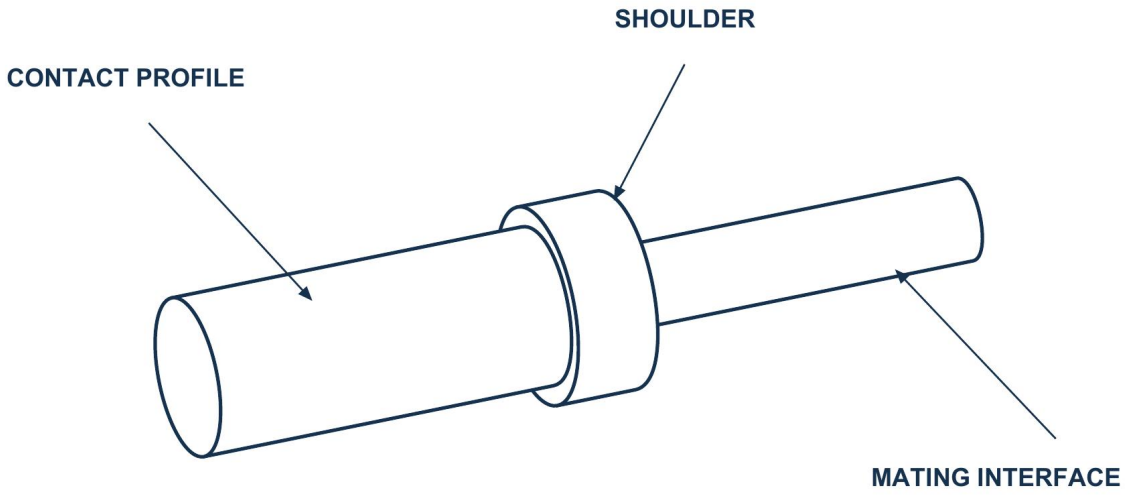
ADCERAX

ENGINEERING PRODUCT CATALOG · REVIEW COPY

Magnesia Stabilized Zirconia Ceramic Locating Pins

Drawing-based Mg-PSZ pins for manufacturing fixtures

Define the pin, mating bore and acceptance together. Use AD-ZRO-MG material data to screen the grade, then specify the finished pin for the actual fixture.



Technical illustration of a stepped pin. Not to scale.

Illustrative geometry for a drawing discussion; not a manufactured item or installation photograph.

Product reference	Material identity	Supply definition
AT-MGO-X001	AD-ZRO-MG Mg-PSZ / MSZ	Custom by drawing Ordered part defined in drawing review

Find the information for your enquiry

02 Pin dimensions and drawing inputs
03 Mating bore and shoulder seating
04 Material reference data
05 Fixture duty and custom features
06 Acceptance and repeat supply
07 Installation and service checks
08 Request an engineering quotation

ADCERAX is a China-based advanced ceramics manufacturer brand for custom precision ceramic components.

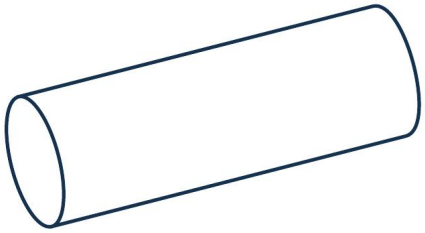
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02 / DRAWING DEFINITION

Define the pin dimensions

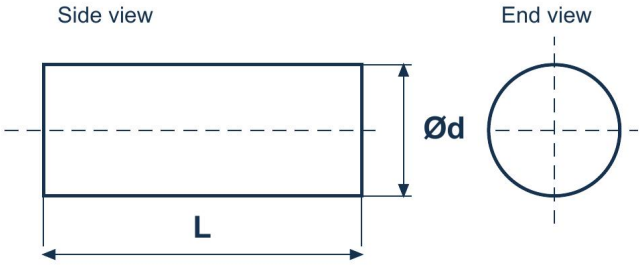
AT-MGO-X001 identifies a custom pin enquiry. It does not select a fixed diameter, length, interface or stock item. The ordered part follows the agreed drawing and revision.

3D RECOGNITION



Plain cylindrical envelope example

GOVERNING VIEWS



Not to scale. Units for RFQ: mm.

