

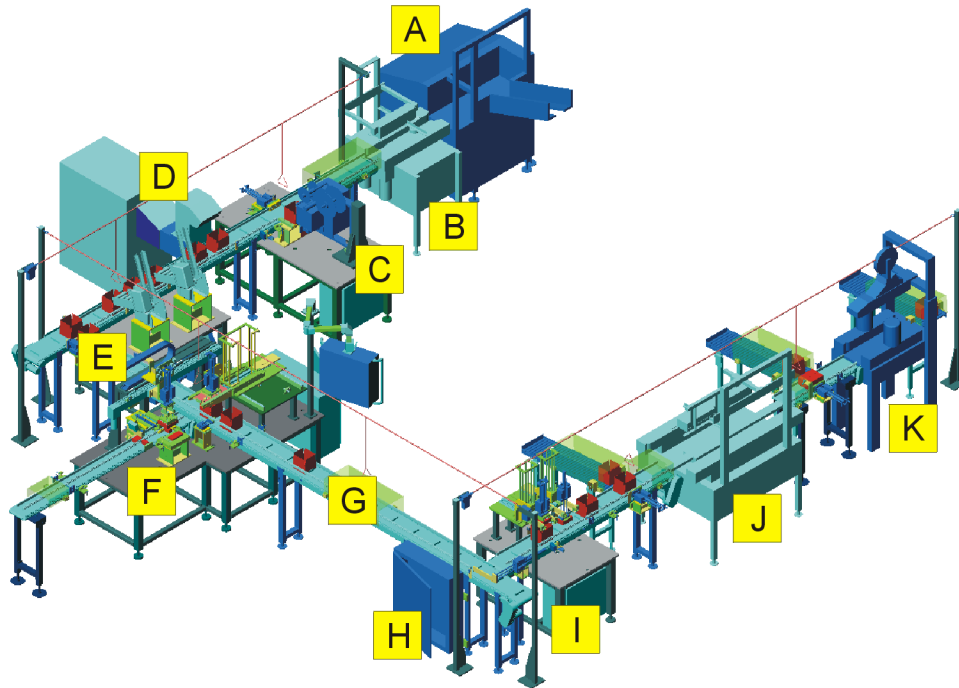
## 1.5 SYSTEM SUMMARY

The Sample Sytem, designed and integrated by Automation Tooling Systems for the Customer, assembles various components into a final product

The Sample Sytem is capable of:

- 3000 parts per hour
- 98% machine uptime

### 1.5.1 Layout Drawing



<b>A</b>	Cell 10 - Load Main Body	<b>E</b>	Cell 50 - Inspection	<b>I</b>	Cell 70 - Load Component C
<b>B</b>	Cell 20 - Palletize Body	<b>F</b>	Cell 60 - Load Component B	<b>J</b>	Cell 80 - Leak Test
<b>C</b>	Cell 30 - Load Component A	<b>G</b>	Main Conveyor	<b>K</b>	Cell 90 - Unload Assembly
<b>D</b>	Cell 40 - Apply Label	<b>H</b>	Main Electrical Enclosure		

## 1.6 SEQUENCE OF OPERATION

This table describes the sequence of operation in the Sample Sytem. For more information on each device, please refer to [2.4 System Components, on page 2-7](#).

### 1.6.1 Cell 10 - Load Main Body

The following occurs at Cell 10:

1. The operator loads main bodies in a known orientation into the loading chute.
2. The operator initiates a cycle start.
3. A pallet is loaded from a cart inside the cell enclosure and placed in a known orientation onto the main conveyor.
4. A servo-driven pick and place device takes a main body from the bottom of the loading chute and places it onto the pallet.
5. Etc., etc.

## 1.7 ELECTRICAL ENCLOSURE CONTROLS AND INDICATORS

### 1.7.1 Main Electrical Enclosure

This segment describes the controls and indicators found on the main electrical enclosure).

