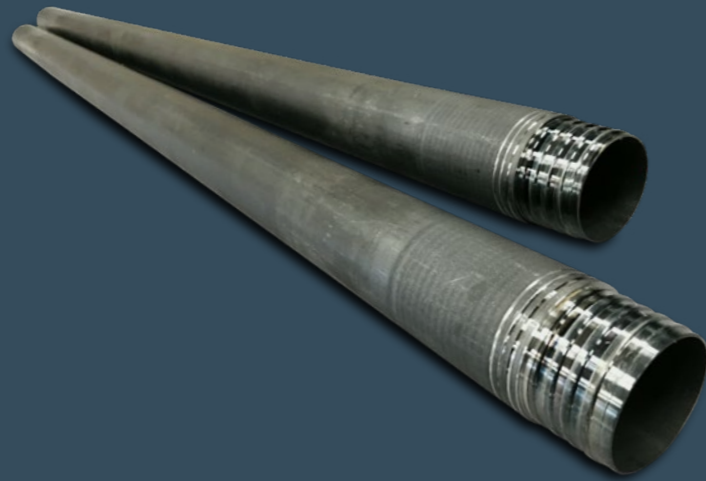


R Rods & Subs

In-The-Hole tools



R and CR series ultra deep hole drilling wireline rods



Wireline drill rods

Today's drilling industry has extremely high expectations for the people, equipment and the tools they use. When it comes to drill rods, it's very simple, they just need to perform, and nothing else is acceptable. When the failure of a rod could mean the loss of a drill hole and possibly the revenues that comes with it, there is no room for mistakes, lower quality or sub-standard products. Epiroc has listened to the industry and we understand what our customers needs are. This is why we make no compromise on our rods. We only use very high quality steel from world class suppliers and manufacture our drill rods to the highest possible standards. All this to ensure quality, reliability and performance. We worry about our wireline rods so our customers don't have to.

R-series (parallel wall rods)

- High depth capacity and demanding drilling.
- Flexible thread suitable for deviation drilling.
- Works in Shallow hole just as well as O type thread but with way more pull back and torsion capacity.
- R thread is perfectly matched to our lightweight wire line drill rods. CR rods with a saving of 13 - 27% in weight while keeping all of the proven R thread performance is the ideal drill rod for deep hole applications or when weight is an issue.

CR-series (internally upset wall rods)

- CR rods will make flight-in contract easier and less costly.
- CR rods are also a good option when customers need to exceed the drills lifting/depth capacity on a project.
- CR rods reduce significantly fuel consumption and put less strain on the engine and drill in general.

Through heat treated and case hardened rods

- R and CR rods goes through 2-stage heat treatment process.
- Initial through heat treatment on both ends provides superior mechanical properties due to change in steel microstructure.
- Final case hardening on pin end and 4.5" above prevents from thread galling during make and break operations and dramatically increases resistance for thread wear as well as body above pin thread where usually clamps and wrenches are placed.

Quality

We use only top rated seamless cold drawn steel blanks from world class suppliers. Epiroc's uncompromising standards in all aspects of material specifications ensure our customers are getting the very best we have to offer.



Uncompromising straightness

Straight rods will reduce or eliminate vibration caused by uneven drill rods and the many serious problems associated with it. Epiroc's extremely high standard provides a truly straight wire line drill rod consistently over a complete rod string.

Hoop stress

The hoop stress is the force exerted circumferentially. When this value is high, in the case of lower quality rods, it can cause the rods to deform under drilling stress and become unusable. With Epiroc's stringent requirements and steel material standards we make sure every single rod we manufacture has a very low hoop stress value. This will eliminate potential bending of the rods after drilling has begun. This is crucial for all drilling systems but even more so for "top drive" drilling equipment as they have a tendency to deform the rods easier by design.

100% quality controlled

We control and verify every rod thread and adapter we make. This is to ensure a perfect fit every time our products are treaded together. We strongly recommend to our customer that they don't mix Genuine Epiroc drill rods with other manufacturers rod to get the best performance and useful life.

