

180 & 180H™ Cartridge Single Seal

Installation, Operation and Maintenance Instructions



Product may be provided with either cast or machined gland

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Seal Data Reference

(From Box Label)

ITEM # _____

SEAL _____

(Example: 180H -15 SSC/CB)

INSTALLATION DATE _____

1.0 CAUTIONS

These instructions are general in nature. It is assumed that the installer is familiar with seals and certainly with the requirements of their plant for the successful use of mechanical seals. If in doubt, get assistance from someone in the plant who is familiar with seals or delay the installation until a seal representative is available. All necessary auxiliary arrangements for successful operation (heating, cooling, flushing) as well as safety devices must be employed. These decisions are to be made by the user. The decision to use this seal or any other Chesterton seal in a particular service is the customer's responsibility.

Do not touch the mechanical seal for any reason while it is operating. Lockout or uncouple the driver prior to personal contact with the seal. Do not touch the mechanical seal while it is in contact with hot or cold fluids. Ensure that all the mechanical seal materials are compatible with the process fluid. This will prevent possible personal injury.

2.0 TRANSPORT AND STORAGE

Transport and store seals in their original packaging. Mechanical seals contain components that may be subject to alteration and ageing. It is therefore important to observe the following conditions for storage:

- Dust free environment
- Moderately ventilated at room temperature
- Avoid exposure to direct sunlight and heat
- For elastomers, storage conditions according to ISO 2230 should be observed.

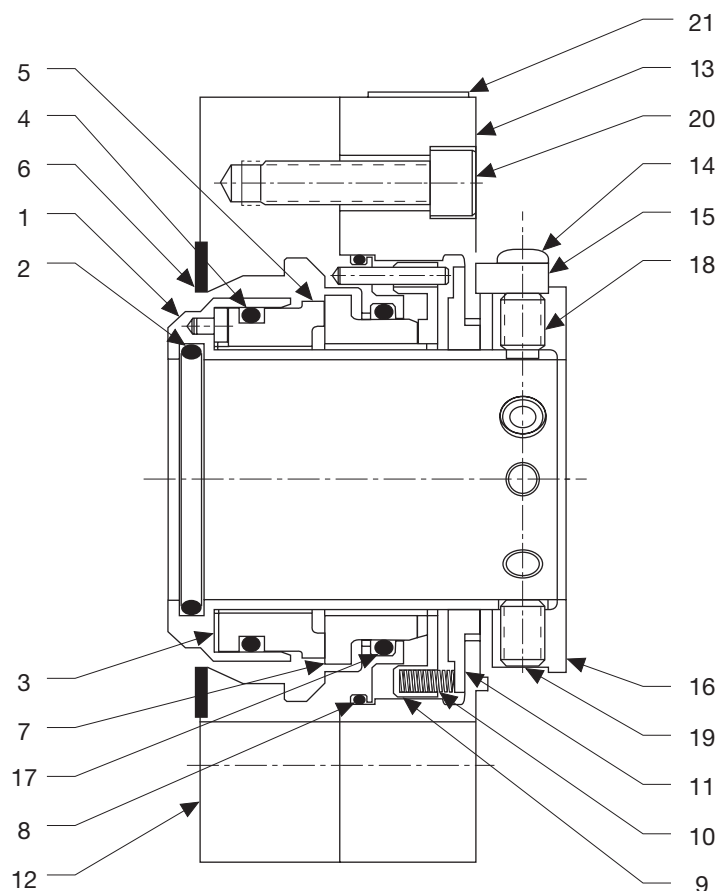
3.0 DESCRIPTION

3.1 Parts Identification

3.1.1 Seal Sizes: 25 mm to 43 mm (1.000" to 1.625") – Figure 1

KEY

- 1 - Sleeve Assembly
- 2 - Shaft O-Ring
- 3 - Rotary Gasket
- 4 - Rotary O-Ring
- 5 - Rotary Seal Ring
- 6 - Gland Gasket
- 7 - Stationary Seal Ring
- 8 - Gland O-Ring
- 9 - Pusher
- 10 - Spring
- 11 - Bushing
- 12 - Inner Gland Assembly
- 13 - Outer Gland
- 14 - Centering Clip Screw
- 15 - Centering Clip
- 16 - Lock Ring
- 17 - Stationary O-Ring
- 18 - Dog Pt Set Screw
- 19 - Cup Pt Set Screw
- 20 - Socket Head Cap Screw
- 21 - Caplug



3.0 DESCRIPTION (cont.)

3.1 Parts Identification

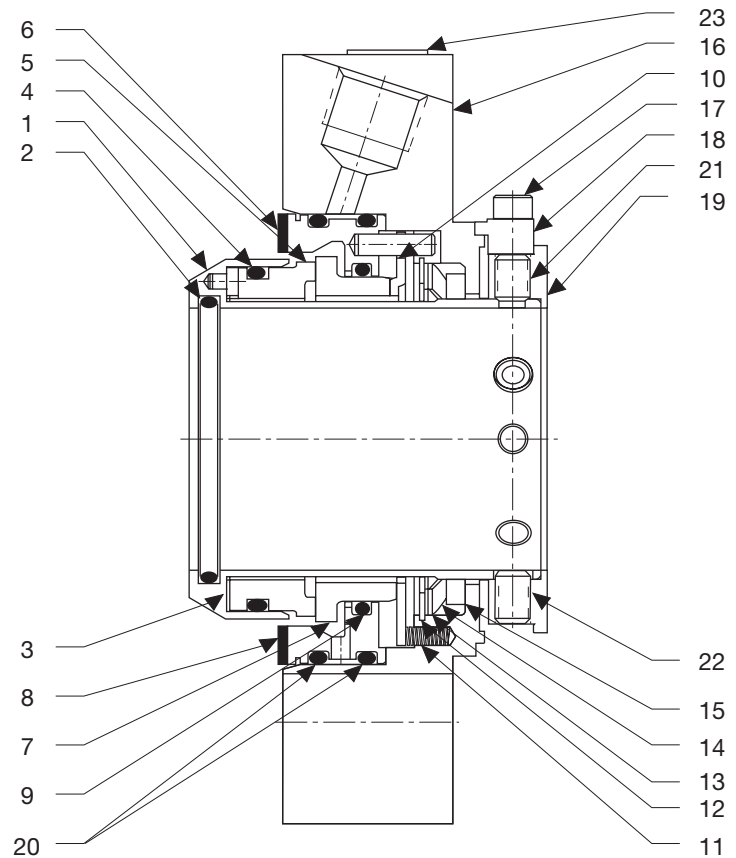
3.1.2 Seal Sizes: 1.125" & 1.375" OVERSIZE – Figure 2

KEY

- 1 - Sleeve Assembly
- 2 - Shaft O-Ring
- 3 - Rotary Gasket
- 4 - Rotary O-Ring
- 5 - Rotary Seal Ring
- 6 - Gland Gasket(s)**
- 7 - Stationary Seal Ring
- 8 - Adapter Assembly
- 9 - Stationary O-Ring
- 10 - Pusher Plate
- 11 - Spring
- 12 - Snap Ring*
- 13 - Shim*
- 14 - Wave Spring*
- 15 - Throttle Bushing*
- 16 - Gland
- 17 - Centering Clip Screw
- 18 - Centering Clip
- 19 - Lock Ring
- 20 - Adapter O-Ring(s)**
- 21 - Dog Pt Set Screw
- 22 - Cup Pt Set Screw
- 23 - Caplug

*Optional

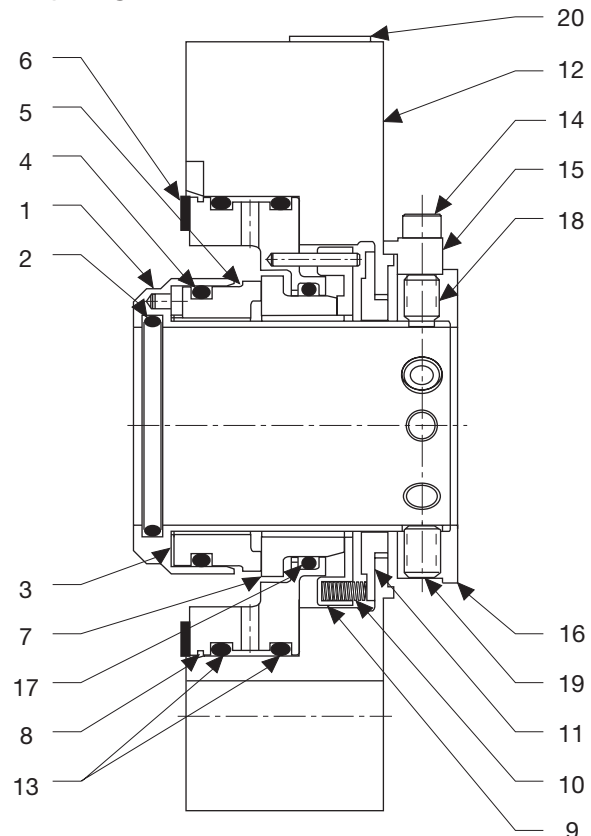
**OVERSIZE design uses
1 O-Ring (20) and 2 gaskets (6)



3.1.3 Seal Sizes: 45 mm to 120 mm (1.750" to 4.750") – Figure 3

KEY

- 1 - Sleeve Assembly
- 2 - Shaft O-Ring
- 3 - Rotary Gasket
- 4 - Rotary O-Ring
- 5 - Rotary Seal Ring
- 6 - Gland Gasket
- 7 - Stationary Seal Ring
- 8 - Adapter Assembly
- 9 - Pusher
- 10 - Spring
- 11 - Bushing
- 12 - Gland
- 13 - Adapter O-Rings
- 14 - Centering Clip Screw
- 15 - Centering Clip
- 16 - Lock Ring
- 17 - Stationary O-Ring
- 18 - Dog Pt Set Screw
- 19 - Cup Pt Set Screw
- 20 - Caplug



3.0 DESCRIPTION (cont.)

3.2 Operating Parameters*

Pressure Limits:

All 180 & 180H Seals can withstand operating pressures from full vacuum (710 mm Hg/28") to the maximum pressures at the conditions listed.

25 to 60 mm (1.000" to 2.500")

Up to 26 bar g (600 psig)*

65 to 120 mm (2.625" to 4.750")

20 bar g to 26 bar g (300 to 600 psig) *

** Seal pressure capabilities are dependent on the fluid sealed, temperature, speed, and seal face combinations.*

Standard Materials**:

All Metal Parts: 316 SS / EN 1.4401

Springs: Alloy C276 / EN 2.4819

Rotary Face: Carbon; Silicon Carbide; Tungsten Carbide

Stationary Face: Silicon Carbide; Tungsten Carbide

Elastomers: FKM, FEPM or EPDM installed

*** Other materials available upon request.*

Speed Limits:

Up to 5000 fpm (25 m/s)

Temperature Limits:

Elastomers

To 150°C (300°F) EPDM

To 205°C (400°F) FEPM, FKM

To 260°C (500°F) FFKM

** Consult Chesterton Mechanical Seal Application Engineering for higher operating conditions.*

3.3 Intended Use

The mechanical seal is specifically designed for the intended application and is to be operated within the operating parameters as specified. For use beyond the intended application and/or outside the operating parameters, consult Chesterton Mechanical Seal Application Engineering to confirm the suitability of the mechanical seal prior to putting the mechanical seal in operation.

