Project Scheduling User Guide

Version 5.40

Fitrix™

Production Order Scheduling ♦ Product Guide

Version 5.40

Copyright
Copyright (c) 1988-2015 Fourth Generation Software Solutions. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form by any means without the written permission of Fourth Generation Software Solutions.

Software License Notice
Your license agreement with Fourth Generation Software Solutions, which is included with the product, specifies the permitted and prohibited uses of the product. Any unauthorized duplication or use of Fitrix INFORMIX-4GL version, in whole or in part, in print, or in any other storage and retrieval system is forbidden.

Licenses and Trademarks
Fitrix is a registered trademark of Fourth Generation Software Solutions. Informix is a registered trademark of Informix Software, Inc. UNIX is a registered trademark of AT&T.
FITRIX ACCOUNTING MANUALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, FURTHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE FITRIX ACCOUNTING MANUALS IS WITH YOU. SHOULD THE FITRIX ACCOUNTING MANUALS PROVE DEFECTIVE, YOU (AND NOT FOURTH GENERATION SOFTWARE SOLUTIONS SOFTWARE OR ANY AUTHORIZED REPRESENTATIVE OF FOURTH GENERATION SOFTWARE SOLUTIONS) ASSUME THE ENTIRE COST OF ALL NECESSARY SERVICING, REPAIR, OR CORRECTION IN NO EVENT WILL FOURTH GENERATION SOFTWARE SOLUTIONS BE LIABLE TO YOU FOR ANY DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF OR INABILITY TO USE SUCH FITRIX ACCOUNTING MANUALS, EVEN IF FOURTH GENERATION SOFTWARE SOLUTIONS OR AN AUTHORIZED REPRESENTATIVE OF FOURTH GENERATION SOFTWARE SOLUTIONS HAS BEE ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY OTHER PARTY. IN ADDITION, FOURTH GENERATION SOFTWARE SOLUTIONS SHALL NOT BE LIABLE FOR ANY CLAIM ARISING OUT OF THE USE OF OR INABILITY TO USE SUCH FITRIX SOFTWARE OR MANUALS BASED UPON STRICT LIABILITY OR FOURTH GENERATION SOFTWARE SOLUTIONS' NEGLIGENCE. SOME STATES DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS, WHICH VARY FROM STATE TO STATE.

Fourth Generation Software Solutions
100 Galleria Parkway, Suite 1020
Atlanta, GA 30339
http://www.fitrix.com

Corporate: (770) 432-7623
Fax: (770) 432-3447
E-mail: sales@fitrix.com

Copyright (c) 1988-2015 - Fourth Generation Software Solutions Corporation - All rights reserved.
No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system or translated.

Table of Contents

Chapter 1.....5

Introduction to Production Scheduling..... 5

Multiple User-Defined Scheduling Intervals..... 7

Multiple Warehouse Scheduling..... 7

Before You Begin..... 7

Setup..... 8

Finite/Infinite Scheduling..... 8

Inquiry and Report Review..... 8

Setup Production Scheduling..... 10

Period Intervals..... 11

Work Center/Warehouse Maintenance..... 13

Capacity in Hours/Day..... 15

Queue Time in Hours – This column is reserved for future use..... 16

Department/Warehouse Maintenance..... 17

Capacity in Hours/Day..... 19

Period-to-Date Costs..... 19

Year-to-Date Costs..... 20

System Dates..... 20

Machine/Warehouse Maintenance..... 21

Queue Time in Hours – These columns are reserved for future use..... 24

Capacity in Hours/Day..... 24

Machine Statistics..... 24

Team/Warehouse Maintenance..... 26

Capacity in Hours/Day..... 27

Work Center Capacity Overrides..... 29

Department Capacity Overrides..... 31

Machine Capacity Overrides....33
Team Capacity Overrides....35
Setup Production Scheduling....36

Chapter 3....39

Processing....39

Chapter 4....46

Inquiries....46
Order Status by Warehouse....47
Capacity/Load by Work Center....51
Capacity/Load by Department....54
Capacity/Load by Machine....57
Capacity/Load by Team....60
Work List by Work Center....63
Work List by Department....66
Work List by Machine....69
Work List by Team....72
Reported Hours, Move and Queue Times, and completed quantities are displayed. Also included are referenc es to the previous, and next, operationsChapter 5....74

Reports....75
Work List Reports....76

Index....79

Chapter 1

Introduction to Production Scheduling

This chapter contains basic information about Fitrix Production Scheduling. It is meant to give you a general picture of what the module can do and how it is used. The sections that address this are as follows:

- General description of the Fitrix Production Scheduling system
- Features of Fitrix Production Scheduling
- Overview of Production Scheduling

General Description

Production Scheduling uses the labor routings in production orders to generate schedules for managing the initiation and completion of manufacturing work. The purpose of the system is to supply production management with the tools needed to ensure that orders are executed in the proper sequence, and highlight areas where plant capacities are under- or over-utilized.

Labor routings contain information for labor and machine hours to be executed, including:

- Run, setup and machine hours required per unit, and for the quantity ordered
- Expected start and completion dates
- Resources to be used, such as departments, work centers, machines and teams

Labor routing steps are organized by production resource to present a list of work to be performed at the resource, in a user-defined priority sequence. Total labor and machine hours for open production orders are also compared to the capacity available at the required resources to support management review and rescheduling.

Features

Multiple Resources per Routing Step

Each labor routing step can be associated with a department, work center, machine, and/or team. Any or all of these resources can be scheduled. These resources can be set up in a hierarchical form, where departments are composed of work centers, which are composed of machines, but this is not a requirement. Teams are typically managed separately and used in environments where the constraining resource is human labor.

Infinite Scheduling

Production Schedules are generated for a specific production facility (warehouse). Each facility can be set up to use Infinite or Finite Scheduling. When using Infinite Scheduling, the order's defined start date and due dates are used to create a load of hours for the steps within the order. These hours are summarized by resource and date, and compared to the hours available for the resource/date. The resulting comparison is used by production management, to help them decide how best to use plant resources, such as:

- Move orders from over-utilized resources to under-utilized alternate resources
- Expedite or defer orders to stabilize the hours loaded against a resource
- Hire additional production staff or implement overtime programs to address team level over-commitments

The Override Capacity menu options can be used to adjust resource capacities on a short-term basis to reflect whatever decisions are made.

Finite Scheduling

When using Finite Scheduling, orders are scheduled based on a user-defined priority. The priority can be one of the following:

- Production Order Due Date
- Order Critical Ratio – the ratio of time remaining vs work remaining
- Order Manual Priority – a management-defined value from 1 to 9

The order with the highest priority is scheduled first. Each labor step's remaining hours are 'loaded' onto the associated resource and, based on the resource's capacity, a due date is calculated. The due date is then used as the start date for the next labor step on the order. After each step is analyzed, a resulting 'Scheduled Due Date' is calculated for the order. The next order in the priority sequence is then loaded in the same way. Each order is then assigned a system-generated due date for comparison to the originally defined due date.

Upon completion of the scheduling option, the Order Status by Warehouse and Capacity vs Load Inquiries can be used to see the effect on resources. Adjustments can be made to increase or decrease capacity using the Capacity Override options to calculate new start and completion dates on subsequent rescheduling runs.

Graphical Capacity Analysis

The results of a scheduling process are presented in a graphical format for analysis and highlight of any bottleneck resources. The analysis can be done at any of the resource levels already noted (department, work center, machine or team). Load vs capacity for any resource can be presented in a daily, weekly, biweekly, semi-monthly, monthly or quarterly basis. Within each time period, drill-downs show the details by order and labor routing step. Time periods are also color-coded to quickly show resources that are over-committed (red), approaching full commitment (yellow), or under commitment (green).

Multiple User-Defined Scheduling Intervals

Production scheduling details can be summarized into one or more time period formats for easy review and analysis. The details of resource load and capacity can be accumulated into user-defined time periods. The time periods can be analyzed for exceptions first and then details can be researched using drill down functions. The time periods can be daily, weekly, bi-weekly, 4-weekly, monthly, quarterly, or combinations of these frequencies. In addition, multiple 'period interval templates' may be created to satisfy the needs of users at different levels within the organization.

Multiple Warehouse Scheduling

Each warehouse within Fitrix Inventory Control is also defined as a Production Facility. Production Scheduling manages each facility individually. Each facility can also be managed via Finite or Infinite Scheduling.

Overview

Before You Begin

Before you can use Production Scheduling, you must first complete "setup" of the module. Setup is the process by which you enter all of the information required to begin processing schedules. Setup includes entry of basic "control" information that the programs need to run, and entry of special parameters for each resource.

Scheduling-related activities can be divided into four broad categories: scheduling setup, scheduling runs, and inquiry and report reviews. Each activity is associated with a specific menu option, and these options are listed for quick reference in this overview section. (The "keystroke path" to a menu option is indicated in parentheses following each option.)

Setup

There are three aspects of setup: Company Setup, Production Scheduling setup, and Resource setup.

Company setup includes entering basic control information that the programs need to run, such as company information and administrative information. This setup is covered in the *Getting Started with Fitrix User Guide*. Because the menu options used for company and administration pertain to the company as a whole, the menu options used to do this initial company setup are located under the General/Administrative menu (option 8). You only need to perform this setup procedure once for all modules in Fitrix ERP.

Production Scheduling setup is performed from the File Maintenance submenu in Production Scheduling. Here you will identify default information used by the reports and inquiries when they are used.

Resource Setup starts in the Standard Routing module but these programs can also be accessed from the Production Scheduling file maintenance submenu. This is where the basic information for departments, work centers, machines and teams are created. Then in either Standard or Production Scheduling, you associate the resources with the production facilities, with resource/warehouse maintenance. Here you define the default daily hours available, by shift. Finally, you can use the resource capacity override functions to define specific dates where you want to use a different capacity for one or more shifts on the date.

Finite/Infinite Scheduling

After setup is complete, you can begin running the scheduling functions, and review the results. The scheduling functions are executed from the Processing submenu in Production Scheduling. You determine ahead of time, for each production facility, if you want to Finitely or Infinitely Schedule. It is recommended that you use Infinite Scheduling at first, to see how your resource capacities are comparing to actual load, without using the system to automatically calculate new operation and order due dates.

Inquiry and Report Review

Scheduling data can be reviewed in a variety of formats, groupings, and sequences. Inquiries and Reports let you analyze by Department, Work Center, Machine, Team and individual production order. There are two types of data presentation:

- Work List – these inquiries and reports are used by production managers to see what the order of work is to be done at a specific resource. The production orders and labor steps are listed in order by priority (either Order Due Date, Critical Ratio, or Manual Priority), and are grouped by:
    - Current Orders – labor steps that have had SOME labor reported, but are not complete
    - Waiting Orders – labor steps completed at the previous operation, and waiting to be started at the current operation
    - Arriving Orders – labor steps still in process at the previous operation

- Capacity vs Load – these inquiries display the current status of specific resources by comparing their capacity in hours to the load from open orders. The capacity/load is divided into user-defined time periods (days, weeks, months, etc.) to show summarized comparisons, with drill-down capability to see the individual orders and labor steps that make up the load.

The inquiries available are:

- Order Status by Warehouse (5-2-3-a)
- Capacity/Load by Work Center (5-2-3-b)
- Capacity/Load by Department (5-2-3-c)
- Capacity/Load by Machine (5-2-3-d)
- Capacity/Load by Team (5-2-3-e)
- Work List by Work Center (5-2-3-f)
- Work List by Department (5-2-3-g)
- Work List by Machine (5-2-3-h)
- Work List by Team (5-2-3-i)

The reports available are:

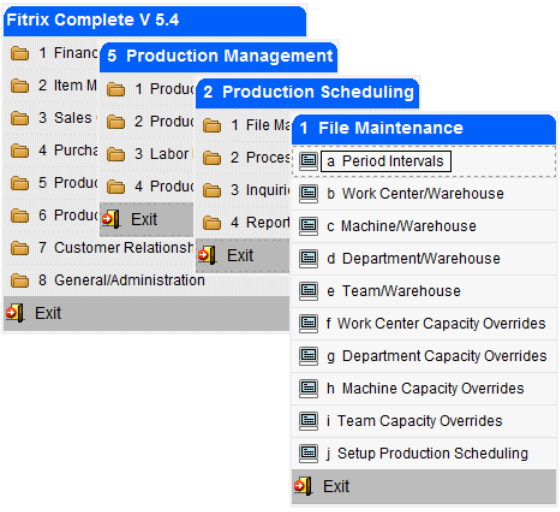
- Work List by Work Center (5-2-4-a)
- Work List by Department (5-2-4-b)
- Work List by Machine (5-2-4-c)
- Work List by Team (5-2-4-d)

Chapter 2

Setup Production Scheduling

- In this chapter you will learn to set up the information needed to assist in scheduling production which includes:

  Period Intervals
  Work Center/Warehouse
  Machine/Warehouse
  Department/Warehouse
  Team/Warehouse
  Work Center Capacity Overrides
  Department Capacity Overrides
  Machine Capacity Overrides
  Team Capacity Overrides
  Setup Production Scheduling



Period Intervals

This menu option is used to setup and maintain the Period Intervals, used by Production Scheduling Inquiries and Reports to place future capacity and load into user-defined time periods. You can define multiple period intervals, and then assign a default Interval in the Setup Production Scheduling menu option. When running inquiries and reports, you may be prompted to enter an Interval Code, or use the default value.

NOTE: Period Intervals are also used by Material Planning, Master Scheduling, and Capacity Planning, in inquires and reports, for the same purpose.

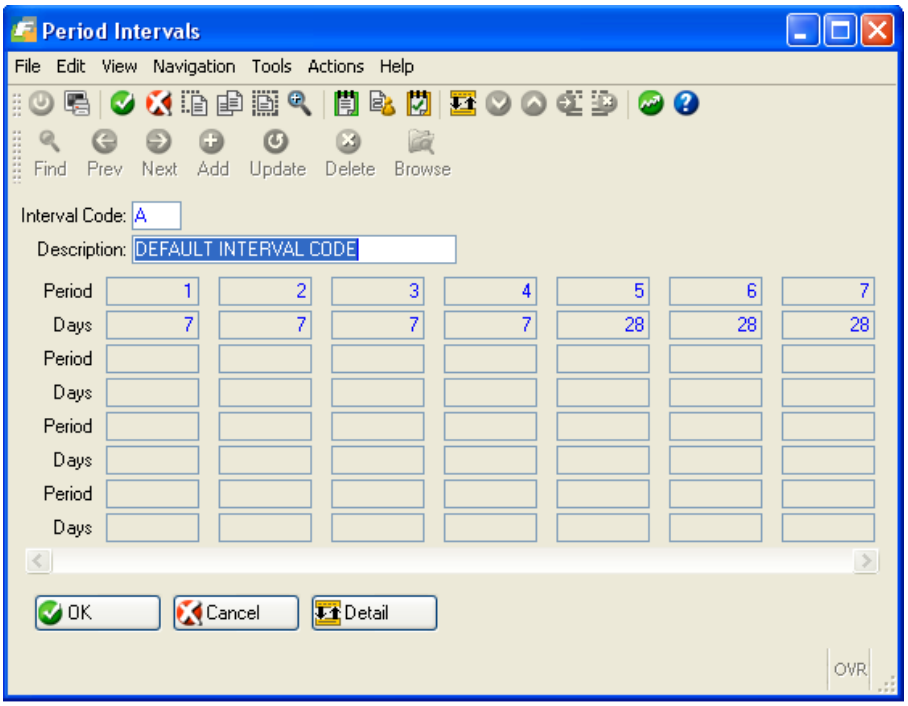
For example:

- Period interval code 'A' could use the following periods:
  - 8 weekly intervals
  - 4 biweekly intervals
  - 3 quarterly intervals

This setup would allow the user to view capacity and load for the next year (approximately). The nearer term plan would be displayed in weekly intervals. The periods would then become larger as the activity moves farther out.

- Interval code 'B' could use the following periods:
  - 52 weekly buckets

This would display all schedule data for the next year on weekly intervals.



The Period Interval screen contains the following fields:

- *Interval Code* - This field stores a unique three-character order type code.
- *Description* - You enter a description of this period interval (up to 30 characters) in this field.

One or more periods must be defined:

- *Period* – Period numbers are automatically assigned by the system. You are allowed to have up to 100 periods per period interval.
- *Days* – Enter the number of days in for the period. This value should be entered as either 1 (daily) or in multiples of 7 (for 1 or more weeks). This achieves a consistent division of time periods into multiples of weeks.

Work Center/Warehouse Maintenance

Use this menu option to enter and maintain the information to describe the work centers for a specific warehouse. If you want a work center to apply to all warehouses you should enter the information using the Work Center Master Maintenance menu option. If you defined work centers using the Master Maintenance option and then use this option, the information entered here will affect only the warehouse being defined in this table.

A work center is a specific production facility consisting of one or more people and /or machines with similar characteristics. They can be considered a group for purposes of capacity requirements planning, standard and actual costing, and detailed scheduling.

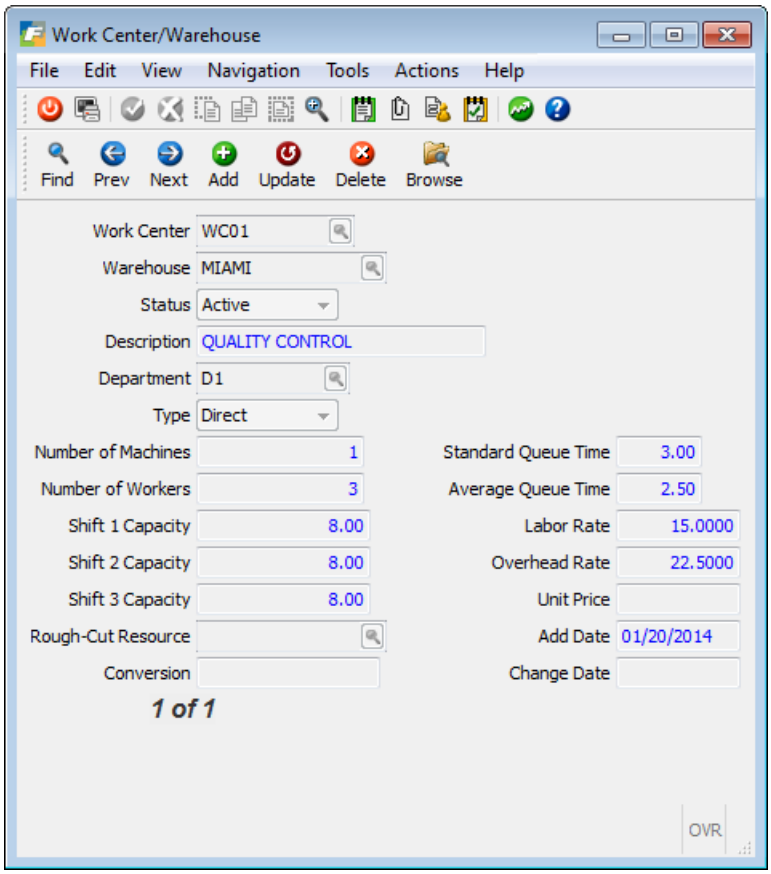
Menu Selection:

Production Management

Production Scheduling

File Maintenance

Work Center/Warehouse



Work Center *Required*

The identifier for the work center.