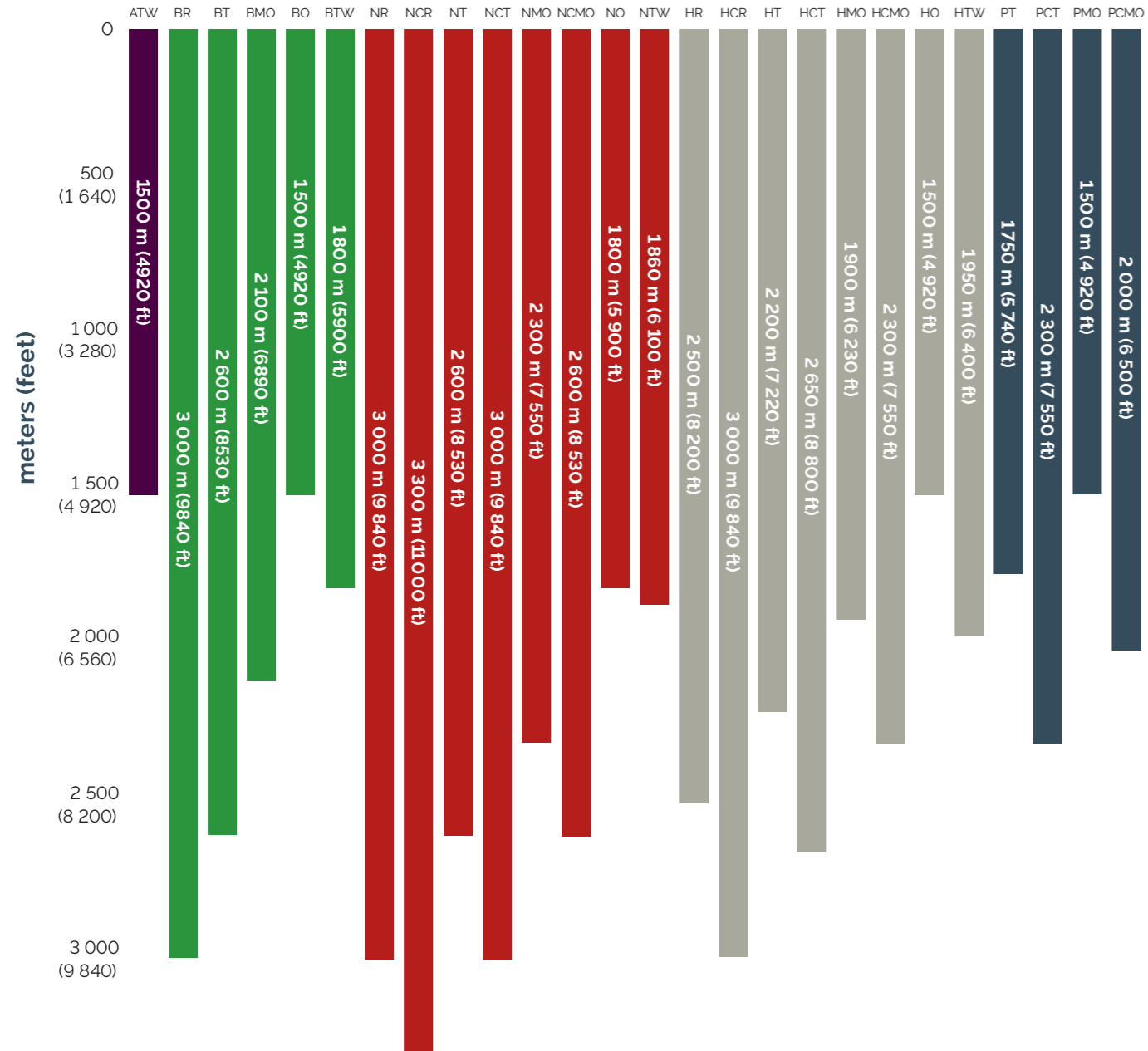
Maintenance and proper care of the rods, particularly the threads are crucial to maximize the life and maintain the torsion and traction capacity of our rods. We ensure, with our manufacturing process that the threads have some initial protection against tread damage but we very strongly recommend using, from the very first use, proper care and maintenance. Keeping the threads clean and without contaminants in addition to using high quality

- Thread grease will keep your investment performing to its best for the longest possible time.
- Do not mix drill rods from different procedures or specifications. This may lead to failure or loss of drill string down the hole.
- The use of high quality drill rod thread grease is essential to drill rod thread performance and durability. Failure to use it will cause premature wear and galling. For best results we recommend the use of thread grease containing metal particulate, ideally zinc, copper or graphite compositions.

