

TANKEN SEAL SEIKO CO.,LTD.

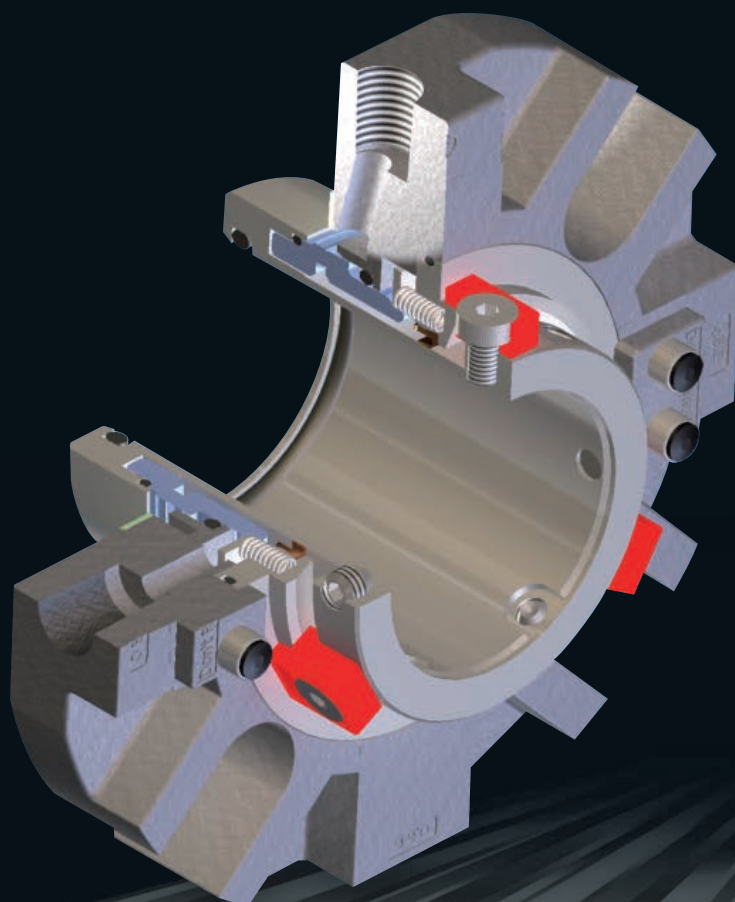


Mechanical seal
CK-1024

Mechanical Seal

Cartridge Master 3 series

Cartridge type mechanical seal

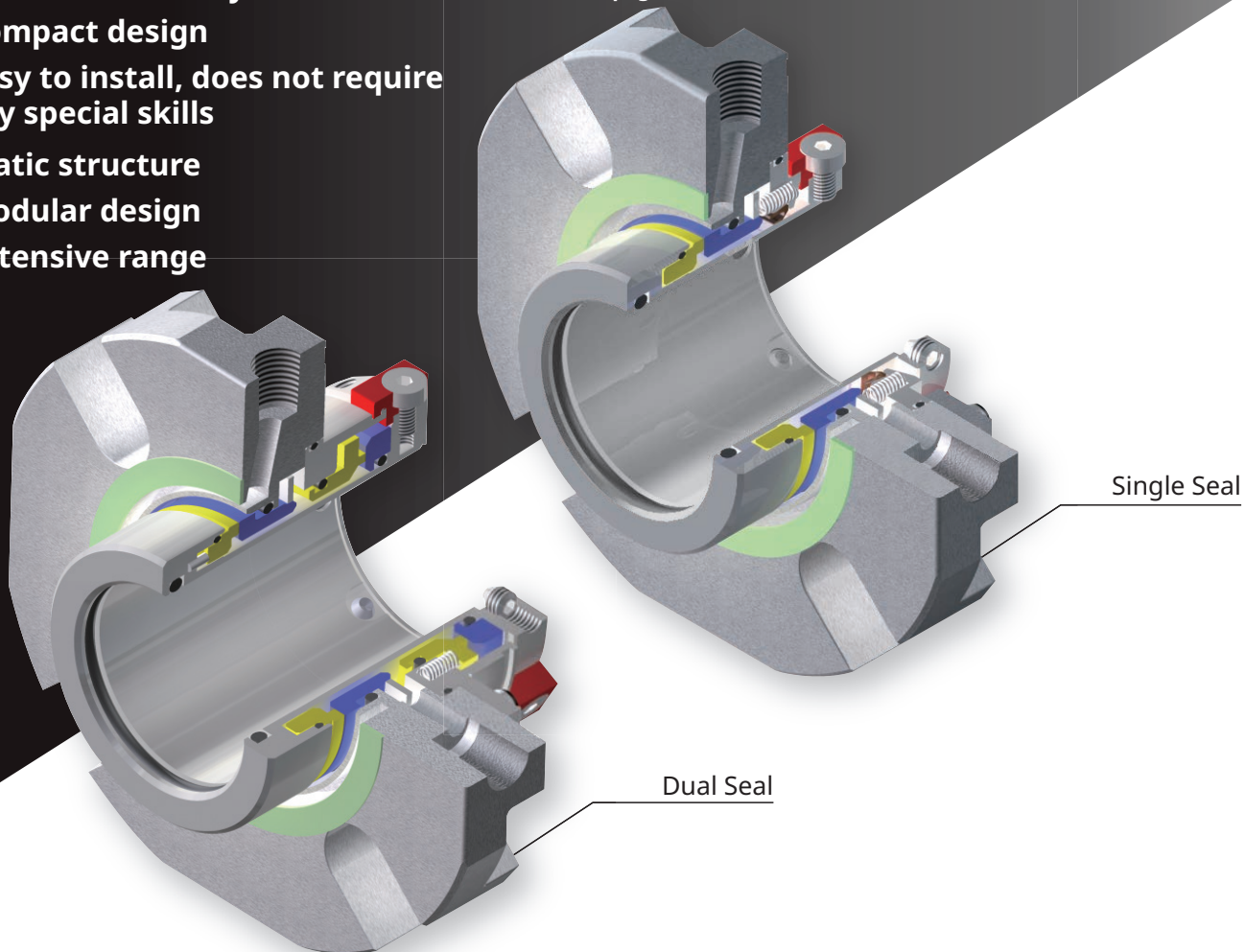


A *Cartridge* type that enables easy handling!

Provides high performance with excellent efficiency like a *Master!*

(Master craftsman)

- In stock and ready to deliver (see the ♦ mark on page 6)
- Compact design
- Easy to install, does not require any special skills
- Static structure
- Modular design
- Extensive range



***Cartridge Master 3* series**

***Cartridge Master 3* series** is

a mechanical seal that was designed based on years of experience and expertise. This series can quickly resolve any problems relating to seals that customers may have, and also contributes to conserving the environment and reducing energy requirements.

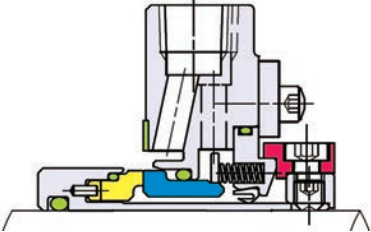
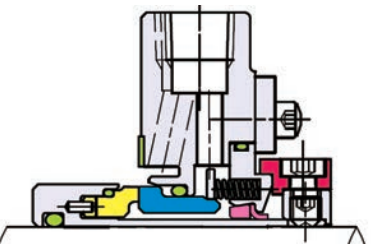
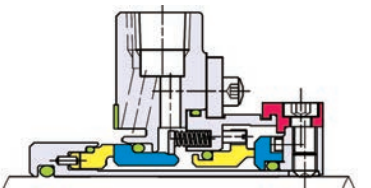
Supports
various
needs

Resolves
seal
problems

Low
energy
requirement

Improves
the
environment

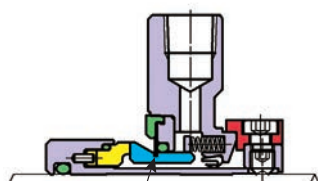
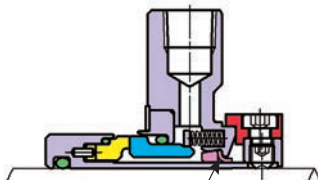
CM3 Model Lineup : With flushing port

Type	Structure	Material	Specifications				Additional information
			Pressure MPaG	Temperature (No cooler) °C		Circumferential speed m/s	
				Water	Oil		
Single	1. Standard	SiC × CARBON	≤1.6	≤90	≤140	≤15	• Can be installed without modifying the equipment from gland packing of 8 × 8 mm square or larger.
		SiC × SiC	≤1.2	≤60			
	Option	2. Quench seal	SiC × CARBON	≤1.6	≤90	≤140	≤15
		SiC × SiC	≤1.2	≤60			
		3. Edge face seal	WC × WC	≤1.0	≤60	≤140	≤9
Dual	4. Dual	Primary: SiC × SiC	Tandem Seal Use ≤1.2	≤80	≤140	≤15	Buffer / Barrier pressure *1: Maximum of 1.2 MPaG
