

Product Information Bulletin

1" Hydraulic Regulator T-seal Improvement

REV	DATE	DESCRIPTION	ORIGIN (issued by)	APPROVED
001	5-16-2019	Document No: 135-051619-001	CM	BR
002	5-20-2019	Correction to Table 2 item 1 description	CM	BR
003	11-11-2019	Correction to Table 3 Item 2 repair kit number	CM	BR
004	10-07-2020	Update to new template	SD	BR

COMPANY PROPRIETARY INFORMATION

© 2014 - 2020 Proserv Gilmore Valve, LLC and/or its affiliates (Gilmore). All rights reserved. Proserv®, Gilmore™, Gilmore & Design (Stallion) and Gilmore, a Proserv Company™ are registered trademarks or trademarks of Gilmore. This Bulletin and the information contained herein is not to be, in whole or in part, reproduced or transmitted in any form by any means without the express permission of Gilmore. **DISCLAIMER:** Whilst Gilmore has carefully reviewed the contents of this Bulletin and believes the information to be correct, Gilmore does not assume any liability in connection with any use of or reliance upon this information and gives no representation or warranty, express or implied, in respect of the information or any products described herein. This Bulletin is intended for use by persons having suitable technical expertise and skill, at their own discretion and risk. Gilmore may change the information contained herein at any time without notice.

For more information:

Call (800) 469-8786

Gilmore@proserv.com

Gilmore, A Proserv Company

1231 Lumpkin Road

Houston, TX 77043

1" Hydraulic Regulator T-seal Improvement



Proserv Gilmore Valve has released an improvement to our 1" Hydraulic Regulator series. The legacy regulators' piston plunger dynamic O-ring has been replaced with an improved T-seal along with a nickel aluminum bronze plunger piston for better galling resistance. This new T-seal hydraulic regulator is suitable for critical offshore and subsea applications. The improved T-seal regulator has an identical footprint to the legacy 1" hydraulic regulator and a conversion kit is available for existing regulators.

Features and Benefits:

- Upgraded existing dynamic O-ring seal to T-seal design for improved debris tolerance and resistance to spiral failure
- Upgraded plunger piston material to nickel aluminium bronze for improved galling resistance

Figure 1. PN 187208: 1" Seal sub mounted Hydraulic Pressure Regulator

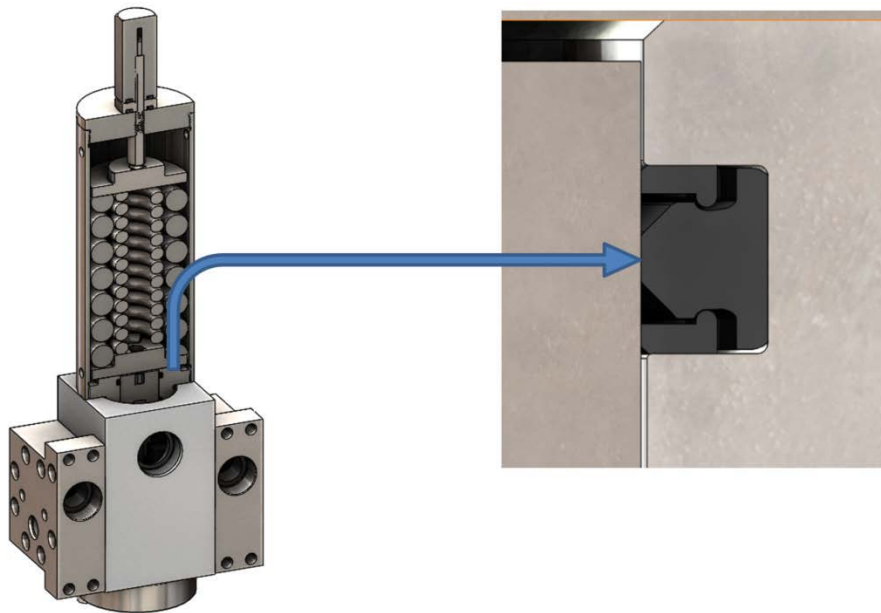


Figure 2. PN 187208: 1" Cross-section of Hydraulic Pressure Regulator with T-Seal detail

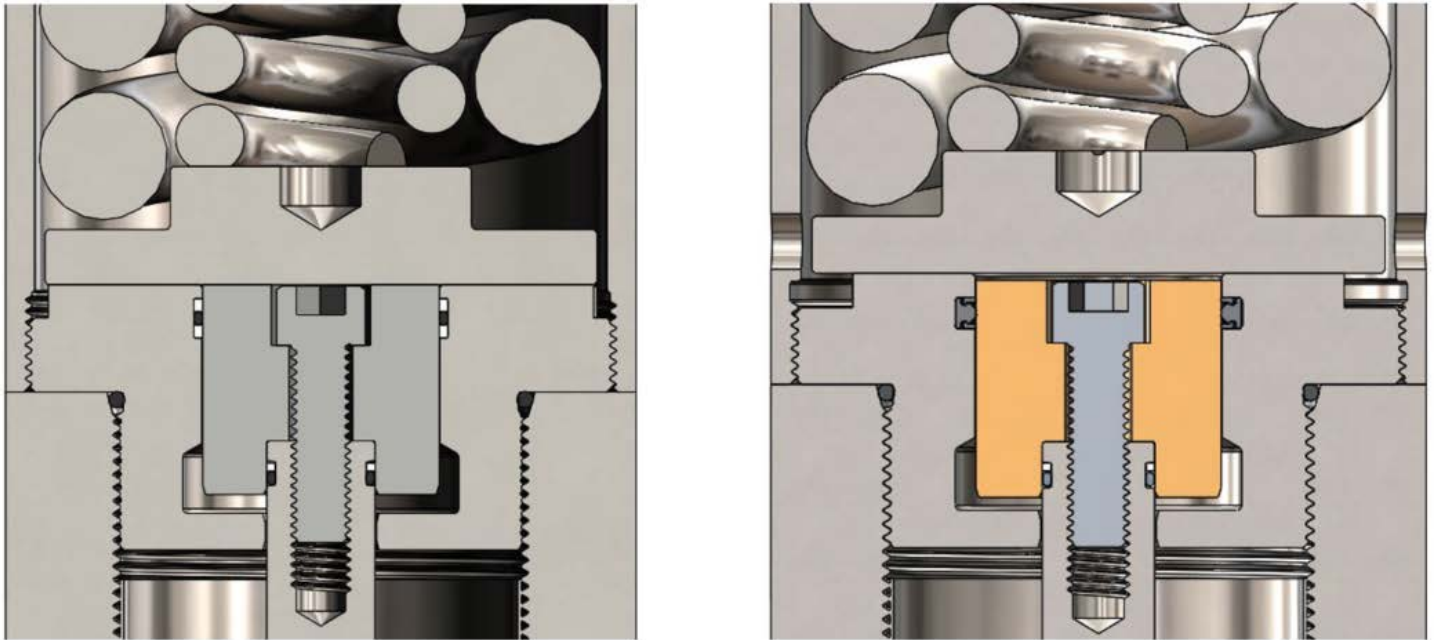


Figure 3. Legacy Nitronic 60 Plunger (12942-3) with O-ring vs new Nickel Aluminium Bronze Plunger (197511) with T-seal