3.0 DESCRIPTION (cont.)

3.4.1 Dimensional Data - Seal Sizes: 25 mm to 43 mm (1.000" to 1.625")

METRIC - Millimeters

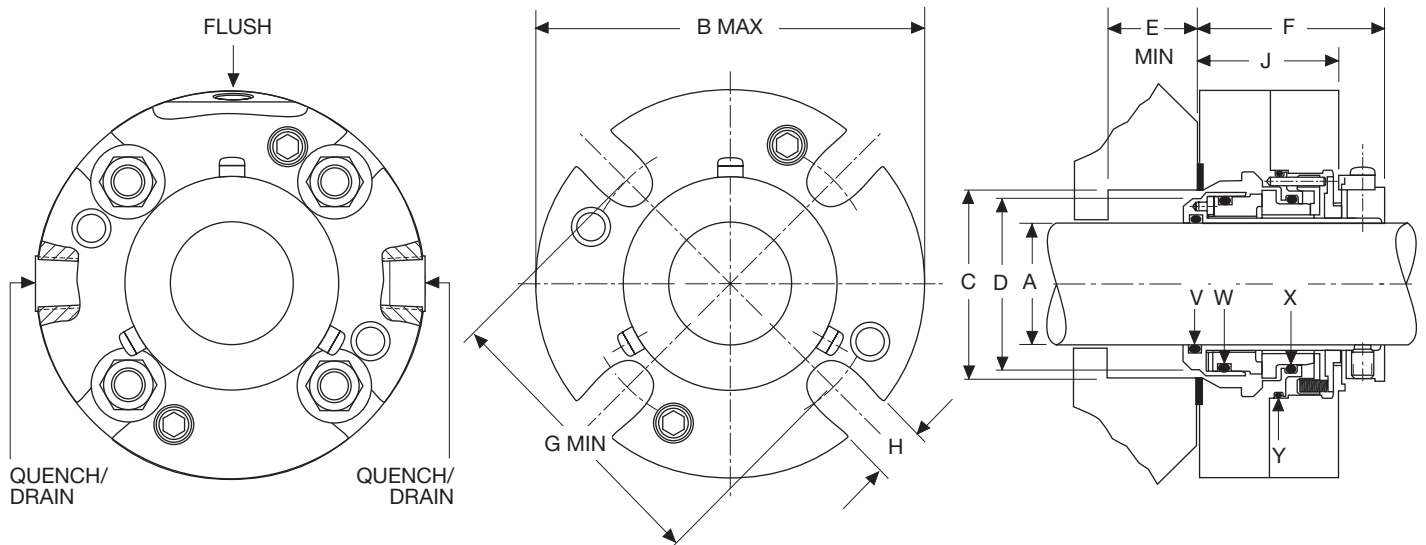
SHAFT SIZE	GLAND OD	STUFFING BOX BORE		IB SEAL DIA	SB DEPTH	OB LENGTH	BOLT CIRCLE BY BOLT SIZE			SLOT WIDTH	GLAND WIDTH	O-RINGS			
												SHAFT	ROTARY	STATIONARY	GLAND
												V	W	X	Y
A	B	C	C	D	E	F	G MIN			H	J				
	MAX	MIN	MAX	MAX	MIN	MAX	10 mm	12 mm	16 mm		MAX				
25	104	41	51	39	6	54	73			11	41	120	126	127	033
28	104	44	52	42	6	54	73			11	41	122	128	129	034
30	104	46	57	44	6	54	78			11	41	123	129	130	035
32	104	48	58	46	6	54	80			11	41	124	130	131	035
33	113	49	59	47	6	54	81	83		14	41	125	131	132	036
35	111	51	59	49	6	54	80	82*		14	41	126	132	133	036
38	114	54	61	52	6	54	85	87		14	41	128	134	135	037
40	127	56	68	54	6	54	90	92		13	41	129	135	136	038
42	127	58	66	56	6	54	88	90		13	41	130	136	137	039
43	127	59	69	57	6	54	91	93		13	41	131	137	138	039

*Requires SHCS or D shaped washers.

INCH

DASH NO.	SHAFT SIZE	GLAND OD	STUFFING BOX BORE		IB SEAL DIA	SB DEPTH	OB LENGTH	BOLT CIRCLE BY BOLT SIZE			SLOT WIDTH	GLAND WIDTH	O-RINGS			
													SHAFT	ROTARY	STATIONARY	GLAND
													V	W	X	Y
	A	B	C	C	D	E	F	G MIN			H	J				
		MAX	MIN	MAX	MAX	MIN	MAX	3/8"	1/2"	5/8"		MAX				
-8	1.000	4.11	1.63	2.01	1.55	0.22	2.11	2.88			0.44	1.62	120	126	127	033
-9	1.125	4.11	1.75	2.04	1.67	0.22	2.11	2.88			0.44	1.62	122	128	129	034
-10	1.250	4.11	1.88	2.27	1.80	0.22	2.11	3.14			0.44	1.62	124	130	131	035
-11	1.375	4.36	2.00	2.33	1.92	0.22	2.11	3.13	3.25*		0.57	1.62	126	132	133	036
-12	1.500	4.49	2.13	2.44	2.05	0.22	2.11	3.33	3.45		0.57	1.62	128	134	135	037
-13	1.625	4.99	2.25	2.69	2.17	0.22	2.11	3.52	3.65		0.57	1.62	130	136	137	038

*Requires SHCS or D shaped washers.

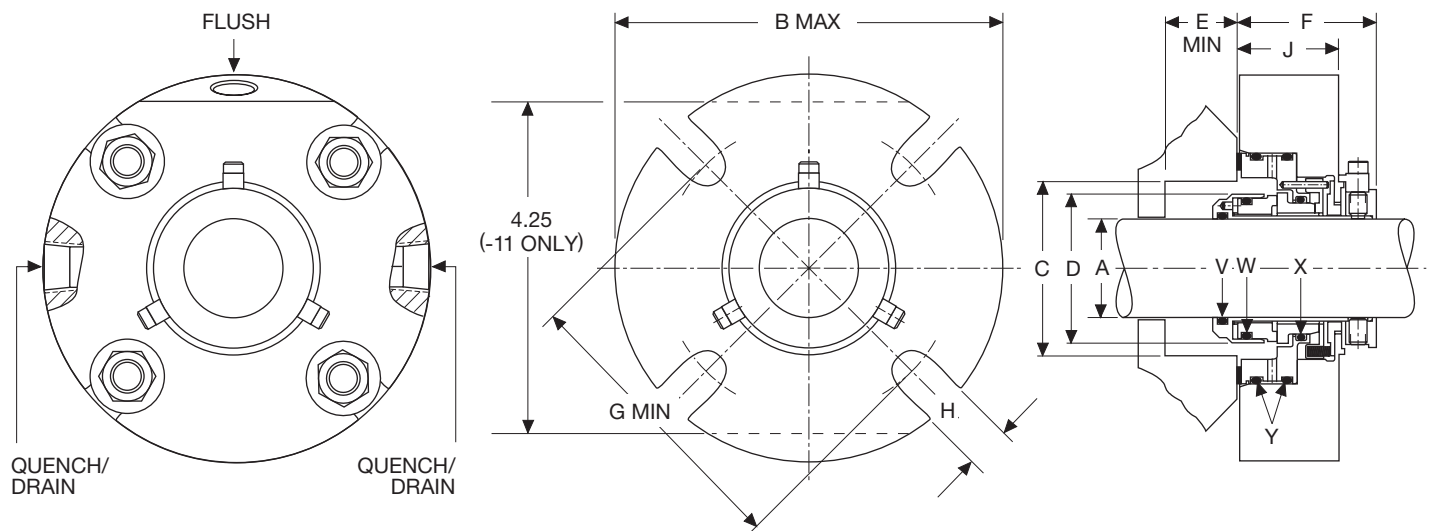


Seal Sizes 25 mm to 43 mm (1.000" to 1.625") - NPT SIZES			
DASH NO.	SHAFT SIZE	FLUSH PORT	QUENCH/DRAIN PORTS
-8 to -13	1.000" to 1.625"	1/4 - 18	1/4 - 18
-	25 mm to 43 mm		

3.0 DESCRIPTION (cont.)

3.4.2 Dimensional Data - Seal Sizes: 1.125" & 1.375" with **OVERSIZE** Gland

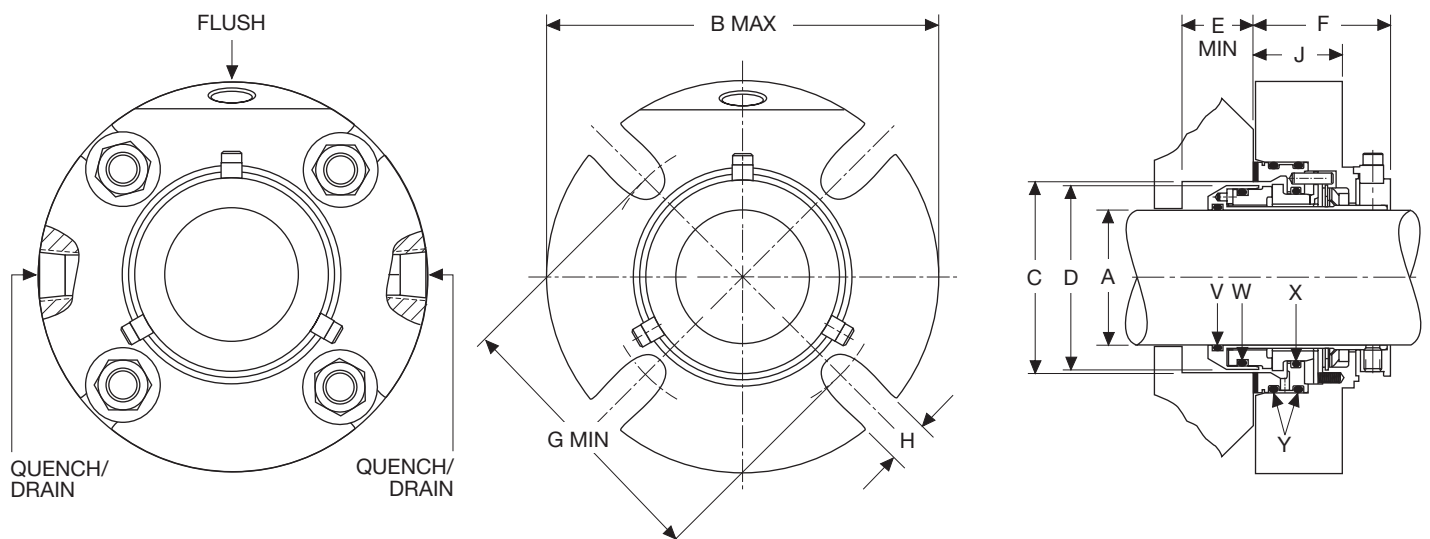
DASH NO.	SHAFT SIZE	GLAND OD	STUFFING BOX BORE		IB SEAL DIA	SB DEPTH	OB LENGTH	BOLT CIRCLE BY BOLT SIZE			SLOT WIDTH	GLAND WIDTH	O-RINGS			
													SHAFT	ROTARY	STATIONARY	ADAPTER
								A	B MAX	C MIN			C MAX	D MAX	E MIN	F MAX
								3/8"	1/2"	5/8"						
-9 OS	1.125	4.48	2.50	2.75	1.82	0.40	1.93	3.71			0.44	1.44	122	128	129	150
-11 OS	1.375	5.40	2.68	3.00	2.07	0.40	1.93	4.03			0.44	1.44	126	132	133	151



