CHAPTER 46 - KITTING.....3

CHAPTER 46 - KITTING

A kit is an item created by combining or modifying other items. An example of a kit is a fireplace set, which is created in the warehouse by picking and gathering together a defined group of individual hearth tools and combining them with a stand to create a new unit that is either returned to storage or picked for shipping from the assembly area. The hearth tools may be received, stored, and shipped as individual items. The stand is only used as part of the kit. Creating the kit reduces inventory for the individual tools (the components), and increases the inventory of the kit item.

Kitting is implemented as a special type of workorder involving a series of picks and then a "kitting" task that converts the items picked into a new SKU. During this processing, the inventory of the old part numbers is decremented and the inventory of the new part number is incremented.

During the actual kitting task, the operations that may occur are many and varied. Examples include:

- Personalization of goods with monograms or logos
- Combining items and re-packaging into a set
- Attaching coupons, etc
- Light assembly (attaching a bracket to a dish antenna, or mounting wheels on a lawn mower).

Four types of kit are supported:

- Kit by Item: Kitting occurs when either an order comes in for the kit or a Work Order is entered to create stock of the kit. Kitting may also occur because the inventory level of the kit falls below a set value. The release of an order for the item triggers the kitting operation.

  The strategy of whether to kit for stock, kit directly to an order, or with a replenishment level depend on the nature and expected volume of the kit, as well as the relationship between the kit inventory and the component inventories.

- Kit by Class: Kitting occurs generally by creating a Work Order. The purpose is to provide for a differentiation of inventory after the kitting activity where the SKU does not change, but specific steps have been taken and the class is used to differentiate the inventory.

  Kit by Class is particularly useful for tagging merchandise with labels specific to a particular consignee. Differentiating the inventory with a specific class and then ordering by that class, will ensure that the

inventory is only routed to the consignee that the inventory was prepared to meet.

- Component Template: Refer to separate Chapter for Component Template Kitting.
- Simplified Kitting: Simplified Kitting allows for ordering a base SKU that is made up of multiple shippable units. Upon receipt and release of the order, the Kit item will be cancelled and the components will be added to the order.

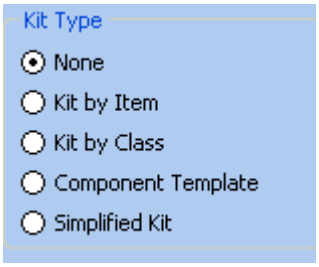
Setting up the Component and Kit items

This document will illustrate the definition of the kitting required with a simple sound system kit, whose item id is SNDKIT1. The kit is comprised of three components, SOUND CARD, GOLD SPEAKER, and POWER ADAPTER. The kitting operation consists of gathering together (picking) the components, testing one component and putting them in a box for shipping.

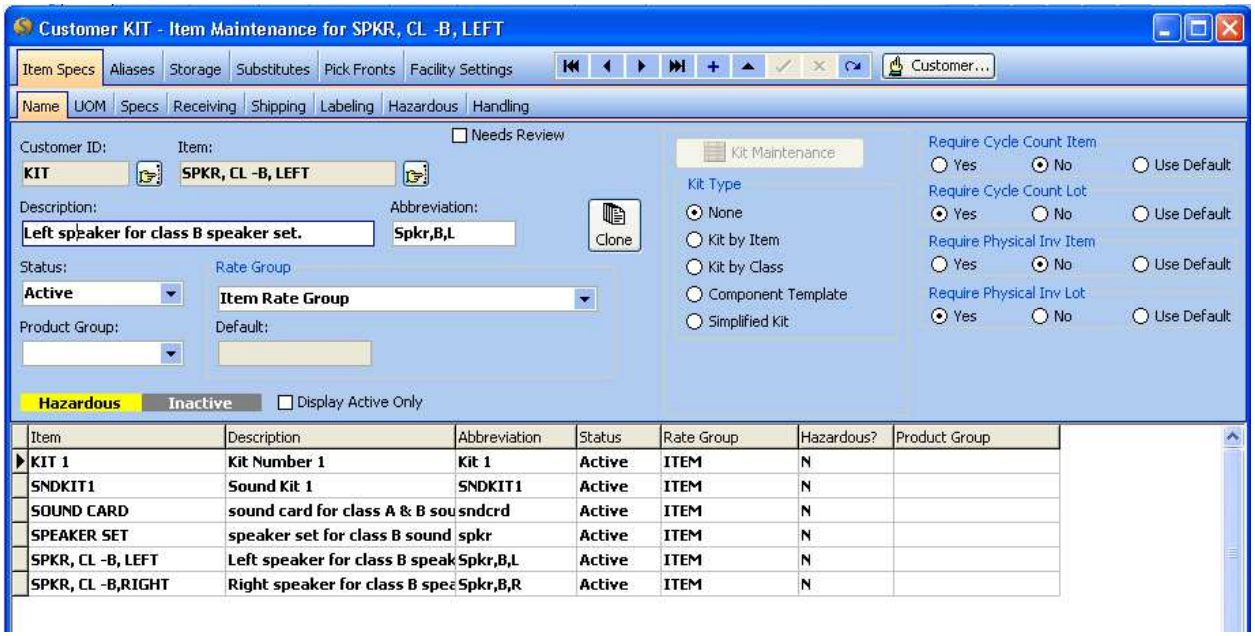
Customer/Item/Item Specs/Item Name Screen

Component Items

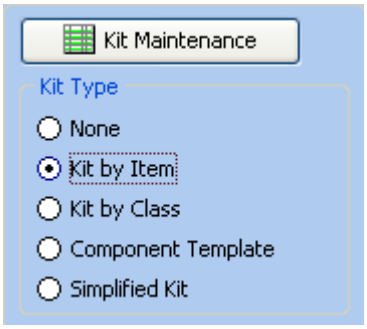
Each component of the kit is defined as a regular item. The components need to be added first before the kit item can be added. The Kit Attributes radio button is set to "None" for the individual component. All component items must be for the same customer at the kit item.



In the sample below, the component SOUND CARD is illustrated. It is one of the three components used to build the sound system kit. It is defined as an individual item, complete with its own pick front and its own receiving and shipping instructions. The item can be ordered and shipped separately, or it can be part of a kit assembly.



Kit Item



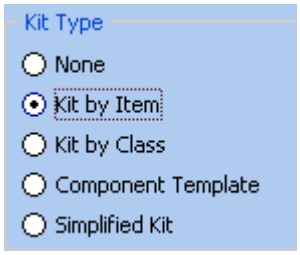
The “kit” is defined as a separate item on the Setup/Customer/Item/Item Specs/Name screen. When the Kit Attributes radio button is set to Make to Stock or Make to Order, the Kit Maintenance button becomes active.

NOTE: When designing and building a “kit” item, it is important to define and setup all the items (components) that will comprise the kit first, then define and setup the final “kitted” item.

The components all need item records even if the individual components can’t be ordered and shipped separately.

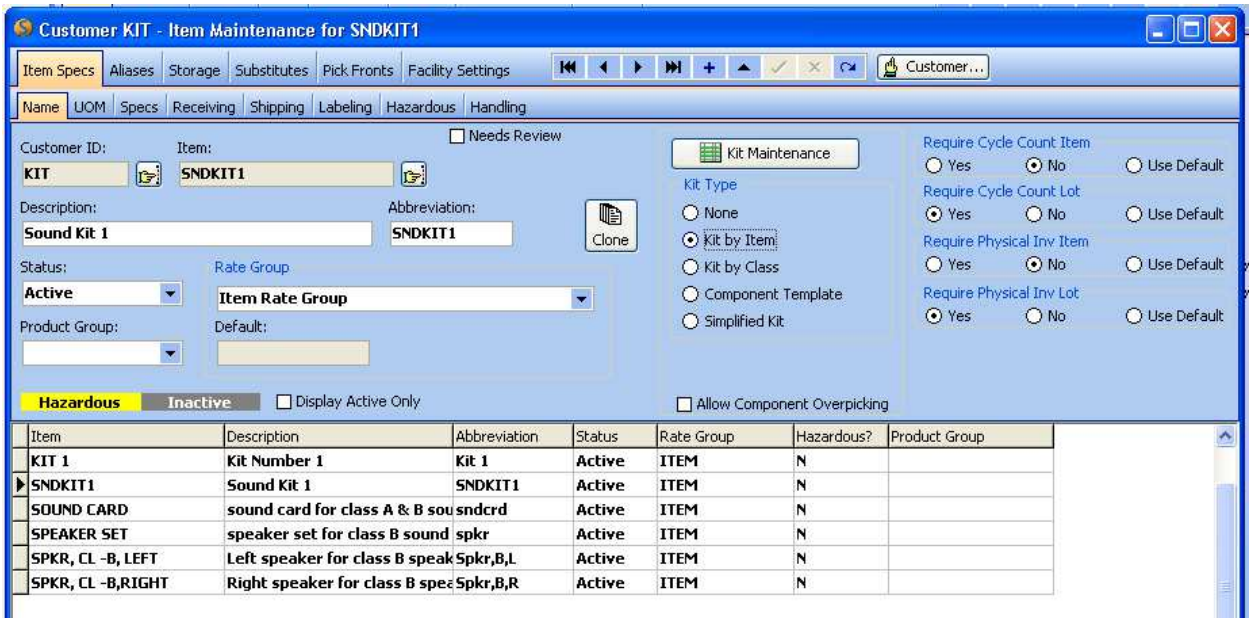
Step 1: Review the component items, making sure that there is a component item record for each component you need for the kit.

Step 2: Build the item record for the kit. Begin as usual, assigning a pick front (if desired) and shipping instructions. You will also need receiving instructions.



Step 3: Set the Kit Attributes to Kit by Item.

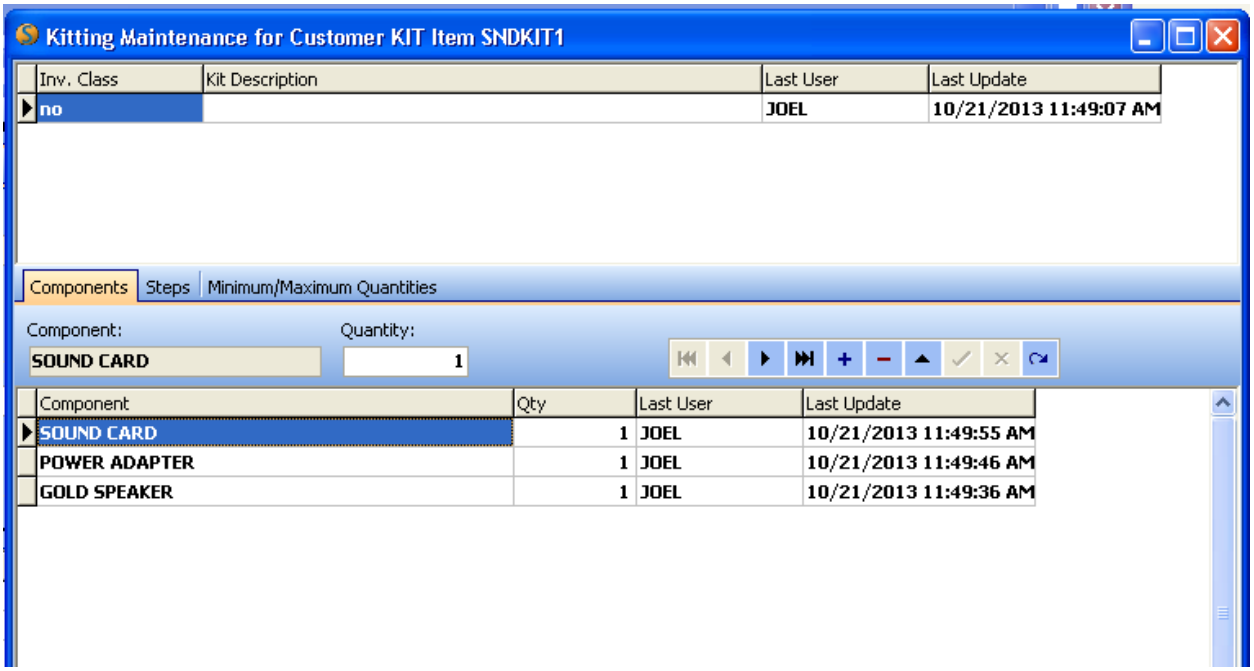
Step 4: Press the Kit Maintenance button. 



Pressing the Kit Maintenance button accesses the following screens.

Customer/Item/Item Specs/Name/Kit Maintenance/Components

This screen is used to define the components and quantities used in the kit item.



Step 1: Press the Insert key  to add a new component item to the kit. The component and quantity fields are cleared.

Step 2: In the Component field, enter the item name of a component item for this kit. It must be the name of an item that already exists for this customer. You may doubleclick on the field to see the list of all items for the customer.

Step 3: Key in the quantity, which is how many of this component you need per kit.

Step 4: Press the Post Edit key 

Step 5: Repeat steps 1 thru 4 for each component that you need.

The usual edit rules apply for modifying or deleting components from a kit.

Note: **After creating the component records, and before entering the kit instructions, please EXIT back to the item screen to allow SYNAPSE to add the information to the database. This allows the components available to the Kit Maintenance Instructions screen. Then press the Kit Maintenance button again, followed by the Instructions tab.**

Customer/Item/Item Specs/Name/Kit Maintenance/Instructions

This screen is used to define each step needed to complete the kit item.

There are 3 types of instructions:

- Movement

- Work or Instruction
- WO Completion/Inventory Update

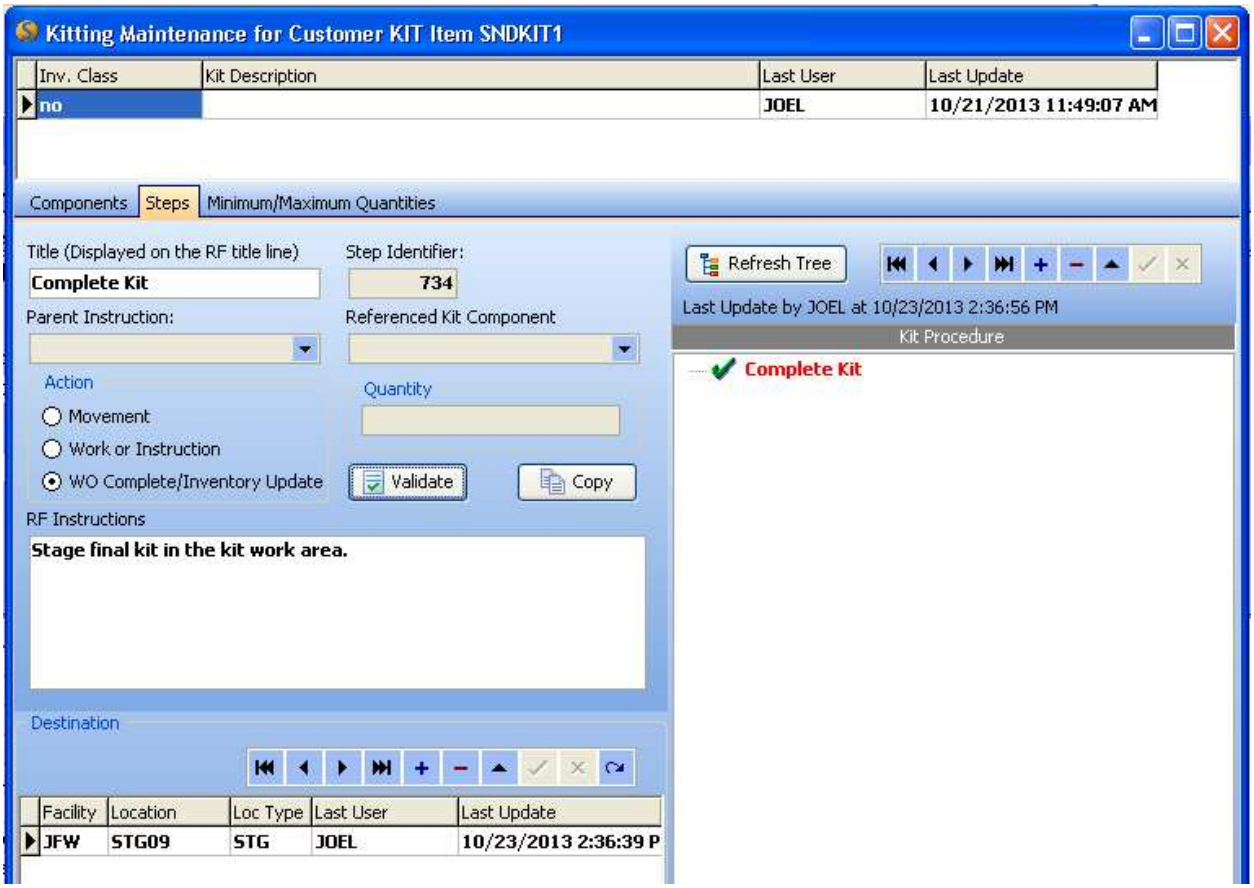
The finished Kitting Instructions take the form of a hierarchical tree structure called the Work Order Procedure. As the structure is built, it is displayed on the right side of the screen. When the structure is complete, the top of the tree is the kit. Displayed below that are steps for each component, in the reverse order of the execution of those steps.

A fundamental concept for creating kit instructions is the parent step. The parent step is the step in the kit-building process that must wait for the current step to finish before it can be executed. Therefore, the parent step is the next later step, in a logical sense. The step that represents the finished kit is the only step that does not have a parent step. It is also the **first step you must create** before creating any other steps.

You may enter all the steps for a kit in chronological order of execution, without assigning a parent step initially. You may then go back and create the finished tree by assigning the parent step to each step except the last. This is the method we will use to illustrate the creation of the kitting instructions for SNDKIT1. For each component, we need to pick the item and move it to a staging area, where we place it in a box for the set. There is an additional step for the power adapter. The actions for the individual components are independent of each other. It does not matter which one is picked first, or even whether there are one or more pickers. The hierarchy that we build will show this, and SYNAPSE will respond accordingly when it creates the picking tasks and the work order tasks for kit building.

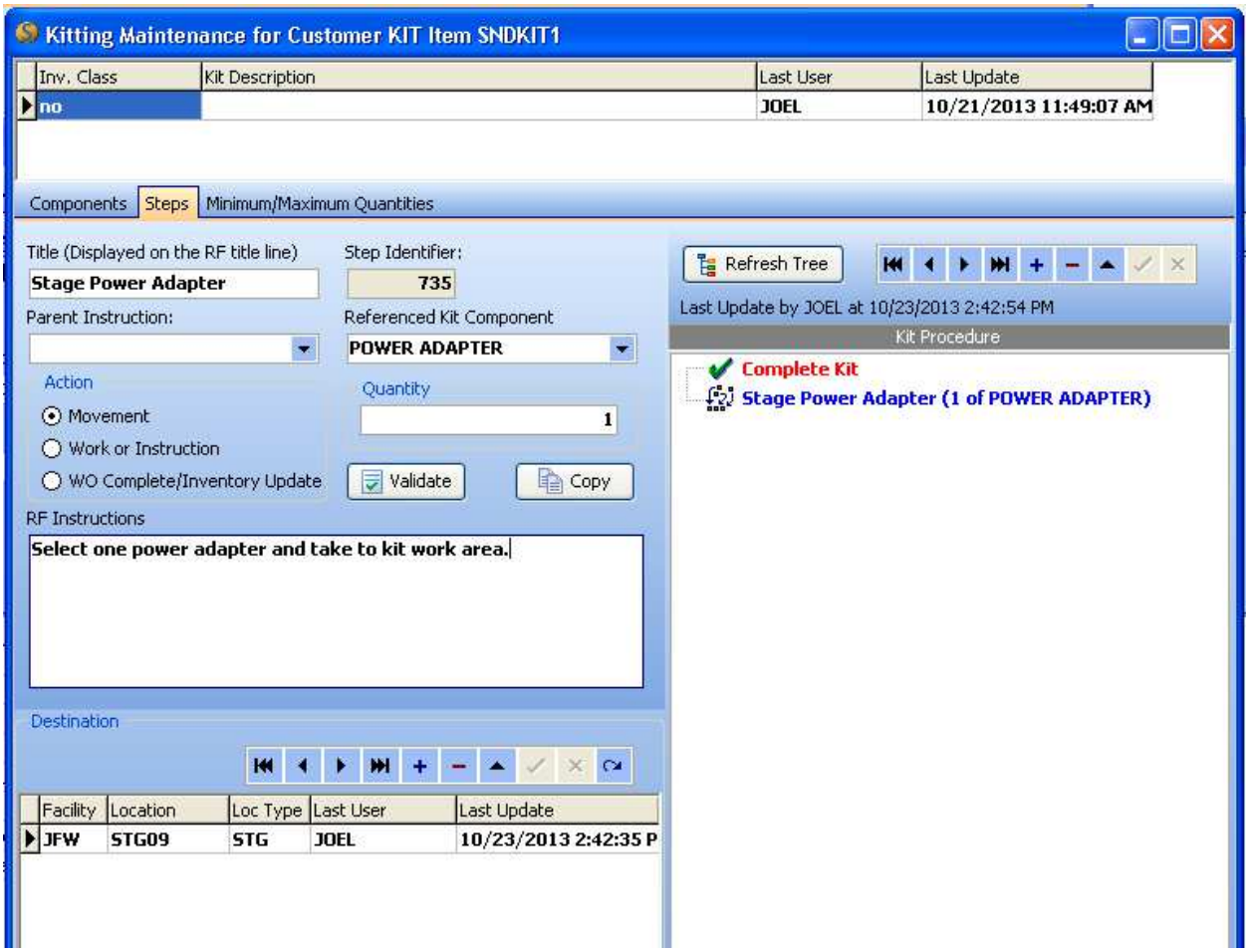
Kit Instruction Entry

When you press “+” to add a new instruction, the sequence number is automatically assigned. The sequence number does affect processing. The execution of instructions is controlled by the hierarchical structure that you will create later, as we will see below. Give the instruction a short explanatory title. You may use mixed case, if you wish. Whatever you enter will be the step title on RF.



The first step we will create is the COMPLETION step. This will be the final step in the kit and it is recommended that the word Completion be used in the title for clarity purposes.

