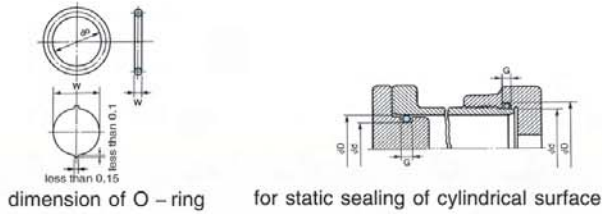


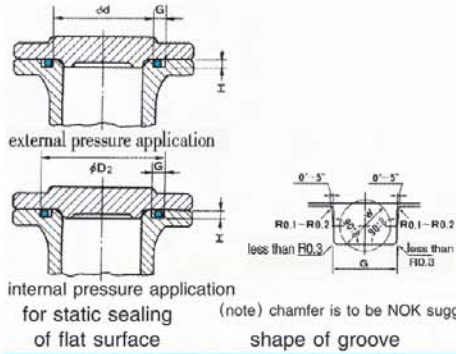
NOK S series (for static sealing)

material A305
F201



dimension of O - ring for static sealing of cylindrical surface

NOK part number		NOK		dimension of O - ring				dimension of groove				
kind and dimension symbol	material symbol		nominal Size	thickness W	inner diameter do	inner diameter tolerance		d _{-0.05} ⁰	D ₂ ^{+0.05}	D ₁ ^{+0.05}	G ₀ ^{+0.25}	H _{-0.1} ⁰
	A305	F201				A305	F201					
CO 0500		O3	S 3	1.5 ± 0.1	2.5	±0.24		3	5.3	5	2.5	1.0
CO 0501		P3	S 4		3.5			4	6.3	6		
CO 0502		P3	S 5		4.5			5	7.3	7		
CO 0503		Q2	S 6		5.5			6	8.3	8		
CO 0504		S0	S 7		6.5			7	9.3	9		
CO 0505		O3	S 8		7.5			8	10.3	10		
CO 0506		O1	S 9		8.5			9	11.3	11		
CO 0507	A	O3	S 10	9.5	10	12.3	12					
CO 0508		P2	S 11.2	10.7	11.2	13.5	13.2	2.5	1.0			
CO 0509		N2	S 12	11.5	12	14.3	14					
CO 0510		Q0	S 12.5	12.0	12.5	14.8	14.5					
CO 0511		R0	S 14	13.5	14	16.3	16					
CO 0512		P2	S 15	14.5	15	17.3	17					
CO 0513		N4	S 16	15.5	16	18.3	18					
CO 0514		R0	S 18	17.5	18	20.3	20					
CO 0515		O2	S 20	19.5	±0.15		20	22.3	22			
CO 0516		N1	S 22	21.5			22	24.3	24			
CO 0517		P2	S 22.4	21.9	±0.3		22.4	25.9	25.4	2.7	1.5	
CO 0518		O4	S 24	23.5			24	27.5	27			
CO 0519		U3	S 25	24.5			25	28.5	28			
CO 0520		N2	S 26	25.5			26	29.5	29			
CO 0521		N2	S 28	27.5			28	31.5	31			
CO 0522		Q0	S 29	28.5			29	32.5	32			
CO 0523		P8	S 30	29.5			30	33.5	33			
CO 0524		U3	S 31.5	31.0	31.5	35	34.5	2.7	1.5			
CO 0525	A	U3	S 32	31.5	32	35.5	35					
CO 0526		N3	S 34	33.5	34	37.5	37					
CO 0527		P0	S 35	34.5	35	38.5	38					
CO 0528		N0	S 35.5	35.0	35.5	39	38.5					
CO 0529		P0	S 36	35.5	36	39.5	39					
CO 0530		G0	S 38	37.5	38	41.5	41					
CO 0531		U3	S 39	38.5	39	42.5	42					
CO 0532		H0	S 40	39.5	40	43.5	43					
CO 0533		U3	S 42	41.5	±0.25	±0.5	42	45.5	45			



■ Note:

1. NOK S series is designed to meet the requirement for small machines, especially for those need very fine thickness O-rings.