Seal Sizes: 1.125" & 1.375" OVERSIZE GLAND - NPT SIZES

DASH NO.	SHAFT SIZE	FLUSH PORT	QUENCH/DRAIN PORTS
-9 OS	1.125	1/8 - 27	1/4 - 18
-11 OS	1.375	1/4 - 18	

3.4.3 Dimensional Data - Seal Sizes: 45 mm to 120 mm (1.750" to 4.750")



Seal Sizes: 45 mm to 120 mm (1.750" to 4.750") - NPT SIZES

DASH NO.	SHAFT SIZE	FLUSH PORT	QUENCH/DRAIN PORTS
-14 to -20	1.750" to 2.500"	3/8 - 18	3/8 - 18
-	45 mm to 60 mm"		
-21 to -38	2.625" to 4.750"	1/2 - 14	1/2 - 14
-	65 mm to 120 mm		

3.0 DESCRIPTION (cont.)

METRIC (millimeters)

SHAFT SIZE	GLAND OD	STUFFING BOX BORE		IB SEAL DIA	SB DEPTH	OB LENGTH	BOLT CIRCLE BY BOLT SIZE			SLOT WIDTH	GLAND WIDTH	O-RINGS			
												SHAFT	ROTARY	STATIONARY	ADAPTER
												V	W	X	Y
A	B	C	C	D	E	F	G MIN			H	J				
	MAX	MIN	MAX	MAX	MIN	MAX	10 mm	12 mm	16 mm		MAX				
45	139	64	73	63	18	49	95	97		13	43	133	139	140	150
48	139	67	73	66	18	49	95*	97*		13	43	134	141	142	151
50	139	69	78	68	18	49	100	102		13	43	136	142	143	151
53	152	73	87	72	18	49	109	111	115	17	43	137	144	145	153
55	152	74	83	73	18	49	105	107	111	17	43	139	145	146	152
58	152	80	91	78	18	49	114	116	120	17	43	140	148	149	153
60	152	80	91	78	18	49	114	116	120	17	43	142	148	149	153
							12 mm	16 mm	20 mm						
65	164	92	103	90	22	64	127	131		17	45	231	235	236	242
70	196	96	111	93	22	64	137	141		17	45	232	236	237	245
75	202	102	119	100	22	64	143	147		17	45	234	238	239	247
80	203	106	122	103	22	64	150	154		17	45	236	239	240	248
85	211	111	128	109	22	64	152	156	161	20	45	237	241	242	250
90	214	116	132	113	22	64	160	164	168	20	45	239	242	243	251
95	221	121	137	119	22	64	161	165	170	20	45	240	244	245	253
100	228	127	144	125	22	64	168	172	177	20	45	242	246	247	255
110	237	137	154	134	22	64	178	182	186	20	45	245	249	250	258
120	266	146	164	144	22	64	187	191	195	20	45	248	252	253	259

*Requires SHCS or D shaped washers.

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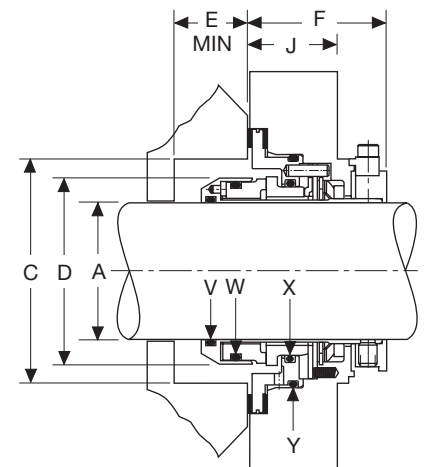
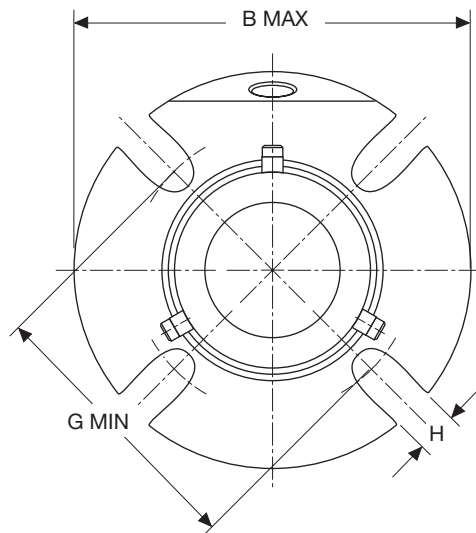
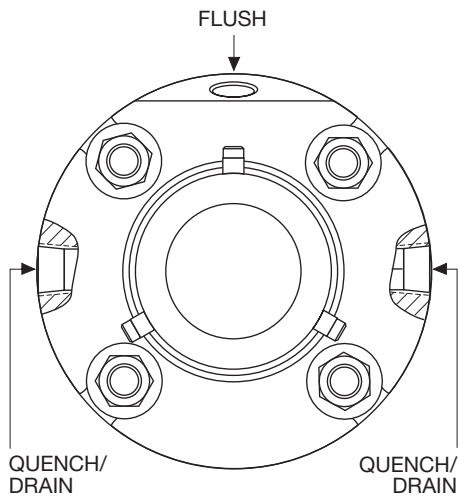
DASH NO.	SHAFT SIZE	GLAND OD	STUFFING BOX BORE		IB SEAL DIA	SB DEPTH	OB LENGTH	BOLT CIRCLE BY BOLT SIZE			SLOT WIDTH	GLAND WIDTH	O-RINGS			
													SHAFT	ROTARY	STATIONARY	ADAPTER
													V	W	X	Y
	A	B	C	C	D	E	F	G MIN			H	J				
		MAX	MIN	MAX	MAX	MIN	MAX	3/8"	1/2"	5/8"		MAX				
-14	1.750	5.49	2.50	2.81	2.44	0.69	1.91	3.62	3.75*		0.57	1.27	132	138	139	150
-15	1.875	5.49	2.63	2.94	2.57	0.69	1.91	3.75	3.87*		0.57	1.27	134	140	141	151
-16	2.000	5.49	2.75	3.19	2.69	0.69	1.91	4.00	4.13		0.57	1.27	136	142	143	152
-17	2.125	5.99	2.88	3.44	2.82	0.69	1.91	4.25	4.38	4.50	0.69	1.27	138	144	145	153
-18	2.250	5.99	3.00	3.56	2.94	0.69	1.91	4.37	4.50	4.62	0.69	1.27	140	146	147	153
-19	2.375	5.99	3.13	3.59	3.07	0.69	1.91	4.43	4.56	4.68	0.69	1.27	142	148	149	153
-20	2.500	6.49	3.25	3.81	3.19	0.69	1.91	4.62	4.75	4.87	0.69	1.27	144	150	151	154
								1/2"	5/8"	3/4"						
-21	2.625	6.45	3.63	4.04	3.54	0.88	2.50	5.02	5.15		0.69	1.77	231	236	237	242
-22	2.750	7.70	3.75	4.38	3.67	0.88	2.50	5.42	5.55		0.69	1.77	232	236	237	245
-23	2.875	7.83	3.88	4.50	3.79	0.88	2.50	5.50	5.62		0.69	1.77	233	237	238	246
-24	3.000	7.94	4.00	4.69	3.92	0.88	2.50	5.65	5.77		0.69	1.77	234	238	239	247
-25	3.125	7.99	4.13	4.81	4.04	0.88	2.50	5.80	5.92		0.69	1.77	235	239	240	248
-26	3.250	8.19	4.25	4.94	4.17	0.88	2.50	5.93	6.05		0.69	1.77	236	240	241	249
-27	3.375	8.30	4.38	5.06	4.29	0.88	2.50	6.02	6.14	6.27	0.81	1.77	237	241	242	250
-28	3.500	8.44	4.50	5.19	4.42	0.88	2.50	6.18	6.31	6.43	0.81	1.77	238	242	243	251
-29	3.625	8.49	4.63	5.31	4.54	0.88	2.50	6.31	6.44	6.56	0.81	1.77	239	243	244	252
-30	3.750	8.71	4.75	5.39	4.67	0.88	2.50	6.38	6.51	6.63	0.81	1.77	240	244	245	253
-31	3.875	8.84	4.88	5.51	4.79	0.88	2.50	6.52	6.64	6.77	0.81	1.77	241	245	246	254
-32	4.000	8.96	5.00	5.69	4.92	0.88	2.50	6.66	6.78	6.91	0.81	1.77	242	246	247	255
-33	4.125	8.99	5.13	5.81	5.04	0.88	2.50	6.79	6.90	7.03	0.81	1.77	243	247	248	256
-34	4.250	8.99	5.25	5.94	5.17	0.88	2.50	6.91	7.04	7.16	0.81	1.77	244	248	249	257
-35	4.375	9.33	5.38	6.06	5.29	0.88	2.50	7.03	7.15	7.28	0.81	1.77	245	249	250	258
-36	4.500	9.49	5.50	6.19	5.42	0.88	2.50	7.18	7.30	7.43	0.81	1.77	246	250	251	258
-37	4.625	9.49	5.63	6.31	5.54	0.88	2.50	7.28	7.40	7.53	0.81	1.77	247	251	252	259
-38	4.750	10.49	5.75	6.47	5.67	0.88	2.50	7.40	7.53	7.65	0.81	1.77	248	252	253	259

*Requires SHCS or D shaped washers.

