



AVEVA

MARINE

# Initial Design Utilities User Guide

[www.aveva.com](http://www.aveva.com)

## Disclaimer

Information of a technical nature, and particulars of the product and its use, is given by AVEVA Solutions Ltd and its subsidiaries without warranty. AVEVA Solutions Ltd and its subsidiaries disclaim any and all warranties and conditions, expressed or implied, to the fullest extent permitted by law.

Neither the author nor AVEVA Solutions Ltd, or any of its subsidiaries, shall be liable to any person or entity for any actions, claims, loss or damage arising from the use or possession of any information, particulars, or errors in this publication, or any incorrect use of the product, whatsoever.

## Copyright

Copyright and all other intellectual property rights in this manual and the associated software, and every part of it (including source code, object code, any data contained in it, the manual and any other documentation supplied with it) belongs to AVEVA Solutions Ltd or its subsidiaries.

All other rights are reserved to AVEVA Solutions Ltd and its subsidiaries. The information contained in this document is commercially sensitive, and shall not be copied, reproduced, stored in a retrieval system, or transmitted without the prior written permission of AVEVA Solutions Ltd. Where such permission is granted, it expressly requires that this Disclaimer and Copyright notice is prominently displayed at the beginning of every copy that is made.

The manual and associated documentation may not be adapted, reproduced, or copied, in any material or electronic form, without the prior written permission of AVEVA Solutions Ltd. The user may also not reverse engineer, decompile, copy, or adapt the associated software. Neither the whole, nor part of the product described in this publication may be incorporated into any third-party software, product, machine, or system without the prior written permission of AVEVA Solutions Ltd, save as permitted by law. Any such unauthorised action is strictly prohibited, and may give rise to civil liabilities and criminal prosecution.

The AVEVA products described in this guide are to be installed and operated strictly in accordance with the terms and conditions of the respective licence agreements, and in accordance with the relevant User Documentation. Unauthorised or unlicensed use of the product is strictly prohibited.

First published September 2007

© AVEVA Solutions Ltd, and its subsidiaries 2007

AVEVA Solutions Ltd, High Cross, Madingley Road, Cambridge, CB3 0HB, United Kingdom

## Trademarks

AVEVA and Tribon are registered trademarks of AVEVA Solutions Ltd or its subsidiaries. Unauthorised use of the AVEVA or Tribon trademarks is strictly forbidden.

AVEVA product names are trademarks or registered trademarks of AVEVA Solutions Ltd or its subsidiaries, registered in the UK, Europe and other countries (worldwide).

The copyright, trade mark rights, or other intellectual property rights in any other product, its name or logo belongs to its respective owner.

# AVEVA Initial Design Utilities

---

<b>Contents</b>	<b>Page</b>
-----------------	-------------

## Initial Design Utilities

<b>Command Interface</b> . . . . .	<b>1:1</b>
<b>The Keyboard User Interface</b> . . . . .	<b>1:1</b>
<b>Rules for Entering Commands</b> . . . . .	<b>1:1</b>
Command Notation . . . . .	1:1
Truncating Command Names and Parameters . . . . .	1:2
Separators . . . . .	1:2
Continuing Commands on more than One Line . . . . .	1:3
Multiple Commands on One Line . . . . .	1:3
Parameter Prompting . . . . .	1:3
<b>Reserved Interface Commands</b> . . . . .	<b>1:4</b>
\$CLOSE . . . . .	1:5
\$DEFAULT . . . . .	1:5
\$DEFINE . . . . .	1:5
\$DELETE . . . . .	1:6
\$DIRECTORY . . . . .	1:6
\$DO . . . . .	1:6
\$ECHO . . . . .	1:6
\$EVALUATE . . . . .	1:6
\$EXIT . . . . .	1:8
\$FPRINT . . . . .	1:8
\$FREE . . . . .	1:8
\$GOTO . . . . .	1:8
\$HELP . . . . .	1:8
\$IF . . . . .	1:9

\$INQUIRE .....	1:9
\$LOAD .....	1:9
\$LOG .....	1:9
\$MAC .....	1:10
\$NOLOG .....	1:11
\$OPEN .....	1:11
\$PRINT .....	1:11
\$PROMPT .....	1:11
\$SET .....	1:11
\$SHOW .....	1:12
\$TRACE .....	1:12
\$VARIABLE .....	1:12
\$? .....	1:13
<b>Application Return Codes .....</b>	<b>1:13</b>
<b>Digit .....</b>	<b>2:1</b>
<b>Introduction .....</b>	<b>2:1</b>
Main Buttons .....	2:1
View .....	2:2
<b>Digitization Procedure .....</b>	<b>2:2</b>
Preparation for using the DIGIT Program .....	2:2
Setup the Ships Axis .....	2:2
Calibrate the digitizer to the drawing .....	2:2
To Digitize a Bodyplan .....	2:4
Editing Data .....	2:4
Loading / Saving Data from Files .....	2:4
<b>Dialogs .....</b>	<b>2:5</b>
<b>Plot .....</b>	<b>3:1</b>
<b>Introduction .....</b>	<b>3:1</b>
Overview .....	3:1
<b>File Management .....</b>	<b>3:1</b>
General Plot File .....	3:1
Export Files .....	3:1
Import DXF Files .....	3:2
Export Postscript Files .....	3:2
<b>Screen Based Reference Guide .....</b>	<b>3:2</b>
The Plot Screen .....	3:2
Using icons to control Plot .....	3:2

The Options Dialogue. ....	3:4
Menu Command Reference Guide. ....	3:5
<b>Edit Britfair. ....</b>	<b>4:1</b>
<b>Introduction . ....</b>	<b>4:1</b>
<b>Main Functions. ....</b>	<b>4:1</b>
Main Buttons . ....	4:1
View . ....	4:2
Editing Data . ....	4:3
<b>Ship Axis Setup . ....</b>	<b>4:5</b>
<b>General Particulars Input . ....</b>	<b>4:6</b>
<b>Distortions . ....</b>	<b>4:7</b>
<b>DXF to Britfair . ....</b>	<b>5:1</b>
<b>Introduction . ....</b>	<b>5:1</b>
<b>Using DXF to Britfair . ....</b>	<b>5:2</b>
<b>Output from DXF to Britfair . ....</b>	<b>5:3</b>



# 1 Command Interface

## 1.1 The Keyboard User Interface

The Command Interface provides a means of communicating with an application. The Initial Design *Lines* and *Surface/Compartment* applications use the standard command driven interface described by this document. While the commands and syntax varies between applications, the structure and operation of the interface remain the same.

Commands are entered via the keyboard, into a command line window or via a macro which can be created via the macro editor.

This document describes the syntax and facilities available in the Command Interface.

## 1.2 Rules for Entering Commands

The general format of a command is:

Command < Parameter > < Qualifier(s) >

where

Command	any valid application command.
Parameter	any valid parameter to the command. Parameters typically refer to an element type e.g. Curve, Patch, Point etc.
Qualifier	any valid qualifier to the command. Qualifiers typically apply some restriction to the parameter or some variation in the way the command executes.

Commands and their parameters are always translated to UPPERCASE so the user is free to choose whichever he prefers.

### 1.2.1 Command Notation

Within the descriptions of commands the following shorthand notation is used:

( )	Parameters enclosed within ( ) indicate a group of mandatory alternatives from which one must be taken.
< >	Parameters enclosed within < > indicate a group of optional alternatives from which one must be taken.
!	The exclamation mark character ! is used to delimit a group of alternatives and should be read as OR.

\$W	Indicates that an alphanumeric( A-Z,0-9 ) identifier must be supplied. The first character must be a letter of the alphabet. If an identifier is to contain lowercase or special characters e.g. SPACE, it must be entered within double quotes e.g. 'My Name'.  e.g. ABCD or 'abcd' or 'This Id'.
\$L	To indicate that 1 or more alphanumeric identifiers must be supplied. Each identifier must be separated by a valid delimiter i.e. SPACE or COMMA.  e.g. A1 A2 A3.
\$F	Indicates that a valid file name must be supplied. The format of the file specification must conform to the allowable specification for the machine on which the application is implemented.  e.g. MYFILE.DAT.
\$N	Indicates that a number must be supplied.  e.g. 1.5.
\$S	Indicates that 1 or more numbers must be supplied.  e.g. 1 2 3.5 4.

### 1.2.2 Truncating Command Names and Parameters

All command names may be truncated to the least number of characters that would make the command unambiguous. Parameters and Qualifiers may be truncated to the least number of characters that would make them unambiguous to the command in which they are used.

### 1.2.3 Separators

Each parameter in a command line must be properly delimited. There must be at least one separator between each item. Valid separators are a SPACE ' ' or a COMMA ','.

e.g.           COMMAND PARAM 1

.

COMMAND,PARAM,1

However, if the parameter begins with a FORWARD SLASH '/' then it need not be preceded by a separator.

e.g.   COMMAND PARAM/QUAL

.

Similarly, if a parameter end with an EQUAL SIGN '=' then the subsequent delimiter can be omitted.

e.g.   COMMAND PARAM=2

.



### 1.2.4 Continuing Commands on more than One Line

A command line may be entered on more than one line by using the continuation character, a HYPHEN '-', as the last character on the line.

e.g BLINES > FIT BUTTOCK 1 THRU 10 INCREMENT 1.0-

.

Continuation > /CLOSE

Each line of input must be no more than 80 characters and the total length of the command line must not exceed 512 characters. The hyphen is treated as a separator therefore keywords cannot be split over two lines.

### 1.2.5 Multiple Commands on One Line

More than one command with associated parameters and qualifiers may appear on a single line by separating each command by a COLON ':'.

e.g CLEAR : DISPLAY POINTS : DISPLAY CURVE

.

### 1.2.6 Parameter Prompting

If a command is not entered in full the interface will prompt the user with a list of valid alternatives for the next parameter of that command. In this way a command can be built up parameter by parameter, this is especially useful for new users or long and infrequently used commands.

e.g.

Syntax: COMMAND ( PARAM1 ! PARAM2 ! PARAM3 ) < /QUAL1 ! /QUAL2  
> \$N

User Input: command

Response: PARAM1 PARAM2 PARAM3  
COMMAND 'Option' : param2

Response: \$N /QUAL1 /QUAL2  
COMMAND PARAM2 'Option' : /qua1

Response: :COMMAND PARAM2 /QUAL2 'Number' : 22

At this point control would pass to the application and the full command

COMMAND PARAM2 /QUAL2 22

would be processed and appropriate action taken.

Commands requiring any of the keywords described in Section 1.1 issue the following prompts:

<b>Keyword</b>	<b>Prompt</b>
\$W	Identifier
\$L	Identifier List
\$F	File name
\$N	Number
\$S	Number Series.

## 1.3 Reserved Interface Commands

The interface has its own set of reserved commands which are completely independent of the application. All reserved commands are preceded by the DOLLAR '\$' character. The full list of reserved words is shown below and described in the following sections.

### General Facilities

\$DEFINE	Define a symbol.
\$ECHO	Echo input data. Application dependent.
\$EVALUATE	Evaluate a mathematical expression. Can be used as simple calculator.
\$HELP	List command syntax.
\$LOG	Turn on session log.
\$NOLOG	Turn off session log.
\$PROMPT	Change prompt.
\$SHOW	Show symbols/variables.

### Macro Facilities

\$DELETE	Delete variable.
\$DEFAULT	Set default value for variable.
\$DIRECTORY	List available macros.
\$DO	Looping.
\$EXIT	Exit current macro.
\$FREE	Unload macro.
\$GOTO	Goto label.
\$IF	If condition.

\$INQUIRE	Inquire value from user.
\$LOAD	Load macro in library.
\$MAC	Execute macro. Can also use @macro-name.
\$PRINT	Print messages and variables.
\$SET	Set variable.
\$TRACE	Set Macro trace level.
\$VARIABLE	Define variable.
\$WAIT	Pause.

### 1.3.1 \$CLOSE

Syntax: \$CLOSE

This command closes the current output file which was opened by the \$OPEN command.

### 1.3.2 \$DEFAULT

Syntax: \$DEFAULT ( Variable ) ( CHAR ! NUM ) ( Expression )

This defines a new variable and assigns a value to it if it has not already been defined. It is primarily used for defaulting parameters to macros. A type code must be supplied with the variable and this should be one of the following:

CHAR for character variables

NUM for numeric variable, no distinction is made between Integer and Real

e.g. \$DEFAULT width NUM 22.5

### 1.3.3 \$DEFINE

Syntax: \$DEFINE ( Symbol ) < Definition >

This is used to define abbreviations to command sequences. Note that if the definition is omitted then the symbol will be deleted.

e.g. \$DEFINE vsd view section:display points:display curve

```

.
!!!                                     !
+-+ +-----+
!                                     !
!                                     command sequence
!
abbreviation
  
```

### 1.3.4 **\$DELETE**

Syntax: \$DELETE ( Variable < Variable ... > )

Deletes symbols/variables. The wildcard character '\*' can be used.

e.g. \$DELETE vsd p\*

### 1.3.5 **\$DIRECTORY**

Syntax: \$DIRECTORY

Gives a directory of the currently stored macros.

### 1.3.6 **\$DO**

Syntax: \$DO ( Variable; start-expression; end-expression < ; inc-expression > )

'Commands'

\$ENDDO

Execute a series of commands in a controlled loop.

e.g. \$VAR NUM forward reverse

\$DO forward ; 1 ; 10

\$PRINT 'Forward=',forward

\$DO reverse ; forward ; 1 ; -1

\$PRINT ' Reverse=',reverse

\$ENDDO

\$ENDDO

### 1.3.7 **\$ECHO**

Syntax: \$ECHO (ON ! OFF) \$N

Display data input as it is being read in. The \$N represents the FORTRAN input channel on which the data is being read (-1 = all channels). This is program dependant and not of general use unless you know the internals of the program.

### 1.3.8 **\$EVALUATE**

Syntax: \$EVALUATE (Expression)

Evaluates an expression and prints the result. Basically operates as an on-line calculator. The following operators and functions are currently incorporated:

Precedence	Symbol	Description
1	!	or
2	&	and
3	=	equal to
3	>	greater than
3	<	less than
3	<>	not equal to
3	>=	greater than or equal to
3	<=	less than or equal to
4	+	add
4	-	subtract
5	*	multiply
5	/	divide
6	-	unary minus
7	^	raise to the power of
8	COS(x)	cosine )
8	SIN(x)	sine )
8	TAN(x)	tangent ) All angles are in radians
8	ACOS(x)	arc cosine )
8	ASIN(x)	arc sine )
8	ATAN(x)	arc tangent )
8	EXP(x)	exponential
8	LOG(x)	natural logarithm
8	LOG10(x)	common logarithm
8	SQRT(x)	square root
8	INT(x)	truncate to integer e.g. INT(2.5) =2
8	MINT(x)	round to nearest integer e.g.. MINT(2.3) = 2, MINT (2.6) = 3
8	EQS(str1,str2)	character string comparison. str1 & str2 must be valid character variables or character constants. e.g. EQS ('YES', REPLY)

Operators are evaluated in the order of their precedence. When two or more operators of equal precedence appear in sequence then they are evaluated in a left-to-right order. Parenthesis i.e. '(' and ')', can be used freely to alter or clarify the expression evaluation order.

e.g.       \$EVALUATE width \* height

              \$EVALUATE total + (width \* height)

              \$EVALUATE (total + width) \* height

              \$EVALUATE COS(theta)

              \$EVALUATE EQS(name1,name2)

              \$EVALUATE EQS(name1,'FRED')

              \$EVALUATE EQS(name1,' ')   n.b. test for blank

### 1.3.9    **\$EXIT**

Syntax: \$EXIT

Exits from current macro. This will return to the calling macro if it has been nested.

### 1.3.10   **\$FPRINT**

Syntax: \$FPRINT < 'Message' > < ,Variable > ...

Outputs to the file opened by the \$OPEN command the value of any variable together with an associated message if required. The message should be enclosed within double-quotes '"'. Any number of variables and messages can be inter-mingled but each should be separated by a comma','.

If the output file has not been \$OPENed then the messages will go to the screen.

e.g. \$FPRINT 'NUMBER OF POINTS', COUNT.

### 1.3.11   **\$FREE**

Syntax: \$FREE (Macro-name)

Removes a macro from User Macro Library.

### 1.3.12   **\$GOTO**

Syntax: \$GOTO %label

Go to the line containing the given label.

e.g. \$GOTO %next-loop

### 1.3.13   **\$HELP**

Syntax: \$HELP < Command < Parameter > >

Gives syntax of the given command. If the Parameter is present then only the syntax of this option is displayed.

### 1.3.14 \$IF

Syntax:

\$IF (Conditional Expression) THEN (Command) < ELSE (Command) >

If statements conditionally transfer control or conditionally execute a command. The statement first evaluates the logical expression. If the value of the expression is TRUE(-1) then the command after the THEN is executed. If the value of the expression is FALSE then the command after the ELSE is executed if there is one, otherwise the command on the next line is executed. Any Interface or Application command can be used. Refer to the \$EVALUATE command for a full list of operators.

e.g.        \$IF loop+1>=max THEN \$GOTO %next-loop ELSE \$GOTO % finish-loop  
               \$IF width\*height\*depth > maxvol THEN \$SET maxvol width\*height\*depth  
               \$IF a>b & a>c THEN \$GOTO %failed

### 1.3.15 \$INQUIRE

Syntax: \$INQUIRE (Variable) < 'Prompt' >

This can be used to prompt the user for a value of a variable. The variable must have been declared previously. The prompt string can be any combination of 'messages' and variables as described in the \$PRINT statement.

e.g.        \$INQUIRE nextone 'Input the next curve required ?'  
  
               \$INQUIRE size 'Max. size is',maxsize,' input size : '

### 1.3.16 \$LOAD

Syntax: \$LOAD (Macro-name)

Loads the given macro into the User Macro Library but does not execute it. The commands within the macro are NOT checked for correct syntax but any labels are pre-processed to avoid re-scanning the macro. The default file extension is MAC which will be appended automatically if a file extension is not supplied.

Three Macro Libraries exist, these are named

MAC\$WRK - Temporary

MAC\$USR - User macro library

MAC\$SYS - System macro library

These files will be created if they do not exist when the application begins. The MAC\$WRK file can be deleted when exiting from the application. The MAC\$USR library can be used to store personal macros. The MAC\$SYS library is used to store predefined or standard macros.

To create a System Macro Library the user should \$LOAD the required macros into the User Library and then copy the User Library to the System Library.

### 1.3.17 \$LOG

Syntax: \$LOG < Filename >

Records all command input in the specified file. If the file name is omitted the default name of SESSION.LOG is used.

