



Century[®] Series

C-740/C-741
Dispensing System

Quick Operations Manual

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TABLE OF CONTENTS

1	Introduction	1
	Overview	1
	Safety First	1
	Basic System Description.....	1
	System Features	2
	Front View Features	2
	Rear View Features.....	10
2	Safety.....	15
	Overview	15
	Facility Requirements.....	15
	Intended Use	15
	Basic Safety Precautions and Practices	16
	Safety of Personnel	16
	Material Safety.....	17
	Preventing Dispensing System and Workpiece Damage.....	17
	Safety Warning Labels	18
	Emergency Shutdown	20
	Emergency Shutdown Situations	21
	Emergency Shutdown Recovery	21
	Integrated Safety Systems	22
	Safety Interlock System.....	22
	Light Beacon.....	25
3	Operation	27
	Overview	27
	Basic System Operation.....	27
	Easy Coat for Windows (ECXP) Software	27
	Dispensing Operations	28
	Robot Concepts.....	28
	Coordinate Systems	29
	Conveyor Operations	30
	Chain Conveyor (C-740)	30
	Control Panel.....	32
	Power Buttons	33
	Download Program Controls	33
	Motion Controls	34
	System Status Controls	36
	Pneumatic Regulators and Gauges	37
	Main Air Regulator and Gauge.....	38
	Conveyor Stop/Clamp Air Regulator and Gauge	39
	Fluid Pressure Regulator and Gauge.....	40
	System Startup/Shutdown.....	41
	Startup	41
	Shutdown.....	43
	Daily Routine Procedures.....	44
	Characterization	45
	Loading a Program.....	48
	Running a Program	49
	Operator Screen	49

4	Maintenance.....	51
	Overview	51
	Safety First	51
	Hazardous Materials	51
	Record Keeping.....	51
	Filling the Fluid Reservoir	52
	Changing Material/Flushing Fluid System.....	53
	Emptying the Water Trap.....	54
	Cleaning the Fluid Filter.....	55

Table of Figures

Figure 1-1	C-740/C-741 Front View	3
Figure 1-2	C-740/C-741 Control Panel	4
Figure 1-3	C-740 Dispensing Area	5
Figure 1-4	C-740/C-741 Dispensing Area Close-up.....	7
Figure 1-5	C-740 Lower Front Cabinet.....	8
Figure 1-6	Computer Front Panel.....	9
Figure 1-7	Rear View (with Material Changeover Option).....	11
Figure 1-8	Lower Rear View	13
Figure 1-9	Right Rear Close-up.....	14
Figure 2-1	Safety Warning Labels,	19
Figure 2-2	EMO/Main Circuit Breaker Locations	20
Figure 2-3	Safety Interlock Keyswitch	22
Figure 2-4	Optional Interlock Warning Tag.....	23
Figure 2-5	Interlock Shutdown Recovery	24
Figure 2-6	Light Beacon/System Status LED's	25
Figure 3-1	Reference Frames.....	29
Figure 3-2	Manual Conveyor Width Adjustment.....	31
Figure 3-3	Control Panel.....	32
Figure 3-4	Adjusting Main Air Pressure	38
Figure 3-5	Adjusting Conveyor Stop/Clamp Air Pressure	39
Figure 3-6	Adjusting Fluid Pressure	40
Figure 3-7	Starting ECXP	42
Figure 3-8	ECXP Characterization Wizard Dialog Box.....	45
Figure 3-9	Characterization Sheet.....	46
Figure 3-10	Material Characterization	47
Figure 3-11	Loading a Program - Operator Screen.....	48
Figure 3-12	Running a Program - Operator Screen (C-740).....	49
Figure 3-13	Running a Program - Operator Screen (C-741).....	50
Figure 4-1	Filling the Fluid Reservoir.....	52
Figure 4-2	Water Trap	54
Figure 4-3	Cleaning the Fluid Filter	55

Table of Tables

Table 1-1	Fluid Delivery Systems.....	6
Table 2-1	Safety Warning Symbols.....	18
Table 2-2	Light Beacon Color Indications	26
Table 3-1	Power Buttons	33
Table 3-2	Download Program Controls	33
Table 3-3	Motion Controls	34
Table 3-4	System Status Controls.....	36
Table 3-5	Recommended Pressure Settings	37
Table 3-6	Daily Routine Procedures	44

1 Introduction

Overview

Congratulations on your choice of the Century C-740/C-741 Series Dispensing System! This manual is intended primarily as a reference for production operators. However, others unfamiliar with Asymtek products may also find this manual useful as a general introduction to the system.

The Century C-740/C-741 Series Dispensing Systems are designed to meet the diverse needs of the conformal coating market. The C-740/C-741 systems provide consistent, uniform dispensing of a variety of conformal coating materials for both conveyORIZED (C-740) and batch (C-741) coating applications. Patented dispensing technology replaces traditional dip, brush, handgun, and aerosol spray systems with field-proven, repeatable delivery of solvent-based and 100-percent solids materials. The system virtually eliminates the requirement for labor-intensive board masking, providing accurately controlled patterns, film builds, and production flexibility in an automated process. Film thickness is achieved in a single pass with little or no masking and with virtually no overspray.

This section covers the following topics:

- [Basic System Description](#)
- [System Features](#)

Safety First

Operation of your C-740/C-741 Dispensing System involves heat, air pressure, pneumatic devices, electrical power, mechanical devices, and the use of hazardous materials. Read this manual in its entirety before attempting any system or component operation. It is essential for all personnel working on or around the dispensing system to fully understand the hazards, risks, and safety precautions associated with operating the dispensing system. When properly operated and maintained, the dispensing system should be safe and reliable. Refer to the [Safety](#) section for additional information.

The Century Series Dispensing System is installed and tested on-site by an Asymtek technician. To ensure that the system is in good working order, only Asymtek-trained technicians should install, move, or service the system.



WARNING!



CAUTION!

Consult the Material Safety Data Sheet (MSDS) for all fluids used with the dispensing system. The MSDS provides material usage instructions, disposal instructions, and safety precautions.

Basic System Description

All Century C-740/C-741 Series Dispensing Systems have a standard platform. Optional components may be added to suit your particular requirements. Your system was configured for your application at the Asymtek factory prior to shipping. Brief descriptions of all features are found later in this section.

System Features

The figures in this section show features of the dispensing system. Callouts locate major components, options, and switches. The item numbers associated with the descriptions correspond to the callout numbers in the illustration. Detailed operating instructions for some of these features are treated in other sections of this manual. Unless otherwise noted, Figures 1-1 to 1-8 apply to both the C-740 and C-741 models.

Front View Features

Below are descriptions of C-740/C-741 Series Dispensing System components shown in Figure 1-1.

1. *Computer Monitor*

The Computer Monitor provides the operator with Easy Coat for Windows XP (ECXP) software displays.

2. *Light Beacon*

The Light Beacon is a warning device for the operator. The beacon signals a dispensing status condition by displaying a colored light and/or issuing an audible tone. Refer to the [Safety](#) section for additional information.

3. *Control Panel*

The Control Panel buttons and switches let you control certain programming and run functions. You can move the Robot (Dispensing Head) and the Conveyor, enable the Safety Interlock, make an emergency stop, check dispensing status, and adjust valve controls. Refer to the [Operation](#) section for detailed descriptions of Control Panel functions.



NOTE The terms Robot and Dispensing Head are synonymous and are used interchangeably throughout this manual.

4. *Dispensing Area*

The Dispensing Head, Solvent Cups, Conveyor, Stop Pins, and Board Sensors are all located in the dispensing area. (See Figure 1-3 and Figure 1-4).

5. *Keyboard Tray*

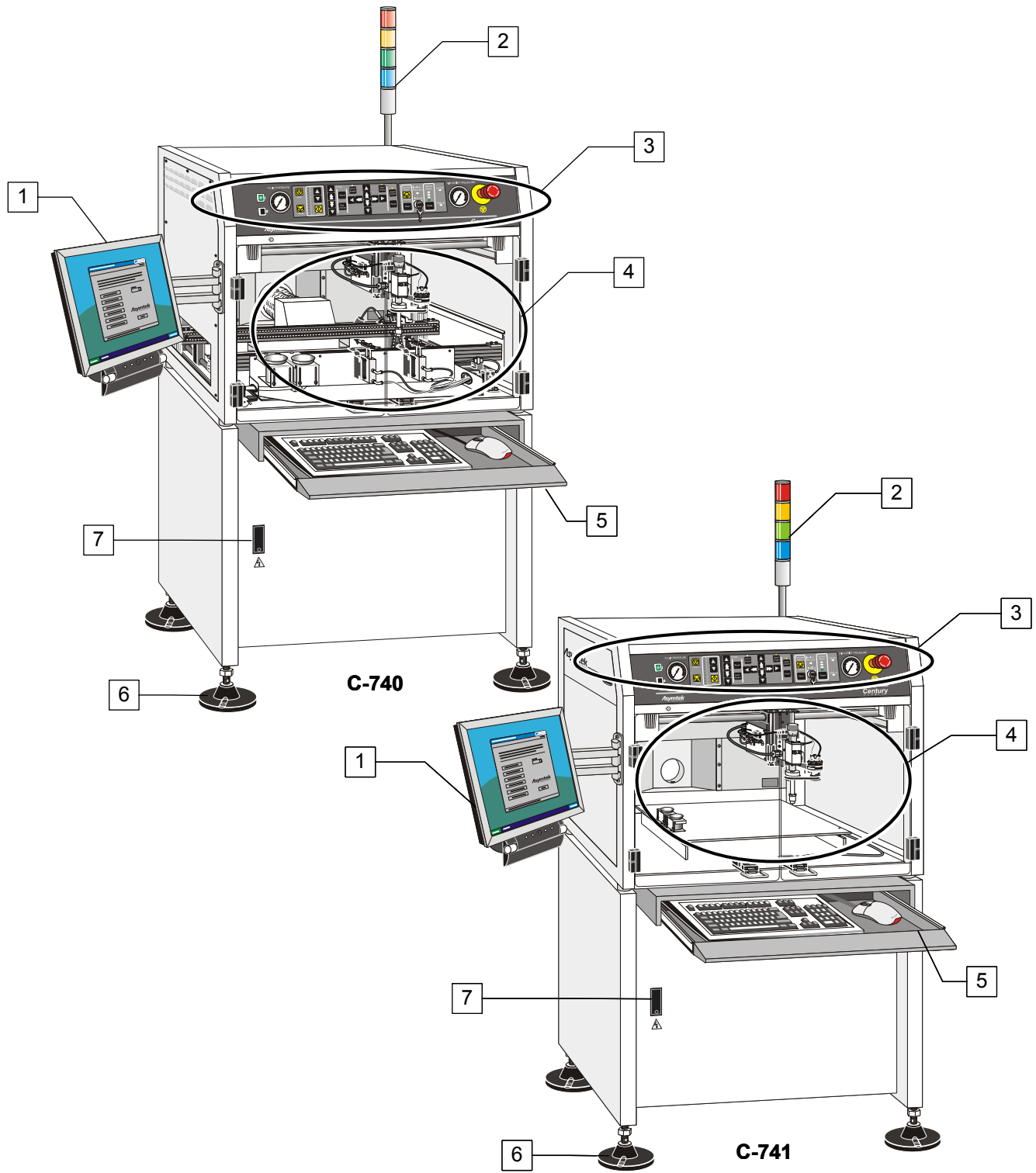
The Keyboard and Mouse Tray holds and protects the Computer System keyboard and mouse.

6. *Levelers (Foot Pads)*

The Levelers are the footpads of the dispensing system. The Levelers are adjusted during installation and should not need attention unless the system is moved to a new location. To protect the dispensing system from moving during an earthquake, the Levelers should be anchored to the floor with bolt anchors. Refer to the *Century C-740/C-741 Installation, Operations, and Maintenance Manual* for instructions.

7. *Lower Front Cabinet*

The Lower Front Cabinet allows access to the system Computer, Conveyor Controller Module, and the Tri-Mode Swirl Box (for the Swirl Coat Module only). See Figure 1-5.




Item	Description	Item	Description
1	Computer Monitor	5	Keyboard Tray (keyboard and mouse)
2	Light Beacon	6	Leveler (foot pad)
3	Control Panel (Figure 1-2)	7	Lower Front Cabinet (Figure 1-5)
4	Dispensing Area (Figure 1-3)		

Figure 1-1 C-740/C-741 Front View

Control Panel

Below are descriptions of C-740/C-741 Series Dispensing System Control Panel buttons as shown in Figure 1-2.

 **NOTE** Refer to the [Operation](#) section for detailed descriptions of all Control Panel buttons and functions.

1. Start/Stop Buttons

The **Start** and **Stop** buttons are push buttons located on the Control Panel. They control the power to the dispensing system. The **Start** button glows green when pushed, and continues to glow until the **Stop** button or Emergency Machine Off (**EMO**) button is pressed.

2. Motion Controls

The Motion Control buttons allow you to manually move the Dispensing Head or the Conveyor. Press the **Robot Enable** button to enable communication with the Dispensing Head. To enable communication with the Conveyor Controller, press the **Convyr Enable** button.

3. Interlock Keyswitch

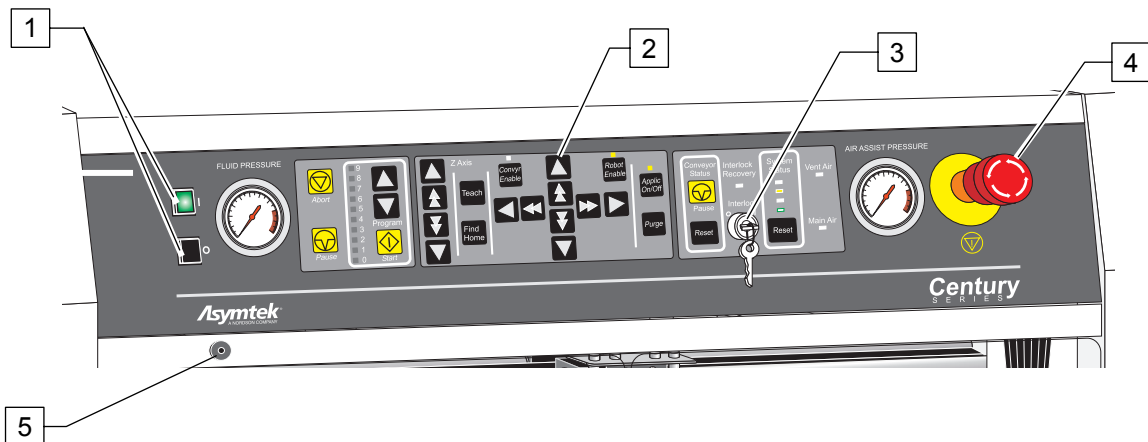
The Interlock Keyswitch activates and deactivates the Safety Interlock System. Refer to the [Safety](#) section for additional information.

4. Emergency Machine Off (EMO)

Activating the EMO vents all pressure in the pneumatic system, de-energizes the Robot motors, and cuts power to all system components except the Computer and Monitor. Refer to the [Safety](#) section for additional information.

5. ESD Grounding Strap Connector

Grounding straps worn by the operator or technician plug into this jack to prevent electrostatic discharge (ESD) damage to workpieces and dispensing system electronics during dispensing operations and servicing.



Item	Description	Item	Description
1	Start/Stop Buttons	4	EMO Button
2	Motion Controls	5	ESD Grounding Strap Connector
3	Interlock Keyswitch		

Figure 1-2 C-740/C-741 Control Panel

Dispensing Area

Below are descriptions of C-740/C-741 Series Dispensing System components shown in Figure 1-3.

1. Solvent Cups

The Century C-740 conveyerized system has two 125 ml stainless steel cups that are installed on separate brackets mounted to the front Conveyor rail. One cup holds solvent for cleaning the dispensing needle. A second cup is used for the purging of conformal coating fluid. The solvent cups can be positioned as desired by the operator on the C-741 batch dispensing system.

2. Dispensing Head (Robot)

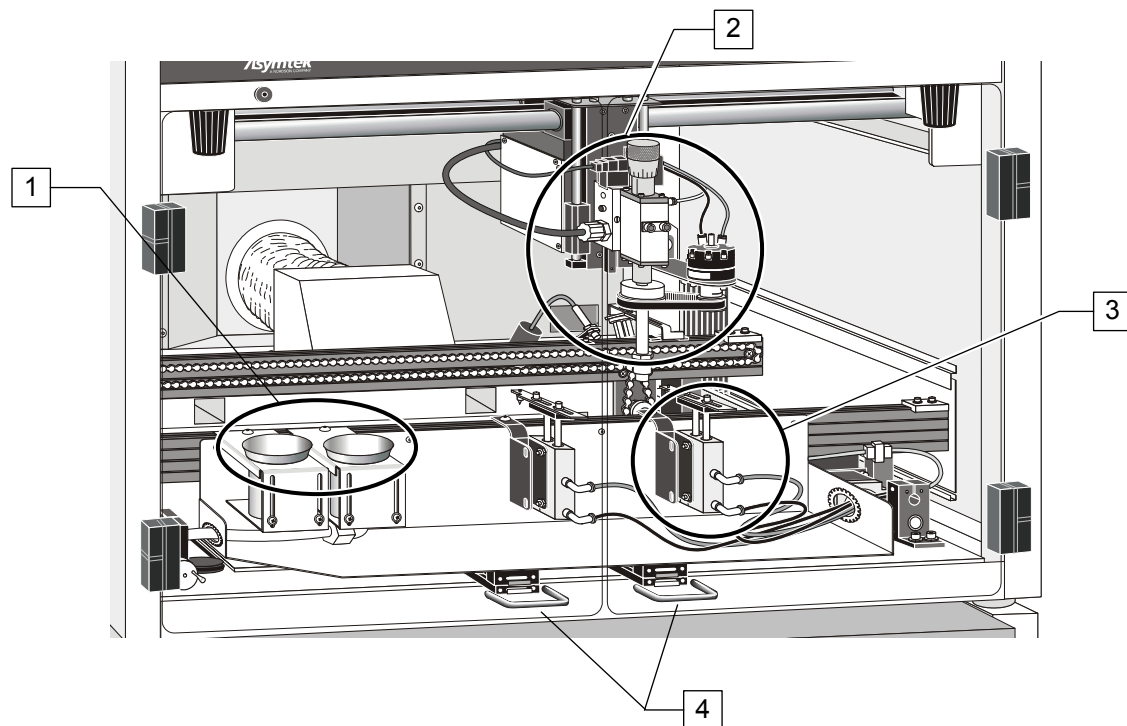
The Dispensing Head moves in the XYZ planes. It is controlled through the ECXP software and the Control Panel. The Fluid Dispensing Applicator, Laser Pointer Programming Tool, and Board Present Sensor are mounted on the Dispensing Head.

