



Operation & Maintenance Manual

Artisan Automated Production System

(AAPS)

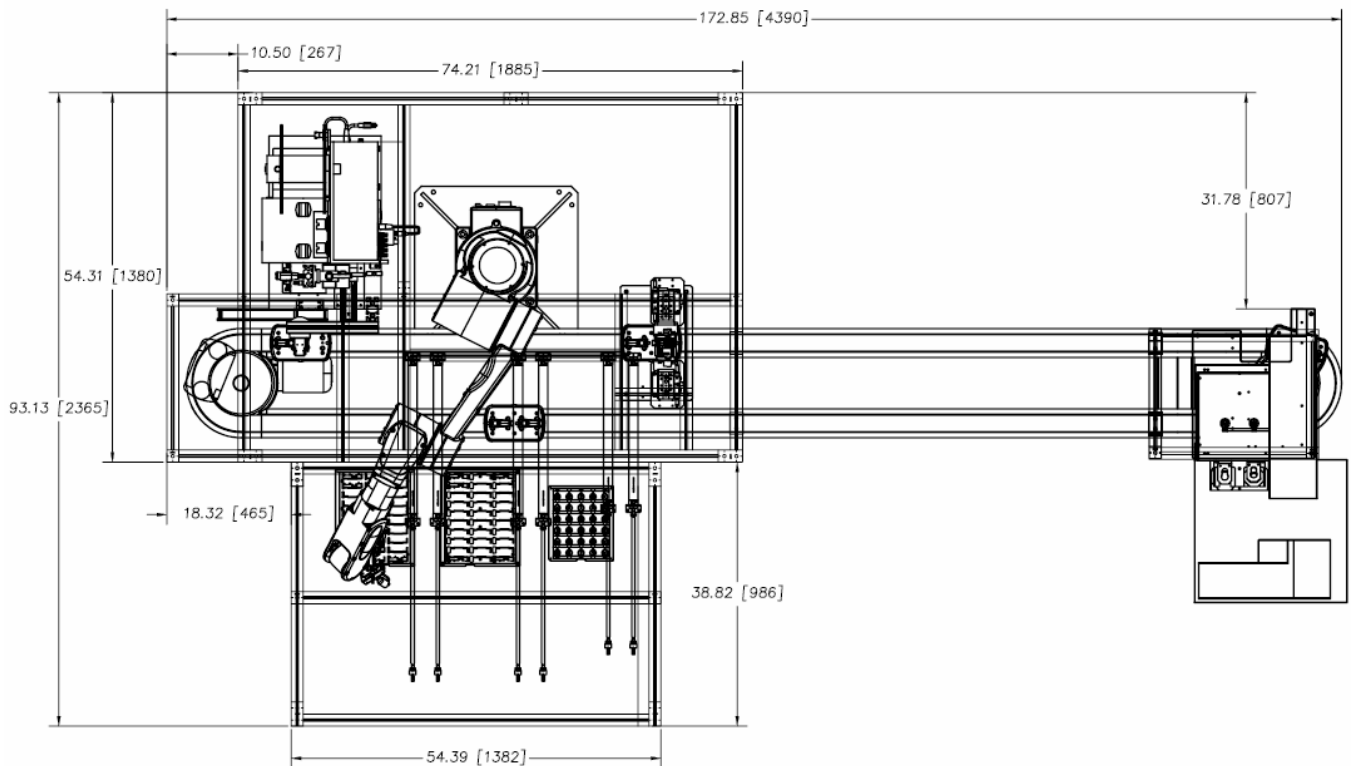




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Chapter 2: Overview

Purpose

The purpose of this chapter is to familiarize the operator with the functional parts and the layout of the Inventek Engineering Automated Artisan Production System, and to provide an overview of the system operation.

The information is provided in the following sections:

