

# **DRILLING EQUIPMENT AND TOOLS**

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# **B D M**



## 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).

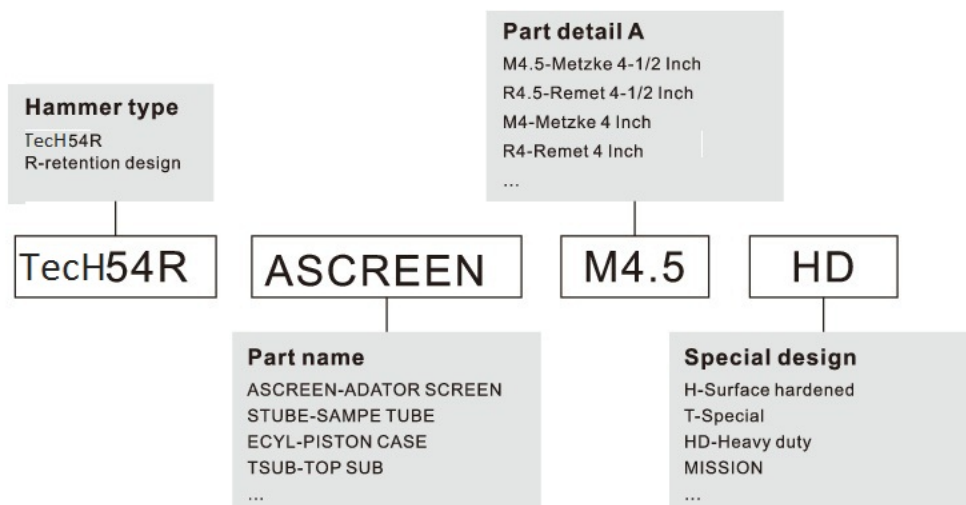
Whether you are exploring potential sites or working an existing mine, the BDDRILL RC hammer will assure of high performance, exceptional reliability and de-pendable support.

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## 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 Alfa-numerical system and not always 100% logical, but with the attached key you will be able find the product you are looking for or and alternative product.

### Example A: TechH54R-ASCREEN-M4.5-HD

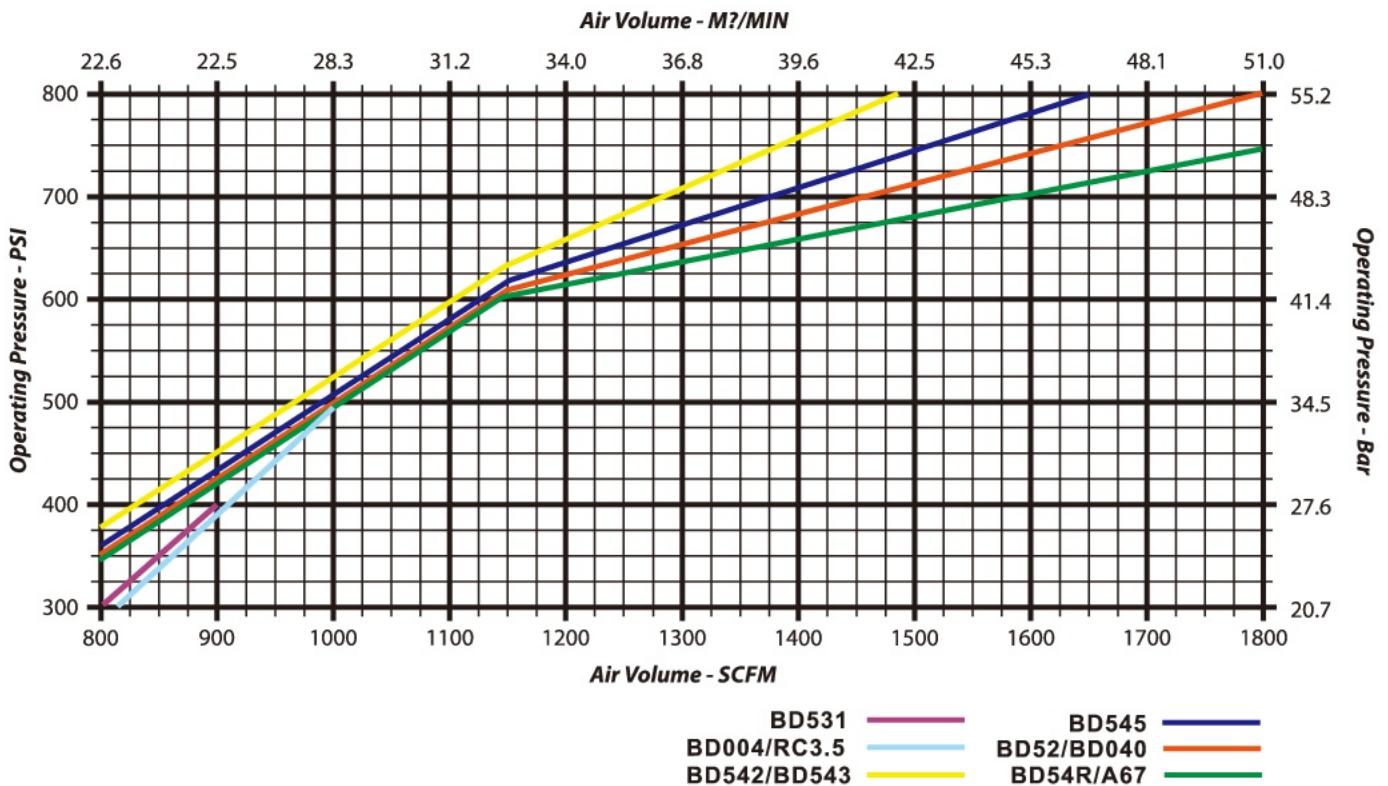


# SPECIFICATIONS

Hammer	BD531	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 (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	69.4	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		17		17
Wrench flat, mm	No Wrench Flat	(L)82 (W)40	(L)90 (W)45	(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 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 type breakouts are recommended. (See diagram). When holding bits for breakout, use a secure plate or pot 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.**



