Hard Suction Hose Air Leak Test Procedure

Dry Vacuum Test for Fire Department Hard Suction Hose

Prepared for	WFR Wholesale Fire & Rescue Ltd. / Customer Use
Procedure type	Hard suction hose air leak test
Recommended test method	Dry vacuum test using clear Lexan test plates/discs and vacuum gauge
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Important: Hard suction hose should be checked for air leaks using a dry vacuum test. Do not test hard suction hose as attack hose unless the hose is specifically marked and approved for positive pressure service.

1. Purpose

This procedure explains how to check fire department hard suction hose for air leaks, coupling leaks, gasket issues, and liner collapse using a dry vacuum test. The goal is to confirm that the hose can hold vacuum and will not lose prime during drafting operations.

2. Reference Standard and Equipment Notes

- NFPA 1962 is the recognized standard for the care, use, inspection, service testing, and replacement of fire hose, couplings, nozzles, and fire hose appliances.
- Commercial suction hose test kits are commonly supplied with clear Lexan discs/plates, a vacuum gauge, a light, and either a vacuum pump or a vacuum-port adapter.
- Kochek describes its suction hose test kit as being supplied for NFPA 1962 A.7.5 compliant testing and including clear Lexan discs for 2.5 inch NH through 6 inch NH suction hoses.

3. Equipment Required

- Fire pump primer, vacuum pump, or suction hose vacuum test kit
- Clear Lexan test discs/plates sized for the hose coupling
- Vacuum gauge capable of reading inches of mercury vacuum (in. Hg)
- Correct suction gaskets for each coupling
- Flashlight or inspection light
- Clean cloths and mild soapy water for troubleshooting suspected leaks
- Test record sheet

4. Safety Precautions

- Perform the test in a clear, stable area where the hose cannot roll or shift.
- Use only properly sized test discs/plates and gaskets that seal correctly against the coupling.
- Do not stand directly in line with test plates, caps, adapters, or couplings while vacuum is being applied.
- Do not modify test plates or use improvised caps that could pull loose under vacuum.
- Remove the hose from service if it cannot hold vacuum, shows liner collapse, has loose couplings, or has visible structural damage.

5. Test Procedure

1. **Step 1 - Identify and inspect the hose:** Record the hose size, length, manufacturer if known, serial number or asset number, coupling type, and date. Visually inspect the hose for cracks, cuts, soft spots, crushed areas, loose couplings, damaged gaskets, missing markings, or signs of liner separation.
2. **Step 2 - Install proper gaskets:** Inspect the suction gaskets and replace any that are dry, cracked, flattened, missing, or damaged. Many failed vacuum tests are caused by gasket or coupling seal problems rather than the hose body.
3. **Step 3 - Connect to the suction source:** Attach one end of the hard suction hose to the suction source, such as the fire pump intake, primer test unit, or vacuum pump adapter. Ensure the connection is tight and the gasket is seated properly.
4. **Step 4 - Seal the free end:** Install the correct clear Lexan test disc/plate or test plug on the free end of the hose. The clear test plate allows the inside of the hose to be inspected while vacuum is applied.
5. **Step 5 - Pull vacuum:** Operate the primer or vacuum pump and draw the hose down to approximately 22 inches of mercury vacuum, unless the current adopted standard or local department policy requires a different value.
6. **Step 6 - Hold the vacuum:** Hold the vacuum for 10 minutes. Do not continue operating the primer or vacuum pump during the hold period unless the test equipment instructions require a specific setup method.
7. **Step 7 - Watch the vacuum gauge:** Monitor and record the vacuum reading at the start and end of the test. A drop in vacuum indicates air entering the system and requires troubleshooting.
8. **Step 8 - Inspect the hose interior:** Using the clear test plate and light, look inside the hose while it is under vacuum. Watch for liner collapse, inward bulging, separation, or distortion.
9. **Step 9 - Troubleshoot leaks:** If the hose loses vacuum, first check the test equipment, intake connection, caps, test plates, gaskets, and coupling areas. Mild soapy water can help locate leaks around couplings and seals. Re-test after correcting gasket or equipment issues.
10. **Step 10 - Record the result:** Mark the hose as Pass, Fail, or Remove from Service. Attach or update the hose test tag if used by the department or customer.

6. Pass / Fail Criteria

Pass	Fail / Remove from Service
Hose holds the required vacuum for the full test period.	Hose cannot hold vacuum or the vacuum drops during the hold period.
No liner collapse, separation, bulging, or distortion is seen.	Liner collapses, separates, bulges inward, or appears damaged.
Couplings and gaskets seal properly.	Couplings are loose, damaged, leaking, or gaskets will not seal.
No visible cracks, cuts, crushed areas, or soft spots are present.	Visible structural damage is present or the hose repeatedly loses prime in service.

7. Clear Test Plate / Kit Purchasing Note

The clear end piece is usually not called a clear suction cap. It is normally part of a **hard suction hose vacuum test kit** or **suction hose test kit**. Ask for clear Lexan test discs/plates for the hose sizes you need, along with a vacuum gauge and either a vacuum pump or a vacuum-port adapter.

Suggested wording when ordering:

> *We are looking for a hard suction hose vacuum test kit for fire department suction hose. We need clear Lexan test discs/plates for 2.5 inch, 3 inch, 4 inch, 4.5 inch, 5 inch, and 6 inch suction hose, with a vacuum gauge and either a vacuum pump or an adapter to connect to a fire pump primer. The kit must be suitable for NFPA 1962 dry vacuum suction hose testing.*

8. Short Staff Instruction

Hard suction hose must be tested by dry vacuum. Connect the hose to a suction source, seal the open end with a clear Lexan test plate, pull approximately 22 inches of mercury vacuum, and hold for 10 minutes. If the hose loses vacuum, shows liner collapse, or has visible damage, remove it from service until it is repaired or replaced.

9. Hard Suction Hose Test Record

Customer / Department		**Test Date**	
Technician		**Hose Size**	
Hose Length		**Asset / Serial No.**	
Coupling Type		**Start Vacuum Reading**	
End Vacuum Reading		**Hold Time**	10 minutes
Result	Pass / Fail	**Notes**	
Notes / Corrective Action			

10. References

- NFPA 1962 - Standard for the Care, Use, Inspection, Service Testing, and Replacement of Fire Hose, Couplings, Nozzles, and Fire Hose Appliances.
- Kochek Dynamic Fluid Solutions - Suction Hose Test Kit product information, including clear Lexan discs and vacuum test kit components.