

442C™ Cartridge Split Mechanical Seal

Installation, Operation and Maintenance Instructions

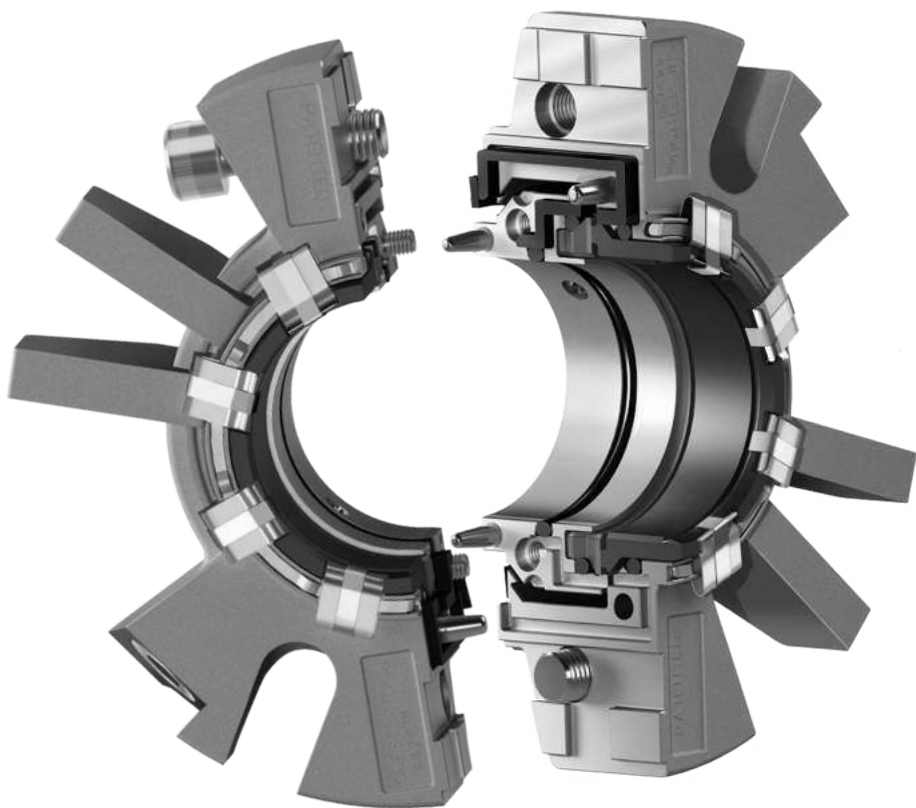


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Seal Data Reference

(Insert seal and equipment data here for future reference)

ITEM # _____

SEAL _____

(Example: 442C – 50 mm 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:

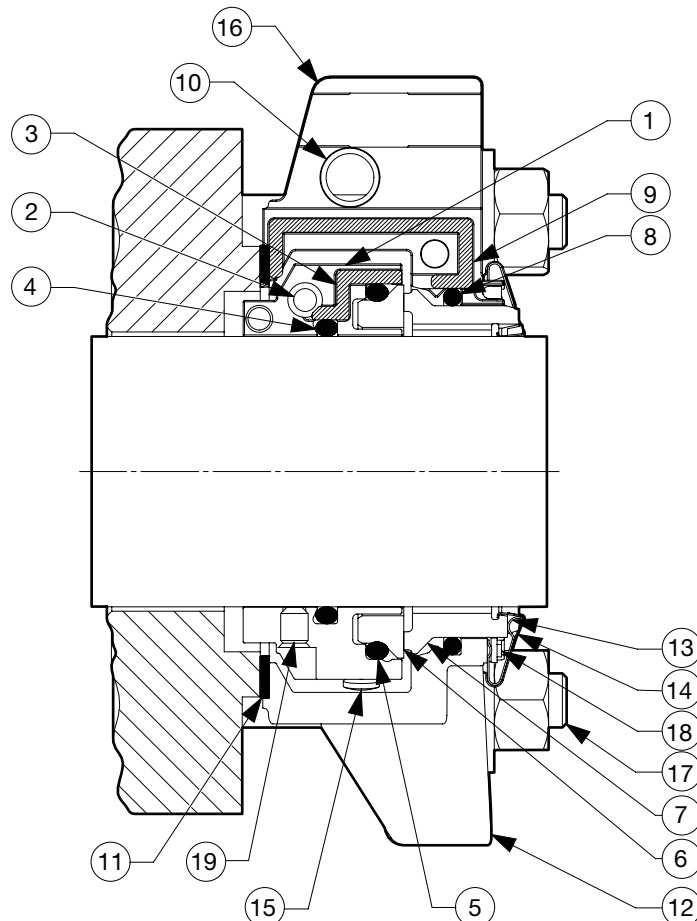
- Dust free environment
- Moderately ventilated at room temperature
- Avoid exposure to direct sunlight and heat

- For elastomers, storage conditions should conform to ISO 2230; particularly storage temperatures between 15°C (59°F) and 25°C (77°F). If stored outside these ranges, the seal assembly or spare parts should be unboxed in a clean environment, with ambient temperature within the previously stated ranges, and allowed to recover for at least 1 hour prior to installation. Failure to follow this step can impact the performance of the seal.

3.0 DESCRIPTION

3.1 Parts Identification

Figure 1



KEY

- 1 – Rotary Holder
- 2 – Holder Cap Screw (X)
- 3 – Holder Gasket
- 4 – Shaft O-Ring
- 5 – Rotary O-Ring
- 6 – Rotary Face
- 7 – Stationary Face
- 8 – Stationary O-Ring
- 9 – Gland Gasket
- 10 – Gland Cap Screw (Y)
- 11 – Stuffing Box Gasket
- 12 – Bolt Tab
- 13 – Spring
- 14 – Spring Retainer
- 15 – Centering Button
- 16 – Gland
- 17 – Stuffing Box Bolts (Z)
- 18 – Spring Lifter
- 19 – Holder Set Screw (W)

3.0 DESCRIPTION cont.

3.1 Parts Identification

Figure 2

KEY

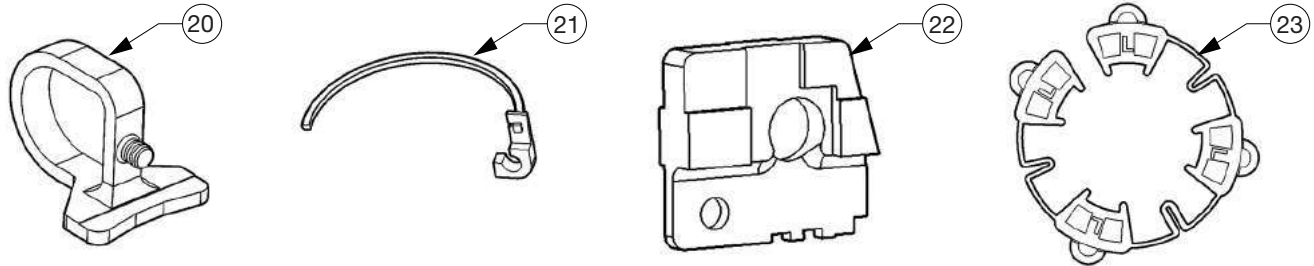
NOT SHOWN AS PART OF INSTALLED SEAL

20 – Rotary Holder Installation Spacer

21 – Rotary Holder Shipping Spacer

22 – Gland Shipping Spacer

23 – Gland Installation Tool



3.2 Operating Parameters*

Pressure Limits:

All 442 Seals can withstand operating pressures from full vacuum (710 mm Hg /28") to the maximum pressures at the conditions listed.

Small Sizes:

25 mm through 60 mm (1.000" through 2.500")

Reaction Bonded Silicon Carbide/Carbon – (3600 RPM)
up to 30 bar g/450 psig

**Use 4 bolt mounting configuration for pressures above
20 bar g/300 psig**

Large Sizes:

65 mm through 120 mm (2.625" through 4.750")

Reaction Bonded Silicon Carbide/Carbon – (1750 RPM)
up to 18 bar g/250 psig

**Use 4 bolt mounting configuration for pressures above
14 bar g/200 psig**

Speed Limits:

To 20 m/s (4000 fpm)

Temperature Limits:

To 120°C (250°F)

** 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 to confirm the suitability of the mechanical seal prior to putting the mechanical seal in operation.

