

# MODULE 12: SUBCONTRACTING

## Module Overview

A subcontractor is a vendor who performs one or more operational steps in the production process. Depending on the company, subcontracting can be an exception in the production process or an important part of it.

This training material describes how to process subcontract work in Microsoft Dynamics® NAV from setup until the work is finished. It also explains how to obtain information on subcontracting operations and ledger entries.

The program offers the following key features to help manage subcontract work.

| Feature                                 | Description   |
|---|---|
| Work centers with assigned vendor       | Set up and associate a work center with a vendor (subcontractor). You then can assign the work center to a routing operation. This makes it easy to include a subcontracted operation as part of the regular production process. In addition, you can assign the subcontracting cost at the work center level or the routing level. |
| Work center cost based on units or time | Base subcontracting costs for a work center on either production time or a flat charge for each unit. Although subcontractors typically use a flat charge for each unit, the program accepts either approach.   |
| Subcontracting worksheet                | Use the subcontracting worksheet to find production orders with material that is ready to send to subcontractors. Then automatically create purchase orders to start the subcontracting operations.   |
| Automatic posting to production orders  | When you post a subcontracting purchase order, the program automatically posts the necessary information to the production order.   |

Before starting the lessons in this module, set your work date to January 23, 2014. Please perform all lessons, demonstrations, and labs in sequence.

### Objectives

The objectives are:

- Describe how to set up a subcontractor and define subcontractor costs.
- Show how to assign a subcontractor work center to a routing operation.
- Explain how to use the subcontracting worksheet to issue purchase orders to subcontractors.
- Describe how to post subcontracting purchase orders.
- Show how to review subcontracting ledger entries.
- Review the **Subcontractor – Dispatch List** report.

## Setup

You set up subcontractor work centers just as you set up regular work centers, except that you specify a vendor in the **Subcontractor No.** field on the work center card. You assign subcontractor work centers to routings just as you assign other work centers. You can specify costing for subcontracting work either on the work center card or on individual routing operations. This approach is not specific to subcontracting. You use the same costing fields for subcontracting that you use for any work center or routing operation.

The main difference between subcontracted operations and regular operations is how the system processes subcontracted operations in the subcontracting worksheet, and how it posts the operations. This behavior is completely dependent on whether you specify a value in the work center's **Subcontractor No.** field.

### Demonstration: Create a Subcontractor Work Center

**Scenario:** CRONUS International Ltd. decides to use vendor 30000, CoolWood Technologies, as a subcontractor. To set this up, Eduardo, the production planner at CRONUS, creates a work center that specifies vendor 30000 in the work center's **Subcontractor No.** field. He then calculates a calendar for the work center.

#### Demonstration Steps

1. Create a new subcontractor work center.
  - a. In the **Search** box, type "work centers", and then select the related link.
  - b. On the **Home** tab of the **Work Centers** list page, click **New**.
  - c. On the **General** FastTab of the work center card, in the **No.** field, type "500".
  - d. In **Name** field, type "Quality Inspection".
  - e. In the **Work Center Group Code** field, select 2, Production Department.
  - f. Expand the **Posting** FastTab.
  - g. In the **Unit Cost of Calculation** field, select Units.
  - h. Select the check box for the **Specific Unit Cost** field.
  - i. In the **Subcontractor No.** field, select vendor 30000, CoolWood Technologies.
  - j. In the **Flushing Method** field, select Manual.
  - k. In the **Gen. Prod. Posting Group** field, select NO VAT. Note that this selection depends on your accounting setup.
  - l. Expand the **Scheduling** FastTab.
  - m. In the **Unit of Measure Code** field, select MINUTES.

- n. Accept the default values for the **Capacity** and **Efficiency** fields.
  - o. In the **Shop Calendar Code** field, select 2. This is the calendar code for two shifts.
2. Calculate a calendar for the work center.
- a. On the **Home** tab of the work center card, click **Calendar**.
  - b. On the **Matrix Options** FastTab of the **Work Center Calendar** page, in the **View by** field, select Month.
  - c. On the **Home** tab, click **Show Matrix**.
  - d. On the **Actions** tab of the **Work Center Calendar Matrix** page, click **Calculate**.
  - e. On the **Options** FastTab of the **Calculate Work Center Calendar** request page, accept the default starting and ending dates.
  - f. On the **Work Center** FastTab, in the **No.** filter field, type "500".
  - g. Click **OK** to start the batch job. This returns you to the **Work Center Calendar Matrix** page.
  - h. On the **Actions** tab, click **Refresh**. The updated capacity values now appear in the month columns for work center 500.

| No. | Name                | Jan 2014 | Feb 2014 | Mar 2014 | Apr 2014 | May 2014 |
|-----|---------------------|----------|----------|----------|----------|----------|
| 100 | Assembly department | 33,120   | 28,800   | 30,240   | 31,680   | 31,680   |
| 200 | Packing department  | 11,040   | 9,600    | 10,080   | 10,560   | 10,560   |
| 300 | Painting department | 20,700   | 18,000   | 18,900   | 19,800   | 19,800   |
| 400 | Machine department  | 20,700   | 18,000   | 18,900   | 19,800   | 19,800   |
| 500 | Quality Inspection  | 20,700   | 18,000   | 18,900   | 19,800   | 19,800   |

**FIGURE 12.1:WORK CENTER CALENDAR MATRIX PAGE**

- i. Press **Esc** three times to return to the **Work Centers** list page.

