



Did YOU know?

Trident Air Primer

The widespread use of air operated priming devices begins with the arrival of the 2018 Freightliner Tankers and 2018 Pierce Engines. Prior to these apparatus the rotary vane electric powered primer was standard.

The Trident Air Primer has the following features:

- Uses chassis air supply from engine driven air compressor
 - * No electric motor, solenoid valve, or heavy battery cables
- Design allows continuous primer operation – no motor or mechanical components to overheat
- Vacuum produced by venturi action within primer body



Controller - Automatic System

The automatic system monitors the discharge pressure near the pump impeller and automatically engages the main pump primer when conditions indicate a loss of prime. The automatic system only evacuates air from the main pump housing.

There are three conditions that must be met for the auto primer to engage:

1. The pump is in gear and the OK to PUMP light is illuminated
2. The auto primer control button is in the "AUTO PRIME" position and the light is illuminated
3. The pump discharge pressure in the main pump body drops below 20psi



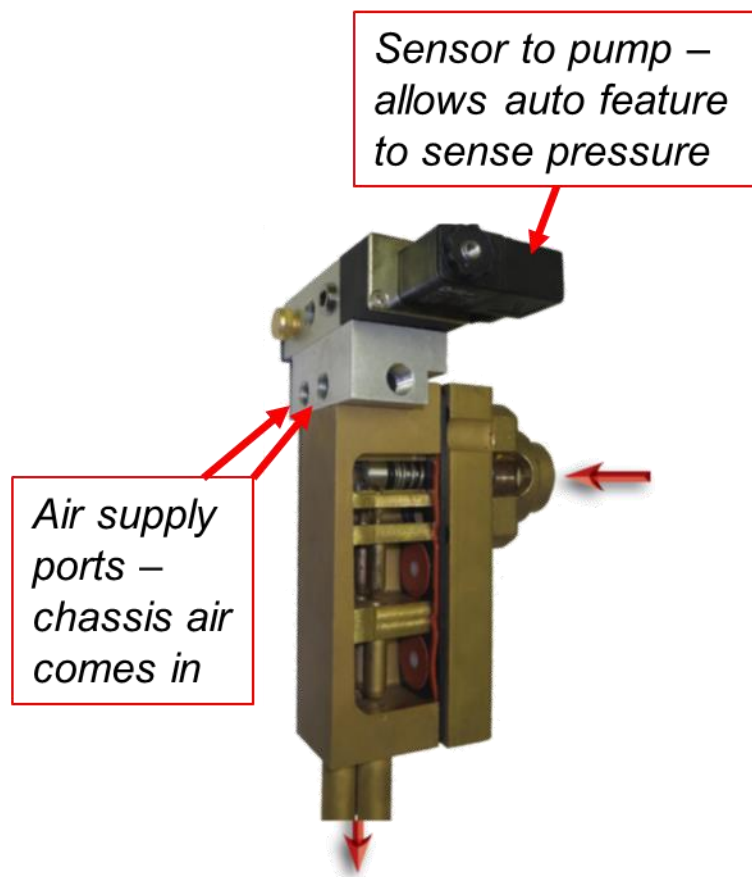
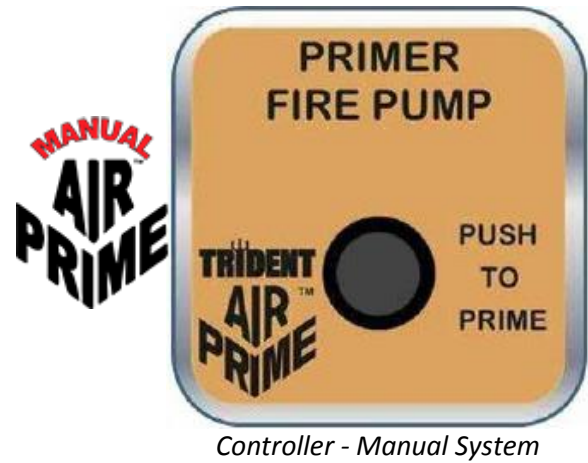
Controller - Manual System

The manual system requires the operator to physically engage the primer much like traditional rotary vane primers. Instead of a pull handle, the air primer has a push button controller to operate the primer. The operator simply depresses the desired primer button to engage the primer and releases the button to disengage the primer. Unlike traditional mechanical primers, there is no time limitation when engaging the air primer.

A combination system includes an automatic system on the main pump with manual priming mechanisms on individual intakes. The primers on the individual intakes are located on the outboard side of the intake valve, so the intake may be primed prior to opening. The presence of individual intake primers replaces the 4-way priming selector that was present on the Crimson engines.

Members are encouraged to seek additional information at the Driver Training website.

There are two types of air primer systems available; automatic and manual. The operating principles and priming equipment are nearly identical with the exception of the operator interface to engage the primer and a solenoid for monitoring pump pressure. Automatic systems may be augmented by outboard manual primers on individual intakes.



Automatic and Combination Systems

The automatic system monitors the discharge pressure near the pump impeller and automatically engages the main pump primer when conditions indicate a loss of prime. The automatic system only evacuates air from the main pump housing. A combination system includes an automatic system on the main pump in unison with manual priming mechanisms on individual intakes. The primers on the individual intakes are located on the outboard side of the intake valve, so the intake may be primed prior to opening. The presence of individual intake primers replaces the 4-way priming selector that was present on the Crimson engines.