			Secondary: CARBON × SiC	Double Seal Use ≤1.0	≤160		

*1: Barrier pressure: Internal pressure + 0.2 MPaG. Buffer / Barrier fluid: External circulation type.

*Please contact us for specifications that are higher than those listed in the above table or non-applicable specifications.

CM3 Model Lineup : Flushless compatible type

Type	Structure	*1 Flushing	Material	Specifications				Additional information
				Pressure MPaG	Temperature (No cooler) °C		Circumf erential speed m/s	
					Water	Oil		
Single	1. Flushless compatible type 	Yes ^{*2}	SiC × CARBON	≤1.6	≤90	≤140	≤15	• Can be installed without modifying the equipment from gland packing of 8 × 8 mm square or larger. • Optimal for when using special material because the wetted metal section is small.
			SiC × SiC	≤1.2	≤60			
		No	SiC × CARBON	≤0.4	≤60	≤120	≤8	
			SiC × SiC					
Option	2. With high-concentration compatible diaphragm 	Yes ^{*2}	SiC × SiC	≤1.2	≤60	≤140	≤15	• Uses a diaphragm to prevent adhesion due to slurry penetration into the operating packing section (the O-ring). • Optimal for high concentration slurry fluid.
		No	SiC × SiC	≤0.4	≤60	≤120	≤8	
	3. Quench seal 	Yes ^{*2}	SiC × CARBON	≤1.6	≤90	≤140	≤15	• A rubber lip type quench seal is attached on the bush section, which is attached as standard. • Maximum quench pressure of 0.03 MPaG. • Quench fluid rate of 1 to 2 liters per minute. • Effective for such as cooling, cleaning and lubricating sliding surfaces.
			SiC × SiC	≤1.2	≤60			
		No	SiC × CARBON	≤0.4	≤60	≤120	≤8	
			SiC × SiC					

*1: All models shown above are the flushless compatible type. However, performing flushing enables these models to be used for higher pressure and circumferential speed applications.

