BellHawk®
Real-Time Operations Tracking and Management Software
www.BellHawk.com

BellHawk Quality Control Option User Manual

Introduction

This document describes the features added to BellHawk by the QC (Quality Assurance) option. This option, unlike some others, mostly modifies the actions of transactions, rather than introducing a whole new set of screens and functions.

BellHawk QC tracks the quality control status of materials from the time they are received to the time finished products are shipped. It prevents the use of materials that have not passed QC inspection in making products or their movement to non-QC inspection areas. BellHawk QC tracks reason-codes for quality failure and handles statistical inspection of lots. It also tracks material that needs to be reviewed into MRB (material review board) locations.

The BellHawk QC option tracks the quality status of Type 1 (single use) containers and individually barcoded items. It does not track the QC status of loose or untagged material in locations or in Type 2 (multi use) containers.

Table of Contents

Setting up Items to be Inspected

When setting up item master records in BellHawk, the "QC Every" field is used to control whether items are inspected or not when received from a supplier or recorded as output from a work order step.

If "QC Every" is set to zero then these items are not to be QC inspected.

If "QC Every" is set to 1 then every container of this item is to be inspected after it is entered into inventory.

All the containers having the same characteristics (part number, external lot number, and expiration date), which are entered into inventory at the same time, by cycling within a transaction, receive the same internal lot number. If subsequently one of these containers is inspected and marked as having failed inspection, then all the other containers having the same internal lot number are marked as needing QC inspection before they can used on a work order or shipped to a customer or moved to a non-QC inspection area.

EDIT ITEM MASTER

Item Number:	CC100
Item Description:	Chemical C
Is Inventoried:	☑
Item Category:	Raw Materials
Material Type:	Chemicals
Measure Type:	Liquid
Unit of Measure:	Fluid Ounces
Secondary Measure Type:	
Secondary Unit of Measure:	
Item Type:	Purchased
Unit Cost:	50
Unit Price:	0
Min Inventory Qty:	0
Lot Control:	Manual
Est. Prod. Life (days):	90
QC Every:	1
Default Location Code:	
Is Individually Barcoded:	☐
Is Serialized:	☐

Setting up QC States

Each container has a field in which its QC State is tracked. This is represented by a single letter QC code, as shown below for the standard QC Codes within BellHawk.

These QC codes are used by the BellHawk software to control, for example, who can set a part or container of material to that QC state.

	A	B	C	D	E	F	G	
1	QCSTATE	QCCode	QCStateDescription	ApprovedForUse	CanBeMoved	RestrictedToQC	RestrictedToMRB	DefaultI
2		A	Auto-Approved	Y	Y	N	N	Y
3		F	Failed	N	N	N	Y	N
4		M	MRB	N	N	N	Y	N
5		P	Passed	Y	Y	N	N	N
6		W	Waiting For Inspection	N	N	Y	N	N
7								

G	H	I	J	K	L	M
edToMRB	DefaultNotInsp	DefaultInsp	DefaultMRB	RequiresReason	IsNonconforming	QCQualRequired
	Y	N	N	N	N	Y
	N	N	N	Y	Y	Y
	N	N	Y	N	N	Y
	N	N	N	N	N	Y
	N	Y	N	N	N	N

Users can modify the actions of the existing codes by modifying the flags associated with each QC state in the QCSTATE table and importing these changes as an Excel spreadsheet through the System Administrator's DEXEL screen.

The meaning of each of the columns (with Y meaning Yes and N meaning No) is:

QC Code – Unique single alphabetic letter code for the QC status of the container, such as P for passed inspection and F for failed.

QC State Description – A text description for display in BellHawk screens and reports.

Approved for Use – a Y means that a container with this code may be picked for a job, recorded into a job step, or picked or shipped for a customer order.

Can be Moved – a container with this code can be moved to a location that is not a QC or MRB quarantine location.

Restricted to QC – can only be moved or entered into a location that is a QC quarantine location

Restricted to MRB – can only be moved or entered into a location that is an MRB location.