Warehouse

The identifier for the warehouse in which this work center exists. To view a list of warehouses, click on the magnifying glass

Status *Required* *Default*

Active- indicates that this work center is active. An active work center will be used in the scheduling and costing routines. Time can be reported against routing steps in an active work center.

Inactive - indicates that this work center is inactive. No transactions or processing can be performed for an inactive work center.

Description *Required*

The 25 character description for this work center.

Department

The identifier of the department with which this work center could be associated. To view a list of departments, click on the magnifying glass.

Type - This column is reserved for future use

Direct - indicates that costs incurred in this work center are normally direct labor.

Indirect - indicates that the costs incurred in this work center are normally indirect labor.

Subcontract - indicates that the costs incurred in this work center are normally subcontract labor.

Number of Machines

The number of machines in this work center. This number is used as a general reference.

Number of Workers

The number of workers in this work center. This number is used as a general reference.

Rough Cut Resource

Reserved for future use with the Fitrix Master Schedule Planning module.

Rough Cut Conversion

Reserved for future use with the Fitrix Master Schedule Planning module.

Capacity in Hours/Day

Shift 1

This is the standard capacity of the work center in hours per day for the first shift.

Shift 2

This is the standard capacity of the work center in hours per day for the second shift.

Shift 3

This is the standard capacity of the work center in hours per day for the third shift.

Queue Time in Hours – This column is reserved for future use

Standard

The standard (expected) amount of time, in hours, a job waits at a work center before set-up or work is performed on the job. This is one element of total manufacturing lead time.

Average

The average amount of time, in hours, a job waits at a work center before setup or work is performed on the job.

Labor Rate

The labor rate for this work center. This labor rate is used when calculating the current standard cost of an item. Setup hours and labor hours can use this rate to calculate setup and labor costs.

Overhead Rate

The overhead rate for this work center. This overhead rate is used when calculating the current standard cost of an item. Setup hours, labor hours and machine hours can use this rate to calculate standard overhead costs.

Date Added *Display Only*

The date that this record was added to the table.

Change Date *Display Only*

The last date that this item was changed.

Department/Warehouse Maintenance

Use this menu option to enter and maintain the information to describe the department for a specific warehouse. If you want a department to apply to all warehouses you should enter the information using the Department Master Maintenance menu option. If you defined departments using the Master Maintenance option and then use this option, the information entered here will affect only the warehouse being defined in this table.

A department can be a collection of work centers. Departments are used in the Actual Costing application to generate the appropriate accounting entries to General Ledger. They are also used in Production Scheduling to analyze load and capacity at a departmental level.

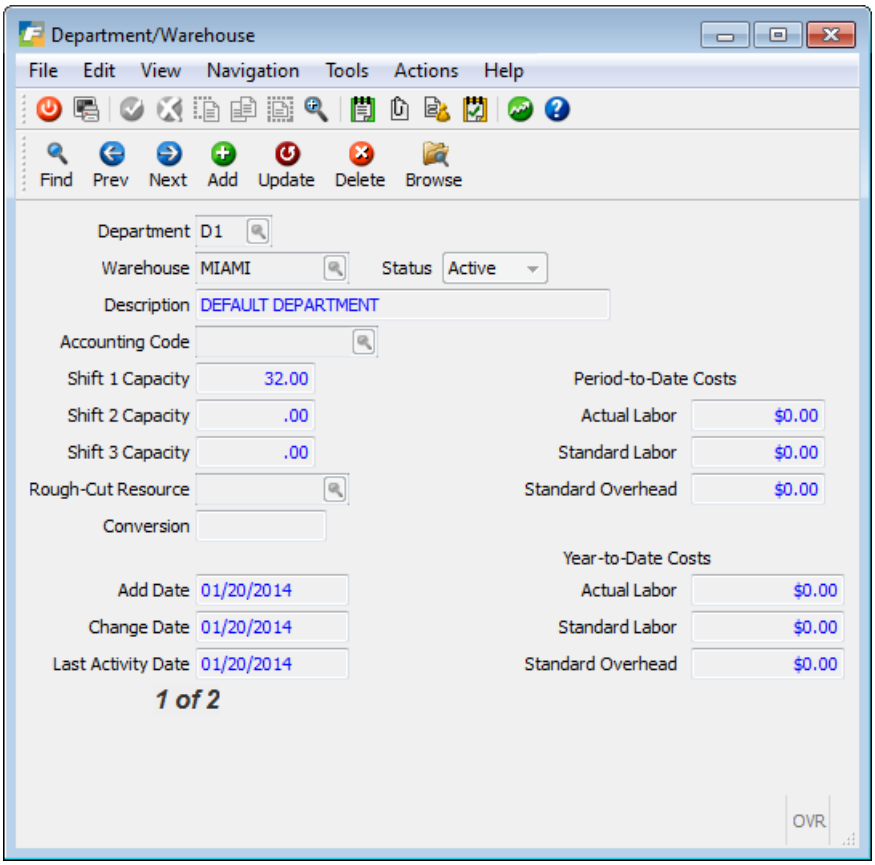
Menu Selection:

Production Management

Production Scheduling

File Maintenance

Department/Warehouse



Department *Required*

The identifier for the department.

Warehouse

The identifier for the warehouse in which this department exists. To view a list of departments, click on the magnifying glass.

Status *Required* *Default*

Active - indicates that this department is active. An active department will be used in the scheduling routines. Time can be reported against routing steps in an active department.

Inactive - indicates that this department is inactive. No transactions or processing can be performed for an inactive department.

Description *Required*

The 25 character description for this department.

Account Code

A code to assign general ledger account numbers to a department. The account code references a table that contains the general ledger account numbers. To view a list of account codes, click on the magnifying glass.

Capacity in Hours/Day

Shift 1

The standard capacity of the department in hours per day for the first shift.

Shift 2

The standard capacity of the department in hours per day for the second shift.

Shift 3

The standard capacity of the department in hours per day for the third shift.

Rough Cut Resource

Reserved for future use with the Fitrix Master Schedule Planning module.

Rough Cut Conversion

Reserved for future use with the Fitrix Master Schedule Planning module.

Period-to-Date Costs

Actual Labor *Display Only*

The total of all the actual labor costs for the department during the current period. This field will be set to zero during period end in the Actual Costing application.

Standard Labor *Display Only*

The total of all the standard labor costs for the department during the current period. This field will be set to zero during period close in the Actual Costing application.

Standard Overhead *Display Only*

The total of all the standard overhead costs for the department during the current period. This field will be set to zero during period close in the Actual Costing application.

Year-to-Date Costs

Actual Labor *Display Only*

The total of all the actual labor costs for the department year to date. This field will be set to zero during year end close in the Actual Costing application.

Standard Labor *Display Only*

The total of all the standard labor costs for the department year to date. This field will be set to zero during year end close in the Actual Costing applications.

Standard Overhead *Display Only*

The total of all the standard overhead costs for the department year to date. This field will be set to zero during year end close in the Actual Costing applications.

System Dates

Add Date *Display Only*

The date that this department was added to the table.

Change Date *Display Only*

The date the department was last maintained.

Last Activity Date *Display Only*

The last date the department had activity reported against it.

Machine/Warehouse Maintenance

Use this menu option to enter and maintain the information to describe the machine for a specific warehouse. If you want a machine to apply to all warehouses you should enter the information using the Machine Master Maintenance menu option. If you defined machines using the Master Maintenance option and then use this option, the information entered here will affect only the warehouse being defined in this table.

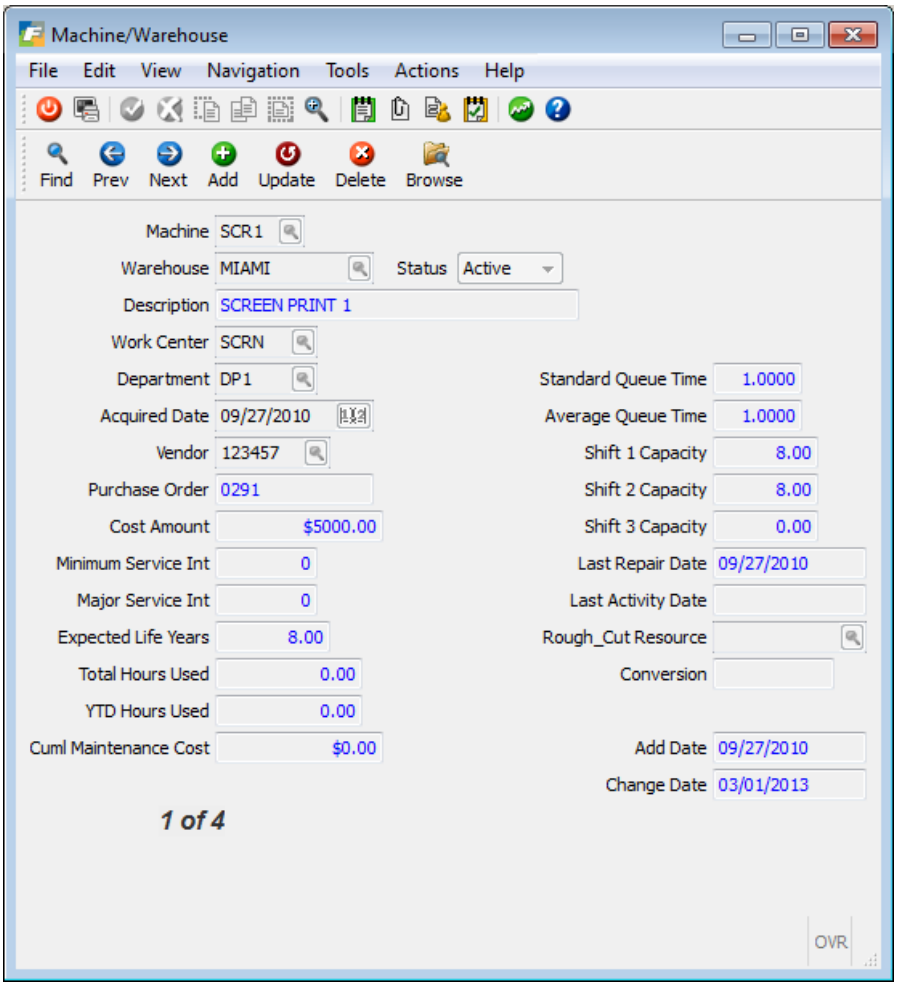
Menu Selection:

Production Management

Production Scheduling

File Maintenance

Machine/Warehouse



Machine identifier *Required*

The identifier for the machine that is being defined.

Warehouse

The identifier for the warehouse in which this work center exists. To view a list of warehouses, click on the magnifying glass.

Status *Required* *Default*

Active - indicates that the status of this machine is active. An active machine will be used in the scheduling routines. Time can be reported against routing steps for an active machine.

Inactive - indicates that the status of this machine is inactive. No transactions or processing can be performed against an inactive machine.

Description *Required*

The identifier for the machine that is being defined.

Work Center *Required*

The identifier for the work center with which this machine could be associated. To view a list of work centers, click on the magnifying glass.

Department

The identifier for the department with which this machine could be associated. To view a list of departments, click on the magnifying glass.

Acquired Date

The date that this machine was put into service.

Vendor

The identifier for the vendor from which the machine was purchased. This field is for reference only. To view a list of vendors, click on the magnifying glass.

Purchase Order

The purchase order number that was used to buy this machine. This field is for reference only.

Cost Amount

The price paid to buy this machine. This field is for reference only.

Minimum Service Int.

The number of hours of run time between minor maintenance service. This field is for reference only.

Major Service Int.

The number of hours of run time between major maintenance service. This field is for reference only.

Expected Life Years

The number of years this machine is expected to be in service. This field is for reference only.

Queue Time in Hours – These columns are reserved for future use.

Standard

The standard (expected) amount of time, in hours, a job waits at a machine before setup or work is performed on the job. This is one element of total manufacturing lead time.

Average

The average amount of time, in hours, a job waits at a machine before setup or work is performed on the job.

Capacity in Hours/Day

Shift 1

This is the standard capacity of the machine in hours per day for the first shift.

Shift 2

This is the standard capacity of the machine in hours per day for the second shift.

Shift 3

This is the standard capacity of the machine in hours per day for the third shift.

Machine Statistics

Total Hours Used *Display Only*

The number of hours this machine was used. This field is updated by the labor processing transactions.

YTD Hours Used *Display Only*

The number of hours this machine was used year to date. This field is updated by the labor processing transactions.

Cuml Maintenance Cost *Display Only*

The accumulated costs for maintenance since the machine was put into service.

Last Maintenance Type *Display Only*

This field is reserved for future use.

Last Repair Date *Display Only*

This field is reserved for future use.

Last Activity Date *Display Only*

The last date that this record was updated by transaction processing.

Rough Cut Resource

Reserved for future use with the Fitrix Master Schedule Planning module.

Rough Cut Conversion

Reserved for future use with the Fitrix Master Schedule Planning module.

Add Date *Display Only*

The date that this record was added to the table.

Change Date *Display Only*

The date the machine was last changed by maintenance.

Team/Warehouse Maintenance

Use this menu option to enter and maintain the information to describe the team for a specific warehouse. If you want a team to apply to all warehouses you should enter the information using the Team Master Maintenance menu option. If you defined teams using the Master Maintenance option and then use this option, the information entered here will affect only the warehouse being defined in this table.

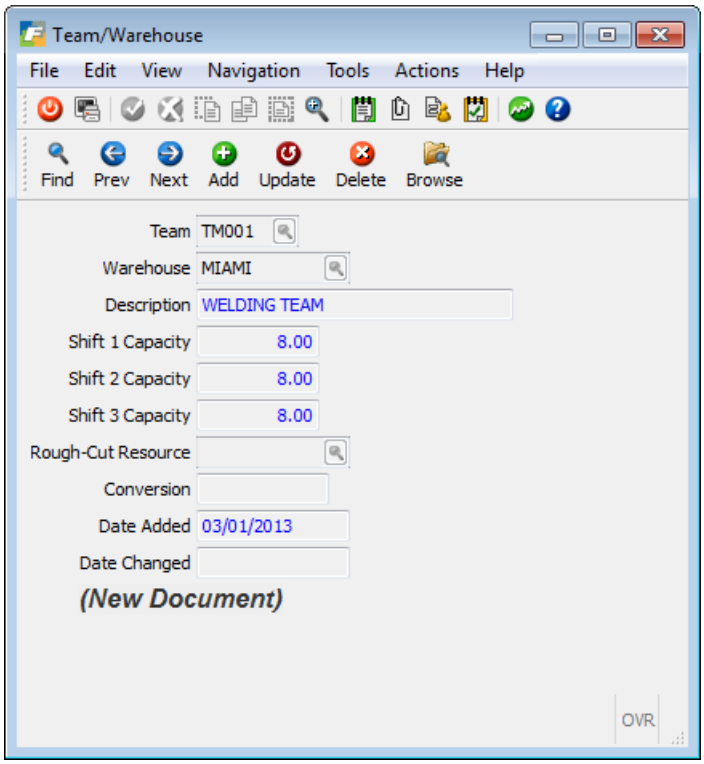
Menu Selection:

Production Management

Production Scheduling

File Maintenance

Team/Warehouse



Team Number *Required*

The identifier for the team that is being defined.

Warehouse

The identifier for the warehouse in which this team exists. To view a list of warehouses, click on the magnifying glass.

Description *Required*

The description for the team.

Capacity in Hours/Day

Shift 1

This is the standard capacity of the team in hours per day for the first shift.

Shift 2

This is the standard capacity of the team in hours per day for the second shift.

Shift 3

This is the standard capacity of the team in hours per day for the third shift.

Rough Cut Resource

Reserved for future use with the Fitrix Master Schedule Planning module.

Rough Cut Conversion

Reserved for future use with the Fitrix Master Schedule Planning module.

Date Added **Display Only**

The date that this record was added to the table.

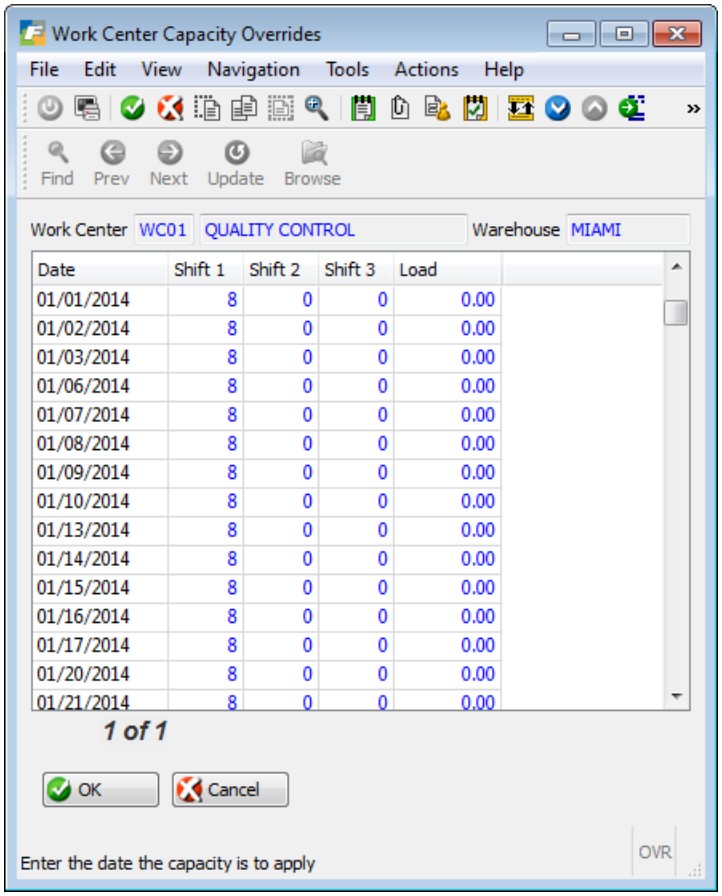
Date Maintained **Display Only**

The date that this team was last maintained.

Work Center Capacity Overrides

Use this menu option to enter and maintain specific dates when the work center/warehouse will have a capacity that differs from the default capacities for any of the three shifts. This is useful for adding or changing capacities to address over-commitments on a short-term basis.

To enter new date overrides, change existing overrides, or delete overrides, you must first click the Find option, then enter a valid work center and warehouse, then click OK. A screen similar to the following will display.



