

# Casing systems **2021**


# INNOVATING LOCALLY, LEADING GLOBALLY.

**Mincon Finland** – Geotechnical Center develops and manufactures **economical and environmentally friendly tools** for construction and well drilling.

Our products are designed especially for **complex ground conditions** where hardest rocks, sands, clays and tills meet.

Behind every product we design and manufacture, there is

- 40 years of experience in manufacturing of DTH tools
- Worksite experience from all continents
- World class testing and development partners
- New innovations and latest manufacturing technology



## DTH IS THE TOOL FOR DRILLING IN COMPLEX GROUND CONDITIONS

DTH drills a straight pile in any ground, even into inclined bed rock. Pile bottom can be verified.

Pile depths can be over 100 meters. DTH covers wide size range from 76 mm to 1 524 mm. DTH can be drilled to any angle.

## WE HAVE TAKEN DTH DRILLING TO THE NEXT LEVEL

We have redesigned the face of the drilling bit and patented it as a new Spiral Flush product range having flushing arrangement crosswise the drilling direction.

With our new flushing technology we can now control air flow and prevent over drilling and air escape. Large diameter DTH drilling can now be taken to urban areas and harbor construction without disturbing the environment.

We have not only enabled the flushing control to DTH drilling, but improved the productivity of the bits at the same time.

**Mincon Finland**  
Geotechnical Center



**SPIRALFLUSH®**



# BREAK-THROUGH INNOVATION

## WE BASE OUR PRODUCTS ON OUR OWN PATENTED INNOVATIONS

We have invented and patented Spiral Flush technology where all air is blown crosswise to the casing with no pressure against the ground.

### EFFICIENT

- Flushing improves drilling speed
- Drilling speed enhances pilot bit life
- Cutting edges improve drilling in hard clay
- Spiral grooves push material out when rotating

### ENVIRONMENTAL

- All cuttings and flushing air are kept inside of the casing – so there is no air escape to the surroundings
- Removes the danger of over drilling (sandy formations)
- Removes the danger of air escape (clay formations)

### INCREASED SIZE RANGE

- We have developed the world's most powerful DTH hammer
- We have designed the most reliable large diameter HD shock absorbers
- We manufacture the biggest DTH bits ever made



**» ENJOY BETTER OVERALL EFFICIENCY**



# WORLDCLASS SOLUTIONS

Anchoring

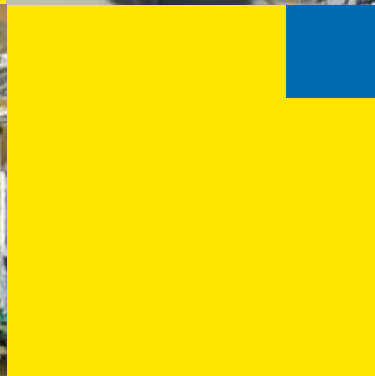


## Interlocked pipe-pile-wall construction

Mincon offers a special product line of drill bits, connectors, sealants and grouting systems.



## Forepoling / Tube Umbrella



## Well Drilling



## Horizontal Drilling



## Rock Drilling

## FULL SERVICE

Our knowledge in DTH drilling is one of a kind. We provide full service and help our customers to gain major leaps in productivity with our technologies.



## Micro Piling



## Piling

DTH Drilling can handle large diameters on and offshore.

Building harbor with 1.3 meter Spiral Flush drill bit system.



# THE NEXT GENERATION OF DTH DRILLING

## SPIRAL FLUSH®

DTH is a perfect solution for overburden drilling in complex ground conditions. To be able to utilize the superior technology in urban and environmentally sensitive areas the air used in drilling should not escape to the surroundings.

Patented Spiral Flush technology is a perfect solution to control air in DTH applications. All air is directed crosswise and there are no air channels forward to the drilled ground.

- No pressure against ground
- No air escape
- No over drilling

### THE DESIGN

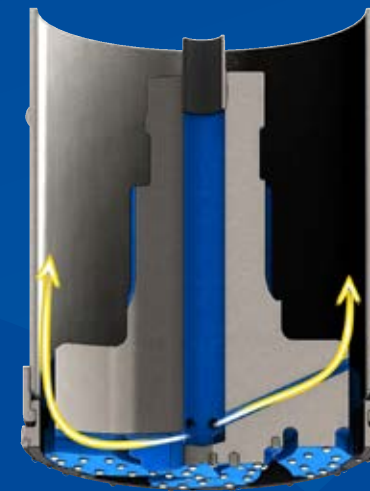
#### Environmental

- All cuttings and flushing air is kept inside of the casing
- Removes the danger of over drilling (sandy formations)
- Removes danger of air escape (clay formations)

#### Efficient

- Flushing improves drilling speed
- Drilling speed enhances pilot bit life
- Cutting edges improve drilling in hard clay
- Spiral groove pushes material out when rotating

# AIR CONTROL THE FUTURE OF DTH DRILLING



- Flushing channels are crosswise to the drilling direction
- Back flush creates vacuum to the pilot bit face area
- Air channels are above the ring bit cutting edge

- » No pressure to the ground
- » No air leakages
- » No over-drilling

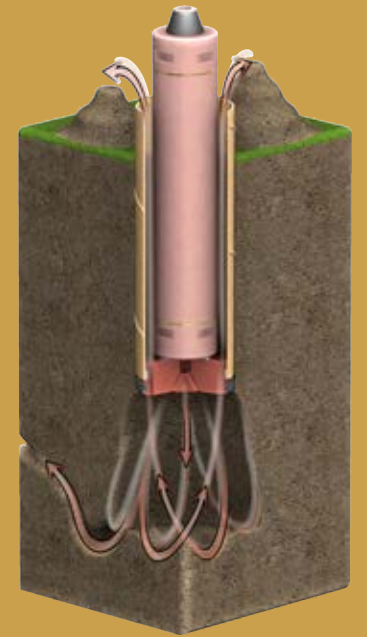


### CONVENTIONAL DTH DRILLING HAS TWO PROBLEM AREAS:



1. Pressurized air over drills material. Over drilling removes more material than anticipated, changing ground's original characteristics hazarding nearby structures.
2. Air that is blown forward travels long distances in loose ground or soft clay. This can cause severe damages in nearby buildings and structures.

- » As a result the use of conventional DTH drilling is limited already in several city centers, shorelines and other sensitive areas around the world.



**SPIRAL FLUSH HAS BEEN TESTED AND APPROVED ALSO FOR THE AREAS WHERE CONVENTIONAL DTH DRILLING IS RESTRICTED**

# SOLITARY RING BIT SYSTEMS



**Solitary ring bit systems** are designed for drilling end bearing piles to bed rock. System is designed to drill straight piles through boulders, rock layers and also into inclined bed rock. Heavy duty ring bit is not attached to casing shoe, which makes it most economical of the ring bit alternatives.

Main **applications** for solitary systems are:

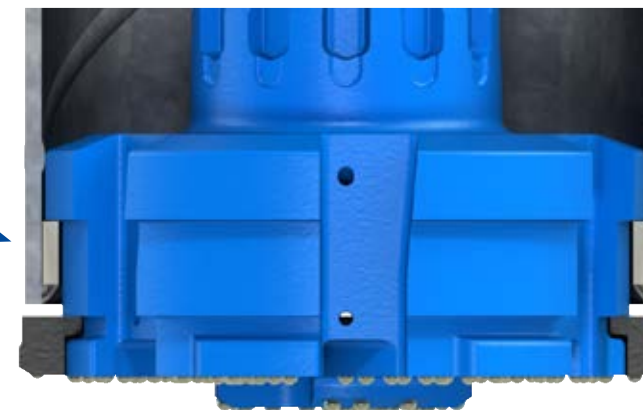
1. End bearing piles including micro piling
2. Pilings with sacrificed casings, which have no large ID ring bit requirements
3. Slope stabilization
4. Pipe walls, king piles etc.



## SOLITARY SYSTEM 114–1 524 mm

Casing shoe and ring bit are not integrated

Heavy duty ring bit



Strong shoulders

Ring bit protects the pilot gauge buttons

System is available from 114 to 1 524 mm casings and for all major shank designs.

