XEROX

User's Guide Revision Record for

Expert Drafting

Document Number: 610E19490 **Publication Date:** April, 1989

Rev. Date	Revised Section	Instructions
4/90	Title page	Remove Release 4.0 title page and replace with Release 4.0.2 title page.
4/90	Table of Contents	Remove pages 7–8 and replace with new pages 7-10.
4/90	6.1.3 IGES	Remove old pages 6-27–6-28 and replace with new pages 6-27–6-28d.
4/90	6.2 Plot	Remove old pages 6-29–6-36, and replace with new pages 6-29–6-36b.
4/90	10. Indexes	Remove old indexes and replace with new indexes.
4/90	Documentation Comment Form	Remove old Documentation Comment Form and replace with new Documentation Comment Form.

Notes: Keep this revision record and place it behind the manual's title page. Remove any previous revision record(s).

XEROX

Expert Drafting

User's Guide

Release 4.0.2

610E21800

All text in this document was prepared with the ViewPoint Document Processing System.

This publication could contain technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in any new editions of this publication.

Xerox® and all Xerox products mentioned in this publication are trademarks of Xerox Corporation.

DEC® and VAX® are trademarks of Digital Equipment Corporation.

HP® is a trademark of Hewlett Packard Company.

Copyright © 1990, Xerox Corporation. All rights reserved.

Document Number 610E21800 April 1990

Copyright protection claimed includes all forms and matters of copyrightable material and information now allowed by statutory or judicial law or hereinafter granted, including without limitation, material generated from the software programs which are displayed on the screen such as icons, screen display looks, etc.

Printed in USA

6. System Management 6-1

6.1 System 6-3

6.1.1 System 6-5

To begin a new drawing from a predefined format 6-5

To save changes to a drawing 6-7

To discard changes to a drawing 6-9

To set system input and message units 6-10

To save command window parameter values 6-13

6.1.2 Forms and Properties 6-15

To create a table 6-15

To create a drawing format 6-21

To place a text note 6-23

To use a replicate field 6-25

6.1.3 IGES 6-27

To convert an Expert drawing to IGES format 6-27

To convert an IGES-formatted file to Expert format 6-28a

6.2 Plot 6-29

6.2.1 Capturing Graphics 6-31

To plot drawings by file 6-31

To plot a drawing view 6-33

To plot objects within a rectangle 6-34

6.2.2 Directing Output 6-35

To create a formatted plot file on the local disk 6-35

To plot in raster format 6-36

To plot through an RS232C port 6-36a

6.2.3 User.cm Settings for Output Devices 6-36a

7. Using Expert Illustrator 7-1

7.1 Expert Illustrator Overview 7-1

7.2 Illustrator Procedures 7-4

7.2.1 Capturing Illustrations 7-4

To capture an illustration 7-4

7.2.2 Transferring Illustrator Files to ViewPoint 7-7

To transfer Illustrator files to ViewPoint using the same workstation 7-7

To transfer Illustrator files to ViewPoint using a floppy disk 7-7
To transfer Illustrator files to ViewPoint using a File Server 7-8
7.2.3 Converting a Pub File to a ViewPoint Document 7-9
To create a ViewPoint document from a pub file 7-10
To create a converter preset for automatic pub-to-ViewPoint conversion 7-12
7.2.4 Merging Interpress Graphics 7-14
To merge Interpress graphics with ViewPoint text 7-14
To create a converter preset for automatic Interpress merging 7-15
7.3 Illustrator Options 7-17
7.3.1 ViewPoint Page Properties 7-17
7.3.2 Graphics Frame Properties 7-19
7.3.3 Converting Drawing Text 7-20
7.3.4 Point Style 7-21
7.4 Illustrator Defaults 7-22
7.5 Text Mapping 7-23

8. Creating Drafting Parts 8-1
8.1 Preparation 8-4
8.2 Using Expert Drafting Commands 8-4
8.3 Storing and Retrieving Drafting Parts 8-5
8.4 Listing and Maintaining Drafting Parts 8-6
To create a drafting part 8-8
To place a drafting part 8-10
To uncluster a drafting part 8-12

9. Appendix 9-1
9.1 Accelerator Keys 9-1
To use page-switching accelerator keys 9-5
To perform direct functions 9-7
To use "fast" function keys 9-9
9.2 Feature Control Characters 9-11

10. Indexes Index-1

10.1 Subject Index Index-1

10.2 Command Index Index-7

6.1.3 IGES

The **IGES** command subwindow, shown in Figure 6.1.12, allows you to convert drawings to and from IGES (Initial Graphics Exchange Specification) format. Expert's IGES conversion software is based on Release 4.0 of the IGES specification.

• To convert an Expert drawing to IGES format

When you convert an Expert drawing to IGES format, the system creates and names a formatted file on the local disk, thus letting you write the file to another system for use with IGES-compatible graphics software. You can write IGES files to magnetic tape with the Output Server Tool, to a VAX with the RS232C Tool, to a floppy disk with the Executive window, or to a network File Server with the File Tool. (These Expert tools are described in Chapter 6 of *Using Expert*.) The IGES version of a translated Expert drawing called *filename.dwg* resides on the local disk as *filename.dwg.IGES*. Because IGES files are quite large, you should not keep them on your workstation disk unnecessarily.

1) Select **IGES** in the **System** window to call up the window shown in Figure 6.1.12.

2) Enter the drawing name in the **Local file name:** field. You can either type the name in the field, or press both mouse buttons to choose from a menu of drawing and IGES file names. You do not need to include the *.dwg* extension as part of the entry.

3) Select **Expert Drafting to IGES**. The system creates the IGES version of the drawing and stores it on your local disk with the *.IGES* extension. Each drawing page becomes a separate IGES drawing entity.

You can control details of Expert to IGES conversion by altering the entries in the [IGES] section of your User.cm file. Chapter 6, Section 6.9 of *Using Expert* explains how to find and edit your User.cm file.

Producing a CALS-compliant IGES File

Expert can produce IGES files that meet CALS (Computer-Aided Acquisition and Logistic Support) requirements for Class 1 documents. During Expert to IGES conversion, Expert refers to the **CALS class:** entry of the User.cm to determine what kind of CALS filtering is needed.

If the value after **CALS class:** is *1*, Expert tailors your IGES files to meet the CALS requirements for a Class 1 document (technical illustrations). During the conversion, Expert filters out any objects not acceptable in a Class 1 document. Points disappear from the IGES version of the drawing, and dimension objects are interpreted as ordinary lines and text.

If the **CALS class:** entry is missing, or if the value is anything other than *1*, the system converts the drawing without performing any CALS filtering.

Adding End of Line Characters After IGES Records

Some systems require an end of line character after each record in an IGES file. You can use the **EOL:** entry in the User.cm to supply the character or characters preferred by the system that will be reading your IGES files. The **EOL:** entry can have the following values:

EOL: CR	inserts a carriage return character after each IGES record in the output file.
EOL: CRLF	inserts a carriage return and a line feed after each IGES record.
EOL: LF	inserts a line feed only.
EOL: none	creates the file without any end of line characters.

If the **EOL:** entry is missing or invalid, Expert creates the file without any end of line characters.

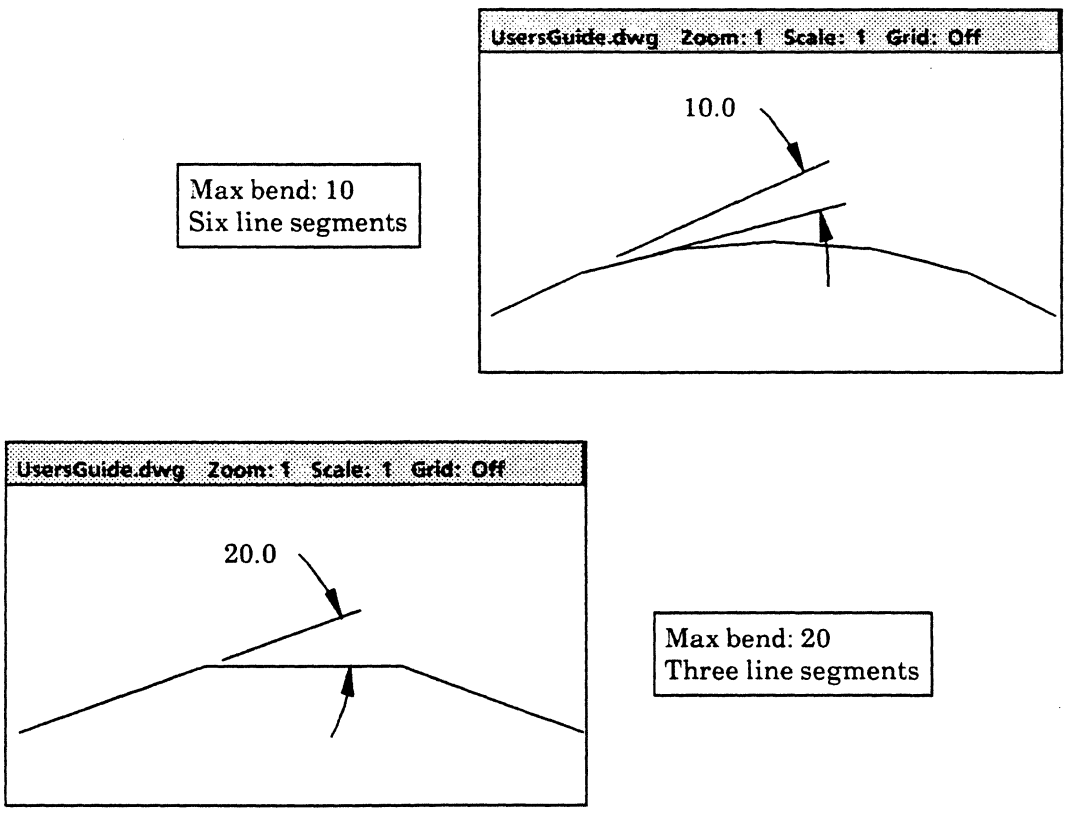


Figure 6.1.13
System commands
Approximating spline curves

• To convert an IGES-formatted drawing to Expert format

1) Move a copy of the IGES file to Expert. You can retrieve IGES files from magnetic tape with the Output Server Tool, from a VAX with the RS232C Tool, from a floppy disk with the Executive window, or from a network File Server with the File Tool. (These Expert tools are described in Chapter 6 of *Using Expert*.) If the name does not contain an *.IGES* extension, you must rename it with the *.IGES* extension on retrieval.

2) Select **IGES** in the **System** command window to call up the window shown in Figure 6.1.12.

3) Enter the name of the IGES file in the **Local file name:** field. You can either type the name in the field, or press both mouse buttons to choose from a menu of drawing and IGES file names. You can omit the *.IGES* extension.

4) Select **IGES to Expert Drafting**. The system creates the new version of the drawing on your local disk, assigning each drawing entity to a separate page, and stores it with the *.dwg* extension. If the system has difficulty reading the IGES file, the message window describes the difficulty and gives the position in the IGES file at which it occurred. When conversion is complete, you can open the new drawing through its design folder.

You can control details of IGES to Expert conversion by altering the entries in the [IGES] section of your User.cm file. Chapter 6, Section 6.9 of *Using Expert* explains how to find and edit your User.cm file.

Approximating spline curves

IGES drawings may contain spline objects; Expert drawings do not. The **Vectorize splines:** entry in the User.cm controls the treatment of splines during IGES to Expert conversions. When the value after **Vectorize splines:** is *true*, Expert will convert a spline curve in an IGES file to a cluster of line segments which approximates the shape of the curve. Anything else will cause spline objects to be ignored.

When **Vectorize splines:** is *true*, the **Max bend:** entry in the User.cm controls how closely the system approximates spline curves during IGES to Expert conversions. The value after **Max bend:** is the maximum bend angle (in degrees) between adjacent line segments. A low number will cause Expert to create many small line segments in areas where the curve is tight. A large number will cause Expert to approximate the curve less exactly, with fewer line segments. (See Figure 6.1.13.) The system ignores any number between 1.0 and 0, and uses the absolute value of negative numbers. If the **Max bend:** entry is missing, or if it does not contain an acceptable value, the system uses a maximum bend angle of 5.0 degrees.

IGES to Expert Mapping

Some IGES entities can not be converted to Expert. These include all solids; curved surfaces and unbounded planes; offset curves and curves on parametric surfaces; certain entities used in finite element analysis; and some structure entities. In addition, IGES defines some fill patterns that cannot be reproduced in Expert. Expert maps these fill patterns to the closest available substitute.

All other IGES entities are converted, as shown in the following table. (Note that although information about intercharacter spacing found in an IGES file is stored with the resulting Expert drawing, this information does not affect the display of Expert text.)

IGES to Expert Mapping

IGES Entity	Expert Object
Geometry Entities	
Circular arc	Circle or Arc
Composite curve	Referenced Drafting objects
Conic Arc	Ellipse, Parabola, or Hyperbola
Copious Data	Clustered lines
Plane	
-Bounded hole	Clustered boundary geometry
-Bounded plane	Clustered boundary geometry
Line	Line
Parametric Spline Curve	Clustered line
Point	Point
Transformation matrix	Used in processing graphic entities.
Flash	Clustered lines
Rational B-Spline Curve	Clustered lines
Connect point	Point
Annotation Entities	
All	Clustered text & geometry

IGES to Expert Mapping, continued...

IGES Entity	Expert Object
Structure Entities	
Line font definition	Line font definition
Subfigure definition	Used in processing graphic entities.
Network subfigure definition	Used in processing graphic entities.
Associativity instance	
-Group	Used in clustering geometry.
-Views visible	Used in processing graphic entities.
-Group without back pointers	Used in clustering geometry.
-Single parent	Used in clustering geometry.
-Ordered group with back pointers	Used in clustering geometry.
-Ordered group without back pointers	Used in clustering geometry.
-Planar associativity	Used in clustering geometry.
Drawing	Used in processing graphic entities.
Property	
-Fill property (obsolete)	Creates solid or slant left area fill if referenced boundary is closed.
-Name	Used to name entity.
-Drawing size	Changes default page width & height. Default is exact fit around existing geometry.
-Drawing units	Changes default drawing units taken from Global section.
-Intercharacter spacing	Stored with referenced text object.
User properties	When reading IGES files created by an Expert Drafting system, Expert uses this information to reset the default text font.
Singular subfigure instance	Used in processing graphic entities.
continued...	

IGES to Expert Mapping, continued...

IGES Entity	Expert Object
Structure Entities, continued...	
View	Used in processing graphic entities.
Rectangular array subfigure instance	Used in processing graphic entities.
Circular array subfigure instance	Used in processing graphic entities.
Network subfigure instance	Used in processing graphic entities.

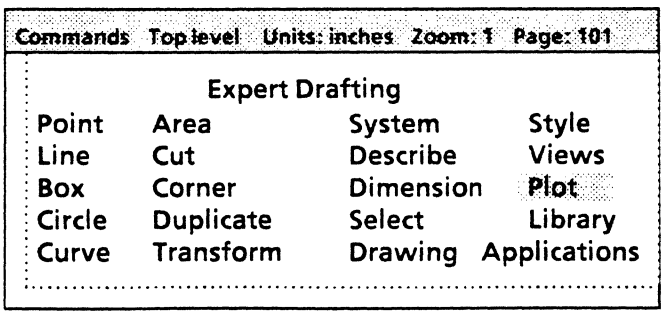
6.2 Plot

The **Plot** commands direct specified drawing pages or portions of a drawing either to a local output device or through the Ethernet to networked remote plotters or printers. Bring up the **Plot** command window by selecting **Plot** from the top-level command window or its pop-up menu or by pressing the **PLOT** key. See Chapter 7 of this manual on the use of the Expert Illustrator.

Expert provides formatting for Versatec electrostatic plotters as well as for Hewlett-Packard, CalComp, and Houston Instrument pen plotters. Formatting is also available for Gerber photoplotting and for Interpress printers. Note that you may also use the RS232C Tool described in Chapter 6 of *Using Expert* to send a plot request through an optional RS232C port to a pen plotter. Detailed procedures for checkplotting and photoplotting appear in the *Expert Printed Circuit Board Design* manual. Before attempting to plot a file, check with your system administrator for instructions on the use and location of your plotters.

To plot a drawing, you must specify an output format and indicate whether you are plotting a file or files, a drawing view, or only objects you choose by dragging a selecting rectangle around them. Expert supports *Hewlett-Packard 7475, 7580,* and *7585* formats; as well as *CalComp 925* and *945*; *Houston Instrument 695, 41,* and *42*; *Versatec Random Format* (*VRF*) and *One-dimensional Compacted Raster* format (*1dRas*); *Gerber*; *COMp80*; and *Interpress*. In addition, you may also specify a plot scale, the number of copies, the maximum size of the output image, the name of the output file, and whether or not you wish to plot only selected objects. If you are plotting by file, you must indicate the names of the files you wish to plot and the pages to plot.

Selecting **Plot: to local file on disk** creates a formatted file on your local disk that you may later write to a magnetic tape, send through the RS232C port, or send through the Ethernet for use with compatible output devices. The **Plot: to local plotter** command sends the drawing directly to a Versatec plotter attached to the workstation's parallel port. **Plot: to RS232C** sends the drawing to a pen plotter attached through an RS232C port. The remaining commands let you plot directly or in compacted raster format to the networked Versatec plotters whose numbers and types are listed in the related fields. Selecting **Inquire** directs your workstation to list plotter numbers (or names) and corresponding plotter types in the fields following the **Plot:** commands.



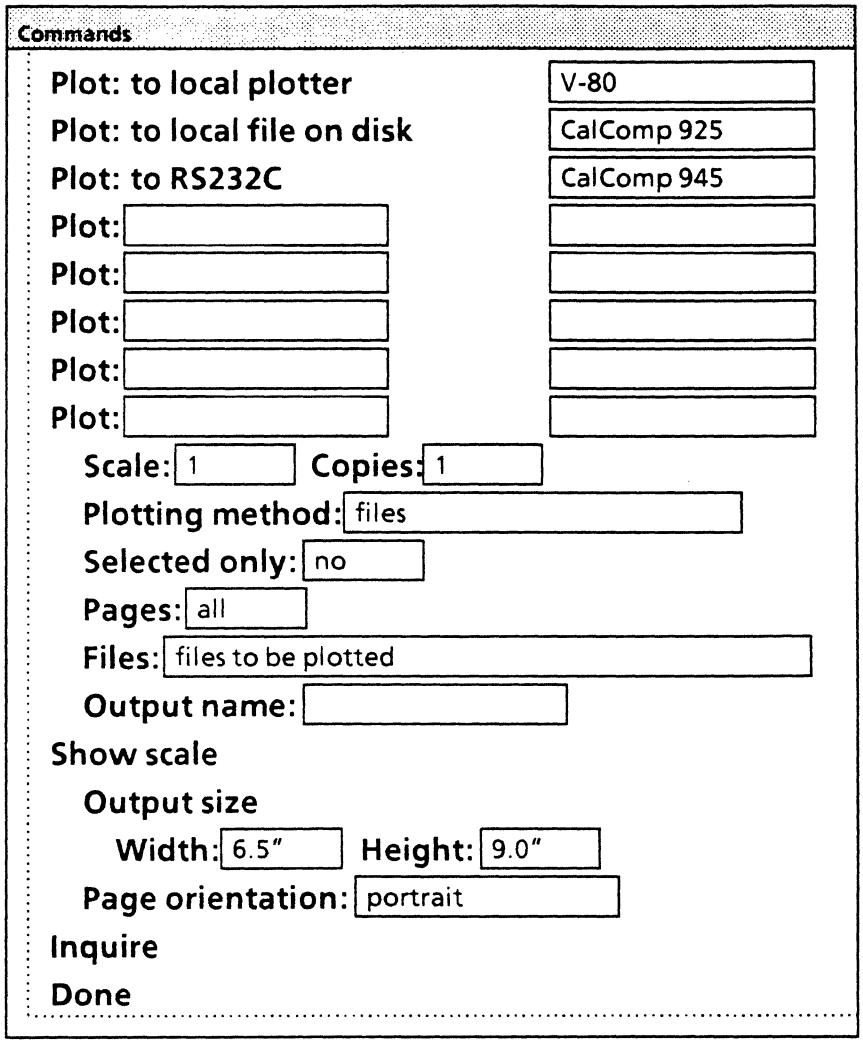


Figure 6.2.1
Plot commands
Output options

6.2.1 Capturing Graphics

The following procedures describe three methods for determining which drawing objects will appear in your plot: plotting *by file*, plotting *by drawing view*, and plotting *within a rectangle*. All methods use the **Plot** command window shown in Figure 6.2.1.

• To plot drawings by file

When you plot a drawing *by file*, the drawing may be closed and saved on your workstation's disk, or open on your display. The plot reflects the current state of the drawing. All layers are visible; all objects, selected or not, appear in the plot. Plotting by file allows you to plot several drawings with one command.

1) Call up the **Plot** command window shown in Figure 6.2.1.

2) Set the **Plotting method:** field to **files**.

3) Select inside the **Files:** field and type the name of the drawing or drawings to be plotted. You may omit the *.dwg* extension. If you wish to plot more than one drawing, you can describe them to the system in three ways:

   (a) Enter a list of drawings with the names separated by spaces. The list may extend beyond the edge of the parameter frame.

   (b) If the files you want to plot have similar names, use the asterisk (*) or pound sign (#) as a wildcard character. The * stands for any number of characters, including 0; the # stands for exactly one character. For example, entering **floorplan* in the **Files:** field tells the system to plot all drawing files whose names end with the characters *floorplan*. *Floorplan#* tells the system to plot all drawing files whose names consist of the characters *Floorplan* followed by a single additional character. (Floorplan.dwg would not be included.)

   (c) Create a text file in a file window in which you list files by either or both of the methods described above. Type an @ in the **Files:** field, followed immediately by the name of the text file, as in *@drawinglist.txt*. When you list file names in a text file, Expert does not automatically add the *.dwg* extension; you must supply it. Do not use carriage returns. Chapter 3, Section 3.5.1 of *Using Expert* explains the use of file windows to create text files.

(Continued)

4) Enter the number of the drawing page you want plotted in the **Pages:** field. If you are plotting directly to a Versatec plotter you can specify several pages at once. Be sure to separate digits in the **Pages:** field by spaces; do not use commas. To plot all pages enter **all** in the **Pages:** field. If you are plotting a list of files the system plots only the specified pages of each file.

5) If you are plotting directly to a Versatec plotter, enter the number of copies you want printed in the **Copies:** field. Otherwise, the system will ignore this field and plot one copy of each drawing page.

