IADC CODES

By Tim Thomas

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IADC CODES

International Association of Drilling Contractors

Codes for every formation bearing design and any other design features (SHIRT TAIL, LEG, SECTION, CUTTER)

History of the IADC

- Founded in 1940 as the American Association of Oil well Drilling Contractors (AADC)
- Promote commitment to safety, preservation of the environment and advances in drilling technology


Comparison Chart - Tooth Bits


Comparison Chart - Carbide Insert Bits

IADC CODE REFERENCE

First Digit:

1, 2, and 3 designate Steel Tooth Bits with 1 for soft, 2 for medium and 3 for hard formations.

4, 5, 6, 7, and 8 designate Tungsten Carbide Insert Bits for varying formation hardness with 4 being the softest and 8 the hardest.

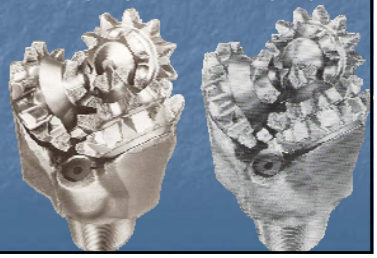
IADC CODE REFERENCE

1 **1** 1

Second Digit:

1, 2, 3, and 4 help further breakdown the formation with 1 being the softest and 4 the hardest.

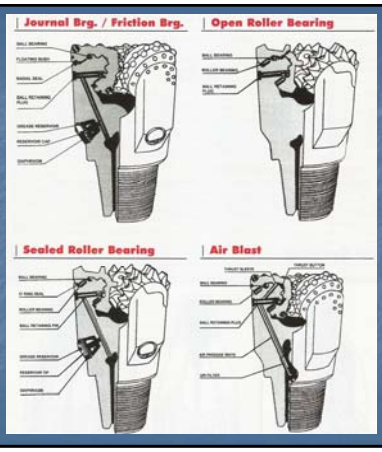
IADC 116 IADC 126



Tricone Bearing Designs

4 Primary Types of Bearing Designs

- Standard Open Bearing Roller Bit
  3rd digit will end with 1
- Air Bearing Roller Bit
  3rd digit will end with 2 or 3
- Sealed Bearing Roller Bit
  3rd digit will end with 4 or 5
- Journal Bearing Roller Bit
  3rd digit will end with 6 or 7



IADC CODE REFERENCE

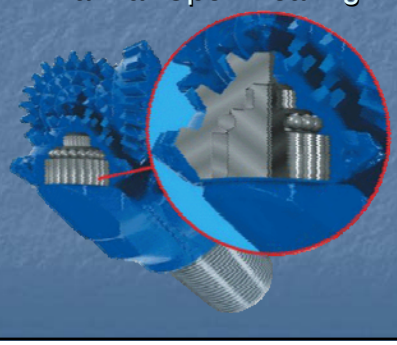
1 1 **1**

Third Digit:

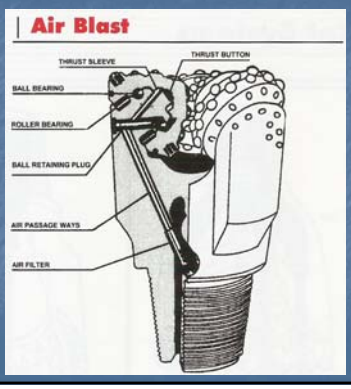
This digit will classify the bit according to bearing/seal type and special gauge wear protection as follows:

1.Standard open bearing roller bit
2.Standard open bearing bit for air drilling only
3.Standard open bearing bit with gauge protection which is defined as carbide inserts in the heel of the cone.
4.Roller sealed bearing bit
5.Roller sealed bearing bit with carbide inserts in the heel of the cone.
6.Journal sealed bearing bit
7.Journal sealed bearing bit with carbide inserts in the heel of the cone.

