DIN 3771 O-Ring Standard: Metric Sizes and Groove Design

The German standard for metric O-ring dimensions, widely used in European hydraulics, pneumatics and automotive engineering.

Overview

DIN 3771 is the German national standard for metric O-ring dimensions, maintained by the Deutsches Institut für Normung. It is technically aligned with ISO 3601 and is the dominant specification for European machinery, hydraulic equipment and automotive applications designed in metric units.

The standard is divided into three parts: - DIN 3771 Part 1: Dimensions and tolerances for inside diameter and cross-section - DIN 3771 Part 2: Groove dimensions for static, dynamic and rotary seals - DIN 3771 Part 3: Quality specifications and acceptance criteria

DIN 3771 designates O-ring sizes by Inside Diameter x Cross-Section (ID x CS) in millimeters. The cross-section series are designated by letters: A, B and C, corresponding to different CS values for static and dynamic applications. For general industrial hydraulics and pneumatics, DIN 3771 and ISO 3601 are fully interchangeable.

Standard Structure

Part	Title	Description
1	Dimensions and Tolerances	Defines nominal inside diameters, cross-sections, and tolerance grades for metric O-rings.
2	Housing Dimensions	Provides groove width, groove depth, edge radius and lead-in chamfer specifications for static, dynamic and rotary seals.
3	Quality Specifications	Defines surface quality, acceptance criteria, visual defect limits and batch inspection rules.

Cross-Section Reference

Application	Cs Mm	Series
Miniature static seals, instrumentation	1.0	A
Small bore static seals, pneumatic fittings	1.5	A
General static seals, valves and pumps	2.0	A
Medium static seals, hydraulic flanges	2.5	A
Heavy static seals, process equipment	3.0	A
Large static seals, pressure vessels	4.0	A
Very large static seals, tank manways	5.0	A
Extra-large static seals, shipbuilding	7.0	A
Small dynamic seals, pneumatic cylinders	2.0	B
Dynamic seals, hydraulic cylinders	2.5	B
Medium dynamic seals, piston and rod seals	3.0	B
Heavy dynamic seals, mobile hydraulics	4.0	B
Large dynamic seals, construction equipment	5.0	B
Very large dynamic seals, industrial presses	7.0	B
Compact static seals, automotive connectors	1.6	C

Application	Cs Mm	Series
General purpose static and dynamic seals	2.4	C
Industrial static and dynamic seals	3.0	C

Tolerance Reference

Cs Mm	Cs Tolerance	Id Tolerance Large	Id Tolerance Small
1.0	+/-0.07	+/-0.30	+/-0.12
1.5	+/-0.08	+/-0.35	+/-0.14
1.6	+/-0.08	+/-0.35	+/-0.14
2.0	+/-0.09	+/-0.42	+/-0.16
2.4	+/-0.09	+/-0.45	+/-0.17
2.5	+/-0.09	+/-0.45	+/-0.17
3.0	+/-0.10	+/-0.50	+/-0.19
4.0	+/-0.13	+/-0.60	+/-0.23
5.0	+/-0.13	+/-0.70	+/-0.25
7.0	+/-0.15	+/-0.85	+/-0.30

Cross References

Standard	Region	Designation
DIN 3771	Germany / EU	ID x CS in mm, Series A/B/C
ISO 3601	International	Dimensionally aligned with DIN 3771
BS 4518	United Kingdom	Metric sizes equivalent to DIN 3771
JIS B 2401	Japan	Metric sizes with P/G/V series

Groove Design Notes

Condition	Guidance
Static	Squeeze 15-20%, groove width 1.15-1.25 x CS, minimum edge radius 0.1 mm
Dynamic	Squeeze 8-15%, groove width 1.20-1.30 x CS, lead-in chamfer 15-20°
Rotary	Squeeze 5-8%, groove width 1.25-1.35 x CS, surface speed <0.5 m/s

FAQ

Is DIN 3771 the same as ISO 3601?

DIN 3771 is technically aligned with ISO 3601 and uses the same metric dimensions for most common sizes. For general industrial use, O-rings labeled to either standard are interchangeable. However, DIN 3771 also includes specific German engineering conventions and quality requirements in Part 3.

What do DIN 3771 Series A, B and C mean?

Series A is for static (fixed) seals, Series B is for dynamic (moving) seals, and Series C provides intermediate cross-sections commonly used in automotive and general-purpose applications.

Can I use a DIN 3771 O-ring in an AS568 gland?

For common sizes, the metric and inch dimensions are close but not identical. In critical applications, always match the O-ring to the gland standard. For general low-pressure static seals, some sizes are practically interchangeable.

What is the largest DIN 3771 O-ring size?

DIN 3771 covers sizes up to approximately 670 mm inside diameter in the standard tables. Larger sizes are manufactured as custom-molded or spliced/vulcanized rings.

Do you supply DIN 3771 O-ring kits?

Yes. We supply metric assortment kits organized to DIN 3771 / ISO 3601 dimensions, popular for servicing European and German machinery. Custom kits with specific sizes and materials are available.