3. Board Pins (C-740)

Pneumatically actuated Board Pins lower into holes in the board to secure it precisely in place for accurate fluid dispensing.

4. Front Doors

The Front Doors allow the operator to view, and if necessary, access the dispensing area. Door Sensors connect the front doors to the Safety Interlock System.



Item	Description	Item	Description
1	Solvent Cups	3	Board Pins
2	Dispensing Head	4	Front Doors

Figure 1-3 C-740 Dispensing Area

Dispensing Area Close Up

Below are functional descriptions of C-740/C-741 Series Dispensing System components shown in Figure 1-4.

1. Board Sensor (C-740)

Mounted on the Conveyor rail within the dispense zone, the Board Sensor detects the presence of a workpiece entering the system. The signal is sent to the Conveyor Controller, which halts Conveyor motion and lowers Stop Pins to hold the part in place for dispensing.

2. Chain Conveyor (C-740)

A chain Conveyor is standard on the C-740 Dispensing System. All Conveyors are SMEMA-compatible. The Conveyor is controlled through the Control Panel and the ECXP software.

3. Stop Pin (C-740)

The Stop Pin is a pneumatic device used to stop workpieces as they are conveyed into the system.

4. Fluid Dispensing Applicator

Depending upon your application requirements, the Century C-740/C-741 Dispensing System can be configured with any of the Fluid Dispensing Applicators listed in Table 1-1.

Table 1-1 Fluid Delivery Systems

Model	Name
SC-104HS	High Speed Film Coater (Circulating)
SC-105HS	High Speed Film Coater (Circulating)
SC-10XVCS	Fluid System, Viscosity Control
SC-204HS	High Speed Non-Circulating Film Coater
SC-205HS	High Speed Non-Circulating Film Coater
SC-200	Slim Swirl Applicator
SC-300	Swirl Coat Applicator



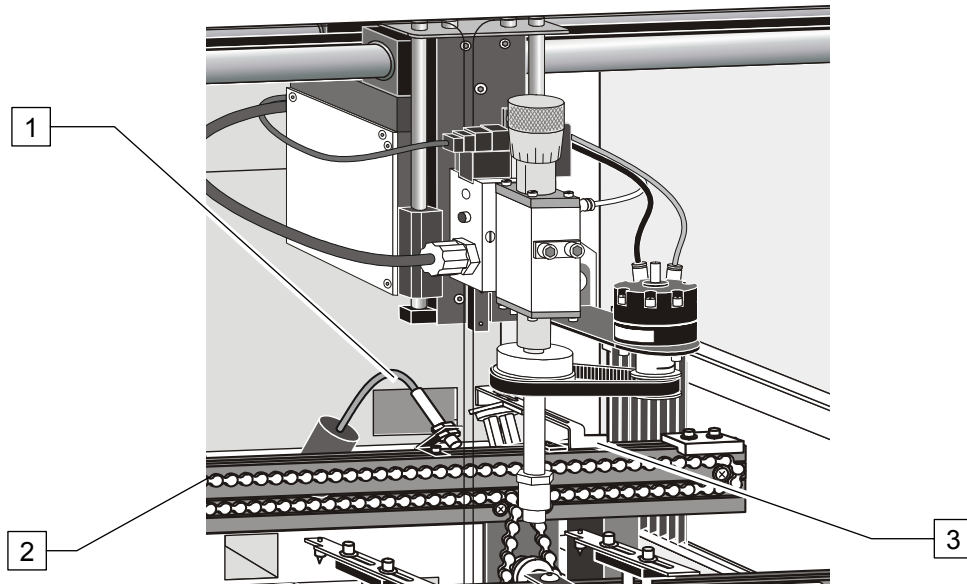
NOTE Each of the Fluid Delivery Systems has its own manual. Refer to the specific manual for the Fluid Delivery System installed on your dispensing system for detailed installation information.

5. Tooling Plate (C-741)

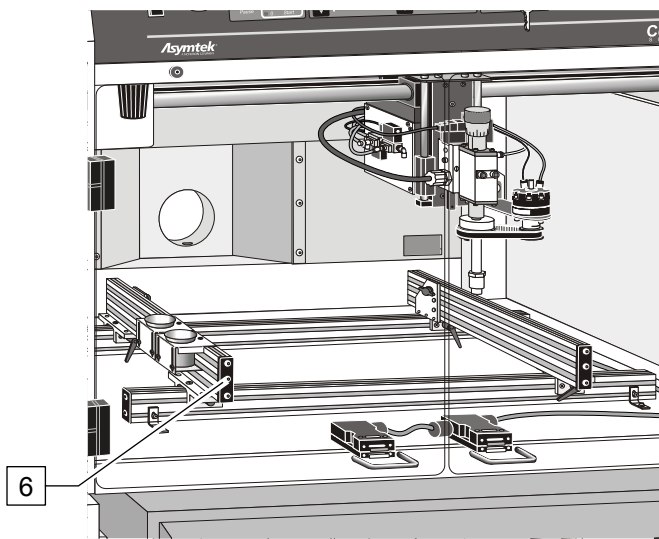
The Tooling Plate secures the workpiece for batch system operations.

6. Adjustable Tooling Rails (C-741)

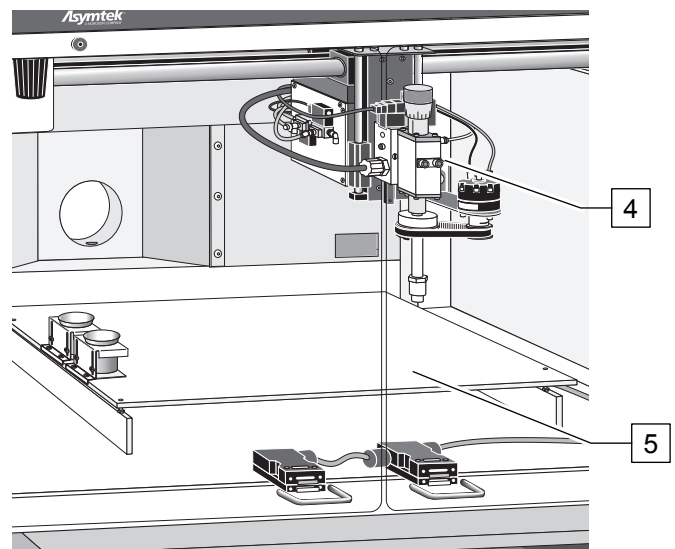
The Adjustable Tooling Rails secure the workpiece for batch system operations.



C-740 with Chain Conveyor



C-741 with Adjustable Tooling Rails



C-741 with Tooling Plate

Item	Description	Item	Description
1	Board Sensor	4	Fluid Dispensing Applicator
2	Chain Conveyor (C-740)	5	Tooling Plate
3	Stop Pin	6	Adjustable Tooling Rails

Figure 1-4 C-740/C-741 Dispensing Area Close-up

Lower Front Cabinet

Below are descriptions of C-740/C-741 Series Dispensing System components shown in Figure 1-5.

1. Computer

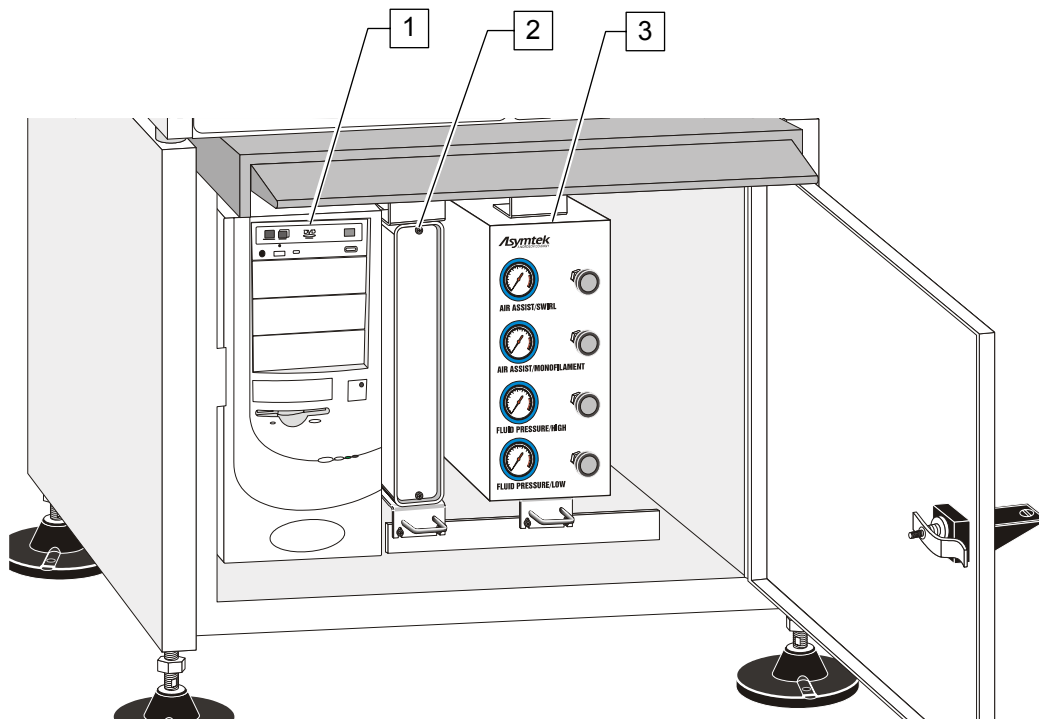
The Computer System is used to create and run dispensing programs with the Asymtek Easy Coat for Windows XP (ECXP) dispensing software.

2. Conveyor Controller Module (C-740)

The Conveyor Controller module monitors the SMEMA interface and controls the Conveyor indexing operations. The inputs and outputs are used for sensors, Stop Pins, Board Pins, and operation of the Conveyor. For more information on the Conveyor, refer to the [Operation](#) section.

3. Tri-Mode Swirl Box (Optional)

The Tri-Mode Swirl Box is a component of the SC-200 and SC-300 Swirl Fluid Systems. It has two air assist and two fluid regulators and gauges, which regulate the fluid and air-assist pressure to the fluid applicator. By varying the pressures, conformal coating materials can be dispensed in a bead, monofilament, or swirl pattern.



Item	Description
1	Computer
2	Conveyor Controller Module
3	Tri-Mode Swirl Box (Optional)

Figure 1-5 C-740 Lower Front Cabinet

Computer

Below are functional descriptions of the system computer front panel controls shown in Figure 1-6. The numbers associated with the descriptions correspond to the callout numbers in the illustration.

1. CD-ROM Drive

Press the button below and to the right of the disk tray to insert or eject a disk.

2. 1.44 MB 3.5-inch Disk Drive

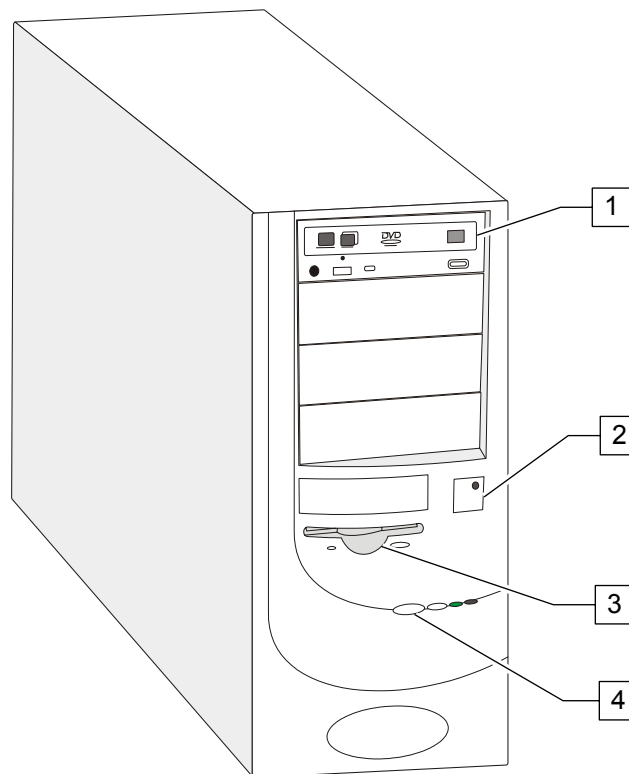
The computer has at least one 3.5-inch, 1.4 MB disk drive. Insert disks through the drive door flap. Press the small button on the lower right to eject a disk.

3. Power Switch

The power switch turns the computer power ON and OFF.

4. Reset Button

Pressing the **Reset** button reboots the computer after a system failure.



Item	Description
1	DVD/CD Drive
2	Power Switch
3	1.44 MB 3.5-inch Disk Drive
4	Reset Button

Figure 1-6 Computer Front Panel

Rear View Features

Below are descriptions of C-740/C-741 Series Dispensing System components shown in Figure 1-7.

1. *Main Air Regulator*

The Main Air Regulator regulates air pressure supplied to the dispensing system through the Main Air Inlet.

2. *Main Air Inlet*

The Main Air Inlet connects the Century Series Dispensing System to your facility air supply.

3. *Main Air Gauge*

The Main Air Gauge indicates the air pressure to which the Main Air Regulator is set. The recommended setting is 551 to 620 kPa (80 to 90 psi).

4. *Air Filter and Water Trap*

The Air Filter and Water Trap remove particles and impurities in the facility air supply and are contained in a single assembly.

5. *Exhaust Vent Duct*

The Exhaust Vent Duct removes fumes from the dispensing area. A customer-supplied air duct must be connected from the dispensing system to the facility air ventilation system for the system to operate.

6. *Low Fluid Sensor (optional)*

Located within the external reservoir, the Low Fluid Sensor triggers a Light Beacon display or software error message when the level of coating material is low.

7. *Fluid Reservoir - 5 gallon (optional)*

The fluid reservoir contains conformal coating fluid or solvent.

8. *Fluid Reservoir - 1 gallon*

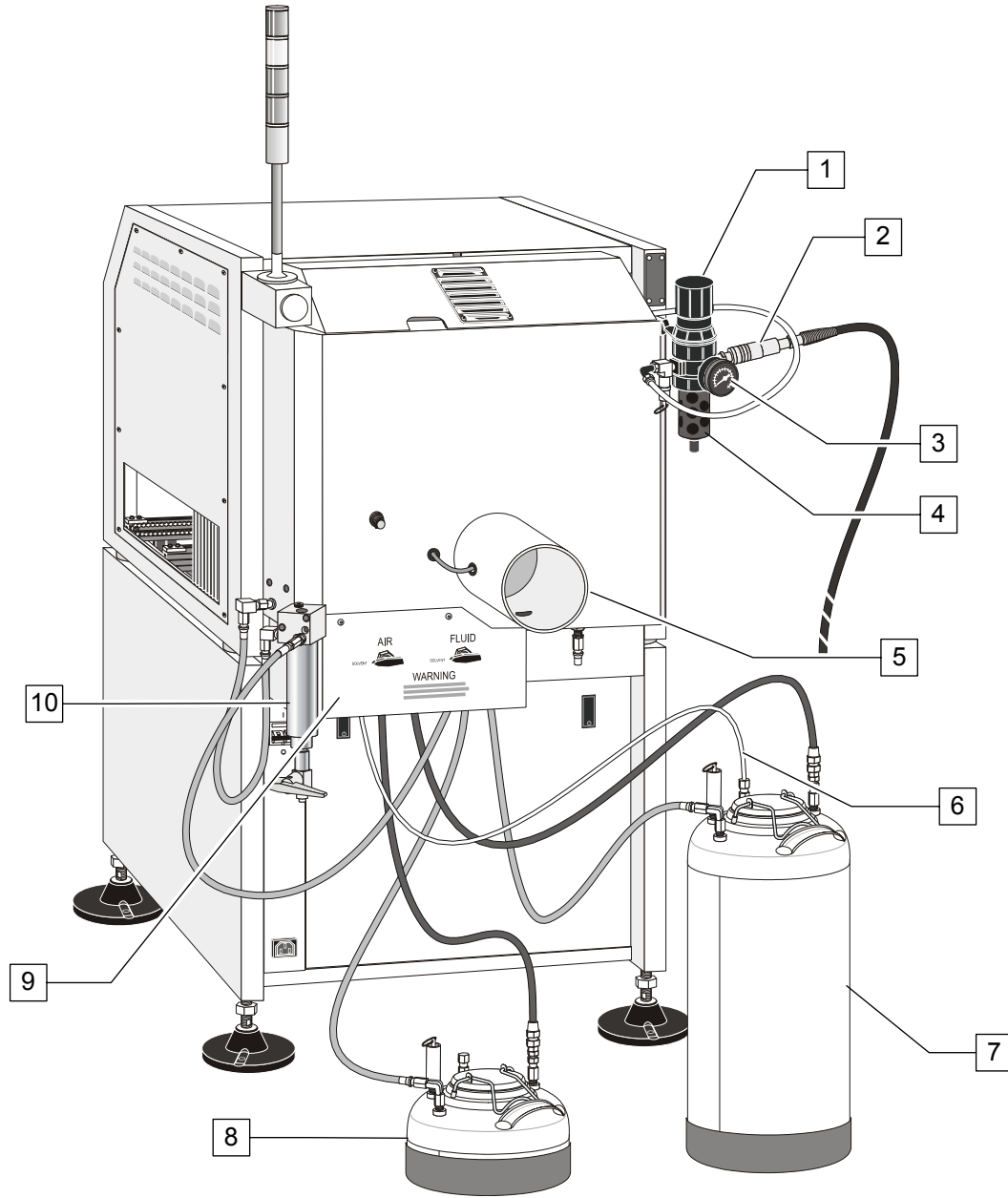
The fluid reservoir contains conformal coating fluid or solvent.