Note: For the WO Complete/Inventory Update action, the Parent field is automatically closed. This action has no "Parent" step.

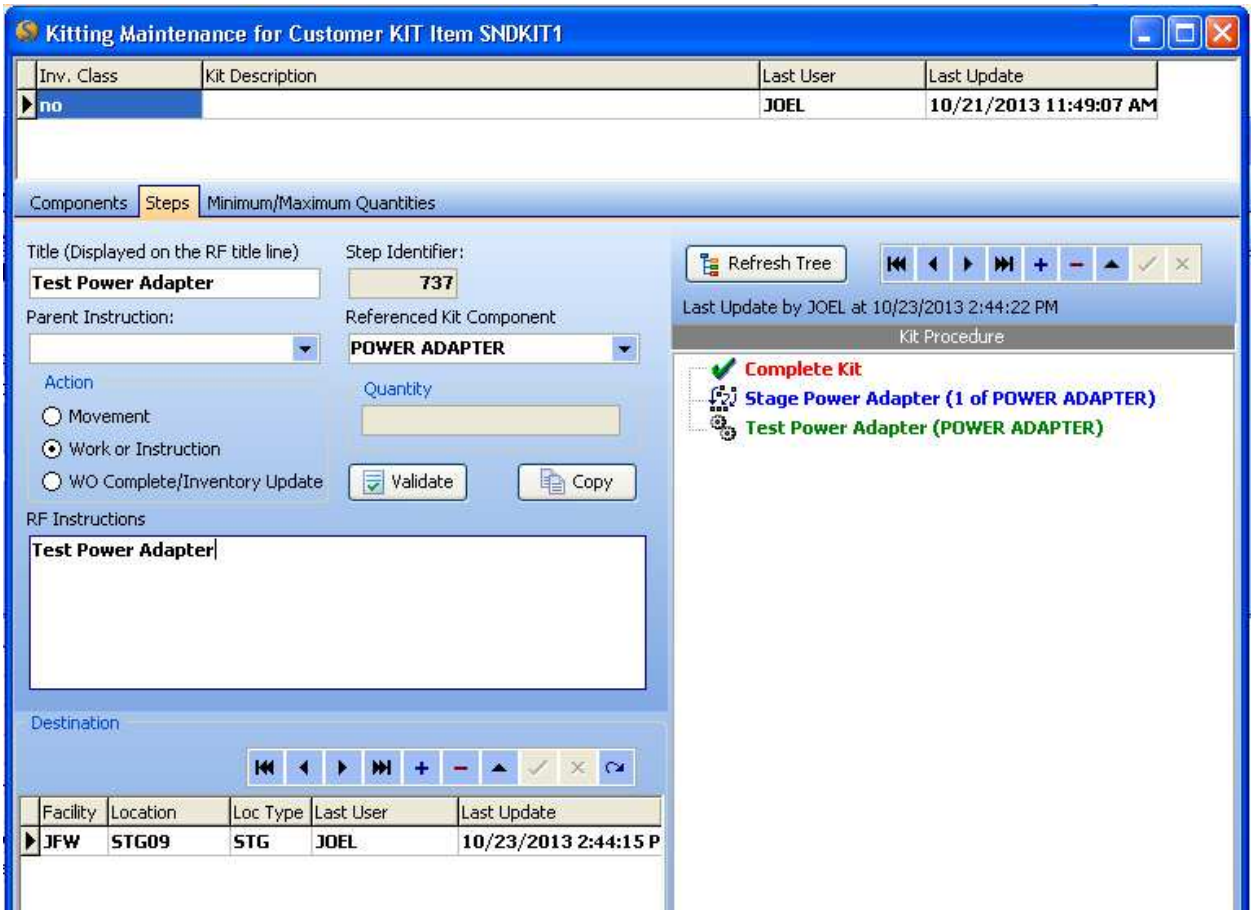


The next step after creating the COMPLETION step, STAGE ADAPTER, above, is one of Movement, picking a POWER ADAPTER and bringing it to the kitting staging area. Notice that we leave the Parent field blank at this time – we'll fill it in later. The component is selected from the drop down list. Because this is movement, the Destination and Quantity fields are open for entry.

For each item, the work order procedure will reflect

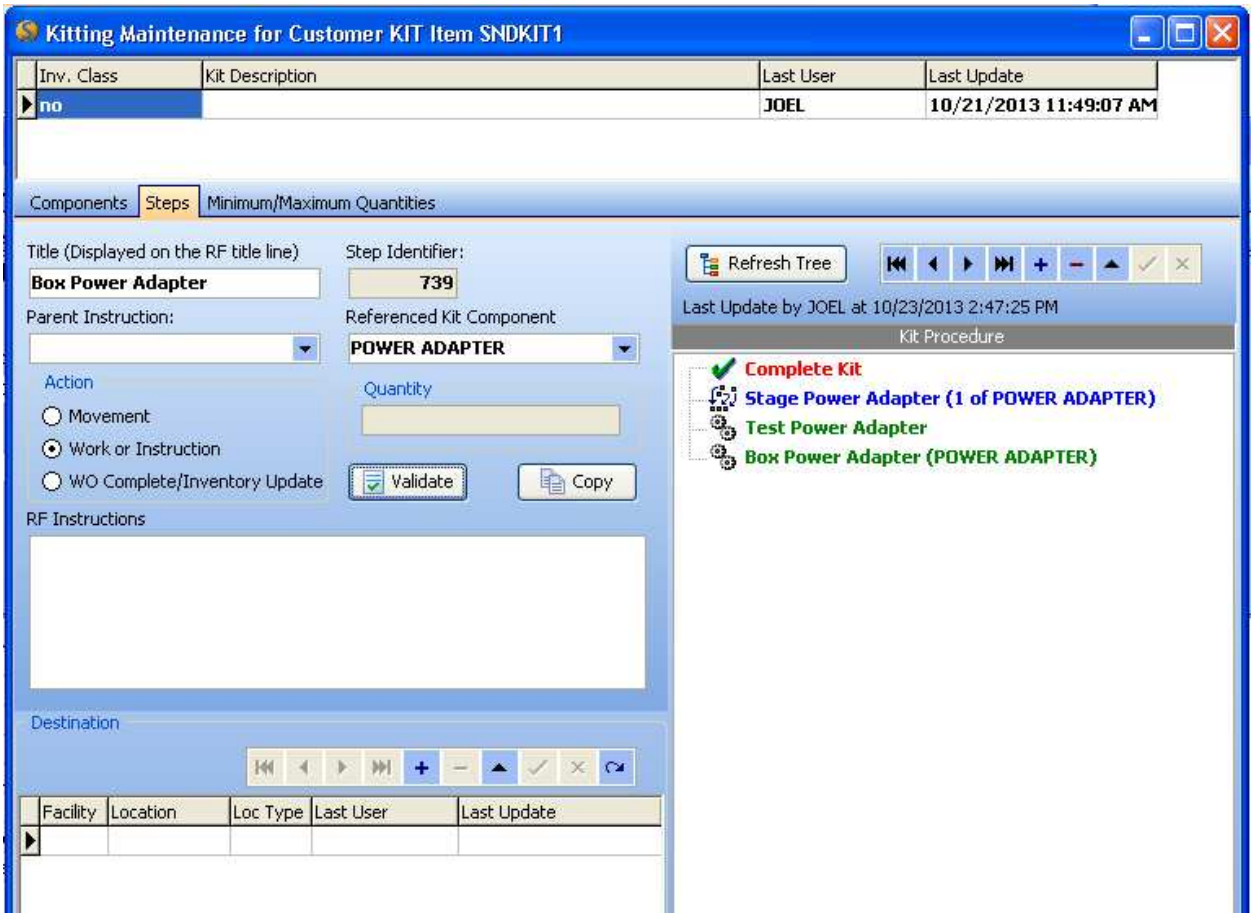
Title (Quantity, Component)

The power adapter requires an additional testing step. We want the adapter tested to make sure the LED indicator light comes on when it is plugged in.

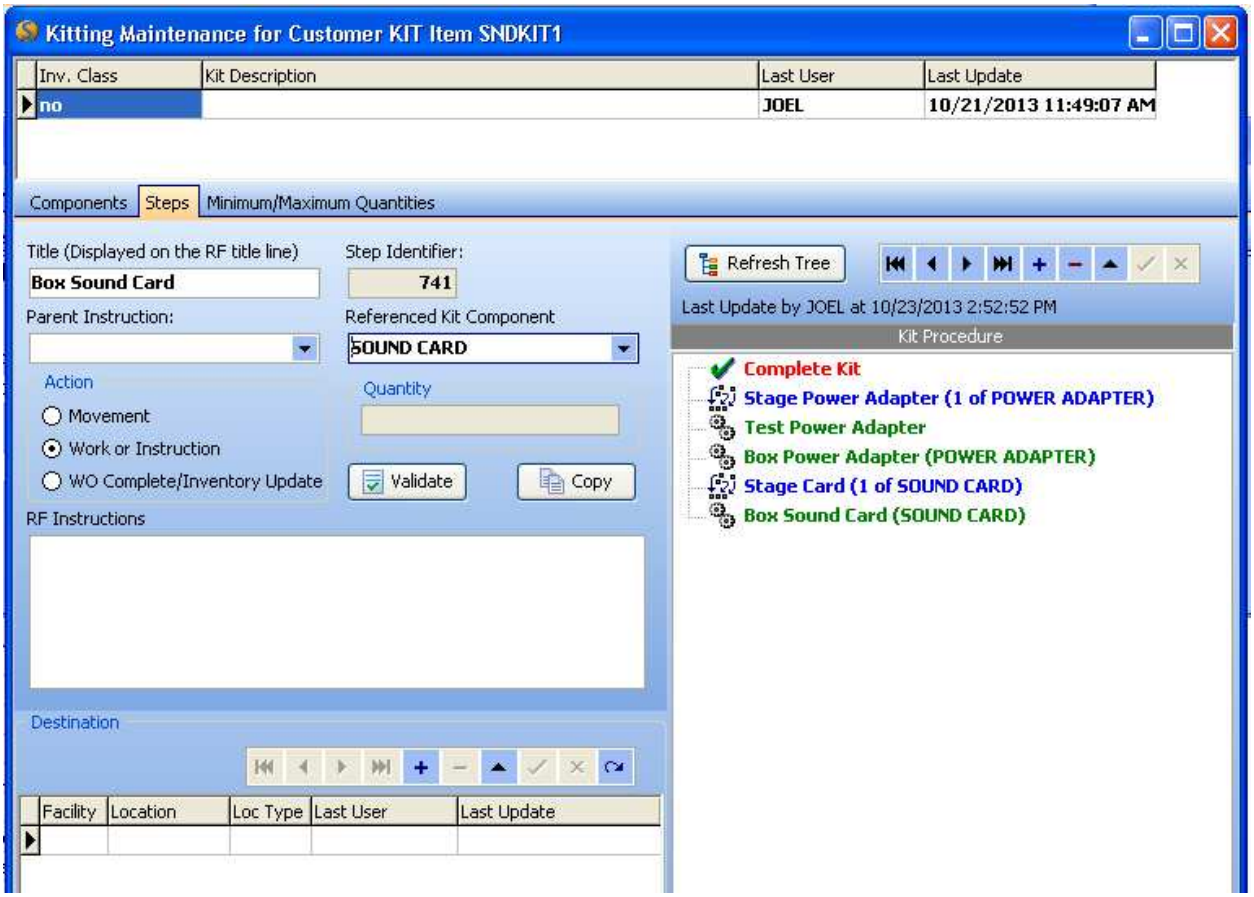


The second step, TEST A.C. is Work or Instruction. The Destination and Quantity fields are closed. (Again, leave Parent blank for now.)

The only step remaining for the POWER ADAPTER is to put it in the box. (This setup assumes there is a supply of suitable boxes for the sound kits kept in the kitting staging area.)



Now enter two steps for the SOUND CARD, similar to the first and last steps for the POWER ADAPTER. First there is a Movement step, STAGE CARD, to pick a SOUND CARD component and move it to the kitting staging area. Then there is a Work or Instruction step, BOX CARD, to put the component in the box. After they are entered the Procedure looks as follows:



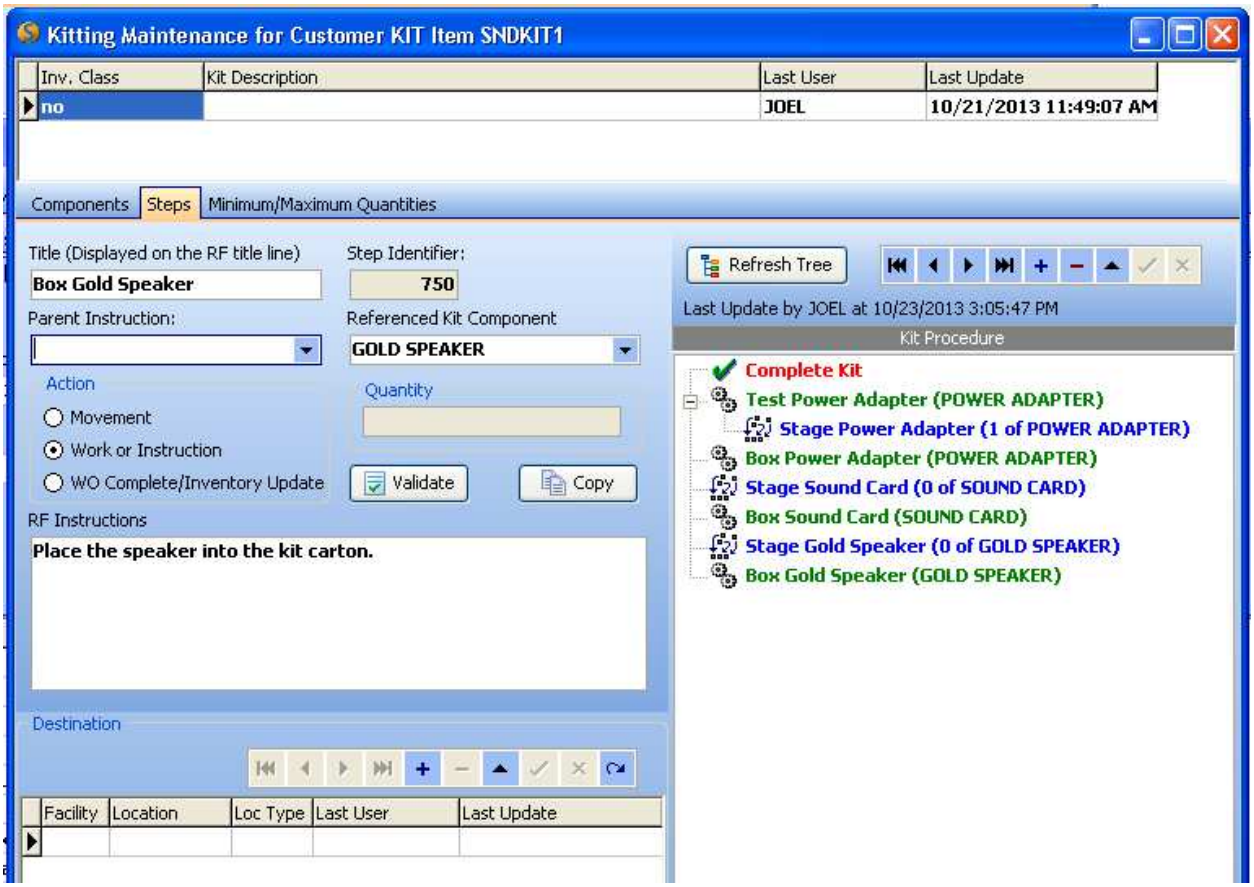
The last component, GOLD SPEAKER, is added in a similar manner to the SOUND CARD.

Work Order Procedure Sequencing

Once all the lines of the Work Order Procedure have been entered, the hierarchy of execution needs to be built. We will now indicate the dependencies of the steps by assigning the Parent step to every step except the last.

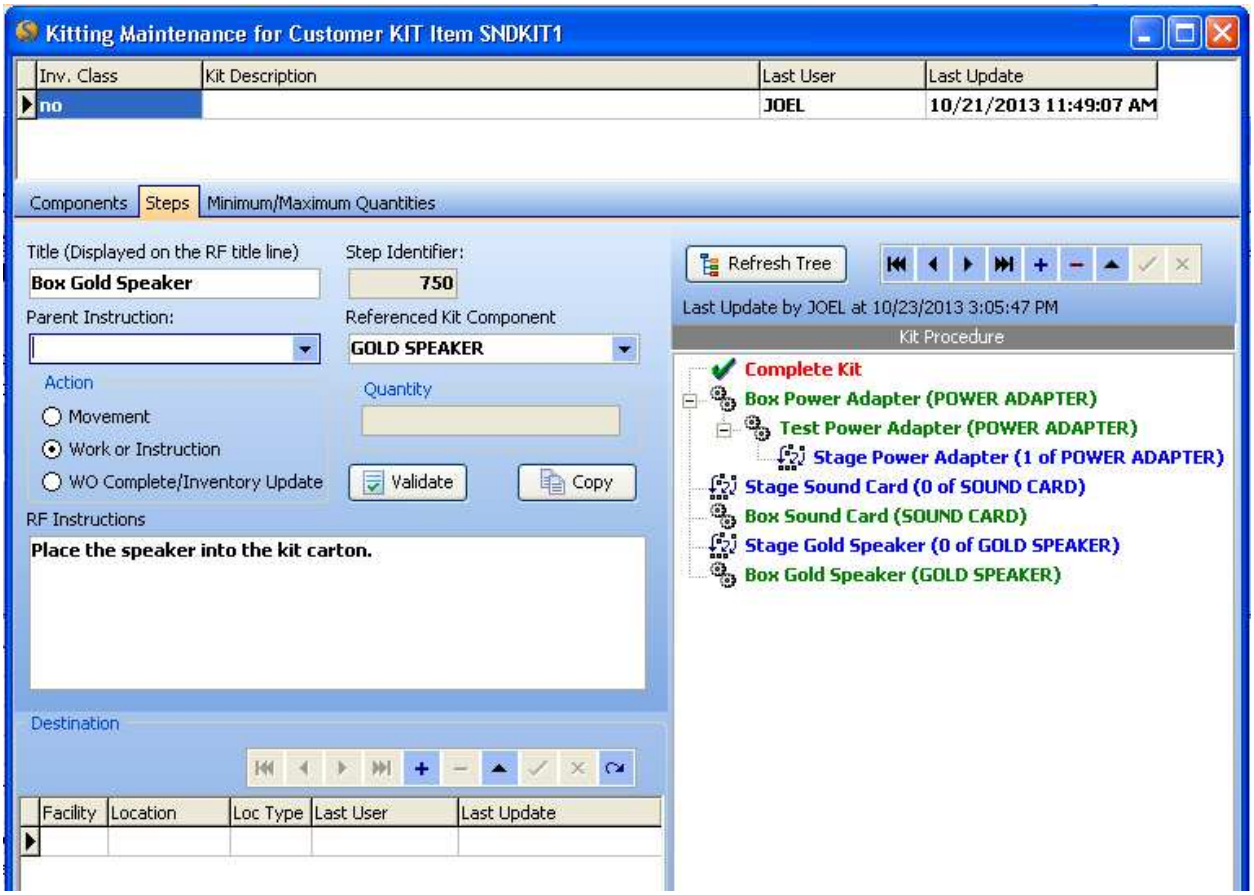
You can set the work order procedure hierarchy from the bottom up or from the top down, as you choose. For this sample, we will start from the bottom of the tree. Remember that the finished kit is at the top of the tree, and that a “Parent” step is the one that logically must follow a given step – the Parent step must wait for the child step to finish.

The bottom of the tree is the earliest step for each component. For the POWER ADAPTER, the STAGE ADAPTER step is first. The step that must wait for it is the TEST A.C. step. Select the STAGE ADAPTER line, and fill in the Parent field with TEST A.C. from the drop down list. When you post the edit, you get the following:



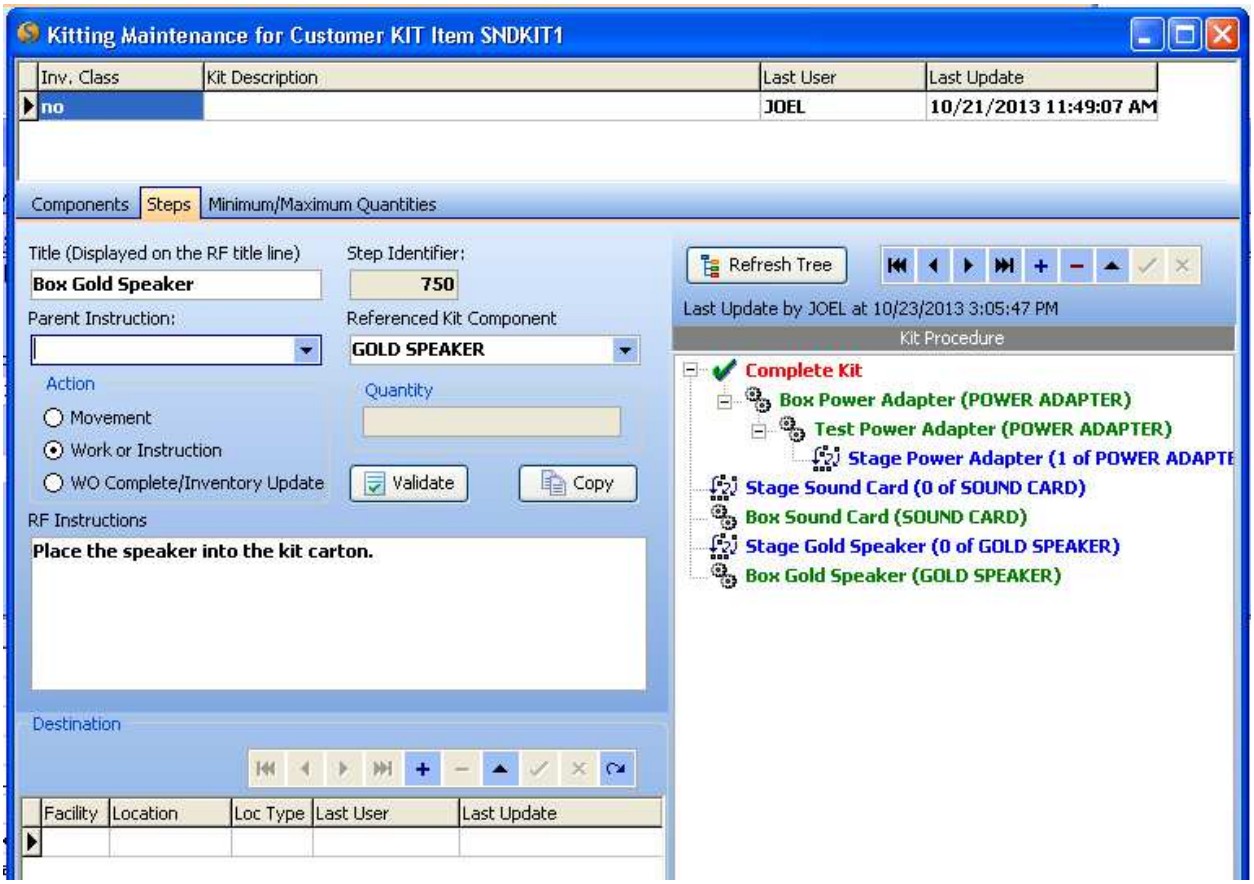
The only lines that changed are the first two – STAGE ADAPTER is now a hierarchical dependent of TEST A.C.

