## **ASSE International**

# PRODUCT (SEAL) LISTING PROGRAM



## **ASSE 1013-2021**

## Reduced Pressure Principle Backflow Preventers

Separate, complete laboratory evaluation report fo	orms for each alternate orientation must be submitted to ASSE for review.
Manufacturer:	
	E-mail:
Address:	
	Laboratory File Number:
Model # Tested:	
Additional Model Information (i.e. orientation, s	
Date models received by laboratory:	Date testing began:
Date testing was completed	
If models were damaged during shipment, desc	ribe damages:
Prototype or production sample?	
Were all tests performed at the selected laborat	
If offsite, identify location:	

### General information and instructions for the testing engineer:

The results within this report apply only to the models listed above.

There may be items for which the judgment of the test engineer will be involved. Should there be a question of compliance with that provision of the standard, a conference with the manufacturer should be arranged to enable a satisfactory solution of the question.

Should disagreement persist and compliance remain in question by the test agency, the agency shall, if the product is in compliance with all other requirements of the standard, file a complete report on the questionable items together with the test report, for evaluation by the ASSE Seal Control Board. The Seal Control Board will then review and rule on the question of compliance with the intent of the standard then involved.

Documentation of material compliance must be furnished by the manufacturer. The manufacturer shall furnish to the testing agency, a bill of material which clearly identifies the material of each part included in the product construction. This identification must include any standards which relate thereto.





### SECTION 1 1.0 General

1.1	Application  Does the purpose of the device agree with that of the standard?		O Yes O Questio	O No nable
	If questionable, explain:			
1.2.1	Description  Does the device conform to the product described in the standard?		O Yes	O No
	If questionable, explain:		— Questio	
1.2.2	Size	inches	(	mm)
	Is the pipe size in accordance with Table 1? O Yes	O No	O Questio	onable
	If questionable, explain:			
1.2.3	Rated Pressure			
	What is the maximum working pressure as noted by the manufacturer?  minimum of 17	psi 75 psi	( (1206.6 kPa	kPa)
1.2.4	Temperature range as noted by the manufacturer:  Assemblies for cold water applications °F to°F (°C to		(120010 1111 0	• 7
	Assemblies for hot water applications °F to°F (°C to	°C)		
1.3.2.1	Relief Valve Connections Can a threaded pipe, a screwed fitting or a tubing be connected internally o charge port?  O Yes If questionable, explain:	) No	nally to the o	
1.3.2.2	Were female pipe threaded connections so constructed that it would not be them far enough to restrict the flow through the assembly or interfere with w		parts?	
	If questionable, explain:			
1.3.2.3	Is the assembly repairable and seats replaceable without removing the asse	embly f	from the line	
	If questionable, explain:			
1.3.2.4	Was the assembly delivered with the shut-off valves attached?		Oyes	ONo
1.3.2.5	Were test cocks properly located?  If questionable, explain:	) No	O Ques	tionable
1.3.2.6		inches inches		mm) mm)





		Do these sizes meet the minimum per Table 2?	O Yes _	O No	O Ques	tionable				
		If questionable, explain:								
	1.3.2.7	State the manufacturer, size and model number of all shut-off valves tested with the device:								
		Were the shut-off valves resilient seated? What is the listing number?			O Yes	О No				
	1.3.2.8	Was the assembly equipped with an air gap device? If yes, did it comply with ASME A112.1.3?			O Yes O Yes	O No O No				
SECT	ION II									
2.0	Test Speci	mens State the quantity of units provided for the evaluation of the	orientatior	requested.						
		How many units were utilized during the laboratory evaluation	on?							
		Drawings Were assembly drawings, installation drawings and other tectesting agency to determine compliance with this standard so			mbly?	_				
		Were these drawings reviewed in the laboratory?			O Yes	O No O No				
		<b>NOTE:</b> Were tests required for an additional orientation?				O 140				
		If yes, were the required additional samples submitted for the	is addition	al orientation	n? O Yes	O No				
		<b>NOTE:</b> Separate, complete laboratory evaluation report form orientation. The correct number of devices specified in the simust be submitted to the testing facility for evaluation to this	tandard fo	r each intend	or each al	ternate				
SECT 3.0		ce Requirements and Compliance Testing								
	3.1	Independence of Components  How was the independence of components verified?	_	rawing Reviently Reviently Review Indicate Indic		ponents				
		In Compliance? If questionable, explain:	O Yes	O No	O Que	estionable				
	3.2	Hydrostatic Test of Complete Device What is the maximum working pressure from section 1.2.3? The assembly was pressurized to:		 psi	(	kPa)				
		The test period was for: minutes  Were there any external leaks from the assembly?  If questionable, explain:	O Yes	O No	_	estionable				
	3.3	Seat Leakage Test for Shut-Off Valves Was the check valve removed? What was the pressure applied to the inlet side of the #1 shu	ut-off valve	9?	O Yes	О No				
				psi	(	kPa)				





