

Cost-effective heavy-duty bearing

Robust and dimensionally stable

iglide® Q2E



When to use it?

- When a wear-resistant plain bearing at loads up to 18,855psi is required
- When a robust and dirt-resistant plain bearing is required
- When a plain bearing with dimensional stability is required.



When not to use?

- When a plain bearing with the highest possible media resistance is required
iglide® X
- With high rotational speeds
iglide® J, iglide® L250
- When a universal standard plain bearing for occasional movements is required
iglide® G



Ø
20 – 60mm
3/4 - 2 1/2 in.

● Material available as:



Bar stock, round bar
Page 761



Bar stock, plate
Page 783



tribo-tape liner
Page 791



Piston rings
Page 685



Two hole flange bearings
Page 709



Molded special parts
Page 721



igubal® spherical balls
Page 965



Cost-effective heavy-duty bearing Robust and dimensionally stable

With extreme loads, even high-tech polymers reach their limits. Therefore iglide® Q2E offers a completely new multi-component design and is able to carry extreme loads. In addition, thanks to optimized injection molding technology, it is more cost-effective than comparable fiber composites.

- Self-lubricating
- Wear-resistant up to 18,855psi dynamic load
- Resistant to dirt
- Corrosion-free

Typical application areas

- Agricultural machinery
- Construction machinery industry
- Utility and construction vehicles
- Hoisting technology



Available from stock

Detailed information about delivery time online.



Online ordering

Including delivery times, prices, online tools

Descriptive technical specifications

| | | | |
|-------------------------------------|---|---|---|
| Wear resistance at +73°F | - | <div style="width: 30%; background-color: #8B4513;"></div> | + |
| Wear resistance at +194°F | - | <div style="width: 20%; background-color: #8B4513;"></div> | + |
| Wear resistance at +302°F | - | <div style="width: 20%; background-color: #8B4513;"></div> | + |
| Low coefficient of friction | - | <div style="width: 40%; background-color: #8B4513;"></div> | + |
| Low moisture absorption | - | <div style="width: 20%; background-color: #8B4513;"></div> | + |
| Wear resistance under water | - | <div style="width: 10%; background-color: #8B4513;"></div> | + |
| High media resistance | - | <div style="width: 40%; background-color: #8B4513;"></div> | + |
| Resistant to edge pressures | - | <div style="width: 100%; background-color: #8B4513;"></div> | + |
| Suitable for shock and impact loads | - | <div style="width: 100%; background-color: #8B4513;"></div> | + |
| Resistant to dirt | - | <div style="width: 100%; background-color: #8B4513;"></div> | + |



Online product finder

www.igus.com/iglidefinder



Online service life calculation

www.igus.com/iglide-expert

| General properties | | | Testing method |
|---|------------------------------------|--------------------|----------------|
| Density | g/cm ³ | 1.46 – 1.69 | |
| Color | | beige-brown | |
| Max. moisture absorption at +73°F and 50% r.h. | % weight | 1.5 | DIN 53495 |
| Max. moisture absorption | % weight | 5.0 | |
| Coefficient of friction, dynamic, against steel | μ | 0.22 – 0.42 | |
| pv value, max. (dry) | psi · fpm | 20,000 | |
| Mechanical properties | | | |
| Flexural modulus | psi | n.s. | DIN 53457 |
| Flexural strength at +68°F | psi | 34,084 | DIN 53452 |
| Compressive strength | psi | n.s. | |
| Max. recommended surface pressure (+68°F) | psi | 19,580 | |
| Shore D hardness | | 80 | DIN 53505 |
| Physical and thermal properties | | | |
| Max. application temperature long-term | °F | +212 | |
| Max. application temperature short-term | °F | +284 | |
| Min. application temperature | °F | -22 | |
| Thermal conductivity | W/m · K | n.s. | ASTM C 177 |
| Coefficient of thermal expansion (at +73°F) | K ⁻¹ · 10 ⁻⁵ | n.s. | DIN 53752 |
| Electrical properties | | | |
| Specific contact resistance | Ωcm | > 10 ¹² | DIN IEC 93 |
| Surface resistance | Ω | > 10 ¹² | DIN 53482 |



-22°F up to +212°F



19,580psi



Table 01: Material properties

The iglide® Q2E plain bearings defy dirt at the heaviest loads due to their robust design.

