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About this document

Read this document to get an overview of the Shop Floor Control (SFC) module’s functionality and to learn more about the functional procedures that are related to SFC.

You need no detailed knowledge of the Baan software to read this document. However, you are more likely to understand the contents if you are familiar with:

- The overall structure of packages, modules, and sessions within the Baan software.
- The general business procedures used in everyday business practice.
- The basic concepts of enterprise resource planning.

For detailed descriptions of the module’s sessions, refer to BaanERP’s comprehensive online Help.

To use this document

Read Chapter 1, The Shop Floor Control (SFC) module in BaanERP, if you want to know more about:

- The module’s functionality.
- The relationship of the module with other modules.
- The functionality of the module’s business objects.

Read Chapter 2, The production-order procedure and Chapter 3, The production-order planning procedure, if you want to know more about:

- The sessions in the procedures.
- The results of the procedures.
- The sessions that are related to the procedures.
- The relationship between secondary procedures and the main procedure.
### Acronyms used in this document

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACP</td>
<td>Accounts Payable</td>
</tr>
<tr>
<td>BOM</td>
<td>Bills of Material</td>
</tr>
<tr>
<td>CF</td>
<td>BaanERP Configurator</td>
</tr>
<tr>
<td>CPR</td>
<td>Cost Price Calculation</td>
</tr>
<tr>
<td>CST</td>
<td>Costing</td>
</tr>
<tr>
<td>FAS</td>
<td>Final Assembly Scheduling</td>
</tr>
<tr>
<td>HRA</td>
<td>Hours Accounting</td>
</tr>
<tr>
<td>IBD</td>
<td>Item Base Data</td>
</tr>
<tr>
<td>INA</td>
<td>Inventory Analysis</td>
</tr>
<tr>
<td>INH</td>
<td>Inventory Handling</td>
</tr>
<tr>
<td>IPD</td>
<td>Item Production Data</td>
</tr>
<tr>
<td>PAT</td>
<td>Plan Aggregation and Transfer</td>
</tr>
<tr>
<td>PUR</td>
<td>Purchase Control</td>
</tr>
<tr>
<td>QM</td>
<td>BaanERP Quality Management</td>
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<tr>
<td>RMP</td>
<td>Resource Master Planning</td>
</tr>
<tr>
<td>ROU</td>
<td>Routing</td>
</tr>
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<td>RPT</td>
<td>Repetitive Manufacturing</td>
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<tr>
<td>RRP</td>
<td>Resource Requirements Planning</td>
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<td>SCS</td>
<td>Supply Chain Solution</td>
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<td>SFC</td>
<td>Shop Floor Control</td>
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<td>SLS</td>
<td>Sales Control</td>
</tr>
<tr>
<td>TRP</td>
<td>Tools Requirement Planning</td>
</tr>
</tbody>
</table>

### Legend

- **Mandatory session**
  - Mandatory session
- **Optional session**
  - Optional session
- **Mandatory business object**
  - Mandatory business object
- **Optional business object**
  - Optional business object
- **Package**
  - Package
- **Module**
  - Module
- **Module that is described in the module procedure**
  - Module that is described in the module procedure
1. The Shop Floor Control (SFC) module in BaanERP

This chapter provides information about:

- The SFC concept as applied in BaanERP.
- SFC’s functional procedures.
- The modules related to SFC.
- The functionality of SFC’s business objects.

1.1 The SFC concept as applied in BaanERP

The efficiency of the production process is a critical success factor for manufacturing companies. BaanERP uses the concept of a production order to control production on the shop floor. A production order states that a certain quantity of an item must be made by a certain date. When production orders are carried out, some issues that influence the efficiency are:

- The amount of material waste in the production process (scrap and yield).
- The number of hours worked on an order.
- The capacity (over)load of the machines and work centers.
- The breakdown of machines.

You can use the SFC production-order procedure:

- To create production orders.
- To plan production orders.
- To archive production orders.
SFC is an execution module. You can use SFC to control the production-order procedure and to maintain data such as the actual materials used. The module is related to the actual production activities on the shop floor of a company. For instance, the planning and rescheduling of operations is performed with SFC.

The basic data that SFC uses includes:
- The items that must be manufactured.
- The parts required.
- The production facilities (such as work centers and machines).
- The operations needed in the production process.

The products are manufactured based on time-phased demand. The coordination between demand and production takes place through planning modules. BaanERP plans the orders in these modules to ensure that required capacity and materials are available when the orders are transferred to the shop floor.
1.1.1 The impact of BaanSCS Scheduler on SFC

BaanSCS Scheduler is a detailed production scheduling application that produces feasible schedules to synchronize plant activities with market demand. The capacity, availability, and interdependencies of all resources (employees, machines, tools, and materials) are thereby taken into account. Contrary to BaanERP, BaanSCS Scheduler takes a finite capacity into account when scheduling production orders.