Default Not Insp – Default behavior for a container that does not require inspection – there can only be one Y in this column. Note that this is the code that will be applied to loose or untagged material at a location or in a type 2 (multi-use) container. Make sure that this is an approved status such as A or P otherwise you will not be able to use these materials on a job or to ship them. Generally A is the correct default option.

Default Insp - Default behavior for a container that requires inspection – there can only be one Y in this column. Generally W, for waiting for inspection, is the correct default.

Default MRB - Default behavior for a container that has MRB status – there can only be one Y in this column. Generally W, for waiting for inspection, is the correct default.

Requires Reason – Reason code entry is optional unless this is set to Y

Is Nonconforming – Does not meet requirements for specified Item Number.

QC Qual Required - Can only be changed to this status by QC Qualified Person. By default anyone can declare a container of materials or an individually barcoded item as needing inspection. But only a QC Qualified person can declare that a container has passed or failed inspection.

Please note that the standard QC State codes should not be deleted as the BellHawk software relies on these to control actions of transactions. You can change the specified default actions but, please be aware that making these changes can cause unexpected side effects.

Setting up Locations

LOCATION	LocationCode	LocationDescription	IsReceiving	IsGeneric	IsQCLocation	IsMRBLocation
	#01504	Stock Room Location #01504	N	N	N	N
	#01506	Stock Room Location #01506	N	N	N	N
	#01513	Stock Room Location #01513	N	N	N	N
	#01516	Stock Room Location #01516	N	N	N	N
	MRB	Material Review Area	Y	Y	N	Y
	Production	Production	N	Y	N	N
	QC	QC Dept	Y	Y	Y	N
	Receiving	Receiving Dock	Y	Y	Y	N
	Shipping	Shipping Dock	N	Y	N	N
	TankRoom	Tank Room	N	Y	Y	N

When setting up locations you can cause the system to generate warnings for material that has not passed inspection, if the operator attempts to move the materials to certain locations. Basically materials that have not passed inspection (QC status = W) can only be moved to QC inspection or MRB (if QC status = M) areas.

So we need that all our warehouse Rack locations (1) are marked as being neither QC or MRB locations. But that the Material Review Area (there could be multiple) is designated as an approved for MRB materials (2) and the QC Department (4) is an approved location for materials needing QC inspection, as is Receiving (5) and the Tank Room (7).

The Warehouse (1) and Production areas (3) are declared off-limits to any materials that have not passed inspection. Materials that need inspection (5) may be received into the Receiving location but finished goods may not be moved into the Shipping Area (6) until they have passed QC inspection.

Setting Up QC Reason Codes

QC Reason codes are setup through the Excel Setup import feature of BellHawk.

Whenever a QC state selection is requested a corresponding reason code can be selected from those imported in this table.

QCREASON	ReasonCode	ReasonDescription
	Contaminated	Contaminated
	Failed SG Test	Failed SG Test
	Incoming	Incoming Inspection

Setting up QC Operations

	A	B	C	D	E	F	G	H
1	OPERATIONS	OperationCode	Description	WcCode	LocationCode	IsTAR	IsQC	IsRework
2		Mixing	Salad Mixing	Production		N	N	N
3		Packing	Packing	Production		N	N	N
4		QC	Quality Inspection	Production	Production	Y	Y	N
5		①	②	③	④	⑤	⑥	⑦
6								
7								

By default, operators are warned if they attempt to record materials into an operation if they have not passed inspection, and may be prevented from continuing.

Additional, optional flags are available with the QC option to enable materials to be recorded into QC or Rework operations, even if they have not passed inspection.

The Operations Code (1), Description (2), WcCode (3), are the same as described in the Advanced Production Tracking User Manual.

If the IsQC flag (6) is set to Y then parts that are awaiting inspection or have passed inspection are allowed to be recorded into the operation.

If the IsRework (7) is set to Y then parts that have failed inspection are allowed into the operation.