now long was the pressure field? fillinates			
What was the pressure applied to the outlet side of the #1 shut-off valve?	ooi	(	kPa)
How long was the pressure held? minutes	JSI	(	KFa)
Did you observe leakage into the assembly from the #1 shut-off valve sealing m	nem		O N =
What was the pressure applied to the inlet side of the #2 shut-off valve?	o o i		○ No kPa)
How long was the pressure held? minutes	osi	(	KPa)
What was the pressure applied to the outlet side of the #2 shut-off valve?	osi	(	kPa)
How long was the pressure held? minutes			(( 0)
		O Yes	O No
Hydrostatic Backpressure Test of Checks  Was the relief valve held closed or isolated?  What was the pressure applied through test cock #3?	osi	O Yes	O No kPa)
How long was the pressure held? minutes Was there any evidence of leakage at sight glass #2?		O Yes	ONo
	osi	(	kPa)
Was there any evidence of leakage at sight glass #3?		O Yes	O No
Allowable Pressure Loss For RP Assemblies Was the assembly installed per Figure 1? If no, explain:		O Yes	O No
			L/s)
What pressure loss through the piping system (if any) was deducted?		(	kPa) kPa
	J31		Ki &
150% of Rated Flow	osi	( (sure?	kPa) kPa)
What was the maximum pressure loss observed at flows from (0) GPM to rated blies? (Both ascending and descending)	flo	w for RP as	ssem- kPa) O No
	f th	e assembly	y? _
Was there any relief valve discharge during the test?		O Yes O Yes	O No O No
was the assembly on test in complete compliance with the criteria of Section 3.	5?	Oyes	O No
	How long was the pressure held? minutes  Did you observe leakage into the assembly from the #1 shut-off valve sealing more with the pressure applied to the inlet side of the #2 shut-off valve?  How long was the pressure held? minutes  What was the pressure applied to the outlet side of the #2 shut-off valve?  How long was the pressure held? minutes  Did you observe leakage into the assembly from the #2 shut-off valve sealing more with the pressure applied through test cock #3?  Hydrostatic Backpressure Test of Checks  Was the relief valve held closed or isolated?  What was the pressure applied through test cock #3?  How long was the pressure held? minutes  Was there any evidence of leakage at sight glass #2?  What was the pressure applied through test cock #4?  How long was the pressure held? minutes  Was there any evidence of leakage at sight glass #3?  Allowable Pressure Loss For RP Assemblies  Was the assembly installed per Figure 1?  If no, explain: What was the rated water flow for the assembly per Table 1? GF  What was the supply pressure used for this test?  What pressure loss through the piping system (if any) was deducted?  What was the maximum pressure loss observed at flows from (0) GPM to rated blies? (Both ascending and descending)  Was there any discharge from the relief valve during the flow test?  Was there any relief valve discharge during the test?	What was the pressure applied to the outlet side of the #1 shut-off valve?  How long was the pressure held? minutes  Did you observe leakage into the assembly from the #1 shut-off valve sealing mem  What was the pressure applied to the inlet side of the #2 shut-off valve?  How long was the pressure held? minutes  What was the pressure applied to the outlet side of the #2 shut-off valve?  How long was the pressure held? minutes  What was the pressure held? minutes  Did you observe leakage into the assembly from the #2 shut-off valve sealing mem  Hydrostatic Backpressure Test of Checks  Was the relief valve held closed or isolated?  What was the pressure applied through test cock #3?  How long was the pressure held? minutes  Was there any evidence of leakage at sight glass #2?  What was the pressure applied through test cock #4? psi  How long was the pressure held? minutes  Was there any evidence of leakage at sight glass #3?  Allowable Pressure Loss For RP Assemblies  Was the assembly installed per Figure 1?  If no, explain: GPM.  What was the rated water flow for the assembly per Table 1? GPM.  What was the supply pressure used for this test? psi  What pressure loss through the piping system (if any) was deducted? psi  Now psi  150% of Rated Flow psi  How long was the 200% of rated flow maintained before recording differential press  What was the maximum pressure loss observed at flows from (0) GPM to rated floblies? (Both ascending and descending) psi  Was there any discharge from the relief valve during the flow test?  Was there any damage or permanent deformation of the internal components of the	What was the pressure applied to the outlet side of the #1 shut-off valve?  How long was the pressure held? minutes  Did you observe leakage into the assembly from the #1 shut-off valve sealing member?  What was the pressure applied to the inlet side of the #2 shut-off valve?  How long was the pressure held? minutes  What was the pressure applied to the outlet side of the #2 shut-off valve?  How long was the pressure held? minutes  What was the pressure held? minutes  Did you observe leakage into the assembly from the #2 shut-off valve sealing member?  Yes  Hydrostatic Backpressure Test of Checks  Was the relief valve held closed or isolated? psi (





ater come bly was re mbly, what nd record ssures of: (Pa) 9	ured to s opened to e out of the re turned to a s t was the dif	elief valve? static condition a ferential pressur	ing differential press after a small amount e across the first ch	psi( of water was flow eck? psi(	kPa ed kPa
ater come bly was re mbly, what nd record ssures of: (Pa) 9	turned to a st was the dif	elief valve? static condition a ferential pressur en the first drop	after a small amount re across the first ch	psi( of water was flow eck? psi(	kPa ed kPa
nd record ssures of:  (Pa)  9  9	t was the dif	ferential pressur	e across the first ch	eck? psi (	kPa
(Pa)9			of water comes out		
(Pa)9			of water comes out	of the relief valve	when
.9 _	psid	kPa			
.9					
		.	.		
_					
.8					
.8		.			
.7		.			
.7			_		
.6		.			
.6					
.5		.			
.5					
.4					
.4					
.3			_		
4.3					
3.2			7		
2.2			7		
1.2					
0.1			_		
9.1			7		
	7	7	7	.7	7





