MODULE 7: SYSTEM SETUP

Module Overview

System setup explains the setup that is required for the manufacturing functionality in Microsoft Dynamics® NAV, and the inventory setup that is related to manufacturing.

Objectives

The objectives are:

- Describe all fields on the **Manufacturing Setup** page.
- Explain all fields on the item card that affect manufacturing.
- Review all fields on the stockkeeping unit card that affect manufacturing.

Manufacturing Setup

Manufacturing setup specifies how to manage your manufacturing processes.

To open manufacturing setup, type "manufacturing setup" in the **Search** box, and then select the related link.

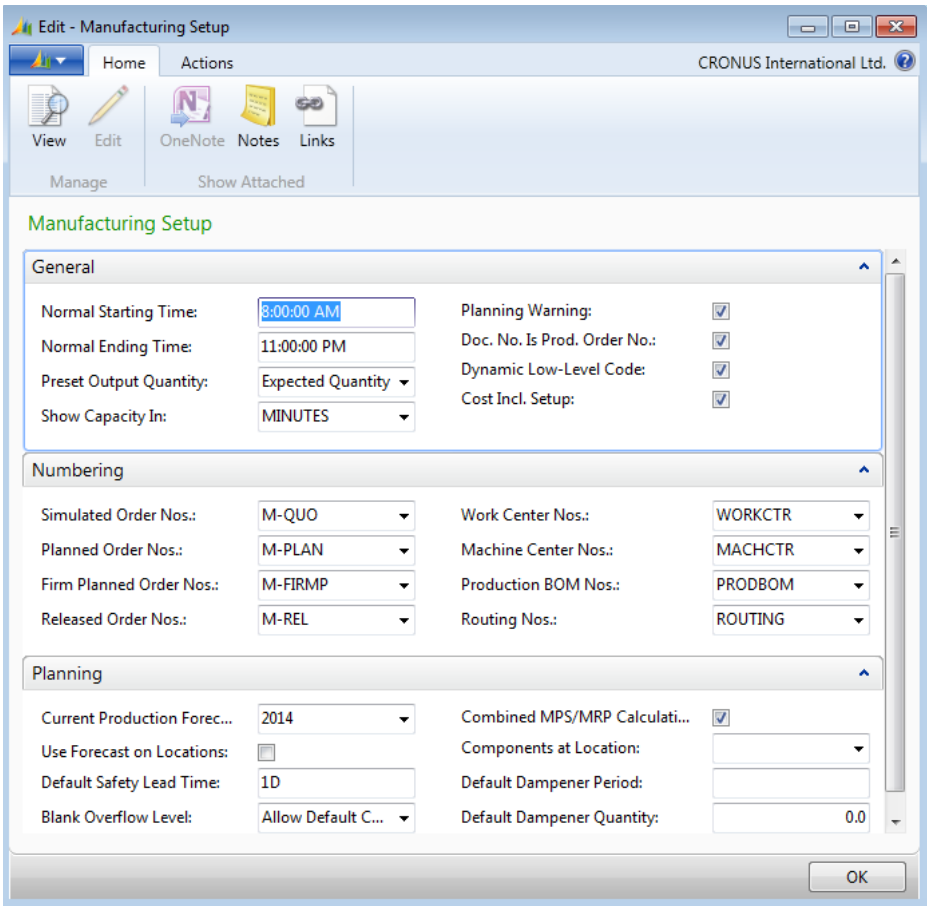

FIGURE 7.1:MANUFACTURING SETUP PAGE

The fields on each FastTab of the **Manufacturing Setup** page are described in the following sections.

General FastTab

Field	Description
Normal Starting Time	Normal starting time of a workday.
Normal Ending Time	Normal ending time of a workday.

Field	Description
Preset Output Quantity	Defines the information to populate in the **Output Quantity** field of a production journal when you open it. The three options are as follows: • **Expected Quantity** – Sets the **Output Quantity** field to equal the production order quantity for all operations in a production journal. • **Zero on All Operations** – Sets the **Output Quantity** field to zero for operations in a production journal. • **Zero on Last Operation** – Sets the **Output Quantity** field to zero for the last operation of a production journal.
Show Capacity In	Specifies the capacity unit of measure to use by default to record and track the man/machine time that is available in production resources. You can override the unit of measure that is defined in this field by setting different capacity units of measure for specific work centers, routing lines, or output journal lines. However, setting different capacity units of measures could cause incorrect capacity figures in calendar or statistics fields where capacities are totaled, such as the **Prod. Order Need (Qty.)** field on the **Work Center Statistics** and **Machine Center Statistics** pages. For example, if you set one operation (routing line) to last six hours and you set a second operation to last 120 minutes, then the total capacity need of that production order could display 126 minutes. If both operations use the same capacity unit of measure, then the total capacity need is displayed correctly as eight hours or 480 minutes.

Field	Description
Planning Warning	Specifies whether the system provides a warning when sales order lines meet certain conditions. If you change a sales order line that is tracked to a production order, the system warns you so that you can review and possibly change the production order.
Doc. No. Is Prod. Order No.	Specifies whether to use the released production order number for all postings. The production order number stays the same when you change the status of a released production order to Finished.
Dynamic Low-Level Code	Specifies whether to automatically calculate low-level codes for each component in the product structure when a production bill of material (BOM) is certified. If you have large amounts of data, this function can adversely affect performance, such as during automatic cost adjustment. This function is not retroactive. Therefore, it is a good idea to consider its use beforehand. Low-level codes must be correct for material requirements planning (MRP) and standard cost calculations to be accurate.
Cost Incl. Setup	Specifies whether to include setup times in the cost calculation of the **Standard Cost** field of the item card.

Numbering FastTab

The fields in this FastTab let you specify different code number series to use when assigning numbers to the following:

- Production orders – you can set different number series for each order status.
- Work center and machine center numbers
- Production BOM numbers
- Routing numbers

If you want to use more than one number series in a field, you can set up a relationship between the relevant series in the **No. Series Relationship** table. This lets you use one code to represent two or more number series.

If you want to enter numbers manually, then use the Manual Nos. option in the **No. Series** setup page.

If you want the program to assign the same number to different types of production orders, for example, firm planned and released, use the same number series for both types of production orders. Finished production orders are automatically assigned the same number as the released production order.

Planning FastTab

The following table describes the fields on the **Planning** FastTab that affect the information in the planning worksheet.

Field	Description
Current Production Forecast	Identifies the production forecast to use to calculate a plan.
Use Forecast on Locations	Specifies whether to net the actual demand against the forecast by location. If you clear this field, the program considers the forecast as valid for all locations.
Default Safety Lead Time	Specifies a time period to add to the lead time of all items that do not have a value in the **Safety Lead Time** field on the item card or the stockkeeping unit card. The program adds this time period to the item's existing lead time as a buffer to make sure that it is available on time when it is purchased, assembled, produced, or transferred.

Field	Description

Blank Overflow Level	Defines how the planning system should react if the **Overflow Level** field is empty on the item or stockkeeping unit card.
	You can select from the following options:
	• **Use Item/SKU Values Only** – Respects the blank value in the **Overflow Level** field of the item or stockkeeping unit card by not using the overflow level.
	• **Allow Default Calculation** – Calculates the overflow level for items that use the two supported reordering policies as follows:
	  ○ **Maximum Qty.**: Overflow Level = Maximum Inventory + (Minimum Order Quantity + rounded up to nearest order multiple)
	  ○ **Fixed Reorder Qty.**: Overflow Level = Reorder Quantity + Reorder Point + (Minimum Order Quantity + rounded up to nearest order multiple)
	
	Note: *This global setup field is intended for solutions that did not have the overflow level functionality, such as solutions that are upgraded from a version of Microsoft Dynamics NAV earlier than version 5.0 SP1.*

Combined MPS/MRP Calculation	Specifies whether to calculate the master production schedule (MPS) and MRP in one step when you run the planning worksheet. If you select this field, then both the MPS and MRP fields are selected by default when you open the **Calculate Plan – Plan Wksh** page. You can clear either field or both fields. If you do not select this field, you can still select either the **MPS** or the **MRP** field in the **Calculate Plan – Plan Wksh.** page. However, you cannot select both.

Field	Description
Components at Locations	Specifies the inventory location that supplies production order components if you have not specified a location in the **Components at Location** field on a stockkeeping unit card. Together with the **Locations Mandatory** field on the **Inventory Setup** page, this field determines how the planning system handles component demand lines with and without location codes.
Default Dampener Period	Specifies a period during which you do not want the planning system to reschedule existing supply orders to a later date. When a dampener period is set, the planning system only proposes to reschedule an order to a later date if the proposed new date exceeds the order's original due date plus the dampener period. Rescheduling to an earlier date is not affected by this setting. This field reduces the number of insignificant rescheduling proposals. The value in this field applies to all items except those items that have a different value in the **Dampener Period** field on the item card.

Field	Description
Default Dampener Quantity	Provides a way to block insignificant quantity change suggestions for existing supply orders if the change is a reduction. If the quantity of the suggested reduction is less than the dampener quantity, the planning system does not propose the change. Suggested increases in order quantity are not affected by this setting. The value in this field applies to all items except for items that have a different value in the **Dampener Quantity** field on the item card. ***Note:*** *The dampener value that is specified in this field is a percentage of the item lot size. On the item card, the dampener value is a quantity.*

Inventory

This lesson describes the most important fields on the item card and stockkeeping unit card for planning and replenishment.

Manufacturing-related Fields on the Item Card

To view an item card, follow these steps.

1. In the **Search** box, type "items", and then select the related link.
2. On the **Items** list page, double-click the line for item 1000, Bicycle.
3. On the item card, expand the **Replenishment** FastTab and the **Planning** FastTab.

Replenishment FastTab

The fields on this FastTab affect the timing and quantity of production orders.

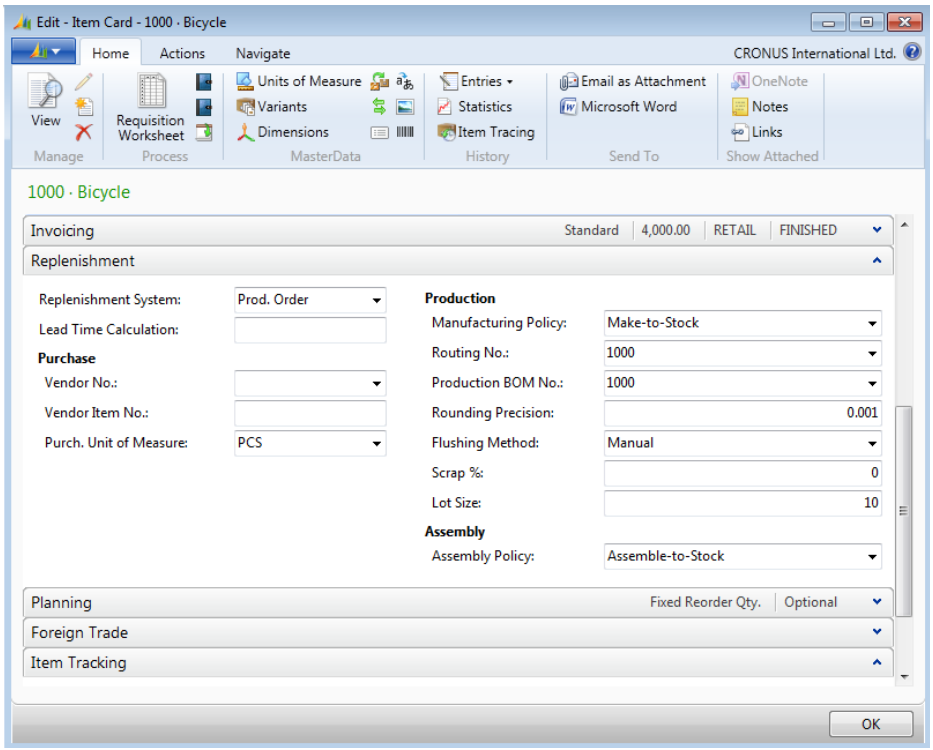

FIGURE 7.2:ITEM CARD REPLENISHMENT FASTTAB

The manufacturing-related fields on this FastTab are described in the following table.

Field	Description
Replenishment System	Specifies whether to replenish the item by production order, purchase order, or assembly order.
Lead Time Calculation	Specifies a date formula for the time period that is required to replenish the item. The program uses this field to calculate the date fields on order and order proposal lines. On a production order, the calculation formula is as follows: *Starting Date + Lead Time Calculation = Ending Date* If the manufactured item uses a routing, then the program uses the routing to calculate the ending date instead.

Field	Description
Manufacturing Policy	Specifies the production method to use for an item that is replenished by production order. The available policies are as follows: • Make-to-Stock (MTS) • Made-to-Order (MTO) ***Make-to-Stock (MTS)*** MTS items are produced to inventory. These are typically standard items with a fairly short manufacturing lead time, or items that are used as subassemblies for other items. For MTS items, the planning system considers only the first level of the BOM and allows for only one item per production order. ***Make-to-Order (MTO)*** MTO items are produced to customer specifications for a specific sales order, and are frequently composed of expensive items that are complex to produce. For MTO items, the planning system explodes the BOM and creates an additional production order or production order proposal line for each level in the BOM structure where the component item's manufacturing policy is also set to MTO. If you want to make multilevel production orders, then the manufacturing policy for the manufactured item and the component items at all levels must be set to Make-to-Order. For all replenishment order proposals, the planning system creates a reservation between the demand requirement and the corresponding proposal line. This preserves the customized information on the relevant orders and links them for inventory and costing. If you create production orders for MTO items through sales order planning, you have the option of putting all sales order items on the same production order regardless of each item's manufacturing policy.

Field	Description
Routing No.	Specifies the routing for the item. This is the routing that is used on production orders. This field must have a value if you use this item in a production BOM with routing link codes. Otherwise, you receive an error message when you try to update the production order.
Production BOM No.	Specifies the BOM for the item. This is the BOM that is used on production orders.
Rounding Precisions	Defines how to round calculated consumption quantities that are entered on consumption journal lines. A value less than .5 means to round down item consumption quantities. A value of .5 or greater than .5 means to round up item consumption quantities. You can set the field to round to the nearest decimal, but no more than six decimal places, or to the nearest number divisible by any whole or decimal number.
Flushing Method	Defines how to post material consumption. The three options are as follows: • **Manual** – Use the consumption journal to manually record consumption. • **Forward** – Automatically consume material at the start of a production order or a production order routing operation. • **Backward** – Automatically consume material at the finish of a production order, or when an output quantity is recorded for a production order routing operation. You can override the flushing method that is defined in this field by setting the **Flushing Method** field on a component item line in a production order BOM. For more information about flushing methods, refer to "Production Order Processing" in this training material.

Field	Description
Scrap %	Specifies the percentage of the item that you expect to scrap in the production process. If the item is a manufactured item, then the scrap percentage represents scrapped output before putting the item away in inventory. This increases the planning quantity for the item. For example, if you type "4" in this field for a manufactured item, then the planning system knows that to produce 50 units of this item, it must create a production order for 52 units because two units (four percent of 50) will be scrapped. If the item is a component item, then the scrap percentage represents scrapped consumption. This percentage then is used to increase the quantity of component items that are picked for a production order. Scrap percentages that are defined for component items do not affect the output quantities of manufactured items.
Lot Size	Specifies how many units of the item one production order processes by default. If the item routing includes fixed costs such as setup time, the program uses the contents of this field when it calculates standard cost price and distributes the fixed costs of manufacturing the item.

Planning FastTab

The fields on this FastTab affect how to plan for the required quantity of an item.

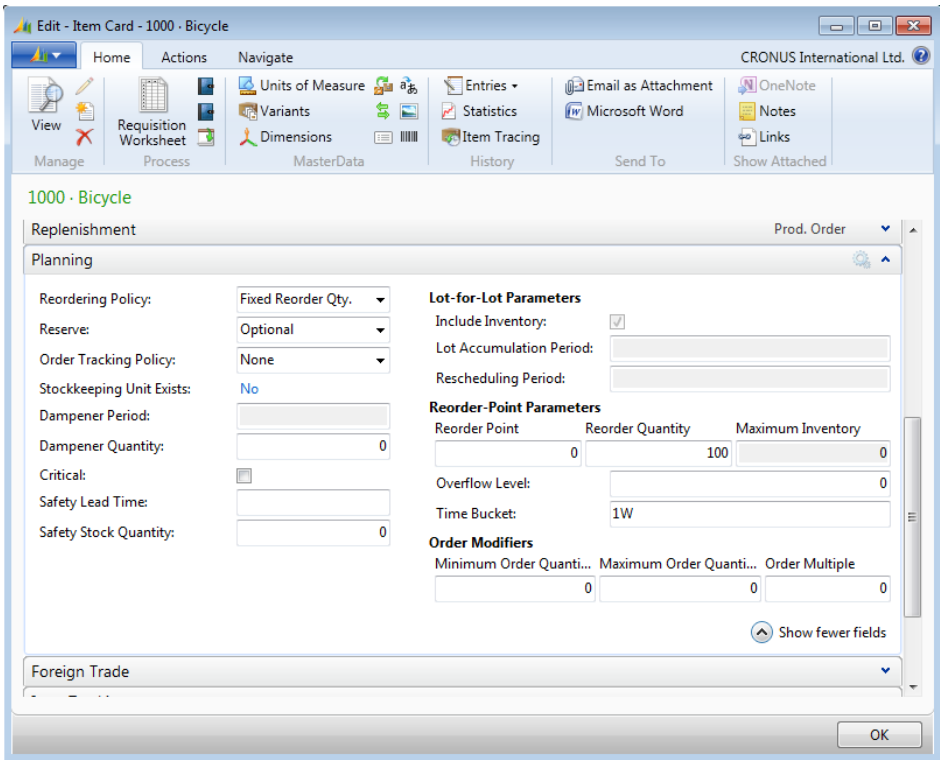

FIGURE 7.3:ITEM CARD PLANNING FASTTAB

The manufacturing-related fields on this FastTab are described in the following table.

Field	Description
Reordering Policy	Specifies the reordering policy. When quantities must be replenished, the planning system uses the reordering policy to calculate the lot size per planning period (time bucket). Valid options are as follows: • **Fixed Reorder Qty.** – Uses the quantity that is specified in the **Reorder Quantity** field as the standard lot size. The planning system can adjust this quantity to meet additional requirements or the specified inventory level. You typically use a reorder point with this reordering policy. This policy is suitable for a fixed demand setup for items that are inexpensive to produce, purchase, or assemble, and that have a low risk of obsolescence. • **Maximum Qty.** – Uses the quantity that is specified in the **Maximum Inventory** field to determine the maximum lot size. The planning system can adjust this quantity to meet additional requirements or the specified inventory level. You typically use a reorder point with this reordering policy. This policy is suitable for a fixed demand setup for items that are inexpensive to produce, purchase, or assemble, and that have a low risk of obsolescence. • **Order** – Generates an order for each requirement and does not use the planning period. Also creates an automatic reservation between the requirement and the corresponding replenishment order proposal. This preserves the customized information on the relevant orders and links them for inventory and costing. Alternatively, you can create a manual reservation to set aside items in inventory and designate them for use in a specific order. Typically, you use the Order reordering policy in an MTO environment. • **Lot-for-Lot** – Generates an order proposal with a quantity that meets the sum of the requirements that are due in the planning period. Be careful if you use a reorder point with this policy, as it can create surplus replenishment order proposals. • **Blank** – Does not calculate order proposals for this item. You must manually plan for the item.

Field	Description
Reserve	Specifies whether reservations can be made for this item. The following options are available: • **Never** – You cannot reserve the item. • **Optional** – The program does not automatically reserve the item. However, you can manually reserve it. • **Always** – The program always reserves the item. If you use MRP to plan production orders, then you should set this field to Optional or Always. If you manually create production orders, then standard reservation rules apply.
Order Tracking Policy	Specifies whether and how the program creates and maintains order tracking entries between supply and its corresponding demand. The following options are available: • **None** – The program does not create tracking entries or action messages. • **Tracking Only** – The program creates tracking entries for this item, but does not issue any action messages. • **Tracking & Action Msg**. – The program creates and maintains tracking entries for this item, and also issues action messages. Order tracking entries are created to link demand and supply in the following two circumstances: • Dynamically, when you create an order that can be matched to an existing order • After you run the planning engine

Field	Description
Dampener Period	Specifies a period during which you do not want the planning system to reschedule existing supply orders for this item to a later date. When a dampener period is set, the planning system only proposes rescheduling an order to a later date if the proposed new date exceeds the order's original due date plus the dampener period. Rescheduling to an earlier date is not affected by this setting. Use of this field reduces the number of insignificant rescheduling proposals. For this item, the value in this field takes precedence over the value in the **Default Dampener Period** field on the **Planning** FastTab of the **Manufacturing Setup** page.
Dampener Quantity	Blocks insignificant quantity changes for existing supply orders of this item if the change is a reduction. If the quantity of the suggested reduction for a supply order is less than the dampener quantity, the planning system does not propose the suggested change. Suggested increases in order quantity are not affected by this setting. For this item, the value in this field takes precedence over the value in the **Default Dampener Quantity** field on the **Planning** FastTab of the **Manufacturing Setup** page.
Critical	Specifies if the item is included in availability calculations to promise a sales shipment date for a parent item. This field does not affect the order promising functionality if you are selling the item itself. It only affects items that use this item as a component.

Field	Description
Safety Lead Time	Specifies a date formula to indicate a safety lead time to use as a buffer period for delays in the production process. In the planning process, this affects the date that manufactured items are available for sale. When calculating order and order proposal lines, the safety lead time is added to the lead time for both forward and backward scheduling. The following formula uses the safety lead time to calculate a production order's due date: *Ending Date + Safety Lead Time + Inbound Warehouse Handling Time = Due Date*. For this item, the value in this field takes precedence over the value in the **Default Safety Lead Time** field on the **Planning** FastTab of the **Manufacturing Setup** page.
Safety Stock Quantity	Specifies the lowest acceptable inventory quantity. This is the quantity of stock that you want to have in inventory to protect against fluctuations in demand and supply during the replenishment lead time for the item. You should specify a lower quantity than the quantity that is specified in the **Reorder Point** field. When the projected available inventory balance falls below the safety stock quantity, the planning system creates an order proposal that is backward scheduled from the due date of the requirement that caused the deficit. The order proposal quantity brings the projected available balance up to at least the level that is specified in the **Safety Stock Quantity** field. ***Note:*** *The planning system does not include the* ***Safety Stock Quantity*** *field in any of its calculations.*

Field	Description
Include Inventory	Specifies whether to include inventory in the projected available balance when the planning system calculates replenishment orders. This field is selected by default because inventory is typically used to fulfill outstanding requirements. The following conditions change the behavior of this field: • If you specify a reordering policy of Lot-for-Lot, then you can change the value of this field. • If you specify a reordering policy of Order, then the field is blank and you cannot change its value.  ***Note:*** *If the manufacturing policy is Make-to-Order, then the planning system does not consider the quantity in inventory regardless of whether you select the* ***Include Inventory*** *field.*
Lot Accumulation Period	Specifies a date formula for a period in which multiple demands accumulate into one supply order when you use a reordering policy of Lot-for-Lot. From the date of the first demand, all demands in the following lot accumulation period accumulate into one supply order. The planning system places the order on the date of the first demand. The supply order does not cover demand that is outside the lot accumulation period. Together with the **Rescheduling Period** field, the **Lot Accumulation Period** field defines the company's time reorder cycle in lot-for-lot planning.

Field	Description
Rescheduling Period	Specifies a date formula for a period within which any suggestion to change a supply date always consists of a *Reschedule* action and never consists of a *Cancel + New* action. The total rescheduling period is one rescheduling period *before* the existing supply date until one rescheduling period *after* the existing supply date. If a suggested new supply date is within this total rescheduling period (forward or backward from the existing supply date), then the suggestion is to reschedule. If a suggested new supply date is outside the rescheduling period, then the suggestion could be to cancel and create a new supply order. Together with the **Lot Accumulation Period** field, the **Rescheduling Period** field defines the company's time reorder cycle in lot-for-lot planning.
Reorder Point	Specifies an inventory level below which you must replenish the item. You can equate the reorder point to expected demand during the replenishment lead time. When the projected inventory level is equal to or below the reorder point, the planning system creates an order proposal. The planning system then forward schedules this proposed order from the date of the requirement that caused the projected available balance to reach or fall below the reorder point. At a minimum, the order proposal quantity brings the projected available balance up to the level that is specified by the **Reorder Point** field. The planning system can adjust the final order proposal to meet additional requirements.  ***Note:*** *The reorder point must always be above the safety stock quantity.*

Field	Description
Reorder Quantity	Specifies a standard lot size for all order proposals for the item. The program uses this quantity as a minimum quantity, although it might increase the final order quantity to meet additional requirements or the specified inventory level. For optimal results, you should set up this reorder-point parameter field so that the reorder point is *higher* than safety stock and *lower* than the reorder quantity. Only the reordering policy of Fixed Reorder Quantity uses this field. It is disabled for all other reordering policy options.
Maximum Inventory	Specifies the maximum inventory level for the item. The program uses the maximum inventory minus the safety stock to calculate order proposal quantities. Depending on the current inventory, this could result in proposed quantities that cause the projected available balance to exceed the maximum inventory that you define. For optimal results, you should set this field so that the reorder point is *smaller* than the maximum inventory and *larger* than the safety stock. Only the Maximum Qty. reordering policy uses this field. It is disabled for all other reordering policy options.
Overflow Level	Specifies a quantity by which the projected inventory can exceed the reorder point before the planning system suggests decreasing existing supply orders. Use this field to reduce minor changes, such as the cancellation of insignificant demand quantities. The planning system ignores the overflow level if it is lower than the suggested supply quantity. Only the **Maximum Qty.** and **Fixed Reorder Qty.** reordering policies use this field.

Field	Description
Time Bucket	Specifies a time period that defines the recurring planning horizon of the item when you use a **Maximum Qty.** or **Fixed Reorder Qty.** reordering policy. The time bucket defines the frequency for checking whether the projected inventory reaches or falls below the reorder point. The planning system uses the time bucket in the following ways: • To group requirements that are due in the time bucket • To potentially reschedule a replenishment order that is due in the time bucket • To determine when the reorder point is crossed If you leave the field blank, then requirements that share the same date are grouped. This field is unavailable if you select the Order or Lot-for-Lot reordering policy. The planning system then handles each demand separately even if other demands share the same date.
Minimum Order Quantity	Specifies a minimum allowed quantity for an item order proposal. When the planning system determines the need for replenishment and adjusts the lot size to meet the specified reordering policy, it increases the proposed quantity to meet the minimum order quantity. Use this order modifier field together with a Make-to-Stock manufacturing policy.
Maximum Order Quantity	Specifies a maximum allowed quantity for an item order proposal. When the planning system determines the need for replenishment and adjusts the lot size to meet the specified reordering policy, it decreases the proposed quantity to meet the maximum order quantity. If additional requirements remain, the planning system meets these requirements by calculating new orders. You generally use this order modifier field together with a Make-to-Stock manufacturing policy.

Field	Description
Order Multiple	Specifies an integer quantity. The proposed order quantity must be a multiple of this quantity. If this is not the case, the planning system increases the proposed order quantity to make it a multiple. For example, if a proposed order quantity is 17, and the order multiple is five, the planning system increases the proposed order quantity to 20. Order Multiple is an order modifier field.

If you are trying to minimize inventory investment, you probably do not enter reorder points, inventory safety stock quantities, or safety lead times.

However, you do have to consider the following:

- Lead-time calculation (and/or routing)
- Manufacturing policy
- Reordering policy
- Reorder cycle
- Applicable order modifiers

For example, if an item is MTS and has a fixed reorder quantity, a routing, and no order modifiers, then the following is true:

- The planning system only creates a production order to produce one item.
- The system uses the reorder quantity to determine how much to order.
- The system uses the routing to determine when to produce the item.

Manufacturing-related Fields on the Stockkeeping Unit Card

The stockkeeping unit card is important to the item and its production. When you create a stockkeeping unit card, most of the information is derived from the item card. However, you can change it. For example, you can set a different reorder point for each location.

If you set the **Locations Mandatory** field to **Yes** on the **Inventory Setup** page, you must create a stockkeeping unit card for each location for accurate planning.

To view a stockkeeping unit card, follow these steps.

1. In the **Search** box, type "stockkeeping units", and then select the related link.
2. On the **Stockkeeping Units** list page, double-click the line for item 7001, Base.
3. On the stockkeeping unit card, expand the **Replenishment** FastTab.

Replenishment FastTab

The fields on this FastTab affect the timing and quantity of production orders.

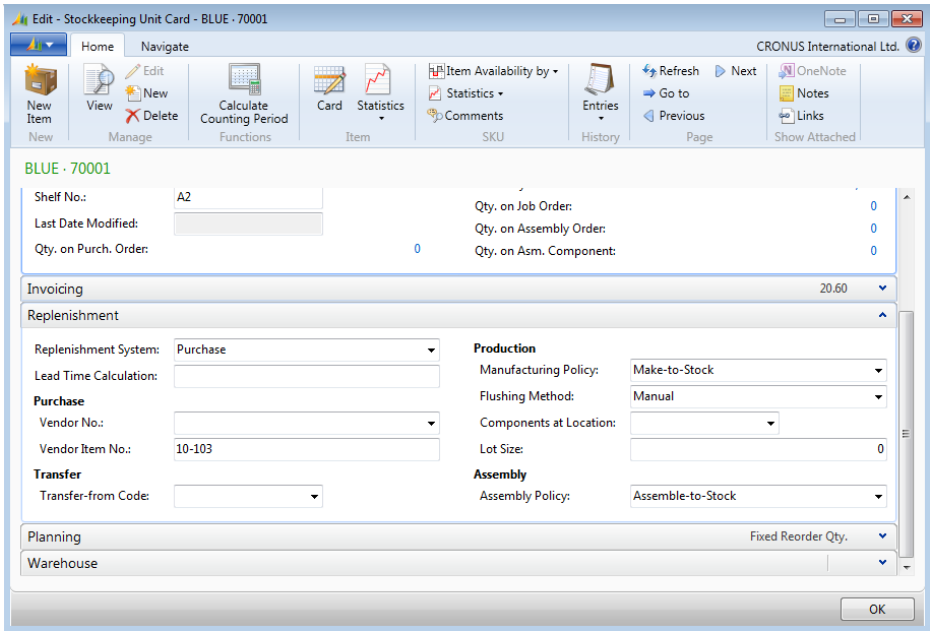

FIGURE 7.4:STOCKKEEPING UNIT CARD

The fields and options on this FastTab that are unique to stockkeeping units are described in the following table.

Field	Description
Replenishment System	Specifies the replenishment system. Options are as follows: • Purchase • Prod. Order • Transfer • Assembly
Transfer-from Code	Specifies the code for the location that usually supplies transfer orders for this stockkeeping unit.
Components at Location	Specifies the code for the location that supplies component items for production orders when producing this stockkeeping unit. If this field is not populated, components are supplied from the location that is specified on the production order or on the **Manufacturing Setup** page.

Module Review

Correct setup is important for the manufacturing functionality in Microsoft Dynamics NAV. In addition to Help, the descriptions that are provided in this module should serve as reference material for many aspects of manufacturing setup.