

# **Advanced Tracking System for Manufacturing**

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*Automated Data Collection and Tracking System  
for Manufacturing*

Developed by

**Business By Design**

Version 3.0

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## Advanced Tracking System for Manufacturing

**ATS for Manufacturing tracks Work-In-Process, labor, rework and scrap, plus more,** and when combined with ATS for Inventory becomes a complete real time manufacturing front end.

**It automates data collection and provides a convenient place to view critical manufacturing activity in real time.** The Advanced Tracking System interfaces with most company information systems.

**The system helps busy people track down jobs in production, confirm or expedite ship dates, make order changes, and ultimately, keep customers happy.** In addition, it saves valuable time when tracing serial numbered products back through paperwork to the sources of the numerous parts and components.

**Data collection is fast and easy.** Workers simply scan bar coded work orders, and employee menus to collect real time WIP and labor. The transactions are captured quickly and accurately in real time without handwritten forms and manual keyboard entry. Value added work dramatically increases by reducing errors and wasted time.

### ATS Functions at a Glance:

- Work-In-Process Tracking
- Labor Tracking
- Rework and Scrap Tracking
- Schedules Work Orders by Department
- Split Order Function
- Raw Materials Traceability – by PO and Lot (when used with ATS for Inventory)
- Finished Goods Traceability– by Serial No. or Lot
- Kitting (when combined with ATS for Inventory)
- Packaging
- Shipping
- Label printing
- Other functions relating to inventory are covered by ATS for Inventory

## FUNCTIONAL OUTLINE

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### ***Work-In-Process Tracking***

Work order activity enters the system through stationary bar code terminals, PC's, and/or portable handheld radio frequency (RF) units. Work In Process lookups are accomplished with the "Locate" function described below. WIP tracking is used to:

- Track orders into and out of departments and work centers.
- Collect all work order activity and operation times by department or cost center.
- Collect labor time for each operation or activity.

### ***Locate Function***

Users can lookup work order status by any known information. Each lookup displays order location and status, in process activity, priority (if used), customer name, part number, due date, etc.

#### **Lookup orders by:**

- Customer Name
- Purchase Order
- Sales Order
- Work Order Number
- Location
- Locate Parent Order by Sub-Assembly Order
- Locate Sub-Assembly Order by Parent Order
- By Priority
- By Model Number
- By Part Number
- By Due Date, Order Date, or Date Range

### ***Locate Function (RF)***

Using a portable handheld RF unit users can perform the following lookups:

- Part Number - Where Needed: Displays or prints a list of orders on hold for part (if used with ATS for Inventory).
- Locate Order: Displays location and status of an order.
- Locate Part: Displays bin locations, quantities and units received but not put-away (if used with ATS for Inventory).
- Kit - Parts Needed: Displays all parts, quantities, and bin locations to kit an order (if used with ATS for Inventory).

**Example of Lookup by Customer Name and P.O. Number - screen shows WIP detail:**

The main window displays the following information:

- Customer Name: Able Manufacturing
- Sales Orders:
 

Due Date	SO Number
11/21/95	414162
- Production Orders:
 

Prod. Order	Location	Bin	Qty	Line	Part No	Model Number	Status	Due	Priority
414162	Shipping		0	0/0	88-88100083	AP3600SV 2PW TW4 TW	CLOSED	11/21/95	SUPER HC

The pop-up window 'Production Order In-Process Status' shows:

- Production Order: 414162
- Scheduled Date: [Empty]
- Activity Log:
 

Activity	Date	Time
Enter Shipping	11/20/95	15:01
Exit Clean Room	11/20/95	14:38
Stop Packaging	11/20/95	14:37
Start Packaging	11/20/95	14:37
Enter Clean Room	11/20/95	14:01
Exit Stock Room	11/20/95	13:46
Enter Stock Room	11/20/95	13:46

Double Click to drill down and view sub-assembly order detail

Pop-Up window shows WIP detail

Production Order: 65317

Part Number	Short
60-97900198	5

This Pop-Up shows detail of an order that was kitted but is short one part. All part shortages are listed.