#### 3.8 Drip Tightness of First Check

What was the static pressure differential across the first check for the following line pressures:

psi	(kPa)	psid	kPa
20	137.9		
30	206.9		
40	275.8		
50	344.8		
60	413.7		
70	482.7		
80	551.6		
90	620.6		
100	689.5		
110	758.5		
120	827.4		
130	896.4		
140	965.3		
150	1034.3		
160	1103.2		
170	1172.2		
180	1241.2		
190	1310.1		
200	1379.1		

between the inlet line pressure and the zone pressure required to open the relief valve as determined O Yes in Section 3.6? 3.9 **Drip Tightness of the Second Check Valve** Indicate the initial height of water in the sight glass at test cock #3:\_\_\_\_\_ inches (\_\_\_\_\_ mm) Indicate the initial height of water in the sight glass at test cock #4: \_\_\_\_\_ inches (\_\_\_\_\_mm) What was the final height difference in the water levels between the sight glasses at test cocks #3 and #4? \_\_\_\_ inches ( \_\_\_\_ mm) 3.10 Relief Valve Discharge Test with Atmospheric Supply Pressure What was the rated flow (per Table 3) through the relief valve for the size of the device on test? \_\_\_ \_\_\_\_\_ GPM ( \_\_\_\_\_L/s) O Yes O<sub>No</sub> Was the moving member of second check valve removed? If no, explain:\_\_\_\_\_ \_\_\_\_\_in-H2O ( \_\_\_\_mm-H2O) What was the pressure measured at test cock #3? \_\_\_\_\_ psi ( \_\_\_\_\_ kPa) What was the recorded discharge flow rate from the relief valve? \_\_\_\_\_ GPM ( \_\_\_\_\_L/s)

Were these pressure differentials at least 3.0 psi (20.7 kPa) greater than the pressure differential





3.11	Relief Valve Discharge With Positive Supply Pressur What was the rated flow (per Table 3) through the relief	valve for the siz	e of the de		t?
	What was the supply pressure?		psi	(	kPa)
	What was the intermediate chamber pressure?		psi	(	kPa)
	What was the recorded discharge flow rate from the relie	ef valve?	GPM	(	L/s)
3.12	Backpressure/Backsiphonage Test Attach test results from USC Protocol for backpressure/I Was there any indication of damage or permanent defor Was there any evidence of water being drawn into the u	mation to the as	ssembly?	O Yes ction tube? O Yes	О No О No
3.13	Air Gap Device Backsiphonage Test (Only applies to Assemblies supplied with an Air Gap de What was the vacuum applied to the inlet of the device?		in m	iches of Ho im of Hg Va	
	Measure and record the quantity of water that is carried port(s):		ir gap into GPM		
	Was there any evidence of water in the air gap device cardischarge port(s)?	arrying over into	the relief	valve O Yes	O No
3.14	Deterioration at Manufacturer's Extremes of Temperature range as noted by the manufacturer: °F to°F (			jes	
	Maximum rated pressure as noted by the manufacturer:		psi	(	kPa)
	Water at: was circulated through the assembly at: at a flow rate of:		°F psi GPM	· —	°C) kPa) L/s)
	Start date and time End date and time for: hours				
	While still at temperature, the assembly shall be retested	d to Sections 3.6	3, 3.8 and	3.9 as shov	vn below:
	Retest Section 3.6 Was the assembly installed per Figure 1 with a bypass libetween test cock #2 and #3? If no, explain:		e valve and	d differentia O Yes	al gauge O No
	The test system was pressurized to		psi	(	kPa)





	•	ome out of the rose sereturned to a s		fter a small amoun	psi ( t of water was flow	
				e across the first ch	neck?	
					psi (	kPa
Repeat the	e test and rec	ord the above d	ata when the firs	t drop of water con	nes out of the relief	f valve
	g supply pres	1	<u> </u>	7		
psi	(kPa)	psid	kPa	_		
20	137.9		<u> </u>	_		
30	206.9			4		
40	275.8			_		
50	344.8			_		
60	413.7			_		
70	482.7			_		
80	551.6			_		
90	620.6			_		
100	689.5			_		
110	758.5			_		
120	827.4			_		
130	896.4			_		
140	965.3			_		
150	1034.3					
160	1103.2			_		
170	1172.2					
180	1241.2					
190	1310.1					
200	1379.1					
			ralve, were all reach pressure seg	adings 2.0 psi (13.8 ment?	3 kPa) or greater? O Yes O Yes	O No
Was the a	ssembly on te	est in complete	compliance with	the criteria of Secti	$\sim$	
					O Yes	O N
<i>Retest Se</i> What was		essure differentia	al across the first	check for the follow	wing line pressures	3:
psi	(kPa)	psid	kPa	7		
20	137.9			7		
30	206.9			7		
40	275.8			7		
50	344.8			1		

