BOART LONGYEAR™

OVERBURDEN TOOLING

DUPLEX DRILLING

03/2026

DUPLEX DRILLNG SYSTEM

For example:
Hydraulic drifter Eurodrill X-Series

A top hammer, connected to a flushing head, drives an internal and external drill string.

Flushing passes down the inner drill string, rises in the gap between inner and outer drill string and exits from holes in the flushing bell.

The casing can be stopped at any depth and the hole can be continued with inner drill string only.

Can be used with DTH hammer and rotary head instead of a top hammer, but drill speed is slower.

The exit hole on the flushing bell can be closed with a plug. This is done for the following reasons:

To fill the hole with grout while the casing is extracted.

To force flushing to rise up outside the casing in sticky ground conditions. The flushing water acts as a lubricant allowing the casing to rotate freely. This process is only done for short periods of time until the casing is freed.

Widely used because it is a very flexible system:

Top hammer can be used for rotary / rotary percussive drilling systems

The inner drill string can be equipped with rotary percussive, DTH or rotary drilling system

Used when when the ground conditions are not known in advance.

This system can be used in ground conditions where the flushing fluid must be contained within the drilling system. This is particularly important in ground that is easily dissolved in water or where the flow of water through fissures could create cavities.

These sytems are used where a cased hole is required, where, however, ground conditions include rock or boulders, too tough to drill with a drive drilling method.

The standard overburden drilling method is a duplex system, using a single head.

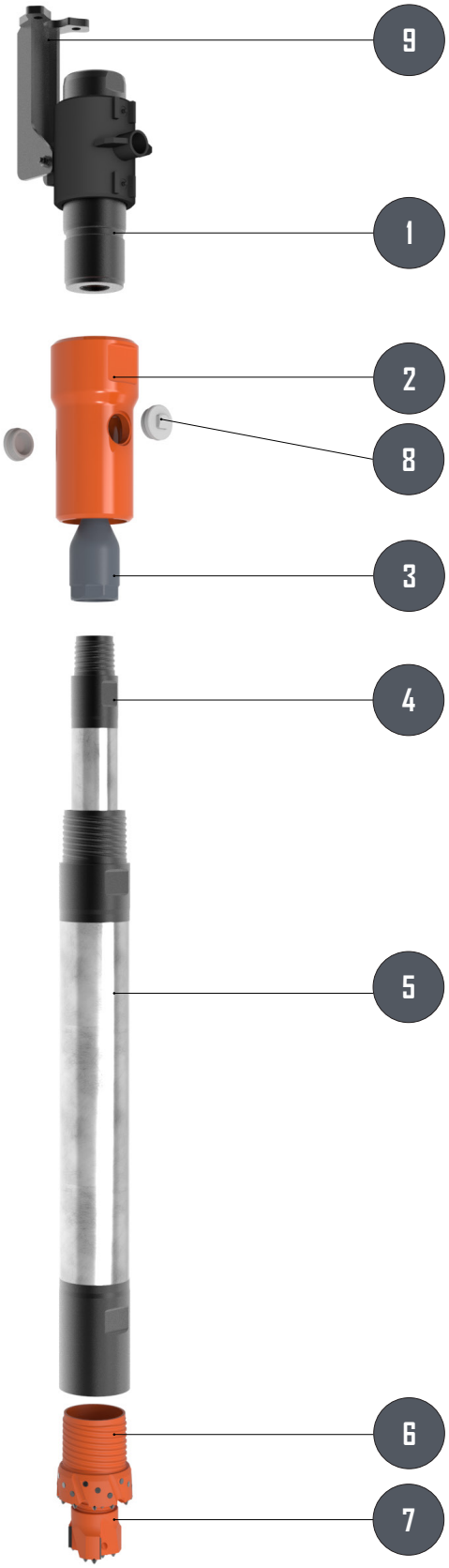
It employs rotary percussive outer casing with a "CASING CROWN" at the bottom end and an inner drill string, consisting either of extension drill steel or rotary percussive tubes, all coupled together at the flushing head.

The inner drill string also carries a "PERCUSSION BIT" at the business end, much like a standard rock bit.

