

PRODUCT MANUAL

TUNGSTEN CARBIDE INSERT DRAG BIT



NS-SE ISO 9001 : 2008/ ISO 9001: 2008 COMPANY



License 7-1-0463

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CONSTRUCTION FEATURES OF BITS

The Company having been established for 30 years as one of the India's largest manufacturers of drag bits, can supply you with any type of drag bit you could possibly need.

The proof of product is in its consistent performance. Products used under diverse geological conditions, has made it a time-tested drill bit for soft drilling, hard drilling, mining, water well and seismic operations and Cement Drilling.

Penetration and wear are the two key elements of consistent drilling. Our tough quality control standards are your assurance against undue delays and downtime and all products are 100% made in India.

Over the years, we have been able to improve our quality and service while cutting the cost of product that we pass along to our customers.

FEATURES OF OUR CARBIDE INSERT DRAG BITS

- Behind carbide inserts relief is hand ground for maximum performance.
- Carbide inserts are individually BRAZED using 50% nickel silver alloy.
- Bits we fabricate are welded with high tensile strength 7016 rod.
- Our blades originate from 4140 heat-treated steel forgings.
- Forgings are milled to better seat the carbide inserts
- Select grade tungsten Carbide inserts 4mm thick are used
- Bits are built to the gauge tolerances.

TYPES OF BITS



STEP TYPE 3 WING BITS



STEP TYPE BIT WITH N-ROD THREADS



STEP TYPE BIT WITH 2- 3/8" API-REG THREADS



CHEVRON BITS WITH 2- 3/8" API-REG THREADS



**STEP TYPE COMBINATION BIT
PILOT AND REAMER
(NO STANDARD SIZE MADE TO ORDER)**



LARGE BIT WITH 3 1/2" API THREADS

DETAILS OF BIT : STEP TYPE
(NON – API)

| Bit Size | THREAD PIN | No of Blades |
|-----------------|-------------------|------------------------|
| 2-3/4" | N-Rod | STEP TYPE THREE / FOUR |
| 3" | N-Rod | STEP TYPE THREE / FOUR |
| 3-1/4" | N-Rod | STEP TYPE THREE / FOUR |
| 3-1/2" | N-Rod | STEP TYPE THREE / FOUR |
| 4-1/4" | 2-3/8" REG API | STEP TYPE THREE / FOUR |
| 4-1/2" | 2-3/8" REG API | STEP TYPE THREE / FOUR |
| 4-3/4" | 2-3/8" REG API | STEP TYPE THREE / FOUR |
| 5" | 2-3/8" REG API | STEP TYPE THREE / FOUR |
| 5-1/2" | 2-3/8" REG API | STEP TYPE THREE / FOUR |
| 6" | 2-3/8" REG API | STEP TYPE THREE / FOUR |
| 6-1/2" | 2-3/8" REG API | STEP TYPE THREE / FOUR |
| 6-3/4" | 2-3/8" REG API | STEP TYPE THREE / FOUR |
| 7" | 3 1/2" REG API | STEP TYPE THREE / FOUR |
| 7-1/2" | 3 1/2" REG API | STEP TYPE THREE / FOUR |
| 7-3/4" | 3 1/2" REG API | STEP TYPE THREE / FOUR |

DETAILS OF BIT : CHEVRON TYPE
(NON – API)

| BIT SIZE INCHES | THREAD PIN API REG | NO OF BLADES |
|------------------------|---------------------------|------------------------|
| 4-1/4" | 2-3/8" REG API | CHEV TYPE THREE / FOUR |
| 4-1/2" | 2-3/8" REG API | CHEV TYPE THREE / FOUR |
| 4-3/4" | 2-3/8" REG API | CHEV TYPE THREE / FOUR |
| 5" | 2-3/8" REG API | CHEV TYPE THREE / FOUR |
| 5-1/2" | 2-3/8" REG API | CHEV TYPE THREE / FOUR |
| 6" | 2-3/8" REG API | CHEV TYPE THREE / FOUR |



**American
Petroleum
Institute**



2011-111

Certificate of Authority to use the Official API Monogram

License Number: 7-1-0463

ORIGINAL

The American Petroleum Institute hereby grants to

**KHALSA OIL FIELD EQUIPMENTS PVT. LTD.
46, Ballapur Road
Dehra Dun, Uttaranchal
India**

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API Spec 7-1** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram should be used in conjunction with this certificate number: **7-1-0463**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following products: Roller Bits; Blade Drag Bits

QMS Exclusions: No Exclusions Identified as Applicable

**Effective Date: JANUARY 10, 2011
Expiration Date: JANUARY 10, 2014**

To verify the authenticity of this license, go to www.api.org/compositelist.