2. Please specify NOK part number in placing your order.

Eg. - For S 150, CO 0565 A

※NOK part number is shown as following:

CO 0500 A
 Material symbol (A: A305, 03 - G0: F201)
 Kind and dimension symbol (S nominal size is S3)

※ Example 1: When booking O-rings with S3 nominal size, A305 material, CO 0500A

Example 2: When booking O-rings with S3 nominal size, F201 material, CO 0500O3

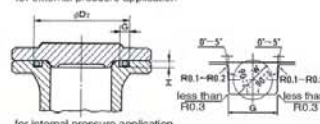
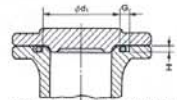
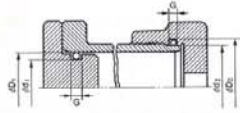
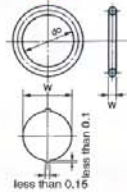
(unit: mm)

NOK part number			NOK nominal Size	dimension of O-ring			dimension of groove											
kind and dimension symbol	material symbol			thickness W	inner diameter do	inner diameter tolerance		d _{-0.05} ⁰	D ₀ ^{+0.05}	D ₀ ^{+0.05}	G ₀ ^{+0.25}	H _{-0.1} ⁰						
CO 0534	A	U3	S 44	2.0 ± 0.1	43.5	± 0.25	± 0.5	44	47.5	47	2.7	1.5						
CO 0535		H0	S 45		44.5			45	48.5	48								
CO 0536		G0	S 46		45.5			46	49.5	49								
CO 0537		G0	S 48		47.5			48	51	51								
CO 0538		U3	S 50		49.5			50	53	53								
CO 0539		U3	S 53		52.5			53	56	56								
CO 0540		U3	S 55		54.5			55	58	58								
CO 0541		H0	S 56		55.5			56	59	59								
CO 0542		G0	S 60		59.5			60	63	63								
CO 0543		G0	S 63		62.5			63	66	66								
CO 0544	A	P0	S 65	2.0 ± 0.1	64.5	± 0.4	± 0.8	65	68	68	2.7	1.5						
CO 0545		U3	S 67		66.5			67	70	70								
CO 0546		U3	S 70		69.5			70	73	73								
CO 0547		G0	S 71		70.5			71	74	74								
CO 0548		R0	S 75		74.5			75	78	78								
CO 0549		U3	S 80		79.5			80	83	83								
CO 0550		N2	S 85		84.5			85	88	88								
CO 0551		G0	S 90		89.5			90	93	93								
CO 0552		A	U3		S 95			2.0 ± 0.1	94.5	± 0.4			± 0.8	95	98	98	2.7	1.5
CO 0553			G0		S 100				99.5					100	103	103		
CO 0554	N3		S 105	104.5	105	108	108											
CO 0555	U3		S 110	109.5	110	113	113											
CO 0556	NO		S 112	111.5	112	115	115											
CO 0557	N1		S 115	114.5	115	118	118											
CO 0558	A	U3	S 120	2.0 ± 0.1	119.5	± 0.6	± 1.2	120	123	123	2.7	1.5						
CO 0559		G0	S 125		124.5			125	128	128								
CO 0560		A	G0		S 130			2.0 ± 0.1	129.5	± 0.6			± 1.2	130	133	133	2.7	1.5
CO 0561			G0		S 132				131.5					132	135	135		
CO 0562			G0		S 135				134.5					135	138	138		
CO 0563			G0		S 140				139.5					140	143	143		
CO 0564			G0		S 145				144.5					145	148	148		
CO 0565		G0	S 150		149.5			150	153	153								

NOK SS series (for static sealing)

