

SVN & EVN Type Sample Valve Technical Manual



Steel & O'Brien Manufacturing
7869 Route 98, Arcade, NY 14009
Tel: 585-492-5800 | www.steelobrien.com

TABLE OF CONTENTS

A. General Information.....	3
B. Part Numbers and Ordering Information.....	4
C. Technical Information.....	5
1. Material Specifications.....	5
2. Finish Specifications.....	5
3. Service Conditions.....	6
4. Documentation.....	6
D. Installation.....	7
E. Operation.....	8
F. Maintenance.....	10
1. Disassembly.....	10
2. Assembly.....	16
G. Appendix.....	21
1. SVN Valve Cross Section.....	21
2. SVN Valve Exploded View.....	22
3. EVN Valve Cross Section.....	23
4. EVN Valve Exploded View.....	24
5. SVN & EVN Bill of Materials.....	25
6. Revision History.....	25

A. General Information

Steel & O'Brien SVN and EVN type sample valves are specifically designed to be the optimum product sampling solution in the industry. With superior engineering and quality, SVN and EVN sample valves offer exclusive performance benefits, not found in other alternatives. SVN and EVN sample valves have been developed with pharmaceutical and sanitary standards in mind, which is reflected in design aspects such as drainability and product contact geometries.

Right-angle concentric (SVN) models are available in ½" – 4" sanitary clamp inlet sizes and right-angle eccentric (EVN) are available in 1"–4" sanitary clamp inlet sizes. Both valve types offer a variety of outlet connections.

B. Part Numbers and Ordering Information

SVN Part Number Matrix:

SVN SAMPLE VALVE PART NUMBER MATRIX					
TYPE	STEM MATERIAL	O-RING MATERIAL	INLET CONNECTION	OUTLET CONNECTION	ID SURFACE FINISH
SVN - RIGHT ANGLE CONCENTRIC	Y - PVDF	E - EPDM	50 - 1/2" TC	A - 1/4" HB	SF1 - 20Ra
			75 - 3/4" TC		
			10 - 1" TC	B - 3/8" HB	
		15 - 1-1/2" TC			
		V - FKM	20 - 2" TC	C - 1/2" HB	SF4 - 15Ra W/ EP
			25 - 2-1/2" TC		
			30 - 3" TC	D - 1/2" TC	SF5 - 20Ra W/ EP
			40 - 4" TC		

EVN

EVN SAMPLE VALVE PART NUMBER MATRIX					
TYPE	STEM MATERIAL	O-RING MATERIAL	INLET CONNECTION	OUTLET CONNECTION	ID SURFACE FINISH
EVN - RIGHT ANGLE CONCENTRIC	Y - PVDF	E - EPDM	50 - 1/2" TC	A - 1/4" HB	SF1 - 20Ra
			75 - 3/4" TC		
			10 - 1" TC	B - 3/8" HB	
		15 - 1-1/2" TC			
		V - FKM	20 - 2" TC	C - 1/2" HB	SF4 - 15Ra W/ EP
			25 - 2-1/2" TC		
			30 - 3" TC	D - 1/2" TC	SF5 - 20Ra W/ EP
			40 - 4" TC		

Part Number Matrix:

Part number example:

EVNYV15ASF1 – Right angle eccentric sample valve, PVDF stem, FKM seal, 1-1/2" TC inlet, 1/4" hose barb outlet, 20Ra internal surface finish.

For ordering and sales, please contact: SALES@SOB.US

C. TECHNICAL INFORMATION

C.1. Material Specifications

Product contact surfaces:

Body: 316L Stainless Steel

Stem: KYNAR® 740 PVDF conforming to FDA/USP CLASS VI

O-Ring: EPDM or FKM conforming to FDA/USP CLASS VI

Non product contact surfaces:

Knob: Polytherimide/PEI or PPS black autoclavable thermoplastic

Indicator: Flex500® yellow vinyl

Upper Stem: Nitronic® 60 stainless steel

Bearing Washer: Virgin PTFE

Hardware/Other Misc. Parts: Stainless Steel

C.2. Finish Specifications

Internal surface finishes per ASME BPE (see ordering options):

