

# Davison Maintenance User Manual



*Davison Software*  
*Davison Systems, LLC*

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# Davison Maintenance System

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See “Help Topics” in the software program for more, including:

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- Importing Data from handheld devices and other sources
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- ODBC Replication, Language setting

With each software update, the manual becomes out-of-date. Refer to “Help Topics” for updated documentation.

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# Tutorials

Following a tutorial may be the easiest method to learn this program. See "Tutorials - How to..." in "Help". Each tutorial was created using the data provided in the trial program. Common tasks are presented step-by-step.

## Getting Started

First enter some initial personnel and equipment data to the following menu items:  
Personnel, Crafts, Locations, Equipment, PM Groups, Part Groups, Stock Locations

There is no mandatory order in which to enter information. In most cases you can enter essential information when prompted from validation windows. However, it is less confusing to enter at least basic personnel and equipment information first.

See [How to Setup New Equipment](#)

## Corrective Maintenance

After some initial data is entered, you will probably want to start tracking corrective (unscheduled) work orders. Enter work orders from any of the following menu selections:

"Work Orders"  
"Work Orders" , "Requested"  
"Equipment", "Work Orders"

See [How to Add Work Orders](#)

See [How to Print Work Orders](#)

## Preventive Maintenance

Your next concern is usually Preventive Maintenance (PM).

Enter PM tasks from "PM Task Setup". After PM tasks are entered and PM group codes are assigned to components, you can print the "PM Due" report from Component PM. You will probably print PM Due once each week, but any interval is acceptable from daily to annual.

After personnel have completed the printed PM tasks, you must close PM tasks. To close PM tasks you must start at "Component PM".

On the next week (or interval of your choice) print the PM Due. Only PM tasks that are due at that time will print.

See [How to Setup Preventive Maintenance](#)

See [How to Print Scheduled Preventive Maintenance](#)

See [How to Close Completed Preventive Maintenance](#)

## Parts Inventory

Parts and tools are accounted from the "Parts" menu.

You can enter part group codes to each component. Assign the same part group code to each component with identical part requirements.

A group of parts can be assigned to each work order and subtracted from inventory when the work order is completed.

A group of parts can be assigned to each PM task and subtracted from inventory when the PM task is completed.

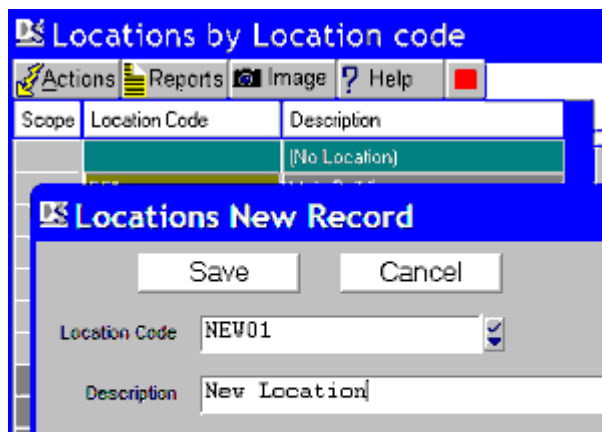
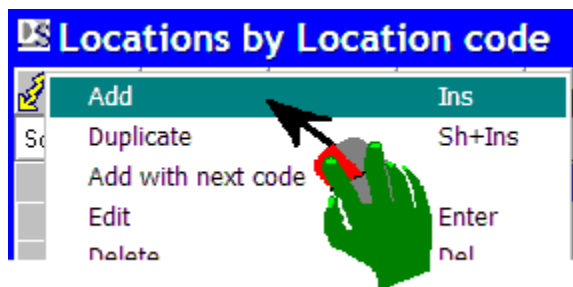
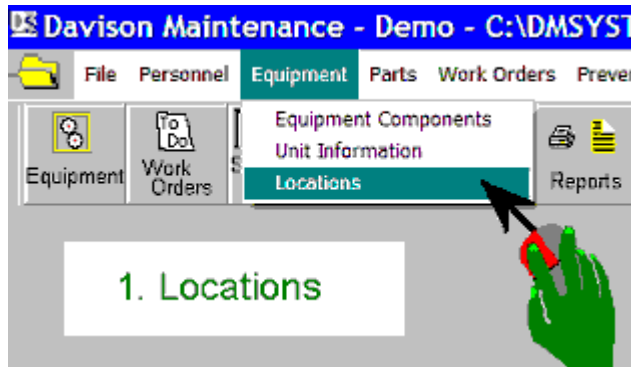
# How to Setup New Equipment

Your first equipment information may be entered as follows:

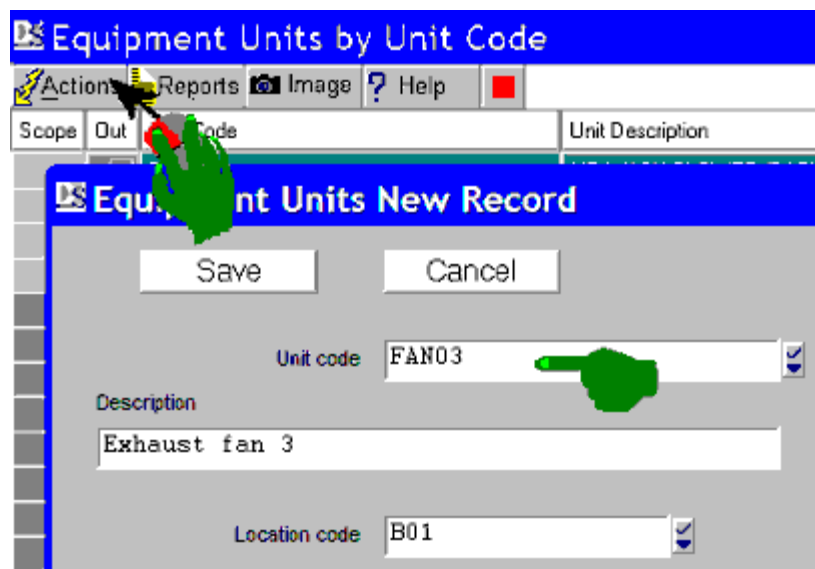
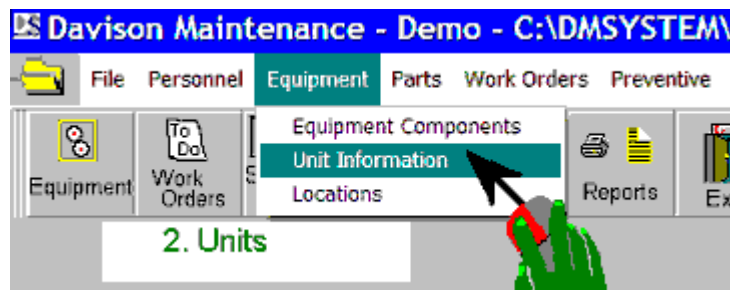
1. Locations
2. Units
3. Component Information

After basic equipment information is entered you may need to setup Preventive Maintenance tasks in the following menu items.

4. PM Groups
5. PM Task Setup



**Keep codes simple. Each location is an area that includes more than one equipment unit.**



Press Actions, Add, then enter new unit information. Each unit may include more than one equipment component. For example, a pump unit may include components of pump, controls, and motor. The unit code must be different than other units.

### 3. Components

Now that you have entered locations and units it is easier to enter equipment component information. Note that a new equipment component record was automatically added for each new unit. See [How to Add Equipment](#)


**Davison Maintenance - Demo - C:\DMSYSTEM\DATA**

File Personnel Equipment Parts Work Orders Preventive Help

Equipment Work Orders Scheduled PM Parts / Inventory Vendors & Purchase Orders

- Component Scheduled PM
- PM Task Setup
- PM Groups**
- Standard PM

4. PM Groups  
Enter PM Groups. Each PM Group represents a group of tasks at different frequencies. Each equipment component with identical preventive maintenance will have the same PM Group.



**PM Groups New Record**

Group Code: BLW02 Save

Description: Blower - Filtration

Standard PM Components

Driver: [dropdown]

Coupling: [dropdown]

You can just enter the PM Group code and description. Standard PM Components are not required.


**Davison Maintenance - Demo - C:\DMSYSTEM\DATA**

File Personnel Equipment Parts Work Orders Preventive Help

Equipment Work Orders Scheduled PM Parts / Inventory Vendors & Purchase Orders

- Component Scheduled PM
- PM Task Setup
- PM Groups**
- Standard PM

5. PM Task Setup



PM Tasks by Group + Craft + Freq. + Re...

Actions Reports Find Group Help

Scope	PM Group	Craft	Frequency	Interval
	AWB	MECH	30	
	AWB	MECH	180	

PM Tasks View Only

View Only Edit

PM Task Detail PM Task Description

PM Group:  Air Wash Blower

Craft:  Mechanical

Assigned To:

Frequency:  Frequency (30 Days) Reading Interval

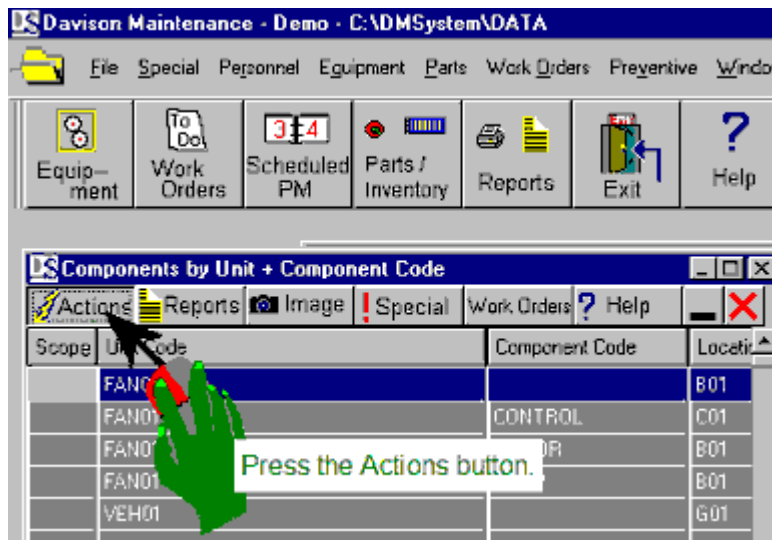
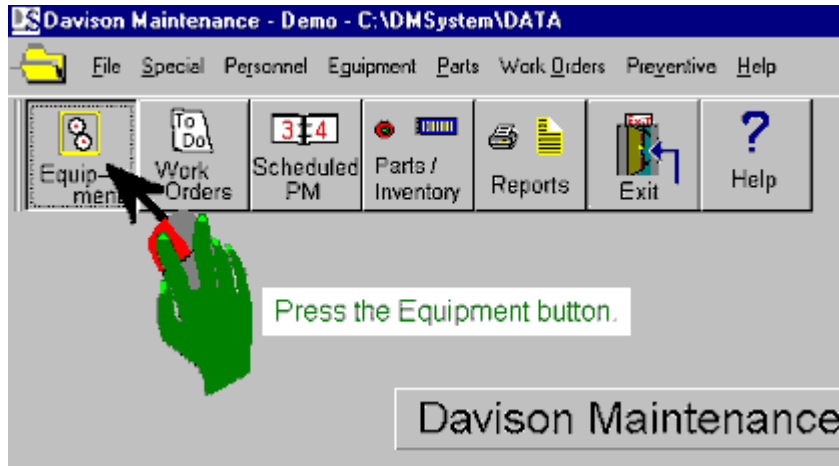
Condition-Directed Type:  Position:  Type of reading

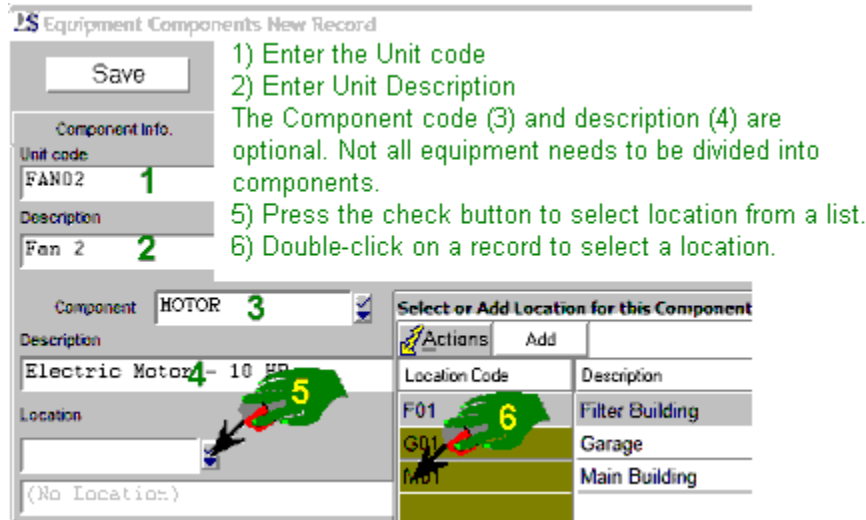
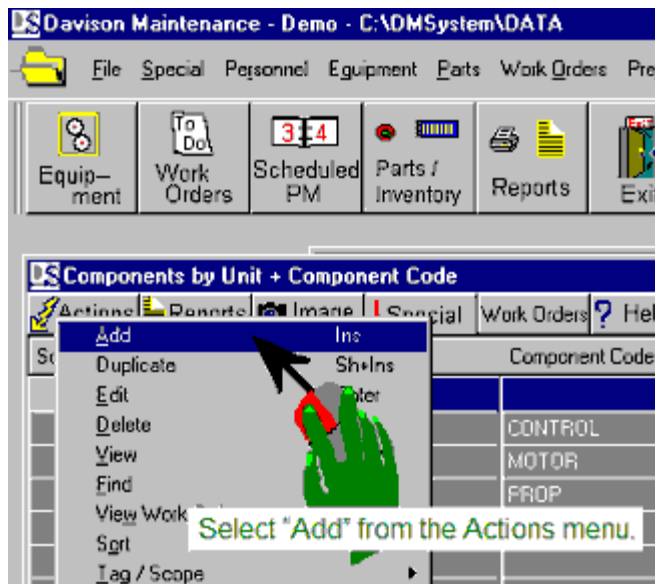
You can enter more than one record in a PM Group, one for each frequency. The Craft field is not required.

See [How to Setup Preventive Maintenance](#)

## How to Add Equipment

This tutorial shows how to add all equipment information from the Equipment Components window. You may wish to add Locations and Units separately before adding Equipment Component information. See [How to Setup New Equipment](#)





**Components New Record**

Save Cancel

Component Info. Notes and Nameplates Cost Info.

Unit FAN02

Component MOTOR

Electric Motor - 10

Location B01

Main Building

The location code was filled from the list (1). Press the "Note and Nameplates" tab (2).

**Components FAN02 /MOTOR**

Save Cancel

Component Info. Notes and Nameplates Cost Info. Preventive Maint.

