

LESSON ONE

FIREFIGHTER I

Water Supplies

DOMAIN: PSYCHOMOTOR

LEVEL OF LEARNING: APPLICATION

MATERIALS

One standard fire department pumper with a full complement of hose; overhead or laptop computer and multimedia projector; slide projector and screen; IFSTA Essentials 5th edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 2nd Edition or Delmar Firefighter's Handbook 3rd Edition.

NFPA 1001 JPR, 2008 edition

5.3.15 Connect a fire department pumper to a water supply

Junior Member Statement:

Junior Member training activities should be supervised by qualified instructors to assure that the cognitive and psychomotor skills are completed in a safe and non-evasive manner. While it is critical that instructors be constantly aware of the capabilities of all students both mentally and physically to complete certain tasks safely and successfully, the instructor should take every opportunity to discuss with departmental leaders and students the maturity and job awareness each participant has for the hazards associated with fire and rescue training.

TERMINAL OBJECTIVE

The Firefighter I candidate shall correctly demonstrate the connection of a fire department pumper supply hose to a hydrant for both a forward hose lay and a reverse hose lay. The hydrant shall be opened and closed in each operation.

ENABLING OBJECTIVES

1. The Firefighter I candidate shall correctly demonstrate the connection of a fire department pumper supply hose to a hydrant, and fully open and close the hydrant.
2. The Firefighter I candidate shall correctly demonstrate the connection of a fire department pumper supply hose to a hydrant for both a forward hose lay and a reverse hose lay.

LESSON 1

FIREFIGHTER I

Water Supplies

MOTIVATION

Water is the most common resource for putting out fires. First, however, water must be brought to the fire. In order to accomplish this, teamwork and knowledge of the necessary equipment used to direct the water are crucial. Only by careful and complete training will the Firefighter I candidate acquire the necessary skills required to perform these operations. On most of the fire ground operations the firefighter will face, an adequate water supply can mean the difference between life and the successful completion of the operation and death and eventual failure.

PRESENTATION

ENABLING OBJECTIVE #1

The Firefighter I candidate shall correctly demonstrate the connection of a fire department pumper supply hose to a hydrant, and fully open and close the hydrant.

1. Discuss the various types of hose couplings utilized by the fire department and demonstrate the correct procedure for connection and disconnection of each type.
2. Discuss, in detail, the use of sexless couplings (STORZ) utilized on large diameter hose since LDH will most likely be used for supply hose.
3. Briefly discuss and demonstrate the operation of the hydrant type utilized within the jurisdiction.
 - a) Dry barrel.
 - b) Wet barrel.
4. List the possible problems incurred from improper operation of the hydrant.
 - a) Sedimentation.
 - b) Obstruction.

- c) Size of water main.
- 5. Discuss and demonstrate the four steps for a correct connection of the pumper's supply hose to a hydrant using the typical size hose for this jurisdiction.
- 6. Demonstrate the use of the auxiliary suctions located on the pumper.

Reference:

Delmar Handbook 3rd edition, pages 238-248, 259, 303-307
J&B Fundamentals 2nd edition, pages 452-455, 467-474, 497
IFSTA Essentials 5th edition, pages 605-608, 638-341

NOTE: Fire departments may utilize non-standard hose threads, before beginning instruction check all equipment for compatibility of design.

APPLICATION

Have the Firefighter I candidate correctly connect the pumper's supply hose to a hydrant and pressurize the supply hose by opening the hydrant and then closing the hydrant correctly. If more than one size hose could be utilized for a supply line, have each Firefighter I candidate demonstrate the operation with each size.

PRESENTATION

ENABLING OBJECTIVE #2

The Firefighter I candidate shall correctly demonstrate the connection of a fire department pumper supply hose to a hydrant for both a forward hose lay and a reverse hose lay.

- 1. Discuss the requirements for forward and reverse hose lay operations.
- 2. List, in step-by-step format, the correct procedure for hydrant-to-pumper connection on a forward hose lay.
- 3. List, in step-by-step format, the correct procedure for hydrant-to-pumper connection on a reverse hose lay.
- 4. Demonstrate the correct procedure for hydrant-to-pumper connection on a forward hose lay.

5. Demonstrate the correct procedure for hydrant-to-pumper connection on a reverse hose lay.

Reference:

Delmar Handbook 3rd edition, pages 310-312

J&B Fundamentals 2nd edition, pages 487-491

IFSTA Essentials 5th edition, pages 664-671, 695-696

APPLICATION

Divide the firefighters into groups of four or five. Give each group three local sites for a simulated fire. Have each group determine what type of hose lay would be most appropriate and why. Allow ten minutes for the groups to determine the answers and then have a spokesperson from each group present to the class his / her groups findings.