Compatibility

Pin and box threaded ends of R rods are fully compatible with RQ rods existing on the market.

Wireline drill rod depth capacity

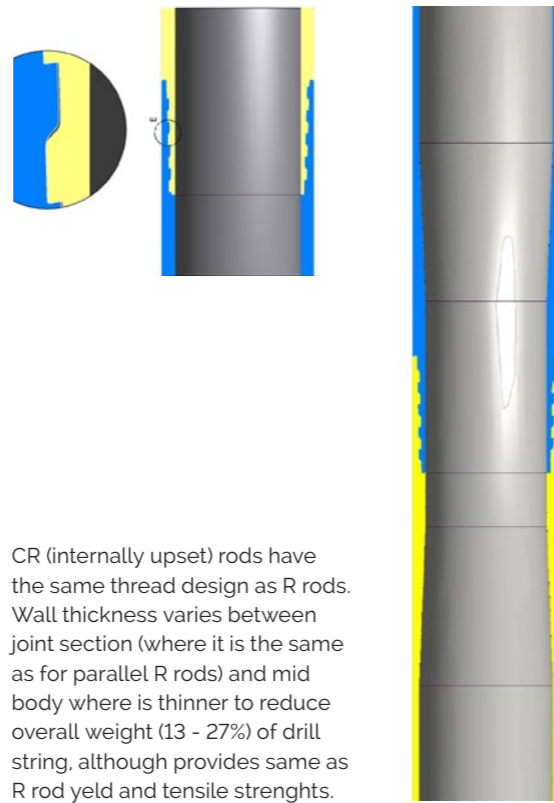


Depth capacity values for vertical and straight holes filled with water



R Wireline drill rods

R Rod	Length	Part no.	Tube walls
Metric	m		
■ BR	0.6 m	3760014014	Parallel
■ BR	1.5 m	3760014015	Parallel
■ BR	3.0 m	3760014016	Parallel
■ NR	0.6 m	3760014020	Parallel
■ NR	1.5 m	3760014021	Parallel
■ NR	3.0 m	3760014022	Parallel
■ NCR	3.0 m	3760014030	Internally upset
■ HR	0.6 m	3760014026	Parallel
■ HR	1.5 m	3760014027	Parallel
■ HR	3.0 m	3760014028	Parallel
■ HCR	3.0 m	3760014050	Internally upset
Imperial	ft	Part no.	Tube walls
■ BR	2 ft	3760014011	Parallel
■ BR	5 ft	3760014012	Parallel
■ BR	10 ft	3760014013	Parallel
■ NR	2 ft	3760014017	Parallel
■ NR	5 ft	3760014018	Parallel
■ NR	10 ft	3760014019	Parallel
■ NCR	10 ft	3760014029	Internally upset
■ HR	2 ft	3760014023	Parallel
■ HR	5 ft	3760014024	Parallel
■ HR	10 ft	3760014025	Parallel
■ HCR	10 ft	3760014049	Internally upset



CR (internally upset) rods have the same thread design as R rods. Wall thickness varies between joint section (where it is the same as for parallel R rods) and mid body where is thinner to reduce overall weight (13 - 27%) of drill string, although provides same as R rod yield and tensile strengths.

Technical specifications

	BR	NR (NCR)	HR (HCR)
Rated maximum depth (m/ft)	3 000/9 840	3 000 (3 300)/9 840 (11 000)	2 500 (3 000)/8 200 (9 840)
Outer diameter (mm/in)	55.6/2.188	69.9/2.750	88.9/3.500
Mid body inner diameter (mm/in)	46/1.811	60.3 (61.8)/2.374 (2.433)	77.8 (80.9)/3.063 (3.185)
Inner (tool joint) diameter (mm/in)	46/1.811	60.3/2.374	77.8/3.063
3m rod weight (kg/lbs)	179/39.5	22.7 (19.9)/50 (43.9)	34.3 (25)/75.6 (55.1)
Threads per inch	3	3	3
Raw material minimum specification			
Yield strength minimum	690 Mpa		
Tensile strength minimum	813 Mpa		
Joint destructive test results			
Ultimate traction (kN)	252	335	510
Ultimate torsion (kN/m)	1 530	2 450	3 530
Minimum make-up torque (Nm/Ft-Lbs)	405/300	600/442	1 010/750



All R and CR rods can be identified by 3 grooves machined at pin end.

