

ABOUT CUSTOM PATTERN MAKER

The design of Custom Pattern Maker software was begun in 1986 under the instigation of Stephanie Schoelzel who was, at that time, the faculty Scenographer at the UCLA Dance Department. Through a grant program at the university intended to encourage the development of computer applications for “the arts” and as “teaching tools for the arts” a determination was made that AutoCAD should be used as the underlying software. A work-study student from the Film Department named Jim Pickrell was assigned to that program as it’s resident computer technician. Jim became intrigued by the project and agreed to take on the challenge of developing the code needed to generate the basic block patterns and otherwise develop the programing with Stephanie’s guidance.

The original goal was to create software where all one needed to do is type in measurements and it would automatically draft a very accurate fit patten that could be plotted out life size. The fact that it turned out to be a complete tool for flat patternmaking was wonderful extra gravy.

The important pattern generating code, based on a drafting method used by Stephanie to create very accurate fitting basic fit blocks, and the special arc functions that accomplish the special curves used in armholes, necklines etc. and the cut function developed by Jim are still the foundation for the programming code used in the current version.

Over the years Stephanie has endeavored to create a customized user interface that facilitates the pattern making process work-flow. She taught the use of it for 3 years. This meant that it was fine tuned on a broad range of people with varied learning styles. Most of them were from all around the world and English is their second language. This made it possible to fine tune this instruction manual also. Bit by bit she has fine tuned the MENU with special adaptations of commands combined with LISP programming to automate many functions that make the work process easier and faster.

Through dogged determination and the wisdom of the management at AutoDESK, the company that produces AutoCAD[®], C.P.M. is now available as an “OEM” product. AutoDESK determined that they would use a licensing program that would make it possible to “small” applications that needed AutoCAD[®] to run would be able to license the parts of the AutoCAD[®] programming needed to run their special application and sell the combined product as software. Their thinking was that this would help support applications with a small audience and/or businesses with a small amount of capitol for buying new equipment.

This means that C.P.M. is available as a stand-alone software. You no longer need to also have AutoCAD to run it.

It has been found that the use of C.P.M. cuts the patternmaking process time by at least 1/3. It is no longer necessary to create “muslin mockups” which then get radical alterations done

to them in the first fitting which require a major remake of the original pattern. This is true for even radically misproportioned bodies and radically odd postures. With a pattern created in C.P.M. you can cut directly in the finished garments fabrics.

WARNING! IMPORTANT! CUSTOM PATTERN MAKER is not a substitute for pattern making knowledge. It is a tool, a parallel to pencil, angles, curves, scissors and paper. You need to already know how to perform flat pattern design in order to be able to use this program. It is important that you know what the steps are that you need to perform to achieve the desired pattern design you are going to be making. You, as the pattern maker, have to make decisions about the process you use. It is wise to plan your process before you begin because the computer does not have the intuitive ability of the human brain. You will need to plan how you are going to get the computer to do the process.

CUSTOM PATTERN MAKER FAST START DIRECTIONS

This set of directions is designed to be used by pattern-makers who want to get started making custom sized basic patterns immediately. The installation instructions are to be found on the disk with the program files in the README.TXT file. There are no assumptions made about the computer literacy of the new user. In this document CUSTOM PATTERN MAKER will be referred to by its initials C.P.M... for the sake of space and visual brevity.

C.P.M. software actually runs on top of a licensed AutoCAD® software program engine and it's drawing files are fully compatible with AutoCAD®. This may not seem to be important at the moment, but it does mean that it can interface with many CAD/CAM software systems for the apparel industry. It also means that patterns created in C.P.M. can easily imported into a 3D modeling program and “built” on a 3D figure for animation.

