HydraForce
POWER FORWARD

i-Design

User Guide 5.4 – October 2018

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User's Guide for the HydraForce i-Design. (Revision 540)

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Contents

1 Introduction 1-1

1.1 Document Content 1-1

2 Getting Started – The Interfaces 2-1

2.1 Main Interface 2-1
2.1.1 File Menu 2-3
2.1.2 Tabs 2-8
2.1.3 Project Explorer 2-13
2.1.4 Main display 2-15
2.1.5 Warning Messages 2-16
2.2 Working with Project Files 2-17
2.2.1 Creating a New File 2-17
2.2.2 Opening a File 2-17
2.2.3 Saving a File 2-18
2.2.4 Saving a File As… 2-20
2.2.5 Previewing the Printing of the Current Configuration 2-20
2.2.6 Printing the Current Configuration 2-21
2.2.7 Importing and Exporting 2-22
2.2.8 Exporting to Automation Studio 2-24
2.2.9 Opening old Project Files / Update Components 2-25
2.3 Software and files updates 2-29

3 Building a First Project 3-1

3.1 Creating a Manifold Project 3-1
3.1.1 Project Parameters Interface 3-1
3.1.2 System Design Interface 3-4
3.1.3 Component Properties 3-18
3.1.4 Creating a Design 3-25
3.1.5 Manifold Layout Interface 3-32
3.1.6 Manifold Manipulations 3-40
3.1.7 Manifold Layout 3-40
3.1.8 Manifold Components Configurations 3-47
3.1.9 Manifold Dimensioning 3-55
3.1.10 Parts List Interface 3-57
3.2 Creating a “Price Components” Project 3-58
3.2.1 Project Parameters Interface 3-58
3.2.2 Price Components Interface 3-58
3.3 Revision History 3-60
3.3.1 Accessing the Revision History 3-60
3.3.2 Revision History Dialog 3-61
3.3.3 Revision History Interface – Creating Revisions 3-62
3.4 Freezing/Unfreezing the Prices of a Manifold Project 3-67
3.5 Current Pricing 3-68
3.6 Price Parameters 3-69
3.6.1 Price List Registration 3-70
3.6.2 Discount Schedule 3-70
3.6.3 Global Multipliers 3-70
3.6.4 Pricing Disclaimer 3-70
3.6.5 Standard Terms and Conditions of Sales 3-71

3.7 Software Options 3-72
3.7.1 General Options 3-72
3.7.2 Default Hydraulic Circuit Options 3-73
3.7.3 Default Technical Drawing Options 3-74
3.8 3D Performances 3-76
3.9 Best Practices for Cost Effective Design 3-77
3.9.1 General Design Considerations 3-77
3.9.2 Valve Placement Suggestions 3-78
3.9.3 Port Placement Suggestions 3-78
3.9.4 Manifold Mounting Holes and Mounting Surface 3-79
3.10 Technical Drawing 3-80
3.10.1 Laying Down the Views 3-80
3.10.2 Updating Views 3-84

4 Documentation (B.O.M) 4-1

4.1 Introduction 4-1
4.2 Generating the report 4-1
4.2.1 Saving the report 4-2
4.2.2 Printing 4-2
4.2.3 Working with the Report 4-2
4.2.4 Report Contents 4-2

5 i-Design WEB Interfaces 5-1

5.1 Introduction 5-1
5.2 Login 5-2
5.3 Save Project to i-Design WEB 5-3
5.4 Open Project from i-Design WEB 5-5
5.4.1 Open a “Price Components” Project from the WEB 5-5
5.4.2 Open a “Price a Manifold” Project from the WEB 5-6
5.4.3 Merge with an Existing Project 5-7

6 Index 6-9

1 Introduction

i-Design v5.4 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 allow the user to determine the price of individual HydraForce components or of a custom manifold product. You can then generate 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:

Chapter	Contents
1	Introduction
2	Getting Started – The Interfaces
3	Building a First Project
4	Documentation (B.O.M)
5	i-Design WEB Interfaces
6	Index

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" windows: 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.

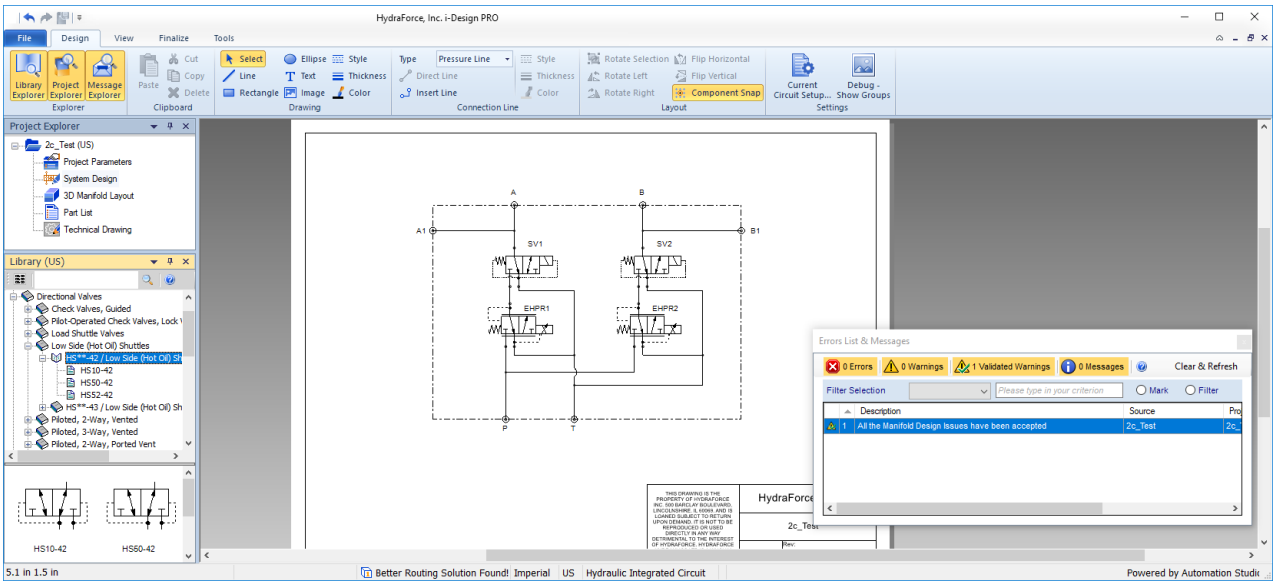


Figure 2-1: HydraForce i-Design Interfaces

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.