*2: With flushing: When flushing, consider installing an intermediate flange or a flushing port on the equipment.

*Please contact us for specifications that are higher than those listed in the above table or non-applicable specifications.

Selection Guide

Selection Guide

STEP 1



Seal fluid properties

Check the seal fluid properties (viscosity, slurry content)

STEP 2



Flushing availability

Check whether flushing is possible to cool the sliding surfaces

STEP 3



Specifications check

Check the temperature, circumferential speed, and pressure

CM3 seal type selection table

STEP 1			STEP 2	STEP 3				Seal type			Material combination
What is the seal fluid?	What is the viscosity?	What is the slurry weight percentage?	Is flushing possible?	Temperature (°C) (No cooler)		Circumferential speed	Pressure				
	Pa·s	wt%		Water	Oil	(m/s)	(MPaG)				
Water or oil-based (trace amount of slurry)	≤0.3	≤0.5	Yes	≤90	≤140	≤15	≤1.6	*1	P.3	Standard	SiC × CARBON
			No	≤60	≤120	≤8	≤0.4		P.4	Flushless compatible type	
Water or oil-based (contains slurry)	≤1.0	≤5.0	Yes	≤60	≤140	≤15	≤1.2		P.3	Standard	SiC × SiC
			No	≤60	≤120	≤8	≤0.4		P.4	Flushless compatible type	
High-viscosity fluid, polymerizable fluid, etc.	≤10.0	≤7.0	Yes	≤60	≤140	≤9	≤1.0		P.3	Edge face seal	WC × WC
			No	≤60	≤120		≤0.4				
High-concentration slurry	≤1.0	*2 ≤30	Yes	≤60	≤140	≤15	≤1.2	P.4	With high-concentration compatible diaphragm	SiC × SiC	
			No	≤60	≤120	≤8	≤0.4				
Hazardous fluid, high-concentration fluid, etc.	>10.0	>7.0	Yes / No	≤160		≤15	≤1.0	Dual	P.3	Dual (Double Seal Use)	Primary: SiC × SiC Secondary: CARBON × SiC

*1: Apply a water quench to prevent adhesion due to leaking fluid (poor tracking) for fluids that crystallize easily, such as alkaline or salt-based fluids.

*2: Slurry concentration is a reference value based on actual data. Depending on the slurry properties, an Edge face seal with a diaphragm may be selected for use.

Installation Procedure

Installation Procedure

Can be installed onto the equipment in four easy steps.



Apply grease to the O-ring on the inner diameter of the MS sleeve. Check that the gasket has been correctly attached, then insert the Cartridge Master onto the shaft.

1



Install onto the stuffing box. Tighten the gland bolts evenly to secure the Cartridge Master to the stuffing box.

2



After the impeller has been secured, tighten the set screws on the set collar.

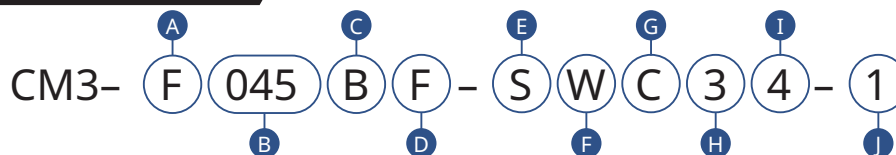
3



Install the piping for flushing and quenching, etc. Finally, remove all preset chips. This completes the procedure.

4

Model identification method



A: Seal type (cover specifications)	
F	With flushing port
T	Flushless compatible type (lost wax method)
A	Flushless compatible type (fully machined parts)

B: Shaft diameter	
025	25 mm
030	30 mm
032	32 mm
035	35 mm
038	38 mm
040	40 mm
045	45 mm
050	50 mm
055	55 mm
060	60 mm
065 *	65 mm
070 *	70 mm
075 *	75 mm
080	80 mm
085	85 mm
090	90 mm
095	95 mm
100	100 mm

*1: Only flushless compatible types of $\phi 65$, $\phi 70$, and $\phi 75$ are in stock as standard and available for immediate delivery.

C: Secondary seal construction and material		
Single Part No.[#15]		
B	Single	With bush
L		Water quench
Dual Part No.[#26×#28]		
C	Dual	CARBON × SiC
T		CARBON × WC
S		SiC × SiC
M		WC × WC

D: Primary sliding surface shape	
Part No.[#8]	
F	Flat
E	Edge

E: Primary sliding surface material	
Part No.[#6×#8]	
C	SiC × CARBON
S	SiC × SiC
L	WC × CARBON
W	WC × WC
N	WC × WC (Edge face seal)

F: O-ring material	
Part No.[#5, 7, 9]	
W	FKM
E	EPDM
S	Silicone rubber
N	NBR
K	Kalrez®7075
P	FFKM

G: Gasket material	
Part No.[#11]	
C	C-4430
F	PTFE
G *	Glass-filled PTFE
T	T#1120

*2: Only models with high-concentration compatible diaphragms are in stock as standard and available for immediate delivery.

