

ZON™

BEARINGS FOR YOUR FUTURE



混合陶瓷轴承





BEARINGS FOR YOUR FUTURE

灿恩轴承品质卓越，在各种标准及非标应用中使用广泛。
无论数量多少，我们的技术部门都能够根据您的要求定制任何规格的非标轴承。

灿恩除了经营一千余种微型轴承（内径1-10mm,包括英制）之外还提供薄壁、推力、标准公制轴承以及其他各种非标轴承。我们能够按照客户的特殊需求，通过一些新型材料例如陶瓷或者特殊钢材来设计轴承以满足工业，医疗，化学或食品加工行业上的各种应用。

如果您在我们的产品目录册中无法找到您的理想型号，请联系我们经验丰富的销售团队。



灿恩已获得德国ISO 9001 TUV莱茵认证。

莱茵认证被视作轴承行业的最高检验标准，受到国际认可并得到广大客户的肯定，被视为品质和服务的保证。

www.zen.biz



混合陶瓷轴承

-  户外耐久性*
-  低温适用*
-  高温适用*
-  耐化学溶剂*
-  高速运转适用*
-  无润滑剂*
-  润滑油
-  润滑脂
-  橡胶密封圈（可选）
-  金属防尘盖（可选）

* 固体陶瓷

技术参数

General Details

| Material | Components | | Details | Application |
|---|------------|-------|--|--|
| | Rings | Balls | | |
| Ball Bearing Chrome Steel 100 Cr6 (Nr. 1.3505) | X | X | Hard wearing Good shock and corrosive resistance | Standard |
| Stainless Steel AISI 440 C (Nr. 1.4125) [†] | X | X | Very good corrosive resistance | Food industry, pharmaceutical industry, ship building and other corrosive surroundings |
| AISI304 | X | X | Very good corrosive resistance | Corrosive surroundings |
| AISI316 | X | X | Excellent corrosive resistance | Corrosive surroundings |
| AISI 316L | X | X | Excellent corrosive resistance | Corrosive surroundings |
| Si3N4 | X | X | High temperature Insulation Excellent corrosive resistance | Chemistry, electronic, food, marine, medical |
| ZrO2 | X | X | High temperature Insulation Excellent corrosive resistance | Chemistry, electronic, food, marine, medical |
| Al2O3 | | X | High temperature Insulation Excellent corrosive resistance | Chemistry, electronic, food, marine, medical |

[†]The static and dynamic load rating of AISI 440 C - ball bearings is approximately 75-80% of the 100 Cr6 - ball bearings.

Technical Details








| Material | Hardness | Max. Temp. | C | Si | Mn | P | S | Cr | Mo | Ni |
|-------------------------|----------|------------|----------|-----------|-------|--------|--------|-----------|-----------|-----------|
| 100 Cr6 (Nr. 1.3505) | 60-64HRC | max. 150°C | 0,5~1,10 | 0,15~0,35 | ≤0,5 | ≤0,025 | ≤0,025 | 1,3~1,6 | ≤0,08 | |
| AISI 440 C (Nr. 1.4125) | ≥58HRC | Max. 230°C | 0,95~1,2 | ≤1,1 | ≤1,0 | ≤0,04 | ≤0,03 | 16,0~18,0 | ≤0,75 | |
| AISI304 | 15~20HRC | 900 | ≤0.07 | ≤1.00 | ≤2.00 | ≤0.035 | ≤0.030 | 17.0~19.0 | | 8,0~10,0 |
| AISI316 | 15~20HRC | 900 | ≤0.08 | ≤1.00 | ≤2.00 | ≤0.035 | ≤0.030 | 16,0~19,0 | 1.80-2.50 | 10,0~14,0 |
| AISI 316L | 15~20HRC | 450 | ≤0.03 | ≤1.00 | ≤2.00 | ≤0.035 | ≤0.030 | 16,0~18,0 | 2.00-3.00 | 12,0~15,0 |

| Material | Hardness | Max. Temp | Component |
|----------|----------|-----------|---|
| Si3N4 | 75~80HRC | 1050 | 88% Si3N4 / 4% Al2O3 / 4% Y2O3 / 4% other |
| ZrO2 | 70HRC | 750 | 95% ZrO2 / 5% Y2O3 |
| Al2O3 | 80HRC | 1750 | 99.5% Al2O3 / 0.5% others |

Tolerance Class

| Tolerance class | Equivalences | |
|-----------------|--------------|--------|
| | ISO | AFBMA |
| ISO / AFBMA | | |
| DIN P0 | class 0 | ABEC 1 |
| DIN P6 | class 6 | ABEC 3 |
| DIN P5 | class 5 | ABEC 5 |
| DIN P4 | class 4 | ABEC 7 |
| DIN P2 | class 2 | ABEC 9 |









密封圈和防尘盖

| | Design | Specification | Temp | Advantage/Disadvantage | |
|---|--------|-------------------------------|---|--|--|
|  | - | No seals | Open | - | No friction Easy to re-lube No protection against contamination |
|  | 2Z | Metal shields | Non contact seals | Min. temp -35°C Max. temp 250°C | No friction Good protection against contamination |
|  | 2RS | Rubber seals | Contact seals made of synthetic rubber | Min. temp -20°C Max. temp 110°C | Higher friction Very good protection against contamination |
|  | 2TS | PTFE seals | Contact seals made of Teflon | Min. temp -40°C Max. temp 250°C | Low friction Very good protection against contamination Good chemical characteristics |
|  | 2TZ | PTFE seals with metal shields | Contact seals made of Teflon | Min. temp -40°C Max. temp 250°C | Low friction Very good protection against contamination Good chemical characteristics |
|  | 2VS | Viton seals | Seals made of Viton | Min. temp -30°C Max. temp 230°C | Higher friction High temperature Good chemical characteristics Very good protection against contamination |
|  | 2DU | Rubber seals | Non contact seal made of synthetic rubber | Min. temp -20°C Max. temp 110°C | No friction Very good protection against contamination |

Important

The author reserves the right not to be responsible for the topicality, correctness, completeness or quality of the information provided. Liability claims regarding damage caused by the use of any information provided, including any kind of information which is incomplete or incorrect, will therefore be rejected.

