

igubal® Rod Ends

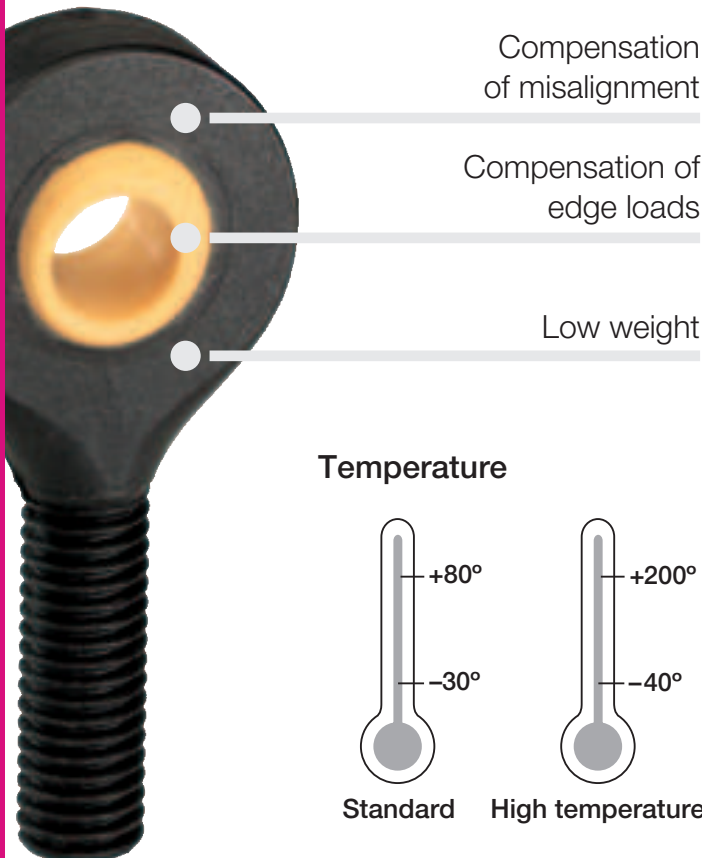
igubal® rod ends can also be used in rough environments. They are corrosion-resistant in humid environments and resistant to weak acids and bases. The operation temperature is from -40°C up to $+80^{\circ}\text{C}$. Rod ends are also insensitive to dirt and dust.



Maintenance-free,
dry-running

High strength
under impact loads

High tensile strength

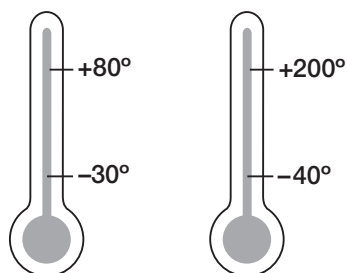


Compensation
of misalignment

Compensation of
edge loads

Low weight

Temperature



Standard High temperature



When to use it?

- If you want to save weight
- To realise rotating, oscillating and linear movements
- If high-frequency oscillations/vibrations preponderance
- If silent run is required
- If you need an electrical insulating article
- If corrosion resistance is required
- In combination with pneumatic cylinders and gas pressure springs
- If chemical resistance is required
- If high stiffness is requested



When not to use it?

- If temperatures are higher than $+80^{\circ}\text{C}$
 - ▶ HT version
- If rotation speeds higher than 0.5 m/s are required
- If really high tensile and transverse loads prevail
- If applications with hydraulic cylinders should be realised
- If dimensions above 30 mm are necessary

Product range

18 types
 $\varnothing 2\text{--}30\text{ mm}$



igubal® Rod Ends | Application Examples



Typical sectors of industry and application areas

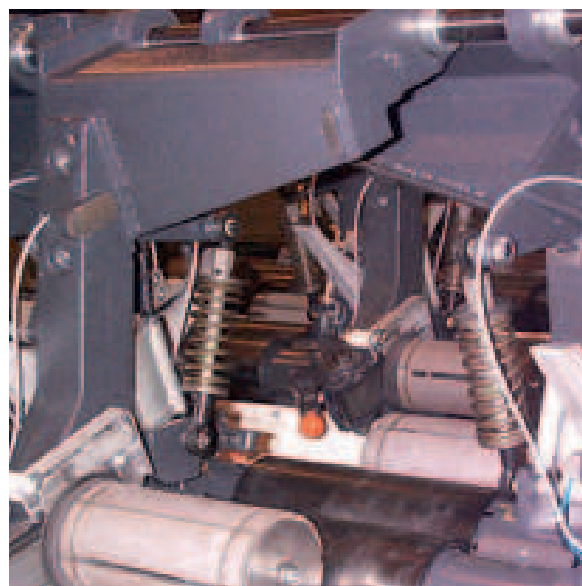
- Bicycle manufacturing
- Plant construction
- Packaging
- Offshore etc.

Improve technology and reduce costs –
110 exciting examples online

► www.igus.eu/eu/igubal-applications



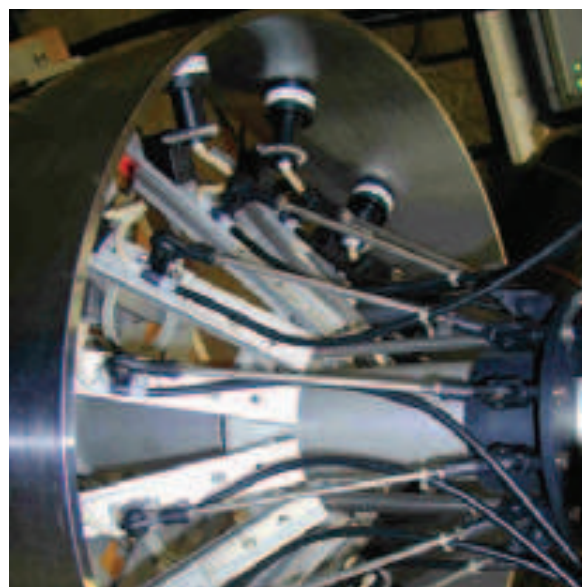
► www.igus.eu/special-bikes



► www.igus.eu/textile



► www.igus-packaging.eu



► www.igus.eu/offshore

Advantages

- Maintenance-free
- High strength under impact loads
- Very high tensile strength for varying loads
- Compensation of misalignment
- Compensation of edge loads
- Insensitive to dirt, dust and lint
- Corrosion- and chemical-resistant
- High vibration-dampening
- Suitable for rotating, oscillating and linear movements
- Light weight
- Dimensional series K and E, according to standard DIN ISO 12240
- Available with a metal sleeve to take a higher torque

Loads

igubal® rod ends handle high loads at normal room temperatures, have excellent dampening properties and weigh only a fifth of traditional metallic rod ends. In applications with high continuous loads and high temperatures, the load capacity of igubal® rod ends should be tested in an experiment that simulates the application.

Coefficients of Friction and Speed

One important advantage of igubal® spherical bearings is that rapid, rotary movements of a mounted shaft take place directly between the shaft and the iglidur® plain spherical bearing. In metallic rod ends, rotary motion takes place between the race and the spherical bearing. High speeds can be achieved with igubal® bearings.

Product Range

igubal® rod ends are available in the dimensional series K and E for shaft diameters of 2 to 30 mm.

- Form A – with male thread and
- Form B – with female thread

The dimensional series K is available in imperial dimensions, as well as a special version containing a stainless steel sleeve in the inner race. This allows a significantly higher torque than for the standard polymer race. Please ask us for more dimensions, delivery time and prices.

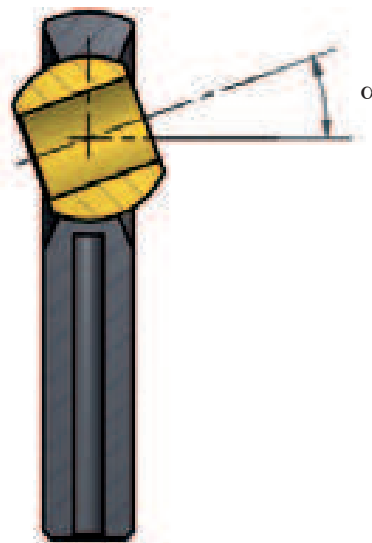
Temperatures

Series E (types A+B) for temperatures up to +200 °C (HT material).

Tolerances

igubal® rod ends can be used at different tolerances depending on the individual application. In standard form, they are designed with a large amount of bearing clearance, which permits reliable operation even at high rotational speeds. The bore of the inner race is produced to a standard tolerance range. Shafts should also meet recommended tolerances. Please contact us if you have any questions regarding tolerances.