9. *Manual Material Change Over (optional)*

If your dispensing system is equipped with two fluid reservoirs, the Manual Material Change Over mechanism is used to switch between a fluid reservoir and solvent reservoir and toggle the air supplied between the reservoirs.

10. *Fluid Filter*

The Fluid Filter blocks small particles in the conformal coating fluid from passing to the Fluid Dispensing Applicator.



Item	Description	Item	Description
1	Main Air Regulator	6	Low Fluid Sensor
2	Main Air Inlet	7	Fluid Reservoir (5 gallon)
3	Main Air Gauge	8	Fluid Reservoir (1 gallon)
4	Air Filter and Water Trap	9	Manual Material Change Over Option
5	Exhaust Vent Duct	10	Fluid Filter

Figure 1-7 Rear View (with Material Changeover Option)

Lower Rear View

Below are descriptions of the C-740/C-741 Series Dispensing System components shown in Figure 1-8.

1. Main Power Inlet

The Main Power Inlet connects the Main Power Cord from the facility power source to the dispensing system.

2. Main Power Circuit Breaker

The Main Power Circuit Breaker controls all electrical power to the entire system including the dispensing system, Computer, and Computer Monitor.

3. Power Manager Module

The Power Manager Module controls both AC and DC power supplied to all system components.

4. Tri-Mode Swirl Box (Optional)

The Tri-Mode Swirl Box is a component of the SC-200 and SC-300 Swirl Fluid Systems. It has two air assist and two fluid regulators and gauges, which regulate the fluid and air-assist pressure to the fluid applicator. By varying the pressures, conformal coating materials can be dispensed in a bead, monofilament, or swirl pattern.

5. Conveyor Controller Module (C-740)

The Conveyor Controller module monitors the SMEMA interface and controls the Conveyor indexing operations. The inputs and outputs are used for sensors, Stop Pins, Board Pins, and operation of the Conveyor. For more information on the Conveyor, refer to the [Operation](#) section

6. Computer

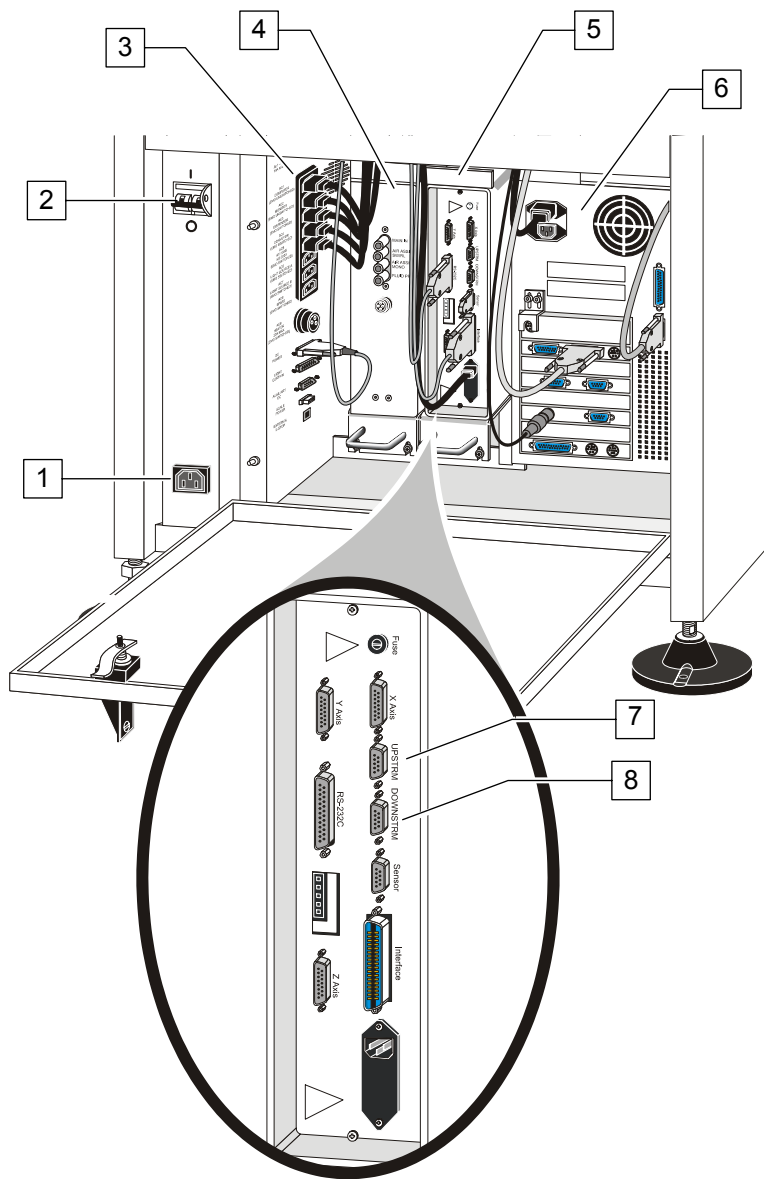
The Computer System is used to create and run dispensing programs with the Asymtek Easy Coat for Windows XP (ECXP) dispensing software. Access to connections at the rear of the computer should be limited to service technicians.

7. SMEMA Connector (upstream)

The upstream SMEMA connector is located on the Conveyor Controller Module and allows for SMEMA communication between the dispensing system and an upstream machine such as a loader.

8. SMEMA Connector (downstream)

The downstream SMEMA connector is located on the Conveyor Controller and allows for SMEMA communication between the dispensing system and a downstream machine such as an unloader.



Item	Description
1	Main Power Inlet
2	Main Power Circuit Breaker
3	Power Manager Module
4	Tri-Mode Swirl Box (Optional)
5	Conveyor Controller Module (C-740)
6	Computer
7	SMEMA Connector (upstream)
8	SMEMA Connector (downstream)

Figure 1-8 Lower Rear View

Right Rear View (Close-up)

Below are descriptions of C-740/C-741 Series Dispensing System components shown in Figure 1-9.

1. Stop/Clamp Air Gauge (C-740)

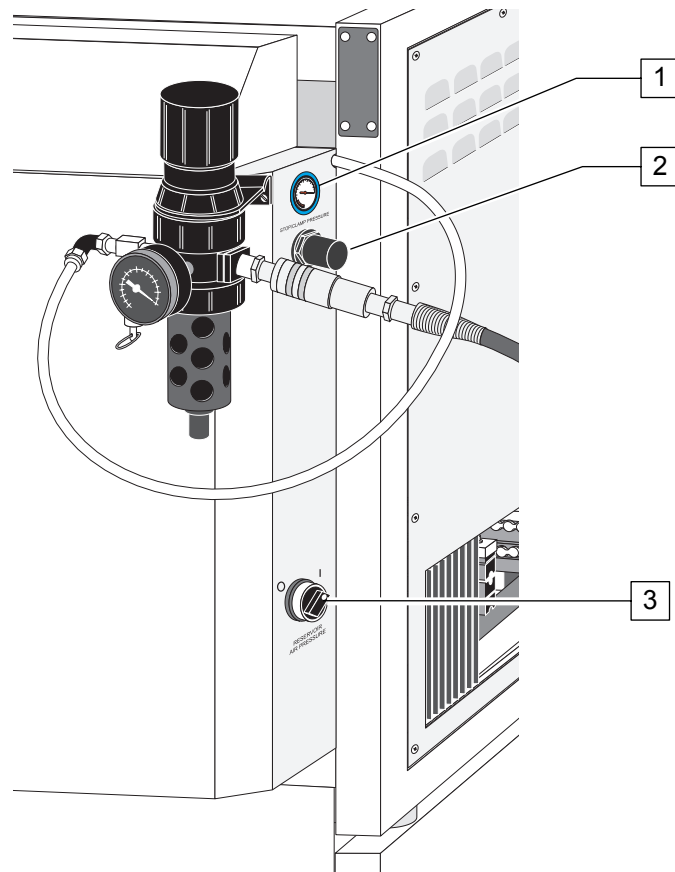
The Stop/Clamp Air Gauge indicates the air pressure to which the Stop/Clamp Air Regulator is set. The recommended setting is 206 to 275 kPa (30-40 psi).

2. Stop/Clamp Air Regulator (C-740)

The Stop/Clamp Air Regulator controls the air pressure supplied to the Stop Pins and Board Pins on the Conveyor.

3. Reservoir Air Pressure Pneumatic Switch

The Reservoir Air Pressure Pneumatic Switch toggles the air supplied to the fluid reservoir ON and OFF.



Item	Description
1	Stop/Clamp Air Gauge
2	Stop/Clamp Air Regulator
3	Reservoir Air Pressure Pneumatic Switch

Figure 1-9 Right Rear Close-up

2 Safety

Overview

This section is intended to provide basic safety information necessary for operating and servicing the Century C-740/C-741 Series Dispensing System. This section covers the following topics:

- Facility Requirements
- Intended Use
- Basic Safety Precautions and Practices
- Safety Warning Labels
- Emergency Shutdown
- Integrated Safety Systems

To further optimize safe dispensing system operation, precautions and recommended practices are included with the procedures throughout this manual.



WARNING!



CAUTION!

Unsafe equipment conditions can result in personal injury or property damage. Failure to properly operate and maintain the system in accordance with this manual may compromise the built-in safety features.



NOTE

Safety is considered a joint responsibility between the original equipment manufacturer (Asymtek) and the end-user (owner). All safety precautions and practices should be in accordance with local regulations and facility practice.

Facility Requirements

To ensure optimal performance and safety, it is necessary to install the dispensing system in a facility that meets the necessary requirements. Refer to the *Century C-740/C-741 Installation, Operations and Maintenance Manual* for facility requirements. If you have any questions, please contact Asymtek Technical Support.

Intended Use

Use of Asymtek equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property. Some examples of unintended use of equipment include:

- Using incompatible materials
- Making unauthorized modifications
- Removing or bypassing safety guards or interlocks
- Using incompatible or damaged parts
- Using unapproved auxiliary equipment
- Operating equipment in excess of maximum ratings

Basic Safety Precautions and Practices

Compliance with the following recommended precautions and practices will prevent personal injury or damage to property during Century C-740/C-741 Series Dispensing System operation and maintenance.



WARNING!



CAUTION!

Failure to comply with any of the safety recommendations could cause serious injury to the user or damage to the dispensing system.

Safety of Personnel

- Only trained personnel should be permitted to perform operation, maintenance, and troubleshooting procedures.
- There should always be a second person present when performing maintenance on a system under power.
- Locate, identify, and obey all safety warning labels on your system before initial use. See [“Safety Warning Labels”](#) later in this section for details.
- Immediately push the red emergency machine off (EMO) button if personnel are in danger of being injured.
- Lock out and tag out power and disconnect facility air to the dispensing system before performing service or maintenance on the dispensing system. Refer to the *Century C-740/C-741 Installation, Operation and Maintenance Manual* for details.
- Lock out and tag out power to upstream and downstream machines before performing service or maintenance on the dispensing system.
- Do not wear loose clothing or jewelry while operating the system. Tie back long hair to prevent it from being caught in moving parts.
- Do not touch the dispensing head, conveyor, or other moving parts while the dispensing system is operating.
- To prevent burn injury, wear thermal gloves when working around heater tooling and fluid heaters.
- If your system is equipped with Laser Fan Width Control, use extreme care to avoid looking directly at the laser beam or its reflection off of mirror-like surfaces. Refer to the *Laser Fan Width Control Owner’s Manual* for additional information.
- Always wear appropriate personal protective equipment (PPE) as recommended by facility safety practices and the material manufacturer’s Material Safety Data Sheet (MSDS).
- Make sure that the main power cable and main air supply hose are securely connected before operating the dispensing system.
- If in a confined room, ensure adequate and uninterrupted air ventilation, heating, and cooling to meet environmental stress limits of personnel and the dispensing system.

- Where volatile organic compound (VOC) emissions can exceed safe limits, facility ventilation and filtration systems must be operational.
- Provide adequate space around the dispensing system to allow for movement of maintenance and service personnel. Allow space for access doors and service panels to open fully.
- Make sure all facility power sources are safely grounded.
- Routinely inspect all air hoses and electrical cables for damage.
- Make sure that power cords and air supply hoses do not cross a walkway or aisle.
- Before attempting to lift a load, take into consideration facility lifting and transport precautions.
- Maintain a clean and orderly work area.

Material Safety

- Follow Material Safety Data Sheet (MSDS) recommendations for the proper handling, cleanup, and disposal of hazardous materials.
- Know the MSDS recommendations for treatment of injury resulting from exposure to hazardous materials.
- When working with multiple fluids, refer to the MSDS to ensure the materials are compatible.
- High-pressure fluids, unless they are safely contained, are extremely hazardous. Always relieve fluid pressure before adjusting or servicing high-pressure equipment. A jet of high-pressure fluid can cut like a knife and cause serious bodily injury, amputation, or death. Fluids penetrating the skin can also cause toxic poisoning.

Preventing Dispensing System and Workpiece Damage

- Immediately push the EMO button if dispensing system or a workpiece is in danger of being damaged.
- Use standard Electrostatic Discharge (ESD) precautions when working near sensitive components. Always wear a grounding strap and connect it to the ESD ground before handling workpieces.
- Immediately contain and clean up any caustic or conductive fluid spills as recommended in the material manufacturer's MSDS. If fluid gets into internal portions of the machine, immediately contact Asymtek Technical Support.
- Follow all recommended system maintenance procedures.
- Always keep the dispensing area clear of any fallen workpieces or obstacles.
- Ensure that no air intake or exhaust grilles are blocked when the system is in operation.

Safety Warning Labels



WARNING!



CAUTION!

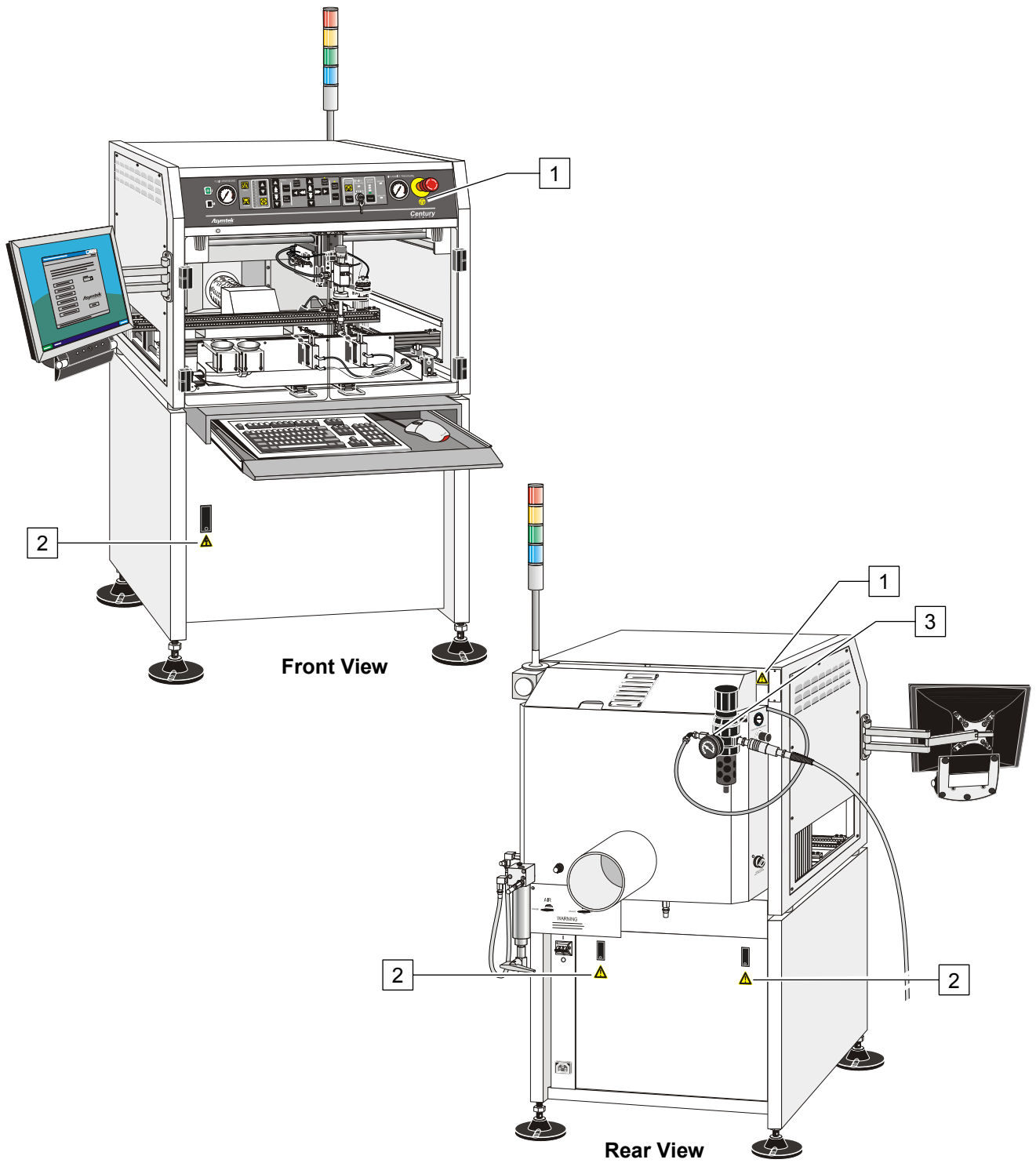
Comply with all safety warning labels or serious injury to personnel or damage to the dispensing system may occur. Worn or damaged labels should be replaced with new labels having the same part number.

