

**BellHawk Real-Time Operations Tracking Software
Work Order and Labor Tracking User Manual****Contents**

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Introduction

This manual describes the work order and labor tracking features of the BellHawk Real-Time Operations Tracking Software (RT-OPS). These features are also available with the Simple Production Tracking Software (SPTS), which is a subset of RT-OPS. SPTS is available through BellHawk Online but not for installation on a client's own Windows Server.

Both base systems can track the progress of batch/service work orders as they move through a sequence of operations. These operations can be part of pre-established routes but do not have to be. RT-OPS and SPTS can also record labor time on each operation as well as “piecework” quantities produced.

The advanced production tracking features of RT-OPS include the ability to track materials consumed and produced by each work order step/operation as well as tracking work-in-process materials.

In this manual we will use the term SPTS to refer to those features that are available within the SPTS subset base system, as well as available with batch/work order tracking work orders in RT-OPS.

While SPTS will track “piecework” quantities produced, it does not track inventory. For applications requiring the tracking of materials consumed and produced by work-order operations, including tracking work-in-process materials, please see the Advanced Production Tracking User Manual for features that are only available with RT-OPS.

For those organizations that simply wish to track the location of Work-in-Process materials without the need to setup work orders or record when operations start or end, then we recommend using the BellHawk License-Plate Materials Tracking Software (LP-MTS) which is another subset of RT-OPS.

For more information about which approach to use, please see the Technical Note "Four Simple Ways to Use Barcode Scanning to Track Work-in-Process", which is available from www.BellHawkOnline.com.

Overview of SPTS

SPTS is designed for use in manufacturing, fabrication, engineering, construction, assembly, repair and other industrial organizations.

BellHawk SPTS uses barcode scanning to track the work-in-progress status of batches of parts or individual parts through a sequence of operations.

SPTS captures the labor expended by individual people or teams on each operation. It can also capture piecework quantities for measuring employee productivity.

SPTS gives a real-time view of the status of work-in-progress and captures the labor expended for subsequent analysis. Management users can print out reports or download Excel exports giving the status of work-in-progress and showing how long work orders are held up between operations.



How SPTS Works

With SPTS, users can set up production routes, and then use these to produce barcoded travelers, as shown here. These travelers can be scanned to track batches of material or individual items.

Alternately these work orders can be imported from another system using one of the available interfaces for BellHawk.

Operators can then record the start and end of each operation by scanning the barcodes on these travelers. This includes recording their labor start and end times by scanning a barcode attached to their badge. They can also record the piecework quantity produced or processed during this time.

SPTS enables organizations to easily transition from using paper forms and manual keyword data entry to having their employees directly capture work order tracking data on the shop floor. The biggest advantage of this transition is to enable managers to see the status of all their jobs in real-time so they can easily spot jobs that are in trouble or need extra attention. It also enables subsequent analysis of the labor performance of different workers.

Work Order


WO00000101

Importance: Standard
Date Wanted: 12/22/2015
Sales Order #:
Customer: CDE Furniture Manufacturers
Instructions: Make Stainless Steel Knobs


Step Instructions: Lathe

Step #: 1
Operation: Production: Lathe


Step Instructions: Drill and Tap

Step #: 2
Operation: Production: Drill and Tap


Step Instructions: Polish and Inspect

Step #: 3
Operation: Production: Polish and Inspect



START WORK

User Badge
E301

NOT scanned into any Operation

Work Order Number
WO00001

Step Barcode
TW000001.1

Operation
Lathe

Submit Clear Return

STOP WORK

User Badge
E301

Scanned into Work Order [WO00001 Step 1 (Lathe)]

Work Order Number
WO00001

Step Barcode
TW000001.1

Operation
Lathe

Quantity
6

Check here if operation is completed

Submit Clear Return

SPTS is designed for use by shop-floor workers who have limited computer literacy. By using barcode scanning manual data entry is minimized. Also SPTS warns users if they make a data collection mistake and allows immediate data correction. SPTS only captures the minimum data

needed for each tracking situation. This minimizes training time and eases the introduction of data collection technology to the shop floor.

SPTS enables the recording of time actually worked, as separate from the elapsed time to complete each operation, by enabling users to scan-out when they go on break or their shift ends. SPTS can also allocate labor time when someone is working on multiple work orders at the same time.

Managers, supervisors and customer support people, can then see the status of all the work orders in real-time, including how long each work order has taken or has been held-up, since completion of the last operation, waiting for the next operation to begin.

Managers are able to download Excel exports showing the progress of work orders, the elapsed time for each operation and how much labor was required. They are also able to get a labor report by work order or employee showing the amount of labor time, elapsed time, and quantity produced for each operation on the job.

BellHawk Users

Users of the BellHawk software are divided into four categories:

1. The system administrator who sets up users, their categories, roles and privileges. The system administrator also sets up system wide parameters, such as the company name and address. The actions required by the system administrator before the system can be used operationally are described in the Systems Administrator's User Manual.
2. Staff users who perform a series of roles, such as setting up operations, work orders and creating template routes for these work orders. Staff users have their own login names and passwords and can carry out operations management functions in the tracking system according to their assigned roles and privileges.
3. Device users who do transactional (barcode scanning) data entry using device logins. They do not have their own logins but are identified by scanning a barcode on their badges when they do transactional data entry.
4. View-Only logins are authorized users who are given a user name or password to enable them to view specific data in the BellHawk system. View-Only logins cannot enter or change any data. Please see the System Administrator User Manual for more details on how to set up View-Only logins for selective access to receiving, shipment, production or inventory information.

The available staff roles are:

- **Production Management Role.** Enables this person to set up and manage work orders.
- **Setup Role.** Enables this person to setup and import work centers, operations, customers, etc.
- **Manager Role.** All staff members are able to view reports relevant to their role. Managers can view all reports plus certain reports containing confidential information. They are also able to export operational data in the form of Excel spreadsheets for subsequent analysis.

Staff members can be assigned more than one role. They can also be granted access to transactional data entry under their own login (as opposed to using a device login) but this does require an additional device login license.

The first step in using BellHawk is for the Administrator to setup the company information, as well as the system wide parameters. Also to setup the device, staff and view-only logins, as well as to enter all the users who will use the system, as described in the BellHawk Systems Administrator User Manual.

Users will only see the screens and buttons that they are authorized to see based on how they are setup by the Administrator.

System Administrators Setup

Before BellHawk SMTS can be used, the Systems Administrator needs to setup the company name and address to correspond to those for which a license was issued. The System Administrator also needs to setup logins and other information for Users and data collection Devices as described in the System Administrators User Manual.

For use with SPTS, the System Administrator may also need to set the following systems parameters:

The screenshot shows the 'EDIT SYSTEM PARAMETERS' interface. At the top, there are three tabs: 'Production' (highlighted with a circled '1'), 'System', and 'Switchboards'. Below the tabs, there are several settings with corresponding controls:

- 'Allow Rungroups': checkbox (unchecked)
- 'Allow Teams': checkbox (unchecked, highlighted with a circled '2' and an arrow)
- 'Allow Piecework Quantity Capture on Stop or End Work': checkbox (unchecked, highlighted with a circled '3' and an arrow)
- 'Allow Recording of Material Out on Stop or End Work': checkbox (unchecked)
- 'Number of days after completion a Work Order remains active': text input field containing '2', followed by 'days' (highlighted with a circled '4' and an arrow)
- 'Automatically generate Work Order Number': checkbox (unchecked, highlighted with a circled '5' and an arrow)
- 'Work Order Number Prefix': text input field containing 'BWRK' (highlighted with a circled '6' and an arrow)
- 'Last used Work Order Sequence Number': text input field containing '0'
- 'Action if User scans into more than one operation at one time': dropdown menu with 'Warn' selected (highlighted with a circled '7' and an arrow)
- 'Action if Operation scanned is not on traveler': dropdown menu with 'Warn' selected
- 'Action if Material scanned into operation is not on traveler': dropdown menu with 'Warn' selected
- 'Action if Item Number scanned out from operation is not on traveler': dropdown menu with 'Warn' selected
- 'Action if WIP for different WO is scanned into Work Order': dropdown menu with 'Warn' selected
- 'Default quantity for Material Into Work Order Transaction': dropdown menu with 'smaller of Container Qty and Required Qty' selected

At the bottom of the form, there are two buttons: 'Apply' (green) and 'Return' (blue).

On the Production tab (1) the System Administrator may:

- Allow Teams (2) to record the start and end of work on work order operations.