3.4 Dimensional Data (Drawings)

Figure 3

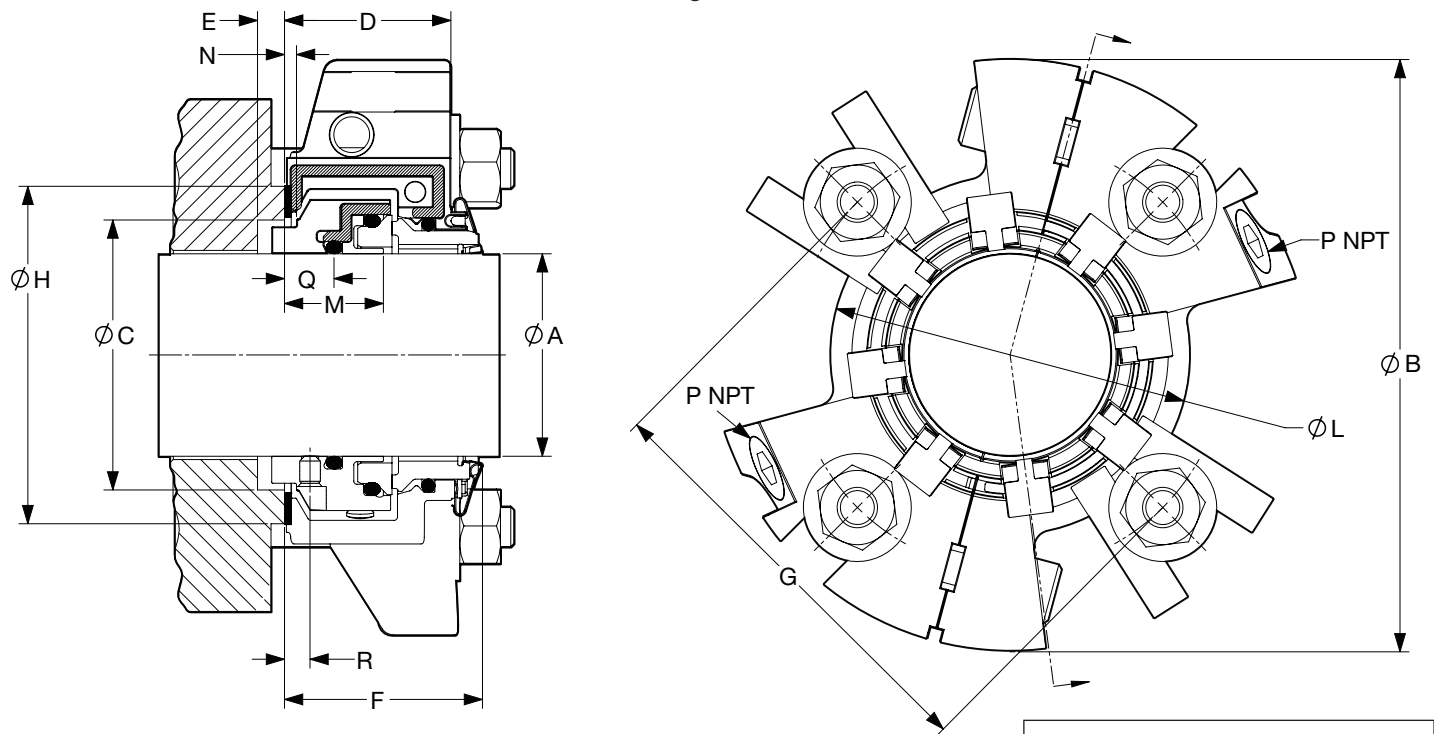


Table 1 – Dimensional Data (Metric and Inch)

SHAFT SIZE	M HOLDER INSIDE DIAMETER FROM BOX	N INSTALLATION DIM	P NPT SIZE	Q SHAFT O-Ring FROM BOX	R SET SCREW FROM BOX	S SLEEVE LENGTH FROM BOX
25 mm to 38 mm (1.000" to 1.500")	24,4 mm (0.96")	2,4 mm (0.09")	1/4"	12,7 mm (0.50")	5,8 mm (0.23")	15,2 mm (0.60")
40 mm to 60 mm (1.625" to 2.500")	24,4 mm (0.96")	2,4 mm (0.09")	3/8"	12,7 mm (0.50")	5,8 mm (0.23")	15,2 mm (0.60")
65 mm to 120 mm (2.625" to 4.750")	27,1 mm (1.07")	2,4 mm (0.09")	3/8"	12,4 mm (0.49")	5,8 mm (0.23")	15,7 mm (0.62")

KEY (chart)

- A – Shaft Size
- B – Max. Gland Dia.
- C – Min./Max. Stuffing Box Dia.
- D – Gland Length
- E – Minimum Stuffing Box Depth
- F – Outboard Seal Length
- G – Min./Max. Bolt Circle by Bolt Size
- H – Min. Stuffing Box Face Outside Diameter
- L – Gland Hub Outside Diameter
- M – Holder End from Box
- N – Installation Dimension
- P – NPT Size
- Q – Shaft O-Ring from Box
- R – Set Screw from Box
- S – Min. Sleeve Length from Box

