



BD Drill

REVERSE CIRCULATION HAMMERS AND BITS

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Black Diamond Drilling Services Australia Pty Ltd



Reverse Circulation Hammers & Bits

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Selecting the Right Hammer

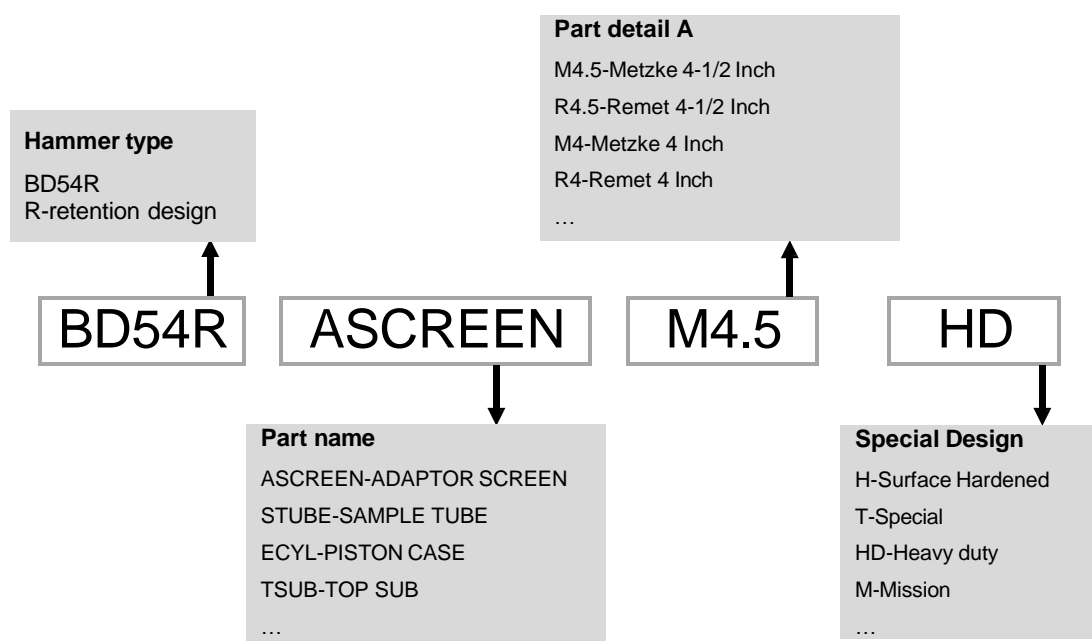
Black Diamond's reverse circulation hammers are specifically designed for all kind of exploration drilling (deep hole and pit grade control applications).

Whether you are exploring potential sites or working an existing mine, the BDDRILL RC hammer will assure high performance, exceptional reliability and dependable support.

Product codes

Product codes are a valuable tool to describe and identify the product. In the code structure we have tried to describe the product features with Alpha-numerical system that is not always 100% logical, but with the attached key you will be able to find the product you are looking for or a suitable alternative product.