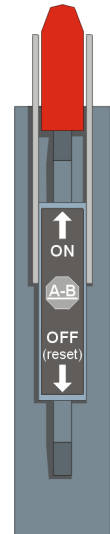
#### Main Power Disconnect Switch



#### WARNING

Servicing an electrical panel that is still connected to its power source may cause injury or death. Unless directed otherwise, turn the MAIN POWER DISCONNECT switch to the OFF position, lock it and tag it before accessing and servicing an electrical panel. **Only electrical technicians should perform service on the electrical panel.**

The MAIN POWER DISCONNECT switch enables and disables all electrical power to the devices of the Sample Sytem. This lever-type switch can be locked in the OFF position to prevent unauthorized or accidental enabling of power to the system while maintenance or service is being performed or when the Sample Sytem is not intended to be used.



#### Emergency Stop Palmbutton



#### WARNING

Pressing an EMERGENCY STOP palmbutton disables switched electrical outputs and vents pressurized air to the Sample Sytem. Although switched outputs are disabled, electricity remains present in the system. Use extreme caution when entering the guarding, even after pressing an EMERGENCY STOP palmbutton.



Easily visible and accessible EMERGENCY STOP palmbuttons allow the user to bring the system to a complete stop in the event of an emergency.

The Sample Sytem is equipped with an EMERGENCY STOP palmbuttons at the following location:

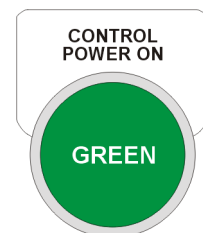
- on the main enclosure for the main electrical enclosure panel
- on the hanging operator panel

When an EMERGENCY STOP palmbutton is pressed:

- switched output power to the Sample Sytem drops, causing moving devices to come to a stop
- pressurized air is vented from the Sample Sytem
- the EMERGENCY STOP palmbutton illuminates

#### Control Power On Pushbutton

The CONTROL POWER ON pushbutton on the main enclosure for the main distribution panel and main conveyor enables switched output power to the cells and conveyors in the Sample Sytem.



Etc., Etc.

# 1.8 OPERATOR INTERFACE CONTROL SCREENS

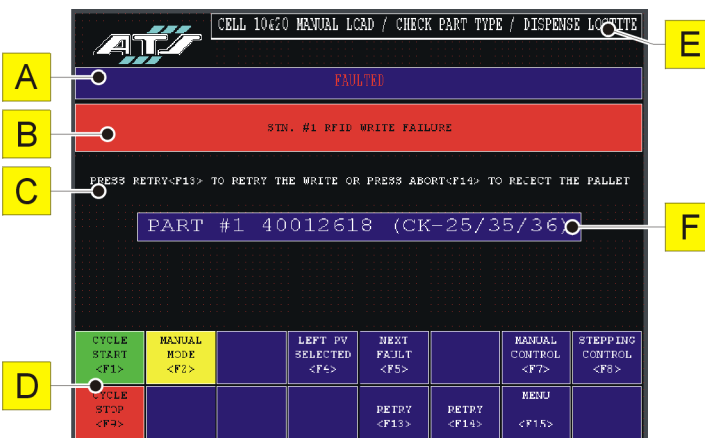
## 1.8.1 Global Screens

The screens shown in this segment are common, with little or no variation in content and appearance, to each cell.

### Main Screen

The Main screen is displayed during normal operation. Cell status, fault information and the current part type are displayed in addition to the various functions described below.

