SOP 5.04 – REWORDED – DECEMBER 2021

Service Hose Testing and Coupling Inspection

Scope	This Standard Operating Procedure applies to all CFA Brigades.
Definitions	The following definitions apply to this Standard Operating Procedure: ▪ **CFA member**: A person who is registered by the Authority as a volunteer officer or member of a Brigade and/or a person who is employed by CFA. ▪ **Competent**: The ability to effectively undertake the task required. ▪ **Coupling**: A device that serves to connect the ends of adjacent fire hose. ▪ **External Lug**: Projections on either side of a coupling that secure two couplings together. ▪ **Extruded Hose**: Commonly referred to as "Duraline" ▪ **Fabric Hose**: Fabric Jacketed Extruded Hose. Commonly referred to as "Canvas" ▪ **kPa**: Kilopascals. ▪ **No Go Zone**: Exclusion area during a hose test where the pressure of the hose is in excess of 500kPa. A minimum distance of 5m is required either side and around laid out hose(s) except where there is a wall or fixture structure that prevents access to the area. Perimeter marked using witches hats or similar. Personnel to remain outside this area whilst three minute test takes place. ▪ **Operational activities**: CFA approved, coordinated or pre-planned action, or series of actions, in response to and in support of a potential or existing emergency incident, including training and exercises. ▪ **Service hose (Delivery lay flat hose)**: A soft wall hose that assumes a flattened shape when empty.
Objective	To ensure that activities involving inspecting and testing of service hose and couplings: ▪ Provide for such items to remain in good operational condition at all times; ▪ Test pressures (set by vehicle pump pressure limitations); and

- Ensure that personnel undertaking service hose testing do not enter the No Go Zone whilst hose is under test pressure.

Procedure	

1. Hose testing shall be conducted by a competent pump operator and at least one (1) other CFA member wearing the appropriate PPC/E.

2. Frequency of Testing

   2.1 All service hose and couplings shall be inspected and tested at least annually.
   2.2 All service hose shall be tested after it has been used for operational activities.
   2.3 Testing must be undertaken when defects are suspected.
   2.4 All hose must be tested after repair or recoupling.

3. Procedure

   3.1 The procedures for testing service hose shall be conducted in accordance with the process outlined in this SOP
   3.2 All couplings and hose patches should be inspected prior to testing.
   3.3 When testing multiple hose lengths ensure the couplings are configured to be in the centre of the laid out hose.

4. Test Pressures
   (set by vehicle pump pressure limitations)

   4.1 Class 1 and 2 Brigades – test to 1,000 kPa. PPC/E in accordance with Schedule 1.
   4.2 Class 3, 4 and 5 Brigades – test to 1,400 kPa. PPC/E in accordance with Schedule 1.

5. Administrative Procedures

   5.1 All hose shall be numbered for ease of identification.
   5.2 Results of any hose testing shall, as a minimum, be recorded in accordance with Schedule 3.

Safety requirements	To prevent potential injuries occurring during hose testing: ▪ Test hose pressure according to Brigade classification. ▪ Wear appropriate PPC during hose testing (as detailed in Schedule 1). ▪ Establish and maintain a No Go Zone during the testing process. ▪ Ensure non-involved personnel are kept away from the testing area. ▪ Where practical, pump operator should only use side delivery to avoid working near pressurised hose. Pump Operator to remain at pump control panel and maintain a visual overview and enforcement of the NO Go Zone ▪ Ensure that once the hose has been filled with water and bled of air, the delivery valve should be reduced (to 1/4) to limit further flow to the hose being tested. The testing of hose requires pressure rather than flow. The reduction in potential flow by gating the delivery back, will reduce the risk of injury should a failure occur. ▪ All personnel must be outside the No Go Zone whilst the hose is under its three minute maximum working pressure. ▪ If you need to mark or move the hose you need to depressurise and stop the test. Restart the three minute test as required. ▪ All personnel must ensure that the pressure in the test hose is depressurised prior to marking leaks and defects.
Environmental notes	▪ Time annual hose testing to avoid periods where water restrictions may apply. ▪ Be aware of water run off where contaminants may be present in hose lines (e.g. chemicals, coal dust or asbestos).

Schedule 1 – Hose Testing Procedure

1. PPC/E

Appropriate minimum PPC/E for hose testing is:

- Wildfire PPC/E including helmet, wildfire goggles, overtrousers, gloves and boots (Figure 1); or
- Structural PPC/E including helmet, wildfire goggles, overtrousers, gloves and boots

Note: If users have access to the Pacific F-15 helmet with inbuilt safety glasses, this can be used in conjunction with the above PPC/E with the safety glasses deployed.

This level of PPC/E must be worn at all times during the testing procedure.

2. Testing of Hose

- Select an area to test the hose that will not leave more dirt on the hose. A clean concrete or area of hard standing is suitable (refer Figure 2), however a dry, grassed area or cut paddock may suffice.
- Lay the hose out flat and wash and scrub it clean with a broom or brush.
- Prior to the pressurising of a hose, a visual inspection of the patches and couplings should take place.
- Attach a shutoff branch.
- Couple the hose to the pump.
- Mark coupling with pen and watch for movement away from the line (Refer figure 3)
- Deliver water through the hose briefly to ensure all air has passed through the hose.

- Close the branch, then crack the branch to allow minimal water to pass (approx. 1L per minute). This will allow for depressurisation at the conclusion of the test.
- Pressurise the hose for three minutes to 1,000 kPa for Class 1 and 2 Brigades and 1,400 kPa for Class 3, 4 and 5 Brigades.
- Inspect the couplings for leaks **outside** the No Go Zone.
- Inspect the pressurised hose for holes **outside** the No Go Zone.
- Once testing is complete lower the pump revs and close the delivery valve.
- Wait until the output from the branch slows and the hose has reduced in pressure
- One person can enter the No-Go zone and fully open the branch when safe to do so
- Mark damage as shown in Item 3 (Schedule 1).
- Dry or restow depending on hose type and record the result in your hose registers.

Note: When a patch on a hose passes its initial hose test, it then becomes a component of that hose. As the hose is tested at a minimum annually, if a visual inspection of the patch at this time is included (not whilst under pressure) and in conjunction with the hose test itself, then the patch and hose are compliant until the hose's next required test. Therefore the hose and patch have an operational lifespan until they don't pass a test or for other reasons withdrawn from service.

Figure 2 – Pump Operator position when hose testing (Tanker)

3. Marking Damage

Marking damaged hose (refer Figure 4), is best done by applying string, masking tape or electrical tape around the hose before and after the hole. The use of texta, pen or liquid marking tool(s) to indicate damage is a last resort as this may interfere with the bonding process when a patch is applied. Knotting the hose at the end closest to the damage can be a visual indicator that damage has occurred to the hose.

Figure 3 – Suggested Damaged Hose Marking Method

4. Repairing hose

- Only members who are qualified in the Hose Repair and Testing Module on LMS are allowed to perform repairs and recoupling of CFA Service Hose.
- Members wishing to undertake the training can assist with the repair process under the supervision of an accredited member.
- Brigades should contact their district for the brigade or process in your area authorised to perform these repairs.

5. Recording

Schedule 3 depicts minimum recommended hose testing/repair proforma to record the hose test and keep track of hose repairs. This form shall be completed when hose is tested and have it available for the Brigade Inspection.

6. Safety note

Ensure the hose couplings are securely tightened before commencing tests.