Pivot angle



Rod ends with female thread: KBRM and KBLM



Standard design



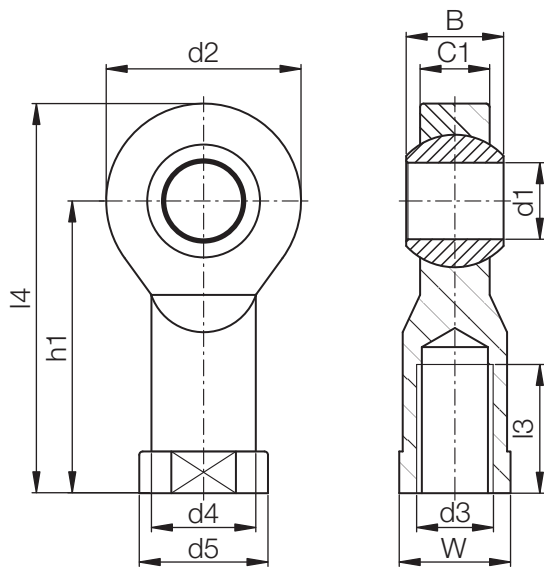
Design with
metal sleeve (MH)

- Maintenance-free, self-lubricating
- High strength under impact loads
- Very high tensile strength for varying loads
- Compensation of misalignment
- Compensation of edge loads
- Insensitive to dirt, dust and lint
- Corrosion- and chemical-resistant
- High vibration-dampening
- Suitable for rotating, oscillating and linear movements
- Very low weight
- Dimensional series K according to standard DIN ISO 12240
- Available with a metal sleeve for a higher torque

Technical Data

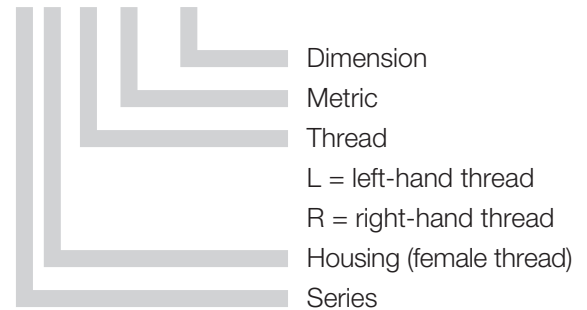
| Part number | | Max. static tensile strength | | Max. static radial load | | Min. thread depth | Max. torque strength | Max. torque through ball | | Weight |
|-------------------|------------------|------------------------------|---------------|-------------------------|---------------|-------------------|----------------------|--------------------------|-----------------------|--------|
| Right-hand thread | Left-hand thread | Short term [N] | Long term [N] | Short term [N] | Long term [N] | Thread [mm] | Inner threading [Nm] | Standard without MH [Nm] | Standard with MH [Nm] | [g] |
| KBRM-02 | KBLM-02 | 200 | 100 | 50 | 25 | 4 | 0.30 | 1 | – | 0.4 |
| KBRM-03 | KBLM-03 | 800 | 400 | 100 | 50 | 5 | 0.50 | 2 | 4 | 2.7 |
| KBRM-05 M4 | KBLM-05 M4 | 1,000 | 500 | 250 | 125 | 7 | 0.75 | 5 | 12 | 3.5 |
| KBRM-05 | KBLM-05 | 1,000 | 500 | 250 | 125 | 7 | 1.00 | 5 | 12 | 3.4 |
| KBRM-06 | KBLM-06 | 1,400 | 700 | 400 | 200 | 8 | 1.50 | 10 | 15 | 4.7 |
| KBRM-08 | KBLM-08 | 2,100 | 1,050 | 700 | 350 | 11 | 5.00 | 12 | 40 | 8.6 |
| KBRM-10 | KBLM-10 | 3,100 | 1,550 | 800 | 400 | 13 | 15.00 | 20 | 50 | 14.6 |
| KBRM-10 F | KBLM-10 F | 3,100 | 1,550 | 800 | 400 | 13 | 6.00 | 20 | 50 | 14.6 |
| KBRM-12 | KBLM-12 | 3,600 | 1,800 | 900 | 450 | 15 | 20.00 | 30 | 70 | 22 |
| KBRM-12 F | KBLM-12 F | 3,600 | 1,800 | 900 | 450 | 15 | 15.00 | 30 | 70 | 22 |
| KBRM-14 | KBLM-14 | 4,000 | 2,000 | 1,000 | 500 | 17 | 25.00 | 35 | 75 | 30.9 |
| KBRM-16 | KBLM-16 | 4,200 | 2,100 | 1,300 | 650 | 19 | 30.00 | 40 | 110 | 39.6 |
| KBRM-16 F | KBLM-16 F | 4,200 | 2,100 | 1,300 | 650 | 19 | 27.50 | 40 | 110 | 39.6 |
| KBRM-18 | KBLM-18 | 4,600 | 2,300 | 1,600 | 800 | 21 | 45.00 | 45 | 150 | 55 |
| KBRM-20 | KBLM-20 | 5,400 | 2,700 | 2,100 | 1,050 | 22 | 60.00 | 55 | 200 | 73.5 |
| KBRM-20 M20 | KBLM-20 M20 | 5,400 | 2,700 | 2,100 | 1,050 | 22 | 60.00 | 55 | 200 | 73.5 |
| KBRM-22 | KBLM-22 | 7,000 | 3,500 | 2,200 | 1,100 | 25 | 75.00 | 60 | – | 94.8 |
| KBRM-25 | KBLM-25 | 8,500 | 4,250 | 2,300 | 1,150 | 28 | 120.00 | 60 | – | 119.8 |
| KBRM-30 | KBLM-30 | 10,500 | 5,250 | 2,500 | 1,250 | 34 | 135.00 | 60 | – | 177 |
| KBRM-30 M27x2 | KBLM-30 M27x2 | 10,500 | 5,250 | 2,500 | 1,250 | 34 | 135.00 | 60 | – | 189.6 |

Rod ends with female thread: KBRM and KBLM



Order key

KB...M-02



Material:

Housing: **igumid G** ► page 983

Spherical ball: **iglidur® W300** ► page 671

Dimensions [mm]

| Part number | d1 | d2 | d3 | d4 | d5 | C1 | B | h1 | l3 | l4 | W | Max. pivot angle |
|-------------------|------------------|----|----|------------|------|------|------|----|------|----|-----|------------------|
| | E10 | | | | | | | | | | | |
| Right-hand thread | Left-hand thread | | | | | | | | | | | |
| KBRM-02 | KBLM-02 | 2 | 9 | M02 | 4.0 | 4.6 | 3.0 | 4 | 12.5 | 6 | 17 | SW04 30° |
| KBRM-03 | KBLM-03 | 3 | 13 | M03 | 6.5 | 8.0 | 4.5 | 6 | 18.5 | 7 | 25 | SW06 30° |
| KBRM-05 M4 | KBLM-05 M4 | 5 | 18 | M04 | 9.0 | 12.0 | 6.0 | 8 | 27 | 10 | 36 | SW09 30° |
| KBRM-05 | KBLM-05 | 5 | 18 | M05 | 9.0 | 12.0 | 6.0 | 8 | 27 | 10 | 36 | SW09 30° |
| KBRM-06 | KBLM-06 | 6 | 20 | M06 | 10.0 | 13.0 | 7.0 | 9 | 30 | 12 | 40 | SW11 29° |
| KBRM-08 | KBLM-08 | 8 | 24 | M08 | 13.0 | 16.0 | 9.0 | 12 | 36 | 16 | 48 | SW14 25° |
| KBRM-10 | KBLM-10 | 10 | 30 | M10 | 15.0 | 19.0 | 10.5 | 14 | 43 | 20 | 58 | SW17 25° |
| KBRM-10 F | KBLM-10 F | 10 | 30 | M10 x 1.25 | 15.0 | 19.0 | 10.5 | 14 | 43 | 20 | 58 | SW17 25° |
| KBRM-12 | KBLM-12 | 12 | 34 | M12 | 18.0 | 22.0 | 12.0 | 16 | 50 | 22 | 67 | SW19 25° |
| KBRM-12 F | KBLM-12 F | 12 | 34 | M12 x 1.25 | 18.0 | 22.0 | 12.0 | 16 | 50 | 22 | 67 | SW19 25° |
| KBRM-14 | KBLM-14 | 14 | 38 | M14 | 20.0 | 25.0 | 13.5 | 19 | 57 | 25 | 76 | SW22 25° |
| KBRM-16 | KBLM-16 | 16 | 42 | M16 | 22.0 | 27.0 | 15.0 | 21 | 64 | 28 | 85 | SW22 23° |
| KBRM-16 F | KBLM-16 F | 16 | 42 | M16 x 1.5 | 22.0 | 27.0 | 15.0 | 21 | 64 | 28 | 85 | SW22 23° |
| KBRM-18 | KBLM-18 | 18 | 46 | M18 x 1.5 | 25.0 | 31.0 | 16.5 | 23 | 71 | 32 | 94 | SW27 23° |
| KBRM-20 | KBLM-20 | 20 | 50 | M20 x 1.5 | 28.0 | 34.0 | 18.0 | 25 | 77 | 33 | 102 | SW30 23° |
| KBRM-20 M20 | KBLM-20 M20 | 20 | 50 | M20 x 2.5 | 28.0 | 34.0 | 18.0 | 25 | 77 | 33 | 102 | SW30 23° |
| KBRM-22 | KBLM-22 | 22 | 56 | M22 x 1.5 | 30.0 | 37.0 | 20.0 | 28 | 84 | 37 | 112 | SW32 22° |
| KBRM-25 | KBLM-25 | 25 | 60 | M24 x 2.0 | 32.0 | 41.0 | 22.0 | 31 | 94 | 42 | 124 | SW36 22° |
| KBRM-30 | KBLM-30 | 30 | 70 | M30 x 2.0 | 37.0 | 50.0 | 25.0 | 37 | 110 | 50 | 145 | SW41 22° |
| KBRM-30 M27x2 | KBLM-30 M27x2 | 30 | 70 | M27 x 2.0 | 37.0 | 50.0 | 25.0 | 37 | 110 | 50 | 145 | SW41 22° |