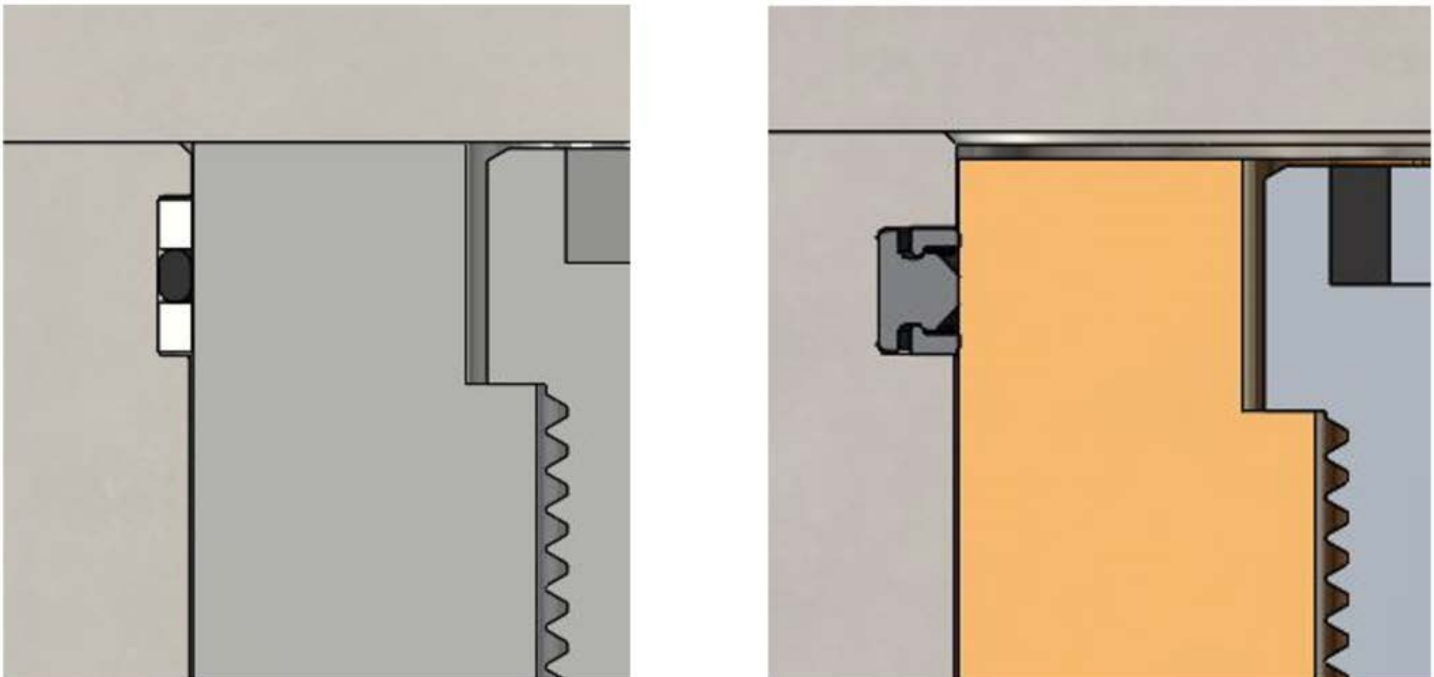


Figure 4. Detail cross-section of Dynamic O-ring vs New T-seal

Proserv Gilmore Valve has qualified the 1” T-seal hydraulic regulator to API 16D requirements by testing to 1,000 cycles in supplying pressure and 500 cycles in venting pressure.

The new Proserv Gilmore 1” T-seal hydraulic regulator has an identical footprint to the legacy valves listed below in Table 1. Along with purchasing a new valve, the T-seal improvement can be implemented in the legacy valves utilizing the conversion kits listed below in Table 1.

Table 1. Affected New and Legacy 1” Regulator Part Numbers with Conversion Kit Part Numbers:

Item	Legacy Description	Legacy Valve PN	Conversion Kit PN	New Valve Description	New Valve PN
1	Regulator, Hydraulic Pressure, Seal Sub Mounted	60174-8	189337	Valve, Regulator, Hydraulic Pressure, Manual, 1-1/4” Seal Sub 3000/5000 psi, w/T-seal	187208
2	Valve, Regulator, Hydraulic Press, Seal Sub	60174	189338	Valve, Regulator, Hydraulic Pressure, Manual, 1-1/4” Seal Sub 3000/5000 psi, w/T-seal	187209
3	Valve, Regulator, Hydraulic Press, Seal Sub	60175	189339	Valve, Regulator, Hydraulic Pressure, Manual, 1-1/4” Seal Sub 3000/5000 psi, w/T-seal	187210

Please Note: The repair kits and seal kits listed below cannot be used interchangeably between regulators due to changes to the plunger piston and plunger guide. Repair kits and Seal kits listed on below Tables 2 and 3 are not interchangeable between the legacy regulator and the new 1” T-seal Regulator.

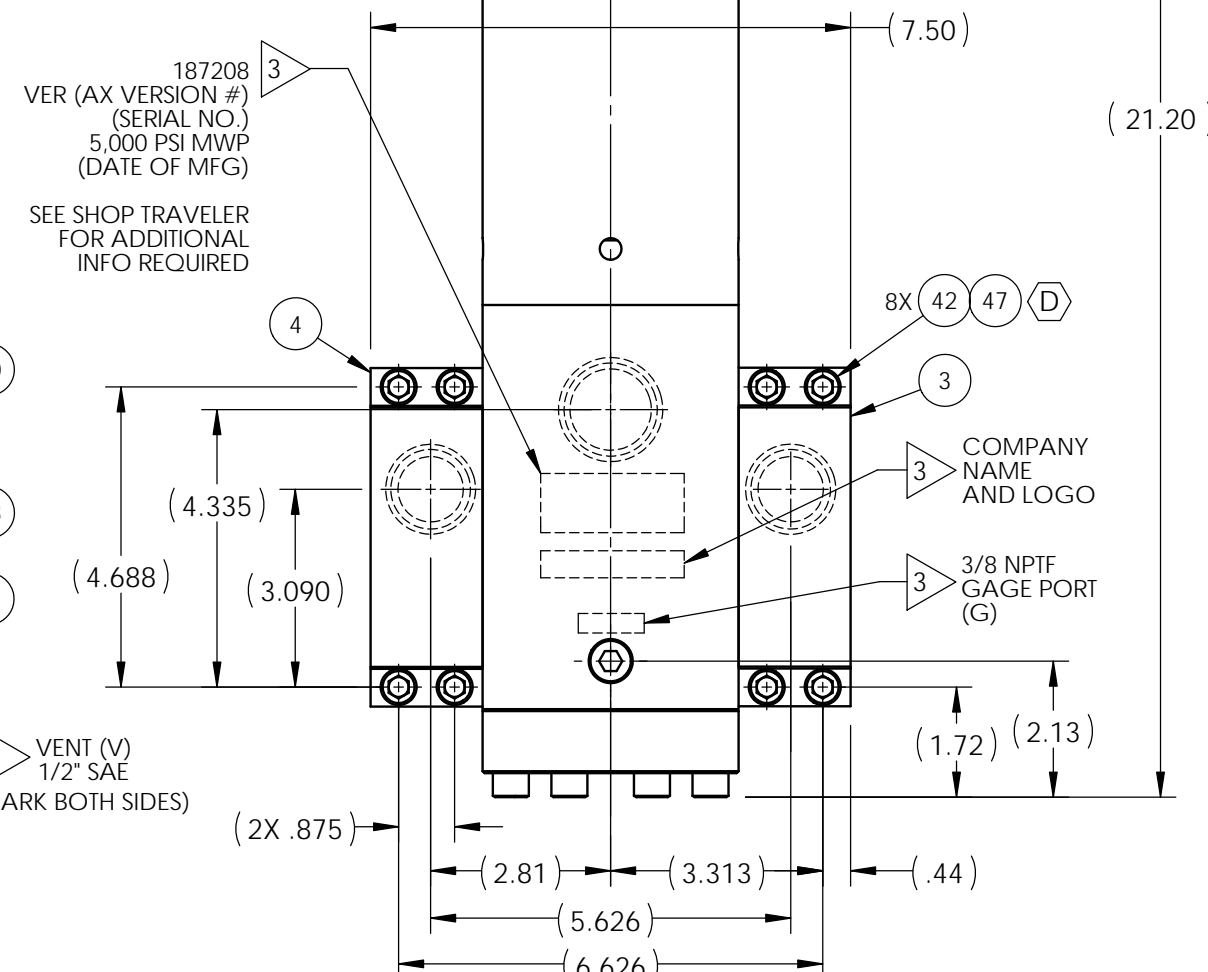
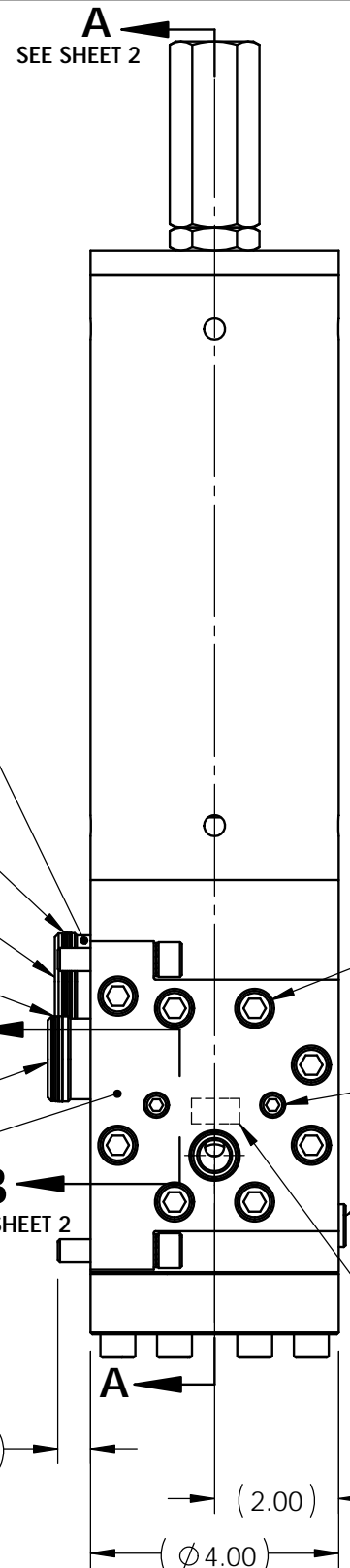
Table 2. Affected Legacy 1” Regulator Kit Part Numbers:

Item	Legacy Description	Legacy Valve PN	Legacy Valve Repair Kit	Legacy Valve Seal Kit
1	Valve, Regulator, Hydraulic Press, Seal Sub	60174-8	60174-8 RK	60174-8 SK
2	Valve, Regulator, Hydraulic Press, Seal Sub	60174	60174 RK	60174 SK
3	Valve, Regulator, Hydraulic Press, Seal Sub	60175	60175 RK	60175 SK

Table 3. Affected New 1” Regulator Kit Part Numbers:

Item	New Valve Description	New Valve PN	New Valve Repair Kit	New Valve Seal Kit
1	Valve, Regulator, Hydraulic Pressure, Manual, 1-1/4” Seal Sub 3000/5000 psi, w/T-seal	187208	187374	187375
2	Valve, Regulator, Hydraulic Pressure, Manual, 1-1/4” Seal Sub 3000/5000 psi, w/T-seal	187209	187377	187378
3	Valve, Regulator, Hydraulic Pressure, Manual, 1-1/4” Seal Sub 3000/5000 psi, w/T-seal	187210	187380	187381

Please contact Gilmore Customer Service to request drawings and quotations for these regulators at Gilmore@proserv.com.