APPLICATION

Have the Firefighter I candidate correctly connect the pumper's supply hose to a hydrant for a forward hose lay and a reverse hose lay utilizing the fire department's standard supply hose.

SUMMARY

Summarize the procedure the Firefighter I candidate will use to connect a fire department pumper supply hose to a hydrant as well as the procedures for pressurizing the supply line and correctly closing the hydrant.

Review the steps required for a Firefighter I candidate to connect a fire department pumper supply hose to a hydrant for a forward and a reverse lay and list reasons why each type of hose lay would be appropriate for any given pump operation.

LESSON TWO

FIREFIGHTER I

Water Supplies

DOMAIN: PSYCHOMOTOR

LEVEL OF LEARNING: APPLICATION

MATERIALS

One standard fire department pumper with a full complement of hose; overhead or laptop computer and multimedia projector; slide projector and screen; IFSTA Essentials 5th edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 2nd Edition or Delmar Firefighter's Handbook 3rd Edition.

NFPA 1001 JPR, 2008 edition

5.3.15 Connect a fire department pumper to a water supply

Junior Member Statement:

Junior Member training activities should be supervised by qualified instructors to assure that the cognitive and psychomotor skills are completed in a safe and non-evasive manner. While it is critical that instructors be constantly aware of the capabilities of all students both mentally and physically to complete certain tasks safely and successfully, the instructor should take every opportunity to discuss with departmental leaders and students the maturity and job awareness each participant has for the hazards associated with fire and rescue training.

TERMINAL OBJECTIVE

The Firefighter I candidate shall correctly demonstrate the required procedures for establishing a dump site pumping operation for a mobile water supply operation when given the necessary apparatus and equipment.

ENABLING OBJECTIVES

1. The Firefighter I candidate, given a fire department pumper, hard tube, strainer, and appropriate wrenches, shall correctly demonstrate the necessary assembly for a drafting operation.
2. The Firefighter I candidate shall correctly describe the procedures for the deployment of a portable water tank (drop tank) of the type utilized by the firefighter's department.
3. The Firefighter I candidate shall correctly describe the assembly of the necessary equipment to transfer water between portable water tanks as utilized by the firefighter's department.
4. The Firefighter I candidate shall correctly describe the procedures for loading and unloading of the portable water tank utilized by the fire department's mobile water supply apparatus.

LESSON TWO

FIREFIGHTER I

Water Supplies

MOTIVATION

Water is not always readily available at a fire location; therefore, water must be carried to the fire location by some means. The mobile water supply operation provides the fire department a method of accomplishing this task. Manipulation of the required equipment for a mobile water supply system requires knowledge and refined skills. The success of fire ground operations, when a mobile water supply system is utilized, largely depends on the firefighter's ability to assemble and assist in the set up of associated equipment. This will include the necessary drafting equipment for the pumper as well as any of the portable water tanks that may be utilized by the fire department.

PRESENTATION

ENABLING OBJECTIVE #1

The Firefighter I candidate, given a fire department pumper, hard tube, strainer, and appropriate wrenches, shall correctly demonstrate the necessary assembly for a drafting operation.

1. Discuss briefly the need for static water supply sources within the jurisdiction. Even in municipal areas where water distribution systems exist, designated static supplies may be required.
2. Discuss standard drafting procedures and illustrate why a hard suction tube is required.
3. Explain the two most common problems to occur during drafting operations; air leaks in the hard tube connections and restriction on the intake side of the pump. Discuss how these problems can be avoided.

4. Discuss each component of the assembly required for a drafting operation including strainer, hard tube, float, rope and /or chain.
5. Demonstrate the correct assembly procedure for the drafting equipment, noting any special requirements.

Reference:

Delmar Handbook 3rd edition, pages 305, 307

J&B Fundamentals 2nd edition, pages 445 & 474

IFSTA Essentials 5th edition, pages 610-611

APPLICATION

Have the Firefighter I candidate correctly assemble the equipment necessary to perform a drafting operation. If more than one type of strainer is utilized and more than one size of hard tube is used, the Firefighter I candidate should demonstrate each different assembly.

PRESENTATION

ENABLING OBJECTIVE #2

The Firefighter I candidate shall correctly describe the procedures for the deployment of a portable water tank (drop tank) of the type utilized by the firefighter's department.

1. Discuss the various types and designs of portable water tanks (drop tanks) that are typical to the jurisdiction. Point out the four basic methods by which tankers unload water.
 - a) Gravity dumping.
 - b) Jet dumps.
 - c) Apparatus – mounted pumps.
 - d) Combination of these methods.
2. Discuss the need for concerted teamwork in the manipulation of the portable water tank from its collapsed position to a fully deployed position.
3. List and discuss the hazards associated with a portable water tank and how these hazards may be avoided through the use of correct procedures.