- Allow piecework quantity capture (3) on stop work or end work transactions. Note that piecework quantities are simply used to record employee productivity and are not tied in any way to materials tracking.
- On this screen the number of days a work order stays in the list of active work orders (4) can be selected. Experience indicates that it can be very disconcerting if a work order that a supervisor has been tracking suddenly disappears from the list of active work orders, because it just was marked as completed. Instead we keep the work order on the active list, with a status of “Completed” for the number of days indicated here.
- The system can be setup to automatically generate work order numbers, if this option (5) is selected. In this case a prefix (6) should be specified for the work order (such as WO) and then the previous/starting number. The WO number is generated by automatically indexing the displayed number and pre-pending the specified pre-fix. Once work orders are being generated this number should not be adjusted as the work order numbers must be unique. This does not get indexed if work orders are imported from another system.
- The administrator can also select what actions (7) to take when a user does something that could be an error but may not be. The choices are to allow the transaction without warning, warn the user but allow an override by the user, or to prevent the transaction from proceeding.

Please remember to select the [Apply] button after the parameters are setup on this tab as the [Apply] button applies only to the currently selected tab and the settings will be lost if you go to another tab without selecting [Apply] first.

Logging in

To log in to BellHawk enter the URL of your BellHawk Operations Tracking Website into the browser on your PC or other device and you will see the “splash” screen shown here. Then please click on the “Continue” link to proceed to the login screen shown below.



**Welcome to BellHawk®
Please Log In**

Device or Login Name:

Password:

Device Type: ▼

If you are a staff user, then you will login with the user name and password provided by the systems administrator.

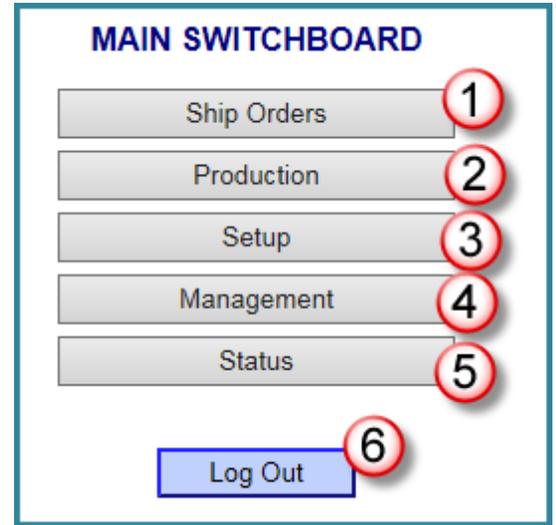
Normally you will select the device type as Desktop for use on a PC.

Device users will login using the device login as described in the section on recording transactions.



After logging in, as a staff user for SPTS, you will be presented with the main switchboard, as shown at right. On this switchboard the user can:

1. Select the Ship Orders button (1) to reach as switchboard from which to select a screen on which to enter customer names. Work Orders can then be associated with a customer name.
2. Select the Production button (2) from which to create and manage Work Orders.
3. Select the Setup button (3) to setup the knowledge base for the BellHawk software.
4. Select the Management button (4) from which to view management reports and to perform Excel exports for subsequent analysis.
5. Select the Status button (5) to view the status of work orders.
6. Log Out (6) from the BellHawk operations tracking website.



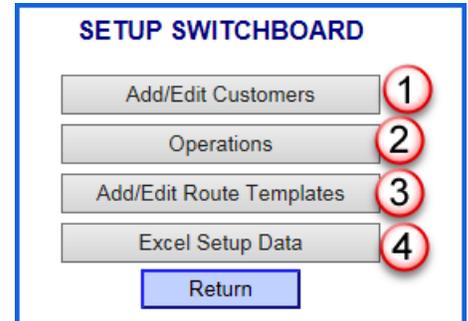
BellHawk Setup

Overview

After the System Administrator has setup the company data and the users of the BellHawk system, the next step is to setup the BellHawk knowledge base. This is done by selection the [Setup] button on the main switchboard, which brings up the Setup Switchboard shown at right.

On this switchboard, which is only available for a staff member with a Setup Role, the user can:

1. Add/Edit Customers (1)
2. Add/Edit Operations (2)
3. Add/Edit Route Templates (3)
4. Import and Export setup data using Excel spreadsheets (4) as described in the Introduction to BellHawk User Manual
5. Return to the prior screen by selecting the blue [Return] button, which is common to all BellHawk screens.



Setting up Customers

When the Add/Edit Customer button is selected, this brings up a list of existing customers:

Customer List		
Customer Number	Customer Name	
CDEFurniture	CDE Furniture Manufacturers	Edit 1
MYCOMPANY	Smith Industries	Edit
2		

Filter Add New Return

From this screen, existing entries can be edited (1) or new customers added (2).

When the Add New Button is selected then the Add Customer screen appears:

ADD CUSTOMER

Customer Number: JLC **1**

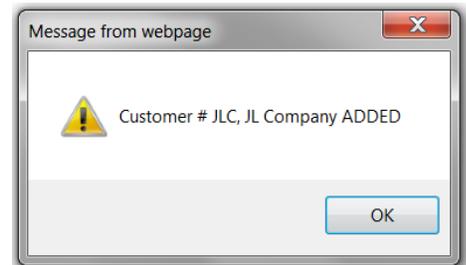
Customer Name: JL Company **2**

3 Add Customer Copy Return

Delete Customer

On this screen, users can enter a unique Alpha Numeric customer number (1) and a Customer Name (2) to appear on reports. Then they can select [Add Customer] to add the customer to the BellHawk database.

If this is successful then a popup message appears, as shown at right. Following clicking [OK] the Edit Customer Detail screen below appears:



EDIT CUSTOMER DETAIL

Customer Number: JLC **1**

Customer Name: JL Company

2 Update Copy **3** Return **5**

4 Delete Customer

On this screen, which can also be reached from the [Edit] button on the list of customers screen, the user can edit the Customer Name (1) and then select Update (2) to update the record. The User can also [Copy] the current record

with a new Customer Number (3), [Delete] the Customer record (4) or [Return] to the list of customers.

Similar mechanisms and features are found on most setup screens.

As an alternative to setting up customers using the [Add/Edit Customers] button, customers can also be imported in the form of Excel spreadsheets, using the [Excel Setup Data] button, as described in the Introduction to BellHawk User Manual.

	A	B	C
1	CUSTOMER	CustomerNumber	CustomerName
2		CDEFurniture	CDE Furniture Manufacturers
3		JLC	JL Company
4	①	MYCOMPANY	Smith Industries
5		②	③

Here the High Level Data Object (HLDO) is "CUSTOMER" (1) with two parameters, the Customer Number (2) and the Customer Name (3).

Setting up Work Centers and Operations

The first step in setting up Operations is to setup the Work Centers in which the Operations occur. This is done using an Excel import, into the Excel Setup Data Screen, as was described in the Introduction to BellHawk manual.

	A	B	C	D
1	WORKCENTER	WcCode	WorkCenterName	SeqNo
2		Production	Production	1
3		Shipping	Shipping	2
4	①	②	③	④
5				

For this import:

1. The High Level Data Element (HLDO) keyword (1) is WORKCENTER
2. Each Work Center Code (2) must be unique
3. As must the Work Center Name, which will appear on reports.
4. When selected from a drop-down list, the sequence number (4) will set the order in the list.

Operations can also be imported using Excel spreadsheets.

	A	B	C	D	E	F
1	OPERATIONS	OperationCode	Description	WcCode	LocationCode	IsQC
2		DrillTap	Drill and Tap	Production		
3		Lathe	Lathe	Production		
4		Polish	Polish and Inspect	Production		
5		Ship	Ship	Shipping		
6	①	②	③	④	⑤	⑥
7						

In this case, the HLDO name is OPERATIONS. The Operation Code (2) must be unique amongst all operations but its description (3) does not need to be unique. Each operation must be associated with a work center through its Work Center Code (4). When just an SPTS base system is in use the Location Code column (5) is left blank but this column needs to be filled in when RT-OPS is being used, as described in the RT-OPS manual. Other columns, such as IsQC (6) are used by other optional modules and should be left blank for use with the SPTS base system.

As an alternative, operations within each work center can then be setup using the Operations button from the Setup switchboard, which brings up the following screen, listing all the operations:

Operation Code	Operation Description	Is TAR	Is QC	Rework	Work Center Code	Work Center Name	Location Code	UDP	
DrillTap	Drill and Tap				Production	Production	Production		① Edit
Ship	Ship				Shipping	Shipping	Shipping		Edit
Lathe	Lathe				Production	Production	Production		Edit
Polish	Polish and Inspect				Production	Production	Production		Edit
									②

Filter Add New Return

From this screen users can Edit (1) an existing entry or Add a new entry (2).