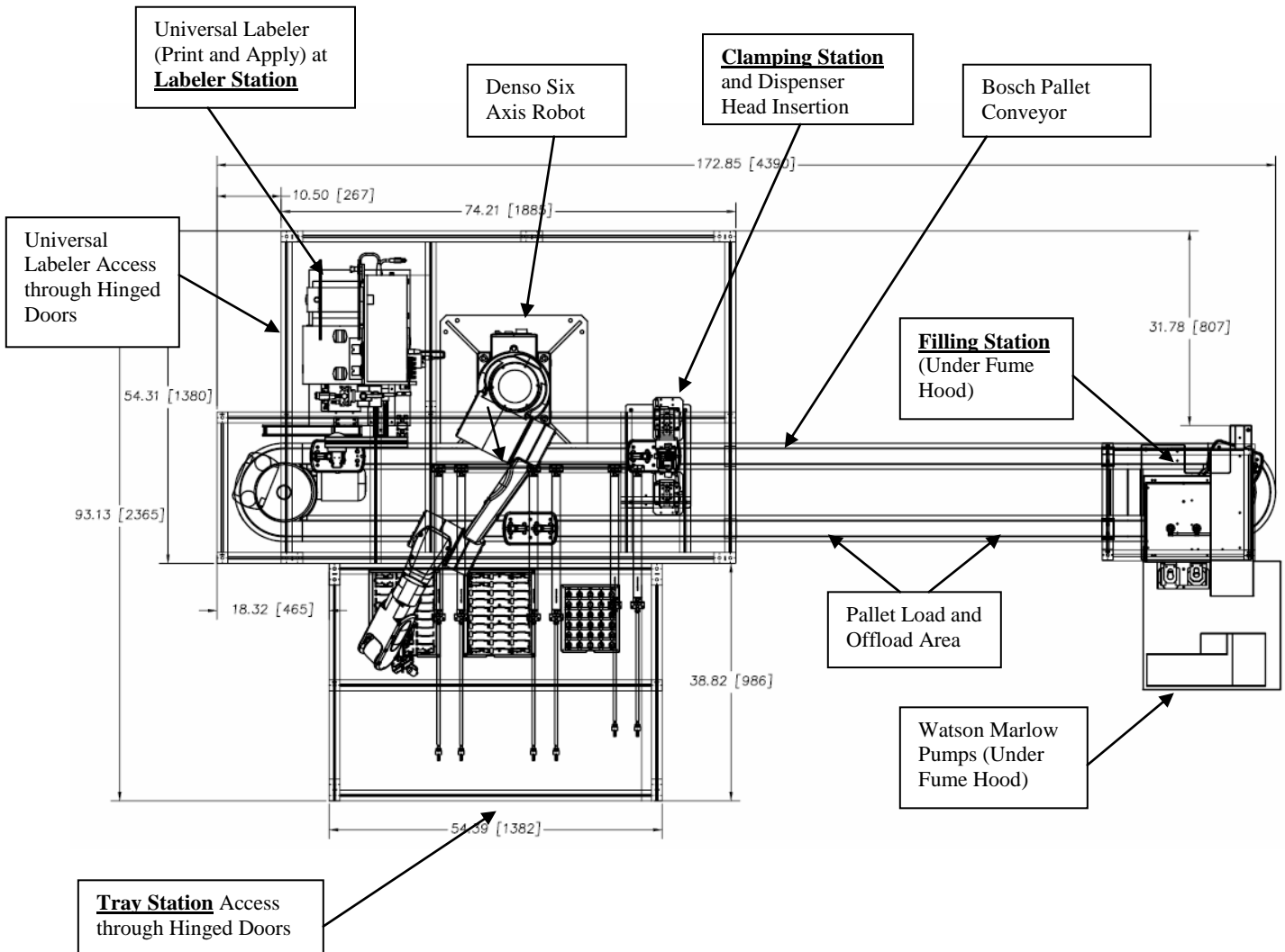
- “Functional Overview”
- “General Views”

Functional Overview

The AAPS is designed and intended for the purpose of automatic filling of either the 50 ml or 100 ml (nominal) Artisan Reagent containers. The AAPS consists of a pallet conveyor, which transports an Artisan Reagent Reservoir throughout the production process. The following steps are included in the process: Load/Offload, Fill, Clamp and Assembly, Label, and Label Inspection. Component part loading of the left and right clamps and dispense heads are accomplished from individual feed trays. A Denso six axis Robot is used to pick up each of the three parts from the three feed trays and articulate them into place onto the Artisan Reservoir after the Fill Station. A Universal Labeler is incorporated into the System, and Labels are automatically applied to the Artisan Reservoirs, after which a vision system is used to validate label placement accuracy and that both the Label Bar Code and 2D Matrix Code are readable.

