Rock Drilling Tools
For Crawler Drill
### Button bit

**T45 B 70 S 6 -FF**
- Shape of base metal face (FF: Flat face, FFRB: Flat face reverse blow, DC: Drop center)
- Quantity of gauge tip
- Shape of tip (S: Spherical, B: Ballistic, C: Conical, P: Parabolic)
- Bit gauge (Φ70mm)
- Kind of bit (B: Button bit)
- Thread shape + Size (T45: T45 thread)

### Cross bit (X bit)

**T38 X 64 -30N RB**
- Blow shape, Tip size (RB: Reverse blow)
- Tip material + Tip size (30: E3, 40: E4, N: Standard tip, -: Large-scale tip)
- Bit gauge (Φ64mm)
- Kind of bit (X: Cross bit and X bit)
- Thread shape + Size (T38: T38 thread)

### Extension rod

**DT32H E -230**
- Length (230: 3050mm, 236: 3660mm, 240: 4000mm)
- Extension rod
- Thread shape + Size (DT32H: T38 thread, Hex 32mm, DT38H: T45 thread, Hex 45mm)

### Male/Female rod

**DT38R E -236 MF**
- Male/Female thread rod
- Length (230: 3050mm, 236: 3660mm, 240: 4000mm)
- Extension rod
- Thread shape + Size (DT38R: T38 thread, Round Φ38mm, DT45R: T45 thread, Round Φ45mm, DT51R: T51 thread, Round Φ51mm)

### Sleeve

**SL -4500**
- Thread shape + Diameter (T45: T45 thread)
- (3800: Φ55mm, 4500: Φ66mm, 4502: Φ63mm 5100: Φ77mm, 5101: Φ72mm)

### Kind of bit and application range

<table>
<thead>
<tr>
<th>Kind of bit</th>
<th>Application range</th>
<th>Kind of bit</th>
<th>Application range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spherical button bit</td>
<td>Hard rock and ultra-hard rock layers</td>
<td>Conical button bit</td>
<td>The tip end is sharp and so the drilling efficiency is excellent. This bit demonstrates its ability especially in limestone.</td>
</tr>
<tr>
<td>Parabolic button bit</td>
<td>Medium hard rock and hard rock layers.</td>
<td>Reverse blow button bit</td>
<td>Used in layers including few fracture zones. Reverse blow is proper to enhance the cutting discharge efficiency.</td>
</tr>
<tr>
<td>Ballistic button bit</td>
<td>Soft rock and medium hard rock layers. Higher drilling speed can be obtained compared with cross bit.</td>
<td>Cross bit</td>
<td>Soft rock and medium hard rock layers Effective in layers where gauges are extremely worn.</td>
</tr>
</tbody>
</table>

### Face configuration

- **FF:** Flat face
- **FFRB:** Flat face reverse blow
- **DC:** Drop center

<table>
<thead>
<tr>
<th>Tip feature</th>
<th>Drilling speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wear resistant bit for medium-hard to hard rock formations.</td>
<td>Wear resistant bit for soft to medium-hard rock formations. For straighter drilling</td>
</tr>
</tbody>
</table>

### Terminology

- A: Tip height
- B: Tip width
- C: Face hole
- C': Center hole
- D: Thread diameter
- E: Gauge tip
- F: Face tip
- G: Bit gauge
- H: Bit height
- R: Reaming surface
- S: Side hole
- α: Cutting angle
- β: Reaming angle
T38 Thread

**Button bit**
- **Bit dia.D**: mm
- **Part No. (Order code)**: 091522-64001
- **Part name (Shape code)**: 13x22
- **Tip d’ys x Dia.**: 6x12
- **Blow hole**: 2x2
- **Mass**: kg

**Extension rod**
- **Part No.**: 092100-11300
- **Part name**: 6x13
- **Thread**: T38-T38
- **Length (L)**: mm
- **Blow hole dia.**: mm
- **Mass**: kg

**Sleeve**
- **Part No.**: 089914-38001
- **Part name**: 3x11
- **Thread**: T38-T38
- **Dia. (D)**: mm
- **Length (L)**: mm
- **Mass**: kg

**Shank rod**
- **Part No.**: 091522-64001
- **Part name**: 6x12
- **Thread**: T38-T38
- **Length (L)**: mm
- **Blow hole dia.**: mm
- **Mass**: kg

**Part No.**
- **Part name**: 13x22
- **Extension rod**: 6x12
- **Sleeve**: 3x11
- **Shank rod**: 6x12

**Bottoen bit**
- **Bit dia.D**: mm
- **Part No. (Order code)**: 091522-64001
- **Part name (Shape code)**: 13x22
- **Tip d’ys x Dia.**: 6x12
- **Blow hole**: 2x2
- **Mass**: kg