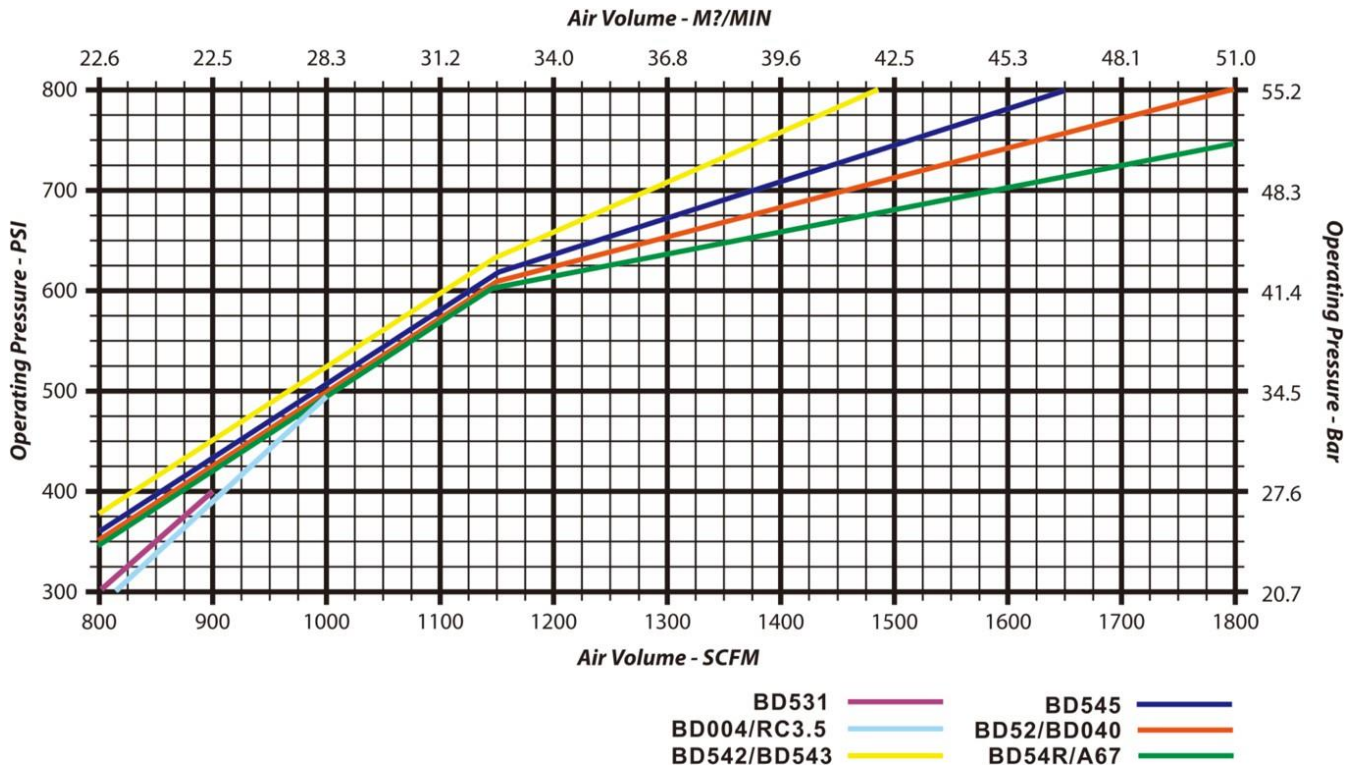
Example A: BDR54R-ASCREEEN-M4.5-HD



SPECIFICATIONS

Hammer	BD351	RC3.5	BD004			BD542			BD543		BD545		BD040				BD52		BD54		A67
Top sub thread	R3"	R3"	R3.5"	R4"	M4"	R3.5"	R4"	M4"	R4"	M4"	M4.5	R4.5	M4"	R4"	M4.5"	R4.5"	m4.5"	R4.5"	M4.5"	R4.5	M4.5"
Package case size	(L)1100 (W)110 (H)120	(L)1230 (W)120 (H)150	(L)1300 (W)150 (H)180			(L)1230 (W)140 (H)170			(L)1260 (W)150 (H)180		(L)1300 (W)150 (H)180				(L)1300 (W)160 (H)190		(L)1300 (W)160 (H)190		(L)1330 (W)160 (H)190		
Recommended bit size, mm	86-100	100-110	111-125			113-133			123-140		127-140				133-143		136-146		136-146		
Bit shank	RE531	RC3.5	RE004			RE542			RE543		RE545		RE040				PR52		PR54		BD67
External diameter, mm	81	94	107			109.5			116		117.5		121				120.5		130		132
Length excl. thread, mm (Less bit)	1069	1184	1252			1191			1261		1210				1227		1294		1200		
Hammer weight, Kg (Less bit)	29	44	52			57			63		65		53.8	47.5	69.8	69.4	68.5		84.5		81.8
Piston weight, Kg	4.8	8.3	10.5			11.6			11.6		13.5		13.6				14.3		16.8		17
Wrench flat, mm	No wrench flat	(L)82 (W)40	(L)90 (W)40	(L)90 (W)50	(L)90 (W)50	(L)95 (W)45	(L)95 (W)45	(L)95 (W)50	(L)95 (W)45	(L)95 (W)50	(L)102 (W)50	(L)102 (W)50	(L)94 (W)50	(L)94 (W)50	(L)94 (W)50	(L)94 (W)50	(L)94 (W)50	(L)94 (W)50	(L)100 (W)50	(L)100 (W)50	(L)95 (W)51
Drilling conditions and project specifications may require a larger air package to be used																					

AIR CONSUMPTION/OPERATING PRESSURE



Reverse Circulation Service Guide

When breaking a hammer down, avoid placing breakout tools in the mid-section of the cylinder (barrel). Recommended breakout points are 130mm from each end of cylinder. Wrap around chain breakouts are recommended (see diagram). When holding bits for breakout, use a secure plate or opt to grab the bit head, but never on the gauge row buttons.

This information is included with every Hammer purchase.



DO NOT APPLY HEAT OR DIRECT IMPACT TO HAMMER WHEN CRACKING JOINTS AS THIS TYPICALLY DAMAGES THE HAMMER.



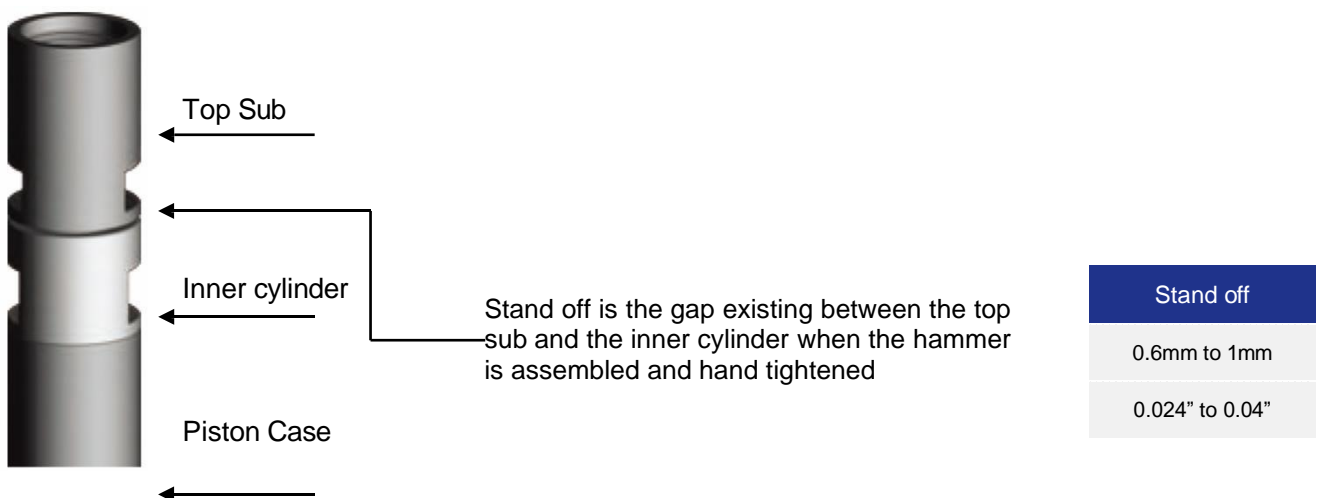
Figure 1: Gripping Locations for BD DRILL Reverse Circulation Hammer

Lubrication

Correct lubrication is critical to the performance and longevity of the hammer.

Recommended:

- Oil Grade: SAE 320 Hammer Oil for most operating conditions
- Rate: 2 litre/hour minimum via automatic feeder
- Double the rate when injecting fluids such as water, foam & polymers
- Clean and relubricate the hammer each day after use to prevent corrosion and premature failure



BD531 R.C. HAMMER

3" R.C. Hammers	Item Description	Weight Kg	Part Number
	1 Top Sub-Remet 3"	3.76	BD531-TSUB-R3
	2 O Ring (Adaptor Tube Remet 3") x 2	0.01	BD531-SK-TSUB-R3
	3 Adaptor Tube Remet 3"	1.85	BD531-ASCREENR3
	4 O Ring (Sample Tube) x 4	0.01	BD531-SK-STUBE
	5 Sample Tube	1.97	BD531-STUBE
	6 Circlip	0.04	BD531-CIRCLIP
	7 O Ring (Distributor 1) x 2	0.01	BD531-SK-DIST-1
	8 O Ring (Distributor 2) x 1	0.01	BD531-SK-DIST-2
	9 Distributor	0.37	BD531-DIST
	10 Check Valve/Plunger	0.08	BD531-CVALVE
	11 O Ring (Check Valve) x 1	0.01	BD531-SK-CVALVE
	12 Spring	0.1	BD531-SPRING
	13 Mount Sample Tube	0.49	BD531-STUBE-MOUNT
	14 Inner Cylinder/Top Barrel	3.4	BD531-ICYL
	15 O Ring (Inner Cylinder) x 1	0.01	BD531-SK-ICYL
	16 Piston	4.69	BD531-PISTON
	17 External Cylinder/Barrel/Piston Case	9.2	BD531-ECYL
	18 Seal Cover/ O Ring (Bearing Bush) x 2	0.02	BD531-SCOVER
	19 Bearing Bush	1.03	BD531-BUSH
	20 Bit Stop Ring	0.08	BD531-SRING
	21 O Ring (Bit Stop Ring) x 1	0.01	BD531-SK-SRING
	22 Shroud	0.45	BD531-SHROUD-85/83
	23 Drive Sub	1.6	BD531-DSUB
	24 Drill Bit	4.2	BD531-85DC-TV
	25 Seal Kit (Item 2+4+7+8+11+18+21)	0.2	BD531-SK

Technical Data

Length(Less bit)	Weight(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1069mm	29.0kg	Φ81mm	BD531	Φ84- Φ100	3 " Remet
Box Size	Impact rate At 2.4Mpa	Recommended rotation speed	Air Consumption		
			200-500(PSI)		
1100x110x120mm	30Hz	25-40r/min	300-1200(CFM)		

