

**REV 01-DEC-04**

- **Diamond Products**
- **Core Barrels**
- **Drill Rods**
- **Water Swivels**
- **Hoisting Plugs**
- **Casing**
- **Recovery Tools**
- **Adapter Subs**
- **Conversion Kits**
- **Tools**
- **Technical Data**
- **Safety Poster**



## Diamond Products

- **Impregnated Bits**
- **Thermally Stable Diamond Bits (TSD)**
- **Reaming Shells**
- **Casing Shoes**
- **Casing Bits**
- **Bit and Shell Gauges**
- **Diamond Wedging Tools**
- **Options and Specialty  
Diamond Products**

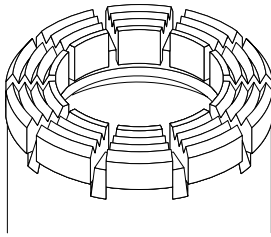
**NOTE:** The diamond tools used for NV, NV2”and NV3 are the same as NQ, NQ2”and NQ3  
Surface Set Bits are available on request.

# Impregnated Bits

## AlphaBit™

Boart Longyear introduces metal coated diamond impregnated bits - the latest in industrial diamond technology.

- Significantly outperforms the successful Series range in both drilling speed and bit life.
- Protects the diamond from oxidation and surface degradation during manufacturing.
- Inhibits the premature "pull-out" of the diamond.
- Increases the number of cutting edges exposed to the rock.
- Available in multiple standard configurations and selected on the basis of relative rock hardness and ground conditions.

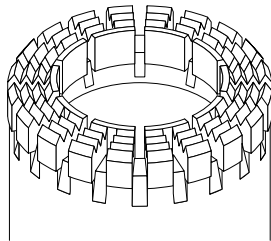


**Standard:** Designed to handle a wide variety of formations.

**Abrasive:** Recommended for broken "abrasive" drilling conditions. For harder rock with broken conditions use a higher number bit to maintain good drilling speeds.

**Competent:** Free cutting design for fast penetration in very hard "competent" rock or for use on lower powered rigs and geotechnical applications.

**Express Geometry:** Bits are supplied with additional intermediate waterways which provide increased flushing. The reduced bit face area allows for higher penetration rates with less bit weight required. Recommended when polishing occurs with standard geometry.



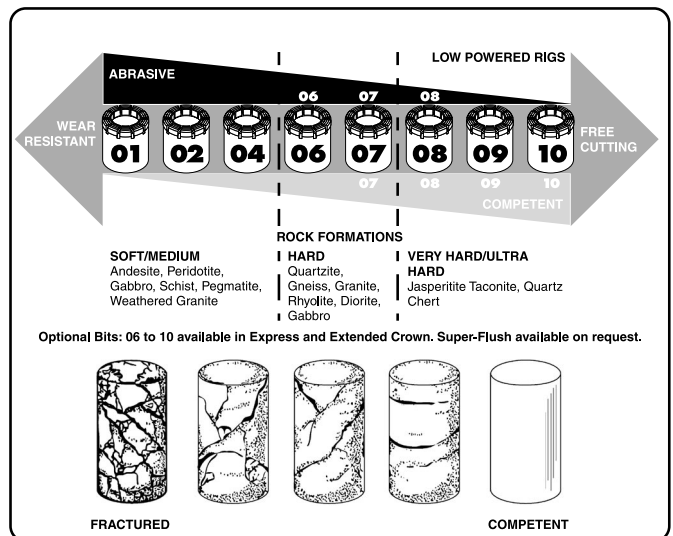
**NOTE:** "Standard Gauge" bits are defined as having a set outside diameter which is 0.38mm (0.015") smaller than "Reaming Shell Gauge". For more detailed information on "Standard Gauge vs Reaming Shell Gauge" impregnated bits, refer to the ITHT Product Manual.

NQ Impregnated Bits		
	Standard Geometry	Reaming Shell Geometry
Alpha01	*	4050637
Alpha01 Abrasive	4050121	4050084
Alpha02	4050126	4050085
Alpha04	4050135	4050088
Alpha06	4050139	4050089
Alpha06 Abrasive	4052346	4050090
Alpha07	4052208	*
Alpha07 Abrasive	4051166	*
Alpha07 Competent	4051327	*
Alpha08	4050352	4050092
Alpha08 Abrasive	4051387	4050093
Alpha08 Competent	4051406	4050094
Alpha09	4052223	*
Alpha09 Competent	*	*
Alpha10	4050124	4050095
Alpha10 Competent	4052342	4051493

NQ2" Impregnated Bits		
	Standard Geometry	Reaming Shell Geometry
Alpha01	*	4050559
Alpha01 Abrasive	4050951	*
Alpha02	4050127	4050182
Alpha04	*	4050243
Alpha06	4050140	4050183
Alpha06 Abrasive	*	4052312
Alpha07	*	*
Alpha07 Abrasive	4050971	4050979
Alpha07 Competent	4051548	*
Alpha08	4050372	4050181
Alpha08 Abrasive	4050186	4050413
Alpha08 Competent	4051267	4050331
Alpha09	4052209	4052311
Alpha09 Competent	4051900	*
Alpha10	4051380	4050180
Alpha10 Competent	4052195	*

\* Available on special request.

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual or the Diamond Products Field Manual for additional operating information.

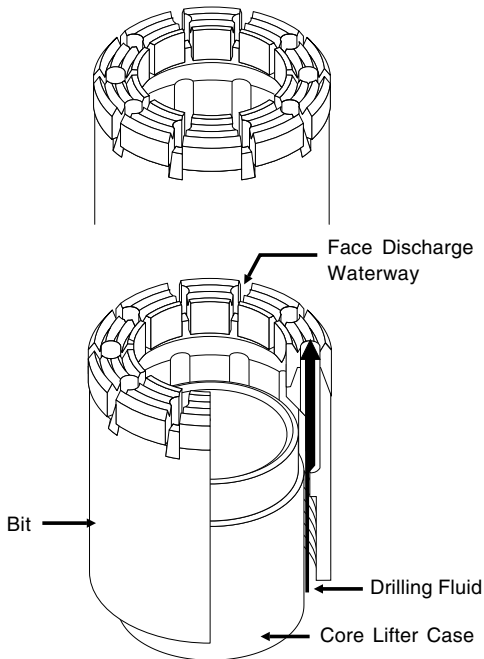


# Impregnated Bits

## AlphaBit™

Boart Longyear introduces metal coated diamond impregnated bits - the latest in industrial diamond technology.

- Significantly outperforms the successful Series range in both drilling speed and bit life.
- Protects the diamond from oxidation and surface degradation during manufacturing.
- Inhibits the premature "pull-out" of the diamond.
- Increases the number of cutting edges exposed to the rock.
- Available in multiple standard configurations and selected on the basis of relative rock hardness and ground conditions.
- Triple-tube bits are used with Boart Longyear triple-tube core barrels. The design of the face discharge waterways and core lifter case forces the drilling fluid to the bit face. Core can be recovered and inspected in a virtually undisturbed condition.



**Standard:** Designed to handle a wide variety of formations.

**Abrasive:** Recommended for broken "abrasive" drilling conditions. For harder rock with broken conditions use a higher number bit to maintain good drilling speeds.

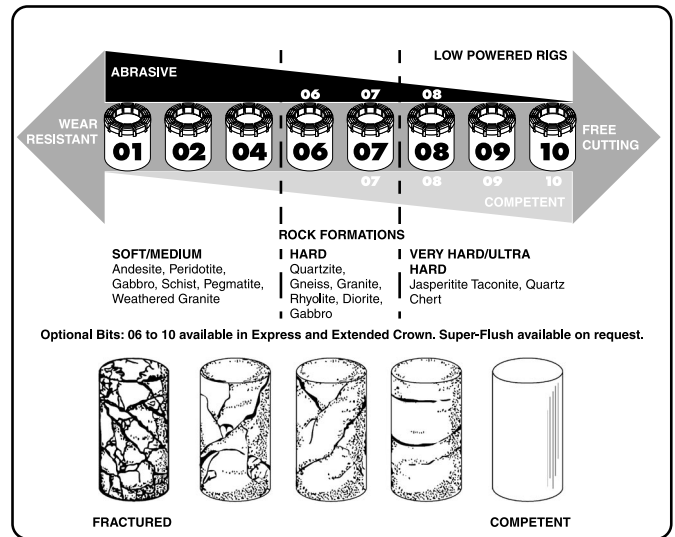
**Competent:** Free cutting design for fast penetration in very hard "competent" rock or for use on lower powered rigs and geotechnical applications.

**NOTE:** "Standard Gauge" bits are defined as having a set outside diameter which is 0.38mm (0.015") smaller than "Reaming Shell Gauge". For more detailed information on "Standard Gauge vs Reaming Shell Gauge" impregnated bits, refer to the ITHT Product Manual.

NQ3 Impregnated Bits		
	Standard Geometry	Reaming Shell Geometry
Alpha01	*	*
Alpha01 Abrasive	*	*
Alpha02	4050492	4050178
Alpha04	*	4051386
Alpha06	*	4050336
Alpha06 Abrasive	*	*
Alpha07	*	*
Alpha07 Abrasive	*	*
Alpha07 Competent	*	*
Alpha08	4051195	4050335
Alpha08 Abrasive	*	*
Alpha08 Competent	*	*
Alpha09	4051979	*
Alpha09 Competent	*	*
Alpha10	4050962	4051270
Alpha10 Competent	*	*

\* Available on special request.

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual or the Diamond Products Field Manual for additional operating information.



# Thermally Stable Diamond (TSD) Bits

**Thermally Stable Diamond (TSD) Bits:**

- Contains no natural diamonds in order to eliminate the possibility of core sample contamination.
- Inside and outside gauge diameter integrity is maintained with heavily reinforced tungsten carbide particles (eliminates the need for natural diamonds).
- Manufactured with a very erosion resistant matrix.
- High penetration rates are common due to maximum setting exposure of the TSD elements providing an aggressive cutting face.
- Large waterways for improved flushing of large cuttings.

**Triple-Tube Thermally Stable Diamond (TSD) Bits:**

- TSD triple-tube face discharge bits are used with Boart Longyear triple-tube core barrels.
- The design of the face discharge waterways and core lifter case forces the majority of the discharge fluid to the bit face.
- Core can be recovered and inspected in a virtually undisturbed condition with the triple-tube system.

**Applications:**

- TSD bits are commonly used for exploration of diamond bearing Kimberlite formations.
- Suitable for geotechnical drilling applications.
- Although best suited for soft ground conditions, intermittent hard ground can be tolerated.

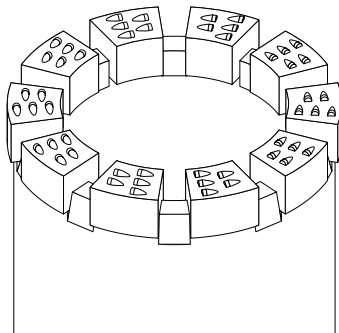
TSD Bits	
NQ Thermally Stable Diamond Bit	508494

TSD Bits	
NQ2" Thermally Stable Diamond Bit	3521345

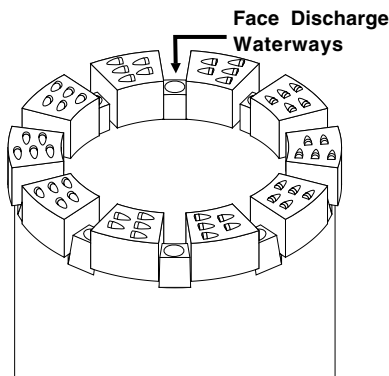
Triple-Tube TSD Bits	
NQ3 Thermally Stable Diamond Bit	**

\*\*Available on special request.

**NOTE:** Refer to the ITHT Product Manual or the Diamond Products Field Manual for additional operating information.



**NQ/NQ2" TSD Bit**



**NQ3 TSD Bit**

# Reaming Shells

The recommended practice is to alternate two reaming shells in each hole drilled to maintain hole diameter. Upon bit changes, the reaming shell should be checked for wear with the bit and shell wear gauge. Failure to observe these recommended practices will result in either a poorly stabilized bit or an undersized hole that will require costly reaming.

Reaming Shells - Sourced from Americas	
NQ Standard	3522860
NQ Stabilized	3522866

Reaming Shells - Sourced from Australasia	
NQ/NQ3/NQ2" Heavy Duty Impregnated	4101029
NQ/NQ3/NQ2" Adaptor Coupling Impregnated	4101174
NQ/NQ3/NQ2" Surface Set	4101847
NQ/NQ3/NQ2" Adaptor Coupling Surface Set	4101851
NQ/NQ3/NQ2" Rod Line Surface Set	4103320

Reaming Shells - Sourced from Europe	
NQ/NQ3/NQ2" Impregnated	49448
NQ/NQ3/NQ2" Surface Set	48795
NQ/NQ3/NQ2" Premium Stabilized	**

Reaming Shells - Sourced from South Africa	
NQ Premium	DP 28230185
NQ Ringset	DP 28230190
NQ Shear Thread	DP 28230191

\*\* Available on special request.

**NOTE:** Refer to the ITHT Product Manual or the Diamond Products Field Manual for additional operating information.

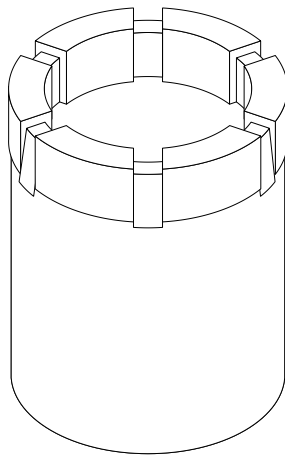
# Casing Shoes

**Casing Shoe**

The inside diameter of the casing shoe is not set with diamonds and is flush with the inside diameter of the casing, permitting free passage of the core barrel past the casing shoe.

**Applications:**

- The casing shoe is threaded to the end of the casing string for penetration through overburden.
- Assists in seating the casing into the bedrock, providing a tight seal for the drilling fluids to flow through to the surface.
- Used to ream the casing downward when advancing a casing string in an existing hole with the rod string still in place.



Casing Shoes	
NW Econo 2	4050981
NW Econo 8	4050952
NW V-Ring	509727
NW Oversize	509134
NW HRQHP Rod Box*	3522295
NW HQ Rod Box*	4050999
NW HMQ Rod Box*	4HREVD/3

Casing Shoes - Sourced from Australasia	
NW Standard Impregnated	4101546

Casing Advancer Shoes - Sourced from Australasia	
NW Impregnated	4101630

Rod Shoes - Sourced from Australasia	
NQ Standard Impregnated	4101554
NQ Heavy Duty Impregnated	4100962
NQ Surface Set	4102155

Casing Shoes - Sourced from Europe	
NW V-Ring	47296
NW Oversize**	49688
NW HQ Rod Box*	48743

\* When HRQHP, HQ or HMQ rods are used in place of NW Casing.

\*\* For use with the wireline casing advancer.

**NOTE:** Refer to the ITHT Product Manual or the Diamond Products Field Manual for additional operating information.



# Casing Bits

## Casing Bit

The inside diameter of the casing bit is set with diamonds and is smaller than the casing shoe. It will not permit the passage of the core barrel.

## Applications:

- Used when deep or difficult overburden is encountered.
- When reaming operations are completed, the casing string is removed from the hole and a casing shoe is substituted for a casing bit before normal drilling operations recommence.

Casing Bits	
NW V-Ring	509152
NW Econo	4051070

Casing Bits - Sourced from Europe	
NW V-Ring	52736

**NOTE:** Refer to the ITHT Product Manual or the Diamond Products Field Manual for additional operating information.

# Bit and Shell Gauge

## Bit and Shell Wear Gauge

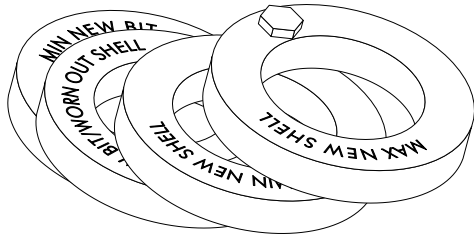
As good practice, the diameter of surface set bits and reaming shells should be measured. This will ensure that the hole size is maintained. All holes should be collared with a full gauge reaming shell. On deeper holes, two or more shells should be alternated in the hole to maintain the hole size. Reaming shells should be gauged every trip out of the hole.

The practice of gauging bits is more common with surface set bits. Impregnated bits typically maintain their gauge until totally consumed.

### Bit and Shell Gauge

NQ/NQ3/NQ2" Bit and Shell Wear Gauge	30001
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**NOTE:** Refer to the ITHT Product Manual or the Diamond Products Field Manual for additional operating information.



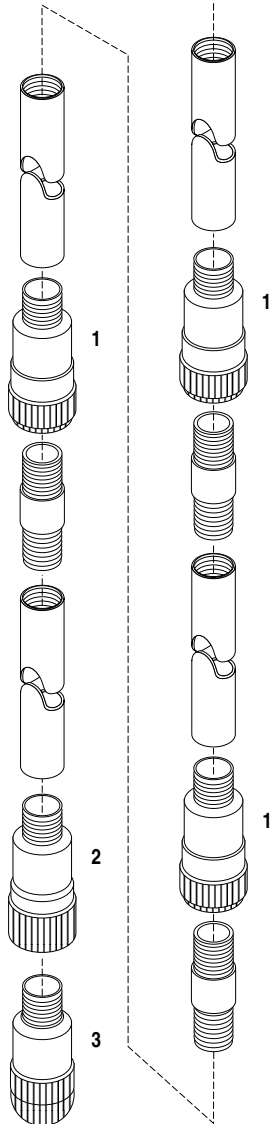
# Diamond Wedging Tools

**Features**

- Available in both retrievable and non-retrievable wedges.
- Complete line consists of pencil core bits, inner tube bits, bullnose wedge bits, wedge lead-in bits, and wedge reaming shells.
- Utilizes high quality diamonds to ensure optimum performance.

**Applications**

- For best results, wedging operations should be undertaken in solid, competent formations.