REVISIONS				
REV	ERN /ECO NUMBER	DRAWN	CHECKED	APPROVED
D	ECO 018653	CMY 5-15-20	JOP 5/15/20	AM 5/15/20

PORTS

SUPPLY: (P) SEAL SUB (2) 5,000 PSI
 REGULATED: (C) SEAL SUB (1) 3,000 PSI
 VENT: (V) 1/2" SAE AMBIENT
 GAGE PORT: (G) 3/8 NPTF 3,000 PSI

FLOW DATA

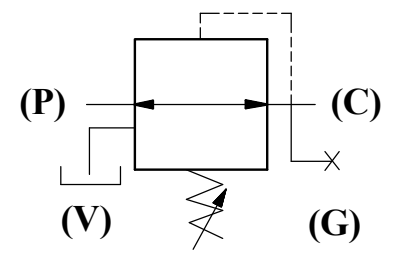
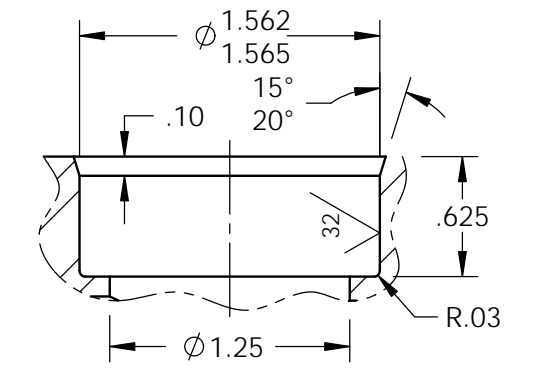
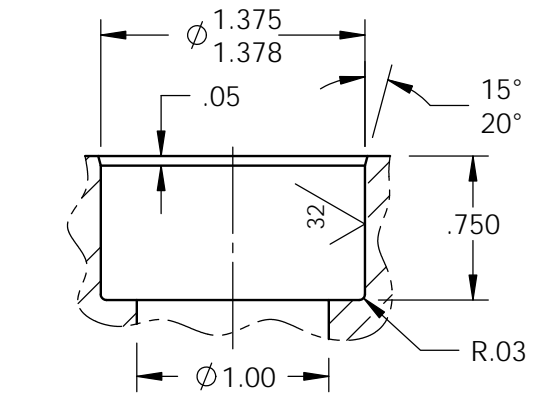
Cv (CALCULATED): SUPPLY: 18.8
 VENT: 2.8

GENERAL DATA

APPROX WEIGHT: 68 LBS.

MATERIAL:

A564 TP 630 (17-4PH)
 A276 TP 440C
 BUNA-N
 TEFLON
 A276 TP 316/316L
 A582 TP 416
 A276 TP 302/304/316
 A582 TP 303
 A453 GR 660
 A286
 AMS 5699 INCONEL X-750
 A313 TP 302
 18-8 SS
 NITRONIC 60
 DELRIN 511P
 UNS C63000 NICKEL ALUMINUM BRONZE



- NOTES:
- AN 'X' DEPICTS PARTS IN REPAIR KIT 187374, SEAL KIT 187375 AND MOUNTING KIT 187376.
 - FOR MK ITEM 30, QTY IS 4, REFER TO 187376 BOM.
 - MARKING: MARK AS SHOWN USING LASER ETCH OR COMPUTER CONTROLLED DOT PEEN MARKING MACHINE, .06 HIGH MIN CHARACTERS.
 - THE CONVERSION KIT (CK) 189337 SHALL BE USED TO CONVERT THE FOLLOWING ASSEMBLY: 60174-8 THE CONVERSION TAG IS ONLY USING IN THE CONVERSION KIT.
 - FOR ASSEMBLY PROCEDURE REFER TO 50185.

MATERIAL: SEE PARTS BOM	DIMENSIONS AND TOLERANCES ARE IN INCHES PER ASME Y14.5M-1994. UNLESS OTHERWISE SPECIFIED: 1) TOLERANCES: X: \pm .1 XX: \pm .01 XXX: \pm .005 ANGLES: \pm 5° 2) SURFACE TEXTURE: 63/ \sqrt 3) CORADIAL FEATURES SHALL BE WITHIN .010 4) BREAK SHARP EDGES .010 5) INTERNAL RADII SHALL BE .016 MAX 6) DRILL POINTS OPTIONAL WHEN SHOWN UNSPECIFIED, ALL DRILL POINT ANGLES SHALL BE BETWEEN 90°-140°	APPROVAL	
CONDITION:		DRAWN BY CMY	DATE 12-7-18
TREATMENT:		CHECKED BY JP	DATE 12-7-18
PROCEDURE NUMBER:		ENGINEER GM	DATE 12-7-18
		ERN NUMBER 02263	DATE 11-30-18
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF GILMORE VALVE CO UNLESS OTHERWISE STATED. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF GILMORE VALVE CO IS PROHIBITED.	