RC3.5 R.C. HAMMER

3.5" R.C. Hammers	Item Description	Weight Kg	Part Number
	1 Top Sub-Remet 3"	6.13	RC3.5-TSUB-R3
	2 Adaptor Tube Remet 3"	1.49	RC3.5-ASCREEN-R3
	3 O Ring (Adaptor Tube Remet 3") x 2	0.01	RC3.5-SK-ASCREEN-R3
	4 Sample Tube	3.31	RC3.5-STUBE
	5 O Ring (Sample Tube) x 6	0.01	RC3.5-SK-STUBE
	6 Circlip	0.01	RC3.5-CIRCLIP
	7 Distributor	0.3	RC3.5-DIST
	8 Top Barrel (Sub)	5.38	RC3.5-TBARREL
	9 Check Valve/Plunger	0.28	RC3.5-CVALVE
	10 Y Ring (Check Valve)	0.01	RC3.5-SK-CVALVE
	11 Spring	0.05	RC3.5-SPRING
	12 Compression Buffer/Make up Ring Steel	0.28	RC3.5-MUR-STEEL
	13 Mount Sample Tube	0.87	RC3.5-STUBE-MOUNT
	14 Inner Cylinder	1.26	RC3.5-ICYL
	15 Piston	8.33	RC3.5-PISTON
	16 External Cylinder/Barrel/Piston Case	10.8	RC3.5-ECYL
	17 Bearing Bush (Cold Pressed)	1.47	RC3.5-BUSH
	18 O Ring (Bit Stop Ring) x 1	0.01	RC3.5-SK-SRING
	19 Bit Stop Ring	0.17	RC3.5-SRING
	20 Shroud	1.1	RC3.5-SHROUD-104/102
	21 Drive Sub	2.9	RC3.5-DSUB
	22 Drill Bit	8.0	RC3.5-104DC-TV
	23 Seal Kit (3+5+10+18)	0.2	RC3.5-SK

Technical Data

Length(Less bit)	Weight(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1184mm	44.0kg	Φ94mm	RC3.5Y	Φ100- Φ110	3 " Remet
Box Size	Impact rate At 2.4Mpa	Recommended rotation speed	Air Consumption		
			200-500(PSI)		
1230x120x150mm	30Hz	25-40r/min	300-1200(CFM)		

BD004 R.C. HAMMER

4" R.C. Hammers	Item Description	Weight Kg	Part Number
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A Top sub Assy Remet 3.5"			
1	Circlip	0.02	BD004-CIRCLIP
2	O Ring (Adaptor Tube Remet 3.5) x 4	0.02	BD004-SK-ASCREEN3.5
3	Adaptor Tube Remet 3.5"	1.06	BD004-ASCREEN-R3.5
4	Top Sub-Remet 3.5"	7.79	BD004-TSUB-R3.5
B Top sub Assy Remet 4"			
1	Circlip	0.02	BD004-CIRCLIP
2	O Ring (Adaptor Tube Remet 4") x 4	0.02	BD004-SK-ASCREENR4
3	Adaptor Tube Remet 4"	1.06	BD004-ASCREEN-R4
4	Top Sub-Remet 4"	7.79	BD004-TSUB-R4
C Top sub Assy Metzke 4"			
1	Circlip	0.02	BD004-CIRCLIP
2	O Ring (Adaptor Metzke 4") x 2	0.02	BD004-SK-ASCREENM4
3	Adaptor Tube Metzke 4"	1.06	BD004-ASCREEN-M4/54 BD004-ASCREEN-M4/57
4	Top Sub-Metzke 4"	7.79	BD004-TSUB-M4
Parts List			
5	Check Valve/Plunger	0.51	BD004-CVALVE
6	Y Ring (Check Valve)	0.01	BD004-SK-CVALVE
7	Spring	0.06	BD004-SPRING
8	Sample Tube Upper	0.74	BD004-STUBE-U
9	Make Up Ring, Steel	0.17	BD004-MUR-STEEL
10	O Ring (Sample Tube) x 2	0.02	BD004-SK-STUBE1
11	O Ring (Sample Tube) x 1	0.02	BD004-SK-STUBE2
12	Sample Tube Lower	2.38	BD004-STUBE
13	Distributor	1.75	BD004-DIST
14	O Ring (Distributor)	0.02	BD004-SK-DIST
15	Inner Cylinder	2.45	BD004-ICYL
16	Piston	10.45	BD004-PISTON
17	Piston Case with Bush (cold press)	17.95	BD004-ECYL
18	Bit Stop Ring	0.29	BD004-SRING
19	O Ring (Bit Stop Ring)	0.02	BD004-SK-SRING
20	Shroud	1.05	BD004-SHROUD-115/113
21	Drive Sub	3.13	BD004-DSUB
22	Drill Bit	11.7	BD004-115DC-TV

Technical Data

Length(Less bit)	Weight(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1252mm	52.0kg	Φ107mm	BD004	Φ111- Φ127	3.5" – 4" Remet 4" Metzke
Box Size	Impact rate At 2.4Mpa	Recommended rotation speed	Air Consumption		
			200-500(PSI)		
1300x150x180mm	30Hz	25-40r/min	300-1200(CFM)		

BD542 R.C. HAMMER

4.5" R.C. Hammers	Item Description	Weight Kg	Part Number
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A Top sub Assy Remet 3.5"			
1	Circlip A	0.04	BD543/542-CIRCLIP-R3.5
2	O Ring (Adaptor Tube Remet 3.5") x 4	0.02	BD543/542-SK-ASCREEN3.5
3	Adaptor Tube Remet 3.5"	2.55	BD543/542-ASCREEN-R3.5
4	Top Sub-Remet 3.5"	8.52	BD543/542-TSUB-R3.5
B Top sub Assy Remet 4"			
1	Circlip A	0.02	BD543/542-CIRCLIP-4
2	O Ring (Adaptor Tube Remet 4") x 4	0.02	BD543/542-SK-ASCREENR4
3	Adaptor Tube Remet 4"	2.55	BD543/542-ASCREEN-R4
4	Top Sub-Remet 4"	8.52	BD543/542-TSUB-R4
C Top sub Assy Metzke 4"			
1	Circlip A	0.02	BD543/542-CIRCLIP-4
2	O Ring (Adaptor Metzke 4") x 2	0.02	BD543/542-SK-ASCREENM4
3	Adaptor Tube Metzke 4"	2.55	BD543/542-ASCREEN-M4
4	Top Sub-Metzke 4"	8.52	BD543/542-TSUB-M4
Parts List			
5	Sample Tube	3.5	BD543/542-STUBE
6	O Ring (Sample Tube) x 5	0.02	BD543/542-SK-STUBE
7	Circlip B	0.02	BD543/542-CIRCLIP-4
8	Air Screen	0.04	BD543/542-AIRSCREEN
9	Distributor	0.56	BD543/542-DIST
10	O Ring (Distributor)	0.02	BD543/542-SK-DIST
11	Check Valve/Plunger	0.5	BD543/542-CVALVE
12	Y Ring (Check Valve)	0.02	BD543/542-SK-CVALVE
13	Spring	0.08	BD543/542-SPRING
14	Mount Sample Tube	0.86	BD543/542-STUBE-M
15	Y Ring (Mount Sample Tube)	0.02	BD543/542-SK-STUBEM
16	Inner Cylinder/Top Barrel	7.26	BD542-ICYL
17	O Ring (Inner Cylinder)	0.02	BD543/542-SK-ICYL
18	Piston	11.64	BD543/542-PISTON
19	External Cylinder/Barrel/Piston Case	19.17	BD542-ECYL
20	Bearing Bush	0.05	BD543/542-PRING
21	Bush Retaining Ring	2.35	BD543/542-BUSH
22	O Ring (Bearing Bush) x 2	0.02	BD543/542-SK-BUSH
23	Bit Ring	0.26	BD543/542-SRING
24	O Ring (Bit Ring)	0.02	BD543/542-SK-SRING
25	Shroud	2.21	BD543/542-SHROUD-127/125
26	Drive Sub	2.94	BD543/542-DSUB
27	Drill Bit	10.96	BD543/542-127DC
28	Seal Kit (Item2+6+10+12+15+17+22+24)	0.3	BD543/542-SK