### 1.3.18 \$MAC

Syntax: \$MAC (Macro-name) < \$1 < \$2 < ... \$9 > > >

or @Macro-name < \$1 < \$2 < ... \$9 > > >

Executes the macro with the given name. The macro can contain any valid interface or application commands. Macros can be nested and also recursive but the user is responsible for a correct exit. Each macro can be supplied with up to 999 parameters which are unique to each macro. These parameters are identified as \$1, \$2, ... \$999

e.g. MODIFY SECTION '\$1': DISPLAY POINTS: DISPLAY CURVE: QUIT

The character '\*' supplied as a parameter indicates that this parameter is to take the default value defined within the macro by the \$DEFAULT command.

e.g. @NOTCH TBAR \* 76.5

Here the parameter \$2 will take the default value which must be defined within the macro.

Comments can be included within a macro by specifying a ';' as the first character on the input line. The whole line will be ignored.

Labels are defined by specifying a '%' as the first character on the input line. The next word( up to 40 characters) represents the label name. The label can be followed by a comment which will be ignored. These labels can be subsequently referenced to in \$GOTO statements to change the sequence of command execution.

e.g. % get\_next\_curve go back and process next curve

```

!           !   !           !
+-----+-----+
!           !
label      comment

```

A special label with the name %HDR can be included, normally at the start of a macro, to supply a single line description of the macro. This will be displayed when the \$DIRECTORY command is used.

e.g. %HDR Create notch macro \$1=Type, \$2=Width, \$3=Height

Whenever an application starts up, and before the interface prompts for the first command, an automatic search is made for an initialisation macro. This is named 'nnnn'.INI where 'nnnn' is the name of the application. This macro is treated just like any other macro and so can contain valid application or interface commands.

The default file extension is MAC which will be appended automatically if no file extension is present.

Whenever a macro is to be executed the users directory is searched for a file with the given name. If it is not found then the User Macro Library (MAC\$USR) is searched and finally the System Macro Library (MAC\$SYS) is searched.



### 1.3.19 \$NOLOG

Syntax: \$NOLOG

This command closes the session log opened by the \$LOG command.

### 1.3.20 \$OPEN

Syntax: \$OPEN (Filename)

Opens the specified file which can be written to using the £FPRINT command. The file can be subsequently closed using the \$CLOSE command.

### 1.3.21 \$PRINT

Syntax: \$PRINT < 'Message' > < ,Variable > ...

Outputs to the screen the value of any variable together with an associated message if required. The message should be enclosed within double-quotes(''). Any number of variables and messages can be inter-mingled but each should be separated by a comma ','.

e.g. \$PRINT 'THE RESULT IS ',result,' METRES'

### 1.3.22 \$PROMPT

Syntax: \$PROMPT < Prompt-string >

This facility enables the user to change the application prompt string. If the prompt string is omitted then the original prompt is used.

### 1.3.23 \$SET

Syntax: \$SET (Variable) < Expression >

This command evaluates the supplied expression and assigns the result to the given variable. If the expression is omitted then the variable will be removed from the symbol table. Variables must have been previously declared by the \$VARIABLE command before using this command. Expressions can be either numeric or character. The type of the variable determines the type of the expression.

Numeric expressions may use any of the operators described in the \$EVALUATE command.

e.g. \$SET width 12.5

\$SET height width^2.0

\$SET OK a>b n.b. TRUE = -1

Character expressions consist of string concatenations.

e.g. \$SET name 'PNT',num

Sub-strings can be used in character expressions. The syntax of a sub-string is as follows

variable([ start-pos] : [ end-pos ])

where,

start-pos = position of first character of sub-string. This can either be a numeric variable or constant. If omitted then 1 is assumed.

end-pos = position of last character of sub-string. This can either be a numeric variable or constant. If omitted then 'string length' is assumed.

e.g.       \$SET sub-name name(2:5)  
               \$SET name old-name(:7) i.e. first 7 characters  
               \$SET name 'NEW',old-name(4:)

### 1.3.24 \$SHOW

Syntax: \$SHOW < Variable >

Displays the value of all or selected variables/symbols.

### 1.3.25 \$TRACE

Syntax: \$TRACE (0 ! 1 ! 2 ! 3)

Set trace level when macros are executing.

0 = Nothing should be echoed.

1 = Only show macro calls.

2 = Show macro calls & Application commands. (DEFAULT)

3 = Show all.

### 1.3.26 \$VARIABLE

Syntax: \$VARIABLE (CHAR ! NUM) ( Variable < [ Dimension ] > ... )

Declares one or more variable to be of the given type. Note that this command only declares the variables and they cannot be used until they have been given a value by the \$SET or \$DEFAULT commands. A type code must be supplied with the variable and this should be one of the following:

CHAR for character variables

NUM for numeric variable, no distinction is made between Integer and Real

e.g.       \$VARIABLE NUM x1 x2 y1 y2  
               \$VARIABLE CHAR name1 name2

**Note:** that all variables(except parameters to macros) are global and therefore can be used at any time.

To use a variable within an INTERFACE command the user should supply the name of the variable

e.g.        \$SET area width\*height  
               \$IF area > max-area THEN \$GOTO %too-big  
               \$PRINT 'AREA ',area,' IS LARGER THEN MAXIMUM ALLOWED ',max-area.

To use a variable as part of an APPLICATION command it must be placed within single quotes.

e.g.        GET SECTION 'curve-pos'

Arrays can be defined using '[ Dimension ]' option. The Dimension of the array must be a positive whole number. The array indexes will be 1, 2, 3, .... , Dimension.

e.g.        \$VARIABLE count myarray[10]  
               \$DO count; 1 ; 10  
               \$SET myarray[count] count\*count  
               \$ENDDO

### 1.3.27 \$?

Syntax: \$?

Displays syntax of the interface commands.

## 1.4 Application Return Codes

Some applications can return values as the result of executing a command. These values are assigned to default variables named as follows:

RET\_CNT = No. of values returned.

RET\_1 = 1st. value returned.

.

.

.

RET\_N = Nth. value returned.

These variables can be treated like any other but the user should be aware that the next application command may change these variables therefore any required results must be assigned to user defined variables.

e.g.        \$VARIABLE num intx inty intz  
               ;  
               ; Execute application command  
               ;

```

INTERSECT SECTION 5 WITH FOS

;
; Check return code
;
$IF RET_CNT = 0 THEN $GOTO %NO-INT
;
; Save result in user variables
;
$SET intx RET_1
$SET inty RET_2
$SET intz RET_3
.
etc.
.
$EXIT
%NO-INT
;
; No intersection found, print appropriate message
;
$PRINT 'NO INTERSECTION FOUND'
$EXIT

```

## 2 Digit

### 2.1 Introduction

The Digit program has been designed to enable a user to digitize a drawing placed on a digitizing tablet attached to the host computer. It can also be used to read/write/edit point data which is in Britfair format.

#### 2.1.1 Main Buttons

The **Main** window has the following buttons across the top.

Button	Use
Load	Loads a file of offsets saved in the Britfair format. Stern and Stem data in X and Z.
Merge	Used to join Britfair files together.
Save	Saves data to the current file. The data for Section is saved in a file in the Britfair format. Stern and Stem data in X and Z.
Save As	Saves the data to a new file.
Axis	Setup the Axes Origin and Station numbers of the Ship.
GPF	Import of General Particulars to set view extent (otherwise view is based on min/max of data).
Reset	Resets the view extents.
Window	Allows the user to zoom in the view, using the left mouse button to drag a rectangle over the area of interest.
Setup Digitizer	Calibrates the attached digitizer.
Exit	Exit from the Program.

Table 2: 1. Buttons and their usage.

## 2.1.2 View

Using the mouse, various interactive facilities can be accessed for altering sections in the graphics view, these are:

Mouse button	Action
LB	Select nearest point to cursor
LB + <Shift>	Remove point
LB + <Ctrl>	Toggle point type
RB	Popup <b>U</b> , <b>V</b> dialogue to change point
RB + <Shift>	Insert point at cursor position
RB + <Ctrl>	Insert point at mid-point between nearest and next point

Table 2: 2. Interactive mouse operations.

The current cursor position in the graphics view is echoed in the edit boxes (*U* and *V*) at the bottom left of the application window.

## 2.2 Digitization Procedure

### 2.2.1 Preparation for using the DIGIT Program

First ensure that your digitizer is connected to the computer and that it is switched on. Attach the bodyplan you wish to digitize to the digitizer. It is usually best to mark the points you wish to digitize before you start work.

### 2.2.2 Setup the Ships Axis

Click the **Axis** button. A panel appears that allows you to set the Origin position and Section numbering convention for the Ship. If the origin is set to FP then the program defaults to x-values being increasing in the aft direction.

### 2.2.3 Calibrate the digitizer to the drawing

Enter the LBP of the ship in the appropriate entry field.

Click the **Setup Digitizer** button. A panel appears that allows you to calibrate the digitizer. Start by selecting the correct COM Port.

Select the type of digitizer you are using, the current options are:

SummaGraphics: Operates at 9600 baud, Odd parity, 8 data bits and 1 stop bit. The digitizer should be set to operated in the following data format:

Output Format:	MM format, 5 byte binary
Tablet origin	Lower left
Co-ordinate system	Absolute
Report mode	Point
Report rate	approx. 100
Resolution	500 lpi

Table 2: 3. SummaGraphics's Parameters.