Figure 4 – Mounting Configurations with Bolt Tabs

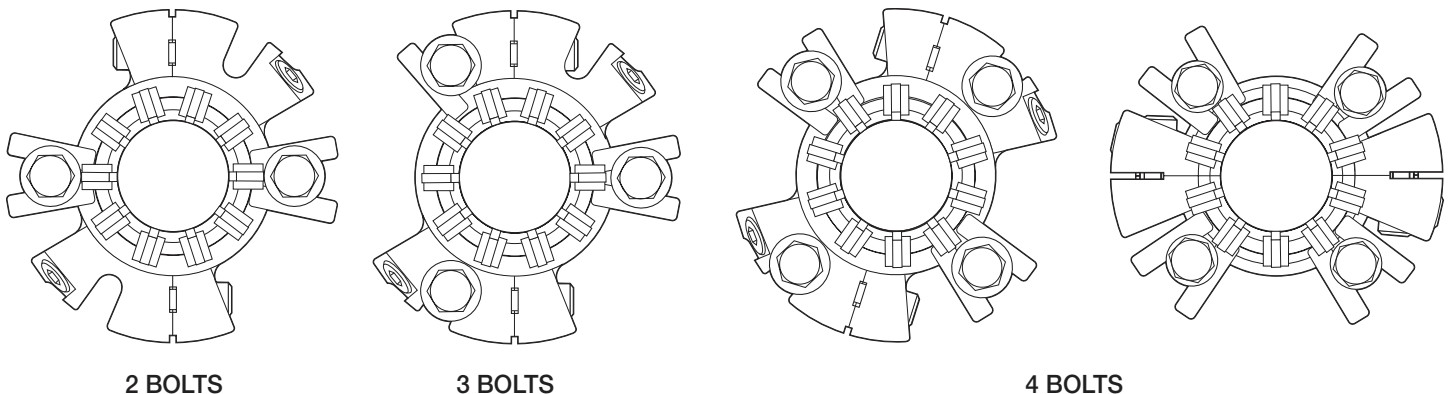


Table 2 – Dimensional Data

METRIC - Millimeters

A	B MAX	C		D	E MIN	F	G MIN							H MIN	L MAX
		MIN	MAX				8 mm	10 mm	12 mm	14 mm	16 mm	18 mm	20 mm		
25,0	125,5	47,2	53,3	40,1	4,3	47,8	79,8	81,8	83,8	85,8	87,8	-	-	59,9	70,9
30,0	125,5	47,2	53,3	40,1	4,3	47,8	79,8	81,8	83,8	85,8	87,8	-	-	59,9	70,9
32,0	125,5	47,2	53,3	40,1	4,3	47,8	79,8	81,8	83,8	85,8	87,8	-	-	59,9	70,9
33,0	125,5	47,2	53,3	40,1	4,3	47,8	79,8	81,8	83,8	85,8	87,8	-	-	59,9	70,9
35,0	127,4	49,3	60,5	40,1	4,3	47,8	81,8	83,8	85,8	87,8	89,8	-	-	66,8	72,8
38,0	130,5	52,3	63,5	40,1	4,3	47,8	85,0	87,0	89,0	91,0	93,0	-	-	69,9	76,0
40,0	133,6	55,6	66,8	40,1	4,3	47,8	87,4	89,4	91,4	93,4	95,4*	-	-	73,2	79,0
43,0	136,8	58,7	70,0	40,1	4,3	47,8	90,5	92,5	94,5	96,5	98,5*	-	-	76,2	82,0
45,0	136,8	58,7	70,0	40,1	4,3	47,8	90,5	92,5	94,5	96,5	98,5*	-	-	76,2	82,0
48,0	140,0	62,0	73,2	40,1	4,3	47,8	97,7	95,7	97,7	99,7	101,7*	-	-	79,5	85,2
50,0	143,2	65,0	76,2	40,1	4,3	47,8	98,4	100,4	102,4	104,4	106,4*	-	-	82,6	88,4
55,0	146,3	68,3	79,2	40,1	4,3	47,8	101,6	103,6	105,6	107,6	109,6	-	-	85,9	91,5
60,0	152,6	74,7	85,6	40,1	4,3	47,8	107,8	109,8	111,8	113,8	115,8	-	-	92,2	97,9
65,0	196,1	85,1	108,0	48,0	8,1	57,7	-	-	140,6	142,6	144,6	146,6*	148,6*	120,7	126,6
70,0	196,1	85,1	108,0	48,0	8,1	57,7	-	-	140,6	142,6	144,6	146,6*	148,6*	120,7	126,6
75,0	202,5	91,4	114,3	48,0	8,1	57,7	-	-	146,2	148,2	150,2	152,2	154,2*	127,0	133,0
80,0	208,8	97,8	120,7	48,0	8,1	57,7	-	-	154,8	156,8	158,8	160,8	162,8	133,4	139,3
85,0	215,2	104,1	127,0	48,0	8,1	57,7	-	-	158,9	160,9	162,9	164,9	166,9	139,7	145,7
90,0	215,2	104,1	127,0	48,0	8,1	57,7	-	-	158,9	160,9	162,9	164,9	166,9	139,7	145,7
95,0	221,5	110,5	133,4	48,0	8,1	57,7	-	-	165,2	167,2	169,2	171,2	173,2	146,1	152,0
100,0	227,9	116,8	139,7	48,0	8,1	57,7	-	-	171,6	173,6	175,6	177,6	179,6	152,4	158,4
105,0	234,2	123,2	146,1	48,0	8,1	57,7	-	-	177,7	179,7	181,7	183,7	185,7	160,3	164,7
110,0	240,6	129,5	152,4	48,0	8,1	57,7	-	-	184,3	186,3	188,3	190,3	192,3	165,1	171,1
115,0	240,6	129,5	152,4	48,0	8,1	57,7	-	-	184,3	186,3	188,3	190,3	192,3	165,1	171,1
120,0	246,9	135,9	158,8	48,0	8,1	57,7	-	-	190,6	192,6	194,6	196,6	198,6	171,5	177,4

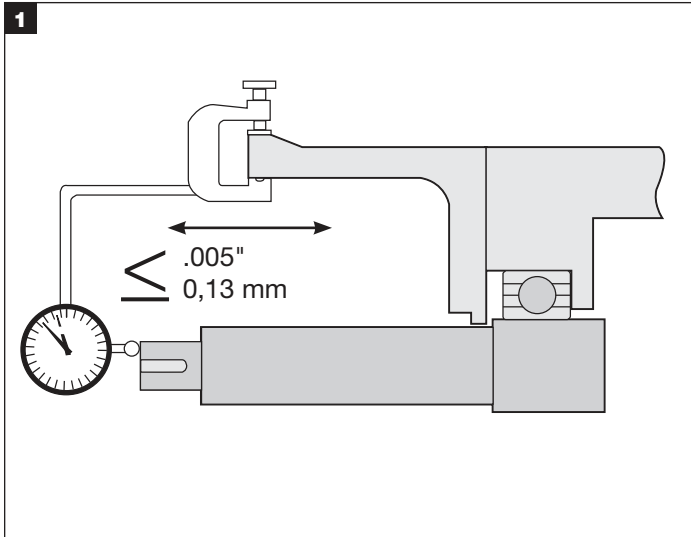
INCH

A	B MAX	C		D	E MIN	F	G MIN					H MIN	L MAX
		MIN	MAX				3/8"	1/2"	5/8"	3/4"	7/8"		
1.000	4.94	1.86	2.10	1.58	0.17	1.88	3.20	3.33	3.45	3.58*	-	2.35	2.79
1.125	4.94	1.86	2.10	1.58	0.17	1.88	3.20	3.33	3.45	3.58*	-	2.35	2.79
1.250	4.94	1.86	2.10	1.58	0.17	1.88	3.20	3.33	3.45	3.58*	-	2.35	2.79
1.375	5.02	1.94	2.38	1.58	0.17	1.88	3.28	3.40	3.53	3.66*	-	2.63	2.87
1.500	5.14	2.06	2.50	1.58	0.17	1.88	3.40	3.53	3.65	3.78*	-	2.75	2.99
1.625	5.26	2.19	2.63	1.58	0.17	1.88	3.50	3.63	3.81*	3.94*	-	2.87	3.11
1.750	5.39	2.31	2.75	1.58	0.17	1.88	3.63	3.75	3.94*	4.06*	-	3.00	3.23
1.875	5.51	2.44	2.88	1.58	0.17	1.88	3.75	3.88	4.06*	4.19*	-	3.12	3.35
2.000	5.64	2.56	3.00	1.58	0.17	1.88	3.94	4.06	4.19*	4.31*	-	3.25	3.48
2.125	5.76	2.69	3.12	1.58	0.17	1.88	4.06	4.19	4.31	4.44*	-	3.37	3.60
2.250	5.88	2.81	3.25	1.58	0.17	1.88	4.19	4.31	4.44	4.56*	-	3.50	3.73
2.375	6.01	2.94	3.37	1.58	0.17	1.88	4.31	4.43	4.56	4.69*	-	3.62	3.85
2.500	6.13	3.06	3.75	1.58	0.17	1.88	4.57	4.70	4.82	4.95*	-	4.00	4.23
2.625	7.72	3.35	4.25	1.89	0.32	2.27	5.44	5.56	5.69	5.81*	5.94*	4.75	4.99
2.750	7.72	3.35	4.25	1.89	0.32	2.27	5.44	5.56	5.69	5.81*	5.94*	4.75	4.99
2.875	7.97	3.60	4.50	1.89	0.32	2.27	5.66	5.78	5.91	6.03*	6.16*	5.00	5.24
3.000	7.97	3.60	4.50	1.89	0.32	2.27	5.66	5.78	5.91	6.03*	6.16*	5.00	5.24
3.125	8.22	3.85	4.75	1.89	0.32	2.27	6.00	6.12	6.25	6.37*	6.50*	5.25	5.48
3.250	8.22	3.85	4.75	1.89	0.32	2.27	6.00	6.12	6.25	6.37*	6.50*	5.25	5.48
3.375	8.47	4.10	5.00	1.89	0.32	2.27	6.16	6.28	6.41	6.53	6.66*	5.50	5.74
3.500	8.47	4.10	5.00	1.89	0.32	2.27	6.16	6.28	6.41	6.53	6.66*	5.50	5.74
3.625	8.72	4.35	5.25	1.89	0.32	2.27	6.41	6.53	6.66	6.78	6.91*	5.75	5.99
3.750	8.72	4.35	5.25	1.89	0.32	2.27	6.41	6.53	6.66	6.78	6.91*	5.75	5.99
3.875	8.97	4.60	5.50	1.89	0.32	2.27	6.66	6.78	6.91	7.03	7.16*	6.00	6.24
4.000	8.97	4.60	5.50	1.89	0.32	2.27	6.66	6.78	6.91	7.03	7.16*	6.00	6.24
4.125	9.22	4.85	5.75	1.89	0.32	2.27	6.90	7.02	7.15	7.27	7.40*	6.25	6.49
4.250	9.22	4.85	5.75	1.89	0.32	2.27	6.90	7.02	7.15	7.27	7.40*	6.25	6.49
4.375	9.47	5.10	6.00	1.89	0.32	2.27	7.16	7.28	7.41	7.53	7.66*	6.50	6.74
4.500	9.47	5.10	6.00	1.89	0.32	2.27	7.16	7.28	7.41	7.53	7.66*	6.50	6.74
4.625	9.72	5.35	6.25	1.89	0.32	2.27	7.41	7.53	7.66	7.78	7.91*	6.75	6.99
4.750	9.72	5.35	6.25	1.89	0.32	2.27	7.41	7.53	7.66	7.78	7.91*	6.75	6.99