Warning labels on your Century C-740/C-741 Series Dispensing System point out areas where personnel must use extreme caution to prevent serious injury and property damage. Table 2-1 shows the warning symbols that may be found on your dispensing system or optional equipment. The location of warning labels found on a typical Century C-740/C-741 Dispensing System is shown in Figure 2-1.

Table 2-1 Safety Warning Symbols

Warning Type	Symbol	Part Number	Hazard
Electrical (Shock Hazard)		70-0116-00 ⁽¹⁾ or 70-0050-00 ⁽²⁾	This label warns of a high-voltage component that can cause shock, burn, or death. Use extreme caution when working in or around these areas. Disconnect and lock out power before servicing.
General Warning		70-0055-00	This label identifies features that require special attention. These features include moving parts (such as the Dispensing Head), important power supply components (such as the Main Power Switch), safety devices (such as the Interlock), or pneumatic components (such as the Main Air Regulator and Gauge).
Fuse (Fire Hazard)		70-0119-00 ⁽¹⁾ or 196667 ⁽²⁾	This label warns of a fuse requirement that, if not met, can cause fire or severe damage to the equipment. For protection against risk of fire, replace a fuse with one having the same type and current rating. Disconnect and lock out power before servicing.
Heavy Object (Lifting Hazard)		70-0118-00 ⁽¹⁾ or 196666 ⁽²⁾	This label warns that the labeled component is heavy and can cause muscle strain or back injury to personnel trying to lift it.
Pressure Relief Warning		322352	This label warns that the Pressure Relief Valve should be pulled before performing service on the pneumatic system or opening the fluid reservoir.
Laser Radiation Warning		7201438 ⁽¹⁾ or 7206858 ⁽²⁾	This label warns of the possibility of hazardous radiation exposure.

Notes: (1) Rectangular labels with symbols and text.
(2) Triangular labels with symbols only.



Item	Description
1	General Warning
2	Electrical Warning
3	General Warning (on top-side of gauge)

Figure 2-1 Safety Warning Labels,

Emergency Shutdown

Your Century C-740/C-741 Series Dispensing System features an Emergency Machine Off (EMO) button that the operator or service technician can use to immediately stop all dispensing operations in case of emergency. This feature helps prevent injury to personnel and damage to the dispensing system and workpieces being processed.

The EMO button is located on the Control Panel on the front of the dispensing system (Figure 2-2). The EMO vents all pressure in the pneumatic system, de-energizes the servo power supply capacitors, and cuts power to all system components except the Computer and Monitor.



TIP

If the operator or technician is unable to reach the EMO button, the Main Circuit Breaker, which is located on the back of the system (see Figure 2-2), can be used for emergency shutdown, but doing this will also shut down the computer and monitor.

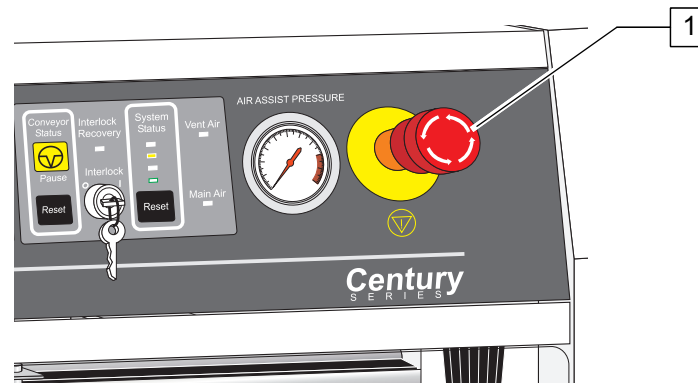


Figure 2-2A Control Panel

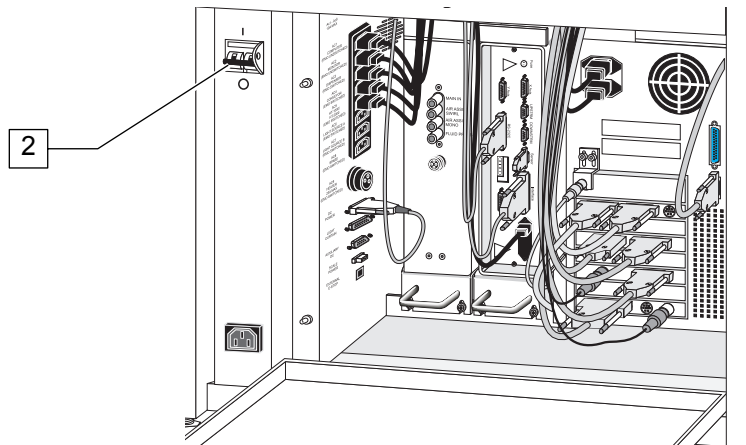


Figure 2-2B Lower Rear

Item	Description
1	Emergency Machine Off (EMO) Button
2	Main Circuit Breaker

Figure 2-2 EMO/Main Circuit Breaker Locations

Emergency Shutdown Situations

As a minimum, activate the EMO in the following situations:



WARNING!



CAUTION!

In an emergency, failure to completely shut down power to the dispensing system with the EMO can cause serious injury to the user and/or damage to the dispensing system.

- If anyone is in immediate danger of being injured by moving parts, hazardous materials, or electrical shock.
- If valuable dispensing system components or the workpieces are in danger of being damaged. This can include:
 - Physical damage to the dispensing valve or workpiece by unexpected Dispensing Head movement.
 - Electrical damage to the dispensing system.

Emergency Shutdown Recovery



WARNING!



CAUTION!

Do not restart the dispensing operation until the condition that caused the emergency shutdown has been corrected. Failure to comply could cause serious injury to the user and/or serious damage to the dispensing system.



NOTE

If the Main Circuit Breaker has been tripped, you will need to restart the dispensing system as specified under “[Startup](#)” in the [Operation](#) section.

To recover after an emergency shutdown:

1. Open the front doors and clear the Conveyor of all workpieces.
2. Locate and remedy the cause of the emergency shutdown. Refer to the *Century C-740/C-741 Series Information, Operations, and Maintenance Manual* for troubleshooting suggestions.
3. Close the dispensing area doors.
4. Turn the EMO knob counterclockwise until it pops back into position.
5. Press the **Start (I)** button on the Control Panel.
6. Press **Find Home** on the Control Panel.
7. Restart your dispensing program. See “[Loading a Program](#)” and “[Running a Program](#)” in the [Operation](#) section.

Integrated Safety Systems

The C-740/C-741 Series Dispensing Systems have a built-in safety system that automatically protects personnel from being injured by movement of the Dispensing Head and Conveyor. This system consists of the following:

- Safety Interlock System
- Light Beacon


Safety Interlock System

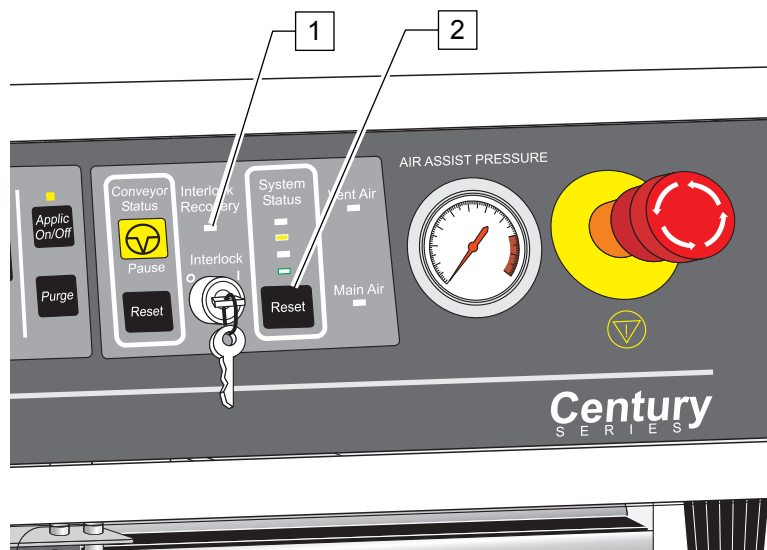
The Safety Interlock System consists of the following:

- Safety Interlock Keyswitch
- Interlock Door Sensors
- Interlock Recovery Light

Safety Interlock Keyswitch

The Safety Interlock Keyswitch is located on the Control Panel (Figure 2-3). It is designed to restrict access to the inside of the dispensing system, based on user-defined levels of operation. The Safety Interlock has two modes: ON (I) or OFF(0). Once an Interlock safety mode is selected, the key can be removed to prevent an inadvertent mode change. The Safety Interlock is designed to work with either the Door Sensors or with the Light Curtain.

 **NOTE** References that describe the front doors as “open” also pertain to situations where the Light Curtain has been triggered by an intruding object.



Item	Description
1	Interlock Keyswitch
2	System Status Indicator LED's

Figure 2-3 Safety Interlock Keyswitch



CAUTION!

Do NOT use the Interlock OFF mode during normal operation. Use OFF mode only when servicing or programming the dispensing system.

ON Mode

When the Interlock is ON (I) and a dispensing program is running, opening the front doors stops all dispensing motion and all position references are lost. This Interlock shutdown condition is indicated by a red System Status Indicator LED on the Control Panel (Figure 2-3) and by a red light on the Light Beacon. For more information, see “[Non-Recoverable Interlock Shutdown](#)” later in this section.

OFF Mode

When the Interlock is OFF (0), it is in BYPASS mode. Both the yellow Light Beacon light and yellow System Status Indicator LED (Figure 2-3) are ON when the Interlock is OFF. When the Interlock is in BYPASS mode, opening the front doors WILL NOT stop Dispensing Head motion. The BYPASS mode should only be used for servicing or programming the dispensing system.

Interlock Warning Tag

This optional tag (see Figure 2-4) can be used to warn operators and service technicians that the Interlock safety feature has been bypassed. Please contact Asymtek for further information.



Figure 2-4 Optional Interlock Warning Tag

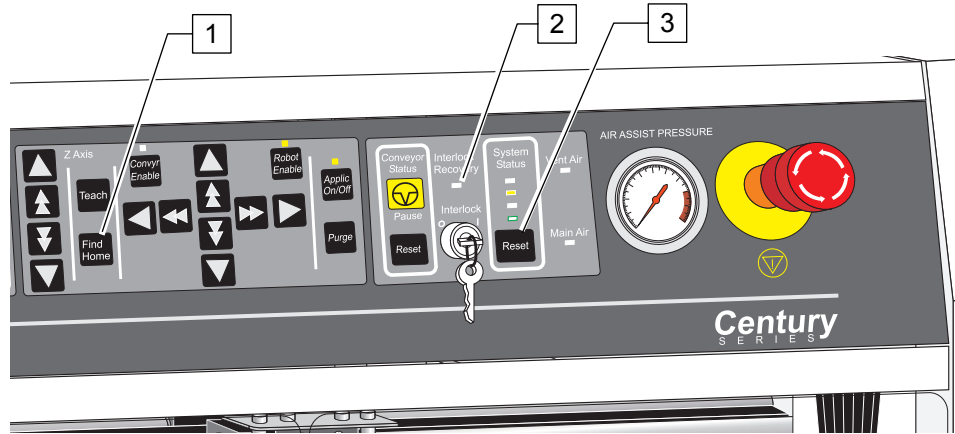
Interlock Door Sensors

The Interlock Door Sensors detect the door status (open or closed). Depending on the Interlock mode, access for certain operations is limited as the Door Sensors activate the Safety Interlock System.

On some systems, the Light Curtain option replaces the doors. The Light Curtain uses an emitter and a receiver to detect obstructions. When an object crosses the Light Curtain, these sensors trigger the Interlock System. For more information, refer to the *Century C-740/C-741 Installation, Operations and Maintenance Manual*.

Interlock Recovery Light

The Interlock Recovery Light (Figure 2-5) is located on the Control Panel and is labeled Interlock Recovery. When the light is ON, you can safely access the inside of the dispensing area. When the light is OFF, accessing the inside of the dispensing area will cause a non-recoverable interlock shutdown to occur.



Item	Description
1	Find Home
2	Interlock Recovery Light
3	System Status Reset

Figure 2-5 Interlock Shutdown Recovery

Non-Recoverable Interlock Shutdown


When a non-recoverable interlock shutdown occurs, the motor power turns OFF, the system loses master references, and the red “ABORT” System Status Indicator LED (Figure 2-6) illuminates. The program WILL NOT be able to resume from where it stopped.

To recover from a shutdown triggered by the Interlock:

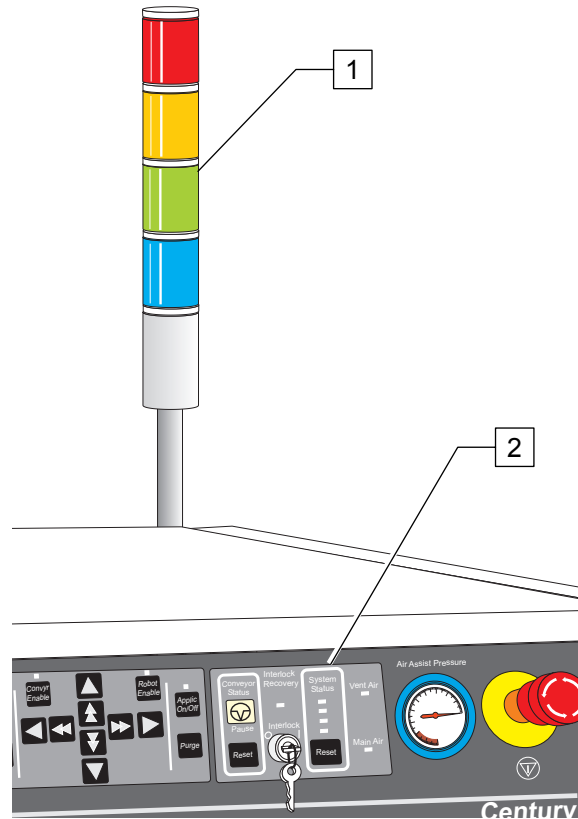
1. Close the doors or remove obstruction from Light Curtain (if installed).
2. Press the **System Status Reset** button on the Control Panel. See Figure 2-5.
3. Wait three seconds and then press the **Find Home** button on the Control Panel. See Figure 2-5.
4. Restart your dispensing program. See “[Loading a Program](#)” and “[Running a Program](#)” in the [Operation](#) section.

Light Beacon

Located at the top right corner of the system, the Light Beacon is a device that displays system status. The Beacon has four different colored lights that can be constantly ON or flashing and has an audible alarm. The colors on the Light Beacon correspond with the System Status LED's on the Control Panel. See Table 2-2 for an explanation of each color indication. The Light Beacon can be custom configured to respond to the I/O states of customer equipment. For more information, refer to the *Century C-740/C-741 Installation, Operations and Maintenance Manual*.

 **NOTE** Software and hardware share control of the Beacon lights. Hardware-driven displays may override those caused by software conditions and vice versa. Flashing light software commands have priority over solid light commands.

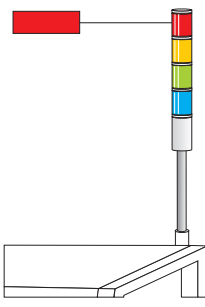
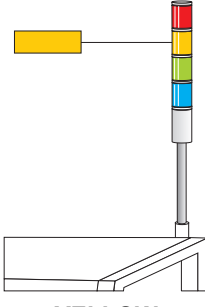
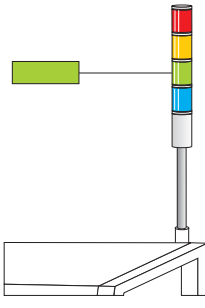
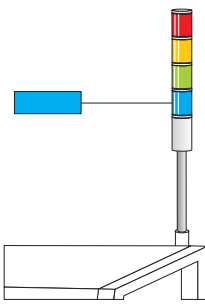
For instance, if the software program dictates a solid yellow light and the hardware detects low air pressure requiring a flashing yellow light, the Beacon will flash the yellow light. A hardware-driven solid yellow light (for a door open condition, for example) will be overridden by a software command to flash the yellow light.