If BaanSCS Scheduler is implemented in addition to SFC, this has implications for the production-order planning functions of SFC. BaanSCS Scheduler takes over these functions for the most part, which results in the disabling of a number of Baan sessions that concerns the production-order planning.

1.2 SFC’s functional procedures

1.2.1 The production-order procedure

SFC contains a main procedure that controls the production process in a company: the production-order procedure.

The production-order procedure consists of that main procedure and the following, optional parallel procedures:

- Hours accounting.
- Subcontracting.
- Backflushing.
- Inventory issuing.
- Pull notes.

1.2.2 The production-planning procedure

SFC also contains functional procedures that enable you to (re)schedule operations and orders, and to change other details of the production planning. You can reschedule operations in several ways:

- Replan individual operations for non-assembly lines.
- Replan multiple operations for non-assembly lines.
- Replan orders by using a graphical planning board.
- (Re)schedule assembly line orders.
1.2.3 Master data and prerequisites

Before you can start working with SFC, you must define the following data:

- The item data, in the IBD module.
- The bills of material, in the BOM module.
- The routing, in the ROU module.
- If you use assembly lines, define assembly lines in CF.

If you use SFC for assembly-line planning, you must already have generated line mixes with the BaanERP Configurator.

You must also set the parameters in the SFC Parameters (tisfc0100s000) session.

1.3 The modules that are related to SFC

Figure 2 shows the modules that are related to SFC.

SFC receives production orders from:

- The BaanERP Configurator (CF), which transfers planned orders for final assembly-line scheduling.
- The Plan Aggregation and Transfer (PAT) module, which transfers the planned production orders from the Resource Master Planning (RMP) and Resource Requirements Planning (RRP) modules.
- The Inventory Analyses (INA) module, which transfers production-order advice.
SFC uses the following information to plan the production orders and calculate the orders’ lead times and cost estimates:

- Item specification and planning data from the Item Base Data (IBD) module and Item Production Data (IPD) module.
- The product structure defined in the Bill of Material (BOM) module.
- The operations carried out to manufacture an item, defined in the Routing (ROU) module.
- The cost accounting data from the Cost Accounting (CPR) module.
- The assembly lines for final assembly-line sequencing, defined in the BaanERP Configurator (CF).

The following modules are also related to SFC:

- The Hours Accounting (HRA) module books hours worked on a production order. The actual hours are used to calculate the actual cost of a production order.
- The Inventory Handling (INH) module issues the components from the warehouse needed for production orders and receives the finished product (a manufactured item) in the warehouse.
- The Resource Requirements Planning (RRP) module shows the capacity load on the production resources caused by the planned production orders from SFC.
- The Tools Requirements Planning (TRP) module plans and shows the availability planning of the tools used for production orders from SFC.
- The Purchase Control (PUR) module handles the subcontracted operations of production orders. When operations are subcontracted in SFC, a purchase order is generated to buy the services of the subcontractor.
- The Repetitive Manufacturing (RPT) module schedules production orders.
- BaanERP Quality Management (QM) checks if the goods produced meet quality standards and, if necessary, adjusts the shop floor planning to manufacture more items to make up for rejected items.
- BaanSCS Scheduler creates schedules that coordinate plant activities. If the Scheduler is implemented, it takes over the production-order planning that is normally carried out in SFC.
1.4 The functionality of SFC’s business objects

SFC contains the following business objects:

- Production Order Control.
- Production Order Planning.
- Production Order Subcontracting.
- Production Order Material Issue.
- Production Order Costing.
- Final Assembly Line Sequencing.
- Production Order History.

1.4.1 Flow between business objects

Figure 3 shows the main flow between the business objects. The Production Order Control business object is used from the start of production until production is completed.

You can use the following business objects in any sequence:

- Production Order Planning.
- Final Assembly Line Sequencing.
- Production Order Material Issue.
- Production Order Subcontracting.

However, the Production Order Control business object does determine the point at which the other business objects can be used.
Production Order Control

You can create production orders by using one of the following methods:

- Manually create the production order within SFC (see below).
- Transfer planned orders from the PAT module, the INA module, and the Configurator (CF) package to SFC.
- Transfer of planned orders form RRP and INA by using the schedules created in the RPT module.

If you make a production order within SFC, the production order process starts with the creation of a production order in the Production Order Control business object. The item that must be manufactured is specified in the production order along with the quantity ordered and other planning data.

