



## Model B1 Accelerator with Integral Accelo-Check

### Features

- Hastens the operation of dry pipe valves
- Can potentially increase the number of automatic sprinklers controlled by one system riser
- Equalizes rapidly as dry system is being filled with air to required pressure
- Self-adjusts for small fluctuations in system air pressure
- Compact and light-weight construction
- Accelo-Check prevents water and debris from entering critical areas
- Tested and approved for use with Reliable dry pipe and preaction systems
- cULus Listed, FM Approved

### Product Description

The Reliable Model B1 Accelerator with integral Accelo-Check (anti-flooding device) is used to speed the operation of dry pipe valves and deluge valves used on certain preaction systems.

The accelerated operation of the dry pipe valve may allow an increase in both the number of sprinklers that can be controlled by one dry pipe valve and the volume of the dry system that can be installed.

### Approvals

1. cULus Listed
2. FM Approved
3. Loss Prevention Certification Board (LPCB)

### Accelerator Operation

The Model B1 Accelerator is a normally-closed valve with ½" (15mm) NPT inlet and outlet ports, that is highly sensitive to the rate of air pressure change in a dry pipe or preaction sprinkler system. This device retains normal dry system air pressure in the top chamber even though pressure in the system may be dropping as a direct result from one or more sprinklers opening.

When a pressure difference of approximately 3 to 4 psi (21 to 28 kPa) occurs between the top and middle chambers, the Model B1 Accelerator opens and vents system pressure, thereby hastening the operation of the dry-pipe or preaction system.

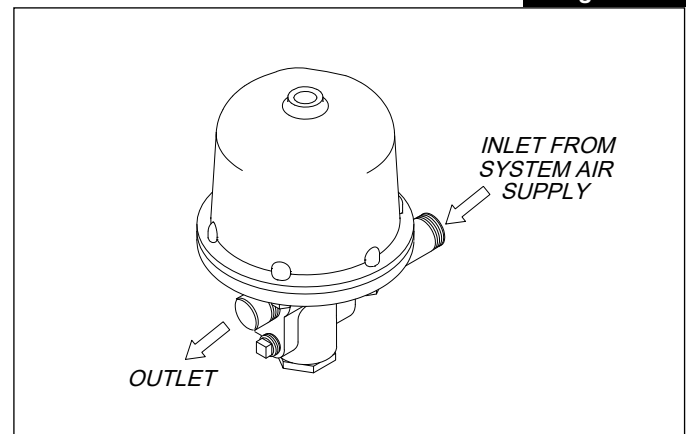
Figure 2 illustrates a cross-section of the Model B1 Accelerator in the "closed" position while being pressurized. Upon initial setup, the Accelerator is filled by air from the dry pipe system via a ½" (15mm) NPT connection. Air passes through its filter assembly (item #18) and passageway E to the device's middle chamber. This air pressure also lifts the diaphragm assembly (Items #5 through #8) off of the push rod (item #10) thereby opening up passageway G. The air then completely fills the top chamber