The Add New button brings up the Add Operation screen. On this screen the user can:

1. Enter the Operation Code (1) which must be unique across all work orders.
2. Enter the Operation Description (2) which should be unique within the Work Center, as it is used to identify the operation on screens and reports.
3. Select the Work Center (3) from a drop-down list of previously entered work center codes.
4. Select the [Add Operation] button to add the operation to the BellHawk database.

ADD OPERATION

Type Code: ①

Operation Description: x ②

Work Center: v ③

④

When an Edit button is used from the list of operations, the following screen appears:

From here, the previous entries (1) can be edited and then saved using the [Update Operation] button (2) or the Operation Can be deleted (3).

Finally, the Return button can be used to return to the list of Operations.

Importing Template Routes

If you have a particular sequence of operations that is used over and over again on different work orders, you may want to save that sequence as a template route to save time adding those steps to work orders. When you set up a route for a work order that uses that sequence, you can then add that whole template route to a new work order instead of having to add each operation to the work order's route one by one.

Template routes can be set up in the system either by importing the data via spreadsheets, like work centers and operations, or they can be set up through the user interface.

Let's look at importing via spreadsheets first. A Staff user with the Setup role must log in, go to the Set up switchboard and open the Import/Export Excel Data screen. From here select the TROUTE and TSTEP keywords and export as spreadsheets. This assumes you have already set up the Work Centers and Operations as described in the previous section of this manual.

The TROUTE spreadsheet must be filled in and imported first as this keyword identifies the names you want to assign to template routes in your system. Each RouteName must be unique.

	A	B	C
1	TROUTE	RouteName	SeqNo
2		Make Knobs	1
3		My New Route Template	2
4			

The Sequence Number (SeqNo) sets the order in which these will appear in the drop-down list from which the route is selected.

Next you will identify each operation to be included in the template route using the TSTEP spreadsheet.

	A	B	C	D	E	F	G
1	TSTEP	RouteName	StepNumber	StepCode	OperationCode	StepBarcode	Instructions
2		Make Knobs	1	1	Lathe	TMake Knobs.1	Lathe
3		Make Knobs	2	2	DrillTap	TMake Knobs.2	Drill and Tap
4		Make Knobs	3	3	Polish	TMake Knobs.3	Polish and Inspect

- The data in column B must correspond to an existing RouteName in column B of the TROUTE spreadsheet. Required.
- The StepNumber in column C is an integer value that indicates the order in which steps are to be performed for the given route. Required. Note that this ordering can be changed through the user interface so the step code does not uniquely identify the operation.
- The StepCode in column D is a Required alphanumeric identifier for the step that is used in drop-down list and on reports. This entry, along with the Route Name uniquely identifies the entry so that it can be changed or deleted by re-importing the TSTEP data.
- The OperationCode in column E identifies which operation is to be performed. It must correspond exactly to an existing operation in the database which was entered in column B of the OPERATION spreadsheet. Required.
- The StepBarcode in column F is the value that uniquely identifies this step on the barcoded traveler. You may leave this blank if you want and the system will create a unique barcode for you by prefixing the RouteName with the letter T and adding a period and step number to the end. Optional.
- Lastly column G contains optional instructions that you would like to be associated with the step and will appear on the traveler when this template route is added to a work order. Optional.

Once you are satisfied with this data, you may import them into the system using the same method described in the Work Centers and Operations section. WORKCENTER, OPERATION, TROUTE must all be imported before TSTEP. The general discussion about importing work centers and operations also applies to importing template routes and route steps as well as any other type of object into the system.

Setting up Template Routes through the User Interface

Template Routes can also be created and/or edited directly through the web user interface. To do so, a Staff user with Setup role must be logged in. This user will have access to an Add/Edit Route Templates button on the Setup switchboard. Clicking this button will open the Route Template List screen shown below:

This screen lists the name of each template route set up in the system (1) and provides buttons to edit each route (2) or to add a new route (3).

There is also a red button (4) to delete a Route Template if you no longer want it to be available for use in your system.

Like all list screens, you may enter a search string in the textbox below the list of names (% as wildcard) and click the [Filter] button to only show Route Templates that match that string. You may also click on the Template Name column header to sort the list by that value.

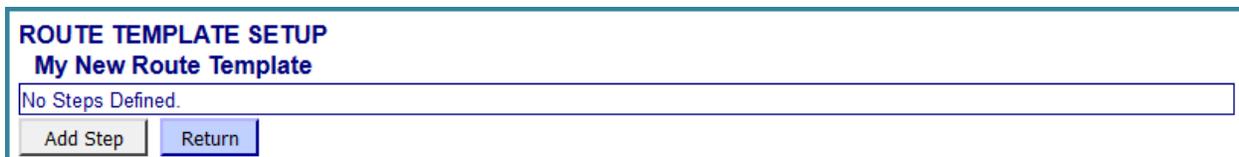
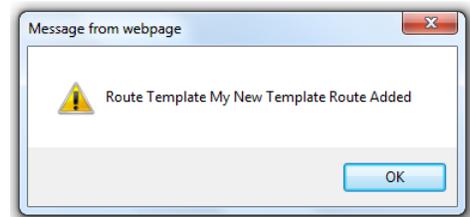
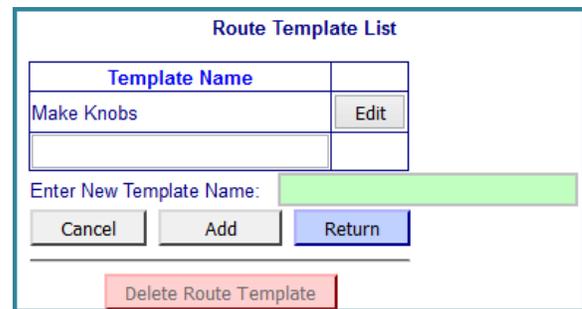
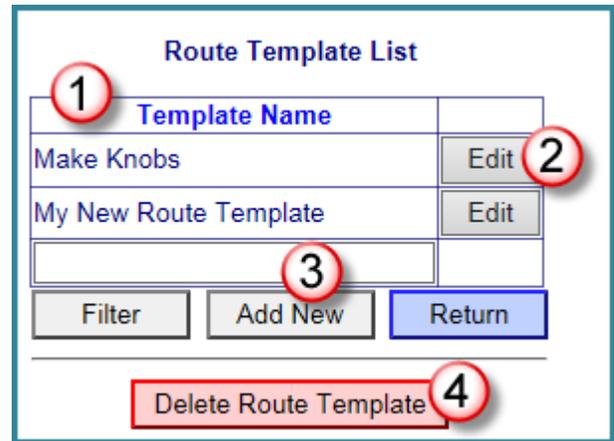
Let's look at what happens when you click the [Add New] button. A green box appears in which you can enter a name for your new template route. This name must be unique and is the only information needed to create a named template.

Enter a new name in the green textbox and then click the Add button.

A confirmation message appears and the route name is added to the list.

Now that the new route template has been added, we can click on the Edit button next to that name to edit the template and add route steps to it.

The following screen opens:



You may note that this screen looks very similar to the screen which you used to add operations to a work order route and in fact, adding operations to a template route works in an identical fashion. Initially the list shows us that no steps have been defined for this template route yet.

Click the [Add Step] button to add steps to your route. You will see the Route Template Step Setup screen.

Select a Work Center from the drop down list (1)

Select an Operation (2) from the drop down list which is filled with operations belonging to the selected Work Center.

You may optionally enter route step instructions (3) to appear on the traveler.

Click Add Step(4) to save the route step data.

Click Return to return to the Route Template Setup list (see below).

ROUTE TEMPLATE SETUP						
My New Route Template						
	Step #	ERP Step Code	Operation	Work Center	Instructions	
↑ ↓	1	1	Lathe	Production	Lathe	Edit

Your step has been added to the route. Repeat the Add Step process as necessary to associate more steps with your template route. With the Work Order Route list, you can use the Up and Down arrow keys (5) on the left to re-order your steps if necessary.

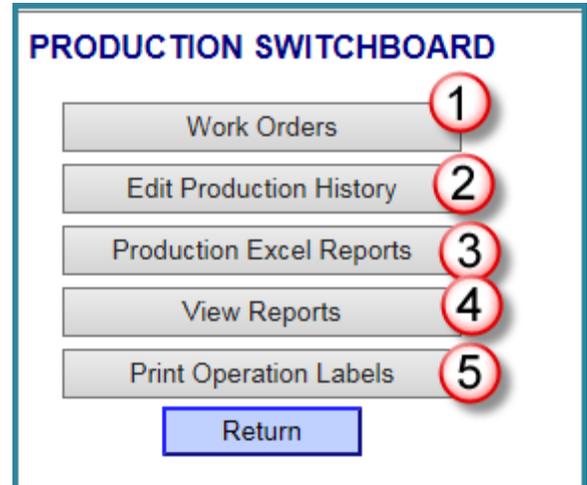
Once your template route is complete, it can then be added to individual work orders as described in the Creating Work Orders section of this manual.

