

RISK COMMUNIQUÉ

Aerial Device Maintenance & Inspection

Aerial devices are critically important pieces of apparatus to fire departments. Aside from the obvious size difference when compared to other types of apparatus, the aerial apparatus is different because of the mechanical function of the aerial device itself. VFIS claims history shows that device failure is not uncommon, particularly in units over 20 years in age.

There are two common general causes of loss for aerial devices. First is metal fatigue; second is improper and/or lack of proper maintenance. Both of these causes of loss are identifiable and the results largely preventable. There are some definitive steps that should be taken that can greatly reduce both wear and tear as well as the possibility of failure.

Maintenance and Visual Inspections

- The first item of maintenance and testing is a budget. Make certain your organization has set aside enough money to conduct the proper tests and maintenance as well as being prepared long term to deal with parts and components that will need to be repaired or replaced.
- Routine maintenance should be completed on every aerial device and completed within the range indicated by the manufacturer's instructions. Items such as cables, rail guides and pulleys should be free of debris and be properly lubricated. Maintenance should be completed routinely.
- A documented visual inspection by qualified department personnel (or preferably a third party) should be conducted to detect any visible defects, damage, leakage, improper maintenance or improperly secured parts. A visual inspection should look for any obvious signs of neglect or damage to the aerial device. Areas of concern include: rails, rungs, pulleys, cables, guides and hydraulic systems. You should look for cracked or bent frame members; missing or cracked rung grips; dirty cables; hydraulic leaks; cracked welds; etc. A checklist of items should be developed to ensure a complete inspection.

Testing (In house)

- In conjunction with routine maintenance and inspection, an operational test should also be documented. The operational test should verify that all moving parts and components are in good working order.
- Conducted in conjunction with the manufacturer's specifications and NFPA 1914-5.8, a load test should be conducted on an annual basis to determine if there is any unacceptable deflection or drifting of the aerial device or hydraulic systems. ***(Although this test does not require any special equipment and could be conducted by departmental personnel, it is strongly recommended that this testing be conducted by experienced personnel or a qualified 3rd party)***

This is a sample guideline furnished to you by VFIS. Your organization should review this guideline and make the necessary modifications to meet your organization's needs. The intent of this guideline is to assist you in reducing exposure to the risk of injury, harm, or damage to personnel, property, and the general public. For additional information on this topic, contact your VFIS Risk Control Representative at (800) 233-1957.

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Non-Destructive Testing (3rd Party)

A non-destructive test (NDT) should be completed at least every 5 years. The NDT is a general classification for one of several methods that can be used to inspect structural components without physically altering or damaging the materials. These could include, but not be limited to, liquid penetrant inspection; magnetic particle inspection; and radiography and ultrasonic. As required in NFPA 1914-4.2.2, 2002 edition, "The person(s) actually performing the non-destructive testing must be certified to at least Level II NDT Technician in the test method specified in ASNT CP-189, Standard for Qualification and Certification of Nondestructive Testing Personnel." Therefore this test is best completed by a qualified 3rd party agency.

Selecting the Proper Test Agency

There are a number of testing agencies through out the United States, both regionally and nationally that can provide the non-destructive testing. However, when selecting a service company your organization should verify that the 3rd party meets these certification and testing standards and has the proper insurance. You should verify this prior to signing any agreement. If the company can not provide documentation verifying that the test personnel and the test that they will perform will meet the testing standard, or cannot provide the appropriate certificate of insurance, then you should look for another test agency to perform the work for you.

To ensure safe operation, any defects, repairs or maintenance items that if not immediately corrected could jeopardize personnel safety should be cause to take the unit out of service until corrected. Regardless of severity, all items noted as non-standard should be corrected as soon as possible to ensure long and uninterrupted service life.

Dealing With the Test Results

As a result of the tests, your organization should be prepared to deal with all of the maintenance and repair items that are discovered. Occasionally there will be critical items identified which will require the aerial device to be placed out-of-service until repairs are made. These repairs will generally have to be made by a qualified mechanic or technician. More often however, non-critical issues will be discovered which suggest maintenance or repair. While these items may not require the aerial device to be taken out of service, don't ignore these. Small problems left unattended can lead to larger problems. An example of this would be a small oil leak. Not enough to fail the test, but large enough to leave residue on metal surfaces; the oil residue will allow dirt to accumulate on these surfaces; the dirt particles will cause abrasion as metal to metal contact occurs and eventually will cause uneven and/or premature wear. So a word to the wise, repair and maintain all parts of your aerial device regardless if they are critical or non-critical.