



# **SOUTH LYON FIRE DEPARTMENT**

## **Manual of Procedures 107**

### **FIRE HOSE**

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Approved: Chief Robert Vogel

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#### **I. PURPOSE**

To establish standards for fire hose loading, testing, maintenance, and documentation. These guidelines are in accordance with the recommendations of NFPA 1962.

#### **II. TESTING**

All fire hose on apparatus or in storage is to be tested annually as directed by the officer in charge of hose testing and records (hose officer). This officer is responsible for maintaining records on all fire hose (new, tested, damaged, and repaired). This will require good communications and cooperation from all personnel to assure complete and accurate records.

#### **III. TEST PROCEDURE**

Hose to be tested

- A. All fire hose 1¾" in diameter and larger shall be pressure tested, this includes all 10 foot sections.
- B. Service test pressures for all hose used by the South Lyon Fire Department are:
  - i. 1¾" through 2½" - 300 psi for five minutes.
  - ii. 4" supply - 200 psi for five minutes.
- B. Any reference to TEST PRESSURE or PSI that may be stenciled on hose that exceed above pressures are not service test pressures! No attempt should be made to exceed the service test pressures listed above.

#### **IV. TEST LAYOUT**

- A. Maximum length for hose service test layout is 300 feet, and all hose in a single layout must be of the same internal diameter and test pressure capacity.
- B. Plan to position apparatus so that all hose to be tested will lie flat, straight, and level. If hose must be tested on a slight incline, the discharge end of the hose must be at the crest of the incline so the pump is at the lowest angle.
- C. A water source from a hydrant must be secured. During all pumping procedures for hose testing, flowing of water through a slightly opened tank refill must take place in order to keep the water temperature cool so as to avoid pump damage.
- D. Test layouts shall be connected to pump discharge gates away from where the pump operator.
- E. Prior to connecting hose to be tested, inspect all couplings to insure that coupling gaskets are in place, female swivels rotate freely, and there are no signs of coupling slippage (couplings "off center," unusually clean fabric next to couplings, or fabric threads broken or "curling" around coupling shanks). Also, visually inspect all hose for jacket tears, burn spots, cuts, severe abrasion, unusual lumps, bulges, or twists.
- F. After visual inspection, connect the hose layout and attach an appropriate nozzle with shutoff.
- G. Connections should be hand tight but firm. Tightening couplings with spanner wrenches prior to wetting may mask coupling gaskets in need of replacement.
- H. All hose shall be marked with the month and year of the testing at the female end of the hose. 4" shall be marked at both ends.



# **SOUTH LYON FIRE DEPARTMENT**

## **Manual of Procedures 107**

### **V. PRESSURE TEST**

- A. Assure the test layout is straight and as level as possible and that the nozzle being used is closed.
- B. Prior to pressurizing the test layout, position one person as a spotter with an unobstructed view of both the test layout and the pump operator. This person shall act as both "traffic control" for personnel entering the test area (15 feet around the hose), as signaler to the pump operator for charging, and shutting down the operation.
- C. When the pump operator receives confirmation that the test is to begin, the pump shall be engaged and the proper discharge gate shall be "cracked" open only enough to allow gradual filling of the test layout. At no time shall pump pressure exceed 50 psi during the initial testing.
- D. From initial pressurization through the remainder of the test, only personnel wearing helmets, face shields down, shall enter the test area.
- E. With test pressure maintained at a maximum 50 psi, the nozzle shall be slowly opened until all air is expelled, then slowly closed. Personnel shall then visually inspect the test layout for any signs of leaks, bulging, or coupling slippage.
- F. While visually inspecting the hose each coupling shall be marked with chalk or felt pen where the jacket meets the coupling shank, so that any coupling slippage can be detected after testing.
- G. If during initial testing leaks are detected around any coupling connections one attempt should be made to tighten the coupling by using spanner wrenches. If the leak continues, the test shall be discontinued and the coupling gasket replaced. Should the coupling continue to leak after restarting the test, the affected hose length shall be removed from the test layout and marked "failed."
- H. After marked the coupling shank and passing visual inspection, the test layout is ready for the service pressure test. All personnel should leave the immediate area and remain at least 15 feet outside of the test layout until the test is completed.
- I. Upon receiving confirmation from the spotter that the area is clear, the pump operator shall gradually increase pump pressure to the proper service test pressure. Discharge gate opening shall remain at a minimum and be manned so that immediate shutdown can be affected if hose rupture occurs.
- J. Once test pressure is achieved, discharge gates shall be closed and the pump slowed to idle.
- K. Maintain test pressure in hose for five (5) minutes.
- L. If during the service pressure test coupling leaks appear or suspicion develops that hose may be approaching failure, discontinue the test! Do not approach the test layout at pressures above 50 psi.

