ADCERAX
ADVANCED CERAMICS

ENGINEERING PRODUCT CATALOG

# Alumina Shaft Sleeve

Shaft protection at pump seals and bushings



Representative sleeve forms from the ADCERAX product gallery.

**CUSTOM CATALOG NUMBER**

**AT-YHL-ZT001**

A replaceable ceramic sleeve covers the metal shaft where packing, a seal or a bushing can wear its surface.

**SUPPLY SCOPE**

One ceramic component to the agreed drawing. Identify its mating parts and operating conditions when requesting a quote.

## Find the information you need


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ADCERAX product page

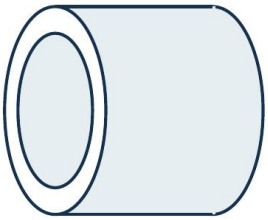
DIMENSIONS / AT-YHL-ZT001

# Shaft diameter and sleeve dimensions

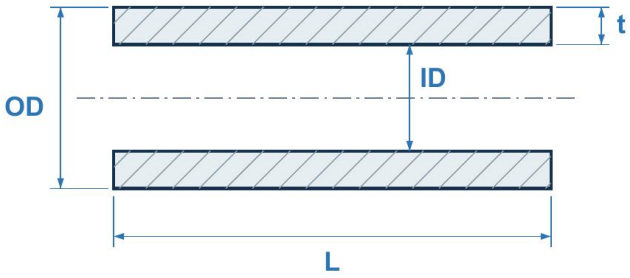
Use the two reference ranges below to start a drawing review. Measure the shaft at the sleeve seat and specify the finished ceramic bore separately.

| Reference dimension | Published range | How to use it |
|---|---|---|
| **Sleeve bore, ID** | 10–60 mm<br>(±0.1 mm as listed) | State the target bore and its limits on the order drawing. |
| **Nominal shaft diameter** | Approx. 6–80 mm | Give the shaft seat diameter and tolerance at the mating location. |

SLEEVE FORM



AXIAL SECTION




Plain cylindrical sleeve shown for dimensioning. The hatched areas are the ceramic wall. Drawing proportions are illustrative.

| Drawing input | What to specify |
|---|---|
| **OD and L / mm** | Outside diameter at each functional land and overall axial length between end faces. |
| **Radial wall, t / mm** | For a concentric, plain section, t = (OD − ID) / 2. Dimension the remaining wall at grooves or steps separately. |
| **Ends and features / mm** | Locate shoulders, grooves, chamfers and radii from a named datum. Show the axial stop and entry end. |
| **Tolerance and finish** | Identify the datum axis, critical runout, surface roughness (Ra) and the face or land to which each limit applies. |

The approved drawing sets the dimensions, fit and inspection limits for the quoted part.

ASSEMBLY / INTERFACES

# Which surface moves, and against what?

Mark the sleeve, shaft and mating part on an assembly section. A sleeve that rotates with the shaft has different fit requirements from a bushing retained in the housing.



Product-family example with a stepped outside profile.

### At the bore

Identify the shaft material, seat tolerance, assembly temperature and intended retention method.

### At the outside diameter

Mark the track that meets the packing, seal element or bushing. Give its axial position, mating material and finish requirement.

## Fit and retention review

| Proposed assembly | Details to send with the drawing |
|---|---|
| **Slip fit** | Give the clearance limits, axial stop and means of preventing unwanted rotation or axial movement. |
| **Interference fit** | Give the shaft and bore limits, wall thickness, support face and installation method. Check the interference at assembly and service temperatures. |
| **Bonded fit** | Identify the adhesive, bond gap, cure conditions and fluids that reach the joint. Show how the sleeve is located during cure. |

## Replacing a metal sleeve

Recover the original OD from the drawing, a spare, or an unworn section of the same land. Use the shaft seat to check the bore fit. For pressure service, show how the assembly seals the path between shaft and sleeve.

