



# *City of Winter Park Fire-Rescue*

## *Standard Operating Guideline*

# 210.09

**Title: Foam Operations**

**Original Date Issued: December 6, 2005**

**Date Last Revised: July 20, 2010**

**Revision Number: 1**

**Total Pages: 6**

**Purpose:** To provide AFFF/ATC capability at incidents. Providing personnel with an effective flammable liquid firefighting agent that enables personnel to control or stabilize hazardous situations until additional resources and/or equipment can be obtained.

**Scope:** This procedure is to be followed by all members of this Department. Authority to deviate from this procedure rests with the Incident Commander who is responsible for the results of any deviation.

**General:** All first due Engine Companies will be provided with an ANGUS IND225 foam eductor, ANGUS F225H foam nozzle, PRO/Pak Portable Multi-Purpose Foam System and 10 gallons of AFFF/ATC foam concentrate.

### **210.09.01. Set-Up Procedure**

1. When possible, the eductor should be set-up at the Engine Pump Panel.
2. Eduction rate will be set to the foam concentration percentage being used. This will either be 3% for AFFF or 6% for ATF.
3. Pump Discharge Pressure or PDP with the eductor attached at the pump panel shall be either 140 p.s.i. or 150 p.s.i. "See Pump Discharge Pressure."

### **210.09.02. Normal Operation**

1. Position Apparatus at a safe distance taking into consideration the terrain, wind direction and speed, exposure, run-off of foam and product and any possible explosive hazards.
2. Through the use of a 2 1/2" to 1 1/2" reducer, attach the eductor to the correct discharge port.

3. Place liquid foam concentrate containers in proximity of the pick-up tube from the eductor. All empty foam containers will be placed on their sides to indicate being empty.
4. Attach a 1 3/4" hose line to the eductor either with the MX FOAM JET nozzle attached to a 1-3/4" fog nozzle or the ANGUS F225H FOAM nozzle.
5. Insert pick-up tube into foam concentrate container and pump appropriate pressure to eductor.
6. When using any nozzle with an eductor, the nozzle must be kept fully OPEN and all kinks kept out of the hose to allow proper flow through the eductor. The ANGUS foam nozzle shall be operated away from the body so that the proper air mixture can be generated.
7. After each use, the eductor, hose and nozzle will be flushed and the pump will be flushed and back-flushed with fresh water.

**210.09.03. Use of AFFF/ATC Foam on Flammable Liquid**

1. Position the apparatus and personnel up-wind and up-hill from the spill or leak.
2. Water must be flowing to begin the venturi action in the eductor. It will usually take 15 to 60 seconds, depending upon the length of hose from the eductor to the nozzle to get the foam from the nozzle. The nozzle should be discharged off to the side until good foam arrives at the nozzle. Failure to do this could spread the fire or spill.
3. After a spill has been covered, do not allow the use of plain water on or near the liquid spill area. This could disrupt the foam vapor seal. Personnel should not be allowed to walk in the foam blanket. If it is necessary to move personnel through the foam blanket they should not shuffle or kick the foam, this will agitate the vapor seal causing the release of product vapor and could increase the possibility of ignition.
4. AFFF/ATC when properly applied is only a "first aid tool" in handling a flammable liquid spill or fire. Additional resources should be notified to handle the abatement of the spill or the clean up of the spilled material.

#### **210.09.04. Pump Discharge Pressures for Foam Operations**

The Pump Discharge Pressure or PDP listed below is calculated at the intake of the eductor.

1. ANGUS IND 225 Eductor with the ANGUS F225H Foam Nozzle or with the MX Foam Jet attached to a 1-3/4" fog nozzle.
  - a. 100' to 200' 1 3/4" hose EP = 140 PSI
  - b. 201' to 300' 1 3/4" hose EP = 150 PSI
2. Pro/pak Foam System
  - a. 100 PSI

#### **210.09.05. Pro/Pak Portable Multi-Purpose Foam System:**

- The Pro/Pak Portable Foam System is a versatile eductor-type foam application appliance. It can be used with Class A foam concentrates or Class B AFFF/ATC foam concentrates.
- With Class B foam concentrates; the primary function of the PRO/pak is vapor suppression. The maximum typical flow of 12 gpm should always be considered before use on an ignited spill, and should always be backed up with additional water/foam flow capabilities.

