All rights reserved.

User’s Guide for the HydraForce i-Design. (Revision 500)

REPRODUCTION
Reproduction of this manual or software, in whole or in part, is strictly prohibited without the express written consent of HydraForce Inc.

It is allowed to print this document from the electronic format

WINDOWS is a registered trademark of Microsoft Corp.

AUTOMATION STUDIO is a registered trademark of FAMIC® Technologies Inc.
# Contents

1  **Introduction**  
   1.1 Document Content

2  **Getting Started – The Interfaces**
   2.1 Main Interface
   2.1.1 File Menu
   2.1.2 Tabs
   2.1.3 Project Explorer
   2.1.4 Main display
   2.1.5 Warning Messages
   2.2 Working with Project Files
   2.2.1 Creating a New File
   2.2.2 Opening a File
   2.2.3 Saving a File
   2.2.4 Saving a File As
   2.2.5 Previewing the Printing of the Current Configuration
   2.2.6 Printing the Current Configuration
   2.2.7 Importing and Exporting
   2.2.8 Exporting to Automation Studio
   2.2.9 Opening 2.0 Project File
   2.2.10 Converting to 3D Environment
   2.3 Software and files updates

3  **Building a First Project**
   3.1 Creating a Manifold Project
   3.1.1 Project Parameters Interface
   3.1.2 System Design Interface
   3.1.3 Component Properties
   3.1.4 Creating a Design
   3.1.5 Manifold Layout Interfaces
   3.1.6 Manifold Manipulations
   3.1.7 Manifold Layouts
   3.1.8 Manifold Components Configurations
   3.1.9 Manifold Dimensioning
   3.1.10 Parts List Interface
   3.2 Creating a “Price Components” Project
   3.2.1 Project Parameters Interface
   3.2.2 Price Components Interface
   3.3 Revision History
   3.3.1 Accessing the Revision History
   3.3.2 Revision History Dialog
   3.3.3 Revision History Interface – Creating Revisions
   3.4 Freezing/Unfreezing the Prices of a Manifold Project
   3.5 Current Pricing
   3.6 Price Parameters
   3.6.1 Price List Registration
   3.6.2 Discount Schedule
   3.6.3 Global Multipliers
   3.6.4 Pricing Disclaimer
4 Documentation (B.O.M) ................................................... 4-115
  4.1 Introduction ................................................... 4-115
  4.2 Generating the report ........................................... 4-115
     4.2.1 Saving the report ........................................... 4-116
     4.2.2 Printing ................................................... 4-116
     4.2.3 Working with the Report .................................. 4-116
     4.2.4 Report Contents ........................................... 4-116

5 i-Design WEB Interfaces ................................................... 5-118
  5.1 Introduction ................................................... 5-118
  5.2 Login ................................................... 5-119
  5.3 Save Project to i-Design WEB .................................. 5-120
  5.4 Open Project from i-Design WEB .................................. 5-122
     5.4.1 Open a "Price Components" Project from the WEB .......... 5-122
     5.4.2 Open a "Price a Manifold" Project from the WEB .......... 5-123
     5.4.3 Merge with an Existing Project ................................ 5-124

6 Index ................................................... 6-1276-127
1 Introduction

I-Design V.5.0 allows you to create custom integrated manifolds from the very beginning design stages all the way through pricing and quoting to your customers. This innovative software allows you to integrate, simplify, and cut costs in your hydraulic system by creating custom integrated manifolds using HydraForce components.

The integrated product selector and configurator allows the user to determine the price of individual HydraForce components or of a custom manifold product. You can then generate an i-Design manifold quote. With the 3D modeling capabilities, you can create a port and component layout, with manifold dimensions, and an estimated weight. This 3D layout will then be used to assist engineers in designing HydraForce manifold systems, or to show customers a visual and dimensional estimation of what their manifold block could look like upon completion. After a manifold has been designed by HydraForce Engineering, the 3D modeling tool can be used to view the final design.

1.1 Document Content

The main goal of the i-Design software is to allow selection and configuration of elements that are part of a custom manifold assembly.

We have included in this i-Design User’s Guide, all the instructions on how to use the software and to configure components or a HydraForce manifold. This content has been organized so that all sections are sorted to follow a logical order.

However, this document does not cover the technical aspects of the components or manifold systems. For more information, refer to the HydraForce documentation or the HydraForce internet website: http://www.HydraForce.com.

The i-Design User’s Guide contains the following chapters:

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
</tr>
<tr>
<td>2</td>
<td>Getting Started – The Interfaces</td>
</tr>
<tr>
<td>3</td>
<td>Building a First Project</td>
</tr>
<tr>
<td>4</td>
<td>Documentation</td>
</tr>
<tr>
<td>6</td>
<td>Index</td>
</tr>
</tbody>
</table>
2 Getting Started – The Interfaces

2.1 Main Interface

The main interface contains multiple elements that will change depending on the section of the software that is currently in use. Therefore, the main interface is designed in a way which the user can easily access the various sections of the software. The major parts of i-Design are based on standard Windows interfaces but include items specifically designed for this application.

The main interface contains the following major sections:

1. The application header: Contains the menus and toolbars;
2. The “Project Explorer” window: Allows the user to switch from one interface to another;
3. The main display: This section will change depending on the selection made in the “Project Explorer”;
4. The “Library Explorer” window: Allows the user to access the application components that can be used in the system design. This interface changes depending on the main display in use. The libraries will be covered in more details later with the main interfaces;
5. The “Messages” window: Lists all the warnings that occurred during the manifold design process.

![Figure 2-1: HydraForce i-Design Interfaces](image-url)
The header is based on a standard Windows interface (Ribbon Bar). This section of the application holds the various menus / toolbars needed to access the main software features and tools. The default configuration is arranged in such a way that all the functions are easily accessible.

*Figure 2-2: Application Header*
2.1.1 File Menu

The “File” menu found in i-Design works as any other standard Windows application (Ribbon Bar).

![Figure 2-3: File Menu](image)

2.1.1.1 Content of the Menu

Menu contents are:
- Nothing Selected → Recent Documents
1. New Project

2. Project
3. Print Preview
4. Print

5. I-Design Web
6. Import / Export

7. Validate with Automation Studio™
8. Preferences

9. Support
2.1.2 Tabs

The application contains tabs which replace menus. These tabs contain a ribbon which is divided into groups from which icons are categorized.

2.1.2.1 Design Tab

The “Design” tab allows for quick access to the explorer, clipboard, drawing, connection line, and layout and 3D features. These are:

**Explorer Section:**

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Library Explorer" /></td>
<td>Library Explorer</td>
<td>Opens/Closes the Library window</td>
</tr>
<tr>
<td><img src="image" alt="Project Explorer" /></td>
<td>Project Explorer</td>
<td>Opens/Closes the Project Explorer window</td>
</tr>
<tr>
<td><img src="image" alt="Message Explorer" /></td>
<td>Message Explorer</td>
<td>Opens/Closes the Errors List &amp; Messages window</td>
</tr>
</tbody>
</table>

**Clipboard Section:**

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Paste" /></td>
<td>Paste</td>
<td>Pastes the content of the clipboard</td>
</tr>
<tr>
<td><img src="image" alt="Cut" /></td>
<td>Cut</td>
<td>Cuts the selection</td>
</tr>
<tr>
<td><img src="image" alt="Copy" /></td>
<td>Copy</td>
<td>Copies the selection to the clipboard</td>
</tr>
<tr>
<td><img src="image" alt="Delete" /></td>
<td>Delete</td>
<td>Deletes the selected items</td>
</tr>
</tbody>
</table>

**Drawing Section (System Design Only):**

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Select" /></td>
<td>Select</td>
<td>Returns the mouse pointer to the normal mode when creating graphic elements.</td>
</tr>
<tr>
<td><img src="image" alt="Line" /></td>
<td>Line</td>
<td>Allows the user to insert a line</td>
</tr>
<tr>
<td><img src="image" alt="Rectangle" /></td>
<td>Rectangle</td>
<td>Allows the user to insert a rectangle</td>
</tr>
<tr>
<td><img src="image" alt="Ellipse" /></td>
<td>Ellipse</td>
<td>Allows the user to insert an ellipse</td>
</tr>
<tr>
<td><img src="image" alt="Text" /></td>
<td>Text</td>
<td>Allows the user to insert text</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Image</td>
<td>Allows the user to insert an image</td>
</tr>
<tr>
<td><img src="image" alt="Style" /></td>
<td>Style</td>
<td>Allows to change the line style of a graphic element</td>
</tr>
<tr>
<td><img src="image" alt="Thickness" /></td>
<td>Thickness</td>
<td>Allows to change the thickness of a graphic element</td>
</tr>
<tr>
<td><img src="image" alt="Color" /></td>
<td>Color</td>
<td>Allows to change the color of a graphic element</td>
</tr>
</tbody>
</table>
Connection Line Section (System Design Only):

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Line</td>
<td>Line Type</td>
<td>Allows changing the selected lines types or the default line type if no line is selected.</td>
</tr>
<tr>
<td></td>
<td>Line Style</td>
<td>Allows changing the selected lines style.</td>
</tr>
<tr>
<td></td>
<td>Line Thickness</td>
<td>Allows changing the selected lines thickness.</td>
</tr>
<tr>
<td></td>
<td>Line Color</td>
<td>Allows changing the selected lines color.</td>
</tr>
</tbody>
</table>

Layout Section:

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rotate Left</td>
<td>Rotates the active component 90 degrees left</td>
</tr>
<tr>
<td></td>
<td>Rotate Right</td>
<td>Rotates the active component 90 degrees right</td>
</tr>
<tr>
<td></td>
<td>Group Manipulation</td>
<td>Rotates the selection (group) to the right (System Design Only)</td>
</tr>
<tr>
<td></td>
<td>Flip Horizontal</td>
<td>Flips the active component over a vertical axis (System Design Only)</td>
</tr>
<tr>
<td></td>
<td>Flip Vertical</td>
<td>Flips the active component over a horizontal axis (System Design Only)</td>
</tr>
<tr>
<td></td>
<td>Component Snap</td>
<td>Snaps the component on the grid</td>
</tr>
</tbody>
</table>

Settings (Manifold Layout Only):

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current Page Setup</td>
<td>Defines the current page setup</td>
</tr>
<tr>
<td></td>
<td>Flow Constraint</td>
<td>Indicates the connection lines to be the shortest in the block manifold</td>
</tr>
</tbody>
</table>

Component (Manifold Layout Only):

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Component Location</td>
<td>Allows to define the component location</td>
</tr>
<tr>
<td></td>
<td>Lock Component Position</td>
<td>Locks a component on its current position</td>
</tr>
<tr>
<td></td>
<td>Restrain Component to Surface</td>
<td>Restrains a component to the current manifold face</td>
</tr>
<tr>
<td></td>
<td>Set Angle</td>
<td>Allows to define the component angle</td>
</tr>
<tr>
<td></td>
<td>Counterboring</td>
<td>Allows to define the counterbore parameters</td>
</tr>
<tr>
<td></td>
<td>Grid Properties</td>
<td>Allows to define the grid spacing</td>
</tr>
</tbody>
</table>

Block (Manifold Layout Only):

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Show Resize Handles</td>
<td>Shows resize handles allowing to resize the block manifold by dragging its edges in the 2D layout and in flat mode in the 3D layout display</td>
</tr>
<tr>
<td></td>
<td>Compact Block</td>
<td>Shrink the block manifold dimensions to its minimum without moving any components</td>
</tr>
<tr>
<td></td>
<td>Block Dimensions</td>
<td>Opens the dialog allowing to manually define the block dimensions</td>
</tr>
<tr>
<td></td>
<td>Grid Properties</td>
<td>Allows to define the grid spacing</td>
</tr>
<tr>
<td></td>
<td>Create Dimension</td>
<td>Allows to create dimensions from pick points</td>
</tr>
</tbody>
</table>
### 2.1.2.2 View Toolbar

The “View” toolbar allows quick access to the various visualization functions. These are:

![Figure 2-5: View Toolbar](image)

#### Show Section:

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Transparency</td>
<td>Displays a Closed/Transparent view in the 3D layouts interfaces (Manifold Only)</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Components</td>
<td>Displays/Hides the external part of the components in the 3D layouts views (Displayed by default – Manifold Only)</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Grid</td>
<td>Displays/Hides the grid</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Connection Port</td>
<td>Displays/Hides the connection port</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Connection Port Name</td>
<td>Displays/Hides the connection port name</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Reference</td>
<td>Displays/Hides the component references</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Title Block</td>
<td>Displays/Hides the title block (System Design Only)</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Component Label</td>
<td>Displays/Hides the component labels</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Components not on the block</td>
<td>Changes the color of the components not placed on the block (System Design Only)</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Satellite Leaders</td>
<td>Displays/Hides the satellite leaders (Manifold Only)</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Reference Axis</td>
<td>Displays/Hides the reference axis (Manifold Only)</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Interferences</td>
<td>Shows the interferences between cavities / manifold edge</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Dimensions</td>
<td>Displays the existing dimensions</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Placement Locks</td>
<td>Displays the placement constraints pin</td>
</tr>
</tbody>
</table>

