HANSAWORLD UNIVERSITY

Standard ERP

Production

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HANSAWORLD

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INTRODUCTION

The Production module in Standard ERP is designed to facilitate the construction of assembled items from components. Two types of assembled items are catered for: those which are assembled on the point of delivery; and those which are assembled in advance of delivery and held in inventory, sometimes referred to as 'Make to Inventory', where appropriate inventory level adjustments are made for the components and assembled items at the time of construction or assembly, with proper costing and general ledger integration. We will cover the latter case in this documentation.

The production module allows you to work according to the needs of your company. Features like working with multi-level recipes (also known as bills of materials, BOM), Just-In-Time purchasing, purchases of raw materials against sales orders (Back-To-Back Ordering), material requirement planning based on sales forecasting and disassembly are all supported. It is possible to collect time usage together with raw material consumptions in assembly processes, and to construct more complex production cycles using routines.

As with all modules in Standard ERP, the production module is fully integrated with the rest of the system and thus interacts with several other Standard ERP modules.

During this course we will give an example illustrative of assembling a finished product with time recording.

We can summarize the main benefits for a company using the production module in one word – efficiency:

1. Efficient planning process;
2. Efficient order management;
3. Efficient inventory management;
4. Accurate cost accounting.

Before we start with our course, let's check some concepts:

MRP (Material Requirements Planning) is an information system that determines what needs to be produced, in what quantity, and when. This is done while keeping the lowest cost. The targets of an MRP system are:

- Ensure that materials and products are available for production and delivery to customers;
- Maintain the lowest possible inventory levels;
- Plan manufacturing activities, delivery schedules and purchases.
-

For a company to be able to meet these targets, there are some requirements:

- The data in the MRP system must be accurate and correct. Errors in the inventory data will cause wrong output from the MRP system.
- Recipes, also known as bills of materials (BOM), must be correctly set up. Outputs are based on the information found here.
- Sales order and purchase order management must be efficient and accurate. Forecasts must, as much as possible, reflect the estimated sales and needs, and should be adjusted as necessary.

The company needs to enter and maintain proper inputs in the MRP system. The output is a recommended activity level, for production and for purchases. The manager must be on top of what is going on in the factory, if that is not reflected in the system, and be able to make decisions.

A JIT (Just in time) inventory policy is one where raw materials or components are only purchased when they are needed, with the intention of keeping inventory levels to the minimum, reducing costs.

A BOM (bill of materials or recipe) is a list of all the components needed to produce a finished product or sub assembly, i.e. all in-and-out items. It can also contain extra information, like instructions, times, machines etc.

There are three types of production companies:

- Producing to inventory, usually producing a large quantity of items with small unit value;
- Produce to order, usually small quantities with high unit value;
- A combination of both situations.

WORK FLOW, EXAMPLE

For our course, and as an example, let's say a company produces and sells tables and other furniture, using the assembly method.

The company defines minimum inventory levels for tables and other furniture, as well as for raw material (components).

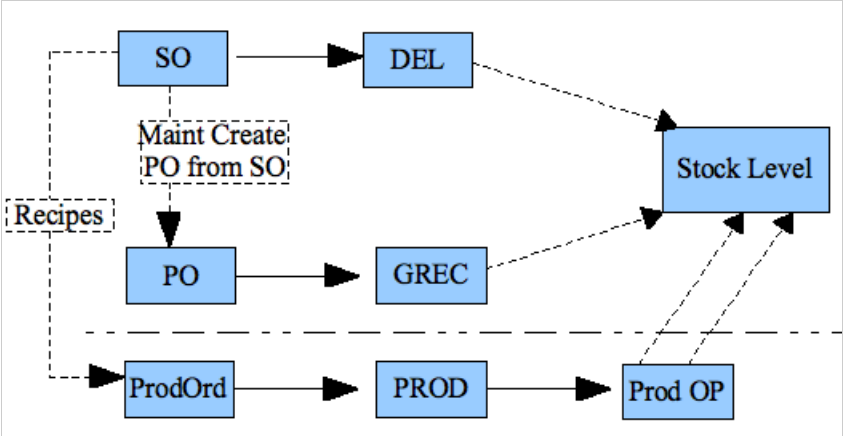
The manager needs to check inventory deficiencies to verify what needs to be produced (deficiency list report). Based on that, production orders will be created. At the same time inventory levels of components will be checked, and if required, purchase orders will be generated (the purchase order process will not be covered on this course).

The calculation of deficiency levels will include minimum inventory levels from the item records, quantities on sales orders to be delivered, quantities on production orders, quantities on purchase orders to be received, and actual inventory levels.

Using maintenance routines, the production manager generates production orders. Based on that, the workers start the production process by creating production records. Labor time can be entered in each production record. When an employee finishes a production, the components are removed from inventory and the assembled item is put into inventory with its real cost. General Ledger transactions are posted per production.

In order to implement this example we'll start by describing the settings and registers that need to be configured. Once the set-up and configuration is complete, we will then describe the workflow to produce an inventory item. Settings, reports and forms in the production module that are not required for the described workflow will be omitted from this course.

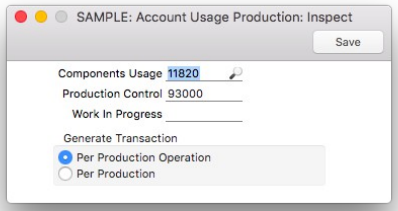
The image below illustrates the workflow described, where the production orders are generated from Sales Orders and/or minimum inventory levels.



BACKGROUND INFO AND CONFIGURATION

Account Usage Production

This setting allows you to determine the Accounts that will be used as defaults in your Production transactions. Take care to ensure that the Accounts that you specify here exist in the Account register.



Components Usage, Production Control: Use 'Paste Special' to choose the Accounts in these fields.

The standard general ledger transaction from a production or production operation will credit the value of the components to an inventory account (materials control), credit the work cost to a production work cost account, and debit the value of the final item to an inventory account (finished goods).

This transaction therefore simply removes the value of the components from inventory and adds the value of the final item to inventory. It will therefore not be possible to distinguish the value of items removed from inventory to be used in productions from the value of the same Items removed from inventory for other purposes (e.g. delivery or inventory adjustment). If you need to make such a distinction, specify components usage and production control accounts here, in the item records for the components and/or in the item groups to which the components belong. If you do so, the transaction will contain additional postings, debiting the value of the components to the components usage account and crediting that value to the production control account.

The components usage account will be taken from the item group to which the component item belongs (if you are using the Use Item Groups for Cost Accounts option in the Cost Accounting setting in the Inventory module), from the component item or from this setting.

The production control account will be taken from the item group to which the component item belongs (if you are using the Use Item Groups for Cost Accounts option) or from this setting.

Using these two accounts, the general ledger transaction will be:

- Inventory valuation – credit (value from component removed from inventory)
- Components usage – debit (value from component removed from inventory)
- Production Control – credit (value from component removed from inventory)
- Production work cost – credit (value of work cost)
- Inventory Valuation – debit (total value of produced item)

If you are not using these accounts, then the first two lines in the transaction, as above, will not be created.

Work In Progress: Production operations allow you to carry out productions in stages. This account will only be used if you are using the "per production operation" option below. In our example it must be blank.

Generate Transaction: The production operation option can only be used when the company chooses to use the routings feature, which is not covered in this course. For this example you must select the 'production' option.

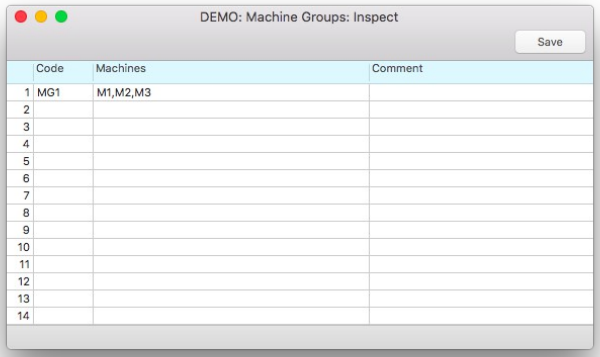
When you choose the 'production' option, you should also allow transactions to be created from productions in the "Sub Systems" setting (in the general ledger) and in the "Number Series - Productions" setting.

Machine Groups

This setting allows you to divide the machines of your company into groups. These groups might represent the different recipes that the machines can produce, different types of work, or the various departments in your company. Dividing machines into machine display groups will help with resource planning. Production orders will be shown in the resource planner, per group and in each group, per machine. This is illustrated below on page 24.

Each machine should have its own record in the asset register in the assets module, as mentioned below on page 12. This register will allow you to account for each machine's depreciation and running cost. You should record each machine in the asset register before entering machine groups.

Selecting 'Machine Groups' from the 'Settings' list in the production module opens the machine group browse window listing the machine groups that have already been entered. To add a new record, simply enter its details on the first blank line and press [Save] to save and close. Use the close box to close without saving changes.



Code: Specify a unique identification code for each machine display group. You can use up to five alphanumeric characters. Use a code that makes it easy to distinguish machine display groups from other records in the resource planner, but do not use a code that is the same as a machine code (asset code) or a person's signature (initials).

Machines: Use the 'Paste Special' function to enter the asset code of each machine (asset) that belongs to the Machine Display Group, separated by commas.

If you need to use 'Paste Special' to enter several machines, type the comma before opening the 'Paste Special' list. This will cause Standard ERP to add the next machine to those already entered. Otherwise, the previous machine will be overwritten.

A particular machine can belong to more than one Machine Display Group.

Number Series - Productions

Each record in the production register has its own unique identifying number, based on a sequential series. When you enter a new record, the next number in the series will be used. If required, you can have a number of such sequences running concurrently, perhaps representing different years or different departments.

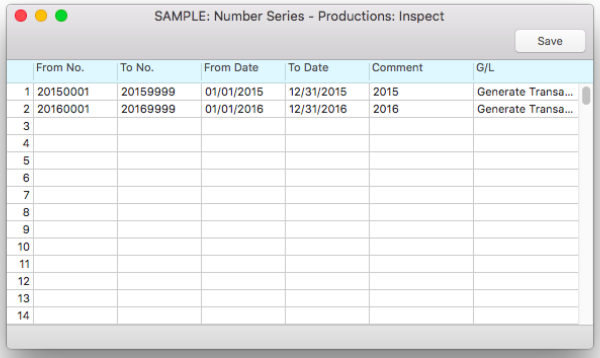
Use this setting to define these sequences, or number series. The different series cannot overlap. If you leave the setting empty, production numbers will start at 1 and continue consecutively.

When you enter production records, the next number in the first valid number series entered to this setting will be used as a default. Change this to the first unused number in any other number series using the 'Paste Special 'function.

For each number sequence, you have a measure of control over whether general ledger transactions will be generated automatically when you approve production records in that sequence. Using 'Paste Special' function from the G/L field brings up a selection list containing two options: "Generate Transactions" and "Do not Generate Transactions". Select the first option if general ledger transactions are to be generated, and the second if they are not. In effect, this feature is an exclusionary one in that you can only choose to not have general ledger transactions created for a particular number sequence. If the overall preference (set in the "Sub Systems" setting in the general ledger) is to not have such transactions created, you cannot decide to have them created for a single sequence.

When you select 'Number Series - Productions' from the settings list in the production module, the following window appears:

Enter each required number series on the first empty line. The comment will be shown in the 'Paste Special' list, so enter some text that will help you choose a number from the correct sequence. Then, press the [Save] button in the button bar to save the changes. To close the window without saving changes, use the "close" box or [Esc].



	From No.	To No.	From Date	To Date	Comment	G/L
1	20150001	20159999	01/01/2015	12/31/2015	2015	Generate Transa...
2	20160001	20169999	01/01/2016	12/31/2016	2016	Generate Transa...
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

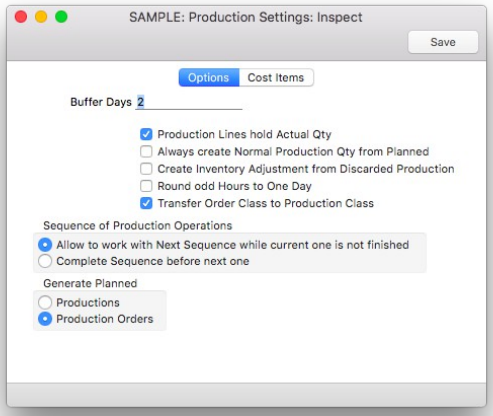
Number Series – Productions Orders/Production Operations

Use these settings to define the number sequences for production orders and production operations in a similar manner to that described for productions above.

Production Classes

This setting allows you to define different classes that can be allocated to production orders and productions. For example, make to order and make to inventory.

Production Settings



This setting contains some miscellaneous options controlling the behavior of various aspects of the production module.

Options Tab

Buffer Days: Insert the number of days that assembled items must be in inventory before the planned delivery date from sales orders here. This will be applied when using the "Create Panned Records from Ordered Items" and "Create Planned Records from Orders" maintenance routines available in the sales orders module.

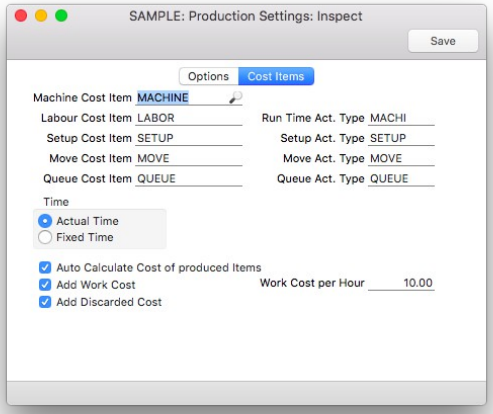
Production Lines hold Actual Qty: If you are using this option, the quantity in each row in a production will be the total quantity required (i.e. Qty in production header * Qty from recipe). Otherwise, the quantity in each row will be the quantity required for a single application of the recipe (i.e. Qty from recipe).

This can be useful, if during the production you use a different quantity than was set in the recipe and you want to make this correction.

Create Inventory Adjustment from Discarded Production: When you finish a production it can sometimes be necessary to discard the items that were produced. For example, the produced items might not be compliant with quality control and need to be removed from inventory. In this case, you can mark the production as "Finished but Discarded" and save. If you are using this option, the discarded items will be added to inventory and their value will be debited to the inventory account in the transaction created from the production. An OKed inventory adjustment will be created, to remove them from inventory. The inventory adjustment will debit the discarded production cost account specified in the "Account Usage Inventory" setting (page 11 below). If you are not using this option, the discarded items will not be added to inventory, and the discarded production cost account will be debited in the transaction created from the production. In both cases, inventory and general ledger will be accurate.

Generate Planned: Choose whether you want Productions or Production Orders to be created by the "Create Planned Records from Ordered Items" and "Create Planned Records from Orders" maintenance routines.

Cost Items Tab



Machine Cost Item: If you are using the "Auto Calculate Cost of produced Items" option (below), an extra row containing this item will be added to each production when you first save it. This row will record the running cost of the machine used during the production process. The running cost will be taken from the 'Costs' tab of the asset record of the machine, and from the "start time" and "end time" of the production. When you mark a production as "Finished" and save it, the running cost will be added to the value of the final item (i.e. it will be included in the debit posting to the inventory account and will be credited to the production work cost account). The row recording the running cost must include an item: specify here which item is to be used for this purpose (using 'Paste Special' if necessary).This item must be a service Item.

Auto Calculate Cost of produced Items: If you want to record the running costs of the machines used in productions then check this box. You must also specify a "machine cost item" above. You should specify "running costs/hr" in the asset records for your machines ('Costs' tab). You should also specify such an asset in the "machine" field in each production.

Add Work Cost: This option is used for three purposes:

Firstly, if you are using the "Production Time Entry" interface (described below on page 42) and you want an activity to be created for set-up time using the setup activity type that you specify in the field above, then check this box. Activities will always be created for labor.

Secondly, if you are using the "Production Time Entry" interface together with this option, a work cost will be added to each production automatically. This will be calculated using the total cost (Time) of the set-up and labor activities and the "work cost per hour" specified below. Since each production will be marked as "finished" automatically, you will not be able to change the work cost.

Finally, if you are using this option and you create a new recipe without a routing but with some "days/hours/minutes/seconds to produce" and a "time to setup", a work cost will be added to the last input row in the recipe automatically. This will be calculated using the "days/hours/minutes/seconds to produce" and the "time to setup" in the recipe, and the "work cost per hour" specified below. You will not be able to change this work cost.

Work Cost per Hour: The "work cost per hour" is used for four purposes:

Firstly, if you are using the "Fixed Time" option above, this will be the hourly rate for "labor", "setup time", "move time" and "queue time". This will be added automatically to production operations when you create them (when using routings).

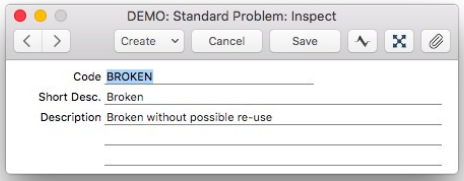
Secondly, if you are using the "Actual Time" option above and you use the "Add Labor" Operations menu function to add time to production operations from activities, this will be the hourly rate (when using routings). The routings feature is not covered in this course.

Thirdly, if you record the time of a production using the "Production Time Entry" interface and you are using the "Add Work Cost" option above, then this time will be added automatically to the production as a work cost using the hourly rate specified here.

Finally, if you are using the "Add Work Costs" option above and you create a new recipe without a routing but with some "days/hours/minutes/seconds to produce" and a "time to setup", a work cost will be added to the recipe automatically.

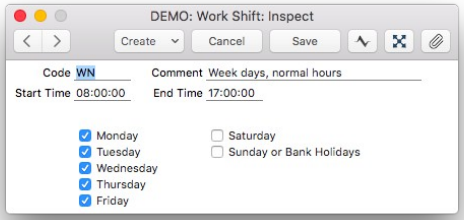
Standard Problems

In this setting you should define the possible standard problems that could lead to a production being discarded. When creating a discarded production, you will be required to add the reason, which you can choose from this setting using 'Paste Special'.



Work Shifts

If you define your Work Shifts in this setting, you can then use the Production Journal report to list the Productions worked on during a particular Work Shift. A Production will satisfy this requirement if its Start Time and End Date comply with the specified Work Shift record. If a Production has an End Date that complies with the Work Shift record but its Start Time is blank, it will not be included in the report.

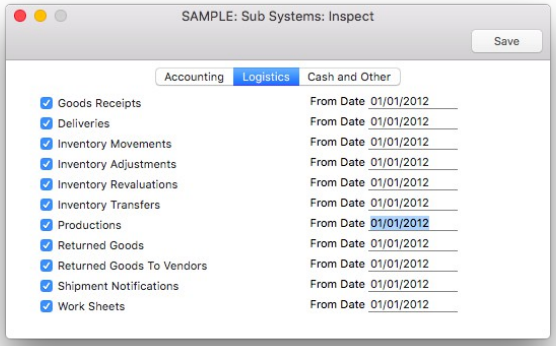


A Work Shift marked as Sunday will include work on bank holidays. You should list annual holidays in the "Bank Holidays" setting in the System module.

Settings in other modules

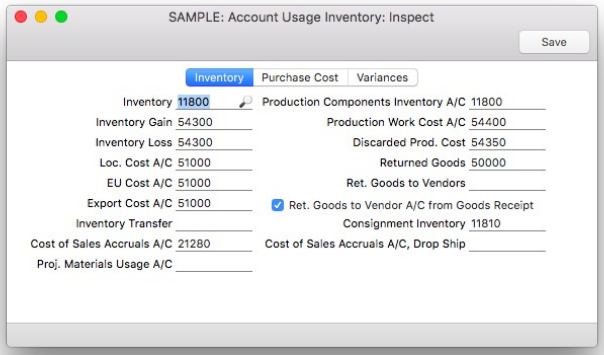
General Ledger>>Settings>>Sub Systems

When defining the “Number Series – Productions” setting, you can select the option to “generate transactions” in the G/L column. For general ledger transactions to be generated from productions, open the “Sub Systems” setting in the general ledger, tick the “Productions” box and enter a start date for the transaction generation.



Inventory>>Settings>>Account Usage Inventory

Using ‘Paste Special, enter accounts in the “Production Components Inventory A/C”, “Production Work Cost A/C” and “Discarded Production Cost” fields on the ‘Inventory’ tab and the “Disassemble Variance” field on the ‘Variances’ tab.



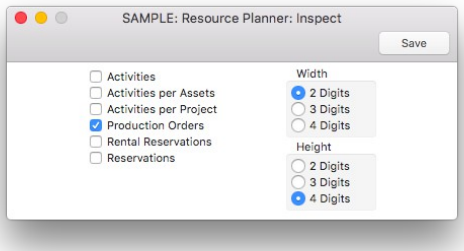
Production Components Inventory A/C: The account specified here will be credited with the total input cost and debited with the total output cost from finished productions, providing no inventory accounts have been specified for the relevant location or item groups. In other words, it will be used as inventory valuation account in general ledger transactions, if no inventory account is found elsewhere.

Production Work Cost A/C: The account specified here will usually be credited with the total work cost from finished productions. Usually, this will be the cost of labor required to build the assembled items. If you are using the “Use Item Groups for Cost Accounts” option in the “Cost Accounting” setting and you enter the Work Cost in a row in the Production with an Item belonging to an Item Group in which you have specified a Production Work Cost Account, then that Account will be used instead.

Discarded Prod. Cost: The account specified here will be debited when you mark a production as “Finished but Discarded”. If you are using the “Create Inventory Adjustment from Discarded Production” option in production settings, this account will be debited from the inventory adjustment. Otherwise, it will be debited directly from the production.

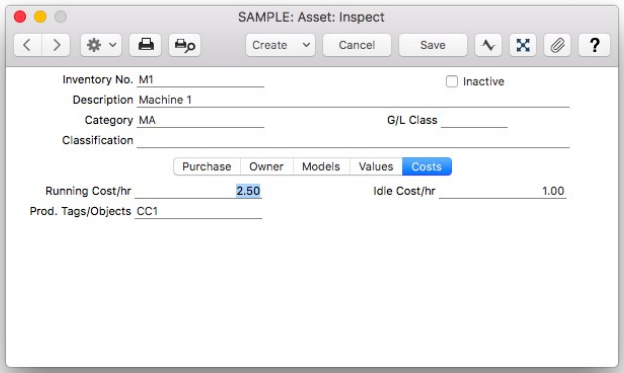
Disassemble Variance: The account specified here will be debited or credited when there are variances between the original production and the disassembled one.

Resource Planning>>Settings>>Resource Planner



Activate the "Production Orders" option if you will use the resource planner as a graphical tool to manage and plan your production orders. To use this feature, you must assign a machine to each production order and you must divide your machines into machine groups (page 7 above).

Assets>>Registers>>Assets



In the asset register, create separate records for each machine that you will use in the production process. You can then divide the machines into groups using the machine groups setting (page 7 above). If you only create an asset for production purposes and you don't want to include it in the depreciations report, assign the asset to a category in which the "Exclude from Reports" option is selected.

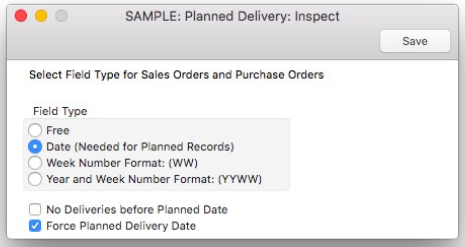
Running Cost/hr: If you selected the "Auto Calculate Cost of produced Items" option in production settings, you should specify the hourly running cost of the machine here. This will be used to calculate the running cost in each production, based on the start and end times of the production.

Idle Cost/hr: Again, if you selected the "Auto Calculate Cost of produced Items" option, you should specify the hourly idle cost of the machine here. This will be included in the running cost calculation in a production, based on the "Time to Setup" specified in the recipe, providing the production was created from a production order.

Production Tags/Objects: If you want tags/objects to be added to each production in which the asset is used as the machine, then enter those tags/objects here. The tags/objects will be shown on the 'Comment' tab of each production, and from there they will be assigned to every posting in the resulting general ledger transaction.

Sales Orders>>Settings>>Planned Delivery

If you will use the "Create Planned Records from Ordered Items" and/or "Create Planned Records from Orders" maintenance routines to create purchase orders and/or productions/production orders from sales orders, you should enter a planned delivery date in each sales order. These routines require you to set the "Field Type" of the planned delivery date to "Date" in this setting.



The planned delivery date in a sales order will be used by the maintenance routines to calculate when the productions should start, and when purchase orders should be issued.

By selecting "Force Planned Delivery Date" you can force users to enter a planned delivery date in every sales and purchase order.