3.0 DESCRIPTION (cont.)

3.4.4 Dimensional Data - Seal Sizes: 1.750" to 4.750" with OVERSIZE Gland

DASH NO.	SHAFT SIZE	GLAND OD	STUFFING BOX BORE		IB SEAL DIA	SB DEPTH	OB LENGTH	BOLT CIRCLE BY BOLT SIZE			SLOT WIDTH	GLAND WIDTH	O-RINGS				
													SHAFT	ROTARY	STATIONARY	ADAPTER	
								A	B MAX	C MIN			C MAX	D MAX	E MIN	F MAX	G MIN
								3/8"	1/2"	5/8"							
-14 OS	1.750	6.64	3.50	3.75	2.44	0.69	1.91	5.21	5.33	5.46	0.57	1.44	132	138	139	151	
-15 OS	1.875	5.99	3.56	3.81	2.57	0.69	1.91		5.00		0.57	1.44	134	140	141	152	
-17 OS	2.125	6.99	3.88	4.25	2.82	0.69	1.91			5.95	0.69	1.44	138	144	145	153	
-19 OS	2.375	8.40	4.13	4.50	3.07	0.69	1.91			7.00	0.69	1.44	142	148	149	154	
-20 OS	2.500	7.77	4.50	4.75	3.19	0.69	1.91			6.75	0.69	1.44	144	150	151	154	
								5/8"	3/4"	7/8"							
-21 OS	2.625	6.98	4.55	4.78	3.54	0.88	2.50	6.00			0.69	1.77	231	235	236	242	
-22 OS	2.750	7.89	4.45	4.78	3.67	0.88	2.50		6.38		0.81	1.77	232	236	237	243	
-24 OS	3.000	8.64	4.93	5.39	3.92	0.88	2.50	7.00	7.13	7.25	0.94	1.77	234	238	239	246	
-27 OS	3.375	8.39	4.95	5.27	4.29	0.88	2.50		6.88		0.82	1.77	237	241	242	248	
-30 OS	3.750	9.76	5.08	6.40	4.67	0.88	2.50	8.25			0.82	1.77	240	244	245	252	
-33 OS	4.125	9.76	5.95	6.27	5.04	0.88	2.50			8.00	0.82	1.77	243	247	248	255	
-36 OS	4.500	12.49	6.75	7.49	5.42	0.88	2.50		10.76		0.88	1.77	246	250	251	258	
-38 OS	4.750	11.39	7.20	7.65	5.67	0.88	2.50	9.88	10.00		0.82	1.77	248	252	253	259	



KEY (drawings & charts)

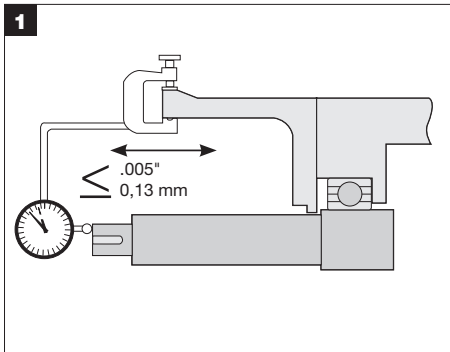
A – Shaft Size	H – Slot Width
B – Maximum Gland Diameter	J – Gland Width
C – Stuffing Box Inside Diameter	V – Shaft O-Ring
D – Inboard Seal Diameter	W – Rotary Seal O-Ring
E – Required Stuffing Box Depth	X – Stationary Seal O-Ring
F – Outboard Seal Length	Y – Gland (or Adapter) O-Ring
G – Minimum Bolt Circle by Bolt Size	

Seal Sizes: 1.750" to 4.750" OVERSIZE Gland - NPT SIZES

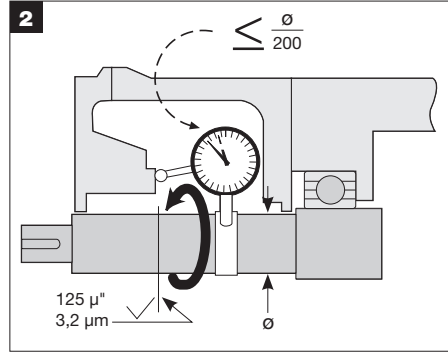
DASH NO.	SHAFT SIZE	FLUSH PORT	QUENCH/DRAIN PORTS
-14 OS to -20 OS	1.750" to 2.500"	3/8 - 18	3/8 - 18
-21 OS to -38 OS	2.625" to 4.750"	1/2 - 14	1/2 - 14

4.0 PREPARATION FOR INSTALLATION

4.1 Equipment

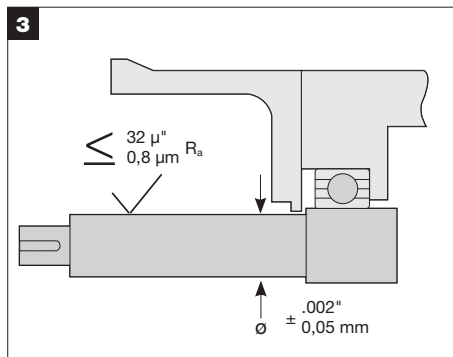


If practical, place the dial indicator tip on the end of the shaft sleeve or on a step in the shaft to measure end play. Alternately push and pull the shaft in the axial direction. If the bearings are in good condition, end play should not exceed 0,13 mm (.005").

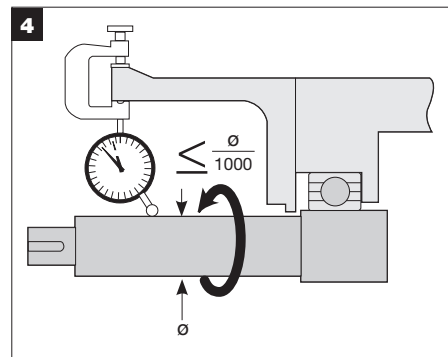


If possible, attach a base dial indicator to the shaft and rotate both the indicator and shaft slowly while reading the runout of the stuffing box face. Misalignment of the stuffing box face relative to the shaft should not exceed 0,005 mm TIR per mm (.005 in per inch) of shaft diameter.

The stuffing box face must be flat and smooth enough to seal the gland. Surface roughness should be 3,2 microns (125 microinch) Ra maximum for gaskets and 0,8 micron (32 microinch) Ra for O-Rings. Steps between halves of split case pumps should be machined flat. Make sure the stuffing box is clean and clear along its entire length.



Remove all sharp corners, burrs, and scratches on the shaft, especially in areas where the O-Ring will slide, and polish if necessary to achieve a 0,8 micron (32 microinch) Ra finish. Make sure the shaft or sleeve diameter is within 0,05 mm (.002") of nominal.



Use a dial indicator to measure the shaft runout in the area where the seal will be installed. Runout should not exceed 0,03 mm TIR per mm (.001 in per inch) of shaft diameter.

4.2 Mechanical Seal

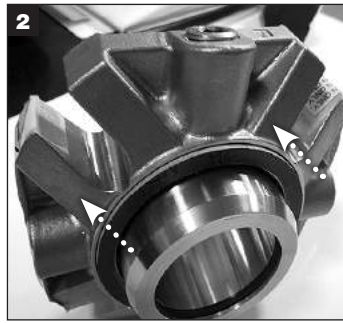
1. Check the chemical listing to determine if the O-Rings installed in this seal are compatible with the fluid being sealed.
2. **CAUTION:** If the seal is operating at a stuffing box pressure over 20 bar (300 psig) for sizes 25 to 60 mm (1" to 2 1/2"), or 16 bar (250 psig) for sizes 65 to 120 mm (2 5/8" to 4 3/4"), or if the shaft is case-hardened, replace the 316 stainless steel set screws with the hardened steel set screws supplied with the seal. The 1/4 dog point set screws go into the small holes in the sleeve. Do not disengage these screws from the sleeve when positioning the seal. The cup point set screws go through the larger holes in the sleeve. Make sure all screws are engaged in the sleeve but do not protrude into the ID bore. Also, when repositioning or removing the seal, make sure the centering clips and socket head cap screws are engaged.
3. Centering clips have been preset at the factory. If for any reason you loosen or remove the centering clip cap screw, retighten as follows prior to installing the seal on the equipment: Tighten the cap screw finger tight. Then using hex wrench, tighten cap screw an additional 1/8 turn. This will approximate the 3,4 Nm (30 inch-pounds) of torque for sizes 45 to 60 mm (1.75" to 2 1/2"), and 4,5 Nm (40 inch-pounds) of torque for 65 to 120 mm (2 5/8" to 4 3/4") set at the factory. For sizes 25 to 43 mm (1" to 1.625") tighten the button head screws to 2,3 Nm (20 inch-pounds) of torque.

5.0 SEAL INSTALLATION

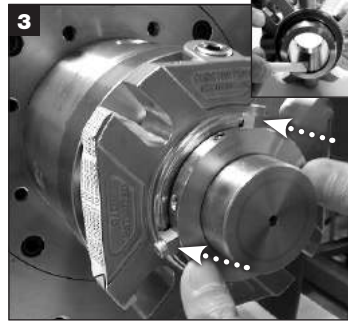
Seal depicted is with a cast gland. Product may be provided with machined gland.



Tools required for installation: Hex wrenches and grease (supplied with seal); open end or socket wrench (size dependent on mounting bolt size).



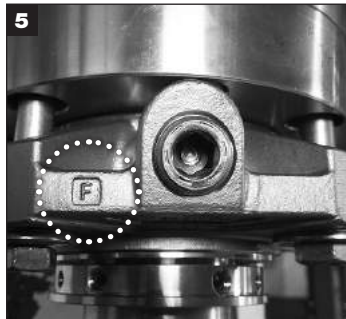
Ensure that the gland face gasket or O-Ring is fixed in the gland gasket (or O-Ring) groove. **CAUTION:** Some gland gaskets are supplied as a loose item with no adhesive. Ensure that gasket remains in place during installation.



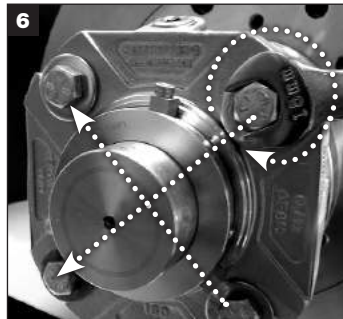
Apply a thin film of grease to the shaft O-Ring and slide seal onto the shaft by pushing on the lock ring. **CAUTION:** Ensure that all set screws are engaged through the sleeve but do not protrude into the sleeve ID bore.



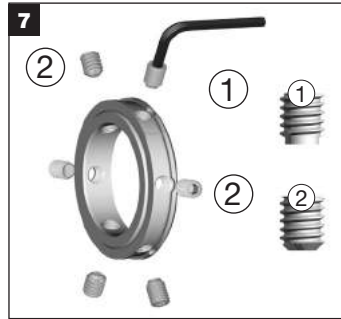
Reassemble the pump and make necessary shaft alignments and impeller adjustments. The impeller can be reset at any time, as long as the centering clips are in place and the seal set screws are loosened while the shaft is being moved.



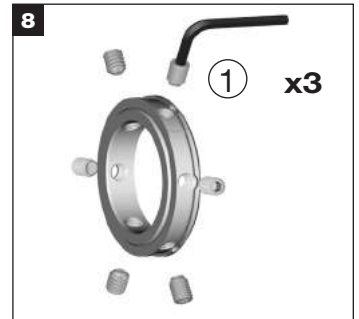
Orient the flush connection (marked F) to the location required. The port is plugged prior to shipping.



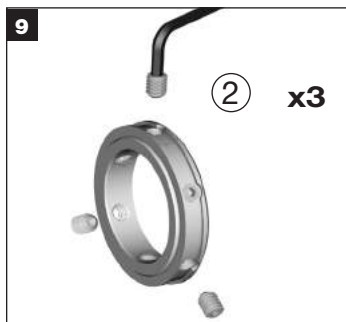
Tighten the gland bolts evenly. **IMPORTANT:** The gland bolts must be tightened before tightening the screws onto the shaft. **IMPORTANT:** Piping connections should not be made prior to tightening the gland bolts.



