

DATA PROCESSING SERVICES, INC.



THE BOSS

BASIC ORDER SELECTION SYSTEM



WHITE PAPER

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THE BOSS

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OVERVIEW

The BOSS has as its primary objective, the task of maximizing picks per hour while minimizing errors per pick. It is an automated picking system that allows the picker to select the correct number of units by reading the quantity in a picking station display instead of from an invoice. The picker no longer has to: find and read the next line item, search the picking line for the item, or check-off the quantity picked.

The BOSS is made up of a control unit and bin displays. Each title has a separate display. A group of displays is called a picking zone and is controlled by a zone master.

The BOSS will also monitor picker productivity by person compared to the line overall. It will analyze picking requirements for the day, factor in individual picker productivity and provide manpower requirements reports and a zone balancing report.

ZONE FLEXIBILITY - The system will suggest zone sizes to conform to the current workload, and zone sizes can be defined in seconds at the system console.

The experience shared by distributors who have used pick systems has been a savings in labor in excess of 38%, a reduction in picking errors of 90%, less shortages, and fewer customer complaints.

More and more wholesalers are looking at the BOSS because of the paybacks the system provides. These paybacks can be categorized into 3 areas:

1. Pick line productivity
2. Reduced error rate
3. Labor cost of error rectification

THE PICKING FUNCTION

Facing the pick line the picker presses the zone controller invoice-request-key.

The host transmits the next invoice number and displays it on the zone master display. It then transmits the pick data for that zone, displays it on the appropriate pick modules, and lights the to-be-picked beacons.

The picker verifies the printed invoice number against the invoice number displayed on the zone master.

The picker recognizes when copies need to be picked from a bin because the quantity is displayed and the to-be-picked beacon is turned on.

The order is filled by picking the quantities indicated in the bin displays.

The picker can check-off the pick by pressing the "Confirm Pick" key which turns off the beacon and blanks the quantity displayed.

When the zone is finished the picker returns to the start of the zone for the next invoice.

If the pick beacon on the zone controller is still on, the picker knows that a pick was missed and can correct the error.

Options

- printer available carton label production
- interface to shipper systems (RPS, UPS, etc.)
- pick verification weight and volume analysis hardware / software module
- complete "turn-key" conveyance, flow rack, pick to light, weight volume analysis systems

WHY AUTOMATE THE TIE LINE

- o **Increased Productivity**
The picker has no paper to handle, no lines to read to find the next item, no search to find the proper bin, and no reread to verify the quantity. Pick rates will increase dramatically.

- o **Reduced Errors**
The picker doesn't have to switch his attention back and forth between the picking list and the bin location of the next item to be picked. The ability to concentrate on the picking activity alone will reduce errors significantly.

- o **Reduce Labor**
Reducing picking labor is only part of the benefit. Eliminating errors also eliminates the necessity of the driver having to reconcile invoice errors, and accounts receivable having to prepare the appropriate transactions to offset the error.

- o **Customer Goodwill**
Getting the right product in the right quantity to the right customer will improve the relationship and image with the customers.

- o **Management Control**
Since the system keeps track of all picking activity you get the information to reset the pick line item sequence when appropriate, calculate manpower requirements on a daily basis, assign picking zones on a daily basis to conform to changing volumes, and pinpoint areas of improvement by analyzing individual pick rates.

WHY AUTOMATE THE TIE LINE WITH THE DPS "BOSS"!

The BOSS system uses state-of-the-art technology designed for the entire system to increase your productivity and dramatically decrease your cost.

DPS EXCLUSIVE FEATURES

Pick Beacon - A bright LED bulb protrudes from the front cover of the pick display unit and is automatically turned on when copies need to be picked from that bin. This enables the picker to go directly to the bins that need to be picked, thereby saving the labor hours of looking at each display to see if a quantity is displayed. Furthermore, with one glance down the zone, if there are no beacons left on, the picker knows he is finished with his section. This eliminates the necessity of walking all the way to the end of the zone to check each display. This will double the labor hours saved and is available only with the BOSS.

Innovative System Design - The system controller, an Intel Pentium series based server, monitors each zone master with continuous polls. This increases the response speed when a zone controller requests the next invoice, and provides constant diagnostic activities. Your people will not be waiting for the next invoice data and they won't spend time hunting down the faulty display while the pickers stand around. Benefits available only with the BOSS.

Current Technology - The latest breakthrough in chip design has lowered the cost of computer chips to the point where each display master has a PC chip of its own that controls its displays. The controller transmits and receives data from the display masters at burst speed because the communication is from computer to computer. Then the display master doles out the data to the pick displays at character speed while the controller goes on to the next display master. This allows multiple zones to be serviced at the same time in a parallel fashion. All competitive systems operate at character speed all the time and can process only one pick zone at a time in a serial fashion. Your pickers will never be waiting for data with the BOSS.

Bin Display Address - The new technology eliminates the necessity of having hardware addresses on each box. The software controls pick box addresses. No more dials to turn, dip switches to set, or taking boxes apart to readdress them.

Spare Displays - Spare displays are kept to a minimum since all display the same. Any display can be replaced by any spare which means you have less money invested in spares vs needing single, spare double, and spare triple display fixtures.

THE BENEFITS

PRODUCTIVITY BENEFITS

Let us assume that it takes a picker five seconds to look at the invoice for the next item to be picked, find its location on the invoice, and refocus on the tie-line. With the BOSS, this time would be saved as the displays show the location and quantity of every title to be picked without having to scrutinize a piece of paper.

Five seconds does not sound like a lot of time, but let us see just what it is costing you. If each invoice has 20 picks on average, and you fill 1,000 invoices a week, this extends out to 20,000 title picks a week. Multiply by 5 seconds, and you are spending 100,000 seconds, or 28 hours per week looking at invoices unnecessarily. The hourly cost of a warehouse employee is at least \$9.50, counting both direct and indirect payroll costs. This means that it costs you at least \$266.00 a week ($\9.50×28), or \$13,832 a year, that you could save by using the system!

ERROR REDUCTION BENEFITS

Every time an invoice is picked for delivery you have the possibility of four types of errors:

1. Counting incorrectly
2. Substituting one product for another
3. Omitting an ordered product
4. Including an unordered product

Industry analysts estimate that the average cost for rectifying an invoice error is \$10.00 per error. By the time you figure all the costs incurred by the route driver; in settling the delivery, the search for the error, the locating and resolving of the error, this cost becomes real immediately.

The CLM (Council of Logistic Managers) estimates that the average picking error rate is .2% or 2 errors per 1,000 picks. If you average 20 line items per invoice you will average two wrong invoices out of every fifty.

If you have 1,000 invoices per week you have 40 with errors and are spending \$400.00 per week ($\10.00×40) or \$20,800 per year on picking error correction.

With the emphasis that retail chains are placing on DSD receiving tasks, the ability to improve accuracy and reduce deliver time will go a long way to enhance your image as a professional. Many of the chains have plans to keep track of each vendors accuracy and if it is good they will only spot check deliveries.

OVERALL JUSTIFICATION

The combination of the increased productivity benefits and the error reduction benefits will pay for the system within one year.

The total yearly savings per 1,000 invoices per week is:

Picking Labor	\$13,832.00
Error Correction Labor ($\$20,800 \times 90\%$)	<u>\$18,720.00</u>
	\$32,552.00

HARDWARE SPECIFICATIONS

Picking System Controller

- o Communicates with the host computer that creates the invoice. The invoice data is downloaded to the picking system controller where it is reformatted and staged to run a picking session.
- o Continuously polls the line controllers to download the line item data for each bin display.

Line Controller

- o Receives line item data from the picking system controller, reformats it, and immediately transmits it to the bin displays under its control.
- o Receives a filled message from the bin displays when the "filled" button is pressed.
- o A line controller can handle up to 30 bin displays.

Bin Display

- o Receives the quantity to be picked from the line controller, displays it in the 4 digit LCD display, and lights the LED pick beacon.
- o Blanks the display when the "filled" button is pressed and transmits a filled message back to the line controller. Note: Optional setup / not required to press filled button.

Power Supply

- o Provides power to the picking system.
- o One power supply can handle up to 300 bin displays.

SYSTEM SPECIFICATIONS

Picking Zone

- o A defined group of bins used to establish responsibility for picking and/or distribute the picking activity into equal parts.
- o The size of a picking zone is not limited by the hardware. It may be defined to contain several line controllers and their attached bin displays.
- o The only hardware requirement is that there must be a line controller with a bin display designated as a zone master at the start of each zone. The zone master controls the zone and cannot be associated with a bin.

Zone Master

- o The zone master is a bin display with a special purpose. It is used to request the next invoice to be picked. When the button is pressed the request is passed through the line controller to the picking system controller.

STATISTICS REPORT

We have just completed a set of programs that allows you to evaluate your pick line for even greater labor savings. A sample is listed below.

This evaluation can be done by zone to determine how balanced your zones are or by picker to evaluate each picker's efficiency by comparing hours and picks.

The system saves all pick statistics for as long as you want. These reports will allow you to reduce picker wait time by balancing zones and enable you to develop standards for picks or units per hour to compare picker productivity against them.

P64 - PICKING STATISTICS REPORT

QTY ZONE	PICKER	DATE	INVOICE	TIME SPENT	NBR PICKS	PICKS PER HOUR	QTY PICKED
1	1	11/08/90	11149000	1.58	10	380	759
1	1	12/04/90	12109000	1.17	10	513	899
TOTAL				2.75	20	893	1,658
2	2	11/08/90	11149000	1.61	10	373	983
2	2	12/04/90	12109000	1.17	10	513	1,293
TOTAL				2.78	20	886	2,276
FINAL TOTAL				5.53	40	1,779	3,934