken rock.

# Technical data

## 45 mm (1¼") bits

| Thread                                                                         | Diameter |      | Product No. | Product code            | No. of buttons | Buttons × button diameter (mm) |        | Gauge buttons angle° | Flushing hole |        | Weight approx. kg |
|--------------------------------------------------------------------------------|----------|------|-------------|-------------------------|----------------|--------------------------------|--------|----------------------|---------------|--------|-------------------|
|                                                                                | mm       | inch |             |                         |                | Gauge                          | Centre |                      | Side          | Centre |                   |
| Powerbit underground – Trubbnos buttons (gauge) and spherical buttons (centre) |          |      |             |                         |                |                                |        |                      |               |        |                   |
| SR28                                                                           | 45       | 1¼   | 90030012    | 125-5045-39-70,37-20    | 9              | 6x10                           | 3x9    | 35°                  | 3             | 3      | 0,8               |
| R32                                                                            | 45       | 1¼   | 90029940    | 103-5045-39-70,37-20    | 9              | 6x10                           | 3x9    | 35°                  | 3             | 3      | 0,7               |
| SR32                                                                           | 45       | 1¼   | 90030013    | 126-5045-39-70,37-20    | 9              | 6x10                           | 3x9    | 35°                  | 3             | 3      | 0,8               |
| SR35                                                                           | 45       | 1¼   | 90030015    | 128-5045-39-30-70,37-20 | 9              | 6x9                            | 3x8    | 40°                  | 1             | 3      | 1,0               |
| SR35                                                                           | 45       | 1¼   | 90029939    | 128-5045-39-70,37-20    | 9              | 6x10                           | 3x9    | 35°                  | 3             | 3      | 0,7               |
| Powerbit underground – Spherical buttons                                       |          |      |             |                         |                |                                |        |                      |               |        |                   |
| R28                                                                            | 45       | 1¼   | 90030014    | 107-5045-39,37-20       | 9              | 6x10                           | 3x9    | 35°                  | 3             | 3      | 0,7               |
| R32                                                                            | 45       | 1¼   | 90030011    | 103-5045-39,37-20       | 9              | 6x10                           | 3x9    | 35°                  | 3             | 3      | 0,7               |
| SR35                                                                           | 45       | 1¼   | 90030016    | 128-5045-39,37-20       | 9              | 6x10                           | 3x9    | 35°                  | 3             | 3      | 0,7               |

## 48 mm (1⅞") bits

| Thread                                                                         | Diameter |      | Product No. | Product code         | No. of buttons | Buttons × button diameter (mm) |        | Gauge buttons angle° | Flushing hole |        | Weight approx. kg |
|--------------------------------------------------------------------------------|----------|------|-------------|----------------------|----------------|--------------------------------|--------|----------------------|---------------|--------|-------------------|
|                                                                                | mm       | inch |             |                      |                | Gauge                          | Centre |                      | Side          | Centre |                   |
| Powerbit underground – Trubbnos buttons (gauge) and spherical buttons (centre) |          |      |             |                      |                |                                |        |                      |               |        |                   |
| R28                                                                            | 48       | 1⅞   | 90030066    | 107-5048-39-70,37-20 | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,9               |
| SR28                                                                           | 48       | 1⅞   | 90030067    | 125-5048-39-70,37-20 | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,8               |
| R32                                                                            | 48       | 1⅞   | 90030041    | 103-5048-39-70,37-20 | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,8               |
| SR32                                                                           | 48       | 1⅞   | 90030063    | 126-5048-39-70,37-20 | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,9               |
| SR35                                                                           | 48       | 1⅞   | 90030037    | 128-5048-39-70,37-06 | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,9               |
| SR35                                                                           | 48       | 1⅞   | 90030038    | 128-5048-39-70,37-20 | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,9               |
| TC35                                                                           | 48       | 1⅞   | 90030065    | 169-5048-39-70,37-20 | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,9               |
| Powerbit underground – Spherical buttons                                       |          |      |             |                      |                |                                |        |                      |               |        |                   |
| R32                                                                            | 48       | 1⅞   | 90030069    | 103-5048-39,37-20    | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,8               |
| SR35                                                                           | 48       | 1⅞   | 90030040    | 128-5048-39,37-20    | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,9               |