Manf.: U.S. MOTORS

Frame: 445T-90A

Size:

Type/Ratio: TF-GMV / 31.8

RPM: 56 / 37

SERIAL NO.: J523806 56-00257-776

Enter nameplate information or other general notes about this component.

**Components New Record**

Save Cancel

Component Info. Notes and Nameplates **Cost info.**

Part Group   
(No part group)

Vendor   
Allied Electric

Purchase Date  Purchase Cost

Warranty Date

Press the "Cost Information" tab. All the fields in this window are optional. We entered a vendor for this component.

**Components New Record**

Save Cancel

Component Info. Notes and Nameplates Cost Info. **Preventive Maint.**

PM Group   
(No PM Group)

PM Start Date  Friday

PM Scheduling  Calendar Scheduling

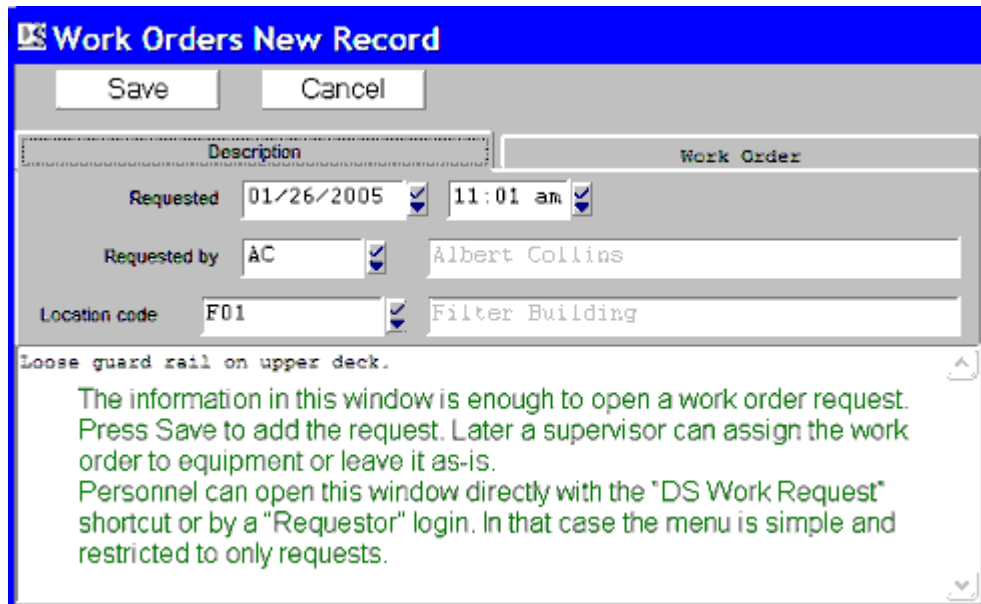
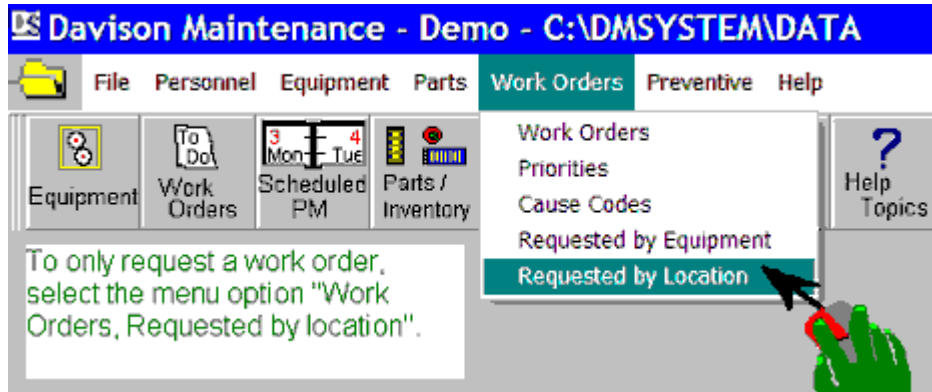
Reading  Type of R

1) Press the Preventive Maintenance tab. A date of one year prior to today's date, adjusted to the same day-of-week, is provided with a new record. The default "PM Scheduling" is "Calendar".  
2) Press the "Save" button. Any fields that do not pass validation will display a message or a list of valid codes.

All of the information in the previous window can also be entered in "Scheduled PM". See [How to Setup Preventive Maintenance](#) for details.

## How to Add Work Orders

Not all the information shown in this tutorial is required. You can add a work order with simply the equipment code or location and a work description. See [Requested Work Orders](#)



File Personnel Equipment Parts Work Orders Preventive W

Equipment Work Orders Scheduled PM Parts / Inventory Vendors & Purchase Orders Reports Exit

### Equipment Components by Unit + Component

Actions Parts Image Handheld Work Orders Parts Fin

Scope	Out	Unit Code	Component Code	Location	PM Group
	<input type="checkbox"/>	1111103		IP	1111
	<input type="checkbox"/>	1111103	MTR	IP	
	<input type="checkbox"/>	1111104		IP	
	<input type="checkbox"/>	1111104	MTR	IP	
	<input checked="" type="checkbox"/>	1111103		IP	
	<input checked="" type="checkbox"/>	1111103	MTR	IP	
	<input type="checkbox"/>	1111104		IP	
	<input type="checkbox"/>	1111104	MTR	IP	

From the Equipment window press "Add WO" in the Work Orders browser. The Work Orders browser shows the Corrective work orders by each equipment component and allows access to more options.

### Work Orders 111103 /MTR Corre

Actions Add Close Re-Open

Date	Craft	Status	Priority	Work Order Number	Descrip
05/22/2004		Re	3	0000000322	Clean i
09/09/2002	ELEC	Re	3	0000000303	Rewinc
02/04/2002	ELEC	Re	3	0000000277	Start b

### Davison Maintenance - Demo - C:\DMSYSTEM\

File Personnel Equipment Parts Work Orders Preventive H

Equipment Work Orders Scheduled PM Parts / Inventory Vendors & Purchase Orders Reports Exit

For adding or changing all details to a work order for any equipment, Press the Work Orders button.

**Davison Maintenance - Demo - C:\DMSYSTEM\DATA**

File Personnel Equipment Parts Work Orders Preventive Window Help

Equipment Work Orders Scheduled PM Parts / Inventory Vendors & Purchase Orders Reports Exit Help Topics

**Work Orders by Status + Priority + Date + Time**

Actions Reports Handheld Close Re-Open Hours Addl Cost

Scope	Work Order No	Status	Priority	Location	Unit Code	Unit C
	00000007	Waiting	Normal	001	BLW01	AIR W
	00000008	Waiting	Normal	001	FAN01	Exha
	00000009	Waiting	Normal	001	BLW01	AIR W
	00000010	Ready to	High priority	001	VEH01	Delive

Press the "Actions" button.

**Davison Maintenance - Demo - C:\DMSY**

File Personnel Equipment Parts Work Orders Pr

Equipment Work Orders Scheduled PM Parts / Inventory Vendors & Purchase Orders Rep

**Work Orders by Status + Priority + D**

Add Ins Re-Open

Sc Duplica location

Edit 01

Delete 01

View Ctrl+V 01

Select "Add".

## Work Orders New Record

Save Cancel Type: Corrective

Work Order	Description	Dates / Status	Personnel	Costs	Preventive
Number					
Unit					

### Select or Add Unit by Unit Code

Actions Add Unit Not found:

Unit Code	Description
BLW01	AIR WASH BLOW (AIR WASH BLOWER)
FAN01	Exhaust Fan
FAN02	Fan 2
FMP01	WASH WATER PUMP

- 1) Leave the work order number blank. When the work order is saved, a work order number will be assigned, one greater than the greatest work order number.
  - 2) Press the check button to select a unit from a list.
  - 3) Double-click on the unit for this work order.
- The Unit field is filled with the code that you selected from the list.

## Davison Maintenance - Demo - C:\DMSYSTEM\DATA

File Personnel Equipment Parts Work Orders Preventive Window Help

Work Orders  
Priorities  
Cause Codes  
Requested

Help Topics

The "Cause" for a work order is displayed in several reports.  
You can enter new cause codes from the "Work Orders" menu.

## Work Orders New Record

Save Cancel Type: Corrective

Work Order	Description	Dates / Status	Personnel	Costs	Preventive
	Replace chipped fan blades				

- 1) Press the "Description" tab.
- 2) Enter work order instructions.

**Work Orders New Record** [Min] [Max] [Close] Type: Corrective

Save Cancel

Work Order [Tab] Dates / Status Personnel Costs Preventive

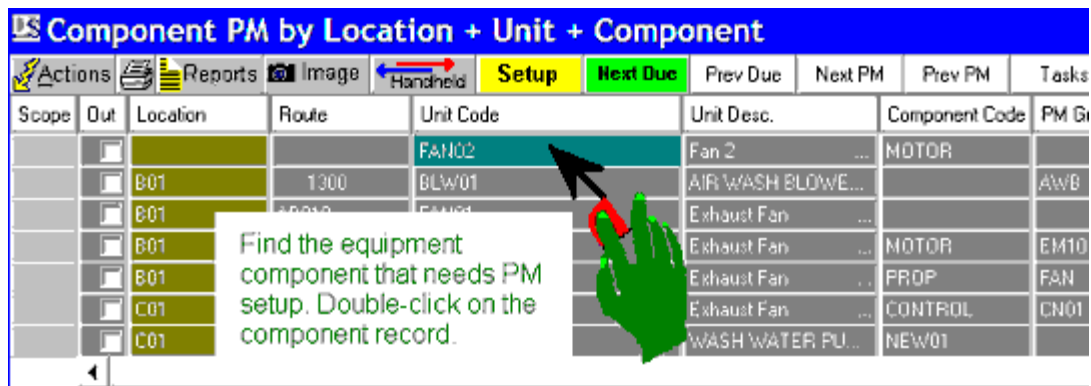
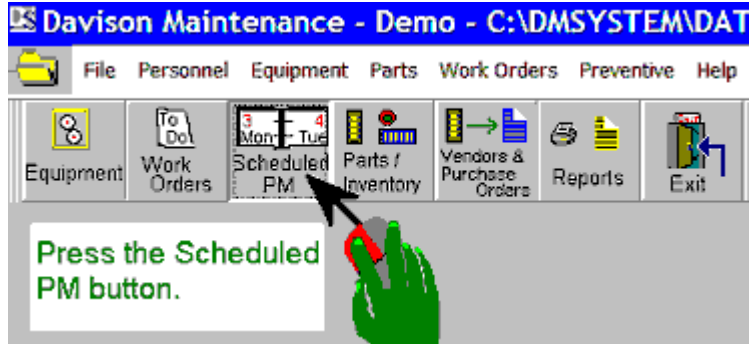
Requested 07/22/2012 07:50 am Scheduled / Completed

Status R Ready/Requested

Priority 3 Normal

- 1) Press the "Dates / Status" tab.
- 2) If you enter a Completed Date, the status is changed to "Completed".
- 3) Status is W, R, P, H, D, or C for Working, Ready/Requested, Project, Hold, Declined, or Completed.
- 4) Press "Save" to save all information for this work order. If all fields are valid, the work order will be saved with no extra messages.

# How to Setup Preventive Maintenance



**Component PM by Location + Unit + Component**

Actions Reports Image Handheld Setup Next Due Prev Due

Scope	Out	Location	Route	Unit Code	Unit Desc.
		B01		FAN02	Fan 2
		C01	1000	FAN01	Exhaust Fa

**Component PM FAN02 /MOTOR**

1) Press the check button.  
2) Double-click on the PM Group for this component.

Unit: FAN02  
Component: MOTOR  
PM Group: (No PM Group)

**Select or Add PM Group for this Component by PM Group Code**

PM Group	Description
(No PM Group)	(No PM Group)
AWB	Air Wash Blower
CMS100R	Motor - AC
CMS127R	Pump - Centrifugal
CND1	Control and thermostat
EM10	Electric Motors - 10 HP
FAN	Fan (propeller) and vari-pitch p...
HCP	WASH WATER PUMP

**Component PM FAN02 /MOTOR**

Save Cancel

Location: D01  
Unit: FAN02  
Component: MOTOR  
PM Group: EM10  
Route:   
PM Start Date: 07/18/2003 Friday  
Reading: 0.00  
Type of reading: C Calendar Scheduling

1) The PM Group field is filled with the PM Group that you selected.  
2) You may want to select "Time Scheduling".  
3) Press "Save".

1  
2  
3

C Calendar Scheduling  
C Calendar Scheduling  
T Time Scheduling

For an explanation of "Calendar" and "Time" Scheduling see [PM Scheduling Methods](#). The PM Start Date is the beginning date of PM scheduling for a component. Calendar PM scheduling is calculated from this date. It is not changed unless calendar PM scheduling for the component needs shifting to other weeks.

PM Tasks for FAN02			/MOTOR	Due to 07/25
	Close Due PM if on Due column or Edit task	Enter	<b>Due 07/25/2</b>	
D	Re-Open the latest closed PM work order for this task		Days	Int
	Close All Due PM for this Component	F7	...	30
	Re-Open PM work orders closed on current close date		...	30
	Re-Open ALL closed PM work orders for this component		...	180
	PM Work Orders	F9		
	Add a PM Work Order for this task - Ready Status	F10		
	Find	Ctrl+F		
	Filter PM Tasks (Slow)			
	<b>Edit or add task for PM Group</b>		<b>Add</b>	
	Go To PM Task Setup		<b>Edit</b>	
	Close	Ctrl+F4	<b>Delete</b>	

Note that the PM tasks now display for this component. To change a PM task for this component ( and all other components in the same PM Group), select "Actions | Edit or Add task for PM Group".

To only change the PM Task for this group, select "Edit" or double-click on the task record.

**Davison Maintenance - Demo - C:\DMSYSTEM\DATA**

File Personnel Equipment Parts Work Orders Preventive Help

Equipment Work Orders Scheduled PM Parts / Inventory Vendors & Purchase Orders

Component Scheduled PM  
**PM Task Setup**  
 PM Groups  
 Standard PM

The same PM Tasks window can also be opened from the Preventive menu.

**PM Tasks by Group + Craft + Freq. + Re...** [Min] [Max] [Close]

Actions Reports Find Group Help

Scope	PM Group	Craft	Frequency	Interval
	EM10	ELEC	30	
	EM10	MECH	30	
	EM10	MECH	30	

---

**PM Tasks View Only** [View Only] [Edit]

PM Task Detail | PM Task Description

PM Group:  Electric Motors - 10 HP

Craft:  Electrical

Assigned To:  (No Personnel ID)

Frequency:  Frequency (30 Days) [v] Reading Interval:

Type of reading:

(Day)  /  through

Part Group:  (No part group)

0.00

*You can create tasks for a new PM group before assigning the PM Group to equipment.  
NOTE: The tasks in a PM Group apply to all components with the same PM Group code.*

## How to Print Scheduled Preventive Maintenance

**Davison Maintenance - Demo - C:\DMSYSTEMS**

File Personnel Equipment Parts Work Orders Preventive Maintenance

1

2

For the easiest command to print PM:  
 1) Press "Reports"  
 2) Select "Due Preventive Maintenance"  
 This is for simple scheduling with no preferences.