For rod ends with metal insert please add **MH** to the part number, e.g. KBRM-10 **MH** (Inner-Ø: 10 mm).



delivery available
time from stock



prices price list online
www.igus.eu/eu/kbrm



order Part number
example KBRM-02

igubal® Rod Ends | Product Range

Rod ends with male thread: KARM and KALM



Standard design



Design with
metal sleeve (MH)

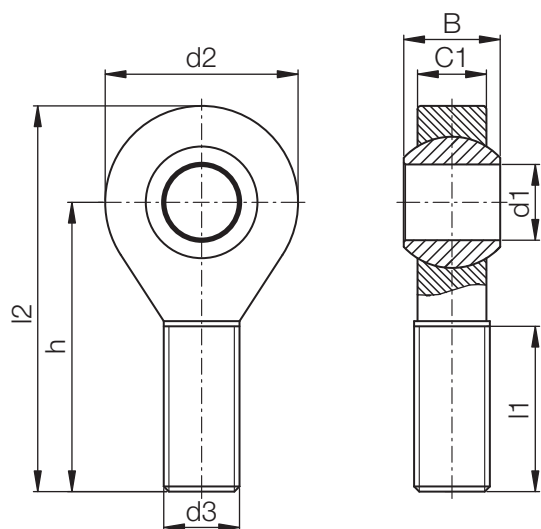
- Maintenance-free, self-lubricating
- High strength under impact loads
- Very high tensile strength for varying loads
- Compensation of misalignment
- Compensation of edge loads
- Insensitive to dirt, dust and lint
- Corrosion- and chemical-resistant
- High vibration dampening capacity
- Suitable for rotating, oscillating, and linear movements
- Light weight
- Dimensional series K according to standard DIN ISO 12240
- Available with metal sleeve for higher torque

Technical Data

| Part number | | Max. static tensile strength | | Max. static radial load | | Min. thread depth | Max. torque strength | Max. torque through ball | | Weight |
|-------------------|------------------|------------------------------|---------------|-------------------------|---------------|-------------------|----------------------|--------------------------|-----------------------|--------|
| | | Short term [N] | Long term [N] | Short term [N] | Long term [N] | | | Standard without MH [Nm] | Standard with MH [Nm] | |
| Right-hand thread | Left-hand thread | | | | | Thread [mm] | Outer threading [Nm] | | | [g] |
| KARM-05 | KALM-05 | 800 | 400 | 80 | 40 | 13 | 0.4 | 5 | 12 | 2.7 |
| KARM-06 | KALM-06 | 1,000 | 500 | 100 | 50 | 15 | 0.5 | 10 | 15 | 3.9 |
| KARM-08 | KALM-08 | 1,700 | 850 | 200 | 100 | 18 | 2.0 | 12 | 40 | 7.1 |
| KARM-10 | KALM-10 | 2,500 | 1,250 | 300 | 150 | 20 | 5.0 | 20 | 50 | 12.5 |
| KARM-10 F | KALM-10 F | 2,500 | 1,250 | 300 | 150 | 20 | 3.0 | 20 | 50 | 12.5 |
| KARM-12 | KALM-12 | 2,700 | 1,350 | 400 | 200 | 22 | 6.0 | 30 | 70 | 18 |
| KARM-12 F | KALM-12 F | 2,700 | 1,350 | 400 | 200 | 22 | 6.0 | 30 | 70 | 18 |
| KARM-14 | KALM-14 | 3,400 | 1,700 | 700 | 350 | 25 | 12.0 | 35 | 75 | 25 |
| KARM-16 | KALM-16 | 3,900 | 1,950 | 800 | 400 | 26 | 17.0 | 40 | 110 | 34 |
| KARM-16 F | KALM-16 F | 3,900 | 1,950 | 800 | 400 | 26 | 17.0 | 40 | 110 | 34 |
| KARM-18 | KALM-18 | 4,200 | 2,100 | 1,000 | 500 | 29 | 20.0 | 45 | 150 | 45.9 |
| KARM-20 | KALM-20 | 6,000 | 3,000 | 1,300 | 650 | 32 | 25.0 | 55 | 200 | 58 |
| KARM-20 M20 | KALM-20 M20 | 6,000 | 3,000 | 1,300 | 650 | 32 | 25.0 | 55 | 200 | 58 |
| KARM-22 | KALM-22 | 7,200 | 3,600 | 1,500 | 750 | 34 | 25.0 | 60 | – | 86.2 |
| KARM-25 | KALM-25 | 7,500 | 3,750 | 1,900 | 950 | 39 | 45.0 | 65 | – | 99.1 |
| KARM-30 | KALM-30 | 8,800 | 4,400 | 2,300 | 1,150 | 46 | 85.0 | 70 | – | 160.4 |

igubal® Rod Ends | Product Range

Rod ends with male thread: KARM and KALM



Order key

KA...M-05



Material:

Housing: **igumid G** ► page 983

Spherical ball: **iglidur® W300** ► page 671

Dimensions [mm]

| Part number | | d1 | d2 | d3 | C1 | B | h | l1 | l2 | Max. pivot angle |
|-------------------|------------------|-----|----|------------|------|------|-----|----|-----|------------------|
| | | E10 | | | | | | | | |
| Right-hand thread | Left-hand thread | | | | | | | | | |
| KARM-05 | KALM-05 | 5 | 18 | M05 | 6.0 | 8.0 | 33 | 19 | 42 | 30° |
| KARM-06 | KALM-06 | 6 | 20 | M06 | 7.0 | 9.0 | 36 | 21 | 46 | 29° |
| KARM-08 | KALM-08 | 8 | 24 | M08 | 9.0 | 12.0 | 42 | 25 | 55 | 25° |
| KARM-10 | KALM-10 | 10 | 30 | M10 | 10.5 | 14.0 | 48 | 28 | 63 | 25° |
| KARM-10 F | KALM-10 F | 10 | 30 | M10 x 1.25 | 10.5 | 14.0 | 48 | 28 | 63 | 25° |
| KARM-12 | KALM-12 | 12 | 34 | M12 | 12.0 | 16.0 | 54 | 32 | 71 | 25° |
| KARM-12 F | KALM-12 F | 12 | 34 | M12 x 1.25 | 12.0 | 16.0 | 54 | 32 | 71 | 25° |
| KARM-14 | KALM-14 | 14 | 38 | M14 | 13.5 | 19.0 | 61 | 36 | 79 | 25° |
| KARM-16 | KALM-16 | 16 | 42 | M16 | 15.0 | 21.0 | 66 | 37 | 88 | 23° |
| KARM-16 F | KALM-16 F | 16 | 42 | M16 x 1.5 | 15.0 | 21.0 | 66 | 37 | 88 | 23° |
| KARM-18 | KALM-18 | 18 | 46 | M18 x 1.5 | 16.5 | 23.0 | 72 | 41 | 96 | 23° |
| KARM-20 | KALM-20 | 20 | 50 | M20 x 1.5 | 18.0 | 25.0 | 78 | 45 | 104 | 23° |
| KARM-20 M20 | KALM-20 M20 | 20 | 50 | M20 x 2.5 | 18.0 | 25.0 | 78 | 45 | 104 | 23° |
| KARM-22 | KALM-22 | 22 | 56 | M22 x 1.5 | 20.0 | 28.0 | 84 | 48 | 112 | 22° |
| KARM-25 | KALM-25 | 25 | 61 | M24 x 2.0 | 22.0 | 31.0 | 95 | 55 | 126 | 22° |
| KARM-30 | KALM-30 | 30 | 71 | M30 x 2.0 | 25.0 | 37.0 | 112 | 66 | 147 | 22° |