60

413.7





70	482.7	 
80	551.6	 
90	620.6	 
100	689.5	 
110	758.5	 
120	827.4	 
130	896.4	 
140	965.3	 
150	1034.3	 
160	1103.2	 
170	1172.2	 
180	1241.2	 
190	1310.1	 
200	1379.1	 

Indicate the initial height of water in the sight glass at test cock #3: inches ( n Indicate the initial height of water in the sight glass at test cock #4: inches ( n What was the final height difference in the water levels between the sight glasses at test cock #3 and #4? inches ( n matches (		200	1073.1						
Indicate the initial height of water in the sight glass at test cock #3: inches (		between the	inlet line pre					alve as de	
What was the final height difference in the water levels between the sight glasses at test cocks #3 and #4? inches ( n and #4? n and #4? inches ( n and #4?				of water in the s	sight glass at test	cock #3:	iı	nches (	mm
and #4?  3.14 continued  Upon completion of the 100 hours and the retesting of Sections 3.6, 3.8, 3.9, water at:		Indicate the	initial height	of water in the	sight glass at test	cock #4:	iı	nches (	mm
Upon completion of the 100 hours and the retesting of Sections 3.6, 3.8, 3.9, water at:			ne final heigh	nt difference in th	ne water levels be	etween the sig			
The assembly was pressurized to: The test period was for: Were there any external leaks from the assembly? If questionable, explain:  Retest Section 3.4 Was the relief valve held closed or isolated? What was the pressure applied through test cock #3? How long was the pressure held? What was the pressure applied through test cock #4? How long was the pressure applied through test cock #4? How long was the pressure held?  What was the pressure applied through test cock #4? How long was the pressure held?  minutes	3. 14 Contin	Upon compl  Once the as	°F( <sub>_</sub> ssembly read		_ °C) was circula	ated through t	he assembl	y.	s 3.2 and
Were there any external leaks from the assembly?  If questionable, explain:  **Retest Section 3.4**  Was the relief valve held closed or isolated?  What was the pressure applied through test cock #3?  How long was the pressure held?  Was there any evidence of leakage at sight glass #2?  What was the pressure applied through test cock #4?  How long was the pressure held?  minutes  Was the pressure applied through test cock #4?  How long was the pressure held?  minutes		The assemb	oly was press				psi	(	kPa
Was the relief valve held closed or isolated?  What was the pressure applied through test cock #3? How long was the pressure held? minutes  Was there any evidence of leakage at sight glass #2?  What was the pressure applied through test cock #4? How long was the pressure held? minutes		Were there	any external	leaks from the a	assembly?	O Yes	O No	O Que	stionable
How long was the pressure held? minutes		Was the reli What was the How long was	ef valve held ne pressure a as the press	applied through ture held?	test cock #3? minutes		psi	(	O No kPa O No
Was there any evidence of leakage at sight glass #3? O Yes		How long wa	as the press	ure held?	minutes		psi	(	kPa





2	4 4	_	_	nti	n		_	۵
.5.	14	·C	OI	nτi	n	u	е	O

Upon completion of testing at ambient water temperature water at:°F was circulated through the assembly for: hours and then the assembly was retested to Sections 3.6, 3.8 and 3.9 as shown below		°C)
Retest Section 3.6 Was the assembly installed per Figure 1 with a bypass line with a needle valve ar between test cock #2 and #3? If no, explain:	nd differen O Yes	
The test system was pressurized to ps	i (	kPa)
When the needle valve was opened to show a decreasing differential pressure, at the first drop of water come out of the relief valve?		
When the assembly was returned to a static condition after a small amount of wat through the assembly, what was the differential pressure across the first check?  ps		wed kPa)

Repeat the test and record the above data when the first drop of water comes out of the relief valve when using supply pressures of:

psi	(kPa)	psid	kPa
20	137.9		
30	206.9		
40	275.8		
50	344.8		
60	413.7		
70	482.7		
80	551.6		
90	620.6		
100	689.5		
110	758.5		
120	827.4		
130	896.4		
140	965.3		
150	1034.3		
160	1103.2		
170	1172.2		
180	1241.2		
190	1310.1		
200	1379.1		

At the time of the opening of the relief valve, were all readings 2.0 psi (13.8 kPa) of		O.,
Did the relief valve close drip tight at each pressure segment?	O Yes O Yes	O No O No
Was the assembly on test in complete compliance with the criteria of Section 3.6?	Oyes	O No





Retest Section 3.8
What was the static pressure differential across the first check for the following line pressures:

psi	(kPa)	psid	kPa
20	137.9		
30	206.9		
40	275.8		
50	344.8		
60	413.7		
70	482.7		
80	551.6		
90	620.6		
100	689.5		
110	758.5		
120	827.4		
130	896.4		
140	965.3		
150	1034.3		
160	1103.2		
170	1172.2		
180	1241.2		
190	1310.1		
200	1379.1		