These Fast Start Directions were developed through classroom teaching. You do not need to know anything about running AutoCAD® to use C.P.M.. The instructions are written in the format of tutorials and are mostly application specific, not in a typical Users Manual format. You will observe that, very much like a class lecture, information is repeated to emphasize its application. Class room experience has indicated where this is needed. The table of contents and the index should help you look up specific command applications. The C.P.M. HELP MENU includes some useful explanations and detailed instructions about how to take accurate measurements for use with the automatic pattern drafts.

The two major functions of drafting and flat patterning are first outlined for those who feel they are familiar with the functioning of 2D CAD drafting software and then followed by detailed step-by-step instructions and also include illustrated instructions. Choose to use that format which works best for you.

The learning time on this program has a direct relationship to knowledge of operator in flat pattern making/ apprehension regarding computer operation/ and time spent per consecutive days working with program.

When we first began to develop C.P.M. it all ran in DOS and very few pattern makers were computer literate. We've “come a long way, baby”. The new Windows interface will feel familiar to anyone who has been using a windows based computer. We still encourage you to begin by exploring the pop-down menus to become familiar with the commands and where they “live”. Then try making a custom block. **USE THE FOLLOWING INSTRUCTIONS THE FIRST TIME YOU TRY IT OUT.** You will be glad you did.

CHAPTER I

THINGS YOU NEED TO KNOW ABOUT WORKING WITH YOUR COMPUTER HARDWARE AND C.P.M. SOFTWARE

1. SYSTEM REQUIREMENTS.

1.1. CPU -

We recommend an IBM clone PC with no lower speed chip than a Pentium 166
OR
A at least a Macintosh G3 running Virtual Windows 95 or 98.

1.2 . RAM - You need at least 64MB of RAM.

1.3. Video Card - You do not need more than an 8bit capable VGA video card, but you will be much more content with a SVGA video card with graphic acceleration and at least 4mb of RAM built into the card.

C.P.M. was originally designed on a 14" monitor and that will do the job, but we recommend a 17" monitor.

1.4. Pointing Device - You will need a 3 button mouse. We like to use a digitizer tablet/drawing pad with a cordless stylus for our regular work.

For digitizing existing patterns into C.P.M. drawings, you will need a "digitizing puck". If you are planning to "digitize" any patterns from books into C.P.M. you will need at least a 3 button digitizing "puck" mouse with cross-hairs and a digitizing tablet of at least a 12" x 12" size. If you are planning to "digitize" full size pattern pieces or take patterns from garments, you will need to have a digitizing table.

1.5. Plotter/Printer - To facilitate plotting patterns C.P.M. already has drawing screens for E and D size architectural plotters. It will, of course, plot to any commercial plotter that has AutoCAD® drivers and/or Windows drivers.

The size E plotter is the most efficient size. Do not waste money on purchasing "plotter paper". Brown craft paper, tag board or dotted paper can be purchased 48" wide and then cut into 38" wide lengths. This will give a pattern page that is 46" x "36". A D-size plotter is the smallest size that still accommodates pattern layout in a reasonable way. Some plotters are made to handle a continuous feed paper roll. Naturally this would be a wonderful feature, but it is not difficult or particularly time consuming divide (grid or tile) a cutting layout into E sized sections and plot them separately.

The ideal plotter for pattern making purposes is a “antique” 4 to 8 pen plotter, or, if you are fortunate enough to find one, one that uses pencils. The multi-pen plotter makes it possible to color code pattern pieces and instructions. Plotter pens are rather expensive (the felt tip type is best for pattern making) so finding one that uses pencils is ideal. Pencil plotters are rare and pen plotters are becoming difficult to find unless you are looking for a used one. Pens are also becoming more difficult to find but the ones that these older plotters use are available through Architectural supply dealers and online through www.ebay.com auctions etc.

C.P.M. is fully compatible with AutoCAD® which means that any plotter, digitizer or cutting machine that is AutoCAD® compatible is also compatible with C.P.M..

