

### **AirPrime Operating Instructions**

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#### **Automatic Priming Control**

##### **“AUTO” Mode (Top Position)**

1. Normally, leave *AirPrime* rocker switch in AUTO mode.
2. If drafting, connect all suction hoses, strainer, and tighten accordingly. In cab: Engage parking brake, Engage pump per manufacturers recommendations (*AirPrime* will start priming automatically when pump is engaged). **NOTE:** Never run a fire pump dry for more than 45 seconds.
3. Pump Panel: Check to see if **OK TO PUMP** green light is **ON** and then increase RPM. When the discharge pressure increases above 20-PSIG [1.4 Bar] the primer will disengage. When master gauge indicates greater than 20-PSIG [1.4 Bar] pressure, the discharges can be opened and pumping operations established.
4. Automatic Operation: If prime is lost, *AirPrime* will automatically operate and re-prime the fire pump and will disengage again when pressure reaches 20-PSIG [1.4 Bar].

##### **“OFF” Mode (Center Position)**

1. Disengages the *AirPrime* at all times.

##### **“PRIME” Mode (Lower Position)**

1. Push and Hold the momentary switch used for manual engagement of primer at any time.
2. For Operation: Properly engage the fire pump, note the green **OK TO PUMP** light, and advance the throttle to 1000 RPM, push and hold the *AirPrime* momentary switch until pump is primed, open discharges slowly. Rocker switch can be changed to **AUTO** mode at any time.
3. The manual mode can be used without having the fire pump engaged for vacuum testing or training on the primer system.

#### **Operating Instructions for Multi-Location Automatic Priming System**

1. See operating instructions for automatic priming system above for the initial fire pump priming procedures.
2. To pre-prime a remote location, push the PRIME button for that location for 45 seconds or until water appears at top of hose.
3. Be sure *AirPrime* is in the “automatic” position when opening the remote location valve control.

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#### **Manual Priming Control**

The manual *AirPrime* is operated simply by increasing the engine speed to a maximum of 1000 RPM and depressing the push button on the panel. Hold the button down until the discharge pressure gauge begins to rise. The primer will stop running when the push button is released. The push button will operate the primer regardless of whether the fire pump is engaged or not.

1. Depressing the **PUSH TO PRIME** button directs air to the primer inlet.
2. An internal valve to the water pump is “opened” with air pressure from chassis air system.
3. Vacuum for drafting is created by air-flow through multi-stage internal ‘venturi nozzles’.
4. Panel control valve has no water, plumbing or electrical lines.
5. Never run a dry pump at engine speeds above 1200 RPM and/or for more than 45 seconds in accordance with fire pump manufacturer’s operating instructions.

#### **Operating Instructions for Multi-Location Manual Priming System**

1. See operating instructions for manual priming system above for the initial fire pump priming procedures.
2. To pre-prime a remote location, push the manual button for that location for 45 seconds or until water appears at top of hose.
3. Be prepared to push the fire pump manual *AirPrime* Push-To-Prime button when remote location valve control is opened to remove any trapped air.

## Annual Primer Testing

The *AirPrime* primer is designed to meet the NFPA requirements of: **Dry Vacuum (TEST #1)** and **Priming Time (TEST #2)**. These tests should be performed on an annual basis, or whenever major repairs or modifications have been made to the fire pump, plumbing or primer.

