

Focus Rotary Bit Availability and Selection Guide



August 2009

Atlas Copco

Selection Guide



Steel tooth bit selection

Soft formation bits

The Type S, regular circulation steel tooth bit is designed for optimum performance in formations of low compressive strength, such as soft sand rock, calcite, shale and clay. These formations quite often contain abrasive materials such as sharp sand and may be interspersed with layers of medium and hard formations.

Soft formation bits are designed with long slim, strong teeth to permit deep penetration into the formation with comparatively light weight. Also, bit geometry is adjusted to give maximum desirable scraping action on bottom. So specific range of footage or penetration rates can be used as a yardstick for determining when to stop using this type bit, due to wide variation in weight, rotary speeds and formation variations encountered. However, if excessive tooth breakage occurs, you might safely assume that either the combination of weight and rotary speed is too great or formation is too hard for this type bit.

Normally, these bits are run with relatively light weights, ranging from 1,000 pounds to 3,000 pounds per inch of bit diameter. Rotary speeds usually range from 120 to 170 revolutions per minute, depending upon the weight applied to the bit.

Medium formation bits

The Type M and regular circulation steel tooth rack bits are designed for abrasive and non-abrasive medium formations. Note that this design differs from the "softer" types principally in the progressive strengthening of the teeth and change in bit geometry to provide more chipping-crushing action. These bits have more closely spaced teeth with a large included angle and more gage surface to resist the wear in harder and more abrasive formations. They are particularly efficient in formations where shales, sandy shales, and limestones alternate. Weight can be applied very effectively to these bits due to the more rugged construction of the cutting structure and bearings. However, excessive rotary speeds should be avoided to reduce the shock loads inherent in drilling these harder formations. This is especially important when formations are broken, causing rough operation. You should avoid combinations of weight and rotary speeds which promote rough running to prevent premature failure of bearings and cutting structure. Drilling weights commonly range from 1,000 to 5,000 pounds per inch of bit diameter, with rotary speeds from 60 to 100 revolutions per minute, depending upon the relative weight on the bit.

Hard formation bits

Type H, regular circulation steel tooth rock bits are designed to drill hard formations which contain amounts of abrasive materials. Formations requiring the use of this bit type are those having:

1. High compressive strength with low abrasive content such as dolomite.
2. High compressive strength with high abrasive content such as dolomite and trap rock.
3. Medium compressive strength with high abrasive content such as quartz, sandstone and the copper ores.

Compared with the soft and medium formation bits, this bit has higher capacity bearings and more closely spaced teeth with increased tooth angles to allow the use of heavier weights required to effectively drill hard formations. The geometry of this bit provides maximum chipping and crushing action with minimum scraping action.

The outermost row of teeth on each cone is the driving row; that is, this row generates a rock gear pattern on bottom, which in the case of these strong rocks, is not easily broken up. Because of this, a webbed gage surface is generally used on heel rows of teeth to keep the patterns broken down.

Tungsten carbide hardfacing is applied to the "webs" to strengthen the gage against abrasive wear.

Type H bits are commonly run with weights ranging from 4,000 to 7,000 pounds per inch of bit diameter with rotary speeds decreasing from 40 to 80 revolutions per minute as weight is increased.

Rock UCS (PSI)	Steeltooth Tricone bit series	Rock Type
0	S series	Unconsolidated Sands
2,000		Limestone, Siltstone
4,000		Clay Stone, Mudstone
6,000	M series	Marl, Chalky Limestone
8,000		Soft Shales
10,000	H series	Consolidated Sandstones
12,000		Soft Marble, Dolomite
14,000		Tuff, Soft Schist

Rock UCS hardness (Unconfined Compressive Strength) is only one factor contributing to the "drillability" of any rock. Other factors influencing drillability are fracture toughness, shear strength, Young's modulus of elasticity, Poisson's ratio of stress vs. strain & internal angle of friction. Any particular bit may be used in harder or softer rock than this chart indicates.



S Series

The S series has widely spaced, long tapered teeth with broad, axial crests for the bottom-hole action necessary to achieve high penetration rates. Inter-fitted rows of teeth prevent formation packing and facilitate the cleaning action. The gage bevel is hardfaced for wear resistance. Tungsten carbide hardfacing on the other critical areas of the S series cutting structure provides superior abrasive wear resistance and allows the teeth to self-sharpen.

Applications: Softer formations such as clays, shales, soft sandstones, and soft limestones.

Suggested Operating Parameters:

Weight on Bit – 1,000 to 3,000 lbs per square inch of diameter

RPM – 70 to 120

IADC range 1-1-2 to 1-4-2

M Series

M series bits are designed with shorter, stronger teeth to withstand the weight required for these formations. The M series shirttail is overlaid with tungsten carbide hardfacing for abrasive wear resistance.

Applications: Medium formations, such as limestones, sandstones, and dolomites.

Suggested Operating Parameters:

Weight on Bit – 3,000 to 5,000 lbs per square inch of diameter

RPM – 60 to 100

IADC range 2-1-2 to 2-4-2



H Series

H series bits have a heavy gage bevel and short, closely spaced teeth to withstand heavier impact loads. Tungsten carbide hardfacing on the shirttail offers superior wear resistance. The H series has proven successful in drilling operations in which excessive gage wear must be avoided.

Applications: Hard shale formations, limestones, sandstones, and dolomite formations.

Suggested Operating Parameters:

Weight on Bit – 4,000 to 7,000 lbs per square inch of diameter

RPM – 60 to 80

IADC range 3-1-2 to 3-4-2



TCI bit selection

Five basic classifications of Atlas Copco Secoroc rock bits are available for TCI (Tungsten Carbide Insert) blasthole drill bits. These are divided into the 40, 50, 60, 70 and 80 series rock bits. The principal design differences are in tailoring the cutting structure of each type to most efficiently drill specific formations. For example, 60 series bits are designed for drilling medium-hard to hard formations, the 70 series for hard formations and the 80 series for the hardest formations.

The modifications in cutting structure design from series to series are:

1. The spacing of inserts or teeth is greatest for the softer or weaker formations and decreases as the formation hardness increases.
2. The number of rows and/or the total number of inserts or teeth per bit increases as formation hardness increases.
3. The groove depth and amount of intermesh is decreased as formation hardness increases.
4. The insert or tooth projection above the cone shell is greatest for the softer formations and is decreased as the formation hardness increases.

40 series

The 40 series bits are typically characterized by large diameter widely spaced super scoop, chisel or conical inserts. The configuration promotes maximum penetration rates in softer formations that have a tendency to stick and ball up the cutting structure.



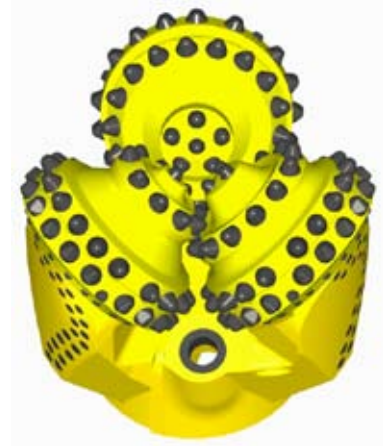
Applications:
Soft formations such as shale, siltstone, soft limestone and alluvials.

Suggested operating parameters:
Weight on bit - 1,000 to 5,000 lbs/inch of diameter
Rotation speed - 50 to 150 RPM

Bit specifications

50 series

The 50 series bits are typically characterized by more densely spaced chisel or conical inserts. This configuration promotes maximum penetration rates in soft/medium formations that are fractured or have varying degrees of hardness.

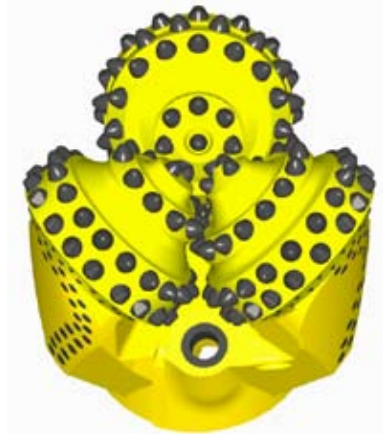


Applications:
Soft/medium formations such as sandstone, shale, granite and some marble.

Suggested operating parameters:
Weight on bit: 3,000 to 6,500 lbs/inch of diameter
Rotations speed: 50 to 150 RPM

60 series

The 60 series bits are typically characterized by more densely spaced, shorter projecting chisel, conical or ogive inserts. This configuration promotes maximum penetration rates in medium/hard formations.



Applications:
Medium/hard formations such as hard limestone, hard shale, basalt and quartzite.

Suggested operating parameters:
Weight on bit - 4,000 to 7,000 lbs/inch of diameter
Rotation Speed - 50 to 120 RPM

TCI (Tungsten Carbide Insert) bits

Bit specifications

70 series

The 70 series bits are typically characterized by densely spaced, shorter projecting conical or ogive inserts with a conical or ovoid/round top gage insert. This configuration promotes maximum penetration rates in hard formations.

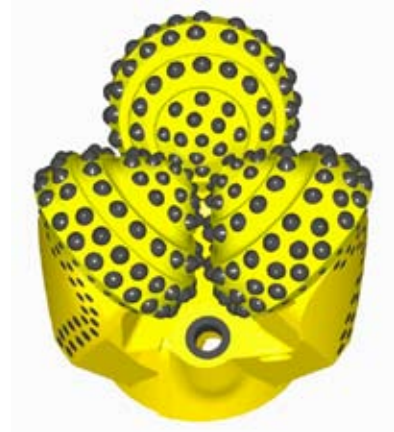


Applications:
Hard formations such as taconite, banded iron and quartzite.

Suggested operating parameters:
Weight on bit - 4,000 to 8,000 lbs/inch of diameter
Rotation speed - 50 to 90 RPM

80 series

The 80 series bits are typically characterized by very densely spaced, short projecting ovoid/round top inserts. This configuration promotes maximum penetration rates in extremely hard formations.



Applications:
Extremely hard formations such as chert, hematite ore and quartzite.

Suggested operating parameters:
Weight on bit - 6,000 to 9,000 lbs/inch of diameter
Rotation speed - 40 to 80 RPM