You can edit a route step by using the Edit button for the route step. If needed, you can delete the step using the Delete Step button from the edit step screen.

Production Switchboard

The production switchboard is reached from the [Production] button on the main switchboard. This brings up the screen shown at right. On this screen there are buttons for:

1. Creating, viewing and editing work orders (1).
2. Editing the production history (2) to correct for any transactional mistakes.
3. Producing Excel Exports for subsequent analysis of production history (3).
4. Viewing production reports (4).
5. Printing barcode labels for each of the operation codes (5).



Work Orders

Work Order List Screen

Clicking the Work Orders button on the Production switchboard will open the following screen from which production staff users can create new work orders, view the current status of existing work orders and manage those work orders.

WORK ORDER LIST							
Work Order Number	Item Number or Instructions	Date Released	Date Last Action	Date Wanted	Importance	Status	
WO3031	XM100	Feb 22, 2016	Feb 23 2016 2:38PM	Feb 22, 2016	Standard	Production: Final Test	Edit
WO3032	Make test piece		Mar 11 2016 7:39AM	Mar 14, 2016	Standard	Not Released	Edit
WO3033	Make 6 Knobs	Mar 11, 2016	Mar 11 2016 7:45AM	Mar 15, 2016	Standard	Released	Edit
WO3034	Make 8 Brass Knobs	Mar 11, 2016	Mar 11 2016 7:49AM	Mar 15, 2016	Standard	✓ Production: Lathe	Edit
					--Show All--	--Show All--	

Filter Add Work Order Return

On this screen:

1. The work orders are listed by work order number (1). Clicking on any header row will cause the rows to be sorted in ascending or descending order by the values in that column.
2. The instructions for each batch/service work order is shown in (2). When this is used as part of PMTS, this column will also show the item number for processing, assembly and test and repair work orders.
3. When setting up a Work Order, its importance can be selected (3). By default these are defined as low, standard, and rush but clients can set up their own Importances.

4. The column (4) shows a tick mark if the current operation has been completed.
5. Column (5) shows the Status of the work order, as follows:
 - a. Not Released – no transactional data entry can take place. Used to ensure that work is not started on a work order until it is completely set up.
 - b. Released – ready for transactional data entry but not yet started.
 - c. WorkCenter:Operation – work has started on this operation. It has been completed if there is a tick mark in column (4).
 - d. Completed – work has been completed on this work order and it has been marked as completed by the production manager. No further transactional data entry can take place.
 - e. Cancelled – the work order has been cancelled. No further transactional data entry can take place.
6. The [Edit] button (6) for each line can be used to view and edit details of the work order.
7. The [Add Work Order] button (7) is used to add a new work order.
8. At the bottom of the table are filter boxes. Typing entries with a % wild card in the text and then selecting the Filter button (8) will cause just the matching entries to be shown.
9. Finally the blue [Return] button, common to all screens, can be used to return to the prior screen.

Note that device users can indicate that an operation/step is completed on a work order as a part of their transactional data entry, which results in the tick mark, shown in column (4) above, being shown. This does not, however, prohibit further scanning on the work order. This can only be done by the production manager declaring the work order as cancelled or closed.

Create Work Order

To create a new work order, click on the Add Work Order button.

WORK ORDER LIST								
Work Order Number	Item Number or Instructions	Date Released	Date Last Action	Date Wanted	Importance		Status	
W00000105	Furniture	Feb 12, 2016	Feb 12 2016 9:22AM	Feb 12, 2016	Standard	✓	Production: Lathe	Edit
W00000106	Furniture	Feb 12, 2016	Feb 12 2016 9:14AM	Feb 17, 2016	Standard		Production: Drill and Tap	Edit
W00000107	Test Furniture		Feb 12 2016 9:29AM	Feb 12, 2016	Standard		Cancelled	Edit
W00000108	Furniture		Feb 12 2016 9:30AM	Feb 12, 2016	Standard		Completed	Edit
W00000109	Knobs		Feb 12 2016 9:31AM	Feb 12, 2016	Standard		Not Released	Edit
					--Show All--	▼	--Show All--	▼

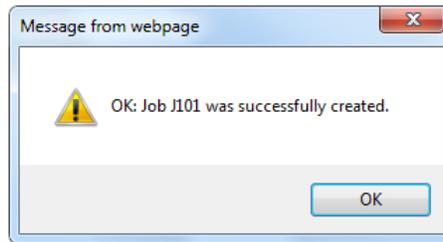
Filter Add Work Order Return

This will bring up the following Add New Work Order screen. Notice that the only buttons available are Create Work Order and Return; the other buttons are grayed out and are not available until a work order is created.

The screenshot shows the 'Add New Work Order' interface. At the top, the title 'Add New Work Order' is centered. Below it, the 'Work Order Number' field is set to 'AUTOMATIC' (callout 1). The 'Instructions' field contains 'Knobs' (callout 2). The 'Date Wanted' is '02/12/2016' (callout 3). The 'Scheduled Start Date' is '02/23/2016' (callout 4). The 'Customer' is 'CDEFurniture' (callout 5). The 'Importance' is 'Standard' (callout 6). At the bottom, the 'Create Work Order' button is highlighted in green (callout 7). Other buttons include 'Release Work Order', 'Edit Route', 'Traveler', 'Copy Work Order', 'Return', 'Reopen Work Order', 'Complete Work Order', and 'Cancel Work Order'.

On this screen, the Production manager can:

1. Enter (1) the new Work Order Number (must be unique) or have it set up automatically (as seen above and described in the System Administrators manual).
2. Enter the Instructions for the work order (2).
3. Enter or select the Date Wanted (3).
4. Scheduled start date of the work order (4)
5. Select the Customer Name (5) from the drop down list or select the three-dot ellipses button for a complete list of customers (Note you can select your own company for make-to-stock work orders).
6. Select the importance (6) for the work order.
7. Click on the green Create Work Order button (7) to create the work order.



The system will provide a message confirming that the work order has been created and the screen will refresh itself as the Work Order Detail screen show below.

A screenshot of the 'WORK ORDER DETAIL' screen. The title 'WORK ORDER DETAIL' is centered at the top. Below it, several fields are displayed: 'Work Order Number: W00000110' (with a red circle '1' next to the input field), 'Status: Not Released', 'Instructions: Knobs (255 char max)', 'Date Wanted: 2/12/2016', 'Scheduled Start Date: 2/23/2016', 'Customer: CDEFurniture', and 'Importance: Standard'. At the bottom, there are several buttons: 'Release Work Order' (with a red circle '2'), 'Edit Route' (with a red circle '3'), 'Traveler' (with a red circle '4'), 'Update Work Order' (with a red circle '5'), 'Copy Work Order' (with a red circle '6'), 'Return' (with a red circle '6'), 'Reopen Work Order' (with a red circle '9'), 'Complete Work Order' (with a red circle '7'), and 'Cancel Work Order' (with a red circle '8').

Now that the work order has been created, you have more buttons available for selection, including editing the existing work order, as the other buttons are no longer disabled. The only thing you can't change now is the Work Order Number (1) which uniquely identifies this particular work order in the database.

The buttons on the Work Order detail screen are:

1. [Release Work Order] (2). Releases the work order so that transactional data recording can take place against this work order.
2. [Edit Route] (3) enables a route to be added to a new work order or the route for an existing work order to be edited.
3. [Traveler] (4) prints out a barcoded traveler for the work order.
4. [Update Work Order] (5) – saves any changes made to the work order.
5. [Copy Work Order] (6) copies the existing work order and assigns a new work order number.
6. [Complete Work Order] (7) marks the work order as completed and stops any further transactional data entry.
7. [Cancel Work Order] (8) collects a reason code, then marks the work order as cancelled and stops any further transactional data entry.
8. If the work order has been closed but more transactional data entry is required, then the [Reopen Work Order] button turns of the Cancelled or Completed flag.