Date – the working date to be overriden

Shift 1 – The overriding hours for shift 1 for the date

Shift 2 - The overriding hours for shift 2 for the date. If shift 2 is not used, enter zero here

Shift 3 - The overriding hours for shift 3 for the date. If shift 3 is not used, enter zero here

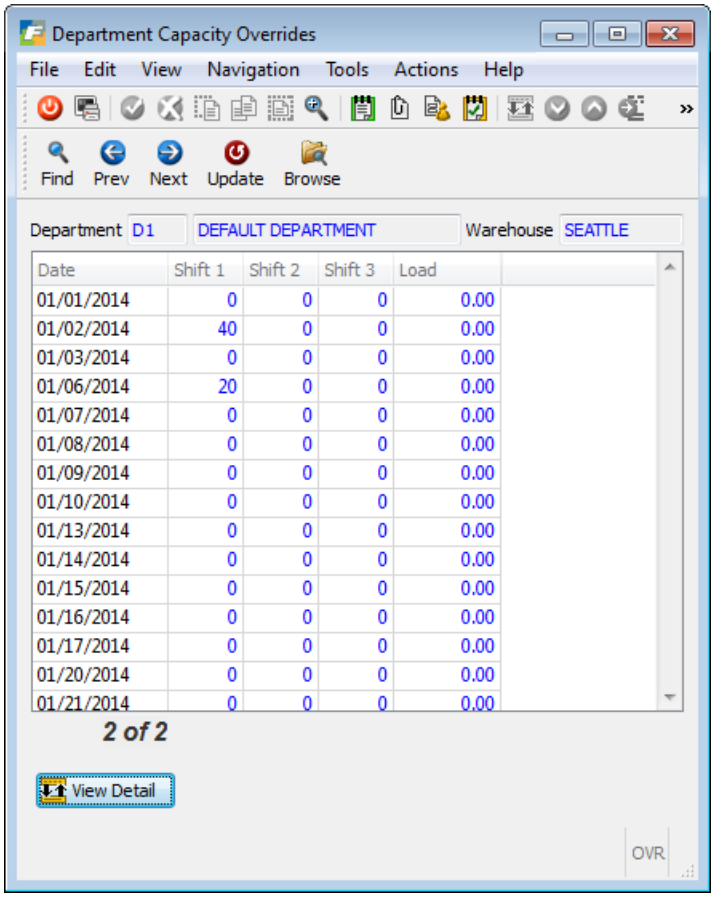
Load - A general reference to the load in hours for this date, from the last Order Reschedule operation . The load is updated by the Finite and Infinite Scheduling functions. It is the summ of labor routing step hours to be completed on that date, based on the start and due dates of the routing steps.

To enter a new date, use either the F1 key to insert a new line, or move the cursor to the end of the list, to a new blank line, and enter the date and hours. To change the hours for an existing date, move the cursor to the date and enter a new value for hours. To remove an override, move the cursor to the existing date, and press F2. This will remove the date, and revert back to the default hours for that date.

Department Capacity Overrides

Use this menu option to enter and maintain specific dates when the department/warehouse will have a capacity that differs from the default capacities for any of the three shifts. This is useful for adding or changing capacities to address over-commitments on a short-term basis.

To enter new date overrides, change existing overrides, or delete overrides, you must first click the Find option, then enter a valid department and warehouse, then click OK. A screen similar to the following will display.



Date – the working date to be overriden

Shift 1 – The overriding hours for shift 1 for the date

Shift 2 - The overriding hours for shift 2 for the date. If shift 2 is not used, enter zero here

Shift 3 - The overriding hours for shift 3 for the date. If shift 3 is not used, enter zero here

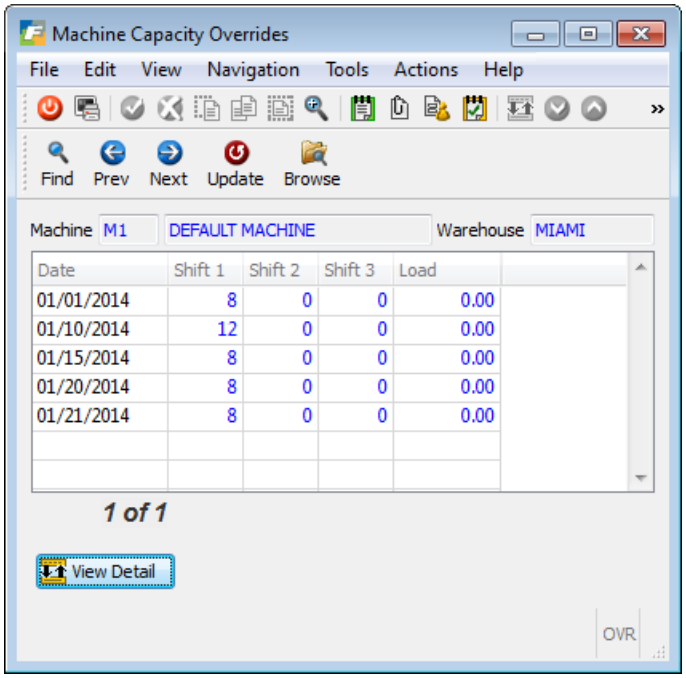
Load - A general reference to the load in hours for this date, from the last Order Reschedule operation . The load is updated by the Finite and Infinite Scheduling functions. It is the summ of labor routing step hours to be completed on that date, based on the start and due dates of the routing steps.

To enter a new date, use either the F1 key to insert a new line, or move the cursor to the end of the list, to a new blank line, and enter the date and hours. To change the hours for an existing date, move the cursor to the date and enter a new value for hours. To remove an override, move the cursor to the existing date, and press F2. This will remove the date, and revert back to the default hours for that date.

Machine Capacity Overrides

Use this menu option to enter and maintain specific dates when the machine/warehouse will have a capacity that differs from the default capacities for any of the three shifts. This is useful for adding or changing capacities to address over-commitments on a short-term basis.

To enter new date overrides, change existing overrides, or delete overrides, you must first click the Find option, then enter a valid machine and warehouse, then click OK. A screen similar to the following will display.



Date – the working date to be overriden

Shift 1 – The overriding hours for shift 1 for the date

Shift 2 - The overriding hours for shift 2 for the date. If shift 2 is not used, enter zero here

Shift 3 - The overriding hours for shift 3 for the date. If shift 3 is not used, enter zero here.

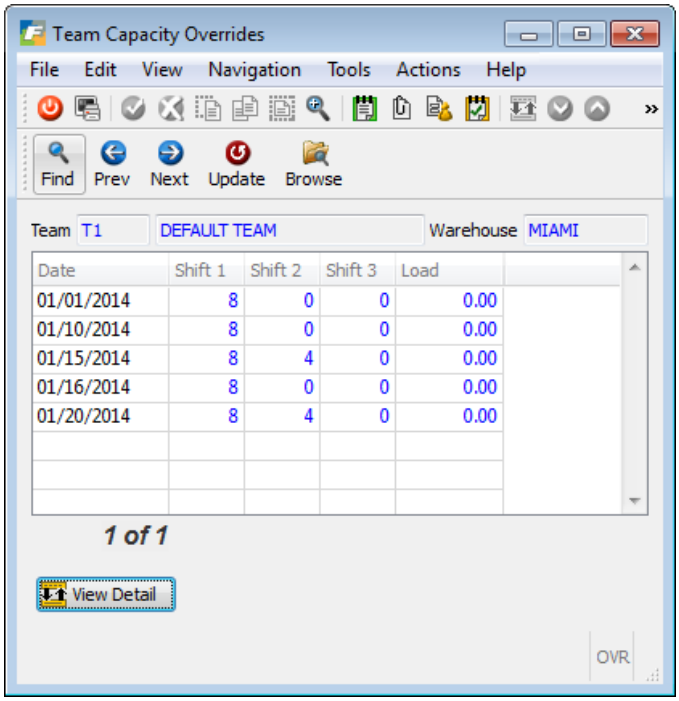
Load - A general reference to the load in hours for this date, from the last Order Reschedule operation . The load is updated by the Finite and Infinite Scheduling functions. It is the summ of labor routing step hours to be completed on that date, based on the start and due dates of the routing steps.

To enter a new date, use either the F1 key to insert a new line, or move the cursor to the end of the list, to a new blank line, and enter the date and hours. To change the hours for an existing date, move the cursor to the date and enter a new value for hours. To remove an override, move the cursor to the existing date, and press F2. This will remove the date, and revert back to the default hours for that date.

Team Capacity Overrides

Use this menu option to enter and maintain specific dates when the team/warehouse will have a capacity that differs from the default capacities for any of the three shifts. This is useful for adding or changing capacities to address over-commitments on a short-term basis.

To enter new date overrides, change existing overrides, or delete overrides, you must first click the Find option, then enter a valid team and warehouse, then click OK. A screen similar to the following will display.



Date – the working date to be overriden

Shift 1 – The overriding hours for shift 1 for the date

Shift 2 - The overriding hours for shift 2 for the date. If shift 2 is not used, enter zero here

Shift 3 - The overriding hours for shift 3 for the date. If shift 3 is not used, enter zero here.

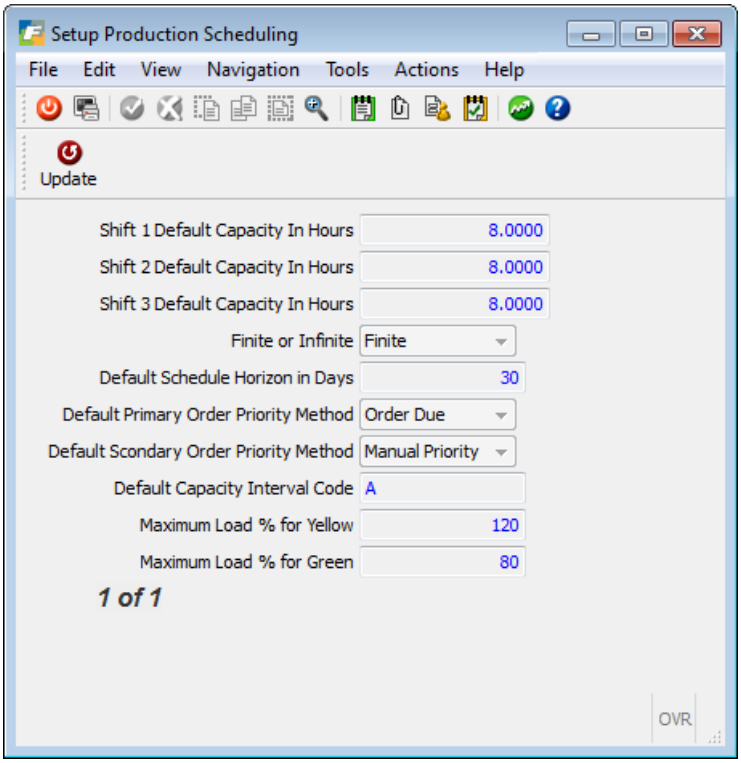
Load - A general reference to the load in hours for this date, from the last Order Reschedule operation . The load is updated by the Finite and Infinite Scheduling functions. It is the summ of labor routing step hours to be completed on that date, based on the start and due dates of the routing steps.

To enter a new date, use either the F1 key to insert a new line, or move the cursor to the end of the list, to a new blank line, and enter the date and hours. To change the hours for an existing

date, move the cursor to the date and enter a new value for hours. To remove an override, move the cursor to the existing date, and press F2. This will remove the date, and revert back to the default hours for that date.

Setup Production Scheduling Error! Bookmark not defined.

Use this menu option to setup and change the application controls for production scheduling.



Shift 1 Default Capacity in Hours

The number of hours available in shift one. This value can be changed in the variable capacity tables defined earlier in this chapter.

Shift 2 Default Capacity in Hours

The number of hours available in shift two. This value can be changed in the variable capacity tables defined earlier in this chapter.

Shift 3 Default Capacity in Hours

The number of hours available in shift three. This value can be changed in the variable capacity tables defined earlier in this chapter.

Finite or Infinite

Select the default scheduling method to be used when scheduling production orders. The entry here is really just a reference to let schedulers know which method they use as a company. The user can still schedule each warehouse either way.

Finite – Uses the finite scheduling method, as defined in the Introduction to Production Scheduling chapter

Infinite – Uses the infinite scheduling method, as defined in the Introduction to Production Scheduling chapter

Default Schedule Horizon in Days

The default number of future days to review resource capacity vs load. The capacity vs load inquiries display open orders for a range of dates. The default starting date is the current date, and the default ending date is the starting date plus the horizon days. Both of these dates can be overridden when running the inquiry

Default Primary Order Priority Method

Order Due indicates that production orders will be prioritized by their due date.

Critical Ratio indicates that production orders will be prioritized by the critical ratio calculation. The calculation is the hours remaining on the operation divided by the hours avail -able. A ratio of 1 means the order is on time. A ratio less than one means the order is ahead of schedule. A ratio greater than 1 means the order is behind schedule.

Priority indicates that production orders will be prioritized by the manual priority code on the order.

Default Secondary Order Priority Method

Order Due indicates that production orders will be prioritized by their due date.

Critical Ratio indicates that production orders will be prioritized by the critical ratio calculation. The calculation is the hours remaining on the operation divided by the hours avail -able. A ratio of 1 means the order is on time. A ratio less than one means the order is ahead of schedule. A ratio greater than 1 means the order is behind schedule.

Priority indicates that production orders will be prioritized by the manual priority code on

Default Capacity Interval Code

The identifier for the capacity interval table entry that should be used for determining the schedule periods to be used. This value will display automatically when running inquiries and reports that prompt for an interval code. You should make sure you have properly set up the interval code you enter here.

Maximum Load % for Yellow

The Capacity vs Load Inquiries will display the load % for a given time period with a color-coded background, to easily see bottlenecks or potential bottlenecks. This value is the threshold at which the load % changes from yellow to red. Any load above this % will display in red, and below (but above the Load % for green) will display in yellow.

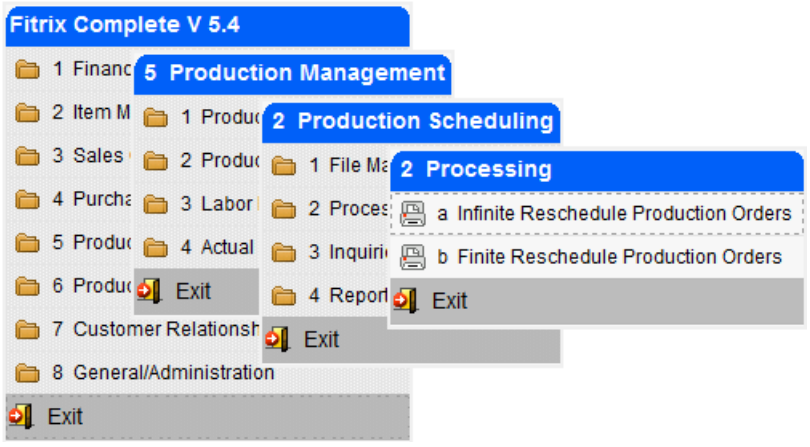
Maximum Load % for Green

The Capacity vs Load Inquiries will display the load % for a given time period with a color-coded background, to easily see bottlenecks or potential bottlenecks. This value is the threshold at which the load % changes from green to yellow. Any load above this % will display in yellow, and below will display in green.

Chapter 3

Processing

- In this chapter you will learn about the order scheduling methods in Production Scheduling
  - Infinite Reschedule Production Orders
  - Finite Reschedule Production Orders



Infinite Reschedule Production Order

When using this function, the production order's defined start date and due dates are used to create a load of hours for the steps within the order. The start and end dates for each labor step in the orders is calculated proportionally:

Labor step lead time

(Hours required for the step / hours required for the order) * (order due date – order start date)

Labor step start date

Order start date + previous labor step lead times

Labor step end date

Order start date + previous labor step lead times + current step lead time

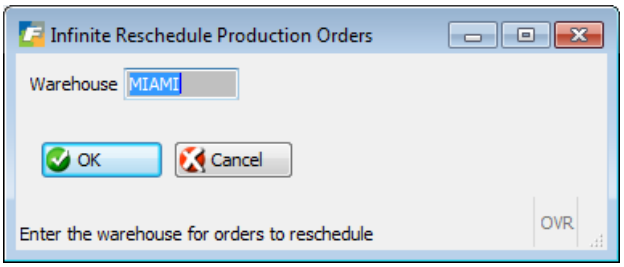
The scheduling function creates a 'load' entry for each resource defined with the labor step (department, work center, machine, and/or team), within the range of start dates and end dates for the step. If the start and end dates are different, the scheduler evenly allocates the hours for the multiple days. For example:

> If a labor step starts on 1/5/xx and ends on 1/8/xx, and has 16 hours of required time, the scheduler assumes 4 hours of work will be performed on each of the 4 days (assuming all 4 days are valid working days)

These load hours are accumulated for the resource/date combination, for all open production orders. A list of orders included in the reschedule function is printed, showing the order scheduled start and completion dates, for later reference. Capacity vs Load Inquiries can then be used to analyze the commitment levels of each resource, over future periods. The results can help production management decide how best to use plant resources, such as:

- Move orders from over-utilized resources to under-utilized alternate resources
- Expedite, defer, or cancel orders to stabilize the hours loaded against a resource
- Hire additional production staff, or implement overtime programs to address over-commitments

The following screen displays:



Warehouse – Enter the production facility (warehouse) to be rescheduled

An example of the report that is generated;

01/17/2014 15:57:38 ABC MANUFACTURING Page: 1
User: randyj Production Order Reschedule Pgm: ps202

Order	Rel	Item	Order Qty	Completed	Scrapped	Remaining	Start	Orig Due	Curr Due	Oper's
140	000	C-MAC	2.00	0.00	0.00	2.00	11/16/2013	11/19/2013	11/19/2013	3
144	000	REPAIR	1.00	0.00	0.00	1.00	12/02/2013	12/04/2013	12/04/2013	1
154	000	C-MAC	1.00	0.00	0.00	1.00	12/06/2013	12/06/2013	12/06/2013	3
155	000	C-MAC	1.00	0.00	0.00	1.00	12/06/2013	12/06/2013	12/06/2013	3
156	000	C-MAC	1.00	0.00	0.00	1.00	12/06/2013	12/06/2013	12/06/2013	3
157	000	C-MAC	1.00	0.00	0.00	1.00	12/06/2013	12/06/2013	12/06/2013	3
158	000	C-MAC	1.00	0.00	0.00	1.00	12/06/2013	12/06/2013	12/06/2013	3
163	000	12104	2.00	0.00	0.00	2.00	12/11/2013	12/12/2013	12/12/2013	1
170	000	12112	2.00	0.00	0.00	2.00	12/13/2013	12/13/2013	12/13/2013	1
52	000	REPAIR	1.00	0.00	0.00	1.00	08/29/2013	08/29/2013	08/29/2013	1
56	000	REPAIR	1.00	0.00	0.00	1.00	09/09/2013	09/09/2013	09/09/2013	1
68	000	REPAIR	1.00	0.00	0.00	1.00	09/17/2013	09/17/2013	09/17/2013	1
70	000	REPAIR	1.00	0.00	0.00	1.00	09/17/2013	09/17/2013	09/17/2013	1
79	000	REPAIR	1.00	0.00	0.00	1.00	09/23/2013	09/23/2013	09/23/2013	1
80	000	REPAIR	1.00	0.00	0.00	1.00	09/23/2013	09/23/2013	09/23/2013	1
83	000	REPAIR	1.00	0.00	0.00	1.00	09/23/2013	09/23/2013	09/23/2013	1
84	000	REPAIR	1.00	0.00	0.00	1.00	09/24/2013	09/24/2013	09/24/2013	1
85	000	REPAIR	1.00	0.00	0.00	1.00	09/24/2013	09/24/2013	09/24/2013	1
92	000	REPAIR	1.00	1.00	0.00	0.00	09/30/2013	09/30/2013	09/30/2013	1
93	000	REPAIR	1.00	1.00	0.00	0.00	10/01/2013	10/01/2013	10/01/2013	1
96	000	REPAIR	1.00	0.00	0.00	1.00	10/03/2013	10/03/2013	10/03/2013	1

NOTE: Oper's is the number of open routing steps not yet completed

NOTE: This menu option does NOT change any order or labor step due dates. If you choose to use the calculated start and due dates from the report, use Production Order Maintenance to change them.

