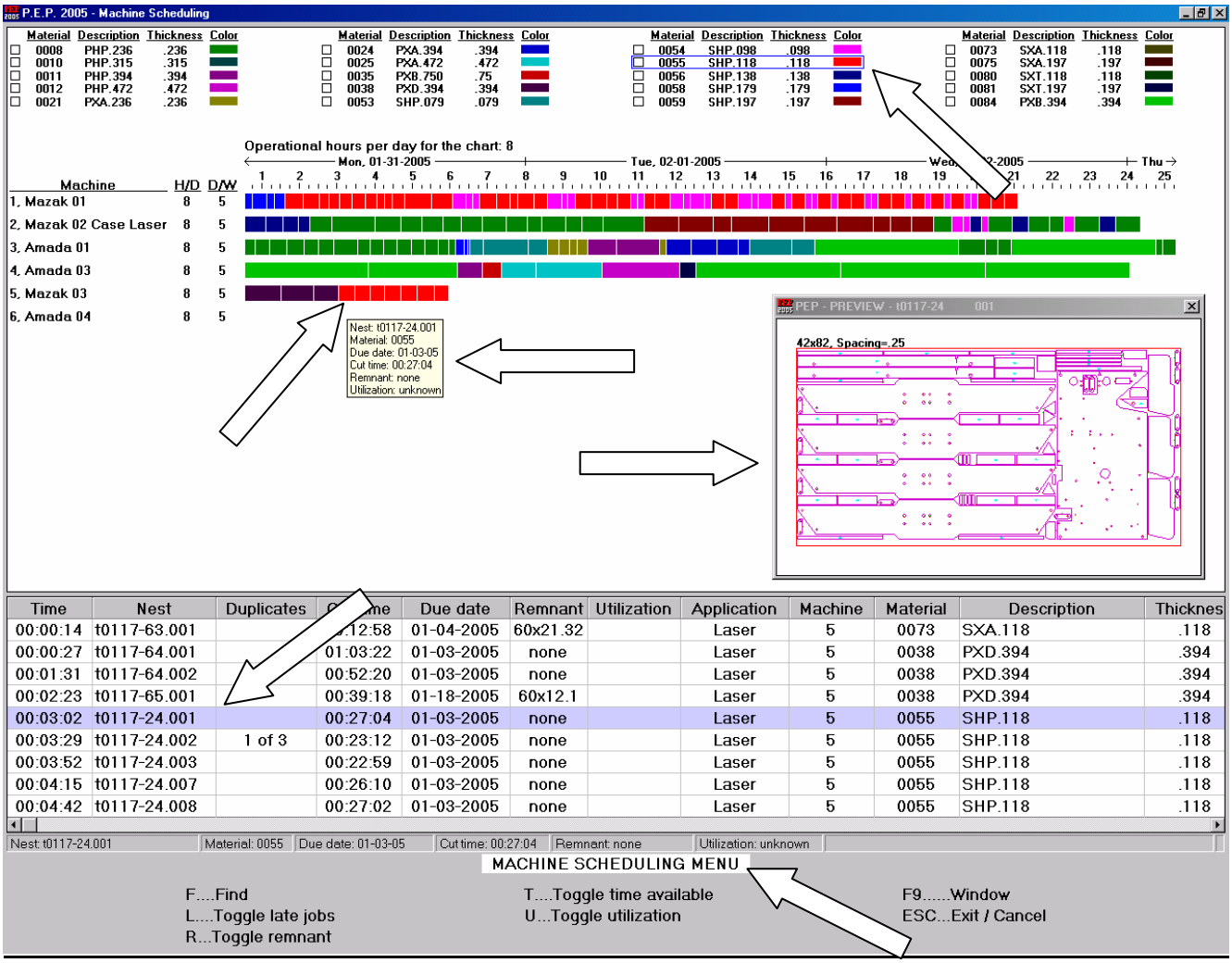
P.E.P. TECHNOLOGY©
The P.E.P. AUTOMATIC JOB SCHEDULING SOFTWARE

The P.E.P. Automatic Job Scheduling Software allows the user to Plan, Schedule, Track and Report everything related to the cutting of parts “prior to” and “after” nesting in REAL TIME.

The database design works seamlessly with the P.E.P. WIP software extracting the initial work order data in MRP, ERP and Excel files automatically, and continually updates the database automatically as work orders are nested in real time. There is NO manual data entry required to update the machine or work order status. In addition to being blindingly fast, another benefit of the software is the automatic checking that ensures that part quantities, revisions, material type and due dates are not compromised. The screen below is the graphic interface used by the operator to display the status and information about the work in process of jobs.