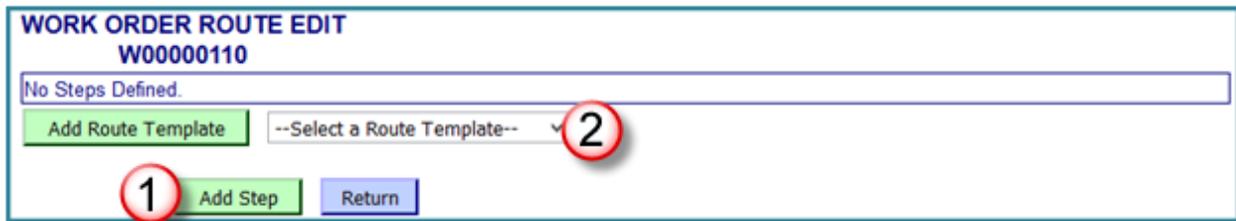
Creating Work Orders with Routes

In order to add a Route to a work order, you must have set up Work Centers and Operations data in your system. Please refer to the System Setup section of this manual for information on how to do that. Here we will assume that Work Centers and Operations have already been set up.

If you wish to add a Route to your work order or edit an existing work order route, click on the [Edit Route] button.

The screenshot displays the 'WORK ORDER DETAIL' interface. At the top, the title 'WORK ORDER DETAIL' is centered. Below it, the 'Work Order Number' is 'W00000110' and the 'Status' is 'Released'. The 'Instructions' field contains 'Knobs' with a '(255 char max)' label. The 'Date Wanted' is '2/12/2016' and the 'Scheduled Start Date' is '2/23/2016'. The 'Customer' is 'CDEFurniture' and the 'Importance' is 'Standard'. At the bottom, there are two rows of buttons: the first row contains 'Release Work Order', 'Edit Route', and 'Traveler'; the second row contains 'Update Work Order', 'Copy Work Order', and 'Return'. A third row contains 'Reopen Work Order', 'Complete Work Order', and 'Cancel Work Order'. A red arrow points to the 'Edit Route' button.

The Work Order Route Edit Screen opens as shown below. Initially there are no steps defined.



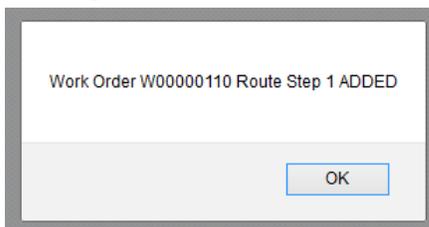
On this screen, you can create a route either by adding individual work order steps (1) to the route or by adding a predefined template route (2).

A template route is a sequence of operations that you have saved to be used on multiple work orders. You may also create a route that combines both by adding a route template and then modifying or adding individual steps.

Let's start creating a route by adding individual work order steps. To do so, simply click the [Add Step] button to open this screen.

On this screen the users can:

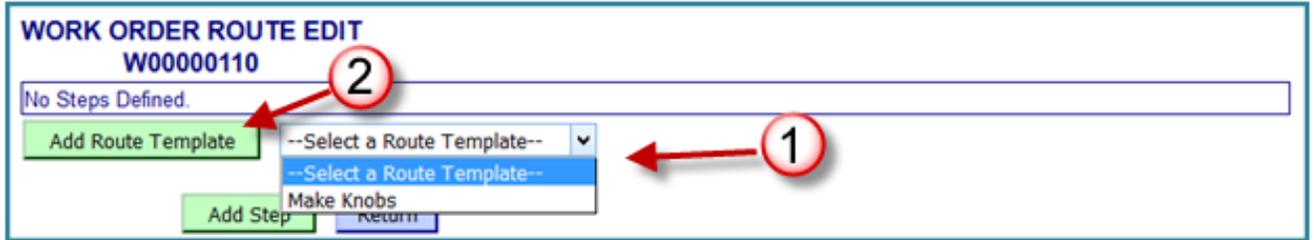
1. Select a work center from the drop down list (1)
2. Select an operation (2) that is associated with that work center.
3. Optionally add work order step instructions (3) which will appear on the printed traveler.
4. Save the route step using the [Add Step] button (4). This will save the work order step information to the database and provide a confirmation message similar to the one shown here.



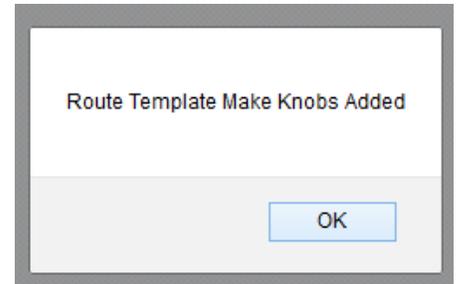
Click OK to acknowledge the confirmation and then select the [Return] button to return to the list of work order steps. You can click Add Step to add another step and build your route thusly step by step. Note that on the Work Order Step Edit screen there is also a Delete Step button which you can use to remove a step from your route.

Alternatively you may have set up Template Routes in your database. The creation of Template Routes is discussed in the System Setup section of this document. For now we will simply look at how to use template routes in setting up a work order route.

On the Work Order Route Edit screen, select a route template from the drop-down list (1). Then select the [Add Route Template] button (2) to add all of the operations in the template route to the work order.



You will see the confirming message shown here:



The Work Order Route Edit list is now automatically filled with all the steps that are associated with the template route. If an additional step is needed, you can add another step to the route by clicking on the green Add Step button as previously described. An unneeded step can be deleted by clicking on the Edit button in its row and then clicking the red Delete Step button on the Route Step Edit screen.



Notice that you can also re-order the sequence of steps for this work order by clicking either the Move Up or Move Down arrows to the left of the steps (3).

Releasing Work Orders to Production

After the data has been reviewed and is correct the next step is to release the work order. Please note that no transactions can be performed on a work order until it is released.

From the Work Order List, click the Edit button for the work order to be released. This opens the Work Order Detail screen.

From this screen you can print out the traveler for the work order (1) and release the work order (2). When you return to the Work Order List, you will now see the Status column has been updated to read “Released”.

WORK ORDER LIST							
Work Order Number	Item Number or Instructions	Date Released	Date Last Action	Date Wanted	Importance	Status	
W00000105	Furniture	Feb 12, 2016	Feb 12 2016 9:22AM	Feb 12, 2016	Standard	✓ Production: Lathe	Edit
W00000106	Furniture	Feb 12, 2016	Feb 12 2016 9:14AM	Feb 17, 2016	Standard	Production: Drill and Tap	Edit
W00000107	Test Furniture		Feb 12 2016 9:29AM	Feb 12, 2016	Standard	Cancelled	Edit
W00000108	Furniture		Feb 12 2016 9:30AM	Feb 12, 2016	Standard	Completed	Edit
W00000109	Knobs		Feb 12 2016 9:31AM	Feb 12, 2016	Standard	Not Released	Edit
W00000110	Knobs	Feb 12, 2016	Feb 12 2016 12:00AM	Feb 12, 2016	Standard	Released	Edit
					--Show All--	--Show All--	

Filter Add Work Order Return

Printing a Traveler

From the Work Order Detail screen, select the traveler button to bring up a screen that will enable the user to print a traveler (1) or to save it as a PDF file (2). Please note that this may take a few seconds to download. Also the print directly to the default printer function (1) will not work correctly with all printer drivers. In some cases it is necessary to create a PDF file and then print the PDF file.

Return

Batch/Service Work Order

Importance: Standard
Date Wanted: 2/12/2016
Sales Order #:
Customer: CDE Furniture Manufacturers
Instructions: Knobs

Step # : 1
Operation: Production: Lathe
Step Instructions: Lathe

Step # : 2
Operation: Production: Drill and Tap
Step Instructions: Drill and Tap

Step # : 3
Operation: Production: Polish and Inspect
Step Instructions: Polish and Inspect

The traveler has barcodes which can be scanned as part of the work order transactions.

These are:

1. The Work Order Number (3)
2. The Step Code (4) – one for each step in the route

Please also note that, like all other BellHawk forms, you cannot click on the browser X button which has been disabled in BellHawk. Instead select the blue Return button, to return to the Work Order Detail screen.

Transactions

Logging In as a Device User

This section describes how the system is used operationally by the device users to record when they start working on work orders, when they stop working on work orders and when the work order step or operation is complete.

By simply recording their start and stop times by each work order step or operation, the system will automatically tally the hours spent on each work order step and prorate hours if a user is working on multiple work orders at the same time. As a result, management will have accurate labor information and know the status of each work order in real-time.