General Views

Overhead View of Cell Showing Key Components and Access Points

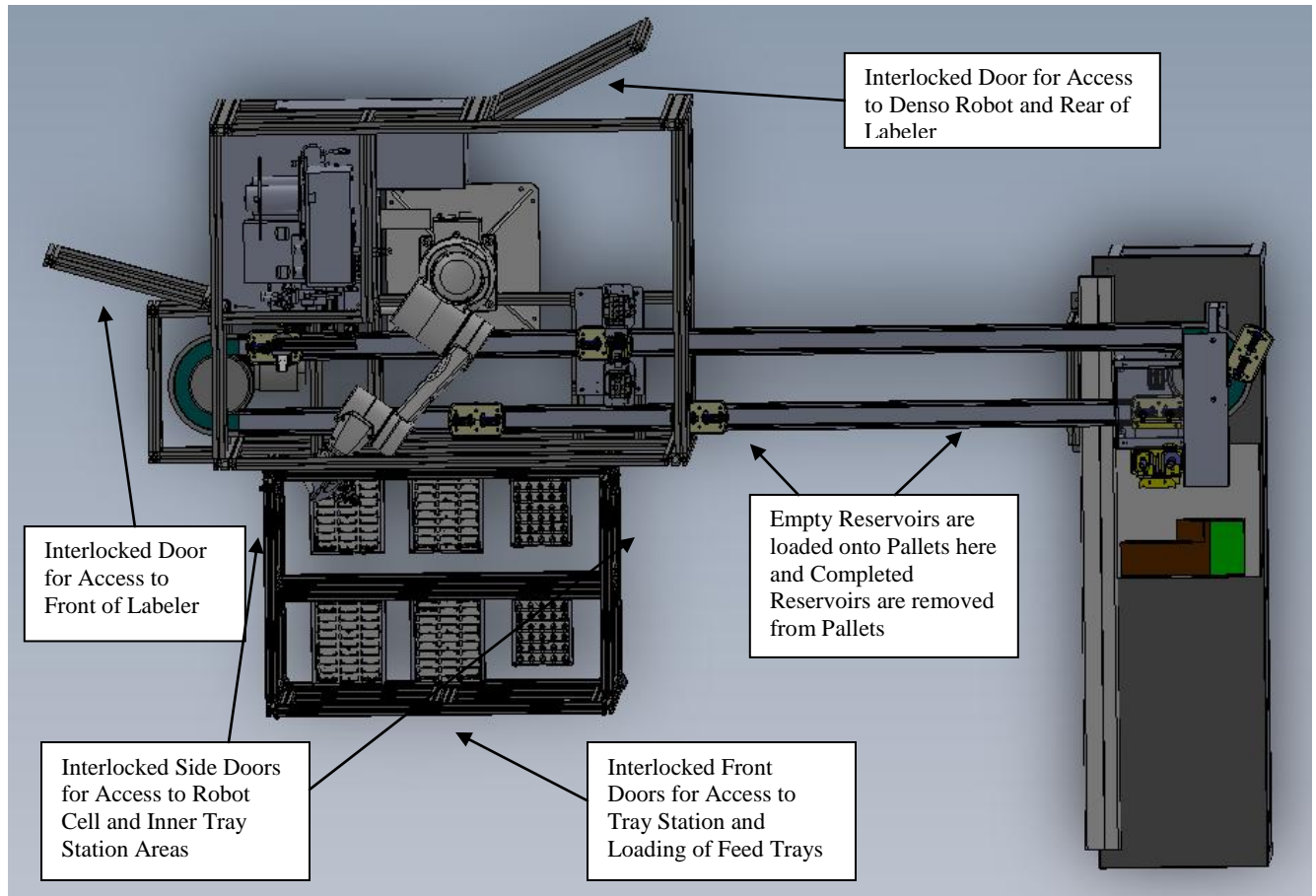




Pallet Shown Entering Fill Station with Two Empty Reservoirs Loaded



Tray Station Shown From Operator Loading Position (Doors Open)



Overhead View of Cell Showing Door and Operator Locations

Chapter 4: System Operation

Purpose

The purpose of this chapter is to familiarize the operator with the system operation of the Artisan Automation Production System.

The following topics are covered in these sections:

1. “System Power-up Procedures”
2. “Starts, Stops, & Emergencies”
3. “Operator Console Touch Screen”

System Power-up Procedures, E-STOP & Interlocks

“Cold” Start Up Procedure

Turn “ON” Main Disconnect and Main Switch on front of Main Control Panel. Note: The [E-STOP RESET] Switch and Lamp will not be illuminated at this point. NOTE: If this is a “cold” start up, it may be necessary to open the Main Control Cabinet and Place all Circuit Breakers in the ON position.