The data defined in the Item Base Data (IBD) module, Item Production Data (IPD) module, Routing (ROU) module, and Cost Accounting (CPR) module and the BaanERP Configurator (CF) package, is used to:

- Plan the production order (start-date and end-date calculation).
- Estimate the cost of the production order.
- Plan materials needed for the order.
The production process starts after the production orders have been created. The following steps of the production process are carried out in the Production Order Control business object:

- Print production-order documents with details of components required and operations to be performed.
- Release the order to the work force on the shop floor so that the order can be carried out.
- Report the operations and order complete.

**Production Order Material Issue**

Use the Production Order Material Issue business object to issue estimated material and additional material. The actual stock is issued in the Inventory Handling (INH) module. If you use backflushing, material is issued automatically, so you do not use this business object.

**Production Order Subcontracting**

Use the Production Order Subcontracting business object to subcontract operations of production orders. Subcontracting an operation results in the generation of a purchase order. Subcontracting in BaanERP is treated as a purchased service from a subcontractor.

**Production Order Costing**

The Production Order Costing business object calculates the actual cost of a production order. To determine the actual costs, you can use the hours booked for the production order in the Hours Accounting (HRA) module and the material issued in the Inventory Handling (INH) module. The cost is booked when the production order is closed, but you can simulate the cost at any time.

**Production Order Planning**

Use the Production Order Planning business object to change or show the planning of a production order. You can reschedule operations by altering their remainder start time. A graphical planning board is provided to facilitate rescheduling. You can also change the next operation, add extra operations, and remove some operations.

Changes in the load on the corresponding work centers and machines are reflected in the Resource Requirements Planning (RRP) module.

*Note*

If BaanSCS Scheduler is implemented, you must use this application for production order planning purposes instead of the Production Order Planning business object in SFC.
Final Assembly Line Sequencing

Use the Final Assembly Line Sequencing business object to plan the production of FAS items (that is, items manufactured on an assembly line). The business object optimizes the sequence of orders on each assembly line, according to rules that you define in the BaanERP Configurator (CF) package.

Production Order History

The Production Order History business object contains information about the differences between the actual cost and the estimated cost of production orders. The business object shows both the materials used for a production order and the time spent on a production order. You can use this historic information to improve the planning of future production orders.

**Link to Finance**

If the following condition is met, financial transactions can be created.

- The link between SFC and BaanERP Finance is active.

The transactions are created in the following circumstances:

- When the material is issued and received in the warehouse.
- When the hours are booked and processed in the Hours Accounting (HRA) module.
- When a Factory Warehouse (WIP) transfer occurs.
- When an order is subcontracted (in which case the financial transactions are generated through the Purchase Control (PUR) module).

**Note**

Sessions in the Production Order Material Issue business object, Production Order Costing business object, and Production Order History business objects belong to the Costing (CST) module. The CST module is used to record the actual costs related to production orders. For further details, see the Production Order Costing (CST) module procedure document (UP127A US).
2. The production-order procedure

This chapter outlines how you can use SFC:

- To carry out a production order for FAS and other items.
- To work with production-order statuses.
- To use optional sessions in the production-order procedure.
- To do hours accounting for a production order.
- To subcontract a production order.

2.1 To carry out a production order for non-FAS items

You can use the production-order procedure to carry out all the aspects of a production order in a production control system. A production order can be carried out in many ways, depending on the manufacturing environment you use. How a production order is used in an assembly-line environment is shown in Section 2.2.

Carrying out a production order results in the increase in stock of the manufactured item and the calculation of the actual cost of the production order. If the Tools Requirements Planning (TRP) module is used and tools were used for a production order, the tool life is updated.

The production-order procedure outlined in Figure 4 is the main procedure for calculating production orders. To complete a production order, you must carry out at least steps 1 through 11.

In addition to the production-order procedure and the production-planning procedure, SFC includes the following optional parallel procedures:

- Hours accounting.
- Subcontracting.
- Backflushing.
- Inventory issuing.
- Pull notes.
Figure 4 shows a typical production-order procedure in a manufacturing environment. However, you can vary some sequences, for example, to report that an operation is completed before the material is issued.

![Diagram of production-order procedure]

**Note**

Figure 4  The production-order procedure
The production-order procedure consists of the following steps.

**Step 1 Create Production-Orders (tisfc0501m000)**

A production order must be created. Usually this order is created by transferring planned orders from the INA module, the RRP module (using Plan Aggregation and Transfer (PAT)), and the BaanERP Configurator package to SFC. However, you can also manually create orders in the current step.

BaanERP processes the production order by calculating the following data for the end product:

- The estimated materials.
- The estimated hours.
- The operations start date.
- The end date.
- The start date.
- The completion date.