保持架

| | Reference | Cage type | Remarks |
|---|-----------|-----------------------------|---|
|  | FC | Full Complement / No Cage | Low revolution high load rating |
|  | W | Crown Cage | Light weight, smooth, low friction |
|  | J | Ribbon Cage | Standard cage, good durability |
|  | T9H | Glass Fibre Reinforced Cage | Light weight, strong, high speed |
|  | | Phenolic Cage | Light weight, strong, high speed |
|  | M | Brass Cage | Low friction, good durability |
|  | PEEK | PEEK | High temperature Good durability Corrosion resistant Insulated |
|  | PTFE | PTFE | High temperature Good durability Corrosion resistant Insulated |

Lubrication

| Lubricant | Remarks | Advantages/Applications |
|--------------|---|--|
| No lubricant | Only with stainless steel bearings or with the use of corrosion preventive fluid | When the lubrication is provided by the customer |
| Grease | Standard filling 30-40% | Life-time lubrication is possible Good protection against corrosion According to the application a variety of greases can be used |
| Oil | | Low friction High revolution |

常用润滑油脂

6

| Mfg | Brand | Thickener | Base oil | Drop Point °C | Consistency | Operating temperature range | Application |
|-------------|-------------------|--------------|-----------------------|---------------|-------------|-----------------------------|--------------------------------|
| Exxon | Beacon 325 | Lithium | Diester | 193 | 290 | -60~+120 | low temp |
| | Andok B | Nathium | Mineral | 260 | 280 | -40~+120 | general purpose |
| | Andok C | Nathium | Mineral | ≥ 260 | 205 | -20~+120 | general purpose |
| Kyodo Yushi | Andok 260 | Nathium | Mineral | 200 | 250 | -30~+150 | general purpose |
| | Multemp PS2 | Lithium | Diester | 189 | 280 | -50~+110 | low temp |
| | Multemp SRL | Lithium | Ester | 191 | 245 | -40~+150 | low temp |
| | Multemp SRH | Lithium | Ester | 250 | 201 | -40~+150 | low temp |
| | Multemp SB-M | Diurea | Synthetic oil | 220 | 260 | -40~+200 | high speed/temp |
| | ET-K | Diurea | Synthetic oil/ester" | 260 | 300 | -40~+200 | high temp/ speed alternator |
| Kluber | Asonic GLY32 | Lithium | Synthetic | 190 | 265-295 | -50~+140 | low temp |
| | Asonic GHY72 | Polyhamstoff | Ester Mineral | 250 | 250-280 | -40~+180 | high temp/low noise |
| | Isoflex Super | | | | | | |
| | LDS18 | Lithium | Diester | 190 | 280 | -60~+130 | low temp |
| | Isoflex LDS18 | | | | | | |
| | Special A | Lithium | Diester | 190 | 280 | -60~+130 | low temp |
| | Isoflex Topas | | | | | | |
| | NB52" | Barium | Synthetic hydrocarbon | 204 | 280 | -60~+170 | low/high temp |
| | Barrierta L55/2 | PTFE | Fluorinated | | 280 | -35~+260 | low/high temp |
| | Barrierta TK44N2 | Na-Komplex | Silicone | | | -60~+230 | low/high temp |
| | Isoflex NCA15 | Special Ca | Ester Mineral | 180 | 265-295 | -40~+130 | high speed |
| | Asonic | | | | | | |
| | HQ72-102" | Urea | Ester | 240 | 250-280 | -40~+180 | low/high temp & low noise |
| Dow Corning | Molykote 33M | Lithium | Silicone | 210 | 260 | -70~+180 | low/high temp |
| | Molykote 44M | Lithium | Silicone | 204 | 260 | -40~+200 | high temp |
| | Molykote 55M | Lithium | Silicone | | | -55~+165 | low temp |
| | Molykete BR2 plus | Lithium | Silicone | | 280 | -30~+150 | high speed |
| | Molykete FS1292 | PTFE | Phlorosilicon | ≥ 232 | 310 | -40~+200 | high speed |
| | Molykete FS3451 | PTFE | Phlorosilicon | ≥ 260 | 285 | -40~+230 | chemical solvent resistant |
| Shell | Alvania No.2 | Lithium | Mineral | 182 | 272 | -25~+120 | general purpose |
| | Alvania No.3 | Lithium | Mineral | 183 | 233 | -20~+135 | general purpose |
| | Alvania RA | Lithium | Mineral | 183 | 252 | -25~+120 | general purpose |
| | Alvania EP2 | Lithium | Mineral | 185 | 276 | -10~+100 | general purpose |
| | Dolium R | | Mineral | 238 | 281 | -20~+140 | general purpose |
| | Aero Shell NO.5 | Microgel | Mineral | ≥ 260 | 282 | -10~+130 | general purpose |
| | Aero Shell NO.7 | Microgel | Mineral | ≥ 260 | 288 | -70~+150 | low temp |
| | Aero Shell RLQ2 | Lithium | Mineral | 195 | 266 | -50~+150 | low noise/ high speed" |
| Mobil Oil | Mobilux2 | Lithium | Mineral | 190 | 280 | -20~+120 | general purpose |
| | Mobil 22 | Lithium | Diester Mineral | 192 | 274 | -50~+140 | low temp |
| | Mobil 28 | Bentonite | syntheic hydrocarbon | ≥ 260 | 280 | -60~+180 | low/high temp |
| | Mobilitemp | | | | | | |
| | SHC22 | Glue-earth | Synthetic oil | 250 | 265-295 | -50~+180 | high speed/temp |
| | Mobiitemp | | | | | | |
| | SHC100 | Glue-earth | Synthetic oil | 250 | 265-295 | -40~+200 | high speed/temp |
| Du Pont | Krytox240AC | PTFE | Fluorinated | | 282 | -35~+280 | high speed/temp |
| Caltex | Chevron SRI-2 | Urea | Mineral | | 293 | -30~+175 | high temp |
| Hangu | Hangu#2 | - | Mineral | - | - | -20~+120 | general purpose |
| Great Wall | Great Wall BLE | Urea | Mineral | 260 | 280 | -30~+200 | low noise/ high temp" |
| Yiping | YP7201 | Synthetic | Mineral | 272 | 272 | -20~+120 | low noise/anti-rust |