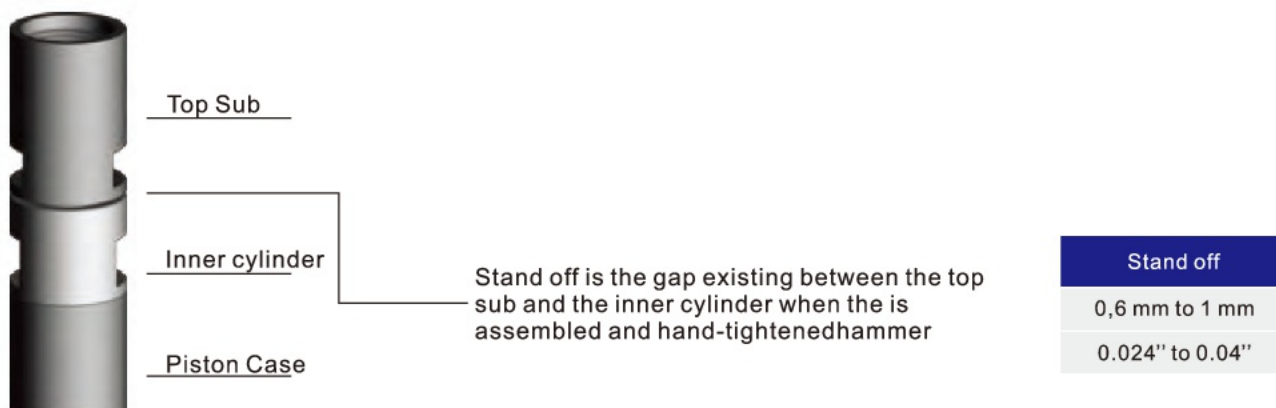
Figure1:Gripping Locations For BD DRILL Reverse Circulation Hammer

## Lubrication

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

### Recommends:

- Oil Grade: SAE 320 Hammer Oil for most operating conditions
- Rate: 2 liter/hour minimum via an 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



# TechH531 R.C. HAMMER

3" R.C. Hammers	Item Description	Weight (Kg)	Part Number
	1 Top Sub-Remet 3"	3.76	TechH531-TSUB-R3
	2 O ring (Adaptor Tube Remet 3") x 2	0.01	TechH531-SK-TSUB-R3
	3 Adaptor Tube Remet 3"	1.85	TechH531-ASCREENR3
	4 O ring (Sample Tube) x 4	0.01	TechH531-SK-STUBE
	5 Sample Tube	1.97	TechH531-STUBE
	6 Circlip	0.04	TechH531-CIRCLIP
	7 O ring (Distributor 1) x2	0.01	TechH531-SK-DIST-1
	8 O ring (Distributor 2) x1	0.01	TechH531-SK-DIST-2
	9 Distributor	0.37	TechH531-DIST
	10 Check Valve/Plunger	0.08	TechH531-CVALVE
	11 O ring (Check Valve) x 1	0.01	TechH531-SK-CVALVE
	12 Spring	0.1	TechH531-SPRING
	13 Mount Sample Tube	0.49	TechH531-STUBE-MOUNT
	14 Inner Cylinder/Top Barrel	3.4	TechH531-ICYL
	15 O ring (Inner Cylinder) x 1	0.01	TechH531-SK-ICYL
	16 Piston	4.69	TechH531-PISTON
	17 External Cylinder/Barrel/Piston Case	9.2	TechH531-ECYL
	18 Seal Cover/O ring (Bearing Bush) x 2	0.02	TechH531-SCOVER
	19 Bearing Bush	1.03	TechH531-BUSH
	20 Bit Stop Ring	0.08	TechH531-SRING
	21 O ring (Bit Stop Ring) x 1	0.01	TechH531-SK-SRING
	22 Shroud	0.45	TechH531-SHROUD-85/83
	23 Drive Sub	1.6	TechH531-DSUB
	24 Drill Bit	4.2	TechH531-85DC-TV
	25 Seal Kit (Item 2+4+7+8+11+18+21)	0.2	TechH531-SK

## Technical Data

Length(Less bit)	Weigth(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1069mm	29.0kg	Φ81	TechH531	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)		

# TechH3.5 R.C. HAMMER

3.5" R.C. Hammers	Item Description	Weight (Kg)	Part Number
	1 Top Sub-Remet 3"	6.13	TechH3.5-TSUB-R3
	2 Adaptor Tube Remet 3"	1.49	TechH3.5-ASCREEEN-R3
	3 O ring (Adaptor Tube Remet 3") x 2	0.01	TechH3.5-SK-ASCREEEN-R3
	4 Sample Tube	3.31	TechH3.5-STUBE
	5 O ring (Sample Tube) x6	0.01	TechH3.5-SK-STUBE
	6 Circlip	0.01	TechH3.5-CIRCLIP
	7 Distributor	0.3	TechH3.5-DIST
	8 Top Barrel(Sub)	5.38	TechH3.5-TBARREL
	9 Check Valve/Plunger	0.28	TechH3.5-CVALVE
	10 Y ring (Check Valve)	0.01	TechH3.5-SK-CVALVE
	11 Spring	0.05	TechH3.5-SPRING
	12 Compression Buffer/Make up ring steel	0.28	TechH3.5-MUR-STEEL
	13 Mount Sample Tube	0.87	TechH3.5-STUBE-MOUNT
	14 Inner Cylinder	1.26	TechH3.5-ICYL
	15 Piston	8.33	TechH3.5-PISTON
	16 External Cylinder/Barrel/Piston Case	10.8	TechH3.5-ECYL
	17 Bearing Bush (Cold Pressed)	1.47	TechH3.5-BUSH
	18 O ring (Bit Stop Ring) x 1	0.01	TechH3.5-SK-SRING
	19 Bit Stop Ring	0.17	TechH3.5-SRING
	20 Shroud	1.1	TechH3.5-SHROUD-104/102
	21 Drive Sub	2.9	TechH3.5-DSUB
	22 Drill bit	8	TechH3.5-104DC-TV
	23 Seal Kit(3+5+10+18)	0.2	TechH3.5-SK

## Technical Data

Length(Less bit)	Weigth(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1184mm	44.0kg	Φ94	TechH3.5Y	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)		

