DIAMOND PRODUCTS

Quality Is Choice

MADE IN USA

CORE BORE BIT INFORMATION

Diamond Products Limited
333 Prospect St., Elyria, OH 44035 U.S.A.

800-321-5336 - diamondproducts.com

CORE BORE BIT INFORMATION

Elements of a Core Bore Bit

Wet Bit Hub Sizes	
Bit Diameter	**Hub Size**
1/2" to 1-1/2"	5/8"-11
1-5/8" to 36"	1-1/4"-7
36" and up	1-7/8"-7 w/adapter

Dry Bit Hub Sizes	
Bit Diameter	**Hub Size**
All Dry Hole Saws	5/8"-11
Dry Vacuum Bits	1-1/4"-20

Large Bit Hub Options	
Hub Type	**Description**
A-Flange / C-Flange	Special drill mounts
Solid Back	For heavy duty applications
Bolt-On	Allows removal of hub to access the core
Spoke Back	Light-weight with side radial water sprayer

Wet Bit Core Length	
Bit Diameter	**Core Length**
1/2" to 7/8"	12"
1" to 14"	13"
16"	19"
18"	22"
20" to 30"	23"
30" to 72"	35"

Dry Bit Core Length	
Bit Diameter	**Core Length**
All	9"
Star Blue	11"

Standard Segment Widths	
Bit Diameter	**Segment Width**
7/8" thru 1-3/4"	.135"
1-7/8" thru 6"	.145"
7" and 8"	.165"
9" thru 16"	.187"
18" thru 24"	.220"
Above 24"	.250"

Standard Segment Lengths	
Bit Diameter	**Segment Length**
1" thru 1-3/8"	.500"
1-1/2" thru 1-3/4"	.787"
1-7/8" thru 84"	1"

Diamond Depth by Quality	
Quality Grade	**Diamond Depth**
Star Blue	.335" (8.5mm)
Standard Gold	.287" (7mm)
Heavy Duty Orange	.237" (6mm)
Premium Black	.237" (6mm)
Super Premium Red	.350" (8.89mm)
Pro Blue	.237" (6mm)
Supreme Silver	.237" (6mm)
Super Premium Plus Red	.400" (10.16mm)

Core Bit Lexicon

Segment - Diamond bearing piece that is welded or brazed to a steel tube. Made up of metal powders and diamonds.
Kurf - Width size of a segment.
Backer Pad - Non-diamond bearing side of the segment that allows it to be welded or brazed to the barrel.
Waterway - Space between segments that allows water to reach the cutting surface.
Thinwall - Core bit with thin-gauge barrel and narrow segments for fast drilling, typically hand-held.
Barrel - Steel tube that makes up the majority of a core bit. A threaded hub and segments are attached to each end
Hub - Cap that is welded to the barrel that has threads to connect to motor spindle.
Core Length - Amount of core depth that can be drilled. Measured from the inside of the barrel from bottom of hub to bottom of segments.
OAL - Over All Length of the core bit from top of hub to bottom of segments.

CORE BORE BIT INFORMATION

Reference Charts

Number of Segments on Core Bits						
Core Bit Diameter	Standard Gold	Heavy Duty Orange	Premium Black	Pro Blue	Super Premium Red	Turbo
1		4	4	4		
1 1/8		4	4			
1 1/4		5	5	5		
1 3/8		5	5			
1 1/2		4	4	4		
1 5/8		5	5			
1 3/4		5	5	5		
1 7/8		4	4			
2	5	5	5	4	4	5
2 1/8	5	5	5	4	4	5
2 1/4	5	5	5	5	5	5
2 1/2	6	6	6	5	5	6
2 3/4	6	6	6	6	6	6
3	7	7	7	6	6	7
3 1/4	8	8	8	8	6	8
3 1/2	8	8	8	7	7	8
3 3/4	8	8	8	7	7	8
4	10	10	10	8	8	10
4 1/4	10	10	10	8	8	10
4 1/2	11	11	11	9	9	11
4 3/4	11	11	11	9	9	11
5	12	12	12	10	10	12
5 1/2	13	13	13	11	11	13
6	14	14	14	12	12	14
6 1/4	14	14	14	12	12	14
6 1/2	15	15	15	13	13	15
7	14	16	16	14	15	16
8	16	16	16	16	16	18
9	18	18	18	18	18	
10	20	20	20	20		20
12	24	24	24	24		24
14	28	28	28	28		
16	30	30	30	30		
18		30	30	30		
20		32	32			
24		38	38			
26		40	40			
28		44	44			
30		47	47			
32		49	49			
34		52	52			
36		56	56			
38		60	60			
40		62	62			
42		65	65			
44		68	68			
46		71	71			
48		74	74			