陶瓷球

Material:

Silicon Nitride (Si₃N₄), Zirconia (ZrO₂) and Alumina (Al₂O₃)

Specification:

1/64" ~ 3/2" with different gauge

Precision:

G3 ~ G20

Usage:

For bearings, inspection and other rolling conditions.

Advantages of ceramic balls compared to steel:

1. Lighter than steel
2. Larger elastic modulus
3. Lower friction coefficient, rolls more freely
4. Lower coefficient of thermal expansion
5. Superior surface finish
6. Higher high temperature hardness
7. Rust proof, rolls without oil or grease
8. Corrosion resistant than steel

7



Black Silicon Nitride Balls



Grey Silicon Nitride Balls



Zirconia Balls



Alumina Balls

陶瓷轴承

Bearing class

ZEN Ball Bearings can produce both complete ceramic ball bearings and hybrid stainless steel or chrome steel ball bearings.

Complete ceramic bearing = The inner ring, outer ring and balls are composed of ceramic materials, including zirconia and silicon nitride.

Hybrid bearings = The balls are ceramic, while the outer ring and inner ring are chrome/stainless steel. Hybrid ball bearings, normally have the identical structure as steel bearings.

Properties advantages, compared with steel ball bearing

- 1. Higher limiting speeds:** Ceramic is lighter than steel and can effectively restrain the centrifugal force, therefore enhances the limiting speeds.
- 2. Higher precision usage:** Ceramic has a higher hardness and elastic modulus than steel, which means ceramic bearings are more rigid than steel bearings, so therefore can be used in higher precision conditions.
- 3. Longer life:** Lighter ceramic leads to a lower centrifugal force, this will extend the life of the bearing. Furthermore, friction coefficient of ceramic is lower than steel, which also extends the life of the bearing.
- 4. Higher temperature usage:** Ceramic is more mechanically stable at elevated temperatures, therefore they could be used under higher temperatures.
- 5. Temperature-variation usage:** Ceramic has a lower thermal expansion coefficient, the clearance and the tolerance variation is lower than those of steel bearings, which leads to a greater variation in temperature range.
- 6. Better seizure resistance:** Ceramic has a smaller thermal expansion coefficient; indicating less thermal deformation, therefore enhancing seizure resistance.
- 7. Could run without oil or grease:** Ceramic never rusts and is self-lubricated, therefore can be used in applications that require no oil or grease.
- 8. Resistant to acid, alkali and salt:** The chemical industry is the largest potential application industry of ceramic bearings to be exploited.
- 9. More suitable for magnetic applications:** Our ceramic bearings are non-magnetic, which means it is difficult for magnetic particles to adhere on the race, therefore reducing particle-abrasion.



Full Zirconia Bearing



Full Zirconia Bearing



Full Silicon Nitride Bearing



Full Ceramic Bearing
Silicon nitride inner and outer ring. Silicon nitride rolling element. Zirconia ball.



Full Ceramic Bearing
Zirconia inner and outer ring. Zirconia rolling element. Silicon nitride ball



Full Ceramic Bearing
Zirconia inner ring, outer ring and rolling element. Silicon nitride ball

陶瓷轴承

Bearing class

ZEN Ball Bearings can produce full ceramic bearing and hybrid ball bearing.

Full ceramic bearing = The inner ring, out ring and ball is composed of ceramic materials, including zirconia and silicon nitride.

Hybrid bearing = The ball is ceramic, while the out ring and inner ring are steel. Hybrid ball bearing, normally have the identical structure as steel bearing.

Cages used in Ceramic bearings

- Beside the standard steel cages, TPE and PEEK cages are used for full ceramic or hybrid ball bearings.
- Both cages types are temperature resistant up to 260 C.
- The Peek material is a harder material and its advantage is high temperature resistance, good mechanical properties, self-lubricating, and anti-chemical properties. The advantage of PTFE is low friction, high temperature, and good wearability.

Facts

Full ceramic bearings have only a load rating (including hybrid ceramic bearing) of about 60% of chrome steel bearing.

Usage

For rough service environment, such as chemical, metallurgy, food, electric, medical industry etc. Our bearing products have been used as high-speed motor spindle bearing, high precision machine spindle bearing, dental drill bearing, high speed wheel head bearing, instrument bearing, hard drive bearing, skating bearing, fishing bearing, etc.

| Item | Unit | Steel | Si3N4 | ZrO ₂ | Al ₂ O ₃ |
|--------------------------------------|----------------------|-------|-----------|------------------|--------------------------------|
| Destiny | g/cm ³ | 7.85 | 3.20~3.30 | 6.05 | 3.95 |
| Thermal Expansion Coefficient | 10 ⁻⁶ /k | 10 | 3.2 | 10.5 | 9.1 |
| Elastic Modulus | Gpa | 208 | 300~320 | 210 | 380 |
| Poisson Ratio | | 0.3 | 0.26 | 0.3 | 0.27 |
| Hardness | (HV) | 700 | 1500~1800 | 1200 | 1800 |
| | (HRC) | 62 | 75~80 | 70 | 80 |
| Bending Strength (800°C) | Mpa | 2400 | 200 | 300 | 220 |
| Crushing Strength (800°C) | Mpa | / | 1400 | 2100 | 1500 |
| Fracture Toughness | MPa·m ^{1/2} | 25 | 6.0~7.0 | 10 | 3.5 |
| Thermal Conductivity (500°C) | W/mk | 30~40 | 18 | 2 | 25 |
| Specific Resistivity (600°C) | Ω·mm ² /m | 0.1~1 | 1018 | 1015 | 108 |
| Max Usage Temperature | °C | 300 | 800 | 550 | 1850 |
| Corrosion Resistance | | Worse | Better | Better | Better |
| Fatigue Stress Recycles (50%Fail) | Times | 107 | 107~109 | 105 | / |
| Dimension Stability with Temperature | | Large | Little | / | / |
| Centrifugal Force | | Large | Little | Large | Medium |
| Non-lubrication Friction | | Large | Little | Little | Little |
| Magnetism | | Exist | Naught | Naught | Naught |



