

O-Rings

Back-Up Rings / P Series

Type	Material	Hardness (JIS H)	Color	Operating Temperature Range	JIS Symbol	Applications	Features
NPA	Nitrile Rubber	70±5	Black	-30~100°C	Class 1A	Mineral Oil Resistant	Most representative material with superior oil / abrasion resistance and heat stability.
NPB	Nitrile Rubber	90±5	Black	-25~100°C	Class 1B	Heat Resistant	
NPSW	Silicon Rubber	50±5	Milky White	-50~200°C	-	Heat Resistant	Having excellent high and low temperature resistances, this material covers the widest range of operating temperatures among synthetic rubbers. It is suitable for food-related applications.
NPS	Silicon Rubber	70±5	Dark Blue	-50~200°C	Class 4C	Heat Resistant	
NPF	Fluoro Rubber	70±5	Black	-15~200°C	Class 4D	Heat Resistant	Best in oil / chemical resistance and heat stability as synthetic rubber. Suitable for a wide range of applications.
NPFH	Fluoro Rubber	90±5	Black	-15~200°C	-	Heat Resistant	
NPEG	Ethylene Propylene Rubber	70±5	Black	-45~130°C	-	For weather-resistant items	Excellent material in weather resistance, ozone resistance and electrical characteristics.
NPBR	Fluoro Resin	-	White	Subject to O-ring	-	For high voltage use	Used when the pressure resistance of O-ring is insufficient.

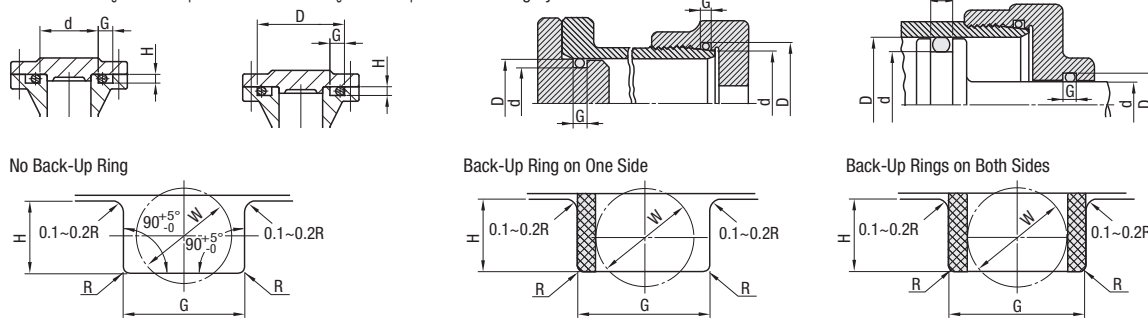
⦿ NPS is colored with dark blue very close to black.

Detailed Fitting Size

Type	No.	G Dimension (Tolerance $+0.25$)			H Dimension $H \pm 0.05$	R Dimension Max. Value
		No Back-Up Ring	Back-Up Ring on One Side	Back-Up Rings on Both Sides		
NPA	3~10	2.5	3.9	5.4	1.4	0.4
NPB	10A~22	3.2	4.4	6.0	1.8	0.4
NPSW	22A~50	4.7	6.0	7.8	2.7	0.8
NPS	50A~80	7.5	9.0	11.5	4.6	0.9

- When an internal pressure is applied to an o-ring for surface mounting, design the structure to bring the outer circumference of the o-ring to a close contact with the outer wall of the groove. When an external pressure is applied to an o-ring for surface mounting, design the structure to bring the inner circumference of the o-ring to a close contact with the inner wall of the groove.
- When using an o-ring for surface mounting for an internal pressure, if the length of D is 30 mm or less, make the length 0.2 to 0.3 mm longer.
- The groove dimensions are for reference.

For surface mounting / For external pressure For surface mounting / For internal pressure For Fixing Cylinder Surface For Motion



JIS B 2407 Back-Up Rings (For the P Series, Bias Cut)

Part Number	Nominal No. of Applicable O-Rings	W	d	D	T	Unit Price	Volume Discount Rate
Type	No.					1 ~ 19 pc(s).	20~50
NPBR (Fluoro Resin, White)	15	P15	2.0	15	0	1.25	±0.1
	16	P16		16			
	18	P18		18			
	20	P20		20			
	21	P21		21			
	22	P22		22			
	22A	P22A	22				
	24	P24	3.0	24	0		
	25	P25		25			
	26	P26		26			
	28	P28		28			
	30	P30		30			
	32	P32		32			
	34	P34		34			
	38	P38		38			
	40	P40		40			
	42	P42		42			
	48	P48		48			
	50	P50		50			