As materials being QC tested are not typically consumed or produced, as a result of being tested, then the ISTAR flag (5) should be set to Y for QC and Rework operations. This flag indicates not to consume the parts recorded in a Material-into-Operation transaction but simply move them to the Location Code (4), which should be the location where the work order operation will be performed. Also, on recording Material-out-from-Operation, the material is simply moved from the Location Code to the destination recorded in the transaction. At the same time, the operator is requested to set whether the resultant output material has passed inspection, if they are QC qualified.

The UDP feature of BellHawk can be used in conjunction with QC operations to setup test parameters to be collected as part of the QC transactions. In this way the BellHawk history records contain the complete history data for each item or container of parts tested.

Setting Up QC Qualified People

Employees of User Category Operator (1) can designate any containers of materials as needing inspection but do not have the privilege of setting the quality control status to passed or failed. But, exceptions can be made, by checking the QC Qualified checkbox (2) for these employees.

Staff members (3) also do not have the Quality Assurance (QC) role by default. By selecting the Quality Assurance role (4) a staff member is designated as QC Qualified.

Operators, even if QC Qualified, do not have access to the Quality Assurance Management screens but staff members who have this role selected do have this privilege.

Transactions

Receiving Materials

Here is the start of a Receive Against Purchase Order (PO) transaction. After we have selected the Purchase Order and the Line number, the system knows that the item being received is QC tracked (QC Every = 1) so it reminds the user (1) that it must be placed in a type 1 (single use) container.

Normally this is the container the materials that we are receiving the materials in and so we need to attach a new unique tracking barcode to the container and select the New Container checkbox (2) as the container will be a container with an unknown tracking barcode.
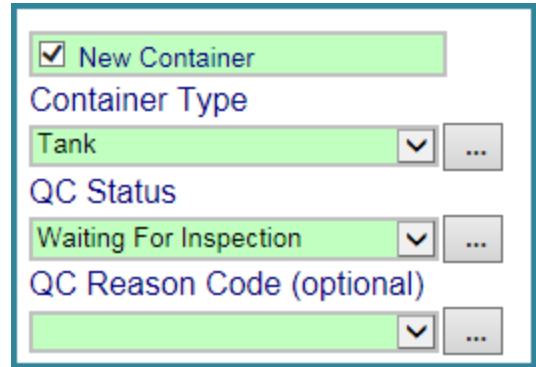

Once the New Container checkbox is checked, then boxes for other data being tracked such as the Lot Number and Expiration date appear (if these are being tracked) plus boxes for the QC Status (3) and the QC Reason Code (4).

If the person doing the receiving is not QC Qualified then the only option available is 'Waiting for Inspection'. If they are QC Qualified then they can choose from any of the available QC Status codes.

The Waiting for Inspection code, by default, does not require that a reason code be supplied but here we have selected an optional "Incoming Inspection" reason code.

Material Out from Work Order Step

A similar process is followed when recording "Material Out from Work Order Step", if the selected item requires QC inspection.

Enter Transaction

With the Enter transaction, which is typically used for setting up inventory, the materials automatically are assigned a status appropriate to the location in which they are recorded. If they are not in a QC quarantine area then they are given a status of "A" for automatically passed. If they are recorded as being in a QC quarantined area, then their status is set to "W" for waiting for inspection. If they are recorded as being in an MRB area, then their status is set to "M"

Simple Receive

The Simple Receive transaction is used for recording the receipt of items into inventory. It follows a similar pattern to the Receive against PO transactions, as far as QC is concerned.

Move Transaction

The Move transaction and all its derivatives, such as Pick and Material Flow, do not change the QC status of materials.

Mixing Materials

Only materials with the same:

- Item Number

- External Lot Number

- QC Status

- Expiration Date

Can be mixed together in the same Type 1 container. In this case, the quantity in the container is simply increased to be the sum of the two or more components.