6) Set the **Page orientation:** field to **portrait** for normal orientation; set it to **landscape** to rotate the plotted image 90 degrees. Be aware that the system will overrule your decision if necessary to make the plot fit on the page.

7) *If you are plotting from a displayed drawing*, set the **Width:** and **Height:** fields according to the image area of your output device and the page orientation you selected in Step 6. This will allow you to scale your output automatically.

   Select **Show scale**. The system asks you to confirm over a drawing view. It sets the **Scale:** field to the largest scale that will allow the entire drawing page to fit within the image area you defined in the **Width:**, **Height:**, and **Page orientation:** fields. You may enter a different value if you prefer.

8) *If you are* not *plotting from a displayed drawing*, set the **Scale:** field to the scale at which you want the drawing or drawings to be plotted.

9) If you are plotting a single file, you can specify a name for the resulting plot file by typing it into the **Output name:** field. (Direct raster plotting does not create a plot file.) Expert automatically includes the extension characteristic of your output format; do not enter it here. If you leave this field blank, the system names each plot file with the drawing name (including *.dwg)* followed by the appropriate extension.

10) Proceed to one of the output procedures in Section 6.2.2. The message window records your progress as the system creates your plot or plot file.

• To plot a drawing view

Plotting by *drawing view* allows you to plot a drawing page as it is currently displayed in a particular drawing window. Only objects on visible layers appear in the plot. If you wish you may plot only selected visible objects.

1) Before you start, display the page you want to plot in a drawing window.

2) Call up the **Plot** command window shown in Figure 6.2.1.

3) Set the **Plotting method:** field to **drawing view**.

4) If you are plotting directly to a Versatec plotter, enter the number of copies you need in the **Copies:** field. Otherwise, the system will ignore this field and plot one copy.

5) Set the **Page orientation:** field to **portrait** for normal orientation; set it to **landscape** to rotate the plotted image 90 degrees. Note that the system will overrule your decision if necessary to make the plot fit on the page.

6) If you wish to use the **Show scale** command, set the **Width:** and **Height:** fields according to the image area of your output device, and select **Show scale**. Confirm with the mouse over the view you want to use. The **Scale:** field shows the scale at which the drawing must be plotted to fit into the image area you have specified in the **Width:**, **Height:**, and **Page orientation:** fields. You may select inside the **Scale:** field and type a different value if you wish.

7) Set the **Selected only:** field to **no** if you want to plot all objects in the drawing view. Set it to **yes** if you want to plot only the objects which are currently selected.

8) You can specify a name for the resulting plot file by typing it into the **Output name:** field. (Plotting directly to a raster device does not create a plot file.) Expert automatically includes the extension characteristic of your output format; do not enter it here. If you leave this field blank, the system names the plot file with the drawing name (including *.dwg*) followed by the appropriate extension.

9) Decide where you want to direct your output, and follow the appropriate output procedure in Section 6.2.2.

10) When the mouse-shaped cursor appears, confirm over the drawing view you wish to plot. The plot shows the drawing page as it appears in that view, at the scale shown in the **Scale:** field.

• To plot objects within a rectangle

Plotting *within a rectangle* lets you plot a rectangular portion of any drawing page. Only objects on visible layers appear in the plot. If you wish you may plot only selected visible objects within the rectangle.

1) Before you start, display the drawing page from which you want to plot in a drawing window.

2) Call up the **Plot** command window shown in Figure 6.2.1.

3) Set the **Plotting method:** field to **within rectangle**.

4) If you are plotting directly to a Versatec plotter, enter the number of copies you need in the **Copies:** field.

5) Set the **Selected only:** field to **no** if you want to plot all objects within a rectangular area. Set it to **yes** if you want to plot only the objects within the rectangle that are currently selected.

6) You can specify a name for the resulting plot file by typing it into the **Output name:** field. (Direct raster plotting does not create a plot file.) Expert automatically includes the extension characteristic of your output format; do not enter it here. If you leave this field blank, the system names each plot file with the drawing name (including *.dwg*) followed by the appropriate extension.

7) Set the **Page orientation:** field to **portrait** for normal orientation; set it to **landscape** to rotate the plotted image 90 degrees. Note that the system will overrule your decision if necessary to make the plot fit on the page.

8) If you want to use the **Show scale** command, set the **Width:** and **Height:** fields according to the image area of your output device, and select **Show scale**. Confirm with the mouse over the view you want to use. The **Scale:** field shows the scale at which you must plot to fit the entire drawing page into the image area you have specified in the **Width:**, **Height:**, and **Page orientation:** fields. You may select inside the **Scale:** field and type in a different value if you wish.

9) Decide where you want to direct your output, and follow the appropriate output procedure in Section 6.2.2.

10) When the mouse-shaped cursor appears, move the cursor to the area you wish to plot. Press and hold down the left mouse button. Then draw the mouse in any direction to display a flashing rectangle over a portion of the drawing. Once the rectangle encloses the area chosen for plotting, release the left mouse button. The plot shows the portion of the drawing included in the rectangular area.

If you are creating an Interpress plot file, as you extend and retract the rectangle the system uses the information in the **Width:**, **Height:**, and **Page orientation:** fields to compute the scale at which the objects within the rectangle must be plotted to fit the image area. The system displays this value in the **Scale:** field and asks you to confirm with the left mouse button before plotting. For any other kind of plot, the system scales the plotted portion of the drawing by the value entered in the **Scale:** field.

6.2.2 Directing Output

This section describes three ways of directing output: creating a plot file on your workstation's disk, raster plotting to an Versatec electrostatic plotter, and plotting through the RS232C port to a pen plotter.

To format a drawing to Hewlett-Packard, CalComp, Houston Instrument, VRF, COMp80, Interpress, or Gerber format, see • **To create a formatted plot file on the local disk**. To plot directly to a Versatec electrostatic plotter, or to create a plot file in One-dimensional Compacted Raster format, see • **To plot in raster format**. To plot via the RS232C port to a Hewlett-Packard, Houston Instrument, or CalComp plotter, see • **To plot through an RS232C port**.

Refer to Section 6.2.3 below to see whether or not you need to change the sections of your User.cm file that pertain to the output device you will be using.

• To create a formatted plot file on the local disk

1) Select a format option in the **Plot: to local file on disk** field. Select either **HP 7475**, **HP 7580**, **HP 7585**, **CalComp 925**, **CalComp 945**, **HI 695**, **HI 41**, **HI 42**, **COMp80**, **Gerber**, **Interpress**, or the **VRF** format corresponding to your plotter model.

2) Select **Plot: to local file on disk**, and complete the plotting procedure you chose from Section 6.2.1. When you have done so, the system creates the new file, adding an extension to the name you placed in the **Output name:** field (or to the drawing name) to indicate the new file's format. For example, formatting a drawing called *drawing.dwg* to HP 7475 format results in a new file called *drawing.dwg.hp7475*. Note that plotting does not alter the original drawing file.

Interpress and **VRF** files plot automatically when you create them. If you have difficulty producing VRF or Interpress files, make sure that your User.cm contains the name of your plotter after **Host:** in the [OutputServerTool] section and the name of your laser printer after **Interpress:** in the [HARDCOPY] section.