**TEST #1 Dry Vacuum Test:** Checks the primer's ability to produce 22 inches (Hg) [7.45 Bar] of vacuum, and the pump and plumbing's ability to hold that vacuum. The test may be run with the pump in gear or not engaged. Never run a dry pump at engine speeds above 1200 RPM. There is no time requirement for the vacuum to reach 22 inches. If the compressor has a capacity of 13.2 CFM [374 cu. cm. displacement], it can take several minutes to reach 22 inches [7.5 Bar]. This time can be shortened by not engaging the pump and increasing the engine speed to 1200 RPM. The test process is as follows:

1. Drain all water from pump and plumbing.
2. Close all valves and drains. Cap all suction openings and the outlet off the suction side relief valve (if so equipped).
3. Connect a test vacuum gauge to the intake test gauge connection on the pump panel.
4. Operate the *AirPrime* with the air system at over 100-PSIG [7.0 Bar] pressure, air tanks filled to capacity, and at 1000 RPM engine speed; until the vacuum gauge indicates 22 inches (Hg) [7.5 Bar] or more of vacuum. (If the primer is an Automatic *AirPrime* electrically controlled model, use the PRIME mode switch position to engage the primer).
5. Watch the gauge, if the vacuum falls more than 10 inches in 5 minutes the test has failed and is a certain indication of an air leak(s). Vacuum leaks may be detected by ear, with the engine turned off. Correct leaks immediately and re-test the priming system.

**TEST #2 Priming Time Test:** This test is to prove that the fire pump and primer has the capability of attain a prime and creating discharge water pressure in a set period of time. This test is also conducted by the apparatus builder prior to delivery. The fire pump shall be engaged and primer actuated. The test is part of an annual pump performance test and is performed as follows:

1. Set up the apparatus in accordance with the pumping test outlined in the NFPA standards.
2. Engage the pump, and increase the throttle to a maximum engine speed of 1000 RPM.
3. Operate the *AirPrime* with the air system at over 100-PSIG [7.0 Bar] pressure, air tanks filled to capacity, and at 1000 RPM engine speed.
  - For the Manual controlled primer, release the push button when a discharge pressure over 20-PSIG [1.4 Bar] is obtained.
  - For the Automatic *AirPrime* electrically controlled model, place the switch in the "AUTO" position, it will turn the primer off automatically when priming is attained.
4. The time to prime should not exceed 30 seconds for 1250-GPM [4700 LPM] and smaller pumps. The time to prime should not exceed 45 seconds for 1500-GPM [5600 LPM] and larger pumps. An additional 15 seconds is allowed for pumps with 4" or larger auxiliary suction.

Higher lifts and operating at higher elevations will slow down time to prime. The air compressor rating should be a minimum of 18 CFM [410 cu. cm. displacement] for elevations over 4000 feet [1200 m] and lifts in excess of 15 feet [4.5 m]. Operation at these extremes may require the primer to be operated at engine speeds in excess of 1000 RPM without engaging the pump, until water reaches the impeller. Never run a dry pump at engine speeds above 1200 RPM.

### IN-SERVICE OPERATIONAL TEST (Ramp Test)

The *AirPrime* integrity and operation can be quickly checked (on a daily or weekly basis) as outlined below, without fire pump engagement:

1. Drain all water from pump and plumbing.
2. Close all valves and drains. Cap all suction openings.
3. Operate the *AirPrime* with the air system at over 100-PSIG [7.0 Bar] pressure, air tanks filled to capacity, and the engine running at 1000 RPM (with an Automatic *AirPrime* electrically controlled model use the PRIME mode switch position).
4. Stop running the primer.

Time to reach 15 inches HG [.50 Bar] or 17 feet [5.0 m] on lift gauge should be within the time allowed in list below for the pump tested.

#### Small Body Pump (Thru 1250-GPM): Vacuum Time

10 inches HG [.33 Bar] (11 feet) 6 Seconds

15 inches HG [.50 Bar] (17 feet) 15 Seconds

#### Large Body Pump (Over 1250-GPM): Vacuum Time

10 inches HG [.33 Bar] (11 feet) 8 Seconds

15 inches HG [.50 Bar] (17 feet) 20 Seconds

**Note:** Vacuum Time listed in the table at left are for operations up to 2000 feet [609 m] of elevation. When running this In-Service Operational Ramp Test at higher elevations, the vacuum should be reduced by 1 inch (1.13 feet) for each 1000 feet [304 m] of elevation over 2000 feet [609 m].