2. INSTALLING CUSTOM PATTERN MAKER SOFTWARE

2.1. Copy the directory C.P.M. to the main trunk of your hard drive.

2.1.1. First open the My Computer window on your computer desktop by DOUBLE CLICKing on the My Computer Icon.

2.1.2. Next open the CD drive window by double clicking on that icon. Then open your hard drive window. (Usually this is the C: drive.)

2.1.3. “Drag” the C.P.M. folder into your harddrive window by putting your cursor on the C.P.M. folder icon in the CD drive window. Hold down the left mouse button. With your other hand, hold down the CTRL (control) key and then “drag” the folder to the hard drive . Once it is there, let up the left mouse button.

2.1.4. Be careful not to “drop” on top of another folder (directory). It is best to drag the cursor on top of the folder icon with the letter of you hard drive (ie. the C folder)

2.1.5. (Keep holding the CTRL key down.) You should see a message widow open up that says it is copying the C.P.M. folder and its content to your harddrive. You should see animated file pages “flying through the air”. Once you see that you can let up on the CTRL key. Wait until it is finished.

2.3. Check and make sure the copying job is really done by CLICKing on the CPM folder (directory) icon. It should open up and you should see the list of C.P.M. program files. This will include the .dwg files for all the marking in addition to all the operational files.

2.4. You can “drag” the CPM.exe icon to your desktop to create an “alias” that will

make starting the program easily accessible. Simply put your cursor on top of the CPM.exe file in the CPM folder, hold the SELECT (left mouse button) button down and “drag” it to where you want it on the Desk Top. It is easy to tell it is an “alias” icon because it will have a little arrow in the lower left corner of the icon pointing toward the upper right corner of the icon.

2.5. The first time you start up C.P.M. you will need to set the **PREFERENCES**. Later on you may want to modify some of the settings, but this first time is the only time it is required.

2.5.1. Start C.P.M. by **DOUBLE CLICKing** on the desktop alias icon or by **DOUBLE CLICKing** on the C.P.M..exe file in the C.P.M. folder (directory) on the harddrive.

2.5.2. Go to the EDIT popdown menu and **SELECT: PREFERENCES**. You will get a popup window with a row of tabs across the top with the names of all the various areas for which you can set operating environment settings. Click on the tab for each area you need to set to bring the appropriate “menu” window forward and make it active.

2.5.2.1. Under **DISPLAY**:

2.5.2.1.1. Put a check in the box for using the scroll bar in the drawing window. Do not check the on screen menu or the maximize on start-up boxes

2.5.2.1.2. The number of lines in the docked command window should be 3. 400 lines of text in the command window should be plenty for your use.

2.5.2.1.3. Find the button toward the bottom right of the dialogue box for **COLOR**. Click it and select the **LIGHT GREY** for your background color. Close the dialogue box.

2.5.2.1.4. Don't bother to mess around with the **FONTS**--- this will not apply to C.P.M..

2.5.2.2. Under **GENERAL**:

2.5.2.2.1. Make sure the **AUTOMATIC SAVE** box is checked and set to time increment to 15.
(Years of experience indicates that saving every 15 minutes is the maximum amount of time you want between "back up" saves.)

2.5.2.2.2. Check the Make Backup Copy of Each Save box.

2.5.2.2.3. Check the Save Thumbnail Preview box.

2.5.2.2.4. The other boxes should be not checked and take the default for the other blanks.

2.5.2.2.5. You don't need to do anything with the rest of the settings to get started.

2.6. Under the OPTIONS menu is the UNITS command. CLICK on UNITS and a popup window will appear and you will see a list of the measuring unit options. We recommend using the Fractional option, if you are working under the English Imperial measurement system, since this will display the dimensions in the format most commonly used in pattern making in the US. Even if you **SELECT** the Fractional units, you can still **TYPE** measurements into the program using decimal inch fractions, feet and inches as in the Fractional format as well as in inches and English style fractions. If you are working under the Metric System, use the Decimal units.