### **VI. TEST COMPLETION**

- A. At 5 minutes, the pressure test is considered completed.
- B. The pump operator shall bring the pump pressure up to within 100 psi of the test pressure and gradually open the discharge gate while reducing the pump to idle. At idle, the discharge should be fully open until pressure in the hose equalizes to the pump. The pump is then disengaged and the discharge closed.
- C. Personnel in proper attire (gloves and helmets) shall slowly open the nozzle to drain the hose, inspect the hose and couplings for slippage or damage, then disconnect and drain the hose.



# SOUTH LYON FIRE DEPARTMENT

## Manual of Procedures 107

- D. Test results and inventory information are to be recorded on the hose testing form and sent to the hose officer. Hose that fails any part of the test shall be "tagged," supplying all pertinent information, and held in a separate location from "passed" hose until processed by the hose officer.
- E. All hose shall be cleaned following testing. If needed, 1¾" and 2½" hose should be "air dried" prior to reloading or storage. 4" shall be reloaded immediately after cleaning but as much excess water as possible should be removed. Cleaning can be accomplished with mild detergent, water, and brushing. Never use solvents or hydrocarbons for cleaning hose!

### VII. GENERAL HOSE CARE

- A. Dirty fire hose shall be hosed down with water and swept with a brush to clean.
- B. Use a mild detergent solution and scrub brush on fire hose that is oily or greasy. Do not use solvents or hydrocarbons.
- C. Cleaned hose should be thoroughly rinsed and air dried. 4" hose may be reloaded "damp."
- D. All couplings must pull straight out. Load so that couplings do not "flip" out of the hose bed.

### VIII. NOZZLES

#### G-Force – Task Force Tips (1½" thread)

Nozzle type: Automatic  
Nozzle gpm: 60 - 150  
Nozzle pressure: 75

#### Handline Nozzle – Task Force Tips (2½" thread)

Nozzle type: Automatic  
Nozzle gpm: 95 - 250  
Nozzle pressure: 75

#### Smoothbore – Task Force Tips (1½" thread)

Nozzle type: Smooth bore 15/16"  
Nozzle gpm: 185  
Nozzle pressure: 50

#### Smoothbore – Task Force Tips (2½" thread)

Nozzle type: Smooth bore 1 1/8"  
Nozzle gpm: 265  
Nozzle pressure: 50

### IX. HOSE LOADS

All large diameter hose is 4" storz coupling.  
Engine 1, Engine 2, and Ladder 1 all have a 25' and 50' sections to assist with hydrant connections.  
Engine 1 and Engine 2 rear bed: 800' (couplings should be spaced through the load)

Ladder 1 rear bed: 400' (250' vertical, 150' horizontal in chute - pictured right)





# **SOUTH LYON FIRE DEPARTMENT**

## **Manual of Procedures 107**

### **Pre-connect #1**

Location: Top / front pre-connect under pump panel  
Hose diameter: 1¾"  
Hose length: 200'  
Hose color: Yellow  
Hose load: Flat load, Double loop. 1<sup>st</sup> loop @ 50ft. 2<sup>nd</sup> loop or nozzle at the end of load  
Nozzle type: Smoothbore  
Pump discharge pressure: 110