SF1: 20Ra maximum

SF5: 20Ra maximum with Electropolish

SF4: 15Ra maximum with Electropolish

External surface finish: 32Ra maximum

C.3. Service Conditions

Maximum operating temperature – 300°F

Maximum operating pressure – 250 PSIG

Maximum SWP – 50 PSIG @ 298°F

C.4. Documentation

Types of documentation available (upon request)

- Material test reports (MTR) for 316L product contact surfaces
- Certificate of compliance for FDA/USP Class VI PVDF stem
- Certificate of compliance for FDA/USP Class VI FKM O-Ring
- Certificate of compliance for FDA/USP Class VI EPDM O-Ring
- Internal surface finish certification
- Electropolish certification
- Passivation certification

D. Installation

CAUTION

Proper safety procedures and equipment should be taken into consideration during install, as determined by the installer.

For SVN and EVN valve styles:

1. Orient valve outlet in a downward direction (see Figure D.1.)
2. Attach sample valve clamp inlet with sanitary clamp and gasket to corresponding clamp face. Use clamp manufacturer's recommended tightening torque when attaching the clamp.

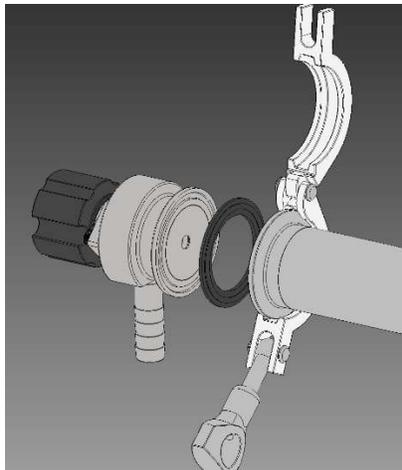


FIGURE D. 1. - SAMPLE VALVE INSTALLATION

Additional notes:

Specific installation parameters of sample valves are to be determined by the installer.

Installation orientation of sample valves can vary; however, drain-ability should be taken into account during the installation.

E. Operation

CAUTION

Proper safety procedures and equipment should be taken into consideration during operation, as determined by the end user and/or operator.

Sample valves are not intended for continuous exposure to steam or high temperatures.

Excessive temperature exposure will lead to premature valve failure.

Sample Valves are to be operated by hand *only*. Overtightening or over torquing the valve will damage the valve.

Valve Opening for SVN and EVN valve styles:

1. Rotate valve knob counterclockwise until desired valve position and outlet flow is achieved.
2. Yellow indicator should be visible upon valve opening (see Figure E.1.)

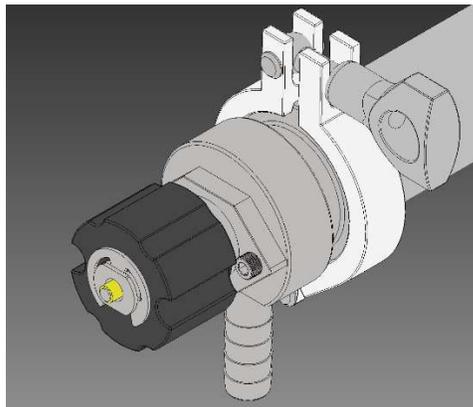


FIGURE E. 1. - SAMPLE VALVE IN OPEN POSITION

Valve Closing for SVN and EVN valve styles:

1. Rotate valve knob clockwise until snug and no outlet flow is achieved. Operator should ensure that knob is not overtightened.
2. Yellow indicator should not be visible upon valve closing (see Figure E.2.)

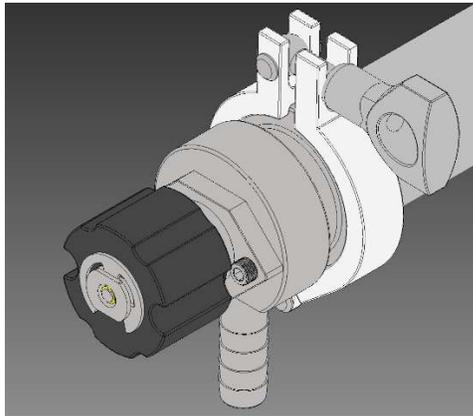


FIGURE E. 2. - SAMPLE VALVE IN CLOSED POSITION

Additional operation notes:

Visible leakage from the valve outlet may indicate potential stem failure.