## 51 mm (2") bits

| Thread                                                                         | Diameter |      | Product No. | Product code         | No. of buttons | Buttons x button diameter (mm) |        | Gauge buttons angle' | Flushing hole |        | Weight approx. kg |
|--------------------------------------------------------------------------------|----------|------|-------------|----------------------|----------------|--------------------------------|--------|----------------------|---------------|--------|-------------------|
|                                                                                | mm       | inch |             |                      |                | Gauge                          | Centre |                      | Side          | Centre |                   |
| Powerbit underground – Trubbnos buttons (gauge) and spherical buttons (centre) |          |      |             |                      |                |                                |        |                      |               |        |                   |
| R32                                                                            | 51       | 2    | 90030049    | 103-5051-39-70,37-20 | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,9               |
| SR35                                                                           | 51       | 2    | 90030046    | 128-5051-39-70,37-20 | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,9               |
| TC35                                                                           | 51       | 2    | 90030048    | 169-5051-39-70,37-20 | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,9               |
| Powerbit underground – Spherical buttons                                       |          |      |             |                      |                |                                |        |                      |               |        |                   |
| R32                                                                            | 51       | 2    | 90030051    | 103-5051-39,37-20    | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,9               |
| SR35                                                                           | 51       | 2    | 90030044    | 128-5051-39,37-20    | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,9               |
| SR35                                                                           | 51       | 2    | 90030047    | 128-5051-39,37-06    | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,9               |
| TC35                                                                           | 51       | 2    | 90030045    | 169-5051-39,37-20    | 9              | 6x11                           | 3x9    | 35°                  | 3             | 3      | 0,9               |



## 41 mm (1<sup>5</sup>/<sub>8</sub>") bits

| Thread                                                                         | Diameter |      | Product No. | Product code         | No. of buttons | Buttons × button diameter (mm) |        | Gauge buttons angle° | Flushing hole |        | Weight approx. kg |
|--------------------------------------------------------------------------------|----------|------|-------------|----------------------|----------------|--------------------------------|--------|----------------------|---------------|--------|-------------------|
|                                                                                | mm       | inch |             |                      |                | Gauge                          | Centre |                      | Side          | Centre |                   |
| Powerbit underground – Trubbnos buttons (gauge) and spherical buttons (centre) |          |      |             |                      |                |                                |        |                      |               |        |                   |
| SR28                                                                           | 41       | 1%   | 90030055    | 125-5041-39-70,37-20 | 9              | 6x9                            | 3x7    | 35°                  | 3             | 3      | 0,6               |
| SR32                                                                           | 41       | 1%   | 90030050    | 126-5041-39-70,37-20 | 9              | 6x9                            | 3x7    | 35°                  | 3             | 3      | 0,6               |
| SR35                                                                           | 41       | 1%   | 90030052    | 128-5041-39-70,37-20 | 9              | 6x9                            | 3x7    | 35°                  | 3             | 3      | 0,5               |

## 43 mm (1<sup>11</sup>/<sub>16</sub>") bits

| Thread                                                                         | Diameter |                  | Product No. | Product code         | No. of buttons | Buttons × button diameter (mm) |        | Gauge buttons angle* | Flushing hole |        | Weight approx. kg |
|--------------------------------------------------------------------------------|----------|------------------|-------------|----------------------|----------------|--------------------------------|--------|----------------------|---------------|--------|-------------------|
|                                                                                | mm       | inch             |             |                      |                | Gauge                          | Centre |                      | Side          | Centre |                   |
| Powerbit underground – Trubbnos buttons (gauge) and spherical buttons (centre) |          |                  |             |                      |                |                                |        |                      |               |        |                   |
| R32                                                                            | 43       | 1⅞ <sub>16</sub> | 90030057    | 103-5043-39-70,37-20 | 9              | 6x9                            | 3x8    | 35°                  | 3             | 3      | 0,7               |
| SR32                                                                           | 43       | 1⅞ <sub>16</sub> | 90030058    | 126-5043-39-70,37-20 | 9              | 6x9                            | 3x8    | 35°                  | 3             | 3      | 0,6               |
| SR35                                                                           | 43       | 1⅞ <sub>16</sub> | 90030054    | 128-5043-39-70,37-20 | 9              | 6x9                            | 3x8    | 35°                  | 3             | 3      | 0,6               |
| Powerbit underground – Spherical buttons                                       |          |                  |             |                      |                |                                |        |                      |               |        |                   |
| R32                                                                            | 43       | 1⅞ <sub>16</sub> | 90030056    | 103-5043-39,37-20    | 9              | 6x9                            | 3x8    | 35°                  | 3             | 3      | 0,7               |