### **Pre-connect #2**

Location: Middle / second pre-connect under pump panel  
Hose diameter: 1¾"  
Hose length: 200'  
Hose color: Red  
Hose load: Flat load, Double loop. 1<sup>st</sup> loop @ 50ft. 2<sup>nd</sup> loop or nozzle at the end of load  
Nozzle type: G-Force  
Pump discharge pressure: 120

### **Pre-connect #3**

Location: Bottom pre-connect under pump panel (Engine 2 only)  
Hose diameter: 1¾"  
Hose length: 200'  
Hose color: Blue  
Hose load: Flat load, Double loop. 1<sup>st</sup> loop @ 50ft. 2<sup>nd</sup> loop or nozzle at the end of load  
Nozzle type: G-Force  
Pump discharge pressure: 150

### **Y-Gate Load (Bundle Load)**

Location: Rear hose bed  
Hose diameter: 2½"  
Hose length: 400'  
Hose load: Flat load  
Nozzle type: Y-gate attached to 2½"  
Nozzle gpm (one line): 60 - 150  
Nozzle type: G-Force  
Nozzle gpm (two lines): 120 - 300  
PDP (two lines) 200

Location: Rear hose bed on top of 2½"  
Hose diameter: 1¾"  
Hose length: 150'  
Hose color: Red  
Hose load: Horseshoe in red bag attached to y-gate  
Nozzle type: G-Force



# **SOUTH LYON FIRE DEPARTMENT**

## **Manual of Procedures 107**

Location: Engine 2 (hose bed on top of 2½") Engine 1 (driver's rear compartment)  
Hose diameter: 1¾"  
Hose length: 150'  
Hose color: Yellow  
Hose load: Horseshoe in yellow bag  
Nozzle type: G-Force

### **Engine 1: Rear 2½" Attack**

Location: Rear hose bed – driver's side  
Hose diameter: 2½"  
Hose length: 400'  
Hose load: Flat load static  
Nozzle type: Smoothbore  
Pump discharge pressure: 85

### **Engine 2: Rear Pre-connect**

Location: Rear hose bed – CO side  
Hose diameter: 2½"  
Hose length: 250'  
Hose load: Flat load – hand loop at 100' and 200'  
Nozzle type: Smoothbore  
Pump discharge pressure: 85

### **Engine 2: Car fire line**

Location: front bumper  
Hose diameter: 1¾"  
Hose length: 100'  
Hose color: Blue  
Hose load: Scorpion Tail load  
Nozzle type: G-Force  
Pump discharge pressure: 100

### **Engine 1: Car fire line**

Location: Drivers side step  
Hose diameter: 1¾"  
Hose length: 100'  
Hose color: Blue  
Hose load: Scorpion Tail load  
Nozzle type: G-Force  
Pump discharge pressure: 100



# SOUTH LYON FIRE DEPARTMENT

## Manual of Procedures 107

### X. LOADING AND DEPLOYING PRE-CONNECTS

#### Scorpion Tail car fire line

Flat load the first 50'. Place a loop on the bumper. Flat load the next 50. Lay nozzle and hand loop on the top of the load. To deploy grab the Loop and nozzle, walk until the loop becomes tight and drop.





# SOUTH LYON FIRE DEPARTMENT

## Manual of Procedures 107

### Flat load, Double loop

Flat load the first 50' and place a hand grab loop. Flat load the remaining 150' placing the nozzle at one end and a hand grab loop at the opposite end. Deploy by grabbing with the nozzle and hand grab loop or both hand grab loops. Pull the top until you have the nozzle in hand. Walk with the nozzle and lower hand grab loop until the lower hand grab loop becomes tight. Drop the lower hand grab loop.



Approved by:  
/s/ Chief Robert Vogel