Cylindrical envelope example only. L is overall end-to-end length; Ød is the specified cylindrical diameter. Not a manufacturing drawing.

Reference	Diameter Ød (mm)	Overall length L (mm)
AT-MGO-X001	Customize	Customize

Include every functional feature

The envelope above explains diameter and overall length only. For a stepped, headed, tapered, hollow, slotted or threaded pin, provide a complete dimensioned drawing of the actual profile.

Locate and seat. Identify each functional diameter, segment length, shoulder position, tip form and seating face. Define datums and insertion direction.

Control the geometry. Specify the relevant roundness, cylindricity, straightness, coaxiality, runout or position requirements against the drawing datums.

Define additional features. Dimension holes, slots, flats, grooves, thread form and engagement, chamfers and radii where present. Identify minimum sections and protected edges.

Set the surface acceptance. Mark contact zones, roughness and texture requirements, edge condition, permissible defects and cleanliness on the drawing.

Overall length and engaged length are different inputs

Use L for the complete pin. Use Le for the actual engagement in the mating bore, as shown on page 3. A length value without its start and end faces is not a complete fit definition.

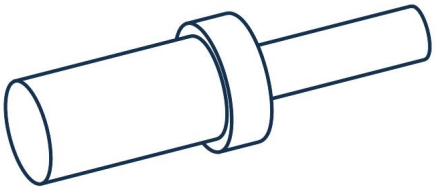
Order control: final dimensions, tolerances, surface requirements and feasible features are agreed during drawing review. No default tolerance or surface roughness is implied.

03 / PIN AND FIXTURE

Match the pin to its mating bore

A locating pin is selected with the bore, seat and retention method. Review the contact and assembly conditions together before assigning clearance, interference or assembly force.

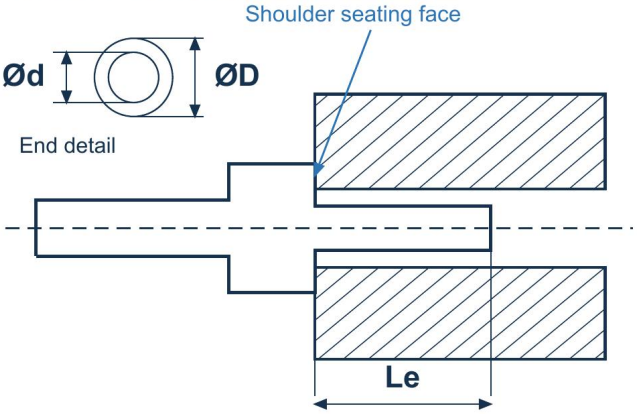
3D RECOGNITION



Illustrative stepped pin

Not to scale; example geometry.

GOVERNING ASSEMBLY SECTION



ØD bore / Ød pin / Le engaged length

Illustrative pin-to-bore fit. The 3D pin supports recognition; the section and end detail define Ød, ØD and Le. Not to scale.

RFQ field	Meaning	Define for the actual assembly
Ød (mm)	Locating pin diameter	Diameter, tolerance and reference temperature
ØD (mm)	Mating-bore diameter	Bore size, tolerance, material and surface condition
Le (mm)	Engaged pin length	From shoulder seating plane to the engaged tip in this example

Seating and retention

Identify the shoulder contact, datum axis, support faces and retention feature. Define all shoulder diameters, thicknesses and remaining lengths on the actual drawing. The concept does not define an orderable stepped-pin geometry.

Assembly conditions

State the insertion direction, alignment method, allowed force path, assembly temperature and removal method. Material strength does not establish an allowable interference or press force.

Two pin fixtures

Assign the primary and secondary locating roles with the complete hole pattern and datum scheme. Review hole spacing, tolerance accumulation and combined constraints so the fixture can seat without forced alignment.

Compare free-state measurement with installed fit. Bore material, temperature, support and assembly loads can change contact even when the pin meets its dimensional drawing.

04 / MATERIAL SELECTION

AD-ZRO-MG reference data

Magnesia-partially-stabilized zirconia, also called Mg-PSZ or MSZ. The values below describe the material family; they are not finished-pin acceptance limits or a guaranteed service rating.