American Petroleum Institute

Director of Global Industry Services

PACKING CASES AND WEIGHT INFORMATION FOR DRAG BITS

| Bit Dia inches | Wg each Kg | No of pcs / Box | Total Net Wt / Box Kg | Total Gross Wt/ Box Kg | Packing Box outer size meter | Packing Box vol Cubic meter each. |
|----------------|------------|-----------------|-----------------------|------------------------|------------------------------|-----------------------------------|
| Step 5" | 3.2 | 10 | 32 | 45 | .74 x .35 x .25 | .065 |
| Step 5¼" | 3.4 | 10 | 34 | 47 | .74 x .35 x .25 | .065 |
| Step 5½" | 3.5 | 10 | 35 | 48 | .74 x .35 x .25 | .065 |
| Step 5-7/8" | 3.6 | 10 | 36 | 53.6 | .84 x .42 x .25 | .088 |
| Step 6" | 3.7 | 10 | 37 | 54.6 | .84 x .42 x .25 | .088 |
| Step 6½" | 3.8 | 10 | 38 | 55.6 | .84 x .42 x .25 | .088 |
| Step 6¾" | 3.9 | 10 | 39 | 56.6 | .84 x .42 x .25 | .088 |
| Step 7-3/8" | 11.0 | 05 | 55 | 73.6 | .60 x .47 x .33 | .093 |
| Chev 5½" | 4.5 | 10 | 45 | 58 | .74 x .35 x .25 | .065 |
| Chev 4½" | 4.0 | 10 | 40 | 53 | .74 x .35 x .25 | .065 |

DETAILS OF BIT : STEP TYPE

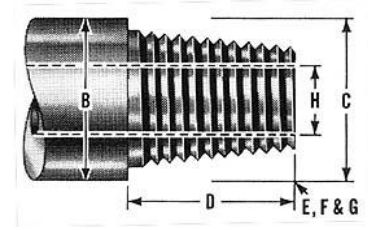
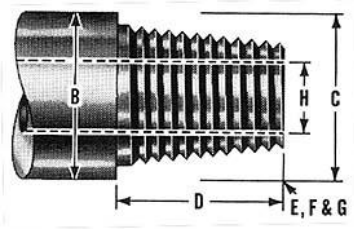
(As per API spec 7-1)

| BIT SIZE INCHES | THREAD PIN | NO OF BLADES |
|-----------------|----------------|------------------------|
| 4-1/4" | 2-3/8" REG API | STEP TYPE THREE / FOUR |
| 4-1/2" | 2-3/8" REG API | STEP TYPE THREE / FOUR |
| 4-3/4" | 2-7/8" REG API | STEP TYPE THREE / FOUR |
| 5" | 2-7/8" REG API | STEP TYPE THREE / FOUR |
| 5-1/2" | 3-1/2" REG API | STEP TYPE THREE / FOUR |
| 6" | 3-1/2" REG API | STEP TYPE THREE / FOUR |
| 6-1/2" | 3-1/2" REG API | STEP TYPE THREE / FOUR |
| 6-3/4" | 3-1/2" REG API | STEP TYPE THREE / FOUR |
| 7" | 3-1/2" REG API | STEP TYPE THREE / FOUR |
| 7-1/2" | 4-1/2" REG API | STEP TYPE THREE / FOUR |
| 7-3/4" | 4-1/2" REG API | STEP TYPE THREE / FOUR |

DETAILS OF BIT : CHEVRON TYPE

| BIT SIZE INCHES | THREAD PIN API REG | NO OF BLADES |
|-----------------|--------------------|------------------------|
| 4-1/4" | 2-3/8" REG API | CHEV TYPE THREE / FOUR |
| 4-1/2" | 2-3/8" REG API | CHEV TYPE THREE / FOUR |
| 4-3/4" | 2-7/8" REG API | CHEV TYPE THREE / FOUR |
| 5" | 2-7/8" REG API | CHEV TYPE THREE / FOUR |
| 5-1/2" | 2-7/8" REG API | CHEV TYPE THREE / FOUR |
| 6" | 2-7/8" REG API | CHEV TYPE THREE / FOUR |

