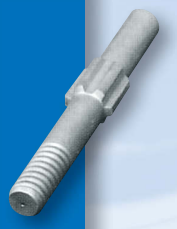
HÜTTE
BOHRTECHNIK



# Drilling Accessories

HÜTTE BOHRTECHNIK

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casagrande group


# Rotary Drilling Systems
with rotary head

# Rotary Drilling Systems D 88.9 – D 152.4

with rotary head

This drilling system is used in solid and loose grounds with basic drill rods.

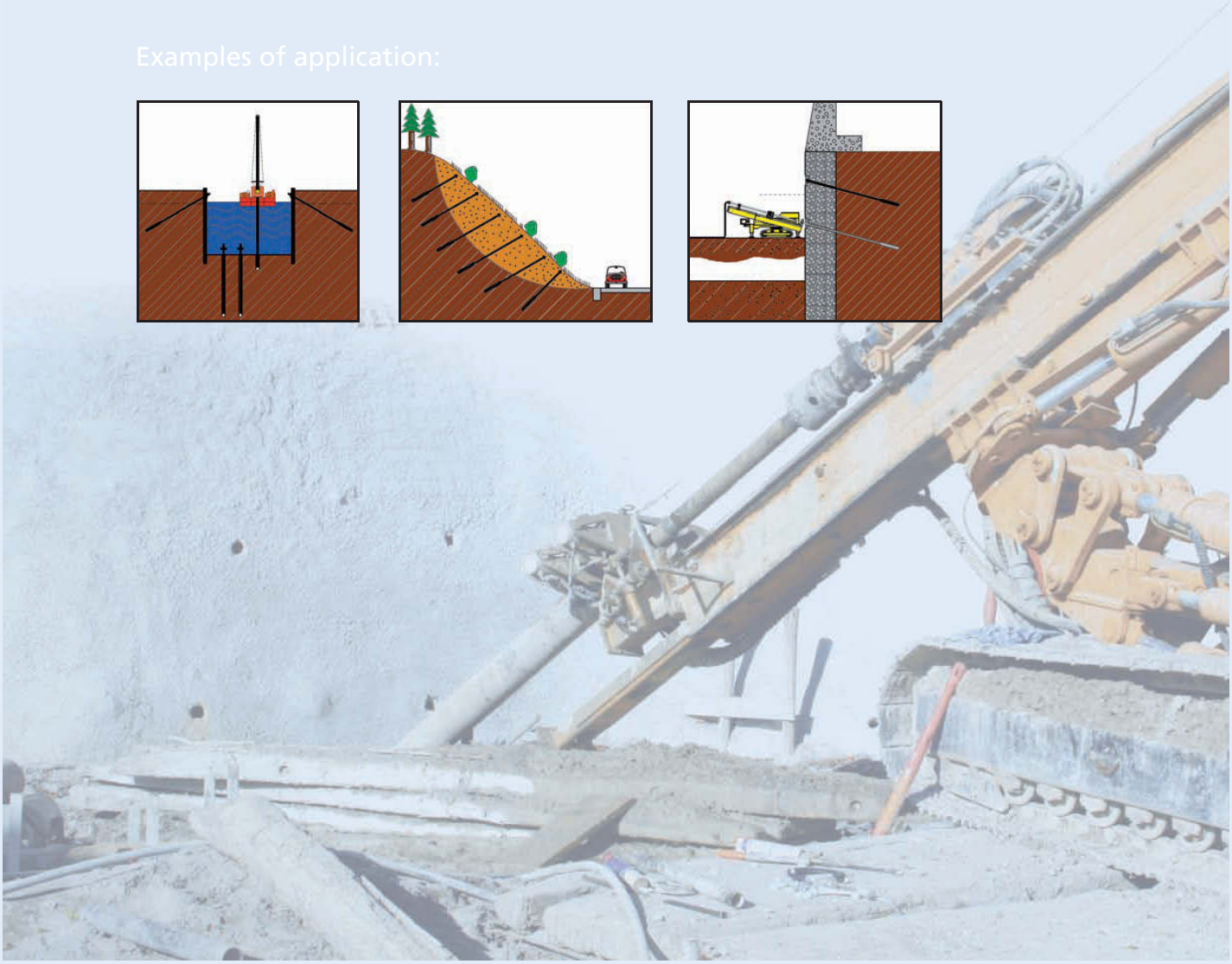
Suitable for flushing drilling in sandy ground. Also used for drilling in silty, clayey or loamy grounds with suitable tools eg drag bits or rock bits. Different flushing mediums can be used.

Examples of application:



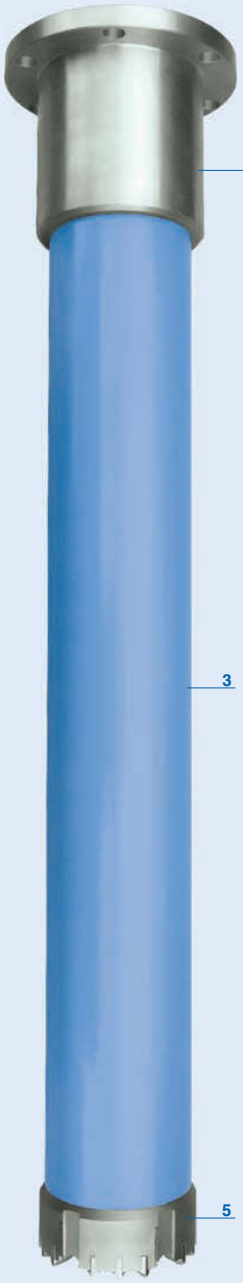


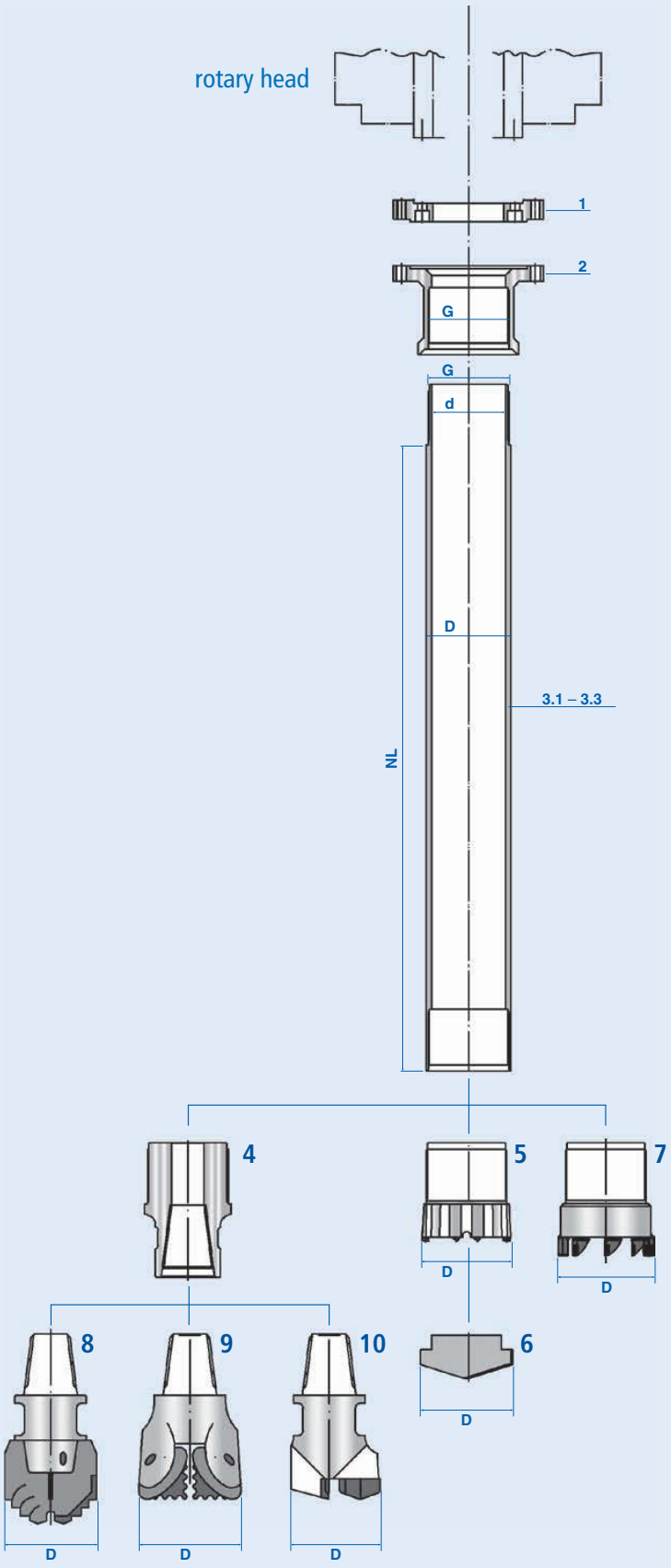




# Rotary Drilling Systems

## with rotary head



# Rotary Drilling System D 88.9

with rotary head

| Pos. | Description |
|---|---|
| 1 | Connecting flange, suitable to rotary head in use (size indicated with order) |
| 3 | Casing D 88.9, 1 start, cyl. LHT or RHT (G) x 8.8mm wth x 69mm (d).<br>Quality tubes: S355J2H; welding ends: high tempered steel quality, friction welded |
| 3.2 | 2000 mm length |
| 4 | Adaptor D 88.9, 1 start, cyl. LHT or RHT male x 2 3/8" API reg. female thread with SF |
| 6 | Cross blade D 105mm, armored or TC-fitted (option) |
| 8 | Rotary drill bit D 88.9, 2 3/8" API reg. male thread x D 100mm, step form, 3 wings |
| 10 | Rotary drill bit D 88.9, 2 3/8" API reg. male thread x D 100mm, 3 wings, TC-plates |

**Tools**

Fishing tap D 88.9, 1 start, cyl. LHT, male

**Accessories**

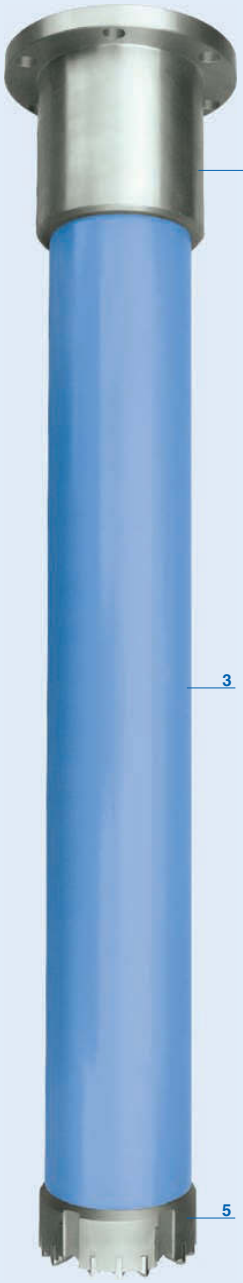
Crouting cap D 88.9, 1 start, cyl. LHT, female x G 1 1/4" connection

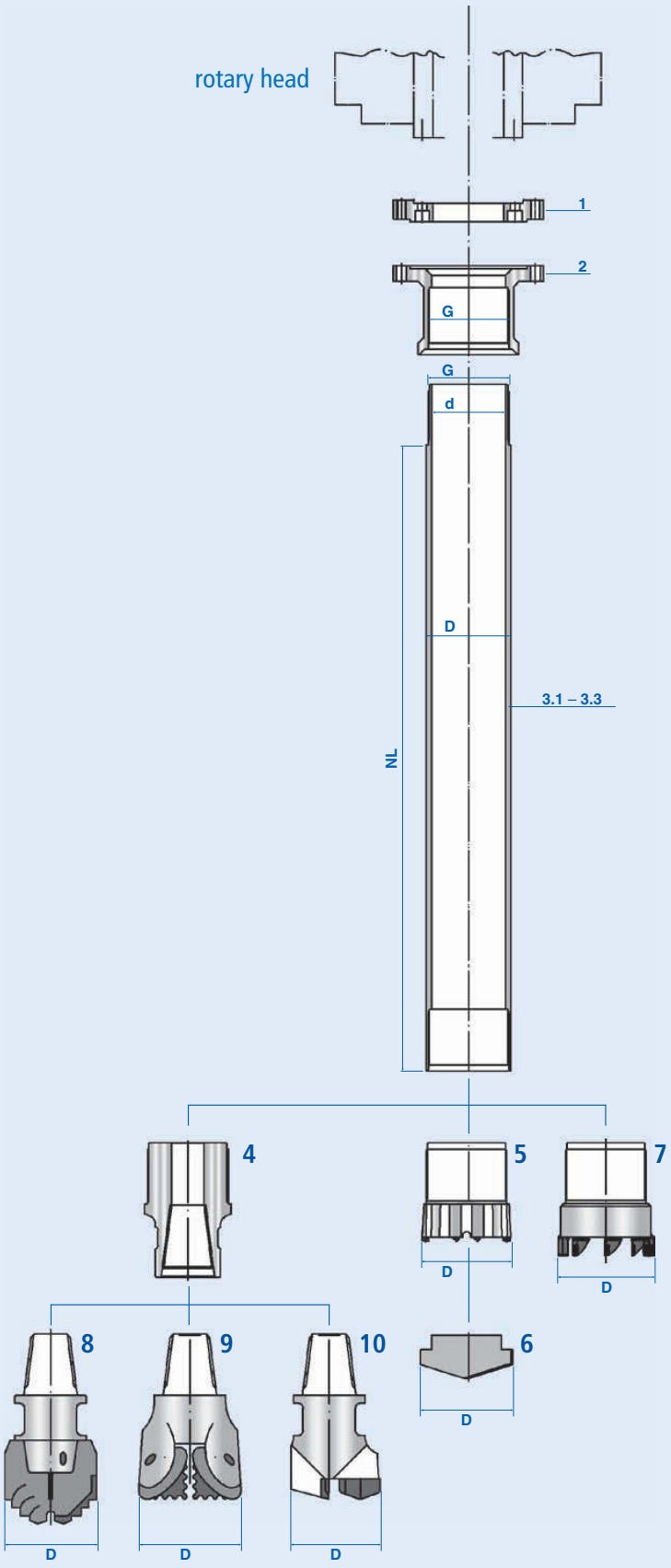
**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical;
SF = spannerflat; L = length; wth = wall thickness.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Rotary Drilling Systems

## with rotary head



# Rotary Drilling System D 114.3

with rotary head

| Pos. | Description |
|---|---|
| 1 | Connecting flange, suitable to rotary head in use (size indicated with order) |
| 3 | Casing D 114.3, 2 starts, cyl. LHT or RHT (G) x 8.8mm wth x 92mm (d).<br>Quality tubes: S355J2H; welding ends: high tempered steel quality, friction welded |
| 3.2 | 2000 mm length |
| 4 | Adaptor D 114.3, 2 starts, cyl. LHT or RHT male x 2 7/8" API reg. female thread with SF |
| 6 | Cross blade D 125mm, armored or TC-fitted (option) |
| 8 | Rotary drill bit D 114.3, 2 7/8" API reg. male thread x D 120mm, step formation, 3 wings |
| 10 | Rotary drill bit D 114.3, 2 7/8" API reg. male thread x D 120mm, 3 wings, TC-plates |

**Tools**

Fishing tap D 114.3, 3 starts, cyl. LHT, male

**Accessories**

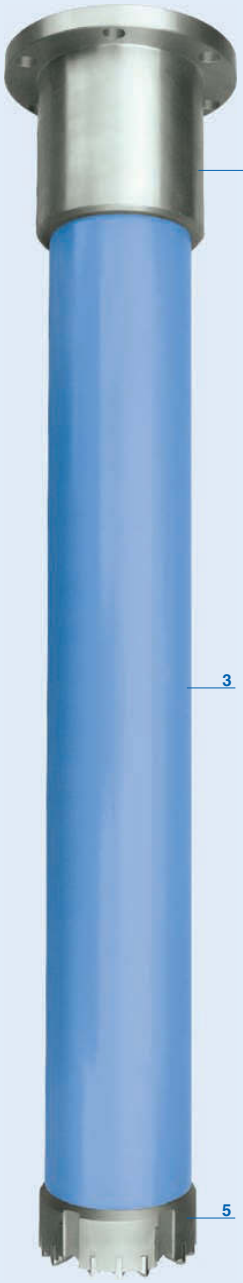
Crouting cap D 114.3, 3 starts, cyl. LHT, female x G 1 1/2" connection

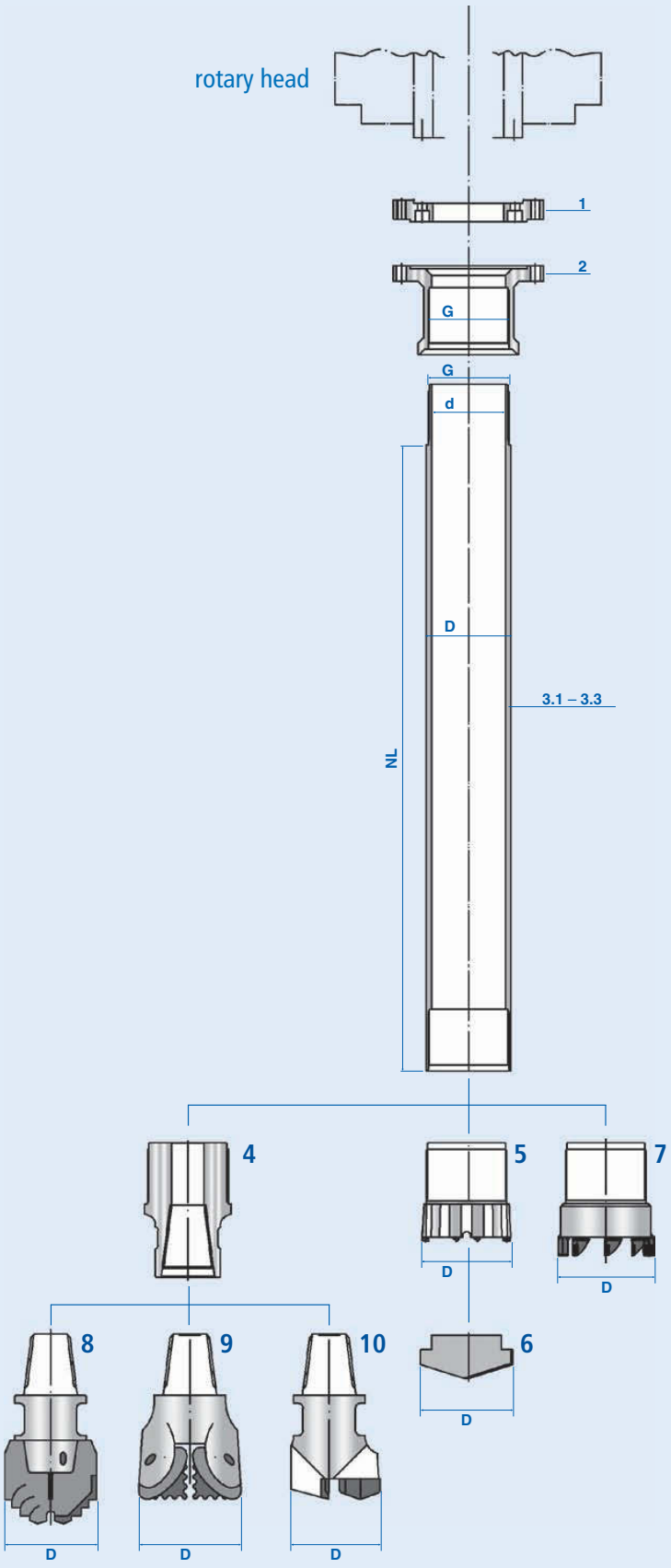
**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical;
SF = spannerflat; L = length; wth = wall thickness.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Rotary Drilling Systems

## with rotary head



# Rotary Drilling System D 133

with rotary head

| Pos. | Description |
|---|---|
| 1 | Connecting flange, suitable to rotary head in use (size indicated with order) |
| 3 | Casing D 133, 2 starts, cyl. LHT or RHT (G) x 10mm wth x 111mm (d).<br>Quality tubes: S355J2H; welding ends: high tempered steel quality, friction welded |
| 3.2 | 2000 mm length |
| 4 | Adaptor D 133, 2 starts, cyl. LHT or RHT male x 3 1/2" API reg. female thread with SF |
| 6 | Cross blade D 145mm, armored or TC-fitted (option) |
| 8 | Rotary drill bit D 133, 3 1/2" API reg. male thread x D 140mm, step formation, 3 wings |
| 10 | Rotary drill bit D 130, 3 1/2" API reg. male thread x D 140mm, 3 wings, TC-plates |

**Tools**

Fishing tap D 133, 3 starts, cyl. LHT, male

**Accessories**

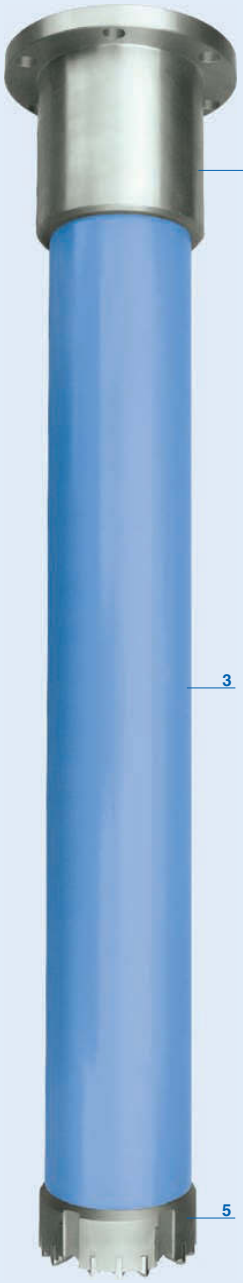
Crouting cap D 133, 3 starts, cyl. LHT, female x G 1 1/2" connection

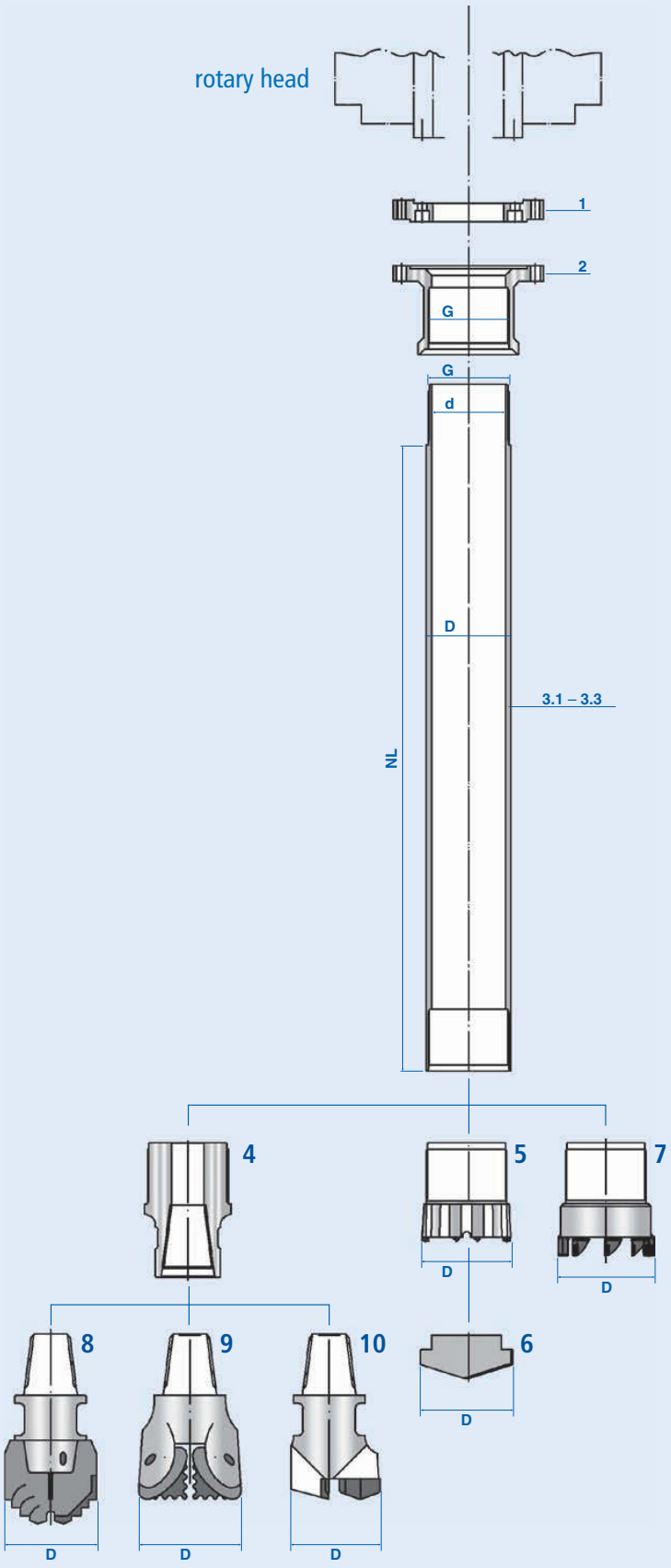
**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical;
SF = spannerflat; L = length; wth = wall thickness.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Rotary Drilling Systems

## with rotary head



# Rotary Drilling System D 152.4

with rotary head

| Pos. | Description |
|---|---|
| 1 | Connecting flange, suitable to rotary head in use (size indicated with order) |
| 3 | Casing D 152.4, 2 starts, cyl. LHT or RHT (G) x 10mm wth x 130mm (d).<br>Quality tubes: S355J2H; welding ends: high tempered steel quality, friction welded |
| 3.2 | 2000 mm length |
| 4 | Adaptor D 152.4, 2 starts, cyl. LHT or RHT male x 3 1/2" API reg. female thread with SF |
| 6 | Cross blade D 165mm, armored or TC-fitted (option) |
| 8 | Rotary drill bit D 152.4, 3 1/2" API reg. male thread x D 160mm, step design, 3 wings |
| 10 | Rotary drill bit D 152.4, 3 1/2" API reg. male thread x D 160mm, 3 wings, TC-plates |

**Tools**

Fishing tap D 152.4, 3 starts, cyl. LHT, male

**Accessories**

Crouting cap D 152.4, 3 starts, cyl. LHT, female x G 1 1/2" connection

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical;
SF = spannerflat; L = length; wth = wall thickness.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.


# **Rotary Drilling Systems**
with rotary head and DTH hammer

# Rotary Drilling Systems D 76.1 – D 114.3

with rotary head and DTH-hammer

These drilling systems are used for all types of rocks using basic drill rods and a DTH hammer.

The design of the drill bits can vary. They are used to drill various kinds of hard and sometimes abrasive rock types.

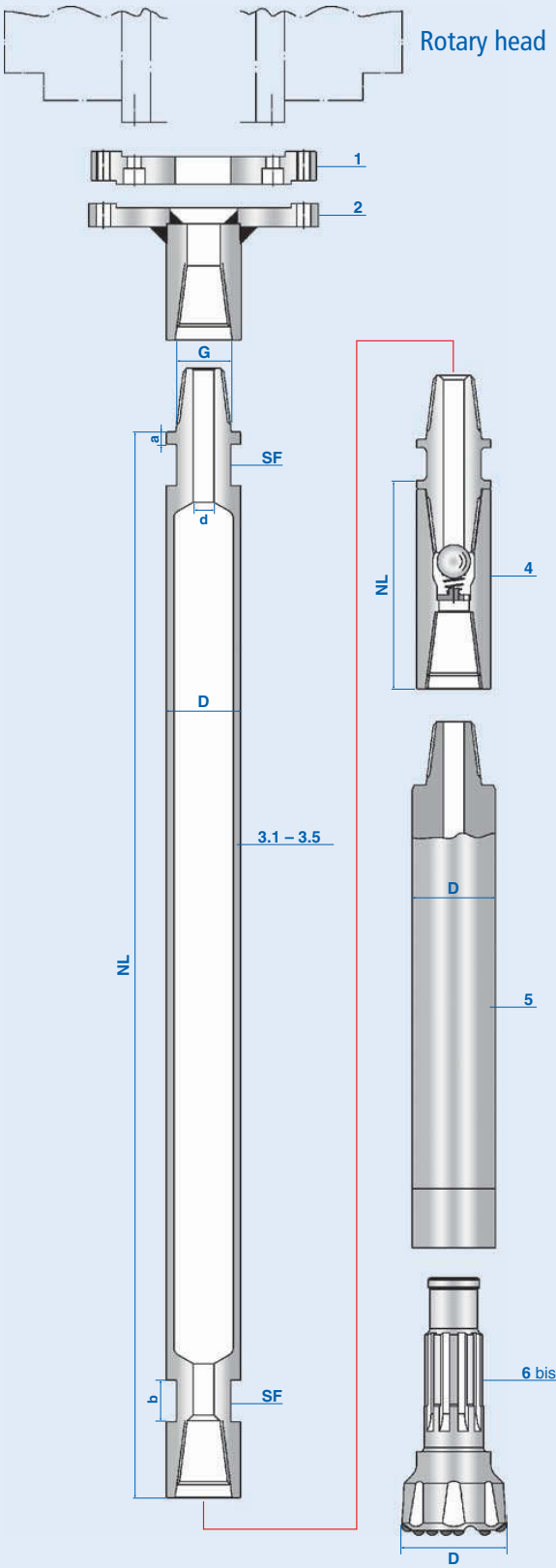
Examples of application:

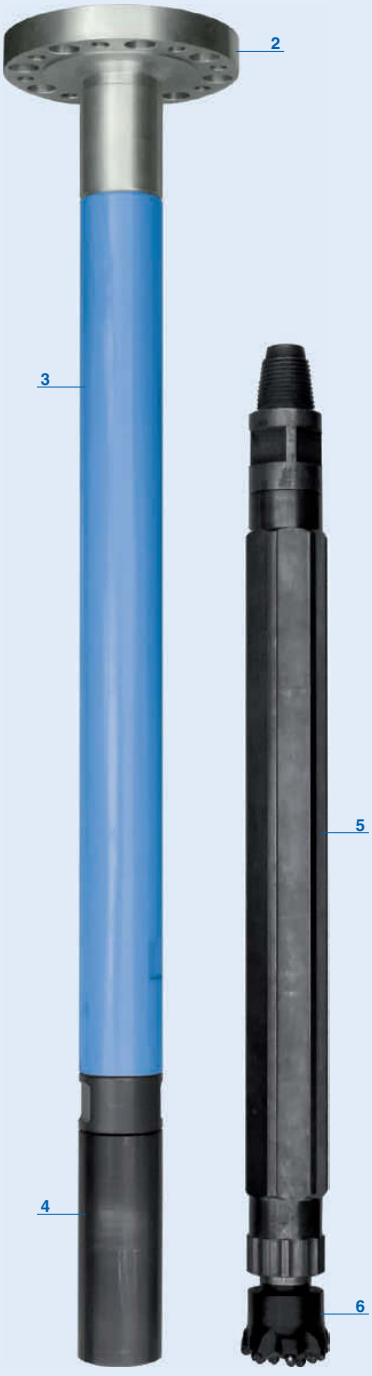





# Rotary Drilling Systems

## with rotary head and DTH hammer



# Rotary Drilling System D 76.1

with rotary head and DTH hammer

| Pos. | Description |
|---|---|
| 1 | Connecting flange, suitable to rotary head in use (size indicated with order) |
| 3 | Casing D 76.1, thread 2 3/8" API Reg. (G) x 8.8mm wth x 25mm (d) with square spannerflat SW 65, size a = 20mm, b = 60mm. Quality tubes: S355J2H; welding ends: high tempered steel quality, nitrated surface, friction welded |
| 3.2 | 3000 mm length |
| 3.4 | 1500 mm length |
| 4 | Back pressure valve D 76.1 x 2 3/8" API Reg. female/male thread x 300mm length, opening to female thread (or as desired) |
| 6 | DTH-hammer-casing bit D = 90mm, button type, shaft according to DTH-hammer type |

**Tools**

| |
|---|
| Fishing tap D 76.1, thread 2 3/8" API Reg. male |
| wrench hammer SW 65 x 500mm long |

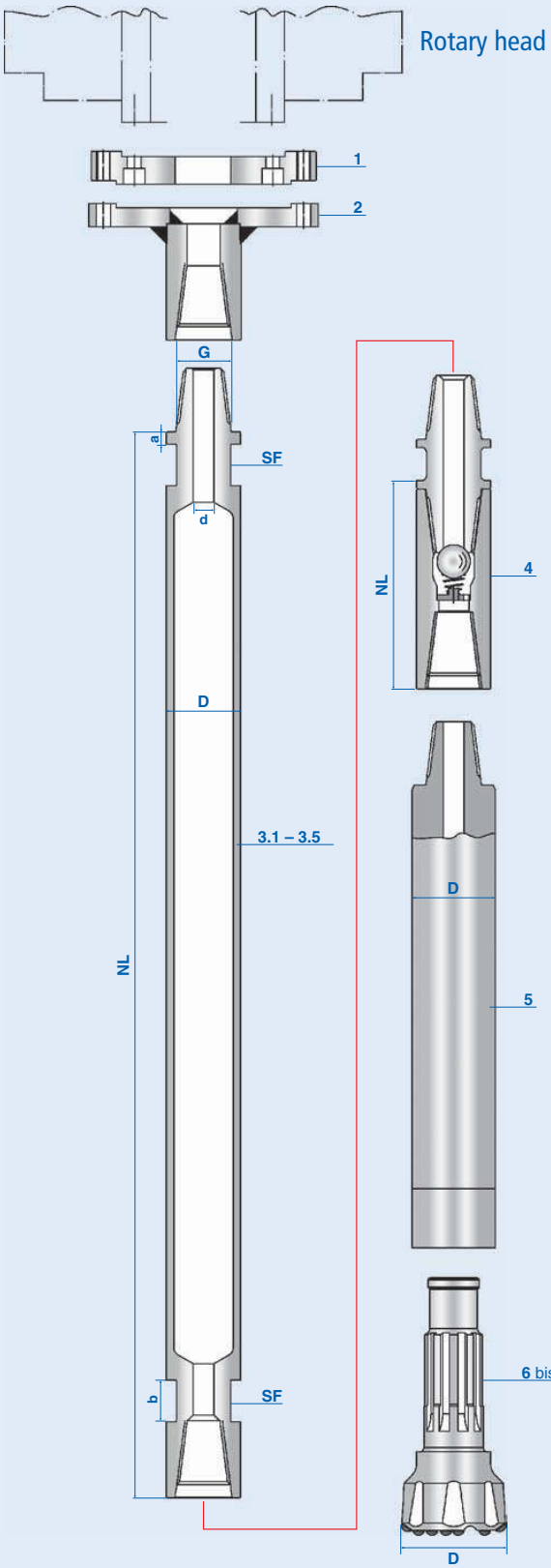
**Signs & Symbols**

wth = wall thickness; SW = key width; D = outer diameter; G = thread connection; SF = spannerflat; L = length

Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Rotary Drilling Systems

## with rotary head and DTH hammer




# Rotary Drilling System D 88.9

with rotary head and DTH hammer

| Pos. | Description |
|---|---|
| 1 | Zwischenflansch, passend zum jeweiligen Drehkopf (Maße im Bestellfall angeben). |
| 3 | Casing D 88.9, thread 2 3/8" API Reg. (G) x 8.8mm wth x 25mm (d) with square spannerflat SW 65, size a = 20mm, b = 60mm. Quality tubes: S355J2H; welding ends: high tempered steel quality, nitrated surface, friction welded |
| 3.2 | 3000 mm NL |
| 3.4 | 1500 mm NL |
| 4 | Back pressure valve D 88.9, x 2 3/8" API Reg. female/male thread x 300mm length, opening to female thread (or as desired) |
| 6 | DTH-hammer-casing bit D = 105mm, button type, shaft suitable to DTH-hammer type |
| 6b | DTH-hammer-casing bit D = 120mm, button type, shaft suitable to DTH-hammer type |

**Tools**

| |
|---|
| Fishing tap D 88.9, thread 2 3/8" API Reg. male |
| wrench hammer SW 65 x 500mm long |

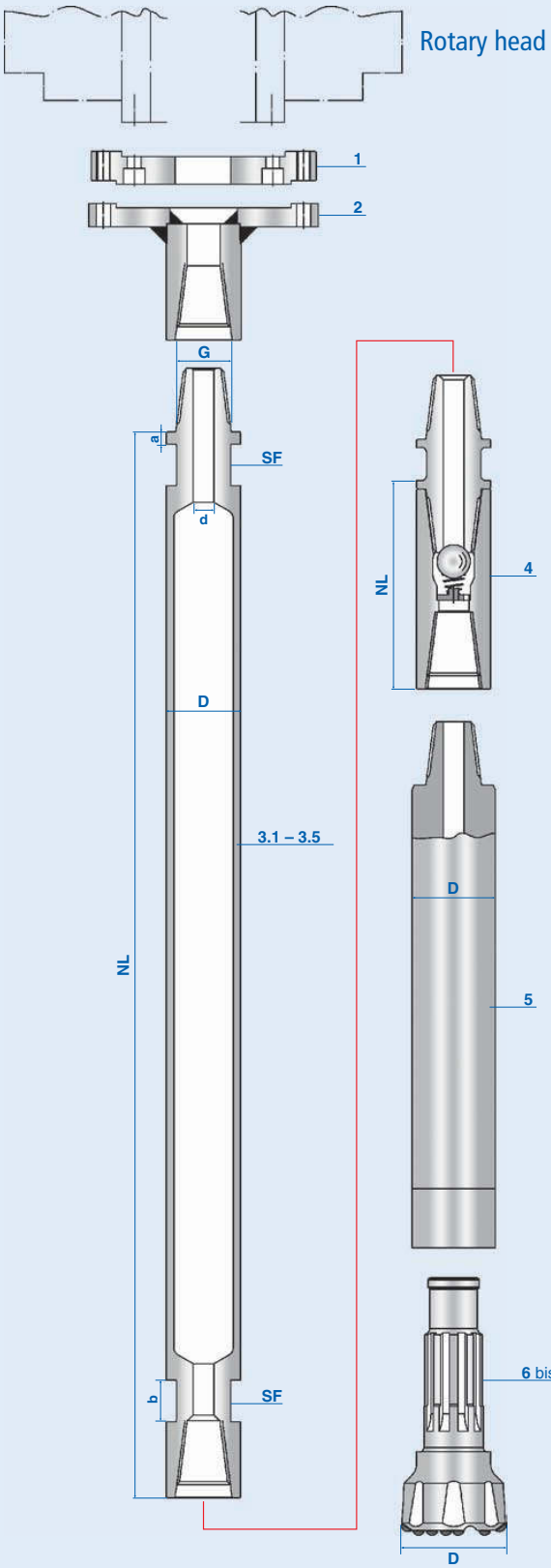
**Signs & Symbols**

wth = wall thickness; SW = key width; D = outer diameter; G = thread connection; SF = spannerflat; L = length

Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Rotary Drilling Systems

## with rotary head and DTH hammer




# Rotary Drilling System D 114.3

with rotary head and DTH hammer

| Pos. | Description |
|---|---|
| 1 | Connecting flange, suitable to rotary head in use (size indicated with order) |
| 3 | Casing D 114.3, thread 3 1/2" API Reg. (G) x 8.8mm wth x 40mm (d) with square spannerflat SW 95, size a = 20mm, b = 60mm. Quality tubes: S355J2H; welding ends: high tempered steel quality, nitrated surface, friction welded |
| 3.2 | 3000 mm length |
| 3.4 | 1500 mm length |
| 4 | Back pressure valve D 114.3 x 3 1/2" API Reg. female/male thread x length as per DTH-hammer (indicated with order), opening to female thread (or as desired) |
| 6 | DTH-hammer-casing bit D = 140mm, button type, shaft suitable to DTH-hammer type |
| 6b | DTH-hammer-casing bit D = 150mm, button type, shaft suitable to DTH-hammer type |

**Tools**

| |
|---|
| Fishing tap D 114.3, thread 3 1/2" API Reg. male |
| wrench hammer SW 95 x 500mm long |

**Signs & Symbols**

wth = wall thickness; SW = key width; D = outer diameter; G = thread connection; SF = spannerflat; L = length

Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.


# **Auger Drilling Systems**
with rotary head

# Auger Drilling Systems D115 – D200

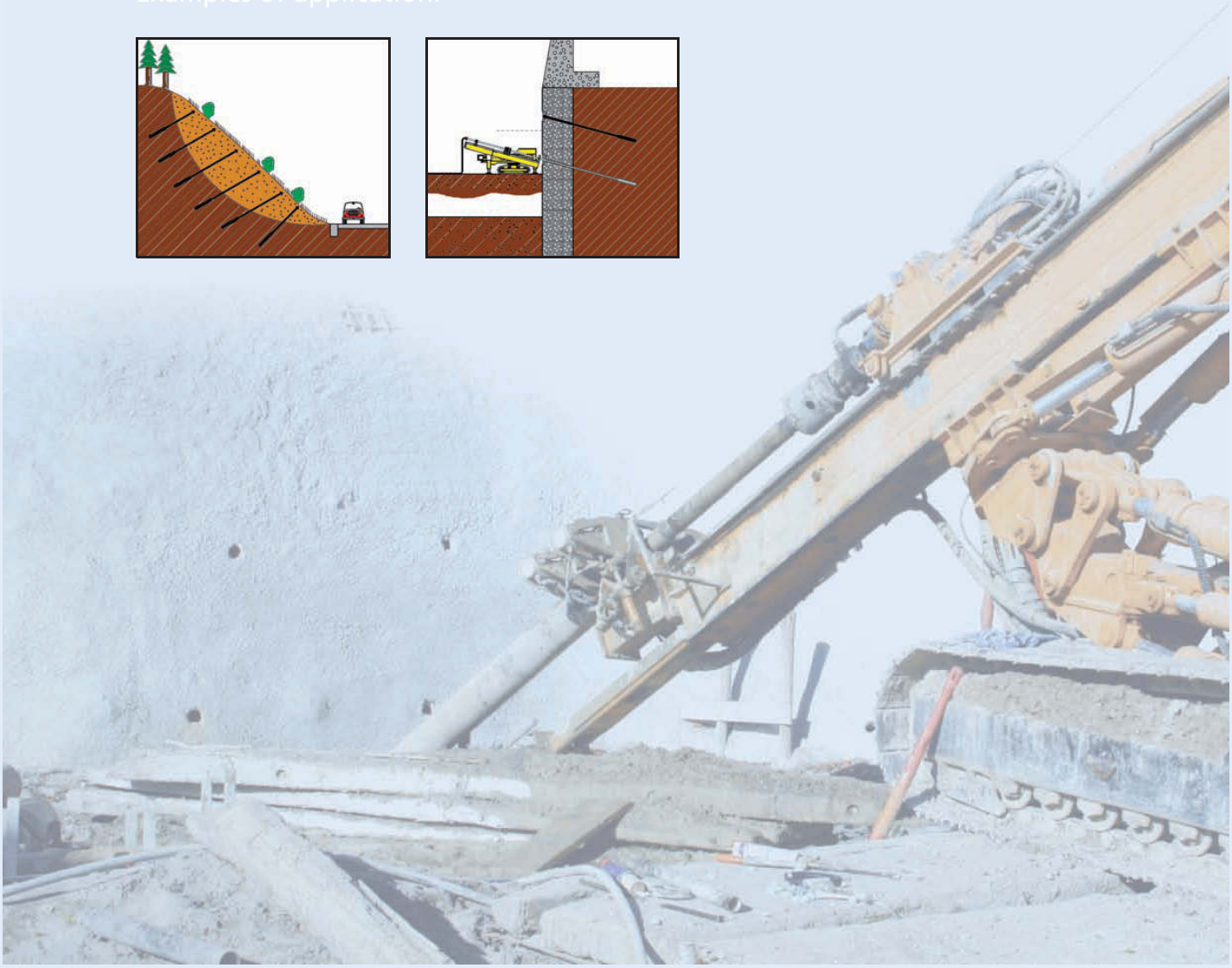
with rotary head

Auger Drilling Systems are mainly used in fissured, scaly, smooth and weathered rocks or other similar cohesive grounds. Different tools are available to manage all types of soil conditions. The discharge of the boring material can be improved by flushing if acceptable.