Retrievable Diamond Wedging Tools	
<b>Stage One (Optional)</b> NQ Inner Tube Bit (to produce flat surface at bottom of hole)	509530
<b>Stage Two</b> NW Pencil Core Bit - BW Thread	509531
<b>Stage Three</b> 1 NW Wedge Lead-In Bit - BW Thread	3521116
2 NW Wedge Reaming Shell - BW Thread	509533
3 NW Bullnose Bit - BW Thread	509534

Retrievable Diamond Wedging Tools - Sourced from Australasia	
<b>Bull Nose Bit to suit Clappison</b> BQ Bit to suit NW Wedge - B Thread	4104130
<b>Clappison/Hall-Rowe Pilot Reaming Assembly</b> 1 NQ Wedging Reaming Bit - N Thread	4103000
2 NQ Wedging Reaming Shell - N Thread	4103040
3 NQ Bullnose Bit - N Thread	4101964

**NOTE:** Refer to the ITHT Product Manual or the Diamond Products Field Manual for additional operating information.

# Options and Specialty Diamond Products

**Hard Facing**

In order to improve the protection of the blank for bits, reaming shell, or casing shoes, three spiral strips of hard tungsten carbide can be applied over the full length of the blank.

**Super Flush Waterways**

Waterways designed to 6.35mm (0.25") width to allow improved passage of drilling fluids.

**Reinforced Waterways**

For surface set bits, matrix protection can be provided by supplying tungsten carbide inserts on the leading edge of the waterways.

**Extra Hard Matrix**

For more abrasive drilling conditions, an increased erosion resistant matrix is available for surface set bits.

**Non-Coring Bits**

Their design provides reinforcement of the center of the bit to prevent excessive wear of this critical area. Various center designs, including pencil core and crowsfoot types, are available to suit your particular needs. Water courses are carefully engineered to provide fast and complete evacuation of the cuttings produced by this type of tool, thereby increasing the penetration rates in all types of formations and increasing bit life. Other non-coring bits are available for hydroelectric grouting applications.

**Specialty Products**

Boart Longyear manufactures other special products such as polishing bits and hole openers to complete the diamond product line. Contact your Boart Longyear representative for more information.

For your specialty diamond product requirements, please contact your local Boart Longyear representative.

## Core Barrels

- **Conventional**
  - NV
  - NV3
  - NV2”
- **Packaging Information**
- **Assembly Instructions**

**NOTE:** All core barrels will require some assembly upon receipt of shipment. Please refer to Packaging Information and Assembly Instruction sections.



## Core Barrels - NV

- **NV Core Barrel**
- **Head Assembly**
- **Inner Tube Components**
- **Outer Tube Components**
- **Extended Core Barrels**
- **Spare Parts Kits**

**NOTE:** All core barrels will require some assembly upon receipt of shipment. Please refer to Packaging Information and Assembly Instruction sections.

# Core Barrel - NV

Boart Longyear offers a field proven standard NV core barrel for use with NWJ rods. It consists of the head assembly (item 1), inner tube components (items 2-5), and outer tube components (items 6-8). The In-The-Hole Tools Product Manual and core barrel Safety Poster are included with all core barrels.

**How to Order:**

To order a standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.

**Options:**

There are alternatives to the standard core barrel which are indicated by a "■". To view these options refer to the head assembly, inner tube components and/or outer tube components sections.

**How to Order:**

To order a non-standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.
- List all optional parts and part numbers from the head assembly, inner tube components and/or outer tube components sections.

**NOTE:** To adapt NW rods to NWJ thread, see Adapter Sub section. For information on packaging and assembly, refer to the packaging and/or assembly pages located at the end of this section.

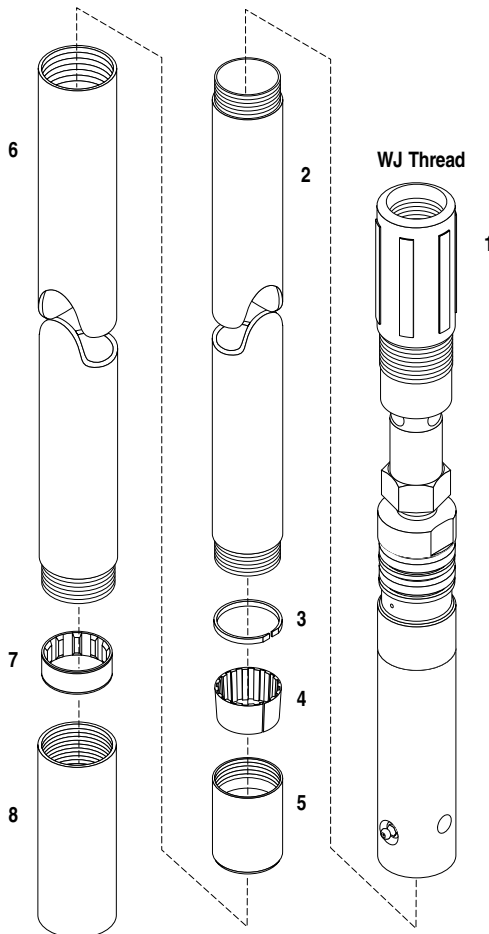
Core Barrels				kg	lbs
1-10	26675	NV Core Barrel	1.5 m / 5 ft	34.0	75.0
1-10	26674	NV Core Barrel	3.0 m / 10 ft	57.5	126.0

Standard Configuration				Qty
1	104653	NV Head Assembly*		1
2	24909	Inner Tube, 1.5 m / 5 ft	■	1
2	24891	Inner Tube, 3.0 m / 10 ft	■	1
3	24893	Stop Ring		1
4	24894	Core Lifter, Fluted	■	1
5	24892	Core Lifter Case		1
6	24910	Outer Tube, 1.5 m / 5 ft	■	1
6	24898	Outer Tube, 3.0 m / 10 ft	■	1
7	44407	Inner Tube Stabilizer		1
8	24900	Thread Protector		1
9	3541994	ITHT Product Manual (not shown)		1
10	306390	Safety Poster (not shown)		1

■ Additional options available.

\* See the head assembly section for a detailed configuration and available options.

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.





# Head Assembly - NV

**Options:**

There are alternatives to the standard head assembly which are indicated by a "■". If options are ordered, the standard head assembly is supplied with the options shipped as separate items (not installed).

**How to Order:**

To order a non-standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.
- List all optional parts and part numbers from this page, and/or the options from the inner tube and outer tube components sections.

**NOTE:** To adapt NW rods to NWJ thread, see Adapter Sub section.

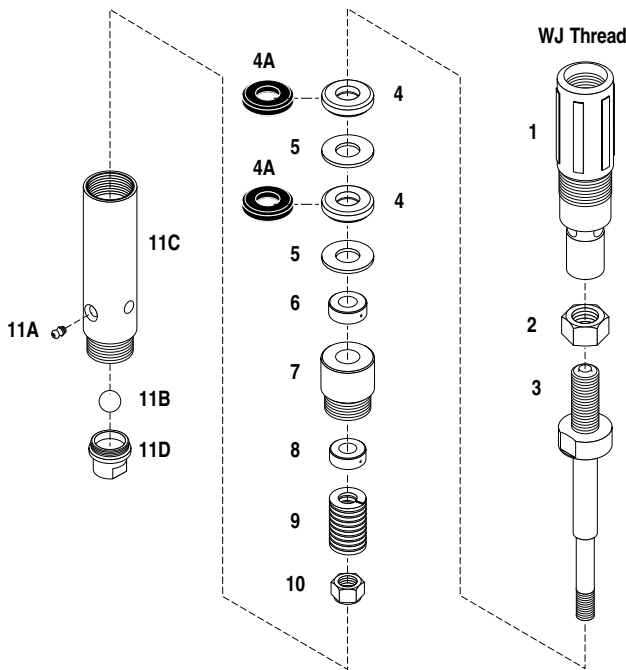
For information on packaging and assembly, refer to the packaging and/or assembly pages located at the end of this section.

Head Assembly			kg	lbs
1-11	104653	NV Head Assembly	8.7	19.0

Standard Configuration				Qty
1	102804	Outer Tube Head NWJ Thread		1
2	24885	Hex Nut		1
3	24886	Spindle		1
4	44209	Shut-Off Valve, Hard		■ 2
5	24888	Valve Adjusting Washer		2
6	24312	Thrust Bearing		1
7	24889	Spindle Bearing		1
8	18298	Hanger Bearing		1
9	24313	Compression Spring		1
10	22918	Stover Lock Nut		1
11	40664	Inner Tube Cap Assembly (11A, B, C, D)		—
11A	17447	Grease Fitting		1
11B	62374	Stainless Steel Ball, 22 mm		1
11C	40677	Inner Tube Cap		1
11D	37382	Check Valve Body		1

Head Assembly Options				Qty
4A	24887	Shut-Off Valve, Soft		■ 2

**NOTE:** Refer to the Tech Data section for technical specifications and the ITH Product Manual for additional operating information.



# Inner Tube Components - NV

To order inner tube components apart from the core barrel, please use the numbers provided and specify any options you may require. If ordering these components as part of a core barrel, please refer to the ordering instructions below. All inner tube components are shipped unassembled.

**Options:**

There are alternatives to the standard inner tube components which are indicated by a "A". If optional items are chosen, they will replace the standard items when the order is processed.

**How to Order:**

To order a non-standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.
- List all optional parts and part numbers from this page, and/or the options from the head assembly and outer tube components sections.

**NOTE:** To adapt NW rods to NWJ thread, see Adapter Sub section For information on packaging and assembly, refer to the packaging and/or assembly pages located at the end of this section.

Inner Tube Components				Qty
1	104653	NV Head Assembly*		1
2	24909	Inner Tube, 1.5 m / 5 ft	■	1
2	24891	Inner Tube, 3.0 m / 10 ft	■	1
3	24893	Stop Ring		1
4	24894	Core Lifter, Fluted	■	1
5	24892	Core Lifter Case		1

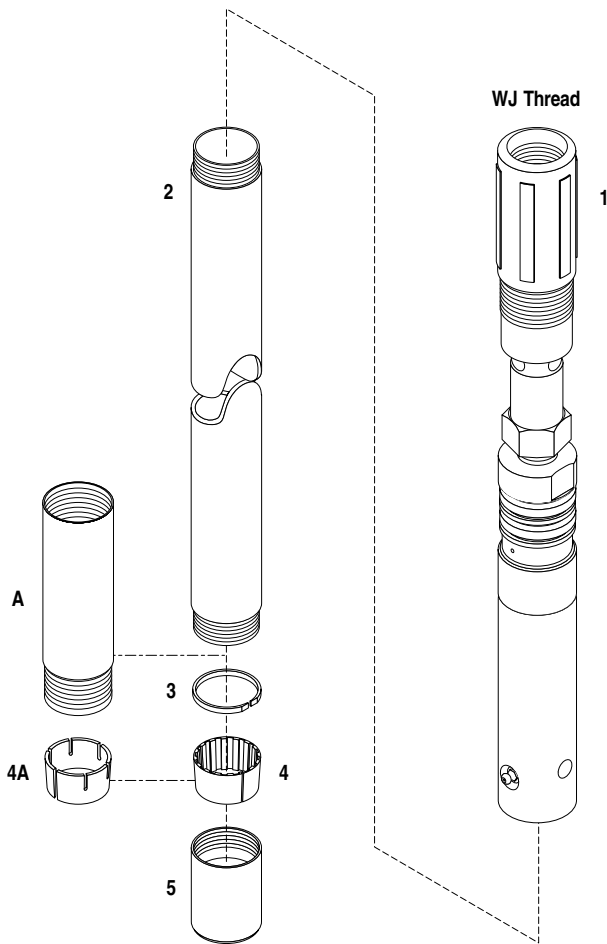
Inner Tube Options				Qty
4A	30488	Core Lifter	■	1

Optional Chrome Plating				
To order chrome plated inner tubes (full length inside diameter) use the following part numbers.				
2A	24909CP	Inner Tube CP 1.5 m / 5 ft	■	1
2A	24891CP	Inner Tube CP 3.0 m / 10 ft	■	1

Option for Stabilized Reaming Shells				Qty
A	34688	Inner Tube Extension	■	1

\* See the head assembly section for a detailed configuration and available options.

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.



# Outer Tube Components - NV

Standard outer tube components are included in the standard core barrel for use with NWJ rods.

**Options:**

There are alternatives to standard outer tube components which are indicated by a "■". If optional items are chosen, they will replace the standard items when the order is processed.

**How to Order:**

To order a non-standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.
- List all optional parts and part numbers from this page, and/or the options from the head assembly and inner tube components sections.

**NOTE:** For information on packaging and assembly, refer to the packaging and/or assembly pages located at the end of this section.

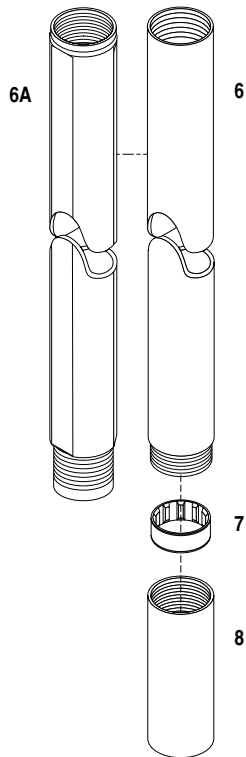
Outer Tube Components				Qty
6	24910	Outer Tube, 1.5 m / 5 ft	■	1
6	24898	Outer Tube, 3.0 m / 10 ft	■	1
7	44407	Inner Tube Stabilizer		1
8	24900	Thread Protector		1

Outer Tube Component Options				Qty
6A	64932	Full-Hole Outer Tube CP, 1.5 m / 5 ft*	■	1
6A	62178	Full-Hole Outer Tube CP, 3.0 m / 10 ft*	■	1

Optional Chrome Plating				
To order chrome plated outer tubes (45 cm (18 in) at both ends on the outside diameter) use the following part numbers.				
6B	24910CP	Outer Tube CP 1.5 m / 5 ft	■	1
6B	24898CP	Outer Tube CP 3.0 m / 10 ft	■	1

\* Full hole outer tubes are supplied chrome plated 45 cm (18 in) at both ends on the outside diameter as standard.

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.



# Extended Core Barrels - NV

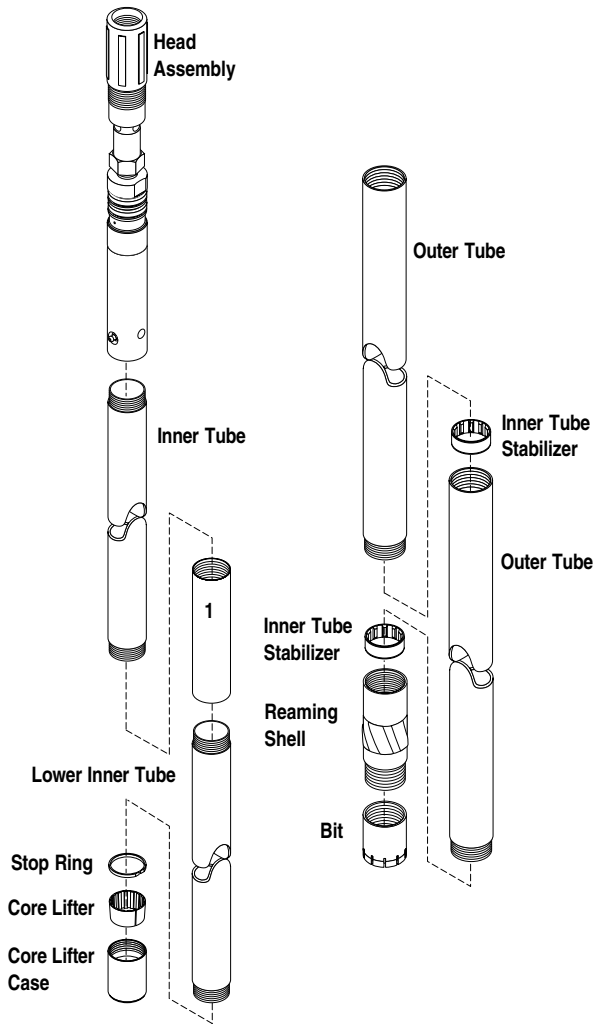
The inner tube coupling and lower inner tube can be used to extend core barrels from 1.5 m (5 ft) to 4.5 m (15 ft), or 3.0 m (10 ft) to 6.0 m (20 ft) lengths in consolidated ground conditions.

**Example:** To assemble a 6 m (20 ft) core barrel, use a 3.0 m (10 ft) core barrel plus the following:

- 1-outer tube 3.0 m/10 ft
- 1-lower inner tube 3.0 m/10 ft
- 1-inner tube stabilizer
- 1-inner tube coupling

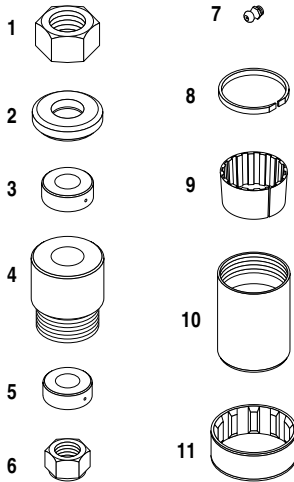
Extended Core Barrels		
1	31403	Inner Tube Coupling

**NOTE:** Refer to ITHT Product Manual for additional operating information.



# Spare Parts Kit - NV

Spare Parts Kits are designed to meet the average requirements for 1 000 m (3,300 ft) of drilling.



Spare Parts Kit			kg	lbs
1-11	3543735	NV Core Barrel Spare Parts Kit	3.9	7.7

Parts				Qty
1	24885	Hex Nut		1
2	44209	Shut-Off Valve, Hard		4
3	24312	Thrust Bearing		1
4	24889	Spindle Bearing		1
5	18298	Hanger Bearing		1
6	22918	Stover Lock Nut		1
7	17447	Grease Fitting		2
8	24893	Stop Ring		2
9	24894	Core Lifter, Fluted		20
10	24892	Core Lifter Case		4
11	44407	Inner Tube Stabilizer		2

**NOTE:** Refer to the Tech Data section for technical specifications and the ITH Product Manual for additional operating information.



## Core Barrels - NV3

- **NV3 Core Barrel**
- **Head Assembly**
- **Inner Tube Components**
- **Outer Tube Components**
- **Spare Parts Kits**

**NOTE:** All core barrels will require some assembly upon receipt of shipment. Please refer to Packaging Information and Assembly Instruction sections.