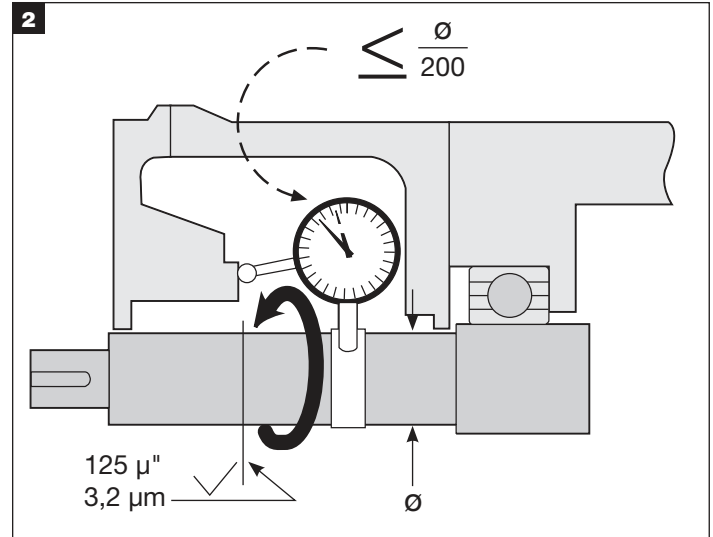
* Two bolts only using bolt tabs

4.0 PREPARATION FOR INSTALLATION

4.1 Equipment

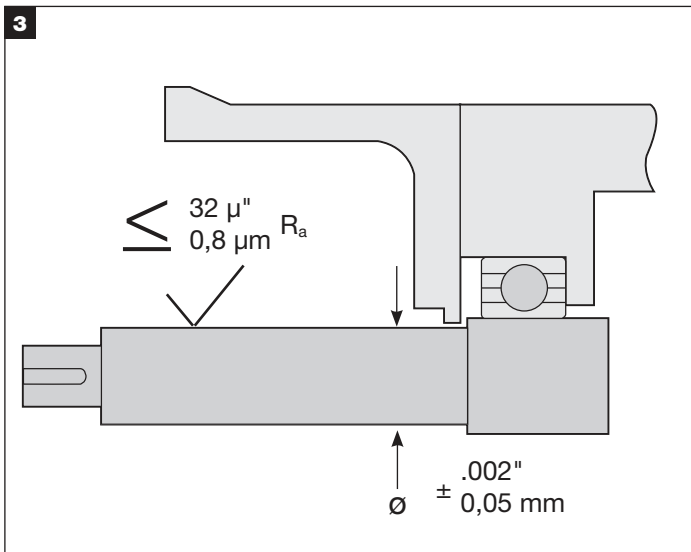


If practical, place the dial indicator tip on the end of the shaft sleeve or on a step in the shaft to measure end play. Alternately push and pull the shaft in the axial direction. If the bearings are in good condition, end play should not exceed 0,13 mm (.005").

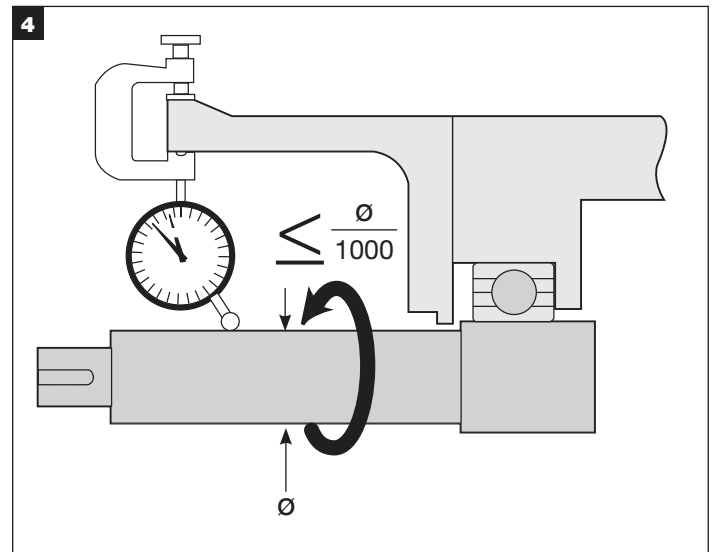


If possible, attach a base dial indicator to the shaft and rotate both the indicator and shaft slowly while reading the runout of the stuffing box face. Misalignment of the stuffing box face relative to the shaft should not exceed 0,005 mm TIR per mm (.005 in per inch) of shaft diameter.

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 0,001 mm TIR per millimeter (.001 inch TIR per inch) of shaft diameter.

4.2 442C Cartridge Split Mechanical Seal

Review seal packaging ensuring no damage or shortage has occurred to the contents.

Review the seal fit dimensions in Tables 1 and 2 to ensure the equipment to be sealed has the required dimensions.

Record the seal Item Number and Name found on the label for referencing when contacting AW Chesterton Application Engineering.

Installation is straightforward, provided the parts are handled and installed carefully. Make sure your hands are clean. Prepare a clean work surface on which to place parts.

NOTES:

- The gland and rotary holder halves are matched pairs by the same number stamped on each half; face halves are matched pairs; mixing components from different seals will result in seal failure.
- Greasy fingerprints on seal faces, dirt particles on the faces seal faces/splits or misaligned face splits may cause leakage. Do not bring the assembly halves together before actual installation. Damage to the seal ring splits may occur.

REQUIRED FOR INSTALLATION

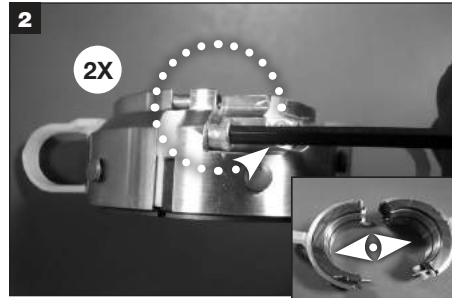
(Items are provided with seal):

- Hex key wrenches
- Grease
- Cleaning wipes

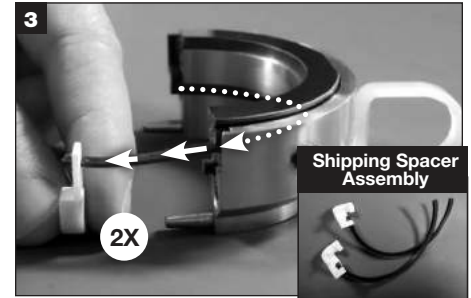
4.0 PREPARATION FOR INSTALLATION cont.



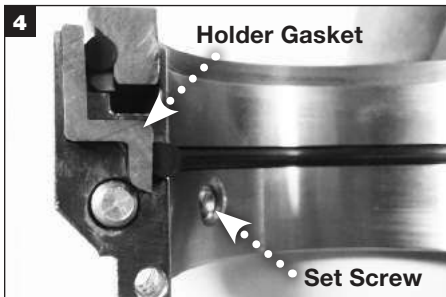
Remove seal from packaging and place on clean work surface. Ensure installation spacers are seated on outside diameter of rotary holder halves. **Important: DO NOT** glue any O-Rings, holder or gland half gaskets!



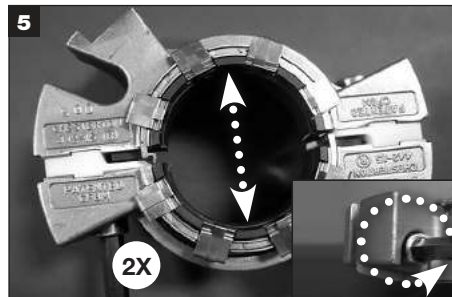
Disengage rotary holder screws and separate rotary holder halves.