Gilmore ENGINEERING
a pro/erv company

VALVE, REGULATOR, HYDRAULIC PRESSURE, MANUAL, 1-1/4" SEAL SUB 3000/5000 PSI, W/T-SEALS

SIZE B	DWG NO	REV D
SCALE 1:3	SolidWorks	SHEET 1 OF 2

187208

B

B

A

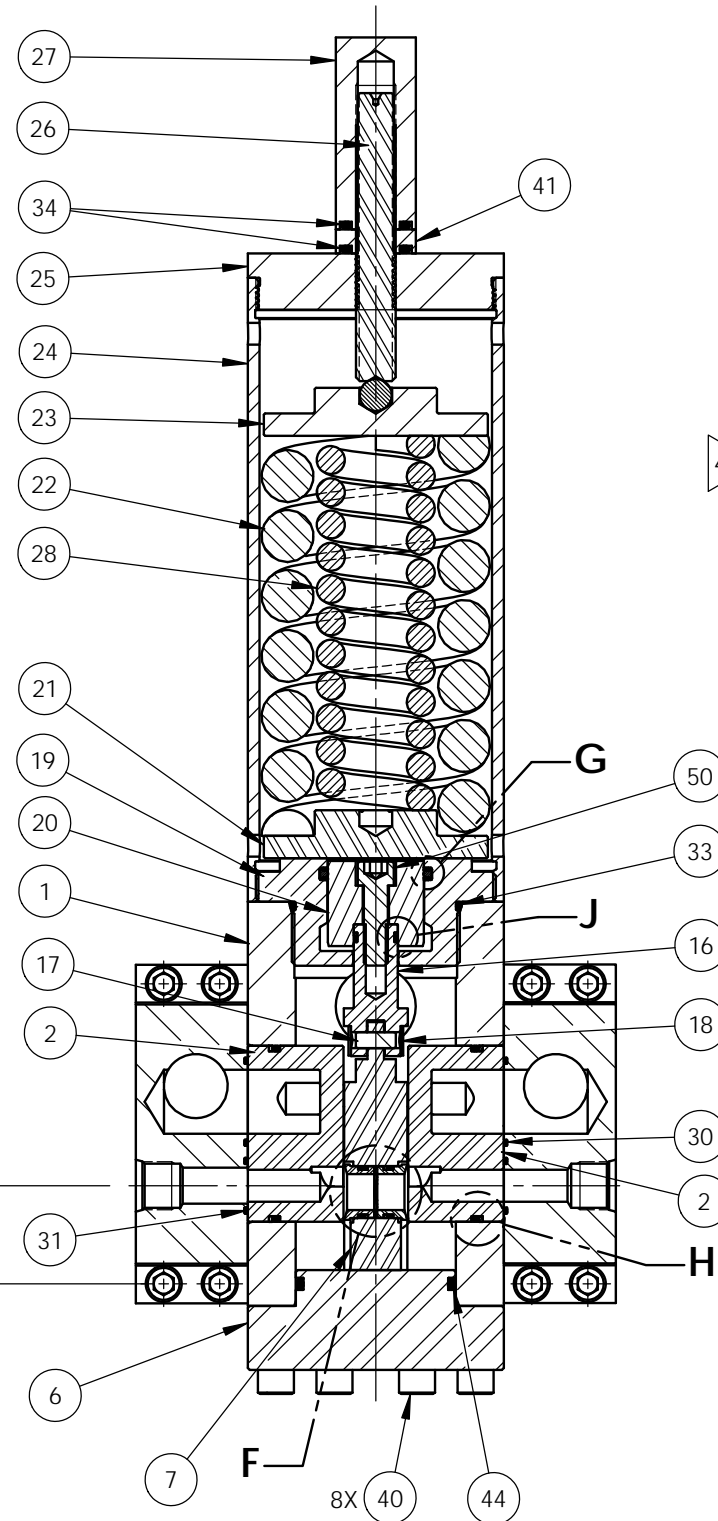
A

BILL OF MATERIALS

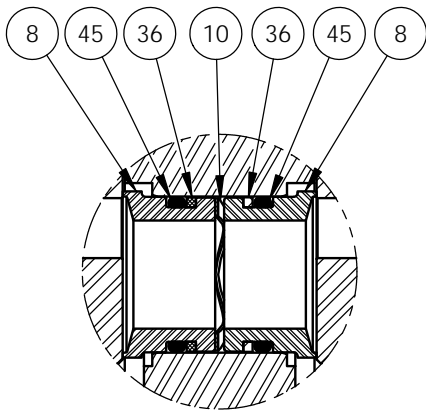
ITEM NO	PART NUMBER	DESCRIPTION	QTY	RK	SK	MK	CK
38	18110-026T	BACKUP RING	4	X	X	X	X
39	18110-130T	BACKUP RING	2	X	X		X
40	18224-003	SHCS 3/8-16 UNC X 1-1/2 LG	24				
41	11580	NUT, LOCK	1				
42	18225-001	SHCS 3/8 - 16 X 1-5/8" LG	8			X	
43	18100-022B	O-RING	1	X	X		X
44	18100-101B	O-RING	1	X	X		X
45	18100-009B	O-RING	2	X	X		X
46	18100-003B	O-RING	4	X	X		X
47	10794442-001	WASHER, NORD-LOCK, 3/8	8	X		X	X
48	18220-118S	SHCS, 1/4-20 UNC X 1-3/4 LG	4	X	X		
49	188445	T-SEAL, LOCKING, ROD 1.500 PISTON OD	1	X	X		X
50	18224-002	SHCS, 3/8-16 UNC X 1.25 LG	1				
51	25999	CONVERSION TAG	1				X

BILL OF MATERIALS

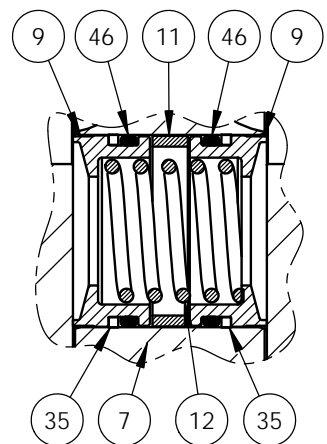
ITEM NO	PART NUMBER	DESCRIPTION	QTY	RK	SK	MK	CK
1	33134	BODY	1				
2	22554	FLOW PORT	2	X			
3	23800	FLANGE, INLET, RIGHT	1				
4	23799	FLANGE, INLET, LEFT	1				
5	18601-008	PIPE PLUG, 3/8"	1				
6	12994	FLANGE BOTTOM	1				
7	25888	SEAL CONTAINER	1				
8	11512	SEAL RING	2	X			
9	11420	SEAL RING	4	X			
10	18701-001	WAVE SPRING	1	X			
11	12109	SPACER	2	X			
12	11438	COMPRESSION SPRING	2	X			
13	12528	SEAL SUB, 1"	2			X	
14	12966	SEAL SUB, 1-1/4"	1			X	
15	18114-003T	BACKUP RING	2	X	X	X	X
16	12983	PLUNGER STEM	1				
17	18500-009	DOWEL PIN	1				
18	11808	RETAINER SLEEVE	1				
19	186816	GUIDE, PLUNGER FOR T-SEAL FOR 1-1/2" OD PISTON	1				X
20	197512	PLUNGER, PISTON, 1.500 DIA	1				X
21	12970	SPRING PLATE	1				
22	12968	SPRING, COMPRESSION	1				
23	12973	SPRING GUIDE ASSEMBLY	1				
24	23796	SPRING HOUSING	1				
25	12971	SEAL PLUG	1				
26	11910	ADJUSTING SCREW	1				
27	11567	CAP, LOCK	1				
28	13125	SPRING, COMPRESSION	1				
29	18100-051C	O-RING	2	X	X		X
30	18100-002B	O-RING	6	X	X	X	X
31	18100-007B	O-RING	2	X	X		X
32	18100-038B	O-RING	2	X	X	X	X
33	18100-099B	O-RING	1	X	X		X
34	18100-113B	O-RING	2	X	X		X
35	18110-002T	BACKUP RING	4	X	X		X
36	18110-005T	BACK-UP RING	2	X	X		X
37	18110-013T	BACKUP RING	1	X	X		X



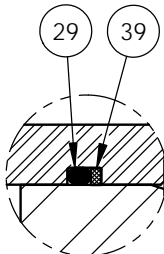
SECTION A-A



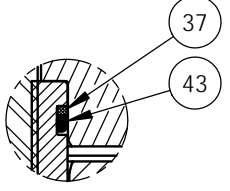
DETAIL F SCALE 1 : 1



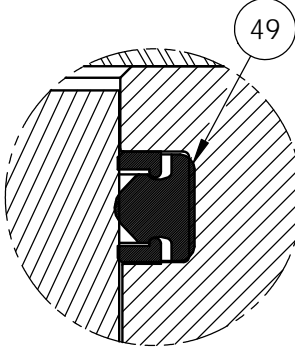
SECTION B-B SUPPLY PORT 2 PLACES SCALE 1 : 1



DETAIL H SCALE 1 : 1



DETAIL J SCALE 1 : 1



DETAIL G SCALE 3 : 1 (NOTE BACK UP RING ORIENTATION)