# Core Barrel - NV3

Boart Longyear offers a field proven standard NV3 core barrel for use with NWJ rods. It consists of the head assembly (item 1), inner tube components (items 2-10), and outer tube components (items 11-13). The In-The-Hole Tools Product Manual and core barrel Safety Poster are included with all core barrels.

Triple-tube core barrels are commonly selected when drilling coal, clay bearing or highly fractured formations. A second inner tube (split lengthwise) is contained inside the standard inner tube. The core ejection piston protects the core from pressurized drilling fluid when the split inner tube, containing the core sample, is pumped out of the standard inner tube. Upon removal, one half of the split tube is lifted off to reveal the undisturbed core sample.

**How to Order:**

To order a standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.

**Options:**

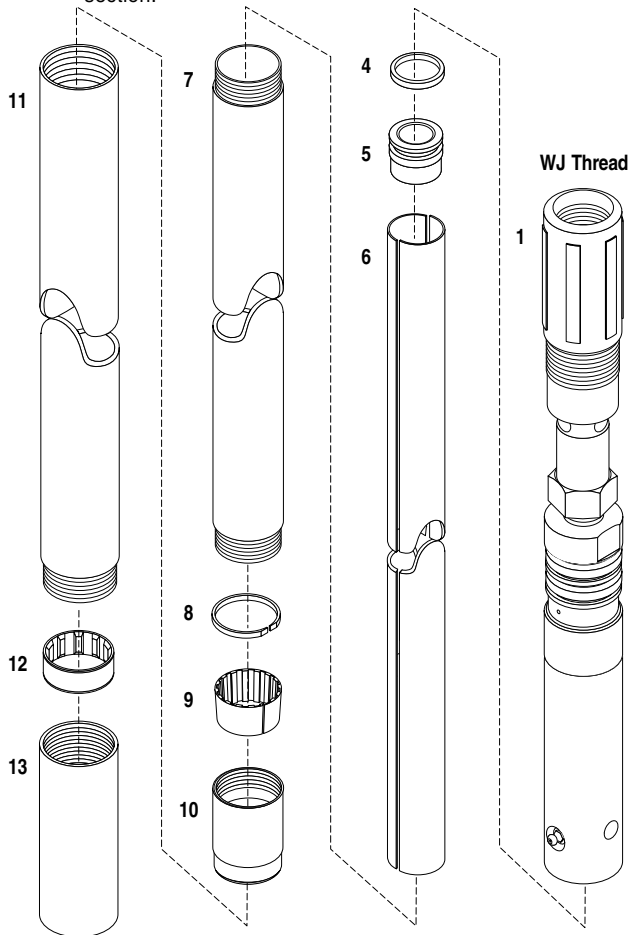
There are alternatives to the standard core barrel which are indicated by a "■". To view these options refer to the head assembly and/or outer tube components sections.

**How to Order:**

To order a non-standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.
- List all optional parts and part numbers from the head assembly and/or outer tube components sections.

**NOTE:** To adapt NW rods to NWJ thread, see Adapter Sub section. For information on packaging and assembly, refer to the packaging and/or assembly pages located at the end of this section.



Core Barrels				kg	lbs
1-15	26975	NV3 Core Barrel	1.5 m / 5 ft	35.4	78.0
1-15	26974	NV3 Core Barrel	3.0 m / 10 ft	60.8	134.0

Standard Configuration				Qty	
1	104653	NV Head Assembly*			1
2	26532	Pump-Out Adapter, 3/4" NPT-F**			1
3	26662	Piston Plug**			1
4	26134	O Ring			1
5	26526	Core Ejection Piston			1
6	26527	Split Tube, 1.5 m / 5 ft			1
6	26528	Split Tube, 3.0 m / 10 ft			1
7	24909	Inner Tube, 1.5 m / 5 ft			1
7	24891	Inner Tube, 3.0 m / 10 ft			1
8	26530	Stop Ring			1
9	26531	Core Lifter, Fluted			1
10	26529	Core Lifter Case			1
11	24910	Outer Tube, 1.5 m / 5 ft	■		1
11	24898	Outer Tube, 3.0 m / 10 ft	■		1
12	44407	Inner Tube Stabilizer			1
13	24900	Thread Protector			1
14	3541994	ITHT Product Manual (not shown)			1
15	306390	Safety Poster (not shown)			1

■ Additional options available.

\* See the head assembly section for a detailed configuration and available options.

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.

\*\* These items are required to pump the core out of the inner tube. Remove the head assembly from the inner tube, insert the piston plug and thread the pump out adapter on to the inner tube.

**Fluid pressure supplied by optional hand pump group (p/n 26738) or pump-out group (p/n 26742). See Tools section.**



# Head Assembly - NV3

**Options:**

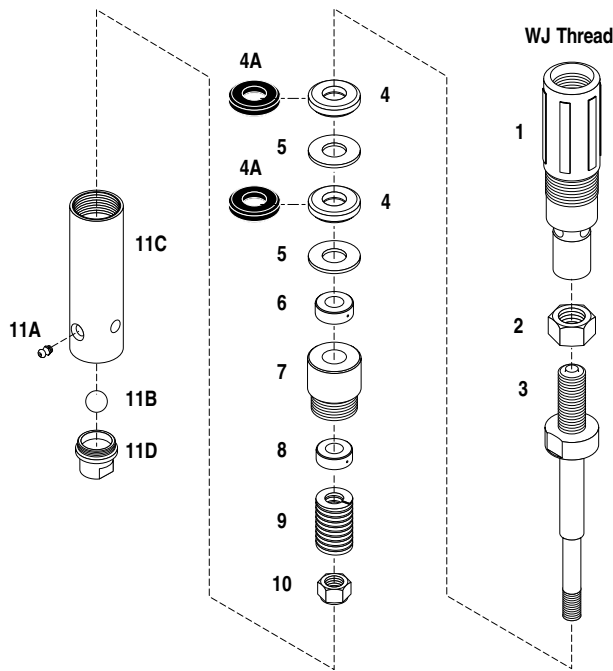
There are alternatives to the standard head assembly which are indicated by a "■". If options are ordered, the standard head assembly is supplied with the options shipped as separate items (not installed).

**How to Order:**

To order a non-standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.
- List all optional parts and part numbers from this page, and/or the options from the inner tube and outer tube components sections.

**NOTE:** To adapt NW rods to NWJ thread, see Adapter Sub section. For information on packaging and assembly, refer to the packaging and/or assembly pages located at the end of this section.



Head Assembly			kg	lbs
1-11	104653	NV Head Assembly	8.7	19.0

Standard Configuration				Qty
1	102804	Outer Tube Head - NWJ Thread		1
2	24885	Hex Nut		1
3	24886	Spindle		1
4	44209	Shut-Off Valve, Hard	■	2
5	24888	Valve Adjusting Washer		2
6	24312	Thrust Bearing		1
7	24889	Spindle Bearing		1
8	18298	Hanger Bearing		1
9	24313	Compression Spring		1
10	22918	Stover Lock Nut		1
11	40664	Inner Tube Cap Assembly (11A, B, C, D)		—
11A	17447	Grease Fitting		1
11B	62374	Stainless Steel Ball, 22 mm		1
11C	40677	Inner Tube Cap		1
11D	37382	Check Valve Body		1

Head Assembly Options				Qty
21A	24887	Shut-Off Valve, Soft	■	2

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.

# Inner Tube Components - NV3

To order inner tube components apart from the core barrel, please use the numbers provided and specify any options you may require. If ordering these components as part of a core barrel, please refer to the ordering instructions below. All inner tube components are shipped unassembled.

**How to Order:**

To order a non-standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.
- List all optional parts and part numbers from the head assembly and outer tube components sections.

**NOTE:** For information on packaging and assembly, refer to the packaging and/or assembly pages located at the end of this section.

Standard Configuration			Qty
1	104653	NV Head Assembly*	1
2	26532	Pump-Out Adapter, 3/4" NPT-F**	1
3	26526	Core Ejection Piston**	1
4	26134	O Ring	1
5	26662	Piston Plug	1
6	26527	Split Tube, 1.5 m / 5 ft	1
6	26528	Split Tube, 3.0 m / 10 ft	1
7	24909	Inner Tube, 1.5 m / 5 ft	1
7	24891	Inner Tube, 3.0 m / 10 ft	1
8	26530	Stop Ring	1
9	26531	Core Lifter, Fluted	1
10	26529	Core Lifter Case	1

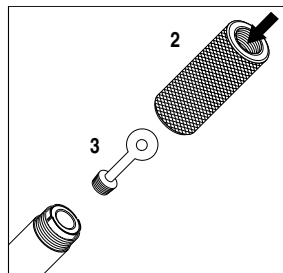
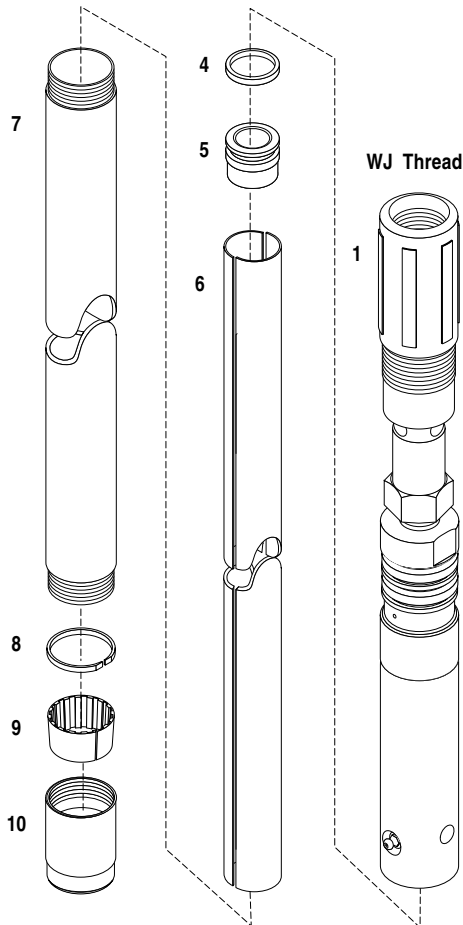
\* See the head assembly section for a detailed configuration and available options.

**NOTE:** Chrome plated inner tubes (full length inside diameter) can not be used with triple-tube core barrels.

Inner tube extensions for use with stabilized reaming shells can not be used with the triple-tube core barrel.

Triple-tube core barrels can not be extended with inner tube couplings.

Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.



\*\* These items are required to pump the core out of the inner tube. Remove the head assembly from the inner tube, insert the piston plug and thread the pump out adapter on to the inner tube.

Fluid pressure supplied by optional hand pump group (p/n 26738) or pump-out group (p/n 26742). See Tools section.

# Outer Tube Components - NV3

Standard outer tube components are included in the standard core barrel for use with NWJ rods.

**Options:**

There are alternatives to standard outer tube components which are indicated by a "■". If optional items are chosen, they will replace the standard items when the order is processed.

**How to Order:**

To order a non-standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.
- List all optional parts and part numbers from this page, and/or the options from the head assembly and inner tube components sections.

**NOTE:** For information on packaging and assembly, refer to the packaging and/or assembly pages located at the end of this section.

Outer Tube Components				Qty
11	24910	Outer Tube, 1.5 m / 5 ft	■	1
11	24898	Outer Tube, 3.0 m / 10 ft	■	1
12	44407	Inner Tube Stabilizer		1
13	24900	Thread Protector		1

Optional Chrome Plating				
To order chrome plated outer tubes (45 cm (18 in) at both ends on the outside diameter) use the following part numbers.				
11B	24910CP	Outer Tube CP 1.5 m / 5 ft	■	1
11B	24898CP	Outer Tube CP 3.0 m / 10 ft	■	1

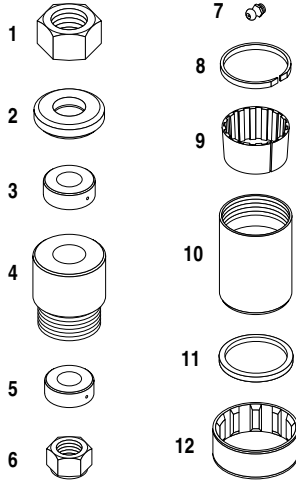
\* Full hole outer tubes are supplied chrome plated 45 cm (18 in) at both ends on the outside diameter as standard.

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.



# Spare Parts Kit - NV3

Spare Parts Kits are designed to meet the average requirements for 1 000 m (3,300 ft) of drilling.



Spare Parts Kit			kg	lbs
1-12	3543737	NV3 Core Barrel Spare Parts Kit	3.5	7.7

Parts				Qty
1	24885	Hex Nut		1
2	44209	Shut-Off Valve, Hard		4
3	24312	Thrust Bearing		1
4	24889	Spindle Bearing		1
5	18298	Hanger Bearing		1
6	22918	Stover Lock Nut		1
7	17447	Grease Fitting		2
8	26530	Stop Ring		2
9	26531	Core Lifter, Fluted		20
10	26529	Core Lifter Case		4
11	26134	O Ring		5
12	44407	Inner Tube Stabilizer		2

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.

## Core Barrels - NV2”

- **NV2” Core Barrel**
- **Head Assembly**
- **Inner Tube Components**
- **Outer Tube Components**
- **Extended Core Barrels**
- **Spare Parts Kits**

**NOTE:** All core barrels will require some assembly upon receipt of shipment. Please refer to Packaging Information and Assembly Instruction sections.

# Core Barrel - NV2"

Boart Longyear offers a field proven standard NV2" core barrel for use with NWJ rods. It consists of the head assembly (item 1), inner tube components (items 2-5), and outer tube components (items 6-8). The In-The-Hole Tools Product Manual and core barrel Safety Poster are included with all core barrels.

**How to Order:**

To order a standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.

**Options:**

There are alternatives to the standard core barrel which are indicated by a "■". To view these options refer to the head assembly, inner tube components and/or outer tube components sections.

**How to Order:**

To order a non-standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.
- List all optional parts and part numbers from the head assembly, inner tube components and/or outer tube components sections.

**NOTE:** To adapt NW rods to NWJ thread, see Adapter Sub section. For information on packaging and assembly, refer to the packaging and/or assembly pages located at the end of this section.

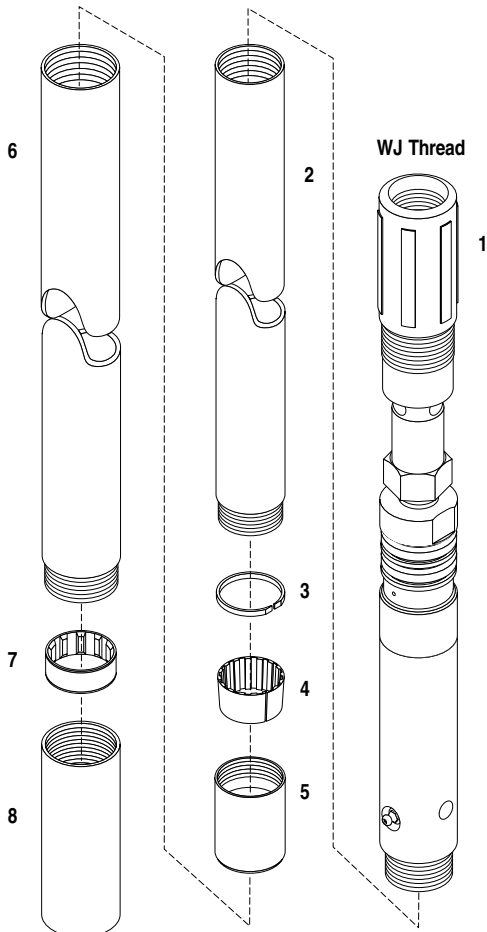
Core Barrels				kg	lbs
1-10	44377	NV2" Core Barrel	1.5 m / 5 ft	34.5	76.0
1-10	43608	NV2" Core Barrel	3.0 m / 10 ft	57.2	126.0

Standard Configuration				Qty	
1	3542994	NV2" Head Assembly*			1
2	44366	Inner Tube, 1.5 m / 5 ft		■	1
2	43601	Inner Tube, 3.0 m / 10 ft		■	1
3	29210	Stop Ring			1
4	29211	Core Lifter, Fluted		■	1
5	29209	Core Lifter Case			1
6	24910	Outer Tube, 1.5 m / 5 ft		■	1
6	24898	Outer Tube, 3.0 m / 10 ft		■	1
7	43812	Inner Tube Stabilizer			1
8	24900	Thread Protector			1
9	3541994	ITHT Product Manual (not shown)			1
10	306390	Safety Poster (not shown)			1

■ Additional options available.

\* See the Head Assembly, Inner Tube options or Outer Tube components sections for a detailed configuration and available options.

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.



# Head Assembly - NV2”

**Options:**

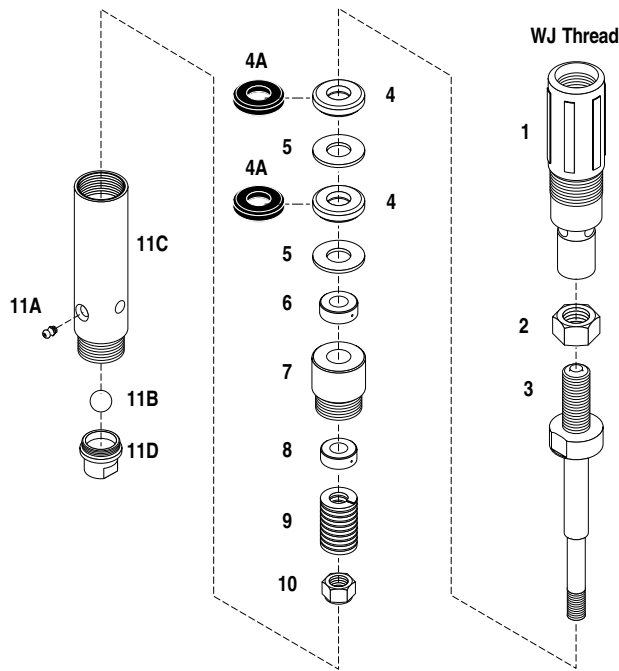
There are alternatives to the standard head assembly which are indicated by a “■”. If options are ordered, the standard head assembly is supplied with the options shipped as separate items (not installed).

**How to Order:**

To order a non-standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.
- List all optional parts and part numbers from this page, and/or the options from the inner tube and outer tube components sections.

