



Surface Back Pressure Regulator Medium Flow, Manual Operation

BPR10000MFB-MA



Operations and
Maintenance Manual

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ABOUT SKOFLO

Our experience and track record speak for themselves. SkoFlo has delivered over 20,000 valves since 1988. We are the only company that proves our products by testing in surface applications before deploying them subsea. The result is that SkoFlo valves have amassed over 25 million continuous operating hours. This level of experience is unparalleled and provides the basis for being the solution provider to our served market.

SkoFlo Surface Back Pressure Regulator (BPR) is the industry leader in the oil and gas marketplace and regulating pump discharge pressure in chemical injection systems.

GENERAL INFORMATION

1. Product Overview

The BPR is designed to maintain a constant set pressure in pump discharge lines feeding the chemical injection system. As pressure rises in the pump discharge line, the BPR will maintain pressure levels at a Set Point while allowing the unused fluid to return to the chemical holding tank.

BPRs should be used in any pump discharge line where the pressure must remain at a constant level and unused fluid can be routed back to the fluid holding tank.

BPRs are not designed to be used as Pressure Safety Devices.

BPRs provide a constant pressure to the system with continuous spill-off to the chemical tank that is independent of the flow rate. The BPR10000MFB series has a maximum operating pressure of 10,000psi and supports a flow range of 0.5 – 15 GPM.

2. Guidelines for Using this Manual

The following instructions are provided to ensure a safe and proper installation.

- Read all instructions prior to installation and operation of this product.
- Follow all warning and caution notes.
- Install this product as specified in the instructions provided by SkoFlo.
- Prior to use, educate personnel in the proper installation, operation, and maintenance of this product.
- Only use replacement parts specified by SkoFlo.

3. Warning, Caution, Notice

Throughout this manual there are steps and procedures which, if not followed, may result in a hazard. The following flags are used to identify the level of potential hazard.

! WARNING



WARNING IS USED TO INDICATE THE PRESENCE OF A HAZARD WHICH CAN CAUSE SEVERE INJURY, DEATH, OR SUBSTANTIAL PROPERTY DAMAGE IF THE WARNING IS IGNORED.

! CAUTION



CAUTION IS USED TO INDICATE THE PRESENCE OF A HAZARD WHICH CAN CAUSE INJURY OR PROPERTY DAMAGE IF THE WARNING IS IGNORED.

! NOTICE



NOTICE IS USED TO NOTIFY PEOPLE OF INSTALLATION, OPERATION, OR MAINTENANCE INFORMATION, WHICH IS IMPORTANT BUT NOT HAZARD RELATED.

4. Abbreviations and Acronyms

BPR	Back Pressure Regulator
BOM	Bill of Materials
GA	General Arrangement
MA	Manual
NPT	National Pipe Thread
PPE	Personal Protective Equipment
PSI	Pounds per Square Inch

INSTALLATION & MAINTENANCE

5. Installation Procedures

Install the valve so that the flow is in the proper direction. The "INLET" and "OUTLET" connections are indicated in the general arrangement drawing in Appendix A. The connections offered include the following:

- 3/4" FKO Hub
- 3/4" MP – this connection is suitable for Autoclave Engineers or Butech fittings.
- Grayloc Hub 1GR5 (Short)
- Grayloc Hub 1GR7 (Long)

If the BPR10000MFB uses FKO hub connections, the hubs are shipped separately from the valve and will need to be installed in the inlet and outlet ports prior to use.

The tightening torque for the hubs is 300 ft-lb [407 Nm]. This torque value applies to all hub types.

The "VENT" connection is not under pressure and will see fluid only if the piston seal is leaking. This connection is 1/4" NPT and may be routed to a drain or atmospheric container if desired. The "VENT" must remain free and unrestricted, and should be visible.

The supply pump pulsations must be adequately dampened with a pulsation dampener to avoid setting up a resonant vibration in the SkoFlo valve.

6. Start-up Procedures

1. Open the supply isolation valve to the back-pressure regulator slowly.
2. Turn the pressure adjustment handle clockwise until you are at the desired pressure. Always start at a pressure below the set pressure and increase to the desired setting.
3. The BPR is now set and further adjustments aren't required. Tighten the lock nut on the handle to avoid inadvertent changes to the adjustment.

7. Operation Notes and Warnings

The SkoFlo Back Pressure Regulator has hard seats and is not designed to provide complete "bubble-tight" shut off. If tight shutoff is required, separate isolation valves should be used for shutting off the flow. Overtightening the handle will not further reduce flow. If the back pressure does not increase when turning the handle clockwise, see "Trouble Shooting Improper Valve Performance".

! WARNING



WEAR PROPER PERSONAL PROTECTIVE EQUIPMENT (PPE) AS REQUIRED BY SITE SAFETY PERSONNEL WHEN INSTALLING AND TESTING.

MAINTAIN SAFE WORKING DISTANCES AS DETERMINED BY SITE SAFETY PERSONNEL WHEN TESTING.

CONSULT SKOFLO IF ANY PRODUCT CONCERNS ARISE DURING HANDLING.

! CAUTION



DO NOT FLOW BACKWARDS THROUGH THE SKOFLO VALVE. INTERNAL SEALS ARE DESIGNED FOR ONE DIRECTION ONLY AND COULD POSSIBLY BECOME DISLODGED.

! CAUTION



DO NOT ADJUST THE VALVE FROM OPEN TO CLOSED POSITION UNLESS VALVE IS PRESSURIZED TO AVOID THE POSSIBILITY OF DISLODGING THE STEM SEAL.

! NOTICE



INSTALL A PULSATION DAMPENER BETWEEN THE PUMP DISCHARGE AND THE SKOFLO BACK PRESSURE REGULATOR AS REQUIRED TO AVOID POSSIBLE DAMAGE AND NOISE FROM HARMONIC PULSATIONS.

! NOTICE



INSTALL RELIEF VALVE AND/OR BURST PLATE UPSTREAM OF THE SKOFLO BACK PRESSURE REGULATOR AS REQUIRED.

! CAUTION



THE VENT FROM THE SPRING CHAMBER MUST NOT BE BLOCKED. LEAVE OPEN TO ATMOSPHERE, OR ROUTE TO A DRAIN COLLECTION POINT AT ATMOSPHERIC PRESSURE. THIS VENT WILL ONLY HAVE FLUID IN THE EVENT OF A LEAKING PISTON SEAL.

