INSTRUCTOR GUIDE

COURSE: FIREFIGHTER PRE-BASIC

SESSION REFERENCE: 3

TOPIC: SMALL TOOLS AND ROPES AND KNOTS

LEVEL OF INSTRUCTION:

TIME REQUIRED: THREE HOURS

MATERIALS: ASSORTMENT OF HAND TOOLS AND POWER SAWS
LENGTHS OF ROPE FOR EACH PARTICIPANT

REFERENCES: ESSENTIALS OF FIRE FIGHTING, FOURTH EDITION, IFSTA, CHAPTERS 11 AND 12
MINIMUM PRE-BASIC TRAINING PROGRAM FOR FIREFIGHTER TRAINEES IN MARYLAND, MARYLAND FIRE-RESCUE EDUCATION AND TRAINING COMMISSION

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PREPARATION:

MOTIVATION:

OBJECTIVE (SPO): The firefighter will demonstrate a basic knowledge of the small tools in general fire service use as well as a knowledge of basic knots used in the fire service.

OVERVIEW:

Small Tools and Ropes and Knots
* Basic Tools
* Knot Tying
* Hoisting Tools

SESSION 3 SMALL TOOLS AND ROPES AND KNOTS

SPO	The firefighter will demonstrate a basic knowledge of the small tools in general fire service use as well as a knowledge of basic knots used in the fire service.
EO 1-1	Demonstrate a basic knowledge of the use and carrying of basic tools used in the fire service.
EO 1-2	Demonstrate tying basic knots used in the fire service including the safety knot, half hitch, bowline, clove hitch, and becket bend.
EO 1-3	Properly hoist a haligan bar, roof ladder, pike pole, and smoke ejector.

This lesson should be delivered as a combination of demonstration and student practice with the minimum amount of time spent on lecture. This material is designed to give the student some basic information on small tools and ropes and knots. It is not intended to replace a Firefighter I program nor make the individuals fully-functional firefighters. It includes some basic information that any new firefighter should know to assist in an exterior mode on the fireground. Instructor should have tools available for display, demonstration, and handling.

I. BASIC TOOLS (3-1)

A. Introduction

1. Need - assist with performing fireground tasks

2. Certain tools required on apparatus as part of apparatus standards

B. Pike Pole

1. Used for pulling ceilings and opening walls or separating debris

2. Carried with point forward and pointed downward

3. Used by pointing hook away, poking the hook into the wall or ceiling, and pulling downward away from body with one hand on the upper part of the handle pushing downward and the other hand on the handle pulling downward

C. Pickhead Axe

1. Used for cutting or pulling apart

2. Carried with blade under the arm and hand over pick

3. Used by striking object with blade; more effective cutting at slight angle rather than straight

NOTE: Cut or punch in direction of blade and not with side of blade

D. Flathead Axe

1. Used for cutting, forcing, or striking other tools

2. Carried with blade under the arm

3. Used by striking object with blade or other object with flat portion of head

NOTE: Cut or strike in direction of blade and not with side of blade

E. Haligan Bar

1. Used for prying or forcing

2. Carried with pointed end forward and slightly downward

3. Forked end and adz end used for prying or forcing; pointed end used for punching holes to start cuts; forked end can be forced with use of flathead axe

F. K-Tool

1. Used in conjunction with flathead axe and haligan bar to pull lock cylinders

2. Carried in the pouch with key tools

3. Blades placed snugly downward against lock cylinder, adz end of haligan bar placed in slot of K-tool and tapped snugly with flat end of flathead axe, haligan bar pushed downward to remove lock cylinder; once lock cylinder removed, appropriate key tool inserted into locked and turned from 5 to 7 o'clock position or vice versa to unlock

G. Rabbit Tool

1. Used to force door locks inward opening doors

2. Carried in carrying bag with accessories including a hammer

3. Blade placed between door and jamb near lock and tapped in place with hammer, hydraulic pump operated until door opens

H. Short Hook (short pike pole with D-handle)

1. Used for pulling ceilings and opening walls or separating debris

2. Carried with point forward and pointed downward

3. Used by pointing hook away, poking the hook into the wall or ceiling, and pulling downward away from body

I. Rope Hose Tool

1. Used for securing hose to ladders, holding doors open, or supporting equipment or ladders

2. Carried coiled in hand

3. Used by forming a loop around object and placing hook on secure surface

J. Spanner Wrench

1. Used for tightening or loosening hose couplings; can also be used as a doorstop, for shutting off natural gas meters, or some forcible entry

2. Carried in hand or pocket

3. For tightening or loosening hose, two wrenches are required. To loosen a hose coupling, place the wrench closest to the user pointed to the left and the other one pointed to the right (lefty loosey, righty tighty), have hands outstretched to prevent injury to the knuckles, and push downward with palms. To tighten hose couplings, place the wrench closest to the user pointed to the right and the other one pointed to the left (righty tighty, lefty loosey), have hands outstretched to prevent injury to the knuckles, and push downward with palms. Use the blade as a doorstop. Use the slot near the blade or the hook to shut off a natural gas meter. Used the hooked end for forcible entry or to clean glass from an opening.