# TecH004 R.C. HAMMER

4" R.C. Hammers	Item Description	Weight (Kg)	Part Number	
	<b>A Top sub Assy Remet 3.5"</b>			
	1 Circlip	0.02	TecH004-CIRCLIP	
	2 O ring Adaptor Tube Remet 3.5" x 4	0.02	TecH004-SK-ASCREENR3.5	
	3 Adaptor Tube Remet 3.5"	1.06	TecH004-ASCREEN-R3.5	
	4 Top Sub-Remet 3.5"	7.79	TecH004-TSUB-R3.5	
	<b>B Top sub Assy Remet 4"</b>			
	1 Circlip	0.02	TecH004-CIRCLIP	
	2 O ring Adaptor Tube Remet 4" x 4	0.02	TecH004-SK-ASCREENR4	
	3 Adaptor Tube Remet 4"	1.06	TecH004-ASCREEN-R4	
	4 Top Sub-Remet 4"	7.79	TecH004-TSUB-R4	
	<b>C Top sub Assy Metzke 4"</b>			
	1 Circlip	0.02	TecH004-CIRCLIP	
	2 O ring Adaptor Tube Metzke 4" x 2	0.02	TecH004-SK-ASCREENM4	
	3 Adaptor Tube Metzke 4"	1.06	TecH004-ASCREEN-M4	
	4 Top Sub-Metzke 4"	7.79	TecH004-TSUB-M4	
	<b>Parts List</b>			
	5 Check Valve/Plunger	0.51	TecH004-CVALVE	
	6 Y ring (Check Valve)	0.01	TecH004-SK-CVALVE	
	7 Spring	0.06	TecH004-SPRING	
	8 Sample Tube Upper	0.74	TecH004-STUBE-U	
	9 Make Up Ring, Steel	0.17	TecH004-MUR-STEEL	
	10 O ring (Sample Tube) x2	0.02	TecH004-SK-STUBE1	
11 O ring (Sample Tube) x1	0.02	TecH004-SK-STUBE2		
12 Sample Tube Lower	2.38	TecH004-STUBE		
13 Distributor	1.75	TecH004-DIST		
14 O ring (Distributor)	0.02	TecH004-SK-DIST		
15 Inner Cylinder	2.45	TecH004-ICYL		
16 Piston	10.45	TecH004-PISTON		
17 Piston Case with Bush (cold press)	17.95	TecH004-ECYL		
18 Bit Stop Ring	0.29	TecH004-SRING		
19 O ring (Bit Stop Ring)	0.02	TecH004-SK-SRING		
20 Shroud	1.05	TecH004-SHROUD-115/113		
21 Drive Sub	3.13	TecH004-DSUB		
22 Drill Bit	11.7	TecH004-115DC-TV		

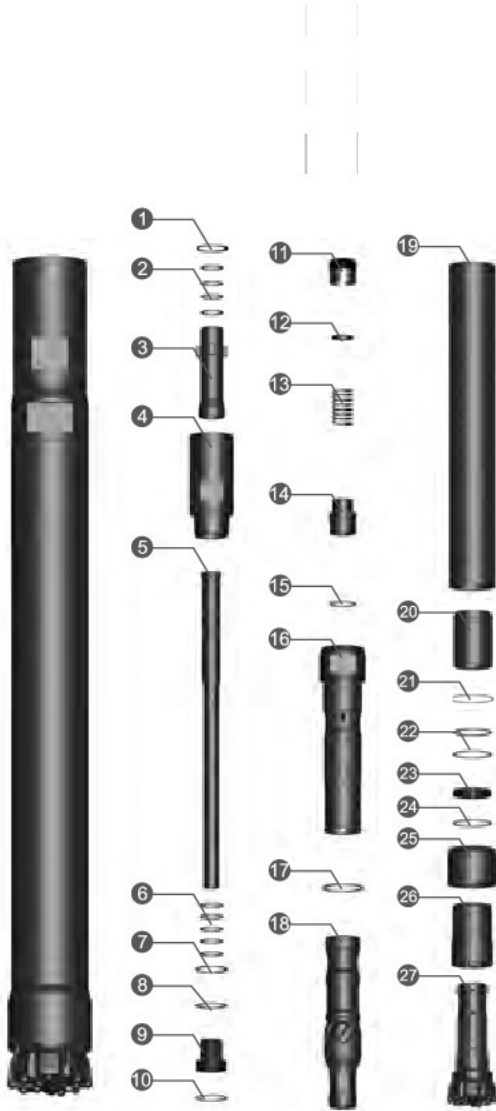
## Technical Data

Length(Less bit)	Weigth(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1252mm	52.0kg	Φ107	TecH004	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)		

# Tech542 R.C HAMMER

## 4.5" R.C. Hammers

Tech



### Item Description

Weight  
(Kg)

### Part Number

#### A Top sub Assy Remet 3.5"

1	Circlip A	0.04	Tech 543/542-CIRCLIP-R3.5
2	O ring (Adaptor Tube Remet 3.5" )x 4	0.02	Tech 543/542-SK-ASCREENR3.5
3	Adaptor Tube Remet 3.5"	2.55	Tech 543/542-ASCREEN-R3.5
4	Top Sub-Remet 3.5"	8.52	Tech 543/542-TSUB-R3.5

#### B Top sub Assy Remet 4"

1	Circlip A	0.02	Tech543/542-CIRCLIP-4
2	O ring (Adaptor Tube Remet 4" ) x 4	0.02	Tech543/542-SK-ASCREENR4
3	Adaptor Tube Remet 4"	2.55	Tech543/542-ASCREEN-R4
4	Top Sub-Remet 4"	8.52	Tech543/542-TSUB-R4

#### C Top sub Assy Metzke 4"

1	Circlip A	0.02	Tech543/542-CIRCLIP-4
2	O ring (Adaptor Tube Metzke 4" ) x 2	0.02	Tech 543/542-SK-ASCREENM4
3	Adaptor Tube Metzke 4"	2.55	Tech543/542-ASCREEN-M4
4	Top Sub-Metzke 4"	8.52	Tech 543/542-TSUB-M4