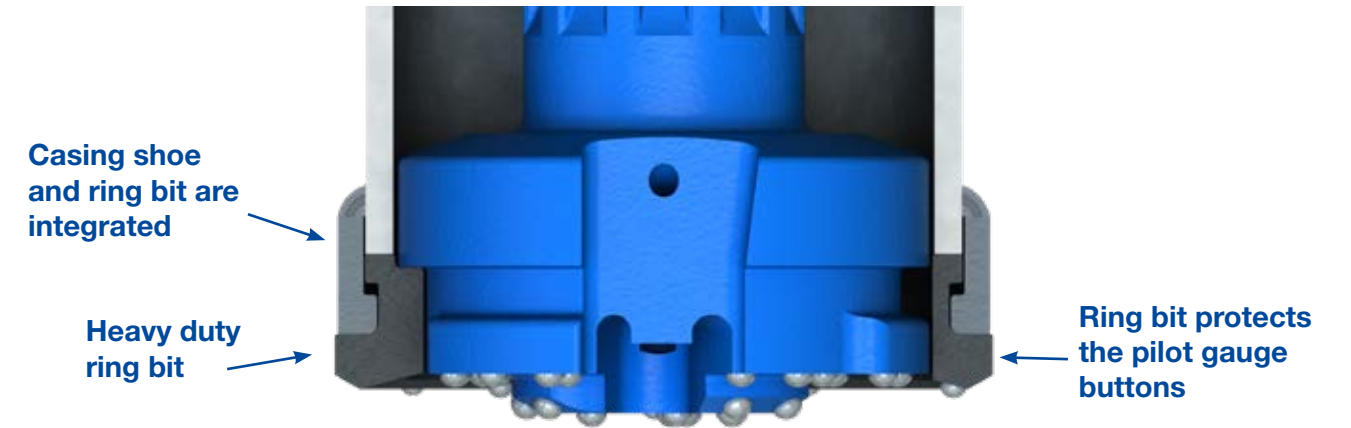
SPIRAF<sub>FLUSH</sub>®

| System product code | Casing OD |        | Max wall |       | Ring bit ID |        | Ring bit OD |        | Pilot bit OD |        |
|---------------------|-----------|--------|----------|-------|-------------|--------|-------------|--------|--------------|--------|
|                     | mm        | inch   | mm       | inch  | mm          | inch   | mm          | inch   | mm           | inch   |
| S114-8-68           | 114.3     | 4.5"   | 8        | 0.31" | 68          | 2.68"  | 125         | 4.92"  | 96           | 3.78"  |
| S127-10-75          | 127       | 5"     | 10       | 0.39" | 75          | 2.95"  | 137         | 5.39"  | 105          | 4.13"  |
| S140-10-87          | 139.7     | 5.5"   | 10       | 0.39" | 87          | 3.43"  | 149         | 5.87"  | 119          | 4.69"  |
| S152-10-96          | 152.4     | 6"     | 10       | 0.39" | 96          | 3.78"  | 162         | 6.38"  | 130          | 5.12"  |
| S159-10-103         | 158.8     | 6.25"  | 10       | 0.39" | 103         | 4.06"  | 169         | 6.65"  | 137          | 5.39"  |
| S168-12.7-106       | 168.3     | 6.63"  | 12.7     | 0.5"  | 106         | 4.17"  | 179         | 7.05"  | 141          | 5.55"  |
| S178-12.7-116       | 177.8     | 7"     | 12.7     | 0.5"  | 116         | 4.57"  | 188         | 7.40"  | 150          | 5.91"  |
| S194-12.7-125       | 193.7     | 7.63"  | 12.7     | 0.5"  | 125         | 4.92"  | 205         | 8.07"  | 166          | 6.54"  |
| S219-12.7-150       | 219.1     | 8.63"  | 12.7     | 0.5"  | 150         | 5.91"  | 230         | 9.06"  | 191          | 7.52"  |
| S244-14.2-170       | 244.5     | 9.63"  | 14.2     | 0.56" | 170         | 6.69"  | 257         | 10.12" | 213          | 8.39"  |
| S254-14.2-172       | 254       | 10"    | 14.2     | 0.56" | 172         | 6.77"  | 265         | 10.43" | 223          | 8.78"  |
| S273-12.7-193       | 273       | 10.75" | 12.7     | 0.5"  | 193         | 7.60"  | 286         | 11.26" | 245          | 9.65"  |
| S301-14.2-220       | 301.6     | 11.87" | 14.2     | 0.56" | 220         | 8.66"  | 312         | 12.28" | 270          | 10.63" |
| S323-14.2-241       | 323.9     | 12.75" | 14.2     | 0.56" | 241         | 9.49"  | 335         | 13.19" | 291          | 11.62" |
| S339-14.2-255       | 339.7     | 13.37" | 14.2     | 0.56" | 255         | 10.04" | 350         | 13.78" | 308          | 12.13" |
| S355-14.2-270       | 355.6     | 14"    | 14.2     | 0.56" | 270         | 10.63" | 367         | 14.45" | 324          | 12.76" |
| S406-16-318         | 406.4     | 16"    | 16       | 0.63" | 318         | 12.52" | 418         | 16.46" | 370          | 14.57" |
| S457-16-369         | 457.2     | 18"    | 16       | 0.63" | 369         | 14.53" | 469         | 18.46" | 423          | 16.65" |
| S508-16-422         | 508       | 20"    | 16       | 0.63" | 422         | 16.61" | 520         | 20.47" | 471          | 18.54" |
| S559-16-470         | 558.8     | 22"    | 16       | 0.63" | 470         | 18.50" | 571         | 22.48" | 521          | 20.51" |
| S610-16-502         | 609.6     | 24"    | 16       | 0.63" | 502         | 19.76" | 622         | 24.49" | 572          | 22.52" |
| S660-16-545         | 660.4     | 26"    | 16       | 0.63" | 545         | 21.46" | 675         | 26.57" | 615          | 24.21" |
| S711-16-610         | 711.2     | 28"    | 16       | 0.63" | 610         | 24.02" | 735         | 28.94" | 675          | 26.76" |
| S762-20-655         | 762       | 30"    | 20       | 0.79" | 655         | 25.79" | 785         | 30.91" | 715          | 28.15" |
| S813-20-700         | 812.8     | 32"    | 20       | 0.79" | 700         | 27.56" | 830         | 32.68" | 766          | 30.16" |
| S863-20-750         | 863.6     | 34"    | 20       | 0.79" | 750         | 29.53" | 880         | 34.65" | 815          | 32.09" |
| S914-20-800         | 914.4     | 36"    | 20       | 0.79" | 800         | 31.50" | 930         | 36.61" | 866          | 34.21" |
| S1016-20-880        | 1 016     | 40"    | 20       | 0.79" | 880         | 34.65" | 1 032       | 40.63" | 966          | 38.09" |
| S1066-20-931        | 1 066.8   | 42"    | 20       | 0.79" | 931         | 36.65" | 1 086       | 42.76" | 1 014        | 39.92" |
| S1220-20-1080*      | 1 219.2   | 48"    | 20       | 0.79" | 1 080       | 42.52" | 1 240       | 48.82" | 1 168        | 45.98" |
| S1321-22-1160*      | 1 320.8   | 52"    | 22       | 0.87" | 1 150       | 45.28" | 1 344       | 52.91" | 1 247        | 49.09" |
| S1422-22-1250*      | 1 422.4   | 56"    | 22       | 0.87" | 1 250       | 49.21" | 1 446       | 56.93" | 1 348        | 53.07" |
| S1524-22-1340*      | 1 524     | 60"    | 22       | 0.87" | 1 340       | 52.76" | 1 548       | 60.94" | 1 462        | 57.56" |

\*Large diameter systems can be engineered based on the specific customer requirements.



# INTEGRATED RING BIT SYSTEMS



System is available from 114 to 301 mm casings and for all major shank designs.

SPIRALFLUSH®

| System product code | Casing OD |        | Max wall |       | Ring bit ID |       | Ring bit OD |        | Pilot bit OD |        |
|---------------------|-----------|--------|----------|-------|-------------|-------|-------------|--------|--------------|--------|
|                     | mm        | inch   | mm       | inch  | mm          | inch  | mm          | inch   | mm           | inch   |
| I114-10-76          | 114.3     | 4.5"   | 10       | 0.39" | 76          | 2.99" | 130         | 5.12"  | 89           | 3.50"  |
| HDI114-10-76        | 114.3     | 4.5"   | 10       | 0.39" | 76          | 2.99" | 138         | 5.43"  | 89           | 3.50"  |
| I127-10-87          | 127       | 5"     | 10       | 0.39" | 87          | 3.43" | 145         | 5.71"  | 105          | 4.13"  |
| I140-10-100         | 139.7     | 5.5"   | 10       | 0.39" | 102         | 4.02" | 160         | 6.30"  | 116          | 4.57"  |
| HDI140-10-100       | 139.7     | 5.5"   | 10       | 0.39" | 102         | 4.02" | 168         | 6.61"  | 116          | 4.57"  |
| I152-10-112         | 152.4     | 6"     | 10       | 0.39" | 112         | 4.41" | 172         | 6.77"  | 130          | 5.12"  |
| I159-10-118         | 158.8     | 6.25"  | 10       | 0.39" | 118         | 4.65" | 181         | 7.13"  | 137          | 5.39"  |
| I168-12.7-125       | 168.3     | 6.63"  | 12.7     | 0.5"  | 125         | 4.92" | 189         | 7.44"  | 140          | 5.51"  |
| HDI168-12.7-125     | 168.3     | 6.63"  | 12.7     | 0.5"  | 125         | 4.92" | 196         | 7.72"  | 140          | 5.51"  |
| I178-12.7-135       | 177.8     | 7"     | 12.7     | 0.5"  | 135         | 5.31" | 199         | 7.83"  | 151          | 5.94"  |
| I194-12.7-147       | 193.7     | 7.63"  | 12.7     | 0.5"  | 147         | 5.79" | 221         | 8.70"  | 166          | 6.54"  |
| I219-12.7-171       | 219.1     | 8.63"  | 12.7     | 0.5"  | 171         | 6.73" | 243         | 9.57"  | 188          | 7.40"  |
| HDI219-12.7-171     | 219.1     | 8.63"  | 12.7     | 0.5"  | 171         | 6.73" | 252         | 9.92"  | 188          | 7.40"  |
| I244-12.7-190       | 244.5     | 9.63"  | 12.7     | 0.5"  | 190         | 7.48" | 269         | 10.59" | 216          | 8.50"  |
| I254-14.2-197       | 254       | 10"    | 14.2     | 0.56" | 197         | 7.76" | 279         | 10.98" | 223          | 8.78"  |
| I273-12.7-220       | 273       | 10.74" | 12.7     | 0.5"  | 220         | 8.66" | 300         | 11.81" | 244          | 9.61"  |
| HDI273-12.7-220     | 273       | 10.74" | 12.7     | 0.5"  | 220         | 8.66" | 310         | 12.20" | 244          | 9.61"  |
| I301-14.2-220       | 301.6     | 11.87" | 14.2     | 0.56" | 220         | 8.66" | 312         | 12.28" | 270          | 10.63" |

Integrated ring bit systems are designed for drilling end bearing piles to bed rock. System is designed to drill straight piles through boulders, rock layers and into inclined bed rock. Heavy duty ring bit is integrated to casing shoe, which makes it safe to drill in loose ground and over the water.

Main applications for integrated systems are:

1. End bearing piles including micro piling
2. Pilings with sacrificed casings, which have no large ID ring bit requirements
3. Compatible with most external threaded casing joint sleeves
4. Slope stabilization
5. Pipe walls, king piles



# INTEGRATED RING BIT SYSTEMS



**Integrated ring bit systems** are designed for drilling end bearing piles to bed rock. System is designed to drill straight piles through boulders, rock layers and into inclined bed rock. Heavy duty ring bit is integrated to casing shoe, which makes it safe to drill in loose ground and over the water.

Integrated and solitary ring bits can be used with the same pilot bit.

Main **applications** for integrated systems are:

1. End bearing piles
2. Pilings with sacrificed casings, which have no large ID ring bit requirements
3. Pipe walls, king piles



System is available from 323 to 1 524 mm casings and for all major shank designs.

SPIRALFLUSH®

| System product code | Casing OD |        | Max wall |       | Ring bit ID |        | Ring bit OD |        | Pilot bit OD |        |
|---------------------|-----------|--------|----------|-------|-------------|--------|-------------|--------|--------------|--------|
|                     | mm        | inch   | mm       | inch  | mm          | inch   | mm          | inch   | mm           | inch   |
| I323-14.2-240       | 323.9     | 12.74" | 14.2     | 0.56" | 240         | 9.45"  | 335         | 13.19" | 291          | 11.46" |
| I339-14.2-255       | 339.7     | 13.37" | 14.2     | 0.56" | 255         | 10.04" | 350         | 13.78" | 308          | 12.13" |
| I355-14.2-270       | 355.6     | 14"    | 14.2     | 0.56" | 270         | 10.63" | 367         | 14.45" | 324          | 12.76" |
| I406-16-318         | 406.4     | 16"    | 16       | 0.63" | 318         | 12.52" | 418         | 16.46" | 370          | 14.57" |
| I457-16-369         | 457.2     | 18"    | 16       | 0.63" | 369         | 14.53" | 469         | 18.46" | 423          | 16.65" |
| I508-16-422         | 508       | 20"    | 16       | 0.63" | 422         | 16.61" | 520         | 20.47" | 471          | 18.54" |
| I559-16-470         | 558.8     | 22"    | 16       | 0.63" | 470         | 18.50" | 571         | 22.48" | 521          | 20.51" |
| I610-16-502         | 609.6     | 24"    | 16       | 0.63" | 502         | 19.76" | 622         | 24.49" | 572          | 22.52" |
| I660-20-545         | 660.4     | 26"    | 20       | 0.79" | 545         | 21.46" | 675         | 26.57" | 615          | 24.21" |
| I711-16-610         | 711.2     | 28"    | 16       | 0.63" | 610         | 24.02" | 735         | 28.94" | 675          | 26.57" |
| I762-20-655         | 762       | 30"    | 20       | 0.79" | 655         | 25.79" | 785         | 30.91" | 715          | 28.15" |
| I813-20-700         | 812.8     | 32"    | 20       | 0.79" | 700         | 27.56" | 830         | 32.68" | 766          | 30.16" |
| I863-20-750         | 863.6     | 34"    | 20       | 0.79" | 750         | 29.53" | 880         | 34.65" | 815          | 32.09" |
| I914-20-800         | 914.4     | 36"    | 20       | 0.79" | 800         | 31.5"  | 930         | 36.61" | 866          | 34.09" |
| I1016-20-880*       | 1 016     | 40"    | 20       | 0.79" | 880         | 34.65" | 1 032       | 40.63" | 966          | 38.03" |
| I1066-20-930*       | 1 066.8   | 42"    | 20       | 0.79" | 930         | 36.61" | 1 086       | 42.76" | 1 014        | 39.92" |
| I1220-20-1080*      | 1 219.2   | 48"    | 20       | 0.79" | 1 080       | 42.52" | 1 240       | 48.82" | 1 168        | 45.98" |
| I1321-22-1150*      | 1 320.8   | 52"    | 22       | 0.87" | 1 150       | 45.28" | 1 344       | 52.91" | 1 247        | 49.09" |
| I1422-22-1250*      | 1 422.4   | 56"    | 22       | 0.87" | 1 250       | 49.21" | 1 446       | 56.93" | 1 348        | 53.07" |
| I1524-22-1340*      | 1 524     | 60"    | 22       | 0.87" | 1 340       | 52.76" | 1 548       | 60.94" | 1 462        | 57.56" |

\*Large diameter systems can be engineered based on the specific customer requirements.