Gilmore ENGINEERING
a proserv company

SIZE B	DWG NO 187208	REV D
SCALE 1:3	SolidWorks	SHEET 2 OF 2

4

3

2

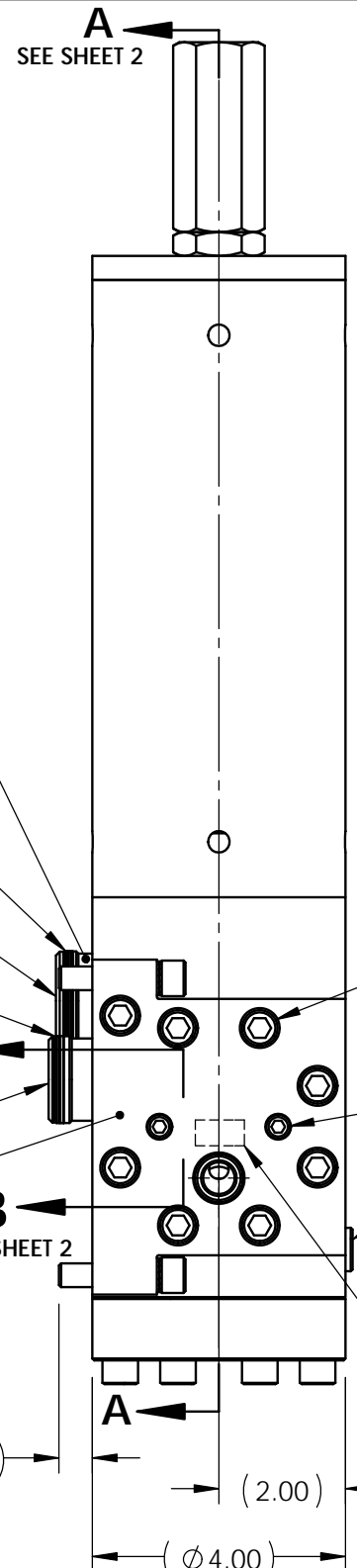
1

B

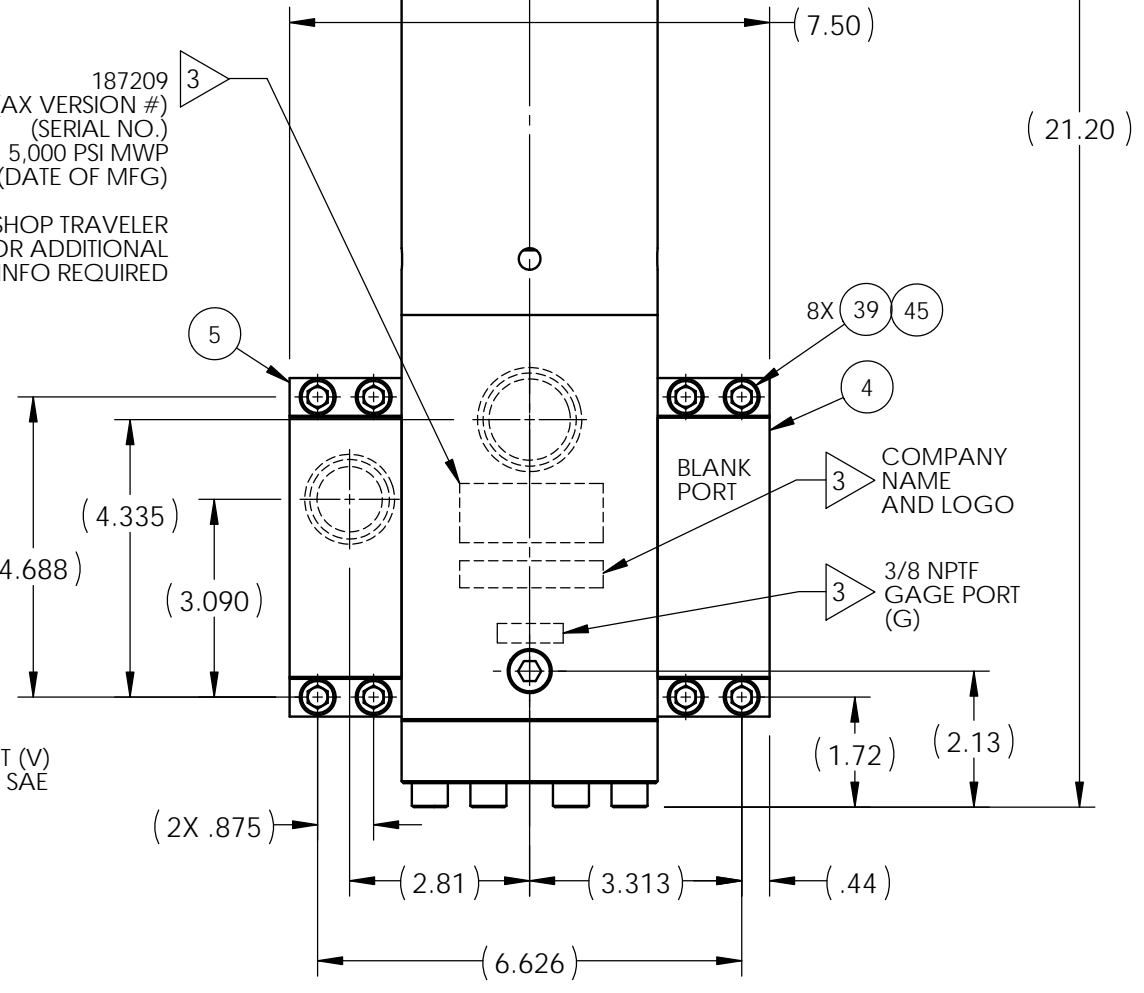
B

A

A



187209
VER (AX VERSION #)
(SERIAL NO.)
5,000 PSI MWP
(DATE OF MFG)
SEE SHOP TRAVELER
FOR ADDITIONAL
INFO REQUIRED



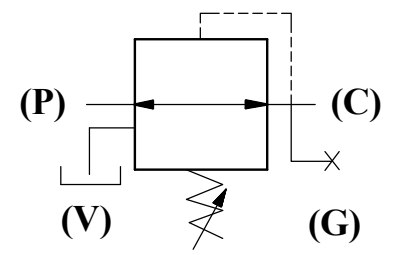
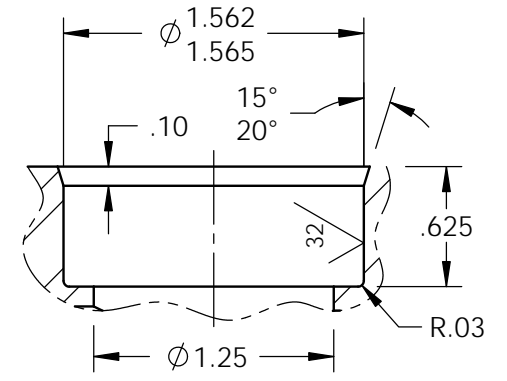
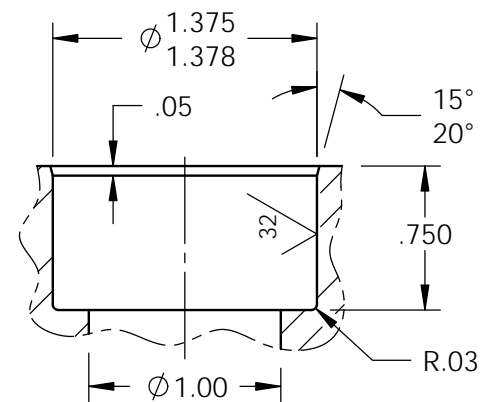
REVISIONS				
REV	ERN /ECO NUMBER	DRAWN	CHECKED	APPROVED
E	ECO 018653		JOP 5/15/20	DM 5/15/20

PORTS
 SUPPLY: (P) SEAL SUB (1) 5,000 PSI
 REGULATED: (C) SEAL SUB (1) 3,000 PSI
 VENT: (V) 1/2" SAE AMBIENT
 GAGE PORT: (G) 3/8 NPTF 3,000 PSI

FLOW DATA
 Cv (CALCULATED): SUPPLY: 9.4
 VENT: 1.4

GENERAL DATA
 APPROX WEIGHT: 68 LBS.

MATERIAL:
 A564 TP 630 (17-4PH)
 A276 TP 440C
 BUNA-N
 TEFLON
 A276 TP 316/316L
 A582 TP 416
 A276 TP 302/304/316
 A582 TP 303
 A453 GR 660
 A286
 AMS 5699 INCONEL X-750
 A313 TP 302
 18-8 SS
 NITRONIC 60
 DELRIN 511P
 UNS C63000 NICKEL ALUMINUM BRONZE



SEE DETAIL D
REGULATED
PRESS (C)

SEE
DETAIL C
SUPPLY PRESS (P)
SEE SHEET 2

- NOTES:
1. AN 'X' DEPICTS PARTS IN REPAIR KIT 187377, SEAL KIT 187378 AND MOUNTING KIT 187379.
 2. FOR MK ITEM 30, QTY IS 4, REFER TO 187379 BOM.
 3. MARKING: MARK AS SHOWN USING LASER ETCH OR COMPUTER CONTROLLED DOT PEEN MARKING MACHINE, .06 HIGH MIN CHARACTERS.
 4. THE CONVERSION KIT (CK) 189338 SHALL BE USED TO CONVERT THE FOLLOWING ASSEMBLY: 60174 THE CONVERSION TAG IS ONLY USED IN THE CONVERSION KIT.
 5. FOR ASSEMBLY PROCEDURE REFER TO 50185.

MATERIAL: SEE PARTS BOM	DIMENSIONS AND TOLERANCES ARE IN INCHES PER ASME Y14.5M-1994. UNLESS OTHERWISE SPECIFIED: 1) TOLERANCES: X: ±.1 XX: ±.01 XXX: ±.005 ANGLES: ± 5° 2) SURFACE TEXTURE: 63/ 3) CORADIAL FEATURES SHALL BE WITHIN .010 4) BREAK SHARP EDGES .010 5) INTERNAL RADII SHALL BE .016 MAX 6) DRILL POINTS OPTIONAL WHEN SHOWN UNSPECIFIED, ALL DRILL POINT ANGLES SHALL BE BETWEEN 90°-140°	APPROVAL	
CONDITION:		DRAWN BY CY	DATE 12/05/18
TREATMENT:		CHECKED BY JOP	DATE 12/05/18
PROCEDURE NUMBER:		ENGINEER GM	DATE 12/05/18
	ERN NUMBER 02263	DATE 11-30-18	
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF GILMORE VALVE CO UNLESS OTHERWISE STATED. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF GILMORE VALVE CO IS PROHIBITED.	