Equipment  
 Work Orders  
 Preventive Maintenance  
 Part Information

All PM Reports - Setup  
 Due Preventive Maintenance

**PM Printing and Scheduling Options**

OK Help

Select Crafts

PM tasks Due (open) this Date. Blank = today 02/26/2001

1

2

1) Enter the ending date for next week's scheduled PM.  
 2) Press the "OK" button.

Print Calendar tasks due only this week  
 Include Daily and Weekly Tasks  
 Print Due Readings from Predict  
 Print components with due PM.  
 Add space for comments at end  
 Page break at each equipment u

Page breaks with change of "Location" code at position

**Report Component PM by Location + Unit + Component**

Actions Reports Image Filter Find Handheld Setup Due PM

Scope	Out	Location	Route	Unit Code	Unit Desc.	Component C
▼	<input type="checkbox"/>	B01	1300	BLW01	AIR WASH BLOWE...	
●	<input type="checkbox"/>	B01	AB010	FAN01	Exhaust Fan ...	
●	<input type="checkbox"/>	B01	AB020	FAN01	Exhaust Fan ...	
●	<input type="checkbox"/>	B01	AB030	FAN01	Exhaust Fan ...	
▲	<input type="checkbox"/>	B01		FAN02	Fan 2 ...	MOTU
	<input type="checkbox"/>	C01	1030	FAN01	Exhaust F...	CONTR
	<input type="checkbox"/>	F01	1200			
	<input type="checkbox"/>	F01		PMP01	WASH WATER PU...	CTRL
	<input type="checkbox"/>	F01	AB040	PMP01	WASH WATER PU...	MTR

After setting your preferences, press "Due PM"

Rpt\_eqpm.rnw - R&R Xbase

PM Due on 02/06/2001 14:10

### Preventive Maintenance Due

PM Due on 02/06/2001 for All Crafts by Location

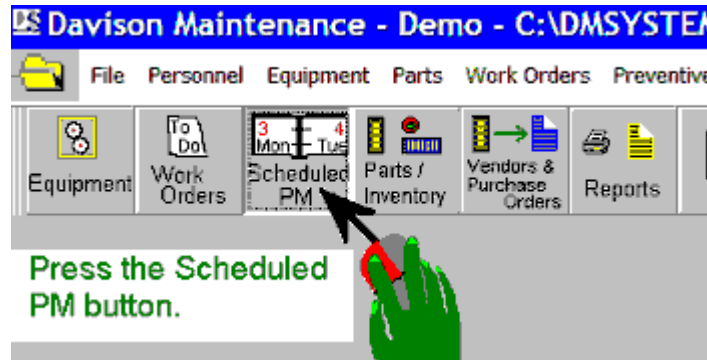
Location	Craft	Unit - Component
B01		Main Building
FAN01		Exhaust Fan
MOTOR		Electric Motor - 10 HP
ELEC		Electrical
		Days: 30
		Done: ___/___/___ Actual Hours: ___
Task Description:		
Test thermostat switch for Hi/Lo cutoff.		
MECH		Mechanical
		Days: 30
		Done: ___/___/___ Actual Hours: ___

Page: 1 NUM

# How to Close Completed Preventive Maintenance

For more detail see [Closing PM Tasks](#)

**This procedure is unnecessary if you use a PDA handheld for Preventive Maintenance.**



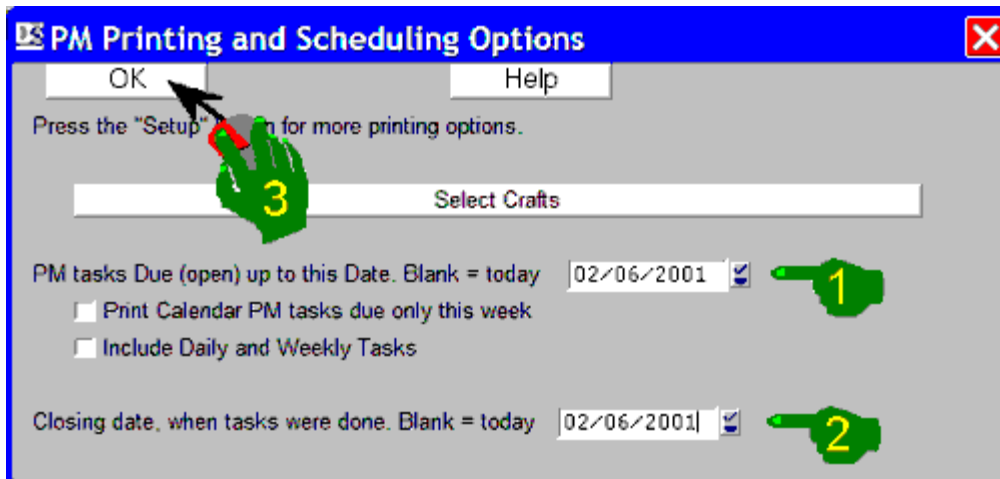
Printed: 02/11/2001 16:35

Preventive Maintenance Due  
PM Due on 02/06/2001 for All Crafts by Location

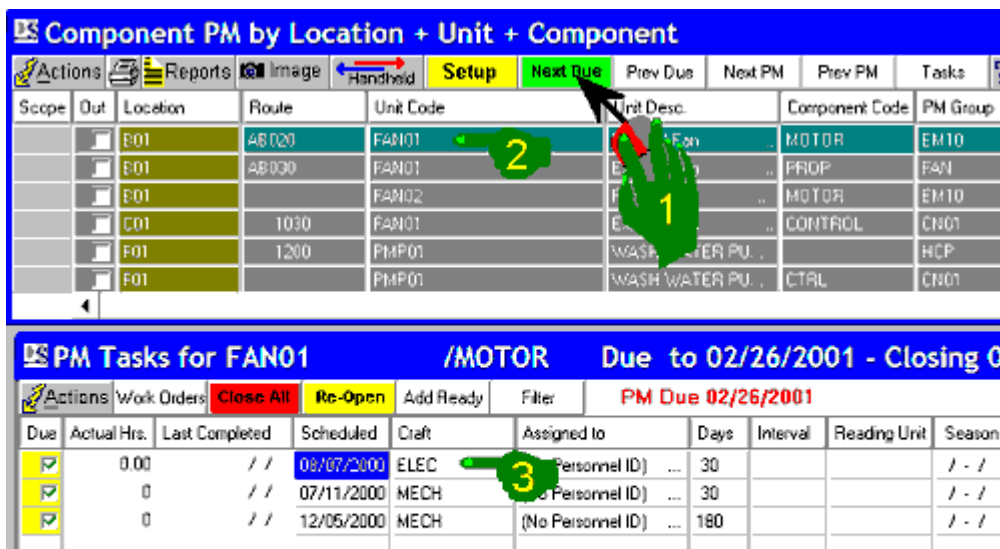
Location Craft Unit - Component

B01		Mai	<b>Note the heading on the printed PM tasks.</b>
FAN01		Exha	<b>1) See the date that the PM was due and the crafts.</b>
MOTOR		E	
ELEC		Ele	
		C	

Task Description:  
Test thermostat switch for  
MFCH Me



- 1) Enter the PM Due date, same as the printed PM.
- 2) Enter default closing date. This is the date that personnel completed PM tasks.
- 3) Press the "OK" button.



- The title for PM tasks indicates the current PM printing and scheduling options.
- 1) Press the "Next Due" button.
  - 2) The first component found should be the same as the PM printout.
  - 3) PM tasks are the same as the printout if the PM tasks are due.

Component PM by Location + Unit + Component						
Scope	Out	Location	Route	Unit Code	Unit Desc.	Component
	<input type="checkbox"/>	B01	AB020	FAN01	Must Fan ...	MOTOR
	<input type="checkbox"/>	B01	AB030	FAN01	Fan ...	PROP
	<input type="checkbox"/>	B01		FAN02	Fan ...	MOTOR
	<input type="checkbox"/>	C01	1030	FAN01	Fan ...	CONTR
	<input type="checkbox"/>	F01	1200	PMP01	WASH WATER PU...	
	<input type="checkbox"/>	F01		PMP01	WASH WATER PU...	CTRL

PM Tasks for FAN01 /MOTOR Due to 02/26/2001						
Due	Actual Hrs.	Last Completed	Scheduled	Craft	Assigned to	Days
<input type="checkbox"/>	0.00	02/26/2001	02/26/2001	ELEC	(No Personnel ID) ...	30
<input type="checkbox"/>		02/26/2001	02/26/2001	MECH	(No Personnel ID) ...	30
<input type="checkbox"/>		02/26/2001	02/26/2001	MECH	(No Personnel ID) ...	180

- 1) If all PM tasks for this equipment component are completed, press "Close All".
- 2) Note that the PM tasks are no longer due. They will not become due again until the frequency (days or interval) for each task has past.
- 3) Press "Next Due" to move to the next component, same as the PM printout.



# Crafts

A craft is a line of skilled work. For example, electrical, mechanical, instrumentation, carpentry, or operations are crafts in this system. Work is often delegated by craft. Preventive maintenance tasks are printed by location and craft.

Keep the number of crafts in this system to a minimum. The crafts that you enter into this system may not equate to work groups in your organization. Enter crafts as you want to divide both corrective and preventive tasks. Usually there are fewer crafts in this system than work groups in your organization. For example, tasks for Mechanical craft might be performed by personnel from a variety of job descriptions.

Hourly Cost: The hourly cost entered here is used in work orders as a default when no actual hours are entered for each person. See [Personnel Hour Cost](#).

## Contracted Services as Crafts

Add contracted services as a craft. Usually a contractor craft is not included in preventive maintenance (PM) tasks. You may wish to precede the code for a contract craft with tilde "~" to keep contractor crafts separated from crafts within your organization at the end of the craft list, for example, "~MECH" as "Mechanical Contractors". See [How to account Contractor costs](#).

## Crafts Separated to Shifts

Shifts (for example 1st Shift: 8 am to 4 PM, 2nd Shift: 4 PM to 12 am) can be managed as Crafts in this system. When separated to shifts, Crafts can be coded like 1STMECH, 2NDMECH, 1STELEC, 2NDELEC to separate and sort work orders by shift.

Craft for shutdown periods can separate Preventive Maintenance tasks, like DOWN-ELEC, DOWN-MECH. This allows easy separation of PM tasks by craft for shut-down periods.

# Personnel

Add personnel initials or ID codes in this screen. The initials or codes you enter here are used for validation in other screens. Add a blank code if you wish to allow blank initials in other screens such as the work order input screen.

Hourly Cost: Enter the hourly cost to multiply hour costs in work orders. See [Personnel Hour Cost](#). Hourly cost is intended as the total expense for an employee, not just their personal pay rate.

Email address is used for emailing work orders or reports. When you select a person this email address is put in the "Send to" email address.

- **Productivity Report**

Available hours for each person are compared to actual hours in work orders for the same person.

You are prompted for beginning and ending dates. Available hours within these dates for each person must be entered in "Personnel", "Hours Available".

For best accounting of Productivity, enter all personnel hours to the "Hours" related browser in Work Orders. Press "Hours". Otherwise, actual hours entered to the work order Actual Hours field are added to the Productivity Report assuming hours are performed by the Assigned person for the work order.

# Available Hours


Available hours are the hours available for performing work. Actual hours are accounted in completed work orders. Available hours and Actual hours are compared in the Productivity report.

Enter Available hours for each personnel. You may enter the date as the ending date of an employee time period or daily time. The Productivity report sums the Available hours for a date range.

See [Personnel Information](#) about the Productivity Report.

# Equipment Components

See [Reports for Equipment Components](#)

The Work Orders browser provides a simple Add/Edit of Corrective work orders for each equipment component. To enter more details for a work order, select "Go to this work order" from the  menu in the Work Orders browser. This jumps to where you can enter parts, personnel hours, and other details for the same work order.

To add new equipment component information, see [How to Add Equipment](#).

Each unit can be divided into component parts. Components can be removed from the unit or shared with other units and usually have maintenance requirements similar to the same components of other units.

When a new unit is entered, a Component record with a blank component code (unit code + blank component code) is created for the new unit.

Handheld Tip: When entering equipment by handheld, the most simple entry is "Component Description" with no unit code. With this minimum entry the CMMS will create a sequential, numeric unit code and use the Component Description for Unit Description. Otherwise enter a unit in the unit popup for new equipment.

**WARNING:** Deleting a component deletes all the work orders related to the component (unit + component code).

When either a component code, unit code, or both are changed, work orders with the same component and unit code are also changed automatically.

## Fields in the Data Window for Components

- Unit

If the code you enter is not in the Unit database a table of valid units displays, except when adding new equipment the unit description field is enabled and the new unit is added to the unit table in the background.

- Component

Each unit and component code combination must be unique. The component code can be used for classification of equipment, when classification is different from PM Group. Several windows sort on component code for grouping equipment by component.

- Size

This field is intended for values like 100 HP, 300 GPM, 150 cfm, or any value followed by a unit term. For example, to list only equipment greater than or equal to 50 HP:

- Enter the HP to equipment like "50 HP", or "100 HP". You must enter "HP" after the number separated by a space.
- Select Actions, Search or Filter, Size.
- Enter ">= 50 HP".
- Check "Tag each record" then press Search.

Only equipment with size >= 50 HP will be tagged. You can then run a report with only the tagged equipment.

- **Priority:** If priority is filled, work orders added from Equipment will default to this priority. You can also print preventive maintenance by priority.

- **Location for component**

The location of the unit is placed in this field by default. You can enter another valid location.

- **Parts Group**

Enter a valid parts group.

- **PM Group**

Enter a valid Preventive Maintenance (PM) group code. If the code you enter is not in the PM group database, a table of valid codes will display.

- **PM Start Date**

The PM Start Date is the beginning date of PM scheduling for the component. Calendar PM scheduling is calculated from this date. For example, a PM Start Date of 02/01/1999 will result in a 1YR (One Year) scheduled PM task on about 02/01 of each following year and a 180 day scheduled PM task on about 02/01 and 08/01 each year. The PM Start Date does not need to change each year; it can be changed to another date to change PM scheduling for a component. See [PM Start Date](#) in Component PM.

- **Route**

Route codes are used mostly for preventive maintenance routes. You can print PM tasks by route code for a more specific route than is possible by Location Code. The "Component PM" (Scheduled PM) browser contains menu commands for creating route codes for many records.