**NOTE:** To adapt NW rods to NWJ thread, see Adapter Sub section. For information on packaging and assembly, refer to the packaging and/or assembly pages located at the end of this section.



Head Assembly			kg	lbs
1-11	3542994	NV2” Head Assembly	8.6	19.0

Standard Configuration				Qty
1	102804	Outer Tube Head - NWJ Thread		1
2	24885	Hex Nut		1
3	24886	Spindle		1
4	44209	Shut-Off Valve, Hard	■	2
5	24888	Valve Adjusting Washer		2
6	24312	Thrust Bearing		1
7	24889	Spindle Bearing		1
8	18298	Hanger Bearing		1
9	24313	Compression Spring		1
10	22918	Stover Lock Nut		1
11	43604	Inner Tube Cap Assembly (11A, B, C, D)		—
11A	17447	Grease Fitting		1
11B	62374	Stainless Steel Ball, 22 mm		1
11C	43602	Inner Tube Cap		1
11D	37382	Check Valve Body		1

Head Assembly Options				Qty
4A	24887	Shut-Off Valve, Soft	■	2

**NOTE:** Refer to the Tech Data section for technical specifications and the ITH Product Manual for additional operating information.

# Inner Tube Components - NV2™

To order inner tube components apart from the core barrel, please use the numbers provided and specify any options you may require. If ordering these components as part of a core barrel, please refer to the ordering instructions below. All inner tube components are shipped unassembled.

**Options:**

There are alternatives to the standard inner tube components which are indicated by a "■". If optional items are chosen, they will replace the standard items when the order is processed.

**How to Order:**

To order a non-standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.
- List all optional parts and part numbers from this page, and/or the options from the head assembly and outer tube components sections.

**NOTE:** To adapt NW rods to NWJ thread, see Adapter Sub section. For information on packaging and assembly, refer to the packaging and/or assembly pages located at the end of this section.

Inner Tube Components				Qty
1	3542994	NV2™ Head Assembly*		1
2	44366	Inner Tube, 1.5 m / 5 ft	■	1
2	43601	Inner Tube, 3.0 m / 10 ft	■	1
3	29210	Stop Ring		1
4	29211	Core Lifter, Fluted	■	1
5	29209	Core Lifter Case		1

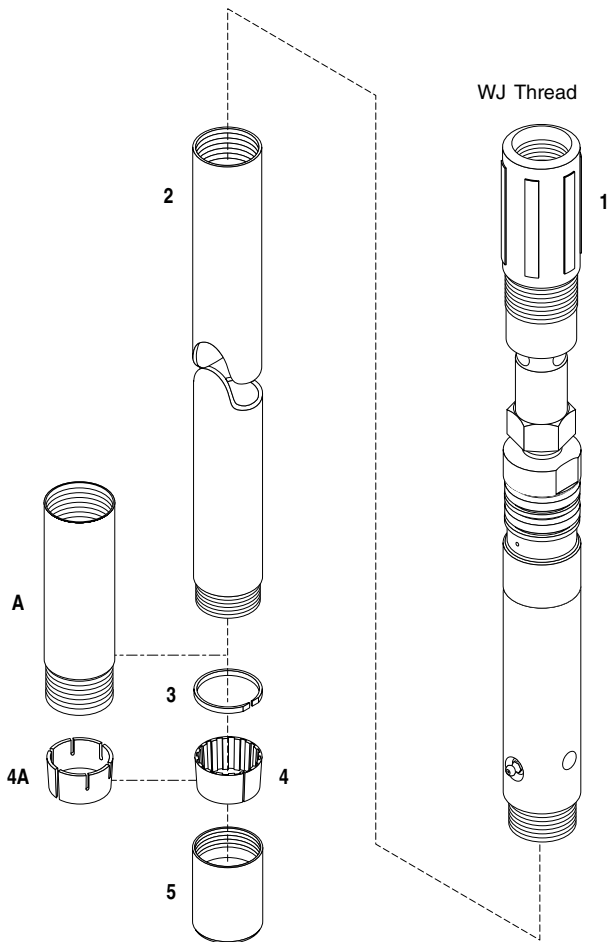
Inner Tube Options				Qty
4A	61416	Core Lifter	■	1

Optional Chrome Plating				
To order chrome plated inner tubes (full length inside diameter) use the following part numbers.				
2A	44366CP	Inner Tube CP 1.5 m / 5 ft	■	1
2A	43601CP	Inner Tube CP 3.0 m / 10 ft	■	1

Option for Stabilized Reaming Shells				Qty
A	104218	Inner Tube Extension	■	1

\* See the head assembly section for a detailed configuration and available options.

**NOTE:** Refer to the Tech Data section for technical specifications and the ITH Product Manual for additional operating information.





# Outer Tube Components - NV2”

Standard outer tube components are included in the standard core barrel for use with NWJ rods.

**Options:**

There are alternatives to standard outer tube components which are indicated by a “■”. If optional items are chosen, they will replace the standard items when the order is processed.

**How to Order:**

To order a non-standard core barrel:

- Select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number.
- List all optional parts and part numbers from this page, and/or the options from the head assembly and inner tube components sections.

**NOTE:** For information on packaging and assembly, refer to the packaging and/or assembly pages located at the end of this section.

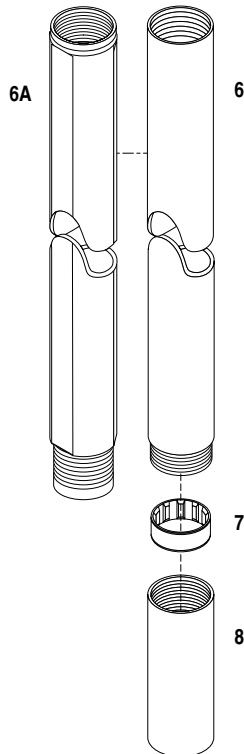
Outer Tube Components				Qty
6	24910	Outer Tube, 1.5 m / 5 ft	■	1
6	24898	Outer Tube, 3.0 m / 10 ft	■	1
7	43812	Inner Tube Stabilizer		1
8	24900	Thread Protector		1

Outer Tube Component Options				Qty
6A	64932	Full-Hole Outer Tube CP, 1.5 m / 5 ft*	■	1
6A	62178	Full-Hole Outer Tube CP, 3.0 m / 10 ft*	■	1

Optional Chrome Plating				
To order chrome plated outer tubes (45 cm (18 in) at both ends on the outside diameter) use the following part numbers.				
6B	24910CP	Outer Tube CP 1.5 m / 5 ft	■	1
6B	24898CP	Outer Tube CP 3.0 m / 10 ft	■	1

\* Full hole outer tubes are supplied chrome plated 45 cm (18 in) at both ends on the outside diameter as standard.

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.



# Extended Core Barrels - NV2''

The inner tube coupling and lower inner tube can be used to extend core barrels from 1.5 m (5 ft) to 4.5 m (15 ft), or 3.0 m (10 ft) to 6.0 m (20 ft) lengths in consolidated ground conditions.

**Example A:** To assemble a 6 m (20 ft) core barrel, use a 3.0 m (10 ft) core barrel plus the following:

- 1-outer tube 3.0 m/10 ft
- 1-lower inner tube 3.0 m/10 ft
- 1-inner tube stabilizer
- 1-inner tube coupling

Inner tube extendas can also be used to extend core barrels.

**Example B:** To extend in 1.5 m (5 ft) lengths.

- 1-outer tube 1.5 m/5 ft
- 1-inner tube stabilizer
- 1-inner tube extenda 1.5 m/5 ft

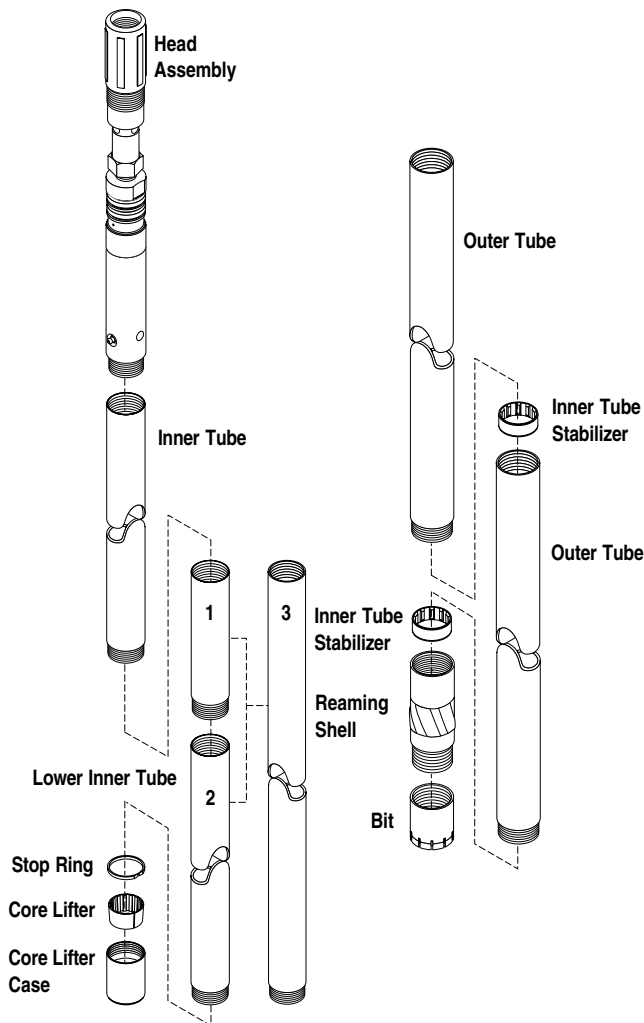
**Example C:** To extend in 3.0 m (10 ft) lengths.

- 1-outer tube 3.0 m/10 ft
- 1-inner tube stabilizer
- 1-inner tube extenda 3.0 m/10ft

Extended Core Barrels		
1	101999	Inner Tube Coupling
2	63033	Lower Inner Tube, 3.0 m / 10 ft
3	104884	Inner Tube Extenda, 1.5 m/5 ft
3	102023	Inner Tube Extenda, 3.0 m/10 ft

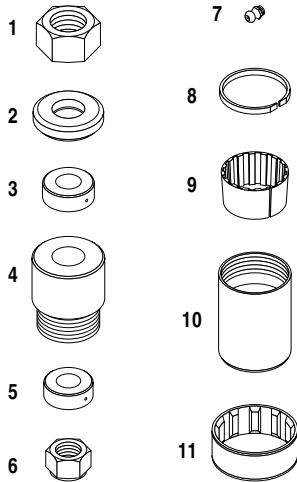
**⚠ WARNING** Inner tube coupling (item 1) will not thread into standard 5ft and 10ft NV2'' inner tubes. This coupling will only thread into the lower inner tube (item 2). For complete details of corebarrel extensions please review Examples A, B and C listed on left side of sheet.

**NOTE:** Refer to ITH Product Manual for additional operating information.



# Spare Parts Kit - NV2”

Spare Parts Kits are designed to meet the average requirements for 1 000 m (3,300 ft) of drilling.



Spare Parts Kit			kg	lbs
1-11	3543736	NV2” Core Barrel Spare Parts Kit	3.0	6.5

Parts				Qty
1	24885	Hex Nut		1
2	44209	Shut-Off Valve, Hard		4
3	24312	Thrust Bearing		1
4	24889	Spindle Bearing		1
5	18298	Hanger Bearing		1
6	22918	Stover Lock Nut		1
7	17447	Grease Fitting		2
8	29210	Stop Ring		2
9	29211	Core Lifter Fluted		20
10	29209	Core Lifter Case		4
11	43812	Inner Tube Stabilizer		2

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.



# Packaging Information

## Ordering Information

Boart Longyear has developed an innovative and practical approach to selecting the best core barrel for your drilling application. This approach incorporates a standard core barrel consisting of the head assembly, inner tube components, outer tube components, the In-The-Hole Tools Product Manual and core barrel Safety Poster. To order the standard configuration core barrel, select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number from the standard core barrel page.

There are also options available for standard product which are indicated by a "X". A listing of the options available appears on the head assembly, inner tube components, and outer tube components sections. If you would like to substitute the standard product for these options, select a 1.5 m/5 ft or 3.0 m/10 ft core barrel part number from the standard core barrel page and specify all optional parts and part numbers from the head assembly, inner tube components and/or outer tube components sections.

## Packaging Information

Core barrel parts are packaged exclusively to provide the customer with the ability to assemble the core barrel with the ideal configuration to the drilling application.

The head assembly is shipped assembled with hard shut-off valves as standard product. If options are requested for the head assembly, they are shipped as separate items (not installed) and must be installed by the end user. If options are ordered for the inner tube and outer tube components, they will replace the standard component.

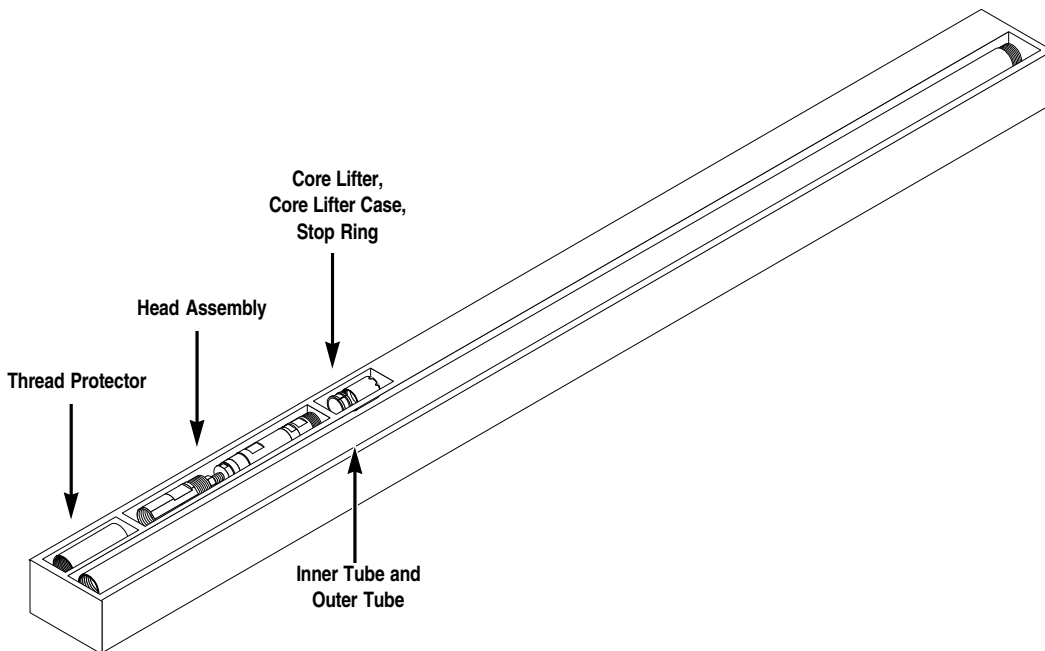
### Box Specifications (approximate)

#### 1.5 m/5 ft CORE BARREL

Length .....	1 930 mm (76 in)
Width .....	203 mm (8 in)
Height .....	127 mm (5 in)

#### 3.0 m/10 ft CORE BARREL

Length .....	3 454 mm (136 in)
Width .....	203 mm (8 in)
Height .....	127 mm (5 in)



**NOTE:** May not be exactly as shown, for illustration purposes only.

# Assembly Instructions

Follow these instructions carefully:

### Inner Tube Components

- 1) Apply rod grease (p/n 62796) to the inside of the core lifter case and to the outside of the core lifter.
- 2) Insert the core lifter into the core lifter case from the threaded end.
- 3) Insert the stop ring into the grooved recess of the core lifter case.
- 4) Apply Z-50 thread compound (p/n 306486) to the threaded ends of the head assembly, core lifter case and inner tube.
- 5) Thread the head assembly to one end of the inner tube and the core lifter case to the other. Use an inner tube wrench to ensure the joints are snug.

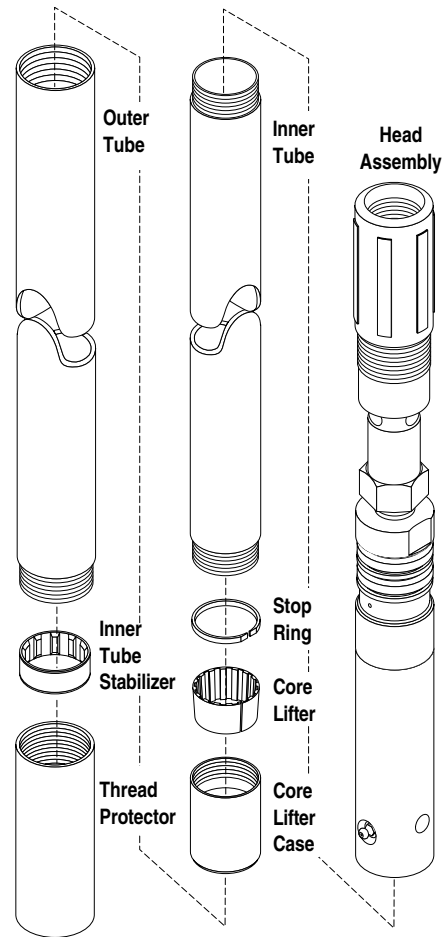
### Outer Tube Components

- 1) If the core barrel is intended for storage, insert the inner tube stabilizer into the thread protector and assemble to one end of the outer tube. If the core barrel is intended for immediate use, insert the inner tube stabilizer into a reaming shell and thread the reaming shell onto the end of the outer tube.
- 2) Tighten all joints with an outer tube wrench to ensure they are snug.

### Core Barrel

- 1) Insert the assembled inner tube components into the assembled outer tube components.