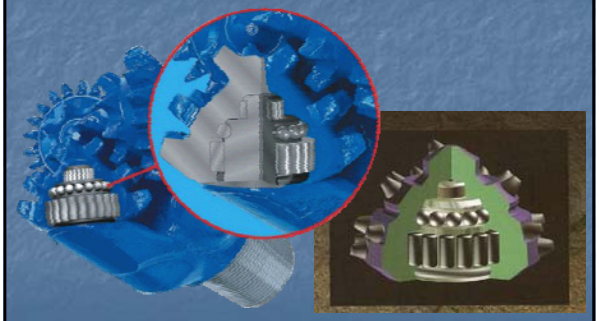
Non-Sealed Roller Bearing a.k.a. Open Bearing



Air Bearing (Blast Hole)

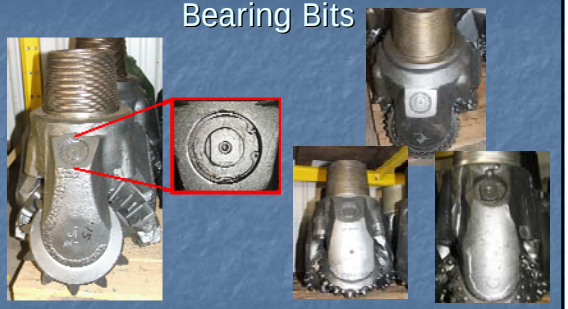


Sealed Roller Bearing



Journal Bearing

How to Visually Identify Sealed Bearing Bits

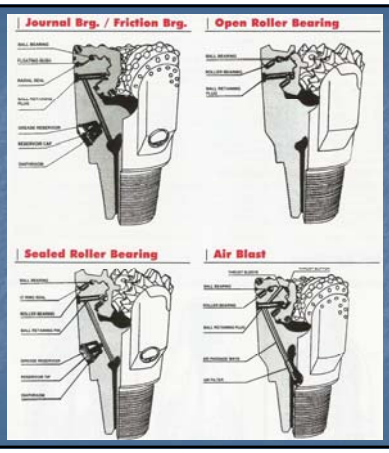


Fitting for the grease reservoir.

How to Visually Identify Sealed Bearing Bits

How to Visually Identify Open Bearing or Air Bearing Bits

No fitting for the grease reservoir.



Tooth Bits

J1 IADC 116

J2 IADC 126

J3 IADC 136

J4 IADC 216

J7 IADC 316

J8 IADC 346


Comparison Chart - Tooth Bits

Soft Formation Tooth Bits

Used in shales, clays, red beds, salts, soft limestone and unconsolidated sands

PSI: 3000 – 5000 lbs of bit diameter

RPM: 120 – 90 reduce weight as RPM Increases

J1 IADC 116

Soft Formation Tooth Bits

Used in shales, clays, red beds, salts, soft limestone and unconsolidated sands

PSI: 3500 – 5500 lbs of bit diameter

RPM: 120 – 90 reduce weight as RPM Increases

J2 IADC 126

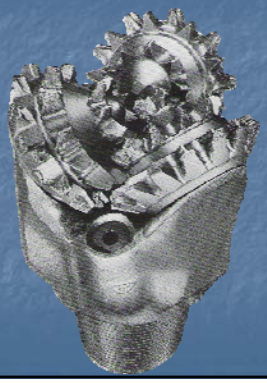
Soft to Medium Formation Tooth Bits

Used in firm shale, anhydrite, salts, soft limestone and unconsolidated sands

PSI: 3500 – 6000 lbs of bit diameter

RPM: 100 - 60 reduce weight as RPM Increases

J3 IADC 136



Medium Formation Tooth Bits

For use in hard shales, sandstones, and limestones

PSI: 4000 – 8000 lbs. of bit diameter

RPM: 100 – 40 reduce weight as RPM Increases

J4 IADC 216

Hard Formation Tooth Bits

For use in hard sands, cherty limestone, dolomite, chert

PSI: 4500 – 8000 lbs. of bit diameter

RPM: 80 – 45 reduce weight as RPM Increases

J7 IADC 316

Very Hard Formation Tooth Bits

Used in chert, quartzite, pyrite, granite, and hard sandstone

PSI: 6000 – 8000 lbs of bit diameter

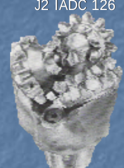
RPM: 70 – 50 reduce weight as RPM Increases

J8 IADC 346

Tooth Bits

J1 IADC 116

J2 IADC 126



J3 IADC 136

J4 IADC 216

J7 IADC 316

J8 IADC 346

Button Bits (TCI)

C1 IADC 427

C17 IADC 447

C27 IADC 527

C47 IADC 627

C7 IADC 737

C9 IADC 837

Comparison Chart - Carbide Insert Bits

IADC	ABCO	Hughes	Smith	Reed	Security	Varel
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Very Soft Formation TCI Bits