Full Ceramic Bearing
Silicon nitride outer ring and rolling element.
Zirconia inner ring.



Full Zirconia Bearing without retainer



UC204. Full Zirconia Bearing



UC205. Full Ceramic Bearing
Zirconia inner ring, outer ring and rolling element.
Silicon nitride ball

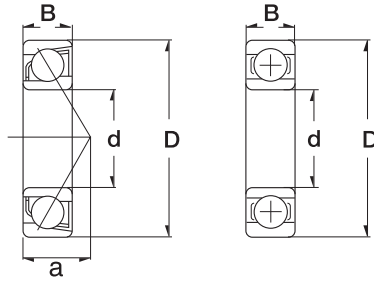


Hybrid Ball Bearing



Hybrid Ball Bearing

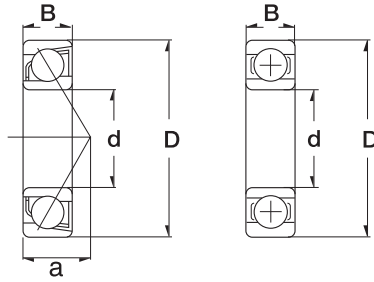
固体陶瓷轴承



10

| Dimension (mm) | | | Designation/Type | * Load Rating | | Weight (g) approx. |
|----------------|------|------|------------------|---------------|------------|--------------------|
| d | D | B | | C, dyn. N | C, stat. N | |
| 8.0 | 22.0 | 7.0 | 608 | 1976 | 827 | 14 g |
| 9.0 | 24.0 | 7.0 | 609 | 2014 | 866 | 16 g |
| 8.0 | 24.0 | 8.0 | 628 | 2000 | 854 | 18 g |
| 9.0 | 26.0 | 8.0 | 629 | 2745 | 1190 | 22 g |
| 8.0 | 16.0 | 5.0 | 688 | 751 | 355 | 4 g |
| 9.0 | 17.0 | 5.0 | 689 | 796 | 401 | 5 g |
| 8.0 | 19.0 | 6.0 | 698 | 1342 | 550 | 8 g |
| 9.0 | 20.0 | 6.0 | 699 | 1480 | 649 | 8 g |
| | | | | | | |
| 10.0 | 26.0 | 8.0 | 6000 | 2730 | 1182 | 18 g |
| 10.0 | 30.0 | 9.0 | 6200 | 3060 | 1434 | 32 g |
| 10.0 | 35.0 | 11.0 | 6300 | 4860 | 2070 | 52 g |
| 12.0 | 28.0 | 8.0 | 6001 | 3060 | 1422 | 22 g |
| 12.0 | 32.0 | 10.0 | 6201 | 4080 | 1830 | 37 g |
| 12.0 | 37.0 | 12.0 | 6301 | 5820 | 2520 | 60 g |
| 15.0 | 32.0 | 9.0 | 6002 | 3360 | 1698 | 31 g |
| 15.0 | 35.0 | 11.0 | 6202 | 4590 | 2250 | 45 g |
| 15.0 | 42.0 | 13.0 | 6302 | 6840 | 3270 | 83 g |
| 17.0 | 35.0 | 10.0 | 6003 | 3600 | 1950 | 41 g |
| 17.0 | 40.0 | 12.0 | 6203 | 5730 | 2880 | 67 g |
| 17.0 | 47.0 | 14.0 | 6303 | 8160 | 3990 | 113 g |
| 17.0 | 62.0 | 17.0 | 6403 | 13740 | 6480 | 270 g |
| 20.0 | 42.0 | 12.0 | 6004 | 5640 | 3000 | 68 g |
| 20.0 | 47.0 | 14.0 | 6204 | 7680 | 3960 | 107 g |
| 20.0 | 52.0 | 15.0 | 6304 | 9540 | 4740 | 145 g |