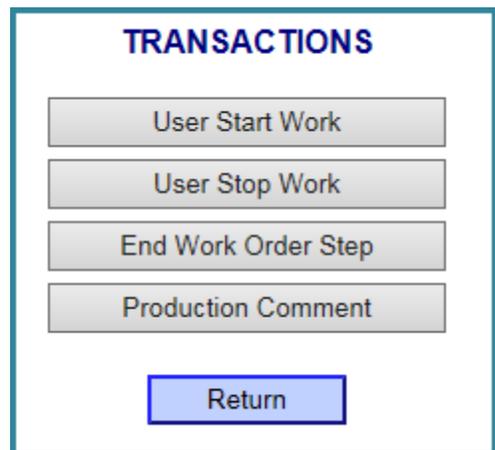
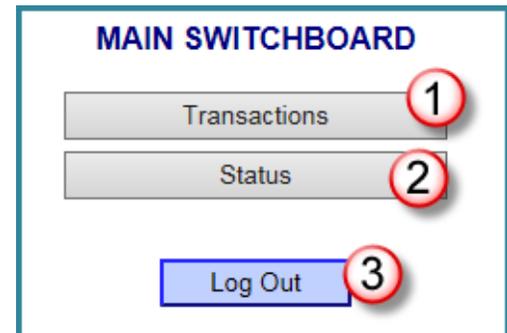
The login process starts by entering the URL of the BellHawk tracking website in use, when the “splash” screen, above right, is shown. Clicking on the Please Click Here to Continue link brings up the login screen at right.

Note that Device users will log in with the device name and password. Once the device name and password are entered then the device type is displayed and the Login button can be selected.

Please note that users who share such devices do not need individual logins since they will scan their barcoded badges whenever they enter data into the BellHawk system.

This brings the device user to the Main Switchboard screen, which has different options depending on the log in used to enter the system. In this case, with a device log in, there is only two buttons – Transactions (1) and Status (2). The Status button gives the device user access to a screen showing the status of work orders.

Clicking on the Transactions button from the Main switchboard will open the Transactions switchboard, seen here at right. From here, users can select the transactions they wish to perform or enter production comments to be shared amongst



Recording Labor

Device users record the time they worked on a work order operation by scanning a User Start Work transaction when they begin work and a User Stop Work transaction when they end work.

A user can start and stop work on an operation as many times as necessary. The system will tally up the total number of hours and minutes worked per work order operation.

Users may also work on multiple work orders, if the system administrator allows this. In this case, their time will be allocated equally across all work orders they are working on at the same time. Also multiple users can work on the same work order at the same time.

The time at which the first user does a Start Work on a work order is considered the start time for that work order and for that operation.

In order to do Start Work or Stop Work transactions, you must have set up Work Centers and Operations data in your system. Please refer to the System Setup section of this manual for information on how to do that. Here we will assume that Work Centers and Operations have already been entered into the system.

Start Work Transaction

The following screen opens when the User Start Work button is clicked. This screen shot is for a work order where no Route has been previously setup for the work order.

The users will Start Work as follows:

Scan the barcode on their badge (1).

The user can type in the work order number, scan a work order barcode from a traveler, or may select from a list of work orders by clicking the three-dots or ellipses button (2) at the end of the line.

Clicking ellipses or three dots button will open a screen displaying all work orders that are currently released to production as shown below.

PLEASE SELECT WORK ORDER NUMBER						
Work Order Number	Item Number or Instructions	Date Released	Date Last Action	Date Wanted	Importance	Status
W00000105	Furniture	Feb 12, 2016	Feb 12 2016 9:00AM	Feb 12, 2016	Standard	Released
					--Show All--	--Show All--

Filter Return

To aid the user in finding the current open work order, the user can click on any column heading to sort the work orders by that column or enter a search string for a column in the bottom row and click “Filter” to filter the list by that search string. The ‘%’ can be used as a wild card in the search string.

To select a work order, simply click on the Work Order Number in the first column and the system will return to the Start Work page with the selected Work Order Number filled in for you. As soon as the Work Order Number is entered, whether by selecting from the list or by direct entry into the textbox, the Start Work screen is reconfigured to now enter the operation (3) if the work order does not have a route.

The operation can be selected by scanning an operation code from a pre-printed sheet of barcodes or by using the ellipses at the end of the line to bring up a list of operations:

Please Select Operation Code

5	Operation Code	Operation Description	Work Center
	DrillTap	Drill and Tap	Production
	Lathe	Lathe	Production
	Polish	Polish and Inspect	Production
	AssembleCB	Assemble Circuit Board	Production
	AssemblePanel	Assemble Panel	Production
	TestInspect	Test and Inspect	Production
	Burnin	Burn In Test	Production
	Final	Final Test	Production
	Rework	Rework Test	Production
	Ship	Ship	Shipping

6 Filter Return

The operation code can then be selected from the first column (1) to select the required operation. If needed Filter boxes (6) can be used to find the desired operation.

Once the operation has been selected, it then appears in the Operation box (3) and the [Submit] button (4) can be used to enter the transaction in the database.

Selecting [Submit] results in the [Submit] button turning yellow until the response has been correctly processed by the server, when it will turn green again.

From here the user can scan into another work order (if multiple work orders are being worked on at the same time) or to [Return] to the prior screen.

START WORK

User Badge
E301

NOT scanned into any Operation

Work Order Number
WO3039 ...

Operation
Lathe 3 ...

Lathe 4

Submit Clear Return

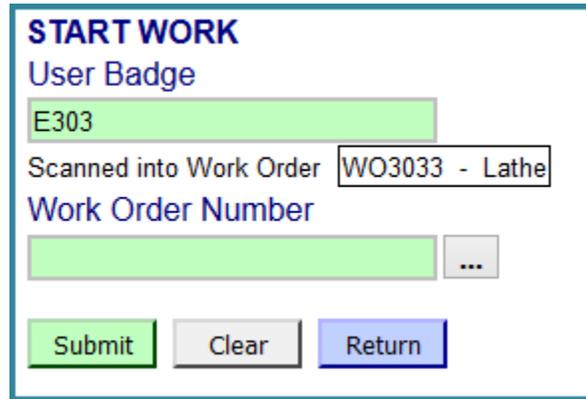
If the work order has route steps then the screen appears as shown at right after the user selects or scans the Work Order number (1). This is typically done by scanning the work order barcode (4) at upper right of the traveler as shown below

Here the user can scan the step barcode (5) from the traveler (2) or choose an operation (3) that is not on the route as previously described.

If the route step is scanned or selected from the ellipses then the Operator selector box is made invisible, as shown below:

Finally the user must click on the Submit button so that the data on this screen will be recorded for this transaction

If a user had already started work on one work order operation and also starts work on another operation without stopping the first one, then when the Start Work transaction screen is opened the system will list the other operations the user is currently working on. This is a reminder in case the user forgot to stop work on the other operations.

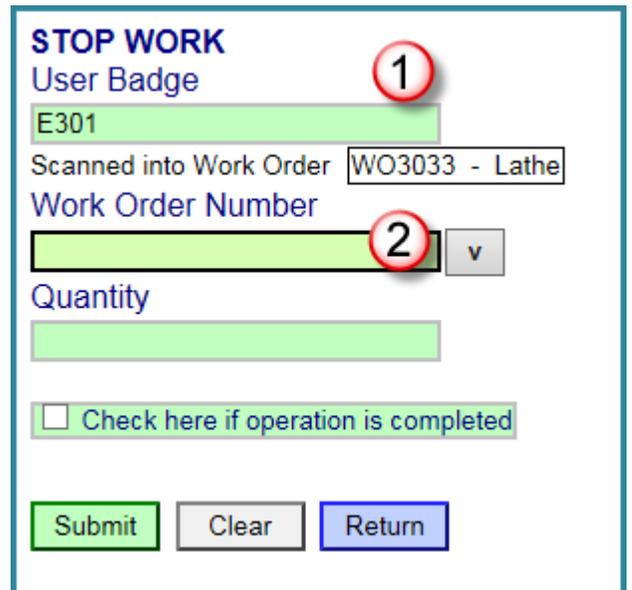


A user may or may not legitimately be working on more than one operation at a time. There is a parameter set by the system administrator which determines whether or not the system should allow, should warn and ask for confirmation before allowing, or should prohibit that action in your system.

Stop Work Transaction

When a user finishes work on an operation or a work order step for a period of time, the user will select a Stop Work transaction. The screen will appear as shown below, right. The users will then:

1. Scan the barcode on their badge (1). The system will display all the work orders the user is currently scanned into.
2. Scan the work order number from the traveler or select this from the drop down list [v] button.



If the drop down is selected then the following appears:

1. A drop-down list of all the work orders into which the user is currently scanned (1) from which the user can choose the one to record a “Stop Work” action on.
2. A triple bars [|||] button, which will return the mode to scanning in the work order. Please note that this use of the triple bars button is common to many transactions in which there is a need for an optional drop-down list in addition to a text box into which to scan data from a barcode.

Once the Work Order barcode has been selected (1), as shown at right, then the operation barcodes into which the user is scanned in for that work center can be selected or scanned (2).

Then the “piecework” quantity can be recorded (3). This does not tie into any specific part number but is simply to measure the incremental productivity of the user.

Note that the Piecework Quantity data entry box can be hidden by a setting on the System Administrators System Parameters screen, Production tab.