<b>A</b>	Cell Status Window
<b>B</b>	Fault/Warning Window
<b>C</b>	Fault Recovery Window
<b>D</b>	Function Button Descriptors
<b>E</b>	Screen Title Banner
<b>F</b>	Part Type Window



The screenshot shows a control interface with the following elements labeled:

- A:** Cell Status Window (FAULTED)
- B:** Fault/Warning Window (STN. #1 RFID WRITE FAILURE)
- C:** Fault Recovery Window (PRESS RETRY<F13> TO RETRY THE WRITE OR PRESS ABORT<F14> TO REJECT THE PALLET)
- D:** Function Button Descriptors (A grid of buttons including CYCLE START, MANUAL MODE, LEFT PV SELECTED, NEXT FAULT, MANUAL CONTROL, STEPPING CONTROL, CYCLE STOP, RETRY, and MENU)
- E:** Screen Title Banner (CELL 10020 MANUAL LOAD / CHECK PART TYPE / DISPENSE LOCUTE)
- F:** Part Type Window (PART #1 40012618 (CK-25/35/36))

**Screen Title Banner:** This banner indicates the name and function of the corresponding cell.

**Fault/Warning Window:** This window displays any fault or warning messages that currently exist at the corresponding cell. The window disappears when no faults or warnings exist.


**Fault Recovery Window:** This window provides the user with instructions for recovering from the current fault.

**Part Type Window:** This window displays the part type currently being assembled.

**Cell Status Window:** This window displays the current operational state of the corresponding cell.

**Function Button Descriptors:** These boxes display the function that is performed when the corresponding function button is pressed.

- **CYCLE START <F1>:** This button starts the cell cycling in AUTOMATIC mode.
- **MANUAL MODE/AUTO PERMITTED <F2>:** This button toggles the cell between AUTOMATIC and MANUAL modes.



**NOTE**

The cell cannot cycle start unless Auto Permitted is displayed on the button.

- **LEFT/RIGHT PV SELECTED <F4>:** This button allows the user to select either the right or left PanelView interface on the corresponding cell as the point of control.
- **LEFT PV/RIGHT PV/PV1000E SELECTED <F4> (at Cell 10 hanging operator interface only):** This button allows the user to select either the right, left PanelView or PanelView 1000e) interface on the corresponding cell as the point of control.
- **NEXT FAULT <F5>:** When more than one fault is present, this function scrolls through the list of faults.
- **MANUAL CONTROL <F7>:** This button brings up the Manual Control Menu screen.

Etc., etc.

## 1.9 LUBRICATION SUMMARY

The following table is a general list of lubricants and where in the system they may be used.

Device	Lubricant
Central Lubricating System	
Modu-Con 3/C and Modu-Flex MF1 Drive Chains	#50 Motor Oil
Modu-Con 3/C and Modu-Flex MF1 Bodine Gearmotors	AGMA #5 EP Compounded (SAE #90) Oil
Modu-Con 3/C and Modu-Flex MF1 Flange Bearings, Pillow Blocks and Grease Fitted Corners	NLGI #2 Lithium Base Grease
Filter, Regulator, Lubricator	Turbine 32 Air Line Oil
Pick and Place Shafts	Dow Corning - BR2 Plus Multi-Purpose EP Grease
Pick and Place Grippers	Esso - Febris K-200 Arco - Truslide 220 Chevron - Waylube 220
Air Cylinder Couplings	Esso - Febris K-200 Arco - Truslide 220 Chevron - Waylube 220
Pivot Points and other Accessible Slide Surfaces	Dow Corning - BR2 Plus Multi-Purpose EP Grease
Fixture Rust Preventive	Penetrating Oil

## 1.10 PREVENTIVE MAINTENANCE CHARTS

### 1.10.1 Global Devices

Device	Frequency	Description
Controls such as Buttons, Keyswitches and Indicators	Daily	Test for proper functioning.
Table and Supporting Structure	Daily	Clean the entire table top and supporting structures.
Sensor Bodies	Monthly	Ensure that they are fastened tightly. Ensure that the proper air gap setting is used.
Sensor Faces	Monthly	Wipe using a clean cloth and isopropyl alcohol.
Hard Stops	Monthly	Ensure that they are fastened tightly and in good condition.
Shock Absorbers	Monthly	Ensure that they are fastened tightly, stop smoothly and don't stick, stutter or bottom out. Ensure that they are in good condition.
Cables, Wiring and Electrical Contacts	Monthly	Inspect for wear and damage. Replace if necessary.
Etc., etc.		