Items

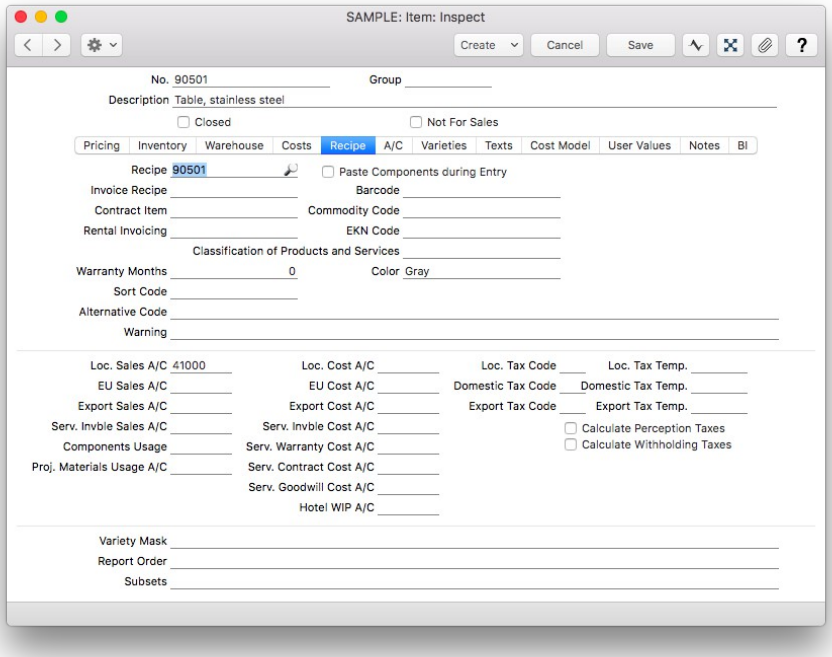
When entering records in the item register to represent assembled items, you will need to make a distinction between items that are assembled at the moment of delivery and those that are assembled in advance and held in inventory. To make this distinction, use the "Item Type" options on the 'Pricing' tab as follows:

Structured Items: Choose this option for items that will be assembled at the moment of delivery.

Inventory Items: Use this option for items that will be assembled in advance of delivery and that will be held in inventory. Use the production register to record the assembly of such items. When you mark a production record as "Finished" and save, the inventory levels of the input items (the components) will be reduced, and the inventory of the output item (the assembled item) will be increased.

In our example, we will use the inventory item option.

In both cases, the assembly process (the components used and the quantities required) is governed by a recipe (bill of materials). To connect an assembled item to its recipe, go to the 'Recipe' tab and use 'Paste Special' to choose the recipe. You can also create a new recipe from the item. Save the item record and then choose 'Recipe' from the Create menu.



Recipe definition is described below. To make the management of items and recipes easier, we recommend that the recipe code should be the same as the item code.

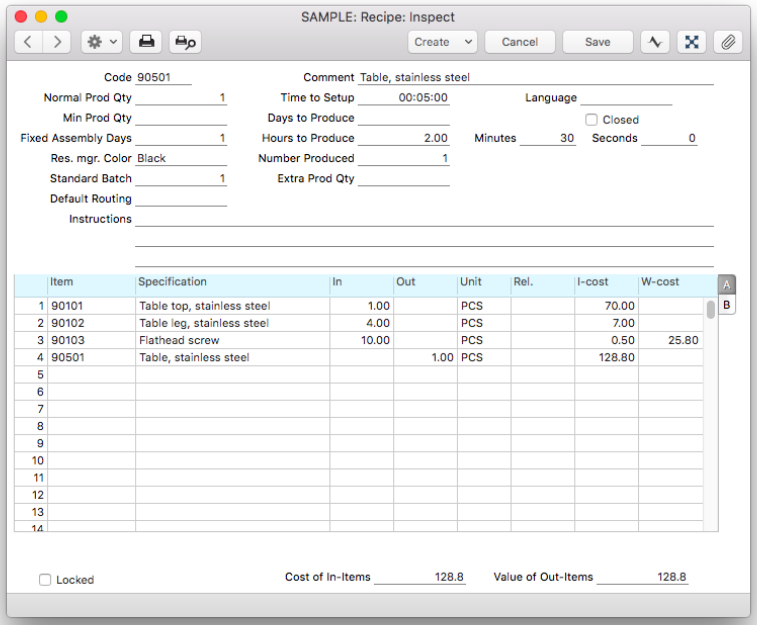
Each component should also have its own record in the item register. A component can itself be an assembled item. In t case, it must be an inventory item, not a structured item. When you produce such a sub-assembly, its inventory will be increased. When you use it as a component, its inventory will be decreased. An assembled item can be made up of several levels of sub-assemblies.

Recipes

When building assembled items from other items (i.e. from components), the assembly process is governed by recipes. A recipe is the list of the components (including quantities) needed to build an assembled item. The recipe is therefore the bill of materials for that item.

Before entering a recipe, you should enter and save the assembled Item as a separate record in the item register as described in the previous point. Specify a recipe for this item on the 'Recipe' tab. You can either enter the recipe directly to the recipe register as described below or you can create it from the item record for the assembled item, by selecting the 'Recipe' option from the Create menu. If you use the Create menu function, the recipe number will be the same as the item number and the assembled item will automatically be entered in the recipe as the output item. In addition, when you save the recipe, the recipe code will be pasted automatically in the recipe field in the item record.

It is recommended that you use the same recipe code that you entered on the 'Recipe' tab of the Item record. To open the recipe register, ensure you are in the production module, press the [Registers] button in the Navigation Center and select 'Recipes' from the resulting list. Select 'New' from the Create menu in the button bar to create a new recipe record.



Code: The code for the recipe can be up to 20 characters long. It is recommended for reasons of simplicity, that you use a recipe code that is the same as the item code of the assembled Item.

Comment: Enter a description of the assembly.

Normal Prod Qty: You only need use this field if the result of the recipe is an inventory item. If this is the case, specify here how many times the recipe is to be used in a single production record (i.e. in a production run). This quantity will be copied to the "Qty" field in the header of productions and production orders.

For example, if the output quantity of the recipe is two and it is applied five times in a production record (i.e. you have entered "5" in this field), the result will be ten units of the output item being added to inventory.

Enter "1" in this field if the output item or any of the components are serial numbered at unit level.

Min Prod Qty: Specify the minimum number of times the recipe can be used in a production run. This minimum quantity will be used by the "Create Planned Records from Ordered Items" and/or "Create Planned Records from Orders" maintenance routines. This figure will be placed in the Qty field in the header of any Production or Production Order created by these routines if it is larger than the quantity in the originating Sales Order.

Fixed Assembly Days, Days/Hours/Minutes/Seconds to produce, Time to Setup: These fields are only used if the result of the recipe is an inventory item. Use the "... to produce" fields to record the time required to build a single Item (i.e. it is for work that is carried out per unit built, many times per production run). The "fixed assembly days" is a constant figure irrespective of the quantity being built (i.e. it is for work that is carried out once per production run). The "time to setup" is an alternative to the "fixed assembly days": the "time to setup" will be included in the cost calculation if you are using the "Add Work Cost" option in Production Settings, while the "fixed assembly days" will not.

For example, the recipe might represent the assembly of an item from wood components. The time taken to retrieve the set of wood from the store, order the raw materials and set up the assembly line is the same, irrespective of the quantity being built. Enter this time as the "fixed assembly days" or the "time to setup". The remainder of the production time is taken up by assembling the components, polishing, painting and packaging. If there is only one set of tools, this can only be done for one unit at a time and therefore you should record this time using the "...to produce" fields.

This information will be used by the "Create Planned Records from Ordered Items" and "Create Planned Records from Orders" maintenance functions in the sales orders module. These functions create productions whose dates are calculated from the planned delivery dates of sales orders and these lead times from the appropriate recipes. This ensures productions for items on sales orders are raised as late as possible, so that the goods are built just before they are scheduled for delivery to the customer. Any necessary purchase orders for the components will also be created. These will be dated using the "delivery days" from the "default purchase items" for the components, ensuring they arrive in time for the assembly process to be completed.

"Days" in "fixed assembly days" and "days to produce" are 24-hour days. The "time to setup" field uses a time format. For example, if the Time to Setup is two hours, enter "02:00:00". The maximum time is 23:59:59.

Res. mgr Color: All Production Orders using a particular recipe will appear in the same color in the resource planner. Use 'Paste Special' to choose that color here.

Standard Batch: This field must contain a value. Define here the quantity that is usually produced when creating productions from production orders. If the quantity is not always the same, then enter 1.

Instructions: Use these three lines to record instructions about how the recipe should be used. These instructions will be copied to production orders.

Use the matrix that takes up most of the record to list the input items (i.e. the components that will be used to build the final assembly) and the output item (i.e. the assembly or the finished product, the result of the recipe). The components must be inventory items, and the output item must be an inventory item or a structured item. If you will use the production register to build the item, or if the result of the recipe will itself be used as a component in another recipe, then the output item must be an inventory item. A recipe can result in more than one assembly or finished product. If so, they should all be the same type (i.e. they should all be inventory items).

Flip A

Item: Use 'Paste Special' to enter the item number of each component item and of the finished product. You can enter the items in any order.

Specification: Standard ERP fills in the item description.

In: Enter the quantity of each component required to make or build the finished product. Do not enter an "in quantity" for the finished product.

In any general ledger transactions generated from production records using this recipe, the credit amount will be taken from the rows with an "in quantity" (i.e. input items).

Out: In the row(s) representing the output item(s), enter the quantity that can be made from the components listed above. Usually, this will be just one, and it must be one if the finished product is a structured item. In any general ledger transactions generated from production records using this recipe, the debit amount will be taken from the rows with an "out quantity" (i.e. output Items).

Rel.: Relativity. You must use this field if the result of the recipe is that more than one output item will be assembled (i.e. there is more than one row in the recipe with an output item). In each row representing an output Item, enter a

percentage figure. When the inventory input cost of each production record is calculated, the total cost of the components will be used to calculate the values of the output items, distributed to each output item according to the percentages entered here.

I-cost: Input cost value (per unit). If the row contains an input item, enter the unit cost price for the item. The default will be the cost price of the item. The cost shown in this field is NOT the same as the FIFO inventory value. You can update this cost using the "Update Recipes" maintenance function.

If the row contains an output item (i.e. the assembled Item), enter the unit cost value of that item. This will usually be the sum of the cost prices of the input items, taking quantities into account. Again, the default will be the cost price of the item.

The total input costs are shown in the Cost of In-Items field in the footer, while the total output costs are shown in the Value of Out-Items field.

W-cost: Work cost value (per unit produced). Usually, this will be cost of the labor required to build the assembled item.

You should only specify a work cost if the result of the recipe is an inventory item that you will build using the production register.

You can enter the work cost in any row featuring an input item, as shown in the illustration above. This ensures the work cost will correctly be credited to the production work cost account in any general ledger transactions generated from production records using this recipe. If you enter the work cost in an output row, the work cost will be debited to the production work cost account. Usually the production work cost account will be taken from the "Account Usage Inventory" setting.

Although you should enter the work cost in an input row, the figure is independent of the "in quantity" in that row. For example, if the work cost is 10.00, enter 10.00: do not enter 5.00 if the "in quantity" is 2.

If you are using the "Add Work Cost" option in Production Settings (page 9 above), a work cost will be calculated automatically and placed in the last input row. The calculation will use the formula: (time to setup + days/hours/minutes/seconds to produce) * work cost per hour from Production Settings. You will not be able to change this work cost.

Work cost values are included in both the cost and value fields in the footer.

Flip B

Description: Any notes about the item can be recorded here.

Recipe: This field shows whether the item is an assembly (i.e. it is one with a recipe specified on its 'Recipe' tab). This is updated automatically by Standard ERP and cannot be changed.

Footer

Locked: Once you are certain the recipe is correct, you should tick this box to prevent further changes. Once you have used a recipe in a transaction (e.g. delivery or production), you should not change it, especially if the result of the recipe is a structured item whose "paste components during entry" box is not checked (in this case the recipe will be locked automatically when you use it for the first time).

If it becomes necessary to change a recipe, you should not do so. Instead, you should create a new one (and attach it to a new inventory item).

Cost of In-Items: This field contains the sum of the costs of the input items (W-cost + (I-cost * In qty)). If the assembled item is an inventory item, you must transfer this value to the cost price field on the 'Costs' tab of the item record for the assembled item, either manually or using the "Update Recipes" maintenance function in the production module. This will ensure that gross margin calculations are correct when you sell the assembled item.

Value of Out-Items: This field contains the sum of the costs of the output items (W-Cost + (I-Cost * Out Qty)).

Machine Hours

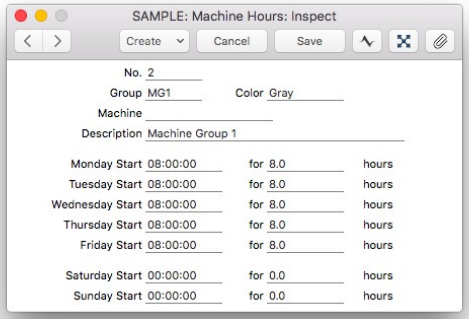
This register in the production module allows you to record the hours when your machines operate. This information will be used for two purposes:

1. It will be used by the "Create Planned Records from Ordered Items" and "Create Planned Records from Orders" maintenance functions when they calculate start dates in production orders.

2. The time when machines are not working will be displayed in the Resource Planner.

For example, if you want the machine group to be available for 8 hours daily from Monday to Thursday and for 7 hours on Friday, enter start at 8:00 for 8 hours for Monday to Thursday and start at 8:00 for 7 hours for Friday.

If the machine group is not available on a particular day, then enter start at 0:00 for 0 hours.



In the Color field, use 'Paste Special' to choose the color that will be used in the resource planner to signify times when the machines are idle. This should be a different color to the Res. mgr Color in the recipes that you will use the machines to produce.

Production Item Alternatives

Use this register in the production module to connect output items, machines and recipes.

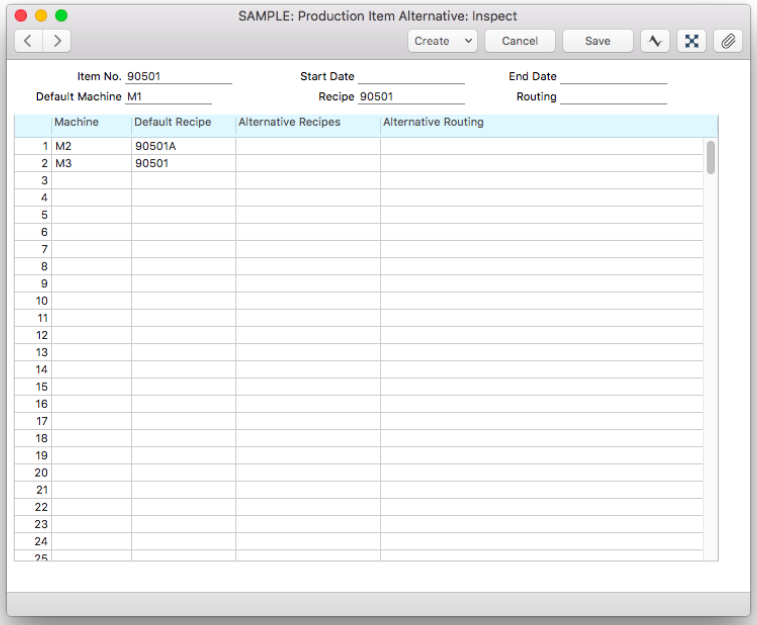
You should enter a separate record in this register for each output item that you produce. In this record, list the machines that you can use to produce the output item, and the recipes that you will use with each machine.

This feature is available only when using production orders.

The information in the Production Item Alternative register will be used in the following situations:

- When you specify a recipe in a production order and if you have entered a record in the Production Item Alternative register for the output item in that recipe, the "Default Machine" from that record will be copied to the production order. If that Production Item Alternative record does not have a "Default Machine", the machine in the first row with the recipe will be used.
- If you create a production order using the "Create Planned Records" or "Create Planned Records from Orders" Maintenance routines, the machine in that production order will be chosen as described in the previous point.
- If you change the machine in a production order, you must do so to a machine that is listed in the Production Item Alternative record for the output item (i.e. to a machine that can produce the item). You can change the machine in a production order itself or by dragging and dropping the production order from one machine to another in the resource planner. If the new machine uses a different recipe, that recipe will be copied to the production order, and the input and output items will be changed accordingly.

The record illustrated below shows that item 90501 is produced by default using machine M1. If this machine is not available for production, we can change to machine M2 or M3. If we change to M2, an alternative recipe 90501A will be used. This new recipe can differ in items in used, quantities (e.g. related to waste) or times.


SAMPLE: Production Item Alternative: Inspect
Create
Cancel
Save
Item No. 90501
Start Date
End Date
Default Machine M1
Recipe 90501
Routing
Machine
Default Recipe
Alternative Recipes
Alternative Routing
1 M2 90501A
2 M3 90501

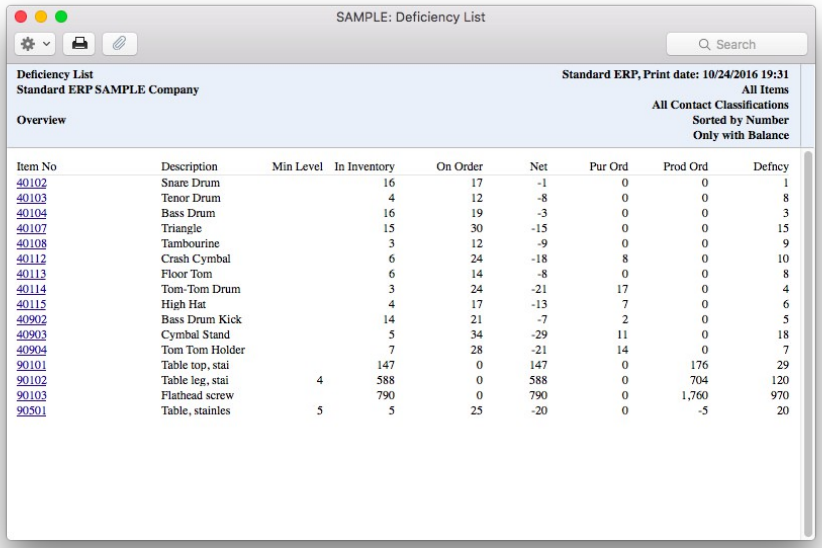
STARTING WORK

Now we have our system properly set up for the work flow and work process we want – the assembling of tables against orders.

Commercial departments will enter sales orders when they receive them from their customers. Alternatively, they can create their own sales forecast usually for longer periods, 6 months, 1 year, or 2 years. In this case production plans and purchase order plans will generate the production orders and purchase orders referred to in this course. For this functionality the MRP module needs to be used.

Checking Deficiency reports

Run the deficiency list report to check your inventory levels, undelivered order quantities and quantities in open purchase orders and production orders. This will give information about deficiency levels, to prompt the creation of the required purchase orders and production orders. The deficiency list report is available in the inventory, production and purchase orders modules.



Deficiency List
Standard ERP SAMPLE Company

Overview

Standard ERP, Print date: 10/24/2016 19:31
All Items
All Contact Classifications
Sorted by Number
Only with Balance

Item No	Description	Min Level	In Inventory	On Order	Net	Pur Ord	Prod Ord	Defncy
40102	Snare Drum		16	17	-1	0	0	1
40103	Tenor Drum		4	12	-8	0	0	8
40104	Bass Drum		16	19	-3	0	0	3
40107	Triangle		15	30	-15	0	0	15
40108	Tambourine		3	12	-9	0	0	9
40112	Crash Cymbal		6	24	-18	8	0	10
40113	Floor Tom		6	14	-8	0	0	8
40114	Tom-Tom Drum		3	24	-21	17	0	4
40115	High Hat		4	17	-13	7	0	6
40902	Bass Drum Kick		14	21	-7	2	0	5
40903	Cymbal Stand		5	34	-29	11	0	18
40904	Tom Tom Holder		7	28	-21	14	0	7
90101	Table top, stai		147	0	147	0	176	29
90102	Table leg, stai	4	588	0	588	0	704	120
90103	Flathead screw		790	0	790	0	1,760	970
90501	Table, stainles	5	5	25	-20	0	-5	20

In our example, we can check that we need to produce tables. The last line in the report shows us that the quantity we have in inventory is not enough to deliver our sales orders and replace minimum levels for this item. We already have an unfulfilled production order for the item but again the quantity is not enough. The preceding lines show that we are also short of some of the components needed to produce the tables.

Creating Production Orders

In our example, when we run the maintenance function described below, production orders will be created that will allow us to deliver our items on their planned delivery dates (just-in-time method).

Create Planned Records from Ordered Items maintenance routine

This function in the sales order and production module will be useful in businesses that operate on the 'Just In Time' principle whereby purchase orders for items on sales orders are generated as closely as possible to the production date, so that the goods arrive just before they are scheduled for delivery to the customer. It creates purchase orders and production orders or productions for items on sales orders dated using the planned delivery dates of the sales orders and the lead times of the items in question. These are sometimes known as "future" or "planned" records. If you wish to use this feature, each sales order must have a planned delivery date, and the "planned delivery date" field must use the date format, set in the "Planned Delivery" setting in the sales orders module (page 12 above).

The function will find all unfulfilled sales orders whose planned delivery dates fall within the specified period. Usually, it will

then create a separate unOKed purchase order for each date/vendor combination. You can print these purchase orders and OK them at the appropriate time from the 'Purchase Orders: Browse' window, sorted by the transaction date. If any of the items on the sales orders are inventory items with a recipe specified on the 'Recipe' tab, records will be created in the production order or production registers facilitating the assembly of these items, and purchase orders will be raised for the components. Use the "Generate Planned" options in the "Production Settings" setting (page 9 above) to choose whether you want production orders or productions to be created.

When the function creates a purchase order for an Item, it will choose the vendor as follows—

1. If the item has a corresponding record in the purchase item register in the purchase orders module with a vendor specified and with the default check box ticked, that vendor will be used. Please refer to the 'purchase orders' manual for details about purchase items.
2. In all other cases, the vendor will be the default vendor specified in the "Purchase Order Settings" setting. If you have not specified a default vendor, purchase orders will not be raised for items that do not meet the criteria in point 1 above.

The dates of the purchase orders will be calculated from the "planned delivery dates" of the sales orders and the "delivery days" of the purchase items. For example:

Planned Delivery Date of Sales Order	January 25
Delivery Days of Item 1 (from Purchase Item)	10
Delivery Days of Item 2 (from Purchase Item)	5
Date of Purchase Order for Item 1	January 15
Date of Purchase Order for Item 2	January 20

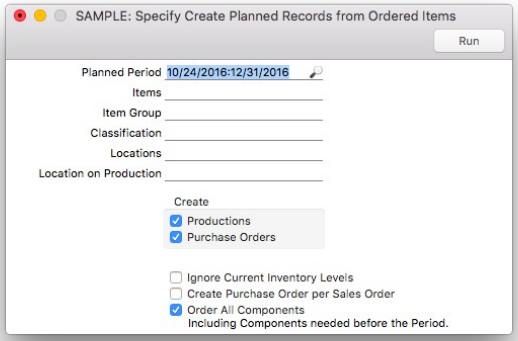
If an item is being purchased from the default vendor (point 2 above), the delivery days is assumed to be zero.

When the function creates a production order or production record, its date will take into account the "fixed assembly days", the "days/hours/minutes/seconds to produce" and the "time to setup" recorded in the recipe, and the "buffer days" in the "production settings" setting. The "days/hours/minutes/seconds to produce" together are the time required to produce a single unit, while the "fixed assembly days" and the "time to setup" are independent of the quantity being produced. For example:

Planned Delivery Date of Sales Order (qty 2)	January 25
Days to Produce for the first unit (from Recipe)	2
Days to Produce for the second unit (from Recipe)	2
Fixed Assembly Days (from Recipe)	1
Buffer Days (from Production Settings)	5
Date of Production or Production Order	January 15

If the function needs to create purchase orders for the components, these will be dated so that the components arrive in time to carry out the assembly.

Selecting the “Create Planned Records from Ordered Items” function brings up the following dialog box:



Planned Period: Purchase orders and productions or production orders will be created from all sales orders whose planned delivery dates fall in the period entered here. If a particular order row has a “planned delivery date” on flip E, this will be used in place of the one on the ‘Date’ tab. In fact the field on the ‘Date’ tab can be blank if every row has its own date. The“planned delivery date” field must use the date format, set in the “Planned Delivery” setting.

The default period runs from the current date to the last day of the first period in the “Reporting Periods” setting.

Any closed orders with “planned delivery dates” falling in the selected period will be ignored.

Items: To create purchase orders and productions or production orders for specific items, enter an item number or range of item numbers here. Other items that have been used in the selected sales orders will not be ordered.

Only inventory items are ordered, meaning that plain, structured and service items are ignored by this maintenance function.

Item Group: To create purchase orders and productions or production orders for items belonging to a specific item group, enter an item group here. Other items (i.e. those belonging to other groups) that have been used in the selected sales orders will not be ordered.

Classification: To create purchase orders and production orders or productions for items belonging to a specific item classification, enter an item classification here. Other items (i.e. those belonging to other classifications) that have been used in the selected sales orders will not be ordered. If you enter a number of classifications separated by commas, purchase orders and production orders or productions will only be created for those items featuring all the classifications listed.

Locations: If you leave this field blank, the function will create one purchase order for each vendor/date combination. So, items on various sales orders that can be purchased from the same vendor and which have to be ordered on a particular date will be placed on a single purchase order. The location field on the ‘Del. Terms’ tab of this purchase order will be the main location from “Inventory Settings”. Sales orders with and without locations (specified on the ‘Del. Terms’ tab) will be considered.