Time	Nest	Duplicates	Cut time	Due date	Remnant	Utilization	Application	Machine	Material	Description	Thickness
00:00:14	t0117-63.001		12:58	01-04-2005	60x21.32		Laser	5	0073	SXA.118	.118
00:00:27	t0117-64.001		01:03:22	01-03-2005	none		Laser	5	0038	PXD.394	.394
00:01:31	t0117-64.002		00:52:20	01-03-2005	none		Laser	5	0038	PXD.394	.394
00:02:23	t0117-65.001		00:39:18	01-18-2005	60x12.1		Laser	5	0038	PXD.394	.394
00:03:02	t0117-24.001		00:27:04	01-03-2005	none		Laser	5	0055	SHP.118	.118
00:03:29	t0117-24.002	1 of 3	00:23:12	01-03-2005	none		Laser	5	0055	SHP.118	.118
00:03:52	t0117-24.003		00:22:59	01-03-2005	none		Laser	5	0055	SHP.118	.118
00:04:15	t0117-24.007		00:26:10	01-03-2005	none		Laser	5	0055	SHP.118	.118
00:04:42	t0117-24.008		00:27:02	01-03-2005	none		Laser	5	0055	SHP.118	.118

Nest: t0117-24.001 | Material: 0055 | Due date: 01-03-05 | Cut time: 00:27:04 | Remnant: none | Utilization: unknown

The six arrows on the screen above point out the **simultaneous** interaction taking place as the user interacts:

1) When selecting a nest from the bar chart or the nest directory using the mouse or keyboard, the PREVIEW window on the right will display the selected nest GRAPHICALLY!
2) The selected plate’s material “TYPE” in the material list at the top of the screen is outlined in blue.
3) The nest name, due date, cut time, etc. is displayed in the rectangular box below the selected plate.
4) When a nest is selected from the bar chart the nest directory scrolls, highlighting the appropriate nest and other pertinent information about the nest.
5) The PREVIEW window displays the highlighted nest as the user arrows side to side and up and down.
6) The Machine Scheduling Menu selections such as Find, Late Jobs, Remnant and Time Available toggle on and off additional bar graphs about the machine schedule. An example of how a nested drawing can be found appears on the last page of this document.

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SCREEN DESIGN - Starting from the top of the screen:

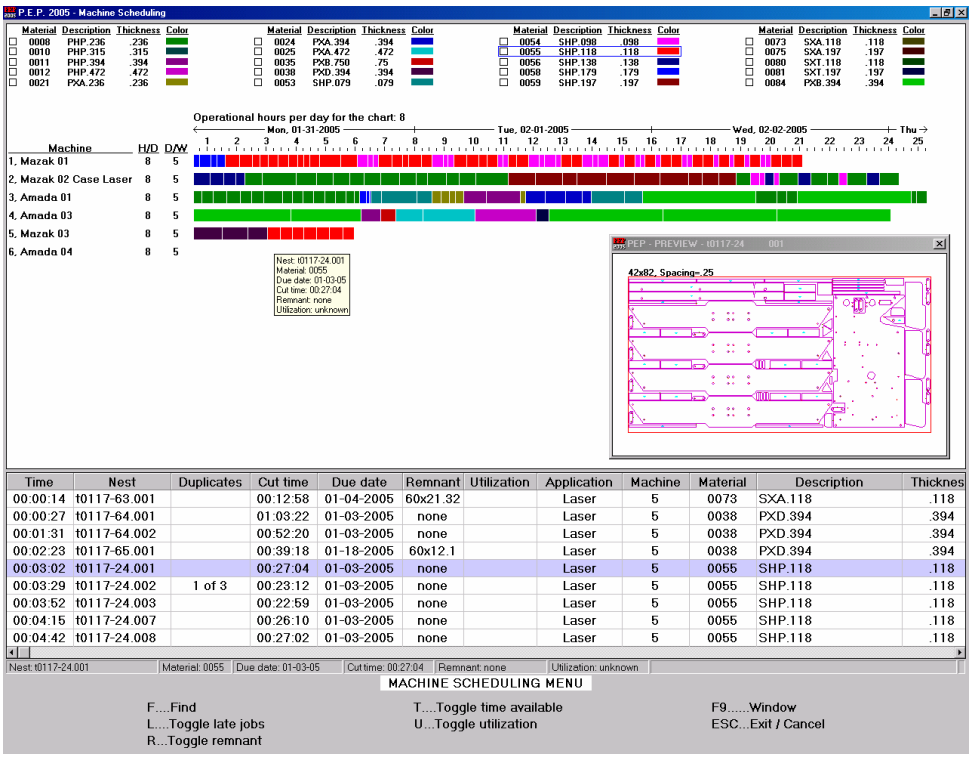
The Material Chart lists the material types that have been nested and are waiting to be cut.