# LARGE ID RING BIT SYSTEMS



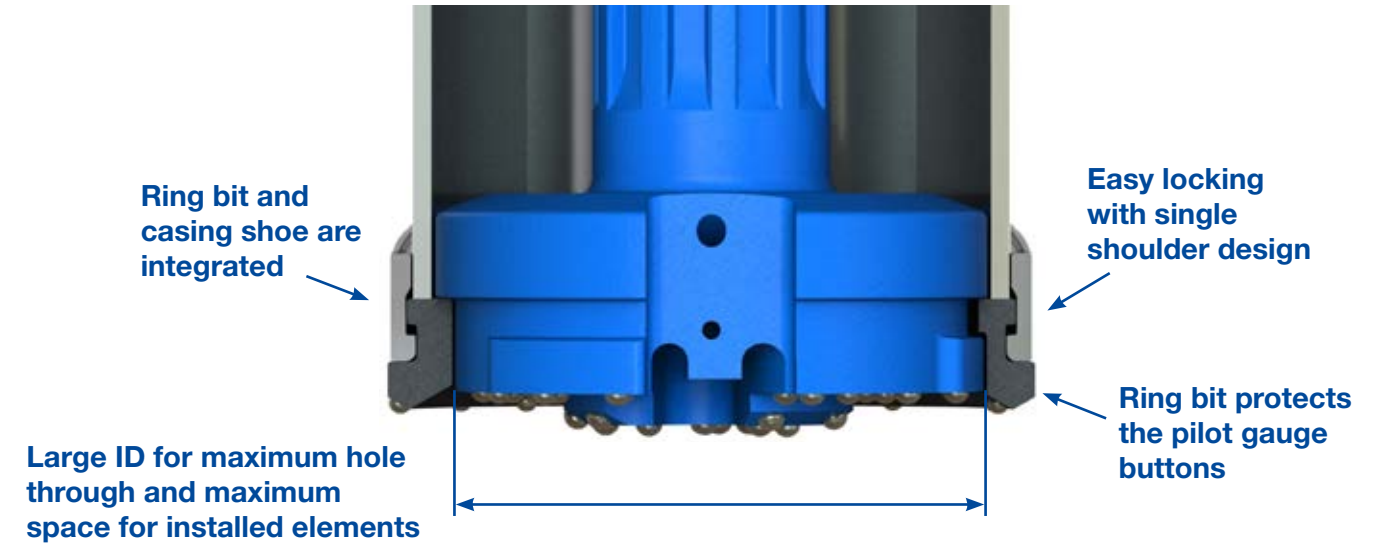
**Large ID ring bit systems** are used with sacrificed casings when there is a requirement to continue the hole after casing is set. Such casings are left in ground due to economical, corrosion protection or sealing reasons, or because of ground cavities.

Main **applications** for large ID ring bit systems are:

1. Piling with sacrificed casings and rock socket
2. Energy/water wells
3. Surface casings (sealing, dewatering)



## LARGE ID SYSTEM 114–660 mm



System is available from 114 to 660 mm casings and for all major shank designs.

SPIRAF<sub>FLUSH</sub>®

| System product code | Casing OD |        | Max wall |       | Ring bit ID |        | Ring bit OD |        | Pilot bit OD |        |
|---------------------|-----------|--------|----------|-------|-------------|--------|-------------|--------|--------------|--------|
|                     | mm        | inch   | mm       | inch  | mm          | inch   | mm          | inch   | mm           | inch   |
| I114-5.5-91         | 114.3     | 4.5"   | 5.5      | 0.22" | 91          | 3.58"  | 133         | 5.24"  | 101.5        | 3.40"  |
| I127-5.5-103        | 127       | 5"     | 5.5      | 0.22" | 103         | 4.06"  | 147         | 5.79"  | 114          | 4.49"  |
| I140-5.5-116        | 139.7     | 5.5"   | 5.5      | 0.22" | 116         | 4.56"  | 160         | 6.30"  | 127.5        | 5.02"  |
| HDI140-5.5-116*     | 139.7     | 5.5"   | 5.5      | 0.22" | 116         | 4.56"  | 168         | 6.61"  | 127.5        | 5.02"  |
| I152-6-128          | 152.4     | 6"     | 6        | 0.24" | 128         | 5.040" | 174         | 6.85"  | 139          | 5.47"  |
| I159-6-134          | 158.8     | 6.25"  | 6        | 0.24" | 134         | 5.28"  | 179         | 7.05"  | 145          | 5.71"  |
| I168-6-142          | 168.3     | 6.63"  | 6        | 0.24" | 142         | 5.59"  | 189         | 7.44"  | 154          | 6.06"  |
| HDI168-6-142*       | 168.3     | 6.63"  | 6        | 0.24" | 142         | 5.59"  | 196         | 7.72"  | 154          | 6.06"  |
| I178-7-153          | 177.8     | 7"     | 7        | 0.28" | 153         | 6.02"  | 204         | 8.03"  | 162          | 6.38"  |
| I194-6-166          | 193.7     | 7.63"  | 6        | 0.24" | 166         | 6.54"  | 220         | 8.66"  | 179          | 7.05"  |
| I219-6.5-190        | 219.1     | 8.63"  | 6.5      | 0.26" | 190         | 7.48"  | 245         | 9.65"  | 203          | 7.99"  |
| I244-8-212          | 244.5     | 9.63"  | 8        | 0.31" | 212         | 8.35"  | 270         | 10.63" | 225          | 8.86"  |
| I254-8-222          | 254       | 10"    | 8        | 0.31" | 222         | 8.74"  | 280         | 11.02" | 235          | 9.25"  |
| I273-8-240          | 273       | 10.75" | 8        | 0.31" | 240         | 9.45"  | 299         | 11.77" | 254          | 10"    |
| I301-10-260         | 301.6     | 11.87" | 10       | 0.39" | 260         | 10.24" | 327         | 12.87" | 279          | 10.98" |
| I323-10-280         | 323.9     | 12.75" | 10       | 0.39" | 280         | 11.02" | 350         | 13.78" | 298          | 11.73" |
| I339-10-295         | 339.7     | 13.37" | 10       | 0.39" | 295         | 11.61" | 366         | 14.41" | 316          | 12.44" |
| I355-10-311         | 355.6     | 14"    | 10       | 0.39" | 311         | 12.24" | 383         | 15.08" | 332          | 13.07" |
| I406-10-365         | 406.4     | 16"    | 10       | 0.39" | 365         | 14.37" | 436         | 17.17" | 382          | 15.04" |
| I457-10-405         | 457.2     | 18"    | 10       | 0.39" | 405         | 15.94" | 487         | 19.17" | 432          | 17.01" |
| I508-12.7-450       | 508       | 20"    | 12.7     | 0.5"  | 450         | 17.72" | 538         | 21.18" | 478          | 18.82" |
| I559-12.7-500       | 558.8     | 22"    | 12.7     | 0.5"  | 500         | 19.69" | 589         | 23.19" | 528          | 20.79" |
| I610-12.7-555       | 609.6     | 24"    | 12.7     | 0.5"  | 555         | 21.85" | 640         | 25.20" | 580          | 22.83" |
| I660-12.7-600**     | 660.4     | 26"    | 12.7     | 0.5"  | 600         | 23.62" | 690         | 27.17" | 629          | 24.76" |
| I711-12.7-641**     | 711.2     | 28"    | 12.7     | 0.5"  | 641         | 25.24" | 741         | 29.17" | 679          | 26.73" |
| I762-12.7-690**     | 762       | 30"    | 12.7     | 0.5"  | 690         | 27.1"  | 794         | 31.26" | 729          | 28.70" |
| I813-12.7-735**     | 812.8     | 34"    | 12.7     | 0.5"  | 735         | 28.94" | 845         | 33.27" | 780          | 30.71" |

\*Heavy duty systems for deep casing drilling. Special design with large ID.

\*\*Large diameter system can be engineered based on the specific customer requirements (660–1 524 mm).

# DRILL THROUGH SYSTEMS



**Drill trough ring bit systems** combines conventional rock bit and casing advance system. Overburden can be drilled with ring bit set. By unlocking pilot bit from the ring bit rock socket can be drilled without changing the tools.

Main **applications** for drill trough ring bit systems are:

1. Anchoring applications
2. End bearing piles with rock socket



System is available from 114 to 1 524 mm casings and for all major shank designs.