If you enter a location here, the function will create separate purchase orders for each vendor/date combination, but only from sales orders with that location specified on flip F of a row or, if blank, on the ‘Del. Terms’ tab. You can also enter a range of locations (separated by a colon) in this field, in which case the function will create separate purchase orders for each vendor/date/location combination. The appropriate location will be copied to the ‘Del. Terms’ tab of the purchase orders.

Usually, only one set of purchase orders and production orders or Productions will be created from a particular sales order. Repeated use of the “Create Planned Records from Ordered Items” function will not result in many purchase orders. However, in the case of sales orders with locations, if you first run the function for specific items (or with a blank specification window) and then for a specific location, you will get two purchase orders, one with a location on the ‘Del. Terms’ tab and one without. It is therefore recommended that you make sure that you always specify a location or always leave the location field blank, as appropriate.

Location on Production: If you want the function to create productions orders or productions, specify here the location that is to appear in the header of each new production order or production.. If you do not specify a location here, the one in the field above will be used. If you specified a range of locations in the field above, the last location in the range will be used.

Create: Use these options to determine whether purchase orders and/or production orders or productions are to be created.

If you choose only to have production orders or productions created, purchase orders will not be created for the components. To choose between production orders and productions, use the "Generate Planned" options in the "Production Settings" setting.

Ignore Current Inventory Levels: By default, the quantity on any purchase orders and productions will take current inventory levels into account. For example, you have a sales order for five of a particular item of which you already have three in inventory. The function will create a purchase order with a quantity of two. The minimum order quantity from the purchase item will be taken into account.

If you use this option, the quantity will be copied from the sales order to the purchase order, and current inventory levels will be ignored. So, in the example, a purchase order with a quantity of five will be created. Again, the minimum order quantity from the purchase item will be taken into account.

Press [Run] to run the function. It may take a few moments, depending on the number of purchase orders and productions to be created. When it has finished, you will be returned to the 'maintenance' list window.

The Production Order Register

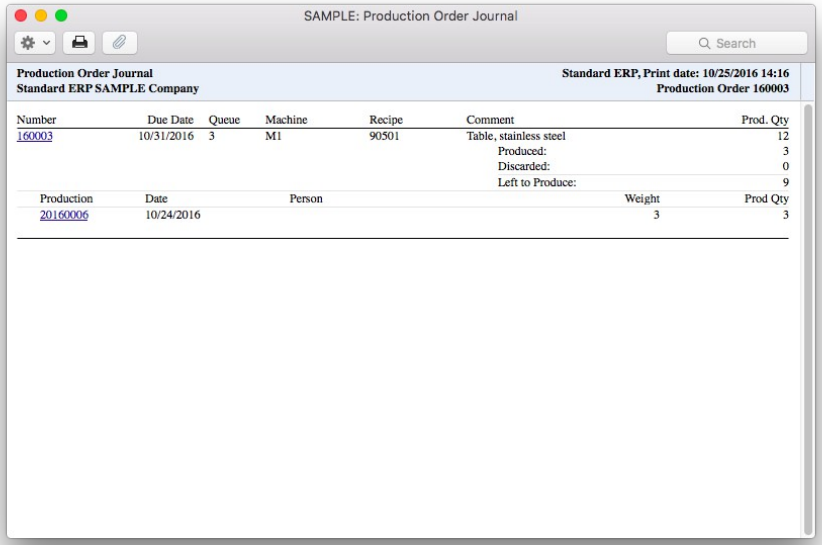
The production order register is the starting point of the production work flow. Most of the information in production orders will be filled in automatically when you generate them using the maintenance routines described previously. Production orders are created with the status "Created".

The machine in each production order will be the "default machine" in the production item alternatives record for the output item, or blank if there is no production item alternatives record.

Managers can check the information in each production order, check in the Resource Planner window (page 24 below) for machine availability and change the status of the production order to "Accepted". For a Production Order to be visible in the Resource Planner, and to be able to generate productions from it, it is mandatory that its status is "Accepted".

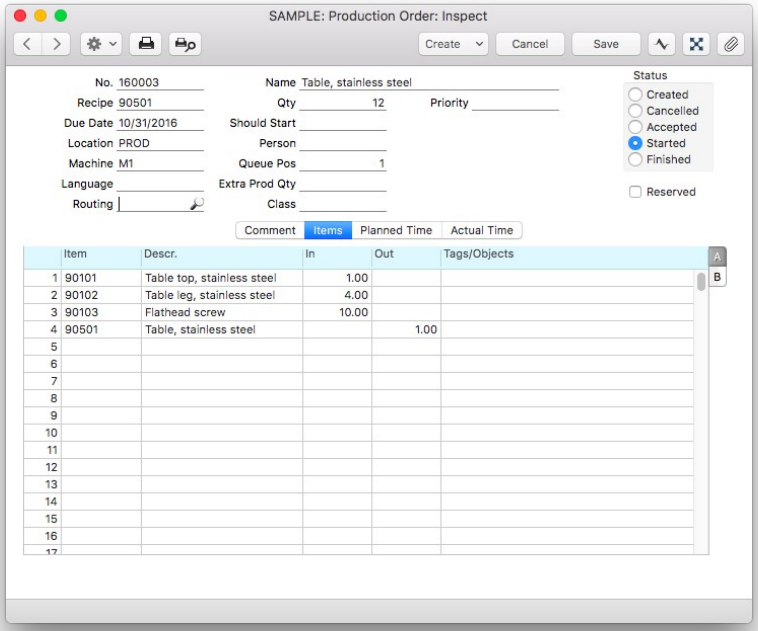
To start the production, open the production order in a record window and choose "Finish Batch" from the operations menu. This action will create a production record with the quantity specified in the production order and will include the other details.

At any time, you can check the status of a production order. Open the production order in a record window and choose "Production Order Status" from the operations menu.



In this example, we have a Production order for 12 units of the item named "Table, Stainless steel". Three units have already been produced.

When the status of a Production Order is “Accepted”, the production manager can create the Production by selecting “Finish Batch” from the Operations menu. Before explaining the Production process, let’s provide descriptions of the different fields in the Production Order record.



Header

No.: The number of the production order record. Standard ERP will enter the next available number from the first number sequence entered in the number series setting for production orders. You may change this number, but not to one that has already been used. In multi-user systems, the next unused number will not be allocated until the production order record is saved.

Name: The name of the recipe appears here after you specify a recipe in the field below.

Status: At any time a production record can be in one of five states, to help with the workflow and for reporting purposes. These states are the following:

Created: When a record is created in the production order register, it will be marked as “Created”.

Cancelled: In the case where you generate a production order record in error or the job is cancelled before work has started, you should change the status to “Cancelled”.

Accepted: When you are ready to place a production order in the queue for the machine, change the status to “Accepted” and save. The queue position will determine the order in which production orders will be produced, and will be shown in the “queue pos” field. To change the queue position, select “Move in Queue” from the operations menu (or use the Resource Planner). You must mark a production order as “Accepted” (or “Started”) before you can create productions from it.

Started: When work starts (e.g. when you select “Finish Batch” from the operations menu), you should change the status to “Started”. This will update the “start date” and “start time” on the ‘Actual Time’ tab. If you create a production from a production order and mark that production as “Started”, the status of the production order will be updated to “Started” as well automatically.

Finished: When the production order is complete (i.e. when all productions are finished), you should mark the production order as “Finished”. You will not be able to produce any more batches from the production order.

Recipe: If you are entering a production order directly to the production order register, use ‘Paste Special’ to choose the recipe. The appropriate input and output items with quantities will be listed in the matrix on the ’Items’ tab. The “default machine” used to produce the recipe will be brought in from the production item alternative register.

Qty: The number of applications of the recipe.

Due Date, Should Start: These dates represent the period when the work represented by this production order record must be carried out.

Location: Use 'Paste Special' to choose the location where production will take place.

Machine: Use 'Paste Special' to choose the machine that will be producing the out item(s) from the Asset register. If you are using Production Item Alternatives, a default machine will be brought in when you specify the recipe.

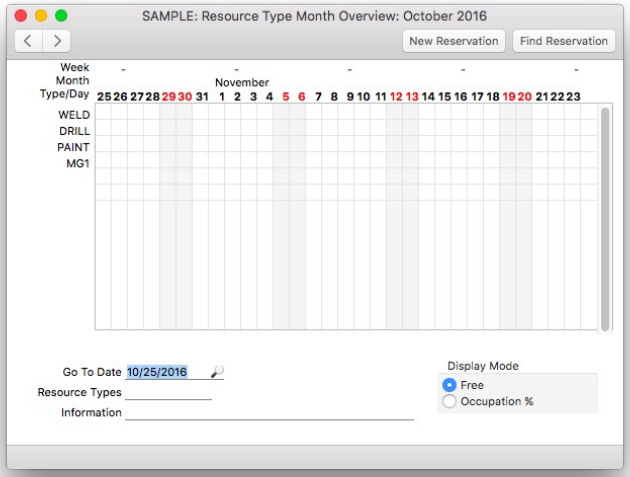
Queue Pos: When you mark a production order as "Accepted" or "Started", it will be placed in the queue for the machine. This field will show its position in the queue. To see the full queue for a machine, open the Resource Planner window or produce a Production Queue report. You can change the queue position by selecting "Move in Queue" from the operations menu, or by dragging and dropping in the Resource Planner. You can also drag and drop to another machine. The recipe might change, depending on the production item alternatives register.

Production Orders and the Resource Planner

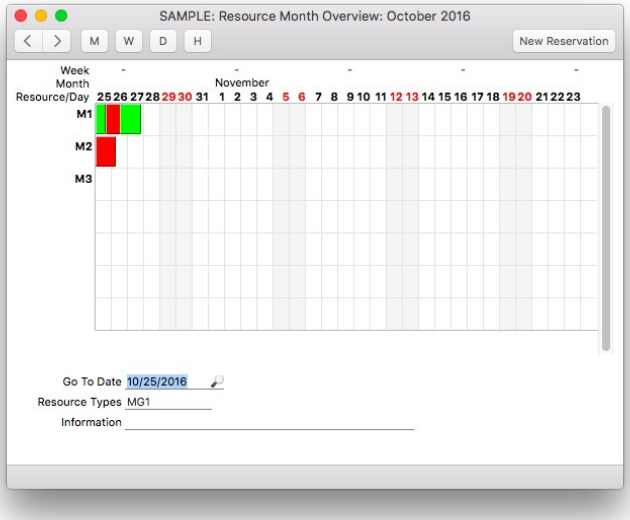
If you have the Resource Planning module, you can use it and the Production Order register to help schedule work on Productions. Using the Resource Planner requires the following configuration steps:

1. Tick the "Production Orders" option in the "Resource Planner" setting (page 12 above).
2. Create records in the asset register for each of your machines (page 12).
3. Divide your machines into groups using the "Machine Groups" setting (page 7).
4. Use the "Machine Hours" register to specify the working hours for each machine (page 16).
5. Use the "Production Item Alternatives" register to connect recipes to machines (page 17).
6. In each recipe, use the various "to Produce" fields and the "Fixed Assembly Days" and/or "Time to Setup" fields to specify the time required to build the assembled item, and specify a color for the Resource Planner in the "Res. mgr Color" field.

To open the Resource Planner, press the [Resources] button in the Navigation Center. In the window that opens, the various machine groups are listed on the left-hand side:



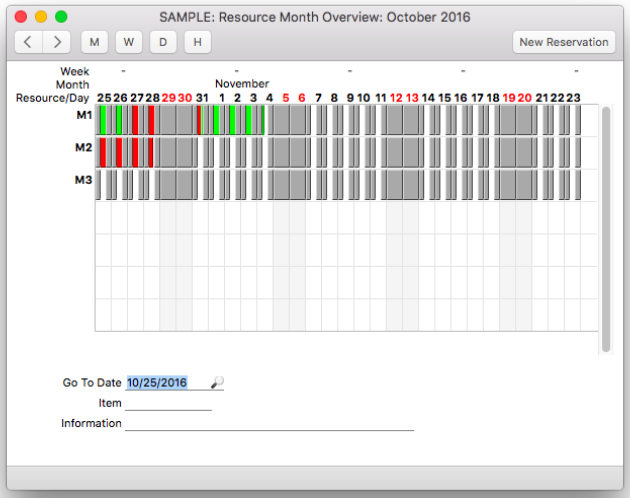
Select one of the machine groups to see the individual machines:



The colored blocks represent the various Production Orders in the queue. These Production Orders use different Recipes, hence the different colors.

You can drag a production order to another machine, providing it is one that can be used to build the output item. The dragged production order will be placed at the end of the other machine's queue. You can also open production order records from the window.

If you used the "Machine Hours" register to specify the working hours for each machine, you should also have specified a color that will be used to display non-working hours in the Resource Planner (gray in the illustration below):



If you prefer to work from a textual representation of the queue, use the Production Queue report (page 58 below).

Working with Productions

The production order is a tool for scheduling work on productions. Each production order has its place in the queue for a particular machine. When a production order reaches the front of the queue, you should create a production from it, so that work can start. The production will update inventory levels of the input and output items, and will cause all costs to be posted to the general ledger.

As described in our example, you can create productions from production orders, by selecting "Finish Batch" from the

operations menu. Depending on the “Generate Planned” option that you have selected in Production Settings, you can also bypass the production order stage and have productions created by the two “Created Planned Records” maintenance routines, and even by the “Create Productions” maintenance routine in the MRP module.

When you create a production record from a production order, the details from the Production Order will be copied in. Otherwise, details from the recipe will be copied in.

While a production is in progress, the employees can make some adjustments to the components used, and they can input working times. When work is complete, they should mark the production as “Finished” and save. The components will be removed from inventory and the produced item will be placed into inventory, with the complete production cost (raw materials + work cost). The necessary general ledger transactions will be generated automatically, according to the settings.

Let’s proceed with our example, where a production was created from a Production Order for 12 units. The quantity in the Production will also be 12 units. If, for example, you decide to produce three units, you can change the Qty field in the header to 3 units.

Immediately, some changes will be made in the production record. In our example we are using the “Production Lines old Actual Qty” option in Production Settings, so the In and Out quantities in the matrix will change. This option means that all the rows show the Qty from the recipe * the Qty from the production header. For example, the Out quantity of the output item will change from 12 to 3. If you are not using the “Production Lines old Actual Qty” option, the rows will show the Qty from the recipe. In this case, changing the Qty field in the header will not affect the rows.

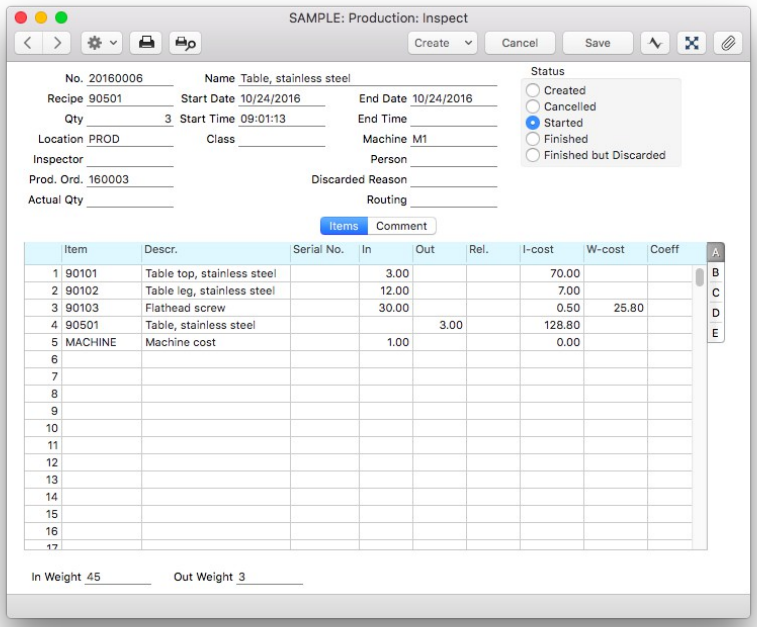
According to the Recipe, to produce these 3 tables, we need 30 Flathead screws. If one of them is damaged and we need to use 31, we could add the cost to the production by adding an extra output row. We could also change the qty to 31 in the existing row. Both are much easier to do because we are using the “Production Lines old Actual Qty” option (if we were not, we would have to increase the row qty to 10.333 because the row qty will be multiplied by the qty in the header to reach the total output quantity).

In our example, there is a line with Machine Cost. This has been added because we are using the “Auto Calculate Cost of produced Items” option in Production Settings (page 9 above). The machine cost will include two costs:

- The running cost: asset running cost * the time taken by the production.
- The idle cost: asset idle cost * recipe “Time to Setup” / total production order quantity.

The machine cost line will be added and updated automatically when you save the Production after changing the Start and End Dates and Times. These dates and times will be updated automatically when you mark the production as “Started” and ”Finished”.

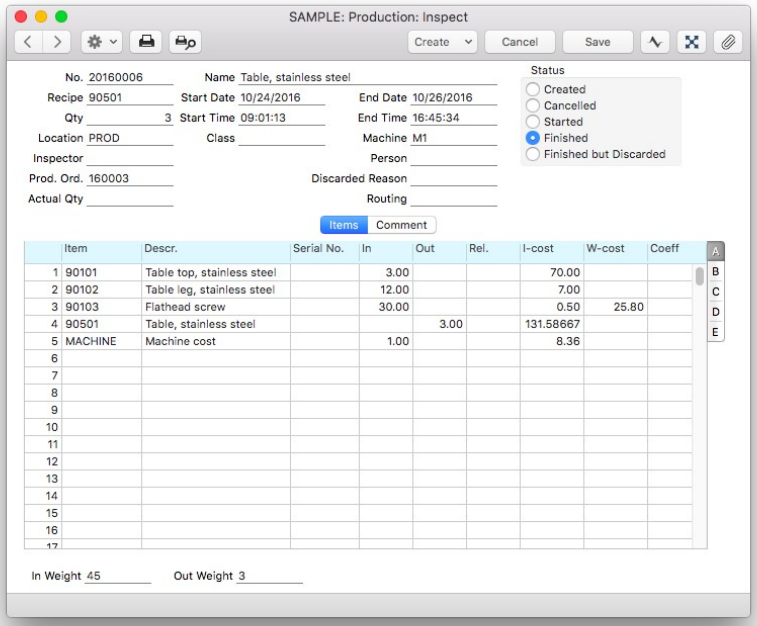
Another cost added automatically is the w-cost in the last input row, copied from the recipe. If you are using the “Add Work Cost” option in Production Settings, a work cost will be added to each recipe automatically (page 16 above).



So, to produce these three units with the correct cost, follow these steps:

- Enter the qty to be produced in the header
- Mark the production as “Started” and save. This will cause the Start Date and Time to be filled in.
- When the work finishes, confirm the components used and update the End Date if necessary. Mark the production as “Finished” and save. This will cause the End Time to be filled in and the machine cost to be calculated.

All the other actions will happen automatically when the production record is finished.



Note that the work cost is per unit, while the machine cost is per production. In the example illustration, the total work cost will be (25.80 * 3) + 8.36.

When you changed the production status to finished, a General Ledger transaction was generated and at the same time, inventory levels were updated: component levels were reduced and three tables were added, available for selling.

The General Ledger transaction looks like the following:

Debit Inventory Valuation	394.76
Credit Inventory Valuation	309.00
Credit Production Work Cost	85.76

This illustrates how easy it is from the users point of view to work with the productions. There is an explanation below of the different fields in the 'Productions: Browse' and the 'Production: Inspect' windows.

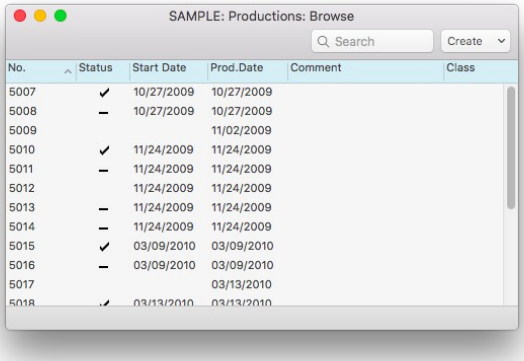
The Production Register

As illustrated in the previous section, this register is used to produce inventory items using recipes i.e. to build them from components for holding in inventory. A general ledger transaction can be generated if required (i.e. if you are maintaining an inventory valuation in the general ledger). Always remember, any output item should be entered as an inventory item.

You can enter production records directly in to the production register or generate them from production orders, using the "Finish Batch" function on the operations menu on the production order record.

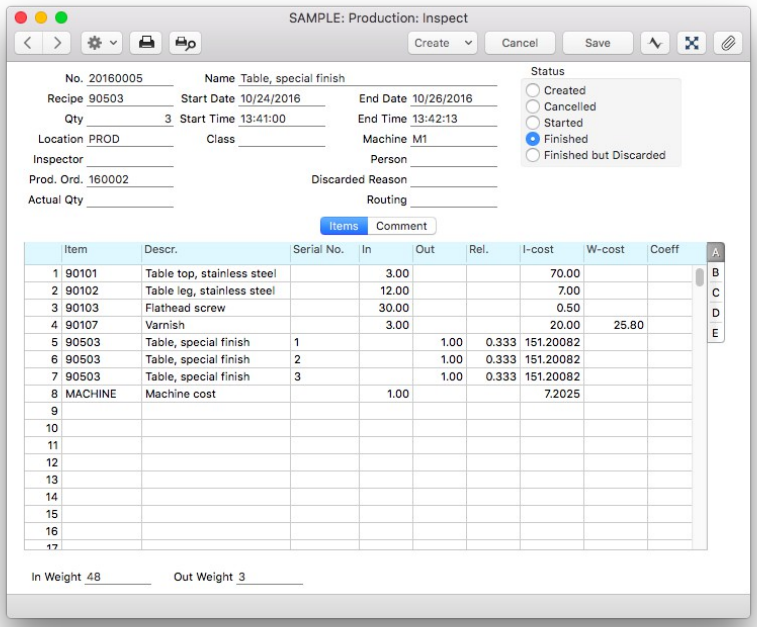
To open the production register, ensure you are in the production module, select 'Registers' from the Navigation Center and choose 'Productions' in the resulting list.

The 'Productions: Browse' window is opened, showing the productions that have already been entered.



The status column is blank for created productions or shows a "√" for cancelled or finished productions, and a "-" for started productions. This status is set per production using the options in the header of the production screen.

To enter a new production, select 'New' from the Create menu in the button bar or use the [Ctrl]+[N] (Windows and Linux) or [⌘]+[N] (Mac OS X) keyboard shortcut. Alternatively, highlight a production record similar to the one you want to enter and select 'Duplicate' from the Create menu.



The production record window is opened, empty if you selected 'New' or containing a duplicate of the highlighted production.

Header

No.: The number of the production record. Standard ERP will enter the next available number from the first number sequence entered in the number series setting. You may change this number, but not to one that has already been used. In multi-user systems, the next un-used number will not be allocated until the production record is saved.

Recipe: Enter here using the 'Paste Special' function or manually enter the recipe code. In a duplicated record, or one generated from a production order, this field is automatically filled. This will set the in- and out items of the recipe with pre-defined quantities.

Name: The name of the recipe appears here after you specify a recipe in the field below.

Status: At any time, a production record can be in one of five states, to help with the workflow and for reporting purposes. These states are the following:

Created: When you first enter a record in the production register, it will be marked as created. Created productions are blank in the status column in the productions browse window.

Cancelled: If you generate a production record by error or the job is cancelled before work has started, you should change the status of the production to cancelled. This signifies that no work should be carried out. Once you have marked a production record as cancelled and saved it, it can no longer be modified. Cancelled production records are marked with a "√" in the production browse window.

Started: As soon as work starts, you should change the status of the production record to started. When you save the record, the start time will be updated. Started production records are marked with a "-" in the production browse' window.

Finished: Check this box to confirm that the production work has been completed and the assembled items delivered to inventory. The inventory levels of the assembled items and the components will be updated when you save the record. The end time will be updated, as will the start time if it is empty. Once you have marked a production record as finished and saved it, it can no longer be modified. Finished production records are marked with a "√" in the productions browse window.

Select the "Do Not Allow Over Delivery" option in the "Inventory Settings" setting in the inventory module if you do not want to create negative inventory of the components. If you are using this option, Standard ERP will not allow you to save a production record marked as finished if there is not enough inventory of any of the components to carry out the assembly.

If you have so determined in the "Sub Systems" setting in the general ledger, a general ledger transaction will be created in the transaction register when a production record is marked as finished and saved. The nature of this transaction is described in the section entitled 'General Ledger Transactions from Production Records', below on page 33.

Finished but Discarded: Check this box to confirm that the production work has been completed, and that for some reason the assembled items were discarded. The consequences will depend on whether you are using the "Create Inventory Adjustment from Discarded Production" option in Production Settings, as follows:

- If you are not using this option, inventory levels of the components will be updated when the record is saved, but not those of the assembled items. The out quantity in the production will be set to zero.
- If you are using this option, inventory levels of the components and the assembled items will both be updated when the record is saved. An OKed inventory adjustment will be created automatically, removing the assembled items from inventory.

In both cases, the end time will be updated, as will the start time if it is empty. You must also specify a reason for discarding before you can save the production (use 'Paste Special' to choose the reason from the "Standard Problems" setting. Once you have marked a production as "finished but discarded" and saved it, it can no longer be modified. Discarded production records are marked with a "√" in the production browse window.