- **Reading**

The current highest reading (miles, hours, or other) for this component. This reading field is updated from new work orders. The type of reading may be miles, hours, gallons, or other. This field is used for preventive maintenance tasks that are scheduled by a reading

- **Unit is Out of Service**

The "Out" column indicates the unit is out of service (OOS). Components within a unit are not separately tagged OOS. When the unit is OOS, all components of the unit are assumed to be OOS.

You can check the "Out" column to mark the Unit OOS without entering OOS date and time. In that case the Out column may not agree with the OOS dates that are related to the unit. To enter date and time press the "Out" button or the "Out of Service date" button in the Component info tab, which will change the latest record for Out of Service for the Unit.

If you enter an OOS beginning date, but leave the ending date empty, the "Out" column is marked.

If you enter a beginning date later than the latest ending date, a new record is added.

If you enter a beginning date and time earlier than the latest ending date and time, the latest OOS record is changed, but if a previous OOS record exists, the beginning date and time must be later than the previous ending date.

See [Out of Service](#) for Equipment Units. In the Units window you can change the OOS date and time for many units, review past OOS dates and times, or run the OOS Work Summary report.

- Direct or Energy Cost

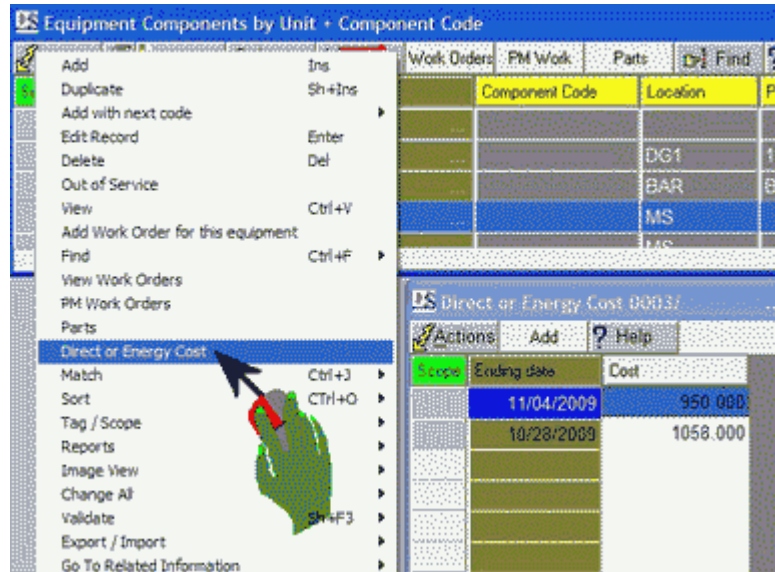
A direct cost is usually energy like fuel or electrical power costs. Direct costs are only summarized in the Equipment Costs report. It is usually the cost of energy consumed by the equipment and separate from the Parts Inventory or work order "additional costs".

You can enter many Direct Cost records for each equipment component. Data is entered as the cost and ending date of the cost. The Equipment Costs report will include costs with an ending date within the date range selected for the report.

Direct energy costs might be calculated independently from electric meter readings or from amperage readings related to power costs. The method of obtaining direct costs can vary among facilities.

Optionally, you might enter direct costs to an equipment record that is reserved to represent a summary of all equipment in a location or process.

The import command in the Actions menu allows importing cost information from another system. Davison Software can provide a special import of direct costs.



- Notes and Nameplates

The "Notes" field is for miscellaneous comments about this component. Nameplate information specific to this component can be entered in the Notes. Do NOT use this field for work completed on the component. Instead make work orders for the component.

You can make various nameplate templates with any text editor with no formatting characters like Windows NotePad. Paste the template from the Windows clipboard to a note field.

#### Data Entry Forms in Equipment Notes

See [Fields within a Multi-line Note](#)

- Schedule Type

Schedule Type is "T" or "C" for Time or Calendar. The default entry is "C" (Calendar). See [Preventive Maintenance Tasks](#) for more about Schedule Type.

- Vendor code:

The vendor code relates the component to the Vendor database.

- Purchase date: Date that the component was purchased.

- Purchase cost: Initial cost of component.

- Warranty date:

The date the component's warranty is expired. When work orders are entered for the component, the warranty date is checked. The warranty date will display on the work order if the work order scheduled date is earlier than the warranty date.

# Reports for Equipment Components

- **Equipment Readings**

The Equipment Readings report prints only components where the reading or the type of reading is not empty. The previous reading from the component record is printed. A blank field is provided for writing new readings. Usually it is best to print this report sorted by Location.

- **Equipment Summary Report**

The Equipment Summary Report combines Work Order, Preventive, and Parts information for each component.

- **Equipment Costs**

Lists maintenance costs with the purchase cost of the equipment.

- **Work Summary report**

The Work Summary report prints a summary of scheduled and completed work for both corrective and preventive maintenance for equipment by craft.

You can process this report for a range of equipment by selecting a scope or tagging equipment. Select the crafts that should be processed for the report and the date range for the report.

The Work Summary report is divided into three sections:

- Corrective Type Work Orders
- Scheduled Preventive Maintenance
- Completed Preventive Maintenance

## Corrective Type Work Orders

The count and actual hours are tabulated for each work order status (Working, Ready, Hold, and Completed). Estimated Hours, Man-hour cost, and Material cost are totaled for all crafts.

## Scheduled Preventive Maintenance

The first two columns are count and estimated hours for all scheduled PM to the date indicated. The following columns tabulate count and hours for the portion of the scheduled PM that is overdue. Overdue counts are calculated from the difference between the scheduled date for each component's PM task and the date indicated.

## Completed Preventive Maintenance

This is a tabulation of Preventive type work orders that were completed during the dates indicated. Overdue counts show how many of these work orders were overdue when they were completed. Overdue counts are calculated from the difference between the "Completed" and "Scheduled" dates on each work order.

# Unit Information

A Unit is a complete machine or other equipment entity such as part of a building or a vehicle. A unit can be divided into component parts, like Driver and Driven, for example, an electric motor and a fan are separate components of the fan unit.

## Out of Service

A unit is usually Out of Service (OOS) when it needs repair or does not need to operate. When repair is needed, OOS causes production down time and is not a scheduled shut-down period. Preventive maintenance tasks will not schedule when a unit is OOS. The Out of Service report summarizes down time from each period when equipment units were OOS.

Units may go in and out of service, so each unit relates to the OOS table of beginning and ending dates and times. The Out of service checkmark is loosely related to the OOS table. You can check a unit as out of service without adding records to the OOS table. When you add or edit the latest record in the OOS table, the OOS checkmark is changed. The Out column is checked if the OOS ending date is empty.

The "Change All..." command prompts for changing OOS dates and times in many units. See Actions, Change All, Out of Service. Beginning or ending date is changed according to the same rules when entering dates and times for each unit. This utility stops when a beginning or ending date and time does not agree with a rule.

### Out of Service Work Summary

Work orders opened and completed within the OOS period are summarized for the costs listed in the OOS report. Preventive Maintenance work orders completed during a shut-down period are not included in the costs of the OOS report. Work orders opened to fix OOS conditions should have a Requested date and time the same or later than the OOS beginning date and time, and a completed work order date and time earlier or the same as the OOS ending. For a complete account of costs, run the OOS Work Summary report after OOS ending dates and times are entered and work orders for the OOS are closed.

The OOS report shows the time equipment was OOS in days, hours, and minutes. If work order cost is included, the time required to complete the work order (Requested to Completed) is shown as "Completed" days, hours, and minutes. The time between work order completion and OOS ending (in service) is shown as "Completed to End".

In the Equipment Components window you can add work orders for OOS and enter OOS date and time. See [Unit is Out of Service](#).

### NOTE:

- When a new unit is entered, a Component record with a blank component code is created for the new unit.
- When you enter a location code, all component records with a blank location code are changed to the new location code.

### WARNING:

- Deleting a unit deletes all the information related to the unit, including components, and work orders.
- When a unit code is changed, components and work orders with the same unit code are also changed automatically.

# Locations

Locations indicate where the unit or component is installed. Units or components can be sorted by location.

If a location is changed here, the same location code is changed in Unit and Component data. Locations deleted here will not delete information elsewhere.


The location code represents an area in a facility, but it can also begin or end with a number representing the order in a route. You can begin the location code with "01...", "02..." to order the locations according to a route.

## Location, Unit, and Component Codes

Location and Unit codes should not be identical. A unit can move to another location and keep the same unit code. Locations are not part of a parent-child relationship (like equipment to equipment components), but Units to Components are a parent-child relationship.

# Work Orders

See [Reports for Work Orders](#)

To add new work order information, press  then select "Add".

See [How to Add Work Orders](#)

See [How to Print Work Orders](#)

## Grouping Work Orders

To find groups of work orders like Active or Closed, select a group from Actions >> Group Work Orders ... A scope of work orders is marked. For example, the "Active Work Orders" group will mark all corrective work orders where status is Working, Ready, or Project.

## Work Order Number:

Each work order number must be unique. The Work Order Number is actually a code that can contain letters and numbers.

To find a work order with no leading zeros, press <space> once, then the work order code.

## Automatic Work Order Numbering

The following actions apply when saving a work order number:

- An empty work order number is filled with the next greater work order number.
- If beginning with a letter, spaces after the letter are filled with the next greater number. For example "A" would be changed to "A000000002" if a work order number "A000000001" already exists.
- If beginning with a digit or a space the remaining code is right-justified. For example "123 " is changed to " 123" and " AA " is changed to " AA".

Leave the work order number blank for automatic numbering. The program finds the highest work order number (not preceded by a letter, like 0000000998), then creates a number that is one greater (like 0000000999). You can find the greatest work order number by searching the colon character (:). Select Actions, Find, then enter ":".

Sometimes work order numbers that have been manually entered cause the automatic numbering to create a different number than expected. To correct this, find the work order number and insert leading zeros or correct it so that it is only one greater than the previous work order number. To correct many work order numbers, select "Actions, Create codes – WO Number".

Numbers are incremented after leading letters in a work order code. For example, if you enter "AB" the work order number is incremented to one greater than the highest work order number that begins with "AB". Override automatic numbering by entering an entire code with no trailing spaces.

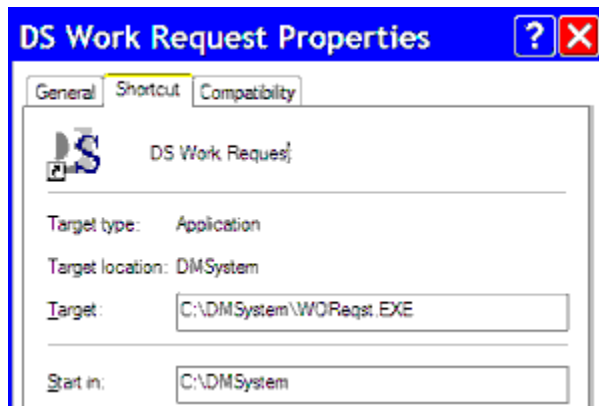
To see what the program will create for the next work order number, add a new work order (Actions, Add), then click the check button. The automatic work order number will appear. You can Cancel the work order.

## Requested Work Orders

People who only need to request work orders use the "Requested" window. Select the menu option "Work Orders, Requested" (1).

Users can be limited to the "Requested" work order window at login. A Requestor is provided with a user level of "4R". The level "4R" opens the Requested Work Orders window, bypassing the menu. No other menu options are available, except the "Reports" button.

Davison Maintenance can open directly to this Work Order request window if you create a new Davison Maintenance shortcut for Requestors with a "Target" property as in the following example or equivalent. In this example the target is "C:\DMSystem\WOReqst.EXE" and the starting folder is "C:\DMSystem".

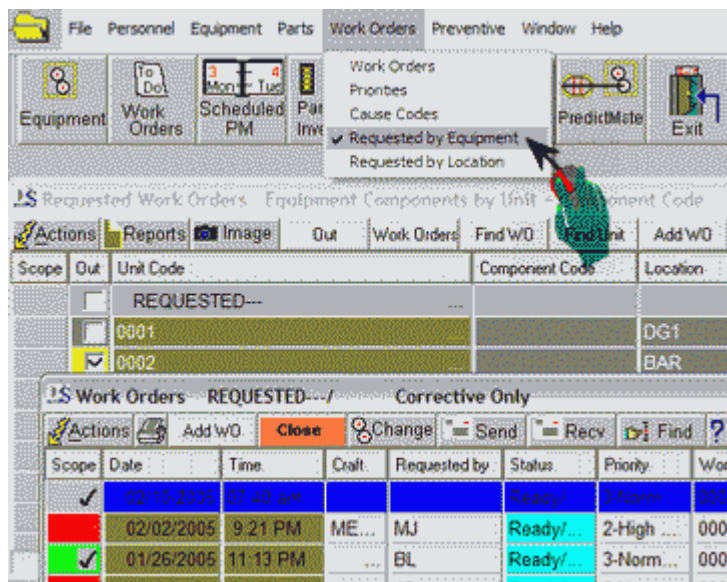




### Work by Equipment

Another shortcut is "Work by Equipment". In this shortcut the Target is "C:\DMSystem\WORqEqp.EXE". This opens a window with a user level of "4R" for maintenance technicians. This has about the same options as the following Requested Window.

The date and time in this work order window is "Requested". This date and time is disabled unless the configuration WOReqDtEnable=Yes or the user level is greater than 4. In the main Equipment window the date and time is "Scheduled" where a supervisor or technician can schedule the work order. All date and time fields are enabled in the main Work Order window.

The "Requested" work order window displays equipment with related Corrective work orders.



Press the  button to change work orders to another equipment. If you tag work order records before pressing , all the tagged work orders will be moved to the equipment that you select.

If the equipment is "Requested" the work orders are moved to the equipment that you select, but the equipment browser stays on the "Requested" equipment record.

If the equipment is not "Requested" the work orders are moved and the equipment browser moves to the selected equipment.

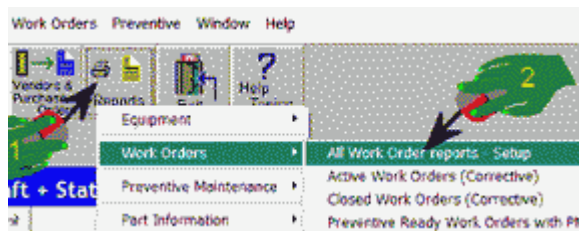
Find any corrective work order by pressing the "Find WO" button. You can enter the work order number. You do not need to enter leading zeros. For example, to find 0000000333, enter 333. To find work order codes that are right justified, enter just one blank before the code. For example to find " 245", enter " 245".

Otherwise, after pressing "Find WO", press "Select Requested Work Order" to select work orders by

Status, with the most recent "Requested" work order at the top. To sort by Craft press the Craft header. When sorted by Craft, work orders are sorted with the highest priority open work orders at the top for each Craft. Press about any other header for other sorting.