Item	Description
1	Light Beacon
2	System Status LED's

Figure 2-6 Light Beacon/System Status LED's

Table 2-2 Light Beacon Color Indications

Beacon Color	Dispenser Status	Recovery Procedures
 <p>RED</p>	<p>ALERT</p> <p>All motion, outputs, valve, and motion controls are disabled.</p> <p>One of the following conditions exists:</p> <ol style="list-style-type: none"> 1. Doors open or light curtain is obstructed when system is moving, INTERLOCK at "I" position. 2. System is in an abort state. 3. INTERLOCK at "I" position, Low Pressure Sensor has been activated. 4. Ventilation is set too low. 	<ul style="list-style-type: none"> • Close doors or remove obstruction, or change INTERLOCK to "0" position. • Press DISPENSER STATUS RESET. • Press FIND HOME. • Select the proper Interlock Mode for your application. • Restart the program. • Check your facility air supply. • Increase ventilation.
	<p>ALERT</p> <p>Audible Alarm</p>	<ul style="list-style-type: none"> • Press DISPENSER STATUS RESET.
 <p>YELLOW</p>	<p>CAUTION</p> <p>One of the following conditions exists:</p> <ol style="list-style-type: none"> 1. INTERLOCK at "0" position. 2. INTERLOCK at "I" position, front doors open or light curtain is obstructed when system is not moving. 3. Blinking Yellow: INTERLOCK at "I" position, Low Pressure Sensor has been activated. 	<ul style="list-style-type: none"> • Reset Interlock System. • Close doors or remove obstruction. • Select correct Interlock mode for your application. • Check your facility air supply.
 <p>GREEN</p>	<p>OPERATION</p> <p>If the machine has doors, the green light means that the system is operational with the front doors closed.</p> <p>If the machine uses a light curtain, the green light means that the system is fully operational with no obstruction in the light curtain. In both cases, INTERLOCK is at "I" position.</p>	<p>Normal condition (no correction needed)</p>
 <p>BLUE</p>	<p>USER-DEFINED</p> <p>(Examples below)</p> <ol style="list-style-type: none"> 1. Low fluid in reservoir. 2. Custom-programmed condition has triggered blue light. 	<p>USER-DEFINED</p> <ul style="list-style-type: none"> • System needs attention. Refill or switch reservoirs. • See custom-programmed condition recovery procedures, or see production supervisor.

 **NOTE** Refer to the *Century C-740/C-741 Installation, Operations and Maintenance Manual* for suggested recovery from the specified conditions.

3 Operation

Overview

Before operating your Century C-740/C-741 Dispensing System, it may be helpful to familiarize yourself with the basics of how the system works. This section covers the following topics:

- [Basic System Operation](#)
- [Easy Coat for Windows \(ECXP\) Software](#)
- [Dispensing Operations](#)
- [Conveyor Operations](#)
- [Control Panel](#)
- [Pneumatic Regulators and Gauges](#)
- [System Startup/Shutdown](#)
- [Characterization](#)
- [Loading a Program](#)
- [Running a Program](#)



NOTE In this section, typical Century C-740/C-741 configurations are considered. However, operational details may vary with the configuration of your system.

Basic System Operation

The Century C-740/C-741 Series Dispensing System is designed to apply conformal coating materials with a high level of flexibility and consistency for both inline (C-740) and batch (C-741) coating applications.

The C-740 has a chain conveyor, which carries the product from an upstream machine, to a dispensing station where fluid is dispensed, and then delivers the processed product to a downstream machine.

Instead of the conveyor, the C-741 batch dispensing system includes an aluminum tooling plate or adjustable tooling rails. The tooling plate is easily removed for modification. Workpiece fixturing is customer-supplied. The adjustable tooling rail option is ready to accept boards with a 3mm or greater edge clearance.



NOTE A product, also referred to as workpiece, is defined as a board or substrate (PCB, PWB, etc.) or a carrier (pallet, auer boat, lead frame, etc.) to be dispensed upon.

Easy Coat for Windows (ECXP) Software

Easy Coat for Windows XP (ECXP) software controls both the robot movements and the dispensing operation. Before the dispensing process can begin, the ECXP software must be installed and programmed to perform the necessary procedures. Refer to [“Loading a Program”](#) and [“Running a Program”](#) for detailed instructions on how to load and run a dispensing program.

Dispensing Operations

All dispensing operations take place in the workcell, also referred to as the dispensing area. The workcell contains a robot and a fluid dispensing applicator mounted on the robot tool arm.

Robot Concepts

Home

The home position of the robot is a known position within the workspace defined by X, Y, and Z coordinates. It is generally located at the front left of the workcell.

Tool

A tool consists of a fluid dispensing applicator and nozzle.

Tool Offset

The tool offset is the X, Y, and Z distance from the robot's lower tooling pin to the tool tip (the end of the nozzle). Robot position is calculated using the coordinates of the tooling pin plus the offset. For more information, refer to the *Century C-740/C-741 Installation, Operations and Maintenance Manual*.

Robot Motion

Robot moves are specified as coordinates on the X, Y or Z-axes. If a move combines motion in all three axes, and the Robot Controller cannot move the robot in the Z-axis at the same time as the X and Y-axes, then the move is performed (depending on the Safe Z Height setting) as follows:

- If the destination is higher than the starting point, the Z motion is performed first.
- If the destination is lower than the starting point, the Z motion is performed last.

Fixture

Fixture is defined as the location at which products are physically constrained in the workcell. It consists of both a position (X, Y, Z) and a corner constraint. For more information, refer to the *Century C-740/C-741 Installation, Operations and Maintenance Manual*.

Safe Z Height

This is the height below which the tool tip cannot go when moving from one set of coordinates to another during operation. It prevents the tool tip from colliding with a board component, a fixture, or the conveyor. The Safe Z Height is set in the ECXP program. For more information, refer to the *Century C-740/C-741 Installation, Operations and Maintenance Manual*.

Coordinate Systems

All positioning in the workcell is done with reference to sets of position coordinates, called Reference Frames. As you face the front of the workcell, the X-axis is left to right, the Y-axis is front to rear, and the Z-axis is up and down. Three different sets of Reference Frames are used: Robot Reference Frame, Product Reference Frame and Pattern Reference Frame.

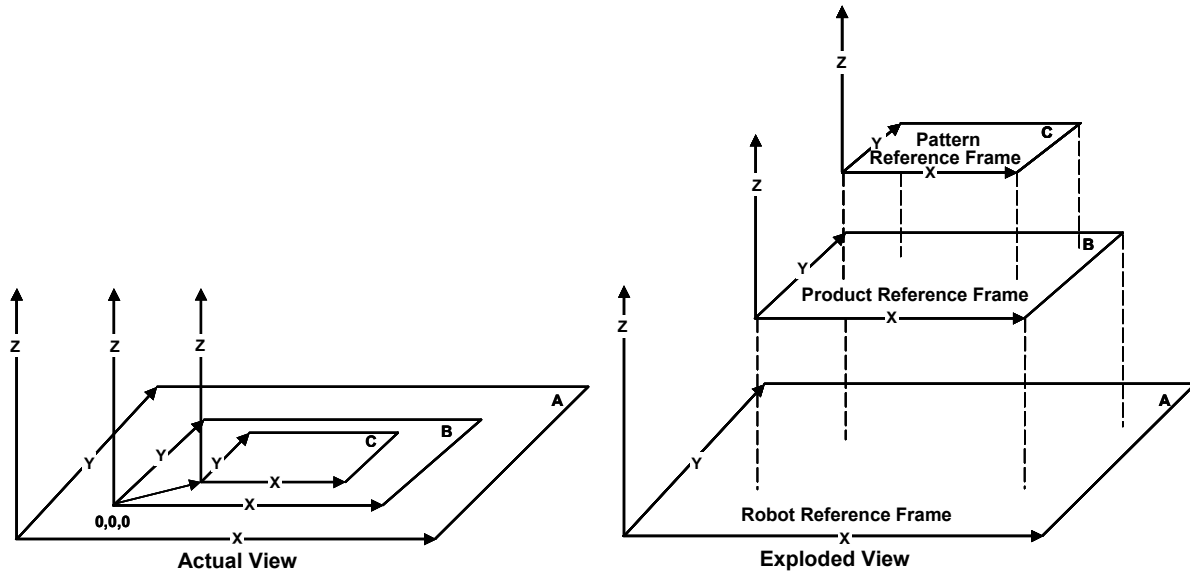


Figure 3-1 Reference Frames

Robot Reference Frame

The Robot Reference Frame (Figure 3-1, Rectangle A) is the set of coordinates (X, Y, and Z) that define the robot's workspace. The origin (Home) of the Robot Reference Frame is a known point in the workspace, defined by a set of limit switches.

Product Reference Frame

Product Reference Frames (Figure 3-1, Rectangle B) exist within the Robot Reference Frame. ECXP uses fixture constraint coordinates, plus the length and width of the product, to calculate the coordinates of the product reference frame. The product reference frame origin is the Main Pattern Edit Frame.



NOTE A product can be a board or a carrier containing one or more boards. If a carrier is used, the dimensions of the carrier are used to calculate the product reference frame.

Pattern Reference Frame

Other than the Main Pattern Edit Frame, the origin coordinates of patterns (Figure 3-1, Rectangle C) are expressed as a set of coordinates in the Product Reference Frame. The pattern origin coordinates are stored in the Pattern Reference Frame when the pattern is created.

Pattern Execution

The Main Pattern runs when the program is executed and contains the dispensing instructions. The Main Pattern is placed at the Product Reference Frame origin, which is the front left corner of the workpiece.

Conveyor Operations

Chain Conveyor (C-740)

The chain conveyor, standard on the Century Series C-740 Dispensing System, transports the workpiece into and out of the dispensing system. Operation of the conveyor is automatic during production runs. An optical sensor detects the part as it arrives, triggering the Conveyor Controller Module to activate the Stop Pin to stop the part at the correct location. Board pins in the dispense zone secure the part in place during fluid dispensing.



NOTE The C-741 batch system has a tooling plate or adjustable tooling rails to secure the workpiece for dispensing operations.

Conveyor Adjustments

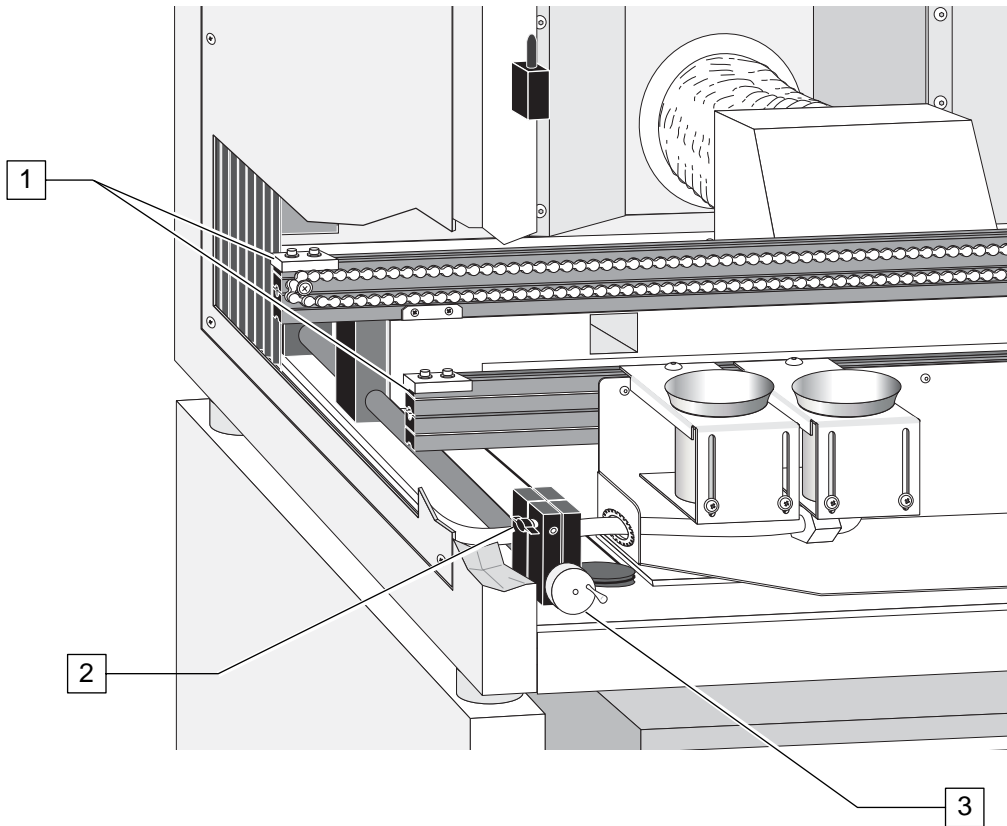
The conveyor should not need adjustment during normal operation. However, during programming, or when replacing conveyor parts or changing the type/size of the workpiece, you may need to move the conveyor chain left or right, or adjust the distance between the conveyor rails.

To move the conveyor chain left or right:

1. Press **CONVYR ENABLE** on the Control Panel.
 - ▶ The conveyor LED blinks when the conveyor control is active.
2. Press the left or right arrow on the Control Panel to move the conveyor chain left or right, respectively.

To manually adjust the distance between conveyor rails:

1. Loosen the Width Adjustment Clamp (Figure 3-2).
2. Manually turn the hand crank clockwise or counterclockwise as needed.
 - ▶ Turning the hand crank clockwise increases the distance between the rails.
 - ▶ Turning the hand crank counterclockwise decreases the distance between the rails.
3. When you are satisfied with the distance between the rails, tighten the Width Adjustment Clamp.



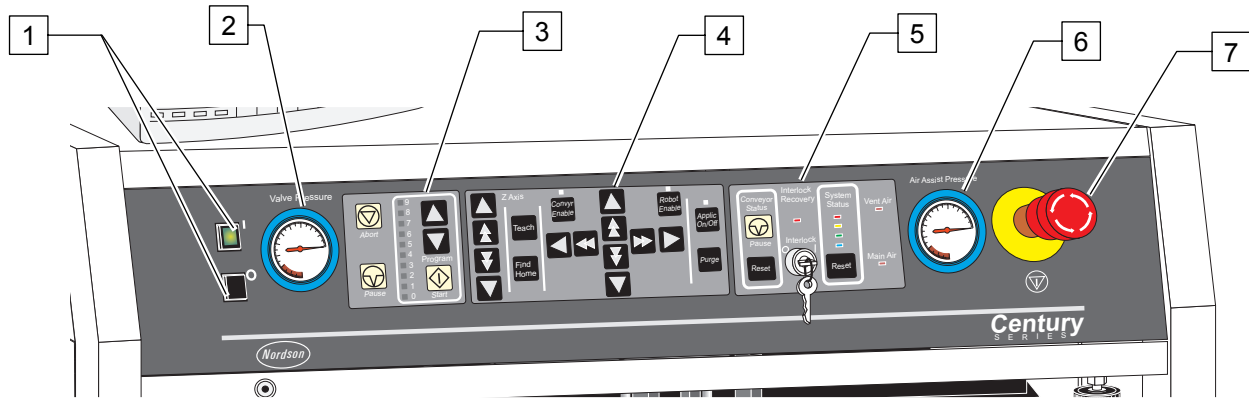
Item	Description
1	Conveyor Rails
2	Conveyor Adjustment Clamp
3	Hand Crank

Figure 3-2 Manual Conveyor Width Adjustment

Control Panel

The following operational controls are located on the Control Panel (Figure 3-3).