Finite Reschedule Production Orders

When using this function, the production order's user-defined priority is used in combination with resource capacity, to calculate new recommended order and labor step start dates and due dates. It uses the available capacity of associated resources as a constraint, and calculates recommended changes to start and due dates, to ensure that resources are not over-committed.

Order priorities are established as one of the following:

Order Due Date – for multiple orders with the same due date, the orders are processed in the order in which they were entered (i.e. Order Number)

Critical Ratio - The calculation is the hours remaining on all operation divided by the hours between the current date and the order's due date. A ratio of 1 means the order is on time. A ratio less than one means the order is ahead of schedule and a ratio greater than 1 means the order is behind schedule. The orders are then processed with the highest ratio first

Manual Priority – Each order can be assigned a manual priority between 1 and 9, with 1 being the highest priority. So the orders with Priority 1 will be processed first. For multiple orders with the same priority, the orders are processed in the order in which they were entered (i.e. Order Number)

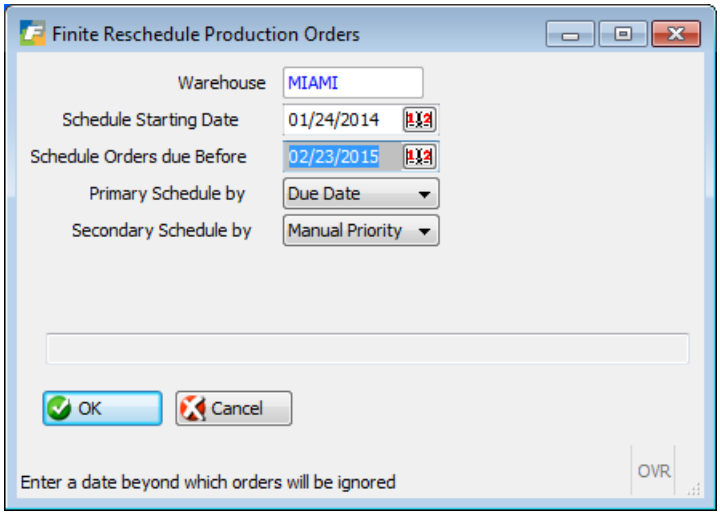
The scheduling function assumes a schedule start date of the current system date. So the first order to be processed has a start date of the current system date. The hours remaining for the order's first open labor step are 'loaded' into the resource defined as the 'Schedule Priority" for the step (Department, Work Center, Machine or Team), for the current date. If the resource's capacity for the date is less than the step's hours remaining, the NEXT working date(s) are loaded with the remaining hours.

When the next order or labor step requiring the same resource is processed, the next available date with unused capacity is loaded. In this way the resource never has a load that exceeds its capacity on any given day. As subsequent orders are loaded into later dates, their labor step start and end dates are 'pushed' out to match when they can be reasonably completed. The resulting labor step start and completion dates will create a new recommended start and completion date for the overall order.

Production Management can review the results of the schedule, to decode on possible changes to the schedule, such as:

- Move orders to under-utilized alternate resources
- Increase capacity by adding more machines, hiring additional production staff, or implementing overtime programs to address team level over-commitments
- Use the Manual Priority override feature to re-order the overall priority of the orders

The following screen displays:



Warehouse – Enter the production facility (warehouse) to be rescheduled

Schedule Starting Date – Enter the beginning date where open orders will be assigned scheduled starting dates. The default is the current system date.

Schedule Orders due Before – Enter a date after which orders will not be added to the schedule. It is often not necessary to include orders that will not be considered for scheduling until a later date. The default is the Starting Date, plus the Schedule Horizon lead time in days from the Setup Production Scheduling option.

Primary Schedule by – Select first method for assigning order priorities. Choices are:

> **Order Due -** indicates that production orders will be prioritized by their due date.
>
> **Critical Ratio -** indicates that production orders will be prioritized by the critical ratio calculation. The calculation is the hours remaining on the operation divided by the hours available. A ratio of 1 means the order is on time. A ratio less than one means the order is ahead of schedule. A ratio greater than 1 means the order is behind schedule.

Priority - indicates that production orders will be prioritized by the manual priority code on the order.

The default is from the Setup Production Scheduling option.

Secondary Schedule by – Select second method for assigning order priorities, in the event multiple orders have the same Primary Schedule value. Choices are:

Order Due - indicates that production orders will be prioritized by their due date.

Critical Ratio - indicates that production orders will be prioritized by the critical ratio calculation. The calculation is the hours remaining on the operation divided by the hours available. A ratio of 1 means the order is on time. A ratio less than one means the order is ahead of schedule. A ratio greater than 1 means the order is behind schedule.

Priority - indicates that production orders will be prioritized by the manual priority code on the order.

The default is from the Setup Production Scheduling option.

NOTE: If multiple orders have the same Primary and Secondary schedule values, the orders will be processed by order number.

An example of the report that is generated;

01/17/2014 17:44:50 ABC MANUFACTURING Page: 1
User: randyj Production Order Finite Reschedule Pgm: ps204
Warehouse: SEATTLE

Order	Rel	Sts	Item	Order Qty	Compl Qty	Scrap Qty	Rem Qty	Rem Hrs	Prty	Cr Ratio	Start	Schd Start	Curr Due	Schd Due	Oper's
174	000	A	C-MAC	1.00	0.00	0.00	1.00	2		1.00	01/17/2014	01/23/2014	01/20/2014	01/23/2014	2
175	000	A	C-MAC	1.00	0.00	0.00	1.00	2		1.00	01/17/2014	01/23/2014	01/20/2014	01/23/2014	2
5		P	C-MAC	1.00			1.00	2			01/14/2014	01/23/2014	01/20/2014	01/23/2014	2
6		P	C-MAC	2.00			2.00	4			01/14/2014	01/24/2014	01/20/2014	01/24/2014	2
4		P	C-MAC	5.00			5.00	10			01/14/2014	01/24/2014	01/20/2014	01/27/2014	2
7		P	C-MAC	2.00			2.00	4			01/16/2014	01/27/2014	01/20/2014	01/28/2014	2
9		P	C-MAC	2.00			2.00	4			01/16/2014	01/28/2014	01/20/2014	01/28/2014	2
8		P	C-MAC	3.00			3.00	6			01/17/2014	01/28/2014	01/20/2014	01/17/2014	2
8		P	C-MAC	3.00			3.00	6			01/17/2014	01/28/2014	01/20/2014	01/17/2014	2

The date columns on the report are:

Start – The start date for the order, when it was entered or maintained

Schd Start – The start date calculated by the Finite Scheduler

Curr Due - The current due date for the order, when it was entered or maintained

Schd Due - The due date calculated by the Finite Scheduler

NOTE Oper's is the number of open routing steps not yet completed

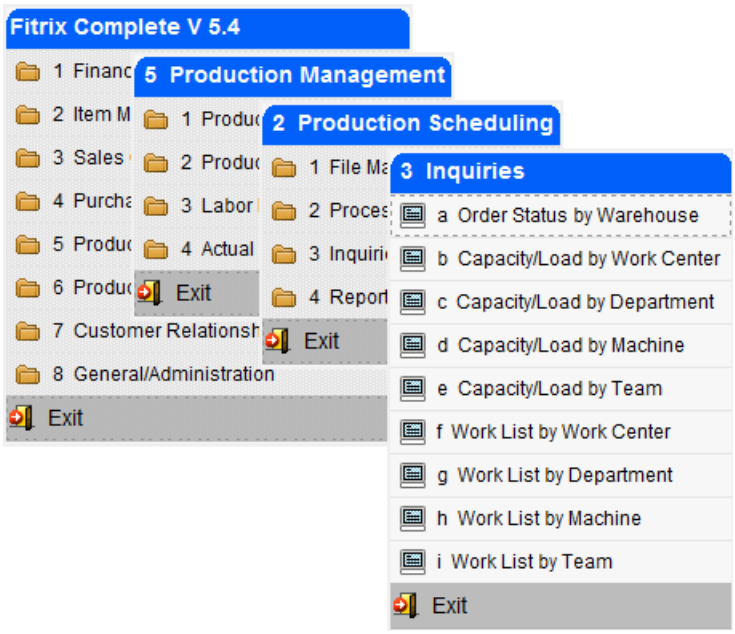
NOTE: This menu option does NOT change any order or labor step due dates. If you choose to use the calculated start and due dates from the report, use Production Order Maintenance to change them.

Chapter 4

Inquiries

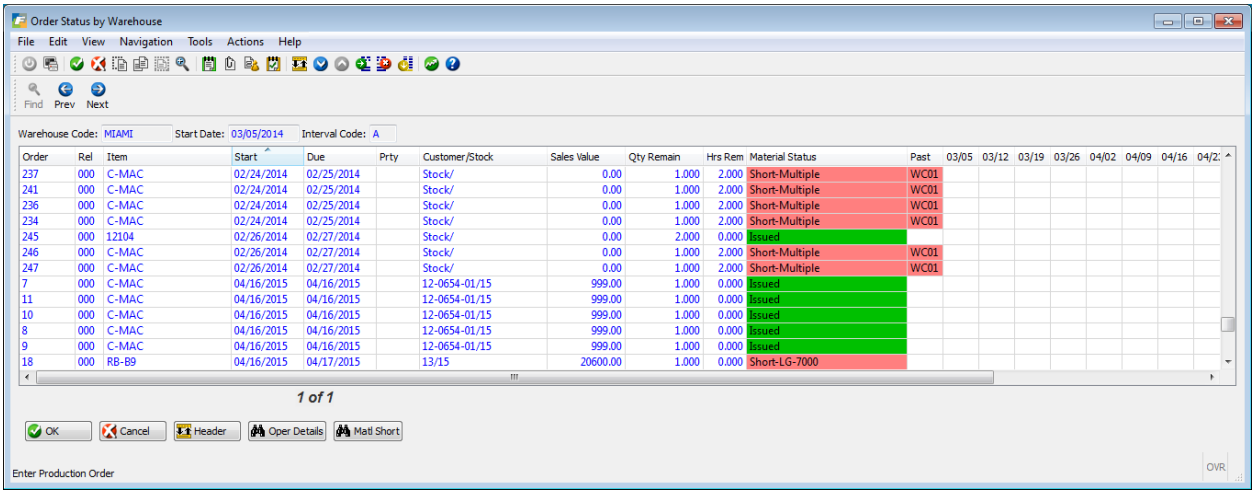
In this chapter we will cover the various inquiries available. These include

- Order Status by Warehouse
- Capacity loads
- Work lists



Order Status by Warehouse

Use this inquiry to review a summary status of active production orders for a selected production facility (warehouse). The orders are listed by due date, then end item code.



Select the Find option and then enter:

Warehouse Code – enter the code for the production facility you want to view

Start Date – enter a starting date for time period intervals to display. Active orders with hours remaining in their labor routing steps will be loaded into the time period intervals to the right of the Material Status column. Each labor routing step's start and due date will be used to determine the time period interval to be loaded. The default value is the current system date.

Interval Code – Enter a time period interval to control how the remaining hours on active orders will be displayed. The interval represents multiple time periods, each of which can be weekly, bi-weekly, monthly, semi-weekly, 4-weekly, or quarterly. The default is from the Setup Production Scheduling option.

After you have selected the above values, click OK, and a list of active orders will display for the facility. The columns are:

Order (Production order number) – the production order assigned

Rel (Production Order release) – the production order release number assigned

Item – Then end item being produced

Start and due dates – the current start and due date for the order

Prty – optionally set management priority

Customer/Stock – If the order has a type MTO or MTN, lists the sales order number and customer code. For any other order type, list 'Stock'

Sales Value – For order type MTO or MTN, shows the extended price of the item on the sales order

Qty Remain – The quantity remaining to be made

Hrs Remain – The hours remaining to complete the production order

Material status – One of the following values

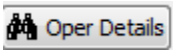
Short – If only one component is short, it lists the component item code. If more than one component is short, it lists 'Multiple'. In either case it displays in a red background.

OK to Issue – All component items are available, but they have not been issued yet. Displays with a yellow background.

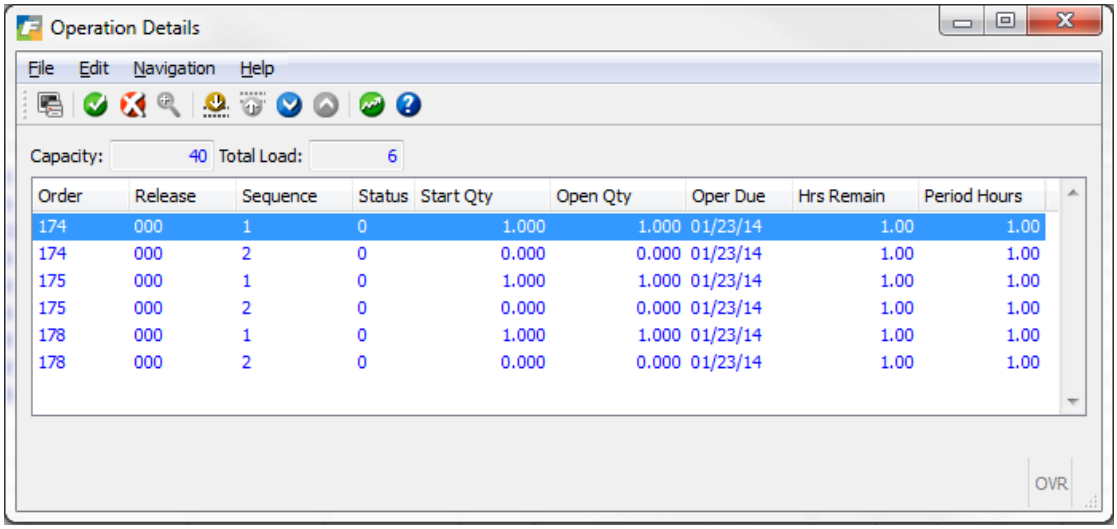
Issued – all components have been issued. Displays with a green background.

Past – If the order has open labor routing steps with hours remaining with start/due dates that are prior to the start date, the associated work center for the labor step is displayed for the matching column.

Time Period Intervals – multiple columns are displayed representing time periods consistent with the Period Interval Chosen. If the order has open labor routing steps with start/due dates that are within the period start date columns, the associated work center for the labor step is displayed for the matching column. If the work center is over-committed for that time period (i.e. the work center's capacity for the time period is less than the total hours for all production order labor steps), it is displayed in red. If the work center is approaching capacity for that time period, it is displayed in yellow. If the work center has sufficient or excess capacity for the time period, it is displayed in green.



- To see the labor routing step details for all orders in a specific time period, click directly on the time period column, then click this button. If no details exist for the time period, a message will display. The following screen displays:



Order – the production order

Release – the production order release

Sequence – the labor routing step sequence

Status – the labor routing step status:

0 – production packet not printed

1 – not started, previous labor step not started

2 – not started, prvious started

3 – not started, previous completed

4 – started

5 – completed

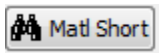
Start Quantity – the starting quantity in the labor step to complete

Open Quantity – the remaining quantity to be completed

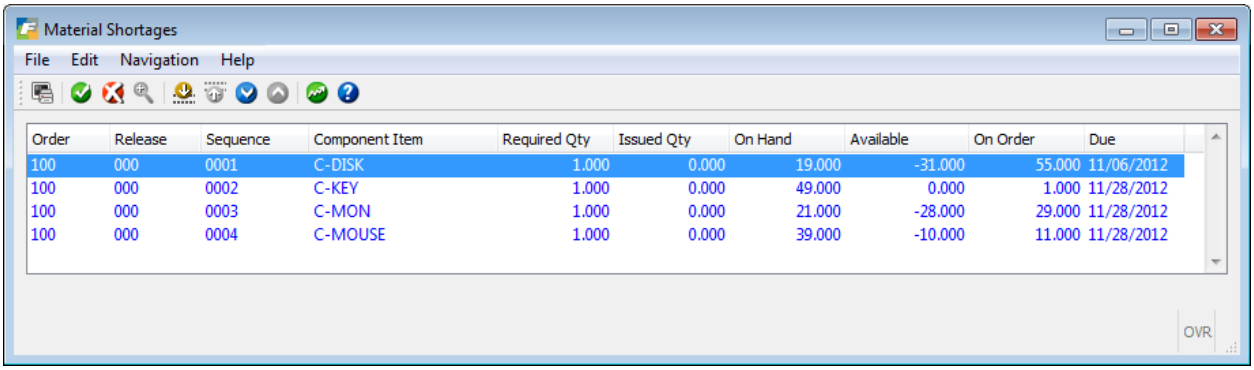
Oper Due – the current due date for the labor step

Hrs Remain – the hours remaining for the labor step to complete

Period Hours – the hours remaining within the current time period interval



- To see a list of components which have insufficient quantity available for an order, place the cursor on the order line, and click on this button. The following screen displays:



Order – the production order

Release – the production order release

Sequence – the bill of material sequence for the component

Component Item – the short component

Issued Qty – quantity already issued to the order

On Hand – the current on hand balance

Available – on hand minus previous allocations to other production or sales orders

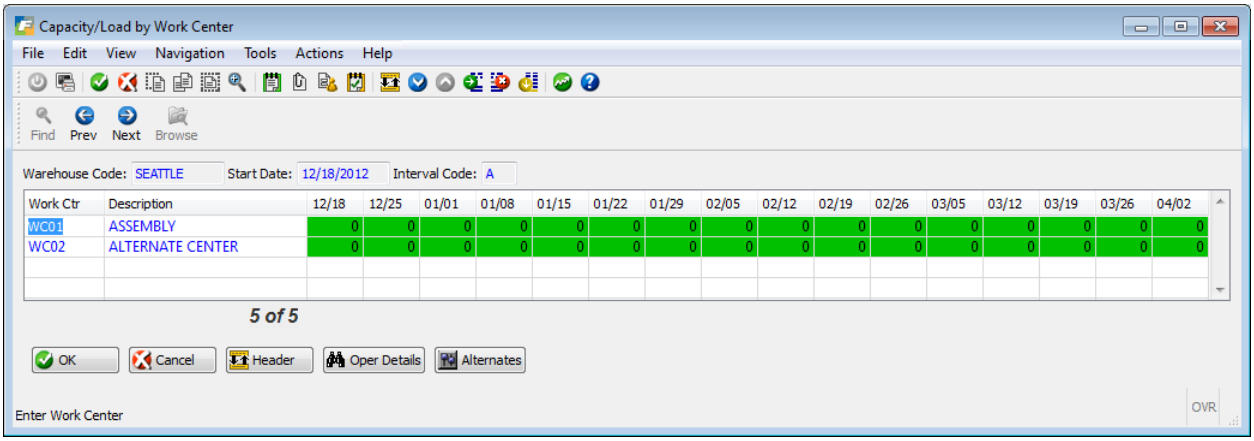
On order – quantity currently on order from other production or purchase orders.

