

Table of Contents

1	Description	
1.1	GENERAL OPERATION	3
1.1.1	“Pick To Belt” (PTB) A-frame.....	3
1.1.2	“Pick To Tote” (PTT) A-frame:	4
1.2	PERFORMANCE.....	5
1.3	PAINT.....	6
1.3.1	Standard color: Medium Shade of Gray with Aluminum cross members.	6
1.3.2	Optional color:	6
1.4	FEATURES AND BENEFITS OF THE DISPEN-SI-MATIC.....	6
1.5	TYPICAL BUYER’S SCOPE OF SUPPLY AND RESPONSIBILITIES	7
2	COMPONENTS	8
2.1	STANDARD FRAME AND CHANNELS	8
2.2	DISPENSERS.....	9
2.3	CENTER COLLECTION CONVEYOR	10
2.4	TRANSFER STATION (SI SHALL SUPPLY TO MAINTAIN ORDER CONTROL)	10
2.5	CROSS OVERS	11
2.6	OPTIONAL REPLENISHMENT TROLLEYS.....	11
2.7	LOW LEVEL LIGHTS (OPTIONAL).....	12
2.8	OPTIONAL VOICE OR RF DIRECTED REPLENISHMENT	13
3	CONTROLS	14
3.1	CONFIGURATION	15
3.2	HOST TO DCS INTERFACE	15
3.3	CONVEYOR INTERFACE.....	16
3.4	REPORTS	17
4	TRAINING	18
4.1	MAINTENANCE TRAINING	18
4.2	SYSTEM OPERATION AND CONTROLS TRAINING.....	18
4.3	OPTIONAL EXTENDED TRAINING.....	19
5	TECHNICAL DATA	20
5.1	DISPENSABLE PRODUCT CHARACTERISTICS	20
5.2	DISPENSER TYPES	20
5.3	PICK TO BELT THROUGH PUT CALCULATIONS	21
5.3.1	Through Put Calculations Parameters (need data):	21
5.3.2	Order Length Calculations	22
5.3.3	Pick To Tote Through-put Calculation.....	22
5.3.3.1	Example Rate Calculation:	22
5.4	PICK TO TOTE THROUGH PUT CALCULATION	23
5.4.1	Through Put Calculations Parameters (need data):	23
5.5	RETURN ON INVESTMENT.....	24
5.5.1	Return on Investment Parameters : (Data Required)	24
5.5.2	Other Parameters:.....	24
5.5.3	Calculate DispenSi-matic Staffing:	25
5.5.4	Return On Investment (ROI) Calculation.....	25
5.5.4.1	Example #3:	25
5.6	GENERAL ARRANGEMENT	25
5.6.1	TYPICAL SYSTEM LAYOUT	27
	HOW TO DETERMINE HOW MANY FRAMES:	29
5.7	ORDER SPACE ON COLLECTION BELT	29
5.8	PICK SPEED	30

5.8.1	Profile.....	31
5.8.2	Pick Delay	31
5.8.3	Drop Time.....	31
5.8.4	Dispenser Type	32
5.9	CUSTOMER DATA.....	32
5.9.1	Customer Survey.....	32
5.9.2	Pick Data required for Planograph	33
5.9.2.3	Product Activity Information	34

1 **DESCRIPTION**

SI's Dispen-SI-matic™ (A-frame) is an automatic piece picking machine that can be arranged in two different configurations to suit nearly every customer requirement for loose pick order selection. The design allows either configuration to be integrated into a system to provide optimum picking and inventory levels for every dispensable product. For each configuration the A-frame is equipped with individual dispensers for each channel. Products are ejected out of these dispensers onto a center gathering belt and transferred into totes or cartons at the front end on a "Pick To Belt" A-frame or directly into totes traveling through the center of the A-frame on the "Pick To Tote" A-frame.

1.1 **GENERAL OPERATION**

1.1.1 "Pick To Belt" (PTB) A-frame

Products are ejected out of dispensers onto a gathering belt conveyor which runs through the center of the A-frame. A discrete section of the gathering belt is assigned to each order being picked. As this section of the belt passes a channel from which products are needed to fill the associated order, the Dispen-SI-matic™ Control System (DCS) fires the electric motor on the dispenser causing the product to be quickly ejected onto the belt.

When the section of belt has traveled the whole length of the A-frame, all products required for that order will have been ejected onto that section of the belt. As the cluster of products for the order exits the A-frame it will proceed up an incline section of the gathering belt and at the top will be automatically transferred into a tote or shipping carton. This tote or shipping carton is positioned on a section of conveyor, (approx. 7' long which SI calls the Transfer Station), which interfaces with the gathering conveyor. From there, totes or shipping cartons can be conveyed to other areas of the warehouse such as manual pick, exception processing, pick to light, any other picking zone, packing operation or directly to shipping.

Rates:

Maximum 700 to 1,200 totes/cartons per hour (order profile dependent).

Tote / Carton Sizes:

Transfer Stations and inclines are tailored to accommodate a wide range of totes and/or carton sizes. Totes and Cartons must be sized to allow for 40% to 60% cube.

Multiple sizes of both totes and cartons can be used on the same system. To do so, SI developed a special Transfer Station with an "Infinite Position" product deflector to direct product into cartons/totes.

Infinite Position Transfer Station

In order to transfer product picked into various size cartons/totes, SI developed an adjustable product deflector which is designed to service the following range of carton/tote sizes:

Range	Length	Width	Height with Flaps Up
Min	15.0"	9.8"	9.375"
Max	26.0"	18.25"	24.5"

This deflector assembly design uses an “Infinite Position” product deflector. A programmable linear actuator is used to vary the height of the funnel vs. air cylinders so that vertical adjustment can be done in an “infinite” range instead of just four fixed stop positions in the standard air cylinder design. The funnel also has the necessary side adjustment to handle the carton/tote width range. The controls system has the necessary hardware and software to detect carton/tote size and move the funnel accordingly.

1.1.2 “Pick To Tote” (PTT) A-frame:

For systems where throughput of more than 1,200 totes per hour is required, it is usually necessary to specify our “Pick To Tote” configuration. In doing so, a re-pack operation is generally required.

The ejection of product is the same as the “Pick to Belt” A-frame. However, instead of the product being ejected onto a section of belt, the DCS fires dispensers so that the product drops into a tote assigned to the order which travels through the center of the A-frame.

The “Pick-To-Tote” DISPEN-SI-MATIC™ system will function with one size (same width and height but length can vary) tote or carton with unique bar coded labels. The in-feed conveyor needs to meter totes so that at least a 1” gap can be maintain between totes entering the DISPEN-SI-MATIC™. This gap is required so that our control system can determine the start and end of each tote throughout the picking process.

When the tote reaches SI’s tracking sensor, (Sync Photo-eye), at the entry, SI will track the tote through the machine by means of an encoder. The DISPEN-SI-MATIC™ will pick the items for each specific order and dispense them directly into the totes as they travel through the center of the machine. That means that the target space on the belt, into which items for an order must be dispensed, is equal to the length of the tote.

The order start function involves “marrying” an order to each empty tote. As each tote approaches the rear or entry end of the “Pick To Tote” A-frame, a photo eye will detect the leading edge of the tote, and a bar code scanner will read the tote's license plate. This identifies the specific order to be picked and the target space (equal to the length of the tote) into which the order must be dispensed.



As the tote moves through the A-frame, dispensers eject the appropriate products directly into the tote. The A-frame products for the order will be in the tote as it exits the front or exit end of the A-frame.

Variable speed

The standard “Pick to Tote” DISPEN-SI-MATIC™ Control System software can automatically adjust the speed of the center gathering belt conveyor to govern the process rate based on order profiles (*speed/rate automatically adjusted based on order profiles*).

As a result, when an order tote requiring multiple picks of an item from a single channel enters the A-frame, the speed of the A-frame’s gathering belt will slow down when this tote is in front of the required channel(s) for the short instance of time required to complete the picks. Once the picks for the associated tote requiring a slow down are completed the A-frame gathering belt speed will automatically adjust back to the original speed.

Re-circulation

Re-circulation through the Pick To Tote A-frame can be included to pick items shorted if desired. Any re-circulation will result in a reduction of actual through-put. Recirculation is highly recommended to provide flexibility in order profiles and to minimize exceptions.