#### **Safety Considerations:**

- This portable foam system can be used in potentially dangerous situations. The following must be observed at all times.
- Make sure that the foam concentrate in the foam tank is the right type for the situation. Do not use Class A foam on Class B fires or Class B foam on Class A fires. Some foam concentrates are universal and can be used on Class B fires and spills and as a wetting agent on Class A fires.
- Make sure that the percentage knob is set to the correct concentration for the type of foam being used.
- Make sure the Flow Control Valve is off and the correct nozzle and Outlet Hose are securely attached to the Control Block before the hose line is charged.

**210.09.06. FOAM COMPATIBILITY**

1. Do not mix different type of foam concentrates or foams of the same type from different manufactures. Mixing of foam concentrates can cause the contents of the foam tank to gel and produce unpredictable results. Clean tank and foam passages thoroughly when changing foam types.
2. Application rates for this unit are limited and are not intended for ignited fire situations. Based on NFPA 11, this unit should not be used for ignited areas greater than 10' x 12' (120 sq. Ft.) Of Hydrocarbon fuels, or 5' x 12' (60 sq. ft.) Of Polar Solvents.

**210.09.07. NOZZLE SELECTION**

1. Straight Stream Nozzle - is for Class A foam solutions. Foam expansion will be negligible. It should be used where maximum reach or penetration is desired.
2. Low Expansion Nozzle - can be used with either Class A or B foam solutions. Reach is slightly less than the smooth bore.
3. Medium Expansion Nozzle - produce the greatest expansion ratios, It should be used on Class B fuels for vapor suppression and Class A fuels when longer lasting insulation layer of drier foam is desired.

**210.09.08. OPERATION**

1. Hose Connection - attach inlet fire hose to the coupling on the inlet end of the PRO/pak.
2. Filling Tank - Unscrew the fill port lid by turning counterclockwise. Fill tank to bottom of fill port, foam may seep out the vents if overfilled. Close fill port lid. Set the selector wheel on the lid to indicate type of foam in the tank.
3. Connect Discharge Hose and Nozzle - The nozzle may be attached directly to the quick-connect fitting on the control block or to the end of the outlet hose, which is then attached to the control block. Align the marks on the quick-connect male fitting with the marks on the female fitting and push the two pieces together.
4. Setting Foam Concentration - Remove the nut on the top of the percentage knob and lift the knob to the desired concentrate percentage. Be sure to use the foam manufacture's recommended

concentrate ratio. The percentage knob may be turned to the OFF position for water use only.

5. Controlling Flow - Pressurize the hose line. Turn the flow control valve to start water flowing through the PRO/pak. Flow may be reduced by partially closing the control valve.
6. Foam Quality - Foam quality with the medium expansion nozzle will depend upon the velocity of the foam solution exiting the nozzle. When pumping high pressures to the PRO/pak it may be necessary to partially close the flow control valve to make high quality foam with the medium expansion nozzle. If the foam exiting the Medium expansion nozzle is not a coherent continuous stream, close the flow control valve slightly until the foam becomes a coherent continuous rope-like stream.
7. Shutting Down After Use (flushing)
  - Reduce pump pressure
  - Remove the nozzle and/or hose from the quick-connect on the front of the control block.
  - Remove the circle cotters and pull out the two pull pins that hold the control unit to the tank.
  - Pull straight up to remove the control unit and pickup tube from the tank.
  - Make sure the percentage knob is NOT in the OFF position.
  - Install the cap on the outlet of the control block.
  - Turn the flow control valve until a trickle of clean water is flowing out the end of the pickup tube.
  - Turn the percentage knob back and forth to make sure all foam passages are flushed.
  - Shut off the water and reinstall the control unit on the tank and insert the pull pins and circle cotters.
  - Remove the cap.
8. Clean up and maintenance
  - Turn the percentage knob to the OFF position. Use the hose, or hose and straight stream nozzle, to rinse off the PRO/pak. Reset the percentage knob to the proper percentage when finished.

9. Specifications

Tank Capacity (to bottom of fill port)	2.5 U.S. Gallons
12 gpm at 100 p.s.i.	
Weight Empty	11.5 lb
Weight Full	30.1 lbs
Length x Width x Height	13.5 x 10.75 x 17 in
Operating Pressure Max/Min	500/40 p.s.i.
Straight Stream Nozzle Reach	50 feet at 100 p.s.i.
Low Expansion Nozzle Reach	37 feet at 100 p.s.i.
Medium Expansion Nozzle Reach	9 feet at 100 p.s.i.



---

James E. White  
Chief of Department

---

Civil Service Chair or Representative