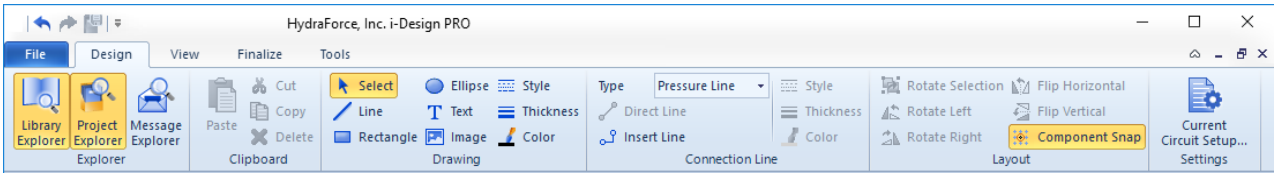


Figure 2-2: Application Header

2.1.1 File Menu

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

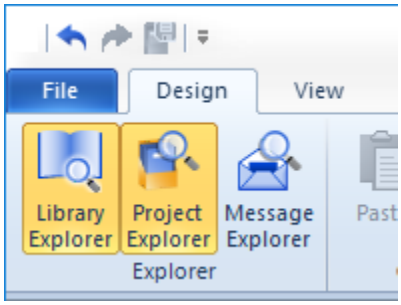
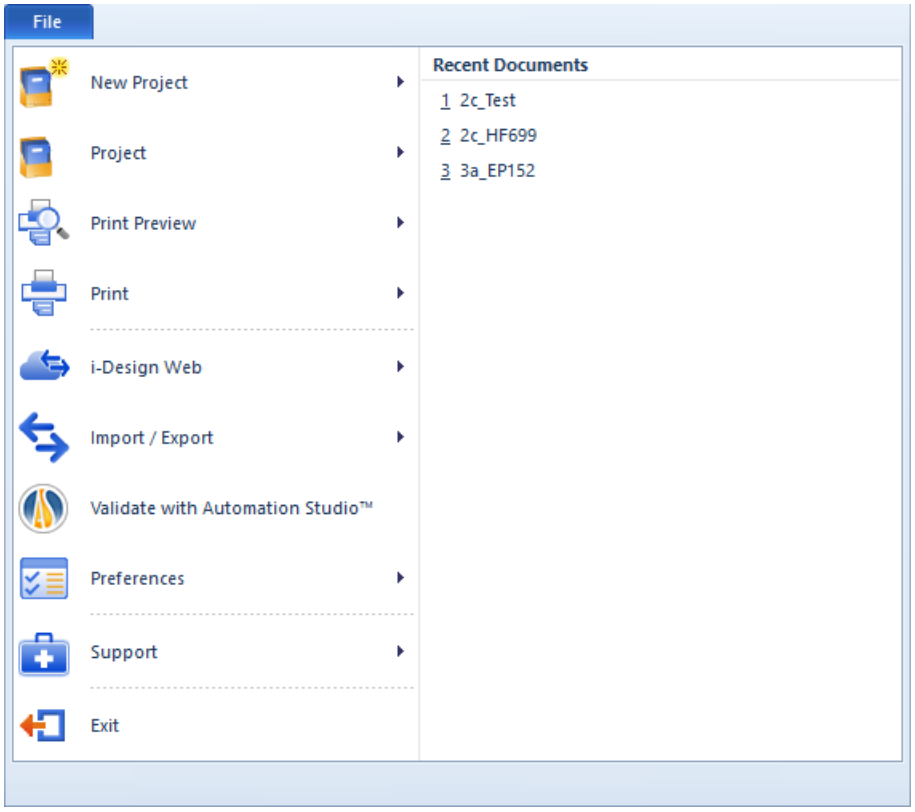


Figure 2-3: File Menu

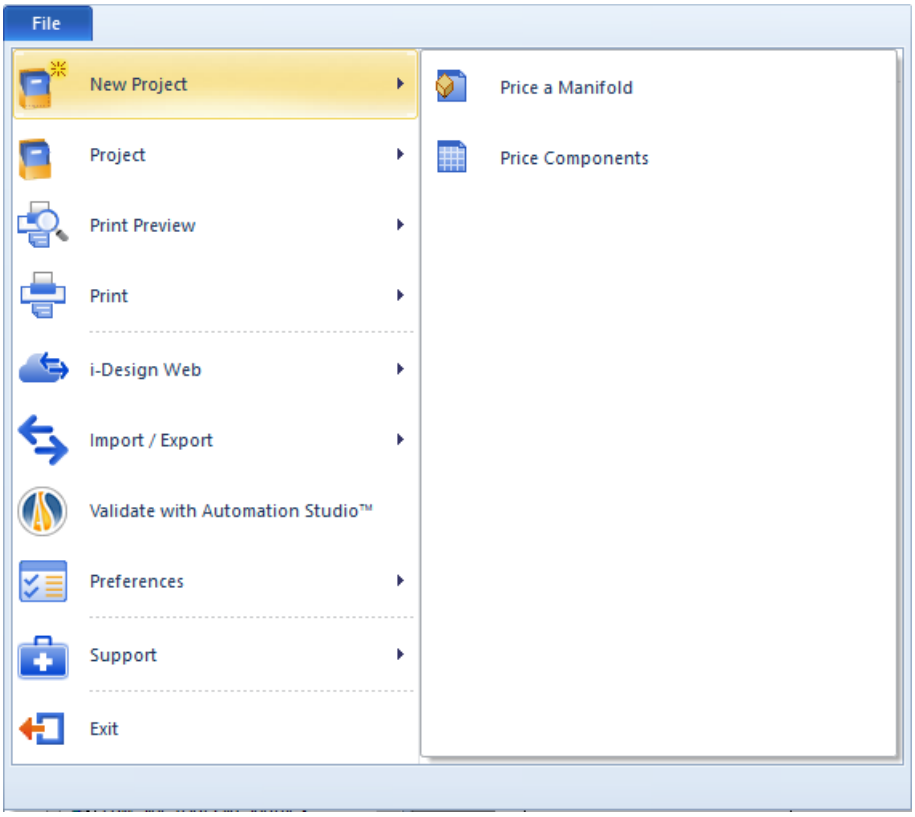
2.1.1.1 Content of the Menu

Menu contents are:

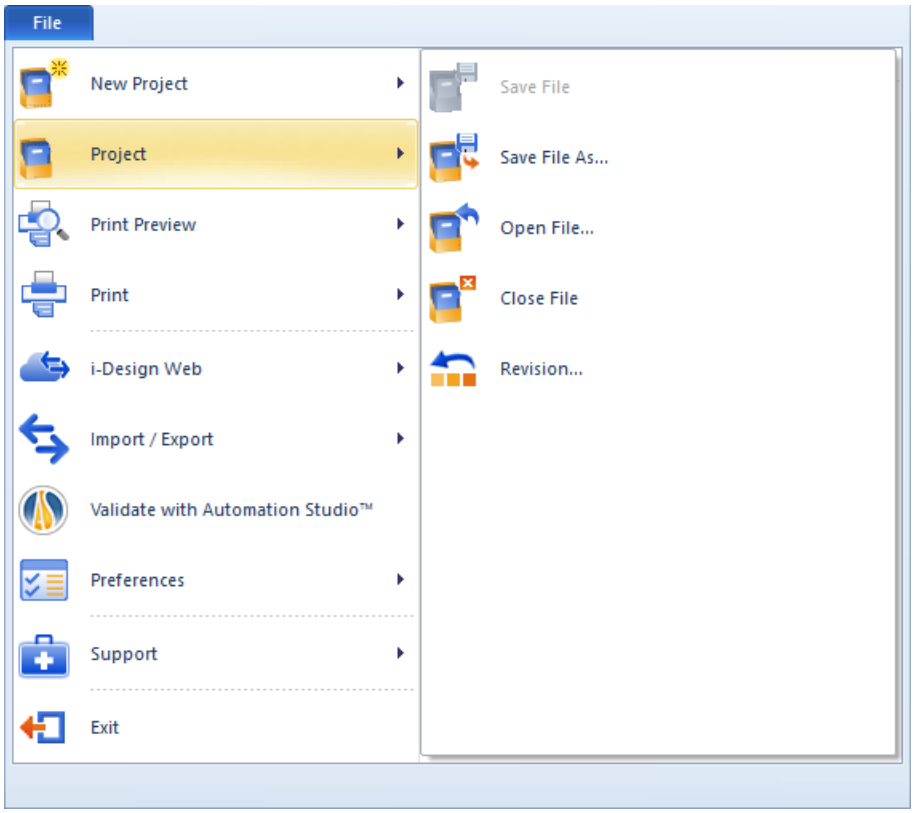
Nothing Selected → Recent Documents



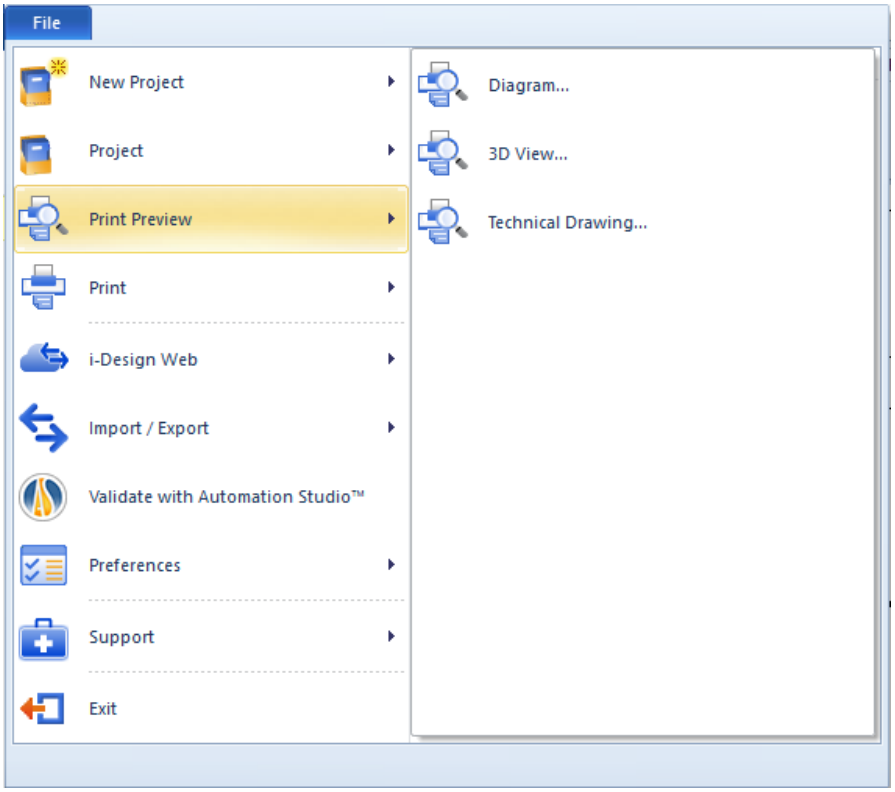
1. New Project



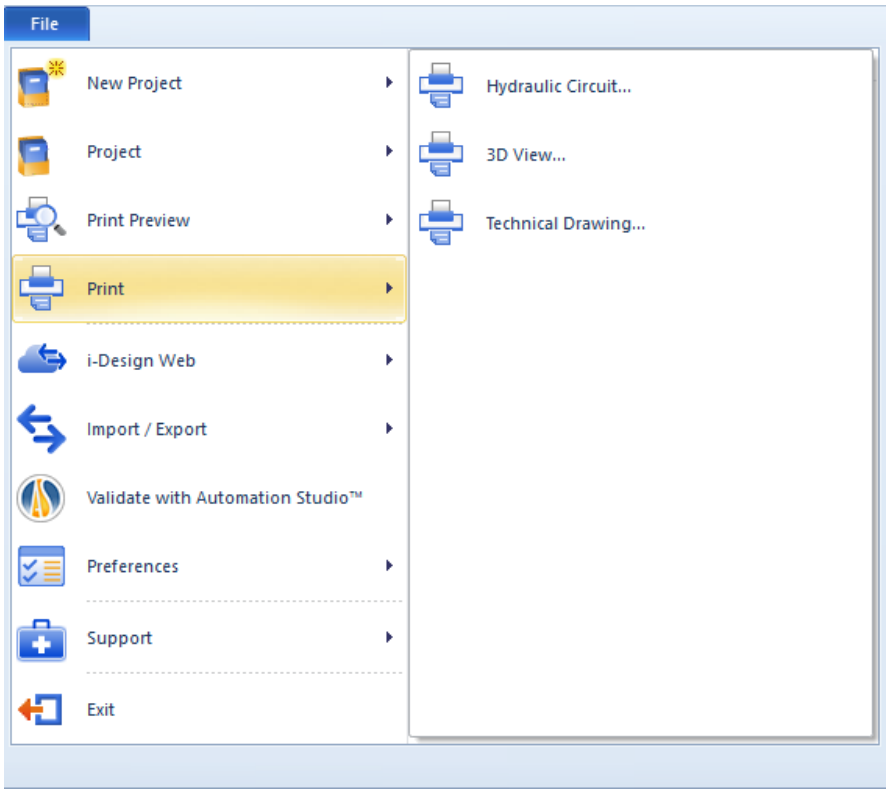
2. Project



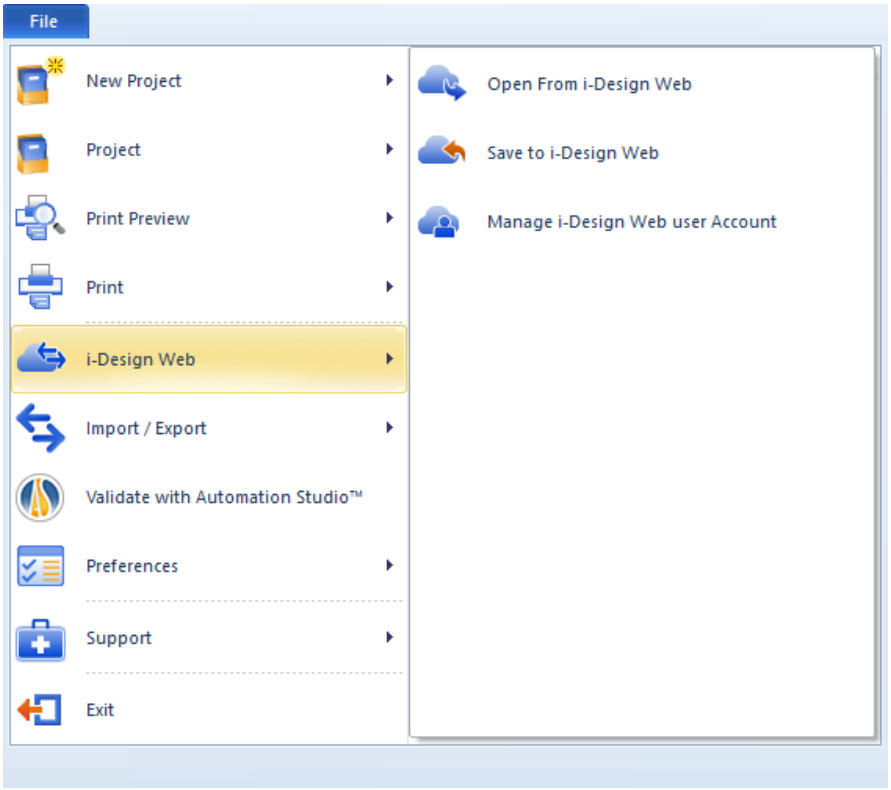
3. Print Preview