CALCOMP 9100: Operates at 9600 baud, Even parity, 7 data bits and 1 stop bit. The digitizer should be set to operated in the following data format:

Output Format	ASCII Format 3, CPxxxxxyyyy<CR>
Tablet origin	Lower left
Co-ordinate system	Absolute
Report mode	Point
Resolution	English(inches)

Table 2: 4. CALCOMP 9100's Parameters.

Then digitize the four corners of your drawing and type in the co-ordinates of the bottom left and top right corners:

Use the Windows mouse to select **1** button, and then on the bottom left point of your drawing.

Click on **2** button and digitize the top left point of your drawing.

Click on **3** button and digitize the bottom right point of your drawing.

Click on **4** button and digitize the top right point of your drawing.

Now enter the U and V values by double clicking into each box and entering values. For sections drawn to the right of the centreline (usually the forward section) typical values for the lower left point would be U=0.0 and V=0.0. The Top right point may typically be U= 10.0 and V= 14.0. This would give a ship of 10 metres half beam and 14 metres depth.

When the calibration data has been entered click **Accept** to confirm the data and leave the panel.

For sections to the left of the centreline, recalibrate the digitizer. Points 1 and 2 are at the centreline, Points 3 and 4 are at the beam of the Ship. The section will be drawn on right of the centreline on the screen.

## 2.2.4 To Digitize a Bodyplan

Once the digitizer is calibrated it may be used for data entry. Click **New** and enter the longitudinal position of the section in the *Section position* box. Click the **Digitize** button, and then digitize each point on the hullform, start at the lowest point and working up towards the highest. The **Four** buttons on the digitizing puck perform the following functions:

- Button **1** enters an ordinary point
- Button **2** enters an ordinary point
- Button **3** enters an knuckle point
- Button **4** terminates the digitization process

At the end of digitizing each section, turn the digitizer input off by clicking button **Four** on the digitizer puck. Start a new section by entering a new *Section position* and continue the digitization process.

Sections must be entered from the baseline up, i.e. so that the points form an anticlockwise arc. For ships with a large flat of keel, enter a point mid-way along the flat of keel to help the definition.

## 2.2.5 Editing Data

To create a New Section click the **New** button this will cause a dialogue box to appear. Enter the longitudinal position of the section in the *Section position*, click **OK** and then click **Digitize** and then use the digitizing puck to enter the points.

To delete a Section select the required curve from the pull-down list and then click the **Delete** button.

To create a new Stem or Stern select the **Required Radio** button and then click **Digitize** and then use the digitizing puck to enter the points.

You can change point types from ordinary to a knuckle and vice versa by selecting the point from the graphics screen or from the point list and then picking the **Ordinary** or **Knuckle Radio** button.

You can change the values of any point by selecting it and changing the values in the text edit fields at the head of the point list and then clicking the **Set** button.

You can delete any point by selecting it and clicking the **Delete** button.

To copy a section click the **Copy** button. This will cause a dialogue box to appear. Enter the longitudinal position of the section in the *Section position* then click **OK**.

The Scaling and Translation functions operate on the currently viewed set of curves e.g. if **Current Only** is selected then whatever curve is visible is changed, if **Aft Sections** is selected then all aft sections are changed etc. To scale or translate a curve select it as described above and click the **Appropriate** button (**Scale** or **Trans**). A dialogue will be displayed in which the required U and V translations can be given.

## 2.2.6 Loading / Saving Data from Files

To input a hullform from an offset file select the **Load** button. A dialogue box will appear that allows you to select the offsets file to be used.

For Section data the offsets must be held in the Britfair format. The default file extension is BRI, which is the default file extension for Britfair files. This may be changed using the File Type list at the bottom right of the dialogue. After successfully importing a hullform the program will display all the sections for inspection.



For Stem and Stern data the points must be held in X and Z column format. The default file extension is .DAT.

If you have entered a series of offsets by hand or by using the digitizer you may wish to save them in a file. From the **Main** dialogue click **Save As**, supply a file name and your data will be saved. The data will be in Britfair format for Sections and X & Z format for the Stem and Stern.

Having altered a file of offsets, the changes can simply be saved in the file by clicking **Save**.

## 2.3 Dialogues

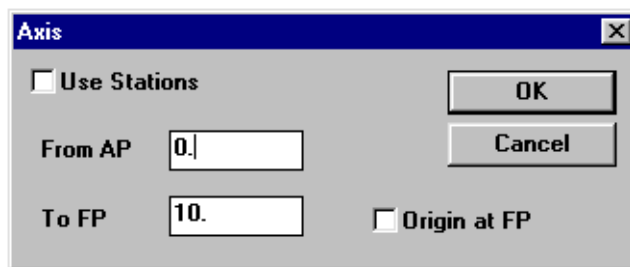


Figure 2.1. Axis dialogue.

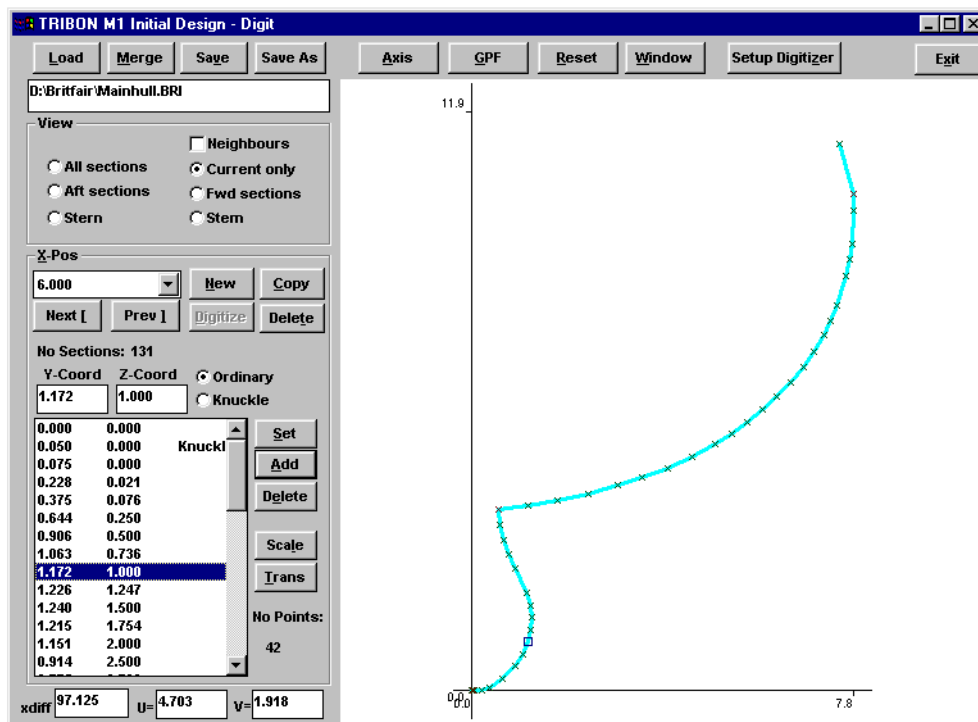


Figure 2.2. Main dialogue.

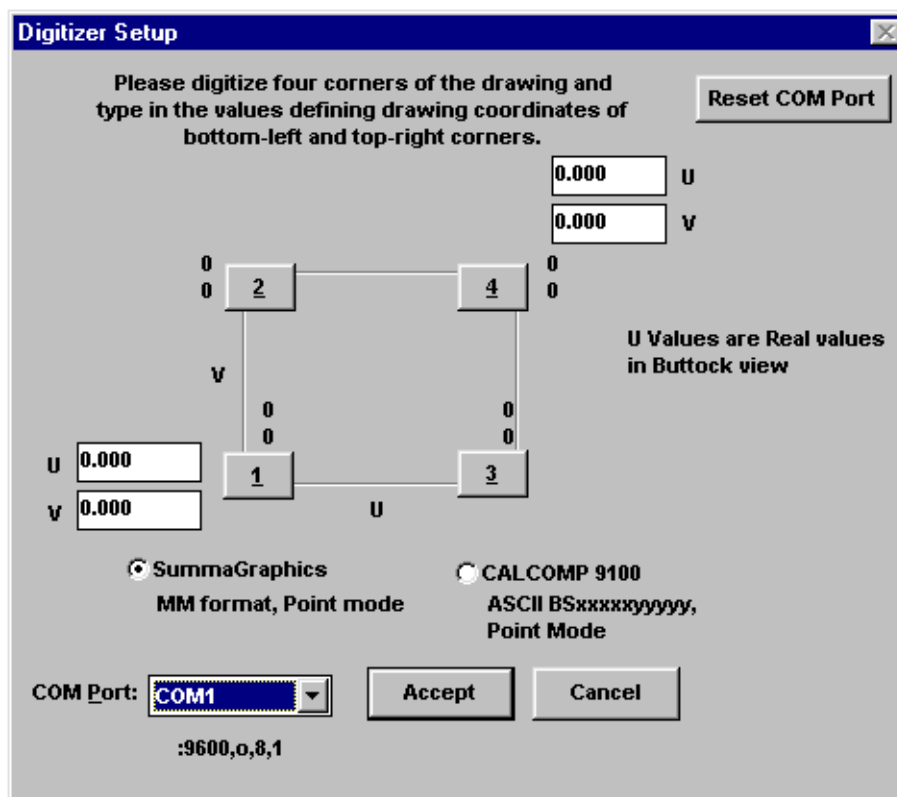


Figure 2.3. Setup dialogue for Normal Axis Ship.

## 3 Plot

### 3.1 Introduction

#### 3.1.1 Overview

Plot is an interactive graphics based editor for manipulation of General Plot files which have been created by AVEVA Marine software such as Lines, etc.