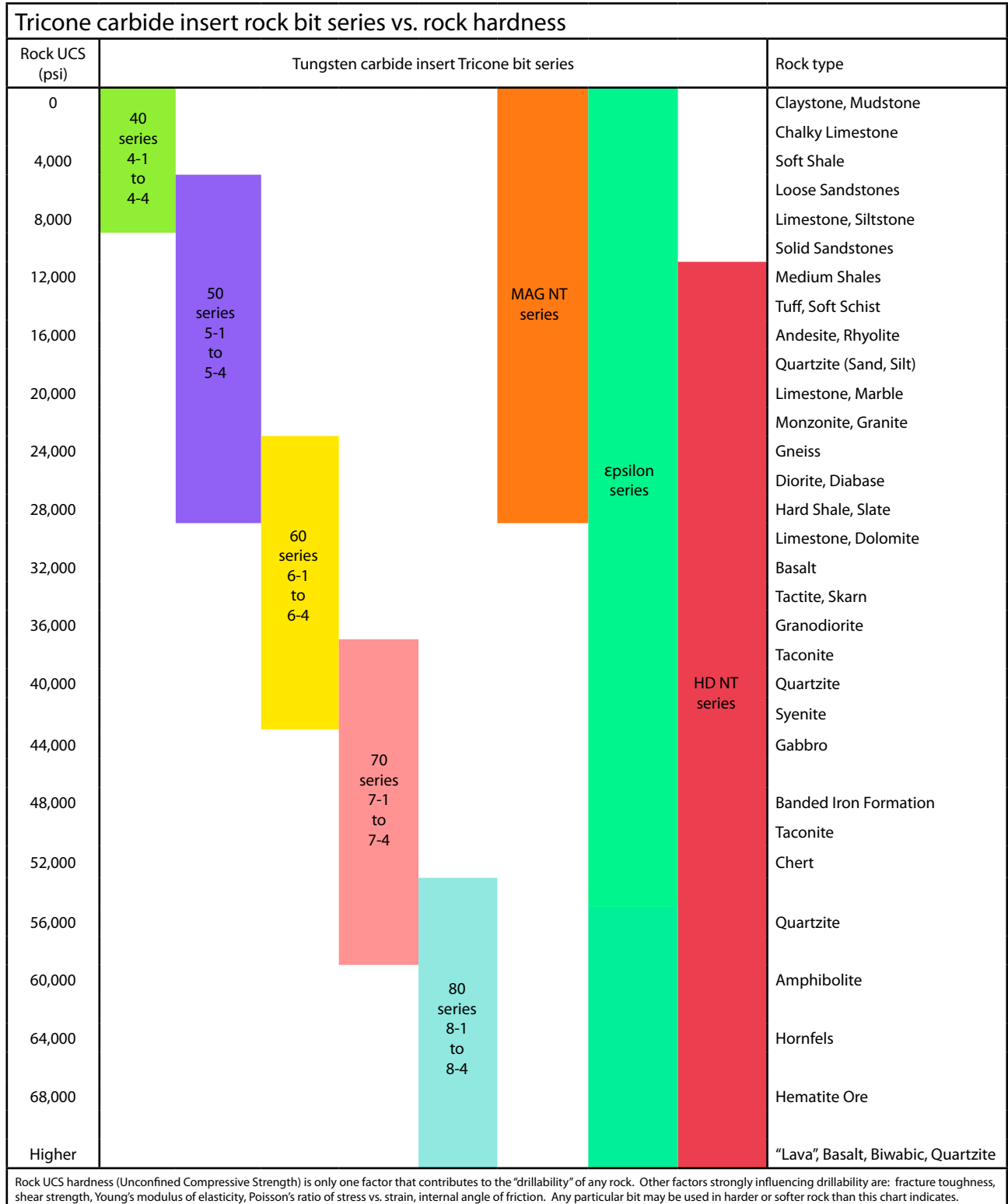
Technical Data

Pin connection sizes and make-up torques					
Bit size range		Connection size		Torque range	
mm	inch	mm	inch	kilogram - force meter	pound - force foot
73	2 7/8	N-Rod*	N-Rod*	277-346	2,000-2,500
95-114	3 3/4-4 1/2	60	2 3/8	415-484	3,000-3,500
117-137	4 5/8-5 3/8	73	2 7/8	622-760	4,500-5,500
143-171	5 5/8-6 3/4	89	3 1/2	970-1240	7,000-9,000
194-229	7 5/8-9	114	4 1/2	1660-2210	12,000-16,000
251-349	9 7/8-13 3/4	168	6 5/8	3870-4420	28,000-32,000
381-445	15-17 1/2	194	7 5/8	4700-5530	38,000-40,000

*Non-standard API

TCI (Tungsten Carbide Insert) bits

Bit selection



Rock UCS hardness (Unconfined Compressive Strength) is only one factor that contributes to the "drillability" of any rock. Other factors strongly influencing drillability are: fracture toughness, shear strength, Young's modulus of elasticity, Poisson's ratio of stress vs. strain, internal angle of friction. Any particular bit may be used in harder or softer rock than this chart indicates.

Rotary Bit Availability



Blasthole Tricone Bits

4 3/4" - 7 7/8"

Bit Diam.	Product No.	Product code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kgs		
4 3/4" 121 mm	93001000	112-3121-62-FB-C-02	6-2-2	F6	Conical Inserts	Jet	20	9	2 7/8" API	21,400-35,600 lbs WOB 70 to 120 RPM
5 1/8" 130 mm	93001001	112-3130-52-FB-F-02	5-2-2	F5	Chisel Inserts	Jet	22	10	2 7/8" API	17,900-33,300 lbs WOB 70 to 120 RPM
5 7/8" 149 mm	93001002	114-3149-62-FB-F-02	6-2-2	F6	Chisel Inserts	Jet	26	12	3 1/2" API	26,400-44,100 lbs WOB 70 to 120 RPM
6 1/4" 159 mm	93001052	114-0159-23-FB-1-02	2-3-2	F23	Conventional Gage Tooth	Jet	32	14.5	3 1/2" API	21,900-34,400 lbs WOB 50 to 120 RPM
6 1/4" 159 mm	93001051	114-0159-33-FB-5-02	3-3-2	F33	"Web" Gage Tooth	Jet	32	14.5	3 1/2" API	28,100-46,900 lbs WOB 50 to 100 RPM
6 1/4" 159 mm	93001003	114-3159-52-FB-C-02	5-2-2	F5	Conical Inserts	Jet	29	13	3 1/2" API	21,900-40,600 lbs WOB 70 to 120 RPM
6 1/4" 159 mm	93001004	114-3159-62-FB-F-02	6-2-2	F6	Chisel Inserts	Jet	29	13	3 1/2" API	28,100-46,900 lbs WOB 70 to 120 RPM
6 1/4" 159 mm	93001005	114-3159-64-FB-F-02	6-4-2	F65	Chisel Inserts	Jet	29	13	3 1/2" API	28,100-46,900 lbs WOB 70 to 120 RPM
6 3/4" 171 mm	93001006	114-3171-42-FB-C-02	4-2-2	F4	Conical Inserts	Jet	39	17.5	3 1/2" API	10,100-37,100 lbs WOB 70 to 150 RPM
6 3/4" 171 mm	93001007	114-3171-52-FB-OA-02	5-2-2	F5	Ogive Inserts, Armor	Jet	39	17.5	3 1/2" API	23,600-43,900 lbs WOB 70 to 120 RPM
6 3/4" 171 mm	93001008	114-3171-62-FB-FA-02	6-2-2	F6	Chisel Inserts, Armor	Jet	39	17.5	3 1/2" API	30,400-50,600 lbs WOB 70 to 120 RPM
6 3/4" 171 mm	93001009	114-3171-73-FB-CA-02	7-3-2	F7	Conical Inserts, Armor	Jet	39	17.5	3 1/2" API	30,400-57,400 lbs WOB 50 to 90 RPM
7 3/8" 187 mm	93001061	114-3187-53-FB-C-02	5-3-2	F5	Conical Inserts	Jet	58.3	26.5	3 1/2" API	25,100-48,000 lbs WOB 70 to 120 RPM
7 3/8" 187 mm	93001062	114-3187-73-FB-C-02	7-3-2	F7	Conical Inserts	Jet	58.3	26.5	3 1/2" API	33,100-62,700 lbs WOB 50 to 90 RPM
7 1/2" 191 mm	93001063	114-3191-73-FB-C-02	7-3-2	F7	Conical Inserts	Jet	58.3	26.5	3 1/2" API	33,800-63,800 lbs WOB 50 to 90 RPM
7 7/8" 200 mm	93001010	117-3200-41-FB-CA-02	4-1-2	F35	Conical Inserts, Armor	Jet	60.5	27.5	4 1/2" API	11,800-43,300 lbs WOB 70 to 150 RPM
7 7/8" 200 mm	93001011	117-3200-43-FB-CA-02	4-3-2	F4	Conical Inserts, Armor	Jet	60.5	27.5	4 1/2" API	11,800-43,300 lbs WOB 70 to 150 RPM
7 7/8" 200 mm	93001012	117-3200-42-FB-CA-02	4-2-2	F4	Conical Inserts, Armor	Jet	60.5	27.5	4 1/2" API	11,800-43,300 lbs WOB 70 to 150 RPM
7 7/8" 200 mm	93001014	117-3200-52-FB-CA-02	5-2-2	F5	Conical Inserts, Armor	Jet	60.5	27.5	4 1/2" API	27,600-51,200 lbs WOB 70 to 120 RPM
7 7/8" 200 mm	93001076	117-3200-52-FB-CAHW-02	5-2-2	F5	Conical Inserts, Armor, Hard Nose on Cones, Wear Resistant Carbide	Jet	60.5	27.5	4 1/2" API	27,600-51,200 lbs WOB 70 to 120 RPM
7 7/8" 200 mm	93001013	117-3200-53-FB-CA-02	5-3-2	F5	Conical Inserts, Armor	Jet	60.5	27.5	4 1/2" API	27,600-51,200 lbs WOB 70 to 120 RPM
7 7/8" 200 mm	93001064	117-3200-53-FB-CY-02	5-3-2	F5	Conical Inserts, Enhanced Shirrtail	Jet	60.5	27.5	4 1/2" API	27,500-51,200 lbs WOB 70 to 120 RPM
7 7/8" 200 mm	93001077	117-3200-53-FB-CAH-02	5-3-2	F5	Conical Inserts, Armor, Hard Nose on Cones	Jet	60.5	27.5	4 1/2" API	27,600-51,200 lbs WOB 70 to 120 RPM
7 7/8" 200 mm	93001015	117-3200-54-FB-CA-02	5-4-2	F55	Conical Inserts, Armor	Jet	60.5	27.5	4 1/2" API	27,600-51,200 lbs WOB 70 to 120 RPM
7 7/8" 200 mm	93001065	117-3200-54-FB-CYV-02	5-4-2	F55	Conical Inserts, Enhanced Shirrtail, Aggressive Cutting Structure	Jet	60.5+	27.5	4 1/2" API	27,500-51,200 lbs WOB 70 to 120 RPM

Blasthole Tricone Bits

7 7/8" - 9 7/8"

Bit Diam.	Product No.	Product code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kgs		
7 7/8" 200 mm	93001016	117-3200-63-FB-CY-02	6-3-2	F6	Conical Inserts, Enhanced Shirttail	Jet	61	27.5	4 1/2" API	35,400-59,100 lbs WOB 70 to 120 RPM
7 7/8" 200 mm	93001017	117-3200-64-FB-CY-02	6-4-2	F65	Conical Inserts, Enhanced Shirttail	Jet	61	27.5	4 1/2" API	35,400-59,100 lbs WOB 70 to 120 RPM
7 7/8" 200 mm	93001018	117-3200-73-FB-CY-02	7-3-2	F7	Conical Inserts, Enhanced Shirttail	Jet	61	27.5	4 1/2" API	35,400-66,900 lbs WOB 50 to 90 RPM

9" 229 mm	93001019	117-3229-41-FB-CA-02	4-1-2	F35	Conical Inserts, Armor	Jet	96	43.5	4 1/2" API	13,500-49,500 lbs WOB 70 to 150 RPM
9" 229 mm	93001021	117-3229-42-FB-CA-02	4-2-2	F4	Conical Inserts, Armor	Jet	96	43.5	4 1/2" API	13,500-49,500 lbs WOB 70 to 150 RPM
9" 229 mm	93001020	117-3229-43-FB-CA-02	4-3-2	F4	Conical Inserts, Armor	Jet	96	43.5	4 1/2" API	13,500-49,500 lbs WOB 70 to 150 RPM
9" 229 mm	93001023	117-3229-52-FB-CA-02	5-2-2	F5	Conical Inserts, Armor	Jet	96	43.5	4 1/2" API	31,500-58,500 lbs WOB 70 to 120 RPM
9" 229 mm	93001067	117-3229-52-FB-C-02	5-2-2	F5	Conical Inserts	Jet	96	43.5	4 1/2" API	31,500-58,500 lbs WOB 70 to 120 RPM
9" 229 mm	93001022	117-3229-53-FB-CA-02	5-3-2	F5	Conical Inserts, Armor	Jet	96	43.5	4 1/2" API	31,500-58,500 lbs WOB 70 to 120 RPM
9" 229 mm	93001066	117-3229-53-FB-C-02	5-3-2	F5	Conical Inserts	Jet	96	43.5	4 1/2" API	31,500-58,500 lbs WOB 70 to 120 RPM
9" 229 mm	93001024	117-3229-54-FB-CA-02	5-4-2	F55	Conical Inserts, Armor	Jet	96	43.5	4 1/2" API	31,500-58,500 lbs WOB 70 to 120 RPM
9" 229 mm	93001025	117-3229-63-FB-CY-02	6-3-2	F6	Conical Inserts, Enhanced Shirttail	Jet	96	43.5	4 1/2" API	40,500-67,500 lbs WOB 70 to 120 RPM
9" 229 mm	93001057	117-3229-63-FB-CYW-02	6-3-2	F6	Conical Inserts, Enhanced Shirttail, Wear Resistant Carbide	Jet	96	43.5	4 1/2" API	40,500-67,500 lbs WOB 70 to 120 RPM
9" 229 mm	93001026	117-3229-73-FB-CY-02	7-3-2	F7	Conical Inserts, Enhanced Shirttail	Jet	96	43.5	4 1/2" API	40,500-67,500 lbs WOB 50 to 90 RPM