Model B1 Accelerator

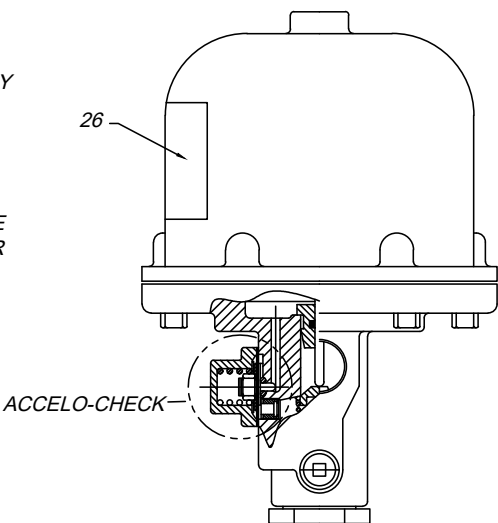
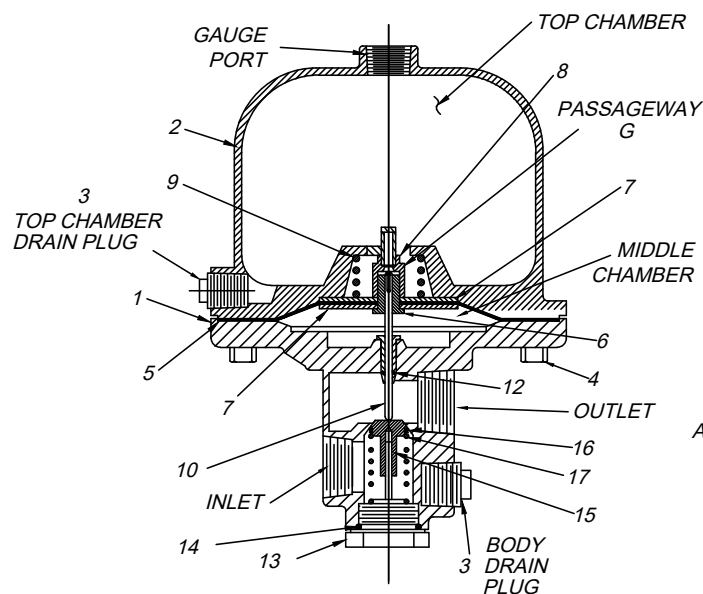
### Inlet & Outlet

Figure 1



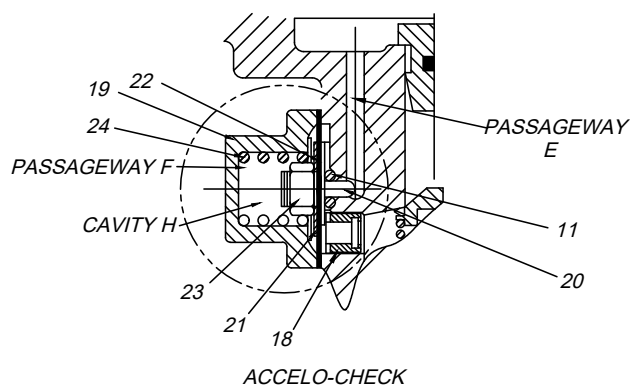
to the match the system pressure. When filled, the diaphragm assembly rests on the end of the push rod closing passageway G to all but very small amounts of air movement, thereby allowing slow changes in pressure between the top and middle chambers due to temperature change or small leaks.

Upon a significant air-pressure decay of the sprinkler system piping (such as sprinkler activation), the retained air pressure in the Accelerator top chamber exerts a net-downward force across the diaphragm assembly and push-rod (items #5-8 & 10). This forces the poppet (item #15) to open thereby allowing system air pressure to pass out of the Accelerator ½" (15mm) outlet port and into the intermediate chamber of the dry pipe valve (or to atmosphere depending on the type of system to which it is installed). This in turn will activate the dry pipe valve. Simultaneously, pressurized air also passes through the Accelerator and closes the integral Accelo-Check (items #11, #19 through #25) by pressurizing cavity H, thereby preventing water and waterborne debris from entering the internal restriction area in passageway E. This increases the reliability of the Accelerator.



26	LABEL, RESETTING	1
25	ACCELO - CHECK SCREW	4
24	ACCELO - CHECK SPRING	1
23	ACCELO - CHECK NUT	1
22*	ACCELO - CHECK DIAPHRAGM	1
21	ACCELO - CHECK WASHER	1
20	ACCELO - CHECK POPPET	1
19	ACCELO - CHECK BODY	1
18*	FILTER ASSEMBLY	1
17	POPPET SPRING	1
16*	"O" RING POPPET	1
15	POPPET	1
14*	"O" RING, VALVE PLUG	1
13	VALVE PLUG ASSEMBLY	1
12*	"O" RING, PUSH ROD GUIDE	1
11*	"O" RING, ACCELO - CHECK	1
10*	PUSH ROD/FLOW ELEMENT ASSY	1
9	DIAPHRAGM SPRING	1
8*	DIAPHRAGM NUT/FILTER S/A	1
7	DIAPHRAGM WASHER	2
6	DIAPHRAGM RETAINER	1
5*	SENSING DIAPHRAGM	1
4	TOP CHAMBER BOLT	6
3	DRAIN PLUG 1/4" NPT	2
2	DOME, TOP CHAMBER	1
1	BODY/PUSH ROD GUIDE S/A	1
ITEM NO.	DESCRIPTION	NO. REQ'D.

\* THESE ITEMS ARE CONTAINED IN SERVICE KIT PART NO. 6888000100 FOR ALL EXCEPT LPCB.  
FOR LPCB, REPLACEMENT PARTS KIT IS PART NO. 6888000150.



Accelerator Compatibility

Table A

Valve	System Type	Technical Bulletin	Accelerator Kit Part Numbers
Model DDX-LP	Dry Pipe	<a href="#">338</a>	6501200019
Model DDX Type F	Double Interlock Preaction	<a href="#">751</a>	6501200019
Model DDX Type PL	Double Interlock Preaction	<a href="#">752</a>	6501200019
Model FX	Dry Pipe	<a href="#">360</a>	650120001A
Model D <sup>(1)</sup>	Dry Pipe	<a href="#">350</a>	6516000002 <sup>(2)</sup>
Model EX <sup>(1)</sup>	Dry Pipe	<a href="#">359</a>	6516000013

- Note:**
- Legacy installations; these valves are no longer available for sale.
  - Accelerator not included in Kit (Accelerator Part Number 6301000300)

## Installation

The Reliable Model B1 Accelerator is quickly attached to various valves and systems manufactured by Reliable. Table A lists the appropriate part numbers as well as technical bulletins which include installation details.

When installed into the basic trim of a Reliable Model D or Model FX Dry Pipe Valve, the Accelerator ½" (15mm) outlet port must be directly connected to the intermediate chamber of the dry pipe valve. In this application, the Model B1 Accelerator directly assists the clapper of the dry pipe valve to open.

For installations into all other Reliable-manufactured dry systems using the Model DDX deluge valve, the Accelerator ½" (15mm) outlet port is vented to the atmosphere. These systems utilize a pneumatic actuator to seal a push rod chamber and mechanically latch the valve closed. In this instance, the Model B1 Accelerator speeds up the purging of the air side of a pneumatic actuator which in turn vents the push-rod chamber pressure of the main fire control valve causing its clapper to open and fill the system piping with water.

### Notes:

1. The Model B1 Accelerator requires a steady, regulated air supply. Use of a tank-mounted compressor and listed pressure maintenance device is strongly recommended to prevent unintended activation of the dry pipe or preaction system.
2. The Model B1 Accelerator may be capable of hastening the operation of non-Reliable manufactured valves, however, it has only been tested and approved with Reliable valves.

## System Requirements

NFPA 13 permits the installation of approved quick-opening devices on dry pipe and double-interlock preaction systems. When installed on systems with a capacity over 500 gallons (1900 L) but less than 750 gallons (2850 L), a requirement to deliver water to a test connection in 60 seconds or less may be waived. When installed on systems with a capacity over 750 gallons (2850 L), the quick-opening device may accelerate the operation of the dry pipe or preaction valve, allowing maximum time for water transit throughout the piping network. Systems with a capacity below 500 gallons (1900 L) do not generally utilize quick-opening devices.

- The Model B1 Accelerator is UL Listed for system volumes to 1500 gallons (5678 L). This capability is also approved by FM.
- System pneumatic pressure must be maintained at a minimum of 15 psi (1 bar) in order for the Accelerator to operate.

It must be cautioned that accelerator operation and water delivery at the inspectors test connection does not occur at the same time. There is a delay while the air is being expelled through the inspectors test connection ahead of the water. This time delay depends on the piping configuration system size, available water supply and other factors which are beyond the control of the accelerator.

Table B provides guidance for approximate expected accelerator trip times for different system parameters. The calculations assume a 3.5 psi drop in system pressure along with a 1 second delay for mechanical workings of the accelerator. This table is to be used for guidance determining the appropriate system air pressure and potential K factor choice.

**Model B-1 Accelerator Operating Time**

**Table B**

Initial Air Pressure psi (bar)	K Factor	Volume gal (l)	Time to Accelerator Operation sec
50 (3.45)	5.6	1500 (5678)	18
		1000 (3785)	12.4
		750 (2839)	9.5
40 (2.75)		1500 (5678)	21.2
		1000 (3785)	14.5
		750 (2839)	11.1
25 (1.72)		1500 (5678)	29.3
		1000 (3785)	19.8
		750 (2839)	15.1
50 (3.45)	8.0	1500 (5678)	12.9
		1000 (3785)	8.9
		750 (2839)	6.9
40 (2.75)		1500 (5678)	15.1
		1000 (3785)	10.4
		750 (2839)	8.0
25 (1.72)		1500 (5678)	20.7
		1000 (3785)	14.2
		750 (2839)	10.9
50 (3.45)	11.2	1500 (5678)	9.2
		1000 (3785)	5.4
		750 (2839)	5.1
40 (2.75)		1500 (5678)	10.7
		1000 (3785)	7.5
		750 (2839)	5.8
25 (1.72)		1500 (5678)	14.6
		1000 (3785)	10.0
		750 (2839)	7.8

## Accelerator Resetting Procedure

This procedure is applicable to the Model D, Model FX, Model LDX, DDX-LP, EX Dry System, and Model DDX Type F Preaction Systems.

**Note:** These steps must be followed each and every time the system has operated or is tested.

1. Isolate the Accelerator by closing the inlet and outlet valves.
2. Close the air supply and main water supply valves to the system. Drain and fully reset the dry pipe/preaction valve in accordance with the manufacturer's instructions.
3. Close the main water supply control valve and open the system main drain. This step serves to prevent accidental operation of the system while resetting the Accelerator.
4. If located on the trim, remove the ½" (15mm) drain plugs on the inlet and outlet piping (Specifically for Model D).
5. Remove the ¼" (6mm) body drain plug from the lower section of the Accelerator.
6. Remove the ¼" (6mm) top chamber drain plug. If water is present in the top chamber, disassemble the Accelerator, clean and dry the top and middle chambers and diaphragm assembly using a clean lint free cloth. Reassemble the Accelerator. Replace the top chamber drain plug using new thread sealant.
7. Carefully remove the Accelo-Check Body and gently lift the Accelo-Check Diaphragm Assembly to verify venting of the middle chamber.
8. Partially open the Accelerator inlet valve, gently purging any water which may be in the trim lines. Close the inlet valve.
9. If removed in step 4, replace the ½" (15mm) drain plugs on the inlet and outlet piping (Specifically for Model D).
10. Partially open inlet valve and gently purge the Accelerator. Close inlet valve and replace the ¼" (6mm) body drain plug on the lower section of the Accelerator.
11. Reopen inlet valve to purge the inlet filter assembly. Close the inlet valve.
12. Reinstall the Accelo-Check assembly to the accelerator.
13. If present, open the Accelerator outlet valve.
14. Pressurize the Accelerator by opening the inlet valve. When properly set, the top chamber pressure of the Accelerator should equal the system pressure.
15. Slightly open the main water supply control valve. Slowly close the main drain valve when water flows, then fully open the main supply valve.

## Inspection Testing and Maintenance

The owner is responsible for maintaining the fire protection system in proper operating condition. Any system maintenance or testing that involves placing a system out of service may eliminate the fire protection that is provided by the fire protection system. Notify any required authorities having jurisdiction and implement appropriate precautions prior to proceeding.

The Reliable Model B1 Accelerator shall periodically be given a thorough inspection and test. NFPA 25, "Inspection, Testing and Maintenance of Water Based Fire Protection Systems," provides minimum maintenance requirements. Replace any components found to be corroded, damaged, worn or non-operable. Increase the frequency of inspections when the valve is exposed to corrosive conditions or chemicals that could impact materials and/or operation of the assembly.

The following inspections should be performed on the Model B1 Accelerator on a weekly basis.

1. Check that the correct system air pressure is being maintained in accordance with NFPA 25.
2. Verify that Accelerator top chamber pressure and system air pressure are equal.
3. Verify that the valves located on both the Accelerator's inlet and outlet lines are in the open position. A valve located on the Accelerator outlet port should only be present if the Accelerator is connected into a dry pipe valve intermediate chamber. Otherwise, the Accelerator outlet port should vent to the atmosphere.