SPIRALFLUSH®

| System product code   | Casing OD |        | Max wall |       | Ring bit ID |        | Ring bit OD |        | Pilot bit OD |        |
|-----------------------|-----------|--------|----------|-------|-------------|--------|-------------|--------|--------------|--------|
|                       | mm        | inch   | mm       | inch  | mm          | inch   | mm          | inch   | mm           | inch   |
| DTI114-10-92-80       | 114.3     | 4.5"   | 10       | 0.39" | 80          | 2.99"  | 130         | 5.12"  | 92           | 3.50"  |
| DTI127-10-105-87      | 127       | 5"     | 10       | 0.39" | 87          | 3.43"  | 145         | 5.71"  | 105          | 4.13"  |
| DTI140-10-114-100     | 139.7     | 5.5"   | 10       | 0.39" | 102         | 3.94"  | 160         | 6.30"  | 114          | 4.49"  |
| DTI152-10-126-112     | 152.4     | 6"     | 10       | 0.39" | 112         | 4.41"  | 172         | 6.77"  | 126          | 4.96"  |
| DTI159-10-133-118     | 158.8     | 6.25"  | 10       | 0.39" | 118         | 4.65"  | 179         | 7.05"  | 133          | 5.24"  |
| DTI168-12.7-140-127   | 168.3     | 6.63"  | 12.7     | 0.5"  | 127         | 4.92"  | 189         | 7.44"  | 140          | 5.51"  |
| DTI178-12.7-150-135   | 177.8     | 7"     | 12.7     | 0.5"  | 135         | 5.31"  | 199         | 7.83"  | 150          | 5.91"  |
| DTI194-12.7-163-147   | 193.7     | 7.63"  | 12.7     | 0.5"  | 147         | 5.79"  | 221         | 8.00"  | 163          | 6.42"  |
| DTI219-12.7-188-171   | 219.1     | 8.63"  | 12.7     | 0.5"  | 171         | 6.73"  | 243         | 9.57"  | 188          | 7.40"  |
| DTI244-12.7-214-194   | 244.5     | 9.63"  | 12.7     | 0.5"  | 194         | 7.64"  | 269         | 10.59" | 214          | 8.43"  |
| DTI254-12.7-224-204   | 254       | 10"    | 12.7     | 0.5"  | 204         | 8.03"  | 279         | 10.98" | 224          | 9.61"  |
| DTI273-12.7-243-222   | 273       | 10.74" | 12.7     | 0.5"  | 222         | 8.74"  | 299         | 11.77" | 243          | 9.57"  |
| DTI301-12.7-272-250   | 301.6     | 11.87" | 12.7     | 0.5"  | 250         | 9.84"  | 330         | 12.99" | 272          | 10.71" |
| DTI323-12.7-294-272   | 323.9     | 12.74" | 12.7     | 0.5"  | 272         | 10.71" | 352         | 13.86" | 294          | 11.57" |
| DTI339-14.2-308-286   | 339.7     | 13.37" | 14.2     | 0.56" | 286         | 11.26" | 368         | 14.49" | 308          | 12.13" |
| DTI355-14.2-324-300   | 355.6     | 14"    | 14.2     | 0.56" | 300         | 11.81" | 384         | 15.12" | 324          | 12.76" |
| DTI406-16-370-346     | 406.4     | 16"    | 16       | 0.63" | 346         | 13.62" | 438         | 17.24" | 370          | 14.57" |
| DTI457-16-420-393     | 457.2     | 18"    | 16       | 0.63" | 393         | 15.47" | 489         | 19.25" | 420          | 16.54" |
| DTI508-16-470-442     | 508       | 20"    | 16       | 0.63" | 442         | 17.40" | 540         | 21.26" | 470          | 18.50" |
| DTI559-16-521-490     | 558.8     | 22"    | 16       | 0.63" | 490         | 19.29" | 593         | 23.35" | 521          | 20.51" |
| DTI610-16-558-540     | 609.6     | 24"    | 16       | 0.63" | 540         | 21.26" | 644         | 25.35" | 558          | 21.97" |
| DTI660-20-605-580     | 660.4     | 26"    | 20       | 0.79" | 580         | 22.83" | 700         | 27.56" | 605          | 23.82" |
| DTI711-20-656-625     | 711.2     | 28"    | 20       | 0.79" | 625         | 24.61" | 753         | 29.65" | 656          | 25.83" |
| DTI762-20-707-672     | 762       | 30"    | 20       | 0.79" | 672         | 26.46" | 804         | 31.65" | 707          | 27.83" |
| DTI813-20-758-720     | 812.8     | 32"    | 20       | 0.79" | 720         | 28.35" | 855         | 33.66" | 758          | 29.84" |
| DTI863-20-808-770     | 863.6     | 34"    | 20       | 0.79" | 770         | 30.32" | 905         | 35.63" | 808          | 31.81" |
| DTI914-20-859-818     | 914.4     | 36"    | 20       | 0.79" | 818         | 32.20" | 958         | 37.72" | 859          | 33.82" |
| DTI1016-20-960-916*   | 1 016     | 40"    | 20       | 0.79" | 916         | 36.06" | 1 060       | 41.73" | 960          | 37.80" |
| DTI1066-20-1010-952*  | 1 066.8   | 42"    | 20       | 0.79" | 952         | 37.48" | 1 112       | 43.78" | 1 010        | 39.76" |
| DTI1220-22-1161-1101* | 1 219.2   | 48"    | 22       | 0.87" | 1 101       | 43.35" | 1 268       | 49.92" | 1 161        | 45.71" |
| DTI1321-25-1260-1205* | 1 320.8   | 52"    | 25       | 1"    | 1 205       | 47.44" | 1 378       | 54.25" | 1 260        | 49.61" |
| DTI1422-25-1360-1305* | 1 422.4   | 56"    | 25       | 1"    | 1 305       | 51.38" | 1 478       | 58.19" | 1 360        | 53.54" |
| DTI1524-25-1405-1466* | 1 524     | 60"    | 25       | 1"    | 1 405       | 55.31" | 1 578       | 62.13" | 1 466        | 57.72" |

\*Large diameter system can be engineered based on the specific customer requirements.



# SOLITARY M-WALL RING BIT SYSTEM



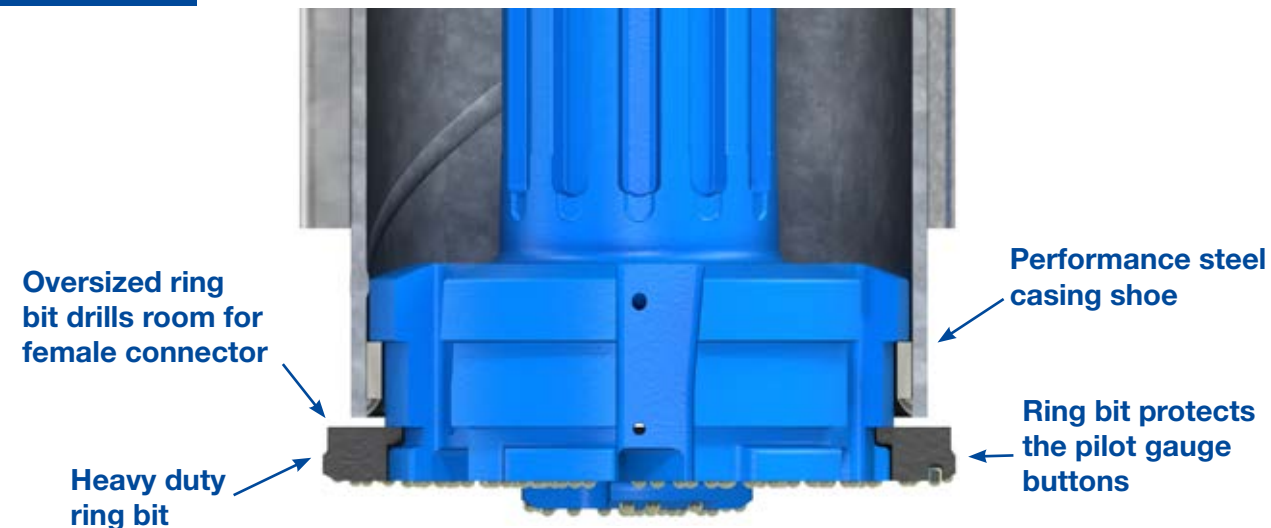
**Solitary M-wall ring bit systems** are used to drill straight interlocked casings through boulders, rock layers even into inclined bed rock. With M-wall technique one can build interlocked casing walls, roofs and other structures for construction industry. M-walls can also replace sheet piles and slurry walls in rocky ground conditions. Heavy duty ring bit is not attached to casing shoe, which makes it most economical of the ring bit alternatives.

Main **applications** for M-wall systems are:

1. Interlocked walls and roofs
2. Cofferdams
3. Retaining walls
4. Watertight cut off walls
5. Suitable for all major interlocked types



## SOLITARY M-WALL RING BIT SYSTEM 219–1 220 mm

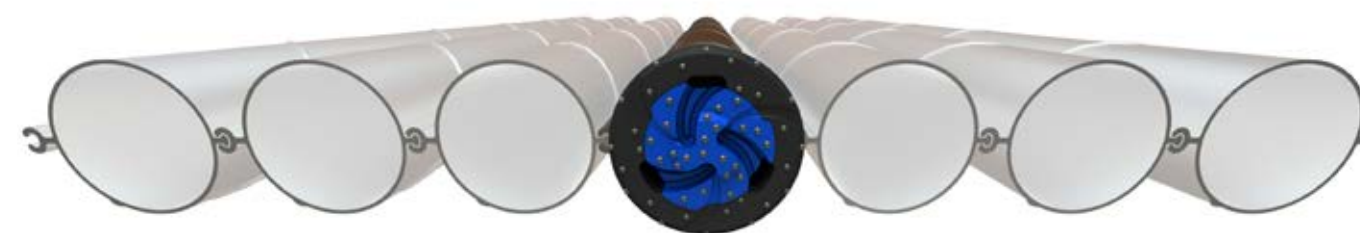


System is available from 219 to 1 220 mm casings and for all major shank designs.

SPIRAIFLUSH®

| System product code | Casing OD |        | Max wall |       | Ring bit ID |        | Ring bit OD |        | Pilot bit OD |        |
|---------------------|-----------|--------|----------|-------|-------------|--------|-------------|--------|--------------|--------|
|                     | mm        | inch   | mm       | inch  | mm          | inch   | mm          | inch   | mm           | inch   |
| XL219-12.7-150      | 219.1     | 8.63"  | 12.7     | 0.5"  | 150         | 5.91"  | 279         | 10.98" | 191          | 7.52"  |
| XL244-14.2-170      | 244.5     | 9.63"  | 14.2     | 0.56" | 170         | 6.69"  | 304         | 11.97" | 213          | 8.39"  |
| XL254-14.2-178      | 254       | 10"    | 14.2     | 0.56" | 178         | 7.01"  | 314         | 12.36" | 223          | 8.78"  |
| XL273-12.7-192      | 273       | 10.75" | 12.7     | 0.5"  | 192         | 7.56"  | 333         | 13.11" | 245          | 9.65"  |
| XL301-14.2-220      | 301.6     | 11.87" | 14.2     | 0.56" | 220         | 8.66"  | 361         | 14.21" | 270          | 10.63" |
| XL323-14.2-240      | 323.9     | 12.75" | 14.2     | 0.56" | 240         | 9.45"  | 383         | 15.08" | 291          | 11.62" |
| XL339-14.2-255      | 339.7     | 13.37" | 14.2     | 0.56" | 255         | 10.04" | 399         | 15.71" | 308          | 12.13" |
| XL355-14.2-270      | 355.6     | 14"    | 14.2     | 0.56" | 270         | 10.63" | 415         | 16.34" | 324          | 12.76" |
| XL406-16-318        | 406.4     | 16"    | 16       | 0.63" | 318         | 12.52" | 466         | 18.35" | 370          | 14.57" |
| XL457-16-360        | 457.2     | 18"    | 16       | 0.63" | 360         | 14.17" | 517         | 20.35" | 423          | 16.65" |
| XL508-16-422        | 508       | 20"    | 16       | 0.63" | 422         | 16.61" | 565         | 22.24" | 471          | 18.54" |
| XL559-16-470        | 558.8     | 22"    | 16       | 0.63" | 470         | 18.50" | 619         | 24.37" | 521          | 20.51" |
| XL610-16-502        | 609.6     | 24"    | 16       | 0.63" | 502         | 19.76" | 670         | 26.38" | 572          | 22.52" |
| XL660-16-545        | 660.4     | 26"    | 16       | 0.63" | 545         | 21.46" | 720         | 28.35" | 615          | 24.21" |
| XL711-16-610        | 711.2     | 28"    | 16       | 0.63" | 610         | 24.02" | 771         | 30.35" | 675          | 26.76" |
| XL762-20-655        | 762       | 30"    | 20       | 0.79" | 655         | 25.79" | 822         | 32.36" | 715          | 28.15" |
| XL813-20-700        | 812.8     | 32"    | 20       | 0.79" | 700         | 27.56" | 873         | 34.37" | 766          | 30.16" |
| XL863-20-750        | 863.6     | 34"    | 20       | 0.79" | 750         | 29.53" | 923         | 36.34" | 815          | 32.09" |
| XL914-20-800        | 914.4     | 36"    | 20       | 0.79" | 800         | 31.50" | 974         | 38.35" | 866          | 34.09" |
| XL1016-20-880*      | 1 016     | 40"    | 20       | 0.79" | 880         | 34.65" | 1 076       | 42.36" | 966          | 38.09" |
| XL1220-20-1080*     | 1 219.2   | 48"    | 20       | 0.79" | 1 080       | 42.52" | 1 280       | 50.39" | 1 168        | 45.98" |

\*Large diameter system can be engineered based on the specific customer requirements.