In other respects, this option is similar to finished, described above. For details about the resulting general ledger transaction, please refer to the section entitled 'General Ledger Transactions from Production Records', below.

Start Date, End Date: These dates represent the period when the work represented by this production record is to be or was carried out.

These fields are important in production records created by the "Create Planned Records from Ordered Items" maintenance function in the sales order module. This function schedules productions for items on sales orders, so that the assembly work is carried out just before the items are scheduled for delivery to the customer. The start and end dates are calculated from the "planned delivery date" of sales orders and the "fixed assembly says" and "days to produce" from the recipe. If it is necessary to create purchase orders for any components, these will be dated using the "delivery days" from the default purchase items for the components, ensuring they arrive in time for the assembly process to be completed.

Qty: The number of applications of the recipe.

The way this field interacts with the In and Out Quantities in the rows depends on the "Production Lines hold Actual Qty" option in the Production Settings setting. For example, a Recipe states that two components are required to produce one final Item. In a Production, if you need to produce two final Items, you will enter "2" in this field. If you are using the "Production Lines hold Actual Qty" option, the In Qty of the component will change from "2" to "4", and the Out Qty of the final Item will change from "1" to "2". If you are not using this option, the In Qty of the component will stay at "2", and the Out Qty of the final Item will stay at "1". In both cases, when you finish the Production, four components will be removed from stock, and two final Items will be added.

When you enter a production directly in the production register, Standard ERP will suggest the normal production quantity from the recipe as a default. In the case of productions created from production orders, the default will be the quantity from the production order. In both cases, you will not be able to enter a value that is lower than the minimum production quantity of the Recipe.

If you are not using the "Production Lines hold Actual Qty" option, you should enter "1" in this field if the output item or any of the components are serial numbered at unit level. If you need to assemble several output items, list the serial numbered items individually in the matrix, and change the in and out quantities of the non-serial numbered items appropriately. If you are using the "Production Lines hold Actual Qty" option and at least one of the Items is Serial Numbered at unit level, you can enter any quantity in this field. The In and Out Quantities in each row will be updated. Then, list the Serial Numbered Items individually in the grid: do not do this before changing the Qty in the header because then the In and Out Quantities in the individual rows will be updated incorrectly.

Start Time: The time when the work represented by this production record began. If this field is empty, the current time will be placed here automatically when you mark a production as started and save it.

This start time can be used to record the running cost of the machine used in the production. Please refer to the description of the Machine field for details.

End Time: The time when the work represented by this production record finished. If this field is empty, the current time will be placed here automatically when you mark a production as finished and save it.

This "end time" can be used to record the running cost of the machine used in the production. Please refer to the

description of the machine field below for details.

Location: The inventory location from where the components are taken and where assembled items are to be stored. If no entry is made, inventory from all locations will be available.

If you have specified a main location in the “Inventory Settings” setting, leaving the field blank means that inventory from the main location will be used. However, if, in the same setting, you have selected the “require location” option, you must enter a location.

Machine: The machine or tool used to carry out the work.

If you are using the “Auto Calculate Cost of produced Items” option in the “Production Settings” setting, you have specified a machine cost item in the same setting, and you have specified a running cost/hr on the ‘Costs’ tab of the asset record for the machine, then an extra row will be added to the production when you save it. This row will use the start and end time of the production to record the running cost of the machine. When you approve the production (mark it as finished, or finished but discarded) and save it, the running cost will be added to the value of the final item and so will be debited to the inventory account, and it will be credited to the production work cost account.

If you are using the “Auto Calculate Cost of produced Items” option, you should also specify a machine cost item in the same setting, and you must specify running costs/hr in the asset records for your machines ('Costs' tab).

Inspector: If the result of the production is to be inspected before the production record can be marked as finished, specify the signature of the inspector here.

Person: This field can be used to record the person responsible for this production or the person carrying out the work.

Prod. Ord.: If the production was created from a production order, the production order number will appear here. This field cannot be modified later.

Discarded Reason: If you have marked the production as finished but discarded, specify here the reason for the discarding. You must specify a reason in a Discarded production before you can save it. You should pre-define the reasons in the standard problem register in the production module: select the correct one using ‘Paste Special’.

Items Tab

When you specify a recipe in the header, the appropriate input and output items, together with quantities and cost prices, will be listed in the matrix. Any modifications that you make will apply to this production record only. If you have not entered a recipe, you can use the matrix to build up an *ad hoc* recipe to be used for this production record only.

Flip A

Item: Use ‘Paste Special’ to enter the item number of each component item and of the finished product. You can enter the items in any order. The output item must be an inventory item.

If a component is an assembly, you should first build up sufficient inventory using other production records. Each production record is responsible for a single level of assembly, meaning it will not create sub-assemblies as well. However, if the production was generated by the “Create Planned Records from Ordered Items” maintenance function in the sales order module, productions for the sub-assemblies will also have been automatically generated.

Descr.: Item description from the recipe or item record.

Serial No.: In the case of input items, enter the serial number of the item being used in the assembly process if necessary. In the case of output items, enter the serial number given to the assembly.

Items that are serial numbered at unit level must be recorded on separate rows of the production - each with a quantity of one. This enables the recording of separate serial numbers in the “known serial number” register and their correct removal from inventory.

If a large quantity of a serial numbered Item is assembled in a single production record, the ‘Generate Serial No. for Out Items’ function in the operations menu can help the entry of consecutive serial numbers. Add the appropriate number of rows with output items to the matrix and specify the lowest serial number in the first one. Then select the function. The remaining rows will all be given serial numbers, each incremented by one.

If you have not specified a location, the ‘Paste Special’ list will show the serial numbers of items in all locations, with an indication of the location in which each item is stored. However, if you have specified a location, only those serial numbers stored in that location will be shown.

In: Enter the quantity of each component required to make or build the finished product. Do not enter an input quantity for the assembly. The default value will be taken from the recipe record.

If you are using the "Production Lines hold Actual Qty" option in the "Production Settings" setting, this figure will be the total quantity of the component required to complete the production (i.e. to build the quantity specified in the header). This figure will be recalculated automatically each time you change the quantity in the header. If you are not using the "Production Lines hold Actual Qty" option, this figure will be the quantity of the component required to complete one application of the recipe and it will therefore remain unchanged if you change the quantity in the header. In both cases, you can change this figure in a particular production, if necessary.

If a general ledger transaction is generated from this production record, its credit amount will be taken from the total I-cost of rows with an in quantity (i.e. input items).

Out: This field contains the quantity of assembled items that can be made from the components listed above. Usually, this will be just one, and it must be one if the assembled item is serial numbered at the unit level. The default value will be taken from the recipe record.

The "Production Lines hold Actual Qty" option affects output quantities in the same way as input quantities as described above. If you are using this option and the assembled item is serial numbered at the unit level, changing the quantity in the header will cause output rows to be added to or removed from the production automatically.

If a general ledger transaction is generated from this production record, its debit amount will be taken from the total I-cost of rows with an Out quantity (i.e. output Items).

Rel.: Relativity. This field is only used if the production process causes more than one item to be assembled (i.e. the production contains more than one output row). In each row representing an output item, enter a percentage figure. When the inventory input cost of each production record is calculated, the total cost of the components will be used to calculate the values of the output items, distributed to each output item according to the percentages entered here. The default value will be taken from the recipe record.

I-cost: Input cost value (per unit). If the row contains an input Item, enter the unit cost price of the item. A default value will be brought in from the recipe. This will be a fixed figure and NOT the same as the FIFO inventory value. Each time you save the Production record, the I-cost will be updated to the correct cost, according to the cost model. The General Ledger transaction will get the correct values.

If the row contains an output item, enter the cost value of that item. Each time you save the Production record, the I-cost will be updated, calculated from the total value of the components and the work cost.

W-cost: Work cost value (per unit produced, determined by the quantity in the header). Enter a work cost: usually, this will be the cost of the labor required to build the assembled item.

You can usually place the work cost in any of the rows featuring an input item (except the last one if you are using the "Add Work Cost" option in Production Settings). This ensures the work cost will correctly be included in the credit amount in the general ledger transaction generated from this production record. If you are using the "Add Work Cost" option, a work cost will be added to the last input row in each recipe automatically, and this will be brought in to the same row in the Production automatically.

Do not place the work cost in an output row because then it will incorrectly be debited (not credited) to the Production Work Cost Account.

Usually the work cost will be credited to the Production Work Cost Account specified in the "Account Usage Inventory" setting. The exception is when you are using the "Use Item Groups for Cost Accounts" option in the "Cost Accounting" setting in the Inventory module and you have specified Production Work Cost Accounts in your Item Groups. If so, the Production Work Cost Account will be taken from the Item Group to which the Item in the row with the work cost belongs. In this case, therefore, you should be sure to enter the work cost in the correct row in the Production, so that the correct Account is credited.

Coeff: The default value is taken from the recipe

The unit coefficient of the item is shown here, taken from the 'Inventory' tab of the item. If you are maintaining inventory quantities using different units of measurement, this coefficient is the ratio between those units of measurement.

Flip B

Tags/Objects: The default value is taken from the item

Up to 20 comma separated tags/objects may be assigned to this row. They will be transferred to the general ledger

transaction generated when this production is marked as finished, providing a flexible method of analysis that can be used in general ledger reports. You might define separate tags/objects to represent different departments, cost centers or product types.

In the general ledger transaction generated from this production record, any tags/objects specified here will be assigned to the credit posting to the Inventory Account (if the Item is an input item) or the debit posting (if it is an output item). This assignment will merge these tags/objects with those of the parent production record (shown on the 'Comment' tab).

Flip C

Serial No., Best Before: Enter here the serial no. or batch number of the items in the production record, for items that require this control.

Flip D

Width, Height, Depth: The default values are taken from the item record and contain the dimensions of the item.

If the item is one that is built by area or volume, you can have the input or output quantity calculated by multiplying the dimensions together. If you would like to use this feature, first check the "enable quantity calculation" box in the "item settings" setting in the accounts receivable module. Then, check the "calculate quantity" box for the unit that has been assigned to the item. If the item is built by area, choose the two dimensions option in the unit record, and the input or output quantity will be calculated from the width and height. If the item is built by volume, choose the "three dimensions" option in the unit record, and the input or output quantity will be calculated from the width, height and depth. Please refer to the description of the units setting in the 'accounts receivable' manual for details and an example.

Flip E

Dis.Row.FIFO: If the production is disassembling a previous one, the final I-cost values from that production will be placed here.

Comment Tab

Comment: Any comment to describe the record.

Tags/Objects: Up to 20 comma separated tags/objects may be assigned to this production record. They will be transferred to the general ledger transaction generated when this production is marked as finished, providing a flexible method of analysis that can be used in general ledger reports. You might define separate tags/objects to represent different departments, cost centers, or product types.

In any general ledger transaction generated from this production record, any tags/objects specified here will be assigned to all debit and the credit postings.

Start Time, End Time: The time when the work represented by this production record started and ended.

Break Time: Use this field to record the total duration of any interruptions in work between the start and end times.

Inspecting and Approving Production Records

When you have completed the assembly process, you should check the instructing production record. Open the production record in a record window and add any extra components that you may have used. Tick the "Finished" radio button (assuming the production was completed successfully), or "Finished but Discarded" (if there was a failure) and save the record. Inventory levels of the components will be reduced and that of the output item will be increased.

When you save the record, if so defined in the "Sub Systems" setting in the general ledger, a cost accounting transaction will be created in the general ledger. Please refer to the section entitled 'General Ledger Transactions from Production Records' immediately below for details of the accounts used by this transaction.

Once you have marked a Production record as "Finished" or "Finished but Discarded", you can no longer edit it. If you need to reverse it, you can do so using the 'Disassemble' function on the Create menu. This is described below on page 37.

General Ledger Transactions from Production Records

When a production record is marked as "finished" and saved, a general ledger transaction will be generated automatically if

you have so determined in the “Sub Systems” setting in the general ledger. This transaction will contain two sets of credit postings, one for the input costs and one for the work cost.

1. The input costs will be credited to the inventory account from the location.
2. If the location does not have an inventory account, or no location has been specified, and if you are using the “Use Item Groups for Cost Accounts” option in the “Cost Accounting” setting in the inventory module, the input costs will be credited in the appropriate proportions to the inventory accounts of the item groups to which the input items belong.
3. In all other circumstances (i.e. if you are not using the “Use Item Groups for Cost Accounts” option or if an input item does not belong to an item group), the production components stock account, as specified on the ‘Inventory’ tab in the “Account Usage Inventory” setting in the inventory module, will be credited.
4. I f tags/objects have been specified in any of the rows, separate credit postings will be made for each tag/object/account combination.
5. The work cost will usually be credited to the Production Work Cost Account, again as specified in the “Account Usage Inventory” setting. The exception is when you are using the “Use Item Groups for Cost Accounts” option and you have specified Production Work Cost Accounts in your Item Groups. If so, the Production Work Cost Account will be taken from the Item Group to which the Item in the row with the work cost belongs. In this case, therefore, you should be sure to enter the work cost in the correct row in the Production, so that the correct Account is credited.

The value of the output Item(s) will be debited to an Account chosen are the following:

1. The value of the output item(s) will be debited to the inventory account from the location.
2. If the location does not have an inventory account, or no location has been specified, and if you are using the “Use Item Groups for Cost Accounts” option, the inventory account of the item group to which the output item belongs will be debited.
3. In all other cases, the production components stock account on the ‘Inventory’ tab in the “Account Usage Inventory” setting will be debited.

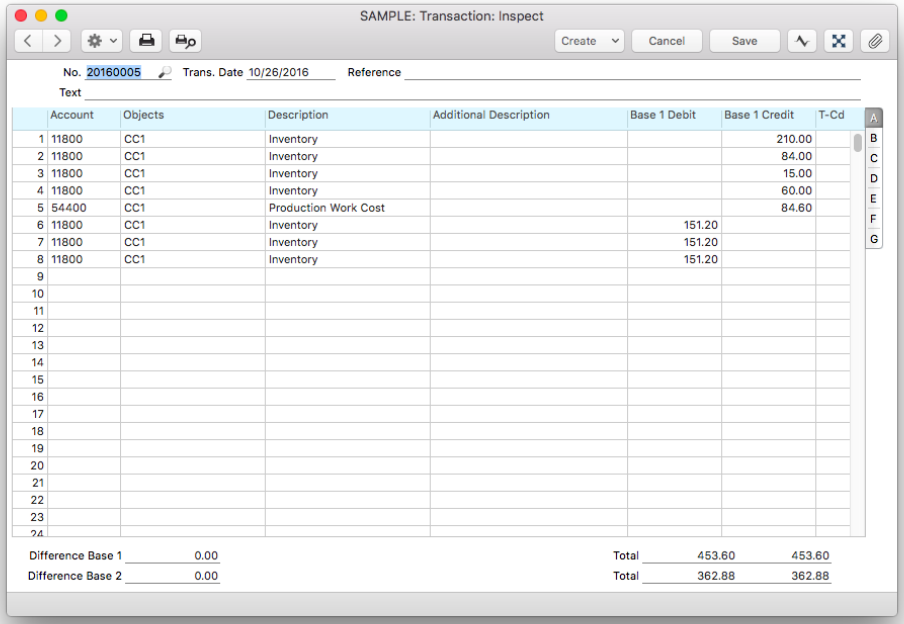
If there is any discrepancy between the sum of the input and work costs and the sum of the output costs, this will be posted to the inventory gain or inventory loss account, as specified on the ‘Inventory’ tab in the “Account Usage Inventory” setting.

If you have marked the production as “finished but discarded”, the credit side of the transaction will be as described above. The debit side will depend on whether you are using the “Create Inventory Adjustment from Discarded Production” option in the “Production Settings” setting, as follows:

- If you are not using this option, there will be no output costs because the out quantity in the production will be set to zero. Therefore, the input and work costs will be balanced by a debit posting of the same value to the discarded production cost account specified in the “Account Usage Inventory” setting.
- If you are using this option, the discarded item will be received into inventory so the debit posting will be as described above. An OKed inventory adjustment will be created automatically, removing the discarded item from inventory. The discarded production cost account will be debited from this inventory adjustment.

No plain or service items will be included in the general ledger transaction.

Below is an example of a general ledger production transaction:



SAMPLE: Transaction: Inspect

Create | Cancel | Save

No. 20160005 Trans. Date 10/26/2016 Reference

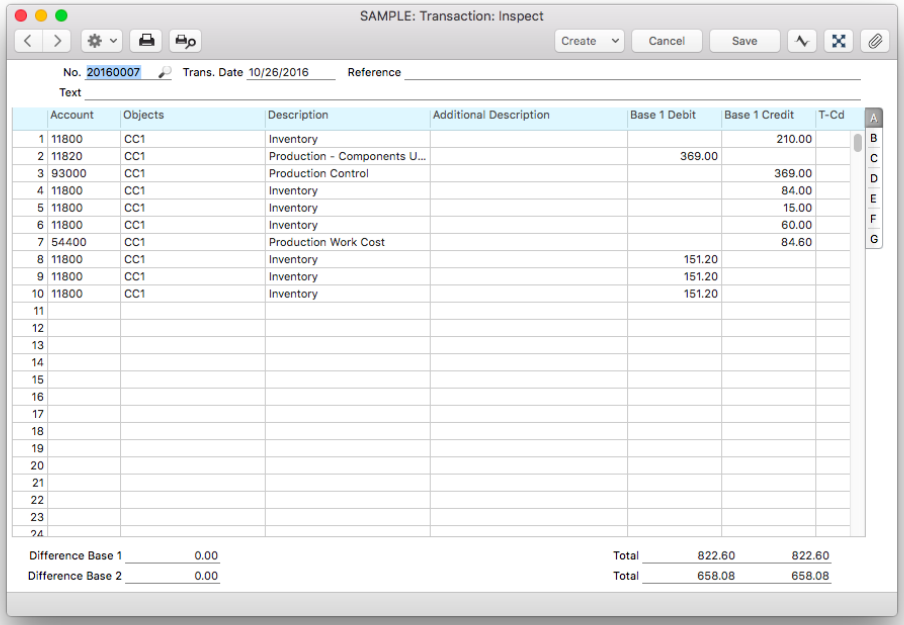
Text

	Account	Objects	Description	Additional Description	Base 1 Debit	Base 1 Credit	T-Cd
1	11800	CC1	Inventory			210.00	
2	11800	CC1	Inventory			84.00	
3	11800	CC1	Inventory			15.00	
4	11800	CC1	Inventory			60.00	
5	54400	CC1	Production Work Cost			84.60	
6	11800	CC1	Inventory		151.20		
7	11800	CC1	Inventory		151.20		
8	11800	CC1	Inventory		151.20		

Difference Base 1 0.00 Total 453.60 453.60

Difference Base 2 0.00 Total 362.88 362.88

The transaction described above simply removes the value of the components from inventory, and adds the value of the final item to inventory. It does not give any indication of the value of items removed from inventory to be used in productions, to contrast with the value of items removed from inventory for other purposes (e.g. delivery or inventory adjustment). If you need such an indication, specify “components usage” and “production control accounts” in the “account usage production” setting, in the item records for the components and/or in the item groups to which the components belong. If you do so, the transaction will contain additional postings, debiting the value of the components to the “components usage account” and crediting that value to the “production control account”.

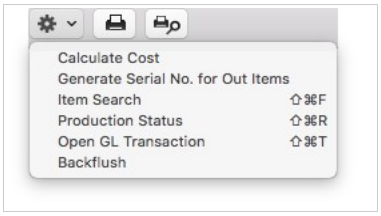


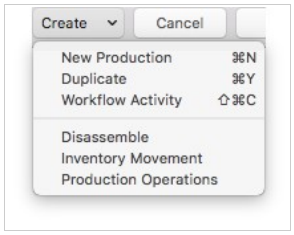
Once the transaction has been generated, you can look at it straight away from the production using the 'open GL transaction' function on the operations menu.

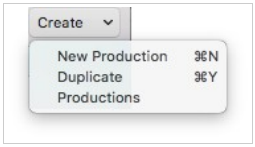
Operations Menu and Create Menu

As is the case throughout Standard ERP, the production register includes operations and create menus that contain several useful tools that you can use when working with productions.

Some of these functions are described below, together with examples and workflow.







The operations (left) and create (right) menus for the production record are shown first, followed by the create menu for the production browse window.

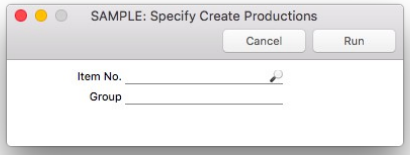
Create Productions

This function on the create menu of the productions browse window will check inventory levels of each inventory item that is linked to a recipe, and will create productions for each one that has fallen below its minimum inventory level (shown on the 'Inventory' tab in each item record). The new production records will be saved with the "Created" status. You can print the production records in a single batch, using the [Forms] button in the Navigation Center.

In comparing inventory levels with the minimum inventory level, unfulfilled sales and purchase orders are taken into account.

Since the production records created by this function will be saved as "Created", no account will be taken of the inventory levels of the components i.e. you may not have sufficient inventory of the components to mark all the new productions as finished. The quantity in each production record will be determined by the inventory shortfall.

Selecting 'Create Productions' opens the following dialog box:



Item No.: Use the 'Paste Special' function to enter the item or range or items for which productions are to be created.

Group: If you use 'Paste Special' to choose an item group here, productions will be be created for items belonging to that item group.

Press the [Shift]+[Enter] key combination or the Run button to start the generation of production records. When the process is finished, the new records will be available for viewing, modifying and approval in the production register.

Producing Inventory Items with Serial Numbers

If an assembled item is serial numbered, you will need to assign serial numbers to each new unit as part of the production process. Standard ERP can help with this by generating serial numbers for the new units.

Setting up

In the item record for the assembled item, choose "Unit Number" as the "Serial Number Tracking" option on the 'Inventory' tab.

In the Recipe, enter the Normal Qty produced. If this quantity is for example 5, then in the matrix, enter one row for the output item and in the Rel. field enter 0.20.

Producing

Generate Production Orders in the same way as described previously. When you create a Production from a production order, the produced qty will be 5, and Standard ERP will automatically add five rows with the output item each with a Rel. of 0.20. The five rows will allow you to enter serial numbers for each unit. As the rows will have the same Rel. figure, the cost of the production will be distributed equally to the five individual units (they will each have the same inventory value).

Before changing the status of the Production record to "finished", enter a serial number for the first unit and then choose "Generate Serial No. for Out Items" from the operations menu. Serial numbers for the other units will be generated and entered. You can now finish the production.

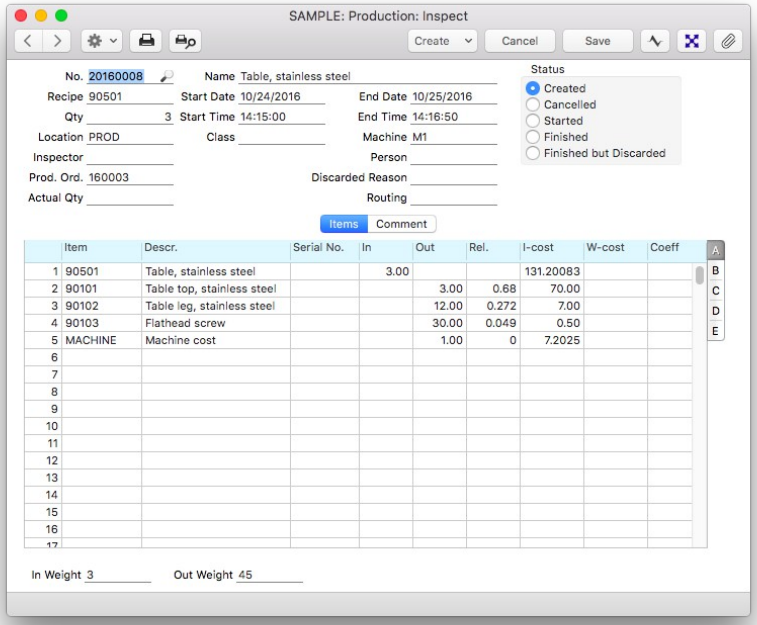
Making corrections in Productions

You may be required to correct a "finished" production for several possible reasons. For example, you might need to disassemble an assembled item and return its components to inventory because a production was marked incorrectly as finished, or because a finished production contained an error. In these cases you can open the production containing the error and choose "Disassemble" from the create menu.

Disassemble

This function reverses the effects of a production record. For example, after assembling a table, it was rejected by quality control. You now need to disassemble it in order to fix the problem, All the components can be re-used.

To correct this problem, find and open the production record that is to be reversed, and select 'Disassemble' from the create menu. The function will create and open a new production record that is the reverse of the original (i.e. the input items in the original production will be output items in the new record, and the original output item will now be an input item).



The new production record is opened in a window entitled 'Production: Inspect'. This means that it has already been saved, and is being opened for checking. You may need to attach a W-cost to the input item to record the cost of disassembly.

When you mark the record as finished and save it, a general ledger transaction will be generated, reversing the one created by the original production record. The inventory levels of the assembled items and the components will also be updated. The assembled item will be removed from inventory, and the components will be returned to inventory.

The two production records will be connected to each other through the Link Manager function. This allows you to open the original production quickly and easily from the disassembly record, or to open the disassembly from the original production.