Quality Assurance Transaction

With the QC Option, the Transaction Roles switchboard gains a Quality Assurance role (as shown at right) which leads to the Quality Assurance Transactions screen shown below.
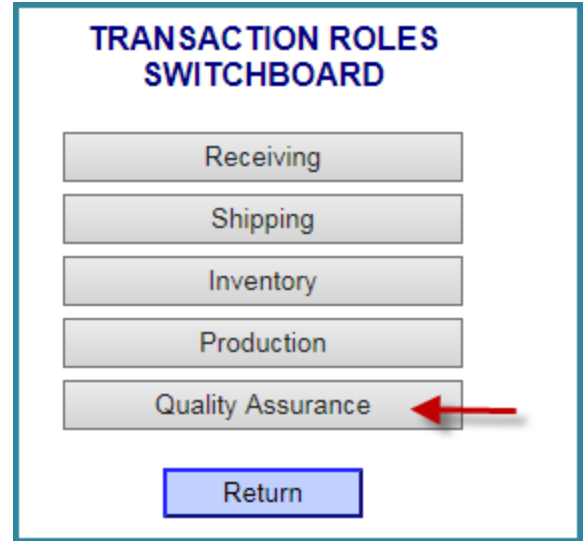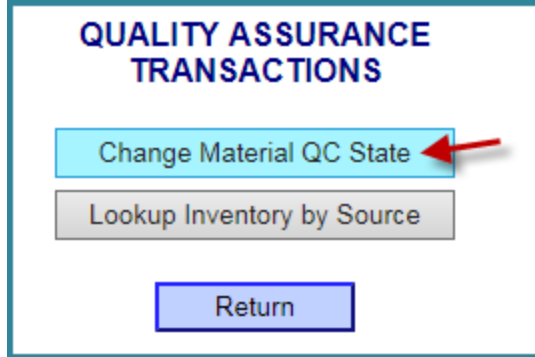
Selecting "Change Material QC State" leads to the screen shown at right. With the QC option, any employee can change the status on a container to Waiting for Inspection, if they think that the contents of the container are potentially defective.

But only an employee who is QC Qualified can use this transaction to change the state to any other state, such as having passed inspection.
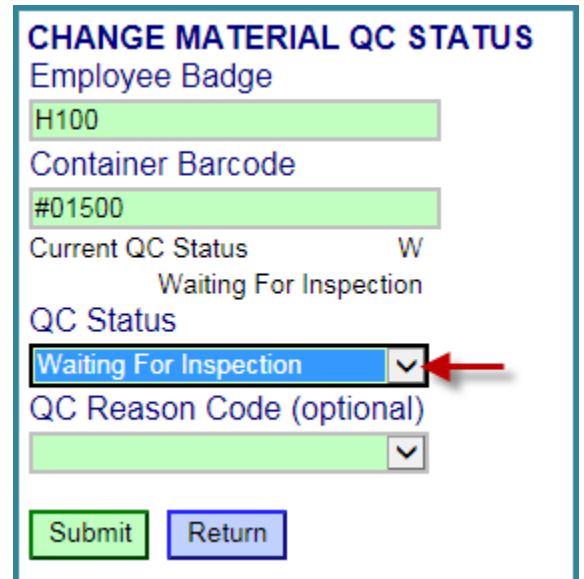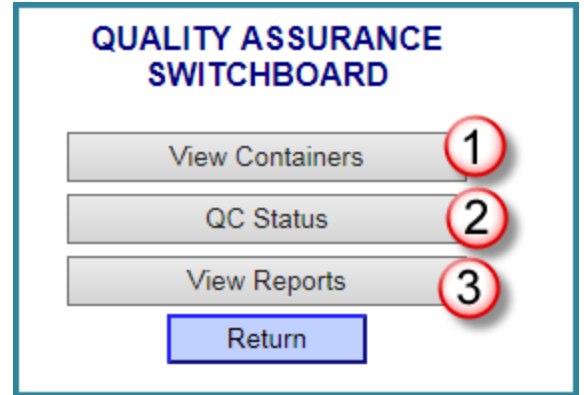
Quality Assurance Management Role