## 54 mm (2<sup>1</sup>/<sub>8</sub>") bits

| Thread                                                                         | Diameter |      | Product No. | Product code         | No. of buttons | Buttons x button diameter (mm) |        | Gauge buttons angle° | Flushing hole |        | Weight approx. kg |
|--------------------------------------------------------------------------------|----------|------|-------------|----------------------|----------------|--------------------------------|--------|----------------------|---------------|--------|-------------------|
|                                                                                | mm       | inch |             |                      |                | Gauge                          | Centre |                      | Side          | Centre |                   |
| Powerbit underground – Trubbnos buttons (gauge) and spherical buttons (centre) |          |      |             |                      |                |                                |        |                      |               |        |                   |
| R32                                                                            | 54       | 2⅝   | 90030060    | 103-5054-39-70,37-20 | 9              | 6x12                           | 3x9    | 35°                  | 3             | 3      | 1.0               |
| SR35                                                                           | 54       | 2⅝   | 90030059    | 128-5054-39-70,37-20 | 9              | 6x12                           | 3x9    | 35°                  | 3             | 3      | 1.0               |

## 57 mm (2<sup>1</sup>/<sub>4</sub>") bits

| Thread                                                                         | Diameter |      | Product No. | Product code         | No. of buttons | Buttons × button diameter (mm) |        | Gauge buttons angle° | Flushing hole |        | Weight approx. kg |
|--------------------------------------------------------------------------------|----------|------|-------------|----------------------|----------------|--------------------------------|--------|----------------------|---------------|--------|-------------------|
|                                                                                | mm       | inch |             |                      |                | Gauge                          | Centre |                      | Side          | Centre |                   |
| Powerbit underground – Trubbnos buttons (gauge) and spherical buttons (centre) |          |      |             |                      |                |                                |        |                      |               |        |                   |
| SR35                                                                           | 57       | 2¼   | 90030061    | 103-5057-39-70,37-20 | 9              | 6x12                           | 3x9    | 35°                  | 3             | 3      | 1,2               |

## Grinding articles

| Button shape         | Diameter | Grinding wheel BQ |
|----------------------|----------|-------------------|
| <b>Gauge buttons</b> |          |                   |
| Spherical            | 10       | 87003970          |
| Trubbnos             | 10       | 87005338          |
| Spherical            | 11       | 87003971          |
| Trubbnos             | 11       | 87005339          |

| Button shape         | Diameter | Grinding wheel BQ |
|----------------------|----------|-------------------|
| <b>Front buttons</b> |          |                   |
| Spherical            | 9        | 87003969          |

# Grind! That's our sharpest advice for effective drilling.

Well-timed grinding is key to rock drilling productivity.

The key is tracking your penetration rate. When it goes down, it's time to regrind. Typically, you can drill until the wear flat ratio (width of wear flat area / the button diameter) is 40–50 %. And when you regrind, make sure that you keep a wear flat area of about 10 % – there's no point in grinding away bit service life. Our tests show that proper button grinding, regardless of button shape, has the potential to double the bit service life.

## Trubbnos grinding is even more important

Epiroc Drilling Tools is exchanging all semi-ballistic buttons for our patented Trubbnos shaped buttons (trapezoid shaped buttons). The Trubbnos shape gives a larger rock contact surface and more cemented carbide volume available for effective drilling. So far, tests have shown that Trubbnos shaped buttons will give you up to 50 % more meters before the first regrind, and up to 15 % more meters between regrinds.