(See APPENDIX A for instructions on importing and exporting Architectural Fractional unit patterns to Metric unit patterns.)

2.6.1. Next you will need to choose the smallest size fraction you want to “display”. For pattern making 1/16" is usually the smallest fraction we aim to be accurate to. **TYPE** in the number 16 and **TYPE** the **ENTER** key.

If you have chosen Decimals, 2 digits to the right of the decimal point should be sufficient. **TYPE** the number 2 and **TYPE** the **ENTER** key.

2.6.2. The next choice is what type of units you want to measure degrees in. Choose what you are most familiar with. Decimal degrees are probably the most common format. If you choose this format, **TYPE** in the number 1 and **TYPE** the **ENTER** key. You will also be asked the number of degree fractions you want displayed. 3 is more than enough for pattern making purposes. **Type** in the number 3 and **TYPE** the **ENTER** key.

2.6.2. Next will be the direction you want your angles measured in. The default direction starts with 0° at the east or 3 o'clock position. Most computer programs that deal with measuring angles default to this mode.

2.6.2.1. Unless you have a very strong reason for measuring angles in a different format you should use this default. **TYPE** the **ENTER** key to accept the default setting.

2.6.2.2. Next you will be asked what direction you want to measure the angles in. It will ask you if you want to measure clockwise. Most computers that deal with measuring angles default to counter clockwise. It is wise to stay with this mode unless you have a very strong reason to measure clockwise. Future use of C.P.M. will include building costumes in Virtual Reality and it is wise to put your mind into the right framework from the beginning. TYPE the letter **N** (for no) and TYPE the **ENTER** key.

2.6.3. You have finished setting your UNITS. Close the pop-up window by clicking on the X in the upper right corner of the window frame.

2.6.4. Finish the process by selecting ZOOM ALL from the VIEW pop-down menu. This will cause the drawing area to just fit on the computer screen.

NOTE: The **Sew1.dwt** and **Sew1a.dwt** are already formatted for fractional UNITS. If you wish to work with decimals, make a copy of the **Sew1.dwt** and/or **Sew1a.dwt** file for “backup”. Then change the UNIT settings on the original files and **SAVE** them. Use these new versions as you prototype drawings. (See your Windows HELP files for instructions on Copying Files.)

2.7. The **GRID** appears when you complete defining the size of the drawing page. The **GRID** is a tool you will use in many ways. It can be set in any increment that you wish. You can use the functions that **SNAP** your work to grid increments, either in free-moving direction or in **ORTHO** mode, which only allows you to move horizontally or vertically. Using the **GRID** keeps the square of the grain visible during the pattern making process. The **GRID** can be used as a measurement device in many instances.

2.7.1. The **GRID** command is found on the **OPTIONS** pop-down menu. The command fly-out contains the commands **ON**, **OFF** and **Grid#**. When you select on of the options you will see in the command line at the bottom of the page:

Grid spacing(X) or ON/OFF/Snap/Aspect <1/2>:

If you have selected **ON**, the word on will appear after the colon (:) and you will see the grid appear on the drawing page. If you have selected **OFF**, that word will appear after the colon and you will see the grid disappear.

2.7.2. The **GRID** increment defaults to 1/2. On most monitors this is the smallest increment that will display when the drawing screen is just framed on the screen. You can set the increment to be any unit you want. Changing the size of the **GRID** increments does not effect the units of measure set for the drawing page. When you select **Grid#** from the **OPTIONS** menu, change the increment size by typing in a new increment in the command line at the bottom of the screen and typing the **ENTER** key.

2.7.3. The **GRID** command line also includes the **S(nap)** function. You can activate **S(nap)** by typing the letter **S** and typing the **ENTER** key. You will see that your cursor now moves in jumps from one Grid increment to the next. You can also turn the **SNAP** movement function **ON** and **OFF** by using the **SNAP** fly-out menu under the **SNAPTO** menu.