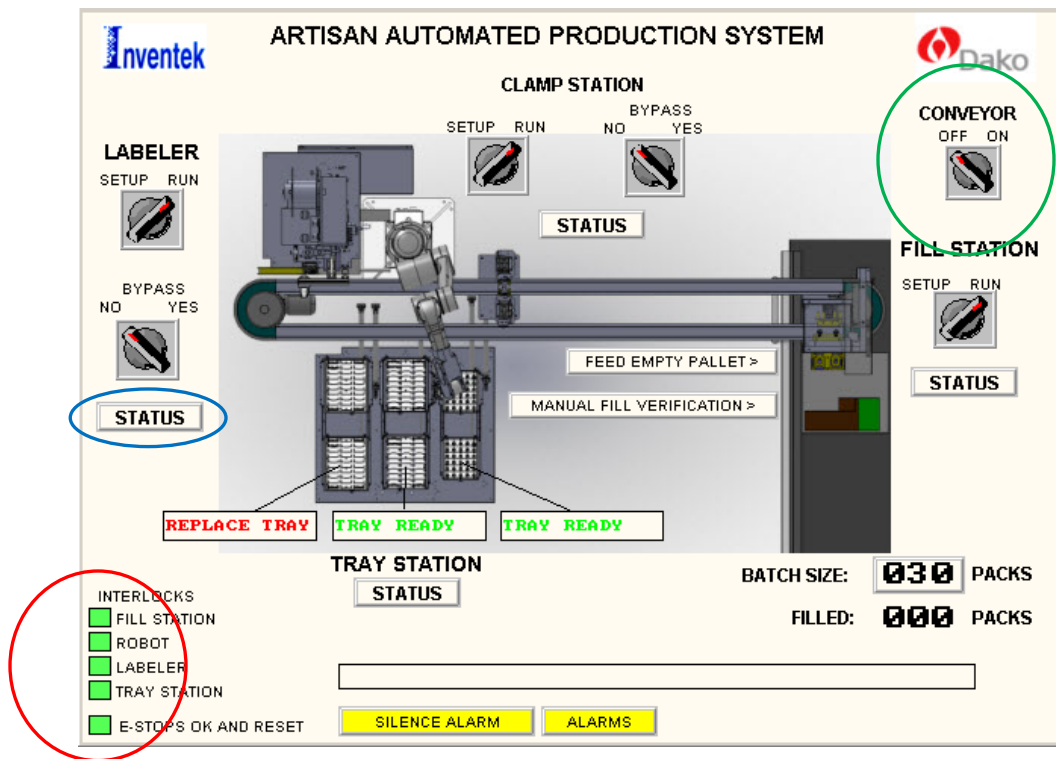
Reset E-STOP

1. Make sure all [**E-STOP**] buttons are released (Turn CCW).
2. Remove “loose” Left and Right Clamps, Dispensers, etc from inside the work area.
3. Warn employees working in the area of the impending re-start.
4. Make sure all Access Doors are firmly closed.
5. Reset E-STOP circuitry by pressing the green [**E-STOP RESET**] button.
6. The Green [**E-STOP RESET**] light will illuminate when the E-STOP has been properly reset.
7. Push all four of the black [**MACHINE RESET**] buttons.

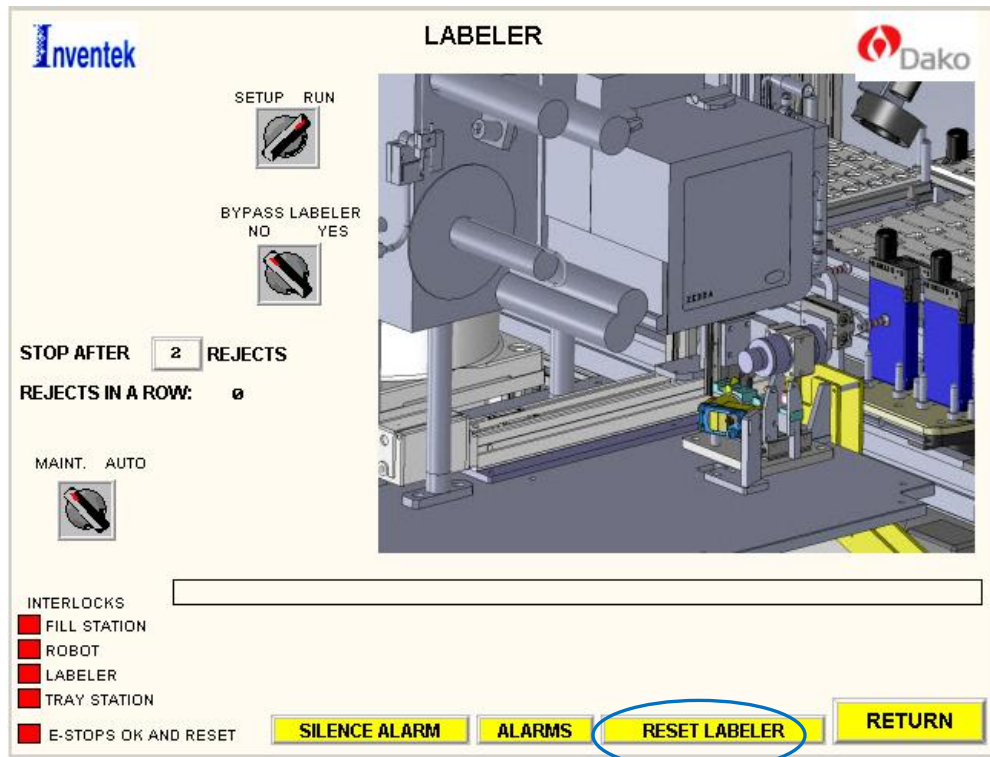
Typical Controls near Access Door(s)



