



Fire Protection Training

Procedures Handbook 4300

POWER TOOLS

TOPIC: Components and Safety Considerations for Portable Lighting Equipment

TIME FRAME: 1 Hour

LEVEL OF INSTRUCTION:

BEHAVIORAL OBJECTIVE:

Condition: A written quiz

Behavior: The firefighter will be able to identify the major components of portable lighting equipment and list appropriate safety considerations.

Standard: With a minimum of 70% accuracy

MATERIALS NEEDED:

- Pens
- Audio visuals
- Chalkboard
- Power generator
- Portable light
- Extension cord
- Pig-tail
- Junction box
- Hand lantern
- Appropriate audio visual equipment

REFERENCES: None



Fire Protection Training

Procedures Handbook 4300

POWER TOOLS

PREPARATION:

Firefighters are often called upon to perform emergency operations in the worst possible environment. One environmental element that can be controlled to a certain degree is darkness. Through the use of portable lighting equipment one can safely provide "working" light for fire fighting, rescue, etc. In order to exercise this element of environmental control, the firefighter must have a knowledge of the components and types of portable lighting equipment available.



Fire Protection Training

Procedures Handbook 4300

COMPONENTS AND SAFETY
CONSIDERATIONS FOR PORTABLE
LIGHTING EQUIPMENT

| PRESENTATION | APPLICATION |
|--|---|
| <p>I. LIGHTING SYSTEMS</p> <p>A. Portable Lighting Is Used as a "System"</p> <ol style="list-style-type: none"> 1. The firefighter brings together various pieces of equipment and combines them to form a system 2. The firefighter must recognize the relationship of one component to another <p>II. PORTABLE LIGHTING COMPONENTS</p> <p>A. Power Source</p> <ol style="list-style-type: none"> 1. Fire service generators <ol style="list-style-type: none"> a. Utilized to provide electrical power at emergency scenes b. Large generator may be mounted on a trailer and towed by vehicle c. Smaller generator is stored on apparatus, often in compartments d. Rating of generator determines number of appliances that can be operated 2. Domestic power | <p>Typical Lighting System</p> <p>Example:</p> <p>Generator Extension cords Junction box Portable lights</p> <p>How can fire department equipment</p> |

4311.1



Fire Protection Training

Procedures Handbook 4300

COMPONENTS AND SAFETY
CONSIDERATIONS FOR PORTABLE
LIGHTING EQUIPMENT

| PRESENTATION | APPLICATION |
|--|---------------------------------|
| <ul style="list-style-type: none"> (2) Generally 10' - 100' in length (3) Require uncoiling or stretching for deployment (4) c. Pig-tails <ul style="list-style-type: none"> (1) "Short" extension cords (2) 1' - 5' in length (3) Often carried in a box or fastened to appliances (4) Used for short span connections or to connect components of the system together which may have incompatible plugs | <p>What are pigtails?</p> |
| <ul style="list-style-type: none"> C. Junction Boxes <ul style="list-style-type: none"> 1. Used to divert power from main extension cord to separate circuits 2. Similar in function to a wye for fire hose 3. Usually made of lightweight metal alloy 4. Often has a light on top which illuminates when box is "hot" | <p>What are junction boxes?</p> |
| <ul style="list-style-type: none"> D. Lighting <ul style="list-style-type: none"> 1. Mobile | |



Fire Protection Training

Procedures Handbook 4300

COMPONENTS AND SAFETY
CONSIDERATIONS FOR PORTABLE
LIGHTING EQUIPMENT

| PRESENTATION | APPLICATION |
|--|-------------|
| <ul style="list-style-type: none">a. Mounted on apparatusb. Frequently removablec. Usually on mast that can be turned or raisedd. Generally operated by plugging into outlet on apparatuse. Wattage varies 100-1000 or more <p>2. Battery Operated</p> <ul style="list-style-type: none">a. Common flashlightb. Headlamp mounted on helmetc. Powered by dry cell batteries <p>III. SAFETY CONSIDERATIONS</p> <p>A. Emergency Scene</p> <ul style="list-style-type: none">1. Avoid tunnel vision2. Consider<ul style="list-style-type: none">a. Topographyb. Water <p>B. Safety Considerations for Portable Lighting System Components</p> <ul style="list-style-type: none">1. Generator<ul style="list-style-type: none">a. Store fuel away from heat sourcesb. Keep fuel fresh - gasoline evaporates or decomposes over timec. Keep fuel storage area clean | |



Fire Protection Training

Procedures Handbook 4300

COMPONENTS AND SAFETY
CONSIDERATIONS FOR PORTABLE
LIGHTING EQUIPMENT

| PRESENTATION | APPLICATION |
|--|-------------|
| <ul style="list-style-type: none">d. Petroleum products can damage other equipmente. Utilize correct fuel type/mixture (i.e. oil/gasoline, 2 cycle)f. Avoid spilling fuel onto clothing and gloves during fillingg. Do not fill generator while it is runningh. Make sure generator is properly vented and groundedi. Insure exhaust is directed away from combustible materialsj. If portable - do not set generator on wet groundk. If portable - set generator on level basel. Insure that fly wheel is free of obstructions <p>2. Domestic power</p> <ul style="list-style-type: none">a. Do not use extension cords found on sceneb. Do not use domestic power unless receptacle is 3 pronged and groundedc. If unsure of system grounding, do not used. Utilize appropriate fire department pig-tail for incompatible connections <p>3. Extension cords</p> <ul style="list-style-type: none">a. Do not use if frayed, if bare wire is exposed, or if connections are loose | |



Fire Protection Training

Procedures Handbook 4300

COMPONENTS AND SAFETY
CONSIDERATIONS FOR PORTABLE
LIGHTING EQUIPMENT

| PRESENTATION | APPLICATION |
|--|-------------|
| <ul style="list-style-type: none">b. Avoid stretching through areas of standing waterc. Utilize proper pig-tailsd. Lay cords out of traffic patterns as much as possiblee. Do not tie knots in cordsf. Use water proof connectors.g. Should be yellow in color to help eliminate tripping hazard. <p>4. Junction Boxes</p> <ul style="list-style-type: none">a. Do not use if obviously damaged or connections are difficult to makeb. Do not overload. The system may not be able to use all available outletsc. Place junction out of the traffic patterns as much as possible <p>5. Mobile electrical lights</p> <ul style="list-style-type: none">a. Ensure light is securely anchored into holderb. Point light in appropriate direction prior to plugging inc. Do not "force" connectiond. Do not look into light when making connection <p>6. Portable electrical lights</p> <ul style="list-style-type: none">a. Do not set light in water | |



Fire Protection Training

Procedures Handbook 4300

COMPONENTS AND SAFETY
CONSIDERATIONS FOR PORTABLE
LIGHTING EQUIPMENT

| PRESENTATION | APPLICATION |
|---|-------------|
| <ul style="list-style-type: none">b. Keep light out of traffic patterns as much as possiblec. The globe can cause painful burns even after short operational periodd. Avoid setting light where fire fighters become "blinded" by glowe. Don't look at light <p>7. Battery powered lights</p> <ul style="list-style-type: none">a. Ensure lights mounted to helmet are securely in placeb. Conceal electrical cords beneath top layer of clothing to reduce possibility of catching cord on protruding objects or obstacles | |



Fire Protection Training

Procedures Handbook 4300

COMPONENTS AND SAFETY
CONSIDERATIONS FOR PORTABLE
LIGHTING EQUIPMENT

SUMMARY:

Portable lighting is frequently used at emergency scenes to make emergency operations faster, easier, and safer. The components of a lighting system include a generator, extension cords, junction boxes and lights. When utilizing these systems the firefighter must remember that each component can cause injury if not used properly. One of the most important safety considerations is to ensure that all lighting systems are safe and properly grounded.

EVALUATION:

A written quiz.

ASSIGNMENT:

To be determined by instructor(s).