And tests show that optimal penetration rate and bit service life are obtained when Trubbnos regrinding takes place at a wear flat ratio of 45–55 %.

Please note that there is one condition for reaching these excellent drilling results. At each regrind, the Trubbnos button shape must be re-created using our special Trubbnos diamond grinding wheels. If you, e.g. use semi-ballistic grinding cups, the Trubbnos advantage will eventually be lost.

## The same grinding routine

Grinding Trubbnos buttons is no different than grinding other button shapes. All you need is the Trubbnos grinding wheels. These fit on our grinding shop machine Grind Matic BQ3 and our portable grinding machine Grind Matic Manual B. For you, the grinding operation is performed just as before, and the grinding time for each bit is similar to grinding other button shapes. It's just that simple.



Cemented carbide buttons – Spherical, Trubbnos and Full-ballistic.



# Grinding machines

## Grind Matic BQ3



Air

7 bar



Semi-automatic grinding machine.

| Grind Matic BQ3    | Product No. |
|--------------------|-------------|
| 400V 3-phase 50 Hz | 87004800    |
| 230V 3-phase 50 Hz | 87004801    |
| 400V 3-phase 60 Hz | 87004803    |
| 230V 3-phase 60 Hz | 87004805    |
| 440V 3-phase 50 Hz | 87004806    |

## Grind Matic Manual B



Air

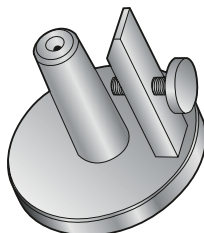
7 bar

Handheld portable grinding machine.

| Grinding machine     | Product No. |
|----------------------|-------------|
| Grind Matic Manual B | 87001890    |

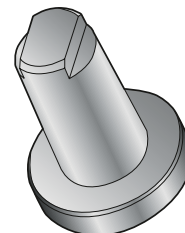
# Accessories & consumables

## Bit holders for button bits



**Bit holder type A**

For Grind Matic BQ3. Can also be used for BQ3-DTH with optional accessories.



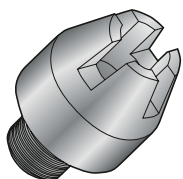
**Bit holder type C**

For Grind Matic Manual B and Grind Matic Manual B-DTH.

| Type     | Threaded bits       | Product No. |
|----------|---------------------|-------------|
| <b>A</b> | R25                 | 87003475    |
|          | R28                 | 87003476    |
|          | R32                 | 87003477    |
|          | R38                 | 87004686    |
|          | T35                 | 87005089    |
|          | T38                 | 87004687    |
|          | T45                 | 87003479    |
|          | T51 and retrac      | 87003521    |
|          | Magnum SR28         | 87003960    |
|          | Magnum SR32         | 87003962    |
|          | Magnum SR35         | 87003956    |
|          | TC35                | 87004685    |
|          | TC42                | 87004641    |
|          | <b>Tube bits</b>    |             |
|          | ST58                | 87003522    |
|          | ST68                | 87003523    |
|          | <b>Tapered bits</b> |             |
|          | 7" taper            | 87003524    |
|          | 12" taper           | 87003525    |
|          | <b>Reaming bits</b> |             |
|          | 64, 76 and 89 mm    | 87003526    |
|          | 89, 102 and 127 mm  | 87003527    |
|          | <b>Guide bits</b>   |             |
|          | R32                 | 87003992    |
|          | SR35                | 87004056    |

| Type     | Threaded bits    | Product No. |
|----------|------------------|-------------|
| <b>C</b> | R25              | 87000792    |
|          | R28              | 87000793    |
|          | R32              | 87000794    |
|          | R35              | 87003360    |
|          | R38              | 87000795    |
|          | T38              | 87000795    |
|          | T45              | 87000796    |
|          | T51              | 87000802    |
|          | Magnum SR28      | 87003961    |
|          | Magnum SR35      | 87003957    |
|          | <b>Dome bits</b> |             |
|          | 7" taper         | 87001044    |