Examples of application:

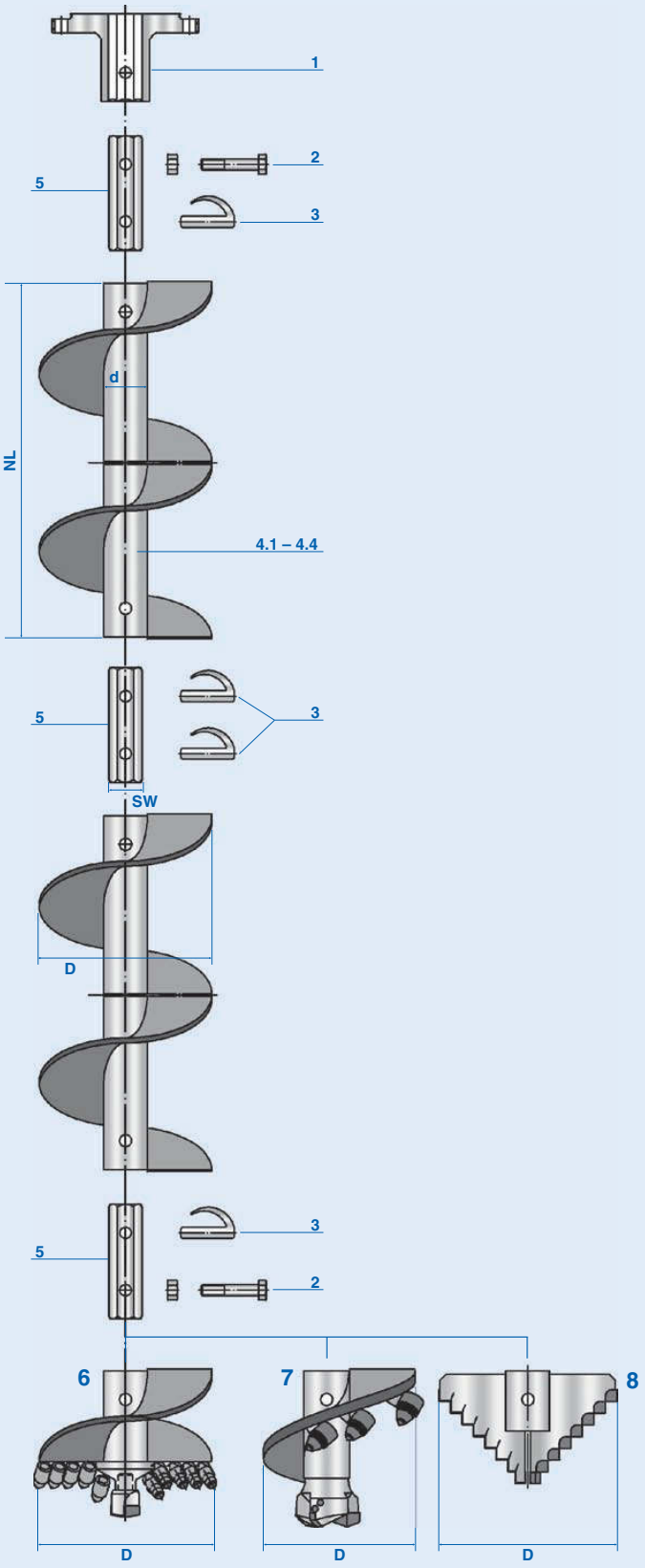


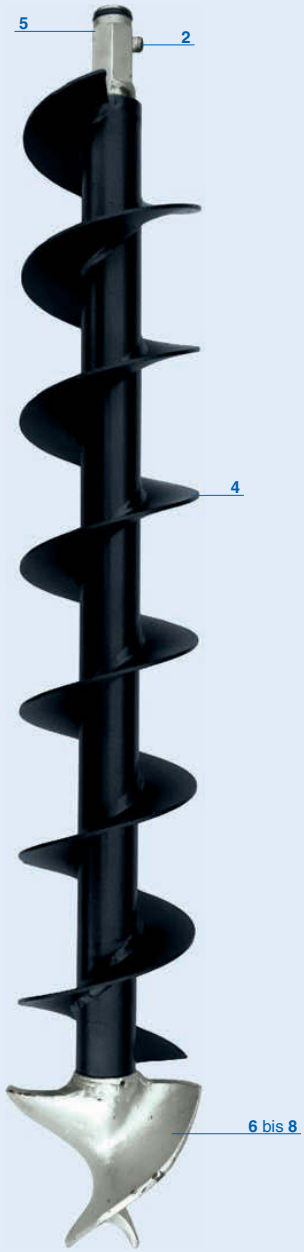




# Auger Drilling Systems

## with rotary head



# Auger Drilling System D 115

with rotary head

| Pos. | Description |
|---|---|
| 1 | Flange with hexagon socket SW 41mm, suitable to rotary head (type and name indicated with order) |
| 3 | U-pin |
| 4.1 | 3000 mm length |
| 4.3 | 1500 mm length |
| 5 | Hexagon socket SW 41mm |
| 7 | Auger drill bit d 63mm, hexagon head SW 41mm x D 115mm, 3 wings, fitted with round attack picks. |

Tools

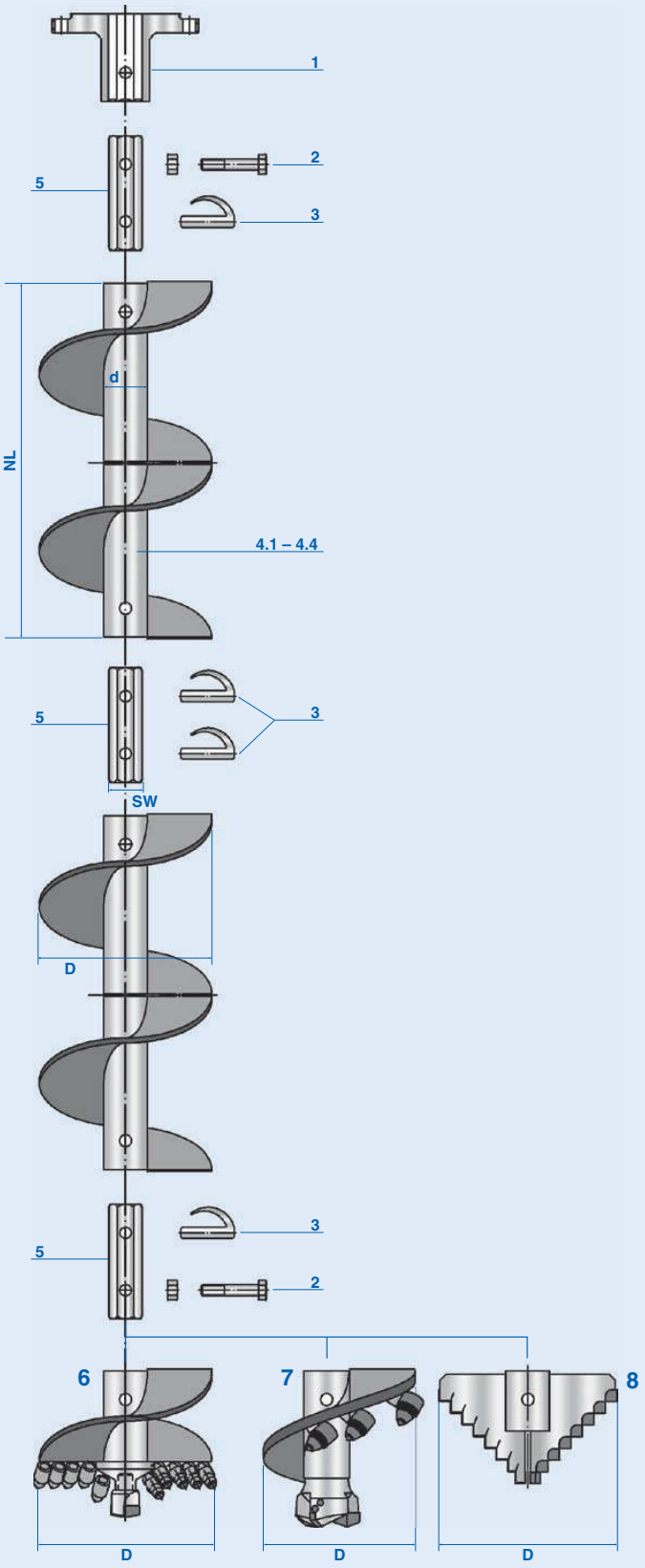
**Signs & Symbols**

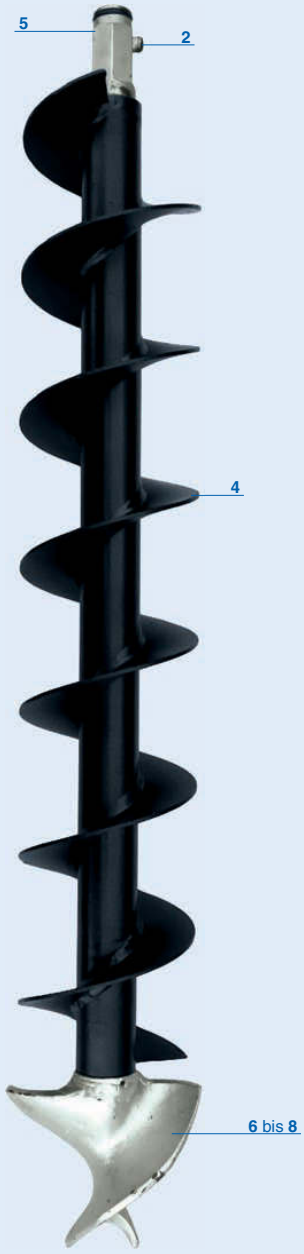
wth = wall thickness; SW = key width; D = outer diameter; G = thread connection; SF = spannerflat; L = length

Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Auger Drilling Systems

## with rotary head



# Auger Drilling System D 150

with rotary head

| Pos. | Description |
|---|---|
| 1 | Flange with hexagon socket SW 41mm, suitable to rotary head (type and name indicated with order) |
| 3 | U-pin |
| 4.2 | 2000 mm length |
| 4.4 | 1000 mm length |
| 5 | Hexagon socket SW 41mm |
| 7 | Auger drill bit d 63mm, hexagon head SW 41mm x D 150mm, 3 wings, fitted with round attack picks. |

**Tools**

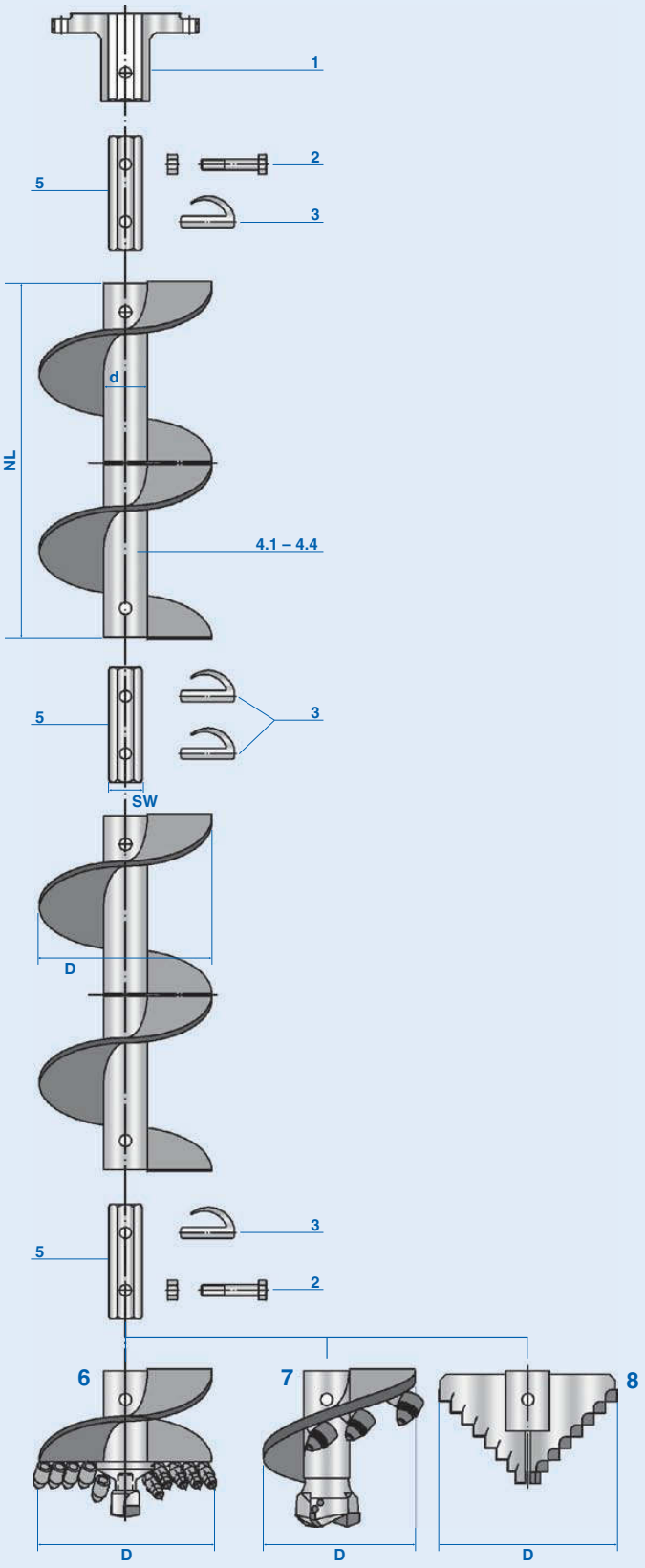
**Signs & Symbols**

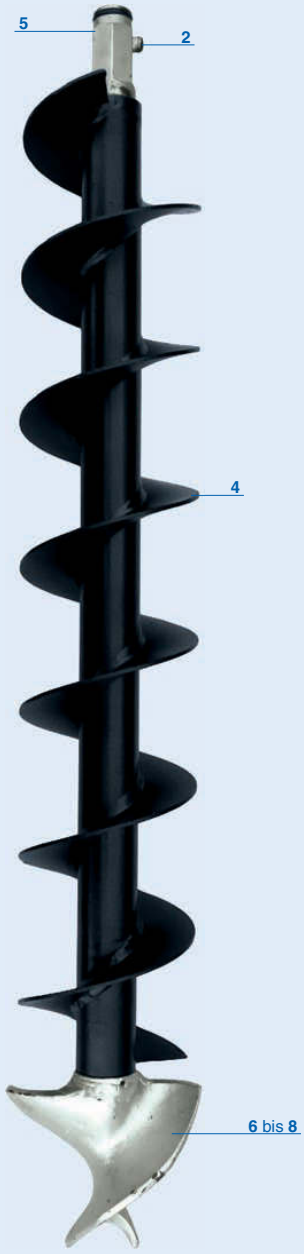
wth = wall thickness; SW = key width; D = outer diameter; G = thread connection; SF = spannerflat; L = length

Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Auger Drilling Systems

## with rotary head



# Auger Drilling System D 170

with rotary head

| Pos. | Description |
|---|---|
| 1 | |
| | Hexagon screw with self-locking nut |
| 3 | |
| | |
| | |
| 4.2 | 2000 mm length |
| | |
| 4.4 | 1000 mm length |
| 5 | Hexagon socket SW 41mm |
| | |
| 7 | Auger drill bit d 63mm, hexagon head SW 41mm x D 170mm, 3 wings, fitted with round attack picks. |

## Tools

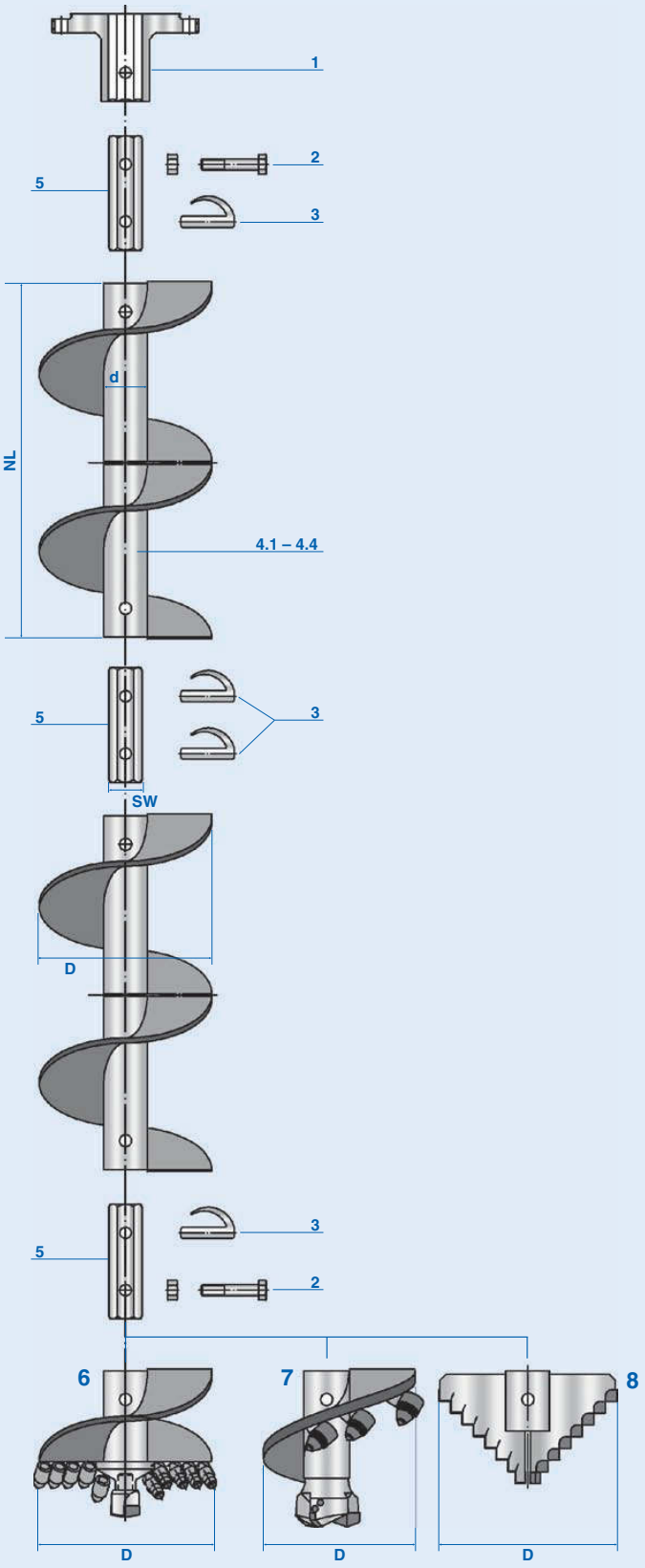
## Signs & Symbols

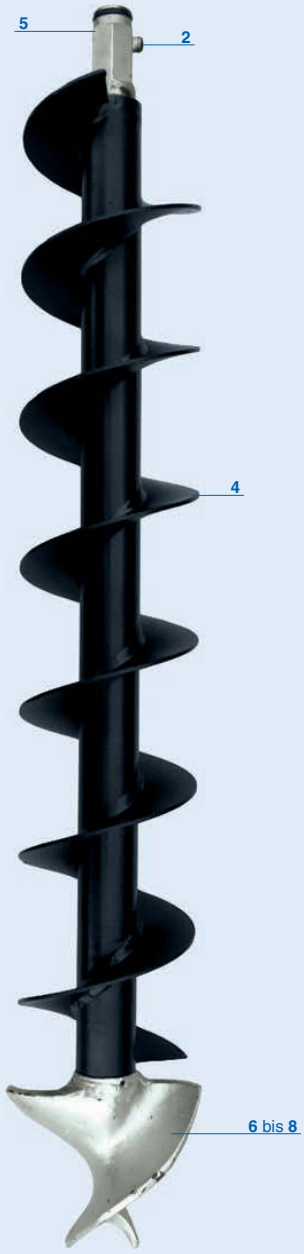
wth = wall thickness; SW = key width; D = outer diameter; G = thread connection; SF = spannerflat; L = length

Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Auger Drilling Systems

## with rotary head



# Auger Drilling System D 190

with rotary head

| Pos. | Description |
|---|---|
| 1 | |
| | Hexagon screw with self-locking nut |
| 3 | |
| | |
| | |
| 4.2 | 2000 mm length |
| | |
| 4.4 | 1000 mm length |
| 5 | Hexagon socket SW 41mm |
| | |
| 7 | Auger drill bit d 63mm, hexagon head SW 41mm x D 190mm, 3 wings, fitted with round attack picks. |

## Tools

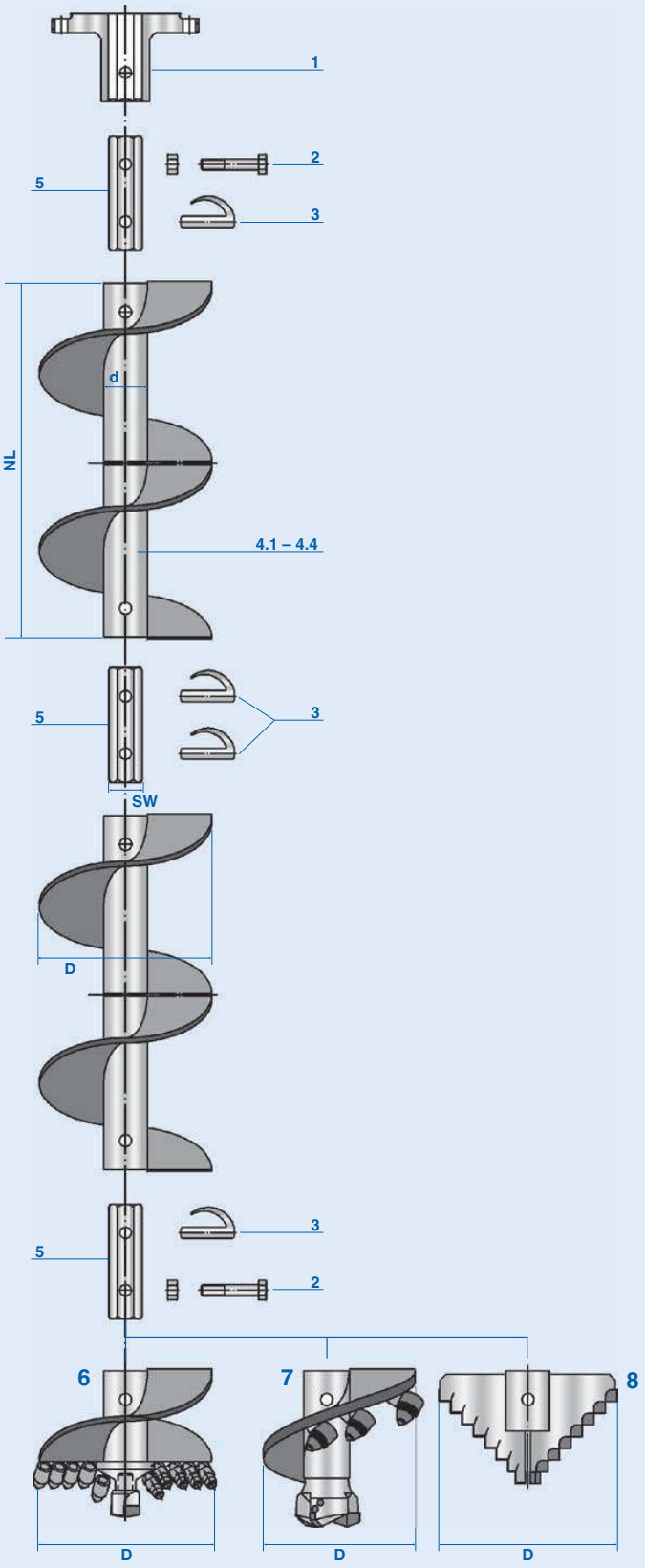
## Signs & Symbols

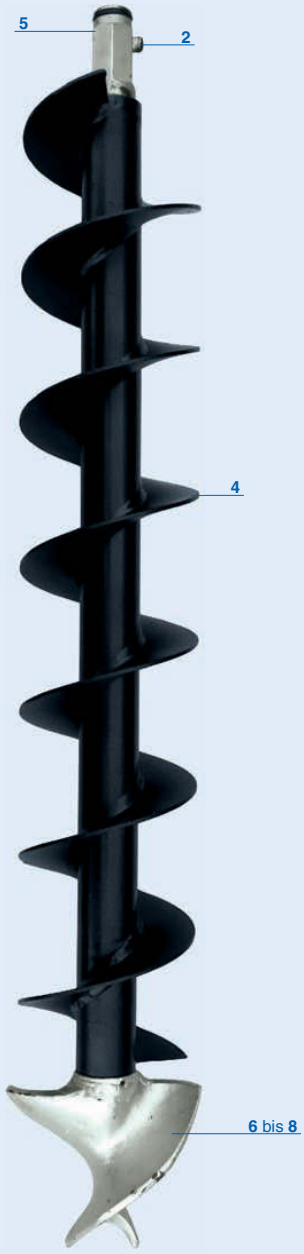
wth = wall thickness; SW = key width; D = outer diameter; G = thread connection; SF = spannerflat; L = length

Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Auger Drilling Systems

## with rotary head



# Auger Drilling System D 200

with rotary head

| Pos. | Description |
|---|---|
| 1 | |
| | Hexagon screw with self-locking nut |
| 3 | |
| | |
| | |
| 4.2 | 2000 mm length |
| | |
| 4.4 | 1000 mm length |
| 5 | Hexagon socket SW 41mm |
| | |
| 7 | Auger drill bit d 63mm, hexagon head SW 41mm x D 200mm, 3 wings, fitted with round attack picks. |

## Tools

## Signs & Symbols

wth = wall thickness; SW = key width; D = outer diameter; G = thread connection; SF = spannerflat; L = length

Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.




# **Overburden Drilling Systems**
with rotary head and DTH hammer

# Overburden Drilling Systems D 114.3 – D 244.5

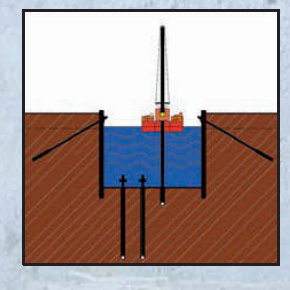
## with rotary head

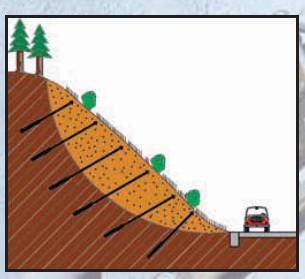
The name „Overburden Drilling" results from the composition of the earth crust. The bedrock is covered with loose layers of earth consisting of sand, gravel, boulders combined with loose ground and other deposits. All these formations are grouped together under the umbrella term „Overburden", which overlies the bedrock.

Certain drilling processes make it necessary to support the wall with tubes. The system shown here has two rotary units that can rotate opposite to each other. The rods counter-rotate independently. Air or water is flushed down the centre of the inner drill string to the end of the drill hole. It discharges the borings in the ring space between both rods through the flushing holes above. The slide of the rotary drives allows the inner rod to move ahead the outer rod and can even be pulled back. The pilot effect of the inner rod gives better alignment. So, these systems are especially suitable for horizontal drilling, e.g. injection drilling for tunnelling and exploratory drilling.

Depending on the ground conditions, the drilling can be made either with rotary drill bits or DTH-hammers. Another possible way to discharge the borings is to use auger drill rods, especially, if flushing with air or water is not allowed for construction or environmental reasons. As it is not possible with this system to drill the whole drill string in together, the drilling is made separately. First the outer casing, followed by the inner string.

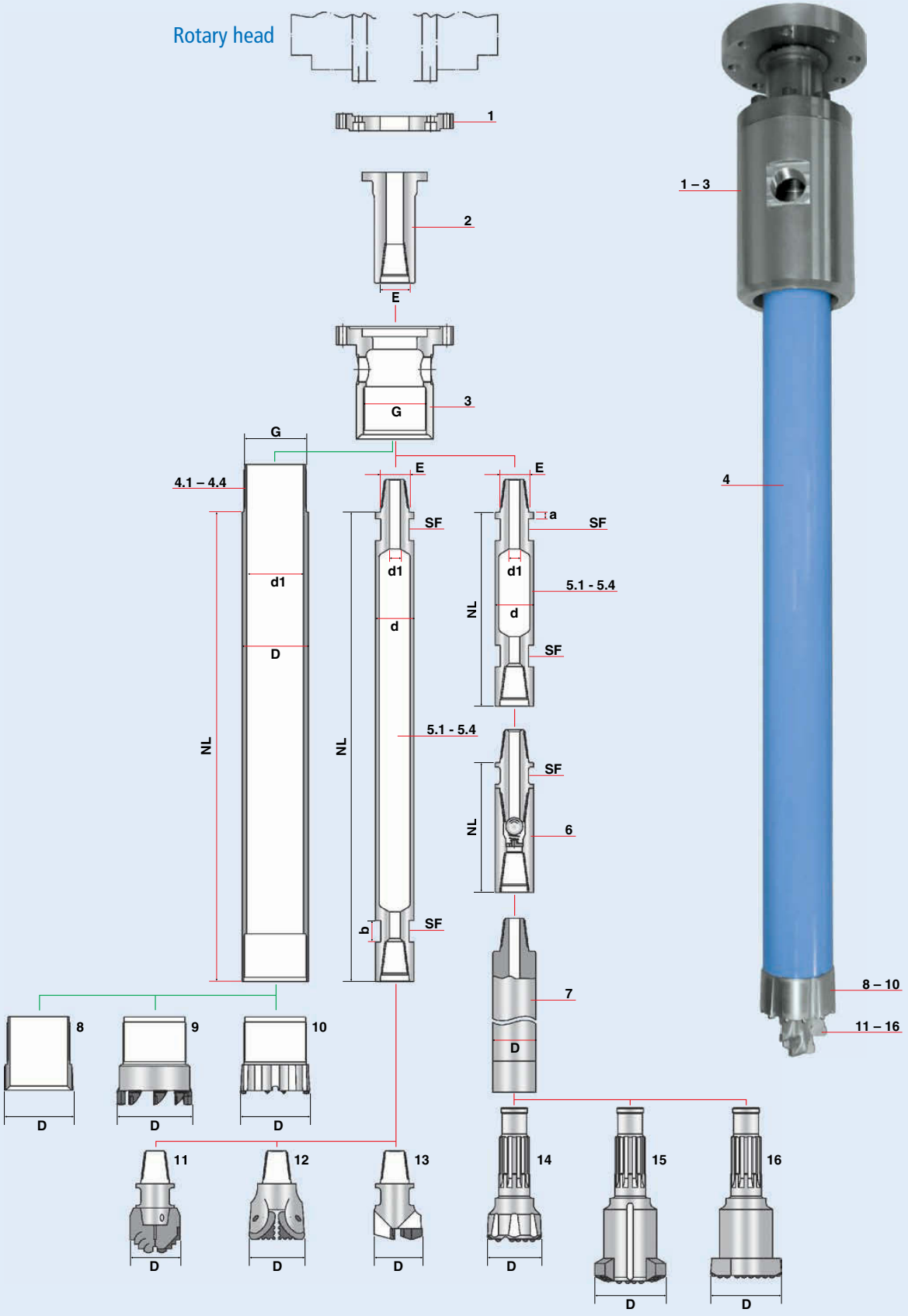
Examples of application:





# Overburden Drilling Systems

## with rotary head



# Overburden Drilling System D 114.3

with rotary head

| Pos. | Description |
|---|---|
| 1 | Connecting flange, suitable for rotary head (indicated with order) |
| 3 | Flange D 114.3, 2 starts, cyl. LHT female (G), with internal toothing |
| 4.1 | 3000 mm length |
| 4.3 | 1500 mm length |
| 5 | DTH rods d 76.1, 2 3/8" API Reg. RHT (E) x 8.8mm wth x 30mm (d1), with square spanner flats SW 65, measurements: a = 20mm, b = 65mm. Quality tubes: S355J2H; Welding ends: high tempered steel, nitrated surface, friction welded |
| 5.2 | 2000 mm length |
| 5.4 | 1000 mm length |
| 7 | DTH-hammer D = 80mm x connecting 2 3/8" API Reg. RHT male |
| 9 | Casing bit D 114.3, 2 starts, cyl. LHT male x D 130mm, with welding teeth, TC fitted |
| 11 | Rotary bit d 76.1 x 2 3/8" API Reg. RHT male x D 89mm, 3 wings, stepped form |
| 13 | Rotary bit d 76.1 x 2 3/8" API Reg. RHT male x D 89mm, 3 wings, with TC plates |

**Tools**

| |
|---|
| Fishing tap D 76.1, 2 3/8" API Reg. male thread |
| Fishing bell D 76.1, 2 3/8" API Reg. male thread |
| Spanner SW 65 x 500mm long |

**Signs & Symbols**

SW = key width; LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
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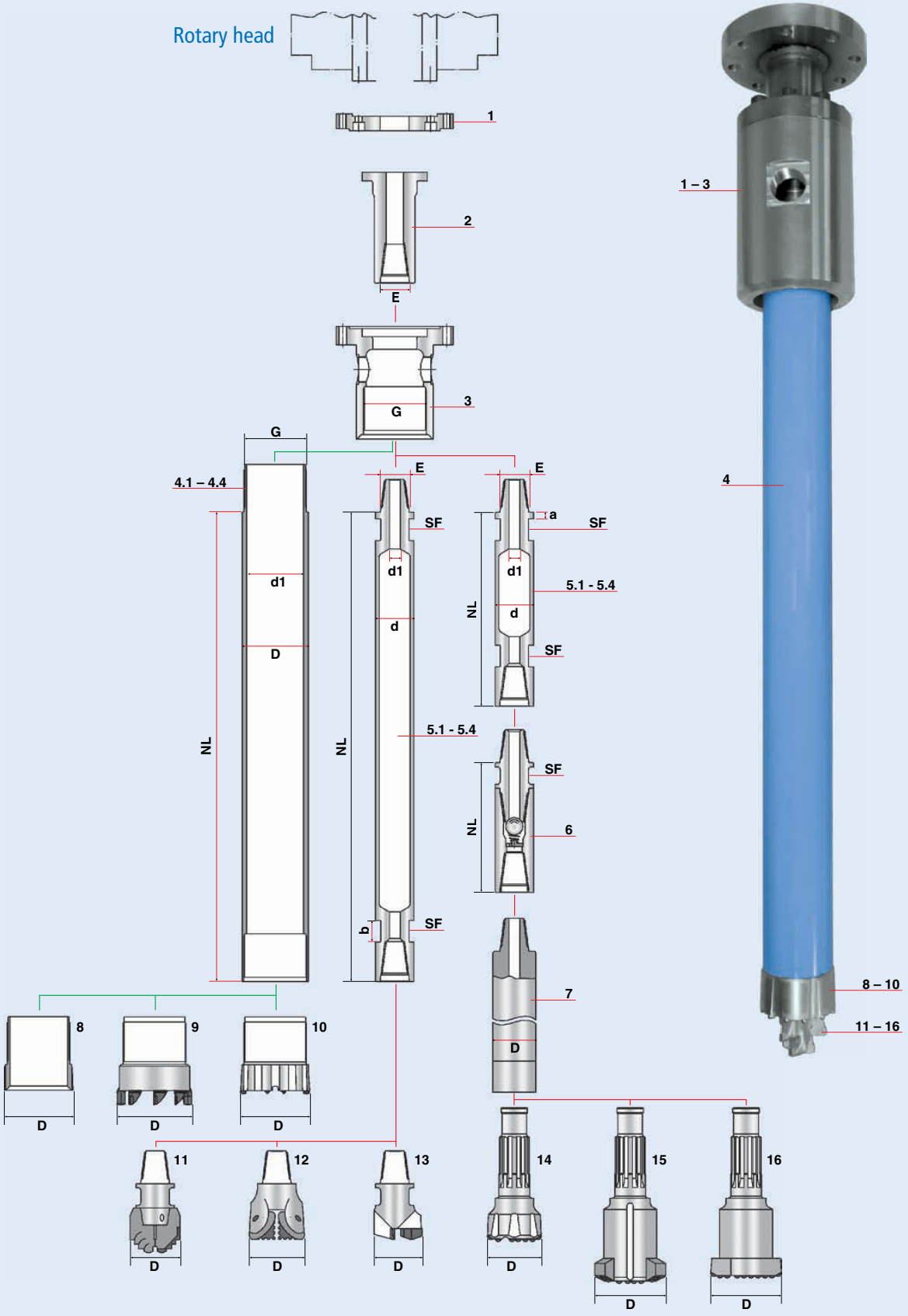
# Overburden Drilling Systems

## with rotary head



# Overburden Drilling System D 139.7

with rotary head

| Pos. | Description |
|---|---|
| 1 | Connecting flange, suitable for rotary head (indicated with order) |
| 3 | Flange D 139.7, 2 starts, cyl. LHT female (G), with internal toothing |
| 4.1 | 3000 mm length |
| 4.3 | 1500 mm length |
| 5 | DTH rods d 88.9, 2 3/8" API Reg. RHT (E) x 8.8mm wth x 30mm (d1), with square spanner flats SW 65, measurements: a = 20mm, b = 60mm. Quality tubes: S355J2H; Welding ends: high tempered steel, nitrated surface, friction welded |
| 5.2 | 2000 mm length |
| 5.4 | 1000 mm length |
| 7 | DTH-hammer D = 92mm x connecting 2 3/8" API Reg. RHT male |
| 9 | Casing bit D 139.7, 2 starts, cyl. LHT male x D 150mm, with welding teeth, TC fitted |
| 11 | Rotary bit d 88.9 x 2 3/8" API Reg. RHT male x D 115mm, 3 wings, stepped form |
| 13 | Rotary bit d 88.9 x 2 3/8" API Reg. RHT male x D 115mm, 3 wings, with TC plates |

## Tools

| |
|---|
| Fishing bell D 88.9, 2 3/8" API Reg. male thread |

## Signs & Symbols

SW = key width; LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
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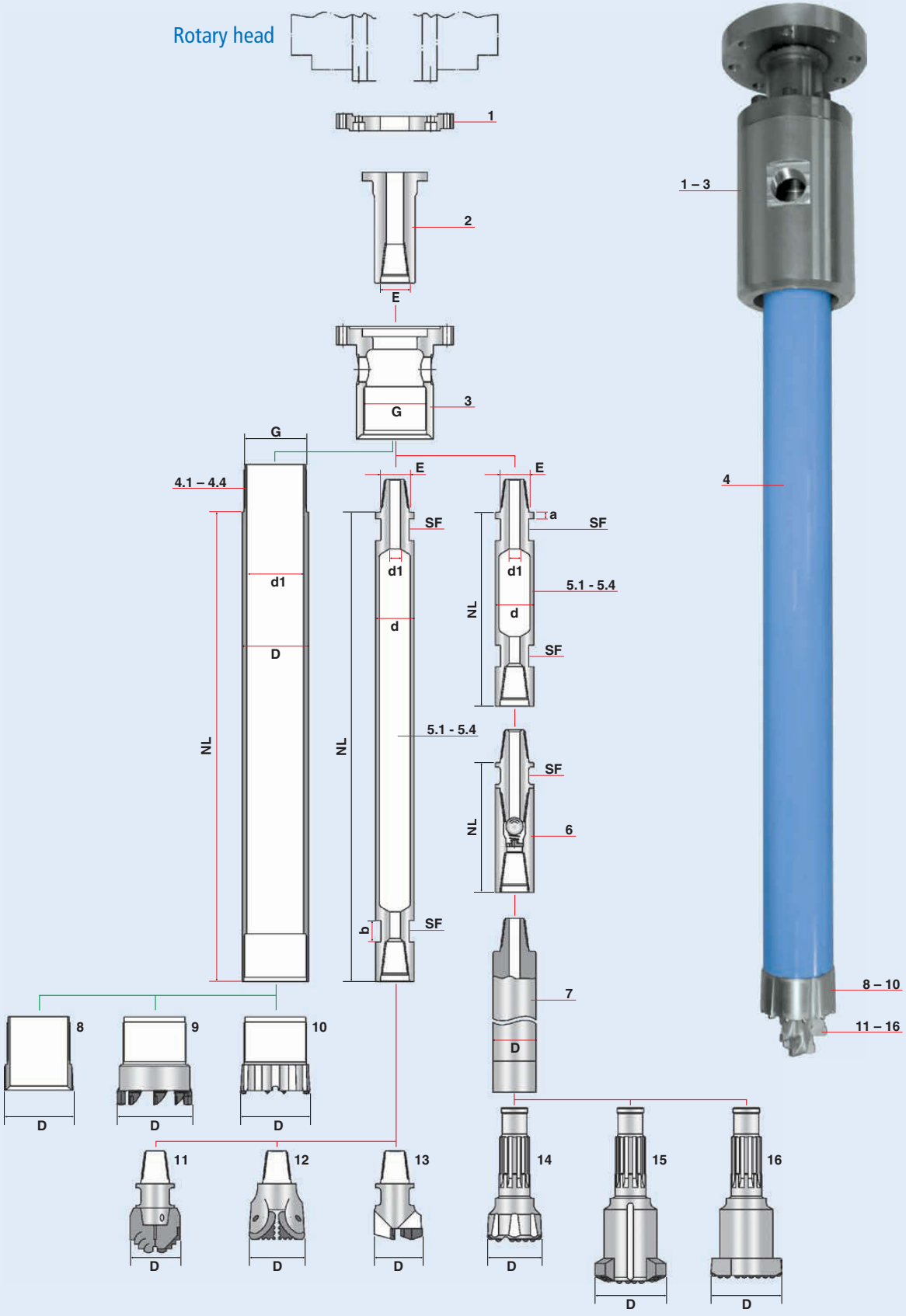
# Overburden Drilling Systems

## with rotary head



# Overburden Drilling System D 152.4

with rotary head

| Pos. | Description |
|---|---|
| 1 | Connecting flange, suitable for rotary head (indicated with order) |
| 3 | Flange D 152.4, 2 starts, cyl. LHT female (G), with internal toothing |
| 4.1 | 3000 mm length |
| 4.3 | 1500 mm length |
| 5 | DTH rods d 88.9, 2 3/8" API Reg. RHT (E) x 8.8mm wth x 25mm (d1), with square spanner flats SW 65, measurements: a = 20mm, b = 60mm. Quality tubes: S355J2H; Welding ends: high tempered steel, nitrated surface, friction welded |
| 5.2 | 2000 mm length |
| 5.4 | 1000 mm length |
| 7 | DTH-hammer D = 92mm x connecting 2 3/8" API Reg. RHT male |
| 9 | Casing bit D 152.4, 2 starts, cyl. LHT male x D 170mm, with welding teeth, TC fitted |
| 11 | Rotary bit d 88.9 x 2 3/8" API Reg. RHT male x D 125mm, 3 wings, stepped form |
| 13 | Rotary bit d 88.9 x 2 3/8" API Reg. RHT male x D 125mm, 3 wings, with TC plates |
| 15 | DTH-hammer drill bit type "Super Jaws T 130" x D 165mm/d 127mm, button type, shaft adapted for type of DTH-hammer |

## Tools

Fishing bell D 88.9, 2 3/8" API Reg. male thread

## Signs & Symbols

SW = key width; LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
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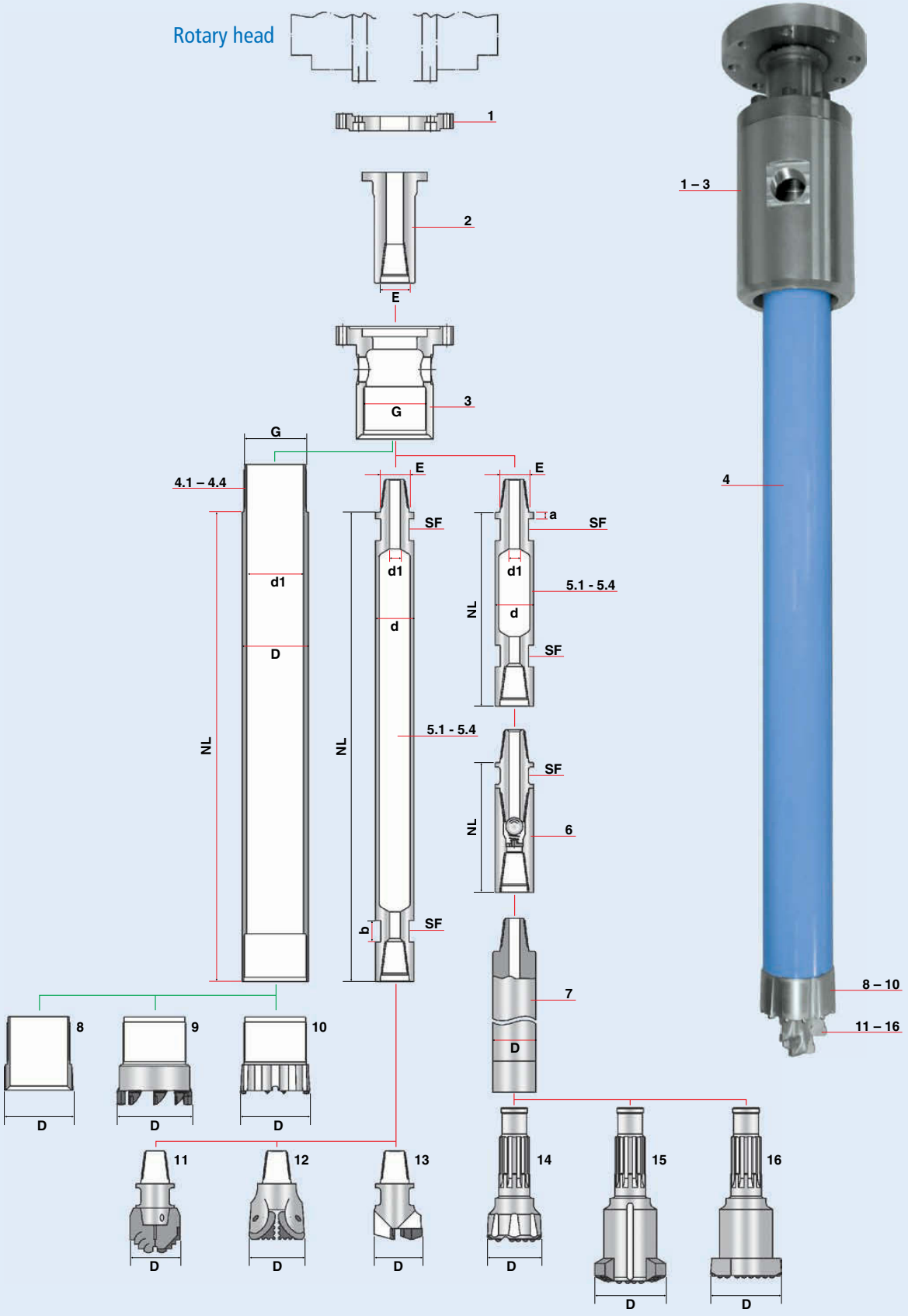
# Overburden Drilling Systems

## with rotary head



# Overburden Drilling System D 177.8

with rotary head

| Pos. | Description |
|---|---|
| 1 | Connecting flange, suitable for rotary head (indicated with order) |
| 3 | Flange D 177.8, 2 starts, cyl. LHT female (G), with internal toothing |
| 4.1 | 3000 mm length |
| 4.3 | 1500 mm length |
| 5 | DTH rods d 114.3, 3 1/2" API Reg. RHT (E) x 8.8mm wth x 45mm (d1), with square spanner flats SW 95, measurements: a = 20mm, b = 60mm. Quality tubes: S355J2H; Welding ends: high tempered steel, nitrated surface, friction welded |
| 5.2 | 2000 mm length |
| 5.4 | 1000 mm length |
| 7 | DTH-hammer D = 122mm x connecting 3 1/2" API Reg. RHT male |
| 9 | Casing bit D 177.8, 2 starts, cyl. LHT male x D 190mm, with welding teeth, TC fitted |
| 11 | Rotary bit d 114.3 x 3 1/2" API Reg. RHT male x D 150mm, 3 wings, stepped form |
| 13 | Rotary bit d 114.3 x 3 1/2" API Reg. RHT male x D 150mm, 3 wings, with TC plates |
| 15 | DTH-hammer drill bit type "Super Jaws T 150" x D 197mm/d 150mm, button type, shaft adapted for type of DTH-hammer |