Now select the TEST A.C. line. The step that must wait for TEST A.C. to complete is BOX ADAPTER. Select the Parent field, select BOX ADAPTER from the drop-down list, and post the edit. The result is:



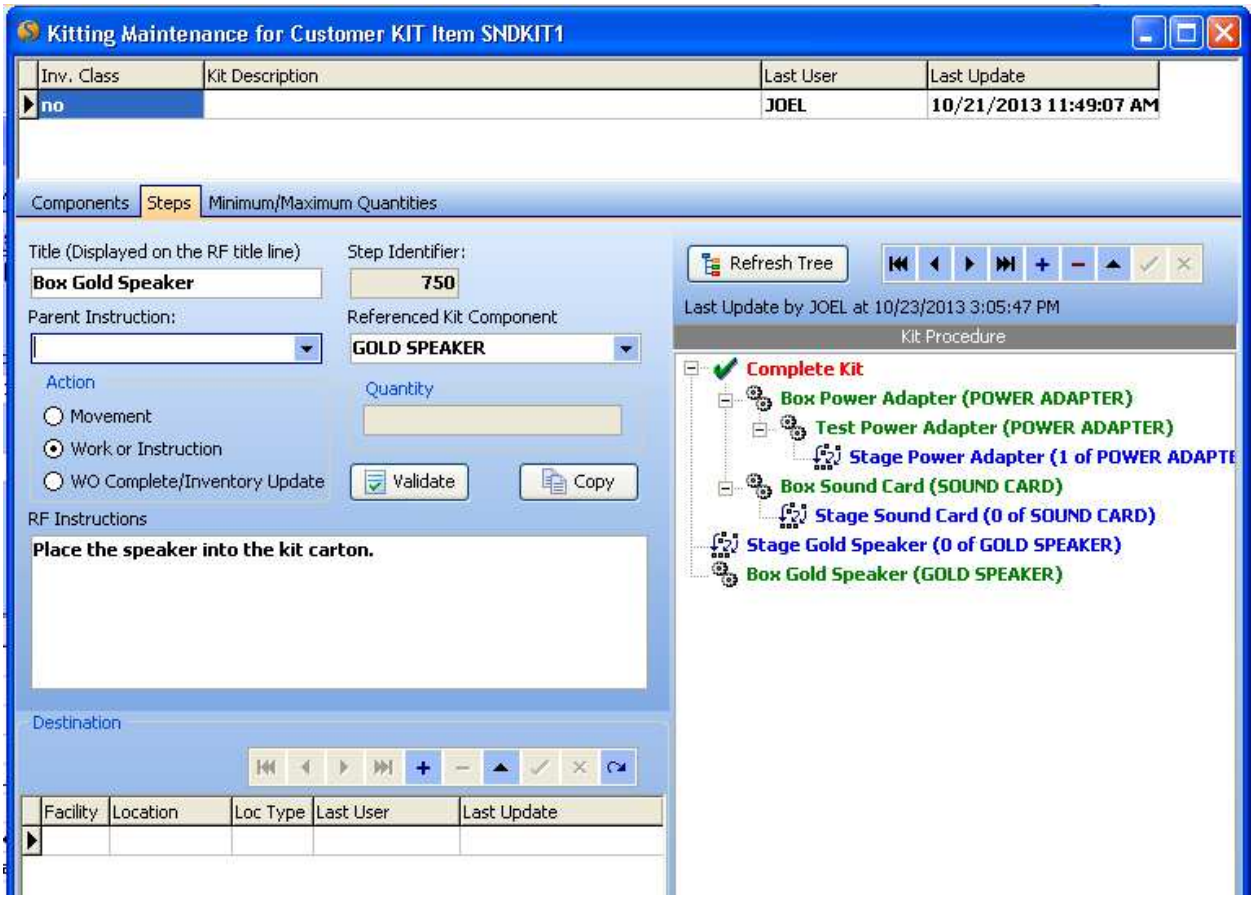
You can see the hierarchy building. The BOX ADAPTER step must wait for the TEST A.C. step, which in turn must wait for the STAGE ADAPTER step.

Now select the BOX ADAPTER step. The only step that must wait for BOX ADAPTER to complete is SOUND KIT COMPLETE. The other components may be picked and staged without a procedural dependency on BOX ADAPTER. In the Parent field of BOX ADAPTER, select SOUND KIT COMPLETE, and post your edit.



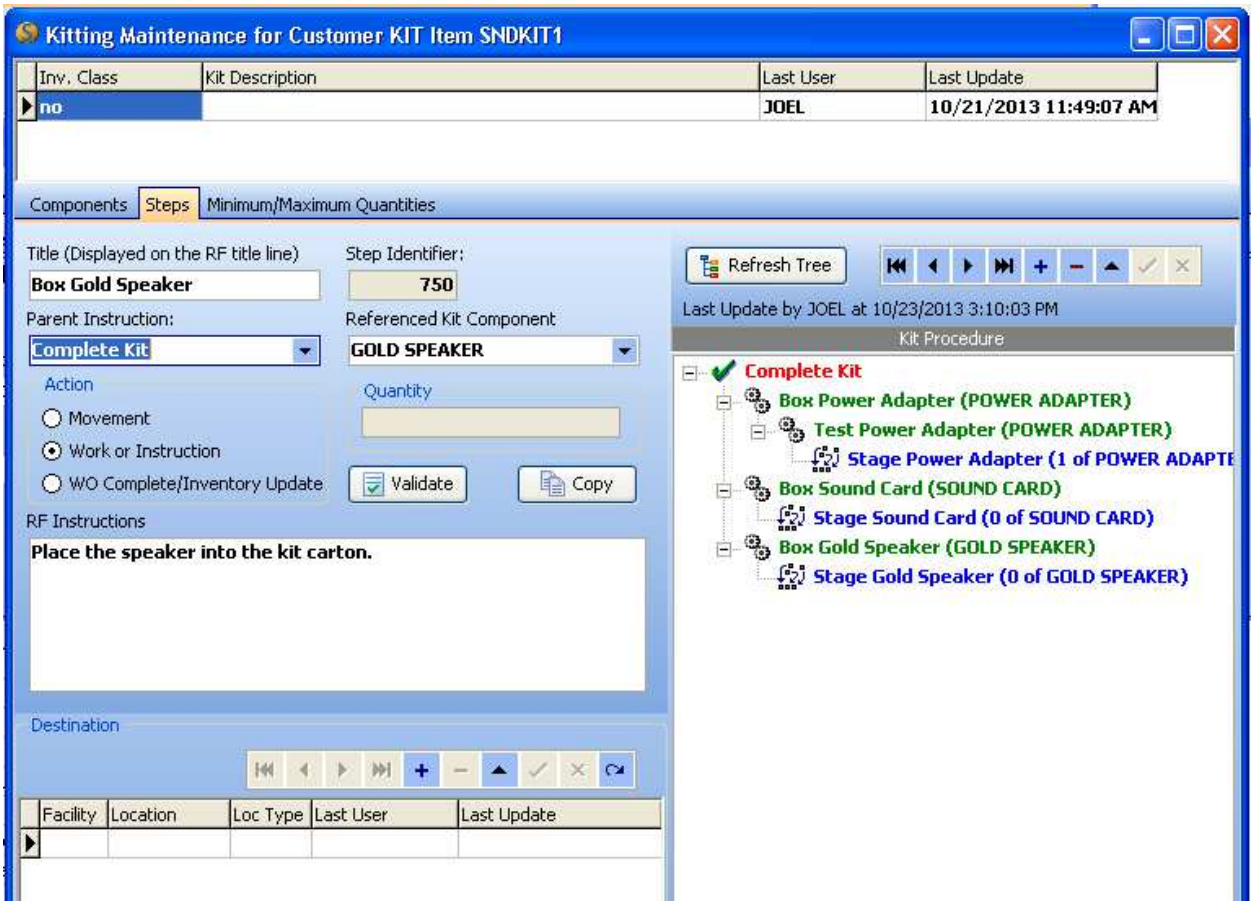
See how the BOX ADAPTER step and its dependent steps have moved to a dependent position under SOUND KIT COMPLETE. The POWER ADAPTER sub processes have been properly defined within the SNDKIT1 Work Order Procedure.

Now do the two lines for the SOUND CARD. The STAGE CARD step must finish before you do the BOX CARD step, so select the STAGE CARD step and set its Parent step to BOX CARD. The BOX CARD step is only dependent to the SOUND KIT COMPLETE step, so select the BOX CARD step and set its Parent to SOUND KIT COMPLETE. When these two are posted, you get the following:



We're nearly finished! We just need to take care of the GOLD SPEAKER.

Assign BOX GOLD SPEAKER as the parent of STAGE GOLD SPEAKER. In the Parent field of GET SPKR SET, select SOUND KIT COMPLETE as the parent of BOX GOLD SPEAKER. When you post the edits, you get:



The process is complete! We built the steps for the procedure in a chronological sequence, and then we assigned Parent steps to create the hierarchically dependent tree structure that SYNAPSE needs. SYNAPSE needs this structure so that it can determine which steps can be performed "in parallel.

The method we just used was "bottom-up", working from the earliest steps to the latest. Once you get used to creating kitting instructions, and are comfortable with the finished tree structure as shown above, you can also create these procedures in a "top-down" fashion.

For "top-down" Work Order Procedure creation, start with the WO Complete / Inventory Update step (like the SOUND KIT COMPLETE step above). Then define the final steps for each component, with the "Complete" step as Parent. Then work your way forward in time, defining the procedure back-to-front, resulting in the top-down tree.

CRT Kitting Maintenance/Release Functions

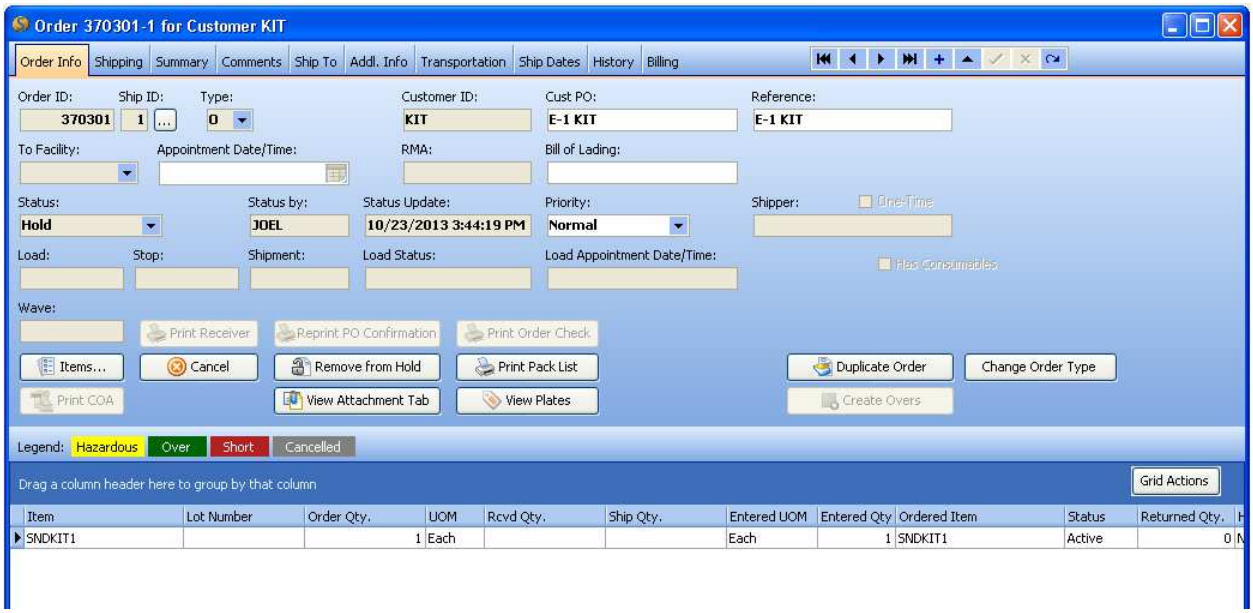
Triggering a kit via an Outbound Order

- Enter an Outbound customer order (Order type "O") that contains a kit item.

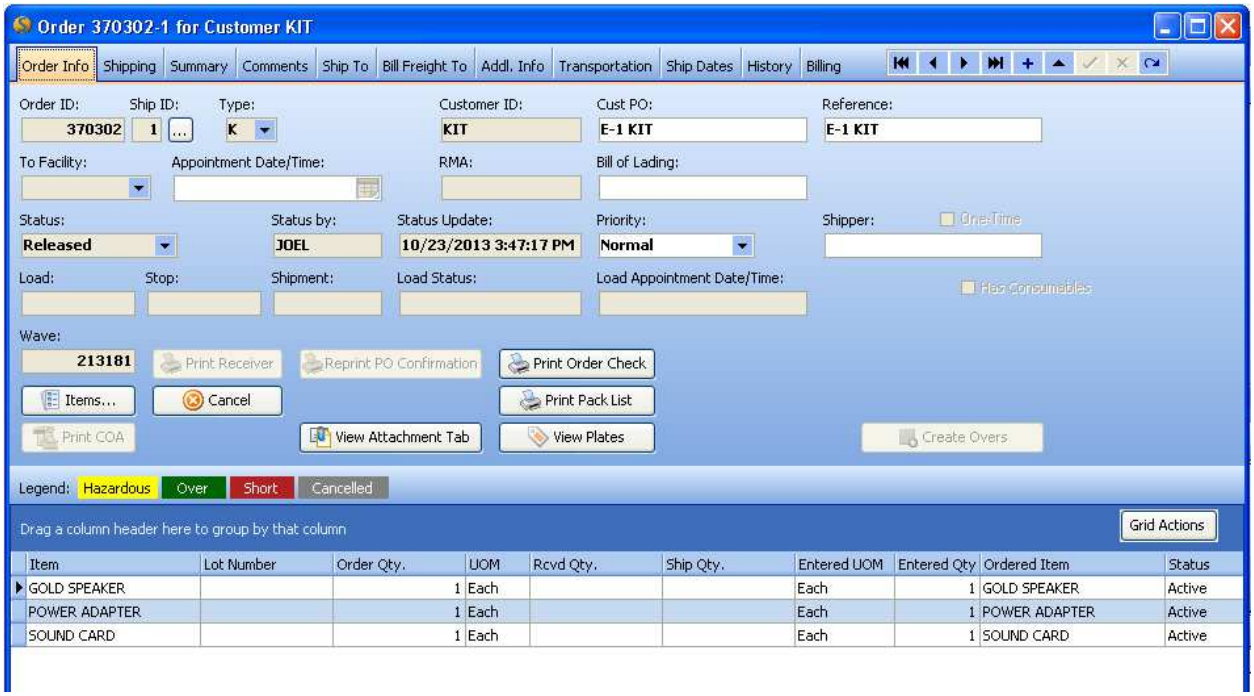
- Upon the release of the order, the system creates a new Kit Work Order (Order type “K”) to fulfill each kit item request.
- The Kit Order(s) become committed and included in the Outbound order's wave.
- The kit line item on the Outbound order contains the kit work order as its "child" order id.
- Conversely, the Kit order itself contains the Outbound order's kit line item as its parent.
- When the wave planner **unreleases** a wave that contains a Kit order, the Kit order is cancelled. Upon re-release, a new Kit order is created.

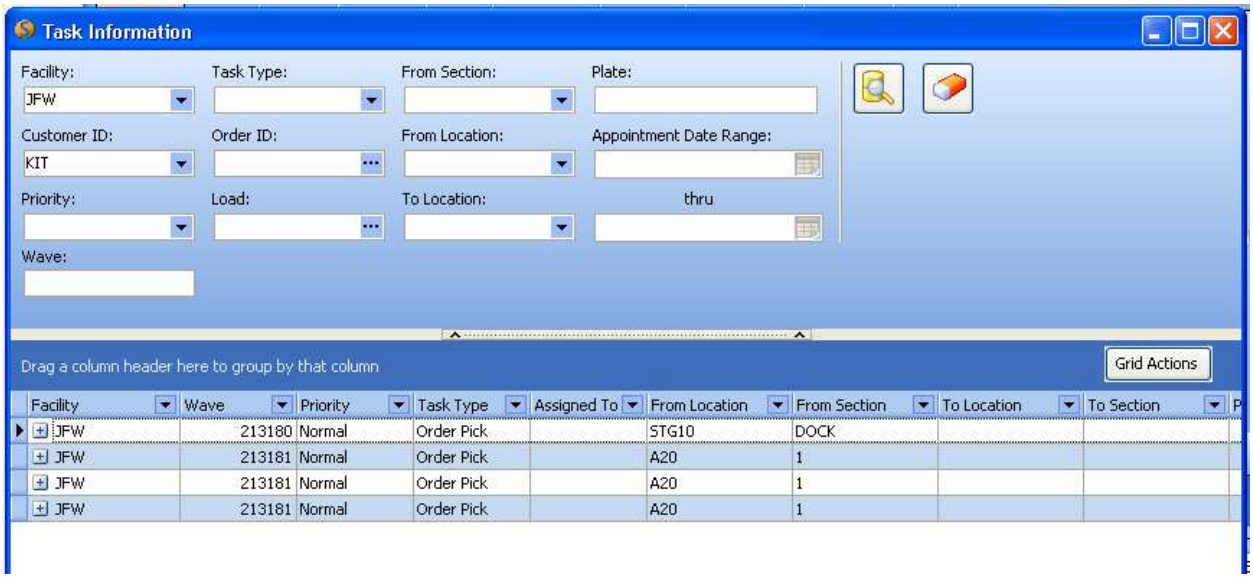
Example of Picking and Staging Components for an outbound order involving a kit item.

In the following example, outbound order # 370301 was manually entered for a quantity of 1 “SNDKIT1”. This order was attached to wave #213181 and the wave was released.

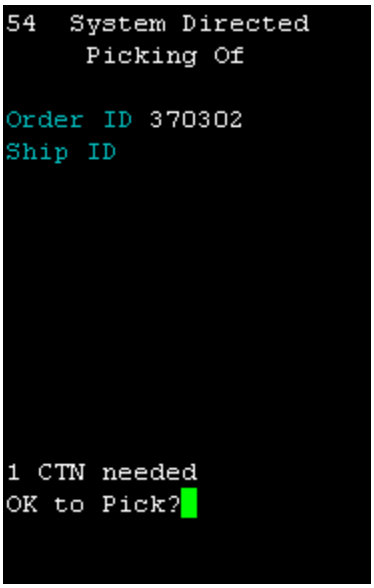


Upon wave release, SYNAPSE created Kit order # 370302 and generated 3 order pick tasks – one for each of the two components. The first step in the processing is to pick the components and stage them at the kitting area.





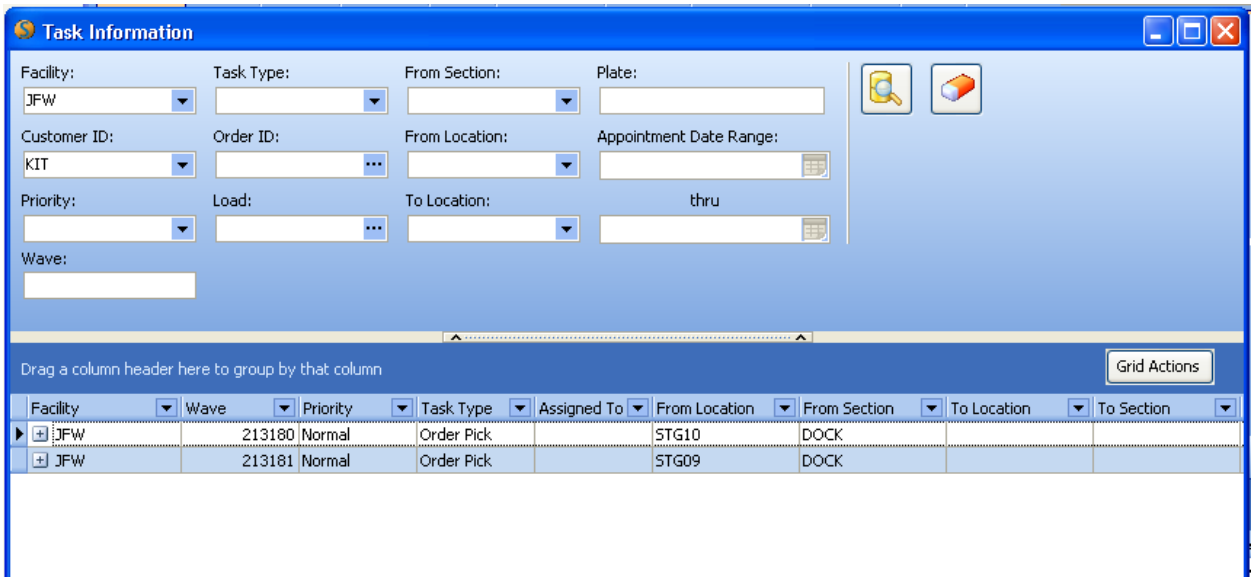
The RF operator signs on for Order Picking (option 54) and enters the kit order 370302. He is prompted to pick the components and stage then at the kitting location designated for the kit – in this example KITSTG.