Technical Data

Length(Less bit)	Weight(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1191mm	57.0kg	Φ109.5mm	BD542	Φ113- Φ130	3.5" – 4" Remet 4" Metzke
Box Size	Impact rate At 2.4Mpa	Recommended rotation speed		Air Consumption	
1230x140x170mm	35Hz	25-40r/min		200-500(PSI) 300-1200(CFM)	

BD543 R.C. HAMMER

4.5" R.C. Hammers	Item Description	Weight Kg	Part Number
	A Crossover sub Assy PIN Metzke 4"(54mm) to Remet 4"(blank, Matrix, Drill Star...) PIN to BOX CROSSOVER SUB ASSEMBLY OD116MM ADAPT-PM4BR4-116/54		
	1 Top Sub-Remet 4" Adaptor Tube	7.79	ADPAT-SUB-PM4BR4-116/54
	2 Remet 4"	1.06	ADAPT-ATUBE-PM4BR4
	3 O Ring (Adaptor Tube Remet 4") x4	0.02	SK-BR4
4 Circlip A	0.02	BD543/542-CIRCLIP-4	
	Parts List		
	5 Sample Tube-Metzke 4"	3.5	BD543/542-STUBE-M4/54
	6 O Ring (Sample Tube) x 5	0.02	BD543/542-SK-STUBE
	7 Circlip B	0.02	BD543/542-CIRCLIP-4
	8 Air Screen	0.04	BD543/542-AIRSCREEN
	9 Distributor	0.56	BD543/542-DIST
	10 O Ring (Distributor)	0.02	BD543/542-SK-DIST
	11 Check Valve/Plunger	0.5	BD543/542-CVALVE
	12 Y Ring (Check Valve)	0.02	BD543/542-SK-CVALVE
	13 Spring	0.08	BD543/542-SPRING
	14 Mount Sample Tube	0.86	BD543/542-STUBE-M
	15 O Ring (Mount Sample Tube)	0.02	BD543/542-SK-STUBEM
	16 Inner Cylinder/Top Barrel-Metzke 4" (to build 543 Hammer with thread of metzke 4")	7.26	BD542-ICYL-M4/54
	17 O Ring (Inner Cylinder)	0.02	BD543/542-SK-ICYL
	18 Piston	11.64	BD543/542-PISTON
	19 External Cylinder/Barrel/Piston Case	19.17	BD542-ECYL
	20 Bearing Bush	0.05	BD543/542-PRING
	21 Bush Retaining Ring	2.35	BD543/542-BUSH
	22 O Ring (Bearing Bush) x 2	0.02	BD543/542-SK-BUSH
	23 Bit Ring	0.26	BD543/542-SRING
	24 O Ring (Bit Ring)	0.02	BD543/542-SK-SRING
	25 Shroud	2.21	BD543/542-SHROUD-127/125
	26 Drive Sub	2.94	BD543/542-DSUB
	27 Drill Bit	10.96	BD543/542-127DC
	28 Seal Kit (Item2+6+10+12+15+17+22+24)	0.3	BD543/542-SK

Technical Data

Length(Less bit)	Weight(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1191mm	62.0kg	Φ116mm	BD543	Φ113- Φ133	3" – 4" Remet 4" Metzke
Box Size	Impact rate At 2.4Mpa	Recommended rotation speed		Air Consumption	
1230x140x170mm	35Hz	25-40r/min		200-500(PSI) 300-1200(CFM)	

BD545 R.C. HAMMER

5" R.C. Hammers	Item Description	Weight Kg	Part Number	
	A Crossover sub Assy PIN Metzke 4.5"(57mm) to Remet 4.5"(blank, Matrix, Drill Star...) PIN to BOX CROSSOVER SUB ASSEMBLY OD117MM ADAPT-PM4BR4-117/57			
	1 Top Sub-Remet 4.5"	7.79	SUB-RC-PM45BR45-117	
	2 Adaptor Tube Remet 4.5"	1.06	ADAPT-ATUBE-PM45BR45	
	3 O Ring (Adaptor Tube Remet 4.5") x6	0.02	SK-BR45	
	4 Circlip A	0.02	BD545-CIRCLIP-A	
	Parts List			
	5 Sample Tube	4.61	BD545-STUBE-M4.5	
	6 O Ring (Sample Tube) x 4	0.02	BD545-SK-STUBE	
	7 Circlip B	0.02	BD545-CIRCLIP-4	
	8 Air Screen	0.04	BD545-AIRSCREEN	
	9 Distributor	0.48	BD545-DIST	
	10 O Ring (Distributor) x2	0.02	BD545-SK-DIST	
	11 Check Valve/Plunger	0.53	BD545-CVALVE	
	12 Y Ring (Check Valve)	0.02	BD545-SK-CVALVE	
	13 Spring	0.12	BD545-SPRING	
	14 O Ring (Inner Cylinder)	0.02	BD545-SK-ICYL	
	15 Inner Cylinder/Top Barrel	10.2	BD545-ICYL-M4.5	
	16 Piston	15.1	BD545-PISTON	
	17 External Cylinder/Barrel/Piston Case	17.2	BD545-ECYL	
	18 Bearing Bush	2.95	BD545-BUSH	
	19 O Ring (Bearing Bush) x 4	0.05	BD545-SK-BUSH	
	20 Bush Retaining Ring	0.02	BD545-PRING	
	21 Bit Ring	0.26	BD545-SRING	
	22 O Ring (Bit Ring)	0.02	BD545-SK-SRING	
	23 Shroud	1.6	BD545-SHROUD127/125	
	24 Drive Sub	3.41	BD545-DSUB	
25 Drill Bit	12.6	BD545-133DC		
26 Seal Kit (Item 2+4(3)+7+11+13+15+20+23)	0.3	BD545-SK		

Technical Data

Length(Less bit)	Weight(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1261mm	65.0kg	Φ117.5mm	BD545	Φ123- Φ140	4" – 4.5" Remet 4" – 4.5" Metzke
Box Size	Impact rate At 2.4Mpa	Recommended rotation speed		Air Consumption	
1260x150x180mm	35Hz	25-40r/min		200-500(PSI) 300-1200(CFM)	

BD547 R.C. HAMMER

5" R.C. Hammers	Item Description	Weight Kg	Part Number
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A Top sub Assy Remet 3.5"

1	Circlip A	0.04	BD547-CIRCLIP-R4.5
2	O Ring (Adaptor Tube Remet 4.5") x 4	0.02	BD547-SK-ASCREEN4.5
3	Adaptor Tube Remet 4.5"	2.95	BD547-ASCREEN-R4.5
4	O Ring (Adaptor Tube) x 2	0.02	BD547-SK-ASCREENMR
5	Top Sub-Remet 3.5"	6.98	BD547-TSUB-R4.5