The user operates Plot via an easy to use menu and icon system. Elements of the General Plot file can be manipulated by selecting them with a graphical cursor. An element is defined as any series of connected lines. Groups of elements can be selected and manipulated by defining an area on which the elements lie. Note that only elements that completely lie within the enclosing area are selected.

Simple annotation with text and pointers may also be added but it should be borne in mind that all text is broken down into move and draw instructions and can only be manipulated as a whole using the area option described above.

### 3.2 File Management

This chapter describes the file types used by Plot.

#### 3.2.1 General Plot File

The general plot file (usually with the extension \*.PRN) can be created from the following AVEVA Marine programs:

- Lines
- Surface

#### 3.2.2 Export Files

A plot can be stored in the general plot file, and can also be exported to other various other files formats for use in other computer packages, such as word processors, or for printing to a plotter. The following file formats are supported for export:

- HPGL file
- HPGL2 file
- Benson file
- DXF file

### 3.2.3 Import DXF Files

A DXF file can be imported. Then an output plot. File for the following file formats that supported for export.

### 3.2.4 Export Postscript Files

Postscript is a “Page Description Language”

## 3.3 Screen Based Reference Guide

This section provides a reference guide for the input screens used by Plot, together with a technical description of the data requirements for each input screen. To start-up Plot double click on the Plot icon in the AVEVA Initial Design application group.

### 3.3.1 The Plot Screen

The Plot screen is split into several parts.

- Main screen containing menus, toolbar and status bar.
- Graphics window containing graphical output.
- Text window containing text output.
- Floating palette containing extra icons.
- **Options** dialogue containing current status information.

### 3.3.2 Using icons to control Plot

Once Plot has been started, the following screen appears. Not all the icons will be available initially, however, they are all explained below. All iconic facilities are available from menu commands as well.

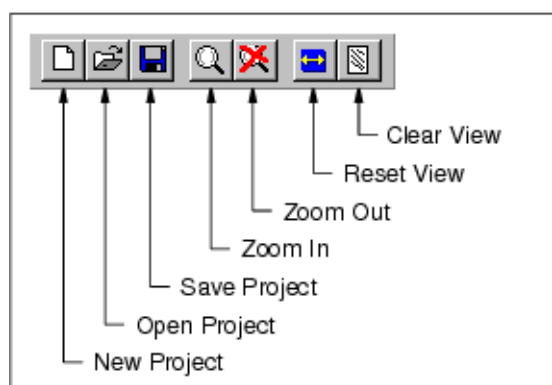


Figure 3.1. The Main Icon Bar.

Help on these icons is available by moving the mouse onto the icon and holding down the left hand button. The function of the icon is then displayed in the status bar. If the mouse is moved off the icon with the left hand mouse button still held down, and then released, the icon is not actioned.

To start a new drawing in Plot, select FILE / NEW or click the icon and the following screen appears

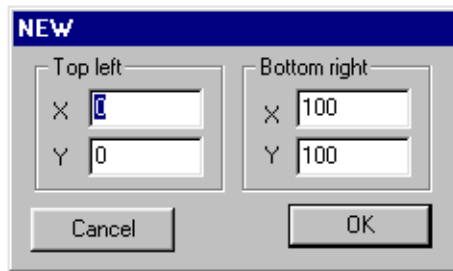


Figure 3.2. The New dialogue.

Enter the X and Y co-ordinates of the top left and bottom right hand corners of the new plot in metres.

If a plot file has been previously created, whether, in Plot or one of the other AVEVA Marine programs, it can be edited by selecting FILE /OPEN or clicking the icon. A file selection dialogue appears for the user to select the required plot file.

Once a drawing session is underway (either with the NEW or OPEN commands), the **Floating Palette** and **Options** dialogue appear and become active (both shown below).

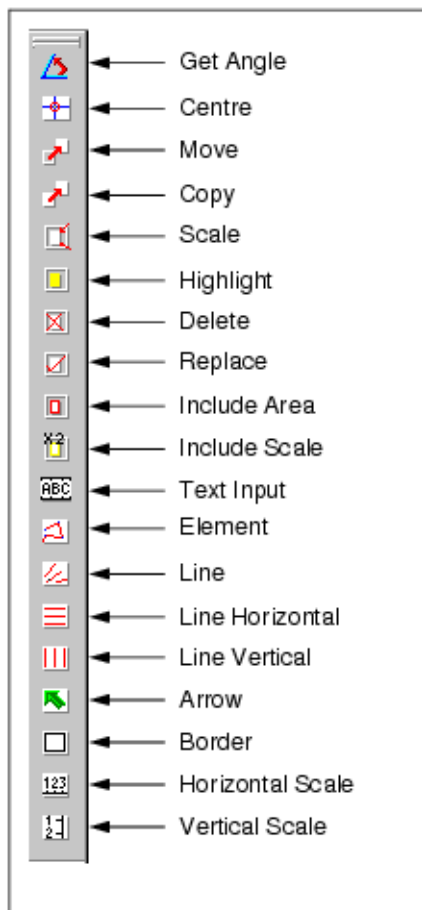


Figure 3.3. Plot Floating Palette.

Help on the above floating palette icons is available in a similar fashion to the toolbar icons, described above.

### 3.3.3 The Options Dialogue

The **Options** dialogue contains information about the current selection in Plot. The user can specify the line type and colour, the arrow head height size (mm), the angle, width (mm), height (mm) and justification of any text to be entered, the grid type and the number of plots in the file to be displayed. After specifying text or grid details, the **Apply** button should be clicked for these changes to take effect.

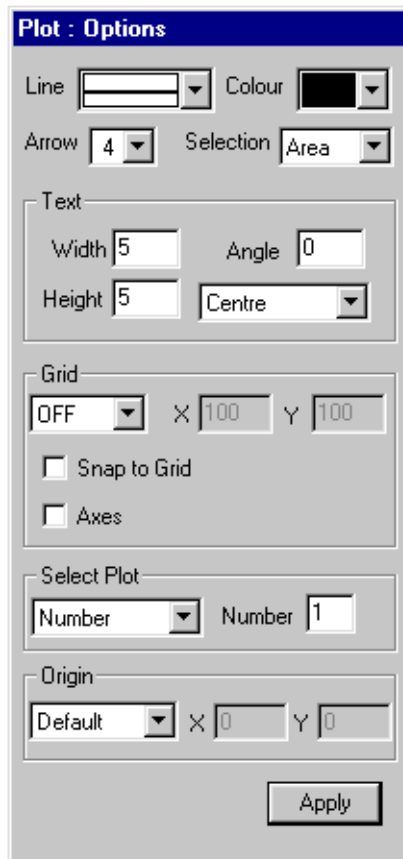


Figure 3.4. The Options dialogue.

The dialogue is used to control the following settings as explained below:

- **Line Type**  
Defines the line type to be used for any subsequent lines or arrows drawn.
- **Colour**  
Defines the colour for any subsequent elements (arrows, lines and text) added to the drawing.
- **Arrow Head Size**  
Defines the size of the any subsequent arrow heads drawn. Select one of the options from 1 to 20 mm in the dropdown list under **Arrow**.

- **Selection**

Specifies whether the next item selected on the drawing will be an area or an element.

- **Text**

The *Text* panel allows the user to specify the width (mm), height (mm), rotation angle (degrees) and justification of any subsequent text entered.

**Note:** that the **Apply** button must be clicked before this command takes effect.

- **Grid**

The *Grid* panel is used to define a grid on the current drawing. Once a grid is defined, the user may snap onto a grid point when using the Arrow Grid, Line Grid or Text Grid commands - i.e., when specifying the position of an arrow, line or text the cursor point is adjusted to the nearest grid point.

There are five options with the Grid command:

<sup>2</sup>	OFF	Switches the current grid off.
<sup>2</sup>	ON	Switches a previously defined grid on.
<sup>2</sup>	Fine	Generates a fine grid mesh.
<sup>2</sup>	Coarse	Generates a coarse grid mesh.
<sup>2</sup>	Custom	Generates a grid mesh at user specified X and Y intervals (m).

Grid marks are not included in any plot output.

**Note:** that the **Apply** button must be clicked before this command takes effect.

- **Select**

A general plot file may contain more than one plot. When a plot file is loaded, the first plot is shown by default. By using the *Select* panel, another plot may be shown and manipulated or all plots may be shown at the same time.

There are three option associated with the Select command:

<sup>2</sup>	Number	displays the drawing specified in the edit box.
<sup>2</sup>	All	displays all drawings in the plot field.

## 3.3.4 Menu Command Reference Guide

This section lists each of the menu items in turn (with its appropriate icon) and describes the commands usage where necessary.

- **File Menu**



FILE \ NEW...

Creates a new blank drawing.



FILE \ OPEN...

Brings up a file selection dialogue for the user to select a previously created plot file.



FILE \ SAVE

Saves the current plot file.

FILE \ SAVE AS...

Brings up a file selection dialogue for the user to specify a file name for the current plot file to be stored.

FILE \ EXPORT

This gives five options for converting the general plot file into an external plot file format:

    \HPGL FILE...



This command converts the general plot file into a format appropriate to a Hewlett Packard HP7585 or HP7475 plotter device.