Check the box if the Operation is completed (4). This box indicates that all work on this operation has been completed. It should not be checked if the user is simply stopping work because the shift was over or because it was time for a lunch break or if other users will be working on this operation later.

Checking the checkbox will indicate on the management view of the work order status that the device user considers this step complete.

This helps management to determine when it is appropriate to mark a work order as closed. Actually closing a work order can only be done by someone with an authorized Production Management role. Once a work order is closed, no further transactions can be recorded against it.

Finally submit the transaction (5). The system will confirm that user has successfully stopped work on work order by turning the Submit button yellow and then green again.

The image displays two screenshots of the 'STOP WORK' interface. The top screenshot shows the initial state where the 'Select Work Order by number' dropdown menu is open, displaying 'WO3033' (1). A triple bar button (2) is visible next to the dropdown. The bottom screenshot shows the form after selection, with 'WO3033' in the dropdown (1), 'Lathe' in the 'Operation Barcode' field (2), '12' in the 'Quantity' field (3), the 'Check here if operation is completed' checkbox checked (4), and the 'Submit' button highlighted in yellow (5).

In a similar manner, if the user was working on a work order with a route of operations, the user will:

Scan the barcode on their badge (1).

Scan the barcode for the Work Order Number on the traveler or select the work order number (2) from a list.

Scan the Work Order Step barcode on the traveler or click the drop-down list selector button [v] and select the Work Order Step from a list (3) of the steps for the work order. The system will fill in the operation name automatically.

(4) Record the quantity that is output for the time the user was working on the work order step.

Check the box if the Operation is completed (5).

Submit the transaction (6).

The screenshot shows a form titled "STOP WORK" with the following fields and controls:

- User Badge:** A text input field containing "12345" with a red circle "1" next to it.
- Scanned into Work Order:** A text input field containing "W00000105 Step 1 (Lathe)".
- Work Order Number:** A text input field containing "W00000105" with a red circle "2" next to it, a dropdown arrow, and a barcode icon.
- Step Barcode:** A text input field containing "TW00000105.1" with a red circle "3" next to it, a dropdown arrow, and a "v" button.
- Operation:** A text input field containing "Lathe".
- Quantity:** A text input field containing "25" with a red circle "4" next to it.
- Check here if operation is completed:** A checkbox with a checkmark and a red circle "5" next to it.
- Submit:** A green button with a red circle "6" next to it.
- Clear:** A grey button.
- Return:** A blue button.

Special Situations

BellHawk provides the flexibility for operations users to add operations to the work order route if needed. There is a system parameter set by the system administrator that determines whether this is allowed, allowed after warning the operations user, or prohibited in your system. If you allow this in your system, then a device user can scan an operation that is not on the work order route as follows:

A device user will start the Start Work transaction as usual by scanning their barcoded badge and scanning or selecting the Work Order Number.

Since the operation the user needs to perform is not set up on the work order's route, the user will skip the Work Order Step Barcode and go directly to the Operation entry instead.

A list of all valid operations can be opened by clicking on the three-dots or ellipses button (1).

From this screen an Operation Code may be selected by clicking on the Operation Code in the first column (see below).

Please Select Operation Code		
Operation Code	Operation Description	Work Center
DrillTap	Drill and Tap	Production
Lathe	Lathe	Production
Polish	Polish and Inspect	Production
Ship	Ship	Shipping

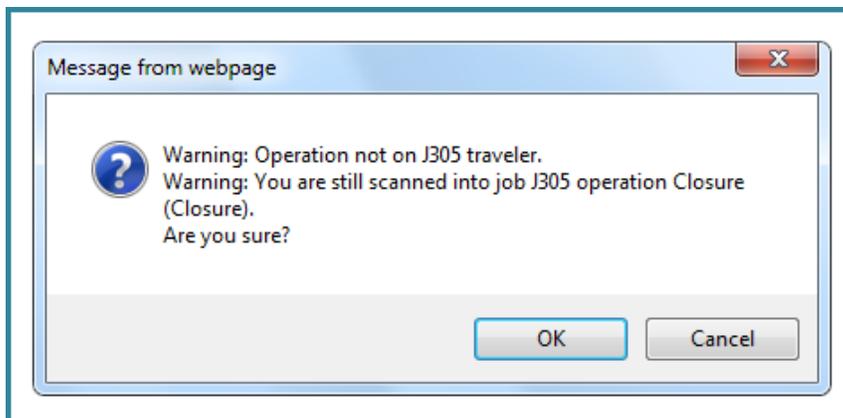
Filter Return

This will return the user to the Start Work screen with the desired Operation Code filled in (1). The transaction can then be submitted by clicking on the green Submit button (2).

This functionality is dependent upon a system parameter. If you set up your system to prohibit scanning operations not on the route, then the user will receive an error message when the user clicks Submit.

If your system parameter is set to Warn, then the user will receive a message similar to the one shown below and the transaction will only be submitted to the database if the user responds by clicking OK.

START WORK
User Badge
12345
NOT scanned into any Operation
Work Order Number
W00000106 ...
Step Barcode
...
Operation
Polish 1 ...
Polish and Inspect
Submit 2 Clear Return



In this example, the system also warned that the user was already scanned into another operation. If this is not the intention, then the Cancel button can be selected. Otherwise the OK button can be clicked.

In this manner, the SPTS Software can track work orders that have routes or are route-less or are a hybrid of the two styles.

Editing Work Order Transactions



Sometimes users forget to scan out at the end of their break or make other mistakes in recording their time or the piecework quantity.

In order to edit the time a user works on a work order a Manager or Staff user who is authorized in the Production role can go into Edit Production History from the Production Switchboard.

The next screen is a listing of all the work orders by number (see below).

PLEASE SELECT WORK ORDER NUMBER

Work Order Number	Item Number or Instructions	Date Released	Date Last Action	Date Wanted	Importance	Status
W00000105	Furniture	Feb 12, 2016	Feb 12 2016 9:22AM	Feb 12, 2016	Standard	✓ Production: Lathe
W00000106	Furniture	Feb 12, 2016	Feb 12 2016 10:23AM	Feb 17, 2016	Standard	✓ Production: Drill and Tap
W00000109	Knobs		Feb 12 2016 9:31AM	Feb 12, 2016	Standard	Not Released
W00000110	Knobs	Feb 12, 2016	Feb 16 2016 8:48AM	Feb 12, 2016	Standard	✓ Production: Drill and Tap
W00000111	Knob Making	Feb 16, 2016	Feb 16 2016 8:45AM	Feb 16, 2016	Standard	✓ Completed
					--Show All--	--Show All--

Filter Return

By clicking on the Work Order number, the next screen will be the View/ Edit Production History screen.

VIEW / EDIT PRODUCTION HISTORY
For Work Order Number: W00000111

LABOR

Operation	Step #	Employee	Start Time	Stop Time	Allocated Time	
Drill and Tap	2	Green, Eric	Feb 16 2016 8:35AM	Feb 16 2016 8:35AM	1:00	Edit 1
Drill and Tap	2	Green, Eric	Feb 16 2016 8:35AM	Feb 16 2016 8:36AM	0:01	Edit
Lathe	1	Green, Eric	Feb 16 2016 8:34AM	Feb 16 2016 9:34AM	1:00	Edit
Polish and Inspect	3	Green, Eric	Feb 16 2016 8:41AM	Feb 16 2016 9:42AM	1:01	Edit

Filter Complete Work Order 2 Return

This screen shows the different operations, the steps, and the device user's actual start and stop times as well as the allocated time for each operation/step.

- (1) The Production Manager/Staff user can edit these items by selecting the Edit button (1) on the right hand side of the screen.
- (2) When all of the information is determined to be correct the Production Manager/Staff user can complete the work order (2) directly from this screen.

By clicking on the Edit button, the Edit Labor Transaction screen, below-left, will be shown.

The screenshot shows the 'Edit Labor Transaction' screen with the following fields and buttons:

- Work Order Number:** W00000111
- Operation:** Lathe
- Employee:** Green, Eric
- Start Time:** Feb 16 2016 8:34AM (1)
- End Time:** Feb 16 2016 9:34AM (1)
- Allocated Time:** 1 Hours (2), 0 Minutes (3), # (4)
- Quantity:** 25 (5)
- Comment:** (6)
- Buttons:** Submit (7), Return, Delete (8)

On the Edit Labor Transaction screen the Production Manager can edit the (1) Start Time and the End Time for a user on a specific operation. This is in case the device user forgets to clock out on time, the manager can change it to the correct time.

The Production Manager can also assign an allocated time for a particular operation: (2) number of hours, (3) number of minutes and (4) “#” clears out the allocated time. If the user is working on multiple orders at the same time, then the time allocated to this step/operation can be manually entered.

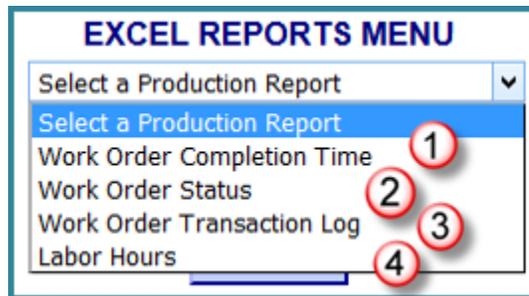
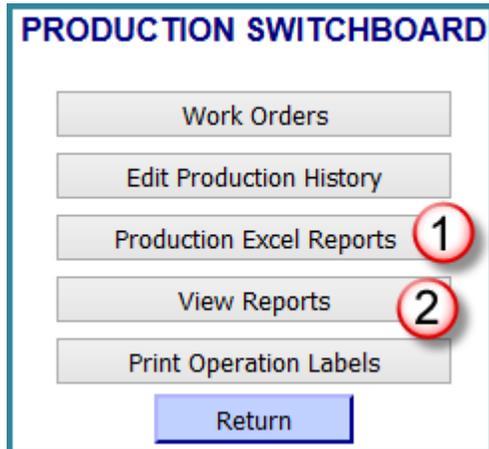
Optionally, the total Quantity produced can be entered (5).

If appropriate a comment (6) may be entered for the audit trail. Please note that the original records for people are not deleted. All changes to the work order transaction history, made through the edit screens are logged in the database and the original history record retained so there is an audit trail.

When complete, select the Submit button (7). To delete the labor transaction click the Delete Button (8).

Work Order Reports

Work Order reports can be accessed from either the Production Switchboard or the Management Switchboard, which are both accessed from the Main Switchboard. These reports are available in Excel format (1) or the standard View Report format (2). Daily logs (3) can be viewed under the Management Switchboard.



The standard Excel format Production Reports are Work Order Completion Time (1), Work Order Status (2), Work Order Transaction Log (3), Labor Hours (4).

The standard View Reports for Work Orders are Production Labor (1) and Production Transaction Log (2).



Production Labor History Report

This report shows the start and stop time for each operation and the allocated hours worked.

<i>Production Labor History</i>				
<i>All Work Orders with labor recorded between 3/8/2016 and 3/15/2016</i>				
<i>Work Order #</i>	<i>Step #</i>	<i>Operation</i>	<i>Start Time</i>	<i>End Time</i>
WO3033		Lathe	3/11/2016 1:09:52 PM	3/15/2016 4:09:00 PM
<i>User Name</i>	<i>Start Work Time</i>	<i>End Work Time</i>	<i>Hrs:Mins Worked</i>	<i>Quantity Produced</i>
Smith, Joe	3/15/2016 4:07:00 PM	3/15/2016 4:09:00 PM	0:02	12
Green, Peter	3/11/2016 1:10:00 PM	3/15/2016 4:09:00 PM	98:58	
<i>Work Order #</i>	<i>Step #</i>	<i>Operation</i>	<i>Start Time</i>	<i>End Time</i>
WO3034	1	Lathe	3/11/2016 7:48:46 AM	3/11/2016 7:49:00 AM
<i>User Name</i>	<i>Start Work Time</i>	<i>End Work Time</i>	<i>Hrs:Mins Worked</i>	<i>Quantity Produced</i>
Green, Peter	3/11/2016 7:49:00 AM	3/11/2016 7:49:00 AM	0:00	6
<i>Work Order #</i>	<i>Step #</i>	<i>Operation</i>	<i>Start Time</i>	<i>End Time</i>
WO3034	2	Drill and Tap	3/11/2016 1:06:03 PM	3/11/2016 1:12:00 PM
<i>User Name</i>	<i>Start Work Time</i>	<i>End Work Time</i>	<i>Hrs:Mins Worked</i>	<i>Quantity Produced</i>
Green, Peter	3/11/2016 1:06:00 PM	3/11/2016 1:12:00 PM	0:05	

Please note that the time worked is half the elapsed time as the operations user was working on two work orders during this time interval.

Work Order Transaction Log

This report shows the date and time of all actions of users, both the production staff members (Release Work Order, Complete Work Order, Cancel Work Order) and the production users (User In, User Out, Operations End) – by Work Order #, Step # and Operation.

Production Transactions Log from 3/8/2016 to 3/15/2016
All Work Orders; All Users

<i>Date/Time</i>	<i>Action</i>	<i>User</i>	<i>Work Order #</i>	<i>Step #</i>	<i>Operation</i>	<i>Quantity</i>
3/11/2016 7:45:38 AM	Release WO	Green, Peter	WO3033			
3/11/2016 7:48:24 AM	Release WO	Green, Peter	WO3034			
3/11/2016 7:48:46 AM	User In	Green, Peter	WO3034	1	Lathe	
3/11/2016 7:49:14 AM	User Out	Green, Peter	WO3034	1	Lathe	6
3/11/2016 7:49:14 AM	End Operation	Green, Peter	WO3034	1	Lathe	
3/11/2016 10:42:50 AM	Release WO	Green, Peter	WO3039			
3/11/2016 1:06:03 PM	User In	Green, Peter	WO3034	2	Drill and Tap	
3/11/2016 1:09:52 PM	User In	Green, Peter	WO3033		Lathe	
3/11/2016 1:11:44 PM	User Out	Green, Peter	WO3034	2	Drill and Tap	
3/15/2016 4:07:05 PM	User In	Smith, Joe	WO3033		Lathe	
3/15/2016 4:08:56 PM	User Out	Smith, Joe	WO3033		Lathe	12
3/15/2016 4:08:56 PM	User Out	Green, Peter	WO3033		Lathe	
3/15/2016 4:08:56 PM	End Operation	Smith, Joe	WO3033		Lathe	

The Excel format Report of the Work Order Transaction Log has the same information as the standard View Report format but is easier to edit in the Excel format, if desired.

	A	B	C	D	E	F	G
1	Date/Time	Action	User	Work Order #	Step #	Operation	Quantity
2	3/11/16 7:45 AM	Release WO	Green, Peter	WO3033			
3	3/11/16 7:48 AM	Release WO	Green, Peter	WO3034			
4	3/11/16 7:48 AM	User In	Green, Peter	WO3034	1	Lathe	
5	3/11/16 7:49 AM	User Out	Green, Peter	WO3034	1	Lathe	6
6	3/11/16 7:49 AM	End Operation	Green, Peter	WO3034	1	Lathe	
7	3/11/16 10:42 AM	Release WO	Green, Peter	WO3039			
8	3/11/16 1:06 PM	User In	Green, Peter	WO3034	2	Drill and Tap	
9	3/11/16 1:09 PM	User In	Green, Peter	WO3033		Lathe	
10	3/11/16 1:11 PM	User Out	Green, Peter	WO3034	2	Drill and Tap	
11	3/15/16 4:07 PM	User In	Smith, Joe	WO3033		Lathe	
12	3/15/16 4:08 PM	User Out	Smith, Joe	WO3033		Lathe	12
13	3/15/16 4:08 PM	User Out	Green, Peter	WO3033		Lathe	
14	3/15/16 4:08 PM	End Operation	Smith, Joe	WO3033		Lathe	

Work Order Status Report

Work Order Number	Step Number	Work Order Instructions	Customer Name	Work Order Status	Operation Last Performed	Operation Started	Operation Completed	Wait Time (days)
W00000105	1	Furniture	CDE Furniture Manufacturers	In Progress	Lathe	2/12/16 9:02 AM	2/12/16 9:22 AM	0
W00000106	1	Furniture	CDE Furniture Manufacturers	In Progress	Drill and Tap	2/12/16 9:14 AM		
W00000110		Knobs	CDE Furniture Manufacturers	Not Started				

The work order status report is an Excel export that shows the status of each work order with the operation last performed, when it started and when it was finished and the time in days that the work order has been waiting for the next operation, since the prior operation was completed.

Work Order Completion Report

The work order completion report shows, for all completed work orders, when they were started and completed and the number of inclusive elapsed calendar days that it took the work order from start to finish.

Commentary

The BellHawk SPTS product provides a simple methodology for tracking batches of materials as they are processed through a sequence of operations. It also can be used for tracking service orders that involve a sequence of operations. As part of this tracking SPTS tracks labor on each operation of each work order and can capture “piecework” quantities produced.

For more sophisticated tracking of work-in-process, such as for tracking materials flow and split batches then the BellHawk RTOPS (job and materials tracking software) is recommended.