# INTEGRATED M-WALL RING BIT SYSTEM



**Integrated M-wall ring bit systems** are used to drill straight interlocked casings through boulders, rock layers even into inclined bed rock. With M-wall technique one can build interlocked casing walls, roofs and other structures for construction industry. M-walls can also replace sheet piles and slurry walls in rocky ground conditions. Heavy duty ring bit is integrated to casing shoe, which makes it safe to drill in loose ground and over the water.

Integrated and solitary ring bits can be used with the same pilot bit.

Main applications for M-wall systems are:

1. Interlocked walls and roofs
2. Cofferdams
3. Retaining walls
4. Watertight cut off walls
5. Suitable for all major interlocked types



## INTEGRATED M-WALL RING BIT SYSTEM 219–1 220 mm

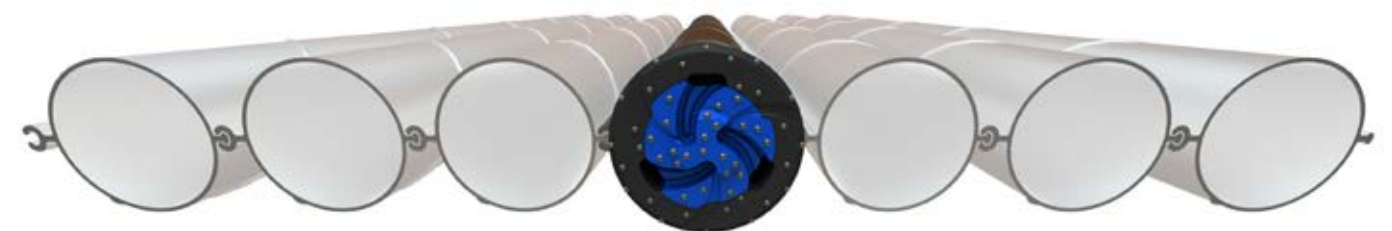


System is available from 219 to 1 220 mm casings and for all major shank designs.

SPIRAIFLUSH®

| System product code | Casing OD |        | Max wall |       | Ring bit ID |        | Ring bit OD |        | Pilot bit OD |        |
|---------------------|-----------|--------|----------|-------|-------------|--------|-------------|--------|--------------|--------|
|                     | mm        | inch   | mm       | inch  | mm          | inch   | mm          | inch   | mm           | inch   |
| XLI219-12.7-150     | 219.1     | 8.63"  | 12.7     | 0.5"  | 150         | 5.91"  | 279         | 10.98" | 191          | 7.52"  |
| XLI244-14.2-170     | 244.5     | 9.63"  | 14.2     | 0.56" | 170         | 6.69"  | 304         | 11.97" | 213          | 8.37"  |
| XLI254-14.2-178     | 254       | 10"    | 14.2     | 0.56" | 178         | 7.01"  | 314         | 12.36" | 223          | 8.78"  |
| XLI273-12.7-192     | 273       | 10.75" | 12.7     | 0.5"  | 192         | 7.56"  | 333         | 13.11" | 245          | 9.65"  |
| XLI301-14.2-220     | 301.6     | 11.87" | 14.2     | 0.56" | 220         | 8.66"  | 361         | 14.21" | 270          | 10.63" |
| XLI323-14.2-240     | 323.9     | 12.75" | 14.2     | 0.56" | 240         | 9.45"  | 383         | 15.08" | 291          | 11.62" |
| XLI339-14.2-255     | 339.7     | 13.37" | 14.2     | 0.56" | 255         | 10.04" | 399         | 15.71" | 308          | 12.13" |
| XLI355-14.2-270     | 355.6     | 14"    | 14.2     | 0.56" | 270         | 10.63" | 415         | 16.34" | 324          | 12.76" |
| XLI406-16-318       | 406.4     | 16"    | 16       | 0.63" | 318         | 12.52" | 466         | 18.35" | 370          | 14.57" |
| XLI457-16-360       | 457.2     | 18"    | 16       | 0.63" | 360         | 14.17" | 517         | 20.35" | 423          | 16.65" |
| XLI508-16-422       | 508       | 20"    | 16       | 0.63" | 422         | 16.61" | 565         | 22.24" | 471          | 18.54" |
| XLI559-16-470       | 558.8     | 22"    | 16       | 0.63" | 470         | 18.50" | 619         | 24.37" | 521          | 20.51" |
| XLI610-16-502       | 609.6     | 24"    | 16       | 0.63" | 502         | 19.76" | 670         | 26.38" | 572          | 22.52" |
| XLI660-16-545       | 660.4     | 26"    | 16       | 0.63" | 545         | 21.46" | 720         | 28.35" | 615          | 24.21" |
| XLI711-16-610       | 711.2     | 28"    | 16       | 0.63" | 610         | 24.02" | 771         | 30.35" | 675          | 26.76" |
| XLI762-20-655       | 762       | 30"    | 20       | 0.79" | 655         | 25.79" | 822         | 32.36" | 715          | 28.15" |
| XLI813-20-700       | 812.8     | 32"    | 20       | 0.79" | 700         | 27.56" | 873         | 34.37" | 766          | 30.16" |
| XLI863-20-750       | 863.6     | 34"    | 20       | 0.79" | 750         | 29.53" | 923         | 36.34" | 815          | 32.09" |
| XLI914-20-800       | 914.4     | 36"    | 20       | 0.79" | 800         | 31.50" | 974         | 38.35" | 866          | 34.09" |
| XLI1016-20-880*     | 1 016     | 40"    | 20       | 0.79" | 880         | 34.65" | 1 076       | 42.36" | 966          | 38.09" |
| XLI1220-20-1080*    | 1 219.2   | 48"    | 20       | 0.79" | 1 080       | 42.52  | 1 280       | 50.39" | 1 168        | 45.98" |

\*Large diameter system can be engineered based on the specific customer requirements.





# RETRIEVABLE RING BIT SYSTEMS



Retrievable ring bit systems can be used several times. System is designed so that the casing can always be pulled out after drilling. Large ID enables the use of maximum size rock socket and installed elements.

Main applications for multi-use retrievable systems are:

1. In situ piles (skin friction) where casing is fully retrieved
2. Anchoring applications
3. Pre-drilling/temporary casing applications
4. Energy/water wells where casing is fully removed



## RETRIEVABLE SYSTEM 114–1 524 mm

Integrated wear resistant steel ring set

Slim desing for easy retrieving



Double shoulders for long service life

Large ID for maximum hole through and maximum space for installed elements

System is available from 114 to 1 524 mm casings and for all major shank designs.

SPIRALFLUSH®

| System product code | Casing OD mm | Casing OD inch | Max wall mm | Max wall inch | Ring bit ID mm | Ring bit ID inch | Ring bit OD mm | Ring bit OD inch | Pilot bit OD mm | Pilot bit OD inch |
|---------------------|--------------|----------------|-------------|---------------|----------------|------------------|----------------|------------------|-----------------|-------------------|
| R114-10-81          | 114.3        | 4.5"           | 10          | 0.39"         | 81             | 3.19"            | 123            | 4.84"            | 92.5            | 3.64"             |
| R127-10-95          | 127          | 5"             | 10          | 0.39"         | 95             | 3.74"            | 135.5          | 5.33"            | 105             | 4.13"             |
| R140-10-104         | 139.7        | 5.5"           | 10          | 0.39"         | 104            | 4.09"            | 148            | 5.83"            | 118             | 4.65"             |
| R152-10-116         | 152.4        | 6"             | 10          | 0.39"         | 116            | 4.57"            | 161            | 6.34"            | 129             | 5.08"             |
| R159-10-122         | 158.8        | 6.25"          | 10          | 0.39"         | 122            | 4.80"            | 168            | 6.61"            | 136             | 5.35"             |
| R168-10-128         | 168.3        | 6.63"          | 10          | 0.39"         | 128            | 5.04"            | 179            | 7.05"            | 146             | 5.75"             |
| R178-10-142         | 177.8        | 7"             | 10          | 0.39"         | 142            | 5.59"            | 189            | 7.44"            | 156             | 6.14"             |
| R194-12.7-154       | 193.7        | 7.63"          | 12.7        | 0.5"          | 154            | 6.06"            | 206            | 8.11"            | 165             | 6.50"             |
| R219-12.7-175       | 219.1        | 8.63"          | 12.7        | 0.5"          | 175            | 6.89"            | 231            | 9.09"            | 191             | 7.52"             |
| R244-12.7-200       | 244.5        | 9.63"          | 12.7        | 0.5"          | 200            | 7.87"            | 258            | 10.16"           | 216             | 8.50"             |
| R254-12.7-210       | 254          | 10"            | 12.7        | 0.5"          | 210            | 8.27"            | 268            | 10.55"           | 226             | 8.90"             |
| R273-12.7-226       | 273          | 10.75"         | 12.7        | 0.5"          | 226            | 8.90"            | 286            | 11.26"           | 245             | 9.65"             |
| R301-12.7-251       | 301.6        | 11.87"         | 12.7        | 0.5"          | 251            | 9.88"            | 316            | 12.44"           | 273             | 10.75"            |
| R323-12.7-273       | 323.9        | 12.75"         | 12.7        | 0.5"          | 273            | 10.75"           | 338            | 13.31"           | 294             | 11.57"            |
| R339-12.7-287       | 339.7        | 13.37"         | 12.7        | 0.5"          | 287            | 11.30"           | 354            | 13.94"           | 311             | 12.24"            |
| R355-12.7-305       | 355.6        | 14"            | 12.7        | 0.5"          | 305            | 12.01"           | 368            | 14.49"           | 326             | 12.83"            |
| R406-12.7-352       | 406.4        | 16"            | 12.7        | 0.5"          | 352            | 13.86"           | 430            | 16.93"           | 376             | 14.80"            |
| R457-12.7-378       | 457.2        | 18"            | 12.7        | 0.5"          | 378            | 14.88"           | 474            | 18.66"           | 427             | 16.81"            |
| R508-16-446         | 508          | 20"            | 16          | 0.63"         | 446            | 17.56"           | 538            | 21.18"           | 475             | 18.70"            |
| R559-16-504         | 558.8        | 22"            | 16          | 0.63"         | 504            | 19.84"           | 584            | 22.99"           | 522             | 20.55"            |
| R610-16-555         | 609.6        | 24"            | 16          | 0.63"         | 555            | 21.85"           | 638            | 25.12"           | 574             | 22.60"            |
| R660-16-580         | 660.4        | 26"            | 16          | 0.63"         | 580            | 22.83"           | 680            | 26.77"           | 622             | 24.49"            |
| R711-16-641         | 711.2        | 28"            | 16          | 0.63"         | 641            | 25.24"           | 738            | 29.06"           | 674             | 26.54"            |
| R762-16-685         | 762          | 30"            | 16          | 0.63"         | 685            | 26.97"           | 788            | 31.02"           | 723             | 28.82"            |
| R813-16-736         | 812.8        | 32"            | 16          | 0.63"         | 736            | 28.98"           | 837            | 32.95"           | 775             | 30.51"            |
| R863-16-775         | 863.6        | 34"            | 16          | 0.63"         | 775            | 30.51"           | 890            | 35.04"           | 823             | 32.40"            |
| R914-16-837         | 914.4        | 36"            | 16          | 0.63"         | 837            | 32.95"           | 940            | 37.01"           | 874             | 34.41"            |
| R1016-16-926*       | 1 016        | 40"            | 16          | 0.63"         | 926            | 36.46"           | 1 042          | 41.02"           | 969             | 38.15"            |
| R1066-16-970*       | 1 066.8      | 42"            | 16          | 0.63"         | 970            | 38.19"           | 1 092          | 42.99"           | 1 025           | 40.35"            |
| R1220-20-1120*      | 1 219.2      | 48"            | 20          | 0.79"         | 1 120          | 44.09"           | 1 247          | 49.09"           | 1 163           | 45.79"            |
| R1321-22-1210*      | 1 320.8      | 52"            | 22          | 0.87"         | 1 210          | 47.64"           | 1 349          | 53.11"           | 1 259           | 49.57"            |
| R1524-22-1404*      | 1 524        | 60"            | 22          | 0.87"         | 1 404          | 55.28"           | 1 552          | 61.10"           | 1 460           | 57.48"            |

