



# IADC CODES



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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 (AAODC)
- Promote commitment to safety, preservation of the environment and advances in drilling technology

## Comparison Chart - Tooth Bits

| IADC                               | ABCO | Hughes<br>SOFT FORMATION TOOTH BITS | Smith   | Reed        | Security | Varel       |
|------------------------------------|------|-------------------------------------|---------|-------------|----------|-------------|
| 111                                | A111 | R1                                  | DSJ     | Y11         | S3SJ     | L11         |
| 114                                | A114 | GTX-1                               | SDS     | S11         | S33S     | ETR1        |
| 115                                | A115 | ATX-G1                              | MSDSH   | EMS11G      | S3SS     | ETR1G       |
| 116                                | A116 | MAX-GT1                             | MSDSSH  | EMS11DH     | SS33SG   |             |
|                                    |      | GT-1                                | FDS     | HP11        | S33SF    | L116        |
|                                    |      | STR-1                               | FDS+    | EHT11       | PSF      |             |
|                                    |      | ATX-11H                             | FDS+    |             |          |             |
| 117                                | A117 | GT-G1                               | FDS+2   | MHP11G      | ERA MPSF | L117        |
|                                    |      | GT-G1H                              | FDS+2   | MHP11DH     | MPSF     | ETD1G       |
|                                    |      | MFDH                                |         |             |          |             |
| 121                                | A121 | R2                                  | DTJ     | Y12         | S3       | L121        |
| 124                                | A124 |                                     |         |             | S33      | L124        |
| 125                                | A125 |                                     |         |             | S33G     | ETR2G, L125 |
| 126                                | A126 | GT-1                                | FTD     | HP12, EHP12 | S33F     | L126        |
| 127                                | A127 |                                     |         |             | S33TGF   | L127        |
| 131                                | A131 |                                     | DGJ     | Y13         | S4TJ     | L131        |
| 134                                | A134 |                                     |         |             | S44      | L134        |
| 135                                | A135 | GTX-G3                              | SDGH    | EMS13G      | SS44G    | ETR3G       |
| 136                                | A136 | MSDGH                               | EMS13DH | S44G        | L135     |             |
|                                    |      | FDG                                 | HP13    | S44F        | L136     |             |
| 137                                | A137 | MFDGH                               | FDGH    | HP13G       | S44GF    | L137        |
|                                    |      |                                     | MHP13G  |             | ETD3G    |             |
| <b>MEDIUM FORMATION TOOTH BITS</b> |      |                                     |         |             |          |             |
| 211                                | A211 |                                     | V2J     |             | M4N      | L211        |
| 214                                | A214 |                                     |         |             | M44N     | L214        |
| 215                                | A215 |                                     | SVH     | MS21G       | M44NG    | L215        |
|                                    |      |                                     | S21G    | MM44NG      |          |             |
| 216                                | A216 | ATJ-4                               | FV      | HP21        | M44NF    | L216        |
| 217                                | A217 | ATJ-G4                              | FVH     | HP21G       | M44NGF   | L217        |
| 221                                | A221 | DR5                                 |         |             | M4       |             |
| 231                                | A231 |                                     |         |             |          | L231        |
| <b>HARD FORMATION TOOTH BITS</b>   |      |                                     |         |             |          |             |
| 311                                | A311 |                                     |         |             | H7       | L311        |
| 314                                | A314 |                                     |         |             | H77      | L314        |
| 315                                | A315 |                                     |         |             |          | L315        |
| 316                                | A316 |                                     |         |             |          | L316        |
| 317                                | A317 |                                     |         | HP31G       |          | L317        |
| 321                                | A321 | R7                                  |         |             |          | L321        |
| 331                                | A331 |                                     |         |             |          |             |

Notation: The comparison chart above lists only those IADC classifications where the American Block Company offers standard products. This is not a comprehensive chart of all IADC codes, and it does not necessarily include all models within the respective classifications for each of the manufacturers listed.

## Comparison Chart - Carbide Insert Bits

| IADC | ABCO | Hughes<br>SOFT FORMATION CARBIDE INSERT BITS | Smith<br>Q1, Q17                | Reed<br>MS43A<br>S43A | Security                   | Varel           |
|------|------|----------------------------------------------|---------------------------------|-----------------------|----------------------------|-----------------|
| 432  | A432 | BH40                                         |                                 |                       | SS6M<br>HDP43              | QMC43ET         |
| 435  | A435 | MAX-GT09<br>MAX-11H<br>ATX-11H               | M1S<br>M1SOD                    |                       | SS82                       | ETR14           |
| 437  | A437 | ATJ-11H<br>ATM-11H<br>GT-09                  | F1, MF1<br>F14T<br>10MF 12MF    | HP43A<br>EHP43A       | S82F<br>SS82F<br>ERA 13    | ETD12<br>ETD14  |
| 517  | A517 | ATJ-22<br>ATM-18<br>ATM-22                   | F15H, F17<br>F2, MF2<br>A1, F25 | HP51<br>EHP51         | SS84F<br>ERA 22<br>ERA 18C | ETD24<br>ETD25  |
| 521  | A521 |                                              |                                 |                       |                            | DW531           |
| 522  | A522 | BH50                                         | Q2                              |                       | SS8M                       | HDP50           |
| 531  | A531 |                                              |                                 |                       |                            | DW9             |
| 532  | A532 | BH50                                         | Q3                              |                       | S8M                        | QMC53ET         |
| 535  | A535 |                                              | M3S                             | HP53A                 | SS86                       | ETR34           |
| 537  | A537 | ATJ-33<br>ATJ-35<br>ATM-33                   | F3<br>MF3                       | EHP53A                | ERA 33                     | ETD34           |
| 611  | A611 |                                              |                                 |                       |                            | DW7             |
| 612  | A612 | BH60                                         | Q4                              |                       | M8M<br>HDP60               | QMC7            |
| 615  | A615 |                                              | 4JS                             |                       | M84                        | ETR44           |
| 617  | A617 | ATJ-44<br>STR-40                             | F4<br>F47                       | HP61<br>EHP61         | M84F                       | ETD44<br>ETD45A |
| 622  | A622 | BH60                                         | Q4                              | Y62JA                 | M8M, 5GA                   | QMC62ET         |
| 631  | A631 |                                              |                                 |                       |                            | DW6             |
| 632  | A632 | G-55                                         | Q5                              | Y63JA                 | M8M                        | DW632           |
| 637  | A637 | ATJ-55<br>MF57                               | F57<br>EHP63                    | HP63                  | M89F                       | ETD55           |
| 722  | A722 | BH70                                         | Q6                              |                       | H8M                        | HDP70           |
| 732  | A732 | BH70                                         | 7GA, Q7                         | Y73JA                 | H8M                        | QMC73ET         |
| 737  | A737 | ATJ-77                                       | F7                              | EHP73                 | H87F                       | V737            |
| 812  | A812 | BH80                                         | Q9                              |                       | H10M                       | HDP80           |
| 832  | A832 | BH80                                         | Q9                              | Y83JA                 | H10M                       | QMC83ET         |
| 837  | A837 | ATJ-99                                       | F9                              | EHP83                 | H100F                      | ETD95           |

Notation: The comparison chart above lists only those IADC classifications where the American Block Company offers standard products. This is not a comprehensive chart of all IADC codes, and it does not necessarily include all models within the respective classifications for each of the manufacturers listed. Please note that the chart also includes air-to-the-bearings mining bits which are generally manufactured to specifications which do not adhere to the tolerances of API Specification 7.

# IADC CODE REFERENCE

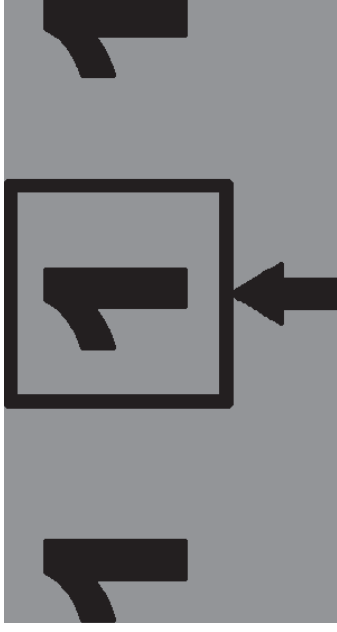


## First Digit:

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

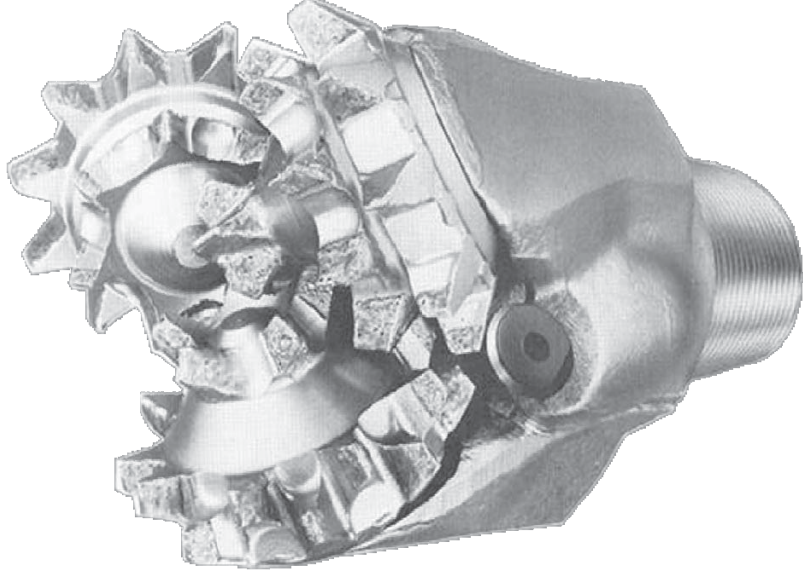
4, 5, 6, 7, and 8 designate Tungsten Carbide Insert Bits for varying formation hardness with 4 being the softest and 8 the hardest.

# IADC CODE REFERENCE

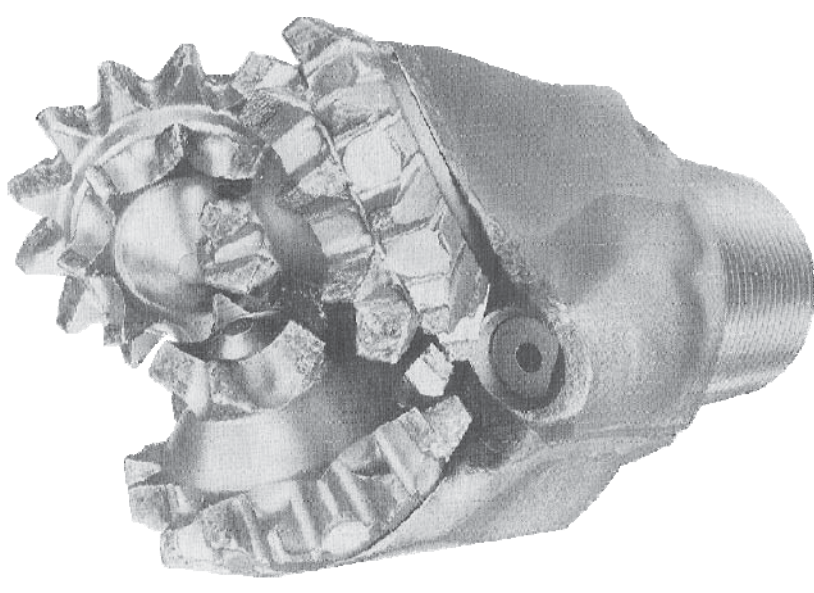


**Second Digit:**  
1, 2, 3, and 4 help further breakdown the formation with 1 being the softest and 4 the hardest.

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

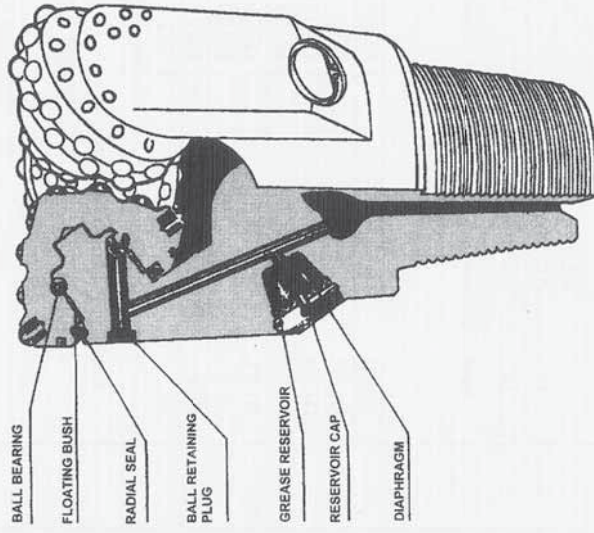
- Sealed Bearing Roller Bit

3rd digit will end with 4 or 5

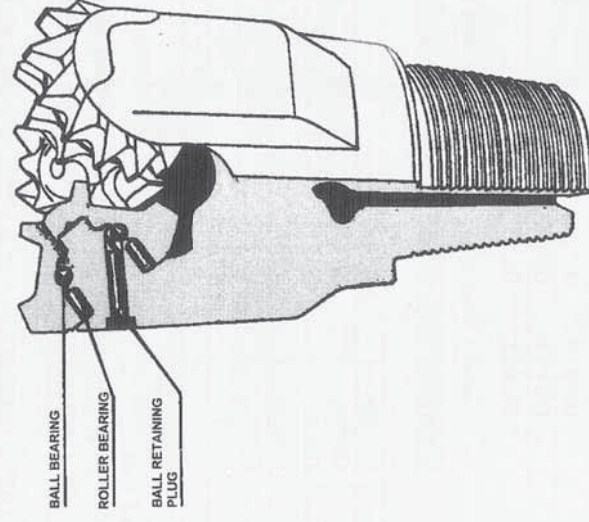
- Journal Bearing Roller Bit

3rd digit will end with 6 or 7

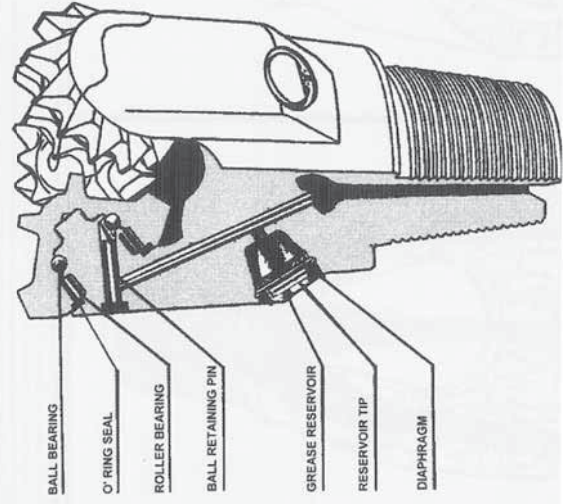
## Journal Brg. / Friction Brg.