B Top sub Assy Metzke 4.5"

1	Circlip A	0.04	BD547-CIRCLIP-M4.5
2	Adaptor Tube Metzke 4.5	2.95	BD547-ASCREEN-M4.5
3	O Ring Adaptor Tube x 2	0.02	BD547-SK-ASCREENMR
4	Top Sub-Metzke 4.5"	6.98	BD547-TSUB-M4.5

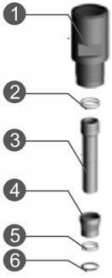
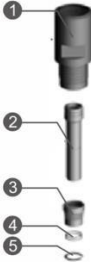
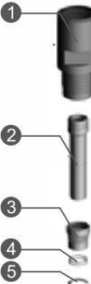
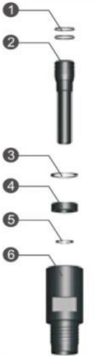
Parts List

6	Sample Tube	4.61	BD547-STUBE
7	O Ring (Sample Tube) x 4	0.02	BD547-SK-STUBE
8	Circlip B	0.02	BD547-CIRCLIP-4
9	Air Screen	0.04	BD547-AIRSCREEN
10	Distributor	0.48	BD547-DIST
11	O Ring (Distributor) x 2	0.02	BD547-SK-DIST
12	Check Valve/Plunger	0.53	BD547-CVALVE
13	Y Ring (Check Valve)	0.02	BD547-SK-CVALVE
14	Spring	0.12	BD547-SPRING
15	O Ring (Inner Cylinder)	0.02	BD547-SK-ICYL
16	Inner Cylinder/Top Barrel	10.2	BD547-ICYL
17	Piston	15.1	BD547-PISTON
18	External Cylinder/Barrel/Piston Case	17.2	BD547-ECYL
19	Bearing Bush	0.05	BD547-PRING
20	O Ring (Bearing Bush) x 2	2.95	BD547-BUSH
21	Bush Retaining Ring	0.02	BD547-SK-BUSH
22	Bit Ring	0.26	BD547-SRING
23	O Ring (Bit Ring)	0.02	BD547-SK-SRING
24	Shroud	1.6	BD547-SHROUD-127/125
25	Drive Sub	3.41	BD547-DSUB
26	Drill Bit	12.6	BD547-133DC
27	Seal Kit (Item 2+4(3)+7+11+13+15+21+23)	0.3	BD547-SK

Technical Data

Length(Less bit)	Weight(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1292mm	80.0kg	Φ124.4mm	BD547	Φ133- Φ146	4" – 4.5" Remet 4"-4.5" Metzke
Box Size	Impact rate At 2.4Mpa	Recommended rotation speed		Air Consumption	
1300x160x190mm	35Hz	25-40r/min		200-500(PSI) 300-1200(CFM)	

BD040 R.C. HAMMER

5" R.C. Hammers	Item Description	Weight Kg	Part Number
 <p>Top Sub Assembly-A</p>	<p>A Top sub Assy Remet 4"</p> <p>① Top Sub-Remet 4"</p> <p>② O Ring (Adaptor Tube Remet 4") x2</p> <p>③ Adaptor Tube Remet 4"</p> <p>④ Air Screen</p> <p>⑤ O Ring (Air Screen) x 2</p> <p>⑥ Circlip</p>	<p>7.79</p> <p>0.02</p> <p>1.51</p> <p>0.5</p> <p>0.02</p> <p>0.02</p>	<p>BD040-TSUB-R4</p> <p>BD040-SK-ASCREEN-R4</p> <p>BD040-ASCREEN-R4</p> <p>BD040-AIRSCREEN</p> <p>BD040-SK-AIRSCREEN</p> <p>BD040-CIRCLIP</p>
 <p>Top Sub Assembly-B</p>	<p>B Top sub Assy Metzke 4"</p> <p>① Top Sub-Metzke 4"</p> <p>② Adaptor Tube Metzke 4"</p> <p>③ Air Screen</p> <p>④ O Ring (Air Screen) x 2</p> <p>⑤ Circlip</p>	<p>7.79</p> <p>1.51</p> <p>0.5</p> <p>0.02</p> <p>0.02</p>	<p>BD040-TSUB-M4</p> <p>BD040-ASCREEN-M4</p> <p>BD040-AIRSCREEN</p> <p>BD040-SK-AIRSCREEN</p> <p>BD040-CIRCLIP</p>
 <p>Top Sub Assembly-C</p>	<p>C Top sub Assy Metzke 4.5"</p> <p>① Top Sub-Metzke 4.5"</p> <p>② Adaptor Tube Metzke 4.5"</p> <p>③ Air Screen</p> <p>④ O Ring (Air Screen) x 2</p> <p>⑤ Circlip</p>	<p>7.79</p> <p>1.51</p> <p>0.5</p> <p>0.02</p> <p>0.02</p>	<p>BD040-TSUB-M4.5</p> <p>BD040-ASCREEN-M4.5</p> <p>BD040-AIRSCREEN</p> <p>BD040-SK-AIRSCREEN</p> <p>BD040-CIRCLIP</p>
 <p>Top Sub Assembly-D</p>	<p>D Top sub Assy Remet 4.5"</p> <p>① O Ring (Adaptor Tube Remet 4.5") x2</p> <p>② Adaptor Tube Remet 4.5"</p> <p>③ Circlip A</p> <p>④ Air Screen</p> <p>⑤ Circlip B</p> <p>⑥ Top Sub-Remet 4.5"</p>	<p>0.02</p> <p>1.51</p> <p>0.02</p> <p>0.5</p> <p>0.02</p> <p>7.79</p>	<p>BD040/52-SK-ASCREEN-R4.5</p> <p>BD040/52-ASCREEN-R4.5</p> <p>BD040/52-CIRCLIP-1</p> <p>BD040/52-AIRSCREEN-R4.5</p> <p>BD040/52-CIRCLIP-2</p> <p>BD040-TSUB-R4.5</p>

BD040 R.C. HAMMER

5" R.C. Hammers	Item Description	Weight Kg	Part Number
	7 Check Valve/Plunger	0.63	BD040/52-CVALVE
	8 Y Ring (Check Valve)	0.01	BD040/52-SK-CVALVE
	9 Spring	0.12	BD040/52-SPRING
	10 Spring Seat	0.12	BD040/52-SSEAT
	11 Make Up Ring, Steel	0.09	BD040/52-MUR-STEEL
	12 Make Up Ring, Viton	0.06	BD040/52-MUR-VITON
	13 Distributor	1.75	BD040/52-DIST
	14 O Ring (Distributor) x 1	0.02	BD040/52-SK-DIST
	15 O Ring (Sample Tube) x 2	0.02	BD040-SK-STUBE1
	16 O Ring (Sample Tube) x 1	0.02	BD040-SK-STUBE2
	17 Sample Tube Lower	4.32	BD040-STUBE
	18 Mount Sample Tube	1	BD040-STUBE-MOUNT
	19 O Ring (Mount Sample Tube) x 1	0.02	BD040-SK-STUBE-M
	20 Inner Cylinder	7.69	BD040-ICYL
	21 Piston	13.63	BD040-PISTON
	22 External Cylinder/Barrel/Piston Case	24.14	BD040-ECYL
	23 Piston Retaining Ring	0.1	BD040-PRING
	24 Bearing Bush	1.89	BD040-BUSH
	25 O Ring (Bearing Bush) x 1	0.02	BD040-SK-BUSH1
	26 O Ring (Bearing Bush) x 1	0.02	BD040-SK-BUSH2
	27 Bit Stop Ring	0.31	BD040-SRING
	28 O Ring (Bit Stop Ring) x 1	0.02	BD040-SK-SRING
	29 Shroud	2.2	BD040-SHROUD-136/134
	30 Drive Sub	3.67	BD040-DSUB
	31 Drill Bit	15.09	BD040-136DC=TV
	32 Seal Kit (Item2(1)+5(4)+8+14+15+16+19+25+26+28)	0.2	BD040-SK