material A305

F201



for static sealing of dimension of O-ring

for static sealing of cylindrical surface

for static sealing of flat surface

(note) chamfer is to be NOK suggested. shape of groove

NOK part number		NOK nominal size	dimension of O-ring				dimension of groove					
kind and dimension symbol	material symbol		thickness W	inner diameter do	inner diameter tolerance		d ₁ ⁰ _{-0.05}	d ₂ ⁰ _{-0.05}	D ₁ ^{+0.05} ₀	D ₂ ^{+0.05} ₀	G ^{+0.15} ₀	H ^{+0.05} ₀
	A305 F201				A305 F201							
CO 3325	N0	SS 2		1.8			2.0	1.9	3.3	3.3		
CO 2956	N1	SS 2.5		2.0			2.5	2.1	3.8	3.5		
CO 3700	G0	SS 3		2.5			3.0	2.6	4.3	4.0		
CO 3835	N0	SS 3.5		3.0			3.5	3.1	4.8	4.5		
DO 1127	G0	SS 4		3.5			4.0	3.6	5.3	5.0		
CO 7820	N0	SS 4.5		4.0			4.5	4.1	5.8	5.5		
CO 3729	N0	SS 5		4.5			5.0	4.6	6.3	6.0		
CO 3370	H0	SS 5.5		5.0			5.5	5.1	6.8	6.5		
CO 3765	N0	SS 6		5.5			6.0	5.6	7.3	7.0		
CO 3216	H0	SS 6.5		6.0			6.5	6.1	7.8	7.5		
CO 8846	A G0	SS 7	1.0 ± 0.07	6.5	± 0.15	± 0.20	7.0	6.6	8.3	8.0	1.5	0.7
CO 5497	G0	SS 7.5		7.0			7.5	7.1	8.8	8.5		
CO 4275	P0	SS 8		7.5			8.0	7.6	9.3	9.0		
CO 7044	H0	SS 8.5		8.0			8.5	8.1	9.8	9.5		
CO 4945	G0	SS 9		8.5			9.0	8.6	10.3	10.0		
CO 7949	G0	SS 9.5		9.0			9.5	9.1	10.8	10.5		
CO 8847	G0	SS 10		9.5			10.0	9.6	11.3	11.0		
CO 8848	G0	SS 10.5		10.0			10.5	10.1	11.8	11.5		
CO 8849	G0	SS 11		10.5			11.0	10.6	12.3	12.0		
CO 5952	H0	SS 11.5		11.0			11.5	11.1	12.8	12.5		
CO 8850	G0	SS 12		11.5			12.0	11.6	13.3	13.0		

■ Note:

1. NOK SS series is designed to meet the requirement for small machines, especially for those need very fine thickness O-rings.
2. Please specify NOK part number in placing your order.

Eg. - For SS 12, CO 8850 A

※ NOK part number is shown as following:

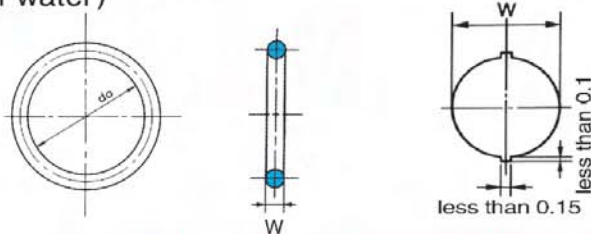
CO 3325 A
 └─ Material symbol (A: A305, N0 - G0: F201)
 └─ Kind and dimension symbol
 (SS nominal size is SS2)

※ Example 1: When booking O-rings with SS5 nominal size, A305 material, CO 3729A

Example 2: When booking O-rings with SS5 nominal size, F201 material, CO 3729 N0

NOK WE series (EPDM material O-ring, for fixing and moving application in water)

material: E116
E700
E575



kind and dimension symbol	NOK part number			NOK nominal size			dimension of O-ring		
	material symbol			1W(E116)	7W(E700)	5W(E575)	thickness W	inner diameter do	E116 E700 E575
	E116	E700	E575						
CO 0000	S2	Z1	O2	1W P 3	7W P 3	5W P 3	1.9 ± 0.07	2.8	
CO 0001	H5	N1	N2	1W P 4	7W P 4	5W P 4		3.8	
CO 0002	H4	G1	U2	1W P 5	7W P 5	5W P 5		4.8	
CO 0003	Z4	R3	H3	1W P 6	7W P 6	5W P 6		5.8	
CO 0004	O3	Y3	G5	1W P 7	7W P 7	5W P 7		6.8	
CO 0005	R4	Z4	Z2	1W P 8	7W P 8	5W P 8		7.8	
CO 0006	U2	V2	H3	1W P 9	7W P 9	5W P 9		8.8	
CO 0007	O5	O4	G5	1W P10	7W P10	5W P10	9.8	± 0.36	
CO 0008	Y2	H4	Z5	1W P10A	7W P10A	5W P10A	2.4 ± 0.07	9.8	
CO 0009	X3	Y1	H3	1W P11	7W P11	5W P11		10.8	
CO 0011	U2	Y1	Z4	1W P12	7W P12	5W P12		11.8	
CO 0012	G4	G3	H2	1W P12.5	7W P12.5	5W P12.5		12.3	
CO 0013	G4	Z3	S2	1W P14	7W P14	5W P14		13.8	
CO 0014	Y3	H4	H3	1W P15	7W P15	5W P15		14.8	
CO 0015	Z5	T2	G3	1W P16	7W P16	5W P16		15.8	
CO 0016	G4	N2	P3	1W P18	7W P18	5W P18		17.8	
CO 0017	Z4	X2	G4	1W P20	7W P20	5W P20	19.8	± 0.45	