#### Parts List

5	Sample Tube	3.5	Tech543/542-STUBE
6	O ring (Sample Tube) x 5	0.02	Tech543/542-SK-STUBE
7	Circlip B	0.02	Tech543/542-CIRCLIP-4
8	Air Screen	0.04	Tech543/542-AIRSCREEN
9	Distributor	0.56	Tech543/542-DIST
10	O ring (Distributor)	0.02	Tech543/542-SK-DIST
11	Check Valve/Plunger	0.5	Tech543/542-CVALVE
12	Y ring (Check Valve)	0.02	Tech543/542-SK-CVALVE
13	Spring	0.08	Tech543/542-SPRING
14	Mount Sample Tube	0.86	Tech543/542-STUBE-M
15	Y Ring (Mount Sample Tube)	0.02	Tech543/542-SK-STUBEM
16	Inner Cylinder/Top Barrel	7.26	Tech542-ICYL
17	O ring (Inner Cylinder)	0.02	Tech543/542-SK-ICYL
18	Piston	11.64	Tech543/542-PISTON
19	External Cylinder/Barrel/Piston Case	19.17	Tech542-ECYL
20	Bearing Bush	0.05	Tech543/542-PRING
21	Bush Retaining Ring	2.35	Tech543/542-BUSH
22	O ring (Bearing Bush) x 2	0.02	Tech543/542-SK-BUSH
23	Bit Ring	0.26	Tech543/542-SRING
24	O ring (Bit Ring)	0.02	Tech543/542-SK-SRING
25	Shroud	2.21	Tech543/542-SHROUD-127/125
26	Drive Sub	2.94	Tech543/542-DSUB
27	Drill Bit	10.96	Tech543/542-127DC
28	Seal Kit (Item 2+6+10+12+15+17+22+24)	0.3	Tech543/542-SK

## Technical Data

Length(Less bit)	Weighth(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1191mm	57.0kg	Φ109.5	Tech542	Φ113-Φ130	3.5" -4 " Remet 4 " Metzke
Box Size	Impact rate at 2.4Mpa	Recommended rotation speed	Air Consumption		
			200-500 (PSI)		
1230x140x170mm	35HZ	25-40r/min	300-1200 (CFM)		

# TechH543 R.C HAMMER

4.5" R.C. Hammers	Item Description	Weight (Kg)	Part Number
	<b>A Top sub Assy Remet 4"</b>		
	1 Circlip A	0.04	TechH543/542-CIRCLIP-4
	2 O ring (Adaptor Tube Remet 4") x 4	0.02	TechH543/542-SK-ASCREENR4
	3 Adaptor Tube Remet 4"	2.55	TechH543/542-ASCSCREEN-R4
	4 Top Sub-Remet 4"	8.52	TechH543/542-TSUB-R4
	<b>B Top sub Assy Metzke 4"</b>		
	1 Circlip A	0.02	TechH543/542-CIRCLIP-4
	2 O ring (Adaptor Tube Metzke 4") x 2	0.02	TechH543/542-SK-ASCSCREENM4
	3 Adaptor Tube Metzke 4"	2.55	TechH543/542-ASCSCREEN-M4
	4 Top Sub-Metzke 4"	8.52	TechH543/542-TSUB-M4
	<b>Parts List</b>		
	5 Sample Tube	3.50	TechH543/542-STUBE
	6 O ring (Sample Tube) x 5	0.02	TechH543/542-SK-STUBE
	7 Circlip B	0.02	TechH543/542-CIRCLIP-4
	8 Air Screen	0.04	TechH543/542-AIRSCREEN
	9 Distributor	0.56	TechH543/542-DIST
	10 O ring (Distributor)	0.02	TechH543/542-SK-DIST
	11 Check Valve/Plunger	0.50	TechH543/542-CVALVE
	12 Y ring (Check Valve)	0.02	TechH543/542-SK-CVALVE
	13 Spring	0.08	TechH543/542-SPRING
	14 Mount Sample Tube	0.86	TechH543/542-STUBE-M
	15 Y Ring (Mount Sample Tube)	0.02	TechH543/542-SK-STUBEM
	16 Inner Cylinder/Top Barrel	7.26	TechH543-ICYL
	17 O Ring (Inner Cylinder)	0.02	TechH543/542-SK-ICYL
	18 Piston	11.64	TechH543/542-PISTON
	19 External Cylinder/Barrel/Piston Case	19.17	TechH543-ECYL
	20 Bearing Bush	0.05	TechH543/542-PRING
	21 Bush Retaining Ring	2.35	TechH543/542-BUSH
22 O ring (Bearing Bush) x 2	0.02	TechH543/542-SK-BUSH	
23 Bit Ring	0.26	TechH543/542-SRING	
24 O ring (Bit Ring)	0.02	TechH543/542-SK-SRING	
25 Shroud	2.21	TechH543/542-SHROUD-127/125	
26 Drive Sub	2.94	TechH543/542-DSUB	
27 Drill Bit	10.96	TechH543/542-127DC	
28 Seal Kit (Item 2+6+10+12+15+17+22+24)	0.30	TechH543/542-SK	

## Technical Data

Length(Less bit)	Weigth(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1191mm	62.0kg	Φ116	TechH543	Φ113-Φ133	3.5" -4 " Remet 4 " Metzke
Box Size	Impact rate at 2.4Mpa	Recommended rotation speed	Air Consumption		
			200-500 (PSI)		
1230x140x170mm	35HZ	25-40r/min	300-1200 (CFM)		

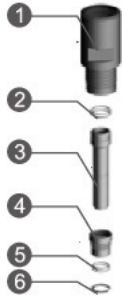
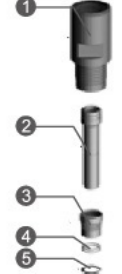
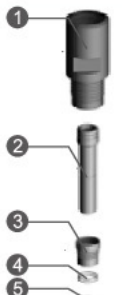
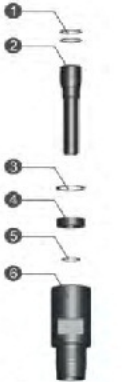
# Tech545 R.C HAMMER