The Bar Graph shows the nests scheduled to be cut, plate by plate, cross referenced by color to the material chart.

The PREVIEW window displays the selected nest graphically.

The Nest Directory displays the information about the selected nest and the preceding and following nests.

The Main Menu displays menu options that will filter and or display additional information about the nests.



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00:03:52	t0117-24.003		00:22:59	01-03-2005	none		Laser	5	0055	SHP.118	.118
00:04:15	t0117-24.007		00:26:10	01-03-2005	none		Laser	5	0055	SHP.118	.118
00:04:42	t0117-24.008		00:27:02	01-03-2005	none		Laser	5	0055	SHP.118	.118

FEATURES and BENEFITS

#	Material Chart	Description / Operation / Benefit
	Material Description	Only materials to be cut are displayed on the chart
	Material Color	Each nest on the machine chart is cross referenced to the material chart color
	Light Blue Outline	Highlights the material type as the user moves from nest to nest on the machine chart
	Check box	Clicking anywhere on a material description will put a check mark in the box to the left of the material indicating and instantly filter Machine Schedule so that only marked materials are displayed. Multiple materials can be checked and displayed on the Machine Schedule. All non checked materials are set to a clear color. Clicking on a material a second time un-checks the material. If no material is checked then all plates return to their appropriate color.
	Machine Schedule	
	Operational hours	The number of hours that the shop operates – user definable
	Day of the week	The days of the week and the date
	Total hours of cutting	The hour scale can be toggled between total hours scheduled and the operating hours per day
	Machine description	Lists the machines available to be scheduled
	H/D	Hours per day – less breaks (8 hours less two 15 min. breaks should be entered as 7.5)
	D/W	Days per week
	Bar Graph	Displays each nest in the order it will be cut and in the color of the material shown on the Material Chart
	Mouse Cursor	Placing the mouse cursor over a nest will display the nest name, material, due date, cut time & remnant
	Left Mouse Click	Turns on PREVIEW, displaying the actual nest
	Left Mouse HOLD	Click and Drag – Allows the user to reschedule a nest within a machine and or move a nest from one machine to another machine
	Arrow keys	Move the cursor left, right, up and down on the machine schedule. If the preview screen is ON the picture of the nests are updated as the cursor is moved.
	Menu Selections	
	Screen Setup	The user can edit the machine parameters for hours of operation and timing information: H/D Hours per day D/W Days per week Machine Calibration – timing variables used in calculating the differences between shifts and machines
	L...Late	Inserts a separate bar graph for each machine listing the plates that are going to be late.
	R..Remnant	Inserts a separate bar graph for each machine displaying the scheduled nests that have a remnants.
	T..Time Available	Displays the amount of machine time available at the beginning of each day.

