ENGINEERED SOLUTIONS
Based on Real-Slim® Bearings
AN ILLUSTRATED MOUNTING GUIDE
Reali-Slim® thin-section bearings have contributed to reductions in weight and size in thousands of applications since we introduced them over 45 years ago. The engineering drawings reproduced in this booklet are representative samples of the many different ways Reali-Slim® bearings have been used to simplify designs, reduce weight and/or size, and cut manufacturing costs in a variety of applications. We hope these illustrated idea starters will help you do the same.

For additional information about Reali-Slim® thin-section bearings, call us toll-free, 1-800-514-3066.
For direct shaftless motor drives, a single 4-point contact bearing provides the required combination of radial, thrust, and moment loads.
How to use Reali-Slim® bearings for more design flexibility.

Reali-Slim® bearings let you replace a small solid shaft (king post), as shown below, with a larger diameter hollow shaft. This gives you the freedom to run air and hydraulic lines, or electrical wiring and slip rings through the shaft, as shown on opposite page.

Traditional Design
Typical solid-shaft (king post) design using two conventional bearings. Overweight, expensive, and bulky. Limits design options.
How to use Reali-Slim® bearings for more design flexibility.

A large bore, small cross-section Reali-Slim® bearing permits the use of a large diameter hollow shaft in place of a smaller solid shaft. Components such as air and hydraulic lines or electrical wiring and slip rings can then be accommodated within the hollow shaft, resulting in a neater, more efficient design.

In many applications, a single 4-point contact Reali-Slim® bearing can replace two bearings, compacting the design and simplifying the bearing mounting. Besides the obvious cost savings of eliminating one bearing, this arrangement also contributes further savings in weight and space.
**Before:** Two angular contact bearings of 10.000" bore x 12.000" O.D. x 1.000" cross-section were used.

**After:** One 4-point contact bearing of 10.000" bore x 12.000" O.D. x 1.000" cross-section takes all radial and thrust loads. This reduces the size of the housing, eliminates parts, and lowers the cost of the entire unit.
**Before:** Small bearings and spread-out design required more space and cost than revised design (below).

**After:** Reali-Slim® bearings with a larger bore permit a more compact design and fewer parts, simplifying manufacturing and reducing costs.
**Weight savings by a factor of 17:1.**

The 5-1/2" bore Reali-Slim® bearing used in this design weighs only 0.25 pounds compared to a weight of 4.5 pounds for the standard 5-1/2" bore bearings which had been considered for the job. Housing weight of the design was also reduced.

**Note:** A Fixed-floating bearing mount is designed primarily for a centered radial load.

Drawing shows actual comparative bearing sizes. XLS 5-1/2" bearing (at left below) 5.000" x 7.500" x 1.000" shown for comparison.
Before: This bench lathe for glass working used a 3-point support consisting of cam rollers which did not provide the required accuracy and operating characteristics.

After: Reali-Slim® bearings provided greater rigidity and precision within the same available space and resulted in a simplified mounting.
Before: This design was planned using two bearings, each 4.3307" x 5.9055" x 0.7874".

Before: Plans called for use of two of the smallest available "standard light-weight" bearings, with each bearing weighing 1.45 pounds.

After: Kaydon supplies two, larger-bore Reali-Slim® bearings weighing only 0.47 pounds each. This results in a much narrower, more compact, and lighter unit.
For precise motion control in robots and other automation equipment, 4-point Reali-Slim® bearings are ideal for multi-axis articulating designs.
Wrist assembly

- 3" bore, 5/16" cross section bearing
- 4.7" bore, 5/16" cross-section bearing
- 4" bore, 5/16" cross-section bearing
- 6" bore, 5/16" cross-section bearing
- 3.5" bore, 5/16" cross-section bearing

BEARINGS SHOWN: KB030XP0, KB047XP0, KB040XP0, KB060XP0, KB035XP0
This design improvement saves weight, space, and cost.

One bearing does the work of three

Save weight, space, and cost by replacing the three-bearing set of angular contact “Type A” bearings (shown above) with a single four-point contact “Type X” bearing. The “Type X” bearing handles thrust load, radial load, and overturning moment load simultaneously.
Pre-loaded 4-point contact Reali-Slim® bearings provide required stiffness for variable speeds and loads.