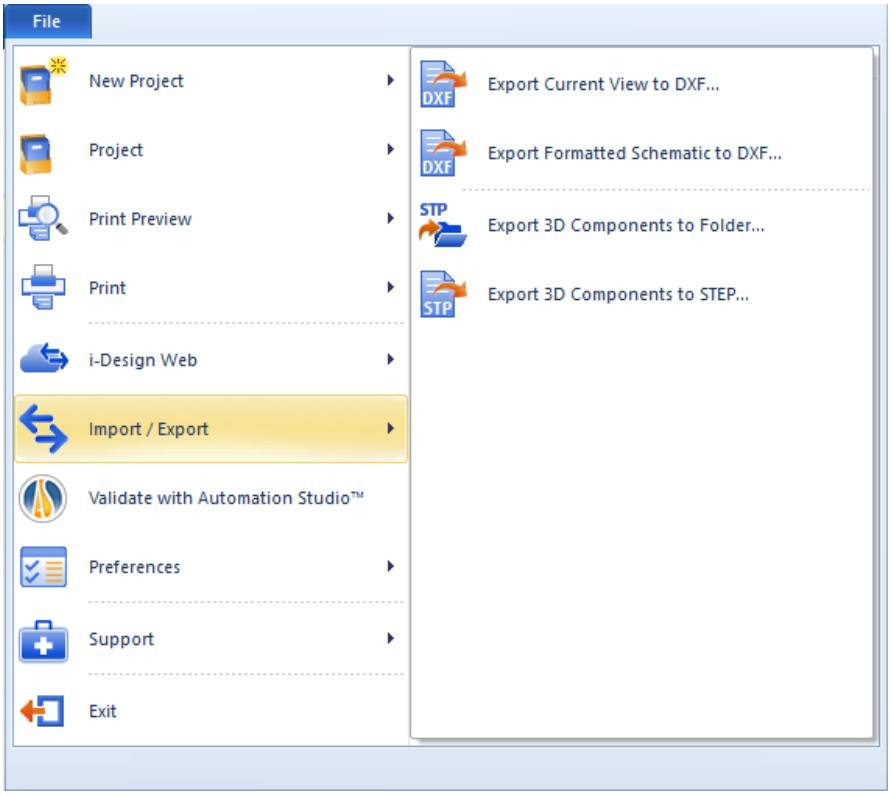
4. Print



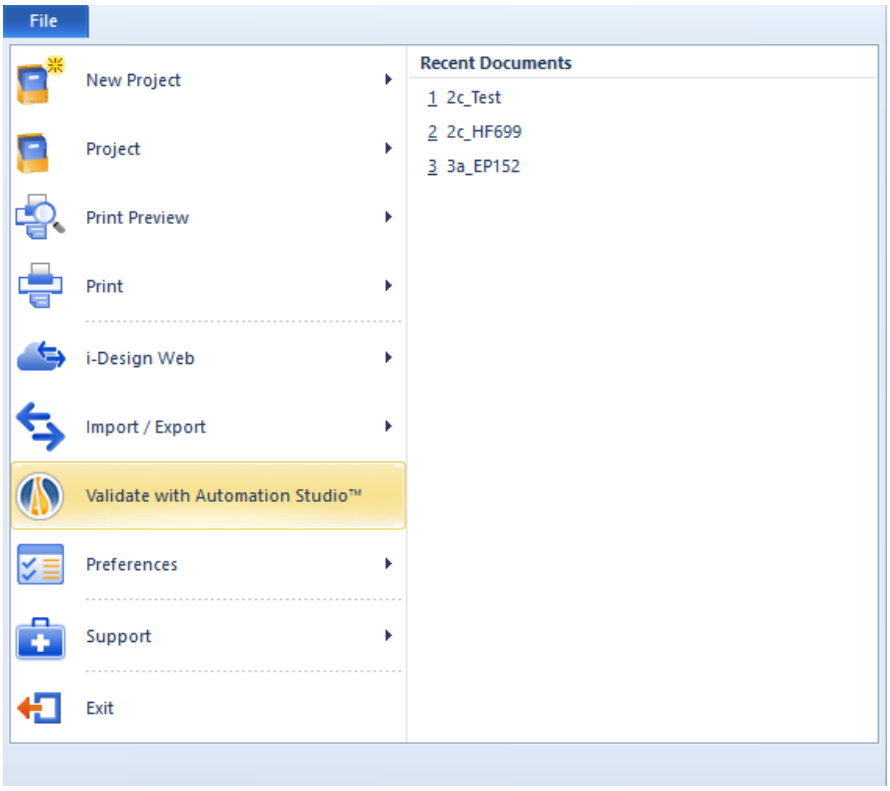
5. I-Design Web



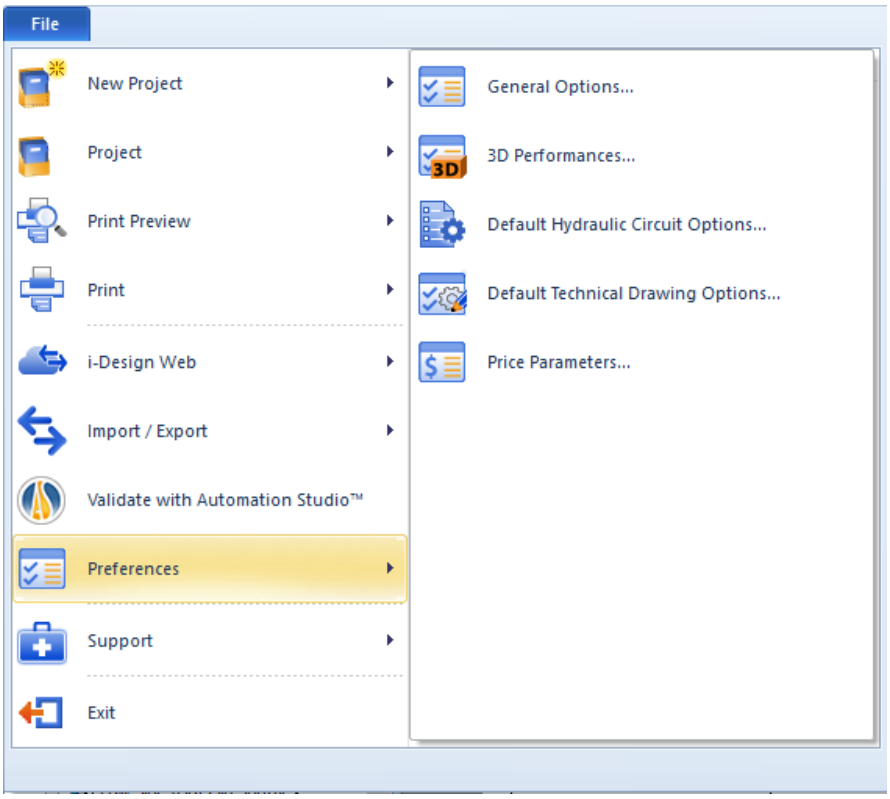
6. Import / Export



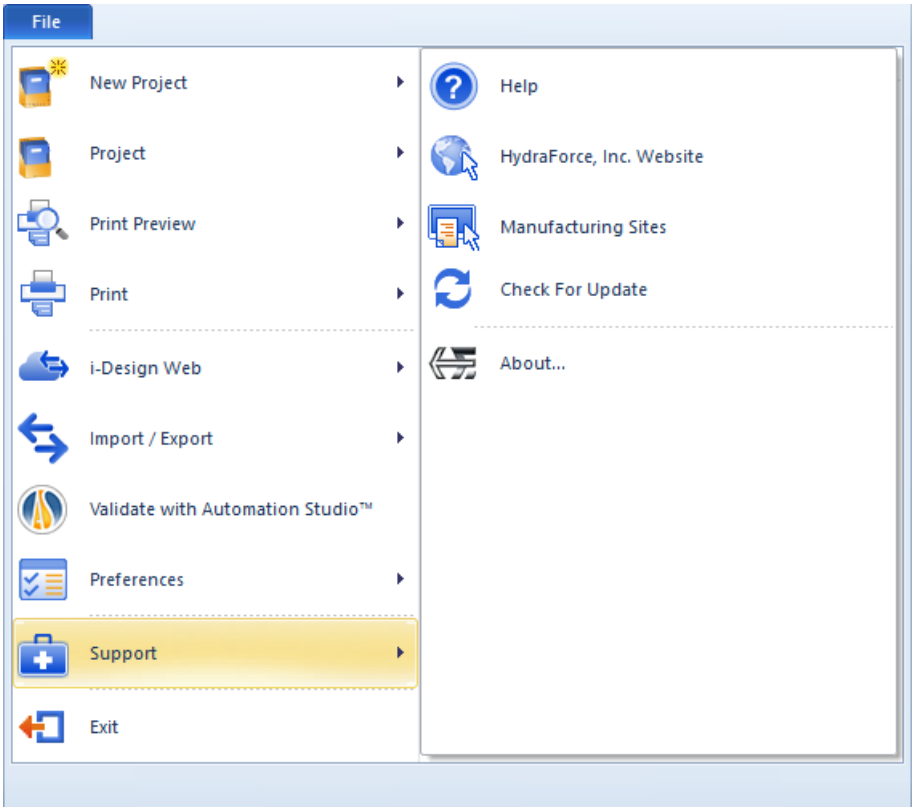
7. Validate with Automation Studio™



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

2.1.2.1.1 Hydraulic Circuit (Schematic)

The "Design" toolbar allows to quickly access the explorer, clipboard, drawing, connection line, layout and settings. These are:

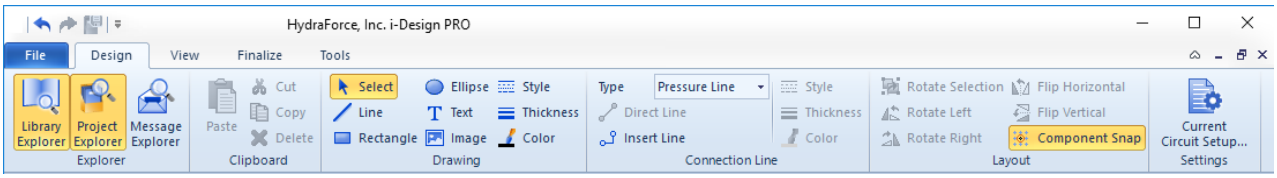


Figure 2-4: Design Tab

Explorer Section:

Button	Description	Function
	Library Explorer	Opens/Closes the Library window

Button	Description	Function
	Project Explorer	Opens/Closes the Project Explorer window
	Message Explorer	Opens/Closes the Errors List & Messages window

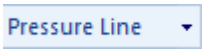
Clipboard Section:

Button	Description	Function
	Paste	Pastes the content of the clipboard
	Cut	Cuts the selection
	Copy	Copies the selection to the clipboard
	Delete	Deletes the selected items

Drawing Section (System Design Only):

Button	Description	Function
	Select	Returns the mouse pointer to the normal mode when creating graphic elements.
	Line	Allows the user to insert a line
	Rectangle	Allows the user to insert a rectangle
	Ellipse	Allows the user to insert an ellipse
	Text	Allows the user to insert text
	Image	Allows the user to insert an image
	Style	Allows to change the line style of a graphic element
	Thickness	Allows to change the thickness of a graphic element
	Color	Allows to change the color of a graphic element

Connection Line Section (System Design Only):

Button	Description	Function
	Line Type	Allows changing the selected lines types or the default line type if no line is selected.
	Line Style	Allows changing the selected lines style.
	Line Thickness	Allows changing the selected lines thickness.
	Line Color	Allows changing the selected lines color.

Layout Section:

Button	Description	Function
	Rotate Left	Rotates the active component 90 degrees left
	Rotate Right	Rotates the active component 90 degrees right
	Rotate Selection	Rotates the selection (group) to the right (System Design Only)
	Flip Horizontal	Flips the active component over a vertical axis (System Design Only)
	Flip Vertical	Flips the active component over a horizontal axis (System Design Only)
	Component Snap	Snaps the component on the grid

2.1.2.1.2 3D Layout

Some features are specific to the *3D Layout*, these are:

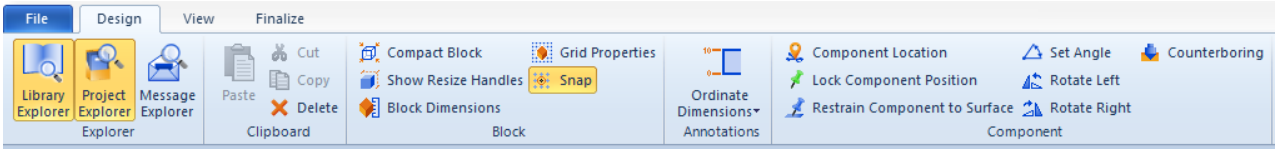


Figure 2-5: Design Tab

Block:

Button	Description	Function
	Compact Block	Shrink the block manifold dimensions to its minimum without moving any components
	Show Resize Handles	Shows resize handles allowing to resize the block manifold by dragging its edges in "flat" mode in the 3D layout display
	Block Dimensions	Opens the dialog allowing to manually define the block dimensions
	Grid Properties	Allows to define the grid spacing
	Component Snap	Snaps the component on the grid

Dimensions:

Button	Description	Function
	Create Dimension	Allows to create dimensions from pick points

Component (Manifold Layout Only):

Button	Description	Function
	Component Location	Allows to define the component location
	Lock Component Position	Locks a component on its current position
	Restrain Component to Surface	Restrains a component to the current manifold face
	Set Angle	Allows to define the component angle
	Rotate Left	Rotates the active component 90 degrees left
	Rotate Right	Rotates the active component 90 degrees right
	Counterboring	Allows to define the counterbore parameters

2.1.2.2 View Toolbar

2.1.2.2.1 Hydraulic Circuit (Schematic)

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

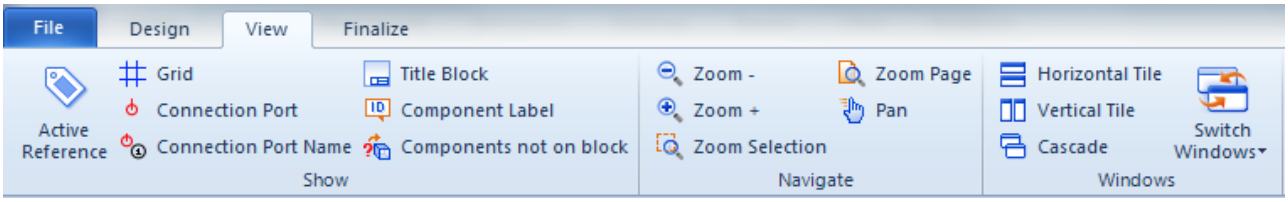


Figure 2-6: View Toolbar

Show Section:

Button	Description	Function
	Grid	Displays/Hides the grid
	Connection Port	Displays/Hides the connection port
	Connection Port Name	Displays/Hides the connection port name
	Reference	Displays/Hides the component references
	Title Block	Displays/Hides the title block (System Design Only)
	Component Label	Displays/Hides the component labels
	Components not on the block	Changes the color of the components not placed on the block (System Design Only)

Navigate Section:

Button	Description	Function
	Zoom Out	Zooms out of the design by 25%
	Zoom In	Zooms into the design by 25%
	Zoom Selection	Allows the user to create a specific zoom selection
	Zoom Page	Allows the user to zoom all the page on the screen (System Design Only)
	Pan	Allows the user to PAN the schematic (Moves the page/view)

Windows Section:

Button	Description	Function
	Horizontal Tile	Arranges the windows in a horizontal tile layout
	Vertical Tile	Arranges the windows in a vertical tile layout
	Cascade	Arranges the windows in a cascade layout
	Switch Windows	Switch the active window

2.1.2.2.2 3D Layout

Some features are specific to the *3D Layout*. These are:

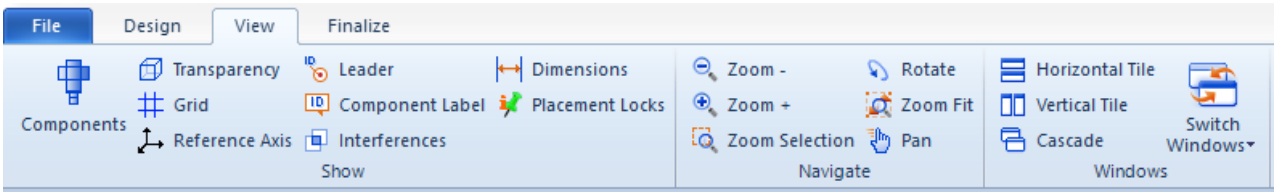


Figure 2-7: View Toolbar

Show:

Button	Description	Function
	Components	Displays/Hides the external part of the components in the 3D layouts views
	Transparency	Displays a Closed/Transparent view in the 3D layouts interfaces
	Grid	Displays/Hides the grid
	Reference Axis	Displays/Hides the reference axis
	Leader	Displays/Hides the satellite owner
	Component Label	Displays components ID on the 3D layout views
	Interferences	Displays/Hides the interferences
	Dimensions	Displays/Hides the dimensions
	Placement Locks	Displays/Hides the placement locks

Navigate:

Button	Description	Function
	Rotate	Allows to rotate the block in the layout display

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:

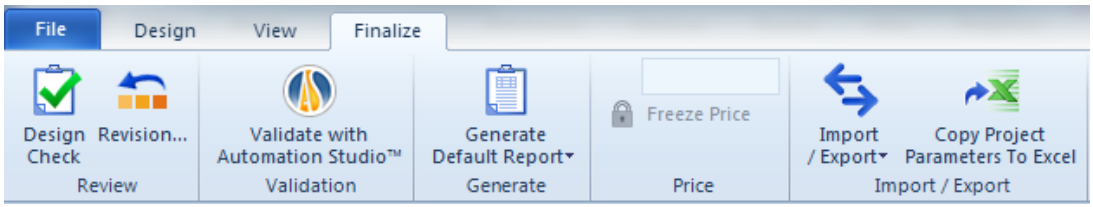


Figure 2-8: Finalize Toolbar

Review:

Button	Description	Function
	Design Check	Allows to verify the rules of configuration
	Revision	Opens the revision dialog

Validate:

Button	Description	Function
	Validate with Automation Studio™	Allows exporting the schematic in Automation Studio to simulate and validate it.

Generate:

Button	Description	Function

Button	Description	Function
	Generate Report(s)	Generates the assembly report depending on the user rights (Sales Manager, Distributor or OEM)

Price:

Button	Description	Function
	Get Total Price	Calculates the total project price and displays the result in the "Total Price" field
	Project Pricing Freeze	Allows project pricing freeze after being approved by HydraForce
	Total Price	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

Import/Export:

Button	Description	Function
	Export Current View to DXF…	Exports the current schematic view to DXF
	Export Formatted schematic to DXF…	Exports a formatted schematic to DXF
	Export 3D Components to Folder…	Exports 3D Components to a specific folder
	Export 3D components to STEP	Export the block components to STEP

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:

Project Type	Choice	Impact
Price a Manifold	Project Parameters	Takes the user to the "Project Parameters" page in the main display.
	System Design	Takes the user to the "System Design" page in the main display.
	3D Manifold Layout	Takes the user to the "Isometric Manifold Layout" page view in the main display.
	Parts list	Takes the user to the "Parts List" page in the main display.
	Technical Drawing	Takes the user to the "Technical Data" page in the main display.
Price Components	Project Parameters	Takes the user to the "Project Parameters" page in the main display.
	Price Component	Takes the user to the "Cart List" page in the main display.

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

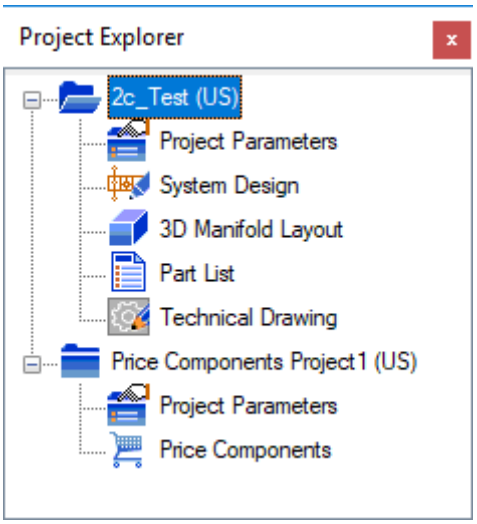


Figure 2-9: Project Explorer

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.

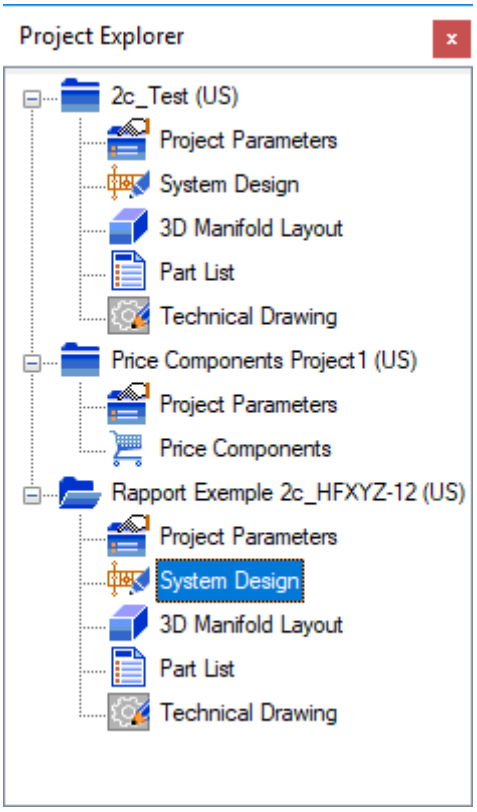


Figure 2-10: Multiple Projects Management

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.