Rate:

The rate of a “Pick-To-Tote” A-frame is determined by belt speed, tote length, order profile and spacing between totes.

Maximum rates we achieved with our PTT A-frame are 4,200 totes per hour.

Tote Sizes:

Rule of Thumb: Minimum - 11” Wide on bottom x 6” High x 15” L

Maximum - 21” Wide on bottom x 12.25” High x 30.5” L

1.2 PERFORMANCE

The Dispen-SI-matic can handle a wide range of packaged items, in sizes from 2" x .9" x .4" to



7.4" x 5" x 4.5" with standard dispensers, up to 12.4" x 10.5" x 3.8" with double wide or extra length dispensers, and as small as 2" x .6" x .6" with a "lipstick dispenser". Rectangular as well as cylindrical products can be dispensed from the product channels.

At ejection rates of up to 4 to 5 units per second, up to 1200 orders per hour can be processed with the "Pick To Belt" configuration and up to 3,600 order per hour with the "Pick To Tote" configuration.

NOTE: (average rate for the "Pick To Belt" A-frame is between 500 to 900 orders; The 1200 orders per hour is for very small orders and not many customers have this ideal order profile. Order profile drives through put).

(SEE SECTION 3 "THROUGH PUT CALCULATIONS)

(SEE SECTIONS 5.1 and 5.2 FOR PRODUCT AND DISPENSER TYPES)

1.3 PAINT

1.3.1 Standard color: Medium Shade of Gray with Aluminum cross members.

1.3.2 Optional color:

SI Blue and SI Beige with Aluminum cross members.

NOTE: The channel guides are powder coated. Due to the electronic/magnetic process different color pigments perform different in friction of final process. Product does not slide down channels without proper friction. To date only the standard medium gray, SI beige and SI blue are approved colors.

1.4 FEATURES AND BENEFITS OF THE DISPEN-SI-MATIC

The Dispen-SI-matic™ from SI Systems provides many substantial benefits.

Flexibility of layout - The Pick to Tote configuration provides great flexibility in designing a distribution system. Any number of frames can be arranged end-to-end, or at right angles, to provide the desired overall length.

Simple, reliable construction - Each frame is of rugged, but simple construction. The only moving parts, the dispensers, are quickly changed, using one bolt and plug in connections.

Easily adjustable channels - The channel widths are easily adjusted for different products by



loosening 2 allen head set screws, sliding the channel dividers to the required location, and re-tightening the screws.

Ultra high throughput - The “Pick To Tote” Dispen-SI-matic™ offers some of the highest picking rates of any system available (up to 4,200 per hour).

High replenishment rates - The simple, paper less replenishment system makes replenishment of the channels fast and easy. Rates of over 3000 pieces per man hour are attainable and no training or special skills are required. Replenishment can be performed while the A-frame is picking, with no interruption. We also offer a Voice or RF directed replenishment tool to direct the replenishment of only the items required to fill down loaded orders.

Product handling - The Dispen-SI-matic™ handles a broader range of products than other cartridge type machines. Products up to 5" wide and 7" long can be handled with standard dispensers. For boxes up to 10" wide and 12" long, dual width or long dispensers are used.

Gentle picking - Each dispenser can be set for specific picking speeds, depending on the item. Thus, it is possible to pick fragile products gently, while still picking "normal" products at high dispenser speeds. This technique maintains high throughput of the Dispen-SI-matic™, with little damage to fragile items.

Outstanding space utilization - The dense configuration of the Dispen-SI-matic™ channels, together with the unique "compound angle" arrangement, provides efficient utilization with no wasted space.

High accuracy - A microprocessor controls and monitors each channel. Accuracy of 99.95% is typical, and if errors do occur, orders are routed off line and a report is printed to direct the correction.

Structured, reliable controls - The modular design of the Dispen-SI-matic™ Control system, together with software proven over scores of installations, provides dependable service with virtually no downtime.

Quick change hardware - All dispensers and switches are easily accessible, have plug in connectors, and can be replaced without interrupting picking.

Clean, silent operation - Electric Dispenser – no oil, silent, non-polluting, and no air.

1.5 TYPICAL BUYER’S SCOPE OF SUPPLY AND RESPONSIBILITIES

The Buyer typically provides the following:

- Taxes, Freight and Permits

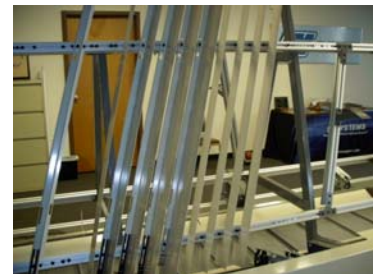
- A protected storage area for equipment, materials and tools
- Host to DCS communication cables
- Electrical power (460 VAC, 3 Ph, 60 Hz, about 30 to 60 amps) to SI's main control Panel.
- Air, as specified, to the transfer station (80 psi, low volume)
- Access roads and vehicle parking
- Fire protection equipment and any required fire watch
- Building security
- Free and Clear Work Space
- Heat, lights, water, sanity facility
- 120VAC power during the installation
- Telephone communication, including a one permanent voice and data line at the DCS for help support modem and verbal communication.
- Technical representative
- Any required non-productive standby labor (fire watch, etc.)
- Labor and test product to load channels for testing
- Labor to do final full channel load
- Planograph Support
- Totes or cartons (large enough for order size, with bar code license plate on both sides – opposite corners). Totes to be tapered so that there is a gap at the bottom when two are accumulated. (optional for SI to provide)
- Tote in-feed and takeaway conveyor, including pack stations equipment and pack station controls to drive printers and label machines. (optional for SI to provide)

2 COMPONENTS

2.1 STANDARD FRAME AND CHANNELS

Frame

The standard frame configuration of the Dispen-SI-matic™ has product channels arranged on both sides of an A-frame shape structure. Each channel has an individual electric dispenser which ejects the product from the bottom of the stacked column of product in the channel.



The frames have “A” shaped structural steel support legs that extruded aluminum cross members mount to the top and bottom. The cross members are used to mount channel guides tilted to the right. The legs, being “A” shaped tilt the channel guides inward and the right tilt of the channel guides align the product within the channels. This dual angled channel guide arrangement also reduces the reach for the replenishers.

Each Frame is 7'-10" in length (94"), and 5'-0" wide (5'-6" wide for frames with long dispensers on one side).

Channels

The channels are made from powder coated sheet steel side guides screwed to the frame cross members. The width of each channel is easily adjusted for various size products by loosening the top and bottom screws, sliding one guide to the proper width, and re-tightening.



A standard channel is 60" high, (95" high versions are available), and the top of a 60" channel is about 7 ft. above floor level. (Can not put 95" channels on both sides of a frame due to interference – it is typical to have 95" on one side and 60" on the other side).

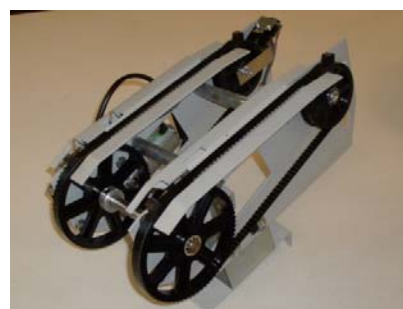
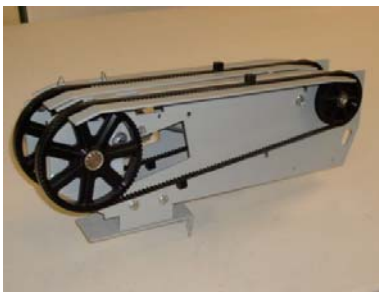
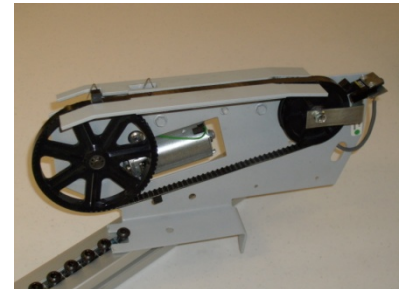
Each frame can have up to a maximum of 64 channels, 32 to a side (number varies with product width). The unloaded weight of a frame with 64 channels is about 1150 pounds.

The open channel construction allows replenishment to be performed while the machine is picking, and also makes it easy to visually determine replenishment needs for each channel.

2.2 DISPENSERS

The dispenser is a self-contained unit which is mounted to the frame beneath each channel by a single bolt. Slots in the frame permit positioning of the dispenser directly under each channel.