For rod ends with **metal insert** please add **MH** to the part number, e.g. KARM-10 **MH** (Inner-Ø: 10 mm).



delivery available
time from stock



prices price list online
www.igus.eu/eu/karm



order Part number
example KARM-05

Rod ends with female thread: EBRM and EBLM



- Maintenance-free, self-lubricating
- High strength under impact loads
- Very high tensile strength for varying loads
- Compensation of misalignment
- Compensation of edge loads
- Insensitive to dirt, dust and lint
- Corrosion- and chemical-resistant
- High vibration-dampening capacity
- Suitable for rotating, oscillating and linear movements
- Light weight
- Dimensional series E according to standard DIN ISO 12240
- 50 % higher tensile force possible due to metal inlay (only dimension 16, more dimensions on request)

Technical Data

| Part number | | Max. static tensile strength | | Max. static radial load | | Min. thread depth | Max. torque strength | Max. torque through ball | Weight |
|--------------------|--------------------|------------------------------|---------------|-------------------------|---------------|-------------------|----------------------|--------------------------|--------|
| Right-hand thread | Left-hand thread | Short term [N] | Long term [N] | Short term [N] | Long term [N] | Thread [mm] | Inner threading [Nm] | [Nm] | [g] |
| EBRM-04 | EBLM-04 | 800 | 400 | 100 | 50 | 7 | 0.4 | 2.0 | 1.8 |
| EBRM-05 | EBLM-05 | 1,300 | 650 | 150 | 75 | 8 | 0.5 | 2.0 | 3.2 |
| EBRM-06 | EBLM-06 | 1,500 | 750 | 200 | 100 | 8 | 1.5 | 2.5 | 4 |
| EBRM-08 | EBLM-08 | 2,000 | 1,000 | 450 | 225 | 11 | 5.0 | 7.0 | 6.9 |
| EBRM-10 | EBLM-10 | 2,300 | 1,150 | 500 | 250 | 13 | 15.0 | 14.0 | 11.2 |
| EBRM-10 F | EBLM-10 F | 2,300 | 1,150 | 500 | 250 | 13 | 6.0 | 14.0 | 11.2 |
| EBRM-12 | EBLM-12 | 3,300 | 1,650 | 550 | 275 | 14 | 20.0 | 25.0 | 17.1 |
| EBRM-12 F | EBLM-12 F | 3,300 | 1,650 | 550 | 275 | 14 | 15.0 | 25.0 | 17.1 |
| EBRM-15 | EBLM-15 | 4,800 | 2,400 | 800 | 400 | 18 | 25.0 | 30.0 | 28.9 |
| EBRM-16 | EBLM-16 | 5,000 | 2,500 | 850 | 425 | 18 | 20.0 | 32.0 | 32.6 |
| EBRM-16 F | EBLM-16 F | 5,000 | 2,500 | 850 | 425 | 18 | 15.0 | 32.0 | 32.6 |
| EBRM-17 | EBLM-17 | 5,300 | 2,650 | 1,100 | 550 | 19 | 30.0 | 35.0 | 42.4 |
| EBRM-17 F | EBLM-17 F | 5,300 | 2,650 | 1,100 | 550 | 19 | 27.5 | 35.0 | 42.4 |
| EBRM-20 | EBLM-20 | 7,200 | 3,600 | 1,800 | 900 | 22 | 60.0 | 40.0 | 65.8 |
| EBRM-20 M20 | EBLM-20 M20 | 7,200 | 3,600 | 1,800 | 900 | 22 | 60.0 | 40.0 | 65.8 |
| EBRM-25 | EBLM-25 | 10,000 | 5,000 | 2,600 | 1,300 | 27 | 115.0 | 55.0 | 125.9 |
| EBRM-30 | EBLM-30 | 10,500 | 5,250 | 3,000 | 1,500 | 33 | 130.0 | 70.0 | 184.1 |

Spherical ball material to choose ► page 667



J4VEM:
clearance-free

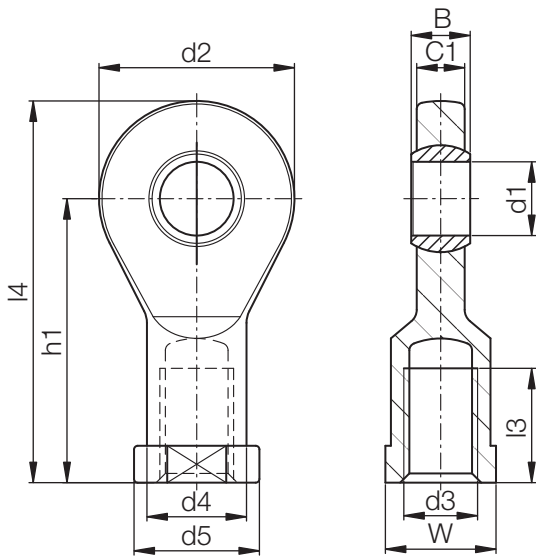


JEM: low
moisture
absorption



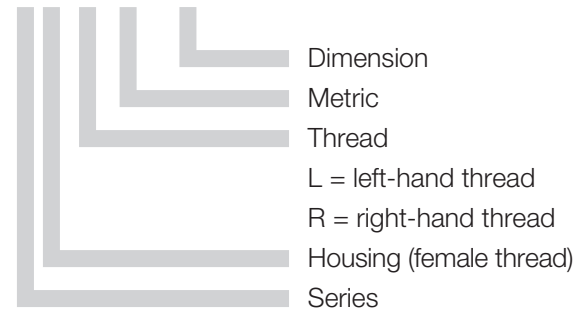
REM:
low-cost

Rod ends with female thread: EBRM and EBLM



Order key

EB...M-04



Material:

Housing: **igumid G** ► page 983

Spherical ball: **iglidur® W300** ► page 671

More spherical balls on request ► page 667

Dimensions [mm]

| Part number | | d1 | d2 | d3 | d4 | d5 | C1 | B | h1 | I3 | I4 | W | Max. pivot angle |
|-----------------|----------------|-----|----|------------|------|----|------|----|------|------|-------|------|---------------------|
| | | E10 | | | | | | | | | | | |
| Right-h. thread | Left-h. thread | | | | | | | | | | | | |
| EBRM-04 | EBLM-04 | 4 | 15 | M04 | – | – | 3.5 | 5 | 22.5 | 9.5 | 30.0 | SW08 | 33° |
| EBRM-05 | EBLM-05 | 5 | 19 | M05 | 9.0 | 11 | 4.4 | 6 | 30 | 12 | 39.5 | SW09 | 33° |
| EBRM-06 | EBLM-06 | 6 | 21 | M06 | 11.0 | 13 | 4.4 | 6 | 30 | 8 | 40.5 | SW11 | 27° |
| EBRM-08 | EBLM-08 | 8 | 24 | M08 | 13.0 | 16 | 6.0 | 8 | 36 | 14 | 48.0 | SW14 | 24° |
| EBRM-10 | EBLM-10 | 10 | 29 | M10 | 15.0 | 19 | 7.0 | 9 | 43 | 18 | 57.5 | SW17 | 24° |
| EBRM-10 F | EBLM-10 F | 10 | 29 | M10 x 1.25 | 15.0 | 19 | 7.0 | 9 | 43 | 18 | 57.5 | SW17 | 24° |
| EBRM-12 | EBLM-12 | 12 | 34 | M12 | 18.0 | 22 | 8.0 | 10 | 50 | 20 | 67.0 | SW19 | 21° |
| EBRM-12 F | EBLM-12 F | 12 | 34 | M12 x 1.25 | 18.0 | 22 | 8.0 | 10 | 50 | 20 | 67.0 | SW19 | 21° |
| EBRM-15 | EBLM-15 | 15 | 40 | M14 | 21.0 | 26 | 10.0 | 12 | 61 | 26 | 81.0 | SW22 | 21° |
| EBRM-16 | EBLM-16 | 16 | 43 | M16 | – | – | 10.5 | 13 | 64.5 | 26.5 | 86.0 | SW22 | 21° |
| EBRM-16 F | EBLM-16 F | 16 | 43 | M16 x 1.5 | – | – | 10.5 | 13 | 64.5 | 26.5 | 86.0 | SW22 | 21° |
| EBRM-17 | EBLM-17 | 17 | 46 | M16 | 24.0 | 30 | 11.0 | 14 | 67 | 27 | 90.0 | SW27 | 18° |
| EBRM-17 F | EBLM-17 F | 17 | 46 | M16 x 1.5 | 24.0 | 30 | 11.0 | 14 | 67 | 27 | 90.0 | SW27 | 18° |
| EBRM-20 | EBLM-20 | 20 | 53 | M20 x 1.5 | 27.0 | 34 | 13.0 | 16 | 77 | 31 | 103.5 | SW30 | 16° |
| EBRM-20 M20 | EBLM-20 M20 | 20 | 53 | M20 x 2.5 | 27.0 | 34 | 13.0 | 16 | 77 | 31 | 103.5 | SW30 | 16° |
| EBRM-25 | EBLM-25 | 25 | 64 | M24 x 2.0 | 34.0 | 41 | 17.0 | 20 | 94 | 38 | 126.5 | SW36 | 16° |
| EBRM-30 | EBLM-30 | 30 | 73 | M30 x 2.0 | 41.0 | 48 | 19.0 | 22 | 110 | 47 | 146.5 | SW41 | 13° |