Select Work Order by Status + Priority + Date + Time							
Work Order Number	Date	Time	Craft	Status	Priority	Type	Description - First Line
000000001	02/09/2000	:	ELEC	Ready/Re	2	Correct...	Replace damaged the
000000003	06/09/2004	:	MECH	Ready/Re	3	Correct...	Replace belts
000000004	06/17/2004	:	ELEC	Ready/Re	3	Correct...	Control box is damage

Requestors can also print work orders from the "Reports" button. This allows printing work orders sorted by Craft, Status, Priority, or other selection. The "Active Work Orders" report prompts for oldest date, priority, and craft.



### Simple Work Orders

The Work Order window with Equipment Components allows easier management of work orders for adding work orders and changing the status. The date and time on the left side of the window fills both Requested and Scheduled date and time. This window has similar function to the Requested Work Order window. See [Work by Equipment](#)

To enter personnel hours press the  button. To enter more details, including material cost, select "Actions, Go to this work order". This will open the main work order window with this work order selected, but only if your rights are enabled for the main work order window.

### Work Order Archiving

You may wish to remove (archive) old work orders. Usually work orders older than two years are archived. Work order archive is selected from "Actions >> Export/Import >> Archive Work Orders". User level 7 is required to archive. Work orders are copied to comma-separated (.CSV) files for compatibility with any future system. Three tables are archived: Work Orders in Old\_Work.csv, personnel hours in Old\_Hour.csv, and work order costs (not part groups) in Old\_WoCt.csv.

#### Before archiving work orders

Backup all data. Select "File >> Backup >> Backup"

Pack data, at least work orders. Archived work orders are deleted. Packing data before archiving removes all pre-existing deleted records and allows recovery from an aborted or reversed archive easier. See "File >> Index >> Pack...".

#### Archive options

Delete each work order is the default. If this is unchecked work order information is not removed, but only copied to the archive file.

You can select Corrective or Preventive work orders. If only Preventive work orders are selected, the last Preventive work order is not removed to keep the current PM scheduling.

Work orders later than the latest date remain. Some Preventive work orders older (earlier) than the latest date may remain.

## After archiving work orders

Do not duplicate old work order numbers. Continue with the next higher number for new work orders. If you choose to import archived work orders later, the old work order numbers need to remain unique.

You can pack data to permanently remove archived work orders. Otherwise the deleted work orders are still in the work order table as hidden. This reduces the size of the work order table and may provide better performance. See "File >> Index >> Pack...".



Old work orders can be imported, but it is not advised to repeatedly archive and import work orders. A second archive system can be copied to another data folder. See in Help "Installation... >> Typical Shortcut... >> Multiple Data Folders". In this case you must copy the existing data folder to another folder for archive purposes.

## Preventive Work Orders

Preventive Maintenance (PM) work orders are automatically created in Component Preventive Maintenance with a work order number beginning with "Z" followed by a number one greater than the last PM work order number. See [PM Work Orders](#).

Preventive Type work orders are added in Component Preventive Maintenance for a record of completed PM, for adding extra comments, and adding individual personnel hours to PM. **Preventive work orders are added only in Component Preventive Maintenance.**

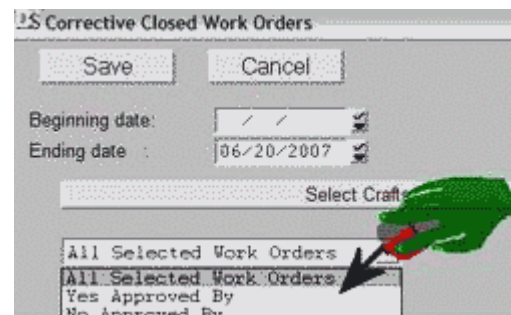
## Closing a work order

Press  to close a work order. This will put today's date to the Completed Date field and "Complete" to status. NOTE: The browser returns to the previous position, usually on the next "Open" work order. To close many work orders, tag the records to be closed before pressing .




To open a work order that was closed (Complete status), select "Actions, Close/Re-open ..., Re-Open...". This changes the status to "Ready" and the completed date to blank. To re-open many work orders, tag the records to be opened before selecting this..


Tip: To find the latest closed work orders, change the sort order to "Date", then scroll to the bottom row. Also right-click, "Return to previous" can return to the latest closed work order after the "Close" button is pressed.

In some cases the work order is approved after it is closed. Use the "Approved by" field for this purpose. To find completed work orders as Approved or not, select "Actions, Group work orders ..., Closed work orders...". You will be prompted for "Yes" or "No" approved work orders. The report "Closed work orders (Corrective)..." shows the same prompt for limiting the work order list to approved or not.



## Receiving Work Order Updates from Email

In the Equipment window, pressing  receives only work order requests. But in this work order window  only receives email that contains a subject "Work Order Number" followed by an existing work order number. This is the format created by email sent after pressing  in either Work Orders or Equipment.

This email does not update work orders until you press . Only Mail Text before "==" END My Comments" is added to the work order with a line showing who sent the mail and the date and time.

### Closing a Work Order from email

If Completed [ ] in the email subject is not filled, the work order status remains unchanged and comments before "==" END My Comments" in the email are added to the work order description.

In the email subject, enter a date or just a single letter in the Completed[ ] brackets. If the email subject contains "Completed[ ]" the work order will be closed if a date or single character is entered in the square brackets. If a work order is already closed, the completed date remains unchanged, but new comments will be added. Date format depends on the windows local setting (mm/dd/ccyy or dd/mm/ccyy). Time must be hh:mm or hh am/pm. After receiving email, this date and time is displayed in the Completed and Time columns.

Examples for closing a work order:

Completed[ 12/01/2007] (Date only)

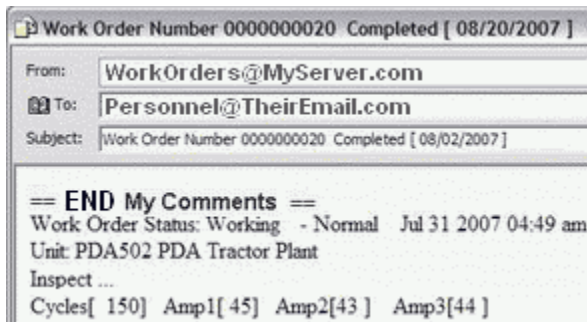
Completed[ 12/01/2007] Time[13:10 ] (Date and time)

Completed[ 12/01/07] Time[1:10 pm] or Time[1 pm] or Time[1pm]

Completed[ 12/01/07] (Date only)

Completed[ 12/01] (mm/dd or dd/mm Assume current year)

Completed [ Y] (A single letter indicates work order closed on the date of the mail.)



Example email for a completed work order. Send the email "From" an account where you want personnel to reply to the email.


Since you can send and receive email to many devices, you can issue work orders with no special wireless connection. You can even send preventive maintenance work as a "Ready" PM work order by email.

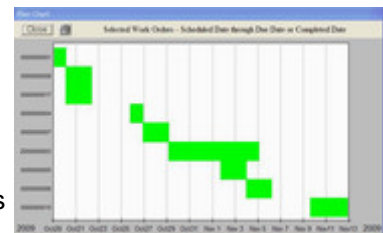
### Images (Pictures) for Work Orders

Images transfer to handheld and can print in work orders. If an image exists named "WorkOrder\_<number>.JPG", it is used for the work order. Otherwise the equipment component image is displayed.

To edit an image for work order instructions, work order images are copied from equipment images or selected. In the Work Order window, press "WO Image" from the work order image viewer, and you are prompted to copy the image to an image for this work order, named "WorkOrder\_<number>.JPG". Then you can edit the file "WorkOrder\_<number>.JPG" specifically for this work order. See [Image View](#) about editing images.

### Plan Chart

The Plan Chart  is a Gantt chart for managing work orders. You would usually select active work orders for a Craft, then run the Plan Chart to see if work orders are spaced for the Craft. If the work orders were sorted by priority, the chart should cascade from upper left to lower right, showing that work orders are scheduled and due by priority. If all work orders display in the same date range, the scheduled and due dates should be changed so that all work orders are not expected complete on



the same day.

The work order Due Date should be filled, otherwise the program assumes a Due Date one day after the Scheduled date. Estimated or actual hours are not calculated in this chart.

## Data Entry Forms in Work Orders

See [Fields within a Multi-line Note](#)

## Priority

See [Work Priorities](#).

## Cause

See [Work Cause](#).

## External Work Orders

You can add work orders from external systems by importing a text file (comma-separated .CSV or tab-delimited .TXT). Select "Actions >> Export / Import >> Add External Work Orders".

The text file must be named "Ext\_Work.csv" or at least include "Ext\_Work" within the file name like "Ext\_Work from Predictive.csv". Work order number is created automatically. Minimum required fields in the text file are:

Eq\_Code, Comp\_Code, Cause, Da\_Sched, Time\_Sched, Notes

These fields contain Equipment code, optional Component code, cause code, Scheduled date, scheduled time, notes describing work.

External work orders are added uniquely by Cause + Eq\_Code + Comp\_Code + Scheduled Date + Time. If an open work order of the same Cause + Eq\_Code + Comp\_Code exists the external work order is not added. This avoids adding the same external work order more than once.

Work orders are also imported from [ODBC Import](#)

## Status

Work order status is a variation of either "Open" or "Closed". Work order status is considered open or closed as follows:

Open: Working, Ready, Project, Hold

Closed: Declined, Completed

**For simple use, work order status can just be *Ready for Open* and *Completed when Closed*.**

Status is W, R, P, H, D, or C for Working, Ready/Requested, Project, Hold, Declined, or Completed. Status is sorted in descending order with "W" first and "C" last. When you select a "C" or "D" status the Date Completed will automatically be filled with the current date. You may type in a different date. When you enter a completed date, the status will automatically be changed to "C" for completed.

Some users may enter work orders that are later considered invalid. When a "Requested" work order is invalid, change the status to "Declined". Declined work orders are not included in management reports. Declined work orders should have no hours or costs.

Days, Interval, and Reading pertain to type "P"reventive work orders only. They are used the same as in the PM Task Entry screen.

Days: The number of days or years between the PM task.

Interval: The interval if a run-hour or mileage meter is read to schedule preventive maintenance for the

equipment.

**Reading:** The meter reading at the time the PM work order was completed.

Unit Code and Component Code are validated against the codes that were entered in Unit Information and Equipment Components.

## Dates

**Requested:** The date of the original request.

**Scheduled:** In Corrective work orders this date can be used for scheduling work orders regardless of priority. See [Work Priorities](#).

In Preventive work orders, this date is automatically filled by the program. It is the date that the preventive maintenance task became due.

**Completed:** The date the work was done or declined. The program fills this date with the current date by default, but you can type any other date.

**Warranty:** The warranty date will display in red if the work order scheduled date is earlier than the warranty date for the component.

## Time

Each work order date has a related time field (Requested, Scheduled, Completed).

Date and Time are used for sorting according to work order Status by the following rules.

If Status is Completed or Declined, Completed Date and Time.

Else if Scheduled Date is not blank, Scheduled Date and Time.

Else Requested Date and Time.

## Estimated and Actual Hours

In Preventive work orders, this is filled from the PM task. You may enter the estimated hours for planning purposes.

## Personnel Hour Cost in work orders

This field is calculated by one of three methods. The first method (perferred) requires entry of charge rate for each personnel record of hours. This is best since charge rate can change over time. The second and third methods cannot handle past charge rates.

The second and third methods are easier because they do not require entry of charge rate for each personnel. **If you prefer the first method leave the Hourly cost factor zero (0) in Personnel and Crafts.** Also, personnel cost greater than 3.00 is assumed to be a charge rate, not a cost factor. In this case the first method is always used.

If you enter a charge rate (greater than or equal to 3.00) with personnel hours, first method is used. But if you enter a pay factor (less than 3.00 or no change equals zero) and an hourly cost in Personnel or Crafts the second or third methods are used.

First method:

Sum of Hours X Personnel Charge rate

Where:

Hourly cost factor from personnel list is zero.

Hourly cost factor from Craft is zero.

Second method:

Sum of hours X Cost Factor X hourly cost for each person.

Where:

Hours = Hours entered for each person

Cost Factor = Entered with each man-hour record or 1 assumed if zero.

Hourly cost = From personnel list.

Third method:

Actual hours X Craft hourly cost

Where:

Actual hours = the number of actual hours entered to the Actual Hours field

Personnel cost is zero.

Craft hourly cost = hourly cost factor (minimum 1) in the Craft Information screen.

Personnel cost is calculated using Craft hourly cost IF the personnel hourly cost is zero. This allows personnel cost by Craft (not by individual personnel). You can enter personnel costs by Craft, leaving the ID field blank.

If records have been added to Personnel Hours (F7 from the browser), the work order Actual Hours field is bypassed during data entry and hours are totaled to the Actual Hours field.

## Material Cost

After saving work order information part costs are summed to the material cost field. If a part group is assigned, the cost for each part in the group is summed and placed in the Material Cost field. Part cost is obtained from the vendor price that is assigned to each part.

## Parts for work orders and the Parts Group

You can add parts for this work order after saving a new record. Parts are summed to the work order when you "Save" any change to this work order.

You can add parts for only this work order or assign a part group to the work order. If you add parts for this work order, the work order number is added to the Parts Group field automatically. You can put other work order numbers in the Parts Group field, which allows duplicating parts among work orders without creating a parts group.

Scope	Stock Code	Description	Quantity	Part
	FLOT001	Power Cable Floats	3	P
✓	GR00002	Grease gun	2	P
✓	J100001	Special lock nuts for use	12	P

Part groups are removed from inventory when closing a work order. You can limit the parts that are removed by tagging only the parts to be removed before closing the work order as shown. You can un-do this by selecting "Actions, Replace parts that were removed." Total cost is summed the same.

## Additional Costs

Additional costs are material costs or services not in inventory. Usually additional cost items are purchased only for the work order. Additional costs may also account contracted services.

Craft is validated against the Craft database. Another term for Craft is Trade, for example, Electricians, Operations, Instrumentation, and Safety.

Initials are validated against Personnel Information.

## Work Description

Try to put the most descriptive terms on the first line. The first line may be displayed on some work order browsers and reports. If the work order type is "P" for Preventive, the PM task is not copied to the Work Description.

Only when adding a new work order, an initial message can be added. This is intended for notes before and after completion of the work order. See the setup parameter InitialWONote in MipWin.INI. This can be added to MipWin.ini as follows. Each semicolon ";" is a line-feed.