Property	AD-ZRO-MG reference	Basis and condition
ZrO_2 + HfO_2	95-99 wt%	Grade range
MgO stabilizer	Grade-specific	Define in the material specification
Color	Ivory	Visual reference
Bulk density	5.70-5.80 g/cm^3	Typical material value
Water absorption	0%	Typical rounded result; dense sintered body
Vickers hardness	11.5 GPa	Typical material value
Flexural strength	500-755 MPa	Typical at 20 °C
Compressive strength	2100 MPa	Typical at 20 °C
Young's modulus	200 GPa	Typical at 20 °C
Poisson's ratio	0.28	Typical material value
Fracture toughness KIC	6-12 MPa·m$^{1/2}$	Typical at 20 °C
Linear thermal expansion	10.5 × 10^{-6}/K	40-80 °C only
Thermal conductivity	2.5 W/(m·K)	Typical at 20 °C
Specific heat capacity	0.45 J/(g·K)	Typical material value
Volume resistivity	>10^{14} Ω·cm	20 °C; material selection value
Volume resistivity	10^8-10^{10} Ω·cm	Typical at 300 °C

Material basis: ADCERAX Zirconia Ceramic Grade Comparison Technical Data Sheet, Rev 06, pages 1-3.

Use the conditions with the values

The thermal-expansion value covers 40-80 °C only. A fit calculation over a wider interval requires suitable expansion data for both pin and seat. Electrical resistivity does not define an assembled working voltage.

Water absorption of 0% is a typical rounded result, not a hermetic-leak specification. Hardness and fracture-toughness acceptance requires an agreed method, specimen condition and test settings.

Set load, atmosphere, dwell, temperature cycle and retained-property criteria for the actual assembly. These data do not establish a maximum pin service temperature, wear life or permissible installation force.

05 / APPLICATION AND FORM

Select for the fixture duty

Select the Mg-PSZ grade and the pin geometry together. The contexts below identify engineering questions for a project; fit and functional acceptance are defined for the actual assembly.

Repeated insertion or sliding. Match the locating diameter, engagement, lead-in and mating surface to the motion. Define the wear and positional changes that trigger inspection or replacement.

Axial seating or retained mounting. Match the shoulder contact, datum axis and retention method. Review the load path through the supporting faces and the weakest local sections.

Welding or robotic fixtures. Review spatter exposure, direct arc energy, impact, insertion alignment and combined constraints. Specify shielding and handling for the fixture.

Thermal-process fixtures. Review pin and seat expansion through the complete temperature cycle, with atmosphere, load and dwell. Check the agreed fit and retained properties after cycling.

Electrical isolation. Evaluate both bulk and surface paths at the operating temperature and cleanliness state. Define the assembled electrical test rather than using material resistivity as a voltage rating.

Replacement or MRO. Identify the old part, equipment version, mounting interface and installation state. Agree trial-fit acceptance against the actual assembly.

Custom features to discuss

Body profiles may be discussed as round, rectangular or chamfered; tips as flat, rounded, tapered or multi-angled. Positioning slots, steps, grooves, reliefs and threaded or notched interfaces require a complete drawing review.

For each feature, identify its function, contact surfaces, retained section and assembly method. A feature name alone does not establish manufacturability, an approved interference or a stress-relief effect.

Keep the material identity explicit

AD-ZRO-MG is distinct from yttria-stabilized zirconia, calcia-stabilized zirconia, black zirconia, alumina and steel. Compare alternatives using their own applicable data, geometry and service validation; do not transfer values or acceptance from another pin material.

Start with a drawing, sketch, old-part photographs or a sample plus intended use and quantity. Known details can start the discussion; the remaining definition is completed during review.

06 / QUALITY AND SUPPLY

Agree acceptance before production

Keep material verification, pin inspection and fixture validation distinct. Agree which records, methods, samples and limits apply to the order before using a first article as the repeat-order baseline.

Acceptance level	Pin-specific definition to agree
Material batch	AD-ZRO-MG identity; grade-specific chemistry and required material records. Select any tests with their methods, conditions and acceptance limits.
Individual pin	Drawing revision; all critical diameters and lengths; geometry; locating and seating surfaces; tips, edges, defects and cleanliness.
Installed assembly	Mating bore and seat; alignment, support and retention; insertion/removal force if specified; installed fit and inspection state.
Fixture in service	Motion and load spectrum; thermal or electrical conditions where relevant; wear, positional stability and replacement criteria.