delivery available
time from stock



prices price list online
www.igus.eu/eu/ebrm



order Part number
example EBRM-04

Rod ends with male thread: EARM and EALM



- Maintenance-free, dry-running
- High stiffness
- Very high tensile strength for varying loads
- Compensation of misalignment
- Compensation of edge loads
- Insensitive to dirt, dust and lint
- Corrosion- and chemical-resistant
- High vibration-dampening capacity
- Suitable for rotating, oscillating, and linear movements
- Light weight
- Dimensional series E according to standard DIN ISO 12240

Technical Data

| Part number | | Max. static tensile strength | | Max. static radial load | | Min. thread depth | Max. torque strength | Max. torque through ball | Weight |
|--------------------|--------------------|------------------------------|---------------|-------------------------|---------------|-------------------|----------------------|--------------------------|--------|
| Right-hand thread | Left-hand thread | Short term [N] | Long term [N] | Short term [N] | Long term [N] | Thread [mm] | Outer threading [Nm] | [Nm] | [g] |
| EARM-05 | EALM-05 | 550 | 275 | 50 | 25 | 14 | 0.4 | 2.0 | 2.2 |
| EARM-06 | EALM-06 | 850 | 425 | 80 | 40 | 14 | 0.5 | 2.5 | 2.7 |
| EARM-08 | EALM-08 | 1,600 | 800 | 160 | 80 | 17 | 2.0 | 7.0 | 5.1 |
| EARM-10 | EALM-10 | 2,600 | 1,300 | 250 | 125 | 19 | 5.0 | 14.0 | 8.4 |
| EARM-10 F | EALM-10 F | 2,600 | 1,300 | 250 | 125 | 19 | 3.0 | 14.0 | 8.4 |
| EARM-12 | EALM-12 | 3,100 | 1,550 | 300 | 150 | 20 | 6.0 | 25.0 | 14.3 |
| EARM-12 F | EALM-12 F | 3,100 | 1,550 | 300 | 150 | 20 | 6.0 | 25.0 | 14.3 |
| EARM-15 | EALM-15 | 3,400 | 1,700 | 600 | 300 | 24 | 12.5 | 30.0 | 21.1 |
| EARM-17 | EALM-17 | 3,600 | 1,800 | 900 | 450 | 26 | 17.5 | 35.0 | 30.2 |
| EARM-17 F | EALM-17 F | 3,600 | 1,800 | 900 | 450 | 26 | 21.0 | 35.0 | 30.2 |
| EARM-20 | EALM-20 | 6,800 | 3,400 | 1,700 | 850 | 30 | 25.0 | 40.0 | 57.3 |
| EARM-20 M20 | EALM-20 M20 | 6,800 | 3,400 | 1,700 | 850 | 30 | 25.0 | 40.0 | 57.3 |
| EARM-25 | EALM-25 | 7,000 | 3,500 | 1,000 | 500 | 37 | 45.0 | 55.0 | 94.8 |
| EARM-30 | EALM-30 | 7,000 | 3,500 | 2,000 | 1,000 | 46 | 85.0 | 70.0 | 156.4 |

Spherical ball material to choose ► page 667



J4VEM:
clearance-free
preloaded

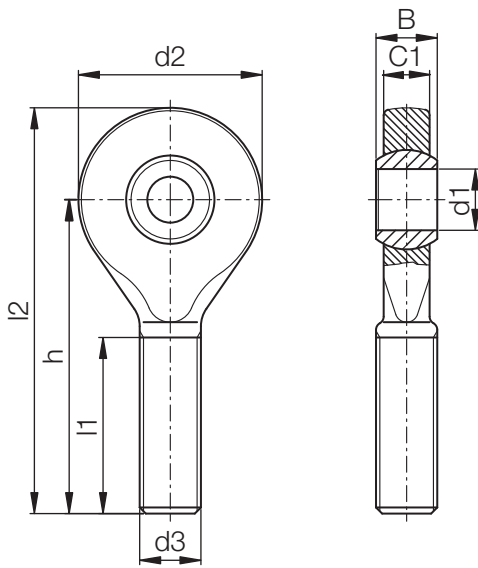


JEM: low
moisture
absorption



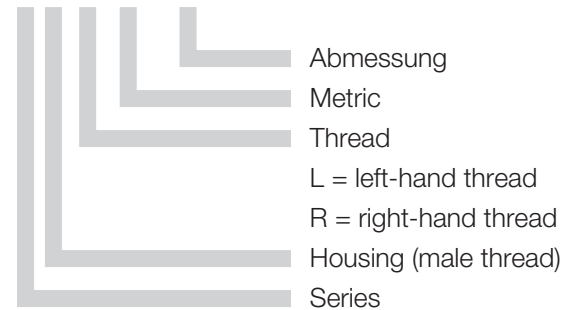
REM:
Low-cost

Rod ends with male thread: EARM and EALM



Order key

EA...M-05



Material:

Housing: **igumid G** ► page 983

Spherical ball: **iglidur® W300** ► page 671

More spherical balls on request ► page 667

Dimensions [mm]

| Part number | | d1 | d2 | d3 | C1 | B | h | l1 | l2 | Max. pivot angle |
|-------------|-------------------|------------------|----|------------|------|----|------|----|-------|---------------------|
| | | E10 | | | | | | | | |
| | Right-hand thread | Left-hand thread | | | | | | | | |
| EARM-05 | EALM-05 | 5 | 19 | M05 | 4.4 | 6 | 36 | 20 | 45.5 | 33° |
| EARM-06 | EALM-06 | 6 | 21 | M06 | 4.4 | 6 | 36 | 20 | 46.5 | 27° |
| EARM-08 | EALM-08 | 8 | 24 | M08 | 6.0 | 8 | 41 | 24 | 53.0 | 24° |
| EARM-10 | EALM-10 | 10 | 29 | M10 | 7.0 | 9 | 47.5 | 27 | 62.0 | 24° |
| EARM-10 F | EALM-10 F | 10 | 29 | M10 x 1.25 | 7.0 | 9 | 47.5 | 27 | 62.0 | 24° |
| EARM-12 | EALM-12 | 12 | 34 | M12 | 8.0 | 10 | 54 | 29 | 71.0 | 21° |
| EARM-12 F | EALM-12 F | 12 | 34 | M12 x 1.25 | 8.0 | 10 | 54 | 29 | 71.0 | 21° |
| EARM-15 | EALM-15 | 15 | 40 | M14 | 10.0 | 12 | 63 | 34 | 83.0 | 21° |
| EARM-17 | EALM-17 | 17 | 46 | M16 | 11.0 | 14 | 69 | 37 | 92.0 | 18° |
| EARM-17 F | EALM-17 F | 17 | 46 | M16 x 1.5 | 11.0 | 14 | 69 | 37 | 92.0 | 18° |
| EARM-20 | EALM-20 | 20 | 53 | M20 x 1.5 | 13.0 | 16 | 80 | 43 | 106.5 | 16° |
| EARM-20 M20 | EALM-20 M20 | 20 | 53 | M20 x 2.5 | 13.0 | 16 | 80 | 43 | 106.5 | 16° |
| EARM-25 | EALM-25 | 25 | 64 | M24 x 2.0 | 17.0 | 20 | 97 | 53 | 129.0 | 16° |
| EARM-30 | EALM-30 | 30 | 73 | M30 x 2.0 | 19.0 | 22 | 113 | 65 | 149.5 | 13° |