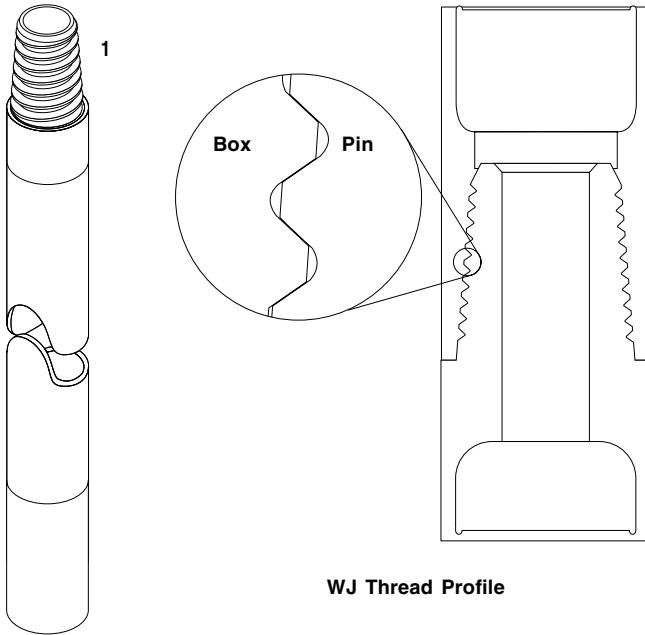
**NOTE:** For complete operating instructions, refer to the ITHT Product Manual that is shipped with every core barrel. Clearly post the safety poster in your work area.



## Drill Rods

- **WJ**
- **Packaging Information**

# WJ Drill Rods



Metric Lengths			kg	lbs
1	63738	NWJ Drill Rod, 1.5 m	13.1	28.9
2	63739	NWJ Drill Rod, 3.0 m	24.0	52.9

Imperial Lengths			kg	lbs
1	63098	NWJ Drill Rod, 2 ft	6.7	14.8
2	62999	NWJ Drill Rod, 5 ft	13.3	29.4
3	3543046	NWJ Drill Rod, 10 ft	24.4	53.9

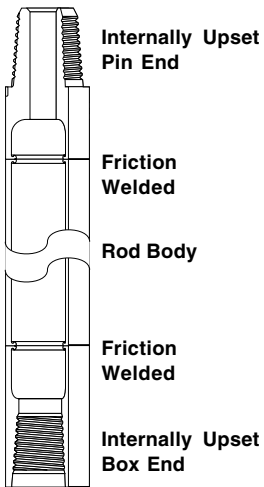
**WJ drill rod:**

- Friction welded pin and box ends.
- Z-50 Thread Compound (p/n 306486, 8 kg pail) is the recommended thread lubricant to reduce wear and the possibility of galling during drilling operations.
- To reduce the friction between the walls of the hole and the drill rod, apply rod grease (p/n 62796) to the surface of the drill rods. Rod grease also reduces in-hole vibration, increasing tool and equipment service life.

**Drill rods MUST be pretorqued with the minimum recommended make-up torque to preload the box and pin prior to drilling. Drilling torque alone will not make-up the joint. Drilling operating torque should never exceed make-up torque.**

**NOTE:** Drill rods are sold by the bundle, see Packaging Information section.

Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.

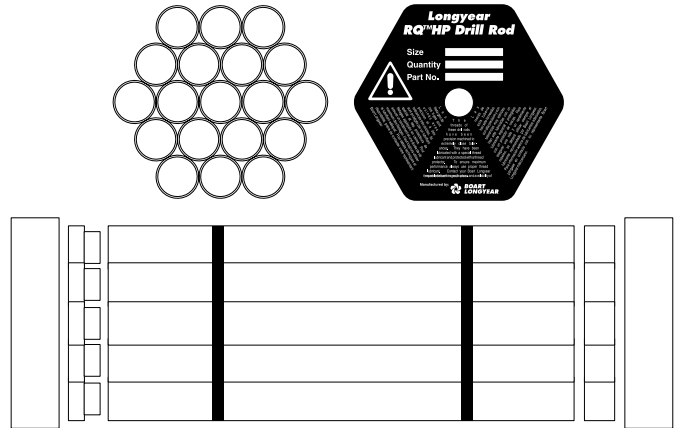




# Packaging Information

**Packing Features:**

- Drill rods are packaged and sold in “bundles” which offer product protection during shipping and handling.
- Heavy duty galvanized hexagon bundle end caps (p/n 41075) protect the drill rod ends.
- Container shipments
  - 20 ft container load of 3.0 m/10 ft rods holds 32 bundles (608 rods)
  - 40 ft container load of 3.0 m/10 ft rods holds 48 bundles (912 rods)
- Drill rod box and pin threads are protected with Z-50 Thread Compound (p/n 306486, 8 kg pail) to avoid oxidation during shipping and storage. Z-50 is the recommended thread lubricant to reduce wear and the possibility of galling during drilling operations.
- Drill rods are coated with Krown KL73 rust inhibitor (p/n 3543544) to reduce product oxidation during shipping. When storing rods for long periods of time, it is recommended to reapply to the product surface for maximum protection.



For “N” size rods, a bundle contains 19 rods.

**Bundle Specifications**

**3.0 m/10 ft ROD BUNDLE**

Dimensions (L x W x H) ..... 3124 x 302 x 235 mm (123 x 14.5 x 13 in)  
 Volume ..... 0.220 m<sup>3</sup> (8 ft<sup>3</sup>)  
 Gross Weight ..... 479 kg (1,056 lbs)

**1.5 m/5 ft ROD BUNDLE**

Dimensions (L x W x H) ..... 1600 x 302 x 235 mm (63 x 14.5 x 13 in)  
 Volume ..... 0.114 m<sup>3</sup> (7 ft<sup>3</sup>)  
 Gross Weight ..... 268 kg (591 lbs)



## Water Swivels

- **Surface Compact Plus Water Swivel**
- **Underground Hi-Speed Water Swivel**
- **Underground Compact Water Swivel**
- **Hose and Connections**
  - Surface
  - Underground
- **Spare Parts Kits**

# Surface Compact Plus Water Swivel

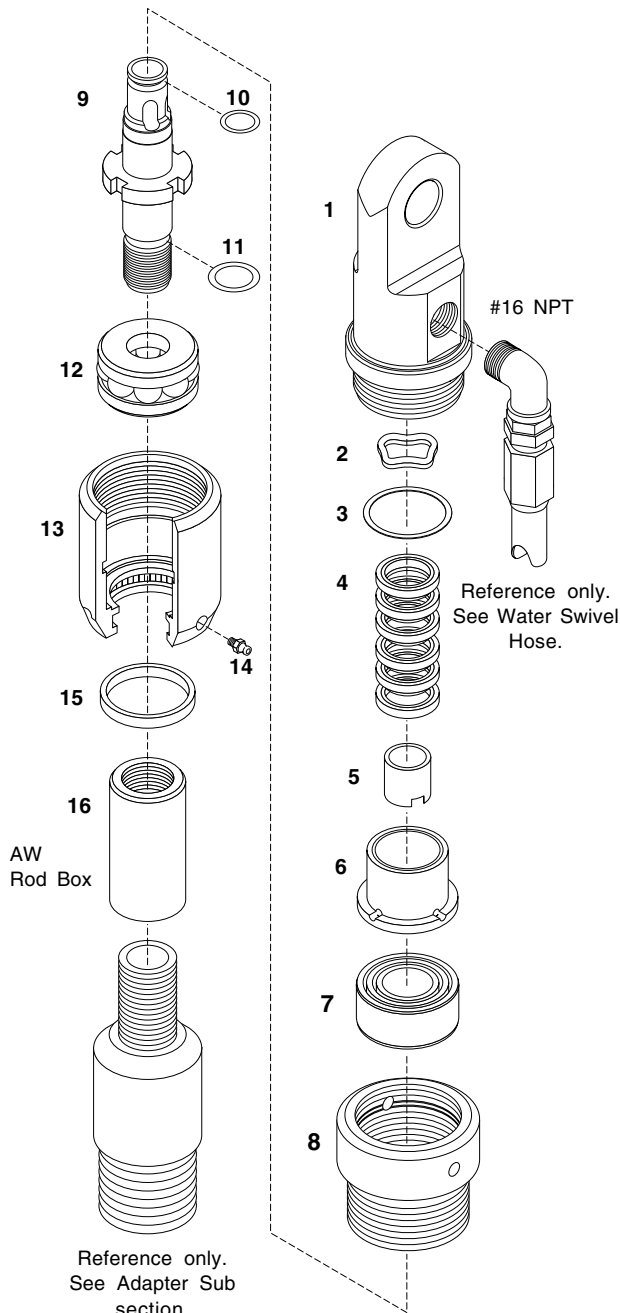


**Features:**

- Swivel cap complete with lifting bail for hoisting cable applications.
- #16 NPT hose connection.
- AW rod box spindle connection.
- Suitable for use with water or drilling mud.
- Easy servicing in the field with common tools.
- Majority of components are common with underground compact water swivel.

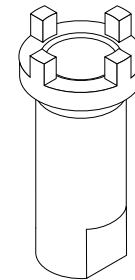
Assembly			kg	lbs
1-16	3546527	Compact Plus Water Swivel	7.6	16.7

Parts			Qty
1	3546529	Swivel Cap	1
2	23863	Washer Spring	1
3	19678	O Ring	1
4	23861	Swivel Packing	1
5	3546530	Wear Sleeve	1
6	23866	Packing Cage	1
7	20324	Ball Bearing	1
8	3546531	Upper Swivel Body	1
9	3546532	Spindle	1
10	20169	O Ring	1
11	28190	O Ring	1
12	3546533	Thrust Ball Bearing	1
13	3546534	Swivel Body	1
14	17447	Grease Fitting	1
15	25612	Felt Seal	1
16	3546677	Spindle Extension	1



**NOTE:** Thread on spindle is to be loctited.

Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.



Spindle Wrench reference. See Tools section.

# Underground Hi-Speed Water Swivel



**Features:**

- Suited for operation with drills equipped for hydraulic or pneumatic rod handling.
- #12 JIC hose connection.
- NRQHP/NQ rod pin direct connection.
- Seal adjustment not required.

Assembly			kg	lbs
1-8	3545448	Hi-Speed Water Swivel NRQHP R/P	3.6	8.0
1-8	3546545	Hi-Speed Water Swivel NQ R/P	3.6	8.0

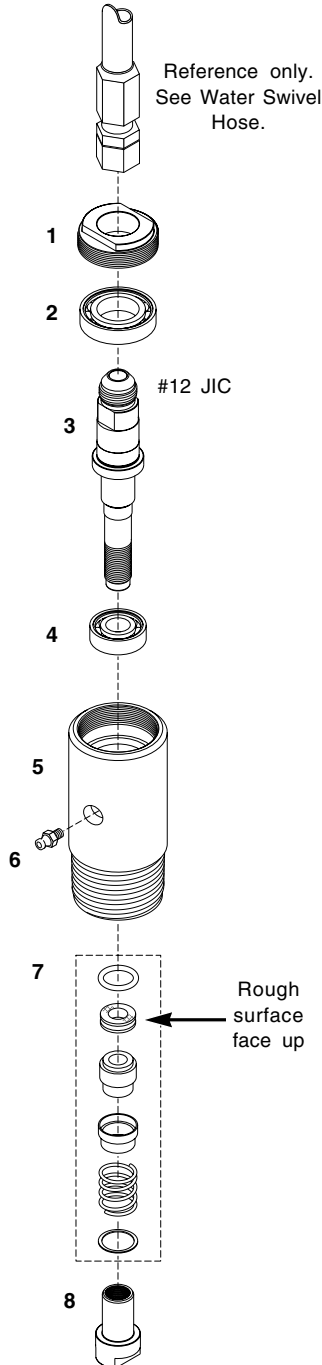
Parts			Qty	
1	3546497	Swivel Cap		1
2	24243	Ball Bearing		1
3	3546498	Swivel Stem		1
4	3546524	Ball Bearing		1
5	3545455	Swivel Body NRQHP		1
5	3546543	Swivel Body NQ		1
6	17447	Grease Fitting		1
7	3546525	Swivel Seal		1
8	3546477	Seal Retainer		1

**NOTE:** It is essential to use suitable lubricant when fitting the swivel seal like soft hand soap and water, or glycerine. Light mineral oil may also be used sparingly.

Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.

**⚠ WARNING** Ensure the rough surface of the face seal is towards the bearing.

Do not use hydrocarbon based liquids on ethylene propylene bellows, and do not use grease (including silicon grease) on any elastomer bellows.



# Underground Compact Plus Water Swivel



**Features:**

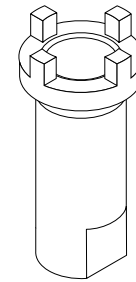
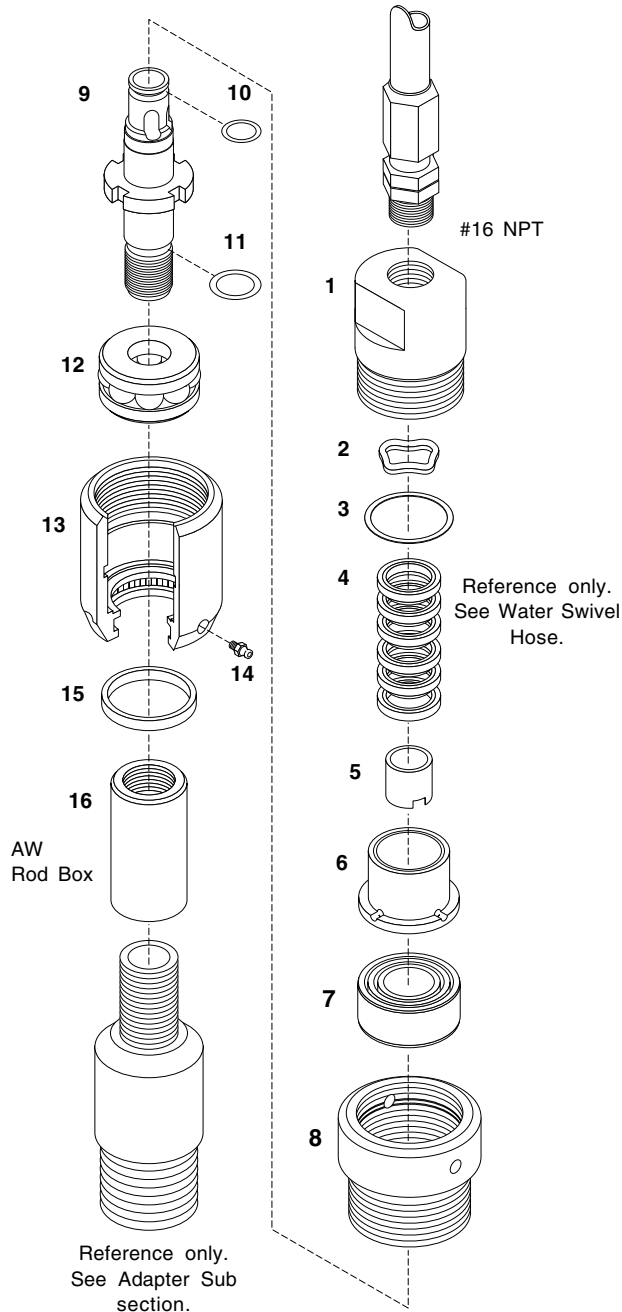
- Suited for operation with drills equipped for hydraulic or pneumatic rod handling.
- #16 NPT hose connection.
- AW rod box spindle connection.
- Suitable for use with water or drilling mud.
- Easy servicing in the field with common tools.
- Majority of components are common with surface compact water swivel.

Assembly			kg	lbs
1-16	3546528	Compact Plus Water Swivel	6.6	14.5

Parts			Qty
1	3542931	Swivel Cap	1
2	23863	Washer Spring	1
3	19678	O Ring	1
4	23861	Swivel Packing	1
5	3546530	Wear Sleeve	1
6	23866	Packing Cage	1
7	20324	Ball Bearing	1
8	3546531	Upper Swivel Body	1
9	3546532	Spindle	1
10	20169	O Ring	1
11	28190	O Ring	1
12	3546533	Thrust Ball Bearing	1
13	3546534	Swivel Body	1
14	17447	Grease Fitting	1
15	25612	Felt Seal	1
16	3546677	Spindle Extension	1

**NOTE:** Thread on spindle is to be loctited.

Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.



Spindle Wrench reference. See Tools section.



Water Saver Sub, reference only. See Adapter Sub section

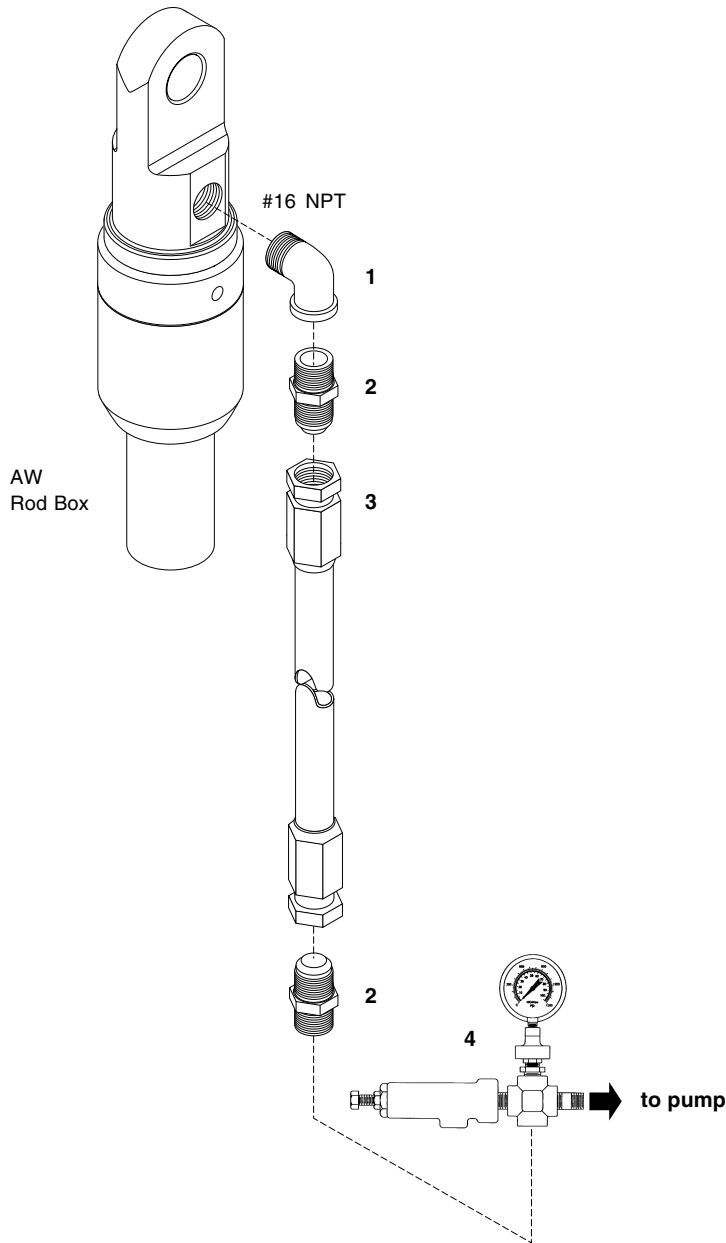
# Hose and Connections - Surface

**Features:**

- SAE 100R2 Type AT hydraulic hose.
- MASHA accepted synthetic rubber cover.
- 2000 psi maximum operating pressure.
- Industry standard #16 JIC female swivels for easy connect/disconnect.