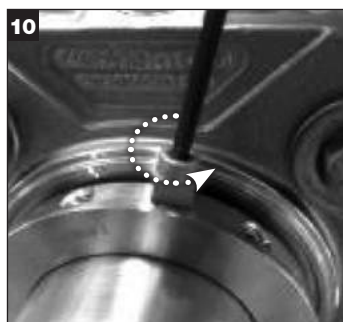
IMPORTANT: 1/4 dog point set screws (1) must be tightened FIRST and cup point set screws (2) must be tightened last.



Tighten three 1/4 dog point set screws (1) evenly with the hex key provided.



Tighten three cup point set screws (2) evenly with the hex key provided. **IMPORTANT:** After all sets screws have been tightened by hand, retighten with a torque wrench:
 Sizes 25 to 60 mm (1" to 2 1/2") to 5,6 to 6,8 Nm (50 to 60 in-lbs)
 Sizes 65 to 120 mm (2 5/8" to 4 3/4") 7,3 to 8,5 Nm (65 to 75 in-lbs)



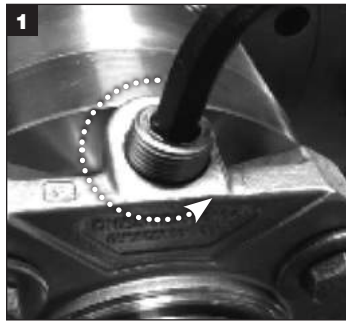
Remove all centering clips and retain for future use when making impeller adjustments.



IMPORTANT: To ensure that the gland is properly centered over the sleeve turn the shaft by hand to make sure the seal turns freely. If you hear metal to metal contact within the seal, it was improperly centered. Re-install the centering clips finger tight. Loosen the gland bolts. Fully tighten clips. Loosen the set screws. Re-tighten the gland bolts. Re-tighten the set screws. Remove the clips. If metal to metal contact still exists check the centering of the stuffing box.

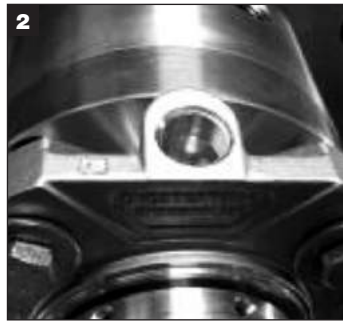
6.0 COMMISSIONING / EQUIPMENT START UP

6.1 Attach appropriate plumbing/environmental controls to the seal.

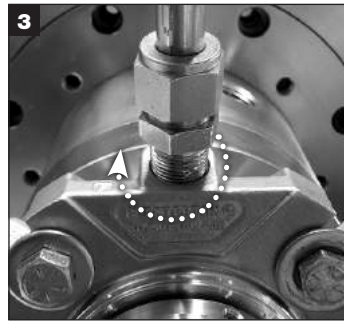


To connect FLUSH: Remove pipe plug from gland to allow for installation of flush connections.

Torque required to remove plug:
Sizes 25 to 60 mm (1" to 2 1/2")
67 Nm (50 ft-lbs.).
Sizes 65 to 120 mm (2 5/8" to 4 3/4") 108 Nm (80 ft-lbs.).



Ensure that the port being used for flush connection is that which is marked "F". Ready to install flush. **CAUTION:** Quench and Drain ports are marked "Q/D" and will be plugged with plastic cap plugs or pipe plugs and will also be covered with a caution sticker.



Install flush line and other piping as required.



Take all necessary precautions and follow normal safety procedures before starting the equipment.

Please contact Chesterton Mechanical Seal Application Engineering for assistance regarding cartridge dual seals.

7.0 DECOMMISSIONING / EQUIPMENT SHUT DOWN

Ensure that the equipment is electrically isolated. If the equipment has been used on toxic or hazardous fluids, ensure that the equipment is correctly decontaminated and made safe prior to commencing work. Ensure that the pump is isolated and check that the stuffing box is drained from any

fluid and pressure is fully released. Disassemble the seal and remove from equipment in the reverse order from installation instructions. In case of disposal, ensure the local regulations and requirements for disposal or recycling of the different components in the seal are adhered to

8.0 SPARE PARTS

Use only Chesterton original spare parts. Use of non-original spare parts represents risk of failure, danger to persons/equipment and voids the product warranty.

Spare Parts Kit can be purchased from Chesterton, referencing the recorded seal data from cover page.

9.0 SEAL MAINTENANCE AND REPAIR

9.1 Seal Maintenance

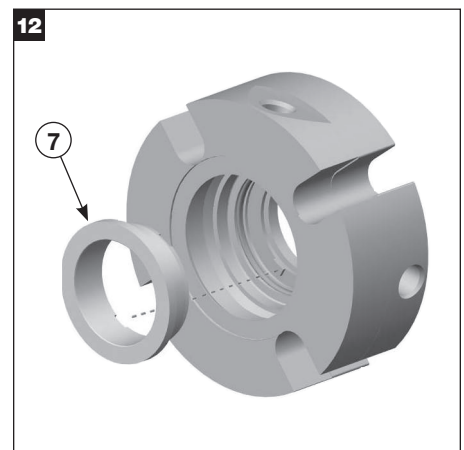
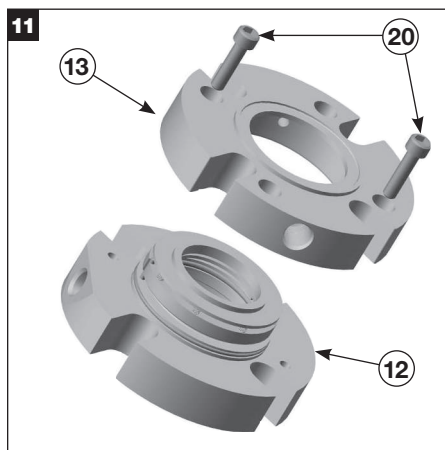
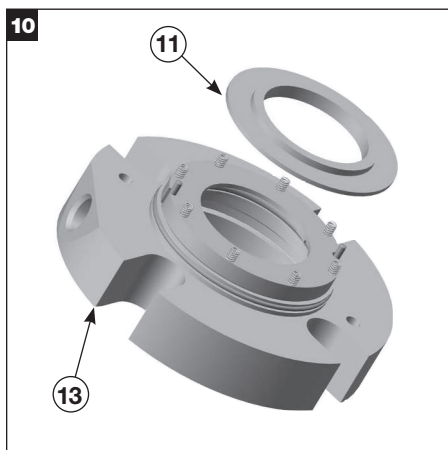
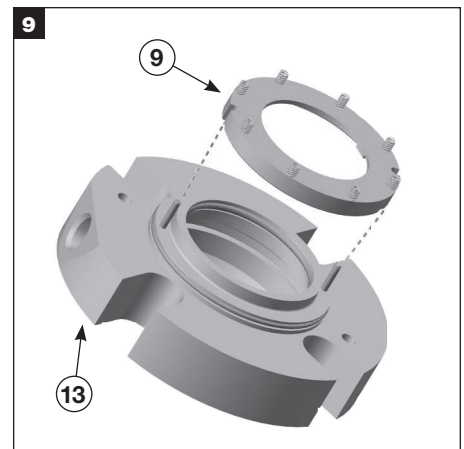
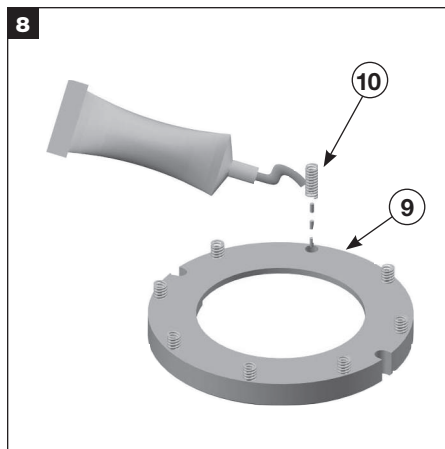
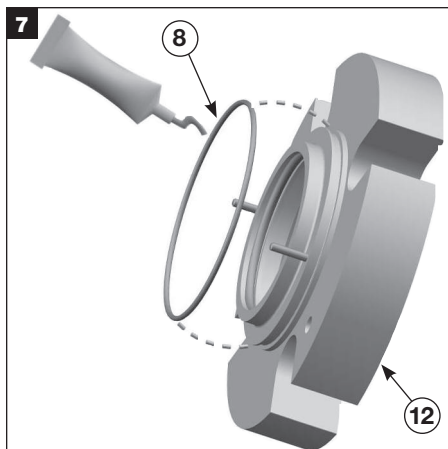
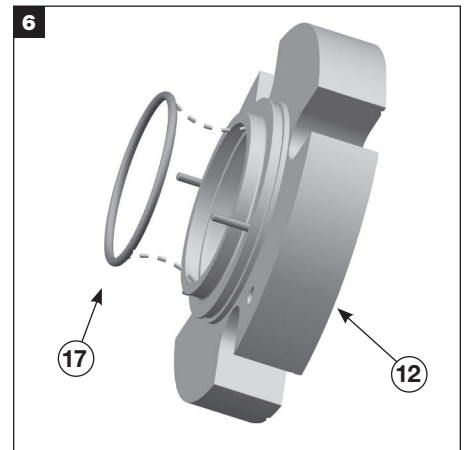
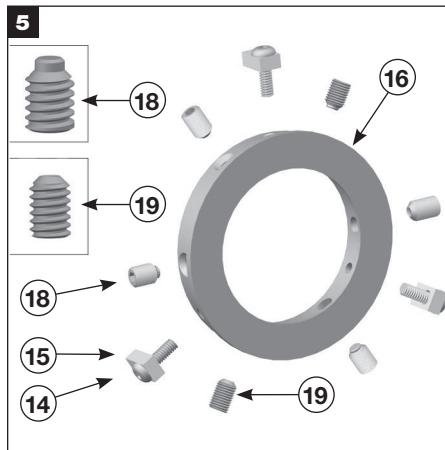
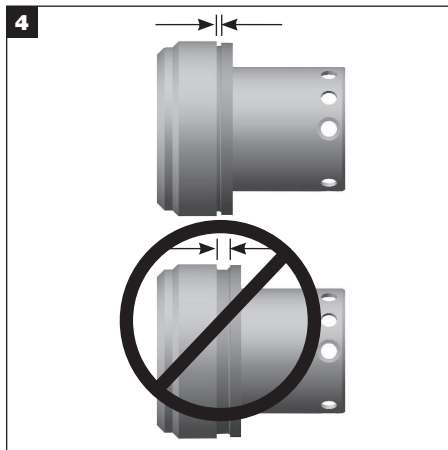
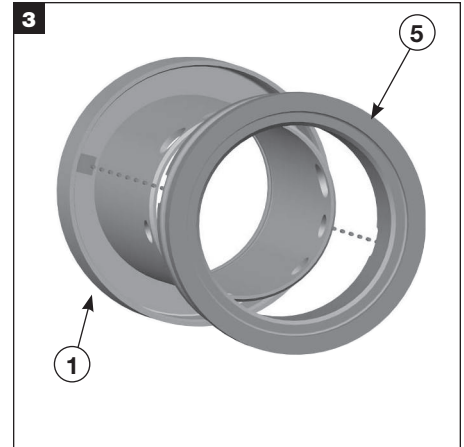
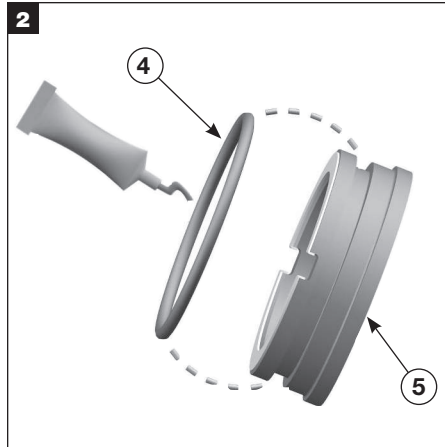
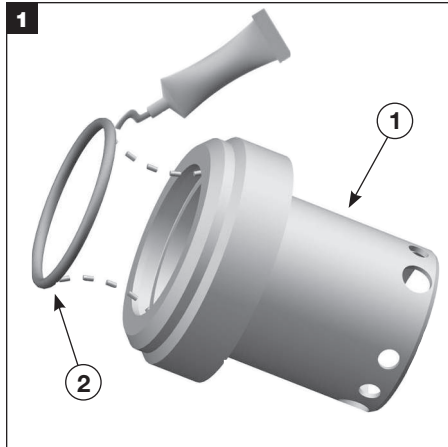
A correctly installed and operated mechanical seal requires little maintenance. It is recommended to periodically check the seal for leakage. Wearing components of a mechanical seal such as seal faces, O-Ring, etc., require replacement over time. While a seal is installed and operating, maintenance is not possible. Therefore it is recommended that a spare seal unit or a spare parts kit be held in stock to allow quick repair.