2.7.4. It is also possible to set the aspect ratio of the grid to be uneven. It defaults to a 1 to 1 aspect ratio. Activate the **GRID** command in the command line at the bottom of the screen

Grid spacing(X) or ON/OFF/Snap/Aspect <1/2>: a

Type **A** for Aspect and type the **ENTER** key.

The command line will then say:

Horizontal spacing(X) <1/2>:

Type in the increment you want and type the **ENTER** key.

The command line will then say:

Vertical spacing(X) <1/2>:

Type in the increment you want and type the **ENTER** key.

3. KEEPING DRAWINGS ON “DISKS”

Most computers now come with very large hard drives. Your pattern drawings will be small in the number of “bytes” in comparison to many other types of graphics files from other software. It would probably be possible for you to store thousands of pattern files on your computer hard drive. Computer hard drives are vulnerable to all sorts of causes for damage. You do not want to take a chance of losing your patterns.

You have already set, under **PREFERENCES**, your **AUTOMATIC SAVE** function, which **SAVEs** your pattern drawing to your hard drive at regular intervals as you work. Additionally, you will want to make sure that you manually **SAVE** your pattern drawing every time you complete a major task in the pattern making process.

C.P.M. also automatically creates a **BACK UP** file each time you **SAVE**. This file has the same name as the primary .DWG file except that the tag is .BAK. This file contains the version of your drawing file as it was the previous time you **SAVED** it. It will be saved in the same folder (directory) as your primary drawing file is saved in. You will find this feature to be a “life saver” on some occasions. If your primary drawing has gotten “out of control” (ie. You cannot Undo something that is totally wrong) then you can **DELETE** your primary drawing file and **RENAME** the .bak version of the file to .dwg. (See your Windows **HELP** files for how to Delete and Rename files.) This way you will only have to start over from the point you were at when you last saved your drawing.

It is very important for you to also store your patterns on a "floppy disk" or a "ZIP" disk that you can take away with you. The best practice is to have a floppy disk inserted in your floppy drive while you work and also **SAVE** your pattern drawing to the floppy disk each time you complete a major task in the pattern making process.

NOTE: Good computer operation practices include "backing up your system" on a regular basis. Running computers is similar to sewing. Just as you always seem to run out of thread 3 inches from the end when you are in a hurry, the computer always seems to "crash" just when you are in a hurry or on a deadline. However, "backup drives" large enough to handle a large hard drive full of software and files are an added expense and are often not part of the equipment people on a tight budget have. Having the automatic habit of always keeping a backup copy of each pattern drawing is the safest practice. (Most hard drives are only expected to have a 3 year life span.)

Like the hard drive, computer floppy disks and ZIP drives are also vulnerable to damage and need to be carefully cared for.

3.1. NEVER set a floppy disk or a ZIP disk down on a piece of electrical equipment or near any thing that may have any sort of magnetism around it. (This means computer monitors, scanners, printers, computer CPU's, radios, TV's, microwave ovens, CD players, VCRs, sewing machines, irons, magnetized scissors, pins, pin holders.

3.2. NEVER have anything containing a liquid sitting near the computer equipment or where floppy or ZIP disks are sitting. Do not drink anything or eat anything that can spill or fall into your computer work space or surfaces where the floppy disks or ZIP disks might be sitting. When you do drink or eat something while working at the computer make sure you are leaning back away from the desktop area.

3.3. If you are transporting a floppy disk or ZIP disk in a bag, purse or whatever, put it in a "zip-lock" plastic bag and make sure the "zip" is zipped tight. Better yet, if you can, get a Mylar bag to transport them in. This will protect them from being accidentally zapped by static electricity in your environment. (Sorry, spraying them with Cling-Free is out of the question. :-)

3.4. DO NOT, as a "nervous" habit, sit and flip the "gate cover" of a floppy disk. A speck of dust, dirt or liquid can corrupt the disk.