Compact Plus Water Swivel to Pump				Qty
1	17003	#16 NPT 90° Street Elbow		1
2	19971	#16 NPT to #16 JIC-M Adapter		2
3	3542419	Water Swivel Hose, 9 m (30 ft)		1
4	18040	Discharge Assembly, #16 NPT		1

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.



# Hose and Connections - Underground

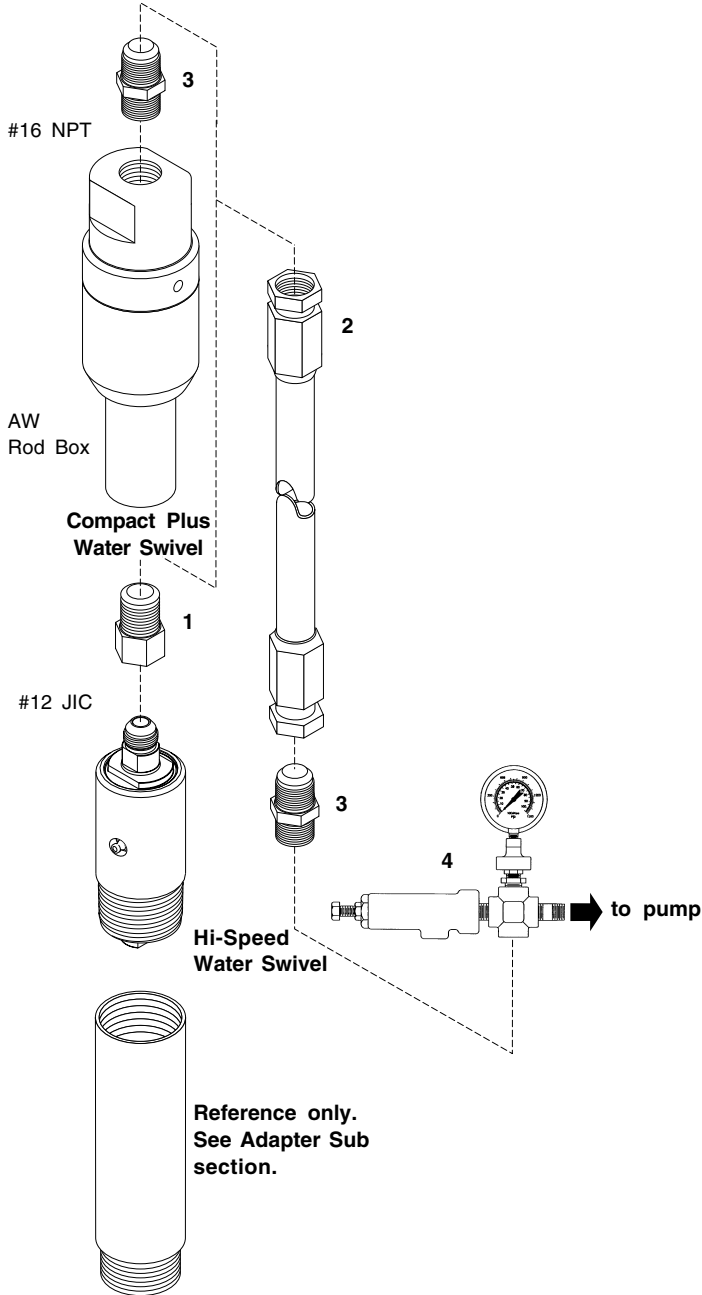
**Features:**

- SAE 100R2 Type AT hydraulic hose.
- MASHA accepted synthetic rubber cover.
- 2000 psi maximum operating pressure.
- Industry standard #16 JIC female swivels for easy connect/disconnect.

Compact Plus Water Swivel to Pump			Qty
2	3542419	Water Swivel Hose, 9 m (30 ft)	1
3	19971	#16 NPT-F to #16 JIC-M Adapter	2
4	18040	Discharge Assembly, #16 NPT	1

Hi-Speed Water Swivel to Pump			Qty
1	41361	#12 JIC-F Female to #16 JIC-M Adapter	1
2	3542419	Water Swivel Hose, 9 m (30 ft)	1
3	19971	#16 NPT-F to #16 JIC-M Adapter	1
4	18040	Discharge Assembly, #16 NPT	1

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.

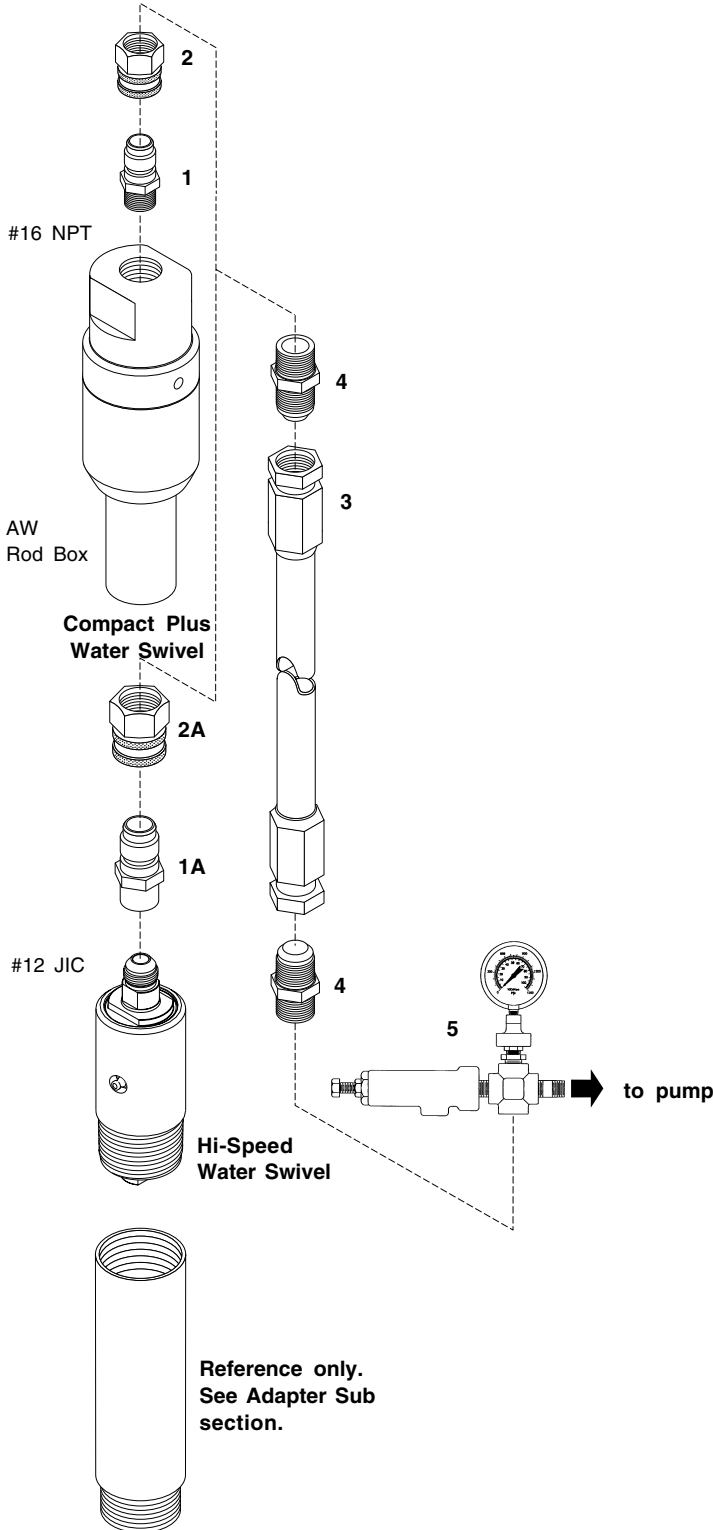




# Hose and Connections - Underground

**Features:**

- SAE 100R2 Type AT hydraulic hose.
- MASHA accepted synthetic rubber cover.
- 2000 psi maximum operating pressure.
- Industry standard #16 JIC female swivels for easy connect/disconnect.



**QUICK COUPLER CONNECTION**

Using quick couplers is recommended when drilling with underground coring systems. They allow for rapid connecting/disconnecting from water swivel to loading chamber when alternating between drilling and overshot pump-in.

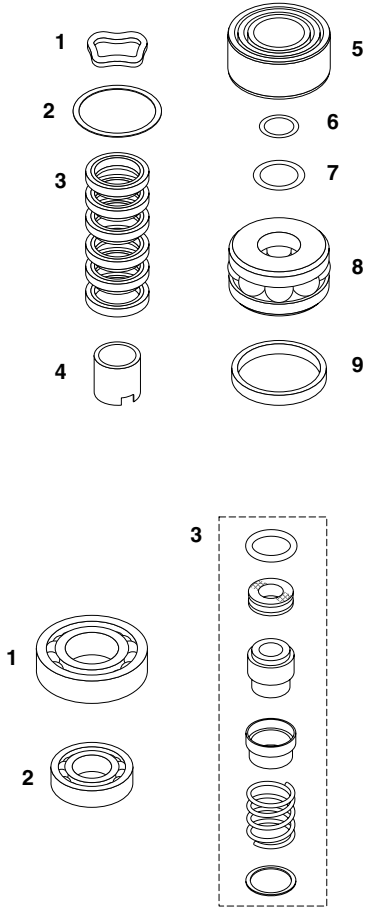
Compact Plus Water Swivel to Pump				Qty
1	104597	#16 NPT Quick Coupler Tip, Male		1
2	100876	#16 NPT Quick Coupler Body, Female		1
3	3542419	Water Swivel Hose, 9 m (30 ft)		1
4	19971	#16 NPT-F to #16 JIC-M Adapter		2
5	18040	Discharge Assembly, #16 NPT		1

Hi-Speed Water Swivel to Pump				Qty
1A	3545899	#16 NPT Quick Coupler Tip, Male		1
2A	100876	#16 NPT Quick Coupler Body, Female		1
3	3542419	Water Swivel Hose, 9 m (30 ft)		1
4	19971	#16 NPT -F to #16 JIC-M Adapter		2
5	18040	Discharge Assembly, #16 NPT		1

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.

# Spare Parts Kits

Spare Parts Kits are designed to meet the average requirements for 1 000 m (3,300 ft) of drilling.



Spare Parts Kit			kg	lbs
1-9	3546535	Compact Plus Water Swivel	—	—

Parts			Qty
1	23863	Washer Spring	2
2	19678	O Ring	6
3	23861	Swivel Packing	3
4	3546530	Wear Sleeve	2
5	20324	Ball Bearing	1
6	20169	O Ring	6
7	28190	O Ring	6
8	3546533	Thrust Bearing	1
9	25612	Felt Seal	2

**NOTE:** Refer to the ITHT Product Manual for additional operating information.

Spare Parts Kit			kg	lbs
1-3	3546541	U/G Hi-Speed Water Swivel	—	—

Parts			Qty
1	24243	Ball Bearing	1
2	3546524	Ball Bearing	1
3	3546525	Seal Assembly	1

**NOTE:** Refer to the ITHT Product Manual for additional operating information.

# Hoisting Plugs

- **Hoisting Plug Assemblies**  
Standard

# Hoisting Plug - Standard



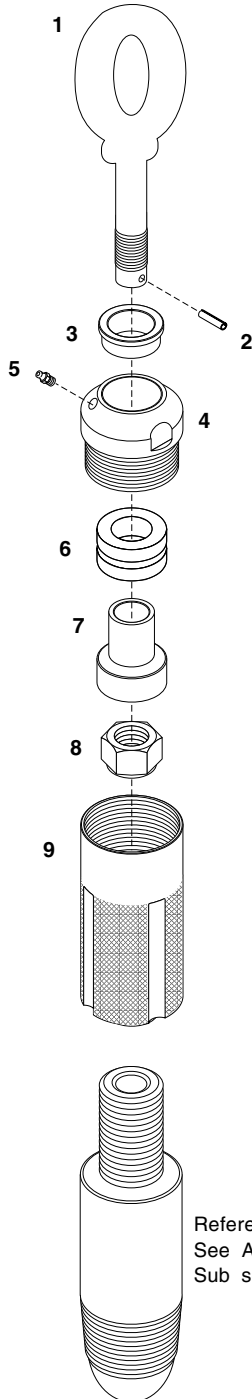
**Features:**

- Dependable, field proven product for surface drilling operations.
- See Tech Data for hoisting capacity.
- Designed with a 5:1 safety factor utilizing rated eye bolt.
- 12.5 mm (0.5 in) diameter down-angled vent is incorporated into the body to eliminate side spray from pressurized drilling fluid.
- Long-life thrust roller bearing provides pivot for ease of connecting and reduces hoisting cable winding during hoisting and lowering.
- NW rod box spindle connection.

Assembly			kg	lbs
1-9	3545380	Standard Hoisting Plug Assembly	9.8	21.6

Parts				Qty
1	3545376	Eye Bolt		1
2	37394	Spring Pin 1/4" x 2"		1
3	3545377	Wear Sleeve		1
4	3545378	Bearing Housing		1
5	17447	Hydraulic Grease Fitting		1
6	3542992	Thrust Bearing		1
7	3545379	Shaft Sleeve		1
8	3543012	Stover Lock Nut		1
9	3545381	Lower Housing		1

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.



Reference only.  
See Adapter  
Sub section.

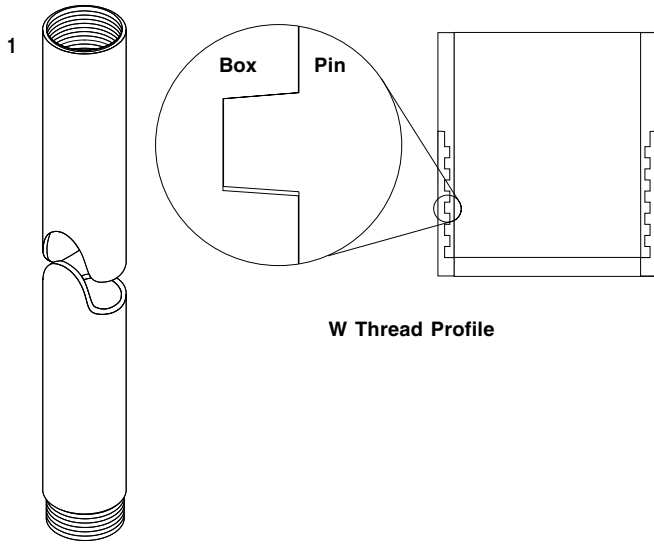
# Casing

- **NW Casing**
- **Casing Cutter**
- **Casing Drive Shoe**
- **Packaging Information**

# Casing

**Features:**

- Casing manufactured from 4130 chromium molybdenum alloy tubing, is a high strength product commonly used in geotechnical/hammering operations.



**W Thread Profile**

Metric Lengths			kg	lbs
1	66543	NW Casing, 1.5 m	19.2	42.3
1	66545	NW Casing, 3.0 m	38.4	84.7

Imperial Lengths			kg	lbs
1	26368	NW Casing, 2 ft	7.9	17.4
1	26366	NW Casing, 5 ft	19.5	43.0
1	26365	NW Casing, 10 ft	39.0	86.0

**4130 Material**

Imperial Lengths			kg	lbs
1	100603	NW Casing, 2 ft	7.9	17.4
1	100602	NW Casing, 5 ft	19.5	43.0
1	100601	NW Casing, 10 ft	39.0	86.0

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.

**Thread Lubrication**

- Z-50 Thread Compound (p/n 306486) is the recommended thread lubricant to reduce wear and the possibility of galling during drilling operations.

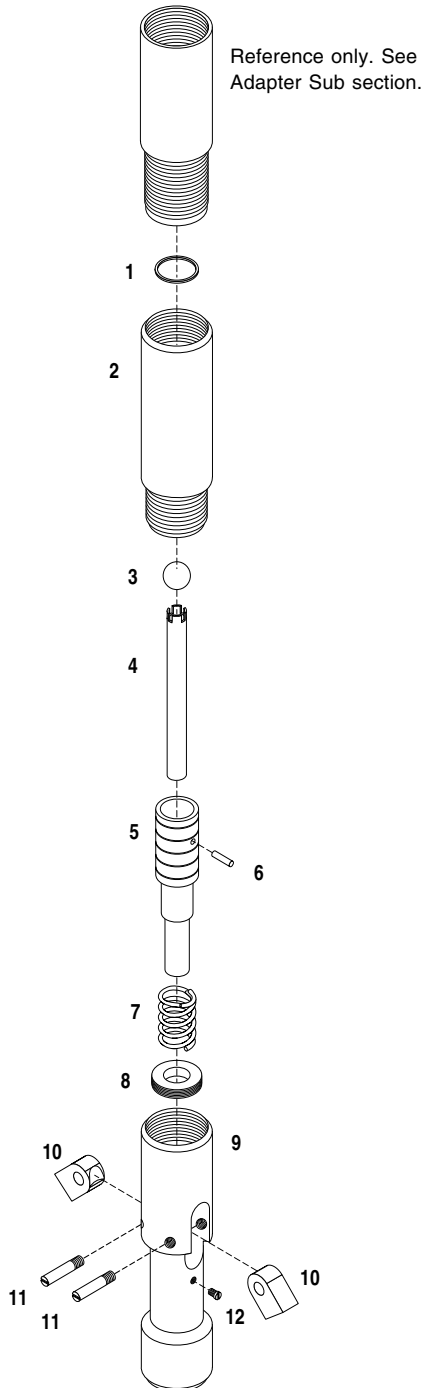
# Casing Cutter

**Features:**

- Used for cutting NW casing or HQ rod at any point in a drill hole when the entire string can not be retrieved.
- NQ rod box connection.