The dispenser frame has a 2.5" flat surface with a recess in it. Products in the channels rest on this flat surface and the dispenser belt runs through the recess. For wide or long products, double width or extra length dispensers are available.



The dispenser is powered by a fractional horsepower, 24 VDC, motor with gear reducer that drives a 3/8 in. wide cogged belt. When a product is to be dispensed, the microprocessor actuates the drive motor, causing it to move the belt one cog forward. A cog pushes a product

out from the bottom of the channel, down the slide pan, and onto the collection conveyor for the “Pick To Belt” configuration or into a tote for the “Pick To Tote” configuration. The advancement of the cog and subsequent ejection of the product is very quick; a 12” stroke takes about 0.15 seconds.

A single mounting bolt, combined with plug in connectors for the control unit, allow the entire dispenser to be changed out in seconds, while the machine is picking. The dispenser mechanism weighs about 3 pounds.

2.3 CENTER COLLECTION CONVEYOR

Pick To Belt

The standard center collection conveyor for a Pick To Belt A-frame is a 19.7” wide Intralox Series 400 flush gray, polypropylene belt with 1” high x 15.54” wide flights on 10.02” centers. This belt conveyor is on a special bed designed and built by SI’s supplier (Hytrol).



It is at a 14” elevation through the Dispen-SI-matic and inclines up to an elevation required for totes/cartons on the Transfer Station to pass under for order filling funnel.

It will have gravity roller belt take-up located under the incline, and screw take-up at the in-feed end.

Pick To Tote:

The center collection conveyor for a “Pick To Tote” A-frame in general shall be a rubber or cloth slider bed belt conveyor with either a side mounted drive at the front end or bottom mounted drive in the center dependent on overall length and shall extend 10’ beyond the A-frame at each entry end and 5’ beyond each exit end.

2.4 TRANSFER STATION (SI shall supply to maintain order control)

The “Pick To Belt” A-frame will be equipped with an automatic product transfer or fill station (Transfer Station). The Transfer Station



has an indexing conveyor, a scanner (verify order), and a hopper or funnel arrangement to guide product into the tote/carton below. Totes/Cartons are propelled at high speed into the product fill position where product is transferred into them. There is one tote/carton at the fill position and one in queue behind it (both stopped by clamps as a standard). High Speed transfer station are available – higher cost.

Optional Shakers

Optional 3 phase motor driven shakers can be provided to assist in the fill of the tote/carton. These shakers are typically only used for systems requiring large pieces/order to be dispensed into plastic totes and have round shaped product such as bottles.

2.5 CROSS OVERS

At the front of the A-frame, and when a machine length exceeds 8 to 10 frames or (100 ft.), it is desirable to provide a cross over point to reduce the travel distance for replenishment and maintenance personnel. Long systems will have two to three.

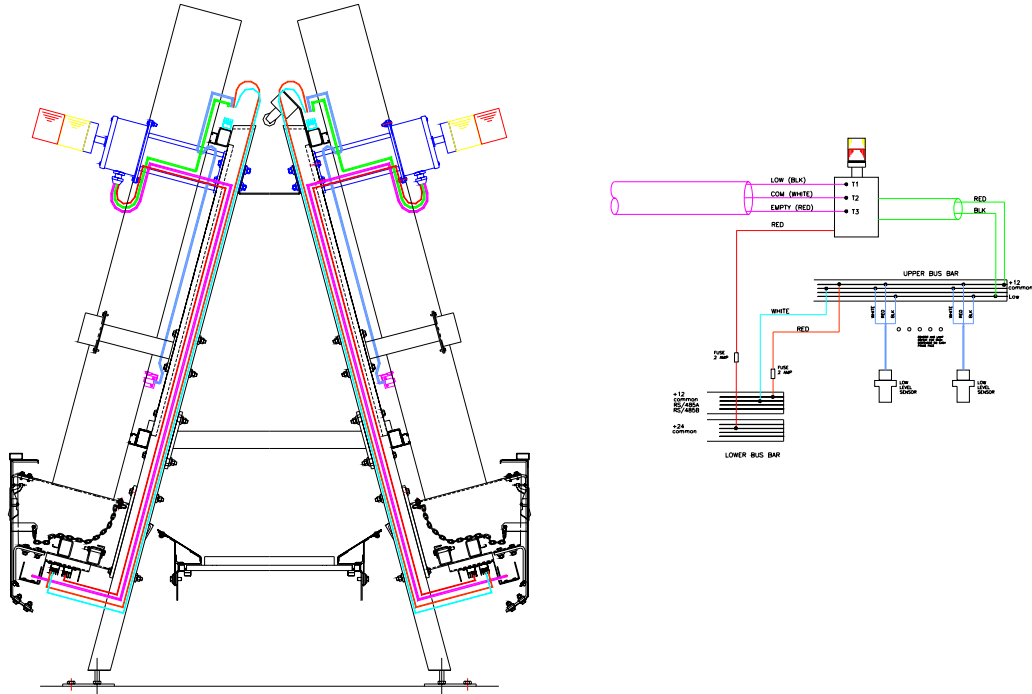


2.6 OPTIONAL REPLENISHMENT TROLLEYS

To assist in the replenishment effort, we offer an option for small wheeled tables which travel on rails on the dispenser shrouds. These optional trolleys provide a surface for operators to place a case of product so that they don't have to turn around during replenishment (usually one for every 4 frame faces).



2.7 LOW LEVEL LIGHTS (OPTIONAL)



As an option, each of the right hand channel guides can be equipped with slots to mount a low level photo-eye type sensor so that they will be adjustable over a slotted range. When product gets below the level of the sensor an associated large light on each side of each frame will illuminate. These frame face lights will be locally wired to the low level sensors on each right hand guide such that when any one of the product low level sensors on a frame face is detected, the corresponding large frame face light will illuminate to alert an operator to the area. Once in the area, the operator shall replenish all the channels with product below the sensor level and or any other channels near low.

An additional option can be provided to wire in a small light for each channel to indicate the channels that are below the set low level.

2.8 OPTIONAL VOICE OR RF DIRECTED REPLENISHMENT

Replenishment activities are critical to the overall efficient running of an Order Fulfillment Distribution Operation and if not managed carefully will have a snowball effect in making the picking operations unpredictable and inefficient.

For this option, we can offer our Voice Directed Replenishment software and headsets or RF devices to direct the replenishment of channels only as needed to fill orders. This option is far superior to the above Low Level Light option.



Late replenishment of forward picking locations results in short order processing which leads to unscheduled emergency replenishment activities which slow the picking activities in a picking area and finally inhibits the release of new orders into a picking area. This inefficiency adds directly to the overhead costs of the picking operation, lengthens the picking day, expands the work force and increases late deliveries.

The SYNTHESIS™ Proactive Replenishment Director (SI PRD) is designed to improve the replenishment processes required to support today's complex Order Fulfillment Distribution Systems. The SI PRD consists of real time processes that continually analyzes picked and unpicked orders, along with available inventory in forward pick locations, and determines the replenishment requirements of the products that are requested by those orders. This analysis results in a sequenced approach to replenishing the picking areas with the correct products at the correct time.

This proactive replenishment approach is designed to minimize the personnel needed for replenishment, reduce and or eliminate short order processing with the ultimate goal of reducing the costs attributed to the replenishment task.

Replenishment Zones

The SYNTHESIS™ Proactive Replenishment Director will analyze all the orders in the order data base and determine the picking/replenishment requirements for the A-FRAME. The SI PRD will then dynamically create the replenishment zone sizes for each operator so that all predicted work is evenly distributed. The replenishment zone information shows a supervisor the starting and ending location for each replenishment zone.

Replenishment Order Analysis Logic

In addition; the SI PRD can display a list of replenishment alerts by carefully analyzing unpicked orders, the products requested by those orders and the available inventory levels of those products in all channel locations in the A-FRAME. Replenishment alerts fall into 2 categories, products whose inventory will go empty if not replenished and products that will just go below their reorder order point (ROP). Products that will not reach their ROP, during the picking shift, will not be on this list for replenishment and should be ignored by the replenishment operators.

From this information all the Products that will need to be replenished for the day will be identified and placed on a list in a sequence that will closely predict when those products will need to be replenished. The SI PRD will use the orders to be picked for the day to determine the replenishment sequence for each zone.