InitialWONote= ;;<< After Complete;;

The above example for "InitialWONote" inserts this message:

<< After Complete:

## How to account Contractor costs

Account contractor costs for equipment by work orders. In a work order you can account hours and material costs from the contractor. If the contractor cost is a lump sum without detail, enter the lump sum to Additional Costs for the work order. Accounting costs by work order and craft works best with reports for equipment. Contracted services are separated without making the system too complicated.

a) Add a Contractor craft in Personnel, Craft Information. You may only need to enter one craft: "Contracted Services".

b) Enter the contractor as a vendor in Parts, Vendor Information.

c) Add the work order for contractors:

- 1) Add a work order for the contractor craft.
- 2) Enter a work order number that begins with letters. The letters should identify work done by contractors, for example: "C00055" for Contractors.

**Tip:** If you enter only "C" as a beginning character for work order number, the next number available for work order numbers beginning "C" is added automatically.

# Reports for Work Orders

**Note:** Click "Include Costs..." in the Reports menu to include cost information in most work order reports. The check mark indicates that costs will be included.

Work Orders - as selected - including Personnel Hours
Work Orders - Parts / Additional Costs
Active Work Orders (Working, Ready, Project status)
Active (or Preventive) Work Orders Including PM Tasks
Print this Work Order
Active Work Orders by Assigned ID including any PM Tasks
Preventive Ready Work Orders with PM Tasks
Active Work Orders by Date Priority and Scheduled Date
Closed Work Orders (Corrective) by Completed Date
---- Configuration ----
Include Costs in above reports
New Page with each work order in above reports
1 Work Orders with insufficient parts
2 Parts Needed by Stock Code - Run this AFTER Insufficient Parts

- **Active Work Orders**

Active work orders are automatically sorted by status and priority to only Working, Ready, and Project status, unless you have already done this. If you tag records with no scope the report will run for only the tagged records. This report prints only Corrective work orders.

You can print active work orders from a scheduler or shortcut with this run command:

"c:\dmsystem\MipWin.exe WORKPRNT". The windows default printer is used without prompting the user.

You can select active work orders for immediate printing with this run command:

"c:\dmsystem\MipWin.exe WORKSLCT". This is intended for use in a shortcut for technicians. See the "Active Work Orders" shortcut in c:\dmsystem\Menu. Variations on the format and query are possible setting the configuration to an optional report, ActiveWORpt=<ReportName>.

You can add Ready PM work orders from condition-directed ("CD ") tasks with this run command:

"c:\dmsystem\MipWin.exe WORKCDPM". This can be called from a scheduler for automatic notification with suggested work as entered in the PM task.

- **Active (or Preventive) Work Orders Including PM Tasks**

Preventive maintenance (PM) tasks, including standard PM tasks, are included with the work order description for Preventive work orders. Other work order listings do not include PM tasks.

You can print *completed* Preventive work orders including PM tasks by setting a scope or tagging the *completed* Preventive work orders before selecting this report. This report is printed often for inspections or other cases where PM tasks must print repeatedly.

- **Active Work Orders by Assigned ID**

Print only active (Working, Ready, and Project status) work orders by Assigned ID.

- **Preventive Ready Work Orders with PM Tasks**

Preventive work orders list by scheduled date. These are only PM Ready work orders that were added

by pressing  in Component PM.

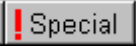
- **Work Orders as Selected**

This selection prints work orders with all possible information.

- **Work Orders – Parts / Additional Costs**

This selection prints parts or additional costs (parts not included in inventory or other costs) relative to every work order. The option "Part and Addl Cost – Totals" is intended only for Active work orders as a list of all parts needed.

- **Custom Work Orders**

Several custom work orders may be added to the Reports menu, different at each installation of this application. Press  for custom work orders.

- **Work Orders with insufficient parts**

This report lists corrective work orders with parts that are not in stock, or the part reorder time is beyond the scheduled date of the work order. The quantity of parts in inventory is insufficient when there is not enough parts for the work order plus the quantity needed for previous work orders. Work orders are considered depending on sort order and scope.

You should not include "Completed" work orders in this report.

For intended results, sort by "Status + Priority + Date" and select a scope from top to the last incomplete work order (not including "Completed" work orders).

IF you sort work orders by "Status + Priority + Date", higher priority work orders get the parts first. Work orders must have a parts group code assigned to be considered.

### **Parts Needed by Stock Code**

After running the report for insufficient parts run this report to see the total of each part needed.

### **Insufficient Parts for Preventive Maintenance Tasks**

To list Preventive Maintenance tasks with parts that are not in stock you must add "Ready" Preventive work orders before running this report. See *Scheduled PM, Actions, Create Ready Work Orders*. Be careful that the PM Setup is correct.

## Work Priorities

Priorities are commonly 1, 2, 3, 4, 5, or Date. You can change these priorities. Priority 1 is emergency. Try to assign priority 1 for emergencies only. Too many high priority work orders can cause confusion.

The Date priority is used when the Scheduled Date is most important in a corrective work order. This is not scheduled preventive maintenance, but a work order with a deadline, which is the Scheduled Date. To view work orders by date priority, sort on Priority, then type "D" or find (Ctrl-F) the first work order with "D"ate priority. Open work orders are sorted by Scheduled Date within the Date priority.

Davison Maintenance does not automatically remind you of corrective work orders that are past their deadline (Scheduled Date). However, you can print the report for "Active Work Orders by Date Priority and Scheduled Date". If you need an automatic reminder for certain activities, several inexpensive popup calendars are available for the Windows (tm) desktop.

## Work Cause

Cause codes are often described like "Normal Wear" or "Excessive Heat". Do not use cause codes to indicate Corrective or Preventive Maintenance. Cause codes often provide a key for management reports.

## Component Preventive Maintenance

**PM tasks are usually printed from this application each week.** Accounting Daily PM tasks on a daily basis is not recommended. Daily PM is usually accounted on a weekly basis. Tasks of less than annual frequency will schedule according to the day of the week, which allows daily scheduling where PM is printed daily.

The **PM Start Date** applies only to Calendar-scheduling. It can be changed for each component. The month and day of the PM Start date is the central date for Calendar-scheduling of all frequencies less than one year (Daily through 180-day). Calendar-scheduling is adjusted to the same day-of-week as the PM Start Date.




See [How to Setup Preventive Maintenance](#)

If you do not use a handheld for Scheduled PM:

See [How to Print Scheduled Preventive Maintenance](#)




See [How to Close Completed Preventive Maintenance](#)

How to distribute, then close completed PM tasks:

1. Press  to set PM Printing options. See [PM Printing and Scheduling Options](#)
2. A. Press  then select "List Due Preventive Maintenance" to print PM tasks. See [Reports for Component Preventive Maintenance](#)
2. B. Alternatively you can export PM tasks to a handheld  .
3. After the PM tasks are completed by personnel, close PM tasks:

If you have exported PM tasks to a handheld the following steps are **not** needed. When you run "Close PM Tasks from handheld", all completed PM marked as done on the handheld will close due PM as needed. If the task is not marked as done on the handheld, comments or actual personnel hours are added to a "Ready" status PM work order. A reading for a component is put to the component reading.

Steps required if PM tasks were printed (not for handheld):

- a. Press  . Check that PM Printing and Scheduling options are the same as the heading of the printed PM tasks.
- b. Press  to find the next equipment component with PM Due.
- c. Press  to close all PM tasks. See [Closing PM Tasks](#).

Build, then schedule PM tasks as follows:

1. Enter PM tasks from the menu: *Preventive, PM Task Setup*.  
Optionally you may first add valid group codes from the menu *Preventive, PM Groups*, but PM groups can be added in *PM Task Setup*.
2. Assign PM group codes to components. Components with identical PM get the same PM group code.
3. For Calendar scheduling, assign a PM Start Date to the component. The PM Start date is the

**beginning** date of PM for the component. It is not changed except to change the month and day during the year that PM tasks are scheduled. You do not need to change the PM Start date from one year to the next. You may need to change this date so that PM tasks for many components do not schedule on the same dates.

You can assign both the PM Group code and the PM Start Date from *Scheduled PM, Actions, Edit*.


Example calendar PM scheduling with a PM Start date of 02/01/?????:



<u>Frequency</u>	<u>PM Scheduled Dates (mm/dd)</u>
30-Day	01/01, 02/01, 03/01, 04/01 ...
90-Day	02/01, 05/01, 08/01, 11/01
180-Day	02/01, 08/01
1YR	02/01

*PM scheduled dates are adjusted to the same day-of-week as the PM start date in the component, except for annual or greater frequency.*

4. Print PM tasks from "Component PM". Press  to print for certain crafts or a PM Due date that is different than today. Press the reports button  to print PM tasks.

## PM Printing and Scheduling Options

This window shows set up options for printing PM tasks from the "Due Preventive Maintenance" report or exporting to handheld. PM Tasks will indicate due with a checkmark  according to these options.

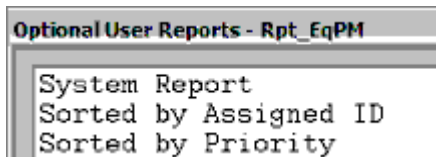
This window displays when you press  or when you first open Scheduled PM. These options apply to a handheld  *only for export* to handheld. Setup options are stored on the handheld when *exported* to handheld. When tasks are *closed* from handheld, the setup options stored on the handheld are used.

- PM tasks Due (open) up to this Date. Blank = today:  
If blank, this date is the current date. If you want to print PM that is calendar-scheduled for previous or future weeks, enter the ending date of the week. Check “Calendar-schedule PM for only one week...” for only PM calendar-scheduled in that week.  
This option is helpful when you want to print PM in advance, before a vacation or other absence.
- Print Calendar PM tasks due only this week:  
Check if you want PM scheduled for only one week. PM tasks that are overdue, earlier than one week prior to the PM Due date will not print or schedule.  
You might want to print Calendar-scheduled PM for several weeks in advance. This allows printing the tasks in advance, each with a Due date ending for each week.
- Closing date, when tasks were done. Blank = today:  
This is the date that PM was completed. Each time a PM is closed this date is put in the completed PM work order as the completion date.
- Include Daily and Weekly Tasks:  
If checked daily and weekly tasks are printed or scheduled. Usually daily and weekly tasks do not need to be printed or closed here.
- Print Due Readings from PredictMate:  
If Checked, predictive readings from PredictMate print with preventive maintenance tasks. It is best to print these readings from PredictMate, but this provides them on one printout.  
NOTE: If you select certain Crafts, one of the following must be true.
  - The same craft code must be used in PredictMate as a Personnel ID.
  - Or the Personnel ID must exist in both PredictMate and in the CMMS assigned to the same Craft.  
See Personnel Information in the CMMS and assign the same Craft.

Export to Handheld includes the note “<<< See PredictMate >>>” where PredictMate readings are due for the equipment unit. Export both Scheduled PM and Predictive readings in the same order for easier


switching between Scheduled PM and Predictive on the handheld.


- Print components with due PM, no task description:  
Check if you want to print a list of components with due PM, but do not need the task description.
- Page break at each unit:  
Check if you want the printout to print a new page with each unit.
- Page breaks with change of location code at position:  
You may want the printout to print a new page *less* often than each change in location code. Enter the number of characters where a change will print a new page. For example, location codes "LC01 , LC02 , LC03..." will *not* print a new page with each change in location if you enter **2**. Since the first **2** characters are the same, the locations will print together on the same page.
- PM work order priority:  
This is the default priority for Completed or Ready PM work orders. You can change this priority in any work order after the work order is added.
- Assigned person or Equipment priority:  
This is intended for PM Closing with the optional printouts sorted by Assigned ID or Equipment Priority. Change this to match each Assigned person or Equipment Priority on the printout as you close PM. This makes the PM Tasks window display only tasks for one person or priority as printed in these optional reports:



See [Images \(Pictures\) for PM Tasks](#)


## Closing PM Tasks

If you have exported PM tasks to a handheld  the following steps are **not** needed. When you run "Completed tasks from handheld", all completed PM marked as done on the handheld will close due PM as needed. The setup options are stored on the handheld. Current setup options displayed from

 will not apply to the handheld when closing PM tasks.

If you do not use a handheld for Scheduled PM:




After preventive maintenance (PM) tasks are finished by personnel, you must close PM tasks. Referring to the printed PM tasks, close tasks that were finished by personnel.

Press  to find certain crafts or a PM Due date that is different than today. When closing PM setup a PM Due date that equals the date when you printed the PM tasks.



### **Always setup the PM Print Options the same as when you printed the PM tasks.**

See the header of the printed PM tasks for setup options. For example a header that reads: "PM Due on 03/16/2001 for All Crafts by Location" means that you must set the PM Due date to 03/16/2001, check All Crafts, and sort the Component PM browser by Location.

If you printed PM by Assigned ID or Equipment Priority, filter by each Assigned ID or Equipment Priority shown on the printout as you close PM.

To close a PM task, click on the checkmark  in "PM Tasks" in Component PM. The checkmark  indicates that the task is due. An  indicates that the task is on Hold or Declined. You can

re-open the task by clicking again on the checkmark.

If **all** due PM for a **component** can be closed, it is faster to press . If you need to re-open PM that was closed, press  to reverse the close-all action when pressed mistakenly.

PM Tasks for FAN01 /MOTOR Due to 07/						
Actions	PM Work	Close All	Re-Open	Add Ready	Filter	PM Due 07/
Due	Actual Hrs.	Last Completed	Scheduled	Craft	Assigned to	Days
<input checked="" type="checkbox"/>	0.00	/ /	08/07/2000	ELEC	(No Personnel ID) ...	30
<input checked="" type="checkbox"/>	0.00	06/05/2004	07/09/2004	MECH	(No Personnel ID) ...	30
<input type="checkbox"/>	0.00	06/05/2004	12/03/2004	MECH	(No Personnel ID) ...	180

When each PM task is closed a "Preventive" type work order of "Completed" status is created by the program.




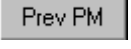
## Closing All PM with a single command

You can close all due PM with one command. Be careful. To close all PM with one command, select from Component PM: *Actions, Close all PM or Create Ready Work Orders, Close all PM*. You can set a scope or tag records to close PM only within the scope or tags.

If you have closed all PM mistakenly it can be reversed (re-opened) with this command: *Actions, Close all PM or Create Ready Work Orders, Re-open closed PM for current closing date*.




## Finding Components with PM tasks

The following commands for next or previous *due* PM are limited to a scope or tagged records, if you set a scope or tags. Commands for PM tasks, due or not due, are not affected by scope or tagged records.

- Press  (or F8) for the program to find the next component where PM is due.
- Press  to find the previous due PM.
- Press  to find the next equipment with PM tasks, due or not due.
- Press  to find the previous equipment with PM tasks, due or not due.

## Closing PM that was done in past weeks

If you get behind in closing PM that was done in previous weeks, you may need to follow this procedure.

1. Set the PM Due date starting with the earliest week. Press  to set the PM Due date.
2. Now pressing  will search only for PM that was due up to that PM date.
3. Close PM as indicated according to the PM Due date.
4. After all PM is closed, set the PM Due date (and PM Close date) to the next week, move to the top, and press  again.