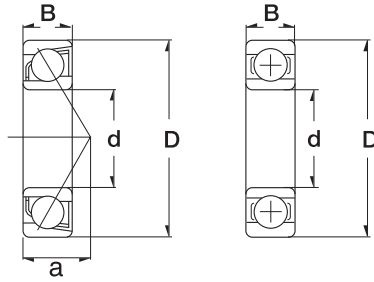
固体陶瓷轴承



11

| Dimension (mm) | | | Designation/Type | * Load Rating | | Weight (g) approx. |
|----------------|-------|------|------------------|---------------|------------|--------------------|
| d | D | B | | C, dyn. N | C, stat. N | |
| 20.0 | 72.0 | 19.0 | 6404 | 18420 | 9000 | 400 g |
| 25.0 | 47.0 | 12.0 | 6005 | 6060 | 3510 | 79 g |
| 25.0 | 52.0 | 15.0 | 6205 | 840 | 4710 | 129 g |
| 25.0 | 62.0 | 17.0 | 6305 | 12360 | 6720 | 235 g |
| 25.0 | 80.0 | 21.0 | 6405 | 21000 | 11460 | 530 g |
| 30.0 | 55.0 | 13.0 | 6006 | 7920 | 4980 | 116 g |
| 30.0 | 62.0 | 16.0 | 6206 | 11700 | 6780 | 199 g |
| 30.0 | 72.0 | 19.0 | 6306 | 16020 | 9000 | 345 g |
| 30.0 | 90.0 | 23.0 | 6406 | 26100 | 14280 | 740 g |
| 35.0 | 62.0 | 14.0 | 6007 | 9600 | 6180 | 151 g |
| 35.0 | 72.0 | 17.0 | 6207 | 15420 | 9180 | 284 g |
| 35.0 | 80.0 | 21.0 | 6307 | 20100 | 11520 | 464 g |
| 35.0 | 100.0 | 25.0 | 6407 | 33120 | 18900 | 950 g |
| 40.0 | 68.0 | 15.0 | 6008 | 10080 | 6900 | 190 g |
| 40.0 | 80.0 | 18.0 | 6208 | 17460 | 10740 | 366 g |
| 40.0 | 90.0 | 23.0 | 6308 | 24300 | 14400 | 636 g |
| 40.0 | 110.0 | 27.0 | 6408 | 37800 | 21600 | 1250 g |
| 10.0 | 19.0 | 5.0 | 6800 | 1030 | 504 | 5.5 g |
| 10.0 | 22.0 | 6.0 | 6900 | 1617 | 764 | 10 g |
| 12.0 | 21.0 | 5.0 | 6801 | 1149 | 625 | 6.3 g |
| 12.0 | 24.0 | 6.0 | 6901 | 1732 | 880 | 11 g |
| 15.0 | 24.0 | 5.0 | 6802 | 1244 | 752 | 7.4 g |
| 15.0 | 28.0 | 7.0 | 6902 | 2593 | 1355 | 16 g |
| 17.0 | 26.0 | 5.0 | 6803 | 1340 | 874 | 8.2 g |

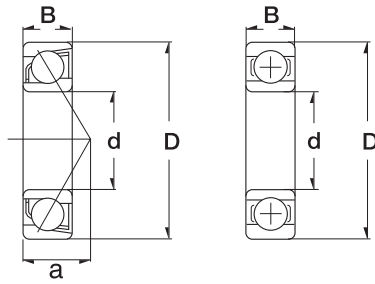
固体陶瓷轴承



12

| Dimension (mm) | | | Designation/Type | * Load Rating | | Weight (g) approx. |
|----------------|------|------|------------------|---------------|------------|--------------------|
| d | D | B | | C, dyn. N | C, stat. N | |
| 17.0 | 30.0 | 7.0 | 6903 | 2753 | 1539 | 18 g |
| 20.0 | 32.0 | 7.0 | 6804 | 2409 | 1477 | 18 g |
| 20.0 | 37.0 | 9.0 | 6904 | 3829 | 2209 | 38 g |
| 25.0 | 37.0 | 7.0 | 6805 | 2582 | 1759 | 22 g |
| 25.0 | 42.0 | 9.0 | 6905 | 4201 | 2724 | 45 g |
| 30.0 | 42.0 | 7.0 | 6806 | 2723 | 2041 | 27 g |
| 30.0 | 47.0 | 9.0 | 6906 | 4345 | 3002 | 51 g |
| 35.0 | 47.0 | 7.0 | 6807 | 2837 | 2293 | 30 g |
| 35.0 | 55.0 | 10.0 | 6907 | 6540 | 4691 | 80 g |
| 40.0 | 52.0 | 7.0 | 6808 | 2954 | 2507 | 34 g |
| 10.0 | 26.0 | 8.0 | 7000 | 2268 | 1290 | 18 g |
| 10.0 | 30.0 | 9.0 | 7200 | 3120 | 1530 | 30 g |
| 12.0 | 28.0 | 8.0 | 7001 | 2448 | 1452 | 20 g |
| 12.0 | 32.0 | 10.0 | 7201 | 3390 | 1890 | 35 g |
| 15.0 | 32.0 | 9.0 | 7002 | 2880 | 1770 | 28 g |
| 15.0 | 35.0 | 11.0 | 7202 | 4980 | 2580 | 43 g |
| 17.0 | 35.0 | 10.0 | 7003 | 3048 | 1932 | 36 g |
| 17.0 | 40.0 | 12.0 | 7203 | 5028 | 3228 | 62 g |
| 20.0 | 42.0 | 12.0 | 7004 | 6300 | 3612 | 67 g |
| 20.0 | 47.0 | 14.0 | 7204 | 8760 | 4920 | 100 g |
| 25.0 | 47.0 | 12.0 | 7005 | 5832 | 3750 | 89 g |
| 25.0 | 52.0 | 15.0 | 7205 | 8400 | 5232 | 146 g |
| 30.0 | 55.0 | 13.0 | 7006 | 7500 | 5172 | 130 g |
| 30.0 | 62.0 | 16.0 | 7206 | 11700 | 7500 | 222 g |

固体陶瓷轴承

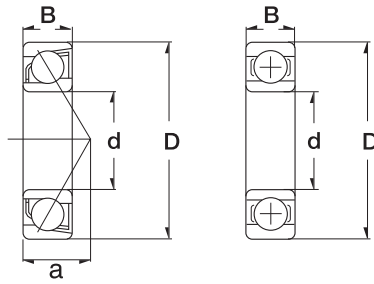


13

| Dimension (mm) | | | Designation/Type | * Load Rating | | Weight (g) approx. |
|----------------|------|------|------------------|---------------|------------|--------------------|
| d | D | B | | C, dyn. N | C, stat. N | |
| 35.0 | 62.0 | 14.0 | 7007 | 9660 | 6960 | 173 g |
| 35.0 | 72.0 | 17.0 | 7207 | 15420 | 10200 | 318 g |
| 40.0 | 68.0 | 15.0 | 7008 | 10260 | 8040 | 215 g |
| 40.0 | 80.0 | 18.0 | 7208 | 19500 | 13620 | 406 g |
| 45.0 | 75.0 | 16.0 | 7009 | 12720 | 10140 | 271 g |
| 45.0 | 85.0 | 19.0 | 7209 | 20340 | 14940 | 467 g |
| 50.0 | 80.0 | 16.0 | 7010 | 14040 | 11400 | 288 g |
| 50.0 | 90.0 | 20.0 | 7210 | 21420 | 16020 | 521 g |