This calculation is called processing a production order. After the production order has been processed, the status of the production order is **Planned**.

BaanERP also calculates the time-phased inventory movement date for the manufactured item. This date depends on the **On Order Date Prod. Orders Based On** parameters in the SFC Parameters (tisfc0100s000) session.

The production order number is generated by BaanERP and is influenced by the **Number Group in Production Ordering** parameter in the SFC Parameters (tisfc0100s000) session.

**Step 2 Scheduling in BaanSCS Scheduler**

If BaanSCS Scheduler is implemented, production orders must be scheduled in Scheduler. The production orders receive the **Scheduled** order status.

**Step 3 Print Order Documents (tisfc0408m000)**

Use this session to print various documents such as operation notes, material lists, and cutting lists. You can use these documents to inform the people on the shop floor about the details of the production orders. Once the documents have been printed, the status of the order is **Documents Printed**.

If the **Printing Order Document Mandatory** check box in the SFC Parameters (tisfc0100s000) session is selected, step 3 is mandatory. If the check box is cleared, you can skip step 3. This check box is not valid for repetitive items.

Use the SFC Parameters (tisfc0100s000) session to define which standard order documents are printed by default. You can also choose whether tool components are printed and whether outbound data is printed on material lists, material issue notes, and checklists. Finally, you can select the print sequence of the outbound data.
The production-order procedure

Step 4  **Release Production Orders (tisfc0204m000)**

At this point, the Release Production Order (tisfc0204m000) session releases the production order. As a result, production can start and the production-order status changes to **Released**.

Step 5  **Issue Material for Production Orders (ticst1501m000)**

With the start of production, you must get the necessary components for the production order from the warehouse. The required material to be issued is maintained in the Material To Issue for Production Orders (ticst1501m000) session.

The Material To Issue for Production Orders (ticst1501m000) session is mandatory if the following are true:

- The Manual Issuing check box is selected in the SFC Parameters (tisfc0100s000) session.
- The material concerned is not backflushed.

The actual issue of inventory takes place in the next step.

Step 6  **Initiate Inventory Issue (tisfc0207m000)**

Use the Initiate Inventory Issue (tisfc0207m000) session to report the actual issue of components from the warehouse. The status of the order becomes **Active**. An order can also gain **Active** status when hours are booked to it in the HRA module.

Step 7  **Report Operations Completed (individually) (tisfc0530m000)**

Use the Report Operations Completed (tisfc0530m000) session to report that an operation is complete, by entering the number of completed products. You can also enter the number of rejected products.

You typically use this session to keep track of the production order’s progress before you report that the entire order is complete.

The calculation of the remaining production time depends on the Calculation Method Remaining Prod. Time parameter in the SFC Parameters (tisfc0100s000) session. This parameter can be either Planned Quantity or Time Spent.

The Report Operations Completed (tisfc0530m000) session is optional. However, if any of the operations of the production order are defined as a count point, you must separately report that operation complete and enter the number of completed products.
Step 8 **Report Orders Completed (globally) (tisfc0520m000)**

Instead of keeping track of the progress of each operation, you can simultaneously report all operations completed.

If the Reporting Method for Previous Operations parameter in the SFC Parameters (tisfc0100s000) session is Automatically, the previous operations are automatically reported completed. If this parameter is Interactive, BaanERP provides an option (Yes/No) to report the completion of operations. The status of the production order becomes To be Completed.

Step 9 **Close Production Orders (ticst0201m000)**

At a certain point in the production process, the production order must be closed. This closure implies that costs, materials used, and hours worked can no longer be booked to the order.

This session closes the order and calculates the actual cost of the production order.

Step 10 **Archive Production Orders (ticst0250m000)**

Use the Archive Production Orders (ticst0250m000) session to remove the old data from the operational company and store them in an archive company. In BaanERP, separate companies are separate data sets.

You can use old production orders to analyze the efficiency of the production process. For instance, you can use, the comparison between estimated costs and actual costs to improve the production process.

Step 11 **Archive Costing History (ticst2250m000)**

You can use this optional session to archive the costing history.

Step 12 **Cancel Production Order (tisfc0203m000)**

You can use this optional session to cancel a production order after the production order is released and before the operations are reported complete. Any materials issued for a production order are posted back to stock. You cannot cancel production orders for which hours have been posted or some quantity has been delivered or rejected.

Step 13 **Reset Production Order status (ticst0203m000)**

If a user prematurely closed a production order, you can reopen the order with the Reset Production Order Status (ticst0203m000) session.

The status of the production order is reverted to Completed. This status again enables you to book hours and materials used.
2.2 To carry out a production order for assembly line items

If you are working in an assembly-line environment (that is, you are making final assembly schedule (FAS) items), you must follow some extra steps to generate production orders (called assembly orders). These steps are shown in Figure 5.