Final case hardening on pin end and 4.5" above prevents from thread galling during make and break operations and dramatically increases resistance for thread wear as well as body above pin thread where usually clamps and wrenches are placed.

Rod box to rod pin

Rod box size	Part no.		
	■ BR pin	■ NR pin	■ HR pin
AWJ		3760014312	
ATW	3760014201	3760014241	
BW			3760014281
BTW	3760014202		
BO	3760014203	3760014242	
BMO	3760014204	3760014244	
BT	3760014205	3760014243	
NW			3760014285
NMO	3760014206	3760014247	3760014284
NO	3760014207	3760014245	3760014282
NT	3760014208	3760014246	3760014283
NTW		3760014248	
HO		3760014249	3760014286
HT		3760014250	3760014287
HMO		3760014251	3760014288
PO			3760014289

Water swivel and hoisting plug adapters

Rod pin size	Part no.		
	■ BR PIN	■ NR PIN	■ HR PIN
AW	3760014209	3760014042	3760014214
AW (350 mm)		3760014252	
BW	3760014210	3760014253	3760014290
NW	3760014211	3760014254	3760014291
NW (300 mm long)	3760014212	3760014255	3760014292
NW (Bul Nose)	3760014213	3760014256	3760014293

Rod pin to rod box

Rod pin size	Part no.		
	■ BR box	■ NR box	■ HR box
AWJ	3760014215		
AW	3760014216	3760014257	
BMO	3760014217	3760014260	
BO	3760014218	3760014258	
BT	3760014219	3760014259	
BTT	3760014220		
BW	3760014221		3760014295
NO	3760014223	3760014263	3760014296
NT	3760014224	3760014264	3760014297
NMO	3760014225	3760014265	3760014298
NR	3760014227		
N4		3760014262	
NW		3760014041	3760014299
HO		3760014267	3760014301
HT		3760014268	3760014302
HMO		3760014269	3760014303
HR		3760014273	
PMO			3760014305

Casing pin to rod box

Rod pin size	Part no.		
	■ BR box	■ NR box	■ HR box
BW	3760014222	3760014261	
NW		3760014266	3760014300
HW		3760014270	3760014304
HWT			3760014305
PW			3760014306

Fishing taps with rod box connection

Casing/rod size	Part no.		
	■ BR box	■ NR box	■ HR box
BW/N - casing type	3760014226		
NW/H - casing type		3760014272	
NW/H - combination tap		3760014271	
HW/P - casing type			3760014307
HW/P - combination tap			3760014308

Locking couplings standard steel full hole

Lcoupl type	Part no.		
	■ BR	■ NR	■ HR
Discovore underground	3760014231	3760017218	3760017330
Universal surface (tang)	3760014035	3760014037	3760014039
Excure/O-series underground	3760014036	3760014038	3760014040

Locking couplings diamond impregnated

Lcoupl type	Part no.		
	■ BR	■ NR	■ HR
Universal surface (tang)	3760014228	3760014274	3760014309
Excure/O-series underground	3760014229	3760014275	3760014310

Stuffing box adapter & dimension kit

Product type	Part no.		
	■ BR	■ NR	■ HR
Stuffing box adapter	3760014313	3760014314	3760014315
Stuffing box dimension kit	3760015755	3760015756	3760015757

PRO 18+ & 18/O UG water swivel adapters

	Part no.		
	■ BR	■ NR	■ HR
WS adapter	3760014043	3760014044	3760014045
PRO 18+ WS complete with coupling	3760016547	3760016543	3760016553

Rod shoes

	Part no.		
	■ BR	■ NR	■ HR
RSHOE	3760954091	3760954094	3760954096

Tricone bit adapter

	Part no.		
	■ BR	■ NR	■ HR
2 3/8" API reg box	N/A	N/A	3760014294

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Performance unites us, innovation inspires us, and commitment drives us to keep moving forward. Count on Epiroc to deliver the solutions you need to succeed today and the technology to lead tomorrow.

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