H: Wetted metal material	
Single standard Part No.[#12, 13] Single flushless compatible type Part No.[#4, 13] Dual Part No.[#12, 13]	
3	SUS316
4	Alloy 20
5	SUS316L
6	Titanium
7	Hastelloy C or eq.

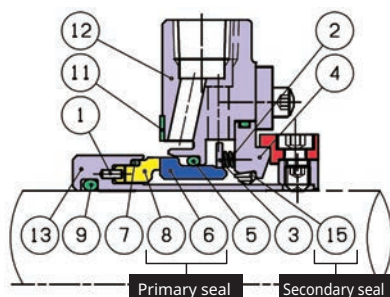
I: Non-wetted metal material	
Single standard Part No.[#2-#1, 3, 4] Single flushless compatible type Part No.[#2-#1, 3] Dual Part No.[# 2, 22-#1, 3, 4]	
3	SUS316 - SUS316
4	Hastelloy C or eq. - SUS316
5	Hastelloy C or eq. - Alloy 20

J: Seal arrangement	
1	Single
2	Dual
D	Diaphragm

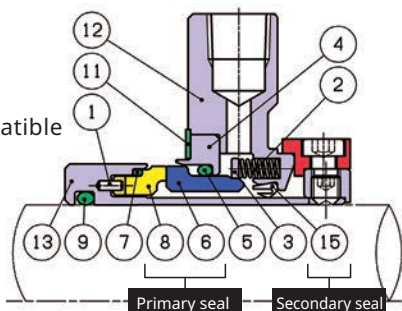
The diamond "◆" mark indicates that the part is in stock as standard and available for immediate delivery.

Single

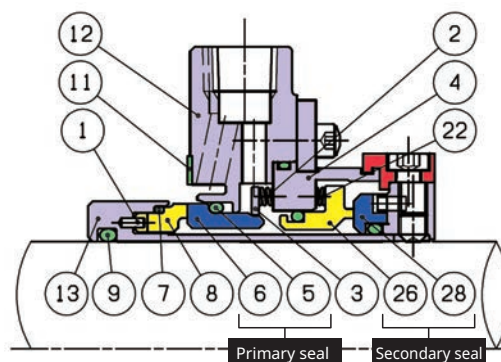
Standard with flushing port



Flushless compatible type



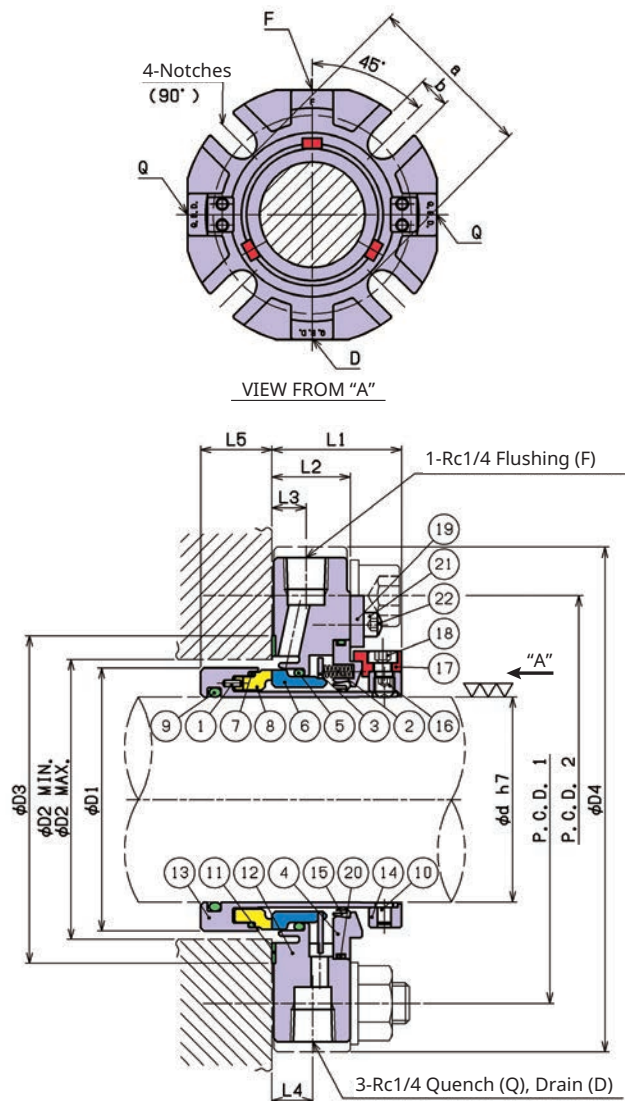
Dual



With flushing port

Dimensions : Single standard

Dimensions



No.	Part name	Material
1	Pin	SUS316
2	Spring	Hastelloy C or eq.
3	Drive plate	SUS316
4	Spring retainer	SUS316
5	O-ring	FKM
6	Seal ring	SiC
7	O-ring	FKM
8	Rotating ring	SiC or CARBON
9	O-ring	FKM
10	Pin	SUS316
11	Gasket	C-4430
12	Cover	SCS14 or SUS316
13	MS sleeve	SUS316
14	Set collar	SUS316
15	Bush	Graphite-filled PTFE
16	Set screw	SUS316
17	Preset chip	PC
18	Low-head hex socket bolt	SUS304
19	Retainer Plate	SCS13
20	O-ring	FKM
21	Hex socket bolt	SUS304
22	Collar for hex socket bolt	POM

*The material column indicates the standard material used.