| Dimension (mm) | | | | Designation/Type | * Load Rating | |
|----------------|-------|-------|-------|------------------|---------------|------------|
| d | D | B1 | B2 | | C, dyn. N | C, stat. N |
| 12.00 | 47.00 | 17.00 | 31.00 | UC 201 | 7500 | 4500 |
| 15.00 | 47.00 | 17.00 | 31.00 | UC 202 | 7500 | 4500 |
| 17.00 | 47.00 | 17.00 | 31.00 | UC 203 | 7500 | 4500 |
| 20.00 | 47.00 | 17.00 | 31.00 | UC 204 | 10000 | 6300 |
| 25.00 | 52.00 | 17.00 | 34.10 | UC 205 | 11000 | 7100 |
| 30.00 | 62.00 | 19.00 | 38.10 | UC 206 | 15200 | 10200 |
| 35.00 | 72.00 | 20.00 | 42.90 | UC 207 | 20100 | 18100 |

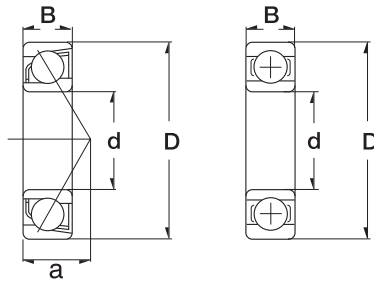
混合轴承



14

| Dimension (mm) | | | Designation/Type | * Load Rating | | Weight (g) approx. |
|----------------|-------|-------|------------------|---------------|------------|--------------------|
| d | D | B | | C, dyn. N | C, stat. N | |
| 3.0 | 7.0 | 2.0 | HYB 683 | 187 | 67 | 1 g |
| 3.0 | 8.0 | 3.0 | HYB 693 | 335 | 108 | 1 g |
| 4.0 | 8.0 | 2.0 | HYB MR 84 | 237 | 85 | 1 g |
| 4.0 | 9.0 | 2.5 | HYB 684 | 385 | 136 | 2 g |
| 4.0 | 10.0 | 3.0 | HYB MR 104 | 427 | 163 | 2 g |
| 4.0 | 11.0 | 4.0 | HYB 694 | 574 | 210 | 2 g |
| 5.0 | 8.0 | 2.0 | HYB MR 85 | 131 | 54 | 1 g |
| 5.0 | 10.0 | 3.0 | HYB MR 105 | 259 | 101 | 2 g |
| 5.0 | 11.0 | 3.0 | HYB 685 | 430 | 169 | 2 g |
| 5.0 | 11.0 | 4.0 | HYB MR 115 | 430 | 169 | 1 g |
| 5.0 | 13.0 | 4.0 | HYB 695 | 646 | 259 | 3 g |
| 6.0 | 10.0 | 2.5 | HYB MR 106 | 298 | 131 | 1 g |
| 6.0 | 12.0 | 3.0 | HYB MR 126 | 430 | 177 | 2 g |
| 6.0 | 13.0 | 3.5 | HYB 686 | 649 | 265 | 3 g |
| 6.0 | 15.0 | 5.0 | HYB 696 | 804 | 314 | 4 g |
| 7.0 | 14.0 | 3.5 | HYB 687 | 704 | 308 | 4 g |
| 7.0 | 17.0 | 5.0 | HYB 697 | 963 | 431 | 6 g |
| 8.0 | 12.0 | 2.5 | HYB MR 128 | 326 | 164 | 1 g |
| 8.0 | 14.0 | 3.5 | HYB MR 148 | 490 | 232 | 3 g |
| 8.0 | 16.0 | 4.0 | HYB 688 | 751 | 355 | 4 g |
| 8.0 | 19.0 | 6.0 | HYB 698 | 1342 | 550 | 8 g |
| 2.38 | 4.763 | 1.588 | HYB R 133 | 86 | 32 | 1 g |
| 3.175 | 6.35 | 2.38 | HYB R 144 | 170 | 58 | 1 g |
| 3.175 | 7.938 | 2.779 | HYB R 2-5 | 335 | 108 | 1 g |