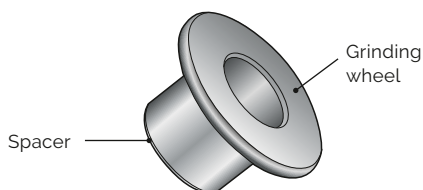
## Centering cups



For Grind Matic BQ3 and BQ3-DTH.

| Button size, mm | Product No. |
|-----------------|-------------|
| 7               | 87001040    |
| 8               | 87000842    |
| 9               | 87001047    |
| 10              | 87001041    |
| 11              | 87000840    |
| 12              | 87001042    |
| 12.7            | 87000839    |
| 13              | 87001385    |
| 14              | 87001043    |
| 14,5            | 87001443    |
| 15              | 87001386    |
| 16              | 87001387    |
| 18              | 87003943    |
| 19              | 87003944    |

## Grinding wheels for steel removal



For Grind Matic BQ3 and BQ3-DTH.

| Type                    | Product No. |
|-------------------------|-------------|
| Grinding wheel          | 87001530    |
| Spacer for 10 mm button | 87001631    |
| Spacer for 11 mm button | 87001632    |
| Spacer for 12 mm button | 87001633    |
| Spacer for 13 mm button | 87001634    |
| Spacer for 14 mm button | 87001635    |

Note: All grinding wheels have an inner diameter of 12 mm.

## Grinding templates - Integral rods and bits



For Grind Matic BQ3 and BQ3-DTH.

| Dimension, mm                 | Product No. |
|-------------------------------|-------------|
| <b>Integral rods</b>          |             |
| -                             | 87005281    |
| <b>Button bits, sperical</b>  |             |
| 7 - 14,5                      | 87005282    |
| 11 - 22                       | 87005284    |
| <b>Button bits. Trubbnos</b>  |             |
| 6 - 12                        | 87005287    |
| 12,7 - 19,1                   | 87005288    |
| <b>Button bits, ballistic</b> |             |
| 7 - 14,5                      | 87005283    |
| 11 - 22                       | 87005285    |
| <b>Cross-type bits</b>        |             |
| -                             | 87005280    |

## Diamond grinding wheels for Grind Matic BQ3 and Grind Matic Manual B



Grinding wheel for spherical buttons.

| Diameter, mm | Product No. |
|--------------|-------------|
| 7            | 87004554    |
| 8            | 87004555    |
| 9            | 87003969    |
| 10           | 87003970    |
| 11           | 87003971    |
| 12           | 87003972    |
| 13           | 87003973    |
| 14           | 87001025    |
| 15           | 87001384    |
| 16           | 87001027    |
| 18           | 87003964    |
| 19           | 87003966    |

NOTE! These grinding wheels have an inner diameter of 12 mm.



Grinding wheel for Trubbnos buttons.

| Diameter, mm | Product No. |
|--------------|-------------|
| 9            | 87004589    |
| 10           | 87004590    |
| 11           | 87004591    |
| 12           | 87004592    |
| 12.7         | 87004593    |
| 14.5         | 87004594    |
| 15.8         | 87004595    |
| 19,1         | 87004596    |

NOTE! These grinding wheels have an inner diameter of 12 mm.



Grinding wheel for ballistic buttons.

| Diameter, mm | Product No. |
|--------------|-------------|
| 7            | 87004556    |
| 8            | 87004557    |
| 9            | 87003974    |
| 10           | 87003975    |
| 11           | 87003976    |
| 12           | 87003977    |
| 13           | 87003413    |
| 14           | 87003414    |
| 15           | 87003415    |
| 16           | 87003416    |
| 18           | 87003965    |
| 19           | 87003967    |

NOTE! These grinding wheels have an inner diameter of 12 mm.



