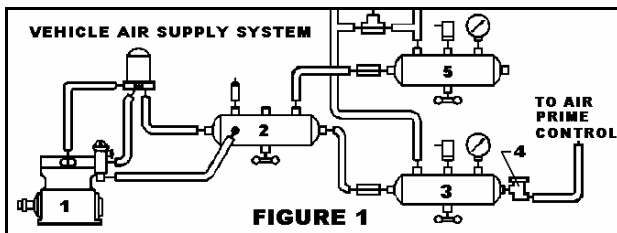


Manual covers 3-Barrel Air Prime
Model # 31.001.2 (Flange Direct Mount)
Model # 31.001.7 (3/4" NPT Mounting)

And the 2-Barrel Air Prime Design
Model # 31.003.2 (Flange Direct Mount)
Model # 31.003.7 (3/4" NPT Mounting)

AIR SUPPLY

The Air Prime must be connected to the vehicle's air brake system exactly as shown in Figure-1 below. In this schematic, which is typical for most trucks built today, the air compressor is shown as (1). The supply reservoir (wet tank) is shown as (2). The primary reservoir (typically for the rear brakes) is shown as (3). The Pressure Protection Valve for the Air Prime is shown as (4). The secondary reservoir (typically for the front brakes) is shown as (5).



In some chassis, the supply reservoir and the secondary reservoir are combined into a dual split-tank containing two distinct air chambers. Many other variations are also possible.

INSTALLER'S RESPONSIBILITIES

A) The 2-barrel Air Prime **must** be used only on fire pumps rated **1000 GPM and smaller**. All other applications **must** use the 3-barrel Air Prime. The vehicle's air compressor **must** have a minimum rating of **13.2 CFM** when using the 2-barrel Air Prime and a minimum rating of **15.6 CFM** when using the 3-barrel Air Prime. For lifts greater than 10 feet, or for operations above 4000 feet of elevation a minimum air compressor size of **18.7 CFM** is required.

B) The air source location used for the Air Prime is the **primary reservoir (3)**, as it will generally have the greatest volume. If an auxiliary tank is provided on the truck that is as large as the primary tank, it may be used as the air supply instead of the primary tank.

C) A Pressure Protection Valve (4) **must be used** between the air supply reservoir and the Air Prime control. This valve is **not supplied** with the Air Primer. The Pressure protection Valve used should be preset to close at **80 psig**. The 80 psig setting will allow the Air Prime enough pressure for operation and still keep the tank pressure well above the "low air pressure" alarm cut-in, which is usually set for 60 psig. This valve is to be connected as shown in Figure 1. Using this valve complies with both NFPA 1901 and the FMVSS 121 requirements, and serves to protect the air brake system from any leaks that may occur in the primer control or the line from the Pressure Protection Valve to the primer control.

D) The supply line from the Pressure Protection Valve to the Air Prime control should be a minimum size of 3/8" air brake tubing and connected at both ends with 1/4" NPT fittings. The tubing should be kept as short as possible, free of any kinks or bends, must not be run near exhaust or rotating components, and must be secured at regular intervals. Use grommets to protect the tubing lines from contacting sharp edges at hole locations. When the length of tubing required exceeds 20 feet, a minimum size of 1/2" air brake tubing should be used. All tubing and fittings used must be rated for air brake service.

PRIMER MOUNTING

The Air Prime must be ordered as follows:

-Mounted directly to midship pumps with “diamond shaped” 2-bolt pad.

Trident Part # 31.001.2 – 3 Barrel

Trident Part # 31.002.2 – 2 Barrel

-Mounted elsewhere for all other pumps

Trident Part # 31.001.7 – 3 Barrel

Trident Part # 31.002.7 – 2 Barrel

Direct Pump Midship Mounting

The Air Prime can be directly mounted to the two bolt priming port for some midship pump models: Consult factory for any compatibility questions. Figure 2, below illustrates the proper mounting of the Air Prime to Midship pumps with 2-bolt diamond shaped pads.