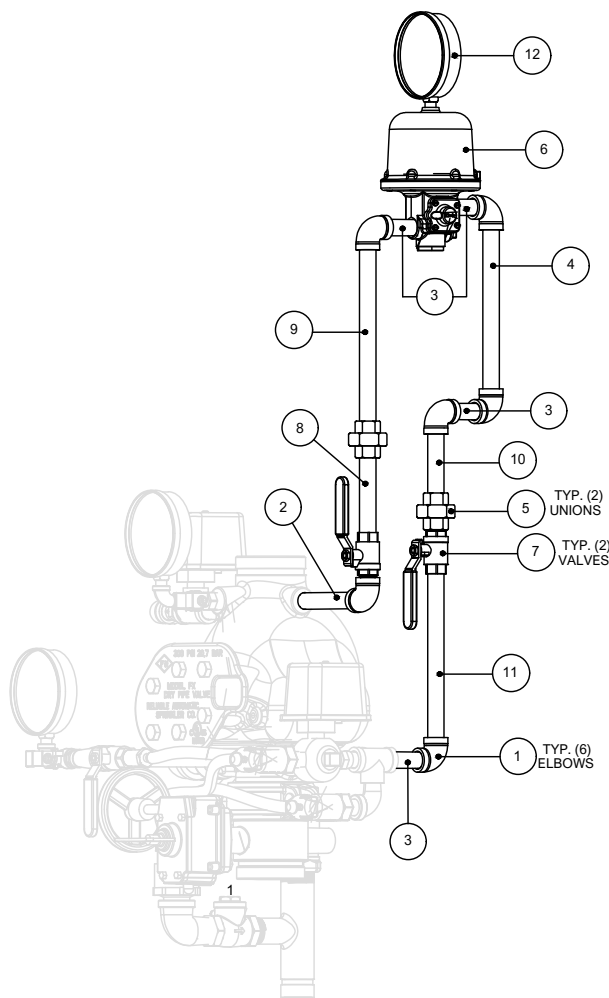
## Test

The following Accelerator tests should be performed semi-annually or whenever the Accelerator has been disassembled.

### **A) Accelerator test without operating the dry pipe valve.**

1. Isolate the Accelerator by closing the valves located on its inlet and/or outlet ports.
2. Loosen the ¼" (6mm) (lower) body drain plug in order to decay the pressure at the inlet of the Accelerator. This will simulate a system decay as when one or more sprinklers open. The Accelerator should operate.
3. Reset the Accelerator following the instructions described in the "Accelerator Resetting Procedure" sections of this bulletin.