**Operations:**

Upon lowering the assembly, the cutting lugs are retracted inside the body by the spring. With low rotation (25 rpm) initially, the cutting lugs are forced out using water pressure, 1 380 kpa (200 psi). A drop in pressure indicates that the cutting operation is complete.



Assembly			kg	lbs
1-12	52777	NW Casing/"H" Rod Cutter Assembly	9.6	21.1

Parts			Qty
1	61460	Retaining Ring	1
2	52778	Plunger Case	1
3	26157	Stainless Steel Ball, 1-1/8"	1
4	14529	Water Tube	1
5	14528	Plunger	1
6	22834	Pin, 3/16" x 1-11/16"	1
7	14531	Spring	1
8	14530	Spring Rest	1
9	14526	Body	1
10	14532	Casing Cutter Lug	2
11	14588	Casing Cutter Pin	2
12	44663	Set Screw	1

**NOTE:** Refer to the ITHT Product Manual for additional operating information.

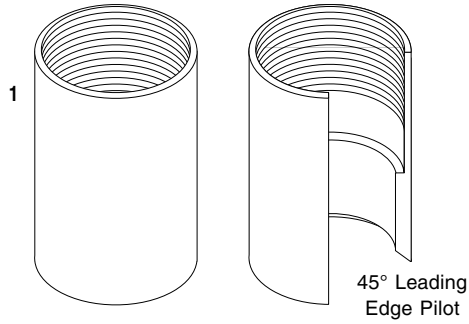
# Casing Drive Shoes

**Features:**

- Commonly used with drive hammers as a method of driving or advancing casing.
- Recommended for use with geotechnical soil sampling tools in clay, sand and other soft formations.
- Hardened surface with 45° leading edge pilot.

Casing Drive Shoe			kg	lbs
1	30108	NW Casing Drive Shoe	1.2	2.7

**NOTE:** Refer to the ITHT Product Manual for additional operating information.

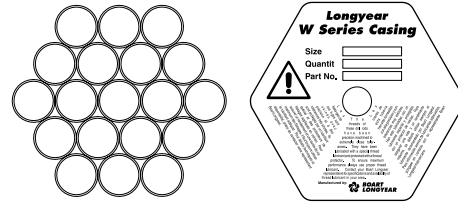




# Packaging Information

**Packing Features:**

- Casing is packaged and sold in “bundles” which offer product protection during shipping and handling.
- Casing is colour coded:  
NW standard - no paint  
NW 4130 - yellow stripe on each piece plus on bundle
- Protective plastic end caps cover box and pin threads sealing in thread lubrication. For ease of identification, casing protectors are color-coded orange.
- Heavy duty galvanized hexagon bundle end caps (p/n 41072) protect the casing ends.
- Casing box and pin threads are protected with Z-50 Thread Compound (p/n 306486) to avoid oxidation during shipping and storage. Z-50 is the recommended thread lubricant to reduce wear and the possibility of galling during drilling operations.
- Casing is coated with Krown KL73 rust inhibitor (p/n 3543544) to reduce product oxidation during shipping. When storing casing for long periods of time, it is recommended to reapply to the product surface for maximum protection.



For “NW” casing, a “bundle” contains 19 pieces.

**Bundle Specifications**

**3.0 m/10 ft CASING BUNDLE**

Dimensions (L x W x H) ..... 3160 x 470 x 406 mm (124.5 x 18.5 x 16 in)  
 Volume ..... 0.5947 m<sup>3</sup> (21 ft<sup>3</sup>)  
 Gross Weight ..... 760 kg (1,676 lbs)

**1.5 m/5 ft CASING BUNDLE**

Dimensions (L x W x H) ..... 1638 x 470 x 406 mm (64.5 x 18.5 x 16 in)  
 Volume ..... 0.3115 m<sup>3</sup> (11 ft<sup>3</sup>)  
 Gross Weight ..... 390 kg (860 lbs)



# Recovery Tools

- **Rod Recovery Taps**
- **Casing Recovery Taps**

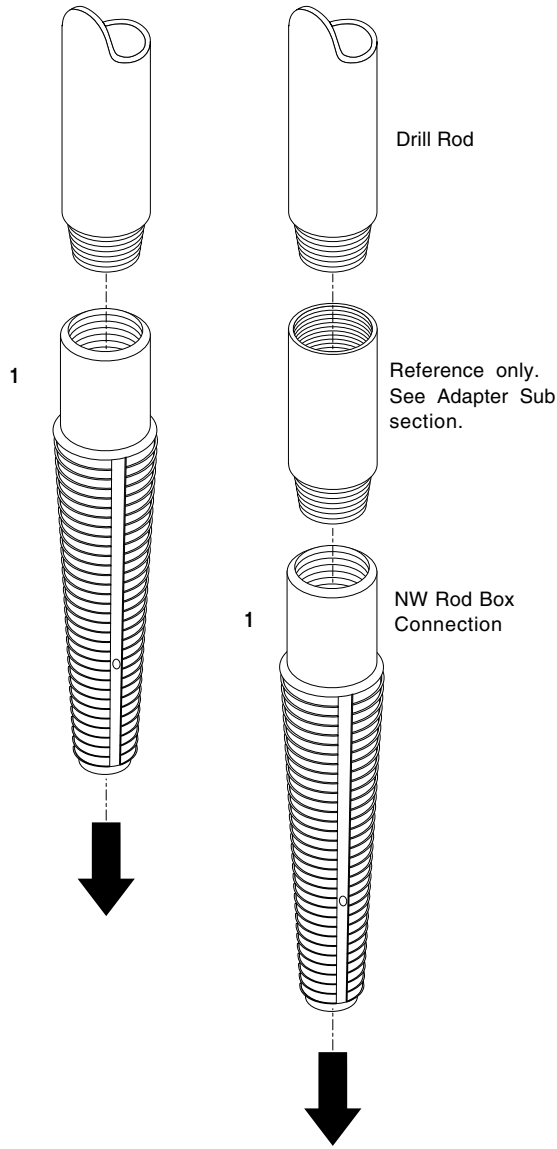
# Rod Recovery Taps

**Features:**

- Tapered, self-tapping thread allows for full penetration, improved recovery connection and longer tap life.
- Right hand thread.
- Connection for optional pilot bit supplied as standard.

Parallel Wall Rod Recovery Tap			kg	lbs
1	306073	NWJ/NW Rod Recovery Tap	—	—

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.



To stuck or broken NWJ/NW Rod.

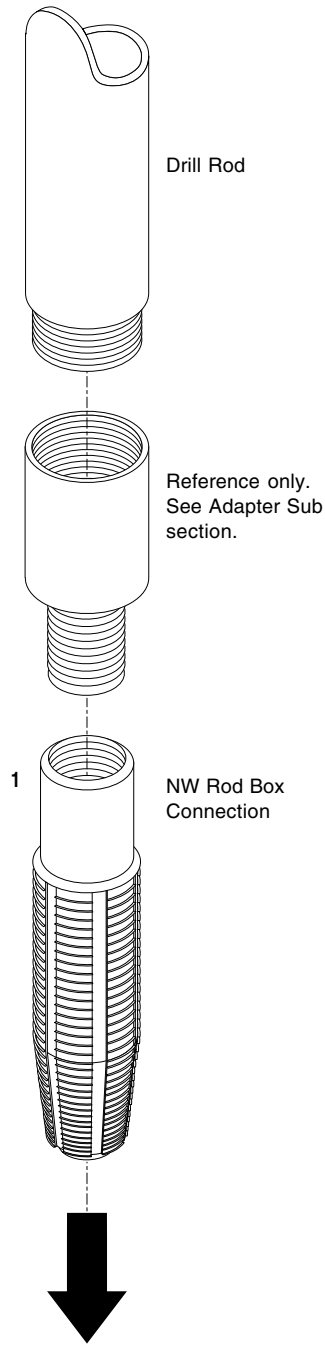
# Casing Recovery Taps

**Features:**

- Parallel wall, self-tapping thread allows for full penetration, improved recovery connection and longer tap life.
- NW rod box connection.
- Right hand thread.

Parallel Wall Casing Recovery Tap			kg	lbs
1	306066	NW Casing Recovery Tap	5.4	12.0

**NOTE:** Refer to the Tech Data section for technical specifications and the ITHT Product Manual for additional operating information.

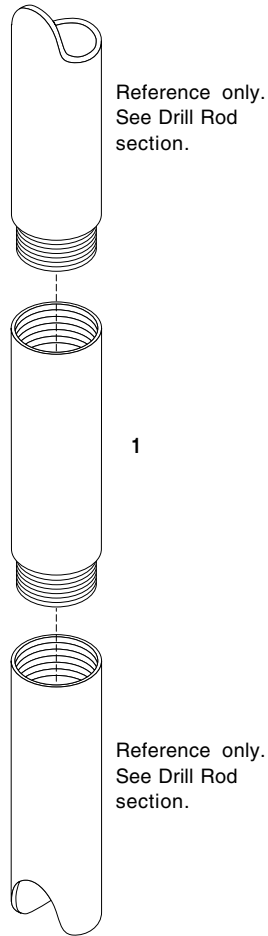




## Adapter Subs

- Drill Rod Adapter Subs
- Water Swivel Adapter Subs
- Hoisting Plug Adapter Subs
- Casing Adapter Subs
- Recovery Tool Adapter Subs
- Blank End Adapter Subs

# Drill Rod Adapter Subs



Drill Rod to Drill Rod			kg	lbs
1	54416	NWJ Rod Box to NW Rod Pin	3.2	7.0
1	54889	NWJ Rod Box to NQ Rod Pin *	3.3	7.3
1	54417	NW Rod Box to NWJ Rod Pin	2.7	6.0

\* Sub is used to adapt the NW casing cutter to NWJ Rod.

**NOTE:** Please contact your Boart Longyear sales representative for other Adapter Subs.

Refer to the ITHT Product Manual for additional operating information.



# Water Swivel Adapter Subs

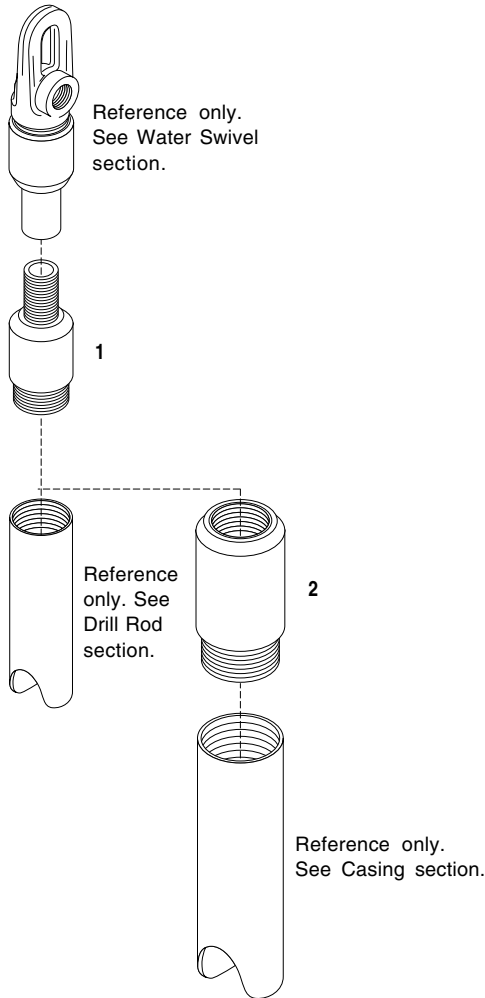
**Features:**

- The rod pin threads are electric induction hardened to ensure long life and minimize rod box thread galling, extending drill rod thread life and joint performance.

Compact Water Swivel to Drill Rod			kg	lbs
1	100372	AW Rod Pin to NWJ Rod Pin	4.0	9.0
1	8521	AW Rod Pin to NW Rod Pin	2.3	5.0

Adapter Sub to NW Casing			kg	lbs
2	54436	NWJ Rod Box to NW Casing Pin	5.0	11.0
2	30180	NW Rod Box to NW Casing Pin	5.0	11.0

**NOTE:** Please contact your Boart Longyear sales representative for other Adapter Subs.  
Refer to the ITHT Product Manual for additional operating information.



# Hoisting Plug Adapter Subs

**Features:**

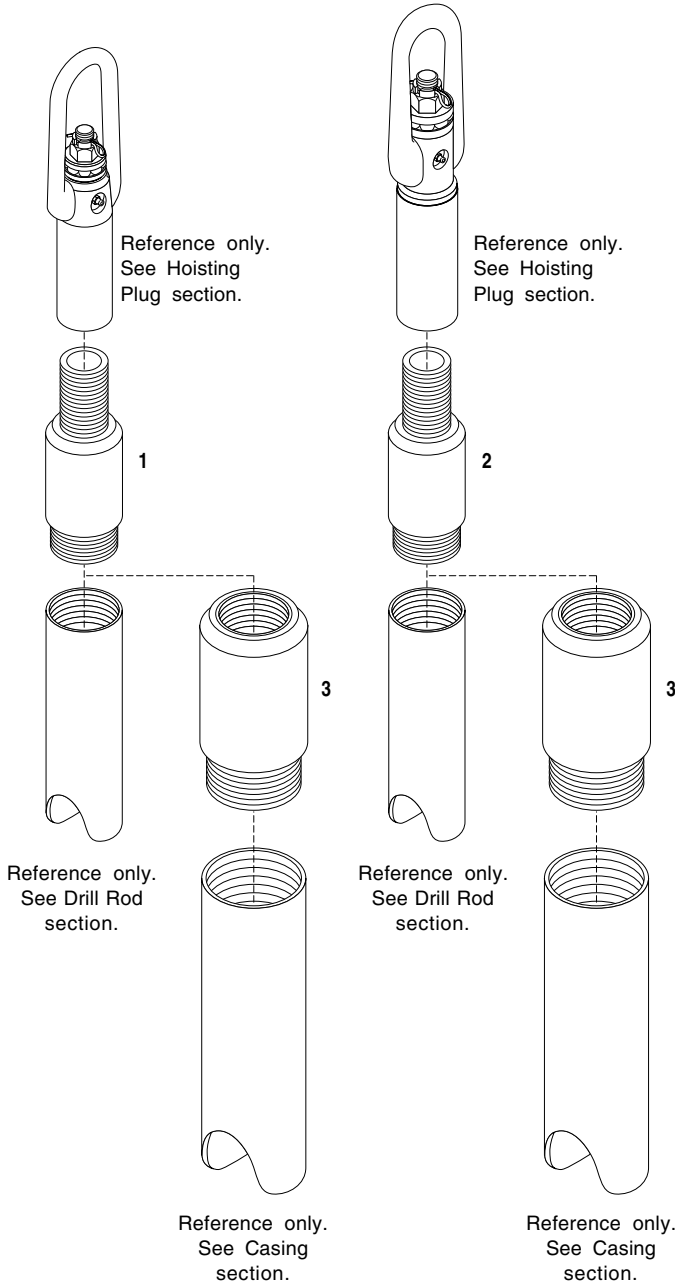
- The rod pin threads are electric induction hardened to ensure long life and minimize rod box thread galling, extending drill rod thread life and joint performance.

5,000 lb Hoisting Plug to Drill Rod			kg	lbs
1	100372	AW Rod Pin to NWJ Rod Pin	—	—
1	8521	AW Rod Pin to NW Rod Pin	4.0	8.8

10,000 lb Hoisting Plug to Drill Rod			kg	lbs
2	54841	NW Rod Pin to NWJ Rod Pin	—	—
2	15632	NW Rod Pin to NW Rod Pin	2.4	5.2

Adapter Sub to NW Casing			kg	lbs
3	54436	NWJ Rod Box to NW Casing Pin	—	—
3	30180	NW Rod Box to NW Casing Pin	3.3	7.4

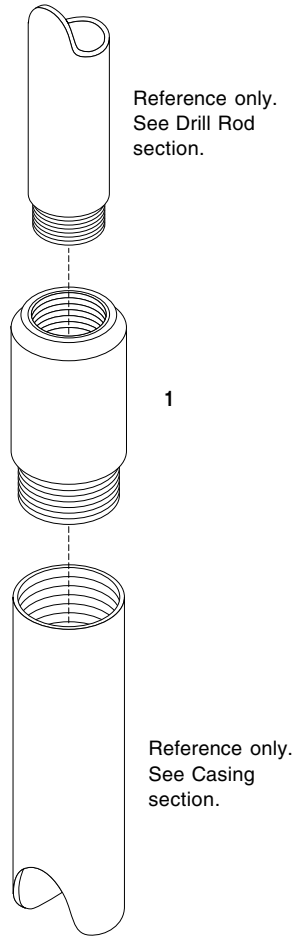
**NOTE:** Please contact your Boart Longyear sales representative for other Adapter Subs.  
Refer to the ITHT Product Manual for additional operating information.



# Casing Adapter Subs

**Features:**

- The casing pin threads are electric induction hardened to ensure long life and minimize rod box thread galling, extending drill rod thread life and joint performance.

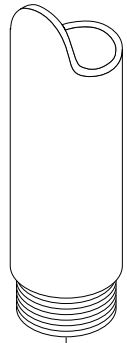


Drill Rod to NW Casing			kg	lbs
1	54436	NWJ Rod Box to NW Casing Pin	—	—

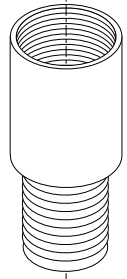
Drill Rod to HWT Casing			kg	lbs
1	55066	NWJ Rod Box to HWT Casing Pin	—	—

**NOTE:** Please contact your Boart Longyear sales representative for other Adapter Subs.  
Refer to the ITHT Product Manual for additional operating information.

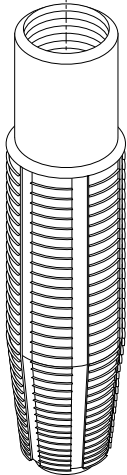
# Recovery Tool Adapter Subs



Reference only.  
See Drill Rod  
section



1



Reference only.  
See Recovery  
Tools section.

Drill Rod to Casing Recovery Tap			kg	lbs
1	54416	NWJ Rod Box to NW Rod Pin	—	—

**NOTE:** Refer to the ITHT Product Manual for additional operating information.

# Blank End Adapter Subs

**Application:**

Blank end adapter subs enable you to manufacture your own adapter subs for your requirements. They are supplied as rod pin or rod box to either SOLID BLANK bar end or TUBING BLANK end.