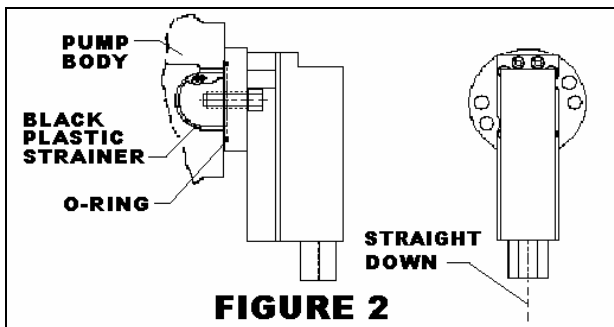


FIGURE 2

ALL OTHER PUMP MOUNTING

For mounting the Air Prime for use on all other pumps, the Primer must be ordered and installed as shown in figure 3 below.

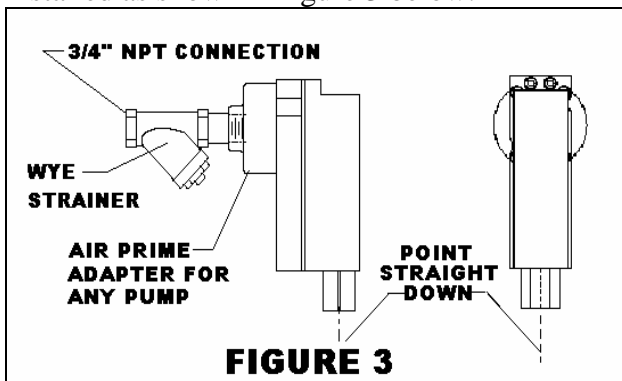


FIGURE 3

The locations of the (4) 1/4"-20 Air Prime mounting holes are shown in figure 4 below. These mounting holes are available for use on all of the Air Prime designs. When fabricating a bracket to attach the primer to a structural member on the vehicle, always use all (4) of the Air Prime mounting holes.

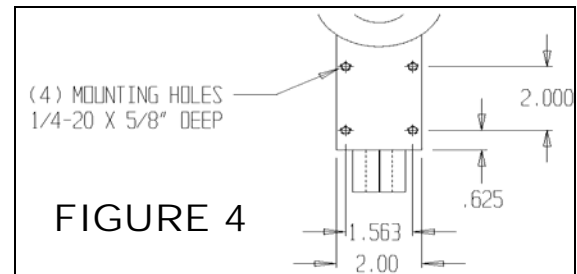


FIGURE 4

This Air Prime model comes with a 3/4" wye strainer. The strainer protects the primer from debris in the water. It should be positioned to allow easy access for periodic cleaning.

The Air Prime can be mounted to the frame rail, the bottom of the pump gearbox, or any other location that is close to the priming port of the pump. The Air Prime outlet must point down.

Finally, make a connection from the 3/4" NPT Air Prime inlet to the pump's priming port using a **minimum** inside diameter of 3/4", non-collapsible, vacuum rated hose.

Note that a 1-1/4" ID hose may be connected to the primer outlet using a hose clamp to secure it in place. This hose can be used to direct the water that is discharged from the primer to any convenient location. Be sure this hose is properly secured, kept as short as possible, and free of any kinks, sharp bends, or potential water traps.

AIR PRIME PANEL CONTROL

The control for the Air Prime is a push to operate air switch that is mounted to the pump panel. Figure 5 shows the placard, push button, and template for the panel cut-outs.

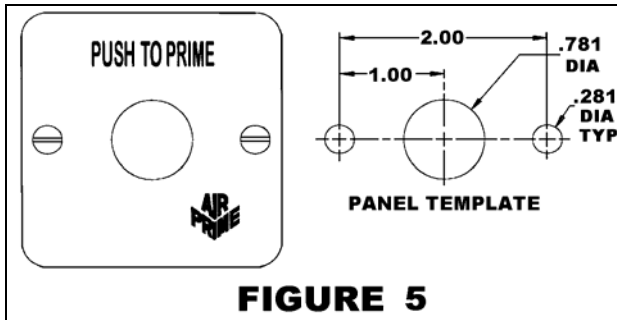


FIGURE 5

The air lines for the Air Prime Manual control are connected as shown in figure 6 below.