The SI PRD will interface with the SI Dispen-SI-Matic™ Control System (SI DCS) and will monitor the actual order picking process. When orders are picked, the SI PRD will check to see if this order will trigger the requirement for a product to be replenished. If it does then the SI PRD will add this product to the list of products to be replenished. The SI PRD will gather all of the replenishment requirements for a give zone and present them to each replenishment operator in least walk sequence.

All information will be transmitted using Voice Technology and operator productivity information will be collected and reported.

Advantages of a Proactive Replenishment Strategy

If you adopt a more Proactive Replenishment Strategy for the Order Fulfillment Operations it is expected that the following benefits will be realized:

- Reduce the number of replenishment runs.
- Quicker turnaround service time for replenishment of critical products.
- Significant reduction in the effort dealing with orders that are shorted.
- Potential Labor Savings (perhaps up to 20 to 30 percent).

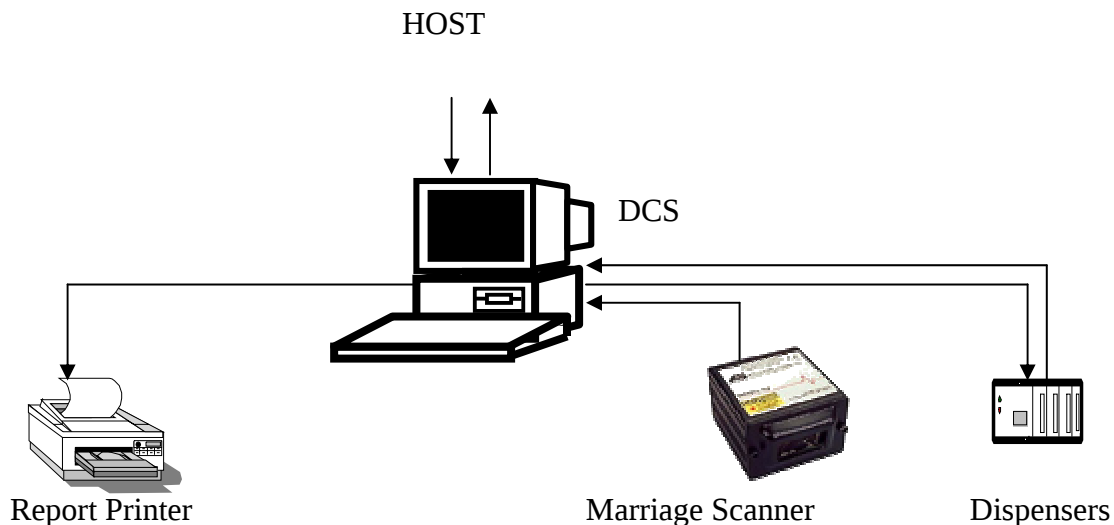
3 CONTROLS

The Dispen-SI-matic™ Control System (DCS) is a stand alone, PC based system that independently controls the A-frame. The DCS receives orders from the Host Computer, controls all picking activities, monitors performance, and prints several useful reports. It has its own built-in diagnostic package; any problems are indicated to the operator, who controls the machine through a color terminal via the menu-driven, user friendly software. The DCS uses a well known DATABASE management package for all data collection, file management and report generation. All DCS software is written in C and runs under Windows based.

Every dispenser is controlled by its own microprocessor which monitors all of the dispenser functions and sends and receives messages from the DCS. An example is the "sensitivity index" which contains data about the pick speed for each product. Each dispenser motor can pick its product at a user defined speed. For any item, the cog on the dispenser belt can be set so as to dispense the item in an optimum manner. With this technology, the DCS can vary the dispensing rates for all items, enhancing the performance of the total system.

Since the DCS is a PC based system it can communicate easily with a wide range of computer systems. The system can print reports for all elements in the database files. Available reports include inventory by channel and product, replenishment, predicted replenishment, lane failure, planograph, and CSU or performance. All files on the DCS can be made available to the Host computer.

3.1 CONFIGURATION



3.2 HOST TO DCS INTERFACE

The system interface is usually Ethernet or Token Ring (Ethernet is preferred and should be stated

as so since token ring does cause extra demands on software). SI will provide an Ethernet or Token Ring card and the TCP/IP interface utility which will be installed in the Dispen-SI-matic Control System (DCS).

Information shall be placed in ASCII formatted files per a mutually agreed upon specification written during the design phase of the project (there is a standard host interface specification – we must note SI’s standards in proposals). The ASCII files are to be written to a shared area on the host computer for access by the SI controller, or transferred to the SI DCS controller for local processing. All files will be renamed after processing so that an audit of the information is possible. Order data will consist of a “header” data (name, address, wave, status, etc.) and “line” data (SKU, pieces required, etc.). SI will submit a detailed order data specification within the first few weeks of the project (start with standard specification).

3.3 CONVEYOR INTERFACE

Pick To Belt

SI’s tote Transfer Station conveyor at the front of the Pick To Belt A-frame must interface with the buyer’s tote in-feed and takeaway conveyors. The following control interface will be required. All signals to be isolated contacts.

Signals from SI’s controls to Buyer’s Conveyor Controls:

“Request Next Tote” (Conveyor controls to advance next tote onto SI’s station)

“Reject Tote” (Conveyor controls to divert the next tote to exit A-frame fill position to the error correct spur)

Signals from Buyer’s Conveyor Controls to SI’s Controls:

“Run” (Indicating that the in-feed and takeaway conveyors are in the run mode)

“Request Ack” (Acknowledgment of SI’s request for next tote)

“Reject Full” (Indicating that the reject spur is full – in this case SI will not release a tote labeled reject until the “reject full” goes away.

Pick To Tote

SI’s Pick To Tote A-frame must interface with the buyer’s tote in-feed and takeaway

conveyors. The following control interface will be required. All signals to be isolated contacts.

Signals from SI's controls to Buyer's Conveyor Controls:

“Running” (Conveyor controls to advance totes into the A-frame)

“Reject Tote” (Conveyor controls to divert the next tote to exit A-frame to the error correct spur)

Signals from Buyer's Conveyor Controls to SI's Controls:

“Run” (Indicating that the in-feed and takeaway conveyors are in the run mode)

“Run Ack” (Acknowledgment of SI's request for totes)

“Reject Full” (Indicating that the reject spur is full – in this case SI will not release a tote labeled reject until the “reject full” goes away.

3.4 REPORTS

The standard DSC has the following report capability:

- CSU Report (Control System Utilization) which shows all system configuration settings, up/down time, number and types of faults
- Database Integrity Report
- Inventory by Lane Report
- Inventory by Product Report
- Lane Failure Report
- Order Summary
- Product Movement Report
- Product Variances Report
- System Configuration Report

4 TRAINING

SI's training program is designed to provide the knowledge and skills to assure that a smooth system operation is achieved. The training described below is a dynamic hands-on effort, (optional classroom sessions are available for additional cost).

Buyer personnel associated with various tasks are instructed in the following areas:

- Maintenance
- System Operation and Controls

4.1 MAINTENANCE TRAINING

SI provides a "hands on" approach to maintenance training. At least 3 weeks before system start-up, the Customer should designate at least one of its maintenance employees to work with SI's field superintendent during final stages of the machine installation. These employees must have prior experience in electrical and mechanical troubleshooting.

SI's field superintendents will conduct training during final stages of assembly to familiarize these personnel with the construction, operation and maintenance of the Dispen-SI-matic. SI will provide "hands-on" guidance in areas such as identification, adjustments and replacement of various components, and troubleshooting techniques. Maintenance manuals will be covered to insure that Buyer's employees are capable of defining problems after acceptance. Replenishers will also be taught all aspects of proper channel replenishment.

It should be noted that maintenance needs of a Dispen-SI-matic are minimal. The only preventive maintenance involves checking and periodic lubrication of moving components such as the collection conveyor, amounting to 3 hours per week, or less.

Other "maintenance" type duties occur when adding or changing lanes. This involves adding or readjusting channel dividers and, sometimes, moving dispensers and setting dispenser speeds. A lane can be reconfigured, adjusted, and tested in 5 minutes; a dispenser can be changed in 2 minutes.

4.2 SYSTEM OPERATION AND CONTROLS TRAINING

During the final week of checkout, SI will present training to prepare selected Customer personnel for the complete operation of the Dispen-SI-matic and its Control System.