Due – the date the component item is needed for the current production order

Capacity/Load by Work Center

Use this menu option to view the capacity/load for all work centers in a selected production facility (warehouse). The work centers are displayed with their description and a series of time period intervals representing the percentage load on the work center. The time period data is expressed as a percent (load divided by capacity). If the load is greater than the capacity, the percent is displayed with a red background. If the load is approaching capacity, it is displayed in yellow, and if the load is low or not approaching capacity, is it displayed in green. The threshold levels for the yellow and green display are entered in the Setup Production Scheduling option.

The following screen displays:



Select the Find option and then enter:

Warehouse Code – enter the code for the production facility you want to view

Start Date – enter a starting date for time period intervals to display. Active orders with hours remaining in their labor routing steps will be loaded into the time period intervals to the right. Each labor routing step's start and due date will be used to determine the time period interval to be loaded. The default value is the current system date.

Interval Code – Enter a time period interval to control how the remaining hours on active orders will be displayed. The interval represents multiple time periods, each of which can be weekly, bi-weekly, monthly, semi-weekly, 4-weekly, or quarterly. The default is from the Setup Production Scheduling option.

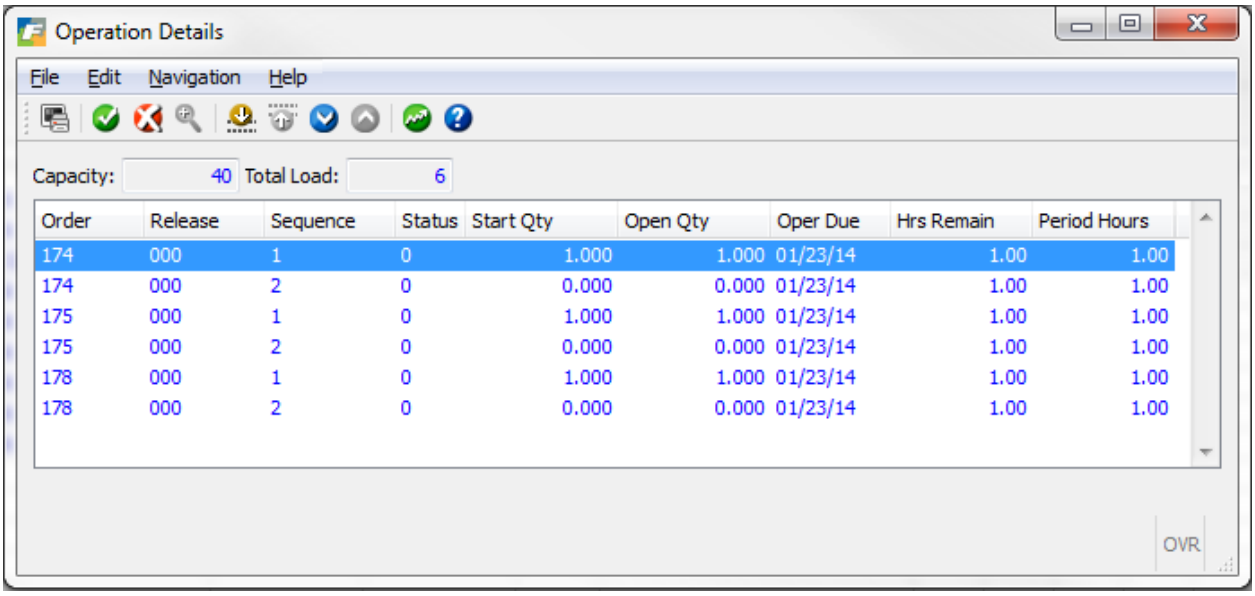
After you have selected the above values, click OK, and a list of work centers will display for the facility. The columns are:

Work Ctr – the work center in the facility

Description – the free-form description of the work center.

Time Period Intervals – multiple columns are displayed representing time periods consistent with the Period Interval Chosen. If production orders have open labor routing steps with start/due dates that are within the period start date columns, the associated work center for the labor step is displayed for the matching column. If the work center is over-committed for that time period (ie the work center's capacity for the time period is less than the total hours for all production order labor steps), it is displayed in red. If the work center is approaching capacity for that time period, it is displayed in yellow. If the work center has sufficient or excess capacity for the time period, it is displayed in green.

Oper Details - To see the labor routing step details for all orders in a specific time period, click directly on the time period, then click this button. If no details exist for the time period, a message will display. The following screen displays:



Order	Release	Sequence	Status	Start Qty	Open Qty	Oper Due	Hrs Remain	Period Hours
174	000	1	0	1.000	1.000	01/23/14	1.00	1.00
174	000	2	0	0.000	0.000	01/23/14	1.00	1.00
175	000	1	0	1.000	1.000	01/23/14	1.00	1.00
175	000	2	0	0.000	0.000	01/23/14	1.00	1.00
178	000	1	0	1.000	1.000	01/23/14	1.00	1.00
178	000	2	0	0.000	0.000	01/23/14	1.00	1.00

Capacity – The work center's capacity in hours, for the selected time period.

Total Load – The total hours for labor routing steps with start/due dates in this time period.

Order – the production order

Release – the production order release

Sequence – the labor routing step sequence

Status – the labor routing step status:

0 – production packet not printed

1 – not started, previous labor step not started

2 – not started, prvious started

3 – not started, previous completed

4 – started

5 – completed

Start Quantity – the starting quantity for the labor step to complete

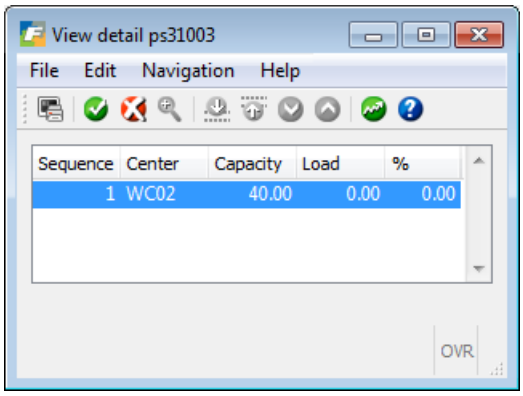
Open Quantity – the remaining quantity to be completed

Oper Due – the current due date for the labor step

Hrs Remain – the hours remaining for the labor step to complete

Period Hours – the hours remaining within he current time period interval

- if any work center is overloaded for a given time period place the cursor in the work center/interval field and click on this buttom to see alternate work centers.

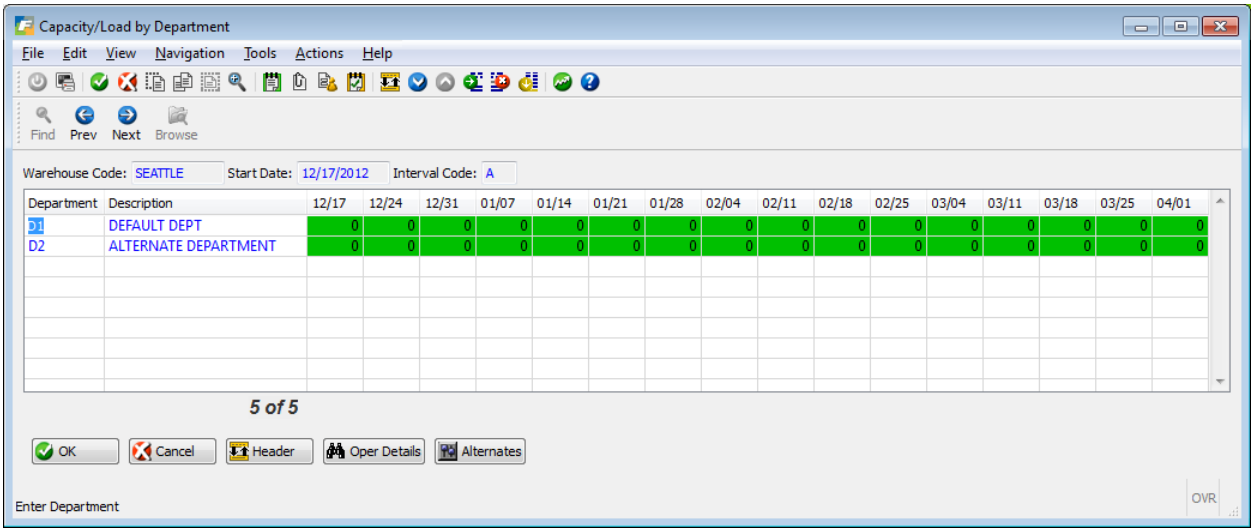


The screen lists all work centers defined as alternates to the current work center. For the same time period, it displays the work center's capacity and load, with a calculated percentage. To balance the load you must then go to the production work order and change the work center

Capacity/Load by Department

Use this menu option to view the capacity/load for all departments in a selected production facility (warehouse). The departments are displayed with their description and a series of time period intervals representing the percentage load on the department. The time period data is expressed as a percent (load divided by capacity). If the load is greater than the capacity, the percent is displayed with a red background. If the load is approaching capacity, it is displayed in yellow, and if the load is low or not approaching capacity, is it displayed in green. The threshold levels for the yellow and green display are entered in the Setup Production Scheduling option.

The following screen displays:



Select the Find option and then enter:

Warehouse Code – enter the code for the production facility you want to view

Start Date – enter a starting date for time period intervals to display. Active orders with hours remaining in their labor routing steps will be loaded into the time period intervals to the right. Each labor routing step's start and due date will be used to determine the time period interval to be loaded. The default value is the current system date.

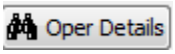
Interval Code – Enter a time period interval to control how the remaining hours on active orders will be displayed. The interval represents multiple time periods, each of which can be weekly, bi-weekly, monthly, semi-weekly, 4-weekly, or quarterly. The default is from the Setup Production Scheduling option.

After you have selected the above values, click OK, and a list of departments will display for the facility. The columns are:

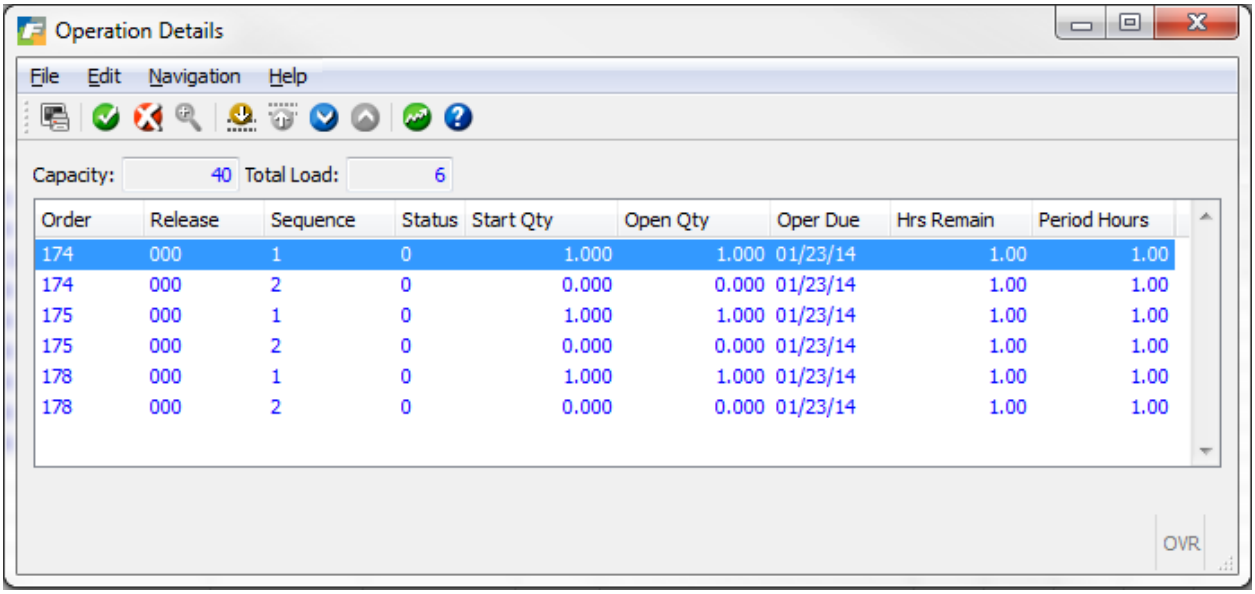
Department – the department in the facility

Description – the free-form description of the department.

Time Period Intervals – multiple columns are displayed representing time periods consistent with the Period Interval Chosen. If production orders have open labor routing steps with start/due dates that are within the period start date columns, the associated department for the labor step is displayed for the matching column. If the department is over-committed for that time period (ie the department's capacity for the time period is less than the total hours for all production order labor steps), it is displayed in red. If the department is approaching capacity for that time period, it is displayed in yellow. If the department has sufficient or excess capacity for the time period, it is displayed in green.



- To see the labor routing step details for all orders in a specific time period, click directly on the time period, then click this button. If no details exist for the time period, a message will display. The following screen displays:



Capacity – The department's capacity in hours, for the selected time period.

Total Load – The total hours for labor routing steps with start/due dates in this time period.

Order – the production order

Release – the production order release

Sequence – the labor routing step sequence

Status – the labor routing step status:

0 – production packet not printed

1 – not started, previous labor step not started

2 – not started, prvious started

3 – not started, previous completed

4 – started

5 – completed

Start Quantity – the starting quantity for the labor step to complete

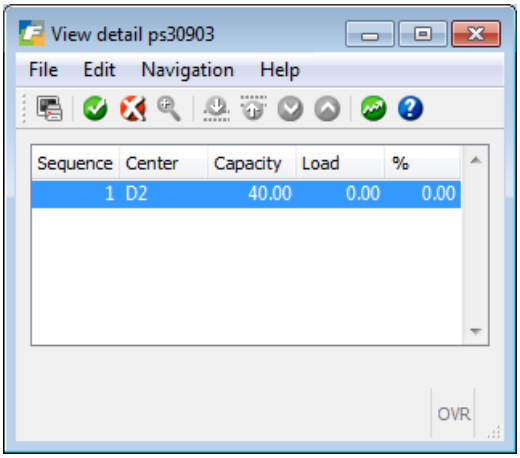
Open Quantity – the remaining quantity to be completed

Oper Due – the current due date for the labor step

Hrs Remain – the hours remaining for the labor step to complete

Period Hours – the hours remaining within he current time period interval

- if any department is overloaded for a given time period place the cursor in the department/interval field and click on this buttom to see alternate departments.

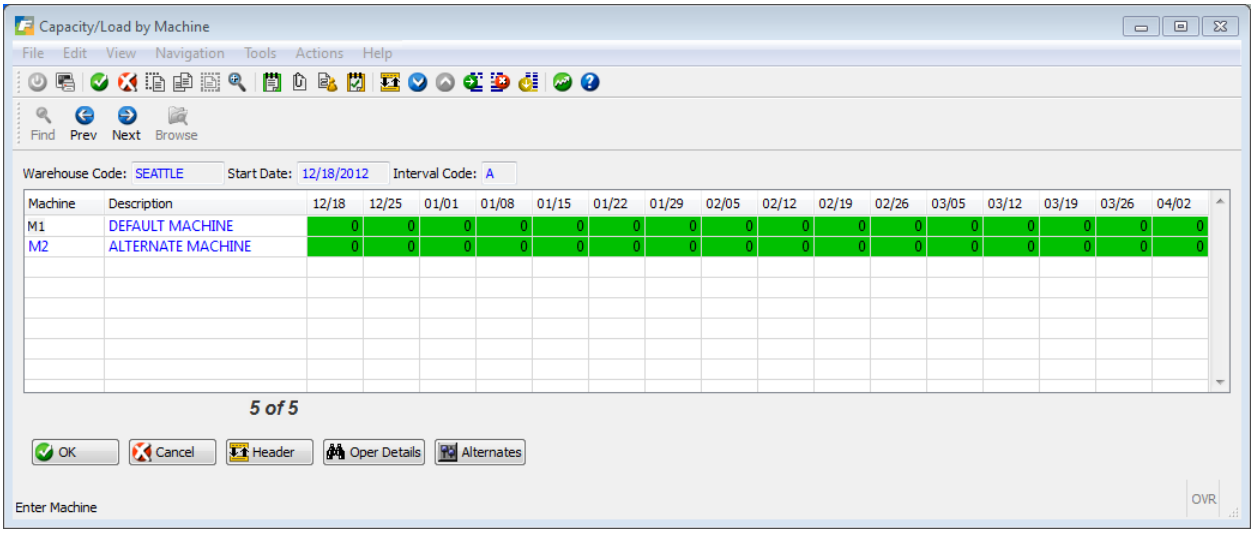


The screen lists all departments defined as alternates to the current departments. For the same time period, it displays the department's capacity and load, with a calculated percentage.

Capacity/Load by Machine

Use this menu option to view the capacity/load for all machines in a selected production facility (warehouse). The machines are displayed with their description and a series of time period intervals representing the percentage load on the machine. The time period data is expressed as a percent (load divided by capacity). If the load is greater than the capacity, the percent is displayed with a red background. If the load is approaching capacity, it is displayed in yellow, and if the load is low or not approaching capacity, is it displayed in green. The threshold levels for the yellow and green display are entered in the Setup Production Scheduling option.

The following screen displays:



Select the Find option and then enter:

Warehouse Code – enter the code for the production facility you want to view

Start Date – enter a starting date for time period intervals to display. Active orders with hours remaining in their labor routing steps will be loaded into the time period intervals to the right. Each labor routing step's start and due date will be used to determine the time period interval to be loaded. The default value is the current system date.

Interval Code – Enter a time period interval to control how the remaining hours on active orders will be displayed. The interval represents multiple time periods, each of which can be weekly, bi-weekly, monthly, semi-weekly, 4-weekly, or quarterly. The default is from the Setup Production Scheduling option.

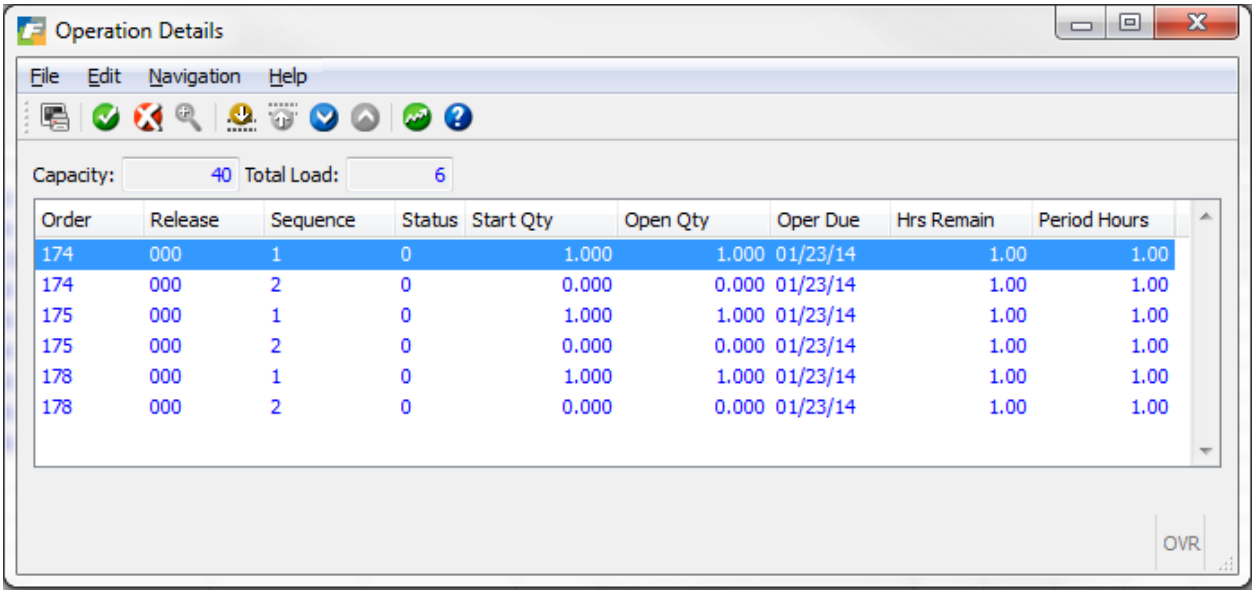
After you have selected the above values, click OK, and a list of machines will display for the facility. The columns are:

Machine – the machine in the facility

Description – the free-form description of the machine.

Time Period Intervals – multiple columns are displayed representing time periods consistent with the Period Interval Chosen. If production orders have open labor routing steps with start/due dates that are within the period start date columns, the associated machine for the labor step is displayed for the matching column. If the machine is over-committed for that time period (ie the machine's capacity for the time period is less than the total hours for all production order labor steps), it is displayed in red. If the machine is approaching capacity for that time period, it is displayed in yellow. If the machine has sufficient or excess capacity for the time period, it is displayed in green.

Oper Details - To see the labor routing step details for all orders in a specific time period, click directly on the time period, then click this button. If no details exist for the time period, a message will display. The following screen displays:



Order	Release	Sequence	Status	Start Qty	Open Qty	Oper Due	Hrs Remain	Period Hours
174	000	1	0	1.000	1.000	01/23/14	1.00	1.00
174	000	2	0	0.000	0.000	01/23/14	1.00	1.00
175	000	1	0	1.000	1.000	01/23/14	1.00	1.00
175	000	2	0	0.000	0.000	01/23/14	1.00	1.00
178	000	1	0	1.000	1.000	01/23/14	1.00	1.00
178	000	2	0	0.000	0.000	01/23/14	1.00	1.00

Capacity – The machine's capacity in hours, for the selected time period.

Total Load – The total hours for labor routing steps with start/due dates in this time period.

Order – the production order

Release – the production order release

Sequence – the labor routing step sequence

Status – the labor routing step status:

0 – production packet not printed

1 – not started, previous labor step not started

2 – not started, prvious started

3 – not started, previous completed

4 – started

5 – completed

Start Quantity – the starting quantity for the labor step to complete

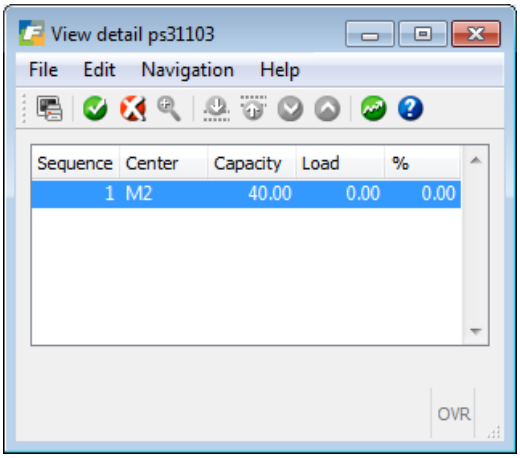
Open Quantity – the remaining quantity to be completed

Oper Due – the current due date for the labor step

Hrs Remain – the hours remaining for the labor step to complete

Period Hours – the hours remaining within he current time period interval

- if any machine is overloaded for a given time period place the cursor in the machine/interval field and click on this buttom to see alternate machines.

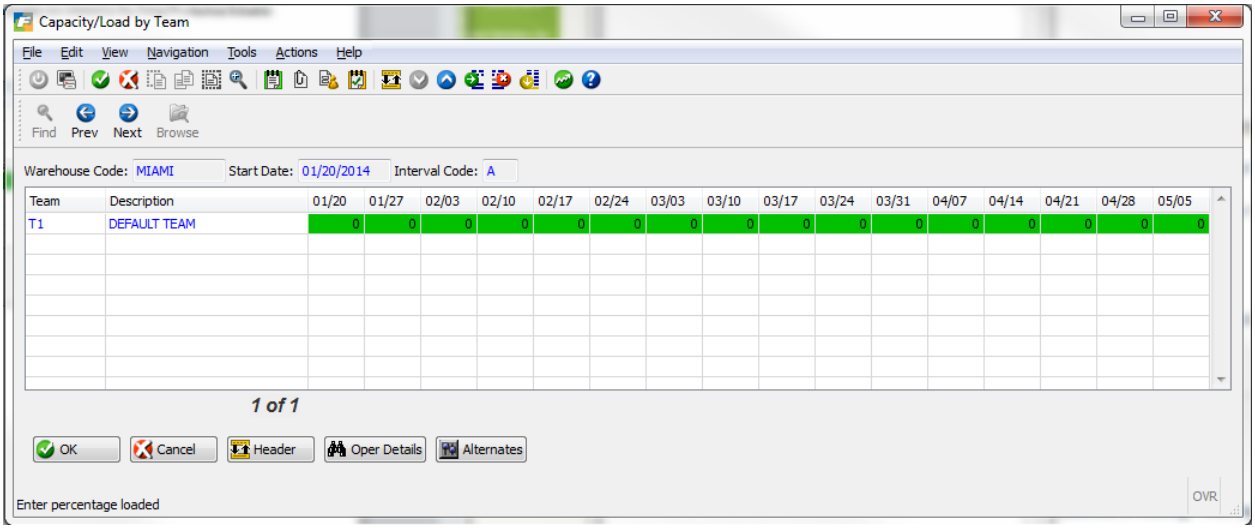


The screen lists all machines defined as alternates to the current machines. For the same time period, it displays the machine's capacity and load, with a calculated percentage.

Capacity/Load by Team

Use this menu option to view the capacity/load for all teams in a selected production facility (warehouse). The teams are displayed with their description and a series of time period intervals representing the percentage load on the team. The time period data is expressed as a percent (load divided by capacity). If the load is greater than the capacity, the percent is displayed with a red background. If the load is approaching capacity, it is displayed in yellow, and if the load is low or not approaching capacity, is it displayed in green. The threshold levels for the yellow and green display are entered in the Setup Production Scheduling option.

The following screen displays:.



Select the Find option and then enter:

Warehouse Code – enter the code for the production facility you want to view

Start Date – enter a starting date for time period intervals to display. Active orders with hours remaining in their labor routing steps will be loaded into the time period intervals to the right. Each labor routing step's start and due date will be used to determine the time period interval to be loaded. The default value is the current system date.

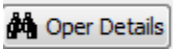
Interval Code – Enter a time period interval to control how the remaining hours on active orders will be displayed. The interval represents multiple time periods, each of which can be weekly, bi-weekly, monthly, semi-weekly, 4-weekly, or quarterly. The default is from the Setup Production Scheduling option.

After you have selected the above values, click OK, and a list of teams will display for the facility. The columns are:

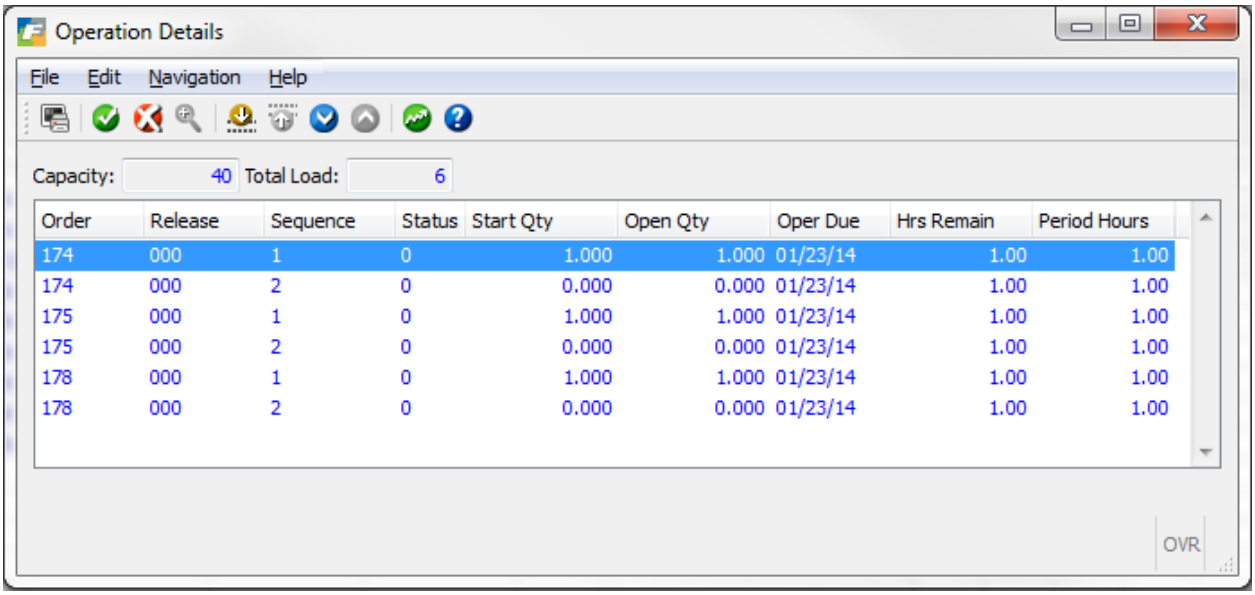
Team – the team in the facility

Description – the free-form description of the team.

Time Period Intervals – multiple columns are displayed representing time periods consistent with the Period Interval Chosen. If production orders have open labor routing steps with start/due dates that are within the period start date columns, the associated team for the labor step is displayed for the matching column. If the team is over-committed for that time period (ie the team's capacity for the time period is less than the total hours for all production order labor steps), it is displayed in red. If the team is approaching capacity for that time period, it is displayed in yellow. If the team has sufficient or excess capacity for the time period, it is displayed in green.



- To see the labor routing step details for all orders in a specific time period, click directly on the time period, then click this button. If no details exist for the time period, a message will display. The following screen displays:



Order	Release	Sequence	Status	Start Qty	Open Qty	Oper Due	Hrs Remain	Period Hours
174	000	1	0	1.000	1.000	01/23/14	1.00	1.00
174	000	2	0	0.000	0.000	01/23/14	1.00	1.00
175	000	1	0	1.000	1.000	01/23/14	1.00	1.00
175	000	2	0	0.000	0.000	01/23/14	1.00	1.00
178	000	1	0	1.000	1.000	01/23/14	1.00	1.00
178	000	2	0	0.000	0.000	01/23/14	1.00	1.00

Capacity – The team's capacity in hours, for the selected time period.

Total Load – The total hours for labor routing steps with start/due dates in this time period.

Order – the production order

Release – the production order release

Sequence – the labor routing step sequence

Status – the labor routing step status:

0 – production packet not printed

1 – not started, previous labor step not started

2 – not started, prvious started

3 – not started, previous completed

4 – started

5 – completed

Start Quantity – the starting quantity for the labor step to complete

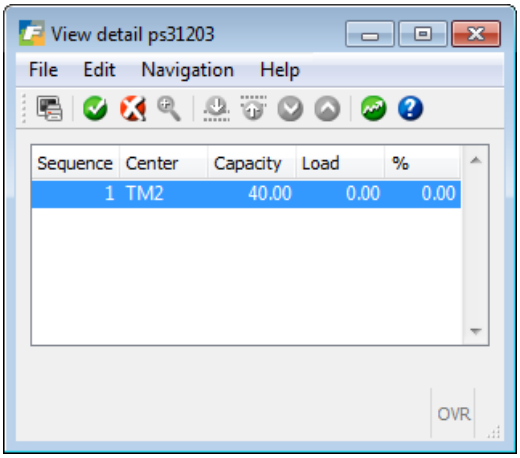
Open Quantity – the remaining quantity to be completed

Oper Due – the current due date for the labor step

Hrs Remain – the hours remaining for the labor step to complete

Period Hours – the hours remaining within he current time period interval

- if any team is overloaded for a given time period place the cursor in the team/interval field and click on this buttom to see alternate teams.



The screen lists all teams defined as alternates to the current team. For the same time period, it displays the team's capacity and load, with a calculated percentage.

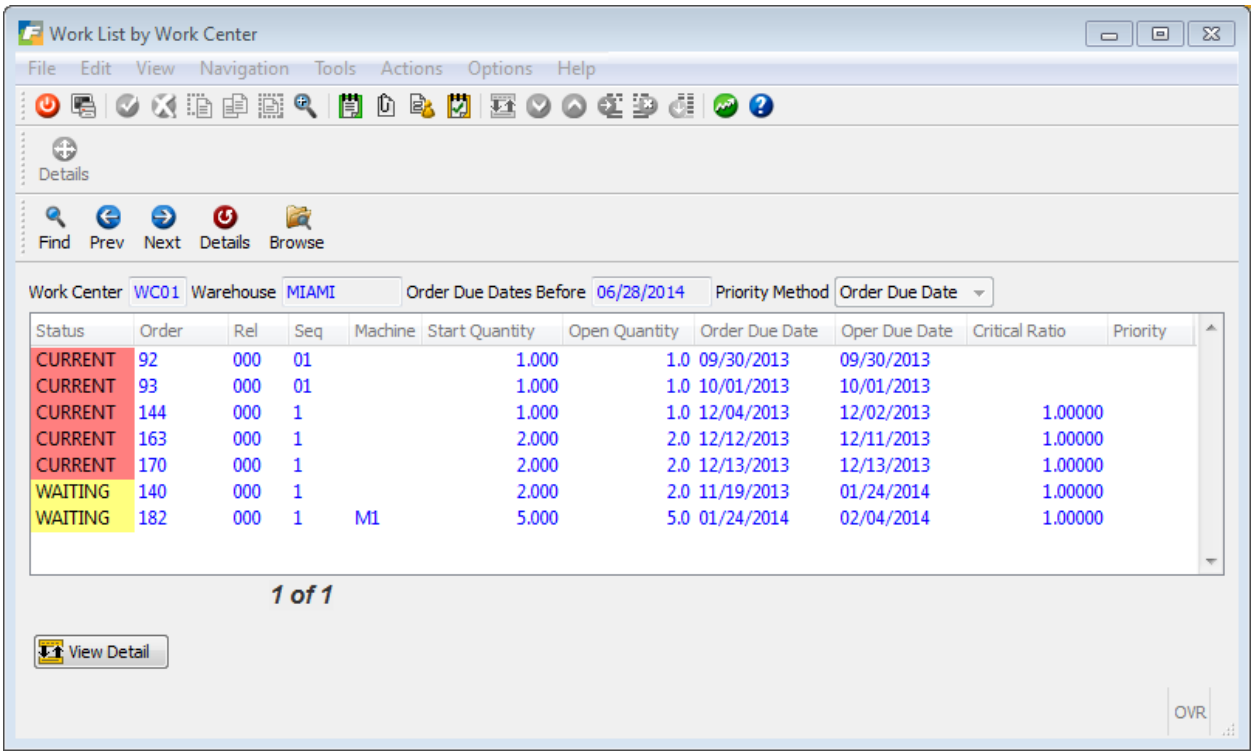
Work List by Work Center

Use this menu option to view a list of work to be performed at specific work centers. The list is prioritized to show production order labor routing steps in 3 categories:

- Current – steps where some labor or machine time has been reported
- Waiting – steps completed at the previous step, and ready to start at the current step
- Arriving – steps still in process at the previous step

Within each category, labor steps are sorted based on a user-enter priority, to provide flexibility in determining which steps should be executed first, second, and so on.

The following screen displays:



Select the Find option and then enter:

Work Center – Enter the work center you want to view

Warehouse – Enter the production facility you want to view

Order Due Dates Before – enter a date after which you do not want to view orders. This prevents unnecessary detail for orders due too far into the future to be of concern. The default date is the current system date, plus the schedule horizon defined in the Setup Production Scheduling.

Priority Method – Select one of the following choices:

Order Due - indicates that production orders will be prioritized by their due date.

Critical Ratio -indicates that production orders will be prioritized by the critical ratio calculation. The calculation is the hours remaining on the operation divided by the hours available. A ratio of 1 means the order is on time. A ratio less than one means the order is ahead of schedule. A ratio greater than 1 means the order is behind schedule.

Priority - indicates that production orders will be prioritized by the manual priority code on the order.

After you have selected the above values, click OK, and a list of labor steps will display for the work center. The columns are:

Status – one of the following values:

CURRENT – displayed in red. Either quantities or hours have been reported on this step, but it is not yet complete.

WAITING – displayed in yellow. The previous labor step has been completed, but no activity has been reported on the step at the current department

ARRIVING – displayed in green. The previous labor step is not yet completed.

Order – the production order

Rel (Release)– the production order release

Seq (Routing Sequence) – the labor routing step sequence

Machine

Start Quantity – the quantity this step originally started with

Open Quantity – the quantity still be completed

Order Due Date – the current due date for the whole order

Oper Due Date – the current due date for this labor step on the order

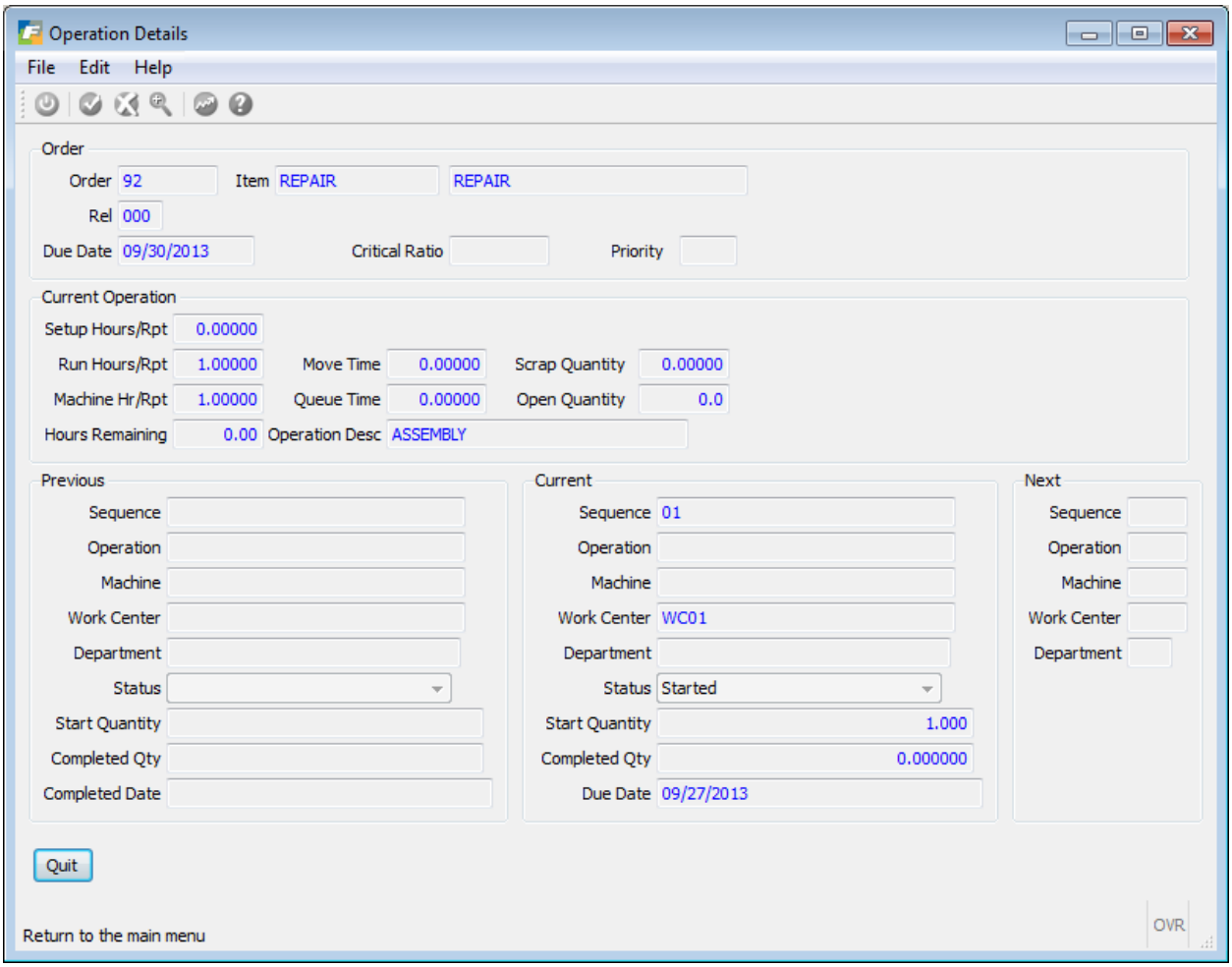
Critical Ratio – the calculated critical ratio for the order

Priority – the manual priority of the production order

To view the details for a labor step:

1. Click on the Details button to go to the detail section of the screen

2. Click the Details button. The following screen displays:



Reported Hours, Move and Queue Times, and completed quantities are displayed. Also included are references to the previous, and next, operations.

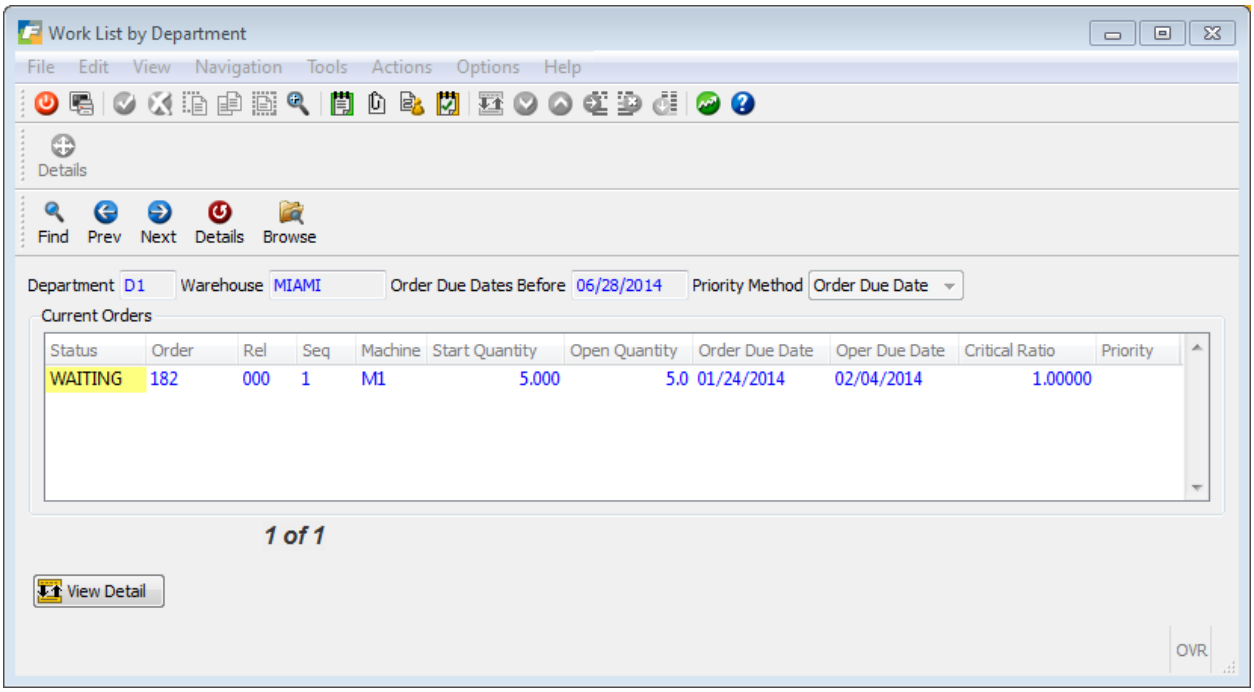
Work List by Department

Use this menu option to view a list of work to be performed at specific departments. The list is prioritized to show production order labor routing steps in 3 categories:

- Current – steps where some labor or machine time has been reported
- Waiting – steps completed at the previous step, and ready to start at the current step
- Arriving – steps still in process at the previous step

Within each category, labor steps are sorted based on a user-enter priority, to provide flexibility in determining which order steps should be executed first, second, and so on.

The following screen displays:



Select the Find option and then enter:

Department – department you want to view

Warehouse – Enter the production facility you want to view

Order Due Dates Before – enter a date after which you do not want to view orders. This prevents unnecessary detail for orders due too far into the future to be of concern. The default date is the current system date, plus the schedule horizon defined in the Setup Production Scheduling.

Priority Method – Select one of the following choices:

Order Due - indicates that production orders will be prioritized by their due date.

Critical Ratio - indicates that production orders will be prioritized by the critical ratio calculation. The calculation is the hours remaining on the operation divided by the hours available. A ratio of 1 means the order is on time. A ratio less than one means the order is ahead of schedule. A ratio greater than 1 means the order is behind schedule.

Priority - indicates that production orders will be prioritized by the manual priority code on the order.

After you have selected the above values, click OK, and a list of labor steps will display for the work center. The columns are:

Status – one of the following values:

CURRENT – displayed in red. Either quantities or hours have been reported on this step, but it is not yet complete.

WAITING – displayed in yellow. The previous labor step has been completed, but no activity has been reported on the step at the current department

ARRIVING – displayed in green. The previous labor step is not yet completed.

Order – the production order

Rel (Release)– the production order release

Seq (Routing Sequence) – the labor routing step sequence

Machine

Start Quantity – the quantity this step originally started with

Open Quantity – the quantity still be completed

Order Due Date – the current due date for the whole order

Oper Due Date – the current due date for this labor step on the order

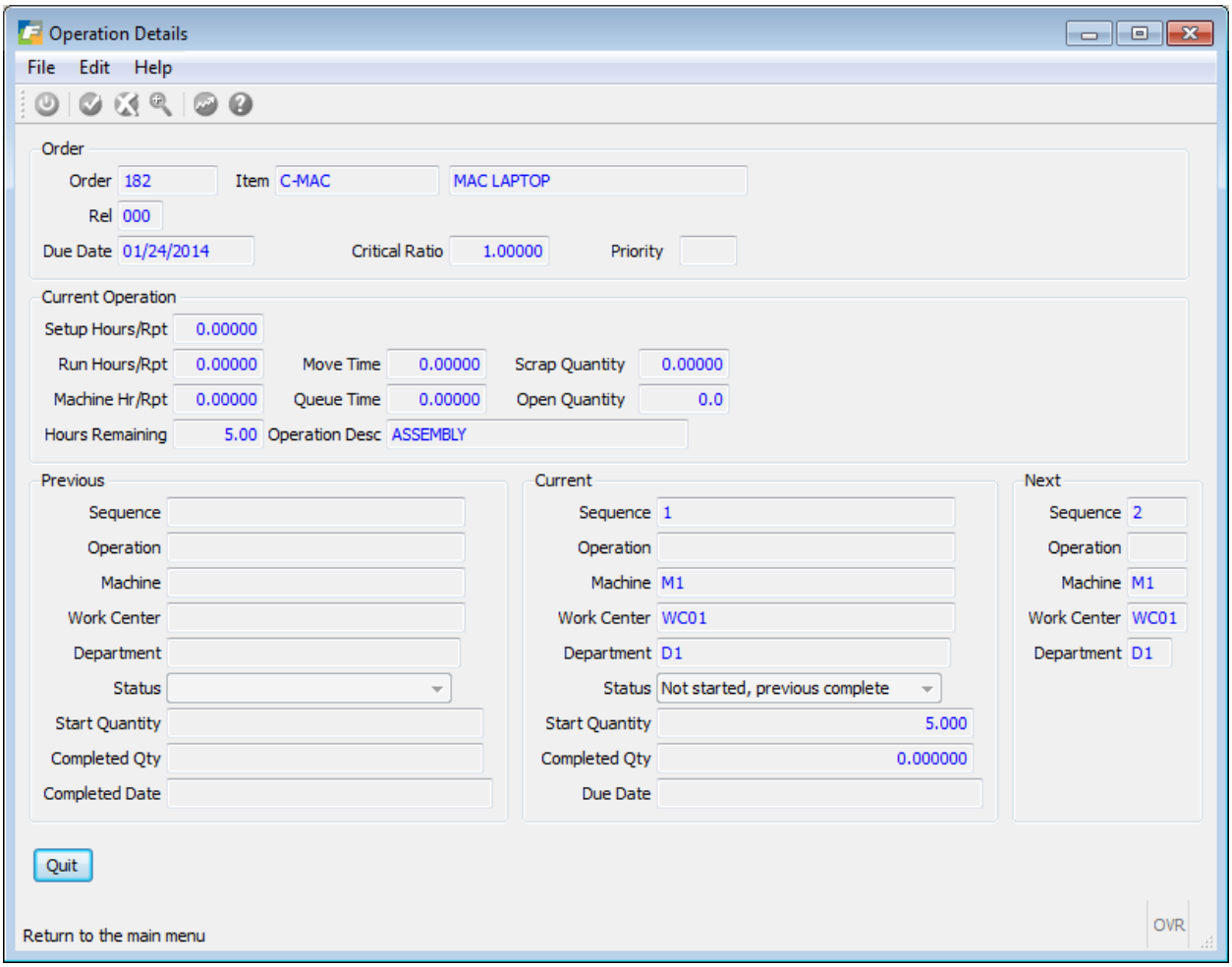
Critical Ratio – the calculated critical ratio for the order

Priority – the manual priority of the production order

To view the details for a labor step:

3. Click on the Details button to go to the detail section of the screen

4. Click the Details button. The following screen displays:



Reported Hours, Move and Queue Times, and completed quantities are displayed. Also included are references to the previous, and next, operations.

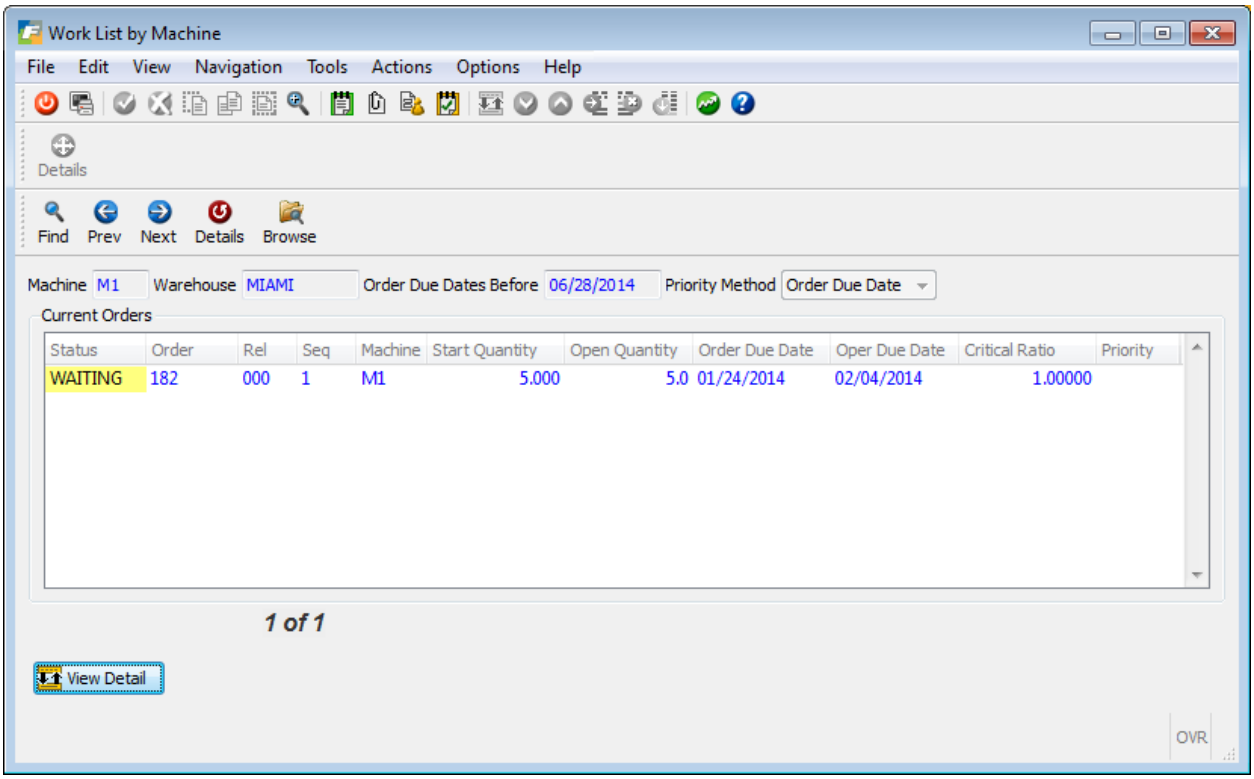
Work List by Machine

Use this menu option to view a list of work to be performed at specific machines. The list is prioritized to show production order labor routing steps in 3 categories:

- Current – steps where some labor or machine time has been reported
- Waiting – steps completed at the previous step, and ready to start at the current step
- Arriving – steps still in process at the previous step

Within each category, labor steps are sorted based on a user-enter priority, to provide flexibility in determining which order steps should be executed first, second, and so on.

The following screen displays:



Select the Find option and then enter:

Machine – Enter the machine you want to view

Warehouse – Enter the production facility you want to view

Order Due Dates Before – enter a date after which you do not want to view orders. This prevents unnecessary detail for orders due too far into the future to be of concern. The default date is the current system date, plus the schedule horizon defined in the Setup Production Scheduling.

Priority Method – Select one of the following choices:

Order Due - indicates that production orders will be prioritized by their due date.

Critical Ratio - indicates that production orders will be prioritized by the critical ratio calculation. The calculation is the hours remaining on the operation divided by the hours available. A ratio of 1 means the order is on time. A ratio less than one means the order is ahead of schedule. A ratio greater than 1 means the order is behind schedule.

Priority - indicates that production orders will be prioritized by the manual priority code on the order.

After you have selected the above values, click OK, and a list of labor steps will display for the work center. The columns are:

Status – one of the following values:

CURRENT – displayed in red. Either quantities or hours have been reported on this step, but it is not yet complete.

WAITING – displayed in yellow. The previous labor step has been completed, but no activity has been reported on the step at the current department

ARRIVING – displayed in green. The previous labor step is not yet completed.

Order – the production order

Rel (Release)– the production order release

Seq (Routing Sequence) – the labor routing step sequence

Machine

Start Quantity – the quantity this step originally started with

Open Quantity – the quantity still be completed

Order Due Date – the current due date for the whole order

Oper Due Date – the current due date for this labor step on the order

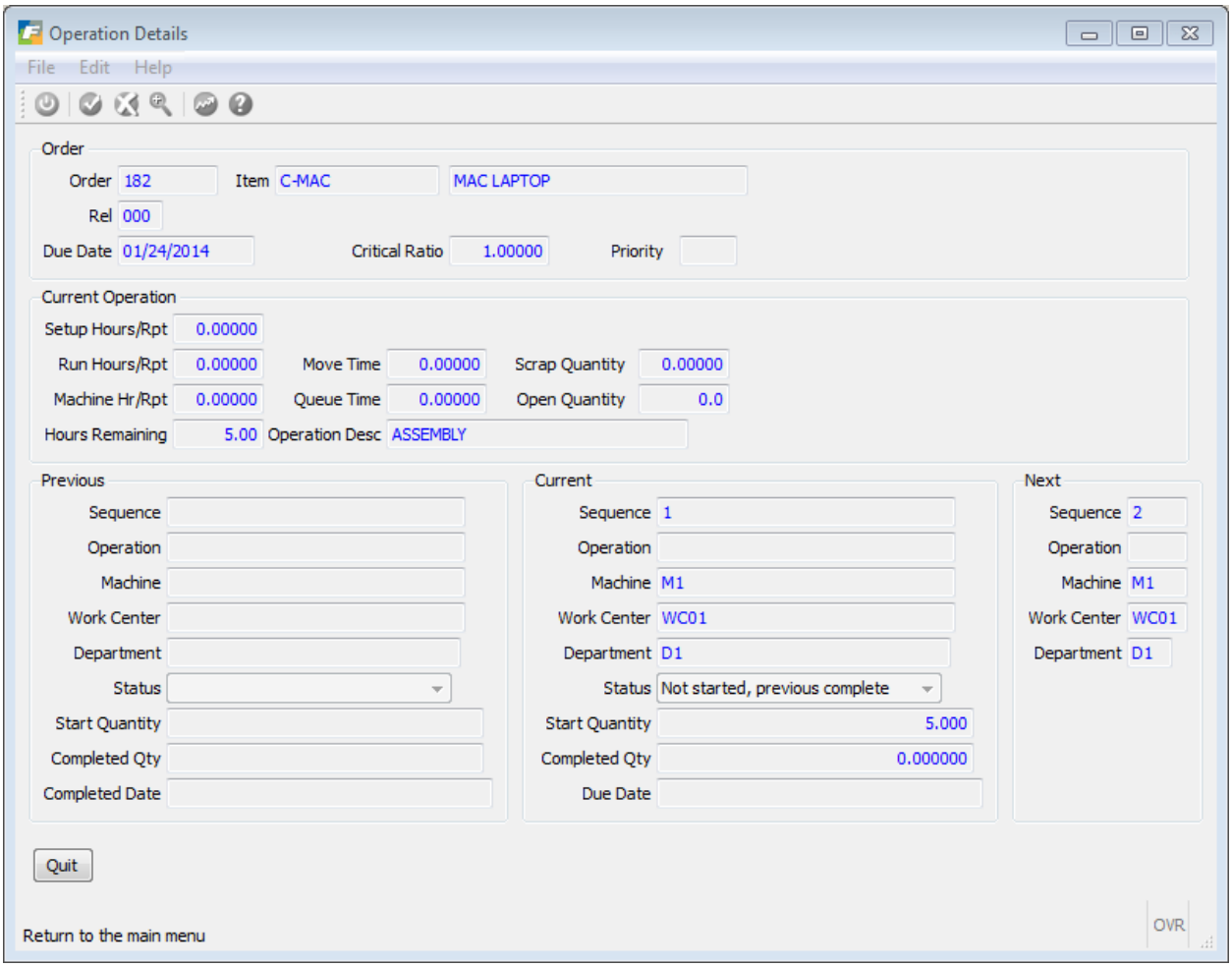
Critical Ratio – the calculated critical ratio for the order

Priority – the manual priority of the production order

To view the details for a labor step:

5. Click on the Details button to go to the detail section of the screen

6. Click the Details button. The following screen displays:



Reported Hours, Move and Queue Times, and completed quantities are displayed. Also included are references to the previous, and next, operations.