Visible leakage from the valve leak detect, located below the knob (see Figure E.3.), may indicate potential O-ring seal failure.

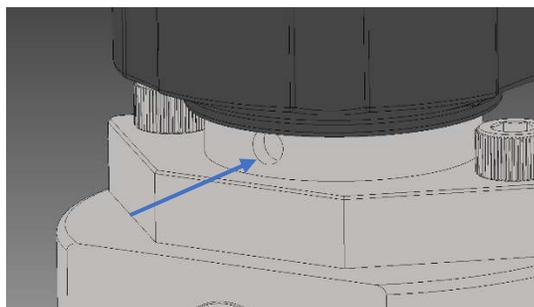


FIGURE E. 3. - LEAK DETECT LOCATION

Any form of leakage suggests immediate action to repair or replace the valve or valve components

F. Maintenance

CAUTION

Proper safety procedures and equipment should be taken into consideration during maintenance as determined by the end user and/or operator.

F.1. Disassembly:

1. Viewing the valve from the top, orient the knob so that the screw heads are visible through the knob fluting (see Figure F.1.)

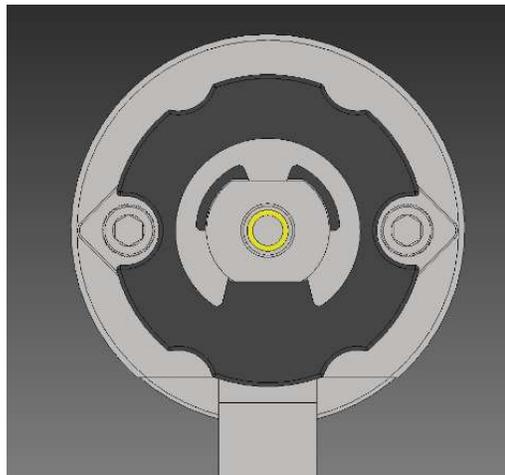


FIGURE F. 1. - KNOB ORIENTATION

2. Loosen screws and remove from valve body and remove (see Figure F.2.)

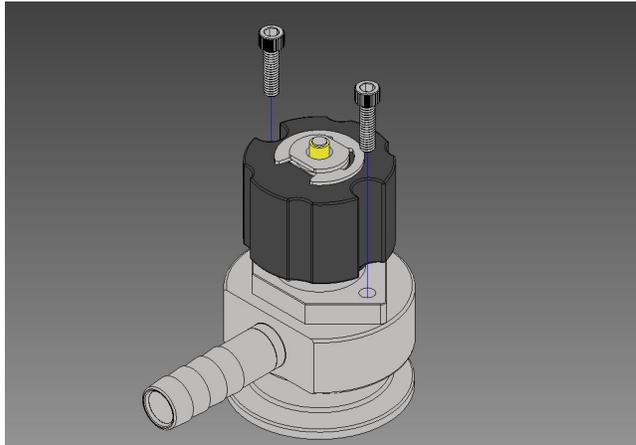


FIGURE F. 2. – SCREW REMOVAL

3. Remove upper half of the valve from the valve body (see Figure F.3.)

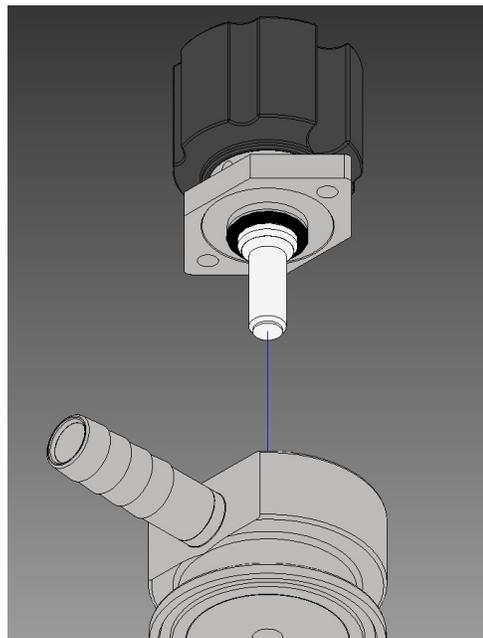


FIGURE F. 3. - TOP HALF REMOVAL

4. Remove the O-ring from the stem. Do not roll O-ring, as this may damage the O-ring. Gently work the O-ring off the stem (see Figure F. 4.)