Segmented Core Bit Recommended R.P.M. Reference Chart			
Bit Diameter	Minimum RPM	Maximum RPM	Ideal RPM
5/16"	7639	12736	10182
1/2"	4775	7960	6364
5/8"	3820	6368	5091
3/4"	3183	5307	4242
7/8"	2728	4549	3636
1"	2387	3980	3182
1-1/5"	1989	3317	2652
1-1/8"	2122	3538	2828
1-1/4"	1910	3184	2545
1-3/8"	1736	2895	2314
1-1/2"	1592	2653	2121
1-5/8"	1469	2449	1958
1-3/4"	1364	2274	1818
1-7/8"	1273	2123	1697
2"	1194	1990	1591
2-1/4"	1061	1769	1414
2-3/8"	1005	1676	1340
2-1/2"	955	1592	1273
2-3/4"	868	1447	1157
3"	796	1327	1061
3-1/4"	735	1225	979
3-1/2"	682	1137	909
4"	597	995	795
4-1/4"	562	937	749
4-1/2"	531	884	707
5"	477	796	636
5-1/2"	434	724	579
6"	398	663	530
6-1/4"	382	637	509
6-1/2"	367	612	490
7"	341	569	455
8"	298	498	398
9"	265	442	354
10"	239	398	318
12"	199	332	265
14"	171	284	227
16"	149	249	199
18"	133	221	177
20"	119	199	159
22"	109	181	145
24"	99	166	133
26"	92	153	122
28"	85	142	114
30"	80	133	106
32"	75	124	99
34"	70	117	94
36"	66	111	88
38"	63	105	84
40"	60	100	80
42"	57	95	76
44"	54	90	72
46"	52	87	69
48"	50	83	66

CORE BORE BIT INFORMATION

Hubs

1.250”-7 Hub

1-1/4” opening with 7 threads per inch. Industry standard on bits 1-5/8” and up. 1.250”-7 spindle is found on most drill motors.

5/8”-11 Hub

5/8” opening with 11 threads per inch. Used on small diameter bits and dry hole saw bits. Typically for hand-held applications.

1.250”-12 Hub

1-1/4” opening with 12 threads per inch. Special hub for dry vacuum hole saws. To be used with the dry vac bit adapter.

Spoke Back

Light-weight with inside radial water sprayer.

A-Flange & C-Flange

Special hub for drill mounts with A-Flange or C-Flange bolt patterns.

Bolt On

Allows removal of the hub to access the core.

Solid Back

Welded hub for heavy duty applications.

Threaded Caps

Threaded caps and barrels are used for deep hole drilling. The barrels can be pieced together as you drill deeper.

Expansion Adapters

- Expansion adapters are used on open-end core bits instead of welded hubs
- Made up of two threaded plates with expansion ring
- The three pieces are placed in the core barrel and tightened on the drill rig spindle
- The expansion ring expands, and tightens against the core barrel-keeping the bit secure

CORE BORE BIT INFORMATION

Specifications

Basic Core Bit Specifications

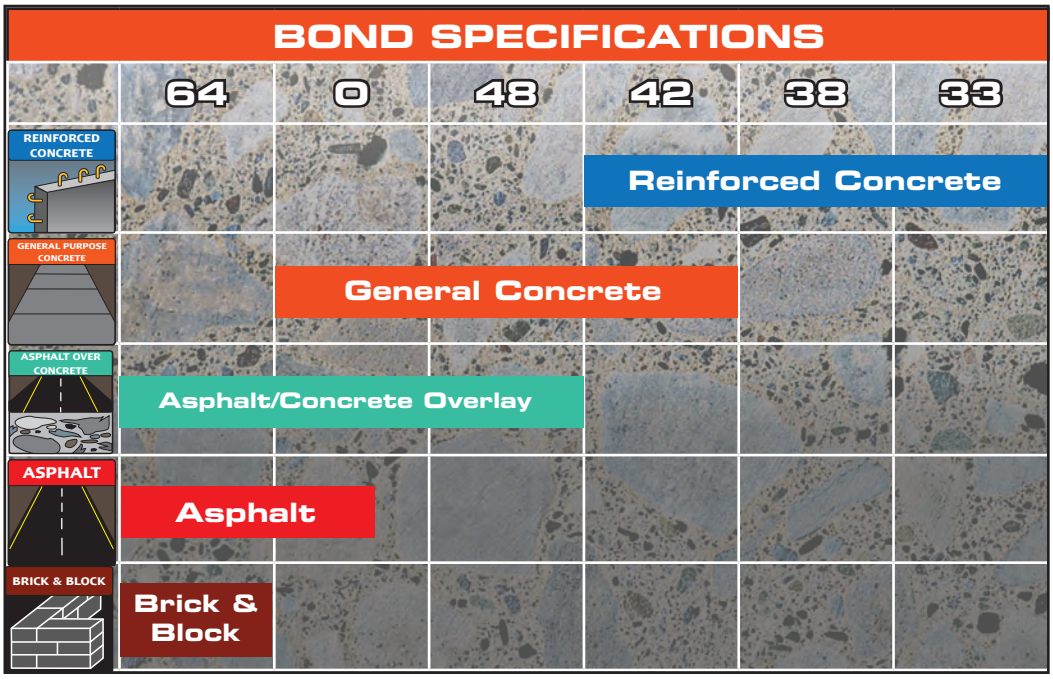
Position 1 Quality Code		Position 2 Bond Number		Position 3 Diamond Size	
S	Standard Gold	33	*Soft Bronze*	L	30/40
H	Heavy Duty Orange	38	*Medium Bronze*	F	40/50
P	Premium Black	42	*Hard Bronze*	Z	20/30
T	Pro Blue	48	*Variation of 50 Bond for Free Cutting*		
SP	Super Premium Red	O	*50B Bond - most used*		
U	Supreme Silver	64	*Hard Bond for soft aggregate or asphalt*		