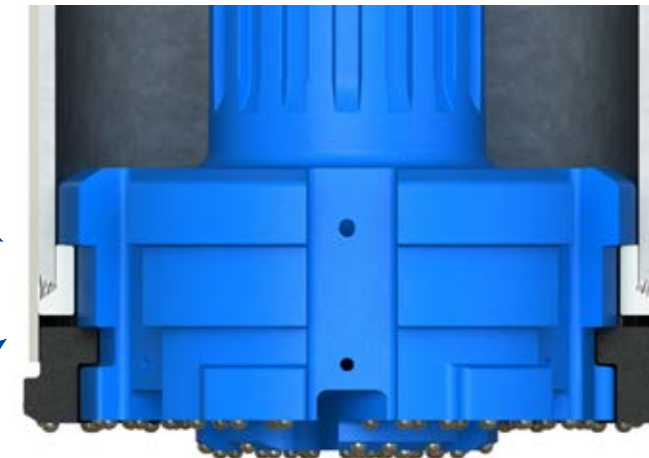
\*Large diameter system can be engineered based on the specific customer requirements.

# HORIZONTAL RING BIT SYSTEMS



Extra strong casing shoe

Slot for guide sleeve to prevent air escape, keep drilling direction and integration (sleeve not included)



Extra large impact shoulders for multi use

Ring bit protects the pilot gauge buttons

**Horizontal ring bit systems** are made for horizontal drilling of utility lines. High casing friction calls for heavy duty ring bit system. Drilling under roads and railways requires advanced air control. Due to strong design the ring bit system can be used several times.

Main **applications** for horizontal systems are:

1. Horizontal drilling of utility lines
  - Road and railway underpasses
  - Replacing of concrete culverts
2. HDD surface casings
3. All break through drilling



System is available from 219 to 1 524 mm casings and for all major shank designs.

| System product code | Casing OD |        | Max wall |       | Ring bit ID |        | Ring bit OD |        | Pilot bit OD |        |
|---------------------|-----------|--------|----------|-------|-------------|--------|-------------|--------|--------------|--------|
|                     | mm        | inch   | mm       | inch  | mm          | inch   | mm          | inch   | mm           | inch   |
| HZ219-12.7-138      | 219.1     | 8.63"  | 12.7     | 0.5"  | 138         | 5.43"  | 237         | 9.33"  | 191          | 7.52"  |
| HZ273-12.7-170      | 273       | 10.75" | 12.7     | 0.5"  | 170         | 6.69"  | 285         | 11.22" | 245          | 9.65"  |
| HZ323-12.7-215      | 323.9     | 12.75" | 12.7     | 0.5"  | 215         | 8.46"  | 341         | 13.43" | 294          | 11.57" |
| HZ406-12.7-300      | 406.4     | 16"    | 12.7     | 0.5"  | 300         | 11.81" | 440         | 17.32" | 376          | 14.80" |
| HZ508-12.7-400      | 508       | 20"    | 12.7     | 0.5"  | 400         | 15.75" | 540         | 21.26" | 477          | 18.78" |
| HZ610-16-495        | 609.6     | 24"    | 16       | 0.63" | 495         | 19.49" | 640         | 25.20" | 572          | 22.52" |
| HZ711-16-590        | 711.2     | 28"    | 16       | 0.63" | 590         | 23.23" | 740         | 29.13" | 675          | 26.57" |
| HZ762-16-630        | 762       | 30"    | 16       | 0.63" | 630         | 24.80" | 792         | 31.18" | 723          | 28.46" |
| HZ813-16-675        | 812.8     | 32"    | 16       | 0.63" | 675         | 26.57" | 845         | 33.27" | 774          | 30.47" |
| HZ914-16-775        | 914.4     | 36"    | 16       | 0.63" | 775         | 30.51" | 945         | 37.20" | 874          | 34.41" |
| HZ1016-16-860       | 1 016     | 40"    | 16       | 0.63" | 860         | 33.86" | 1 050       | 41.34" | 974          | 38.35" |
| HZ1219-16-1050*     | 1 219.2   | 48"    | 16       | 0.63" | 1 050       | 41.34" | 1 239       | 48.78" | 1 176        | 46.30" |
| HZ1321-16-1150*     | 1 320.8   | 52"    | 16       | 0.63" | 1 150       | 45.28" | 1 341       | 52.80" | 1 273        | 50.12" |
| HZ1422-20-1250*     | 1 422.4   | 56"    | 20       | 0.79" | 1 250       | 49.21" | 1 442       | 56.77" | 1 366        | 53.78" |
| HZ1524-20-1340*     | 1 524     | 60"    | 20       | 0.79" | 1 340       | 52.76" | 1 544       | 60.79" | 1 466        | 57.72" |

\*Large diameter system can be engineered based on the specific customer requirements.



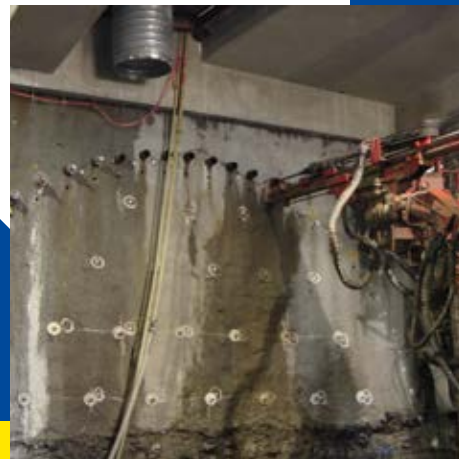
# FOREPOLING SYSTEMS ALSO KNOWN AS TUBE UMBRELLA



Forepoling ring bit systems and casing tubes are designed to be drilled with top hammer or DTH in an umbrella shape as secondary support in the tunnel roof. Weak ground and overburden must be strengthened by grouting through the casing and grouting valves into the ground.

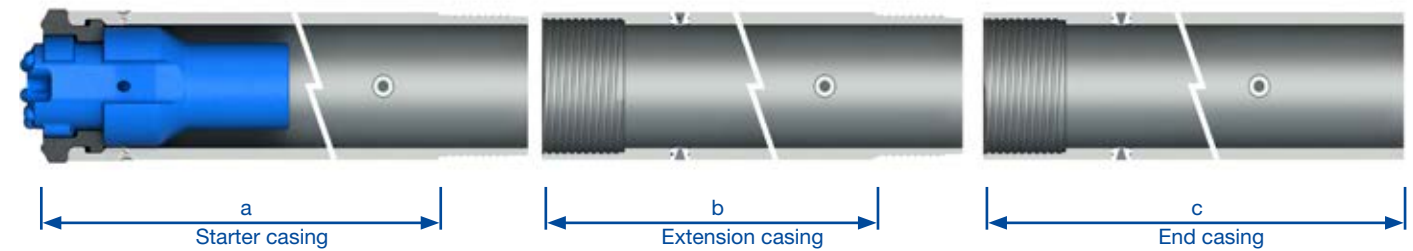
Main **applications** for forepoling systems are:

1. Forepoling or tube umbrella
2. Anchoring
3. Micro piling
4. Fibre glass face stabilization
5. PVC foundations



Casing shoe and ring bit are integrated with strong shoulders

Ring bit welded to starter casing in factory



Heavy duty ring bit protects the pilot gauge buttons

Optional one way valves for grouting installed in factory (3–10 bar)

System is available from 76 to 219 mm casings and for all major DTH shanks and top hammer threads. Threaded casings are available with 2–3 start trapezoidal threads and 10 mm entrance.

SPIRALFLUSH®

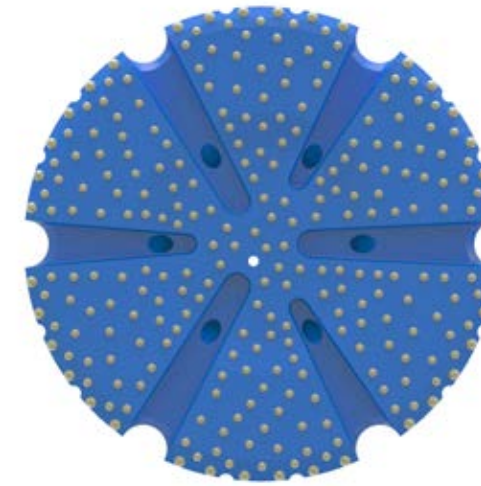
| System product code | Casing OD |       | Max wall |       | Ring bit ID |       | Ring bit OD |       | Pilot bit OD |       | Pilot bit thread |
|---------------------|-----------|-------|----------|-------|-------------|-------|-------------|-------|--------------|-------|------------------|
|                     | mm        | inch  | mm       | inch  | mm          | inch  | mm          | inch  | mm           | inch  |                  |
| F76-8-40            | 76.1      | 3.00" | 8        | 0.31" | 40          | 1.57" | 82          | 3.23" | 58           | 2.28" | R32              |
| F89-8-52            | 88.9      | 3.5"  | 8        | 0.31" | 52          | 2.05" | 94.5        | 3.72" | 70.9         | 2.79" | T38              |
| F102-8-62           | 101.6     | 4.0"  | 8        | 0.31" | 62          | 2.44" | 106.6       | 4.20" | 83           | 3.27" | T38              |
| F114-10-70          | 114.3     | 4.5"  | 10       | 0.39" | 70          | 2.76" | 120         | 4.72" | 92           | 3.62" | T38, T45         |
| F140-10-94          | 139.7     | 5.5"  | 10       | 0.39" | 94          | 3.70" | 148         | 5.83" | 116.7        | 4.59" | T45              |
| F159-10-120         | 159       | 6.26" | 10       | 0.39" | 118         | 4.65" | 179         | 7.05" | 133          | 5.24" | T45, T51         |
| F168-10-128         | 168.3     | 6.63" | 12.7     | 0.5"  | 125         | 4.92" | 189         | 7.44" | 140          | 5.51" | T45, T51         |
| F219-12.7-171       | 219.1     | 8.63" | 12.7     | 0.5"  | 171         | 6.73" | 243         | 9.57" | 188          | 7.40" | T45, T51         |



# LARGE DIAMETER ROCK BITS



## LARGE DIAMETER ROCK BIT 300–1 524 mm

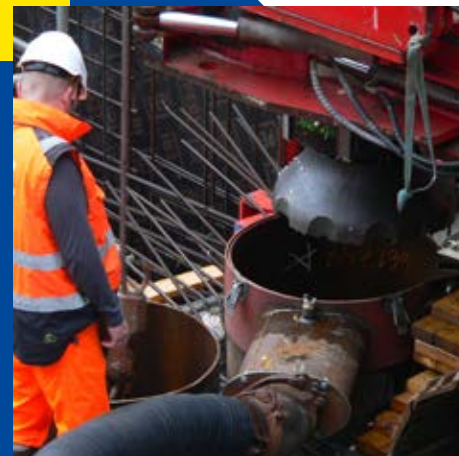


Large diameter rock bits are available from 300 to 1 524 mm diameter and for all major shank designs.