- Power Buttons
- Download Program Controls
- Motion Controls
- System Status Controls






Item	Description
1	Start/Stop Buttons
2	Fluid Pressure Gauge (see Pneumatic Regulators and Gauges)
3	Download Program Controls
4	Motion Controls
5	System Status Controls
6	Air Assist Pressure Gauge (NOT USED)
7	Emergency Machine Off (EMO) Button

Figure 3-3 Control Panel

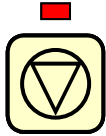
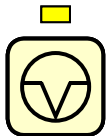
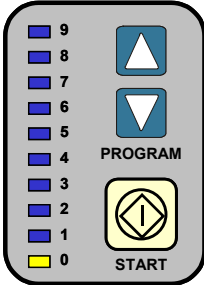

Power Buttons

Table 3-1 Power Buttons

Button/Switch	Appearance	Function
EMO Button		<p>Located at the right end of the Control Panel, the large, red Emergency Machine OFF (EMO) button cuts electricity to the Power Manager and stops all system motion.</p> <p>Pressing the EMO vents all pressure in the pneumatic system, de-energizes the robot motors, and cuts power to all system components except the Computer and Monitor.</p>
System START/STOP Buttons		<p>The Start and Stop buttons are located on the Control Panel and control power to major system components.</p> <p>The Start (I) button glows green when pushed and continues to glow until the Stop (O) button or Emergency Machine OFF (EMO) button is pressed.</p> <p> NOTE During power-up, there is a 60 second delay to allow the dispensing system to vent properly.</p>

Download Program Controls

Table 3-2 Download Program Controls

Button/Indicator	Function
 ABORT	<p>ABORT halts a production run. After you press the ABORT button, its red LED lights to indicate that the currently loaded program is discontinued.</p> <p>After a program is aborted you must press RESET and then FIND HOME before you can restart the program.</p>
 PAUSE	<p>PAUSE temporarily stops a production run. When its yellow LED indicator is ON, the system is paused. You can pause a production run at any time.</p> <p>To resume dispensing, press PAUSE again. When the LED indicator turns OFF, the system resumes dispensing.</p>
	<p>Program selection lets you program the dispensing system and download a pre-programmed set of instructions.</p> <p> NOTE This feature is not used with ECXP.</p>

Motion Controls

Table 3-3 Motion Controls

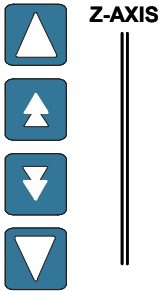







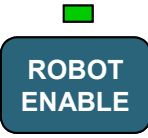

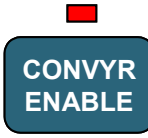

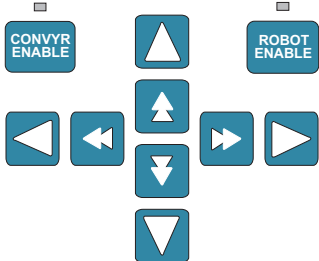
















Button/Indicator	Function	
	 Moves the Dispensing Head up in small* increments.	 Moves the Dispensing Head down in small* increments.
	 Moves the Dispensing Head up in large** increments.	 Moves the Dispensing Head down in large** increments.
	 NOTE The Z-Axis arrows are non-functional for the conveyor.	
	TEACH lets you set a desired point on the dispensing surface when prompted by the Easy Coat program. The software stores the “taught” location for future reference.	
	<p>FIND HOME sends the Dispensing Head to either its XYZ or its Z machine origin. Before you press FIND HOME, verify that the ROBOT ENABLE LED is lit, indicating the controls are active.</p> <p>FIND HOME can be used in two ways:</p> <ol style="list-style-type: none"> To move the Dispensing Head to its XYZ machine origin and re-establish its “Home” reference coordinates, press FIND HOME. The Dispensing Head finds home in the following order: <ul style="list-style-type: none"> Moves to the Z-Axis Home position first (up/down position). Moves in the Y-Axis at 50-75 mm/sec (2-3 in/sec) to the front of the dispensing area. Moves in the X-Axis at 50-75 mm/sec (2-3 in/sec) to the front left corner of the dispensing area. To move the Dispensing Head to its Z machine origin and re-establish its “Home” reference coordinates, first press a “Z” axis UP button, then press FIND HOME. 	
	Press ROBOT ENABLE to establish communication to the Robot (Dispensing Head) Controller. Once communication has been established, the right and left arrows on the Control Panel control the X-axis motion of the robot and the up and down arrows control the Y-axis motion.  NOTE The LED above the ROBOT ENABLE button will be illuminated when the robot is enabled.	
	Press CONVYR ENABLE to establish communication with the conveyor Controller. Once communication has been established, the right and left arrows on the Control Panel control forward and reverse motion of the conveyor. The up and down arrows on the Control Panel are non-functional for the conveyor.  NOTE The LED above the CONVYR ENABLE button will be illuminated when the conveyor is enabled.	

Table 3-3 Motion Controls (continued)

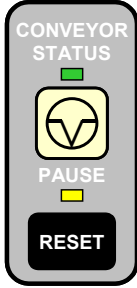

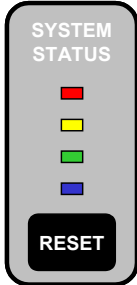



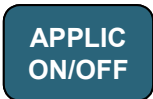

Button/Indicator	Function			
	Dispensing Head Response (XY-Axis)		Conveyor Response (XY-Axis)	
		Moves the Dispensing Head to the back in small* increments.		
		Moves the Dispensing Head to the front in small* increments.		
		Moves the Dispensing Head to the right in small* increments.		Moves the Conveyor to the right in small* increments.
		Moves the Dispensing Head to the left in small* increments.		Moves the Conveyor to the left in small* increments.
		Moves the Dispensing Head to the back in large** increments.		
		Moves the Dispensing Head to the right in large** increments.		Moves the Conveyor to the right in large** increments.
		Moves the Dispensing Head to the front in large** increments.		
		Moves the Dispensing Head to the left in large** increments.		Moves the Conveyor to the left in large** increments.

* Click and release a single arrow to move the component 1 mm/sec (0.001 in. per sec). Click and hold a single arrow to move the component 25.4 mm/sec (1 in. per sec).

** Click and hold a double arrow to move the component 50 to 75 mm/sec (2 to 3 in. per sec).

System Status Controls

Table 3-4 System Status Controls

Button/Indicator	Function
 <p>The image shows a vertical panel labeled 'CONVEYOR STATUS'. At the top is a green LED. Below it is a yellow button with a 'V' symbol and the word 'PAUSE'. At the bottom is a black button with the word 'RESET'.</p>	<p>CONVEYOR STATUS has two buttons.</p> <p>PAUSE halts the Conveyor. The PAUSE LED lights up to indicate that the Conveyor has been paused. Press PAUSE again to resume Conveyor movement.</p> <p>Press RESET to clear the Conveyor Controller after a fault condition has occurred.</p>
 <p>The image shows two indicators: 'INTERLOCK RECOVERY' with a green LED, and 'INTERLOCK' with a key switch in the 'ON' position.</p>	<p>The Interlock is a key-activated safety feature that prevents the Conveyor and the Dispensing Head from moving while the dispensing system Front Doors are open.</p> <p>The Interlock should always be ON during normal operation. This helps prevent personal injury or damage to the dispensing system.</p> <p>For more information on the Interlock feature, see “Safety Interlock System” in the Safety section.</p>
 <p>The image shows a vertical panel labeled 'SYSTEM STATUS' with four colored LEDs (red, yellow, green, blue) and a black 'RESET' button at the bottom.</p>	<p>SYSTEM STATUS LEDs are color coded for each System Status condition. The LED lights correspond with the colored lights on the Light Beacon. For an explanation of the different status conditions, see Table 2-2.</p> <p>If the red ABORT LED has been triggered, press the SYSTEM STATUS RESET after the condition that triggered it has been corrected. This will reset the dispensing system electronics.</p> <p> NOTE After you press the SYSTEM STATUS RESET button, you must press the FIND HOME button to re-establish motor references.</p>
 <p>The image shows two red LEDs: 'VENT AIR' and 'MAIN AIR'.</p>	<p>The VENT AIR LED illuminates when vent air is insufficient.</p> <p> NOTE The VENT AIR LED flashes while the dispensing system is powering up.</p> <p>The MAIN AIR LED illuminates when main (facility) air pressure is insufficient.</p>
 <p>The image shows a blue button with the text 'APPLIC ON/OFF'.</p>	<p>Press APPLIC ON/OFF to turn fluid applicator operation on and off. This feature can be used to test run a program without dispensing fluid (dry mode).</p>
 <p>The image shows a blue button with the text 'PURGE'.</p>	<p>This button is NON-FUNCTIONAL on the C-740/C-741 dispensing system. The purge function is executed through the software.</p>

Pneumatic Regulators and Gauges

The C-740/C-741 Series Dispensing Systems have the following pneumatic regulators and gauges:

- [Main Air Regulator and Gauge](#)
- [Conveyor Stop/Clamp Air Regulator and Gauge](#)
- [Fluid Pressure Regulator and Gauge](#)

The Main Air and Conveyor Stop/Clamp regulator controls are located at the rear of the system (Figure 3-4 and Figure 3-5). The Fluid Regulator control is a black knob extending down from the roof of the dispensing area (Figure 3-6). To reach it you must open the front doors or reach through the light curtain (if installed) where it is located just behind the front hood.



WARNING!



CAUTION!

Make sure the Safety Interlock Recovery Light located on the Control Panel is ON before you access the inside of the dispensing area. When the light is OFF, accessing the inside of the dispensing area will cause a non-recoverable interlock condition to occur. Refer to the [Safety](#) section for additional information.

Recommended pressure settings are provided in Table 3-5. See detailed adjustment instructions following descriptions in this section.

Table 3-5 Recommended Pressure Settings

Device	Recommended Pressure/Flowrate	Comments
Main Air Pressure Regulator	80 psi (551 kPa)	Facility pressure is 85 to 90 psi (586 to 620 kPa).
Conveyor/Stop Clamp	30 to 40 psi (206 to 275 kPa)	If air pressure is too high, you can damage parts. If pressure is too low, the stop pins, board pins, and bar clamps will not work.
Fluid Air Pressure Regulator	30 to 40 psi (206 to 275 kPa)	Recommended pressure depends on fluid being dispensed and fluid applicator being used. Refer to the <i>Installation and Operations</i> manual applicable to the Dispensing Valve on your system.

Main Air Regulator and Gauge

The main air inlet provides regulated air pressure to the dispensing system from your facility air source. You can adjust the main air pressure with the Main Air Regulator. The recommended pressure from the facility air supply to the dispensing system is 85 to 90 psi (586 to 620 kPa).

To adjust the main air pressure:

1. Verify that the facility air supply is connected to the main air inlet.
2. Locate the Main Air Regulator at the rear of the dispensing system (Figure 3-4).



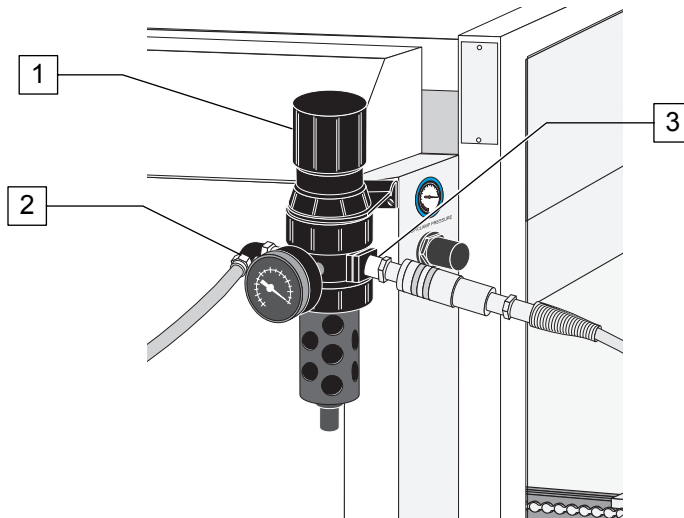
TIP For accurate pressure adjustment, lower the pressure below the desired level and then increase to the desired pressure.

3. Rotate the Main Air Regulator counterclockwise until the Main Air Gauge registers 0 psi.
4. Rotate it clockwise until the Main Air Gauge registers 85 to 90 psi (586 to 620 kPa).
 - ▶ If the Main Air Gauge fails to register pressure, verify that the dispensing system is connected to the facility air source.



NOTE The regulator assembly is equipped with a relief valve to protect the system components. Increasing the pressure above 95 psi (655 kPa) may trigger the relief valve. If so, reduce the air pressure below 95 psi.

5. Monitor the Main Air Gauge to make sure that pressure builds at a steady rate. Watch for dropping pressure indicating an air leak.
 - ▶ If there is an air leak, identify the source, shut off the facility air, and fix the leak before proceeding.




Item	Description
1	Main Air Regulator
2	Main Air Gauge
3	Main Air Inlet

Figure 3-4 Adjusting Main Air Pressure

Conveyor Stop/Clamp Air Regulator and Gauge

Located on the right rear of the dispensing system next to the main air inlet, the Stop/Clamp Air Regulator and Gauge controls air pressure supplied to the stop pins and board pins (chain conveyor) and/or bar clamps. The recommended air pressure is 30 to 40 psi (206 to 275 kPa).

 **NOTE** If air pressure is too high, parts may be damaged. If pressure is too low, the stop pins, board pins and bar clamps will not work.

To adjust the Conveyor Stop/Clamp air pressure:

1. Locate the Conveyor Stop/Clamp Air Regulator adjustment knob at the rear of the dispensing system (Figure 3-5).

2. Unlock the adjustment knob by pulling it out.



TIP For accurate pressure adjustment, lower the pressure below the desired level and then increase to the desired pressure.

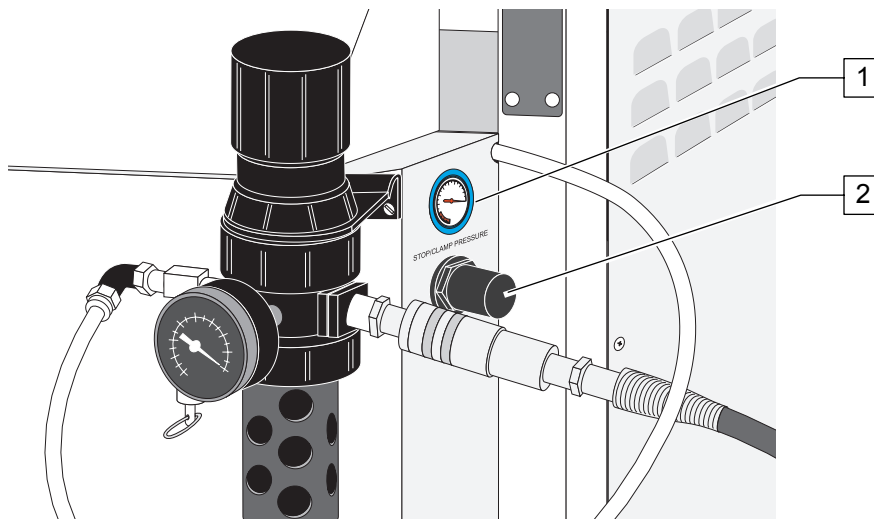
3. Rotate the knob counterclockwise until the Stop/Clamp Air Gauge registers 0 psi.

4. Rotate the knob clockwise until the Stop/Clamp Air Gauge registers 55 psi (379 kPa).

5. Monitor the Stop/Clamp Air Gauge to make sure that pressure builds at a steady rate. Watch for dropping pressure indicating an air leak.

- ▶ If there is an air leak, identify the source, shut off the facility air, and fix the leak before proceeding.

6. Lock the knob by pushing it in.



Item	Description
1	Stop/Clamp Air Gauge
2	Stop/Clamp Air Regulator

Figure 3-5 Adjusting Conveyor Stop/Clamp Air Pressure

Fluid Pressure Regulator and Gauge

The Fluid Pressure Regulator controls the pressure of the fluid reservoir for the SC-205 Non-Circulating Film Coater and the SC-200 Slim Swirl Applicator. For the SC-105HS High Speed Film Coater, this regulator controls the pilot pressure to the pilot operated fluid regulator on the rear of the dispensing system. For more details on how the air is used for fluid pump operation and recommended pressure setting, refer to the manual for your specific fluid pump.

To adjust the fluid pressure:

1. Verify the Reservoir Air Pressure Pneumatic Switch (Figure 3-6) is in the ON (I) position.
2. Locate the Fluid Pressure Regulator adjustment knob underneath the left side of the front hood.
3. Unlock the knob by pulling it downward.



TIP For accurate pressure adjustment, lower the pressure below the desired level and then increase to the desired pressure.

4. Rotate the Fluid Pressure Regulator adjustment knob counterclockwise until the Fluid Pressure Gauge registers 0 psi.
5. Rotate the knob clockwise until the Fluid Pressure Gauge registers 60 psi (413 kPa).
6. Monitor the Fluid Pressure Gauge to make sure that pressure builds at a steady rate. Watch for dropping pressure indicating an air leak.
 - ▶ If there is an air leak, identify the source, shut off the facility air, and fix the leak before proceeding.
7. Lock the knob by pushing it upward.

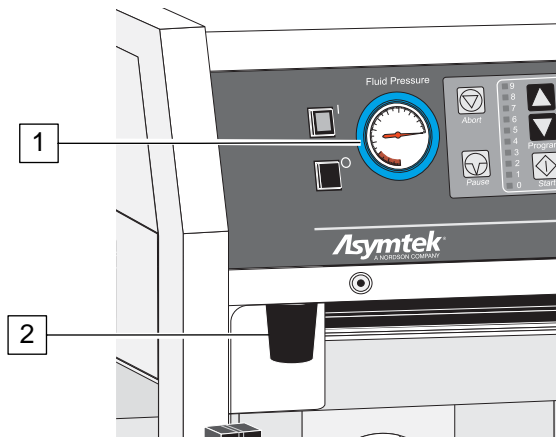


Figure 3-6A Fluid Pressure Gauge and Regulator

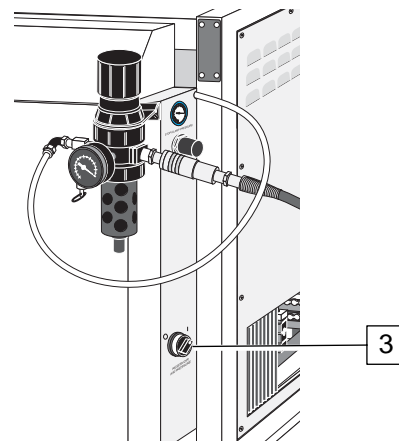


Figure 3-6B Reservoir Air Pressure Pneumatic Switch

Item	Description
1	Fluid Pressure Gauge (Control Panel)
2	Fluid Pressure Regulator
3	Reservoir Air Pressure Pneumatic Switch

Figure 3-6 Adjusting Fluid Pressure

System Startup/Shutdown

These following procedures are offered as general recommendations and suggestions when starting and/or shutting down your Century C-740/C-741 Series Dispensing System. Your actual start-up and shutdown procedures may vary.



WARNING! Only authorized service technicians or process engineers should connect power cables to the power source. Operators should not attempt to make electrical connections.

Startup

If necessary, refer to the figures in the [Introduction](#) section to identify system components.