WET

Other Bonds:

Hundreds of other custom bonds and combinations are available to dial-in the specification needed for the application.

Material / Bond Specifications



Example Bonds:

H64L

High Diamond Concentration (**H**eavy Duty Grade) for Long Life Drilling in Soft Material (Asphalt) with No Reinforcement (**64** Bond) with Large Diamond Size (**L**) for Added Drilling Life

SOFT AGGREGATE

HOL

High Diamond Concentration (**H**eavy Duty Grade) for Long Life Drilling in Medium Aggregate with Low Reinforcement (**O** Bond) with Large Diamond Size (**L**) for Added Drilling Life.

MEDIUM AGGREGATE

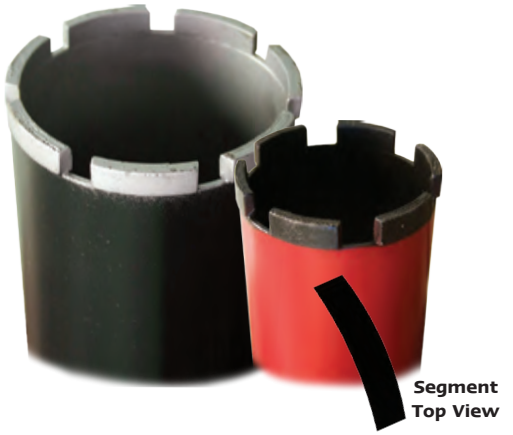
P38Z

Very High Diamond Concentration (**P**remium Grade) for Longer Life Drilling in Hard Aggregate with Reinforcement (**38** Bond) with Small Diamond Size (**Z**) for Faster Drilling.

HARD AGGREGATE

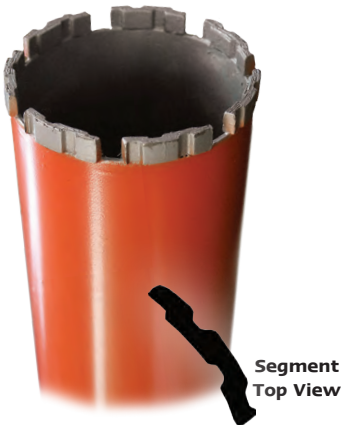
CORE BORE BIT INFORMATION

Segment Styles



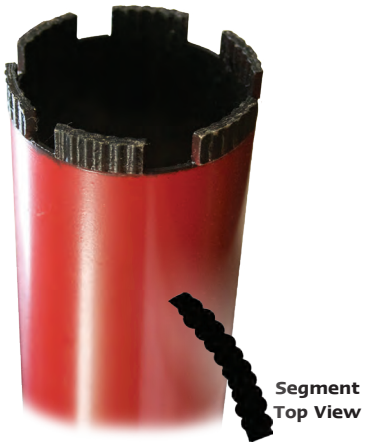
Straight Segment

Straight segment for general drilling and good cutting life at standard speeds. Segment heights and diamond depths vary depending on the quality grade.



Turbo Segment

Serrated segment design for less surface to surface contact.