JIS B 2401 P Series (For Mounting, Dynamic)

Part Number	JIS Nominal Number	W	I.D.			Matching Material		NPF		NPB		NPSW		NPS		NPFH		NPEG		
			do	NPA, NPB Tolerance	NPS, NPSW, NPEG Tolerance	NPF, NPFH Tolerance	d	Tolerance	D	Tolerance	Unit Price	Volume Discount Rate	Unit Price	Volume Discount Rate	Unit Price	Volume Discount Rate	Unit Price	Volume Discount Rate	Unit Price	Volume Discount Rate
3	P3	1.9±0.08	2.8	±0.14	±0.21	±0.16	3	6												
4	P4		3.8				4	7												
5	P5		4.8	±0.15	±0.22	±0.18	5	8												
6	P6		5.8				6	9												
7	P7		6.8				7	10												
8	P8		7.8	±0.16	±0.24	±0.19	8	11												
9	P9		8.8				9	12												
10	P10		9.8	±0.17	±0.25	±0.20	10	13												
10A	P10A		9.8				10	14												
11	P11		10.8	±0.18	±0.27	±0.21	11	15												
11.2	P11.2	11.0				11.2	15.2													
12	P12	11.8				12	16													
12.5	P12.5	12.3	±0.19	±0.28	±0.22	12.5	16.5													
14	P14	13.8				14	18													
15	P15	14.8	±0.20	±0.30	±0.24	15	19													
16	P16	15.8				16	20													
18	P18	17.8	±0.21	±0.31	±0.25	18	22													
20	P20	19.8	±0.22	±0.33	±0.26	20	24													
21	P21	20.8	±0.23	±0.34	±0.27	21	25													
22	P22	21.8				22	26													
NPA																				
(Nitrile Rubber, Black)																				
22A	P22A	21.7				22	28													
22A	P22A	22.1	±0.24	±0.36	±0.28	22.4	28.4													
NPB																				
(Nitrile Rubber, Black)																				
24	P24	23.7				24	30													
25	P25	24.7	±0.25	±0.37	±0.30	25	31													
25.5	P25.5	25.2				25.5	31.5													
NPSW																				
(Silicon Rubber, Milky White)																				
26	P26	25.7	±0.26	±0.39	±0.31	26	32													
28	P28	27.7	±0.28	±0.42	±0.33	28	34													
29	P29	28.7				29	35													
29.5	P29.5	29.2	±0.29	±0.43	±0.34	29.5	35.5													
30	P30	29.7				30	36													
NPS																				
(Silicon Rubber, Dark Blue)																				
31	P31	30.7	±0.30	±0.45	±0.36	31	37													
31.5	P31.5	31.2	±0.31	±0.46	±0.37	31.5	37.5													
32	P32	31.7				32	38													
34	P34	33.7	±0.33	±0.49	±0.39	34	40													
NPF																				
(Fluoro Rubber, Black)																				
35	P35	34.7				35	41													
35.5	P35.5	35.2	±0.34	±0.51	±0.40	35.5	41.5													
36	P36	35.7				36	42													
38	P38	37.7				38	44													
NPFH																				
(Fluoro Rubber, Black)																				
39	P39	38.7	±0.37	±0.55	±0.44	39	45													
40	P40	39.7				40	46													
41	P41	40.7	±0.38	±0.57	±0.45	41	47													
42	P42	41.7	±0.39	±0.58	±0.48	42	48													
NPEG																				
(Ethylene Propylene Rubber, Black)																				
44	P44	43.7	±0.41	±0.61	±0.49	44	50													
45	P45	44.7				45	51													
46	P46	45.7	±0.42	±0.63	±0.50	46	52													
48	P48	47.7	±0.44	±0.66	±0.52	48	54													
50	P50	49.7	±0.45	±0.67	±0.54	50	56													
50A	P50A						60													
52	P52	51.6	±0.47	±0.70	±0.56	52	62													
53	P53	52.6	±0.48	±0.72	±0.57	53	63													
55	P55	54.6	±0.49	±0.73	±0.58	55	65													
56	P56	55.6	±0.50	±0.75	±0.60	56	66													
58	P58	57.6	±0.52	±0.78	±0.62	58	68													
60	P60	59.6	±0.53	±0.79	±0.63	60	70													
62	P62	61.6	±0.55	±0.82	±0.66	62	72													
63	P63	62.6	±0.56	±0.84	±0.67	63	73													
65	P65	64.6	±0.57	±0.85	±0.68	65	75													