Technical Data

Length(Less bit)	Weight(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1362mm	80.5kg	Φ120.5mm	BD040	Φ124- Φ142	3.5" – 4.5" Remet 3.5"- 4.5" Metzke
Working Pressure	Impact rate At 2.4Mpa	Recommended rotation speed	Air Consumption		
			200-500(PSI)		
1.5-3.5Mpa	35Hz	25-40r/min	300-1200(CFM)		

RC121-BD040 R.C. HAMMER

4.5" R.C. Hammers	Item No.	Crossover Sub Remet 4 1/2" (Thread available in Drill Star, Matrix and Blank)	
	①	DAPT-PM45BR45-121 Pin to Box Crossover Sub Assembly Od121mm	
	②	ADAPT-SUB-PM45BR45-121 Pin to Box Crossover Sub Od121mm	
	③	SK-BR45 O Ring (Box Remet 4.5")	
	④	ATUBE-PM45BR45 Adaptor Tube Pin to Box	
	⑤	SKOPM45 O Ring (Pin Metzke 4.5)	
	Item Description Weight Kg Part Number		
	⑥	Inner Cylinder	8.95 RC121-ICYL-M4.5
	⑦	O Ring x 1	0.02 RC121-SK-ICYL
	⑧	Sample Tube	5.2 RC121-STUBE-H
	⑨	O Ring x 5	0.02 BD67/RC121-SK-STUBE
	⑩	Circlip B	0.02 BD67/RC121-CIRCLIP-1
	⑪	Air Screen	0.02 BD67/RC121-AIRSCREEN-1
	⑫	Distribution Nozzle	0.48 BD67/RC121-DIST-1
	⑬	"O" Ring x2	0.02 BD67/RC121-SK-DIST
	⑭	Plunger/Check Valve	0.53 BD67/RC121-CVALVE-MHK
	⑮	"Y" Ring x 1	0.02 BD67/545/547/RC121-SK-YRING
	⑯	Spring	0.12 BD67/545/547/RC121-SPRING
	⑰	Piston	14.1 BD52/RC121-PISTON
	⑱	External Cylinder/Barrel/Wear Sleeve/Piston Case	19.4 RC121-ECYL-DK
	⑲	Bush Retaining Ring	0.02 RC121-SRING-BUSH
	⑳	Bearing Bush/Bush Drive Sub	1.85 RC121-BUSH
	㉑	"O" Ring x 2	0.02 BD040/RC121-SK-BUSH
	㉒	Bit Retaining Ring	0.31 BD040/RC121-SRING-HD
	㉓	"O" Ring x 1	0.02 RC121/BD040-SK-SRING
	㉔	Piston Retaining Ring	0.15 RC121-RRING
	㉕	Shroud	2.2 BD040-136/133.5-DB
	㉖	Drive Sub/Chuck	3.67 RC121/BD040-DSUB
㉗	Drill Bit	15.09 BD040-136DC-TV	

Technical Data

Length(Less bit)	Weight(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1039mm	71.0kg	Φ121mm	RE040	Φ126- Φ146	Metzke 4.5" Remet 4.5"
Box Size	Impact rate At 2.4Mpa	Recommended rotation speed		Air Consumption	
1340x350x350mm	35Hz	25-40r/min		200-500(PSI) 300-1200(CFM)	

BD52 R.C. HAMMER

5.5" R.C. Hammers	Item Description	Weight Kg	Part Number
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A Top sub Assy Metzke 4.5"			
2	Adaptor Tube Metzke 4.5"	2.19	BD52-ASCREEN-M4.5
3	Circlip B	0.03	BD52-CIRCLIP
4	Air Screen	0.42	BD52-AIRSCREEN-M4.5
5	Circlip A	0.03	BD52-CIRCLIP
6	Top Sub-Metzke 4.5"	8.92	BD-TSUB-M4.5
B Top sub Assy Remet 4.5"			
1	O Ring Adaptor Tube Remet 4.5" x 2	0.02	BD040/52-SK-ASCREEN-R4.5
2	Adaptor Tube Remet 4.5"	2.19	BD040/52-ASCREEN-R4.5
3	Circlip B	0.03	BD040/52-CIRCLIP
4	Air Screen	0.42	BD040/52-AIRSCREEN-R4.5
5	Circlip A	0.03	BD040/52-CIRCLIP
6	Top Sub-Remet 4.5"	8.92	BD52-TSUB-R4.5
Parts List			
7	Check Valve/Plunger	0.63	BD040/52-CVALVE
8	Y Ring (Check Valve)	0.03	BD040/52-SK-CVALVE
9	Spring	0.12	BD040/52-SPRING
10	Spring Seat	0.12	BD040/52-SSEAT
11	Make Up Ring, Steel	0.1	BD040/52-MUR-STEEL
12	Make Up Ring, Viton	0.05	BD040/52-MUR-VITON
13	Distributor	1.31	BD040/52-DIST
14	O Ring (Distributor)	0.02	BD040/52-SK-DIST
15	O Ring (Sample Tube) x 2	0.02	BD52-SK-STUBE1
16	O Ring (Sample Tube) x 1	0.02	BD52-SK-STUBE2
17	Sample Tube Lower	4.52	BD52-STUBE
18	Mount Sample Tube	0.8	BD52-STUBE-MOUNT
19	O Ring (Mount Sample Tube)	0.02	BD52-SK-STUBE-M
20	Inner Cylinder	7.39	BD52-ICYL
21	Piston	14.63	BD52-PISTON
22	External Cylinder/Barrel/Piston Case	18.86	BD52-ECYL
23	Piston Retaining Ring	0.13	BD52-PRING
24	Bearing Bush	1.89	BD52-BUSH
25	O Ring (Bearing Bush) x 1	0.02	BD52-SK-BUSH1
26	O Ring (Bearing Bush) x 1	0.02	BD52-SK-BUSH2
27	Bit Stop Ring	0.31	BD52-SRING
28	O Ring (Bit Stop Ring)	0.02	BD52-SK-SRING
29	Shroud (Retaining Option)	1.86	BD52-SHROUD-136/134 or BD52R-SHROUD-136/134
30	Drive Sub (Retaining Option)	4.17	BD52-DSUB or BD52R-DSUB
31	Drill Bit (Retaining Option)	11.01	BD52-136DC or BD52R-136DC
32	Seal Kit (Item 1+8+14+15+16+19+25+26+28)	0.30	BD52-SK