**Extension rod**
- **Part No.**: 092100-11300
- **Part name**: 6x13
- **Thread**: T38-T38
- **Length (L)**: mm
- **Blow hole dia.**: mm
- **Mass**: kg

**Sleeve**
- **Part No.**: 089914-38001
- **Part name**: 3x11
- **Thread**: T38-T38
- **Dia. (D)**: mm
- **Length (L)**: mm
- **Mass**: kg

**Shank rod**
- **Part No.**: 091522-64001
- **Part name**: 6x12
- **Thread**: T38-T38
- **Length (L)**: mm
- **Blow hole dia.**: mm
- **Mass**: kg

**Part No.**
- **Part name**: 13x22
- **Extension rod**: 6x12
- **Sleeve**: 3x11
- **Shank rod**: 6x12
**Grinding of bit**

As drilling continues, the tips of bits are flattened. Then, not only the drilling speed is lower but also the broken earlier than usual or can cause drifter malfunctions. To prevent these failure, it is necessary to grind the bits at a proper interval.

- **Time to grind the button bit**
  1. When the tips are worn to flat and its wear width are 1/3 ~ 1/2 of the tip diameter.
  2. When the reaming clearance is extremely reduced to 0.5 mm or less.
  3. When a netlike crack (snakeskin) has occurred at the top of tip.

  ![Before grinding](image1)
  ![After grinding](image2)

  **CAUTION**
  1. Use a cup grinder applicable to the tip size. As checking with a special template, grind the tips to their original shape.
  2. Perform grinding in a wet process. Don't grind the base metal too much.
  3. If snakeskin occurs, perform grinding until it disappears.

- **Time to grind the X bit (cross bit)**
  1. When the wear width reaches approx. 4mm at the 5mm inward, from the reaming point.
  2. When the reaming surface is reversely tapered or when the tip is extremely protruded the base metal is worn.

  ![Before grinding](image3)
  ![After grinding](image4)

  **CAUTION**
  1. The standard cutting angle is 105°
  2. The height of edge must be uniform.
  3. The tip ends of reaming surface must be protruded uniformly.
  4. Grinder should be GC. Its proper particle degree is 60 ~ 80, and the cohesion is H ~ J.
  5. When grinding manually, you should use a both-head desk grinder of 0.75 ~ 1.5kW.
  6. Perform grinding in a dry process. Even if the bit is heated, don't cool it rapidly with water, etc.
### Shank Rod

#### Drifter model Shank rod

<table>
<thead>
<tr>
<th>Drifter model</th>
<th>Shank rod</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Thread</th>
<th>Length (L) mm</th>
<th>Row holes dia mm</th>
<th>Mass kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD200</td>
<td></td>
<td>907820-91603</td>
<td>PD200H-H1600</td>
<td>H16</td>
<td>380</td>
<td>14</td>
<td>4.2</td>
</tr>
<tr>
<td></td>
<td>907820-93807</td>
<td>PD200H-T3800</td>
<td>H16</td>
<td>380</td>
<td>14</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>907820-93809</td>
<td>PD200H-T3801</td>
<td>H16</td>
<td>485</td>
<td>14</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>907820-93811</td>
<td>PD200H-R3801</td>
<td>R38</td>
<td>380</td>
<td>14</td>
<td>5.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>907820-94507</td>
<td>PD200H-T4501</td>
<td>T45</td>
<td>495</td>
<td>14</td>
<td>5.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>907820-94509</td>
<td>PD200L-T4501</td>
<td>T45</td>
<td>460</td>
<td>14</td>
<td>4.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>907820-91605</td>
<td>PD200L-H1600</td>
<td>H16</td>
<td>380</td>
<td>14</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>907820-93817</td>
<td>PD200L-R3801</td>
<td>R38</td>
<td>380</td>
<td>14</td>
<td>3.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>907820-93813</td>
<td>PD200L-T3800</td>
<td>T38</td>
<td>380</td>
<td>14</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>907820-93815</td>
<td>PD200L-T3801E</td>
<td>T38</td>
<td>450</td>
<td>14</td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td>M110</td>
<td></td>
<td>007520-25001</td>
<td>HD180-T3800</td>
<td>T38</td>
<td>455</td>
<td>14</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>007520-25005</td>
<td>HD180-T3801</td>
<td>T38</td>
<td>565</td>
<td>14</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>007620-25017</td>
<td>HD300-T3800</td>
<td>H16</td>
<td>655</td>
<td>16</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>007620-25015</td>
<td>HD300-T4500</td>
<td>T45</td>
<td>655</td>
<td>16</td>
<td>6.6</td>
<td></td>
</tr>
<tr>
<td>HD180</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HD300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HD500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HD606</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HD606 RP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HD609</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HD609 RP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HD612</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HD612 RP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Shank Rod