(Continued)

You write Gerber, CalComp 925, and COMp80 files to magnetic tape using the Output Server Tool. You can also use the Output Server Tool to send VRF files to Versatec plotters. You send Hewlett-Packard, Houston Instrument, and CalComp 945 files to a local plotter using the RS232C Tool. You can send an Interpress file to a printer using the Executive window. (For instruction on the use of the Output Server Tool, RS232C Tool, and the Executive window, see Chapter 6 of *Using Expert.*)

Use the full drawing name, including its extensions, (for example, *Drawing.dwg.cal925*) when referring to plot files in Expert tool windows. The extensions *.hp7475*, *.hp7580*, and *.hp7585* designate Hewlett-Packard plotter formats, while *.hi695*, *.hi41*, and *.hi42* designate Houston Instrument formats. The *.cal925* and *.cal945* extensions designate CalComp formats. Expert uses the *.photo* extension for Gerber format, *.comp80* for COMp80 format, *.VRF* for Versatec Random Format, and *.ip* for an Interpress file.

• To plot in raster format

The **Plot:** and **Plot to local plotter:** commands allow you to perform raster plotting. If you have a Versatec electrostatic plotter connected to your network by an Output Server, or connected to your 8010 workstation by a 290 Personal Plotter Interface Unit, you can plot Expert drawings directly, without creating a formatted plot file. If your electrostatic plotter is connected to the network by a Plot Server rather than an Output Server, the **Plot:** command creates a plot file in One-dimensional Compacted Raster format, which you can send to the plotter using the Output Server Tool. (See Chapter 6 of *Using Expert.*) The file name extension for a compacted raster file is *.1dRas*.

You may prefer to plot using VRF format. *VRF* (Versatec Random Format) plots a file more quickly. However, the VRF format plots text with vector fonts, which may not exactly duplicate what you see on your display, and represents grey-filled areas as black or patterned. To plot a VRF file, use the **Plot: to local file on disk** command, and set the format to **VRF**.

a) To plot to a *network plotter through an Output Server:*

1) If you do not see the name of the plotter you want to use in the **Plot** command window, select **Inquire**. The system searches for available Output Servers and updates the contents of the **Plot:** fields. Only idle plotters will appear in the updated fields. The **Plot:** fields will contain names and plotter models if you have a network Clearinghouse, numbers and plotter models otherwise. You may also type the name or number of the desired plotter in one of the **Plot:** fields.

2) Select the **Plot:** command opposite the name of the plotter you want to use, and complete the plotting procedure you chose from Section 6.2.1. When you have done so, the plot passes directly to the plotter, in raster format.

b) To plot to a *network plotter through a Plot Server:*

1) If you do not see the name of the plotter you want to use in the **Plot** command window, check your HOSTS.TXT file. (See *Using Expert* Appendix 8.2.) The **Plot:** fields will contain the names and plotter models of all plotters listed in the HOSTS.TXT file.

2) Select the **Plot:** command opposite the name of the plotter you want to use, and complete the plotting procedure you chose from Section 6.2.1. When you have done so, the system creates a plot file in One-dimensional Compacted Raster format, with the file name extension *.1dRas*. You can use the Output Server Tool to send this file to the plotter.

c) To plot to a *local electrostatic plotter*:

1) Set the **Plot: to local plotter** field to the appropriate plotter type.

2) Select the **Plot: to local plotter** command, and complete the plotting procedure you chose from Section 6.2.1. The plot passes directly to the plotter, in raster format.

• To plot through an RS232C port

1) Set the format field of the **Plot: to RS232C** command to either **HP 7475, HP 7580, HP 7585, HI 695, HI 41, HI 42,** or **CalComp 945,** to correspond to your plotter type.

2) Select **Plot: to RS232C**, and complete the plotting procedure you chose from Section 6.2.1. The system creates a formatted file on your disk and sends it to your plotter. You may also use the RS232C Tool, as described in *Using Expert,* to communicate with local pen plotters.

6.2.3 User.cm Settings for Output Devices

Expert refers to certain parameters in the User.cm file when it communicates with output devices. This section describes the parameters which affect the appearance of your plots. Other User.cm parameters involving output devices are described in *Using Expert.*

If you need to change default values in the User.cm, load the file into a file window and set the parameters as needed. (You can find instructions for editing a file in a file window in *Using Expert,* Chapter 3, Section 3.5.) Spell and capitalize parameter values exactly as they are shown here.

Hardcopy Parameters

When you output a drawing to a Hewlett-Packard, Houston Instrument, or CalComp pen plotter, a COMp80 machine, an electronic printer, or a Gerber photoplotter, Expert refers to the [HARDCOPY] section of your User.cm file for parameters which affect the appearance of your drawing. These parameters and their default values are shown in Table 1 below.

Parameter	Default Value
Interpress:	The Name of Your Print Server
Lines:	fill
Pen plotter dashes:	false
Fill areas:	true
Pen plotter fonts:	false
BWSpool:	false

User.cm settings
Hardcopy parameters

Interpress: should be followed by the name of your printer. Check this entry if you have difficulty printing Interpress files.

10. Indexes

10.1 Subject Index

See the *Command Index* (Section 10.2) for the locations of individual drafting commands.

A

Accelerators, keyboard 9-1
Angle bisector 2-33
Angular units
  Dimension 4-41, 6-12
  System 6-3, 6-10
Annotation 4-5, 4-29, 6-23
ANSI 1-12, 6-3, 6-5
  (*See also* Dimension)
Arc 2-59, 2-61
  Around implicit point and tangent 2-81
  Around point and tangent 2-81
  From coordinates 2-75
  From implicit points 2-77
  From one point 2-79
  From three points 2-83, 2-87
  From three implicit points 2-85
Area 2-109
  Create 2-111
  Destroy 2-111
  Styles (*See* Styles)
Arguments (parameters) 1-5, 1-8, 6-13

B

Bisect 2-33
Blank drawing 1-12, 6-5, 6-21
Board Design 1-6
Box 2-45
  Freehand 2-47
  From a point 2-49
  From coordinates 2-47
  From two points 2-49
Breaklines 3-17

C

CalComp
  Formats supported 6-29
  To create a formatted file 6-35, 6-36a
  To plot a formatted file 6-36, 6-36a
  User.cm settings for 6-36b, 6-37
CALS 6-27
Center view 5-45
Chamfer corner 3-21
Circle 2-51
  From coordinates 2-53
  From point 2-55
  From point and object 2-65
  From three points 2-61
  From two points 2-63
  Tangent 2-59, 2-69
  With particular diameter 2-57
Cluster 5-19
Color 1-20, 5-73
Command
  Organization 1-2
  Parameters 1-5, 1-8, 6-13
  Windows 1-5
Computer-Aided Acquisition and Logistic Support 6-27
Comp80 output 6-35, 6-36, 6-36b
Confirmation 1-4
Conic 2-99
  Definition 1-4
  Hyperbola 2-99, 2-101, 2-105
  Parabola 2-77, 2-103
  Through three points 2-107
Conversion 7-9, 7-15
Coordinate 1-4
Copy (*See* Duplicate)
Copy text
  from a drawing to a file window 4-17
  from a file window to a drawing 4-13, 4-15
Corner 3-19
  Chamfer 3-21
  Fast 9-9
  Fillet 3-21
  Sharp 3-21
Current layer 1-20, 5-68
Current view 1-13

Curve 2-71
Arc (*See* Arc)
Conic (*See* Conic)
Definition 1-4
Ellipse (*See* Ellipse)
Cut 3-3
Breaklines 3-17
Dissect 3-11
Dissect into equal pieces 3-15
Self-dissect 3-13
Trim to one object 3-5
Trim to length 3-9
Trim to two objects 3-7
Cycling 1-10