#### Navigate Section:

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Zoom Out</td>
<td>Zooms out of the design by 25%</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Zoom In</td>
<td>Zooms into the design by 25%</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Zoom Selection</td>
<td>Allows the user to create a specific zoom selection</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Zoom Page</td>
<td>Allows the user to zoom all the page on the screen (System Design Only)</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Pan</td>
<td>Allows the user to PAN the schematic (Moves the page/view)</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Zoom Fit</td>
<td>Allows the user to zoom to have all the block on the screen (Manifold Only)</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Rotate</td>
<td>Rotates the blocks (Manifold Only)</td>
</tr>
</tbody>
</table>
Windows Section:

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Horizontal Tile</td>
<td>Arranges the windows in a horizontal tile layout</td>
</tr>
<tr>
<td></td>
<td>Vertical Tile</td>
<td>Arranges the windows in a vertical tile layout</td>
</tr>
<tr>
<td></td>
<td>Cascade</td>
<td>Arranges the windows in a cascade layout</td>
</tr>
<tr>
<td></td>
<td>Switch Windows</td>
<td>Switch the active window</td>
</tr>
</tbody>
</table>

### 2.1.2.3 Finalize Toolbar

The “Edit/View” toolbar allows quick access to the various functions available from the “Edit/View” menu. These are:

![Finalize Toolbar](image)

**Figure 2-6: Finalize Toolbar**

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Design Check</td>
<td>Allows to verify the rules of configuration</td>
</tr>
<tr>
<td></td>
<td>Revision</td>
<td>Opens the revision dialog</td>
</tr>
</tbody>
</table>

**Validate:**

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Validate with Automation Studio™</td>
<td>Allows exporting the schematic in Automation Studio to simulate and validate it.</td>
</tr>
</tbody>
</table>

**Generate:**

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Generate Report(s)</td>
<td>Generates the assembly report depending on the user rights (Sales Manager, Distributor or OEM)</td>
</tr>
</tbody>
</table>

**Price:**

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Button</td>
<td>Description</td>
<td>Function</td>
</tr>
<tr>
<td>--------</td>
<td>------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Get Total Price</td>
<td>Calculates the total project price and displays the result in the “Total Price” field</td>
</tr>
<tr>
<td></td>
<td>Project Pricing Freeze</td>
<td>Allows project pricing freeze after being approved by HydraForce</td>
</tr>
<tr>
<td></td>
<td>Total Price</td>
<td>Contains the price of the manifold at the moment when the “Get Total Price” button is pressed. The “Total Price” field value is followed by “…” when the price is incomplete</td>
</tr>
</tbody>
</table>

**Import/Export:**

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Export Current View to DXF…</td>
<td>Exports the current schematic view to DXF</td>
</tr>
<tr>
<td></td>
<td>Export Formatted schematic to DXF…</td>
<td>Exports a formatted schematic to DXF</td>
</tr>
<tr>
<td></td>
<td>Export 3D Components to Folder…</td>
<td>Exports 3D Components to a specific folder</td>
</tr>
<tr>
<td></td>
<td>Export 3D components to STEP</td>
<td>Export the block components to STEP</td>
</tr>
</tbody>
</table>

### 2.1.3 Project Explorer

The “Project Explorer” lists all the opened projects and allows choosing the interface that will appear in the main display area. For “Price a Manifold” projects types, the user has the choice between five interfaces. Two interfaces exist for “Price Components” projects. These interfaces are:

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Choice</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price a Manifold</td>
<td>Project Parameters</td>
<td>Takes the user to the “Project Parameters” page in the main display.</td>
</tr>
<tr>
<td></td>
<td>System Design</td>
<td>Takes the user to the “System Design” page in the main display.</td>
</tr>
<tr>
<td></td>
<td>2D Manifold Layout</td>
<td>Takes the user to the “Orthogonal Manifold Layout” page view in the main display.</td>
</tr>
<tr>
<td></td>
<td>3D Manifold Layout</td>
<td>Takes the user to the “Isometric Manifold Layout” page view in the main display.</td>
</tr>
<tr>
<td></td>
<td>Parts list</td>
<td>Takes the user to the “Parts List” page in the main display.</td>
</tr>
<tr>
<td>Price Components</td>
<td>Project Parameters</td>
<td>Takes the user to the “Project Parameters” page in the main display.</td>
</tr>
<tr>
<td></td>
<td>Price Component</td>
<td>Takes the user to the “Cart List” page in the main display.</td>
</tr>
</tbody>
</table>

The opening and closing of the project explorer window is done with the “Project Explorer” button located in the “Design” tab.

**Notes:**

When version 2.0 projects are opened, the project explorer will list only four choices. There isn’t any 3D manifold layout view in this case. Refer to the i-Design version 2.0 User’s Guide for more details.

You may want to convert your project to 3D to take advantage of the isometric view and the latest i-Design version capabilities.
2.1.3.1 Multiple Projects Management

When several projects are opened during the same work session, they will all be listed in the “Project Explorer” window. It is then possible to copy and paste components from the “System Design” interface of a project to another one.

It is also possible to use the tiled or cascade functions in the “View” tab to display one or more projects at a time.

2.1.3.2 Project Explorer Contextual Menu

In the “Project Explorer” window, right-click on a project name to access its contextual menu.

The “Project Explorer” contextual menu allows to:

1. Save the current project;
2. Close the current project;
3. Rename the current project;
4. Access the “Revision History” dialog box.
2.1.4 Main display

The main display will change as per the choices of interface that has been made. As written previously, the main display will have five interfaces for a Price Manifold project and two interfaces for Price Components project:

Price a Manifold
1. Project Parameters;
2. System Design;
3. 2D Manifold Layout;
4. 3D Manifold Layout;
5. Parts list.

Price Components
1. Project Parameters;
2. Price components.

Note: When version 2.0 projects are opened, the Project Explorer will show only four choices. There isn’t any 3D manifold Layout view in this case. Refer to the i-Design version 2.0 User’s Guide for more details.

2.1.5 Warning Messages

Warning messages are displayed to alert the user that some rules have not been respected during the design phases. Warning messages could appear while working in the “Project Parameters”, “System Design”, “Manifold Layouts” or “Price Components” interfaces.

An indication that a message is pending appears in the status bar, at the bottom of the application window.

Figure 2-9: Project Explorer Contextual Menu

Figure 2-10: Pending Message in the Status Bar
To make the warning disappear from the status bar, you need to open the "Messages" window. There are two ways to open it:

1. Click on the warning message directly in the status bar;
2. Click on the “Messages” button in the “Design” tab. This will open the “Messages” windows if it was closed or close it if it was opened.

The “Messages” window lists all the warnings that have been displayed in the current work session. To clear the messages, click on the “Clear & Refresh” button located on the top-right of the window.
2.2 Working with Project Files

2.2.1 Creating a New File

To create a new file:

1. Select the “New Project” command from the “File” menu
2. Choose the type of project to create (“Price a Manifold” or “Price Components”).

![Figure 2-12: File Menu – New Project](image)

This will create a new project that appears in the “Project Explorer”. When a project is created it will have a default name. It can be renamed at any time.

2.2.2 Opening a File

To open a file:

1. Select the “Open File” command in the “File” menu → “Project”;

---

Figure 2-12: File Menu – New Project

---
A Windows standard browser for file opening appears.

2. Use the browser to find the desired file in .hf3d or .hfr format and select it;

3. Click on the “Open” button.

  The project opens and appears in the “Project Explorer”. All saved information is retrieved and all interfaces, options and information are updated accordingly.

Notes:

The symbols and underlying configuration features do not update automatically when a project is loaded. That is, the symbol and configuration are specific to a project. If there is any doubt that the symbol or features have been updated the user should re-insert the component into the project. The symbols and configuration features are part of the component database. The revision level of the component database can be found in the “About” dialog box under the “Support” menu. The price of the component will automatically be updated regardless of the symbol or component database version.

It is possible to open a project created with i-Design version 2.0. In this case, there won’t be any isometric (3D) view of the manifold and all functions related to it will not be accessible. In this case you may consider converting your project in 3D. For this, refer to the “Convert to 3D” command in the “File” menu.
2.2.3 Saving a File

Three options are available to save a project:

1. Select the “Save File” command from the “File” menu → “Project”;

![Figure 2-14: File Opening Browser](image)

![Figure 2-15: File Menu – Save File](image)
Or
1. Click on the “Save File” button in the “Quick Access” toolbar;
Or
1. Use the “Save” command from the contextual menu in the “Project Explorer” (right-click on the project name);

Figure 2-16: Contextual Menu

If the file has not been previously saved, the browser window opens. If the file has been previously saved, the application will overwrite the last saved file version.

2. Choose the folder where to save the file;
3. Type the name of the file in the “File Name” field;
4. Click on the “Save” button.

Figure 2-17: File Saving Browser

Note: If the project was previously loaded from a .hfr file, this operation will save the file with the .hf3d extension and delete the previous .hfr file.
2.2.4 Saving a File As…

Using the “Save As…” command is the same as using the “Save” function for the first time. It is mostly used to save the file with a different name or to create a backup.

Note: Do not rename a file in Windows Explorer, the project name will be modified in i-Design. The project name and file name are linked.

2.2.5 Previewing the Printing of the Current Configuration

To preview the current manifold configuration:

1. Select the “File” menu → “Print Preview” → “Diagram”, “2D Manifold” or “3D Manifold”;

![Figure 2-18: File Menu – Print Preview](image)

2. Select the correct options that pertain to the printer set-up and location in the print dialog;
3. Click on OK;
4. The current configuration will be displayed on the screen in a “Print Preview” window;
2.2.6 Printing the Current Configuration

The manifold configuration can be printed at any time during the design process. Whether in the “System Design” or in the “Manifold Layout” interfaces, the user has the option to choose what to send to the printer.

To print the current manifold configuration:

1. Select the “File” menu → “Print” → “Diagram”, “2D Manifold” or “3D Manifold”;

2. Choose the options that pertain to the printer set-up and print location in the dialog box;

3. Click on OK;

4. The chosen interface will be sent to the printer.

2.2.7 Importing and Exporting

2.2.7.1 Exporting to DXF or to STEP

To export a diagram to a DXF or STEP file format:

1. Select the “File” menu → “Import/Export” → “Export to DXF” or “Export to STEP” command;
Figure 2-20: File menu – Export DXF

A “Save As…” dialog box opens.
2. Select the desired folder to save to;
3. Click on the “Save” button.

Note: The .dxf format used is compatible with AutoCAD® 2000 and later revisions.

2.2.7.2 Exporting 3D Components

The 3D files of each component are stored in the root of a folder named “3DFiles”. The latter is found in the root of the i-Design directory. The whole manifold assembly can also be exported into a single STEP file. All the 3D files are in .stp format.

To export 3D components to a folder:
1. Select the “File” menu → “Import/Export” → “Export 3D Components to Folder” command;

To export the 3D Assembly STEP file:
2. Select the “File” menu → “Import/Export” → “Export 3D Components to STEP” command;
A windows explorer dialog box opens.

3. Select the folder to save the 3D files in;
4. Click OK to begin the exportation process;
5. A message will alert the user if the 3D export has been successfully achieved or not;

Because there are similarities in the external view of many of the HydraForce components, the file names may not directly correspond to the product selected. A cross reference for the product and the corresponding file name can be found in an Excel spreadsheet located in the folder named “3DFiles”.
2.2.7.3 Exporting 3D Layout to XML

To export the components 3D positions information into an XML file:

1. Select the “File” menu → “Import/Export” → “Export to 3D Layout to XML” command;

   ![Figure 2-23: File menu – Export 3D Layout to XML]

   A “Save As” dialog box opens.

2. Select the folder to save to;

3. Click on the “Save” button.

   Note: All the components are exported to the XML file, even if they are not inserted on the manifold block.

2.2.7.4 Importing from 3D Layout XML

To import the components 3D positions in the current project from an XML file:

1. The manifold project selected must use the components listed in the XML file you want to import.

2. Select the “File” menu → “Import/Export” → “Import 3D Layout from XML” command;
Figure 2-24: File menu – Import 3D Layout from XML

An “Open” dialog box appears.

3. Select the .xml file to import;

4. Click on the “Open” button.

Note: The positions of the components listed in the XML file will be automatically updated in i-Design. The manifold layout views will be refreshed accordingly.