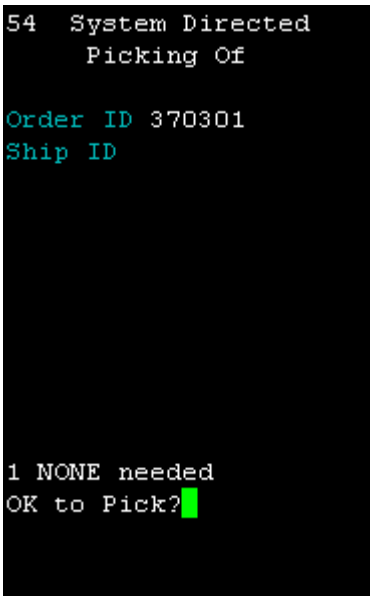
After the operator picks the 3 components, he is then prompted to take the picked components to the staging location for the kit. In this case it is STG09.

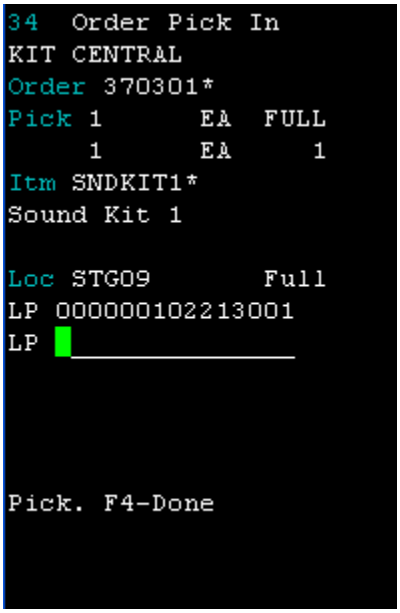
After the components have been staged at the kitting location for the above example, an operator can begin the RF kitting processing under outbound order 370301.

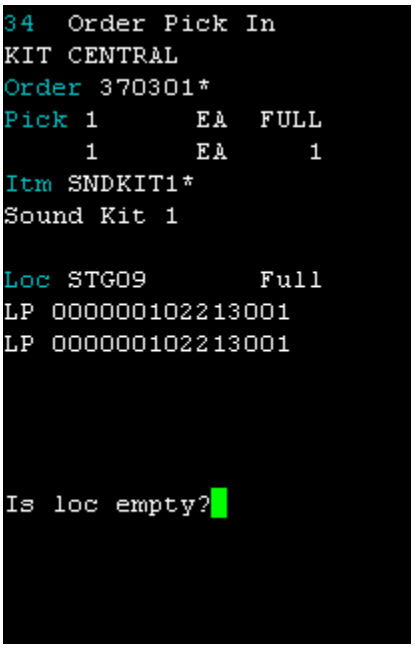
After the kitting is complete, an order pick task is generated to pick item “SNDKIT1” from the kitting location and stage it for loading.



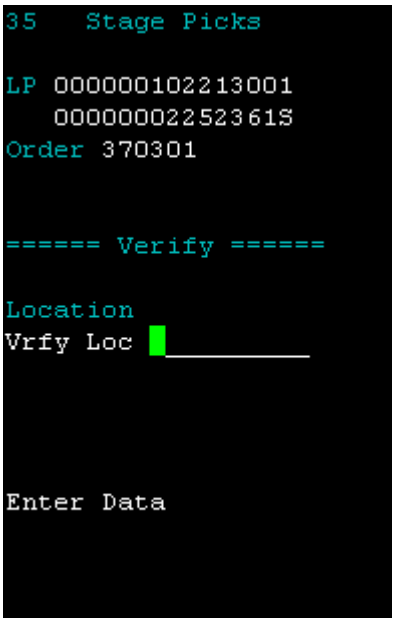
The operator signs on for Order Picking for order 370301.

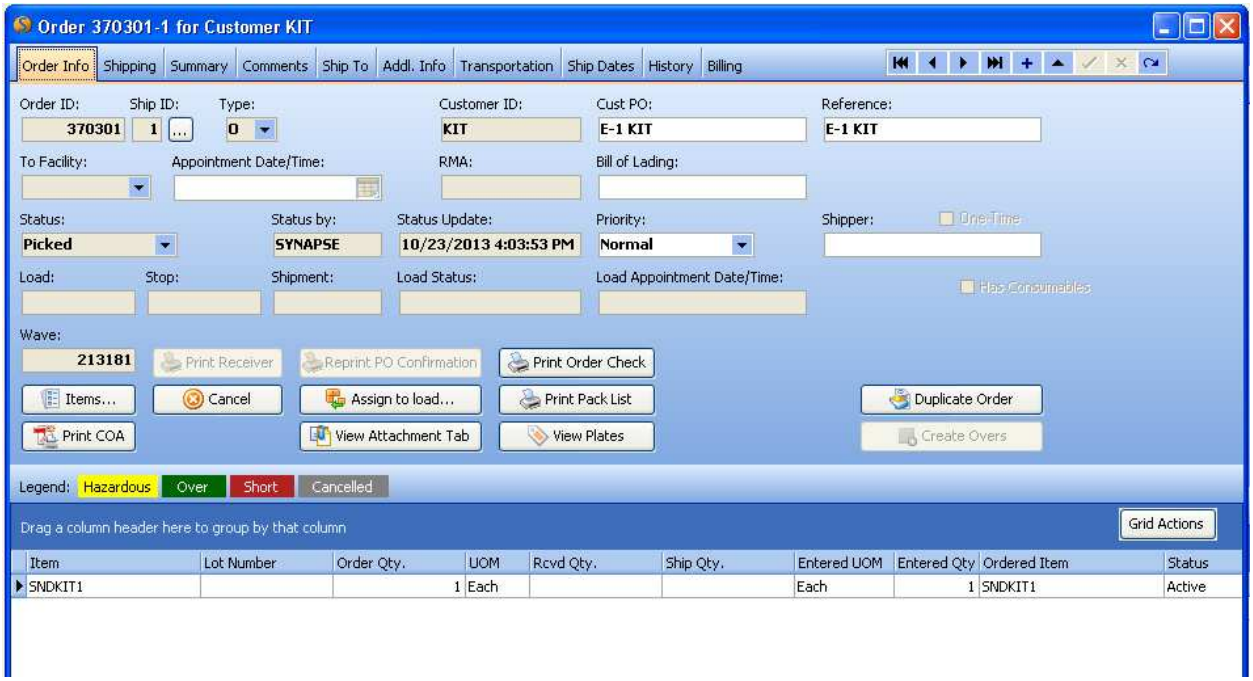

54 System Directed
Picking Of
Order ID 370301
Ship ID
1 NONE needed
OK to Pick?


34 Order Pick In
KIT CENTRAL
Order 370301*
Pick 1 EA FULL
1 EA 1
Itm SNDKIT1*
Sound Kit 1
Loc STG09 Full
LP 000000102213001
LP
Pick. F4-Done



After picking the SNDKIT1, the operator responds “Y” to the “Is loc empty” prompt.



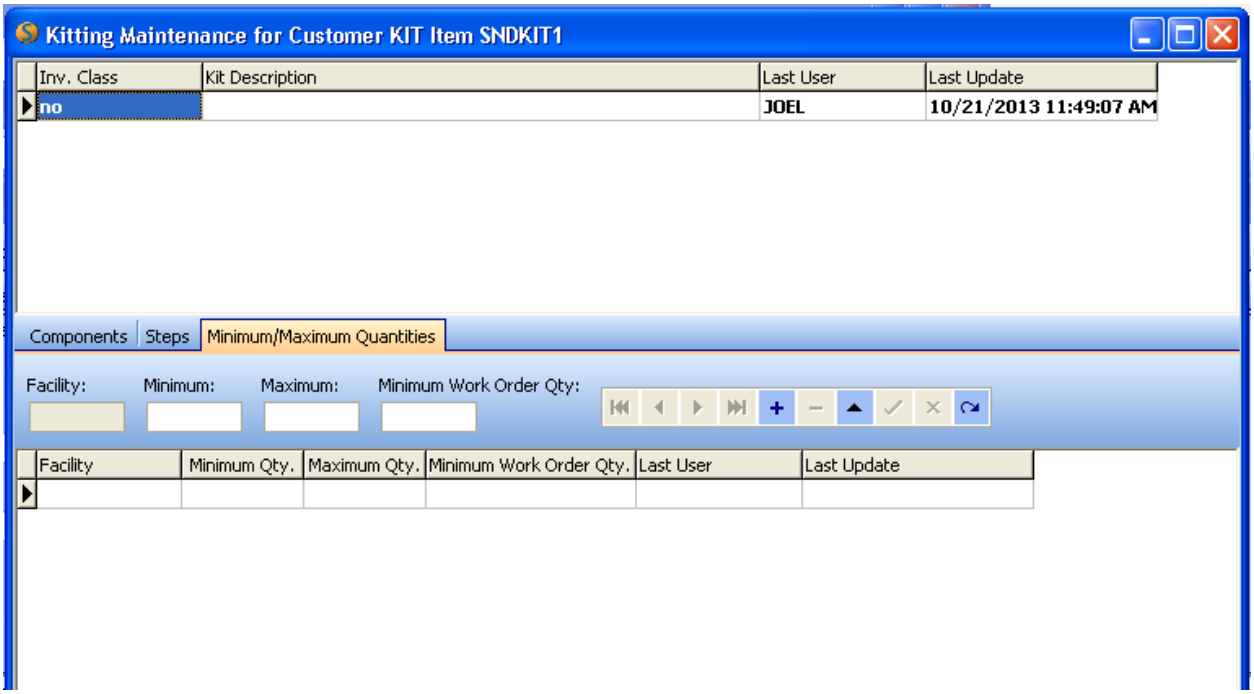


Inventory Commitment

The commitment logic ignores Kitted Items when determining if an outbound order is to be cancelled because of a commitment shortage.

Customer/Item/Item Specs/Name/Kit Maintenance/Minimum/Maximum Quantities

This screen is used to specify the work order quantities for kits that you want to be driven by automatic trigger for stock fill. See the section below for Make-to-Stock kits for more detailed information.



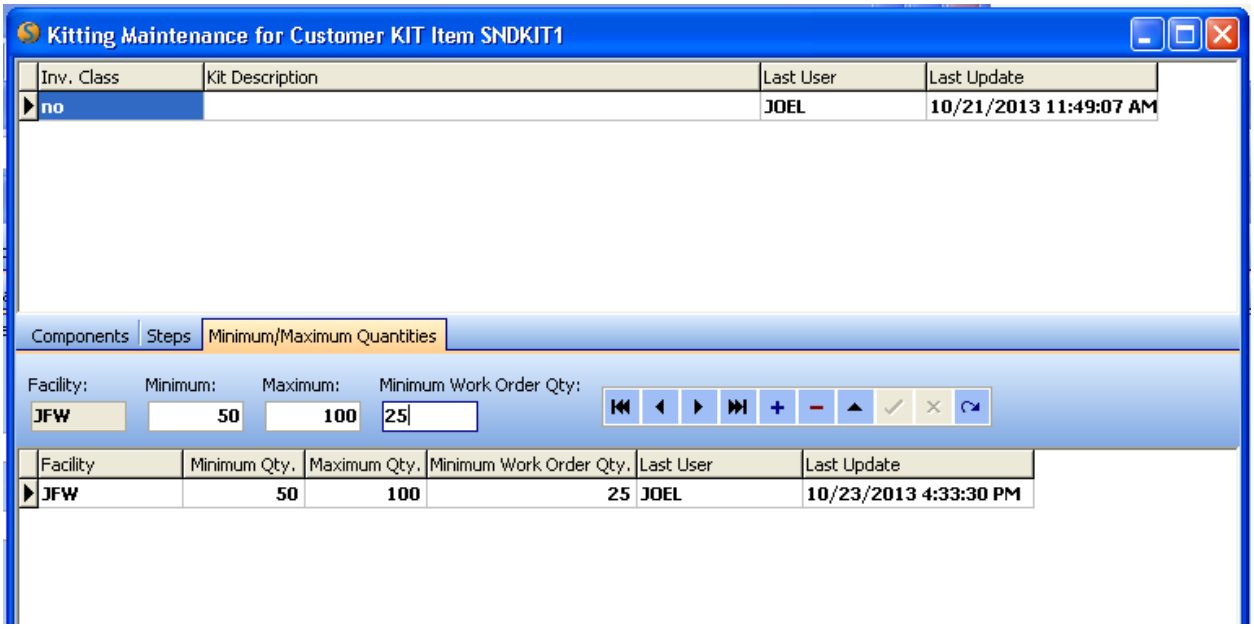
Kitting for Stock

To generate the first batch of kits for inventory, manually enter a Workorder Order (type "W"), remove it from hold, add it to a wave and release the wave. No shipping information is needed on the workorder.

Kit Maintenance Form--Minimum/Maximum Quantity Tab

- Synapse uses the Minimum Work Order Quantity and the min/max quantities for determine if a replenishment Work Order should be created.

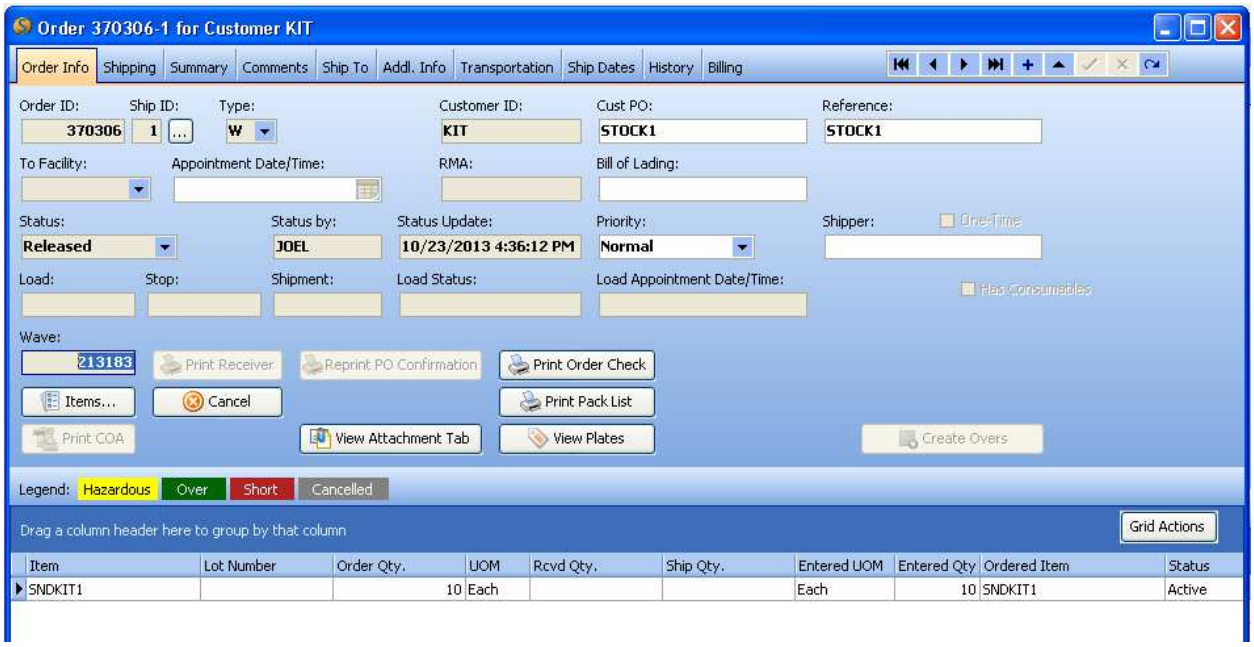
Example:	Min	50
	Max	100
	Min Work Order	25



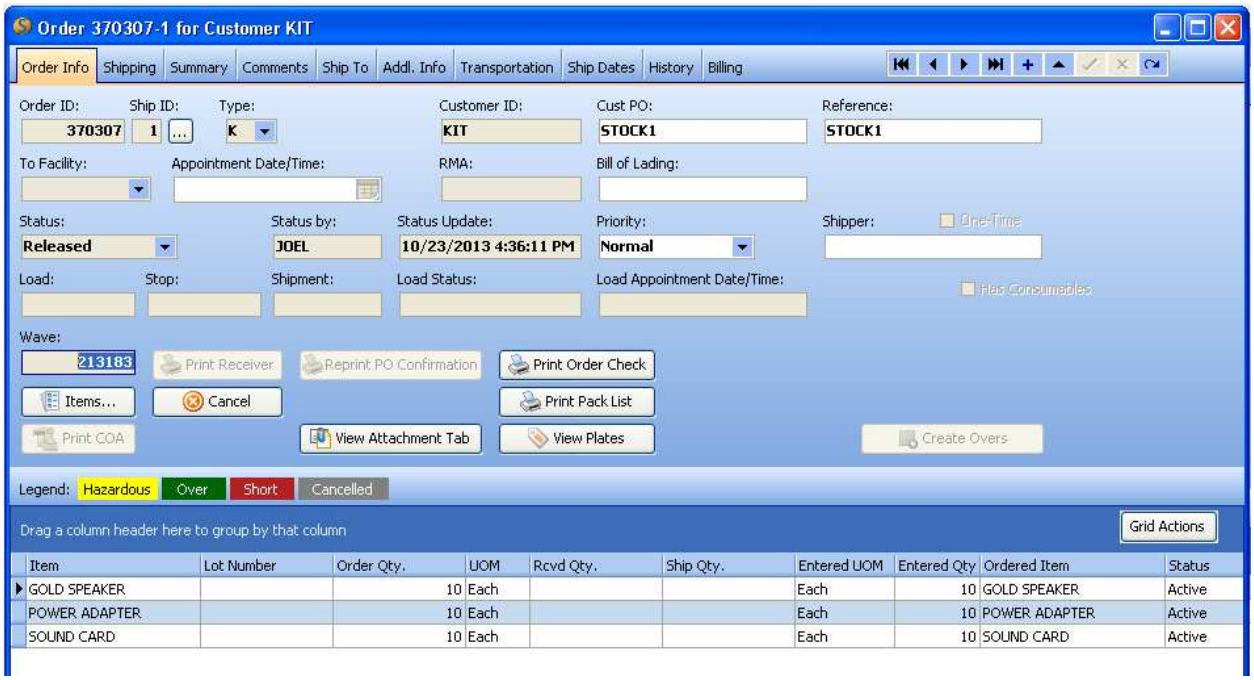
- Each time a LiP quantity of the item decreases, SYNAPSE checks to see if the on-hand quantity is less than the minimum quantity.
- If the minimum has been reached, the system will generate a Work Order as long as the replenishment quantity meets or exceeds the min. work order quantity. So, in the example above, once the inventory level hits 49, a work order for 51 units would be generated to bring the inventory level up to 100 (the max).
- If the quantity needed to bring the inventory level up to the minimum is less than the minimum work order quantity, no replenishment work order is generated--this prevents a number of small work orders from being generated.
- The Work Orders are generated in Hold status (status 0) so they must be removed from hold, reviewed and released by the wave planner.

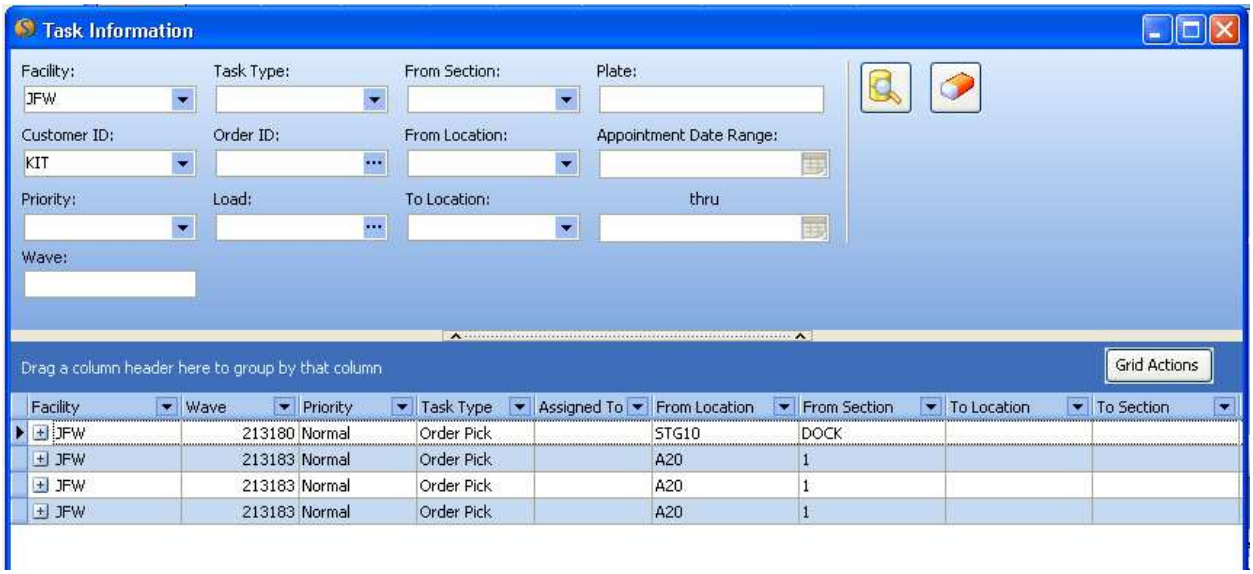
Example of Picking and Staging Components for a Work Order.

In the following example, order # 370306 was manually entered for a quantity of 10 SNDKIT1. This work order was attached to wave #213183 and released.

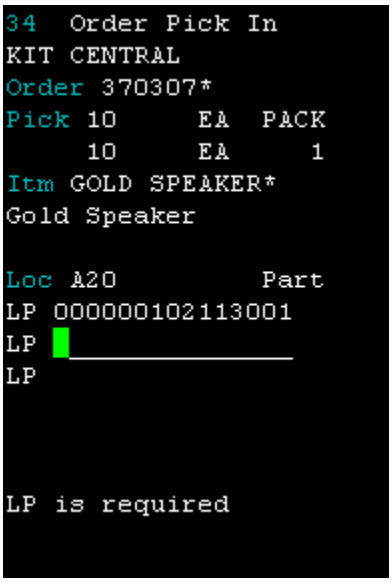


Upon wave release, SYNAPSE created Kit order # 370307 and generated 3 order pick tasks – one for each of the two components.