Moisture absorption

Under standard climatic conditions, the moisture absorption of iglide® Q2E plain bearings is approximately 1.5% weight. The saturation limit in water is 5.0% weight. This must be taken into account for these types of applications.

Vacuum

In vacuum, any present moisture is released as vapor. The use in vacuum is only possible to a limited extent.

Radiation resistance

Plain bearings made from iglide® Q2E are resistant up to a radiation intensity of $3 \cdot 10^2$ Gy.

Resistance to weathering

iglide® Q2E plain bearings have not yet been tested for their resistance to weathering. Please consult igus® if you're planning to use them outdoors.

Mechanical properties

With increasing temperatures, the compressive strength of iglide® Q2E plain bearings decreases. Diagram 02 shows this inverse relationship. The maximum recommended surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. Diagram 03 shows the elastic deformation of iglide® Q2E at radial loads.

► Surface pressure, [Page 50](#)

Permissible surface speeds

Typical applications for iglide® Q2E plain bearings are pivoting movements under high loads at comparatively low speeds. However, relatively high speeds are still attainable. The speeds stated in table 03 are limit values for the lowest bearing loads. With higher loads, the permitted speed drops with the extent of the load due to the limitations by the pv value.

► Surface speed, [Page 44](#)

Temperature

iglide® Q2E is a very temperature-stable material. The long-term upper temperature limit of +212°F permits the broad use in applications typical for the agricultural, utility vehicle or construction equipment sectors. With increasing temperatures, the compressive strength of iglide® Q2E plain bearings decreases. For temperatures over +167°F an additional securing is required. When considering temperatures, the additional frictional heat in the bearing system must be taken into account.

- Application temperatures, **Page 48**
- Additional securing, **Page 48**

Friction and wear

The coefficient of friction alters similarly to the wear resistance with increasing load and surface speed (diagrams 04 and 05).

- Coefficient of friction and surfaces, **Page 47**
- Wear resistance, **Page 50**

| Chemicals | Resistance |
|---------------------------------|------------|
| Alcohols | + |
| Diluted acids | 0 up to - |
| Diluted alkalines | + |
| Fuels | + |
| Greases, oils without additives | + |
| Hydrocarbons | + |
| Strong acids | - |
| Strong alkalines | 0 |

All information given at room temperature [+68°F]

Table 02: Chemical resistance

- Chemical table, **Page 1762**

Installation tolerances

iglide® Q2E plain bearings are standard bearings for shafts with h tolerance (recommended minimum h9). The bearings are designed for press-fit into a housing machined to a H7 tolerance. The tolerances are based on class E11. After installing in a nominal size housing, the inner diameter of the bearings is adjusted according to the specifications in the product range.

- Testing methods, **Page 57**
- Tolerance table, **Page 58**

| For Inch Size Bearings | | |
|------------------------|-----------------------------|---|
| Length Tolerance (b1) | | Length of Chamfer (f) Based on d1 |
| Length (inches) | Tolerance (h13) (inches) | |
| 0.1181 to 0.2362 | -0.0000 /-0.0071 | f = .012 → d ₁ .040" - .236" |
| 0.2362 to 0.3937 | -0.0000 /-0.0087 | f = .019 → d ₁ > .236" - .472" |
| 0.3937 to 0.7086 | -0.0000 /-0.0106 | f = .031 → d ₁ > .472" - 1.18" |
| 0.7086 to 1.1811 | -0.0000 /-0.0130 | f = .047 → d ₁ > 1.18" |
| 1.1811 to 1.9685 | -0.0000 /-0.0154 | |
| 1.9685 to 3.1496 | -0.0000 /-0.0181 | |

Shaft materials

In high load applications, we generally recommend the use of hardened shafts. Furthermore, even at low to medium loads, iglide® Q2E will attain increased service life with "hard" shafts as compared to "soft" shafts. But for low load applications, the results are outstanding with free cutting steel as well. For high loads, the wear in pivoting applications is much lower than for rotation. If the shaft material you plan on using is not shown in these test results, please contact us.