There may be a difference in the value of the assembled Item in the original Production and in the disassembling Production. There can be two reasons for this:

1. The original Production may include a Work Cost. If so, the value of this Work Cost will be debited to the Inventory Gain Account from the disassembling Production.

2. The calculated value of the assembled Item may have changed between assembly and disassembly. For example, if you are using the Weighted Average Cost Model, the Weighted Average value of the assembled Item may change if you have assembled or otherwise received into inventory other examples of the assembled Item in the intervening time. If you are using the FIFO Cost Model, the assembled Item may not be first in the queue for removal from inventory, and may have a different value to the first example in the queue. If it is the case that the calculated value of the assembled Item has changed between assembly and disassembly, the difference will be debited (if the value has increased) or credited (if it has decreased) to the Disassemble Variance Account. The calculated value of the assembled Item at the time of disassembly will be shown in the I-Cost field on flip A of the 'Items' tab in the disassembly Production, while the value at the time of assembly will be shown in the Dis. Row FIFO field on flip E.

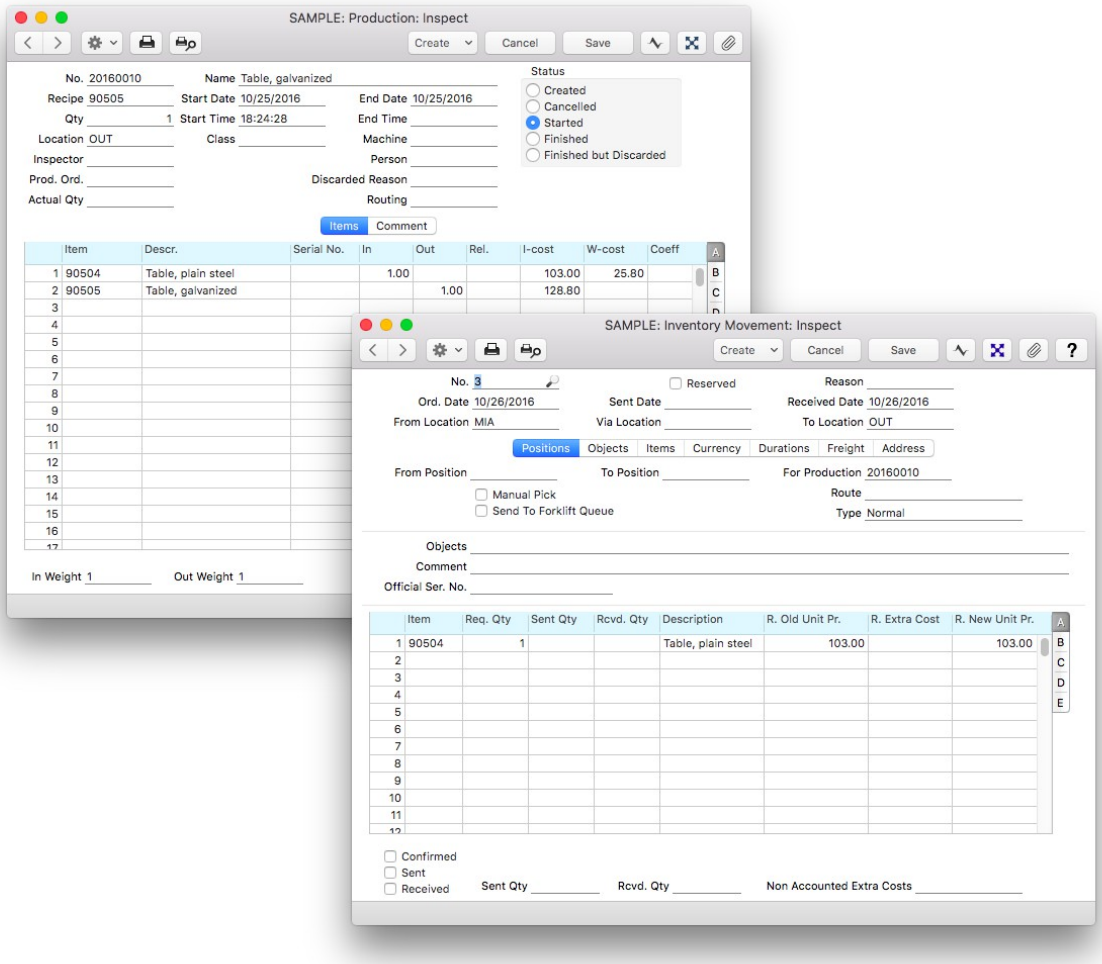
The Inventory Gain and Disassemble Variance Accounts will be taken from the "Account Usage Inventory" setting.

Locations in Production and Outsourcing

In some industries it may happen that part of the production process is outsourced. It is important that you keep track of the items you have sent out (which items, how many items and where were they sent to), what for and easy register when final item is returned. For this purpose you can create separate locations per each subcontractor and use Productions and Inventory Movements. As first step you register Production that you ordered to be done on subcontractor location. Than to register that row materials are send out to subcontractor you use Create menu of this Production and select the "Inventory Movement" option. When the outsourcing company returns the items produced, you first mark Production as finished, to remove row materials and receive final item to subcontractors location. After that you create another inventory movement

from the Create menu of Production to receive the final items into your company location. On this stock movement you should add extra cost that was invoiced by subcontractor for their services done, so final item while moving to your location has accurate cost price.

In this example, a table needs to be galvanized, so we have created a production for that purpose and in header specified Location "OUT" that was created beforehand as subcontractors location. From that production, we have created an inventory movement from our plain materials location "MIA" to send the table out for galvanizing to "OUT" location.



You can also use the "Inventory Movement" option when there is insufficient inventory of components in the location specified in the header of the production record (i.e. in the production workshop) to complete the production order (you can ascertain this information using the 'item Status' function mentioned below on page 41). You can then create an inventory movement to move any inventory that might exist elsewhere into that location (into the workshop). You can also use this function when the production is complete, to move the assembled item out of the workshop to another location.

Below is a detailed explanation on how to use the "Inventory Movement" function.

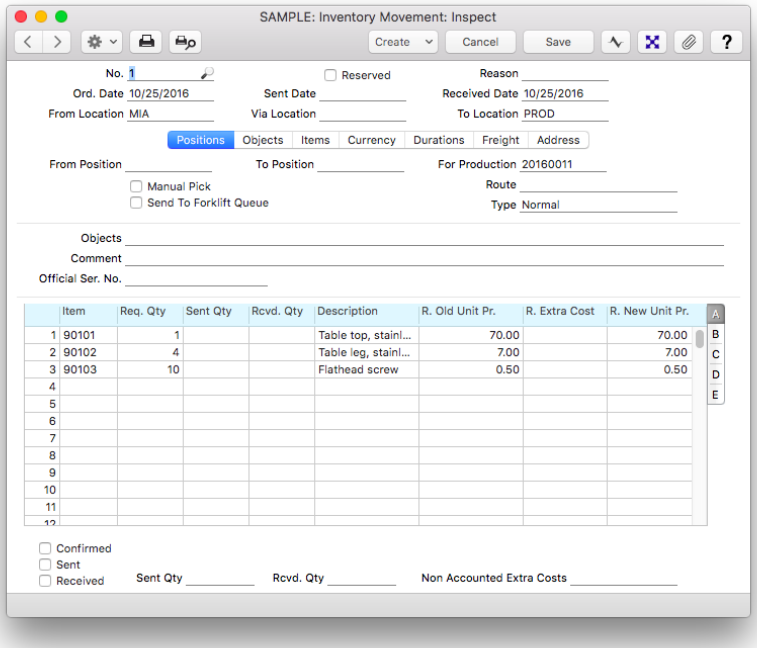
Create Inventory Movement

To create an inventory movement from a production, you must first save the production, and there must be a location specified in the header of the production (unless you have specified a main location in the "inventory settings" setting in the inventory module, in which case that location will be used).

When you select "Inventory Movement" from the Create menu in a production, a new record will be created in the inventory movement register (in the inventory module). It will be opened in a new window, entitled 'Inventory Movement: Inspect'. This means that it has been created and saved and is being opened for amendment and approval.

The contents of the Inventory movement will depend on the status of the originating production record, as follows:

Status = Created or Started: The purpose of this inventory movement will be to move components to the production workshop so the production can be completed. So, the location from the header of the production (or, if this is blank, the main location if there is one) will be copied to the "To Location" field in the inventory movement to enable the moving of the components to that location. The main location will be copied to the "From Location" field. The production number will be copied to the "For Production" field in the inventory movement. All input rows with inventory items in the production will be transferred to the inventory movement. The requested quantity in each inventory movement row will be the input quantity in the corresponding production row multiplied by the quantity in the production header (i.e the exact quantity needed to complete the production). There will be no attempt to calculate the existing inventory level in the "To Location" and to move in the balance.



Confirm a "From Location", enter a received quantity in each row, tick the "Confirmed" and "Received" boxes and save.

The components will be moved to the "To Location". If you are using the "do not allow over delivery" option in the "inventory settings" setting, you will not be able to mark the inventory movement as "Received" if there is insufficient inventory in the "From Location" for the transfer. This check will not be made for plain or service items, whatever the setting of the "do not allow over delivery" option. If you would like to ascertain yourself whether the "From Location" has sufficient inventory for the transfer before receiving and saving the inventory movement, use the 'Item Status' function on the row menu or produce an inventory list report.

When you approve and save the inventory movement, the "old unit price" of each component will be calculated using the usual cost model for each item (e.g. weighted average or FIFO). If you specify an extra cost in an inventory movement row, the value of the Item in the FIFO/LIFO queue will be adjusted to include the extra cost, as will the overall weighted average figure for the item, shown on the 'Costs' tab of the item record. If you are using the Weighted Average per Location option in the Cost Accounting setting in the Inventory module, the extra cost will also be included in the weighted average figure for the Item in the "To Location".

Status = Finished: The purpose of this inventory movement will be to move the finished item out of the production workshop to another location for holding in inventory or for sale. So, the new inventory movement will contain the finished production item(s).

The location from the header of the production (or, if this is blank, the main Location if there is one) will be copied to the "From Location" field in the inventory movement to enable the moving of the assembled Item(s) from that location. The "To Location" will be blank. All output rows with inventory items from the production will be transferred to the inventory movement. The requested quantity in each inventory movement row will be the output quantity in the corresponding production row multiplied by the quantity in the production header (i.e the exact quantity built by the production). The "old" and "new unit prices" will be the input cost from the production row.

Enter a “To Location” (the location to which the item is to be moved), enter a received quantity in each row, tick the “Confirmed” and “Received” boxes and save. The finished item(s) will be moved to the “To Location”.

You can also create an inventory movement from a production using the Production Picking List form. This form is unusual in that it first creates new inventory movements and then prints them as a picking list that warehouse staff can use to transfer the components from the warehouse to the workshop or, when a production has finished, to transfer the finished Item from the workshop to the warehouse.

Please refer to the ‘Inventory Module’ manual for full details about the ‘Inventory Movement: Inspect' window.

Other Options Available on the Operations, Create and Row menus

Row menu>>Item Status

This function displays the current status of the item in the production row containing the cursor or highlighted in the ‘Paste Special' list. Information displayed in a new window includes the quantity in inventory, the quantity on order and the quantity shippable.

Please refer to the ‘items and pricing’ manual for full details of this function.

Operations menu>>Open GL Transaction

Once a production record has been approved and saved, if so defined in the “Sub Systems” setting in the general ledger, a general ledger transaction is created. This function allows you to view that transaction.

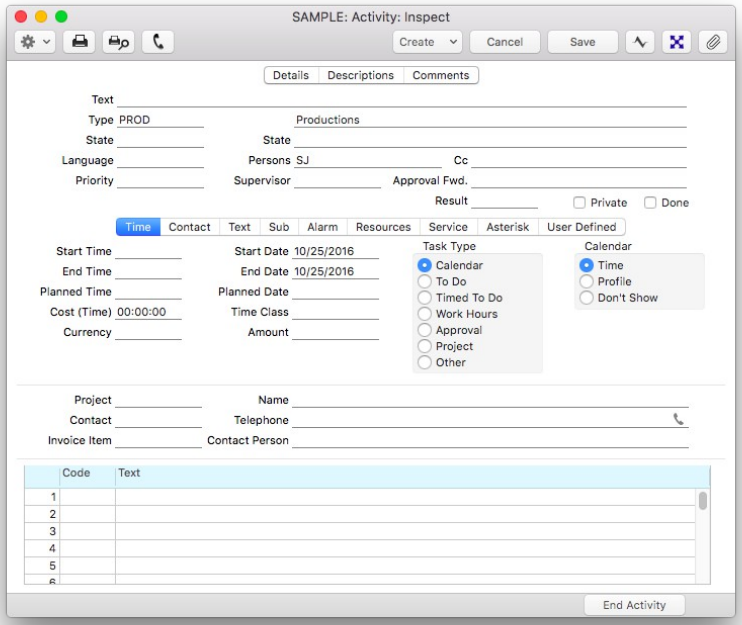
On selecting the function, the transaction will be opened in a new window.

Create menu>>Workflow Activity

This function can be used to create records in the activity register in the system module. This can be useful for technicians who like to use the activity register and calendar to schedule their work.

Before using this function, open the “Activity Types, Subsystems” setting in the CRM module and specify the activity type that will be used in activities created from Productions.

When you select the ‘Workflow Activity’ function from a production record, a new activity will be opened:



The new record is opened in a window entitled ‘Activity: Inspect’. This means that it has already been saved, and is being

opened for checking. The start date of the activity will be the start date of the production, and its end date will also be copied from the production. If the production has start and/or end times, these will be copied to the activity as well. The person in the activity will be the person from the production, while the current user's initials will appear in the cc field. After amendment, if necessary, save the record in the activity register by pressing the [save] button in the button bar and close it using the close box. Alternatively, if you no longer require the activity, remove it using the 'delete' function on the record menu. In either case, you will be returned to the production window.

The production record and the activity will remain connected to each other through the Link Manager and Workflow Manager. This allows you to open the production quickly and easily when reviewing the activity, or to open the activity from the production. When viewing the activity, you can return to the production quickly and easily using the Link Manager in the activity, while you can open the activity from the production using the Workflow Manager..

Please refer to the 'CRM' manual for full details about the 'Activity: Inspect' window.

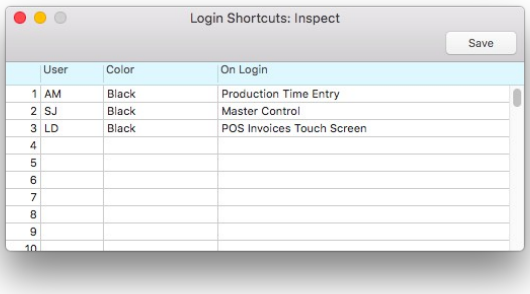
The Production Time Entry Interface

The "Production Time Entry" interface allows you to complete productions and to register the time spent in doing so in a simple manner that does not require you to search for productions or enter activities. As you complete each production, it will be marked as finished automatically, and activities will also be created and marked as done automatically. This interface therefore reduces the time spent administering productions, thus increasing efficiency.

For example, while producing the tables, you might want workers simply to enter the number of tables produced, without the need to adjust the components used. A very efficient way is using the Production Time Entry Interface option.

Set-up

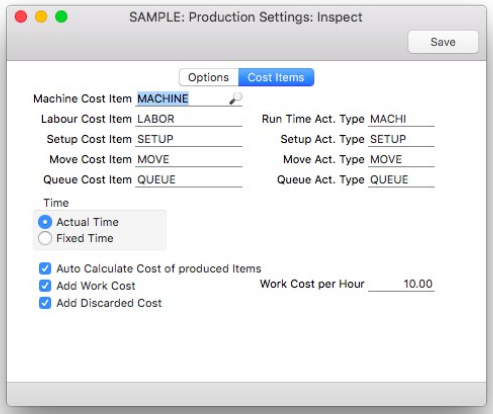
1. The first step is to specify that the "Production Time Entry" interface should appear when particular members of staff log in to your Standard ERP system. Change to the user settings module and open the login shortcuts register.



   Specify each person in the first column using the 'Paste Special' function if necessary, and enter "Production Time Entry" in the third column, again using 'Paste Special'. The third column specifies which window each person will see when they first log in. Any person not listed will see the standard Navigation Center.

   As the login shortcuts register is in the user settings module, you will need to fill it in separately on each client machine.

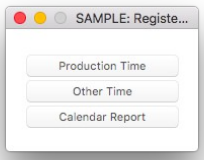
2. When you are using the Production Time Entry interface, the time spent working on Productions will be recorded in Activities that will be created automatically. The next step is to specify the Activity Types that are to be used in these Activities. Open the Production Settings setting and go to the 'Cost Items' tab:



Using 'Paste Special', choose a "Run Time Act. Type" and a "Setup Act. Type". The " Run Time Act. Type" will be used in Activities that keep track of the time spent working on a production, while the "Setup Act. Type" will be used in Activities that record the time spent preparing for a production. Run Time Activities will always be created, but if you need Setup Activities to be created as well, tick the "Add Work Cost" box. Ticking the "Add Work Cost" option will also cause a Work Cost to be added to each Production, for the Run Time and the Setup Time. The total time will be calculated from the two Activities, and the cost will be the Work Cost per Hour that you specify in the same setting.

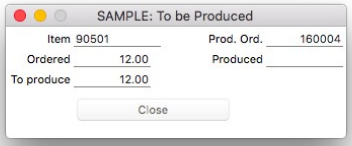
Producing

3. If it has been specified in the login shortcuts register that you will use the "Production Time Entry" interface when you log in, the first window that you will see will be the 'Register Time' window.



4. When you start working on a production, press the [Production Time] button. The 'Production Time' window opens, where you should specify a production order number:

5. When you press [Save], the 'To be Produced' window will open, showing the item that you should produce and the quantity required. The fields displayed are not to be entered and are solely for information purposes.



6. When you have finished work on the Production, press the [Close] button to close the 'To be Produced' window. The 'Register Time' window illustrated in step 3 appears. Press the [Production Time] button again, and the 'Specify Produced Quantities' window opens:

Complete the window as described below, and then press the [Save] button.

Produced: Enter the quantity you have produced.

Discarded: If you produced and then discarded any final items, enter the quantity discarded.

Discarded Reason: If you discarded any final items, you must enter a reason before you can close the window. Use 'Paste Special' to choose the reason from the standard problems setting.

Setup Time (min.): The set-up time is the time required to configure a machine or work centre before you can complete the production (e.g. calibration). Enter the set-up time here.

Production Order: This field provides a reminder of the production order you are working on.

Set Production Order as Finished: Check this box if you want to mark the production order as finished. You should do this if you have produced all the items required in the production order, and there is no more work required.

7. When you press the [Save] button, the 'Specify Produced Quantities' window closes, to be replaced by the 'Register Time' window illustrated in step 3. Return to step 4 and press the [Production Time] button to begin work on the next production order.

8. If you quit Standard ERP between steps 5 and 6, the production order will remain open in your name. When you next log in and press the [Production Time] button in the 'Register Time' window, you will be taken immediately to the 'Specify Produced Quantities' window described in step 5.

The Production Time Entry interface therefore provides a simple method that you can use to register the number of final items built to satisfy each production order, and to register the time taken to build those items. When an operator uses the "Production Time Entry" interface, the consequences in the production order, production and activity registers can be divided into two sections:

i. When the operator specifies a production order number in the 'Production Time' window (step 4 above), the consequences are the following:

   a) The production order will be marked as started automatically.

   b) If the production order is cancelled or finished, the operator will be told 'check production order status', meaning that no more work can be carried out against the selected production order, and the operator should specify another one.

   c) A new production will be created from the production order automatically. The status of this production will be started.

   d) An activity will be created, to record the labor time. The activity type in this activity will be the "run time activity type" specified in the "production settings" setting. The person will be the current user, the "start date" and

"time" will be the current date and time, and the "task type" will be calendar. The "production number" will be copied to the production field on the 'Service' tab of the activity.

As mentioned in step 7 above, if the operator quits Standard ERP between steps 5 and 6, the production order will remain open in their name. This is controlled by the existence of this activity.

ii. When the operator completes the 'Specify Produced Quantities' window (step 5 above), the consequences are the following:

a) If the operator chose the "set production order as finished" option, the production order will be marked as finished (irrespective of whether the required quantity has been produced).

b) The end time and date in the activity recording the labor time will be updated, and the activity will be marked as done. This will free the operator to work on another production order.

c) If the operator entered a "setup time" in the 'Specify Produced Quantities' window and if you are using the "add work cost" option in the "production settings" setting, a second activity will be created, to record the "setup labor time". The activity type in this activity will be the "setup activity type" specified in the "production settings" setting. The Person will be the current user, the cost (time) will be the setup time entered by the operator, and the task type will be calendar. The production number will be copied to the production field on the 'Service' tab of the activity. This activity will be marked as done.

d) If you are using the add work cost option in the production settings setting, a work cost will be added to the production, calculated using the total cost (time) of the labor and setup time activities and the work cost per hour specified in the "production settings" setting.

e) The production will be marked as finished automatically. Inventory levels of the components and the final item will be adjusted, and a general ledger transaction will be created, to adjust the inventory valuation in the general ledger. This transaction is described above on page 33.

f) If there is insufficient inventory of components to complete the production and you are using the "do not allow over delivery option" in the " inventory settings" setting, steps a, d and e above will not be completed, and instead the operator will be informed that there is insufficient inventory. Therefore, because step b will be completed, the operator will be free to work on another production order.

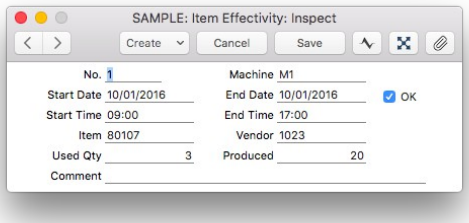
Item Effectivity

In some industries it is important to control the usage of certain items used in production. These items are not raw materials; instead they are tools or subsidiary materials that can be used for several productions. Because they can have a considerable value, their usage or productivity should be controlled. For example, in the marble stones industry, diamond discs are used to cut slices from marble blocks. Diamond discs are expensive items and it is therefore important to know the productivity of each one, and the respective vendor since the quality and productivity is frequently connected with the vendor. It is also important to know the machine where each disc was used. An older machine or a machine that wasn't maintained properly can cause the disc to age more quickly than normal.

In order to allow this control, you can enter usage information in the Item Effectivity setting in the production module and run the report with the same name. This data needs to be entered manually and it is not integrated with any other part of the system.

Item Effectivity setting

No.: Unique number for each item effectivity record.



Machine: Use 'Paste Special' to select the machine where the tool or item was used. In the report with the same name,

you can check the productivity of the items used with a particular machine: the machine code is one of the selection criteria in the report.

Start Date: Enter the date when you used the tool/item for the first time. When you produce an Item Effectivity report. you can list the items that were first used on a particular date or during a particular period.

End Date: Enter the date when you used the tool/item for the last time.

Start Time: Enter the time when you used the tool/item for the first time.

End Time: Enter the time when you used the tool/item for the last time.

Item: Use 'Paste Special' to select the item code for the item/tool whose use you are monitoring.

Vendor: Use 'Paste Special' to select the code of the vendor from whom you purchased the item/tool.

Used Qty: Enter the quantity of the item/tool you used during the period specified above to produce the quantity entered in the next field.

Produced: Enter the quantity of items produced using the item/tools entered in the previous field and during the period set in this record.

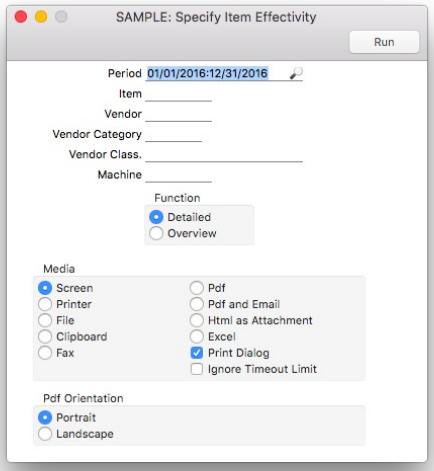
Comment: You can enter any comment that can be relevant for this record.

OK: After OKing and saving the record, no further changes will be possible.

Item Effectivity report

To report on the data entered in the previous setting, use the "Item Effectivity" report in the production module.

This report will provide you with information about the average quantity produced when using a certain item, bought from a specific vendor, used in a specific machine. This information is very important in industries where the productivity of a certain item is connected with the vendor and with the machine used.



Period: Select the period you want to analyze. All item effectivity records with a start date in this period will be included in the report.

Item: Use 'Paste Special' to select the item code of an item/tool if you need to see usage and performance statistics for that item in the report.