2.2.8 Exporting to Automation Studio

To export to Automation Studio:

1. Select the “File” menu → “Validate with Automation Studio™” command;
2. A “Save As…” dialog box opens.
3. Select the desired folder to save to;
4. Click on the “Save” button.
2.2.9 Opening 2.0 Project File

To open an earlier 2.0 project file into the latest i-Design version:

1. Select the “Project” ➔ “Open File” command from the “File” menu;
2. Then in the “Open File” dialog, make sure to change the file extension (default is *.hf3D) to *.hfr;
3. Browse and select the 2.0 project file to open and click on the “Open” button;
4. The project file opens and displays the following information message:

Figure 2-27: 2D to 3D File Conversion Information

Note: To maximize i-Design full capabilities, user must convert 2.0 project file to 3D environment. See next section for details on the procedure.

Project created with an earlier version of i-Design can also be dragged and dropped directly into the application from Windows Explorer.

2.2.10 Converting to 3D Environment

This feature is only available for i-Design 2.0 project file already opened which is not converted yet.

To convert i-Design version 2.0 project file into 3D:

1. Select the “Convert to 3D Environment” command from the “File” menu;
2. Acknowledge the warning message that opened by clicking on “Yes”.

Note: The component placement information on the manifold layout view will be lost during this process and the initial .hfr file will be deleted.
3. Select the measure system that will be used for this project. In the report, all measures units will be as per this choice. It will not be possible to modify the project unit once it is converted.

![Unit System Selection](image)

Figure 2-30: Unit System Selection

4. The new 3D project is saved using a filename with a .hf3d extension. The “Revision History” dialog box opens automatically. Fill in all the information relative to this revision.

   Note: The previous project file is overwritten, so make sure to back up the initial file before converting it.

5. A message informs the user that the conversion is completed.

![Conversion Completed](image)

Figure 2-31: 3D Conversion Completed

Once converted, the “Project Explorer” will contain the branches that permit to access the “2D Manifold Layout” and “3D Manifold Layout” interfaces.
2.3 Software and files updates

You can check if new software releases or database are available by using the “File” menu → “Support” → “Check for Update” command (an Internet connection is mandatory in order for this feature to work properly).

The software update check can generate 3 cases:

1. The update server is not responding

![Figure 2-32: Data Server Not Available](Image)

2. The update server doesn’t have new versions

![Figure 2-33: Software is Up-to-date](Image)

3. The update server has an available update
Figure 2-34: Software Updates are Available

You can click on the “i-Design Installation Package – v5.X.X.XXXX” button or the “US Price – vX.X.XXXX” button when available; otherwise the window can only be closed. This action launches the current browser with the HydraForce server address. Then the user can download the latest version and install it in its computer (i-Design needs to be closed prior to the update operation).
3 Building a First Project

3.1 Creating a Manifold Project

When you begin a new project, you will start on the “System Design” document where you can quickly and easily create your circuit using drag-and-drop feature. Or you may choose to start on the “Project Parameters” document where i-Design allows you to select specific technical parameters as default values that will carry throughout all component selections. After designing the circuit, you can move on to the “Manifold Layout” document where you will specify where to locate valves, ports and mounting holes, and define the maximum envelope dimensions. There is also a “Parts List” and “Pricing Wizard” for quick review of the bill of material and manifold costs anytime throughout the design process.

When you finish your design and layout, the software has a built-in design check that will provide a variety of detailed warnings, such as incomplete product specifications, errors in component size, pressure or flow setting, etc.

When you’re ready to see the final draft of your project, you will generate a report. The report contains information from all parts of the project; customer and distributor information, technical parameters, the circuit, the manifold layout, the bill of material, warnings, and revision history.

3.1.1 Project Parameters Interface

The first step in creating a new manifold design is to describe the project and its technical parameters. The project parameters interface is designed for this specific purpose. It allows the user to define the basic information needed to build a HydraForce custom manifold. This information can be general, technical or specific to HydraForce. Therefore the interface is divided in three sections.
3.1.1.1 Accessing the Project Parameters Interface

To access the Project Parameters interface:

1. Open the “Project Explorer”;
2. In the desired project, click on the “Project Parameters” branch.

3.1.1.2 HF Use Only

This section is used by HydraForce to input:
• Assembly #: The assembly number is the P/N that HydraForce will assign to the complete manifold assembly;
• Block #: The block number is the P/N that HydraForce will assign to the aluminum, continuous cast iron or steel body.

3.1.1.3 General Information

This section is used for information purposes only. It will appear on the report and can be consulted at any time while using the software but it has no impact on the choices offered to the user during the design process. Fields found in this section of the interface permit the user to define:

• Project HF (Same as the filename);
• Approval / Delivering field with these choices:
  o Approval drawing required;
  o No Approval Drawing – Release Drawing;
  o “Fast-Track” Delivered – No approval Drawing (PO required).
• Design Review Format (DWG, DXF, Iges, Pro-E, STEP, hf3d and PDF);
• Released Design format (DWG, DXF, Iges, Pro-E and STEP);
• Distributor/Location;
• OEM Customer;
• Distributor Contact;
• OEM Contact;
• OEM Address;
• Email;
• Estimated Annual Usage;
• Estimated Production Date;
• PO#;
• Initiated By and Date;
• Additional project notes;
• PPAP Level (Selection list from level 1 to level 6, with level 6 as default).
• Market
• Country Export
• Commodity Code

3.1.1.4 Technical Project Parameters

Technical project parameters are used as reference while the user is designing the system. Therefore, the choices made / entered in this section of the interface will have an impact on the design process. Fields found in this section of the interface permit the user to define:

• Nominal Flow Rate;
• Nominal Pressure;
• Oil Type and viscosity;
• Typical (operating) Temperature;
• Ports Extra-Spacing;
• Default Value for Seal Type;
3.1.1.5 Selecting Default Values

Default values are selected so that they will appear by default in the component properties interface. If a selection is made and it happens that it does not exist in the component options, the first option available will be selected by default. The fields, which a default value can be set for are:

1. Seal Type;
2. Coil Voltage;
3. Coil Termination.

Note: Default values can be overwritten during the configuration process.

3.1.2 System Design Interface

The system design interface allows designing the actual hydraulic circuit that will be later creating the HydraForce custom manifold. This interface is split into two major parts:

1. The parts library;
2. The diagram editor.

### 3.1.2.1 Accessing the Main Design Interface

To access the main circuit design interface:

1. Click on the “Project Explorer” button on the “Design” toolbar;
2. In the desired project, click on the “System Design” branch.

The main display will show the circuit design interface.

### 3.1.2.2 Parts Library

The “Library Explorer” is the main tool for selecting components and building circuits. To access the “Library Explorer”:

1. Click on the “Library Explorer” button on the “Design” toolbar;
2. Browse the various categories using the + sign and selecting various categories in the library.
   Or
   Use the search engine to find the component you want.
   Components and their description / model code appear in the component viewer / selector window.

Note: The contents of the library will change depending on the selected interface and project type currently used.

#### 3.1.2.2.1 Search Field

The search field allows the user to search through the library for a specific model code or part of model code. When the search is launched from anywhere in the library, the search engine will close the search loop by restarting from the beginning.

#### 3.1.2.2.2 Library Explorer

The “Library Explorer” is a navigational tool. It allows the user to:

- View different component categories;
- Expand / Contract component categories.

#### 3.1.2.2.3 Component Selector

The component selector allows the user to:

- Visualize the component symbols;
- Visualize the component description. If selected in the subfolder, the complete component description is shown;
- The component selector allows the user to drag and drop a component onto the design area. (See the Working with Components chapter)
3.1.2.3 Diagram Editor

The diagram editor is the main part of the software. This interface is used for designing the schematic of the manifold design. It is composed of the following elements:

- Drawing area;
- Drawing tools;
- CAD elements.

Briefly, it allows the user to:

- View the drawing area;
- Activate the grid function;
- Insert a Title Block;
- Zoom in, zoom out and pan the drawing area;
- Browse, select libraries and view components;
- Insert components onto the drawing area;
- Move, copy, cut, rotate and paste components on the drawing area;
- Connect components;
- Access specific component properties dialogs.
3.1.2.3.1 Drawing Area

The drawing area is a white section onto which it is possible to design the desired system. The drawing area is limited to 22x22 inches. Many tools and drawings aids are available while in this interface, primarily:

- Page setup;
- Grid function;
- Zoom function.

3.1.2.3.2 Default Page Setup

The “Default Page Setup” dialog box can be accessed through the “File” menu → “Preferences” → “Default Page Setup”. It allows specifying the default page format for every new diagram.

![Image of File Menu - Preferences - Default Page Setup]

Figure 3-3: File Menu – Preferences - Default Page Setup

The “Default Page Setup” dialog box allows the user to select the default diagram size, orientation and units.
3.1.2.3 Current Page Setup

The “Current Page Setup” allows specifying the dimensions of the diagram that is currently in use. It can be accessed:

1. Through the “Design” tab → “Settings” group → “Current Page Setup”;

![Current Page Setup Dialogue Box]

Figure 3-5: Design Tab – Current Page Setup

The “Current Page Setup” dialog box allows the user to select the current diagram size, orientation, and units.

Note: Those settings overwrite the ones specified in the “Default Page Setup”.
3.1.2.3.4 **Grid Function**

The grid is a series of perpendicular lines allowing the user to see the horizontal and vertical alignment of components. This function allows the user to align components to improve the clarity of the hydraulic circuit. To activate the grid:

1. Select the “View” tab ➔ “Show” group ➔ “Grid”.

---

*Figure 3-6: Current Page Setup Dialog*

*Figure 3-7: Activated Grid Function*
3.1.2.3.5 Component Snap

Component snap is used to keep all of the components connectors on a grid point. It is recommended to keep the snap mode active at all time to insure alignment of the components when placed on the drawing area.

To activate component snap:
1. Select the “Design” tab \(\rightarrow\) “Layout” group \(\rightarrow\) “Component Snap”.

3.1.2.3.6 Zoom Functions

The zoom functions are used to change the view of the drawing or manifold layout document. There are many zoom tools that can be used:

- The zoom-in tool:
  1. Click on the “Zoom in” \(\rightarrow\) button in the “View” tab \(\rightarrow\) “Navigate” group to make the complete drawing zoomed-in;
  OR
  2. Click on CTRL with +;
  OR
  3. Hold down CTRL key and scroll with the mouse button.

- The zoom-out tool:
  1. Click on the “Zoom out” \(\rightarrow\) button in the “View” tab \(\rightarrow\) “Navigate” group to make the complete drawing zoomed-out;
  OR
  2. Click on CTRL with -;
  OR
  3. Hold down CTRL and scroll with the mouse button.

- The zoom box tool:
  1. Click on the “Zoom Box” \(\rightarrow\) button in the “View” tab \(\rightarrow\) “Navigate” group to make it active;
  2. Make a box on the drawing space around the components you wish to zoom in.

- The zoom-page tool:
  1. Click on the “Zoom Page” \(\rightarrow\) button on the “View” tab \(\rightarrow\) “Navigate” group;
  2. The grid and the components symbols are zoomed-out or in so that all of the components on the drawing area are visible.

- The pan tool:
  1. Click on the “Pan” \(\rightarrow\) button on the “View” tab \(\rightarrow\) “Navigate” group;
  2. The mouse pointer takes the shape of a hand;
  3. Move the drawing area and all of the components on it by clicking and dragging the hand on the drawing area;
4. De-select the tool by clicking on the icon again.

OR

1. Hold down the SHIFT button;
2. The mouse pointer becomes a hand;
3. Move the drawing surface and all of the components on it by clicking and dragging the hand on the drawing area.

3.1.2.4 Working with Components

The first step in designing a system is to select and position components onto the drawing area. More precisely this section details the following items:

1. Dragging and dropping components on the drawing area;
2. Components representation on the drawing area;
3. Selecting, deleting, copying, cutting, and pasting components;
4. Rotating and moving components;
5. Accessing the component properties dialog box;
6. Components contextual menu.

3.1.2.4.1 Dragging and Dropping Components on the Drawing Area

Once the desired component has been found in the component library, the user needs to do the following steps to insert it onto the drawing area:

1. Select the image of the component in the bottom part of the library;
2. Click and drag the component to the desired location on the drawing area;
   An image of the component is dragged along with the mouse pointer.
   If the component cannot be dropped at the position of the mouse pointer, the cursor changes to an interdiction symbol (circle with oblique bar). 
3. Release the mouse button.
   If the position is valid, the component stays in place and a purple rectangle (boundary box) with handle points surrounding the component is visible.
   The component appears in red. It means that it is not completely configured.
   Ports for the component appear in red until they get connected to other ports.
   Component labels (satellites) appear besides the symbol. The “Displayed Information” dialog box allows to choose what to display on the schematic.

3.1.2.4.2 Selecting – Single Component

To select a component:

1. Click on the component. A selected component is enclosed in a purple boundary box.
3.1.2.4.3 Selecting – Window Selection

To select multiple components using the selection window:

1. Click and drag a rectangle on the drawing area while not in a tool mode (pan, zoom, line, etc.).

   Everything that is inside the selection box is then selected.