! NOTICE



WHEN LIFTING THE SKOFLO VALVE, LIFT USING M12 X 1.75 EYEBOLTS IN SIDE OF BODY. DO NOT LIFT USING THE HANDLE AS THIS CAN DAMAGE THE HANDLE.

8. Maintenance Notes

Replacing Seals: When replacing valve seals, it is recommended that the new seals be lubricated with Parker Super Lube or equivalent. Install backup ring on low pressure side of O-ring. For more details, see seal kits sheets in Appendix C, D or E. Make sure the backup ring is lined up at the joint.

Fastener & Torque Summary

Parts Joined	Fastener Description	Thread Compound	Torque Required
Cap Lock Screws	M8 -25 SHCS Grade 70 316SS	Never Seize	10 -12 FT LB
Tie Rod Nuts	7/8 NC Teflon Coated Nut	Never Seize	80-90 FT LB
In/Out Adapters	Machined Components	Never Seize	400-425 FT LB
Autoclave Plugs	Machined Components	Never Seize	20-25 FT LB
Holder	Machined Components	Loctite #271	40-50 FT LB
Second Pin Holder	Machined Components	Loctite #271	40-50 FT LB

NOTE: Loctite #271 requires heat (such as a propane torch) to disassemble.

Recommended Spare Parts

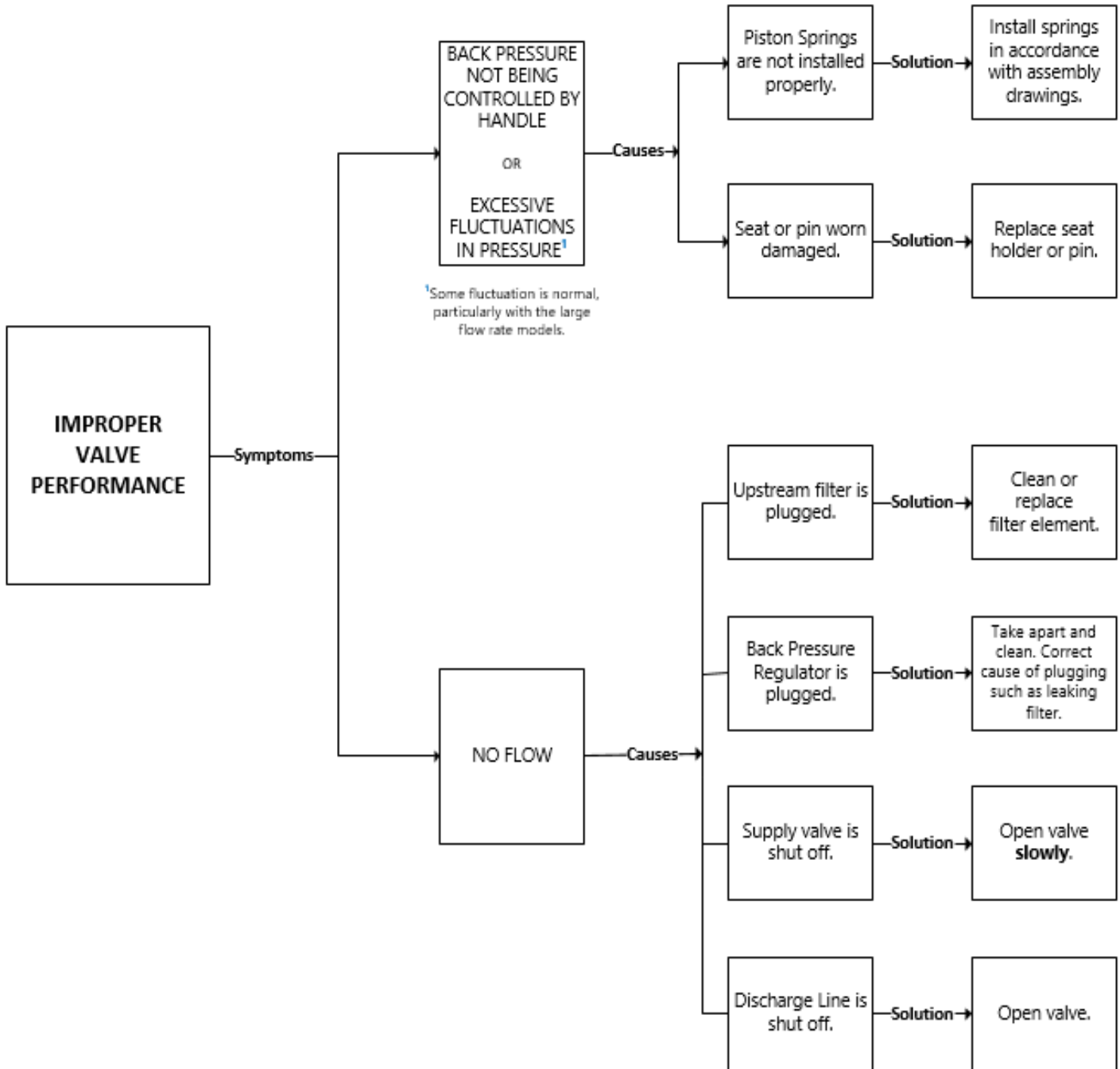
Description	Part #	Qty
Primary Stage Seat Holder with Seat	22048	1
Primary Stage Ceramic Pin	20544	1
Pressure Stage Ceramic Seat	20628	1
Check Stage Carbide Pin	20714	1
Complete Seal Kit EPDM:	22100	1
• Primary Stage Seal Kit EPDM	22102	1
• Pressure Stage Seal Kit EPDM	22104	2
• Check Stage Seal Kit EPDM	22106	1
Complete Seal Kit FFKM:	22101	1
• Primary Stage Seal Kit FFKM	22103	1
• Pressure Stage Seal Kit FFKM	22105	2
• Check Stage Seal Kit FFKM	22107	1