This Pop-Up shows the shipping detail of an order that has already shipped. It will display all shipments for the order

Production Order: 6499405

Order Quantity: 16

Quantity	Date	How	Where
16	12/13/96	FED EX PI	Per Order









Quantity In Process: 0

## Labor Tracking

The labor module collects and maintains records of all direct labor data for each work order. All time is collected and stored by work order and by workstation and activity or operation.

- Report direct labor hours by part number
- Report direct labor for a range of part numbers
- Report direct labor by department for a user defined time frame

### Sample Work Station Menu:

Advanced Tracking System		
Activity & Employee Menu		Assembly
18-Sep-95		
Code		Activity
501		Enter Clean Room
502		Exit Clean Room
511		Start Assembly
512		Stop Assembly
Code		Employee
002		Barney Rubble
004		Elmer Fudd
001		Fred Flintston
003		George Jetson

System prints a different bar coded menu for each work center

Activities or operations specific to the work center are printed with bar codes for easy scanning

All workers at the work center are listed with bar coded employee numbers for labor tracking

## Scheduling Work Orders (From a Work Station)

- Schedule individual orders by Department or Work Center.
- Automatically schedule all orders a specified number of days before their due date.
- Scheduled orders can easily be rescheduled or unscheduled and put on hold.
- System displays the time required for each order to help scheduler.
- User can enter special instructions to a department for a specific date.
- Prints schedules by department by date with special instructions.
- Orders can be sorted by Customer Name, Sales Order number, or Time Required.
- Order priority and due date can easily be changed by the scheduler.

### Department Scheduling Screen:

The screenshot shows the 'Schedule All' window with the following details:

- Department: Cleanroom
- Schedule Date: 7/7/97
- Buttons: Customer, Sales Order, Time Rqd
- Unscheduled Production Orders table:

Prod. Order	Customer	SO No	Line Item	Due	Location	Priority	Time Rqd
7000762				2/2/96	Cleanroom		0
7000761				2/2/96	Cleanroom		0
5374				2/8/96	Cleanroom	SUPERHOT	0

Scheduled Production Orders table:

Prod. Order	Customer	SO No	Line Item	Due	Location	Priority	Time Rqd	Sched
26181	CHESBY ENTERPRI	64284		5/22/96	Cleanroom		1320	7/6/97
19165	H.P.T. SrL	62022		5/22/96	Cleanroom	EXPEDITE	12	7/6/97
64646	BTI	64646	0/0	2/24/97	Cleanroom		24	7/6/97
19168	H.P.T. SrL	62022		5/22/96	Cleanroom	EXPEDITE	12	7/6/97
6260202	AIR PRODUCTS & CH	62602	2/2	6/14/96	Cleanroom		25	7/6/97
7001689	SUMMIT TECHNOLC	5680		5/21/96	Cleanroom	EXPEDITE	0	7/6/97
21902				6/14/96	Cleanroom	HOLD	0	7/6/97
631661	SEMI GAS SYSTEMS	63166	0/0	2/1/97	Cleanroom	HOT	1000	7/6/97
6344503	NORCIMBUS, INC.	63445	3/12	8/21/96	Cleanroom	SUPERHOT	40	7/6/97

Instructions: \_\_\_\_\_

Annotations:

- View schedule by Customer, Sales Order, or Time Required.
- User can change order priority on the fly
- Enter special instructions by Dept. and Date

## Split Order Function

- The split order function is handy in situations where not enough raw materials are on hand to run the complete order or to break a large order into smaller lots to speed throughput times.
- Split a work order in two or more smaller work orders. System calculates the bill of materials for each lot and prints out new work orders with the original WO number with an alpha suffix. Orders can be split into as many as 26 different orders and the system will accurately track each one.