<table>
<thead>
<tr>
<th>Drifter model</th>
<th>Shank rod</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Thread</th>
<th>Length (L) mm</th>
<th>Mass kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD606</td>
<td></td>
<td>HD606-02501</td>
<td>HD606-3200</td>
<td>R32</td>
<td>580</td>
<td>3.90</td>
</tr>
<tr>
<td>HD606 RP</td>
<td></td>
<td>HD606-02502</td>
<td>HD606-3800</td>
<td>T38</td>
<td>580</td>
<td>4.30</td>
</tr>
<tr>
<td>HD609</td>
<td></td>
<td>HD609-02501</td>
<td>HD609-3800</td>
<td>T38</td>
<td>755</td>
<td>5.60</td>
</tr>
<tr>
<td>HD609 RP</td>
<td></td>
<td>HD609-02502</td>
<td>HD609-4500</td>
<td>T45</td>
<td>620</td>
<td>6.00</td>
</tr>
<tr>
<td>HD612</td>
<td></td>
<td>HD612-02502</td>
<td>HD612-3800</td>
<td>H16</td>
<td>670</td>
<td>8.00</td>
</tr>
<tr>
<td>HD612 RP</td>
<td></td>
<td>HD612-02503</td>
<td>HD612-3801</td>
<td>T38</td>
<td>795</td>
<td>8.00</td>
</tr>
<tr>
<td>HD612 (with Dual damper)</td>
<td></td>
<td>HD612-02551</td>
<td>HD612-4500</td>
<td>T45</td>
<td>925</td>
<td>11.40</td>
</tr>
<tr>
<td>HD612 RP (with Dual damper)</td>
<td></td>
<td>HD612-02572</td>
<td>HD612-3800</td>
<td>T38</td>
<td>750</td>
<td>8.90</td>
</tr>
</tbody>
</table>

**Drifter model Shank rod**

- **Part No.**
- **Order No.**
- **Thread**
- **Length (L) mm**
- **Row holes dia mm**
- **Mass kg**

**Shank Rod**

- **Part No.**
- **Order No.**
- **Thread**
- **Length (L) mm**
- **Mass kg**
<table>
<thead>
<tr>
<th>Drifter model</th>
<th>Shank rod</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Thread</th>
<th>Length (L) mm</th>
<th>Mass kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD615</td>
<td></td>
<td>HD615-02502</td>
<td>HD615-T4500</td>
<td>T45</td>
<td>700</td>
<td>11.00</td>
</tr>
<tr>
<td>HD615 RP</td>
<td></td>
<td>HD615-02506</td>
<td>HD615-T45D0</td>
<td>T45</td>
<td>880</td>
<td>13.40</td>
</tr>
<tr>
<td>HD615 (with Dual damper)</td>
<td></td>
<td>HD615-02512</td>
<td>HD615-QT4500</td>
<td>T45</td>
<td>880</td>
<td>14.00</td>
</tr>
<tr>
<td>HD615 RP (with Dual damper)</td>
<td></td>
<td>HD615-02518</td>
<td>HD615-QT45D0</td>
<td>T45</td>
<td>910</td>
<td>14.90</td>
</tr>
<tr>
<td>HD615 (with Dual damper)</td>
<td></td>
<td>HD615-02511</td>
<td>HD615-QT5100</td>
<td>T51</td>
<td>960</td>
<td>15.20</td>
</tr>
<tr>
<td>HD615 RP (with Dual damper)</td>
<td></td>
<td>HD615-02519</td>
<td>HD615-QT51D0</td>
<td>T51</td>
<td>990</td>
<td>15.60</td>
</tr>
</tbody>
</table>