Once multiple components selection is made, components can be:

- Moved;
- Copied;
- Deleted.

3.1.2.4.4 Deleting

To delete a component:

1. Select the component or group of components;
2. Click on the “Delete” button in the “Design” tab → “Clipboard” group;
   Or
3. Press the DEL key;
   Or
4. Open the contextual menu and select the “Delete” command.
All links created from the component, see the linking components section, stay in place.

### 3.1.2.4.5 Copying

To copy a component:

1. Select the component or group of components;
2. Click on the “Copy” button in the “Design” tab “Clipboard” group;
   Or
3. Press the CTRL+C keys;
   Or
4. Open the contextual menu and select the “Copy” command.

The component and all its attributes (properties, orientation, etc.) are sent to the clipboard.

### 3.1.2.4.6 Cutting

To cut a component:

1. Select the component or group of components;
2. Click on the “Cut” button in the “Design” tab “Clipboard” group;
   Or
3. Press the CTRL+X keys;
   Or
4. Open the contextual menu and select the “Cut” command;

The component and all of its attributes (properties, orientation, etc.) are sent to the clipboard. The component is removed from the drawing surface.

### 3.1.2.4.7 Pasting

To paste a component:

1. Click on the drawing area at the location where you want to paste the component;
2. Click on the “Paste” button in the “Design” tab “Clipboard” group;
   Or
3. Press the CTRL+V keys;
   Or
4. Open the contextual menu and select the “Paste” command.

**Note:** A component can only be pasted if it exists in the clipboard.
3.1.2.4.8 Rapid Copy/Paste

To accelerate the Copy/Paste function, press the CTRL key while moving a component, this will automatically copy the component to the new position.

The mouse pointer changes to when the CTRL key is used.

3.1.2.4.9 Rotating

To rotate a component:

1. Select a component;
2. Use the clockwise rotation command in the “Design” tab ➔ “Layout” group;
   Or
3. Use the counter clockwise rotation command in the “Design” tab ➔ “Layout” group;
   Or
4. Press on the CTRL+R or CTRL+H rotation right shortcut keys on the keyboard;
   Or
5. Press on the CTRL+L rotation left shortcut keys on the keyboard;
   Or
6. Select the “Rotate Right” command from the contextual menu;
   Or
7. Select the “Rotate Left” command from the contextual menu.

The rotation of a component will rotate the symbol but not the satellite texts associated to it.

3.1.2.4.10 Flipping

To flip a component:

1. Select a component;
2. Use the “Flip Horizontal” command in the “Design” tab ➔ “Layout” group;
   Or
3. Use the “Flip Vertical” command in the “Design” tab ➔ “Layout” group;
   Or
4. Press on the CTRL+T keys on the keyboard (Horizontal);
   Or
5. Press on the CTRL+F keys on the keyboard (Vertical);
   Or
6. Select the “Flip Horizontal” command from the contextual menu;
   Or
7. Select the “Flip Vertical” command from the contextual menu. The flipping of a component will flip the symbol but not the satellite texts associated to it.

3.1.2.4.11 Moving

To move a component:

1. Drag and drop the component to a new position;
   Or
2. Select the component and move it using the arrow keys.

The same rules apply if a component is dragged from the “Library”. If links are attached to the component, the links remain attached when moving it.

3.1.2.5 Contextual Menus

To access contextual menus, right-click with the mouse in one of the following situations:

<table>
<thead>
<tr>
<th>Mouse pointer is on</th>
<th>Contents of the contextual menu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component inserted in the drawing area</td>
<td>Undo (grayed if not available)</td>
</tr>
<tr>
<td></td>
<td>Redo (grayed if not available)</td>
</tr>
<tr>
<td></td>
<td>Cut</td>
</tr>
<tr>
<td></td>
<td>Copy</td>
</tr>
<tr>
<td></td>
<td>Paste (grayed if not available)</td>
</tr>
<tr>
<td></td>
<td>Delete</td>
</tr>
<tr>
<td></td>
<td>Rotate Left</td>
</tr>
<tr>
<td></td>
<td>Rotate Right</td>
</tr>
<tr>
<td></td>
<td>Flip Horizontal</td>
</tr>
<tr>
<td></td>
<td>Flip Vertical</td>
</tr>
<tr>
<td></td>
<td>Properties</td>
</tr>
<tr>
<td></td>
<td>Help</td>
</tr>
</tbody>
</table>

Empty drawing space

| Paste (grayed if not available) |
| Help |

3.1.2.6 Viewing Component Properties

To view component properties:

1. Double-click on the component;
2. Select the “Properties” command from the contextual menu of the selected item.

See the “Component Properties” section of this manual for more details.

3.1.2.7 Working with Graphical Elements

Inserting a graphical element on the drawing area resembles the insertion of a component but through the use of a drawing tool. Graphical elements can be stretched, copied, rotated, deleted and moved.
3.1.2.7.1 Inserting a Line, a Rectangle, and an Ellipse

To avoid redundancy in the drawing functions description, only one graphical object’s drawing procedure is described below.

To insert an ellipse:

1. Select the “Insert Ellipse” button in the “Design” tab → “Drawing” group;
2. Click on the left-mouse button without releasing it and drag the cursor away;
3. While dragging, the shape of the object appears and changes with the mouse movements;
4. Release the mouse button when the object has reached the desired dimensions;
   The graphical object is displayed on the diagram.
5. Repeat steps 1 to 4 for any other graphical object to insert in the diagram.

3.1.2.7.2 Inserting a Text Box and a Picture

To avoid redundancy, the following function description starts from releasing the mouse button in the previous section.

To insert a text box:

1. Repeat steps 1 to 4 of the previous procedure, making sure the “Insert Text” tool is selected from the “Design” tab → “Drawing” group. In the input box, type-in the text to include in the diagram.

To insert a picture:

1. Repeat steps 1 to 4 of the previous procedure making sure the “Insert Image” tool is selected from the “Design” tab → “Drawing” group;
   The “Open” dialog box pops up.
2. Select the image you wish to insert in the diagram;
   Accepted formats are .JPG, .GIF and .BMP.
3. Click on Open.
   The image appears on the diagram.

3.1.2.7.3 Modifying Text Attributes

To modify the text attributes:
1. Double-click on the text to modify or select the “Properties” from its contextual menu; The “Component Properties” dialog box for the text appears.
2. Change the font of the text. Choices appearing in the list are as per the Windows installed fonts;
3. Change the font style. Styles available are Windows standard: Bold, Italic and Bold Italic;
4. Change the font size;
5. Add the text effects: Strikeout or Underline;
6. Change the font color;
7. Change the font script;

Figure 3-11: Text Attributes Dialog Box

The color selection is done with the following dialog box:
3.1.2.7.4 Modifying Graphical Element Attributes

To change the outline of a graphical element:

1. Select the element;
2. Using the following buttons in the “Design” tab → “Drawing” group, define the line attributes of the element.

The selection of colors is done through the use of a Windows standard color selector.

The selection of the line type is done via a pull-down menu.

The selection of the line thickness is done via a pull-down menu.

Note: The color and thickness tools can be used for modifying the valve symbols as well.

3.1.2.8 Displaying Connection Port Names

To display the port names of the components:
1. Select the “View” tab → “Show” group → “Connection Port Name”;
The port name/number will appear in a bubble. They cannot be moved or modified.

2. To display a different port number, use the text tool to create a custom ID.

3.1.2.9 Displaying Connection Ports

To display the ports (small circles) on the components:

1. Select the “View” tab → “Show” group → “Connection Port”;
The ports will appear or disappear depending on their current state.

3.1.3 Component Properties

The “Component Properties” dialog box can contain four branches that are used to:

- Component Configuration:
  - View the component description;
  - Select the component model;
  - View the component technical properties (ex: “Flow” and “Operating Pressure”)
  - Select to engrave the label of the component on the manifold;
  - View the component symbol;
  - Select specific options for the component;
  - Mark this component as a special one, so the user can enter a special model code.
  - View the current component “Model Code” (P/N);
  - View the component cavity name;
  - View the component price;

- Displayed Information:
  - Select some component information to be displayed on the system design page;
  - Add a comment;
  - Edit the component label.

- Service Port:
  - Defined a component buried under it;
  - Allow to indicate on the “System Design” display that there is a buried component.

- Catalog Information:
  - View additional information on the component;
  - View the component PDF catalog file.
To access the “Component Properties” dialog box:
1. Double-click on the component;
   Or
2. Select the “Properties” command from its contextual menu.

![Component Properties Dialog](image)

**Figure-3-14: Component Properties Dialog**

### 3.1.3.1 Selecting a Component Model

Component model selection is the first step in the configuration of a component. Select the expected component model from this field drop down list. This will update the component options fields as well as the “Model Code” number.

### 3.1.3.1.1 Configuring the Component Model Code

To configure the model code, select the desired options in each of the pull-down menus. Each component is defined as per the component specific attributes. Selection menus are dynamic, meaning that the contents of the pull-down lists will be consequential to the previous choices.

If a default value for certain options has been defined in the “Project Properties” interface (seal, coil, termination) the pull-down menus will default to that value. However, it can be overwritten. Otherwise, the default is blanked represented by the choices “None” or “?”.

If a modification is made in an option field and it impacts another field, the second field is then automatically updated. If the previous choice still exists, it stays, if it does not, it resets to a blank value.
3.1.3.1.2 Incomplete Component Model Codes – Component Display

Components that have an incomplete model code, due to a field left blank in the component options or when the “Component Properties” screen has not been opened, appear in red in the “System Design” document.

Furthermore, even though the user fills up all component options in the “Project Parameters” interface and a default model code is available for a component, that component will still appear in red as long as the user has not open the “Component Properties” dialog box and click on the “Apply” button.

3.1.3.2 Options Having an Impact on Component Symbol

Some options selected in the pull-down lists will have an impact on the symbol that represents the component on the drawing area, such as “Manual Overrides” and “Screens”.

When one of these options is selected in the lists and the “Apply” button is clicked, the component symbol is automatically updated to reflect these changes.

Once the component symbol has been updated it is then treated as a normal component.

3.1.3.3 Component Identifier (ID) – Automatic Numbering

The component “Identifier” is unique to each component on the drawing area. The software will automatically generate an ID for each component inserted on the diagram based on the following rules:

1. The first two letters of the ID correspond to the first two letters of the component model code;
2. The following two digits are a sequential number in function of the first two digits. Example: the first valve will be CV01, the second CV02 and so on.

Note: There is no check for “Component ID” uniqueness. The “Component Label” can be edited in the “Displayed Information” dialog box, but not the “Component ID”. The “Component ID” is a sequential number and will always take the value of a free number or increment the last available one. For example: There is SV1, SV2, SV4 and SV3 was deleted. The new inserted component will have the “Component ID” SV03. The next component inserted will take the ID SV5.

3.1.3.4 Component Cavity

For each component, a cavity is identified. This cavity is defined as per the specific component options found in the manufacturer’s catalog. Furthermore, the corresponding cavity will appear in the “Component Properties” → “Component Configuration” dialog box.

3.1.3.5 Displayed Information

The information listed in this dialog box is displayed on the diagram, but only if the box left to the field is checked. Standard information is displayed and positioned beside the symbol. The text displayed on the diagram can be moved but will always keep a relative position to the component. If the component is moved, the text boxes (satellites) move accordingly.

3.1.3.6 Catalog Information

This section will bring up the PDF catalog page for the current component model.
Custom components are found in the “Library” as black boxes with a certain number of connection ports. Those can have from 0 to 6 ports.

Custom components are used to represent components that are not in the “Library”. The “Component Configuration”, “Displayed Information” and “Service Ports” branches are available but not the “Catalog Information”.

The component options available are:

1. Part Number;
2. Manufacturer (defaulted to HydraForce);
3. Special Price;
4. Cavity Type.
3.1.3.8 Net Adder Component

This component allows entering prices that are function of component quantities ranges.

In its dialog box, the “Net Adder” has the following options:
- Part Number;
- Manufacturer;
- 5 x “Quantity” levels and their related “Price”;  
- Cavity Type.

In the report pricing section, the “Net Adder” components are presented in a separate sub-section. In this sub-section, the pricing levels defined in the component are showed. The total price of the manifold will not include the “Net Adder” components.

The “Net Adder” properties dialog box looks like:
Figure 3-19: Net Adder Component (Component Configuration)
3.1.4 Creating a Design

3.1.4.1 Connecting Components

To connect components:

1. Click on one of the symbol connection ports to define the starting point. The connection ports appear in red when a component is inserted onto the drawing area and still not connected;

   The mouse pointer takes the shape of a cross. 