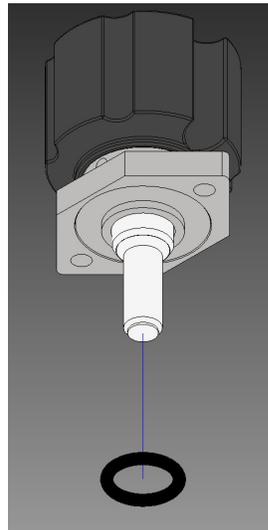


FIGURE F. 4. - O-Ring Removal

5. Remove seal retaining bushing (see Figure F.5.)

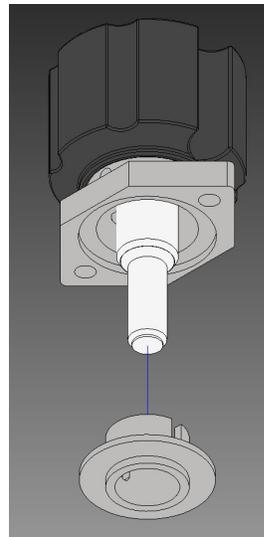


FIGURE F. 5. - BUSHING REMOVAL

6. Rotate the stem clockwise to unscrew the wetted stem, threaded stem and corresponding parts from the rest of the assembly (see Figure F.6.)

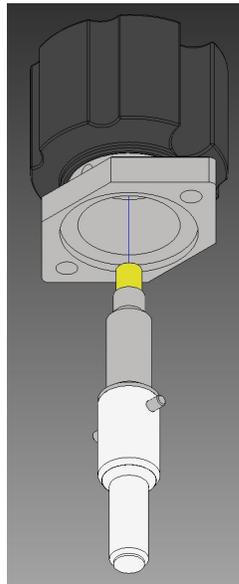


FIGURE F. 6. - STEM REMOVAL

7. Remove the wetted stem retaining pin and disassemble (see Figure F.7.)

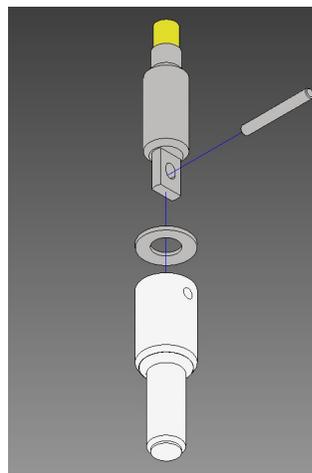


FIGURE F. 7. - STEM DISASSMBLY

8. OPTIONAL – If required, remove the indicator (see Figure F.8.). Typically, this is only required if indicator needs to be replaced.

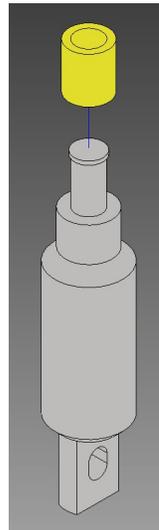


FIGURE F. 8. - INDICATOR REMOVAL

9. OPTIONAL – If operator disassembly is required, start by removing the E-Clip from the top (see Figure F.9.). This usually is only required for additional cleaning or PTFE washer replacement.