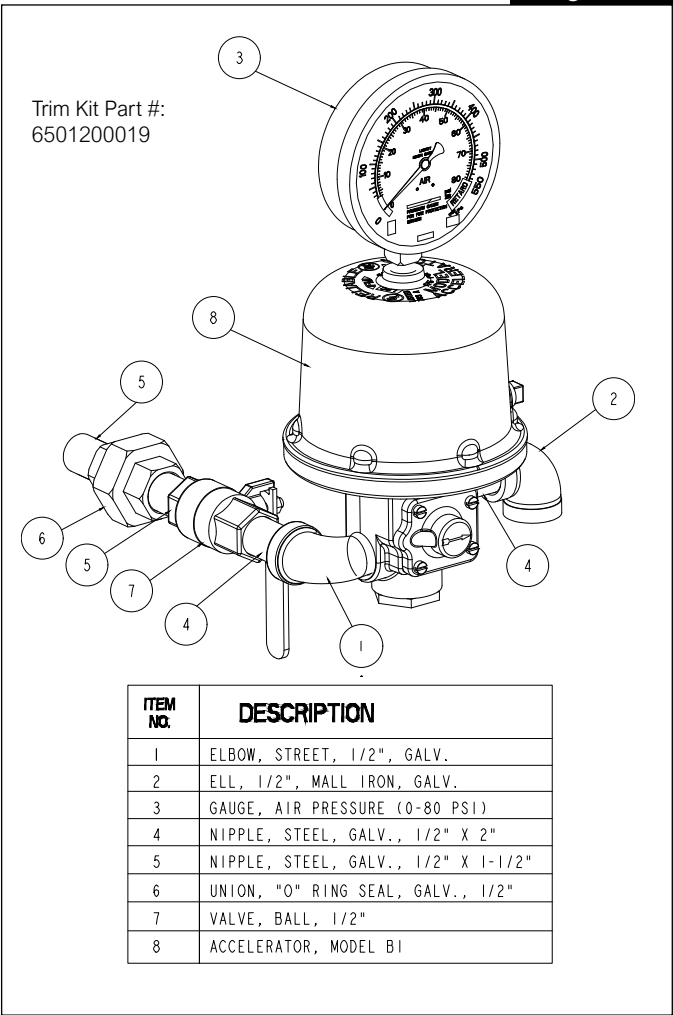
Trim Kit Part #:  
650120001A



ITEM	DESCRIPTION	REMARKS	QTY.
1	ELL, 1/2", MALL IRON, GALV.		6
2	NIPPLE, STEEL, GALV., 1/2" X 5-1/2"		1
3	NIPPLE, STEEL, GALV., 1/2" X 2-1/2"		4
4	NIPPLE, STEEL, GALV., 1/2" X 9"		1
5	UNION, 1/2", IRON, G.J., GALV		2
6	ACCELERATOR, MODEL B1		1
7	VALVE, BALL, 1/2" NPTF X 1/2" NPTM		2
8	NIPPLE, STEEL, GALV., 1/2" X 5"	2", 2-1/2", 3", 4" & 76MM VALVES	1
	NIPPLE, STEEL, GALV., 1/2" X 4"	6" & 165MM VALVES	
9	NIPPLE, STEEL, GALV., 1/2" X 9-1/2"	2-1/2", 3" & 76MM VALVES	1
	NIPPLE, STEEL, GALV., 1/2" X 9"	2", 4, 6" & 165MM VALVES	
10	NIPPLE, STEEL, GALV., 1/2" X 1-1/2"	2" VALVE	1
	NIPPLE, STEEL, GALV., 1/2" X 4"	2-1/2", 3", 4" & 76MM VALVES	
	NIPPLE, STEEL, GALV., 1/2" X 5"	6" & 165MM VALVES	
11	NIPPLE, STEEL, GALV., 1/2" X 9"	2-1/2", 3" & 76MM VALVES	1
	NIPPLE, STEEL, GALV., 1/2" X 9-1/2"	2", 4, 6" & 165MM VALVES	
12	GAUGE, AIR PRESSURE (0 - 80 PSI)		1

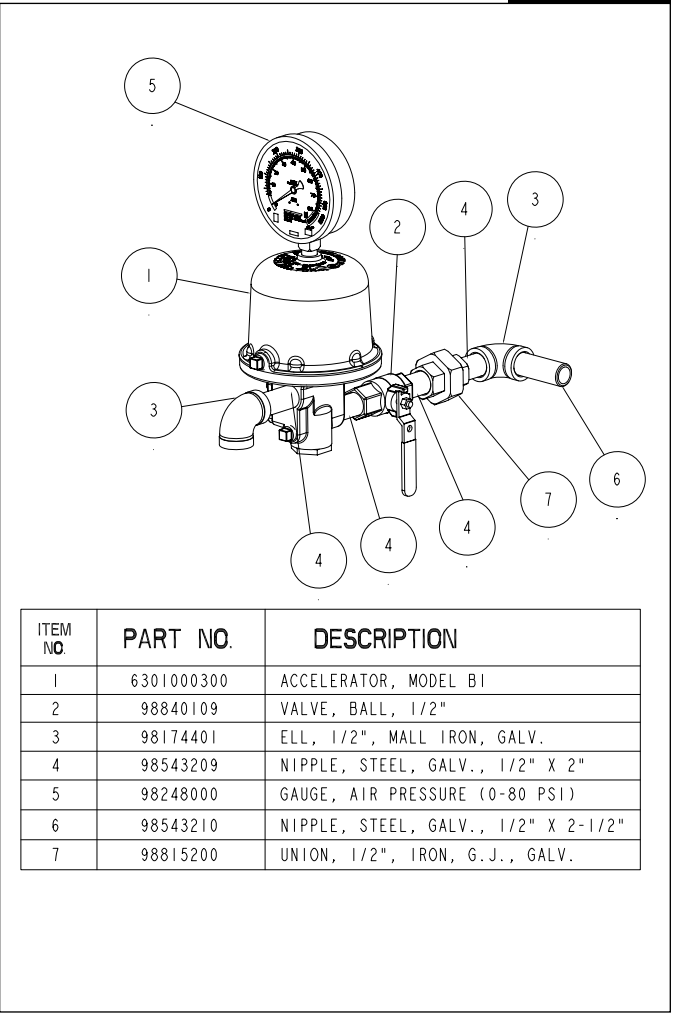
Model B1 Accelerator on  
Model DDX Systems