	Were these pressure differentials at least 3.0 psi (20.7 kPa) of between the inlet line pressure and the zone pressure required in Section 3.6?			
	Retest Section 3.9 Indicate the initial height of water in the sight glass at test co	ck #3: i	nches (	mm)
	Indicate the initial height of water in the sight glass at test co	ck #4: i	nches (	mm)
	What was the final height difference in the water levels between and #4?	0 0	at test cocks nches(	
3.14 contin	<b>ued</b> Was the assembly on test in complete compliance with the c	riteria of Section 3.15	i? O Yes	O <sub>No</sub>
3.15	Cycle Test		0 165	O 110
	(1) Flow water at 25% of the rated flow (see Table 1) What was the flow rate? What was the supply pressure? The test period was for	GPM psi	(	L/s) kPa)
	(2) What was the static pressure? The test period was for	psi seconds	` ———	kPa)





(3)	The pressure was decreased to: The test period was for	psi		(k	(Pa)
(4)	Backpressure was increased to: The test period was for	psi		( k	(Pa)
(5)	Remove backpressure What was the supply pressure?	psi	i	(k	(Pa)
(6)	Steps (1) through (5) were repeated forcycles.				
(7)	Retest assembly to Sections 3.6, 3.8 and 3.9.				
Wa	est Section 3.6 s the assembly installed per Figure 1 with a bypass line w ween test cock #2 and #3?	ith a needle valve ar			ige ) No
The	e test system was pressurized to	psi	i	(k	(Pa)
	en the needle valve was opened to show a decreasing dif first drop of water come out of the relief valve?	ferential pressure, at psi			
	en the assembly was returned to a static condition after a ough the assembly, what was the differential pressure acro		ter	was flowed	
	,, ,, ,,	psi	i	( k	(Pa)
Dar	eact the test and record the above data when the first draw	of water comes out	٠	f the relief velv	_

Repeat the test and record the above data when the first drop of water comes out of the relief valve when using supply pressures of:

psi	(kPa)	psid	kPa
20	137.9		
30	206.9		
40	275.8		
50	344.8		
60	413.7		
70	482.7		
80	551.6		
90	620.6		
100	689.5		
110	758.5		
120	827.4		
130	896.4		
140	965.3		
150	1034.3		
160	1103.2		
170	1172.2		
180	1241.2		
190	1310.1		
200	1379.1		





Did the reli	ef valve close	drip tight at ea	ch pressure segi	ment?	Oyes	C
Was the as	ssembly on tes	t in complete c	ompliance with t	he criteria of Sec	etion 3.6?	C
Retest Sec What was		sure differential	across the first	check for the follo	owing line pressures	3:
psi	(kPa)	psid	kPa	7		
20	137.9			1		
30	206.9			1		
40	275.8			Ī		
50	344.8			1		
60	413.7			1		
70	482.7			1		
80	551.6			Ī		
90	620.6			1		
100	689.5			1		
110	758.5			1		
120	827.4		İ	1		
130	896.4			1		
140	965.3			1		
150	1034.3			1		
160	1103.2			1		
170	1172.2			1		
180	1241.2			1		
190	1310.1					
200	1379.1					
between the in Section	ne inlet line pre 3.6?				the pressure difference relief valve as det	
Retest Sec Indicate the		of water in the	sight glass at tes	st cock #3:	inches (	
Indicate the	e initial height	of water in the	sight glass at tes	st cock #4:	inches (	
What was	the final height	difference in the	ne water levels b	petween the sight	glasses at test cock	(s #





	What was the supply pressure? The test period was for				psi seconds		kPa)
	was the static st period was				psi seconds		kPa)
	essure was d st period was	psi seconds		kPa)			
	ressure was i st period was		psi seconds		kPa)		
	ve backpress was the suppl				psi	(	kPa)
Steps	(1) through (5	5) were repeated	d forc	cles.			
(9) Retest	assembly to	Sections 3.6, 3.	8 and 3.9.				
			1 with a bypass l	ine wi	th a needle valve an		fferential gauge Yes O No
The test sy	/stem was pro	essurized to			psi	(	kPa)
		was opened to some out of the re			erential pressure, at		
					small amount of wat ss the first check? psi		vas flowed kPa)
	e test and rec g supply pres		ata when the firs	t drop	of water comes out	of t	he relief valve
psi	(kPa)	psid	kPa				
20	137.9						
30	206.9						
40	275.8			1			
50	344.8			1			
60	413.7			1			
70	482.7			1			
80	551.6			1			
90	620.6			1			
100	689.5			1			
110	758.5			1			
120	827.4			1			
130	896.4			1			