*We can provide support for other materials based on the conditions of use.

*Both hex bolts and hex socket bolts can be used for the mounting bolts.

Dimensions

(Unit: mm)

SIZE d	D1	D2		D3	D4	a	b	L1	L2	L3	L4	L5	P.C.D.1 (for hex bolts)				P.C.D.2 (for hex socket bolts)			
		MIN.	MAX.										M10	M12	M16	M20	M10	M12	M16	M20
25	39	41	50	59	113	61	14	38	23	10	12	21	74-101	77-99	-	-	72-101	74-99	-	-
30	44	46	55	64	118	66	14	38	23	10	12	21	79-106	82-104	-	-	77-106	79-104	-	-
32	46	48	57	66	120	68	14	38	23	10	12	21	81-108	84-106	-	-	79-108	81-106	-	-
35	49	51	60	69	123	71	14	38	23	10	12	21	84-111	87-109	-	-	82-111	84-109	-	-
38	55	57	65	74	126	74	14	38	23	10	12	21	87-114	90-112	-	-	85-114	87-112	-	-
40	57	59	67	76	128	76	14	38	23	10	12	21	89-116	92-114	-	-	87-116	89-114	-	-
45	62	64	72	81	133	81	18	38	23	10	12	21	-	97-119	103-115	-	-	94-119	101-115	-
50	67	69	77	86	138	86	18	38	23	10	12	21	-	102-124	108-120	-	-	99-124	106-120	-
55	72	74	82	91	143	91	18	38	23	10	12	21	-	107-129	113-125	-	-	104-129	111-125	-
60	77	79	87	96	148	96	18	38	23	10	12	21	-	112-134	118-130	-	-	109-134	116-130	-
65	82	84	92	101	163	103	18	40	23	10	14	21	-	120-144	124-140	-	-	116-144	122-140	-
70	93	95	106	115	178	117	18	44	27	12	16	27	-	130-159	135-155	-	-	130-159	133-155	-
75	98	100	113	122	193	124	18	46	27	12	16	27	-	137-174	141-170	-	-	137-174	141-170	-
80	103	105	118	127	198	129	18	46	27	12	16	27	-	142-179	146-175	-	-	142-179	146-175	-
85	108	110	123	132	208	134	22	46	27	12	16	27	-	147-189	151-185	157-181	-	147-189	151-185	155-181
90	113	115	128	137	208	139	22	46	27	12	16	27	-	152-189	156-185	162-181	-	152-189	156-185	160-181
95	118	120	133	142	218	144	22	46	27	12	16	27	-	156-199	161-195	167-191	-	156-199	161-195	165-191
100	123	125	138	147	218	149	22	46	27	12	16	27	-	162-199	165-195	172-191	-	162-199	165-195	170-191

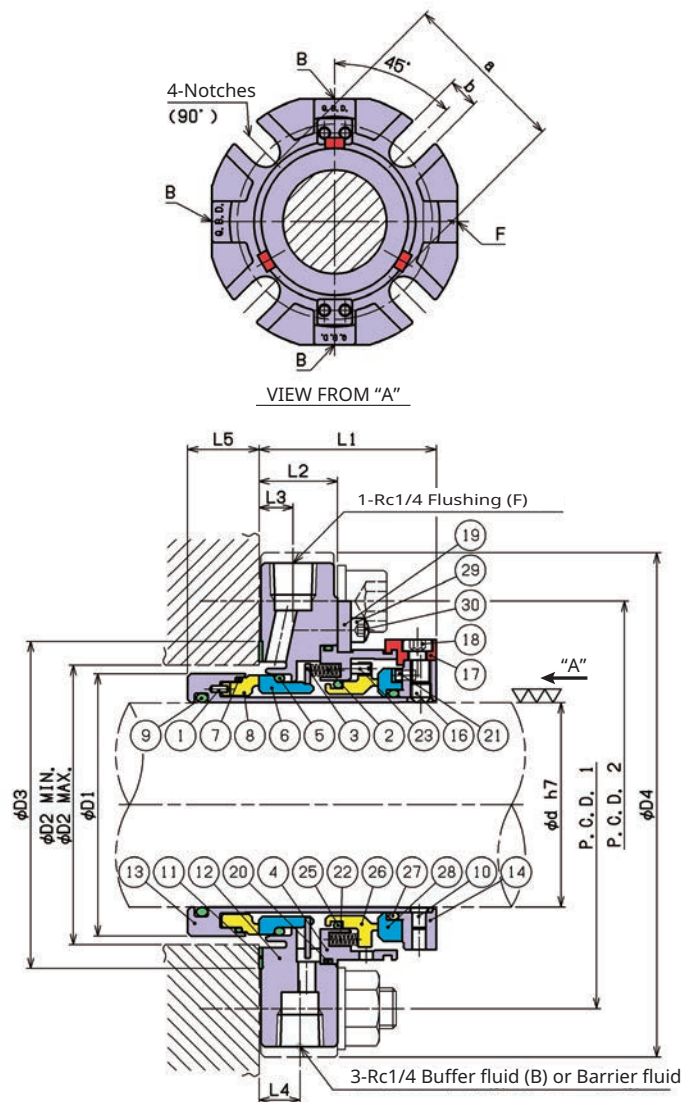
*We can also provide support for shaft diameters other than those listed in the above table.