SI instructors will train Buyer's personnel to operate and troubleshoot the equipment and Controls. The training will familiarize Buyer's personnel with the functions, utilities, and



reports available with the System. Training will cover hardware basics, key board basics, operating system basics, and system operation via the terminal. Advanced topics will include order and product file manipulation, start of day and end of day procedures, running statistics, importing and exporting orders, and query manager functions. The training will be conducted at the system work station(s), during normal working hours, Monday-Friday from 8:00 am to 5:00 p.m.

During the first week after start-up SI instructors will "stand by", observing Buyer's personnel operating the system and offering repeat advice and instructions as needed.

4.3 OPTIONAL EXTENDED TRAINING

SI Handling will gladly provide additional pricing should buyer's requirements or specifications dictate the need for extensive and/or formal classroom training. This would include the need to train various disciplines from those described above, training on different shifts other than normal SI Handling job site hours of work, and/or the request to train multiple groups of Buyer's employees outside the guidelines described above or classroom training.

5 TECHNICAL DATA

5.1 DISPENSABLE PRODUCT CHARACTERISTICS

Many factors affect the reliable dispensing of a product, (shape, size, weight, hardness, friction, weight distribution, etc.), that is why SI needs to work closely with prospective customers to identify the most favorable SKU's to be picked from the Dispen-SI-matic. Characteristics along with movement determine what products will go into the A-frame. To assist in the selection of products SI should inspect and in most cases test the product and prepare a "planograph" of the system.

In general, product weight and dimensional data are collected at the site or the customer sends this data along with movement data (lines per day, and pieces per line). However, SI must also hand inspect or test the products for dispensability prior to firm quoting. SI runs this data through the "planograph" software which sizes the A-frame along with determining what type of dispensers and the number of channels.

- Item weights over one pound must be individually tested.
- Weight of stacked product within a channel generally cannot exceed 30 pounds.
- Product should stack evenly within a channel; tapered products are generally excluded.
- Product must not deform under heir own stacked channel weight.
- Product must slide freely on top of one another; irregular bulges or edges, which can catch on adjacent product or a rough or sticky sliding surface can cause jams when dispensing.
- Dimensions: must have dimensions shown below for each dispenser type.
- Cylinders, cubes, carded items, & rectangular boxes are Okay to dispense.
- **SOFT GOODS, GLASS , LIQUIDS , or most bottles with flip open caps should not be dispensed.**

5.2 DISPENSER TYPES

DISPENSER NAME	Min. Length	Min. Width	Min. Height	Max. Length	Max, Width	Max. Height
Standard	2.0"	0.9"	0.4"	7.4"	5.0"	4.5"
Dual Belt Standard	2.0"	0.9"	0.4"	7.4"	10.5"	3.8"
Long	2.0"	0.9"	0.4"	12.4"	5.0"	4.5"
Dual Belt Long	2.0"	0.9"	0.4"	12.4"	10.5"	3.8"
Lipstick	2.0"	0.6	0.6"			

5.3 PICK TO BELT THROUGH PUT CALCULATIONS

5.3.1 Through Put Calculations Parameters (need data):

- Order Profile (lines per order, pieces per line, maximum pieces per line)
- Product type (round items etc.)
- Product Size (small or large items)

Other Parameters / Data Required to Determine Through Put for Pick To Belt A-frame

Tote Fill: Use 40% to 60% of the tote volume to calculate product volume in tote (40% if mostly boxed product and 60% if mostly round product such as bottles).

Front Safety Gap:

Front Gap	
Belt Speed (100 fpm)	.5 sec
Belt Speed (Standard 200 fpm)	1.0 sec

Note: the front gap is used to prevent belt drift (on E-Stop) from mixing orders.

Rear Safety Gap:

Rear Gap	
Flat Product	.5 sec
Round Product	1.0 sec

Note: the rear gap is used to prevent product that falls back from mixing with the following order and provides time for product to fall into the tote.

Tote Index:

Transfer Station Index Time	
1. Standard Transfer (24 in. tote)	3.0 sec
2. High Speed Transfer (24 in. tote)	1.0 sec

Order Length:

Needs to be calculated. (See below)

5.3.2 Order Length Calculations

Order Length	
1. Small Orders (less than 10 lines, 20 pieces, small items)	$(.33 \text{ sec per piece}) * (\text{maximum pieces per line})$
2. Small Orders (less than 10 lines, 20 pieces, large items)	$(.50 \text{ sec per piece}) * (\text{maximum pieces per line})$
3. Large Orders (greater 10 lines, 20 pieces, small items)	$\{(\text{Total lines}) * (.165 \text{ ft})\} / (\text{belt speed ft per second}) + \{(\text{maximum pieces per line}) * (.33 \text{ sec per piece})\}$
4. Large Orders (greater 10 lines, 20 pieces, large items)	$\{(\text{Total lines}) * (.165 \text{ ft})\} / (\text{belt speed ft per second}) + \{(\text{maximum pieces per line}) * (.50 \text{ sec per piece})\}$

5.3.3 Pick To Tote Through-put Calculation

Total Order Time = Front Safety Gap + Tote Index Time + Rear Safety Gap + Order Length

Orders per Hour = $(60 \text{ seconds} / \text{Total Order Time}) \times 60 \text{ minutes}$

5.3.3.1 Example Rate Calculation:

Large Order: 200 fpm Belt (3.33 ft per second) : (1 second Front Gap)
 Standard transfer: (3 seconds index time)
 Round Product: (1 second Rear Gap)
 Small Product: .33 sec per piece
 50 lines, 6 Pcs/line Maximum

Large Order : Use Order Length Calculation #3:

$(50 * .165) / 3.33 + (6 * .333) = 4.47 \text{ sec per order}$

Front Gap:	1 sec
Index time:	3 sec
Rear Gap:	1 sec
Order Length:	4.47 seconds
Total	9.47 seconds

Throughput (Orders per Hour) = $(60 \text{ sec.} / 9.47 \text{ sec.}) \times 60 \text{ min.} = 380 \text{ totes/hr}$

5.4 PICK TO TOTE THROUGH PUT CALCULATION

5.4.1 Through Put Calculations Parameters (need data):

- Order Profile (lines per order, pieces per line, maximum pieces per line)
- Product type (round items etc.)
- Product Size (small or large items)

Other Parameters / Data Required to Determine Through Put for Pick To Tote A-frame

- Tote Fill: Use 40% to 60% of the tote volume to calculate product volume in tote (40% if mostly boxed product and 60% if mostly round product such as bottles).
- Tote Length:
- Conveyor Speed:
- Gap Between Totes:

The maximum dispensing rate of the SI dispenser is five pieces per second (based upon product size, shape, and weight). For average product size we expect an average of 3 pieces per second and we need the tote in front of the dispenser for about 1 second.

For the “Pick To Tote” A-frame, picking directly into totes on the belt, it is possible to produce rates as high as 3,600 to 4,200 totes per hour (order profile dependent).

The rate of a “Pick-To-Tote” system is determined by the belt speed and tote length as well as spacing between totes. We can govern the belt speed to allow for the required order profile, (primary the number of items required to pick out of a single channel).

Speed can be automatically governed to accommodate orders consisting of different order profiles. Therefore, we can automatically reduce the belt speed for orders requiring more picks from a single channel and then automatically return to full speed once the tote travels by the associated channel. Maximum rates for a Pick To Tote A-frame are achieved by induction of back to back totes properly gapped for identification.

The combination of high throughput capability and variable belt speed feature will provide for a flexible system that can process orders of different order profiles and growth. Our “Pick-To-Tote” system can process every changing order profile while still maintaining order rates.

A standard “Pick-To-Belt” A-frame has rate limitations as order profiles vary. Orders requiring more pieces per line take up more space on the conveyor and therefore degrade order rates.

Example

For example, to achieve the rate of 3,600 totes per hour for 15” long tapered totes (outside dimension) there must be a steady stream of totes with no gaps (the tapered sides provides the required gap), the SI center conveyor would run at 75 fpm, (this will allow for totes to be in front of a dispenser for 1 second), and the order profile should not exceed one pick per dispenser (*up to 2 to 3 picks per dispenser can occur for smaller items dependent on size*).