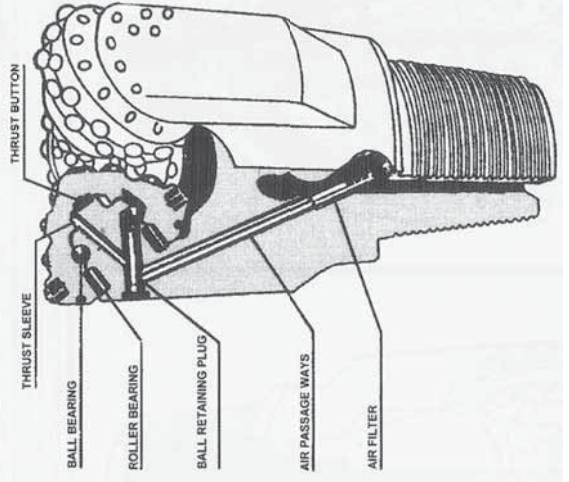
## Open Roller Bearing



## Sealed Roller Bearing



## Air Blast



# IADC CODE REFERENCE

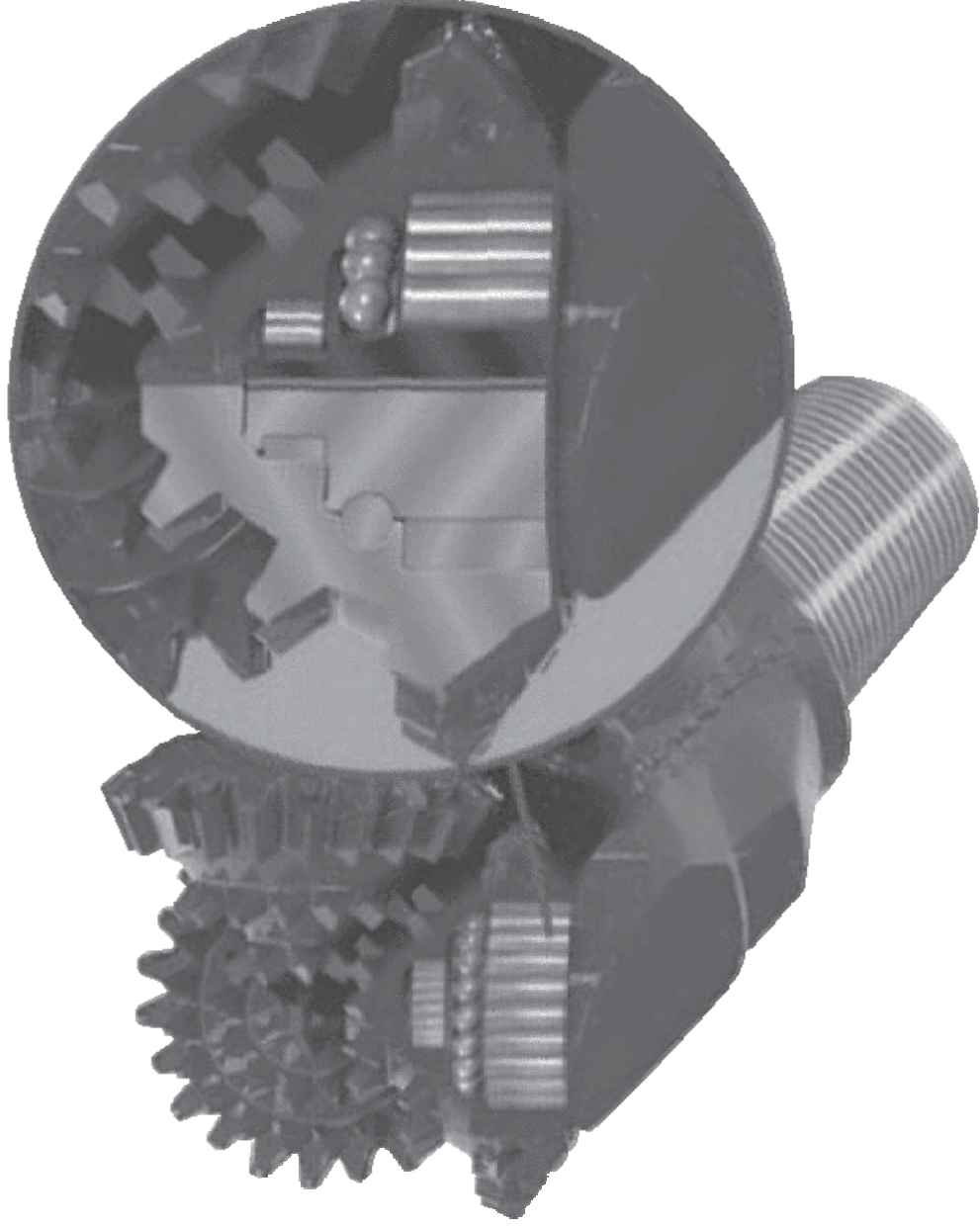


## Third Digit:

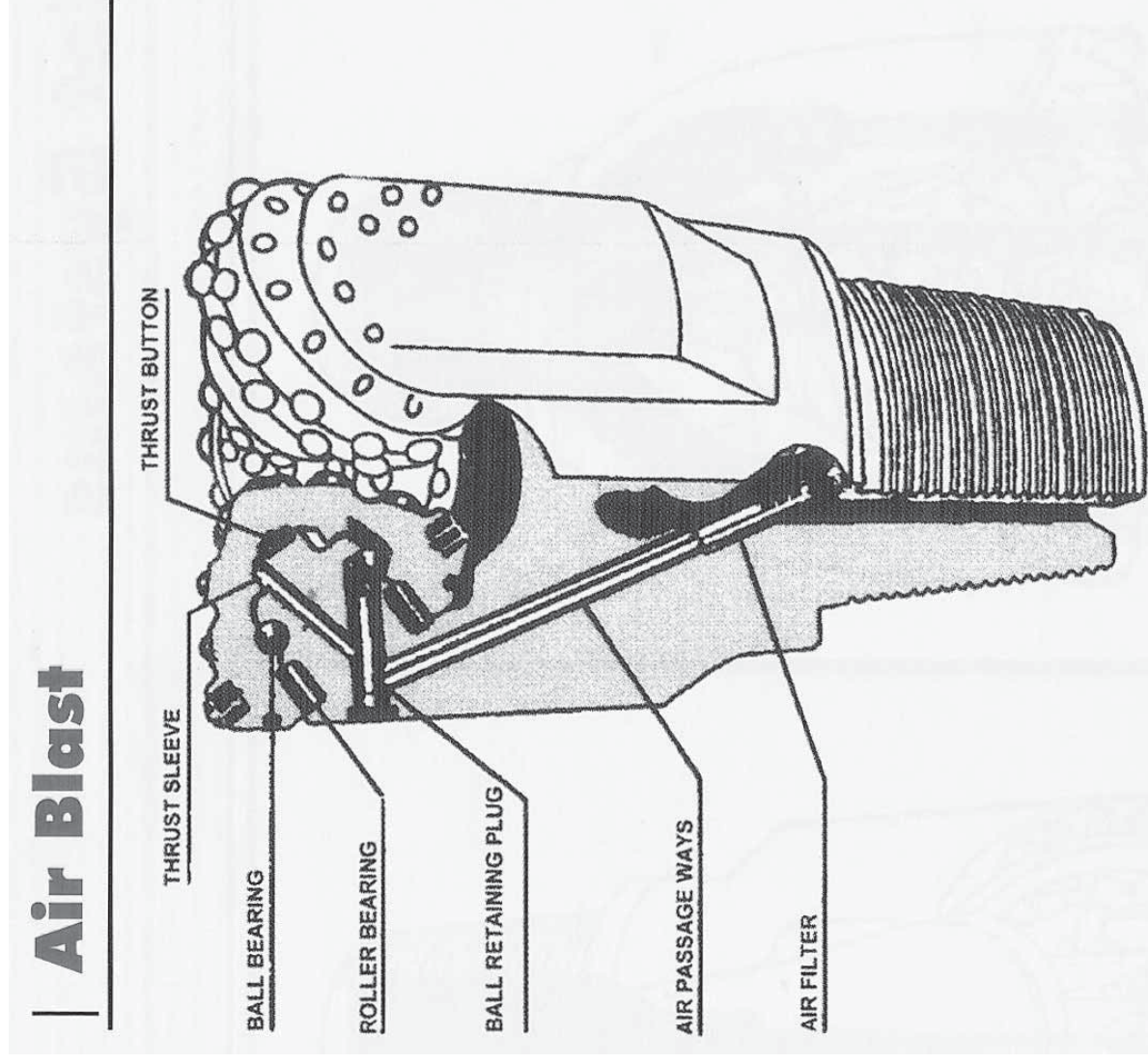
This digit will classify the bit according to bearing/seal type and special gauge wear protection as follows:

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.

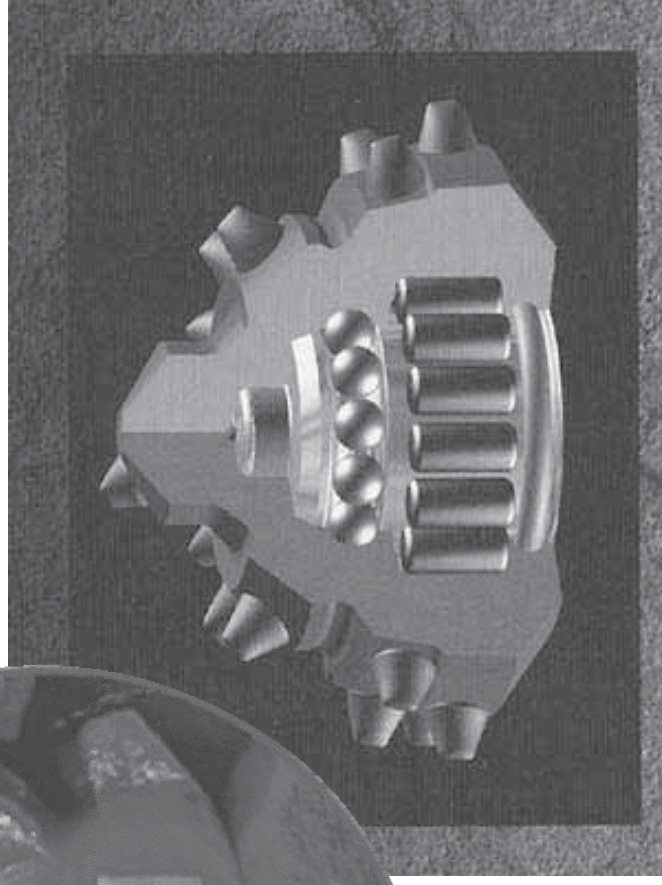
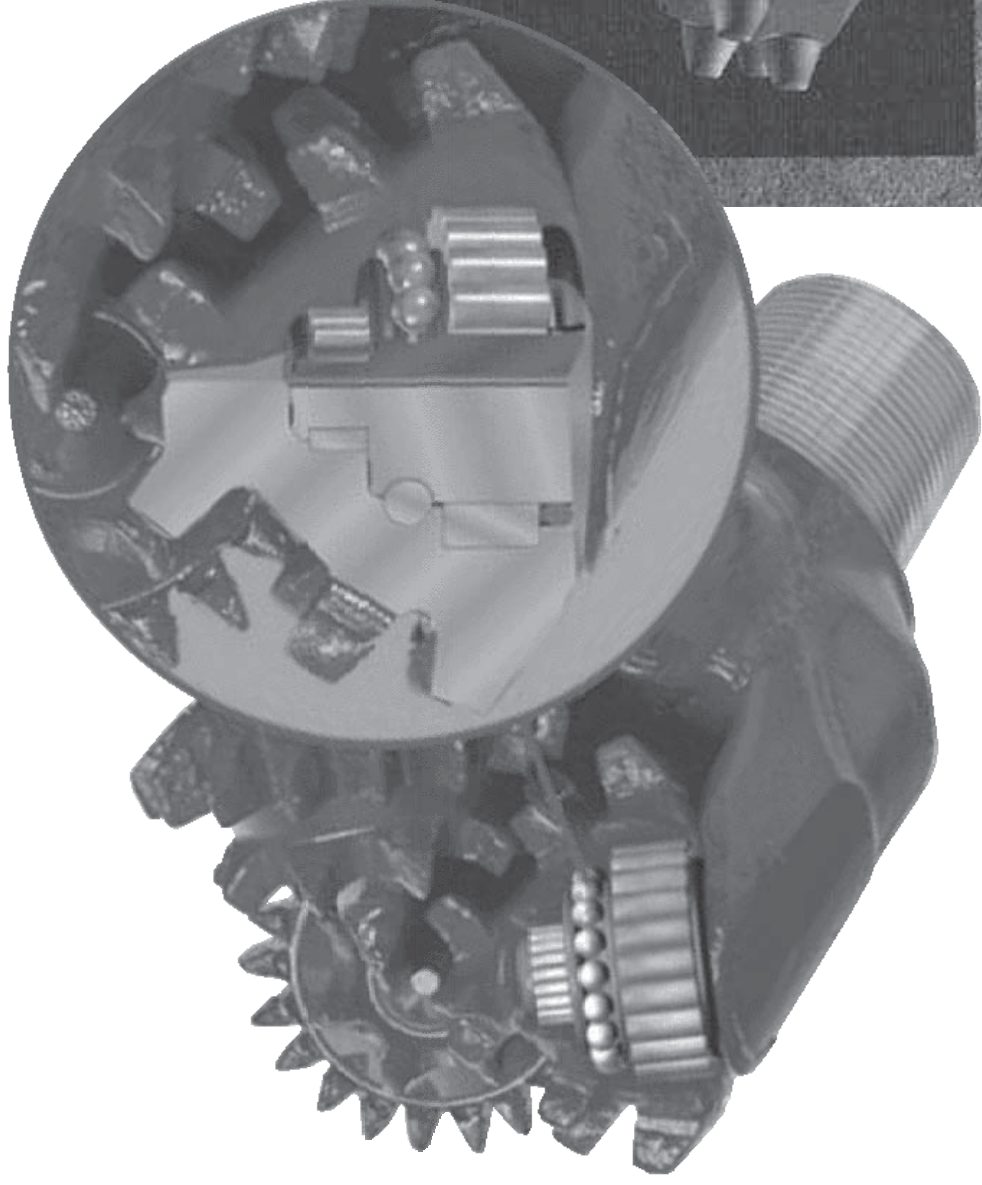
# Non-Sealed Roller Bearing a.k.a. Open Bearing