140

150

965.3

1034.3





160	1103.2	 
170	1172.2	 
180	1241.2	
190	1310.1	 
200	1379.1	 

At the time of the opening of the relief valve, were all readings 2.0 psi (13.8 kPa) of	r greater?	
7 3 7	Ŏ Yes	O <sub>No</sub>
Did the relief valve close drip tight at each pressure segment?	O Yes	O No
Was the assembly on test in complete compliance with the criteria of Section 3.6?		
	O Yes	ONo

Retest Section 3.8 What was the static pressure differential across the first check for the following line pressures:

psi	(kPa)	psid	kPa
20	137.9		
30	206.9		
40	275.8		
50	344.8		
60	413.7		
70	482.7		
80	551.6		
90	620.6		
100	689.5		
110	758.5		
120	827.4		
130	896.4		
140	965.3		
150	1034.3		
160	1103.2		
170	1172.2		
180	1241.2		
190	1310.1		
200	1379.1		

Were these pressure differentials at least 3.0 psi (20.7 kPa) greater than the between the inlet line pressure and the zone pressure required to open the re in Section 3.6?	•	
Retest Section 3.9 Indicate the initial height of water in the sight glass at test cock #3:	inches (	mm
Indicate the initial height of water in the sight glass at test cock #4:	inches (	mm
What was the final height difference in the water levels between the sight gla and #4?	sses at test cock	s #3 mm





## 3.15 continued

Second Check valve drip Evaluation	a afo	/	٠,
(10) With the relief valve open to atmosphere, a back pressure was applied for:	e of: psi minutes	(kP	a)
Was there dripping from the vent?	minutes	O Yes O N	10
(11) With the relief valve open to atmosphere, a back pressure		(kP	a)
was applied for: Was there dripping from the vent?	minutes	O Yes O N	10
(12) The pressure at the inlet was raised to: for:	psi minutes	(kP	a)
(13) The pressure at the inlet was raised to: for:	psi minutes	· —————	a)
(14) Flow water at 75% of the rated flow (See Table 1). What was the flow rate?	GPM	(L/	(c)
What was the how rate: What was the supply pressure? The test period was for	psi		a)
What was the static pressure? The test period was for	psi seconds	(kP	a)
The pressure was decreased to: The test period was for	psi seconds	(kP	a)
Backpressure was increased to: The test period was for	psi seconds	(kP	a)
Remove backpressure What was the supply pressure?	psi	(kP	a)
Steps (1) through (5) were repeated forcycles.			
(15) Retest assembly to Sections 3.6, 3.8 and 3.9.			
Retest Section 3.6 Was the assembly installed per Figure 1 with a bypass line w between test cock #2 and #3?	ith a needle valve an	d differential gauge	
The test system was pressurized to	psi	(kP	a)
When the needle valve was opened to show a decreasing difthe first drop of water come out of the relief valve?			
When the assembly was returned to a static condition after a through the assembly, what was the differential pressure acro			a)
Repeat the test and record the above data when the first drop when using supply pressures of:			/





psi	(kPa)	psid	kPa
20	137.9		
30	206.9		
40	275.8		
50	344.8		
60	413.7		
70	482.7		
80	551.6		
90	620.6		
100	689.5		
110	758.5		
120	827.4		
130	896.4		
140	965.3		
150	1034.3		
160	1103.2		
170	1172.2		
180	1241.2		
190	1310.1		
200	1379.1		

At the time of the opening of the relief valve, were all readings 2.0 psi (13.8 kPa) o	r greater? O Yes	ONo
Did the relief valve close drip tight at each pressure segment?	_	O No
Was the assembly on test in complete compliance with the criteria of Section 3.6?	Oyes	ONo

Retest Section 3.8 What was the static pressure differential across the first check for the following line pressures:

psi	(kPa)	psid	kPa
20	137.9		
30	206.9		
40	275.8		
50	344.8		
60	413.7		
70	482.7		
80	551.6		
90	620.6		
100	689.5		
110	758.5		
120	827.4		
130	896.4		
140	965.3		





150	1034.3	 
160	1103.2	 
170	1172.2	 
180	1241.2	 
190	1310.1	 
200	1379.1	 

	200	1379.1			]		
		etween the i	nlet line pressur		Pa) greater than to pressure required	the pressure d to open the relief O Yes	valve as
	Retest Secti Indicate the		of water in the	sight glass at tes	t cock #3:	inches (	mm
	Indicate the	initial height	of water in the	sight glass at tes	t cock #4:	inches (	mm
	What was th and #4?	e final heigh	t difference in th	ne water levels b	etween the sight	glasses at test co	
3.15 contin	ued						
	(16) Flow wa What wa What wa	ter at 100% as the flow ras the supply period was	/ pressure?	(See Table 1).		GPM ( psi ( seconds	
		as the static period was	•			psi ( seconds	kPa
		ssure was de period was	ecreased to: for			psi ( seconds	kPa
		essure was ir period was				psi ( seconds	kPa
		backpressurs the supply				psi (	kPa
	Steps (1	) through (5	) were repeated	forcy	cles.		
	(17) Retest a	ssembly to	Sections 3.6, 3.8	3 and 3.9.			
	Retest Secti Was the ass between tes	embly instal		with a bypass lin	ne with a needle	valve and differen	tial gauge O No
	The test sys	tem was pre	ssurized to			psi (	kPa
			vas opened to s me out of the re		g differential pre	ssure, at what pres	ssure did kPa