- Shaft materials, **Page 52**

| | | Rotating | Oscillating | linear |
|------------|-----|----------|-------------|--------|
| long-term | fpm | 197 | 138 | 787 |
| short-term | fpm | 394 | 276 | 984 |

Table 03: Maximum surface speeds

| | Dry | Greases | Oil | Water |
|---------------------------|-------------|---------|------|-------|
| Coefficient of friction μ | 0.22 – 0.42 | 0.09 | 0.04 | 0.04 |

Table 04: Coefficient of friction against steel (Ra = 1 μm, 50HRC)

| Ø d1 [mm] | Housing | | Plain bearing | | Shaft | |
|-------------|---------------|----------|---------------|----------|---------|---------|
| | H7 [mm] | E11 [mm] | E11 [mm] | E11 [mm] | h9 [mm] | h9 [mm] |
| 0 – 3 | +0.000 +0.010 | +0.014 | +0.074 | -0.025 | +0.000 | |
| > 3 – 6 | +0.000 +0.012 | +0.020 | +0.095 | -0.030 | +0.000 | |
| > 6 – 10 | +0.000 +0.015 | +0.025 | +0.115 | -0.036 | +0.000 | |
| > 10 – 18 | +0.000 +0.018 | +0.032 | +0.142 | -0.043 | +0.000 | |
| > 18 – 30 | +0.000 +0.021 | +0.040 | +0.170 | -0.052 | +0.000 | |
| > 30 – 50 | +0.000 +0.025 | +0.050 | +0.210 | -0.062 | +0.000 | |
| > 50 – 80 | +0.000 +0.030 | +0.060 | +0.250 | -0.074 | +0.000 | |
| > 80 – 120 | +0.000 +0.035 | +0.072 | +0.292 | -0.087 | +0.000 | |
| > 120 – 180 | +0.000 +0.040 | +0.085 | +0.335 | -0.100 | +0.000 | |

Table 05: Important metric tolerances for plain bearings according to ISO 3547-1 after press-fit

| For Metric Size Bearings | | |
|--------------------------|-------------------------|---------------------------------------|
| Length Tolerance (b1) | | Length of Chamfer (f) Based on d1 |
| Length (mm) | Tolerance (h13) (mm) | |
| 1 to 3 | -0 /-140 | f = 0.3 → d ₁ 1 - 6 mm |
| > 3 to 6 | -0 /-180 | f = 0.5 → d ₁ > 6 - 12 mm |
| > 6 to 10 | -0 /-220 | f = 0.8 → d ₁ > 12 - 30 mm |
| >10 to 18 | -0 /-270 | f = 1.2 → d ₁ > 30 mm |
| >18 to 30 | -0 /-330 | |
| >30 to 50 | -0 /-390 | |
| >50 to 80 | -0 /-460 | |

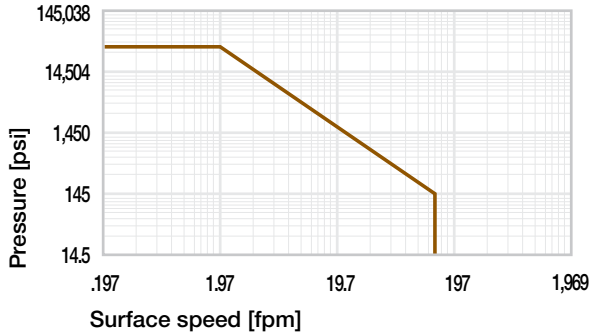


Diagram 01: Permissible pv values for iglide® Q2E plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +68°F, mounted in a steel housing

