Mud Motor Bearing

Tungsten Carbide Radial Bearing -128723M

Bearings	
ISO	**128723M**
Dimensions	
d(mm)	115
D(mm)	205
B(mm)	570
Loading	
Dyn C(KN)	560
stat C_0(KN)	610
Weight	
kg	89.1

Tungsten Carbide Radial Bearings

Tungsten Carbide Radial Bearing is used as antifriction bearing for downhole motor. We have several different types from size 54 to size 286 for your choice (a total of 14 size). Besides, we can design and manufacture related TC bearings according to the specification of customers: 4140 and 4340 alloy steel materials are most commonly used for the base material of our radial bearings. Custom steels are available upon customers request. Customer may also choose to use various tungsten carbide shape configurations including but not limited to rounds, hexagon, rectangular, and grain style.Documentation such as material certifications as well as heat treatment and certificates of conformity can be supplied with each shipment. Part and traceability numbers can be included on every part for ease of tracking and verification.

Custom designs and prototypes are welcomed as well as small batch orders. Expedited deliveries can be arranged at time of order. Tungsten carbide bearings can also be ordered in either oversized or undersized configurations to fit customers special requirements.

The TC Radial Bearing mainly including the below types

1.TC Tile Bearing

TC Tile Bearing:Hard alloy covering rate reach more than 55%

2. TC Grain Bearing

TC Grain Bearing: Hard holly ball with diameter of 0.7-1.2mm makes it more suitable for small and complicated TC.

3.TC Disc Bearing

TC Disc Bearing: Hard alloy covering rate reached to more than 80%. It has a longer life and more antifriction.

Tile TC Bearings

Most commonly used in mud lubricated drilling tools.

Tungsten carbide covers approximately 55% of surface area. (Can cover more depending upon tile configuration and placement)

Typical life expectancy: 300 – 400 hours. (Run life solely depends upon drilling environment, mud composition, bend settings, carbide configuration and quality)

Average hardness for the tungsten carbide is 70 HRC. (Different compositions are available at customers request)

Average hardness of substrate is 28-36 HRC. (Many material and heat treating options are available)

Common sizes available include but are not limited to: 2 1/8”, 2 3/8”, 2 7/8”, 3 3⁄4”, 4.75”, 5”, 6.25”, 6.50”, 6.75”, 7.75”, 8”, 9 5/8”, and 11 1⁄4”

Both imperial and metric units are available.

Grain Style TC Bearings

Average hardness of carbide grain matrix: > 70 HRC.

Average substrate body hardness: 28-36 HRC. (Different values provided upon customers request).

Common sizes available include but are not limited to: 2 1/8”, 2 3/8”, 2 7/8”, 3 3⁄4”, 4.75”, 5”, 6.25”, 6.50”, 6.75”, 7.75”, 8”, 9 5/8”, and 11 1⁄4”.

Grain styles perform best in enclosed environments of oil. Under magnification it has been noted that oil accumulates in the areas

where washand erosion of the matrix happen. This holds tiny pockets of oil, which helps in lubrication of the bearings.

Typical life expectancy: 300 – 400 hours (Run life solely depends upon drilling environment, mud composition, bend settings, carbide saturation and quality).

Tungsten Carbide layer can be applied in various thicknesses with our unique processing.

Round Button Style TC Bearings

Round TC tiles are configured so that there is no direct pathway for the fluid to wash or erode. This helps with keeping fluid flow through the bearing pack to a minimum as radial bearings act as a flow restrictor as well.

Configuration of buttons allow for more carbide per square inch > 70% surface area. (Buttons can be stacked much closer together).

Typical life expectancy: 300 – 400 hours. (Run life solely depends upon drilling environment, mud composition, bend settings, carbide saturation and quality)

Average hardness of TC Buttons: > 70 HRC

Average substrate body hardness: 28-36 HRC. (Many material and heat treating options are available).

Common sizes available include but are not limited to: 2 1/8”, 2 3/8”, 2 7/8”, 3 3⁄4”, 4.75”, 5”, 6.25”, 6.50”, 6.75”, 7.75”, 8”, 9 5/8”, and 11 1⁄4”.

Hexagon Style TC Bearings

Hexagon TC insert layouts are configured so that there is no direct pathway for the fluid to wash or erode. This helps with keeping fluid flow through the bearing pack to a minimum as radial bearings act as a flow restrictor as well.

All TC radial bearings are well suited for high RPM, pressures, temperatures, corrosive and erosive environments.

Hexagon TC inserts are capable of covering 70% + of bearing surface areas.

Typical life expectancy: 300 – 400 hours. (Run life solely depends

upon drilling environment, mud composition, bend settings, carbide saturation and quality).