## Tools

| |
|---|
| Fishing bell D 114.3, 3 1/2" API Reg. male thread |

## Signs & Symbols

SW = key width; LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
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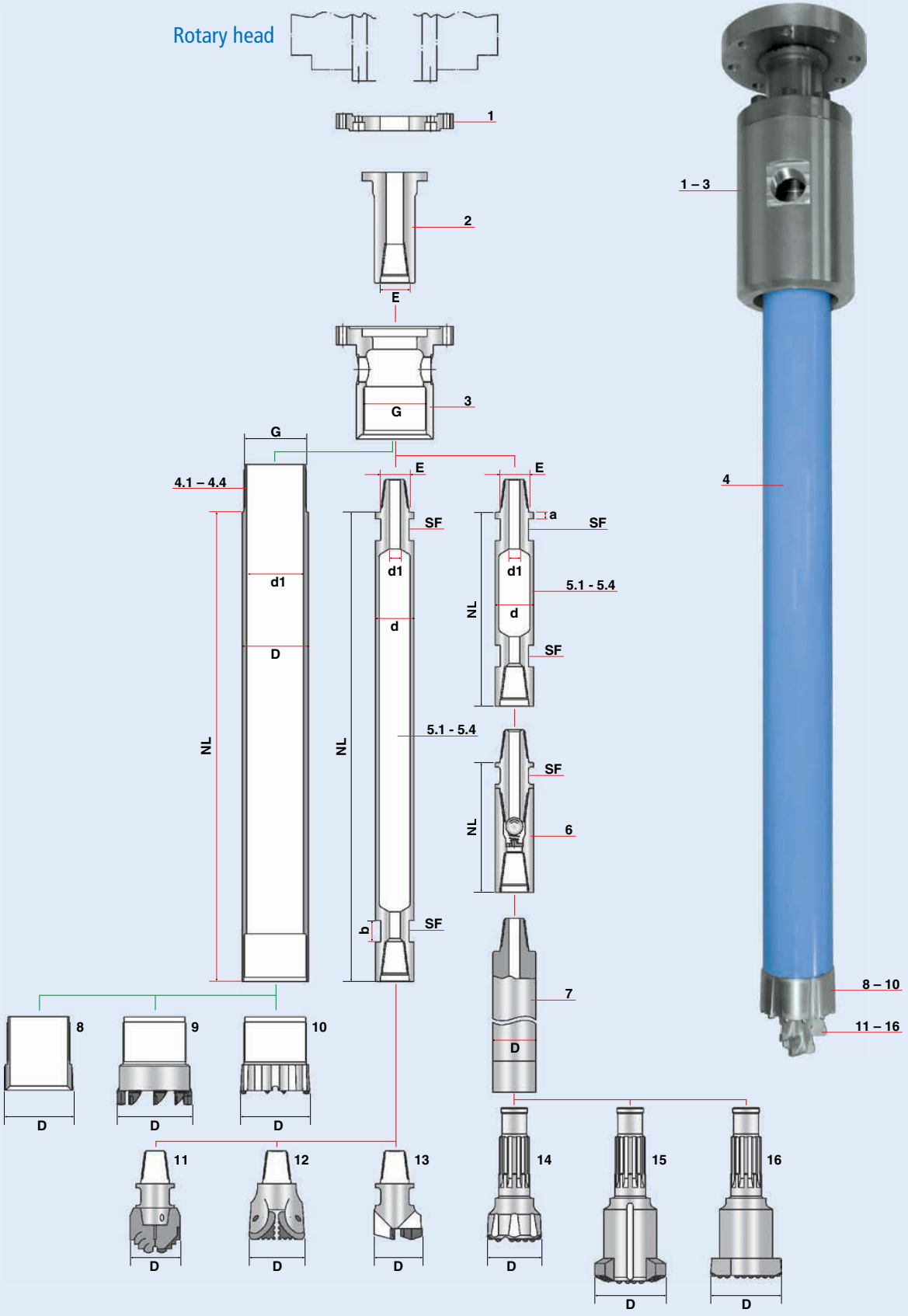
# Overburden Drilling Systems

## with rotary head



# Overburden Drilling System D 219.1

with rotary head

| Pos. | Description |
|---|---|
| 1 | Connecting flange, suitable for rotary head (indicated with order) |
| 3 | Flange D 219.1, 2 starts, cyl. LHT female (G), with internal toothing |
| 4.1 | 3000 mm length |
| 4.3 | 1500 mm length |
| 5 | DTH rods d 114.3, 3 1/2" API Reg. RHT (E) x 8.8mm wth x 45mm (d1), with square spanner flats SW 95, measurements: a = 20mm, b = 60mm. Quality tubes: S355J2H; Welding ends: high tempered steel, nitrated surface, friction welded |
| 5.2 | 2000 mm length |
| 5.4 | 1000 mm length |
| 7 | DTH-hammer D = 146mm x connecting 3 1/2" API Reg. RHT male |
| 9 | Casing bit D 219.1, 2 starts, cyl. LHT male x D 230mm, with welding teeth, TC fitted |
| 11 | Rotary bit d 114.3 x 3 1/2" API Reg. RHT male x D 195mm, 3 wings, stepped form |
| 13 | Rotary bit d 114.3 x 3 1/2" API Reg. RHT male x D 195 mm, 3 wings, with TC plates |
| 15 | DTH-hammer drill bit type "Super Jaws T 190" x D 237mm/d 191mm, button type, shaft adapted for type of DTH-hammer |

**Tools**

Fishing bell D 114.3, 3 1/2" API Reg. male thread

**Signs & Symbols**

SW = key width; LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
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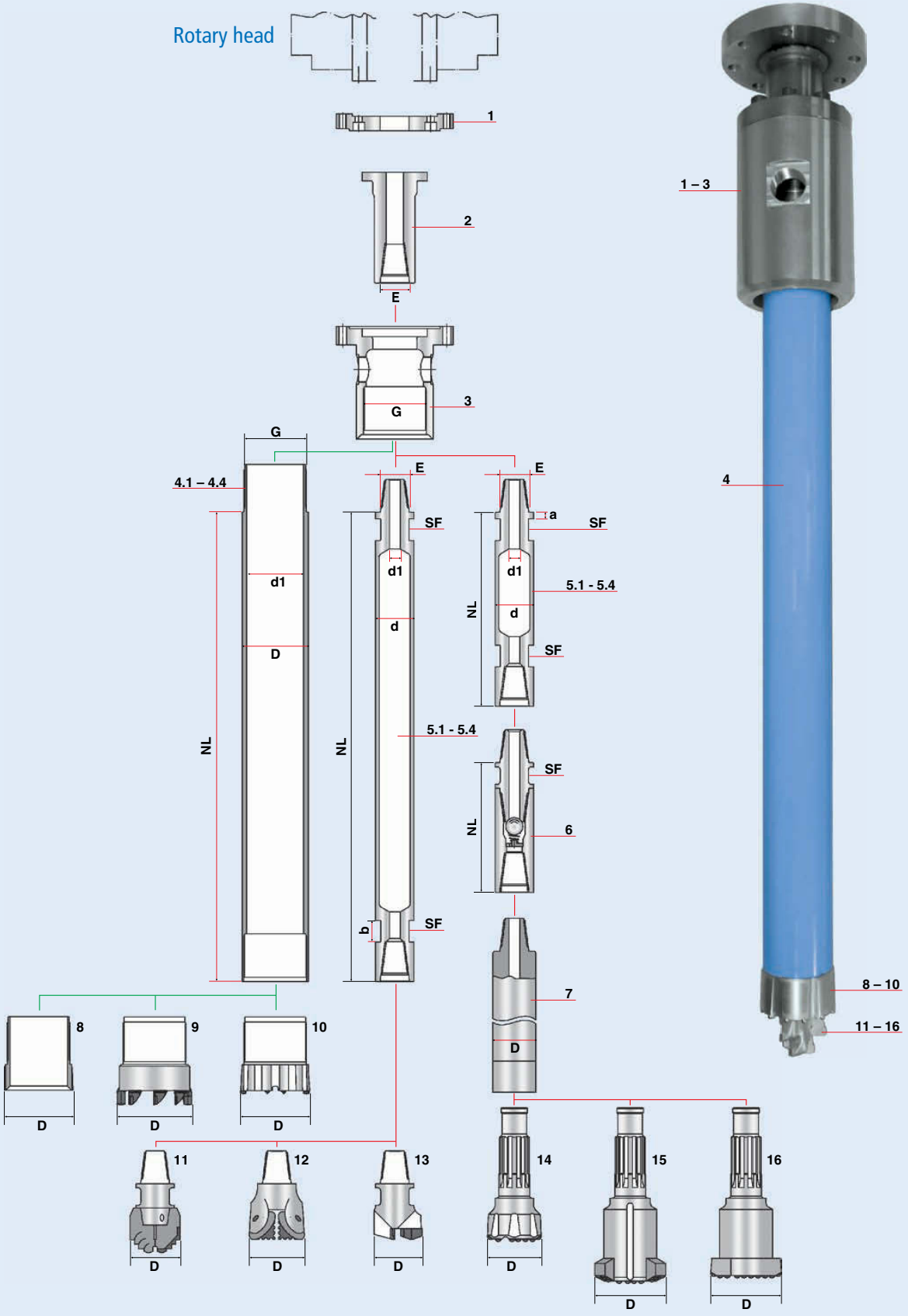
# Overburden Drilling Systems

## with rotary head



# Overburden Drilling System D 244.5

with rotary head

| Pos. | Description |
|---|---|
| 1 | Connecting flange, suitable for rotary head (indicated with order) |
| 3 | Flange D 244.5, 2 starts, cyl. LHT female (G), with internal toothing |
| 4.1 | 3000 mm length |
| 4.3 | 1500 mm length |
| 5 | DTH rods d 139.7, 4 1/2" API Reg. RHT (E) x 8.8mm wth x 60mm (d1), with square spanner flat SW 120, measurements: a = 20mm, b = 60mm. Quality tubes: S355J2H; Welding ends: high tempered steel, nitrated surface, friction welded |
| 5.2 | 2000 mm length |
| 5.4 | 1000 mm length |
| 7 | DTH-hammer D = 162mm x connecting 4 1/2" API Reg. RHT male |
| 9 | Casing bit D 244.5, 2 starts, cyl. LHT male x D 265mm, with welding teeth, TC fitted |
| 11 | Rotary bit d 139.7 x 4 1/2" API Reg. RHT male x D 215mm, 3 wings, stepped form |
| 13 | Rotary bit d 139.7 x 3 1/2" API Reg. RHT male x D 215mm, 4 wings, with TC plates |
| 15 | DTH-hammer drill bit type "Super Jaws T 215" x D 263mm/d 211mm, button type, shaft adapted for type of DTH-hammer |

## Tools

| |
|---|
| Fishing bell D 139.7, 4 1/2" API Reg. male thread |

## Signs & Symbols

SW = key width; LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
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# **Overburden Drilling Systems**
with hydraulic drifter

# Overburden Drilling Systems D 88.9 – D 152.4

with hydraulic hammer

The name „Overburden Drilling" results from the composition of the earth crust. The bedrock is covered with loose layers of earth consisting of sand, gravel, boulders combined with loose soil and other deposits. All these formations are grouped together under the umbrella term "Overburden", which overlies the bedrock.

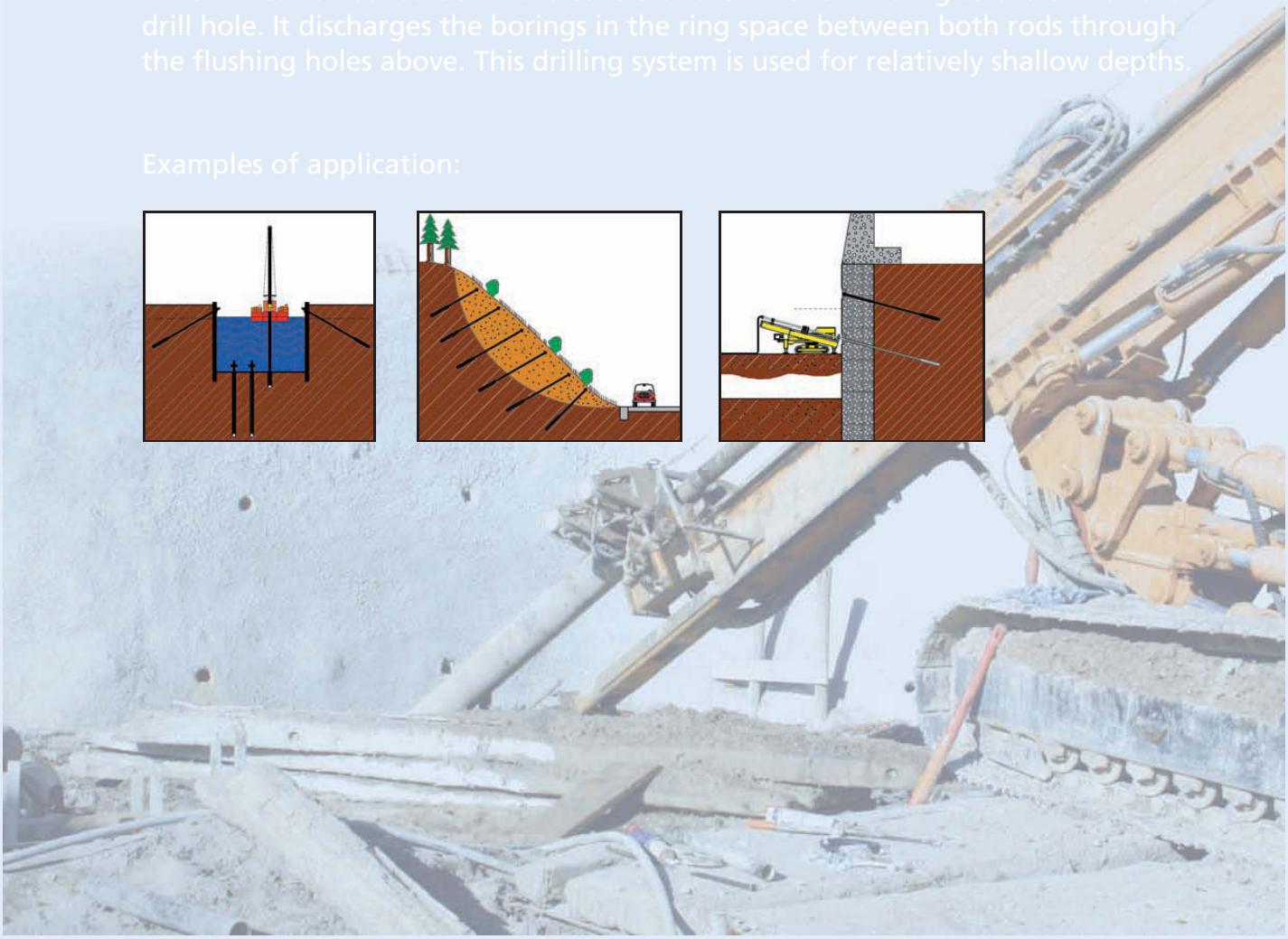
Certain drilling processes make it necessary to support the wall with tubes. The system shown here is powered by a hydraulic hammer, which turns and strikes the whole drill string from above, consisting of an outer and inner rod.
Air or water is flushed down the centre of the inner drill string to the end of the drill hole. It discharges the borings in the ring space between both rods through the flushing holes above. This drilling system is used for relatively shallow depths.

Examples of application:



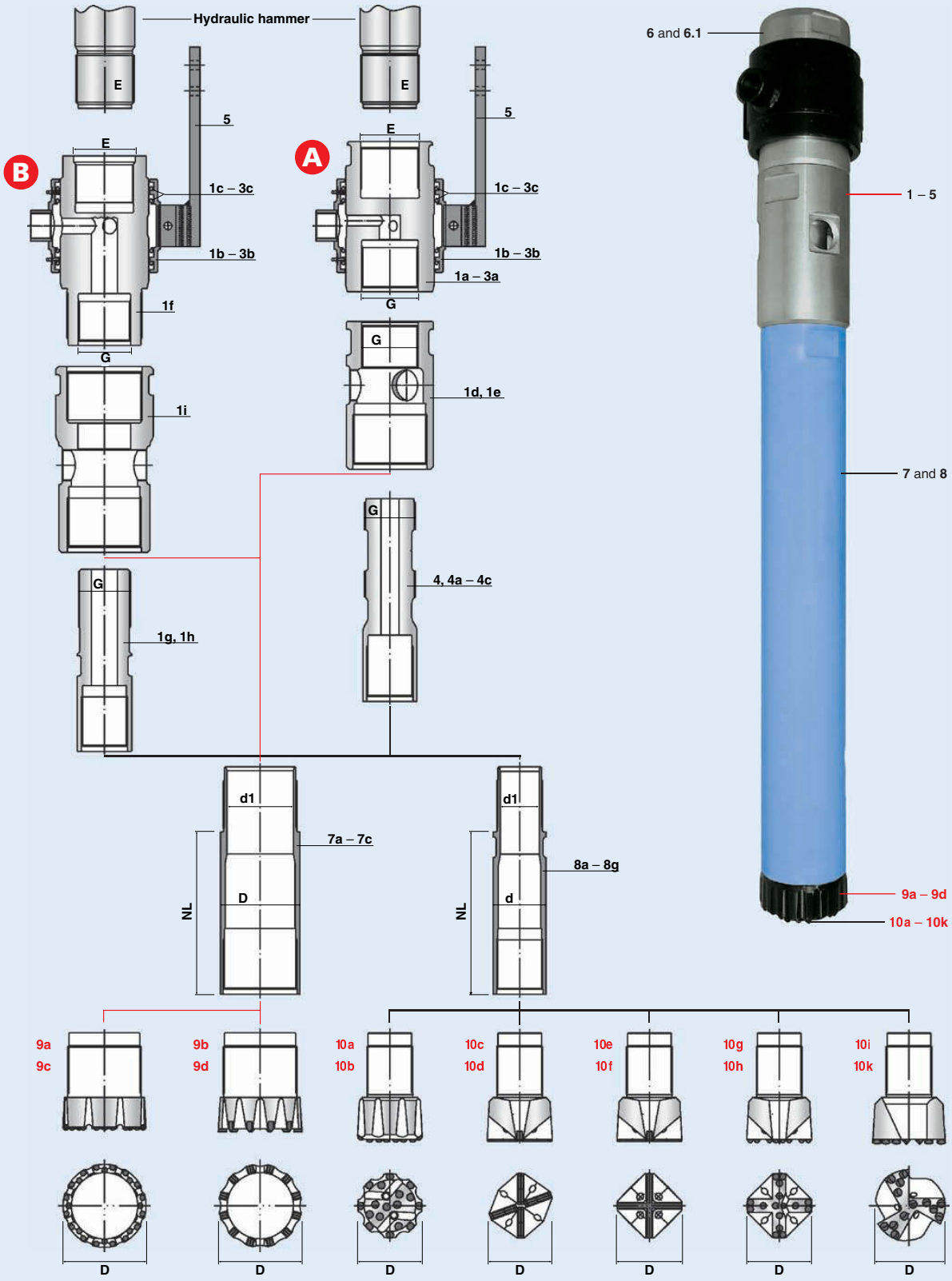






# Overburden Drilling Systems

## with hydraulic hammer



# Overburden Drilling System D 88.9

with hydraulic hammer

| Pos. | Description |
|---|---|
| | **FLUSHING HEAD A** |
| 1 | Flushing head D 88.9, 1 start, cyl. LHT female x H 55 LHT female (E) x d 1 1/2" T 38 LHT female, complete with flushing ring, without holder (component parts see pos. 1a, 1b, 1c and 1d) |
| | **alternatively:** |
| | Flushing head D 88.9, 1 start, cyl. LHT female x H 64 LHT female (E) x d 1 1/2" T 38 LHT female, complete with flushing ring, without holder (component parts see pos 2a, 2b, 2c and 1d) |
| | **alternatively:** |
| 3 | Flushing head D 88.9, 1 start, cyl. LHT female x H 112 (C 112) LHT female (E) x d 1 1/2" T38 LHT female, complete with flushing ring, without holder (component parts see pos. 3a, 3b, 3c and 1d) |
| | |
| | flushing body D 100 x H 55 LHT female (E) x S 68 LHT female (G) |
| 2a | flushing body D 120 x H 64 LHT female (E) x S 68 LHT female (G) |
| | flushing body D 170 x H 112 (C 112) LHT female (E) x S 68 LHT female (G) |
| 1b | Flushing ring D 100 x connection G 1 1/4" female |
| | Flushing ring D 120 x connection G 1 1/4" female |
| 3b | Flushing ring D 170 x connection G 1 1/4" female |
| | Seal D 100 |
| 2c | Seal D 120 |
| | Seal D 170 |
| 1d | Ejection bell D 88.9, 1 start, cyl. LHT female x S 68 LHT female (G) with 2 ejection holes G 2" |
| | Adaptor d 1 1/2", T 38 LHT female x S 68 LHT male (G) |
| 5 | Flushing ring holder suitable for hydraulic hammer and corresponding flushing ring (indicated with order) |
| | |
| | **FLUSHING HEAD B** (option with respect to items 1-3) |
| | Flushing head D 88.9, 1 start, cyl. LHT female x H 112 (C 112) LHT female (E) x 1 1/2" T 38 LHT female, complete with flushing ring without holder (component parts see pos. 1f, 1g, 1h, 3b and 3 c) |
| 1f | Flushing body D 170 x H 112 (C 112) LHT female (E) x D 152.4, 2 starts, cyl. LHT male (G) x H 55 LHT female (G) |
| | Adaptor d 1 1/2", T 38 LHT female x H 55 LHT male (G) |
| 1i | Ejection bell D 88.9, 1 start, cyl. LHT female x D 152.4, 2 starts, cyl. LHT female, with 2 ejection holes G 2" |
| | |
| | **Casings** |
| 7 | Rotary percussion tubes D 88.9, 1 start, cyl. LHT x 8.8mm wth x 64.5mm (d1), Quality: high tempered steel, only male side friction welded, without spanner flats |
| | 3000mm length |
| 7b | 2000mm length |
| | 1000mm length |
| 9 | Casing bit D 88.9, 1 start, cyl. LHT male x D 95mm |
| | Button type |
| 9b | Plate type |

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
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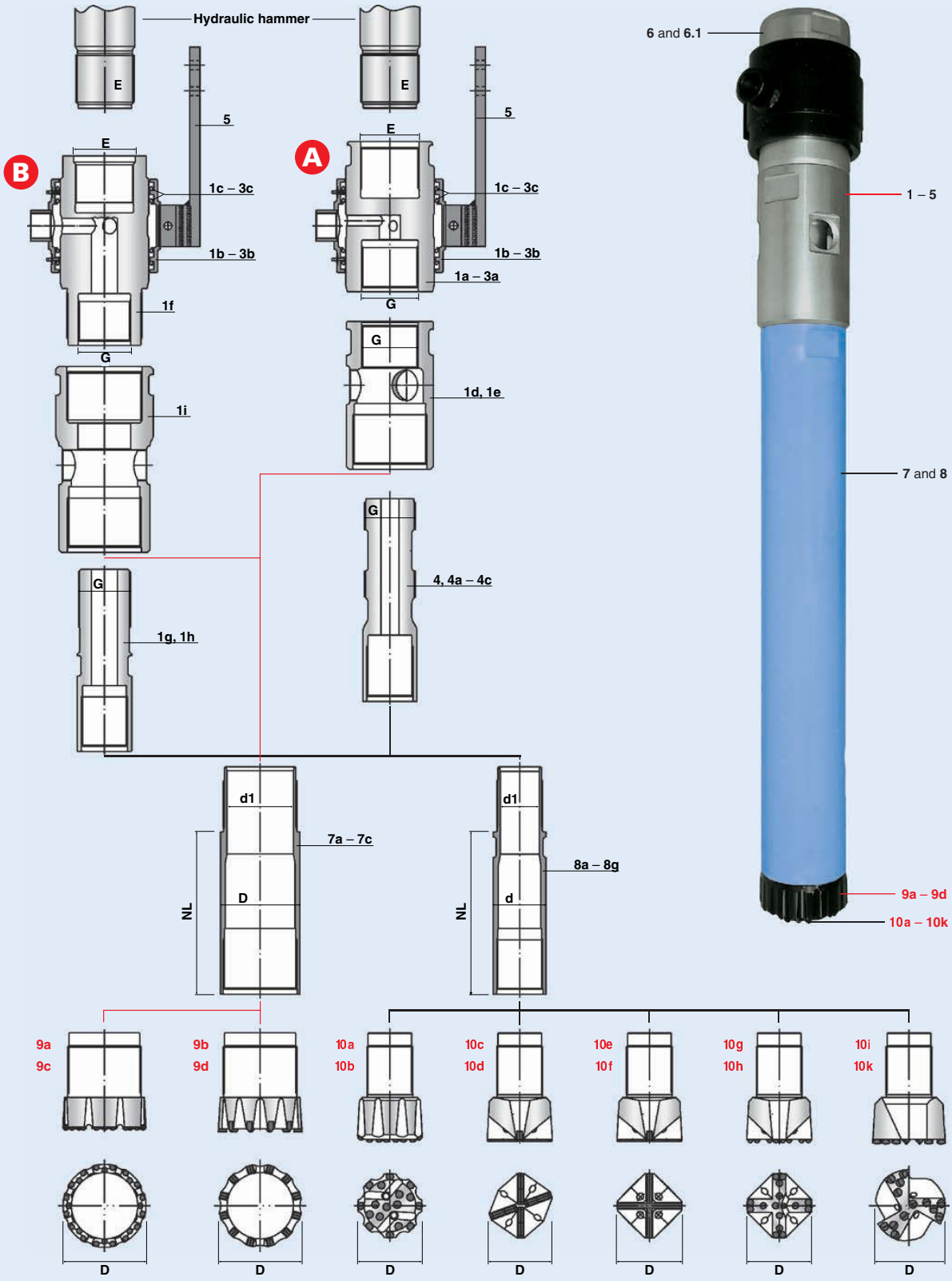
# Overburden Drilling Systems

## with hydraulic hammer



# Overburden Drilling System D 88.9

with hydraulic hammer

| Pos. | Description |
|---|---|
| | **Inner rods** |
| 8 | Extenstion rods d 1 1/2", T 38 LHT |
| | 3000mm length |
| 8b | 2000mm length |
| | 1000mm length |
| 8d | Sleeve d 1 1/2", T 38 LHT female/female |
| | Percussion bit d 1 1/2", T 38 LHT female x D 62mm with flushing holes |
| 10a | Button type |
| | Plate type, X-version |
| 10e | Plate type, cross version |
| | Cross blade with special TC inserts |
| 10i | 3-wing-bit with special TC inserts |

**Tools**

Fishing tap D 88.9, 1 start, cyl. LHT, male

**Accessories**

Grouting cap D 88.9, 1 start, cyl. LHT female x G 1 1/4" connection

**Signs & Symbols**

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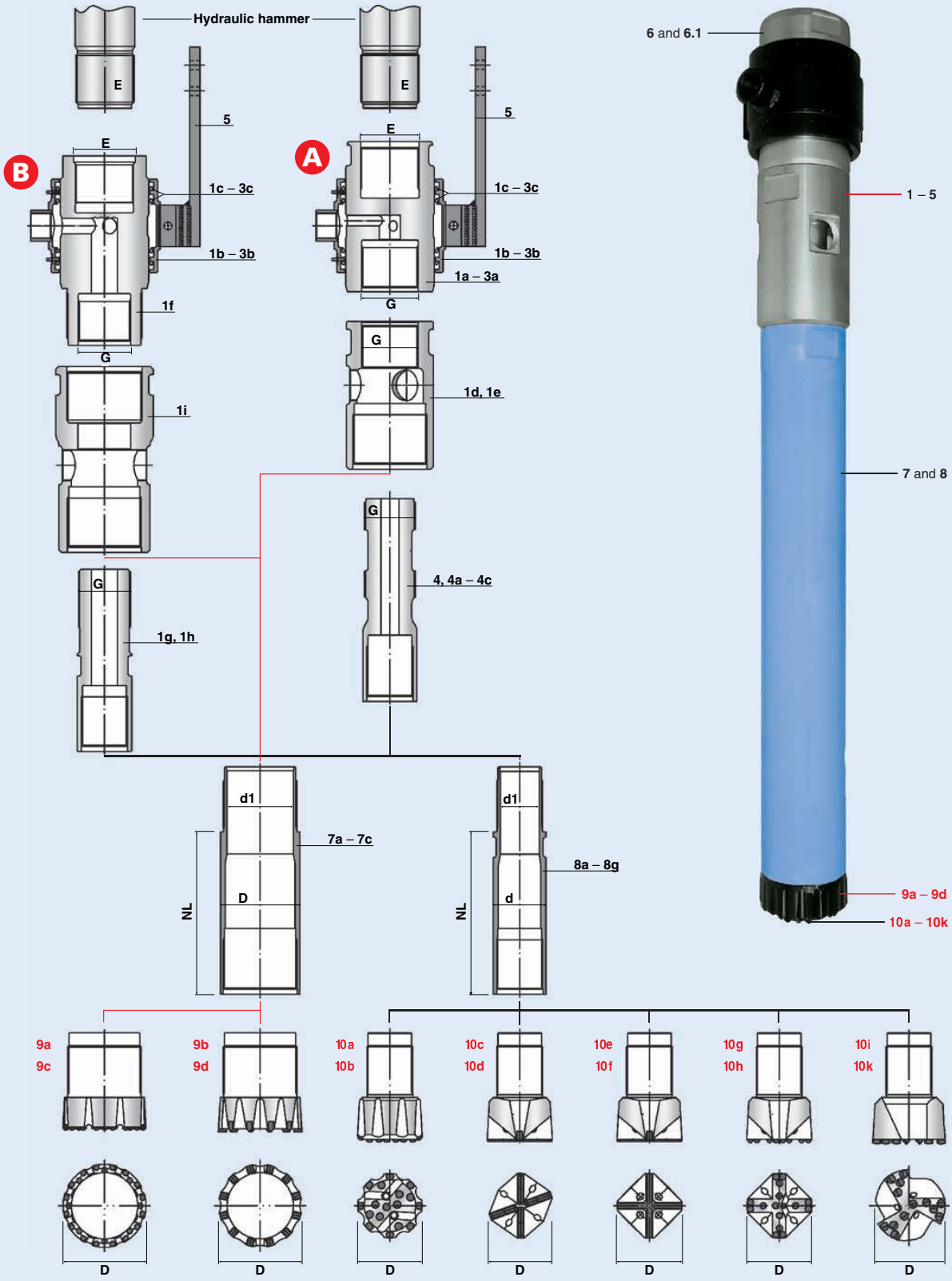
# Overburden Drilling Systems

## with hydraulic hammer



# Overburden Drilling System D 101.6

with hydraulic hammer

| Pos. | Description |
|---|---|
| | **FLUSHING HEAD A** |
| 1 | Flushing head D 101.6, 3 starts cyl. LHT female x H 55 LHT female (E) x 1 1/2" T 38 LHT female, complete with flushing ring without holder (component parts see pos. 1a, 1b, 1c, 1d and 4) |
| | **alternatively:** |
| | Flushing head D 101.6, 3 starts cyl. LHT female x H 55 LHT female (E) x d 63.5, 1 start, cyl. LHT female, complete with flushing ring without holder (component parts see pos. 1a, 1b, 1c, 1d and 4b) |
| | **alternatively:** |
| 2 | Flushing head D 101.6, 3 starts cyl. LHT female x H 64 LHT female (E) x 1 1/2" T 38 LHT female, complete with flushing ring without holder (component parts see pos 2a, 2b, 2c, 1e and 4a) |
| | **alternatively:** |
| | Flushing head D 101.6, 3 starts, cyl. LHT female x H 64 LHT female (E) x d 63.5, 1 start, cyl. LHT female, complete version with flushing ring without holder (component parts see pos. 2a, 2b, 2c, 1e and 4c) |
| | **alternatively:** |
| 3 | Flushing head D 101.6, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x 1 1/2" T 38 LHT female, complete version with flushing ring without holder (component parts see pos. 3a, 3b, 3c, 1e and 4a) |
| | **alternatively:** |
| | Flushing head D 101.6, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x d 63.5, 1 start, cyl. LHT female, complete version with flushing ring without holder (component parts see pos.3a, 3b, 3c, 1e and 4c) |
| | |
| 1a | Flushing body D 100 x H 55 LHT female (E) x S 68 LHT female (G) |
| | Flushing body D 120 x H 64 LHT female (E) x S 78 LHT female (G) |
| 3a | Flushing body D 170 x H 112 (C 112) LHT female (E) x S 78 LHT female (G) |
| | Flushing ring D 100 x connection G 1 1/4" female |
| 2b | Flushing ring D 120 x connection G 1 1/4" female |
| | Flushing ring D 170 x connection G 1 1/4" female |
| 1c | Seal D 100 |
| | Seal D 120 |
| 3c | Seal D 170 |
| | Ejection bell D 101.6, 3 starts, cyl. LHT female x S 68 LHT female (G) with 2 ejection holes G 2" |
| 1e | Ejection bell D 101.6, 3 starts, cyl. LHT female x S 78 LHT female (G) with 2 ejection holes G 2" |
| | Adaptor d 1 1/2", T 38 LHT female x S 68 LHT male (G) |
| | **alternatively:** |
| 4a | Adaptor d 1 1/2", T 38 LHT female x S 78 LHT male (G) |
| | **alternatively:** |
| | Adaptor d 63.5, 1 start, cyl. LHT female x S 68 LHT male (G) |
| | **alternatively:** |
| 4c | Adaptor d 63.5, 1 start, cyl. LHT female x S 78 LHT male (G) |
| | Flushing ring holder suitable for hydraulic hammer and corresponding flushing ring (indicated with order) |
| | |
| | **FLUSHING HEAD B** (option with respect to items 1-3) |
| 6 | Flushing head D 101.6, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x 1 1/2" T 38 LHT female, complete with flushing ring without holder (component parts see pos. 3a, 3b, 3c, 1f, 1g and 1i) |
| | **alternatively:** |
| | Flushing head D 101.6, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x d 63.5, 1 start, cyl. LHT female, complete with flushing ring without holder (component parts see pos. 3a, 3b, 3c, 1f, 1h and 1i) |
| 1f | Flushing body D 170 x H 112 (C 112) LHT female (E) x H 80 LHT female (G) |
| | Adaptor d 1 1/2", T 38 LHT female x H 80 LHT male (G) |
| 1h | Adaptor d 63.5, 1 start, cyl. LHT female x H 80 LHT male (G) |
| | Ejection bell D 101.6, 3 starts, cyl. LHT female x D 152.4, 2 starts, cyl. LHT female with 2 ejection holes G 2". |

**Signs & Symbols**

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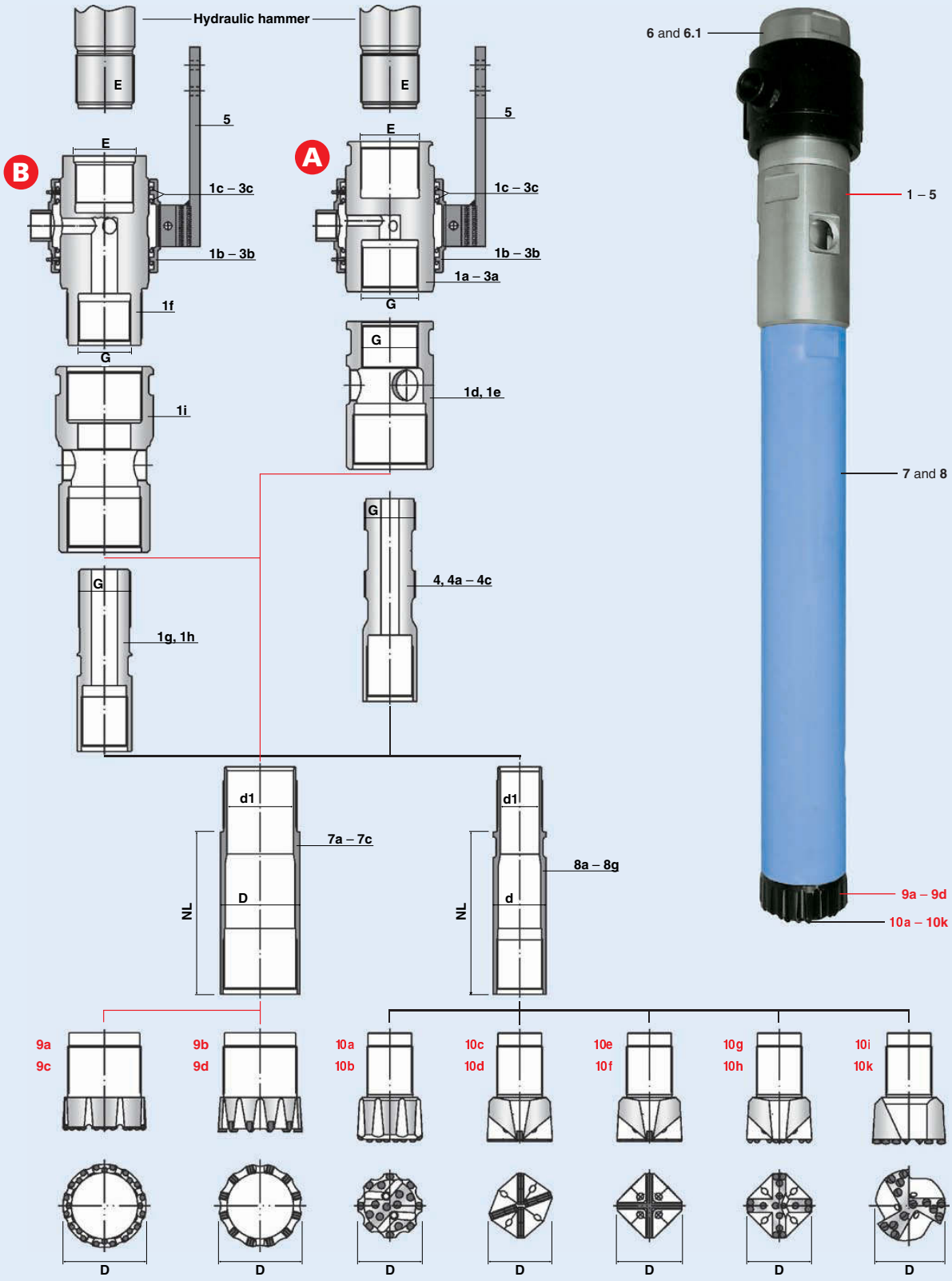
# Overburden Drilling Systems

## with hydraulic hammer



# Overburden Drilling System D 101.6

with hydraulic hammer

| Pos. | Description |
|---|---|
| | **Casings** |
| | Rotary percussion tubes D 101.6, 3 starts, cyl. LHT x 10mm wth x 75mm (d1), Quality: high tempered steel, only male side friction welded, without spanner flats |
| 7a | 3000mm length |
| | 2000mm length |
| 7c | 1000mm length |
| | Casing bit D 101.6, 3 starts, cyl. LHT male x D 107mm |
| 9a | Button type |
| | Plate type |
| | **alternatively D 115mm:** |
| 9c | Casing bit D 101.6, 3 starts, cyl. LHT male x D 115mm, button type |
| | Casing bit D 101.6, 3 starts, cyl. LHT male x D 115mm, blade type |
| | |
| | **Inner rods** |
| | Rotary Percussion tubes d 63.5, 1 start, cyl. LHT x 8.8mm Wth x 30mm (d1). Quality: high tempered steel, thread ends friction welded, with spanner flats |
| 8a | 3000mm length |
| | 2000mm length |
| 8c | 1000mm length |
| | **alternatively:** |
| | Extension rod d 1 1/2", T 38 LHT |
| 8d | 3000mm length |
| | 2000mm length |
| 8f | 1000mm length |
| | Sleeve d 1 1/2", T 38 LHT female/female |
| 10a | Percussion bit d 1 1/2", T38 LHT female x D 72mm, button type, flushing holes |
| | Percussion bit d 63.5, 1 start, cyl. LHT male x D 72mm, button type, flushing holes |
| 10c | Percussion bit d 1 1/2" x T 38 LHT female x D 72mm, X-version, flushing holes |
| | Percussion bit d 63.5, 1 start, cyl. LHT male x D 72mm, X-version, flushing holes |
| 10e | Percussion bit d 1 1/2" x T 38 LHT female x D 72mm, cross version, flushing holes |
| | Percussion bit d 63.5, 1 start, cyl. LHT male x D 72mm, cross version, flushing holes |
| 10g | Percussion bit d 1 1/2" x T 38 LHT female x D 72mm, 4 wings, button type, flushing holes |
| | Percussion bit d 63.5, 1 start, cyl. LHT male x D 72mm, 4 wings, button type, flushing holes |
| 10i | Percussion bit d 1 1/2" x T 38 LHT female x D 72mm, 3 wings, special TC inserts, flushing holes |
| | Percussion bit d 63.5, 1 start, cyl. LHT male x D 72mm, 3 wings, special TC inserts, flushing holes |

**Tools**

Fishing tap D 101.6, 3 starts, cyl. LHT, male

**Accessories**

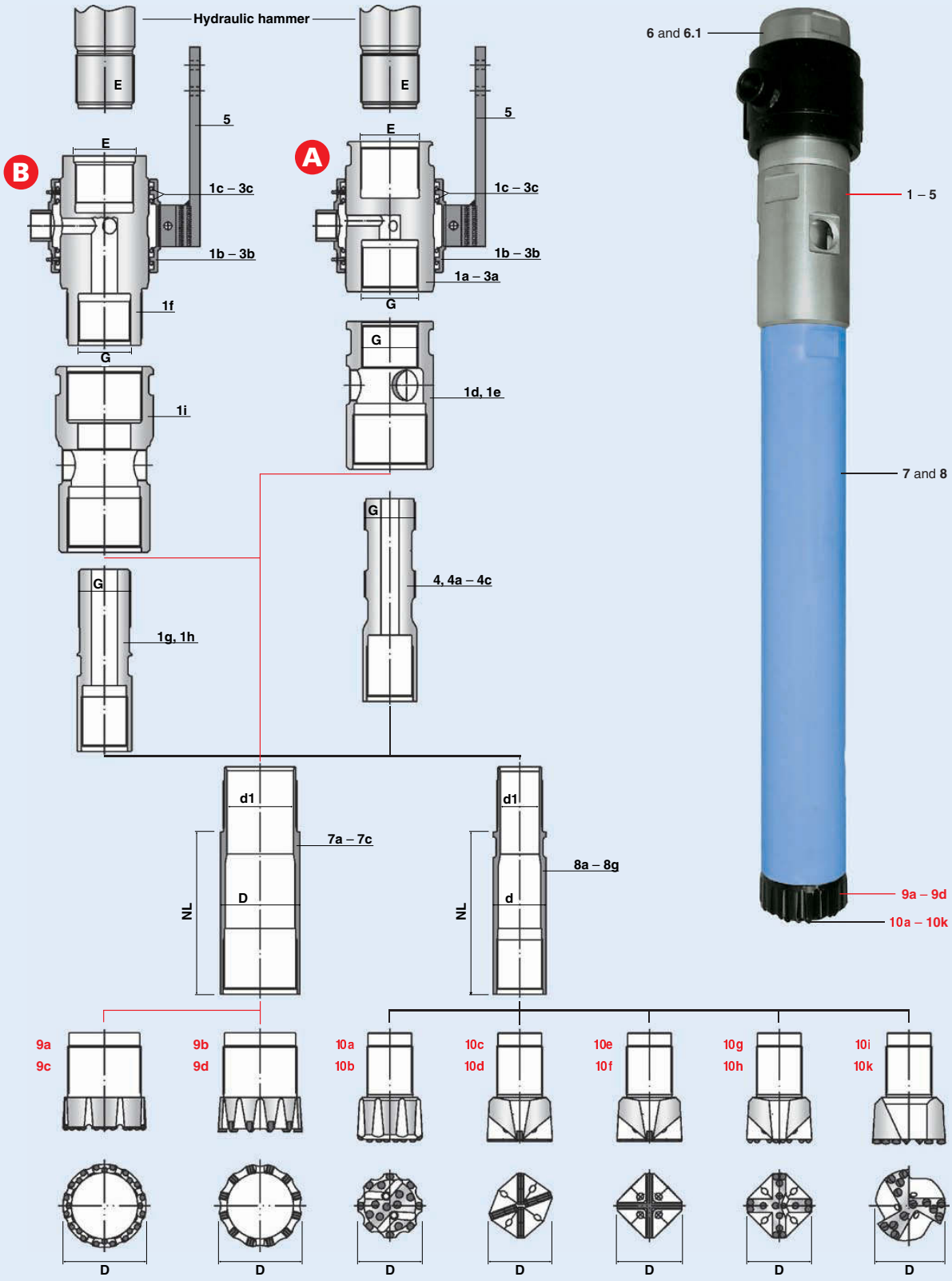
Grouting cap D 101.6, 3 starts, cyl. LHT female x G 1 1/4" connection

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; E = shank connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheet shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Overburden Drilling Systems

## with hydraulic hammer



# Overburden Drilling System D 114.3

with hydraulic hammer

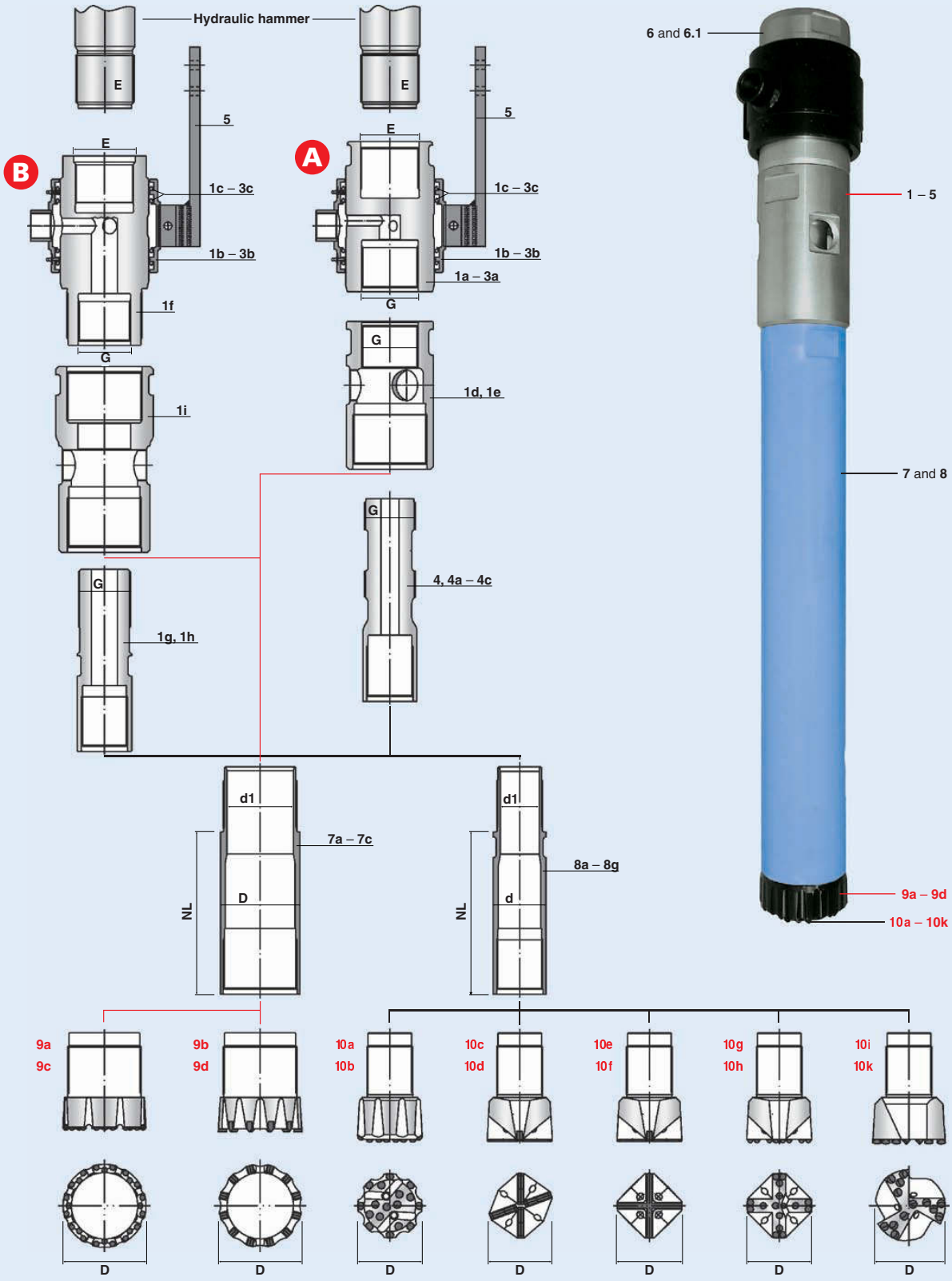
| Pos. | Description |
|---|---|
| | **FLUSHING HEAD A** |
| 1 | Flushing head D 114.3, 3 starts, cyl. LHT female x H 55 LHT female (E) x 1 3/4" T 45 LHT female, complete with flushing ring without holder (component parts see pos. 1a, 1b, 1c, 1d and 4) |
| | **alternatively:** |
| | Flushing head D 114.3, 3 starts, cyl. LHT female x H 55 LHT female (E) x d 76.1, 1 start, cyl. LHT female, complete with flushing ring without holder (component parts see pos. 1a, 1b, 1c, 1d and 4b) |
| | **alternatively:** |
| 2 | Flushing head D 114.3, 3 starts, cyl. LHT female x H 64 LHT female (E) x 1 3/4" T 45 LHT female, complete with flushing ring without holder (component parts see pos 2a, 2b, 2c, 1e and 4a) |
| | **alternatively:** |
| | Flushing head D 114.3, 3 starts, cyl. LHT female x H 64 LHT female (E) x d 76.1, 1 start, cyl. LHT female, complete with flushing ring without holder (component parts see pos. 2a, 2b, 2c, 1e and 4c) |
| | **alternatively:** |
| 3 | Flushing head D 114.3, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x 1 3/4" T 45 LHT female, complete with flushing ring without holder (component parts see pos. 3a, 3b, 3c, 1e and 4a) |
| | **alternatively:** |
| | Flushing head D 114.3, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x d 76,1, 1 start, cyl. LHT female, complete with flushing ring without holder (component parts see pos. 3a, 3b, 3c, 1e and 4c) |
| | |
| 1a | Flushing body D 100 x H 55 LHT female (E) x S 68 LHT female (G) |
| | Flushing body D 120 x H 64 LHT female (E) x S 78 LHT female (G) |
| 3a | Flushing body D 170 x H112 (C112) LHT female (E) x S 78 LHT female (G) |
| | Flushing ring D 100 x connection G 1 1/4" female |
| 2b | Flushing ring D 120 x connection G 1 1/4" female |
| | Flushing ring D 170 x connection G 1 1/4" female |
| 1c | Seal D 100 |
| | Seal D 120 |
| 3c | Seal D 170 |
| | Ejection bell D 114.3, 3 starts, cyl. LHT female x S 68 LHT female (G) with 2 ejection holes G 2" |
| 1e | Ejection bell D 114.3, 3 starts, cyl. LHT female x S 78 LHT female (G) with 2 ejection holes G 2" |
| | Adaptor d 1 3/4", T 45 LHT female x S 68 LHT male (G) |
| | **alternatively:** |
| 4a | Adaptor d 1 3/4", T 38 LHT female x S 78 LHT male (G) |
| | **alternatively:** |
| | Adaptor d 76.1, 1 start, cyl. LHT female x S 68 LHT male (G) |
| | **alternatively:** |
| 4c | Adaptor d 76.1, 1 start, cyl. LHT female x S 78 LHT male (G) |
| | Flushing ring holder suitable for hydraulic hammer and corresponding flushing ring (indicated with order) |
| | |
| | **FLUSHING HEAD B** (option with respect to items 1-3) |
| 6 | Flushing head D 114.3, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x 1 3/4" T 38 LHT female, complete with flushing ring without holder (component parts see pos. 3a, 3b, 3c, 1f, 1g and 1i) |
| | **alternatively:** |
| | Flushing head D 114.3, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x d 76.1, 1 start, cyl. LHT female, complete with flushing ring without holder (component parts see pos. 3a, 3b, 3c, 1f, 1h and 1i) |
| 1f | Flushing body D 170 x H 112 (C 112) LHT female (E) x H 80 LHT female (G) |
| | Adaptor d 1 3/4", T 45 LHT female x H 80 LHT male (G) |
| 1h | Adaptor d 76.1, 1 start, cyl. LHT female x H 80 LHT male (G) |
| | Ejection bell D 114.3, 3 starts, cyl. LHT female x D 152.4, 2 starts, cyl. LHT female with 2 ejection holes G 2" |

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; E = shank connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheet shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Overburden Drilling Systems

## with hydraulic hammer



# Overburden Drilling System D 114.3

with hydraulic hammer

| Pos. | Description |
|---|---|
| | **Casings** |
| | Rotary percussion tubes D 114.3, 3 starts, cyl. LHT x 8.8mm wth x 88mm (d1),<br>Quality: high tempered steel, only male side friction welded, without spanner flats |
| 7a | 3000mm length |
| | 2000mm length |
| 7c | 1000mm length |
| | Casing bit D 114.3, 3 starts, cyl. LHT male x D 120mm |
| 9a | Button type |
| | Plate type |
| | **alternatively D 125mm:** |
| 9c | Casing bit D 114.3, 3 starts, cyl. LHT male x D 125mm, button type |
| | Casing bit D 114.3, 3 starts, cyl. LHT male x D 125mm, blade type |
| | |
| | **Inner rods** |
| | Rotary Percussion tubes d 76.1, 1 start, cyl. LHT x 8.8mm wth x 50mm (d1),<br>Quality: high tempered steel, thread ends friction welded, with spanner flats |
| 8a | 3000mm length |
| | 2000mm length |
| 8c | 1000mm length |
| | **alternativ:** |
| | Extension rod d 1 3/4", thread T 45 |
| 8d | 3000mm length |
| | 2000mm length |
| 8f | 1000mm length |
| | Sleeve d 1 3/4", thread T 45 |
| 10a | Percussion bit d 1 3/4", T38 LHT female x D 85mm, button type, flushing holes |
| | Percussion bit d 76.1, 1 start, cyl. LHT male x D 85mm, button type, flushing holes |
| 10c | Percussion bit d 1 3/4" x T 38 LHT female x D 85mm, X-version, flushing holes |
| | Percussion bit d 76.1, 1 start, cyl. LHT male x D 85mm, X-version, flushing holes |
| 10e | Percussion bit d 1 3/4" x T 38 LHT female x D 85mm, cross version, flushing holes |
| | Percussion bit d 76.1, 1 start, cyl. LHT male x D 85mm, cross version, flushing holes |
| 10g | Percussion bit d 1 3/4" x T 38 LHT female x D 85mm, 4 wings, button type, flushing holes |
| | Percussion bit d 76.1, 1 start, cyl. LHT male x D 85mm, 4 wings, button type, flushing holes |
| 10i | Percussion bit d 1 3/4" x T 38 LHT female x D 85mm, 3 wings, special TC insert, flushing holes |
| | Percussion bit d 76.1, 1 start, cyl. LHT male D 85mm. 3 wings, special TC insert, flushing holes |

**Tools**

Fishing tap D 114.3, 3 starts, cyl. LHT, male

**Accessories**

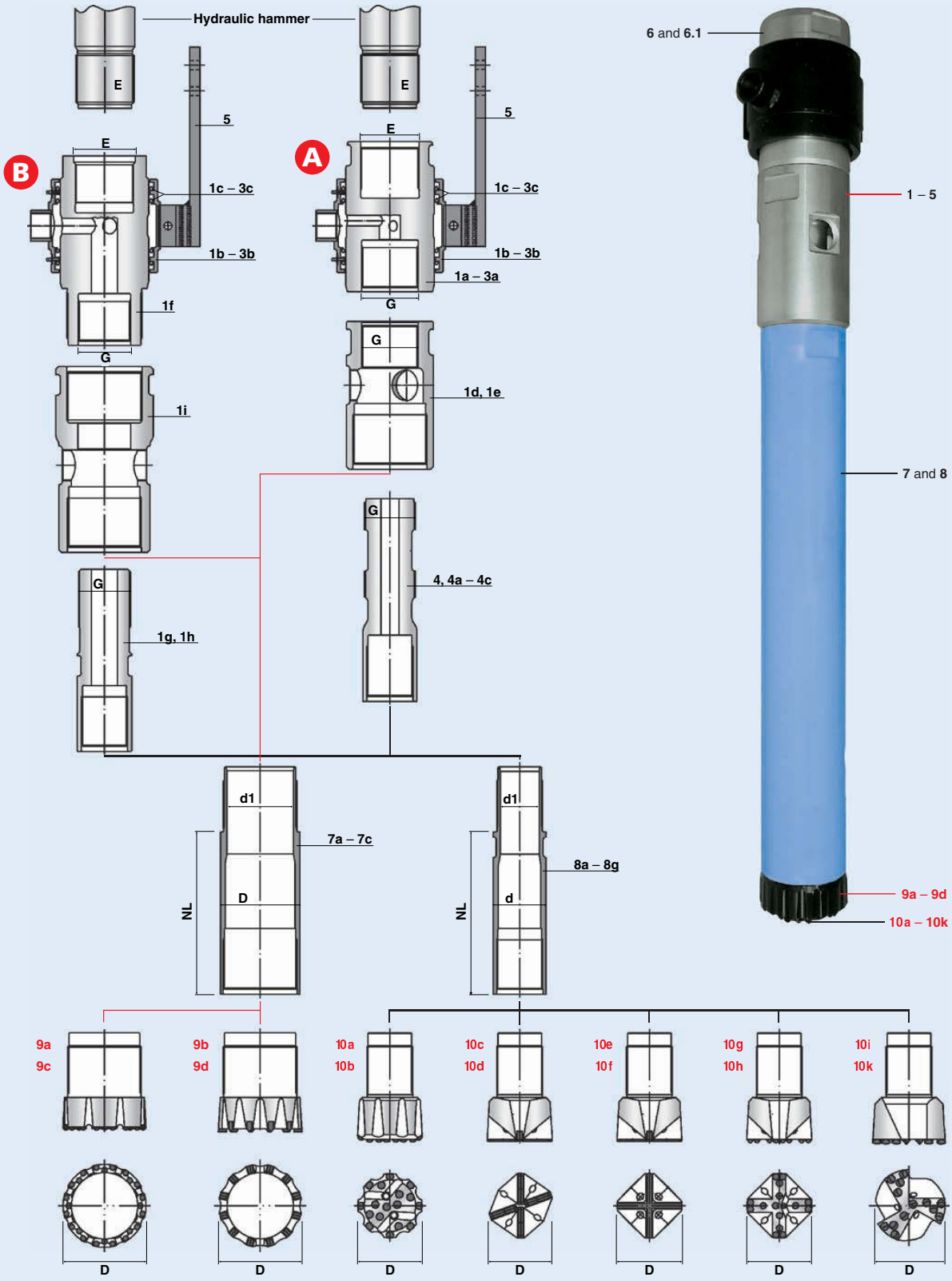
Grouting cap D 114.3, 3 starts, cyl. LHT female x G 1 1/4" connection

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; E = shank connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheet shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Overburden Drilling Systems

## with hydraulic hammer



# Overburden Drilling System D 133

with hydraulic hammer

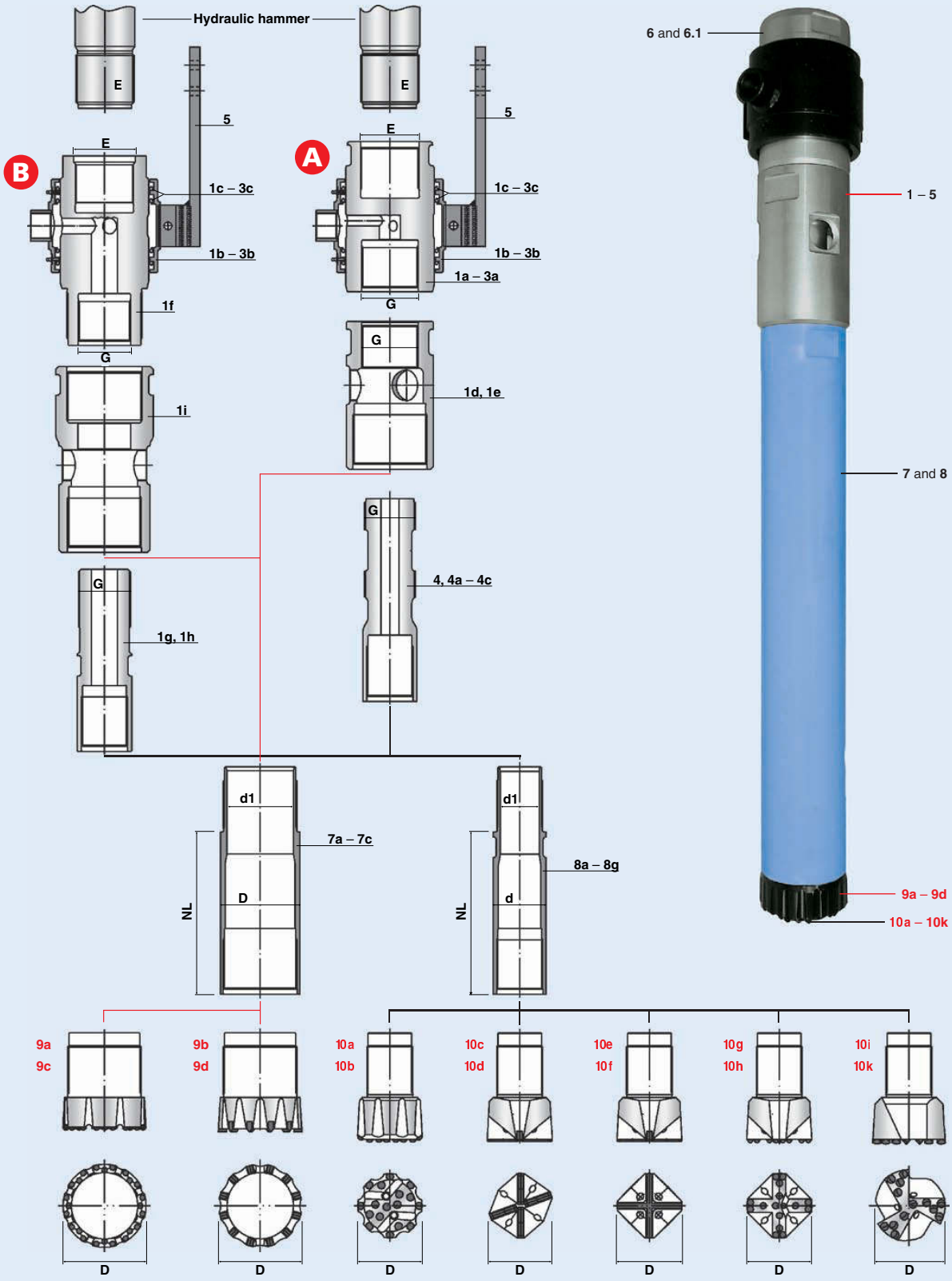
| Pos. | Description |
|---|---|
| | **FLUSHING HEAD A** |
| 1 | Flushing head D 133, 3 starts, cyl. LHT female x H 55 LHT female (E) x 1 3/4" T 45 LHT female, complete with flushing ring without holder (component parts see pos. 1a, 1b, 1c, 1d and 4) |
| | **alternatively:** |
| | Flushing head D 133, 3 starts, cyl. LHT female x H 55 LHT female (E) x d 88.9, 1 start, cyl. LHT female, complete with flushing ring without holder (component parts see pos. 1a, 1b, 1c, 1d and 4b) |
| | **alternatively:** |
| 2 | Flushing head D 133, 3 starts, cyl. LHT female x H 64 LHT female (E) x 1 3/4" T 45 LHT female, complete with flushing ring without holder (component parts see pos 2a, 2b, 2c, 1e and 4a) |
| | **alternatively:** |
| | Flushing head D 133, 3 starts, cyl. LHT female x H 64 LHT female (E) x d 88.9, 1 start, cyl. LHT female, complete with flushing ring without holder (component parts see pos. 2a, 2b, 2c, 1e and 4c) |
| | **alternatively:** |
| 3 | Flushing head D 133, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x 1 3/4" T 45 LHT female, complete with flushing ring without holder (component parts see pos. 3a, 3b, 3c, 1e and 4a) |
| | **alternatively:** |
| | Flushing head D 133, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x d 88.9, 1 start, cyl. LHT female, complete with flushing ring without holder (component parts see pos. 3a, 3b, 3c, 1e and 4c) |
| | |
| 1a | Flushing body D 100 x H 55 LHT female (E) x S 68 LHT female (G) |
| | Flushing body D 120 x H 64 LHT female (E) x S 78 LHT female (G) |
| 3a | Flushing body D 170 x H 112 (C 112) LHT female (E) x S 78 LHT female (G) |
| | Flushing ring D 100 x connection G 1 1/4" female |
| 2b | Flushing ring D 120 x connection G 1 1/4" female |
| | Flushing ring D 170 x connection G 1 1/4" female |
| 1c | Seal D 100 |
| | Seal D 120 |
| 3c | Seal D 170 |
| | Ejection bell D 133, 3 starts, cyl. LHT female x S 68 LHT female (G) with 2 ejection holes G 2" |
| 1e | Ejection bell D 133, 3 starts, cyl. LHT female x S 78 LHT female (G) with 2 ejection holes G 2" |
| | Adaptor d 1 3/4", T 45 LHT female x S 68 LHT male (G) |
| | **alternatively:** |
| 4a | Adaptor d 1 3/4", T 38 LHT female x S 78 LHT male (G) |
| | **alternatively:** |
| | Adaptor d 88.9, 1 start, cyl. LHT female x S 68 LHT male (G) |
| | **alternatively:** |
| 4c | Adaptor d 88.9, 1 start, cyl. LHT female x S 78 LHT male (G) |
| | Flushing ring holder suitable for hydraulic hammer and corresponding flushing ring (indicated with order) |
| | |
| | **FLUSHING HEAD B** (option with respect to items 1-3) |
| 6 | Flushing head D 133, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x 1 3/4" T 45 LHT female, complete with flushing ring without holder (component parts see pos. 3a, 3b, 3c, 1f, 1g and 1i) |
| | **alternatively:** |
| | Flushing head D 133, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x d 88,9, 1 start, cyl. LHT female, complete with flushing ring without holder (component parts see pos. 3a, 3b, 3c, 1f, 1h and 1i) |
| 1f | Flushing body D 170 x H 112 (C 112) LHT female (E) x H 80 LHT female (G) |
| | Adaptor d 1 3/4", T 45 LHT female x H 80 LHT male (G) |
| 1h | Adaptor d 88.9, 1 start, cyl. LHT female x H 80 LHT male (G) |
| | Ejection bell D 133, 3 starts, cyl. LHT female x D 152.4, 2 starts, cyl. LHT female with 2 ejection holes G 2". |

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; E = shank connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheet shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Overburden Drilling Systems

## with hydraulic hammer



# Overburden Drilling System D 133

with hydraulic hammer

| Pos. | Description |
|---|---|
| | **Casings** |
| | Rotary percussion tubes D 133, 3 starts, cyl. LHT x 8.8mm wth x 108mm (d1), Quality: high tempered steel, only male side friction welded, without spanner flats |
| 7a | 3000mm length |
| | 2000mm length |
| 7c | 1000mm length |
| | Casing bit D 133, 3 starts, cyl. LHT male x D 120mm |
| 9a | Button type |
| | Plate type |
| | **alternatively D 150mm:** |
| 9c | Button type |
| | Plate type |
| | |
| | **Inner rods** |
| | Rotary Percussion tube d 88.9, 1 start, cyl. LHT x 8.8mm wth x 64,5mm (d1), Quality: high tempered steel, thread ends friction welded, with spanner flats |
| 8a | 3000mm length |
| | 2000mm length |
| 8c | 1000mm length |
| | **alternatively:** |
| | Extension rod d 1 3/4", thread T 45 |
| 8d | 3000mm length |
| | 2000mm length |
| 8f | 1000mm length |
| | Sleeve d 1 3/4", T 45 LHT female/female |
| 10a | Percussion bit d 1 3/4", T45 LHT female x D 105mm, button type, flushing holes |
| | Percussion bit d 88,9, 1 start, cyl. LHT male x D 105mm, button type, flushing holes |
| 10c | Percussion bit d 1 3/4" x T 38 LHT female x D 105mm, X-version, flushing holes |
| | Percussion bit d 88,9, 1 start, cyl. LHT male x D 105mm, X-version, flushing holes |
| 10e | Percussion bit d 1 3/4" x T 38 LHT female x D 105mm, cross version, flushing holes |
| | Percussion bit d 88.9, 1 start, cyl. LHT male x D 105mm, cross version, flushing holes |
| 10g | Percussion bit d 1 3/4" x T 38 LHT female x D 105mm, 4 wings, button type, flushing holes |
| | Percussion bit d 88.9, 1 start, cyl. LHT male x D 105mm, 4 wings, button type, flushing holes |
| 10i | Percussion bit d 1 3/4" x T 38 LHT female x D 105mm, 3 wings, special TC insert, flushing holes |
| | Percussion bit d 88,9, 1 start, cyl. LHT male x D 105mm. 3 wings, special TC insert, flushing holes |

**Tools**

Fishing tap D 133, 3 starts, cyl. LHT, male

**Accessories**

Grouting cap D 133, 3 starts, cyl. LHT female x G 1 1/4" connection

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; E = shank connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
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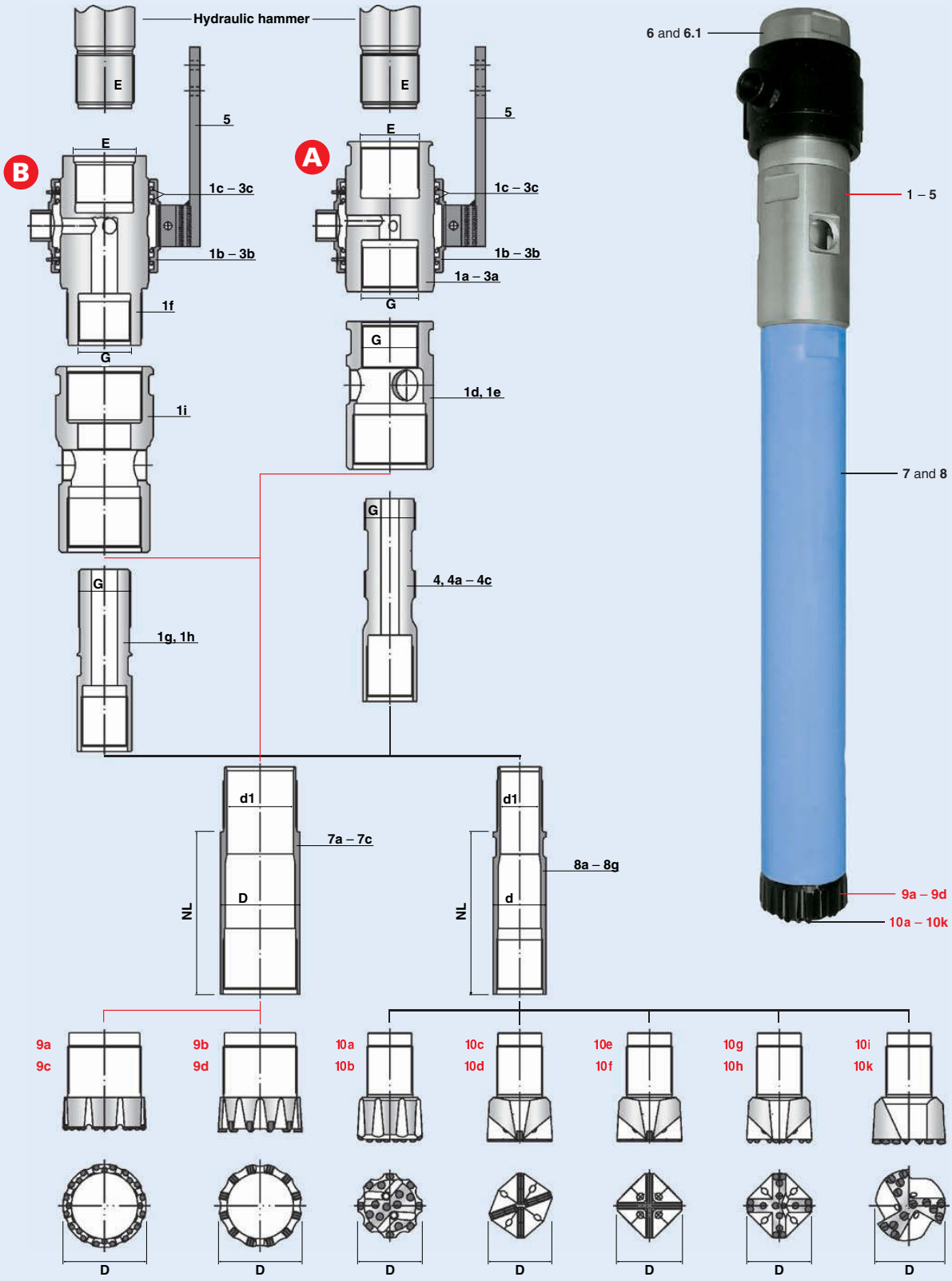
# Overburden Drilling Systems

## with hydraulic hammer



# Overburden Drilling System D 152.4

with hydraulic hammer

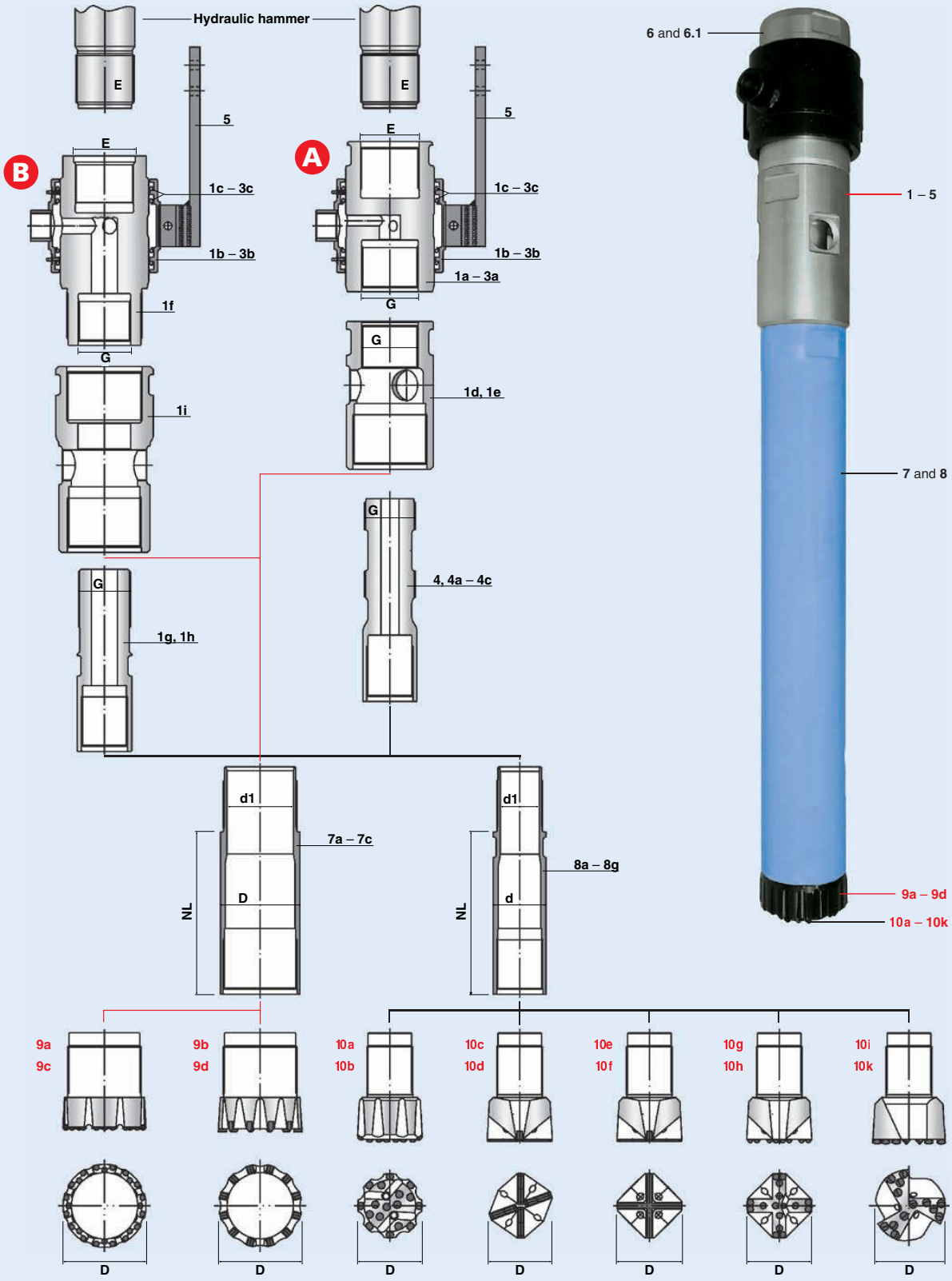
| Pos. | Description |
|---|---|
| | **FLUSHING HEAD A** |
| 1 | Flushing head D 152.4, 3 starts, cyl. LHT female x H 64 LHT female (E) x 2" T 51 LHT female, complete with flushing ring without holder (component parts see pos. 1a, 1b, 1c, 1d and 4) |
| | **alternatively:** |
| | Flushing head D 152.4, 3 starts, cyl. LHT female x H 112 LHT female (E) x d 101.6, 3 starts, cyl. LHT female, complete with flushing ring without holder (component parts see pos. 1a, 1b, 1c, 1d and 4 b) |
| | **alternatively:** |
| 3 | Flushing head D 152.4, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x 2" T 51 LHT female, complete with flushing ring without holder (component parts see pos. 2a, 2b, 2c, 1e and 4a) |
| | **alternatively:** |
| | Flushing head D 152.4, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x d 101.6, 3 starts, cyl. LHT female, complete with flushing ring without holder (component parts see pos. 2a, 2b, 2c, 1e and 4c) |
| | |
| 1a | Flushing body D 120 x H 64 LHT female (E) x S 78 LHT female (G) |
| | Flushing body D 170 x H 112 (C 112) LHT female (E) x S 108 LHT female (G) |
| 1b | Flushing ring D 120 x connection G 1 1/2" female |
| | Flushing ring D 170 x connection G 1 1/2" female |
| 1c | Seal D 120 |
| | Seal D 170 |
| 1d | Ejection bell D 152.4, 3 starts, cyl. LHT female x S 78 LHT female (G) with 2 ejection holes G 2". |
| | Ejection bell D 152.4, 3 starts, cyl. LHT female x S 108 LHT female (G) with 2 ejection holes G 2". |
| 4 | Adaptor d 2", T 51 LHT female x S 78 LHT male (G) |
| | **alternatively:** |
| 4a | Adaptor d 2", T 51 LHT female x S 108 LHT male (G) |
| | **alternatively:** |
| 4b | Adaptor d 101.6, 1 start, cyl. LHT female x S 78 LHT male (G) |
| | **alternatively:** |
| 4c | Adaptor d 101.6, 1 start, cyl. LHT female x S 108 LHT male (G) |
| 5 | Flushing ring holder suitable for hydraulic hammer and corresponding flushing ring (indicated with order) |
| | |
| | **FLUSHING HEAD B** (option with respect to items 1-3) |
| 6 | Flushing head D 152.4, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x 2" T 51 LHT female, complete with flushing ring without holder (component parts see pos. 3a, 3b, 3c, 1f, 1g and 1i) |
| | **alternatively:** |
| | Flushing head D 152.4, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x d 101.6, 3 starts, cyl. LHT female, complete with flushing ring without holder, consisting of (pos. 3a, 3b, 3c, 1f, 1h and 1i) |
| 1f | Flushing body D 170 x H 112 (C 112) LHT female (E) x H 80 LHT female (G) |
| | Adaptor d 2", T 51 LHT female x H 80 LHT male (G) |
| 1h | Adaptor d 101.6, 3 starts, cyl. LHT female x H 80 LHT male (G) |
| | Ejection bell D 152.4, 4 starts, cyl. LHT female x D 152.4, 2 starts, cyl. LHT female with 2 ejection holes G 2". |

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; E = shank connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheet shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Overburden Drilling Systems

## with hydraulic hammer



# Overburden Drilling System D 152.4

with hydraulic hammer

| Pos. | Description |
|---|---|
| | **Casings** |
| | Rotary percussion tube D 152.4, 3 starts, cyl. LHT x 8.8mm wth x 128mm (d1),<br>Quality: high tempered steel, only male side friction welded, without spanner flats |
| 7a | 3000mm length |
| | 2000mm length |
| 7c | 1000mm length |
| 9 | Casing bit D 152.4, 3 starts, cyl. LHT male x D 160mm |
| | Button type |
| 9b | Plate type |
| | **alternatively D 165mm:** |
| | Button type |
| 9d | Plate type |
| | |
| | **Inner rods** |
| | Rotary Percussion tube d 101.6, 1 start, cyl. LHT x 8.8mm wth x 75mm (d1), Quality: high tempered steel,<br>thread ends friction welded, with spanner flats |
| 8a | 3000mm length |
| | 2000mm length |
| 8c | 1000mm length |
| | **alternatively:** |
| | Extension rod d 2", thread T 51 |
| 8d | 3000mm length |
| | 2000mm length |
| 8f | 1000mm length |
| | Sleeve d 2", T 51 LHT female/female |
| 10a | Percussion bit d 1 3/4" x T45 LHT female x D 125mm, button type, flushing holes |
| | Percussion bit d 101.6, 1 start, cyl. LHT male x D 125mm, button type, flushing holes |
| 10c | Percussion bit d 1 3/4" x T 38 LHT female x D 125mm, X-version, flushing holes |
| | Percussion bit d 101.6, 1 start, cyl. LHT male x D 125mm, X-version, flushing holes |
| 10e | Percussion bit d 1 3/4" x T 38 LHT female x D 125mm, cross version, flushing holes |
| | Percussion bit d 101.6, 1 start, cyl. LHT male x D 125mm, cross version, flushing holes |
| 10g | Percussion bit d 1 3/4" x T 38 LHT female x D 125mm, 4 wings, button type, flushing holes |
| | Percussion bit d 101.6, 1 start, cyl. LHT male x D 125mm, 4 wings, button type, flushing holes |
| 10i | Percussion bit d 1 3/4" x T 38 LHT female x D 125mm, 3 wings, special TC insert, flushing holes |
| | Percussion bit d 101.6, 1 start, cyl. LHT male x D 125mm. 3 wings, special TC insert, flushing holes |

| Tools | Accessories |
|---|---|
| Fishing tap D 152.4, 3 starts, cyl. LHT, male | Grouting cap D 152.4, 3 starts, cyl. LHT female x G 1 1/4" connection |

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; E = shank connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
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# **Overburden Drilling Systems**
## with double rotary head
## (rotary/rotary)

# Overburden Drilling Systems D 114.3 – D 219.1

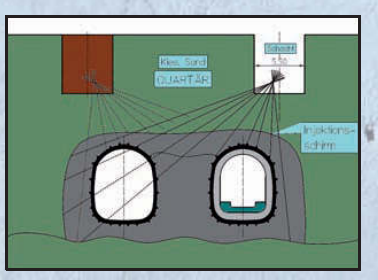
## with double head drilling unit (rotary/rotary)

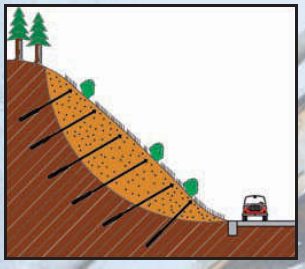
The name „Overburden Drilling" results from the composition of the earth crust. The bedrock is covered with loose layers of earth consisting of sand, gravel, boulders combined with loose soil and other deposits. All these formations are grouped together under the umbrella term „Overburden", which overlies the bedrock.

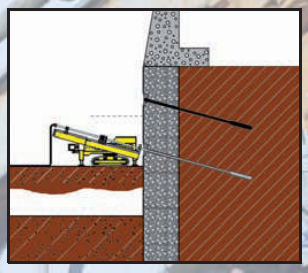
Certain drilling processes make it necessary to support the wall with tubes. The system shown here has two rotation units which can be moved opposite to one another. The rods are counter-rotating independently. Air or water is flushed down the centre of the inner drill string to the end of the drill hole. It discharges the borings in the ring space between both rods through the flushing holes above. The slide of the rotary drives allows the inner rod to move up and down relative to the outer casing. The pilot effect of the inner rod gives better alignment.
So, these systems are especially suitable for horizontal drilling, e.g. injection drilling for tunnelling and exploratory drilling.

Depending on the ground conditions, the drilling is made either with rotary drill bits or DTH-hammers. Another possible way to discharge the borings is to use auger drill rods, which are especially suitable for deep drilling with eccentric drill bits.
This system is also convenient, if flushing with air or water is not allowed for construction or environmental reasons.

### Examples of application:

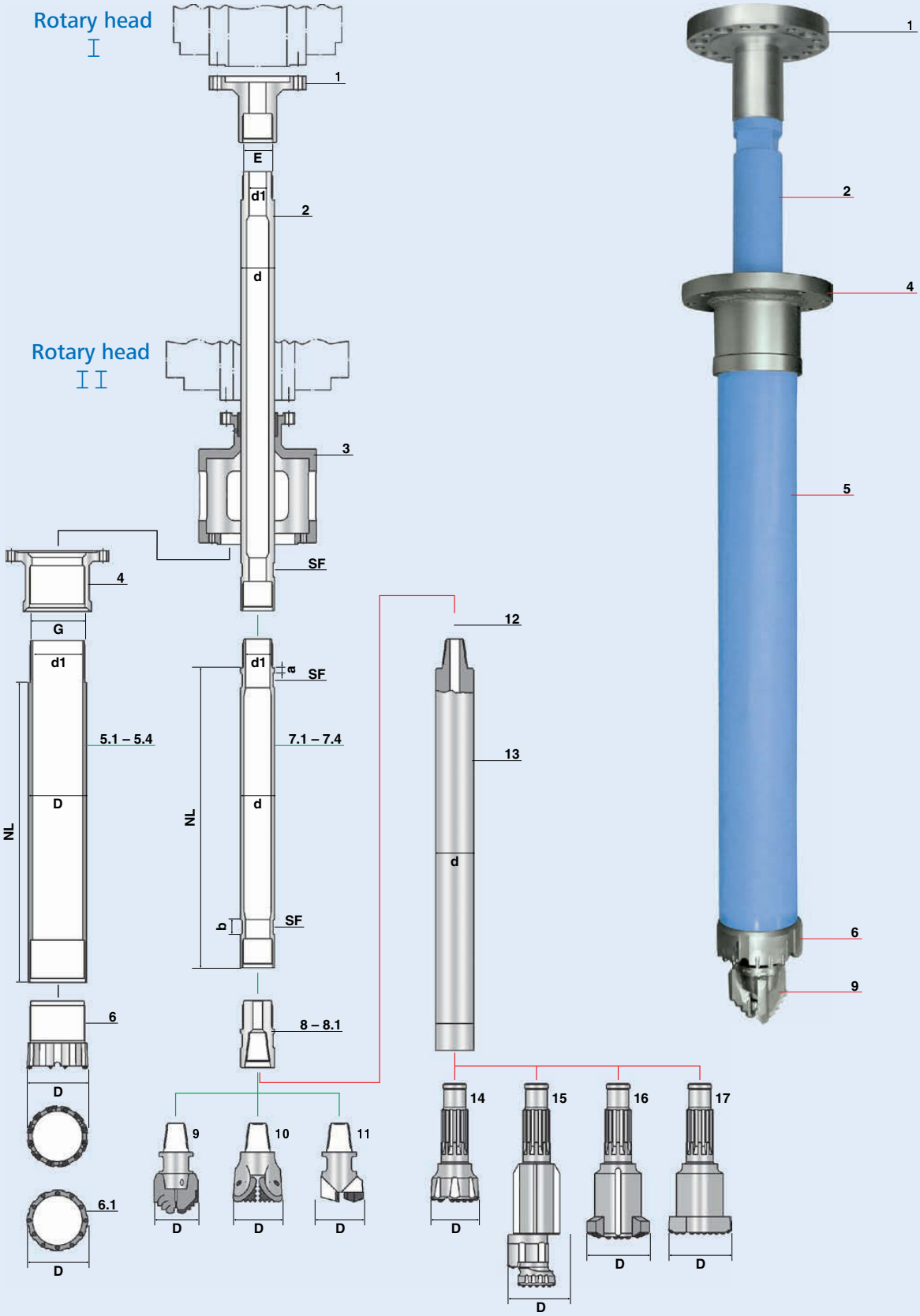




# Overburden Drilling Systems

## **with double head drilling unit** (rotary/rotary)



# Overburden Drilling System D 114.3

with double head drilling unit (rotary/rotary)

| Pos. | Description |
|---|---|
| 1 | Flange d 88.9 x 2 3/8" API IF RHT female (E), suitable for rotary head I (indicated with order) |
| 3 | Ejection bell fitted with connecting flange suitable for rotary head II and bolt circle suitable for flange pos. 4. |
| 5 | Casings D 114.3, 2 starts, cyl. LHT (G) x 8.8mm (10mm) wth x 92mm (d1).<br>Quality tubes: S355J2H; Welding ends: high tempered steel. Welding ends friction welded. |
| 5.2 | 2000 mm length |
| 5.4 | 1000 mm length |
| 6.1 | Casing bit D 114.3, 2 starts, cyl. LHT male x D 120mm, with special TC inserts and lateral wear protection. |
| 7.1 | 3000 mm length |
| 7.3 | 1500 mm length |
| 8 | Adaptor d 76.1 x 2 3/8" API Reg. RHT male x RHT female, suitable for pos. 10 |
| 9 | Rotary bit d 76.1 x 2 3/8" API IF RHT male x D 90mm, 3 wings, stepped form, TC-fitted |
| 11 | Rotary bit d 76.1 x 2 3/8" API Reg. RHT male x D 90mm, 3 wings, plate type |
| 13 | DTH-hammer d = 82mm x connecting thread 2 3/8" API Reg. RHT male. |

**Tools**

Fishing bell d 76.1 x 2 3/8" API Reg. RHT male

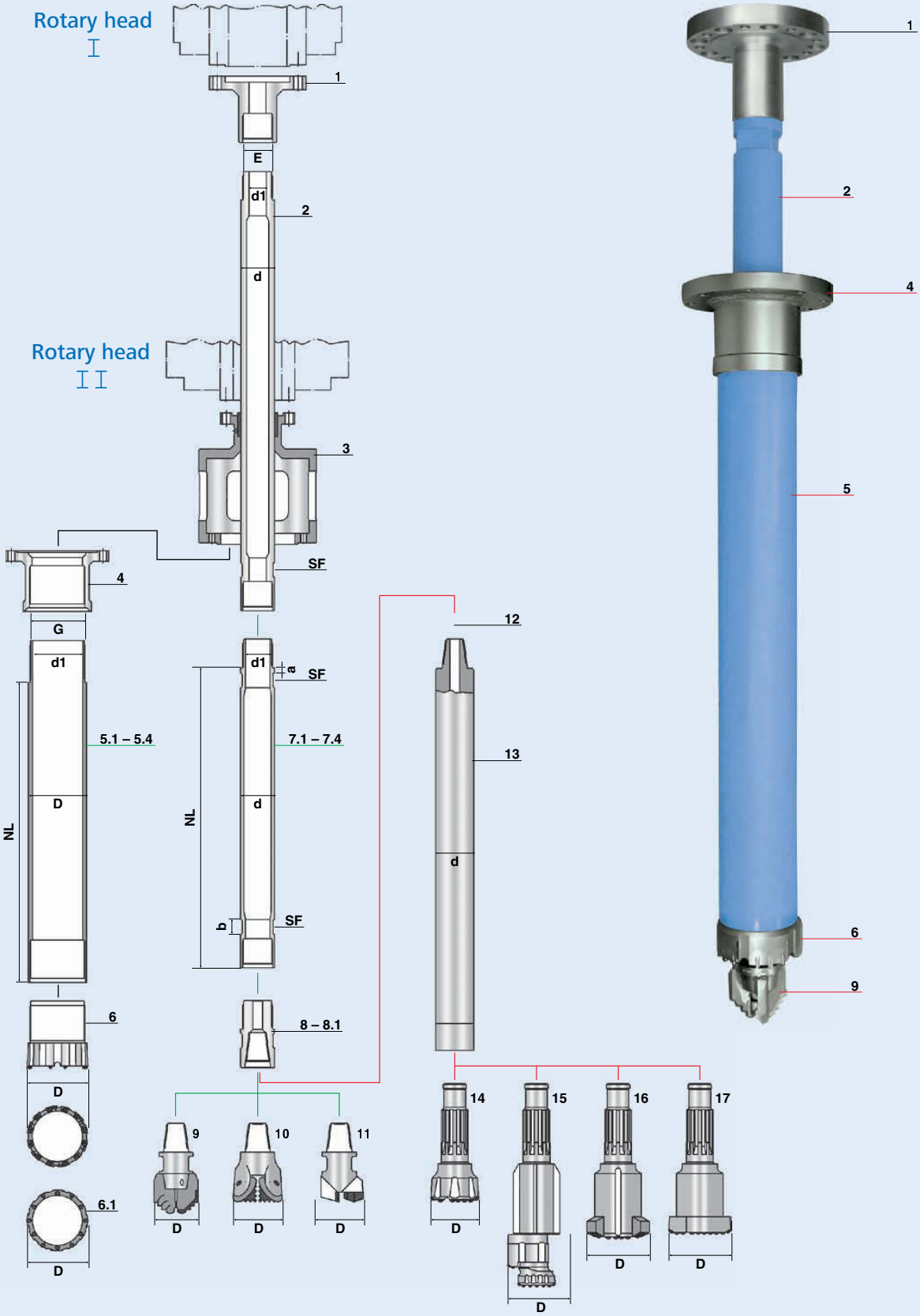
Lifting nipple d 76.1, 2 3/8" API Reg male

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheet shows only standard versions due to the many possible tool variations. Special designs on request.

# Overburden Drilling Systems

## **with double head drilling unit** (rotary/rotary)



# Overburden Drilling System D 133

with double head drilling unit (rotary/rotary)

| Pos. | Description |
|---|---|
| 1 | Flange d 88.9 x 2 3/8" API IF RHT female (E), suitable for rotary head I (indicated with order) |
| 3 | Ejection bell fitted with connecting flange suitable for rotary head II and bolt circle suitable for flange pos. 4. |
| 5 | Casings D 133, 2 starts, cyl. LHT (G) x 8.8mm (10mm) wth x 110mm (d1).<br>Quality tubes: S355J2H; Welding ends: high tempered steel. Welding ends friction welded. |
| 5.2 | 2000 mm length |
| 5.4 | 1000 mm length |
| 6.1 | Casing bit D 133, 2 starts, cyl. LHT male x D 140mm, with special TC inserts and lateral wear protection. |
| 7.1 | 3000 mm length |
| 7.3 | 1500 mm length |
| 8 | Adaptor d 76.1 x 2 3/8" API Reg. RHT male x RHT female, suitable for pos. 10 |
| 9 | Rotary bit d 76.1 x 2 3/8" API IF RHT male x D 105mm, 3 wings, stepped form, TC fitted |
| 11 | Rotary bit d 76.1 x 2 3/8" API Reg. RHT male x D 105mm, 3 wings, plate type |
| 13 | DTH-hammer d = 82mm x connecting thread 2 3/8" API Reg. RHT male |

**Tools**

Fishing bell d 76.1 x 2 3/8" API Reg. RHT male

Lifting nipple d 76.1, 2 3/8" API Reg male

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
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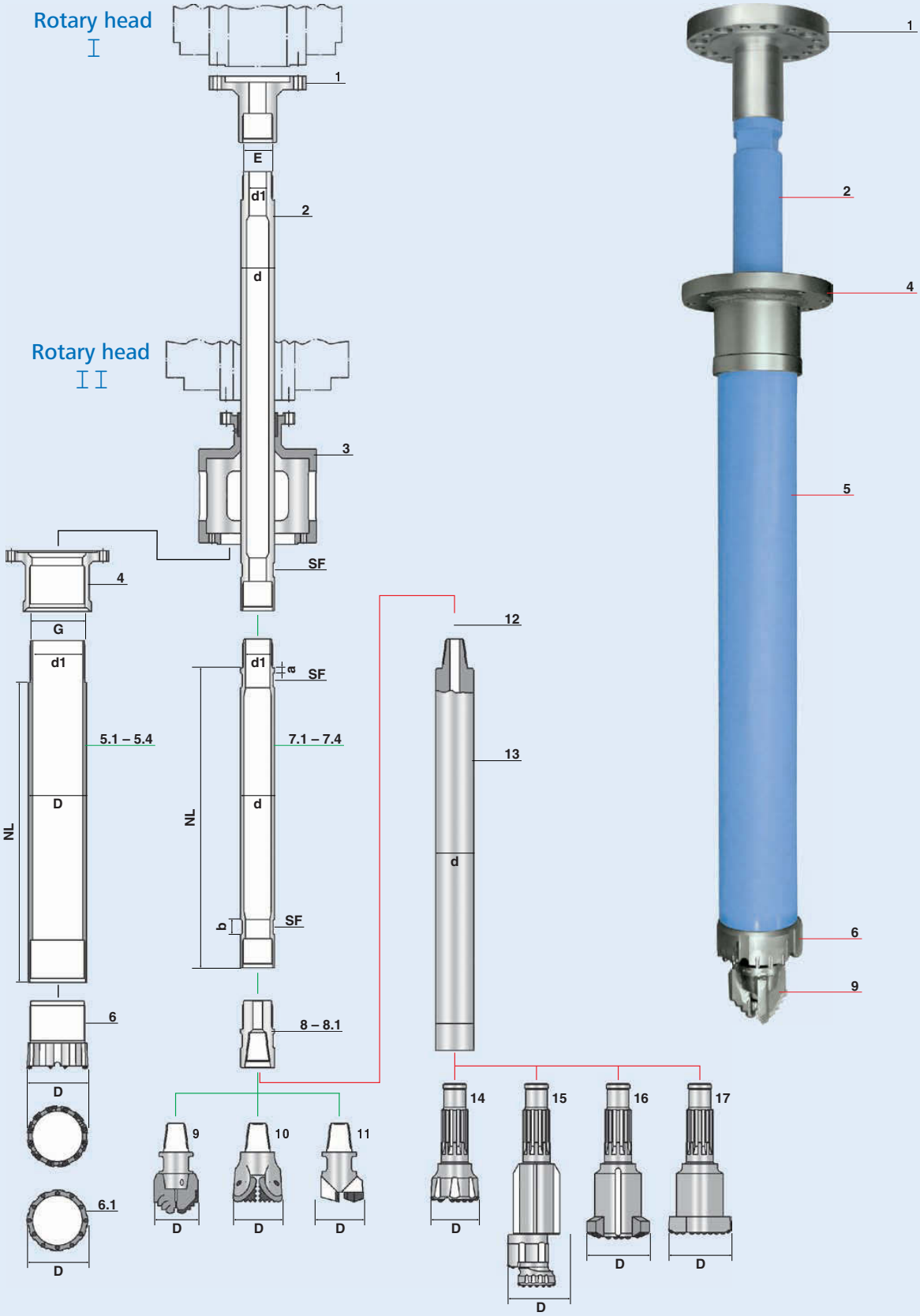
# Overburden Drilling Systems

## **with double head drilling unit** (rotary/rotary)



# Overburden Drilling System D 139.7

with double head drilling unit (rotary/rotary)

| Pos. | Description |
|---|---|
| 1 | Flange d 88.9 x 2 3/8" API IF RHT female (E), suitable for rotary head I (indicated with order) |
| 3 | Ejection bell fitted with connecting flange suitable for rotary head II and bolt circle suitable for flange pos. 4. |
| 5 | Casings D 139.7, 2 starts, cyl. LHT (G) x 8.8mm (10mm) wth x 117mm (d1).<br>Quality tubes: S355J2H; Welding ends: high tempered steel. Welding ends friction welded. |
| 5.2 | 2000 mm length |
| 5.4 | 1000 mm length |
| 6.1 | Casing bit D 139.7, 2 starts, cyl. LHT male x D 148mm, with special TC inserts and lateral wear protection. |
| 7.1 | 3000 mm length |
| 7.3 | 1500 mm length |
| 8 | Adaptor d 88.9 x 2 3/8" API Reg. RHT male x RHT female, suitable for pos. 10 |
| 9 | Rotary bit d 88.9 x 2 3/8" API IF RHT male x D 115mm, 3 wings, stepped form, TC fitted |
| 11 | Rotary bit d 88.9 x 2 3/8" API Reg. RHT male x D 114.3mm, 3 wings, plate type |
| 13 | DTH-hammer d = 92mm x connecting thread 2 3/8" API Reg. RHT male. |
| 15 | DTH-percussion bit type "EBEX 115" x D 148mm/d 115mm, button type,<br>shaft adapted for type of DTH-hammer |
| 17 | DTH-percussion bit type "Super Maxbit 115" x D 148mm/d 115mm, button type,<br>shaft adapted for type of DTH-hammer |

**Tools**

Fishing bell d 88.9 x 2 3/8" API Reg. RHT male

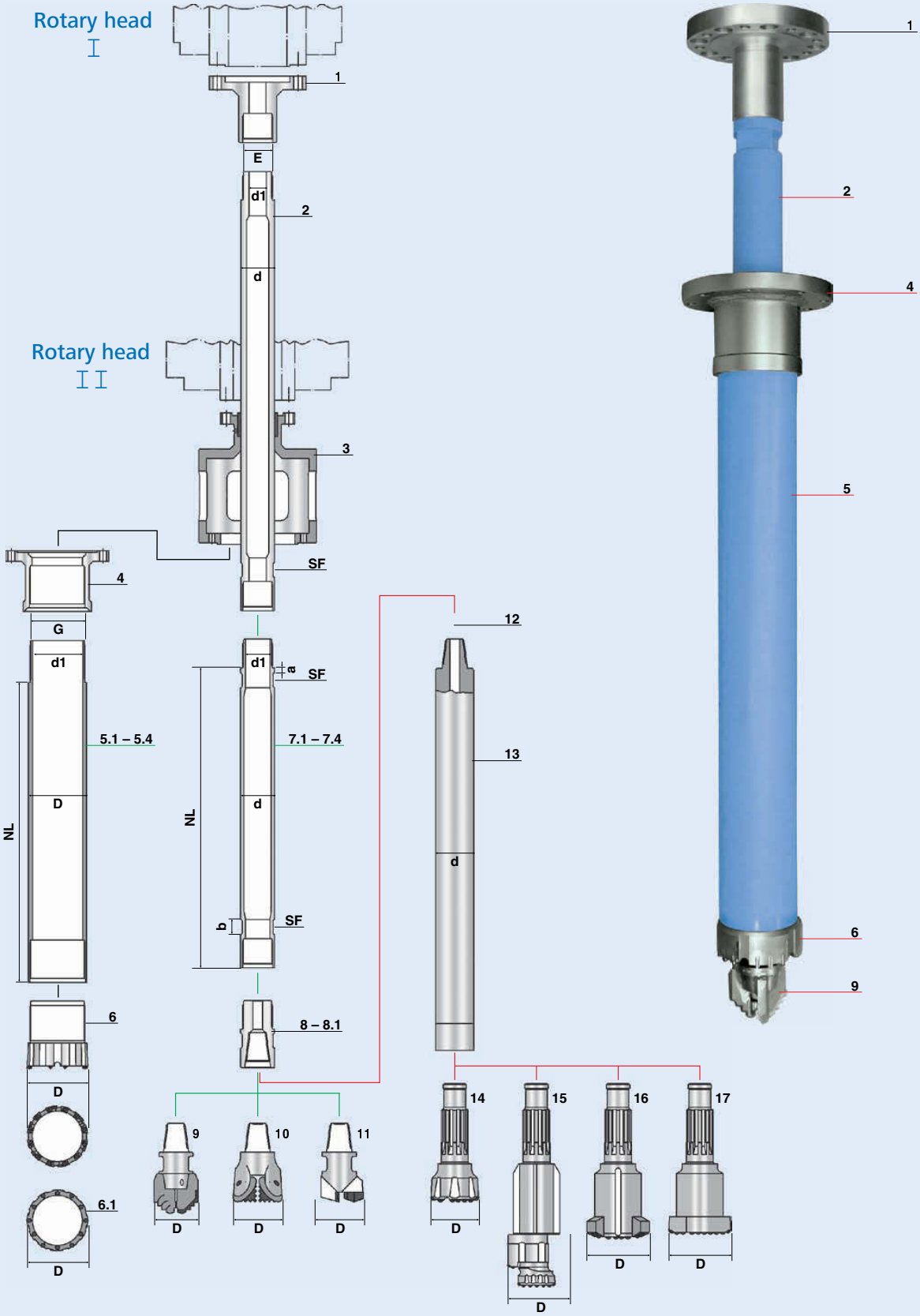
Lifting nipple d 88.9, 2 3/8" API Reg. RHT male

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheet shows only standard versions due to the many possible tool variations. Special designs on request.

# Overburden Drilling Systems

## **with double head drilling unit** (rotary/rotary)



# Overburden Drilling System D 152.4

with double head drilling unit (rotary/rotary)

| Pos. | Description |
|---|---|
| 1 | Flange d 88.9 x 2 3/8" API IF RHT female (E), suitable for rotary head I (indicated with order) |
| 3 | Ejection bell fitted with connecting flange suitable for rotary head II and bolt circle suitable for flange pos. 4. |
| 5 | Casings D 152.4, 2 starts, cyl. LHT (G) x 8.8mm (10mm) wth x 130mm (d1).<br>Quality tubes: S355J2H; Welding ends: high tempered steel. Welding ends friction welded. |
| 5.2 | 2000 mm length |
| 5.4 | 1000 mm length |
| 6.1 | Casing bit D 152.4, 2 starts, cyl. LHT male x D 160mm, with special TC-inserts and lateral wear protection. |
| 7.1 | 3000 mm length |
| 7.3 | 1500 mm length |
| 8 | Adaptor d 88.9 x 2 3/8" API Reg. RHT male x RHT female, suitable for pos. 10 |
| 9 | Rotary bit d 88.9 x 2 3/8" API IF RHT male x D 125mm, 3 wings, stepped form, TC fitted |
| 11 | Rotary bit d 88.9 x 2 3/8" API Reg. RHT male x D 125mm, 3 wings, plate type |
| 13 | DTH-hammer d = 92mm x connecting thread 2 3/8" API Reg. RHT male. |
| 15 | DTH-percussion bit type "EBEX 130" x D 162mm/d 125mm, button type,<br>shaft adapted for type of DTH-hammer |
| 17 | DTH-percussion bit type "Super Maxbit 130" x D 165mm/d 127mm, button type,<br>shaft adapted for type of DTH-hammer |

## Tools

Fishing bell d 88.9 x 2 3/8" API Reg. RHT male

Lifting nipple d 88.9, 2 3/8" API Reg. RHT male

## Signs & Symbols

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
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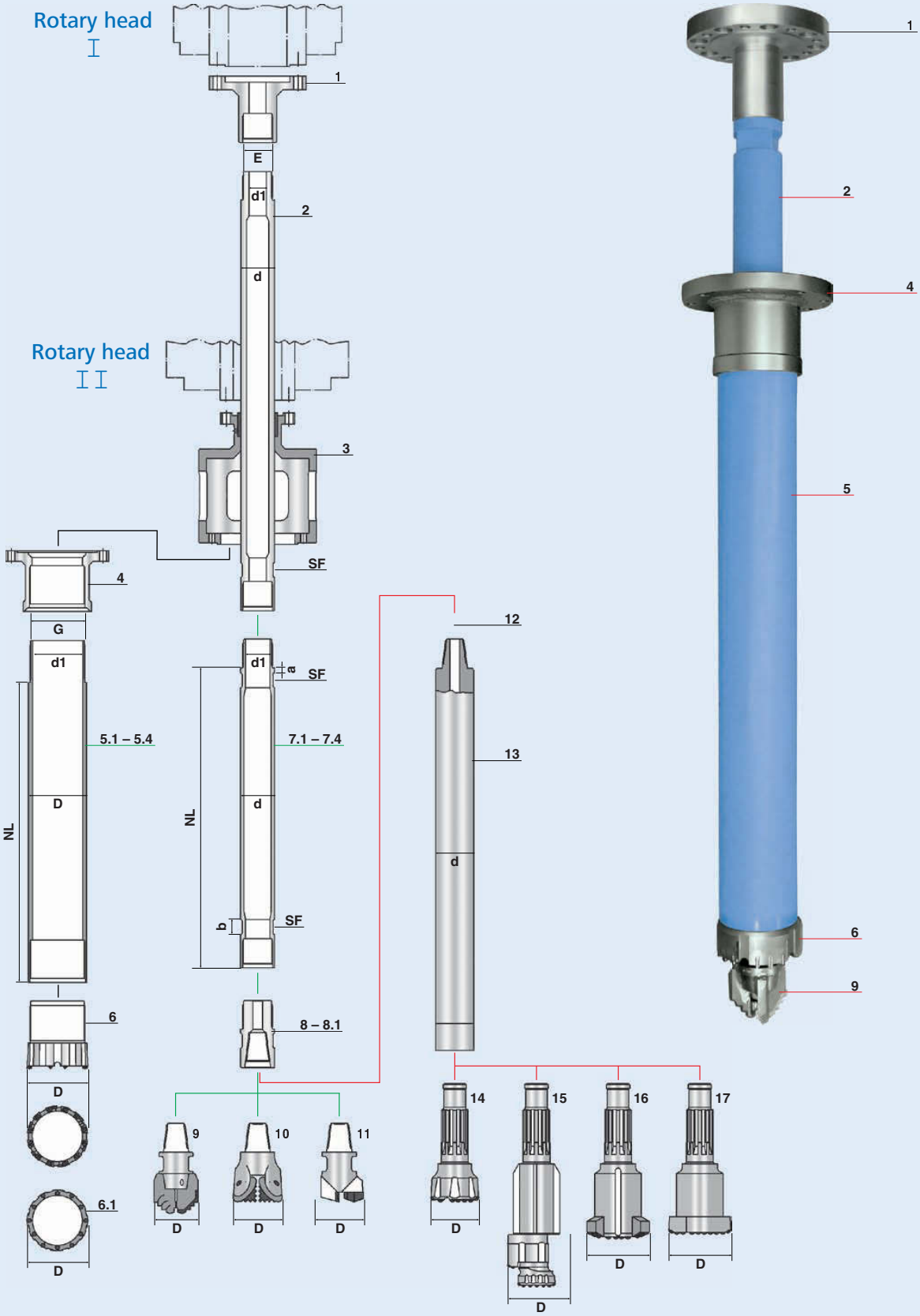
# Overburden Drilling Systems

## **with double head drilling unit** (rotary/rotary)



# Overburden Drilling System D 177.8

with double head drilling unit (rotary/rotary)

| Pos. | Description |
|---|---|
| 1 | Flange d 88.9 x 2 3/8" API IF RHT female (E), suitable for rotary head I (indicated with order) |
| 3 | Ejection bell fitted with connecting flange suitable for rotary head II and bolt circle suitable for flange pos. 4. |
| 5 | Casings D 177.8, 2 starts, cyl. LHT (G) x 8.8mm (10mm) wth x 155mm (d1).<br>Quality tubes: S355J2H; Welding ends: high tempered steel. Welding ends friction welded. |
| 5.2 | 2000 mm length |
| 5.4 | 1000 mm length |
| 6.1 | Casing bit D 177.8, 2 starts, cyl. LHT male x D 185mm, with special TC inserts and lateral wear protection. |
| 7.1 | 3000 mm length |
| 7.3 | 1500 mm length |
| 8 | Adaptor d 88.9 x 2 3/8" API Reg. RHT male x RHT female, suitable for pos. 10 |
| 9 | Rotary bit d 88.9 x 2 3/8" API IF RHT male x D 150mm, 3 wings, stepped form, TC fitted |
| 11 | Rotary bit d 88.9 x 2 3/8" API Reg. RHT male x D 150mm, 3 wings, plate type |
| 13 | DTH-hammer d = 121mm x connecting thread 3 1/2" API Reg. RHT male. |
| 15 | DTH-percussion bit type "EBEX 140" x D 178mm/d 150mm, button type,<br>shaft adapted for type of DTH-hammer |
| 17 | DTH-percussion bit type "Super Maxbit 150" x D 189mm/d 149mm, button type,<br>shaft adapted for type of DTH-hammer |

## Tools

Fishing bell d 88.9 x 2 3/8" API Reg. RHT male

Lifting nipple d 88.9, 2 3/8" API Reg. RHT male

## Signs & Symbols

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
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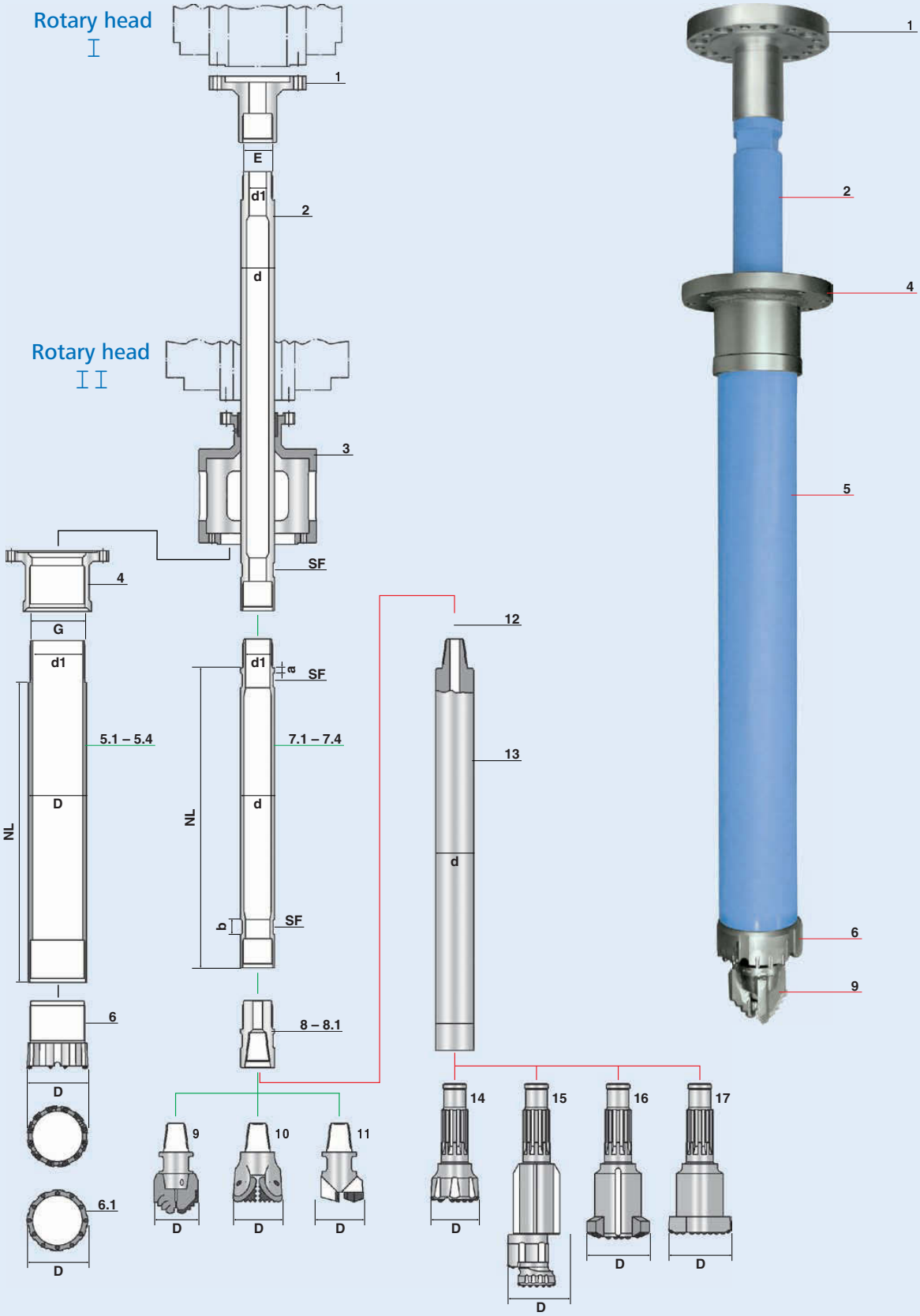
# Overburden Drilling Systems

## **with double head drilling unit** (rotary/rotary)



# Overburden Drilling System D 203

with double head drilling unit (rotary/rotary)

| Pos. | Description |
|---|---|
| 1 | Flange d 88.9 x 2 3/8" API IF RHT female (E), suitable for rotary head I (indicated with order) |
| 3 | Ejection bell fitted with connecting flange suitable for rotary head II and bolt circle suitable for flange pos. 4. |
| 5 | Casings D 203, 2 starts, cyl. LHT (G) x 8.8mm (10mm) wth x 180mm (d1).<br>Quality tubes: S355J2H; Welding ends: high tempered steel. Welding ends friction welded. |
| 5.2 | 2000 mm length |
| 5.4 | 1000 mm length |
| 6.1 | Casing bit D 203, 2 starts, cyl. LHT male x D 210mm, with special TC inserts and lateral wear protection. |
| 7.1 | 3000 mm length |
| 7.3 | 1500 mm length |
| 8 | Adaptor d 114.3 x 3 1/2" API Reg. RHT male x RHT female, suitable for pos. 10 |
| 9 | Rotary bit d 114.3 x 3 1/2" API IF RHT male x D 178mm, 3 wings, stepped form, TC fitted |
| 11 | Rotary bit d 114.3 x 3 1/2" API Reg. RHT male x D 178mm, 3 wings, plate type |
| 13 | DTH-hammer d = 121mm x connecting thread 3 1/2" API Reg. RHT male |
| 15 | DTH-percussion bit type "EBEX 165" x D 210mm/d 167mm, button type,<br>shaft adapted for type of DTH-hammer |
| 17 | DTH-percussion bit type "Super Maxbit 165" x D 211mm/d 165mm, button type,<br>shaft adapted for type of DTH-hammer |

**Tools**

Fishing bell d 114.3 x 3 1/2" API Reg. RHT male

Lifting nipple d 114.3, 3 1/2" API Reg. RHT male

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
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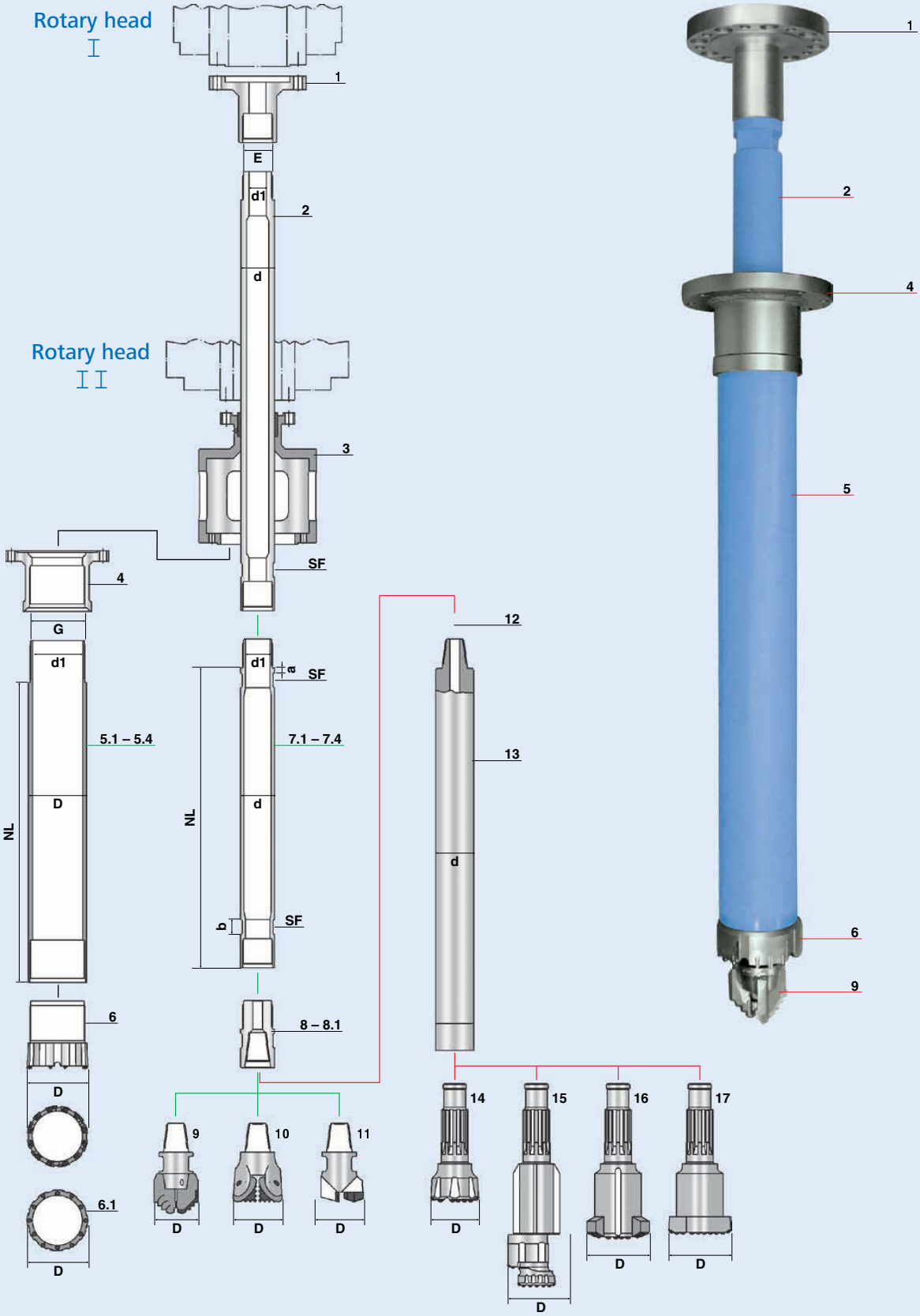
# Overburden Drilling Systems

## **with double head drilling unit** (rotary/rotary)



# Overburden Drilling System D 219.1

with double head drilling unit (rotary/rotary)

| Pos. | Description |
|---|---|
| 1 | Flange d 88.9 x 2 3/8" API IF RHT female (E), suitable for rotary head I (indicated with order) |
| 3 | Ejection bell fitted with connecting flange suitable for rotary head II and bolt circle suitable for flange pos. 4. |
| 5 | Casings D 219.1, 2 starts, cyl. LHT (G) x 8.8mm (10mm) wth x 196mm (d1).<br>Quality tubes: S355J2H; Welding ends: high tempered steel. Welding ends friction welded. |
| 5.2 | 2000 mm length |
| 5.4 | 1000 mm length |
| 6.1 | Casing bit D 219.1, 2 starts, cyl. LHT male x D 225mm, with special TC-inserts and lateral wear protection. |
| 7.1 | 3000 mm length |
| 7.3 | 1500 mm length |
| 8 | Adaptor d 114.3 x 3 1/2" API Reg. RHT male x RHT female, suitable for pos. 10 |
| 9 | Rotary bit d 114.3 x 3 1/2" API IF RHT male x D 194mm, 3 wings, stepped form, TC fitted |
| 11 | Rotary bit d 114.3 x 3 1/2" API Reg. RHT male x D 194mm, 3 wings, plate type |
| 13 | DTH-hammer d = 121mm x connecting thread 3 1/2" API Reg. RHT male. |
| 15 | DTH-percussion bit type "EBEX 190" x D 237mm/d 191mm, button type,<br>shaft adapted for type of DTH-hammer |
| 17 | DTH-percussion bit type "Super Maxbit 190" x D 237mm/d 191mm, button type,<br>shaft adapted for type of DTH-hammer |

**Tools**

| | |
|---|---|
| Fishing bell d 114.3 x 3 1/2" API Reg. RHT male | Lifting nipple d 114.3, 3 1/2" API Reg. RHT male |

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheet shows only standard versions due to the many possible tool variations. Special designs on request.


# **Overburden Drilling Systems**
## with double rotary head
(rotary/rotary percussion)

# Overburden Drilling Systems D 114.3 – D 177.8

## with double head drilling unit (rotary/rotary-percussion)

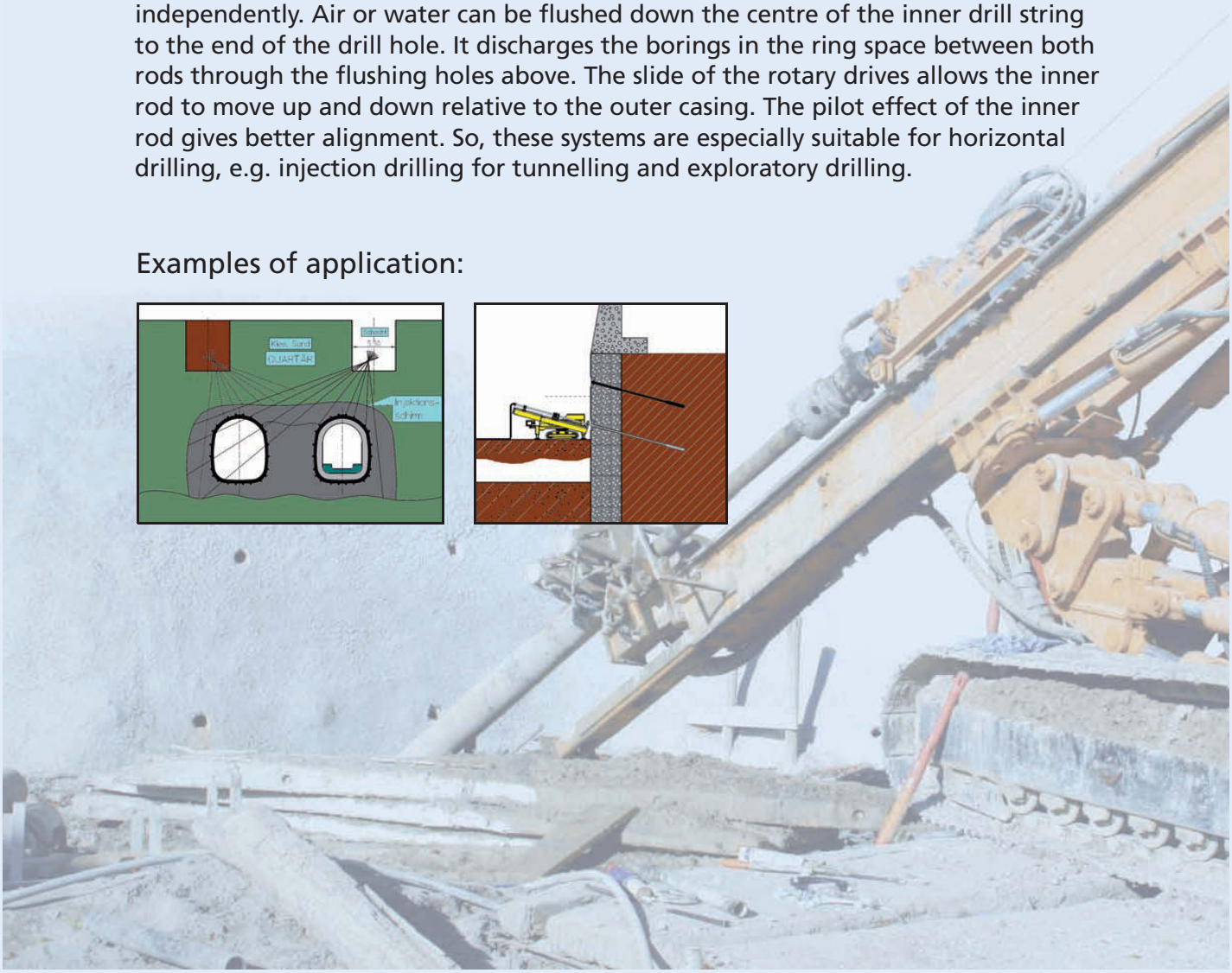
The name „Overburden Drilling" results from the composition of the earth crust. The bedrock is covered with loose layers of earth consisting of sand, gravel, boulders combined with loose soil and other deposits. All these formations are grouped together under the umbrella term „Overburden", which overlies the bedrock.

Certain drilling processes make it necessary to support the wall with tubes. The system shown here has two heads which can be moved opposite to one another, rotary (outer rods) and rotary-percussion (inner rod). The rods are counter-rotating independently. Air or water can be flushed down the centre of the inner drill string to the end of the drill hole. It discharges the borings in the ring space between both rods through the flushing holes above. The slide of the rotary drives allows the inner rod to move up and down relative to the outer casing. The pilot effect of the inner rod gives better alignment. So, these systems are especially suitable for horizontal drilling, e.g. injection drilling for tunnelling and exploratory drilling.

Examples of application:

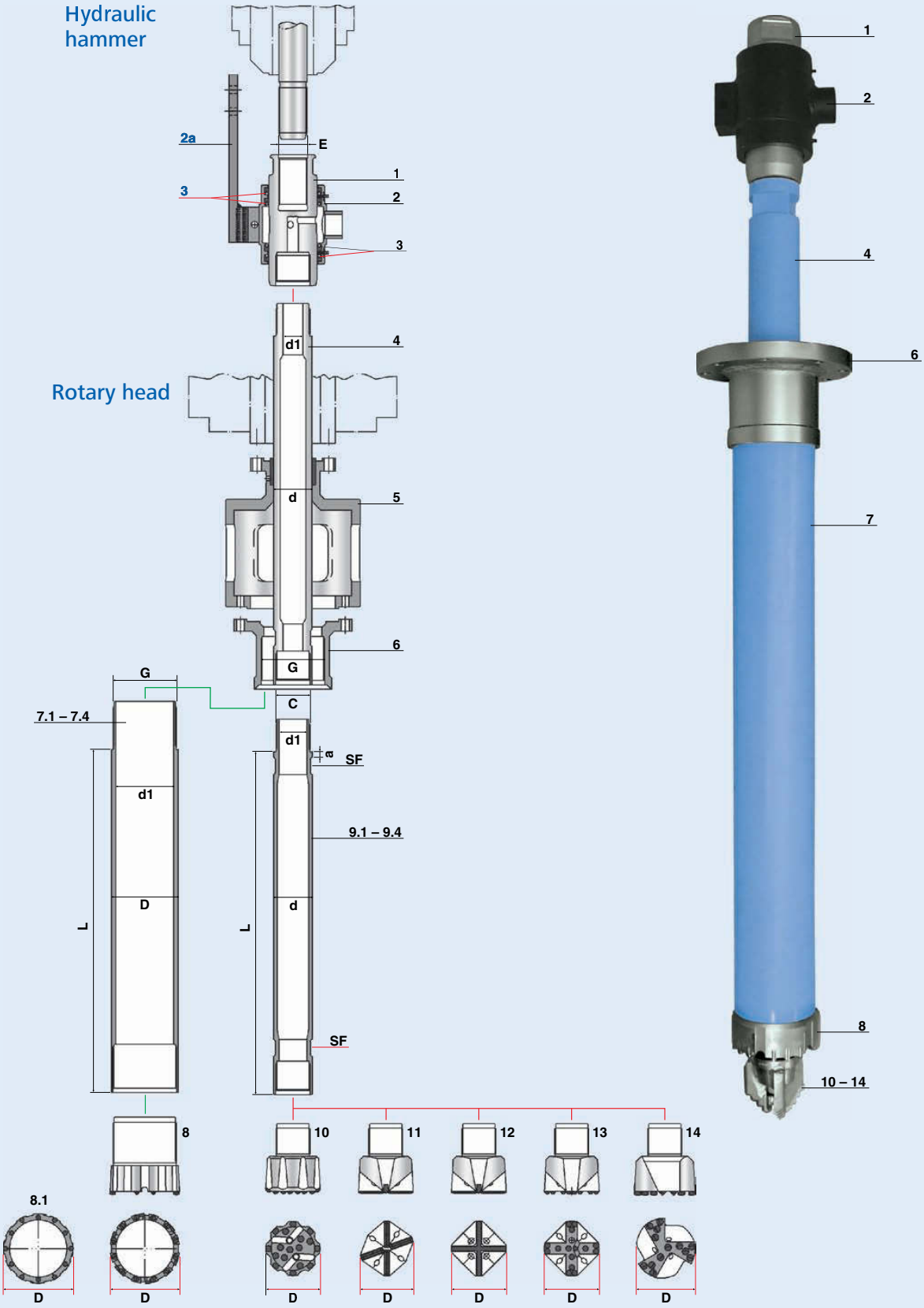




# Overburden Drilling Systems

## **with double head drilling unit** (rotary/rotary-percussion)



# Overburden Drilling System D 114.3

with double head drilling unit (rotary/rotary-percussion)

| Pos. | Description |
|---|---|
| 1 | Flushing head D 100 x H 55 LHT female (E) x SW 76 LHT female,<br>complete with flushing ring (Pos. 2) and seals (Pos. 3), but without holder. |
| 2a | Holder for flushing ring, suitable for hydraulic drifter (indicated with order). |
| 4 | Balancing rod d 80mm, SW 76 LHT male x T 58 LHT female (C) x length according to<br>double head system (indicated with order). |
| 6 | Flange D 114.3, 2 starts, cyl. RHT female (G), suitable for ejection bell Pos. 5. |
| 7.1 | 3000 mm length |
| 7.3 | 1500 mm length |
| 8 | Casing bit D 114.3, 2 starts, cyl. RHT male x D 120mm, hexagon type, lateral wear protection. |
| 9 | Rotary percussion tube d 76.1, T 58 LHT (C) x 8.8mm wth x 35mm (d1), with spanner flats.<br>Quality tubes: high tempered steel quality, nitrated surface; Welding ends: friction welded. |
| 9.2 | 2000 mm length |
| 9.4 | 1000 mm length |
| 11 | Percussion bit d 76.1, T 58 LHT male x D 89mm, X-plate. |
| 13 | Percussion bit d 76.1, T 58 LHT male x D 89mm, cross plate and special TC inserts. |

**Tools**

Fishing bell d 76.1, T 58 LHT male

Lifting nipple D 114.3, 2 starts, cyl. RHT male

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection; SW = Sysbohr thread.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
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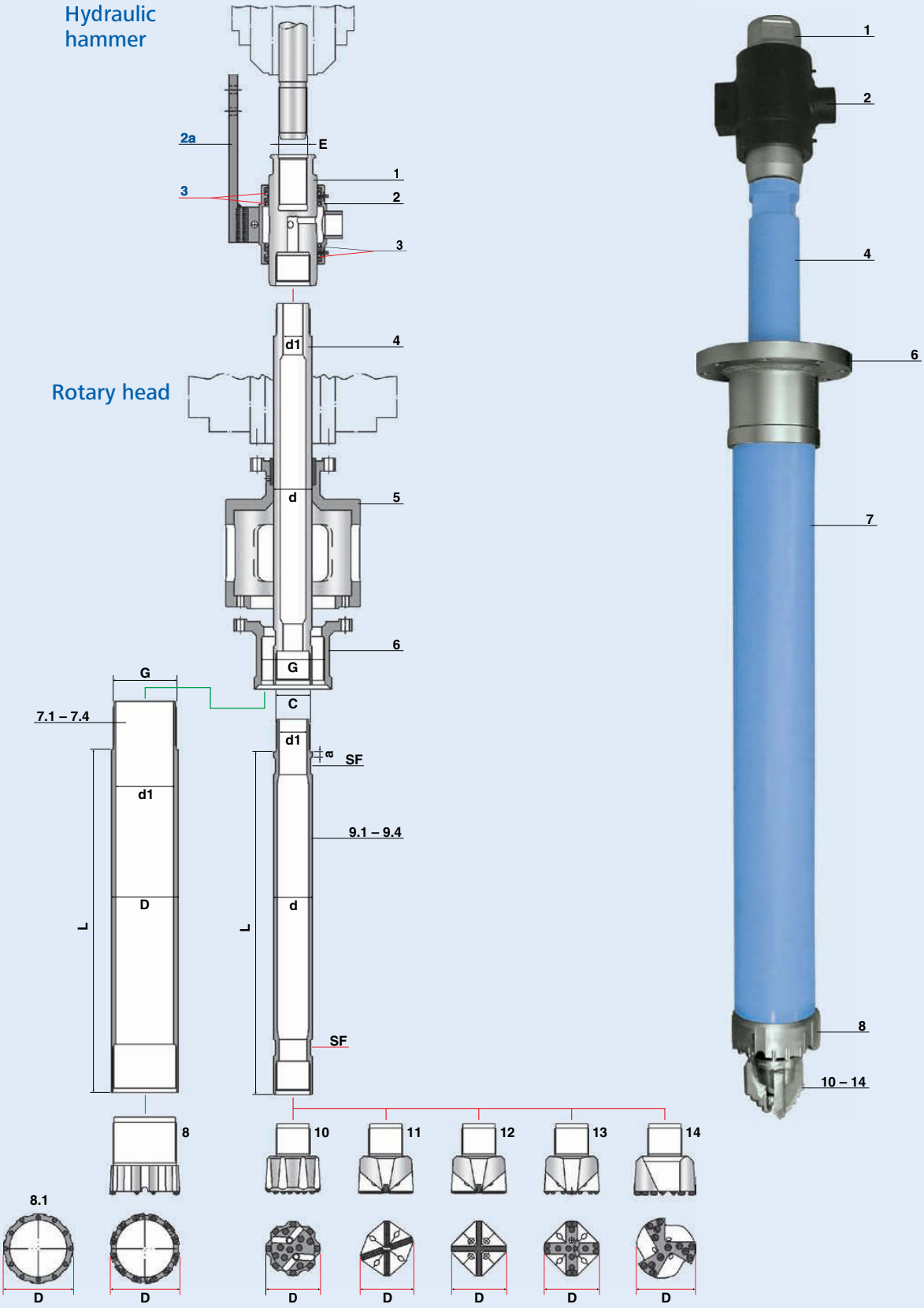
# Overburden Drilling Systems

## **with double head drilling unit** (rotary/rotary-percussion)



# Overburden Drilling System D 133

with double head drilling unit (rotary/rotary-percussion)

| Pos. | Description |
|---|---|
| 1 | Flushing head D 100 x H 55 LHT female (E) x SW 76 LHT female,<br>complete with flushing ring (Pos. 2) and seals (Pos. 3), but without holder. |
| 2a | Holder for flushing ring, suitable for hydraulic drifter (indicated with order). |
| 4 | Balancing rod d 80mm, SW 76 LHT male x T 58 LHT female (C) x length according to<br>double head system (indicated with order). |
| 6 | Flange D 133, 2 starts, cyl. RHT female (G), suitable for ejection bell Pos. 5. |
| 7.1 | 3000 mm length |
| 7.3 | 1500 mm length |
| 8 | Casing bit D 133, 2 starts, cyl. RHT male x D 140mm, hexagon type, lateral wear protection. |
| 9 | Rotary percussion tube d 76.1, T 58 LHT (C) x 8.8mm wth x 35mm (d1), with spanner flats.<br>Quality tubes: high tempered steel quality, nitrated surface; Welding ends: friction welded. |
| 9.2 | 2000 mm length |
| 9.4 | 1000 mm length |
| 11 | Percussion bit d 76.1, T 58 LHT male x D 105mm, X-plate. |
| 13 | Percussion bit d 76.1, T 58 LHT male x D 105mm, cross plate and special TC inserts. |

**Tools**

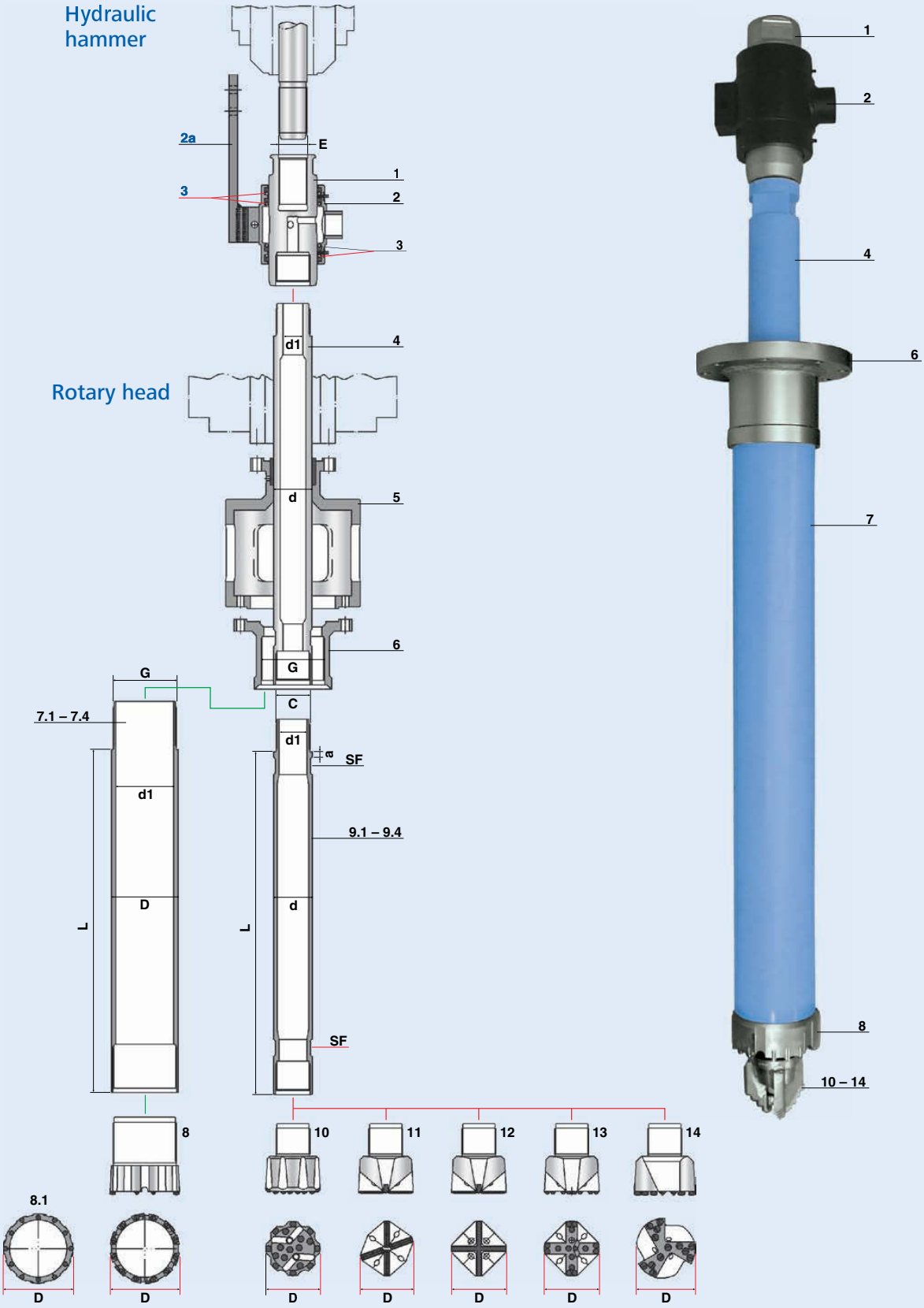
| | |
|---|---|
| Fishing bell d 76.1, T 58 LHT male | Lifting nipple D 133, 2 starts, cyl. RHT male |

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection; SW = Sysbohr thread.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheet shows only standard versions due to the many possible tool variations. Special designs on request.

# Overburden Drilling Systems

## **with double head drilling unit** (rotary/rotary-percussion)



# Overburden Drilling System D 152.4

with double head drilling unit (rotary/rotary-percussion)

| Pos. | Description |
|---|---|
| 1 | Flushing head D 100 x H 55 LHT female (E) x SW 76 LHT female,<br>complete with flushing ring (Pos. 2) and seals (Pos. 3), but without holder. |
| 2a | Holder for flushing ring, suitable for hydraulic drifter (indicated with order). |
| 4 | Balancing rod d 80mm, SW 76 LHT male x T 65 LHT female (C) x length according to<br>double head system (indicated with order). |
| 6 | Flange D 152.4, 2 starts, cyl. RHT female (G), suitable for ejection bell Pos. 5. |
| 7.1 | 3000 mm length |
| 7.3 | 1500 mm length |
| 8 | Casing bit D 152.4, 2 starts, cyl. RHT male x D 160mm, hexagon type, lateral wear protection. |
| 9 | Rotary percussion tube d 88.9, T 65 LHT (C) x 8.8mm wth x 45mm (d1), with spanner flat.<br>Quality tubes: high tempered steel quality, nitrated surface; Welding ends: friction welded. |
| 9.2 | 2000 mm length |
| 9.4 | 1000 mm length |
| 11 | Percussion bit d 88.9, T 65 LHT male x D 125mm, X-plate. |
| 13 | Percussion bit d 88.9, T 65 LHT male x D 125mm, cross plate and special TC inserts. |

## Tools

Fishing bell d 88.9, T 65 LHT male

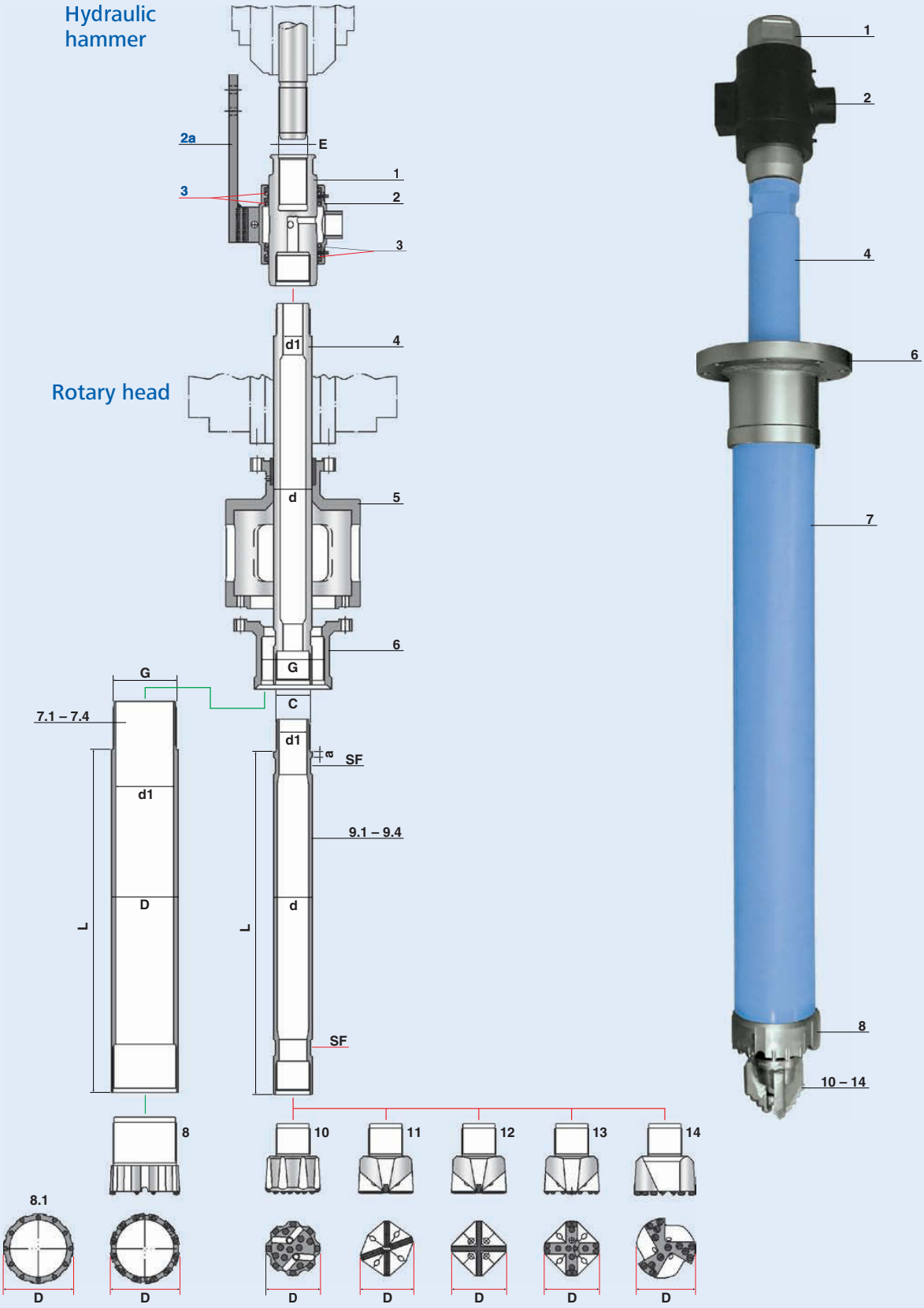
Lifting nipple D 152.4, 2 starts, cyl. RHT male

## Signs & Symbols

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection; SW = Sysbohr thread.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheet shows only standard versions due to the many possible tool variations. Special designs on request.

# Overburden Drilling Systems

## **with double head drilling unit** (rotary/rotary-percussion)



# Overburden Drilling System D 177.8

with double head drilling unit (rotary/rotary-percussion)

| Pos. | Description |
|---|---|
| 1 | Flushing head D 100 x H 55 LHT female (E) x SW 76 LHT female,<br>complete with flushing ring (Pos. 2) and seals (Pos. 3), but without holder. |
| 2a | Holder for flushing ring, suitable for hydraulic drifter (indicated with order). |
| 4 | Balancing rod d 80mm, SW 76 LHT male x T 65 LHT female (C) x length according to<br>double head system (indicated with order). |
| 6 | Flange D 177.8, 2 starts, cyl. RHT female (G) suitable for ejection bell Pos. 5. |
| 7.1 | 3000 mm length |
| 7.3 | 1500 mm length |
| 8 | Casing bit D 177.8, 2 starts, cyl. RHT male x D 185mm, hexagon type, lateral wear protection. |
| 9 | Rotary percussion tube d 88.9, T 65 LHT (C) x 8.8mm wth x 45mm (d1), with spanner flats.<br>Quality tubes: high tempered steel quality, nitrated surface; Welding ends: friction welded. |
| 9.2 | 2000 mm length |
| 9.4 | 1000 mm length |
| 11 | Percussion bit d 88.9, T 65 LHT male x D 145mm, X-plate. |
| 13 | Percussion bit d 88.9, T 65 LHT male x D 145mm, cross plate and special TC inserts. |

## Tools

Fishing bell d 88.9, T 65 LHT male

Lifting nipple D 177.8, 2 starts, cyl. RHT male

## Signs & Symbols

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection; SW = Sysbohr thread.
The following threads are on offer: right hand, left hand, cylindrial or conical. All casings can be made friction-welded or with nipples.
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# **Drive Drilling Systems**
with hydraulic drifter

# Drive Drilling Systems D 88.9 – D 152.4

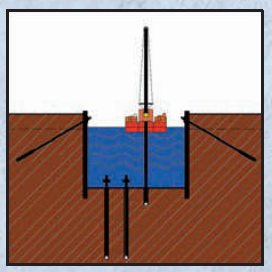
with hydraulic drifter

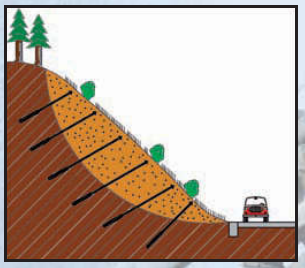
The name „Overburden Drilling" results from the composition of the earth crust. The bedrock is covered with loose layers of earth consisting of sand, gravel, boulders combined with loose soil and other deposits. All these formations are grouped together under the umbrella term "Overburden", which overlies the bedrock.

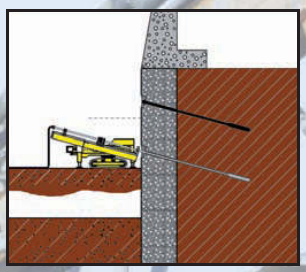
„Drive Drilling" is another drilling system used to manage the overburden ground conditions. A rotary percussion hammer drives a single rod through the overburden layers. This penetration process is produced by a cone on the end of the tube. It is fixed inside the tube and doesn't rotate. Having reached the final depth, the cone is pushed away. Now, the inner part of the tube is free for the drilling purposes (anchors, grout injection etc). The cone is sacrificial. Different ground conditions can be drilled by using wear resistant lost bits instead of cones which are manufactured by hard-facing, special TC inserts, etc. The discharge of the borings can be made by flushing, if cavities and voids are not present.

The drill bits or cones can be modified as necessary (against artesian water or to improve the drilling speed). This can be decided on site.

Examples of application:

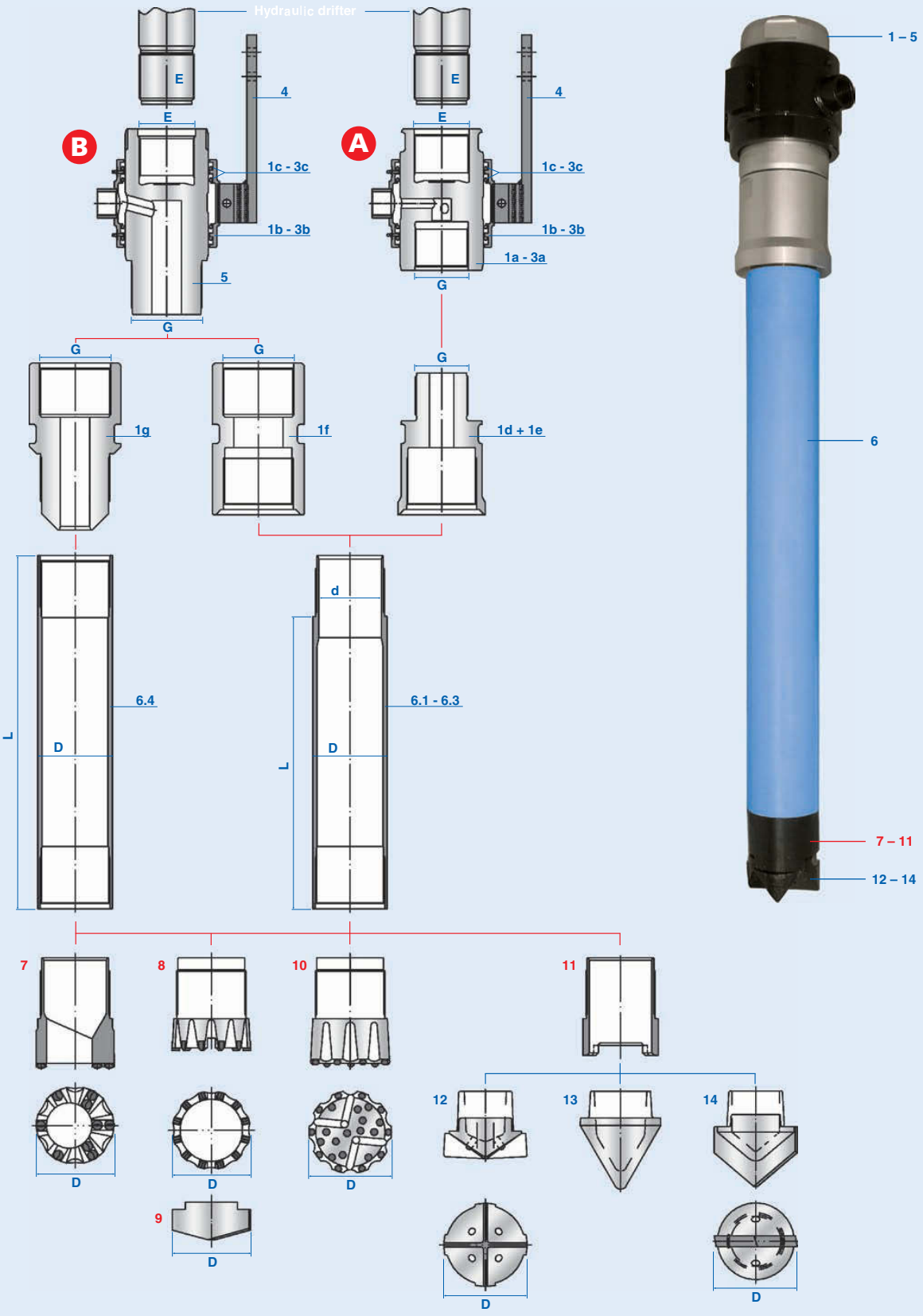






# Drive Drilling Systems

## with hydraulic drifter



# Drive Drilling System D 88.9

with hydraulic drifter

| Pos. | Description |
|---|---|
| | **FLUSHING HEAD A** |
| | Flushing head D 88.9, 1 start, cyl. LHT female x H 55 LHT female (E) x S 68 (G),<br>complete with flushing ring, connection G 1 1/4" female (component parts see pos. 1a, 1b, 1c and 1d) |
| | **alternatively:** |
| 2 | Flushing head D 88.9, 1 start, cyl. LHT female x H 64 LHT female (E) x S 78 (G),<br>complete with flushing ring, connection G 1 1/4" female (component parts see pos. 2a, 2b, 2c and 1e) |
| | **alternatively:** |
| | Flushing head D 88.9, 1 start, cyl. LHT female x H 112 (C112) LHT female (E) x S 78 (G),<br>complete with flushing ring, connection G 1 1/4" female (component parts see pos. 3a, 3b, 3c and 1e) |
| 1a | Flushing body D 100 x H 55 LHT female (E) x S 68 LHT female (G) |
| | Flushing body D 120 x H 64 LHT female (E) x S 78 LHT female (G) |
| 3a | Flushing body D 170 x H 112 (C 112) LHT female (E) x S 78 LHT female (G) |
| | Flushing ring D 100 x connection G 1 1/4" female |
| 2b | Flushing ring D 120 x connection G 1 1/4" female |
| | Flushing ring D 170 x connection G 1 1/4" female |
| 1c | Seal D 100 |
| | Seal D 120 |
| 3c | Seal D 170 |
| | Adaptor D 88.9, 1 start, cyl. LHT female x S 68 LHT male (G) |
| 1e | Adaptor D 88.9, 1 start, cyl. LHT female x S 78 LHT male (G) |
| | Flushing ring holder suitable for hydraulic drifter (indicated with order) |
| | **FLUSHING HEAD B** (alternatively to pos. 1-3) |
| 5 | Flushing body D 170 x H 112 (C 112) LHT female (E) x D 152.4, 2 starts, cyl. LHT male (G) |
| 1f | Adaptor D 88.9, 1 start, cyl. LHT female x D 152.4, 2 starts, cyl. LHT female (G) |
| 1g | Adaptor D 88.9, 1 start, cyl. LHT male x D 152.4, 2 starts, cyl. LHT female (G) |
| 6 | Rotary percussion tube D 88.9, 1 start, cyl. LHT x 8.8mm wth x 64.5mm (d),<br>of high tempered steel quality, only male side friction welded, without spanner flats |
| 6.1 | 3000 mm length |
| 6.2 | 2000 mm length |
| 6.3 | 1000 mm length |
| 6.4 | 900 mm length, both sides female, starting tube using part pos. 1f |
| 7 | Casing bit D 88.9, 1 start, cyl. LHT male x D 100mm, button type and excentric hole |
| 8 | Casing bit D 88.9, 1 start, cyl. LHT male x D 100mm, button type, grooves for blade |
| 9 | Lost blade D 100mm x 15mm, hard faced |
| 10 | Percussion bit D 88.9, 1 start, cyl. LHT x D 100mm, button type, flushing holes |
| 11 | Casing shoe D 88.9, 1 start, cyl. LHT male x radial groove |
| 12 | Lost bit D 88.9 x D 105mm x radial groove x cross plate, flushing holes |
| 13 | Lost point D 88.9 x radial groove |
| 14 | Lost point D 88.9 x radial groove x D 105mm x cross plate, flushing holes |

**Tools**

Fishing bell D 88.9, cyl. LHT, male

**Accessories**

Grouting nipple D 88.9, 1 start, cyl. LHT, male x G 1 1/4" connection

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded or with nipples.
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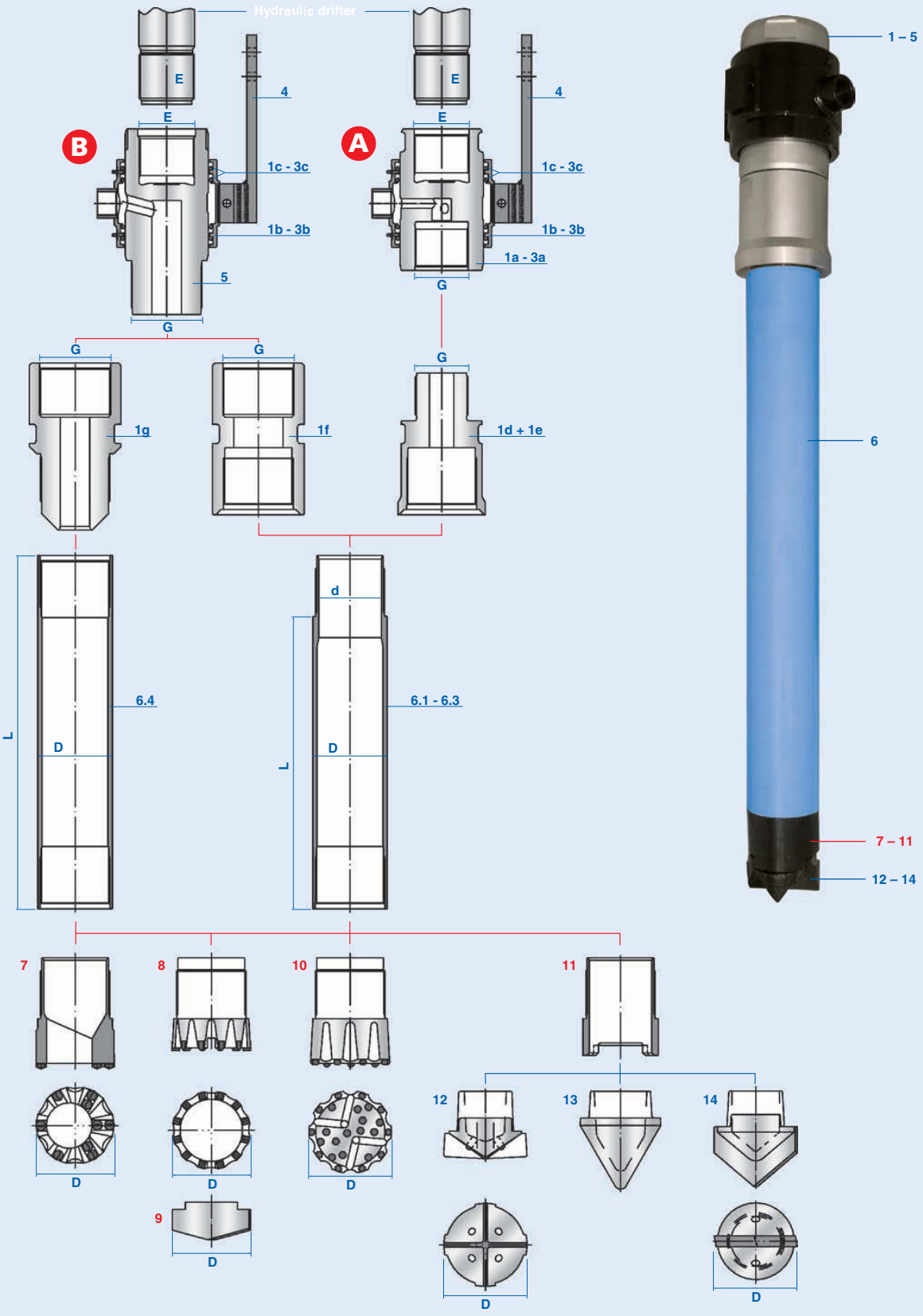
# Drive Drilling Systems

## with hydraulic drifter



# Drive Drilling System D 101,6

with hydraulic drifter

| Pos. | Description |
|---|---|
| | **FLUSHING HEAD A** |
| | Flushing head D 101.6, 3 starts, cyl. LHT female x H 55 LHT female (E) x S 68 (G),<br>complete with flushing ring, connection G 1 1/4" female (component parts see pos. 1a, 1b, 1c and 1d) |
| | **alternatively:** |
| 2 | Flushing head D 101.6, 3 starts, cyl. LHT female x H 64 LHT female (E) x S 78 (G),<br>complete with flushing ring, connection G 1 1/4" female (component parts see pos. 2a, 2b, 2c and 1e) |
| | **alternatively:** |
| | Flushing head D 101.6, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x S 78 (G),<br>complete with flushing ring, connection G 1 1/4" female (component parts see pos. 3a, 3b, 3c and 1e) |
| 1a | Flushing body D 100 x H 55 LHT female (E) x S 68 LHT female (G) |
| | Flushing body D 120 x H 64 LHT female (E) x S 78 LHT female (G) |
| 3a | Flushing body D 170 x H 112 (C 112) LHT female (E) x S 78 LHT female (G) |
| | Flushing ring D 100 x connection G 1 1/4" female |
| 2b | Flushing ring D 120 x connection G 1 1/4" female |
| | Flushing ring D 170 x connection G 1 1/4" female |
| 1c | Seal D 100 |
| | Seal D 120 |
| 3c | Seal D 170 |
| | Adaptor D 101.6, 3 starts, cyl. LHT female x S 68 LHT male (G) |
| 1e | Adaptor D 101.6, 3 starts, cyl. LHT female x S 78 LHT male (G) |
| | Flushing ring holder suitable for hydraulic drifter (indicated with order) |
| | **FLUSHING HEAD B** (alternatively to pos. 1-3) |
| 5 | Flushing body D 170 x H 112 (C 112) LHT female (E) x D 152.4, 2 starts, cyl. LHT male (G) |
| 1f | Adaptor D 101.6, 3 starts, cyl. LHT female x D 152.4, 2 starts, cyl. LHT female (G) |
| 1g | Adaptor D 101.6, 3 starts, cyl. LHT male x D 152.4, 2 starts, cyl. LHT female (G) |
| 6 | Rotary percussion tube D 101.6, 3 starts, cyl. LHT x 10mm wth x 75mm (d), in high tempered steel quality,<br>only male side friction welded, without spanner flats |
| 6.1 | 3000 mm length |
| 6.2 | 2000 mm length |
| 6.3 | 1000 mm length |
| 6.4 | 900 mm length, both sides female, used as starting tube with part pos. 1f |
| 7 | Casing bit D 101.6, 3 starts, cyl. LHT male x D 107mm, button type and excentric hole |
| 8 | Casing bit D 101.6, 3 starts, cyl. LHT male x D 107mm, button type, grooves for blade |
| 9 | Lost blade D 115mm x 15mm, hard faced |
| 10 | Percussion bit D 101.6, 3 starts, cyl. LHT x D 107mm, button type, flushing holes |
| 11 | Casing shoe D 101.6, 1 start, cyl. LHT male x radial groove |
| 12 | Lost percussion bit D 101,6 x D 120mm x radial groove x cross plate, flushing holes |
| 13 | Lost point D 101.6 x radial groove |
| 14 | Lost point D 101.6 x radial groove x D 120mm x cross plate, flushing holes |

## Tools

Fishing bell D 101.6, cyl. LHT, male

## Accessories

Grouting nipple D 101.6, 3 start, cyl. LHT, male x G 1 1/4" connection

## Signs & Symbols

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded or with nipples.
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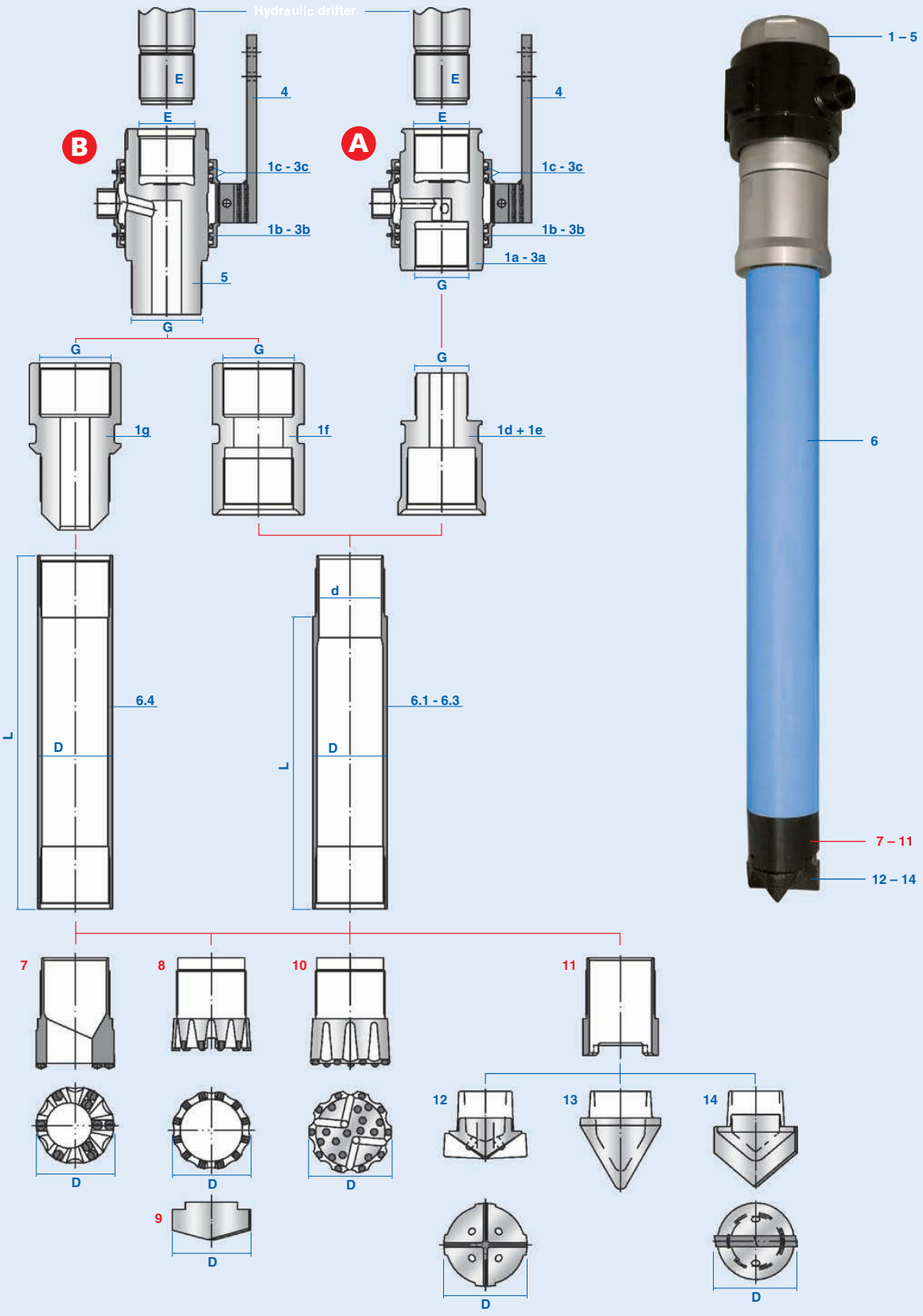
# Drive Drilling Systems

## with hydraulic drifter



# Drive Drilling System D 114,3

with hydraulic drifter

| Pos. | Description |
|---|---|
| | **FLUSHING HEAD A** |
| | Flushing head D 114.3, 3 starts, cyl. LHT female x H 55 LHT female (E) x S 68 (G),<br>complete with flushing ring, connection G 1 1/4" female (component parts see pos. 1a, 1b, 1c and 1d) |
| | **alternatively:** |
| 2 | Flushing head D 114.3, 3 starts, cyl. LHT female x H 64 LHT female (E) x S 78 (G),<br>complete with flushing ring, connection G 1 1/4" female (component parts see pos. 2a, 2b, 2c and 1e) |
| | **alternatively:** |
| | Flushing head D 114.3, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x S 78 (G),<br>complete with flushing ring, connection G 1 1/4" female (component parts see pos. 3a, 3b, 3c and 1e) |
| | |
| 1a | Flushing body D 100 x H 55 LHT female (E) x S 68 LHT female (G) |
| | Flushing body D 120 x H 64 LHT female (E) x S 78 LHT female (G) |
| 3a | Flushing body D 170 x H 112 (C 112) LHT female (E) x S 78 LHT female (G) |
| | Flushing ring D 100 x connection G 1 1/4" female |
| 2b | Flushing ring D 120 x connection G 1 1/4" female |
| | Flushing ring D 170 x connection G 1 1/4" female |
| 1c | Seal D 100 |
| | Seal D 120 |
| 3c | Seal D 170 |
| | Adaptor D 114.3, 3 starts, cyl. LHT female x S 68 LHT male (G) |
| 1e | Adaptor D 114.3, 3 starts, cyl. LHT female x S 78 LHT male (G) |
| | Flushing ring holder suitable for hydraulic drifter (indicated with order) |
| | |
| | **FLUSHING HEAD B** (alternatively to pos. 1-3) |
| 5 | Flushing body D 170 x H 112 (C 112) LHT female (E) x D 152.4, 2 starts, cyl. LHT male (G) |
| | Adaptor D 114.3, 3 starts, cyl. LHT female x D 152.4, 2 starts, cyl. LHT female (G) |
| 1g | Adaptor D 114.3, 3 starts, cyl. LHT male x D 152.4, 2 starts, cyl. LHT female (G) |
| | |
| | Rotary percussion tube D 114.3, 3 starts, cyl. LHT x 8.8mm Wd x 88mm (d), in high tempered steel quality,<br>only male side friction welded, without spanner flats |
| 6.1 | 3000 mm length |
| | 2000 mm length |
| 6.3 | 1000 mm length |
| | 900 mm length, both sides female, used as starting tube with part pos. 1f. |
| 7 | Casing bit D 114.3, 3 starts, cyl. LHT male x D 120mm, button type and excentric hole |
| | Casing bit D 114.3, 3 starts, cyl. LHT male x D 120mm, button type, grooves for blade |
| 9 | Lost blade D 125mm x 15mm, hard faced |
| | Percussion bit D 114.3, 3 starts, cyl. LHT male x D 120mm, button type, flushing holes |
| 11 | Casing shoe D 114.3, 3 starts, cyl. LHT male x radial groove |
| | Lost percussion bit D 114.3, x D 125mm x radial groove x cross plate, flushing holes |
| 13 | Lost point D 114.3 x radial groove |
| | Lost point D 114.3 x radial groove x D 125mm x cross plate, flushing holes |

| Tools | Accessories |
|---|---|
| Fishing bell D 114.3, cyl. LHT, male | Grouting nipple D 114.3, 3 starts, cyl. LHT, male x G 1 1/4" connection |

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
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The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded or with nipples.
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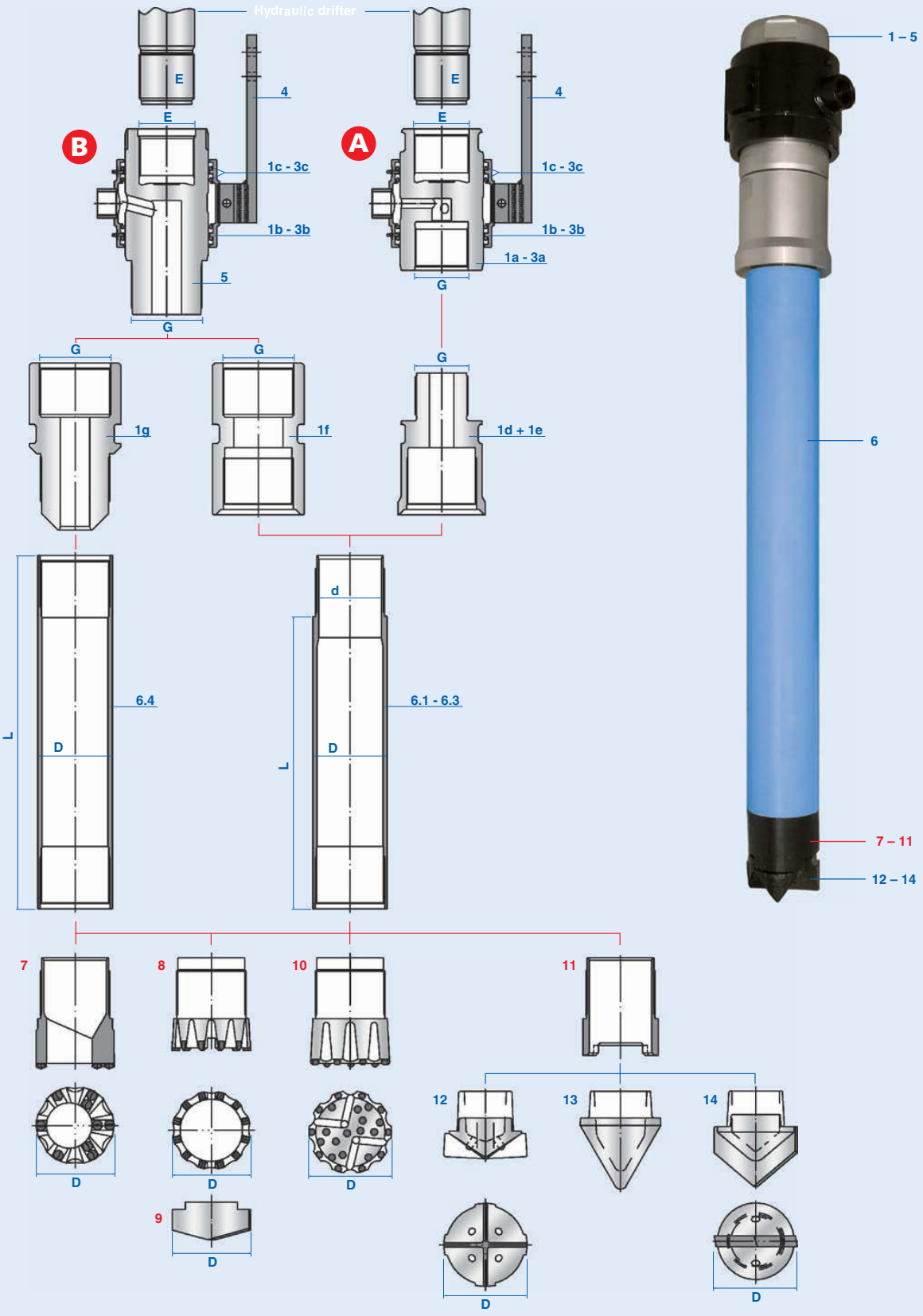
# Drive Drilling Systems

## with hydraulic drifter



# Drive Drilling System D 133

with hydraulic drifter

| Pos. | Description |
|---|---|
| | **FLUSHING HEAD A** |
| | Flushing head D 133, 3 starts, cyl. LHT female x H 55 LHT female (E) x S 68 (G),<br>complete with flushing ring, connection G 1 1/2" female (component parts see pos. 1a, 1b, 1c and 1d) |
| | **alternatively:** |
| 2 | Flushing head D 133, 3 starts, cyl. LHT female x H 64 LHT female (E) x S 78 (G),<br>complete with flushing ring, connection G 1 1/2" female (component parts see pos. 2a, 2b, 2c and 1e) |
| | **alternatively:** |
| | Flushing head D 133, 3 starts, cyl. LHT female x H 112 (C 112) LHT female (E) x S 78 (G),<br>complete with flushing ring, connection G 1 1/2" female (component parts see pos. 3a, 3b, 3c and 1e) |
| | |
| 1a | Flushing body D 100 x H 55 LHT female (E) x S 68 LHT female (G) |
| | Flushing body D 120 x H 64 LHT female (E) x S 78 LHT female (G) |
| 3a | Flushing body D 170 x H 112 (C 112) LHT female (E) x S 78 LHT female (G) |
| | |
| 2b | Flushing ring D 120 x connection G 1 1/2" female |
| | |
| 1c | Seal D 100 |
| | Seal D 120 |
| 3c | Seal D 170 |
| | Adaptor D 133, 3 starts, cyl. LHT female x S 68 LHT male (G) |
| 1e | Adaptor D 133, 3 starts, cyl. LHT female x S 78 LHT male (G) |
| | Flushing ring holder suitable for hydraulic drifter (indicated with order) |
| | |
| | **FLUSHING HEAD B** (alternatively to pos. 1-3) |
| 5 | Flushing body D 170 x H 112 (C 112) LHT female (E) x D 152.4, 2 starts, cyl. LHT male (G) |
| 1f | Adaptor D 133, 3 starts, cyl. LHT female x D 152.4, 2 starts, cyl. LHT female (G) |
| 1g | Adaptor D 133, 3 starts, cyl. LHT male x D 152.4, 2 starts, cyl. LHT female (G) |
| | |
| 6 | Rotary percussion tube D 133, 3 starts, cyl. LHT x 8.8mm wth x 108mm (d),<br>in high tempered steel quality, only male side friction welded, without spanner flats |
| 6.1 | 3000 mm length |
| 6.2 | 2000 mm length |
| 6.3 | 1000 mm length |
| 6.4 | 900 mm length, both sides female, used as starting tube with part pos. 1f |
| 7 | Casing bit D 133, 3 starts, cyl. LHT male x D 140mm, button type and excentric hole |
| 8 | Casing bit D 133, 3 starts, cyl. LHT male x D 140mm, button type, grooves for blade |
| 9 | Lost blade D 145mm x 15mm, hard faced |
| 10 | Percussion bit D 133, 1 start, cyl. LHT x D140mm, button type, flushing holes |
| 11 | Casing shoe D 133, 3 starts, cyl. LHT male x radial groove |
| 12 | Lost percussion bit D 133 x D 145mm x radial groove x cross plate, flushing holes |
| 13 | Lost point D 133 x radial groove |
| 14 | Lost point D 133 x radial groove x D 145mm x cross plate, flushing holes |

## Tools

Fishing bell D 133, 3 starts, cyl. LHT male

## Accessories

Grouting nipple D 133, 3 starts, cyl. LHT, male x G 1 1/4" connection

## Signs & Symbols

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded or with nipples.
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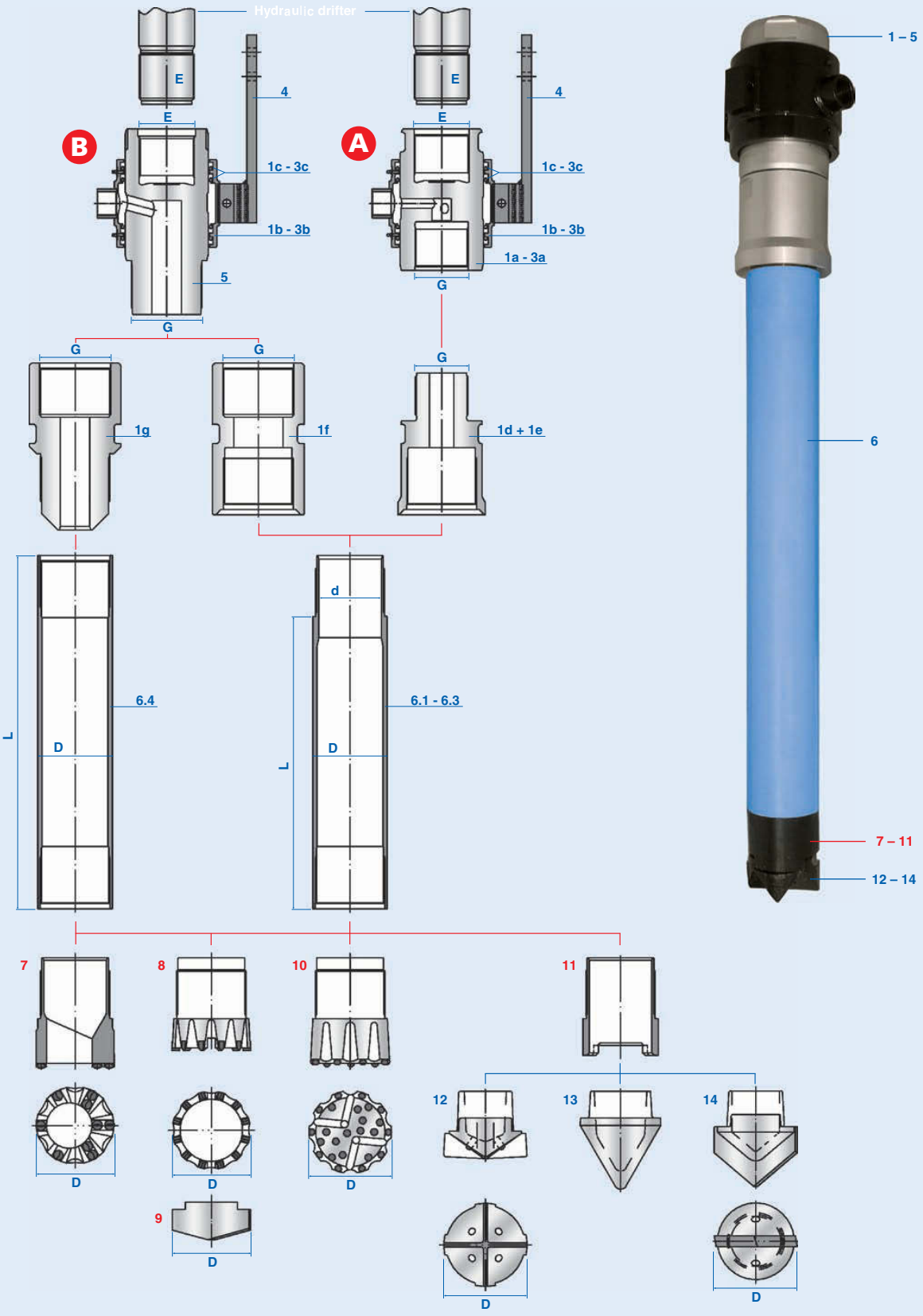
# Drive Drilling Systems

## with hydraulic drifter



# Drive Drilling System D 152,4

with hydraulic drifter

| Pos. | Description |
|---|---|
| | **FLUSHING HEAD A** |
| 1 | Flushing head D 152.4, 3 starts, cyl. LHT female x H 64 LHT female (E) x S 78 (G), complete with flushing ring, connection G 1 1/2" female (component parts see pos. 2a, 2b, 2c and 1d) |
| | **alternatively:** |
| | Flushing head D 152.4, 3 starts, cyl. LHT female x H 112 LHT female (E) x S 108 (G), complete with flushing ring, connection G 1 1/2" female (component parts see pos. 3a, 3b, 3c and 1e) |
| 2a | Flushing body D 120 x H 64 LHT female (E) x S 78 LHT female (G) |
| | Flushing body D 170 x H 112 (C 112) LHT female (E) x S 108 LHT female (G) |
| 2b | Flushing ring D 120 x connection G 1 1/2" female |
| | Flushing ring D 170 x connection G 1 1/2" female |
| 2c | Seal D 120 |
| | Seal D 170 |
| 1d | Adaptor D 152.4, 3 starts, cyl. LHT female x S 78 LHT male (G) |
| | Adaptor D 152.4, 3 starts, cyl. LHT female x S 108 LHT male (G) |
| 4 | Flushing ring holder suitable for hydraulic drifter (indicated with order) |
| | **FLUSHING HEAD B** (alternatively to pos. 1-2) |
| | Flushing body D 170 x H 112 (C 112) LHT female (E) x D 152.4, 2 starts, cyl. LHT male (G) |
| 1f | Adaptor D 152.4, 3 starts, cyl. LHT female x D 152.4, 2 starts, cyl. LHT female (G) |
| 1g | Adaptor D 152.4, 3 starts, cyl. LHT male x D 152.4, 2 starts, cyl. LHT female (G) |
| 6 | Rotary percussion tube D 152.4, 3 starts, cyl. LHT x 8.8mm wth x 128mm (d), in high tempered steel quality, only male side friction welded, without spanner flats |
| 6.1 | 3000 mm length |
| 6.2 | 2000 mm length |
| 6.3 | 1000 mm length |
| 6.4 | 900 mm length, both sides female, used as starting tube with part pos. 1f. |
| 7 | Casing bit D 152.4, 3 starts, cyl. LHT male x D 160mm, button type and excentric hole |
| 8 | Casing bit D 152.4, 3 starts, cyl. LHT male x D 160mm, button type, grooves for blade |
| 9 | Lost blade D 165mm x 15mm, with button type |
| 10 | Percussion bit D 152.4, 3 starts, cyl. LHT x D160mm, button type, flushing holes |
| 11 | Casing shoe D 152.4, 3 starts, cyl. LHT male x radial groove |
| 12 | Lost percussion bit D 152.4 x D 165mm x radial groove x cross plate, flushing holes |
| 13 | Lost point D 152.4 x radial groove |
| 14 | Lost point D 154.4 x radial groove x D 165mm x cross plate, flushing holes |

## Tools

Fishing bell D 152.4, 3 starts, cyl. LHT male

## Accessories

Grouting nipple D 152.4, 3 starts, cyl. LHT, male x G 1 1/2" connection

## Signs & Symbols

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheet shows only standard versions due to the many possible tool variations. Special designs on request.


# **Geothermal Drilling Systems**
with double rotary head
(rotary/rotary)

# Geothermal Drilling Systems D 146 – D 219.1

## with double head drilling unit

Geothermal energy is very popular at the moment and is provided by Geothermal loops coupled to geothermal energy pumps. The drilling process is very challenging as there are ground layers with different hydraulic characteristics and pressure conditions to pass through.
Therefore this type drilling is mostly carried out using double head drilling units with independently counter rotating rods.

The outer rods, also called protection rods, are only used for drilling in overburden conditions or broken formations. Then, the drilling will be continued by inner rods with corresponding drilling tools up to depths of 200 meters and more. The drill string can be altered during the drilling process to conform to certain requirements including the ability to switch from DTH hammer using standard drill bits to eccentric or standard rotary percussive drill bits. Drag bits or Rock Roller bits can also be used.

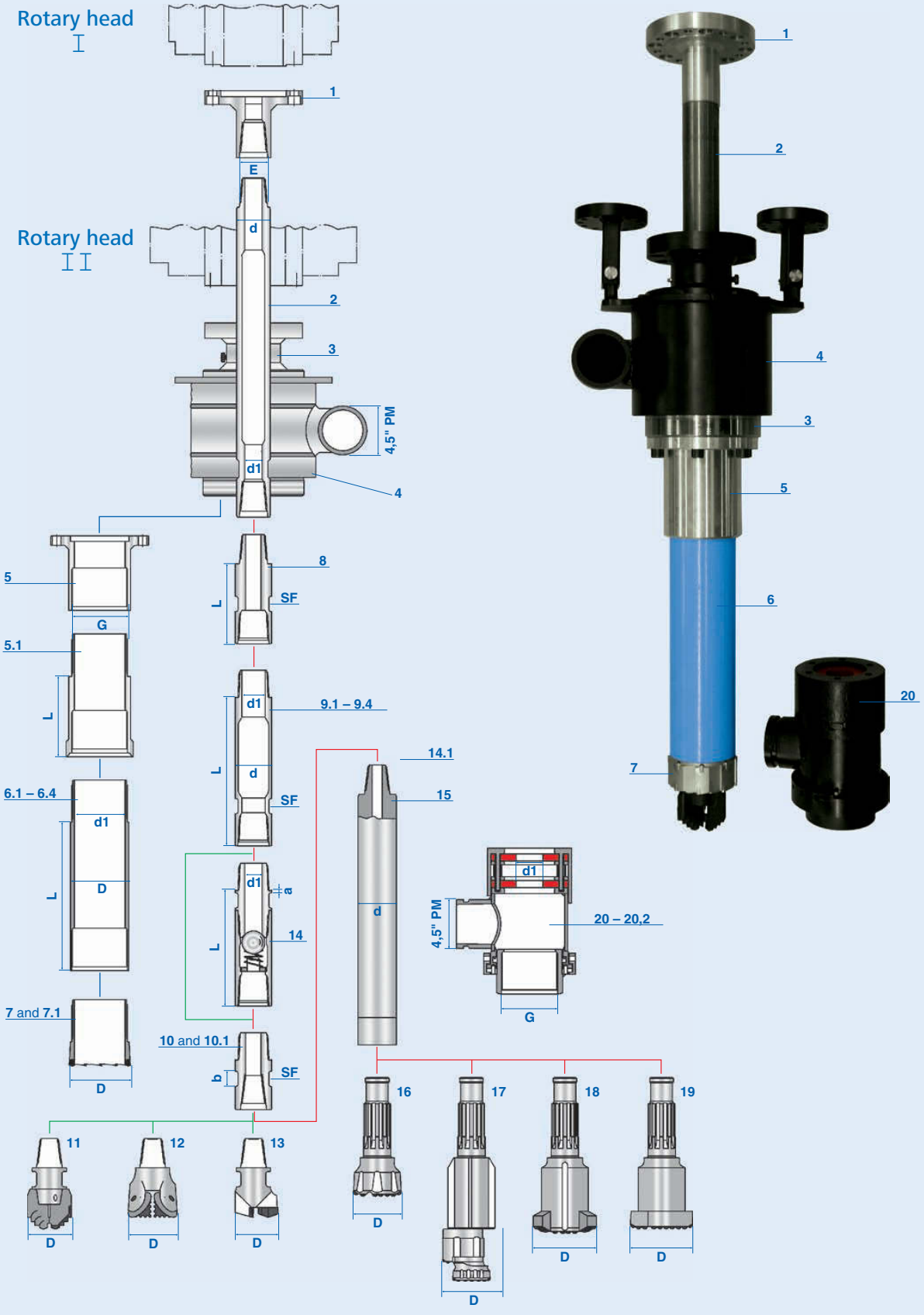
Special preventers are available to protect the surroundings from discharged borings and keep the job site clean.

Example of application:



# Geothermal Drilling Systems

## with double rotary drilling unit



# Geothermal Drilling System D 146

with double rotary drilling unit

| Pos. | Description |
|---|---|
| 1 | Flange d 88.9, 1 start, cyl. RHT female (E), suitable for rotary head I (indicated with order) |
| 3 | Ejection bell with connecting flange suitable to rotary head II<br>as well as bolt circle suitable to flange pos. 5 |
| 5 | Flange D 146, 2 starts, cyl. LHT female (G) suitable to ejection bell, pos. 3 |
| 6 | Casing D 146, 2 starts, cyl. LHT x 10mm wth x 123mm (d1).<br>Quality tubes: S355J2H; Welding ends: high tempered steel, MIG welded to tubes |
| 6.2 | 2000 mm length |
| 6.4 | 1000 mm length |
| 7.1 | Casing bit D 146, 2 starts, cyl. LHT male x D 155mm, with special TC inserts, wear protection |
| 9 | Rotary tubes d 88.9, 1 start, cyl. RHT x 8.8mm wth x 56mm (d1)<br>with groove D = 75mm x 20mm width on female side. Quality tubes: S355J2H;<br>Welding ends: high tempered steel, surface nitrated. Welding ends friction welded to tubes |
| 9.2 | 2000 mm length |
| 9.4 | 1000 mm length |
| 10.1 | Adaptor d 88.9, 1 start, cyl. RHT male x female thread suitable to pos. 15 |
| 12 | Roller bit d 88.9, 2 7/8" API Reg. male thread x D 120.7mm (4 3/4") |
| 14 | Back pressure valve d 88.9, 1 start, cyl. RHT male/female x length adjusted to length of DTH hammer<br>(indicated with order), opening in female direction (optional) |
| 15 | DTH hammer d = 92mm x connecting thread 2 3/8" API Reg. male |
| 17 | DTH hammer drill bit "EBEX 115" x D 148mm/115mm, button type, shaft according to DTH hammer |
| 19 | DTH hammer drill bit "Super Maxbit 115" x D 148mm/115mm, button type, shaft according to DTH hammer |
| 20.1 | Soil preventer D 146, 2 starts, cyl. LHT female (G) x d 88.9 (d1 = 80mm) x connection 4.5" PM.<br>Thread (G) seperable with bayonet lock |

## Tools

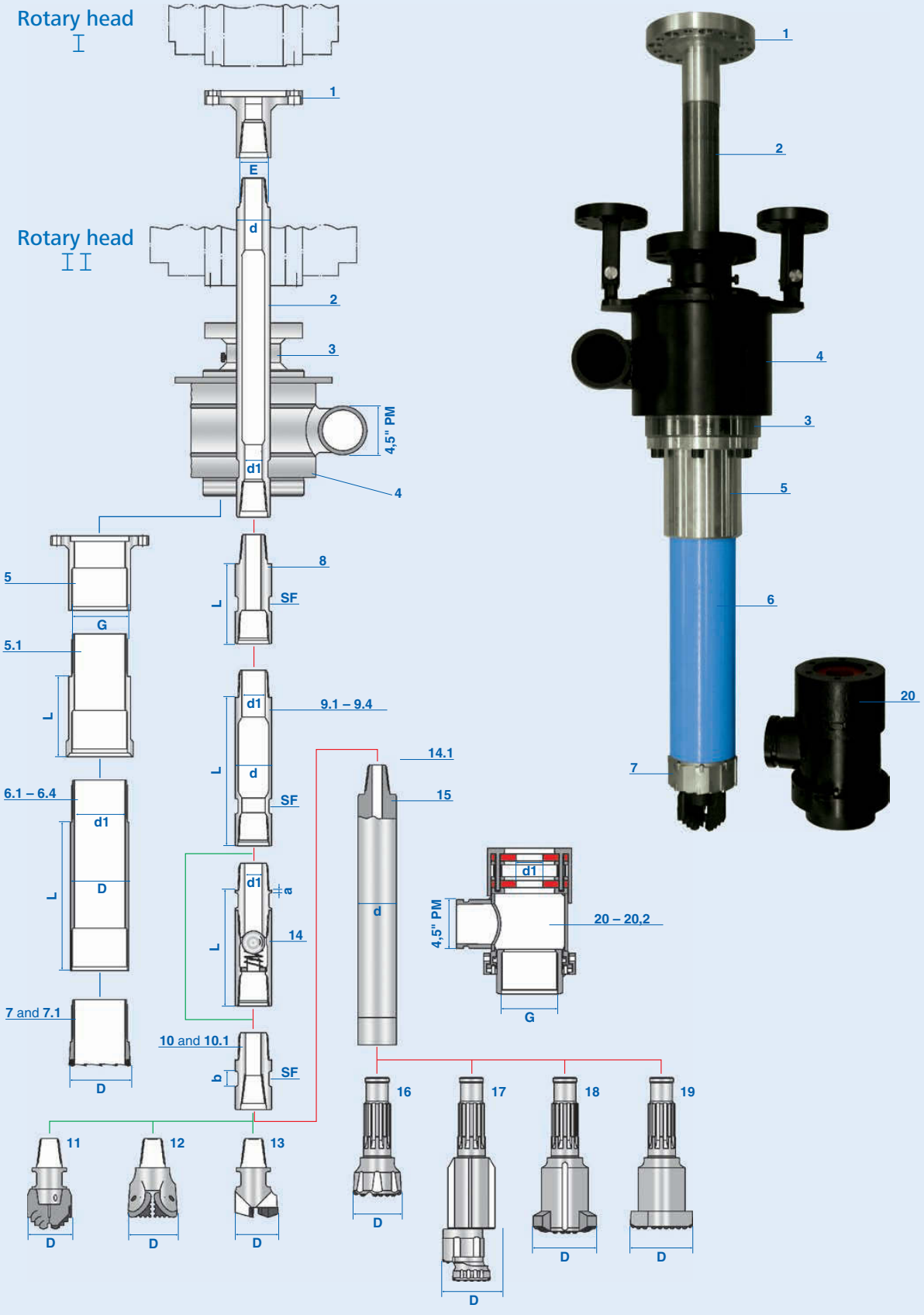
| | |
|---|---|
| Fishing bell d 88.9, 1 start, cyl. RHT male | Lifting cap D 146, 2 starts, cyl. LHT female |

## Signs & Symbols

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = diameter inner tube; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection outer tube; E = thread connection inner tube.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded.
Please note that this production sheet shows only standard versions due to the many possible tool variations. Special designs on request.

# Geothermal Drilling Systems

## with double rotary drilling unit



# Geothermal Drilling System D 152.4

with double rotary drilling unit

| Pos. | Description |
|---|---|
| 2 | Balance rod d 88.9, 1 start, cyl. RHT male/female x 56mm (d1) x 2000mm length<br>(or according to double rotary head) |
| 4 | Rotary preventer with discharge connection PM 4.5" |
| 5 | Flange D 152.4, 2 starts, cyl. LHT female (G) suitable to ejection bell, pos. 3 |
| 6 | Casing D 152.4, 2 starts, cyl. LHT x 10mm wth x 130mm (d1). Quality tubes: S355J2H;<br>Welding ends: high tempered steel, MIG welded to tubes |
| 6.2 | 2000 mm length |
| 6.4 | 1000 mm length |
| 7.1 | Casing bit D 152.4, 2 starts, cyl. LHT male x D 160mm, with special TC inserts, wear protection |
| 9 | Rotary tubes d 88.9, 1 start, cyl. RHT x 8.8mm wth x 56mm (d1)<br>with groove D = 75mm x 20mm width on female side. Quality tubes: S355J2H;<br>Welding ends: high tempered steel, surface nitrated. Welding ends friction welded to tubes |
| 9.2 | 2000 mm length |
| 9.4 | 1000 mm length |
| 10.1 | Adaptor d 88.9, 1 start, cyl. RHT male x female thread suitable to pos. 15 |
| 12 | Roller bit d 88.9, 2 7/8" API Reg. male thread x D 120.7mm (4 3/4") |
| 14 | Back pressure valve d 88.9, 1 start, cyl. RHT male/female x length adjusted to length of DTH hammer<br>(indicated with order), opening in female direction (optional) |
| 15 | DTH hammer d = 92mm x connecting thread 2 3/8" API Reg. male |
| 17 | DTH hammer drill bit "EBEX 130" x D 162mm/125mm, button type, shaft according to DTH hammer |
| 19 | DTH hammer drill bit "Super Maxbit 130" x D 165mm/127mm, button type, shaft according to DTH hammer |
| 20.1 | Soil preventer D 152.4, 2 starts, cyl. LHT female (G) x d 88.9 (d1 = 80mm) x connection 4.5" PM.<br>Thread (G) seperable with bayonet lock |

## Tools

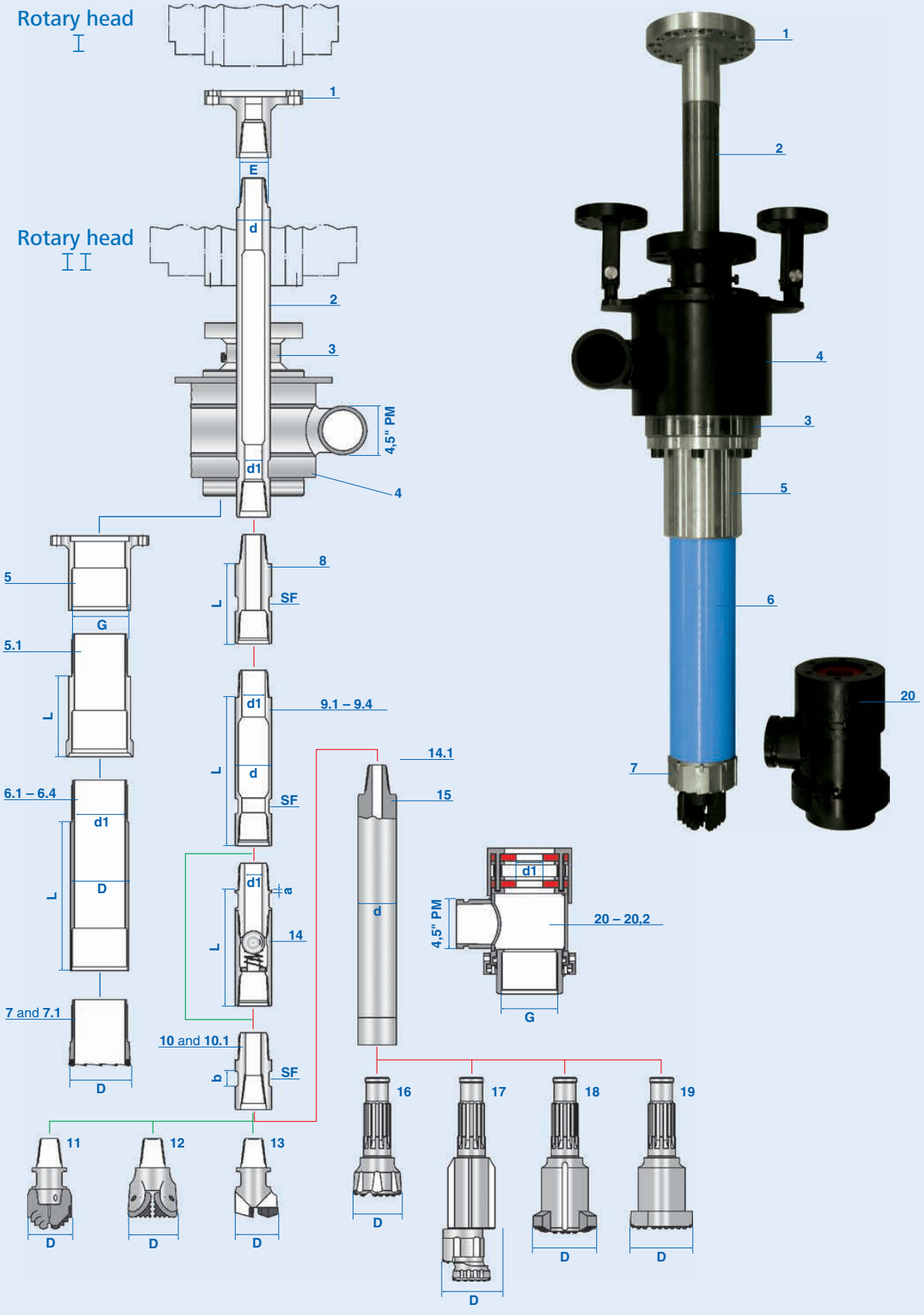
| | |
|---|---|
| Fishing bell d 88.9, 1 start, cyl. RHT male | Lifting cap D 152.4, 2 starts, cyl. LHT female |

## Signs & Symbols

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = diameter inner tube; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection outer tube; E = thread connection inner tube.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded.
Please note that this production sheet shows only standard versions due to the many possible tool variations. Special designs on request.

# Geothermal Drilling Systems

## with double rotary drilling unit



# Geothermal Drilling System D 168.3

with double rotary drilling unit

| Pos. | Description |
|---|---|
| 2 | Balance rod d 88.9, 1 start, cyl. RHT male/female x 56mm (d1) x 2000mm length<br>(or according to double rotary head) |
| 4 | Rotary preventer with discharge connection PM 4.5" |
| 5 | Flange D 168.3, 2 starts, cyl. LHT female (G) suitable to ejection bell, pos. 3 |
| 6 | Casing D 168.3, 2 starts, cyl. LHT x 10mm wth x 145mm (d1). Quality tubes: S355J2H;<br>Welding ends: high tempered steel, either friction welded or MIG welded on tubes |
| 6.2 | 2000 mm length |
| 6.4 | 1000 mm length |
| 7.1 | Casing bit D 168.3, 2 starts, cyl. LHT male x D 170mm, with special TC inserts, wear protection |
| 9 | Rotary tubes d 114.3, 2 starts, cyl. RHT x 8.8mm wth x 80mm (d1)<br>with groove D = 101mm x 20mm width on female side. Quality tubes: S355J2H;<br>Welding ends: high tempered steel, surface nitrated. Welding ends friction welded to tubes |
| 9.2 | 2000 mm length |
| 9.4 | 1000 mm length |
| 10.1 | Adaptor d 114.3, 2 starts, cyl. RHT male x female thread suitable for pos. 15 |
| 12 | Roller bit d 114.3, 3 1/2" API Reg. male thread x D 142.8mm (5 5/8") |
| 14 | Back pressure valve d 114.3, 2 starts, cyl. RHT male/female x length adjusted to length of DTH hammer<br>(indicated with order), opening in female direction (optional) |
| 15 | DTH hammer d = 121mm x connecting thread 3 1/2" API Reg. male |
| 17 | DTH hammer drill bit "EBEX 140" x D 178mm/140mm, button type, shaft according to DTH hammer |
| 19 | DTH hammer drill bit "Super Maxbit 140" x D 180mm/140mm, button type, shaft according to DTH hammer |
| 20.1 | Soil preventer D 168.3, 2 starts, cyl. LHT female (G) x d 114.3 (d1 = 100mm) x connection 4.5" PM.<br>Thread (G) seperable with bayonet lock |

## Tools

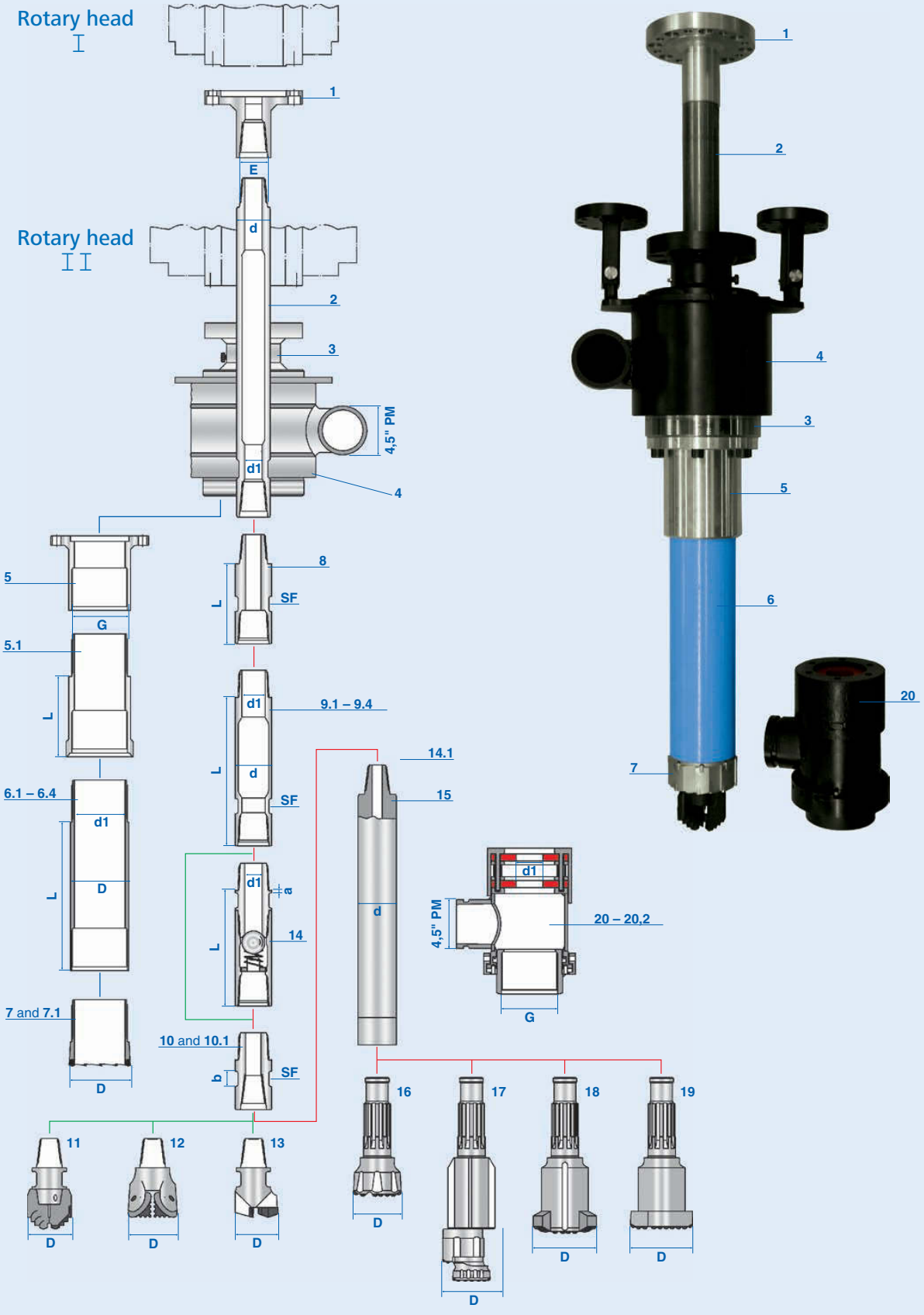
| | |
|---|---|
| Fishing bell d 114.3, 2 starts, cyl. RHT male | Lifting cap D 168.3, 2 starts, cyl. LHT female |

## Signs & Symbols

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = diameter inner tube; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection outer tube; E = thread connection inner tube.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded.
Please note that this production sheet shows only standard versions due to the many possible tool variations. Special designs on request.

# Geothermal Drilling Systems

## with double rotary drilling unit



# Geothermal Drilling System D 177.8

with double rotary drilling unit

| Pos. | Description |
|---|---|
| 2 | Balance rod d 88.9, 1 start, cyl. RHT male/female x 56mm (d1) x 2000mm length<br>(or according to double rotary head) |
| 4 | Rotary preventer with discharge connection PM 4.5" |
| 5 | Flange D 177.8, 2 starts, cyl. LHT female (G) suitable to ejection bell, pos. 3 |
| 6 | Casing D 177.8, 2 starts, cyl. LHT x 10mm wth x 154mm (d1). Quality tubes: S355J2H;<br>Welding ends: High tempered steel, threads machined into tubes |
| 6.2 | 2000 mm length |
| 6.4 | 1000 mm length |
| 7.1 | Casing bit D 177.8, 2 starts, cyl. LHT male x D 185mm, with special TC inserts, wear protection |
| 9 | Rotary tubes d 114.3, 2 starts, cyl. RHT x 8.8mm wth x 80mm (d1)<br>with groove D = 101mm x 20mm width on female side. Quality tubes: S355J2H;<br>Welding ends: high tempered steel, surface nitrated. Welding ends friction welded to tubes |
| 9.2 | 2000 mm length |
| 9.4 | 1000 mm length |
| 10.1 | Adaptor d 114.3, 2 starts, cyl. RHT male x female thread suitable for pos. 15 |
| 12 | Roller bit d 114.3, 3 1/2" API Reg. male thread x D 149.2mm (5 7/8") |
| 14 | Back pressure valve d 114.3, 2 starts, cyl. RHT male/female x length adjusted to length of DTH hammer<br>(indicated with order), opening in female direction (optional) |
| 15 | DTH hammer d = 121mm x connecting thread 3 1/2" API Reg. male |
| 17 | DTH hammer drill bit "EBEX 140" x D 178mm/150mm, button type, shaft according to DTH hammer |
| 19 | DTH hammer drill bit "Super Maxbit 150" x D 189mm/149mm, button type, shaft according to DTH hammer |
| 20.1 | Soil preventer D 177.8, 2 starts, cyl. LHT female (G) x d 114.3 (d1 = 100mm) x connection 4.5" PM.<br>Thread (G) seperable with bayonet lock |

## Tools

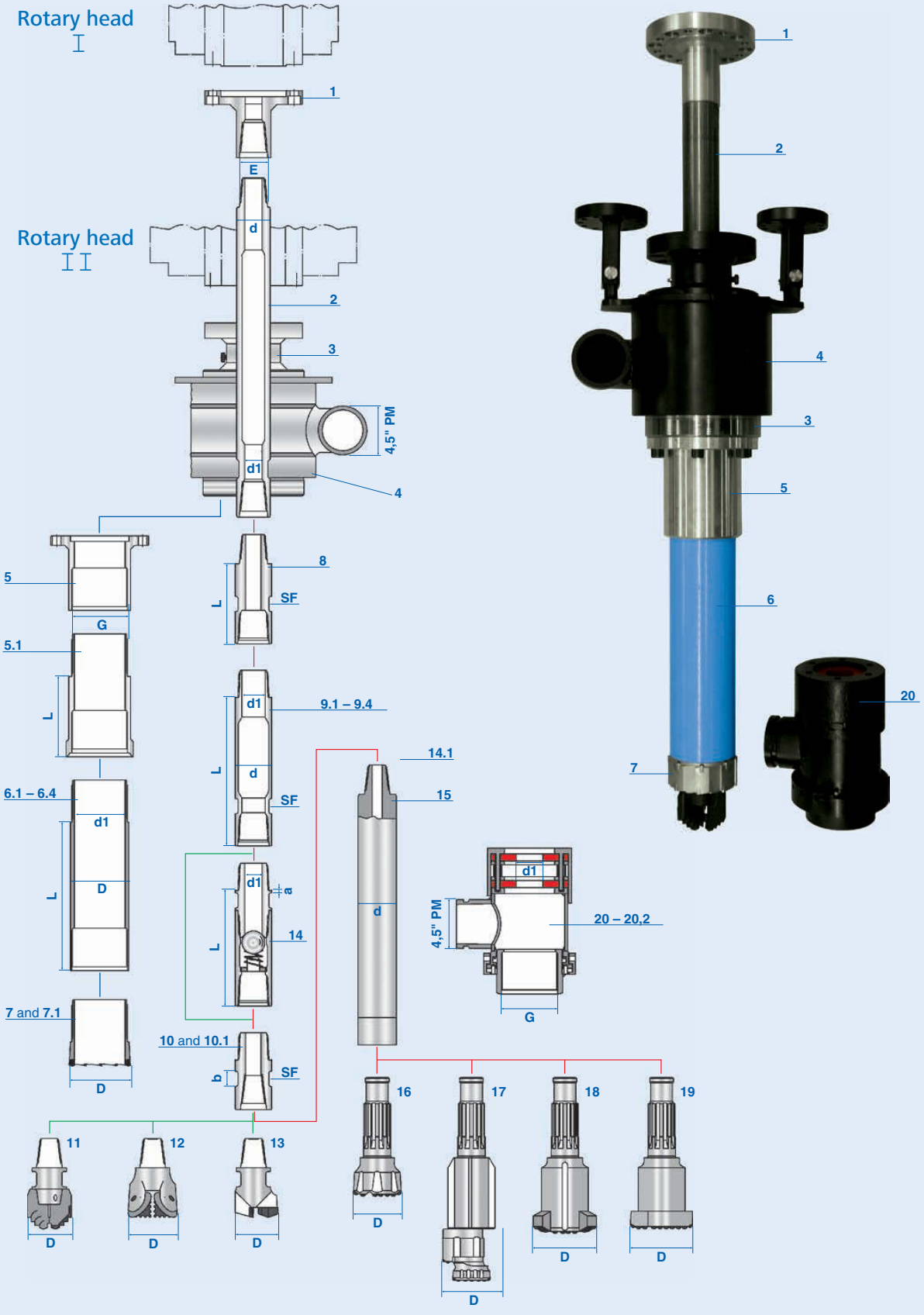
| | |
|---|---|
| Fishing bell d 114.3, 2 starts, cyl. RHT male | Lifting cap D 177.8, 2 starts, cyl. LHT female |

## Signs & Symbols

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = diameter inner tube; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection outer tube; E = thread connection inner tube.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded.
Please note that this production sheet shows only standard versions due to the many possible tool variations. Special designs on request.

# Geothermal Drilling Systems

## with double rotary drilling unit



# Geothermal Drilling System D 203

with double rotary drilling unit

| Pos. | Description |
|---|---|
| 2 | Balance rod d 88.9, 1 start, cyl. RHT male/female x 56mm (d1) x 2000mm length<br>(or according to double rotary head) |
| 4 | Rotary preventer with discharge connection PM 4.5" |
| 5 | Flange D 203, 2 starts, cyl. LHT female (G) suitable to ejection bell, pos. 3 |
| 6 | Casing D 203, 2 starts, cyl. LHT x 10mm wth x 180mm (d1). Quality tubes: S355J2H;<br>Welding ends: tempered steel, threads MIG welded to tubes |
| 6.2 | 2000 mm length |
| 6.4 | 1000 mm length |
| 7.1 | Casing bit D 203, 2 starts, cyl. LHT male x D 210mm, with special TC inserts, wear protection |
| 9 | Rotary tubes d 114.3, 2 starts, cyl. RHT x 8.8mm wth x 80mm (d1)<br>with groove D = 101mm x 20mm width on female side. Quality tubes: S355J2H;<br>Welding ends: high tempered steel, surface nitrated. Welding ends friction welded to tubes |
| 9.2 | 2000 mm length |
| 9.4 | 1000 mm length |
| 10.1 | Adaptor d 114.3, 2 starts, cyl. RHT male x female thread suitable for pos. 15 |
| 12 | Roller bit d 114.3, 3 1/2" API Reg. male thread x D 171.5mm (5 7/8") |
| 14 | Back pressure valve d 114.3, 2 starts, cyl. RHT male/female x length adjusted to length of DTH hammer<br>(indicated with order), opening in female direction (optional) |
| 15 | DTH hammer d = 121mm x connecting thread 3 1/2" API Reg. male |
| 17 | DTH hammer drill bit "EBEX 140" x D 210mm/167mm, button type, shaft according to DTH hammer |
| 19 | DTH hammer drill bit "Super Maxbit 165" x D 211mm/165mm, button type, shaft according to DTH hammer |
| 20.1 | Soil preventer D 203, 2 starts, cyl. LHT female (G) x d 114.3 (d1 = 100mm) x connection 4.5" PM.<br>Thread (G) seperable with bayonet lock |

## Tools

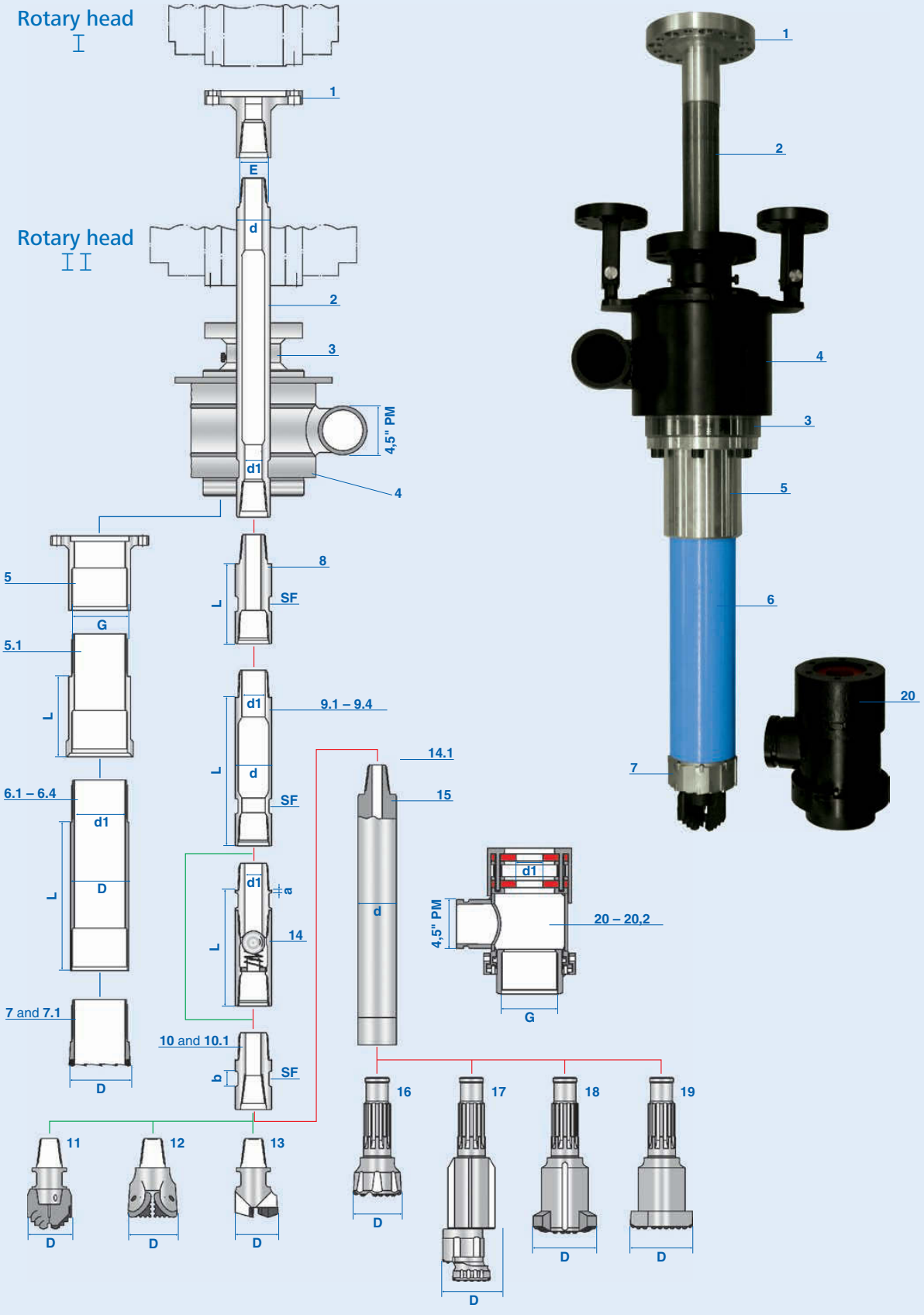
| | |
|---|---|
| Fishing bell d 114.3, 2 starts, cyl. RHT male | Lifting cap D 203, 2 starts, cyl. LHT female |

## Signs & Symbols

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = diameter inner tube; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection outer tube; E = thread connection inner tube.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded.
Please note that this production sheet shows only standard versions due to the many possible tool variations. Special designs on request.

# Geothermal Drilling Systems

## with double rotary drilling unit



# Geothermal Drilling System D 219.1

with double rotary drilling unit

| Pos. | Description |
|---|---|
| 2 | Balance rod d 88.9, 1 start, cyl. RHT male/female x 56mm (d1) x 2000mm length<br>(or according to double rotary head) |
| 4 | Rotary preventer with discharge connection PM 4.5" |
| 5 | Flange D 219.1, 2 starts, cyl. LHT female (G) suitable to ejection bell, pos. 3 |
| 6 | Casing D 219.1, 2 starts, cyl. LHT x 10mm wth x 195mm (d1). Quality tubes: S355J2H;<br>Welding ends: high tempered steel, threads MIG welded to tubes |
| 6.2 | 2000 mm length |
| 6.4 | 1000 mm length |
| 7.1 | Casing bit D 219.1, 2 starts, cyl. LHT male x D 225mm, with special TC inserts, wear protection |
| 9 | Rotary tubes d 114.3, 2 starts, cyl. RHT x 8.8mm wth x 80mm (d1)<br>with groove D = 101mm x 20mm width on female side. Quality tubes: S355J2H;<br>Welding ends: high tempered steel, surface nitrated. Welding ends friction welded to tubes |
| 9.2 | 2000 mm length |
| 9.4 | 1000 mm length |
| 10.1 | Adaptor d 114.3, 2 starts, cyl. RHT male x female thread suitable for pos. 15 |
| 12 | Roller bit d 114.3, 3 1/2" API Reg. male thread x D 193.7mm (7 5/8") |
| 14 | Back pressure valve d 114.3, 2 starts, cyl. RHT male/female x length adjusted to length of DTH hammer<br>(indicated with order), opening in female direction (optional) |
| 15 | DTH hammer d = 146mm x connecting thread 3 1/2" API Reg. male |
| 17 | DTH hammer drill bit "EBEX 190" x D 237mm/191mm, button type, shaft according to DTH hammer |
| 19 | DTH hammer drill bit "Super Maxbit 190" x D 237mm/191mm, button type, shaft according to DTH hammer |
| 20.1 | Soil preventer D 219.1, 2 starts, cyl. LHT female (G) x d 114.3 (d1 = 100mm) x connection 4.5" PM.<br>Thread (G) seperable with bayonet lock |

## Tools

| | |
|---|---|
| Fishing bell d 114.3, 2 starts, cyl. RHT male | Lifting cap D 219.1, 2 starts, cyl. LHT female |

## Signs & Symbols

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = diameter inner tube; cyl. = cylindrical; con. = conical
SF = spannerflat; L = length; wth = wall thickness; G = thread connection outer tube; E = thread connection inner tube.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded.
Please note that this production sheet shows only standard versions due to the many possible tool variations. Special designs on request.