## Printing Overdue PM

If some PM is overdue and you want to print the overdue PM first, just press Filter. You can set a filter for only overdue PM tasks (7, 14, or 28 days overdue), then print PM tasks.

## PM Tasks window

The PM Tasks window displays PM tasks for the component. Tasks are ordered by Craft, Frequency, and Mile or Hour limit (Interval). A checkmark indicates that the PM tasks are due.

The "Scheduled" date indicates:

- the date that the PM task for the component **became** due IF the PM task is due.
- the date that the PM task for the component **will be** due IF the PM task is not due.

## PM Work Orders Window

When a PM work order is created, the work order number is filled with "Z" plus a number incremented from the highest PM work order number. Unique work order numbers provide a relation to man-hour and additional cost databases.

To view *Corrective* work orders with PM, select from the "Component PM" window: "Actions", "View Corrective work orders". This browser contains all the Corrective work orders for each component, while the PM Work order browser contains only the PM work orders for each PM task for each component.

Example of Component PM, PM Task, and PM Work Orders windows:

The screenshot shows three overlapping windows from a maintenance management system:

- Top Window: Component PM by Location + Unit + Component**

Scope	Out	Location	Route	Unit Code	Unit Desc.	Component Code	PM Group
		B01	AB020	FAN01	Exhaust Fan ...	MOTOR	EM10
		B01	AB030	FAN01	Exhaust Fan ...	PROP	FAN
		B01		FAN02	Fan 2 ...	MOTOR	EM10
- Middle Window: PM Tasks for FAN01 /MOTOR Due to 07/26/2004 - Closing 0**

Due	Actual Hrs.	Last Completed	Scheduled	Craft	Assigned to	Days	Interval	Reading Unit	Season
<input checked="" type="checkbox"/>	0.00	/ /	08/07/2003	ELEC	(No Personnel ID) ...	30			/ - /
<input checked="" type="checkbox"/>	0.00	06/05/2004	07/09/2004	MECH	(No Personnel ID) ...	30			/ - /
<input type="checkbox"/>	0.00	06/05/2004	12/03/2004	MECH	(No Personnel ID) ...	180			/ - /
- Bottom Window: PM Work Orders for FAN01 /MOTOR /ELEC / 30/**

Scope	WO Number	Status	Completed	Scheduled	Reading	Est Hrs	Act Hrs	Extra
	~00000005	Ready/Reque.	/ /	08/07/2000		0.00	0.00	
	~00000004	Complete	07/20/2004	03/09/1998		0.00	0.00	

## PM Ready Work Orders

A Completed PM work order is added each time a PM task is closed. Ready PM work orders are added only for special circumstances:

- **PM Due Report is not printed.** Personnel do not use the Scheduled PM window. If the PM Due Report is not printed, personnel work on Ready PM work orders and complete the PM Ready work orders from the work order window. This allows users to access one window for completing both Corrective and Preventive work orders without training about the difference between Corrective and Preventive work.

You can add many PM Ready work orders with this procedure from the Scheduled PM window:

- 1) Enter the PM Due date in PM Setup, or the PM Due Date can be blank for simple scheduling of PM Due to the current date.
- 2) Tag equipment to be worked on. This is optional for creating fewer Ready PM Work Orders.
- 3) Select "Actions > Close all PM or Create Ready Work Orders > Create Ready PM ...".

- **Adding special notes for a component PM**

Edit the work order from "PM Work Orders for...". Add special notes in the "Extra Comments". These comments will print in addition to the PM task only for this component.

- **Data Entry Forms in Preventive Work Orders**

To copy a data entry form from a PM Task, press the button "Copy PM Task to Description". If the keyword "==" Enter" exists in the PM task, only the lines following "==" Enter" are copied to the work order description for extra comment and data entry, otherwise the entire PM task is copied. The entire PM task prints with work orders or in the "Due PM List" report, so it does not need to be copied entirely.

Then the user enters data in the fields, marked with "[". See [Fields within a Multi-line Note](#)

Example fields:

Pressure [ ] Cycles [ ] Hours [ ]

If a "Ready" work order is created from the Scheduled PM window, any data entry forms following "==" Enter" are copied automatically to the work order description. The keyword "==" Enter" can be configured with the parameter "CopyToWOKeyword" in Environment, Configuration.

If a "Ready" work order is created and the PM task first line begins with two periods ".." (or other characters configured with the parameter "CopyToWOBegLine"), the entire PM task is copied to the work order description. See "Change the PM Task for a Component this time" below.


Forms for data entry can print separately from the PM task. Just duplicate the PM Task with a different interval like -1. If Interval is a factor in the scheduling, just duplicate with 0.1 difference, like 1000.1 for a 1000 hour task. Then add the form in the duplicated task.

- **Change the PM Task for a Component this time.**

When an entire PM task is copied to a work order (no keyword "==" Enter" exists in the PM task), the PM printout title will be "Task Description from Work Order" and the PM Task is not printed, just the task as copied from the work order. The first line of the PM Task must be unchanged in the work order for the program to recognize that this is a copied PM task, but all following lines can be changed in the work order. This first line can be any character, even blank. This is an alternative where the entire PM task is a data entry form and the keyword "==" Enter" is not applicable.

- **Special, one-time scheduling or postponing a PM task**

You can put a future Scheduled date. This PM task will not become due until that date.

You can put Hold status to delay a task indefinitely. You can put Declined status when the task in this PM group should never be scheduled for only this component. An  indicates that the task is on Hold or Declined.


- **Partial completion of PM tasks**

When part of a PM task is completed, you may want to show the task as completed and make a status Ready work order for the remaining part of the PM task. Enter a note about what needs to be done for the PM task in the Description for this work order.


- **Ready PM work orders in the active work order list.**

Ready PM work orders appear in the active work order list. This puts priority on the Ready work orders when they are listed in the Active Work Order list.

How to add a Ready work order:

1. Press  to add a PM work order with Ready status (and no completion date).
2. You may need to change the Scheduled Date. PM will schedule next according to this date until this work order is completed.

## Priority of PM tasks

- Set the Equipment Priority in the Equipment window. You can filter or tag by priority or print Due PM by priority.
- For one-time priority:
  - Tag records in the Component PM browser. Only tagged components will print.
  - Print Ready PM work orders as follows.
    - a) Add a ready PM work order by pressing . You could also change the priority in the ready work order. You can set the default priority for Ready PM work orders in PM Printing and Scheduling Options.
    - b) Print the PM tasks from the report for Open Preventive Work Orders Print one of the reports entitled "... by Priority".
- Change the sort order of Components to provide the priority needed. For example sorting on Components or PM Groups, then selecting a scope of components in that order.
- Indicate priority by Route code. Since Route is intended as the order for personnel to walk through the facility, it is also the priority in which PM tasks are completed. Route codes like "AA0001, AA0002" and "AB0001, AB0002" indicate different routes (and priority).
- For priority of random equipment every week:
  - a) Tag the equipment records in the "Component PM..." data browser *in the order that you want the PM to print*. This could be an odd order, regardless of any sort order.
  - b) Save the tags to file. You can select "Save tags to file." from the Tag / Scope menu.
  - c) Print the "List PM Due" report.
  - d) Later, when you close the PM tasks, restore the tags from file and move from one tagged component to the next with the "Next tag" command (Ctrl-N).


**NOTE:** If the equipment database is packed after tagging, old tags to file will not relate correctly.

## Dates for PM Scheduling

- PM Start Date

The beginning date of PM scheduling for a component. Calendar PM scheduling is calculated from this date. Each component has a PM Start Date. This date is entered when a component is added to this system and not changed unless calendar PM scheduling for the component needs shifting to other weeks.

After running the "Year Schedule Hours" report, you may want to change this date for some components to make a better balance of PM scheduling through the year. In this case you only change the month and day of the PM Start Date. Leave the year the same as the original.
- PM Due Date (PM Calendar-Scheduled Date)

The date from which PM tasks are scheduled. By default, the PM Due Date is the current date. You can change this date in the PM Print Options. Press .
- Default Closing Date for PM

This date is put into the Completion date for a work order when a PM work order is closed. This date is changed in the PM Print Options.


- Work Order Scheduled Date (PM or Corrective)  
In the "Component PM" window, where PM is closed, this is the date that the PM task became due for the component.
- Seasonal Month/Day  
In the PM Tasks window this designates a season or date range in which the task is performed. The date is entered in the format mm/dd to mm/dd and may cross over the end of one year to the beginning of the next year, for example "11/15 to 02/15".

See [Preventive Maintenance Tasks](#).

## Reports for Component Preventive Maintenance

- List PM Due

Print PM tasks due for each component. Components are sorted by Location. You can change to other sort orders and you might want to select only a scope of components.

Press  to set PM Printing options. See [PM Printing and Scheduling Options](#) before printing Due PM.

- Sum Estimated PM Hours

Check weekly PM scheduling with this report. This report lists the distribution of PM estimated hours scheduled per week. The count of tasks is an alternate indicator of PM scheduling in case accurate estimated hours are not available.

If some weeks are too busy, change some component PM start dates to shift their scheduled PM to other weeks. Then run this report again.

Weekly tasks are included since some weekly tasks could be seasonal. Daily tasks are not included. Estimated hours and number of tasks are identical to a list of Due PM only when weekly tasks are included in those listings.

- Components where PM Group has no PM tasks

Sometimes PM groups are assigned to components, but the PM group may not yet contain PM tasks. Components in this list need PM tasks added to their PM Group in "PM Task Setup".

- Preventive Work Orders

Each of these reports print one work order for each PM task for each equipment. Preventive work orders with a status of Working, Ready, Hold, or Declined were created manually with a specific purpose. You can print only certain crafts by selecting crafts in the PM Printing Options.

### Open (Working, Ready) Preventive Work Orders

Working or Ready preventive work orders are created for higher priority PM, to delay scheduling, or to add special notes.

### Hold or Declined Preventive Work Orders

Hold or Declined preventive Work Orders stop the scheduling of the specific PM task for an equipment component.

### Last Closed Preventive Work Orders

Every time a PM task is closed a Closed (Completed) PM work order is added. Special notes, personnel hours, and parts could be added to this work order. This work order shows the last time the PM task was completed for this equipment component.


## Preventive Maintenance Groups

Enter Preventive Maintenance (PM) Group codes in this table. PM Group codes entered for Components or PM Tasks validate against the group codes entered to this table.

### Standard PM Components

Standard PM components are **only** required if you use standard PM tasks. In most applications standard PM tasks are not used. Standard PM tasks can be very useful for standardizing PM among many sites or for setting up PM where no PM procedures are established.

To assign standard PM tasks to a PM group, enter component codes. Standard PM tasks will print with Due PM according to the component codes assigned in this data window.

After assigning component codes, press  to add records to PM Task Setup. Otherwise some standard tasks may not schedule if a corresponding record for Craft and Frequency does not exist for the PM Group in PM Task Setup. Tag a single record to update for only one PM Group.

### Changing Related PM Group Codes

**WARNING:** When a PM Group code is changed here, the same PM Group Code in PM Tasks and Components is changed to the new code. Deleting a PM Group Code here does not delete any PM Tasks or Components.

# Preventive Maintenance Tasks

## PM Groups

The tasks in a Preventive Maintenance (PM) group are related to a component by the group code. Enter the tasks to a PM group, then enter the group code to components that require the PM in that group. If you change the PM tasks in a group, the changes appear in the next list of Due PM for each component in the group.

You can create a new PM group by duplicating an existing PM group. See "Actions", "Create new PM group from old". If records are tagged, they are used for the new group. Existing records in the new PM group are not replaced.

Each Group, Craft, Days, and Interval combination is unique. You are not allowed to enter more than one record of the same Group, Craft, Days, and Interval.

If you change a Craft, Frequency or Reading Interval, the **latest** Preventive work order for every component with the same PM Group is changed to keep its relation to this task. This prevents rescheduling when the task was already done with the original Craft, Frequency, or Reading Interval.

## Standard PM Tasks

When standard PM tasks are assigned to a PM task, the standard PM tasks will print following any comments in the PM task description. An empty PM task description is acceptable when standard PM tasks are assigned.

## Part Groups

Parts required for a PM task can be assigned to a part group related to the Parts (Stock Inventory) menu. Enter a part group and the parts will list with the PM task. When the PM is completed, you may subtract the number of parts in the part group from inventory.

**Assigned To** - The "Assigned to" field is intended only for PM tasks for a specialized person.

## Images (Pictures) for PM Tasks

Images transfer to handheld and can print with PM Tasks. If an image exists named "<Group>\_<Craft>\_<Frequency>\_<Interval>.JPG", it is printed with the PM Task. The equipment component image is printed at the header for equipment.

For the handheld, create images selecting "Actions, Image View, Create images for handheld".

To copy or edit an image for a PM task, press "PM Image" from the image viewer in PM Task Setup. You are prompted to copy the image to an image for the PM Task. Then you can edit the image file specifically for this PM Task. See [Image View](#) about editing images.

## Additional Insert Text after a PM Task

In some cases you might want a task added that is repeated often among several PM tasks, like a lockout procedure. Create Insert Text from "File, Text to Insert".

Right-click within the PM Task Description, then select 'Add keyword "==" Additional <Description>". This will add a keyword at the end of text so the program will add the "Insert Text" when printing the PM Tasks. Only one insert is allowed, and it will only print after the PM Task description.

## Data Entry Forms in PM Tasks

See [Data Entry Forms in Preventive Work Orders](#)

## Options for PM Scheduling

- Reading Interval

Enter Miles, hours, or any other reading except days or years in the "Interval" field. This field is optional and only used for tasks that are scheduled by a reading. The "Type of Reading" is the unit for the reading (Miles, Hours, or other) but not days or years.

### Combining Multiple Intervals (Cycles, Hours, Mileage, other)

In some cases PM is scheduled according to more than one interval, like cycles and hours. To schedule PM for multiple intervals, schedule comparing to the lowest interval value. For example where PM is scheduled at 40 hours or 20,000 cycles, the lowest interval value is 40. Enter 40 to the Reading Interval in PM Tasks. Compare cycles to hours as cycles divided by hours (20,000 cycles / 40 hours = 500 cycles per hour).

Record the accumulated reading to equipment as the highest common reading. In this example where PM is scheduled by cycles or hours, enter equipment readings as hours (or cycles divided by 500), whichever is greater. If the accumulated readings were 400 Hours and 300,000 cycles, the common reading is 600 (300,000 cycles / 500 cycles per hour = 600) which is greater than 400 hours. If PM was last done at a common reading of 550, this PM will now be scheduled (600 – 550 = 50 which is greater than the Reading Interval of 40).

- Days frequency

Valid entries for "Days frequency" are:

CD 10Y 5YR 4YR 3YR 2YR 1YR 180 120 90 60 45 30 21 14 7 1 0  
 0 is for initial startup tasks. CD is Condition-Directed from PredictMate.  
 Blank when interval only (Mileage or Run Hours).