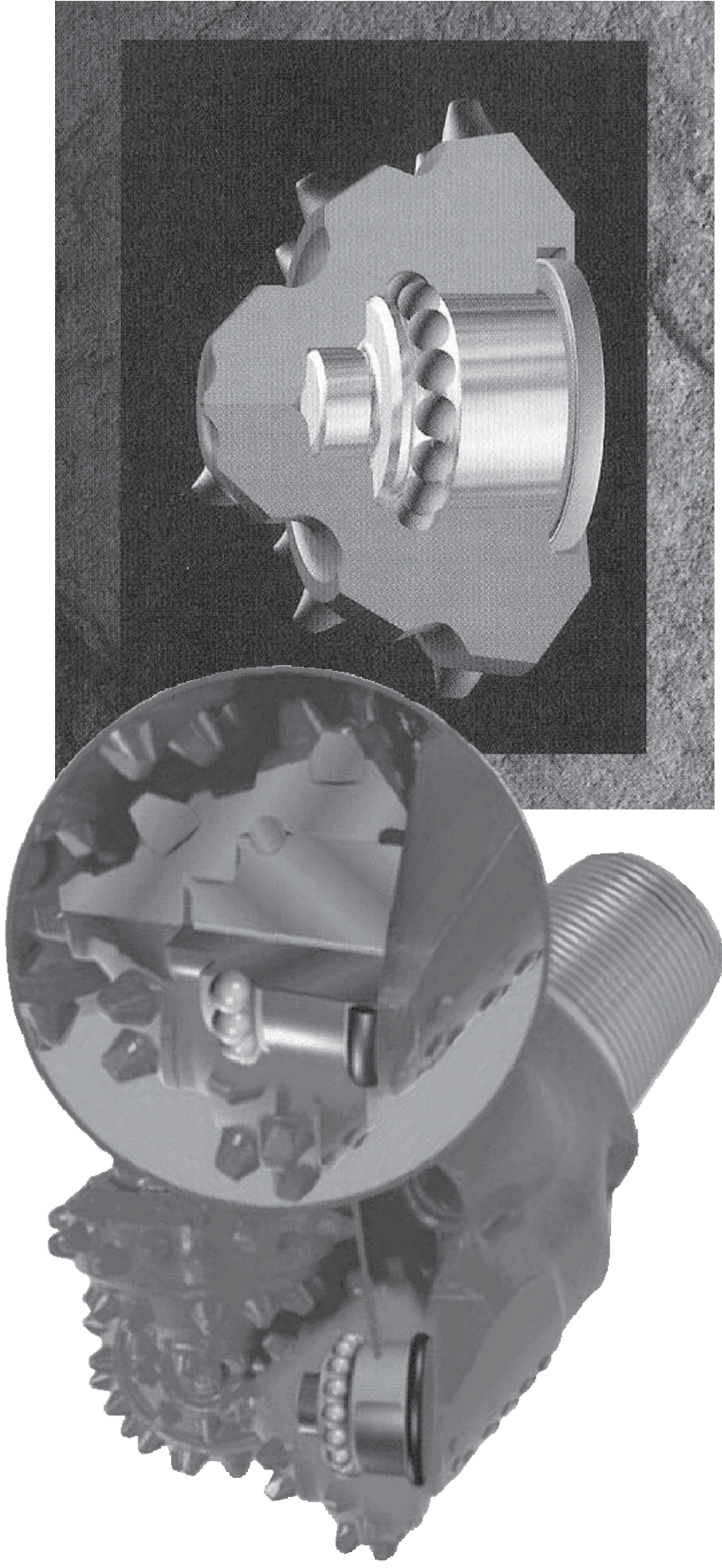
# Air Bearing (Blast Hole)



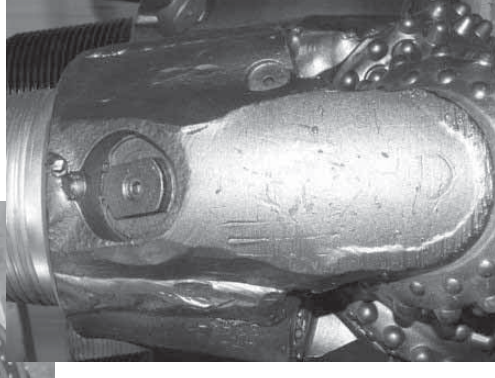
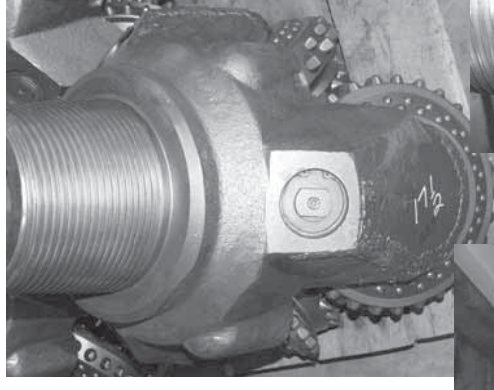
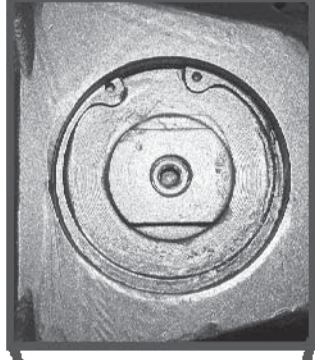
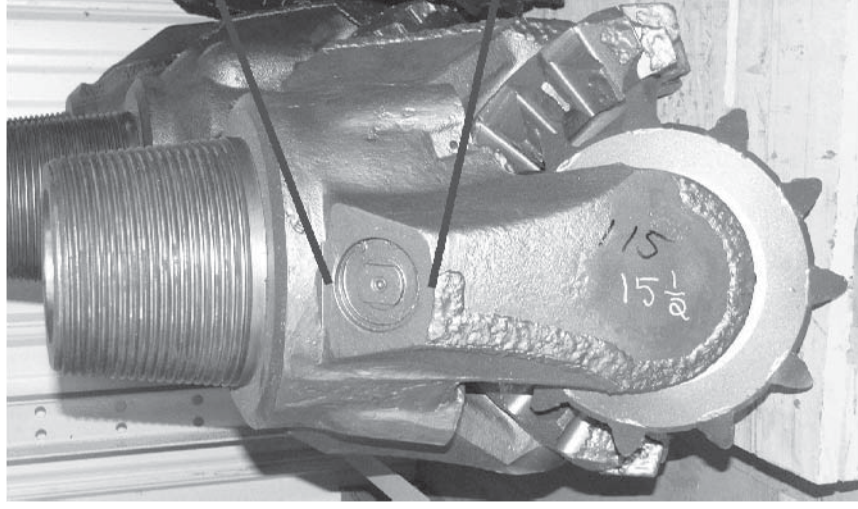
# Sealed Roller Bearing



# Journal Bearing

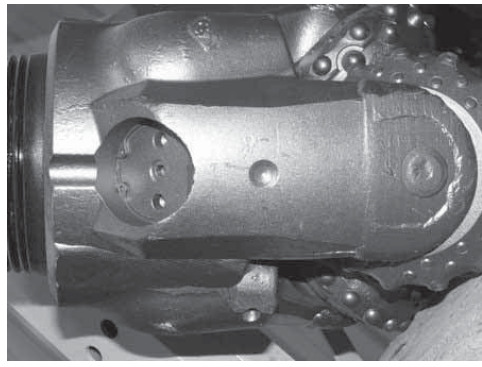
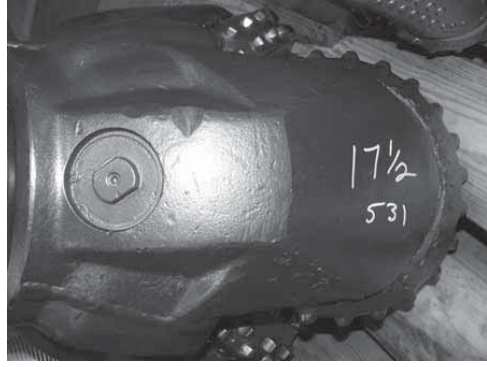
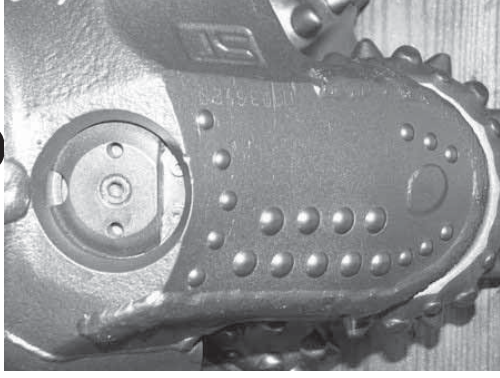
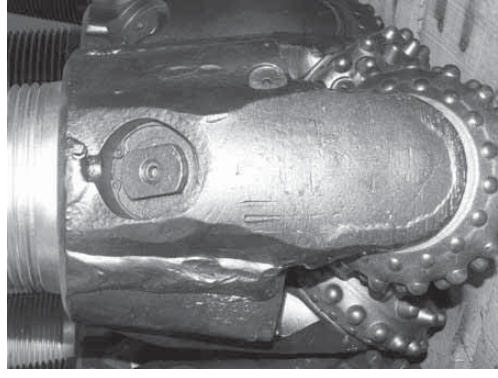
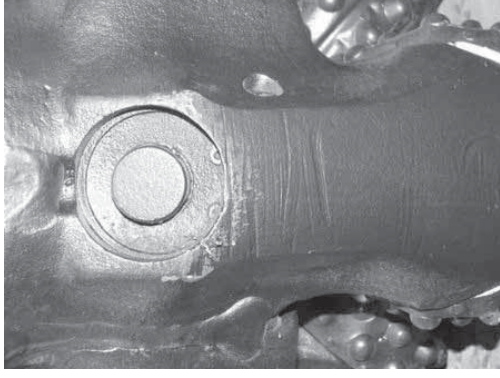


# How to Visually Identify Sealed Bearing Bits

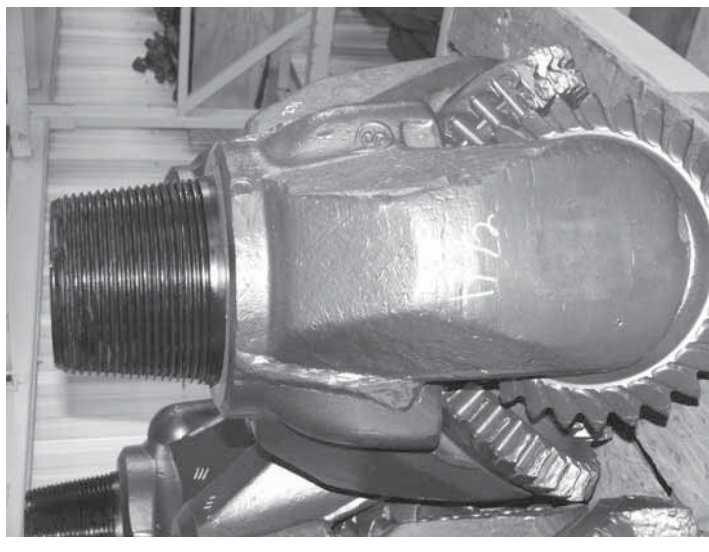
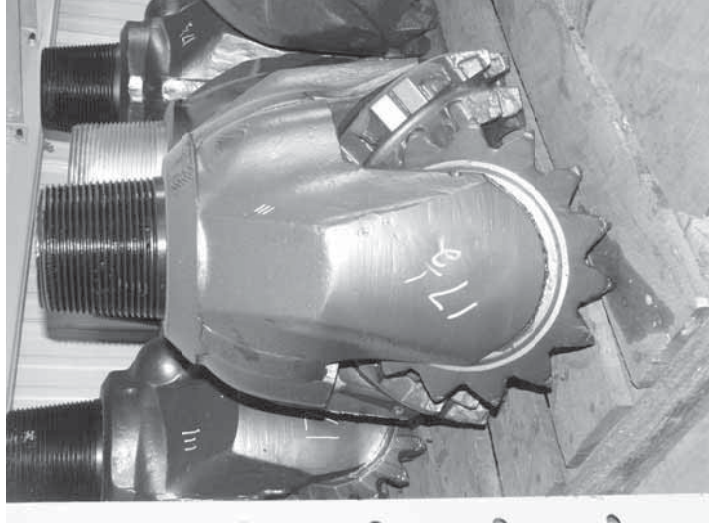
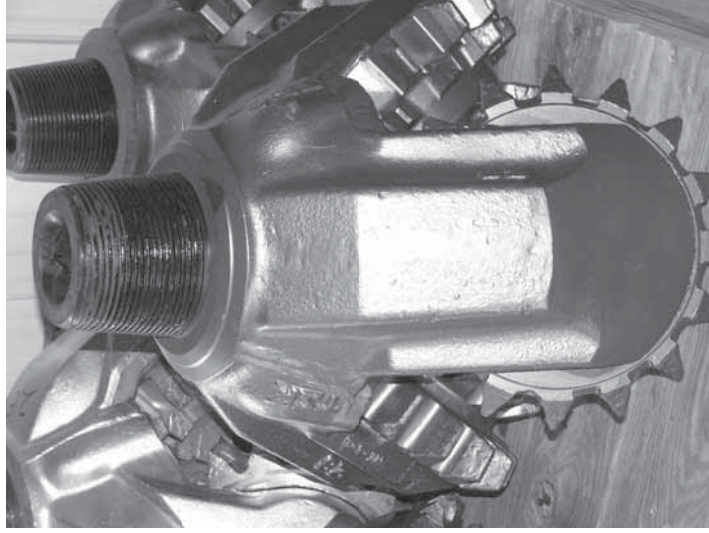


Fitting for the grease reservoir.