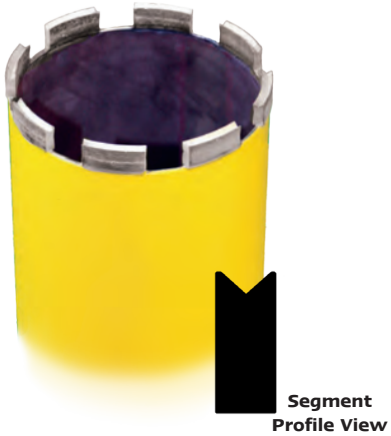


Ribbed Turbo Segment

Ribbed segment design for a faster coring, saving you time and money.

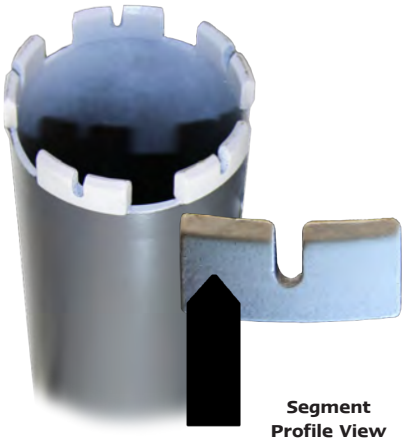
Crown Segment

Single-piece segment with waterways that can be used on small diameter bits up to 1-3/4" for smooth coring and good life.



Commander Segment

Very high quality diamond with V-Shaped segments for the fastest coring right out of the box in reinforced concrete.



Great White Segment

'Shark-Tooth' segment offers fast coring and long life due to the pointed shape and cutout.

Thinwall Segment

Typically .145" thick straight segment for fast, smooth coring. Also used on Heavy Duty Orange and Star Blue dry hole saws.

Carbide Segment

Carbide inserts brazed into barrel for use on metal rebar and plate steel after concrete is drilled.

Note on Diamond Segments:

Diamond bonds and segments shown are just the basic specifications.

Check with the factory on custom specifications and bit configurations to fit your applications.

Let us help you dial-in the right bit!

CORE BORE BIT INFORMATION

Specialty Core Bit Solutions

Retractable Carbide Bits

- Used in Offices and buildings where duct work is present
- Carbide bit drills through thin duct work and diamond bit drills through concrete

Threaded Cap

Carbide Bit

Threaded Bit

Custom Length Bits

- When deep hole drilling is needed
- If continuous threaded tubes can't be used
- Almost unlimited lengths can be made (check with the factory)

Step Bits

- Designed to make a recessed **'step'** for drain covers, and other special uses
- Custom sizes available.
- Available in all quality grades and in straight segment or turbo style
- Custom made to your individual application.

Many sizes and specifications available **Star Blue excluded*

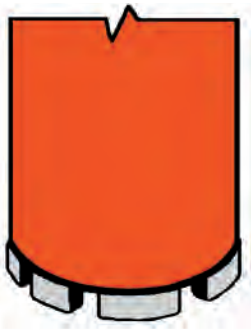
Pancake Bits

- For use in applications where a hole is needed with a recessed top
- Great for airport runway light canisters
- Most custom sizes and bonds available
- Custom made to your individual application

Many other sizes and specifications available-call for more information

CORE BORE BIT INFORMATION

Troubleshooting



GLAZING
(Bit stops drilling or is very slow)

CAUSE: Too much feed pressure.
REMEDY: Open bit with abrasive material (Sand pot, concrete block, chop saw blade). Reduce feed pressure. Using an ammeter will help control speed and pressure.

CAUSE: Aggregate is too hard.
REMEDY: Change to a softer bond.

BENT SEGMENTS

CAUSE: Too much feed pressure and not enough water.
REMEDY: Repair the bit if possible. Ease up on feed pressure and increase water flow.

CAUSE: Aggregate is too hard.
REMEDY: Change to a softer bond.

LOST SEGMENTS
(Particularly on bits up to 1 -3/4")

CAUSE: Steel reinforcing rod
REMEDY: Ease up on feed pressure (water ammeter). Use a higher quality bit and increase the water flow.

CAUSE: Not enough water to properly cool bit.
REMEDY: Increase water flow.

CAUSE: Drill rig is not properly anchored
REMEDY: There are three ways of anchoring a core rig. **STANDING ON IT IS NOT ONE OF THEM!** This quick dirty method damages the bit and the rig and dramatically slows the drilling process.

CORE STUCK

CAUSE: Not enough water to remove slurry.
REMEDY: Remove bit and drive core out with a spike through the hub. Increase water flow.

CAUSE: Core barrel is dented because of hammering on it to remove previous hung up cores.
REMEDY: Repair the barrel. Increase water flow.