Note:
1) NOK WE series O-ring is a EPDM material product for water application, which is from designing of the three kinds of material suggested by NOK according to JIS B2401 series.
2) Material and characteristic

material	E116	E700	E575
characteristic	long life time	long life time resin resistance	long life time resin resistance salt resistance
color	black	black	purple

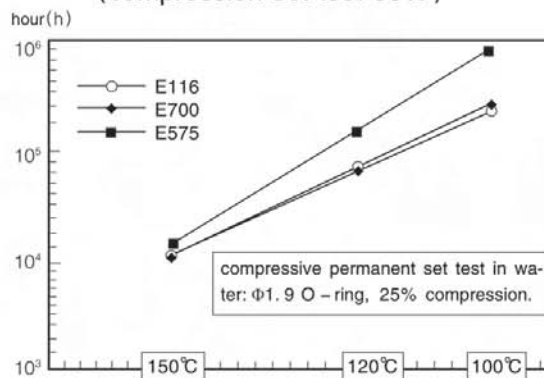
3) Though dimensions according to JIS B2401 P series have been fixed, we also set standard tolerance, because there are special rubber material here.
4) For groove dimension, please refer to JIS B2401 P series (page 18).
5) This series was designed to comply with food hygiene law.
6) Please specify NOK part number in placing your order.
Eg. For P 20 O-ring, CO 0017 Z4

※ Structure of NOK part number:

Co 0017 Z4
Material symbol (S2-S4: E116; Z1-X2: E700; O2-G4: E575)
Kind and dimension symbol (WE series, nominal size P20)

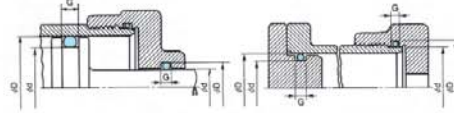
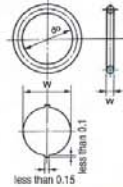
※ Example 1 for the case of nominal size P20, E116 material, CO 0017 Z4
Example 2 for the case of nominal size P20, E700 material, CO 0017 X2

hot water resistance (compression set test 80%)



NOK IRON RUBBER P,G series (for static sealing and dynamic sealing)

material: U565
U801

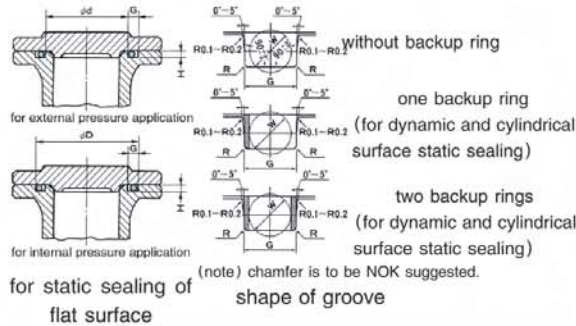


dimension of O - ring for dynamic sealing for static sealing of cylindrical surface

P series

(unit: mm)