				psi (	kPa
	e test and rec g supply pres		ta when the first	drop of water comes out of the relief	valve
psi	(kPa)	psid	kPa	]	
20	137.9				
30	206.9				
40	275.8				
50	344.8				
60	413.7				
70	482.7				
80	551.6			1	
90	620.6				
100	689.5				
110	758.5				
120	827.4				
130	896.4				
140	965.3				
150	1034.3				
160	1103.2				
170	1172.2				
180	1241.2				
190	1310.1				
200	1379.1				
oid the rel	ief valve clos	e drip tight at eac	h pressure segr	dings 2.0 psi (13.8 kPa) or greater?  O Yes  nent?  Yes  The criteria of Section 3.6?  Yes	0 n 0 n
Retest Se	ction 3.8			check for the following line pressures	:
psi	(kPa)	psid	kPa		
20	137.9				
30	206.9				
40	275.8				
ΕO	344.8				
50				1	
	413.7				
60	413.7 482.7				
50 60 70 80	+				

100

689.5





110	758.5	 
120	827.4	 
130	896.4	 
140	965.3	
150	1034.3	 
160	1103.2	 
170	1172.2	 
180	1241.2	
190	1310.1	 
200	1379.1	

	Were these pressure differentials at least 3.0 psi (20.7 kPa) g between the inlet line pressure and the zone pressure require		alve as deter	mined
	in Section 3.6?		O Yes	O No
	Retest Section 3.9 Indicate the initial height of water in the sight glass at test coc	k #3: iı	nches (	mm
	Indicate the initial height of water in the sight glass at test coc	k #4: i	nches (	mm
	What was the final height difference in the water levels between and #4?		at test cocks nches(	
3.15 conti	nued			
	Second Check Valve drip Evaluation (18) With the relief valve open to atmosphere, a back pressure was applied for:	e of: psi minutes		kPa
	Was there dripping from the vent?		O Yes	O No
	(19) With the relief valve open to atmosphere, a back pressure was applied for:	e of: psi minutes	(	_ kPa
	Was there dripping from the vent?		O Yes	ON
	(20) The pressure at the inlet was raised to: for:	psi minutes	(	_ kPa
	(21) The pressure at the inlet was raised to: for:	psi minutes	(	_ kPa
	(22) Flow water at 75% of the rated flow (See Table 1) What was the flow rate?	GPM	(	L/s
	What was the supply pressure? The test period was for	psi seconds	· ———	kPa
	What was the static pressure? The test period was for	psi seconds	(	_ kPa
	The pressure was decreased to:	psi	(	_ kPa
	The test period was for	seconds		





	Backpressure was increased to:  The test period was for	psi seconds	(	kPa)
	Remove backpressure What was the supply pressure?	psi	(	kPa)
	Steps (1) through (5) were repeated forcycles.			
	(23) Retest assembly to Sections 3.6, 3.8 and 3.9.			
Retest Sec	tion 3.6  Was the assembly installed per Figure 1 with a bypass line with a need between test cock #2 and #3?	le valve and	d different O Yes	ial gauge O No
	The test system was pressurized to	psi	(	kPa)
	When the needle valve was opened to show a decreasing differential process the first drop of water come out of the relief valve?			
	When the assembly was returned to a static condition after a small amount through the assembly, what was the differential pressure across the firs		er was flov	ved
		psi	(	kPa)
	Repeat the test and record the above data when the first drop of water	comes out	of the relie	ef valve

Repeat the test and record the above data when the first drop of water comes out of the relief valve when using supply pressures of:

psi	(kPa)	psid	kPa
20	137.9		
30	206.9		
40	275.8		
50	344.8		
60	413.7		
70	482.7		
80	551.6		
90	620.6		
100	689.5		
110	758.5		
120	827.4		
130	896.4		
140	965.3		
150	1034.3		
160	1103.2		
170	1172.2		
180	1241.2		
190	1310.1		
200	1379.1		





	lief valve close assembly on tes			egment? th the criteria of Section	O Yes	O No
	,	·	•		O Yes	O No
Retest Se	ection 3.8					
		sure differentia	al across the fi	rst check for the follow	ing line pressure	es:
psi	(kPa)	psid	kPa			
20	137.9					
30	206.9		_			
40	275.8					
50	344.8					
60	413.7		_			
70	482.7		_			
80	551.6		_			
90	620.6					
100	689.5					
110	758.5		_			
120	827.4					
130	896.4					
140	965.3		_			
150	1034.3					
160	1103.2		_			
170	1172.2					
180	1241.2					
190	1310.1		_			
200	1379.1		.			
between t	the inlet line pre			7 kPa) greater than the required to open the		
Retest Se Indicate th		of water in the	sight glass at	test cock #3:	inches (	mm)
Indicate th	ne initial height	of water in the	sight glass at	test cock #4:	inches (	mm)
What was and #4?	the final heigh	t difference in	the water leve	ls between the sight g -	lasses at test cod inches(	
	JSC Life Cycle ach these test r		ised?		O Yes	O No
Was the a	ssembly on test	in complete c	ompliance with	the criteria for RP or w	vith the USC Test	Protocol?





