Universal Tool Accessories II
OBJECTIVE:
Given a distribution hotstick trailer, you will be able to identify the universal tool accessories and explain their function.

WHY?
You can do almost any type of job using live line sticks. A big part of this is knowing the tools and accessories available.

LEARNING OBJECTIVES:
1. Identify and explain the function of the pinning accessories.
2. Identify and explain the function of the insulator handling accessories.
3. Identify and explain the function of the ampact hotstick kit accessories.
<table>
<thead>
<tr>
<th>IN THIS MODULE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pinning Accessories</td>
</tr>
<tr>
<td>2. Insulator Handling Accessories</td>
</tr>
<tr>
<td>3. Ampact Hotstick Kit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESOURCES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Distribution hotstick trailer</td>
</tr>
</tbody>
</table>

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<tr>
<th>ESTIMATED TIME:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 hour</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>PREREQUISITES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ampact Maintenance and Operation module</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEARNING STEPS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Watch the training video.</td>
</tr>
<tr>
<td>2. Cover the module.</td>
</tr>
<tr>
<td>4. Clarify any questions you may have.</td>
</tr>
<tr>
<td>5. Complete the Knowledge Check.</td>
</tr>
</tbody>
</table>
Introduction

When performing live line procedures on an insulator string, or when performing an ampact connection, it is vital to utilize the proper tools. But, first, you have to know the tools and accessories required to do the job safely and efficiently.

In this module, you will learn to identify and explain the function of pinning accessories, insulator handling accessories and the ampact hotstick kit.

No matter what tool you are using, remember that your safety and that of your co-workers are prime considerations in all work activities.
There are many types of pinning accessories available for live line work. These accessories are designed to install and remove pins, manipulate hardware, and couple or uncouple insulator strings. In this module, you will learn about the most common pinning accessories.

**Ball Socket Adjuster**

The ball socket adjuster is used to control the adapter between the clevis clamp and the ball socket insulator pins. This tool is designed to hold the ball socket securely when coupling or uncoupling an insulator string.
Forked Ball Socket Adjuster

The forked ball socket is used to hold heavy socket clevises while positioning suspension and deadend clamps. The fork has a series of teeth along the inside of it, which are designed to accommodate different sizes of ball sockets.

Cotter Key Installer

The cotter key installer is used to replace cotter keys in insulator fittings. The spring-loaded gripping jaw holds the cotter key securely in the tool.
Cotter Key Puller

The cotter key puller is used to pry out deeply set cotter keys or to partially withdraw ball socket cotter keys. This tool functions simply by inserting the pin into the eye of the cotter key, and either pushing or pulling the work stick will extract the key.

Snap-out Cotter Key Remover

The snap-out cotter key remover uses a hammer-like action to pull out jammed cotter keys. By giving the work stick a quick pull, the compression spring releases.
All-purpose Cotter Key Tool

The all-purpose cotter key tool is used to install and remove hump-type cotter keys. The tool provides a contoured slot and a raised eye pin to secure the cotter key in the tool, making it easy to guide the pin into place.

Clevis Pin Installer

The clevis pin installer is particularly useful in live line hotstick applications. This device has three fingers and is spring-loaded to provide a positive grip on the pin. The jaw size may be adjusted using the nut on the side of the tool.
Pin Holder

The pin holder is used to replace pins and bolts. The pin or bolt head fits into a slot, and is held tight by a spring. This slot can be adjusted to accommodate the bolt or pin by turning a small screw on the face of the tool.
Insulator Handling Accessories

There are two insulator handling accessories that you will learn about in this section — the shepherd hook and the adjustable insulator fork. By using these together, you will be able to manipulate common insulator configurations.

Shepherd Hook

The shepherd hook is used to assist in pulling and lifting insulator strings. The hook itself may be angled up or down to reach difficult areas.
Adjustable Insulator Fork

The adjustable insulator fork is used to grasp 9 and 10 inch suspension insulators between the glass skirt and the heel of the insulator. By rotating the work stick, the fibre jaws are adjusted from 3 to 4-1/2 inches. The fork assembly may also be adjusted up or down for better positioning.
Ampact Hotstick Kit

The eight tools in the ampact hotstick kit are used in conjunction with live line hotsticks to complete ampact connections on energized circuits, especially where access is limited.

The kit consists of the following:

- piggyback clamp
- small ampact tool holder
- large ampact tool holder
- 90 degree adapter
- C-clamp holder
- wedge holder
- general breech cap assembly
- ampact hammer

Serious injury may result if the worker is not competent in ampact maintenance and operation.