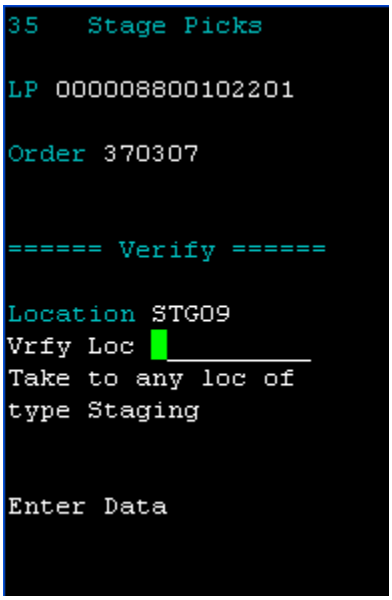




The RF operator signs on for Order Picking (option 54) and enters order 370307. He is prompted to pick the components and stage then at the kitting location designated for the kit.



The operator is then prompted to take the picked components to the staging location for the kit. In this case it is STG09.



After the components have been staged at the kitting location for the above example, an operator can begin the kitting processing under work order 370306.

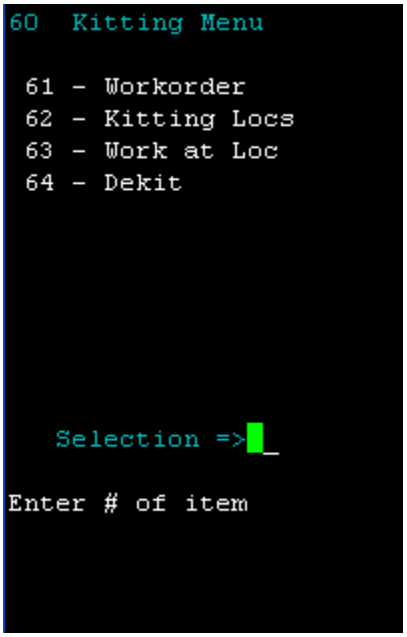
RF Kitting

Note: before you can use RF kitting, you need to:

1. Build a "kitting" item.
2. Enter an order for the item
3. Plan and release the wave(s) - there could be multiple waves
4. Pick the components – this will be the child or “K”it order items
5. Stage the components in the Kitting location.

   Note: the components of a “kitted” item are picked and staged separately (not picked in one batch and staged together). Each component generates am order pick task.

60 Kitting Menu



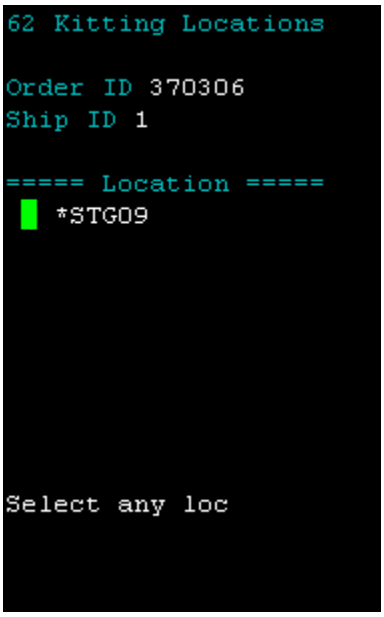
The RF portion of kitting consists of 4 functions under the Kitting Menu (option 60):

- 61 - Workorder
- 62 - Kitting Locs
- 63 - Work at Loc
- 64 - Dekit

62 Kitting Locations

Kitting Locations (option 62) will display a scrollable list of all locations that contain "kitting components" for a specific order. The operator must enter an Order ID (Ship ID is optional). If the location is one at which "work is ready to be performed", the name of the location will be preceded by an asterisk "*". Work is ready to be performed at a location if, for any step in the kitting process, there is at least 1 component from each child step at that location. Valid function keys while entering the Order ID and Ship ID are:

- F1 - exit to menu
- F3 - transfer to Misc Charges (93)
- F5 - transfer to Profile (95)
- F7 - exit to menu



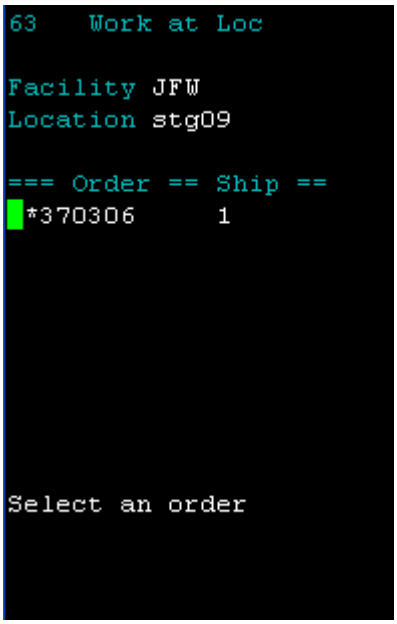
The operator can "select" any displayed location by entering a non-blank character before the location name and pressing Enter - this will cause control to transfer to Workorder Kit (option 61) with the entered Order and the selected location. Upon return from Workorder Kit, this screen will be automatically updated to reflect any changes.

Valid function keys while in the scrollable region are:

- F1 - return to Order ID and Ship ID entry
- F7 - exit to menu
- F9 - scroll down
- F10 - scroll up

63 Work at Loc

Work at Loc (option 63) will display a scrollable list (Order ID and Ship ID) of all orders that have kitting components at a specific location. Note that the order displayed is not a kitting order, but its parent order. The operator must enter a location. If the order has "work ready to be performed", the Order ID and Ship ID will be preceded by an asterisk "*".



Valid function keys while entering the location are:

- F1 - exit to menu
- F3 - transfer to Misc Charges (93)
- F5 - transfer to Profile (95)
- F7 - exit to menu

The operator can "select" any displayed order by entering a non-blank character before the Order ID and pressing Enter - this will cause control to transfer to Workorder Kit (option 61) with the entered location and the selected order.

Upon return from Workorder Kit, this screen will be automatically updated to reflect any changes.

Valid function keys while in the scrollable region are:

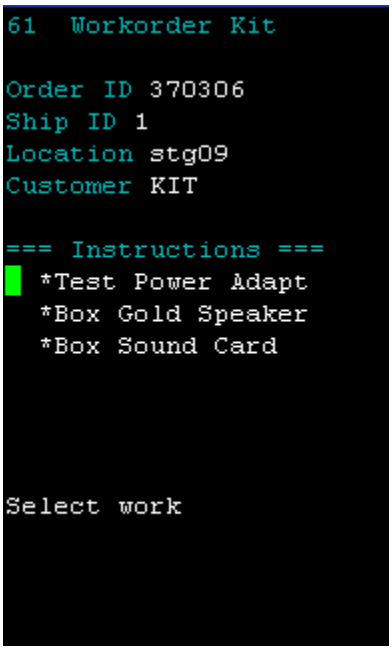
- F1 - return to Order ID and Ship ID entry
- F7 - exit to menu
- F9 - scroll down
- F10 - scroll up

61 Workorder Kit

This is the RF function that directs the kitting operation. Workorder Kit (option 61) will display a scrollable list of all "instruction titles" (work to be performed on components) for a specific order and location.

If this function is selected from the menu, then the operator must enter Order ID, Ship ID and Location. Otherwise, these fields will be automatically populated and the cursor will be placed in the scrollable area. If the instruction is ready to be performed (at least one component from each child instruction is present at the location), the title will be preceded by an asterisk "*". The title may be truncated to fit on one line.

The sample RF screens below are for item “SNDKIT1” that we built in the beginning of the chapter

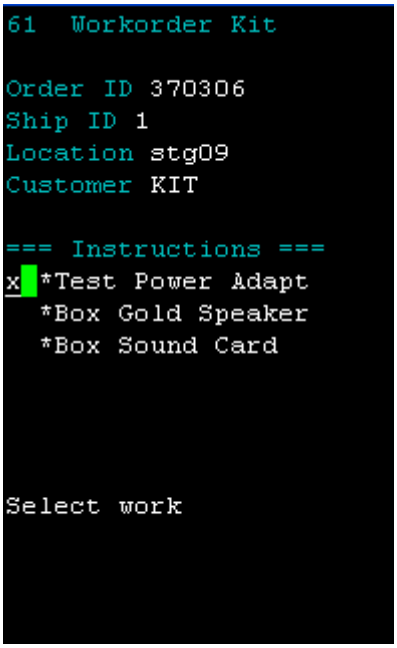


Valid function keys while entering the Order ID, Ship ID and Location are:

- F1 - exit to menu or calling program
- F2 - transfer to Plate Inquiry (92)
- F3 - transfer to Misc Charges (93)
- F5 - transfer to Profile (95)
- F7 - exit to menu

- F11 - transfer to Reprint LP (21)

The operator can "select" any displayed instruction by entering a non-blank character before the title and pressing Enter.



Valid function keys while in the scrollable region are:

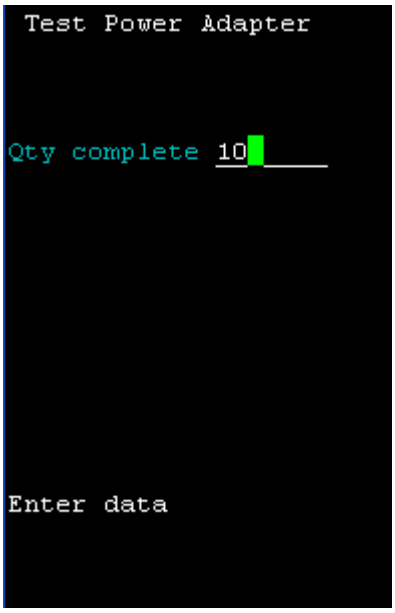
- F1 - return to Order ID, Ship ID, and Location entry or calling program
- F7 - exit to menu
- F9 - scroll down
- F10 - scroll up

Once the operator has selected an instruction, the screen will be updated to contain the complete title (on the top 2 lines) and a scrollable list of instructions.

Valid function keys while the instructions displaying the instructions are:

- F1 - return to instruction title selection
- F2 - transfer to Plate Inquiry (92)
- F3 - transfer to Misc Charges (93)
- F4 - indicate completion of the instruction
- F5 - transfer to Profile (95)
- F7 - exit to menu
- F9 - scroll down
- F10 - scroll up
- F11 - transfer to Reprint LP (21)

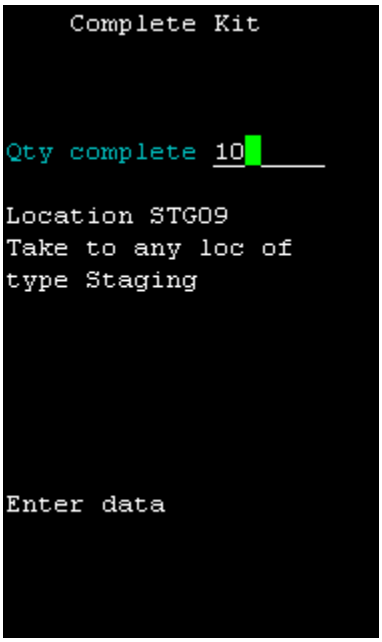
If the RF operator has indicated completion of the instruction (F4), a new screen will be displayed in which the operator must enter a quantity (complete) and optionally a location (if the instruction is for movement or kit complete).

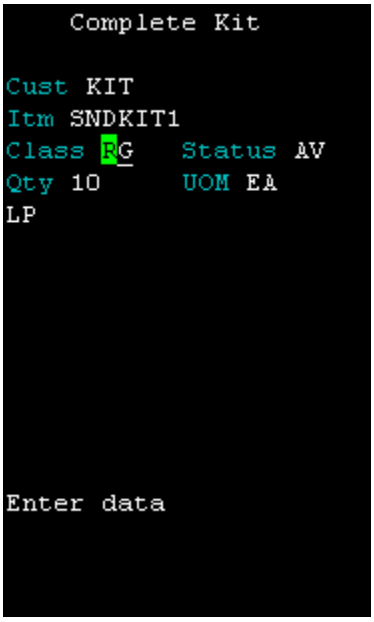


If a location is required, a suitable location and/or location type will be displayed for the operator. Edits for valid quantity and location are also performed. Valid function keys while in this area are:

- F1 - return to instruction display
- F2 - transfer to Plate Inquiry (92)
- F3 - transfer to Misc Charges (93)
- F5 - transfer to Profile (95)
- F6 - proceed to scrap entry (any entered data is ignored)
- F7 - exit to menu
- F11 - transfer to Reprint LP (21)

If the completed instruction was for "kit completion", then the operator will be requested to enter data similar to the “in 1-step receiving” (e.g. inventory class, inventory status, unitofmeasure, LP, lotno, ...). The quantity on the LP must be equal to the quantity completed after UOM translation. Valid function keys while in this area are:

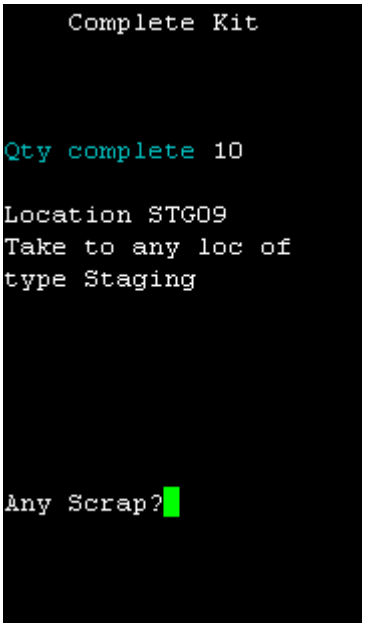




- F1 - exit entry
- F2 - transfer to Plate Inquiry (92)
- F3 - transfer to Misc Charges (93)
- F5 - transfer to Profile (95)
- F7 - exit to menu
- F11 - transfer to Reprint LP (21)

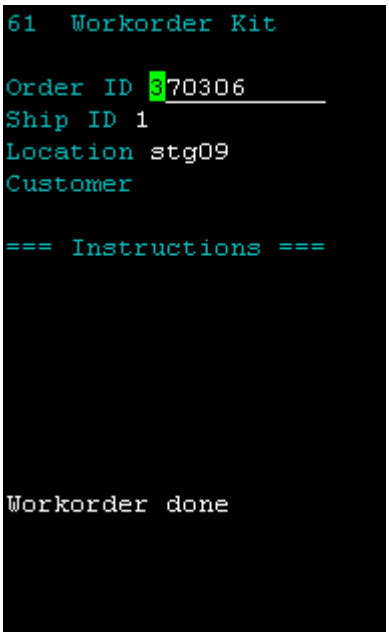
If any LPs were created (i.e. kit completion), the RF operator will be asked whether any more kits have been completed (i.e. "Done. More?"). If the RF operator responds with Y, then entry of quantity complete and LP data will be repeated.

If any LPs were created (i.e. kit completion) or the RF operator pressed F6 while displaying the instructions, then the operator will be asked to enter data for any scrapped component. This data includes item, inventory class, inventory status, quantity, unitofmeasure and LP. Valid function keys while in this area are:



- F1 - exit entry
- F2 - transfer to Plate Inquiry (92)
- F3 - transfer to Misc Charges (93)
- F5 - transfer to Profile (95)
- F7 - exit to menu
- F11 - transfer to Reprint LP (21)

After a "scrap LP" has been built, the RF operator will be asked whether any more scrap is to be entered (i.e. "Done. More?"). If the RF operator responds with Y, then entry of scrap data will be repeated.



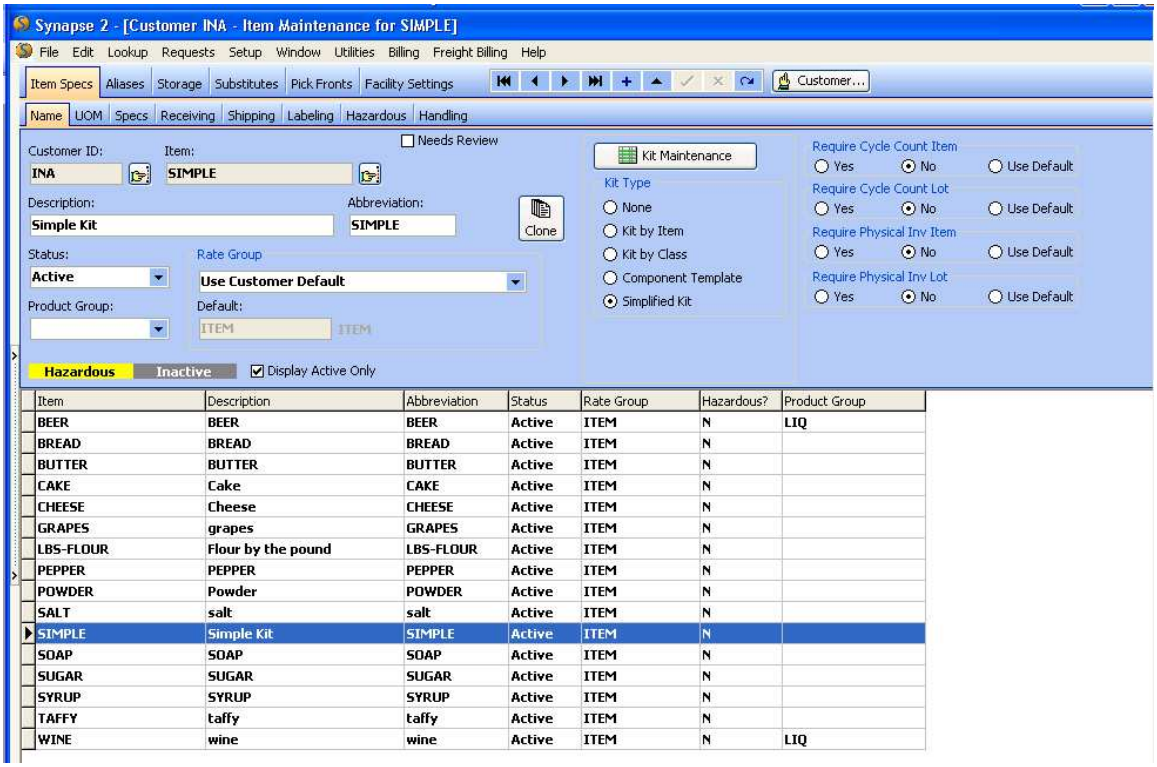
If any LPs have been created, then the following will occur:

- All automatic charges will be computed based on the KIT business event.
- The operator will be asked to enter any prompted charges based on the KIT business event.
- The operator will be prompted for any labels based on the KIT business event.
- Pick tasks will be generated for any kits needed by non-workorder orders (Make to Order)
- Putaway of kits for workorder orders will be performed (Make to Stock)
- Putaway of scrap LPs will be performed

Note: The status final status for the Kit and Work orders used for kitting is 6 – Picked.

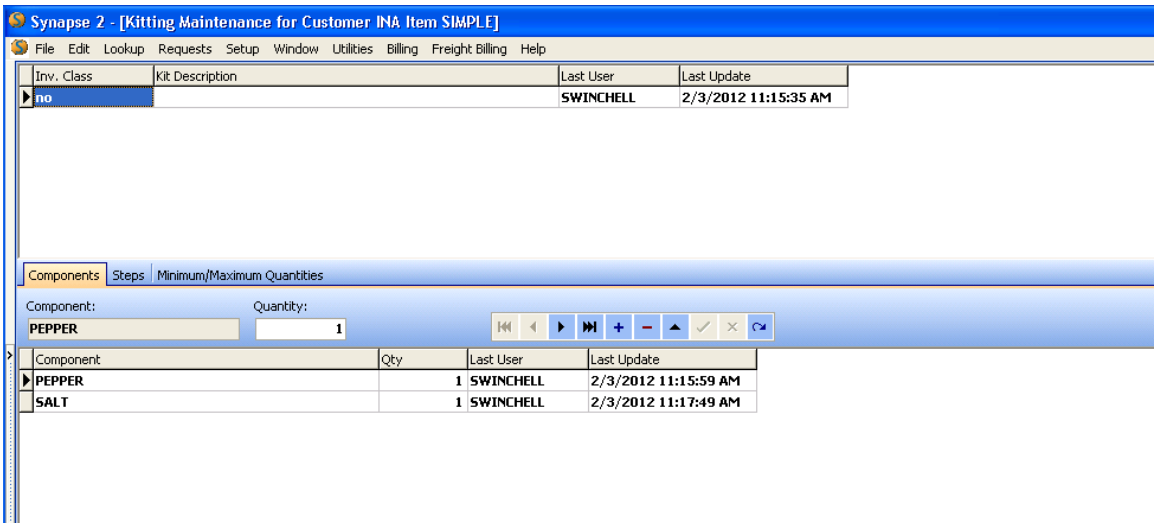
Simplified Kitting

A modification has been added to kitting and is designed to allow for a much simpler kitting process than what is provided for in Synapse already. With Simplified Kitting, there is no actual kitting process. The objective is to allow a customer to order a kit item and the system directs users to pick the components of that kit. No actual assembly or other handling of the goods is required. RF Kitting is not used.