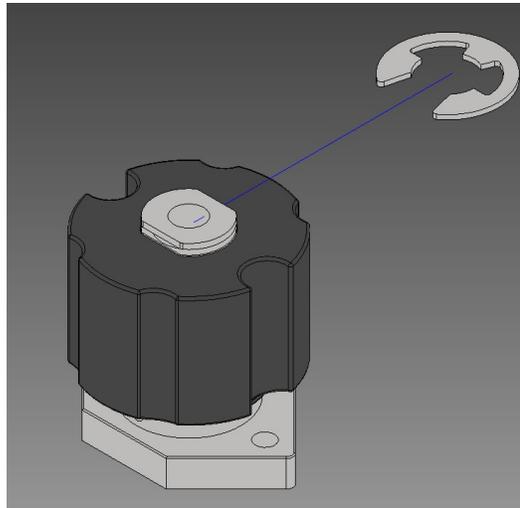


FIGURE F. 9. - E-CLIP REMOVAL

10. OPTIONAL (continued from step 9) – Disassemble operator assembly (see Figure F.10.)

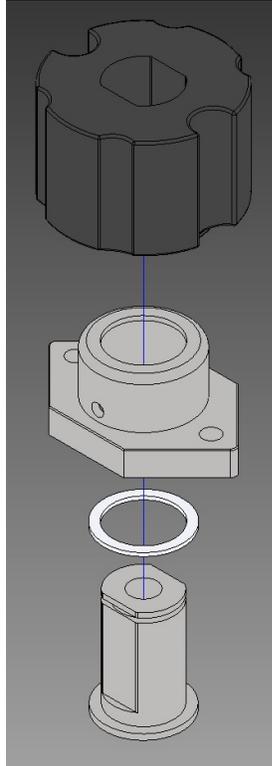


FIGURE F. 10. – OPERATOR DISASSEMBLY

F.2. Assembly:

1. OPTIONAL – If required, install the indicator (see Figure F.11.). Typically, this is only required if indicator is missing or needs replacement.

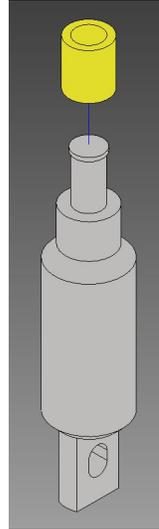


FIGURE F. 11. - INDICATOR INSTALLATION

2. OPTIONAL– If required, assemble operator assembly (see Figure F.12.)

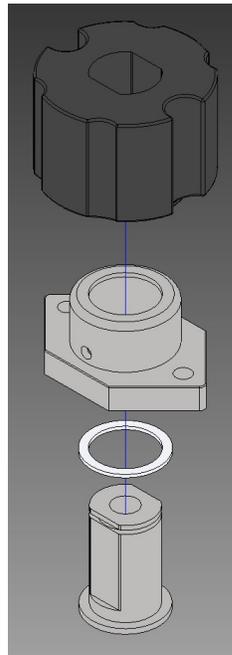


FIGURE F. 12. - OPERATOR ASSEMBLY

3. OPTIONAL (continued from step 2) – Install the E-Clip (see Figure F.13.)

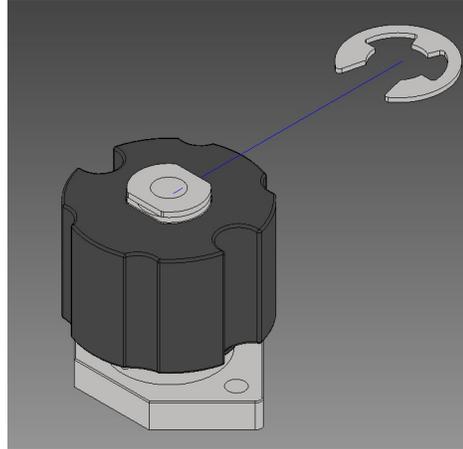


FIGURE F. 13. - E-CLIP INSTALLATION

4. Attach the wetted stem and spring washer to the threaded stem with the retaining pin and (see Figure F.14.). Note the washer orientation when installing.

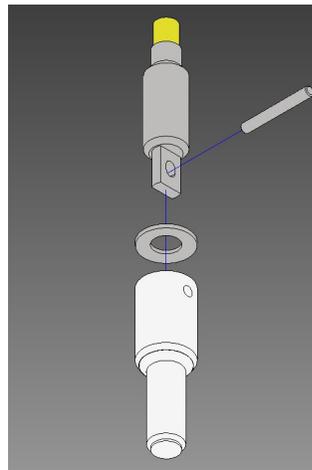


FIGURE F. 14. - STEM ASSEMBLY

5. Add FDA compliant lubricant to the stem threading, as required. Rotate the stem counter-clockwise to screw the wetted stem, threaded stem and corresponding parts into the rest of the assembly (see Figure F.15.)