Large diameter rock bits are engineered for customer requirements. Concave structure gives excellent accuracy in challenging jobs with high demands for hole straightness.

Main applications for rock bits are:

1. Air ventilation for tunnels
2. Shafts for utility lines
3. Rescue shafts for mining
4. Rock sockets



## HOLE OPENER ROCK BIT DESIGN FEATURES



Hole opener rock bits are available up to 1 524 mm diameter and for all major shank designs.



# MINCON DTH HAMMERS



Mincon DTH hammers are designed around proven technology to perform at the top end of the performance scale. Our hammers are excellent for all types of drilling applications including residential geothermal, production quarry drilling, seismic drilling and construction drilling.

## KEY FEATURES AND BENEFITS

- Patented features maximize energy output and reduce service requirements.
- Fewer internal components minimize service requirements.
- Valveless, high frequency design ensures smooth operation.
- All critical internal components are heat treated under strict control to maximize tool longevity.



## 3–34" HAMMER SPECIFICATIONS

For more hammer models and additional information, please visit [mincon.com](http://mincon.com).

| Range | Hammer product name | Shank  | Footvalve | Hammer OD mm | Hammer OD inch | Tool length mm | Tool length inch | Piston weight kg | Piston weight lb | Weight kg | Weight lb | Std. backhead      |
|-------|---------------------|--------|-----------|--------------|----------------|----------------|------------------|------------------|------------------|-----------|-----------|--------------------|
| 3"    | Mincon 3"           | DHD3.5 | YES       | 77           | 3.05"          | 865            | 34.06"           | 4.1              | 9.0              | 22.3      | 49.2      | 2 3/8" API Reg Pin |
|       | MP35                | DHD3.5 | YES       | 85           | 3.35"          | 805            | 31.69"           | 3.9              | 8.6              | 24.5      | 54.0      | 2 3/8" API Reg Pin |
| 4"    | MP40-TD             | TD40   | YES       | 101.5        | 4"             | 967            | 38.07"           | 8.3              | 18.3             | 41.0      | 90.4      | 2 3/8" API Reg Pin |
|       | MP40-MQ             | TD40   | -         | 101.5        | 4"             | 981            | 38.62"           | 8.3              | 18.3             | 43.5      | 95.9      | 2 3/8" API Reg Pin |
|       | 4HRTD               | TD40   | YES       | 98           | 3.86"          | 956            | 37.64"           | 7.7              | 17.0             | 38.6      | 85.1      | 2 3/8" API Reg Pin |
|       | 4HR                 | DHD340 | YES       | 97           | 3.82"          | 956            | 37.64"           | 7.7              | 17.0             | 38.6      | 85.1      | 2 3/8" API Reg Pin |
| 5"    | MP56-QL             | QL50   | YES       | 124          | 4.88"          | 1 019          | 40.12"           | 15.3             | 33.7             | 67        | 147.7     | 3 1/2" API Reg Pin |
|       | MP56-MQ             | QL50   | -         | 124          | 4.88"          | 1 019          | 40.12"           | 15               | 33.1             | 67        | 147.7     | 3 1/2" API Reg Pin |
|       | MP56-DHD350         | DHD350 | YES       | 124          | 4.88"          | 1 039          | 40.91"           | 15.2             | 33.5             | 67        | 147.7     | 3 1/2" API Reg Pin |
|       | 5DH                 | DHD350 | YES       | 124          | 4.88"          | 1 054          | 41.50"           | 15               | 33.1             | 67.3      | 148.4     | 3 1/2" API Reg Pin |
|       | MP50-QL             | QL50   | YES       | 115          | 4.53"          | 1 057          | 41.61"           | 13.7             | 30.2             | 59.9      | 132.1     | 3 1/2" API Reg Pin |
|       | MP50-MQ             | QL50   | -         | 115          | 4.53"          | 1 057          | 41.61"           | 13.7             | 30.2             | 59.9      | 132.1     | 3 1/2" API Reg Pin |
| 6"    | MP60-QL             | QL60   | YES       | 140          | 5.5"           | 1 002          | 39.45"           | 21.6             | 47.6             | 81.9      | 180.6     | 3 1/2" API Reg Pin |
|       | MP60-MQ             | QL60   | -         | 140          | 5.5"           | 1 002          | 39.45"           | 19.3             | 42.5             | 83.3      | 183.6     | 3 1/2" API Reg Pin |
|       | 6DH360              | DHD360 | YES       | 140          | 5.5"           | 1 134          | 44.65"           | 20               | 44.1             | 95.3      | 210.1     | 3 1/2" API Reg Pin |
| 8"    | MP80-QL             | QL80   | YES       | 181          | 7.15"          | 1 186          | 46.69"           | 39               | 86.0             | 173.2     | 381.8     | 4 1/2" API Reg Pin |
|       | MQ80                | QL80   | -         | 181          | 7.15"          | 1 306          | 51.42"           | 46.3             | 102.1            | 184.2     | 406.1     | 4 1/2" API Reg Pin |
|       | 8DH                 | DHD380 | YES       | 181          | 7.15"          | 1 186          | 46.69"           | 39               | 86.0             | 173.2     | 381.8     | 4 1/2" API Reg Pin |
| 10"   | MP100-SD            | SD10   | YES       | 219          | 8.62"          | 1 360          | 53.50"           | 77.8             | 171.5            | 295       | 650.4     | 6 5/8" API Reg Pin |
| 12"   | MP120-N125          | N125   | YES       | 273          | 10.75"         | 1 452          | 57.17"           | 138.3            | 304.9            | 454       | 1 001     | 6 5/8" API Reg Pin |
|       | MP120-QL            | QL120  | YES       | 273          | 10.75"         | 1 454          | 57.24"           | 138.5            | 305.3            | 457       | 1 008     | 6 5/8" API Reg Pin |
|       | MP120-SD            | SD12   | YES       | 273          | 10.75"         | 1 431          | 56.34"           | 130.8            | 288.4            | 469       | 1 034     | 6 5/8" API Reg Pin |
| 18"   | MP180-N180          | N180   | YES       | 400          | 15.75"         | 1 708          | 67.20"           | 282              | 621.7            | 1 194     | 2 632     | 8 5/8" API Reg Pin |
|       | MP180-QL200         | QL200  | YES       | 400          | 15.75"         | 1 673          | 65.87"           | 284              | 626.1            | 1 215     | 2 679     | 8 5/8" API Reg Pin |
|       | MP180-MQ            | N180   | -         | 400          | 15.75"         | 1 782          | 70.16"           | 320              | 705.5            | 1 249     | 2 754     | 8 5/8" API Reg Pin |
| 24"   | MP240               | N240   | YES       | 525          | 20.67"         | 1 925          | 75.79"           | 550              | 1 213            | 2 585     | 5 699     | HEX275 Pin         |
| 34"   | MP340               | MF34   | -         | 750          | 29.53"         | 2 351          | 92.56"           | 1 050            | 2 315            | 5 807     | 12 802    | HEX370 Pin         |



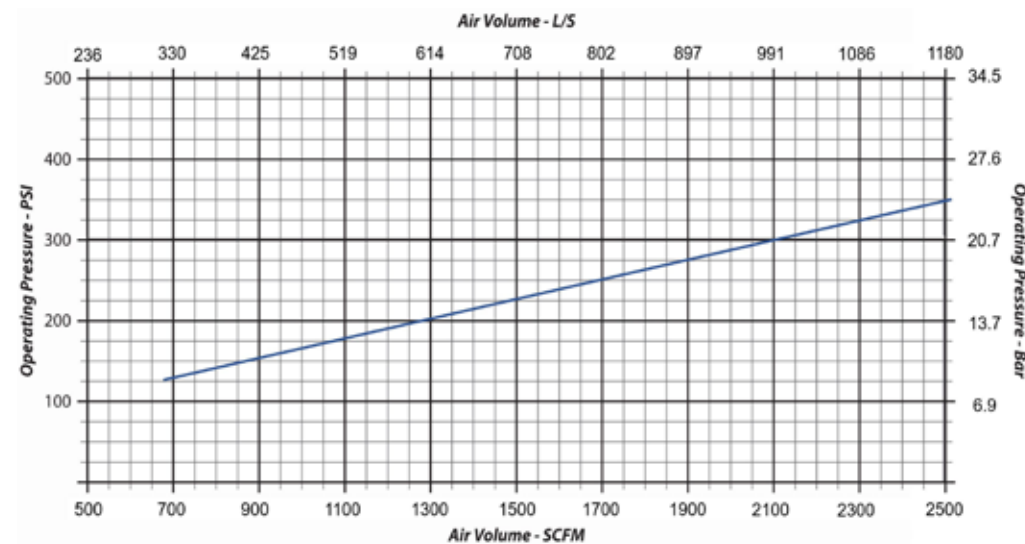
# MP120 HAMMER SPECIFICATIONS



## MP120 SPECIFICATIONS

| Technical specifications:   |                    | MP120-QL            |          | MP120-N125 |          | MP120-SD |          |
|-----------------------------|--------------------|---------------------|----------|------------|----------|----------|----------|
| Outside diameter            |                    | 273 mm              | 10.75"   | 273 mm     | 10.75"   | 273 mm   | 10.75"   |
| Length shoulder to shoulder |                    | 1 454 mm            | 57.24"   | 1 452 mm   | 57.17"   | 1 431 mm | 56.34"   |
| Weight without bit          |                    | 455 kg              | 1 003 lb | 462 kg     | 1 019 lb | 470 kg   | 1 036 lb |
| Piston weight               |                    | 138.5 kg            | 305.3 lb | 138.3 kg   | 304.9 lb | 130.8 kg | 288.4 lb |
| Stroke                      |                    | 100 mm              | 4"       | 100 mm     | 4"       | 100 mm   | 4"       |
| Shank                       |                    | QL120               |          | N125       |          | SD12     |          |
| Backhead                    |                    | 6 5/8" API Reg Pin  |          |            |          |          |          |
| Beats per minute            |                    | 1 286 1/2 @ 300 psi |          |            |          |          |          |
| <b>Drill bit diameters:</b> |                    |                     |          |            |          |          |          |
| Minimum size                | Overburden<br>Rock | 406 mm<br>304.8 mm  |          | 16"<br>12" |          |          |          |
| Maximum size                | Overburden<br>Rock | 508 mm<br>457.2 mm  |          | 20"<br>18" |          |          |          |