# How to Visually Identify Sealed Bearing Bits

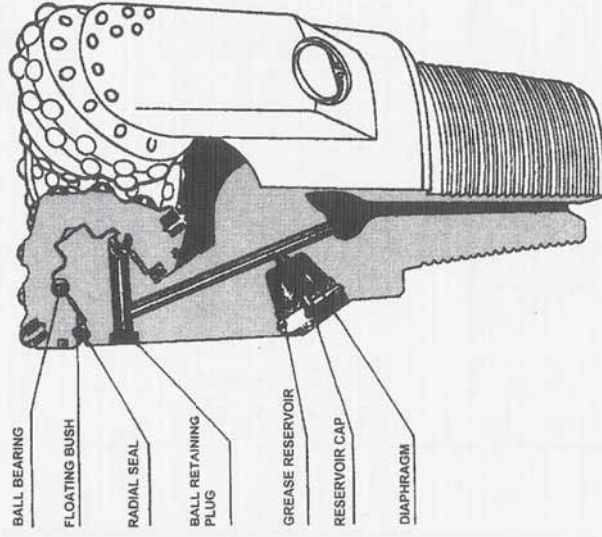


# How to Visually Identify Open Bearing or Air Bearing Bits

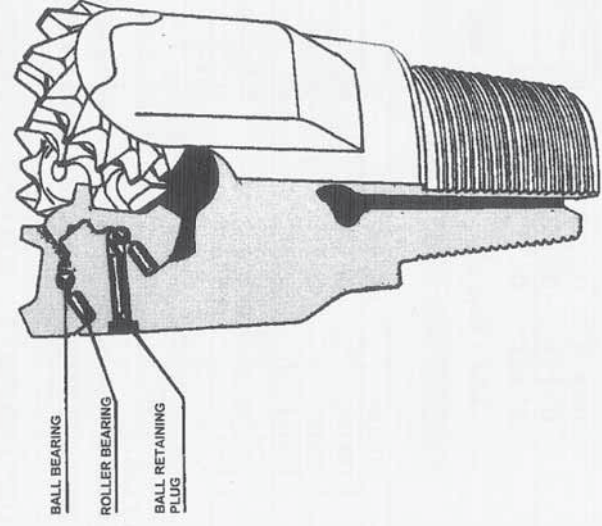


No fitting for the grease reservoir.

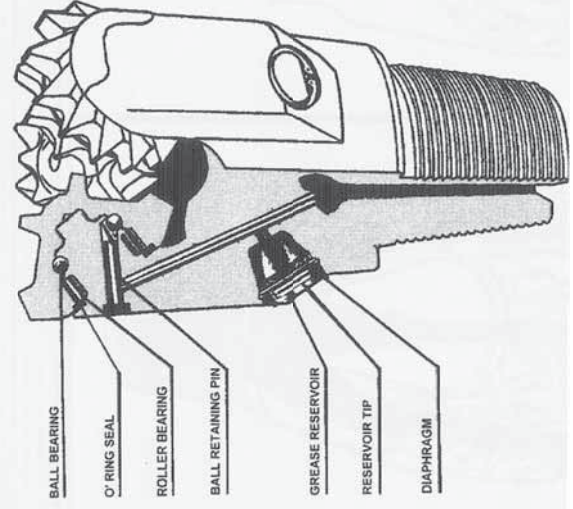
## Journal Brg. / Friction Brg.



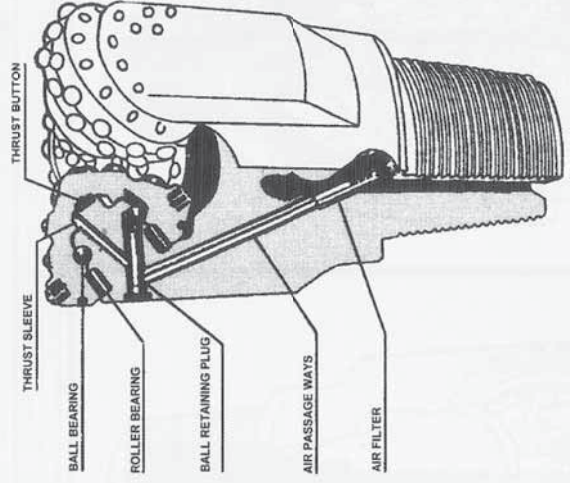
## Open Roller Bearing



## Sealed Roller Bearing

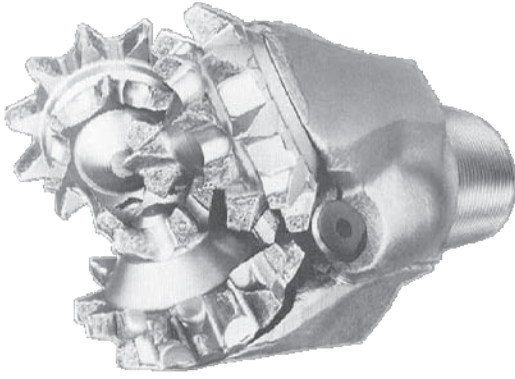


## Air Blast

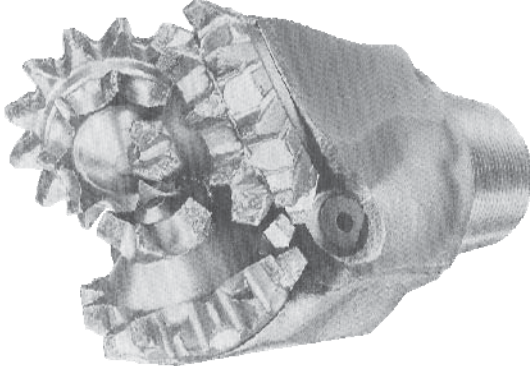


# Tooth Bits

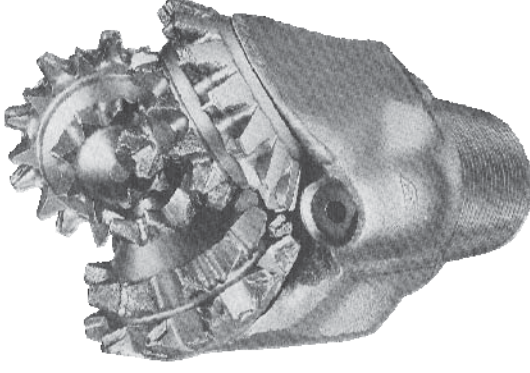
J1 IADC 116



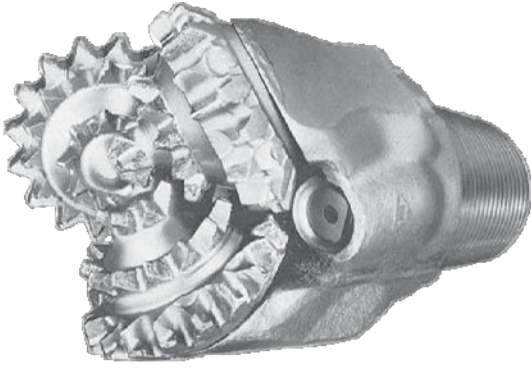
J2 IADC 126



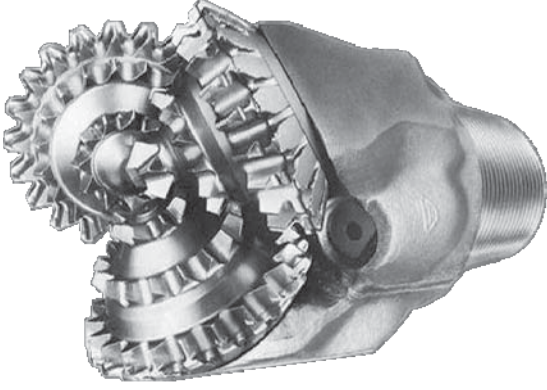
J3 IADC 136



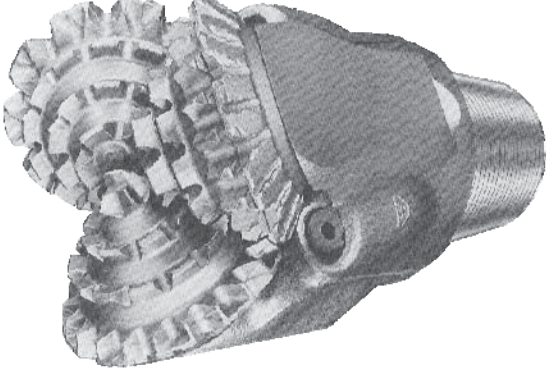
J4 IADC 216



J7 IADC 316



J8 IADC 346



## Comparison Chart - Tooth Bits

| IADC                        | ABCO | Hughes  | Smith   | Reed        | Security | Varel       |
|-----------------------------|------|---------|---------|-------------|----------|-------------|
| SOFT FORMATION TOOTH BITS   |      |         |         |             |          |             |
| 111                         | A111 | R1      | DSJ     | Y11         | S3SJ     | L11         |
| 114                         | A114 | GT-X-1  | SDS     | S11         | S33S     | ETR1        |
| 115                         | A115 | ATX-G1  | MSDSH   | EMS11G      | S3SS     | ETR1G       |
|                             |      | MAX-GT1 | MSDSSH  | EMS11DH     | S33SG    |             |
| 116                         | A116 | GT-1    | FDS     | HP11        | S33SF    | L116        |
|                             |      | STR-1   | FDS+    | EHT11       | PSF      |             |
|                             |      | ATX-11H | FDSS+   |             |          |             |
| 117                         | A117 | GT-G1   | FDS+2   | MHP11G      | ERA MPSE | L117        |
|                             |      | GT-G1H  | FDSS+2  | MHP11DH     | MPSE     | ETD1G       |
|                             |      | MFDH    |         |             |          |             |
| 121                         | A121 | R2      | DTJ     | Y12         | S3       | L121        |
| 124                         | A124 |         |         |             | S33      | L124        |
| 125                         | A125 |         |         |             | S33G     | ETR2G, L125 |
| 126                         | A126 | GT-1    | FTD     | HP12, EHP12 | S33F     | L126        |
| 127                         | A127 |         |         |             | S33TGF   | L127        |
| 131                         | A131 |         | DGJ     | Y13         | S4TJ     | L131        |
| 134                         | A134 |         |         |             | S44      | L134        |
| 135                         | A135 | GTX-G3  | SDGH    | EMS13G      | SS44G    | ETR3G       |
|                             |      | MSDGH   | EMS13DH | S44G        | L135     |             |
| 136                         | A136 | FDG     | HP13    | S44F        | L136     |             |
| 137                         | A137 | MFDGH   | FDGH    | HP13G       | S44GF    | L137        |
|                             |      |         | MHP13G  |             | ETD3G    |             |
| MEDIUM FORMATION TOOTH BITS |      |         |         |             |          |             |
| 211                         | A211 |         | V2J     |             | M4N      | L211        |
| 214                         | A214 |         |         |             | M44N     | L214        |
| 215                         | A215 |         | SVH     | MS21G       | M44NG    | L215        |
|                             |      |         | S21G    | MM44NG      |          |             |
| 216                         | A216 | ATJ-4   | FV      | HP21        | M44NF    | L216        |
| 217                         | A217 | ATJ-G4  | FVH     | HP21G       | M44NGF   | L217        |
| 221                         | A221 | DR5     |         |             | M4       |             |
| 231                         | A231 |         |         |             |          | L231        |
| HARD FORMATION TOOTH BITS   |      |         |         |             |          |             |
| 311                         | A311 |         |         |             | H7       | L311        |
| 314                         | A314 |         |         |             | H77      | L314        |
| 315                         | A315 |         |         |             |          | L315        |
| 316                         | A316 |         |         |             |          | L316        |
| 317                         | A317 |         |         | HP31G       |          | L317        |
| 321                         | A321 | R7      |         |             |          | L321        |
| 331                         | A331 |         |         |             |          |             |