8. Go to the Main Operator Touch Screen, (refer to the figure below).



9. The interlocks in the system should all be “satisfied”, and the interlock status in the lower left corner will turn green for each area. If any interlock is not properly reset it’s interlock status will be red. Check that all doors are securely closed and push the black [MACHINE RESET] buttons again.
10. Turn on the conveyor by touching the Conveyor On control indicated by green circle above.
11. Access the Labeler Status Screen by touching the control indicated by the blue circle above. The Labeler Status Screen will appear.



12. Push the RESET LABELER control and the MASTER RESET – LABELER Screen will appear. (See figure on next page.)
13. Follow the directions on the Touch Screen within the green circle.
14. When completed, touch the yellow RETURN control twice to return to the main Touch Screen.

Inventek **MASTER RESET - LABELER** **Dako**

- PRESS: **START RESET**
- REMOVE REAGENT PACKS FROM GRIPPER AND NEST. MOVE GRIPPER TO A SAFE POSITION.
- CLOSE DOOR AND PRESS 'MACHINE RESET'
- WHEN GREEN PRESS: **CONTINUE**
- WHEN GREEN, PRESS: **DONE**

INTERLOCKS

- FILL STATION
- ROBOT
- LABELER
- TRAY STATION
- E-STOPS OK AND RESET

SILENCE ALARM **ALARMS** **RETURN**

< MOVE GRIPPER TO CLEAR TAMP HEAD

15. Reset the Clamp, Fill and Tray Stations following the same procedure. Refer to the figures below.

Inventek **ARTISAN AUTOMATED PRODUCTION SYSTEM** **Dako**

CLAMP STATION

SETUP RUN NO YES BYPASS

LABELER

SETUP RUN

BYPASS NO YES

STATUS

CONVEYOR

OFF ON

FILL STATION

SETUP RUN

STATUS

FEED EMPTY PALLET >

MANUAL FILL VERIFICATION >

TRAY STATION

REPLACE TRAY **TRAY READY** **TRAY READY**

STATUS

BATCH SIZE: **030** PACKS

FILLED: **000** PACKS

INTERLOCKS

- FILL STATION
- ROBOT
- LABELER
- TRAY STATION
- E-STOPS OK AND RESET

SILENCE ALARM **ALARMS**

Access the CLAMP STATION STATUS Screen



Chapter 5: System Installation

Purpose

The purpose of this chapter is to provide system installation and setup information. Information is provided in the following section:

- “System Installation”

System Installation

Facilitation Requirements:

Electrical Power:

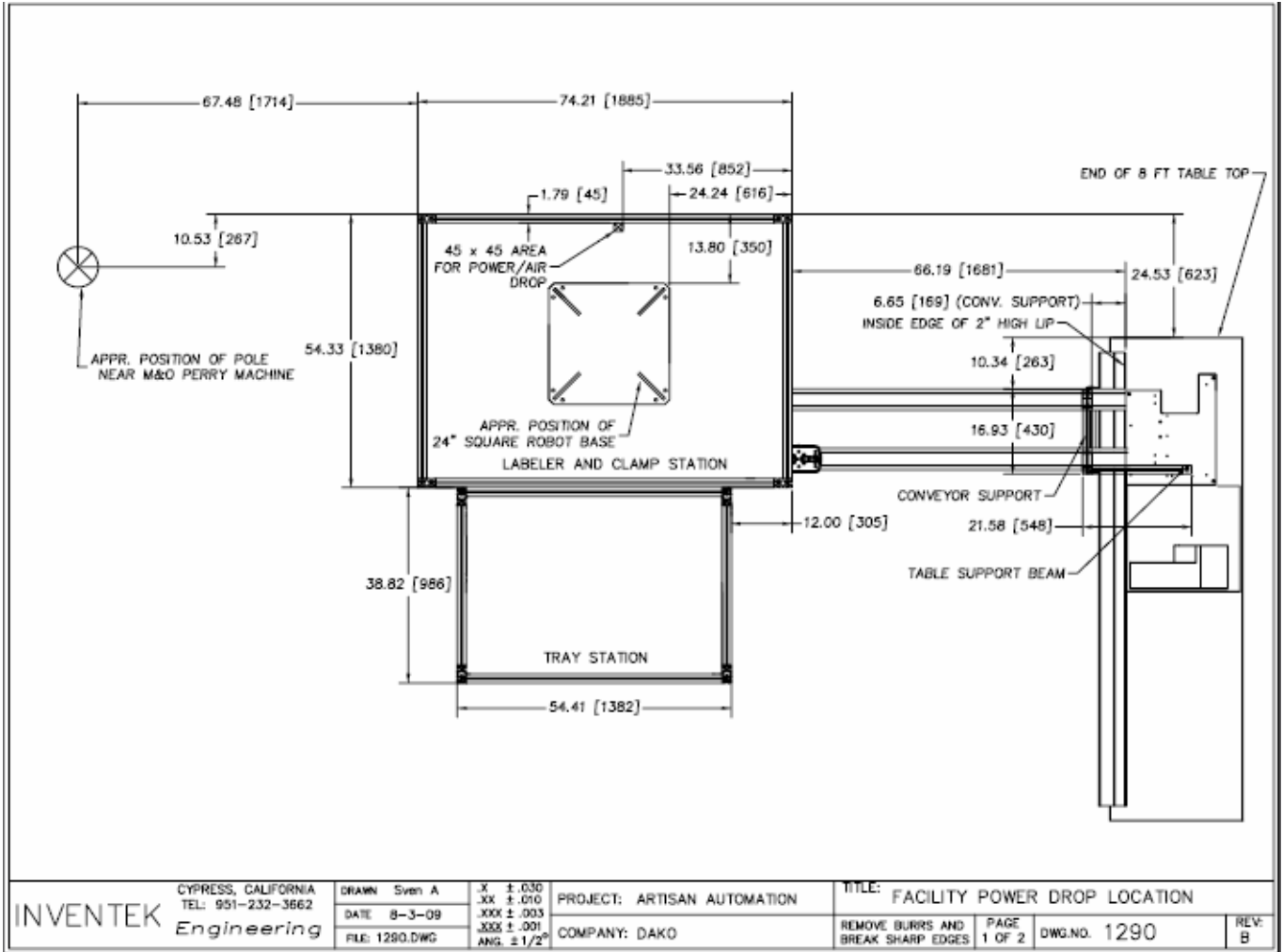
Main Panel 208 VAC, 60 Hz, 3 phase, 30A

CDA – Compressed Air 110 PSI, 3 to 5 CFM, Filtered

This section describes the process of installing the AAPS.