K. Gas-powered Disk and Chain Saws

1. Used for making openings in walls, floors, and roofs

2. Carried by carrying handle with saw shut off and blade not turning

3. Turn saw on and open choke, place foot in handle, and pull starting cord upward in a forceful manner. Once saw is running, close choke, and allow saw to warm up. Shut off by turning off. Determine area to be cut, reeve up saw and proceed to cut making sure that feet and legs are out of direction of cut.

L. CO_2 and Dry Chemical Fire Extinguishers

1. Used to extinguish small or special fires.

2. Carried using carrying handle.

3. Carry by carrying handle, pull pin on extinguisher, and operate pushing operating lever downward. Aim at base of fire with wind to back and sweep from side to side. For CO_2 extinguishers, hold nozzle by wood or rubber handle; for dry chemical extinguishers, hold hose near nozzle.

M. Smoke Ejector (use discussed more in ventilation section)

1. Used for exhausting smoke from a building or forcing fresh air inward.

2. Carried by carrying handle.

3. To exhaust smoke, place high in an opening using a rope hose tool or strap on the unit. The motor should be pointed outward to smoke removal. To force fresh air inward, place low in an opening with the motor pointed inward. Plug in and turn on.

N. Brush Rake

1. Used for removing fuel in a wildland fire.

2. Carried with blade pointed forward and downward.

3. Used as a digging tool to remove ground vegetation and expose bare soil. Dig into the soil and rake material away from the fire.

II. KNOT TYING (3-2)

A. Introduction

1. Kind of rope

a. Lifeline rope used for rescue

b. Utility rope used for hoisting tools, securing and area, and general use

2. Rope materials

a. Synthetic materials such as nylon, polyester, or polypropylene

b. Natural materials such as manila or cotton

3. Rope construction

a. Laid - constructed by twisting yarn together to form strands with three strands twisted to form the rope

b. Braided - constructed by uniformly intertwining strands of rope together

c. Kernmantle - composed of a braided covering or sheath called a mantle over the main load bearing strands called the kern

4. Rope care

a. Store rope in dry area free of hydrocarbon fuels

b. Do not store in direct sunlight

c. Inspect periodically and after each use for damage

5. Checking condition of rope

a. Charring or melting or fibers

b. Fibers cut or abrased

c. Chemical damage

d. Stressed or broken fibers

B. Terms

1. Working end - part of the rope used to tie the knot

2. Running end - part of the rope used for hoisting (opposite of the working end)

3. Standing part - part of the rope between the working end and the running end

4. Bight - a complete bend or horseshoe in a rope

5. Loop - a complete circle in the rope with the ends are pointed in opposite directions

6. Round turn - a complete circle in the rope where the ends are in the same direction

C. Safety or Overhand Knot - used as a safety knot

1. Form a complete loop in the working end

2. Pass the working end through the loop

D. Half Hitch - used in conjunction with the bowline or clove hitch to secure a tool for hoisting

1. Form a bight in the rope

2. Place the bight over the tool with the standing part on the bottom of the loop

E. Bowline - used for rescue or hoisting tools

1. Form a small loop (approximately three times the diameter of the rope) about three feet from the working end or allow enough rope to reach around the object

2. Note the position of the standing part in the loop

3. If the standing part is on the bottom of the loop, pass the working end up through the loop from the bottom; if the standing part is on the top, enter the loop from the top.

4. Pass the working end around the standing part and back through the loop with the two parts being parallel

5. Tighten up the loop

F. Clove Hitch - used to secure a rope to an object

1. Pass the working end around the object to which the rope is to be secured

2. Have the working end cross the standing part

3. Continue going around the object a second time being careful that the standing end remains on the correct side of the standing part

4. Pass the working end under the portion of the standing end that is crossed

G. Becket Bend - used to join two ropes together

1. Form a bight in one of the working ends

2. Pass the other working end through the bight

3. Pass the working end around the standing part

4. Pass the working end under portion of the standing part that passed through the bight (the working end should not go back through the bight)

III. HOISTING TOOLS (3-3)

A. Axe

1. Form a bowline and pass it over the axe handle or form a clove hitch on the handle near the head

2. Pass the standing part under the axe head

3. Form a half hitch on the end of the axe handle by forming a bight and placing it on the handle

B. Haligan Bar

1. Form a clove hitch on the bar near the forked end

2. Pass the standing part through the fork

3. Form a half hitch on the adz/point end by forming a bight and placing it under the adz/point

C. Pike Pole

1. Form a clove hitch on the end opposite the hook

2. Form a half hitch on the point end by forming a bight and placing it under the hook (longer pike poles may need more than one half hitch)

D. Roof Ladder

1. Form a bowline in the rope with a loop big enough to go around the outside of the ladder

2. Go down about one-third of the length of the ladder from the tip and pass the bowline between the rungs

3. Slide the bowline under the rung and back to the tip

4. Place the bowline over the tip of the ladder

4. Take the slack out of the rope

E. Smoke Ejector

1. Pass the working end rope through both handles

2. Proceed to tie the bowline

REVIEW:

Small Tools and Ropes and Knots

* Basic Tools
* Knot Tying
* Hoisting Tools

REMOTIVATION:

ASSIGNMENT:

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EVALUATION: