CHAPTER 6

Procurement Proposals

This chapter covers the procurement element called the planned order. You'll learn how a material availability check can be executed for a planned order and you'll learn about several ways to convert a planned order to a production order.

Procurement proposals are created as a result of an MRP run. The system generates planned orders for materials produced in-house and purchase requisitions for materials procured externally. Planned orders are further converted to production orders for order processing. Purchase requisitions are subsequently converted to purchase orders, which are formal (legal) documents sent to vendors for procuring goods or services. This chapter discusses the planned order, since it is relevant to the production process.

Planned Orders

A *planned order* is a procurement proposal that's usually created by MRP to cover requirements for materials that are produced in-house. A planned order can also be created manually if needed. A planned order contains basic information like the material, quantity, and the production dates, along with some other information. The planned order is only a procurement proposal and thus must be converted to a production order for manufacturing execution.

Note   As mentioned, a planned order is only a procurement proposal and is not used for manufacturing execution. This statement is valid for discrete and process industries only. In repetitive manufacturing, planned orders are used for production execution. If the material is flagged to be executed with repetitive manufacturing, then planned orders with the PE Run-Schedule Quantity order type are created. Such planned orders cannot be converted to production orders.

As you can see in Figure 6-1, MRP has generated several planned orders to fulfil requirements generated by the planned independent requirements.


Figure 6-1. *Stock requirement list*

Planned orders can be created manually or automatically as a result of an MRP run.

Manual creation of planned order: A planned order can be generated manually by choosing Logistics ➤ Production ➤ MRP ➤ Planned Order ➤ Create. You can also use Transaction Code MD11 to create a planned order.

You must specify the planned order's profile on the initial screen, as shown in Figure 6-2.
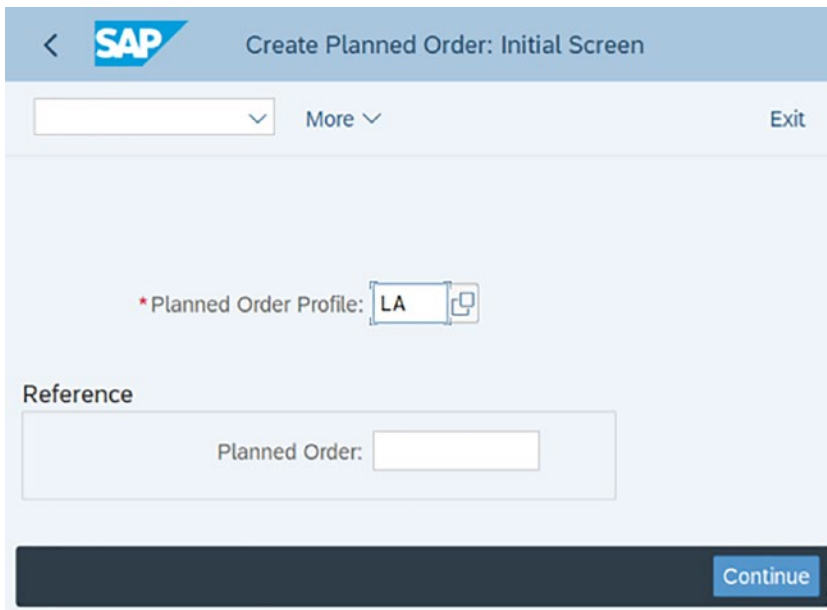
Figure 6-2. *Creating a planned order: initial screen*

A planned order profile uses a unique key that contains several parameters, as shown in Table 6-1:

- Order type (planned order type)

- Procurement type (i.e., in-house procurement or external procurement)

- Special procurement type

- Account assignment category

Table 6-1. *Order Types*

Profile	Procurement Proposal Type	Procurement Type	Special Procurement Type	Account Assignment Category
KB	Standard purchase order	F	K	
KD	Individual customer order	E	E	E
LA	Stock order	E	E	
LB	Standard purchase order	F	L	
LBE	Standard purchase order	F	L	E
NB	Standard purchase order	F		
NBE	Standard purchase order	F		E
PR	Project order	E	E	Q
UL	Standard purchase order	F	U	

The planned order profile called LA Stock Order is used to create standard PP planned orders that are eventually converted to production orders or process orders.

The Planned Order header consists of the planned order number, special procurement type, material number, and so on, as shown in Figure 6-3.

Figure 6-3. *Creating a planned order*

The planned order contains three views—Header, Assignment, and Master Data—each of which contains specific information.

Header View

The Header data view of a planned order contains three sections—Quantities, Dates/Times, and Other Data. Let's look at each of these sections:

- **Quantities:** This section contains the order quantity (i.e., the quantity to be produced and the scrap quantity).

- **Dates/Times:** Basic Dates: Basic dates are calculated when running MRP with basic scheduling. During the planning run, the system determines the basic production dates for the planned orders. The basic start and end date are calculated based on the in-house production time maintained in the MRP2 view of the material master. The in-house production time is independent of the lot size during the calculation of basic dates. Schedule margin key is not considered during the basic scheduling. The basic dates are accurate to days.

Production dates: The production dates and times are calculated when running the MRP with lead time scheduling. The system determines the production dates based on the time maintained in the routing. Various times can be maintained in the routing, such as setup time, processing time, queue time, interoperation time, and so on. All these times are used to calculate the exact time required to produce a material based on the order lot quantity. During lead time scheduling, the system not only calculates the production date and time but also generates capacity requirements. The lead time scheduling calculates the exact production dates and time to the accuracy of minutes and seconds.

Opening date: You must maintain a Schedule Margin key in the MRP2 view of the material master with an opening period. The opening period is the time (in days) to provide the MRP controller with some buffer time to convert planned orders to production orders. The opening date indicates when the planned orders should be converted to production orders.

Available for MRP: This is the date when the material will be available in the warehouse. This is calculated by adding the Goods Receipt processing time to the order finish date.

GR processing time: This is the time needed for inspection and placing the materials in the warehouse once the production is finished.

Other Data

Production plant: The plant where the material is being produced.

Storage location: Where the material produced is stored once the production is finished.

Production version: Let's say there are multiple production versions that can produce the material. You must specify the production version in the planned order.

Firming

Planned Order: If this indicator is active, it means the planned order is firmed. A firmed planned order cannot be changed during the MRP run. The firmed indicator is activated for the planned order when creating the planned order manually or when changing a planned order created by the MRP run.

Components: If this indicator is active, it means the components are firmed and cannot be changed during the next planning run. The firming indicator for a planned order must be activated before activating the firming for components.

Capacity dispatched: This indicator suggests that the capacity requirements for the order have been generated and the capacity has been reserved at the work center for the order to be executed as per scheduled date and time.

Conversion indictor: This indicator determines whether a planned order can further be converted to a production order or a process order or purchase requisition. Planned orders for repetitive manufacturing are created with the PE Run-Schedule Quantity order type, which cannot be converted to production or process orders.

Assignment View

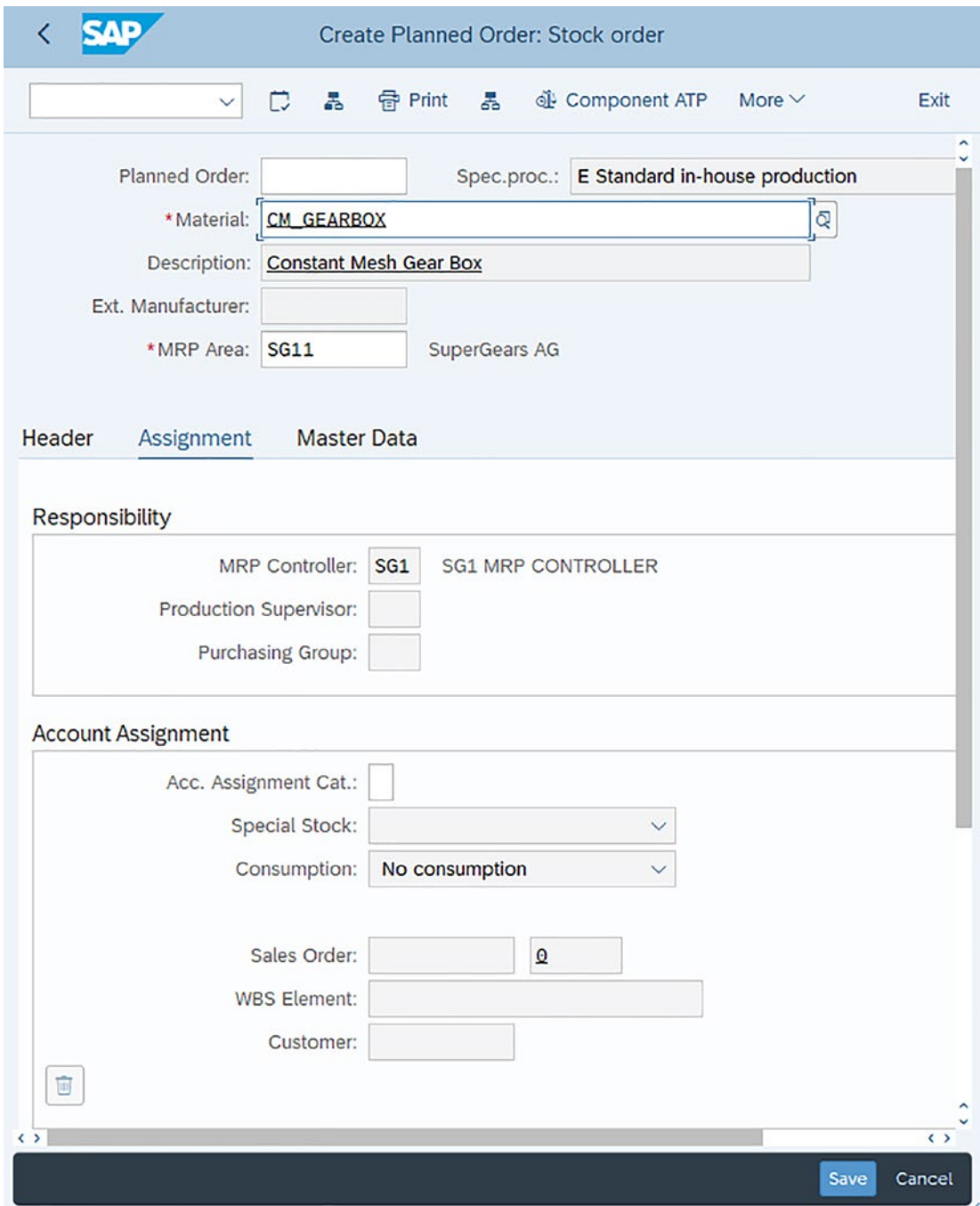The Assignment view contains two sections—Responsibility and Account Assignment—as shown in Figure 6-4.

Figure 6-4. *Planned order: assignment view*

- **Responsibility:** The MRP controller, production supervisor, and purchasing group are populated from the material master to specify the responsible person/group of persons in each area.

- **Account Assignment:** Account Assignment category: This field determines the cost object, such as a cost center, order, and so on, where the cost of production should be posted.

Special stock: This field specifies the special stock type for the material—for example, consignment stock.

Consumption: This field specifies if the consumption is to be posted to a consumption account (V) or an asset account (A).

Sales order: In a make-to-order environment, the planned order is generated with reference to a sales order to establish a 1:1 relationship. The reference sales order is populated in the planned order.

WBS element: If you're working in an engineer-to-order environment and the planned orders are generated with reference to a WBS (Work Breakdown Structure) element.

Master Data View

The master data view contains two sections—material master and bill of material. The material master section displays a field from the material master—MRP views and the bill of material (BOM) sections. The BOM is exploded based on the production version in the planned order, as shown in Figure 6-5.
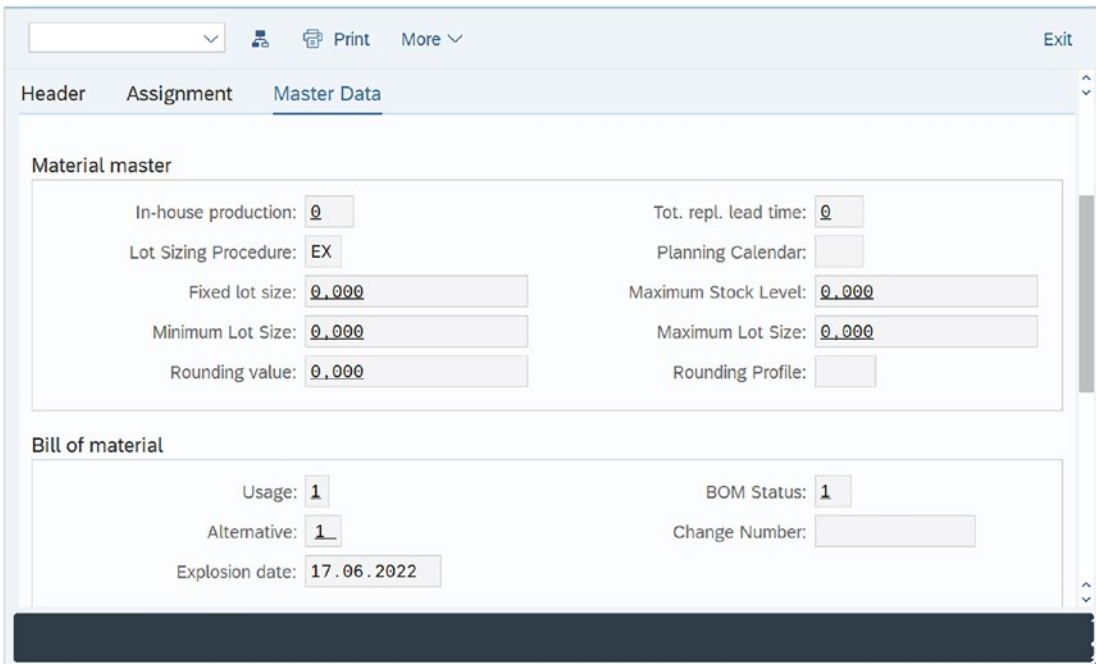
Figure 6-5. *Planned order: master data*

Several functions can be executed on the planned order on the menu bar. The planned order can be deleted by clicking the Delete button.

Schedule Planned Order

If you had run basic scheduling during the MRP run, you can schedule the order by clicking the Schedule Planned Order button. The system will calculate the production date and time based on the routing. The scheduling is the same as the scheduling carried out by lead time scheduling during the MRP run. If the order has been scheduled earlier manually or using the lead time scheduling during the planning run, you can reschedule the planned order manually to calculate the latest production dates.

Component overview: You can display all the components and their needed quantities by clicking the Components Overview button, as shown in Figure 6-6.

Figure 6-6. *Components overview*

Material Availability Check

You can execute a component availability check to determine if the components are available in the required quantity on the required date. If the component isn't available in the required quantity, the material is flagged with the Missing Part indicator.

The MRP controller can also run a collective availability check by choosing Logistics ➤ Production ➤ MRP ➤ Planned Order ➤ Collective Availability Check. You can also use Transaction Code MDVP.

Enter the selection parameters on the selection screen. For example, the production plant and the MRP controller (see Figure 6-7).

Figure 6-7. *Collective availability check*

Based on the selection parameters, a list of planned orders is displayed, as shown in Figure 6-8.

Figure 6-8. *Collective availability: order view*

You can select a few orders manually or click the Select All button to select all the planned orders from the list. Click the Order button to execute the material availability check for the selected orders. A popup window appears, where you must select the Reset Availability Data and Execute Availability Check options, as shown in Figure 6-9.

Figure 6-9. *Collective availability check*

You can select the indicators to control how the availability check is executed.

Reset Availability Data: If you want to run the material availability check on orders for which the availability check has been executed previously, you may activate this indicator. This means the existing components that were confirmed are deleted and recalculated. Similarly, the confirmation date and quantity are determined again.

The system status FMAT (missing material availability) in the production order is also reset.

Execute Availability Check: You must set this indicator if you want to execute a material availability check. The availability check for each material is carried out depending on the check group assigned in the MRP3 view of the material master. The results of the availability check are displayed with traffic lights—Red, Yellow, and Green. The materials for which the availability check were successful are marked as Green and the committed quantity and commitment date are updated.

Availability check is executed in conjunction with the parameters checking group, checking rule, scope of check, and checking control.

Checking Group: You must specify the checking group in the MRP3 view of the material master, under the availability check field. The checking group controls whether the quantities confirmed in the availability check are locked or not. It also determines if the ATP quantity are added up.

Checking Rule: You can define a checking rule in customization for various application areas like sales and distribution, MRP, production order, inventory management, and so on.

Scope of Check: The scope of check is used to determine the stocks and demand and supply elements that should be considered during the availability check. A scope of check is defined for a unique combination of checking group and checking rule. You can also control if the replenishment lead time is checked during the availability check, as shown in Figure 6-10.

- **Stocks:** You can define which stocks should be considered during the availability check. For example, safety stock, stock in transfer, and quality inspection stocks are included in the scope of check.

- **Supply elements:** You can select the supply elements like purchase requisitions, purchase orders, and so on, that should be included during the availability check.

- **Demand elements:** You can select the demand elements like sales orders, reservations, dependent requirements, and so on, that should be included during the availability check.
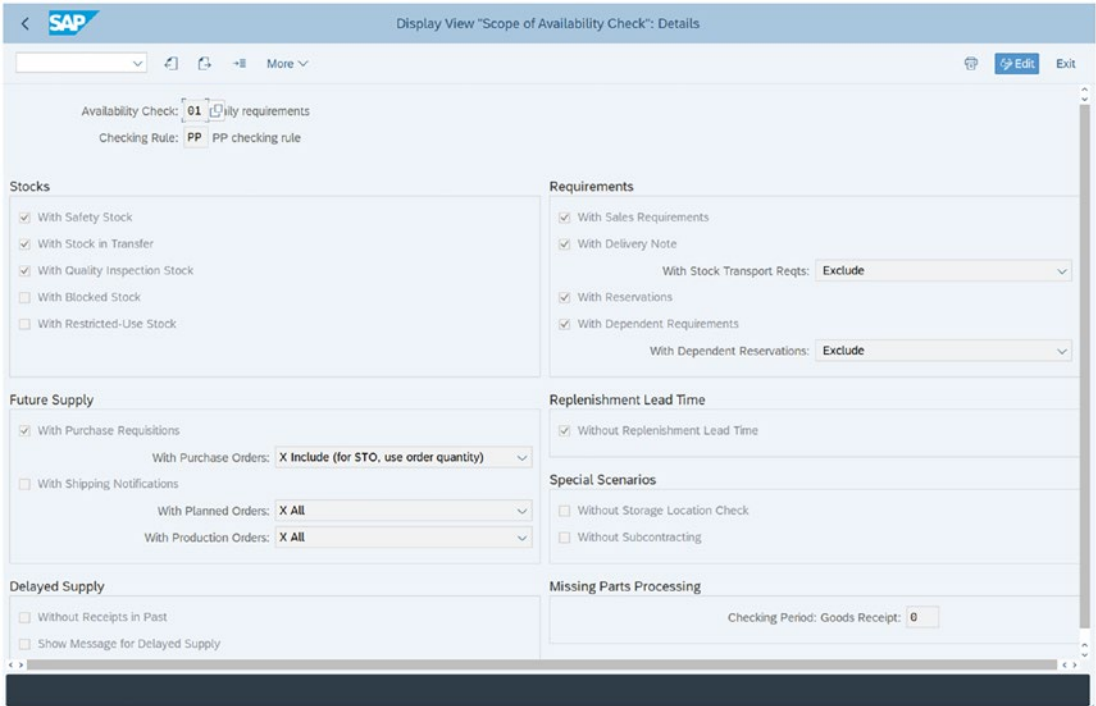
Figure 6-10. Scope of availability check

Checking Control: Using a checking control, you can control if the availability check should be carried out while creating or releasing an order, as shown in Figure 6-11. Using the checking control, you can define which checking rule should be used and how material shortage affects order creation/release.
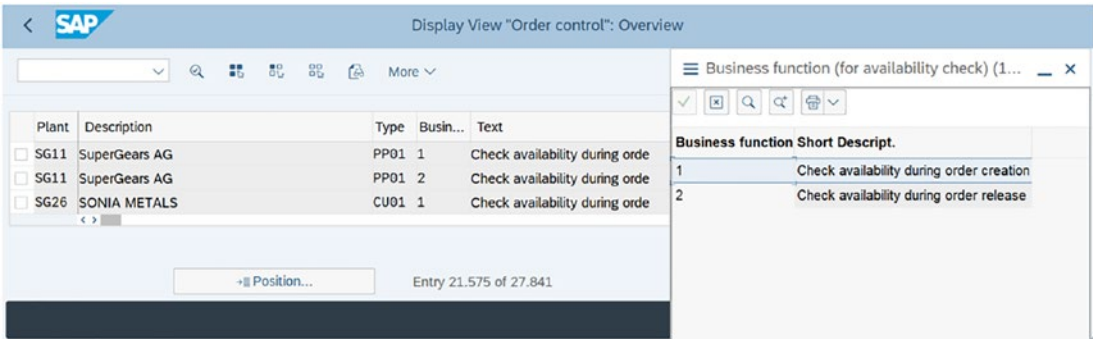
Figure 6-11. Order control

You can define parameters for availability check at the time of order creation and different parameters at the time of order release.
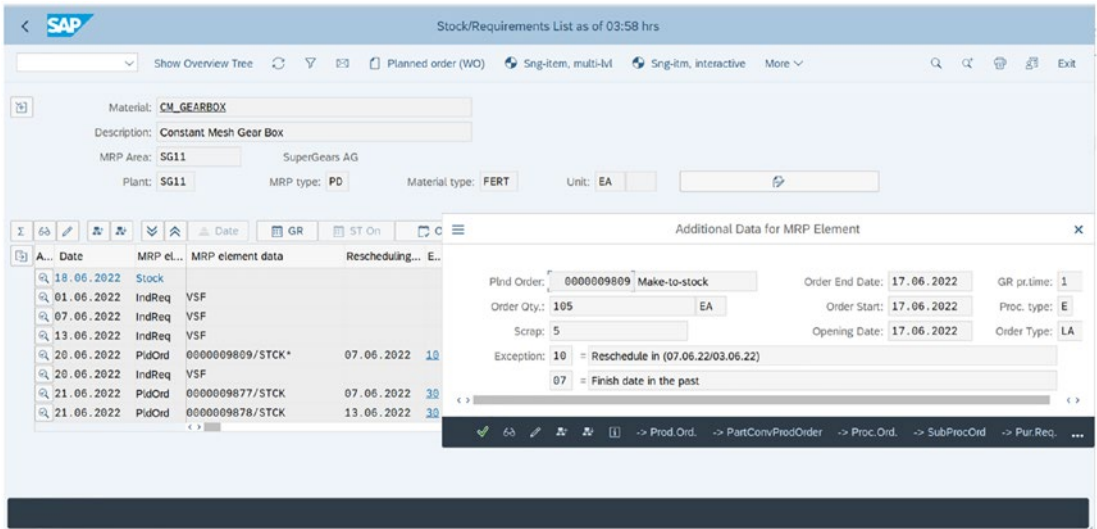
Convert a Planned Order to a Production Order

Once the planning is frozen and production can be executed, the planned order must be converted to a production order. This can be done in various ways, discussed next.

Convert in Stock Requirement List

You can convert a planned order to production from the stock requirement list. Double-click the planned order and then click the ➤ Prod. Ord. button, as shown in Figure 6-12, to convert a planned order to a production order.