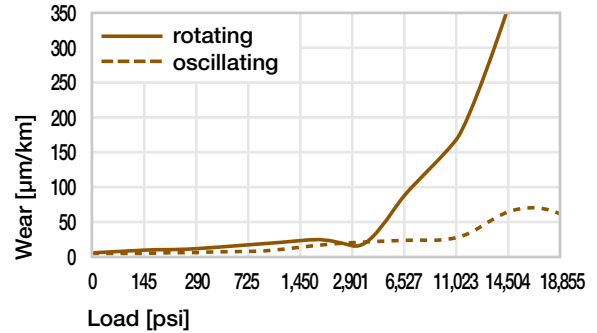


Diagram 05: Wear for oscillating and rotating applications with shaft material case hardened and ground steel, as a function of the load

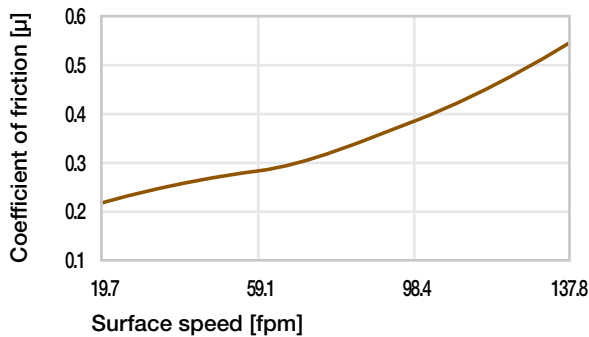


Diagram 02: Coefficient of friction as a function of the surface speed, $p = 108\text{psi}$

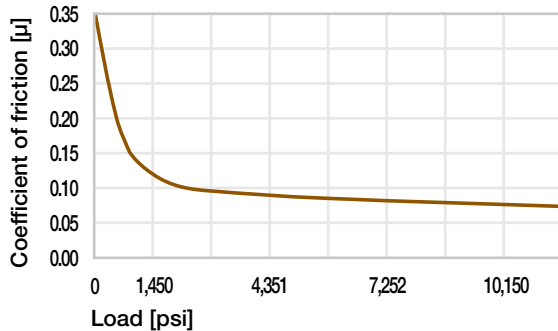


Diagram 03: Coefficient of friction as a function of the pressure, $v = 1.97\text{fpm}$

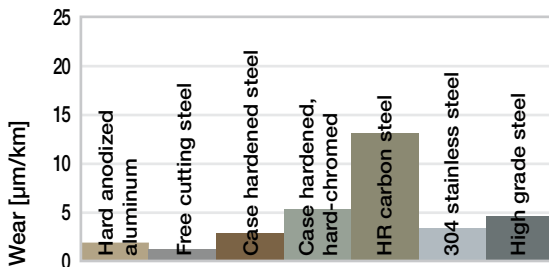
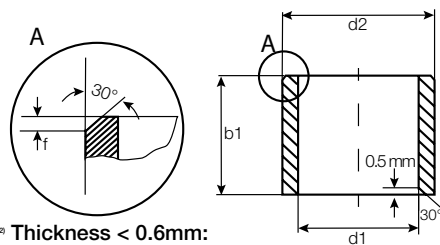


Diagram 04: Wear, pivoting with different shaft materials, pressure $p = 145\text{psi}$, $v = 59\text{fpm}$

Sleeve bearing (form S), inch



Thickness < 0.6mm:

Chamfer = 20°

For tolerance values, page 556

Chamfer in relation to d1

*Based on steel housing bore

| d1 [inch] | Ø .040-.236 | Ø >.236-.472 | Ø >.472-1.18 | Ø > 1.18 |
|-----------|-------------|--------------|--------------|----------|
| f [inch] | .012 | .019 | .031 | .047 |