ENGINEERING

**VALVE, REGULATOR, HYDRAULIC
PRESSURE, MANUAL, 1-1/4" SEAL SUB
3000/5000 PSI, W/T-SEALS**

SIZE B	DWG NO	REV E
SCALE 1:3	SolidWorks	SHEET 1 OF 2

4

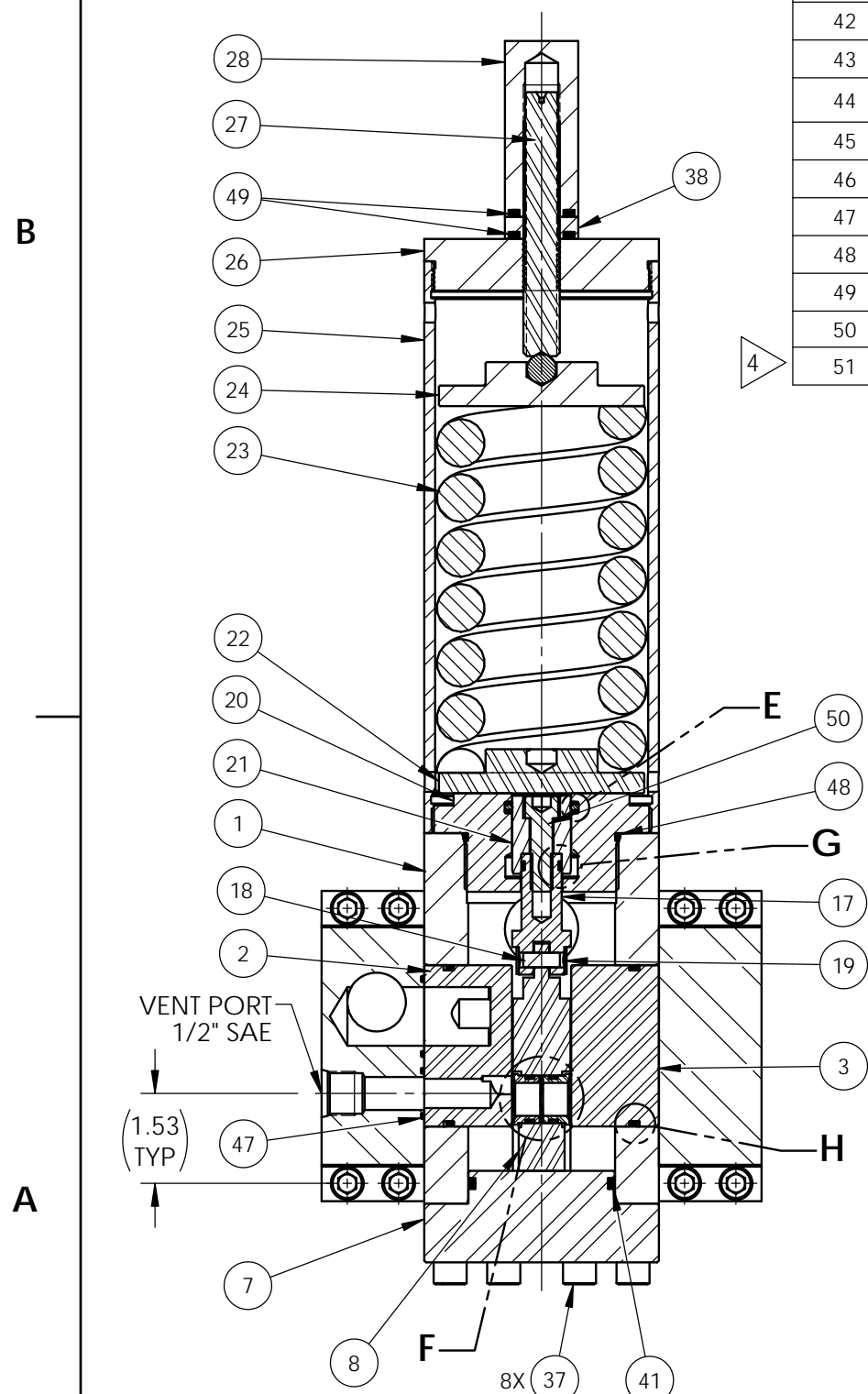
3

2

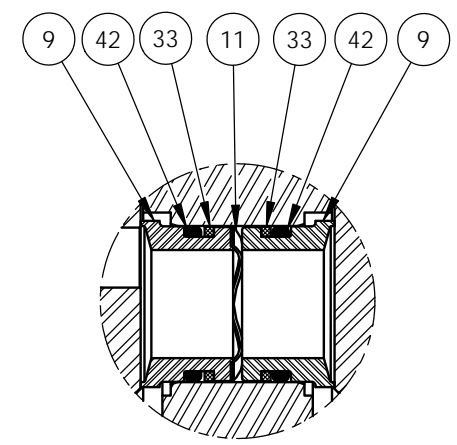
1

BILL OF MATERIALS							
ITEM NO	PART NUMBER	DESCRIPTION	QTY	RK	SK	MK	CK
39	18225-001	SHCS 3/8 - 16 X 1-5/8" LG	8			X	
40	18100-022B	O-RING	1	X	X		X
41	18100-101B	O-RING	1	X	X		X
42	18100-009B	O-RING	2	X	X		X
43	18100-003B	O-RING	4	X	X		X
44	188446	T-SEAL, LOCKING, ROD 1" PISTON OD	1	X	X		X
45	10794442-001	WASHER, NORD-LOCK, 3/8	8	X		X	X
46	18220-118S	SHCS, 1/4-20 UNC X 1-3/4 LG	4	X	X		
47	18100-007B	O-RING	1	X	X		X
48	18100-099B	O-RING	1	X	X		X
49	18100-113B	O-RING	2	X	X		X
50	18224-002	SHCS, 3/8-16 UNC X 1.25 LG	1				
51	25999	CONVERSION TAG	1				X

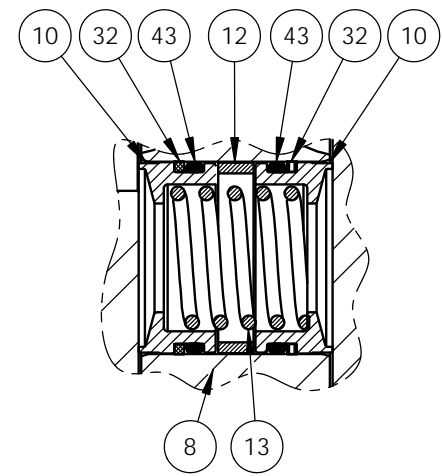
BILL OF MATERIALS							
ITEM NO	PART NUMBER	DESCRIPTION	QTY	RK	SK	MK	CK
1	33134	BODY	1				
2	22554	FLOW PORT	1	X			
3	22141	PLATE, BLIND	1	X			
4	23819	FLANGE, BLIND, RIGHT	1				
5	23799	FLANGE, INLET, LEFT	1				
6	18601-008	PIPE PLUG, 3/8"	1				
7	12994	FLANGE BOTTOM	1				
8	22187	SEAL CONTAINER	1				
9	11512	SEAL RING	2	X			
10	11420	SEAL RING	4	X			
11	18701-001	WAVE SPRING	1	X			
12	12109	SPACER	2	X			
13	11438	COMPRESSION SPRING	2	X			
14	12528	SEAL SUB, 1"	1				X
15	12966	SEAL SUB, 1-1/4"	1				X
16	18114-003T	BACKUP RING	2	X	X	X	X
17	12983	PLUNGER STEM	1				
18	18500-009	DOWEL PIN	1				
19	11808	RETAINER SLEEVE	1				
20	187098	GUIDE, PLUNGER FOR T-SEAL FOR 1" OD PISTON	1				X
21	197511	PLUNGER, PISTON, 1.000 DIA	1				X
22	12970	SPRING PLATE	1				
23	12968	SPRING, COMPRESSION	1				
24	12973	SPRING GUIDE ASSEMBLY	1				
25	23796	SPRING HOUSING	1				
26	12971	SEAL PLUG	1				
27	11910	ADJUSTING SCREW	1				
28	11567	CAP, LOCK	1				
29	18100-051C	O-RING	2	X	X		X
30	18100-002B	O-RING	3	X	X	X	X
31	18100-038B	O-RING	2	X	X	X	X
32	18110-002T	BACKUP RING	4	X	X		X
33	18110-005T	BACK-UP RING	2	X	X		X
34	18110-013T	BACKUP RING	1	X	X		X
35	18110-026T	BACKUP RING	2	X	X	X	X
36	18110-130T	BACKUP RING	2	X	X		X
37	18224-003	SHCS 3/8-16 UNC X 1-1/2 LG	24				
38	11580	NUT, LOCK	1				



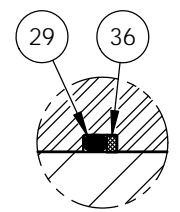
SECTION A-A



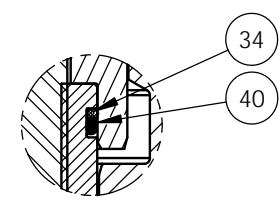
DETAIL F
SCALE 1 : 1



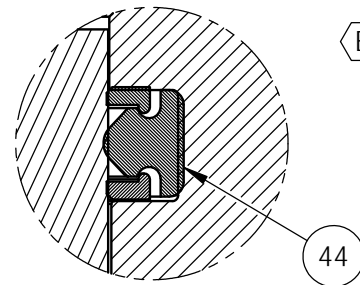
SECTION B-B
SUPPLY PORT
2 PLACES
SCALE 1 : 1



DETAIL H
SCALE 1 : 1



DETAIL G
SCALE 1 : 1



DETAIL E
SCALE 3 : 1
(NOTE BACK UP RING ORIENTATION)