4. Describe on a flip chart the step-by-step procedure for deploying the portable water tank utilized within the jurisdiction.
5. Utilizing the assistance of the candidates, demonstrate the correct deployment procedures for the portable water tank.

Reference:

Delmar Handbook 3rd edition, pages 243-244

J&B Fundamentals 2nd edition, pages 445-449

IFSTA Essentials 5th edition, pages 612-616

NOTE: Fire departments may utilize more than one type of portable water tank. The instructor shall be familiar with any design utilized by the jurisdiction.

APPLICATION

Divide the class into groups of two to six, depending on the design, weight, and size of the portable water tank. Allow one member of each group to direct the correct deployment of the portable water tank. Have the other groups observe, and as each group completes its evolution allow constructive feedback from the class.

PRESENTATION

ENABLING OBJECTIVE #3

The Firefighter I candidate shall correctly describe the assembly of the necessary equipment to transfer water between portable water tanks as utilized by the firefighter's department.

1. Discuss the various types and designs of siphon / water tank connectors that are typical to the jurisdiction.
2. Discuss the need for efficient teamwork in the manipulation of the siphon / water tank connector when positioning the assembly.
3. List and discuss the hazards associated with improper assembly and positioning of the siphon / water tank connector and how these hazards may be avoided

through the use of correct procedures. Special attention should be given to jet siphon units.

4. Describe the step-by-step procedure for assembly of the siphon / water tank connector used by the jurisdiction.
5. With the assistance of the candidates, demonstrate the correct assembly and positioning of the siphon / water tank connector.

Reference:

J&B Fundamentals 2nd edition, pages 445-449

IFSTA Essentials 5th edition, pages 612-616

NOTE: Fire Departments may utilize one or more types of siphon / water tank connectors. The instructor shall be familiar with any design utilized by the jurisdiction.

APPLICATION

Divide the class into groups of two to four, depending on the design, weight, and size of the siphon / water tank connector. Allow one member of each group to direct the correct assembly and positioning of the siphon / water tank connector. Have the other groups observe and as each group completes its evolution, permit constructive feedback from the class.

PRESENTATION

ENABLING OBJECTIVE #4

The Firefighter I candidate shall correctly describe the procedures for loading and unloading of the portable water tank utilized by the fire department's mobile water supply apparatus.

1. Discuss the various types and designs of portable water tanks that are carried on the apparatus and their respective storage location.
2. Discuss the need for efficient teamwork in the loading and unloading of the tank, especially in the area of safety.

3. List any hazards associated with the use of improper procedures in loading and unloading the tank. Include hazards to personnel and hazards to the equipment.
4. Describe the step-by-step procedure for correctly unloading and loading the tank utilized by the fire department.
5. With the assistance of the candidates, demonstrate the correct procedure for unloading and loading the portable water tank.

Reference:

Delmar Handbook 3rd edition, pages 242-244

J&B Fundamentals 2nd edition, pages 446-448

IFSTA Essentials 5th edition, pages 612-616

NOTE: Fire departments may utilize one or more types of portable water tanks. The area of the apparatus that stores the tank will vary with the design of the tank and apparatus. The instructor is advised to evaluate the required procedures as recommended by the manufacturer before teaching this evolution.

APPLICATION

Divide the class into groups of two to four depending on the design, weight and size of the portable water tank. Allow one member of each group to direct the correct unloading and loading of the portable water tank. Have the other groups observe and as each group completes its evolution, allow constructive feedback from the class.

SUMMARY

Summarize the steps involved in setting up the fire department pumper for a drafting operation. List the required equipment and tools.

Review the procedure for deploying the portable water tank of the type utilized by the fire department.

Review the assembly procedures for the type of water tank connection device utilized by the fire department.

Review the loading and unloading procedures for the portable water tank utilized by the fire department.

LESSON THREE

FIREFIGHTER I

Water Supplies

DOMAIN: PSYCHOMOTOR

LEVEL OF LEARNING: APPLICATION

MATERIALS

Water distribution map or water point map for the local jurisdiction; S.O.P.s for the mobile water supply operation; hydrant and hose wrenches; overhead and/or laptop computer and multimedia projector; slide projector and screen; IFSTA Essentials 5th edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 2nd Edition or Delmar Firefighter's Handbook 3rd Edition.

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5.3.15 Connect a fire department pumper to a water supply

Junior Member Statement:

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TERMINAL OBJECTIVE

The Firefighter I candidate shall correctly demonstrate the connection of a fire department pumper supply hose to a hydrant for both a forward hose lay and a reverse hose lay, correctly opening and closing the hydrant in each operation.