Note the condition of the parts, including elastomer surfaces and gland springs. Analyze the cause of failure and correct the problem, if possible, before reinstalling the seal.

Clean all elastomer and gasket surfaces with cleaning solvent.

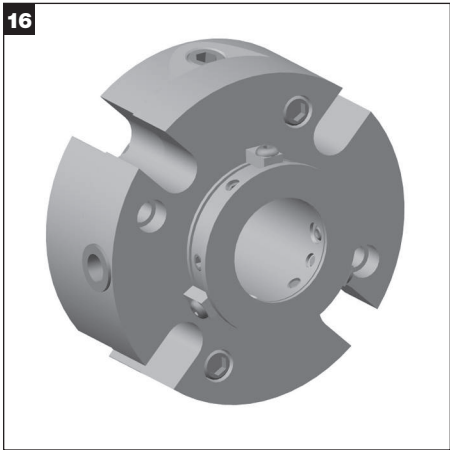
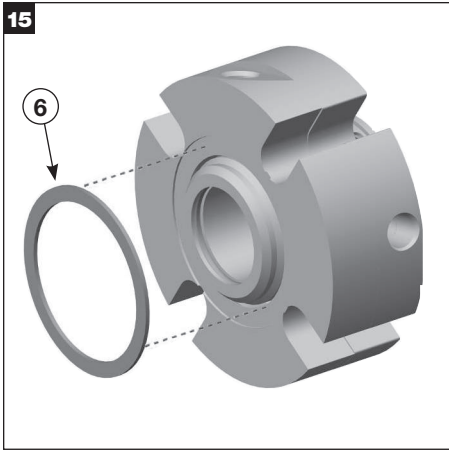
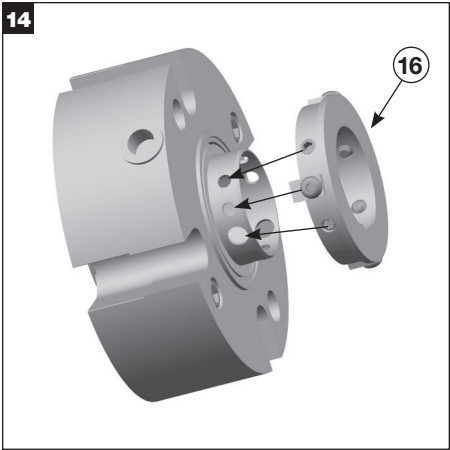
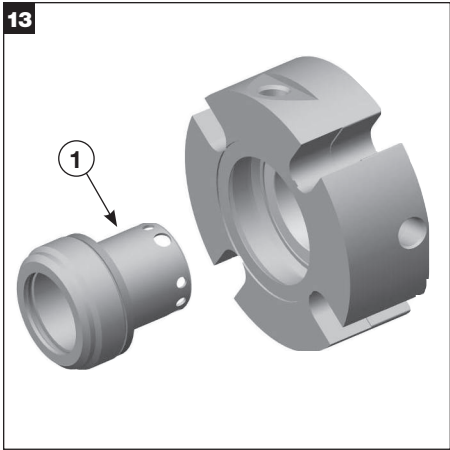
9.0 SEAL MAINTENANCE AND REPAIR (cont.)

9.1.1 Standard Seal Assembly - Seal Sizes: 25 mm to 43 mm (1.000" to 1.625")



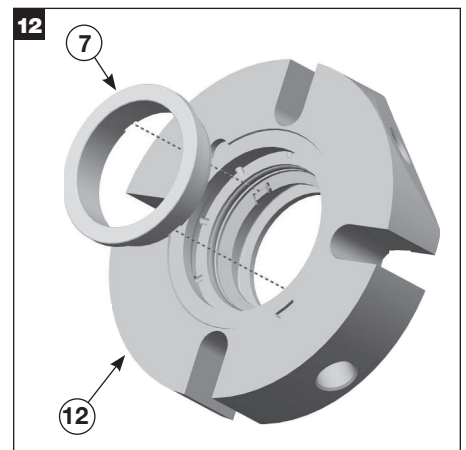
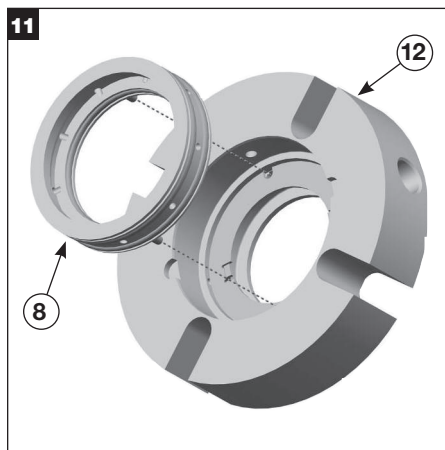
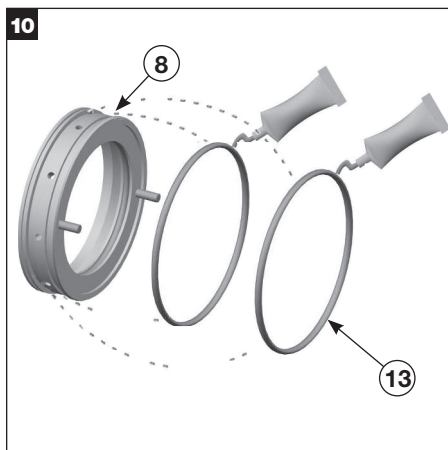
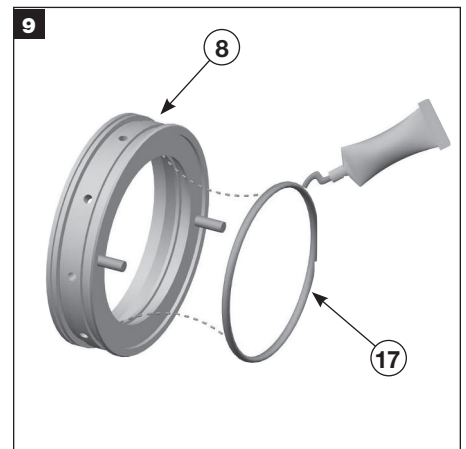
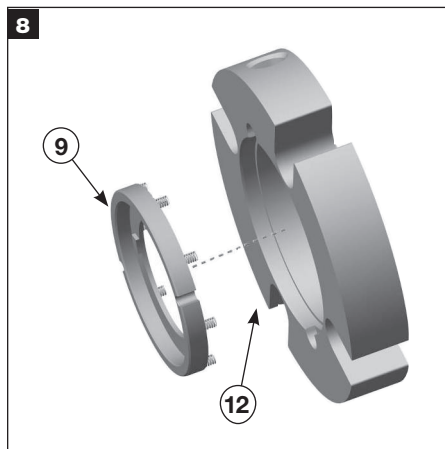
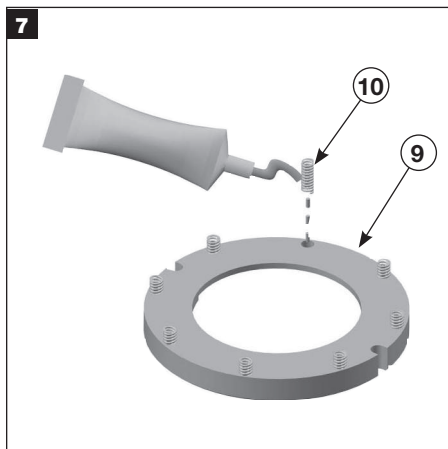
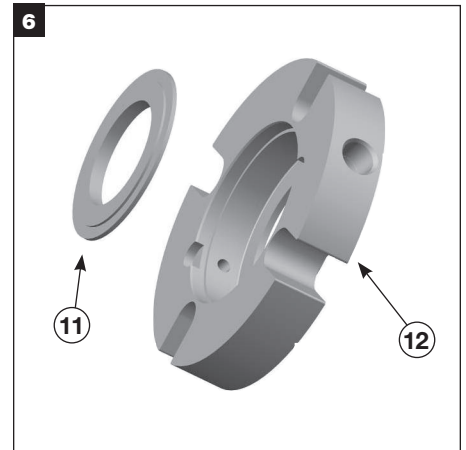
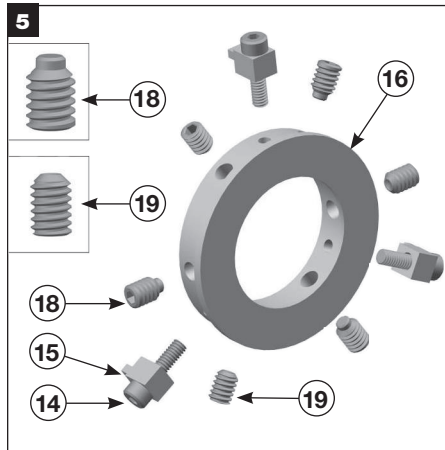
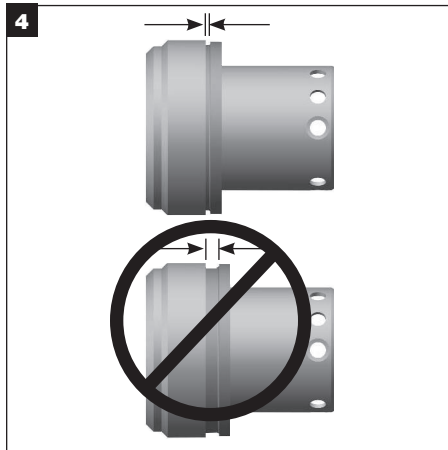
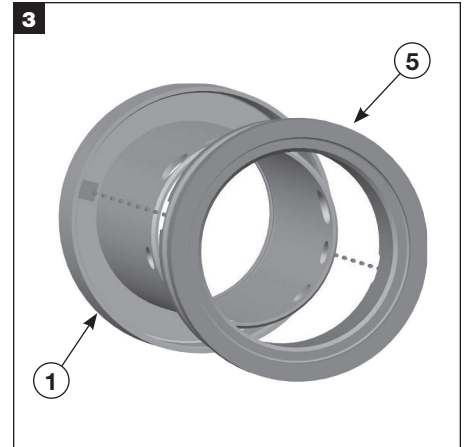
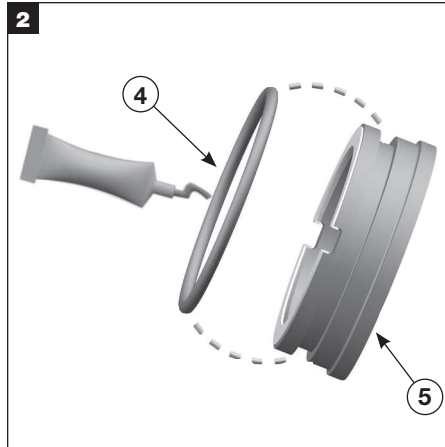
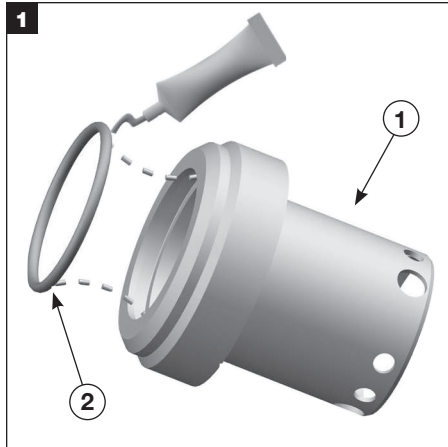
9.0 SEAL MAINTENANCE AND REPAIR (cont.)