When the user selects this option the following screen appears:

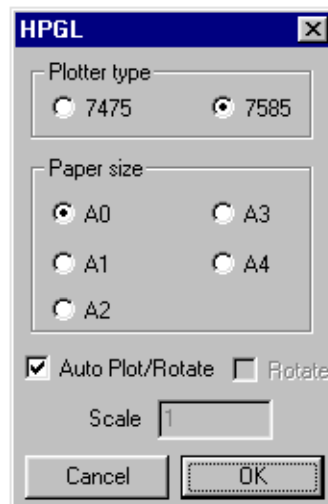


Figure 3:5. The HPGL dialogue.

Select the correct plotter type (Hewlett Packard model number) and paper size and specify whether the plot is to be automatically rotated to fit the page, or manually rotated. Also enter a scale for the plot. This scale factor should be a positive real number. A scale factor of 1 will not change the size of the plot, whereas a scale factor of 0.5 will half the dimensions of the plot. A file selection dialogue appears for the user to specify the export file name.

HPGL2 FILE...

This command converts the general plot file into a standard Hewlett Packard graphics format. This format can be read by most word processing or drawing packages.

When the user selects this option the following screen appears:

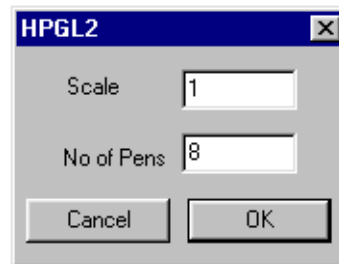


Figure 3:6. The HPGL2 dialogue.

Enter a scale for the plot, which should be a positive real number. A scale factor of 1 will not change the size of the plot, whereas a scale factor of 0.5 will half the dimensions of the plot. Also specify the number of pens to use. This determines the number of colours that are included in the exported file. A file selection dialogue appears for the user to specify the export file name.

#### \ BENSON FILE...

This command converts the general plot file into a format appropriate to a Benson plotter device.

When the user selects this command the following screen appears.

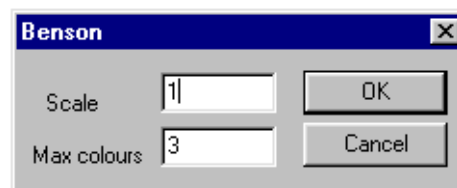


Figure 3:7. The Benson dialogue.

Enter a scale for the plot, which should be a positive real number. A scale factor of 1 will not change the size of the plot, whereas a scale factor of 0.5 will half the dimensions of the plot. Also specify the maximum number of colours to use. A file selection dialogue appears for the user to specify the export file name.

#### \ DXF FILE...

This command converts the general plot into a standard DXF format which can be read by various CAD packages. A file selection dialogue appears for the user to specify the export file name.

### \ POSTSCRIPT FILE...

This command converts the general Plot into standard postscript format, postscript is a “Page Description Language”.

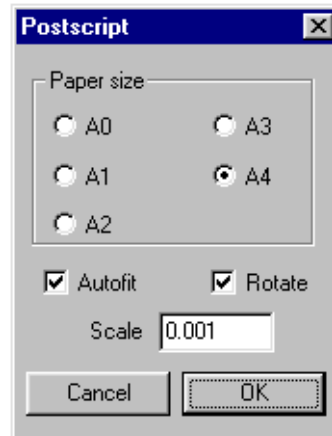


Figure 3:8. The Postscript dialogue.

### FILE \ IMPORT DXF...

Converts DXF format files into general plot file.

### FILE \ EXIT...

Closes down Plot. Plot prompts the user to save any unsaved plots.

- **View Menu**

### VIEW \ TOOLBAR

Toggles between displaying the toolbar (which contains the icons) and switching it off.

### VIEW \ STATUS BAR

Toggles between displaying the status bar (which contains system messages) and switching it off.

- **Palette Menu**

**PALETTE \ GET ANGLE**

Returns the angle of an element in the plot at the position nearest to the point given by the user via the cursor. This is particularly useful when the user wishes to place text parallel to a line or arrow.

**PALETTE \ CENTRE...**

Scales and centres the current drawing to a given window. The given window is specified by the user in a dialogue that pops up prompting for the co-ordinates of the top left and bottom right hand corners (m).

**PALETTE \ MOVE**

Moves an area or element of the drawing from one position to another. To specify an area or element, change the **Selection** on the **Options** dialogue. To move an area, click the mouse button in the opposite corners of the area. Any elements crossing the boundary of the area will not be moved. Once an area has been selected a source and target point are required. Position the mouse at the source point for the move operation and click the button. A move will now be placed in the same position relative to the target point as the original relative to the source point.

To move an element, click as near to the desired element as possible with the mouse button. Click the mouse again in the required position to move the element.

**PALETTE \ COPY**

Copies an area or an element of the drawing from one position to another. To specify whether area or element, change the **Selection** on the **Options** dialogue.

To copy an area, click the mouse button in the opposite corners of the area. Any elements crossing the boundary of the area will not be copied. Once an area has been selected a source and target point are required. Position the mouse at the source point for the copy operation and click the button, then position the mouse at a target point for the copy and click the button. A copy will now be placed in the same position relative to the target point as the original relative to the source point.

To copy an element, click as near to the desired element as possible with the mouse button. Click the mouse again in the required position to copy the element.



## PALETTE \ SCALE

Scales an area or element of the drawing. To specify an area or element, change the **Selection** on the **Options** dialogue.

When the scale command is performed a dialogue appears to enter the scale factor to use.

To scale an area, click the mouse button in the opposite corners of the area. Any elements crossing the boundary of the area will not be scaled. The area is then scaled and redrawn using the cursor position (when the mouse button is next clicked) as the focus for the scale.

To scale an element, click as near to the desired element as possible with the mouse button. The element is then scaled and redrawn using the cursor position (when the mouse button is next clicked) as the focus for the scale.



## PALETTE \ HIGHLIGHT

Highlights an area or element which would have been deleted had the equivalent Delete command been given. To specify whether an area or element, change the **Selection** on the **Options** dialogue. An area is specified by clicking the mouse button in the opposite corners of the required area. An element is given by clicking near to the element with the mouse button.



## PALETTE \ DELETE

Deletes an area or element of the drawing. To specify an area or element, change the **Selection** on the **Options** dialogue. An area is indicated by clicking the mouse button in the opposite corners of the area. Any elements crossing the boundary of the area will not be copied. An element is deleted by clicking as near to the desired element as possible with the mouse button.

N.B. This command remains active until cancelled by clicking the right hand mouse button.



## PALETTE \ REPLACE

Replaces the last element removed by the Delete command.



## PALETTE \ INCLUDE AREA...

Includes another plot file in the current drawing and scales it to fit within a given area of the current drawing. This given area is specified by the user by clicking the mouse button in the opposite corners of this area.



## PALETTE \ INCLUDE SCALE...

Includes another plot file in the current drawing and scales it by a scale factor given by the user in a pop up dialogue. The plot is imported at a position relative to the origin which is specified with a mouse click.

N.B. This factor is not an absolute factor, but a factor relative to the imported plot.



## PALETTE \ TEXT...

Allows the user to add a text string to the drawing. A screen pops up for the user to enter the desired text. When the mouse button is next clicked over the graphics region, the text is justified to that position with the currently set justification. If the Grid box is checked, the justification point will snap to the nearest grid point, if a grid is present.

## PALETTE \ LINES/ARROWS

This gives seven further options:



### \ ELEMENT

Draws straight lines between the cursor position when the mouse button is clicked. Each subsequent line follows on from the end of the previous line.



### \ LINE

Draws straight lines between the cursor position when the mouse button is clicked. Once a line has been drawn, the user can move the cursor to a new position and add a new line.

**Note:** that this command remains active until cancelled by clicking the right hand mouse button.



### \ LINE HORIZONTAL

Adds a series of horizontal lines to the drawing by joining all grid points within a specified area of the drawing with horizontal lines. This is particularly useful for creating a table. The area to be filled with horizontal lines is specified by clicking the mouse button in the opposite corners of the area. A grid must be switched on for this command to work.



### \ LINE VERTICAL

Adds a series of vertical lines to the drawing by joining all grid points within a specified area of the drawing with vertical lines. This is particularly useful for creating a table. The area to be filled with vertical lines is specified by clicking the mouse button in the opposite corners of the area. A grid must be switched on for this command to work.



### \ ARROW

Adds an arrow to the drawing. First select the height of the arrow head (mm) on the **Options** dialogue, then indicate the position of the head of the arrow by clicking the left hand mouse button, followed by the position of the tail of the arrow.



### \ BORDER

This command will draw a border around the current plot. The top left corner of the border will be x units to the left and y units above the current plot. Similarly the bottom right will be x units to the right and y units below the current plot.

## PALETTE \ SCALES

This gives two further options:



### \ HORIZONTAL

Displays a horizontal scale line on the graphics screen in Metres and Feet with the origin at a position specified by the user via the cursor. The scale line is not included in any plot output.



### \ VERTICAL

Displays a vertical scale line on the graphics screen in Metres and Feet with the origin at a position specified by the user via the cursor. The scale line is not included in any plot output.

- **Window Menu**



### WINDOW \ ZOOM IN

Windows in on a specified area. The area is specified by clicking the mouse button in the opposite corners of the required area.



### WINDOW \ ZOOM OUT

Resizes a windowed area to full size.



### WINDOW \ RESET VIEW

Re-calculates the graphics window to fill the page. If there are any elements outside the drawing boundaries, then the window will increase in size to include all elements.



### WINDOW \ CLEAR

Clears the screen and re-draws the plot without changing the window size.