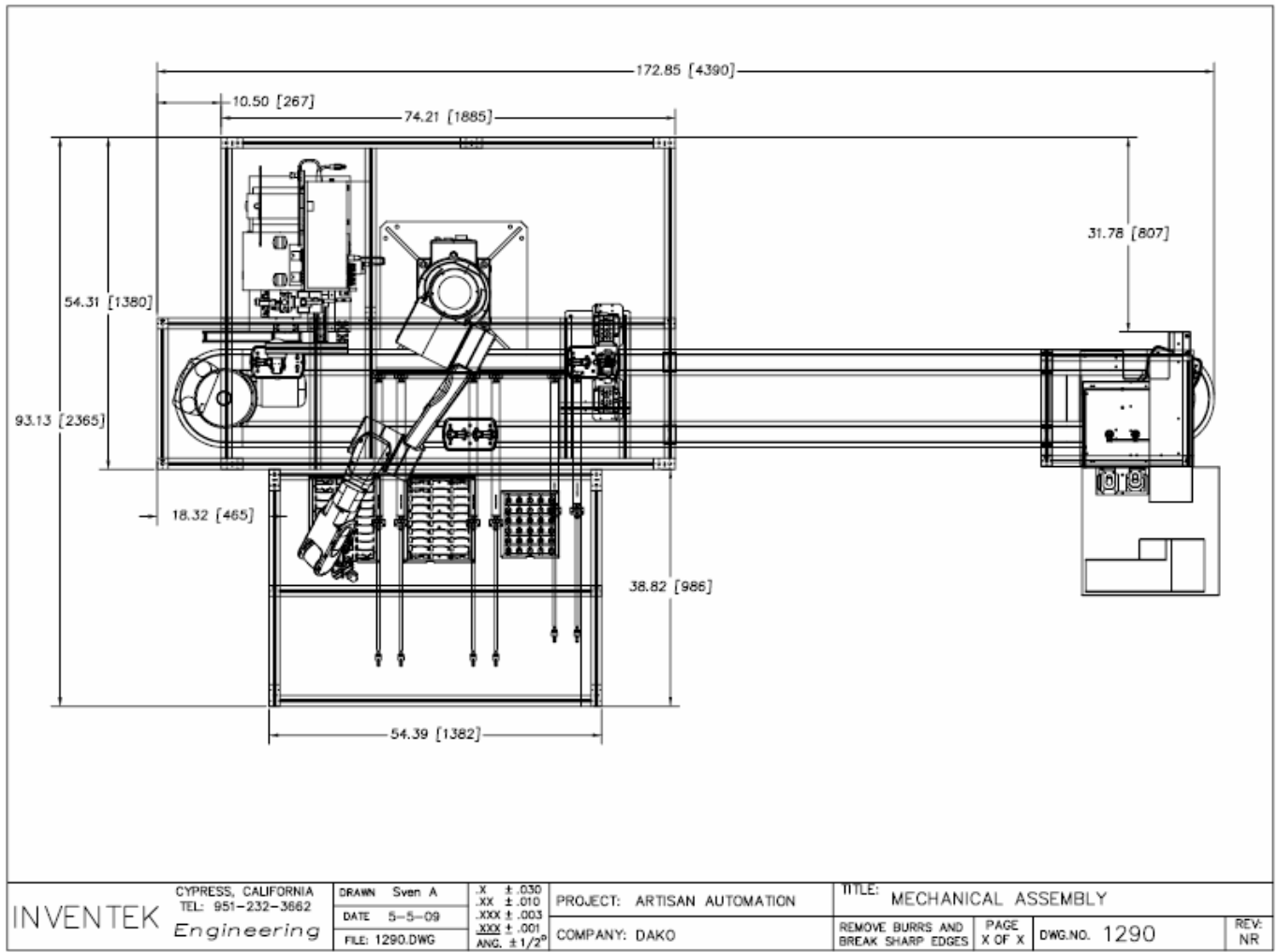
- 1 Ship crated machine to customer site.
- 2 Uncrate and inspect all shipping crates for damage.
- 3 Inspect machine location. For ease of installation, the AAPS is provided with both heavy duty casters and leveling pads. Move the AAPS into position using the supplied casters. Upon locating the AAPS into location use the leveling pads to position the main frames and conveyor.

- 4 Assemble the system starting with the reconnecting the framing. Ensure that there is at least 36" front to back clearance and 30" shoulder clearance in front of the electrical enclosure.