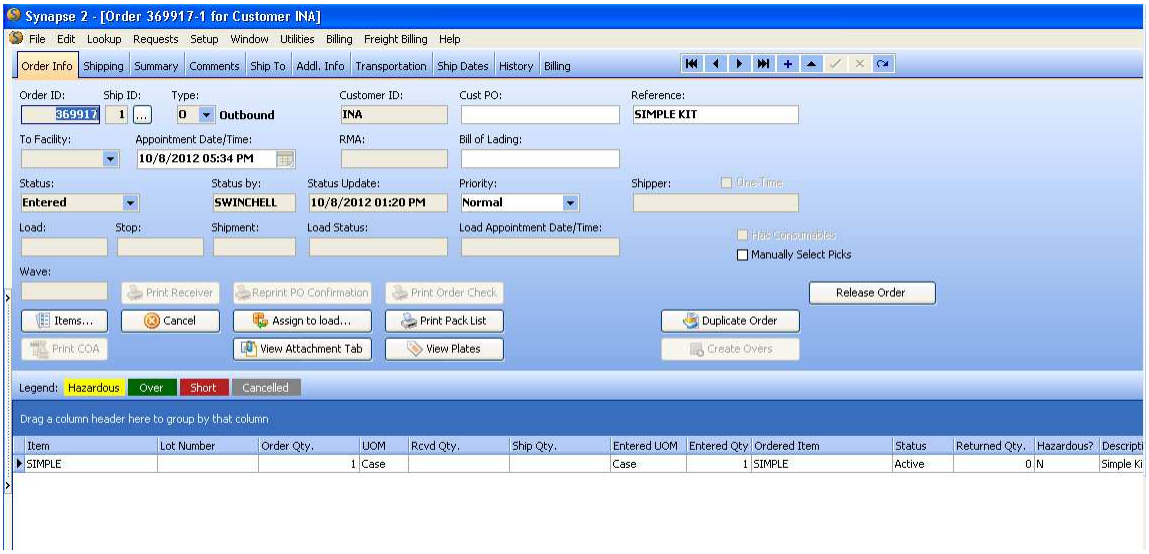
Kit Maintenance

In the Kitting Maintenance for kit items, only components may be setup. Steps or Min/Max quantities will have no effect, although the user will not be prevented from configuring those options.



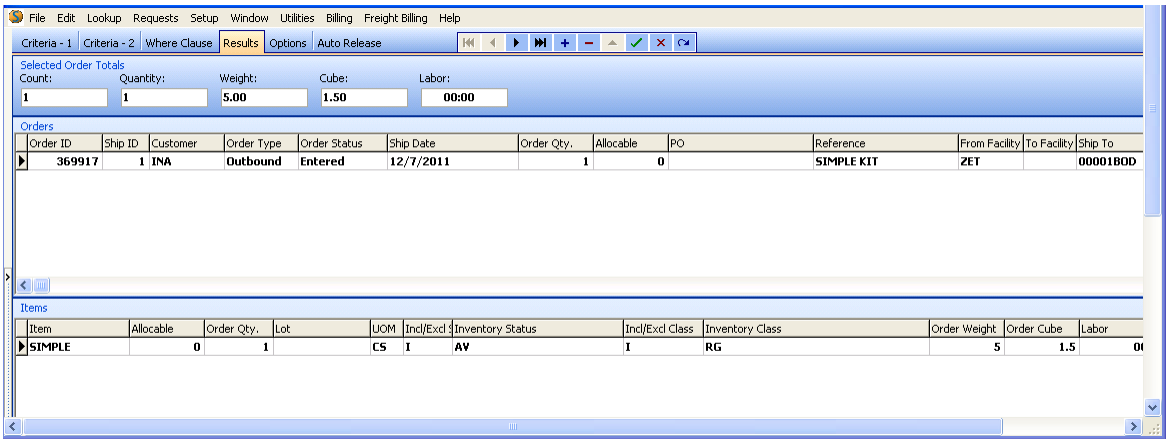
Orders

Once the new kit item is setup, orders may be entered in the system in any of the normal ways and reference the kit item. In the example below the kit item is SIMPLE.



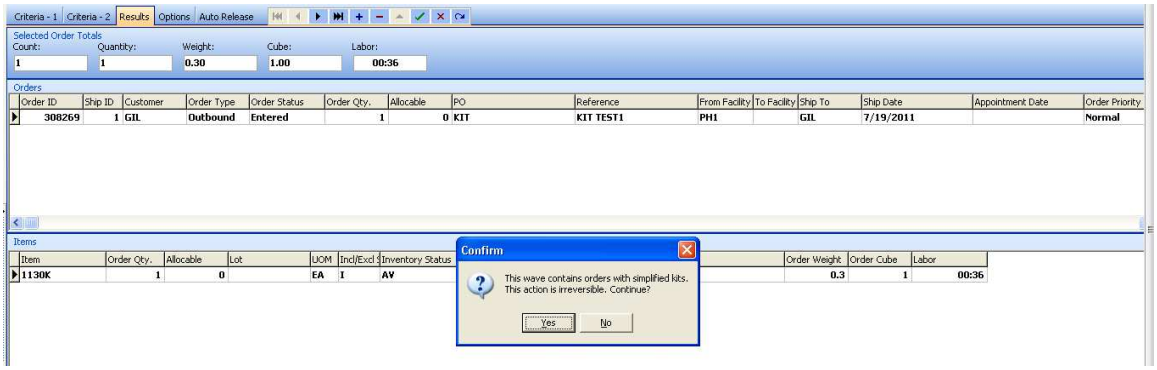
Wave Planning

During the wave planning of an order that contains Simplified Kitting items, the user will notice that the Allocable quantity shows 0. This is normal when the kit will be made on demand.



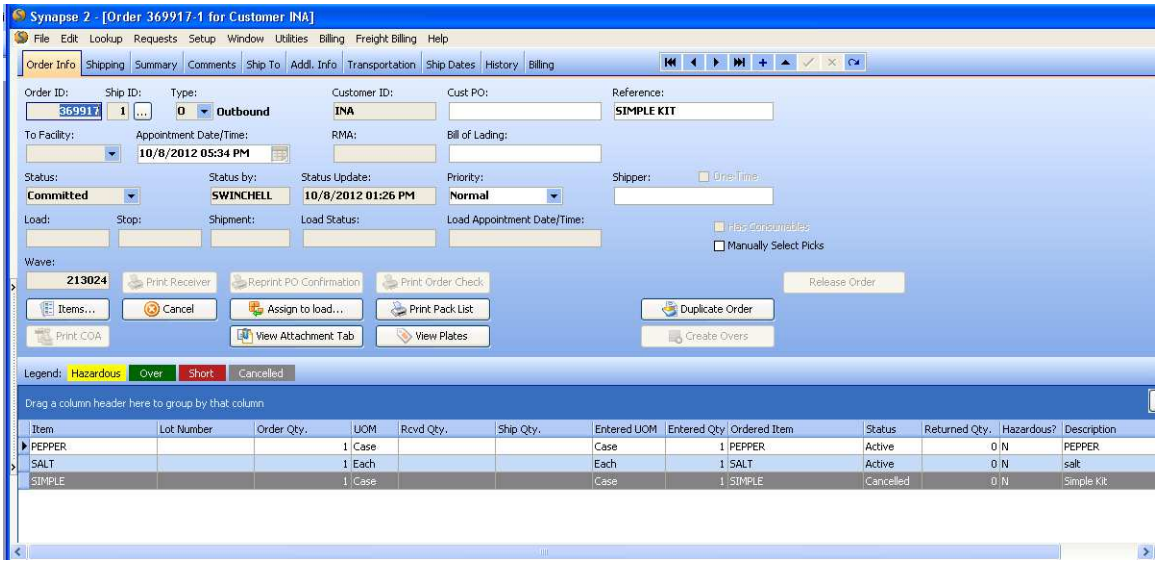
The user will be prompted with a warning message stating that the detail updates will be irreversible. If the user would like to continue with the process, they will select Yes. If the user does not want to continue, they will select No.

***Note:** Correction of erroneously committed orders will require manual reentry of the order.

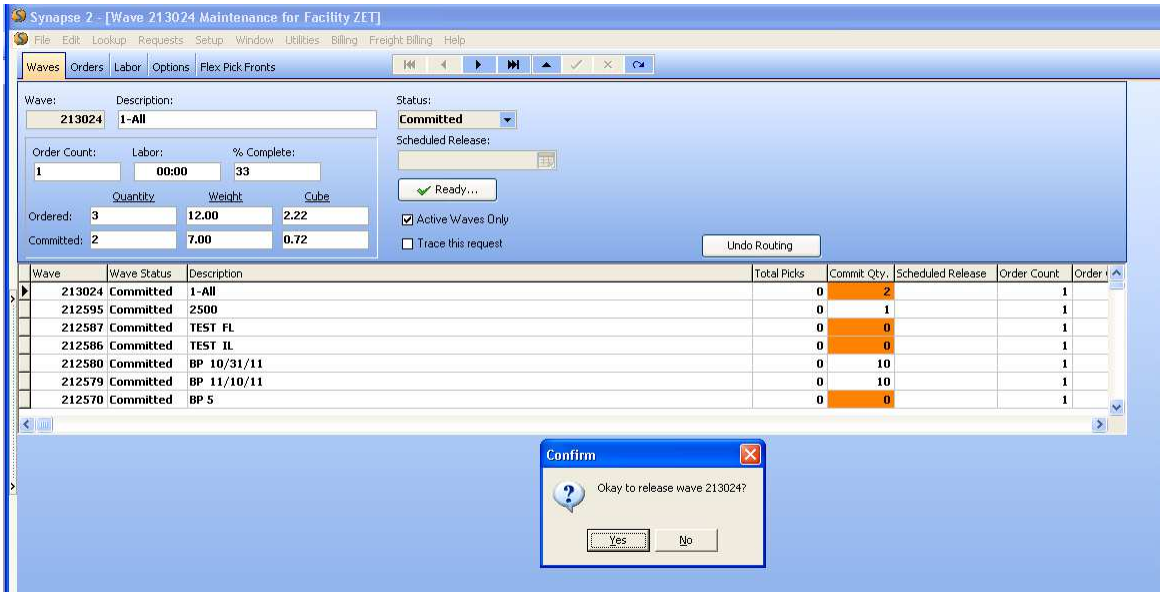


Order Detail

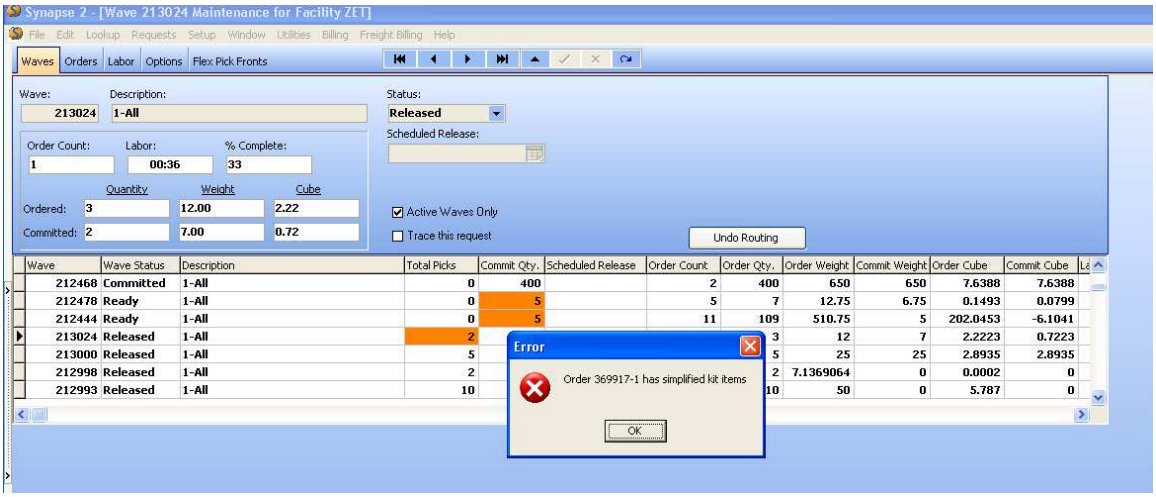
Once the commitment has been completed, the order details are updated with the component items and quantities and the kit item is changed to Cancelled status. From this point on the order will behave in the normal manner (picks will be generated for the component items). No updates to the cancelled kit items' lines will be made following commitment.



Wave Release



If a user attempts to un-release a wave that contains orders that have Simplified Kitting items on it, they will receive the following message:



***Note:** The user should always review the quantity of tasks created to ensure that all inventory was tasked.

Security

No additional security is required to utilize this function.

Notes:

- Direct Wave Release does not support Simplified Kitting.

- If kits already exist in inventory, Simplified Kitting will ignore the existing inventory and create picks for the components.
- RF Option 64 (De-kitting) does not support this type of Kit.

Kit by Class

An enhancement has been added to the Kitting process to include Kit by Class. This enhancement will allow an item to retain the item name and characteristics after it has been kitted, only changing the Inventory Class. The Kit by Class will handle inventory in the same manner as the other kitting processes by reducing inventory for the individual tools (the components), and increasing the inventory of the kit item.

Kit by Class is implemented as a special type of kit order involving a series of picks and then a "kitting" task that converts the items picked into a new inventory class while retaining the existing item name. During this processing, the inventory of the old part numbers is decremented and the inventory of the new part number is incremented.

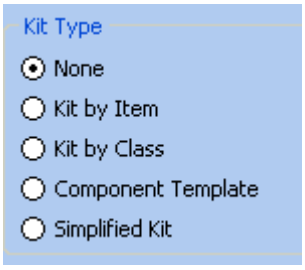
Setting up the Component and Kit items

A kit is comprised of components (items). The Kitting operation consists of gathering together (picking) the components, performing some type of operation, such as assembly, and either shipping on an Outbound order or putting into inventory for future Outbound orders.

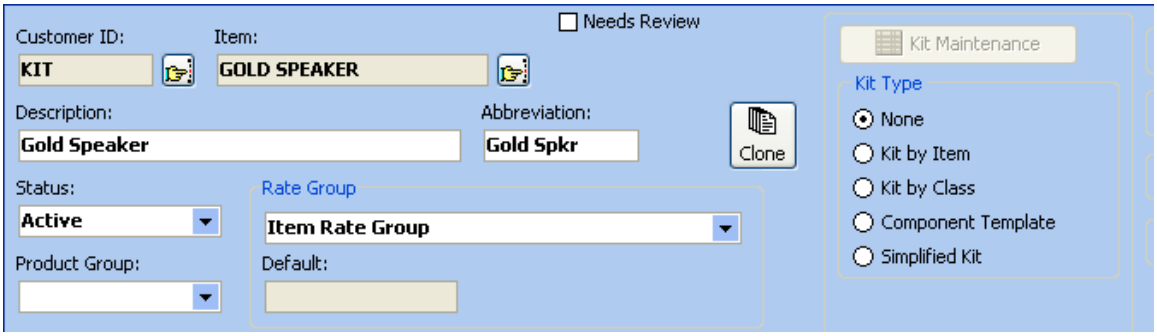
Customer/Item/Item Specs/Item Name Screen

Component Items

Each component of the kit is defined as an item, complete with its own pick front and its own receiving and shipping instructions. The Inventory Class of the item is indicated in 'Unkitted Class'. The item can be ordered and shipped separately, or it can be part of a kit assembly, based on the Inventory Class. The components need to be added first before the kit item can be added. The Kit Attributes radio button is set to "None" for the individual component. All component items must be for the same customer as the kit item.

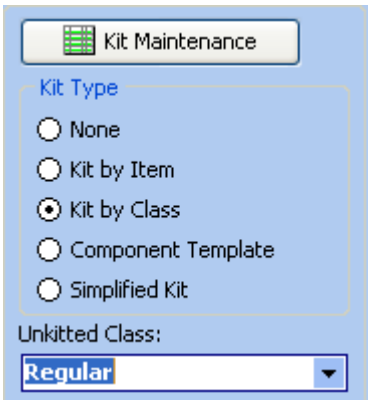


In order for the item to be included in the kit, it must have the same Unkitted Class as the other items, but not of the completed kit item.



Kit Item

The "kit" is defined as a separate inventory class item on the Setup/Customer/Item/Item Specs/Name screen. When the Kit Attributes radio button is set to Kit by Class, the Kit Maintenance button becomes active.



NOTE: **When designing and building a "kit" item, it is important to define and setup all the items (components) that will comprise the kit first, then define and setup the final "kitted" item.**

The components all need item records even if the individual components can't be ordered and shipped separately.

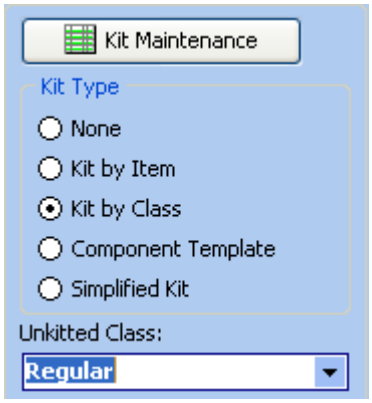
1) Review the component items, making sure that there is a component item record for each component needed for the kit. Component items must have a 'Kit Type' of 'None'.

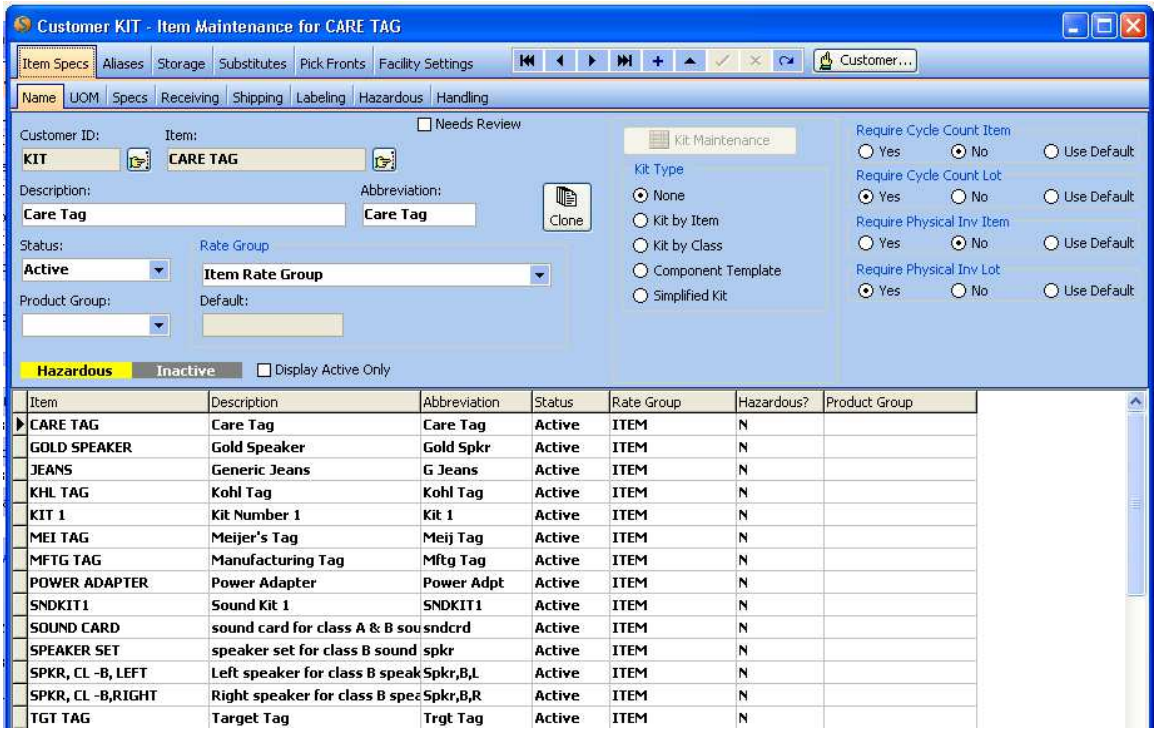
2) Build the item record for the kit. Begin as usual, assigning a pick front (if desired) and shipping instructions. Receiving instructions need to be indicated.

3) Set the Kit Attributes to Kit by Class.

4) Press the Kit Maintenance button. 

5) Indicate the 'Unkitted Class' of the kit item.

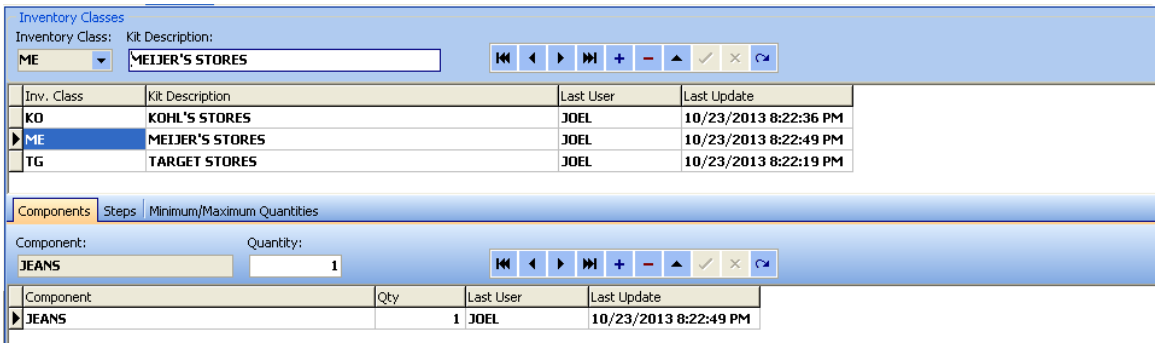




Pressing the Kit Maintenance button accesses the following screens.

Customer/Item/Item Specs/Name/Kit Maintenance/Inventory Classes

This screen is used to define the various inventory classes that this kit will include.



1) Press the Insert key  to add a new component item to the kit. The component and quantity fields are cleared.

2) Use the drop down menu to select the desired Inventory Class.

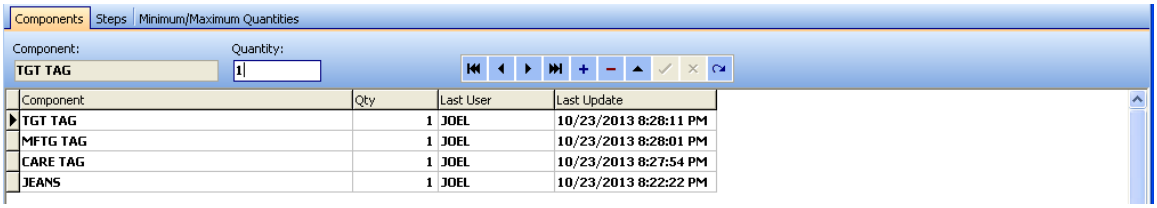
3) Enter the description.

4) Press the Post Edit key 

5) Repeat steps 1 thru 4 for each inventory class needed.

Customer/Item/Item Specs/Name/Kit Maintenance/Components

This screen is used to define the components and quantities used in the kit item.



1) Press the Insert key  to add a new component item to the kit. The component and quantity fields are cleared.