Solid bar end subs are for use with hoist plugs and water swivels ONLY. They are NOT for use as cross over subs. Thread stand off is adjusted for hand tight box/pin shoulder makeup.

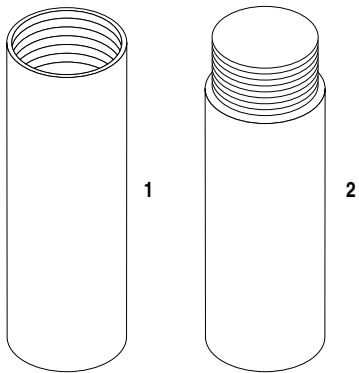
**⚠ WARNING** Do not bore solid pin end subs greater than 25 mm (1 inch) to avoid shrinkage due to heat treat stresses.

Drill Rod to Blank End Sub			kg	lbs
1	64481	NWJ Rod Box to Solid Blank	—	—
2	64480	NWJ Rod Pin to Solid Blank	—	—

**NOTE:** Please contact your Boart Longyear sales representative for other Adapter Subs.

Refer to the ITHT Product Manual for additional operating information.

**Solid Blank Bar End Sub**

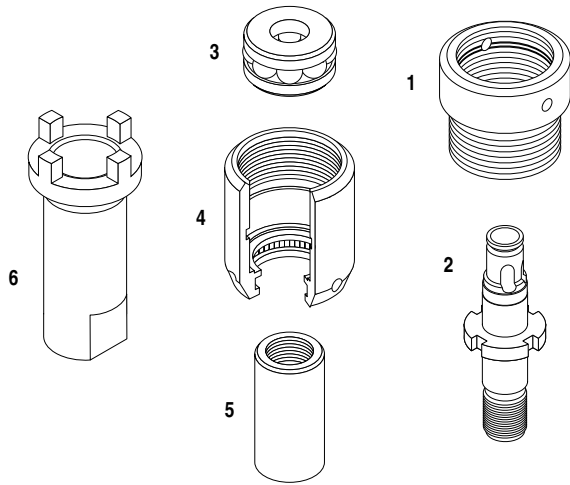




## Conversion Kits

- **Water Swivel**  
Compact to Compact Plus

# Conversion Kits



Water Swivel Conversion Kit			kg	lbs
1-6	3546682	Compact to Compact Plus	—	—

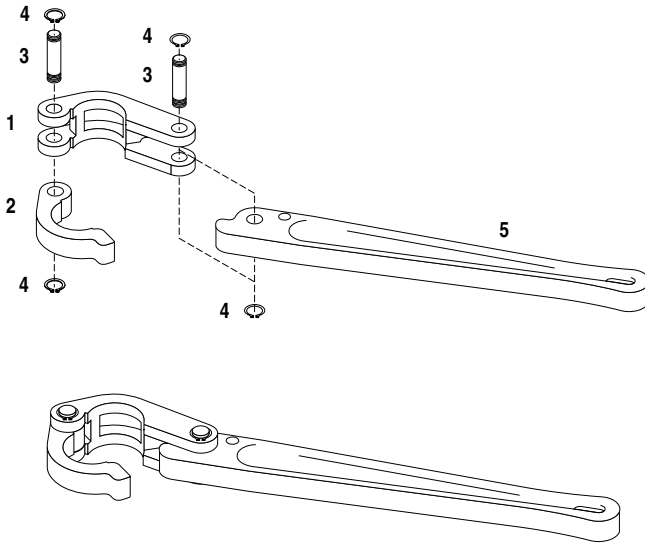
Parts			Qty
1	3546531	Upper Swivel Body	1
2	3546532	Spindle	1
3	3546533	Thrust Ball Bearing	1
4	3546534	Swivel Body	1
5	3546677	Spindle Extension	1
6	3546536	Spindle Wrench	1



## Tools

- Inner/Outer Tube Wrenches
- Pipe Wrenches
- Triple-Tube Pump-Out Groups
- Spindle Wrench

# Inner/Outer Tube Wrenches



Assembly			kg	lbs
1-5	25319	Full Grip NQ Inner Tube Wrench	1.7	3.7

Parts			Qty
1	48917	Stationary Jaw	1
2	29027	Swing Jaw	1
3	38581	Pin	2
4	38582	Retaining Ring	4
5	28251	Wrench Handle	1

Assembly			kg	lbs
1-5	28252	Full Grip NQ2" Inner Tube Wrench	2.0	4.4

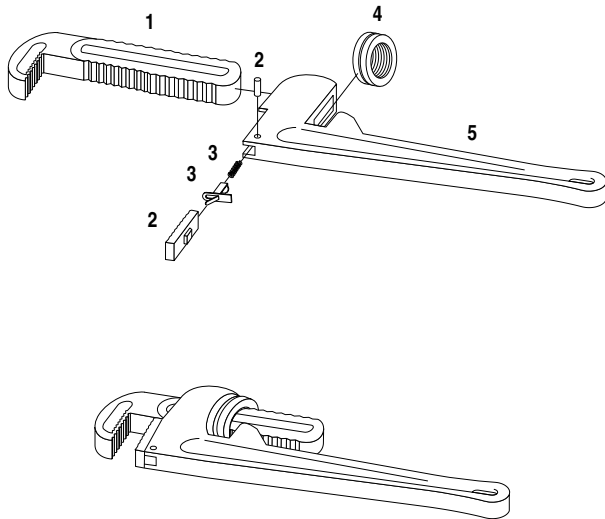
Parts			Qty
1	28253	Stationary Jaw	1
2	28254	Swing Jaw	1
3	38581	Pin	2
4	38582	Retaining Ring	4
5	28251	Wrench Handle	1

Assembly			kg	lbs
1-5	28255	Full Grip NQ/NQ2" Outer Tube Wrench	3.4	7.4

Parts			Qty
1	28256	Stationary Jaw	1
2	28257	Swing Jaw	1
3	38580	Pin	2
4	38583	Retaining Ring	4
5	28259	Wrench Handle	1

**NOTE:** Refer to the ITHT Product Manual for additional operating information.

# Pipe Wrenches



**Estimated Torque**

**45 KG (100 LB) HAND LOAD**

18" Heavy Duty Pipe Wrench .....	200 Nm (150 ft lbf)
24" Heavy Duty Pipe Wrench .....	270 Nm (200 ft lbf)
36" Heavy Duty Pipe Wrench .....	400 Nm (300 ft lbf)
48" Heavy Duty Pipe Wrench .....	540 Nm (400 ft lbf)

Assembly			kg	lbs
1-5	14942	18" Heavy Duty Pipe Wrench	2.6	5.8

Parts			Qty
1	14944	Hook Jaw	1
2	14943	Heel Jaw with Pin	1
3	200561	Coil and Spring	1
4	200562	Wrench Nut	1
5	—	Wrench Handle (included)	1

Assembly			kg	lbs
1-5	14945	24" Heavy Duty Pipe Wrench	4.3	9.4

Parts			Qty
1	14947	Hook Jaw	1
2	14946	Heel Jaw with Pin	1
3	200563	Coil and Spring	1
4	200564	Wrench Nut	1
5	—	Wrench Handle (included)	1

Assembly			kg	lbs
1-5	14948	36" Heavy Duty Pipe Wrench	8.4	18.6

Parts			Qty
1	14950	Hook Jaw	1
2	14949	Heel Jaw with Pin	1
3	200565	Coil and Spring	1
4	200566	Wrench Nut	1
5	—	Wrench Handle (included)	1

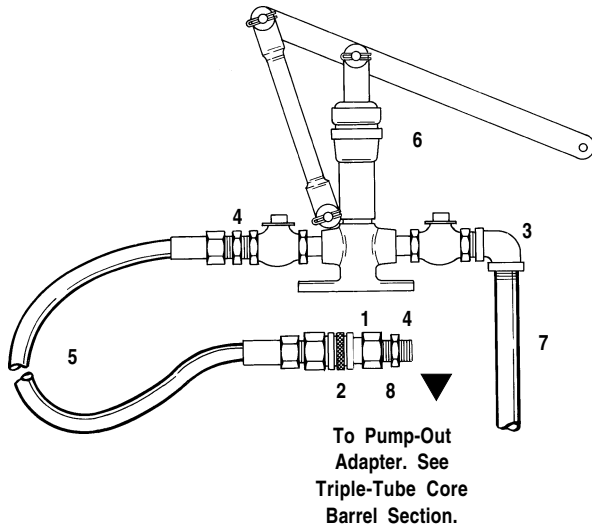
Assembly			kg	lbs
1-5	14951	48" Heavy Duty Pipe Wrench*	12.7	28.0

Parts			Qty
1	14953	Hook Jaw	1
2	14952	Heel Jaw with Pin	1
3	200567	Coil and Spring	1
4	200568	Wrench Nut	1
5	—	Wrench Handle (included)	1

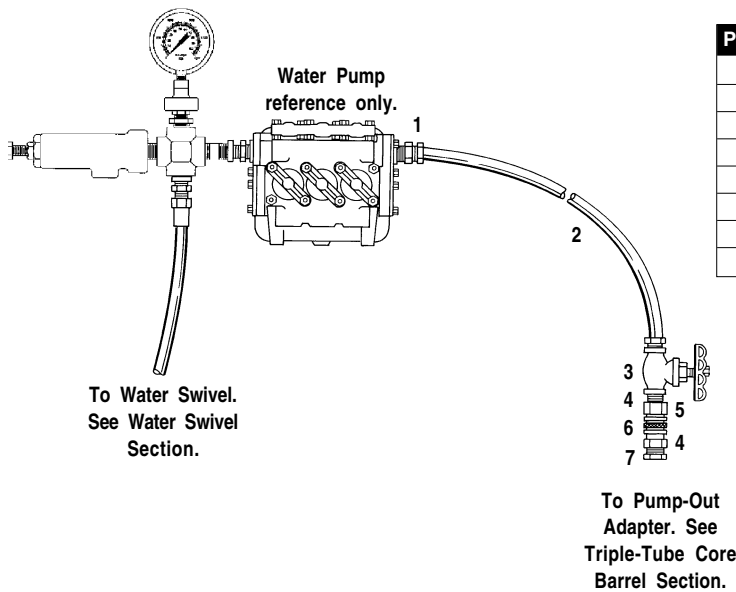
**NOTE:** Refer to the Tech Data section for drill rod pretorque and the ITHT Product Manual for additional operating information.

# Triple-Tube Pump-Out Groups

Fluid pressure supplied by optional hand pump group or pump-out group is required to pump the second inner tube (split lengthwise) out of the standard inner tube.



Hand Pump-Out Group			Qty
1-8	26738	Hand Pump-Out Group consisting of:	
1	29257	Quick Coupling 1/2" NPT-F	1
2	29258	Quick Coupling 1/2" NPT-M	1
3	20829	90° Street Elbow 3/4" NPT	1
4	21413	Hex Bushing 3/4" x 1/2"	2
5	26739	Hose Assembly, 8 ft x 1/2" NPT-M	1
6	26740	Hand Pump	1
7	31746	Suction Pipe 3/4" x 24" length	1
8	17905	Close Nipple 1/2" NPT	1



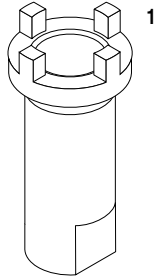
Pump-Out Group			Qty
1-7	26742	Pump-Out Group consisting of:	
1	18922	Hex Bushing 1-1/4" x 1/2" NPT	1
2	26739	Hose Assembly, 8 ft x 1/2" NPT-M	1
3	26741	Globe Valve 1/2" NPT	1
4	17905	Close Nipple 1/2" NPT	2
5	29257	Quick Coupling 1/2" NPT-F	1
6	29258	Quick Coupling 1/2" NPT-M	1
7	21413	Hex Bushing 3/4" x 1/2"	1

# Spindle Wrench

The spindle wrench is used to disassemble/reassemble the surface or underground compact plus water swivel for maintenance and repairs.

Deep Drive Socket			kg	lbs
1	3546536	Spindle Wrench	—	—

**NOTE:** Refer to the ITHT Product Manual for additional operating information.





## Technical Data

- **Nominal Dimensions**
- **Drilling Guidelines**
- **Rod Operating Specifications**

# Technical Data

## Nominal Dimensions

<b>HOLE DIAMETER (REAMING SHELL GAUGE)</b> .....	75.57/75.82 mm (2.975/2.985 in)
<b>HOLE VOLUME (REAMING SHELL GAUGE)</b> .....	4.50 L/m (0.36 gal/ft)
<b>CORE DIAMETER/BIT INSIDE DIAMETER</b>	
NQ/NQU .....	47.50/47.75 mm (1.870/1.880 in)
NQ3 .....	44.96/45.21 mm (1.770/1.780 in)
NQ2"/NQ2"U .....	50.55/50.80 mm (1.990/2.000 in)
<b>BIT OUTSIDE DIAMETER</b> .....	75.31/75.57 mm (2.965/2.975 in)
<b>BIT KERF WIDTH</b>	
NQ .....	13.9 mm (0.548 in)
NQ3 .....	15.2 mm (0.598 in)
NQ2" .....	12.4 mm (0.488 in)
<b>CORE BARREL OUTER TUBE</b>	
Outer Diameter .....	73.2 mm (2.88 in)
Outer Diameter Full Hole .....	75.2 mm (2.96 in)
Inner Diameter .....	60.5 mm (2.38 in)
<b>Minimum Flat Diameter - Full Hole</b> .....	72.09 mm (2.838 in)
<b>CORE BARREL INNER TUBE</b>	
<b>Outer Diameter</b>	
NV/NV3 .....	55.6 mm (2.19 in)
NV2" .....	57.2 mm (2.25 in)
<b>Inner Diameter</b>	
NV/NV3 .....	50.0 mm (1.97 in)
NV2" .....	52.3 mm (2.06 in)
<b>ROD BODY</b>	
Rod Body Outer Diameter .....	66.7 mm (2.63 in)
Rod Body Inner Diameter .....	60.3 mm (2.25 in)
<b>ROD JOINT</b>	
Rod Joint Pin Length .....	63.5 mm (2.50 in)
Rod Joint Inner Diameter .....	28.6 mm (1.13 in)
Threads per Inch .....	4
<b>ROD WEIGHT</b> .....	7.91 kg/m (5.31 lb/ft)
<b>ROD CONTENT VOLUME</b> .....	2.86 L/m (0.23 gal/ft)
<b>ROD DISPLACEMENT VOLUME</b> .....	0.97 L/m (0.08 gal/ft)
<b>ROD/HOLE ANNULUS VOLUME</b> .....	0.67 L/m (0.05 gal/ft)
<b>NW CASING</b>	
Outer Diameter .....	88.9 mm (3.5 in)
Inner Diameter .....	76.2 mm (3.0 in)
Weight .....	12.8 kg/m (8.6 lb/ft)

## Drilling Guidelines

<b>RECOMMENDED FLOW</b>	
.....	30 to 38 L/min (8 to 10 gpm)
<b>BIT WEIGHT RANGE</b>	
.....	14 to 27 kN (3,000-6,000 lbf)
<b>BIT PENETRATION @ 1350 rpm</b>	
Rate @ 80 r/cm (200 rpi) .....	17 cm/min (6.75 in/min)
Rate @ 100 r/cm (250 rpi) .....	14 cm/min (5.4 in/min)
<b>BIT PENETRATION @ 800 rpm</b>	
Rate @ 80 r/cm (200 rpi) .....	10 cm/min (4 in/min)
Rate @ 100 r/cm (250 rpi) .....	8 cm/min (3.2 in/min)
<b>WATER SWIVEL ROTATING LOAD RATING</b>	
<b>Compact Plus</b> .....	4 540 kg (10,000 lbs)
<b>HOISTING PLUG STATIC LOAD RATING</b>	
Standard .....	5:1 = 6,800 kg (15,000 lb)
.....	3:1 = 11 300 kg (25,000 lb)

## Rod Operating Specifications

<b>RATED MAXIMUM DEPTH</b>	
NWJ .....	1 500 m (4,921 ft)
<b>RATED MAXIMUM DRILLING PULLBACK</b>	
NWJ .....	222 kN (50,000 lbf)
<b>RATED MAXIMUM DRILLING TORQUE</b>	
NWJ .....	1355 Nm (1000 ft lbf)
<b>RECOMMENDED MINIMUM MAKE-UP TORQUE to 1 000 m (3,280 ft) depth*</b>	
NWJ .....	600 Nm (442 ft lbf)
<b>MIDBODY MINIMUM YIELD STRENGTH</b>	
NWJ .....	621 MPa (90,000 psi)
<b>MIDBODY MINIMUM TENSILE STRENGTH</b>	
NWJ .....	723 MPa (105,000 psi)
<b>JOINT MINIMUM YIELD STRENGTH</b>	
NWJ .....	657 MPa (100,000 psi)
<b>JOINT MINIMUM TENSILE STRENGTH</b>	
NWJ .....	755 MPa (115,000 psi)
<b>PURE TENSION TO FAILURE**</b>	
NWJ .....	712 kN (160,000 lbf)
<b>PURE TORSION TO FAILURE**</b>	
NWJ .....	9491 Nm (7000 ft lbf)

**NOTE:** Rod capacities and failure loads were determined by independent facility. A safety factor has been applied for the above ratings (applies to new, unused Boart Longyear rods, in a straight vertical down hole, assuming compliance to ITHT Product Manual and standard core drilling practices). Burst and collapse pressure ratings will be reduced under drilling loads. Operating torque should not exceed make-up torque.

\* Increase make-up torque to match operating torque as depth increases.

\*\* These failure loads are for product comparison purposes ONLY. Drilling loads should not exceed rating values.

## Pressure Ratings (per API bulletin 5C3)

<b>BURST PRESSURE - Box Shoulder</b>	
NWJ Rod .....	78.8 MPa (11,400 psi)
NW Casing .....	29.1 MPa (4,214 psi)
<b>BURST PRESSURE - Midbody</b>	
NWJ Rod .....	69 MPa (10,000 psi)
NW Casing .....	65.4 MPa (9,480 psi)
<b>COLLAPSE PRESSURE - Midbody</b>	
NWJ Rod .....	70.7 MPa (10,250 psi)
NW Casing .....	67.6 MPa (9,808 psi)