Prior to drilling mount the correct flushing head on the shank adaptor.

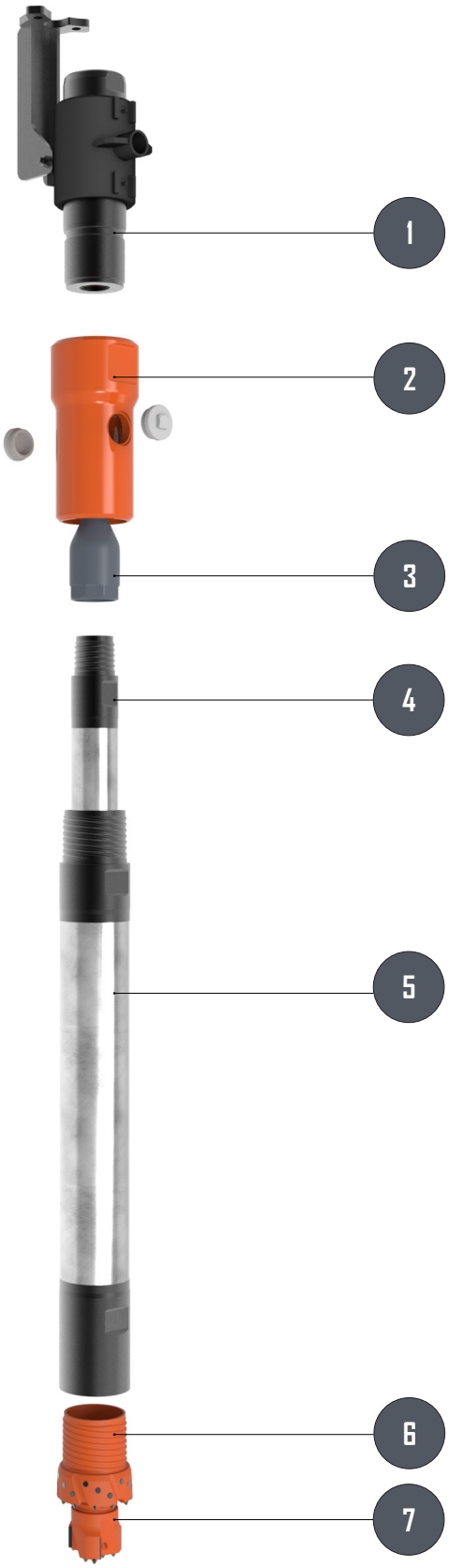
DUPLEX DRILLNG SYSTEM

DRILL STRING COMPONENTS



1	FLUSHING HEAD
2	EJECTION BELL
3	BALANCING ROD
4	INNER ROD
5	CASING
6	CASING BIT
7	INNER STRING BIT
8	PLUG
9	RETAINING PART

SYSTEM AND COMPONENTS



DRILL HEAD: SINGLE HYDRAULIC DRIFTER

Flushing:	Air or water within casing
Casing:	Rotary/percussive, nipple or friction welded
Inner drill rod:	Friction welded rod or percussive drill steel
Casing bit:	Tungsten carbide ring bit
Inner string bit:	Full face percussive, DTH
Typical thread direction:	Left (percussive), right (DTH)
Diameter offering:	From 89mm (3.5") to 254mm (10")

GROUND CONDITIONS
Gravel, sand, silt, some slate, limestone, limited boulders

SYSTEM FEATURES
- Dual string drilling system with internal flushing
- Casing can be stopped at any depth while drilling continues with inner rod
- Can be configured for single rotary head with DTH, rotary drag bit,or tri-cone
- Flexible system for a wide range of ground conditions

FLUSHING HEAD (1)
Allows for the introduction of flushing media into the duplex drilling string as well as an exit point through the ejection bell.

EJECTION BELL (2)
The ejection bell is part of the flushing head assembly.

