

JASO F404 O-Ring Standard

Japanese automotive metric O-ring sizes for fuel, oil, coolant and air conditioning systems.

Overview

JASO F404 is the Japanese automotive standard for O-ring dimensions, published by the Society of Automotive Engineers of Japan. It is widely used in Japanese domestic vehicles (JDM), global automotive supply chains, and motorcycle manufacturing.

The standard defines metric inside diameters and cross sections specifically for fuel injection systems, engine oil circuits, cooling systems, power steering, and automotive air conditioning. JASO F404 sizes are closely aligned with JIS B 2401 P-series and ISO 3601 A/B-series, making them compatible with most Asian and European automotive sealing specifications.

Cross-Section Reference

Cs Mm	Notes
1.50	Small fuel injectors, sensors, miniature fittings
1.60	Compact automotive connectors
1.78	Compatible with AS568-004 cross section
1.80	Equivalent to JIS B 2401 P-series and ISO 3601 A-series
1.90	JASO F404 primary cross section for fuel system seals
2.00	Coolant and power steering fittings
2.40	Medium-pressure oil and transmission circuits
2.50	Air conditioning and refrigerant lines
2.62	Compatible with AS568-1xx cross section
2.65	Equivalent to JIS B 2401 G-series and ISO 3601 B-series
3.00	Heavy-duty engine and transmission seals
3.10	Common in JIS B 2401 P-series large sizes
3.50	JIS B 2401 P-series large diameter seals
3.53	Compatible with AS568-2xx cross section
3.55	Equivalent to ISO 3601 C-series
4.00	Large bore automotive static seals
5.00	Heavy equipment and commercial vehicle hydraulics
5.30	Equivalent to ISO 3601 D-series
5.33	Compatible with AS568-3xx cross section
5.70	JIS B 2401 V-series vacuum and large static seals

Tolerance Reference

Cs Mm	Cs Tolerance	Id Range	Id Tolerance
1.50 - 1.80	+/-0.08	<= 10	+/-0.14
1.50 - 1.80	+/-0.08	10 - 20	+/-0.17

Cs Mm	Cs Tolerance	Id Range	Id Tolerance
1.90 - 2.65	+/-0.09	<= 13	+/-0.17
1.90 - 2.65	+/-0.09	13 - 30	+/-0.22
1.90 - 2.65	+/-0.09	30 - 50	+/-0.28
3.00 - 3.55	+/-0.10	<= 20	+/-0.20
3.00 - 3.55	+/-0.10	20 - 40	+/-0.28
3.00 - 3.55	+/-0.10	40 - 85	+/-0.36
4.00 - 5.33	+/-0.13	<= 40	+/-0.28
4.00 - 5.33	+/-0.13	40 - 80	+/-0.36
4.00 - 5.33	+/-0.13	80 - 140	+/-0.45
5.70	+/-0.15	<= 80	+/-0.36
5.70	+/-0.15	80 - 160	+/-0.45

Example Sizes

ID mm	CS mm	Typical Use
4.00	1.50	Small fuel injectors
6.00	1.80	Fuel system connectors
7.50	1.90	JASO F404 primary fuel seal size
8.00	2.00	Coolant fittings
10.00	2.40	Oil filter housings
11.00	2.50	A/C refrigerant lines
12.00	2.65	Power steering pumps
14.00	3.00	Transmission housings
16.00	3.10	Engine coolant passages
18.00	3.50	Large fuel system flanges
20.00	3.55	Heavy-duty engine seals
25.00	4.00	Commercial vehicle hydraulics
30.00	5.00	Truck air brake systems
35.00	5.30	Large automotive static seals
40.00	5.70	JIS V-series large vacuum seals

Cross References

Standard	Region	Designation
JIS B 2401	Japan	P-series and G-series align directly with JASO F404 automotive sizes
ISO 3601	International	A/B/C/D series cross sections are compatible with JASO F404
DIN 3771	Germany/EU	German metric sizes overlap with JASO F404 for automotive hydraulics
AS568	USA	Imperial cross sections convert to nearest metric JASO sizes
SMS 1588	Sweden	Swedish metric sizes share common cross sections with JASO F404

Groove Design Notes

Condition	Guidance
Static	Groove width $\approx 1.15 \times CS$ with 15-22% compression for automotive face and radial static seals.
Dynamic	Groove width $\approx 1.2-1.3 \times CS$. Target 10-15% compression for fuel injector and coolant dynamic seals to minimise friction and heat.
Rotary	Limit groove fill to 75-80% max. Use FKM or HNBR for engine accessory drives. Avoid NBR for high-speed rotary service.

FAQ

What is the difference between JASO F404 and JIS B 2401?

JASO F404 is specifically for automotive applications and published by the Society of Automotive Engineers of Japan. JIS B 2401 is the broader Japanese industrial standard. Most JASO F404 sizes are drawn from JIS B 2401 P-series and G-series, but with tighter automotive-specific tolerances and material requirements.

What is the best material for JASO F404 fuel system O-rings?

FKM (Viton) is the standard for gasoline and diesel fuel systems due to its excellent aromatic fuel resistance. HNBR is preferred for bio-fuels, sour gasoline, and when low-temperature flexibility is required.

Are JASO F404 O-rings used outside Japan?

Yes. Many global Tier-1 and Tier-2 automotive suppliers use JASO F404 dimensions for vehicles exported from Japan, as well as for motorcycles and small engines manufactured in Southeast Asia.

Can you supply JASO F404 O-rings to automotive PPAP and IATF 16949 requirements?

Yes. We can support PPAP documentation, material test reports, and IATF 16949 manufacturing controls for JASO F404 automotive O-ring programs.