5" R.C. Hammers	Item Description	Weight (Kg)	Part Number
	<b>A Top sub Assy Metzke 4.5"</b>		
	1 Circlip A	0.04	Tech545-CIRCLIP-R4.5
	2 O ring Adaptor Tube Remet 4.5" x 4	0.02	Tech545-SK-ASCREENR4.5
	3 Adaptor Tube Remet 4.5"	2.95	Tech545-ASCREEN-R4.5
	4 O ring Adaptor Tube x 2	0.02	Tech545-SK-ASCREENMR
	5 Top Sub-Remet 4.5"	6.98	Tech545-TSUB-R4.5
	<b>B Top sub Assy Metzke 4.5"</b>		
	1 Circlip A	0.04	Tech545-CIRCLIP-M4.5
	2 Adaptor Tube Metzke 4.5"	2.95	Tech545-ASCREEN-M4.5
	3 O ring Adaptor Tube x 2	0.02	Tech545-SK-ASCREENMR
	4 Top Sub-Metzke 4.5"	6.98	Tech545-TSUB-M4.5
	<b>Parts List</b>		
	6 Sample Tube	4.61	Tech545-STUBE
	7 O ring (Sample Tube) x 4	0.02	Tech545-SK-STUBE
	8 Circlip B	0.02	Tech545-CIRCLIP-4
	9 Air Screen	0.04	Tech545-AIRSCREEN
	10 Distributor	0.48	Tech545-DIST
	11 O ring (Distributor) x 2	0.02	Tech545-SK-DIST
	12 Check Valve/Plunger	0.53	Tech545-CVALVE
	13 Y ring (Check Valve)	0.02	Tech545-SK-CVALVE
	14 Spring	0.12	Tech545-SPRING
	15 O ring (Inner Cylinder)	0.02	Tech545-SK-ICYL
	16 Inner Cylinder/Top Barrel	10.2	Tech545-ICYL
	17 Piston	15.1	Tech545-PISTON
	18 External Cylinder/Barrel/Piston Case	17.2	Tech545-ECYL
	19 Bearing Bush	0.05	Tech545-PRING
	20 O ring (Bearing Bush) x 2	2.95	Tech545-BUSH
21 Bush Retaining Ring	0.02	Tech545-SK-BUSH	
22 Bit Ring	0.26	Tech545-SRING	
23 O ring (Bit Ring)	0.02	Tech545-SK-SRING	
24 Shroud	1.6	Tech545-SHROUD-127/125	
25 Drive Sub	3.41	Tech545-DSUB	
26 Drill Bit	12.6	Tech545-133DC	
27 Seal Kit (Item 2+4(3)+7+11+13+15+21+223)	0.3	Tech545-SK	

## Technical Data

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

# TechH040 R.C HAMMER

5" R.C. Hammers	Item Description	Weight (Kg)	Part Number
 <p><b>Top Sub Assembly-A</b></p>	<p><b>A Top sub Assy Remet 4"</b></p> <p>① Top Sub-Remet 4"</p> <p>② O ring (Adaptor Tube Remet 4") x 2</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>TechH040-TSUB-R4</p> <p>TechH040-SK-ASCREEEN-R4</p> <p>TechH040-ASCREEEN-R4</p> <p>TechH040-AIRSCREEN</p> <p>TechH040-SK-AIRSCREEN</p> <p>TechH040-CIRCLIP</p>
 <p><b>Top Sub Assembly-B</b></p>	<p><b>B Top sub Assy Metzke 4"</b></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>TechH040-TSUB-M4</p> <p>TechH040-ASCREEEN-M4</p> <p>TechH040-AIRSCREEN</p> <p>TechH040-SK-AIRSCREEN</p> <p>TechH040-CIRCLIP</p>
 <p><b>Top Sub Assembly-C</b></p>	<p><b>C Top sub Assy Metzke 4.5"</b></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>TechH040-TSUB-M4.5</p> <p>TechH040-ASCREEEN-M4.5</p> <p>TechH040-AIRSCREEN</p> <p>TechH040-SK-AIRSCREEN</p> <p>TechH040-CIRCLIP</p>
 <p><b>Top Sub Assembly-D</b></p>	<p><b>D Top sub Assy Remet 4.5"</b></p> <p>① O ring Adaptor Tube Remet 4.5" x 2</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>TechH040/52-SK-ASCREEEN-R4.5</p> <p>TechH040/52-ASCREEEN-R4.5</p> <p>TechH040/52-CIRCLIP-1</p> <p>TechH040/52-AIRSCREEN-R4.5</p> <p>TechH040/52-CIRCLIP-2</p> <p>TechH040-TSUB-R4.5</p>

# TechH040 R.C HAMMER

5" R.C. Hammers	Item Description	Weight (Kg)	Part Number
	7 Check Valve/Plunger	0.63	TechH040/52-CVALVE
	8 Y ring (Check Valve)	0.01	TechH040/52-SK-CVALVE
	9 Spring	0.12	TechH040/52-SPRING
	10 Spring Seat	0.12	TechH040/52-SSEAT
	11 Make Up Ring, Steel	0.09	TechH040/52-MUR-STEEL
	12 Make Up Ring, Viton	0.06	TechH040/52-MUR-VITON
	13 Distributor	1.75	TechH040/52-DIST
	14 O ring (Distributor) x1	0.02	TechH040/52-SK-DIST
	15 O ring (Sample Tube) x2	0.02	TechH040-SK-STUBE1
	16 O ring (Sample Tube) x1	0.02	TechH040-SK-STUBE2
	17 Sample Tube Lower	4.32	TechH040-STUBE
	18 Mount Sample Tube	1	TechH040-STUBE-MOUNT
	19 O ring (Mount Sample Tube)x1	0.02	TechH040-SK-STUBE-M
	20 Inner Cylinder	7.69	TechH040-ICYL
	21 Piston	13.63	TechH040-PISTON
	22 External Cylinder/Barrel/Piston Case	24.14	TechH040-ECYL
	23 Piston Retaining Ring	0.1	TechH040-PRING
	24 Bearing Bush	1.89	TechH040-BUSH
	25 O ring (Bearing Bush) x 1	0.02	TechH040-SK-BUSH1
	26 O ring (Bearing Bush) x 1	0.02	TechH040-SK-BUSH2
	27 Bit Stop Ring	0.31	TechH040-SRING
	28 O ring (Bit Stop Ring)x 1	0.02	TechH040-SK-SRING
	29 Shroud	2.2	TechH040-SHROUD-136/134
	30 Drive Sub	3.67	TechH040-DSUB
	31 Drill Bit	15.0	TechH040-136DC-TV
	32 Seal Kit (Item 2(1)+5(4)+8+14+15+16+19+25+26+28)	0.2	TechH040-SK

