

O-Rings

V Series / AS Series

Type	Material	Hardness (JIS H)	Color	Operable Temperature Range	JIS Symbol	Applications
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

RoHS 10

JIS B 2401 V Series (For Vacuum Flanges)

Part Number		JIS Nominal Number	W	I.D.			NVA		NVF	
Type	No.			do	NVA Tolerance	NVF Tolerance	Unit Price	Volume Discount Rate	Unit Price	Volume Discount Rate
NVA (Nitrile Rubber, Black)	15	V15	4.0±0.1	14.5	±0.20	±0.24	1~49	50~100	1~49 pc (s).	50~100
	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	I.D.		NASA		NASF		
Type	No.		do	Tolerance	Unit Price	Volume Discount Rate	Unit Price	Volume Discount Rate	
NASA (Nitrile Rubber, Black)	001	1.02±0.07	0.74	±0.10	1~49 pc (s).	50~100	1~49 pc (s).	50~100	
	002	1.27±0.07	1.07						
	003	1.52±0.07	1.42						
	004		1.78						±0.12
	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	±0.15					
	014		12.42						
	015		14.00						
	016		15.60						
	017		17.17						
	018		18.77						
	019		20.35						
	020		21.95						
	021		23.52						
	022		25.12						±0.25
	023		26.70						
	024		28.30						
	025		29.87						
	026		31.47						
	027		33.05						
	028		34.65						
	029		37.82						
	030		41.00						

Ordering Example Part Number NASA001

High Chemical Resistant / High Heat Resistant Seals

Type	Grade	Color	Max. Operating Temp.	Material
MPPEM	Chemical Resistant Grade	Black	260°C	Perfluoro Rubber
MPPEJ	Special Heat Resistant Grade	Black	320°C	

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- Features**
- Excellent resistances required in extreme conditions such as strong acid, strong alkali, amines, steam and high temperature polar solvent (260 ~ 320°C).
 - Has the properties of Low gas precipitation, Low Out-gas, etc. and can be used under high vacuum.
 - Heavy metal and molding agents are not used in the process of production.

P Series (For Mounting, Dynamic)

Part Number		Nominal Number	W	I.D.		Matching Material			MPPEM		MPPEJ			
Type	No.			do	MPPEM, MPPEJ Tolerance	d	Tolerance	D	Tolerance	Unit Price	Volume Discount Rate	Unit Price	Volume Discount Rate	
MPPEM (Chemical Resistant Grade)	3	3	1.9±0.08	2.8	±0.16	3	6	0	+0.05					
	4	4		3.8	7									
	5	5		4.8	8									
	6	6		5.8	±0.18	6	9							
	7	7		6.8	7	10								
	8	8		7.8	8	11								
	9	9		8.8	9	12								
	10	10		9.8	±0.19	10	13							
	11	11		10.8	11	15								
	12	12		11.8	±0.21	12	16							
	MPPEJ (Special Heat Resistant Grade)	14	14	2.4±0.09	13.8	±0.22	14	18	0				+0.06	
		15	15		14.8	15	19							
		16	16		15.8	16	20							
		18	18		17.8	±0.24	18	22						
		20	20		19.8	±0.25	20	24						
		21	21		20.8	±0.26	21	25						
		22	22		21.8	±0.27	22	26						
		24	24		23.7	±0.28	24	30						
		25	25		24.7	±0.29	25	31						
		26	26		25.7	±0.30	26	32						
		MPPEJ	28	28	3.5±0.1	27.7	±0.31	28	34				0	+0.08
			29	29		28.7	±0.32	29	35					
			30	30		29.7	±0.33	30	36					

Specifications

Type	MPPEM		MPPEJ
	Chemical Resistant Grade	Special Heat Resistant Grade	
Color	Black	Black	
Hardness (Shore)	75	74	
Tensile Strength (kgf/cm ²)	216	161	
Elongation (%)	183	205	
Operable Temperature Range (°C)	260	320	
Compression Set	200°Cx70h(%)	21	19
	230°Cx70h(%)	31	26

Ordering Example Part Number MPPEM5

Chemical Resistance Data (MPPEM Chemical Resistant Grade) [Evaluation] A: ΔV = ~ 5%, B: 5 ~ 20%, C: 21 ~ 35%

Chemical	Soaking Temperature (°C)	Soaking Time (Day)	Volume Change (ΔV%)
Sodium Hydroxide (50%)	150	7	A
Ammonia Water (35%)	45	20	A
Ammonia	100	7	A
N-Butylamine	23	7	A
Formic Acid (12%)	100	7	B
Chlorosulfonic Acid	23	7	A
Hydrochloric Acid (37%)	24	28	B
Nitric Acid (65%)	40	30	B
Sulfuric Acid (94%)	70	14	A
Phosphoric Acid (45%)	60	7	A
Hydrogen Sulfide	70	7	A
Hydrogen Fluoride (50%)	80	7	B
MBK (Methyl Isobutyl Ketone)	118	7	A
Dimethylformamide	153	7	B
1,2-Dichlorobenzene	180	7	B
Chlorobenzol	100	7	A
R123 (CFC)	24	28	C
Steam	121	7	A
Phenol	220	7	A
Ethylene Oxide	23	7	A

*Data above are not guaranteed values but experimental value. For actual use, confirm the applicability under specific conditions.