APPLICATIONS / MATERIAL SELECTION

# Match the sleeve to the service conditions

Start with the location and appearance of the damage. The operating data below help distinguish wear at the outside surface from cracking at a seat or shoulder.

| Equipment and observation | Information that guides selection |
|---|---|
| **Chemical process pump**<br>**Pitting at the seal track** | Name the fluid, concentration, operating temperature and cleaning chemicals. Identify all materials exposed at the joint. |
| **Slurry pump**<br>**Grooves under packing** | Give particle size, solids concentration, shaft speed and flushing conditions. Mark the wear track and its direction. |
| **Water or utility pump**<br>**Fines or scale near a support** | Describe the deposits and water treatment chemicals. Record running clearance and the condition of the mating bushing. |
| **Mixer or agitator**<br>**One-sided wear or edge chips** | Give shaft runout, side load, vibration and support locations. Mark the damage relative to the end face or shoulder. |

## If a sleeve cracks shortly after fitting

Record when the crack appeared, how the sleeve was fitted and where it started. Inspect the shaft shoulder, chamfer, alignment and interference. A sudden change during flushing or cleaning also warrants a review of thermal gradients.

## Choosing the ceramic grade

Include the alumina grade from the bill of materials or request a grade review against the fluid and duty. Specify normal and peak temperatures, duration, pressure, speed and lubrication. If impact dominates, ask for a toughness comparison with zirconia. For severe abrasive or thermal duty, include silicon carbide in the review.

Material certificate values describe the ceramic grade. Permissible load, operating temperature, leakage and wear life require evidence from the intended assembly and duty.

ACCEPTANCE / DELIVERY

# Agree how the first sleeve will be checked

Use the same drawing revision for quotation, first-article inspection and trial fit. Mark each critical characteristic and agree how it will be measured before placing the order.

| Inspection stage | Evidence to agree |
| --- | --- |
| **Material identity** | Specify the grade on the drawing or bill of materials. Request the required certificate and lot identification with the quotation. |
| **Finished dimensions** | List bore, OD, length, shoulders and groove locations. State tolerances, datums, measuring temperature and first-article reporting requirements. |
| **Contact surfaces and edges** | Identify the inspection area, Ra requirement, edge breaks and permissible defects. Indicate which faces require a recorded measurement. |
| **Assembly trial** | Agree how to verify seating, runout, retention and running clearance with the actual shaft and mating component. |
| **Operating trial** | If leakage, temperature rise or wear is critical, define the test fluid, speed, duration and acceptance criteria for the assembled equipment. |

## Handling and installation

Inspect the bore and edges before assembly. Remove burrs from the shaft seat, clean the mating surfaces and support the sleeve as specified in the assembly procedure. Keep impact tools away from the ceramic and avoid sudden cooling of a hot part.

## Packing and identification

State any individual cushioning, part separation, carton labels and lot traceability required for receipt. Include the drawing number and revision to distinguish similar sleeves in a mixed shipment.

REQUEST FOR QUOTATION / AT-YHL-ZT001

# Send a drawing or a worn-sleeve photo

For an initial review, send the shaft diameter, sleeve ID, OD and length, the intended fit, process fluid and quantity. A marked photo or assembly sketch helps when a dimension is still unknown.

| RFQ field | Include with the inquiry |
|---|---|
| **Part and application** | Drawing number and revision, pump or mixer model, mounting location, and which part rotates. |
| **Geometry and fit** | Shaft seat and sleeve dimensions in mm, tolerances, datums, wall at steps or grooves, retention and mating materials. |
| **Surface requirements** | Mark contact lands and sealing surfaces. State Ra in µm, chamfers and form or runout limits as applicable. |
| **Service history** | Fluid and concentration, solids, temperature range, pressure, rpm, load, flushing and any observed damage. |
| **Supply and acceptance** | Requested material grade, sample and batch quantities, inspection documents, packing, destination and requested delivery date. |

## Example inquiry

“Please review AT-YHL-ZT001 for the shaft shown in the attached pump section. The removed sleeve has a wear groove at the packing track. The drawing shows the unworn OD and shaft seat tolerance. Please quote a first article and identify the dimensions you can report.”

## Contact ADCERAX

**info@adcerax.com**

Open the product page and attach a drawing

Please include AT-YHL-ZT001 in the subject line.