Average hardness of hexagon TC inserts: > 70 HRC.

Average substrate body hardness: 28-36 HRC. (Many material and heat treating options are available)

Common sizes available include but are not limited to: 2 1/8”, 2 3/8”, 2 7/8”, 3 3⁄4”, 4.75”, 5”, 6.25”, 6.50”, 6.75”, 7.75”, 8”, 9 5/8”, and 11 1⁄4”.

Tungsten Carbide Radial Bearings For Mud lubricated Drilling MotorsTungsten Carbide Radial Bearings For Mud lubricated Drilling Motors.

Raw Materials

Bearing Bodies can have many various compositions some of the most common are: 4140, 4145, 4330V, or 4340. Custom configurations are available upon customers request. Standard bearing body material makeup is as follows:

Mechanical properties:

Tensile strength ≥1080

Yield strength ≥ 930

Elongation δ5 (%):≥12

Reduction of cross-section area ψ (%):≥ 45

Ballistic work: Akv (J):≥63

Impact toughness αkv ≥78

Hardness:≤217HB

After sintering and forced air cooling:

Tensile strength: 827 Mpa

Yield strength Rp0.2: 668 Mpa

Elongation: 13%

After thermal refinement:

Tensile strength: 931 ~ 955 Mpa

Yield strength Rp 0.2: 804 ~ 835 Mpa

Elongation: 24.5 ~ 26%

Chemical Composition of Bearing Body (Substrate):

C: 0.38~0.45

Si: ≤0.40

Mn: 0.60~0.90

S: residue ≤ 0.035

P: residue ≤ 0.035

Cr: 0.90~1.20

Mo: 0.15~0.30

Chemical Composition of Tungsten Carbide:

Hard Alloy Insert (YG8)

Composition: WC92%, Co8%

Density (g/cm3): 14.5 – 14.9

Hardness (HRA): 89 – 91

Flexural strength (σbb/MPa): 1500

Impact toughness σK/ (J/cm2): 2.5

Cast Tungsten Carbide Powder:

Composition: WC 96%, Ct < 4%

Particle distribution, +80 mesh ~ -200mesh

Binding alloy:

Composition: Cu, Ni, Zn, Mn

Performance:

1) Highly resistant to abrasion, erosion, corrosion, and mechanical failure.

2) Extremely resistant to chipping, cracking, and flaking which are inherent problems in cladding or welded overlay processes.

3) High heat conductivity eliminates thermal cracking.

4) Proprietary design eliminates catastrophic downhole radial bearing failure.

5) Carbide tile and matrix design ensures extended life compared to cladding or welded overlay designs.

6) Inner and outer components can be reconditioned.

7) The hardness of body surface can reach 30-37 HRC.

High strength,long life inserted cemented carbide radial bearing is a proprietary product of our company (the largest and earliest company to manufacture radial bearings). Cemented carbide and special welding materials and cemented carbide additives regularly placed on the inner and outer surfaces of the radial bearing are fused with the based of the radial bearing through specific sinter processing. Its friction pair is featured by corrosion resistance, shock resistance, heavy load bearing and long life, and its appearance quality and technical indicators are superior than the similar products of other countries.

Advantages:

1. Increased Bearing Life.

Monton exclusive cladding sustains tight tolerances and remains durable, even under extreme heat and stress.

2. Reduced Operational Costs.

3. Improved Mud Motor Performance.

Operators can push motors without damaging the bearings, permitting sharper turns, faster penetration and less drilling time.

4. Enhanced Drilling Accuracy.

Reduced bearing wear means that design tolerances are maintained downhole, resulting in improved mud motor control and greater

drilling accuracy.

5. Unsurpassed Quality Standards.

Our radial bearings are designed and manufactured according to stringent quality standards that govern material selection, machining, infiltration brazing, surface finishing and packaging.

Features:

1. Use 100% tungsten carbide raw material

2. Stable chemical properties

3. Excellent performance and good wear / corrosion resistance

4. HIP sintering, good compactness

5. Blanks, high machining accuracy / precision

6. OEM customized sizes available

7. Factory’s offer

8. Strict products quality inspection

Radial bearing

Expandable liner hanger is one kind of the application of expandable pipe technology in liner hanging. The technological principle of expandable liner hanger is different from slip type liner hanger. Using hydraulic or mechanical forces, the expansion cone pressurize expansion pipe inner of the upper casing pipe to form reliable sealing and support hanging weight of liner pipes. Compared with conventional hanger, the expandable liner hanger has a larger drift diameter, reliable annulus seal, large hang force and rotation ability, which is suitable for the lateral well, deviational well, horizontal well, deep well, extra-deep well, HTHP well and H2S well. It has an extensive market potential with great prospect.

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