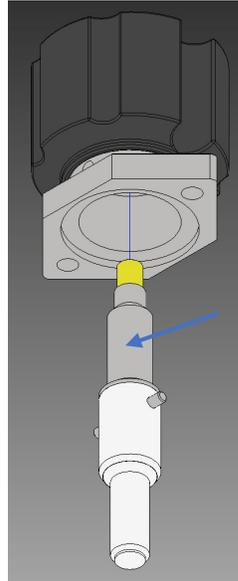


FIGURE F. 15. - STEM INSTALLATION

6. Install seal retaining bushing (see Figure F.16.)

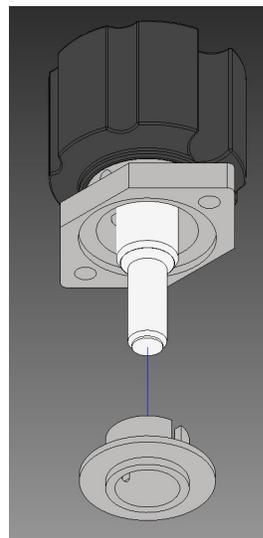


FIGURE F. 16. - BUSHING INSTALLATION

7. Install the O-ring onto the stem. Do not roll O-ring, as this may damage the O-ring. Gently work the O-ring onto the stem (see Figure F. 17.)

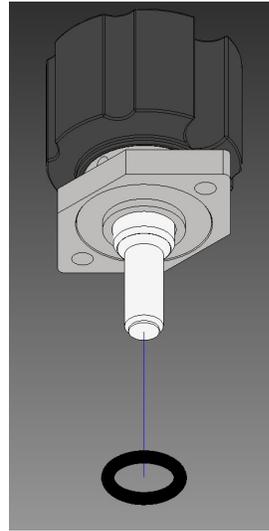


FIGURE F. 17. - O-RING INSTALLATION

11. Join together the upper half of the valve and the valve body (see Figure F.18.). Ensure that the leak detect hole aligns in the same direction as the valve body outlet, as indicated.

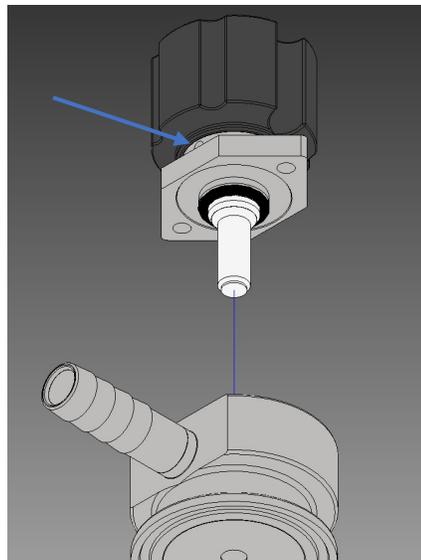


FIGURE F. 18. - TOP HALF INSTALLATION

8. Rotate the valve knob into a position so that the screw holes are visible through the knob fluting (see Figure F. 19.)

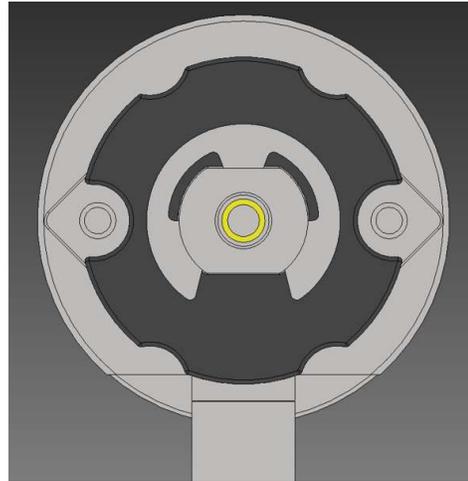


FIGURE F. 19. - KNOB ORIENTATION

9. Thread screws to complete valve assembly (see Figure F.20.). Ensure that screws are tightened evenly to ensure that the O-Ring will not be pinched and the valve stem will not misalign. It is recommended for screws to be tightened a few turns or fractions of a turn in an alternating pattern. Turn until screws are snug. Do not overtighten or over torque.