Used in shale, sand, red bed, clay, salt, and soft limestone

PSI: 1500 – 4000 lbs of bit diameter

RPM: 180 – 60 reduce weight as RPM increases

C1 IADC 427

Very Soft Formation TCI Bits

Used in shale, sand, red bed, clay, salt, and limestone

PSI: 2000 – 5000 of bit diameter

RPM: 160 – 60 reduce weight as RPM increases

C17 IADC 447

Soft Formation TCI Bits

Used in shale, clay, red bed, salt, sand, soft limestone and soft anhydrite

PSI: 2000 – 5000 lbs of bit diameter

RPM: 140 – 60 reduce weight as RPM increases

C27 IADC 527

Medium Hard Formation TCI Bits

Used in hard limestone, dolomite, and gypsum

PSI: 3000 – 6000 of bit diameter

RPM: 75 – 40 reduce weight as RPM increases

C47 IADC 627

Hard Formation TCI Bits

Used in sandy shale, limestone, dolomite, chert, and hard, sharp sands

PSI: 3000 – 6500 lbs of bit diameter

RPM: 60 – 35 reduce weight as RPM increases

C7 IADC 737

Very Hard Formation TCI Bits

Used in high strength abrasive formations: sand, chert, quartzite, pyrite, granite and quartzitic.

PSI: 5000 – 6500 of bit diameter

RPM: 60 – 35 reduce weight as RBM increase

C9 IADC 837

Button Bits (TCI)

C1 IADC 427 C17 IADC 447 C27 IADC 527

C47 IADC 627 C7 IADC 737 C9 IADC 837

IADC Reference Code

Fourth Digit / Additional Letter:

Example 111 C

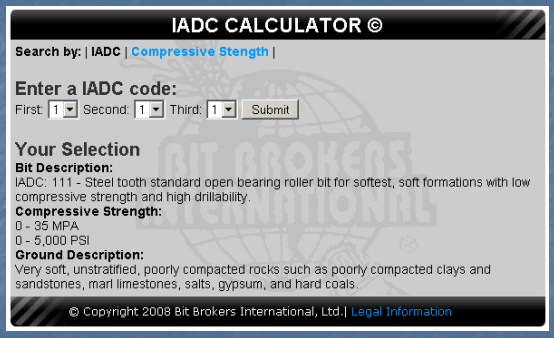
The following letter codes are used in the fourth digit position to indicate additional features:

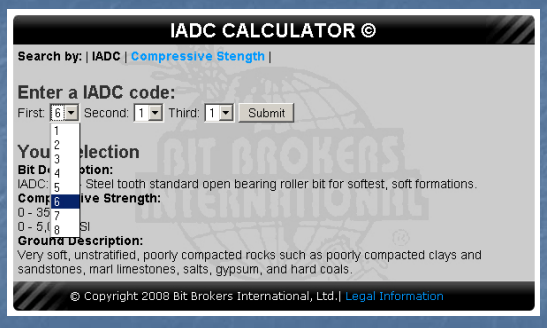
- A - Air application
- B - Special Bearing Seal
- **C - Center Jet**
- D - Deviation control
- E - Extended Jets
- G - Extra gauge protection
- H - Horizontal Application
- J - Jet Deflection
- L - Lug Pads
- M - Motor Application
- R - Reinforced welds
- S - Standard Tooth Bit
- T - Two Cone Bits
- W - Enhanced Cutting Structure
- X - Chisel Insert
- Y - Conical Insert
- Z - Other insert shape