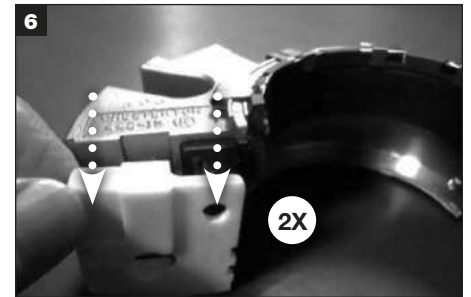
Important! Remove entire shipping spacer assembly from each holder half by pulling on tab; retain for future use. **Caution:** Do not push on the rotary faces. Re-install shipping spacers if this occurs.



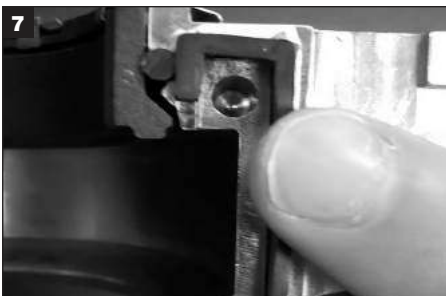
Ensure that the holder gaskets are lubricated and seated in their grooves. **Important:** Set screws protruding past the inside diameter may cause the holder to deform resulting in shaft leakage and/or damage to the rotary faces.



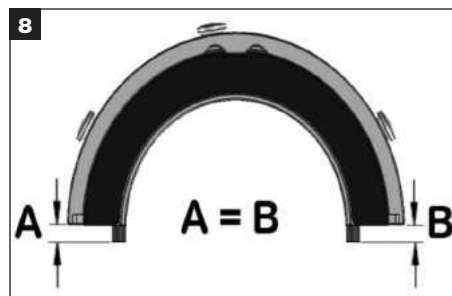
Disengage gland cap screws and separate gland halves.



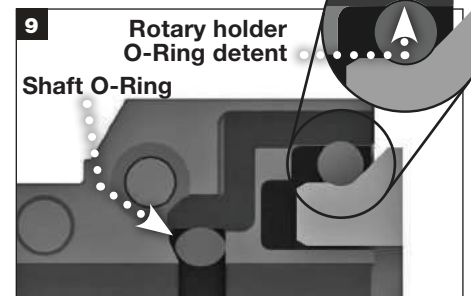
Remove gland split shipping spacers from each gland half.



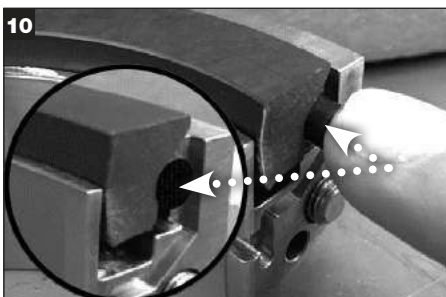
Ensure that the gland gaskets are lubricated and seated in their grooves.



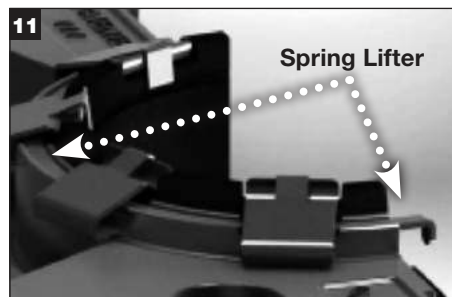
Ensure that the rotary holder shaft O-Ring is properly seated in its groove with both ends protruding evenly. Apply grease to shaft O-Ring only where it contacts the shaft.



Ensure the rotary face O-Rings are positioned in holder O-Ring detent. If rotary face O-Rings are not in the holder detent, review rebuild instructions.



To prevent seal leakage, ensure that the rotary face O-Ring ends are flush with but not below the face splits. Push on O-Ring ends if they protrude past the face splits.

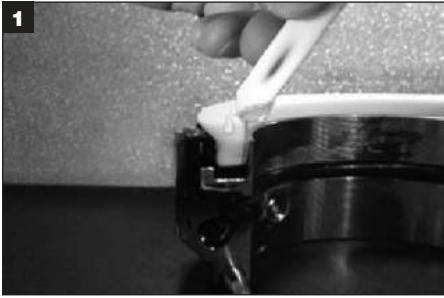


Ensure that gland spring lifter is extended prior to starting installation of gland assembly. If spring lifter is not in its proper position, review rebuild instructions.

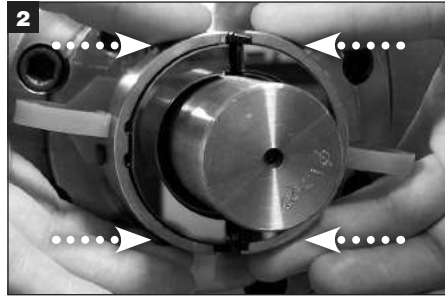


To prevent seal leakage, ensure that the stationary face O-Ring ends are flush with but not below the stationary face splits. Carefully push on O-Ring ends if they protrude past the face splits. Preparation complete; go to **Seal Installation**

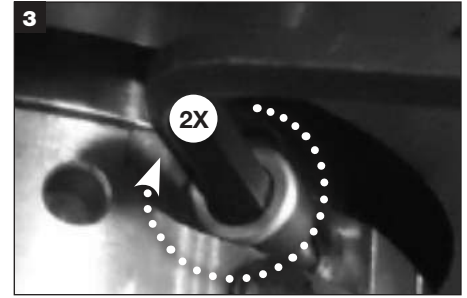
5.0 SEAL INSTALLATION



Equipment shaft should be cleaned and greased prior to rotary holder installation. Apply supplied grease only to face splits. Do not apply grease to o-ring ends. **Caution:** Dirt particles on seal face splits may cause leakage. The rotary holder should not be rotated on the shaft during Steps 2 through 4 as it may lead to shaft leakage and/or face damage.



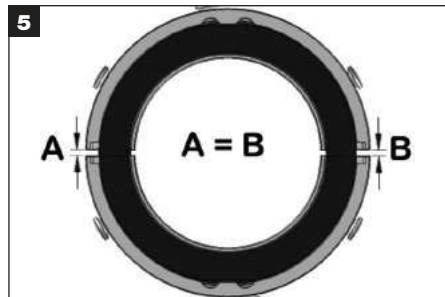
Bring rotary holder assembly halves together over shaft, engaging the pins. **Caution: DO NOT** use holder installation spacers as handles. **Note:** If shaft cannot be rotated manually, the holder split line **should not** align with the gland split line (refer to steps 12 and 17).



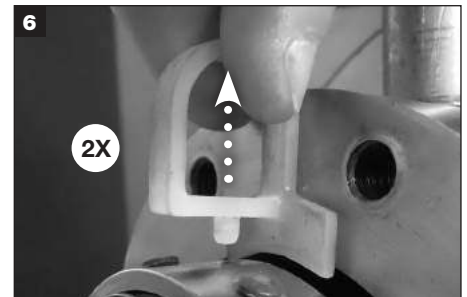
Use hex wrench and alternately tighten holder cap screws to finger-tightness to allow holder to slide along the shaft. **Caution:** Care should be taken not to rotate the rotary holder on the shaft.



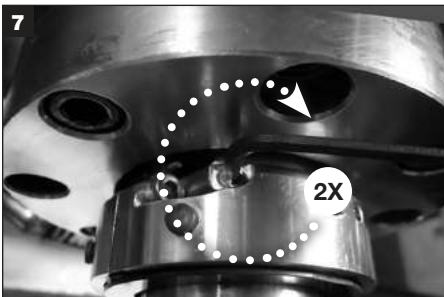
Push holder assembly so that plastic installation spacers contact the stuffing box. Face. **Use hex wrench and alternately tighten holder cap screws** (Refer to Table 3 - Holder Cap screw Torque Values). Ensure gaps at holder splits are equal on both sides (see Figure 5). **Caution: DO NOT** push directly on seal face.