## Tracing

- System maintains a perpetual log of all orders shipped by serial number or lot number.
- Orders can be traced by Serial Number or Lot Number, or by Customer Name and Date Range.
- Traced orders show all order information, component parts with PO and lot number, shipping information, and labor history.

### Trace by Serial Number screen:

**Trace by Serial Number**

Not Archived    Serial Number: 00430500    Date Packaged: 12/30/96  
 Archived in

Sales Order:	Sales Order	Line Item	Order PO	Order Date
▶	65140	2/8	PRAX	12/10/96

Production Order:	Prod Ord.	Part No.	List Price	Disc	Net
▶	6514002	88-88100958	\$498.80	0	\$498.80

Shipments:	Date Shipped	Time Shipped	How Shipped	Where Shipped	Quantity
▶	12/31/96	3:39:56 PM	DHL	Per Order	12

Labor History:	Date	Activity	Employee	Employee	Employee	Employee
▶	12/12/96	Kitted	ON, D			
	12/17/96	Kitted	OCCO, M			
	12/17/96	Start Deionizing	IP, S			
	12/20/96	Start Assembly	Y, S			
	12/20/96	Start Function Test	EL, M			
	12/30/96	Start Leak Test	PORT, Y			

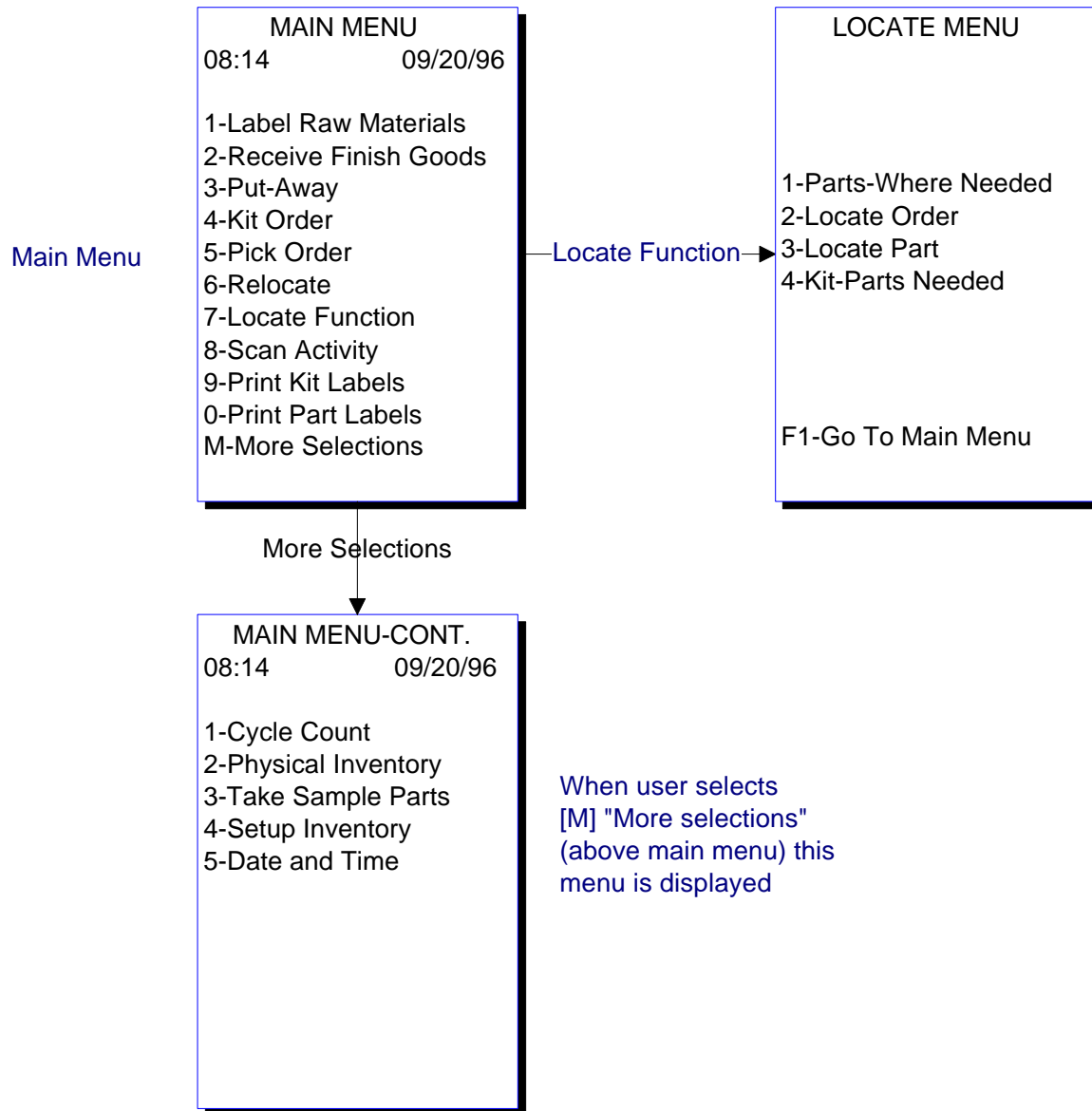
Component Parts:	Part Number	Quantity	PO Number
▶	84000040	12	7-001
	88000265	24	3-008
	89000144	12	
	88000228	12	88

The tracing function saves a great deal of time digging through file cabinets of old records to piece together the complete history of an order.

The tracing function can be used for warranty purposes or to locate a defective part and its PO number used in the manufacturing process. Another application is to isolate an employee who, possibly, needs more training.

## Janus RF Handheld Menu:

The example shown below includes functions from the ATS for Inventory module. The system menu is customized to match your company's needs and reflects the way you do business.



## **Rework**

Note: The rework function requires ATS for Inventory to work properly

- Replace defective parts and sub-assemblies used in Work Order BOM.
- System links and tracks all replacement parts and their vendor PO number and lot code or In-House order number to parent order.
- Track all defective parts with defect or scrap codes and prints scrap report.
- User can replace, label, and track defective sub-assemblies. Defective sub-assemblies can be assigned a defect code and tracked like a work order -- allowing the assembly itself to be reworked.

## **Packaging**

- Automatic labeling feature generates on-demand printed labels for each work order being packaged. User simply scans work order into system and all relevant information is sent to printer. User may specify which printer to output labels (convenient when more than one printer is used).
- Product labels can include company logo and/or specific graphics using bland label stock.
- Transfers items packaged from WIP to finished goods.
- Automatically generates summary pallet label for both single item pallets and mixed item pallets.
- User can enter serial number ranges or individual serial number of products packaged. User can delete or add serial numbers to a previously entered range. Serial numbers are used for tracking products returned for repair or for ISO 9000 product and component part tracking requirements.

## **Shipping**

- Displays shipping information to either a bar code terminal or a PC.
- Displays current ship to address of scanned orders.
- Tracks shipping method.
- Ship an order in one or more lots.
- Shipping details are displayed to ATS users during the Locate function.
- Prints packing list which lists items by pallet number, totals weights by pallet and order
- Prints Bill of Lading
- Prints UCC 128 SSCC pallet labels.

## System architecture

The Advanced Tracking System is a Microsoft Access for Windows application and can be operated on a local area network or as a stand-alone system. It is usually connected to a Novell or Windows network as well as an Intermecc bar code data collection network consisting of wired terminals and/or portable radio frequency (RF) linked hand held units. The ATS system receives input from several sources: your existing information system, directly from scanned or keyed input, and from the bar code terminals. The system provides information output to both the bar code terminals and workstations on the network and can export data to your existing information system.

The system can be tailored to an individual company's needs. Our programming staff is able to customize the system to match your company's needs and can interface the Advanced Tracking System with your existing system.

For additional information regarding our products, contact Business By Design at 707.586.9122 or visit our website at [www.barcodesystem.com](http://www.barcodesystem.com)