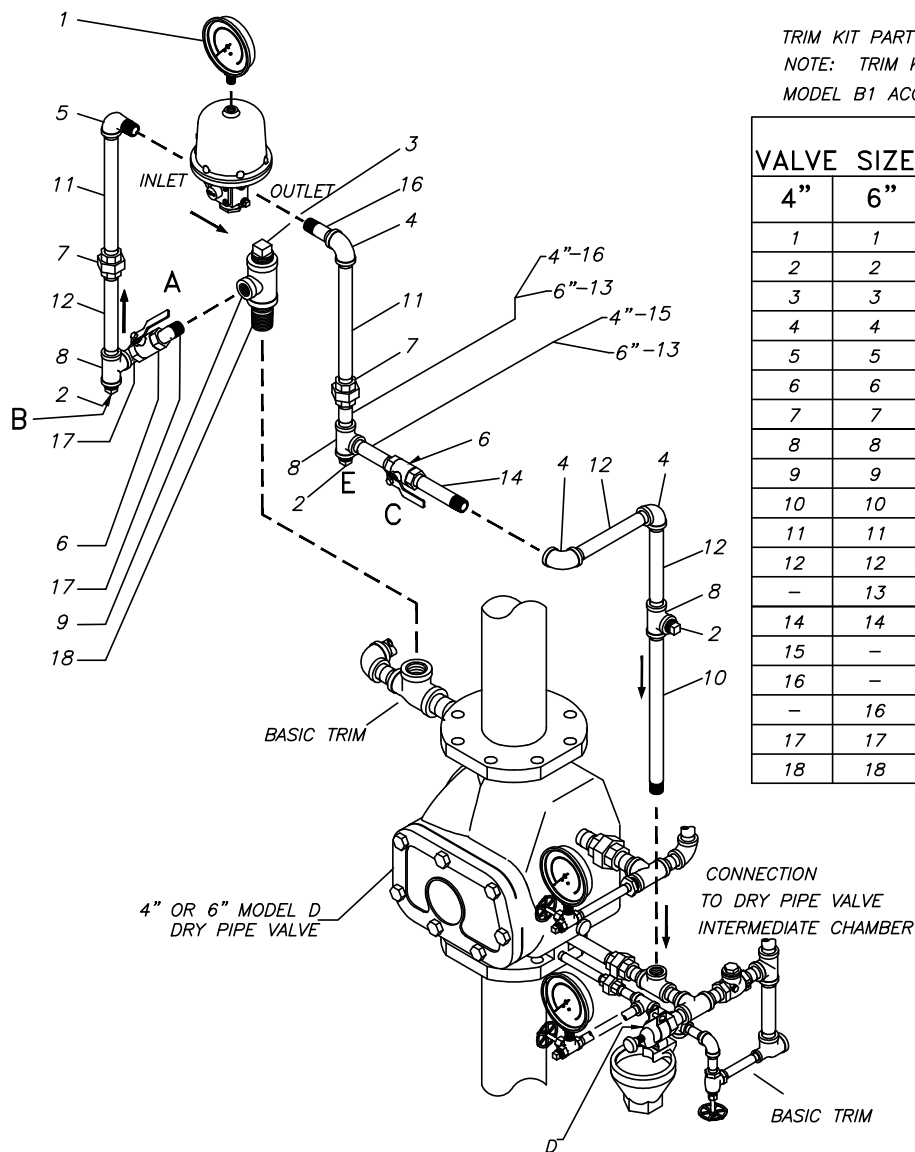
Figure 4



Model B1 Accelerator on  
Model EX Systems

Figure 5





TRIM KIT PART #: 6516000002

NOTE: TRIM KIT DOES NOT INCLUDE ACCELERATOR

MODEL B1 ACCELERATOR PART #: 6301000300

VALVE SIZE		DESCRIPTION	QTY.
4"	6"		
1	1	GAUGE, PRESSURE-AIR	1
2	2	PLUG, 1/2"	3
3	3	PLUG, 1"	1
4	4	ELBOW, 1/2"	3
5	5	ELBOW, STREET, 1/2"	1
6	6	BALL VALVE, 1/2"	2
7	7	UNION, 1/2"	2
8	8	TEE, 1/2" X 1/2" X 1/2"	3
9	9	TEE, 1" X 1" X 1/2"	1
10	10	NIPPLE, 1/2" X 10 1/2"	2
11	11	NIPPLE, 1/2" X 8 1/2"	2
12	12	NIPPLE, 1/2" X 6"	3
-	13	NIPPLE, 1/2" X 5 1/2"	2
14	14	NIPPLE, 1/2" X 4"	1
15	-	NIPPLE, 1/2" X 3 1/2"	1
-	16	NIPPLE, 1/2" X 2 1/2"	2
-	16	NIPPLE, 1/2" X 2 1/2"	1
17	17	NIPPLE, 1/2" X 2"	2
18	18	NIPPLE, 1" X CLOSE	1



## Maintenance & Troubleshooting (refer to Figure 2)

The following table provides a simplified, troubleshooting guide which indicates the necessary corrective maintenance for the more common problems, which may occur.

**Table C**

Symptom	Probable Cause	Correction
Air flows rapidly through the Accelerator and into the outlet port when resetting.	The push-rod is in the held down position by contamination, the push-rod is bent or the push-rod guide is too tight.	Clean or replace as needed.
Minor air flow or leakage through the Accelerator.	1. Contamination in the poppet area.	1. Clean.
	2. The Poppet "O"-Ring has blown off the Poppet, or is cut.	2. Install new "O"-Ring.
	3. The Accelo-Check diaphragm has a hole or rip allowing air to reach the outlet through passageway (F).	3. Replace.
	4. Leakage past the push-rod guide "O"-Ring.	4. Replace.
	5. The push-rod or push-rod guides damaged causing leakage.	5. Replace.
No or low air pressure in the top chamber (gauge pressure does not increase, and no air pressure in the outlet).	1. Filter assembly is clogged.	1. Replace