**Shank Rod**

<table>
<thead>
<tr>
<th>Drifter model</th>
<th>Shank rod</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Thread</th>
<th>Length (L) mm</th>
<th>Mass kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD709</td>
<td></td>
<td>HD709-02501</td>
<td>HD709-T3800</td>
<td>T38</td>
<td>590</td>
<td>6.00</td>
</tr>
<tr>
<td>HD818</td>
<td></td>
<td>HD818-02502</td>
<td>HD818-T4500</td>
<td>T45</td>
<td>590</td>
<td>6.60</td>
</tr>
<tr>
<td>HD712</td>
<td></td>
<td>HD712-02501</td>
<td>HD712-T3800</td>
<td>T38</td>
<td>785</td>
<td>9.20</td>
</tr>
<tr>
<td>HD822</td>
<td></td>
<td>HD822-02502</td>
<td>HD822-T4500</td>
<td>T45</td>
<td>785</td>
<td>9.80</td>
</tr>
<tr>
<td>HD715</td>
<td></td>
<td>HD715-02501</td>
<td>HD715-T3800</td>
<td>T38</td>
<td>592</td>
<td>8.20</td>
</tr>
<tr>
<td>HD828</td>
<td></td>
<td>HD828-02502</td>
<td>HD828-T4500</td>
<td>T45</td>
<td>592</td>
<td>8.70</td>
</tr>
<tr>
<td>HD712 RP</td>
<td></td>
<td>HD712-02532</td>
<td>HD712-T3800</td>
<td>T38</td>
<td>787</td>
<td>12.00</td>
</tr>
<tr>
<td>HD822 RP</td>
<td></td>
<td>HD822-02533</td>
<td>HD822-T4500</td>
<td>T38</td>
<td>787</td>
<td>12.50</td>
</tr>
<tr>
<td>HD715 RP</td>
<td></td>
<td>HD715-02532</td>
<td>HD715-T3800</td>
<td>T38</td>
<td>592</td>
<td>10.30</td>
</tr>
<tr>
<td>HD828 RP</td>
<td></td>
<td>HD828-02533</td>
<td>HD828-T4500</td>
<td>T38</td>
<td>592</td>
<td>10.80</td>
</tr>
<tr>
<td>HD715 (with Dual damper)</td>
<td></td>
<td>HD715-02501</td>
<td>HD715-T5100</td>
<td>T51</td>
<td>790</td>
<td>10.00</td>
</tr>
<tr>
<td>HD828 (with Dual damper)</td>
<td></td>
<td>HD828-02502</td>
<td>HD828-T5100</td>
<td>T51</td>
<td>790</td>
<td>10.60</td>
</tr>
<tr>
<td>HD715 (with Dual damper)</td>
<td></td>
<td>HD715-02503</td>
<td>HD715-T5100</td>
<td>T51</td>
<td>920</td>
<td>11.00</td>
</tr>
<tr>
<td>HD828 (with Dual damper)</td>
<td></td>
<td>HD828-02504</td>
<td>HD828-T5101</td>
<td>T51</td>
<td>920</td>
<td>11.60</td>
</tr>
<tr>
<td>HD715 (with Dual damper)</td>
<td></td>
<td>HD715-02505</td>
<td>HD715-T5100</td>
<td>T51</td>
<td>960</td>
<td>12.00</td>
</tr>
</tbody>
</table>
Shank Rod

<table>
<thead>
<tr>
<th>Drifter model</th>
<th>Shank rod</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Thread</th>
<th>Length (L)</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD836</td>
<td></td>
<td>002503-250010</td>
<td>HD836-ST58</td>
<td>ST58</td>
<td>794</td>
<td>16.02</td>
</tr>
<tr>
<td>HD836 RP</td>
<td></td>
<td>002503-250020</td>
<td>HD836-GT60</td>
<td>GT60</td>
<td>794</td>
<td>16.61</td>
</tr>
</tbody>
</table>

Overseas Subsidiaries

**AFRICA, EUROPE, RUSSIA and CIS**

FURUKAWA ROCK DRILL EUROPE B.V.
Address: Proostwetering 29, 3543 AB Utrecht
TEL: +31-30-241-2277 FAX: +31-30-241-2305

**CANADA, USA, and CENTRAL AMERICA**

FURUKAWA ROCK DRILL USA
Website: www.frdusa.com
Address: 705 Lake Street, Kent, OH 44240-0017 USA

**CHINA**

FURUKAWA ROCK DRILL (SHANGHAI) CO., LTD.
Website: www.frds.cn
Address: No.125 Yingjin Rd., Jinhui Town, Fengxian District, Shanghai, China
TEL: +86-21-5748-6636 FAX: +86-21-5748-6638

**INDIA**

FURUKAWA ROCK DRILL INDIA PRIVATE LTD.
Address: No.116, 1st Floor, 8th Cross, Railway Parallel Road, Kumara Park West, Bangalore-560
TEL: +91-80-2346-0240 FAX: +91-80-2346-0241

**SOUTH KOREA**

FURUKAWA ROCK DRILL KOREA CO., LTD.
Address: 761 Jiwol-ri, Paltan-myeon, Hwaseong-si, Gyeonggi-do, 445-917, Korea
TEL: +82-31-352-8447 FAX: +82-31-333-6937

**AFRICA, EUROPE, RUSSIA and CIS**

FURUKAWA ROCK DRILL EUROPE B.V.
Website: www.frd.eu
Address: Proostwetering 29, 3543 AB Utrecht
TEL: +31-30-241-2277 FAX: +31-30-241-2305

**MIDDLE EAST, OCEANIA**

FURUKAWA ROCK DRILL CO., LTD.
Website: https://www.furukawa-rockdrill.com/
Address: 1-5-3 Nihonbashi, Chuo-ku, Tokyo 163-0027, Japan
TEL: +81-3-3231-6982 FAX: +81-3-3231-6994