D

Dash pattern 5-23, 5-25, 5-27, 6-37
Decimal places
For dimensions 4-41
For system units 6-10, 6-13
Defining points 5-6
Describe 5-3
Defining points 5-6
Drafting parts 8-6
Drawing attributes 5-8
Fast describe 9-9
Layer 5-75
Part 5-5
Relative description 5-7
Styles 5-11, 5-13, 5-27, 5-33
Written description 5-5
Deselection 5-15
Design folders 1-6, 6-5
Destroy
Views 5-39
Areas 2-111
Dimension 4-3
ANSI 4-31, 4-39, 4-42
Angular 4-25
Annotation 4-5, 4-29
At angle 4-15
Changing
ANSI/ISO style definition 4-39
Existing dimensions 4-38, 4-41
Text 4-23
Style 4-31, 4-38, 4-41
Diametric 4-23
Dragging of 3-43
Dual 4-31
Horizontal 4-13
Indexed 4-27
ISO 4-31, 4-39, 4-42
in ViewPoint 7-2
Layer 1-20, 5-70
Limit 4-41
Radial 4-21
Styles 4-31
Units 4-41, 6-12
Vertical 4-19
Directrix 2-99
Dissection (*See* Cut)
Drafting part 8-1
Abbreviation 8-1, 8-6
Create 8-1, 8-2, 8-8
ID 8-1, 8-4, 8-6
Place 8-1, 8-10
Uncluster 8-1, 8-12
Write 8-1, 8-6, 8-8
Dragging geometry 3-43
Drawing window 1-10
Blank 1-12, 6-21
Creating another view 1-13, 5-39
Creating from format 1-12, 6-5
Erasing changes to 6-9
Saving changes to 6-7
Duplicate 3-23
Along trajectory 3-31
Around point 3-39
At different scale 3-37
At displacement 3-25
Horizontal replication 3-29
Image profile 3-33
Mirror and keep 3-27
Object-relative 3-27
Vertical replication 3-29
Dynamic (pop-up) menus 1-7, 1-9

E

Editable fields 1-9, 6-15
Ellipse 2-71, 2-89
Around point 2-95
From coordinates 2-91
From implicit points 2-93
From point and trajectories 2-97
From two points 2-97
Endpoints
Point from 2-11
Line between 2-35
Erasing changes 6-3, 6-9
Expert Illustrator (*See* Illustrator)
Expert Printed Circuit Board Design 1-6

Extensions, file name 1-12, 6-5, 6-7, 6-27, 6-31

F

Feature control characters 4-5, 4-7, 4-9, 7-2, 7-19, 9-7, 9-11
Fields
  Definition 1-5
  Text 1-15, 6-15
  Parameter 1-5, 1-8
File name 1-12, 6-5, 6-7, 6-27, 6-31, 7-5, 7-8
Fill pattern (*See* Styles, Area)
Floppy disk 7-7
Focus 2-99, 2-101
Format, drawing 1-5, 1-6, 1-12, 6-3, 6-5, 6-21
Forms and properties 6-15
Fonts 1-4, 1-15, 5-21, 6-36, 7-20, 7-23, 7-24, 7-25

G

Gerber photoplotting 6-35, 6-36, 6-36b
Grid 5-50
  Change appearance 5-50, 5-53
  Change current 5-53
  Create new 5-57, 5-59, 5-61, 5-63
  Delete current 5-53
  Describe 5-55
  Isometric 5-50, 5-59
  List 5-53
  Non-orthographic 5-50
  Normal 1-4, 5-50
  Points displayed 5-55
  Snap-to-grid 5-55
  Spacing 1-4

H

Hewlett-Packard plotting
  Formats supported 6-29
  To create a formatted file 6-35,6-36a
  To plot a formatted file 6-35, 6-36, 6-36a
  User.cm settings for 6-36b, 6-37
HOSTS.TXT file 6-36a
Houston Instrument plotting
  Formats supported 6-29
  To create a formatted file 6-35,6-36a
  To plot a formatted file 6-35, 6-36, 6-36a
  User.cm settings for 6-36b, 6-37
Hyperbola 2-99, 2-101, 2-105

I

IGES 6-27
Illustrator 7-1
  Procedures 7-4
  Text mapping 1-15,7-23
  ViewPoint property defaults 7-22
  ViewPoint property options 7-5, 7-17
Image frame 7-1, 7-12,7-14
Implicit points 1-4, 2-1, 2-2
Interpress 6-35, 6-36b, 6-39, 7-1, 7-6, 7-12, 7-14
Initial top-level commands 1-5
ISO 1-12, 6-3, 6-5
  (*See also* Dimension)
Isometric grid 5-50

K

Keyboard
  Accelerators 9-1
  Feature control characters 4-5, 4-7, 4-9, 9-7, 9-11

L

Layer 1-19, 5-65
  Change current layer 5-68
  Change dimension layer 5-70
  Change layer of selection 5-69
  Color 5-73
  Create new layer 5-69
  Delete layer 5-75
  Describe layer 5-75
  Protection 5-71
  Rename layer 5-69

Select layer 5-76
Visibility 5-71
Library 1-6, 8-1, 8-6
Line 2-19
Between endpoints 2-35
Bisector 2-33
Definition 1-4
Freehand 2-25
From coordinates 2-21
From implicit points 2-23
From one line 2-29
From one point 2-27
From two curves 2-43
From two points 2-33
Parallel 2-31
Relative to arc or circle 2-41
Through point, relative to object 2-37
Line style (*See* Style)
Linear units
Dimension 4-41, 6-12
System 6-3, 6-10

M

Magnification 1-17,3-53
Margins,ViewPoint 7-5, 7-17
Menus 1-7, 1-10
Message window 5-3, 6-10
Midpoint (line segment) 2-9
Mirroring
Copy 3-27
Move 3-49
Move (*See* Transform)
Multiple choice fields 1-9, 6-15

N

Notes 3-27, 4-5, 4-29, 6-23
Numeric fields 1-9, 6-15

O

Object, definition of 1-4
Object relative
Copy 3-27
Move 3-49
Object styles (*See* Styles)
One-dimensional Compacted Raster 6-29, 6-36
1dRas 6-29, 6-36
Origin 1-4
Output (*See* Plotting)
Output Server 6-36
Overviews 1-9, 1-11, 5-41

P

Page orientation 6-32, 6-33, 6-34, 6-35, 7-5, 7-17
Page size 1-12, 6-15, 6-21, 7-5, 7-17
Pages 5-48
Parabola 2-99, 2-103
Parameters 1-5, 1-8, 6-13
Part, drafting 8-1
Abbreviation 8-1, 8-6
Create 8-1, 8-2, 8-8
ID 8-1, 8-4, 8-6
Place 8-1, 8-10
Uncluster 8-1, 8-12
Write 8-1, 8-6, 8-8
Pixel 1-4
Plot Server 6-36, 6-36a
Plotting 6-29
By drawing view 6-33
By file 6-31
Multiple files 6-31
Through RS232C port 6-35, 6-36a
To file on disk 6-35
To local device 6-36a
To Versatec plotter 6-33, 6-35, 6-36, 6-36a, 6-37
Within rectangle 6-34
Point 2-3
Along arc 2-13
Along line 2-11
Endpoints 2-11
Fast point 9-9
From coordinates 2-7
From point 2-7, 2-9
From point, along trajectory 2-15
Implicit 1-4, 2-1, 2-2
Intersection 2-17
Midpoints 2-9
On circle 2-15
Virtual 2-17
Pop-up menus 1-7, 1-9
Projections 3-55

Properties
in Expert 6-15
inViewPoint 7-9, 7-12, 7-14, 7-15 7-16,7-20

R

Ray 1-4
Replicate (*See* Duplicate)
Replicate fields 6-15, 6-25
Rotate
Copy 3-39
Move 3-51
RS232C port 6-29, 6-35, 6-36, 6-36a