Gaps at holder splits should be equal on both sides.



Remove installation spacers; retain for future use.



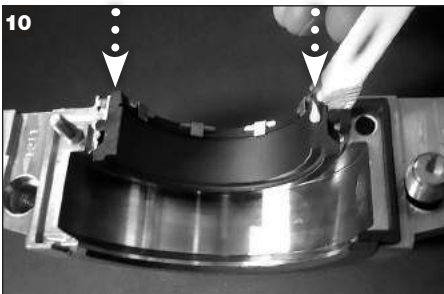
Alternately tighten 2 holder set screws (1 per holder half) (refer to Table 4 - Holder Set Screw Torque Values).



Clean rotary face with supplied cleaning wipe, ensuring there is no debris at splits. **Caution:** Do not push on seal face - it may cause the seal face to misalign resulting in seal leakage.



Install gland installation tool between holder assembly and stuffing box face.



Apply supplied grease only to face splits. Do not apply grease to O-Ring ends. **Caution:** Dirt particles on seal face splits may cause leakage.

Table 3
Holder Cap Screw Torque Values

SEAL SIZE	HOLDER CAP SCREW* (X)	HEX WRENCH SIZE
25 mm to 60 mm (1" to 2.5")	4,8 Nm (43 in-lbf)	5/32
65 mm to 120 mm (2.625" to 4.75")	12,4 Nm (110 in-lbf)	3/16

* Recommended maximum

Table 4
Holder Set Screw Torque Values

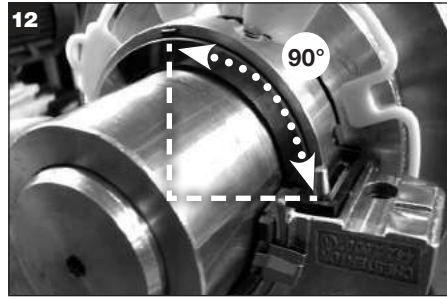
SEAL SIZE	HOLDER SET SCREW* (W)	HEX WRENCH SIZE
25 mm to 120 mm (1" to 4.75")	4,3 Nm (38 in-lbf)	1/8

* Recommended maximum

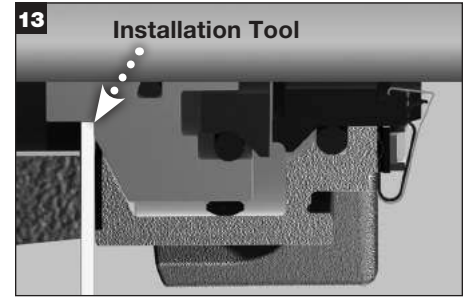
5.0 SEAL INSTALLATION *cont.*



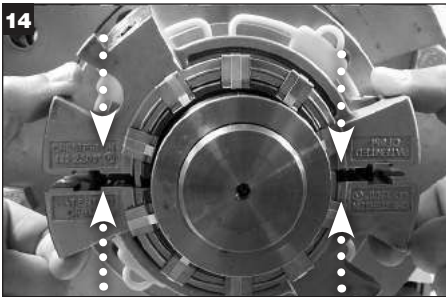
Clean stationary face with cleaning wipe, ensuring that there is no debris at splits.



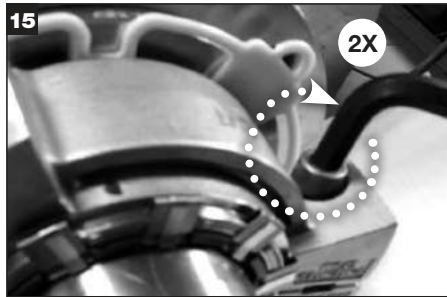
Position the gland splits approximately 90 degrees from the rotary holder splits.



Bring the first gland half squarely into position by sliding the gland gasket face against the gland installation tool, ensuring the stationary face does not make contact with the rotary face.



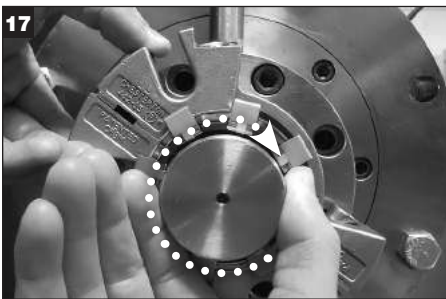
Bring the second gland half squarely into position against the gland installation tool, ensuring the pins and gland bolts are engaged.



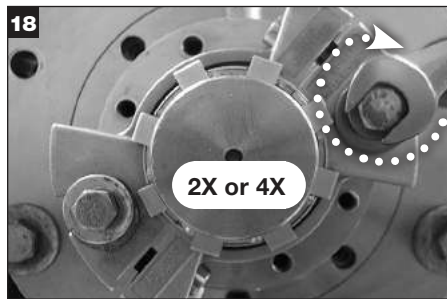
Alternately tighten gland cap screws to specified torque (refer to **Table 5 – Gland Cap Screw and Stuffing Box Bolt Torque Values**). **Note:** The spring lifter will automatically move into its final position once the gland cap screws are tightened.



Carefully remove the gland installation tool, taking care not to dislodge the gland stuffing box gasket. Retain the gland installation tool for future use.



If possible rotate gland together with shaft when aligning gland bolt slots with the stuffing box bolt holes (refer to step 12).



Install and alternately tighten stuffing box bolts to recommended torque (refer to **Table 5 – Gland Cap Screw and Stuffing Box Bolt Torque Values**).



Seal installation complete (refer to **EQUIPMENT STARTUP**). **Note:** Four bolt configuration is shown. (refer to **Figure 4 - Mounting Configurations for other bolt quantities**).

Table 5 – Gland Cap Screws and Stuffing Box Bolt Torque Values

SEAL SIZE	GLAND CAP SCREWS* (Y)	HEX WRENCH SIZE	STUFFING BOX BOLTS** (Z)
25 mm to 60 mm (1" to 2.5")	14-20 Nm (125 – 175 in-lbf)	5/16	13.5-27 Nm (15 – 20 ft-lbf)
65 mm to 120 mm (2.625" to 4.75")	17-23 Nm (150 – 200 in-lbf)	3/8	27-34 Nm (20 – 25 ft-lbf)

* Recommended maximum

** Typical Values: Torque necessary to seat stuffing box gasket varies with application.

5.0 SEAL INSTALLATION *cont.*

5.1 442C INSTALLATION VIDEO

To view an instructional installation video, please scan the QR Code with your mobile device or go to our web page at **www.chesterton.com/442C_Videos** and click on the desired video.



6.0 COMMISSIONING / EQUIPMENT START-UP

1. Rotate the shaft by hand, if possible, to ensure no metal-to-metal contact within the seal. A slight drag may be found due to the seal faces and the centering buttons but the shaft should rotate freely.
2. Attach appropriate plumbing/environmental controls to the seal. Take all necessary precautions and follow normal safety procedures before starting the equipment.
3. Depending on how carefully the seal components were handled during installation, split seals may drip on startup. For example, greasy fingerprints on the faces or misaligned face splits may cause leakage. This type of leakage usually decreases and stops over a period of time. If the leakage remains steady, check O-Rings and gaskets for proper installation and check the faces for chips, scratches and proper alignment.

Please Contact Chesterton Mechanical Seal Application Engineering for assistance regarding split 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 442C split 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.

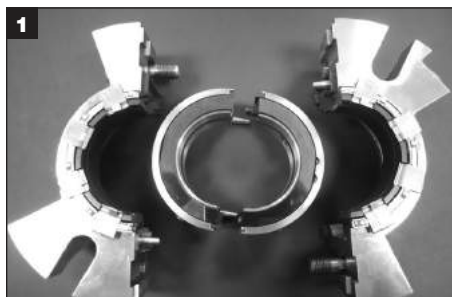
Spare Parts Kit can be purchased from Chesterton, referencing the recorded seal data from cover page.

9.0 SEAL MAINTENANCE AND REPAIR

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.