Technical Data

Length(Less bit)	Weight(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1227mm	68.5kg	Φ121mm	BD52	Φ126- Φ142	4" – 4.5" Remet 4"-4.5" Metzke
Working Pressure	Impact rate At 2.4Mpa	Recommended rotation speed	Air Consumption		
1.5-3.5Mpa	35Hz	25-40r/min	200-500(PSI) 300-1200(CFM)		


BD54 R.C. HAMMER

5.5" R.C. Hammers	Item Description	Weight Kg	Part Number
A Top sub Assy Remet 4.5"			
	1 Top Sub-Remet 4.5"	11.61	BD54-TSUB-R4.5
	2 O Ring (Adaptor Tube Remet 4.5") x 2	0.02	BD54-SK-ASCREEEN-R4.5
	3 Adaptor Tube Remet 4.5"	2.35	BD54-ASCREEEN-R4.5
	4 Air Screen	0.50	BD54-AIRSCREEN
	5 O Ring (Air Screen) x 2	0.02	BD54-SK-AIRSCREEN
	6 Circlip	0.04	BD54-CIRCLIP
B Top sub Assy Metzke 4.5"			
	1 Top Sub-Metzke 4.5"	11.61	BD54-TSUB-M4.5
	2 Adaptor Tube Metzke 4.5"	2.35	BD54-ASCREEEN-M4.5
	3 Air Screen	0.5	BD54-AIRSCREEN
	4 O Ring (Air Screen) x 2	0.02	BD54-SK-AIRSCREEN
	5 Circlip	0.04	BD54-CIRCLIP
Parts List			
	7 Check Valve/Plunger	0.58	BD54-CVALVE
	8 Y Ring (Check Valve)	0.02	BD54-SK-CVALVE
	9 Spring	0.12	BD54-SPRING
	10 Spring Seat	0.12	BD54-SSEAT
	11 Make Up Ring, Steel	0.14	BD54-MUR-STEEL
	12 Make Up Ring, Viton	0.06	BD54-MUR-VITON
	13 Distributor	1.54	BD54-DIST
	14 O Ring (Distributor)	0.02	BD54-SK-DIST
	15 O Ring (Sample Tube) x 2	0.02	BD54-SK-STUBE1
	16 O Ring (Sample Tube) x 1	0.02	BD54-SK-STUBE2
	17 Sample Tube Lower	6.47	BD54-STUBE
	18 Mount Sample Tube	1.00	BD54-STUBE-MOUNT
	19 O Ring (Mount Sample Tube)	0.02	BD54-SK-STUBE-M
	20 Inner Cylinder	8.54	BD54-ICYL
	21 Piston	16.8	BD54-PISTON
	22 External Cylinder/Barrel/Piston Case	23.44	BD54-ECYL
	23 Piston Retaining Ring	0.2	BD54-PRING
	24 Bearing Bush	1.89	BD54-BUSH
	25 O Ring (Bearing Bush) x 1	0.02	BD54-SK-BUSH1
	26 O Ring (Bearing Bush) x 1	0.02	BD54-SK-BUSH2
	27 Bit Stop Ring	0.43	BD54-SRING
	28 O Ring (Bit Stop Ring)	0.02	BD54-SK-SRING
	29 Shroud (Retaining Option)	2.35	BD54 SHROUD-143/141 or BD54R-SHROUD-136/134
	30 Drive Sub (Retaining Option)	4.9	BD54-DSUB or BD54R-DSUB
	31 Drill Bit (Retaining Option)	18.33	BD54-143DC or BD54R-143DC
	32 Seal Kit (Item 2+4+8+14+15+16+19+25+26+28)	0.3	BD52-SK


Technical Data

Length(Less bit)	Weight(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1294mm	84.5kg	Φ130mm	BD54	Φ136- Φ150	4.5" Remet 4.5" Metzke
Working Pressure	Impact rate At 2.4Mpa	Recommended rotation speed		Air Consumption	
1.5-3.5Mpa	35Hz	25-40r/min		200-500(PSI)	
				300-1200(CFM)	


BD 531 Reverse circulation drill bit and shroud

	Diameter		No x Button diameter mm		Button Angle°	Flushing Holes	Shroud Diameter	Weight (Kg)	Part No.
	mm	Inch	Gauge Buttons	Front Buttons					
	86	2 1/4	6x12	4x12					
89	2 1/2	8x12	5x12	35	2	87	4.3	BD351-89	
95	2 3/4	8x12	6x12	35	2	93	4.6	BD351-95	
102	3	8x12	6x12	35	2	100	4.9	BD531-102	


RC3.5Y Reverse circulation drill bit and shroud

	Diameter		No x Button diameter mm		Button Angle°	Flushing Holes	Shroud Diameter	Weight (Kg)	Part No.
	mm	Inch	Gauge Buttons	Front Buttons					
	100	3 15/16	6x16	6x14+6x13					
104	4 1/10	6x16	6x14+6x13	35	2	102	6.6	RC3.5Y-104	
108	4 1/4	8x16	6x14+6x13	35	2	106	6.9	RC3.5Y-108	
114	4 1/2	8x16	6x14+6x13	35	2	112	7.5	RC3.5Y-114	


BD 004 Reverse circulation drill bit and shroud

	Diameter		No x Button diameter mm		Button Angle°	Flushing Holes	Shroud Diameter	Weight (Kg)	Part No.
	mm	Inch	Gauge Buttons	Front Buttons					
	114	4 1/2	8x14	6x14					
118	4 5/8	8x14	6x14	35	2	116	11.7	BD004-118	
121	4 3/4	8x14	6x14	35	2	119	12.0	BD004-121	
127	5	8x14	8x14	35	2	125	12.4	BD004-127	


BD 542 Reverse circulation drill bit and shroud

	Diameter		No x Button diameter mm		Button Angle°	Flushing Holes	Shroud Diameter	Weight (Kg)	Part No.
	mm	Inch	Gauge Buttons	Front Buttons					
	121	4 3/4	8x14	6x14					
124	4 7/8	8x14	8x13	35	2	122	10.8	BD542-124	
127	5	8x14	8x14	35	2	125	11.0	BD542-127	
130	5 1/8	8x14	10x14	35	2	128	11.3	BD542-130	


BD 543 Reverse circulation drill bit and shroud

	Diameter		No x Button diameter mm		Button Angle°	Flushing Holes	Shroud Diameter	Weight (Kg)	Part No.
	mm	Inch	Gauge Buttons	Front Buttons					
	124	4 7/8	8x14	8x13					
127	5	8x14	8x14	35	2	125	11.0	BD543-127	
130	5 1/8	8x14	10x14	35	2	128	11.3	BD543-130	
133	5 1/4	8x16	10x14	35	2	131	11.8	BD543-133	


BD 545 Reverse circulation drill bit and shroud

	Diameter		No x Button diameter mm		Button Angle°	Flushing Holes	Shroud Diameter	Weight (Kg)	Part No.
	mm	Inch	Gauge Buttons	Front Buttons					
	124	4 7/8	8x14	8x13					
127	5	8x14	8x14	35	2	125	13.5	BD545-127	
133	5 1/4	8x16	10x14	35	2	131	13.8	BD545-133	
136	5 3/8	8x16	6x16+3x14	35	2	134	14.2	BD545-136	