![Figure 5 The assembly-order procedure](image-url)
Step A **Move order to Line Mix (tisfc7221m000)**

A line mix is a sequence of orders to be carried out on a particular assembly line. Line mixes of orders are transferred to SFC from the BaanERP Configurator. In this optional step, you can add additional orders to the line mix.

Step B **Remix Line Mix (tisfc7220m000)**

In addition to adding orders to the line mix that comes from the Configurator, you can make minor changes to the mix with this optional step. You can calculate a new mix to clear a backlog or to improve existing mixes (for example, to take account of a higher priority given to an order as a result of altering its offline date).

Step C **Generate Line Sequences (tisfc7230m000)**

In this mandatory step, BaanERP takes the line mix transferred from the BaanERP Configurator and generates assembly orders. The sequence of orders on the assembly line is calculated to be as efficient as possible, in terms of sequencing rules that you have defined in the Configurator. See section 3.2 for more details.

After step C, the procedure for assembly orders then follows the same sequence as orders for non-assembly items, from step 2.

**Overview session**

You can control the flow of assembly orders (during the assembly stage) from the Line Sequences (tisfc7530m000) session. This session shows an overview of the sequence of orders and their status, for an assembly line. You can start all the other relevant sessions from the Specific menu of the Line Sequences (tisfc7530m000) session, which enables you to manage and adjust the sequence of assembly orders in the light of changing circumstances on the shop floor.
2.3 To work with production-order statuses

The production-order procedure has many steps. You can use the order status to keep track of a production order and to determine which steps can be carried out.

The sequence of statuses for a production order is strictly regulated. The order status of the production order is checked before a step is carried out. After certain steps, the status is updated automatically. The following table shows the status changes of production orders.

<table>
<thead>
<tr>
<th>From status</th>
<th>To status</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>—</td>
<td>Planned</td>
<td>Production Orders (tisfc0501m000)</td>
</tr>
<tr>
<td>Planned</td>
<td>Scheduled</td>
<td>The Scheduled status only appears when the production order is scheduled by BaanSCS Scheduler.</td>
</tr>
<tr>
<td>Planned</td>
<td>Sequence Phase</td>
<td>Generate Line Sequences (tisfc7230m000) The Sequence Phase status is only valid for FAS item production orders.</td>
</tr>
<tr>
<td>Planned, Scheduled or Order Documents Printed</td>
<td>Released</td>
<td>Release Production Orders (tisfc0204m000)</td>
</tr>
<tr>
<td>Released</td>
<td>Active</td>
<td>Process Hours Accounting (tihra1210m000)</td>
</tr>
<tr>
<td>Released</td>
<td>Canceled</td>
<td>Cancel Production Orders (tisfc0203m000)</td>
</tr>
<tr>
<td>Released, or Active</td>
<td>Completed</td>
<td>Report Orders Completed (tisfc0520m000)</td>
</tr>
<tr>
<td>Completed</td>
<td>Closed</td>
<td>Close Production Orders (ticst0201m000)</td>
</tr>
<tr>
<td>Closed</td>
<td>Completed</td>
<td>Reset production-order status (ticst0203m000)</td>
</tr>
<tr>
<td>Closed</td>
<td>Archived</td>
<td>Archive Production Orders (ticst0250m000)</td>
</tr>
</tbody>
</table>

BaanERP uses order statuses to determine, for example, at what stage in the production-process it can issue material, post hours, and generate subcontracted orders. Figure 6 shows the possible statuses of a production order.
The production-order procedure

2.4 To use optional sessions in the production-order procedure

You can use the following optional sessions in the production-order procedure.

- **Default Production Order Data (tisfc0502m000) session**
  You can use this session to create defaults for production orders. The defaults are used when a new production order is created.

- **Report Orders Completed Globally (tisfc0206m000) session**
  You can use this session to report that a range of production orders are complete.

- **Overview sessions**
  To view several production-order data, use the following sessions:
  - Production Orders by Item (tiscf0503m000) session.
  - Blocked Operations by Production Order (tisfc0540m000) session.
  - Inventory by Production Order (tisfc0516m000) session.

- **Report sessions**
  To print production-order data, use the following sessions:
  - Print Rejects (tisfc0403m000) session.
  - Print Subsequent Deliveries (tisfc0404m000) session.
  - Print Shortages by Production Order (tisfc0418m000) session.
  - Print Blocked Operations by Production Order (tisfc0440m000) session.
To perform hours accounting for a production order

The time spent on a production order is entered in the Hours Accounting (HRA) module. The booked hours are used to determine the production order result (that is, the difference between estimated costs and actual costs).

Figure 7 shows the position of the hours-accounting procedure relative to the production-order procedure, for a non-FAS item.
As shown in Figure 7, the hours worked on production orders can be entered after the production order is released. After the production order is closed, the hours can no longer be booked to the production order. However, you can enter the hours again after reopening the production order with the Reset Production-Order Status (ticst0203m000) session.

For more information about the hours-accounting procedure, refer to the Hours Accounting (HRA) module procedure.
To subcontract a production order

A company can decide to subcontract the work: another company carries out the work and returns the products to your company.

Subcontracting is either planned or unplanned (for instance, because a machine has broken down). The type of decision influences the procedure that must be followed.

Figure 8 shows the steps in the subcontracting procedure.

As you can see in Figure 8, the subcontracting can start after the production order is created. You cannot close a production order until the subcontracting is completed.
The subcontracting procedure consists of the following steps:

**Step A** **Subcontracting Rates (ticpr1560m000)**

Before you can subcontract any work, you must know the subcontractor’s price. The rate of the task that the subcontractor is going to perform is entered in the Subcontracting Rates (ticpr1560m000) session.

**Step B** **Subcontract Operations (tisfc2210m000)**

For unplanned subcontracting, use the Subcontract Operations (tisfc2210m000) session to shift the operation from its original work center to a subcontracting work center.

For planned subcontracting, the operation is already planned on a subcontracting work center in the routing of the manufactured item. So, this step is only mandatory for unplanned subcontracting.

**Step C** **Generate Subcontracting Orders (tisfc2250m000)**

In BaanERP, subcontracting is treated as service from a subcontractor. In other words, a subcontracting order is a purchase order. The Generate Subcontracting Orders (tisfc2250m000) session uses all the operations that are subcontracted to generate the purchase orders you need to order the service from the subcontractor.

The remaining procedure is carried out in the Purchase Control (PUR) module. Once the quantities have been registered in the PUR module, the information is displayed in the Report Operations Completed (tisfc0506m000) session.

If the quantity reported completed for the operation is not equal to the quantity received from the subcontractor, BaanERP displays a warning message that states the difference.

**Note**

If the link with BaanERP Finance is active, a subcontracted production order cannot be closed before the purchase invoice is approved in the Accounts Payable (ACP) module.

### 2.7 To backflush materials

Backflushing is the automatic issue of materials from inventory, based on theoretical usage and the quantity of the item reported completed. If backflushing is operational, and when the manufacture of a product is completed, the quantity of materials used to make the product is automatically released for the following item, without the need to record the physical issue of materials.

You can also backflush hours using a similar procedure. Further details of how to backflush hours are given in the online Help.
2.7.1 Backflushing materials procedure

The procedure for backflushing materials is shown in Figure 9. Steps one, two, three, and five involve setting the correct parameters for backflushing, and steps four, six, and seven are where the actual backflushing is carried out.

**Figure 9  Backflushing materials**

**Step 1  Item production data (tiipd0101s000)**

If you want to backflush materials for an item, its item data must be defined appropriately. The following item data concern the backflushing issue:

- If you want to backflush a component item, you must select the **Backflush If Material** check box. Consequently, the **Backflushing** check box in the Estimated Materials (tisfc0110s000) session for that specific item is selected by default.

- If you want to backflush all components for an end item, select the **Backflush Materials** check box. Consequently, the **Backflush Materials** check box in the Production Orders (tisfc0101s000) session for that specific production order is selected by default.
Step 2  **Production Orders (tisfc0101s000)**

If you selected the **Backflush Materials** check box in the Item Production Data (tiipd0101s000) session, the **Backflush Materials** check box in the Production Orders (tisfc0101s000) session is selected by default. If you do not want to backflush materials for a particular order, you can always clear the **Backflush materials** check box for that order. However, if you do want to backflush materials, both the **Backflush materials** check box in the Production Orders (tisfc0101s000) session and the **Backflushing** check box in the Estimated Materials (tisfc0110s000) session must be selected.

Step 3  **Estimated Materials (tisfc0110s000)**

If you selected the **Backflush if Material** check box in the Item Production Data (tiipd0101s000) session, the **Backflushing** check box in the Estimated materials (tisfc0110s000) session is selected by default. If you do not want to backflush a specific material, you can always clear the **Backflushing** check box. However, if you do want to backflush a material, both the **Backflush if Material** check box in the Production Orders (tisfc0101s000) session and the **Backflushing** check box in the Estimated Materials (tisfc0110s000) session must be selected.

Step 4  **Report Operations Complete (tisfc0530m000) or Report Orders Complete (tisfc0520m000)**

When you report that an order or operation is complete, backflushing occurs (if the check boxes that are mentioned in the previous steps are selected). The amount of materials backflushed is not just the amount of materials present in the manufactured item, but includes the materials used in rejected items, materials lost to scrap, and materials lost to yields of less than 100%.

Step 5  **SFC Parameters (tisfc0100s000)**

In this session, you can select the method for backflushing. This can be:

- **Automatic**: backflushing proceeds without input.
- **Interactive**: BaanERP asks you if you want backflushing to proceed.
- **Manual**: you must carry out Step 6.

Step 6  **Backflush Materials and Hours (tisfc0220m000)**

You only carry out this step if the **Backflushing Method** field in the SFC Parameters (tisfc0100s000) session is **Manual**.

You can use this session to backflush materials or hours for a selected range of production orders or assembly orders.
Step 7  Production orders (tisfc0101s000)

You must select the Backflush Materials check box, otherwise backflushing will not occur. You can see the result of backflushing materials in the Production Orders (tisfc0101s000) session. BaanERP subtracts the backflushed material quantity from the Subsequent Delivery field in the Material to Issue for Production Orders (ticst0101s000) session, and adds the same quantity to the To Issue field. The corresponding warehouse order is immediately initiated.

After the warehouse order has been issued, you can still order additional quantities by using the Material To Issue for Production Orders (ticst0101s000) session.

2.8  To issue inventory

When you carry out a production order, you must issue the required materials from the warehouses where the materials are stored to the shop floor. The warehouse concerned can be the warehouse that is defined in the bill of material (BOM), or the WIP warehouse, in case one is defined for a work center. There is no difference between issuing materials from a normal warehouse or from a WIP warehouse.

You can determine the extent in which you want to be in control when issuing the materials: a tight control when you issue manually, or a somewhat looser control when you issue automatically.

- Manual issue
  Select the Manual Issuing check box in the SFC Parameters (tisfc0100s000) session (the material concerned is not backflushed). This setting implies that you must always enter a quantity in the To Issue field in the Material to Issue for Production Orders (ticst1501m000) session when you issue materials. After that, you must run the Initiate Inventory Issue (tisfc0207m000) session to actually issue the materials.

- Automatic issue
  The Manual Issuing check box in the SFC Parameters (tisfc0100s000) session is cleared (the material concerned is not backflushed). This setting implies that you only need to run the Initiate Inventory Issue (tisfc0207m000) session to issue materials.

Control methods

In addition to the settings mentioned above, you can specify a number of special methods for the release of inventory:

- Pull Notes
  You can control the physical flow of materials to the shop floor with pull notes (see section 2.9).

- Backflushing
  You can specify that the estimated quantity of materials is issued when you report that a product is completed (see section 2.7).
• Floor Stock
  You can specify cheap components as floor stock, so that they are delivered directly to the work center when the production order is released.

2.9 To issue pull notes

A pull note authorizes the movement of goods to the shop floor, between operations, or from the shop floor.

Types of pull notes

You can define four different types of pull notes, for different usages:

• To shop floor
  Used to move materials from the warehouse to the shop floor.

• Inter-operation
  Used to move subassemblies from one work center to the next.

• From shop floor
  Used to move the final product (end item) from the shop floor to the warehouse.

• Replenishment order
  Used to restock warehouses, to the maximum inventory.

You must enter the quantity of items to be moved by each pull note and the number of pull notes per item in the Item Production Data (tiipd0501m000) session. For some types of pull notes, these values can be modified at a later stage.

Note

If BaanSCS is implemented, pull notes do not apply.
This chapter outlines how you can use SFC to:

- 'Manually’ reschedule operations.
- Reschedule operations though a planning graphical interface.
- Alter other planning details of operations.
- Sequence assembly-line orders.
3.1 To plan production for non-assembly line manufacturing

The production-planning procedure describes the position of the planning of production orders relative to the production-order procedure.

Figure 10 shows the steps in the production-planning procedure.
The production-planning procedure consists of the following single step:

**Step A  Production Planning (tisfc1500m000)**

As shown in Figure 10, you can modify the production-order planning after the production order is created (when the production-order status is **Planned**) and before the production order is reported complete (when the production-order status is **Completed**).

Use the Production Planning (tisfc1500m000) session if unexpected events take place during production that require you to replan the production orders.

The Production Planning (tisfc1500m000) session allows you to modify the planning of production orders by operation. You can change:

- Start date of operations.
- Cycle time.
- Setup time.
- Production rate.
- Work center.
- Machine on which the job must be done.
- The task assigned to the operation.
- The next operation.
- If backflushing is enabled.

If you only want to change the date of the operation, you can use the graphical planning board (see section 3.3). If BaanSCS Scheduler is implemented, this does not apply.

If you alter one date of an operation (such as the Start date remainder), BaanERP also updates all other dates for the operation, and the related operations.

The change in planning can affect the due date of a production order and also the cost estimate. These changes are reflected in the planning and are based on the settings in the SFC Parameter (tisfc0100s000) session:

- If the **Automatic Update of Production Order Dates** check box is selected, the production order date is automatically updated after production-order planning is modified. If the check box is cleared, the production-order date remains unaffected.
- If the **Update Method for Estimated Hours** is **Automatically**, the cost estimate is automatically changed.
- If the **Update Method for Estimated Hours** is **Interactively**, BaanERP will ask you whether the cost estimate must be changed.
- If the **Update Method for Estimated Hours** is **None**, the cost estimate will not be changed.

**Note**

For detailed shop floor planning, you can integrate BaanERP and BaanSCS Scheduler. In this case, SFC will send the order details to Scheduler. In Scheduler an optimization calculation is carried out and the results of the calculation are sent back to BaanERP.
3.2 To plan production for assembly lines

Assembly orders come to SFC from the BaanERP Configurator. The Configurator places the orders in a mix according to mix rules (for example, marketing rules).

![Assembly line planning diagram]

In SFC you can, optionally, add orders to a mix (in the Move Order to Line Mix (tisfc7221m000) session), or remix the orders using mix rules and priority rules (in the Remix Line Mixes (tisfc7220m000) session).

The orders are then passed to the Generate Line Sequences (tisfc7230m000) session (see Figure 11). In this session, the sequence engine tries to find the most efficient sequence of orders that satisfy sequencing rules. The existing line mix is used as the basis.

There are three types of sequencing rules:

1. Dispersion rules
   Used to spread out critical option combinations over the sequence.

2. Placement rules
   Used to determine how items are placed in relation to other items.

3. Priority rules
   Orders with a higher priority are processed first.
After the assembly line sequence has been generated, you can modify it manually using the following sessions:

- Reschedule Line Sequences (tisfc7231m000) session.
- Exchange Exchangeable Configurations (tisfc7250m000) session.

### 3.3 To use sessions that are related to the production-planning procedure

**Note**

If BaanSCS Scheduler is implemented, the planning board sessions in this section do not apply.

The following sessions are related to the production-planning procedure, for nonassembly items:

- **Planning board sessions**
  - You can modify the production plan by using a planning board instead of the Production Planning (tisfc1500m000) session. The following sessions are available:
    - Production Planning by Planning Board (tisfc1120m000) session.
    - Work Center Planning by Planning Board (tisfc1130m000) session.
    - Machine Planning by Planning Board (tisfc1140m000) session.

![Planning board](image)

You can alter the production dates by dragging the orders or operations with your mouse (Figure 12).

- **Overview sessions**
  - You can use the following sessions to look at the capacity utilization (that is, how much you have planned to use a work center or machine):
    - Production Planning Overview (tisfcf1507m000) session.
    - Utilization by Week Overview (tisfc1502m000) session.
    - Utilization by Day Overview (tisfc1503m000) session.
    - Work Center Utilization by Week Overview (tisfc1501m000) session.
    - Work Center Utilization by Day Overview (tisfc1506m000) session.
    - Machine Utilization by Week Overview (tisfc1504m000) session.
    - Machine Utilization by Day Overview (tisfc1505m000) session.
In the **Capacity Overview** group box of the SFC parameters (tisfc0100s000) session, you can determine how weekly and/or daily capacity is calculated:

- Automatically (for example, when the production plan is changed),
- Manually, when you run the Build utilization session (tisfc0201m000), or
- Not calculated.

If the capacity utilization is not calculated on a weekly basis, you cannot use the sessions that give a weekly overview of utilization.

- Print sessions
  You can print the following data:
  - Production order planning overview or by priority.
  - Work center utilization by week or by day.
  - Machine utilization by week or by day.
  - The difference between actual and available capacity for work centers.
  - Financial Cover of Work Centers.

The following sessions are related to the production-planning procedure, for assembly items:

**Overview sessions to show assembly line attributes:**

- Line Mixes (tisfc7520m000).
- Line Segments (tisfc7521m000).
- Line Stations by Segment (tisfc7522m000).
- Chart of Number of Orders by Option Combination (tisfc7710m000).

You can print assembly-line data using the following sessions:

- Number of Orders by Option Combination (tisfc7410m000) session.
- Line Mixes (tisfc7420m000) session.
- Line Sequences (tisfc7430m000) session.
- Line Offsets (tisfc7440m000) session.
- Exchangeable Configurations (tisfc7450m000) session.