1. Only the gland and rotary holder are reused. **Caution:** The gland, rotary holder, face halves and O-Rings are matched pairs; do not mix halves from different seals since this will cause seal failure.
2. The following items, in addition to wrenches, grease and cleaning wipes, will be required for rebuild:

- Small pliers (remove centering buttons)
 - Small, flat-head screwdriver (set spring lifter location)
 - Plastic tipped mallet or hammer (replace centering buttons)
 - Cleaning solvent (clean elastomer/gasket surfaces)
3. 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.
 4. Clean all elastomer and gasket surfaces with cleaning solvent.



Prepare a clean work surface for seal disassembly and rebuild.



Remove used rotary holder gaskets.



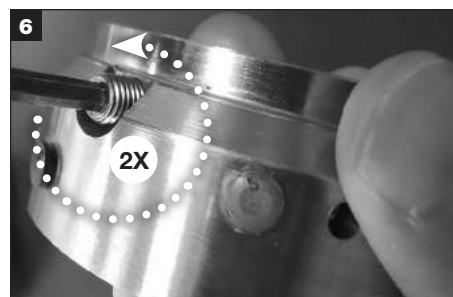
Remove used shaft O-Ring halves.



Remove used rotary face halves by pushing on end of face and sliding out of rotary holder half.



Remove used rotary face O-Ring halves.



Remove used holder set screws (2 places) from rotary holder.



Remove used holder cap screws from holder halves.

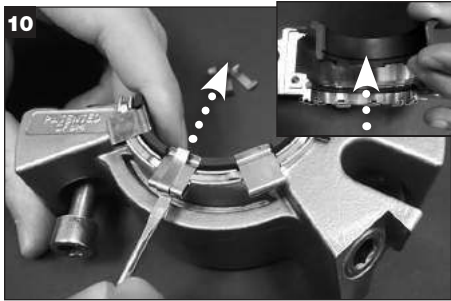


Remove used centering buttons from outside diameter of rotary holder.

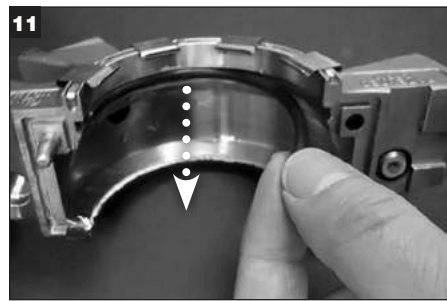


Remove used gland gaskets from gland grooves.

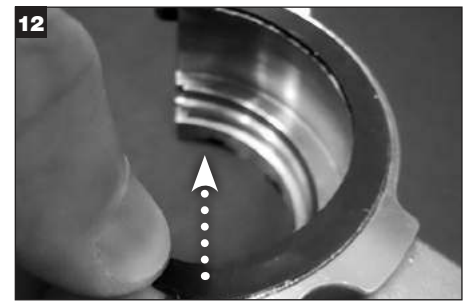
9.0 SEAL MAINTENANCE AND REPAIR cont.



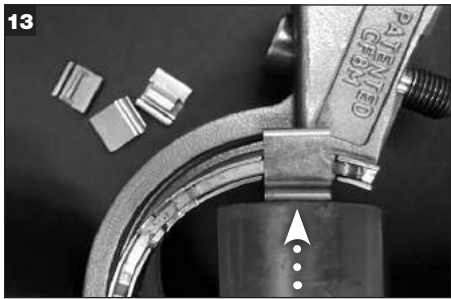
Remove used spring retainers from gland halves. **Note:** When last retainer is removed the stationary seal ring can be removed



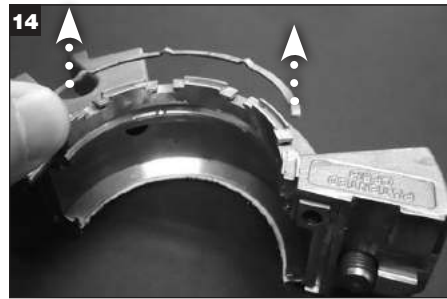
Remove used stationary face O-Ring.



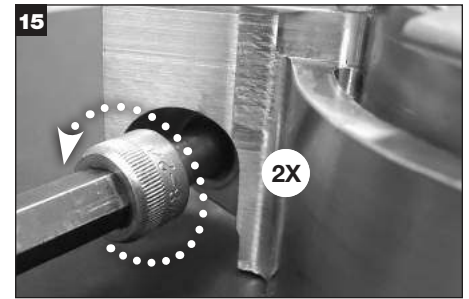
Remove used stuffing box gasket from gland recess and all adhesive residue with cleaning solvent.



Remove used springs from gland halves by tapping them from the gland half inside diameter with a small hammer



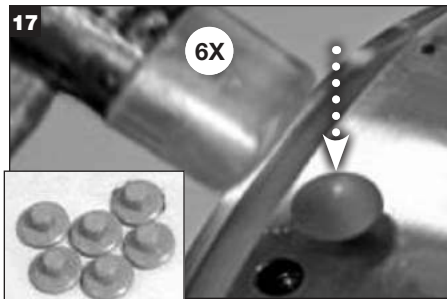
Remove spring lifter halves from gland halves.



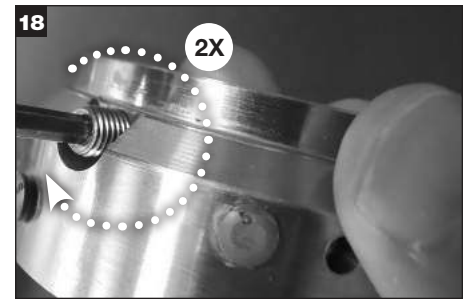
Remove used gland cap screws.



Remove all spare parts kit components from packaging and place on the clean work surface.



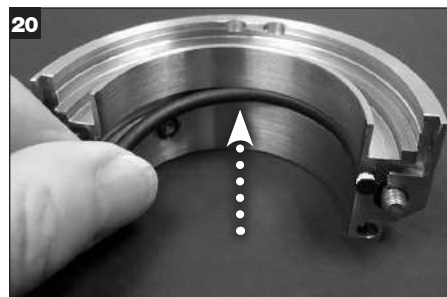
Install new centering buttons on outside diameter of rotary holder. **Important:** Make sure buttons are fully seated without deforming the exposed heads



Lubricate threads with a recommended anti-seize compound and install new holder set screws (2 places) in rotary holder. **Important:** Prior to installing the rotary holder on the shaft/sleeve, check to ensure the holder set screws are not protruding beyond the inside diameter of the rotary holder.



Lubricate threads with a recommended anti-seize compound and install holder cap screws in rotary holder half.



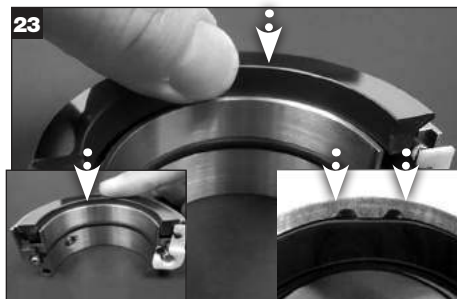
Apply a thin film of grease and install shaft O-Ring halves in rotary holder halves. O-Rings must protrude evenly from both holder half ends. (Refer to step 9 on page 8).



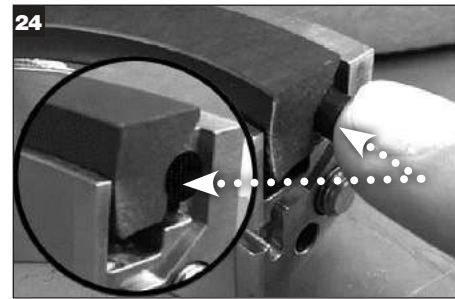
Install rotary holder shipping spacers in rotary holder halves to hold the rotary face O-Ring in place.



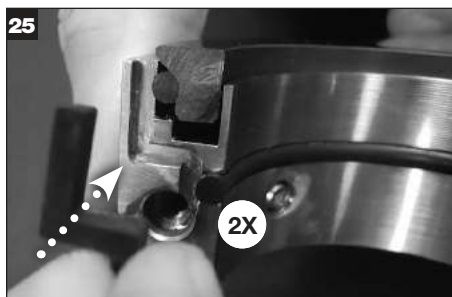
Apply a thin film of grease and install rotary face O-Ring halves in rotary holder halves.