2. Each click, other than on another connection port, defines a new elbow in the link;

3. Click on another port to create a connection. The link is established between the two components;

   Or

4. Double clicked on the drawing where there is no connection port. The link will terminate at that point with a connection port at its end.

   The mouse pointer reverts to its initial shape once the link is finished, as described in steps 3 and 4.

3.1.4.1.1 Modifying a Connection Line (Link)

To modify the shape of a link:

1. Select the link to modify;

   The link assumes the selection color and handles are displayed along it.

2. Click and hold the mouse button on one of the link handle;

   The mouse cursor takes one of these shapes depending on the selected handle or .

3. Drag the cursor to modify the link path;

   Figure 3-20: Modifying the Shape of a Link

4. Release the mouse button.

   The link is modified.

   The mouse pointer reverts to its initial shape.
3.1.4.1.2 Link Crossing Jump and Connection

When two links cross each other without connecting, a line jump will be affected to one of the two lines. Whilst two links that connects to each other will do so with a connection point (black dot).

![Figure 3-21: Line Jump and Line Connection](image)

3.1.4.1.3 Configuring a Connection Line

3.1.4.1.3.1 Configuring the Default Appearance of a Connection Line

The default appearance of each line can be changed in the “File” menu → “Preferences” → “Options” of the application. See “Preferences/Options” Chapter.

Possible line types are:

<table>
<thead>
<tr>
<th>Line type</th>
<th>Default Appearance (Example)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure</td>
<td>Solid Black Line</td>
</tr>
<tr>
<td>Return</td>
<td>Solid Black Line</td>
</tr>
<tr>
<td>Pilot</td>
<td>Short Dashed Black Line</td>
</tr>
<tr>
<td>Drain</td>
<td>Short/Long Dashed Black Line</td>
</tr>
<tr>
<td>Load Sense</td>
<td>Short/Long Dashed Black Line</td>
</tr>
<tr>
<td>Other</td>
<td>Solid Black Line</td>
</tr>
</tbody>
</table>

The “Other” connection line is a special case; its default appearance could be modified from the ribbon. The first time the application is launched, its default value will be the same as the pressure line. The “Other” line keeps the last changes configuration.

The standard line types can be modified too, but in this case information will be added to the name of the type to indicate that the default value has been modified. Example: Pressure Line (Modified)

3.1.4.1.3.2 Modifying a Connection Line from the Ribbon

![Figure 3-22: Modifying a Connection Line](image)
3.1.4.1.3.3 Behavior for the modifications of Connection Line

The user can choose among predefined and custom connection lines when he draws the schematic.

Predefined connection Lines

The “usual” connection lines are predefined in the “Options” dialog (Preferences menu):
- Pressure Line
- Drain Line
- Pilot Line

“Other” (or Modified) Connection Line

The user can use a specific configuration (Color, Style and Thickness) using the “Other” option. In this case, he can change the color, the style and the thickness from the ribbon. Also,

3.1.4.1.3.4 Use Case 1: Select the Connection Line Type before draw it (No connection line selected on the schematic)

If no connection line is selected on the schematic, the list box displays the current connection type (which will be used for each new connection line). The user can change the current line type by selecting a different value.

The three buttons allowing the modification of the color, style and thickness are enabled. If one of these predefined values is modified (and different), a text appears near the line type in the list box.
If a predefined type is selected in the list box, and if the color, style or thickness is modified with the same value, the predefined type is still selected.

The values selected in the list box will be used for each new connection lines drawn on the schematic.

3.1.4.1.3.5 Use Case 2: Modify an existing Connection Line Type on the schematic

If one or more connection lines are selected, the list box displays the type of the selected connections. If there are different connection types in the selection, the list box will be empty.

If one or more connection lines are selected, the user can change the type of the selected connections by selecting a different value.

If one or more connection lines are selected, the user can change the color, style and thickness.

If a predefined type is selected in the list box, and if the color, style or thickness is modified with the same value, the predefined type is still selected.

3.1.4.1.3.6 Use Case 3: Behavior when a project is open

When a project is opened, it uses the “Predefined values” of the user to draw the predefined connection lines.

Example: If a project is created on the computer1, using some black predefined pressure lines, the color of the connection lines will be black. If the project is open on another computer2, with red predefined pressure line, the connection lines will be displayed in red.

3.1.4.1.3.7 Configuring a Connection Line from the Contextual Menu

As different line types exist in the hydraulic circuit design, it is possible for the user to select the different line type from the line contextual menu (right click on the line). This will allow the user to represent the lines differently on the schematic.

This line type change modifies only the selected connection lines.
3.1.4.1.3.8 Configuring a Connection Line from the Properties Dialog

The line properties dialog allows configuring the line’s technical data (and these properties can be exported to Automation Studio).

The technical data should at least include the following parameters:
- Diameter
- Length
- Material
- Maximum Pressure
- Maximum Temperature
- Heat Transfer Coefficient
- Maximum Flow
- Internal Roughness
- Elevation

Example of the line technical data properties dialog:

![Line Properties Dialog – Technical Data](image)
3.1.4.2 Creating a System Boundary

The “System Boundary”, or manifold border, is used to define the limits of the manifold in a circuit diagram.

To create a manifold border:

1. Select the “System Boundary” component from the “Library”;
2. Drag and drop the “System Boundary” anywhere onto the drawing area;
3. Using the handles, stretch the border to the desired size, encompassing all components that are included in the manifold block.

![Manifold Border](image)

Figure 3-28: Manifold Border

3.1.4.3 Adding Ports to the Manifold

The manifold ports are components used to define the connections that will appear on the manifold once it has been completely designed.

To insert a port:

1. Select the “Connection Port” component from the “Library”;
2. Click and drag the port onto the drawing area;
3. Double click on the “Connection Port” or choose “Properties” from its contextual menu.
4. In the “Component Configuration” branch, enter the following “Component Options”:
   - Extra Port;
   - Port Style;
   - Port Size.

Note: Each “Port” inserted in the system design diagram will appear in the “Manifold Library” used in the manifold layout interfaces.
Orifice disks are treated as other components. The insertion is done in the same manner as the other components. These discs have the following properties:

1. Disc Diameter;
2. Drill Thru Diameter.

Orifice discs must be connected to the valves port number 1. A validation mechanism is included in the software to produce a warning if this is not the case.

### 3.1.4.5 Adding Orifice Plugs

Orifice plugs are treated as other components, the insertion is done in the same manner as the other components. These plugs have the following properties:

1. Size;
2. Orifice Diameter;
3. Adhesive.

### 3.1.4.6 Adding Other Components

“Other Components” are not HydraForce components, but they can still be used to make a complete schematic. These components are: pumps, cylinders, filters, tanks, motors and many more. The options that define these components are:

1. Part Number;
2. Manufacturer;
3. Special Price;
3.1.5 Manifold Layout Interfaces

The manifold layout interfaces allow to position the components physically on the manifold block faces. The components representation showed in the interfaces are realistic. The components size and shape are represented as envelops that needs to be taken into consideration when positioned. The manifold extrusion and length may also be optimized by taking care of interferences between components cavities located in the block.

The interface is composed of two major parts:

1. The “Manifold Library”;
2. The “Manifold Layout” editors;

There are two manifold layout editors. The user may work with any one of those at their convenience. Every change done in one interface will immediately affect the other one.

There is the “2D Manifold Layout” interface, which is an orthogonal view of each of the manifold six faces.

The second interface is the “3D Manifold Layout”, which is an isometric view of the manifold block. It can be rotated to view each of its faces.
3.1.5.1 Components not on the Block

This feature is used to help the user to easily identify the components, while into the “System Design” document. When activated, components not yet located on the block are shown in blue, while the located components are shown in usual black color.

Note: It is greatly recommended to use this feature in conjunction with a split screen environment, “System Design” side-by-side with the 2D or 3D “Manifold Layout” document, where the user can drag and drop components directly from the “System Design” to “Manifold Layout” document.

The “Components not on Block” feature can be activated from the “View” tab → “Show” group when the “System Design” document is active.

3.1.5.2 Manifold Layout Library

The “Manifold Library” uses the same interface as the “System Design Library”. Differences lie in the components that populate the library. Three major component categories are included in this library:

1. Manifold Ports;
1. Components;
2. Mounting Holes;

The “Manifold Library” is automatically populated with components inserted in the “System Design” document.

Note: Accessories are not showed in the manifold library. They are component options.

### 3.1.5.2.1 Manifold Ports

The manifold ports are the same “Connection Ports” that have been inserted and configured in the “System Design” interface. In the “Library”, they are identified by the same identifier that is defined in the “System Design” interface.

![Manifold Layout Library](image)

Figure 3-3240: Manifold Layout Library

### 3.1.5.2.2 Manifold Components

Components found in the “Components” section of the “Manifold Library” are taken directly from the “System Design” interface. They are represented with the hydraulic symbol. Their identifiers are the same as the ones defined in the “System Design” interface.
3.1.5.2.3 Mounting Holes

Mounting holes do not appear in the “System Design” interface. Only one component appears in the manifold library. That same component can be inserted several times on the manifold block as required.

3.1.5.3 Manifold Layout Editors

The 2D and 3D manifold layout editors allow positioning of the various components on the manifold block. That is required to define the manifold physical parameters.

3.1.5.3.1 Inserting Ports

The insertion of “Ports” is the same as the insertion of other components in the “System Design” interface; the component can be dragged and dropped from the “Manifold Library” onto one of the manifold surfaces. The positioning and manipulation of components and satellite texts follow the same rules as for the “System Design” interface. The size and identifier that are defined for the “Port” appear automatically beside it.

3.1.5.3.2 Deleting Ports

Deleting “Ports” is done in one of two following ways:

1. Select the “Port” and press the DELETE key;
2. Select the “Delete” command from the “Edit” contextual menu.

The deleted port will return to the “Manifold Library” and be available for re-insertion.
3.1.5.3.3 Managing Ports

If a port is deleted in the main design interface, the corresponding port is also deleted in the manifold layout editors.

If a port’s ID is changed in the main design interface, the corresponding port is renamed in the manifold layout interfaces.

A port cannot be pasted/copied in the manifold layout editors.

3.1.5.3.4 Inserting Components

The insertion of components in the “Manifold Layout” editors is done in the same way as in the “System Design” interface. To insert a component, drag and drop it onto one of the manifold faces. The component can be dropped only if it is on one of the manifold faces.

3.1.5.3.5 Component Management

If a component is deleted from the main design interface, the corresponding component is also deleted from the manifold layout editors.

If a component label is changed in the main design interface, the corresponding component is renamed in the manifold layout interfaces.

A component cannot be pasted/copied in the manifold layout editors.

3.1.5.3.6 Inserting Mounting Holes

The “Mounting Hole” component is available only in the “Manifold Layout” documents.

The insertion is done in the same way as all of the other ports or components. The “Component Properties” dialog box is then used for proper configuration.

To access the “Component Properties” dialog box double click on the “Mounting Hole”.

To “Mounting Hole” options are:

1. System Unit (Imperial or Metric);
2. Type;
3. Size;
4. Depth.
3.1.5.3.7 Inserting Dimensions

To insert an ordinate dimension (default):

1. Select the “Ordinate Dimension” button in the “Design” tab → “Block” group;
2. The first point of the dimension automatically attaches to the reference corner (see Reference Axis for more details) while anchor points are displayed on each block corner and elements on the block;
3. Move over the desired anchor point;
4. Click the left mouse button to create at the same time, the dimension at the origin and the dimension at the anchor point;
To insert a linear dimension:

1. Click on the arrow below the “Ordinate Dimension” button in the “Design” tab → “Block” group;

2. Select the “Linear Dimension” option in the combo box;

3. Anchor points are displayed on each block corner and elements on the block, move over the desired anchor point;

4. Click the left mouse button to create the first side of the dimension;

5. Move over to the next desired anchor point;

6. Click the left mouse button to finalize the dimension between the first and second anchor points;
3.1.5.3.8 Modifying Dimensions

To modify the location of a dimension:

1. Click the left mouse button and hold your click on the dimension;
2. Drag the dimension to the new location;
3. Release your click;
To modify the properties of a dimension:

1. Double-click on the dimension to open its “Dimension Properties” dialog;
2. Make the changes and click on “OK”;

![Dimension Properties Dialog](image)

Figure 3-3947: Dimension Properties Dialog

To modify the default options of the dimension:

1. Click on the arrow below the “Ordinate Dimension” button in the “Design” tab → “Block” group;
2. Select the “Default Dimension Options” in the combo box;
3. The “Default Dimension Options” dialog opens. Make the changes and click on “OK”. These changes will take effect upon newly created dimension;

![Default Dimension Options](image)

Figure 3-4048: Default Dimension Options
Figure 3-4142: Default Dimension Properties Dialog
3.1.6 Manifold Manipulations

The following functionality is available for both manifold layout interfaces (2D and 3D).

3.1.6.1 Faces Labels

Each block face has a stamped label name (Front, Back, Top, Bottom, Left or Right).

3.1.6.2 Zoom

The user can zoom in and out by using the mouse scroll or the zoom functions from the “View” tab.

If the mouse is used, the zoom is focalized on the center of the 3D view.

3.1.6.3 Pan

The user can use the panning function from the “View” tab to move the whole view in any direction.

The other method is to move the mouse by holding the SHIFT key or the SPACEBAR on the keyboard.

When the “Pan” mode is activated, the cursor changes with the following image:

3.1.6.4 Rotate

The user may rotate the 3D view by using the wheel button in the 3D view and moving the mouse around.

The “Rotate Block” tool in the “View” tab can also be used to rotate the manifold block.

When the “Rotate Block” mode is activated, the cursor changes with the following image:

When using the “Rotate Block”, a click and drag action on the manifold will then rotate the view.

The ESC key cancels the “Rotate Block” mode, and return to the “Select” mode.

3.1.7 Manifold Layouts

The 2D and 3D manifold layouts may be configured in several ways. This section describes how to activate the following view features:

- Transparency;
- Components;
- Grid;
- Reference Axis;
- Leader;
- Components Label;
- Interferences;
3.1.7.1 Transparency

The 2D and 3D manifold interfaces may be configured to be visualized in a solid view or a transparent view. By default, the block manifold view is solid.

There is 2 ways to change the transparency setting:

1. By clicking on the “Transparency” button in the “View” tab “Show” group.
2. Selecting the “Transparency” command in the contextual menu of the block manifold.
3.1.7.2 **View Components**

The 2D and 3D manifold interfaces may be configured to display only the cavities portion of the components in transparent view. By default, the complete components are displayed.

![Figure 3-4452: View of the Complete Components vs. the Cavities Only](image)

There are 2 ways to change the “Components” setting:

1. By clicking on the “Components” button in the “View” tab → “Show” group.
2. Selecting the “Components” command in the contextual menu of the block manifold.

![Figure 3-4553: View Components Option](image)
3.1.7.3 **Manifold Grid**

The 2D and 3D manifold interfaces may be configured to display the snapping grid. By default, the grid is not displayed.

![Manifold Grid](image)

**Figure 3-4554: Grid in 3D Manifold Layout**

There are 2 ways to change the “Grid” setting:

1. By clicking on the “Grid” button in the “View” tab → “Show” group.
2. Selecting the “Grid” command in the contextual menu of the block manifold.

Notes: Grid properties can be changed from the “Grid Properties” dialog in the “Design” tab → “Component” group.

3.1.7.4 **View Reference Axis**

The 2D and 3D manifold interfaces may be configured to display/hide XYZ axis at the (0, 0, 0) coordinate. By default, the axis is not displayed.

![Reference Axis](image)

**Figure 3-4755: Reference Axis**
There are 2 ways to change the “Reference Axis” setting:

1. By clicking on the “Reference Axis” button in the “View” tab “Show” group.
2. Selecting the “Reference Axis” command in the contextual menu of the block manifold.

3.1.7.5 View Leader

The 2D and 3D manifold interfaces may be configured to display/hide a line going from the components to theirs identifiers. By default, the line is not displayed. This is useful to easily figure which identifiers goes with each components.

To change the “Leader” setting:

1. Click on the “Leader” button in the “View” tab “Show” group.

Note: The reference lines will follow the corresponding IDs when they are moved.
3.1.7.6 **View Component’s ID**

The 2D and 3D manifold interfaces may be configured to display/hide the component’s IDs. By default, the component’s IDs are displayed.

To change the “Component’s ID” setting:

1. Click on the “Component’s Label” button in the “View” tab → “Show” group.

It is possible to configure the identifiers font by double clicking on each of them. The identifiers can also be moved around by selecting and dragging them.

3.1.7.7 **View Interferences**

The 2D and 3D manifold interfaces may be configured to display/hide the physical cavities interferences in red. By default, the interferences are displayed.

There are 2 ways to change the “Interference” setting:

1. By clicking on the “Interference” button in the “View” tab → “Show” group.
2. Selecting the “Interference” command in the contextual menu of the block manifold.
### 3.1.7.8 View Dimensions

The 2D and 3D manifold interfaces may be configured to display/hide the dimensions. By default, the dimensions are displayed.

To change the “Dimensions” setting:

1. Click on the “Dimensions” button in the “View” tab → “Show” group.

It is possible to configure the dimensions font by double clicking on each of them. The dimensions can also be moved around by selecting and dragging them.

### 3.1.7.9 View Placement Locks

The 2D and 3D manifold interfaces may be configured to display/hide the placement locks. By default, the locks are displayed.

To change the “Placement Locks” setting:

1. Click on the “Placement Locks” button in the “View” tab → “Show” group.

### 3.1.7.10 Flat View

In the 3D interface you have the “Flat” view. To rapidly go in “Flat” view, double click on the desired face.

To see the isometric view after activating the flat view, simply rotate the manifold by pressing on the wheel button and moving the mouse in the main display.

![3D Top Face in Flat View](image-url)
### 3.1.8 Manifold Components Configurations

Once a component has been inserted on a manifold face the user can modify various parameters to their exact specifications. The following configurations can be applied:

- Set Custom Component Dimension;
- Set Component Location;
- Rotate and Move Components;
- Lock Component Position;
- Restraint Component to Surface;
- Counterboring;
- Grid Properties.

We are also describing how to assign notes to a manifold face at the end of this section.

#### 3.1.8.1 Set Custom Component Dimension

Custom components are not HydraForce components, but it is possible to position them on the manifold block. Custom components have unknown dimensions and shapes, so you need to specify those properties. To do this:

1. Insert the custom component from the library to one of the manifold face;
2. Right click on it and choose “Set Dimensions…” from the contextual menu;
3. Select the envelop shape in the dialog box that opened;
4. Enter the dimensions of the component.

![Figure 3-5361: 3D Set Dimensions](image-url)
3.1.8.2 Set Component Location

Components can be moved in three different ways:

1. By selecting a component and dragging it with the mouse on any manifold face;
   
   Note: The movement is restricted to one face if more than one component is selected at a time.

2. By selecting a component and using the keyboard arrows to move it. The component movement is restricted to its current face. This works only while in the orthogonal (2D) view;

3. By right clicking on the component and choosing “Set Location” from its contextual menu.

   Then enter the X, Y, Z position coordinates in the dialog box that opens. Those coordinates are relative to the origin point showed by the
Reference axis. (See View Reference Axis section for more details)

Figure 3-5664: Set Location X, Y, Z Fields

Note: The coordinates must be on the same face where the component is currently located. This is the reason why there is one coordinate that cannot be edited.

3.1.8.3 Rotate a Component

Components and accessories can be rotated so the user can optimize the block manifold space. To do this:

1. Right click on the component to select it and display its contextual menu.

2. Choose the “Set Angle” command;

Figure 3-5766: Set Angle Command

3. Type in the desired angle in the “Component Angle” dialog box that opens;

Figure 3-5866: Component Angle Dialog

4. Click on “OK”. The manifold layout views are immediately refreshed to display the new angle of the modified component.
The “Flip Left” and “Flip Right” tools in the “Layout” toolbar can also be used to quickly rotate the selected component by 45 or 90 degrees counter-clockwise or clockwise. The angle used depends on the selected component.

3.1.8.4 Lock Component Position

If a component position is a constraint for the block manifold design, the user can lock the component position so that it cannot be moved or displaced afterward.

There are three ways to lock the position of a component on the manifold:

1. By using the “Lock Component Position” tool in the “Manifold Layout” toolbar;
2. By right clicking on a component and choosing “Lock Position” from its contextual menu;
3. By right clicking on a component and choosing the “Set Location” from its contextual menu.

Then select the “Lock Location” radio button in the “Constraint” area of the “Set Location” dialog box.

Note: To unlock the component position choose the “None” radio button in the “Constraint” area of the “Set Location” dialog box.

A green pin is displayed over the component in the manifold views to indicate that it cannot be relocated.
3.1.8.5 **Restrain Component to Surface**

If a component position is restricted to a face of the block manifold design, the user can restrain the component position so that it cannot be moved outside of the selected face.

There is several ways to restrain the position of a component on the manifold:

1. By using the “Restrain Component to Surface” tool in the “Manifold Layout” toolbar;
2. By right clicking on a component and choosing the “Lock on Current Face” from its contextual menu.

![Figure 3-6142: Lock on Current Face Command](image)

3. By right clicking on a component and choosing “Set Location” from its contextual menu.

   Then select the “Lock on Current Face” radio button to activate the constraint.

   The “Preferred Faces” choice is used only for documentation purpose. The software will not restrain the component location in this case. To do this, choose the “Preferred Faces” radio button instead. Then add the preferred faces to the list going from 1st to 6th.
A blue pin is displayed over the component in the manifold views to indicate that it is restrained to the current face.

A yellow pin is displayed over the component to indicate that it is restrained to several faces.

3.1.8.6 Counterboring

After being placed on an orthogonal projection or on one of the isometric view faces, a valve can be sank into a counterbore. To create a counterbore:

1. Right click on a component in a manifold layout interface;
2. Choose “Counterboring” from its contextual menu;
3. Configure the depth and the diameter of the desired counterboring for this component.

![Counterboring Dialog Box](image)

**Figure 3-6472: Counterboring Dialog Box**

Note: The minimum values are: Depth of 0.031 in. and Diameter of 1.188 in.

### 3.1.8.7 Manifold Grid Properties

The grid properties can be configured for the 2D and 3D manifold interfaces. The unit defined when the project has been created is used.

![Manifold Layout Grid Properties Dialog Box](image)

**Figure 3-6573: Manifold Layout Grid Properties Dialog Box**

To open the “Grid Properties” dialog:

1. Click on the “Grid Properties” button in the “Design” tab → “Component” group.

Notes: Do not forget to activate the “Grid” option in the “View” tab → ”Show” group to see the grid lines.
3.1.8.8 Assigning Notes to the Manifold Faces

Notes can be added to each face of the manifold block. To create a note:

In orthogonal view (2D):

1. Right click on the faces where you want to add the note;
2. Select “Set Note” in the contextual menu;

![Set Note Command in the Manifold Face Contextual Menu](image)

3. Type in the note;

![Set Note Dialog Box](image)

4. Configure the desired text font by clicking on the “Font” button.

A note is now displayed below the face.

In isometric view (3D):

1. Double click on the face where the note must appear to display it in flat mode;
2. Repeat the same steps as in the 2D view.

![Note Added to the Manifold Left Face](image)
3.1.9 Manifold Dimensioning

When a new project is created, the manifold has predefined dimensions. You can read the current extrusion size and length in the status bar.

![Extrusion Size and Length in the Status Bar](image)

There are three ways to modify the block manifold size:

- By dragging face edges;
- By using the “Dimensions” dialog box;
- By using the automatic shrinking feature called “Compact Block”.

### 3.1.9.1 Resizing by Dragging the Edges

Modification to the manifold dimensions can be done by dragging the edges. Depending on the dragged edge the dimension change will be done on the length or the extrusion. To do this:

1. Choose “2D Manifold Layout” in the project explorer
   Or
   Choose “3D Manifold Layout” and double click on a face to display it in “Flat mode”.
2. Activate the resizing mode by clicking on the “Show Resize Handles” tool in the “Design” tab ➔ “Block” group.

Selection boxes with handles will appear on the manifold layout interface;

![The Manifold Layout Interface in Resizing Mode](image)
3. Grab one of the handles, which are the little squares on the selection lines around the faces, and drag it with the mouse.

4. Repeat dragging the edges until you obtain a size that fits your need.

Notes:

An edge cannot be moved if it implies that a component position becomes illegal.

When dragging a manifold edge, the extrusion will increase or decrease to the next standard size.

3.1.9.2 Resizing using the Dimensions Dialog Box

The manifold dimensions can be modified from the “Manifold Dimensions” dialog box by choosing “Design” tab → “Block” group → “Block Dimensions”.

![Figure 3-7280: Manifold Dimensions…](image)

This opens the “Manifold Dimension” dialog box that allows resizing precisely the extrusion and the length of the manifold block.

![Figure 3-7381: The “Manifold Dimensions” Dialog](image)
To resize the extrusion:

1. Select the desired “Extrusion Size” from the predefined list;
2. Select the direction in which resizing should be done by checking the corresponding boxes;
   - If two opposed extrusion checkboxes are selected, then resizing is done symmetrically in the two directions. Else it will only be done in the checked direction.
   - If two opposite directions are unchecked, the “Extrusion Size” pull-down list will only show choices using the current dimension for this side.

Note: The available extrusion sizes in the pull-down list depend on the components envelop inserted in the manifold block.