ENABLING OBJECTIVES

1. The Firefighter II candidate shall correctly identify, in writing, the type of apparatus utilized, and the required equipment and appliances needed for a mobile water supply operation.
2. The Firefighter II candidate shall correctly describe, in writing, the required apparatus and equipment for a water relay operation if a water distribution system is not applicable.

LESSON THREE

FIREFIGHTER I

Water Supplies

MOTIVATION

When there is a need for water at a location where no water distribution system exists, alternate methods must be employed. For these alternate methods to be successful in delivering adequate supplies of water, all fire fighting personnel must be knowledgeable about the required equipment and systems. A failure in any single aspect of a mobile water supply or relay pumping operation will reduce, if not eliminate, the flow of water to the attack lines. A loss of water to an attack line could produce disastrous effects for the nozzle crew.

PRESENTATION

ENABLING OBJECTIVE #1

The Firefighter II candidate shall correctly identify, in writing, the type of apparatus utilized, and the required equipment and appliances needed for a mobile water supply operation.

1. Discuss briefly the structure of a mobile water supply system. Explain the purpose of the mobile water supply operation and why it may preclude any other means of moving water.
2. Discuss, in detail, the three key elements to a water shuttle operation and the decisive factors that initiate the operation.
3. Explain the function of each piece of equipment and appliance utilized in a water shuttle operation (i.e., portable water tanks, low level strainers).
4. Examine the role of pumpers and tankers utilized in a water shuttle operation.

5. Discuss the different methods for dumping the water from a tanker and stress the need for uniformity of design.
6. Discuss the various methods of filling a tanker and explain the different types of equipment required for each method.
7. Outline the Water Supply Officer's duties and responsibilities for the set up and supervision of a water shuttle operation.

Reference:

Delmar Handbook 3rd edition, pages 243-244

J&B Fundamentals 2nd edition, pages 445-449

IFSTA Essentials 5th edition, pages 612-616

APPLICATION

Select a known location within the jurisdiction that would require a water shuttle operation. Have each Firefighter I candidate correctly structure, on paper, the water shuttle operation for the selected location. Upon completion of the exercise, randomly select firefighters to present their design of the water shuttle operation to the class. The firefighters should be restricted to the utilization of existing equipment and apparatus for their respective jurisdiction.

PRESENTATION

ENABLING OBJECTIVE #2

The Firefighter II candidate shall correctly describe, in writing, the required apparatus and equipment for a water relay operation if a water distribution system is not applicable.

1. Discuss briefly the structure of a relay operation. Explain the purpose of the relay operation and why it may preclude any other means of moving water.
2. Discuss, in detail, the two important factors to consider before attempting establishing a relay operation.
3. Explain the function of each piece of equipment and appliance utilized in a relay operation (i.e., large

diameter hose, multiple hose lines, relay relief valves, gated wyes, and clapped siamese).

4. Examine the role of each individual type of apparatus utilized in a relay operation (i.e., pumpers and tankers).
5. Discuss the eleven steps for setting up the relay operation and stress the need for well-trained personnel.
 - a) Position the attack pumper.
 - b) Position the largest capacity pumper at water source and have personnel begin connections to the water supply.
 - c) Lay out the hose load from the relay pumpers. As a good rule of thumb, leave at least two sections of hose as reserve in the event of hose failure.
 - d) Connect all supply lines to the pumper in the relay.
 - e) Driver / operators for all pumpers, except the source pumper, should open an unused discharge, if the pump does not have a relay relief valve. This allows air to escape from the hose lines.
 - f) Pump 175 psi from pumper at the water source.
 - g) Driver / operators at the first relay pumper should close the unused discharge once a steady flow of water begins, and then advance the throttle until 175 psi is achieved. Each successive driver / operator then follows the same procedure.
 - h) The pressure regulator is set by each driver / operator.
 - i) Attack pumper driver / operator adjusts the discharge pressures to supply the attack lines.
 - j) Maintain flow from the attack pumper during possible temporary shutdowns by using one or more discharge gates as dump lines.
 - k) Additional hose lines are laid between the apparatus in the relay if there is an additional need for water supplies.
6. Outline and discuss the Water Supply Officer's duties and responsibilities for the set up and supervision of the relay operation.

Reference:
IFSTA Essentials 5th edition, pages 612-616

APPLICATION

Select a known location within the jurisdiction that would require a relay operation. Have each Firefighter I candidate correctly structure, on paper, the relay operation for the selected location. Upon completion of the exercise, randomly choose several firefighters to present their design of the relay operation to the class. The firefighters should be restricted to the utilization of existing equipment and apparatus for their respective jurisdiction.

SUMMARY

Review the structure of the mobile water supply system and all of its required components.

Review the necessary procedures for establishing a relay pumping operation and identify the required equipment, its purpose, and function.