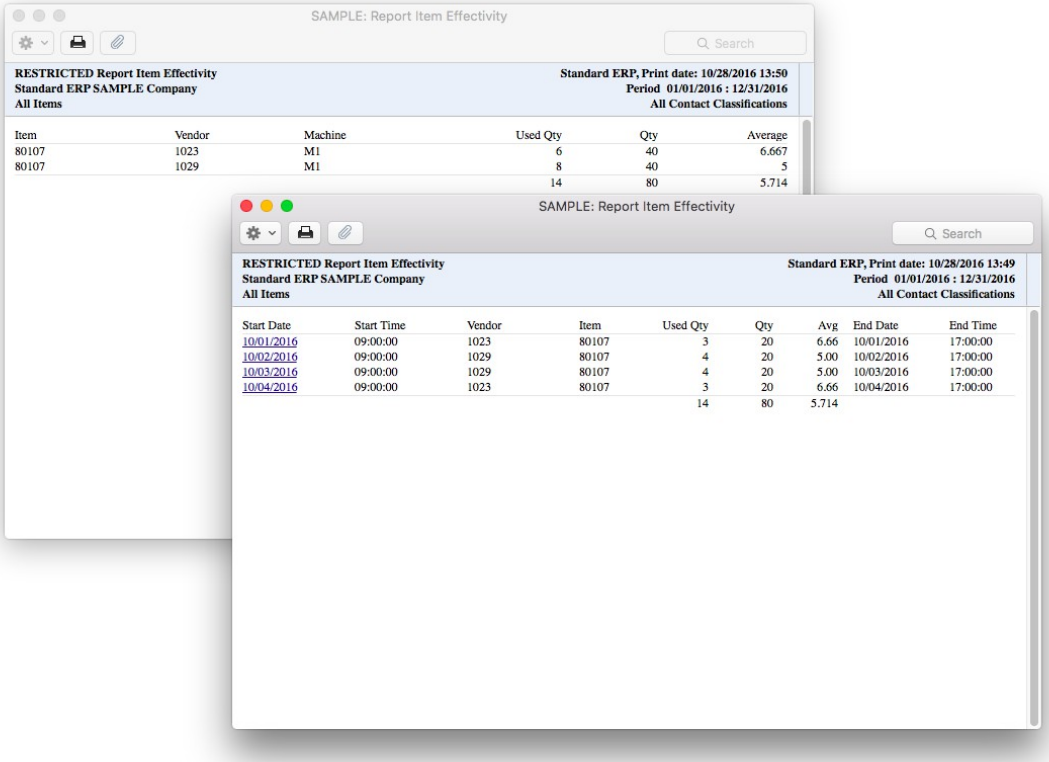
Vendor: Use 'Paste Special' to select a vendor code if you want to see how items and tools purchased from that vendor have performed during the report period.

Machine: Use 'Paste Special' to choose a machine if you need to see how the items and tools used by that machine have performed.

Function: You can run this report in detailed layout or overview layout. The detailed layout lists each item effectivity record individually. The overview layout contains a single line for each item/vendor/machine combination, perhaps

making it easier to see trends.

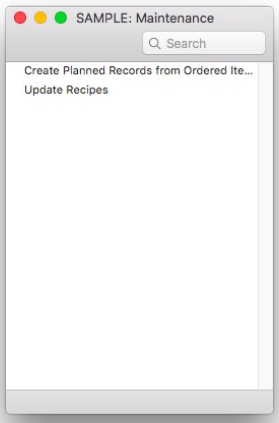
Press the Run button or [Shift]+[Enter] on your keyboard to run the report. In the illustration below, the overview is behind the detailed version of the report.



Maintenance

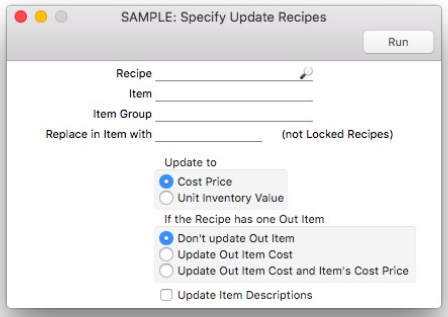
Introduction

Maintenance functions allow you to carry out certain updating tasks, usually involving batch processing and encompassing many or all of the records in a particular register. There are two such functions available in the Production module. To use them, press the [Routines] button in the Navigation Center and then [Maintenance]. A list will appear where you can select the routine that you need.



Update Recipes

This function updates the input costs and other details of components in recipes with new prices and information from the item register. Before running this routine, you can produce a Recipe Cost Comparison report if you need to see the differences between a Recipe and the details in the Item register.



Recipe: To update the costs in particular recipes, enter a recipe code or a range of recipe codes here.

Item: To update the costs of particular items when used as components in recipes, enter an item code or range of item codes here.

Item Group: To update the costs of items belonging to a single item group when used as components in recipes, enter an item group code here.

Replace in Item with: If you want to change an input item in all recipes, specify the new item here. This item will replace the one specified in the field above in every recipe in the range (except recipes that are locked).

Update to: Determine how the new input costs of the components are to be calculated.

Cost Price: The new input costs are taken from the cost prices of the components as shown on the 'costs' cards of their records in the item register.

Unit Inventory Value: The new costs are calculated using the unit inventory value of the component Items. This will be calculated using the Cost Model specified in the relevant Item or Item Group record. If that Cost Model is Default, the Primary Cost Model specified in the Cost Accounting setting will be used. This option will therefore use the FIFO, LIFO, Weighted Average or other value of an Item as its new cost, depending on the Cost Model.

If you use this option, any Service Items used as components in Recipes will have their Input Cost set to zero. This will also be the case for any Inventory Items of which there is no inventory.

If the Recipe has one Out Item: Use these options to specify whether you would like the cost of the output item (as shown in the recipe) to be updated to reflect the changes made to the costs of the input items. These options will only affect recipes with a single output row. If there are several output items, you should update them manually so that the costs can be apportioned correctly.

Do not update: The cost of the output item will not be updated.

Update Out Item Cost: The cost of the output item will be updated.

Update Out Item Cost and Item's Cost Price: The cost of the output item will be updated, and the cost price in its record in the item register will also be updated.

If the output item is a structured item, it is recommended that you do not use this option. Where costs are required (e.g. in gross margin calculations), they will be taken from the item records of the components. If the output item is an inventory item with a recipe specified on the 'Recipe' tab of its item record (i.e. it is an assembly that you will build from components to hold in inventory, using the production register), then you should use this option to enter the cost price.

Update Item Names: Check this box if you would like the names of the items in the selected recipes to be updated from the item register.

Press the [Run] button to start the updating process.

Create Planned Records from Ordered Items

This routine was described earlier, when creating production orders.

Forms

Introduction

The 'Forms' function permits you to print particular records or documents in batches.

To print a form, follow this procedure:

1. Ensure you are in the Production module and press the [Forms] button in the Navigation Center.
2. The window illustrated below appears, listing the forms that you can print from the Production module.
3. Open one of the options from the list. A specification window will then appear, where you can determine the information that is to be included in the printed documents (e.g. which production orders are to be printed). This specification window is described in detail below.
4. Press [Run] to print the documents.
5. Close the 'Documents' window using the close box.

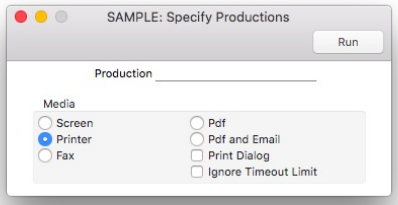
Before you can print a form, you must connect it to a form template. The form template Is where you design the layout of the printed output. To connect a form to a form template (or, in other words, to specify which form template will be used when you print a form), follow these steps:

1. Design a form template (or change the sample Form Template supplied to reflect your own requirements) using the form template register in the system module. This process is fully described in the 'system module' manual.
2. Change to the production module and open the 'Forms' window using the [Forms] button in the Navigation Center.
3. Highlight the item in the list and select 'Define Form' from the Operations menu. In the subsequent 'Form Definition' window, open 'Paste Special' from the "Form Template" field in the first row and choose the form template.
4. Save.
5. You only need use the 'Define Form' function once. After this has been done, form selection will be automatic.

Production

Use this form when you need to print a production record or a range of production records, perhaps to provide instructions to the assembly department. You can also print this form by opening a production record in a record window and then using the printer icon or selecting 'Print' from the File menu.

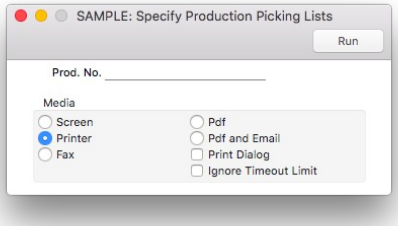
Production: Enter a production number (or range of production numbers) for which documents are to be printed.



Production Picking List

This form is unusual in that it first creates new records and then prints them. You can use it when there is insufficient inventory of components in the production area for a production and you need to create an inventory movement to move stock there from the warehouse. After the inventory movement has been created, it will be printed as a picking list that warehouse staff can use to transfer the components from the warehouse to the production area.

The 'Specify Production Picking Lists' window contains a single field:



Enter a production number (or range of production numbers) for which you need inventory movements to be created and printed. If you leave this field empty, no inventory movements will be created and no documents will be printed.

When you press the [Run] button, separate inventory movements will be created for each production in the range, as follows:

1. If the status of a production is “Created” or “Started”, an inventory movement will be created that will move the components from the Main Location specified in the “Inventory Settings” setting to the production location. All input rows with inventory items in the selected productions will be transferred to the corresponding inventory movement.

   By default, the Requested Quantity in each inventory movement row will be the exact quantity needed to complete the production. This will be the In Qty in each production row, less any quantity that has been moved in a previous inventory movement (i.e. any previous inventory movement with the same Production Number in the “For Production” field). If there is not enough inventory in the “From Location” to satisfy the Requested Quantity, then it will be reduced to the quantity in inventory. Each inventory movement will be marked as “Reserved”, meaning that when you deliver similar Items, sufficient stock will be reserved for the inventory movement until you mark it as Sent or Received.

2. If the status of a production is “Finished”, an inventory movement will be created that will move the assembled item from the production location. The “To Location” will be left empty, so you will need to choose one before you can mark the inventory movement as Received. All output rows with inventory items in the production will be transferred to the inventory movement. The quantity in each inventory movement row will be the exact quantity built by the production.

3. If the status of a production is “Cancelled” or “Discarded”, no new inventory movement will be created.

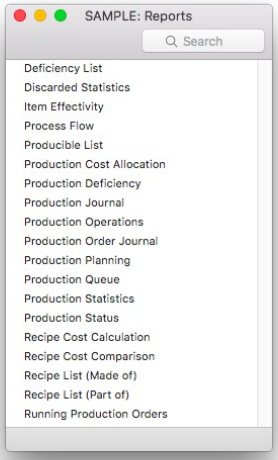
4. If there is a previous inventory movement (of any status) for the entire In Qty, no new inventory movement will be created and nothing will be printed.

REPORTS

Introduction

As with all modules, to print a report in the Production module, press the [Reports] button in the Navigation Center. Then, select the report that you need from the resulting list.

The following reports are available in the Production module:



A specification window will appear, where you can decide what is to be included in the report. Leave all the fields in this window blank if the report is to cover all the records in the appropriate register. If it is necessary to restrict the coverage of the report, use the fields as described individually for each report.

Where specified below, it is often possible to report on a selection range, such as a range of production records, or a range of recipes. To do this, enter the lowest and highest values of the range, separated by a colon. For example, to report on Productions from 2011001 to 2011010, enter “2011001:2010010” in the Production field. Depending on the field, the sort used might be alpha or numeric. In the case of an alpha sort, a range of 1:2 would also include 100, 10109, etc.

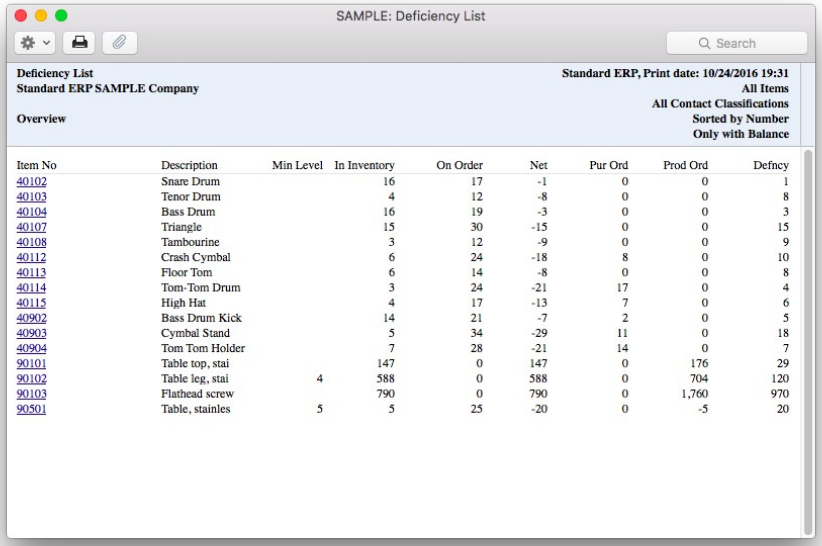
Using the options at the bottom of the specification window, determine the print destination of the report (the default is to print to screen). You can initially print to screen and subsequently send the report to a printer using the printer icon.

Once you have entered the reporting criteria and have chosen a print destination, press [Run].

If you print a report to screen, you can use the ‘Recalculate’ command on the operations menu to update the report after making alterations to background data. The ‘Reopen Report Specification’ command on the same menu allows you to update the report using different reporting criteria.

Deficiency List

This report shows the minimum inventory level, the current inventory balance, the quantity on open sales, purchase and production orders and the deficiency for each item. The deficiency is the quantity required to bring the inventory balance up to the minimum inventory level after all orders have been fulfilled. You can therefore use the report prior to entering production records to show how many of a particular inventory Item should be assembled. The report does not show structured items.



SAMPLE: Deficiency List

Deficiency List
Standard ERP SAMPLE Company

Overview

Standard ERP, Print date: 10/24/2016 19:31
All Items
All Contact Classifications
Sorted by Number
Only with Balance

Item No	Description	Min Level	In Inventory	On Order	Net	Pur Ord	Prod Ord	Defncy
40102	Snare Drum		16	17	-1	0	0	1
40103	Tenor Drum		4	12	-8	0	0	8
40104	Bass Drum		16	19	-3	0	0	3
40107	Triangle		15	30	-15	0	0	15
40108	Tambourine		3	12	-9	0	0	9
40112	Crash Cymbal		6	24	-18	8	0	10
40113	Floor Tom		6	14	-8	0	0	8
40114	Tom-Tom Drum		3	24	-21	17	0	4
40115	High Hat		4	17	-13	7	0	6
40902	Bass Drum Kick		14	21	-7	2	0	5
40903	Cymbal Stand		5	34	-29	11	0	18
40904	Tom Tom Holder		7	28	-21	14	0	7
90101	Table top, stai		147	0	147	0	176	29
90102	Table leg, stai	4	588	0	588	0	704	120
90103	Flathead screw		790	0	790	0	1,760	970
90501	Table, stainles	5	5	25	-20	0	-5	20

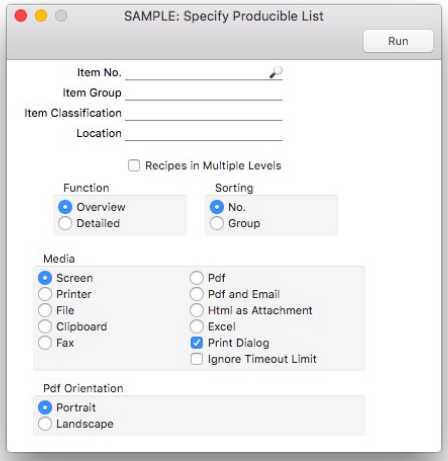
For full details about this report, please refer to the 'Purchase Orders' manual.

Item Effectivity

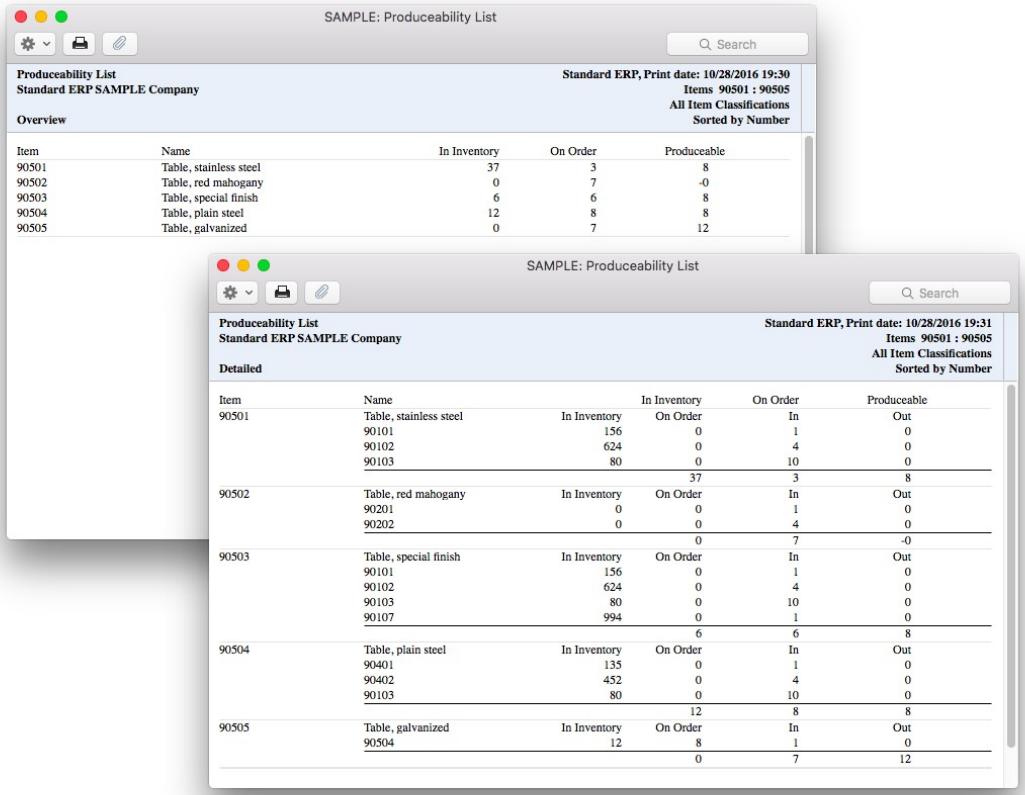
This report is described above on page 46.

Producible List

This report shows the quantity of assembled items (inventory and structured items with recipes) that you can produce from the components you currently have available in inventory. For each item, this figure is compared with the quantity of unfulfilled sales orders. Unfulfilled orders for individual components are taken into account.



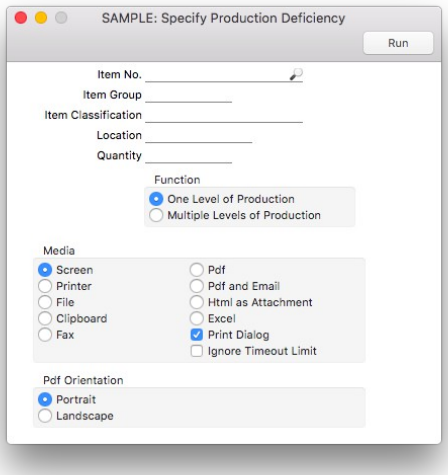
Two versions of the report are available: the overview and a more detailed report. The detailed report lists the components in each recipe. In the illustration below, the overview is behind the detailed version of the report.



For full details about this report, please refer to the 'Sales Orders' manual.

Production Deficiency

This report is similar to the producible list described above, but it also contains suggestions of what components you should order to build a specified number of assembled items. The minimum inventory level of each component (from the 'inventory' tab of the item record) is taken into account in making this calculation. The number of components already on unfulfilled purchase orders is shown for comparison purposes.



Item No.: Enter the item number of an assembled item to view its production requirements. If you enter a range of item numbers (separated by a colon), only those items in the range with recipes will be shown in the report.

Group: Enter an item group to report on all items in the group that have recipes.

Location: The report takes the number of components in inventory into consideration when offering purchasing suggestions. If you wish to restrict this process to inventory from a particular location, specify that here.

Quantity: In calculating purchasing suggestions, the report compares the inventory of each component with the quantity required to satisfy unfulfilled sales orders. If you would like an additional quantity of assembled Items to be taken into account (perhaps to anticipate future demand), enter that additional quantity here. The number of components required to satisfy this quantity will be shown in a separate column in the report.

Function: For assembled items that use components that themselves are sub-assemblies, you can either show the inventory levels of the sub-assemblies or show those of the most basic level components. To use the latter alternative, use the "multiple levels of production" option.

To produce the report illustrated below, we entered 10 as the Quantity in the specification window. The report therefore shows us how many of each component is required to produce ten units of each assembled item. In the case of item 90202, there is also an open sales order for one unit. This item also has a minimum inventory level of 4 (not shown in the report). The suggestion is therefore 1 (on sales order) + 4 (minimum inventory level) + 40 (required to build 10 x 90502) – 0 (in inventory) = 45.

In more detail, the columns are:

In Inventory: The quantity of the component currently in inventory.

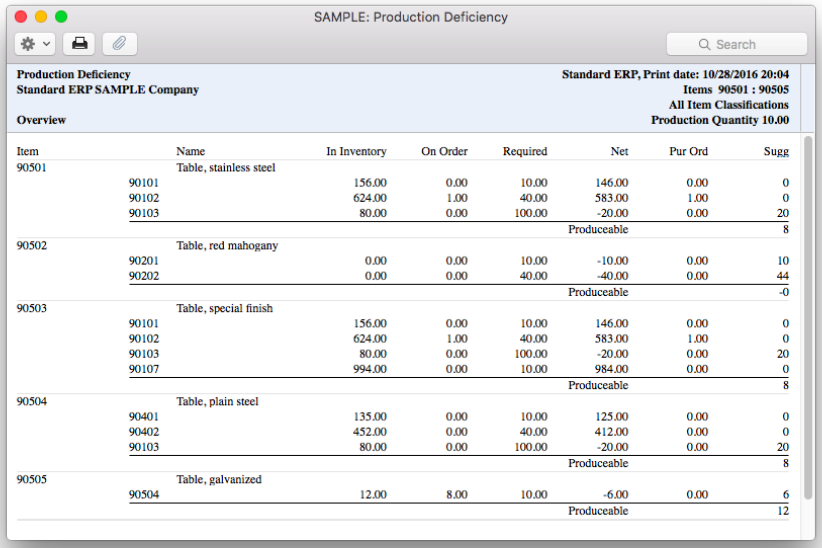
On Order: The quantity of the component included in unfulfilled sales orders. This includes sales orders for the component itself and for Structured Items that require the component. It does not include sales orders for assembled items (inventory Items with Recipes) that require the component, as it is assumed that these Items are already assembled and the component will not be needed again to satisfy the order. For example, item 90202 is a component in 90502. The report shows that there is an order for one unit of item 90202. Any orders that there might be for 90202 as a component of 90502 are not included in this figure.

Required: The quantity of the component required to build the number of assembled Items specified in the Quantity field in the specification window (10 in the example).

Net: In Inventory - On Order - Required

Pur Ord: The quantity of the component included in unfulfilled purchase orders.

Sugg: -Net - Pur Ord + Item Minimum Level. This is the quantity you need to purchase to build the number of assembled Items specified in the Quantity field in the specification window, satisfy sales orders and bring the component up to its minimum inventory level.



SAMPLE: Production Deficiency

Search

Production Deficiency
Standard ERP SAMPLE Company

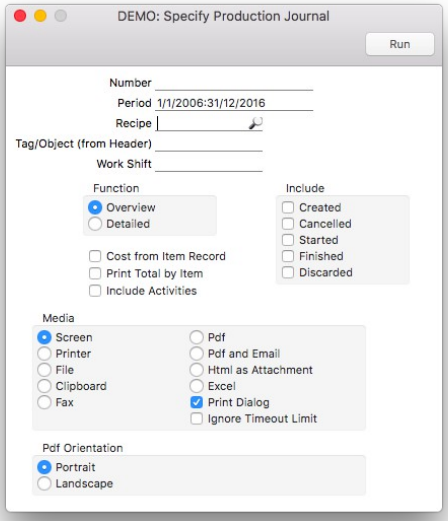
Overview

Standard ERP, Print date: 10/28/2016 20:04
Items 90501 : 90505
All Item Classifications
Production Quantity 10.00

Item		Name	In Inventory	On Order	Required	Net	Pur Ord	Sugg
90501		Table, stainless steel						
	90101		156.00	0.00	10.00	146.00	0.00	0
	90102		624.00	1.00	40.00	583.00	1.00	0
	90103		80.00	0.00	100.00	-20.00	0.00	20
						Produceable		8
90502		Table, red mahogany						
	90201		0.00	0.00	10.00	-10.00	0.00	10
	90202		0.00	0.00	40.00	-40.00	0.00	44
						Produceable		-0
90503		Table, special finish						
	90101		156.00	0.00	10.00	146.00	0.00	0
	90102		624.00	1.00	40.00	583.00	1.00	0
	90103		80.00	0.00	100.00	-20.00	0.00	20
	90107		994.00	0.00	10.00	984.00	0.00	0
						Produceable		8
90504		Table, plain steel						
	90401		135.00	0.00	10.00	125.00	0.00	0
	90402		452.00	0.00	40.00	412.00	0.00	0
	90103		80.00	0.00	100.00	-20.00	0.00	20
						Produceable		8
90505		Table, galvanized						
	90504		12.00	8.00	10.00	-6.00	0.00	6
						Produceable		12

Production Journal

This report lists registered production records.



