Model B1 Accelerator
with Integral Accelo-Check

Features
• Quickens the operation of dry pipe valves.
• Can potentially increase the number of automatic sprinklers controlled by one dry pipe valve.
• Equalizes rapidly as dry system is being filled with air to required pressure.
• Adjusts without operation for small fluctuations in system air pressure.
• Dependable in operation, compact and light-weight construction.
• Accelo-Check prevents water and debris from entering critical areas, minimizing the need of removing cover plates, etc. to reset or clean internal mechanisms.
• Tested and approved for use with Reliable dry pipe and preaction systems.
• UL Listed, FM Approved

Product Description
The Reliable Model B1 Accelerator with integral Accelo-Check (anti-flooding device) is used to speed up the operation of both dry pipe valves (in dry-type automatic sprinkler systems) and deluge valves (in preaction sprinkler systems). Both of these systems utilize pressurized air or nitrogen in the piping, instead of water, to prevent freezing or to prevent the accidental release of water.

The accelerated operation of the dry pipe valve permits 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. Listed by Underwriters Laboratories, Inc.
2. Underwriters' laboratories of Canada for up to 1500 gal. (5678 liters) systems.
3. Approved by Factory Mutual Research Corporation
4. Loss Prevention Council

Accelerator Operation
The Model B1 Accelerator is a normally-closed valve with ½” NPT inlet and outlet ports, that is highly sensitive to the rate of air pressure change in a dry pipe 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.

Fig. 1 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” 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 to 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 pushrod (items 5-8 & 10). This forces the poppet (item #15) to open thereby allowing system air pressure to pass out of the Accelerator ½” 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 and reduces the maintenance which would otherwise be required to clean it after each operation.
Installation
The Reliable Model B1 Accelerator is quickly attached to various valves and systems manufactured by Reliable. Table 1 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 Dry Pipe Valve, the Accelerator ½” outlet port should 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 such as Models DDX, DDX-LP & EX, the Accelerator ½” outlet port should be vented to the atmosphere. These types of systems do not utilize differential-type clappers that require additional air pressure to operate. Instead, these systems utilize a pneumatic actuator to seal a push rod chamber and mechanically latch a valve closed. In this instance, the Model B1 Accelerator speeds up the purging of the air side of the Model LP 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.

Note: 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 (National Fire Protection Association) 13 titled “Installation of Sprinkler Systems”, specifies that Accelerators (quick-opening devices) are required on dry systems having capacities of more than 500 gallons. However, exceptions permit the omission of quick-opening devices for larger systems when water can be delivered to the inspector’s test connection in less than 60 seconds.

- Reliable’s Accelerator is UL Listed for system volumes to 1500 gallons. This capability is also approved by FM.
- System pneumatic pressure must be maintained at a minimum of 15 psi in order for the Accelerator to operate.

Accelerator Compatibility

<table>
<thead>
<tr>
<th>Valve</th>
<th>System Type</th>
<th>Technical Bulletin</th>
<th>Accelerator Part Numbers</th>
<th>Trim Kit Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model D</td>
<td>Dry Pipe</td>
<td>350</td>
<td>6301000300</td>
<td>6516000002</td>
</tr>
<tr>
<td>Model EX</td>
<td>Dry Pipe</td>
<td>359</td>
<td>6501200019</td>
<td>(Included)</td>
</tr>
<tr>
<td>Model DDX-LP</td>
<td>Dry Pipe</td>
<td>338</td>
<td>6501200019</td>
<td>(Included)</td>
</tr>
<tr>
<td>Model DDX Type F</td>
<td>Double Interlock Preaction</td>
<td>751</td>
<td>6501200019</td>
<td>(Included)</td>
</tr>
<tr>
<td>Model DDX Type PL</td>
<td>Double Interlock Preaction</td>
<td>752</td>
<td>6501200019</td>
<td>(Included)</td>
</tr>
</tbody>
</table>
Resetting Procedure For Model D Dry Pipe Valve Systems (refer to Fig. 1)

**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 dry pipe valve. Drain and fully reset the dry pipe valve in accordance with the manufacturers 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. Remove the 1/2” drain plugs on the inlet and outlet piping.
5. Remove the 1/4” body drain plug from the lower section of the Accelerator.
6. Remove the 1/4” 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. Carefully reinstall these parts.
8. Partially open the Accelerator inlet valve, gently purging any water which may be in the trim lines. Close the inlet valve.
9. Replace the 1/2” drain plugs on the inlet and outlet piping.
11. Open the Accelerator outlet valve.
12. Pressurize the Accelerator by opening the inlet valve. When properly set, the top chamber pressure of the Accelerator should equal the system pressure.
13. Slightly open the main water supply control valve. Slowly close the main drain valve when water flows, then fully open the main supply valve. The system is now ready for service.

Resetting Procedure For Model LDX, DDX, EX Dry Systems & 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 valve.
2. Close the air and water supply valves to the deluge valve. Drain and reset the system in accordance with the manufacturers 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. Remove the 1/4” body drain plug from the lower section of the Accelerator.
5. Remove the 1/4” 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.
6. Carefully remove the Accelo-Check Body, and gently lift the Accelo-Check Diaphragm Assembly to verify venting of the middle chamber. Carefully reinstall these parts.
7. Partially open the Accelerator inlet valve, gently purging any water which may be in the trim lines. Close the inlet valve and replace the 1/4” body drain plug on the lower section of the Accelerator.
8. Pressurize the Accelerator by opening the inlet valve. The top chamber pressure of the Accelerator should equal the system pressure.
9. Slightly open the main water supply control valve. Close the main drain valve when water flows, then fully open the main supply valve. The system is now ready for service.

**Caution**
The presence of water in the Accelerator may cause premature operation. Therefore, it is imperative that after system operation, the Accelerator be inspected for any signs of water and that the Accelerator trim lines are purged prior to completing the Accelerator reset procedure. In addition, after system set-up, the prime water level must not exceed the dry pipe valve’s prime level (if applicable).

**Recommended Periodic Inspections**
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.
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.
4. Check that the prime water level is correct (if applicable).

**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 1/4” (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 “Resetting Procedure” sections of this bulletin.

**B) Sensitivity Test (Model D Dry Pipe Valves only)**

1. Close the main water supply control valve.
2. Bleed the system air pressure at a rate of 1 psi per minute.
3. After ten minutes (the air pressure should have decayed 10 psi) the Accelerator should not have tripped.
4. Restore the system air pressure and reopen the main water supply control valve.
### Maintenance & Trouble Shooting (refer to Fig. 1)

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

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