2) In the Component field, enter the item name of a component item for this kit. It must be the name of an item that already exists for this customer. Doubleclick on the field ot see the list of all items for the customer.

3) Key in the quantity, which is how many of this component will needed per kit.

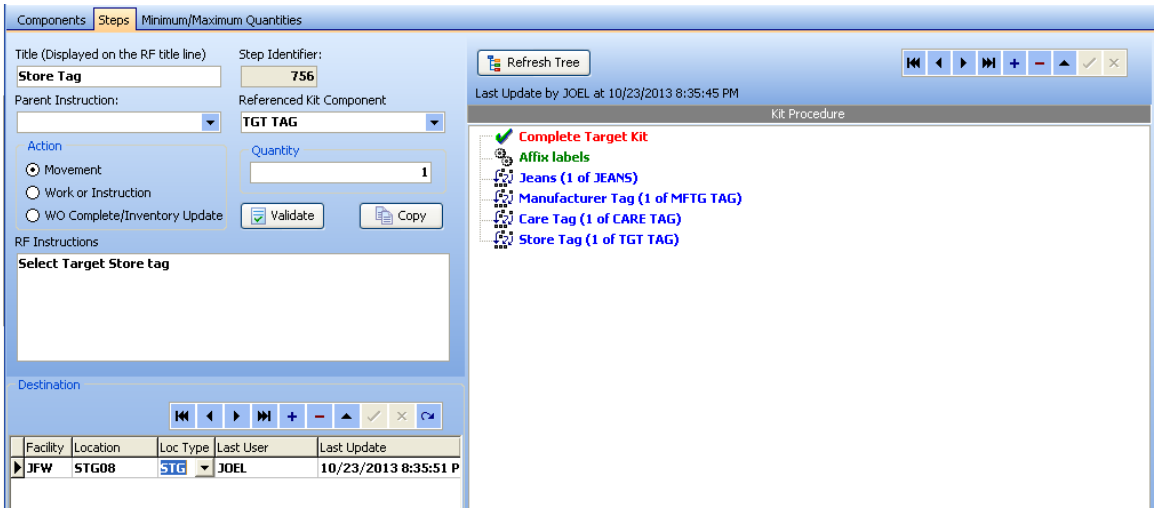
4) Press the Post Edit key 

5) Repeat steps 1 thru 4 for each component that needed.

The usual edit rules apply for modifying or deleting components from a kit.

Customer/Item/Item Specs/Name/Kit Maintenance/Steps

This screen is used to define each step needed to complete the kit item. There are 3 types of instructions:



- WO Completion/Inventory Update
- Work or Instruction
- Movement

These steps need to be completed for each inventory class associated with the kit.

The finished Kitting Instructions take the form of a hierarchical tree structure called the Kit Procedure. As the structure is built, it is displayed on the right side of the screen.

When the structure is complete, the top of the tree is the kit. Displayed below that are steps for each component, in the reverse order of the execution of those steps.

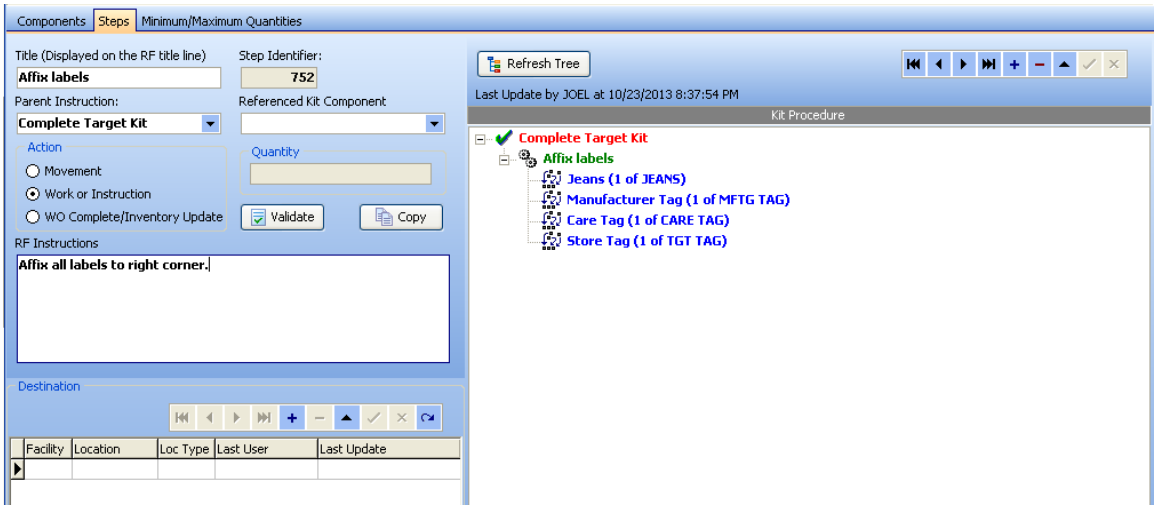
A fundamental concept for creating kit instructions is the parent step. The parent step is the step in the kit-building process that must wait for the current step to finish before it can be executed. Therefore, the parent step is the next later step, in a logical sense. The step that represents the finished kit is the only step that does not have a parent step.

For each component, a pick is needed for the item and to move it to a staging area, where it will be assembled to create the finished product. The actions for the individual components are independent of each other. It does not matter which one is picked first, or even whether there are one or more pickers. The hierarchy built will show this, and SYNAPSE will respond accordingly when it creates the picking tasks and the kitting tasks for kit building.

Kit Steps Entry

Press "+" to add a new step, the sequence number is automatically assigned. The sequence number does affect processing. The execution of instructions is controlled by the hierarchical structure that will be created later, as indicated below. Give the instruction a short explanatory title. It is permissible to mix case, if desired. Whatever is entered will be the step title on RF.

The first step is Kit Complete/Inventory Update, the name of the kit upon completion. This signals SYNAPSE to adjust the inventories, and to trigger the step that follows the kitting procedure – either putaway of the kit if this is for Replenishment, or stage for shipment if this was created as a result of an Outbound order.

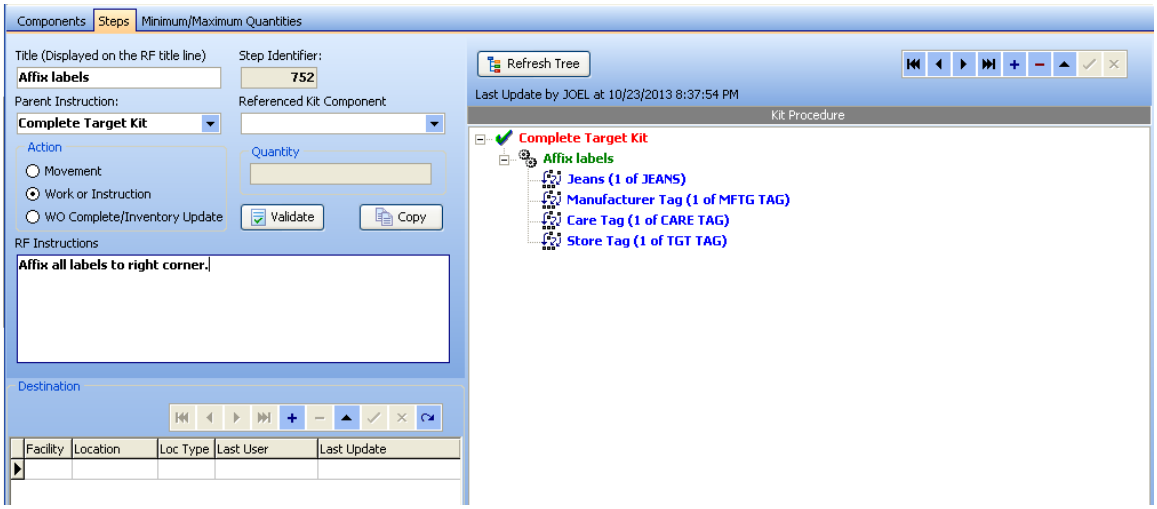


1) Enter the title (displayed on the RF title line) of the completed kit. The title is self-explanatory if named the kit and called 'COMPLETE KIT'. This is the 'Parent Instruction' for the "Work or Instruction' action.

2) Select the 'Action' of 'Kit Complete/Inventory Update'.

3) Enter the 'Destination' of the completed kit including Facility, Location and Location Type.

The second step is Work or Instruction, this is where the assembly of the components takes place.

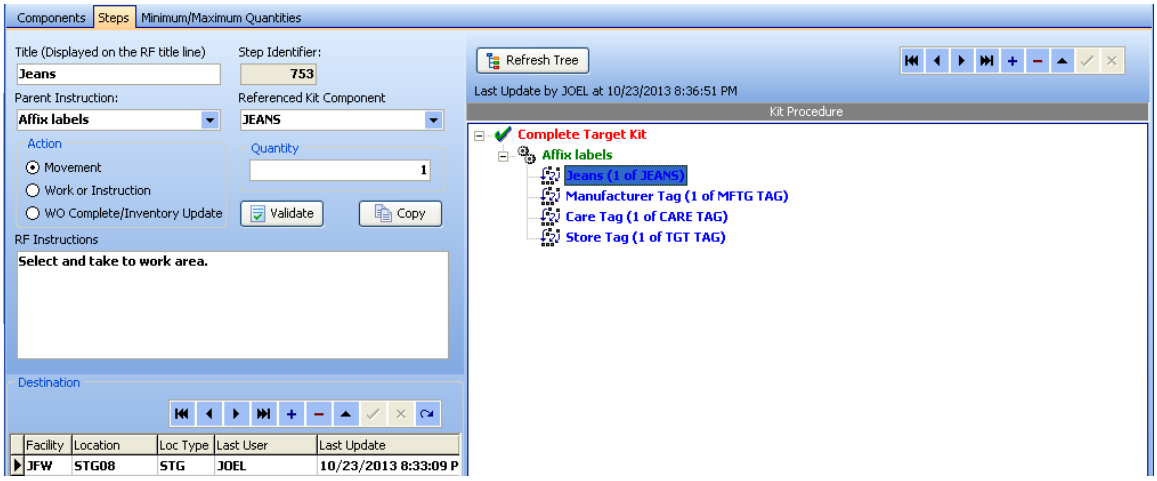


1) Enter the title (displayed on the RF title line) of the work or instruction, such as ‘Affix Tags’.

2) Using the drop down menu select the ‘Parent Instruction’ of the ‘Work or Instruction’. This would be the title ‘COMPLETE KIT’ from the “Kit Complete/Inventory Update’ action.

3) Select the ‘Action’ of ‘Work or Instruction’.

The final step is Movement, which is the picking and staging of the components that are needed to create the final kit.



1) Enter the title (displayed on the RF title line) of the Component.

2) The ‘Parent Instruction’ of the ‘Movement’ is the title ‘AFFIX TAGS’ from the ‘Work or Instruction’ action.

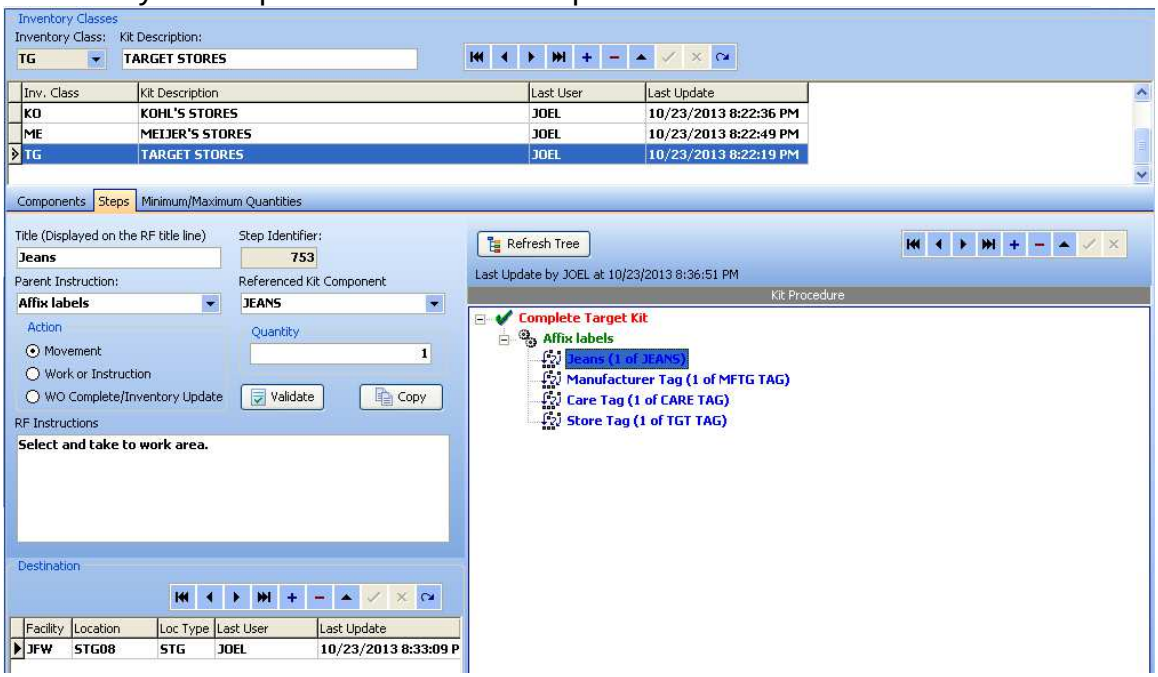
3) Select the ‘Action’ of ‘Movement’.

4) Using the drop

5) If instructions for the movement are needed, such as ‘Inspect for Damage’, indicated these instructions in the ‘RF Instructions’.

Repeat the above Movement for each component needed to create the kit and include any pertinent RF instructions.

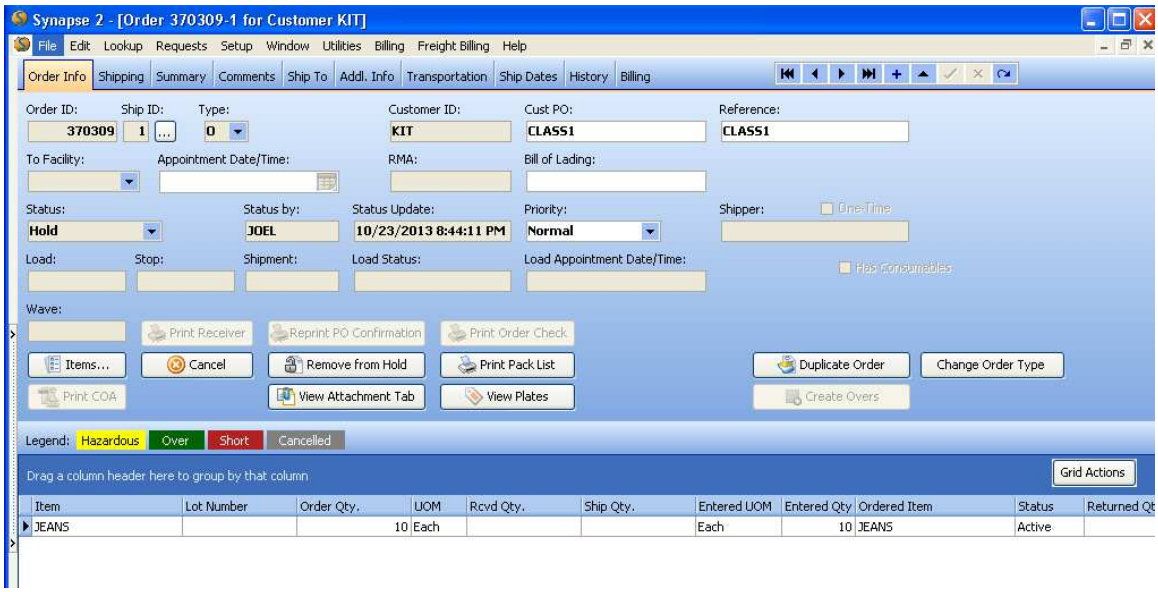
The ‘Kit by Class’ procedure is now completed.



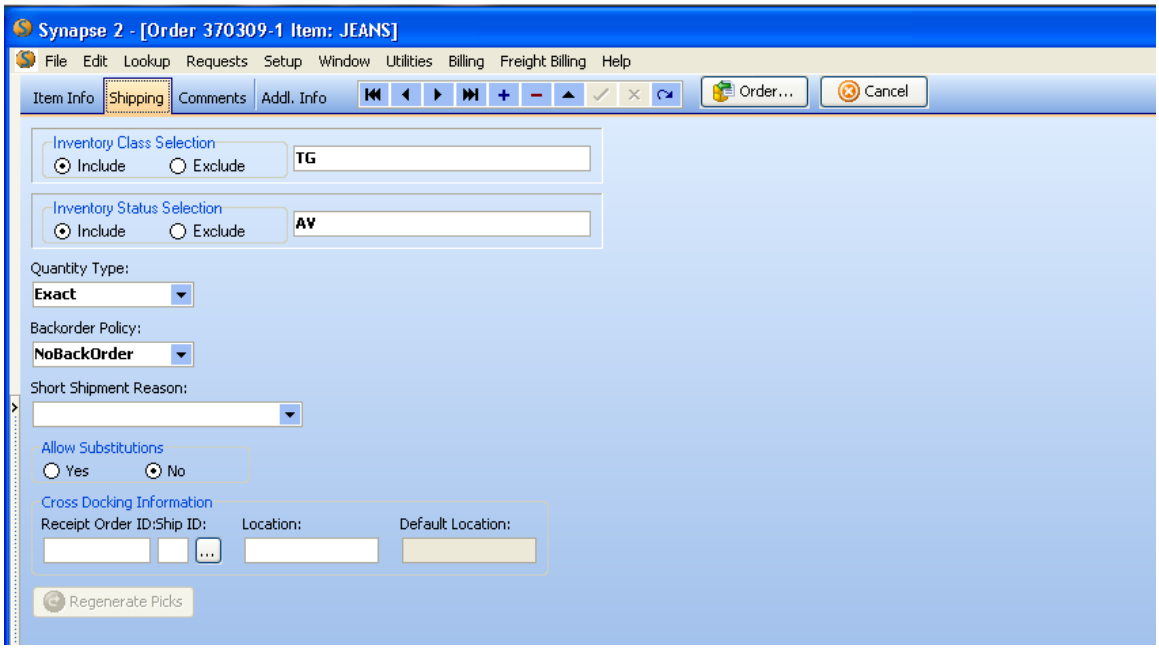
CRT Kitting Maintenance/Release Functions

Kit by Class

- Enter an Outbound customer order (Order type “O”) or a Work Order (type “W”), that contains a Kit by Class kit item.



- Enter the correct Inventory Class for the “Kit by Class’ item.

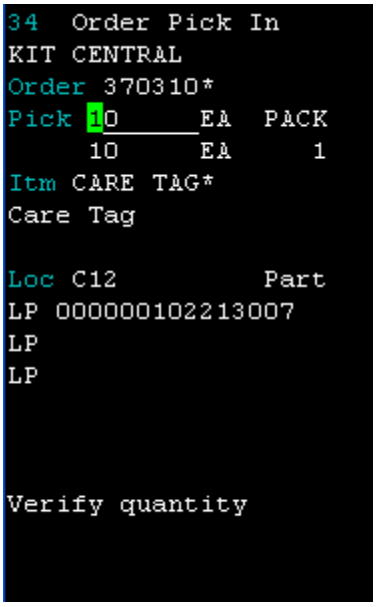


- Upon the release of the order, the system creates a new Kit Work Order (Order type “K”) to fulfill each kit item request.

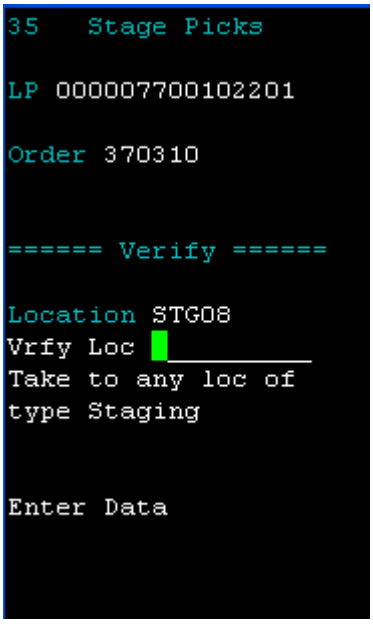
- The Kit Order(s) become committed and included in the Outbound and the Work Order's wave.
- The kit line item on the Outbound order or Work Order contains the kit work order as its "child" order id.
- Conversely, the Kit order itself contains the Outbound order's or Work Order's kit line item as its parent.
- When the wave planner **unreleases** a wave that contains a Kit order, the Kit order is cancelled. Upon re-release, a new Kit order is created.

RF Processing

The RF operator signs on for Order Picking (option 54) and enters the kit order. The user is prompted to pick the components.



Once the components are picked, the user is then prompted to take the picked components to the staging location for the kit.



After the components have been staged, the user can begin the RF kitting processing

RF Kitting

60 Kitting Menu

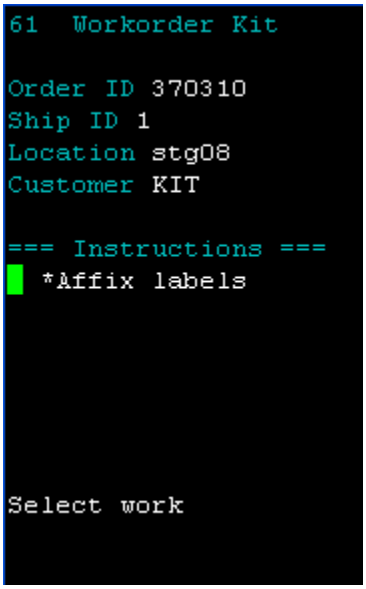
The RF portion of kitting consists of 4 functions under the Kitting Menu (option 60):

- 61 - Workorder
- 62 - Kitting Locs
- 63 - Work at Loc
- 64 - Dekit

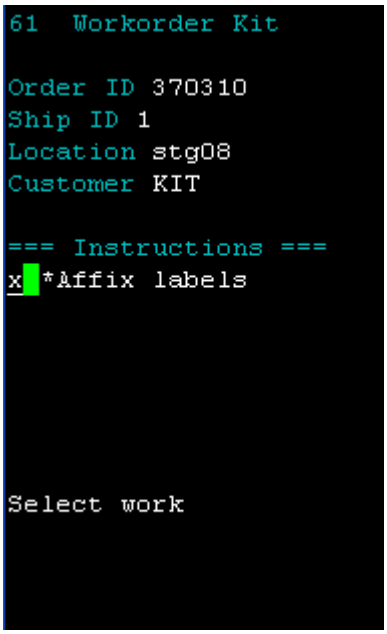
61 Workorder Kit

This is the RF function that directs the kitting operation. Workorder Kit (option 61) will display a scrollable list of all "instruction titles" (work to be performed on components) for a specific order and location.