Number: Enter the Production Number (or range of Production Numbers) of the records to be shown in the report.

Period: Enter a period manually, or use 'Paste Special' to choose from the "Reporting Periods" setting in the system module. Productions whose End Dates fall within this period will be shown in the report.

Recipe: Enter a recipe number to list the production records that use a particular recipe.

Function: These options control the level of detail shown in the report.

Overview: This option is a simple list of productions, showing for each one the number, end date, recipe, quantity produced, comment and whether it has been marked as finished.

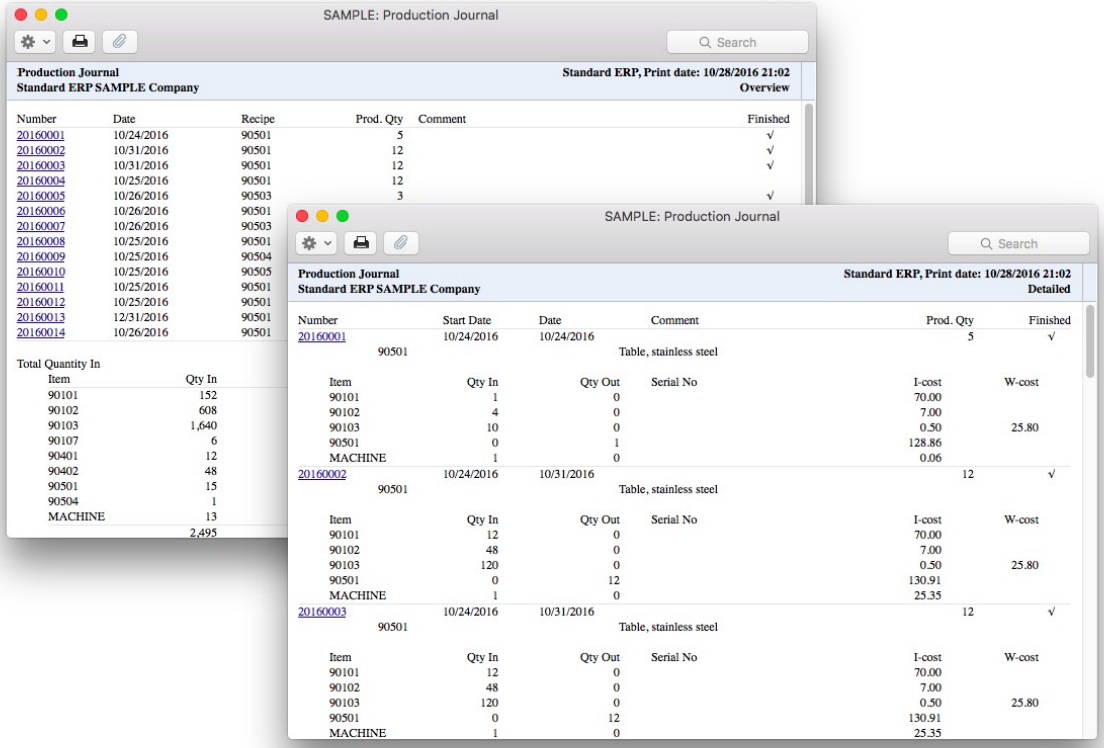
Detailed: This option shows the details of each production record, listing the components individually with serial numbers and costs.

Cost from Item Record: Usually, the detailed version of this report uses the cost of the components from the production records. If you would like the costs to be taken from the relevant item records, check this box.

Print Total by Item: This option adds two sections to the report, listing the Input and Output Items used in the Productions listed in the report. This option is selected in the reports illustrated below.

Include Activities: This option will add an extra column to the overview version of the report, showing the number of hours spent working on each production. This is calculated from activities that have been marked as Done where the production number is recorded on the 'Service' tab.

Include: Check the boxes to include production records of different types in the report. You must select at least one option; otherwise a blank report will result.

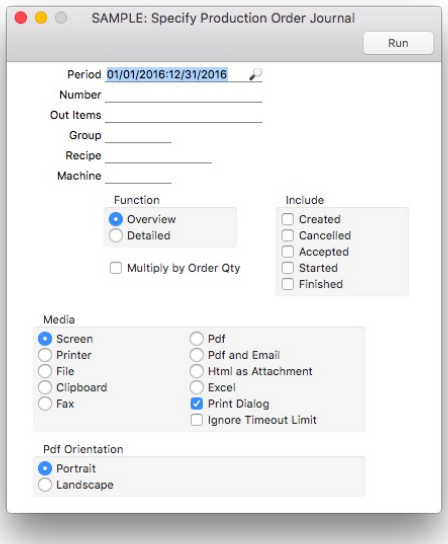


Production Order Journal

This report lists registered production order records, and also shows the production records that have been created from each production order.

You can also produce the overview version of this report by opening a production order and choosing 'Production Order Status' from the operations menu.

When printed to screen, the production journal has Standard ERP Drill-down feature. Drill down from any production order or production number to open an individual production order or production record.



Period: Enter the start and end dates of the reporting period.

If you choose to list “Started” production orders in the report, those whose Start Dates fall within this period will be included. For other production orders, those whose Due Dates fall within this period and those with blank Due Dates will be included.

Number: Enter the production order number (or range of numbers) of the records to be shown in the report.

Out Items: Enter the item number of an assembled item to list production orders with a particular out item.

Group: If you enter an item group here, the report will list every production order with an out item as a member of the item group.

Recipe: Enter a recipe number to list production order records that use a particular recipe.

Machine: Enter a machine number to list production orders that have been assigned to a particular machine.

Function: These options control the level of detail shown in the report.

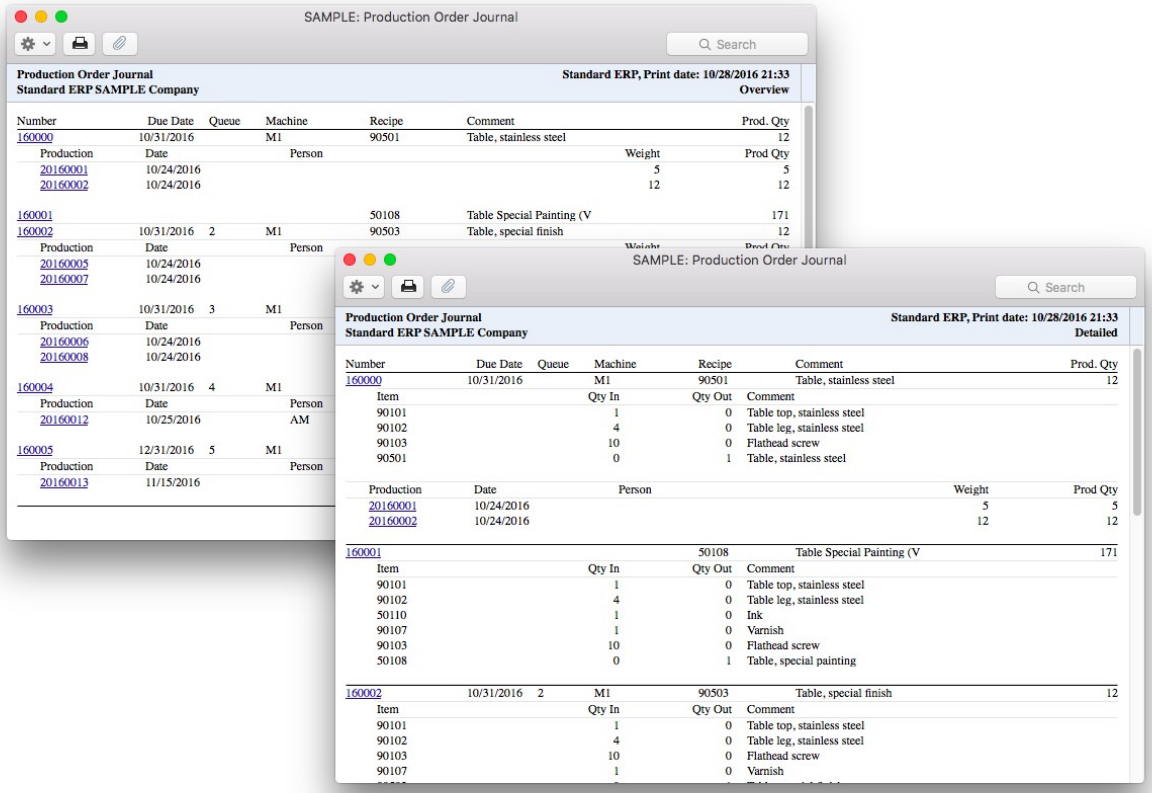
Overview: On a single line per production order record, this option shows number, due date, queue position. Machine, recipe, name and quantity produced, comment and whether it has been marked as finished. If any productions have been created from a production order, these will be listed on individual lines under the production order. Information shown will be the number, date, person, total weight and quantity.

Detailed: In addition to the details in the overview, this option shows the comments and instructions from details of each production order record, and lists the components individually with serial numbers and costs.

Multiply by Order Qty: The list of components in the detailed option can include the quantities required to produce one out item as entered to the production order, or it can include the total quantities required to complete the production order. Check this box if you want to use the second option.

For example, a production order has a total quantity of 2000. 500 have already been built (included in finished productions). Two units of a particular component are required for each out item (this is the input quantity in the matrix in the production order). If you are not using this option, the report will show a quantity of two (quantity required to produce one out item). If you are using this option, the report will show a quantity of 3000 (quantity required to complete the Production Order, (2000 - 500) x 2).

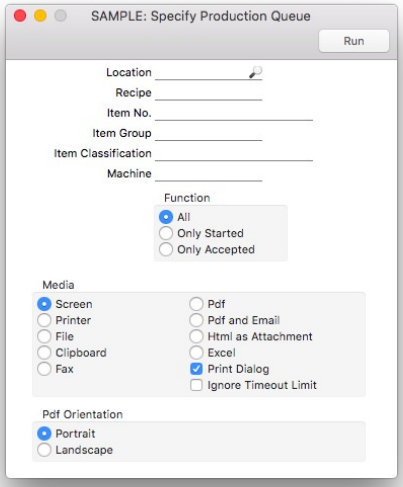
Include: Check the boxes to include production order records of different types in the report. you must choose at least one option; otherwise a blank report will result.



Production Queue

This report lists the production orders that are currently waiting to be produced. This means production orders whose status is “Started” or “Accepted” and that have a Queue Position.

When printed to screen, the production queue report has the Standard ERP Drill-down feature: drill down on any Production Order Number to open the corresponding record. For example, if you need to move a production order to a different position in the queue, you can open it by drilling down and then choose ‘Move in Queue’ from the Operations menu. If you need to begin or continue work on a production order, open it and choose ‘Finish Batch’ from the Operations menu.



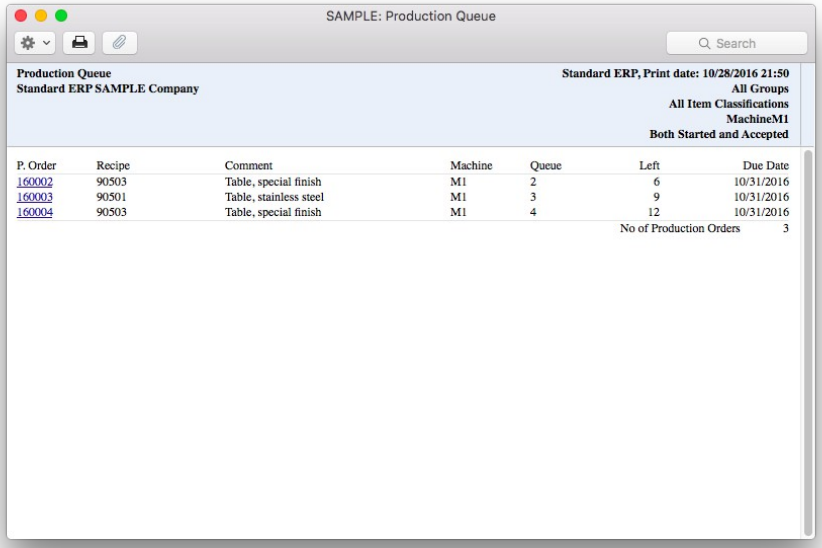
Location: Enter a location to list production orders that have been assigned to a particular location (e.g. a particular workshop).

Recipe: Enter a recipe number to list production orders that use a particular recipe.

Item Group: If you specify an item group, the report will list production orders that have output items belonging to that item group.

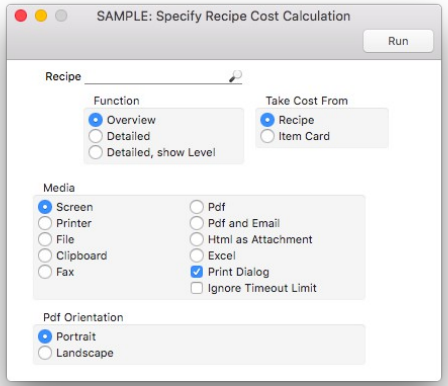
Machine: Enter a machine to list the production orders that are in the queue for a particular machine.

Function: You can choose to list “Accepted” production orders, “Started” production orders or both in the report.



Recipe Cost Calculation

This report is a list of Recipes that compares the total cost of assembly with the sales price of the output Item. The cost of assembly is the I-Cost plus the W-Cost. The I-Cost can be taken from the Recipe or from the Item records of the components ('Costs' tab). The sales price of the output Item is taken from the 'Pricing' tab of the relevant Item record.



Recipe: Specify the recipes to be listed by entering a recipe number, or range of recipe numbers.

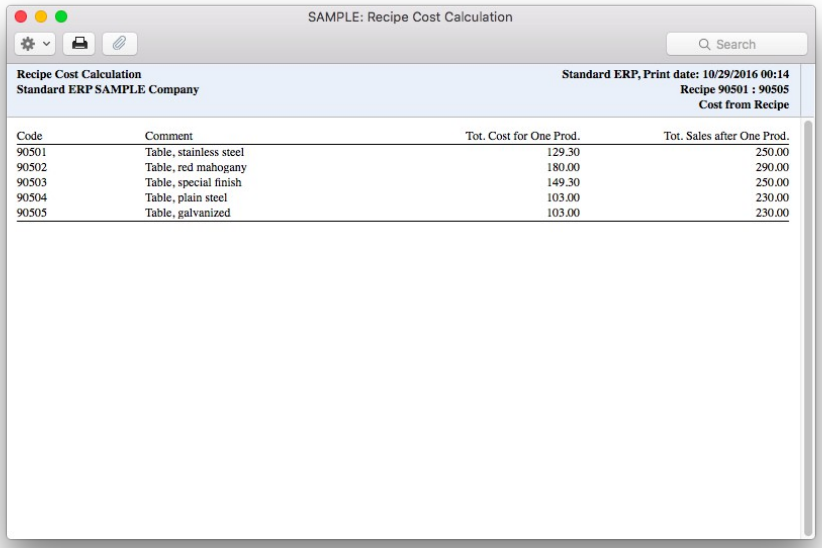
Function: Use these options to control the level of detail shown in the report.

Overview: This option produces a simple list showing recipe number and name, total cost and sales price.

Detailed: This option lists the components of each recipe together with individual costs and quantities. Components that are assemblies themselves are not listed, but are broken down so that the bottom-level components are shown.

Detailed, show Level: This option is very similar to the detailed option, with the exception that the component level is also shown. Since components that are assemblies themselves are not listed, but are broken down so that the bottom-level components are shown, this will be a useful indication of the number of levels of sub-assembly that go towards producing the final item. The final item is on level 0, the components of that item are on level 1, the components of those Items are on level 2, etc.

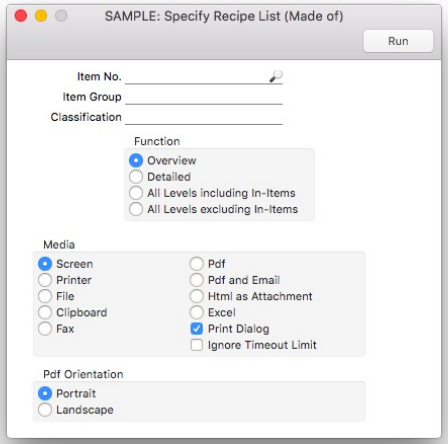
Take Cost From: Use these options to choose whether the cost prices of the components are to be taken from the recipes or from the 'Costs' tabs of the relevant item records.



Code	Comment	Tot. Cost for One Prod.	Tot. Sales after One Prod.
90501	Table, stainless steel	129.30	250.00
90502	Table, red mahogany	180.00	290.00
90503	Table, special finish	149.30	250.00
90504	Table, plain steel	103.00	230.00
90505	Table, galvanized	103.00	230.00

Recipe List (Made of)

This list shows for each assembled Item its Recipe and the components used.



Item No.: Enter the item number of an assembled item to view how it is made up. If you enter a range of item numbers, only those items in the range with recipes will be shown in the report.

Item Group: Enter an item group to show all items in the group that have recipes.

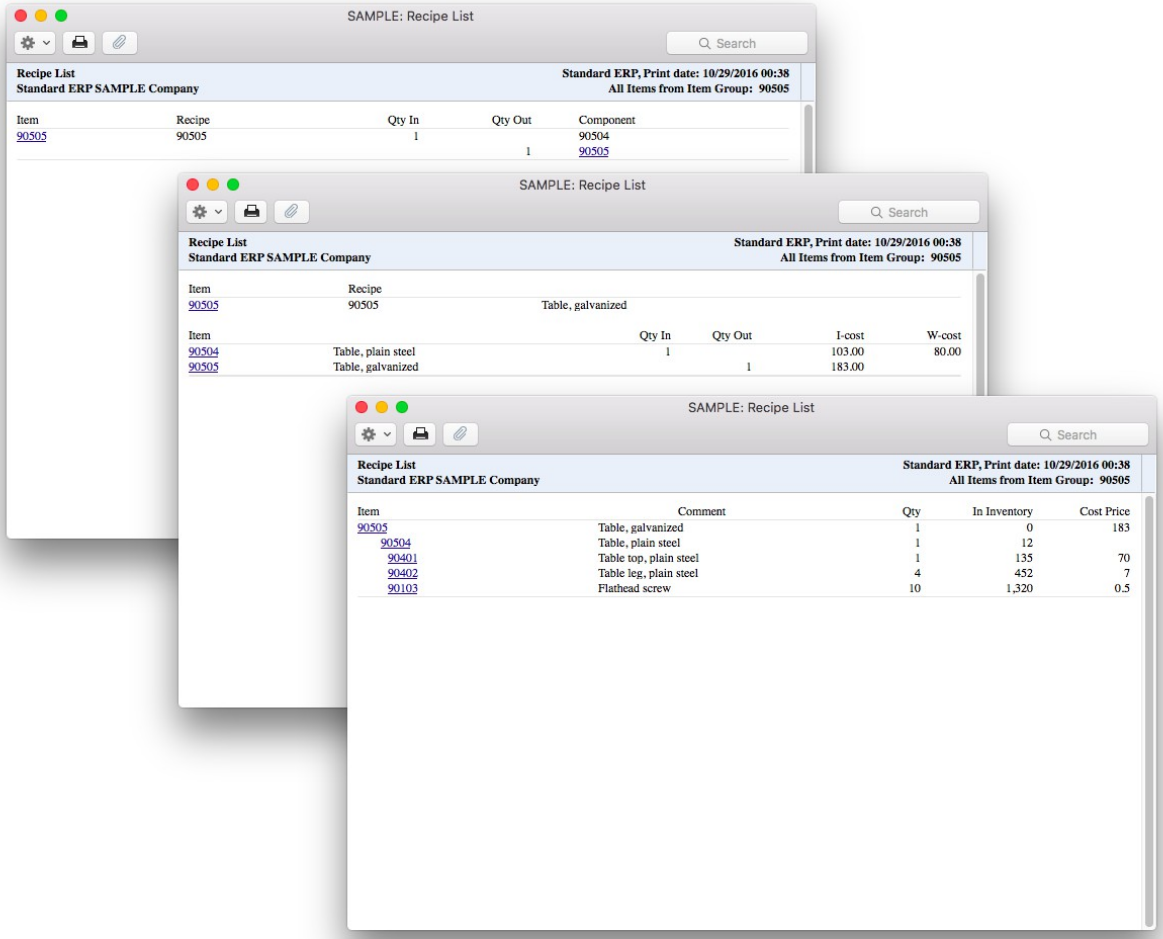
Function: These options control the level of detail shown in the report.

Overview: This option shows the item number and quantity used for each component.

Detailed: In addition to the above, this option shows the item name and cost of each component.

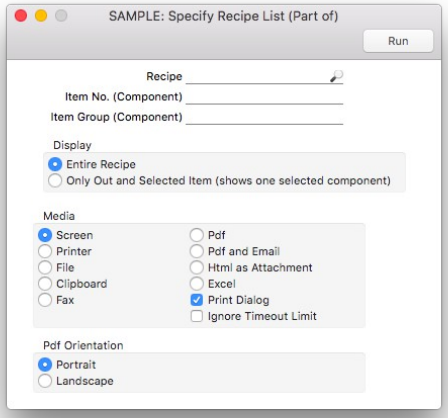
All Levels including In-Items: For both the input and output items, this option shows the In or Out Quantity as appropriate, the quantity in inventory and the I-cost and W-cost. If a recipe contains a sub-assembly, the input items in that sub-assembly will also be listed.

All Levels excluding In-Items: This is similar to the previous option, but only lists output items.



Recipe List (Part of)

This report is a list of recipes, showing the components with quantities and costs.



Recipe: Use this field to limit the report to a single recipe, or range of recipes.

Item No. (Component): Enter an item number to show the recipes in which the item is used as a component.

Item Group (Component): Enter an item group to show the recipes in which items from this group are used as components.

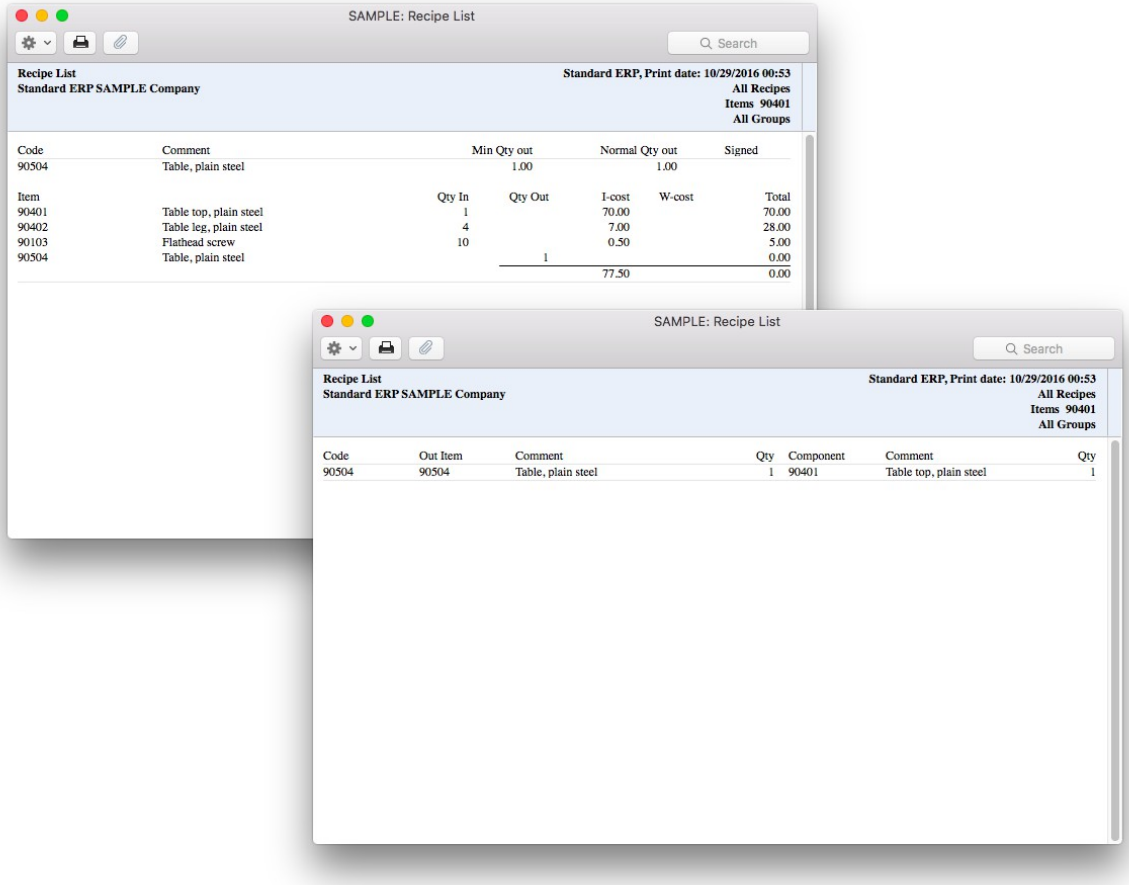
Display: These options control the level of detail shown in the report.

Entire Recipe: This option produces a very detailed report. For each recipe, the code, name and minimum and normal production quantities are shown. The input and output items are then listed. For each one, the item number and name, the In or Out Quantity, the I-cost, the W-cost and the total ((I-cost * Quantity) + W-cost) are shown.