delivery available
time from stock

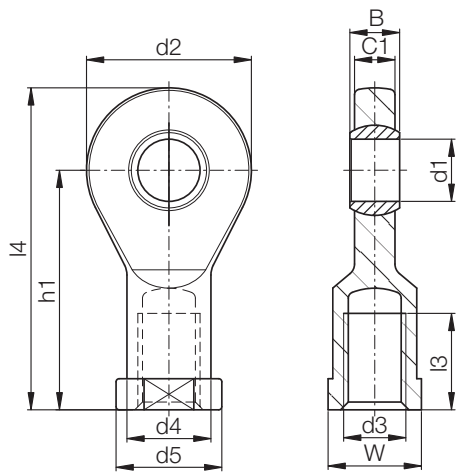


prices price list online
www.igus.eu/eu/earm



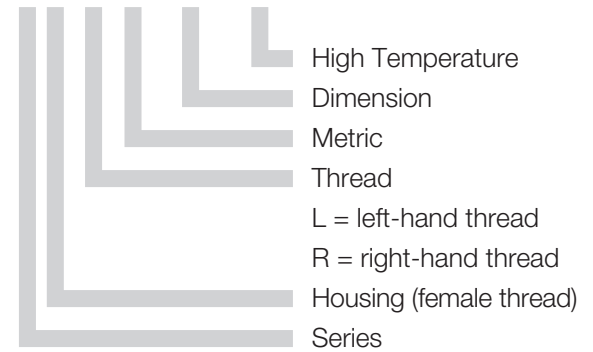
order Part number
example EARM-05

High temperature rod ends with female thread: EBRM-HT and EBLM-HT



Order key

EB...M-05-HT



- For temperatures up to +200 °C
- Maintenance-free, self-lubricating
- High strength under impact loads
- Very high tensile strength for varying loads
- Compensation of misalignment
- Compensation of edge loads
- Insensitive to dirt, dust and lint
- Corrosion- and chemical-resistant
- High vibration-dampening capacity
- Suitable for rotating, oscillating and linear movements
- Light weight



Material:

Housing: **iguton G** ▶ page 983

Spherical ball: **iglidur® X** ▶ page 673

Dimensions [mm]

| Part number | | d1 | d2 | d3 | d4 | d5 | C1 | B | h1 | l3 | l4 | W | Max. pivot angle | Weight [g] |
|-------------------|-------------------|-----|----|-----|------|----|-----|----|----|----|------|------|------------------|------------|
| | | E10 | | | | | | | | | | | | |
| Right-hand thread | Left-hand thread | | | | | | | | | | | | | |
| EBRM-05-HT | EBLM-05-HT | 5 | 19 | M05 | 9.0 | 11 | 4.4 | 6 | 30 | 12 | 39.5 | SW09 | 33° | 3.8 |
| EBRM-06-HT | EBLM-06-HT | 6 | 21 | M06 | 11.0 | 13 | 4.4 | 6 | 30 | 12 | 40.5 | SW11 | 27° | 5 |
| EBRM-08-HT | EBLM-08-HT | 8 | 24 | M08 | 13.0 | 16 | 6.0 | 8 | 36 | 16 | 48.0 | SW14 | 24° | 8.5 |
| EBRM-10-HT | EBLM-10-HT | 10 | 29 | M10 | 15.0 | 19 | 7.0 | 9 | 43 | 18 | 57.5 | SW17 | 24° | 13.7 |
| EBRM-12-HT | EBLM-12 HT | 12 | 34 | M12 | 18.0 | 22 | 8.0 | 10 | 50 | 20 | 67.0 | SW19 | 21° | 21.4 |



delivery available
time from stock



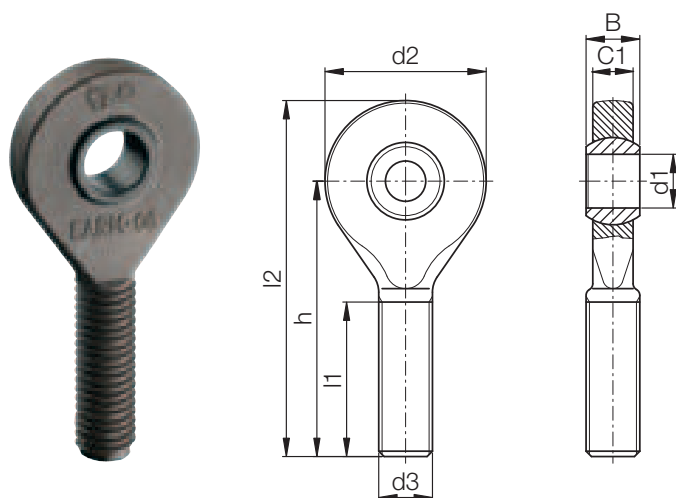
prices price list online
www.igus.eu/eu/ebm-ht



order Part number
example EBRM-05 HT

igubal® Rod Ends | Product Range

High temperature rod ends with male thread: EARM-HT and EALM-HT



Order key

EA...M-05-HT



High Temperature
Dimension
Metric
Thread
L = left-hand thread
R = right-hand thread
Housing (male thread)
Series

- For temperatures up to +200 °C
- Maintenance-free, self-lubricating
- High strength under impact loads
- Very high tensile strength for varying loads
- Compensation of misalignment
- Compensation of edge loads
- Insensitive to dirt, dust and lint
- Corrosion- and chemical-resistant
- High vibration-dampening capacity
- Suitable for rotating, oscillating and linear movements
- Light weight
- Dimensional series K according to standard DIN ISO 12240



Material:

Housing: **iguton G** ► page 983

Spherical ball: **iglidur® X** ► page 673

Dimensions [mm]

| Part number | | d1 | d2 | d3 | C1 | B | h1 | l1 | l2 | Max. pivot angle |
|-------------------|------------------|-----|----|-----|-----|----|------|----|------|------------------|
| | | E10 | | | | | | | | |
| Right-hand thread | Left-hand thread | | | | | | | | | |
| EARM-05-HT | EALM-05-HT | 5 | 19 | M05 | 4.4 | 6 | 36 | 20 | 45.5 | 33° |
| EARM-06-HT | EALM-06-HT | 6 | 21 | M06 | 4.4 | 6 | 36 | 20 | 46.5 | 27° |
| EARM-08-HT | EALM-08-HT | 8 | 24 | M08 | 6.0 | 8 | 41 | 24 | 53.0 | 24° |
| EARM-10-HT | EALM-10-HT | 10 | 29 | M10 | 7.0 | 9 | 47.5 | 27 | 62.0 | 24° |
| EARM-12-HT | EALM-12-HT | 12 | 34 | M12 | 8.0 | 10 | 54 | 29 | 71.0 | 21° |



delivery available
time from stock



prices price list online
www.igus.eu/eu/earm-ht



order Part number
example EARM-05 HT

Rod ends with female thread: KBRI and KBLI



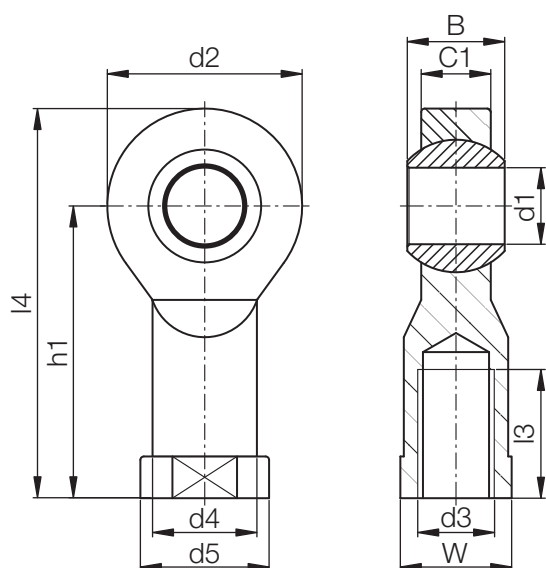
- Maintenance-free, self-lubricating
- High strength under impact loads
- Very high tensile strength for varying loads
- Compensation of misalignment
- Compensation of edge loads
- Insensitive to dirt, dust and lint
- Corrosion- and chemical-resistant
- High vibration-dampening capacity
- Suitable for rotating, oscillating, and linear movements
- Light weight