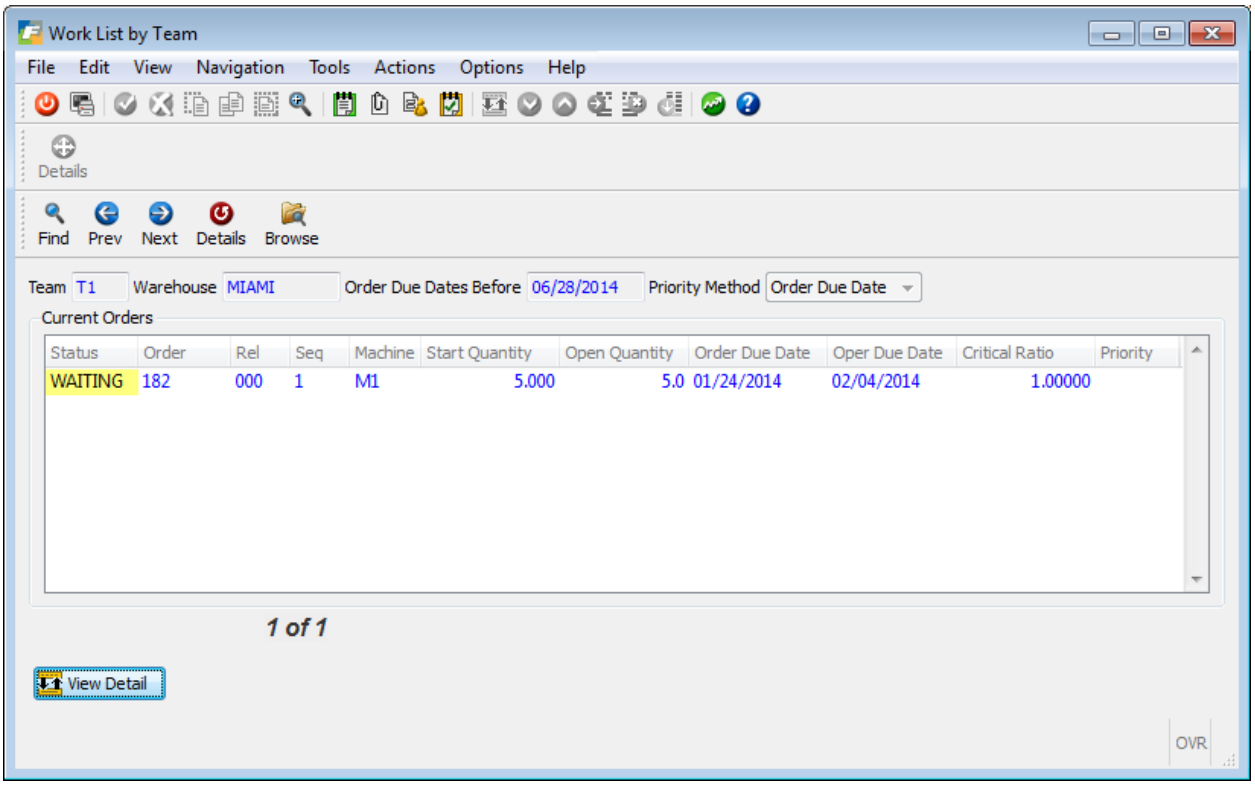
Work List by Team

Use this menu option to view a list of work to be performed by specific teams. The list is prioritized to show production order labor routing steps in 3 categories:

- Current – steps where some labor time has been reported
- Waiting – steps completed at the previous step, and ready to start at the current step
- Arriving – steps still in process at the previous step

Within each category, labor steps are sorted based on a user-enter priority, to provide flexibility in determining which order steps should be executed first, second, and so on.

The following screen displays:



Select the Find option and then enter:

Team – Enter the team you want to view

Warehouse – Enter the production facility you want to view

Order Due Dates Before – enter a date after which you do not want to view orders. This prevents unnecessary detail for orders due too far into the future to be of concern. The default date is the current system date, plus the schedule horizon defined in the Setup Production Scheduling.

Priority Method – Select one of the following choices:

Order Due - indicates that production orders will be prioritized by their due date.

Critical Ratio -indicates that production orders will be prioritized by the critical ratio calculation. The calculation is the hours remaining on the operation divided by the hours available. A ratio of 1 means the order is on time. A ratio less than one means the order is ahead of schedule. A ratio greater than 1 means the order is behind schedule.

Priority - indicates that production orders will be prioritized by the manual priority code on the order.

After you have selected the above values, click OK, and a list of labor steps will display for the work center. The columns are:

Status – one of the following values:

CURRENT – displayed in red. Either quantities or hours have been reported on this step, but it is not yet complete.

WAITING – displayed in yellow. The previous labor step has been completed, but no activity has been reported on the step at the current department

ARRIVING – displayed in green. The previous labor step is not yet completed.

Order – the production order

Rel (Release)– the production order release

Seq (Routing Sequence) – the labor routing step sequence

Machine

Start Quantity – the quantity this step originally started with

Open Quantity – the quantity still be completed

Order Due Date – the current due date for the whole order

Oper Due Date – the current due date for this labor step on the order

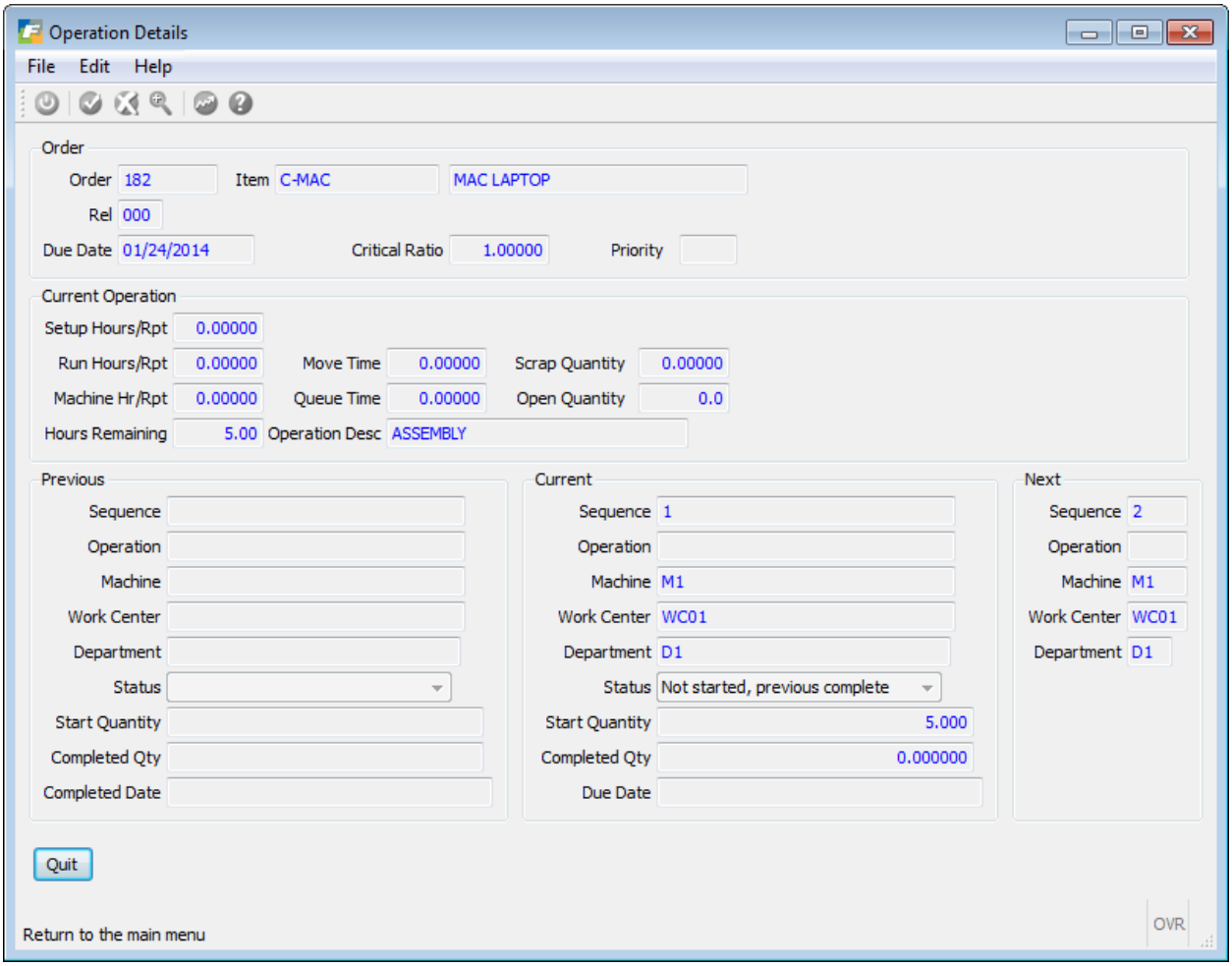
Critical Ratio – the calculated critical ratio for the order

Priority – the manual priority of the production order

To view the details for a labor step:

7. Click on the Details button to go to the detail section of the screen

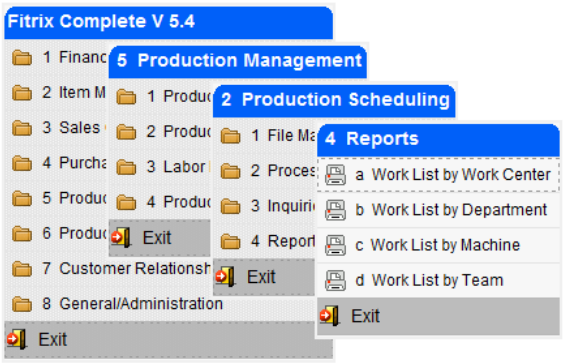
8. Click the Details button. The following screen displays:



Reported Hours, Move and Queue Times, and completed quantities are displayed. Also included are referenc es to the previous, and next, operations

Chapter 5

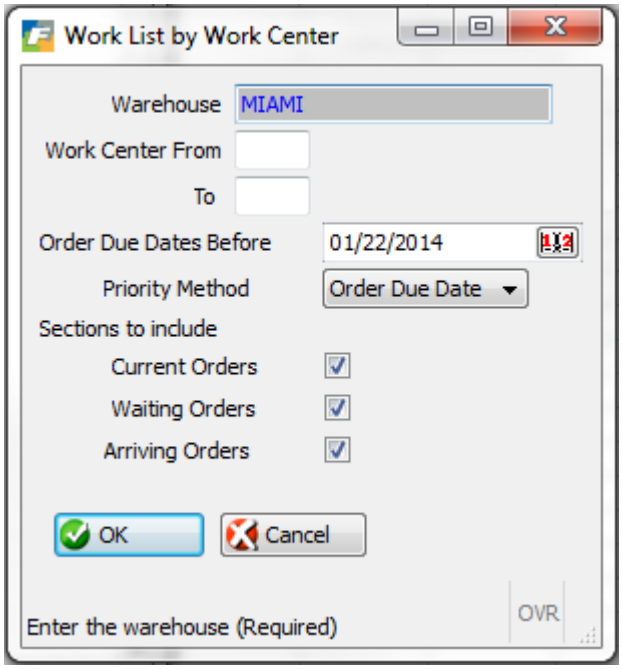
Reports



Work List Reports

Select this option to run reports that list outstanding work by work center, department, machine, or team. The report prompts and details have the same format. Each report allows you to select a range of work centers, departments, machines or teams.

The example here is for the Work List by Work Center. The following screen displays:



Warehouse

Enter the warehouse for which you want to print the work list.

Work Center From

Enter the identifier for the low end of the range of work centers that you want to include in this report.

Work Center To

Enter the identifier for the high end of the range of work centers that you want to include in this report.

Order Due Dates Before

Enter the latest date for orders you want to include in this report. The default is today's date.

Priority Method

Order Due Date - indicates the priority for this order is based on the order due date.

Critical Ratio - indicates the priority for this order is the critical ratio

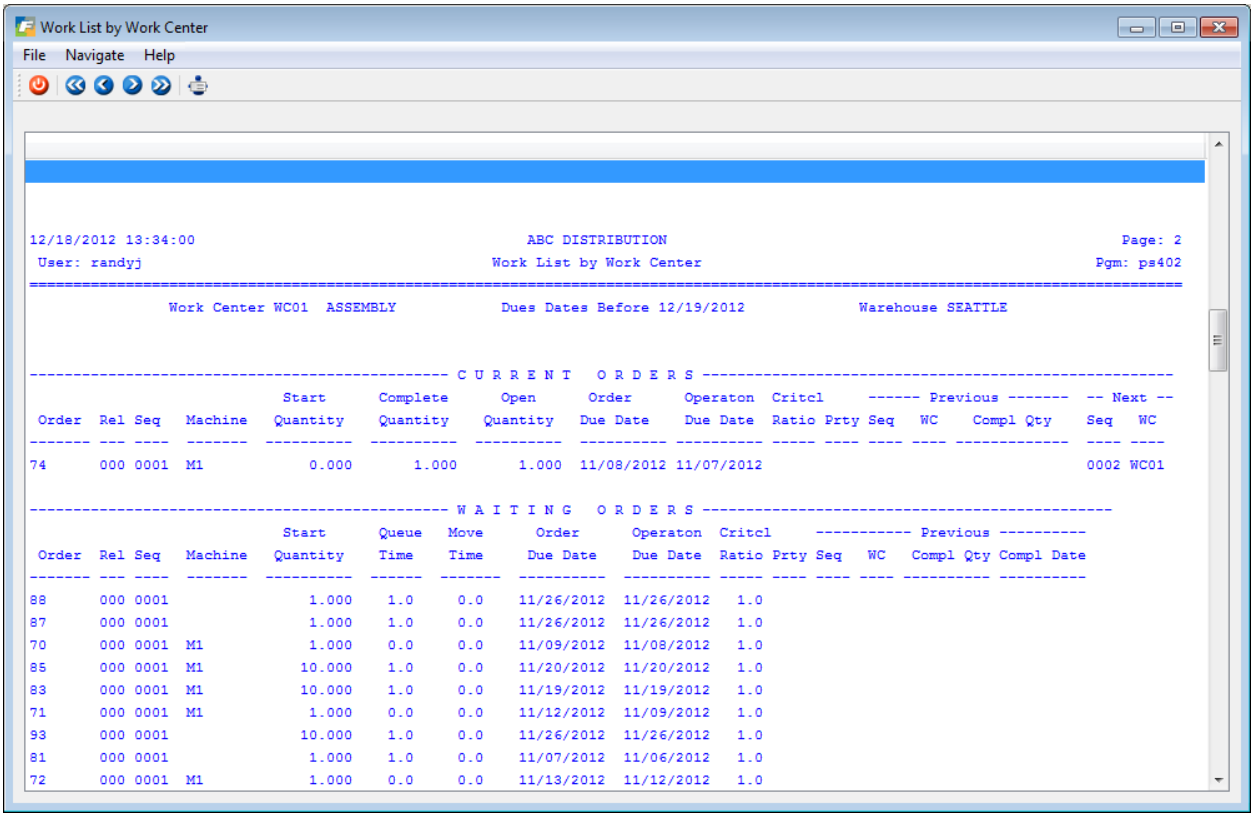
Manual Priority - indicates the priority for this order is based on the manual priority entered in the order.

Current Orders – check to include orders currently being worked. Uncheck to exclude

Waiting Orders – check to include orders waiting to start at the current labor step. Uncheck to exclude

Arriving Orders - check to include orders still in process at previous labor steps. Uncheck to exclude.

Here is a sample of the Work List by Work Center report. This report an also be run by Department, Machine, or Team.



12/18/2012 13:34:00 ABC DISTRIBUTION Page: 2
User: randyj Work List by Work Center Pgm: ps402

Work Center WC01 ASSEMBLY Dues Dates Before 12/19/2012 Warehouse SEATTLE

C U R R E N T O R D E R S

Order	Rel	Seq	Machine	Start Quantity	Complete Quantity	Open Quantity	Order Due Date	Operaton Due Date	Critcl Ratio	Prty	Previous Seq	Previous WC	Previous Compl Qty	Next Seq	Next WC
74	000	0001	M1	0.000	1.000	1.000	11/08/2012	11/07/2012						0002	WC01

W A I T I N G O R D E R S

Order	Rel	Seq	Machine	Start Quantity	Queue Time	Move Time	Order Due Date	Operaton Due Date	Critcl Ratio	Prty	Previous Seq	Previous WC	Previous Compl Qty	Previous Compl Date
88	000	0001		1.000	1.0	0.0	11/26/2012	11/26/2012	1.0					
87	000	0001		1.000	1.0	0.0	11/26/2012	11/26/2012	1.0					
70	000	0001	M1	1.000	0.0	0.0	11/09/2012	11/08/2012	1.0					
85	000	0001	M1	10.000	1.0	0.0	11/20/2012	11/20/2012	1.0					
83	000	0001	M1	10.000	1.0	0.0	11/19/2012	11/19/2012	1.0					
71	000	0001	M1	1.000	0.0	0.0	11/12/2012	11/09/2012	1.0					
93	000	0001		10.000	1.0	0.0	11/26/2012	11/26/2012	1.0					
81	000	0001		1.000	1.0	0.0	11/07/2012	11/06/2012	1.0					
72	000	0001	M1	1.000	0.0	0.0	11/13/2012	11/12/2012	1.0					

Index

A

alternates, 54, 57, 60, 63
Arriving Orders, 78

C

Capacity, 3, 4, 6, 7, 9, 10, 12, 16, 20, 25, 28, 30, 32, 34, 36, 37, 38, 39, 41, 47, 52, 53, 55, 56, 58, 59, 61, 62
Capacity Interval Code, 39
Capacity/Load by Department, 55
Capacity/Load by Machine, 58
Capacity/Load by Team, 61
Capacity/Load by Work Center, 52
Critical Ratio, 6, 8, 38, 39, 43, 44, 45, 65, 68, 71, 72, 74, 78
Current Orders, 78

D

Default Capacity in Hours, 37, 38
Department/Warehouse Maintenance, 18

F

Finite Scheduling, 6

I

Infinite Scheduling, 3, 6, 7, 8, 31, 33, 34, 36
Interval Code, 12, 13, 48, 52, 55, 58, 61

M

Machine/Warehouse Maintenance, 22
Manual Priority, 6, 8, 43, 44, 78
Multiple Resources per Routing Step, 6

O

Order Priority Method, 38
Order Status by Warehouse, 48

P

Period Intervals, 12
Priority Method, 65, 68, 71, 74, 78

R

Reschedule Production Orders, 41, 43

S

Setup Production Scheduling, 3, 4, 10, 12, 37, 44, 45, 48, 52, 55, 58, 61, 65, 67, 71, 74

T

Team/Warehouse Maintenance, 27, 30, 32, 34, 36
Time Period Intervals, 49, 53, 56, 59, 62

W

Waiting Orders, 78
Work Center/Warehouse Maintenance, 14
Work List by Department, 67
Work List by Machine, 70
Work List by Team, 73
Work List by Work Center, 64
Work List Reports, 77