### WINDOW \ SNAP ON/OFF

Toggles between snapping elements to the nearest grid points not snapping elements. A grid needs to be switched on for this command to take effect.

### WINDOW \ SHOW OPTIONS...

Show Status brings up the **Options** dialogue. Most of the time this dialogue is visible, but should it disappear (e.g. by clicking on the **Options** dialogue and clicking Escape) this command will bring it back.

### WINDOW \ 1 TEXT WINDOW, 2 DRAWING AREA, etc.

Switches between open Plot windows.

- **Help Menu**

HELP \ INDEX

Displays the opening screen of the Plot on-line help.

HELP \ USING HELP

Displays instructions about how to use the windows help facility.

HELP \ ABOUT PLOT...

Displays the copyright notice and version number of the copy of Plot that is currently running.



## 4 Edit Britfair

### 4.1 Introduction

The Britfair Edit application is designed for manipulating offset data stored in britfair and associated files. Individual sections can be manipulated by interactively editing points or the offset data can be editing as a whole by means of scaling, translating and non-linear distortions via the Lackenby method.

### 4.2 Main Functions

#### 4.2.1 Main Buttons

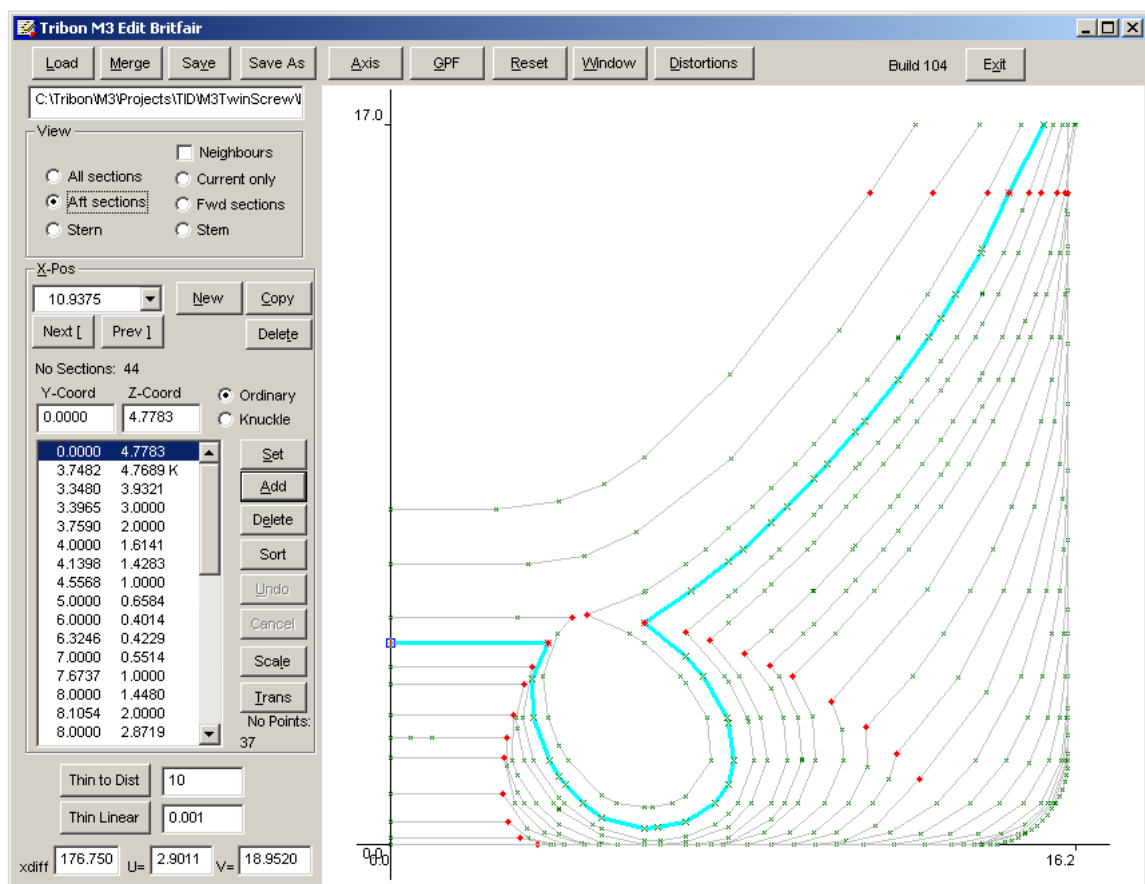


Figure 4:1. Main Window.

Button	Use
<b>Load</b>	Loads data into the editor. If any of the view options <b>All sections</b> , <b>Aft sections</b> , <b>Fwd sections</b> or <b>Current Only</b> is selected, then section offset data in Britfair format is loaded. If the <b>Stern</b> or <b>Stem</b> view option is selected, then stern or stem data points are loaded in the form of (X,Z) coordinates. The user will be prompted for the data file.
<b>Merge</b>	Merges offset data stored in Britfair format with the offset data already loaded into the editor.
<b>Save</b>	Saves data to the current file shown in the edit field at the top left corner of the editor.
<b>Save As</b>	Saves the data to a new file.
<b>Axis</b>	Setup the Axes Origin and Station numbers of the Ship. (see <a href="#">Ship Axis Setup</a> )
<b>GPF</b>	Import of General Particulars to set view extents (otherwise view is based on min/max of data). (see <a href="#">General Particulars Input</a> )
<b>Reset</b>	Resets the view extents.
<b>Window</b>	Allows the user to zoom in the view, using the left mouse button to drag a rectangle over the area of interest.
<b>Distortions</b>	Distort offset data using scaling, geosim or Lackenby shift. (see <a href="#">Distortions</a> )
<b>Exit</b>	Exit from the Program.

Table 4: 1. Main buttons and their usage.

## 4.2.2 View

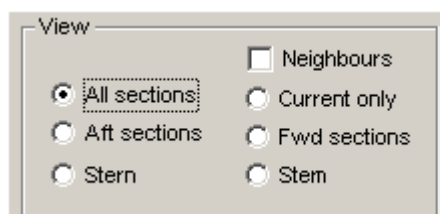


Figure 4:2. View options.

The view options are used to filter what is shown in the graphics window:

Option	Use
All Sections	Show offset data for all sections
Aft Sections	Show offset data for aft sections only
Fwd Sections	Show offset data for forward sections only
Current Sections	Show offset data for the currently selected section
Neighbours	If the <b>Current Sections</b> option is selected, then show the previous and next section as well as the current one
Stern	Show data for the stern profile. Note that it is necessary to Load the stern data

Table 4: 2. View options.

### 4.2.3 Editing Data

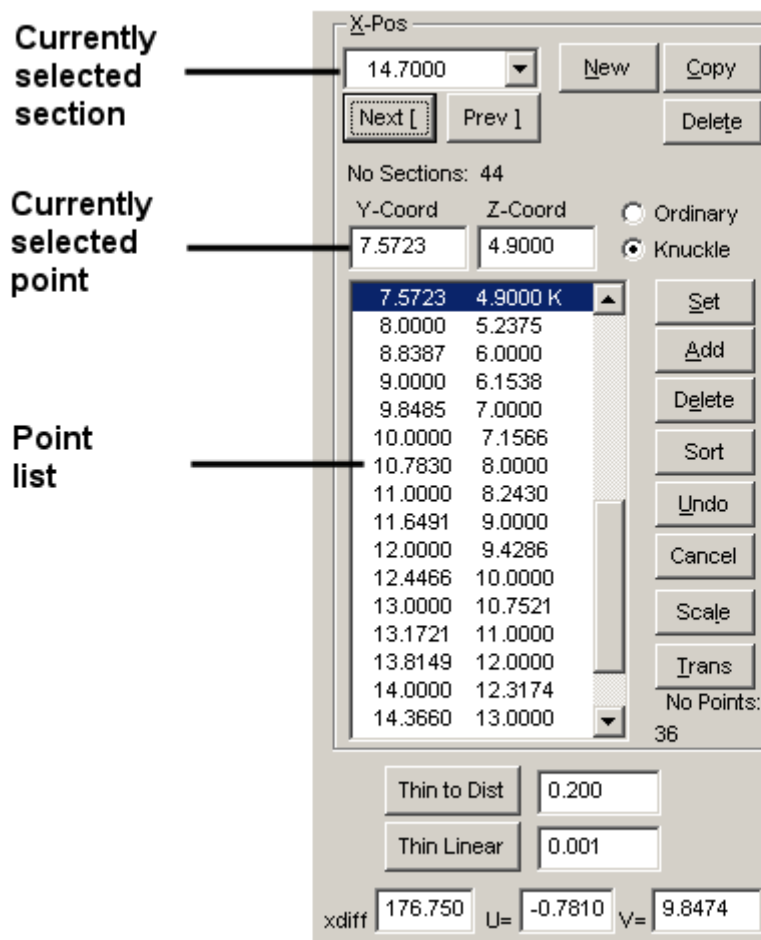


Figure 4:3. Editing functions.

## Editing using the controls

Offset data can be edited using the buttons and options of the left hand side of the editor.