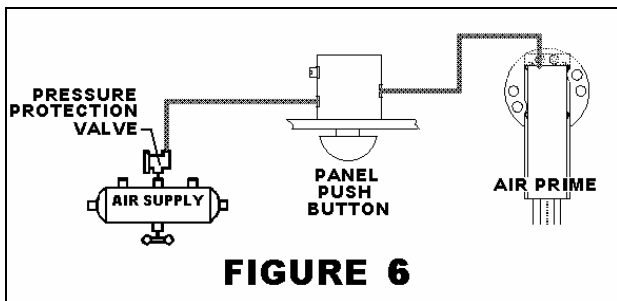


FIGURE 6

Use 3/8" tubing and 1/4" NPT fittings (rated for air brake service) at all connections. Keep tubing secured and free of any kinks and bends. Do not run tubing within 6" of any exhaust or other hot components.

AIR PRIME OPERATION

The Manual Air Prime 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. **Never run a dry pump at engine speeds above 1000 rpm.**

ANNUAL PRIMER TESTING

There are two tests that should be performed at least on an annual basis, or whenever major repairs or modifications have been made to the pump or plumbing. They are the “Dry Vacuum Test”, and the “NFPA Priming Time Test”.

The **Dry Vacuum Test** checks the primer’s ability to produce a 22in.-Hg vacuum, and the pump and plumbing’s ability to hold that vacuum.

1. Close all valves and drains. Cap all suction openings and the outlet of the suction side relief valve (if so equipped).
2. Connect a test vacuum gauge or manometer to the intake test gauge connection on the pump panel.
3. Start with the air tanks fully charged, and run the primer until the gauge or manometer indicates 22 in.-Hg or more of vacuum.
4. Watch the gauge. If the vacuum falls more than 10 in.-Hg in 5 minutes, it is a certain indication of at least one air leak. Vacuum leaks may be detected by ear if the engine is turned off. Correct leaks immediately to return the pump to a serviceable condition.

This test may be run with the pump rotating or stationary. **Never run a dry pump at engine speeds above 1000 rpm.** There is no time requirement for the vacuum to reach 22 in.-Hg. If the compressor is small, it can take several minutes to reach 22 in.-Hg. This time can be shortened by not rotating the pump and increasing the engine speed to 1200 rpm.

The **NFPA 1901 Priming Time Test** demonstrates the primer’s ability to lift water into the pump and create discharge pressure within the allowable time. This test is also conducted by the apparatus builder prior to delivery. The test is often run as 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 1901 standard.
2. Engage the pump, and increase the throttle to a maximum engine speed of 1000 rpm.
3. With the air tanks fully charged, start the primer. Release the push button when a discharge pressure over 20 psig is obtained.
4. The time to prime should not exceed 30 seconds for 1250 gpm and smaller pumps. The time to prime should not exceed 45 seconds for 1500 gpm and larger pumps. An additional 15 seconds is allowed for pumps with auxiliary suctions having a volume of 1 cubic foot or more.

The Air Prime is designed to meet the NFPA requirements. Higher lifts and operating at higher elevations will slow down the time to prime. The air compressor rating for lifts in excess of 15 feet and elevations over 4000 feet must be at least 18.7-CFM. Operation at these extremes may require the primer to be operated at engine speeds in excess of 1000 rpm without spinning the pump, until water reaches the impeller. **Never run a dry pump at engine speeds above 1000 rpm.**

REPAIR / REPLACEMENT PARTS

For Manual Air Prime Models:

3 Barrel / 2 Barrel

#31.001.2 / #31.003.2 – Midship Pump Direct Mount

#31.001.7 / #31.003.7 – 3/4" NPT Mounting