## Cost Fields

In the "Create a Subcontractor Work Center" demonstration, you selected Units for the **Unit Cost Calculation** field, and you selected the check box for the **Specific Unit Cost** field. Following is a more detailed description of these fields.

### **Unit Cost Calculation**

Typically, you set the **Unit Cost Calculation** field to Units on a subcontractor work center. The unit cost for a purchase order that you generate for a production order operation then calculates by unit charge instead of by time charge.

### **Specific Unit Cost**

If you decide to set up a single rate for a subcontractor, you must do the following:

- Set up costs on the work center card by filling in the regular costing fields.
- Leave the **Specific Unit Cost** field blank.

If you want to use a different rate for each subcontracting process with the vendor, select the **Specific Unit Cost** field. You then can specify the cost in the **Unit Cost per** field on each routing line that you assign to the subcontractor work center. A subcontracting operation on a production order then obtains its cost from the corresponding routing line instead of from the costing fields on the work center card. Because costs for the production order operation flow through to the purchase order, you do not have to re-enter cost information for each purchase order.

For example, suppose that you subcontract two operations to a vendor. One is for assembly, and the other is for painting. These two operations probably have different costs. Instead of creating a different work center for each operation, select the **Specific Unit Cost** field and specify the costs in the routing operations.

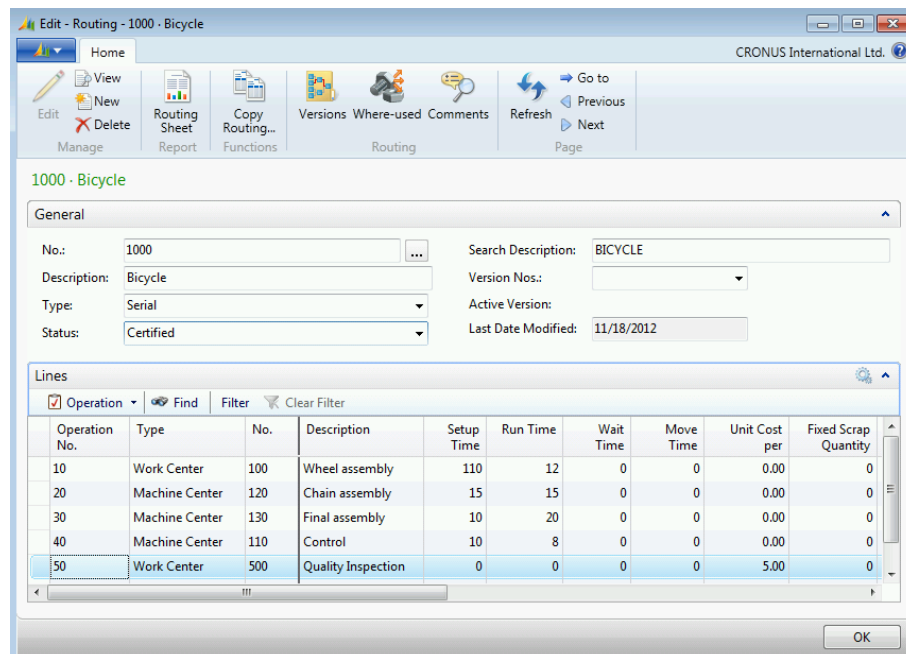
### **Demonstration: Assign a Subcontractor Work Center to a Routing Operation**

The process to assign a routing operation to a subcontractor work center is the same as for a regular work center. However, where you do this depends on your reasons for subcontracting. If you want to set up a subcontractor work center as part of a regular manufacturing process, you can assign the work center to a routing line. If you are subcontracting because of an emergency, such as machine failure or unusually high demand, you can assign the work center to a production order operation instead of to the base routing. The procedure is the same in either case.

**Scenario:** Eduardo, the production planner at CRONUS, must now assign the new subcontractor work center to a routing operation.

## Demonstration Steps

1. Assign the subcontractor work center to a routing operation.
  - a. In the **Search** box, type "routings", and then select the related link.
  - b. On the **Routings** list page, double-click routing number 1000, Bicycle.
  - c. On the **General** FastTab of the routing card, in the **Status** field, select Under Development.
  - d. On the **Lines** FastTab, in the **Operation No.** field of the fifth line, type "50".
  - e. In the **No.** field, type "500". Notice that the description from your subcontractor work center populates the **Description** field.
  - f. In the **Unit Cost per** field, type "5.00".
  - g. On the **General** FastTab, in the **Status** field, select Certified.



**FIGURE 12.2:ROUTING PAGE**

- h. Click **OK** to close the routing card.

## Subcontracting Worksheet

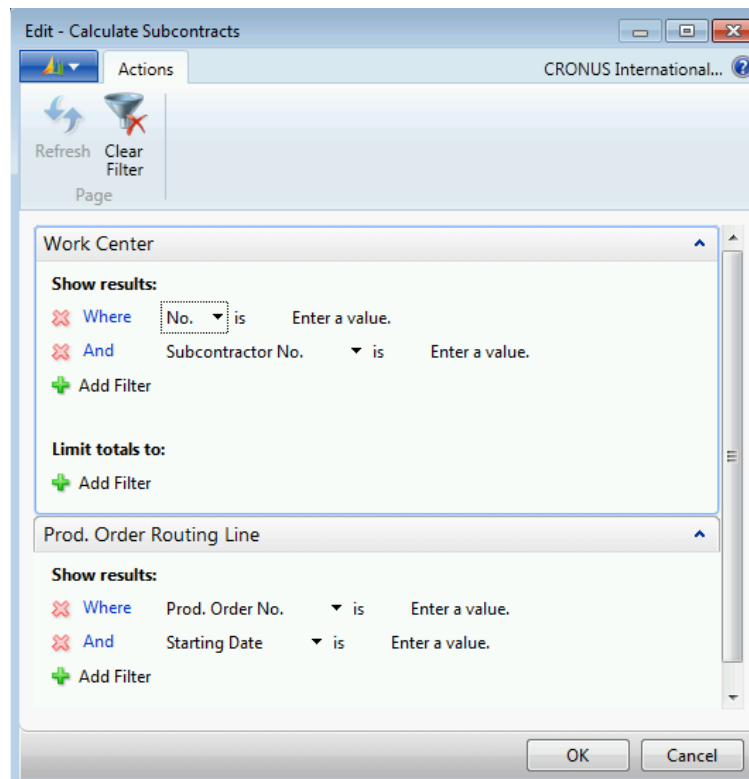
The subcontracting worksheet operates similar to the planning and requisition worksheets. It uses a batch job to calculate information and create action messages. In this case, the batch job calculates production order routing operations that are scheduled for subcontractor work centers. The batch job then creates action messages that suggest new purchase orders to the subcontracting vendors.

As with the other worksheets, you can review the actions messages and change or delete them before carrying them out.

### Calculate Subcontracts Request Page

To calculate subcontracts, follow these steps.

1. In the **Search** box, type "subcontracting worksheets", and then select the Subcontracting Worksheets - Departments/Manufacturing/Planning link.
2. On the **Home** tab of the subcontracting worksheet, click **Calculate Subcontracts**. This opens the **Calculate Subcontracts** request page.



**FIGURE 12.3: CALCULATE SUBCONTRACTS REQUEST PAGE**

The **Calculate Subcontracts** request page has the following two FastTabs:

- Work Center
- Prod. Order Routing Line

The filter fields on the **Work Center** FastTab let you limit the calculations based on any field on the work center card. This includes the **Subcontractor No.** field, which lets you restrict a calculation to only those operations that are intended for a specific subcontractor.

The filter fields on the **Prod. Order Routing Line** FastTab let you restrict the calculations based on any field on the **Prod. Order Routing Line** table. This includes all date fields if, for example, you want to plan subcontracting work for a specific date range.



**Note:** You can calculate subcontracting action messages only for released production orders.

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### Demonstration: Calculate Subcontracts

**Scenario:** Eduardo, the production planner at CRONUS, creates his first released production order that uses the revised routing for item 1000, Bicycle. He then calculates the subcontracting purchase order for the new production order.

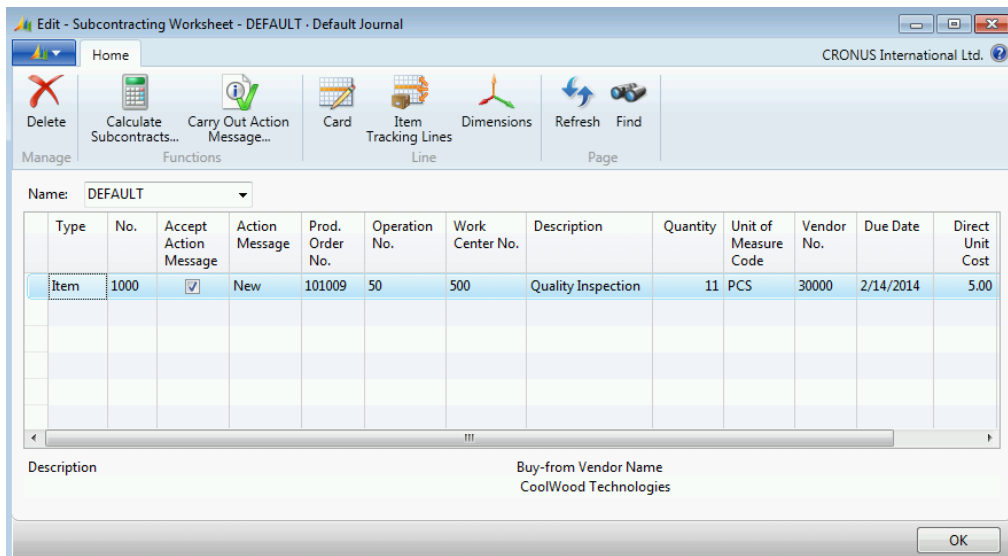
#### Demonstration Steps

1. Create a new released production order for item 1000, Bicycle.
  - a. Close all open pages.
  - b. In the **Search** box, type “released prod. orders”, and then select the related link.
  - c. On the **Home** tab of the **Released Prod. Orders** list page, click **New**, and then press **Enter**.
  - d. On the **General** FastTab of the production order card, in the **Source No.** field, type “1000”.
  - e. In the **Quantity** field, type “11”.
  - f. Set the **Due Date** field to February 17, 2014.
  - g. On the **Home** tab, click **Refresh Production Order**.
  - h. Accept all default values on the **Refresh Production Order** request page, and then click **OK** to start the batch job. When the batch job finishes, notice that it creates three production order lines: one each for item 1000, 1100, and 1200. Items 1100 and 1200 are on the same production order as their parent item, 1000, because the manufacturing policy for all three items is Make-to-Order (MTO).



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2. Verify the presence of the subcontracting operation in the production order routing lines for item 1000.
  - a. On the **Lines** FastTab of the production order, select the line for item 1000.
  - b. Click **Line**, and then click **Routing**. Notice that operation number 50 for the subcontractor work center number 500 is present in the routing lines. This includes the value in the operation's **Unit Cost per** field.
  - c. Press **Esc** two times to return to the **Released Prod. Orders** list page.
3. Calculate subcontracts for the new production order.
  - a. In the **Search** box, type "subcontracting worksheets", and then select the Subcontracting Worksheets - Departments/Manufacturing/Planning link.
  - b. On the **Home** tab of the subcontracting worksheet, click **Calculate Subcontracts**.
  - c. On the **Calculate Subcontracts** request page, accept all default values, and then click **OK**. When the batch job finishes, notice that it creates one planning line that suggests creating one new purchase order. Also notice that there is no field that shows the replenishment system. This is because the subcontracting worksheet only generates action messages for purchase orders.



The screenshot shows the 'Edit - Subcontracting Worksheet - DEFAULT - Default Journal' window. The interface includes a ribbon with tabs for 'Manage', 'Functions', 'Line', and 'Page'. The 'Functions' tab is active, showing icons for 'Delete', 'Calculate Subcontracts...', 'Carry Out Action Message...', 'Card', 'Item Tracking Lines', 'Dimensions', 'Refresh', and 'Find'. Below the ribbon, there is a 'Name' dropdown set to 'DEFAULT'. The main area contains a table with the following data:

| Type | No.  | Accept Action Message               | Action Message | Prod. Order No. | Operation No. | Work Center No. | Description        | Quantity | Unit of Measure Code | Vendor No. | Due Date  | Direct Unit Cost |
|------|------|-------------------------------------|----------------|-----------------|---------------|-----------------|--------------------|----------|----------------------|------------|-----------|------------------|
| Item | 1000 | <input checked="" type="checkbox"/> | New            | 101009          | 50            | 500             | Quality Inspection | 11       | PCS                  | 30000      | 2/14/2014 | 5.00             |

Below the table, there is a 'Description' field with the text 'Buy-from Vendor Name CoolWood Technologies'. An 'OK' button is located at the bottom right of the window.

**FIGURE 12.4: SUBCONTRACTING WORKSHEET WITH AN ACTION MESSAGE**

- d. Leave the subcontracting worksheet open.

### Subcontracting Worksheet Fields

The following table describes the main fields in the subcontracting worksheet.

| Field                        | Description   |
|------------------------------|---|
| <b>Type</b>                  | Type of the requisition worksheet line. For the subcontracting worksheet, this is set to Item.  |
| <b>No.</b>                   | Item number of the item for which the action message proposes to create a purchase order. This is the item number from the production order line that represents the demand for the purchase order. It is also the item number that the program specifies on the purchase order.  |
| <b>Accept Action Message</b> | Check box that determines whether to carry out the action message when you run the <b>Carry out Action Msg. – Req.</b> batch job. If you select this check box for an action message, the batch job carries out the action message and then deletes the message from the worksheet. If you clear the check box, the batch job does not carry out the action message, and instead leaves the message in the worksheet. |
| <b>Action Message</b>        | The action to take about the proposed purchase order. This is set to New in the subcontracting worksheet.   |
| <b>Prod. Order No.</b>       | Order number of the production order that represents the demand for the proposed purchase order.  |
| <b>Operation No.</b>         | Operation number of the specific operation in the production order routing lines that represents the demand for the proposed purchase order.  |
| <b>Work Center No.</b>       | Work center number for the subcontractor work center.   |

| Field                       | Description   |
|-----------------------------|---|
| <b>Description</b>          | Description for the subcontractor work center.  |
| <b>Quantity</b>             | Quantity for the proposed purchase order. This is first set to equal the quantity on the production order line.   |
| <b>Unit of Measure Code</b> | The unit of measure code for the proposed purchase order.   |
| <b>Vendor No.</b>           | The vendor number for the subcontractor.  |
| <b>Due Date</b>             | The due date for the proposed purchase order.   |
| <b>Direct Unit Cost</b>     | The direct unit cost of the item for the proposed purchase order. If you selected the <b>Specific Unit Cost</b> field on the work center card, this cost comes from the <b>Unit Cost per</b> field on the production order routing line that represents the demand for the proposed purchase order. Otherwise, the cost comes directly from the work center card. The program copies the value in the <b>Direct Unit Cost</b> field to the proposed purchase order, and then uses the cost to calculate the line amount for the purchase order. |

### **Demonstration: Carry Out Subcontracting Action Messages**

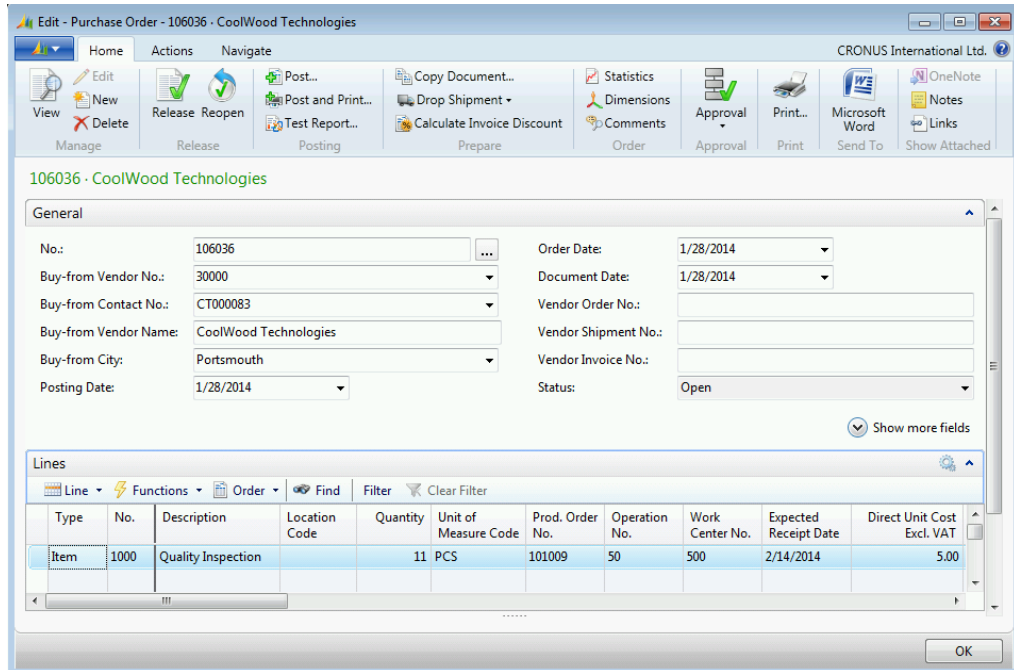
In a live situation, the person in charge of subcontracting purchase orders reviews each action message that is proposed in the subcontracting worksheet. As with the other worksheets, you can delete an action message from the worksheet without affecting the original information. If you delete an action message, and the demand for the proposed purchase order still exists the next time that you run the **Calculate Subcontracts** batch job, the planning engine repeats the proposal.

When you carry out action messages, the program creates one purchase order for each vendor. If all the action messages in the subcontracting worksheet relate to the same vendor location, the program creates only one purchase order. If there are action messages for multiple vendors, the program creates multiple purchase orders.

**Scenario:** After he reviews the action message that are proposed by the **Calculate Subcontracts** batch job, Eduardo, the production planner at CRONUS, creates a purchase order by carrying out the action message.

### Demonstration Steps

1. Carry out the action message.
  - a. For the single action message in the subcontracting worksheet, select the **Accept Action Message** check box.
  - b. On the **Home** tab, click **Carry Out Action Message**.
  - c. On the **Carry Out Action Msg. – Req.** request page, accept all default values, and then click **OK** to start the batch job. When the batch job finishes, notice that it deletes the action message from the subcontracting worksheet.
  - d. Click **OK** to close the subcontracting worksheet.
  
2. Review the purchase order.
  - a. In the **Search** box, type “purchase orders”, and then select the related link.
  - b. On the **Purchase Orders** list page, double-click the line for the purchase order to vendor number 30000 for 11 units of item 1000, Bicycle. You might have to use the filter field in the upper-right corner of the purchase order list to help find the correct purchase order.
  - c. On the **Lines** FastTab of the purchase order card, rearrange the other fields as shown in the “Purchase Order Page” image. Notice that the purchase order is linked to the operation that is assigned to work center number 500 on the production order routing. Other fields, such as the date fields and the **Direct Unit Cost Excl. Vat** field, also obtain or calculate their values based on the source production order operation.



**FIGURE 12.5: PURCHASE ORDER FROM PRODUCTION ORDER ROUTING OPERATION**

d. Leave the purchase order card open.



**Note:** Because the program links the purchase order to the demand from the original production order operation, this prevents the **Calculate Subcontracts** batch job from proposing duplicate purchase orders in later planning runs. Because the demand is already met, no additional supply is required.



**Note:** Another advantage of the link between the purchase order and the production order is accurate costing. If the costs change when you invoice the purchase order, the new costs correctly flow to the production order.

## Posting Process

You use a subcontract purchase order to buy services, not items. When you receive the purchase order, this does not increase the output quantity of the related production order line's parent item, except in one situation. If the subcontracted operation is the final step on the production order routing, then posting the purchase order receipt is the same as posting output to the final operation for the production order routing. This increases the inventory for the production order line's parent item.

When you invoice the purchase order, this registers the costs with the production order.



**Note:** We recommend that you do not specify a subcontractor work center as the last operation in a routing. This is because most companies prefer to validate the subcontractor's work when it is received. The automatic posting of the production order also results in some functional limitations if you still need to post for other operations.

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### Demonstration: Post a Subcontract Purchase Order

**Scenario:** Eduardo, the production planner at CRONUS, posts receipt of the purchase order that he sent to vendor 30000, Coolwood Technologies, for the subcontracted operation on the production order for 11 units of item 1000, Bicycle. Because this is the last operation on the production order routing for item 1000, the posting increases the inventory for item 1000.

#### Demonstration Steps

1. Post the subcontract purchase order as received.
  - a. On the **General** FastTab of the purchase order for 11 units of item 1000, set the **Posting Date** field to January 28, 2014.
  - b. In the **Vendor Invoice No.** field, type "123456".
  - c. On the **Home** tab, click **Post**.
  - d. On the request message, select Receive.
  - e. Click **OK** to post receipt of the order.
  
2. Review the capacity ledger entries for the linked production order.
  - a. On the **Lines** FastTab, use the **Choose Columns** function to add the **Prod. Order No.** field. Position it after the **Unit of Measure Code** field.
  - b. In the **Prod. Order No.** field, drill down into the production order number, and then click **Advanced**.
  - c. On the **Navigate** tab of the **Select – Production Order List** page, click **Entries**, and then click **Capacity Ledger Entries**. Notice that the ledger entry contains the quantity for operation number 50 in the **Output Quantity** field. However, it has no costs in the **Direct Cost** field.

| Posting Date | Order Type | Order No. | Type        | No. | Operation No. | Item No. | Description        | Quantity | Output Quantity | Direct Cost |
|--------------|------------|-----------|-------------|-----|---------------|----------|--------------------|----------|-----------------|-------------|
| 1/28/2014    | Production | 101009    | Work Center | 50  | 50            | 1000     | Quality Inspection | 11       | 11              | 0.00        |

**FIGURE 12.6: CAPACITY LEDGER ENTRIES FOR THE SUBCONTRACTED PRODUCTION ORDER ROUTING OPERATION**

- d. Press **Esc** two times to return to the purchase order card.
3. Post the subcontract purchase order as invoiced.
    - a. On the **General** FastTab, in the **Vendor Invoice No.** field, type "46446".
    - b. On the **Home** tab, click **Post**.
    - c. On the request message, select Invoice.
    - d. Click **OK** to post the purchase order as invoiced. After it posts, the program deletes the purchase order.
  4. Review the capacity ledger entries for the production order.
    - a. In the **Search** box, type "released prod. orders", and then select the related link.
    - b. On the **Released Production Orders** list page, double-click the line for the production order for 11 units of item 1000, Bicycle.
    - c. On the **Navigate** tab of the production order card, click **Entries**, and then click **Capacity Ledger Entries**. Notice that the **Direct Cost** field now contains costs for the operation.

| Posting Date | Order Type | Order No. | Type        | No. | Operation No. | Item No. | Description        | Quantity | Output Quantity | Direct Cost |
|--------------|------------|-----------|-------------|-----|---------------|----------|--------------------|----------|-----------------|-------------|
| 1/28/2014    | Production | 101009    | Work Center | 500 | 50            | 1000     | Quality Inspection | 11       | 11              | 55.00       |

**FIGURE 12.7:CAPACITY LEDGER ENTRIES WITH COSTS**


d. Press **Esc** two times to close the open pages.

## Material Consumption of Components That Are Sent to a Subcontractor

Frequently, you send components to a subcontracted vendor to perform some type of assembly or manufacturing operation. To record the withdrawal of components from inventory, you must create a manual consumption journal entry. To minimize data entry, you can do the following:

- Set up the component to automatically flush consumption at the start or finish of the production order.
- Assign a routing link code on the production BOM, and the same code on the subcontracting routing operation. This automatically flushes the components by operation.
- Or, set up a routing with a "picking" operation immediately before the subcontracted operation. This makes sure that components are removed from inventory at the correct time.

You can also set up a receiving operation for components that are returned by the subcontractor. You can then link negative quantities on the production BOM to the receiving operation. This results in an inventory increase of components when you receive them from the subcontractor.

 **Note:** If the subcontractor step is the last operational step on the routing, the program automatically records that the parent item on the production order is finished when you receive and invoice the purchase order. Therefore, you cannot explode the routing. If you did not record time for earlier operational steps, you must manually record the time line by line in the output journal. You must also manually change the status of the production order to Finished.



## Reports

The **Subcontractor – Dispatch List** report is the only report that is specific to subcontracting.

### Subcontractor – Dispatch List

This report lists all released production order routing lines for subcontracting operations. It shows when these operations are scheduled and whether a purchase order exists for each operation.

To access the report, type “subcontractor dispatch list” in the **Search** box, and then select the related link.

The report’s request page consists completely of filter fields. These fields let you filter the report results that are based on fields from the following tables:

- Vendor
- Work Center
- Prod. Order Routing Line

The default filters include the following:

- Vendor number
- Work center number
- Production order number
- Production order starting date
- Production order ending date

The following table describes the report’s output columns.

| Column                      | Description  |
|-----------------------------|--|
| <b>Production Order No.</b> | Production order number for the production order that contains the subcontracting operation. |
| <b>Operation No.</b>        | Operation number for the subcontracting operation on the production order routing.           |

| Column                      | Description   |
|-----------------------------|---|
| <b>Description</b>          | Description of the operation. This value copies from the routing description. This in turn copies from the work center description. |
| <b>Starting Date</b>        | Starting date for the subcontracting operation.   |
| <b>Ending Date</b>          | Ending date for the subcontracting operation.   |
| <b>Remaining Quantity</b>   | Quantity for the subcontracting operation that is not yet assigned to a purchase order.   |
| <b>Purch. Order No.</b>     | Order number of the purchase order that is linked to the subcontracting operation.  |
| <b>Qty. on Purch Order</b>  | Quantity for the subcontracting operation that is assigned to the linked purchase order.  |
| <b>Unit of Measure Code</b> | The unit of measure code for the subcontracting operation.  |

In addition to these report columns, the report also groups subcontracting operations by vendor and work center.

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## Lab: Set up and Process a Subcontracting Operation

### Scenario

**Scenario:** You are the production planner at CRONUS. The price that vendor 30000, CoolWood Technologies, charges for the inspection of bicycles increases to 6.00 LCY per bike. Change routing number 1000, Bicycle, to record this price increase. Then create a new released production order for 12 units of item 1000, Bicycle. Use the subcontracting worksheet to generate a purchase order for the inspection operation, and then finish the operation by receiving and invoicing the purchase order.

### High Level Steps

1. On operation number 50 of routing 1000, Bicycle, change the value in the **Unit Cost per** field from 5.00 LCY to 6.00 LCY.
2. Create a new released production order for 12 units of item 1000, Bicycle.
3. Use the subcontracting worksheet to generate a purchase order for the subcontracted operation on the production order that you created in step 2.
4. Receive and invoice the purchase order.

### Detailed Steps

1. On operation number 50 of routing 1000, Bicycle, change the value in the **Unit Cost per** field from 5.00 LCY to 6.00 LCY.
  - a. In the **Search** box, type "routings", and then select the related link.
  - b. On the **Routings** list page, double-click the line for routing number 1000, Bicycle.
  - c. On the **General** FastTab of the routing card, in the **Status** field, select Under Development.
  - d. On the **Lines** FastTab, on the line for operation number 50, change the value in the **Unit Cost per** field from 5.00 LCY to 6.00 LCY.
  - e. On the **General** FastTab, in the **Status** field, select Certified.
  - f. Click **OK** to close the routing card.
2. Create a new released production order for 12 units of item 1000, Bicycle.
  - a. In the **Search** box, type "released prod. orders", and then select the related link.
  - b. On the **Home** tab of the **Released Prod. Orders** list page, click **New**, and then press **Enter**.

- c. On the **General** FastTab of the production order card, in the **Source No.** field, type "1000".
  - d. In the **Quantity** field, type "12".
  - e. Set the **Due Date** field to February 21, 2014.
  - f. On the **Home** tab, click **Refresh Production Order**.
  - g. Accept all default values on the **Refresh Production Order** request page, and then click **OK** to start the batch job.
  - h. Click **OK** to close the production order card.
3. Use the subcontracting worksheet to generate a purchase order for the subcontracted operation on the production order that you created in step 2.
  - a. In the **Search** box, type "subcontracting worksheets", and then select the Subcontracting Worksheets - Departments/Manufacturing/Planning link.
  - b. On the **Home** tab of the subcontracting worksheet, click **Calculate Subcontracts**.
  - c. On the **Calculate Subcontracts** request page, accept all default values, and then click **OK** to calculate the plan. The program creates one action message.
  - d. For the action message in the subcontracting worksheet, select the **Accept Action Message** check box.
  - e. On the **Home** tab, click **Carry Out Action Message**.
  - f. On the **Carry Out Action Msg. – Req.** request page, accept all default values, and then click **OK** to start the batch job.
  - g. When the batch job finishes, click **OK** to close the subcontracting worksheet.
4. Receive and invoice the purchase order.
  - a. In the **Search** box, type "purchase orders", and then select the related link.
  - b. On the **Purchase Orders** list page, double-click the line for the purchase order for 12 units of item 1000, Bicycle. You might have to use the filter field in the upper-right corner of the purchase order list to help find the correct purchase order.
  - c. On the **General** FastTab of the purchase order card, set the **Posting Date** field to January 28, 2014.
  - d. In the **Vendor Invoice No.** field, type "542349".
  - e. On the **Home** tab, click **Post**.
  - f. On the request message, select Receive and Invoice.
  - g. Click **OK** to post the order.

## Module Review

In a world where manufacturing companies increasingly outsource work, it is important for a company's manufacturing software to fully support subcontracting.

Microsoft Dynamics NAV achieves this through a seamless integration between work center setup, routings, production orders, and purchase orders. This lets you manage subcontracting quantities and costs without disrupting your regular workflow.

## Test Your Knowledge

Test your knowledge with the following questions.

1. Which field on the work center card do you use to identify a work center as a subcontractor's work center?

- Vendor No.
- Subcontractor No.
- Internal Operation
- External Operation.

2. Which field on the work center card do you use to specify that you want to assign costs on the routing line?

- Direct Unit Cost
- Unit Cost
- Unit Cost Calculations
- Specific Unit Cost

3. On the work center card, what does the Unit Cost Calculation field do?

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4. In which situation does posting a subcontracting purchase order as Received result in posting output quantity to the production order?
- ( ) When the production order is released.
  - ( ) Every time that you receive quantities against the purchase order.
  - ( ) Only if you use auto flushing.
  - ( ) Only if the operation linked to the purchase order is the last operation in the production order routing.

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## Test Your Knowledge Solutions

### Test Your Knowledge

1. Which field on the work center card do you use to identify a work center as a subcontractor's work center?  
 Vendor No.  
 Subcontractor No.  
 Internal Operation  
 External Operation.
2. Which field on the work center card do you use to specify that you want to assign costs on the routing line?  
 Direct Unit Cost  
 Unit Cost  
 Unit Cost Calculations  
 Specific Unit Cost
3. On the work center card, what does the Unit Cost Calculation field do?

MODEL ANSWER:

Typically, you set the Unit Cost Calculation field to Units on a subcontractor work center. The unit cost for a purchase order that you generate from a production order routing operation then calculates by unit charge instead of a time charge.

4. In which situation does posting a subcontracting purchase order as Received result in posting output quantity to the production order?  
 When the production order is released.  
 Every time that you receive quantities against the purchase order.  
 Only if you use auto flushing.  
 Only if the operation linked to the purchase order is the last operation in the production order routing.