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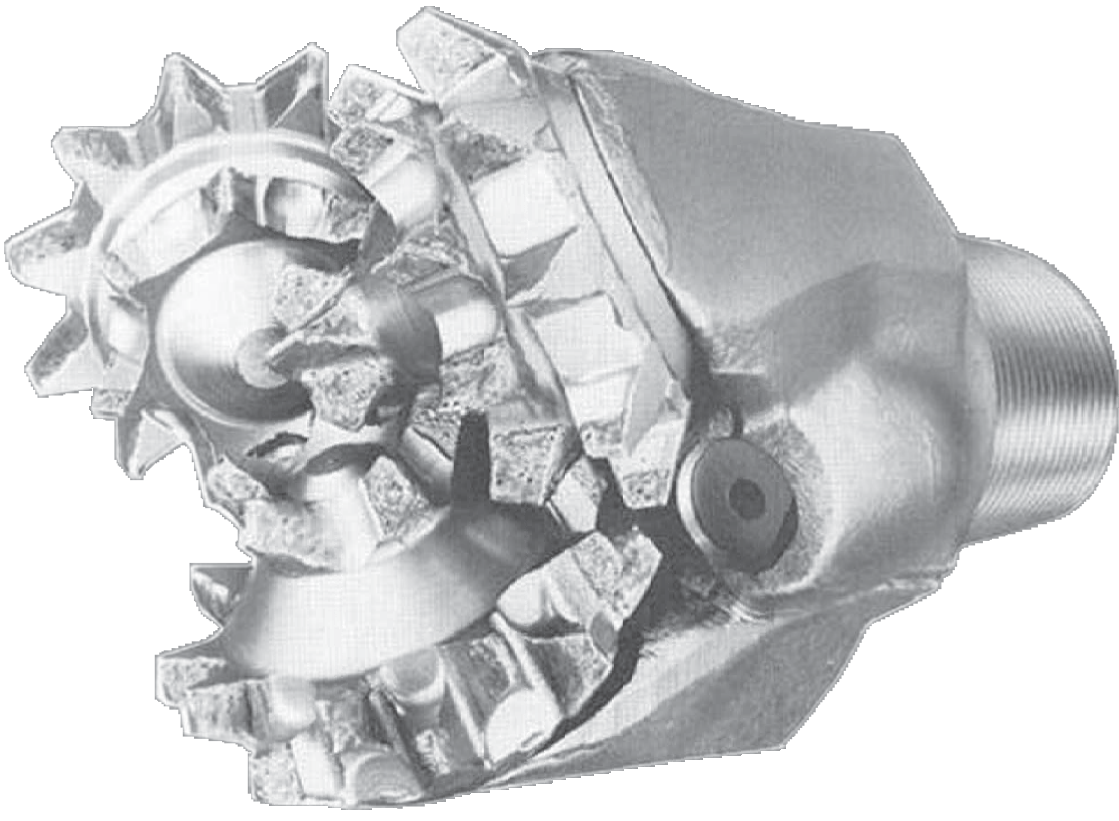
# Soft Formation Tooth Bits