Install rotary face halves in rotary holder halves. Press on face to seat rotary in holder halves. Align flat on outside diameter of rotary face with flat on inside diameter surface of rotary holder.



Ensure that the rotary face O-Ring ends are flush, not below, with the face splits. Push on O-Ring ends if they protrude past the face splits.



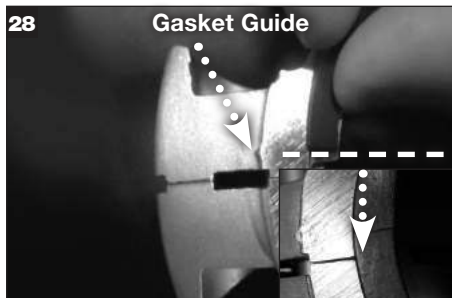
Apply a thin film of grease and install holder half gaskets (1 per holder half).



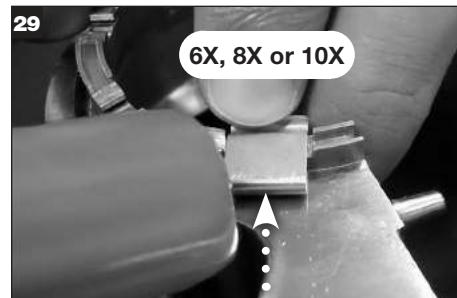
Install installation spacers on outside diameter of holder halves.



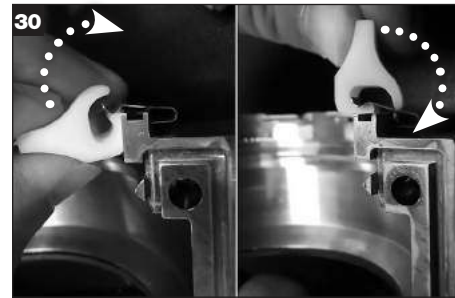
Clean rotary face halves with cleaning wipe.



Bring gland halves together. After peeling off protective backing, seat one gasket half in the gland recess ensuring that cut end aligns with gasket guide. Seat second gasket half into gland recess, ensuring that it butts up to cut ends of first half.



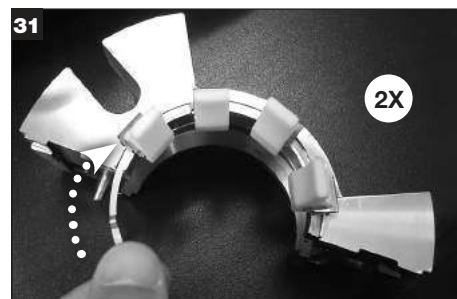
Install springs into spring slots on gland. Use a plastic tipped mallet to ensure springs are seated into place.



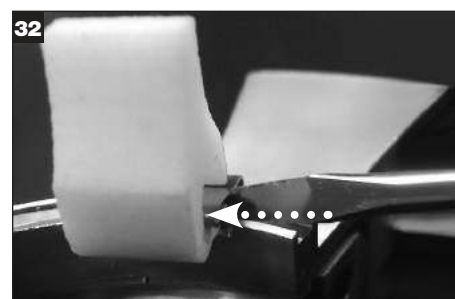
Install spring lifter clips in gland halves.



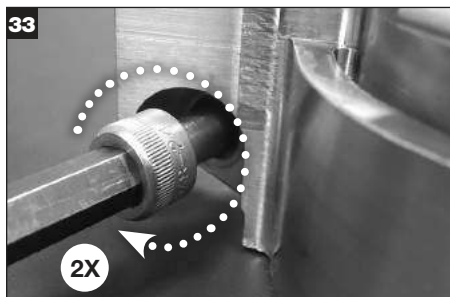
Spring lifter clips installed in gland halves.



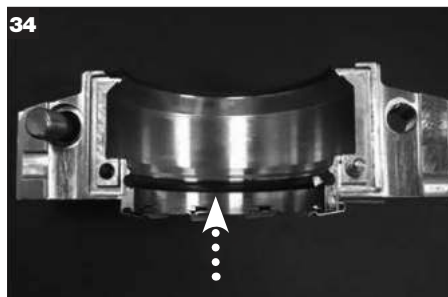
Install spring lifter in gland halves such that leading end is exposed beyond last spring. **Important:** Bent TAB on spring lifter must be installed on the recessed side of the gland.



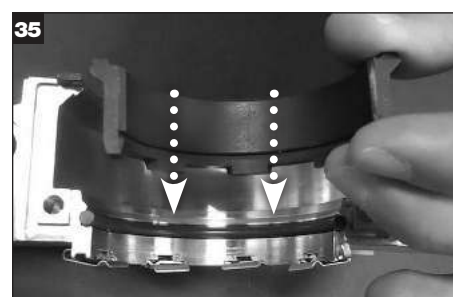
Set spring lifter location using a flat head screwdriver. **Important:** End of spring lifter must be aligned with edge of the end spring. Remove all clips and retain for re-setting lifter location.



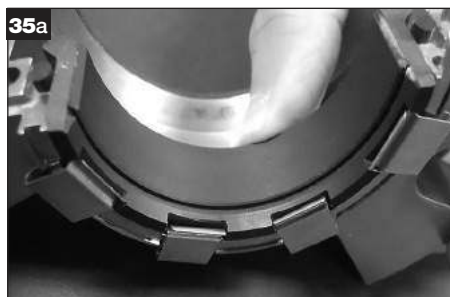
Install new gland cap screws in gland halves.
Note: Gland cap screws are installed in one end of each gland half, in the ends away from the mounting bolt slot.



Apply a thin film of grease to the stationary face O-Ring halves and install in gland halves; Ensure that O-Ring splits are protruding evenly on both sides.



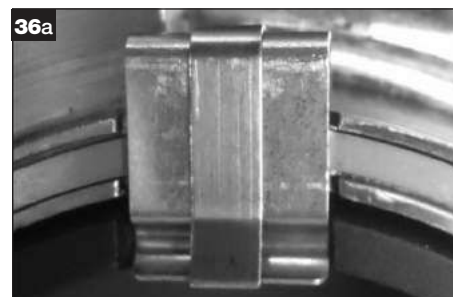
Install stationary face halves into gland halves.



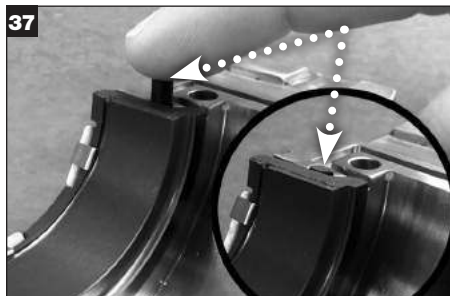
Stationary face half installed in gland half.
Important: Ensure that O-Ring splits are still protruding evenly at both sides.



Install spring retainers in gland halves, holding the stationary seal ring half in the gland.



Spring retainer installed.



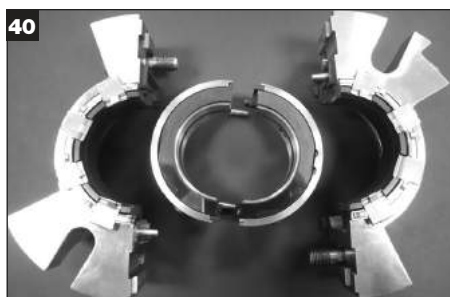
Ensure that the stationary face O-Ring ends are flush with and not below the stationary face splits. Push on O-Ring ends if they protrude past the stationary face splits.



Apply a thin film of grease to gland gaskets and install in grooves of gland halves. **Note:** Gland gaskets must be installed on gland end where stuffing box face gasket protrudes.



Clean stationary face halves with cleaning wipe to ensure there is no debris on face and at splits.



Seal components are ready for installation. Proceed to Seal Installation Instructions.

9.1 442C SEAL REPAIR INSTRUCTION VIDEO

To view an instructional video on how to repair the 442C, please scan the QR Code with your mobile device or go to our web page at **www.chesterton.com/442C_Videos** and click on the desired video.



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 scan the QR Code with your mobile device or go to our web page at **www.chesterton.com/Mechanical_Seal>Returns** to obtain information required for returning seals for repair or seal analysis.