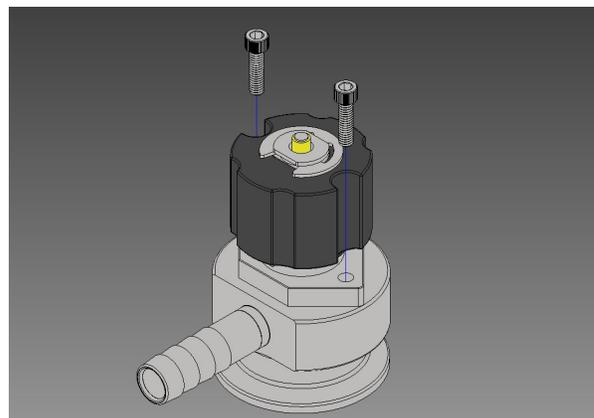
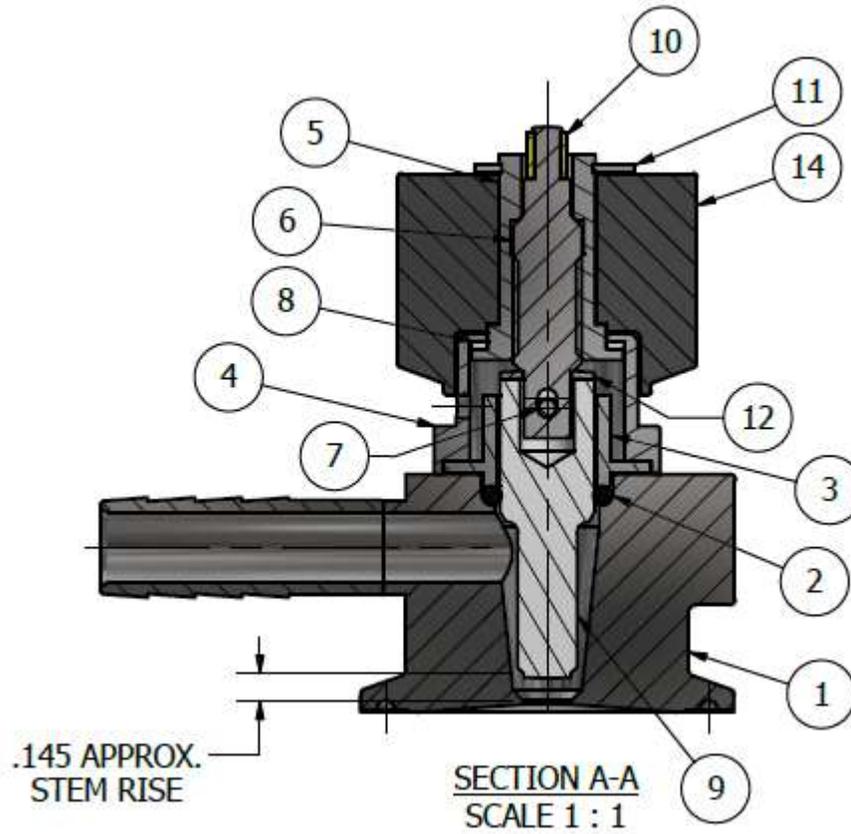