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



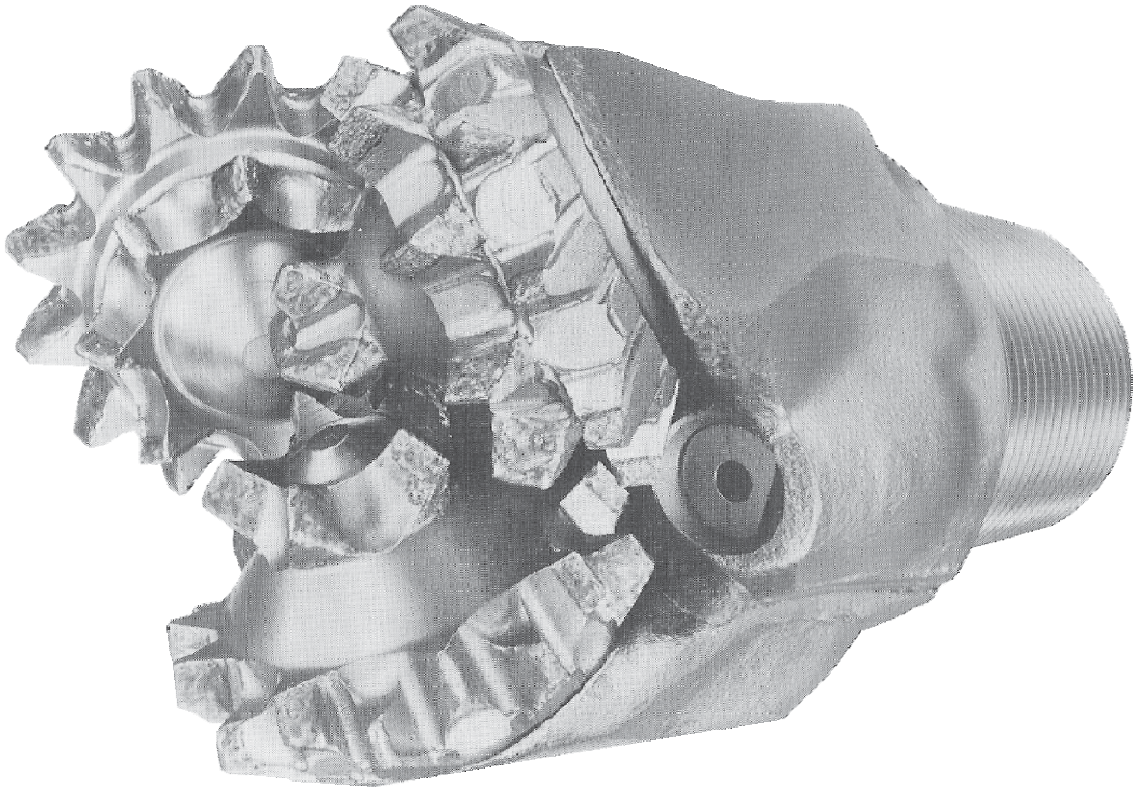
# Soft Formation Tooth Bits

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



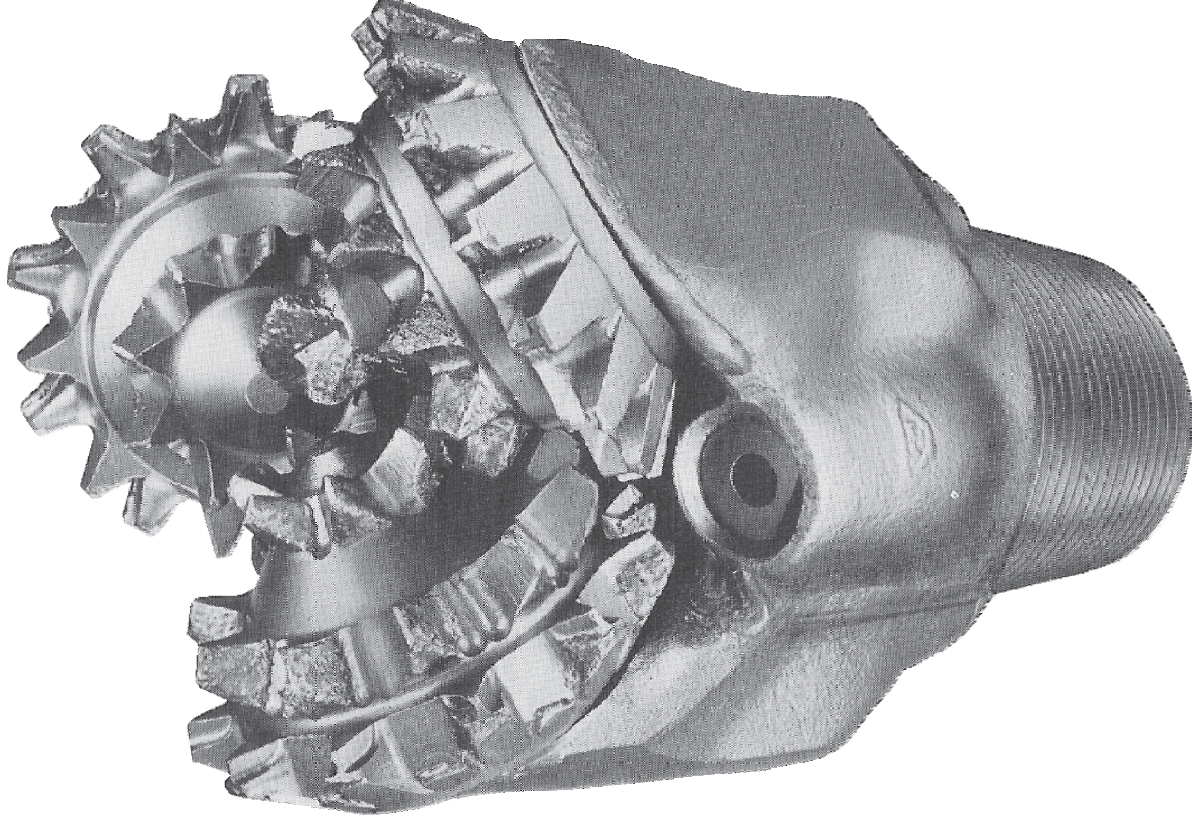
# Soft to Medium Formation Tooth Bits

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



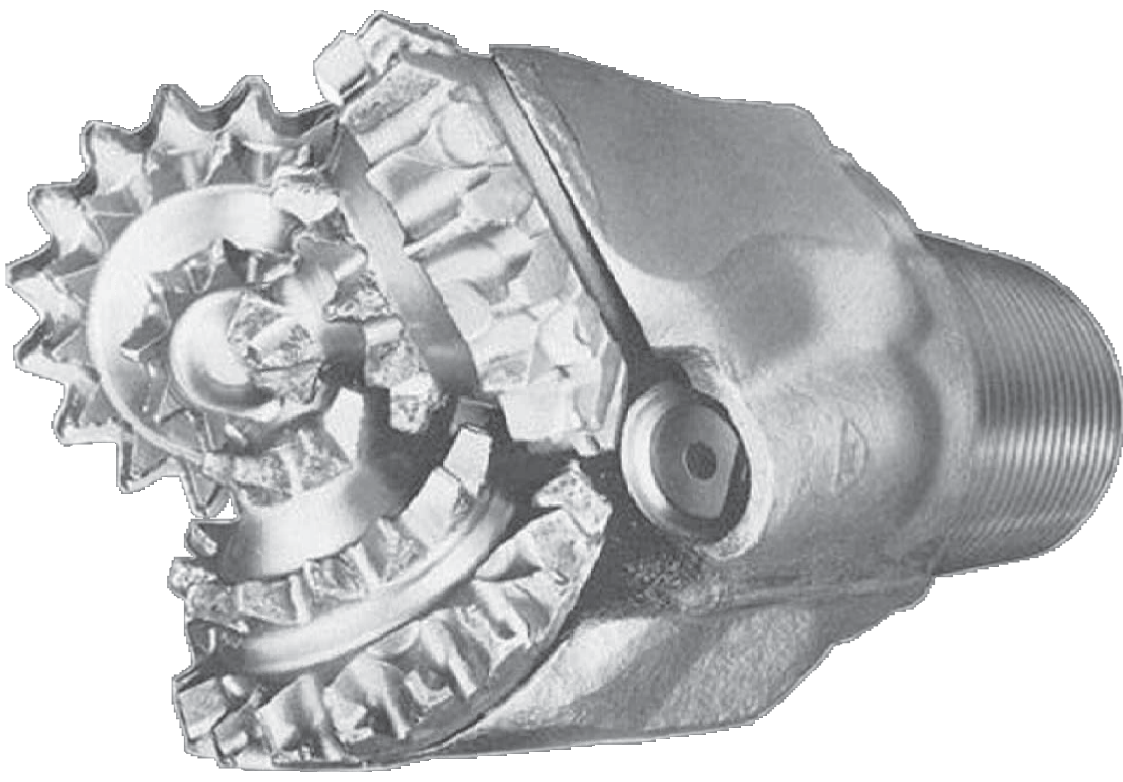
# Medium Formation Tooth Bits

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



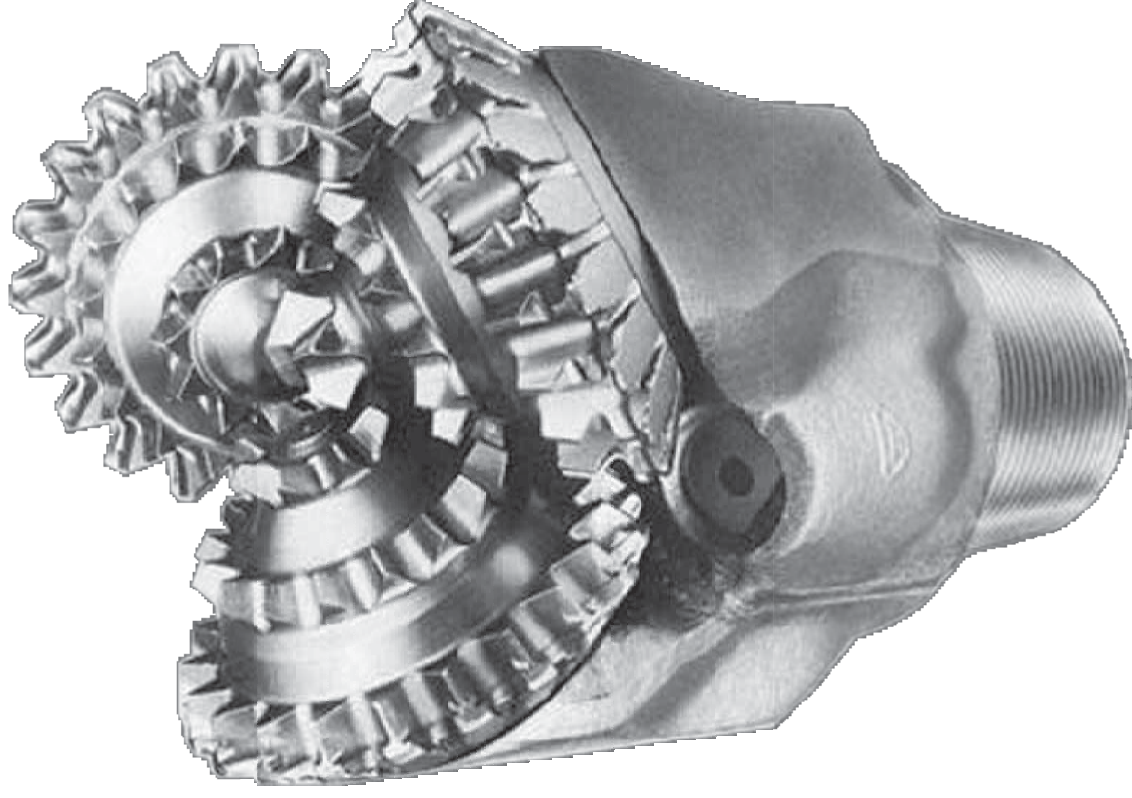
# Hard Formation Tooth Bits

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



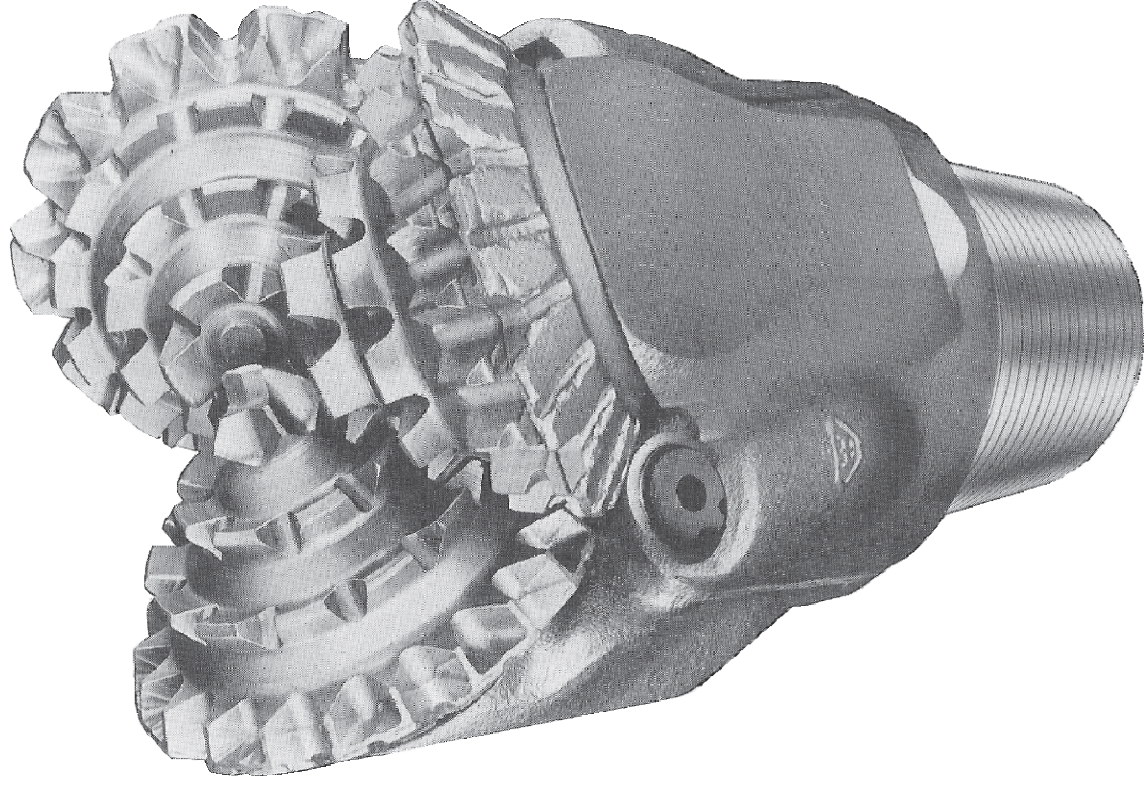
# Very Hard Formation Tooth Bits

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

PSI: 6000 – 8000 lbs of bit  
diameter

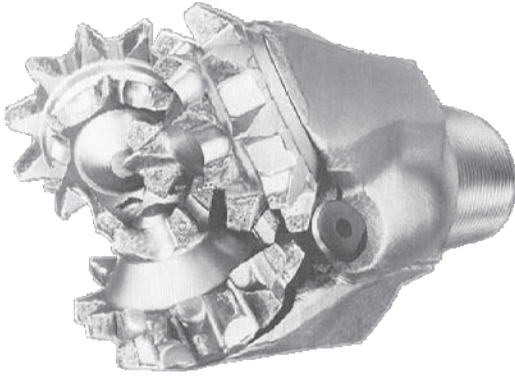
RPM: 70 – 50 reduce weight  
as RPM Increases