9. Storage

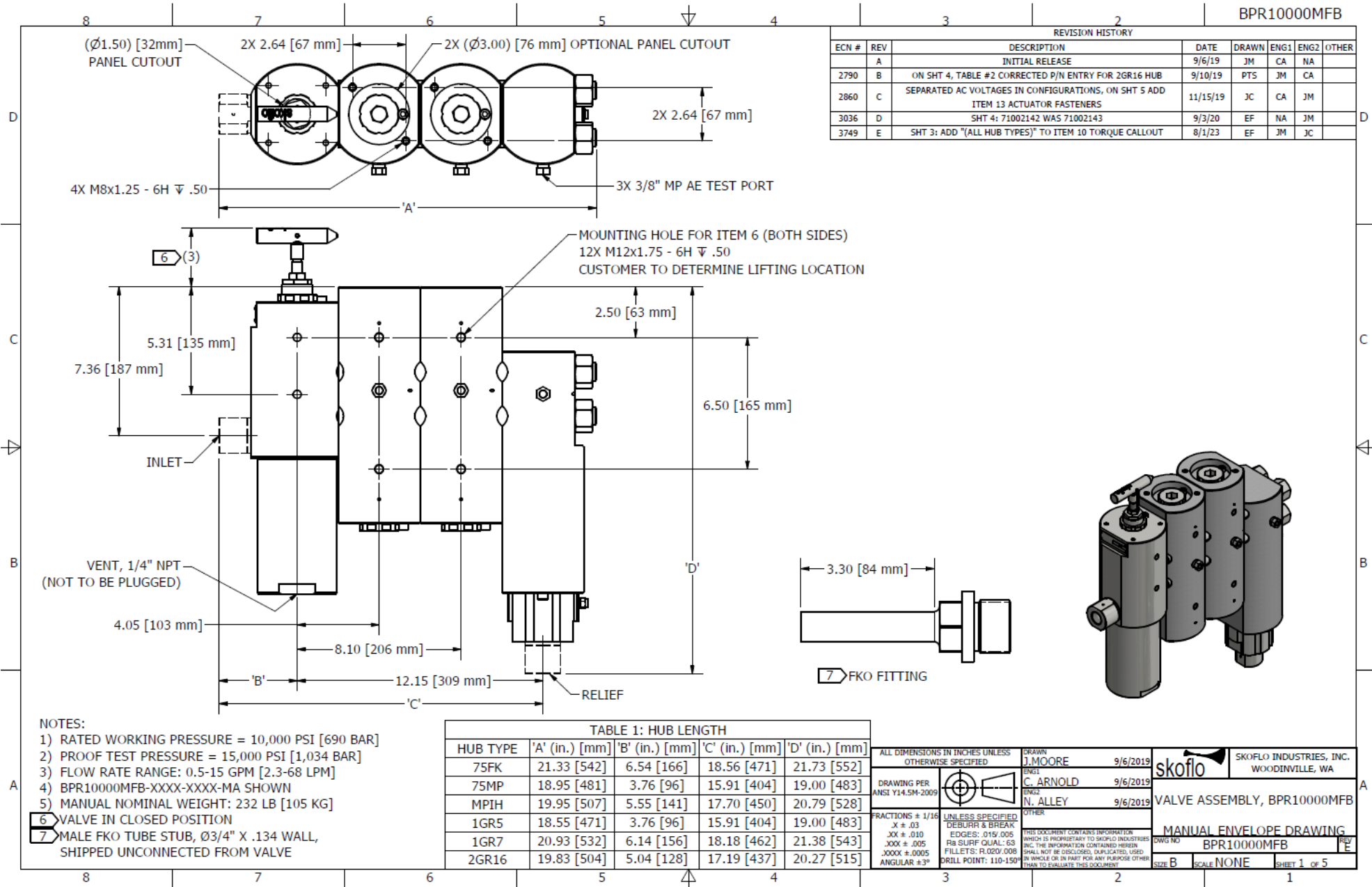
When storing SkoFlo valves prior to first use, it is recommended that the valves be stored indoors. If stored outdoors, apply a light coating of protectant to the exterior of the valve. The shipping plugs in the HP INLET, RELIEF, and VENT should remain in place.

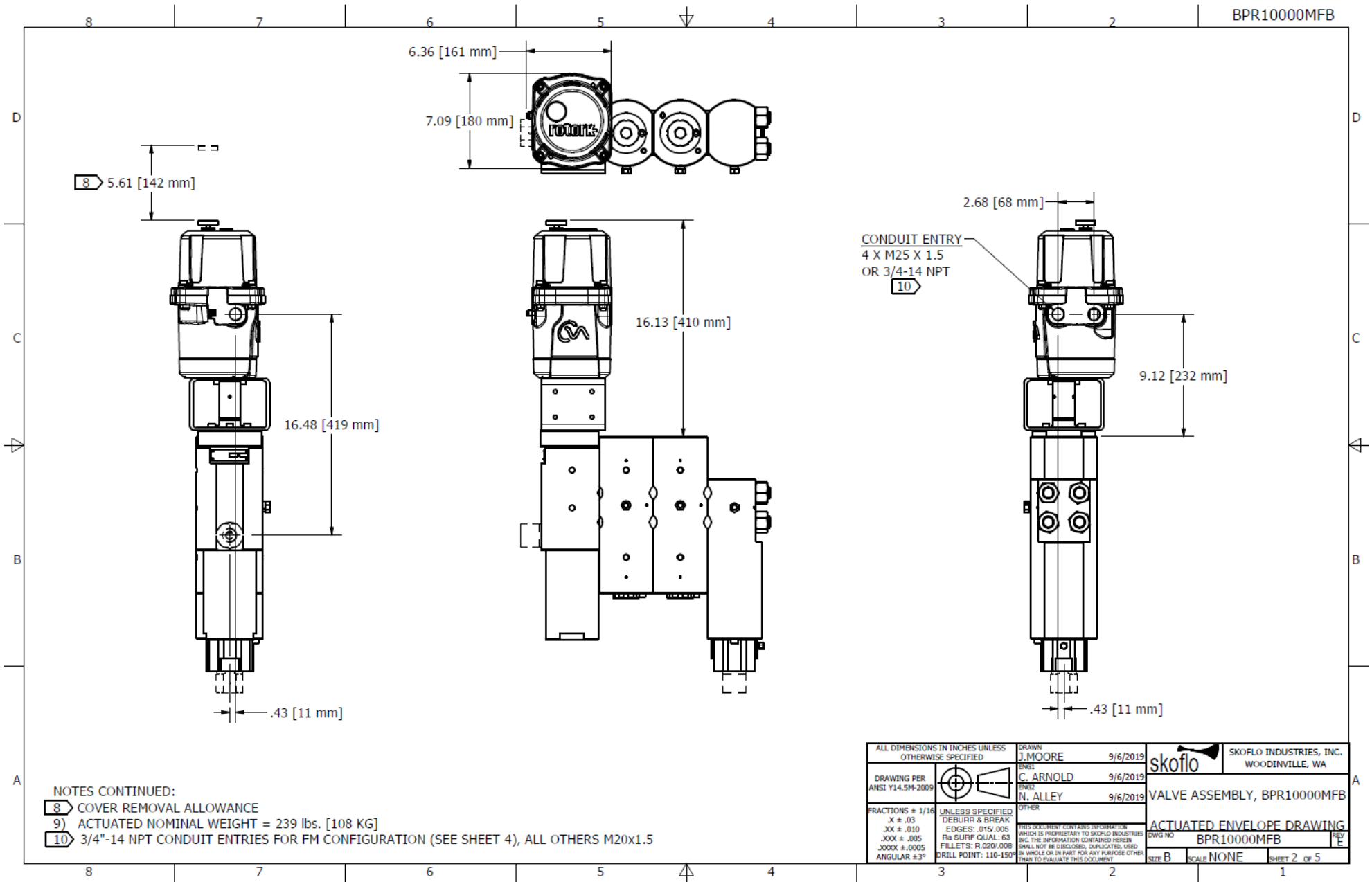
When storing SkoFlo valves after being in use, dismantle, clean thoroughly and reassemble. Then store as noted above.

10. Trouble Shooting Improper Valve Performance



APPENDIX A – GENERAL ARRANGEMENT

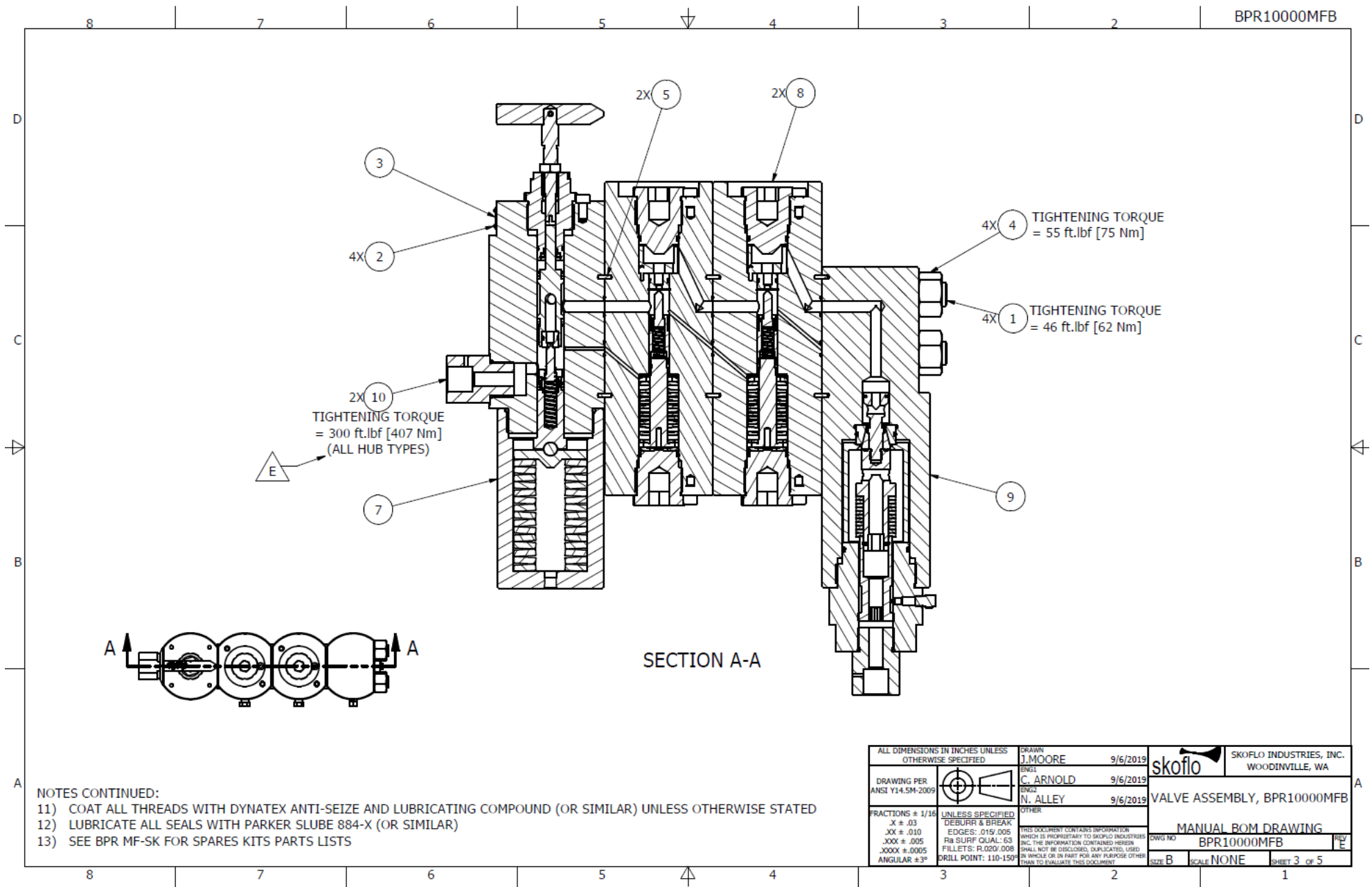




NOTES CONTINUED:

- 8 COVER REMOVAL ALLOWANCE
- 9 ACTUATED NOMINAL WEIGHT = 239 lbs. [108 KG]
- 10 3/4"-14 NPT CONDUIT ENTRIES FOR FM CONFIGURATION (SEE SHEET 4), ALL OTHERS M20x1.5

ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED		DRAWN J. MOORE 9/6/2019	SKOFLO INDUSTRIES, INC. WOODINVILLE, WA
DRAWING PER ANSI Y14.5M-2009		ENGR C. ARNOLD 9/6/2019	
FRACTIONS ± 1/16 X ± .03 XX ± .010 .XXX ± .005 .XXXX ± .0005 ANGULAR ± 3°	UNLESS SPECIFIED: DEBURR & BREAK EDGES: .015 / .005 Ra SURF QUAL: 63 FILLET: R.020 / .008 DRILL POINT: 110-150°	ENGR N. ALLEY 9/6/2019	VALVE ASSEMBLY, BPR1000MFB
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PARTS LIST					
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	PRESSURE CONTAINING
1	4	21423	TIE ROD, BPR1000MFB	NITRONIC 50 HS	YES
2	4	71002116	U-DRIVE SCREW, RH, #2X1/4	302 SS	NO
3	1	71002142	NAMEPLATE, BPR1000C/BPR1000MFB	316L SS	NO
4	4	71002789	NUT, HEX 7/8-9, XYLAN BLUE COAT	316 SS	YES
5	2	71003528	DWL, 1/8 X 3/8	316L SS	NO
6	2	71004205	EYEBOLT LIFTING , M12-1.75 X 21 mm THREAD LENGTH AND 30mm EYE	304 SS	NO
7	1	SEE TABLE 1	ASSY, BPR, MF, PRIMARY STAGE	SEE DWG	YES
8	2	SEE TABLE 1	ASSY, BPR, MF, SECOND STAGE	SEE DWG	YES
9	1	SEE TABLE 1	ASSY, BPR, MF, CHECK STAGE	SEE DWG	YES
10	2	SEE TABLE 2	ADAPTER HUB	SEE TABLE 2	YES

MANUAL CONFIGURATION NUMBER GUIDE

BPR1000MFB	-	XXXX	-	XXXX	-	MA
		EPDM		75FK		3/4" FKO
		FFKM		75MP		3/4" AE MP
		SEAL MATERIAL		MPIH		MPI HUB
				1GR5		GRAYLOC 1GR5
				1GR7		GRAYLOC 1GR7
				2GR16		GRAYLOC 2GR16
				HUB CODE		HUB TYPE

TABLE: 1 SEAL SELECTION

ITEM	EPDM	FFKM
7	20742-001	20742-002
8	20743-001	20743-002
9	29219-001	29219-002

TABLE 2: HUB SELECTION

ITEM	75FK	75MP	MPIH	1GR5	1GR7	2GR16
10	31046	20531	26465	71005634	28424	71007323
MATERIAL	SUPER DUPLEX 2507	NITRONIC 50 HS	NITRONIC 50 HS	NITRONIC 50 HS	SUPER DUPLEX 55	SUPER DUPLEX 55

ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED		DRAWN J. MOORE 9/6/2019	SKOFLO INDUSTRIES, INC. WOODINVILLE, WA VALVE ASSEMBLY, BPR1000MFB MANUAL BOM DWG NO BPR1000MFB SIZE B SCALE NONE SHEET 4 of 5
DRAWING PER ANSI Y14.5M-2009		ENGR C. ARNOLD 9/6/2019	
FRACTIONS ± 1/16 X ± .03 XX ± .010 XXX ± .005 XXXX ± .0005 ANGULAR ± 3°	UNLESS SPECIFIED DEBURR & BREAK EDGES: 0.15/0.05 Ra SURF QUAL: 63 FILLET: R.020/0.008 DRILL POINT: 110-150°	ENGR N. ALLEY 9/6/2019	

ACTUATED CONFIGURATION NUMBER GUIDE

XXXX		AT		XX		X		XX	
SEAL MATERIAL		HUB CODE		VOLTAGE CODE		PROTOCOL CODE		CODE	
EPDM	75FK	3/4" FKO	120	120 VAC	4	4-20mA	AX	ATEX	
FFKM	75MP	3/4" AE MP	208	208 VAC	F	FIELD BUS	EX	IECEX	
	MPIH	MPI HUB	230	230 VAC	H	HART	NA	FM	
	1GR5	GRAYLOC 1GR5	DC	24 VDC		COM. PROTOCOL	GO	GOST	
	1GR7	GRAYLOC 1GR7						HAZLOC CERTIFICATION	
	2GR16	GRAYLOC 2GR16							

TABLE: 3 SEAL SELECTION

ITEM	EPDM	FFKM
11	30932-001	30932-002

SECTION B-B

NOTES CONTINUED:
14) ITEM 7 IS NOT REQUIRED FOR ACTUATED CONFIGURATION

PARTS LIST CONTINUED - ACTUATED ONLY

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	PRESSURE CONTAINING
11	1	SEE TABLE 3	ASSY, BPR, MF, PRIMARY STAGE, ACTUATOR	SEE DWG 30932	YES
12	1	SEE DWG 71007126	ACTUATOR, ROTARY, CMR-200	SEE DWG 71007126	NO
13	4	71007246	SHCS, M6X1 X 12LG	316 SS	NO

ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED		DRAWN J. MOORE 9/6/2019		SKOFLU INDUSTRIES, INC. WOODINVILLE, WA
DRAWING PER ANSI Y14.5M-2009		ENG1 C. ARNOLD 9/6/2019		VALVE ASSEMBLY, BPR1000MFB
FRACTIONS ± 1/16 .X ± .03 .XX ± .010 .XXX ± .005 .XXXX ± .0005 ANGULAR ± 3°	UNLESS SPECIFIED DEBURR & BREAK EDGES: .015/.005 FIB SURF QUAL: 63 FILLET: R1.000/.008 DRILL POINT: 110-150°	ENG2 N. ALLEY 9/6/2019	OTHER	
THIS DOCUMENT CONTAINS INFORMATION WHICH IS PROPRIETARY TO SKOFLU INDUSTRIES, INC. THE INFORMATION CONTAINED HEREIN SHALL NOT BE DISCLOSED, REPLICATED, USED IN WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN TO EVALUATE THIS DOCUMENT.			DWG NO BPR1000MFB	REV E
			SIZE B	SCALE NONE
			SHEET 5 OF 5	

APPENDIX B – BOM & SEAL KITS – PRIMARY STAGE

TABLE 1		TABLE 2			
P/N	DESCRIPTION	ITEM	DESCRIPTION	EPDM -001	FFKM -002
20742-001	BPR, MF, PRIMARY STAGE, EPDM	24	SL, O-RING, 2-013	71001748	71007236
20742-002	BPR, MF, PRIMARY STAGE, FFKM	25	SL, O-RING, 2-014	71001753	71001756
		26	SL, O-RING, 2-016	71001758	71007393
		27	SL, O-RING, 2-020	71001773	71007395
		28	SL, O-RING, 3-916	71001829	71007402

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	PRESSURE CONTAINING
1	1	20275	SEAT, CERAMIC SIZE .210 O RING	ALUMINA	NO
2	1	20312	HOLDER, PIN, BPR-MF, PRIMARY STAGE	NITRONIC 60	NO
3	1	20536	CAP, SPRING, MULTI STAGE BPR, PRIMARY STAGE	NITRONIC 60	YES
4	1	20539	HOLDER, SEAT, BPR, MF, PRIMARY STAGE	NITRONIC 60	YES
5	1	20544	PIN, CERAMIC, SIZE .310 BPR-MF	ZIRCONIA 3Y-TZP OR Z201N	NO
6	1	20548	BODY, VALVE, PRIMARY STAGE	NITRONIC 60	YES
7	1	20565	PRIMARY STAGE UPPER STEM CAP	NITRONIC 60	YES
8	1	20567	RETAINER, STEM SEAL	NITRONIC 60	NO
9	1	20681	BUSHING, STEM, BPR-MF/NMFE	AL-NI-BRZ, C63000	NO
10	1	20762	WASHER, SPRING, PRIMARY STAGE	NITRONIC 60	NO
11	1	21911	PISTON, COATED, BPR-MF, PRIMARY STAGE	SEE DWG 21911	YES
12	1	29129	ASSY, HANDLE, BPR, MF, SURFACE	SEE DWG 29129	NO
13	1	71007730	SL, O-RING, 2-229	EPDM	NO
14	1	71001862	SL, CUP, 0.500 OD, 0.375 ID	VARIOUS, SEE ASSY DRAWING	YES
15	1	71001879	SL, BU RING, X218583	PEEK	NO
16	3	71001881	SL, CUP, 0.812 ID W/ BU RING	VARIOUS, SEE ASSY DRAWING	YES
16	ALT	71007782	SL, CUP, 0.812 ID W/ BU RING	VARIOUS, SEE ASSY DRAWING	YES
17	1	71001896	SL, BU RING, SCARF CUT, 2-014	PTFE	NO
17	ALT	71007721	SL, BU RING, SCARF CUT, 2-014	PTFE	NO
18	1	71001934	SL, BU RING, 8-020	PEEK	NO
19	1	71001949	SNAP RING, INT, .75"	316 SS	NO
20	15	71001967	SPRING, WASHER, 02.750 OD x 01.062 ID, .238 TH	17-7 SS	NO
21	1	71001971	BALL, 0.500	SILICONE NITRIDE, GR10	NO
22	1	71002073	SPRING, PIN	302 SS	NO
23	1	71007321	SHCS, M8-1.25 X 16 LG	A4-80	NO
24	1	SEE TABLE 2	SL, ORING, 2-013	SEE TABLE 2	YES
25	1	SEE TABLE 2	SL, ORING, 2-014	SEE TABLE 2	NO
26	1	SEE TABLE 2	SL, ORING, 2-016	SEE TABLE 2	YES
27	1	SEE TABLE 2	SL, O-RING, 2-020	SEE TABLE 2	YES
28	1	SEE TABLE 2	SL, O-RING, 3-916	SEE TABLE 2	YES

ECN #	REV	DESCRIPTION	DATE	DRAWN	ENGR	ENGR2	OTHER
2729	F	REMOVE SHEET 2; REPLACE INDIVIDUAL HANDLE & STEM PARTS W/ HANDLE ASSY 29129; SPRING STACK ASSY (22116) REPLACED W/ 15X 71001967; 71007321 WAS 28722-002; REMOVED QTY -001 AND QTY -002 COLUMNS. ADD QTY & "PRESSURE CONTAINING" COLS; SORT ALL ITEMS BY P/N; ADD TABLE 2 AND NOTES	10/1/19	EF	JM	NA	
2851	G	ITEM 8 WAS "YES" ON PRESSURE CONTAINING; ITEM 14 WAS "NO" ON PRESSURE CONTAINING	11/7/19	PTS	NA	JM	
2868	H	UPDATED COLUMN FFKM-002 TO REFLECT "ISOLAST" BRAND O-RING P/Ns; ADD NOTE 4	11/26/19	PTS	JM	NA	
3623	J	ITEM 13: 71007730 WAS 71001844; ADD ALTERNATES FOR ITEMS 16 & 17	2/23/23	EF	JM	SI	

NOTES:

- 1) COAT ALL THREADS WITH DYNATEX ANTI-SEIZE AND LUBRICATING COMPOUND (OR SIMILAR) UNLESS OTHERWISE STATED
- 2) LUBRICATE ALL SEALS WITH PARKER SLUBE 884-X (OR SIMILAR)
- 3) SEE BPR MF-SK FOR SPARES KITS PARTS LISTS
- 4) PRESSURE CONTAINING FFKM O-RINGS SHALL BE "ISOLAST" GRADE J9523

ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED		DRAWN E. NGUJEDE 9/1/2009	SKOFLO INDUSTRIES, INC. WOODINVILLE, WA
DRAWING PER ANSI Y14.5M-2009		ENGR S. SPAHI ENGR J. MOORE OTHER	
FRACTIONS ± 1/16 .X ± .03 .XX ± .010 .XXX ± .005 .XXXX ± .0005 ANGULAR ± 30'	UNLESS SPECIFIED DEBURR & BREAK EDGES: .015/.005 FIN SLURF QUAL: 63 FILLETS: R1.000/0.008 DRILL POINT: 110-150°	ASSY, BPR, MF, PRIMARY STAGE BOM DWG NO 20742 SIZE B SCALE NONE SHEET 1 OF 1	