BD 040 Reverse circulation drill bit and shroud

	Diameter		No x Button diameter mm		Button Angle°	Flushing Holes	Shroud Diameter	Weight (Kg)	Part No.
	mm	Inch	Gauge Buttons	Front Buttons					
	124	4 7/8	8x14	8x13					
127	5	8x14	8x14	35	2	125	14.7	BD040-127	
133	5 1/4	8x16	10x14	35	2	131	15.2	BD040-133	
138	5 7/16	8x16	6x16+3x14	35	2	136	15.8	BD040-138	

BD 52 Reverse circulation drill bit and shroud

	Diameter		No x Button diameter mm		Button Angle°	Flushing Holes	Shroud Diameter	Weight (Kg)	Part No.
	mm	Inch	Gauge Buttons	Front Buttons					
	133	5 1/4	8x16	10x14					
136	5 3/8	8x16	6x16+3x14	35	2	134	11.5	BD52-136	
140	5 1/2	8x16	6x16+3x14	35	2	138	11.9	BD52-140	
143	5 5/8	8x16	6x16+3x14	35	2	141	12.3	BD52-143	

BD 54 Reverse circulation drill bit and shroud

	Diameter		No x Button diameter mm		Button Angle°	Flushing Holes	Shroud Diameter	Weight (Kg)	Part No.
	mm	Inch	Gauge Buttons	Front Buttons					
	136	5 3/8	8x16	6x16+3x14					
140	5 1/2	8x16	6x16+3x14	35	2	138	18.5	BD54-140	
143	5 5/8	8x16	6x16+3x14	35	2	141	18.8	BD54-143	
146	5 3/4	8x16	6x16+3x14	35	2	144	19.2	BD54-146	

Reverse circulation drill string

Black Diamond offers a complete range of reverse circulation rock drilling tools. The drill string equipment is designed specifically for greenfield exploration and in-pit grade control.



Air Swivel

The side inlet swivel distributes the air in between the outer and inner tube.

Saver sub

The saver sub protects the threads on the rotator head. The saver sub thread comes into contact with all the other threads in the drill string and should be replaced frequently to reduce the risk of a damaged thread spreading through your drill string.

Drill pipes

The dual-wall pipe supplies air to the hammer through the annulus between the inner and outer pipe, and transports cuttings inside the inner tube for sampling.

Digout sub

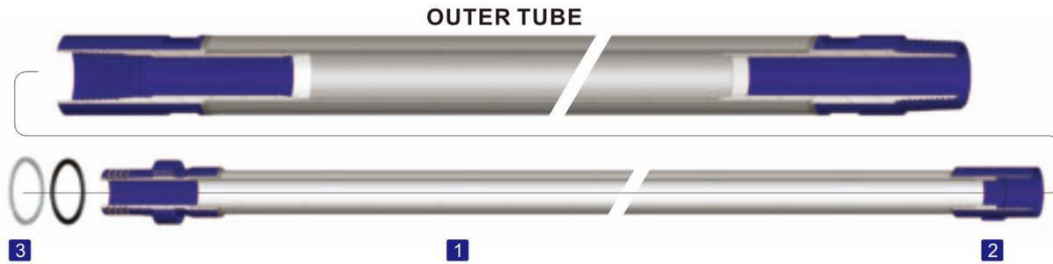
A digout sub is a short crossover sub between the hammer and pipes. With 4 bars, it stabilises the hammer and prevents damage to the hammer when digging out holes.

Hammers

RC50 high-frequency reverse circulation hammers offer world class performance and reliability in all rock formations, with 15-20 percent higher penetration than conventional tools.

Remet

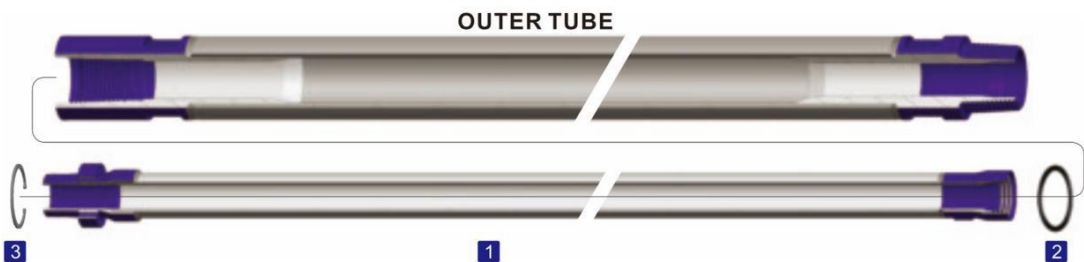
	A	1	2	3
1	Rod RC 4-1/2" x 6m Long Remet	Inner Tube RC 4-1/2" x 6m Remet	O-Ring, 4-1/2" Remet/Metzke	Circlip, 4-1/2" Remet
2	Rod RC 4-1/2" x 3m Long Remet	Inner Tube RC 4-1/2" x 3m Remet	O-Ring, 4-1/2" Remet/Metzke	Circlip, 4-1/2" Remet
3	Rod RC 4" x 6m Long Remet	Inner Tube RC 4" x 6m Remet	O-Ring, 4" Remet	Circlip, 4" Remet/Metzke
4	Rod RC 4" x 6m Long Remet	Inner Tube RC 4" x 3m Remet	O-Ring, 4" Remet	Circlip, 4" Remet/Metzke
5	Rod RC 3-1/2" x 6m Long Remet	Inner Tube RC 3-1/2" x 6m Remet	O-Ring, 3-1/2" Remet/Metzke	Circlip, 3-1/2" Remet/Metzke
6	Rod RC 3-1/2" x 3m Long Remet	Inner Tube RC 3-1/2" x 3m Remet	O-Ring, 3-1/2" Remet/Metzke	Circlip, 3-1/2" Remet/Metzke



A 4.5" ASSEMBLY EXAMPLE

Metzke

	A	1	2	3
1	Rod RC 4-1/2" x 6m Long Metzke	Inner Tube RC 4-1/2" x 6m Metzke	O-Ring, 4-1/2" Metzke/Remet	Circlip, 4-1/2" Metzke/Remet
2	Rod RC 4-1/2" x 3m Long Metzke	Inner Tube RC 4-1/2" x 3m Metzke	O-Ring, 4-1/2" Metzke/Remet	Circlip, 4-1/2" Metzke/Remet
3	Rod RC 4" x 6m Long Metzke	Inner Tube RC 4" x 6m Metzke	O-Ring, 4" Metzke	Circlip, 4" Metzke
4	Rod RC 4" x 6m Long Metzke	Inner Tube RC 4" x 3m Metzke	O-Ring, 4" Metzke	Circlip, 4" Metzke
5	Rod RC 3-1/2" x 6m Long Metzke	Inner Tube RC 3-1/2" x 6m Metzke	O-Ring, 3-1/2" Metzke/Remet	Circlip, 3-1/2" Metzke/Remet
6	Rod RC 3-1/2" x 3m Long Metzke	Inner Tube RC 3-1/2" x 3m Metzke	O-Ring, 3-1/2" Metzke/Remet	Circlip, 3-1/2" Metzke/Remet



A 4.5" ASSEMBLY EXAMPLE