Spanner nut for retention

High capacity Real-Slim® bearing in a turntable-type output shaft
**NOTE:** Thin section, large bore bearings add stiffness to design.

**Bearings of different cross-sections**
complement one another. This design shows an adjustable back-to-back mounting of 14" and 18" bore bearings.
Design shows integral bearing assembly which includes SPIROLOX® retaining rings and external seals.

SPIROLOX® Retaining rings (8 places)

9" bore, 1/2" radial cross-section

External seals

7" bore, 1/2" radial section bearing

Center line
For designing a product that will be manufactured in various sizes based on shaft diameter, Reali-Slim® bearings are ideal. Each bearing series has a cross-section which remains constant throughout all designs. So your bearing envelope stays the same for all product sizes.

Note: X-type bearing is ideal here because of its compact profile.
Complete bearing assemblies can simplify your manufacturing

Kaydon also provides complete bearing assemblies like the one shown. Options include internal or external gears, no gear, and contact seals.

**Gear Data:**

- 5/7 DP
- 20° Pressure angle
- 84 Teeth
- Type = Fellows stub

**Note:** Through holes are used in bearing assembly which allow bolts to fasten to mounting structure.
Slip rings are engineered into a bearing assembly where electrical or RF signals must be transmitted through a rotating member.

Many bearing-slip ring assemblies also provide internal clearance for air and hydraulic lines to pass through a hollow shaft.
Pre-loaded Reali-Slim® bearings provide precision movement and low noise levels at high speed.

Type “A” angular contact bearing shown enlarged (actual size 1/4" x 1/4")

**Note:** Left side is pre-loaded against right side of bearing during assembly.
Bearing Application Data
Copy, fill out and fax to 213-759-4102

Please answer the questions on this form as completely as possible. Include a drawing (or sketch) of the application if available. Be sure to show all parts and information relevant to the application. The data you supply is the basis for our recommendations.

TO ______________ Kaydon Corporation
Muskegon, Michigan 49443
Fax: 231/759-4102

FROM ______________
Name ______________ Title ______________
Company __________________________ Telephone __________________________
Address __________________________ Email __________________________
Application __________________ Project __________________
Experimental □ Prototype □ Production □ Special Machine □ Other □
Quantity _____ Original Equipment Manufacturer □ Resale □ Own Use □ Replacement □

LOADS __________ Static Radial (Max.) __________ Dynamic Radial (Mean) __________
Static Thrust (Max.) __________ Dynamic Thrust (Mean) __________
Static Moment (Max.) __________ Dynamic Moment (Mean) __________
If mean dynamic loads are unknown, attach all conditions with percent of time each occurs.
Vibration or shock Describe __________________________
Factor of Safety of __________________________ (is) (is not) included in loads above.

SPEED __________ RPM (Max.) __________ RPM (Mean) __________ or attach conditions with percent of time.

OSCILLATION __________ Angle __________ ° Frequency __________

ACCURACY __________ Kaydon Precision Class __________ or:
Permissible Eccentricity: Inner __________ Outer __________
Permissible Face Run-Out: Inner __________ Outer __________
Permissible Looseness: Radial __________ Axial __________

LIFE __________ Hours (Min. __________ Hours (Avg. __________ Other __________

TEMPERATURE __________ Normal Operating __________ °F Minimum __________ °F Maximum __________ °F.
Differential between shaft and housing __________ °F.

LUBRICATION __________ Proposed Lubricant __________ and method __________

BEARING __________ Preferred Size: Bore __________ Outside Dia. __________ Width __________
Min. Bore __________ Max. Outside Dia. __________ Max. Width __________
Preferred Type: __________
Bearing Axis in (Vertical) (Horizontal) position with (outer) (inner) race rotation relative to load.

MATERIAL __________ Shaft __________ Housing __________

SPECIAL __________ Allowable Bearing Torque __________

REQUIREMENTS __________ Sealing __________
Protective Coating __________
Other __________

REMARKS __________


WARRANTY: Kaydon Corporation guarantees its products to be free from defects in materials and workmanship for a period of one year from date of shipment from our plant. Any product proving defective within this one-year period will be replaced free of charge provided the defective product is returned, charges prepaid, to the appropriate Kaydon facility, under Kaydon’s authorization (Return Goods Authorization number issued) and found to have been properly mounted, lubricated, loaded and used. No responsibility will be assumed by Kaydon for contingent charges.