NOK part number	nominal size	dimension of O - ring		dimension of groove							
		thickness W	inner dimension do	d	D	G(tolerance $^{+0.25}_0$)			H ± 0.05	R MAX	
						no backup ring	one backup ring	two backup rings			
FR 0318	P 3	1.9 ± 0.08	2.8	± 0.16	3	6	2.5	3.9	5.4	1.4	0.4
FR 0383	P 4		3.8		4	7					
FR 0457	P 5		4.8		5	8					
FR 0458	P 6		5.8		6	9					
FR 0278	P 7		6.8	± 0.19	7	10					
FR 0350	P 8		7.8	± 0.20	8	11					
FR 0489	P 9		8.8		9	12					
FR 0329	P 10		9.8		10	13					
FR 0246	P 10A	2.4 ± 0.09	9.8	± 0.21	10	14	3.2	4.4	6.0	1.8	0.4
FR 0460	P 11		10.8		11	15					
FR 0337	P 11.2		11.0		11.2	15.2					
FR 0461	P 12		11.8		12	16					
FR 0462	P 12.5		12.3	± 0.22	12.5	16.5					
FR 0307	P 14		13.8	± 0.24	14	18	3.2	4.4	6.0	1.8	0.4
FR 0463	P 15		14.8		15	19					
FR 0281	P 16		15.8		16	20					
FR 0282	P 18		17.8		18	22					
FR 0283	P 20		19.8	± 0.26	20	24					
FR 0464	P 21		20.8	± 0.27	21	25					
FR 0386	P 22		21.8		22	26					
FR 0384	P 22A		21.7	± 0.28	22	28					
FR 0310	P 22.4		22.1		22.4	28.4					
FR 0092	P 24		23.7		24	30					
FR 0250	P 25		24.7		25	31					
FR 0465	P 25.5		25.2	± 0.30	25.5	31.5					
FR 0364	P 26		25.7	± 0.31	26	32	4.7	6.0	7.8	2.7	0.7
FR 0380	P 28		27.7		28	34					
FR 0375	P 29		28.7		29	35					
FR 0466	P 29.5		29.2		29.5	35.5					
FR 0113	P 30		29.7	± 0.34	30	36					
FR 0467	P 31	3.5 ± 0.1	30.7	± 0.36	31	37	4.7	6.0	7.8	2.7	0.7
FR 0468	P 31.5		31.2		31.5	37.5					
FR 0311	P 32		31.7		32	38					
FR 0361	P 34		33.7		34	40					
FR 0133	P 35		34.7	± 0.39	35	41					
FR 0469	P 35.5		35.2	± 0.40	35.5	41.5	4.7	6.0	7.8	2.7	0.7
FR 0138	P 36		35.7		36	42					
FR 0378	P 38		37.7		38	44					
FR 0470	P 39		38.7		39	45					
FR 0363	P 40		39.7	± 0.44	40	46					
FR 0471	P 41		40.7	± 0.45	41	47	4.7	6.0	7.8	2.7	0.7
FR 0158	P 42		41.7		42	48					
FR 0385	P 44		43.7		44	50					
FR 0377	P 45		44.7		45	51					
FR 0472	P 46		45.7	± 0.50	46	52					
FR 0379	P 48		47.7	± 0.52	48	54	4.7	6.0	7.8	2.7	0.7
FR 0473	P 49		48.7		49	55					
FR 0474	P 50		49.7		50	56					



■ Please specify NOK part number in placing our order.
 ※ NOK part number is shown as following:
 FR 0000 V
 Material symbol (V: U565; W: U801)
 Kind and dimension symbol
 ※ Example 1: for nominal size P3, U565 material O-ring, FR 0318V
 Example 2: for nominal size P3, U801 material O-ring, FR 0318W

G series

(unit: mm)

NOK part number	nominal size	dimension of O-ring		dimension of groove						
		thickness W	inner dimension do	d	D	G (tolerance $^{+0.25}_0$)			H	R
						no backup ring	one backup ring	two backup rings		
FR 0285 FR 0286 FR 0475 FR 0149	G 25 G 30 G 35 G 40	3.1 ± 0.1	24.4 ± 0.30 29.4 ± 0.34 34.4 ± 0.39 39.4 ± 0.44	25 30 35 40	30 35 40 45	4.1	5.6	7.3	2.4	0.7
FR 0476 FR 0477	G 45 G 50		44.4 ± 0.49 49.4 ± 0.54	45 50	50 55					

- IRON RUBBER O-ring is exchangeable to JIS B2401 P&G series.
- Characteristic of IRON RUBBER

1. High tensile strength
2. High tensile strength at yield
3. High elasticity
4. High load resistance
5. Wear resistance

tensile strength – Young's modulus and hardness

With these five outstanding characteristics, IRON RUBBER has been extensively used.