## Indexing templates for Grind Matic BQ3 grinding machine

| T35 Powerbits                                      |                         | Indexing templates |
|----------------------------------------------------|-------------------------|--------------------|
| Product No.                                        | Product code            | Product No.        |
| POWERFACE BITS – Trubbnos buttons, heavy duty (HD) |                         |                    |
| 90029785                                           | 133-6064-21-44-70,57-20 | 87003487           |
| POWERFACE BITS – Trubbnos buttons                  |                         |                    |
| 90029823                                           | 133-6051-44-70,37-20    | 87003559           |
| 90029822                                           | 133-6054-44-70,37-20    |                    |
| 90029786                                           | 133-6057-44-70,37-20    |                    |
| FLAT FACE BITS – Trubbnos buttons                  |                         |                    |
| 90029827                                           | 133-5048-39-70,37-20    | Not available      |

| T38 Powerbits                                       |                         | Indexing templates |
|-----------------------------------------------------|-------------------------|--------------------|
| Product No.                                         | Product code            | Product No.        |
| ROCKET BITS – Full-ballistic buttons                |                         |                    |
| 90029274                                            | 135-5089-46-66,57-20    | 87003560           |
| POWERFACE BITS – Trubbnos buttons, heavy duty (HD)  |                         |                    |
| 90029790                                            | 135-6060-21-44-70,57-20 | 87003487           |
| 90029713                                            | 135-6064-21-70,57-20    |                    |
| 90029466                                            | 135-6064-21-44-70,57-20 |                    |
| 90029691                                            | 135-6070-21-44-70,57-20 | 87003953           |
| 90029717                                            | 135-6076-21-70,57-20    |                    |
| 90029687                                            | 135-6076-21-44-70,57-20 |                    |
| 90029719                                            | 135-6089-21-70,57-20    | 87004432           |
| POWERFACE BITS – Trubbnos buttons                   |                         |                    |
| 90029714                                            | 135-6076-70,57-20       | 87003953           |
| 90029757                                            | 135-6076-44-70,57-12    |                    |
| 90029686                                            | 135-6076-44-70,57-20    |                    |
| 90029682                                            | 135-6089-44-70,57-20    | 87004432           |
| 90029756                                            | 135-6102-70,57-20       | 87004435           |
| POWERFACE BITS – Spherical buttons, heavy duty (HD) |                         |                    |
| 90029712                                            | 135-6064-21,57-20       | 87003487           |
| 90029467                                            | 135-6064-21-44,57-20    |                    |
| 90029718                                            | 135-6070-21,57-20       | 87003953           |
| 90029690                                            | 135-6070-21-44,57-20    |                    |
| 90029715                                            | 135-6076-21,57-20       |                    |
| 90029685                                            | 135-6076-21-44,57-20    |                    |
| 90029716                                            | 135-6089-21,57-20       | 87004432           |
| 90029681                                            | 135-6089-21-44,57-20    |                    |
| POWERFACE BITS – Spherical buttons                  |                         |                    |
| 90029755                                            | 135-6102,57-20          | 87004435           |
| FLAT FACE BITS – Spherical buttons                  |                         |                    |
| 90029693                                            | 135-5064,57-20          | 87003953           |
| 90029753                                            | 135-5064-44,57-20       |                    |
| 90029689                                            | 135-5076,57-20          | 87004433           |
| 90029688                                            | 135-5076-44,57-20       |                    |
| 90029684                                            | 135-5089,57-20          | 87004434           |
| 90029867                                            | 135-5089-44,57-20       |                    |
| 90029788                                            | 135-5102,57-20          | 87004775           |
| 90029758                                            | 135-5115,57-20          |                    |
| FLAT FACE BITS – Trubbnos buttons                   |                         |                    |
| 90029694                                            | 135-5064-70,57-20       | 87004434           |
| 90029752                                            | 135-5076-70-99,57-20    | Not available      |
| DOME BITS – Spherical or Trubbnos buttons           |                         |                    |
| 90029789                                            | 135-5102-42-24,57-20    | 87003953           |
| 90029784                                            | 135-5127-42-24,57-20    | 87004775           |
| 90029783                                            | 135-5127-42-24-70,57-20 |                    |
| HOLE OPENERS – Spherical buttons                    |                         |                    |
| 90029787                                            | 135-9127-51,57-20       | 87003500           |

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