NOTE Ensure that all recommended Daily Routine Procedures have been completed prior to starting the production run. Refer to “[Daily Routine Procedures](#)” later in this section.

To start the dispensing system:


1. Verify that the Safety Interlock Keyswitch is in the ON (I) position for production.
2. Close the dispensing system front doors and access covers.
3. Verify that the main power cord is connected to the Main Power Inlet and the facility power source.
4. Verify that the facility air hose is connected to the Main Air Inlet.
5. Verify that the Facility Exhaust Ventilation System ductwork is connected to the Exhaust Vent Duct.
6. Turn the Main Circuit Breaker to the ON (I) position.
7. Turn the Computer Power Switch to the ON (I) position.
8. Check the EMO button to see if it has been activated. If it has been activated, deactivate it by turning the red knob clockwise until the knob pops out.
9. Press **Start** on the Control Panel (Figure 3-3).



NOTE The dispensing system turns on after an approximate 60-second vent air time delay. Verify that the red Vent Air LED on the control panel is blinking. If it is on and not blinking, the exhaust is inadequate.

- ▶ The dispensing system should be in a powered-up state. If not, make sure the power cord is properly connected to the dispensing system and to an active facility power source.
 - ▶ The system computer should begin the boot up sequence.
10. Press **System Status Reset** and **Conveyor Status Reset** on the Control Panel.
 11. Press **Find Home** on the Control Panel.
 - ▶ The Robot should move to the extreme front left corner of the dispensing area.

To Start ECXP:

1. Double click the ECXP  icon on the Windows desktop.
 - ▶ As an alternative, you may click on the Windows Start menu and select Programs > ECXP to start the ECXP software.
 - ▶ The Dispenser will find Home in the Z-Axis, Y-Axis, and X-Axis, respectively.
 - ▶ The ECXP Operator Screen shown in Figure 3-7 will open.



NOTE The Operator Screen will vary slightly if the software is configured for a C-741 Series Dispensing System.

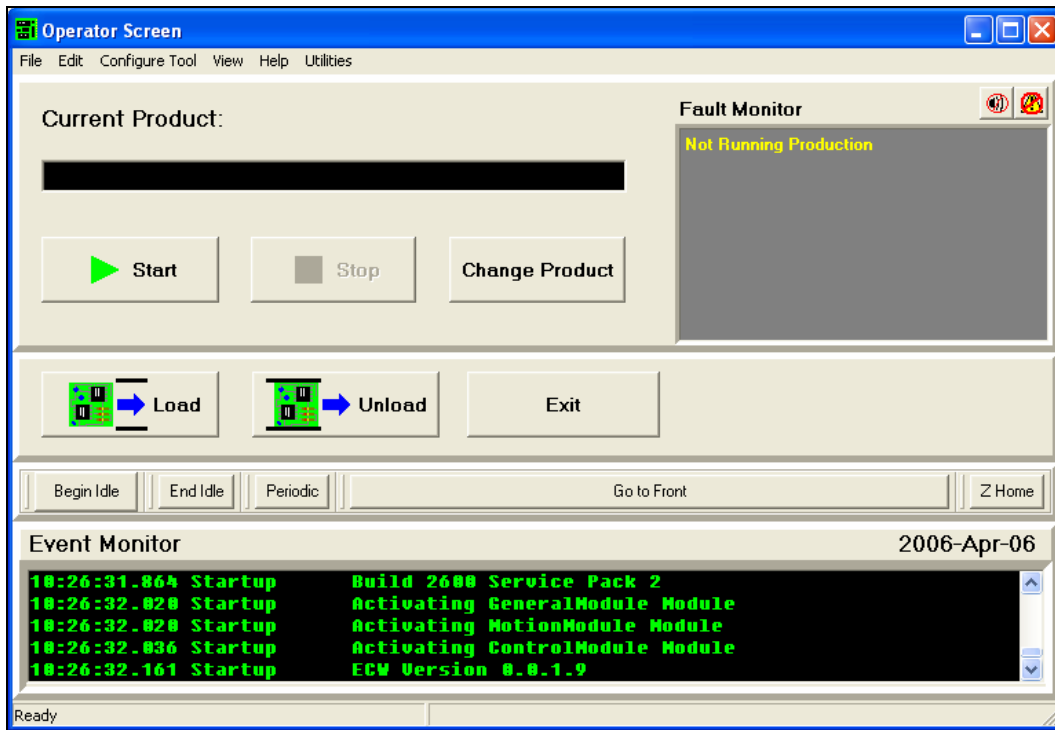


Figure 3-7 Starting ECXP



NOTE If ECXP does not start, or you receive error messages during start-up, please contact Asymtek Technical Support.

2. To exit ECXP, click on  or select **File > Exit** from the Operator Screen menu bar.



NOTE Refer to “Loading a Program” and “Running a Program” in the *Operation* section for detailed instructions on system setup and running production.

Shutdown

Emergency Shutdown

In case of an emergency or malfunction, press the **EMO** button. The EMO is the large red button on the Control Panel. Refer to the [Safety](#) section for important information concerning emergency shutdown.



WARNING!

Power is still available to the power supply and to the Power Manager after an Emergency Shutdown. To fully remove power to the system, all power cords must be disconnected.

Routine Shutdown

Routine shutdown may vary depending on your particular requirements. The system may be left in the power-on state at the end of the day or turned off completely. However, it is recommended that you incorporate the following procedure into your production shutdown routine:

To shut down at the end of a production shift (overnight):

If you are using a coating material without pot life limitations, follow these steps for shutdown:

1. Wait for the dispensing program to complete.
2. Verify that all motion has stopped.
3. Unload all boards from the conveyor.
4. Turn the reservoir air pressure switch (Figure 3-6B) to the OFF (0) position.
5. Remove the nozzle from the fluid applicator.
6. To prevent material from curing inside the fluid applicator nozzle, immerse the applicator in the appropriate solvent in the stainless steel solvent cup.
 - ▶ If necessary, use an Asymtek nozzle brush (P/N 901905) to remove build-up.
7. Dry the nozzle and inspect the orifice for blockage.
8. Immerse the nozzle in solvent and store it in a safe place.
9. Exit ECXP.
10. Press the **Stop (0)** button on the Control Panel.

Service Shutdown


To shut down for service:

1. Perform Steps 1-10 under "[Routine Shutdown](#)" above.
2. Turn OFF (0) the main power circuit breaker at the rear of the system.
3. Lockout/tagout electrical and pneumatic energy as described in the *Century C-740/C-741 Installation, Operations, and Maintenance Manual*.

Daily Routine Procedures

Table 3-6 contains a brief description and instructions for routine procedures that should be performed on a daily basis before and after operating the dispensing system.

Table 3-6 Daily Routine Procedures

Procedure	Description
STARTUP	
Clean Fluid Filter	Check the fluid filter and clean if necessary. Refer to “ Cleaning the Fluid Filter ”.
Check Main Air Pressure	Ensure that the main air pressure is properly adjusted. If necessary, adjust the main air pressure as described in “ Main Air Regulator and Gauge ” in the <i>Operation</i> section. Record the proper setting on the Daily Routine Checklist for daily reference.
Check Fluid Pressure	Ensure that the fluid pressure is properly adjusted. If necessary, adjust the fluid pressure as described in “ Fluid Pressure Regulator and Gauge ” in the <i>Operation</i> section. Record the proper setting on the Daily Routine Checklist for daily reference.  NOTE Refer to the manual for your specific fluid applicator for appropriate fluid pressure settings.
Verify Exhaust Connection	Verify that the Exhaust Vent is properly connected to the facility exhaust system ductwork. Refer to the <i>Century C-740/C-741 Installation, Operations, and Maintenance Manual</i> .
Fill Fluid Reservoir	Fill the Fluid Reservoir as described in “ Filling the Fluid Reservoir ”.
Fill Solvent Cup	Make sure that the solvent cup is filled with a clean supply of the appropriate solvent and is properly placed for the selected coating program.
Verify Material Temperature	Verify the material temperature, if applicable.
Perform Characterization	Perform a characterization if necessary. See “ Characterization ” later in this section.
SHUTDOWN	
Remove Workpieces	Remove all workpieces and foreign objects from the dispensing and conveyor areas.
Flush Fluid System	Flush the fluid system. Refer to “ Changing Material/Flushing Fluid System ”.
Clean Dispensing System	Clean all surfaces of the dispensing system (doors, side panels, control panel, part sensor, etc.).
Clean Nozzle	Refer to the manual for your specific fluid applicator for instructions.

Characterization



NOTE A characterization must be performed for each tool and each coating material used or as required to ensure quality and consistent dispensing.

Many variables, such as material type, temperature, viscosity, substrate type, robot velocities, and dispenser response times affect the coating process. Characterization improves coating placement accuracy and repeatability. The Characterization Wizard helps you adjust program values to compensate for these variables. The characterization process consists of defining the following values:

- On/Off Response Times
- Dispense Height
- Dispense Speed (Velocity)
- Dispense Width



NOTE All of these variables are interrelated. Make your selections based on the results you want to achieve. Refer to ECXP online help or contact your Asymtek representative for additional information.

The characterization automatically calculates dispensing ON and OFF times. Characterization compensates for such variables as:

- Change in air pressure
- Fluid viscosity
- Fluid Dispensing Applicator velocity

When you perform a characterization, the Fluid Dispensing Applicator will dispense three stripes of material. You will then be prompted to select the best pass (generally the third line). The values will be stored in the Robot Controller. The Fluid Dispensing Applicator will then dispense three additional stripes of material. These lines should correspond to the best pass previously selected. This is your characterization.

To perform a characterization:

1. From the Operator screen, click on **Configure Tool > Toolname**.
 - ▶ The Conformal Coating Characterization Wizard dialog box shown in Figure 3-8 opens:

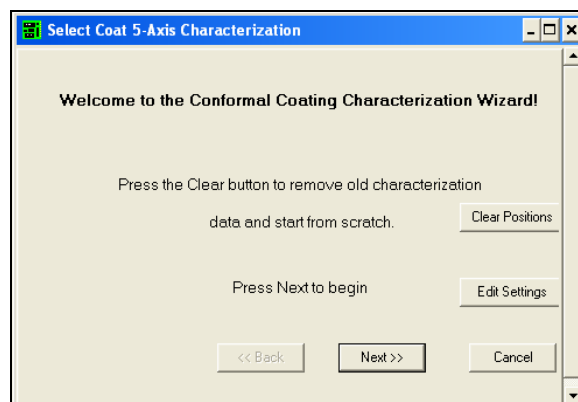


Figure 3-8 ECXP Characterization Wizard Dialog Box

2. Click **Clear Positions** and then click **OK** to confirm.
 - ▶ If you have performed a characterization before, the old test area coordinates are used unless you clear them.
3. Click **Next**.
4. Click **Yes** when prompted to teach the substrate height.
5. Teach the substrate height.
 - a. Install a nozzle on the Fluid Dispensing Applicator and lower the tool until the tip just touches the substrate.
 - b. Click **Teach Z**
 - c. Click **OK**
6. Enter the dispense height.
 - ▶ The following variables should be considered:
 - Height of tallest component to be coated
 - Width of coating stripe
 - Coating material flow rate and viscosity
 - Coating stripe overlap
7. Enter the desired rotate position and click **Next** (for applicators equipped with rotate and cross-cut nozzles).
8. Enter the desired dispense speed and click **Next**.
9. Place a characterization sheet (Figure 3-9) in the workcell and click **Next**.


															ELECTRONICS BUSINESS GROUP															SELECT COAT® SYSTEM														
															SEQUENCE NUMBER: _____																													
															OPERATOR: _____																													
															DATE: _____																													
															TYPE MATERIAL: _____																													
															MIX MAT./SOLV.: _____																													
															ZAHN 2 TIME: _____																													
															NOZZLE: _____																													
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															AIR MOTOR PRESSURE: _____																													
															COAT ON TIME: _____																													
															COAT OFF TIME: _____																													
															ML THICKNESS: _____																													
															COMMENTS: _____																													
															V-0432-001A 143817																													

Figure 3-9 Characterization Sheet

10. Position the tool tip over the left intersection of the dotted lines and click **Next**.
11. Position the tool over the right intersection of the dotted lines and click **Next**.
12. Position the tool tip over the right dotted line and the back line and click **Next**.
 - ▶ Remove any teaching devices before continuing.
13. Click **Next**.
 - ▶ The Wizard will now apply three stripes of material to the test area (See Figure 3-10).

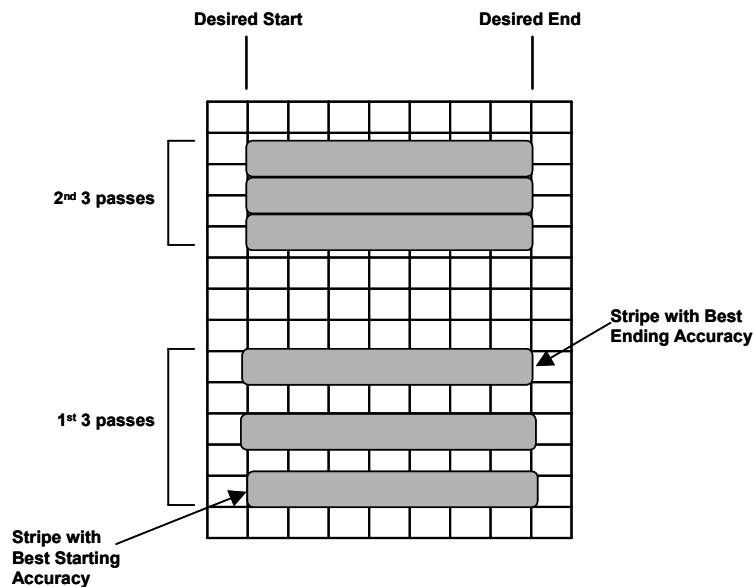


Figure 3-10 Material Characterization

14. You will be prompted to teach the coordinates of the test area.
 - a. Teach the stripe with the best starting accuracy.
 - ▶ If none are exact but one stripe starts too soon and the next too late, teach between the two stripes. The Wizard interpolates the values of the two.
 - b. Teach the stripe with the best ending accuracy.
 - ▶ If none are exact but one stripe ends too soon and the next too late, teach between the two stripes. The Wizard interpolates the values of the two.
15. Enter the stripe width.
 - ▶ The Wizard applies three more stripes to the test area.
16. Check the starting and ending points of the second three stripes. If they are not accurate, rerun the characterization, making adjustments as necessary to obtain the best results.
17. The settings will be displayed for your approval. The only variable you can change is the stripe width. To change any other settings, you will have to rerun the characterization.




TIP To perform a characterization from the ECXP Edit screen, click on **Configure > Tools**. The Tool Configuration dialog box opens. Select the tab for the tool you wish characterize, then click the **Configure** button.

Loading a Program

Programs can be loaded from both the ECXP Operator Screen (Figure 3-11) and the ECXP Edit Screen. Refer to the *Century C-740/C-741 Installation, Operations, and Maintenance Manual* for instructions on loading a program from the Edit Screen.

To load a program from the Operator Screen:

1. If a program is currently running, click on the **Stop**  button.
 - ▶ Production stops after the currently loaded product is coated.
2. Click on the **Change Product** button or double-click the **Current Product** field (Figure 3-11).
 - ▶ The product map opens. The product map is a tree structure of the folders and subfolders where the programs are stored.
 - Click on a plus sign (+) to expand a group and view the product programs in that group.
 - Click on a minus sign (-) to collapse a group.
3. Click on the desired program to select it. When selected, it is highlighted in blue.
4. Click on the **OK** button to load the selected program.



NOTE Click on the **Cancel** button to exit the product map without loading a program.

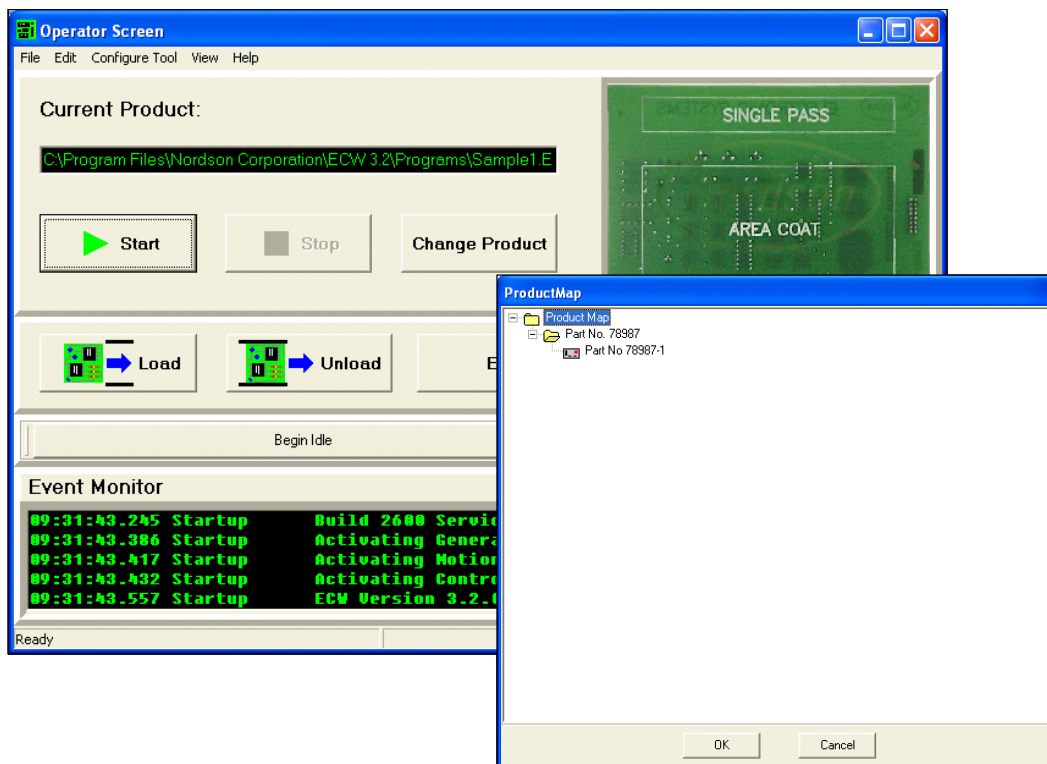


Figure 3-11 Loading a Program - Operator Screen

Running a Program

Programs can be run from both the ECXP Operator Screen (Figure 3-12 and Figure 3-13) and from the ECXP Edit Screen. Refer to the *Century C-740-C-741 Installation, Operations, and Maintenance Manual* for instructions on running a program from the Edit Screen.