The Quality option adds a Quality Assurance button to the Main Switchboard for any staff person with the Quality Assurance role.
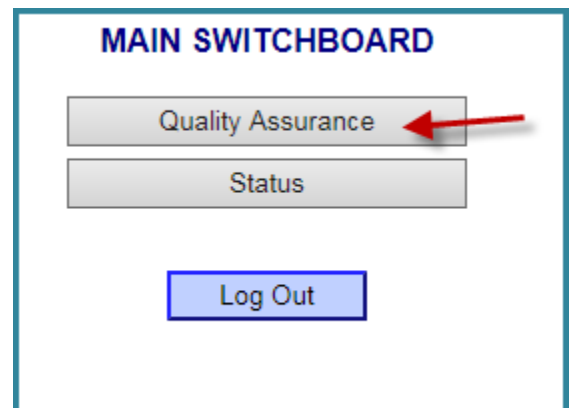
When the Quality Assurance button is selected, this brings up the Quality Assurance switchboard shown at right.

From this switchboard, the QC Manager can View Containers (1) – the same view as is available to Materials Managers, view and change the QC Status of Containers (2), and view some special QC reports (3).

Selecting the QC Status button (2) brings up a list of Containers needing inspection:

From here the QC Manager can:

1. Select containers with other QC Status settings, such as all those waiting for MRB inspection or all Failed containers, (1).

2. Edit the quality control status of an individual container (2)

3. Select multiple containers (3) and Edit all those that were checked (4) to have the same status, such as Passed inspection.

If the box in the header row (3) is checked then it checks all visible containers.

If the Edit button is selected for a specific container, then the screen shown at right appears. Here the current status of the container is shown (5) and the QC Manager can change the Status of the Container. Here, if it is marked as Failed, the reason code is required (6).

If multiple containers are checked on the Inventory QC Status screen and the "Edit All Checked" button is selected, then the screen shown at right appears.

This shows a list of the containers selected (1) and gives the ability to change the QC Status and optional reason code (2) on all the selected containers.

CHANGE MATERIAL QC STATUS
Container Barcodes
#01500
#02426   (1)
QC Status
[▼]   (2)
QC Reason Code (optional)
[▼]

[Submit]   [Return]

QC Reports

There are two QC related reports available from the Reports button of the Quality Assurance switchboard as shown below:

Quality Assurance Log from 11/22/2013 to 11/29/2013
All Item Numbers; All Item Categories:

Date Stamp	Container	Item Number	Lot Number	Status	Reason	Status Assigned By
11/29/13 4:19 PM	#01500	CC100	HJ6789	W	Incoming Inspection	Handler, Harry

QA Restricted Inventory

All Item Numbers; All Item Categories: All Restricted QA Codes

STATUS: W   Waiting For Inspection

Item Number	Container Tag	Lot Number	Location		Quantity	
CC100	#01500	HJ6789	Stock Room Location #01516		5	fl oz
				Item Total:	5	fl oz

Item Number	Container Tag	Lot Number	Location		Quantity	
CM200	#02426		Tank Room		10	Gal
				Item Total:	10	Gal

Excel Reports

A failure summary report is available in the form of an Excel export from the QA Managers switchboard and the Production Managers Switchboard.

	A	B	C	D	E	F	G	H
1	**Failure Summary Report**							
2	Report Created 6/30/2019 7:58 PM , Orders released after 6/23/2019 before 6/30/2019							
3	**Work Order**	**Parts Made**	**Parts Failed**	**Parts Reworked**	**Parts Scrapped**	**Parts OK**		
4	W00001001	0	0	0	0	10		
5	W00001002	0	0	0	0	0		
6								

There is also a corresponding Failure Detail Report Excel Export that details the failures by Operation and Work Order.

These reports are intended to provide the data for subsequent analysis of failure rates.

Commentary

The QC option in BellHawk plays a critical role in tracking quality control operations and in preventing the use of materials that have not passed inspection. It does not do statistical QC analysis. For this, BellHawk needs to be used in conjunction with statistical analysis software.

BellHawk can import test data results in the form of Excel spreadsheets from test equipment or it can be directly interfaced to test stands to import test data for each part, as well as its QC status.