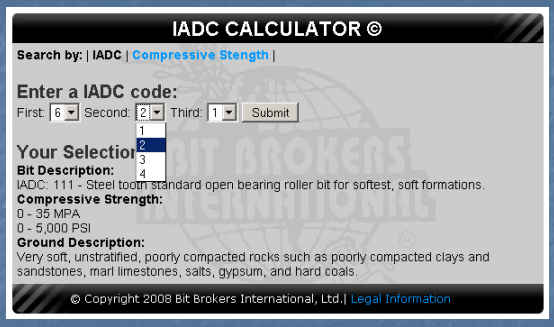
Optional Features

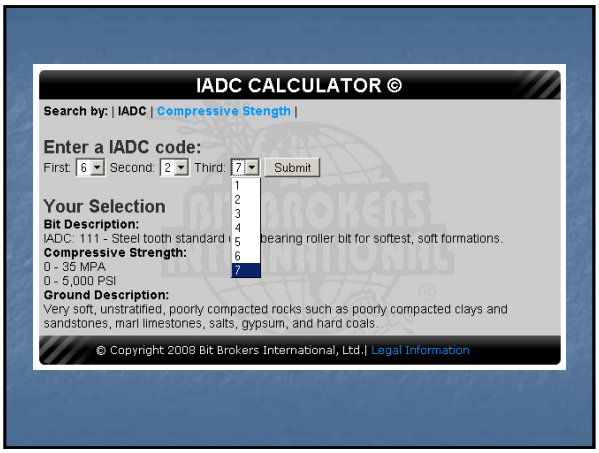
IADC Calculator

For finding the right IADC code go to
www.bitbrokers.com/iadc-calculator.php








IADC CALCULATOR ©
Search by: | IADC | Compressive Stength |
Enter a IADC code:
First: 6 Second: 2 Third: 7 Submit
1
2
3
4
5
6
7
Your Selection
Bit Description:
IADC: 111 - Steel tooth standard
bearing roller bit for softest, soft formations.
Compressive Strength:
0 - 35 MPA
0 - 5,000 PSI
Ground Description:
Very soft, unstratified, poorly compacted rocks such as poorly compacted clays and sandstones, marl limestones, salts, gypsum, and hard coals.
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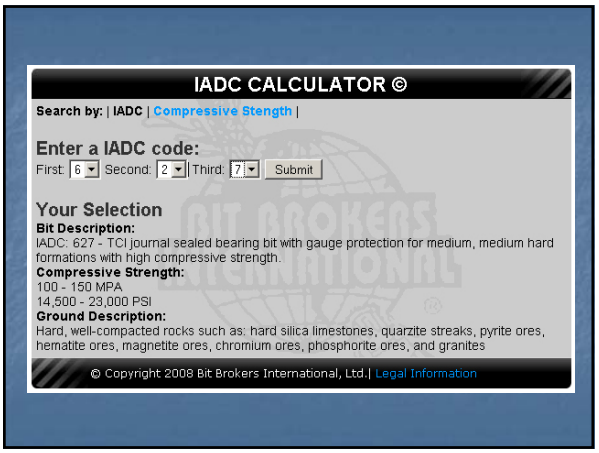
IADC CALCULATOR ©
Search by: | IADC | Compressive Stength |
Enter a IADC code:
First: 6 Second: 2 Third: 7 Submit
Your Selection
Bit Description:
IADC: 627 - TCI journal sealed bearing bit with gauge protection for medium, medium hard formations with high compressive strength.
Compressive Strength:
100 - 150 MPA
14,500 - 23,000 PSI
Ground Description:
Hard, well-compacted rocks such as: hard silica limestones, quarzite streaks, pyrite ores, hematite ores, magnetite ores, chromium ores, phosphorite ores, and granites
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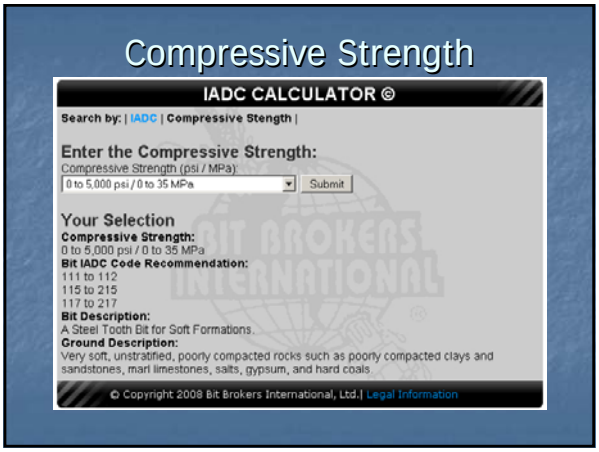
Compressive Strength
IADC CALCULATOR ©
Search by: | IADC | Compressive Stength |
Enter the Compressive Strength:
Compressive Strength (psi / MPa):
0 to 5,000 psi / 0 to 35 MPa Submit
Your Selection
Compressive Strength:
0 to 5,000 psi / 0 to 35 MPa
Bit IADC Code Recommendation:
111 to 112
115 to 215
117 to 217
Bit Description:
A Steel Tooth Bit for Soft Formations.
Ground Description:
Very soft, unstratified, poorly compacted rocks such as poorly compacted clays and sandstones, marl limestones, salts, gypsum, and hard coals.
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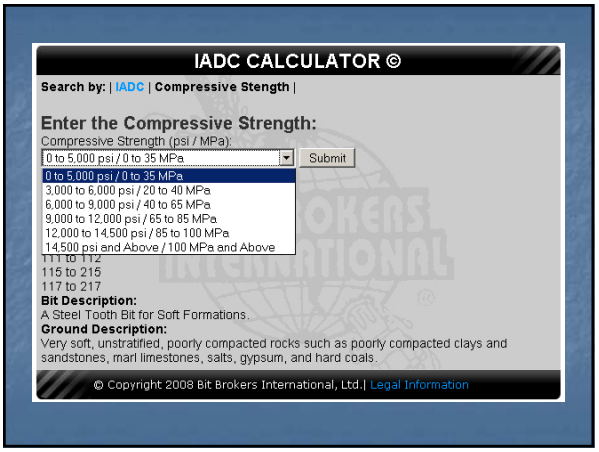
IADC CALCULATOR ©