Function	Use
<b>X-Pos list</b>	Select a section to edit from the list of sections. This option is disabled if editing the stern or stem profile.
<b>Next</b>	Select the next section in the list (click '[' as a short cut).
<b>Prev</b>	Select the previous section in the list (click ']' as a short cut).
<b>New</b>	Create a new section. A dialogue will prompt for the position of the new section. The <b>Copy only WL heights</b> option is not valid for the <b>New</b> function.
<b>Copy</b>	Copy the currently selected section to a new position. A dialogue will prompt for the position of the new section. If the <b>Copy only WL heights</b> option is selected, then only the Z values of the currently selected curve will be copied to the new position. All Y values will be set to 0.0.
<b>Delete</b>	Delete the currently selected section.
<b>Ordinary</b>	Set the type of the currently selected point to <b>Ordinary</b>
<b>Knuckle</b>	Set the type of the currently selected point to <b>Knuckle</b>
<b>Set</b>	Set the currently selected point to the coordinate value specified in the Y-Coord and Z-Coord edit boxes.
<b>Add</b>	Add a new point into the currently selected section. This is added immediately after the currently selected point with the same coordinates.
<b>Delete</b>	Delete the currently selected point.
<b>Sort</b>	Perform a nearest point sort on the currently selected section, starting at the first point.
<b>Undo</b>	Undo the last edit to the currently selected curve.
<b>Cancel</b>	Cancel all edits to the currently selected curve.
<b>Scale</b>	Scale all offset data. A dialogue is presented, allowing the user to specify a scale factor in both U and V directions. Note that this function operates on all curves.
<b>Translate</b>	Translate all offset data. A dialogue is presented, allowing the user to specify a translation in both U and V directions. Note that this function operates on all curves.
<b>Thin to Dist</b>	Remove points in the currently selected curve which are within the given tolerance of other points on the curve.
<b>Thin Linear</b>	Remove points in the currently selected curve which lie in a straight line within the given tolerance.

Table 4: 3.

Table 4: 4. Editing controls.

### Editing using the mouse

Offset data for the currently selected curve can be edited interactively using the mouse:

Mouse button	Action
LB	Select nearest point to cursor.
LB + <Shift>	Remove point.
LB + <Ctrl>	Toggle point type.
LB double click	Present a dialogue for entering the coordinate of the point nearest the cursor.
RB + <Shift>	Insert point at cursor position.
RB + <Ctrl>	Insert point at mid-point between nearest and next point.
RB + drag	Move the nearest point to the cursor.

Table 4: 5. Editing using the mouse.

### Informational feedback

The **xdiff** edit box at the bottom left hand side of the editor shows the distance between the first and last section.

The **U** and **V** edit boxes at the bottom left hand side of the editor shows the current coordinate of the cursor.

## 4.3 Ship Axis Setup

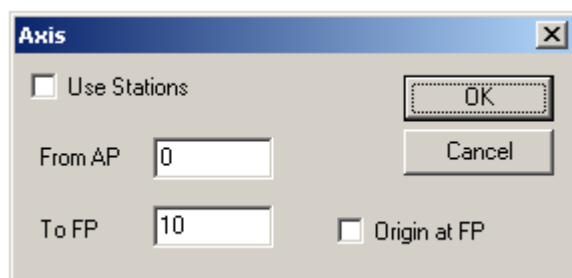


Figure 4:4. Axis setup.

Click the **Axis** button in the editor to set up the axis convention used. A dialogue appears that allows the user to set the Origin position and Section numbering convention for the Ship. If the origin is set to FP then the editor defaults to x-values increasing in the aft direction.

## 4.4 General Particulars Input

Parameter	Value
Name	tscrew
Length overall	185
Length between perps.	175
Beam	32
Design draft	9.5
Depth at Midships	15.4
Flat of Keel	0
Rise of floor	0
Bilge radius	2
Rake of Keel	0
Stern overhang	4.5
Stem overhang	5.5
Maximum Z value	16
Minimum Z value	0

Buttons: Import ..., Save ..., OK, Cancel

Figure 4:5. General Particulars dialogue.

General particulars are used to define the viewing area in the graphics window and are also required if performing a distortion.

Click the **GPF** button in the editor to define the general particulars. Values can be entered directly into the dialogue or can be imported from a `gpf` file by clicking the **Import** button. Once values are entered into the dialogue, they can be saved to a file for re-use later by clicking the **Save** button.

## 4.5 Distortions

	Current	Target	Achieved
Cb	0.81247	0.81247	0.81247
LCB (%)	2.4875	2.4875	2.4875
Entrance	43.75	43.75	43.75
Run	70	70	70

Figure 4.6. Distortions dialogue.

Click the **Distortions** button in the editor to show the **Distortions** dialogue.

To enable distortions, a britfair file must be loaded using the **Load** button and the general particulars must be defined. The following files must also exist in the same folder as the britfair file (where name indicates the main part of the britfair file name, name.bri):

- name.stn  
A file containing the X/Z coordinates of the stern profile
- name.stm  
A file containing the X/Z coordinates of the stem profile
- name.gpf  
A file containing the general particulars

Offset data can be distorted in the following ways:

- Scaling  
The offset data can be scaled in X, Y or Z by selecting the **Scale ship** option and specifying a new Lpp, Beam and/or Depth.
- Geosim  
The offset data can be scaled by the same ratio in each of the X, Y and Z directions by selecting the **Geosim** option. A target Lpp or Displacement can be given.
- Lackenby  
The offset data can be scaled non-linearly in the X direction by means of a **Lackenby** shift to achieve a new block coefficient, LCB, Entrance and/or Run at a given draft.





## 5 DXF to Britfair

### 5.1 Introduction

The DXF to Britfair application is designed to convert 3D DXF data into britfair and associated files suitable for import into Lines.

Its main purpose is to identify Section curves and produce a Britfair file. It does this by collecting together all POLYLINES, LINES or LWPOLYLINES which are defined in an x-plane. Each set of points with a common x value is sorted and output as one Britfair section.

All other curves that can be identified are written to separate files called CCnnnn.3d. The points in these files are formatted as 3 column (x,y,z) data and can be input into Lines to create Plines, Knuckles or Tangents.

DXF files from AutoCad version 12 are supported. Files from later versions should first be converted to version 12 for best result.

## 5.2 Using DXF to Britfair

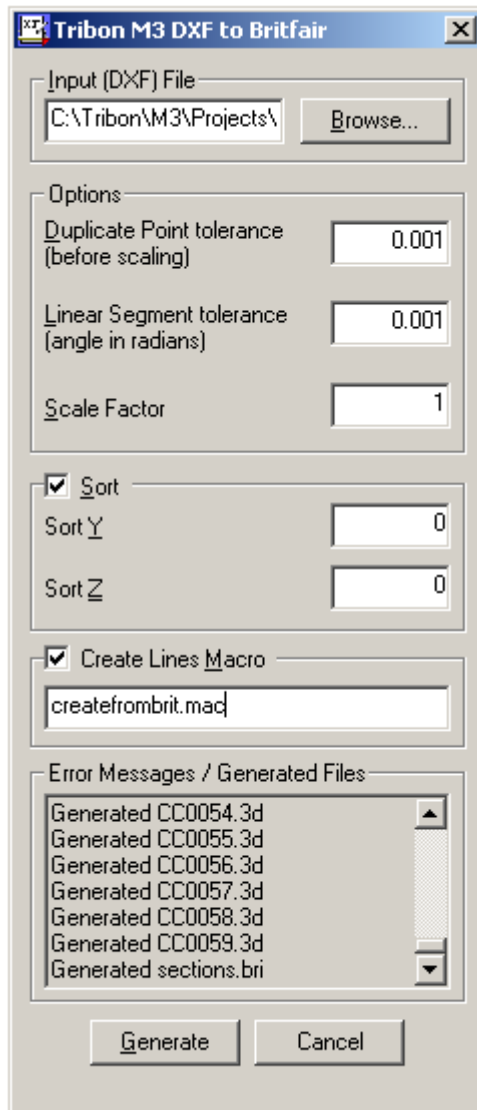


Figure 5.1. DXF to Britfair application.

Enter the name of the DXF file to be converted or click **Browse** to find the file.

The following options can be given for the conversion:

- Duplicate Point tolerance  
Points generated from the DXF data which are within the given tolerance are considered duplicate and are removed.
- Linear Segment tolerance  
Points which lie on a straight line to the specified tolerance (given in radians) are removed.
- Scale Factor  
The DXF data is scaled by the given factor. This is to allow DXF data given in millimetres to be converted to metres, for example.

- **Sort**  
If the Sort option is selected, then data identified as sections is sorted by means of a nearest point sort to the specified Y/Z coordinate.
- **Create Lines Macro**  
If this option is selected and the name for a macro file given, then a Lines macro file will be created which contains the commands to read the generated britfair and 3D files into a Lines design.

Click **Generate** to convert the DXF file into britfair and 3D Lines files.

## 5.3 Output from DXF to Britfair

The following files are created during the conversion:

- **Sections.bri**  
The britfair file containing section offset data
- **CC0001.3d, CC0002.3d ... CCnnnn.3d**  
Files containing 3D curve data
- **Macro file**  
If the **Create Lines Macro** option is selected then the given macro file is created and contains Lines commands to read the 3D files as Plines and read and fit the offset data as sections.

To use the output data, create a new design in Lines and then either:

- Read in the 3D curve data using the **Curve Points** page of the **Create Curve** dialogue (menu option CURVE \ CREATE).
- Read in the britfair data using the **Design** page of the **Create Curve** dialogue (menu option CURVE \ CREATE).
- Fit sections to the design data using the **Fit** page of the **Fairing** dialogue (menu option CURVE \ FAIRING) with *Design* selected as the **Interpolation** option.

Or, if a Lines Macro file has been created

- Open a macro editor (menu option FILE \ MACRO EDITOR).
- Open the generated macro file and click **Execute**.