9 5/8" 245 mm	93001056	118-3245-73-FB-CA-02	7-3-2	F7	Conical Inserts, Armor	Jet	124.3	56.5	6 5/8" API	43,300-81,800 lbs WOB 50 to 90 RPM
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9 7/8" 251 mm	93001053	118-0251-33-FB-5-02	3-3-2	F33	"Web" Gage Tooth	Jet	124.3	56.5	6 5/8" API	44,400-74,100 lbs WOB 50 to 100 RPM
9 7/8" 251 mm	93001027	118-3251-41-FB-CA-02	4-1-2	F37	Conical Inserts, Armor	Jet	122	55.5	6 5/8" API	14,800-54,300 lbs WOB 70 to 150 RPM
9 7/8" 251 mm	93001028	118-3251-42-FB-CA-02	4-2-2	F4	Conical Inserts, Armor	Jet	122	55.5	6 5/8" API	14,800-54,300 lbs WOB 70 to 150 RPM
9 7/8" 251 mm	93001029	118-3251-52-FB-CA-02	5-2-2	F5	Conical Inserts, Armor	Jet	122	55.5	6 5/8" API	34,600-64,200 lbs WOB 70 to 120 RPM
9 7/8" 251 mm	93001068	118-3251-52-FB-C-02	5-2-2	F5	Conical Inserts	Jet	122	55.5	6 5/8" API	34,500-64,200 lbs WOB 70 to 120 RPM
9 7/8" 251 mm	93001030	118-3251-54-FB-CA-02	5-4-2	F55	Conical Inserts, Armor	Jet	122	55.5	6 5/8" API	34,600-64,200 lbs WOB 70 to 120 RPM
9 7/8" 251 mm	93001069	118-3251-54-FB-C-02	5-4-2	F55	Conical Inserts	Jet	122	55.5	6 5/8" API	34,500-64,200 lbs WOB 70 to 120 RPM
9 7/8" 251 mm	93001054	118-3251-71-FB-CYV-02	7-1-2	F67	Conical Inserts, Enhanced Shirttail, Aggressive Cutting Structure	Jet	122	55.5	6 5/8" API	44,400-74,100 lbs WOB 70 to 120 RPM
9 7/8" 251 mm	93001033	118-3251-62-FB-CY-02	6-2-2	F67	Conical Inserts, Enhanced Shirttail	Jet	122	55.5	6 5/8" API	44,400-74,100 lbs WOB 70 to 120 RPM
9 7/8" 251 mm	93001031	118-3251-63-FB-CA-02	6-3-2	F6	Conical Inserts, Armor	Jet	122	55.5	6 5/8" API	44,400-74,100 lbs WOB 70 to 120 RPM
9 7/8" 251 mm	93001058	118-3251-63-FB-C-02	6-3-2	F6	Conical Inserts	Jet	122	55.5	6 5/8" API	44,400-74,100 lbs WOB 70 to 120 RPM
9 7/8" 251 mm	93001078	118-3251-63-FB-CAH-02	6-3-2	F6	Conical Inserts, Armor, Hardnose on Cones	Jet	123.2	56	6 5/8" API	44,400-74,100 lbs WOB 70 to 120 RPM
9 7/8" 251 mm	93001059	118-3251-64-FB-C-02	6-4-2	F65	Conical Inserts	Jet	122	55.5	6 5/8" API	44,400-74,100 lbs WOB 70 to 120 RPM

Blasthole Tricone Bits

9 7/8" - 12 1/4"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kgs		
9 7/8" 251 mm	93001032	118-3251-64-FB-CA-02	6-4-2	F65	Conical Inserts, Armor	Jet	122	55.5	6 5/8" API	44,400-74,100 lbs WOB 70 to 120 RPM
9 7/8" 251 mm	93001055	118-3251-71-FB-CY-02	7-1-2	F68	Conical Inserts, Enhanced Shirrtail	Jet	122	55.5	6 5/8" API	44,400-83,900 lbs WOB 50 to 90 RPM
9 7/8" 251 mm	93001034	118-3251-73-FB-CY-02	7-3-2	F7	Conical Inserts, Enhanced Shirrtail	Jet	122	55.5	6 5/8" API	44,400-83,900 lbs WOB 50 to 90 RPM
9 7/8" 251 mm	93001035	118-3251-73-FB-CYH-02	7-3-2	F7 (NMDC)	Conical Inserts, Enhanced Shirrtail, Hardnose on Cones	Jet	122	55.5	6 5/8" API	44,400-83,900 lbs WOB 50 to 90 RPM

10 5/8" 270 mm	93001036	118-3270-41-FB-CAV-02	4-1-2	F33	Conical Insert, Armor, Aggressive Cutting Structure	Jet	143	65	6 5/8" API	15,900-58,400 lbs WOB 70 to 150 RPM
10 5/8" 270 mm	93001070	118-3270-41-FB-CA-02	4-1-2	F35	Conical Insert, Armor	Jet	143	65	6 5/8" API	10,600-47,800 lbs WOB 70 to 120 RPM
10 5/8" 270 mm	93001037	118-3270-42-FB-CA-02	4-2-2	F4	Conical Insert, Armor	Jet	143	65	6 5/8" API	15,900-58,400 lbs WOB 70 to 150 RPM
10 5/8" 270 mm	93001038	118-3270-53-FB-CA-02	5-3-2	F5	Conical Insert, Armor	Jet	143	65	6 5/8" API	37,200-69,100 lbs WOB 70 to 120 RPM
10 5/8" 270 mm	93001039	118-3270-54-FB-CA-02	5-4-2	F55	Conical Insert, Armor	Jet	143	65	6 5/8" API	37,200-69,100 lbs WOB 70 to 120 RPM
10 5/8" 270 mm	93001040	118-3270-63-FB-CA-02	6-3-2	F6	Conical Insert, Armor	Jet	143	65	6 5/8" API	47,800-79,700 lbs WOB 70 to 120 RPM
10 5/8" 270 mm	93001071	118-3270-63-FB-CAW-02	6-3-2	F6	Conical Insert, Armor, Wear Resistant Carbide	Jet	143	65	6 5/8" API	47,800-79,700 lbs WOB 70 to 120 RPM
10 5/8" 270 mm	93001041	118-3270-64-FB-CY-02	6-4-2	F65	Conical Insert, Enhanced Shirrtail	Jet	143	65	6 5/8" API	47,800-79,700 lbs WOB 70 to 120 RPM
10 5/8" 270 mm	93001072	118-3270-64-FB-C-02	6-4-2	F6	Conical Inserts	Jet	143	65	6 5/8" API	47,800-79,700 lbs WOB 70 to 120 RPM
10 5/8" 270 mm	93001042	118-3270-73-FB-CY-02	7-3-2	F7	Conical Insert, Enhanced Shirrtail	Jet	143	65	6 5/8" API	47,800-90,300 lbs WOB 50 to 90 RPM

11" 279 mm	93001043	118-3279-53-FB-CY-02	5-3-2	F5	Conical Insert, Enhanced Shirrtail	Jet	154	70	6 5/8" API	38,500-71,500 lbs WOB 70 to 120 RPM
11" 279 mm	93001044	118-3279-63-FB-CY-02	6-3-2	F6	Conical Insert, Enhanced Shirrtail	Jet	154	70	6 5/8" API	49,500-82,500 lbs WOB 70 to 120 RPM
11" 279 mm	93001045	118-3279-73-FB-CY-02	7-3-2	F7	Conical Insert, Enhanced Shirrtail	Jet	154	70	6 5/8" API	49,500-93,500 lbs WOB 50 to 90 RPM

12 1/4" 311 mm	93001046	118-3311-53-FB-CA-02	5-3-2	F5	Conical Insert, Armor	Jet	205	93	6 5/8" API	42,900-79,600 lbs WOB 70 to 120 RPM
12 1/4" 311 mm	93001047	118-3311-63-FB-CY-02	6-3-2	F6	Conical Insert, Enhanced Shirrtail	Jet	205	93	6 5/8" API	55,100-91,900 lbs WOB 70 to 120 RPM
12 1/4" 311 mm	93001060	118-3311-63-FB-CYV-02	6-3-2	F67	Conical Insert, Enhanced Shirrtail, Aggressive Cutting Structure	Jet	205	93	6 5/8" API	55,100-91,900 lbs WOB 70 to 120 RPM
12 1/4" 311 mm	93001073	118-3311-63-FB-C-02	6-3-2	F6	Conical Inserts	Jet	205	93	6 5/8" API	55,100-91,900 lbs WOB 70 to 120 RPM
12 1/4" 311 mm	93001048	118-3311-64-FB-CY-02	6-4-2	F65	Conical Insert, Enhanced Shirrtail	Jet	205	93	6 5/8" API	55,100-91,900 lbs WOB 70 to 120 RPM
12 1/4" 311 mm	93001049	118-3311-73-FB-CY-02	7-3-2	F7	Conical Insert, Enhanced Shirrtail	Jet	205	93	6 5/8" API	55,100-104,100 lbs WOB 50 to 90 RPM
12 1/4" 311 mm	93001074	118-3311-73-FB-C-02	7-3-2	F7	Conical Inserts	Jet	205	93	6 5/8" API	55,100-91,900 lbs WOB 70 to 120 RPM
12 1/4" 311 mm	93001050	118-3311-74-FB-CY-02	7-4-2	F75	Conical Insert, Enhanced Shirrtail	Jet	205	93	6 5/8" API	55,100-104,100 lbs WOB 50 to 90 RPM
12 1/4" 311 mm	93001075	118-3311-74-FB-C-02	7-4-2	F75	Conical Inserts	Jet	205	93	6 5/8" API	55,100-91,900 lbs WOB 70 to 120 RPM