Search by: | IADC | Compressive Stength |
Enter the Compressive Strength:
Compressive Strength (psi / MPa):
0 to 5,000 psi / 0 to 35 MPa Submit
0 to 5,000 psi / 0 to 35 MPa
3,000 to 6,000 psi / 20 to 40 MPa
6,000 to 9,000 psi / 40 to 65 MPa
9,000 to 12,000 psi / 65 to 85 MPa
12,000 to 14,500 psi / 85 to 100 MPa
14,500 psi and Above / 100 MPa and Above
111 to 112
115 to 215
117 to 217
Bit Description:
A Steel Tooth Bit for Soft Formations.
Ground Description:
Very soft, unstratified, poorly compacted rocks such as poorly compacted clays and sandstones, marl limestones, salts, gypsum, and hard coals.
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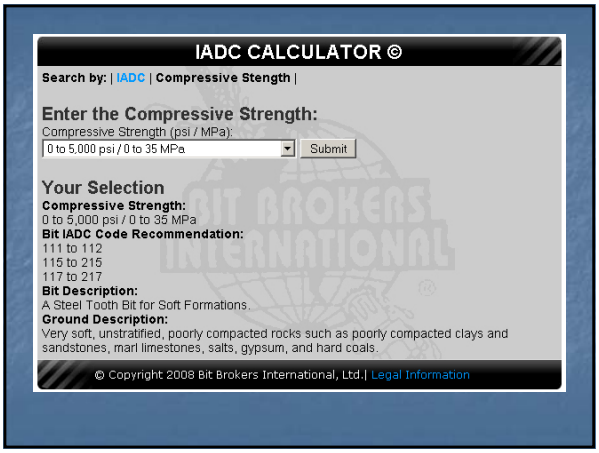
IADC CALCULATOR ©
Search by: | IADC | Compressive Stength |
Enter the Compressive Strength:
Compressive Strength (psi / MPa):
0 to 5,000 psi / 0 to 35 MPa Submit
Your Selection
Compressive Strength:
0 to 5,000 psi / 0 to 35 MPa
Bit IADC Code Recommendation:
111 to 112
115 to 215
117 to 217
Bit Description:
A Steel Tooth Bit for Soft Formations.
Ground Description:
Very soft, unstratified, poorly compacted rocks such as poorly compacted clays and sandstones, marl limestones, salts, gypsum, and hard coals.
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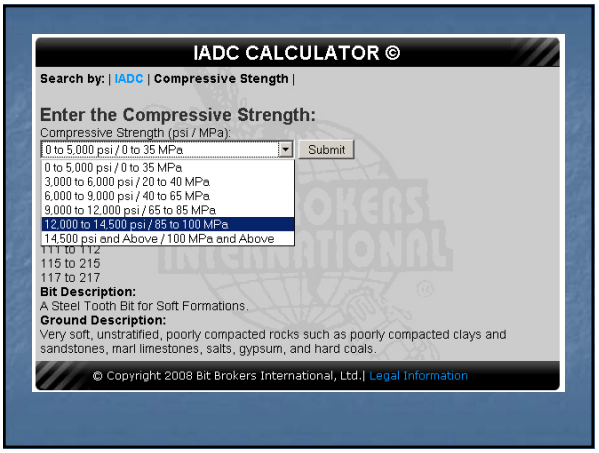
IADC CALCULATOR ©
Search by: | IADC | Compressive Stength |
Enter the Compressive Strength:
Compressive Strength (psi / MPa):
0 to 5,000 psi / 0 to 35 MPa Submit
0 to 5,000 psi / 0 to 35 MPa
3,000 to 6,000 psi / 20 to 40 MPa
6,000 to 9,000 psi / 40 to 65 MPa
9,000 to 12,000 psi / 65 to 85 MPa
12,000 to 14,500 psi / 85 to 100 MPa
14,500 psi and Above / 100 MPa and Above
111 to 112
115 to 215
117 to 217
Bit Description:
A Steel Tooth Bit for Soft Formations.
Ground Description:
Very soft, unstratified, poorly compacted rocks such as poorly compacted clays and sandstones, marl limestones, salts, gypsum, and hard coals.
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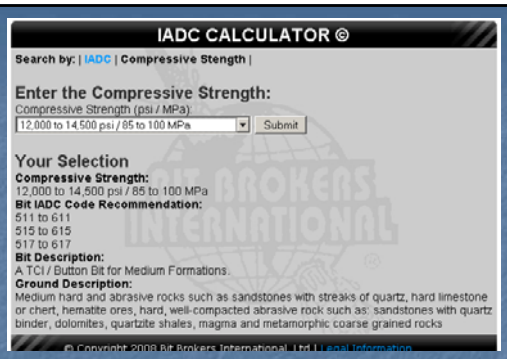