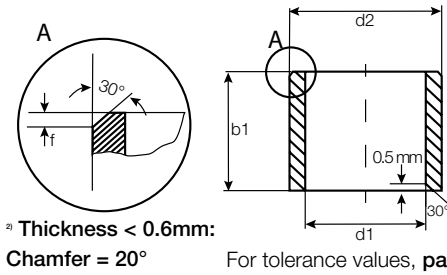


Order key

| Type | Dimensions |
|-------------------------|------------|
| Q2E S I -1216-16 | |
| iglide® material | |
| Form S (sleeve) | |
| Inch | |
| Inner Ø d1 (inch) | |
| Outer Ø d2 (inch) | |
| Length b1 (inch) | |

| Part Number | d1 | d2 | b1 | I.D. After Pressfit* | | Housing Bore | | Shaft Size | |
|---------------|-------|-------|----|----------------------|--------|--------------|--------|------------|--------|
| | | | | h13 | Min. | Max. | Min. | Max. | Min. |
| Q2ESI-1216-16 | 3/4 | 1 | 1 | 0.7516 | 0.7569 | 1.0000 | 1.0008 | 0.7480 | 0.7500 |
| Q2ESI-1620-16 | 1 | 1 1/4 | 1 | 1.0016 | 1.0069 | 1.2500 | 1.2510 | 0.9980 | 1.0000 |
| Q2ESI-2024-16 | 1 1/4 | 1 1/2 | 1 | 1.2520 | 1.2579 | 1.5000 | 1.5010 | 1.2476 | 1.2500 |
| Q2ESI-2428-16 | 1 1/2 | 1 3/4 | 1 | 1.5020 | 1.5079 | 1.7500 | 1.7510 | 1.4976 | 1.5000 |
| Q2ESI-3236-16 | 2 | 2 1/4 | 1 | 2.0024 | 2.0091 | 2.2500 | 2.2510 | 1.9971 | 2.0000 |
| Q2ESI-4044-16 | 2 1/2 | 2 3/4 | 1 | 2.5024 | 2.5091 | 2.7500 | 2.7510 | 2.4971 | 2.5000 |

Sleeve bearing (form S), metric



i Dimensions according to ISO 3547-1 and special dimensions

*Based on steel housing bore

Chamfer in relation to d1

| d1 [mm] | Ø 1-6 | Ø >6-12 | Ø >12-30 | Ø > 30 |
|---------|-------|---------|----------|--------|
| f [mm] | 0.3 | 0.5 | 0.8 | 1.2 |

Order key

| Type | Dimensions | | | | |
|-------------------------|-----------------|--------|-----------------|-----------------|----------------|
| Q2E S M-20 25-20 | | | | | |
| iglide® material | Form S (sleeve) | Metric | Inner Ø d1 (mm) | Outer Ø d2 (mm) | Length b1 (mm) |

| Part Number | d1 | d2 | b1 | I.D. After Pressfit* | | Housing Bore | | Shaft Size | |
|---------------|------|------|------|----------------------|--------|--------------|--------|------------|--------|
| | | | | Min. | Max. | Min. | Max. | Min. | Max. |
| Q2ESM-2025-20 | 20.0 | 25.0 | 20.0 | 20.040 | 20.164 | 25.000 | 25.021 | 19.948 | 20.000 |
| Q2ESM-2530-30 | 25.0 | 30.0 | 30.0 | 25.040 | 25.164 | 30.000 | 30.021 | 24.948 | 25.000 |
| Q2ESM-3035-30 | 30.0 | 35.0 | 30.0 | 30.050 | 30.190 | 35.000 | 35.025 | 29.948 | 30.000 |
| Q2ESM-3540-40 | 35.0 | 40.0 | 40.0 | 35.050 | 35.190 | 40.000 | 40.025 | 34.938 | 35.000 |
| Q2ESM-4045-40 | 40.0 | 45.0 | 40.0 | 40.050 | 40.190 | 45.000 | 45.025 | 39.938 | 40.000 |
| Q2ESM-4550-50 | 45.0 | 50.0 | 50.0 | 45.050 | 45.190 | 50.000 | 50.025 | 44.938 | 45.000 |
| Q2ESM-5055-50 | 50.0 | 55.0 | 50.0 | 50.060 | 50.220 | 55.000 | 55.030 | 49.938 | 50.000 |
| Q2ESM-6065-60 | 60.0 | 65.0 | 60.0 | 60.060 | 60.220 | 65.000 | 65.030 | 59.926 | 60.000 |

Notes

A large grid of graph paper for taking notes, consisting of 20 columns and 30 rows of small squares.