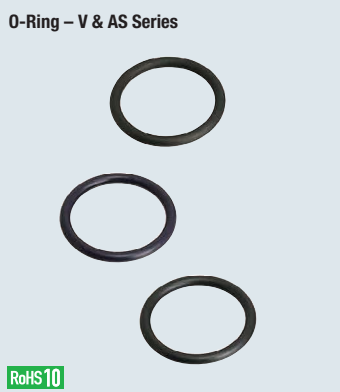


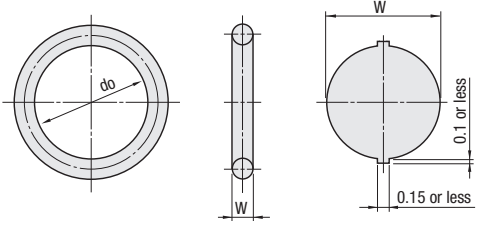
# O-Ring

## V & AS Series



RoHS 10

Type	Material	Hardness (JIS Hs)	Color	Operating Temp. Range	JIS Symbol	Usage
NVA	Nitrile Rubber	70±5	Black	-30~100°C	Class 1 A	Mineral Oil Resistant
NVF	Fluoro Rubber	70±5	Black	-15~200°C	Class 4 D	Heat Resistant
NASA	Nitrile Rubber	70±5	Black	-30~100°C	—	Mineral Oil Resistant
NASF	Fluoro Rubber	70±5	Black	-15~200°C	—	Heat Resistant



### JIS B 2401 V Series (For Vacuum Flanges)

Part Number		JIS Nominal Number	W	Inner Dia.		
Type	No.			do	NVA Tolerance	NVF Tolerance
NVA Nitrile Rubber, Black	15	V15	4.0±0.1	14.5	±0.20	±0.24
	24	V24		23.5	±0.24	±0.29
	34	V34		33.5	±0.33	±0.40
	40	V40		39.5	±0.37	±0.45
	55	V55		54.5	±0.49	±0.59
NVF Fluoro Rubber, Black	70	V70		69.0	±0.61	±0.74
	85	V85		84.0	±0.72	±0.87
	100	V100		99.0	±0.83	±1.00
	120	V120		119.0	±0.97	±1.17
	150	V150		148.5	±1.18	±1.42
	175	V175		173.0	±1.36	±1.63


### AS568 AS Series

Part Number		W	Inner Dia.	
Type	No.		do	Tolerance
NASA Nitrile Rubber, Black	001	1.02±0.07	0.74	±0.10
	002	1.27±0.07	1.07	
	003	1.52±0.07	1.42	
	004		1.78	
	005		2.57	
	006		2.90	
	007		3.68	
	008		4.47	
	009		5.28	
	010		6.07	
	011		7.65	
	012		9.25	
	013		10.82	
	014		12.42	
	015		14.00	
NASF Fluoro Rubber, Black	016	1.78±0.07	15.60	±0.15
	017		17.17	
	018		18.77	
	019		20.35	
	020		21.95	
	021		23.52	
	022		25.12	
	023		26.70	
	024		28.30	
	025		29.87	
	026		31.47	
	027		33.05	
	028		34.65	
	029		37.82	
	030		41.00	

Part Number Example: NASA001

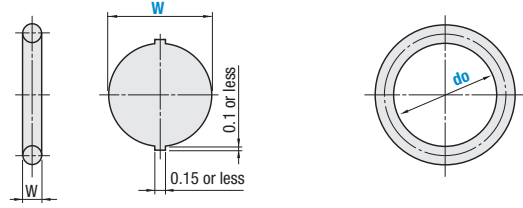
# Large Diameter O-Rings

## Configurable Type



RoHS 10

Type	Material	Hardness (JIS Hs)	Color	Operating Temp. Range	JIS Symbol
DFA	Nitrile Rubber	70±5	Black	-30~100°C	Class 1 A
DFB	Nitrile Rubber	90±5	Black	-25~100°C	Class 1 B
DFE	Fluoro Rubber	70±5	Black	-15~200°C	Class 4 D



Type	Wire Dia. W	Wire Dia. Tolerance	Inner Dia. do 1mm Increment	Inner Dia.	Inner Dia. Tolerance
				300-400	±2.82
DFA Nitrile Rubber 70, Black	3.1	±0.13	300-2000	401-500	±3.30
	3.53			501-600	±4.00
	4			601-700	±4.70
	5.33			701-800	±5.30
	5.7			801-900	±6.00
DFB Nitrile Rubber 90, Black	6	±0.15		901-1000	±6.70
	7			1001-1100	±7.50
	8			1101-1200	
	8.4			1201-1300	
	9			1301-1400	
DFE Fluoro Rubber 70, Black	10	±0.20		1401-1500	
	11			1501-1600	
	12			1601-1700	
	13			1701-1800	
	15			1801-1900	
	16		1901-2000		
	18			+10.0-10.4	
	20			+10.0-11.2	
				+10.0-11.7	

Wire and inner diameter tolerances of DFE are 1.5 times larger than those in the above table.

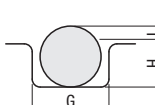
### Material Specification Table (JISB2401)

Type	DFA x1.0 Nitrile Rubber 70, Black	DFB x1.3 Nitrile Rubber 90, Black	DFE Fluoro Rubber 70, Black
JIS Symbol	Class 1 A	Class 1 B	Class 4 D
Tensile Strength (MPa)	9.8	14	9.8
Elongation (%)	250	100	200
Tensile Stress (MPa)	2.7	—	1.9
Compression Set (%)	40	40	40

Part Number Example: DFA4 - 850

### Design Standards of O-Rings & Groove Dimension

(1) In case of internal or external pressure seal on flat surfaces, set crush rate at 8 to 30% as a guide.



Setting Crush Ratio (Operating Range 8~30%)  
 $E = \frac{H}{W} \times 100$

E (%): Crush Rate  
d (mm): Crush Width (=W-H)  
W (mm): O-Ring Wire Dia.  
H (mm): Groove Depth

(2) Design Standards of Internal and External Circumstances (Reference)  
Inner Diameter Expansion Rate (%) 0~5%  
Outer Tensile Rate (%) 0~3%

### Application Example

#### Features

- Wire diameter and inner diameter are selectable.
- Able to keep high level of air tightness because of vulcanization molding.
- No breaks from joint parts.