 **ENGINEERING**
a proserv company

SIZE B	DWG NO 187209	REV E
SCALE 1:3	SolidWorks	SHEET 2 OF 2

4

3

2

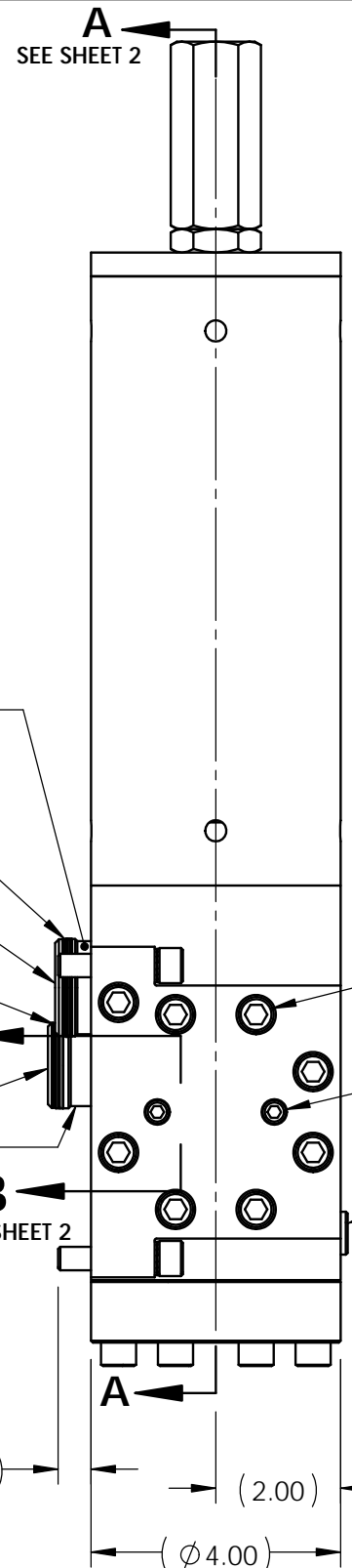
1

B

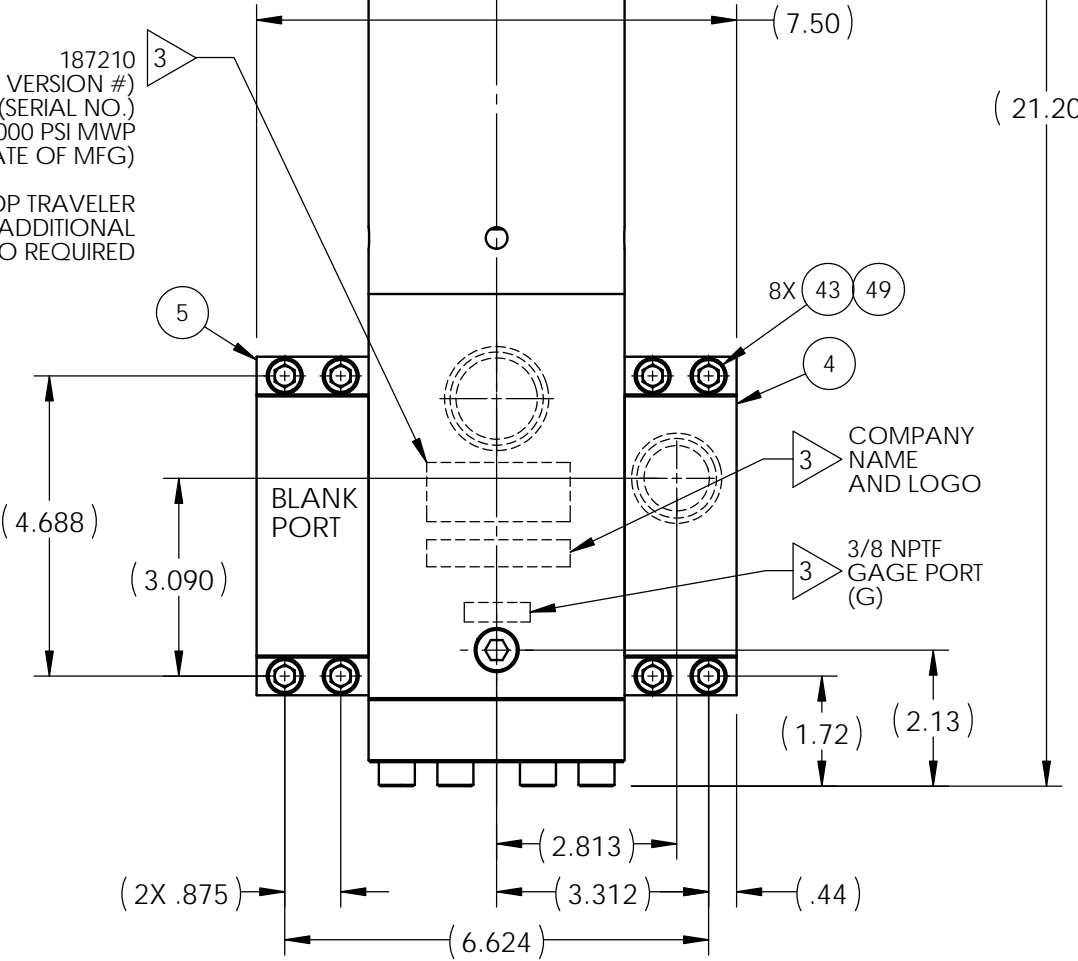
B

A

A



187210
VER (AX VERSION #)
(SERIAL NO.)
5,000 PSI MWP
(DATE OF MFG)
SEE SHOP TRAVELER
FOR ADDITIONAL
INFO REQUIRED



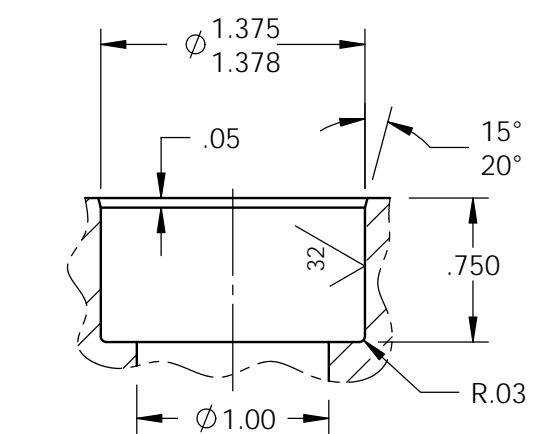
REVISIONS				
REV	ERN /ECO NUMBER	DRAWN	CHECKED	APPROVED
E	ECO 018653		JOP 5/15/20	DM 5/15/20

PORTS
 SUPPLY: (P) SEAL SUB (1) 5,000 PSI
 REGULATED: (C) SEAL SUB (1) 3,000 PSI
 VENT: (V) 1/2" SAE AMBIENT
 GAGE PORT: (G) 3/8 NPTF 3,000 PSI

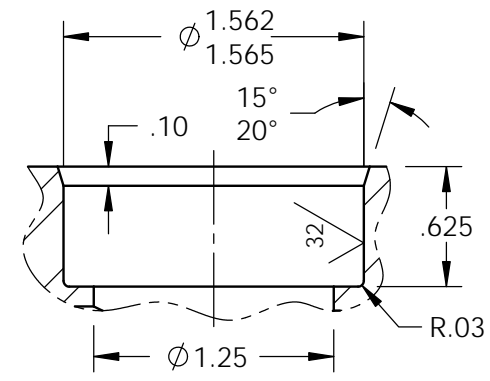
FLOW DATA
 Cv (CALCULATED): SUPPLY: 9.4
 VENT: 1.4

GENERAL DATA
 APPROX WEIGHT: 68 LBS.

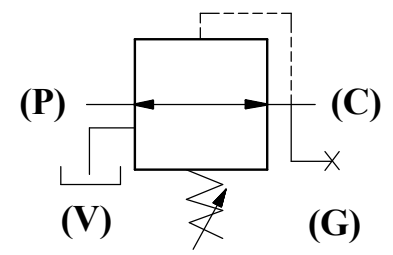
MATERIAL:
 A564 TP 630 (17-4PH)
 A276 TP 440C
 BUNA-N
 TEFLON
 A276 TP 316/316L
 A582 TP 416
 A276 TP 302/304/316
 A582 TP 303
 A453 GR 660
 A286
 AMS 5699 INCONEL X-750
 A313 TP 302
 18-8 SS
 NITRONIC 60
 DELRIN 511P
 UNS C63000 NICKEL ALUMINUM BRONZE



**DETAIL C
SEAL SUB POCKET DETAIL
SCALE 1:1**



**DETAIL D
SEAL SUB
POCKET DETAIL
SCALE 1:1**



SCHEMATIC

- NOTES:
- AN 'X' DEPICTS PARTS IN REPAIR KIT 187380, SEAL KIT 187381 AND MOUNTING KIT 187382.
 - FOR MK ITEM 30, QTY IS 4, REFER TO 187382 BOM.
 - MARKING: MARK AS SHOWN USING LASER ETCH OR COMPUTER CONTROLLED DOT PEEN MARKING MACHINE, .06 HIGH MIN CHARACTERS.
 - THE CONVERSION KIT (CK) 189339 SHALL BE USED TO CONVERT THE FOLLOWING ASSEMBLY: 60175. THE CONVERSION TAG IS ONLY USED IN THE CONVERSION KIT.
 - FOR ASSEMBLY PROCEDURE REFER TO 50185.

MATERIAL: SEE PARTS BOM	DIMENSIONS AND TOLERANCES ARE IN INCHES PER ASME Y14.5M-1994. UNLESS OTHERWISE SPECIFIED: 1) TOLERANCES: X: ±.1 XX: ±.01 XXX: ±.005 ANGLES: ± 5° 2) SURFACE TEXTURE: 63/ 3) CORADIAL FEATURES SHALL BE Ⓞ WITHIN .010 4) BREAK SHARP EDGES .010 5) INTERNAL RADII SHALL BE .016 MAX 6) DRILL POINTS OPTIONAL WHEN SHOWN UNSPECIFIED, ALL DRILL POINT ANGLES SHALL BE BETWEEN 90°-140°	APPROVAL	
CONDITION:		DRAWN BY CMY	DATE 12-5-18
TREATMENT:		CHECKED BY JP	DATE 12-5-18
PROCEDURE NUMBER:		ENGINEER GM	DATE 12-5-18
		ERN NUMBER 02263	DATE 11-30-18
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF GILMORE VALVE CO UNLESS OTHERWISE STATED. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF GILMORE VALVE CO IS PROHIBITED.	