TCI Waterwell Bits

2 31/64" - 3 3/4"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kg		
2 31/64" 63 mm	93002252	161-3063-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	3.3	1.5	4n-Rod	8,700-16,100 lbs WOB 70 to 120 RPM
2 31/64" 63 mm	93002253	161-3063-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	3.3	1.5	4n-Rod	30,400-57,400 lbs WOB 50 to 90 RPM
2 1/2" 64 mm	93002149	161-3064-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	3.3	1.5	4n-Rod	8,800-16,300 lbs WOB 70 to 120 RPM
2 1/2" 64 mm	93002150	161-3064-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	3.3	1.5	4n-Rod	11,300-21,300 lbs WOB 50 to 90 RPM
2 5/8" 67 mm	93002151	161-3067-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	3.3	1.5	4n-Rod	9,200-17,100 lbs WOB 70 to 120 RPM
2 5/8" 67 mm	93002152	161-3067-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	3.3	1.5	4n-Rod	11,800-22,300 lbs WOB 50 to 90 RPM
2 7/8" 73 mm	93002153	161-3073-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	3.3	1.5	4n-Rod	10,100-18,700 lbs WOB 70 to 120 RPM
2 15/16" 75 mm	93002154	161-3075-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	4.4	2.0	4n-Rod	10,300-19,100 lbs WOB 70 to 120 RPM
2 15/16" 75 mm	93002155	161-3075-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	4.4	2.0	4n-Rod	13,200-25,000 lbs WOB 50 to 90 RPM
3" 76 mm	93002157	161-3076-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	4.4	2.0	4n-Rod	10,500-19,500 lbs WOB 70 to 120 RPM
3" 76 mm	93002156	161-3076-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	4.4	2.0	4n-Rod	13,500-25,500 lbs WOB 50 to 90 RPM
3 1/8" 79 mm	93002158	161-3079-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	4.4	2.0	4n-Rod	10,900-20,300 lbs WOB 70 to 120 RPM
3 1/4" 83 mm	93002159	161-3083-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	4.4	2.0	4n-Rod	11,400-21,100 lbs WOB 70 to 120 RPM
3 1/2" 89 mm	93002160	110-3089-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	7.1	3.2	2 3/8" API	12,300-22,800 lbs WOB 70 to 120 RPM
3 1/2" 89 mm	93002255	161-3089-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	7.1	3.2	4n-Rod	12,300-22,800 lbs WOB 70 to 120 RPM
3 1/2" 89 mm	93002185	110-3089-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	7.1	3.2	2 3/8" API	12,300-22,800 lbs WOB 70 to 120 RPM
3 1/2" 89 mm	93002187	161-3089-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	7.1	3.2	4n-Rod	12,300-22,800 lbs WOB 70 to 120 RPM
3 1/2" 89 mm	93002161	110-3089-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	7.1	3.2	2 3/8" API	15,800-29,800 lbs WOB 50 to 90 RPM
3 1/2" 89 mm	93002254	161-3089-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	7.1	3.2	4n-Rod	15,750-29,750 lbs WOB 50 to 90 RPM
3 1/2" 89 mm	93002186	110-3089-71-FW-CR-02	7-1-2	F7	Conical Inserts	Regular	7.1	3.2	2 3/8" API	15,800-29,800 lbs WOB 50 to 90 RPM
3 21/32" 93 mm	93002162	110-3093-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	7.1	3.2	2 3/8" API	12,800-23,800 lbs WOB 70 to 120 RPM
3 21/32" 93 mm	93002163	110-3093-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	7.1	3.2	2 3/8" API	16,500-31,100 lbs WOB 50 to 90 RPM
3 3/4" 95 mm	93002256	110-3095-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	7.7	3.5	2 3/8" API	13,100-24,400 lbs WOB 70 to 120 RPM
3 3/4" 95 mm	93002188	110-3095-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	7.7	3.5	2 3/8" API	13,100-24,400 lbs WOB 70 to 120 RPM

TCI Waterwell Bits

3 7/8" - 5"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kg		
3 7/8" 98 mm	93002164	110-3098-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	8.8	4.0	2 3/8" API	13,600-25,200 lbs WOB 70 to 120 RPM
3 7/8" 98 mm	93002189	110-3098-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	8.8	4.0	2 3/8" API	13,600-25,200 lbs WOB 70 to 120 RPM
3 7/8" 98 mm	93002165	110-3098-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	8.8	4.0	2 3/8" API	17,400-32,900 lbs WOB 50 to 90 RPM
3 7/8" 98 mm	93002190	110-3098-71-FW-CR-02	7-1-2	F7	Conical Inserts	Regular	8.8	4.0	2 3/8" API	17,400-32,900 lbs WOB 50 to 90 RPM
4" 102 mm	93002166	110-3102-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	8.8	4.0	2 3/8" API	14,000-26,000 lbs WOB 70 to 120 RPM
4" 102 mm	93002191	110-3102-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	8.8	4.0	2 3/8" API	14,000-26,000 lbs WOB 70 to 120 RPM
4" 102 mm	93002167	110-3102-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	8.8	4.0	2 3/8" API	18,000-34,000 lbs WOB 50 to 90 RPM
4" 102 mm	93002192	110-3102-71-FW-CR-02	7-1-2	F7	Conical Inserts	Regular	8.8	4.0	2 3/8" API	18,000-34,000 lbs WOB 50 to 90 RPM
4 1/8" 105 mm	93002193	110-3105-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	8.8	4.0	2 3/8" API	14,400-26,800 lbs WOB 70 to 120 RPM
4 1/4" 108 mm	93002257	110-3108-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	8.8	4.0	2 3/8" API	14,900-27,600 lbs WOB 70 to 120 RPM
4 1/4" 108 mm	93002194	110-3108-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	8.8	4.0	2 3/8" API	14,900-27,600 lbs WOB 70 to 120 RPM
4 3/8" 111 mm	93002258	110-3111-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	8.8	4.0	2 3/8" API	15,300-28,400 lbs WOB 70 to 120 RPM
4 1/2" 114 mm	93002168	110-3114-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	12.1	5.5	2 3/8" API	15,800-29,300 lbs WOB 70 to 120 RPM
4 1/2" 114 mm	93002195	110-3114-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	12.1	5.5	2 3/8" API	15,800-29,300 lbs WOB 70 to 120 RPM
4 1/2" 114 mm	93002169	110-3114-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	12.1	5.5	2 3/8" API	20,300-38,300 lbs WOB 50 to 90 RPM
4 1/2" 114 mm	93002196	110-3114-71-FW-CR-02	7-1-2	F7	Conical Inserts	Regular	12.1	5.5	2 3/8" API	20,300-38,300 lbs WOB 50 to 90 RPM
4 3/4" 121 mm	93002170	112-3121-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	18.7	8.5	2 7/8" API	16,600-30,900 lbs WOB 70 to 120 RPM
4 3/4" 121 mm	93002197	112-3121-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	18.7	8.5	2 7/8" API	16,600-30,900 lbs WOB 70 to 120 RPM
4 3/4" 121 mm	93002171	112-3121-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	18.7	8.5	2 7/8" API	21,400-40,400 lbs WOB 50 to 90 RPM
4 3/4" 121 mm	93002198	112-3121-71-FW-CR-02	7-1-2	F7	Conical Inserts	Regular	18.7	8.5	2 7/8" API	21,400-40,400 lbs WOB 50 to 90 RPM
4 7/8" 124 mm	93002172	112-3124-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	18.7	8.5	2 7/8" API	17,100-31,700 lbs WOB 70 to 120 RPM
4 7/8" 124 mm	93002199	112-3124-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	18.7	8.5	2 7/8" API	17,100-31,700 lbs WOB 70 to 120 RPM
5" 127 mm	93002173	112-3127-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	18.7	8.5	2 7/8" API	17,500-32,500 lbs WOB 70 to 120 RPM
5" 127 mm	93002200	112-3127-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	18.7	8.5	2 7/8" API	17,500-32,500 lbs WOB 70 to 120 RPM
5" 127 mm	93002259	112-3127-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	19.8	9	2 7/8" API	22,500-42,500 lbs WOB 50 to 90 RPM

TCI Waterwell Bits

5 1/8" - 5 7/8"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kg		
5 1/8" 130 mm	93002201	112-3130-51-FW-FR-02	5-1-2	F5	Chisel Inserts	Regular	22.0	10.0	2 7/8" API	17,900-33,300 lbs WOB 70 to 120 RPM
5 1/8" 130 mm	93002174	112-3130-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	22.0	10.0	2 7/8" API	17,900-33,300 lbs WOB 70 to 120 RPM
5 1/8" 130 mm	93002202	112-3130-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	22.0	10.0	2 7/8" API	17,900-33,300 lbs WOB 70 to 120 RPM
5 1/8" 130 mm	93002260	112-3130-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	19.8	9	2 7/8" API	23,100-43,600 lbs WOB 50 to 90 RPM

5 1/4" 133 mm	93002175	112-3133-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	22.0	10.0	2 7/8" API	18,400-34,100 lbs WOB 70 to 120 RPM
5 1/4" 133 mm	93002278	112-3133-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	22.0	10.0	2 7/8" API	18,400-34,100 lbs WOB 70 to 120 RPM
5 1/4" 133 mm	93002261	112-3133-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	22.0	10.0	2 7/8" API	23,600-44,600 lbs WOB 50 to 90 RPM

5 3/8" 137 mm	93002279	112-3137-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	23.1	10.5	2 7/8" API	18,800-34,900 lbs WOB 70 to 120 RPM
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5 1/2" 140 mm	93002176	112-3140-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	23.1	10.5	2 7/8" API	19,300-35,800 lbs WOB 70 to 120 RPM
5 1/2" 140 mm	93002280	112-3140-52-FW-F-02	5-2-2	F5	Chisel Inserts	Jet	23.1	10.5	2 7/8" API	19,300-35,800 lbs WOB 70 to 120 RPM
5 1/2" 140 mm	93002203	112-3140-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	23.1	10.5	2 7/8" API	19,300-35,800 lbs WOB 70 to 120 RPM
5 1/2" 140 mm	93002281	112-3140-62-FW-C-02	6-2-2	F6	Conical Inserts	Jet	24.2	11	2 7/8" API	24,800-41,300 lbs WOB 70 to 120 RPM
5 1/2" 140 mm	93002262	112-3140-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	23.1	10.5	2 7/8" API	24,800-46,800 lbs WOB 50 to 90 RPM

5 5/8" 143 mm	93002177	114-3143-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	24.2	11.0	3 1/2" API	19,700-36,600 lbs WOB 70 to 120 RPM
5 5/8" 143 mm	93002204	114-3143-53-FW-FR-02	5-3-2	F5	Chisel Inserts	Regular	24.2	11.0	3 1/2" API	19,700-36,000 lbs WOB 70 to 120 RPM
5 5/8" 143 mm	93002282	114-3143-62-FW-C-02	6-2-2	F6	Conical Inserts	Jet	25.3	11.5	3 1/2" API	25,300-42,200 lbs WOB 70 to 120 RPM

5 3/4" 146 mm	93002263	114-3146-43-FW-CR-01	4-3-1	F4	Conical Inserts	Regular	25.3	11.5	3 1/2" API	8,600-31,600 lbs WOB 70 to 120 RPM
5 3/4" 146 mm	93002265	114-3146-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	25.7	11.7	3 1/2" API	20,100-37,400 lbs WOB 70 to 120 RPM
5 3/4" 146 mm	93002264	114-3146-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	26.2	11.9	3 1/2" API	25,900-48,900 lbs WOB 50 to 90 RPM

5 7/8" 149 mm	93002206	114-3149-43-FW-CR-02	4-3-2	F4	Conical Inserts	Regular	26.4	12.0	3 1/2" API	8,400-30,100 lbs WOB 70 to 150 RPM
5 7/8" 149 mm	93002178	114-3149-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	26.4	12.0	3 1/2" API	20,500-38,200 lbs WOB 70 to 120 RPM
5 7/8" 149 mm	93002205	114-3149-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	26.4	12.0	3 1/2" API	19,700-33,100 lbs WOB 70 to 120 RPM
5 7/8" 149 mm	93002179	114-3149-62-FW-FR-01	6-2-1	F6	Chisel Inserts	Regular	26.4	12.0	3 1/2" API	23,500-44,100 lbs WOB 70 to 120 RPM
5 7/8" 149 mm	93002266	114-3149-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	26.4	12.0	3 1/2" API	26,400-50,000 lbs WOB 50 to 90 RPM