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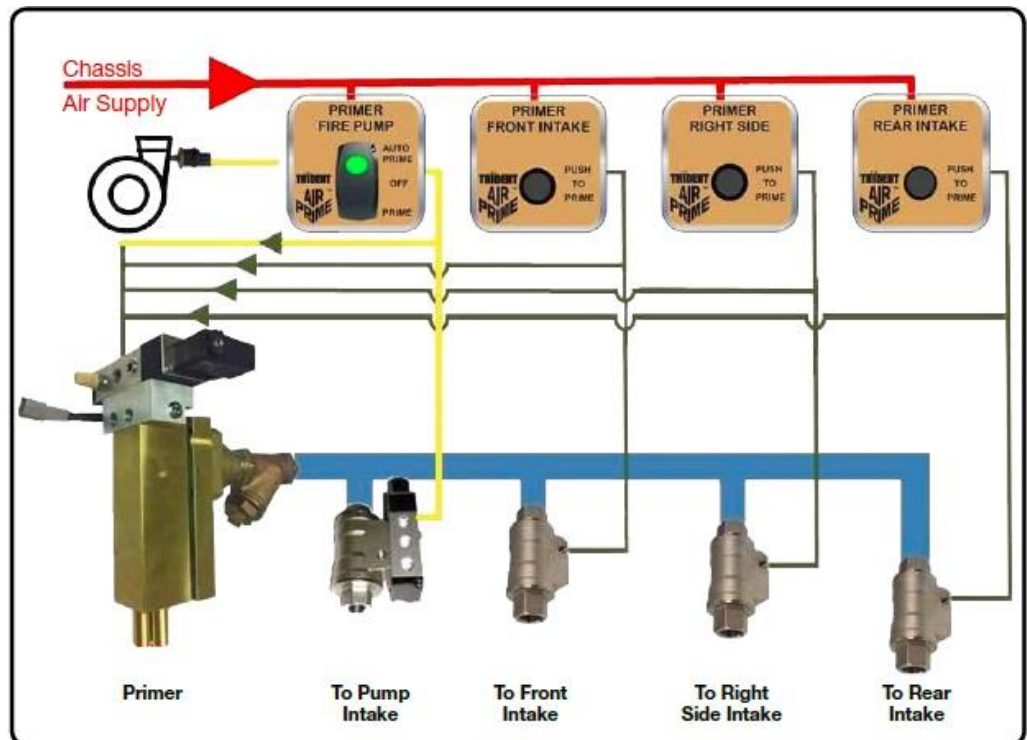
1. The pump is in gear and the OK to PUMP light is illuminated
2. The auto primer control button is in the "AUTO PRIME" position and the light is illuminated
3. The pump discharge pressure in the main pump body drops below 20psi



Any time these three conditions exist simultaneously the air primer on the main pump will engage. This includes initial pump priming tasks or incidental loss of prime during pumping operations due to an air slug, rapid opening of a discharge, or switching from tank water to another source.

The automatic primer can also be operated manually by pressing the control button downward to the "PRIME" position. This is a momentary switch that only engages the main pump primer while depressed. This is useful for periodic operational checkouts and operates whether the pump is engaged or not.

In a combination system the manual intake primers and automatic main pump primer all utilize a single primer body. The individual intake primers may be engaged simultaneously with the main pump primer if necessary.



Manual Systems

Manual systems may be used on the main pump as well as individual intakes as previously described. The manual system requires the operator to physically engage the primer much like traditional rotary vane primers. Instead of a pull handle, the air primer has a push button controller to operate the primer. The operator simply depresses the desired primer button to engage the primer and releases the button to disengage the primer. Unlike traditional mechanical primers, there is no time limitation when engaging the air primer.



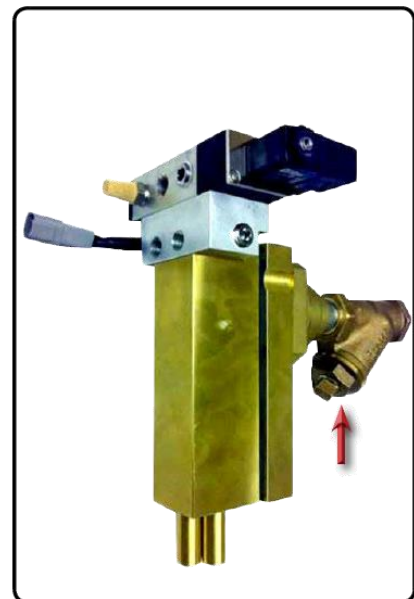
Maintenance and Troubleshooting

All of the customary troubleshooting options for drafting apply when using an air primer, i.e. leaking couplings, minimizing vertical lift, closing pump drains, etc. The air primer offers the advantage of overcoming imperfect drafting setups more readily than traditional rotary vane primers due to its unlimited engagement time. Theoretically the air primer can overcome more air trapped or infiltrating the drafting setup.

There is no routine maintenance intervention required by station personnel for the air primer. There are no fluids or moving parts to lubricate. The primer operation should be checked as part of routine pump inspections. The primer body has an integral strainer to reduce the potential for debris entering the primer body and obstructing the air inlets. If priming performance seems to be reduced or impaired the strainer should be checked for debris.



Separate and Cleanable
Wye Strainer



Integral Strainer on Primer Intake
Shown With Red Arrow Above

Additional Resources

Troubleshooting Guide

- <http://www.tridentautoairprime.com/troubleshooting.html>

Trident Website

- <http://www.tridentautoairprime.com/>