Technical Data

| Part number | | Max. static tensile strength | | Max. radial load | | Min. thread depth | Max. torque strength | Max. torque through ball | Weight |
|-------------------|------------------|------------------------------|---------------|------------------|---------------|-------------------|----------------------|--------------------------|--------|
| Right-hand thread | Left-hand thread | Short term [N] | Long term [N] | Short term [N] | Long term [N] | Thread [Inch] | Inner threading [Nm] | [Nm] | [g] |
| KBRI-03 | KBLI-03 | 900 | 450 | 300 | 150 | .350 | 2 | 3 | 3.3 |
| KBRI-04 | KBLI-04 | 1,100 | 550 | 400 | 200 | .480 | 5 | 4 | 5.1 |
| KBRI-05 | KBLI-05 | 1,700 | 850 | 500 | 250 | .480 | 6 | 10 | 7.1 |
| KBRI-06 | KBLI-06 | 2,000 | 1,000 | 1,000 | 500 | .568 | 7 | 15 | 12.6 |
| KBRI-07 | KBLI-07 | 2,300 | 1,150 | 1,200 | 600 | .655 | 18 | 25 | 16.1 |
| KBRI-08 | KBLI-08 | 2,600 | 1,300 | 1,500 | 750 | .743 | 23 | 35 | 26.5 |
| KBRI-10 | KBLI-10 | 4,900 | 2,450 | 1,700 | 850 | .962 | 30 | 50 | 38.7 |
| KBRI-12 | KBLI-12 | 5,600 | 2,800 | 2,300 | 1,150 | 1.093 | 40 | 70 | 54.4 |
| KBRI-16 | KBLI-16 | 6,000 | 3,000 | 2,600 | 1,300 | 1.488 | 46 | 85 | 197.5 |

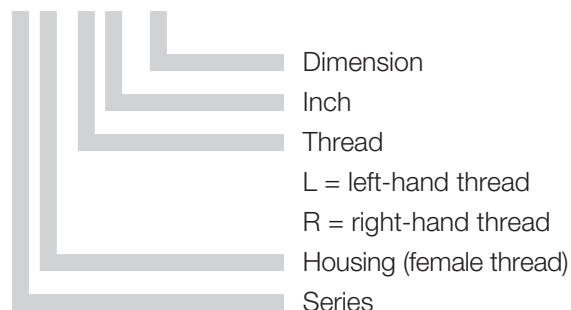
igubal® Rod Ends | Product Range | Inch

Rod ends with female thread: KBRI and KBLI



Order key

KB...I-03



Material:

Housing: **igumid G** ► page 983

Spherical ball: **iglidur® W300** ► page 671

Dimensions [Inch]

| Part number | | d1 | d2 | d3 | d4 | C1 | B | h1 | l3 | l4 | W | Max. pivot angle |
|-----------------|----------------|--------|-------|---------|-------|-------|-------|-------|-------|-------|-------|------------------|
| | | E10 | | | | | | | | | | |
| Right-h. thread | Left-h. thread | | | | | | | | | | | |
| KBRI-03 | KBLI-03 | .1900 | .625 | 10-32 | .406 | .246 | .312 | 1.062 | .500 | 1.374 | .312 | 25° |
| KBRI-04 | KBLI-04 | .2500 | .750 | 1/4-28 | .469 | .272 | .365 | 1.312 | .687 | 1.687 | .375 | 25° |
| KBRI-05 | KBLI-05 | .3125 | .875 | 5/16-24 | .500 | .340 | .437 | 1.375 | .687 | 1.813 | .437 | 25° |
| KBRI-06 | KBLI-06 | .3750 | 1.000 | 3/8-24 | .687 | .394 | .500 | 1.625 | .812 | 2.125 | .562 | 22° |
| KBRI-07 | KBLI-07 | .4375 | 1.125 | 7/16-20 | .750 | .456 | .562 | 1.812 | .937 | 2.374 | .625 | 22° |
| KBRI-08 | KBLI-08 | .5000 | 1.312 | 1/2-20 | .875 | .487 | .625 | 2.125 | 1.062 | 2.781 | .750 | 22° |
| KBRI-10 | KBLI-10 | .6250 | 1.500 | 5/8-18 | 1.000 | .545 | .750 | 2.500 | 1.375 | 3.250 | .875 | 22° |
| KBRI-12 | KBLI-12 | .7500 | 1.750 | 3/4-16 | 1.125 | .676 | .875 | 2.875 | 1.562 | 3.750 | 1.000 | 22° |
| KBRI-16 | KBLI-16 | 1.0000 | 2.750 | 1-12 | 1.625 | 1.000 | 1.375 | 4.125 | 2.125 | 5.500 | 1.500 | 20° |



delivery available
time from stock



prices price list online
www.igus.eu/eu/kbri



order Part number
example KBRI-03

Rod ends with male thread: KARI and KALI

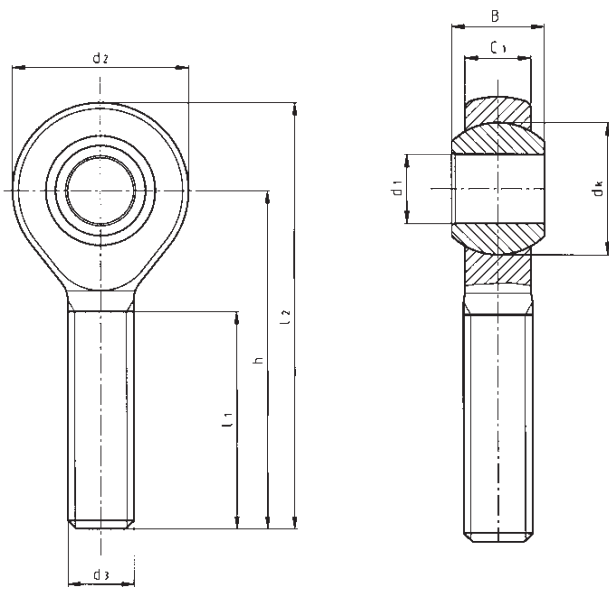


- Maintenance-free, self-lubricating
- High strength under impact loads
- Very high tensile strength for varying loads
- Compensation of misalignment
- Compensation of edge loads
- Insensitive to dirt, dust and lint
- Corrosion- and chemical-resistant
- High vibration-dampening capacity
- Suitable for rotating, oscillating, and linear movements
- Light weight

Technical Data

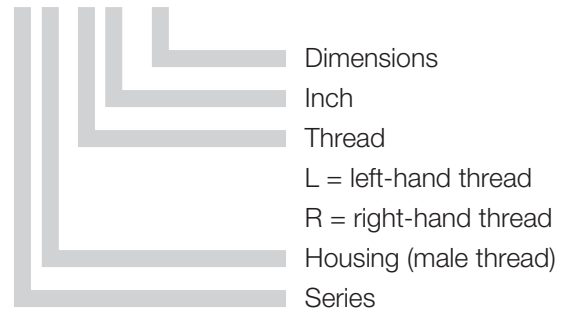
| Part number | | Max. static tensile strength | | Max. radial load | | Min. thread depth | Max. torque strength | Max. torque through ball | Weight |
|-------------------|------------------|------------------------------|-----------|------------------|-----------|-------------------|----------------------|--------------------------|--------|
| Right-hand thread | Left-hand thread | Short term | Long term | Short term | Long term | Outer threading | | | |
| | | [N] | [N] | [N] | [N] | [Inch] | [Nm] | [Nm] | [g] |
| KARI-03 | KALI-03 | 390 | 200 | 70 | 35 | .525 | 0.5 | 3 | 2.1 |
| KARI-04 | KALI-04 | 900 | 450 | 100 | 50 | .700 | 1.0 | 4 | 3.5 |
| KARI-05 | KALI-05 | 1,100 | 550 | 150 | 75 | .875 | 2.0 | 10 | 6 |
| KARI-06 | KALI-06 | 1,500 | 750 | 350 | 175 | .875 | 3.0 | 15 | 8.8 |
| KARI-07 | KALI-07 | 2,000 | 1,000 | 400 | 200 | .962 | 6.0 | 25 | 12.4 |
| KARI-08 | KALI-08 | 2,500 | 1,250 | 450 | 225 | 1.050 | 9.0 | 35 | 18.5 |
| KARI-10 | KALI-10 | 3,500 | 1,750 | 600 | 300 | 1.137 | 12.0 | 50 | 27.6 |
| KARI-12 | KALI-12 | 3,900 | 1,950 | 1,000 | 500 | 1.226 | 25.0 | 70 | 42.8 |
| KARI-16 | KALI-16 | 4,400 | 2,200 | 1,300 | 650 | 1.488 | 45.0 | 85 | 143.3 |

Rod ends with male thread: KARI and KALI



Order key

KA...I-03



Material:

Housing: **igumid G** ► page 983

Spherical ball: **iglidur® W300** ► page 671

Dimensions [Inch]

| Part number | | d1 | d2 | d3 | C1 | B | h | l1 | l2 | Max. pivot angle |
|-------------------|------------------|--------|-------|---------|-------|-------|-------|-------|-------|------------------|
| | | E10 | | | | | | | | |
| Right-hand thread | Left-hand thread | | | | | | | | | |
| KARI-03 | KALI-03 | .1900 | .625 | 10-32 | .234 | .312 | 1.250 | .750 | 1.563 | 25° |
| KARI-04 | KALI-04 | .2500 | .750 | 1/4-28 | .250 | .365 | 1.562 | 1.000 | 1.937 | 25° |
| KARI-05 | KALI-05 | .3125 | .875 | 5/16-24 | .312 | .437 | 1.875 | 1.250 | 2.313 | 25° |
| KARI-06 | KALI-06 | .3750 | 1.000 | 3/8-24 | .359 | .500 | 1.938 | 1.250 | 2.438 | 22° |
| KARI-07 | KALI-07 | .4375 | 1.125 | 7/16-20 | .406 | .562 | 2.125 | 1.375 | 2.688 | 22° |
| KARI-08 | KALI-08 | .5000 | 1.312 | 1/2-20 | .453 | .625 | 2.428 | 1.500 | 2.094 | 22° |
| KARI-10 | KALI-10 | .6250 | 1.500 | 5/8-18 | .484 | .750 | 2.625 | 1.625 | 3.375 | 22° |
| KARI-12 | KALI-12 | .7500 | 1.750 | 3/4-16 | .593 | .875 | 2.875 | 1.750 | 3.750 | 22° |
| KARI-16 | KALI-16 | 1.0000 | 2.750 | 1-12 | 1.000 | 1.375 | 4.125 | 2.350 | 5.500 | 20° |



delivery available
time from stock



prices price list online
www.igus.eu/eu/kari



order Part number
example KARI-03

Rod ends with female thread: EBRI and EBLI

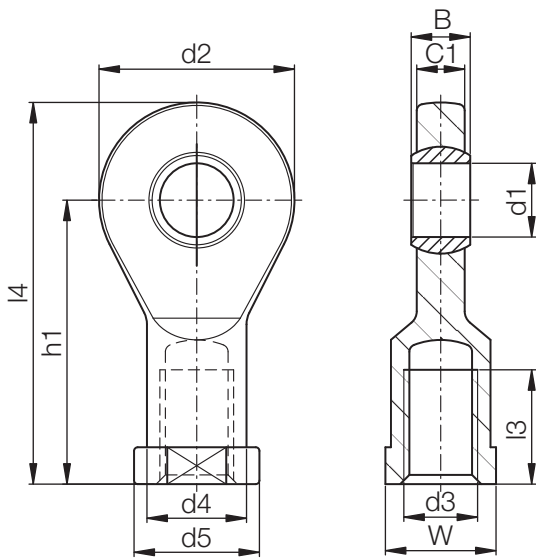


- Maintenance-free, self-lubricating
- High strength under impact loads
- Very high tensile strength for varying loads
- Compensation of misalignment
- Compensation of edge loads
- Insensitive to dirt, dust and lint
- Corrosion- and chemical-resistant
- High vibration-dampening capacity
- Suitable for rotating, oscillating and linear movements
- Light weight
- Dimensional series K according to standard DIN ISO 12240

Technical Data

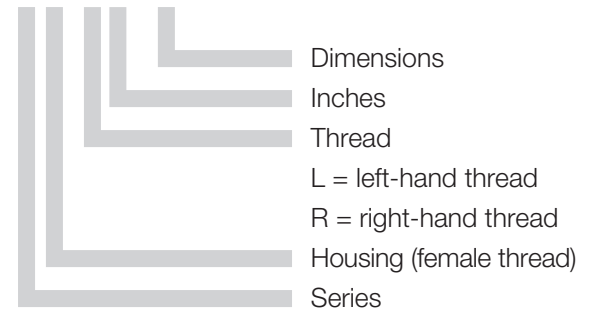
| Part number | | Max. static tensile strength | | Max. radial load | | Min. thread depth | Max. torque strength | Max. torque through ball | Weight |
|-------------------|------------------|------------------------------|-----------|------------------|-----------|-------------------|----------------------|--------------------------|--------|
| Right-hand thread | Left-hand thread | Short term | Long term | Short term | Long term | Thread | Inner threading | | |
| | | [N] | [N] | [N] | [N] | [Inch] | [Nm] | [Nm] | [g] |
| EBRI-03 | EBLI-03 | 1,300 | 650 | 150 | 75 | .315 | 2 | 2.0 | 3,1 |
| EBRI-04 | EBLI-04 | 1,500 | 750 | 200 | 100 | .315 | 5 | 2.5 | 3,8 |
| EBRI-05 | EBLI-05 | 2,000 | 1,000 | 450 | 225 | .433 | 6 | 7.0 | 6.9 |
| EBRI-06 | EBLI-06 | 2,300 | 1,150 | 500 | 250 | .512 | 7 | 14.0 | 11.5 |
| EBRI-07 | EBLI-07 | 3,300 | 1,650 | 550 | 275 | .551 | 18 | 25.0 | 17.6 |
| EBRI-08 | EBLI-08 | 3,300 | 1,650 | 550 | 275 | .551 | 23 | 25.0 | 18.1 |
| EBRI-10 | EBLI-10 | 5,000 | 2,500 | 850 | 425 | .709 | 30 | 32.0 | 31.9 |
| EBRI-12 | EBLI-12 | 7,200 | 3,600 | 1,800 | 900 | .866 | 40 | 40.0 | 61.5 |

Rod ends with female thread: EBRI and EBLI



Order key

EB...I-03



Material:

Housing: **igumid G** ► page 983

Spherical ball: **iglidur® W300** ► page 671

Dimensions [Inch]

| Part number | | d1 | d2 | d3 | d4 | d5 | C1 | B |
|-----------------|----------------|--------|-------|---------|--------|--------|--------|--------|
| | | E10 | | | | | | |
| Right-h. thread | Left-h. thread | | | | | | | |
| EBRI-03 | EBLI-03 | 0.1900 | 0.748 | 10-32 | 0.3543 | 0.4331 | 0.1732 | 0.1900 |
| EBRI-04 | EBLI-04 | 0.2500 | 0.827 | 1/4-28 | 0.4331 | 0.5118 | 0.1732 | 0.2500 |
| EBRI-05 | EBLI-05 | 0.3125 | 0.945 | 5/16-24 | 0.5118 | 0.6299 | 0.2362 | 0.3125 |
| EBRI-06 | EBLI-06 | 0.3750 | 1.142 | 3/8-24 | 0.5906 | 0.7480 | 0.2756 | 0.3750 |
| EBRI-07 | EBLI-07 | 0.4375 | 1.339 | 7/16-20 | 0.7087 | 0.8661 | 0.3150 | 0.4063 |
| EBRI-08 | EBLI-08 | 0.5000 | 1.339 | 1/2-20 | 0.7087 | 0.8661 | 0.3150 | 0.4063 |
| EBRI-10* | EBLI-10* | 0.6250 | 1.693 | 5/8-18 | - | - | 0.4134 | 0.5000 |
| EBRI-12 | EBLI-12 | 0.7500 | 2.087 | 3/4-16 | 1.0630 | 1.3386 | 0.5118 | 0.6250 |

| Part number | | h1 | l3 | W | Max. pivot angle |
|-------------------|------------------|--------|--------|------|------------------|
| | | E10 | | | |
| Right-hand thread | Left-hand thread | | | | |
| EBRI-03 | EBLI-03 | 1.1811 | 0.4724 | 0.35 | 30° |
| EBRI-04 | EBLI-04 | 1.1811 | 0.4724 | 0.43 | 25° |
| EBRI-05 | EBLI-05 | 1.4173 | 0.6299 | 0.55 | 22° |
| EBRI-06 | EBLI-06 | 1.6929 | 0.7087 | 0.67 | 22° |
| EBRI-07 | EBLI-07 | 1.9685 | 0.7874 | 0.75 | 18° |
| EBRI-08 | EBLI-08 | 1.9685 | 0.7874 | 0.75 | 18° |
| EBRI-10* | EBLI-10* | 2.5394 | 1.0433 | 0.87 | 16° |
| EBRI-12 | EBLI-12 | 3.0315 | 1.2205 | 1.18 | 14° |

* EBRI-10/EBLI-10 special form with hexagonal foot



delivery available
time from stock



prices price list online
www.igus.eu/eu/ebri



order Part number
example EBRI-03