● Other characteristic

Oil, chemical and water resistance

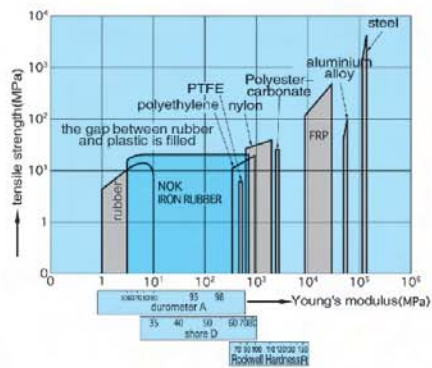
IRON RUBBER's oil resistance is better than nitril rubber but not so good as fluororubber, and it is fit for aether, edible oil and salt application. And it's water resistance is better than ammonia ester.

● It has been certified by food hygiene law.

Food hygiene law (the Ministry of Welfare in Japan NO. 85) appliance. (U565, U801)

● Ozone resistance

Its ozone resistance is as good as fluororubber and silicone rubber



Special O – rings

Superior series “FP64” & “FP53”

We also have “superior” series O – ring which have great chemical and solvent resistance available. Please contact us directly in placing such O – ring.

Characteristic

- Solvent resistance is as good as FFKM.
- With good resistance to both acid and alkali.
- Hot resistance and bending at low temperature are as good as FKM.
- Heavy metal free※ (※ heavy metal is the elements beyond V (vanadium) in the Periodic Table of the Elements.)。
- Be fit for chemical, petroleum, painting, medicine and OA machines where chemical and solvent are applied.
- Can work with P, G, and AS series standard and large diameter (over $\Phi 400$) specification.

General property

property	FP64 (black)	FP53 (white)
1. normal condition hardness by durometer A tensile strength (Mpa) elongation (%)	70 15.7 190	69 16.9 200
2. compressive permanent set (%)	175°C × 22h	
	22	20
3. bending at low temperature TR ₁₀ value (°C)	-10	-10

Volume variation to chemical solutions

The following table is the volume variation to some representative chemical solutions

	solution	temperature (°C)	time (h)	universal FKM	FFKM	FP64 FP53
acid and alkali	acetic acid (98%)	118	70	110	10	27
	nitric acid (60%)	86	70	50	5	11
	sulfuric acid (90%)	95	168	12	5	3
	Phosphoric Acid (85%)	160	168	55	4	0
	hydrofluoric acid (2%)	23	720	n. t	5	4
	sodium hydroxide (30%)	100	70	decompose	5	0
	potassium hydroxide (30%)	150	70	decompose	4	12
	NH ₄ OH (2%)	23	720	n. t	3	2
solvent	acetone	20	168	over 200	10	25
	xylene	25	168	n. t	5	5
	MEK	20	168	over 200	7	25
	acetic acid and butyric acid	125	70	over 200	13	31
	dibutyl ether	25	168	85	3	5
	methyl – tert – butyl ether (MTBE)	23	70	120	17	26
	toluene	23	70	11	2	4
	THF	20	168	over 200	11	28
dichloromethane	20	168	25	9	12	

- n, t not tested
- values in the table are volume variation (%)。

φ - 2 Connecting O - ring

Inner diameter dimension over Φ400 are made by combination.
Please contact us direct in placing your order.

Material

JIS symbol	Class 1 A	Class 4 D
NOK material symbol	A305 (black)	F201 (black)

Preserved thickness

(unit: mm)

3	3.53	4	5.33	5.7	6
6.98	8.4	10	12	12.7	15

Inner diameter dimension

over ø400

Dimension tolerance

(inner diameter) inner diameter tolerance for Class 1 A and Class 4 D is ±1% inner diameter.
(thickness) thickness tolerance is shown in the following table

(unit: mm)

thickness	Class 1 A	Class 4 D
ø 3.00 ~ ø 5.70	±0.15	±0.20
ø 5.71 ~ ø 8.40	±0.25	±0.25
ø 8.41 ~ ø 11.0	±0.30	±0.30
ø 11.01 ~ ø 17.0	±0.50	±0.50