S

Saving changes 6-3
Saving command parameters 4-31, 6-3, 6-13
Scale
Drawing 1-17, 3-37, 5-65, 5-67
Dimension 4-34
in Illustrator 7-5, 7-6, 7-22
Plot scale 6-32, 6-33, 6-34, 6-35
Selection 5-15
By layer 5-71, 5-76
Of all objects 5-17
Of clusters 5-19
Of contiguous objects 5-18
Of objects by type 5-18
Protection from 5-71
Using **Find** 5-19
Within rectangle 5-17
Self-dissection 3-13
Sharp corner (*See* Corner) 3-21
Snap-to-grid 5-55
Spline curves 6-28a
Standard top-level commands 1-6
Stretch 3-41, 3-57
A single line, arc, or circle by a displacement 3-59
A single line, arc, or circle to a point 3-61
A group of lines from an endpoint by a displacement 3-63
A group of lines from an endpoint to a point 3-65
A group of lines from a line segment 3-67
Start angle 2-73
Stop angle 2-73
Styles 1-14, 5-21
Area 1-14, 5-23, 5-29, 7-2
Change area 5-23
Change line 5-23
Change text 5-23
Describe line and area 5-11, 5-13 5-27, 5-33
Dimension 4-25
Line 1-14, 5-23, 5-25, 6-37
Redefine line 5-25
Redefine area 5-29
Text 1-15, 5-23
Tolerance 4-41, 6-12
ViewPoint (*See* Illustrator)
System 6-3
Drawing creation 6-5
Format creation 6-21
Forms and properties 6-15
Erasing changes 6-9
IGES formatting 6-27
Replicate fields 6-15, 6-25
Saving changes 6-7
Saving command parameters 6-13
Table creation 6-15
Text notes 6-23
Units 6-10

T

Tables 6-15, 6-25
Text
copying between drawings and file windows 4-13, 4-15, 4-17
Dimension 4-5, 4-29
Fields 1-15, 6-15
Notes 3-27, 4-5, 6-23
ViewPoint 7-2, 7-14, 7-20, 7-23
Styles (*See* Styles)
Tolerance style 4-41
Top-level commands 1-6
Trajectory, definition of 1-4
Transform 3-41
At displacement 3-47
Drag 3-43
Magnification 3-53
Mirror 3-49
Object-relative move 3-49
Projections 3-55
Rotate 3-51

Stretch (*See* Stretch)
Trim (*See* Cut)
Unlimit 2-19, 3-41

U

Uncluster 5-19
Undo 1-6, 9-7
Units
Dimension 4-41, 6-12
System 6-10
Unlimit 2-19, 3-41
User-choice fields 1-9, 6-15
User.cm file 6-35, 6-36a, 7-2
User profile 7-23

V

Vector text 1-15, 5-23, 6-36, 7-20, 7-23
Versatec plotter 6-32, 6-33, 6-34, 6-35, 6-36
ViewPoint (*See* Illustrator)
Views 5-35
Appearances (**Visibility**) 5-47
Centering 5-45
Creating additional 1-13, 5-39
Current 1-13, 5-31
Destroying 5-39
Grids (*See* Grid)
Layer visibility 5-71
Overviews 1-13, 5-41
Pages 5-48
Reducing/magnifying (**Zoom**) 1-13, 1-17, 5-37
Virtual point 2-17
VRF format 6-35, 6-36, 6-38

W – Z

Windows
Command 1-6
Drawing 1-10
X-spacing (*See* Grid)
Y-spacing (*See* Grid)
Zooming views 1-13, 1-17, 5-37

10.2 Command Index

A

Abbreviations: (Drafting parts) 8-8
Add
  page: 5-48
  properties 6-17
Along object: (implicit point) 2-2
Angle bisector 2-33
Angular dimension 4-19
Another view 1-6, 1-13, 5-39
Applications 1-6, 7-2
Arc 2-73
  around one point, between two other points 2-87
  around point, tangent to trajectory 2-81
  around point with radius: 2-75
  at point* 2-77
  at point and tangent to object* 2-59
  at (X, Y) 2-75
  through three points 2-81
  with 3 points* 2-85
Area 2-1, 2-109, 2-111
At angle: (Drafting parts) 8-10
At intersection points 2-15, 2-17
At (X,Y) (point) 2-7

B

Bold text: 6-39
Both endpoints (of line) 2-11
Both endpoints (of curve) 2-13
Bottom (point of circle) 2-15
Box 2-1, 2-45
  at (X, Y) 2-45, 2-47

C

CALS class: 6-27
Capture by: (Drafting parts) 8-8
Center of curve 2-13
Center (point of circle) 2-15
Center view 5-35, 5-45
Chamfer with cut: 3-19, 3-21
Change
  area style: 5-21, 5-23
  current grid appearance to: 5-53, 5-57, 5-59, 5-61
  current grid to: 5-53
  dimension style 4-38, 4-39
  dimension units 4-42
  line style: 2-19, 2-51, 2-67, 5-21, 5-23
  old dimensions 4-38, 4-39, 4-41, 5-23
  selected to current (layer) 5-55, 5-65
  text style: 5-21, 5-23
  to: style 4-42
Circle 2-1, 2-51
  around point, with diameter: 2-55
  around point, through point 2-55
  at point and tangent to object* 2-59
  at (X, Y) 2-53
  between objects 2-65
  with diameter* 2-57
  with 3 points* 2-61
  with 2 points* 2-63
Cluster 5-15, 5-19
Conic 2-99
Copy objects by (dX, dY) 3-23, 3-25
Copy text in 4-3, 4-13, 4-15
Copy text out 4-3, 4-17
Corner 3-1, 3-19, 5-19, 5-67, 9-9
Create
  area from outline 2-109, 2-111
  box 2-41, 2-45
  from format: 1-6, 1-12, 6-3, 6-5, 6-21
  new grid 5-57, 5-59, 5-61
  new grid named: 5-57, 5-59, 5-61
  pub file from: 7-1, 7-4, 7-6
  text field 6-19
Current
  layer: 5-65, 5-68, 5-69
  scale: 5-65, 5-67
Curve 2-1, 2-71
Cut 3-1, 3-3, 5-19, 5-67

D

Defining points 5-3, 5-6

Delete 5-15, 5-75, 9-7, 9-9
current grid 5-53
layers: 5-65, 5-75
page: 5-51
properties 6-17
Describe 5-1, 5-3, 9-9
area styles 5-3, 5-13, 5-21, 5-29
current grid 5-55
drawing 2-19, 5-3, 5-8
layers 5-65, 5-75
line styles 2-19, 2-51, 2-71, 5-3, 5-11, 5-21
Destroy view 5-39
Destroy area,
keep outline 2-109, 2-111
Detail at current scale 1-17, 3-23, 3-27, 3-37, 5-67
Diametric dimension 4-23
Dimension 2-45, 4-1, 4-3
at angle: 4-21
at same angle: 4-21
layer: 5-65, 5-69, 5-70
style 4-1, 4-3, 4-31
Display
arrowheads as: 5-47
every ___ grid point 5-55
dimensions as: 5-35, 5-47
page: 5-49
points as: 5-47
Dissect 3-11
Dissect into equal pieces: 3-3, 3-15
Done 1-7, 9-1, 9-5
Drafting parts 8-1, 8-5, 8-8, 8-10
Drag 3-43, 4-11, 8-7
along trajectory 3-43, 3-45
around pivot 3-43, 3-45
Drawing 3-37, 5-1, 5-65
Duplicate 3-1, 3-23, 5-19, 5-67
(dX, dY) from point (point) 2-7