Operator Screen

To run a program from the Operator Screen (C-740 Conveyorized System):

1. Load the program you want to run as described in “[Loading a Program](#)” previously in this section.
2. Click on the **Start** button.
3. A new product (board or carrier) is requested from the upstream machine, loaded into the fixture, and coated.
 - ▶ If a product is present at the coating station when the **Start** button is clicked, a dialog box will appear, asking you if you want to coat the product. If you respond **No**, the product is unloaded downstream. If you respond **Yes**, the product is coated and then unloaded downstream.



NOTE You can use the **Load Product** and **Unload Product** buttons to control the conveyor manually when not running a coating program. Clicking on the **Load Product** button moves a product on the conveyor into the fixture; clicking on the **Unload Product** button moves the product out of the workcell.

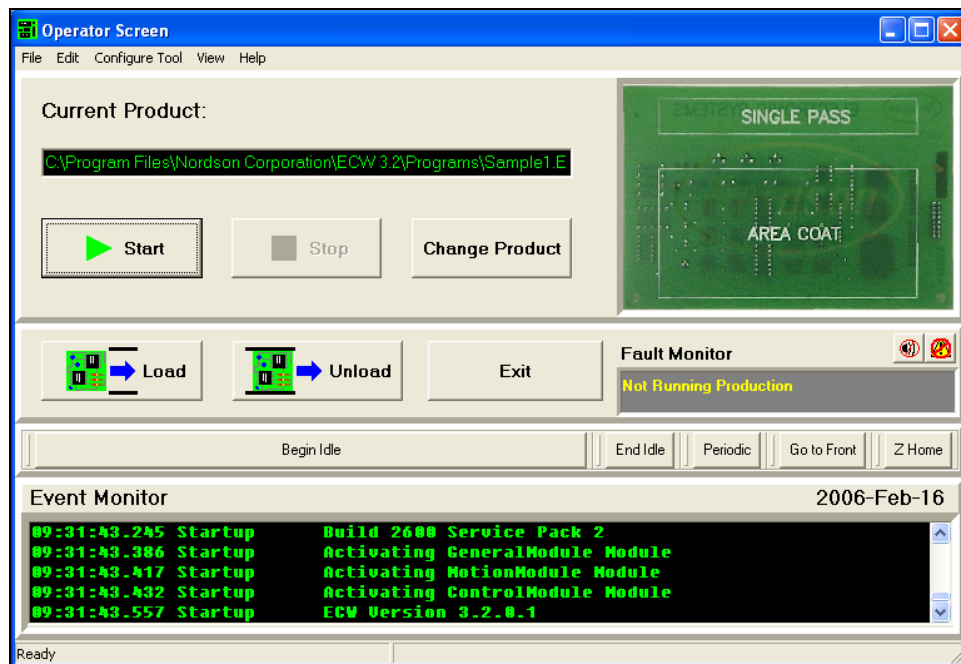


Figure 3-12 Running a Program - Operator Screen (C-740)

To run a program from the Operator Screen (C-741 Batch System):

1. Load the program you want to run as described in “Loading a Program” previously in this section.
2. Load a new product (board or carrier) into the fixture.
3. Click on the **Start** button and then on the **Run Product** button.

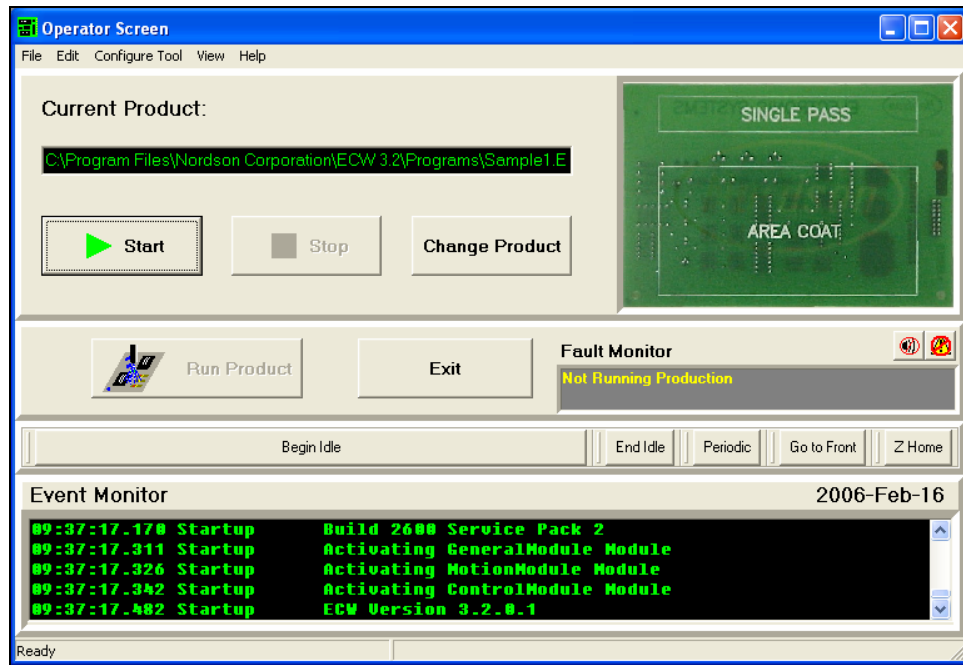


Figure 3-13 Running a Program - Operator Screen (C-741)

4 Maintenance

Overview

Performing recommended maintenance procedures increases system life and ensures high quality dispensing performance for every production run. This section covers the following operator-level procedures:

- [Filling the Fluid Reservoir](#)
- [Changing Material/Flushing Fluid System](#)
- [Emptying the Water Trap](#)
- [Cleaning the Fluid Filter](#)

Refer to the *Century C-740/C-741 Installation, Operations, and Maintenance Manual* for detailed information on all recommended maintenance procedures.

Safety First

Before performing maintenance procedures, please familiarize yourself with the important information provided in the [Safety](#) section. When performing maintenance, it is essential that you obey all written safety warnings and the warning labels affixed to your dispensing system.



WARNING!

Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

Hazardous Materials

Some maintenance procedures involve the use of hazardous materials. Always follow all applicable national and local statutes and regulations, facility safety practice, and the material manufacturer's MSDS recommendations.

Record Keeping

The type of maintenance performed (such as preventive and parts replacement) should be recorded in maintenance records for the dispensing system. Dates, part numbers/serial numbers of replaced parts, names of technicians, and other pertinent data should be recorded.

Filling the Fluid Reservoir



CAUTION!

Make sure to observe the fluid level indicator. Never let the dispensing system run out of fluid as this may damage the fluid applicator.

To fill the Fluid Reservoir:

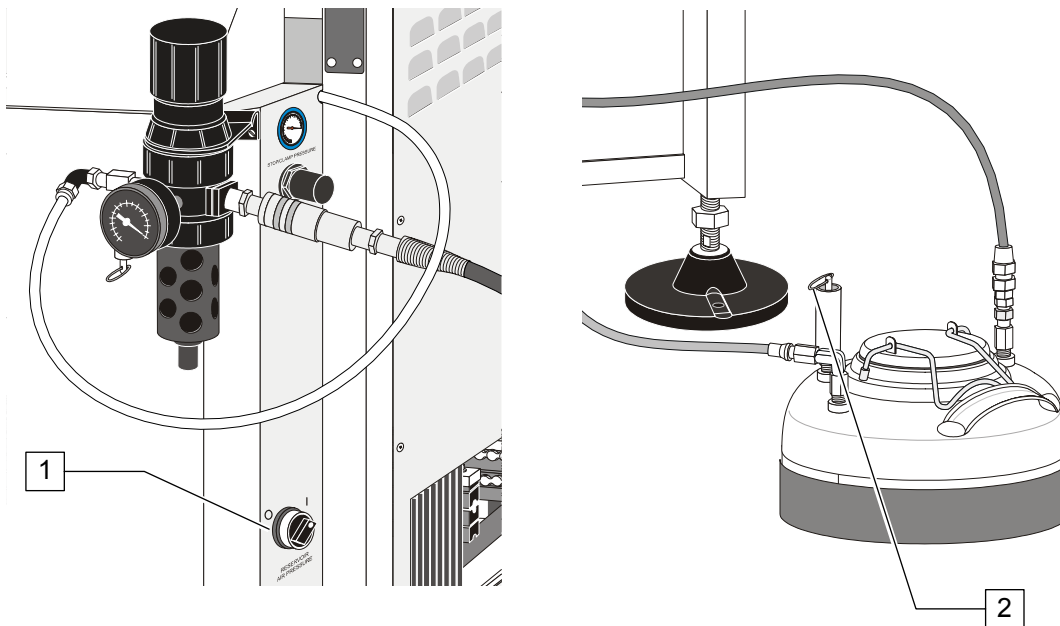
1. Turn the Reservoir Air Pressure Pneumatic Switch to the OFF (0) position.
2. Relieve residual pressure in the Fluid System by opening the Fluid Pressure Relief Valve on the Fluid Reservoir.
3. Open the lid and check that the reservoir is clean and free from foreign materials.



WARNING!

Solvent vapors may be released when the lid is open.

4. Add fluid up to a maximum of 50 mm (2 in.) below the rim of the opening.
5. Close the lid immediately after filling.



Item	Description
1	Reservoir Air Pressure Pneumatic Switch (right rear)
2	Fluid Pressure Relief Valve

Figure 4-1 Filling the Fluid Reservoir

Changing Material/Flushing Fluid System

To change material and flush the Fluid System:

1. If applicable, turn off the heater and allow the fluid to cool for at least fifteen minutes.
2. Reduce fluid air pressure to 7 psi (48 kPa).
 - ▶ Refer to “[Pneumatic Regulators and Gauges](#)” in the *Operation* section for instructions on adjusting fluid pressure.
3. Open and drain the Fluid Applicator.
 - ▶ Refer to the manual for your specific Fluid Applicator for instructions.
4. Disconnect the siphoning hose from the container.
5. Adjust the air pressure to allow the pump to stroke slowly.
6. The material will drain into the reservoir.
7. When the system is empty, stop the pump by reducing the pump air pressure to zero.
8. Flush the system with solvent as described below:
 - a. Put the siphoning hose into a container filled with 0.75 liter (1 quart) of solvent.
 - b. Put the drain hose into the waste container.
 - c. Start the pump by increasing the pump air pressure. The solvent will purge residual material out of the system.
 - d. Close the drain valve.
 - e. Put the drain hose into the solvent container.



NOTE If you are using a circulating fluid applicator, such as the SC-104HS or SC-105HS, perform Steps f and g. Otherwise, skip to Step 8.

- f. Open the drain valve and allow the solvent to circulate for one minute.
 - g. Close the drain valve and open the circulation valve. Allow the solvent to circulate for another minute.
9. Purge the Fluid Dispensing Applicator several times.
 10. Clean the reservoir and fill it with new material.
 11. Empty the Fluid System and check the Fluid Filter.
 12. Fill the Fluid System with new material.



NOTE Check that all residual solvent was purged into the waste container by the new material.

Emptying the Water Trap

Moisture from the outside air can condense in the pneumatic system. The Water Trap collects this condensed moisture. You must empty it monthly or whenever it is full.

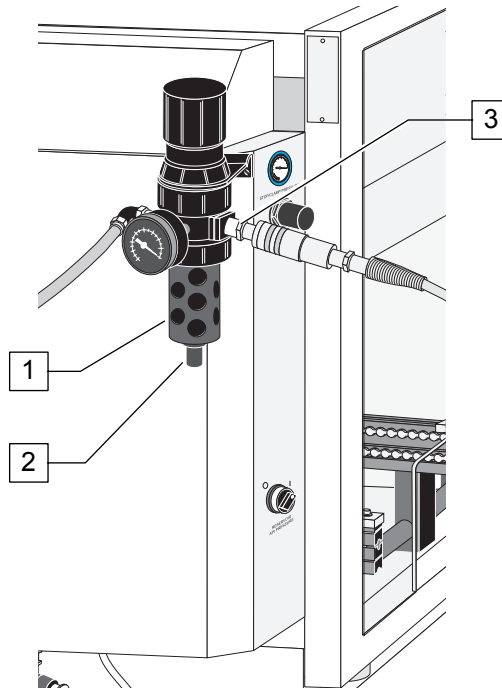


WARNING!

Do not remove the steel bowl guard protecting the Water Trap. The bowl is made of polycarbonate plastic, which could rupture if the inside or outside of the bowl is exposed to chemicals incompatible with polycarbonate.

To empty the Water Trap:

1. Locate the Water Trap (Figure 4-2) at the rear of the system.
2. Disconnect the facility air supply from the Main Air Inlet.
3. Hold a container under the Water Trap to catch the water.
4. Using your finger, push the water drain knob at the bottom of the assembly.
5. Reconnect the facility air supply to the Main Air Inlet.



Item	Description
1	Water Trap
2	Drain Knob
3	Main Air Inlet

Figure 4-2 Water Trap

Cleaning the Fluid Filter

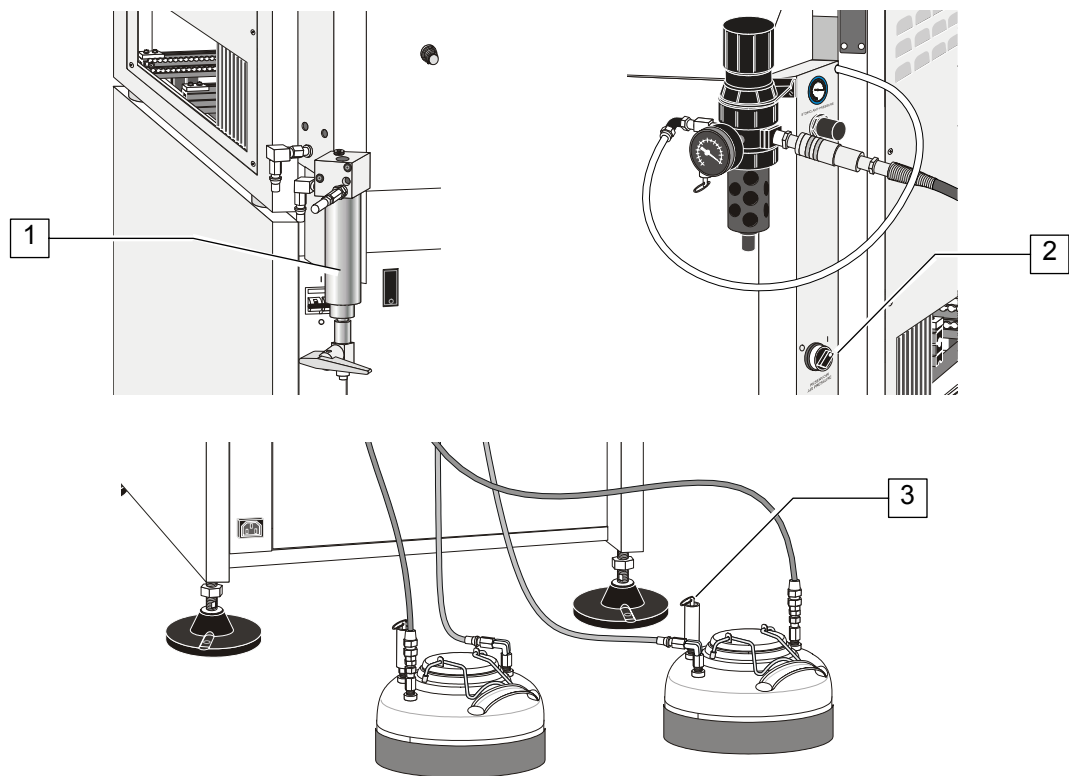
To clean the Fluid Filter:

1. Turn the Reservoir Air Pressure Pneumatic Switch to the OFF (0) position. See Figure 4-3.
2. Relieve residual pressure in the Fluid System by opening the Pressure Relief Valve on the Fluid Reservoir.



WARNING! To prevent eye injury or irritation, wear safety goggles while performing this procedure.

3. Unscrew the Fluid Filter cap.
 - ▶ The Fluid Filter is located inside the housing.
4. Remove the 150-micron in-line filter and clean it with a proper solvent.
5. Brush the stainless steel screen with the appropriate solvent. Replace if necessary.
6. Blow filter surface with compressed air.



Item	Description
1	Fluid Filter Cap (left rear)
2	Reservoir Air Pressure Pneumatic Switch (right rear)
3	Fluid Reservoir Pressure Relief Valve

Figure 4-3 Cleaning the Fluid Filter



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