# **Duplex Jet Grouting Systems**
with rotary head

# Duplex Jet Grouting Systems D 76.1 – D 114.3

with rotary head and hydraulic chuck

These drilling systems are especially used for grout injection to improve the ground conditions by i.e. consolidation, vertical shoring or lining slicing the soil structure by means of a jet of grout at pressures of 100 to 600 bar.

This drilling process is normally carried out using a rotary head and external flushing. The drilling tools are adapted for the extreme pressures used. Having reached the final depth, the rods will be pulled up with slow pull back, allowing a jet of cement suspension to cut the surrounding ground. The depth of penetration of the jet can be increased by air via a separate nozzle. The borings are partly discharged with the flushing return movement, partly homogenized with cement.

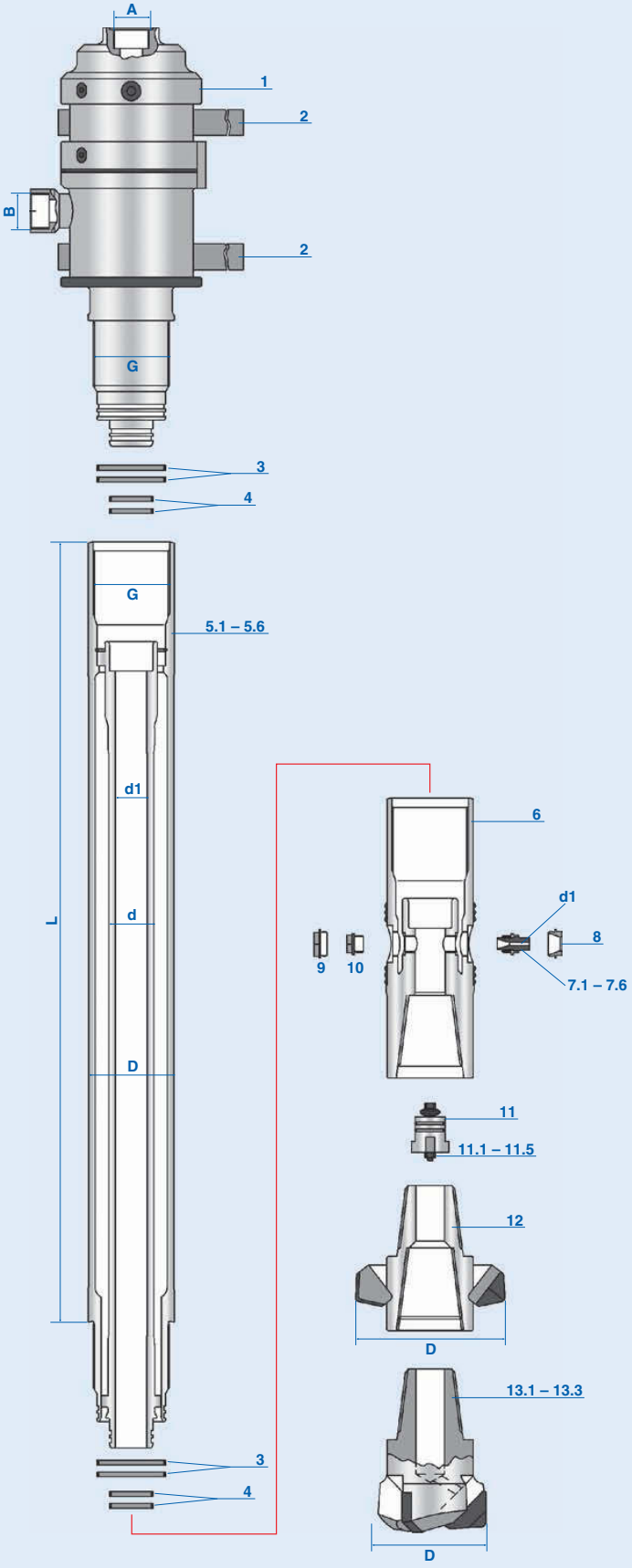
There are complete systems of D76.1 – D114.3 with different nozzle diameters and types of drill bits available. They are suitable for boulders and loamy grounds.

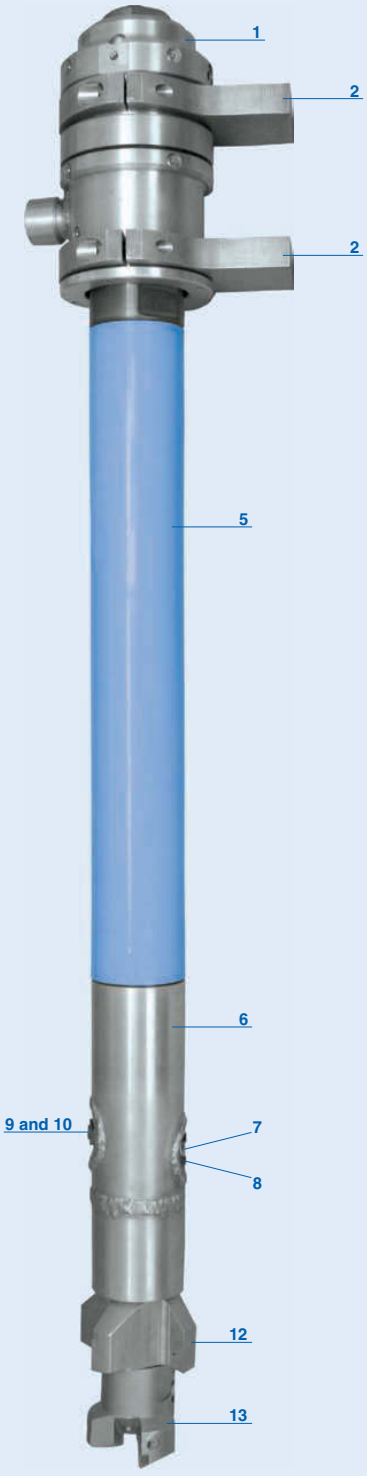
Sample of application:



# Duplex Jet Grouting Systems

## with rotary head and hydraulic chuck



# Duplex Jet Grouting System D 76.1

with rotary head and hydraulic chuck

| Pos. | Description |
|---|---|
| 1 | Duplex jet grouting flushing head D 76.1, 1 start, con. RHT male (2 starts, cyl. RHT on option) x A = G 1 1/4" RHT female x B = G 1" RHT female |
| 3 | Seals for outer rods (option for cyl. thread) |
| 5 | Jet grouting duplex tubes D 76.1, 1 start, con. RHT. (2 starts, cyl. RHT on option) (G) x 8.8mm wth x d 42.4mm x 20mm (d1). Quality casing: high tempered steel; Welding ends: high tempered steel, friction-welded. Quality inner tube: S355J2H; Plug and socket: high tempered steel |
| 5.2 | 1000 mm length |
| 5.4 | 2000 mm length |
| 5.6 | 4000 mm length |
| 7 | Jet grouting nozzles M 20 x 1.5mm |
| 7.2 | d1 = 2.5mm |
| 7.4 | d1 = 3.5mm |
| 7.6 | d1 = 4.5mm |
| 9 | Sealing plug for air passage M 33 x 1.5mm |
| 11 | Jet grouting automatic valve for jet grouting duplex monitor D 76.1, without spring |
| 11.2 | Jet grouting spring green |
| 11.4 | Jet grouting spring blue |
| 13 | Rotary bit D 76.1, 2 3/8" API Reg. RHT male x D 115mm, 3 wings, plate type |

**Tools**

Mounting tool for retaining rings

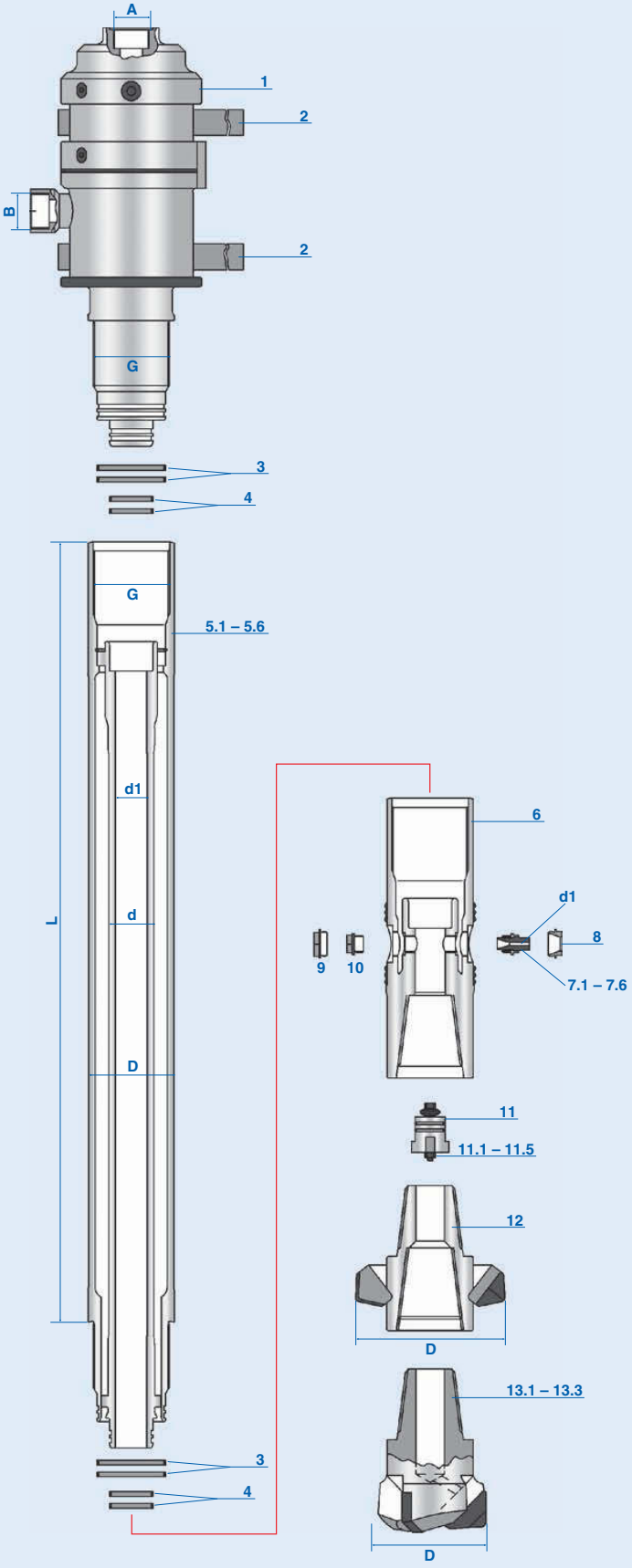
**Accessories**

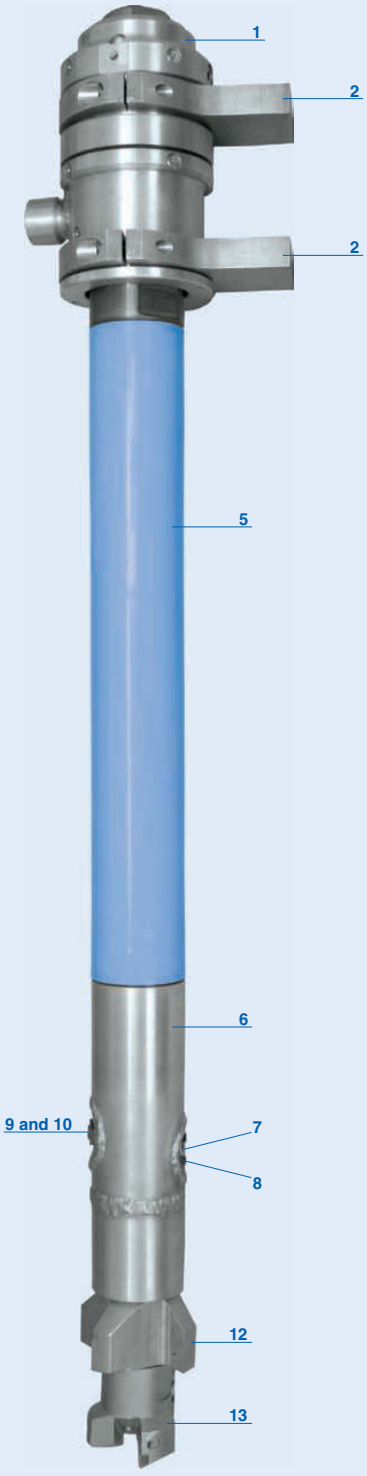
**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical; SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Duplex Jet Grouting Systems

## with rotary head and hydraulic chuck



# Duplex Jet Grouting System D 88.9

with rotary head and hydraulic chuck

| Pos. | Description |
|---|---|
| 1 | Duplex jet grouting flushing head D 88.9, 1 start, con. RHT male (2 starts, cyl. RHT on option) x A = G 1 1/4" RHT female x B = G 1" RHT female |
| 3 | Seals for outer rods (option for cyl. thread) |
| 5 | Jet grouting duplex tubes D 88.9, 1 start, con. RHT. (2 starts, cyl. RHT on option) (G) x 8.8mm wth x d 57mm x 32mm (d1). Quality casing: high tempered steel; Welding ends: high tempered steel, friction-welded. Quality inner tube: S355J2H; Plug and socket: high tempered steel |
| 5.2 | 1000 mm length |
| 5.4 | 2000 mm length |
| 5.6 | 4000 mm length |
| 7 | Jet grouting nozzles M 20 x 1.5mm |
| 7.2 | d1 = 2.5mm |
| 7.4 | d1 = 3.5mm |
| 7.6 | d1 = 4.5mm |
| 9 | Sealing plug for air passage M 40 x 1.5mm |
| 11 | Jet grouting automatic valve for jet grouting duplex monitor D 88.9 without spring |
| 11.2 | Jet grouting spring green |
| 11.4 | Jet grouting spring red |
| 12 | Rotary bit D 88.9 x 2 7/8" API Reg. short version, RHT male/female x D 150mm, 4 wings with welding bars (only with pos. 13) |

**Tools**

Mounting tool for retaining rings

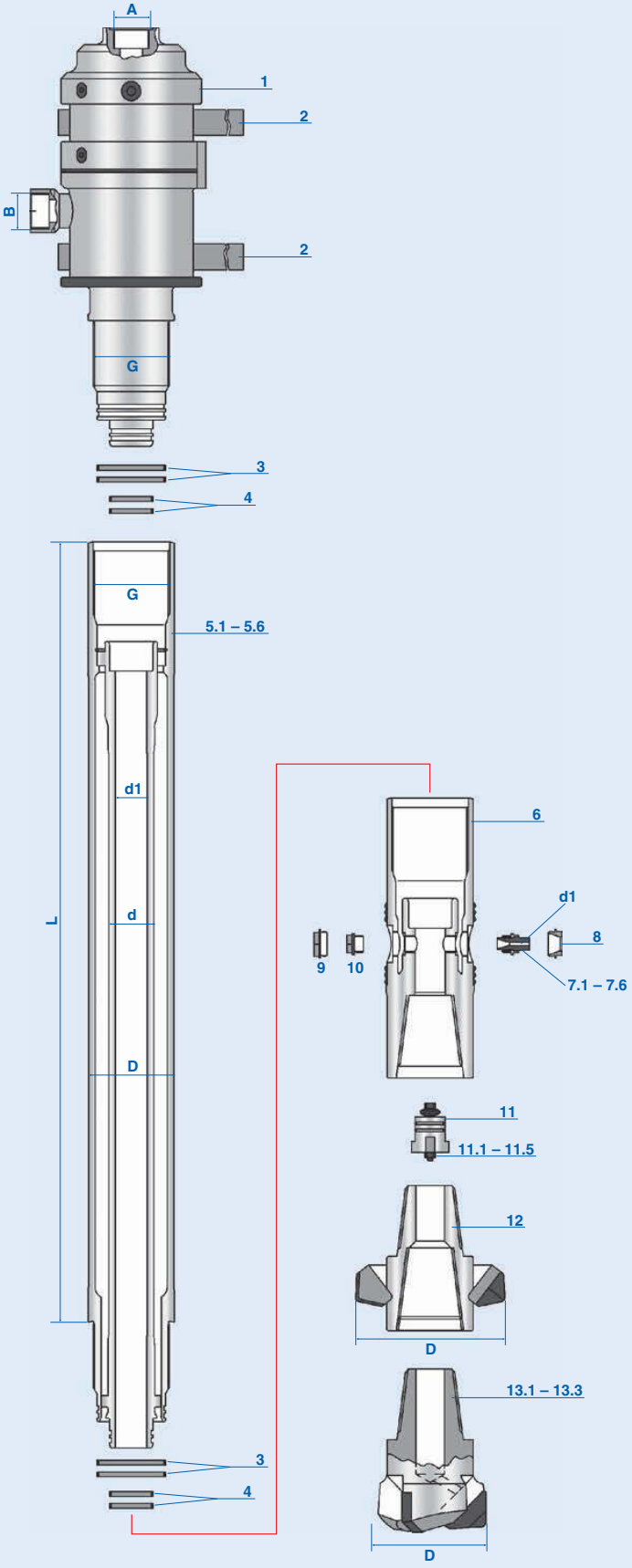
**Accessories**

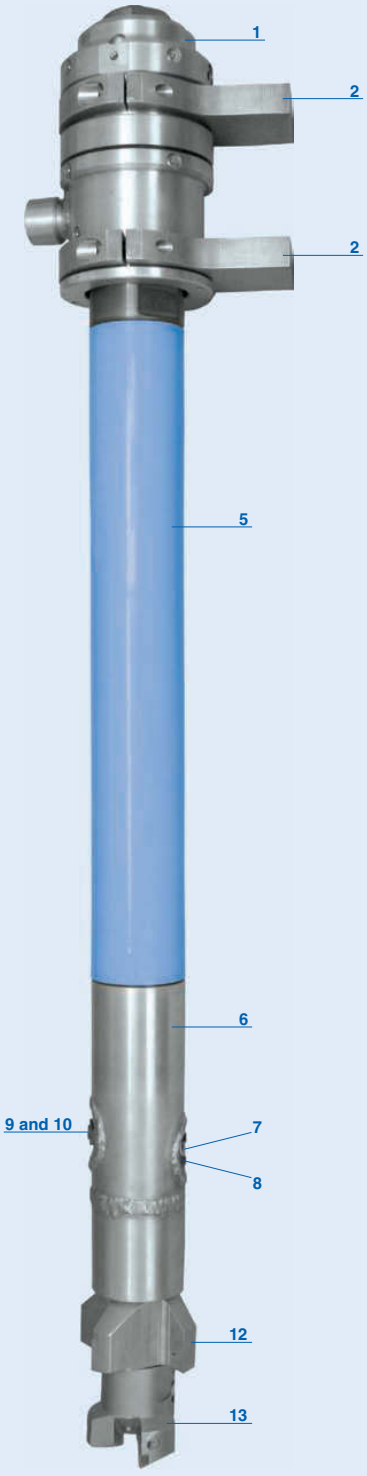
**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical; SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Duplex Jet Grouting Systems

## with rotary head and hydraulic chuck



# Duplex Jet Grouting System D 114.3

with rotary head and hydraulic chuck

| Pos. | Description |
|---|---|
| 1 | Duplex jet grouting flushing head D 114.3, 2 starts, cyl. RHT male x A = G 1 1/2"<br>RHT female x B = G 1 1/2" RHT female |
| 3 | Seals for outer rods (option for cyl. thread) |
| 5 | Jet grouting duplex tubes D 114.3, 2 starts, cyl. RHT (G) x 8.8mm wth x d 60.3mm x 42mm (d1).<br>Quality casing: high tempered steel; Welding ends: high tempered steel, friction-welded.<br>Quality inner tube: S355J2H; Plug and socket: high tempered steel |
| 5.2 | 1000 mm length |
| 5.4 | 2000 mm length |
| 5.6 | 4000 mm length |
| 7 | Jet grouting nozzles M 22 x 1.5mm |
| 7.2 | d1 = 2.5mm |
| 7.4 | d1 = 3.5mm |
| 7.6 | d1 = 4.5mm |
| 9 | Sealing plug for air passage M 40 x 1.5mm |
| 11 | Jet grouting automatic valve for jet grouting duplex monitor D 114.3 without spring |
| 11.2 | Jet grouting spring green |
| 11.4 | Jet grouting spring red |
| 12 | Rotary bit D 114.3 x 3 1/2" API Reg. RHT male/female x D 180mm, 4 wings with<br>welding bars (only with pos. 13) |

**Tools**

Mounting tool for retaining rings

**Accessories**

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical;
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheets shows only standard versions due to the lot of possible tool variations. Special designs on request.


# **Simplex Jet Grouting Systems**
with rotary head

# Simplex Jet Grouting Systems (HDI) D 88.9 – D 114.3

with rotary head and hydraulic chuck

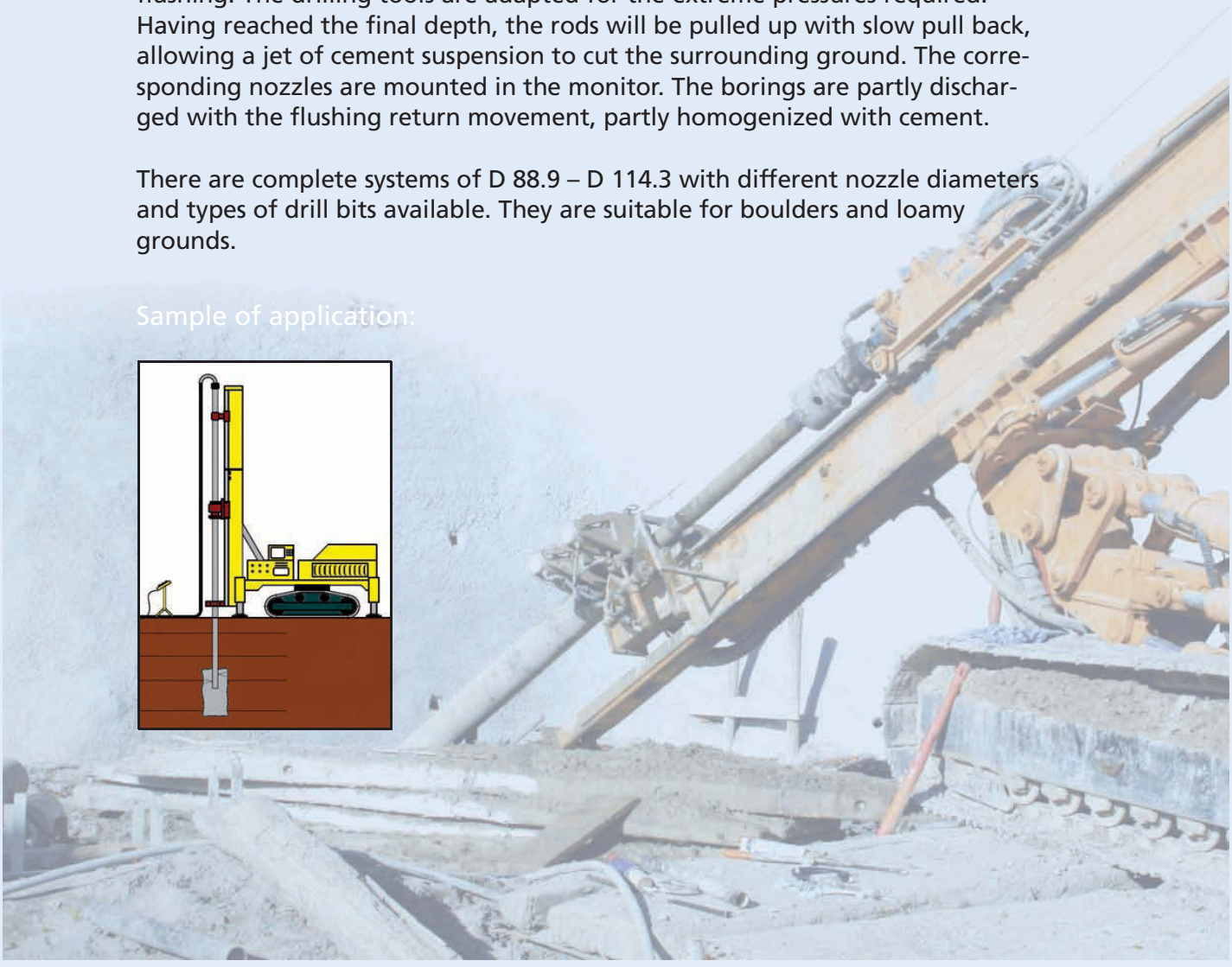
These drilling systems are especially used for grout injection to improve the ground conditions by i.e. consolidation, vertical shoring or lining slicing the soil structure by means of a jet of grout at pressures of 100 to 600 bar.

This drilling process is normally carried out using a rotary head and external flushing. The drilling tools are adapted for the extreme pressures required. Having reached the final depth, the rods will be pulled up with slow pull back, allowing a jet of cement suspension to cut the surrounding ground. The corresponding nozzles are mounted in the monitor. The borings are partly discharged with the flushing return movement, partly homogenized with cement.

There are complete systems of D 88.9 – D 114.3 with different nozzle diameters and types of drill bits available. They are suitable for boulders and loamy grounds.

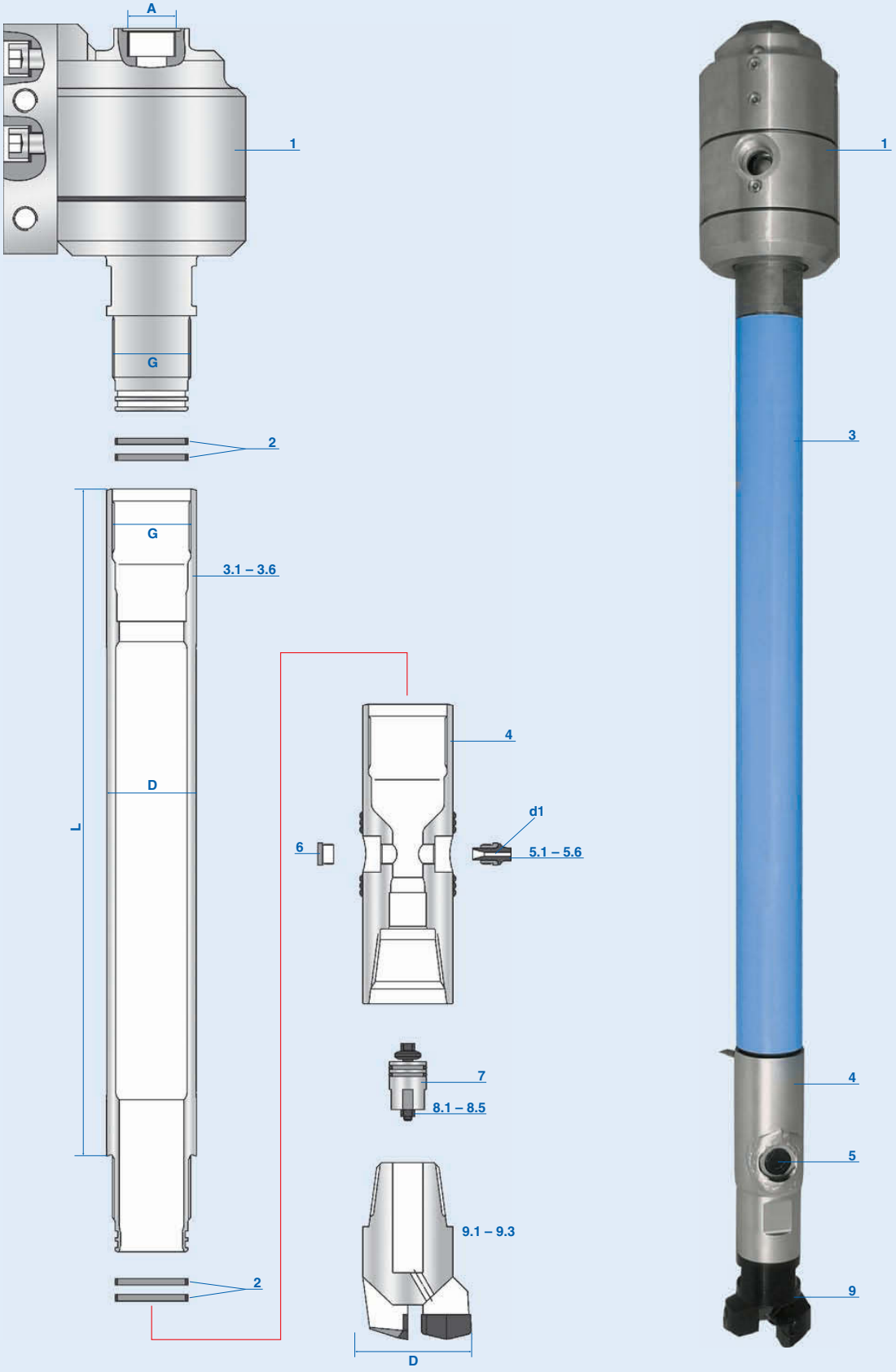
Sample of application:





# Simplex Jet Grouting Systems

## with rotary head and hydraulic chuck



# Simplex Jet Grouting System D 88.9

with rotary head and hydraulic chuck

| Pos. | Description |
|---|---|
| 1 | Simplex jet grouting flushing head D 88.9, 1 start, con. RHT male<br>(2 starts, cyl. RHT on option) (G) x A = G 1 1/4" RHT female |
| | |
| 3 | Jet grouting simplex tube D 88.9, 1 start, con. RHT. (2 starts, cyl. RHT on option) (G) x 8.8mm wth.<br>Quality casing: high tempered steel; Welding ends: high tempered steel, friction welded |
| | |
| 3.2 | 1000 mm length |
| | |
| 3.4 | 2000 mm length |
| | |
| 3.6 | 4000 mm length |
| | |
| 5 | Jet grouting nozzles M 20 x 1.5mm |
| 5.1 | d1 = 2.0mm |
| | |
| 5.3 | d1 = 3.0mm |
| | |
| 5.5 | d1 = 4.0mm |
| | |
| 6 | Sealing plug M 20 x 1.5mm |
| | |
| 8.1 | Jet grouting spring blanc |
| | |
| 8.3 | Jet grouting spring copper |
| | |
| 8.5 | Jet grouting spring blue |
| | |
| 9.1 | Rotary bit D 88.9 x 2 7/8" API Reg. RHT, short version, male x D 127mm, 3 wings with special TC inserts |

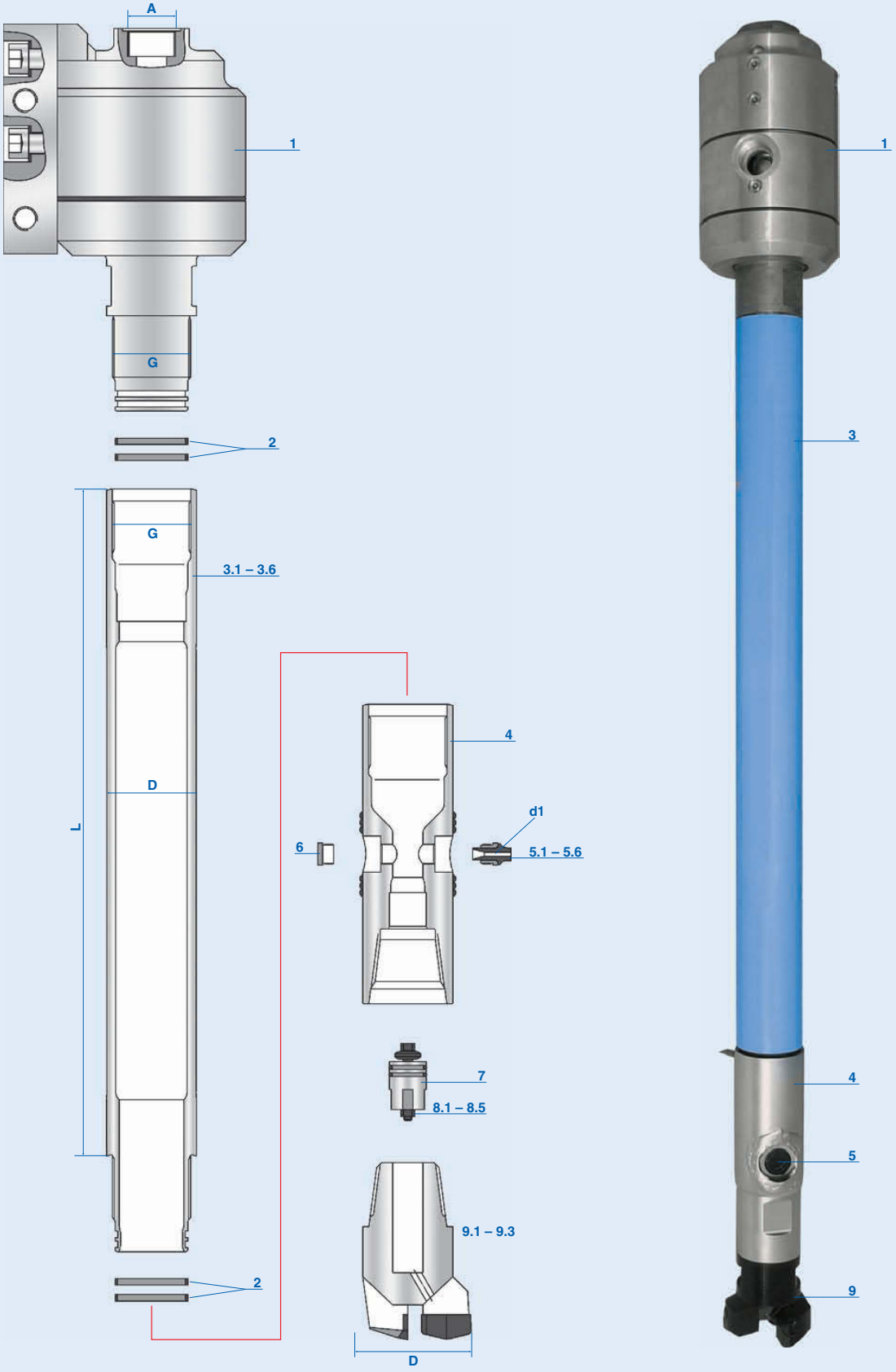
**Tool**

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical;
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheet shows only standard versions due to the lot of possible tool variations. Special designs on request.

# Simplex Jet Grouting Systems

## with rotary head and hydraulic chuck



# Simplex Jet Grouting System D 114.3

with rotary head and hydraulic chuck

| Pos. | Description |
|---|---|
| 1 | Simplex jet grouting flushing head D 114.3, 2 starts, cyl. RHT male (G) x A = G 1 1/2" RHT female |
| | |
| 3 | Jet grouting simplex tube D 114.3, 2 starts, cyl. RHT (G) x 8.8mm wth.<br>Quality casing: high tempered steel; Welding ends: high tempered steel, friction-welded |
| 3.1 | 500 mm length |
| | |
| 3.3 | 1500 mm length |
| | |
| 3.5 | 3000 mm length |
| | |
| | |
| 5 | Jet grouting nozzles M 22 x 1.5mm |
| 5.1 | d1 = 2.0mm |
| | |
| 5.3 | d1 = 3.0mm |
| | |
| 5.5 | d1 = 4.0mm |
| | |
| 6 | Sealing plug M 22 x 1.5mm |
| | |
| 8.1 | Jet grouting spring blanc |
| | |
| 8.3 | Jet grouting spring copper |
| | |
| 8.5 | Jet grouting spring blue |
| | |
| 9.1 | Rotary bit D 114.3 x 3 1/2" API Reg. RHT male x D 150mm, 3 wings with special TC inserts |

**Tool**

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical;
SF = spannerflat; L = length; wth = wall thickness; G = thread connection.
The following threads are on offer: right hand, left hand, cylindrical or conical. All casings can be made friction-welded or with nipples.
Please note that this production sheet shows only standard versions due to the lot of possible tool variations. Special designs on request.


# **Simplex Jet Grouting Systems**
with hydraulic drifter

# Simplex Jet Grouting System (HDI) D 88.9

with hydraulic drifter

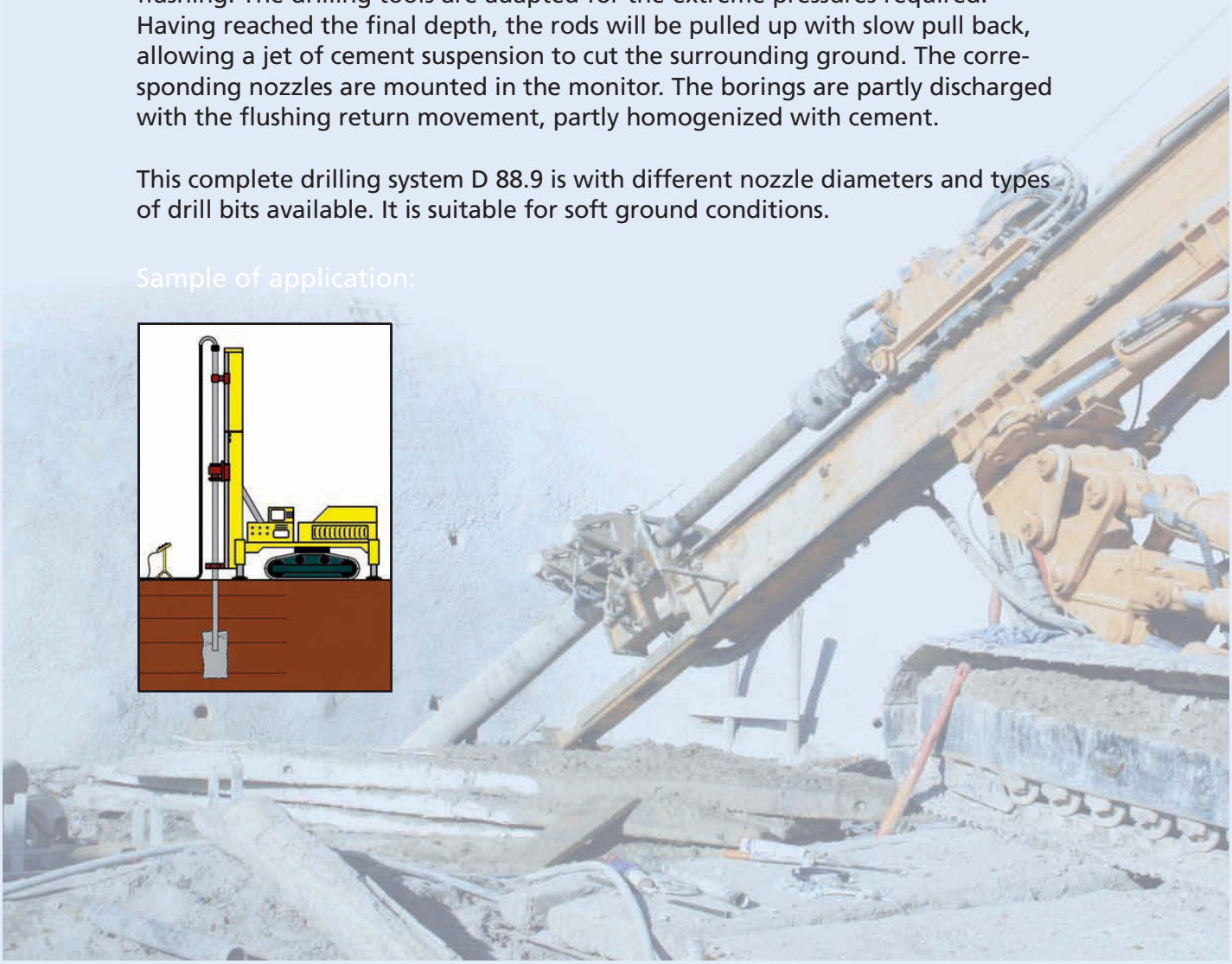
This drilling system is especially used for grout injection to improve the ground conditions by i.e. consolidation, vertical shoring or lining slicing the soil structure by means of a jet of grout at pressures of 100 to 600 bar.

This drilling process is normally carried out using a hydraulic drifter and external flushing. The drilling tools are adapted for the extreme pressures required. Having reached the final depth, the rods will be pulled up with slow pull back, allowing a jet of cement suspension to cut the surrounding ground. The corresponding nozzles are mounted in the monitor. The borings are partly discharged with the flushing return movement, partly homogenized with cement.

This complete drilling system D 88.9 is with different nozzle diameters and types of drill bits available. It is suitable for soft ground conditions.

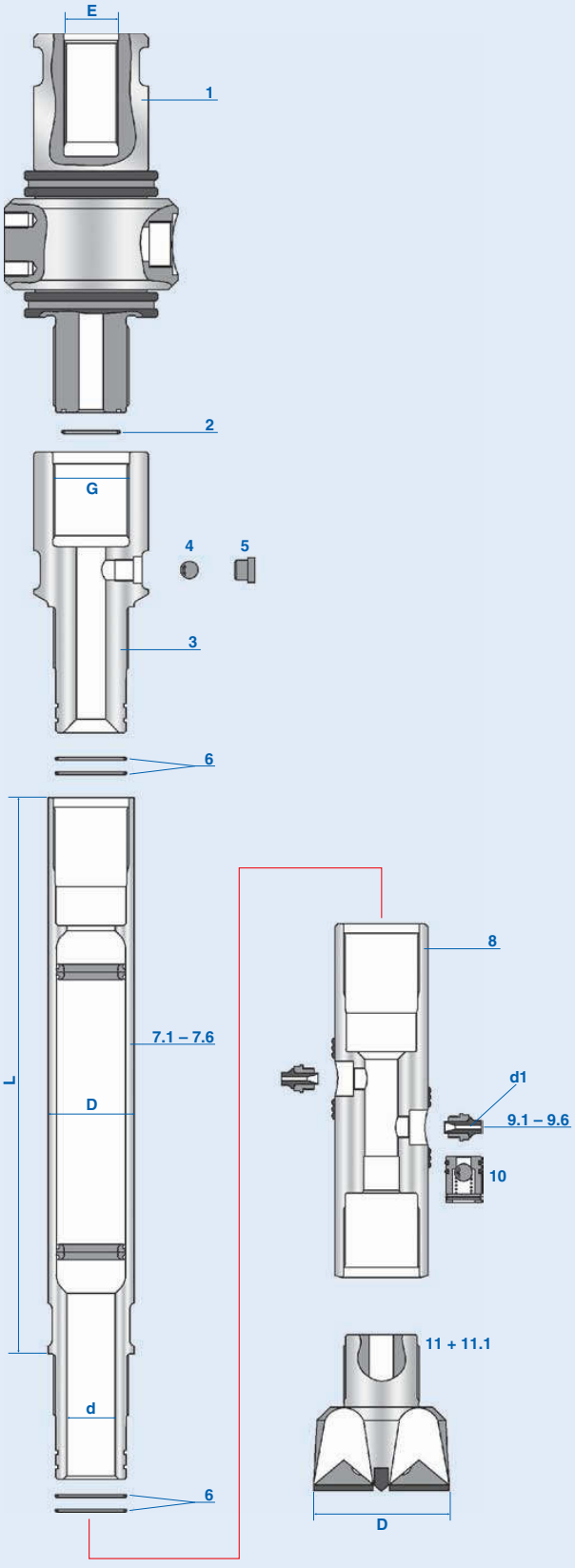
Sample of application:

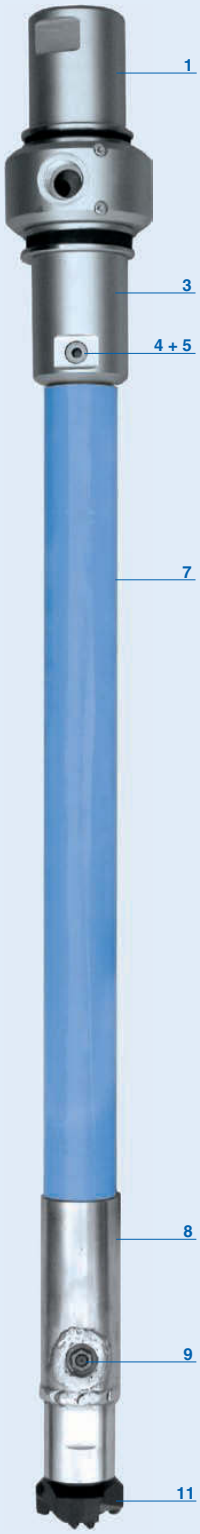




# Simplex Jet Grouting System

## with hydraulic drifter



# Simplex Jet Grouting System D 88,9

with hydraulic drifter

| Pos. | Description |
|---|---|
| 1 | Simplex jet grouting flushing head D 88.9, 1 start, con. RHT male (2 starts cyl. RHT on option) (G) x H55 RHT female (E) x A = G 1 1/4" RHT female, complete |
| 3 | Adaptor D 88.9, 1 start, cyl. RHT female (G) x 1 start, cyl. RHT male (2 starts, cyl. RHT on option) |
| 5 | Plug |
| 7 | Jet grouting simplex tube D 88.9, 1 start, con. RHT (2 starts, cyl. RHT on option) (G) x 8.8mm wth. Quality casing: high tempered steel; Welding ends: high tempered steel, friction welded |
| 7.1 | 500 mm length |
| 7.3 | 1500 mm length |
| 7.5 | 3000 mm length |
| 8 | Jet grouting simplex monitor D 88.9, 1 start, con. RHT female (2 starts, cyl. RHT female on option) x 1 start, cyl. RHT female, with 2 nozzle seats M 20 x 1.5mm |
| 9.1 | d1 = 2.0mm |
| 9.3 | d1 = 3.0mm |
| 9.5 | d1 = 4.0mm |
| 10 | Back pressure valve |
| 12 | Percussion bit D 88.9, 1 start, cyl. RHT male x D 115mm, button type |

**Tool**

**Signs & Symbols**

LHT = left hand thread; RHT = right hand thread; D = outer diameter; d = inner diameter; cyl. = cylindrical; con. = conical; SF = spannerflat; L = length; wth = wall thickness; G = thread connection; SW = key width.
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