For finding the right IADC code go to

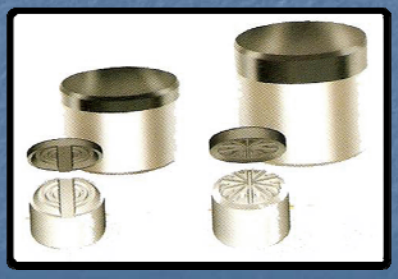
www.bitbrokers.com/iadc-calculator.php

IADC Reference Codes For PDC Bits

Uses 4 characters to classify the bit.

- body material
- cutter density
- cutter size or type
- profile

PDC BIT CUTTERS



IADC Reference Codes For PDC Bits

M 1 1 1

First Character:

Denotes the body material

- M for Matrix
- S for Steel

IADC Reference Codes For PDC Bits

M 1 1 1

Second Character:

Stands for the amount of ½ in. cutters

- Ranges 1 to 4 in PDC bits
- 1 = 30 or fewer ½ in. cutters
- 2 = 30 to 40 ½ in. cutters
- 3 = 40 to 50 ½ in. cutters
- 4 = 50 or more ½ in. cutters

IADC Reference Codes For PDC Bits

M 1 1 1

Third Character:

Ranges from 1-4 and represents the size of the PDC cutter on the bit

- 1 = cutters larger than 1 in.
- 2 = cutters from 9/16 in. to 1 in.
- 3 = cutters of 1/2 in.
- 4 = cutters of 5/16 in.

IADC Reference Codes For PDC Bits

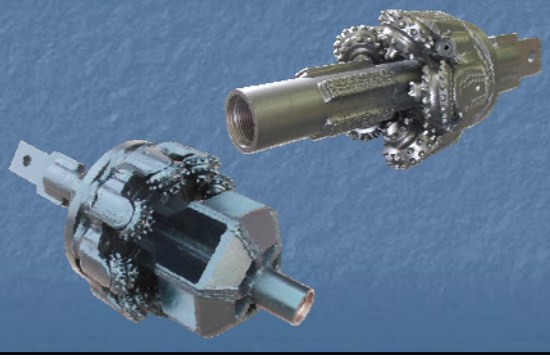
M 1 1 1

Fourth Character

Ranges 1 to 4 and gives as idea of basic appearance of and body style the bit, based on the overall length of the cutting face of the bit.

- 1 = fishtail PDC Bit
- 2 = short bit profile
- 3 = medium bit profile
- 4 = long bit profile

Hole Openers



Custom-built Hole Openers

Options for Hole Openers:

Tooth or TCI Cutter
Sealed or open bearing
Standard or reverse circulation
New, Surplus or Rebuilt Cutters

Cutters

Tooth Cutters

TCI Cutters

For more information about drill bit selection please visit:

www.bitbrokers.com