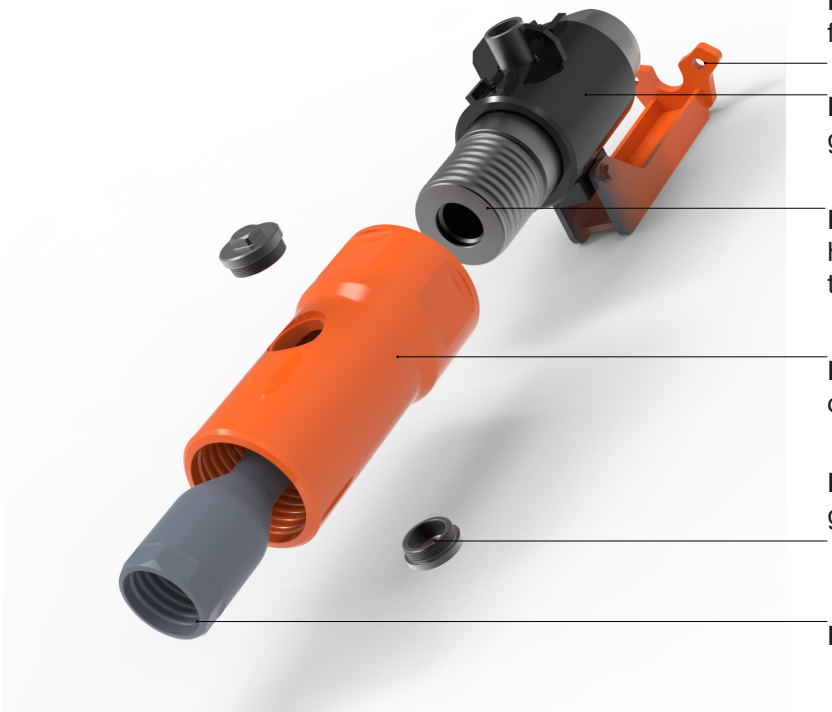
CASING (5)
Duplex drilling systems utilize rotary percussive casing.

INNER DRILL ROD (4)
The inner drill string of duplex drill systems are either friction welded rotary percussive rods or Twin Drive™ inner drill rods.

CASING BIT (6)
Casing bits for duplex systems are ring bits with tungsten carbide inserts.

INNER STRING BIT (7)
The inner drill string bit of duplex drilling systems typically utilizes a full face percussive bit, but can also be used with rotary bits or DTH hammers.

DRILL STRING COMPONENTS- FLUSHING HEAD COMPLETE



RETAINING PART: Prevents the twisting of the flushing ring.

FLUSHING RING: Brings in the flushing and grouting media.

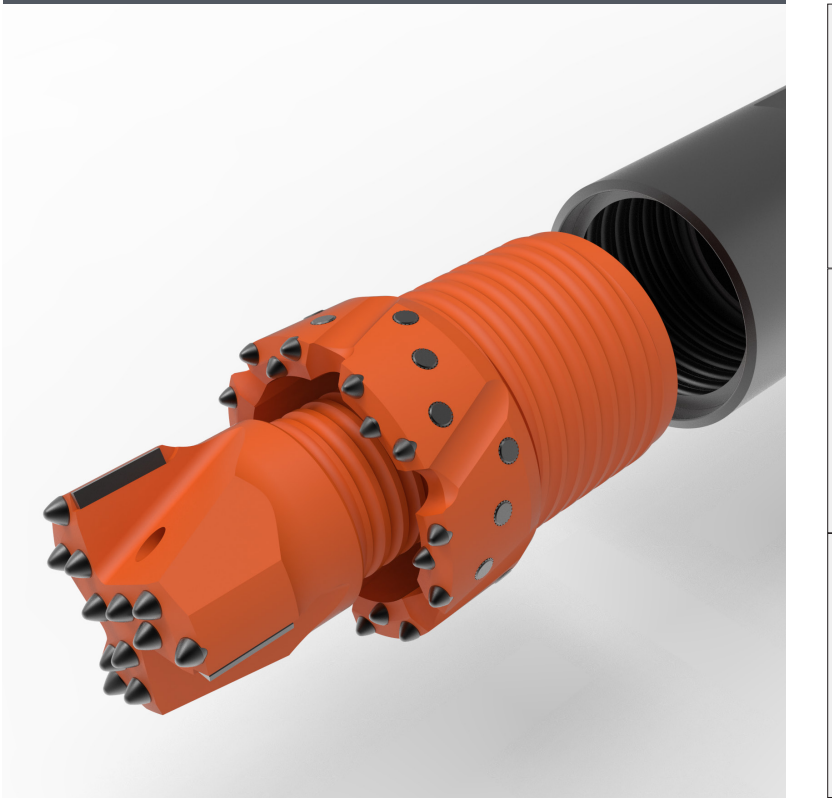
FLUSHING BODY: To match with the hydraulic drifter shank on the drill and to match the balancing rod as well as the ejection bell.