	2. Restriction area (Passageway G) is clogged or the filter on the diaphragm nut is clogged.	2. Replace.
Accelerator will not trip during a system test.	1. The top chamber air pressure is bleeding back to the system too fast through restriction area.	1. Clean the top of the push-rod and mating surface in diaphragm nut, or replace.
	2. The top chamber air pressure is bleeding back to the system through the ripped diaphragm.	2. Replace
	3. External leak in top chamber.	3. Check the gauge and the drain plug for tightness-use new PTFE tape on the plug after each resetting.
	4. Filter assembly restricted.	4. Replace.
Accelerator floods with water.	1. Inspect check valve for leakage when system is filled with water.	1. Wipe off the clapper facing and seat clean.
	2. The Accelo-Check "O"-Ring is missing or cut.	2. Replace if necessary.
	3. Leakage past the push-rod guide "O"-Ring.	3. Replace.
	4. Push-rod or push-rod guide is damaged allowing leakage.	4. Replace.
	5. Condensate from the compressor has not been drained.	5. Drain water from compressor and air supply line.
Accelerator operates prematurely.	1. Water or dirt in the restriction area.	1. Clean top of the push-rod and mating surface-perform sensitivity test.
	2. Air is not bleeding back through the restriction area to compensate for minor pressure fluctuations.	2. Replace push-rod and / or diaphragm nut. In "Test" section of this Technical Bulletin - perform sensitivity test.
	3. Dry pipe valve is operating prematurely - not the accelerator.	3. Review the correct pressure settings from the corresponding system's technical bulletin.
	4. On-Off is setting of the compressor's pressure switch allowing the system pressure to decay too far.	4. Readjust the differential of pressure switch to minimum (6-8 psi) when using an accelerator.