- Season Month/Day

Seasonal tasks are scheduled by Month/Day. These PM tasks only schedule between the month/day period entered. The month/day period can cross from the end of one year to the beginning of the next. For example, 11/01 to 01/30.

- Seasonal option: If no frequency is entered and a season is entered, a seasonal task is assumed. The task will schedule once after the season beginning Month/Day. This allows for spring or fall tasks different from a "1YR" frequency.

You can enter more than one seasonal task if you enter a number in the "interval" field. A negative number is recommended, to not conflict with other tasks in the same PM group that schedule by interval. In this case the "interval" serves no purpose other than to make the PM task record unique within the PM group and craft. This allows many seasonal tasks with different schedule dates of the Month/Day. Schedule dates are not adjusted for day-of-week.

For example, these PM task records are possible:

Craft	Frequency	Interval	Season
MECH	(Blank)	-1	10/01 (Fall startup)
MECH	(Blank)	-2	04/01 (Spring shutdown)
or:			
MECH	(Blank)	-1	03/01
MECH	(Blank)	-2	04/01
...			

- Many tasks of the same frequency

Like seasonal tasks you can enter more than one task of the same craft and frequency if you enter a number in the "interval" field. A negative number is recommended.

An example of more than one task of the same frequency:

Craft	Frequency	Interval
MECH	30	-1
MECH	30	-2 (Same frequency with different tasks)

## PM Scheduling Methods

**All PM scheduling is reversible.** When a PM task is closed a PM work order is created. You can recover from mistakenly closing PM by selecting one of the commands for re-opening PM in Component Scheduled PM.

*PM for each component can be scheduled by one of four methods:*

### 1) Interval scheduling:

Interval scheduling finds the latest reading (usually hours or mileage) from the component table. PM is due if the latest component reading minus the reading of the last PM completed for the same craft and days is more than the limit. If a days (for example 30 days) is entered in combination with a interval task, the PM task is due with either the interval or the days, whichever occurs sooner.

### 2) Time scheduling:

Time scheduling finds the last date PM was completed for the craft and frequency. The date for the next PM is calculated from the last completion plus the number of days for this frequency. If the current date is equal to or greater than the date for the next PM, the PM is due.

### 3) Calendar scheduling:

PM is scheduled by finding the latest completed PM work order, then comparing it's completion date to the schedule date. The schedule date is calculated using the component PM start date and the PM task frequency. PM is due if the schedule date is on or before the current date (or PM Due date).

The current schedule date is calculated from the PM start date entered in the Component window. The PM start date entered in the component window is the date that PM scheduling for the component begins. The PM start date can be changed to shift the PM schedule for the component.

Early closing of PM (up to one fourth of the frequency) is allowed and accounted as complete for the next schedule date with the following frequencies:

10Y 5YR 4YR 3YR 2YR 1YR 180 120 90 60 45 30

In the component screen, "Schedule Type:" is "T" or "C" for Time or Calendar. The default value is "C" (Calendar).

Calendar scheduling is usually preferred since it sets a balance of PM hours scheduled from week to week. With time scheduling the PM hours for each week will probably vary.

The schedule date is adjusted to the same day-of-week as the PM start date for the component for both *Time scheduling* and *Calendar Scheduling*, except for annual or greater frequencies. The practical due date is the date that you print PM tasks. If the PM is due on Wednesday and you print and distribute on Friday, the practical due date is Friday. PM Tasks that show a scheduled date a few days apart will print together and are done at the same time. **PM tasks are usually printed from this application each week.** Accounting Daily tasks on a daily basis is not practical from this application.

### 4) Condition-Directed:

Condition-Directed Tasks Setup

Condition-Directed (CD) tasks require setup in the CMMS and data input (readings for the Type and Position for each equipment) in PredictMate. In the CMMS, PM Task Setup:

- 1) Select the Frequency "Condition-Directed from PredictMate"
- 2) Enter a PredictMate Type code to Condition-Directed Type.
- 3) Optionally, enter a PredictMate Position to Condition-Directed Position.

CD tasks will become due according to readings in PredictMate.

When the CMMS Frequency is "Condition-Directed from PredictMate", the CMMS program warns you if you enter a PredictMate Type that is not valid from the table of Reading Types in PredictMate.

If the task "Reading Interval" is filled and the Condition-Directed Type begins "TOT" for totalizer reading, the task is due if the difference between the last PredictMate reading and the last completed PM work order is greater than the Reading Interval. Also, the equipment reading will be updated from the PredictMate reading.

**WARNING:** CD Position is not validated against PredictMate readings or Equipment limits. Take care to enter a position that either exists or will be added for readings in PredictMate for equipment in this PM Group.

## Process

As PredictMate readings are input the CMMS CD tasks will become due only when the latest reading in PredictMate exceeds the CD limit. If the Condition-Directed Position is blank and no blank position for the type for the equipment exists in PredictMate, the CD task will become due according to any Position for the equipment in PredictMate of that Type that is greater than the maximum or less than the minimum.

The Reading Interval and Type of Reading in PM Task Setup is not related to PredictMate and does not affect CD tasks. However, you can enter a different Reading Interval (like -1, -2, ...) to additional records to allow additional CD tasks for the same PM Group and Craft.

## Simple scheduling of CD tasks without PredictMate

For a simple alternative to schedule Condition-Directed (CD) tasks, you can set the Reading Interval for a PM task to 1. Then each time CD tasks should become due, increase the equipment component reading by 1. This only works where only one CD task is needed for the equipment component.

### **PM for a component will NOT schedule if:**

- the unit is out of service.
- no PM group code is assigned to the component.
- a type "P" (Preventive) work order exists for the component (Ready status). The work order craft and days are the same. The work order scheduled date is greater than the current date.
- a type "P" (Preventive) work order exists for the component with Hold or Declined status.
- you have created a setup that does not allow scheduling of a craft, daily/weekly, or the PM Due Date is different.
- a Condition-Directed task has no related readings in PredictMate or the readings are prior to the PM Start date.

## *Commands that help improve Preventive Maintenance (PM) Estimated Hours*

### *F8, Get Average Actual Hours for PM Tasks*

Completed PM work orders are scanned for actual hours and the average is put to the Average Actual Hours field for each task. All records are updated unless you select a scope or tag records in the data

browser. This has no effect on the scheduled PM task list.

After running this command, compare the average actual hours to the current estimated hours. The F9 command can replace estimated hours with the average actual hours for many records. You may prefer to individually change the estimated hours different than the average actual hours.

### *F9, Replace Task Estimated Hours with Actual hours*

Average Actual Hours are put to the Estimated Hours field. All records are updated unless you select a scope or tag records in the data browser. You might only select records where you agree that the average actual hours as better than the current estimated hours. When Average Actual Hours equals zero, Estimated Hours are not overwritten with zero.

## Part Inventory Menu

- Part Information

Part information detail, including the stock code, location, reorder point, and other fields. Assign parts to vendors and part groups in this window.

- Groups (Part)

Add or review valid part groups. Assign parts to a group code in this window. Parts can be used or subtracted from stock by group or received by group.

- Stock Locations

Add or review valid part storage locations.

- Vendor Information

Add or review vendor detail. Assign parts to vendors in this window. This database can be used for names and addresses other than vendors.

## Special Tools

Enter special tools in parts inventory, not equipment, since they usually are stored in the same physical location. However, tools that require regular maintenance could be entered as equipment and assigned preventive maintenance tasks.

## Part Groups

An important concept in the parts inventory module is the part group. Any combination of parts can be assigned to a part group. A "part" is usually an expendable item of an equipment.

Assign part group codes to each component. Components with identical parts get the same part group code.

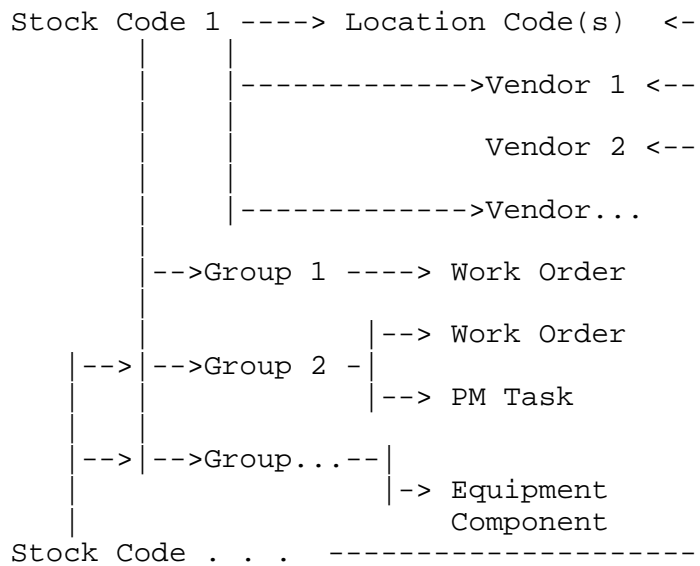
A group of parts assigned to each work order is subtracted from inventory when the work order is completed.

A group of parts assigned to each PM task can be subtracted from inventory when the PM task is completed.

## Part Codes Relation

- Stock Code:  
Unique to each part.
- Part Group Code:  
Contains a group of stock codes. The part group code is assigned to a component, work order, or PM task with the quantity, vendor, and price of the part in that group.
- Vendor code:  
Unique to each vendor. More than one stock code is assigned to a vendor. Vendor part numbers are cross-referenced to a stock code.
- Part location code:  
A plant location or bin number for the part.

### Example Relationships



# Part Group Data

This is the primary location for part groups. For example, the part group code entered to each equipment component or work order must exist in this window.

If you want to allow blank part groups in component and work order windows, add one record with a blank group code and the description "No Part Group Assigned".

If the vendor code is blank for a part in a part group, no cost is related to the part. The cost for a part only is obtained by the relation to a vendor. This can affect material cost totals for work orders and the Equipment Costs report.

## Special Commands

Shift-F3 Check for duplicate Codes from the current record forward.

F6 - Duplicate the current part group to a new part group code.

F7 - Assign parts to group:

Opens a window for assigning stock codes (parts) to the currently selected part group. In the part groups window the quantity field indicates the quantity of the part required when the part is used in the group. Parts removed from inventory by group will be removed by the quantity that you enter. The default quantity is 1.

F8 - Remove parts from stock in the current part group. Part quantity is reduced in part information according to the quantity entered in the current part group.

F9 - Receive parts by group. Each part is received (added) to part information according to its quantity in the current part group.


- Replace parts that were previously removed from stock. This allows you to "UnDo" removal of parts from stock. This is the opposite of the F8 key and can be used to reverse an accidental use of the F8 key or to add parts back if they were accidentally removed during work order completion.

If you change a part group code, the same code in components and part groups will be changed in order to keep the relation.


## Part Information

Part Information is ordered by stock code, description, or location. To add new part information, press

 then select "Add".

Press the image view button  in the tool bar to view the selected image file. Image files named the same as the Stock Code will relate even if not entered to the "Image File" field.

Enter the number of a part received or used in the columns. Note that the number of parts "In Stock" or "Total Used" change as you enter the number received or used.

Press F7 or press  to display vendors for the selected part and assign or review vendor part numbers. Enter the cost for parts here. A blank vendor code is acceptable so that part cost can be entered without vendor information.

Press "Actions, Part Groups" or F8 to review and assign part groups for the selected part. In the part groups window the quantity field indicates the quantity of the part required in that group.

If you change a part stock code, the same code in part groups will be changed. If you delete a part (stock code) the same stock code in part groups will be deleted.

## Parts Information Fields

- **Stock Code:**  
Code for identifying and ordering each part record. The stock code is your code for cross-reference to vendor part numbers. Your stock code is the same regardless of each vendor's part number.
- **Primary Stock Location:**  
Physical location of the part. This may represent a plant location or a bin number. The primary location is the first place you expect to find this part in the greatest quantity. The program maintains the quantity in stock, quantity on order, reorder point, and total use by the primary stock location only.
- **Secondary Stock Location:**  
Other locations where the part is stored, limited to about 8 locations.
- **Quantity in Stock:**  
Total quantity currently in stock.
- **Quantity on Order:**  
Number of parts currently on order from a vendor.
- **Reorder Point:**  
Minimum number of this part before ordering more. Enter -1 for no more  
0 orders of the part.
- **Reorder Margin:**  
The additional number of parts that you order when the number of parts is less than the Reorder Point. If the Reorder Point is 5 and the number In Stock is 3 and the Reorder Margin is 5, you order 7 parts.
- **Total Use:**  
Total number of this part used.
- **Lead Time (Days):**  
Number of days between placing an order and delivery of the part.
- **Description:**  
A description of the part (45 character limit).
- **Receive Parts:**  
Enter number of parts received. This entry increases the Quantity and decreases Quantity on Order.

- Use Parts:

Enter number of parts used. The new Quantity and Total Use is calculated.

- Price Column

You can change vendor price directly in the "Price" column. If a vendor exists for this part, the price is changed for the first vendor found. Otherwise, a record is added with the price.

## Reports for Part Information (Inventory)

- Reorder Parts

Lists parts where the quantity in stock is less than or equal to the Reorder point. Parts in this list should be ordered from a vendor.

The "Need to Order" column is calculated as follows:

$$\text{Need to order} = \text{Reorder Point} - (\text{In Stock} + \text{On order}) + \text{Reorder Margin}$$

- Vendors for Stock

Lists vendors for each part with the vendor's part number and price.

- Work Orders with insufficient parts

See [Reports for Work Orders](#).

## Stock Location

Add plant location codes and their descriptions in this window. Other windows use these codes for validation. Add a blank code if you wish to allow no stock location.

## Vendor Information

Vendor information contains business address, telephone, and contact. A note field provides space for miscellaneous information and additional addresses and phone numbers.

Vendor priority is assigned by Vendor Code. Precede the vendor code with a number or letter to indicate vendor priority. For example a vendor code "1-Vend02" is higher priority than "2-Vend01".

Press "Parts" to review or assign stock available from this vendor. Enter the vendor cost for parts here.

From Actions, Shift-F3, check for duplicate Vendor Codes from the current record forward.

If you change a vendor code, the same code will be changed in part information in order to keep the relation. If you DELETE a vendor, the vendor relation in part information will be deleted.

## Purchase Orders

You can select parts from each vendor to create purchase orders. Purchase Orders can be emailed to the vendor with line items attached to the email. You can select other exports (HTML) from the actions menu.

See [How to Add a Purchase Order](#)

## Vendor Inventory

Parts (Inventory) for vendor contains parts available from each vendor. Stock code is validated against parts information. The part description is displayed from part information and cannot be changed here. Enter the cost for parts from each vendor here.

Parts in your system are cross-referenced by the Stock Code to each Vendor part number.