*Covers of φ65 to φ100 are fully machined parts so the actual shape may be slightly different to the shape illustrated here.

With flushing port

Dimensions : Dual

Dimensions



No.	Part name	Material
1	Pin	SUS316
2	Spring	Hastelloy C or eq.
3	Drive plate	SUS316
4	Spring retainer	SUS316
5	O-ring	FKM
6	Seal ring	SiC
7	O-ring	FKM
8	Rotating ring	SiC
9	O-ring	FKM
10	Pin	SUS316
11	Gasket	C-4430
12	Cover	SCS14 or SUS316
13	MS sleeve	SUS316
14	Set collar	SUS316
16	Set screw	SUS316
17	Preset chip	PC
18	Low-head hex socket bolt	SUS304
19	Retainer Plate	SCS13
20	O-ring	FKM
21	Pin	SUS316
22	Spring	Hastelloy C or eq.
23	Pin	SUS316
25	O-ring	FKM
26	Seal ring	CARBON
27	O-ring	FKM
28	Rotating ring	SiC
29	Hex socket bolt	SUS304
30	Collar for hex socket bolt	POM

*The material column indicates the standard material used.
 *We can provide support for other materials based on the conditions of use.

*Both hex bolts and hex socket bolts can be used for the mounting bolts.

Dimensions

(Unit: mm)

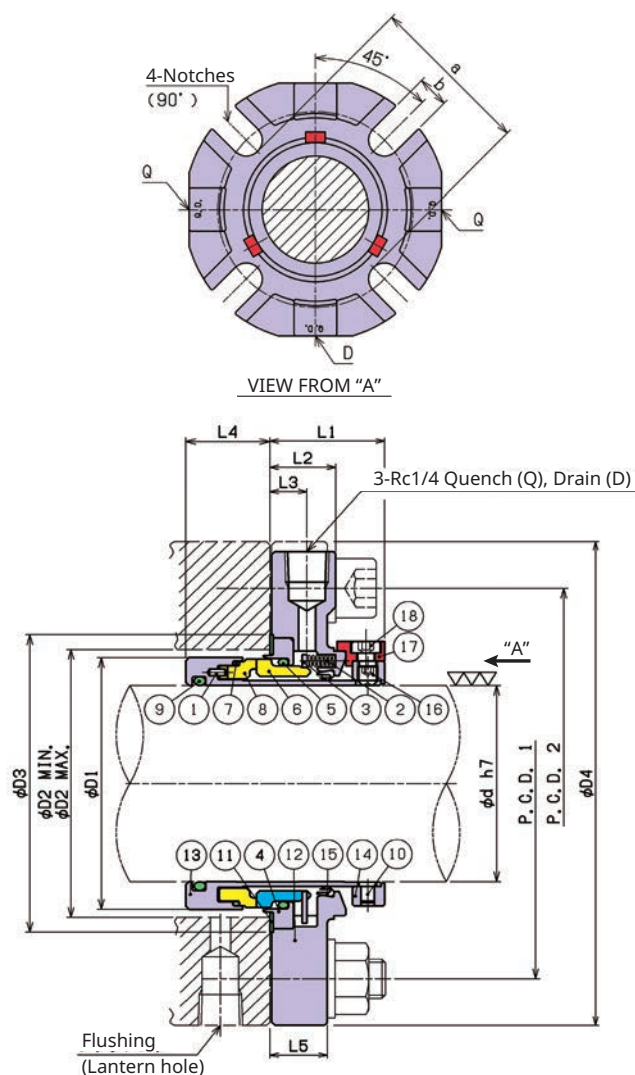
SIZE d	D1	D2		D3	D4	a	b	L1	L2	L3	L4	L5	P.C.D.1 (for hex bolts)				P.C.D.2 (for hex socket bolts)			
		MIN.	MAX.										M10	M12	M16	M20	M10	M12	M16	M20
25	39	41	50	59	113	61	14	52	23	10	12	21	78-101	81-99	-	-	75-101	78-99	-	-
30	44	46	55	64	118	66	14	52	23	10	12	21	83-106	86-104	-	-	80-106	83-104	-	-
32	46	48	57	66	120	68	14	52	23	10	12	21	85-108	88-106	-	-	82-108	85-106	-	-
35	49	51	60	69	123	71	14	52	23	10	12	21	88-111	91-109	-	-	85-111	88-109	-	-
38	55	57	65	74	126	74	14	52	23	10	12	21	91-114	94-112	-	-	88-114	91-112	-	-
40	57	59	67	76	128	76	14	52	23	10	12	21	93-116	96-114	-	-	90-116	93-114	-	-
45	62	64	72	81	133	81	18	52	23	10	12	21	-	101-119	111-115	-	-	101-119	107-115	-
50	67	69	77	86	138	86	18	52	23	10	12	21	-	106-124	116-120	-	-	106-124	112-120	-
55	72	74	82	91	143	91	18	52	23	10	12	21	-	111-129	121-125	-	-	111-129	117-125	-
60	77	79	87	96	148	96	18	52	23	10	12	21	-	116-134	126-130	-	-	116-134	122-130	-
65	82	84	92	101	163	103	18	54	23	10	14	21	-	123-144	132-140	-	-	123-144	128-140	-
70	93	95	106	115	178	117	18	60	27	12	16	27	-	134-159	144-155	-	-	131-159	140-155	-
75	98	100	113	122	193	124	18	62	27	12	16	27	-	139-174	149-170	-	-	137-174	145-170	-
80	103	105	118	127	198	129	18	62	27	12	16	27	-	144-179	154-175	-	-	142-179	150-175	-
85	108	110	123	132	208	134	22	62	27	12	16	27	-	149-189	159-185	166-181	-	147-189	155-185	161-181
90	113	115	128	137	208	139	22	62	27	12	16	27	-	154-189	164-185	171-181	-	152-189	160-185	166-181
95	118	120	133	142	218	144	22	62	27	12	16	27	-	159-199	169-195	176-191	-	157-199	165-195	171-191
100	123	125	138	147	218	149	22	62	27	12	16	27	-	164-199	174-195	181-191	-	162-199	170-195	176-191