APPENDIX C – BOM – PRESSURE STAGE

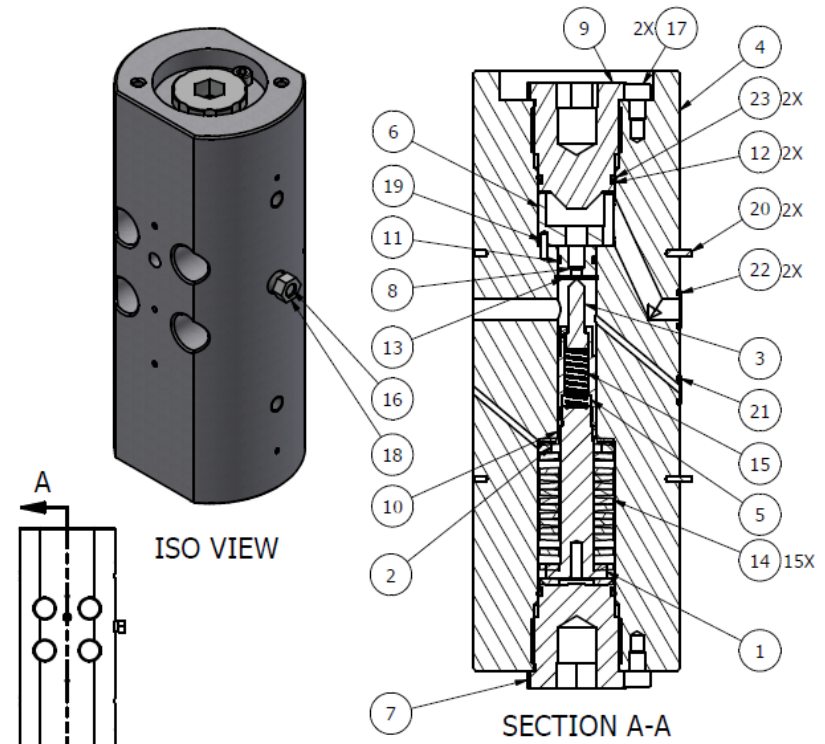
20743

P/N	DESCRIPTION
20743-001	BPR, MF, PRESSURE STAGE, EPDM
20743-002	BPR, MF, PRESSURE STAGE, FFKM

ITEM	DESCRIPTION	EPDM -001	FFKM -002
21	SL, O-RING, 2-013	71001748	71007236
22	SL, O-RING, 2-016	71001758	71007393
23	SL, O-RING, 2-125	71001797	71007398

ECN #	REV	DESCRIPTION	DATE	DRAWN	ENG1	ENG2	OTHER
2794	D	REMOVE SHEET 2; REPLACE 22018 W/ 15X 71001954; REMOVED QTY -001 AND QTY -002 COLUMNS; ADD QTY AND "PRESSURE CONTAINING COLUMNS"; SORT ALL ITEMS BY P/N; ADD TABLE 2 AND NOTES; ITEM 20 WAS 71001874, CHANGED TO 71007370	9/16/19	PTS	CA	JM	
2868	E	UPDATED COLUMN FFKM-002 TO REFLECT "ISOLAST" BRAND O-RINGS P/N'S; ADD NOTE 4	11/22/19	PTS	JM	NA	
2969	F	71001874 WAS 71007370	2/26/20	CA	JC	NA	
3681	G	ADDING ALTERNATE P/Ns FOR ITEMS 2 AND 10	2/21/23	EF	JC	SI	

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	PRESSURE CONTAINING
1	1	20535	PISTON, BPR-MF, HPS STAGE	NITRONIC 50 HS	NO
2	1	20542	WASHER, SPRING, .210, BPR 2ND STAGE	NITRONIC 50 HS	NO
2	ALT	31863-X	WASHER, SPRING, BPR-MF, 2ND STAGE	NITRONIC 50 HS	NO
3	1	20544	PIN, CERAMIC, SIZE .310 BPR-MF	ZIRCONIA 3Y-TZP OR Z201N	NO
4	1	20546	BODY, BPR-MF 2ND STAGE	NITRONIC 60	YES
5	1	20561	HOLDER, PIN, BPR-MF, 2ND STAGE	NITRONIC 50	NO
6	1	20562	HOLDER, SEAT, BPR-MF 2ND STAGE	NITRONIC 60	NO
7	1	20576	CAP, BASE, BPR, MF, PRESSURE STAGE	NITRONIC 60	YES
8	1	20628	SEAT, CERAMIC, .210, BPR-MF	ALUMINA	NO
9	1	20653	CAP, UPPER, BPR-MF, PRESSURE STAGE	NITRONIC 60	YES
10	1	71001874	SL, CUP, Ø.625 ID W/ BU RING, 302 SS SPRING	SEE DRAWING	NO
10	ALT	71007716	SL, CUP, .625 ID, W/ BU RING & HAT RING, X635668	SEE DRAWING	NO
11	1	71001930	SL, BU RING, 8-016	PEEK	NO
12	2	71001941	SL, BU RING, 8-125	PEEK	NO
13	1	71001949	SNAP RING, INT, .75"	316 SS	NO
14	15	71001954	SPRING, WASHER, Ø1.450 OD x Ø.662	17-7 PH	NO
15	1	71002071	SPRING, PIN	302 SS	NO
16	1	71002083	PLUG, 3/8 AE	316 SS	YES
17	2	71002091	SHCS, M8 X 1.25 X 10	A4-70	NO
18	1	71003288	NUT, PLUG, 3/8 AUTOCLAVE	316 SS	YES
19	1	71003373	PIN, DOWEL, 1/8 X 1/2, 316 SS	316 SS	NO
20	2	71003528	DWL, 1/8 X 3/8	316L SS	NO
21	1	SEE TABLE 2	SL, O-RING, 2-013	SEE TABLE 2	YES
22	2	SEE TABLE 2	SL, O-RING, 2-016	SEE TABLE 2	YES
23	2	SEE TABLE 2	SL, O-RING, 2-125	SEE TABLE 2	YES



- NOTES:
- 1) COAT ALL THREADS WITH DYNATEX ANTI-SEIZE AND LUBRICATING COMPOUND (OR SIMILAR) UNLESS OTHERWISE STATED
 - 2) LUBRICATE ALL SEALS WITH PARKER SLUBE 884-X (OR SIMILAR)
 - 3) SEE BPR MF-SK FOR SPARES KITS PARTS LISTS
 - 4) PRESSURE CONTAINING FFKM O-RINGS SHALL BE "ISOLAST" GRADE J9523

ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED	DRAWN E. NGUJEDE 6/1/2018	SKOFLIO INDUSTRIES, INC. WOODINVILLE, WA		
DRAWING PER ANSI Y14.5M-2009	<table border="1"> <tr><td>ENG1</td></tr> <tr><td>ENG2</td></tr> <tr><td>OTHER</td></tr> </table>		ENG1	ENG2
ENG1				
ENG2				
OTHER				
FRACTIONS ± 1/16 X ± .03 XX ± .010 XXX ± .005 XXXX ± .0005 ANGULAR ± 3°	UNLESS SPECIFIED DEBURR & BREAK EDGES: .015/.005 Fillet SURF QUAL: 63 FILLETS: R.020/.008 DRILL POINT: 110-150°	ASSY, BPR, MF, PRESSURE STAGE BOM 20743 REV G		
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APPENDIX D – BOM – CHECK STAGE

TABLE 1		TABLE 2				REVISION HISTORY							
P/N	DESCRIPTION	ITEM	DESCRIPTION	EPDM -001	FFKM -002	ECN #	REV	DESCRIPTION	DATE	DRAWN	ENG1	ENG2	OTHER
29219-001	ASSY, BPR, MF, CHECK STAGE , EPDM	18	SL, O-RING, 2-017	71001763	71001765	2770	C	CORRECTED QUANTITY OF 71001807 FROM 1 TO 0 FOR QTY-002	8/15/19	CA	NA	MK	
29219-002	ASSY, BPR, MF, CHECK STAGE , FFKM	19	SL, O-RING, 2-018	71001766	71001769	2800	D	REMOVE SHEET 2; REPLACE 22015 WITH 11X 71001963; REMOVED QTY -001 AND QTY -002 COLUMNS; ADD "QTY" AND "PRESSURE CONTAINING" COLUMNS; SORT ALL ITEMS BY P/N; ADD TABLE 1 AND TABLE 2; ADD NOTES	9/17/19	PTS	JM	CA	
		20	SL, O-RING, 2-125	71001797	71001801	2868	E	UPDATE COLUMN FFKM-002 TO REFLECT "ISOLAST" BRAND O-RING P/N'S; ADD NOTE 4	9/25/19	PTS	JM	NA	
		21	SL, O-RING, 2-141	71001807	71007400	3670	F	ITEM 12: 71007785 WAS 71001963	1/31/23	EF	JM	JC	
		22	SL, O-RING, 3-916	71001829	71007402								

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	PRESSURE CONTAINING
1	1	20705	CAP, OUTLET, BPR-MF CHECK STAGE	NITRONIC 60	YES
2	1	20706	TENSIONER, SPRING, BPR-MF CHECK ST	NITRONIC 60	NO
3	1	20707	RETAINER, SEAT, BPR-MF CHECK STAGE	316L SS	NO
4	1	20708	PISTON, BPR-MF CHECK STAGE	NITRONIC 60	NO
5	1	20711	BODY, CHECK SECTION	NITRONIC 60	YES
6	1	20712	HOLDER, SEAT, BPR-MF CHECK STAGE	NITRONIC 60	NO
7	1	20713	SEAT, BPR-MF CHECK STAGE	CARBIDE BC-6N	NO
8	1	20714	PIN, BPR-MF CHECK STAGE	CARBIDE BC-6N	NO
9	2	71001885	SL, BU RING, SOLID, 8-116	GF (15-25%) PTFE	NO
10	1	71001905	BU RING, PTF	PTFE	NO
11	1	71001941	SL, BU RING, 8-125	PEEK	NO
12	11	71007785	SPRING, WASHER, Ø1.450 OD x Ø.937 ID, .112 TH	INCONEL 718	NO
13	1	71002083	PLUG, 3/8 AE	316 SS	YES
14	1	71002091	SHCS, M8 X 1.25 X 10	A4-70	NO
15	1	71002101	SHSS, CUP, M6-1 X 8	316 SS	NO
16	1	71002130	PLUG, 1/8 NPT, SS-2P-1/8 NPT	316 SS	YES
17	1	71003288	NUT, PLUG, 3/8 AUTOCLAVE	316 SS	YES
18	2	SEE TABLE 2	SL, O-RING, 2-017	SEE TABLE 2	NO
19	1	SEE TABLE 2	SL, O-RING, 2-018	SEE TABLE 2	NO
20	1	SEE TABLE 2	SL, O-RING, 2-125	SEE TABLE 2	NO
21	1	SEE TABLE 2	SL, O-RING, 2-141	SEE TABLE 2	YES
22	1	SEE TABLE 2	SL, O-RING, 3-916	SEE TABLE 2	YES

ISO VIEW

SECTION A-A

NOTES:

- 1) COAT ALL THREADS WITH DYNATEX ANTI-SEIZE AND LUBRICATING COMPOUND (OR SIMILAR) UNLESS OTHERWISE STATED
- 2) LUBRICATE ALL SEALS WITH PARKER SLUBE 884-X (OR SIMILAR)
- 3) SEE BPR MF-SK FOR SPARES KITS PARTS LISTS
- 4) PRESSURE CONTAINING FFKM O-RINGS SHALL BE "ISOLAST" GRADE J9523

ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED		DRAWN E. NGUJEDE 6/4/2018	skoflo SKOFLO INDUSTRIES, INC. WOODINVILLE, WA
DRAWING PER ANSI Y14.5M-2009		ENG1	ASSY, BPR, MF, CHECK STAGE
FRACTIONS = 1/16 X ± .03 XX ± .010 XXX ± .005 XXXX ± .0005 ANGULAR ± 3°	UNLESS SPECIFIED DEBURR & BREAK EDGES: 0.15/0.05 Ra SURF QUAL: 63 FILLETS: R.020/0.08 DRILL POINT: 110-150°	ENG2	BOM
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SIZE B		SCALE NONE	SHEET 1 OF 1



SkoFlo Industries
14241 NE 200th Street

Woodinville, WA 98072 USA
Tel 1-425-485-7816
Fax 1-425-368-1696

www.skoflo.com