E

Ellipse 2-89
around point, rotated by: 2-95
around point, through point 2-97
at point* 2-93
at (X, Y) rotated by: 2-91
Enable text field selections: 3-23, 5-15, 6-17, 6-19, 6-21, 6-23, 6-25
End point (implicit point) 2-2
EOL: 6-28
Erase (implicit point) 2-3
Erase and close 6-3, 6-9
Erase changes 6-3, 6-9
Everything (Select) 5-15, 5-17, 9-7
Expert Drafting to IGES 6-27

F

Fillet with radius: 3-21
Find 5-15, 5-19, 9-7
Forms and properties 2-19, 4-5, 6-3, 6-17
Freehand
box 2-45, 2-47
lines 2-19, 2-25

G

Grid 2-3, 5-35, 5-50

H

Horizontal dimension 4-19
Horizontal line
at Y 2-21
through point 2-27
Hyperbola at (X, Y) 2-105

I

IGES 6-3, 6-27
IGES to Expert Drafting 6-28a
Illustrator 7-2
Image profile with offset: 3-23, 3-33
Inquire 6-29, 6-36
Intersection (implicit point) 2-3
Italic text: 6-39

L

Layer
color: 5-65, 5-73
protection: 5-65, 5-72
visibility: 5-65, 5-71

Left (point of circle) 2-15
Length from point: (point) 2-9
Library 1-6
Library name: (Drafting part) 8-8
Line 2-1, 2-19
  at absolute angle through point 2-27
  between endpoints 2-35
  between centers of curves 2-35
  between points 2-33
  cross tangent to curves 2-43
  parallel at distance: 2-31
  straight tangent to curves 2-43
  through center at absolute angle: 2-41
  through end at absolute angle: 2-29
  through end at relative angle to line: 2-29
  through midpoint at absolute angle: 2-29
  through midpoint at relative angle to line: 2-29
  through point and endpoint 2-39
  through point at relative angle: 2-39
  through (X, Y) at absolute angle: 2-21
  with length at absolute angle through point: 2-27
Line style (Select) 5-18
List
  grids 5-53
  pages 5-35, 5-49

M

Magnify: 1-18, 2-111, 3-41, 3-53
Make breakline, with mean width: 3-3, 3-17
Make overview 5-35, 5-41
Max bend: 6-28a
Mid point (implicit point) 2-2
Midpoint (of curve) 2-13
Midpoint (of line) 2-9
Mirror: (drafting part) 8-10
Mirror around line (Transform) 3-41, 3-49
Mirror around line and keep (Duplicate) 3-23, 3-27
Modify page size to:
  finite geometry 1-10, 5-41, 6-21, 7-5
Move objects by (dX,dY) 3-41, 3-47

N

New dash pattern: 5-27
New fill pattern: 5-30, 5-33

O

Objects (Select) 5-18
Object-relative
  copy 3-23, 3-27, 3-37, 3-49
  move 3-41, 3-49
One endpoint (of curve) 2-13
One endpoint (of line) 2-11
Origin (implicit point) 2-3

P

Pages 5-35, 5-48
Paper size: 6-39
Parabola at (X, Y) 2-103
Parallel line through point 2-37
Part
  ID: 8-8
  ID/Abbr: 8-10
  name: 8-8
  number: 8-8
Perpendicular line through point 2-37
Place
  part 8-1, 8-10
  text: 6-15, 6-23
Plot 6-1, 6-29
Plot: 6-29, 6-36
Plot: to local file on disk 6-29, 6-35
Plot: to local plotter 6-29, 6-36, 6-36a
Plot: to RS232C 6-29, 6-36a
Point 2-1, 2-3, 9-7, 9-9
Point along
  curve: 2-13
  curve from point: 2-11, 2-13, 2-15
  line: 2-11
Projections 3-1, 3-41, 3-55

Property name (drafting part) 8-8

Q

Quick lines* 2-23

R

Radial dimension 4-23
Random points (implicit point) 2-3
Redefine
area style: 5-13, 5-21, 5-33
dimension style 4-38, 4-39, 5-21
line style: 5-11, 5-21, 5-27
: styles (Dimension) 4-39
Relative description 5-3, 5-7
Rename current layer: 5-65, 5-69
Replicate objects
along trajectory 3-31
horizontally 3-29, 3-31
vertically 3-29, 3-31
Right (point of circle) 2-15
Rotate
by angle around point 3-23, 3-41
forward by: 3-55
left by: 3-55
around line by: 3-55

S

Save
and close 5-21, 6-3, 6-7
changes 5-21, 6-3, 6-7
commands 1-9, 4-31, 6-3, 6-13, 7-5
Select 5-1, 5-15
contiguous 5-15, 5-18
layers 5-65, 5-69, 5-75, 5-76
Selected items only:
(Drafting parts) 8-8
Self-dissect 3-13
Set
index point 4-27
system units 6-3, 6-10
Sharp corner 3-21
Show dash pattern: 5-3, 5-11, 5-27
Show fill pattern: 5-3, 5-13, 5-33
Show scale 6-32, 6-33, 6-34, 7-5
Show structure 7-10, 7-14
Snap-to-grid: 2-3, 3-43, 5-35, 5-55
Snap to object (implicit point) 2-3
Stop 8-7
Stretch 2-111, 3-1, 3-41, 3-57
by (dX, dY) 3-57, 3-59, 3-63, 3-67
to point 3-57, 3-61, 3-65, 3-67
Style 1-14, 5-1, 5-21
System 6-1, 6-3

T

Tangent circle
(between three objects) 2-69
around point 2-65
through point,
with diameter: 2-59
with diameter: 2-69
Tangent curve through points 2-107
Tangent ellipse around
point, at angle: 2-97
Tangent line
at absolute angle: 2-41
through point 2-37
Text: (Select) 5-18
Text note: 4-5, 4-7, 4-9, 4-11
Tolerance style 4-1, 4-3, 4-31, 4-41
Top (of circle) 2-15
Transform 3-1, 3-41, 5-19, 5-67
Trim 3-3, 3-5
to length: 3-3, 3-9
to two objects 3-7

U

Uncluster 2-45, 5-15, 5-19
Uncluster part 8-5, 8-12
Undo 1-6, 1-12, 5-15, 9-7
Undo breakline 3-17
Unlimit 2-19, 3-41
User 7-7

V

Value (Drafting parts) 8-8
Vectorize splines: 6-28a
Vertical dimension 4-19
Vertical line
at X 2-21
through point 2-25
Views 1-13, 2-3, 5-1, 5-35
Visibility 2-3, 5-35, 5-47

W-Z

Within rectangle (Select) 5-15, 5-17
Write part 8-1, 8-8
Written description 5-3, 5-5
X-Indexed dimension 4-27
Y-Indexed dimension 4-27
Zoom view by: 1-17, 5-19, 5-37, 5-41

XEROX

Expert Documentation Comment Form

Please use this form to express your opinion of this manual. Your comments help us to improve our manuals, and make them more useful for you. All comments and suggestions become property of Xerox. Mail this form to Xerox-PE&D, 475 Oakmead Parkway, MS SVHQ-530, Sunnyvale, CA 94086.

Manual Title: _____

Who are you?

Name: _____

Company Name: _____

Position: _____

How do you use the manual?

- As an introduction to the product it describes ☐
- As a reference guide ☐
- As a tutorial ☐
- Other: _____ ☐

How well does the manual meet your needs?	Yes	No
Is it easy to read?	☐	☐
Is it easy to understand?	☐	☐
Are the format and organization easy to follow?	☐	☐
Is it technically accurate?	☐	☐
Can you easily find the information you need?	☐	☐
Is it complete? Does it tell you everything you need to know?	☐	☐
Is it well illustrated?	☐	☐

Technical or editorial errors (please list page number):

_____

_____

_____

_____

_____

Suggestions for improvement:

_____

_____

_____

_____

_____