Gilmore ENGINEERING
 a pro/erv company

**VALVE, REGULATOR, HYDRAULIC
PRESSURE, MANUAL, 1-1/4" SEAL SUB
3000/5000 PSI, W/T-SEALS**

SIZE B	DWG NO	REV E
SCALE 1:3	SolidWorks	SHEET 1 OF 2

4

3

2

1

4

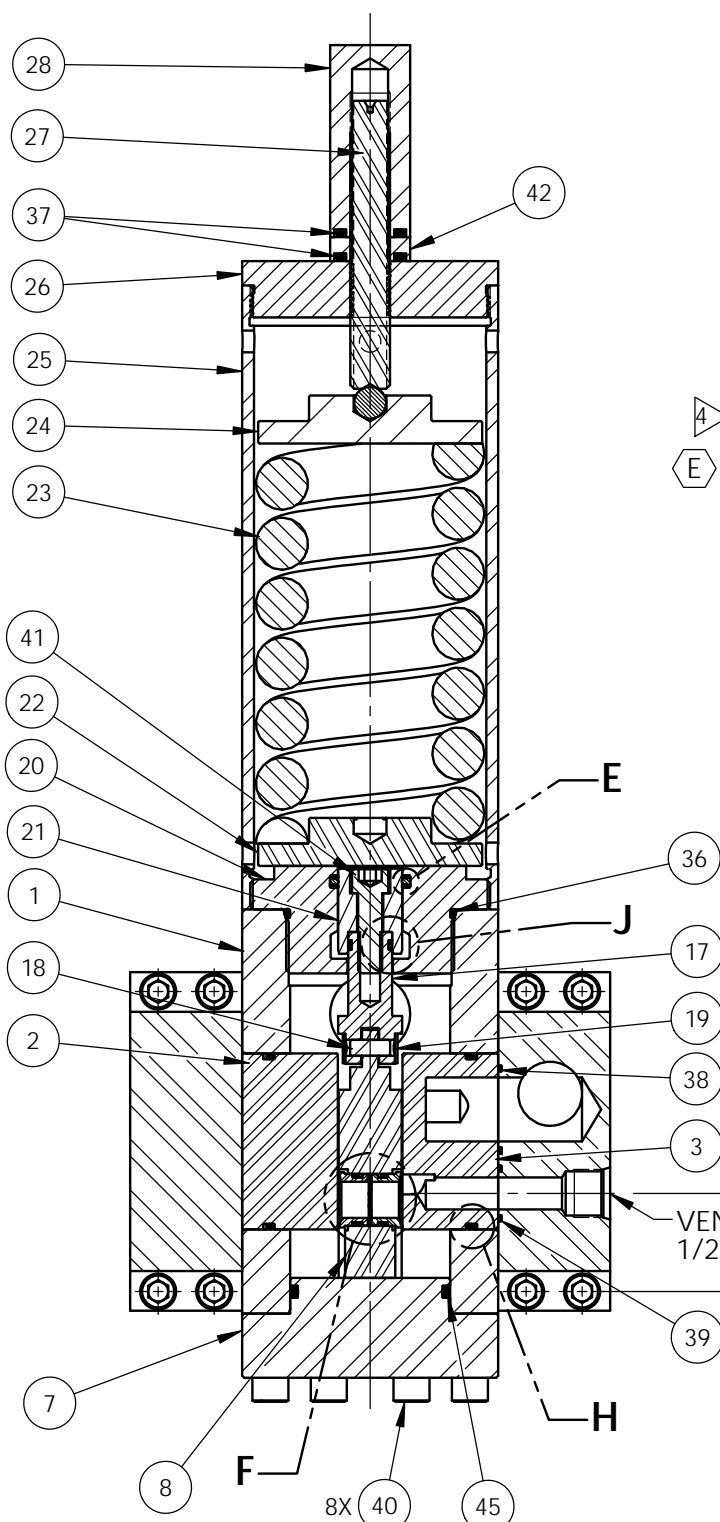
3

2

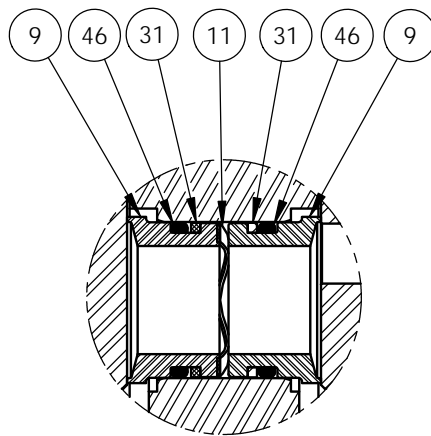
1

BILL OF MATERIALS							
ITEM NO	PART NUMBER	DESCRIPTION	QTY	RK	SK	MK	CK
39	18100-007B	O-RING	1	X	X		X
40	18224-003	SHCS 3/8-16 UNC X 1-1/2 LG	24				
41	18224-002	SHCS, 3/8-16 UNC X 1.25 LG	1				
42	11580	NUT, LOCK	1				
43	18225-001	SHCS 3/8 - 16 X 1-5/8" LG	8			X	
44	18100-022B	O-RING	1	X	X		X
45	18100-101B	O-RING	1	X	X		X
46	18100-009B	O-RING	2	X	X		X
47	18100-003B	O-RING	4	X	X		X
48	188446	T-SEAL, LOCKING, ROD 1" PISTON OD	1	X	X		X
49	10794442-001	WASHER, NORD-LOCK, 3/8	8	X		X	X
50	18220-118S	SHCS, 1/4-20 UNC X 1-3/4 LG	4	X	X		
51	25999	CONVERSION TAG	1				X

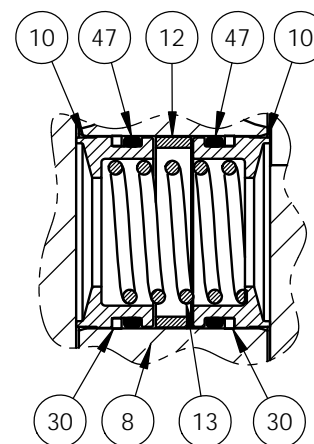
BILL OF MATERIALS							
ITEM NO	PART NUMBER	DESCRIPTION	QTY	RK	SK	MK	CK
1	33134	BODY	1				
2	22141	PLATE, BLIND	1	X			
3	22554	FLOW PORT	1	X			
4	23800	FLANGE, INLET, RIGHT	1				
5	23820	FLANGE, BLIND, LEFT	1				
6	18601-008	PIPE PLUG, 3/8"	1				
7	12994	FLANGE BOTTOM	1				
8	22187	SEAL CONTAINER	1				
9	11512	SEAL RING	2	X			
10	11420	SEAL RING	4	X			
11	18701-001	WAVE SPRING	1	X			
12	12109	SPACER	2	X			
13	11438	COMPRESSION SPRING	2	X			
14	12528	SEAL SUB, 1"	1			X	
15	12966	SEAL SUB, 1-1/4"	1			X	
16	18114-003T	BACKUP RING	2	X	X	X	X
17	12983	PLUNGER STEM	1				
18	18500-009	DOWEL PIN	1				
19	11808	RETAINER SLEEVE	1				
20	187098	GUIDE, PLUNGER FOR T-SEAL FOR 1" OD PISTON	1				X
21	197511	PLUNGER, PISTON, 1.000 DIA	1				X
22	12970	SPRING PLATE	1				
23	12968	SPRING, COMPRESSION	1				
24	12973	SPRING GUIDE ASSEMBLY	1				
25	23796	SPRING HOUSING	1				
26	12971	SEAL PLUG	1				
27	11910	ADJUSTING SCREW	1				
28	11567	CAP, LOCK	1				
29	18100-051C	O-RING	2	X	X		X
30	18110-002T	BACKUP RING	4	X	X		X
31	18110-005T	BACK-UP RING	2	X	X		X
32	18110-013T	BACKUP RING	1	X	X		X
33	18110-026T	BACKUP RING	2	X	X	X	X
34	18110-130T	BACKUP RING	2	X	X		X
35	18100-038B	O-RING	2	X	X	X	X
36	18100-099B	O-RING	1	X	X		X
37	18100-113B	O-RING	2	X	X		X
38	18100-002B	O-RING	3	X	X	X	X



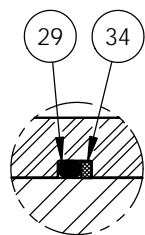
SECTION A-A



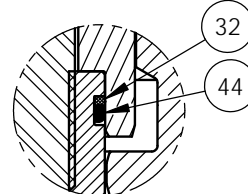
DETAIL F
SCALE 1 : 1



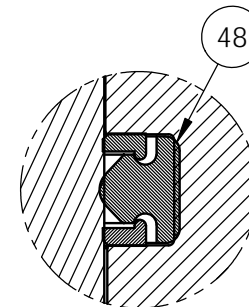
SECTION B-B
SUPPLY PORT
2 PLACES
SCALE 1 : 1



DETAIL H
SCALE 1 : 1



DETAIL J
SCALE 1 : 1



DETAIL E
SCALE 3 : 1
(NOTE BACK UP RING ORIENTATION)



SIZE	DWG NO	REV
B	187210	E
SCALE	1:3	SHEET 2 OF 2
SolidWorks		