*We can also provide support for shaft diameters other than those listed in the above table.

*Covers of $\phi 65$ to $\phi 100$ are fully machined parts so the actual shape may be slightly different to the shape illustrated here.

Dimensions : Flushless compatible type

Dimensions



No.	Part name	Material
1	Pin	SUS316
2	Spring	Hastelloy C or eq.
3	Drive plate	SUS316
4	Retainer	SUS316
5	O-ring	FKM
6	Seal ring	SiC
7	O-ring	FKM
8	Rotating ring	SiC or CARBON
9	O-ring	FKM
10	Pin	SUS316
11	Gasket	C-4430
12	Cover	SCS14 or SUS316
13	MS sleeve	SUS316
14	Set collar	SUS316
15	Bush	Graphite-filled PTFE
16	Set screw	SUS316
17	Preset chip	PC
18	Low-head hex socket bolt	SUS304

*The material column indicates the standard material used.
 *We can provide support for other materials based on the conditions of use.
 *Both hex bolts and hex socket bolts can be used for the mounting bolts.

Dimensions

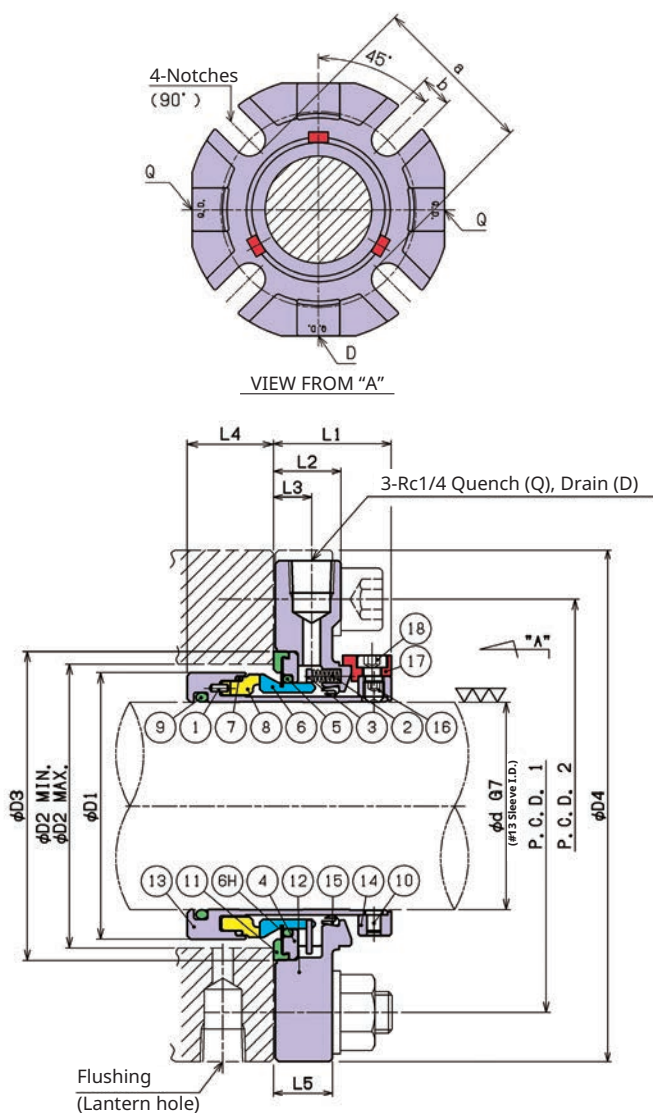
(Unit: mm)