### Air consumption:

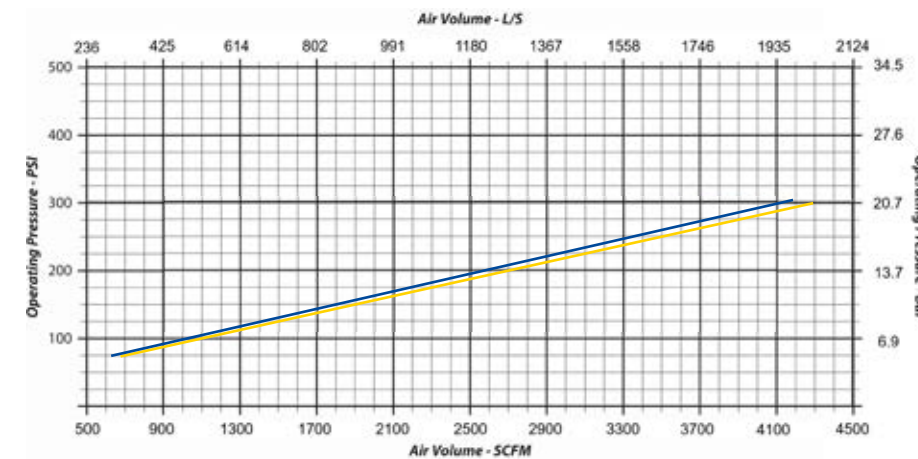


# MP180 HAMMER SPECIFICATIONS

## MP180 SPECIFICATIONS

| Technical specifications:   |                    | MP180-N180                      |          | MP180-QL200 |          | MP180-MQ          |          |
|-----------------------------|--------------------|---------------------------------|----------|-------------|----------|-------------------|----------|
| Outside diameter            |                    | 400 mm                          | 15.75"   | 400 mm      | 15.75"   | 400 mm            | 15.75"   |
| Length shoulder to shoulder |                    | 1 708 mm                        | 67.20"   | 1 673 mm    | 65.87"   | 1 782 mm          | 70.16"   |
| Weight without bit          |                    | 1 194 kg                        | 2 632 lb | 1 215 kg    | 2 679 lb | 1 249 kg          | 2 754 lb |
| Piston weight               |                    | 282 kg                          | 621.7 lb | 284 kg      | 626.1 lb | 320 kg            | 705.5 lb |
| Stroke                      |                    | 127 mm                          | 5"       | 127 mm      | 5"       | 108 mm            | 4.25"    |
| Shank                       |                    | N180                            |          | QL200       |          | N180              |          |
| Backhead                    |                    | 8 5/8" API Reg Pin / HEX275 Pin |          |             |          |                   |          |
| Beats per minute            |                    | 1 025 1/2 @ 250 psi             |          |             |          | 945 1/2 @ 250 psi |          |
| <b>Drill bit diameters:</b> |                    |                                 |          |             |          |                   |          |
| Minimum size                | Overburden<br>Rock | 508 mm<br>457 mm                |          | 20"<br>18"  |          |                   |          |
| Maximum size                | Overburden<br>Rock | 711 mm<br>609.6 mm              |          | 28"<br>24"  |          |                   |          |

### Air consumption:



— MP180-N180 & MP180-QL200  
— MP180-MQ





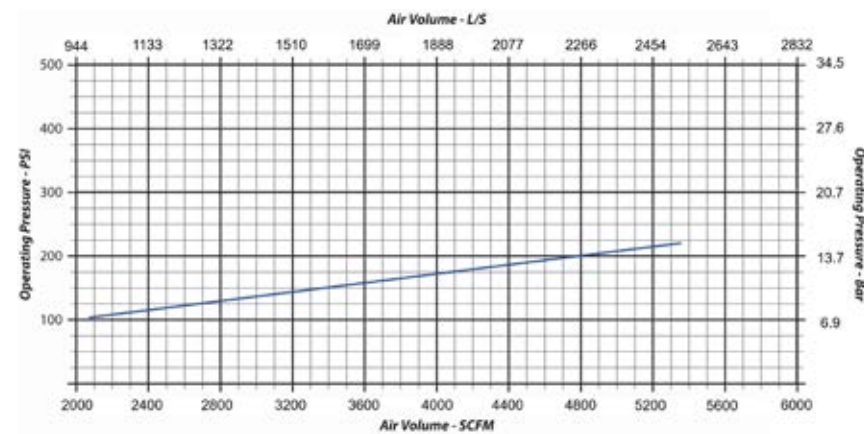
# MP240 HAMMER SPECIFICATIONS



## MP240 SPECIFICATIONS

| Technical specifications:          |   |          |     |
|------------------------------------|---|----------|-----|
| Outside diameter                   | 525 mm                                      | 20.67"   |     |
| Length shoulder to shoulder        | 1 925 mm                                    | 75.79"   |     |
| Weight without bit                 | 2 585 kg                                    | 5 699 lb |     |
| Piston weight                      | 550 kg                                      | 1 213 lb |     |
| Stroke                             | 140 mm                                      | 5.5"     |     |
| Beats per minute                   | 860 <sup>1</sup> / <sub>min</sub> @ 200 psi |          |     |
| Connections:                       |   |          |     |
| Backhead - Heaxagonal (douple pin) | HEX275 mm                                   | 10.83"   |     |
| Shank                              | N240  |          |     |
| Drill bit diameters:               |   |          |     |
| Minimum size                       | Overburden                                  | 711 mm   | 28" |
|                                    | Rock  | 609.6 mm | 24" |
| Maximum size                       | Overburden                                  | 914.4 mm | 36" |
|                                    | Rock  | 863.6 mm | 34" |

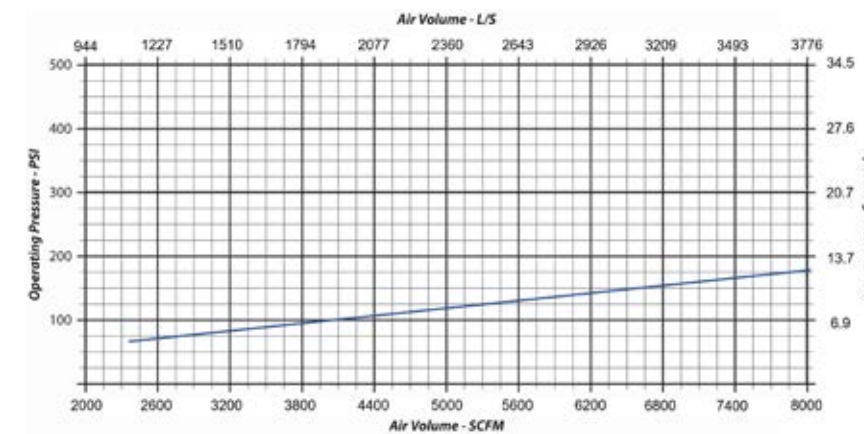
### Air consumption:



## MP340 SPECIFICATIONS

| Technical specifications:          |   |           |        |
|------------------------------------|---|-----------|--------|
| Outside diameter                   | 750 mm                                      | 29.53"    |        |
| Length shoulder to shoulder        | 2 351 mm                                    | 92.56"    |        |
| Weight without bit                 | 5 807 kg                                    | 12 802 lb |        |
| Piston weight                      | 1 050 kg                                    | 2 315 lb  |        |
| Stroke                             | 150 mm                                      | 6"        |        |
| Beats per minute                   | 580 <sup>1</sup> / <sub>min</sub> @ 150 psi |           |        |
| Connections:                       |   |           |        |
| Backhead - Heaxagonal (douple pin) | HEX370 mm                                   | 14.57"    |        |
| Shank                              | MF34  |           |        |
| Drill bit diameters:               |   |           |        |
| Minimum size                       | Overburden                                  | 1 016 mm  | 40"    |
|                                    | Rock  | 850 mm    | 33.46" |
| Maximum size                       | Overburden                                  | 1 524 mm  | 60"    |
|                                    | Rock  | 1 220 mm  | 48"    |

### Air consumption:



# SHOCK ABSORBERS



For protecting your drill rig, rotary head, boom joints and drill string components we have engineered a product line of heavy duty shock absorbers. Shock absorber are designed for easy maintenance ensuring trouble free operations on worksite every day.

**Features** in large sizes:

- Three cushion construction
- Damping on both directions
- Easy to change drive pins for rotation
- Connections according to requirements



## SHOCK ABSORBER SPECIFICATIONS

| System product code | OD  |        | Length |        | Tool length |        | Weight |       | Connections*   |                | Drive pins | Dampers both directions |
|---------------------|-----|--------|--------|--------|-------------|--------|--------|-------|----------------|----------------|------------|-------------------------|
|                     | mm  | inch   | mm     | inch   | mm          | inch   | kg     | lb    | bottom         | top            |            |                         |
| MSA04               | 95  | 3.76"  | 566    | 22.28" | 489         | 19.25" | 22     | 47.8  | 2 3/8" API Reg | 2 3/8" API Reg | -          | -                       |
| MSA05               | 114 | 4.49"  | 626    | 24.65" | 527         | 20.75" | 34     | 75.0  | 3 1/2" API Reg | 3 1/2" API Reg | -          | -                       |
| MSA06               | 140 | 5.50"  | 680    | 26.77" | 584         | 23.00" | 55     | 120.8 | 2 1/2" API Reg | 2 1/2" API Reg | -          | -                       |
| SA08                | 182 | 7.15"  | 783    | 30.83" | 675         | 26.57" | 102    | 224.9 | 4 1/2" API Reg | 4 1/2" API Reg | -          | YES                     |
| SA10                | 219 | 8.62"  | 926    | 36.46" | 799         | 31.46" | 173    | 381.4 | 6 5/8" API Reg | 6 5/8" API Reg | -          | YES                     |
| SA12                | 273 | 10.75" | 1 012  | 39.84" | 885         | 34.84" | 293    | 645.9 | 6 5/8" API Reg | 6 5/8" API Reg | YES        | YES                     |
| SA18*               | 400 | 15.75" | 1 048  | 41.26" | 911         | 35.87" | 611    | 1 347 | 8 5/8" API reg | 8 5/8" API reg | YES        | YES                     |
| SA24*               | 507 | 19.96" | 1 211  | 47.68" | 1 001       | 39.41" | 1 079  | 2 379 | 275 mm hex     | 200 mm hex     | YES        | YES                     |
| SA34*               | 607 | 23.90" | 1 398  | 55.04" | 1 118       | 44.02" | 1 846  | 4 070 | 370 mm hex     | 275 mm hex     | YES        | YES                     |

\*Connections according to the requirements.





# DRILL PIPES & ACCESSORIES



## DRILL PIPES

- Friction welding 48–140 mm
- Large diameter pipes up from 140 mm
- Cold Drawn Seamless pipes
- High strength, straight pipes with no scale
- API certified testing after production

## REVERSE CIRCULATION (RC)

- Friction welded dual wall pipes
- Pipes up to 140 mm
- RC accessories
- Complete RC conversion kits

## ADAPTERS/SUBS

- Wide range of standard cross over subs, saver subs and subs with API threads
- Customized subs by your specifications
- The subs are made out of micro alloy steel with a hard surface for wear resistance and a tough core for fatigue resistance as standard

## ACCESSORIES

- Wide range of accessories for drilling
- Non-return valves for mud and air
- Stabilizers, wrenches, hammer sleeves
- Chucks with guiding, fishing and lifting tools



Driconeq is now a part of Mincon group. For more information please visit [www.driconeq.com](http://www.driconeq.com)