EJECTION BELL: Brings out the drillings cutting . Connection for casing

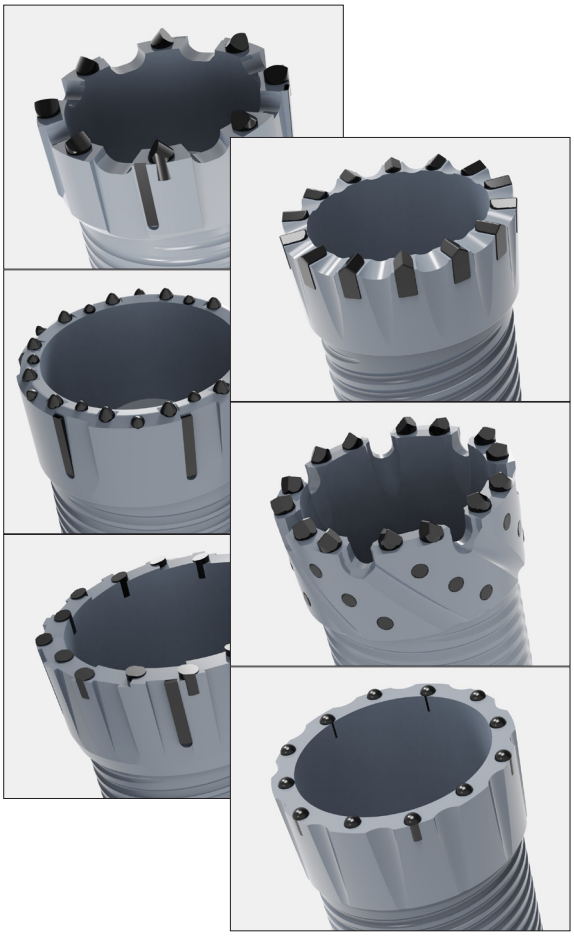
PLUG: To close the ejection holes while grouting.

BALANCING ROD: Connection for inner rod.

DRILL STRING COMPONENTS- DRILLING TOOLS



CASING BITS: Various designs are available pending on ground conditions.



GLOBAL HEADQUARTERS
BOART LONGYEAR
2455 SOUTH 3600 WEST
SALT LAKE CITY, UT 84119
UNITED STATES OF AMERICA
INFO@BOARTLONGYEAR.COM

TEL: +1 801 972 6430
FAX: +1 801 977 3374

CANADA
BOART LONGYEAR
2442 SOUTH SHERIDAN WAY
MISSISSAUGA, ONTARIO
CANADA L5J 2M7
INFO@BOARTLONGYEAR.COM

TEL: +1 905 822-7922
FAX: +1 905 822-7232

ASIA PACIFIC
BOART LONGYEAR
26 BUTLER BOULEVARD
ADELAIDE, 5950
AUSTRALIA
INFO_AUS@BOARTLONGYEAR.COM

TEL: +61 8 8375 8375
FAX: +61 8 8375 8497

LATIN AMERICA
BOART LONGYEAR
AV. LOS LIBERTADORES 16.500 - SITIO 1-A-2
COMPLEJO INDUSTRIAL
LOS LIBERTADORES
COLINA, SANTIAGO-CHILE
INFOCHILE@BOARTLONGYEAR.COM

TEL: +56 2 595 3300
FAX: +51 242 671

EUROPE
BOART LONGYEAR
Boart Longyear Poland Sp. z o.o.
ul. Popiełuszki 30
55-080 Katy Wrocławskie, Poland

Tel: +48 661 892 800
Email: info@boartlongyear.com