9.1.1 Standard Seal Assembly - Seal Sizes: 25 mm to 43 mm (1.000" to 1.625") (cont.)



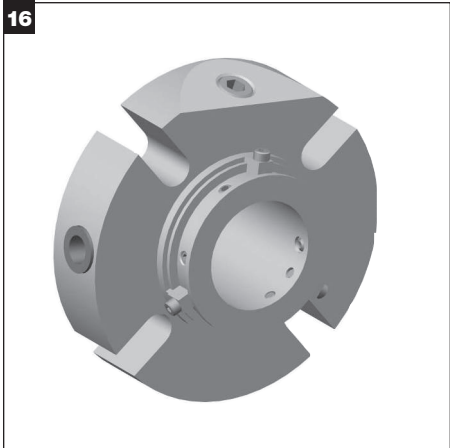
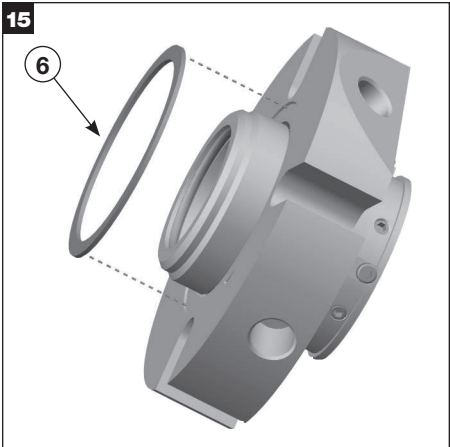
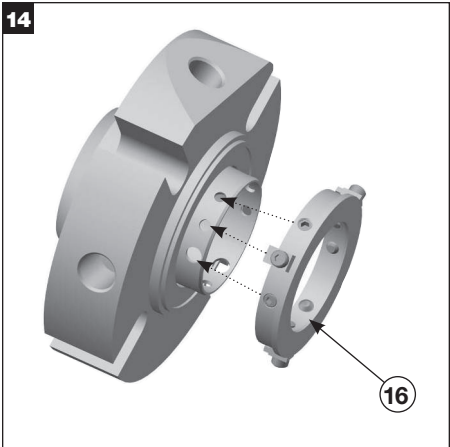
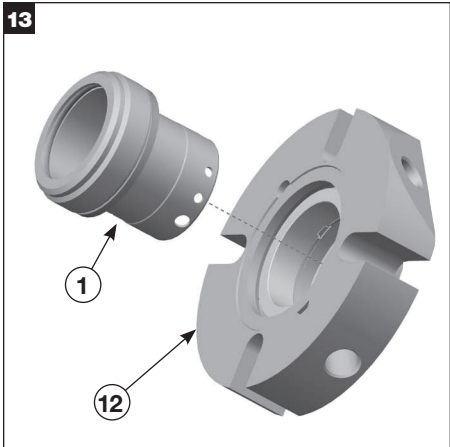
9.0 SEAL MAINTENANCE AND REPAIR (cont.)

9.1.2 OVERSIZE Gland Seal Assembly - Seal Sizes: 1.125" & 1.375"



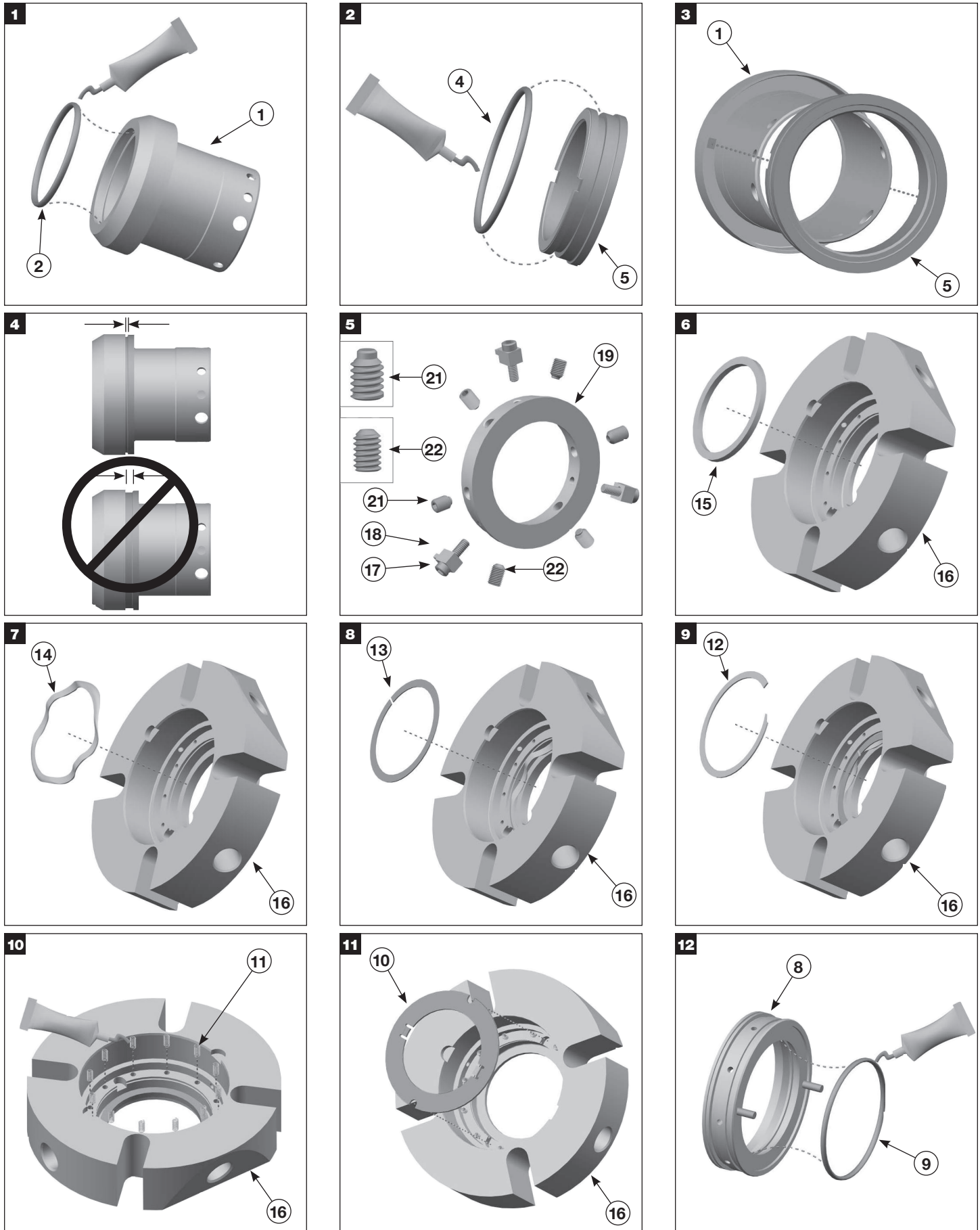
9.0 SEAL MAINTENANCE AND REPAIR (cont.)

9.1.2 OVERSIZE Gland Seal Assembly - Seal Sizes: 1.125" & 1.375" (cont.)



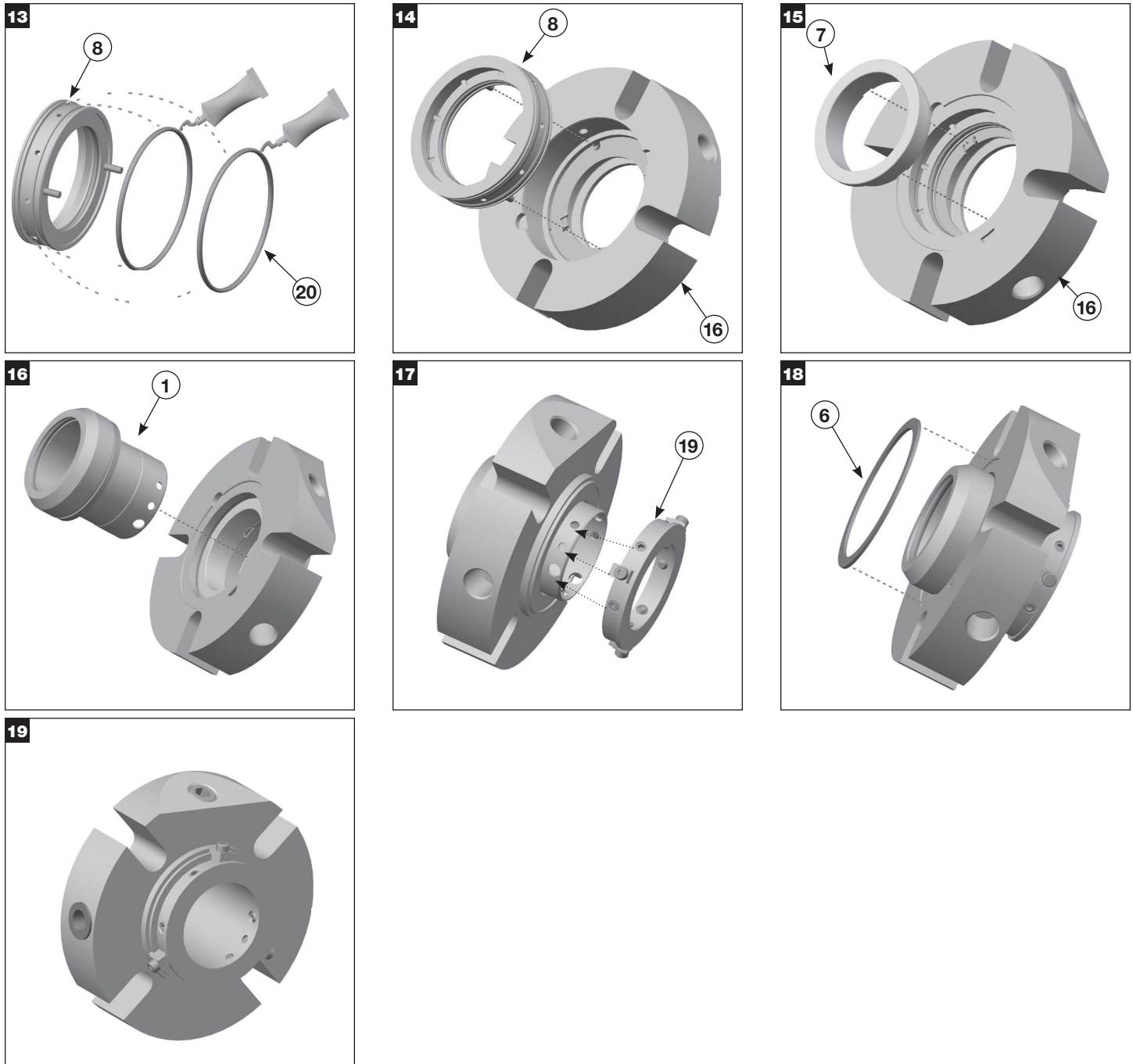
9.0 SEAL MAINTENANCE AND REPAIR (cont.)

