



# **Manufacturing Efficiency Guide**

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# Manufacturing Efficiency Guide

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# 1 Introduction

## **Our mission is to help you maximize your efficiency potential**

Our company was founded in 1992 to develop software aimed at helping small manufacturing businesses maximize their efficiency potential. The current version of DBA Manufacturing reflects our many years of experience working with smaller manufacturing companies on workflow processes and system implementation

## **The Demand Driven Miracle**

DBA has been an industry leader in the development of *Demand Driven MRP* for small business. Our system can be implemented by anyone without need for extensive training or consultancy. Our mission is to be the alternative to over complicated ERP.

 [The Demand Driven Miracle](#)

## **What is manufacturing efficiency?**

The simple definition of manufacturing efficiency is to fulfill customer orders as quickly and reliably as possible using the least amount of inventory and WIP.

## **It requires seven essential processes**

Over the years we've learned that companies can only reach their full efficiency potential by deploying these seven essential processes:

- Essential #1 - Plan a Strategic Inventory
- Essential #2 - Target Dates with Flexible Feedback
- Essential #3 - Release Jobs with Material
- Essential #4 - Coordinate Work Centers
- Essential #5 - Issue Materials in Real Time
- Essential #6 - Update Job Labor in Real Time
- Essential #7 - Use WIP-Based Costing

## **Four core values promote efficiency**

To reach your full manufacturing efficiency potential, you must combine the seven essential processes with a company culture that promotes the following core values:

- Value #1 - Planning Settings
- Value #2 - BOM and Job Accuracy
- Value #3 - Inventory Accuracy
- Value #4 - Real-Time Processing

## **Your efficiency gains will be dramatic**

If you deploy all seven essential processes and integrate the four values into your company culture, your efficiency gains will be dramatic for these reasons:

- You will know when you can ship
- You will know when and what to make and buy
- You will know what to do next on the shop floor
- You will know what your products cost to make

## 2 What Is Manufacturing Efficiency?

Manufacturing efficiency consists of two core elements:

### 1. Fulfill customer orders as quickly and reliably as possible

The primary purpose of a manufacturing system is to fulfill customer orders. An efficient manufacturing company fulfills customer orders as quickly and reliably as possible. Target shipping dates are established as orders are received and orders are shipped on time.

### 2. Use the least amount of inventory and WIP

Fulfilling customer orders requires inventory – raw materials, components, subassemblies, and finished items – and work in process – which includes labor and subcontract services. An efficient manufacturing company meets sales order required dates using the least amount of inventory and WIP.

## Benefits

- Quick and reliable shipments increase customer satisfaction and boost sales.
- Increased sales boost shop utilization, which spreads fixed manufacturing overhead costs over more items to lower unit overhead costs and increase gross margins.
- Minimizing inventory frees up working capital and warehouse space.
- Minimizing WIP increases shop efficiency with smaller run sizes, shorter queue times, less material in aisles and staging areas, and fewer quality problems with less material handling.

### 3 The Seven Essential Processes

To reach your full efficiency potential, you must take the six steps described below to implement the core practices that are the drivers of manufacturing efficiency. Each step is described in full detail over the next six chapters.

#### **Essential #1 – Plan a Strategic Inventory**

Instead of using guesswork with shipping dates and operating with an inventory that is out of control, you plan a demand driven strategy that reduces times to shipment using the least amount of inventory to do so.

#### **Essential #2 – Target Dates with Flexible Feedback**

Instead of struggling with tedious manual planning, inefficient quantities and unreliable dates, and all the expediting that goes with it, you generate jobs and POs quickly and efficiently within a coordinated set of target dates that gives you an action plan for shipping on time.

#### **Essential #3 – Release Jobs with Material**

Instead of guessing or investigating which jobs have material to get started, or having to rob material from some jobs in order to start other jobs – you avoid all this by using MRP to cover all job demand and by allocating material to jobs so you know exactly which jobs can be released to production at any given time. An additional benefit is that the master schedule gets automatically adjusted without any need for manual intervention.

#### **Essential #4 – Coordinate Work Centers**

Instead of running the shop by guesswork and expediting, you run work center sequences in job priority order so that jobs are automatically expedited to meet required dates.

#### **Essential #5 – Issue Material in Real Time**

Instead of backflushing components after the fact so that you never know what is actually on hand and what has already been issued to work in process, you issue materials on a “just in time” basis for real time inventory tracking that benefits all your inventory-related processes.

#### **Essential #6 – Update Job Labor Completions in Real Time**

Instead of running the shop by guesswork and expediting, you track job labor sequence *Standard* hours completions in real time to update job priorities and work center queues, which enables the work center coordination that helps jobs meet their required dates.








### **Essential #7 – Use WIP-Based Costing**

Instead of operating in the dark with incomplete product costs, you will be furnished with estimated and actual product costs that reflect material, labor, overhead, and subcontract services, along with self-adjusting Inventory and WIP accounts.

## 4 Essential #1 - Plan a Strategic Inventory

The first essential process for manufacturing efficiency is to plan a strategic inventory to reduce times to shipment while using the least amount of inventory to do so.

### Topics

-  [Overview](#)
-  [Minimum Requirements](#)
-  [What to Do](#)
-  [What Not to Do](#)
-  [Forecast Reorder Point Entry](#)

## 4.1 Overview

### **All manufacturing companies have the same challenge**

All manufacturing companies have the same fundamental challenge – how quickly and reliably can customer orders be shipped and how much inventory will be required to do so?

### **Use the Demand Driven order policy for improved inventory efficiency**

With the *Demand Driven* order policy, your intent is to have stock on hand of an item readily available to meet a high probability of your anticipated needs. Using this order policy you will have stock on hand for immediate use or sale. If you are fortunate enough to have sales greater than anticipated and you run out of stock on hand, the system will create a new Job or PO for that item and it will automatically receive priority in all work centers that it goes through to get you back on track and cover the shortage efficiently.

### **The Demand Driven order policy eliminates time to shipment for many orders**

Setting a *Demand Driven* order policy for sell items eliminates time to shipment altogether because items are available for immediate shipment from stock on hand.

### **Demand Driven components reduce time to shipment for custom to order manufactured items**

Setting a *Demand Driven* order policy for key subassemblies and purchased components instead of making and buying them to order means that jobs can be started immediately without delay and thus reduces time to shipment for made to order items.

#### **The Dell Computer example**

Dell Computer provides a good example of how having key components on hand reduces time to shipment for make to order items. Dell ships custom configured products to order almost immediately without delay. It can do this because all required components are on hand and available for immediate assembly on a just in time basis.

### **Strategic inventory reduces time to shipment using the least amount of inventory**

“Strategic inventory” is a plan for reducing times to shipment using the least amount of inventory to do so. You decide which items are to be made or purchased Demand Driven and against those items you enter a monthly potential demand and supply days target to minimize inventory.

### **Reducing times to shipment gives you a competitive edge**

Strategic inventory enables you to dramatically reduce times to shipment, which gives you a competitive edge in the marketplace over slower rivals. Increased customer satisfaction boosts sales and faster payment cycles boost cash flow.

### **Shipping dates will be reliable and achievable**

Whenever you enter a sales order line, the program uses strategic inventory settings to calculate a required date, which is the driver of your MRP system and target dates throughout. You always leave the line item requirement date unchanged and you have an Expected Ship Date that you can use as your communication date to customers. Instead of guessing when orders can be shipped, you will now operate with reliable and achievable shipping dates that reflect your strategic inventory plan.

### **Orders that exceed your stock on hand are auto-prioritized in all work centers**

If you are fortunate enough to have a sale that exceeds your potential monthly demand value and you run out of inventory on hand, the system will automatically prioritize jobs in the system in all of the work centers that they flow through. This helps you get back on schedule in the most efficient way possible.

### **Late Supply screen helps you improve customer communications on shipment dates**

The *Sales > Late Supply* screen will provide feedback to help update the Expected Ship Date for items that are running behind schedule.

### **Apply Demand Driven order policies to applicable items**

Strategic inventory is achieved by applying a Demand Driven order policy against any item you wish to have on hand to meet your anticipated needs. See *What to Do* below for guidance in making these determinations.

#### **Enter a Monthly Potential Demand and Supply Days target**

When you assign a *Demand Driven* order policy, you must also enter a *Monthly Potential Demand* and *Supply Days* target. These settings drive two calculations:

- A *Reorder Point* is automatically calculated from the item's monthly potential demand and replenish time to trigger job or PO generation whenever net demand falls below the *Reorder Point*.
- A *Min Order* amount is calculated from the supply days target so that each job or PO quantity covers so many days of forecast demand.

#### **Dynamic Reorder Point and Min Order updating**

The *Reorder Point* and *Min Order* amounts are dynamically recalculated whenever a change is made to the item's monthly demand value or replenish time variables (*Lead Days* or *Job Days*).

## **The Supply Days minimizes stock on hand**

The *Supply Days* target minimizes stock on hand and enables widespread use of strategic inventory without massive inventory investment. For example, if your average *Supply Days* target is 30 days, the total stock on hand for your entire strategic inventory will be roughly equal to 15 days of potential demand. This is because stock on hand peaks when supply is received, but then declines close to zero prior to the next receipt. 15 days supply is the midpoint of the replenishment cycle and therefore represents the average stock on hand at any given time.

## **Strategic inventory is the foundation of manufacturing efficiency**

Planning a strategic inventory is the foundation of manufacturing efficiency and sets the table for all your other key processes. Item reorder points and replenish time settings establish sales order required dates and are used by MRP to generate a coordinated master schedule. The master schedule gets adjusted based on actual material availability from inbound jobs and POs. Jobs get prioritized within work centers relative to their required dates. The Late Supply screen helps you update your expected ship dates and keep your customers informed. All of these processes function smoothly and efficiently when they emanate from a strategic inventory.

## **Boosting your manufacturing efficiency**

Planning a strategic inventory is an essential element in boosting your manufacturing efficiency. Instead of using guesswork with shipping dates and operating with an inventory that is out of control, you plan a stocking strategy that reduces times to shipment using the least amount of inventory to do so.

## 4.2 Required Settings

Before you assign the Demand Driven order policy to any items, make sure that all Manufactured (M) items have *Job Days* allocations and all Purchased (P) items have *Lead Days* allocations. These allocations are required for proper inventory levels and accurate target dates throughout the system.

### DBA requires the “Big 3” lead time settings

Whether you run MRP or not, the DBA workflow requires the “Big 3” lead time settings – a realistic Lead Days target for each P item, a realistic Job Days target for each M item, and the correct item Order Policy.

### Two lead time settings are auto-calculated

Items assigned to the *To Order* policy contribute lead time to two dynamically calculated settings -- the pre-job Lead Days for each Manufactured item (which is equal to the longest *Lead Days* + *Job Days* among its *To Order* policy components) and the Time to Shipment for each top-level Manufactured item (which is equal to the item’s pre job Lead Days + Job Days). These two dynamic settings are a unique DBA innovation for determining when jobs can be started and when make to order items can be shipped.

### Job Days and Purchased Item Lead Days affect inventory levels

The job days allocations for M items and lead days for your P items that you enter affect the auto-calculated replenishment times for your items. The goal of the demand driven system is to trigger a new job or purchase order with enough time to replenish the stock before you run out. If you enter inflated or padded M Item Job Days or P Item Lead Days this will inflate your replenishment time and lead to inflated inventory levels. Make sure you do not introduce fictional values in your MRP settings.

## MRP Settings

(*MRP - MRP Settings*)

Item allocations and Order Policy selection are entered in the *MRP Settings* screen.

### 1. Maintain a realistic Job Days allocation and Run Size against all Manufactured items

A *Job Days* allocation, along with a *Run Size* that represents a typical large-size job quantity, must be maintained against all your M (manufactured) items.

#### Establishing the Run Size quantity

The *Run Size* represents a typical large-size job quantity and provides a referential basis for the *Job Days* allocation. Because MRP allocates a fixed number of *Job*

*Days*, no matter what the actual demand may be, the *Run Size* amount should be sufficient to cover the larger job quantities that are likely to be required. You can click the *Production* tab to get a listing of past job quantities to help you determine this setting.

### **Establishing the Job Days allocation**

The *Job Days* is the number of shop days allocated by MRP for manufacturing the *Run Size*. For guidance on making this allocation, click the icon to the right of the *Job Days* field to launch the *Job Days Inquiry*, which provides a *Calculated Job Days* amount derived from current routing and work center settings.

NOTE: If the *Calculated Job Days* is not a plausible amount, check the item's BOM for faulty or incomplete routing settings. Also make sure that work center capacity settings are correctly established, especially the *Buffer Days* amount, which accounts for expected queue time that often exceeds actual production time. For details, see the *Work Center Capacity Settings* chapter within the *Shop Control Guide*.

WARNING: Do not artificially inflate item *Job Days* allocations because all dates are inter-connected. Inflated allocations will push out other dates in a cascading fashion that corrupts the master schedule.

## **2. Maintain a realistic Lead Days allocation against all Purchased items**

A *Lead Days* allocation must be maintained against all your P (purchased) items. The *Lead Days* is the number of calendar days allocated by MRP for procuring the item.

Bear in mind that the *Lead Days* is an "allocation" and is not the literal time it takes to receive the item from the default supplier. The allocation should take into account procurement time, receipt processing time, and extra time that may be needed to cover potential delays.

Also be aware that the allocation length may affect planned start dates for jobs that use the item. A shorter allocation may enable earlier planned start dates, but increases the risk of job delays from late POs. A longer allocation reduces the risk of job delays, but may contribute to later planned start dates.

WARNING: Do not artificially inflate item *Lead Days* allocations because all dates are inter-connected. Inflated allocations will push out other dates in a cascading fashion that corrupts the master schedule.

### **Strive for uniformity within supplier**

Among items assigned to the same default supplier, apply consistent allocations to achieve uniform due dates on multi-line POs. The *MRP Settings* screen can be filtered by default supplier, which enables you to focus on sets of items by supplier.

## Delivery Inquiry

To get a listing of actual delivery days associated with past PO receipts, you can click the *Delivery* tab at the top of the grid.

### 3. Choose a consistent Order Policy

(MRP - MRP Settings - Order Policy Screen)

A standard *Order Policy* for each item is an integral element of *Demand Driven MRP* and is a required setting that cannot be ignored or conflict with your actual planning behavior. Without exception a clear and consistent *Order Policy* must be assigned to each and every P and M item. Three *Order Policy* selection options are available in the *Order Policy* Screen.

#### Demand Driven

Assign the *Demand Driven* order policy when you intend to maintain stock on hand sufficient to cover a high probability of your potential demand scenarios. You will enter a *Monthly Potential Demand* value and a *Supply Days* target and the system will dynamically calculate the *Reorder Point* and *Min Order* quantity that are used to generate demand-driven jobs or purchase orders. Because your planning intent is to have stock on hand readily available, these items are not lead day contributors in the jobs and SOs where they are used.

#### To Order

Only assign the *To Order* policy when a component item is always ordered before parent jobs can be started or when a sell item is always made for each sales order. These items are always lead day contributors where they are used.

NOTE: It is important that *To Order* policy items remain strictly To Order. If you intend to sometimes carry extra stock or if you want a minimum quantity for price break reasons, the *Demand Driven* order policy is recommended. You can go to the *MRP > Order Policy Reviews* screen to audit your *To Order* items.

#### Manual Reorder Point (not recommended)

This setting is for manual planners that do not use MRP for generation of jobs or purchase orders. The planning assumption the software makes is that you intend to have stock on hand for all demand scenarios. Because your planning intent is to have stock on hand readily available, these items are not lead day contributors in the jobs and SOs where they are used.

#### The item Order Policy is for lead time planning



The item *Order Policy* is for lead time planning and determines whether the item is a lead time contributor or not.

### **Any item with a To Order policy is a lead time contributor**

A job that uses a component item with a *To Order* policy must wait until the item is procured or manufactured before the job can be started. When several *To Order* policy components exist, the one with the longest lead time determines the parent item's pre-job *Lead Days* allocation. Therefore any P item or lower level M item with a *To Order* policy is a lead time contributor to higher-level items.

Any top level item with a *To Order* policy is planned to be made to order, in which case the item's standard *Lead Days* and *Job Days* contribute to the item's *Time to Shipment* target. Therefore any top level M item is a lead time contributor to its own time to shipment.

### **Any item with a Demand Driven or Manual Reorder Point order policy does not contribute to lead time**

Any component item with a *Demand Driven* or *Manual Reorder Point* order policy will not delay the start of any jobs because the item is planned for immediate availability from stock. Therefore the lead time of any P item or lower level M item with a *Demand Driven* or *Manual Reorder Point* order policy does not contribute to higher-level item lead times. Changing an item's order policy from *To Order* to *Demand Driven* removes the item from higher-level item lead time calculations.

Any top level M item with a *Demand Driven* order policy is planned for immediate shipment from stock and therefore its lead time does not contribute to its own *Time to Shipment* target.

### **The item Order Policy is a binary choice**

The item *Order Policy* is a binary choice, meaning that the item is either planned to order or for stocking, but not both. It is an "either or" decision.

- If you plan the item with a *To Order* policy, all lead time calculations are based on the item always being purchased or made to order and not having stock on hand.
- If you plan the item with a stocking (*Demand Driven* or *Manual Reorder Point*) order policy, all lead time calculations are based on the item always being available from stock on hand.

### **Avoid CTO job linking with standard items**

When a top level M item is flagged for CTO job linking it is assigned a *To Order* policy and jobs are linked to and generated directly from sales order lines for the exact quantity ordered. CTO linking is ideally suited for one-off, custom items that

are made to order and never stocked. For standard items, however, CTO linking is counter-productive and should be avoided because such items are interchangeable from order to order and subject to stocking. There is no ability to adjust CTO jobs to account for stock on hand or to consolidate demand into more efficient job sizes. Furthermore, CTO linking forces items to be made to order, even in cases where items with frequent orders could be planned with a *Demand Driven* order policy to enable immediate shipment from stock.

## 4.3 What Not to Do

### Do not co-opt item order policies for cross-purposes

Do not co-opt item order policies for cross-purposes where you sometimes plan an item to order and sometimes you plan it demand driven. The only proper use of item order policies is for each item to always be planned to order or to always be planned for demand driven. Consistent and proper use of item order policies is essential for the following reasons:

- Consistent dates are essential to avoid conflicting priorities among multiple sales orders for the same item.
- Consistent dates are essential to provide multi-level date alignment within MRP generation.
- Using consistent order policies avoids introducing anomalies between planned inventory and stock on hand. When an item is planned for stock, the system expects stock to be available. When an item is planned to order, the system does not expect any stock to be on hand.
- Using consistent order policies avoids introducing distortions into M item *Lead Days* allocations. Items with *To Order* policies always contribute to M item *Lead Days* allocations, regardless when stock on hand exists.

### Do not use manual reorder points

Strategic inventory cannot be achieved using arbitrary *Manual Reorder Point* order policies, for the following reasons:

- With arbitrary reorder points there is no ability to use *Supply Days* targets, which are essential for keeping inventory to a minimum.
- With arbitrary reorder points there is no calculation basis for establishing the *Reorder Point* and *Min Order* settings.
- With arbitrary reorder points there is no dynamic updating of *Reorder Point* and *Min Order* values to reflect changes in demand or replenish time variables.

## 4.4 Demand Driven Inventory

The *Demand Driven* order policy and associated settings are entered within the *MRP Settings Order Policy* screen.

### How to assign the correct Order Policy

To assign the correct Order Policy for inventory planning and lead time contribution, follow this simple guideline:

- If you intend for the item to be on hand for the majority of demand scenarios, assign the Demand Driven order policy and plan for a Potential Demand rate and Supply Days interval.
- If you intend to always buy or make the item prior to each parent job or sales order, assign the To Order policy.

NOTE: To verify that To Order items match your actual planning behavior, run the MRP - Order Policy Review.

### Reducing lead times

A To Order policy item is removed as a lead time contributor by reassigning it to the *Demand Driven* order policy. You can reduce pre-job *Lead Days* for your manufactured items by selectively removing contributor components, which enables jobs to be started earlier. Reassigning top-level M items to the *Demand Driven* order policy eliminates Time to Shipment altogether.

### Target dates sequence and prioritize system activities

The “Big 3” lead time settings and two dynamic settings for lead time contribution determine your PO, job, and SO dates, which are perfectly aligned in the correct order of assembly. Take note that these are target dates, not literal dates, that sequence and prioritize system activities.

### When items have highly unpredictable demand:

The *Demand Driven* order policy does not require a reliable or consistent demand pattern to be effective. When unexpected demand causes a shortage, MRP immediately generates new supply and prioritizes dependent jobs to get them back on schedule. When an unusually large sales order necessitates making the item to order, the Late Supply screen provides feedback from production, which helps sales establish a realistic Estimated Ship date for communication to the customer.

### How to get your inventory under control

All material planning methods incur inventory because it is not practical to buy and make everything to order. The best inventory planning method, by far, is demand driven MRP, which is the basis of the *Demand Driven* order policy, a unique DBA innovation for smaller manufacturers. This simple planning method provides efficient ordering, rapid response to shortages, and eliminates overstocking.

## The root cause of inventory problems

Other planning methods drive lower-level requirements from sales forecasts using linked jobs or BOM explosions. Top-down explosions cause the “bullwhip effect” where forecast errors amplify exponentially at each lower level whenever component quantities are multiples of the parent. Like the power of a bullwhip, minor planning errors at the top quickly grow into major errors at the bottom and inventory easily gets out of control.

## Breaking the bullwhip effect

Demand driven planning has no bullwhip effect because lower-level items are planned individually instead of from a top-down explosion. New supply for any given item is triggered by total net demand instead of being linked to specific jobs or sales orders.

## Each item is planned for potential demand

Demand driven planning does not forecast or explode future requirements. Instead, each item is planned for a Potential Demand rate, aided by a monthly usage graph, which is simply a possible demand scenario, not a forecast or prediction. It is entered as a monthly amount that gets translated into a daily rate.

The Potential Demand rate is applied to the item’s Replenishment Time (Lead Days + Job Days + MRP Interval) to calculate a dynamic Reorder Point, and a Supply Days interval is specified to calculate a dynamic Min Order quantity.

NOTE: Make sure that item Lead Days and/or Job Days targets are realistic. Padded or inflated lead times cause high Reorder Points that trigger excessive inventory.

## New supply is triggered by firm demand

Demand driven planning never takes action on tentative demand from forecasts or explosions, which constantly changes over time. Instead, new supply is triggered solely by firm demand from sales orders.

During each MRP session, items are evaluated in a multi-level progression so that new jobs generated at each level create demand for components at subsequent levels. Whenever net demand (on hand + inbound supply - planning period demand) falls below an item’s Reorder Point, MRP generates a new job or PO for the item’s Min Order quantity or actual demand amount, whichever is greater.

## Reordering is timely and efficient

Demand driven planning solves the universal problems of when to order and in what quantity. New supply is ordered early enough so that remaining supply covers daily *Potential Demand* over the item’s *Replenishment Time*. The *Min Order* quantity ensures efficient order sizes at consistent intervals.

### **You are pre-ordering for the next Supply Days interval**

Like to order planning, new supply is only triggered by firm demand from jobs or sales orders. Instead of ordering for the job or sales order, however, you are pre-ordering for the next *Supply Days* interval, which eliminates lead time with relatively little inventory.

The item's *Potential Demand* rate does not require precision or constant adjustments. When actual demand is greater than the *Potential Demand* rate, the item will be reordered sooner than its planned *Supply Days* interval. Conversely, when actual demand is less than the *Potential Demand* rate, the item will be reordered later than its planned *Supply Days* interval.

### **Nothing can fall through the cracks**

Because each item is planned individually, there is no need for SO/job linking or BOM explosions to ensure that material requirements are fully covered. Each item's *Reorder Point* makes it impossible for any demand to somehow get missed or fall through the cracks.

### **Overstocking is eliminated**

When inventory is “pushed” onto the system with top-down explosions or blanket POs, stock continues to accumulate unless constant adjustments are made to realign supply with actual demand. By contrast, demand driven planning “pulls” inventory into the system, triggered solely by firm demand from sales orders. Inventory for any given item can never exceed one *Supply Days* interval.

### **It's the best way to plan P items with long lead times**

Demand driven planning takes the risk and guesswork out of planning P items with extremely long lead times. Instead of less frequent, larger orders with high inventory cost and risk of lengthy shortages, the item *Lead Days*, *Potential Demand*, and *Supply Days* settings cause multiple POs to be triggered in demand driven intervals, which moderates inventory swings and minimizes the duration of any shortages.

### **It's a lot easier!**

Demand driven MRP replaces lengthy and intermittent planning sessions with daily job and PO generation for rapid response to new demand. With only three item settings – the *Potential Demand* rate, *Supply Days* interval, and *Lead Days* or *Job Days* target – demand driven planning is the easiest and most effective way to get your inventory under control.



## 4.4.1 What to Do

### Step 1 – Plan a strategic inventory for sell items

Review all your sell items and assign a *Demand Driven* order policy against any item that should be made to stock for immediate shipment. Accompany the order policy with a *Potential Monthly Demand* and *Supply Days* target.

#### **Make sell items with consistent demand to stock**

When a standard sell item has consistent and predictable demand, it should be made to stock so that it is available for immediate shipment.

#### **Make sell items with inconsistent demand to stock when needed**

When a standard sell item has inconsistent and unpredictable demand, it is a judgment call as follows:

##### **When to make to order:**

If the time it takes to make the item to order is acceptable to customers and poses no harm to your market competitiveness, the item can be made to order.

##### **When to make to stock:**

If the time it takes to make the item to order is not acceptable to customers or poses harm to your market competitiveness, the item should be made to stock so that it is available for immediate shipment. In this case the sales benefits outweigh the inventory investment.

#### **One-off custom items are always made to order**

When a one-off item is customized from a model BOM or engineered from scratch, it is always made to order. One-off items are automatically assigned an order policy of *To Order*.

### Step 2 – Plan a strategic inventory for most commonly used subassemblies

Review all your subassembly M items and assign a *Demand Driven* order policy against any item that should be made to stock for immediate issuing to higher-level jobs. Accompany the order policy with a *Potential Monthly Demand* value and *Supply Days* target.

#### **Make sub items with consistent demand to stock**

When a subassembly item has consistent and predictable demand, it should be made to stock so that it is available for immediate issuing to higher-level jobs.



### **Make sub items with inconsistent demand to stock when needed**

When a subassembly item has inconsistent and unpredictable demand, it is a judgment call as follows:

#### **When to make to order:**

If the time it takes to make the item to order does not pose an unacceptable delay in starting higher-level jobs, the item can be made to order.

#### **When to make to stock:**

If the time it takes to make the item to order poses an unacceptable delay in starting higher-level jobs, the item should be made to stock. In this case the benefits in reducing time to shipment for top level items outweigh the inventory investment.

### **Step 3 - Plan a strategic inventory for most commonly used Purchased items**

Review all your P items and assign a *Demand Driven* order policy against any item that should be purchased to stock for immediate issuing to higher-level jobs. Accompany the order policy with a *Potential Monthly Demand* value and *Supply Days* target.

#### **Consider a gradual transition**

If you are transitioning from a completely *To Order* policy environment, it is consider introducing *Demand Driven* order policies on a gradual basis, limiting the initial change to your most significant *Lead Days* contributors. This way you avoid abruptly generating a large number of POs all at once as you establish initial stock quantities.

#### **Purchase items with consistent demand to stock**

When a P item has consistent and predictable demand, it should be purchased to stock so that it is available for immediate issuing to associated jobs.

#### **Purchase items with inconsistent demand to stock when needed**

When a P item has inconsistent and unpredictable demand, it is a judgment call as follows:

#### **When to purchase to order:**

If the time it takes to purchase the item to order does not pose an unacceptable delay in starting associated jobs, the item can be purchased to order.

#### **When to purchase to stock:**

If the time it takes to purchase the item to order poses an unacceptable delay in starting associated jobs, the item should be purchased to stock. In this case the benefits in reducing time to shipment for top level items outweigh the inventory investment.

### **Long Lead Days items must be purchased to stock**

When a purchased item has an extremely long *Lead Days* allocation, it should be purchased to stock to avoid unacceptable delays in starting associated jobs. In such cases the *Monthly Demand* and *Supply Days* target is used to create a pipeline of staggered POs.

### **Step 4 – Review Manufactured item Lead Days allocations**

After all the previous steps are completed, review the *Lead Days* allocations against all your M items to make sure they reflect your time to shipment objectives. If a *Lead Days* allocation is greater than desired, use the *Lead Days Inquiry* to view the contributor components so that you can apply *Demand Driven* order policies where needed to remove contributor components from the allocation.

### **How the Lead Days allocation works**

Each M item has an automatically calculated *Lead Days* allocation that is equal to the longest lead time among its to-order BOM components. MRP uses the *Lead Days* to allocate sufficient time prior to the job start date for buying components and making subassemblies.














Review all *Lead Days* allocations among your M items. When a *Lead Days* allocation is longer than desired, the remedy is to remove components with long replenish times as contributors to the calculated amount. This is done by changing each such component's order policy from *To Order* to *Demand Driven*.

You can use the *Lead Days Inquiry*, which is accessed from the icon to the right of the *Lead Days* field, to view the contributor components.

## 5 Essential #2 - Target Dates with Flexible Feedback

The second essential process for manufacturing efficiency is to generate a master schedule whereby job and PO supply dates are coordinated with dependent demand dates.

### Topics:

-  [Overview](#)
-  [Benefits](#)
-  [Automatic Scheduling](#)
-  [Item Order Policies](#)
-  [Item Allocations](#)
-  [MRP Action Window](#)
-  [Date Alignment](#)
-  [Interdependent Demand](#)
-  [Schedule Dates](#)
-  [Self-Adjusting Job Dates](#)
-  [Inquiries](#)
-  [Minimum Requirements](#)
-  [Guidelines](#)

## 5.1 Overview

### **All manufacturing companies have the same challenge**

All manufacturing companies have the same fundamental challenge when planning sales orders, jobs, and POs. When can orders be shipped and what items need to be made and purchased to meet target shipping dates?

### **DBA generates target dates automatically based on your Big 3 MRP Settings**

Your MRP settings (P item *Lead Days*, M item *Job Days*, and a clear cut *Order Policy*) are used by DBA to automatically calculate the *Pre-Job Lead Days* for your manufactured items, your Time to Shipment targets for sales orders and your replenishment time action windows for your items. These settings and calculations are used to establish SO line required dates, job planned start and finish dates, and PO line due dates.

### **SO required dates are generated during order entry**

SO line required dates are auto-generated during order entry and serve as MRP target dates. The SO line requirement dates are the principle driver of demand for the MRP system and also are used for allocations in the *Sales > Picking Manager* screen to ensure that you are always shipping in priority order.

### **MRP creates jobs for your for sale manufactured items based on firm SO demand**

MRP creates your top level jobs when sales orders requirement dates fall within the item's planning period action window. This ensures that your Jobs are always based on firm sales order demand. The *Planned Start Date* of a Job is the target release date for the system and drives demand for lower level jobs and POs.

### **MRP aligns subassemblies and purchased components with the planned start date of your jobs**

MRP will then progress through all levels of production generating subassembly jobs aligning the finish date of the subs with the *Planned Start Date* (planned release date) of their parent jobs. After all levels of production have been converted, MRP will then generate purchase orders and align the purchased components with the *Planned Start Date* of their jobs.

### **The Job Finish date is self-adjusting with job release**

Jobs are released to production based on material availability from inbound jobs and POs and stock on hand. Jobs are only released when all materials are available and allocated by DBA for the job. Upon release, jobs are assigned new finish dates to

reflect actual released dates. The released job finish date establishes a new and reliable supply date for that item.

### **PO Schedule provides feedback on late supply**

You will clearly see purchased components that are late for job release in the dependency view of the PO Schedule screen. This screen can provide a valuable resource for tracking POs that are holding up your production schedule. If a supplier firms up a delivery date, you can manually update the PO expected date and this will flow through to the Job Release screen and dependency view.

### **Late Supply screen helps you manage customer communications**

The *Sales > Late Supply* screen provides feedback to your office staff to update the Expected Ship Date for Jobs that are running behind schedule.

### **Picking Manager helps ensure that you are shipping on time**

The *Sales > Picking Manager* allocates your stock on hand in priority order to ensure that you are staying on time across all sales orders company wide.

### **Scheduling is totally automated**

The scheduling system is totally automated, meaning that there is no need for manual intervention with any scheduling dates except for rare exceptions. All dates are derived from item order policies and allocations.

### **Boosting your manufacturing efficiency**

Generating a master schedule is an essential element in boosting your manufacturing efficiency. Instead of struggling with tedious manual planning, inefficient quantities and unreliable dates, and all the expediting that goes with it, you generate jobs and POs quickly and efficiently within a coordinated master schedule that gives you an action plan for shipping on time.

## 5.2 Benefits

### **Enables you to operate with a strategic plan**

Instead of reacting to events with expediting and other ad hoc measures, the scheduling system enables you to operate pro-actively with a strategic plan that expresses your shipping and inventory objectives.

### **Enables any company to use strategic planning**

Strategic planning is achieved by using common sense item order policies and allocations. Any company can learn to use these simple settings without need for special expertise.

### **Provides reliable and achievable shipping dates**

Instead of guessing when orders can be shipped and hoping those dates can be met, the scheduling system automatically generates target shipping dates that are consistent, achievable, and can reliably be furnished to customers.

### **Instills confidence that dates are realistic and meaningful**

Instead of resorting to hot lists, material hoarding, and other workarounds caused by a lack of trust in system dates, your shop personnel will gain confidence that master schedule dates are realistic and can reliably be used to guide shop activities.

### **Eliminates manual date adjustments**

Instead of tediously adjusting a complex web of interdependent dates, the scheduling system automatically adjusts job dates when jobs are released to production.

### **Eliminates manual expediting**

The scheduling system eliminates all the time spent on inefficient and costly manual expediting formerly needed to get jobs through the shop. Work center sequences are now automatically prioritized so that jobs trending late are automatically expedited to meet their required dates.

### **Dramatically boosts your manufacturing efficiency**

Using the master schedule to translate your strategic inventory objectives into an overall action plan will dramatically boost your manufacturing efficiency, which is your ability to fulfill customer orders quickly and reliably using the least amount of inventory and WIP.

## 5.3 Automatic Scheduling

### **Scheduling is totally automated**

The scheduling system is totally automated, meaning that there is no need for manual intervention with any scheduling dates but for rare exceptions.

### **SO dates are automatically set by item order policies and allocations**

SO line required dates are automatically set to the current date when an item has a stocking order policy (*Demand Driven* or *Manual Reorder Point*) and is forward scheduled by the items *Lead Days* and *Job Days* allocations when an item has a *To Order* policy.

### **New job dates are automatically set by item allocations**

New job start and finish dates are automatically scheduled backward from required dates by item *Lead Days* and *Job Days* allocations.

### **PO dates are automatically set by item allocations**

PO line due dates are automatically scheduled backward from required dates by item *Lead Days* allocations.

### **Job dates are automatically adjusted with job release**

When a job gets released to production as material becomes available from inbound jobs and POs and stock on hand, the job gets a released date and an updated finish date.

### **Jobs are automatically prioritized in work center queues**

Each job gets a priority value based on estimated job days remaining relative to the job's finished date. Job sequences are listed in job priority order within work center queues so that late trending jobs are automatically expedited as needed.

### **Late Supply screen helps improve your customer communications**

The *Sales > Late Supply* screen will allow you to update your expected ship date for Jobs that are running behind schedule.

### **Picking Manager helps ensure that you are shipping on time**

The *Sales > Picking Manager* allocates your stock on hand in priority order to ensure that you are staying on time across all sales orders companywide.

## 5.4 Big 3 Settings

### The "Big 3" MRP Settings

In our experience, the majority of companies that are struggling with MRP can remedy their problems by focusing on the Big 3 MRP settings: 1). Reasonable Job Days on 100% of their manufactured items 2). Reasonable lead days on 100% of their purchased items, and 3). A clear cut order policy decision of *Demand Driven* or *To Order* based lead day contribution. If the Big 3 settings are not done, you must make an immediate commitment to get these settings done completely as the highest priority. Once the Big 3 are in place the entire system will fall in line for your entire company.

### Maintain a Job Days allocation and Run Size against all M items

A *Job Days* allocation, along with a *Run Size* that represents a typical large-size job quantity, must be maintained against all your M (manufactured) items. The *Job Days* is the number of shop days allocated by MRP for manufacturing the item. For guidance on making this allocation, you can use the *Job Days Inquiry*, which provides a *Calculated Job Days* amount derived from current routing and work center settings.

### Maintain a Lead Days allocation against all P items

A *Lead Days* allocation must be maintained against all your P (purchased) items. The *Lead Days* is the number of calendar days allocated by MRP for procuring the item. Make sure sufficient days are allocated to cover the entire procurement process, including potential variations in supplier delivery time and receipt processing time. Among items assigned to the same default supplier, apply consistent allocations to achieve uniform due dates on multi-line POs.

### Use item Order Policies to plan a strategic inventory

"Strategic inventory" is a plan for reducing times to shipment using the least amount of inventory to do so. Strategic inventory is achieved by applying a Demand Driven order policy against any item you wish to have on hand to meet a high probability of your demand scenarios, accompanied by a *Monthly Potential Demand* value and *Supply Days target*.

Link:

 [Essential #1 - Plan a Strategic Inventory](#)



## 5.5 Item Allocations

### All dates are generated from Lead Days and Job Days allocations

All dates within the master schedule (SO line required dates, job start and finish dates, PO line due dates) are generated from item *Lead Days* and *Job Days* allocations.



### Allocations determine item action windows

Each item's *Lead Days* plus *Job Days* allocations are the basis for its replenish time, which is used by MRP as the "action window" for assessing net demand to trigger job or PO generation.

### All items must be given a Job Days or Lead Days allocation

The scheduling system depends on allocation settings for date generation and action window determination. Therefore, the scheduling system only works when all M items, without exception, are given a *Job Days* allocation and all P items, without exception, are given a *Lead Days* allocation.

#### Links:

-  [MRP Guide - M Item Settings](#)
-  [MRP Guide - P Item Setting](#)

## 5.6 Item Order Policies

### Order Policy is based on lead day contribution

The choice of a clear cut order policy based on lead day contribution is essential. To Order items are always planned to be made/purchased to order and are lead day contributors where they are used. Items that you carry stock (Demand Driven) are planned to be available immediately and are therefore not lead day contributors.

### Avoid a hybrid order policy

Do not sometimes carry stock for your *To Order* items. From a planning perspective, *To Order* items will always be lead day contributors in the schedule regardless of your current stock on hand. Only assign the *To Order* policy when a component line is always ordered before parent jobs can be started or when a sell item is always made/purchased for each sales order. If you intend to carry extra stock for any reason, the *Demand Driven* order policy is recommended.

### Item order policies directly affect SO required dates

Item order policies directly affect SO line required dates, which are MRP target dates.

#### Demand Driven Order Policy

When an item has an on hand policy (*Demand Driven* or *Manual Reorder Point*), the required date is set to the current date because stock is expected to be available for immediate shipment.

#### To Order Policy

When an item has a *To Order* policy, the item is expected to always be made to order, in which case the required date is forward scheduled by the item's *Lead Days* and *Job Days* allocations.

#### Reducing time to shipment

Time to shipment for make to order items can be significantly reduced by reducing or eliminating the M item's *Lead Days* allocation, which is the time allocated for making subassemblies or buying components to order prior to job start. This is achieved by making and buying contributor components demand driven instead of to order within the context of a strategic inventory.

### Strategic inventory is your shipping and inventory management plan

"Strategic inventory" is your shipping and inventory management plan. You decide which items are to be made or purchased demand driven in order to reduce times to shipment. Against those items you enter a monthly potential demand value and supply days targets to keep inventory to a minimum. See the previous chapter for details.

**Link:**

 [Essential #1 - Plan a Strategic Inventory](#)

**Reducing times to shipment gives you a competitive edge**

Strategic inventory enables you to dramatically reduce times to shipment, which gives you a competitive edge in the marketplace over slower rivals. Increased customer satisfaction boosts sales and faster payment cycles boost cash flow.

**Shipping dates will be reliable and achievable**

Whenever you enter a sales order line, the program uses strategic inventory settings to calculate a required date, which is a target shipping date that you can reliably furnish to the customer. If a Job is running behind schedule you can use the *Sales > Late Supply* screen to update your *Expected Ship* date and inform your customer if necessary. Instead of guessing when orders can be shipped, you will now operate with consistent and achievable shipping dates that reflect your strategic inventory plan.

## 5.7 MRP Action Window

### **The MRP action window is based on replenish time**

The MRP “action window” refers to each item’s planning period, which is used to assess net demand for job and PO generation. Ideally, the planning period is equal to the item’s replenish time. For M items, replenish time is primarily comprised of the item’s *Lead Days* plus *Job Days* allocations. For P items, replenish time is primarily comprised of the item’s *Lead Days* allocation.

### **Demand outside the action window needs no current action**

Any demand that exists outside an item’s action window is not fully complete and needs no current action. This is because ample time remains to initiate stock replenishment at a later time when that demand firms up and eventually falls into the action window.

### **The action window limits the schedule to current requirements**

The MRP action window limits the master schedule to requirements that need current action. All dates in the schedule, with the exception of blanket sales orders, are short term in nature.

### **The short term nature of the system targets makes for realistic dates**

The short term nature of the system targets makes for dates that are realistic upon their generation without any need for manual adjustment.

### **Avoid adding extra days to P Item Lead Days or M Item Job Days**

The scheduling system works most efficiently when the MRP “action window” is equal to each item’s replenish time. Avoid adding extra days or padding to your P Item *Lead Days* or M Item *Job Days*. Fictional values in your lead days and job days will severely impact your system target dates, material allocations and your inventory stocking levels.

If your objective is to enlarge your item's planning period action window during MRP generation, you can go to the *MRP Setup - MRP Defaults* and add extra days to your MRP replenishment time.

### **Replenishment time also affects how much stock you carry**

The dynamically calculated reorder point in the Demand Driven order policy uses the Monthly Potential Demand value and converts it to a daily rate and multiplies that by the replenishment time. Making sure you have reasonably accurate replenishment times will lead to a more efficient inventory.

## 5.8 Date Alignment

### **System target dates provide an overall action plan**

System target dates provide an overall action plan for establishing and meeting your sales order required dates. This action plan is effective because all dates are coordinated so that events are scheduled in a logical sequential order.

### **All supply dates are aligned with dependent demand dates**

All dates within the master schedule are coordinated so that supply dates associated with inbound jobs and POs are exactly aligned with dependent demand dates associated with jobs and sales orders.

### **Date alignment makes the schedule coherent and meaningful**

The alignment of supply dates with dependent demand dates makes the overall schedule coherent and meaningful. Sales and shop personnel will have confidence that dates are realistic and can be relied upon to furnish to customers and guide shop activities.

### **M item Lead Days allocations provide multi-level date alignment**

M item *Lead Days* allocations are automatically calculated and made equal to the longest replenish time among each parent's to-order components. This provides for perfect date alignment during all levels of MRP generation whereby demand dates at one level (SO required dates or job start dates) are perfectly aligned with supply dates at the next level (job finish dates or PO due dates).

### **Plan your M item Lead Days with strategic inventory**

M item *Lead Days* allocations are derived from component order policies. Using strategic inventory, you can reduce or eliminate *Lead Days* allocations as needed to tighten master schedule dates and meet your time to shipment objectives.

## 5.9 Interdependent Demand

### **System target dates provide an overall action plan**

System target dates provide an overall action plan for establishing and meeting your sales order required dates. This action plan is effective because all dates are coordinated so that events are scheduled in a logical sequential order.

### **All supply dates are aligned with dependent demand dates**

All dates within the master schedule are coordinated so that supply dates associated with inbound jobs and POs are exactly aligned with dependent demand dates associated with jobs and sales orders.

### **Date alignment makes the overall schedule coherent and meaningful**

The alignment of supply dates with dependent demand dates makes the overall schedule coherent and meaningful. Sales and shop personnel will have confidence that dates are realistic and can be relied upon to furnish to customers and guide shop activities.

### **M item Lead Days allocations provide multi-level date alignment**

M item *Lead Days* allocations are automatically made equal to the longest replenish time among each parent's to-order components. This provides for perfect date alignment during all levels of MRP generation whereby demand dates at one level (SO required dates or job start dates) are perfectly aligned with supply dates at the next level (job finish dates or PO due dates).

### **Plan your M item Lead Days with strategic inventory**

M item *Lead Days* allocations are derived from component order policies. Using strategic inventory, you can reduce or eliminate *Lead Days* allocations as needed to tighten master schedule dates and meet your time to shipment objectives.

## 5.10 Schedule Dates

### Schedule dates are all dictated by your item settings

All dates in the master schedule are dictated by your item settings. SO line required dates are dictated by item order policies and *Lead Days* and *Job Days* allocations. Job start and finish dates are dictated by item *Lead Days* and *Job Days* allocations. PO line due dates are dictated by item *Lead Days* allocations.

### Target dates express your planning strategy

The overall schedule translates your item settings into an action plan that expresses your planning strategy for times to shipment, inventory, and production and procurement allocations.

### SO line required dates are the drivers of MRP

SO required dates always reflect the MRP planning dates and are derived from item order policies and allocations. The SO line required date ignores current stocking levels and always comes in based on the order policy rule.

For example, if an item has a *To Order* policy, the required date is always forward scheduled by the item's *Lead Days* and *Job Days* allocations, even if the order can be covered by stock on hand, contrary to what is expected by the item's order policy. The required date remains consistent with the order policy for these reasons:

### Stock on hand rarely deviates from planned inventory

When you use consistent order policies over time, stock on hand conforms to your strategic objectives and will rarely deviate from planned inventory except for these minor exceptions:

- If an item has a stocking order policy (*Demand Driven* or *Manual Reorder Point*), the system expects stock to be on hand and therefore makes the sales order required date equal to the current date. If stock is not on hand due to a temporary shortage, any job in progress for this item automatically receives high priority to minimize late shipment time. These items will show up in the Late Supply screen and help you manage the expected ship date and customer communications on progress.
- If an item has a *To Order* policy, the system never expects stock to be on hand and therefore always forward schedules the SO required date by the item's *Lead Days* and *Job Days* allocations. If by some fluke the order can be covered by stock on hand, MRP will not generate a job. The item will be allocated and available to ship in the Picking Manager screen.

### Using consistent dates avoids conflicting priorities

Using consistent dates that reflect item order policies avoids conflicting priorities when multiple orders exist for the same item. Each order is not an isolated event. Open orders may already exist for the same item and new orders could be entered tomorrow, the next day, and so on. New supply may have arrived yesterday, today, or may arrive tomorrow. It is not logical for a new order to get a higher priority required date than an older order. Consistent dates avoid this problem altogether.

### **Items with conflicting priorities should be made to stock (Demand Driven)**

If you commonly receive multiple orders for the same item, the way to avoid conflicting priorities altogether is to make the item to stock instead of to order. Any item with consistent and predictable demand should be made to stock because it requires very little inventory to do so and all orders can then be shipped immediately without delay. Additionally, job quantities will be more efficient and fewer jobs simplify the master schedule.

### **The Expected Ship date is your customer communication date**

By default, the SO line *Expected Ship* date starts out equal to the SO line item required date (MRP driver). If an item is running behind schedule you can update the expected ship date and notify the customer of this new date. The *Sales > Late Supply* screen is a very important tool that helps you manage your expected ship dates and customer communications.

### **Do not co-opt item order policies for cross-purposes**

Do not co-opt item order policies for cross-purposes where you sometimes plan an item to order and sometimes you plan it for stock. The only proper use of item order policies is for each item to always be planned to order or to always be planned for stock (Demand Driven). Consistent and proper use of item order policies is essential for the following reasons:

- Consistent dates are essential to avoid conflicting priorities among multiple sales orders for the same item.
- Consistent dates are essential to provide multi-level date alignment within MRP generation.
- Using consistent order policies avoids introducing anomalies between planned inventory and stock on hand. When an item is planned for demand driven stock, the system expects stock to be available. When an item is planned to order, the system does not expect any stock to be on hand.
- Using consistent order policies avoids introducing distortions into M item *Lead Days* allocations. Items with *To Order* policies always contribute to M item *Lead Days* allocations, regardless when stock on hand exists.



## 5.11 Self-Adjusting Job Dates

What makes the scheduling system so easy to use is that job dates and priorities are automatically adjusted without any need for manual intervention. Therefore, the overall schedule always reflects actual conditions on the ground.

### **Jobs cannot be started until material is available**

Actual job start dates vary from planned start dates because jobs are often dependent on material supply from inbound POs and subassembly jobs. Jobs are released to production only when material becomes available. So if an inbound PO or subassembly job is running late, dependent jobs must be delayed until the PO or job is received.

### **Job finish dates get adjusted with job release**

When material is available and a job gets released, it is assigned a new finish date relative to its actual released date. This establishes a new and reliable supply date for the item. If conditions change during production that delays your job, you can manually update the *Finish Date* in the *Job Schedule* screen to update the new expected supply date.

### **Jobs are automatically prioritized in work center queues**

Each job gets a priority value based on estimated job days remaining relative to the job's finished date. Job sequences are listed in job priority order within work center queues so that jobs are automatically expedited as needed. Jobs that are trending late relative to their required dates automatically receive higher priority than jobs trending early or on time.

### **Job priority requires timely job labor completions**

Be aware that job priority is only meaningful when job labor is updated as sequences are finished. This process has many efficiency benefits, which are explained in detail in our *Manufacturing Efficiency Guide*.

#### **Link:**

 [Essential #6 - Track Job Labor](#)

### **Late Supply screen improves communication between the shop and the office**

When a job is running late and is released for production the finish date (supply date) is moved outward. When the finish date is greater than the sales order requirement date this job will show up in the *Sales > Late Supply* screen. This will immediately let the office know which jobs are running late and they can update the *Expected Ship* date and contact the customer if appropriate.

**Use the Picking Manager to ensure that you are following your plan**

The *Sales > Picking Manager* screen allocates your stock on hand in priority order to ensure that you are staying on time across all sales orders company wide.

## 5.12 Inquiries

There are many Inquiry screens in DBA that provide feedback on how you are performing against your system target dates.

### Job Schedule

The *Job Schedule* screen displays the overall status of your jobs. *Newstatus* jobs that are waiting to be started are displayed separately from *Released* status jobs that are in production. When jobs are released the job *Finish Date* is updated to provide a reliable supply date for the item. If conditions during production change, you can manually change the *Finish Date* to reflect a new supply date for the item. The *Finish Date* for released jobs will provide feedback to your office staff in the *Sales > Late Supply* screen (see below).


#### Link:

 [Screen Help - Job Schedule](#)

### PO Schedule

The *PO Schedule* screen displays the master PO schedule. Late POs are monitored in this screen to expedite supplier delivery. You will see a dependency view against PO lines that are running late against their release job target date (*Planned Start Date*). If a supplier confirms a delay in shipment, you can update the Expected Date in the PO schedule and it will update the supply date in the system. This new supply date will be seen in the Job Release screen and in the Stock Status screen.

#### Link:

 [Screen Help - PO Schedule9](#)

### Late Supply screen improves communication between the shop and the office

If a job is running late you can update the finish date in the *Job Schedule* screen to reflect your conditions in the shop. Likewise, if a PO is running late (for example, the supplier is reporting an unexpected delay) you can update the expected date in the *PO Schedule* screen. In both cases when the expected supply date (*Finish Date* for Jobs and *Expected Date* for POs) is greater than the sales order line requirement date this item will show up in the *Sales > Late Supply* screen. This will immediately let the office know which jobs or POs are running late and they can update the SO line *Expected Ship* date and contact the customer if appropriate.

### Picking Manager helps ensure that you are shipping on time

The *Sales > Picking Manager* allocates your stock on hand in priority order to ensure that you are staying on time across all sales orders company wide

## 5.13 Target Dates - Guidelines

Follow these guidelines for the scheduling system to work properly and provide good results.

### **Do not co-opt item order policies for cross-purposes**

Do not co-opt item order policies for cross-purposes where you sometimes plan an item to order and sometimes plan it for stock (*Demand Driven*). The only proper use of item order policies is for each item to always be planned to order or to always be planned to stock (*Demand Driven*).

### **Avoid adding extra days to P Item Lead Days or M Item Job Days**

The scheduling system works most efficiently when the MRP “action window” is equal to each item’s replenish time. Avoid adding extra days or padding to your P Item *Lead Days* or M Item *Job Days*. Fictional values in your lead days and job days will severely impact your system target dates, material allocations and your inventory stocking levels.

If your objective is to enlarge your item's planning period action window during MRP generation, you can go to the *MRP Setup - MRP Defaults* and add extra days to your MRP replenishment time.

### **Use default SO Required dates**

Use default SO line *Required* dates, which reflect your item order policies and allocations, without manual intervention. If any required date is not as desired, change the underlying settings so that your planned time to shipment meets your strategic objectives for this order and future orders as well. Never allow the required date to be used as a “wish date” by salespeople because it is a manufacturing date that must be aligned with dependent jobs and POs. You can use the *Expected Ship* date for customer communications. The *Expected Ship* date can be freely changed without impacting system dates or allocations.

### **Do not adjust SO Required dates when supply jobs are trending late**

Do not adjust SO line *Required* dates when supply jobs are trending late. Otherwise, the sales order loses priority within the *Sales > Picking Manager*.

### **Use the Expected Ship date as the customer communication date**

The *Sales > Late Supply* screen will help you update the *Expected Ship* date for items that are running behind schedule.

### **Generate MRP on a daily basis**

The most efficient way to perform just in time planning is to generate MRP on a daily basis. This way you always respond immediately to any new demand that arises.

Unlike manual planning, which is time-consuming and therefore is often done only once or twice a week in lengthy sessions, daily MRP generation only takes a few minutes.

### **Never generate partial or fragmented MRP sessions**

Each MRP session is designed for complete generation and conversion through all job levels and always finishing with PO generation and conversion. Complete generation is an absolute requirement for achieving a coordinated master schedule. Never skip levels or generate jobs on one day and POs on another.

NOTE: This guideline does not mean that two people cannot participate in an MRP session. A production planner, for example, could generate the entire session and convert jobs, but could pause the session after PO generation so that a buyer could convert the planned POs after verifying supplier prices and other details.

### **Never delay planned job or PO conversion**

When MRP generates a planned job or PO, it must be converted immediately in order to avoid introducing late dates into the master schedule. Never delay conversion because this defeats the “just in time” nature of the master schedule.

### **Do not bypass MRP with manual jobs and POs**

MRP generates a coordinated master schedule in which all dates are inter-connected and work centers are prioritized based on meeting required dates. When you interject a manually created job or PO into the master schedule, it has no relationship with other dates and disrupts the schedule by misallocating material and distorting work center priorities.

### **Do not create future jobs**

Do not manually create future jobs in anticipation of future demand or to comply with blanket sales orders. This is a crude form of forecasting that is not compatible with just in time planning and the master schedule. The correct way to plan for anticipated demand is to enter a *Monthly Forecast* and *Supply Days* target to automatically generate demand-driven jobs at planned intervals.

### **Do not manually adjust job dates**

Job dates are coordinated upon creation with dependent demand dates and are automatically adjusted at time of job release with no need for manual intervention prior to job release.

### **Only release jobs when material is available**

Never release a job without allocated material, which disables the means by which jobs are started in the correct order of assembly and given new finish dates to reflect actual conditions on the ground.

**Link:**

 [Essential #3 - Release Jobs with Material](#)

**Run work center sequences in job priority order**

Whenever possible, run work center sequences in job priority order so that late trending jobs are automatically expedited as needed to meet their required dates.

**Link:**

 [Essential #4 - Coordinate Work Centers](#)

**Track job labor using Standard Hours completions**

Track job labor as sequences are finished, using standard or actual hours, in order to update work center queues and job priorities.

**Link:**

 [Essential #6 - Track Job Labor](#)

**Use the Late Supply screen to manage customer communications for shipment dates**

The *Sales > Late Supply* screen provides feedback to your office staff to update the SO line *Expected Ship* date for Jobs or POs that are running behind schedule.

**Use the Picking Manager to ensure that you are following your plan**

The *Sales > Picking Manager* screen allocates your stock on hand in priority order to ensure that you are staying on time across all sales orders company wide.

## 6 Essential #3 - Release Jobs with Material

The third essential process for manufacturing efficiency is to release jobs based on material availability, which automatically adjusts the master schedule to reflect actual receipts from inbound jobs and POs.

### All manufacturing companies have the same challenge

All manufacturing companies have the same fundamental challenge -- when can jobs be started and in what order?

### Jobs are released to production in the Job Release screen

Jobs are released to production in the *Job Release* screen within the *Job Control Panel*. DBA automatically allocates all supply with existing demand according to your plan. Jobs are released on their *Planned Start* date, provided that material is fully allocated to all job components. Otherwise, job release is delayed until material is fully allocated.

### Job release adjusts the master schedule

When a delayed job gets released, the *Job Finish* date is automatically forward scheduled from the *Released* date to update the master schedule with a realistic supply date. This is what makes the master schedule self-adjusting without need for manual intervention.

### The Late Supply screen helps update your SO line Expected Ship Date

When the job is released it will update the job finish date. When the job finish exceeds your SO line item *Required* date it will show up on the *Sales > Late Supply* screen where you can update your SO line *Expected Ship* date and notify the customer if necessary.

### The Released date is considered the actual start date

The job *Planned Start* date is the original job start date. When the job gets released, the *Released* date is captured and is considered the actual start date for analysis purposes.

### Job release saves time

Job release saves a great deal of time because you always know exactly when jobs can be started without having to manually investigate whether purchased components have been received or subassemblies completed.

### Job release is especially useful with multi-level jobs



When you release jobs only when material is fully allocated, jobs will get released in perfect order because subassembly jobs will be finished in order to be available for allocation to higher level jobs.

### **Material is allocated in a batch process**

Whenever the *Job Control Panel* screen is launched, a batch process allocates component stock on hand ('Material') to all open jobs. Material is allocated first to *Released* status jobs in *Planned Start* date order and then to *Newstatus* jobs in *Planned Start* date order.

### **Boosting your manufacturing efficiency**

Releasing jobs with material is an essential element in boosting your manufacturing efficiency. Instead of guessing or investigating which jobs have material to get started, or having to rob material from some jobs in order to start other jobs – you avoid all this by using MRP to cover all job demand and by allocating material to jobs so you know exactly which jobs can be released to production at any given time. An additional benefit is that the master schedule gets automatically adjusted without any need for manual intervention.

## **What to Do**

### **Do not release when Shortage is indicated**

When a red icon and 'Shortage' is displayed in the *Material* field, it means that the job is at or past its *Planned Start* date, but one or more of its components is not fully allocated. Without allocated material, job release must be delayed.

### **Material Allocation Inquiry**

You can click the red icon in the *Material* field to launch the *Material Allocation* inquiry, which provides a list of the components that are not currently fully allocated to the job. In most cases an open PO or job exists to supply the component, but has not yet been received. You can get a list of projected supply and demand transactions by clicking the icon in the *Stock Status* field.

NOTE: Within the *Projected* tab of the *Stock Status* inquiry you can click the PO or job number in the *Source* field to drill down to the *PO Schedule* or *Job Schedule* screen to view the underlying details of the supply event associated with the component shortage.

### **Do not ignore the shortage warning**

It is vitally important that you only release jobs for which material is fully allocated. If you ignore the shortage warning and release a job anyway, the released job "steals"

allocated material from non-released jobs and the rescheduling function is compromised.

### **Job release can occur multiple times per day**

Job release is not a once a day process. If you have a relatively high volume of multi-level jobs, jobs should be released periodically throughout the day so that higher level jobs can be released in a timely fashion as subassembly jobs get completed. It is common that when you do a Job Receipt for a subassembly, that you will immediately go to the Job Release screen and release the next job level waiting for that subassembly. Releasing jobs is a simple process that is a big time-saver because it eliminates all the manual investigation that would otherwise be needed to determine which jobs are completed and which ones are to be started next.

### **Job travelers can be printed concurrent with release**

Each time a batch of jobs is released, you are prompted to print job travelers for the newly released jobs. This is highly convenient and is the best way to insure that travelers get printed when needed and include timely schedule dates.

## 7 Essential #4 - Coordinate Work Centers

The fourth essential process for manufacturing efficiency is to coordinate your work centers so that sequences are run in job priority order so that jobs are automatically expedited to meet their required dates.

### All manufacturing companies have the same challenge

All manufacturing companies have the same challenge when it comes to running the shop – what job sequence should be run next in each work center? With lots of work centers and lots of jobs, this is not easy to do, which is why most shops rely heavily on manual expediting to get jobs through the shop.

### Job sequences are assigned in the Work Center Schedule screen

Assigning job sequences to workers is done in the *Schedule* tab within the *Work Center Schedule* screen.

### Job sequences are limited to Started, Ready, and Next status

Job sequences are listed by work center and are limited to those with a status of *Started*, *Ready*, and *Next*, which are described as follows and listed in this order:

#### Started

This status identifies job sequences that have been assigned to workers and are in progress.

#### Ready

This status identifies job sequences that are finished in the previous work center, but have not yet been started in this work center. These job sequences can be considered “on deck.”

#### Next

This status identifies job sequences that are in progress in the previous work center, but are not yet finished. These sequences are listed to accommodate situations where a job sequence can overlap and be run in parallel with a previous sequence.

### Sequences are sorted by Priority within status

Within each status, sequences are sorted by ascending job *Priority*, which is calculated as follows:

Shop Days to Required – Remaining Sequence Days = Priority

A negative number means that remaining production time exceeds available shop time and therefore the job is trending late relative to its required date. Conversely, a positive number means that available shop time exceeds remaining production time and therefore the job is trending on schedule. Sequences are sorted lowest to highest

*Priority* value so that jobs trending late automatically get greater priority without need for manual expediting.

### **Assigning sequences by priority optimizes shop workflow**

When job sequences are assigned in priority order across all work centers, overall shop workflow is optimized so that jobs get finished on schedule without need for manual expediting.

### **Boosting your manufacturing efficiency**

Coordinating work centers is an essential element in boosting your manufacturing efficiency. Instead of running the shop by guesswork and expediting, you run work center sequences in job priority order so that jobs are automatically expedited to meet required dates.

## **What to Do**


### **Change status to Started when worker assignment is made**

Assigning job sequences to workers is done as follows. Within *Ready* status sequences you always select the job sequence at the top of the list, which has the greatest priority. After the assignment has been communicated to the appropriate worker, click the button in the *Status* field to change the status from *Ready* to *Started*. This lets you know that the sequence has been assigned and is now in progress.

### **Update job labor as sequences are finished**

Work centers can only be coordinated when job labor is updated as sequences are finished, which updates job priority values and work center queues.

#### **Link:**

 [Essential #6 - Track Job Labor](#)

## 8 Essential #5 - Issue Material in Real Time

The fifth essential process for manufacturing efficiency is to issue material to jobs in real time in order to achieve accurate on hand quantities for the benefit of MRP and all your inventory processes.

### All manufacturing companies have the same challenge

All manufacturing companies have the same challenge when it comes to tracking stock on hand. You need to know what's actually on hand to plan jobs and POs, to know when jobs can be started, to know what can be issued to jobs, to know what can be shipped, and to be able to conduct stock counts.

### Job release assures material availability

Jobs are only released to production when material is fully allocated to all job components and therefore the job release process assures that material will be available when needed for specific job sequences.

#### Link:

 [Essential #3 - Release Jobs with Material](#)

### Issue material on a “just in time” basis

Because material is fully allocated on job release, there is no need to hoard material in advance, which clogs aisles and staging areas. Instead, material can be issued on a “just in time” basis prior to job sequences being started.

### Location control saves time and reduces errors

If you have been using a single “dummy” location against all items instead of actual locations, we highly recommend using location control. Tracking material by specific location saves time and reduces errors by making it easier to find items and detect and correct mistakes. It also adds a discipline to receiving, issuing, and picking processes that promotes a “real time” culture among shop personnel.

### Boosting your manufacturing efficiency

Issuing material in real time is an essential element in boosting your manufacturing efficiency. Instead of bacflushing components after the fact so that you never know what is actually on hand and what has already been issued to work in process, you issue materials on a “just in time” basis for real time inventory tracking that benefits all your inventory-related processes.

## What to Do

### **The Material icon indicates when material is needed**

Within the work center queue in the *Work Center Schedule* screen, a red *Material* icon indicates when material is needed and has not yet been issued to a job sequence.

Any components assigned to the sequence are to be issued prior to sequence start. Additionally, if the *First Seq* checkbox is selected, this is the job's first sequence, in which case all components that are not assigned to specific sequences are to be issued as well.

### **Click the icon to issue the material**

To issue the material, click the icon in the *Material* field to launch the *Job Issues* screen, which is filtered to include just the components that are to be issued to this sequence.

### **Do not use the job traveler as an issue list**

Do not use the job traveler as an issue list because it is not designed for that purpose and does not include location or lot and serial information. Components and quantity per amounts are listed on the traveler for manufacturing specification purposes.

### **Use the issue list or dispatch list**

You can issue the material using the issue list or dispatch list method.

#### **Issue List Method**

The issue list is printed by clicking the *Issue List* button above the grid in the *Job Issues* screen. The issue list includes stock quantities by location and by lot and serial number and is limited to the components needed for this sequence. You print the issue list, gather the material, and then you return to the *Job Issues* screen to make your entries.

#### **Dispatch List Method**

The dispatch list method works in the opposite manner. You issue the material on the screen first and then you go to the *Batch History* tab and click the *Dispatch* button to print the dispatch list. The dispatch list provides a listing of the components, locations, and lot and serial values that were issued.

The dispatch list is highly useful if you rely on warehouse personnel to gather the material for you. You submit the dispatch list to the warehouse and it provides all the instructions needed for gathering and delivering the material to the work center.

### **Always issue material in real time**

It is vitally important that material is always issued on the screen in real time when it actually gets issued out on the shop floor. This assures that on hand quantities are

always accurate, which helps with stock counts and gives users confidence that inventory numbers have meaningful value.

### **Failure to issue affects downstream work centers**

If material does not get issued against an associated job sequence, the material icon will continue displaying in red against all downstream job sequences until the material gets issued.

### **Return unused material and correct the BOM if needed**

When a sequence is completed, any unused material should be returned to stock. This is done by clicking the *Return* button on the *Transactions* sub-tab within the *Job Issues* screen, which enables you to return a portion of the original issue amount back to stock.

If the unused material was due to an error in the bill of materials, it is vitally important that the BOM gets corrected immediately so that the error does not get perpetuated in future jobs.

## 9 Essential #6 - Update Job Labor in Real Time

The sixth essential process for manufacturing efficiency is to track job labor to update job priorities and work center queues.

### **All manufacturing companies have the same challenge**

All manufacturing companies face the same challenge when it comes to monitoring work in process – where does each job stand at any given time? A great deal of effort gets wasted investigating job progress to expedite jobs through the shop.

### **Recording labor sequence completions real time is a requirement for shop control**

Shop control is the means by which shop activities are coordinated to complete jobs. Using shop control will dramatically boost your manufacturing efficiency. Job labor tracking provides the information and feedback that makes shop control possible.

### **The benefits of job labor tracking (real time sequence completions)**

Job labor tracking has a profound impact on your efficiency.

- It enables the *Work Center Schedule* screen to govern all shop activities, including worker assignments, material issues, and labor updating.
- It enables the job *Priority* calculation that determines the optimum job sequence order within work centers.
- It enables finished jobs to be received in real time without any delays for labor costing.

### **Labor must be updated as job sequences are finished**

Real time labor updating is done using the *Work Center Schedule* screen. The *Labor* icon is clicked against the finished sequence to launch the *Job Labor* screen, which is opened to the selected job.

### **Standard hours are recommended for improved throughput**

When the *Standard* hours type is used against job sequences, labor can be quickly updated in just a few clicks because standard setup and labor hours are applied instead of actual hours. Using standard hours eliminates all the mechanical processes that are required to collect and report actual labor hours. Our recommendation is to use *Standard* hour sequences and commit to reporting completions when sequences are finished.

### **Use Actual hours sparingly**



When the *Actual* hours type is used against job sequences, actual labor hours are collected manually and entered as an alternative to standard hours. *Actual* hours are appropriately used in these situations:

- When a process is one-off, custom in nature and has high variance potential from the estimated cycle time.
- Job Shop environments that typically manufacture with a Job Quantity of 1

### **Special Warning Regarding Actual Hours**

Our experience has shown that it is very difficult to perform actual hours in most manufacturing environments. The reality of most shops are that once an item is finished it is shipped out as soon as possible regardless of whether all of the costing information has been submitted. It is very easy to make errors or omissions in labor entry that can have a very consequential effect on your cost of sales accounts and make your income statement a challenge to interpret. Since the product is likely already out the door, there is not an opportunity to fix the costs after the fact. We strongly recommend Standard hours completions for most companies.

### **Job labor tracking requires 100% participation**

Shop control is totally dependent on timely labor updating to have any meaningful use. Like any complex system, it is only as good as its weakest link. Therefore, shop control requires 100% participation among all workers and supervisors in updating their own labor as sequences are finished with no tolerance for delay.

### **Labor updating as the final step in any process**

Never get behind on labor updating because doing so destroys the effectiveness of shop control. The best way to avoid this is to instill the notion in all production personnel that a job sequence is not considered finished until the labor gets updated. Workers can easily be trained to use the *Job Labor* screen and make their own entries.

### **Boosting your manufacturing efficiency**

Tracking job labor is an essential element in boosting your manufacturing efficiency. Instead of running the shop by guesswork and expediting, you track job labor completions in real time to update job priorities and work center queues, which enables the work center coordination that helps jobs meet their required dates.

## **What to Do**

### **Review your routing Hours Type settings - Set most for Standard Hours**

Review all your BOM routing sequences and make sure the appropriate *Hours Type* is selected to meet your labor tracking objectives. Our recommendation is to use Standard hours and focus on real time completions of labor sequences.

### **Review Job Labor Defaults**

Go to the *Job Labor Defaults* screen and review options that facilitate job labor entry.

- Unless you have a compelling reason for tracking actual setup hours, select the *Setup - No Entry – Use Standard Hours* option.
- If you always complete all jobs for the exact total job quantity, you can select the *Flag as Finished* option to facilitate labor updating without the need to specify the completion quantity
- Unless you have a compelling reason for tracking standard hours transactions to specific workers, clear the *Standard Hours - Worker Selection Required* option to facilitate labor updating.

### **Format the job traveler for actual hours collection (Actual hours sequences only)**

The job traveler can be used to collect the labor hours that accumulate prior to sequence finish. When you format your job traveler layout, select the *Labor Collection* option. Additionally, you can specify the number of *Labor Lines per Sequence*. Within each “Actual” hours type job sequence on the traveler, manual entry fields are provided to enter the *Worker* number, *Date*, *Start Time*, *End Time*, *Total Hours*, *Completions*, and *Finished* flag. Workers can manually update this information throughout the course of performing the job sequence.

### **Provide workstation access to each work center**

It is essential that each work center has access to a computer workstation to enable real time labor updating.

### **Update labor as each job sequences is finished**

As each job sequence is finished, update labor by clicking the *Labor* icon within the *Work Center Schedule* screen. This launches the *Job Labor* screen, which is opened to the selected job sequence.

- If *Hours Type = Standard*, flag the sequence as finished or pre-fill or enter the completed quantity.
- If *Hours Type = Actual*, enter the total hours and flag the sequence as finished or pre-fill or enter the completed quantity. If the total hours are calculated on the job traveler, enter the total hours. You have the option of clicking the down arrow in the *Hours* field to open the *Hours Calculator*, which calculates the hours based on start and end times with deductions for shift breaks.



## 10 Essential #7 - Use WIP-Based Costing

The seventh essential process for manufacturing efficiency is to use WIP-based costing to operate with complete cost profiles and accurate costs of goods sold.

### **All manufacturing companies have the same challenge**

All manufacturing companies have the same challenge when it comes to product costing – how can labor, overhead, and subcontract services be incorporated into product costs? Only with complete cost profiles can you make good pricing and product decisions.

### **The Shop Rates screen is used to calculate hourly rates**

The *Shop Rates* screen is used to calculate hourly rates for labor and manufacturing overhead that get applied to your work centers.

### **Hourly rates can be factored in the Work Centers screen**

In the *Work Centers* screen you can factor hourly shop rates up or down to account for differences in work center personnel and overhead consumption.

### **The Cost Rollup calculates estimated costs for M items**

The *Cost Rollup* screen is used to roll the costs of material, labor, overhead, and subcontract services up through all levels of your product structures to calculate a total estimated cost for each of your manufactured items. This is especially useful with one-off custom items because you can then apply a markup over cost to furnish a price to the customer.

### **An estimated job cost is calculated when jobs are created**

Whenever a job is created, the program calculates an estimated job cost, which can be viewed in summary or detail fashion within the *Job Inquiry*.

### **What is WIP-based product costing?**

WIP-based product costing is the process by which job costs are accumulated and absorbed into the inventory cost of finished items.

### **Absorbed job costs are applied to job receipts**

When finished quantities are entered in the *Job Receipts* screen, the program calculates the total unit job cost for you, which includes material, labor, overhead, and subcontract service costs. The calculation can be at actual or estimated job cost, depending on the system setting in the *Job Cost Basis* screen. Job receipt costing is the means by which all these cost elements get absorbed into item inventory values, which flow through to cost of goods sold when items are shipped and invoiced.

**WIP gets balanced with job close**

Jobs are closed in this screen. As each job gets closed, your WIP account gets automatically balanced. Any difference between job input and output costs gets posted to a *WIP Adjustment* variance account.

**Total WIP value is self-adjusting and always in balance**

The total value of the *Work in Process* account reflects the current WIP balance of all jobs in progress at any given time. Whenever a job is closed, its WIP balance is adjusted to zero and thus the overall *Work in Process* account value is always in perfect balance with the underlying jobs in progress.

**The WIP account is self-adjusting with no period end procedures**

Because it is self-adjusting, you never make journal entries to the *Work in Process* account. Any such journal entry will corrupt the account and cause it to be out of balance with the WIP balances in the underlying jobs in progress.

**The Inventory account is self-adjusting with no period end procedures**

The *Inventory* account is also self-adjusting and is never subject to journal entry except to establish its initial value on system startup. When manufactured items are received to inventory, the cost reflects labor, subcontract services, and manufacturing overhead and thus needs no further adjustment. Any cost adjustments are made at the item level through the *Change Inventory Cost* screen and never by journal entry.

**Boosting your manufacturing efficiency**

Using WIP-based product costing is an essential element in boosting your manufacturing efficiency. Instead of operating in the dark with incomplete product costs, you will be furnished with estimated and actual product costs that reflect material, labor, overhead, and subcontract services, along with self-adjusting Inventory and WIP accounts.

**What to Do****Review shop rates once per month**

Review the variances for direct labor and shop overhead once per month for an appropriate date range (3 months minimum) in the *Shop Rates* screen and adjust your shop rates as needed if you sense that an absorbed cost variance is trending in any direction away from actual costs.

**Perform cost rollups at frequent and regular intervals**

Roll up estimated costs at frequent and regular intervals to insure that estimated job costs reflect current work center rates and component costs. Run a mass update to purchase item costs in the *Estimated Purchase Costs* screen at least once per month and run a batch rollup in the *Cost Rollup* screen at least once a week.

### **Receive finished items at a realistic cost**

When finished items are received to inventory in the *Job Receipts* screen, always make sure the unit cost is realistic, meaning that it is within acceptable range to the estimated job cost and is not affected by an obvious costing error.

## **What Not to Do**

### **Never attempt to adjust past costs**

Even when large variances are reported in the *Shop Rates* screen, never attempt to adjust past costs by reopening jobs or reversing invoices or any other means. These are harmful practices that do not work and cause numerous accounting problems. Large variances are properly handled by variance accounts and do not require correction. Past labor and overhead costs are usually in closed accounting periods and have long ago been co-mingled with other costs and absorbed into the cost of other items.

### **Never make journal entry adjustments to your Inventory account**

Never make journal entry adjustments to your *Inventory* account. This is a self-adjusting account that is always fully reconciled with the total inventory value of stock on hand.

### **Never make journal entry adjustments to your Work in Process account**

Never make journal entry adjustments to your *Work in Process* account. This is a self-adjusting account that is always fully reconciled with underlying job costs.

### **Do not devise your own costing method**

WIP accounting is not compatible with any other costing method. If you are accustomed to some other method in your previous system, do not attempt to replicate it in any form or fashion within DBA.

### **Do not use the sales order for costing or planning**

Do not use the sales order for costing or planning purposes. This practice yields false numbers, promotes inefficient job planning, and compromises the integrity and effectiveness of DBA's WIP accounting system. Sales orders should only be used to establish sales demand in terms of quantities and required dates and to establish selling prices.



## 11 The Four Efficiency Values

To reach your full manufacturing efficiency potential, you must combine the seven essential processes with a company culture that promotes the following core values:

### Value #1 – Planning Settings

An efficient manufacturing company is devoted to using planning settings instead of manual planning and expediting.

Manual planning and expediting are inherently inefficient. Manual planning is tedious, time-consuming, non-timely, prone to shortages and over-stocking, and relies on job chaining, BOM explosions, and other MRP workarounds. Expediting favors one job at a time at the expense of many other jobs and to overall shop throughput.

In a company culture that values planning settings, high priority is given to maintaining item MRP settings – *Lead Days* allocations, *Job Days* allocations, order policies, *Monthly Demand*, and *Supply Days* targets. Shop managers adhere to the master schedule with job release and work center priorities. As a result, customer orders will be fulfilled quickly and reliably while keeping inventory and WIP to a minimum.

### Value #2 – BOM and Job Accuracy

An efficient manufacturing company is devoted to maintaining accurate BOMs and job details.

BOM inaccuracy flows through to job detail and is the source of myriad problems, including erroneous PO generation, shortages, job delays, assembly errors, costing errors, and inventory errors.

In a company culture that values BOM accuracy there is no tolerance for errors in BOM specifications or job details. Whenever errors are encountered, they are fixed immediately in the job and in the BOM so that future jobs will not encounter problems. Any customization that is made out on the shop floor is immediately reflected in job details to insure accurate PO generation and inventory updating.

### Value #3 – Inventory Accuracy

An efficient manufacturing company is devoted to maintaining an accurate inventory.

An accurate inventory is essential because stock on hand is the driver of MRP generation, job release, and the shipment planner.

In a company culture that values inventory accuracy there is no tolerance for inventory errors. All inventory processes are performed correctly and in real time. Whenever an error is encountered, it is fixed immediately. Mass physical inventories are avoided in favor of systematic cycle counting, especially for items with variable job usage.



## Value #4 – Real-Time Processing

An efficient manufacturing company is devoted to performing all workflow processes in real time.

Delaying job issues, labor updating, and other processes until job finish is highly inefficient because you never know the status of work center queues or job priorities. As a result, expediting is required to meet job required dates, which favors some jobs at the expense of all other jobs and the shop as a whole. Furthermore, processing delays also result in incomplete job receipt costs that adversely affect inventory value and cost of goods sold.

In a company culture that values real-time processing, materials are issued to jobs when sequences are started and labor is updated as sequences are finished.