TOOL JOINT THREADS – 1



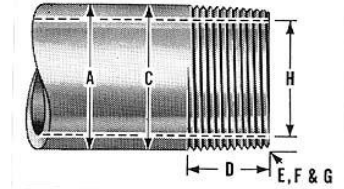
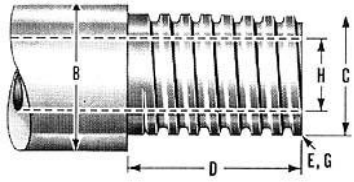
| A - Nominal Pipe Size | B - Outside Diameter of Tool Joint | | C - Major Thread Diameter or Diameter at Shoulder | | | | | |
|---|------------------------------------|---------------------------------|---|-------------------------------|---------------------|-------------------------------|--------------|---------------------------------|
| D - Length of Pin | E - Threads per Inch | F - Taper per Foot | G - Threaded Form | | H - Tool Joint Bore | | | |
| Name | A | B | C | D | E | F | G | H |
| TOOL JOINTS:¹ | | | | | | | | |
| 2 ³ / ₈ API Regular | 2 ³ / ₈ | 3 ¹ / ₈ | 2 ⁵ / ₈ | 3 | 5 | 3 | 60° API | 1 |
| 2 ⁷ / ₈ API Regular | 2 ⁷ / ₈ | 3 ³ / ₄ | 3 | 3 ¹ / ₂ | 5 | 3 | 60° API | 1 ¹ / ₄ |
| 3 ¹ / ₂ API Regular | 3 ¹ / ₂ | 4 ¹ / ₄ | 3 ¹ / ₂ | 3 ³ / ₄ | 5 | 3 | 60° API | 1 ¹ / ₂ |
| 4 ¹ / ₂ API Regular | 4 ¹ / ₂ | 5 ¹ / ₂ | 4 ⁵ / ₈ | 4 ¹ / ₄ | 5 | 3 | 60° API | 2 ¹ / ₄ |
| 2 ³ / ₈ API Internal Flush | 2 ³ / ₈ | 3 ³ / ₈ | 2 ⁷ / ₈ | 3 | 4 | 2 | 60° API | 1 ³ / ₄ |
| 2 ⁷ / ₈ API Internal Flush | 2 ⁷ / ₈ | 4 ¹ / ₈ | 3 ²⁵ / ₆₄ | 3 ¹ / ₂ | 4 | 2 | 60° API | 2 ¹ / ₈ |
| 3 ¹ / ₂ API Internal Flush | 3 ¹ / ₂ | 4 ³ / ₄ | 4 ¹ / ₆₄ | 4 | 4 | 2 | 60° API | 2 ¹¹ / ₁₆ |
| 2 ³ / ₈ Mayhew Junior | 2 ³ / ₈ | 2 ³ / ₄ | 2 ²¹ / ₆₄ | 2 ¹ / ₄ | 4 | 2 | 60° Mod. API | 1 ¹ / ₂ |
| 2 ³ / ₈ Mayhew Regular | 2 ³ / ₈ | 3 ¹ / ₄ | 2 ³⁵ / ₆₄ | 3 | 4 | 1 ¹ / ₂ | 60° Mod. API | 1 ⁵ / ₈ |
| 2 ⁷ / ₈ Mayhew Full Hole | 2 ⁷ / ₈ | 3 ³ / ₄ | 3 ³ / ₆₄ | 3 ³ / ₈ | 4 | 1 ¹ / ₂ | 60° Mod. API | 2 |
| 2 ³ / ₈ Failing Exploration | 2 ³ / ₈ | 2 ³¹ / ₃₂ | 2 ¹ / ₂ | 2 ³ / ₄ | 4 | 2 | 60° Mod. API | 1 ¹ / ₂ |
| 2 ⁷ / ₈ Failing Exploration | 2 ⁷ / ₈ | 3 ³ / ₄ | 3 ¹ / ₈ | 3 ¹ / ₄ | 4 | 2 | 60° Mod. API | 1 ⁷ / ₈ |
| 2 ³ / ₈ Hughes Acme Regular | 2 ³ / ₈ | 3 ¹ / ₈ | 2 ¹⁹ / ₃₂ | 3 | 4 | 3 ³ / ₈ | 29° Acme | 1 |
| 2 ³ / ₈ Winter Weiss | 2 ³ / ₈ | 3 ¹ / ₄ | 2 ³⁵ / ₆₄ | 3 | 4 | 1 ¹ / ₂ | 60° Mod. API | 1 ¹ / ₂ |
| 2 ⁷ / ₈ Winter Weiss | 2 ⁷ / ₈ | 3 ⁷ / ₁₆ | 2 ³⁵ / ₆₄ | 3 | 4 | 1 ¹ / ₂ | 60° Mod. API | 1 ¹ / ₂ |
| 3 ¹ / ₂ API Full Hole | 3 ¹ / ₂ | 4 ⁵ / ₈ | 4 | 3 ³ / ₄ | 5 | 3 | 60° Mod. API | 2 ¹ / ₁₆ |
| FLUSH JOINT TAPERED THREAD² | | | | | | | | |
| United Geophysical (1 ¹¹ / ₁₆ OD) | 1 ¹¹ / ₁₆ | 1 ¹¹ / ₁₆ | 1 ³ / ₈ | 1 | 6 | 3 | 29° Acme | 1 |

¹Pipe diameter smaller than joint diameter.