Typical Belt speed for a Pick To Tote is 60 fpm to 90 fpm. At 90 fpm or 5400 ft per hour belt speed, 18” long tapered totes would be processed at $(5400 \text{ ft} / 1.5 \text{ ft}) = 3,600 \text{ totes} / \text{hour}$ or 1 tote per second. Allowing for a .3 second front and rear safety, this would provide for the sweet spot of a tote to be in front of a dispenser for at least .4 seconds to dispense an item.

It is best to allow for 1 second of picking to dispense up to 3 items out of the same channel + .3 second front safety + .3 second rear safety = 1.6 seconds per tote. In doing so a system with the same 18” tapered totes would need to run at 11.25” per seconds or 56.25 fpm belt speed and would obtain a rate of 2250 totes per hour.

Reminder: The standard “Pick to Tote” DISPEN-SI-MATIC™ Control System software can automatically adjust the speed of the center gathering belt conveyor to govern the process rate based on order profiles (*speed/rate automatically adjusted based on order profiles*).

As a result, when an order tote requiring multiple picks of an item from a single channel enters the A-frame, the speed of the A-frame’s gathering belt will slow down when this tote is in front of the required channel(s) for the short instance of time required to complete the picks. Once the picks for the associated tote requiring a slow down are completed the A-frame gathering belt speed will automatically adjust back to the original speed.

5.5 RETURN ON INVESTMENT

5.5.1 Return on Investment Parameters : (Data Required)

- Number of workers (pickers, packers, checkers, replenishers)
- Cost per hour (or yearly cost with benefits per person)
- Number of lines picked per hour
- Number of pieces per line
- Number of lines per order
- Hours worked per day

5.5.2 Other Parameters:

Replenishment Rates:

Replenishment	
1. Large Products	1000 per hour
2. Medium Products	1500 per hour
3. Small Products	2000 per hour
4. Special Products (replenishment tools)	3000 per hour

5.5.3 Calculate DispenSI-matic Staffing:

- Operator (Operates machine fills shorts): 1 person
- Replenishers: Total shift volume/Replenishment Rate
- Tote Handling: Depends on operation
- Maintenance: usually 1/3 person

$$\text{Total \# A-frame People} = (\text{Operators} + \text{Replenishers} + \text{Tote Handling} + \text{Maintenance})$$

5.5.4 Return On Investment (ROI) Calculation

ROI is usually measured in total dollar savings per year.

$$\text{Total Number of People} = \text{Number of Current Manual Pickers} - \text{Total \# A-frame People}$$

$$\text{Total \$ Savings per Year} = \text{Total Number of People} * \text{Annual Cost per Person}$$

5.5.4.1 Example #3:

Volume: 80,000 pieces per shift (7.5 hours)

Manual Pick: 400 pcs. per hour (3,000 per shift)

Annual Cost per Person: \$33,000 full burden

Use existing maintenance person.

Operator : 1

Replenisher: $\{80,000 \text{ pieces} / (7.5 \text{ hours per shift})\} / (1500 \text{ per hour replen rate}) =$
7.1 replenishment operators

Manual Pick: $80,000 / 3,000 =$ 26.6

DispenSI-matic People required = 8.1

Total Savings 18.56 operators

Total Savings per year $18.56 * \$33,000 = \$612,480 / \text{year}$

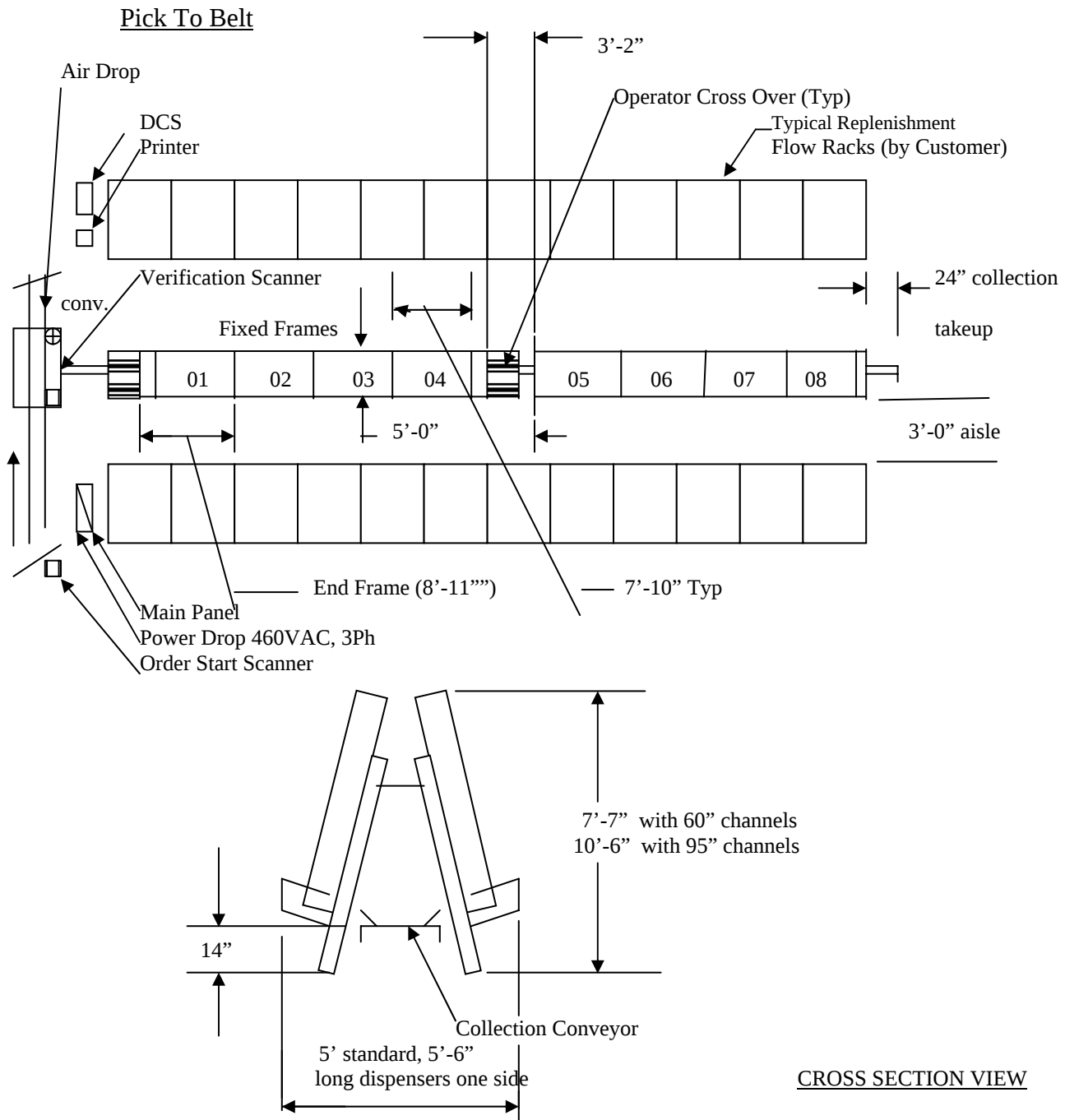
5.6 GENERAL ARRANGEMENT

Along with the Dispen-SI-matic™ a typical system includes the Transfer Station and incline

up to the Transfer Station for the “Pick To Belt” version, cross overs, Control System, order start scanner and verification scanner. The typical system layout below shows overall dimensions and general location of control panels, power and air drops, and depicts how a typical A-frame will be installed within a facility (flow rack on both sides).

It is common to slot the fast movers in the front frames. In doing so it keeps the these fast moving SKU’s toward the front closer to the system operator to assist in replenishment. One thing not shown on the typical system layout drawing is an exception or error correction spur. All machines should have an exception or error correct spur, (generally supplied by the conveyor supplier), just downstream of the exit of the Transfer Station or exit of the A-frame so that the next order out of the A-frame can be diverted onto the exception or error spur for order correction.