9.1.3 Seal Assembly - Seal Sizes: 45 mm to 120 mm (1.750" to 4.750")



9.0 SEAL MAINTENANCE AND REPAIR (cont.)

9.1.3 Seal Assembly - Seal Sizes: 45 mm to 120 mm (1.750" to 4.750") (cont.)



9.2 Returning Seals For Repair and Hazard Communication Requirements

Any mechanical seal returned to Chesterton that has been in operation, must comply with our Hazard Communication requirements. Please go to our web page at www.chesterton.com/Mechanical_Seal>Returns to obtain information required for returning seals for repair or seal analysis.

10.0 180H SEAL

10.1 180H Seal Overview

The 180H Seal is a standard 180 Cartridge Single Seal that uses an advanced hydropad geometry rotary seal face that improves film formation between the mechanical seal faces and significantly enhances face lubricity.

Hydropad designs are useful in high pressure applications, where pressure has a tendency to distort the seal faces, high speed applications, where the face velocity increases heat generation and in sealing fluids that have poor lubrication properties. Combinations of pressure and speed that exceed the limits of the standard 180 Seal faces would also be potential applications for hydropad use.

10.2 180H Environmental Control Considerations

Due to the special operating conditions the 180H is designed for, the seal typically requires environmental controls for sealing reliability.

In hot water applications such as condensate return pumps, a **Plan 21 Cooled Discharge Recirculation** for cooling will reduce the temperature of the process water, requiring additional energy requirements to elevate the water temperature. Where cooling the stuffing box is not acceptable to the process, there are cases where environmental controls are not utilized or a **Plan 11 Discharge Recirculation** arrangement has been used to improve the conditions inside the stuffing box without cooling or dilution.

Chesterton Application Engineering can help you specify the right seal recommendation for the end user including your environmental control options. The 2 diagrams below illustrate the most common plans used with the 180H Cartridge Single Seal.

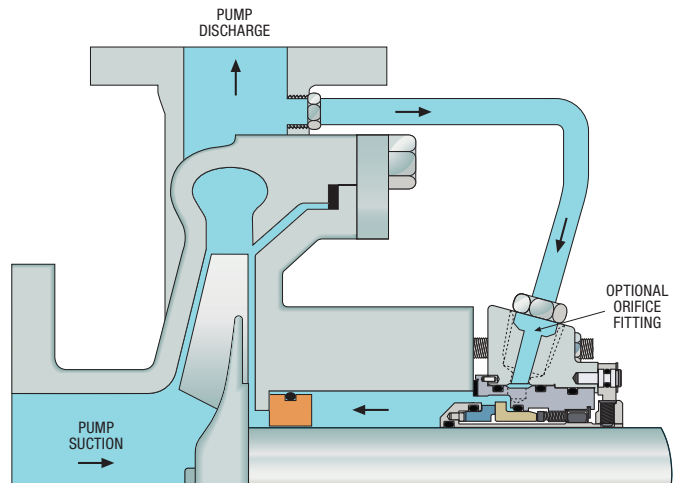
10.0 180H SEAL (cont.)

10.2 180H Environmental Control Considerations (cont.)

Plan 11

Discharge Recirculation

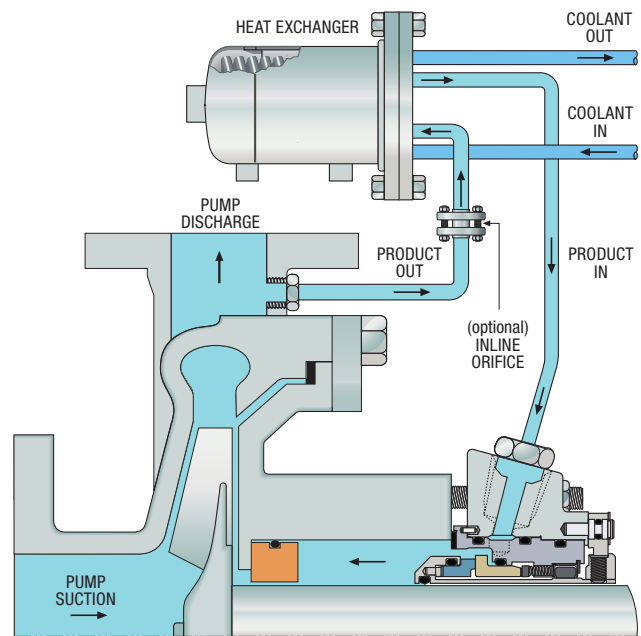
- What** Discharge recirculation through an orifice to the seal flush port. The orifice is used to control discharge pressure to the seal chamber. A smaller orifice allows less pressure to enter the seal chamber.
- Why** To raise the pressure in the stuffing box to prevent flashing at the seal faces; To lower the temperature at the seal faces by using product to remove heat from the seal faces.
- When** With clean process fluids. Process fluids with particulate may cause abrasion.



Plan 21

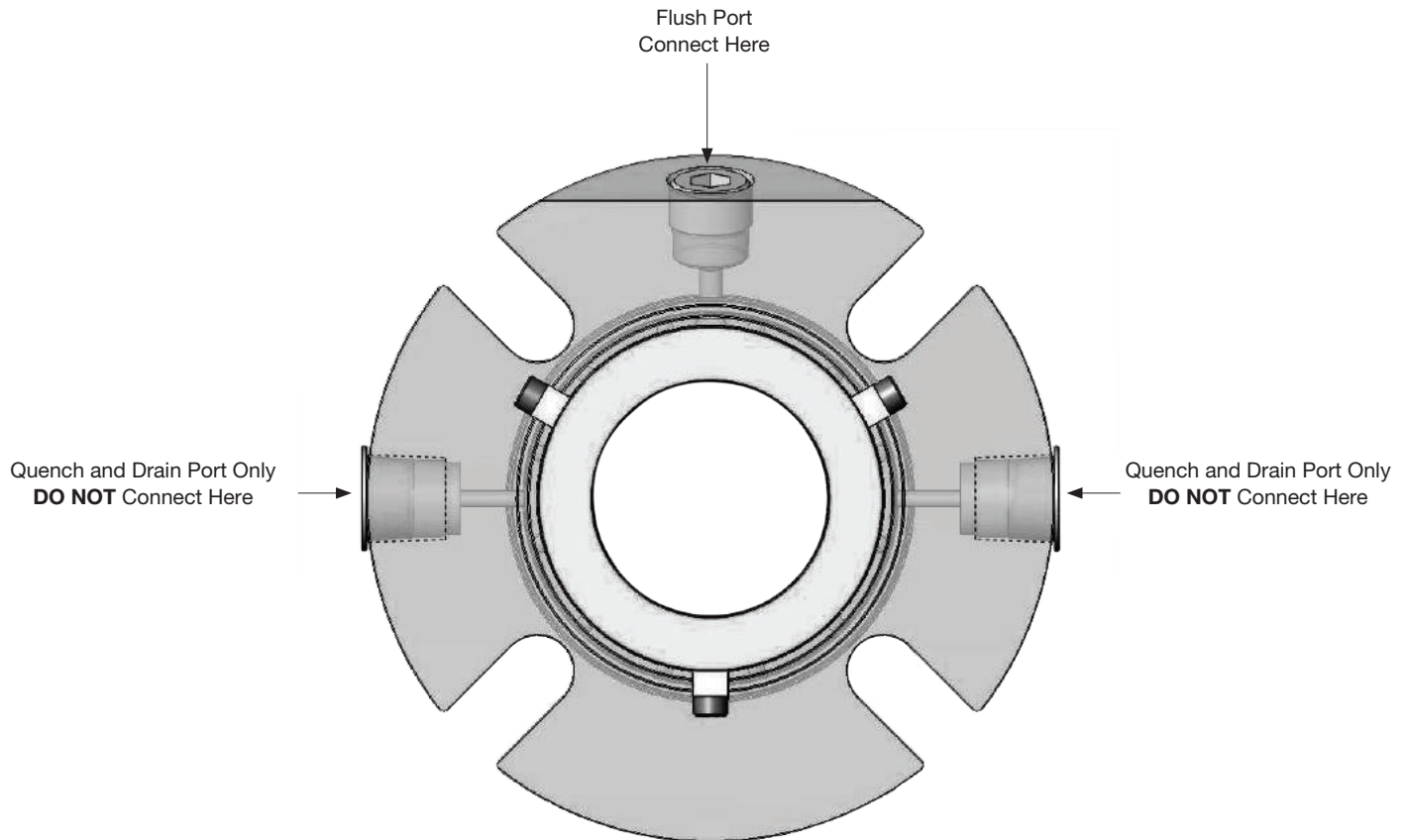
Cooled Discharge Recirculation

- What** Discharge recirculation through an orifice and a heat exchanger to the flush port of the seal. A temperature indicator can be installed when specified.
- Why** To raise the pressure in the stuffing box to prevent flashing at the seal faces; To lower the temperature at the seal faces by using cooled product to remove heat from the seal faces.
- When** Used with clean fluids. High velocity solids may cause seal abrasion and score the seal faces if directed by the flush port.



10.0 180H SEAL (cont.)

10.2.1 180H Flush Port Connection



Remove pipe plug from flush port. Connect discharge re-circulation to flush port.

DO NOT CONNECT DISCHARGE RECIRCULATION TO EITHER PORT IDENTIFIED WITH  STICKER AS LEAKAGE WILL RESULT.



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