If this function is selected from the menu, then the user must enter Order ID, Ship ID and Location. Otherwise, these fields will be automatically populated and the cursor will be placed in the scrollable area. If the instruction is ready to be performed (at least one component from each child instruction is present at the location), the title will be preceded by an asterisk "*". The title may be truncated to fit on one line.

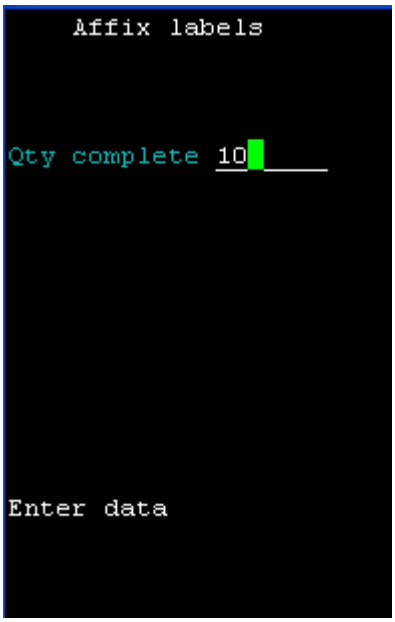


The operator can "select" any displayed instruction by entering a non-blank character before the title and pressing Enter.

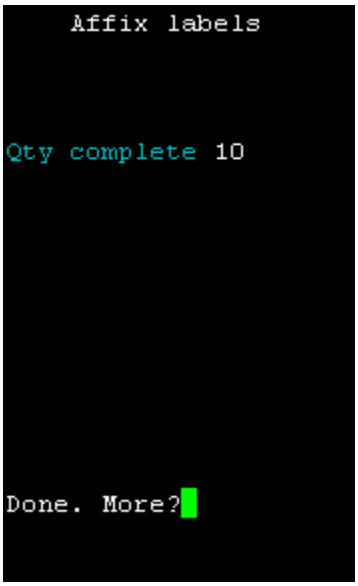


Once the user has selected an instruction, the screen will be updated to contain the complete title (on the top 2 lines) and a scrollable list of instructions.

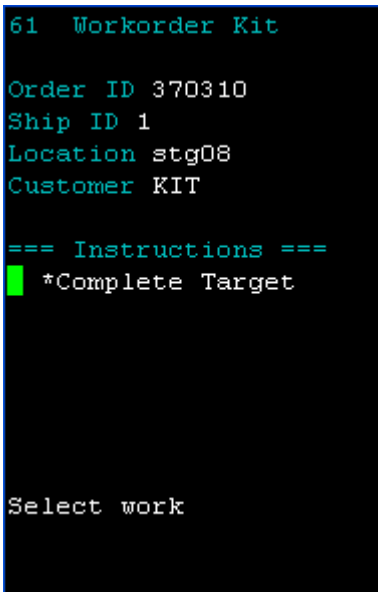
If the user has indicated completion of the instruction (F4), a new screen will be displayed in which the user must enter a quantity (complete).



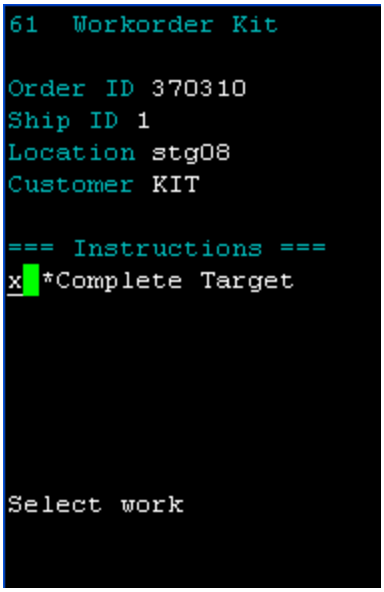
The user will be asked whether any more kits have been completed (i.e. "Done. More?"). If the user responds with Y, then entry of quantity complete and LP data will be repeated.



The user will be directed to the 'kit completion' of the instruction (F4), if the instruction is ready to be performed (at least one component from each child instruction is present at the location), the title will be preceded by an asterisk "*". The title may be truncated to fit on one line.

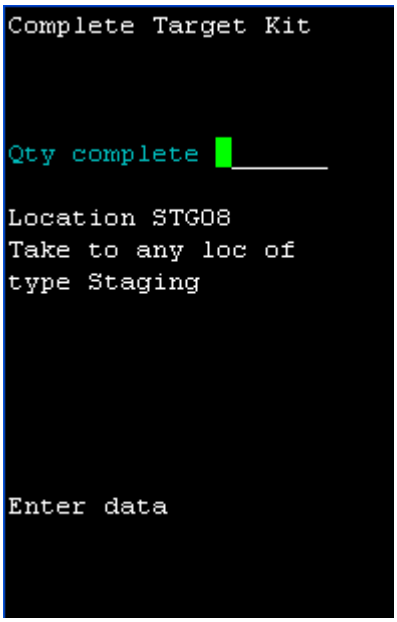


The operator can "select" any displayed instruction by entering a non-blank character before the title and pressing Enter.



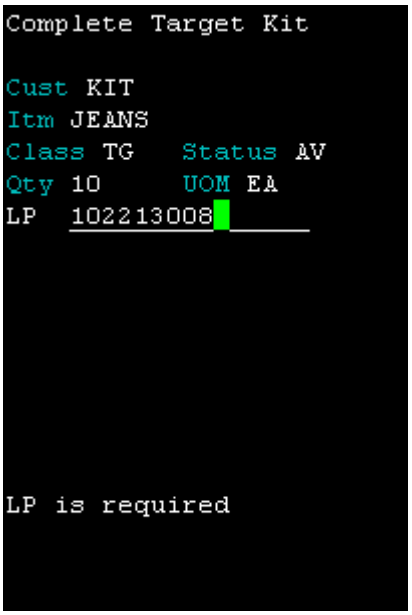
Once the user has selected an instruction, the screen will be updated to contain the complete title (on the top 2 lines) and a scrollable list of instructions.

If the user has indicated completion of the instruction (F4), a new screen will be displayed in which the user must enter a quantity (complete) and optionally a location (if the instruction is for movement or kit complete). If a location is required, a suitable location and/or location type will be displayed for the operator.

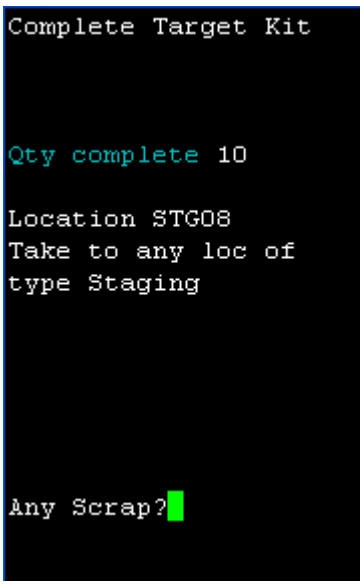


After the completed instruction for "kit completion" is completed, then the user will be requested to enter data similar to the “in 1-step receiving” (e.g. inventory class,

inventory status, unitofmeasure, LP, lotno, ...). The quantity on the LP must be equal to the quantity completed after UOM translation.



If any LPs were created (i.e. kit completion), the user will be asked whether any more kits have been completed (i.e. "Any Scrap?"). If the user responds with N, then entry of quantity complete and LP data will be repeated. If the user responds with Y, then the RF will request disposition of the scrap.

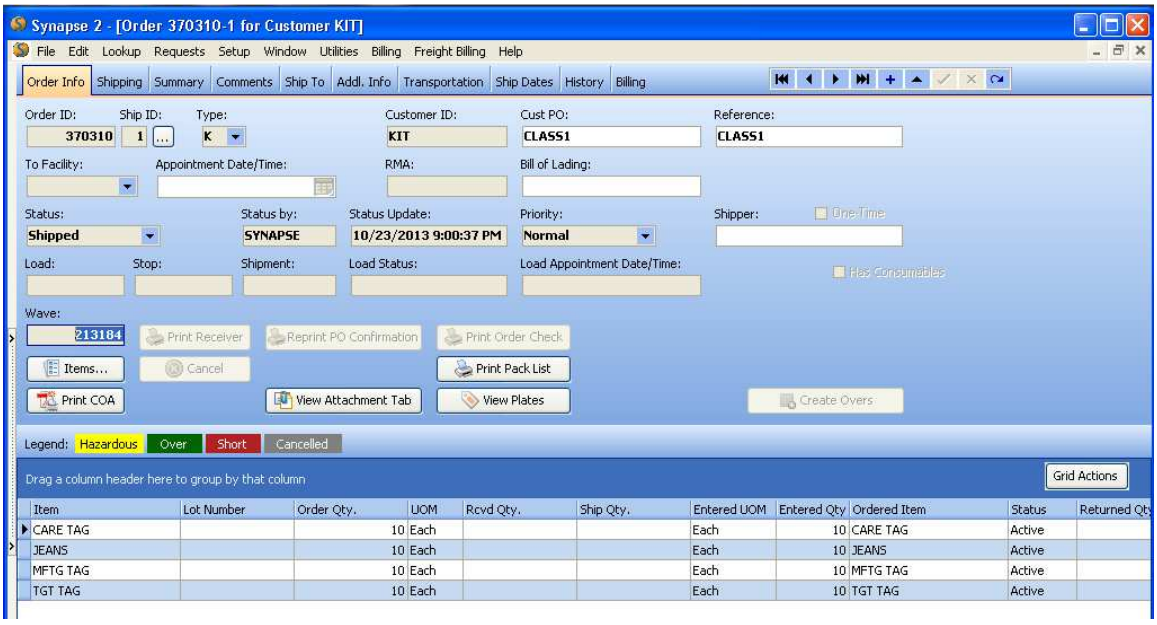


After a "scrap LP" has been built, the user will be asked whether any more scrap is to be entered (i.e. "Done. More?"). If the user responds with Y, then entry of scrap data will be repeated.

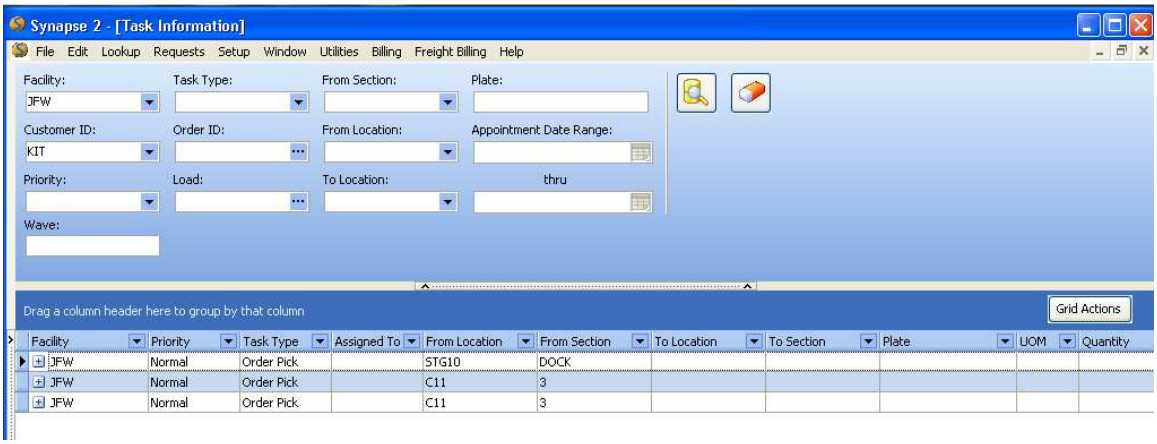
If any LPs have been created, then the following will occur:

- All automatic charges will be computed based on the KIT business event.
- The operator will be asked to enter any prompted charges based on the KIT business event.
- The operator will be prompted for any labels based on the KIT business event.
- Pick tasks will be generated for any kits needed by non-workorder orders (Outbound orders)
- Putaway of kits for workorder orders will be performed (Replenishment)
- Putaway of scrap LPs will be performed

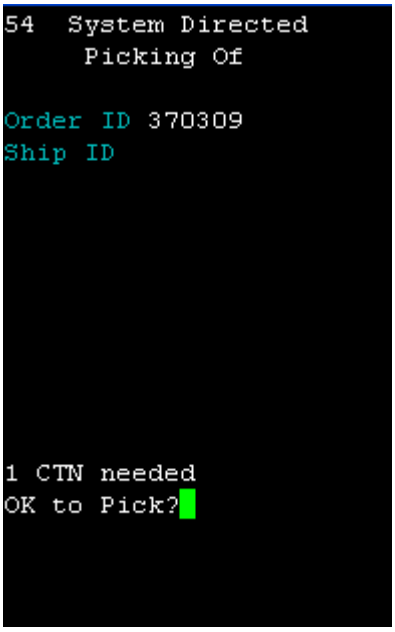
Note: The status final status for the Kit and Work orders used for kitting is 9 – Shipped.

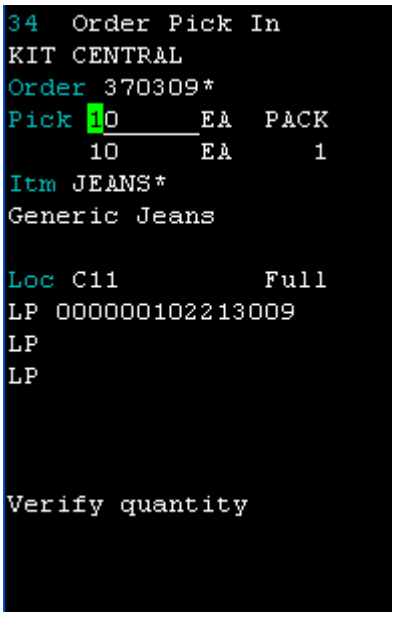


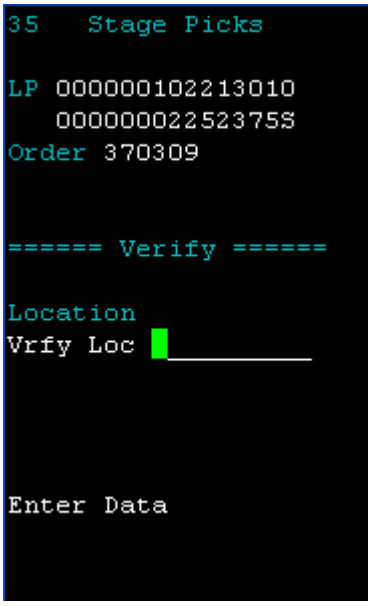
After the kitting is complete, an order pick task is generated to pick the completed kit item from the kitting location.



The user will either stage the LP for an outbound order or complete a Putaway task for a Work Order.

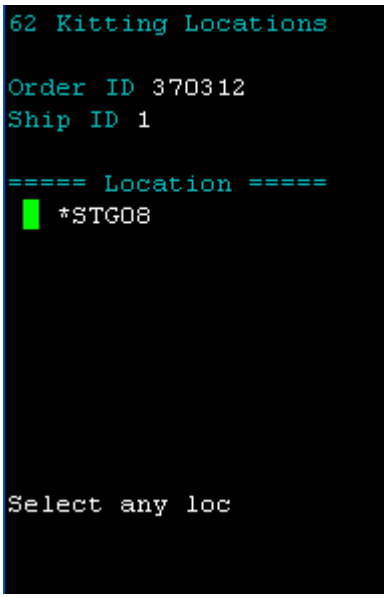






62 Kitting Locations

Kitting Locations (option 62) will display a scrollable list of all locations that contain "kitting components" for a specific order. The user must enter an Order ID (Ship ID is optional). If the location is one at which "work is ready to be performed", the name of the location will be preceded by an asterisk "*". Work is ready to be performed at a location if, for any step in the kitting process, there is at least 1 component from each child step at that location.



The user can "select" any displayed location by entering a non-blank character before the location name and pressing Enter - this will cause control to transfer to Workorder Kit (option 61) with the entered Order and the selected location. Upon return from Workorder Kit, this screen will be automatically updated to reflect any changes.

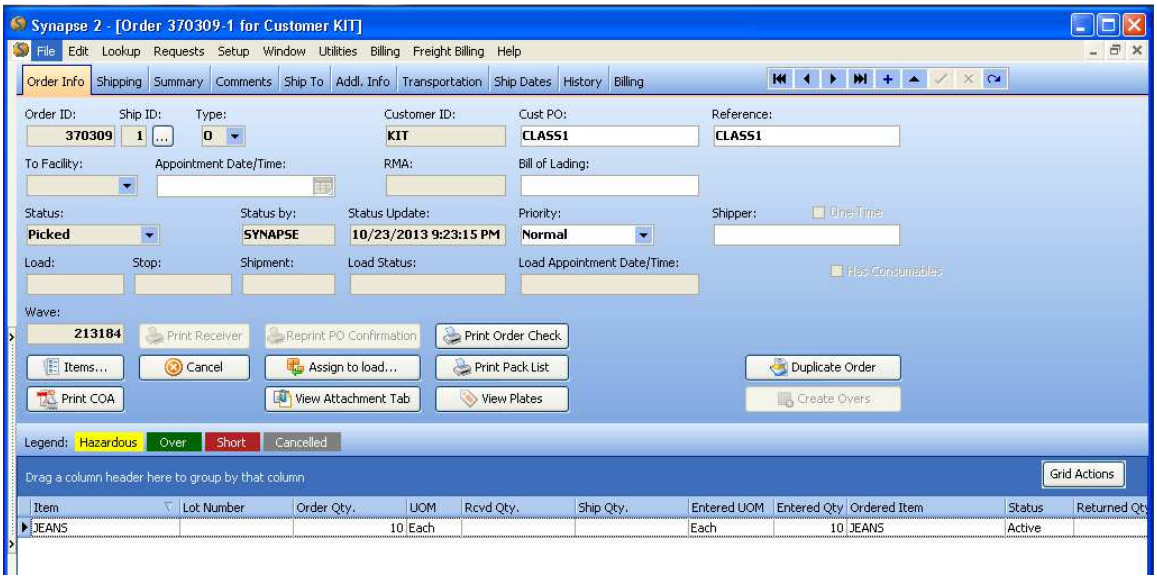
63 Work at Loc

Work at Loc (option 63) will display a scrollable list (Order ID and Ship ID) of all orders that have kitting components at a specific location. Note that the order displayed is not a kitting order, but its parent order. The operator must enter a location. If the order has "work ready to be performed", the Order ID and Ship ID will be preceded by an asterisk "*".

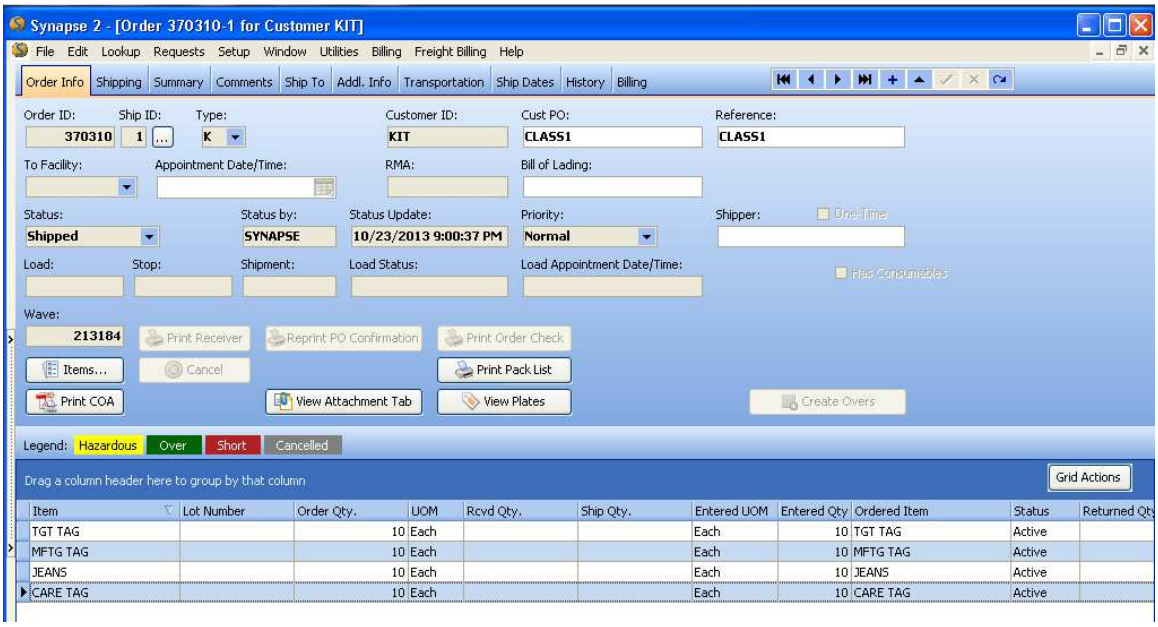
```
63    Work at Loc

Facility JFW
Location stg08

=== Order == Ship ==
 *370311      1









Select an order
```

The operator can "select" any displayed order by entering a non-blank character before the Order ID and pressing Enter - this will cause control to transfer to Workorder Kit (option 61) with the entered location and the selected order. Upon return from Workorder Kit, this screen will be automatically updated to reflect any changes.

The status of the Outbound Order or the Work Order is now in the 'Picked' status.



The status of the KitWorkOrder is now in the 'Shipped' status.



Inventory Commitment

The commitment logic has changed to first look at available inventory of kitted items when determining if a kitting operation is need for an Outbound order. If total inventory is available, then the no Kit by Class order is created. If there is no inventory or only partial inventory available, Synapse will create a Kit by Class for the remainder that is need to fulfill the Outbound order.