²Pipe diameter same as joint diameter.

Dimension B for API Tool Joints is standard. Optional larger diameters are common in oilfield practices.

TOOL JOINT THREADS – 2



| Name | A | B | C | D | E | F | G | H |
|--|---------------------------------|---------------------------------|---------------------------------|--------------------------------|-----|---|--------------|---------------------------------|
| FLUSH JOINT STRAIGHT THREAD ³ | | | | | | | | |
| E-Rod ⁴ | 1 ⁵ / ₁₆ | 1 ⁵ / ₁₆ | 1 | 1½ | 3 | | Sq. Thd. | 7 ⁷ / ₁₆ |
| EW-Rod ^{4*} | 1 ³ / ₈ | 1 ³ / ₈ | 1 ¹ / ₁₆ | 1 ⁹ / ₁₆ | 3 | | Sq. Thd. | 7 ⁷ / ₁₆ |
| A-Rod ⁴ | 1 ⁵ / ₈ | 1 ⁵ / ₈ | 1 ¹⁷ / ₆₄ | 1¾ | 3 | | Sq. Thd. | 9 ⁹ / ₁₆ |
| AW-Rod ^{4*} | 1¾ | 1¾ | 1 ³ / ₈ | 1 ⁷ / ₈ | 3 | | Sq. Thd. | 5 ⁵ / ₈ |
| B-Rod ⁴ | 1 ²⁹ / ₃₂ | 1 ²⁹ / ₃₂ | 1 ¹³ / ₃₂ | 1 ⁷ / ₈ | 5 | | Sq. Thd. | 5 ⁵ / ₈ |
| BW-Rod ^{4*} | 2 ¹ / ₈ | 2 ¹ / ₈ | 1 ¹¹ / ₁₆ | 2¼ | 3 | | Sq. Thd. | ¾ |
| N-Rod ⁴ | 2 ³ / ₈ | 2 ³ / ₈ | 1 ⁷ / ₈ | 2 ³ / ₈ | 4 | | Sq. Thd. | 1 |
| NW-Rod ^{4*} | 2 ⁵ / ₈ | 2 ⁵ / ₈ | 2 ⁷ / ₃₂ | 2¾ | 3 | | Sq. Thd. | 1 ³ / ₈ |
| Carey Modified 3-Thd. | 2 ³ / ₈ | 2 ³ / ₈ | 2 ¹ / ₁₆ | 2 ³ / ₈ | 3 | | Sq. Thd. | 1½ |
| N-Rod Failing Type | 2 ³ / ₈ | 2 ³ / ₈ | 1 ⁷ / ₈ | 2¾ | 3 | | Sq. Thd. | 1 ¹ / ₈ |
| Petty Geophysical | 1½ | 1½ | 1¼ | 1 ⁹ / ₁₆ | 6 | | Sq. Thd. | ¾ |
| API LINE PIPE | | | | | | | | |
| 1" Line Pipe | 1 ⁵ / ₁₆ | | 1 ⁵ / ₁₆ | 6 ³ / ₆₄ | 11½ | ¾ | 60° Vee Thd. | 1 ³ / ₆₄ |
| 1¼ Line Pipe | 1 ²¹ / ₃₂ | | 1 ²¹ / ₃₂ | 1 | 11½ | ¾ | 60° Vee Thd. | 1 ³ / ₈ |
| 1½ Line Pipe | 1 ²⁹ / ₃₂ | | 1 ²⁹ / ₃₂ | 1 ¹ / ₃₂ | 11½ | ¾ | 60° Vee Thd. | 1 ³⁹ / ₆₄ |
| 2 Line Pipe | 2 ³ / ₈ | | 2 ³ / ₈ | 1 ¹ / ₁₆ | 11½ | ¾ | 60° Vee Thd. | 2 ¹ / ₁₆ |
| 2½ Line Pipe | 2 ⁷ / ₈ | | 2 ⁷ / ₈ | 1 ⁹ / ₁₆ | 8 | ¾ | 60° Vee Thd. | 2 ¹⁵ / ₃₂ |
| 3 Line Pipe | 3½ | | 3½ | 1 ⁵ / ₈ | 8 | ¾ | 60° Vee Thd. | 3 ¹ / ₁₆ |

³Pipe diameter same as joint diameter.

⁴American Diamond Core Drill Standards.

*American Standards Show