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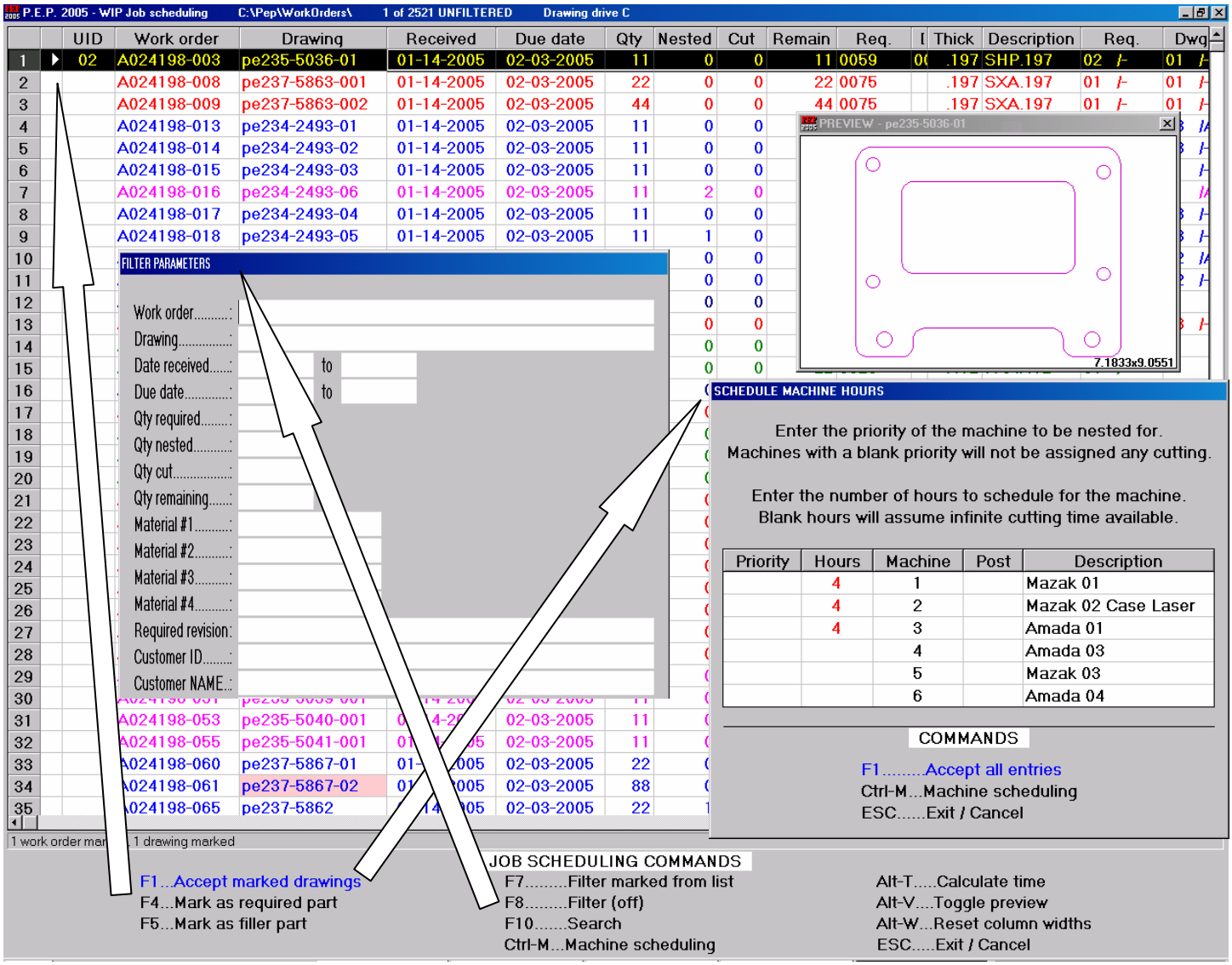
Scheduling of work orders is as simple as 1, 2, 3:

1. At the Job Scheduling Directory, select F8 to filter to the work order database by; customer, due date, material, etc.
2. Use F4 to mark the appropriate work orders to be nested and then press F1 to accept marked work orders.
3. Schedule individual machine hours and priority using the “Machine Hour” prompt.



Highlights of the Wip Database and Nest Scheduling software

Work orders can be automatically updated continuously 24 hours a day. As text files are extracted into the Wip database the software compares each of the Wip database fields and the Nest Schedule. If contradictions exist the software warns the user of discrepancies. The following are highlights of the software interaction:

1. Each horizontal row in the work order directory references a drawing and the pertinent work order data.
2. Each row is color coded to the material type
3. Cad drawings that do not exist have the drawing name field displayed in magenta (ex. #12, 14, 15 & 16).
4. Marking a drawing that does not exist will result in the software automatically searching for and converting the Cad file.
5. Drawing revisions are checked against the master drawing database and the user is warned when there is a mis-match.
6. Materials in the database are checked against the Drawing database and the user warned if they are not the same.
7. Changes to the part quantities are updated and the user warned when appropriate.
8. WIP supports “KITS”. Marking a kit will extract the drawings and part quantities necessary to make the entire assembly.
9. Tracking of required quantities, nested quantities and cut quantities is kept by the Wip Database and displayed below.
10. Changes in Revision, Material, Quantity and Due date will flag nests in the Scheduling Database so they are not cut.