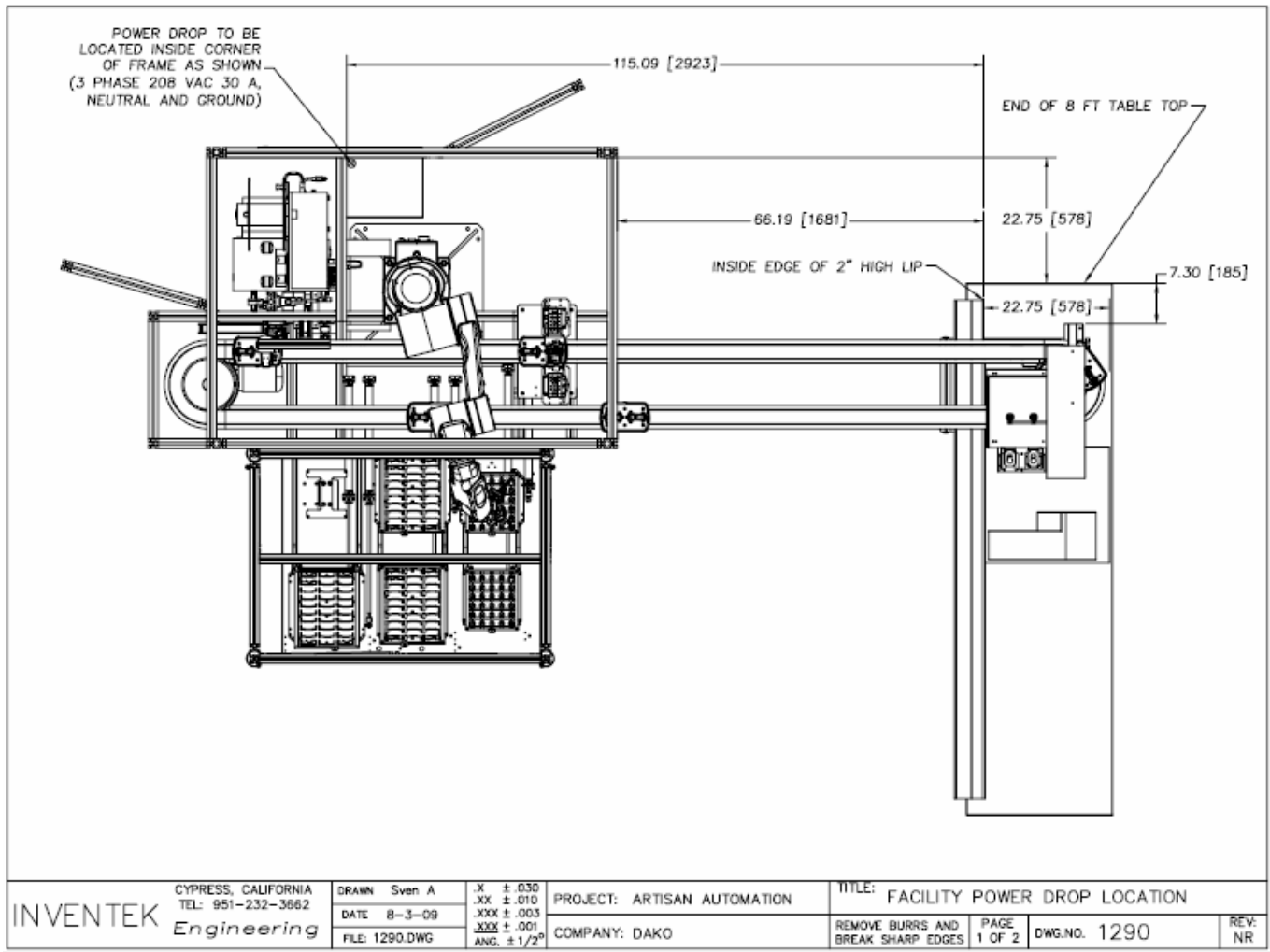


AAPS Installation Dimensions with Facility Drop Locations

- 5 Reconnect all cables, mechanical components, and tubing.
- 6 Connect main power and other facilities.
- 7 Power up system and validate interlocks and EMO's.
- 8 Confirm operator console is fully operable.
- 9 Run complete I/O check.
- 10 Bring system on-line.
- 11 Confirm that all final alignments and adjustments are complete.



AAPS Overall Footprint with Dimensions



AAPS Footprint Dimensions Relevant to Fume Hood



Chapter 9: Attachments:

Attachments and Appendices

- Electrical Schematics for AAPS

1290 Schematic – AAPS.pdf

- Spare Parts List for AAPS

Spares Parts List - AAPS.pdf

- Detailed Fabrication Drawings for AAPS

Print Out plus PDF Files

- Assembly Views and Bill of Materials

ACAD Files plus Indentured Parts List

- OEM Technical Literature and Data Sheets (Binder No. 1)

- Operators and Instruction Manuals for Cognex Insight Micro Vision System and Cognex Checker 3G Vision Sensor

Sensor View and Checker Manuals, Insight Explorer Software CD, Checker Software CD and Vision View User Manual.

- Operators and Maintenance Manuals for DENSO VM-G SCARA Robots. Includes installation and removal instructions for Robot, and preventative maintenance procedures.

DENSO Manuals (On a CD)

DENSO Robot – Safety Precautions Manual

- OEM Technical Literature and Data Sheets (Binder No. 2)
- **MOXA EtherDevice Switch Installation Guide**
- Safety Precautions and Instruction Bulletins for Omron Components

SYSMAC CJ Series Programmable Controllers

Instruction Sheet NS10 Touch Screen

Instruction Sheet Switching Power Supply

Instruction Sheet Remote I/O Terminal

Instruction Sheet E3T-ST13 Photoelectric Sensor

Instruction Sheet E3X-NA41 Photoelectric Sensor

Instruction Sheet E2K-X8MF1 Proximity Switch

Instruction Sheet Model D4BL Safety Door Switch

- **Patlite Signal Tower Installation Guide**
- Mounting, Operating and Assembly Instructions for Bosch-Rexroth Conveyor and Components.

Lenze Keypad Global Drive Instructions

Lenze Drive Motor Mounting Instructions

Vario Flow Pallet Assembly Instructions

Lateral Guide Assembly Instructions

Lateral Guide Holder Assembly Instructions

Switch Bracket Assembly Instructions

Stop Gate Assembly Instructions

Vario Flow Conveyor Assembly Instructions, Operation and Maintenance

- **SMC Digital Pressure Switch Operation Instructions**

- Schmersal Safety Interlock Switch Mounting and Wiring Instructions

AZ 15/16 Safety Interlock Switch

LAZ 15 / AZ 16 Switch Actuators

- Zebra Print Head and Universal Labeler (Provided by Others)

Safety Guide Zebra Print Heads

Software and Documentation for Zebra PAX4 Series (On a CD)

Label House/Universal APA-II Manual on CD