Only Out and Selected Item (shows one selected component): If you produce the report leaving the Item No, and Item Group fields in the specification window empty, this report will be identical to the Entire Recipe option described above.

If you specify an Item No., this report will be a simple list of the recipes that contain the item you have specified as a component. This list will show the recipe code, the item number and name of the output item, the Out Quantity, the item number and name of the specified component and the In Quantity of that component.

If you specify a range of Item Numbers or an Item Group, the report will be as described in the previous paragraph. If a particular recipe contains more than one component in the range of item numbers or in the item group, only the first one will be included in the report.



PROCESSES FOR MANUFACTURING

The production module can be used for producing for customer orders and producing for inventory. Below both cases are discussed. The main difference between these two are that the former is initiated by customer demand, and the latter is initiated by logistical routines such as the deficiency report, minimum and maximum inventory levels and inventory buffers.

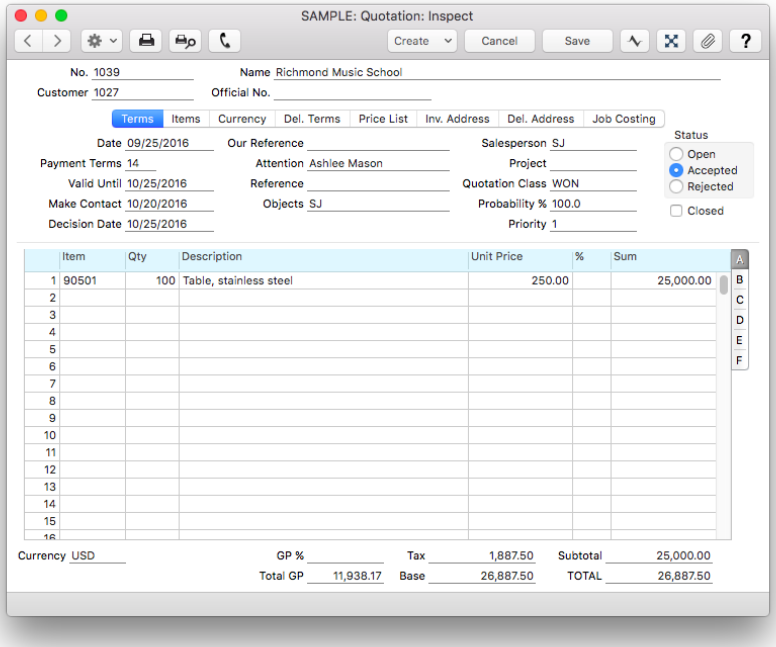
Make to Order

Making to order means that a customer order initiates production as the finished goods are not previously kept in inventory. The argument for such a method is that the finished goods may be quite expensive to produce or keep in inventory, or that the finished goods are customer specific so they may not be applicable for other purposes.

Firstly, the customer can be quoted, and from the quotation a sales order can be generated once the quotation is approved. Production orders or productions can be created based on sales orders by the create planned records from ordered items maintenance routine. Once the production is complete, the inventory levels increase, which makes it possible to create a delivery from the sales order, and from there to create an invoice.

Quotation, 'Costing' and Proposal

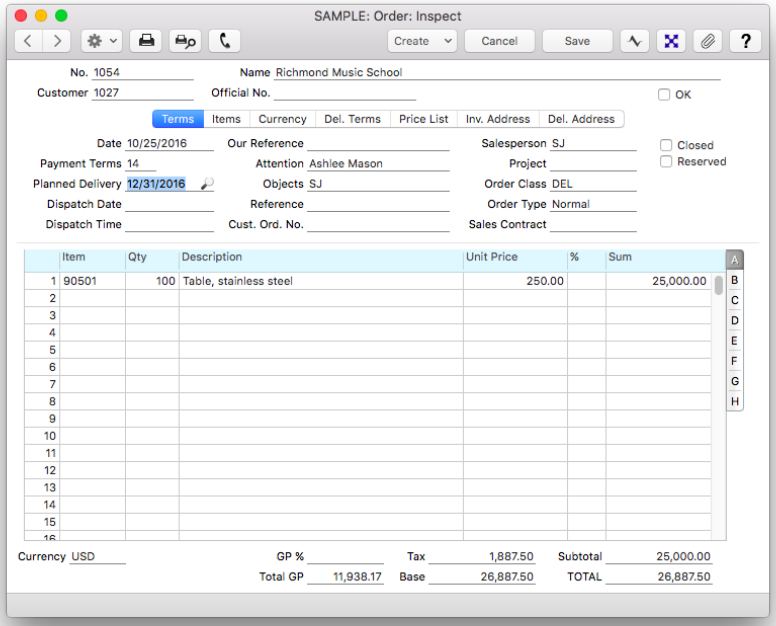
As elaborated in other sections of this material, input items and output items are separate item records entered in Standard ERP. The setting that makes the difference is that the input items are set in a recipe (BOM) and this recipe is linked to the output item. In other words, the input items are the production inputs which make the output items. The output items are the items that must be entered in estimates and quotations. If the items and recipes have already been defined at this point, the calculations and quotations will be made easier as Standard ERP will do most of the work. Calculating the cost and price of an output item must embody all facets of the production process, not just the cost prices of the input items. Labor, set up, moving materials, queuing and wear of the machines must also be incorporated. This is easily set in Standard ERP and you can refer to the settings section of this material.



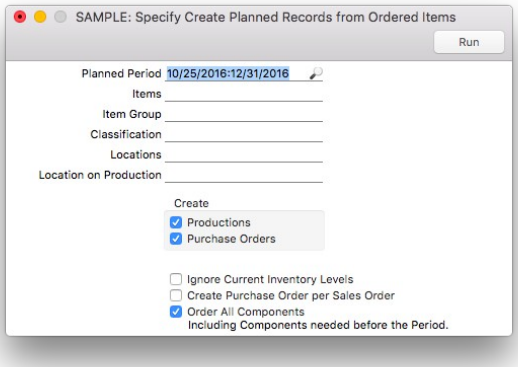
Setting up the recipe before the quotation may make the costing and pricing process easier. When the recipe is entered it will show the cost price of all the input items, as well as the total and work cost. Running the "Recipe Cost Calculation" report will provide an excellent basis for calculating the price based on cost. The intuitive next step will then be to enter the quotation. The likelihood of a quotation being accepted the first time is rather small. Therefore, when the quotation is altered, it is advised that the change is made in a new separate quotation in order to know what changed between the initial quotation and the one that was accepted. When the quotation is accepted by the customer, a sales order can be generated by selecting the "Order" function from the create menu in the quotation record.

Order Confirmation, Sales Order

The sales order that is generated from the accepted quotation copies important details such as the items, quantities, unit prices and of course the customer. A planned delivery date must be entered in the order for production orders to be generated. This will serve as a deadline date for the production. Normally, the customer will sign the quotation, but getting acceptance of the order confirmation will reduce the probability of communication errors and other misunderstandings. Therefore, after receiving the quotation acceptance, it is advised to send an order confirmation as well. This document will also show the agreed deadline.



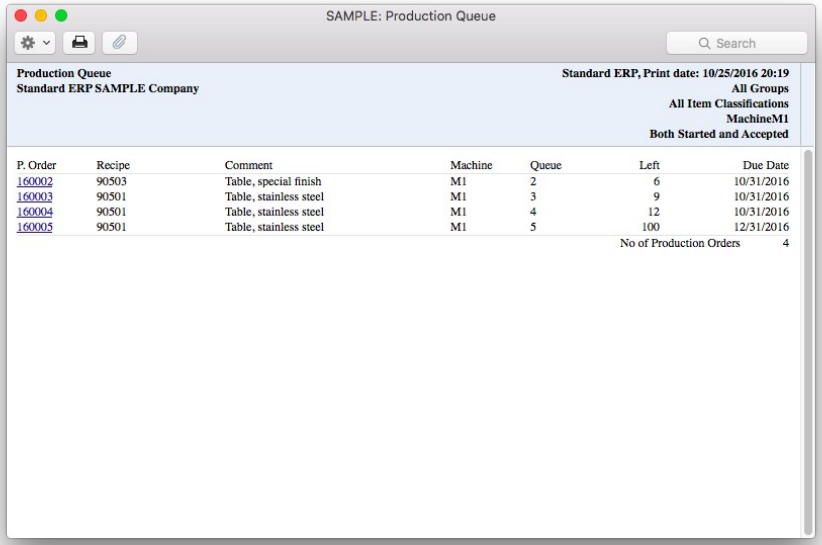
From the sales orders or production modules, the production order is created using the “Create Planned Records from Ordered Items” maintenance routine. If the purchase orders option is also checked and the input items are connected to default purchase items, Standard ERP will create purchase orders when the inventory level of the input items is insufficient. In other words, purchase items should be created from the original input items in order to connect them to vendors or subcontractors. The “Create Planned Records” function allows a perfect “just-in-time” logistic process.



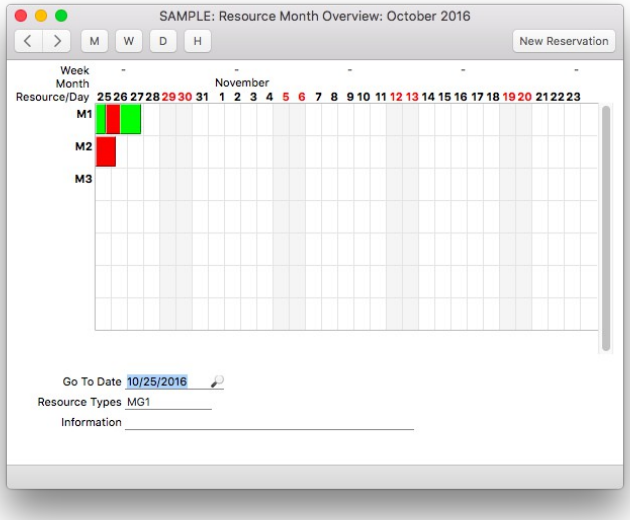
If the input items also have recipes (i.e. they are sub-assemblies), the “Create Planned Records” function will create production orders for these items as well. This will not be the case if the production order is manually created. In Standard ERP, there are no fields in the production order to say that it was generated from the sales order, therefore, it is important to have strict and clear routines so the maintenance function is only run once.

Once production orders are created, they can be accepted. At this point they will be given a queue position for the specified machine. The production queue report can be used to check which productions are in the queue for a specific machine and

when the productions should be finished in order to be able to deliver in time.



By using the resource planning module with production orders, it is also possible to be given a graphical presentation of productions, and allocating productions to different machines can simply be done by dragging and dropping.

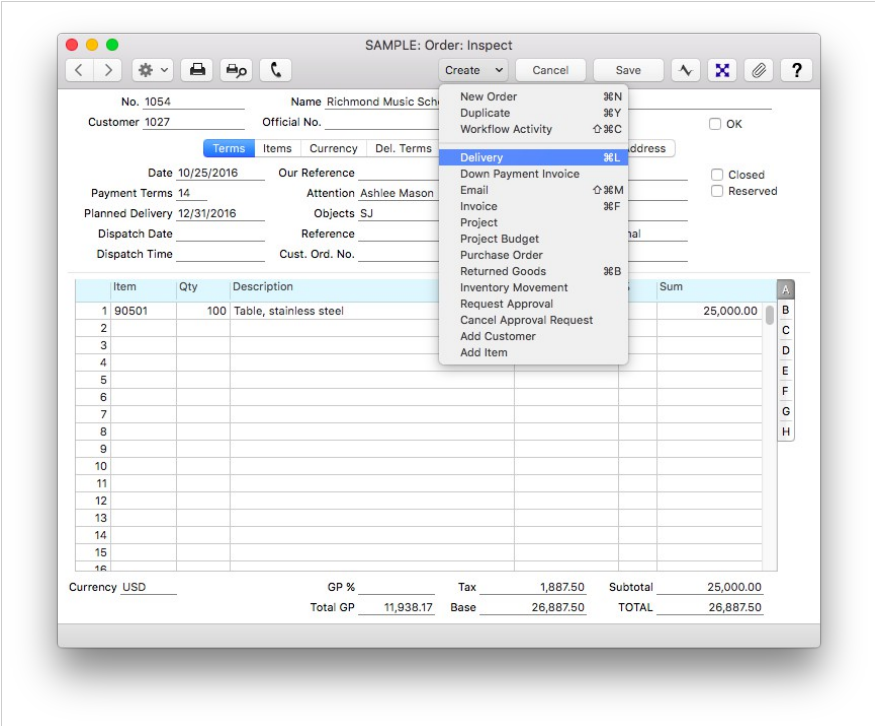


Creating Productions

When a production order reaches the front of the queue, a production can be created, by selecting the “Finish Batch” function from the operations menu in the quotation record. When work starts, the production can be marked as “Started”, to set the start date and time. When the work is complete, the production should be marked as “Finished”. This will remove the input items from inventory and add the output item.

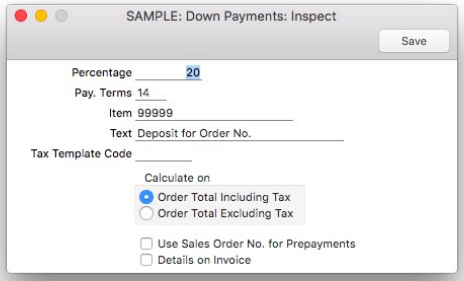
Creating the Delivery

When the production has been completed the sales order may be delivered to the customer. From the create menu in the sales order, the “Delivery” function generates a delivery which allows the produced items to be sent to the customer. The delivery is necessary in order to create the final invoice and to reduce the inventory level of the finished items.



Generating Down Payment Invoices

There are two ways to enter payments before creating the final invoice. The first is to enter a prepayment using the receipts register in the accounts receivable module without specifying the invoice. A down payment invoice can then be created from the receipt. The second method is to create a down payment invoice from the order. For this, the “Down Payment Invoice” from the create menu in the sales order is used. Before creating a down payment invoice, the “Down Payments” setting in the sales order module must be configured.



Percentage: In this field, enter the percentage of the total invoice amount that is to be prepaid.

Pay Terms: In this field, enter the payment term that is to be used as the standard payment term in down payment invoices.

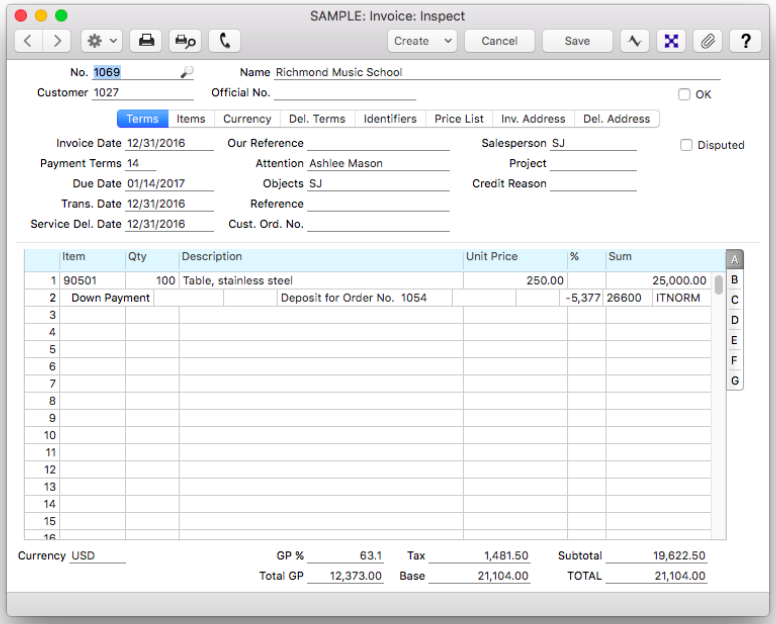
Item: Enter a down payment item here. This will provide the sales account to be used for down payments.

Text: The text entered here will be the text pasted on the invoice.

Tax Template Code: Enter a tax template code if it deviates from the standard.

Calculate on: Choose whether the percentage is to be calculated from the total or the net amount.

Then, the function “create down payment” is used.



The down payment invoice will appear in the order status report as an invoice.

Generating the sales invoice

When the order has been delivered, the invoice can be issued. From the sales order the “Invoice” function on the create menu is used to create the final invoice.

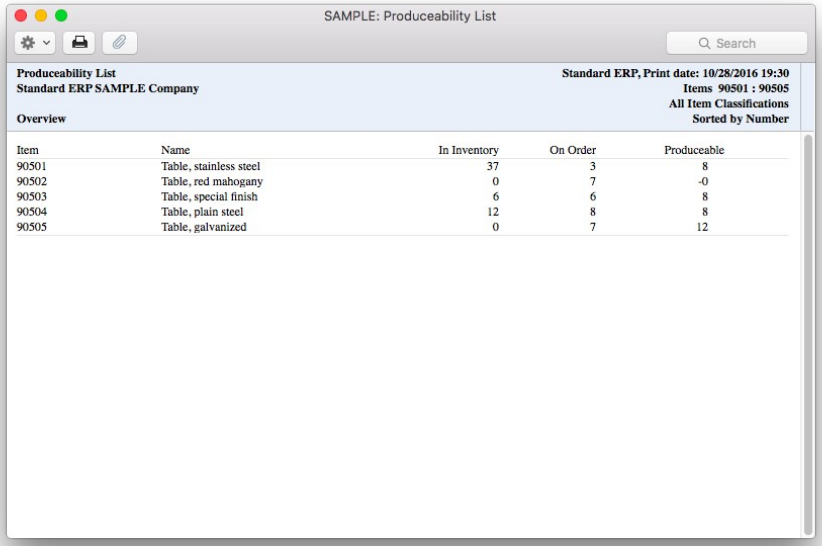
The final invoice will be reduced by the down payment invoice which also will be shown on the invoice. This leaves the residual to be paid by the customer. If a prepayment receipt has been entered without being connected to an invoice, Standard ERP will inform you of this when creating the final invoice. The invoice must then be connected to the prepayment manually, using the “Connect to Prepayment” function on the operations menu. Entering such prepayments may not give as much control as creating down payment invoices, and the customer may not get a document for their bookkeeping.

Make to Inventory

Making to inventory simply means that when the inventory levels of certain items are low, new units must be produced. The case here might be where a sales company has outsourced the production processes to a third party, or a company that wants to keep certain levels of items in inventory at all times. This method is mostly used when the cost of maintaining inventory is acceptable and when customers expect to receive items right away, for example in retail. In this case, the customer demand appears after the items have been produced, increasing the complexity of finding the correct quantity to produce. Reports showing item history and sales trends may be areas to turn to in order to establish a sense of periodic production quantity. However, the customers are likely to determine the quantity, and the producing company will set the prices.

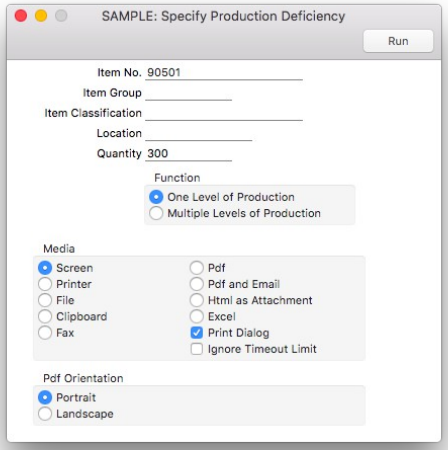
When making items to inventory, production orders can be entered directly to the production order register, or the various maintenance routines mentioned previously can be used to create production orders automatically based on item minimum inventory levels. The deficiency list report will also show how many components are needed for production orders, so it is very easy to see the total requirement for items used in production. If production orders are entered manually, purchase orders for input items can be created by running the “Create Purchase Orders” maintenance routine.

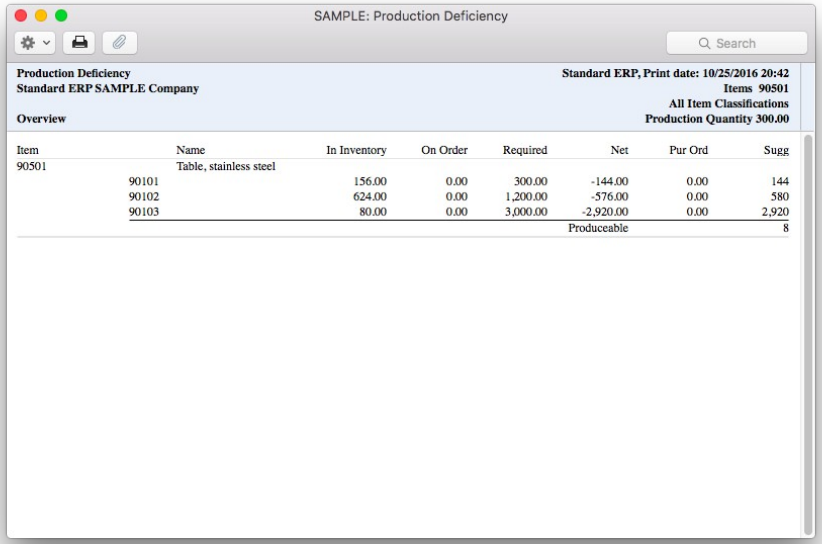
The producible list report will show how many items that have a recipe specified can be produced with current inventory levels and how many items are currently on order from customers.



Item	Name	In Inventory	On Order	Produceable
90501	Table, stainless steel	37	3	8
90502	Table, red mahogany	0	7	-0
90503	Table, special finish	6	6	8
90504	Table, plain steel	12	8	8
90505	Table, galvanized	0	7	12

The quantity of input items needed for a specific recipe can be checked using the production deficiency report. This report can also be used to estimate the amount of input items needed to fulfill a desired production quantity.





SAMPLE: Production Deficiency

Production Deficiency
Standard ERP SAMPLE Company

Standard ERP, Print date: 10/25/2016 20:42
Items 90501
All Item Classifications
Production Quantity 300.00

Overview

Item	Name	In Inventory	On Order	Required	Net	Pur Ord	Sugg
90501	Table, stainless steel						
90101		156.00	0.00	300.00	-144.00	0.00	144
90102		624.00	0.00	1,200.00	-576.00	0.00	580
90103		80.00	0.00	3,000.00	-2,920.00	0.00	2,920
					Produceable		8

For additional forecasting, planning and reporting the MRP module can be used with production to create sales forecasts, production and purchase order plans from which production orders and purchase orders can be created using a maintenance routine.

EXERCISES

1. Create a new inventory item that is to be used in production. Remember also to create a recipe and purchase items so that it is possible to use the “Create Planned Records from Ordered Items” maintenance routine.
2. Enter sales orders for the newly created item and use the “Create Planned Records from Ordered Items” maintenance routine to generate purchase orders and productions/production orders.
3. Generate a production from a production order using the “Finish Batch” option on the operations menu.
4. Open a finished production and disassemble the production.
5. Use reports to find out what needs to be produced and what could be produced with the current inventory levels.
6. Create several production orders, and move them in the production order queue.

Questions

1. What is the difference between production orders and productions?
2. What is the correct way to move a production order in the queue?
3. What is the planned delivery field in sales orders used for?
4. Describe in a few words what the “Create Planned Records for Ordered Items” maintenance routine does.
5. Which item type should be selected for items used in productions?
6. What is a recipe?
7. How can a finished production be corrected?
8. Describe in a few words the difference and use of the deficiency list and producible list reports.
9. What can the “Update Recipes” maintenance routine be used for?
10. What are machine groups?

HANSAWORLD

APPENDIX

Terminology in Different Versions of the English Language

The language used in this material is American English. There are slight differences between the various versions of the English language, which can lead to confusion. This table should help to clear this up. Sorted alphabetically

British	USA	Canada	Australia+New Zealand	Singapore
Cheque	Check	Cheque	Cheque	Cheque
Colour/coloured	Color/colored	Colour/coloured	Colour/coloured	Colour/coloured
Credit Note (CN)	Credit Memo (CN)	Credit Memo (CM)	Credit Note (CN)	Credit Note
Dialogue	Dialog			
Instalment	Installment			
Jewellery	Jewelry	Jewellery	Jewellery	Jewellery
Licence (noun)	License	Licence	Licence	Licence
Mileage Claim	Miles	Way Lists	Mileage Claim	Mileage Claim
Miles	Miles	KM	KM	KM
Mobile	Cell	Mobile	Mobile	Mobile
Nominal Ledger (NL)	General Ledger (GL)	General Ledger (GL)	General Ledger (GL)	General Ledger (GL)
Post Code	ZIP Code	Post Code	Post Code	Post Code
Profit and Loss Statement	Income Statement	Income Statement	Statement of Profit or Loss	Statement of Profit or Loss
Purchase Ledger	Payable (PL = AP)	Payable (PL = AP)	Purchase Ledger	Purchase Ledger
Sales Ledger	Receivable (SL = AR)	Receivable (SL = AR)	Sales Ledger	Sales Ledger
Salesman	Salesperson	Salesperson	Salesman	Salesperson
Stock	Inventory	Inventory	Stock	Inventory
Stocktake	Inventory Count	Inventory Count	Stocktake	Inventory Count
Stock Depreciation	Inventory Adjustment	Inventory Adjustment	Stock Depreciation	Inventory Adjustment
Supplier	Vendor	Vendor	Supplier	Vendor
Turnover	Revenue	Revenue	Revenue	Revenue
VAT	Sales Tax or Tax	Tax (or GST/PST)	GST	GST/SST/HST