J8 IADC 346

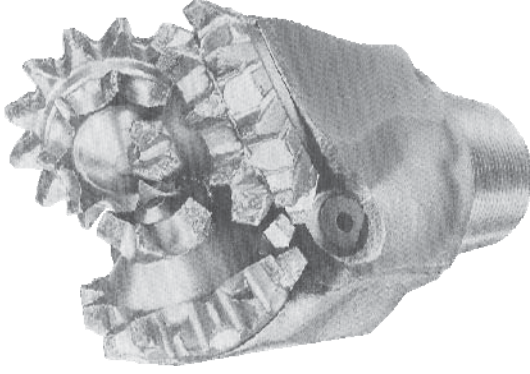


# Tooth Bits

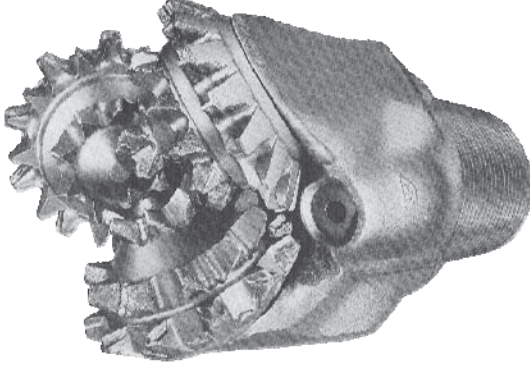
J1 IADC 116



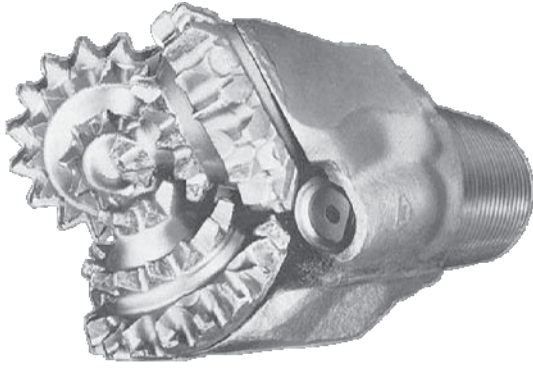
J2 IADC 126



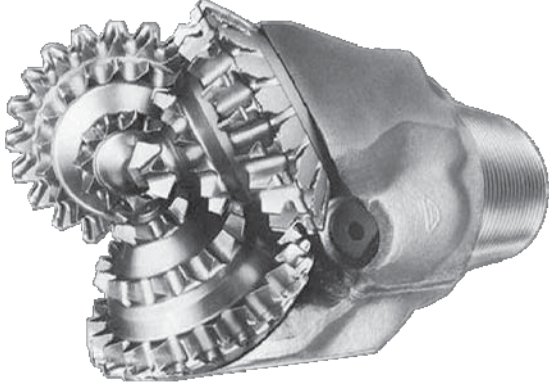
J3 IADC 136



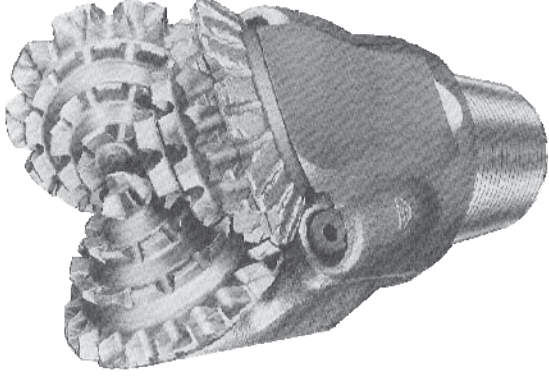
J4 IADC 216



J7 IADC 316

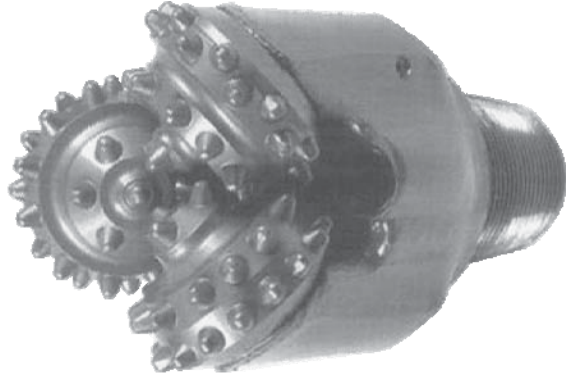


J8 IADC 346

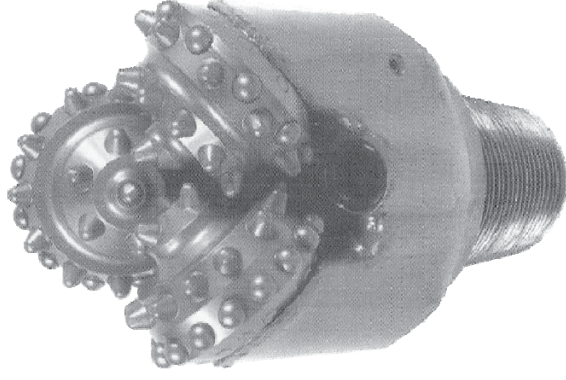


# Button Bits (TCl)

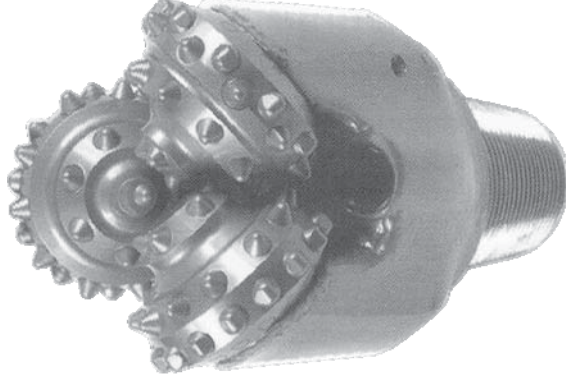
C1 IADC 427



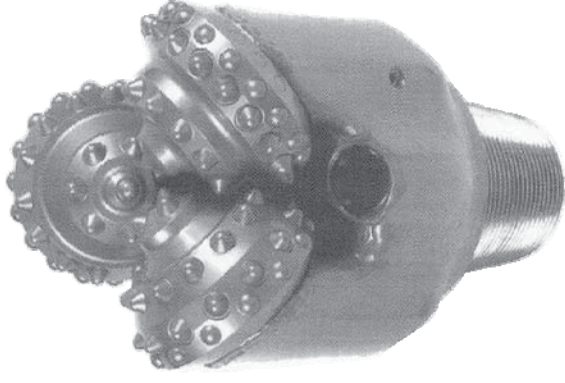
C17 IADC 447



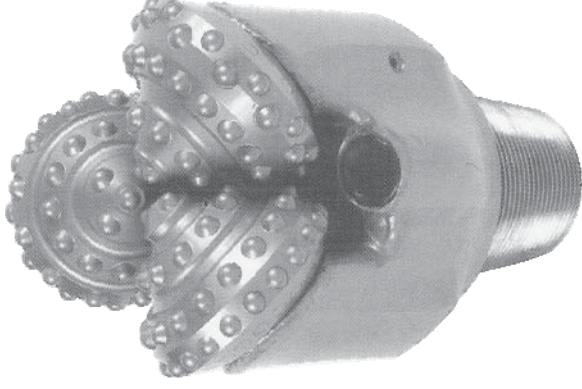
C27 IADC 527



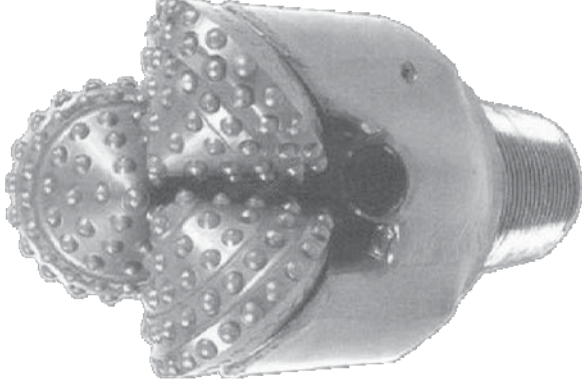
C47 IADC 627



C7 IADC 737



C9 IADC 837

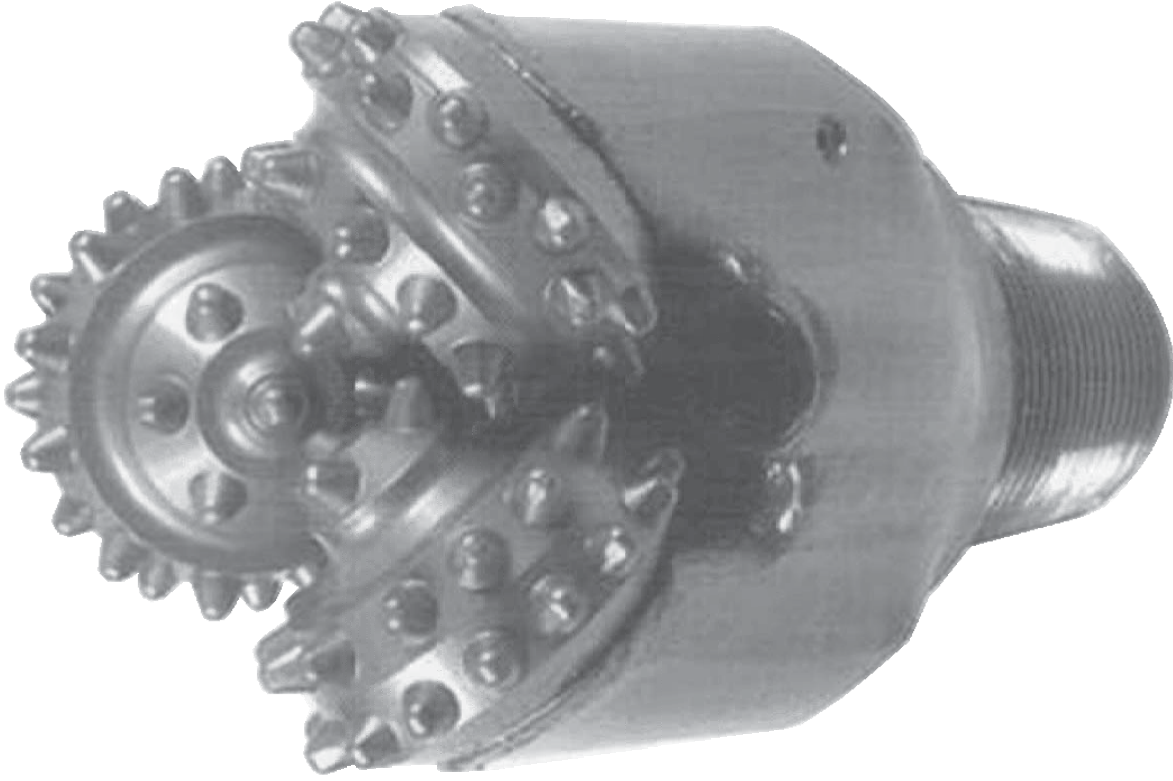


Comparison Chart - Carbide Insert Bits

| IADC                                         | ABCO | Hughes                        | Smith           | Reed            | Security      | Varel          |
|----------------------------------------------|------|-------------------------------|-----------------|-----------------|---------------|----------------|
| SOFT FORMATION CARBIDE INSERT BITS           |      |                               |                 |                 |               |                |
| 432                                          | A432 | BH40                          | Q1, Q17         |                 | SS6M<br>HDP43 | QMC43ET        |
| 435                                          | A435 | MAX-GT09<br>MAX-11H           | M1S<br>M1SOD    | MS43A<br>S43A   | SS82          | ETR14          |
| 437                                          | A437 | ATX-11H<br>ATJ-11H<br>ATM-11H | F1, MF1<br>F14T | HP43A<br>EHP43A | S82F<br>SS82F | ETD12<br>ETD14 |
|                                              |      | GT-09                         | 10MF, 12MF      |                 | ERA 13        |                |
| SOFT TO MEDIUM FORMATION CARBIDE INSERT BITS |      |                               |                 |                 |               |                |
| 517                                          | A517 | ATJ-22                        | F15H, F17       | HP51            | SS84F         | ETD24          |
|                                              |      | ATM-18                        | F2, MF2         | EHP51           | ERA 22        | ETD25          |
|                                              |      | ATM-22                        | A1, F25         |                 | ERA 18C       |                |
| 521                                          | A521 |                               |                 |                 |               | DW531          |
| 522                                          | A522 | BH50                          | Q2              |                 | SS8M          | HDP50          |
| 531                                          | A531 |                               |                 |                 | DW9           |                |
| 532                                          | A532 | BH50                          | Q3              |                 | S8M           | QMC53ET        |
| 535                                          | A535 |                               | M3S             | HP53A           | SS86          | ETR34          |
| 537                                          | A537 | ATJ-33                        | F3              | EHP53A          | ERA 33        | ETD34          |
|                                              |      | ATJ-35                        | MF3             |                 |               |                |
|                                              |      | ATM-33                        |                 |                 |               |                |
| MEDIUM FORMATION CARBIDE INSERT BITS         |      |                               |                 |                 |               |                |
| 611                                          | A611 |                               |                 |                 |               | DW7            |
| 612                                          | A612 | BH60                          | Q4              |                 | M8M           | QMC7           |
|                                              | G44  |                               |                 |                 | HDP60         |                |
| 615                                          | A615 |                               | 4JS             |                 | M84           | ETR44          |
| 617                                          | A617 | ATJ-44                        | F4              | HP61            | M84F          | ETD44          |
|                                              |      | STR-40                        | F47             | EHP61           |               | ETD45A         |
| 622                                          | A622 | BH60                          | Q4              | Y62JA           | M8M, 5GA      | QMC62ET        |
| 631                                          | A631 |                               |                 |                 |               | DW6            |
| 632                                          | A632 | G-55                          | Q5              | Y63JA           | M8M           | DW632          |
| 637                                          | A637 | ATJ-55                        | F57             | HP63            | M89F          | ETD55          |
|                                              |      | MF57                          | EHP63           |                 |               |                |
| HARD FORMATION CARBIDE INSERT BITS           |      |                               |                 |                 |               |                |
| 722                                          | A722 | BH70                          | Q6              |                 | H8M           | HDP70          |
| 732                                          | A732 | BH70                          | 7GA, Q7         | Y73JA           | H8M           | QMC73ET        |
| 737                                          | A737 | ATJ-77                        | F7              | EHP73           | H87F          | V737           |
| EXTRA HARD FORMATION CARBIDE INSERT BITS     |      |                               |                 |                 |               |                |
| 812                                          | A812 | BH80                          | Q9              |                 | H10M          | HDP80          |
| 832                                          | A832 | BH80                          | Q9              | Y83JA           | H10M          | QMC83ET        |
| 837                                          | A837 | ATJ-99                        | F9              | EHP83           | H100F         | ETD95          |

Notation: The comparison chart above lists only those IADC classifications where the American Black Company offers standard products. This is not a comprehensive chart of all IADC codes, and it does not necessarily include all models within the respective classifications for each of the manufacturers listed. Please note that the chart also includes air-to-the-bearings mining bits which are generally manufactured to specifications which do not adhere to the tolerances of API Specification 7.