Define comparable inspection results

For dimensional inspection, state the reference temperature, support, measuring force, instrument, measuring locations, sampling and reporting requirements. Keep free-state and installed measurements identifiable.

For material testing, agree the method and specimen basis. Test force and dwell matter for hardness; fracture-toughness methods are not interchangeable. Specify temperature, voltage, electrification time and electrode geometry for resistivity.

Protect the locating features in shipment

Agree separation, cushioning and protection for the contact diameter, tip, shoulder and edges. Define cleanliness, handling, part identification and transport protection with the order; specify packing documentation when required.

Control the repeat order

Link the accepted drawing revision, material grade, inspection baseline and part or lot identification. Record deviations and approved changes before repeating a previously accepted pin.

Quotation sequence

Drawing and duty review → agreed geometry and material → inspection and first-article scope → quotation and supply plan. Confirm quantity, MOQ where applicable, price, lead time, documents and packing in the quotation.

07 / INSTALLATION AND CARE

Protect the functional surfaces

Apply the assembly and maintenance procedure approved for the specific pin and fixture. Material properties do not define a universal installation force, cleaning method or service interval.

1 Check and align. Verify bore or slot geometry and tolerance. Align the pin and fixture axes with the intended jig; trial-fit with free alignment before applying the approved assembly force.

2 Control the force path. Use guided pressure and a soft pusher at the designated support face. Avoid hammer impact, edge loading and unapproved interference. Review removal loads through the mounting interface.

3 Protect the installed pin. Use fixture shielding where direct arc energy or spatter may reach the pin. Keep the retained pin in its intended position; adjust or remove it using the approved procedure.

4 Store and handle separately. Use clean, closed and padded storage. Prevent pin-to-pin contact, vibration and impacts; keep tools and contact surfaces clean.

5 Clean and inspect. Check locating surfaces, shoulder, tips and edges for debris, wear, chips and cracks. Use a soft brush and a cleaning method confirmed for the pin, mating materials and surface acceptance.

6 Monitor by fixture. Record service hours or insertion cycles and abnormal events. Set inspection intervals and replacement criteria from the actual duty and accepted baseline.

Why can a measured pin fit differently after installation

Free-state and installed checks use different conditions. Compare the pin and bore with the seating, alignment, temperature and force path; one measured diameter does not describe the complete fit.

What changes require a new review

Review changes to the material grade, locating or mounting geometry, mating bore, assembly method and duty against the accepted first article. Keep the drawing and inspection baseline linked to the same fixture function.

Inspection timing, magnification, cleaning chemicals and life limits are specified for the actual application; this catalog does not prescribe fixed values.

08 / ENGINEERING RFQ

Request a pin quotation

Send the information you have. A drawing, sketch, old-part photographs or sample plus intended use and quantity is enough to start the discussion.

Existing reference or repeat enquiry

Quote AT-MGO-X001 with this catalog revision. Include the accepted part drawing or previous order reference, requested quantity and any changes to the pin, mating bore or duty. The product reference alone does not select a fixed-size pin.

New drawing or replacement project

Provide the pin and mating interface definition below. Complete application-specific fields only where relevant; identify unknowns for discussion rather than guessing values.

Information	Include with the request
Part and quantity	AT-MGO-X001 or drawing/sample identification; drawing revision; prototype and repeat quantity.
Material	AD-ZRO-MG / Mg-PSZ; required material specification and records.
Pin geometry	Units, all diameters and lengths, tips, shoulders and other features; datums, tolerances, surfaces and edge acceptance.
Mating assembly	Bore drawing/material, engagement, seating, retention, alignment and assembly/removal method.
Duty and conditions	Locating/guiding role; motion, load and impact; temperature, atmosphere or medium. Electrical and cleanliness requirements if applicable.
Acceptance and documents	Critical features, method, sampling, first-article checks and any installed or service test criteria.
Supply requirements	Destination, target schedule, identification, protective packing and required documentation.

Send the drawing for engineering review and quotation

info@adcerax.com

Suggested subject: AT-MGO-X001 | Mg-PSZ Pin RFQ

View the Mg-PSZ ceramic pin product page

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The quotation confirms the final material, drawing revision, acceptance scope, feasible features, availability, price and delivery plan.