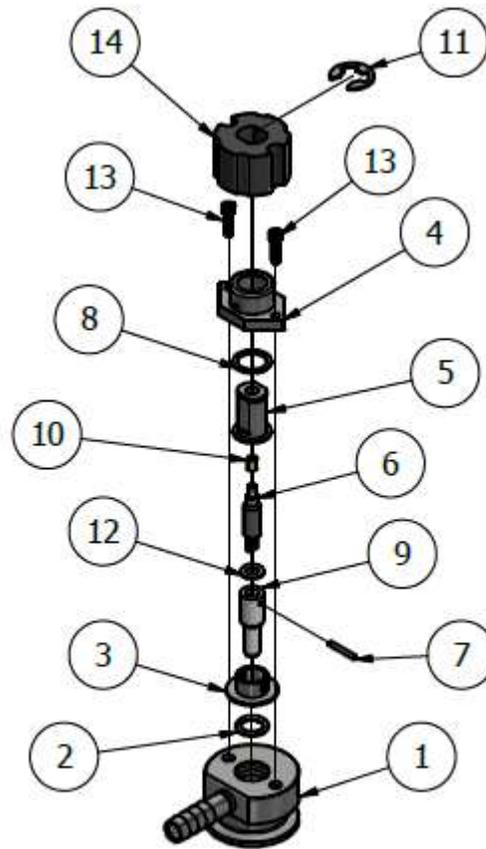
FIGURE F. 20. – SCREW INSTALL

G. Appendix

G.1. SVN Valve Cross Section:

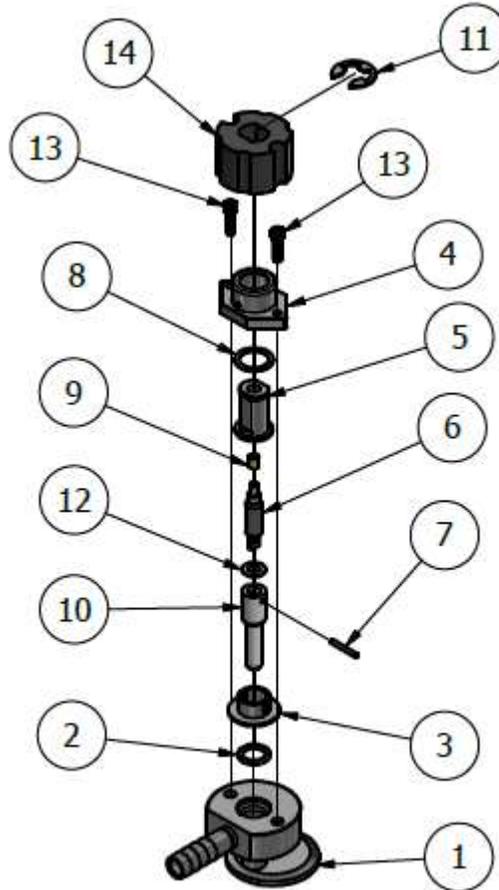


G.2. SVN Exploded View:



EXPLODED VIEW
SCALE NTS
SVN SAMPLE VALVES

G.4. EVN Exploded View:



EXPLODED VIEW
SCALE NTS
EVN SAMPLE VALVES

G.5. SVN & EVN Bill of Materials:

ITEM	PART NUMBER	PART	QTY
1	CONTACT SOB FOR REPLACEMENT	VALVE BODY	1
2	ORING-112-FDA-2107-EPDM-O OR ORING-112-FDA-V70SW-FKM-O	O-RING (EPDM OR FKM OPTIONS)	1
3	SVNSBR-316L-O	SEAL RETAINING BUSHING	1
4	SVNBOD-316L-O	BONNET	1
5	JINSBF-316L-O	STEM OPERATOR	1
6	SVNSTM-N60-O	THREADED STEM	1
7	SVNPIN-304-O	STEM RETAINING PIN	1
8	SVNWASH-TEF-O	PTFE WASHER	1
9	SVNWET-KYNAR740-O / EVNWET-KYNAR740-O	WETTED STEM (SVNWET FOR SVN TYPE VALVES, EVNWET FOR EVN TYPE VALVES)	1
10	SVNIND-VINYL-O	INDICATOR	1
11	SVNCLP-304-O	E-CLIP	1
12	BSW8-NA-O	SPRING WASHER	1
13	CSSH11-NA-O	SCREW	2
14	SVNKNB-ULT-BLACK-O	KNOB	1

For ordering and sales of replacement parts, please contact: SALES@SOB.US

G.6. Revision History:

REVISION NUMBER	NOTES	DATE
1	ORIGINAL RELEASE	10/21/22
2	REV. ASSEMBLY SECTION	11/10/22
3	REV. MATERIAL NAME	12/1/22
4	REV. PART NUMBERS	1/5/23
5	REV. SERVICE CONDITIONS	2/20/23
6	P/N NAMING	3/3/23