## **SECTION IV**

4.0	Г	etail	ed	Resu	lts

4.1	Materials  Did the manufacturer provide evidence that the materials make-up of the device has been used successfully in similar applications for at least one (1) year?  O Yes  No
4.1.1	Materials in Contact with Water  Did any solder and fluxes in contact with the potable water supply exceed 0.2% lead content?  O Yes  O No  O Questionable
	If questionable, explain:
4.1.2	Elastomers and Polymers  Did all of the elastomers and polymers in contact with the water comply with the requirements of the  U.S. Code of Federal Regulations (CFR) Title 21, Section 177?  O Yes  O Questionable
	If questionable, explain:
4.1.3	Did all ferrous cast parts conform to ASTM A126 for gray iron or ASTM A536 Grade 65-45-12 for ductile iron?  O Yes  O No  O Questionable gray iron or ASTM A536 Grade 65-45-12 for ductile iron?
4.1.4	Were all ferrous cast parts in contact with the water flowing through the assembly protected against corrosion by epoxy coating or other equivalent methods? O Yes O No O Questionable If questionable, explain:
4.1.5	Were all stainless steel components in contact with water of Series 300 stainless steel?  O Yes O No O Questionable
	If questionable, explain:
4.1.6	Were all non-ferrous wetted parts of a corrosion resistance of at least equal to an alloy of 79% copper?  O Yes  If questionable, explain:
4.1.7	Were all internal non-cast parts of a corrosion resistance of at least equal to an alloy of 79% copper?  O Yes  O No  O Questionable
4.1.8	Were all springs in contact with the water flowing through the assembly of a corrosion resistance of at least equal to stainless steel series 300?  O Yes  No  Questionable of the property of
4.1.9	Were all flexible non-metallic parts of a design to withstand all the criteria of this standard without change in their physical characteristics?  O Yes  No  Questionable questionable, explain:
4.1.10	Were check or relief valve seats of a metal to metal seating? O Yes O No O Questionable If questionable, explain:
	Identify seating material: #1 Check: #2 Check: Relief Valve:





Were the seat rings of a corrosion resistance of at least e					
If questionable, explain:		─ No	O Questionable		
Were the test cocks of a corrosion resistance of at least of			copper. O Questionable		
If questionable, explain:			<del> </del>		
Do all pipe flanges conform to ASME B16.24 for bronze fla	anges and AS <sup>-</sup> O Yes	TM A126 fo O No	r cast iron flanges? O Questionable		
If questionable, explain:			<del> </del>		
dryseal?	O Yes	O No	O Questionable		
Do inlet and outlet grooved connections comply with AW	WA C606?		O Yes O No O Questionable		
If questionable, explain:					
Marking Instructions Identify the markings found on the test assembly/manifold assemblies:					
<ul> <li>b. Model designation of assembly:</li> <li>c. Maximum working pressure:</li> <li>d. Maximum working temperature:</li> <li>e. Serial number consistent with the manufacturer's staf.</li> <li>f. Nominal valve size:</li> <li>g. Direction of flow:</li> <li>h. Each shut-off valve shall be marked with the manufa</li> </ul>	ndard practice	e:			
Describe how these markings were made:			<del> </del>		
Installation and Maintenance Instructions  Were instructions for installation and maintenance submitted with the device?  O Yes O Question					
Did the installation instructions indicate the tested and appli	roved installati O Yes	on orientati O No	on of the assembly?  O Questionable		
If questionable, explain:					
Maintenance Were maintenance instructions furnished? If questionable, explain:	O Yes	O No	O Questionable		
Was the test assembly capable of being maintained or repaired while in-line?					
If questionable, explain:		∪ No 	O Questionable		
Were field testing instructions furnished? If questionable, explain:	O Yes	O No	O Questionable		
	Were the test cocks of a corrosion resistance of at least of the test cocks of a corrosion resistance of at least of the test cocks of a corrosion resistance of at least of the test cocks of a corrosion resistance of at least of the test cocks of a corrosion resistance of at least of the test cocks of the test cocks of a corrosion resistance of at least of the test cocks of the test cock	Were the test cocks of a corrosion resistance of at least equal to an all organization of the test cocks of a corrosion resistance of at least equal to an all organization of the test of	Were the test cocks of a corrosion resistance of at least equal to an alloy of 79%		



LISTED LABORATORY	
LISTED LABORATORY:	
ADDRESS:	
PHONE:	
FAX	
TEST ENGINEER(S):	
If applicable:	
OUTSOURCED LABORATORY:	
ADDRESS:	
PHONE:	
FAX:	
TEST ENGINEER(S):	
Scope of outsourced testing:	
We certify that the evaluations are based on our best judgments and that the of the performance of the device on test.	e test data recorded is an accurate record
Signature of the official of the listed laboratory:  Signature of the official of the listed laboratory:	
Sign	nature
Title of the official:	Date: