

# User's Guide for Subcontracting

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# About this document

## Objective

The objective of this guide is to describe subcontracting in ERP LN.

## Intended audience

This document is intended for persons in charge of subcontracting. The intended audience can include key users, implementation consultants, product architects, support specialists, and so on.

## Document summary

This document contains the following chapters:

- **Introduction**  
Provides an introduction to the supported types of subcontracting.
- **Subcontracting without Material Flow Support**  
Describes the most simple type of subcontracting, which was already available in earlier releases of ERP LN.
- **Subcontracting - Manufacturer's Side**  
Describes how a manufacturer can subcontract several operations or a production order to a subcontractor. This description includes the flow of subassemblies and optionally of components.
- **Subcontracting - Subcontractor's Side**  
Describes how a subcontractor executes one or more operations for a manufacturer. This description includes the flow of subassemblies and optionally of components.

## How to read this document

This document was assembled from online Help topics. References to other sections in the manual are presented as shown in the following example:

For details, refer to *Introduction (p. 1-1)* .

To locate the referred section, please refer to the Table of Contents or use the Index at the end of the document. If you view this document online, you can click the section title to go to the section directly.

At the end of this document, a glossary is included. Terms explained in the glossary are presented as shown in the following example:

In Common Data, you can link addresses to business partners.

If you view this document online, you can click these terms to go to the term's definition in the glossary.

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## Overview of subcontracting

For various reasons, companies can decide to involve a subcontractor and subcontract part of their activities. The subcontractor carries out the work and returns the products to your company.

In ERP LN, subcontracting is considered as purchasing labor from a third party. Therefore, if a manufacturer wants to subcontract work, he must generate a purchase order to start the subcontracting process.

### Subcontracting without material flow support

The simplest form of subcontracting is to generate a subcontracting purchase order to record the operations outsourced to a subcontractor. The subcontracting purchase order only represents the administrative handling of the subcontracting process. If the subcontracted item is received back from the subcontractor, you must close the subcontracting purchase order, which is the signal to continue with the production process. Neither the physical handling of the subcontracted item nor sending material to the subcontractor is supported. The subcontracting is considered as a service.

For more information, refer to *Operation subcontracting without material flow support (p. 2-1)* .

### Subcontracting with material flow support

A more extensive way of subcontracting in ERP LN includes not only outsourcing work, but also the supply and receipt of the required material. ERP LN supports the physical and administrative flow of subassemblies as well as the required material. After the subcontractor has finished the activities on the subcontracted items the items are shipped back to the manufacturer.

You can choose between the following types of subcontracting:

- Operation subcontracting, where part of production process (one or more operations) is subcontracted.
- Item subcontracting, where the entire production process is subcontracted.

### Unplanned subcontracting

In case of unplanned subcontracting, you take the decision to subcontract work *after* the creation of a production order. If you choose to subcontract the entire production production, you must cancel the production order, and change it into a purchase order. If you want to subcontract a number of operations, you must replace the work centers on those operations with subcontracting work centers in the Subcontract Operations (tisfc2210m000) session.

### Costs and prices

Subcontracting rates are defined in the Subcontracting Rates (ticpr1160m000) session by price calculation code, subcontractor, and task. How subcontracting costs are calculated, and consequently, how the subcontracting rate must be interpreted, depends on the **Calculation Method for Subcontracting Costs** field in the Subcontracting Rates (ticpr1160m000) details session.



## Operation subcontracting without material flow support

The simplest way of subcontracting in ERP LN is to create a subcontracting purchase order to record the operations that are outsourced to a subcontractor. This means that you purchase labour from a subcontractor. For this type of subcontracting, no material is supplied to the subcontractor.

### Setup

To start a subcontracting process *without* material supply, you must set up the following data:

- **Subcontracted Service item**  
In the Items - General (tcibd0501m000) session, define an item with item type **Subcontracted Service**. This is an administrative item that represents the subcontracted work. The **Subcontracted Service** item is displayed on the subcontracting purchase order.
- **Subcontracting work center**  
Define a subcontracting work center in the Work Centers (tirou0101m000) session. In the Routing Operations (tirou1102m000) session, link the subcontracting work center to the routing operation that you want to subcontract.
- **Subcontracting rates**  
In the Subcontracting Rates (ticpr1160m000) session, define the subcontracting costs. In the **Subassembly** field you must enter the **Subcontracted Service** item. Note that you must define the rate for the correct combination of price calculation code and subcontractor. If you want to define an item-specific subcontracting rate, fill the **Parent item** field.

## Procedure

### **Step 1: Release production order**

Create and release a production order for the item with subcontracted operations. On the item's routing, subcontracting work centers are defined.

### **Step 2: Generate subcontracting purchase order**

In the Generate Subcontracting Purchase Orders (tisfc2250m000) session, generate a subcontracting purchase order. The number of the subcontracting purchase order is displayed on the subcontracted operation in the production planning.

If more than one operation is subcontracted, with more than one subcontractor involved, a purchase order is generated for every subcontractor.

### **Step 3: Handle purchase order**

Handle the purchase order according to the defined purchase order procedure. For more information, refer to Flexible purchase order processing and Overview of purchase order handling.

### **Step 4: Handle warehouse order**

Carry out the warehouse order procedure. For more information, refer to To handle warehousing orders.

### **Step 5: Complete operations**

Complete the subcontracted operations, and, if applicable, further operations.

### **Step 6: Process purchase invoice**

Process the purchase invoice. For more information, refer to To process purchase invoices.

### **Step 7: Close production order**

Close the production order.

## Ad hoc subcontracting

If you had not planned to subcontract one or more operations, and consequently no subcontracting work centers are defined in the routing, use the Subcontract Operations (tisfc2210m000) session to replace an existing work center with a subcontracting work center on the operations that you want to subcontract.

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## Chapter 3

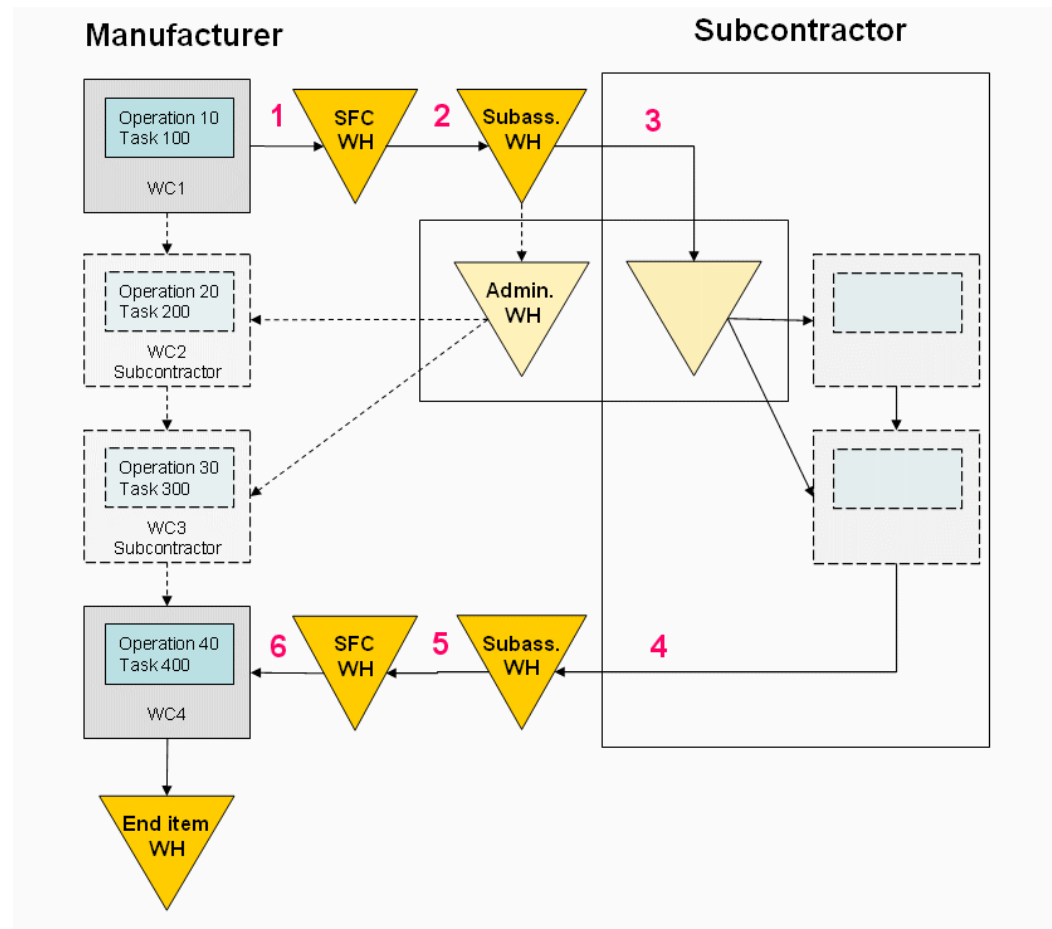
### Subcontracting - Manufacturer's Side

# 3

Operation subcontracting

Subcontracting diagram

The following diagram shows the movements of the subassemblies in case operations 20 and 30 have been subcontracted.



Subcontracting with material flow - manufacturer's side

### Legend

#### WH Warehouse

- 1 The subassembly produced in operation 10 is completed and received in the shop floor warehouse.
- 2 The subassembly is transferred to a warehouse for subassemblies.
- 3 The subassembly is delivered to the subcontractor without ownership change. In the manufacturer's system, the subassembly is registered as stored in an administrative warehouse.
- 4 The subassembly produced by the subcontractor in operation 30 is received in the warehouse at the manufacturer's site.
- 5 The subassembly is transferred to work center WC4.
- 6 The subassembly is issued to production and consumed in operation 40.

## To set up operation subcontracting (manufacturer's side)

You can choose to subcontract part of the production process, and supply material to the subcontractor.

Before the actual subcontracting starts, you must set up the following data:

### Step 1: Implemented software components

Consider the following check boxes in the Implemented Software Components (tccom0500m000) details session:

- **Subcontracting with Material Flow (manufacturer)**  
If you want to support the flow of subassemblies and components during the subcontracting process, you must select the **Subcontracting with Material Flow (manufacturer)** check box.
- **Allocation and Hard Pegging**  
Allocation and hard pegging is required to identify subassemblies uniquely. If the **Allocation and Hard Pegging** check box is selected, every subassembly is allocated to a specific SFC order by means of a reference number.
- **Terms and Conditions**  
In ERP LN, the manufacturer is by default responsible to supply components for subcontracting. However, if a component is transferred by sales order, or if the subcontractor is responsible for the component's planning, you must use the Terms and Conditions module to lay this down (refer to step 5). To use Terms and Conditions, you must select the **Terms and Conditions** check box.

### Step 2: Administrative warehouse

Define an administrative warehouse in the Warehouses (whwmd2500m000) session. The administrative warehouse reflects the external warehouse at the subcontractor's site. Define the subcontractor data in the **Sold-to** field and the **Ship-to** field. This data is necessary to create subcontracting purchase orders during the subcontracting process.

Consider the following check boxes:

- **Inventory Management**  
If you clear the **Inventory Management** check box, you indicate that the subcontractor carries out the warehouse's inbound activities, which is a logical choice in case of subcontracting. You must complete the inbound procedure in one of the following ways:
  - Use automatic warehousing procedures. For more information, refer to To handle warehousing orders.
  - Update the inventory based on ReceiveDelivery messages. For more information, refer to Receipt delivery messages.

If you clear the **Inventory Management** check box, and select the **Manual Inbound Process Allowed** check box, inventory management is not carried out, but you can do a manual inbound.

Note that if you select the **Inventory Management** check box, you must also use automatic warehousing procedures.

- **Include in Enterprise Planning**  
Select the **Include in Enterprise Planning** check box.

### Step 3: Item data for subcontracted item and subassemblies

- **End item**  
In the Items - Production (tiipd0101m000) session, find the end item for which you subcontract one or more operations, and for which you want to support the material flow. Select for this item the **Subcontracting with Material Flow** check box. If you want to subcontract, but you do not want to support the material flow, refer to *Operation subcontracting without material flow support (p. 2-1)* .  
Calculate the end item's cost price (top-down) in the Calculate Cost and Valuation Prices (ticpr2210m000) session.
  - **Subassemblies**  
In the Items - General (tcibd0501m000) details session, define two items for which the **Subassembly** check box is selected. These items represent respectively the subassembly sent by the manufacturer to the subcontractor, and the subassembly sent back by the subcontractor after work is done. If you want to leave open the possibility to produce the item yourself instead of sending it to a subcontractor, set the item type of the subassembly that you receive back from the subcontractor to **Manufactured**.  
If the manufacturer sends no subassembly to the subcontractor but only material, you just need to define an item code for the subassembly created by the subcontractor.  
Define the following data for the subassemblies:
    - **Warehouse**  
In the Items - Ordering (tcibd2500m000) session, find the defined subassemblies. For the subassembly that you will send to the subcontractor, enter in the **Warehouse** field the warehouse from which you send the subassembly. For the subassembly that you receive back from the subcontractor, enter the warehouse in which you receive the subassembly.
    - **Cost price**  
To generate an effective cost component structure, define the assemblies' costing data in the Items - Costing (ticpr0107m000) session. Calculate and actualize the cost price in the Calculate Cost and Valuation Prices (ticpr2210m000) session while the **Actualize Standard Cost and Valuation Prices** check box is selected.
-

- **Supply**

Subassemblies are sent to the subcontractor by means of a purchase subcontracting order, which is an order-specific supply. In the Warehouse - Item (whwmd2510m000) details session, you must therefore define the supply system Order Controlled / Single for the correct combination of the subassembly that you will send to the subcontractor and the administrative warehouse. Note that for a subassembly, this is the only supply system you can use.

- **Price**

For the item that is sent back by the subcontractor, you must determine the price you will pay to the subcontractor. In the Items - Purchase (tdipu0101m000) session, use the **Source of Price** field to choose between Subcontracting Rate and Price Book / Contract to determine the price. Note that if you subcontract the last operation, you must define the price for the end item instead of for the subassembly.

If the **Source of Price** field is **Subcontracting Rate**, you must define subcontracting rates in the Subcontracting Rates (ticpr1160m000) session. Define the rate by task for the correct combination of project, price calculation code, parent item or subcontractor.

If the **Source of Price** field is **Price Book / Contract**, the Subcontracting Rates (ticpr1160m000) session is also relevant, because of the tasks' cost components are defined in this session. You can leave the **Project**, **Parent item**, and **Subassembly** fields empty.

## Step 4: Supply data for components

Regulate the supply of components to the subcontractor. There are two ways:

- **Order specific supply**

Order specific supply means that supply is linked to the subcontracting purchase order. The supplied quantity is the quantity required for the purchase order. To use order specific supply, the component's supply system in the Warehouse - Item (whwmd2510m000) session must be **Order Controlled/Single**, for the correct combination of component and administrative warehouse.

Order specific supply can exist between manufacturer and subcontractor, or directly between supplier and subcontractor:

### Manufacturer - subcontractor

- Select the **Supply from Warehouse** check box in the Warehouse - Item (whwmd2510m000) details session, for the correct combination of component and administrative warehouse.
  - Supply takes place by warehouse transfers.
-

**Supplier - subcontractor**

- Clear the **Supply from Warehouse** check box in the Warehouse - Item (whwmd2510m000) details session, for the correct combination of component and administrative warehouse.
- Enter the supplier in the **Ship-from Business Partner** field and the **Buy-from Business Partner** field.
- Supply takes place by purchase order.

- **Bulk supply**

Bulk supply means that components are sent to the subcontractor anonymously, independent of the subcontracting purchase order. There are two ways to generate bulk supply: using a specific supply system, or by Enterprise Planning. You must choose one of these methods; you cannot use both methods to supply the same subcontracting (that is, administrative) warehouse.

- **Supply system**

In the Warehouse - Item (whwmd2510m000) details session, for the correct combination of component and administrative warehouse, you can choose **Time-Phased Order Point**, **KANBAN**, or **Order Controlled/Batch** to generate bulk supply. Note that the administrative warehouse and the supplying warehouse must be either belong to the same cluster, or they should not be assigned to a cluster at all.

- **Enterprise Planning**

To generate bulk supply using Enterprise Planning, the administrative warehouse must be in a different cluster than the main warehouse. Furthermore, distribution relations must be defined between the two warehouses. The supply system defined in the Warehouse - Item (whwmd2510m000) details session, must be **Order Controlled/Single**. For more information about clusters, refer to Clusters in Enterprise Planning.

**Step 5: Terms and conditions**

Define terms and conditions in the following cases:

- If components are shipped by sales orders.
- If you, the manufacturer, are responsible for the components' planning.

Perform the following steps:

1. By means of the Terms and Conditions (tctrm1100m000) session, start the Terms and Conditions (tctrm1600m000) session to define a terms and conditions agreement. The **Terms and Conditions Type** field must be **Sales**.
-



2. Define a terms and conditions search level for which the **Search Attribute 1** field is **Item Group**, and the **Search Attribute 2** field is **Warehouse**. Select the **Order** check box and the **Planning** check box.
3. Double-click the defined search level to start the Terms and Conditions Search Level - Lines (tctrm1610m000) session. In this session, define the items to which the agreement applies.
4. Double-click the defined items to start the Terms and Conditions Line (tctrm1620m000) session. On the Planning tab or in the Planning Terms and Conditions (tctrm1135m000) session, select the **Responsible for Supply Planning** check box. On the Order tab or in the Order Terms and Conditions (tctrm1130m000) session, select **Sales Order Transfer** in the **Transfer Type** field.

For more information about agreements, refer to To set up terms and conditions.

### Step 6: Sales contract

If components are planned by the subcontractor or shipped by sales order, define a contract in the Sales Contracts (tdsls3500m000) session. The **Sold-to Business Partner** field must contain the subcontractor code. Use the **Terms and Conditions ID** field to link the applicable terms and conditions agreement.

Define the rest of the contract in the Sales Contract Lines (tdsls3501m000) session.

### Step 7: User profile purchase

Define your user profile in Purchase Control so that ERP LN can generate and handle subcontracting purchase orders properly.

### Step 8: Subcontracting work center and shop floor warehouse

In your ERP LN system, you must define a subcontracting work center to represent the place at the subcontractor's site where subcontracting operations are carried out. In the Work Centers (tirou0101m000) session, define a subcontracting work center with work center type **Subcontracting Work Center**.

Link the following information to the subcontracting work center:

- In the **Subcontractor** field, enter the subcontractor code.
- In the **Shop Floor Warehouse** field, enter the administrative warehouse, which can be a normal warehouse or a shop floor warehouse. This warehouse represents the warehouse at the subcontractor's site, and is used to monitor the subassemblies' and components' inventory levels.

In the Shop Floor Control Parameters (tisfc0500m000) session, select the **Use of Shop Floor Warehouses** check box.

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## Step 9: Routing

In the Routing Operations (tirou1102m000) session, link the defined subassemblies, warehouses, and subcontracting work centers.

- **Link to the operation that precedes the subcontracted operation:**  
The subassembly which represents the product that is sent to the subcontractor. The warehouse from which you send the subassembly to the subcontractor is defaulted from the **Warehouse** field in the Items - Ordering (tcibd2500m000) session. It is recommended that the subassembly warehouse equals the BOM warehouse of the materials sent to the subcontractor.
- **Link to the subcontracted operations:**  
The applicable subcontracting work center.
- **Link to the last subcontracted operation:**  
The subassembly which represents the product that is sent back by the subcontractor. The warehouse in which you receive the subassembly after subcontracting is defaulted from the **Warehouse** field in the Items - Ordering (tcibd2500m000) session.

## Step 10: BOM

In the Bill of Material (tibom1110m000) session, use the **Supplied by Subcontractor** check box to determine how the subcontractor is provided with material for subcontracting activities.

In the **Operation** field, enter the operation number for which the subcontractor requires the material.

To subcontract operations (manufacturer's side)

Complete the following steps to subcontract one or more operations. Together with the subassemblies, material is sent to the subcontractor. The data setup for subcontracting with material supply is described in *To set up operation subcontracting (manufacturer's side)* (p. 3-3) .

## Subcontracting procedure

### Step 1: Create production order

For an item with one or more subcontracted operations, you need a production order. Create a production order manually in Shop Floor Control, or create a planned production order in Enterprise Planning, and transfer it to Shop Floor Control.

For planned production orders in Enterprise Planning, you can view the production order operations in the Capacity Use by Planned Order session. If applicable, information about subassemblies is indicated on the operation line.

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Use the Print Subcontracting Forecast (cprp2402m000) session to print a list of all subassemblies that are planned to be received from the subcontractor.

## Step 2: Release a production order

Release the production order in Shop Floor Control.

In the Production Order (tisfc0101m100) session, on the Estimated Materials (ticst0101m000) tab, click **Show Subassembly** to view the subassemblies included in the estimated materials:

- For the subassembly that is sent to the subcontractor, a negative quantity is displayed for the operation that precedes the subcontracting operation. A positive quantity is displayed for the subcontracted operation.
- For the subassembly that is received back from the subcontractor, a negative quantity is displayed for the subcontracted operation. A positive quantity is displayed for the operation that follows the subcontracted operation.

## Step 3: Generate subcontracting purchase order

A subcontracting purchase order is required to administrate the subcontracting process.

From the Production Orders (tisfc0501m000) session, start the Generate Subcontracting Purchase Orders (tisfc2250m000) session to generate a purchase order. If the **Previous Operation Must be Completed** check box in this session is selected, you must first complete the operations that precede the subcontracted operation before you can generate a purchase order.

In the Generate Subcontracting Purchase Orders (tisfc2250m000) session, enter a purchase order type. The activities linked to the purchase order type determine the handling of the subcontracting purchase order. For example, you can choose to insert the Generate Supply Orders for Subcontracting (tdpur4216m000) session, and select the **Automatic** check box, so that supply orders are automatically generated.

View the generated purchase order in the Purchase Order - Lines (tdpur4100m900) session. The order line displays the subassembly that you will receive from the subcontractor after subcontracting.

## Step 4: Supply lines and supply orders

After a subcontracting purchase order is generated, you can view the supply lines, in the Purchase Order - Lines (tdpur4100m900) session or the Purchase Order Material Supply Lines (tdpur4116m000) session. Supply lines represent the materials and subassembly that must be shipped to the subcontractor

Supply orders are used to ship the subassembly and material from their warehouses at the manufacturer's site to the administrative warehouse. If supply

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orders are not created automatically (refer to step 3), run the Generate Supply Orders for Subcontracting (tdpur4216m000) session. Note that the subassembly's supply system, defined in the Warehouse - Item (whwmd2510m000) session, must be **Order Controlled/Single**.

### Step 5: Approve subcontracting purchase order

In the Purchase Order - Lines (tdpur4100m900) session, click **Approve** to approve the subcontracting purchase order. For more information, refer to Purchase order approval.

### Step 6: Report preceding operations completed

In the Report Operations Completed (tisfc0130m000) session, complete the operations preceding the subcontracted operations. If you defined a shop floor warehouse, the subassembly is automatically received in the shop floor warehouse. Without shop floor warehouse, the subassembly is received in the warehouse defined in the Items - Ordering (tcibd2500m000) session.

In the Material to Issue for Production Orders (ticst0101m100) session, you can check whether the subassembly is issued. In the Allocated-to Inventory (whwmd2519m000) session, you can check in which warehouse the subassembly is received.

### Step 7: Transfer subassemblies

To ship the subassembly from the shop floor or the shop floor warehouse to the subassembly warehouse, carry out the transfer order.

1. In the Material to Issue for Production Orders (ticst0101m100) session, select the subassembly that must be sent to the subassembly warehouse. This material line has a negative quantity. In the **Specific** menu, click **Production Warehouse Orders** to start the Production Warehouse Orders (timfc0101m000) session.
2. Select the transfer order with transaction type **Issue**, and click **Warehouse Order - Status Overview**.
3. In the Outbound Line Status Overview (whinh2129m000) session, carry out the defined activities for the outbound-order line.

### Step 8: Send subassemblies and material to subcontractor

The manufacturer must send subassemblies and material to the subcontractor. In ERP LN, the subassemblies and material are sent to the administrative warehouse using an outbound procedure. To do so, you must handle the subassembly's and material's supply orders.

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1. In the Purchase Order - Lines (tdpur4100m900) session or the Purchase Order Material Supply Lines (tdpur4116m000) session, select the subassembly and material and click **Supply Order....**
2. In the Warehousing Order (whinh2100m100) session, generate an advice.
3. If the orders were not already handled automatically, in the Warehousing Order (whinh2100m100) session, select the outbound line and click **Status Overview**.
4. In the Outbound Line Status Overview (whinh2129m000) session, carry out the defined activities such as generating and releasing the outbound advice and confirming the shipment.

In some cases, material for subcontracting activities is directly sent by the supplier to the subcontractor. In that case, complete the following steps:

1. In the Purchase Order - Lines (tdpur4100m900) session or the Purchase Order Material Supply Lines (tdpur4116m000) session, select the subassembly and material and click **Supply Order....** A new supply order is generated.
2. Select the newly generate order line, and click **Approve**.

### **Step 9: Receive purchase order in subassembly warehouse**

After subcontracting, the subcontractor sends back the subassemblies. To receive the subassemblies into the subassembly warehouse, you must handle the purchase order. Note that the name of the subassembly sent back by the subcontractor differs from the name of the subassembly you sent to the subcontractor.

Complete the following steps:

1. In the Purchase Order - Lines (tdpur4100m900) session, select the purchase order line of the subassembly sent back by the subcontractor, and click **Status**.
2. From the Purchase Order Line Status (tdpur4534m000) session, handle the purchase order according to the defined purchase order procedure. For more information about purchase order handling, refer to Flexible purchase order processing and Overview of purchase order handling.

Note that when the purchase order is received, ERP LN automatically reports the subcontracted operations as completed. If applicable, the subassembly and the material that you sent with the subassembly are backflushed.

### **Step 10: Transfer from subassembly warehouse to shop floor warehouse or the shop floor**

You may work further on the subassemblies that you received from the subcontractor. Therefore, you must issue the subassemblies to the shop floor.

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In the Material to Issue for Production Orders (ticst0101m100) session, select the subassembly that was sent to you by the subcontractor, which is the subassembly that has a positive quantity. Issue the subassembly to the shop floor.

If you use a shop floor warehouse, you must complete a transfer order to ship the subassemblies from the subassembly warehouse to the shop floor warehouse.

1. In the Material to Issue for Production Orders (ticst0101m100) session, select the subassembly that was sent to you by the subcontractor, which is the subassembly that has a positive quantity in the **To Issue** field.
2. In the **Specific** menu, click **Production Warehouse Orders** to start the Production Warehouse Orders (timfc0101m000) session.
3. Select the subassembly's *transfer* order with transaction type **Issue**, and click **Warehouse Order - Status Overview**.
4. In the Outbound Line Status Overview (whinh2129m000) session, carry out the defined activities.

You can check in the Allocated-to Inventory (whwmd2519m000) session whether the subassembly is allocated inventory in the shop floor warehouse.

### **Step 11: Report operations completed.**

In the Report Operations Completed (tisfc0130m000) session, process the remaining operations and report them as completed. You can post the end items immediately to inventory.

### **Step 12: Report production order completed**

Report the production order as completed in the Report Orders Completed (tisfc0520m000) details session.

### **Step 13: Close production order**

Close the production order in the Close Production Orders (ticst0201m000) session.

## Item subcontracting

### Item subcontracting - setup

You can use item subcontracting to subcontract an item's entire production process. If you apply item subcontracting, *no* production order is created.

For item subcontracting, set up the following data:

---

### Step 1: Implemented software components

Consider the following check boxes in the Implemented Software Components (tccom0500m000) details session:

- **Subcontracting with Material Flow (manufacturer)**  
If you want to perform full subcontracting, you must select the **Subcontracting with Material Flow (subcontractor)** check box.
- **Terms and Conditions**  
Select the **Terms and Conditions** check box to implement the Terms and Conditions module. You need this module if you want the subcontractor to be responsible for the supply of components. In ERP LN, by default the manufacturer is responsible for component supply. In that case you do not need to set up planning data.

### Step 2: Warehouse at the subcontractor's site

Define an administrative warehouse in the Warehouses (whwmd2500m000) session. The administrative warehouse reflects the external warehouse at the subcontractor's site.

Consider the following check boxes:

- **Inventory Management**  
If you clear the **Inventory Management** check box, you indicate that the subcontractor carries out the warehouse's inbound activities, which is a logical choice in case of subcontracting. You must complete the inbound procedure in one of the following ways:
  - Use automatic warehousing procedures. For more information, refer to To handle warehousing orders.
  - Update the inventory based on ReceiveDelivery messages. For more information, refer to Receipt delivery messages.If you clear the **Inventory Management** check box, and select the **Manual Inbound Process Allowed** check box, inventory management is not carried out, but you can do a manual inbound.  
Note that if you select the **Inventory Management** check box, you must also use automatic warehousing procedures.
- **Include in Enterprise Planning**  
Select the **Include in Enterprise Planning** check box.

### Step 3: Item related data

Define the following item related data:

- **Item Base Data**  
Define the end item that you want to subcontract in the Item - General (tcibd0101s000) session. Select the **Subcontracted** check box.
-

- **Item Production Data**  
To send material to the subcontractor, select the **Subcontracting with Material Flow** check box in the Items - Production (tiipd0101m000) session.
- **Item Purchase Data**  
In the Items - Purchase (tdipu0101m000) session, enter the appropriate price in the **Subcontracting Purchase Price** field.
- **Item Sales Data**  
In the Items - Sales Business Partner (tdisa0510m000) session, enter the administrative warehouse defined in step 2 in the **Ship-to Warehouse** field.

#### Step 4: Supply data for components

Regulate the supply of components to the subcontractor. There are two ways:

- **Order specific supply**  
Order specific supply means that supply is linked to the subcontracting purchase order. The supplied quantity is the quantity required for the purchase order. To use order specific supply, the component's supply system in the Warehouse - Item (whwmd2510m000) session must be **Order Controlled/Single**, for the correct combination of component and administrative warehouse.  
  
Order specific supply can exist between manufacturer and subcontractor, or directly between supplier and subcontractor:

##### Manufacturer - subcontractor

- Select the **Supply from Warehouse** check box in the Warehouse - Item (whwmd2510m000) details session, for the correct combination of component and administrative warehouse.
- Supply takes place by warehouse transfers.

##### Supplier - subcontractor

- Clear the **Supply from Warehouse** check box in the Warehouse - Item (whwmd2510m000) details session, for the correct combination of component and administrative warehouse.
  - Enter the supplier in the **Ship-from Business Partner** field and the **Buy-from Business Partner** field.
  - Supply takes place by purchase order.
  - **Bulk supply**  
Bulk supply means that components are sent to the subcontractor autonomously, independent of the subcontracting purchase order. There are two ways to generate bulk supply: using a specific supply system, or by Enterprise Planning. You must choose one of these methods; you cannot use both methods to supply the same subcontracting (that is, administrative) warehouse.
-



- **Supply system**

In the Warehouse - Item (whwmd2510m000) details session, for the correct combination of component and administrative warehouse, you can choose **Time-Phased Order Point**, **KANBAN**, or **Order Controlled/Batch** to generate bulk supply. Note that the administrative warehouse and the supplying warehouse must be either belong to the same cluster, or they should not be assigned to a cluster at all.

- **Enterprise Planning**

To generate bulk supply using Enterprise Planning, the administrative warehouse must be in a different cluster than the main warehouse. Furthermore, distribution relations must be defined between the two warehouses. The supply system defined in the Warehouse - Item (whwmd2510m000) details session, must be **Order Controlled/Single**. For more information about clusters, refer to Clusters in Enterprise Planning.

## Step 5: Terms and conditions

Define terms and conditions in the following cases:

- If components are shipped by sales orders.
- If the subcontractor is responsible for the components' planning.

Perform the following steps:

1. By means of the Terms and Conditions (tctrm1100m000) session, start the Terms and Conditions (tctrm1600m000) session to define a terms and conditions agreement. The **Terms and Conditions Type** field must be **Sales**.
2. Define a terms and conditions search level for which the **Search Attribute 1** field is **Item Group**, and the **Search Attribute 2** field is **Warehouse**. Select the **Order** check box and the **Planning** check box.
3. Double-click the defined search level to start the Terms and Conditions Search Level - Lines (tctrm1610m000) session. In this session, define the items to which the agreement applies.
4. Double-click the defined items to start the Terms and Conditions Line (tctrm1620m000) session. On the Planning tab or in the Planning Terms and Conditions (tctrm1135m000) session, select the **Responsible for Supply Planning** check box. On the Order tab or in the Order Terms and Conditions (tctrm1130m000) session, select **Sales Order Transfer** in the **Transfer Type** field.

For more information about agreements, refer to To set up terms and conditions.

---

### Step 6: Sales contract

If components are planned by the subcontractor or shipped by sales order, define a contract in the Sales Contracts (tdsls3500m000) session. The **Sold-to Business Partner** field must contain the subcontractor code. Use the **Terms and Conditions ID** field to link the applicable terms and conditions agreement.

Define the rest of the contract in the Sales Contract Lines (tdsls3501m000) session.

### Step 7: BOM

In the Bill of Material (tibom1110m000) session, create the subcontracted item's BOM.

If the **Supplied by Subcontractor** check box is cleared, the components are sent to the subcontractor to be used in the subcontracted item. If this check box is selected, the components are directly supplied by the subcontractor.

## Item subcontracting - procedure

You can use item subcontracting to subcontract an item's entire production process. If you apply item subcontracting, *no* production order is created.

For item subcontracting, perform the following steps:

### Step 1: Create purchase order

A purchase order is required to subcontract the production of a specific item. You can create a purchase order in two ways:

- Manually in the Purchase Orders (tdpur4100m000) session.
  - By means of an item order plan.
    - a. In the Sales Orders (tdsls4100m000) session, create a sales order for the subcontracted item that you have sold.
    - b. In the Item Order Plan (cprp0520m000) session, click **Generate Order Planning (Item)** to generate an item order plan. If the demand exceeds the supply, a planned purchase order is generated for the subcontracted item. You can view the planned purchase order in the Planned Order (cprp1600m000) session.
    - c. In the Planned Order (cprp1600m000) session, select the planned purchase order, and click **Transfer**. The planned purchase order becomes a purchase order advice, which can be viewed as a purchase order in the Purchase Orders (tdpur4100m000) details session.
-

## Step 2: Handle purchase order and supply orders

In the Purchase Order - Lines (tdpur4100m900) session, you can view and maintain the purchase order. Note that the **Subcontracted** check box in the Purchase Order Lines (tdpur4101m000) session is selected. The **Material Supply Lines** tab lists the materials that are sent to the subcontractor. From the Purchase Order - Lines (tdpur4100m900) session, carry out the following steps to handle the purchase order, and receive the finished subcontracted items in your warehouse:

1. Select the purchase order line, and click **Approve**.
2. On the **Material Supply Lines** tab, click **Supply Order...** to generate supply orders. The **Transfer Type** field indicates how material is shipped from the manufacturer to the subcontractor.
3. In the header's **Specific** menu, click **Activities** to check which activities must be done to handle the purchase order, and whether the activities are performed automatically.
4. In the purchase order's header, click **Approve**.
5. Check in the **Supply Order Number** field whether supply orders are already generated. If not, select the material supply line, and click **Generate Supply Order** in the **Specific** menu. You can also use the Generate Supply Orders for Subcontracting (tdpur4216m000) session.
6. Select the material supply lines for which a supply order exist, and click **Supply Order...** in the **Specific** menu. You can now handle the supply order.
7. Select the purchase order line, and click **Purchase Order Line Status**. From the Purchase Order Line Status (tdpur4534m000) session, handle the purchase order according to the defined purchase order procedure so that the order is received in the warehouse. For more information about purchase order handling, refer to Flexible purchase order processing and Overview of purchase order handling.

## Step 3: Handle sales order

If you created a sales order because you sold the subcontracted items, you must approve the sales order. In the Sales Order - Lines (tdsls4100m900) session, on the Monitor tab, select the sales order line, and click **Inbound/Outbound Status**. From the Outbound Line Status Overview (whinh2129m000), handle the sales order.

---



# Chapter 4

## Subcontracting - Subcontractor's Side

# 4

### Subcontracting (subcontractor's side)

This topic contains an overview of the functionality for subcontractor's.

### To set up operation subcontracting (subcontractor's side)

This topic describes how to set up your system to support the execution of operations for a manufacturer as a subcontractor. The transfer of components and subassemblies is supported.

#### Note

For the subcontractor, the procedure for item subcontracting is the same as the procedure for operation subcontracting.

### Setup

Before the actual subcontracting starts, you must set up the following data:

#### Step 1: Implemented software components

Consider the following check boxes in the Implemented Software Components (tccom0500m000) details session:

- **Subcontracting with Material Flow (subcontractor)**  
If you want to support the flow of subassemblies and components during the subcontracting process, you must select the **Subcontracting with Material Flow (manufacturer)** check box.
- **Allocation and Hard Pegging**  
Allocation and hard pegging is required to identify subassemblies uniquely. If the **Allocation and Hard Pegging** check box is selected, every

subassembly is allocated to a specific SFC order by means of a reference number.

- **Terms and Conditions**

In ERP LN, the manufacturer is by default responsible to supply components for subcontracting. However, if a component is transferred by sales order, or if the subcontractor is responsible for the component's planning, you must use the Terms and Conditions module to specify this. To use Terms and Conditions, you must select the **Terms and Conditions** check box.

## Step 2: Item data for subcontracted item and subassemblies

- **Subassemblies**

In the Items - General (tcibd0501m000) details session, define two items for which the **Subassembly** check box is selected. These items represent respectively the subassembly sent by the manufacturer to the subcontractor, and the subassembly sent back by the subcontractor after work is done. The item type of the subassembly you send back to the manufacturer must be **Manufactured**.

If the manufacturer sends no subassembly to the subcontractor but only material, you just need to define an item code for the subassembly created by the subcontractor.

Define the following data for the subassemblies:

- **Warehouse**

In the Items - Ordering (tcibd2500m000) session, find the defined subassemblies. For the subassembly that you receive from the manufacturer, enter in the **Warehouse** field the warehouse in which you receive the subassembly. For the subassembly that you send back to the manufacturer, enter the warehouse from which you send the subassembly.

- **Cost price**

To generate an effective cost component structure, define the assemblies' costing data in the Items - Costing (ticpr0107m000) session. Calculate and actualize the cost price in the Calculate Cost and Valuation Prices (ticpr2210m000) session while the **Actualize Standard Cost and Valuation Prices** check box is selected.

- **Price**

For the item that is sent back by the subcontractor, you must determine the price the manufacturer pays to the subcontractor.

## Step 3: Terms and conditions

Define terms and conditions in the following cases:

- If components are shipped by sales orders.
  - If the the manufacturer is responsible for the components' planning.
-

Perform the following steps:

1. By means of the Terms and Conditions (tctrm1100m000) session, start the Terms and Conditions (tctrm1600m000) session to define a terms and conditions agreement. The **Terms and Conditions Type** field must be **Purchase**.
2. Define a terms and conditions search level for which the **Search Attribute 1** field is **Item Group**, and the **Search Attribute 2** field is **Warehouse**. Select the **Order** check box and the **Planning** check box.
3. Double-click the defined search level to start the Terms and Conditions Search Level - Lines (tctrm1610m000) session. In this session, define the items to which the agreement applies.
4. Double-click the defined items to start the Terms and Conditions Line (tctrm1620m000) session. On the Planning tab or in the Planning Terms and Conditions (tctrm1135m000) session, select the **Supply Planning by Supplier** check box. On the Order tab or in the Order Terms and Conditions (tctrm1130m000) session, select **Sales Order Transfer** in the **Transfer Type** field.

For more information about agreements, refer to To set up terms and conditions.

#### Step 4: Purchase contract

If components are planned by the subcontractor or shipped by sales order, define a contract in the Purchase Contracts (tdpur3100m000) session. The **Buy-from Business Partner** field must contain the manufacturer's code. Use the **Terms and Conditions ID** field to link the applicable terms and conditions agreement.

Define the rest of the contract in the Purchase Contract Lines (tdpur3101m000) session.

#### Step 5: User profile purchase

Define your user profile in Sales Control so that ERP LN can generate and handle sales orders properly.

#### Step 6: Work center and shop floor warehouse

In the Work Centers (tirou0101m000) session, define the work centers as a work center for regular production orders. Do not select work center type **Subcontracting Work Center**.

Link the following information to the subcontracting work center:

- In the **Shop Floor Warehouse** field, you can enter a shop floor warehouse. This warehouse is used to monitor the subassemblies' and components' inventory levels.
-

In the Shop Floor Control Parameters (tisfc0500m000) session, select the **Use of Shop Floor Warehouses** check box.

### Step 7: Routing

In the Routing Operations (tirou1102m000) session, link the defined subassemblies, warehouses, and work centers.

- **Link to the first subcontracted operation:**  
The subassembly which represents the product that the manufacturer sends to the subcontractor. It is recommended that the subassembly warehouse equals the BOM warehouse of the materials sent to the subcontractor.
- **Link to the other subcontracted operations:**  
The applicable work center.
- **Link to the last subcontracted operation:**  
The subassembly which represents the product that you send back to the subcontractor. The warehouse in which you receive the subassembly takes a default value from the **Warehouse** field in the Items - Ordering (tcibd2500m000) session.

### Step 8: BOM

Optionally, in the Bill of Material (tibom1110m000) session, enter the operation number for which the subcontractor requires the material in the **Operation** field.

## To execute subcontracted operations (subcontractor's side)

This topic describes how a subcontractor can handle an order from a manufacturer to execute one or more operations.

#### Note

For the subcontractor, the procedure for item subcontracting is the same as the procedure for operation subcontracting.

## Subcontracting procedure

### Step 1: Create sales order

Based on the subcontracting purchase order that the manufacturer sent you, you must create a sales order in the Sales Orders (tdsls4100m000) session.

View the sales order in the Sales Order - Lines (tdsls4100m900) session. The order line displays the completed subassembly that you send to the manufacturer after executing the operations.

---



## Step 2: Supply lines and supply orders

After a sales order is created, you can view the supply lines, in the Sales Order - Lines (tdsls4100m900) session or the Sales Order Material Supply Lines (tdsls4116m000) session. Supply lines represent the materials and subassembly that must be shipped from the manufacturer to the subcontractor

## Step 3: Create production order

To execute the subcontracted operations, you need a production order. Create a production order manually in Shop Floor Control, or create a planned production order in Enterprise Planning, and transfer it to Shop Floor Control.

For planned production orders in Enterprise Planning, you can view the production order operations in the Capacity Use by Planned Order session. If applicable, information about subassemblies is indicated on the operation line.

## Step 4: Release a production order

Release the production order in Shop Floor Control.

In the Production Order (tisfc0101m100) session, on the Estimated Materials (ticst0101m000) tab, click **Show Subassembly** to view the subassemblies included in the estimated materials:

- A positive quantity is displayed for the subcontracted operation.
- For the subassembly that is sent back to the manufacturer, a negative quantity is displayed for the subcontracted operation.

## Step 5: Receive subassemblies and components from manufacturer

The manufacturer sends you the subassemblies and material.

## Step 6: Report operations completed

In the Report Operations Completed (tisfc0130m000) session, complete the operations you executed. If you defined a shop floor warehouse, the subassembly is automatically received in the shop floor warehouse. Without shop floor warehouse, the subassembly is received in the warehouse defined in the Items - Ordering (tcibd2500m000) session.

In the Material to Issue for Production Orders (ticst0101m100) session, you can check whether the subassembly is issued. In the Allocated-to Inventory (whwmd2519m000) session, you can check in which warehouse the subassembly is received.

---

### Step 7: Report production order completed

Report the production order as completed in the Report Orders Completed (tisfc0520m000) details session.

### Step 8: Transfer subassemblies

To ship the subassembly from the shop floor or the shop floor warehouse to the subassembly warehouse, carry out the transfer order.

1. In the Material to Issue for Production Orders (ticst0101m100) session, select the subassembly that must be sent to the subassembly warehouse. This material line has a negative quantity. In the **Specific** menu, click **Production Warehouse Orders** to start the Production Warehouse Orders (timfc0101m000) session.
2. Select the transfer order with transaction type **Issue**, and click **Warehouse Order - Status Overview**.
3. In the Outbound Line Status Overview (whinh2129m000) session, carry out the defined activities for the outbound-order line.

### Step 9: Transfer completed subassembly

After you completed the subcontracted operations, you must return the subassemblies to the manufacturer. To transfer the completed subassembly, you must handle the sales order. Note that the name of the subassembly you send back to the manufacturer differs from the name of the subassembly you received from the manufacturer.

### Step 10: Receive purchase order in subassembly warehouse

After subcontracting, the subcontractor sends back the subassemblies. To receive the subassemblies into the subassembly warehouse, you must handle the purchase order. Note that the name of the subassembly sent back by the subcontractor differs from the name of the subassembly you sent to the subcontractor.

Complete the following steps:

1. In the Sales Order - Lines (tdsls4100m900) session, select the sales order line of the completed subassembly, and click **Status**.
  2. From the Sales Order Line Status (tdsls4534s000) session, handle the sales order according to the defined sales order procedure. For more information about sales order handling, refer to Flexible sales order processing and Overview of sales order handling.
-

### **Step 11: Close production order**

Close the production order in the Close Production Orders (ticst0201m000) session.



---

# Appendix A

## Glossary

# A

### activity

A step that you must carry out for the purchase/sales order type. An activity represents the sessions or the manual action that you must carry out for the purchase/sales order type.

### address

A full set of addressing details, which include the postal address, access numbers for telephone, fax, and telex, e-mail and Internet address, identification for taxation purposes, and routing information.

### administrative warehouse

A warehouse that offers a view of a warehouse that is managed by a business partner. An administrative warehouse corresponds with a physical warehouse controlled by the business partner's system. In that physical warehouse, the inbound and outbound processing takes place. The administrative warehouse mirrors the inventory levels present in the business partner's warehouse.

Administrative warehouses are used in situations such as the following:

- The warehouse is located at your site, but a supplier manages and possibly owns the inventory until you use the items.
- The warehouse is located at a customer's site. You own the inventory until the customer uses the items, but the customer manages the inventory.
- The warehouse is located at a subcontractor's site. You own the unfinished goods present in the warehouse, but the subcontractor manages the inventory.

Administrative warehouse is not one of the warehouse types that you can define in ERP LN, setting up an administrative warehouse requires various parameter settings.

---

**business partner**

A party with whom you carry out business transactions, for example, a customer or a supplier. You can also define departments within your organization that act as customers or suppliers to your own department as business partners.

The business partner definition includes:

- The organization's name and main address.
- The language and currency used.
- Taxation and legal identification data.

You address the business partner in the person of the business partner's contact. The business-partner status determines if you can carry out transactions. The transactions type (sales orders, invoices, payments, shipments) is defined by the business partner's role.

**cluster**

In Enterprise Planning, a grouping of warehouses connected to each other by supplying relationships.

A cluster represents a geographical location that consists of one or more warehouses. Enterprise Planning considers these warehouses as one unit for planning purposes.

**inbound**

A procedure in which received goods are stored in a warehouse.

**item order plan**

A time-phased overview of your order planning.

The item order plan contains overview values for demand and forecast on one hand, and the other hand it provides information about scheduled receipts (actual orders) and planned supply (planned orders).

**item subcontracting**

The entire production process of an item is outsourced to a subcontractor.

**operation subcontracting**

The work on one or more operations in an item's production process is outsourced to a subcontractor.

---

### order controlled/single

A demand-pull system that regulates the supply of items to shop floor warehouses.

In this supply system, a specific production order for a specific product pulls the required items from a supply warehouse to the shop floor warehouse. A direct link is established between the production order for which the items are required, and the warehousing order that regulates the supply of the required items to the shop floor warehouse.

### outbound-order line

A warehouse-order line that is used to issue goods from a warehouse.

An outbound-order line gives detailed information about planned issues and actual issues, for example:

- Item data.
- Ordered quantity.
- Warehouse from where the goods are issued.

### planned production order

A planned order in Enterprise Planning to produce a certain quantity of an item.

### planned purchase order

A planned order in Enterprise Planning to purchase a certain quantity of an item from a supplier (buy-from business partner).

### price calculation code

A specification of how a cost price, valuation price, or sales price is calculated. The code stores specific cost calculation data.

The price calculation code that is defined in the Cost Price Calculation (CPR) Parameters determines the standard cost price. Other price calculation codes are used for simulation purposes. The price calculation code for customized items is stored by project.

### Example

- Specific operation rates
  - Subcontracting rates
  - Simulated purchase prices
  - Surcharges
-

### purchase order advice

A recommendation based on the economic stock and the reorder point of an item. Purchase order advices must be confirmed and transferred to convert them into actual purchase orders.

### purchase order type

The order type determines which sessions are part of the order procedure and how and in which sequence this procedure is executed.

### shop floor warehouse

A warehouse that stores intermediate inventory in order to supply work centers. A shop floor warehouse is linked to one or more work centers and can be supplied with goods by means of replenishment orders, or by pull-based material supply.

The pull-based material supply methods are:

- **Order Controlled/Batch** (only applicable in Assembly Control ).
- **Order Controlled/SILS** (only applicable in Assembly Control ).
- **Order Controlled/Single** (only applicable in Shop Floor Control ).
- **KANBAN.**
- **Time-Phased Order Point.**

The items stored in the shop-floor warehouse are not part of the work in process (WIP). When items leave the shop floor warehouse for use in production, their value is added to the WIP.

Synonym: WIP warehouse

### subassembly

An intermediary product in a production process that is not stored or sold as an end product, but that is passed on to the next operation.

For subcontracting purposes, a manufacturer can send a subassembly to a subcontractor to carry out work on the subassembly. This subassembly has its own item code defined in the Item Base Data.

After work is finished, the subcontractor sends the subassembly back to the manufacturer. Also this reworked subassembly has its own item code defined in the Item Base Data.

### subcontracting

Allowing another company (the subcontractor) to carry out work on an item. This work can concern the entire production process, or only one or more operations in the production process.

---



### subcontracting rate

The rate that is used to calculate the subcontracting costs. How ERP LN uses the subcontracting rate in the calculation depends on the calculation method:

- **Fixed Amount by Product**
- **Operation Rate**
- **Man Hour Rate**
- **Machine Hour Rate**

### supply system

The system that is used to coordinate the timely supply of goods to the production lines or assembly lines.

The following supply systems are available in ERP LN:

- **Time-Phased Order Point**
- **KANBAN**
- **Order Controlled/Batch**
- **Order Controlled/SILS**
- **Order Controlled/Single**

### terms and conditions agreement

An agreement between business partners about the sale, purchase, or transfer of goods, in which you can define detailed terms and conditions about orders, planning, logistics, invoicing, and allocation/hard pegging, and define the search mechanism to retrieve the correct terms and conditions.

The agreement includes the following:

- A header with the type of agreement and the business partner(s).
- Search levels with a search priority and a selection of search attributes (fields) and linked terms and conditions groups.
- One or more lines with the values for the search levels' search attributes.
- Terms and conditions groups with detailed terms and conditions about orders, planning, logistics, invoicing, and allocation/hard pegging for the lines.

### terms and conditions search level

A priority level for searching and selecting a terms and conditions line. Search levels include a selection of search attributes (fields) and linked terms and conditions groups.

---

user profile (sales)

The default data that is recorded by the user and influences the creation of sales quotations, sales contracts, sales orders, and sales schedules. This data determines the method of order entry, default values during order input, and so on.

user profiles (purchase)

The default data that is recorded by the user and influences the creation of purchase requisitions, requests-for-quotations, purchase contracts, purchase orders, purchase schedules, purchase releases, call-offs, and approval rules. This data determines the method of order entry, default values during order input, and so on.

warehouse transfer

A warehousing order to move an item between warehouses.

A warehouse transfer consists of a warehousing order of inventory transaction type **Transfer**.

WIP warehouse

*See: shop floor warehouse (p. A-4)*

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