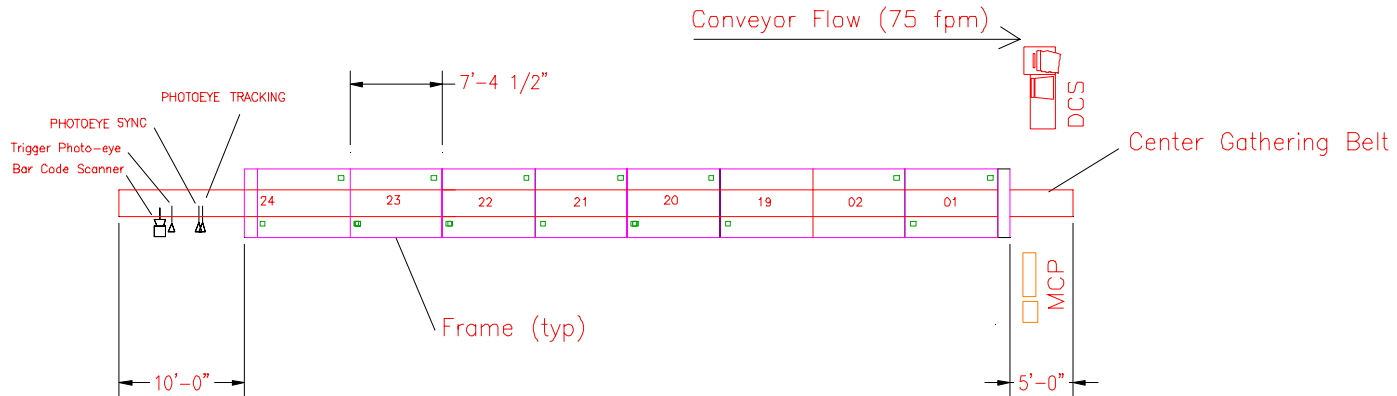
5.6.1 TYPICAL SYSTEM LAYOUT



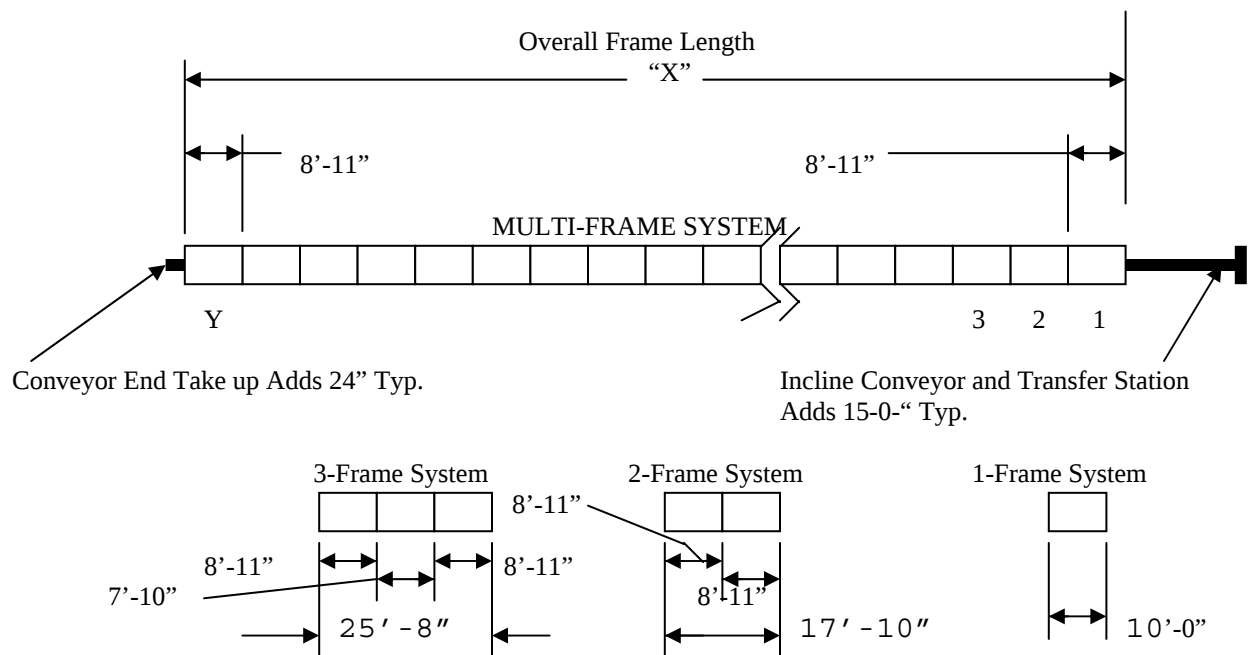
Pick To Tote

The Pick To Tote A-frame uses the same frames as the Pick To Belt A-frame above. The

Transfer Station is eliminated.



Machine Length



NOTE: Cross-overs when required add an additional 4'-6" per cross-over to "x" Dimension.



DISPEN-SI-MATIC FRAME LENGTH CHART (less cross overs) Y = number of Frames

Y	4	5	6	7	8	9	10	11	12	13	14	15	16
X	33'-6"	41'-4"	49'-2"	57'	64'-10"	72'-8"	80'-6"	88'-4"	96'-2"	104'	111'-10"	119'-8"	127'-6"

Y	17	18	19	20	21	22	23	24	25	26	27	28	29
X	135'-4"	143'-2"	151'	158'-10"	166'-8"	174'-6"	182'-4"	190'-2"	198'	205'-10"	213'-8"	221'-6"	229'-4"

Y	30	31	32	33	34	35	36	37	38	39	40		
X	237'-2"	245'	252'-10"	260'-8"	268'-6"	276'-4"	284'-2"	292'	299'-10"	307'-8"	315'-6"		

How to determine how many frames:

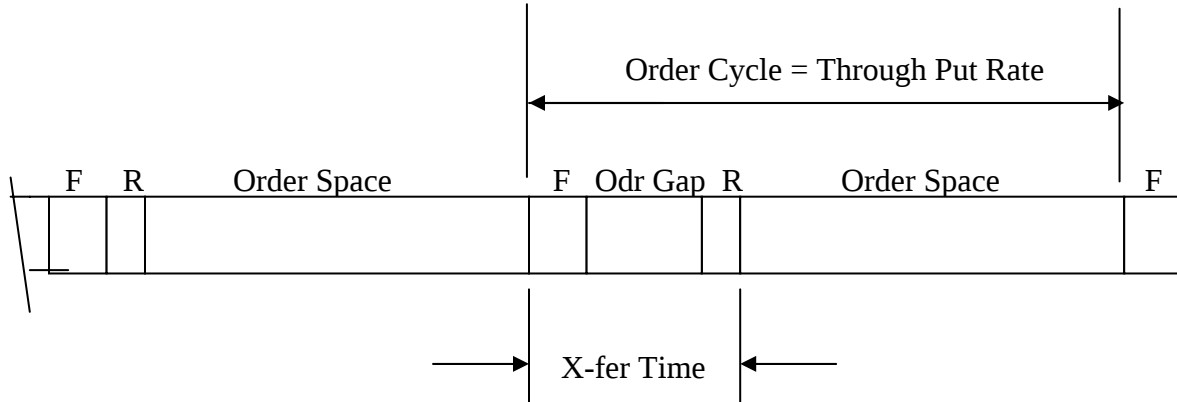
The actual number of frames for the DISPEN-SI-MATIC™ depends on the product size mix, (in particular the width), which will populate the A-frame and inventory levels. Each frame has two frame faces (one each side). Each frame face has 83.2" of available space to populate with product. To calculate the number of frames required you have to start with how many products can fit within each frame face. To start with, .3" must be added to each product width to allow for the right and left hand product guides, and the minimum width used for any product plus channel guides shall be 2.5" (width of a dispenser). Should provide enough channels to stock a minimum of 2 to 4 hours of inventory for each item. As a result, the faster moving items will have multiple channels.

5.7 ORDER SPACE ON COLLECTION BELT

The total order space on the belt for each order consist of:

- Front Safety Gap – prevents roll over into tote if belt stops
- Order Space – space on belt for product for the order
- Rear Safety Gap – incase last piece in order delays or falls back some
- Order Gap – Between order gap

The combination of the rear safety gap, the order cap, and the front safety gap makes up the maximum time allowed to transfer in the next order tote or carton. The physical transfer must be under this time such that enough time (2/10 sec.) is left for communications. If the transfer is longer, then the A-frame belt will stop, wait for the next tote in position signal, and then go through a pre-start warning horn time prior to re-start the belt or picking operation. This will destroy any through-put rate. The transfer has to be done under the combined time in order to keep the A-frame running. All times are adjustable within menus on the DCS.



5.8 PICK SPEED

Each dispenser is powered by a DC motor of the type found in automotive applications (windshield wiper motor). Local power supplies supply 24 volt s to the motors. Like all DC motors, the speed is proportional with the voltage supplied. By varying the voltage from 0 to 24 volts, it is possible to produce any desired RPM and corresponding dispenser belt/chain speed.

The microprocessor for the dispenser meters the voltage to the motor in a range from 0 volts to 24 volts. With no load at 24 volts, full speed for a standard fixed dispenser is 203 RPM. This equates to a belt speed of 48.7 inches per second. For a traveling dispenser these figures are 190 RPM and 38 inches per second.

The microprocessor produces variable motor speeds by varying the timing, rate, and duration of “pulses” to the voltage supply to the motor. The effect is similar to using a “kill” button on a race motor. With the motor running at full speed, a driver can slow down by hitting the “kill” button for short periods. The timing and duration of the “kill” contacts can produce a series of accelerations and decelerations that appear as if the motor were running at a slower speed.

The control logic for the dispensers works in a similar fashion. The microprocessor interrupts the voltage supply to the motor, creating different periods of pause to full speed operation. These, combined with full speed, result in eight (8) profiles or levels of “sensitivity”.

Pick speed is a four (4) digit number (####) – (1234):

Digit Position	1	2	3	4
Definition	Dispenser Type	Drop Time	Pick Time	Profile

Default is 0000, which is acceptable for most product. All other settings result in slower picking. **Maximum picks per second: Fixed = 5**

5.8.1 Profile

With 0 sensitivity, (labeled as Profile 0), the dispenser motor accelerates from dead stop to full speed and continues at full speed until one cycle is complete. (A cycle is the advancement of one cog for a distance equal to the cog spacing on the belt/chain; it represents one piece picked).

For level 1 sensitivity, (labeled as Profile 1), the motor accelerates to about 94 percent of full speed and continues at this speed until one cycle is complete.

Profile	0	1	2	3	4	5	6	7
% - Full Speed	100	94	88	81	75	69	63	56
Speed (inches/sec) Fixed	48.7	45.7	42.6	39.6	36.5	33.5	30.4	27.4
Speed (inches/sec) Travel	38.0	35.6	33.2	30.9	28.5	26.1	23.7	21.4

5.8.2 Pick Delay

To increase the effectiveness of sensitivity, the control logic allows an additional level of sensitivity to be applied. This level is identified as “pick delay”. Again, a total of eight (8) possibilities are available. A selection of “0” will cause no pick delay to be applied, selection of “pick delays” 1 through 7 will cause a “pick delay” to be applied at varying positions in the pick cycle. The higher the “pick delay” the greater distance the belt/chain cog will travel before the “pick delay” is applied.

“Pick delay” will cause the control logic to rapidly decelerate the cog and then accelerate the cog back to the profile velocity for the remainder of the cycle. By applying a “pick cycle” in conjunction with a particular “profile” a great range of sensitivities can be applied to suit various product handling requirements.

To gain benefit from the “pick delay” the controller must be told where the end of the product is and it will then cause the “pick delay” to occur at that position thereby providing a gentle contact between the cog and the product.

5.8.3 Drop Time

As the name implies, the controls delay the supply of voltage to the motor for a period of time before the beginning of the next cycle. “Drop time” only applies to a dispenser from which multiple picks will occur for an order.

For instance, suppose an order calls for three (3) pieces of a given product; when the order space passes in front of the channel, the controls will “fire” the dispenser. Without “drop time” the motor will make about two full revolutions, advancing three cogs forward and ejecting three pieces at full speed (assuming no sensitivity). If “drop time” is selected, however, the motor will turn for about 2/3 of a revolution, advancing one cog forward, then pause for the selected time, then make another 2/3 revolution, advancing another cog forward, pause again

for the selected time, and then make the final 2/3 revolution. The effect of this is clearly seen when picking several pieces from a full channel. This setting is required for products which require greater time to drop than the time required for the cog to travel to the rear of the product. (The cog will pass under the product without “drop time, causing a no pick).

This setting is also helpful for handling product that tends to bounce. The pause lets the product briefly settle into proper position before the next dispenser stroke occurs. This ends to reduce jams.

The “drop time” is also selectable from 0 to 7 or eight (8) settings.

Drop Time Setting	0	1	2	3	4	5	6	7
Time (seconds)	0	.050	.100	.200	.400	.600	.800	1.0

5.8.4 Dispenser Type

The final portion of the pick speed is a number which represents the type of dispenser.

Setting	0	1	2
Dispenser Type	Standard Fixed	Long	Traveling

5.9 CUSTOMER DATA

5.9.1 Customer Survey

The following information should be obtained by the sales / application team to allow for proper evaluation and pricing:

General Information:

- Customer Name:
- Address:
- Contact:
- Phone Number:
- Fax Number:
- E-Mail Address:

Operational Data:

- Average number of orders per day
- Peak number of orders per day
- Number of times peak orders occur

- Average number of lines per order
- Peak number of lines per order
- Number of times peak lines occur
- Average number of pieces per order
- Peak number of pieces per order
- Number of times peak pieces per order occur
- Average number of days worked per week
- Average number of hours worked per day
- Total number of items (SKU's)
- Number of SKU's that comprise 80% of volume
- Annual increase in number of items (SKU's)
- Product Size: Length, Width, Height, Weight
- Product Shape and Hardness
- Shipping Container Size
- Number of containers per order
- Number of waves per day/shift
- Number of orders per wave
- Number of warehouse Personnel per shift
(Pickers, Packers, Checkers, Replenishers)
- Annual wage and fringe cost per man
- Type of Host Computer / location
- Special Conditions/Requirements

5.9.2 Pick Data required for Planograph

The following information requirements are meant as guidelines. Depending upon the scope of the project, not all of the following data may be necessary. Possibly more or different information is required. These issues should be addressed in conjunction with SI.

Media and File Layouts:

FLAT ASCLL FILE – comma delimited, with quotes around alphanumeric fields or FIXED LENGTH RECORDS. In either case, please provide file layout, including blocking factor and label information if applicable.

DISKETTE, e-mail, IOMEGA Zip, CD-ROM

IF AN EBCDIC FILE IS TO BE PROVIDED, DO NOT INCLUDE PACKED FIELDS OR INTERNALLY SIGNED FIELDS.

5.9.2.1 Order File

The following information is requested. The field formats for the two files are suggested for guidance. Order file for one week of recent or peak history (time frame can vary depending upon the project).

FIELD	FORMAT	COMMENTS
ORDER DATE	YYMMDD	ORDER PICK DATE
ORDER NUMBER	X (8)	UNIQUE ORDER IDENTIFIER
ITEM NUMBER	X (15)	UNIQUE ITEM IDENTIFIER
QTY ORDERED	999999	ORDER LINE QUANTITY
CASE PICKS	999999	FULL CASE PICKS FOR ORDER LINE
LOOSE PICKS	999999	LOOSE PICKS FOR ORDER LINE
ORDER TYPE	XXX	If appropriate, indicate type of order (hospital, retail distribution center, mail order, retail store, etc.

5.9.2.2 Product File

One record for each item number / pack-size combination.

FIELD	FORMAT	COMMENTS
ITEM NUMBER	X (15)	Unique Item Identifier
PACK SIZE	999	Minimum Dispense Qty to Pick
ITEM DESCRIPTION	X (50)	
ITEM NDC OR UPC	X (12)	
DEPARTMENT CODE	XXX	OTC, Rx, Cage, Refrig, Vault, etc.
CASE QUANTITY	99999	
ITEM HEIGHT	99.9	Dimensions should be rounded up to nearest .1"
ITEM WIDTH	99.9	Dimensions should be rounded up to nearest .1"
ITEM DEPTH	99.9	Dimensions should be rounded up to nearest .1"
ITEM WEIGHT	999.99	Pounds
CASE HEIGHT	99.9	If Required for Project
CASE WIDTH	99.9	If Required for Project
CASE DEPTH	99.9	If Required for Project
WHSE LOCA	X (8)	Split Case Warehouse Location
CASE LOCA	X (8)	If Required for Project
SHAPE CODE	X	R= Cylindrical, ' ' = Other

5.9.2.3 Product Activity Information

FIELD	FORMAT	COMMENTS
DAYS ACTIVITY	999	Number of days this item code / pack size was active
HITS	9 (05)	Total invoice lines for this item code / pack size for days active.
PICKS	9 (05)	Total pick units for this item code / pack size for days active.