

CHAPTER 1: INTRODUCTION

Objectives

The objectives are:

- Introduce the fundamental costing issue in Microsoft Dynamics® AX 2009.
- Understand basic cost flow in Microsoft Dynamics AX using standard cost, fixed receipt price and running average methodology.
- Use the **Financial inventory** parameter and discover its influence on item costing.
- Calculate estimated values before closing.
- Use the **Include physical** value parameter and find out how it effects item costing.

Introduction

In Microsoft Dynamics AX 2009, inventory costing system provides effective performance and accuracy of costing and inventory valuation. The value that the inventory is calculated at is determined by the method chosen in the inventory model group.

The standard cost framework used for inventory valuation does not require the inventory close process to be performed. Inventory costing system includes tools for including indirect costs in the full absorption of production costs, enabling an overview of all costs involved in a production.

Fundamental Costing Issue

The fundamental costing issue is that companies do not necessarily know the cost price of their items when the items are sold. Companies are frequently forced to operate with estimated and forecasted cost prices if they have issues with items before the purchase order (or production order) for the items is invoice posted (or costed). The fundamental challenge regarding inventory costing and valuation is to design a strategy to deal with this uncertainty.

There are generally two ways companies can handle this issue:

- They can either operate with a politically selected cost price (standard cost).
- They can recalculate and adjust the used (estimated) cost price when they learn the actual price of the receipt.

Basic Cost Flow in Microsoft Dynamics AX

The basic cost principle in Microsoft Dynamics AX 2009 is that receipt costs are generally set by the user, but issue costs are set by Microsoft Dynamics AX automatically, based on the costs of their related receipts, except for standard cost.

Running Average

Costs on receipts are generally set by users. And, costs on issues are set at an interim cost using running average cost price, when they are financially posted, unless the item is set to use inventory model Standard cost. Average cost prices may be calculated per inventory dimension if the item's inventory dimension group has been set up in a way that allows this.

The average cost price is calculated as the total value of the item in relation to the total quantity.

Then, when you run a recalculation or close, Microsoft Dynamics AX tries to settle those issues back to receipts, according to the rules of inventory model (FIFO, LIFO, Weighted average etc.)

If the cost on the issue doesn't match the cost on the receipt it is settled to, then Microsoft Dynamics AX generates a cost adjustment on that issue, to make it match the receipt cost.

Fixed Receipt Price

Microsoft Dynamics AX allows you to retain a specified cost price as cost value for an item when you want all item transactions into and out of the inventory to be valued at.

You can do this by selecting the **Fixed receipt price** check box in the **Inventory model groups** form for the items that are to be adjusted to standard cost price.

Inventory Management > Setup > Inventory > Inventory model groups > Inventory model tab

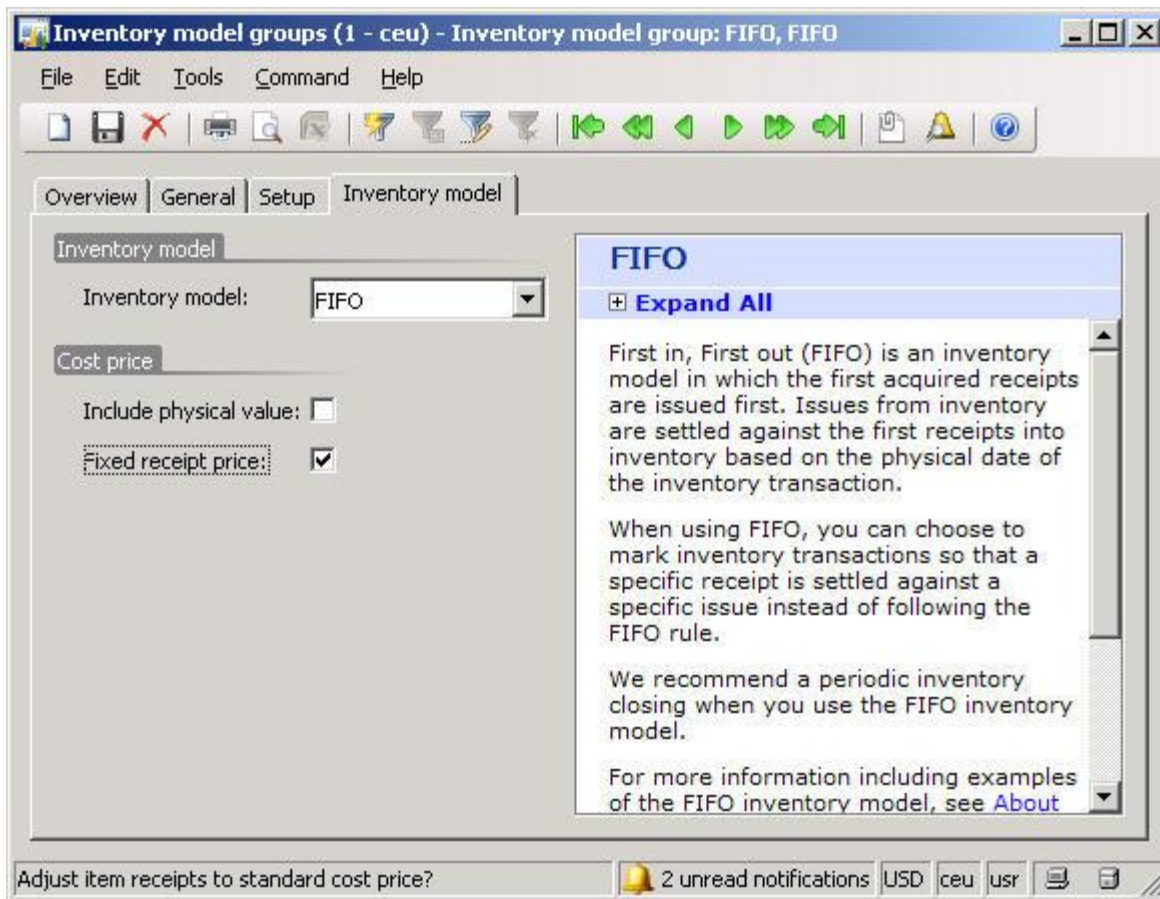


FIGURE 1.1: INVENTORY MODEL GROUPS FORM – FIXED RECEIPT PRICE OPTION

When you work with a fixed receipt price, item receipt and issue values are adjusted to the fixed receipt price in the **Item** form when posted. If the receipt price is different from the fixed receipt price, inventory is updated with the fixed receipt price, and the difference is posted to the account for fixed receipt price loss or profit.

In the **Inventory model group** form, when you select the **Fixed receipt price** check box, you also need to select an inventory model. Upon closing, issue transactions are value-adjusted according to the inventory model groups that are selected in the **Inventory model groups** form.

Standard Cost

Standard cost is an inventory valuation method that is based on the standard cost principle, where inventory receipts and issues are valued using an item's active standard cost. Variances capture the differences arising between an item's standard cost and the actual cost of transactions.

The main advantage of the standard cost inventory model is that items defined by this valuation method no longer require the inventory close process to be performed. But it should be also noted that manual marking does not apply with the items using standard cost valuation method.

Standard cost inventory model is discussed in more details in Chapter 3 Standard Cost Framework.

Financial Inventory Parameter

Use the **Financial inventory** parameter on inventory dimensions to calculate the cost price on groups of transactions for this specific dimension within the inventory dimension group. This means that instead of performing the price calculation on one large group of transactions, undifferentiated by the specific dimension, the calculation is performed only between transactions with the same dimension identification. To perform calculations per the specific dimension you must select the **Financial inventory** parameter for the dimension.

Procedure: Select the Financial Dimension Parameter for a Storage Dimension

Use this procedure to select the **Financial dimension** parameter for a storage dimension:

1. Click **Inventory management > Setup > Dimensions > Dimension group**.
2. Select the dimension group.
3. Select a storage dimension, that is Warehouse, Batch number and other dimensions in the lower pane.
4. In the storage dimension make sure that it is active and select the **Financial dimension** check box.

Examples

The example is made where a dimension group only contains the warehouse and batch number.

In the first scenario only the Site and Warehouse dimension has the **Financial inventory** parameter selected.

Storage dimensions - activation and setup

Overview General Editing							
Active	Name	Mandatory	Primary stocking	Blank receipt allowed	Blank issue allowed	Physical inventory	Financial inventory
☒	Site	☒	☒	☐	☐	☒	☒
☒	Warehouse	☒	☒	☐	☐	☒	☒
☐	Batch number	☐	☐	☐	☐	☐	☐
☐	Location	☐	☐	☐	☐	☐	☐
☐	Pallet ID	☐	☐	☐	☐	☐	☐
☐	Serial number	☐	☐	☐	☐	☐	☐

FIGURE 1.2: BATCH NOT INCLUDED IN THE FINANCIAL INVENTORY

The second scenario is an identical copy of the first scenario but the Batch number dimension also has the **Financial inventory** parameter selected.

Storage dimensions - activation and setup							
Overview General Editing							
Active	Name	Mandatory	Primary stocking	Blank receipt allowed	Blank issue allowed	Physical inventory	Financial inventory
☒	Site	☒	☒	☐	☐	☒	☒
☒	Warehouse	☒	☒	☐	☐	☒	☒
☒	Batch number	☐	☐	☐	☐	☒	☒
☐	Location	☐	☐	☐	☐	☐	☐
☐	Pallet ID	☐	☐	☐	☐	☐	☐
☐	Serial number	☐	☐	☐	☐	☐	☐

FIGURE 1.3: BATCH INCLUDED IN THE FINANCIAL INVENTORY

What happens after inventory closing is described in the following paragraphs:

Scenario 1

In this scenario Batch number does not have the **Financial inventory** check box selected.

On January 10 you receive a purchase order of 10 pieces of an item 1401 at USD120.00 each. The receipt has batch number 'S-001' attached to it and is received at warehouse 11. The purchase order is invoiced.

On January 15 you receive a purchase order of 10 pieces of the same item at a price of USD 150.00 per piece. The receipt has a batch number 'S-002' attached to it and is received at warehouse 11. The purchase order is invoiced.

On January 16 you deliver and invoice update a sales order for 10 pieces of the batch number 'S-002' items.

The inventory model used for the item is Weighted average and when you perform the inventory closing the whole quantity of 20 pieces is considered for the calculation.

Inventory closing settles the issue partly against both receipts. Because you received and invoiced two purchase orders, 5 pieces from each order are settled and this results in a cost of USD135.00 each. See the graphical representation of what this looks like.

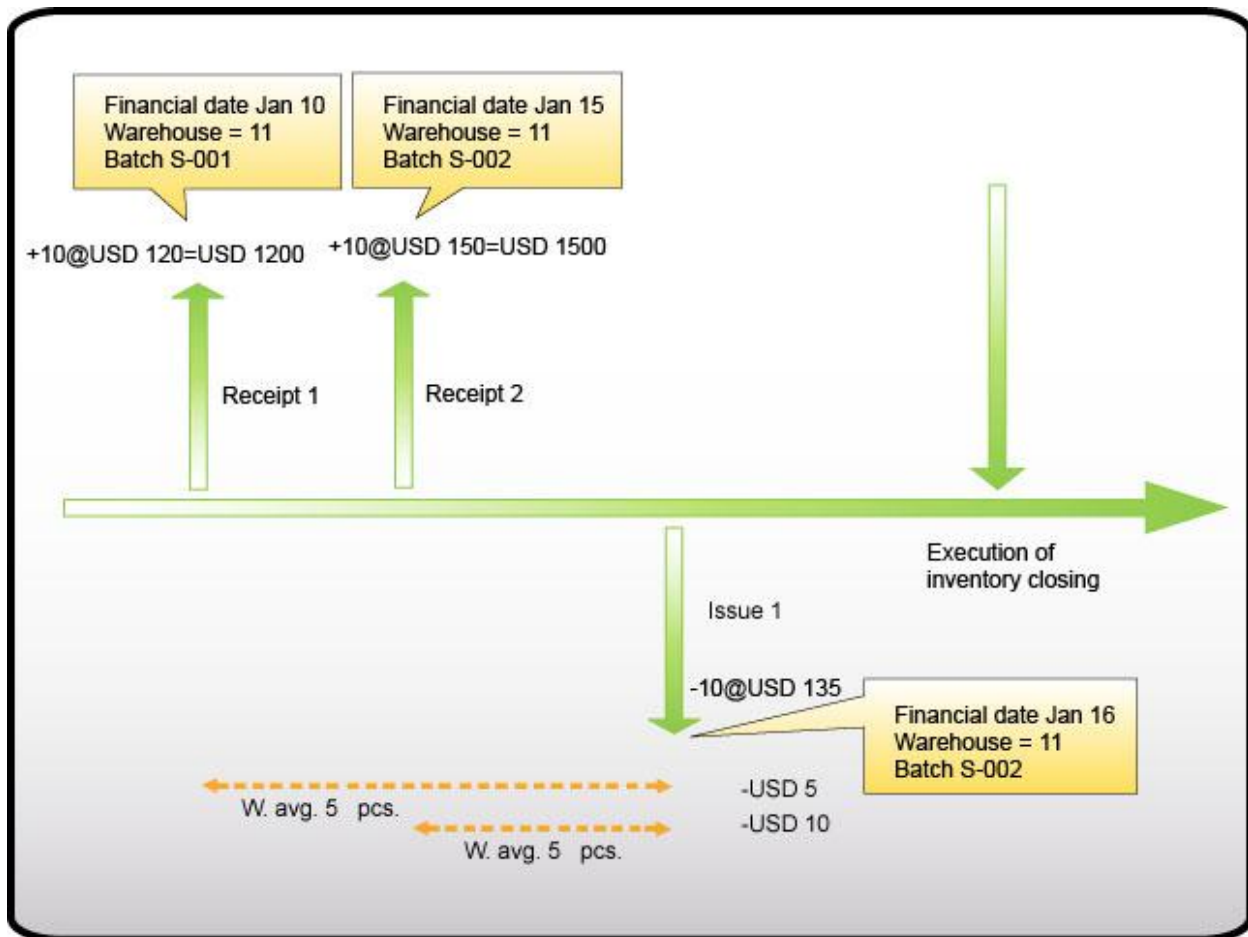


FIGURE 1.4: BATCH NOT INCLUDED IN THE FINANCIAL INVENTORY

Scenario 2

In the second scenario the batch number dimension is selected as financial inventory.

After you have performed inventory closing the issues are only settled against the purchase order with batch number 'S-002' attached to it. In this example the Batch number dimension has the **Financial inventory** parameter selected. This means that the issues have a cost of USD 150 each. Figure 1.5 illustrates what happens in this scenario:

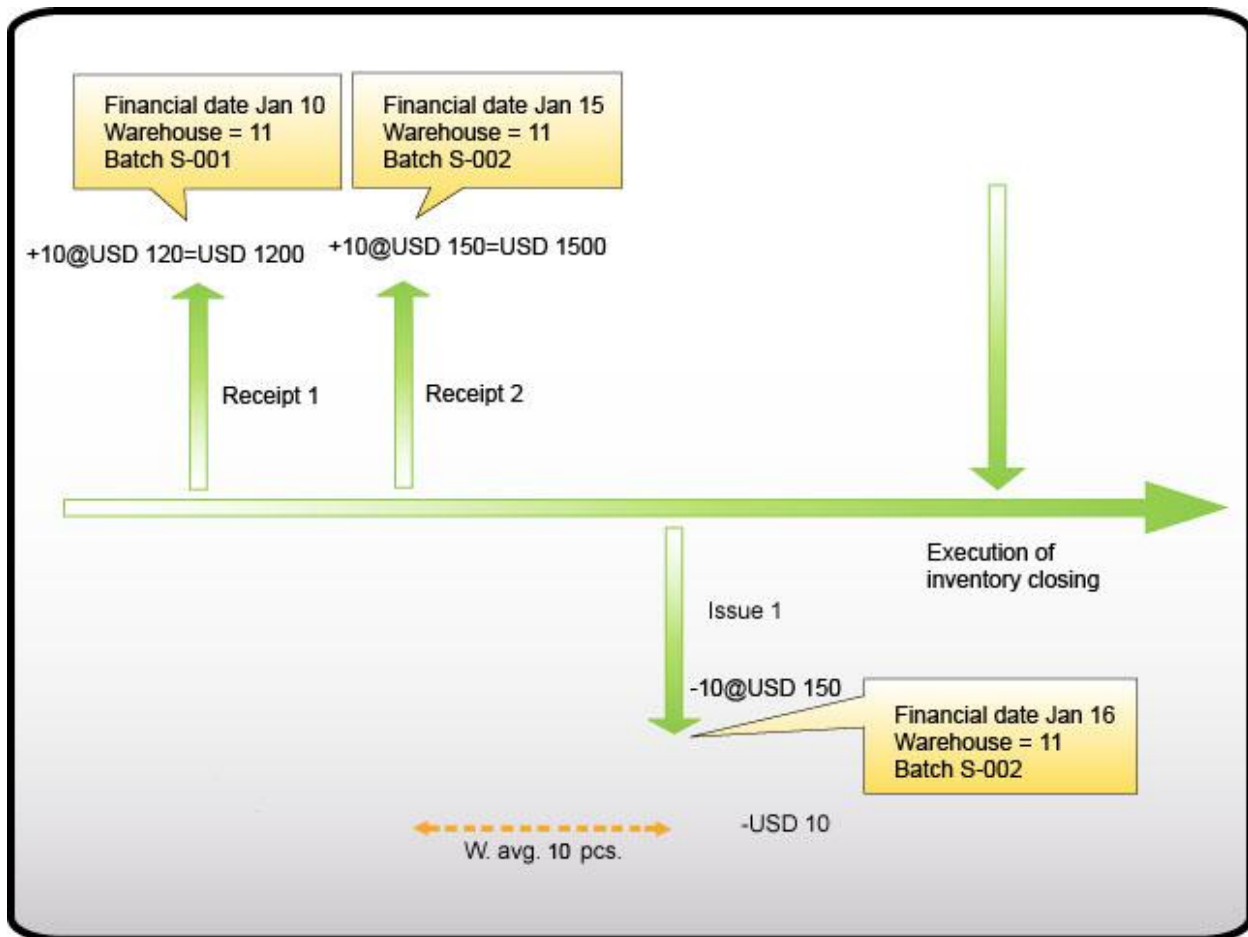


FIGURE 1.5: BATCH INCLUDED IN THE FINANCIAL INVENTORY

Scenario 2 shows that when you select **Financial inventory** for the storage dimension the calculation is made at a more specific level.

Notice the following about the dimension group parameter **Financial inventory** in relation to Microsoft Dynamics AX 2009:

- You cannot clear the parameters for **Financial inventory** and **Physical inventory** for item dimensions, that is configuration, size and color, in a dimension group.
- You cannot clear the **Financial inventory** and **Physical inventory** parameters for a dimension group when there are open transactions for items which have the dimension group attached to them. When you have performed inventory closing and all the open transactions for items with the dimension group specified for them have been closed you can then modify these parameters for the dimension group.
- When you select the **Financial inventory** parameter for a dimension you can no longer also select the **Blank receipt allowed** and **Blank issue allowed** parameters.

- When you select the **Financial inventory** parameter for a dimension the **Physical inventory** parameter is automatically selected.

Estimated Values before Closing

Microsoft Dynamics AX always uses an average cost price to represent the value of inventory until inventory is closed regardless of which inventory model is set up, except for standard cost. When an item is sold from inventory, and the invoice is financially updated it goes out of the inventory at the current average cost price. This is true for all costing methods (LIFO, FIFO, Weighted average and other inventory models) except for the standard cost method that will be discussed later.

The formula used is:

$$\text{Average Cost Price} = \frac{\text{(Total Financial Cost Amount)}}{\text{Total Posted Quantity}}$$

The Inventory dimension group determines, for the item, whether average cost price should be calculated for the whole on-hand inventory, or per Inventory dimension. Examples of this are warehouse, batch or serial number, size, color, or configuration.

Example of Estimated Average Cost Price

On January 1, one item is purchased for a cost price of USD10.00. The on-hand inventory level is one piece, with a posted value of USD10.00 and known cost price of USD10.00.

On January 5, one more item is purchased for a cost price of USD 20.00. Now, the on-hand inventory level is two pieces with a posted value of USD 30.00 and an estimated average cost price of USD 15.00.

On January 15, one more item is purchased for a cost price of USD 30.00. Now you have three pieces on hand with a posted value of USD 60.00 (USD 10 + USD 20 + USD 30) and an estimated average cost price of USD 20 (USD 60 / 3).

On January 30 you sell one piece. You sell this at USD 20.00 (estimated average cost price) and have left two pieces on hand with a posted value of USD 40.00 and an estimated average cost price of USD 20.00.

If the item had been sold between January 5 and January 14, it would have been picked at a value of USD15.00.

Date	Status	Quantity	Cost	Posted On-hand	Posted	Average
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			Price	Inventory	Value	Cost Price
1/1	Purchased	1	10	1	10.00	10.00
1/5	Purchased	1	20	2	30.00	15.00
1/15	Purchased	1	30	3	60.00	20.00
1/30	Sold	-1	-20	2	40.00	20.00

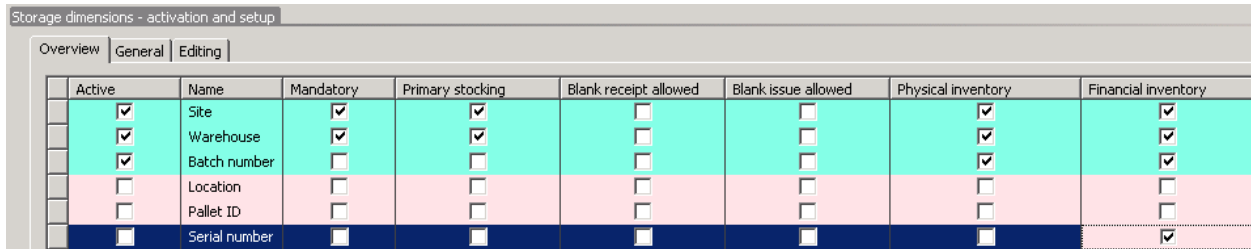
The real inventory value must be calculated for ledger purposes. This value is found in relationship to a selected inventory model (FIFO, LIFO and other inventory models) that automatically matches receipts costs and issues.

The matching calculation occurs only when closing or recalculation process is performed.

Estimated Average Cost per Dimension

Average cost prices may be calculated per inventory dimension. The Inventory dimension group specifies that one or more Inventory dimensions are to be included in the financial inventory table. This means that all costing is based on these dimensions.

In the following screenshot the dimension group for the item is set up so that cost prices are calculated per warehouse, batch number and serial number.



Storage dimensions - activation and setup							
Overview General Editing							
Active	Name	Mandatory	Primary stocking	Blank receipt allowed	Blank issue allowed	Physical inventory	Financial inventory
☒	Site	☒	☒	☐	☐	☒	☒
☒	Warehouse	☒	☒	☐	☐	☒	☒
☒	Batch number	☐	☐	☐	☐	☒	☒
☐	Location	☐	☐	☐	☐	☐	☐
☐	Pallet ID	☐	☐	☐	☐	☐	☐
☐	Serial number	☐	☐	☐	☐	☐	☒

FIGURE 1.6: WAREHOUSE, SERIAL AND BATCH NUMBERS ARE INCLUDED IN THE FINANCIAL INVENTORY

Packing Slip Update

Inventory values are calculated from the posted values (invoice updated transactions). Many items are in the company's possession and included in the inventory value from the time that the purchase is invoiced until the time the sale order is invoiced. The physical presence in the company does not necessarily correspond with the financial presence, thus the distinction between physical and financial. This is referred to as a "Floating Value."

An item is often received via a packing slip update, physically in inventory and date stamped, before the purchase order is invoice updated, financially in

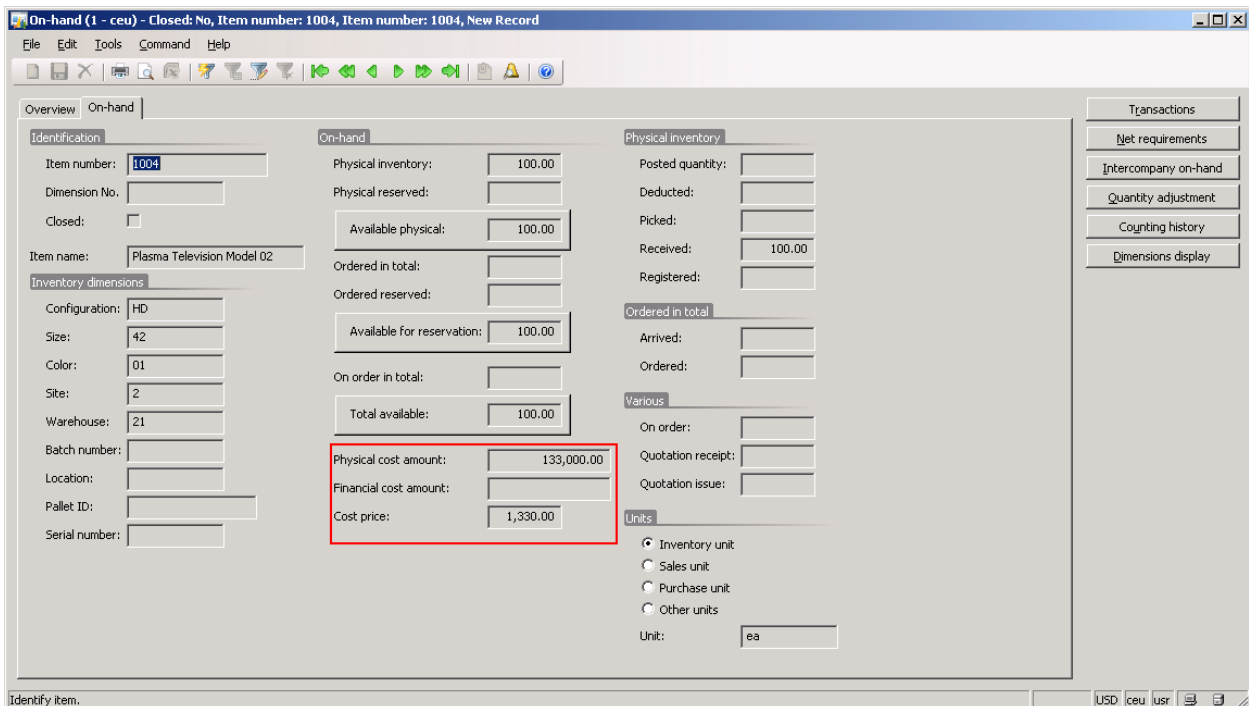
inventory and date stamped. The company does not know the item value when updating the packing slip, but expects the received goods to be a certain value.

The value of received, but non-invoiced items is known as the Floating Value.

Floating Value

The estimated value of an item can be viewed in **Inventory management > Items > On-hand** button > **On-hand** tab. You can view the following fields:

- **Financial cost amount** – This is the financially posted value.
- **Physical cost amount** – Only packing slip updated costs.
- **Cost price** – This is the current average cost price.



The screenshot displays the 'On-hand (1 - ceu)' form with the 'On-hand' tab selected. The form is divided into several sections:

- Identification:** Item number: 1004, Dimension No., Closed: ☐, Item name: Plasma Television Model 02.
- Inventory dimensions:** Configuration: HD, Size: 42, Color: 01, Site: 2, Warehouse: 21, Batch number, Location, Pallet ID, Serial number.
- On-hand:** Physical inventory: 100.00, Physical reserved: 0.00, Available physical: 100.00, Ordered in total, Ordered reserved, Available for reservation: 100.00, On order in total, Total available: 100.00.
- Physical inventory:** Posted quantity, Deducted, Picked, Received: 100.00, Registered.
- Ordered in total:** Arrived, Ordered.
- Various:** On order, Quotation receipt, Quotation issue.
- Units:** Inventory unit (selected), Sales unit, Purchase unit, Other units, Unit: ea.
- Costs:** Physical cost amount: 133,000.00 (highlighted with a red box), Financial cost amount, Cost price: 1,330.00.

The 'Physical cost amount' field is highlighted with a red box, indicating it is the current value for the physical inventory.

FIGURE 1.7: ON-HAND FORM – PHYSICAL COST AMOUNT

A quantity, for a non-invoiced yet received item, appears in the **Physical inventory** field group, the **Received** field. The items are physically on-hand with a physical value, you can see this in the screenshot above. When the receipt is financially updated the physical inventory value is moved to the **Financial cost amount** field. In the following screenshot one piece has been invoice-updated.

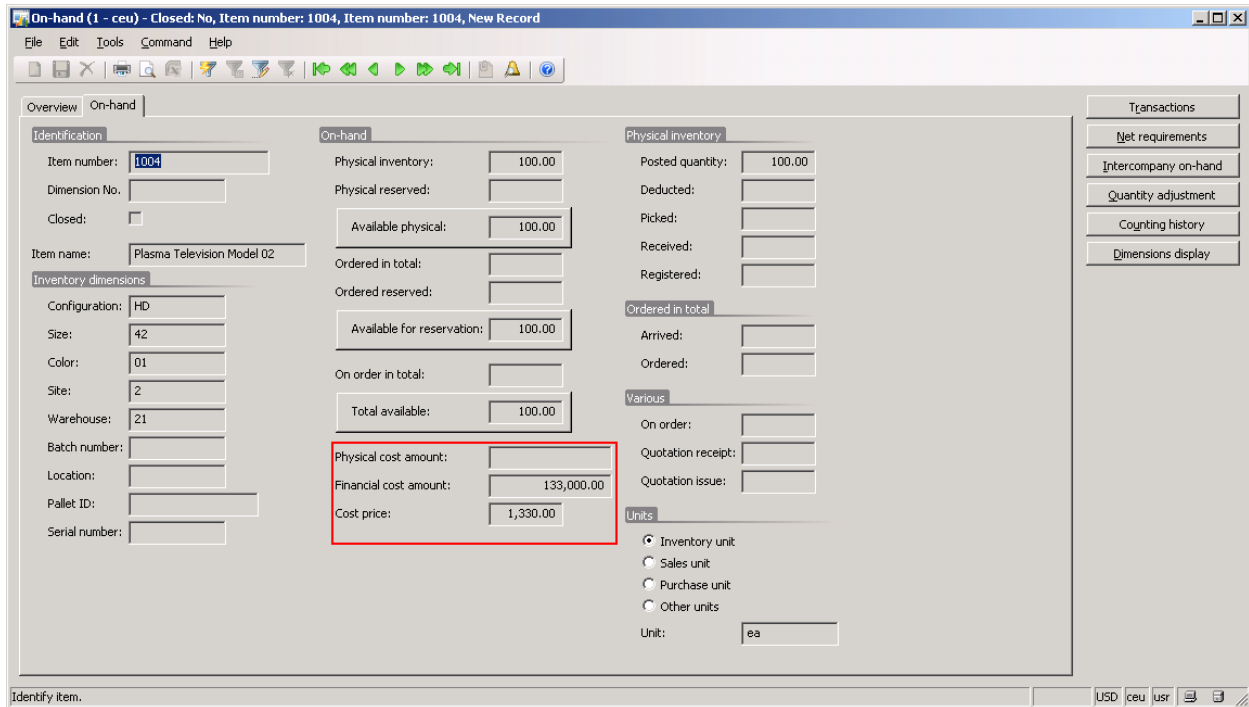


FIGURE 1.8: ON-HAND FORM – FINANCIAL COST AMOUNT

In **General ledger** the original value representing physical inventory is reversed. If a company wants to calculate the average cost price where receipts that have not yet been invoice updated are included, then the company must select the **Include physical value** parameter in the item's inventory model group.

NOTE: The **Include physical value** parameter has another function in that the actual cost of the item is taken from the purchase order and not as standard from **Item** form when a production order is estimated or a BOM calculation is run.

The following example shows the effect that the **Include physical value** parameter has on transactions and cost prices for items with an inventory model group where the parameter is selected.

Example

The Contoso Company created transactions for an item on the specified dates. After January, 10 the inventory transactions are as follows:

Reference	Physical date	Financial date	Quantity	Physical value	Financial value
Purchase order #1	Jan, 1	Jan, 3	1	USD 10.00	USD 12.00
Purchase	Jan, 1	Jan, 10	1	USD 20.00	USD 20.00

order #2					
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In the following table, you can see what the average cost prices for the item would have been on different dates depending on whether the **Include physical value** was clear or selected:

Date	Physical value	Financial value	Average unit cost price / Include physical value = clear/	Average unit cost /Include physical value = selected/
Jan. 2	USD 30.00	USD 0.00	USD 0.00 At this date, the two receipts were only packing slip updated. These values are not included.	USD 15.00 At this date, the two receipts were only packing slip updated. These values are now included $((10+20)/2)$.
Jan. 8	USD 20.00	USD 12.00	USD 12.00 At this date, purchase order #1 was invoice updated (USD 12.00) and purchase #2 was only packing slip updated (USD 20.00) but not included.	USD 16.00 At this date, purchase order #1 was invoice updated (USD 12.00) and purchase order #2 was only packing slip updated (USD 20).
Jan. 11	USD 0.00	USD 32.00	USD 16.00 Both purchase orders were invoice updated.	USD 16.00 Both purchase orders were invoice updated.

If the Contoso Company delivered one of the items on January 2 and later, transactions of the invoice-updated order on January 8 would be as shown in the following table depending on whether the **Include physical value** parameter is clear or selected.

Parameter Include Physical Value: Clear

Reference	Physical date	Financial date	Quantity	Physical Value	Financial Value
Purchase order #1	Jan.1	Jan.3	1	USD 10.00	USD 12.00
Purchase order #2	Jan.1	Jan.10	1	USD 20.00	USD 20.00
Purchase order #3	Jan.2	Jan.8	-1	USD 0.00 ¹	USD 12.00 ²

¹ Only financially updated inventory is used to calculate the average unit cost price. On January 2 the average unit cost price was USD 0.

² Only financially updated inventory is used to calculate the average unit cost price. On January 8 the average unit cost price was USD 12.

Parameter Include Physical Value: Selected

Physical date	Financial date	Quantity	Physical Value	Financial Value
Jan.1	Jan.3	1	USD 10.00	USD 12.00
Jan.1	Jan.10	1	USD 20.00	USD 20.00
Jan.2	Jan.8	-1	USD 15.00 ¹	USD 16.00

¹ Physical and financial inventory is included to calculate the average unit cost price. On January 2 the average unit cost price was USD 15.00.

² Physical and financial inventory is included to calculate the average unit cost price. On January, 8 the average unit cost price was USD.

Lab 1.1 - Costing with the Include Physical Value Parameter

Pre-requisite for the lab:

Create a new item with the following specifications:

- Item no. – 00001
- Item name – Car audio special
- Item group – Car audio
- Item type – Item
- Inventory model group – WA-PHY
- Dimension group – N-N

Scenario

As a new employee at the Contoso Company you are exploring how average cost price is calculated in Microsoft Dynamics AX 2009 with regard to the **Include physical value** setting parameter in inventory model group.

You create and update two purchase orders for item 00001 for vendor 1001 with the following specifications:

P.O	Quantity	Physical date	Financial date	Physical value	Financial value	Site	Warehouse
#1	1	One week before today's date	One day before today's date	USD 800	USD 850	1	11
#2	1	One week before today's date	–	USD 900	–	1	11

Then you create a sales order for item 00001 and customer 1101, warehouse 11. Your task is to apply an average cost price to the item for the created sales order line.

Challenge Yourself

1. Verify that the **Include physical value** check box for the item's inventory model group is selected.
2. Create and packing slip update the first purchase order. Verify the cost price for the item.
3. Invoice update the first purchase order and verify the cost price for the item.
4. Create and packing slip update the second purchase order.
5. Create a new sales order and view the cost price for the item.

6. Apply the cost price for the item and post the sales order.

Need a Little Help?

1. Verify that the **Include physical value** check box for the item's inventory model group is selected. **Inventory management > Setup > Inventory > Inventory model groups > Inventory model** tab.
2. View the cost price for the item after first purchase order packing slip update by clicking **Inventory > On-hand** from the purchase order lines.
3. View the cost price to be applied to a sales order by clicking **Inventory > On-hand** on the sales order line.

Step by Step

1. From the Main menu click **Inventory management > Setup > Inventory > Inventory model groups**.
2. Select the "WA_PHY (Weighted average w/physical value)" inventory model group and then click the **Inventory model** tab.
3. On the **Inventory model** tab, in the **Cost price** field group, verify that the **Include physical** value check box is selected.
4. Go to **Accounts payable > Purchase Order Details**. In the **Purchase order** form, create a new purchase order for vendor 1001.
5. Create a purchase order line for one piece of item 00001, from warehouse 11. Specify unit price USD 800.
6. Click **Posting > Packing slip**.
7. On the **Setup** tab of the **Posting packing slip** form, specify packing slip date as one week before today's date. Click **OK**.
8. From the purchase order line, click **Inventory > On-hand**.
9. In the **Cost price** field, verify the average cost price for the item. It should be USD 800.
10. In the **Purchase order** form, click **Posting > Invoice**. In the **Posting invoice** form that opens, on the **Setup** tab, specify posting date as one day before today's date.
11. Click the **Lines** tab. In the **Unit price** field, change the price from USD 800 to USD 850.
12. Click **OK** to invoice update the purchase order.
13. Verify the cost price by clicking **Inventory > On-hand**. It should be USD 850.
14. Create one more purchase order according to the specifications given.
15. Create a purchase order line for item 00001, site 1, warehouse 11.
16. In the **Unit price** field, type "900".
17. Click **Posting > Packing slip**.
18. On the **Setup** tab of the **Posting packing slip** form, specify packing slip date as one week before today's date. Click **OK**.
19. Click **Accounts receivable > Sales Order Details**.

20. Create a new sales order for item 00001 and customer 1101.
21. From the sales order line, click **Inventory > On-hand**.
22. View the average cost price for the item. It should now be USD 875.
23. Type “875.00” in the **Unit price** field.
24. In the **Site** field, enter “1”, in the **Warehouse** field, enter “11”.
25. Post the invoice for the sales order.
26. In the line area of the Sales order click **Inventory > Transactions**.
27. In the **Cost amount** field verify that value is -875.00 USD.

Summary

This chapter introduced fundamental costing issue and basic cost flow in Microsoft Dynamics AX 2009. The chapter covered:

- The influence of the **Financial inventory** parameter on the cost price calculation.
- The principle of running average price calculation for the items.
- Packing slip updating process and **Include physical value** parameter functionality.

Test Your Knowledge

Packing Slip Update

1. What set up should be performed in Microsoft Dynamics AX 2009 to include physically updated receipts to running average price calculation?
 - () The **Include physical value** check box should be selected on the inventory model group attached to the item.
 - () The **Financial inventory** check box should be selected on the inventory dimension group attached to the item.
 - () Only financially updated receipts can be included into running average price calculation.
 - () Microsoft Dynamics AX 2009 always includes physically updated receipts for price calculation.

Packing Slip Update

2. Where in Microsoft Dynamics AX 2009 can you view the current average cost price for the item? Choose all that apply.
 - () **Inventory management > Reports > On-hand > On-hand inventory**
 - () **Inventory management > Closing and adjustment > Close > Open quantities**
 - () **Inventory management > Item Details > On-hand > On-hand tab**
 - () **Purchase Order Details > Lines > On-hand > On-hand tab**

Financial Inventory Parameter

3. What setup is needed to calculate the cost price on group of transactions for a specific dimension?
 - () The **Physical inventory** check box should be selected for a dimension on the inventory model group.
 - () The **Financial inventory** check box should be selected for a dimension on the inventory model group.
 - () The Item dimension specification check box should be selected for the item.
 - () Price calculation is always performed on all transactions undifferentiated by dimension.

Quick Interaction: Lessons Learned

Take a moment and write down three key points you have learned from this chapter:

1.

2.

3.

Solutions

Test Your Knowledge

Packing Slip Update

1. What set up should be performed in Microsoft Dynamics AX 2009 to include physically updated receipts to running average price calculation?

☒ The **Include physical value** check box should be selected on the inventory model group attached to the item.

☐ The **Financial inventory** check box should be selected on the inventory dimension group attached to the item.

☐ Only financially updated receipts can be included into running average price calculation.

☐ Microsoft Dynamics AX 2009 always includes physically updated receipts for price calculation.

Packing Slip Update

2. Where in Microsoft Dynamics AX 2009 can you view the current average cost price for the item? Choose all that apply.

☐ **Inventory management > Reports > On-hand > On-hand inventory**
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☒ **Purchase Order Details > Lines > On-hand > On-hand tab**

Financial Inventory Parameter

3. What setup is needed to calculate the cost price on group of transactions for a specific dimension?

☐ The **Physical inventory** check box should be selected for a dimension on the inventory model group.
☒ The **Financial inventory** check box should be selected for a dimension on the inventory model group.
☐ The Item dimension specification check box should be selected for the item.
☐ Price calculation is always performed on all transactions undifferentiated by dimension.

CHAPTER 2: INVENTORY MODELS USED FOR CLOSING

Objectives

The objective is:

- Use the different inventory models available in Microsoft Dynamics AX 2009 to close inventory and understand their effect on item costing.

Introduction

There are six different inventory models to recalculate the real inventory costs in Microsoft Dynamics AX 2009.

- Standard cost
- FIFO
- LIFO
- LIFO date
- Weighted average
- Weighted average date

These models are set up in **Inventory management > Setup > Inventory > Inventory model groups > Inventory model** tab > **Inventory model** field group. The inventory model set up in the inventory model group attached to the item affects the way issues for the item are settled against receipts at inventory closing.

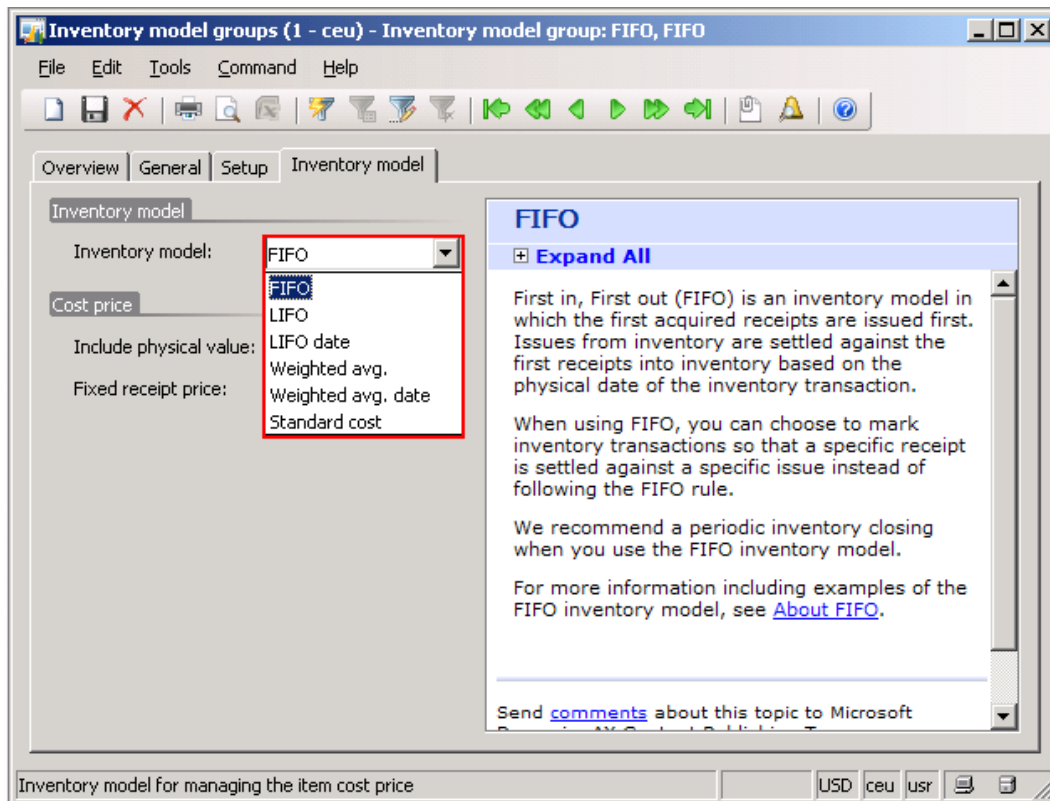


FIGURE 2.1: INVENTORY MODEL GROUPS FORM

The next sections discuss the different formulas of these inventory models.

FIFO (First In First Out)

First in, First out (FIFO) is an inventory model in which the first acquired receipts are issued first. Financially updated issues from inventory are settled against the first financially updated receipts into inventory based on the financial date of the inventory transaction.

It is recommended to perform a periodic inventory closing or recalculation when you use the FIFO inventory model.

The following examples illustrate the impact of using FIFO with two different configurations:

- FIFO without the **Include physical value** option
- FIFO with the **Include physical value** option

FIFO Without the Include Physical Value Option

In this FIFO example, the inventory model group is not marked to include physical value.

Example

April 3: A purchase order for an item with a purchase price of USD10 is received and bought, and both the packing slip and invoice are updated.

April, 5: A purchase order for yet one more piece of the item for USD 25 is received. Purchase order is on only packing slip updated.

April 7: A purchase order for an item with a purchase price of USD20 is received and bought; both the packing slip and invoice are updated.

April, 10: A sales order is created for one piece of the item. The order is delivered and sold. From the sales order line you now check the cost information for the transaction. Because Microsoft Dynamics AX 2009 calculates the cost price immediately for every posting made, and the **Include physical value** check box is **cleared** this sales order was deducted at a price of USD 15 = $(1 \times \text{USD}10 + 1 \times \text{USD}20) / 2$ pieces.

The second purchase order with the date April, 5 is not included into average price calculation, because physically updated receipts are not considered in price calculation according to our setup.

April 12: A further purchase for the item for USD 30 is received and bought.

Issues are always deducted at the on-hand cost, average of the on-hand quantity, at the time that the transaction was made. View the calculation in the following table:

Date	Status	Quantity	Cost price	Posted value	Posted accumulated value/ quantity	Average cost price
4/3	Purchased	1	10	10	10/1	10.00
4/5	Registered	1	25	-	-	-
4/7	Purchased	1	20	20	30/2	15.00
4/10	Sold	-1	-15	-15	15/1	15.00
4/12	Purchased	1	30	30	45/2	22.50

Before you perform a full inventory closing two items are on hand at an average cost price of USD 22.50 each.

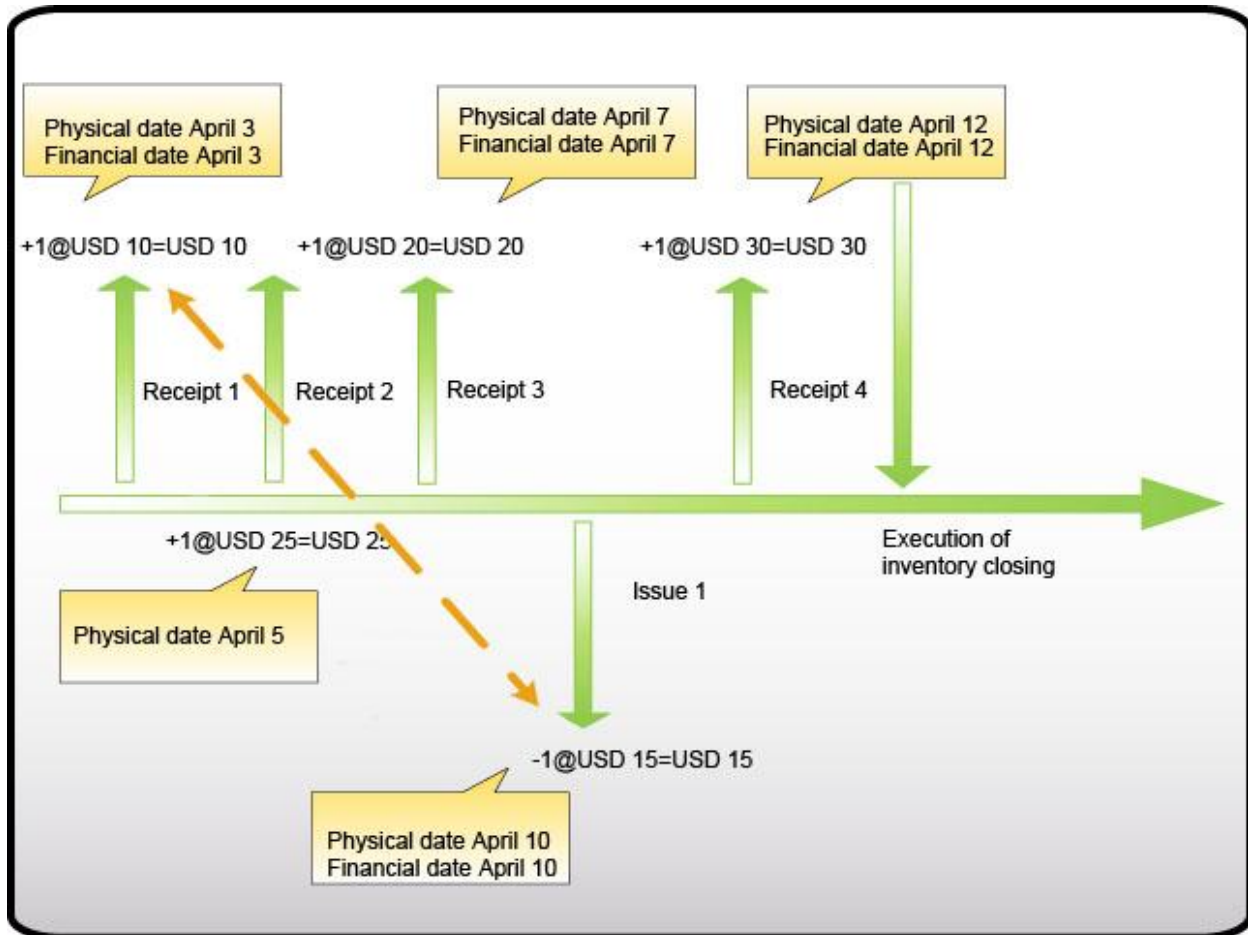


FIGURE 2.2: FIFO CLOSING MODEL WITHOUT THE INCLUDE PHYSICAL VALUE OPTION

After you have run inventory closing you can see a change in the cost price to USD 10 based on the first item received.

When the **Include physical value** box is cleared, inventory close with the FIFO inventory model will make settlements only to transactions that are financially updated.

View this update from the sales order line by clicking **Inventory > Transactions**. Because FIFO is the costing method, the cost of this item is based on the principle first in, first out and the transactions of the first purchase and the sales order will be settled against each other and closed. An adjustment is also made of USD 5 from the original estimated cost price of USD -15 up to USD -10. The third and fourth items are still on hand at a cost price of USD 25 ($1 \times \text{USD} 20 + 1 \times \text{USD} 30$) / 2.

FIFO With the Include Physical Value Option

If the **Include physical value** check box is selected for an item in the **Inventory model group** form, Microsoft Dynamics AX will use both physical and financial receipt transactions to calculate the running average cost price. Where applicable,

the system will also make adjustments to the physically updated issue transaction.

Example

April 3: A purchase order for an item with a purchase price of USD10 is received and bought, and both packing slip and invoice updated.

April, 5: A purchase order for yet one more piece of the item for USD 20 is received. Purchase order is on only packing slip updated.

April 7: A purchase order for an item with a purchase price of USD 30 is received and bought, and both the packing slip and invoice updated.

April, 10: A sales order is created for one piece of the item. The order is delivered and sold. From the sales order line you now check the cost information for the transaction.

Because Microsoft Dynamics AX 2009 calculates the cost price immediately for every posting made, and the **Include physical value** check box is selected this sales order was deducted at a price of $\text{USD } 20 = (1 \times \text{USD}10 + 1 \times \text{USD}20 + 1 \times \text{USD}30) / 3 \text{ pieces}$.

The second purchase order with the date April, 5 is included into average price calculation, because the **Include physical value** option uses both physical and financial receipt transactions to calculate the running average cost price.

April 12: A further purchase for the item for USD 20 is received and bought.

Issues are always deducted at the on-hand cost, average of the on-hand quantity, at the time that the transaction was made. View the calculation in the following table:

Date	Status	Quantity	Cost price	Posted value	Posted accumulated value/ quantity	Average cost price
4/3	Purchased	1	10	10	10/1	10.00
4/5	Registered	1	20	20	30/2	15.00
4/7	Purchased	1	30	30	60/3	20.00
4/10	Sold	-1	-20	-20	40/2	20.00
4/12	Purchased	1	20	20	60/3	20.00

Before inventory closing there are three items on hand at an average cost price of USD 30 each.

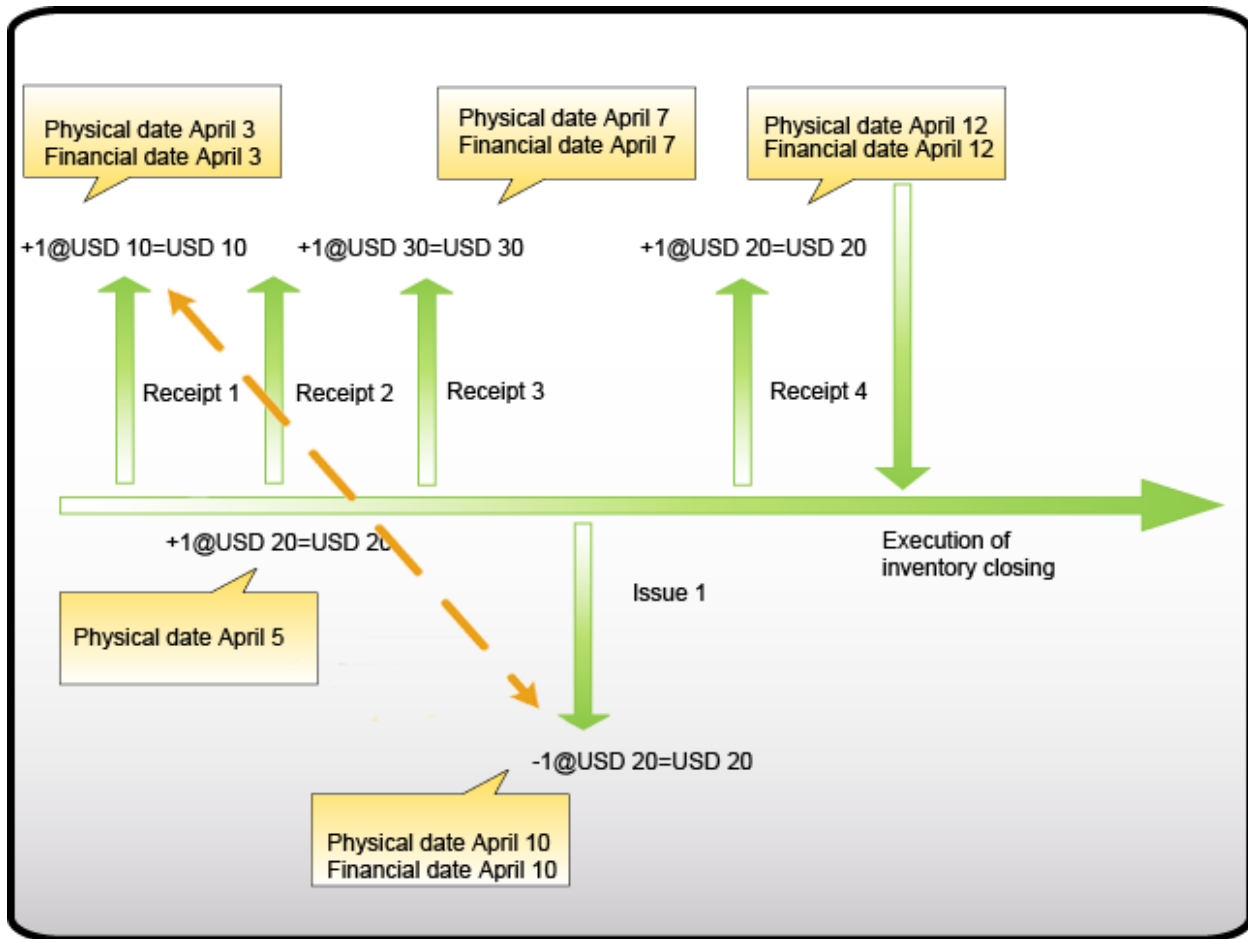


FIGURE 2.3: FIFO CLOSING MODEL WITH THE INCLUDE PHYSICAL VALUE OPTION

After inventory closing or recalculation is performed, the cost price of the first issue is changed to USD 10, according to the FIFO principle where first issues are settled against first receipts.

View this update from the sales order line by clicking **Inventory >**

Transactions. Because FIFO is the costing method, the cost of this item is based on the principle first in, first out and the transactions of the first purchase and the sales order will be settled against each other and closed. An adjustment is also made of USD 10 from the original estimated cost price of USD 20 up to USD 10. The second, third and fourth items are still on hand at a cost price of USD 23.30 ($1 \times \text{USD}20 + 1 \times \text{USD}20 + 1 \times \text{USD}30$) / 3.

LIFO (Last In First Out)

Last in, First out (LIFO) is an inventory model in which the last (newest) receipts are issued first. Issues from inventory are settled against the last receipts into inventory based on the date of the inventory transaction.

It is important to say that the LIFO in Microsoft Dynamics AX 2009 is described as last issue is settled against the last receipt as shown below.

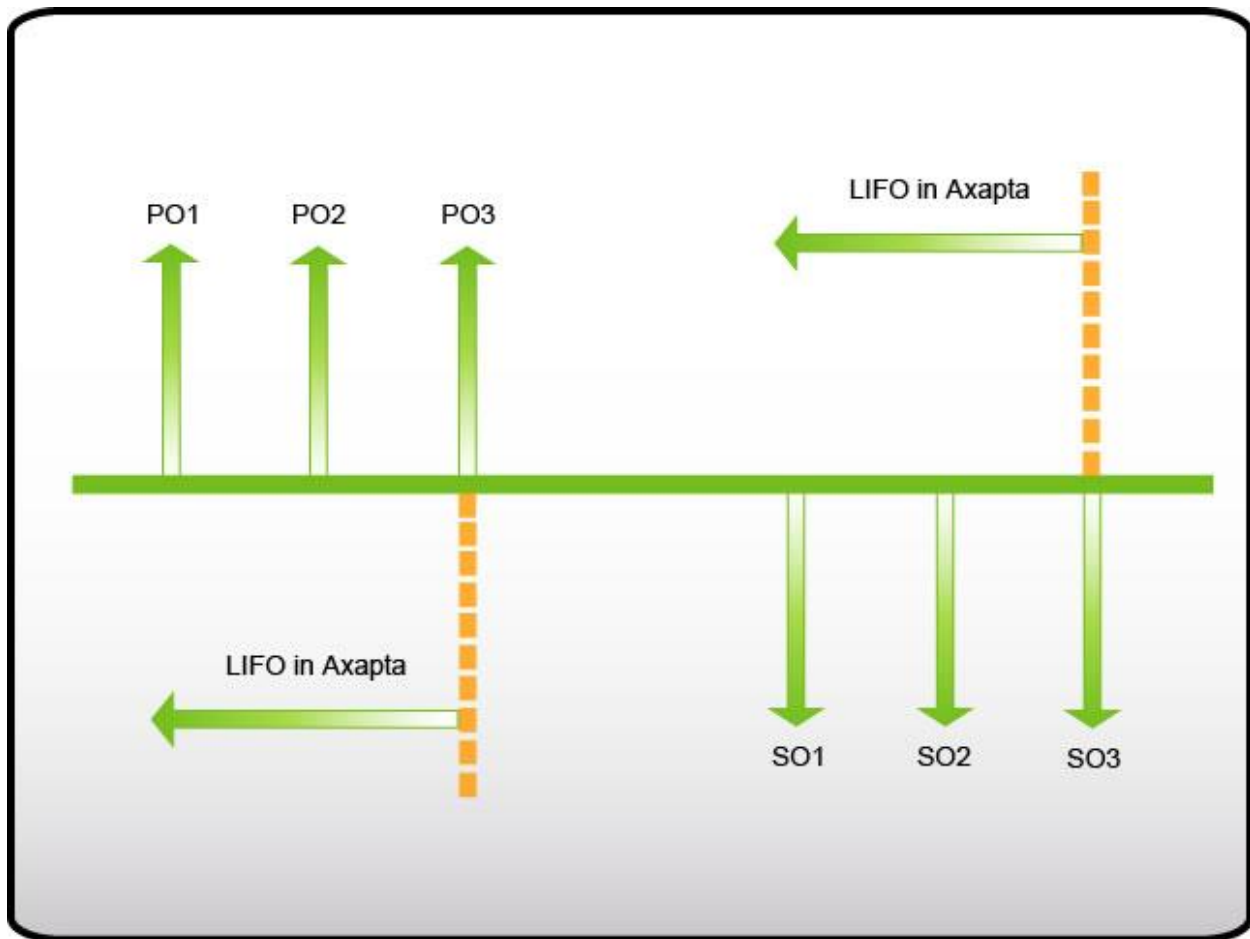


FIGURE 2.4: LIFO CLOSING MODEL

The following examples illustrate the impact of using LIFO with two different configurations:

- LIFO without the Include physical value option
- LIFO with the Include physical value option

LIFO without the Include Physical Value Option

In this LIFO example, the inventory model group is not marked to include physical value.

Example

On April 3, a purchase order for one item for USD10 is received and both packing slip and invoice-updated.

April 5, a purchase order for yet one more piece of the item for USD 20 is received. Purchase order is on only packing slip updated.

On April 7, a purchase order for one more item at USD30 is received and is both packing slip and invoice-updated.

On April 10, a sales order for one piece of the item was sold. It was also packing slip and invoice-updated.

On April 12, a further purchase for one item of USD 40 is received and is both packing slip and invoice-updated.

Issues are always deducted at the on-hand cost, average of the on-hand quantity, at the time that the transaction was made. View the calculation in the following table:

Date	Status	Quantity	Cost price	Posted value	Posted accumulated value/ quantity	Average cost price
4/3	Purchased	1	10	10	10/1	10.00
4/5	Registered	1	20	-	-	-
4/7	Purchased	1	30	30	40/2	20.00
4/10	Sold	-1	-20	-20	20/1	20.00
4/12	Purchased	1	40	40	60/2	30.00

The second purchase order is not included into average cost price calculation, because physically updated receipts are not considered in price calculation according to our setup.

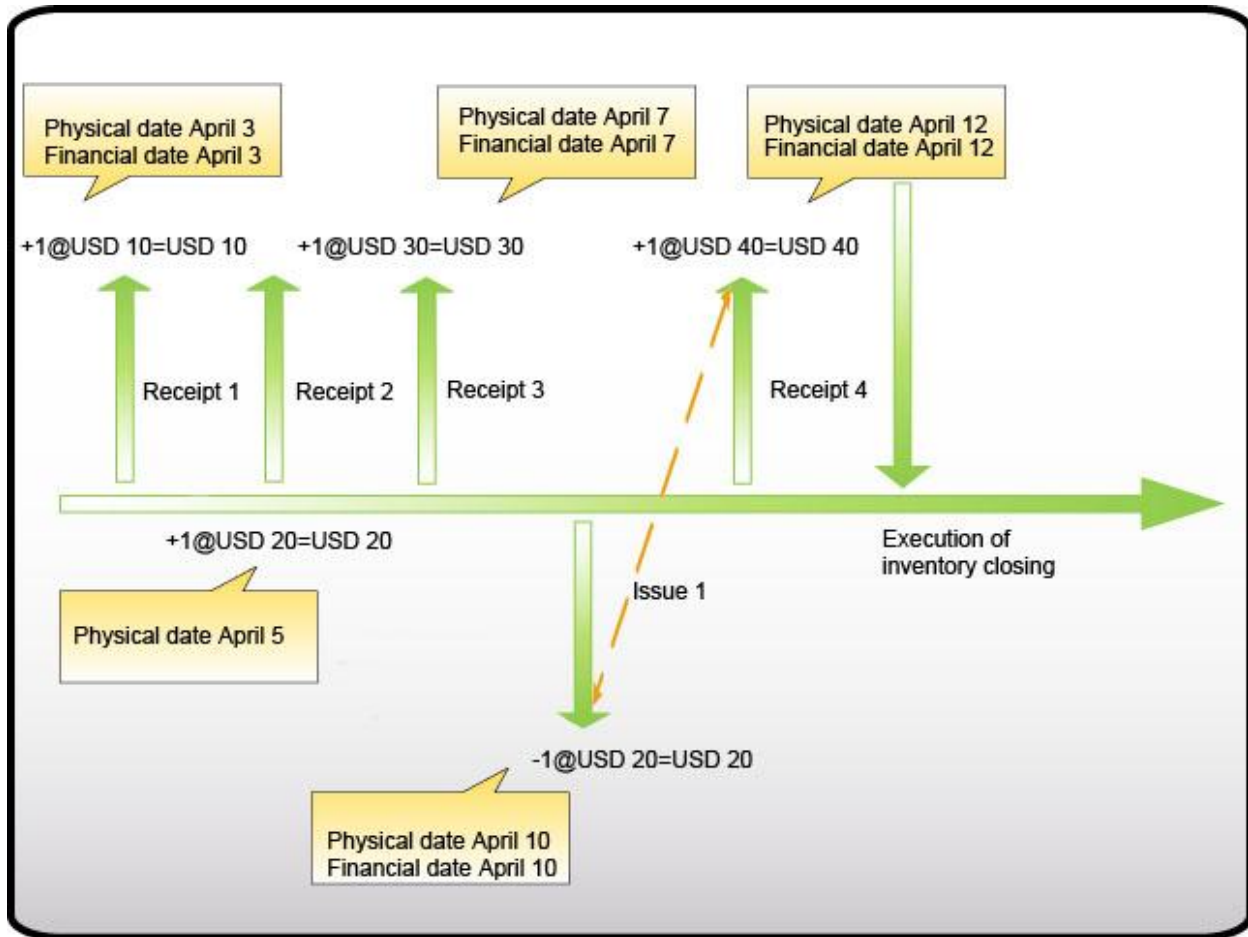


FIGURE 2.5: LIFO CLOSING MODEL WITHOUT THE INCLUDE PHYSICAL VALUE OPTION

After you have performed inventory closing the cost price is updated to USD 40 because the cost is based on the cost of the last received item. The inventory model LIFO settles the sales order against the last purchase order and a cost price of USD40. The first and second items are still on hand to a cost price of USD20 $(1 \times \text{USD}10 + 1 \times \text{USD}30) / 2$.

LIFO with the Include Physical Value Option

In this LIFO example, the inventory model group is setup to include physical value for average cost price calculation.

Example

On April 3, a purchase order for one item for USD10 is received and both packing slip and invoice-updated.

April 5, a purchase order for yet one more piece of the item for USD 20 is received. Purchase order is on only packing slip updated.

On April 7, a purchase order for one more item at USD30 is received and is both packing slip and invoice-updated.

On April 10, a sales order for one piece of the item was sold. It was also packing slip and invoice-updated.

On April 12, a further purchase for one item of USD 20 is received and is both packing slip and invoice-updated.

Issues are always deducted at the on-hand cost, average of the on-hand quantity, at the time that the transaction was made. View the calculation in the following table:

Date	Status	Quantity	Cost price	Posted value	Posted accumulated value/ quantity	Average cost price
4/3	Purchased	1	10	10	10/1	10.00
4/5	Registered	1	20	20	30/2	15.00
4/7	Purchased	1	30	30	60/3	20.00
4/10	Sold	-1	-20	-20	40/2	20.00
4/12	Purchased	1	20	20	60/3	20.00

The second purchase order is included into average cost price calculation, because physically updated receipts are considered in price calculation according to our setup.

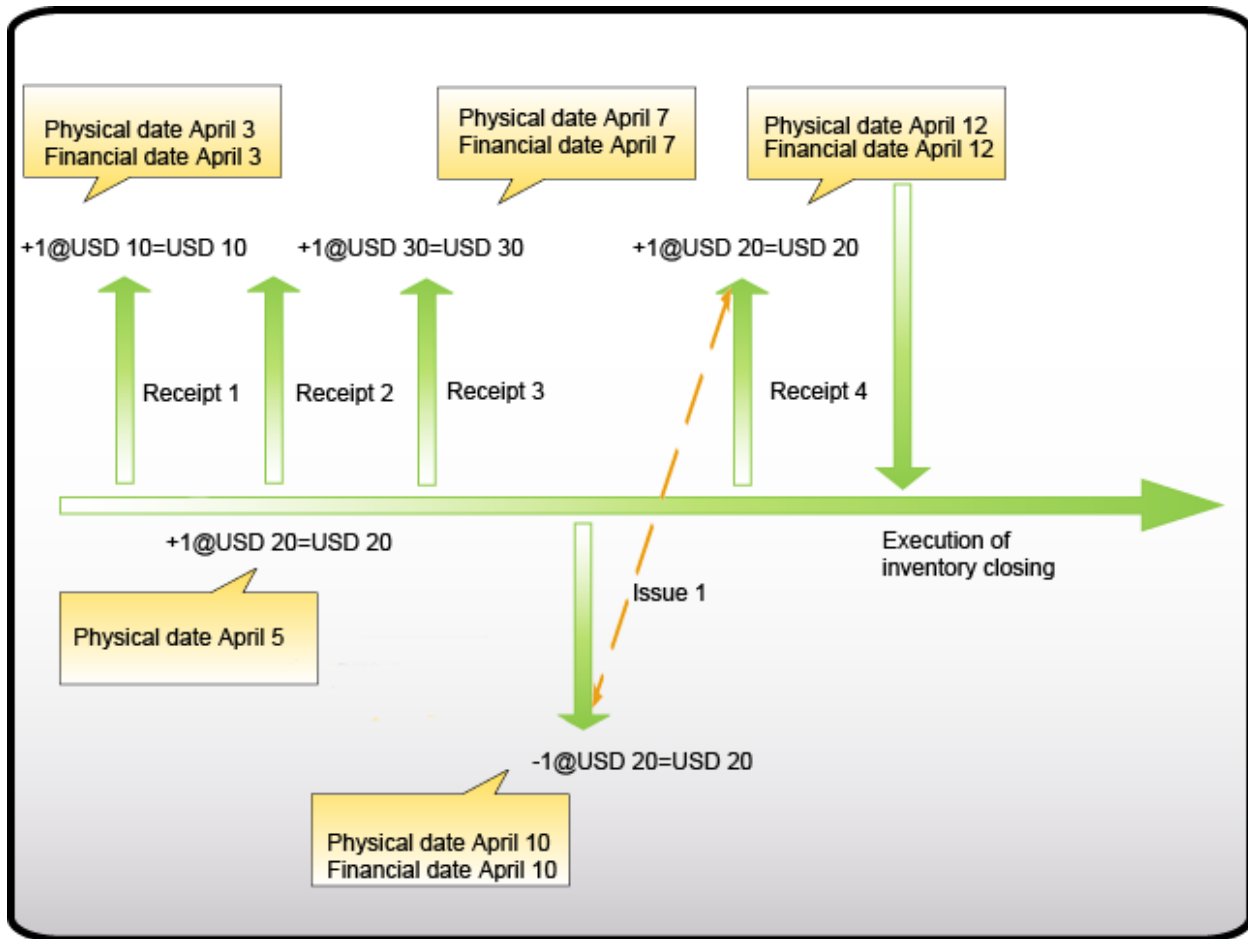


FIGURE 2.6 LIFO CLOSING MODEL WITH THE INCLUDE PHYSICAL VALUE OPTION

After you have performed inventory closing the cost price is updated to USD 40 because the cost is based on the cost of the last received item. The inventory model LIFO settles the sales order against the last purchase order and a cost price of USD40. An adjustment is also made of USD 20 from the original estimated cost price of USD –20 up to USD - 40. The first and second and third items are still on hand to a cost price of USD20 (1 x USD10 + 1 x USD20 + 1 x USD30) / 3.

LIFO Date

Last in, First out Date (LIFO Date) is an inventory model based on the LIFO principle that issues from inventory are settled against the last receipts into inventory based on the date of the inventory transaction. It means that system takes into consideration only receipts with the dates before the issue date. If there is no receipt before the issue, the issue is settled against any receipts that occur after the date of the issue. Several issues on the same date may be settled in the order of last issue, last receipt.

If you use the same items as in the previous example for LIFO date, the sales order is settled against the purchase order of April 7, and the cost will be USD30.

The remaining on hand of the items is costed at USD16.70 per piece with the **Include physical value** check box selected ((1 x USD10 + 1 x USD20+1 x USD20) / 3), and USD 15 with the **Include physical value** check box cleared ((1 x USD10 +1 x USD20) / 2).

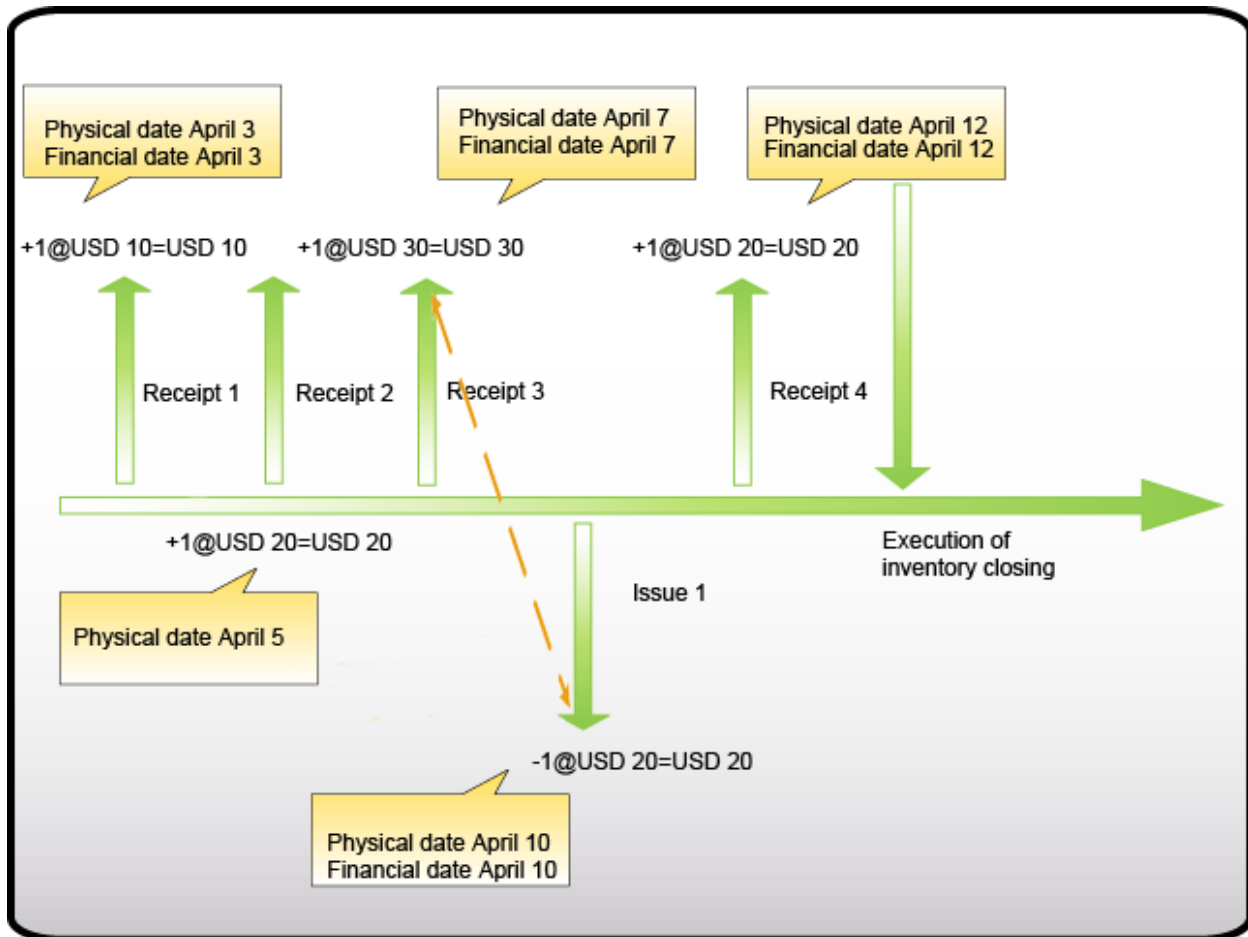


FIGURE 2.7: LIFO DATE CLOSING MODEL

Weighted Average

Weighted average is an inventory model based on the weighted average principle, where issues from inventory are valued at the average value of the items that are received into inventory during the inventory closing period, plus any on-hand inventory from the previous period.

When you run an inventory closing, all receipts are settled against a virtual issue, which holds the total received quantity and value. This virtual issue has a corresponding virtual receipt from which the issues are settled. In this way, all issues get the same average cost. The virtual issue and receipt can be seen as a virtual transfer, called the weighted average inventory closing transfer.

If there is only one receipt, all issues can be settled from it and the virtual transfer will not be created.

In Microsoft Dynamics AX, the weighted average inventory costing method is calculated by the following formula:

- $\text{Weighted average} = (Q1 \cdot P1 + Q2 \cdot P2 + Qn \cdot Pn) / (Q1 + Q2 + Qn)$

Inventory transactions leaving the inventory issues, including sales orders, inventory journals, purchase credit notes, and production orders, will take place at an estimated cost price on the date of posting. This estimated cost price is referred to as running average.

At the time of inventory close, Microsoft Dynamics AX will analyze the inventory transactions for previous and current periods and determine which of the following closing principles should be used.

- Direct settlement
- Summarized settlement

Settlements are inventory close postings that adjust the issues to the correct weighted average as of the closing date.

The following examples illustrate the impact of using weighted average with four different configurations:

- Weighted average direct settlement without the **Include physical value** option
- Weighted average summarized settlement without the **Include physical value** option
- Weighted average direct settlement with the **Include physical value** option
- Weighted average summarized settlement with the **Include physical value** option

Weighted Average Direct Settlement Without Include Physical Value Option

The direct settlement principle used to settle directly between receipts and issues. Microsoft Dynamics AX uses this direct settlement principle when:

- One receipt and one or several issues has been posted in the period
- Only issues have been posted in the period and the inventory contains on-hand items from a previous closing

Example

April 5, a purchase order for five pieces of the item for USD 10 is received. Purchase order is packing slip updated.

On April 7, a purchase order for five pieces of item for USD10 is invoice-updated.

On April 12, a sales order for two pieces of the item for USD 10 was sold. It was invoice-updated.

Issues are always deducted at the on-hand cost, average of the on-hand quantity, at the time that the transaction was made. View the calculation in the following table:

Date	Status	Quantity	Cost price	Posted value	Posted accumulated value/ quantity	Average cost price
4/5	Registered	5	10	-	-	-
4/7	Purchased	5	10	50	50/5	10.00
4/12	Sold	-2	-10	-20	30/3	10.00

During inventory close, Microsoft Dynamics AX will settle the receipt directly against the issue, and no adjustment to the cost price is needed on issue.

The following diagram illustrates this series of transactions with the effects of choosing the Weighted average inventory model and the direct settlement principle without the **Include physical value** option.

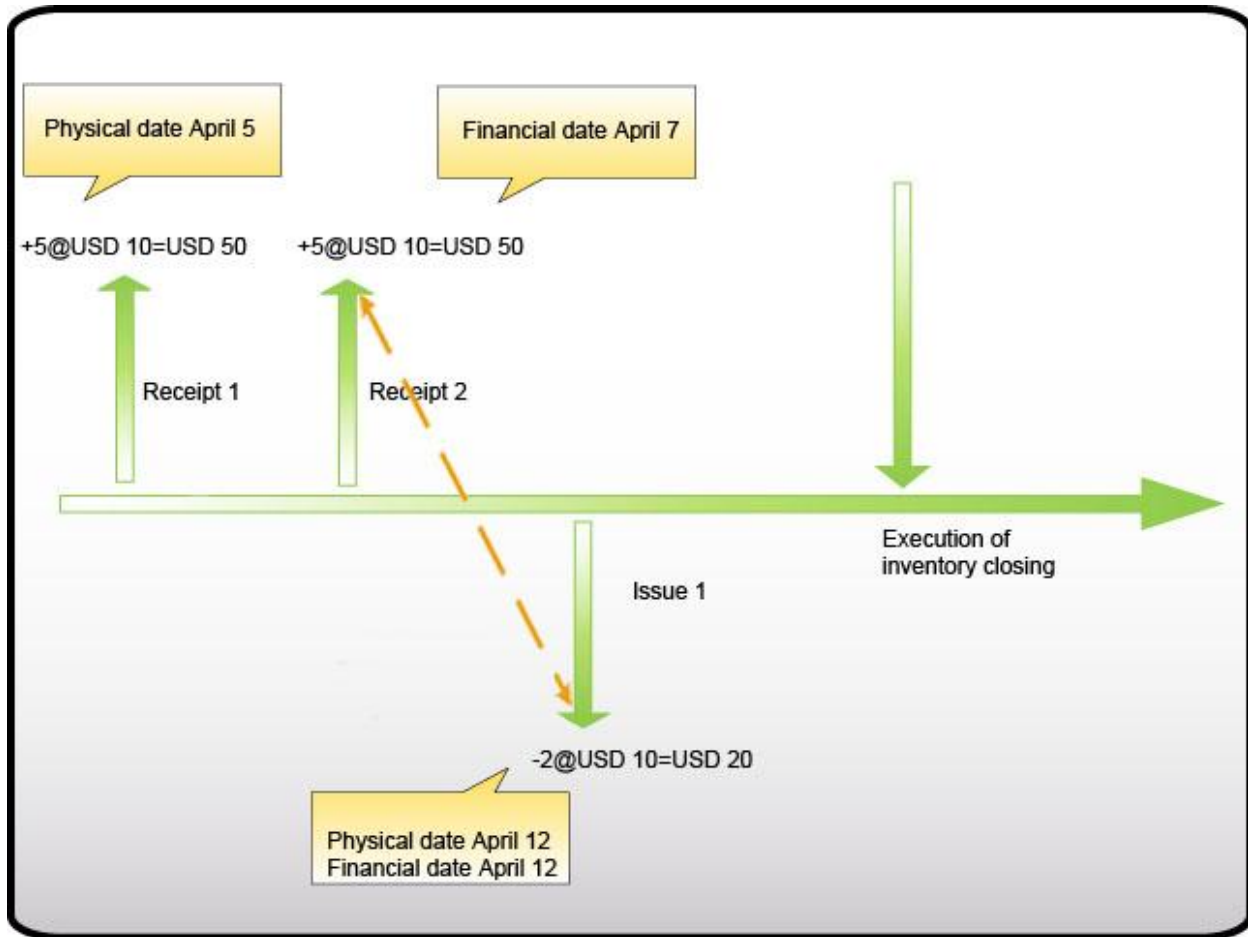


FIGURE 2.8: WEIGHTED AVERAGE CLOSING MODEL DIRECT SETTLEMENT WITHOUT INCLUDE PHYSIACL VALUE OPTION

Weighted Average Summarized Settlement without the Include Physical Value Option

Weighted average summarized settlement is based on the principle that all receipts within in a closing period are summarized into a new inventory transfer transaction called Weighted average inventory closing. All the receipts for the period will be settled against the issue of the newly created inventory transfer transaction. All issues for the period will be settled against the receipt of the new inventory transfer transaction.

If the on-hand inventory is positive after the inventory close, that on-hand inventory and value of the inventory are summarized on the new inventory transfer transaction (receipt).

If the inventory on-hand is negative after the inventory close, the on-hand inventory and value of the inventory is the sum of individual issues that have not been fully settled.

Example

On April 5, a purchase order for one pieces of the item for USD 10 is purchased.

On April 7, a purchase order for one item for USD10 is packing slip updated.

On April 10, a purchase order for one piece of the item for USD 20 is purchased.

On April 12, a sales order for one item for USD15 (running average) is physically updated.

On April 15, a sales order for one piece of the item for USD 15 (running average) was sold.

On April 17, a purchase order for one piece of the item for USD 30 was purchased.

Issues are always deducted at the on-hand cost, average of the on-hand quantity, at the time that the transaction was made. View the calculation in the following table:

Date	Status	Quantity	Cost price	Posted value	Posted accumulated value/ quantity	Average cost price
4/5	Purchased	1	10	10	10/1	10
4/7	Received	1	10	-	10/1	10
4/10	Purchased	1	20	20	30/2	15
4/12	Deducted	-1	-15	-	15/1	15
4/15	Sold	-1	-15	-15	-	-
4/17	Purchased	1	30	30	30/1	30

During inventory close, Microsoft Dynamics AX will generate and post the summarized inventory transfer transaction in order to settle all the receipts for the period against the summarized inventory transfer issue transaction. All the issues posted for the period will be settled against the summarized inventory transfer receipt transaction. The weighted average is calculated to be USD 20.00.

Because the issue was originally posted with an estimated cost price of USD 15, an adjustment of negative USD 5 will be created and posted on the issue. As of the inventory closing date, the on-hand inventory is 1 piece with a value of USD 30.00.

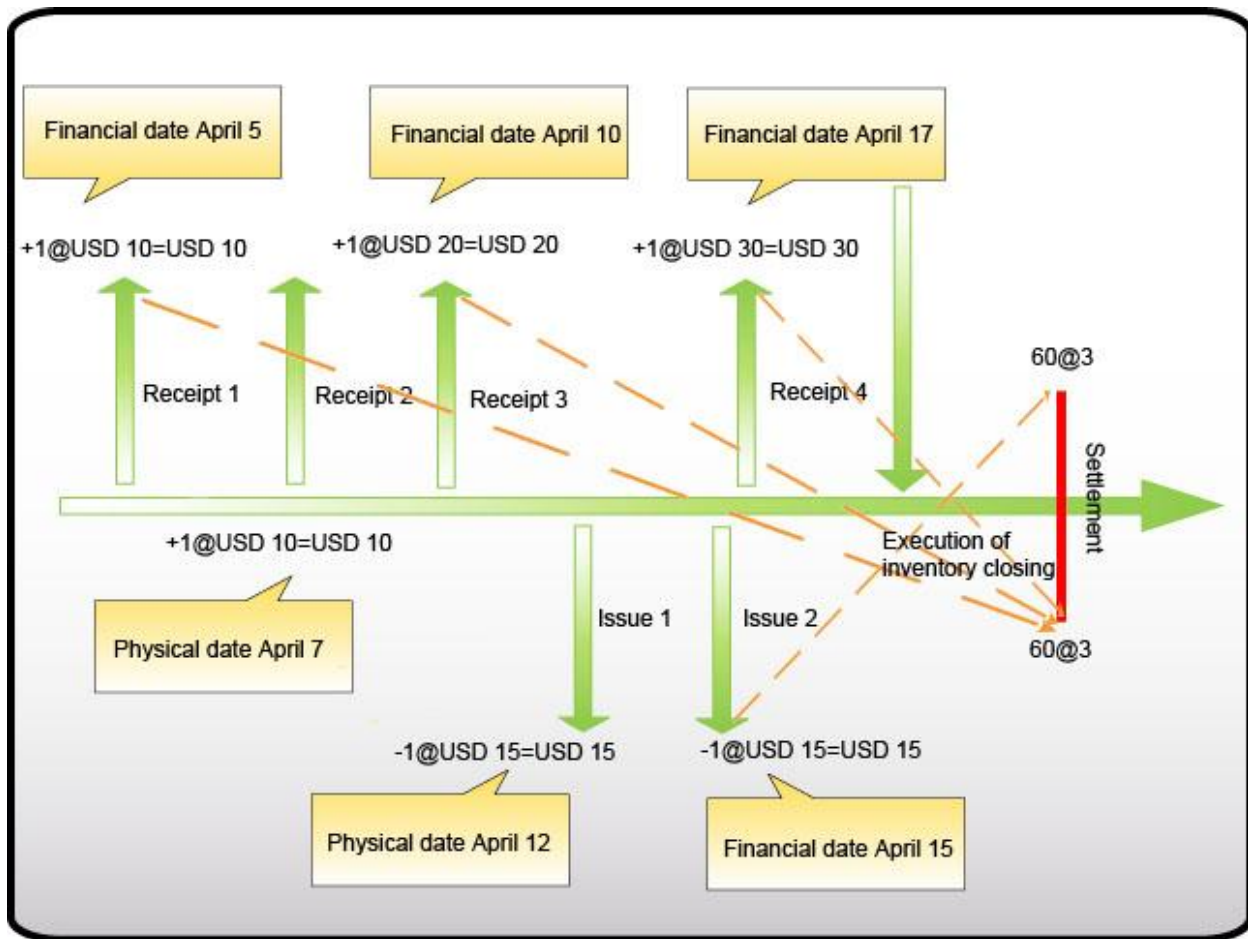


FIGURE 2.9: WEIGHTED AVERAGE CLOSING MODEL SUMMARIZED SETTLEMENT WITHOUT THE INCLUDE PHYSICAL VALUE OPTION

Weighted Average Direct Settlement with the Include Physical Value Option

If the **Include physical value** check box is selected for an item in the **Inventory model group** form, Microsoft Dynamics AX 2009 will use physically updated receipts when calculating the estimated cost price, or running average. Issues will be posted based on this estimated cost price during the period. During the inventory close, financially updated receipts only will be considered in the weighted average calculation.

Example

On April 5, a purchase order for one piece of the item for USD 11 is received and packing slip updated.

On April 7, a purchase order for one item for USD10 is invoice-updated.

On April 10, a purchase order for one piece of the item for USD 15 is received and packing slip updated.

On April 17, a sales order for one piece of the item for USD 12 (running average cost, since the physical receipt value is taken into consideration) was invoice-updated.

Issues are always deducted at the on-hand cost, average of the on-hand quantity, at the time that the transaction was made. View the calculation in the following table:

Date	Status	Quantity	Cost price	Posted value	Posted accumulated value/ quantity	Average cost price
4/5	Received	1	11	11	11/1	11.00
4/7	Purchased	1	10	10	21/2	10.50
4/10	Received	1	15	15	36/3	12.00
4/17	Sold	-1	-12	-12	24/2	12.00

Inventory close is performed. During inventory close, Microsoft Dynamics AX will disregard all inventory transactions that have been only physically updated. Instead, the direct settlement principle will be used because only one financial receipt exists. An adjustment of USD 2 will be posted to the inventory transaction that has been financially issued as of the inventory closing date. After inventory close, the on hand inventory will be a quantity of 2 with a running average cost price of USD 12.00.

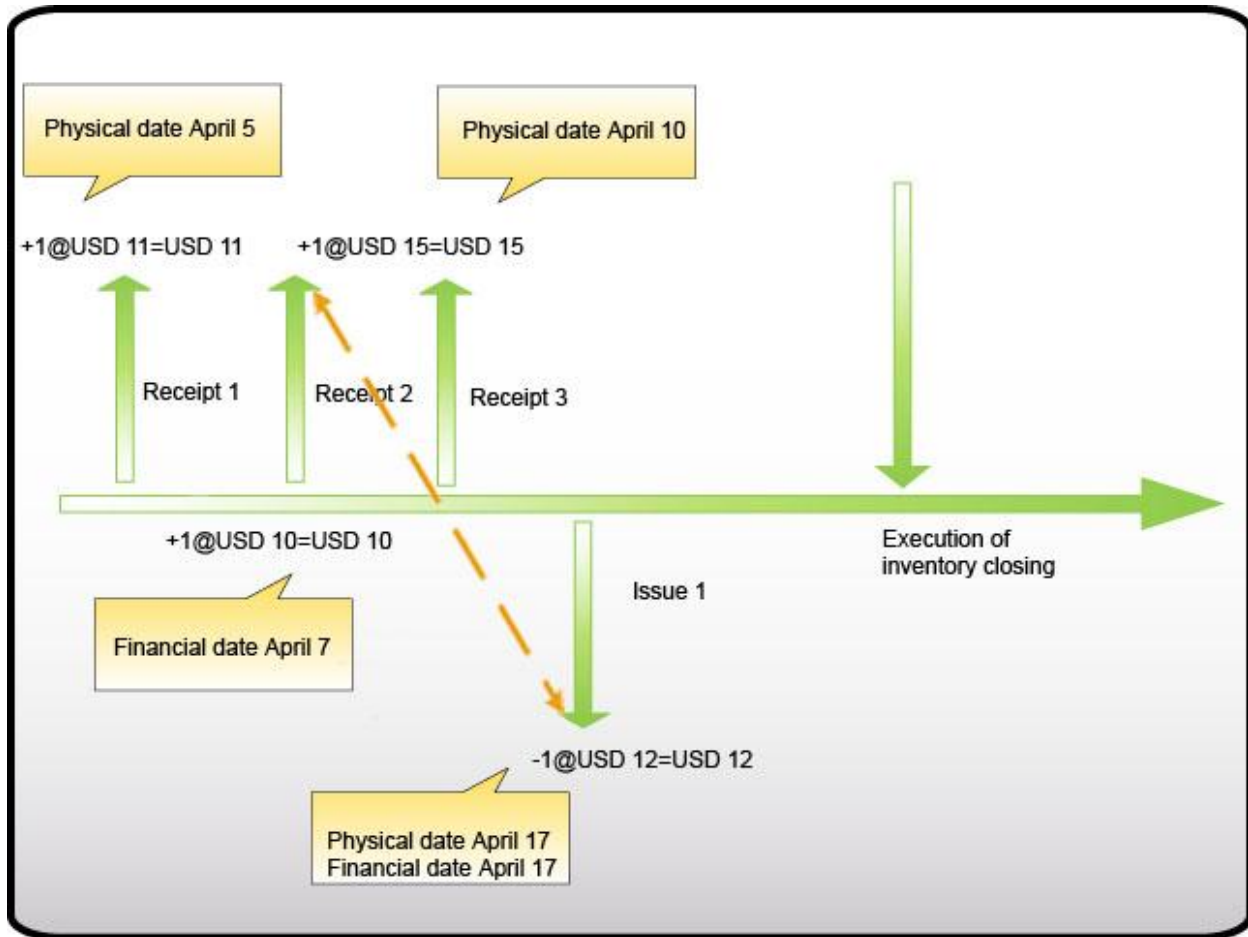


FIGURE 2.10 WIEGHTED AVERAGE CLOSING MODEL WITH DIRECT SETTLEMENT AND THE INCLUDE PHYSICAL VALUE

Weighted Average Summarized Settlement with the Include Physical Value Option

If the **Include physical value** check box is selected for an item in the **Inventory model group** form, Microsoft Dynamics AX will use physically updated receipts in the calculation of estimated cost price, or running average. Issues will be posted based on this estimated cost price during the period. During the inventory close financially updated receipts only will be considered in the weighted average calculation.

Example

On April 5, a purchase order for one pieces of the item for USD 10 is purchased.

On April 7, a purchase order for one item for USD10 is packing slip updated.

On April 10, a purchase order for one piece of the item for USD 20 is purchased.

On April 12, a sales order for one item for USD13.3 (running average) is physically updated.

On April 15, a sales order for one piece of the item for USD 13.3 (running average) was sold.

On April 17, a purchase order for one piece of the item for USD 30 was purchased.

Issues are always deducted at the on-hand cost, average of the on-hand quantity, at the time that the transaction was made. View the calculation in the following table:

Date	Status	Quantity	Cost price	Posted value	Posted accumulated value/ quantity	Average cost price
4/5	Purchased	1	10	10	10/1	10
4/7	Received	1	10	-	20/2	10
4/10	Purchased	1	20	20	40/3	13.3
4/12	Deducted	-1	-13.3	-	26.7/2	13.3
4/15	Sold	-1	-13.3	-13.3	13.3/1	-
4/17	Purchased	1	30	30	43.3/2	21.65

Inventory close is performed. During inventory close, Microsoft Dynamics AX will disregard all inventory transactions that are updated only physically. Microsoft Dynamics AX will generate and post the summarized inventory transfer transaction in order to settle all the receipts for the period against the summarized inventory transfer issue transaction. All the issues posted for the period will be settled against the summarized inventory transfer receipt transaction. The weighted average is calculated to be USD 20.00.

Because the issue was originally posted with an estimated cost price of USD 13.3, an adjustment of negative USD 6.7 will be created and posted on the issue. As of the inventory closing date, the on-hand inventory is 2 pieces with a value of USD 21.65.

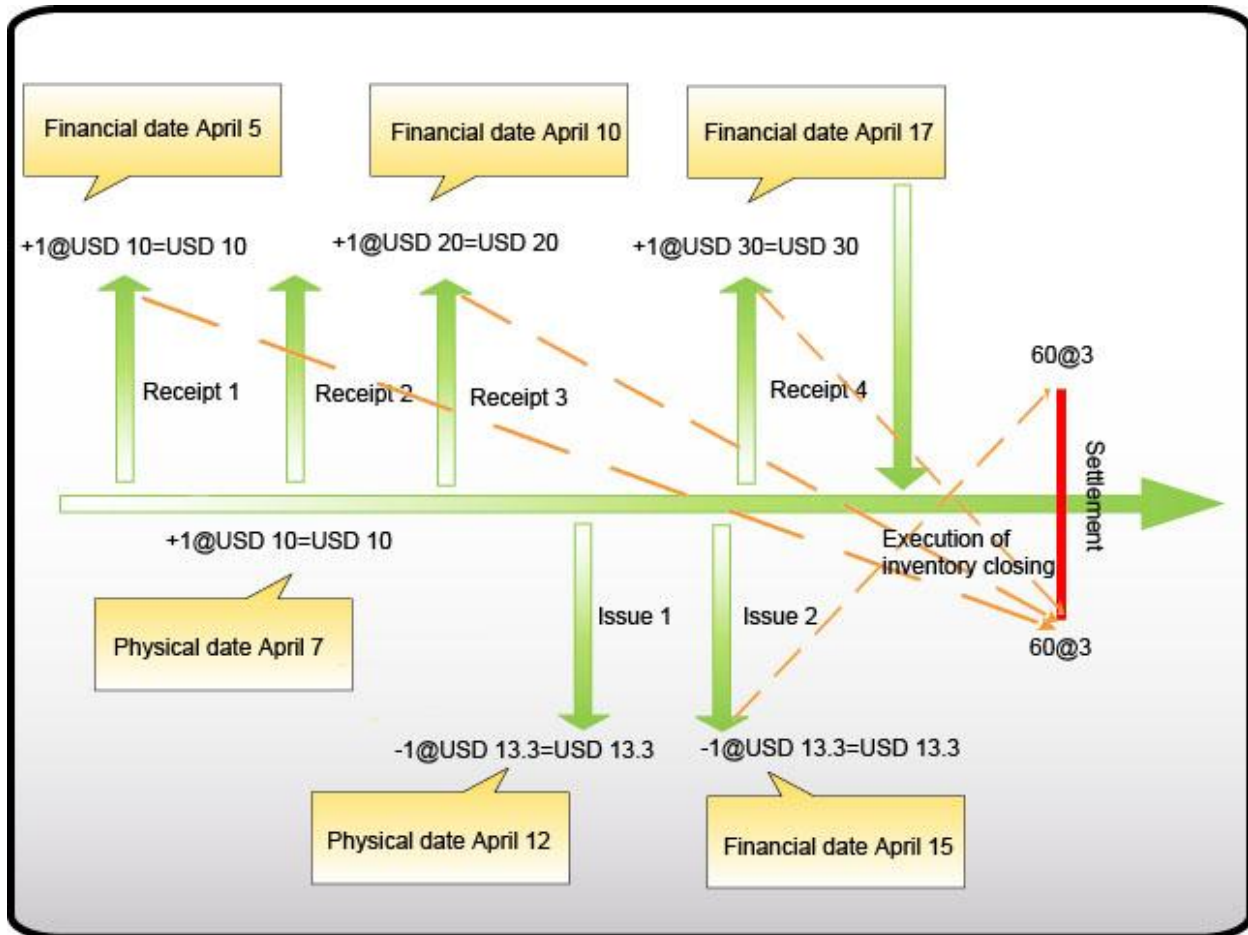


FIGURE 2.11 WIEIGHTED AVERAGE CLOSING MODEL SUMMARIZED SETTLEMENT WITH THE INCLUDE PHYSICAL VALUE OPTION

Weighted Average Date

Weighted average date is an inventory model based on the weighted average principle, where issues from inventory are valued at the average value of the items that are received into inventory for each separate day in the inventory closing period.

The principle of a weighted average date is that all receipts within one day are summarized into a new inventory transfer transaction called weighted average inventory closing.

When you run an inventory closing with weighted average date, all receipts for a day are settled against a virtual issue, which holds the total received quantity and value for that day. This virtual issue has a corresponding virtual receipt from which the issues will be settled. In this way, all issues get the same average cost. The virtual issue and receipt can be seen as a virtual transfer, called the "weighted average inventory closing transfer".

If only one receipt has occurred on or before the date, it is not necessary to value the average because all issues are settled from it and the virtual transfer will not be created. Likewise, if only issues occur on the date, there are no receipts from which to value the average, and the virtual transfer will not be created in this case either.

In Microsoft Dynamics AX 2009, weighted average date the inventory costing method is calculated by the following formula:

- $\text{Weighted average} = (Q1 * P1 + Q2 * P2 + Qn * Pn) / (Q1 + Q2 + Qn)$

During inventory close, the calculation will be executed on a daily basis through the closing period as illustrated in the following graphic.

Inventory issue transactions, including sales orders, inventory journals, purchase credit notes, and production orders, will take place at a running average cost price on the date of posting.

On the date of inventory close, Microsoft Dynamics AX will analyze the inventory transactions for previous periods, previous days, and the current day to determine which closing principle should be used – direct or summarized settlement.

The following examples illustrate the impact of using weighted average with four different configurations:

- Weighted average date direct settlement without the Include physical value option
- Weighted average date summarized settlement without the Include physical value option
- Weighted average date direct settlement with the Include physical value option
- Weighted average date summarized settlement with the Include physical value option

Weighted Average Date Direct Settlement without the Include Physical Value Option

The direct settlement principle will settle directly between receipts and issues.

Example

April 5, a purchase order for one piece of the item for USD 10 is received. Purchase order is packing slip updated.

On April 7, a purchase order for one item for USD10 is invoice-updated.

On April 10, a sales order for one piece of the item for USD 10 was sold. It was packing slip and invoice-updated.

Issues are always deducted at the on-hand cost, average of the on-hand quantity, at the time that the transaction was made. View the calculation in the following table:

Date	Status	Quantity	Cost price	Posted value	Posted accumulated value/ quantity	Average cost price
4/5	Received	1	10	-	-	-
4/7	Purchased	1	10	10	10/1	10.00
4/10	Sold	-1	-10	-10	-	-

Financially updated receipt and issue have been posted. During inventory close, Microsoft Dynamics AX will settle the receipt directly against the issue, and no adjustment to the cost price is needed on issue.

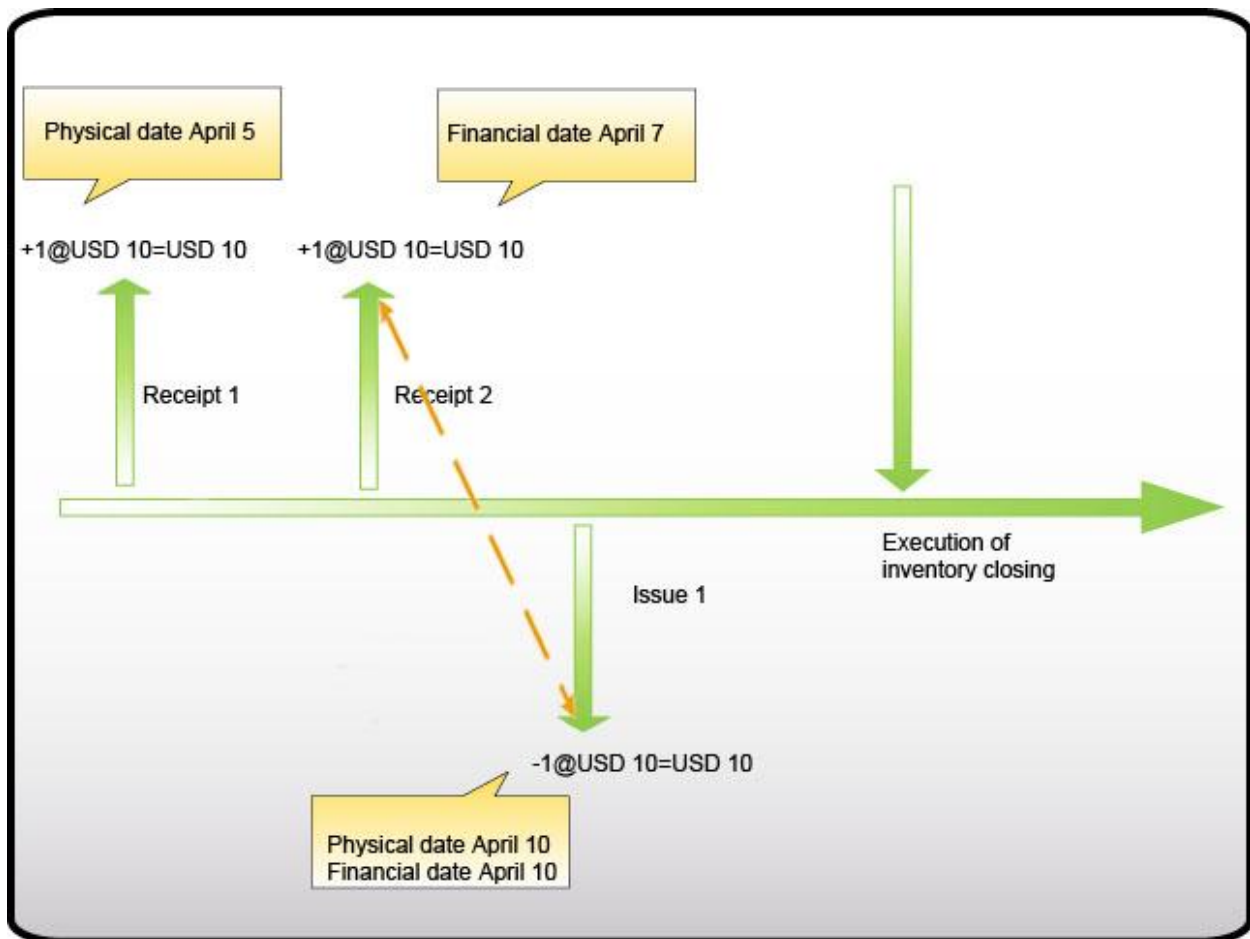


FIGURE 2.12: WIEGHTED AVERAGE DATE CLOSING MODEL DIRECT SETTLEMENT WITHOUT INCLUDE PHYSICAL VALUE OPTION

Weighted Average Date Summarized Settlement without the Include Physical Value Option

Weighted average date summarized settlement is based on the principle that all receipts within in a closing period are summarized into a new inventory transfer transaction called Weighted average inventory closing. All the receipts for the day will be settled against the issue of the newly created inventory transfer transaction. All issues for the day will be settled against the receipt of the new inventory transfer transaction.

If the on-hand inventory is positive after the inventory close, that on-hand inventory and value of the inventory are summarized on the new inventory transfer transaction (receipt).

If the inventory on-hand is negative after the inventory close, the on-hand inventory and value of the inventory is the sum of individual issues that have not been fully settled.

Example

April 5

- Purchase order for five pieces of the item for USD 10 each is received. Purchase order is invoice updated.
- Purchase order for one piece of the item for USD 15 is received. Purchase order is packing slip updated.
- Sales order for one piece of the item for USD 10 (running average cost price) is sold and both packing slip and invoice-updated.

In this case the system will use direct settlement approach.

April 7

- Sales order for one piece of the item for USD 10 (running average cost price) is sold and both packing slip and invoice-updated.

In this case the system will use direct settlement approach.

April 10

- Sales order for one piece of the item for USD 10 (running average cost price) is sold and both packing slip and invoice-updated.
- Purchase order for one piece of the item for USD 20 is received. Purchase order is packing slip and invoice updated.

Issues are always deducted at the on-hand cost, average of the on-hand quantity, at the time that the transaction was made. View the calculation in the following table:

Date	Status	Quantity	Cost price	Posted value	Posted accumulated value/ quantity	Average cost price
April 5	Purchased	5	10	50	50/5	10
	Received	1	15	-	50/5	10
	Sold	-1	-10	-10	40/4	10
April 7	Sold	-1	-10	-10	30/3	10
April 10	Sold	-1	-10	-10	20/2	10
	Purchased	1	20	20	40/3	13.3

Inventory close is performed. The direct settlement will need to be used because there are multiple receipts crossing multiple days.

A weighted average inventory close transaction financial issue is created at for a quantity of 4 at USD 50 to summarize the settlements of all inventory financial receipts to date that have not been closed.

A weighted average inventory close transaction financial receipt is created as the offset to a weighted average inventory close transaction financial issue.

Microsoft Dynamics AX 2009 will generate and post the summarized inventory transfer transaction and settle all the receipts for the day and on-hand inventory for previous days against the summarized inventory transfer issue transaction. All the issues for the day will be settled against the summarized inventory transfer receipt transaction. The weighted average cost price is calculated to be USD 12.50. The issue will have an adjustment of USD 2.50 to adjust to the weighted average cost. The new running average cost price is USD 12.50.

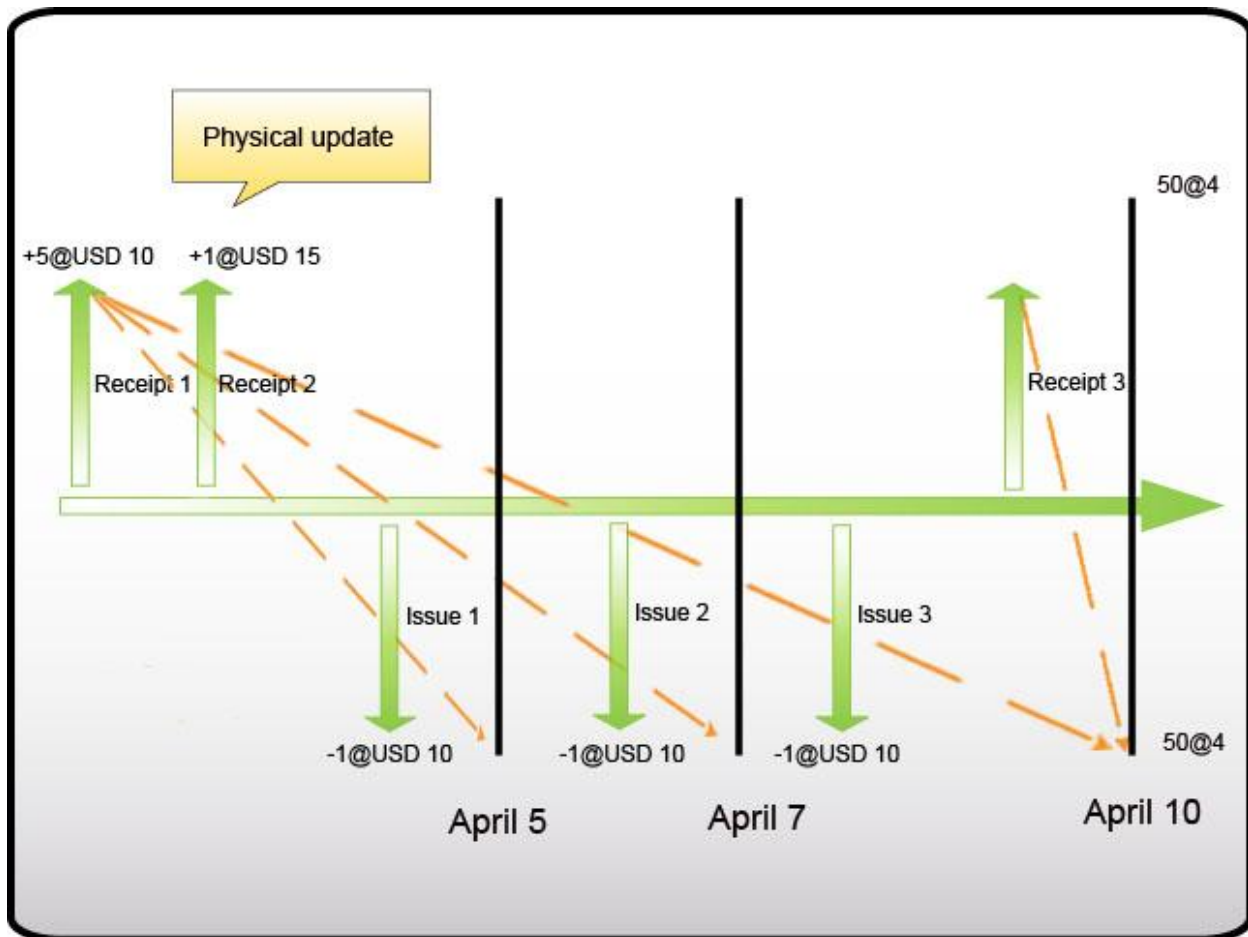


FIGURE 2.13: WIEGHTED AVERAGE DATE CLOSING MODEL SUMMARIZED SETTLEMENT WITHOUT THE INCLUDE PHYSICAL VALUE OPTION

Weighted Average Date Direct Settlement with Include Physical Value Option

The direct settlement principle will settle directly between receipts and issues.

Example

April 5, a purchase order for one piece of the item for USD 10 is received. Purchase order is packing slip updated.

On April 7, this purchase order was invoice-updated.

April 8, a purchase order for one piece of the item for USD 20 is received. Purchase order is packing slip updated.

On April 10, a sales order for one piece of the item for USD 15 (running average cost price, since the physical receipt value is taken into consideration) was sold. It was packing slip and invoice-updated.

Issues are always deducted at the on-hand cost, average of the on-hand quantity, at the time that the transaction was made. View the calculation in the following table:

Date	Status	Quantity	Cost price	Posted value	Posted accumulated value/ quantity	Average cost price
4/5	Received	1	10	10	10/1	10.00
4/7	Purchased	1	10	10	10/1	10.00
4/8	Received	1	20	20	30/2	15.00
4/10	Sold	-1	-15	-15	15/1	15.00

Inventory close is performed. During inventory close, Microsoft Dynamics AX will disregard all inventory transactions that have been only physically updated. Instead, the direct settlement principle will be used because only one financial receipt exists. An adjustment of USD 5 will be posted to the inventory transaction that has been financially issued as of the inventory closing date.

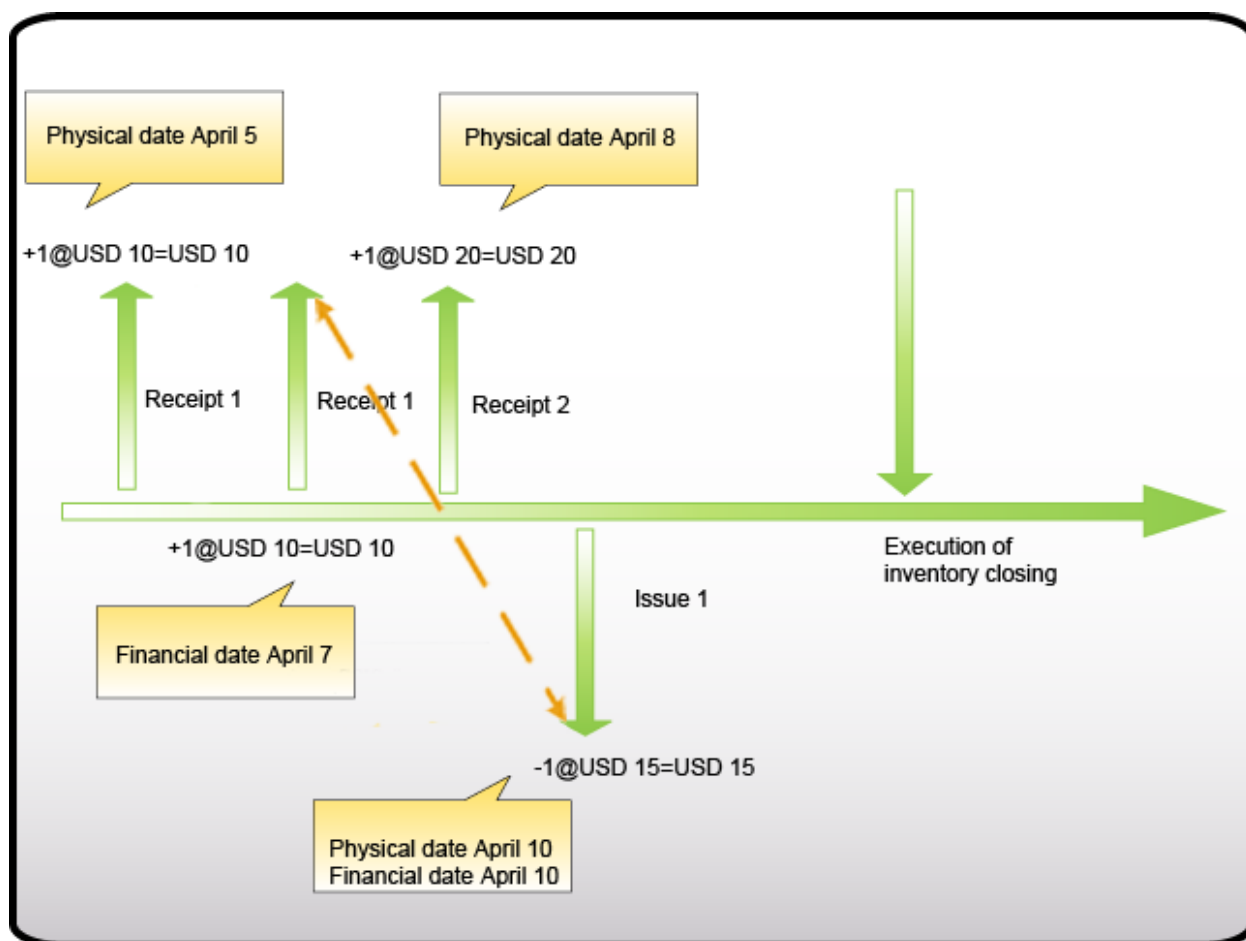


FIGURE 2.14: WIEGHTED AVERAGE DATE CLOSING MODEL DIRECT SETTLEMENT WITH THE INCLUDE PHYSICAL VALUE OPTION

Weighted Average Date Summarized Settlement with the Include Physical Value Option

As mentioned earlier summarized settlement means that all the receipts for the day will be settled against the issue of the newly-created inventory transfer transaction. All issues for the day will be settled against the receipt of the new inventory transfer transaction.

Example

April 5

- Purchase order for five pieces of the item for USD 10 each is received. Purchase order is packing slip and invoice updated.
- Purchase order for one piece of the item for USD 15 is received. Purchase order is packing slip updated.
- Sales order for one piece of the item for USD 10.80 (running average cost price, since the physical receipt value is taken into consideration) is sold and both packing slip and invoice-updated.

In this case the system will use direct settlement approach.

April 7

- Sales order for one piece of the item for USD 10.80 (running average cost price, since the physical receipt value is taken into consideration) is sold and both packing slip and invoice-updated.

In this case the system will use direct settlement approach.

April 10

- Sales order for one piece of the item for USD 10.80 (running average cost price, since the physical receipt value is taken into consideration) is sold and both packing slip and invoice-updated.
- Purchase order for one piece of the item for USD 20 is received. Purchase order is packing slip and invoice updated.

Issues are always deducted at the on-hand cost, average of the on-hand quantity, at the time that the transaction was made. View the calculation in the following table:

Date	Status	Quantity	Cost price	Posted value	Posted accumulated value/ quantity	Average cost price
Day 1	Purchased	5	10	50	50/5	10
	Received	1	15	-	65/6	10.80
	Sold	-1	-10.80	-10.80	54.20/5	10.80
Day 2	Sold	-1	-10.80	-10.80	43.40/4	10.80
Day 3	Sold	-1	-10.80	-10.80	32.60/3	10.80
	Purchased	1	20	20	52.60/4	13.15

Inventory close is performed. The direct settlement will need to be used because there are multiple receipts crossing multiple days. During the inventory close, financially updated receipts only will be considered in the weighted average calculation.

Microsoft Dynamics AX 2009 will generate and post the summarized inventory transfer transaction and settle all the receipts for the day and on-hand inventory for previous days against the summarized inventory transfer issue transaction. All the issues for the day will be settled against the summarized inventory transfer receipt transaction. The weighted average cost price is calculated to be USD 12.50. The issue will have an adjustment of USD 1.7 to adjust to the weighted average cost. The new running average cost price is USD 12.50.

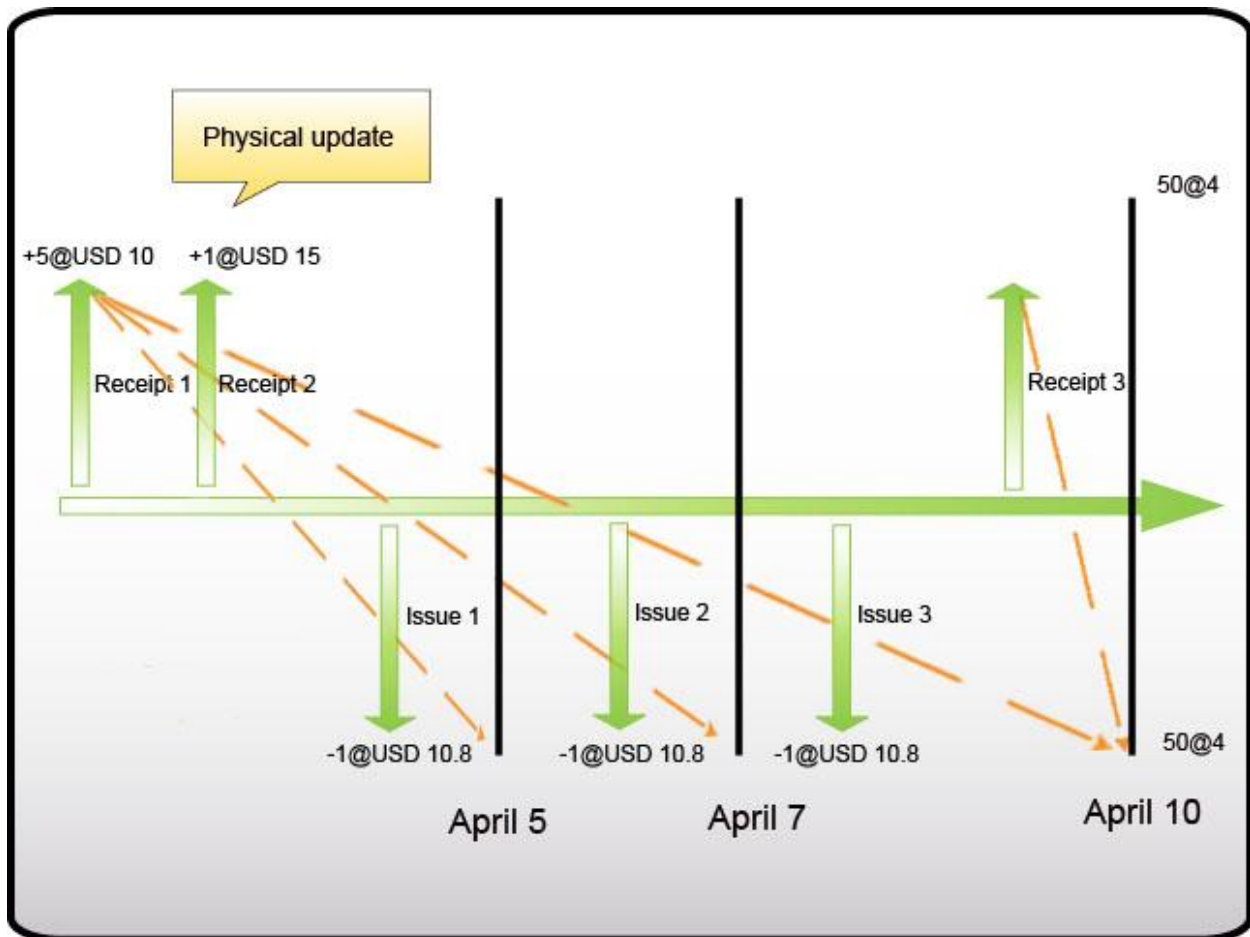


FIGURE 2.15: WIEGHTED AVERAGE DATE CLOSING MODEL SUMMARIZED SETTLEMENT WITH THE INCLUDE PHYSICAL VALUE OPTION

Lab 2.1 – Inventory Models

Scenario

Your company purchases and sells a number of different items, with different inventory models used when inventory closing is performed. You are learning about the inventory closing function in Microsoft Dynamics AX 2009 and want to investigate how the different inventory models for different items affect settlements of issues against receipts after you have performed inventory closing.

To start with you create the following purchase orders with Fog Projectors (vendor account 1103) and a sales order with Sparrow Wholesales (customer account 1201) with warehouse 21. When you come to invoice the purchase orders and sales orders, you invoice them in the sequence they are created and using the financial date as the Posting date, for purchase orders, and the Invoice date, for sales orders.

Purchase order 1

Item no	Inventory model group	Quantity	Price in USD	Financial date
1510	FIFO_PHY	1	285	04/03/2007
1511	LIFO_PHY	1	285	04/03/2007
1512	LIFOd_PHY	1	285	04/03/2007
1513	WA_PHY	1	285	04/03/2007
1514	WAD_PHY	1	285	04/03/2007

Purchase order 2

Item no	Inventory model group	Quantity	Price in USD	Financial date
1510	FIFO_PHY	1	305	04/07/2007
1511	LIFO_PHY	1	305	04/07/2007
1512	LIFOd_PHY	1	305	04/07/2007
1513	WA_PHY	1	305	04/07/2007
1514	WAD_PHY	1	305	04/07/2007

Sales order 1

Item no	Inventory model group	Quantity	Price in USD	Financial date
1510	FIFO_PHY	1	375 (default)	04/10/2007
1511	LIFO_PHY	1	375 (default)	04/10/2007
1512	LIFOd_PHY	1	375 (default)	04/10/2007

1513	WA_PHY	1	375 (default)	04/10/2007
1514	WAD_PHY	1	375 (default)	04/10/2007

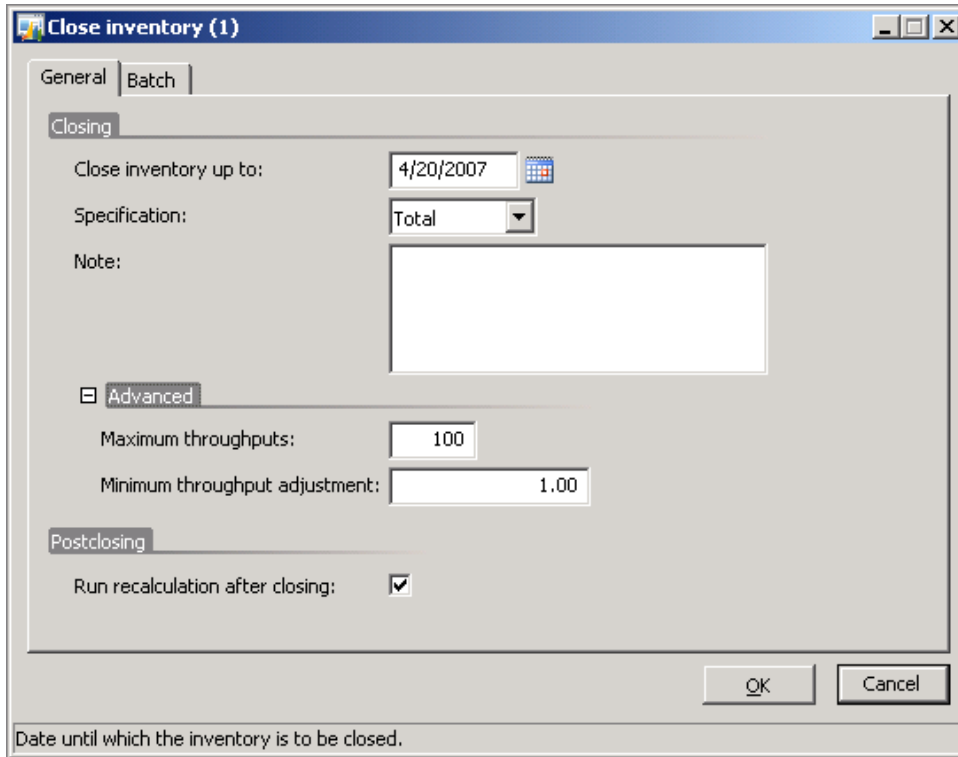
Purchase order 3

Item no	Inventory model group	Quantity	Price in USD	Financial date
1510	FIFO_PHY	1	365	04/12/2007
1511	LIFO_PHY	1	365	04/12/2007
1512	LIFOd_PHY	1	365	04/12/2007
1513	WA_PHY	1	365	04/12/2007
1514	WAD_PHY	1	365	04/12/2007

Finally you perform inventory closing up to April 20, 2007. You then look at the results of the closing and see how different inventory models affected the recalculation of the item.

Challenge Yourself

- Make sure that correct inventory model group is attached to each item.
- Create all the purchase orders and invoice-update the first two purchase orders. Notice that the Financial date must be specified in the **Posting date** field.
- Create the sales order and invoice update it. Notice that the financial date must be specified in the **Invoice date** field.
- What is the average cost price for all the items?
- Why are the average cost prices for all items the same?
- Create the last purchase order and invoice update it. Notice that the Financial date must be specified in the **Posting date** field.
- Close the inventory per April 20, 2007. Make sure that the settings in the **Recalculate inventory** dialog box are as in the following screenshot:



The image shows a software window titled "Close inventory (1)". It has two tabs: "General" and "Batch". The "General" tab is active. Inside, there's a "Closing" section with a date field set to "4/20/2007", a "Specification:" dropdown set to "Total", and a "Note:" text area. Below that is an "Advanced" section with a checkbox (checked), "Maximum throughputs:" set to "100", and "Minimum throughput adjustment:" set to "1.00". At the bottom is a "Postclosing" section with a checkbox "Run recalculation after closing:" which is checked. "OK" and "Cancel" buttons are at the bottom right. A status bar at the very bottom says "Date until which the inventory is to be closed."

FIGURE 2.16 CLOSE INVENTORY FORM

- Fill in the following table:

Item number	Value open	Cost amount	Adjustment	Amount settled
1510				
1511				
1512				
1513				
1514				

Question: Look at the sales order lines for items 1513 and 1514. Click **Inventory > Transactions > Inventory > Settlements > Transaction** you will come to the **Settlements in the transaction** form. Note the settled quantity and the settled amounts. Why have the receipts been settled against the issue in this manner?

Need a Little Help?

1. When the first order is created you can copy the second and third order from the menu button **Functions > Copy from all**. However you must have created the purchase header by CTRL + N
2. To learn information to fill in the table go to the sales order line click **Inventory > Transactions** and then click the **General** and **Updates** tabs.

Step by Step

1. In the **Item** form, on the **General** tab make sure that corresponding inventory model group is attached to the item.
2. Create the purchase orders according to the instructions in the lab. For each purchase order specify vendor 1103 and warehouse 21. When overwriting default quantity on the purchase order lines, click **Cancel** when the dialog box proposes to insert minimum quantity. Update the first two of the purchase orders specifying the financial date from the tables in the scenario in the **Posting date** field.
3. Create the sales order according to the instructions in the lab. For the sales order specify Customer 1201 and warehouse 21. Invoice-update the sales order using the Invoice date from the scenario.
4. Update the third purchase order using the Posting date from the scenario.
5. View the cost price for each item from the sales order by clicking **Inventory > Transactions**.
6. Perform inventory closing by going to **Inventory management > Periodic > Inventory closing and adjustment**.
7. In the **Closing and adjusting** form, click **Close procedure > Close**.
8. In the **Close inventory up to** field, enter the date “04/20/2007”.
9. Click **OK**.
10. After recalculation is performed, in the **Closing and Adjustment** form, click **Settlements** to view the results of inventory close.

Answers to questions:

- The average cost price for all the items is USD 295.
- All issues, regardless of their inventory model, are issued at average cost price before closing.

Summary

This chapter covered five main inventory models used for inventory closing and their principles.

Each inventory model described inventory recalculation principle with regard to the Include physical value option. Weighted average and weighted average date inventory models were discussed in relation to direct or summarized settlements.

With the help of inventory models used for closing you can calculate the value of your inventory according to the way you operate with inventory valuation.

Test Your Knowledge

Inventory models

1. During inventory close, which receipts will be considered in the weighted average calculation? (Select all that apply.)
 - ☐ Only physically updated receipts
 - ☐ Only financially updated receipts
 - ☐ Both physically and financially updated receipts
 - ☐ None
2. Using which inventory model the first acquired receipts are issued first?
 - ☐ LIFO
 - ☐ LIFO Date
 - ☐ Weighted average
 - ☐ FIFO
3. Which of the following statements about inventory model LIFO is true?
 - ☐ The first (oldest) receipts are issued first.
 - ☐ The last (newest) receipts are issued first.
 - ☐ The first (oldest) receipts are issued first based on the date of inventory transaction.
 - ☐ The last (newest) receipts are issued first based on the date of inventory transaction.
4. What is the difference between the inventory models LIFO and LIFO date?

5. What is the principle of the weighted average inventory model?

Quick Interaction: Lessons Learned

Take a moment and write down three key points you have learned from this chapter:

1.

2.

3.

Solutions

Test Your Knowledge

Inventory models

1. During inventory close, which receipts will be considered in the weighted average calculation?
☐ Only physically updated receipts
☒ Only financially updated receipts
☐ Both physically and financially updated receipts
☐ None

2. Using which inventory model the first acquired receipts are issued first?
☐ LIFO
☐ LIFO Date
☐ Weighted average
☒ FIFO

3. Which of the following statements about inventory model LIFO is true?
☐ The first (oldest) receipts are issued first.
☒ The last (newest) receipts are issued first.
☐ The first (oldest) receipts are issued first based on the date of inventory transaction.
☐ The last (newest) receipts are issued first based on the date of inventory transaction.

4. What is the difference between the inventory models LIFO and LIFO date?

Model answer: Issues from inventory are settled against the last receipts into inventory based on the date of the inventory transaction with LIFO date.

5. What is the principle of the weighted average inventory model?

Model answer: Issues from inventory are valued at the average value of the items that are received into inventory during the inventory closing period, plus any on-hand inventory from the previous period.

CHAPTER 3: STANDARD COST FRAMEWORK

Objectives

The objectives are:

- Introduce the concept of the standard cost framework.
- Perform necessary setup needed for standard cost.
- Introduce cost breakdown feature.
- Investigate indirect costs and calculation formulas used for costing versions.
- Use costing sheet to organize and structure the cost consumption.
- Learn about costing versions.
- Identify variances between the production actual costs and the standard cost.

Introduction

Standard cost is an inventory valuation method that is based on the standard cost principle, where inventory receipts and issues are valued using an item's active standard cost. Variances capture the differences arising between an item's standard cost and the actual cost of transactions.

The inventory costing method standard cost provides three types of variances:

- Purchase price variance
- Cost change variance
- Production variance (Price variance, Quantity variance, Lot size variance, Substitution variance)

An item's standard costs are site specific and can be manually entered or calculated for manufactured items. An item's standard cost is initially created with a pending status, and must be activated for production costing and inventory valuation purposes.

Activating an item's standard cost (for an item held at standard cost) will result in revaluation of the item's inventory and work in process, where a cost revaluation variance captures the difference. Site-to-site transfers result in cost change variances when an item's standard costs differ between sites.

An inventory closing is not required for the standard cost valuation method, and manual marking does not apply.

An item's standard cost provides the basis for calculating purchase price variances at the time of purchase order receipt and invoice entry, and for calculating production variances at the time of ending a production order.

Production variances can optionally reflect the cost group breakdown and production variance types compared to a manufactured item's calculated cost, such as quantity or price variances related to material, labor and overhead.

Set Up Standard Cost Framework

Before using standard cost functionality the following setup should be completed:

- Setup standard cost method for inventory model group
- Enable production variances
- Define ledger accounts related to standard cost variances
- Set up variances on standard cost posting profile
- Activate multisite functionality.

Demonstration: Set up Standard Cost Method on Inventory Model Group

To enable the standard cost method on an inventory model group, perform the following:

1. Open **Inventory management > Setup > Inventory > Inventory model group**.
2. Select an inventory model group.
3. Click the **Inventory model** tab.
4. Select “Standard cost” in the **Inventory model** field.

NOTE: The *Include physical value* and *Fixed receipt price* check boxes are locked and inactive when standard cost is the active inventory model.

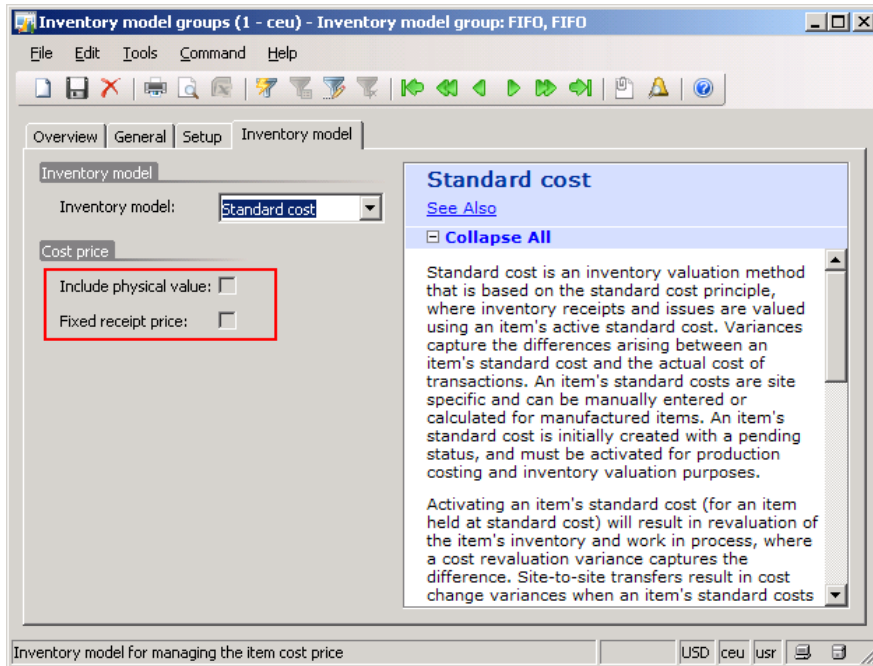


FIGURE 3.1: INVENTORY MODEL GROUPS FORM

Demonstration: Enable Production Variances

To define inventory parameters related to standard cost, perform the following steps:

1. Open **Inventory management** > **Setup** > **Parameters**.
2. Click the **Bills of materials** tab.
3. Select “Summarized” or “Per cost group” in the **Variance to Standard** field.

The selection of “Per cost group” enables you to identify purchase price variances and production variances by cost group, and also identify the four types of production variances (the lot size, quantity, price and substitution variances). The selection of “Summarized” means that you cannot identify variances by cost group, and you cannot identify the four types of production variances. You can only view a summarized production variance.

Define Ledger Accounts Related to Standard Cost Variances

In the **Chart of Accounts** form define ledger accounts that are related to standard cost variances. These ledger accounts must be defined before they can be assigned to the variances in the **Posting** form. The ledger accounts can reflect item groups and cost groups.

Procedure: Set Up Variances on Standard Cost Posting Profile

To set the ledger accounts to apply for posting the variances to standard cost in the ledger, perform the following steps:

1. Open **Inventory management > Setup > Posting > Posting**.
2. Click the **Standard cost variance** tab in the **Inventory posting** form.
3. Select the type of variance for which to setup the ledger accounts.
4. Press CTRL+N to create a new line.
5. Select the Item relation and Cost relation that will govern the ledger account resolution.
6. Select the account number from the drop-down list in the **Account number** field.

Save the record and close the **Inventory posting** form.

[illegible]

FIGURE 3.2: INVENTORY POSTING FORM

Activate Multisite Functionality

Use the **Multisite Activation Wizard** to activate multisite functionality in Microsoft Dynamics AX 2009. As standard costs are site-specific, multisite functionality should be enabled. For more information about multisite functionality and its activation, refer to Master Planning in Microsoft Dynamics AX 2009 and Production I in Microsoft Dynamics AX 2009 courses.

Cost Breakdown

Product costs are composed of different types of resources' cost contributions, typically classified as:

- Materials costs
- Labor costs
- Indirect costs

The cost breakdown feature enables the tracking of the cost composition of items held at standard cost across production levels, for planned, estimated and actual costs. Product cost, production costs, inventories, WIP, cost of goods sold and cost composition can be analyzed and rolled up in their original cost groups.

In planned cost, production estimate and production costing calculation, and user-defined cost groups linked to the resources, enable the collection and classification of costs contributions. Upon valuing manufactured components' cost contributions at standard costs, the system inserts the summarized standard cost decomposition for each cost group. This enables the compilation of the multilevel rolled up cost decomposition for each cost group of the product and production cost.

A dedicated standard cost framework supports the cost breakdown feature. It stores and identifies the standard cost and its composition for each cost group. Additionally, it captures and records inventory movement valued at standard cost, in relation to the standard cost identification and the variances to that standard cost. This forms the repository for cost composition analysis.

NOTE: *The cost breakdown feature is limited to the standard cost inventory method in Microsoft Dynamics AX 2009.*

Demonstration: Enable Cost Breakdown

To enable cost breakdown in the configuration of Microsoft Dynamics AX 2009, perform the following:

1. Open **Administration > Setup > System > Configuration**.
2. Expand the **Logistics** node.
3. Expand the **Bills of materials** node.
4. Select the **Allow cost breakdown activation** check box.

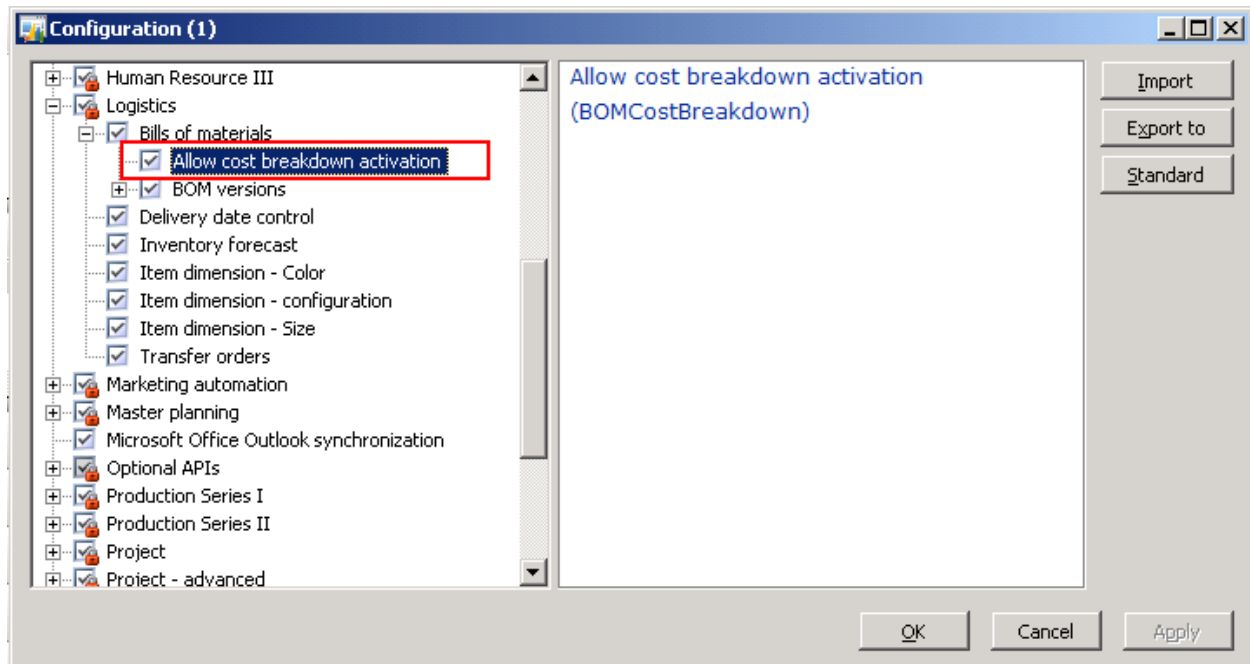


FIGURE 3.3: CONFIGURATION FORM

To enable the cost breakdown in the **Inventory management** module, perform the following:

1. Open **Inventory management > Setup > Parameters**.
2. Click the **Bills of materials** tab.
3. Make a selection in the **Cost Breakdown** field.
4. Close the **Parameters** form.

FIGURE 3.4: INVENTORY PARAMETERS FORM

Costing Sheet

Scenario

Ken, the Controller, defines and organizes the cost structure that is applied to the company. Additionally, he maps the cost groups whose cost contributions form the cost of goods manufactured and sold in the costing sheet.

Cost composition inquiries present consistently planned, estimated and actual cost in the costing sheet framework.

Product costs are composed of different types of resources' cost contributions. Cost groups enable the collection and classification of cost contributions according to the nature of the resources.

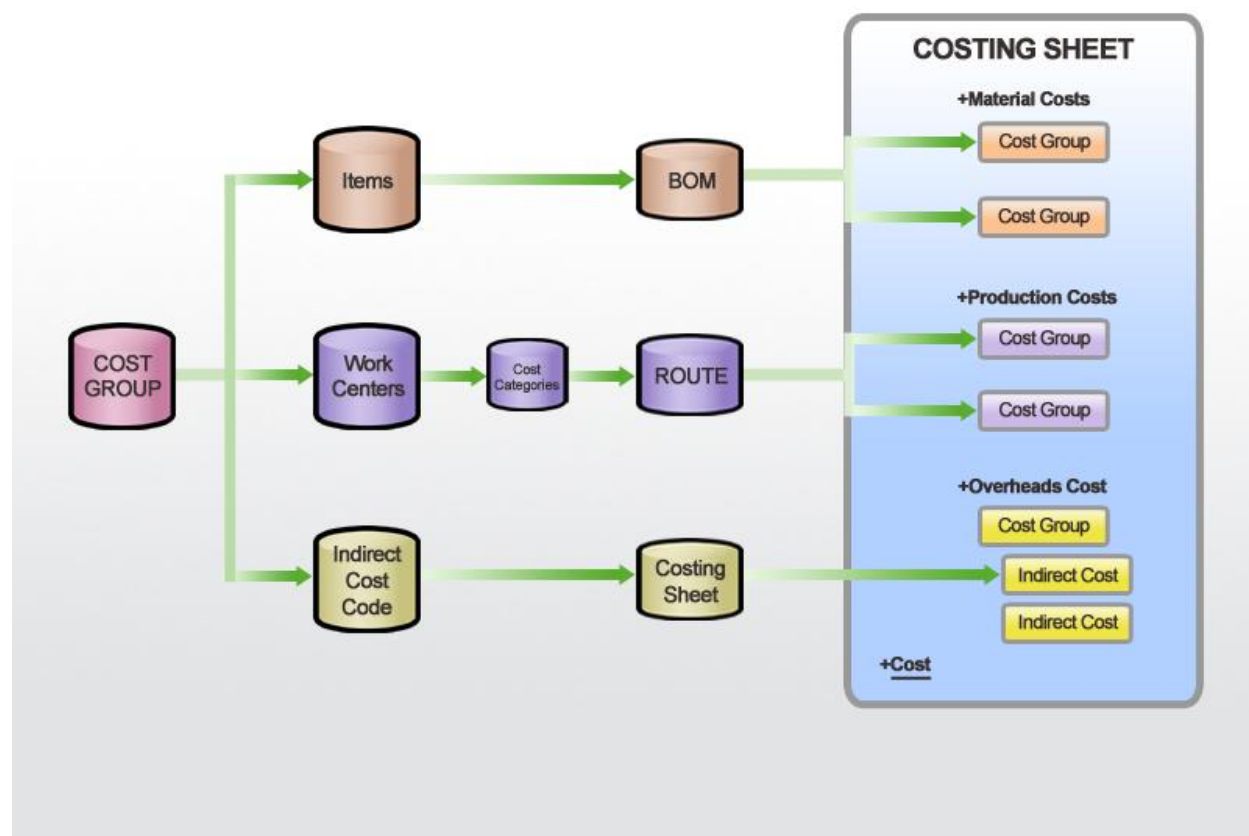
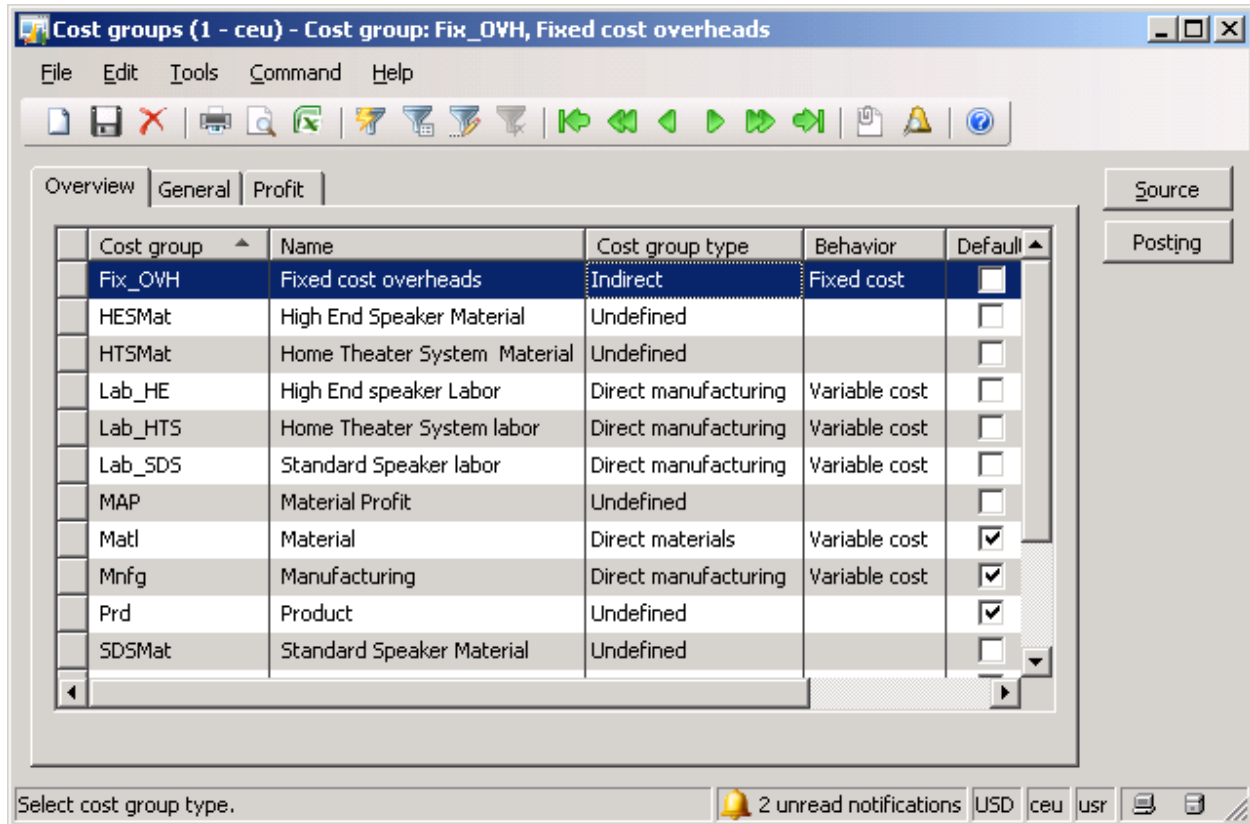


FIGURE 3.5: COMPOSITION OF COSTS IN THE COSTING SHEET

The costing sheet feature lets users consistently organize and structure the cost composition for each cost group for plan cost calculation, production estimation and production costing. The costing sheet also serves as the underlying framework for setting and calculating indirect costs (see the topic titled Indirect Cost for more information).

In Microsoft Dynamics AX 2009, the costing sheet is limited to a single costing sheet for each company level. However, costs, prices, rates, and ratios can be set up for each site.

To set up the cost groups, go to **Inventory management > Setup > Bills of materials > Cost groups**.



Cost group	Name	Cost group type	Behavior	Default
Fix_OVH	Fixed cost overheads	Indirect	Fixed cost	☐
HESMat	High End Speaker Material	Undefined		☐
HTSMat	Home Theater System Material	Undefined		☐
Lab_HE	High End speaker Labor	Direct manufacturing	Variable cost	☐
Lab_HTS	Home Theater System labor	Direct manufacturing	Variable cost	☐
Lab_SDS	Standard Speaker labor	Direct manufacturing	Variable cost	☐
MAP	Material Profit	Undefined		☐
Matl	Material	Direct materials	Variable cost	☒
Mnfg	Manufacturing	Direct manufacturing	Variable cost	☒
Prd	Product	Undefined		☒
SDSMat	Standard Speaker Material	Undefined		☐

FIGURE 3.6: COST GROUPS FORM

To set up the costing sheet, go to **Inventory management > Setup > Bills of materials > Costing sheet setup**.

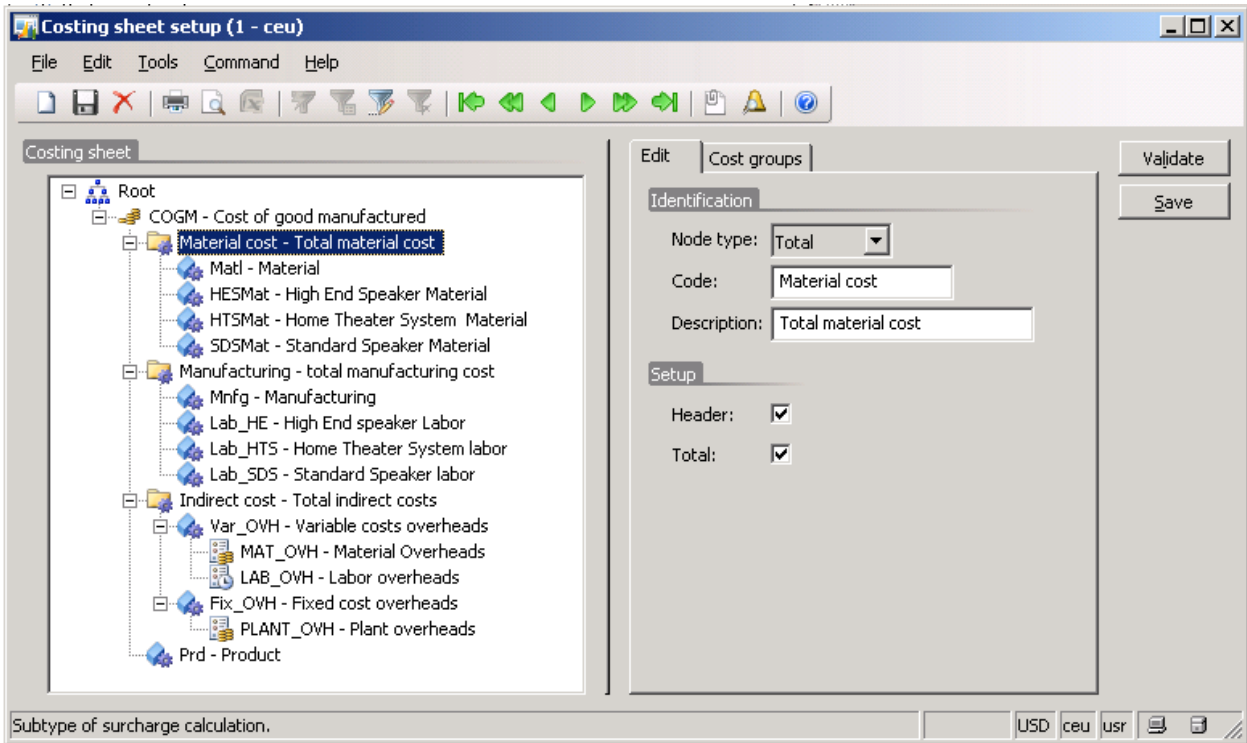


FIGURE 3.7: COSTING SHEET SETUP FORM

CAUTION: When setting up the costing sheet, click the **Save** button before exiting. Otherwise, changes will not be saved.

The costing sheet can only be applied on the following manufacturing related events:

- Plan product costs
- Production estimation / Consumption reporting / Production costing

The costing sheet is displayed as part of the complete **BOM Calculation** form. It can be displayed for a manufactured item, a production order, or a line item on a sales order, sales quotation, or service order.

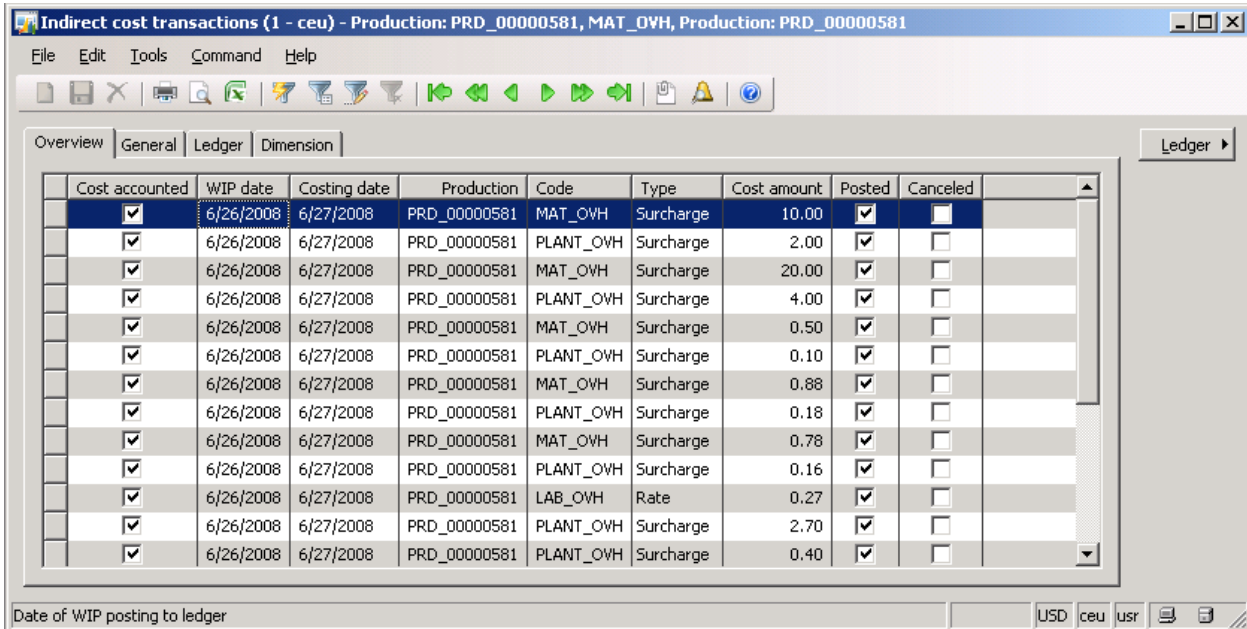
Indirect Cost

Under full absorption costing methodology, manufacturing indirect costs are charged to products. This costing feature enables the definition, through the costing sheet, of the manufacturing indirect costs to be applied, either as a surcharge over other cost aggregates or else as a rate over production hours or quantities.

Indirect costs contribute to the planned, estimated, and actual product and production costs. Indirect costs are applied and posted to ledger at the time of the resources consumptions.

The **Indirect cost transactions** form provides an overview of indirect costs applied on the production order. Each transaction shows the calculation formula information that was defined in the costing sheet setup, including the costing sheet node, the cost group, the type of indirect cost, and the subtype.

Production > Production order details > Inquiries > Indirect cost transactions



Cost accounted	WIP date	Costing date	Production	Code	Type	Cost amount	Posted	Canceled
☒	6/26/2008	6/27/2008	PRD_00000581	MAT_OVH	Surcharge	10.00	☒	☐
☒	6/26/2008	6/27/2008	PRD_00000581	PLANT_OVH	Surcharge	2.00	☒	☐
☒	6/26/2008	6/27/2008	PRD_00000581	MAT_OVH	Surcharge	20.00	☒	☐
☒	6/26/2008	6/27/2008	PRD_00000581	PLANT_OVH	Surcharge	4.00	☒	☐
☒	6/26/2008	6/27/2008	PRD_00000581	MAT_OVH	Surcharge	0.50	☒	☐
☒	6/26/2008	6/27/2008	PRD_00000581	PLANT_OVH	Surcharge	0.10	☒	☐
☒	6/26/2008	6/27/2008	PRD_00000581	MAT_OVH	Surcharge	0.88	☒	☐
☒	6/26/2008	6/27/2008	PRD_00000581	PLANT_OVH	Surcharge	0.18	☒	☐
☒	6/26/2008	6/27/2008	PRD_00000581	MAT_OVH	Surcharge	0.78	☒	☐
☒	6/26/2008	6/27/2008	PRD_00000581	PLANT_OVH	Surcharge	0.16	☒	☐
☒	6/26/2008	6/27/2008	PRD_00000581	LAB_OVH	Rate	0.27	☒	☐
☒	6/26/2008	6/27/2008	PRD_00000581	PLANT_OVH	Surcharge	2.70	☒	☐
☒	6/26/2008	6/27/2008	PRD_00000581	PLANT_OVH	Surcharge	0.40	☒	☐

FIGURE 3.8 INDIRECT COST TRANSACTIONS FORM

Scenario

Ken, the Controller, defines the indirect costs to apply in the company, inserting indirect cost codes in the costing sheet, under the parent indirect cost group to collect and classify their contributions.

For example, Ken creates material overheads as a surcharge to apply over material costs, labor overheads as a rate to apply over reported labor hours, and plant overheads as a surcharge over direct and indirect costs.

Calculated indirect cost contributions are inserted in the planned cost, production estimate, and production cost calculations, accounting for the applied indirect costs. Distinct ledger accounts on the indirect cost code enable the posting of their absorption distinctively in the ledger.

Costing Versions

A costing version can serve one or more purposes based on the data that is contained within the costing version. The primary purpose of a costing version is to contain cost records about items, cost categories, and indirect cost calculation formulas. A costing version can contain a set of standard cost records or a set of

planned cost records that are based on the costing type that is assigned to the costing version.

For standard costs - a costing version can support a standard cost inventory model for items, where the costing version contains a set of standard cost records about items and manufacturing processes. Cost data about manufacturing processes is expressed in terms of the cost categories for routing operations and the calculation formulas for manufacturing overheads.

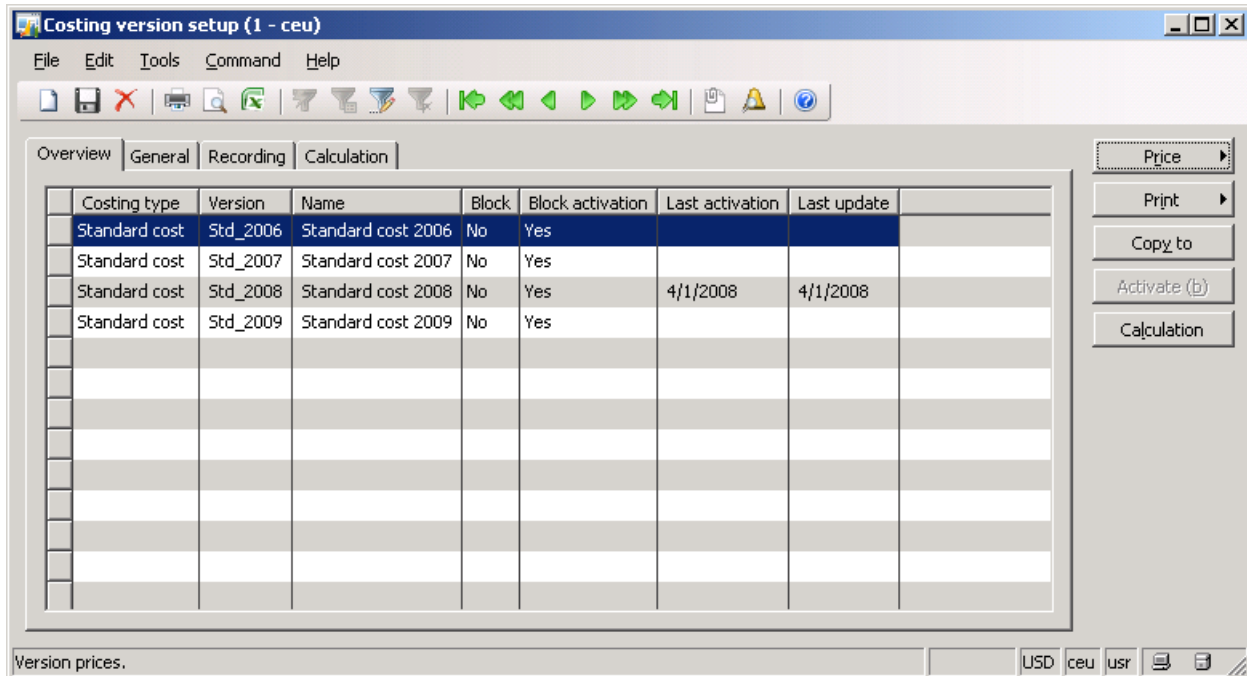
Maintenance of cost records within a costing version involves entering costs for purchased items and for items that are transferred between sites. Additional data maintenance for manufacturers involves entering costs for cost categories (associated with routing operations), entering calculation formulas for the indirect costs reflecting manufacturing overheads, and calculating costs for manufactured items.

The item cost data within a costing version will consist of one or more cost records for each item. An item cost record is initially entered with a pending status and an intended effective date. Activating the item cost record updates the status (to active) and the effective date (to the activation date). Different item cost records may reflect different sites (when you use multisite functionality), effective dates, or status. When calculating costs for manufactured items for a future date, the BOM calculation will use cost records with the relevant effective date whether status is pending or active. An item's current active cost record will be used for estimating production order costs and valuing inventory transactions under a standard costing inventory model. The maintenance of cost records for cost categories and indirect cost calculation formulas is similar to the maintenance of item cost records.

Two blocking policies for a costing version determine whether pending costs can be maintained and whether the pending cost can be activated. Use the blocking policies to permit data maintenance, and then to prevent data maintenance for cost records within a costing version.

The **Costing version setup** form enables users to create distinct user-defined environments, for maintaining and calculating items' planned costs and it can be found here:

Inventory management > Setup > Costing versions



Costing type	Version	Name	Block	Block activation	Last activation	Last update
Standard cost	Std_2006	Standard cost 2006	No	Yes		
Standard cost	Std_2007	Standard cost 2007	No	Yes		
Standard cost	Std_2008	Standard cost 2008	No	Yes	4/1/2008	4/1/2008
Standard cost	Std_2009	Standard cost 2009	No	Yes		

FIGURE 3.9 COSTING VERSION SETUP FORM

Users can enter and maintain planned items' costs, cost categories' rate, indirect costs' rate, and ratio in costing versions. The BOM calculation executed on the costing version calculates and appends the manufactured item planned costs to it.

The costs created with a status of "pending" can be activated, discreetly or else in mass, to become effective and be applied to production costing and inventory valuation.

Attributes on costing versions, enable constraints of content and cost calculations in that version. Items' costs in a costing version can be analyzed and maintained individually or for each costing version. Active cost history is kept, with full details.

NOTE: The costing version feature is available on all types of costing methods. However, when standard cost is enabled, there are principles in the **Costing version setup** form that are restricted and cannot be changed.

Scenario

Vince, the Operating Manager wants to build up next year's standard costs.

Vince creates a new dedicated costing version for those. Various contributors populate the plan costing version with next year's purchased item costs, cost category rate, and indirect cost ratios.

A BOM calculation, executed on the costing version, calculates and inserts the standard costs for a manufactured item in the version. The calculation is based on

the costing version cost set. Vince reviews the content of the costing version, correcting as necessary and locking the costing version as soon as he is satisfied with its content.

At the beginning of the new year, Vince mass activates the costing version's costs. This makes them effective and applied for inventory valuation and production costing in the new year.

Demonstration: Create a Costing Version

To create a costing version, perform the following steps:

1. Open **Inventory management > Setup > Costing versions**.
2. Press CTRL+N to create a new line.
3. Select a **Costing type**.
4. Type text in the **Version** field.
5. Type text in the **Name** field.
6. Select "Yes", or "No" in the **Block changes** field (depending on if the version needs to be blocked for usage or not).
7. In the **Block activation** field, select "No".
8. Save the record.

Procedure: Add Item Costs in a Costing Version

To add an item's costs in a costing version, perform the following:

1. Open **Inventory management > Periodic > Bills of materials > Costing versions**.
2. Select a record in the **Costing version maintenance** form.
3. Click **Price > Item price**.
4. Complete fields as required on the **Pending prices > Overview** tab.
5. Save the record and close the **Item price** form.

Procedure: Input Cost Category Rate in the Costing Version

To enter cost category rates in a costing version, perform the following:

1. Open **Inventory management > Periodic > Bills of materials > Costing versions**.
2. Select a record in the **Costing version maintenance** form.
3. Click **Price > Cost category price**.
4. Fill in the fields as required on the **Overview** tab.
5. Save the record and close the **Cost category price** form.

Procedure: Input Indirect Cost Factors in the Costing Version

To enter indirect cost factors in a costing version, perform the following:

1. Open **Inventory management > Periodic > Bills of materials > Costing versions**.
2. Select a record in the **Costing version maintenance** form.
3. Click **Price > Indirect cost**.
4. Fill in the fields as required on the **Overview** tab.
5. Save the record and close the **Indirect cost** form.

Procedure: Calculate Product Cost in the Costing Version

To calculate product cost on the basis of the costing version costs' set, perform the following:

1. Open **Inventory management > Setup > Costing versions**.
2. Select a record in the **Costing version setup** form.
3. Click **Calculation** (on a record that is not blocked).
4. Select the criteria for running the BOM calculation or filtering the product to calculate.
5. Click **OK**.

Procedure: Activate Cost Prices from Costing Version

To activate cost prices from the **Costing version setup** form, perform the following:

1. Open **Inventory management > Setup > Costing versions**.
2. Select a record in the **Costing version setup** form.
3. Make sure that the **Block activation** field is set to "No" to make sure activation can be performed.
4. Click the **Activate** button.
5. Select only the **Cost price** check box to activate the cost price only.
6. Click **OK**.

NOTE: *Costing versions' costs and prices can be processed and maintained for each individual item, cost categories, and indirect costs by accessing those items and using the **Prices** button.*

Production Variances

According to standard cost methodology, the product and production are valued at a pre-determined standard cost, built on the assumption of prices and quantities.

The difference between the production actual costs and the standard cost are captured as variances. Production variances to standard cost are classically distinguished between prices based or quantity based variances and segregated for each resource type (material, labor, overheads).

The production variances feature enables the capture of the distinct types of production variances to standard cost for each resource contributing to the production.

NOTE: *Production variances are calculated and posted at the production end only in Microsoft Dynamics AX 2009.*

The production variances to standard cost can be posted on separate ledger accounts, according to the variance type and the contributing resources' cost group (Direct manufacturing, Direct material, Indirect, Undefined).

When the user is running cost breakdown, the sub level variance can be calculated but not posted. This can be used for information about the variances of semi finished items.

Scenario

When the user ends the production of a product held at standard cost, he makes a comparison of the detailed realized production costs against the pre-determined standard cost calculation details.

Microsoft Dynamics AX 2009 compiles distinct variances for each individual resource contributing to the production level. Ledger accounts for posting those variances are resolved according to the variance types and cost contributor's cost group.

There are the following distinct types of production variances to standard costs:

- **Price variance** – is the variance that is related to the differences between the costs that were used for standard cost calculations and the costs that were used for actual consumption transactions.
- **Quantity variance** – is the variance that is related to the differences between the quantities for components and operations that were used for standard cost calculations and the quantities that were used for actual consumption transactions.
- **Lot size variance** – is the variance that is related to the differences between the standard cost calculation quantity and the production order quantity. The variance reflects the differences in the amortization of constant costs.
- **Substitution variance** – is the variance that is related to the differences between the components and operations that were used for standard cost calculations and those that were used for actual consumption transactions. For example, the substitution variance

could reflect actual consumption of a component that was not in the bills of material (BOM) for the standard cost calculation.

See the formula in the following tables for the calculation of the each variance.

Price variance

Calculation	Variance
	Realized consumption
*	(Standard cost allowed/Standard quantity allowed) – (Realized cost amount / Realized consumption)
=	Price variance

Quantity variance

Calculation	Description
	(Standard quantity allowed – Realized consumption)
*	(Standard cost allowed/ Standard quantity allowed)
=	Quantity variance

Lot size variance

Calculation	Description
	Standard cost lot size constant
*	(Realized quantity / Standard cost lot size)
-	1
=	Lot size variance

Procedure: Inquire on Production Order Variances

To make an inquiry on the variances recorded on an ended production order for a standard cost product, perform the following steps:

1. Open **Production > Production Order Details**.
2. Select a production order (where status = Ended).

3. Click the **Inquiries > Price calculation**.
4. Click the **Variance** button.
5. The system will now display the variances recorded on the production order.

Variance Analysis Statement

The variance analysis statement in Microsoft Dynamics AX 2009 is used to prepare a report about production variances and purchase variances during a specified time period, such as the current period or current year.

The report lets to determine the total variances during a period. It summarizes the direct material variances related to purchase orders and production orders, and the production order variances related to direct manufacturing, indirect, and undefined cost.

With a summary or detailed breakdown of variances, the report can focus on items, orders, or cost groups.

Inventory Management > Reports > Analysis > Variance analysis statement

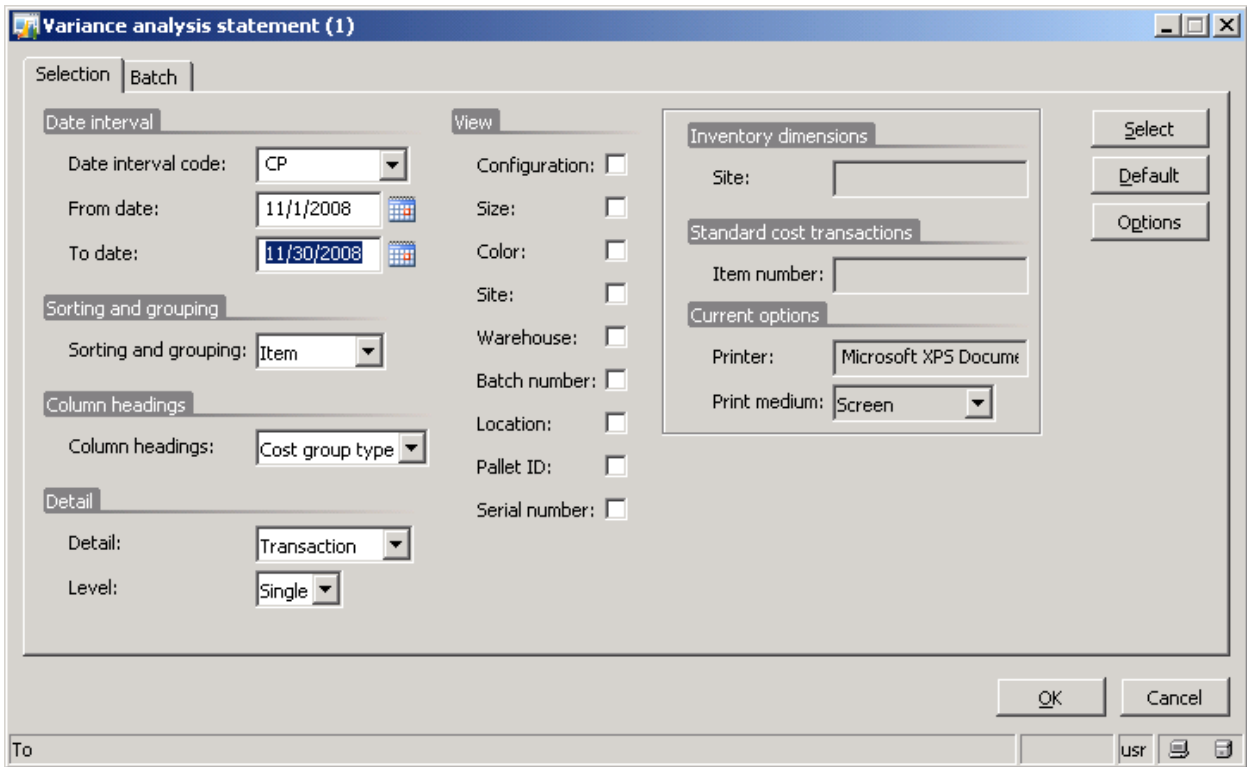


FIGURE 3.10: VARIANCE ANALYSIS STATEMENT FORM

Lab 3.1 – Standard Cost

Scenario

You are, the Purchasing Agent at the Contoso Company. For the item 1401 Car Audio System Model 01 your company uses standard cost inventory valuation method. This means that item 1401 is valued at its standard cost price which is USD 150.

On July 17, 2008 you decide to refill inventory with 10 pieces of item 1401. You contact your constant supplier Topaz Electronics (vendor account 1201), and they respond that beginning from August 1, 2008 the new price for item 1401 is USD 180. But if Contoso makes an order before August 01, the price will be USD 165 per item.

You create a purchase order with the following specification:

Vendor account	1201 Topaz Electronics
Site	2
Warehouse	21
Item number	1401 Car Audio System Model 01
Size	6 (6 inch speaker system)
Price each	USD 165
Quantity	10
Posting date	07/25/2008

After you create and invoice-update the purchase order, you should verify the transactions and adjustment settled.

As beginning from August 01, price for the item will rise to USD 180, your task is to make revaluation of the item according to the new price and analyze the results of revaluation.

Challenge Yourself

1. Create and invoice-update a purchase order according to the lab specification.
2. View posted adjustments.
3. Change cost price in the current costing version for item 1401. Activate new price.
4. View and analyze the results of revaluation.

Need a Little Help?

1. Go to **Inventory management > Purchase Order Details** to create and invoice-update the purchase order.
2. In the **Item** form, locate the item and click **Transaction > Inventory > Settlements** to view posted adjustments.
3. Click **Inventory management > Setup > Costing versions** to locate current active costing version.
4. To change cost price click **Price > Item price** in the **Costing version setup** form.
5. View revaluation results by clicking **Transaction > Inventory > Settlements** in the **Item** form.

Step by Step

1. Go to **Inventory management > Purchase Order Details**, and create a purchase order according to the specification in the lab.
2. Overwrite the minimum purchase order quantity for the item.
3. Change the unit price for the item from USD 150 to USD 165.
4. Invoice update the purchase order by clicking **Posting > Invoice**. In the **Posting invoice** form specify posting date “07/25/2008”.
5. Click **Inventory management > Item details** to open the **Item** form. Locate item number 1401 and click **Transactions**.
6. In the **Transactions on item** form, click the last record with your purchase order reference. Verify the amount in the **Cost amount** field.
7. Click **Inventory > Settlements**.
8. In the **Settlements** form, click the adjustment line and then click **Ledger > Voucher**.
9. Verify the ledger account the adjustment was posted to, and the amount of the adjustment.
10. Click **Inventory management > Setup > Costing versions** to open the **Costing version setup** form.
11. Select costing version “Standard cost 2008”.
12. Click the **Recording** tab.
13. In the **From date** field, enter 08/01/2008.
14. Verify that the **Cost price** check box is selected.
15. Select “No” in the **Block activation** field.
16. Click **Price > Item price**.
17. In the **Item price** form, on the **Pending prices Overview** tab click **New** to create a new record.
18. Enter “1401” in the **Item number** field.
19. Verify that the price type is “Cost”.
20. Click **Inventory > Dimensions display**.
21. Select the **Size** and **Site** check boxes.
22. Select the **Save setup** check box and click **OK**.

23. In the **Size** field, select “6” from the drop-down list.
24. In the **Site** field, enter “2”.
25. In the **Price** field, type the new price for the item USD “180”.
26. Click **Save**.
27. Click **Activate** and verify that the cost price was updated by clicking the **Active prices** tab.
28. To verify and analyze revaluation results, open the **Item** form.
29. In the **Item** form, select item number 1401 and click **Transactions**.
30. Select the last record. Verify the amount in the **Cost amount** field. How does it differ from the originally posted amount? Why?
31. Click **Inventory > Settlements**.
32. Select the last line with adjustment and click **Ledger > Voucher**.
33. In the **Voucher transactions** form, view the accounts adjustments were posted to, and the corresponding amounts. What is the current cost price of the item 1401?

Lab 3.2 – Variance Analysis Statement

Pre-requisite

In order to start this lab, lab 3.1 should be completed.

Scenario

You are a Purchasing Agent in the Contoso Company. On July 25, 2008 you ran revaluation of the item 1401 because of the price change by the supplier. Besides, you remember that the last purchase order for this item was posted with the price different from the item's standard cost price.

Today, Inga, the Purchasing Manager, asks you to report the variances related to item 1401 Car Audio System Model 01.

Your task is to run the report that reflects the variances associated with item 1401.

Challenge Yourself

- Run the variance analysis statement report.
- Use date interval code "Current year" for the report.

Need a Little Help?

To open the Variance analysis statement report navigate to **Inventory management > Reports > Analysis > Variance analysis statement**.

Step by Step

1. Go to **Inventory management > Reports > Analysis > Variance analysis statement** to open the **Variance analysis statement** report.
2. In the **Variance analysis statement** form, in the **Date interval code** field, select "CY" (Current year) from the drop-down list. The **From date** and **To date** fields are filled in automatically with the corresponding dates.
3. In the **Sorting and grouping** field, select "Item" from the drop-down list.
4. In the **Column heading** field, enter "Position" to display the impact of variances on the value on-hand.
5. In the **Detail** field, select "Transaction" to display transaction details.
6. Click the **Item number** field, and then click **Select**. Use the query to select the item number.
7. Specify item number "1401" in the **Criteria** field.
8. Click **OK** to close the query.
9. Click **OK** to launch the report.

Summary

In this chapter we covered the main principle of the standard cost framework and its setup. The chapter introduced:

- Necessary setup as a prerequisite to using standard cost.
- Cost breakdown feature that enables the tracking of the cost composition of items held at standard cost across production levels, for planned, estimated and actual costs.
- Indirect costs and calculation formulas used for costing versions.
- Costing sheet feature that lets users consistently organize and structure the cost composition for each cost group for plan cost calculation, production estimation and production costing.
- Costing versions used to contain cost records about items, cost categories, and indirect cost calculation formulas.
- Variances as a difference between the production actual costs and the standard cost.

Using standard cost inventory valuation method no more requires inventory closing as the inventory receipts and issues are valued using an item's active standard cost.

Test Your Knowledge

Introduction

1. What is the main principle of the standard cost valuation method?

Variances

2. Select two types of production variances that can be set up and used with standard cost.
- ☐ Price Variance
 - ☐ Purchase Price Variance
 - ☐ Cost Change Variance
 - ☐ Substitution Variance
3. What is the formula for the Quantity variance type of production variance that can be set up and used with standard cost?
- ☐ $\text{Realized consumption} * (\text{Standard cost allowed} / \text{Standard quantity allowed}) - (\text{Realized cost amount} / \text{Realized consumption})$
 - ☐ $(\text{Standard quantity allowed} - \text{Realized consumption}) * (\text{Standard cost allowed} / \text{Standard quantity allowed})$
 - ☐ $\text{Standard cost lot size constant} * (\text{Realized quantity} / \text{Standard cost lot size}) - 1$
 - ☐ Cost contribution that is not in the standard cost, but in realized cost, or that is in standard cost but not in realized cost

Set Up Standard Cost Framework

4. If standard cost is the active inventory model, which two check boxes are locked and inactive in the **Inventory model groups** form?
- ☐ Registration requirements
 - ☐ Post financial inventory
 - ☐ Include physical value

() Fixed receipt price

Quick Interaction: Lessons Learned

Take a moment and write down three key points you have learned from this chapter:

1.

2.

3.

Solutions

Test Your Knowledge

Introduction

1. What is the main principle of the standard cost valuation method?

MODEL ANSWER - Inventory receipts and issues are valued using an item's active standard cost and inventory closing is not required for the standard cost valuation method.

Variances

2. Select two types of production variances that can be set up and used with standard cost.

☒ Price Variance
☐ Purchase Price Variance
☐ Cost Change Variance
☒ Substitution Variance

3. What is the formula for the Quantity variance type of production variance that can be set up and used with standard cost?

☐ Realized consumption * (Standard cost allowed/Standard quantity allowed) – (Realized cost amount / Realized consumption)
☒ (Standard quantity allowed – Realized consumption) * (Standard cost allowed/ Standard quantity allowed)
☐ Standard cost lot size constant * (Realized quantity / Standard cost lot size) - 1
☐ Cost contribution that is not in the standard cost, but in realized cost, or that is in standard cost but not in realized cost

Set Up Standard Cost Framework

4. If standard cost is the active inventory model, which two check boxes are locked and inactive in the **Inventory model groups** form?

☐ Registration requirements
☐ Post financial inventory
☒ Include physical value
☒ Fixed receipt price

CHAPTER 4: MARKING

Objectives

The objectives are:

- Introduce marking functionality in Microsoft Dynamics AX 2009.
- Mark sales orders against purchase order lots.
- Learn how dimensions influence marking process.
- Learn the rules of the item's cost price calculation.
- Mark sales orders against purchase orders across dimensions and warnings.
- Mark complete lots between sales orders and purchase orders.

Introduction

Marking is a process in Microsoft Dynamics AX that allows you to link, or mark, an issue transaction to a receipt transaction. Marking can occur either before or after a transaction is posted. You can use marking when you want to be sure of the exact cost of the inventory when the transaction is posted or when the inventory close is performed.

Marking is based on the cost of an inventory receipt (lot) and is considered by inventory closing. During inventory closing the marking overrules the item's inventory model setting, FIFO, LIFO and other inventory models that are ordinarily used for finding the cost price for issues except for standard cost. Inventory closing always uses the cost price from the marked receipt.

NOTE: *Marking does not work with the items that have inventory model Standard cost. These items are valued at a standard cost entered for the item.*

Demonstration: Marking a Sales Order against a Purchase Order Lot

Scenario: One of the biggest customers of the Contoso Company, The Pelican Wholesales, orders 50 High-Definition DVD Players required for a special installation. The competition being very aggressive, the customer states it would have to pay much less than its usual sales price to do business with the Contoso Company. The customer also points out that it could wait a couple of weeks for delivery, if it is necessary. The required item is available on hand currently. But after research, the purchase price paid does not give enough margin to be competitive by applying a larger discount than regular discount.

After communicating with the purchase department, the Contoso Company was able to place a special order with the supplier for 100 of those DVD players, being delivered in two weeks at a very good purchase price. Now the salesperson can place a sales order for The Pelican Wholesales that gives a larger discount than regular discount. Because there is a special purchase that partially covers this order with a reduced cost (so the sales line margin is still acceptable), the sales order clerk will use the marking functionality to link this sales order with the specific purchase order, keeping financial inventory value of the transaction right on track even if this product was not attached to inventory dimension tracking at this level of detail.

Now you can create the previous scenario by following these steps:

Prerequisite: Create a purchase order with vendor 1203 for 100 pieces of item 1706 High-Definition DVD Player for delivery two weeks from today's date. Set the purchase price to USD 10 lower than the ordinary purchase price. Invoice update the purchase order.

1. Create a sales order with customer 1203 for warehouse 21 and attach a sales order line for 50 pieces of item 1706.
2. From the sales order line click **Inventory > Marking**.
3. View the receipts that can be marked against the sales order line.
4. Select the **Set mark now** check box for the five batches you want to mark against, and in the **Mark now** field ten pieces will be entered automatically.
5. Click **Apply** and the value "10" moves to the **Marked** field and green check mark appears next to the batch. The green check mark indicates that a marking update has been made between issues and receipts with the same inventory dimension value.
6. Click **OK** and exit the dialog box.
7. Go back to the sales order. Perform picking list update and picking list registration. Then packing slip update the sales order.
8. You can now see that the sales order line has been marked against the receipt lots that you selected by viewing the marking in the following ways:
 - Select the sales order line and then click **Inventory > Lot > Lot transactions > General tab > Reference lot**.
 - Select the sales order and then click **Inquiry > Packing slip > Lines tab > Inventory > Lot transactions > General tab > Reference lot**.

Notes

You cannot see the lot number itself on the printed packing slip, unless you modify the report, because it is really a type of inventory transaction. However, as in the example above you can see the marking if batch or serial numbers are used as these are printed on the packing slip update.

You cannot perform manual markings if the item requirements have been transferred to Picking on output orders or to Picking list registration in the **Sales order** and/or **Production order** forms.

Dimensions and Marking

What can be marked is primarily determined by the inventory dimension setup of the financial inventory. If in the dimension group attached to an item the dimension is included in financial inventory, you can only mark issues against receipts with the same dimension value.

In the following diagram you can see that the dimension Warehouse is included in Financial inventory for the dimension group N-W Standard which is attached to item 1000. Therefore, when you try to mark an issue from warehouse 21 for 10 pieces of item 1000 only receipts at warehouse 21 will be displayed and can be marked against, although there are also receipts at warehouse 23 and 22.

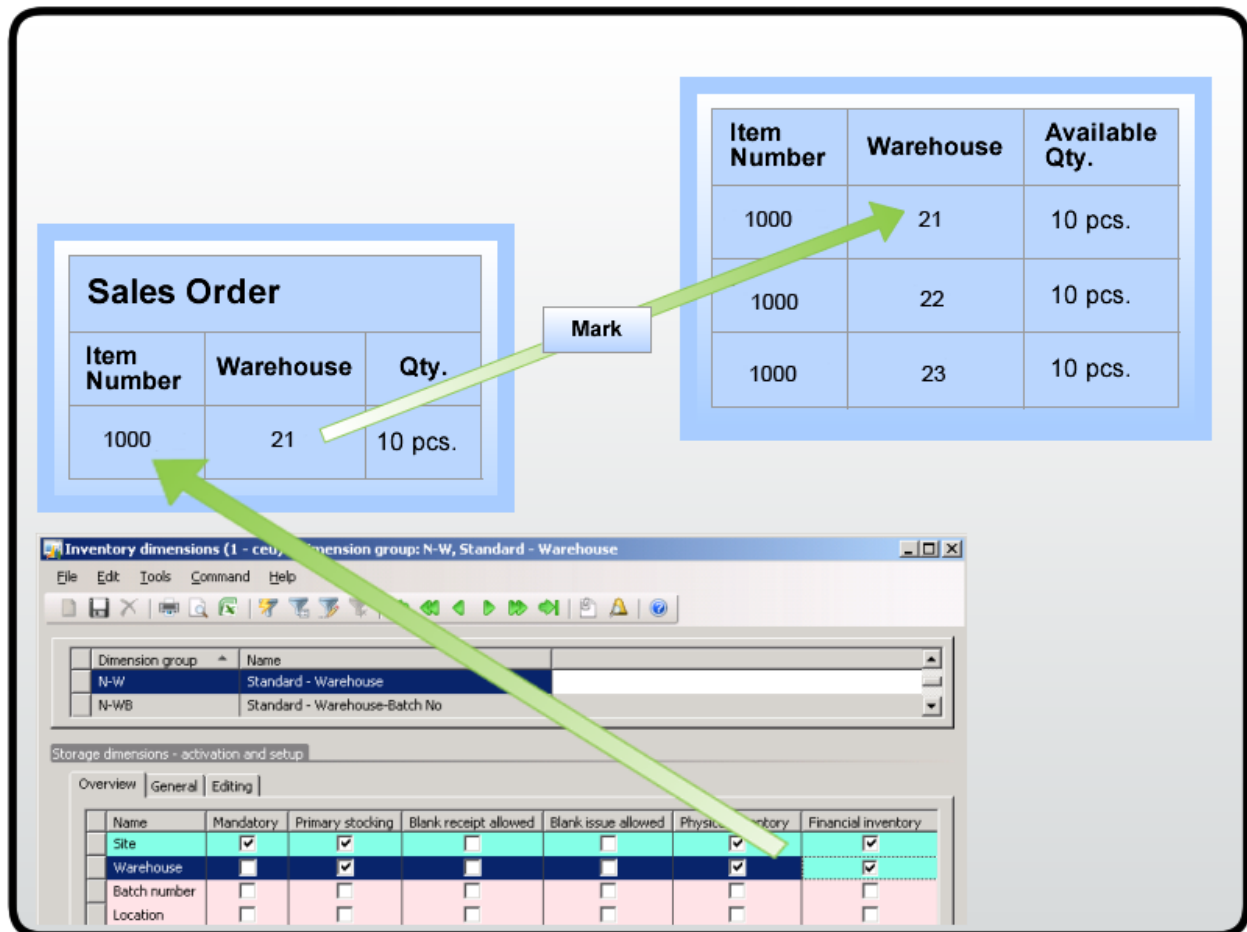


FIGURE 4.1 MARKING – WAREHOUSE A PART OF FINANCIAL INVENTORY

However, if a dimension is not part of financial inventory then you can mark across dimension values. For example, if you operate with an item in connection with warehouses, issues in warehouse 21 can be marked on receipt in warehouse 22 if the warehouse dimension is not included in the financial inventory.

Cost Price Calculation

When a marked sales order line is Packing slip updated or Invoice updated, the item consumption and the cost price are determined according to the following rules:

- If the current item has a batch or serial number which is included in the financial inventory, the marking is ignored and the cost price is calculated. The cost price calculation is based on a running average of the on-hand inventory.
- If the current item does not have a batch or serial number included in the financial inventory, the financially updated quantity and the cost value of the marked lot are summarized and a running average cost price is calculated for the lot.
- If the inventory model group indicates that physical updates should be included when calculating the cost price, the physical updated items are also included in the calculation of the running average cost price.
- If the marked lot is neither physically nor financially updated, the marking is ignored and the cost price is calculated. The cost price calculation is typically based on a running average of the on-hand inventory.

Notice that an average cost price is always calculated for the entire lot, even if only a small subset of the lot is marked for the sales order line.

When the inventory is closed or adjusted, item issues and item receipts are settled according to the marking if the following conditions are fulfilled:

- Batch or serial numbers included in the financial inventory, are not used.
- Marking has not been implemented across inventory dimensions included in the financial inventory.
- Both issue and receipt are financially updated either before or on the closing date.

If the first two of these conditions have not been fulfilled, the marking is canceled automatically and transactions are closed or adjusted, just as if the transactions had not been marked. If the third condition has not been fulfilled, the issue transactions are not settled in connection with the current closing, but the marking is kept.

Marking Form

Open the **Marking** from by clicking the **Inventory** button from:

- Sales order lines
- Purchase order lines

- Inventory journal lines
- Item transaction
- Production orders

For example, when selecting **Marking** from a sales order line, the following dialog box appears.

FIGURE 4.2 MARKING FORM

Upper Pane of the Marking Dialog Box

The top half of the dialog box displays information from the current reference, that is:

- Where the dialog box was opened from (sales order, production order and other references).
- Order number and lot ID of the line it was opened from.
- The **Quantity** field shows the total quantity of the current lot with the inventory dimensions shown in the **Inventory dimensions** field.
- The **Remainder** field shows the quantity available for marking. For example in the previous screenshot if you had already marked forty pieces from the receipt. Then the **Remainder** field would be blank.

- The **Mark now** field shows the quantity you specified to mark in the **Mark now** field lower pane of the dialog box.
- In the **Marked** field, you see the quantity that is marked.

Notice the following about transactions in the **Marking** form:

- If the inventory transactions have been closed because of closing or adjusting the inventory, they are not displayed in the **Marking** form.
- Only open transactions can be marked and are shown in this dialog box.
- The dialog box cannot be used to check how an item lot was marked originally.

Lower Pane of the Marking Dialog Box

The lower pane of the **Marking** form displays the lots available for marking. The pane displays a line with the total quantity for each combination of inventory dimensions included in the financial inventory. Although, you should notice that if, for example, you receive the same batch number but in two different lots, two lines are shown here.

However, if the dimension is not included in financial inventory then receipts with all dimension values are show in this pane. If, for example, Warehouse is not included in the financial inventory for an item, receipt lots at all warehouses are displayed regardless of the issue dimension value.

Enter the quantity of the lot to be marked in the **Mark now** field and then click **Apply** and the quantity is transferred to the **Marked** field. Alternatively, select the **Set mark now** field to automatically fill in the field with the remainder quantity.

Marking Across Dimensions and Warnings

You can only mark across dimension values if the dimension in the dimension group is not included in the financial inventory.

If one of the dimensions you set up for a dimension group for an item is set up as not having **Financial inventory** selected and marking happens across dimensions, you will receive a question mark warning that the transactions for the receipt and issue do not match. This may occur in the following scenario.

Scenario – Marking across Dimensions

You have an item for which the dimension group has the **Financial inventory** check box selected for Warehouse but not for Batch number. Batch number is therefore not included in the financial inventory.

You create two purchase order lines for two pieces each of the item. You attach the batch number '1' to the first line and batch number '2' to the second line. Both purchase order lines are to be received at warehouse 21.

A customer calls and orders two pieces of the item. You mark the sales order line order against batch number '1', because this has the lowest cost price letting you generate the greatest revenue from the sale.

At a later point in time, the customer calls and informs you that they need the freshest batch of the item. You inquire about the batches available and enter batch '2' on the sales order line. The transactions for the dimension value marked against each other when you first marked the order have been changed. You therefore receive the question mark warning as there is now a mismatch between dimension values.

The screenshot shows the 'Marking (1 - ceu)' window with the following data:

Reference	Number	Lot ID	Quantity	Remainder	Marked	Mark now
Sales order	SO-100156	00019273_068	1.00		1.00	

Below the table, the 'Mark on' section shows:

Reference	Number	Lot ID	Quantity	Remainder	Marked	Mark now	Set mark now	
Purchase...	000094	00019271_068		-1.00	1.00		☐	?
Purchase...	000094	00019271_068	2.00	1.00			☐	
Purchase...	000094	00019272_068	2.00	2.00			☐	

At the bottom, the 'Account number' is 1001, 'Inventory dimensions' are Batch number=2, Warehouse=21, Site=2, and 'Cost price' is 0.00. The 'Name' field contains 'Earth Televisions'. The 'Expected date', 'Physical date', 'Packing slip', and 'Financ' fields are empty. The 'OK', 'Cancel', 'Apply', and 'Auto' buttons are visible at the bottom right.

FIGURE 4.2 RECEIPT AND ISSUE DIMENSION MISMATCH

Marking Complete Lots between Sales Orders and Purchase Orders

When a marking is updated, it is checked whether the whole lot is marked for the same issue, for example, a sales order line. When a sales order line is fully marked for only one purchase, the **Item reference** fields are updated automatically with a marked purchase number. In the same manner, the **Item reference** fields on the purchase order will be updated automatically with the order number if the purchase is fully marked for the order line.

NOTE: *The purchase order reference is also updated on the sales order when the sales order line is reserved from one lot. However in this case, when this receipt lot is not completely marked against the sales order the purchase order line is not updated with the sales order reference.*

Lab 4.1 - Marking

Scenario

The Contoso Company has received a special deal from its vendor Datum Receivers on their purchase order for 50 Lamp for LCD Video Projector Model 01 (item number 1507); Datum Receivers is selling these lamps to the Contoso Company for a unit price of 250.00 because of a minor defect of the lamps. One of the Contoso Company sales representatives is calling his or her best customers to offer the lamps at a lower than usual price (250.00 each). As a result, David Galvin (7221) places an order for 20 of these lamps. Because of the special pricing involved, the sales order entry must be marked against this special purchase for accurate margin calculation.

Your task is to create a purchase order for the 50 lamps with the special price, and then create a sales order for the 20 lamps, marking it against the purchase order you just created. Afterward, check that the Purchase order number has been linked to the sales order.

Challenge Yourself

1. Create the purchase order.
2. Note the Purchase order number.
3. Create the sales order and mark it.

Need a Little Help?

1. Create a purchase order for 50 items 1507 from vendor 2001 at 250.00 each.
2. Note the Purchase order number.
3. Enter a new sales order for customer 2012 for 20 items 1507 and mark it against purchase order created in step 1.

Step by Step

1. From the Navigation Pane, click **Accounts payable > Purchase Order Details**.
2. Press CTRL+N to create a new purchase order.
3. In the **Vendor account** field, enter "2001".
4. Click **Yes** to transfer vendor information.
5. In the **Warehouse** field, enter warehouse "21".
6. Click **OK**.
7. Click the lines, and then press CTRL+N to create a new line.
8. Click the **Item number** arrow, and then click "1507".
9. In the **Quantity** field, type "50".
10. In the **Unit price** field, type "250.00".
11. Note the Purchase order number.
12. Click **Save** and close the form.
13. Click **Accounts receivable > Sales Order Details**.

14. Press CTRL+N to create a new sales order.
15. In the **Customer account** field, enter “2012”.
16. In the **Warehouse** field, enter warehouse 21.
17. Click **OK**.
18. Click the lines, and then press CTRL+N to create a new sales line.
19. Click the **Item number** arrow, and then click “1507”.
20. In the **Quantity** field, type “20”.
21. In the **Unit price** field, type 250.00.
22. Click **Inventory > Marking**.
23. In the **Marking** form, in the **Mark on** grid, click the purchase order you created.
24. Select the **Set mark now** check box for the line.
25. Click **Apply**.
26. Click **OK**.
27. On the Sales order, in the sales lines, click the **Other** tab.
28. Note the Purchase order number that is displayed in the **Item reference** group.
29. Close all the forms.

Summary

This chapter explained how using the marking functionality enables you to mark specific issues against specific receipts. The chapter also discussed how to use marking to determine the financial value instead of using the inventory costing process.

Test Your Knowledge

Introduction

1. What is marking?

2. Which of the following statements about marking are true? (Select all that apply.)
- ☐ Marking is based on the cost of an inventory receipt and is considered by inventory closing.
 - ☐ You can see the receipt lot number on the printed packing slip.
 - ☐ If the marked lot is neither physically nor financially updated, the marking is ignored and the cost price is calculated.
 - ☐ The cost price calculation is based on a running average of the on-hand inventory.
3. Which inventory model attached to the item does not allow using marking functionality?
- ☐ Weighted average
 - ☐ LIFO
 - ☐ FIFO
 - ☐ Standard cost

Dimensions and Marking

4. If an item has dimension Warehouse included in financial inventory, how does this influence marking?
- ☐ Issues can only be marked against receipts with the same warehouse.
 - ☐ Issues can only be marked against receipts with the different warehouses.
 - ☐ Only financially updated issues can be marked against receipts.
 - ☐ Warehouse should be specified when marking issues against receipts.

Cost Price Calculation

5. What happens if both issue and receipt are financially updated after inventory closing date? (Select all that apply.)
- ☐ Marking issues against receipts is kept.
 - ☐ Marking issues against receipts is cancelled.
 - ☐ Issue transactions are settled against the marked receipts.
 - ☐ Issue transactions are not settled against the marked receipts.

Quick Interaction: Lessons Learned

Take a moment and write down three key points you have learned from this chapter:

1.

2.

3.

Solutions

Test Your Knowledge

Introduction

1. What is marking?

MODEL ANSWER - Marking is a process in Microsoft Dynamics AX that allows you to link, or mark, an issue transaction to a receipt transaction.

2. Which of the following statements about marking are true? (Select all that apply.)

- ☒ Marking is based on the cost of an inventory receipt and is considered by inventory closing.
- ☐ You can see the receipt lot number on the printed packing slip.
- ☒ If the marked lot is neither physically nor financially updated, the marking is ignored and the cost price is calculated.
- ☐ The cost price calculation is based on a running average of the on-hand inventory.

3. Which inventory model attached to the item does not allow using marking functionality?

- ☐ Weighted average
- ☐ LIFO
- ☐ FIFO
- ☒ Standard cost

Dimensions and Marking

4. If an item has dimension Warehouse included in financial inventory, how does this influence marking?

- ☒ Issues can only be marked against receipts with the same warehouse.
- ☐ Issues can only be marked against receipts with the different warehouses.
- ☐ Only financially updated issues can be marked against receipts.
- ☐ Warehouse should be specified when marking issues against receipts.

Cost Price Calculation

5. What happens if both issue and receipt are financially updated after inventory closing date? (Select all that apply.)

- ☒ Marking issues against receipts is kept.

- () Marking issues against receipts is cancelled.
- () Issue transactions are settled against the marked receipts.
- (√) Issue transactions are not settled against the marked receipts.

CHAPTER 5: CLOSING INVENTORY

Objectives

The objectives are:

- Introduce the inventory closing procedure in Microsoft Dynamics AX 2009.
- Perform pre-closing actions before running inventory close.
- Perform an inventory closing.
- Perform an inventory recalculation.
- Perform manual inventory adjustments.
- Perform inventory close cancellation using batch framework.

Introduction

The Microsoft Dynamics AX inventory close process settles issue transactions to receipt transactions based on the inventory valuation method that is selected in the item's inventory model group.

Until inventory close or recalculation is run, however, Microsoft Dynamics AX posts issue transactions at the calculated running average cost price, except for items that have inventory model Standard cost attached.

After inventory close, it is no longer possible to post in periods prior to the inventory close date that you set unless you cancel a completed inventory close process. For example, if inventory close is run for the period ending January 31, Microsoft Dynamics AX will prevent any transactions from being posted with a date prior to January 31.

NOTE: In Microsoft Dynamics AX 2009, inventory close is not required with the Standard cost valuation method.

The frequency of running inventory close varies by company, but transaction volume will have an impact on how often you choose to run inventory close. In general, most companies run inventory close as part of their month-end closing and reconciliation procedures.

If adjustments to inventory and the general ledger are necessary during the course of a month or other inventory period, you can run inventory recalculation instead of inventory close. Inventory recalculation makes adjustments, but not settlements, to inventory transactions.

Items in inventory are assigned to one of three inventory types: item, bill of materials (BOM), or service. Inventory close will perform the same functions for all three types, but for service items, inventory close will still settle issues to receipts.

Pre Closing Actions

Before you perform inventory close, it is recommended to complete the tasks described below.

1. Validate that the inventory model assigned to the item on the **Inventory model** tab of the **Inventory model groups** form is accurate. Inventory close will settle transactions to each other based on the current inventory valuation method assigned to the item.
2. View or print the **Open quantity** report by clicking **Inventory management > Periodic > Closing and adjustment > Close procedure > 1. Check open quantities**. This report will print a list of inventory transactions that will remain open after the inventory close is performed.

For example, you have an item that includes the following transactions:

- Inventory physical receipt for a quantity of 10
- Inventory financial issue for a quantity of 3

In this case, the report will show an open quantity of 3 since this financial issue cannot be settled to any transactions.

The Open quantity report also includes a **Show receipts** option that lets you view all the physical receipts posted for an item and all the open quantities that will remain after an inventory close for the date specified.

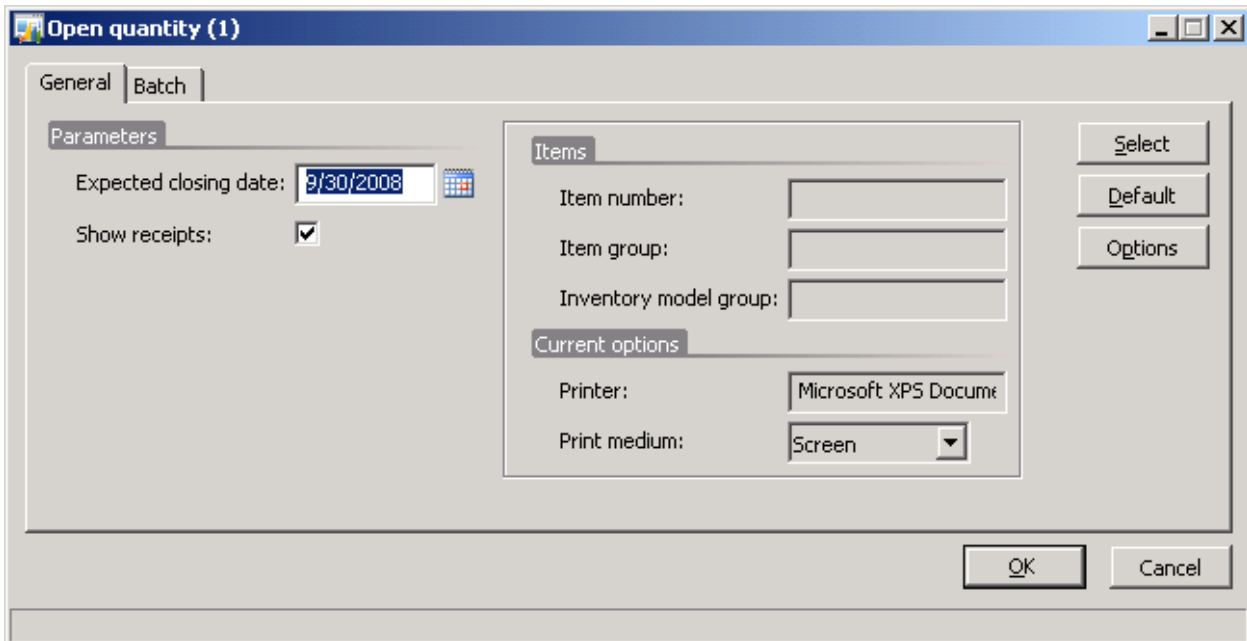


FIGURE 5.1: OPEN QUANTITY FORM

3. Print or view the **Investigation of cost price for receipts** report by clicking **Inventory management > Periodic > Closing and adjustment > 2. Check cost prices**. This report allows you to enter a maximum deviation percentage. Items that appear on this report will exceed the maximum deviation percentage. The deviation is based on the item cost price, item or median cost price, or median.

For example:

An item contains a cost price of USD 5.00. When a purchase order invoice was posted for this item, the cost price entered was USD 15.00.

When printing this report the maximum deviation percentage was set to be 30% and to use the item cost price as the base. This purchase order would appear on the report since the cost of the item posted, USD 15.00 is more than 30% greater than the item cost price, USD 5.00.

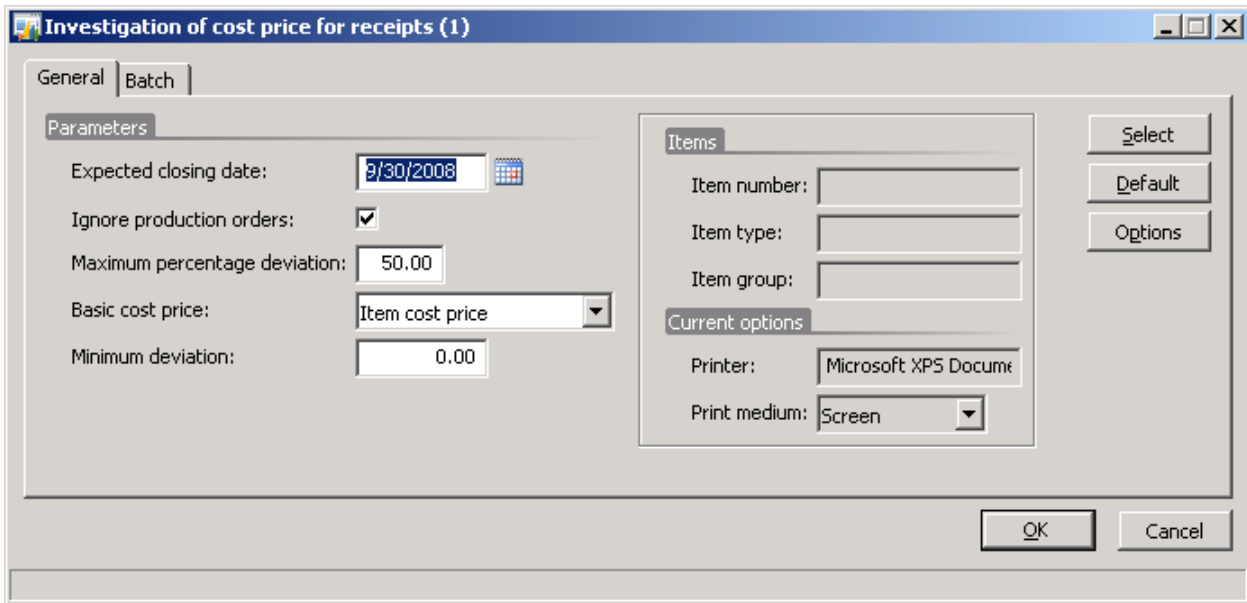


FIGURE 5.2: INVESTIGATION OF COST PRICE FOR RECEIPTS FORM

Inventory Closing Procedure

As it was already mentioned, inventory close will settle issue transactions to receipt transactions based on the inventory model you select in the item's inventory model group setup. After all the prerequisites for inventory closing is completed, inventory close can be performed.

The **Inventory close** form is used for closing procedure. The form can be accessed by clicking **Inventory management > Closing and adjustment > Close procedure > 3. Close**

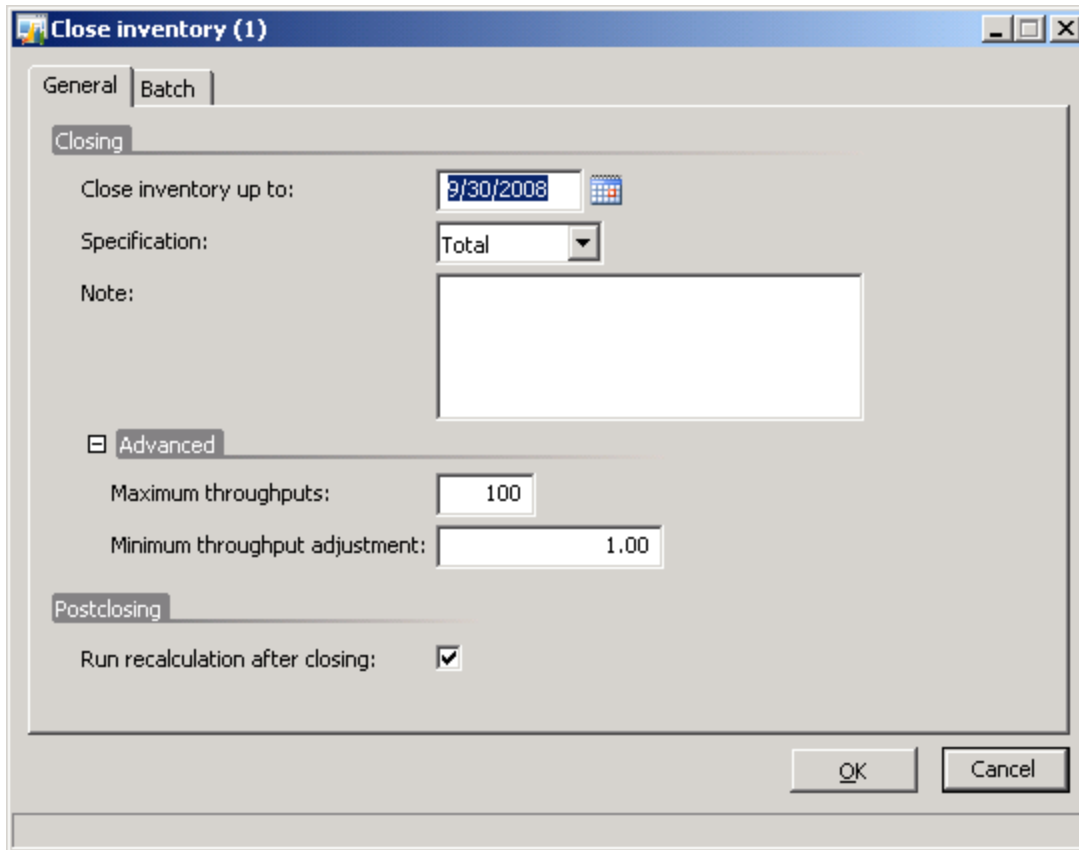


FIGURE 5.3: CLOSE INVENTORY FORM

The **Inventory close form** allows to recalculate and close the inventory up to a specified date, and match inventory receipts and issues for the transactions that are not financially matched through inventory dimensions in order to determine the real value of the on-hand inventory.

The following table describes the fields of the **Close inventory** form.

Field	Description
Close inventory up to	Enter the date for the period for which you want to close inventory. You can change this from the default date provided, but only to a date after the latest closing. NOTE: <i>The first time the inventory closes, the default is the ending date of the previous month. Subsequently, the default is the ending date of the month that follows the latest active closing.</i> For example: Inventory transactions exist for January, February, and March. If value in the Close inventory up to field is February 28, only transactions dated equal to and prior to this date will be reviewed by inventory close to select settlements and adjustments. There will be no settlements or adjustments made on transactions dated after February 28. The next time inventory close is run after February 28, the

	default date provided in the Close inventory form will be March 31.
Specification	The option you select determines the level of detail that will be posted to the general ledger. - If you select the Total option, the sum values for each unique ledger account will be posted to the general ledger as a total figure. For example: Inventory close is to make settlements to five different items. As long as the transactions to be adjusted all contain the same general ledger account numbers, then inventory close will sum the values being posted and create only one general ledger journal entry. - If you select the Item group option, then the sum values for each unique item group will be posted to the general ledger. For example: Inventory close is to make settlements to five different items. These items belong to three different item groups. A separate transaction will be posted in the general ledger to summarize each item group. - If you select the Item number option, then the value for each unique item will be posted to the general ledger. For example: Inventory close is to make settlements to five different items. These items belong to three different item groups. The transaction posted in the general ledger will be a summary based on the item group.
Maximum throughputs	The number of iterations inventory close will perform during the close process. The default is 50. A high figure gives on circularity a closer approximate cost price but a worse performance. Maximum throughputs are used for Bill of Material accuracy as well as Inventory Transfer accuracy. Bill of material example: Finished Good (level 0) Subassembly (level 1) Subassembly (level 2) Subassembly (level 3) Subassembly (level 4) Subassembly (level 5) If the maximum throughput value is 4, since the lowest level of the BOM structure is 5, then any cost changes that might have occurred on level 5 will not appear in the finished good item.
Minimum throughput adjustment	Works in conjunction with Maximum throughputs. The value entered for Minimum throughput adjustment represents the minimum currency amount to be reflected in the next level. The default is 1.00. A low figure gives on circularity a closer approximate cost price but a worse performance. The value you enter should be at least as deep as the lowest level in a Bill of Material.

	Bill of material example: Finished Good (level 0) Component A (level 1) Component B (level 1) Assume that the maximum throughput value is greater than 2 and the minimum throughput adjustment is set to USD 5.00. If the Component B item has a settlement that is less than USD 5.00, the cost of this settlement will not be rolled-up and reflected in the cost of the finished good item.
Run recalculation after closing	After the closing has completed, run a recalculation from the closing date to the current date. For example: Assume today is March 10; and inventory close was performed up to February 28. If the Run recalculation after closing option is selected, then the system will close inventory as of February 28 and will run recalculation on the inventory transactions dated February 28 through March 10.

Procedure: Close Inventory

To run the close procedure, follow these steps:

1. Click **Inventory management > Periodic > Closing and adjustment > Close procedure > 3. Close** to open the **Close inventory** form.
2. In the **Close inventory up to** field, type or select the end date for which you want to close inventory.
3. Select the **Run recalculation after closing** check box if you want to run a recalculation up to the current date after the closing is completed.
4. Set any other options you want to choose for this inventory close.
5. Click **OK**.

After inventory close is completed, the results will be reported in the **Closing and adjustment** form.

In some cases when inventory close is being processed on one or more than one client, you may want to pause the process. To pause the process click **Calculation > Pause calculation** in the **Closing and adjustment** form.

When inventory close has been paused, you must resume the process in order for it to complete. To resume inventory closing click **Calculation > Resume calculation**.

You may also need to reverse a completed inventory close, returning settlements to the state they held before adjustments were made. When you reverse a completed inventory close, inventory is also reopened to allow for posting in the applicable period.

Procedure: Reverse a Completed Inventory Close

To reverse inventory close, follow these steps:

1. In the **Closing and adjustment** form, on the **Overview** tab, select the record of the inventory closing to be reversed.
2. Click **Cancellation** to open the **Cancellation - Initialize** form.
3. Use the **Cancellation - Initialize** form to specify options for canceling one voucher or all recalculations.
4. Click **OK**.

Inventory Recalculation

Before inventory closing in Microsoft Dynamics AX 2009, you can perform a process which recalculates the inventory cost price as of a given date. A recalculation is similar to running an inventory closing in Microsoft Dynamics AX 2009, but with some important differences:

1. The recalculated inventory transactions will **not** be closed as happens when you perform inventory closing.
2. You can run a recalculation on specific items, item groups or warehouses.

NOTE: Be careful when running a recalculation for a group of items or specific items because they may be part of a BOM where the greater BOM is not included in the recalculation job. If this is the case, the greater BOM item will not be recalculated with the modified costs.

Inventory closing is always performed for all items and for every warehouse. A recalculation is therefore also known as simulated inventory closing.

As with inventory closing, Microsoft Dynamics AX 2009 also matches inventory receipts and issues for the transactions that are not financially matched through inventory dimensions to determine the real actual value of the on-hand inventory. If some transactions have been adjusted or if financial matches have been made, the consequences will only be visible after an inventory closing.

When a recalculation is performed, it is calculated according to the inventory model of the item's inventory model group.

The purpose of a recalculation is to calculate the actual values of your inventory for a present period (today). You do not close your inventory, and it can only be run for a smaller part of your inventory.

Since inventory recalculation can be run on a subset of items, and because inventory recalculation will not make an adjustment for less than the throughput amount, it is not as accurate as an inventory close and should not be relied on to replace inventory close.

Procedure: Run a Recalculation

To recalculate the inventory and match item issues with receipts in order to determine their cost price without closing the inventory, follow these steps:

1. Click **Inventory management > Periodic > Closing and adjustment > Recalculation** to open the **Recalculation** form.
2. In the **Recalculate inventory up to** field, specify the date as of which you want to recalculate the inventory value.
3. In the **Specification** field, enter the specific level within the General ledger for which you want to create ledger postings (Item number, Item group, Total).
4. In the **Note** field, enter any additional information about the recalculation. For example, explain why you decided to perform a recalculation, on which items or item groups and other relevant information.
5. In the **Advanced** section enter:
 - Maximum throughputs = Number of allowed loops
 - Minimum throughput adjustment = precision parameter
6. Use the **Select** query to select specific items and item groups on which to perform temporary calculations or calculate items which may have large fluctuations in cost and must be specifically addressed. Also if you are not planning to recalculate your complete inventory, use the **Select** query to select specific items or item groups.
7. Click **OK** to start the recalculation.

As soon as the recalculation is run, click the **Settlements** button to see the changes made by the system. View the changes by highlighting a line and clicking the **Inventory > Transactions**, where each transaction was physically derived. This helps to determine if the transaction is sound.

You can also print the adjustment settlements by clicking the **Print** button from the **Closing and adjustment** form.

You may also view the transactions which the system has created based on the inventory model.

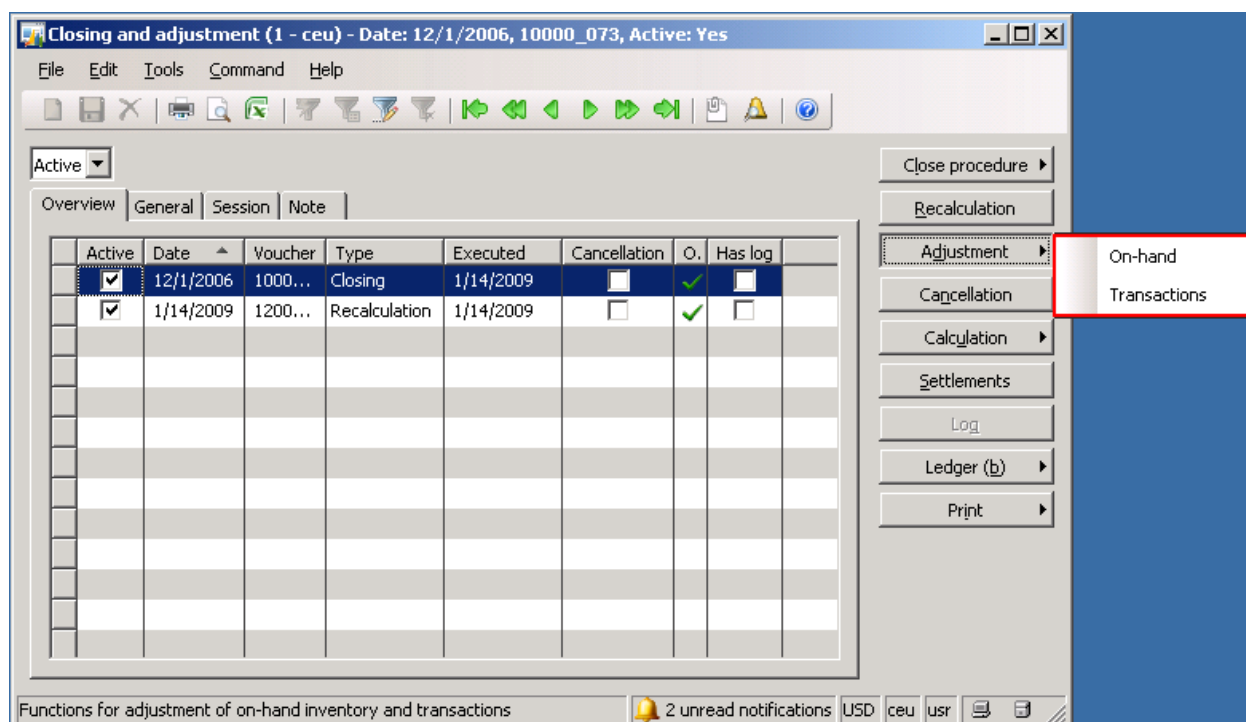
After review of the settlements, the user may make adjustments. This topic is discussed in the next section.

Manual Inventory Adjustments

There are two possibilities to manually adjust your inventory values in Microsoft Dynamics AX 2009:

- Adjust transactions
- Adjust on-hand inventory

You can appreciate or depreciate the value of on-hand inventory or inventory transactions in the **Closing and adjustment** form. Depending on where you are in the closure process, the procedure is identical, but the prerequisites and consequences are different.



Active	Date	Voucher	Type	Executed	Cancellation	O.	Has log
☒	12/1/2006	1000...	Closing	1/14/2009	☐	☒	☐
☒	1/14/2009	1200...	Recalculation	1/14/2009	☐	☒	☐

FIGURE 5.4: CLOSING AND ADJUSTMENT FORM

Performing Adjustments for Transactions

If you have not closed inventory, you may only make adjustments of transactions with the receipt status of "Purchased."

Adjustments of transactions with a receipt status of Purchased may be executed without prior closing. If you perform an adjustment of one or more transactions, the item's inventory value will only be calculated following a recalculation. The following section provides an example of how you perform an adjustment for a transaction.

Example

A purchase order was received and invoiced for 10 items 3004 Tweeter - Standard Speaker at USD 46.50 total. An additional charge of USD15.00 was incurred for the total lot.

By highlighting the line to adjust, you can enter in the **Edit now** field the amount to adjust the cost (positive or negative). In this example, you appreciate the value by USD15.00 (positive USD15.00).

Once completed, click the **Post** button, which creates a Posting journal.

Now return to the posting journal header and click the **Settlements** button. You see that there is a posting to the Adjustment account for this item of USD15.00. Then in the **Settlements** form, if you click the **Inventory** button, it shows that the Purchase order total has now been adjusted from USD 46.50 to USD 61.50, a positive adjustment of USD15.00.

Performing Adjustments on On-hand

You can only perform this kind of adjustment on on-hand inventories as soon as the inventory has been closed.

The procedure for appreciating or depreciating on-hand inventory is the same as for adjusting value for transactions. However, the prerequisites and consequences are different:

- On-hand inventories can only be adjusted once you have closed the inventory, as the adjustment is performed on an on-hand inventory of a known value.

If you edit on-hand inventory, the previous closure cannot be canceled until the adjustment is canceled. Both cancellations are performed by clicking the **Cancel** button in the **Closing and adjustments** form.

See the following example to see how to perform this kind of adjustment.

Example

Go to the **Item details** form and create a new item. Enter a cost price of USD 2.50 on the **Price/Discount** tab.

For this example, you purchased 100 pieces at USD 2.50 each. Invoice the purchase order so that you now have on-hand inventory.

Recalculate your costs by closing your inventory for this month.

Make a transaction adjustment to the purchase order to increase it by USD 100.00 in the **Edit now** field.

Look at the transaction created by the posting adjustment for your purchase order. It shows that the system has updated the purchase amount (total) to USD 350.00.

If you look at the financial transactions, there is an adjustment for USD100.00.

Pegging to the account you see the specific transactions created. Notice, for the highlighted line, the transaction text is "Closing Adjustment."

The new cost price is reflected in the **On-hand** form. Therefore, all new transactions (issues) will be made at this cost price.

You now sell 10 pieces at USD 3.00 each. Remember the current cost price is USD 3.50 per piece. When sold, a transaction record is created that displays that, physically from inventory 10 pieces were sold. Their value is USD 35.00. This is not the amount they were sold for, but it is their value in the system.

If you look at the transactions for the sale, you see the offsetting transactions for the sale and the cost of the goods sold.

By pegging deeper into the accounts and ledgers, you see how the amounts are split up to offset the loss of the sale because of the change in the cost price.

Procedure: Perform Adjustments on Transactions and On-hand

Follow this procedure to perform adjustments on both transactions and on hand.

1. Click **Inventory management > Periodic > Closing and adjustment**.
2. Select whether you want to perform an adjustment for transactions or on hand by selecting either the **On-hand** or **Transactions submenu** items.
3. Click the **Select** button and select the item, item group, or transaction that matches what you want to adjust through the standard query.
4. In the **Edit now** field, specify the amount by which you want to adjust the transaction or on-hand. Alternatively you may use the **Adjustment** button and adjust the item costs for all items displayed by a certain calculation chosen of five possibilities:
 - **Item cost price** – Costs are adjusted to the item cost price for an individual item. The item cost price is specified in the **Price** field in the **Item** form.
 - **Fixed cost price** – Insert a new self-defined price for the item transactions or the on-hand items. This price is not checked against other prices that have been used for the item.
 - **Amount** – With this option you can insert an amount (positive or negative) of which the transaction will be adjusted.
 - **Value** – Insert a new value (for the whole transaction or on-hand) to where Microsoft Dynamics AX is adjusting the new cost price to.
 - **Percentage** – Insert a percentage (positive or negative) about which the transaction or on hand will be adjusted.

When you have completed the adjustment, click the **Post** button to post your adjustment. Select the **Update ledger** check box if you have a General ledger integration and also fill the **Note** field with additional important information as to why this adjustment was posted. An Auditor might find your posted adjustments and need an explanation why you manually adjusted your inventory values.

Inventory Close Cancellation

In some cases, you may need to reverse a completed inventory close, returning settlements to the state they held before adjustments were made. When you reverse a completed inventory close, inventory is also reopened to allow for posting in the applicable period.

To adjust and close inventory, do recalculations (simulated inventory closings), cancel adjustments, and access information related to closing and adjusting inventory the **Cancellation – Initialize** form is used. The form can be opened by clicking **Inventory management > Periodic > Closing and adjustment > Cancellation**.

The options available in the form are provided in the following table.

Field	Description
Cancel one voucher	Select this option to cancel only the close, recalculation, posting, or adjustment selected.
Posting date used	Automatically completed from the transaction you selected in the Closing and adjustment form.
Voucher number employed	Automatically completed from the transaction you selected in the Closing and adjustment form. This is the voucher used on the original transaction if it was updated in the General Ledger .
Note	Enter a comment about the reverted transaction. The comment is saved in the transaction generated in the Closing and adjustment form.
Cancel recalculations	Select this option if you want Microsoft Dynamics AX to cancel the recalculations without specifying which recalculation to cancel.
Cancel all recalculations from	The date from which you want to cancel all recalculations; all recalculations from this date to the current date will be cancelled. For example, assume that you have performed calculations dated March 1, March 3 and March 5. If you enter the date of March 1 in the Cancel all recalculations from field, the calculations dated March 5, March 3, and March 1 will be canceled.
Note	Enter a comment about the reverted transaction. The comment is saved in the transaction generated in the Closing and adjustment form.

Inventory cancellation can be run using batch framework in Microsoft Dynamics AX 2009.

Each item is handled as a separate task by the batch framework and the batch framework will keep track of the dependencies between the tasks. All ledger postings will occur within their own Transaction Tracking System (TTS) scope.

Batch jobs are added to a queue, and are run automatically by a batch server. By using batch job when running inventory cancellation, you avoid slowing down your computer or the server during typical working hours.

Best Practices – Recommended Setup of Costing to Avoid Conflicts and Looping in Inventory Closing

Microsoft Dynamics AX 2009 provides the possibility of a very flexible configuration of the modules Inventory Management, Production, Accounts Payable, Accounts Receivable and Master Planning which indirectly effect Cost management. Customers can configure parameters to suit their specific requirements. The flexibility comes with the cost of complexity. The Customer should get aligned on the Customer's current and potential also future requirements to Cost management before configuring the system.

This lesson will focus on a set of recommendations by Microsoft but these should not be considered as the only option to configure the Inventory Management and Cost Management modules more a best practice.

It is recommended that the following setup should be completed for effective cost management in Microsoft Dynamics AX 2009:

- Ledger integration
- Dimensions
- Cost groups
- Cost categories
- Costing sheet
- Costing versions

Ledger Integration Setup

Integration to General ledger comes in the form of posting profiles, affiliated to the resources.

The posting profiles are designed to reflect the detailed transaction level existing in the module also called posting type. For each posting type the user can select a ledger account as the integrator to General ledger.

When setting up ledger integration there are several things to take into consideration:

- A posting type may require a different mapping to General ledger based on
 - Item type
 - Inventory model group/parameters
- At which aggregated level do I expect to report financial results from General ledger
- At which aggregated level do I expect to reconcile Inventory and General ledger

It's recommended that WIP is divided into 3 separate ledger accounts. In Microsoft Dynamics AX 2009 the physical inventory reports only focus on resources from the **Item** form and to make the reconciliation between the inventory and ledger easier it's recommended to have a special ledger account reflecting each resource type.

Dimensions

Costing management in Microsoft Dynamic AX 2009 offers means to setup the level of details at which cost and inventory value should be maintained, through the inventory dimensions. Microsoft Dynamic AX also offers, through financial dimensions, the ability to trace costs flow in ledger in relation to the organizational subdivision.

Inventory dimensions

Inventory dimensions give the flexibility of defining additional identification criteria for the item's cost and quantities. The inventory dimensions, identify the item dimensions which are relevant for tracking item's physical quantities, planning quantities on the item and for maintaining item's cost and inventory values.

In relation to costing and inventory valuation, the inventory dimensions identified as "financial Inventory " active, will determine the level of segregation at which the item's cost and the item's inventory value should be maintained.

It is strongly recommended to align the level of inventory value segregation to match that of the cost. In other word, there is little purpose in keeping the item's inventory value segregated per color, for instance, if the item cost is not maintained per item and color.

Financial dimensions

Financial dimensions are primarily designed for the purpose of ledger transactions analysis. Typically financial dimensions are used to model the organization and capture it on ledger transactions for later analysis and reporting purpose. The organizational/business structure can be modeled via selected financial dimensions (cost centers, cost objects) enabling to trace the organizational ownership of cost, capture it and reflect it in ledger.

Sites

A site is an inventory dimension which identifies a geographical location representative of a collection of warehouses and resources. In Microsoft Dynamics AX 2009, costs and inventory value are necessarily maintained per site, when multi site is enabled. The site is a financially active inventory dimension when multi site is active.

The site inventory dimension can be linked to selected financial dimensions bridging traceability across operations and financial to allow for profit and loss statement per sites.

Cost Groups

Cost groups provide the basis for segmenting and analyzing cost contributions in a manufactured item's calculated cost.

Cost groups can be used to collect and classify cost contributions according the nature of the resources. This allows the segmentation and classification of the cost composition for the purpose of:

- Deriving a projected sales price from the calculated cost , applying a profit over the cost collected on the cost group
- Calculating manufacturing indirect cost on the basis of the cost or measurements collected on the cost group
- Maintaining multi level standard cost roll up

Cost Categories

The function of the cost category in cost accounting is equivalent to the function of the chart of accounts in General ledger. Cost amounts are posted to cost categories through general ledger postings or cost accounting postings.

The cost categories, allows to:

- Classify the work centers 'activities
- Set rates to value the contribution resulting from a work center activity
- Identify the cost group under which the cost contribution resulting from a work center activity should be classified and collected.

It is important to note, that in Microsoft Dynamics AX 2009, entry of planned costs (item, cost categories, indirect cost) is performed through a costing version. The cost need to be activated in order to be applied for inventory valuation and product costing.

Costing Sheet

Create the costing structure applicable to the legal entity and define calculation for manufacturing applied indirect costs.

Through the costing sheet, cost groups are mapped in a structure. Additional calculation can be added enabling to derive and record applied manufacturing indirect costs.

Setting up the costing sheet involves two objectives. As the first objective, you define the format for displaying cost of goods sold information about a manufactured item or production order. The formatted display is termed a costing sheet. As the second objective, you define the basis for calculating indirect costs.

Costing Versions

Costing versions are user defined environments, meant to maintain planned costs. Costing versions can be used for a number of different purpose, such as for simulation, building next period planned cost or standard costs, updating panned or standard cost in the course of a period etc.

The costing version's costing type (standard cost, planned cost) identify the principles and constrains on entry and calculation of planned costs and prices in the costing version to respectively fit the standard costing and normal costing valuation method approaches.

Lab 5.1: Adjust Transactions

Pre-requisite for this lab

Create a new item number: 170315 (DVD Player-Training). Specify the following for the item:

- Item group: DVD Player
- Inventory model group: FIFO_PHY
- Dimension group: N-W

Scenario

You are a purchaser in the Contoso Company. You have to create and invoice-update three purchase orders. Each purchase order is created with the vendor Opal Electronics (Vendor account 1203) and the currency you are working in is USD.

- First purchase order: 10 units of DVD Player-Training at USD100.00 each to be received at warehouse 21. Posting date June 1, current year.
- Second purchase order: 10 units of DVD Player-Training at USD150.00 each to be received at warehouse 21. Posting date June 3, current year.
- Third purchase order: 10 units of DVD Player-Training at USD200.00 each to be received at warehouse 21. Posting date June 6, current year.

You receive a shipping bill, USD 70.00 per lot. Now you have to adjust the value of all items and write a note to indicate why you have adjusted the value.

You want to check the new inventory value and average cost price after the adjustment has been made.

Answer the question in Challenge yourself!

Challenge Yourself

1. Create and invoice-update the purchase orders according to the specification in the scenario.
2. Find out the cost price for the item and the average cost price.
3. Appreciate the transactions with the amount for the shipping per lot. Add a note when you post the adjustment explaining why have appreciated the transaction. Post the transaction.

Question: The company's auditor at a later point in time wants to see why the posted transactions have been appreciated. Where can the auditor see this information?

4. Check to see what the inventory value and the average cost for the item is after the adjustment has been made.

Need a Little Help?

1. Perform the adjustment to the transaction in the **Inventory management > Periodic > Closing and Adjustment** form.
2. Enter the amount you want to adjust the transaction by in the **Edit now** field.

Step by Step

1. Create the purchase order and lines according to the specification in the scenario.
2. Invoice update the purchase orders using their different posting dates.
3. Click **Inventory management > Item Details**.
4. Select the item “DVD Player-Training” and click **On-hand**. On the **On-hand** tab you can see that the total inventory value of the item is USD 4,500.00 and that the average cost price is USD 150.00.
5. To appreciate the transaction with the USD 70.00 shipping charge click **Inventory management > Periodic > Closing and adjustment**.
6. Click **Adjustment > Transactions**.
7. Select which transaction you want to adjust, by clicking the **Select** button and entering the selection criteria in the query.
8. Click **Adjustment > Amount**.
9. The **Adjustment with amount** dialog box opens.
10. In the **Amount** field, enter “70.00” and click **OK**.
11. Click the **Post** button.
12. The **Adjust transactions** dialog box appears. In the **Note** field, you can write a note explaining why you have appreciated the transactions.
13. Answer to the question: The company’s auditor can see the note associated with the adjustment on the **Note** tab of the **Closing and adjustment** form.
14. To see the inventory value and the average cost after the adjustment was made select the item DVD Player-Training in the **Item** form and then click **On-hand**. You can see that the cost price and average cost price are as follows:

On-hand (1 - ceu) - Closed: No, Item number: 170315, Item number: 170315, New Record

File Edit Tools Command Help

Overview On-hand

Identification

Item number: 170315

Dimension No.:

Closed: ☐

Item name: DVD Player-Training

Inventory dimensions

Configuration:

Size:

Color:

Site: 2

Warehouse: 21

Batch number:

Location:

Pallet ID:

Serial number:

On-hand

Physical inventory: 30.00

Physical reserved:

Available physical: 30.00

Ordered in total:

Ordered reserved:

Available for reservation: 30.00

On order in total:

Total available: 30.00

Physical cost amount:

Financial cost amount: 4,570.00

Cost price: 152.33

Physical inventory

Posted quantity: 30.00

Deducted:

Picked:

Received:

Registered:

Ordered in total

Arrived:

Ordered:

Various

On order:

Quotation receipt:

Quotation issue:

Units

☒ Inventory unit

☐ Sales unit

☐ Purchase unit

☐ Other units

Unit: Pcs

Transactions

Net requirements

Intercompany on-hand

Quantity adjustment

Counting history

Dimensions display

Identify item.

2 unread notifications USD ceu usr

FIGURE 5.5: ON-HAND FORM

Lab 5.2: Recalculation

Pre-requisite for this lab:

You must complete Lab 5.1 to perform this lab.

Scenario

You receive a request for four pieces of item 170315 (DVD Player Training) from your constant customer Sunset Wholesales. You create and invoice-update a sales order for a unit sales price of USD 200.00.

- What is the total inventory value of the item?
- What is the average inventory value?

You decide to perform recalculation of the inventory for June 30, before running inventory closing.

Challenge Yourself

Answer the following questions:

- Where in Microsoft Dynamics AX 2009 do you perform inventory recalculation?
- What is the cost amount for the sales order you created?
- What is the adjustment amount? Why has this adjustment occurred?

Need a Little Help?

1. Before invoice updating a sales order, perform picking list and picking list registration.
2. View the total and average inventory value of the item by clicking **On-hand** from the **Item** form.

Step by Step

1. Create the sales order as specified in the lab.
 - The total inventory value of the item after posting is USD 3,960.67 (4,710.00 - (4*152.33))
 - The average cost price is USD 152.33
2. Answers to questions:
 - You perform the recalculation in **Inventory management > Periodic > Closing and Adjustment > Recalculation**.
 - The cost amount is USD -628.00 (4*-152.33).
 - There has been an adjustment of USD 209.33. This occurs because the inventory model group that is attached to the item uses the

inventory model FIFO. Therefore, when you perform a recalculation for the item the issue is settled using the FIFO method, and to match it against four pieces from the first purchase order which had a financially updated purchase price of USD 100.00 per piece.

Summary

This chapter reviewed how the inventory closing functionality works in Microsoft Dynamics AX 2009. The chapter covered:

- Performing pre-closing tasks to ensure optimal closing performance and accuracy.
- Making manual adjustments to transactions and on-hand inventory.
- Performing inventory close cancellation using batch framework.

Using the inventory closing functionality you can calculate the value of your inventory according to the way you operate with inventory valuation.

Test Your Knowledge

Introduction

1. Which price does Microsoft Dynamics AX 2009 use to post issue transactions until inventory closing or recalculation is run?
 - ☐ Price calculated according to the inventory model attached to the item
 - ☐ Latest purchase price
 - ☐ Earliest purchase price
 - ☐ Running average cost price

Inventory Closing Procedure

2. Which specification option will you choose while running inventory closing to post the value for each item to the general ledger?
 - ☐ Item group
 - ☐ Item number
 - ☐ Total
 - ☐ Table

Inventory Recalculation

3. What is the difference between inventory closing and inventory recalculation? Choose all that apply? (Select all that apply.)
 - ☐ The recalculated inventory transactions will not be closed.
 - ☐ No transactions will be posted to general ledger.
 - ☐ Recalculation can be run on specific items, item groups, warehouses.
 - ☐ Only items that have inventory model Standard cost will be recalculated.

Manual Inventory Adjustments

4. Which receipt status should a transaction have to allow adjustments?

5. Which two manual adjustments are available from the **Closing and Adjustment** form?
- ☐ Transaction
 - ☐ On-hand
 - ☐ Standard cost price
 - ☐ Open quantities

Quick Interaction: Lessons Learned

Take a moment and write down three key points you have learned from this chapter:

1.

2.

3.

Solutions

Test Your Knowledge

Introduction

1. Which price does Microsoft Dynamics AX 2009 use to post issue transactions until inventory closing or recalculation is run?
 - ☐ Price calculated according to the inventory model attached to the item
 - ☐ Latest purchase price
 - ☐ Earliest purchase price
 - ☒ Running average cost price

Inventory Closing Procedure

2. Which specification option will you choose while running inventory closing to post the value for each item to the general ledger?
 - ☐ Item group
 - ☒ Item number
 - ☐ Total
 - ☐ Table

Inventory Recalculation

3. What is the difference between inventory closing and inventory recalculation? Choose all that apply? (Select all that apply.)
 - ☒ The recalculated inventory transactions will not be closed.
 - ☐ No transactions will be posted to general ledger.
 - ☒ Recalculation can be run on specific items, item groups, warehouses.
 - ☐ Only items that have inventory model Standard cost will be recalculated.

Manual Inventory Adjustments

4. Which receipt status should a transaction have to allow adjustments?

MODEL ANSWER: Purchased

5. Which two manual adjustments are available from the **Closing and Adjustment** form?
 - ☒ Transaction
 - ☒ On-hand
 - ☐ Standard cost price
 - ☐ Open quantities

CHAPTER 6: INVENTORY COSTING AND ADJUSTMENT REPORTS

Objectives

The objectives are:

- Run the Adjustment report.
- Run the Fixed receipt deviation report.
- Run the Physical inventory value by item group report.
- Run the Physical inventory value by dimension group report.
- Run standard cost reports.

Introduction

There are a number of standard reports available in Microsoft Dynamics AX 2009 that relate to inventory costing and adjustments. These reports can be found in **Inventory management > Reports**.

Adjustments Report

To open the adjustment report click **Inventory management > Reports > Transactions > Adjustments**. This report prints adjustment settlements; that is, settlements that have adjusted inventory transactions. The report draws information from the Inventory settlement table. You can also print this report directly from the **Closing and adjustment** form by clicking **Print > Adjustments**. In this situation you only print adjustments for the current voucher.

Contoso Entertainment Systems

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10/23/2008
10:39:34 am

Adjustment settlements

Id	Item number	Date	Voucher	Principle	Adjustment	Financial date	Reference	Number	Quantity	Financial cost amount	Adjustment total
No 1102		4/15/2008	POCV000001	Adjustment	401.60	4/15/2008	Production	PRD_00000004	20.00	13,899.20	401.60
No 1102		4/11/2008	POCV000010	Adjustment	20.13	4/11/2008	Production	PRD_00000005	1.00	694.91	20.13
No 1102		4/11/2008	POCV000010	Adjustment	60.38	4/11/2008	Production	PRD_00000005	3.00	2,084.74	60.38
No 1102		5/6/2008	POCV000190	Adjustment	120.60	5/6/2008	Production	PRD_00000006	6.00	4,169.64	120.60
No 1102		5/23/2008	POCV000297	Adjustment	802.91	5/23/2008	Production	PRD_00000007	40.00	27,798.69	802.91
No 1102		5/23/2008	POCV000298	Adjustment	19.96	5/23/2008	Production	PRD_00000008	1.00	695.08	19.96
No 1102		5/23/2008	POCV000298	Adjustment	59.90	5/23/2008	Production	PRD_00000008	3.00	2,085.22	59.90
No 1102		5/23/2008	POCV000299	Adjustment	120.55	5/23/2008	Production	PRD_00000009	6.00	4,169.69	120.55
No 1107		4/11/2008	POCV000011	Adjustment	17.81	4/11/2008	Production	PRD_00000010	1.00	644.24	17.81
No 1107		4/11/2008	POCV000011	Adjustment	88.05	4/11/2008	Production	PRD_00000010	5.00	3,221.20	88.05
No 1107		5/6/2008	POCV000191	Adjustment	316.13	5/6/2008	Production	PRD_00000011	18.00	11,597.17	316.13
No 1107		5/6/2008	POCV000192	Adjustment	172.85	5/6/2008	Production	PRD_00000012	10.00	6,445.65	172.85
No 1107		5/30/2008	POCV000336	Adjustment	17.66	5/30/2008	Production	PRD_00000013	1.00	644.19	17.66
No 1107		5/30/2008	POCV000336	Adjustment	194.22	5/30/2008	Production	PRD_00000013	11.00	7,086.13	194.22
No 1201		4/18/2008	POCV000078	Adjustment	27.10	4/18/2008	Production	PRD_00000014	3.00	594.56	27.10
No 1201		5/2/2008	POCV000195	Adjustment	69.82	5/2/2008	Production	PRD_00000015	8.00	1,587.94	69.82
No 1201		5/2/2008	POCV000196	Adjustment	164.05	5/2/2008	Production	PRD_00000016	41.00	8,331.97	164.05
No 1201		5/2/2008	POCV000197	Adjustment	51.39	5/2/2008	Production	PRD_00000017	5.00	935.51	51.39
No 1201		5/23/2008	POCV000302	Adjustment	10.31	5/23/2008	Production	PRD_00000018	1.00	187.09	10.31
No 1203		4/18/2008	POCV000079	Adjustment	15.70	4/18/2008	Production	PRD_00000019	2.00	590.68	15.70
No 1203		5/2/2008	POCV000198	Adjustment	97.63	5/2/2008	Production	PRD_00000020	13.00	3,843.84	97.63
No 1203		5/2/2008	POCV000199	Adjustment	118.45	5/2/2008	Production	PRD_00000021	16.00	4,732.59	118.45
No 1203		5/23/2008	POCV000303	Adjustment	30.04	5/23/2008	Production	PRD_00000022	4.00	1,182.72	30.04
No 1203		5/23/2008	POCV000304	Adjustment	18.68	5/23/2008	Production	PRD_00000023	2.00	568.56	18.68
No 1203		5/23/2008	POCV000305	Adjustment	18.68	5/23/2008	Production	PRD_00000024	2.00	568.56	18.68
No 1205		4/18/2008	POCV000080	Adjustment	12.43	4/18/2008	Production	PRD_00000025	1.00	316.06	12.43

FIGURE 6.1 ADJUSTMENT SETTLEMENTS REPORT

You can also view the adjustments made of the inventory by clicking the **Settlements** button in the **Closing and adjustment** form.

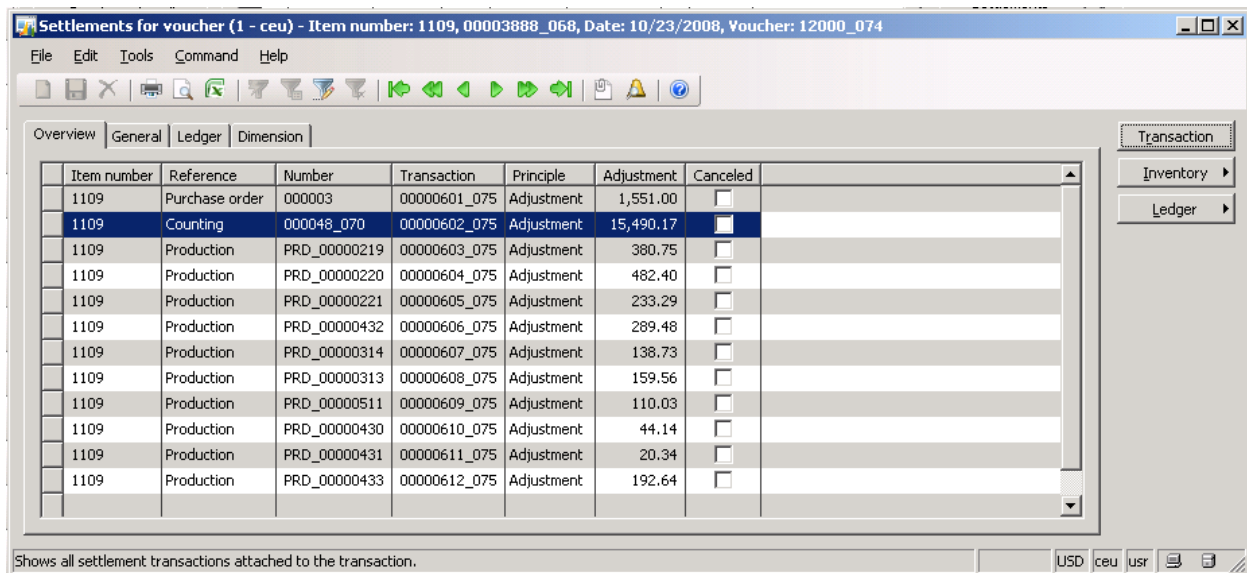


FIGURE 6.2 SETTLEMENTS FOR VOUCHER FORM

Fixed Receipt Price Deviation Report

In the sub-folder **Analysis** under **Reports** of the **Inventory management** module, there is a report named **Fixed receipt price deviation**. This report prints the differences in the standard cost price per item and item group based on the inventory transactions. The report also shows credited lines from purchases created based on the function **Create credit note** in the **Purchase order** form. The report shows whether you are working with realistic standard cost prices.

To open the report click **Inventory management > Reports > Analysis > Fixed receipt price deviations**.

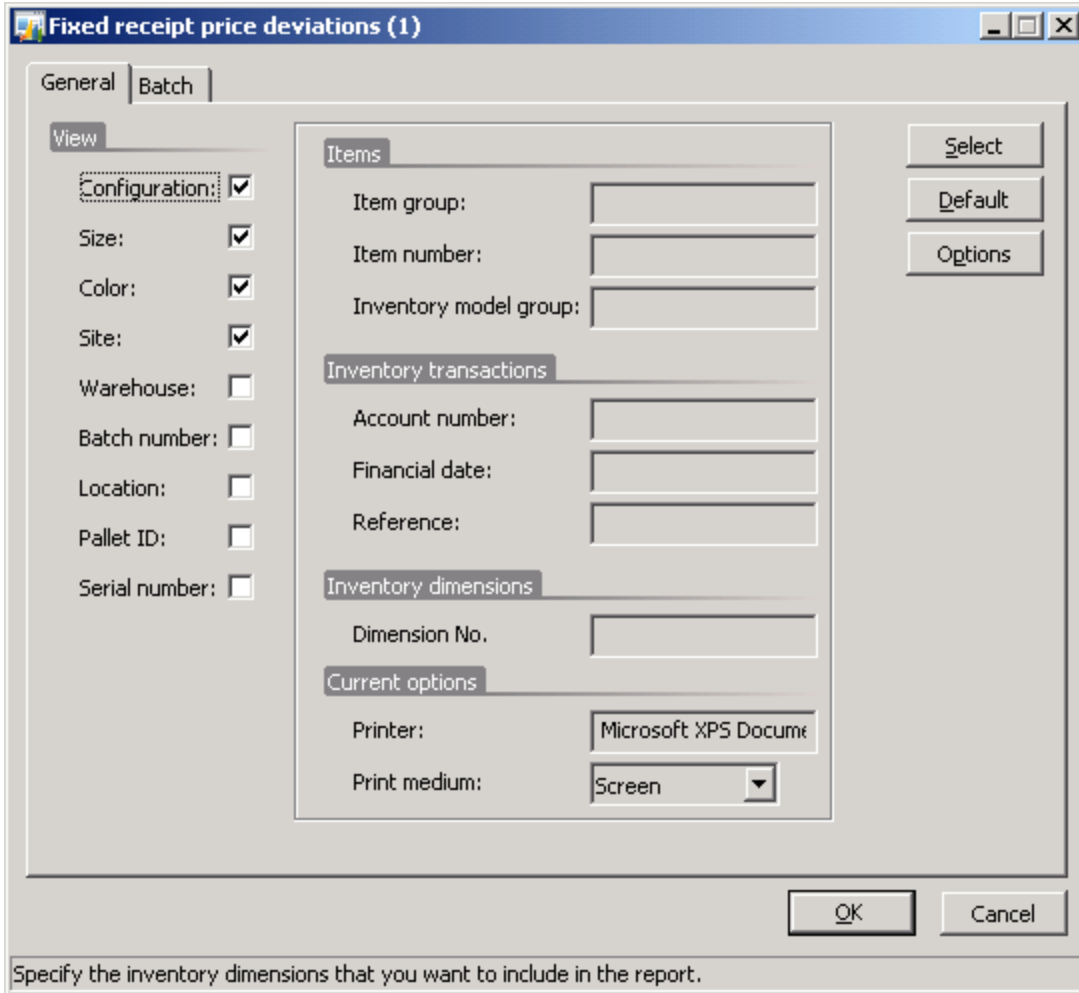


FIGURE 6.3 FIXED RECEIPT PRICE DEVIATION REPORT

Physical Inventory Value by Item Group

Physical inventory by item group report prints the physical inventory per item group on the date specified. To run the report, click **Inventory management > Reports > Status > Physical inventory > Physical inventory by item group**. The following options are available for printing the report:

- **Show zero lines** – select this check box to print items without physical quantity or value.
- **Show registered** - print the quantities of items that have been registered on a pick.
- **Show picked** - print the quantities of items that are picked.
- **Print total** - print the total posted value of inventory.
- **Total account** – print the total value from a general ledger account on the report and the details of the general ledger account will be printed on a separate page.

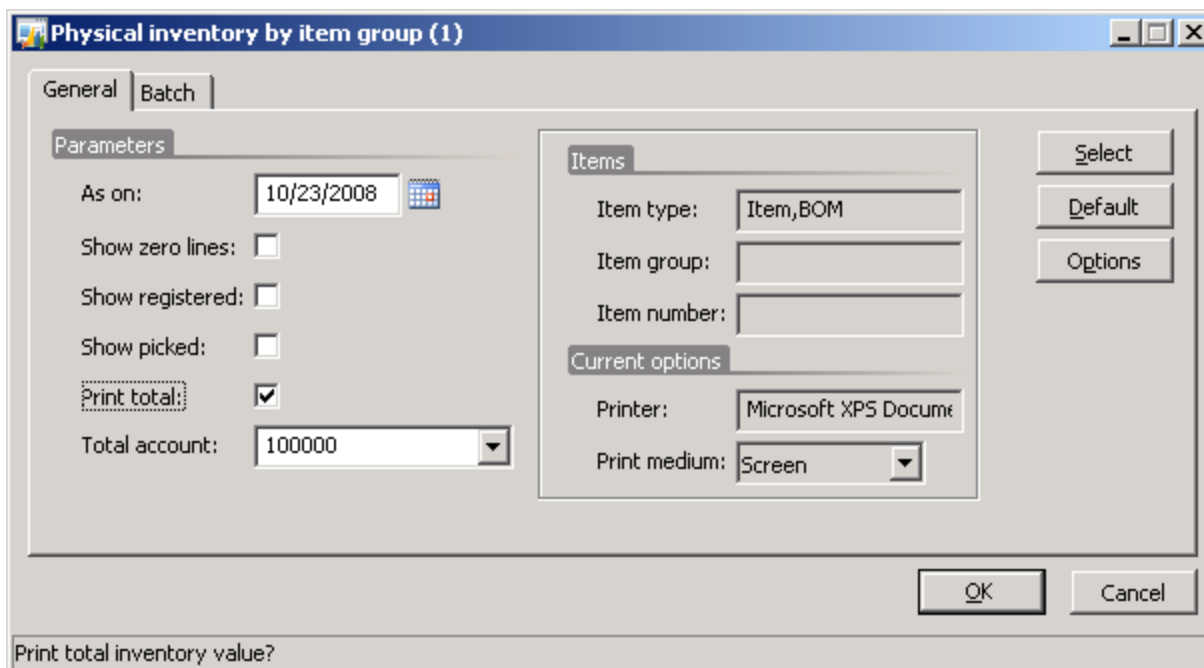


FIGURE 6.4 PHYSICAL INVENTORY BY ITEM GROUP REPORT

Before running a report the date that the on-hand inventory is assessed for should be specified in the **As on** field.

Example

An item is received on a purchase order with a date of September 1, 2008 with the value 100. The **Post physical inventory** check box is selected in the **Inventory model groups** form.

A report on September 1 shows a quantity of 1 in the **Received** column and a value of 100 in the **Physical value (posted)** column. The invoice that includes the item is posted on September 3 with a value of 105.

A report on September 3 will display a quantity of 1 in the **Financial quantity** column and a value of 105 in the **Financial value** column.

You can print this report from an earlier date than today. If the current date is September 3, and you set the date in the **As on** field to September 2, the report will show a Physical posted value of 100. The **Known financial difference** column displays 5. The report was printed on September 3, when the item was posted.

Physical Inventory Value by Dimension

Physical inventory by dimension report prints the physical inventory according to the selected inventory dimensions and on the date specified. To run the report click **Inventory management > Reports > Status > Physical inventory > Physical inventory by inventory dimension**.

The same options as for the **Physical inventory value by item** group report are

available. In the **View** field group, select inventory dimensions to run physical inventory report for.

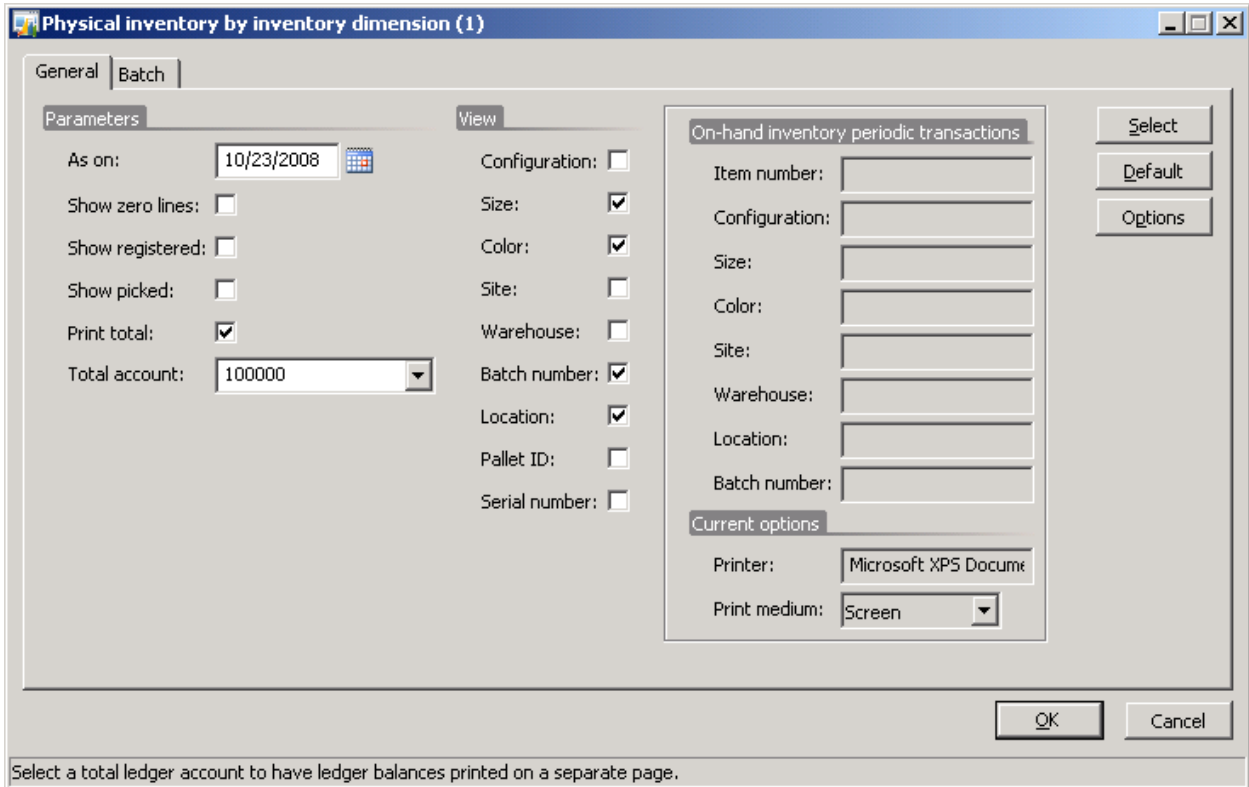


FIGURE 6.5 PHYSICAL INVENTORY BY INVENTORY DIMENSION REPORT

Inventory Value Statement

Use this form to prepare a report about inventory value during a specified time period. The report displays beginning and ending balances as well as period activity. The report format has several variations reflecting the report options. For example, the report format can display period activity for items or orders or cost groups depending on your selection of the report option for axis. Selectively report information based on selection criteria, such as the site or item number.

Inventory management > Reports > Status > Inventory value > Standard cost > Inventory value statement

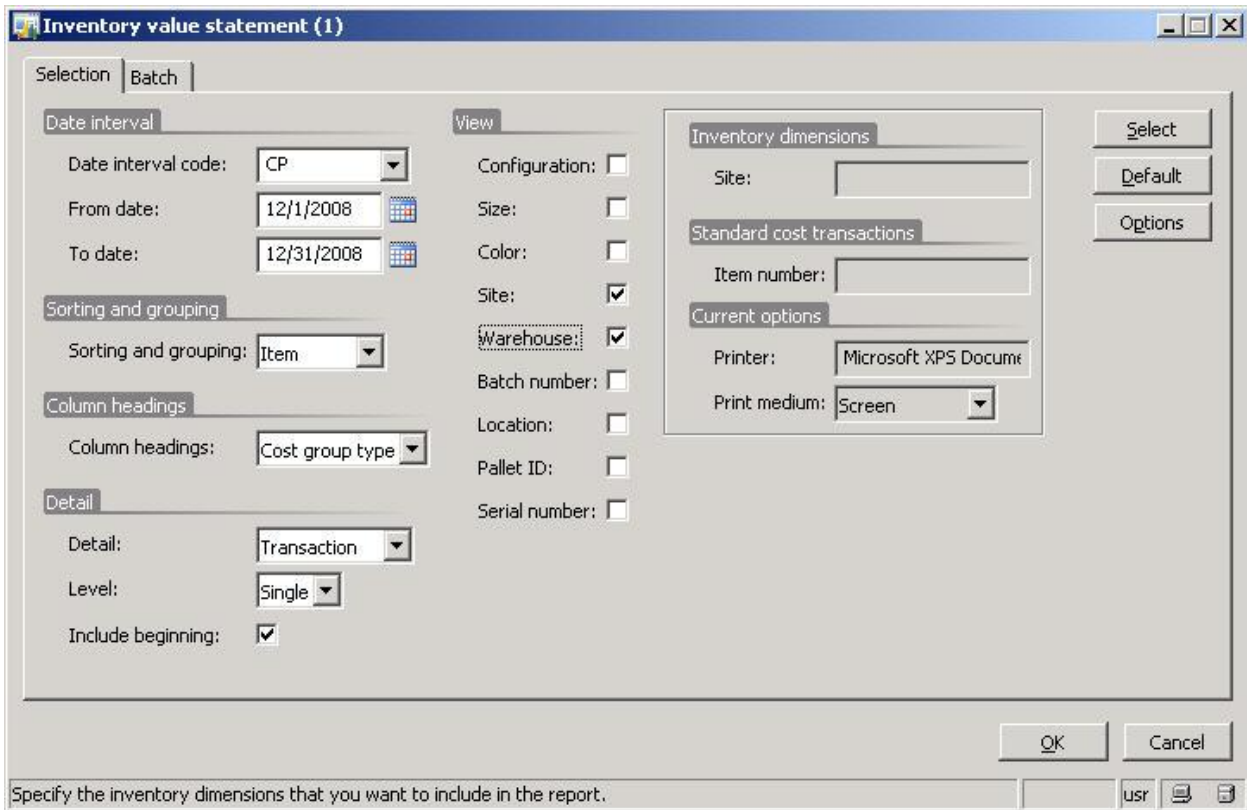


FIGURE 6.6 INVENTORY VALUE STATEMENT REPORT

The following options are available for printing the report:

- **Date interval code** – Select from the available date interval codes, that will automatically assigns the From and To dates.
- **Sorting and grouping** - Select the primary focus of the report:
 - **Item** - Display period activity by item, with subtotals by item and by item group.
 - **Origin** - Display period activity by transaction type, with subtotals by transaction type. The types include purchase orders, production orders, and inventory journals.
 - **Cost group** - Display period activity by cost group, with subtotals by cost group and by cost group type. The types include direct materials, direct manufacturing, indirect, and undefined.
- **Column headings** - Define how the report columns should be used to display cost information:
 - **Cost group type** - Use four columns to display values as direct materials, direct manufacturing, indirect, and undefined.
 - **Fixed/Variable** - Use two columns to display values as fixed or variable (based on the behavior that is assigned to a cost group).

- **Position** - Use four columns to indicate the values of on-hand, work in process (WIP), deferred, and cost of goods sold (COGS).
- **Detail** - Select the level of detail that you want in the report:
 - **Transaction** - Display transaction detail.
 - **No** - Do not display transaction detail.
 - **Decomposition** - Display additional detail about cost groups when the primary focus concerns items or origin. A primary focus on cost groups means that decomposition details are already displayed.
- **Level** - Level only applies to detailed reporting when the primary focus concerns items or origin. Select from the following items:
 - **Single** - Provide a detailed breakdown of costs by transaction.
 - **Multi** - Provide a detailed breakdown by cost group.
 - **Total** - Do not provide a detailed breakdown.

Lab 6.1 – Adjustment Settlements

In order to start this lab, lab 3.1 and 3.2 should be completed.

Scenario

After running variance analysis statement to see the variances caused by revaluation and cost price change in the purchase order, you decide to run one more report to see the total amount of the adjustments settled for item 1401 Car Audio System Model 01.

Run the report for item 1401 and analyze the results.

What is the total amount of adjustments posted for item 1401?

Challenge Yourself

Use the **Adjustment settlements** report to view settled adjustments for item 1401.

Need a Little Help

1. To open the Adjustment settlements report go to **Inventory management > Reports > Transactions > Adjustments**.
2. Use the Query to run the report for a specific item.

Step by Step

1. Navigate to **Inventory management > Reports > Transactions > Adjustments**.
2. In the **Adjustment settlements report** form, click in the **Item number** field and then click **Select**.
3. Use the query to select the item number.
4. Specify item number “1401” in the **Criteria** field.
5. Click **OK**.

Answer to the question: Total amount of adjustments settled for item 1401 is USD 1200.

Summary

This chapter reviewed the inventory costing and adjustment reports in Microsoft Dynamics AX 2009. The chapter covered the following reports:

- Adjustment report
- Fixed receipt price deviation report
- Physical inventory value by item group
- Physical inventory value by dimension group
- Standard cost reports

Using these reports you can view all the necessary information concerning inventory closing and adjustment.

Test Your Knowledge

Physical Inventory Value by Item Group

1. What option should be selected in **Physical Inventory Value by Item group** report to print items without physical quantity or value?
 - ☐ Print total
 - ☐ Show registered
 - ☐ Show picked
 - ☐ Show zero lines

Fixed Receipt Price Deviation

2. Which of the following statements about **Fixed receipt price deviation** report are true? Select all that apply?
 - ☐ Report prints adjustments to the item transactions with standard cost price.
 - ☐ Report prints differences in the standard cost price per item or item group.
 - ☐ Report shows credited lines from purchases created based on Create credit note function.
 - ☐ Report prints changed standard costs for the specified period.

Adjustment Report

3. Where from can you run adjustment report in Microsoft Dynamics AX 2009? (Select all that apply.)
 - ☐ **Inventory management > Reports > Transactions > Adjustments**
 - ☐ **Inventory management > Closing and adjustment > Print > Adjustments**
 - ☐ **Inventory management > Purchase Order Details > Inquiries > Adjustments**
 - ☐ **Inventory management > Item Details > Functions > Adjustments**

Quick Interaction: Lessons Learned

Take a moment and write down three key points you have learned from this chapter:

1.

2.

3.

Solutions

Test Your Knowledge

Physical Inventory Value by Item Group

1. What option should be selected in **Physical Inventory Value by Item group** report to print items without physical quantity or value?
 - ☐ Print total
 - ☐ Show registered
 - ☐ Show picked
 - ☒ Show zero lines

Fixed Receipt Price Deviation

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 - ☐ Report prints changed standard costs for the specified period.

Adjustment Report

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 - ☒ **Inventory management > Reports > Transactions > Adjustments**
 - ☒ **Inventory management > Closing and adjustment > Print > Adjustments**
 - ☐ **Inventory management > Purchase Order Details > Inquiries > Adjustments**
 - ☐ **Inventory management > Item Details > Functions > Adjustments**