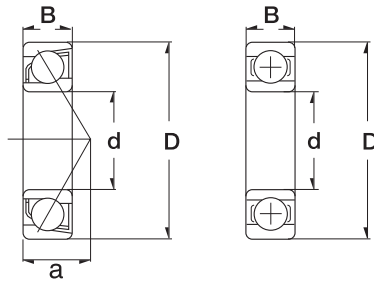
混合轴承



15

| Dimension (mm) | | | Designation/Type | * Load Rating | | Weight (g) approx. |
|----------------|--------|-------|------------------|---------------|------------|--------------------|
| d | D | B | | C, dyn. N | C, stat. N | |
| 3.175 | 9.525 | 3.967 | HYB R 2 | 379 | 131 | 2 g |
| 3.967 | 7.938 | 2.779 | HYB R 155 | 215 | 90 | 1 g |
| 4.763 | 9.525 | 3.175 | HYB R 166 | 425 | 163 | 1 g |
| 4.763 | 12.7 | 3.967 | HYB R 3 | 781 | 293 | 3 g |
| 6.35 | 9.525 | 3.175 | HYB R 168 | 224 | 103 | 1 g |
| 6.35 | 12.7 | 3.175 | HYB R 188 | 649 | 265 | 3 g |
| 6.35 | 15.875 | 4.978 | HYB R 4 | 888 | 373 | 5 g |
| 9.525 | 22.225 | 5.558 | HYB R 6 | 1994 | 853 | 12 g |
| 8.0 | 22.0 | 7.0 | HYB 608 | 1976 | 827 | 14 g |
| 9.0 | 24.0 | 7.0 | HYB 609 | 2014 | 866 | 16 g |
| 8.0 | 24.0 | 8.0 | HYB 628 | 2000 | 854 | 18 g |
| 9.0 | 26.0 | 8.0 | HYB 629 | 2745 | 1190 | 22 g |
| 8.0 | 16.0 | 5.0 | HYB 688 | 751 | 355 | 4 g |
| 9.0 | 17.0 | 5.0 | HYB 689 | 796 | 401 | 5 g |
| 8.0 | 19.0 | 6.0 | HYB 698 | 1342 | 550 | 8 g |
| 9.0 | 20.0 | 6.0 | HYB 699 | 1480 | 649 | 8 g |
| 10.0 | 26.0 | 8.0 | HYB 6000 | 2730 | 1182 | 18 g |
| 10.0 | 30.0 | 9.0 | HYB 6200 | 3060 | 1434 | 32 g |
| 10.0 | 35.0 | 11.0 | HYB 6300 | 4860 | 2070 | 52 g |
| 12.0 | 28.0 | 8.0 | HYB 6001 | 3060 | 1422 | 22 g |
| 12.0 | 32.0 | 10.0 | HYB 6201 | 4080 | 1830 | 37 g |
| 12.0 | 37.0 | 12.0 | HYB 6301 | 5820 | 2520 | 60 g |
| 15.0 | 32.0 | 9.0 | HYB 6002 | 3360 | 1698 | 31 g |

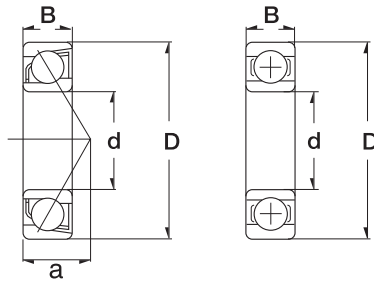
混合轴承



16

| Dimension (mm) | | | Designation/Type | * Load Rating | | Weight (g) approx. |
|----------------|-------|------|------------------|---------------|------------|--------------------|
| d | D | B | | C, dyn. N | C, stat. N | |
| 15.0 | 35.0 | 11.0 | HYB 6202 | 4590 | 2250 | 45 g |
| 15.0 | 42.0 | 13.0 | HYB 6302 | 6840 | 3270 | 83 g |
| 17.0 | 35.0 | 10.0 | HYB 6003 | 3600 | 1950 | 41 g |
| 17.0 | 40.0 | 12.0 | HYB 6203 | 5730 | 2880 | 67 g |
| 17.0 | 47.0 | 14.0 | HYB 6303 | 8160 | 3990 | 113 g |
| 17.0 | 62.0 | 17.0 | HYB 6403 | 13740 | 6480 | 270 g |
| 20.0 | 42.0 | 12.0 | HYB 6004 | 5640 | 3000 | 68 g |
| 20.0 | 47.0 | 14.0 | HYB 6204 | 7680 | 3960 | 107 g |
| 20.0 | 52.0 | 15.0 | HYB 6304 | 9540 | 4740 | 145 g |
| 20.0 | 72.0 | 19.0 | HYB 6404 | 18420 | 9000 | 400 g |
| 25.0 | 47.0 | 12.0 | HYB 6005 | 6060 | 3510 | 79 g |
| 25.0 | 52.0 | 15.0 | HYB 6205 | 840 | 4710 | 129 g |
| 25.0 | 62.0 | 17.0 | HYB 6305 | 12360 | 6720 | 235 g |
| 25.0 | 80.0 | 21.0 | HYB 6405 | 21000 | 11460 | 530 g |
| 30.0 | 55.0 | 13.0 | HYB 6006 | 7920 | 4980 | 116 g |
| 30.0 | 62.0 | 16.0 | HYB 6206 | 11700 | 6780 | 199 g |
| 30.0 | 72.0 | 19.0 | HYB 6306 | 16020 | 9000 | 345 g |
| 30.0 | 90.0 | 23.0 | HYB 6406 | 26100 | 14280 | 740 g |
| 35.0 | 62.0 | 14.0 | HYB 6007 | 9600 | 6180 | 151 g |
| 35.0 | 72.0 | 17.0 | HYB 6207 | 15420 | 9180 | 284 g |
| 35.0 | 80.0 | 21.0 | HYB 6307 | 20100 | 11520 | 464 g |
| 35.0 | 100.0 | 25.0 | HYB 6407 | 33120 | 18900 | 950 g |
| 40.0 | 68.0 | 15.0 | HYB 6008 | 10080 | 6900 | 190 g |
| 40.0 | 80.0 | 18.0 | HYB 6208 | 17460 | 10740 | 366 g |

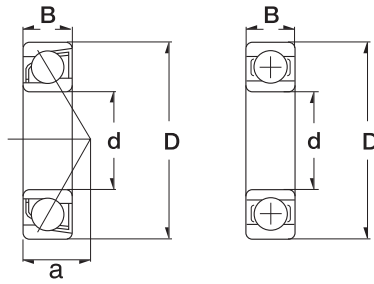
混合轴承



17

| Dimension (mm) | | | Designation/Type | * Load Rating | | Weight (g) approx. |
|----------------|-------|------|------------------|---------------|------------|--------------------|
| d | D | B | | C, dyn. N | C, stat. N | |
| 40.0 | 90.0 | 23.0 | HYB 6308 | 24300 | 14400 | 636 g |
| 40.0 | 110.0 | 27.0 | HYB 6408 | 37800 | 21600 | 1250 g |
| 10.0 | 19.0 | 5.0 | HYB 6800 | 1030 | 504 | 5.5 g |
| 10.0 | 22.0 | 6.0 | HYB 6900 | 1617 | 764 | 10 g |
| 12.0 | 21.0 | 5.0 | HYB 6801 | 1149 | 625 | 6.3 g |
| 12.0 | 24.0 | 6.0 | HYB 6901 | 1732 | 880 | 11 g |
| 15.0 | 24.0 | 5.0 | HYB 6802 | 1244 | 752 | 7.4 g |
| 15.0 | 28.0 | 7.0 | HYB 6902 | 2593 | 1355 | 16 g |
| 17.0 | 26.0 | 5.0 | HYB 6803 | 1340 | 874 | 8.2 g |
| 17.0 | 30.0 | 7.0 | HYB 6903 | 2753 | 1539 | 18 g |
| 20.0 | 32.0 | 7.0 | HYB 6804 | 2409 | 1477 | 18 g |
| 20.0 | 37.0 | 9.0 | HYB 6904 | 3829 | 2209 | 38 g |
| 25.0 | 37.0 | 7.0 | HYB 6805 | 2582 | 1759 | 22 g |
| 25.0 | 42.0 | 9.0 | HYB 6905 | 4201 | 2724 | 45 g |
| 30.0 | 42.0 | 7.0 | HYB 6806 | 2723 | 2041 | 27 g |
| 30.0 | 47.0 | 9.0 | HYB 6906 | 4345 | 3002 | 51 g |
| 35.0 | 47.0 | 7.0 | HYB 6807 | 2837 | 2293 | 30 g |
| 35.0 | 55.0 | 10.0 | HYB 6907 | 6540 | 4691 | 80 g |
| 40.0 | 52.0 | 7.0 | HYB 6808 | 2954 | 2507 | 34 g |
| 10.0 | 26.0 | 8.0 | HYB 7000 | 2268 | 1290 | 18 g |
| 10.0 | 30.0 | 9.0 | HYB 7200 | 3120 | 1530 | 30 g |
| 12.0 | 28.0 | 8.0 | HYB 7001 | 2448 | 1452 | 20 g |
| 12.0 | 32.0 | 10.0 | HYB 7201 | 3390 | 1890 | 35 g |

混合轴承



18

| Dimension (mm) | | | Designation/Type | * Load Rating | | Weight (g) approx. |
|----------------|------|------|------------------|---------------|------------|--------------------|
| d | D | B | | C, dyn. N | C, stat. N | |
| 15.0 | 32.0 | 9.0 | HYB 7002 | 2880 | 1770 | 28 g |
| 15.0 | 35.0 | 11.0 | HYB 7202 | 4980 | 2580 | 43 g |
| 17.0 | 35.0 | 10.0 | HYB 7003 | 3048 | 1932 | 36 g |
| 17.0 | 40.0 | 12.0 | HYB 7203 | 5028 | 3228 | 62 g |
| 20.0 | 42.0 | 12.0 | HYB 7004 | 6300 | 3612 | 67 g |
| 20.0 | 47.0 | 14.0 | HYB 7204 | 8760 | 4920 | 100 g |
| 25.0 | 47.0 | 12.0 | HYB 7005 | 5832 | 3750 | 89 g |
| 25.0 | 52.0 | 15.0 | HYB 7205 | 8400 | 5232 | 146 g |
| 30.0 | 55.0 | 13.0 | HYB 7006 | 7500 | 5172 | 130 g |
| 30.0 | 62.0 | 16.0 | HYB 7206 | 11700 | 7500 | 222 g |
| 35.0 | 62.0 | 14.0 | HYB 7007 | 9660 | 6960 | 173 g |
| 35.0 | 72.0 | 17.0 | HYB 7207 | 15420 | 10200 | 318 g |
| 40.0 | 68.0 | 15.0 | HYB 7008 | 10260 | 8040 | 215 g |
| 40.0 | 80.0 | 18.0 | HYB 7208 | 19500 | 13620 | 406 g |
| 45.0 | 75.0 | 16.0 | HYB 7009 | 12720 | 10140 | 271 g |
| 45.0 | 85.0 | 19.0 | HYB 7209 | 20340 | 14940 | 467 g |
| 50.0 | 80.0 | 16.0 | HYB 7010 | 14040 | 11400 | 288 g |
| 50.0 | 90.0 | 20.0 | HYB 7210 | 21420 | 16020 | 521 g |

技术参数

| Item | Unit | Steel | Si ³ N ⁴ | ZrO ² | Al ² O ³ |
|--------------------------------------|----------------------|-------|--------------------------------|------------------|--------------------------------|
| Destiny | g/cm ₃ | 7.85 | 3.20~3.30 | 6.05 | 3.95 |
| Thermal Expansion Coefficient | 10 ⁻⁶ /k | 10 | 3.2 | 10.5 | 9.1 |
| Elastic Modulus | Gpa | 208 | 300~320 | 210 | 380 |
| Passion Ratio | | 0.3 | 0.26 | 0.3 | 0.27 |
| Hardness | (HV) | 700 | 1500~1800 | 1200 | 1800 |
| | (HRC) | 62 | 75~80 | 70 | 80 |
| Bending Strength (800°C) | Mpa | 2400 | 200 | 300 | 220 |
| Crushing strength(800°C) | Mpa | - | 1400 | 2100 | 1500 |
| Fracture Toughness | MPa-m | 25 | 6.0~7.0 | 10 | 3.5 |
| Thermal Conductivity(500°C) | W/mk | 30~40 | 18 | 2 | 25 |
| Specific Resistivity(600°C) | Ω·mm ² /m | 0.1~1 | 1018 | 1015 | 108 |
| Max Usage Temperature | °C | 300 | 800 | 550 | 1850 |
| Corrosion Resistance | | Worse | Better | Better | Better |
| Fatigue Stress Recycles(50%Fail) | Times | 107 | 107~109 | 105 | - |
| Dimension Stability with Temperature | | Large | Little | - | - |
| Centrifugal Force | | Large | Little | Large | Medium |
| Non-lubrication Friction | | Large | Little | Little | Little |
| Magnetism | | Exist | Naught | Naught | Naught |

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