

Casing Machinery

Course 313: Casing Machinery

Covers operating characteristics and service techniques of accessory or auxiliary machines used with packaging lines. Describes general operating characteristics of labeling equipment, uncasing, unscrambling, and cleaning machines, gluing equipment and adhesives, wrapping machines, tying, strapping, and stitching machines, and shrink wrapping devices.

TPC Training is accredited by IACET to offer **1.0 CEU** for this program.

**Lesson 1: Uncasing and Unscrambling***Topics*

How Containers are Received; Manual Uncasing; Low-Volume Uncasing; Low-Volume Unscrambling; Unscrambling with Wire-Mesh Conveyors; Unscrambling with Parallel Conveyors; Automatic Uncasing; Combined Automatic Operations; Unscrambling Plastic Bottles; Unscrambling Plastics Bottles by Gravity; Unscrambling with an Inclined Hopper; Conveyor Chain and Its Care

Objectives

- List the steps that must occur before an empty container can be processed.
- Tell which types of conveyors are typically used for unscrambling.
- Explain how the pickup head of an automatic uncaser grips different container shapes.
- List important steps in the periodic care and maintenance of roller chain.

Lesson 2: Cleaning and Washing*Topics*

Why Clean Containers Are Necessary; Container Cleaning Methods; Semiautomatic Air Cleaning; Fully Automatic Air Cleaning; Inverter Air Cleaners; Manual Washing with Water; Combination Bottle Washer and Rinser; Metal Washers; High-Production Washing; Container Warming; Why Pasteurization is Necessary; The Pasteurizer; The Pasteurizing Process; Lubricating a Pasteurizer; Pasteurizer Maintenance

Objectives

- Name the two methods by which containers are usually cleaned.
- Describe the automatic air cleaning operation.
- Describe the operation of an automatic bottle washer and rinser.
- Describe the operation of a high-production bottle washer.
- Explain why pasteurization is important.

Lesson 3: Gathering Machines*Topics*

Types of Gathering Machines; Multipacking Machines; Infeed Supply Machinery for Multipacking; Continuous Run Multipacking; Skip-Carton Detector; Continuous Run Accumulator; Stacking Sequence for Continuous Runs; Cycle-Style Multipacking; Cycling Operations; Case Packing Machines; Bundling Machines; Gathering Machine Maintenance

Objectives

- Name the three types of gathering machines currently in use.
- Describe the operation of a bundling machine.
- Describe the infeed supply operation and cycle of a multipacker.
- Name the two functions of a typical case packer.
- Explain your most important responsibility in gathering machine maintenance.

Lesson 4: Cartoning Machines*Topics*

Cartons and Their Application; Basic Steps in Carton Making; Common Types of Cartons; Glue-End Cartons; Types of Cartoning Machines; Methods of Carton Feeding; Expanding Draw Feeding; Rotary Feeding; Product Infeed; Horizontal Carton Loading; Cartoning Machine Attachments; Closing Cartons; Gluing Cartons; Cartoning Machine Maintenance

Objectives

- Define the following terms: reverse tuck, arthur lock, and crash fold.
- Explain why butt flaps are rarely used.
- Describe the operation of cartoning machines and related carton feeding methods.
- Explain how cartons are typically closed and glued.
- List steps involved in cartoning machine maintenance.

Lesson 5: Casing Machines*Topics*

Casing Machine Types; Case Forming Machines; Horizontal Casing Machines; Vertical Casing Machines; Top Filling Machines; Side Filling Machines; Bottom Filling Machines; Case Taping Machines; Casing Long Narrow Products; Heat Shrink Sealing; Machine Maintenance

Objectives

- Tell how the manner in which cases are filled is determined.
- Explain the function of a compression unit.
- Contrast top filling and side filling machines.
- Explain the purpose and operation of electrical interlocks in an automatic casing machine.
- Identify the source of heat control problems in a shrink film machine.

Lesson 6: Wrapping Machines*Topics*

Machine Drive; Wrapping Materials; Parts Lists and Changeover Parts; Scale and Dial Settings and Controls; Paper Feed; Adjusting the Paper Feed; Adjusting the Paper Reel; Paper Corrugating Wires; Paper Rollers; Paper Cutoff Change Gears; Paper Cutoff Knife; Paper Feed Belts; Paper Stops and Guides; Starting the Machine; Machine Adjustments; Heat Controls; Glues and Their Application; Package Discharge; Lubrication

Objectives

- Explain the function of registration dots on the continuous roll paper used on wrapping machines.
- Explain the functions of the paper corrugating wires in a wrapping machine.
- Trace the operation of a typical wrapping machine, including timing elements.
- Tell how to clear a jam in a wrapping machine.
- Describe various kinds of glue used in wrapping machines and their application.

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Lesson 7: Strapping and Stitching

Topics

Strapping Materials; Tensioner and Sealers; Combination Tools; Combination Tool Maintenance; Strapping Machines; Operation of Strapping Head; Strapping Head Maintenance; Strapping Systems; Stitching Machines; Buckled Stitch Legs; Variance in Stitch Leg Length; Keeping the Wire Straight; Leg Too Short or Too Long; Distorted, Broken Corners; Other Stitch Defects; Adjusting Defective Stitching Machines

Objectives

- Explain why a tensioner and sealer are sometimes combined into a single assembly.
- Describe the maintenance required by strapping heads.
- Explain the operation of a stitching machine.
- List common stitching machine problems and stitch defects and tell their probable causes.

Lesson 8: Adhesives and their Application

Topics

Adhesives in Packaging; Properties of Adhesives; Types of Adhesives; Hot Melts; Advantages of Hot Melts; Hot Melt Application Systems; Hot Melt Troubleshooting; Maintaining Hot Melt Equipment; Cleaning Hot Melt Equipment; Other Synthetic Adhesives; Natural Adhesives; Applying Natural Adhesives; Maintaining Application Equipment; Storing and Handling Liquid Adhesives

Objectives

- Define the terms penetration, tackiness, and viscosity as they relate to adhesives.
- Name the most likely source of trouble in hot melt application machinery.
- List steps involved in servicing a hot melt dispensing head.
- Explain common maintenance items related to application equipment.
- Describe the storing and handling requirements for liquid adhesives.

Lesson 9: Labeling and Coding

Topics

Purpose of Labeling; Label Forms; Manual Labeling; Semiautomatic Labeling; Automatic Labeling; Continuous Roll Feeding; Indirect Label Feeding; Pressure-Sensitive Labeling; Pressure-Sensitive Labeling Heads; Labeling Head Setup, Maintenance; Automatic Pressure-Sensitive Labeling; Daily and Monthly Maintenance; Coding Attachments; Bottom Coding of Containers; Flexograph Imprinting; Flexograph Imprinter Maintenance

Objectives

- Name common problems in labeling operations and give their solutions.
- Describe the process of continuous roll feeding.
- Explain the periodic maintenance required of labeling heads.
- Explain the operation of a friction-driven coder and a flexographic imprinter.

Lesson 10: Maintenance and Safety

Topics

Planned Maintenance; Spare Parts; Lubrication Schedules; Mechanical Maintenance; Electrical Maintenance; Fluid Components Maintenance; Maintenance Safety; Safe Clothing; Using Tools Correctly; Hand Tool Safety; Machine Guards; Material Handling

Objectives

- Identify the key to good planned maintenance.
- Name the two most important factors in drive belt wear on a packaging machine.
- List items to consider when replacing a motor?
- Explain the purpose of recommended color codes for plant equipment.
- Name the leading causes of industrial injuries.