## Technical Data

Length(Less bit)	Weighth(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1362mm	80.5kg	Φ120.5	TechH040	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)		

# TechH52 R.C HAMMER

5.5" R.C. Hammers	Item Description	Weight (Kg)	Part Number
	<b>A Top Sub Assy Metzke 4.5"</b>		
	2 Adaptor Tube Metzke 4.5"	2.19	TechH52-ASCREEN-M4.5
	3 Circlip B	0.03	TechH52-CIRCLIP
	4 Air Screen	0.42	TechH52-AIRSCREEN-M4.5
	5 Circlip A	0.03	TechH52-CIRCLIP
	6 Top Sub-Metzke 4.5"	8.92	TechH52-TSUB-M4.5
	<b>B Top Sub Assy Remet 4.5"</b>		
	1 O Ring Adaptor Tube Remet 4.5" x 2	0.02	TechH040/52-SK-ASCREEN-R4.5
	2 Adaptor Tube Remet 4.5"	2.19	TechH040/52-ASCREEN-R4.5
	3 Circlip B	0.03	TechH040/52-CIRCLIP
	4 Air Screen	0.42	TechH040/52-AIRSCREEN-R4.5
	5 Circlip A	0.03	TechH040/52-CIRCLIP
	6 Top Sub-Remet 4.5"	8.92	TechH52-TSUB-R4.5
	<b>Parts List</b>		
	7 Check Valve/Plunger	0.63	TechH040/52-CVALVE
	8 Y Ring (Check Valve)	0.03	TechH040/52-SK-CVALVE
	9 Spring	0.12	TechH040/52-SPRING
	10 Spring Seat	0.12	TechH040/52-SSEAT
	11 Make Up Ring, Steel	0.1	TechH040/52-MUR-STEEL
	12 Make Up Ring, Viton	0.05	TechH040/52-MUR-VITON
	13 Distributor	1.31	TechH040/52-DIST
	14 O Ring (Distributor)	0.02	TechH040/52-SK-DIST
	15 O Ring (Sample Tube) x2	0.02	TechH52-SK-STUBE1
	16 O Ring (Sample Tube) x1	0.02	TechH52-SK-STUBE2
	17 Sample Tube Lower	4.52	TechH52-STUBE
	18 Mount Sample Tube	0.8	TechH52-STUBE-MOUNT
	19 O Ring (Mount Sample Tube)	0.02	TechH52-SK-STUBE-M
	20 Inner Cylinder	7.39	TechH52-ICYL
	21 Piston	14.63	TechH52-PISTON
	22 External Cylinder/Barrel/Piston Case	18.86	TechH52-ECYL
	23 Piston Retaining Ring	0.13	TechH52-PRING
	24 Bearing Bush	1.89	TechH52-BUSH
25 O Ring (Bearing Bush) x 1	0.02	TechH52-SK-BUSH1	
26 O Ring (Bearing Bush) x 1	0.02	TechH52-SK-BUSH2	
27 Bit Stop Ring	0.31	TechH52-SRING	
28 O Ring (Bit Stop Ring)	0.02	TechH52-SK-SRING	
29 Shroud (Retaining Option)	1.86	TechH52-SHROUD-136/134 or TechH52R-SHROUD-136/134	
30 Drive Sub (Retaining Option)	4.17	TechH52-DSUB or BD52R-DSUB	
31 Drill Bit (Retaining Option)	11.01	TechH52-136DC or BD52R-136DC	
32 Seal Kit (Item 1+8+14+15+16+19+25+26+28)	0.30	TechH52-SK	

## Technical Data

Length(Less bit)	Weigth(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1227mm	68.5kg	Φ121	TechH52	Φ126-Φ142	4" - 4.5" Remet 4" - 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)		

# TechH54 R.C HAMMER

5.5" R.C. Hammers	Item Description	Weight (Kg)	Part Number
	<b>A Top sub Assy Remet 4"</b>		
	1 Top Sub-Remet 4.5"	11.61	TechH54-TSUB-R45
	2 O Ring (Adaptor Tube Remet 4.5") x 2	0.02	TechH54-SK-ASCREEEN-R45
	3 Adaptor Tube Remet 4.5"	2.35	TechH54-ASCREEEN-R45
	4 Air Screen	0.50	TechH54-AIRSCREEN
	5 O Ring (Air Screen) x 2	0.02	TechH54-SK-AIRSCREEN
	6 Circlip	0.04	TechH54-CIRCLIP
	<b>B Top sub Assy Metzke 4"</b>		
	1 Top Sub-Metzke 4.5"	11.61	TechH54-TSUB-M45
	2 Adaptor Tube Metzke 4.5"	2.35	TechH54-ASCREEEN-M45
	3 Air Screen	0.5	TechH54-AIRSCREEN
	4 O Ring (Air Screen) x 2	0.02	TechH54-SK-AIRSCREEN
	5 Circlip	0.04	TechH54-CIRCLIP
	<b>Parts List</b>		
	7 Check Valve/Plunger	0.58	TechH54-CVALVE
	8 Y Ring (Check Valve)	0.02	TechH54-SK-CVALVE
	9 Spring	0.12	TechH54-SPRING
	10 Spring Seat	0.12	TechH54-SSEAT
	11 Make Up Ring, Steel	0.14	TechH54-MUR-STEEL
	12 Make Up Ring, Viton	0.06	TechH54-MUR-VITON
	13 Distributor	1.54	TechH54-DIST
	14 O Ring (Distributor)	0.02	TechH54-SK-DIST
	15 O Ring (Sample Tube) x2	0.02	TechH54-SK-STUBE1
	16 O Ring (Sample Tube) x1	0.02	TechH54-SK-STUBE2
	17 Sample Tube Lower	6.47	TechH54-STUBE
	18 Mount Sample Tube	1.00	TechH54-STUBE-MOUNT
	19 O Ring (Mount Sample Tube)	0.02	TechH54-SK-STUBE-M
	20 Inner Cylinder	8.54	TechH54-ICYL
	21 Piston	17.2	TechH54-PISTON
	22 External Cylinder/Barrel/Piston Case	23.44	TechH54-ECYL
	23 Piston Retaining Ring	0.2	TechH54-PRING
	24 Bearing Bush	1.89	TechH54-BUSH
25 O Ring (Bearing Bush) x 1	0.02	TechH54-SK-BUSH1	
26 O Ring (Bearing Bush) x 2	0.02	TechH54-SK-BUSH2	
27 Bit Stop Ring	0.43	TechH54-SRING	
28 O Ring (Bit Stop Ring)	0.02	TechH54-SK-SRING	
29 Shroud (Retaining Option)	2.35	TechH54-SHROUD-143/141 or TechH54R-SHROUD-136/134	
30 Drive Sub (Retaining Option)	4.9	TechH54-DSUB or BD54R-DSUB	
31 Drill Bit (Retaining Option)	18.33	TechH54-143DC or BD54R-143DC	
32 Seal Kit (Item 2+4+8+14+15+16+19+25+26+28)	0.3	TechH54-SK	

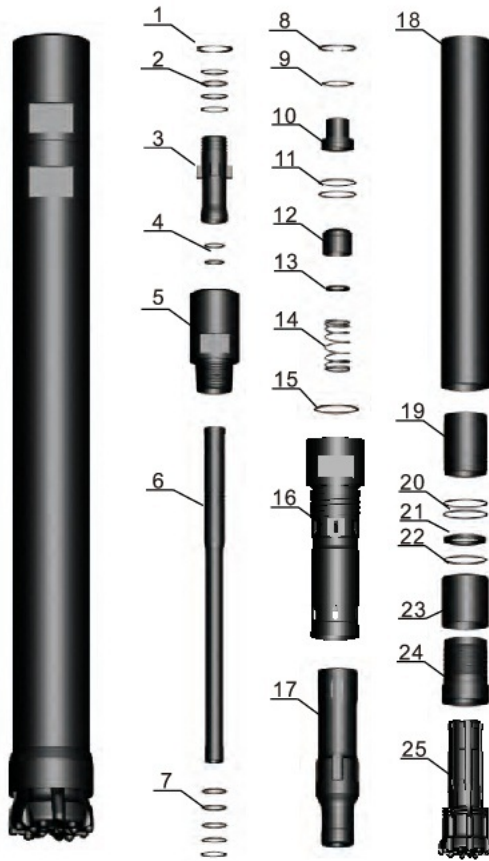
## Technical Data

Length(Less bit)	Weigth(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1294mm	84.5kg	Φ130	TechH54	Φ136-Φ150	4.5" Remet 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)		

# TechH5.5-A67 HAMMER

TechH5.5-A67 Hammers	Item Description	Weight (Kg)	Part Number
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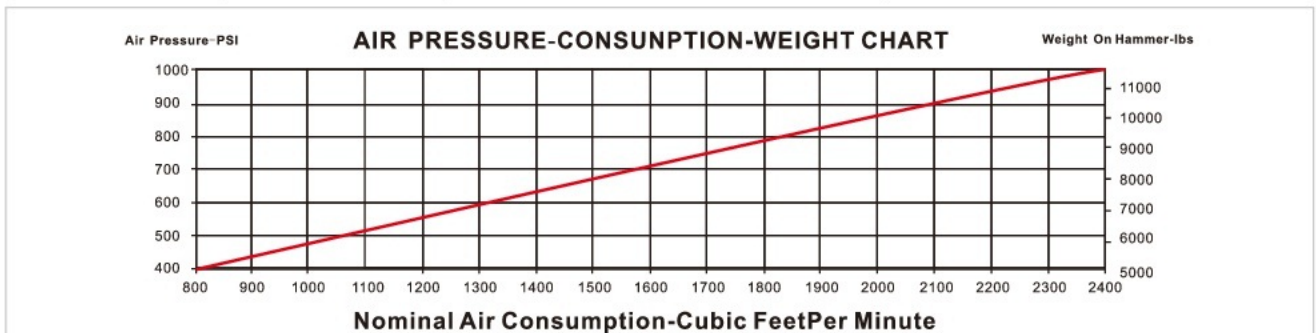
SPARE PARTS LISTING: RC5.5 (Hammer OD 132mm) comes complete with Adaptor Sub




1	CIRCLIP	0.05	A67-CIRCLIP-TSUB
2	"O" RING X4	0.02	A67-SK-ASCREEN1
3	ADAPTOR SCREEN	2.95	A67-ASCREEN
4	"O" RING X2	0.02	A67-SK-ASCREEN2
5	TOP SUB	6.98	A67-TSUB
6	SAMPLE TUBE	4.90	A67-STUBE
7	"O" RING X5	0.02	A67-SK-STUBE
8	CIRCLIP	0.04	A67-CIRCLIP-AIRSCREEN
9	AIRSCREEN	0.02	A67-AIRSCREEN
10	DISTRIBUTOR NOZZLE	0.48	A67-DIST
11	"O" RING X2	0.02	A67-SK-DIST
12	PLUNGER	0.53	A67-PLUNGER
13	"Y" RING X1	0.02	A67-SK-PLUNGER
14	SPRING	0.12	A67-SPRING
15	"O" RING X1	0.02	A67-SK-ICYL
16	INNER CYLINDER	12.00	A67-ICYL
17	PISTON	16.70	A67-PISTON
18	PISTON CASE	25.30	A67-ECYL
19	BUSH DRIVE SUB	2.30	A67-BUSH
20	"O" RING X2	0.02	A67-SK-BUSH
21	BIT RETAINING RING	0.23	A67-SRING
22	"O" RING X1	0.02	A67-SK-SRING
23	SHROUD	1.60	A67-SHROUD
24	DRIVE SUB	3.10	A67-DSUB
25	DRILL BIT	12.60	

## Technical Data


Length(Less bit)	Weighth(Less bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1280mm	86.8KG	Φ132	AD	Φ136-Φ146	4-1/2" Remet/Metzke
Working Pressure	Impact rate at 4 Mpa	Recommended rotation speed	Air Consumption		
			400-1100(PSI)		
4-11MPA	35HZ	30-70r/min	400-2400(CFM)		




## Tech531 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					
	89	2 1/2	8x12	5x12	35	2	87	4.3	TechH531-89
	95	2 3/4	8x12	6x12	35	2	93	4.6	TechH531-95
	102	3	8x12	6x12	35	2	100	4.9	TechH531-102


## Tech3.5Y 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					
	104	4 1/10	6x16	6x14+6x13	35	2	102	6.6	TechH3.5Y-104
	108	4 1/4	8x16	8x14+6x13	35	2	106	6.9	TechH3.5Y-108
	114	4 1/2	8x16	8x14+6x14	35	2	112	7.5	TechH3.5Y-114


## Tech004 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					
	118	4 5/8	8x14	6x14	35	2	116	11.7	TechH004-118
	121	4 3/4	8x14	6x14	35	2	119	12.0	TechH004-121
	127	5	8x14	8x14	35	2	125	12.4	TechH004-127


## Tech542 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					
	124	4 7/8	8x14	8x13	35	2	122	10.8	TechH542-124
	127	5	8x14	8x14	35	2	125	11.0	TechH542-127
	130	5 1/8	8x14	10x14	35	2	128	11.3	TechH542-130


## 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					
	127	5	8x14	8x14	35	2	125	11.0	TechH543-127
	130	5 1/8	8x14	10x14	35	2	128	11.3	TechH543-130
	133	5 1/4	8x16	10x14	35	2	131	11.8	TechH543-133


## 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					
	127	5	8x14	8x14	35	2	125	13.5	TechH545-127
	133	5 1/4	8x16	10x14	35	2	131	13.8	TechH545-133
	136	5 3/8	8x16	6x16+3x14	35	2	134	14.2	TechH545-136


## Tech040 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					
	127	5	8x14	8x14	35	2	125	14.7	Tech040-127
	133	5 1/4	8x16	10x14	35	2	131	15.2	Tech040-133
	138	5 7/16	8x16	6x16+3x14	35	2	136	15.8	Tech040-138

## 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					
	136	5 3/8	8x16	6x16+3x14	35	2	134	11.5	Tech52-136
	140	5 1/2	8x16	6x16+3x14	35	2	138	11.9	Tech52-140
	143	5 5/8	8x16	6x16+3x14	35	2	141	12.3	Tech52-143

## 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					
	140	5 1/2	8x16	6x16+3x14	35	2	138	18.5	Tech54-140
	143	5 5/8	8x16	6x16+3x14	35	2	141	18.8	Tech54-143
	146	5 3/4	8x16	6x16+3x14	35	2	144	19.2	Tech54-146

# 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 between the inner and outer tube.

## Saver sub

The saver sub protects the threads on the rotation 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 the cuttings inside the inner tube for sampling.

## Digout sub

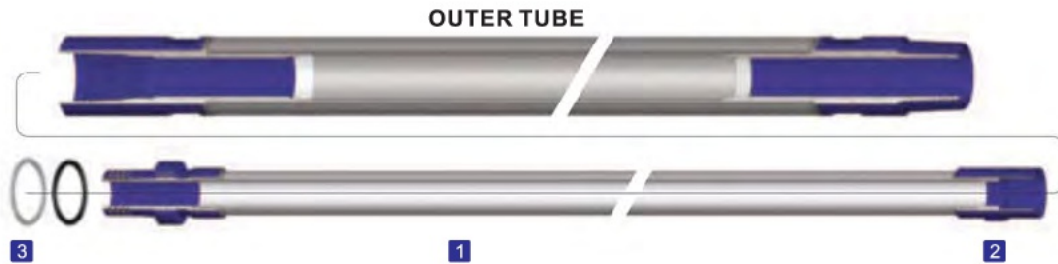
A digout sub is a short crossover sub between the hammer and pipes. With 4 bars, it stabilizes the hammer and prevents damage to the hammer when digging out holes.

## Hammers

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

## Remet

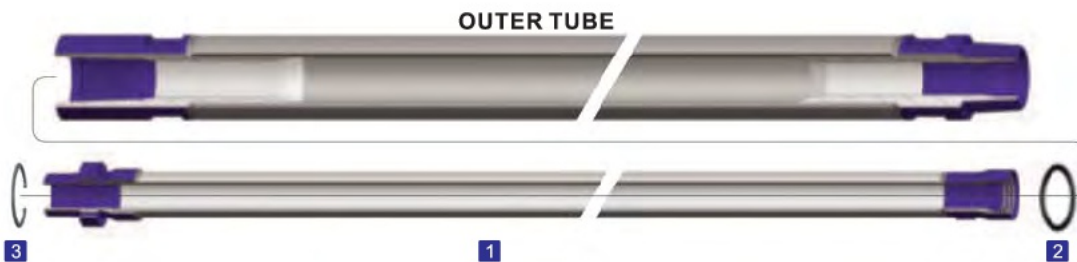
	A	1	2	3
1	Rod RC 4-1/2" x 6m Long Remet	Inner Tube RC 4-1/2" x 6m Remet	O-Ring, 4 1/2" Remet/Metzke	Circlip, 4 1/2" Remet
2	Rod RC 4-1/2" x 3m Long Remet	Inner Tube RC 4-1/2" x 3m Remet	O-Ring, 4 1/2" Remet/Metzke	Circlip, 4 1/2" Remet
3	Rod RC 4" x 6m Long Remet	Inner Tube RC 4" x 6m Remet	O-Ring, 4"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