To change the manifold length:

1. Enter the desired value in the “Length” field;
2. Select the direction in which resizing should be done by checking the corresponding “Length” boxes;
   - If both extrusion checkboxes are selected, then resizing is done symmetrically in the two directions, else it will only be done in the checked direction.

Note: The minimum length permitted, displayed at the right of the “Length” field, depends on the components envelop inserted in the manifold block.

### 3.1.9.3 Automatic Block Shrinking

The “Automatic Block Shrinking” feature allows to automatically find the minimum extrusion and length size by closing each manifold faces from each other until cavities envelop interferences are detected.

To shrink the manifold dimensions automatically, you need to click on the “Compact Block” button in the “Design” tab → “Block” group.

### 3.1.10 Parts List Interface

The parts list interface is a simple BOM of the current design. It displays the information of the components that have been inserted and configured in the system design interface.

This list can be copied and pasted into any Microsoft compatible spreadsheet application.
All of the information found in the parts list interface is defined in the “Component Properties” dialog box.
3.2 Creating a “Price Components” Project

The “Price Components” project is like a shopping cart. It allows the user to specify components individually for reasons like getting replacements or spare parts.

3.2.1 Project Parameters Interface

In the case of a “Price Components” project, the sections “HF Use Only”, drawing formats and “Technical Parameters” are removed. The properties: “PPAP Level”, “Estimated Annual Usage”, “Prototype Qty” and “P.O #” are not used and thus are grayed out.

All the active fields are the same as in a “Price a Manifold” project.

A new field is added in this case, which is the “Discount Level”. This field allows the user to enter a global discount on all the listed components. This discount level can be overwritten for every component in the “Price Components” interface. (See next section 3.2.2).

![Project Parameters Interface](image)
### 3.2.2 Price Components Interface

The “Price Components” interface is a table with 12 columns: Item, Model Code, Coil, Valve Housing, Seal Kit, Description, Flow, Operating Pressure, Configured Price, Discount %, Quantity and Total. To add a new part to the list:

1. Search the desired component in the “Library”;

   **Note:** The “Library” of a “Price Components” project is different from the “Price a Manifold” project. It contains a different list of components.

2. Drag the component from the “Library” into the spreadsheet. Consequently, the sheet will add a row for that part;

   A component that is not fully configured will have its characteristics displayed in red;

3. Double click on a row in the spreadsheet to open the “Component Properties” dialog box that allows to modify the component options;

4. Adjust the discount percentage and the desired quantities by clicking in those fields in the spreadsheet and by typing the correct numbers.

   The line total is automatically adjusted and the total price list is displayed at the bottom of the interface.

   **Note:** The default values in the “Discount %” column are equal to the value in the “Discount Level” of the “Project Parameters” interface. If the value of the “Discount Level” in the “Project Parameters” interface is modified, the “Discount %” column in the spreadsheet will be updated accordingly. A message will alert the user that he will lose the previous modifications he made.
Figure 3-7684: Price Components Interface
3.3 Revision History

The “Revision History” dialog box is used to track the changes made on the manifold design project.

In this section we will:

1. Describe how to access the “Revision History” dialog box;
2. List the fields available;
3. See how to create and view revisions.

3.3.1 Accessing the Revision History

There is several ways to access this dialog box:

1. Through the “Revision” command in the “File” menu → Project;

![Revision in the File Menu](image)

2. By right clicking in the project name in the “Project Explorer” window and selecting “Revision” in the context menu;

![Revision in the Project Explorer Context Menu](image)
3. By clicking on the “Revision” button in the “Project Parameters” interface;

![Revision Button in the Project Parameters Interface](image)

Figure 3-7987: Revision Button in the Project Parameters Interface

4. When the project is saved the “Revision History” dialog box will automatically open if the “Prompt for Revision History” box is checked in the “Preferences” → “Options” dialog box.

![Prompt for Revision History Checkbox in the Options](image)

Figure 3-8088: Prompt for Revision History Checkbox in the Options

### 3.3.2 Revision History Dialog

The “Revision History” dialog box is there to provide a means to describe and document the various changes and evolutions made to the project. It contains the following fields:

- “Drawing Level”: Input box that allows user to add a prefix to the revision;
- “Revision Selection” list: Will display all of the revisions that have been created and documented. A user needs to select the revision to see its description and comments. This field starts at 0 (no revision) and is automatically increment by 1 each time there is a new revision.
- “Revision Comment”: Input box that allows the user to input the information for a specific revision.
- “Revised By” (Mandatory): Open field that allows the user to input the information for a specific revision.
- “Date”: This field is automatically filled with the current date when the reviser writes or modifies his name.
- “Verified by”: Input box that allows the user to input the information for a specific revision.
- “Date”: This field is automatically filled with the current date when the approbatory writes or modifies his name.
- “Approved by”: Input box that allows the user to input the information for a specific revision.
- “Date”: This field is automatically filled with the current date when the approbatory writes or modifies his name.
- “New Revision” button: Allows the user to create a new revision. This button increments the revision number by one. It can only be used when someone puts his name in the “Revised by” field.

Note: The revision given in i-Design is not directly correlated to the design revision given on by the HydraForce engineering drawing of the manifold assembly.
3.3.3 Revision History Interface – Creating Revisions

3.3.3.1 Revision History Interface – Creating a Revision

At the beginning, no revision is created. All the fields, except the drawing level, are grayed off.
1. To create a new revision, the user needs to click on the “New Revision” button.

2. If the user confirms the revision name, this will be considered the identifier for the new revision. All the input fields will be unlocked so the user can input the information needed for the new revision.

3. The revision name is based on the drawing level. For example, if the drawing level is “A”, the first revision name will be “A.1” and then the future revisions will continue with “A.2”, “A.3”, “A.4”, etc.
   a. When changing the drawing level to a new (unused) prefix, the next revision name will start back to “1”. For example, if, after creating revision “A.4”, the drawing level is changed to “1”, the next revision will be “1.1” and then “1.2”, “1.3”, etc.
   b. When changing the drawing level to an already used prefix, the revision name will continue from the highest revision name with that prefix. For example, if we switch back the drawing level from “1” to “A” and the highest revision name with “A” we had was “A.4”, the new revision will be “A.5”.

4. The “Revised by” field has to be filled (Mandatory) to be able to validate the revision (OK) or to create a new revision (New Revision).

5. When a new revision is created, the older revisions cannot be modified no more.

6. The CANCEL button cancels all the modifications.

Figure 3. Revision Confirmation
3.3.3 Drawing Level

The drawing level is influenced by the “Approval/Delivering” field in the Project Parameters in the following way:

- If the drawing level is switched to “No Approval Drawing – Release Drawing” or “<<Fast-Track>> Delivered – No Approval Drawing (PO Required)” AND the current drawing level is an alphabetic value, the drawing level will be changed to “1”.
- If the drawing level is switched to “Approval Drawing Required” AND the current drawing level is a numerical value, the drawing level will be changed to “A”.

3.3.3.3 Locking some fields for a revision

The user can “lock” some fields using the button on the right of each field. Once the field is locked, nobody can modify it (After hitting OK).
3.3.3.4 Revision History Interface – Viewing a Revision

To view a revision and its description:
Select the correct revision number from the pull down “Revision” list.

3.3.3.5 Revision History Interface – Modifying a Revision

Only the last active revision is available for modification. The previous revisions are locked and can only be viewed.
The Revision History dialog shows by default the last revision. The user can modify the fields as desired and confirm with the OK button.

3.3.3.6 Revision History Interface – Clearing the revision history

When saving a project with a different name (File/Save As…), and if the project already has a revision, the user is prompt with a message dialog asking to modify or not the revision history (If the “Check the Revision History” is checked in the “options” dialog from the Preferences/Options menu.)

Yes ➔ the revision dialog opens, and a button “Clear” is visible on the bottom-left. The user can modify or clear all the existing revisions. Then, the project is saved.
No → the project is saved without displaying the revision dialog.

Figure 3-8896: Clear Revision History
3.4 Freezing/Unfreezing the Prices of a Manifold Project

The total price of a ‘Price a Manifold’ project can be locked by the user. Once locked, the total price is stored in the project. Changing the price list file has no effect.

To freeze the prices of the manifold block in a project, the user has to click on the “Freeze Price” tool in the “File” toolbar.

The user can still make changes to the project (adding/deleting/modifying components) but the frozen total price will not change.

In order to unfreeze the price, the user has two options:
- clicking again on the “Freeze” button
- saving the project under a new file name
3.5 Current Pricing

The Pricing button gives you the ability to calculate the current price of the manifold without having to generate the report. This option is only available when the HydraForce Pricelist is used.

Figure 3-9098: Get Total Price in the Finalized Tab
3.6 Price Parameters

This dialog allows the user to specify and adjust various price parameters:

- the price list information
- the discount schedule for the reports
- the global multipliers used in the price calculation
- The pricing disclaimer and the conditions and terms of sales

The options in this dialog are global. For example, the global multiplier values are used in the price calculation for all the projects.

![Price Parameters dialog]

*Figure 3-9: The Price Parameters dialog*
3.6.1 Price List Registration

This section allows the user to specify the price list to be used for calculating the prices:

- Price List Name;
- Price List Key;

In order to get prices for your components, you need to fill in the Price List Name and Key fields. To get this information, please contact HydraForce.

3.6.2 Discount Schedule

The discount schedule section allows the user to specify up to five quantity breaks and their associated discount percentage.

This information is used in order to display the Discount Schedule in the OEM and Distributor Proposal reports.

If a Manifold Quantity field is left empty, the discount for that line will not be used nor displayed in the report.

The discount field is used to calculate the unit price for the corresponding quantity break (see figure).

<table>
<thead>
<tr>
<th>Discount Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>

Figure 3.52: The discount schedule section in the reports

Only the final unit price is displayed in the report for each quantity break. The discount percentage is not shown.

3.6.3 Global Multipliers

The reason for the global multipliers is to give the distributor enhanced functionality in pricing. As the VAT, duties and tariffs are different from one country to another, the manifold cost can vary and the standard price list does not take this into account.

The global multipliers address this very problem, by giving the distributor a multiplier for both the valves and block.

The multiplier 1 applies to the list price of all products considered a component (for example, a valve)

The multiplier 2 applies to the list price of block related elements (for example, cavities and ports)

If one of these multipliers has a value other than 1, a warning will be displayed during error checking and prior to generating a report. The multiplier value is not shown in the report.

3.6.4 Pricing Disclaimer

This section allows the user to:
• Choose the pricing disclaimer file to be included in the reports (HTML format).
• Choose whether he wants to include the disclaimer file in the reports.

3.6.5 Standard Terms and Conditions of Sales

This section allows the user to:

• Choose the standard terms and conditions of sales file to be included in the reports (HTML format).
• Choose whether he wants to include this file in the reports.
3.7 Software Options

Software options allow customizing some parameters globally in the application. These following options can be accessed from the “File” menu → “Preferences” → “Options”:

1. **Title Block**:
   - Company name;
   - The disclaimer that appear in the title block;
   - The option to activate globally the title blocks insertion. It is checked by default;
   - “Apply to Current Diagram” changes done on the company name and disclaimer fields.

2. **Settings**:
   - Language;
   - Default System Units used throughout the application: Imperial or Metric. It cannot be modified for after a project has been created.
   - View Models in Library From different levels (Component Families);

3. **Miscellaneous**:
   - Prompt for revision history when saving a project. It is checked by default;
   - Prompt for component delete;
   - Toolbar Position Saving Mode (Manual or Automatic)
   - Show Tip Message to Convert 3D Environment. If checked, a message will be displayed when a project saved with the previous version of i-Design is opened. It is checked by default;
   - Show Warning if Insufficient Video Memory. If checked, a warning message will be displayed when starting I-Design if the video memory is less than the recommended value (128 Mb). This option is checked by default;
   - Ask for confirmation for the “Compact Block” feature. If checked, a confirmation dialog will be displayed each time that the user clicks the “Compact Block” button in the “Design” tab → “Block” group ( ). This option is checked by default;

4. **Connection Lines**:
   - Default Pressure Line Configuration;
   - Default Return Line Configuration
   - Default Pilot Line Configuration
   - Default Drain Line Configuration
- Default Load Sense Line Configuration

![Software Options](image-url)

Figure 3-Software Options
3.8 3D Performances

The i-Design application relies heavily on the graphic card in order to render the 2D/3D manifold layouts. Thus, for large blocks with a lot of components, depending on the graphics card capabilities, the responsiveness in the 2D/3D Manifold Layout interfaces can decrease considerably.

The following dialog can be accessed from the “File” menu → “Preferences” → “3D Performances”. This dialog allows the user to adjust the quality of the 3D definition depending on the graphics card capabilities:

![The 3D Options dialog](image)

Thus 3D Visual Definition section allows the user to adjust the quality of the component and cavities 3D representation.

The Highest definition setting is recommended for computer with a good graphics card.