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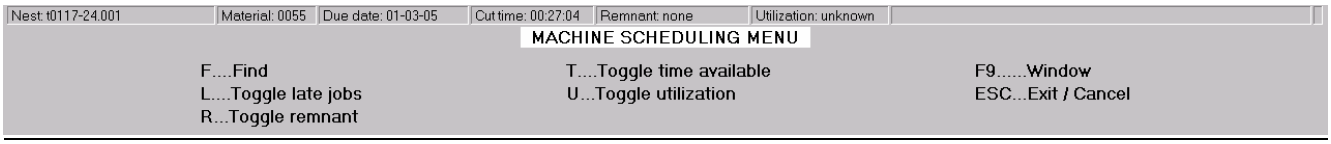
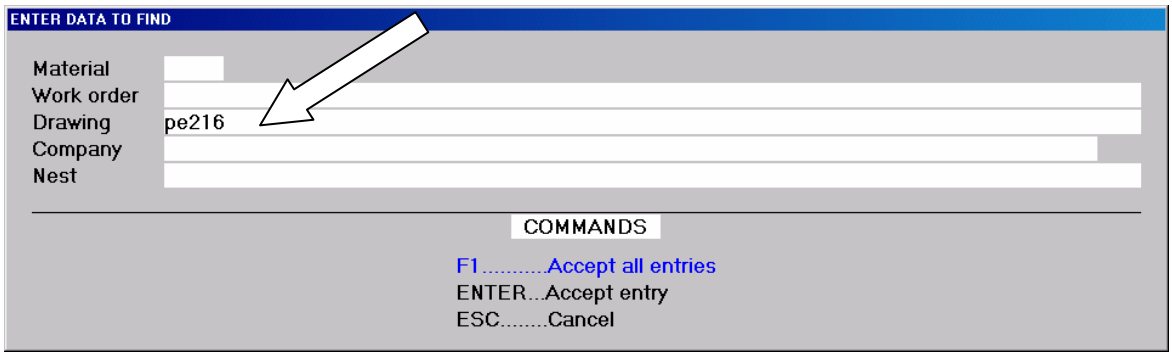
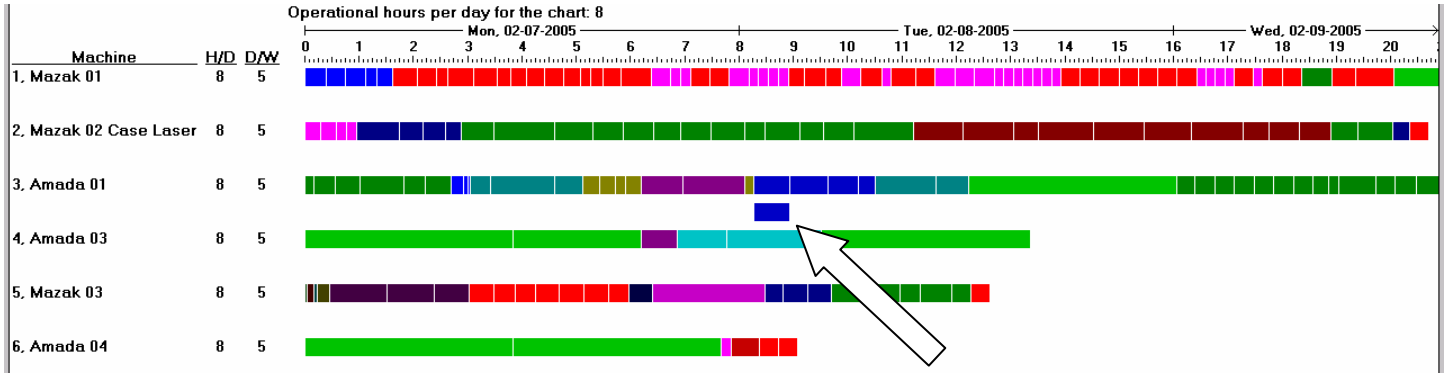
Menu Selections on the Machine Scheduling Menu

Tracking of nests, drawings, work orders and materials is done with the menu selections provided on the Scheduling Software screen shown on page 1. The following are highlights of the selections.



F…Find
This selection will display the plates that match the FIND criteria on a separate line below the machine bar chart. In the example below, 5 characters were entered into the drawing field and the software found a drawing on the blue plate that is scheduled to be cut on machine #3.





Each of the other menu selections work similarly.

L…Late jobs
This selection displays all of the nests that have a part with a due date that later than the scheduled date.

R…Remnant
This selection prompts the user for the remnant size and then displays the nests having a remnant greater than the minimum distance set by the user.

T…Time Available
This selection displays the amount of machine time available at the beginning of each day before any scheduled part will be late. Time available is displayed on a machine by machine basis.

U…Utilization
This selection prompts the user for the minimum material yield and then displays all the nests that do not meet that minimum yield.