# 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

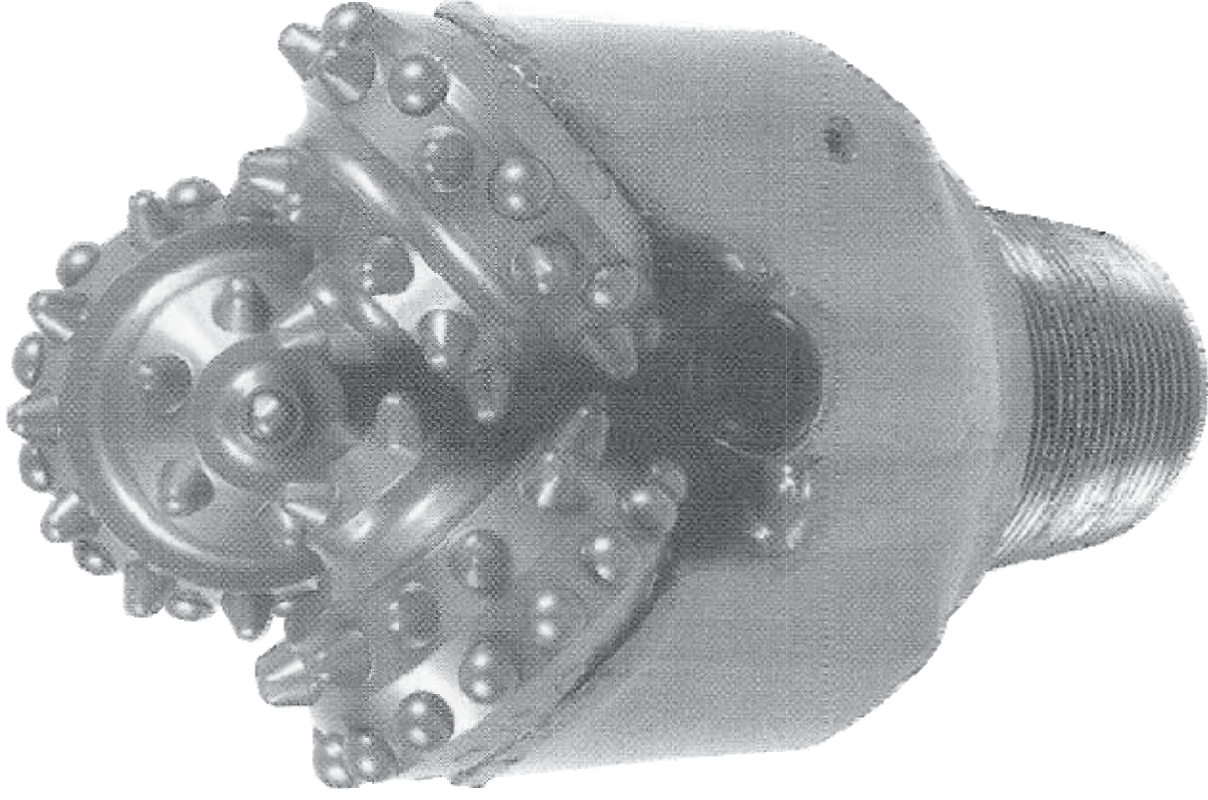
# Very Soft Formation TCI Bits

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

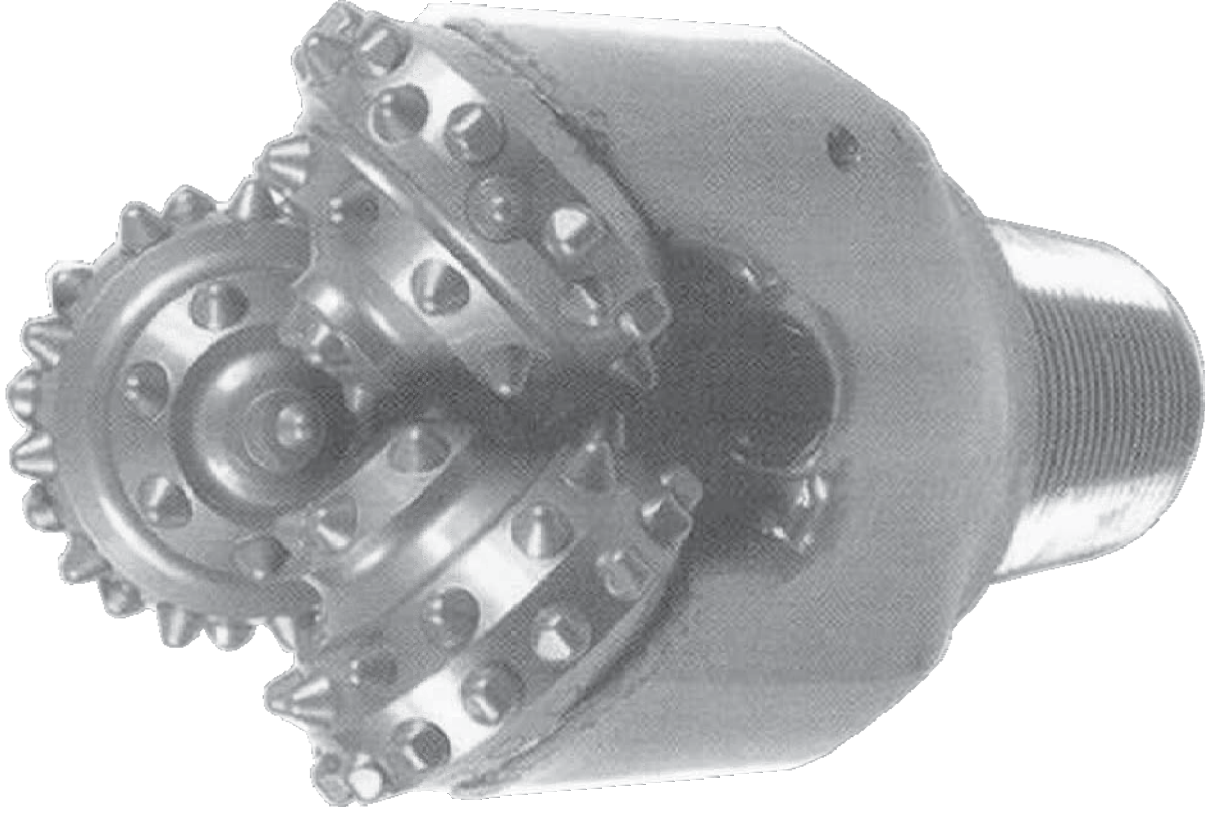
PSI: 2000 – 5000 of bit diameter

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

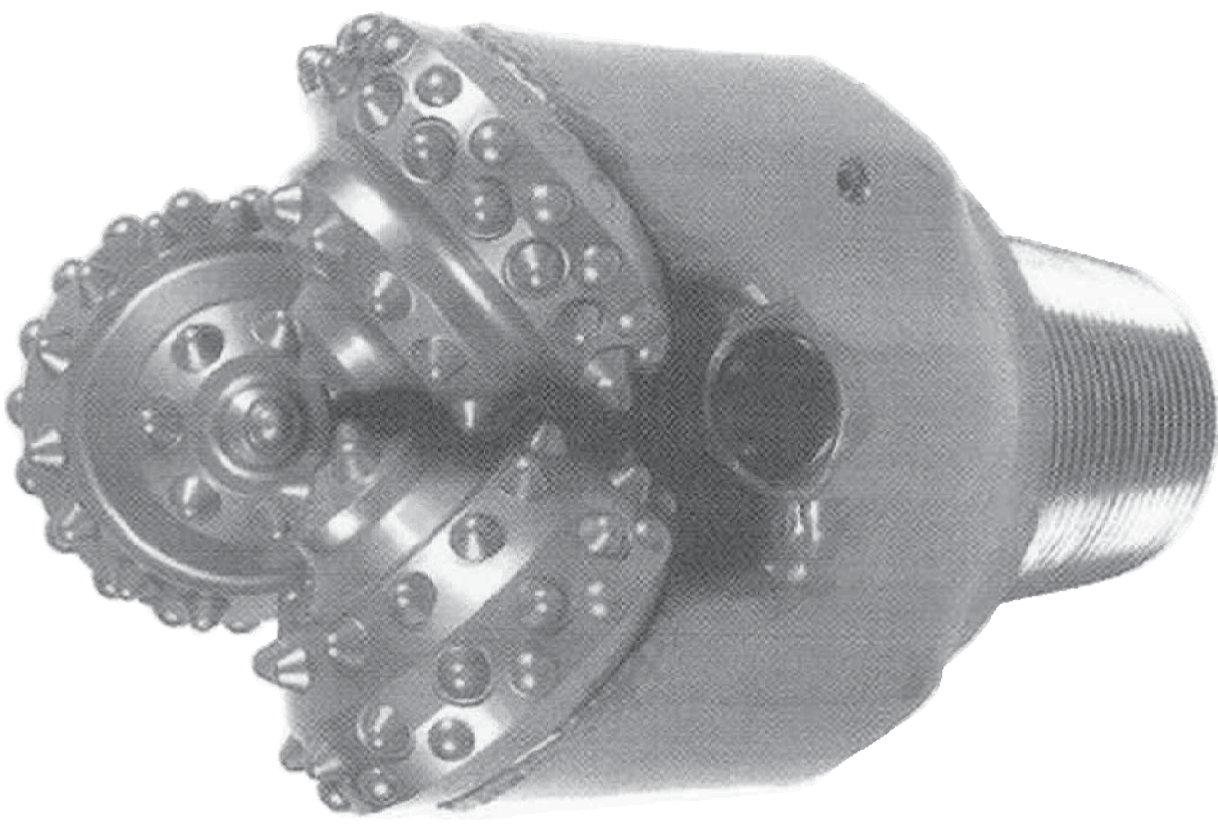
# Medium Hard Formation TCI Bits

Used in hard limestone, dolomite,  
and gypsum

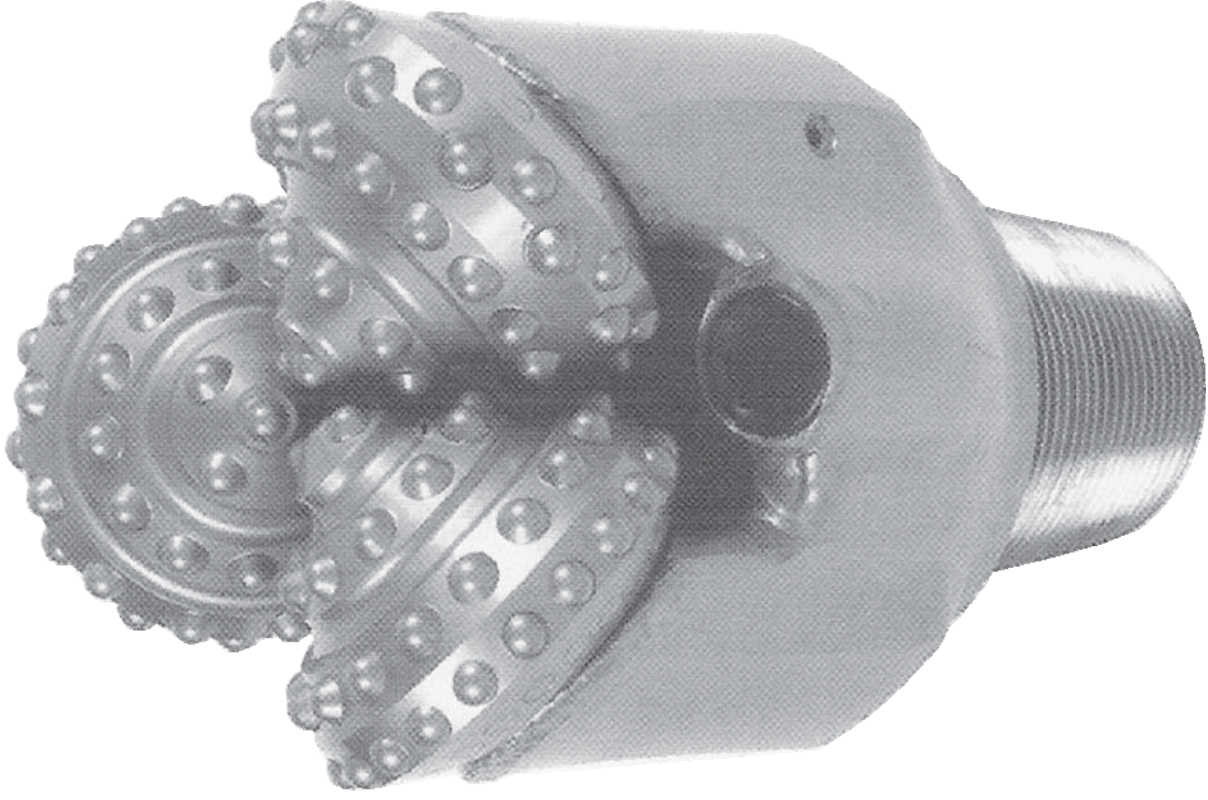
PSI: 3000 – 6000 of bit diameter

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

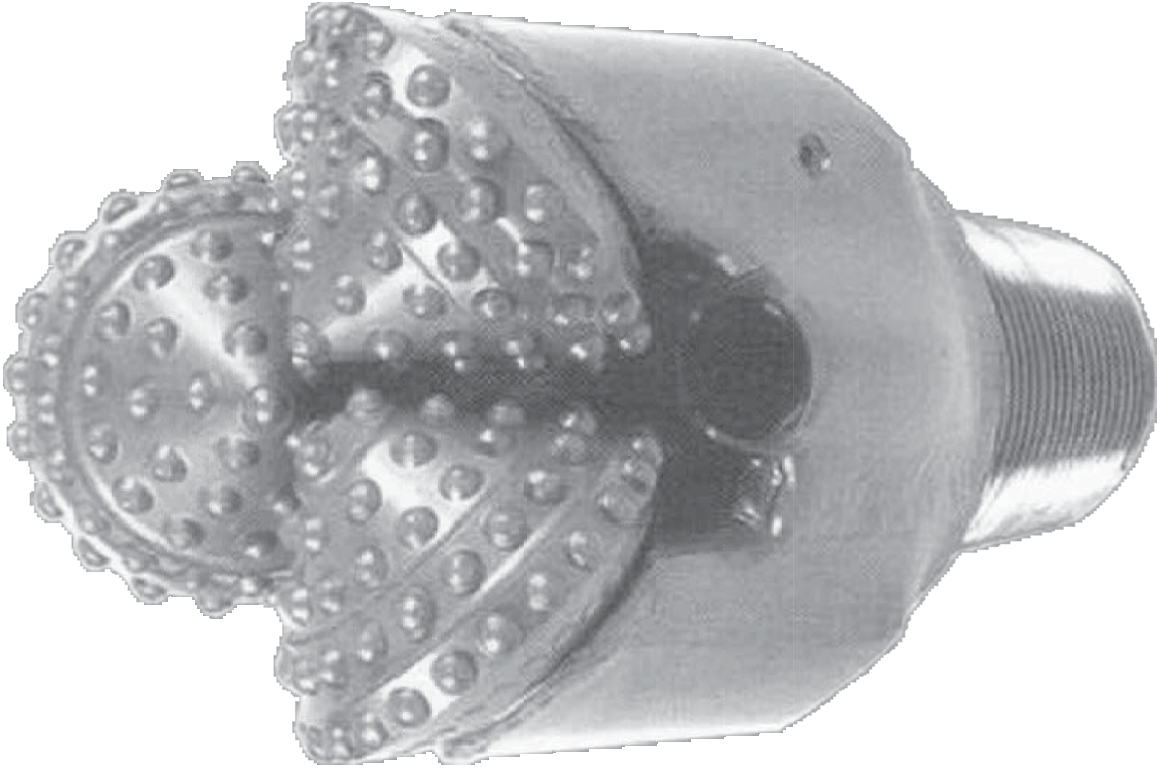
# Very Hard Formation TCI Bits

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

PSI: 5000 – 6500 of bit diameter

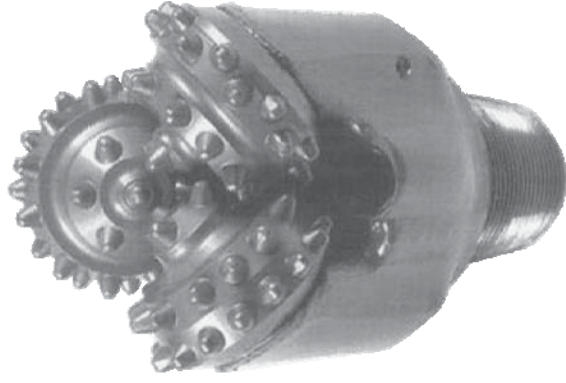
RPM: 60 – 35 reduce weight as  
RBM increase

C9 IADC 837

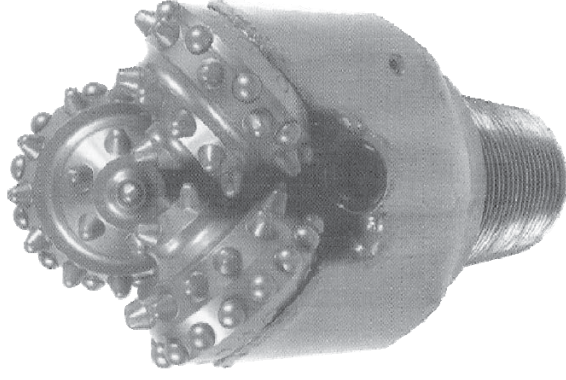


# Button Bits (TCI)

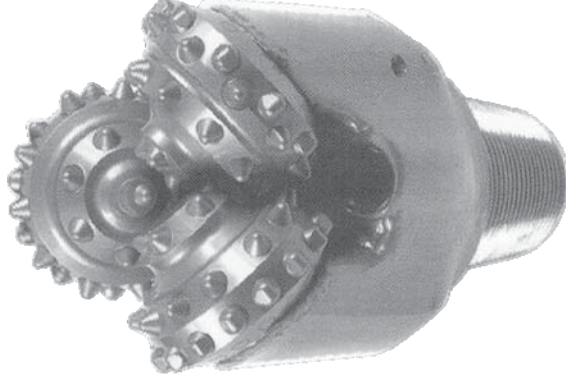
C1 IADC 427



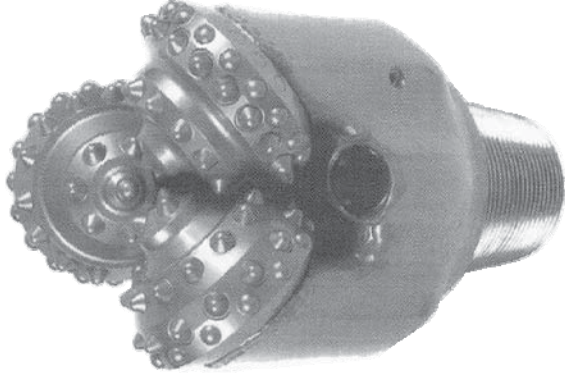
C17 IADC 447



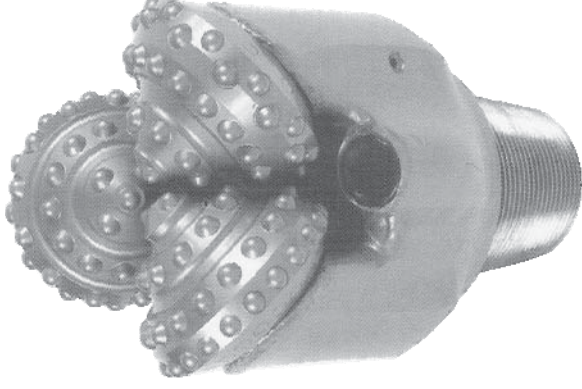
C27 IADC 527



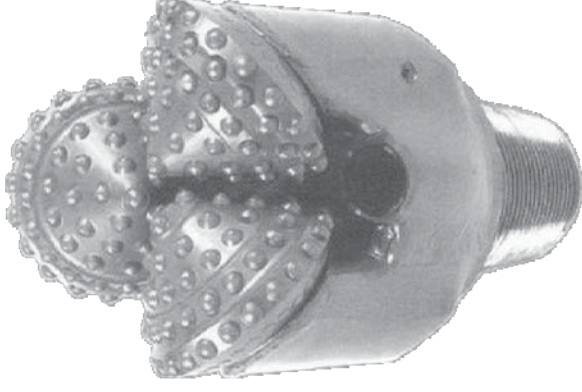
C47 IADC 627



C7 IADC 737



C9 IADC 837



# IADC Reference Code

Fourth Digit / Additional Letter:

**Example 111**  

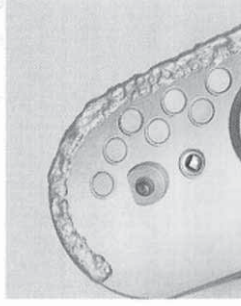
The following letter codes are used in the fourth digit position to indicate additional features:

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

# Optional Features

**OPTIONAL FEATURES:  
LETTERS FOLLOWING NUMERICAL CUTTING STRUCTURE TYPE:**

**SP**



**CARBIDE SHIRTTAIL  
PROTECTION**

**L**



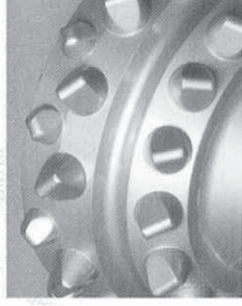
**STABILIZER LUG-  
WEAR PAD**

**D**



**SPECIAL RADIUS  
GAGE CARBIDE**

**V  
VR**



**VECTORED® INSERTS,  
REVERSE VECTORED®  
INSERTS**

**RG**



**REAMING GAGE®  
PROTECTION**

**X**



**FULLY EXTENDED JET  
NOZZLES**