SIZE d	D1	D2		D3	D4	a	b	L1	L2	L3	L4	L5	P.C.D.1 (for hex bolts)			P.C.D.2 (for hex socket bolts)		
		MIN.	MAX.										M10	M12	M16	M10	M12	M16
25	39	41	47	56	103	57	14	34	19.5	11	25	17	73-92	75-89	-	69-92	71-89	-
30	44	46	52	61	105	62	14	34	19.5	11	25	17	78-94	80-91	-	74-94	76-91	-
32	46	48	54	63	110	64	14	34	19.5	11	25	17	80-99	82-96	-	76-99	78-96	-
35	49	51	57	66	115	67	14	34	19.5	11	25	17	83-104	85-101	-	79-104	81-101	-
40	57	59	62	71	125	72	14	34	19.5	11	25	17	88-116	90-114	-	84-116	86-114	-
45	62	64	67	76	133	77	18	34	19.5	11	25	17	-	95-119	103-115	-	91-119	101-115
50	67	69	72	81	138	82	18	34	19.5	11	25	17	-	100-124	108-120	-	96-124	106-120
55	72	74	77	86	143	87	18	34	19.5	11	25	17	-	105-129	113-125	-	101-129	111-125
60	77	79	82	91	148	92	18	34	19.5	11	25	17	-	110-134	118-130	-	106-134	116-130
65	82	84	87	96	153	97	18	36	19.5	11	25	17	-	116-139	124-135	-	112-139	122-135
70	93	95	98	107	168	109	18	40.5	22	12.5	30.5	20	-	127-154	133-150	-	123-154	129-150
75	98	100	103	112	173	114	18	42.5	22	12.5	30.5	20	-	132-159	138-155	-	128-159	134-155

*We can also provide support for shaft diameters other than those listed in the above table.

Dimensions : With high-concentration compatible diaphragm

Dimensions



No.	Part name	Material
1	Pin	SUS316
2	Spring	Hastelloy C or eq.
3	Drive plate	SUS316
4	Retainer	SUS316
5	O-ring	FKM
6	Seal ring	SiC
6H	Diaphragm	FKM
7	O-ring	FKM
8	Rotating ring	SiC
9	O-ring	FKM
10	Pin	SUS316
11	Gasket	Glass-filled PTFE
12	Cover	SCS14 or SUS316
13	MS sleeve	SUS316
14	Set collar	SUS316
15	Bush	Graphite-filled PTFE
16	Set screw	SUS316
17	Preset chip	PC
18	Low-head hex socket bolt	SUS304

*The material column indicates the standard material used.
 *We can provide support for other materials based on the conditions of use.
 *Both hex bolts and hex socket bolts can be used for the mounting bolts.

Dimensions

(Unit: mm)

SIZE d	D1	D2		D3	D4	a	b	L1	L2	L3	L4	L5	P.C.D.1 (for hex bolts)			P.C.D.2 (for hex socket bolts)		
		MIN.	MAX.										M10	M12	M16	M10	M12	M16
25	39	41	47	54	103	57	14	34	19.5	11	25	17	73-92	75-89	-	69-92	71-89	-
30	44	46	52	59	105	62	14	34	19.5	11	25	17	78-94	80-91	-	74-94	76-91	-
32	46	48	54	61	110	64	14	34	19.5	11	25	17	80-99	82-96	-	76-99	78-96	-
35	49	51	57	64	115	67	14	34	19.5	11	25	17	83-104	85-101	-	79-104	81-101	-
40	57	59	62	69	125	72	14	34	19.5	11	25	17	88-116	90-114	-	84-116	86-114	-
45	62	64	67	74	133	77	18	34	19.5	11	25	17	-	95-119	103-115	-	91-119	101-115
50	67	69	72	79	138	82	18	34	19.5	11	25	17	-	100-124	108-120	-	96-124	106-120
55	72	74	77	84	143	87	18	34	19.5	11	25	17	-	105-129	113-125	-	101-129	111-125
60	77	79	82	89	148	92	18	34	19.5	11	25	17	-	110-134	118-130	-	106-134	116-130
65	82	84	87	94	153	97	18	36	19.5	11	25	17	-	116-139	124-135	-	112-139	122-135
70	93	95	98	105	168	109	18	40.5	22	12.5	30.5	20	-	127-154	133-150	-	123-154	129-150
75	98	100	103	110	173	114	18	42.5	22	12.5	30.5	20	-	132-159	138-155	-	128-159	134-155

*We can also provide support for shaft diameters other than those listed in the above table.

MEMO





TANKEN SEAL SEIKO CO.,LTD.

3-14-15 Yaguchi, Ota-ku, Tokyo 146-0093

Tel: +81-3-3750-2151 (switchboard) Fax: +81-3-3750-5171

<https://www.tankenseal.co.jp>

*The information listed in this catalog is current as of March 2025. The content may change without prior notice.

*Please use the above contact information for any inquiries concerning the content of this catalog.

*Values shown in the selection table are intended as a guide for selecting mechanical seals and do not guarantee the selection of the best mechanical seal for your application.

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*Please refer to "Catalog No.1025" for the Cartridge Master 6 series catalog.