TCI Waterwell Bits

6" - 8 1/2"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kg		
6" 152 mm	93002180	114-3152-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	26.4	12	3 1/2" API	21,000-39,000 lbs WOB 70 to 120 RPM
6" 152 mm	93002207	114-3152-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	26.4	12	3 1/2" API	21,000-39,000 lbs WOB 70 to 120 RPM
6" 152 mm	93002181	114-3152-62-FW-FR-01	6-2-1	F6	Chisel Inserts	Regular	26.4	12	3 1/2" API	27,000-45,000 lbs WOB 70 to 120 RPM
6" 152 mm	93002267	114-3152-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	26.4	12	3 1/2" API	27,000-51,000 lbs WOB 50 to 90 RPM
6 1/8" 156 mm	93002268	114-3156-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	27.5	12.5	3 1/2" API	21,400-39,800 lbs WOB 70 to 120 RPM
6 1/4" 159 mm	93002269	114-3159-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	29.7	13.5	3 1/2" API	21,900-40,000 lbs WOB 70 to 120 RPM
6 1/2" 165 mm	93002182	114-3165-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	26.4	12	3 1/2" API	22,800-42,300 lbs WOB 70 to 120 RPM
6 1/2" 165 mm	93002208	114-3165-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	26.4	12	3 1/2" API	22,800-42,300 lbs WOB 70 to 120 RPM
6 1/2" 165 mm	93002284	114-3165-62-FW-C-02	6-2-2	F6	Conical Inserts	Jet	29.7	13.5	3 1/2" API	29,300-48,800 lbs WOB 70 to 120 RPM
6 1/2" 165 mm	93002270	114-3165-71-FW-CR-01	7-1-1	F7	Conical Inserts	Regular	30.8	14	3 1/2" API	29,300-55,300 lbs WOB 50 to 90 RPM
6 1/2" 165 mm	93002283	114-3165-71-FW-C-02	7-1-2	F7	Conical Inserts	Jet	30.8	14	3 1/2" API	29,300-55,300 lbs WOB 50 to 90 RPM
6 5/8" 168 mm	93002183	114-3168-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	26.4	12	3 1/2" API	23,200-43,100 lbs WOB 70 to 120 RPM
6 3/4" 171 mm	93002184	114-3171-52-FW-FR-01	5-2-1	F5	Chisel Inserts	Regular	35.2	16	3 1/2" API	23,600-43,900 lbs WOB 70 to 120 RPM
6 3/4" 171 mm	93002209	114-3171-52-FW-FR-02	5-2-2	F5	Chisel Inserts	Regular	35.2	16	3 1/2" API	23,600-43,900 lbs WOB 70 to 120 RPM
7 3/8" 187 mm	93002271	114-3187-43-FW-C-01	4-3-1	F4	Conical Inserts	Jet	35.2	26.5	3 1/2" API	11,100-40,600 lbs WOB 70 to 150 RPM
7 7/8" 200 mm	93002214	117-3200-61-FW-C-01	6-1-1	F6	Conical Inserts	Jet	60.5	27.5	4 1/2" API	35,400-59,100 lbs WOB 70 to 120 RPM
7 7/8" 200 mm	93002272	117-3200-63-FW-C-01	6-3-1	F6	Conical Inserts	Jet	62.7	28.5	4 1/2" API	35,400-59,100 lbs WOB 70 to 120 RPM
8 1/2" 216 mm	93002273	117-3216-52-FW-C-01	5-2-1	F5	Conical Inserts	Jet	93.5	42.5	4 1/2" API	29,800-55,300 lbs WOB 70 to 120 RPM
8 1/2" 216 mm	93002210	117-3216-61-FW-C-01	6-1-1	F6	Conical Inserts	Jet	95.7	43.5	4 1/2" API	38,300-63,800 lbs WOB 70 to 120 RPM
8 1/2" 216 mm	93002274	117-3216-71-FW-C-01	7-1-1	F7	Conical Inserts	Jet	97.9	44.5	4 1/2" API	38,300-72,300 lbs WOB 50 to 90 RPM

TCI Waterwell Bits

9 7/8" - 15"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kg		
9 7/8" 251 mm	93002213	118-3251-61-FW-C-01	6-1-1	F6	Conical Inserts	Jet	122.1	55.5	6 5/8" API	44,400-74,100 lbs WOB 70 to 120 RPM
10 5/8" 270 mm	93002275	118-3270-63-FW-C-01	6-3-1	F6	Conical Inserts	Jet	143	65	6 5/8" API	47,800-79,700 lbs WOB 70 to 120 RPM
11 5/8" 295 mm	93002212	118-3295-61-FW-C-01	6-1-1	F6	Conical Inserts	Jet	204.6	93	6 5/8" API	52,300-87,200 lbs WOB 70 to 120 RPM
12 1/4" 311 mm	93002211	118-3311-61-FW-C-01	6-1-1	F6	Conical Inserts	Jet	204.6	93	6 5/8" API	55,100-91,900 lbs WOB 70 to 120 RPM
14" 356 mm	93002276	118-3356-63-FW-C-01	6-3-1	F6	Conical Inserts	Jet	258.7	117.6	6 5/8" API	63,000-105,000 lbs WOB 70 to 120 RPM
15" 381 mm	93002277	118-3381-63-FW-C-01	6-3-1	F6	Conical Inserts	Jet	276.1	125.5	6 5/8" API	67,500-112,500 lbs WOB 70 to 120 RPM

Steeltooth Waterwell Bits

2 1/2" - 3 1/2"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kgs		
2 1/2" 64 mm	93002003	161-0064-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	3.3	1.5	4n-Rod	3,800-8,800 lbs WOB 60 to 140 RPM
2 1/2" 64 mm	93002002	161-0064-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	3.3	1.5	4n-Rod	8,800-13,800 lbs WOB 50 to 120 RPM
2 1/2" 64 mm	93002218	161-0064-32-FW-1R-01	3-2-1	F32	Conventional Gage Tooth	Regular	3.3	1.5	4n-Rod	11,300-18,800 lbs WOB 50 to 100 RPM
2 1/2" 64 mm	93002001	161-0064-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	3.3	1.5	4n-Rod	11,300-18,800 lbs WOB 50 to 100 RPM

2 5/8" 67 mm	93002005	161-0067-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	3.3	1.5	4n-Rod	9,200-14,400 lbs WOB 50 to 120 RPM
2 5/8" 67 mm	93002004	161-0067-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	3.3	1.5	4n-Rod	11,800-19,700 lbs WOB 50 to 100 RPM

2 7/8" 73 mm	93002006	161-0073-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	4.0	1.8	4n-Rod	10,100-15,800 lbs WOB 50 to 120 RPM
2 7/8" 73 mm	93002007	161-0073-32-FW-1R-01	3-2-1	F32	Conventional Gage Tooth	Regular	4.0	1.8	4n-Rod	12,900-21,600 lbs WOB 50 to 100 RPM

2 15/16" 75 mm	93002009	161-0075-21-FW-1R-01	2-1-1	F21	Conventional Gage Tooth	Regular	4.4	2.0	4n-Rod	10,300-16,200 lbs WOB 50 to 120 RPM
2 15/16" 75 mm	93002008	161-0075-32-FW-1R-01	3-2-1	F32	Conventional Gage Tooth	Regular	4.4	2.0	4n-Rod	13,200-22,000 lbs WOB 50 to 100 RPM
2 15/16" 75 mm	93002010	161-0075-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	4.4	2.0	4n-Rod	13,200-22,000 lbs WOB 50 to 100 RPM

3" 76 mm	93002012	161-0076-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	4.4	2.0	4n-Rod	10,500-16,500 lbs WOB 50 to 150 RPM
3" 76 mm	93002219	161-0076-32-FW-1R-01	3-2-1	F32	Conventional Gage Tooth	Regular	4.4	2.0	4n-Rod	13,500-22,500 lbs WOB 50 to 100 RPM
3" 76 mm	93002011	161-0076-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	4.4	2.0	4n-Rod	13,500-22,500 lbs WOB 50 to 100 RPM

3 1/8" 79 mm	93002013	161-0079-32-FW-1R-01	3-2-1	F32	Conventional Gage Tooth	Regular	4.4	2.0	4n-Rod	14,100-23,400 lbs WOB 50 to 100 RPM
3 1/8" 79 mm	93002014	161-0079-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	4.4	2.0	4n-Rod	14,100-23,400 lbs WOB 50 to 100 RPM

3 1/4" 83 mm	93002017	161-0083-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	4.4	2.0	4n-Rod	4,900-11,400 lbs WOB 60 to 140 RPM
3 1/4" 83 mm	93002016	161-0083-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	4.4	2.0	4n-Rod	11,400-17,900 lbs WOB 50 to 120 RPM
3 1/4" 83 mm	93002015	161-0083-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	4.4	2.0	4n-Rod	14,600-24,400 lbs WOB 50 to 100 RPM

3 1/2" 89 mm	93002018	110-0089-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	7.1	3.2	2 3/8" API	5,300-12,300 lbs WOB 60 to 140 RPM
3 1/2" 89 mm	93002221	110-0089-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	7.1	3.2	2 3/8" API	12,250-19,250 lbs WOB 50 to 120 RPM
3 1/2" 89 mm	93002073	161-0089-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	7.1	3.2	4n-Rod	12,250-19,250 lbs WOB 50 to 120 RPM
3 1/2" 89 mm	93002074	110-0089-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	7.1	3.2	2 3/8" API	12,250-19,250 lbs WOB 50 to 120 RPM
3 1/2" 89 mm	93002076	110-0089-32-FW-2R-02	3-2-2	F32	Tapered Gage Tooth	Regular	7.1	3.2	2 3/8" API	15,750-26,300 lbs WOB 50 to 100 RPM
3 1/2" 89 mm	93002217	110-0089-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	7.1	3.2	2 3/8" API	15,750-26,300 lbs WOB 50 to 100 RPM
3 1/2" 89 mm	93002220	161-0089-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	7.1	3.2	4n-Rod	15,750-26,300 lbs WOB 50 to 100 RPM
3 1/2" 89 mm	93002075	110-0089-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	7.1	3.2	2 3/8" API	15,750-26,300 lbs WOB 50 to 100 RPM

Steeltooth Waterwell Bits

3 3/4" - 4 1/8"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kgs		
3 3/4" 95 mm	93002021	110-0095-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	5,600-13,100 lbs WOB 60 to 140 RPM
3 3/4" 95 mm	93002020	110-0095-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	13,100-20,600 lbs WOB 50 to 120 RPM
3 3/4" 95 mm	93002078	110-0095-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	13,100-20,600 lbs WOB 50 to 120 RPM
3 3/4" 95 mm	93002222	110-0095-32-FW-2R-01	3-2-1	F32	Tapered Gage Tooth	Regular	8.8	4.0	2 3/8" API	16,900-28,100 lbs WOB 50 to 100 RPM
3 3/4" 95 mm	93002079	110-0095-32-FW-2R-02	3-2-2	F32	Tapered Gage Tooth	Regular	8.8	4.0	2 3/8" API	16,900-28,100 lbs WOB 50 to 100 RPM
3 3/4" 95 mm	93002019	110-0095-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	8.8	4.0	2 3/8" API	16,900-28,100 lbs WOB 50 to 100 RPM
3 3/4" 95 mm	93002077	110-0095-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	8.8	4.0	2 3/8" API	16,900-28,100 lbs WOB 50 to 100 RPM

3 7/8" 98 mm	93002223	110-0098-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	9.9	4.5	2 3/8" API	5,800-13,600 lbs WOB 60 to 140 RPM
3 7/8" 98 mm	93002083	110-0098-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	5,800-13,600 lbs WOB 60 to 140 RPM
3 7/8" 98 mm	93002224	110-0098-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	9.9	4.5	2 3/8" API	13,500-21,300 lbs WOB 50 to 120 RPM
3 7/8" 98 mm	93002081	110-0098-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	13,600-21,300 lbs WOB 50 to 120 RPM
3 7/8" 98 mm	93002022	110-0098-32-FW-1R-01	3-2-1	F32	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	17,400-29,100 lbs WOB 50 to 100 RPM
3 7/8" 98 mm	93002080	110-0098-32-FW-1R-02	3-2-2	F32	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	17,400-29,100 lbs WOB 50 to 100 RPM
3 7/8" 98 mm	93002023	110-0098-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	8.8	4.0	2 3/8" API	17,400-29,100 lbs WOB 50 to 100 RPM
3 7/8" 98 mm	93002082	110-0098-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	8.8	4.0	2 3/8" API	17,400-29,100 lbs WOB 50 to 100 RPM