Figure 6-12. *Convert a planned order to a production order*

This function will convert a planned order into a production order. All the details—like material, quantity, production dates, and so on—are automatically copied from the planned order to the production order (see Figure 6-13).
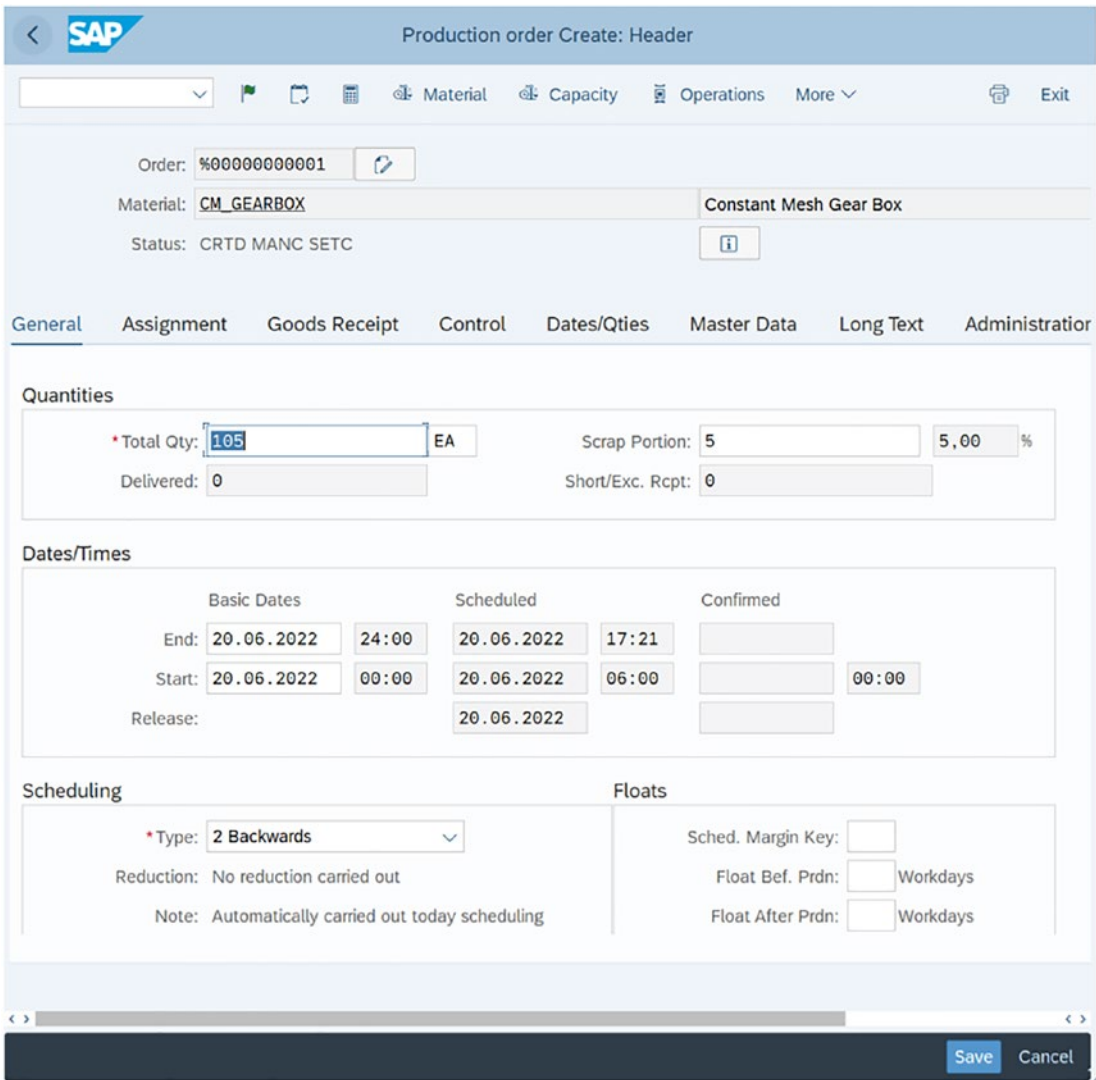
Figure 6-13. *Creating a production order: general*

In the assignments view, the planned order number is stored to establish a 1:1 relation with the production order, as shown in Figure 6-14. However, it must be noted that the moment a planned order is converted, it is permanently deleted from the system. This means the planned order cannot be displayed using the Transaction Codes MD04, MD12, and MD13 or in the planned order PLAF table.

Figure 6-14. *Creating a production order: assignment*

Click the Save button to save the production order; the system will generate a production order number.

Individual Conversion

A planned order can be converted to a production order manually by choosing Logistics ➤ Production ➤ MRP ➤ Planned Order ➤ Convert to Production Order ➤ Individual conversion. You can also use Transaction Code CO40 to convert a planned order.

Enter the planned order number and the order type of the production order to be used, as shown in Figure 6-15. You can also partially convert the planned order by clicking the Partial Conversion indicator.

Figure 6-15. *Creating a planned order: initial screen*

Click the Continue button. The system will convert the planned order to a production order and generate a production order number when you save the order.

Collective Conversion

Planned orders can be converted to production orders collectively by choosing Logistics ➤ Production ➤ MRP ➤ Planned Order ➤ Convert to Production Order ➤ Collective conversion. You can also use Transaction Code CO41 for mass conversion.

You can select the parameters on the initial screen for which you would like to convert the planned orders—for example, the planning plant and MRP controller—as shown in Figure 6-16.

Figure 6-16. *Collective conversion of planned order: initial screen*

Based on the input parameters on the selection screen, the screen in Figure 6-17 is displayed. The output list shows a list of planned orders and other relevant information like material, material description, order quantity, order dates like start data, and end date, as shown in Figure 6-17. The first column shows the opening date, which can help the MRP controller decide whether to convert the planned order or not. The order type for the production order is also populated based on the plant's customization settings.
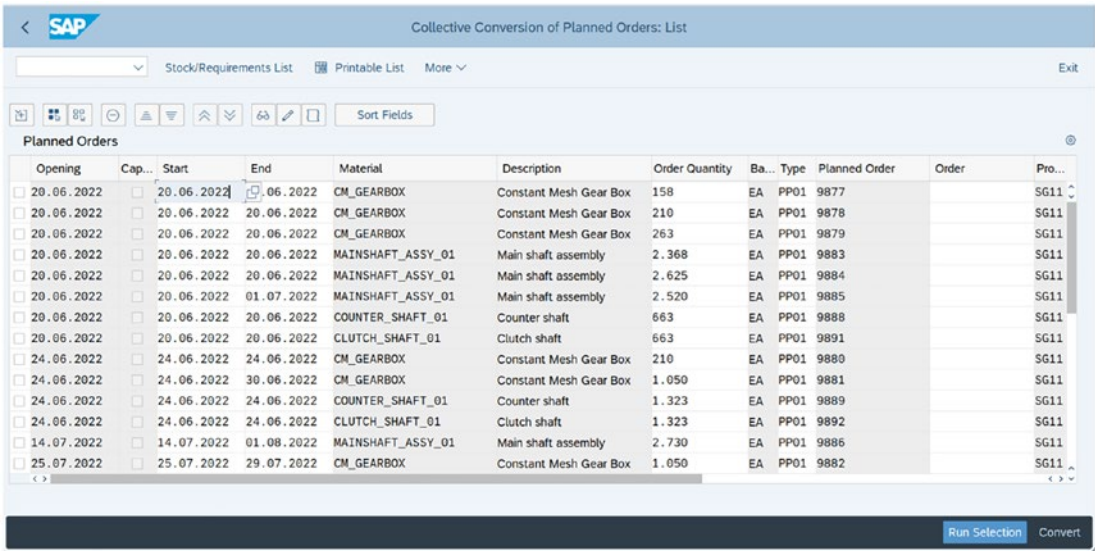
Figure 6-17. *Collective conversion of planned order: list*

The MRP controller can choose an order manually or can click the Select All button to select all the planned orders from the list. Then you click the Convert button.

The selected planned orders are converted to production orders and a production order number is updated for each planned order, as shown in Figure 6-18.
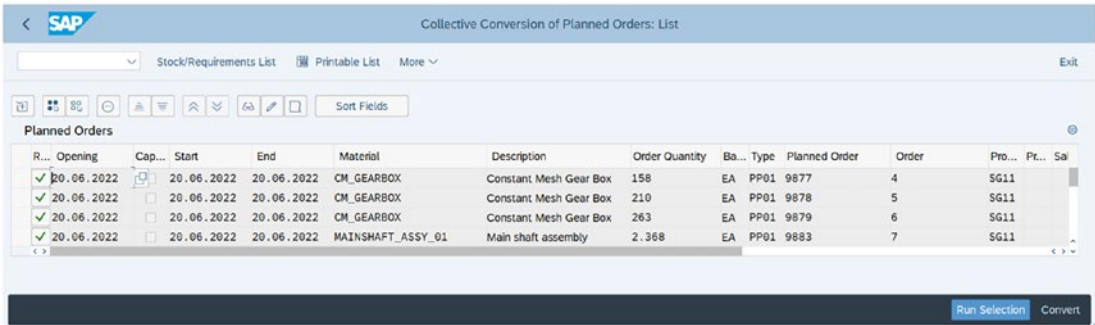

Figure 6-18. *Collective conversion of planned orders: list*

Summary

In this chapter, you learned about the planned order procurement element. The chapter discussed several details about planned orders. It also discussed different ways to convert planned orders to production orders.

Planned orders should be converted to production orders only after the planning process is finished. Once planned orders are generated, you must run:

- Material availability check

- Capacity requirement planning

The system provides the flexibility to run the capacity requirement planning for planned orders as well as production orders. It can be argued if capacity requirement planning should be run for planned orders or production orders. From my point of view, capacity planning should be run for planned orders.

You must identify material shortages using MRP and then dispatch your capacity requirements. Once the shortage situation is dealt with and the capacity is reserved for the planned order, you can convert the planned orders to production orders.

This chapter discussed the material availability check. The next chapter moves to the last step of production planning (Capacity Requirement Planning).