This module does not provide detailed instruction in the maintenance and operation of an ampact. It is assumed that the participant is competent at that task. Further information can be obtained in the Ampact Maintenance and Operation module.
Piggyback Clamp

Piggyback clamps are available in two sizes:

- #8 to 556.5 mcm
- 795 mcm to 1192.5 mcm

The clamps are installed with a grip-all hotstick by gripping the eye and turning clockwise, closing the clamp.

The tap wire can be installed in the top or bottom position.

Small Ampact Tool Holder

The small ampact tool holder is designed to hold only the small ampact tool, which uses red, white and blue shells.
Large Ampact Tool Holder

The large ampact tool holder is designed to hold only the large ampact tool, which uses yellow shells.

90 Degree Adapter

The 90 degree adapter may be installed between the tool holder and the hotstick if this will result in a better working position for the lineman.
C-clamp Holder

The C-clamp holder is designed to hold the C-clamp in place by tightening the eye bolt, and will fit a full range of C-clamp sizes.

Wedge Holder

The wide end of the wedge is placed in the notch of the wedge holder, and the eye bolt is tightened to hold the wedge in place.
Geared Breech Cap Assembly

The geared breech assembly is used for the large and small tools.

Ampact Hammer

The impact hammer is equipped with two striking surfaces:

- rubber mallet
- brass surface

The rubber mallet is used to fire the impact gun. The brass end is used for tapping the wedge into the C-clamp.

⚠️ Serious injury may result if the worker is not competent in impact maintenance and operation.
Summary

To summarize this module, you have learned:

- The identity and function of the pinning accessories.
- The identity and function of the insulator handling accessories.
- The identity and function of the ampact hotstick kit.

Now...

- Complete the Review Questions.
- Clarify any questions or concerns you may have.
- Complete the Knowledge Check.
REVIEW QUESTIONS

Universal Tool Accessories II

This section is a practice for your module Knowledge Check. Complete the questions, and verify your answers with the Review Question Solutions located at the end of this module.

Identify and explain the function of the pinning accessories.

1. The ball socket adjuster is:
   (a) used to hold the ball socket securely when coupling or uncoupling an insulator string.
   (b) used to control the adapter between the clevis clamp and the ball socket insulator pins.
   (c) attached to the end of a work stick.
   (d) all of the above

   T / F 2. The forked ball socket adjuster has a series of teeth along the inside edges which accommodates different sizes of ball sockets.

   T / F 3. A strong magnet holds the cotter key securely in the jaws of a cotter key installer tool.

   T / F 4. A cotter key puller uses a hammer-like action to pull out jammed cotter keys.

   T / F 5. The snap-out cotter key remover is used to pry out deeply set cotter keys or to partially withdraw ball socket cotter keys.

   T / F 6. The all-purpose cotter key tool is used to install or remove hump-type cotter keys.

   T / F 7. The clevis pin installer is a devise which utilizes three fingers and is spring-loaded.
8. The jaws of a pin holder can be adjusted by turning a small screw on the face of the tool.

**Identify and explain the function of the insulator handling accessories.**

9. The shepherds hook is used to:
   (a) shunt out suspension insulators.
   (b) provide an attachment for a work stick to grip.
   (c) grip an insulator being removed from an insulator string.
   (d) assist in the pulling and lifting of an insulator string.

10. The adjustable insulator fork:
    (a) may be adjusted up or down for better positioning.
    (b) may be adjusted from 3 to 4-1/2 inches by rotating the work stick.
    (c) is used to grasp 9 to 10 inch suspension insulators between the glass skirt and the heel of the insulator.
    (d) all of the above
Identify and explain the function of the ampact hotstick kit accessories.

11. Match the ampact hotstick kit accessory shown in the left column with the best description shown in the right column.

| (a) Piggyback clamp       | Designed to hold the C-clamp in place by tightening the eye bolt. |
| (b) Small ampact tool holder | Designed to hold only the small ampact tool. |
| (c) Large ampact tool holder | The wide end of a wedge is placed in the notch of this accessory and then held in place by a tightened eye bolt. |
| (d) 90 degree adapter      | Is equipped with two striking surfaces. |
| (e) C-clamp holder         | Designed to hold only the large ampact tool. |
| (f) Wedge holder           | If a better working position is required for the lineman, this accessory may be installed between the tool holder and the hotstick. |
| (g) Geared breech assembly | Used for the large and small tools. |
| (h) Ampact hammer          | Is available in two sizes, and are installed with a grip-all stick by gripping the eye and turning clockwise. |
Universal Tool Accessories II

1. d
2. True
3. False
4. False
5. False
6. True
7. True
8. True
9. d
10. d
11. e, b, f, h, c, d, g, a