4" 102 mm	93002026	110-0102-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	6,000-14,000 lbs WOB 60 to 140 RPM
4" 102 mm	93002024	110-0102-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	14,000-22,000 lbs WOB 50 to 120 RPM
4" 102 mm	93002084	110-0102-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	14,000-22,000 lbs WOB 50 to 120 RPM
4" 102 mm	93002025	110-0102-32-FW-1R-01	3-2-1	F32	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	18,000-30,000 lbs WOB 50 to 100 RPM
4" 102 mm	93002085	110-0102-32-FW-1R-02	3-2-2	F32	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	18,000-30,000 lbs WOB 50 to 100 RPM
4" 102 mm	93002225	110-0102-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	9.9	4.5	2 3/8" API	18,000-30,000 lbs WOB 50 to 100 RPM
4" 102 mm	93002086	110-0102-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	8.8	4.0	2 3/8" API	18,000-30,000 lbs WOB 50 to 100 RPM

4 1/8" 105 mm	93002090	110-0105-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	6,200-14,400 lbs WOB 60 to 140 RPM
4 1/8" 105 mm	93002027	110-0105-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	14,400-22,700 lbs WOB 50 to 120 RPM
4 1/8" 105 mm	93002089	110-0105-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	14,400-22,700 lbs WOB 50 to 120 RPM
4 1/8" 105 mm	93002087	110-0105-32-FW-1R-02	3-2-2	F32	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	18,600-30,900 lbs WOB 50 to 100 RPM
4 1/8" 105 mm	93002088	110-0105-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	8.8	4.0	2 3/8" API	18,600-30,900 lbs WOB 50 to 100 RPM

Steeltooth Waterwell Bits

4 1/4" - 4 3/4"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kgs		
4 1/4" 108 mm	93002029	110-0108-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	6,400-14,900 lbs WOB 60 to 140 RPM
4 1/4" 108 mm	93002092	110-0108-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	6,400-14,900 lbs WOB 60 to 140 RPM
4 1/4" 108 mm	93002226	110-0108-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	14,900-23,400 lbs WOB 50 to 120 RPM
4 1/4" 108 mm	93002093	110-0108-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	14,900-23,400 lbs WOB 50 to 120 RPM
4 1/4" 108 mm	93002028	110-0108-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	8.8	4.0	2 3/8" API	19,100-31,900 lbs WOB 50 to 100 RPM
4 1/4" 108 mm	93002091	110-0108-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	8.8	4.0	2 3/8" API	19,100-31,900 lbs WOB 50 to 100 RPM

4 3/8" 111 mm	93002030	110-0111-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	6,600-15,300 lbs WOB 60 to 140 RPM
4 3/8" 111 mm	93002094	110-0111-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	8.8	4.0	2 3/8" API	6,600-15,300 lbs WOB 60 to 140 RPM

4 1/2" 114 mm	93002032	110-0114-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	12.1	5.5	2 3/8" API	6,800-15,800 lbs WOB 60 to 140 RPM
4 1/2" 114 mm	93002096	110-0114-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	12.1	5.5	2 3/8" API	6,800-15,800 lbs WOB 60 to 140 RPM
4 1/2" 114 mm	93002031	110-0114-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	12.1	5.5	2 3/8" API	15,800-24,800 lbs WOB 50 to 120 RPM
4 1/2" 114 mm	93002095	110-0114-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	12.1	5.5	2 3/8" API	15,800-24,800 lbs WOB 50 to 120 RPM
4 1/2" 114 mm	93002033	110-0114-32-FW-2R-01	3-2-1	F32	Tapered Gage Tooth	Regular	12.1	5.5	2 3/8" API	20,300-33,800 lbs WOB 50 to 100 RPM
4 1/2" 114 mm	93002097	110-0114-32-FW-2R-02	3-2-2	F32	Tapered Gage Tooth	Regular	12.1	5.5	2 3/8" API	20,300-33,800 lbs WOB 50 to 100 RPM
4 1/2" 114 mm	93002034	110-0114-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	12.1	5.5	2 3/8" API	20,300-33,800 lbs WOB 50 to 100 RPM
4 1/2" 114 mm	93002098	110-0114-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	12.1	5.5	2 3/8" API	20,300-33,800 lbs WOB 50 to 100 RPM

4 5/8" 117 mm	93002035	110-0117-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	12.1	5.5	2 3/8" API	6,900-16,200 lbs WOB 60 to 140 RPM
4 5/8" 117 mm	93002099	110-0117-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	12.1	5.5	2 3/8" API	6,900-16,200 lbs WOB 60 to 140 RPM
4 5/8" 117 mm	93002227	110-0117-32-FW-2R-01	3-2-1	F32	Tapered Gage Tooth	Regular	12.1	5.5	2 3/8" API	20,800-34,700 lbs WOB 50 to 100 RPM
4 5/8" 117 mm	93002036	110-0117-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	12.1	5.5	2 3/8" API	20,800-34,700 lbs WOB 50 to 100 RPM

4 3/4" 121 mm	93002039	112-0121-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	18.7	8.5	2 7/8" API	7,100-16,600 lbs WOB 60 to 140 RPM
4 3/4" 121 mm	93002102	112-0121-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	18.7	8.5	2 7/8" API	7,100-16,600 lbs WOB 60 to 140 RPM
4 3/4" 121 mm	93002037	112-0121-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	18.7	8.5	2 7/8" API	16,600-26,100 lbs WOB 50 to 120 RPM
4 3/4" 121 mm	93002100	112-0121-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	18.7	8.5	2 7/8" API	16,600-26,100 lbs WOB 50 to 120 RPM
4 3/4" 121 mm	93002228	112-0121-32-FW-2R-01	3-2-1	F32	Tapered Gage Tooth	Regular	18.7	8.5	2 7/8" API	21,400-35,600 lbs WOB 50 to 100 RPM
4 3/4" 121 mm	93002103	112-0121-32-FW-2R-02	3-2-2	F32	Tapered Gage Tooth	Regular	18.7	8.5	2 7/8" API	21,400-35,600 lbs WOB 50 to 100 RPM
4 3/4" 121 mm	93002038	112-0121-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	18.7	8.5	2 7/8" API	21,400-35,600 lbs WOB 50 to 100 RPM
4 3/4" 121 mm	93002101	112-0121-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	18.7	8.5	2 7/8" API	21,400-35,600 lbs WOB 50 to 100 RPM

Steeltooth Waterwell Bits

4 7/8" - 5 3/8"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kgs		
4 7/8" 124 mm	93002106	112-0124-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	18.7	8.5	2 7/8" API	7,300-17,100 lbs WOB 60 to 140 RPM
4 7/8" 124 mm	93002229	112-0124-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	19.8	9.0	2 7/8" API	17,100-26,800 lbs WOB 50 to 120 RPM
4 7/8" 124 mm	93002104	112-0124-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	18.7	8.5	2 7/8" API	17,100-26,800 lbs WOB 50 to 120 RPM
4 7/8" 124 mm	93002105	112-0124-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	18.7	8.5	2 7/8" API	21,900-36,600 lbs WOB 50 to 100 RPM

5" 127 mm	93002043	112-0127-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	18.7	8.5	2 7/8" API	7,500-17,500 lbs WOB 60 to 140 RPM
5" 127 mm	93002110	112-0127-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	18.7	8.5	2 7/8" API	7,500-17,500 lbs WOB 60 to 140 RPM
5" 127 mm	93002040	112-0127-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	18.7	8.5	2 7/8" API	17,500-27,500 lbs WOB 50 to 120 RPM
5" 127 mm	93002107	112-0127-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	18.7	8.5	2 7/8" API	17,500-27,500 lbs WOB 50 to 120 RPM
5" 127 mm	93002041	112-0127-32-FW-1R-01	3-2-1	F32	Conventional Gage Tooth	Regular	18.7	8.5	2 7/8" API	22,500-37,500 lbs WOB 50 to 100 RPM
5" 127 mm	93002108	112-0127-32-FW-2R-02	3-2-2	F32	Tapered Gage Tooth	Regular	18.7	8.5	2 7/8" API	22,500-37,500 lbs WOB 50 to 100 RPM
5" 127 mm	93002042	112-0127-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	18.7	8.5	2 7/8" API	22,500-37,500 lbs WOB 50 to 100 RPM
5" 127 mm	93002109	112-0127-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	18.7	8.5	2 7/8" API	22,500-37,500 lbs WOB 50 to 100 RPM

5 1/8" 130 mm	93002230	112-0130-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	20.2	9.2	2 7/8" API	7,700-17,800 lbs WOB 60 to 140 RPM
5 1/8" 130 mm	93002111	112-0130-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	22.0	10.0	2 7/8" API	7,700-17,900 lbs WOB 60 to 140 RPM
5 1/8" 130 mm	93002045	112-0130-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	22.0	10.0	2 7/8" API	17,900-28,200 lbs WOB 50 to 120 RPM
5 1/8" 130 mm	93002113	112-0130-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	22.0	10.0	2 7/8" API	17,900-28,200 lbs WOB 50 to 120 RPM
5 1/8" 130 mm	93002044	112-0130-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	22.0	10.0	2 7/8" API	23,100-38,400 lbs WOB 50 to 100 RPM
5 1/8" 130 mm	93002112	112-0130-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	22.0	10.0	2 7/8" API	23,100-38,400 lbs WOB 50 to 100 RPM

5 1/4" 133 mm	93002047	112-0133-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	22.0	10.0	2 7/8" API	7,900-18,400 lbs WOB 60 to 140 RPM
5 1/4" 133 mm	93002114	112-0133-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	22.0	10.0	2 7/8" API	7,900-18,400 lbs WOB 60 to 140 RPM
5 1/4" 133 mm	93002048	112-0133-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	22.0	10.0	2 7/8" API	18,400-28,900 lbs WOB 50 to 120 RPM
5 1/4" 133 mm	93002115	112-0133-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	22.0	10.0	2 7/8" API	18,400-28,900 lbs WOB 50 to 120 RPM
5 1/4" 133 mm	93002046	112-0133-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	22.0	10.0	2 7/8" API	23,600-39,400 lbs WOB 50 to 100 RPM
5 1/4" 133 mm	93002215	112-0133-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	22.0	10.0	2 7/8" API	23,600-39,400 lbs WOB 50 to 100 RPM

5 3/8" 137 mm	93002049	112-0137-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	22.0	10.0	2 7/8" API	8,100-18,800 lbs WOB 60 to 140 RPM
5 3/8" 137 mm	93002116	112-0137-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	22.0	10.0	2 7/8" API	8,100-18,800 lbs WOB 60 to 140 RPM
5 3/8" 137 mm	93002216	112-0137-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	22.0	10.0	2 7/8" API	8,100-18,800 lbs WOB 60 to 140 RPM
5 3/8" 137 mm	93002050	112-0137-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	22.0	10.0	2 7/8" API	24,200-40,300 lbs WOB 50 to 100 RPM

Steeltooth Waterwell Bits

5 1/2" - 5 7/8"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kgs		
5 1/2" 140 mm	93002053	112-0140-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	23.1	10.5	2 7/8" API	8,300-19,300 lbs WOB 60 to 140 RPM
5 1/2" 140 mm	93002119	112-0140-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	23.1	10.5	2 7/8" API	8,300-19,300 lbs WOB 60 to 140 RPM
5 1/2" 140 mm	93002054	112-0140-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	23.1	10.5	2 7/8" API	19,300-30,300 lbs WOB 50 to 120 RPM
5 1/2" 140 mm	93002120	112-0140-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	23.1	10.5	2 7/8" API	19,300-30,300 lbs WOB 50 to 120 RPM
5 1/2" 140 mm	93002051	112-0140-32-FW-2R-01	3-2-1	F32	Tapered Gage Tooth	Regular	23.1	10.5	2 7/8" API	24,800-41,300 lbs WOB 50 to 100 RPM
5 1/2" 140 mm	93002117	112-0140-32-FW-2R-02	3-2-2	F32	Tapered Gage Tooth	Regular	23.1	10.5	2 7/8" API	24,800-41,300 lbs WOB 50 to 100 RPM
5 1/2" 140 mm	93002052	112-0140-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	23.1	10.5	2 7/8" API	24,800-41,300 lbs WOB 50 to 100 RPM
5 1/2" 140 mm	93002118	112-0140-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	23.1	10.5	2 7/8" API	24,800-41,300 lbs WOB 50 to 100 RPM

5 5/8" 143 mm	93002055	114-0143-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	24.2	11.0	3 1/2" API	8,400-19,700 lbs WOB 60 to 140 RPM
5 5/8" 143 mm	93002121	114-0143-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	23.1	10.5	3 1/2" API	8,400-19,700 lbs WOB 60 to 140 RPM
5 5/8" 143 mm	93002122	114-0143-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	23.1	10.5	3 1/2" API	19,700-30,900 lbs WOB 50 to 120 RPM
5 5/8" 143 mm	93002231	114-0143-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	22	10.0	3 1/2" API	25,300-42,200 lbs WOB 50 to 100 RPM
5 5/8" 143 mm	93002248	114-0143-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	24.2	11.0	3 1/2" API	25,300-42,200 lbs WOB 50 to 100 RPM

5 3/4" 146 mm	93002125	114-0146-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	26.5	12.0	3 1/2" API	8,600-20,100 lbs WOB 60 to 140 RPM
5 3/4" 146 mm	93002124	114-0146-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	26.5	12.0	3 1/2" API	20,100-31,600 lbs WOB 50 to 120 RPM
5 3/4" 146 mm	93002123	114-0146-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	26.5	12.0	3 1/2" API	25,900-43,100 lbs WOB 50 to 100 RPM

5 7/8" 149 mm	93002057	114-0149-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	26.5	12.0	3 1/2" API	8,800-20,600 lbs WOB 60 to 140 RPM
5 7/8" 149 mm	93002232	114-0149-11-FW-1RV-01	1-1-1	F11	Conventional Gage Tooth, Aggressive Cutting Structure	Regular	23.8	10.8	3 1/2" API	8,800-20,600 lbs WOB 60 to 140 RPM
5 7/8" 149 mm	93002249	114-0149-11-FW-1V-02	1-1-2	F11	Conventional Gage Tooth, Aggressive Cutting Structure	Jet	30.4	13.8	3 1/2" API	8,800-20,600 lbs WOB 60 to 140 RPM
5 7/8" 149 mm	93002233	114-0149-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	24	10.9	3 1/2" API	20,600-32,300 lbs WOB 50 to 120 RPM
5 7/8" 149 mm	93002126	114-0149-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	26.5	12.0	3 1/2" API	20,600-32,300 lbs WOB 50 to 120 RPM
5 7/8" 149 mm	93002146	114-0149-23-FW-1-02	2-3-2	F23	Conventional Gage Tooth	Jet	26.5	12.0	3 1/2" API	20,600-32,300 lbs WOB 50 to 120 RPM
5 7/8" 149 mm	93002127	114-0149-32-FW-2R-02	3-2-2	F32	Tapered Gage Tooth	Regular	26.5	12.0	3 1/2" API	26,400-44,100 lbs WOB 50 to 100 RPM
5 7/8" 149 mm	93002056	114-0149-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	26.5	12.0	3 1/2" API	26,400-44,100 lbs WOB 50 to 100 RPM
5 7/8" 149 mm	93002128	114-0149-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	26.5	12.0	3 1/2" API	26,400-44,100 lbs WOB 50 to 100 RPM

Steeltooth Waterwell Bits

6" - 6 5/8"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kgs		
6" 152 mm	93002059	114-0152-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	26.5	12.0	3 1/2" API	9,000-21,000 lbs WOB 60 to 140 RPM
6" 152 mm	93002250	114-0152-23-FW-1-02	2-3-2	F23	Conventional Gage Tooth	Jet	24.3	11.0	3 1/2" API	21,000-33,000 lbs WOB 50 to 120 RPM
6" 152 mm	93002129	114-0152-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	26.5	12.0	3 1/2" API	21,000-33,000 lbs WOB 50 to 120 RPM
6" 152 mm	93002068	114-0152-31-FW-3-01	3-1-1	F31	"T" Gage Tooth	Jet	26.5	12.0	3 1/2" API	27,000-45,000 lbs WOB 50 to 100 RPM
6" 152 mm	93002130	114-0152-32-FW-2R-02	3-2-2	F32	Tapered Gage Tooth	Regular	26.5	12.0	3 1/2" API	27,000-45,000 lbs WOB 50 to 100 RPM
6" 152 mm	93002131	114-0152-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	26.5	12.0	3 1/2" API	27,000-45,000 lbs WOB 50 to 100 RPM
6" 152 mm	93002058	114-0152-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	26.5	12.0	3 1/2" API	27,000-45,000 lbs WOB 50 to 100 RPM

6 1/8" 156 mm	93002285	114-0156-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	27.5	12.5	3 1/2" API	21,400-33,700 lbs WOB 50 to 120 RPM
6 1/8" 156 mm	93002132	114-0156-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	26.5	12.0	3 1/2" API	21,400-33,700 lbs WOB 50 to 120 RPM
6 1/8" 156 mm	93002147	114-0156-23-FW-1-02	2-3-2	F23	Conventional Gage Tooth	Jet	26.5	12.0	3 1/2" API	21,400-33,700 lbs WOB 50 to 120 RPM

6 1/4" 159 mm	93002234	114-0159-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	26.5	11.0	3 1/2" API	9,400-21,900 lbs WOB 60 to 140 RPM
6 1/4" 159 mm	93002133	114-0159-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	26.5	12.0	3 1/2" API	9,400-21,900 lbs WOB 60 to 140 RPM
6 1/4" 159 mm	93002235	114-0159-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	24.6	11.2	3 1/2" API	21,900-34,400 lbs WOB 50 to 120 RPM
6 1/4" 159 mm	93002135	114-0159-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	26.5	12.0	3 1/2" API	21,900-34,400 lbs WOB 50 to 120 RPM
6 1/4" 159 mm	93002251	114-0159-23-FW-1-02	2-3-2	F23	Conventional Gage Tooth	Jet	24.6	11.2	3 1/2" API	21,900-34,400 lbs WOB 50 to 120 RPM
6 1/4" 159 mm	93002236	114-0159-32-FW-2R-01	3-2-1	F32	Tapered Gage Tooth	Regular	25.3	11.5	3 1/2" API	28,100-46,900 lbs WOB 50 to 100 RPM
6 1/4" 159 mm	93002237	114-0159-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	25.7	11.7	3 1/2" API	28,100-46,900 lbs WOB 50 to 100 RPM
6 1/4" 159 mm	93002134	114-0159-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	26.5	12.0	3 1/2" API	28,100-46,900 lbs WOB 50 to 100 RPM

6 1/2" 165 mm	93002061	114-0165-12-FW-1R-01	1-2-1	F12	Conventional Gage Tooth	Regular	26.5	12.0	3 1/2" API	9,800-22,800 lbs WOB 60 to 140 RPM
6 1/2" 165 mm	93002136	114-0165-12-FW-1R-02	1-2-2	F12	Conventional Gage Tooth	Regular	26.5	12.0	3 1/2" API	9,800-22,800 lbs WOB 60 to 140 RPM
6 1/2" 165 mm	93002238	114-0165-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	29.7	13.5	3 1/2" API	22,800-35,800 lbs WOB 50 to 120 RPM
6 1/2" 165 mm	93002137	114-0165-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	26.5	12.0	3 1/2" API	22,800-35,800 lbs WOB 50 to 120 RPM
6 1/2" 165 mm	93002239	114-0165-32-FW-2R-01	3-2-1	F32	Tapered Gage Tooth	Regular	30.8	14.0	3 1/2" API	29,300-48,800 lbs WOB 50 to 100 RPM
6 1/2" 165 mm	93002138	114-0165-32-FW-2R-02	3-2-2	F32	Tapered Gage Tooth	Regular	26.5	12.0	3 1/2" API	29,300-48,800 lbs WOB 50 to 100 RPM
6 1/2" 165 mm	93002240	114-0165-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	30.8	14.0	3 1/2" API	29,300-48,800 lbs WOB 50 to 100 RPM
6 1/2" 165 mm	93002139	114-0165-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	26.5	12.0	3 1/2" API	29,300-48,800 lbs WOB 50 to 100 RPM

6 5/8" 168 mm	93002062	114-0168-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	26.5	12.0	3 1/2" API	23,200-36,400 lbs WOB 50 to 120 RPM
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Steeltooth Waterwell Bits

6 3/4" - 15"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kgs		
6 3/4" 171 mm	93002064	114-0171-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	35.3	16.0	3 1/2" API	10,100-23,600 lbs WOB 60 to 140 RPM
6 3/4" 171 mm	93002141	114-0171-11-FW-1R-02	1-1-2	F11	Conventional Gage Tooth	Regular	35.3	16.0	3 1/2" API	10,100-23,600 lbs WOB 60 to 140 RPM
6 3/4" 171 mm	93002063	114-0171-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	35.3	16.0	3 1/2" API	23,600-37,100 lbs WOB 50 to 120 RPM
6 3/4" 171 mm	93002140	114-0171-23-FW-1R-02	2-3-2	F23	Conventional Gage Tooth	Regular	35.3	16.0	3 1/2" API	23,600-37,100 lbs WOB 50 to 120 RPM
6 3/4" 171 mm	93002065	114-0171-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	35.3	16.0	3 1/2" API	30,400-50,600 lbs WOB 50 to 100 RPM
6 3/4" 171 mm	93002142	114-0171-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	35.3	16.0	3 1/2" API	30,400-50,600 lbs WOB 50 to 100 RPM
7 3/8" 187 mm	93002241	114-0187-23-FW-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	58.3	26.5	3 1/2" API	25,800-40,600 lbs WOB 50 to 120 RPM
7 3/8" 187 mm	93002148	114-0187-33-FW-5-02	3-3-2	F33	"Web" Gage Tooth	Jet	48.5	22.0	3 1/2" API	33,200-55,300 lbs WOB 50 to 100 RM
7 5/8" 194 mm	93002143	117-0194-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	52.9	24.0	4 1/2" API	34,300-57,200 lbs WOB 50 to 100 RM
7 7/8" 200 mm	93002243	117-0200-11-FW-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	58.3	26.5	4 1/2" API	11,800-27,600 lbs WOB 60 to 140 RPM
7 7/8" 200 mm	93002242	117-0200-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	58.3	26.5	4 1/2" API	35,400-59,100 lbs WOB 50 to 100 RPM
8" 203 mm	93002069	117-0203-31-FW-3-03	3-1-3	F31	"T" Gage Steel Tooth	Jet	74.8	34.0	4 1/2" API	21,200-40,600 lbs WOB 50 to 100 RPM
8" 203 mm	93002066	117-0203-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	74.8	34.0	4 1/2" API	36,000-60,000 lbs WOB 50 to 100 RPM
8" 203 mm	93002144	117-0203-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	74.8	34.0	4 1/2" API	36,000-60,000 lbs WOB 50 to 100 RPM
8 1/2" 216 mm	93002244	117-0216-11-FW-1-01	1-1-1	F11	Conventional Gage Tooth	Jet	95.7	43.5	4 1/2" API	12,750-29,750 lbs WOB 60 to 140 RPM
10" 254 mm	93002070	118-0254-31-FW-3-03	3-1-3	F31	"T" Gage Steel Tooth	Jet	114.4	52.0	6 5/8" API	45,000-75,000 lbs WOB 50 to 100 RPM
10" 254 mm	93002067	118-0254-33-FW-5R-01	3-3-1	F33	"Web" Gage Tooth	Regular	114.4	52.0	6 5/8" API	45,000-75,000 lbs WOB 50 to 100 RPM
10" 254 mm	93002145	118-0254-33-FW-5R-02	3-3-2	F33	"Web" Gage Tooth	Regular	114.4	52.0	6 5/8" API	45,000-75,000 lbs WOB 50 to 100 RPM
10 5/8" 270 mm	93002245	118-0270-33-FW-5-01	3-3-1	F33	"Web" Gage Tooth	Jet	143	65.0	6 5/8" API	47,800-79,700 lbs WOB 50 to 100 RPM
12 1/4" 311 mm	93002071	118-0311-31-FW-3-03	3-1-3	F31	"T" Gage Steel Tooth	Jet	191.4	87.0	6 5/8" API	55,125-91,875 lbs WOB 50 to 100 RPM
12 1/4" 311 mm	93002246	118-0311-33-FW-5-01	3-3-1	F33	"Web" Gage Tooth	Jet	201.3	91.5	6 5/8" API	55,125-91,875 lbs WOB 50 to 100 RPM
14" 356 mm	93002247	118-0356-33-FW-5-01	3-3-1	F33	"Web" Gage Tooth	Jet	246.4	112	6 5/8" API	63,000-105,000 lbs WOB 50 to 100 RPM
15" 381 mm	93002072	118-0381-33-FW-5-01	3-3-1	F33	"Web" Gage Tooth	Jet	257.4	117	6 5/8" API	67,500-112,500 lbs WOB 50 to 100 RPM

Exploration Bits

5 1/8" - 5 1/2"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kg		
5 1/8" 130 mm	93004001	112-0130-11-FE-1AR-06	1-1-6	F11J	Conventional Gage Tooth, Armor	Regular	18.0	8.2	2 7/8" API	5,100-20,500 lbs WOB 70-140 RPM
5 1/8" 130 mm	93004004	112-3130-52-FE-FAR-07	5-2-7	F52J	Chisel Inserts, Armor	Regular	19.4	8.8	2 7/8" API	15,400-28,200 lbs WOB 60-90 RPM

5 1/4" 133 mm	93004002	112-0133-11-FE-1AR-06	1-1-6	F11J	Conventional Gage Tooth, Armor	Regular	20.7	9.4	2 7/8" API	5,300-21,000 lbs WOB 70-140 RPM
5 1/4" 133 mm	93004005	112-3133-52-FE-FAR-07	5-2-7	F52J	Chisel Inserts, Armor	Regular	20.5	9.3	2 7/8" API	15,800-28,900 lbs WOB 60-90 RPM

5 1/2" 140 mm	93004003	112-0140-11-FE-1AR-06	1-1-6	F11J	Conventional Gage Tooth, Armor	Regular	21.6	9.8	2 7/8" API	5,500-22,000 lbs WOB 70-140 RPM
5 1/2" 140 mm	93004006	112-3140-52-FE-FAR-07	5-2-7	F52J	Chisel Inserts, Armor	Regular	23.1	10.5	2 7/8" API	16,500-30,300 lbs WOB 70-140 RPM

Workover Bits

3 1/4" - 6 1/4"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kgs		
3 1/4" 83 mm	93005008	110-0083-11-FO-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	4.0	1.8	2 3/8" API	4,875-11,375 lbs WOB 60-140 RPM
3 1/4" 83 mm	93005007	110-0083-32-FO-2R-01	3-2-1	F32	Tapered Gage Tooh	Regular	4.4	2.0	2 3/8" API	14,625-24,375 lbs WOB 50-100 RPM
3 3/8" 86 mm	93005001	110-0086-32-FO-2R-01	3-2-1	F32	Tapered Gage Tooth	Regular	6.2	2.8	2 3/8" API	15,200-25,300 lbs WOB 50-100 RPM
3 1/2" 89 mm	93005009	110-0089-32-FO-2R-01	3-2-1	F32	Tapered Gage Tooth	Regular	7.0	3.2	2 3/8" API	15,750-26,250 lbs WOB 50-100 RPM
3 5/8" 92 mm	93005002	110-0092-32-FO-2R-01	3-2-1	F32	Tapered Gage Tooth	Regular	7.0	3.2	2 3/8" API	16,300-27,200 lbs WOB 50-100 RPM
3 3/4" 95 mm	93005003	110-0095-11-FO-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	7.7	3.5	2 3/8" API	5,625-13,125 lbs WOB 60-140 RPM
3 7/8" 98 mm	93005004	110-0098-11-FO-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	9.2	4.2	2 3/8" API	5,800-13,600 lbs WOB 60-140 RPM
3 7/8" 98 mm	93005010	110-0098-23-FO-1R-01	2-3-1	F23	Conventional Gage Tooth	Regular	7.5	3.4	2 3/8" API	5,800-13,600 lbs WOB 60-140 RPM
3 7/8" 98 mm	93005005	110-0098-32-FO-2R-01	3-2-1	F32	Tapered Gage Tooth	Regular	9.5	4.3	2 3/8" API	17,400-29,100 lbs WOB 50-100 RPM
4" 102 mm	93005011	110-0102-11-FO-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	7.7	3.5	2 3/8" API	6,000-14,000 lbs WOB 60-140 RPM
4 3/4" 121 mm	93005012	112-0121-11-FO-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	12.5	5.7	2 7/8" API	7,125-16,625 lbs WOB 60-140 RPM
4 3/4" 121 mm	93005006	112-0121-32-FO-2R-01	3-2-1	F32	Tapered Gage Tooth	Regular	13	5.9	2 7/8" API	21,375-35,625 lbs WOB 50-100 RPM
4 7/8" 124 mm	93005013	112-0124-11-FO-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	12.8	5.8	2 7/8" API	7,300-17,100 lbs WOB 60-140 RPM
6" 152 mm	93005014	114-0152-11-FO-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	24.2	11.0	3 1/2" API	9,000-21,000 lbs WOB 60-140 RPM
6 1/8" 156 mm	93005015	114-0156-11-FO-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	26.0	11.8	3 1/2" API	9,200-21,400 lbs WOB 60-140 RPM
6 1/4" 159 mm	93005016	114-0159-11-FO-1R-01	1-1-1	F11	Conventional Gage Tooth	Regular	26.4	12.0	3 1/2" API	9,375-21,875 lbs WOB 60-140 RPM

Horizontal Directional Drilling Bits

3 7/8" - 6 3/4"

Bit Diam.	Product No.	Product Code	IADC	Product	Special Features	Circ.	Weight		Pin Connection	Operating Suggestions WOB/RPM
							lbs	kgs		
3 7/8" 98 mm	93006001	110-0098-21-FD-1A-06	2-1-6	F21J	Conventional Gage Tooth, Armor	Jet	9.2	4.2	2 3/8" API	5,800-17,400 lbs WOB 70-120 RPM
3 7/8" 98 mm	93006009	110-3098-52-FD-FA-07	5-2-7	F52J	Chisel Inserts, Armor	Jet	9.5	4.3	2 3/8" API	4,875-11,375 lbs WOB 60-140 RPM
4 1/4" 108 mm	93006010	110-3108-53-FD-FA-07	5-3-7	F53J	Chisel Inserts, Armor	Jet	10.6	4.8	2 3/8" API	12,750-25,500 lbs WOB 50-90 RPM
4 3/4" 121 mm	93006002	112-0121-11-FD-1AG-07	1-1-7	F11J	Conventional Gage Tooth, Armor, Gage Bevel	Jet	8.8	4.0	2 7/8" API	4,750-19,000 lbs WOB 70-140 RPM
4 3/4" 121 mm	93006003	112-0121-21-FD-1A-06	2-1-6	F21J	Conventional Gage Tooth, Armor	Jet	9.9	4.5	2 7/8" API	7,125-21,375 lbs WOB 70-120 RPM
4 3/4" 121 mm	93006011	112-3121-52-FD-FA-07	5-2-7	F52J	Chisel Inserts, Armor	Jet	14.3	6.5	2 7/8" API	14,250-26,125 lbs WOB 60-90 RPM
4 7/8" 124 mm	93006012	112-3124-52-FD-FA-07	5-2-7	F52J	Chisel Inserts, Armor	Jet	19.8	9.0	2 7/8" API	14,625-26,800 lbs WOB 60-90 RPM
5 1/8" 130 mm	93006013	112-3130-52-FD-FA-07	5-2-7	F52J	Chisel Inserts, Armor	Jet	20.9	9.5	2 7/8" API	15,375-28,200 lbs WOB 60-90 RPM
5 1/4" 133 mm	93006014	112-3133-52-FD-FA-07	5-2-7	F52J	Chisel Inserts, Armor	Jet	23.1	10.5	2 7/8" API	15,750-28,875 lbs WOB 60-90 RPM
5 1/2" 140 mm	93006015	112-3140-52-FD-FA-07	5-2-7	F52J	Chisel Inserts, Armor	Jet	22.4	10.2	2 7/8" API	16,500-30,250 lbs WOB 60-90 RPM
5 7/8" 149 mm	93006016	114-3149-52-FD-FA-07	5-2-7	F52J	Chisel Inserts, Armor	Jet	27.5	12.5	3 1/2" API	17,625-32,300 lbs WOB 60-90 RPM
6" 152 mm	93006004	114-0152-11-FD-1AG-07	1-1-7	F11J	Conventional Gage Tooth, Armor, Gage Bevel	Jet	27.5	12.5	3 1/2" API	6,000-24,000 lbs WOB 70-140 RPM
6" 152 mm	93006017	112-3152-52-FD-FA-07	5-2-7	F52J	Chisel Inserts, Armor	Jet	27.9	12.7	2 7/8" API	18,000-33,000 lbs WOB 60-90 RPM
6" 152 mm	93006018	114-3152-52-FD-FA-07	5-2-7	F52J	Chisel Inserts, Armor	Jet	29	13.2	3 1/2" API	18,000-33,000 lbs WOB 60-90 RPM
6 1/8" 156 mm	93006005	114-0156-11-FD-1AG-07	1-1-7	F11J	Conventional Gage Tooth, Armor, Gage Bevel	Jet	28.6	13.0	3 1/2" API	6,125-24,500 lbs WOB 70-140 RPM
6 1/8" 156 mm	93006019	114-3156-52-FD-FA-07	5-2-7	F53J	Chisel Inserts, Armor	Jet	30.6	13.9	3 1/2" API	18,375-36,750 lbs WOB 50-90 RPM
6 1/4" 159 mm	93006006	114-0159-11-FD-1AG-07	1-1-7	F11J	Conventional Gage Tooth, Armor, Gage Bevel	Jet	25.3	11.5	3 1/2" API	6,250-25,000 lbs WOB 70-140 RPM
6 1/4" 159 mm	93006020	114-3159-51-FD-CA-07	5-1-7	F51J	Conical Inserts, Armor	Jet	31.5	14.3	3 1/2" API	15,625-34,375 lbs WOB 70-100 RPM
6 1/4" 159 mm	93006021	114-3159-53-FD-FA-07	5-3-7	F53J	Chisel Inserts, Armor	Jet	31.5	14.3	3 1/2" API	18,750-37,500 lbs WOB 50-90 RPM
6 1/2" 165 mm	93006007	114-0165-11-FD-1AG-07	1-1-7	F11J	Conventional Gage Tooth, Armor, Gage Bevel	Jet	31.2	14.2	3 1/2" API	6,500-26,000 lbs WOB 70-140 RPM
6 1/2" 165 mm	93006022	114-3165-52-FD-FA-07	5-2-7	F52J	Chisel Inserts, Armor	Jet	32.3	14.7	3 1/2" API	19,500-35,750 lbs WOB 60-90 RPM
6 3/4" 171 mm	93006008	114-0171-11-FD-1AG-07	1-1-7	F11J	Conventional Gage Tooth, Armor, Gage Bevel	Jet	34.1	15.5	3 1/2" API	6,750-27,000 lbs WOB 70-140 RPM
6 3/4" 171 mm	93006023	114-3171-52-FD-FA-07	5-2-7	F52J	Chisel Inserts, Armor	Jet	32.8	14.9	3 1/2" API	20,250-37,125 lbs WOB 60-90 RPM