

O-Rings

Back-Up Rings / P Series

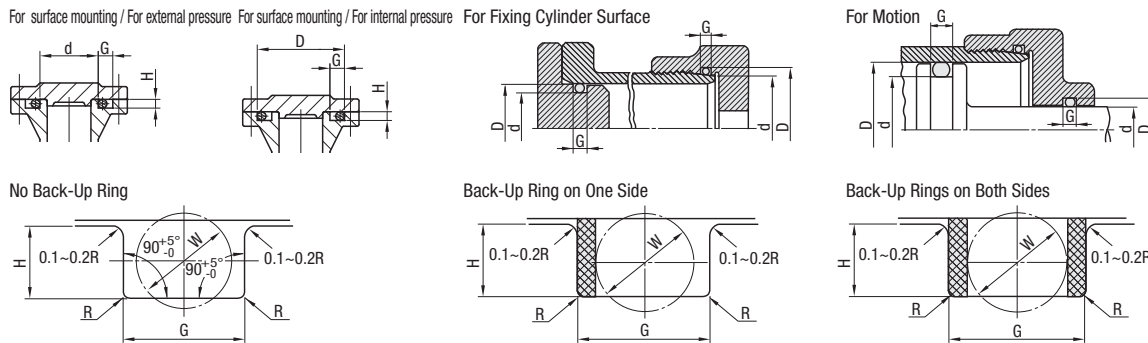
Part Number
& Spec. Change
Printed in Purple

Type	Material	Hardness (JIS H)	Color	Operable 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	-	-
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.
NPSK	Silicon Rubber	70±5	Scarlet Red	-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	Fluororesin	-	White	Subject to O-ring	-	For high voltage use	Used when the pressure resistance of O-ring is insufficient.

Detailed Fitting Size

Type	No.	G Dimension (Tolerance $^{+0.25}_0$)			H Dimension H±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
NPSW	10A~22	3.2	4.4	6.0	1.8	0.4
NPSK	22A~50	4.7	6.0	7.8	2.7	0.8
NPF	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.



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 (Fluororesin, White)	15	2.0	+0.15 0	15	19	1.25	±0.1	
	16			20				
	18			22				
	20			24				
	21			25				
	22			26				
	22A			28				
	24			30				
	25			31				
	26			32				
	28	34	3.0	+0.20 0	36			40
	30	38						
	32	40						
	34	42						
	38	44						
	40	46						
	42	48						
	48	54						
	50	56						

JIS B 2401 P Series (For Mounting, Dynamic)

Part Number	JIS Nominal Number	W	I.D.			Matching Material		NPF	NPB	NPSW	NPSK	NPFH	NPEH	NPEG
			do	NPA, NPB Tolerance	NPSK, NPSW, NPEG Tolerance	NPF, NPFH Tolerance	d							
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	0	+0.05					
7	P7		6.8			7	10	-0.05	0					
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	0	+0.06						
15	P15	14.8			15	19	-0.06	0						
16	P16	15.8	±0.20	±0.30	±0.24	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								
22A	P22A	21.7			22.2	28								
22.4	P22.4	22.1	±0.24	±0.36	±0.28	22.4	28.4							
24	P24	23.7			24	30								
25	P25	24.7			25	31								
25.5	P25.5	25.2	±0.25	±0.37	±0.30	25.5	31.5							
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								
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	0	+0.08					
35	P35	34.7			35	41	-0.08	0						
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								
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							
44	P44	43.7			44	50								
45	P45	44.7	±0.41	±0.61	±0.49	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	0	+0.10					
63	P63	62.6	±0.56	±0.84	±0.67	63	73	-0.10	0					
65	P65	64.6	±0.57	±0.85	±0.68	65	75							
67	P67	66.6	±0.59	±0.88	±0.70	67	77							
70	P70	69.6	±0.61	±0.91	±0.73	70	80							
71	P71	70.6	±0.62	±0.93	±0.74	71	81							
75	P75	74.6	±0.65	±0.97	±0.78	75	85							
80	P80	79.6	±0.69	±1.03	±0.82	80	90							