The Highest Performance option is recommended for computers with older graphics card. However, the visual representation of the components will be degraded.
3.9 Best Practices for Cost Effective Design

The following guidelines should be considered during manifold design to ensure you receive the most cost effective manifold assembly.

3.9.1 General Design Considerations

1. All designs are subject to change in size, shape, and layout at the discretion of the designer. The 2D/3D manifold layout in i-Design gives the user an estimate of what the design might look like.

2. When valves, ports, and mounting holes are placed on the manifold surface portions of the components may turn red. This is to indicate that the components are too close together. To visualize a manifold that most likely can be realized in an actual design, move the components and expand the block size until none of the elements are red.

3. Open Design; it is best to leave the design open to the discretion of the manifold designer. The valves and ports can be placed on the various surfaces to get an idea of the overall manifold size. However, if these elements are not specifically constrained the designer will assume the design is open. In general the designer does try to limit the number of surfaces where ports and valves are place. The designer does try to group the work ports in a logical order. For example, the A and B port for a given directional control will typically be on the same surface. At least one surface will be free of valves or without valves protruding from the surface so that this surface can serve as the mounting surface. The open design is denoted by a note on the Project Parameter page under Technical Parameters.

4. Constraints; if your machine/equipment design requires that some of the valves or ports must be on a given surface clearly mark these components as such. The constraint can be applied by right clicking on the valve or port while in the 2D or 3D layout screens and then selecting set location. The constrained design is denoted by a note on the Project Parameter page under Technical Parameters.
   - It is recommended that the user does not constrain all valves and ports. This may force the size of the manifold to be objectionably large or the designer may not be able to accommodate the request. In general do not constrain valves that do not have coils or adjustments, for example CV’s, EC’s and PD’s.

5. Manifold surface names: The manifold surface names may have no relation to how a manifold is installed in a machine. These names were placed on the surface to facilitate discussion between HF sales and engineering as well as with the customer.
6. Size of manifold body:
   a. The left and right face of the body is limited by standard material sizes available to HF. The length of the manifold increments is by 0.5 inch, or 10 mm.
   b. Once components have been placed the overall size of the manifold can be reduced by selecting the “Compact Block” icon. If space still remains between components these can be moved closer and the icon selected again.

3.9.2 Valve Placement Suggestions

1. Five and six ported solenoid operated valves: We recommend that these valves be placed on the top surface.

2. Five and six ported PD’s and PE’s: We recommend that these valves be placed on the left or right surface. After these valves are placed the valve that controls the pilot pressure to the pilot of these valves can then be placed on a surface that is perpendicular to the left or right face. It is suggested that this pilot valve be located near the pilot port.

3. Valves with manual adjustments: These valves can be placed on any surface that is convenient for accessing these adjustments where the manifold is installed in the machine.

4. Non-adjustable valves: Non-adjustable valves can be placed on any surface.

3.9.3 Port Placement Suggestions

1. We recommend placing the work ports after placing the associated valve. These ports normally are placed on the surface perpendicular to the valve cavity axis. The exception could be that the port related to the valve port 1 can be placed in line with the cavity axis.
3.9.4 Manifold Mounting Holes and Mounting Surface

1. Mounting surface: Remember during the valve and port placement that at least one surface will be required to mount the manifold. It is recommended that no ports be placed on this surface. Low profile, non-adjustable valves can be placed on this surface. The cavity and valve can be counter sunk below the surface using the counter bore tool.

2. Mounting holes: After the valves and ports have been placed and the manifold size has been minimized the mounting holes can be placed.
4 Documentation (B.O.M)

4.1 Introduction

The report is the main objective of i-Design application. It allows to communicate to HydraForce all the information required to build your manifold block. It includes: the components list, placement, configuration, the manifold parameters and the costs.

Note: If no pricing appears in the report, contact HydraForce to get the most recent price list and its key. The price list file needs to be copied in i-Design root folder. The price list file name and key information must be entered in the “File” menu → “Preferences” → “Price Parameters” dialog box.

4.2 Generating the report

To generate the report:

1. Click on the “Generate Default Report” button in the “Finalize” tab → “Generate” group
   Or
2. Choose one of the two other options by clicking on the arrow of the “Generate Default Report” button in the “Finalize” tab → “Generate” group

Figure 4-1: Generate Report in the File Menu
The report is created in HTML format on the local computer. HTML can be imported to Microsoft Word® or any other text or HTML editing application.

Note: Turn off the grid prior to generating the report. It is difficult to view the schematic in the printed form when the grid is on.

4.2.1 Saving the report

When the report is generated, click on the HTML viewer “File” menu then use the “Save As…” command. This is a standard Windows feature.

Notes: Due to various versions of Microsoft Explorer® it is recommended to save the file in .PDF format. There are several free PDF writers available on the Web.

4.2.2 Printing

When the report is generated and opened in an HTML viewer application, click on the “File” menu then use the “Print” command. This is a standard Windows feature.

4.2.3 Working with the Report

To insert the report into a Microsoft type application:

1. With the report opened in the browser window, right click in the window and use the “Select All” command;
   Or
   Use the CTRL+A keys to select everything in the report;
   The text and images in the report become highlighted to show that they are selected.
2. Select the “Copy” command from the “Edit” menu;
   Or
   Use the CTRL+C keys to send all of the information to the clipboard.
3. Open the desired application;
4. Select the “Paste” command;
   Or
   Use the CTRL+V keys to paste the information in the targeted application.

4.2.4 Report Contents

The report contents will vary depending on the design. For a standard report, the following information is included:

- Section 1: Project information sheet;
- Section 2: Technical information;
- Section 3: 2D Manifold layout in orthogonal views;
• Section 4: 3D Manifold layout in isometric view;
• Section 5: Bill of material and pricing;
• Section 6: Manifold summary information;
• Section 7: Net adder components;
• Section 8: Placement constraints;
• Section 9: Revision history;
• Section 10: Warnings and revision history page;
• Section 11: Disclaimer and hydraulic diagram.
• Section 12: Standard terms and conditions of sales.
5 i-Design WEB Interfaces

5.1 Introduction

A user can create projects from the WEB → i-Design WEB.

A user must be able to:

• Send projects from i-Design Desktop to i-Design WEB
• Open projects from i-Design WEB to i-Design Desktop
• Manage his user account

![Figure 5-1: i-Design WEB access](image-url)
5.2 Login

When a user tries to access i-Design WEB for the first time, he has to enter a login and a password.

![User Account Identification](image)

*Figure 5-2: i-Design WEB access*

If an account with the login and password exists, the user accesses to his request (Open, Save or Manage dialog).

Note: To create an account, the user has to use i-Design WEB.

If the login and/or password are wrong, a message is displayed to the user. No action is executed:

![Web Login](image)

*Figure 5-3: i-Design WEB access*
5.3 Save Project to i-Design WEB

If no project is open, the command “Save to i-Design WEB” is grayed out in the menu.

Figure 5-4: i-Design WEB access

“Save to i-Design WEB” Command: A dialog opens and allows the user to see the existing files on the Web. The name of the current project to save is automatically set as File Name.
Action on the “Save” button sends the project to the WEB.

The “Refresh” button allows refreshing the list of projects, in case of temporary WEB problem.
5.4 Open Project from i-Design WEB

“Open from i-Design WEB” Command: A dialog opens and allows to the user to see the existing files on the Web. The user has to decide between opening a project or merging a project from the web in i-Design.

File Selection ➔ Open
File Selection ➔ Merge with an existing project

The “Refresh” button allows refreshing the list of projects, in case of temporary WEB problem.

5.4.1 Open a “Price Components” Project from the WEB

A “Price Components” project is automatically created, the file is downloaded from the WEB and all the components are inserted inside the project, in the main spreadsheet.
The data from the Project Parameters are updated with the values coming from the WEB.

5.4.2 Open a “Price a Manifold” Project from the WEB

A “Price a Manifold” project is automatically created, the file is downloaded from the WEB and all the components are inserted inside the project, on the schematic.
The data from the Project Parameters are updated with the values coming from the WEB.

If mounting holes are present from the WEB project, they will be automatically located on the block with possible overlapping. User intervention to relocate the mounting holes or to increase the block size might be necessary.

5.4.3 Merge with an Existing Project

If the user checks “Merge with an existing project”, a textbox appears allowing to the user to select the original file to merge the WEB project inside.
Merging scenarios:

Depending on the project selected for merging, user can encounter the following cases.

1. **Project types are the same, Identical file name, File is opened on desktop version (modified or not):**
   
   Display message to notify user about updating opened desktop file with WEB file:
   
   “The project selected for updating is already open, the project is going to be replaced and unsaved changes are going to be lost, do you want to continue?” → If yes button: desktop project is overwritten replacing the older file.

2. **Project types are the same, Identical file name, File is not opened on desktop version, WEB version is newer:**
   
   Display message to notify user about updating desktop file with WEB newer file version:
   
   “The project is going to be updated, do you want to continue?” → If yes button: desktop project is overwritten replacing the older file.

3. **Project types are the same, Identical file name, File is not opened on desktop version, WEB version is older:**
   
   Display message to notify user about updating desktop file with WEB older file version:
   
   “The project is going to be updated with an older file version, do you want to continue?” → If yes button: desktop project is overwritten replacing the older file.

4. **Project types are the same, File names are different, File is opened on desktop version (modified or not):**
   
   Display message to notify user about merging opened desktop file with WEB file:
   
   “The project selected for merging is already open, both projects are going to be merged, do you want to continue?” → If yes button: Items from the WEB project file are added to the desktop.

5. **Project types are the same, File names are different, File is not opened on desktop version:**
   
   Display message to notify user about merging desktop file with WEB file version:
“The projects are going to be merged, do you want to continue?” → If yes button: Items from the WEB project file are added to the desktop project.

6. **Project types are different**
   Display error message: “Project file types are not compatible, please select another file”.
6 Index

2D Manifold Layout, 2-15, 3-69
3D Conversion, 2-28
3D Manifold Layout, 2-15
3D Options, 3-115
3D view quality, 3-115
Automatic Manifold Block Resizing, 3-96
Automation Studio Format, 2-26
Axis, 3-82
Catalog Information, 3-54
Cavities Only View, 3-81, 3-82
Cavity, 3-54
Closing, 2-14
Coil Voltage, 3-36
Color, 3-49
Colors Selection, 3-50
Component
Copy, 3-45
Counterboring, 3-91, 3-92
Custom, 3-55, 3-64
Cut, 3-45
Delete, 3-44
Dimensions, 3-86
Flip, 3-46
Identifier, 3-53
Location, 3-87
Lock Position, 3-89
Model, 3-52
Move, 3-47
Multiple Select, 3-44
Net Adder, 3-56
Paste, 3-45
Properties, 3-51
Rapid Copy/Paste, 3-46
Restrain to Surface, 3-90
Rotate, 3-46, 3-88
Select, 3-43
Snap, 3-42
Components Configurations, 3-86
Connect Components, 3-58
Contents, 1-1
Context Menus, 3-47
Converting to 3D, 2-28
Copy, 3-45
Copy/Paste, 3-46
Counterboring, 3-91, 3-92
Current Page Setup, 3-40
Custom Components, 3-55
Cut, 3-45
Default Page Setup, 3-39
Delete, 3-44
Diagram Editor, 3-37, 3-38
Dimension Line, 3-74, 3-75, 3-76, 3-77
Discount and Multipliers, 3-110
Discount Schedule, 3-111
Global Multipliers, 3-111
Displayed Information, 3-54
Drawing Surface, 3-39
DXF Format, 2-22
Ellipse, 3-48
Export
3D Components to a Folder, 2-23
Automation Studio, 2-26
DXF, 2-22
XML 3D, 2-25
File
Create, 2-17
New, 2-17
Open, 2-17
Save, 2-19
Save As…, 2-21
Flip, 3-46
Freezing Prices, 3-108
General Information, 3-35
Graphic Elements, 3-47
Grid, 3-39
Activating, 3-41
Manifold, 3-92
Header Section, 2-1
Import from XML, 2-25
Inserting Components, 3-43
Interface
2D Manifold Layout, 3-69
Component Properties, 3-51
Header Section, 2-1
Main Display, 2-1
Navigation Pane, 2-1
Edit, 2-11
File, 2-9
View, 2-12
Transparency, 3-80
Unfreezing Prices, 3-108
View
Cavities Only, 3-81, 3-82
Component Properties, 3-47
Component’s ID, 3-84, 3-85
Connection Port, 3-51
Interferences, 3-84
Manifold Grid, 3-92
Port Names, 3-50
Reference Axis, 3-82
Revision, 3-106
Satellite Owner, 3-83
Transparency, 3-80
Warning Messages, 2-15
XML 3D Export, 2-25
XML 3D Import, 2-25
Zoom, 3-39, 3-42
Zoom-all, 3-42
Zoom-in, 3-42
Zoom-out, 3-42