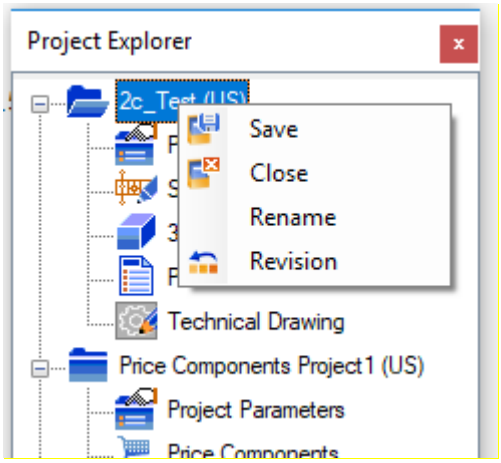


Figure 2-11: Project Explorer Contextual Menu

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. 3D Manifold Layout;
4. Parts list.;
5. Technical Drawing.

Price Components

1. Project Parameters;
2. Price components.

Note: When version 1.0 or 2.0 projects are opened, they are converted to the last i-Design version.

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 Layout", "Technical Drawing" or "Price Components" interfaces.

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

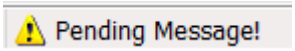


Figure 2-12: Pending Message in the Status Bar

To make the warning disappear from the status bar, you need to open the "Messages" window. There is 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.

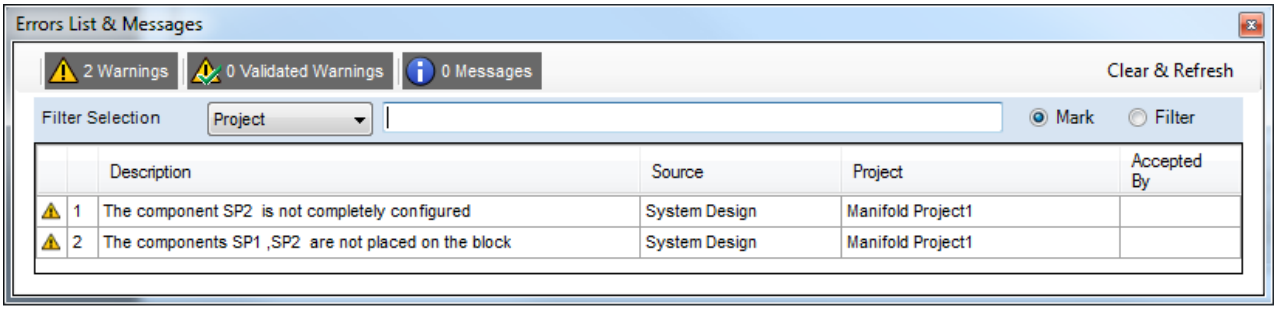


Figure 2-13: Warning in the Messages Window

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”).

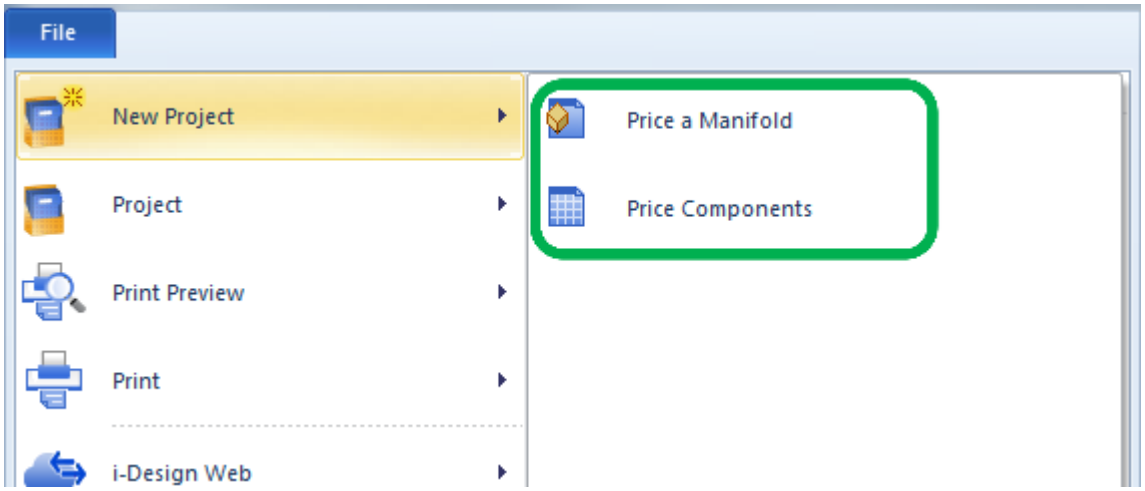


Figure 2-14: File Menu – New Project

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”;

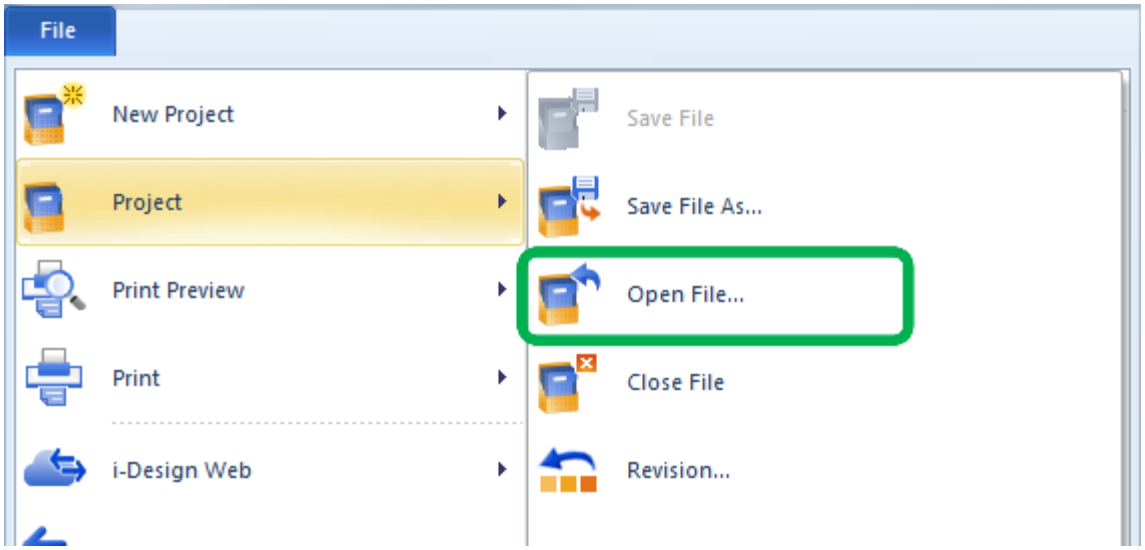


Figure 2-15: File Menu – Open File

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.

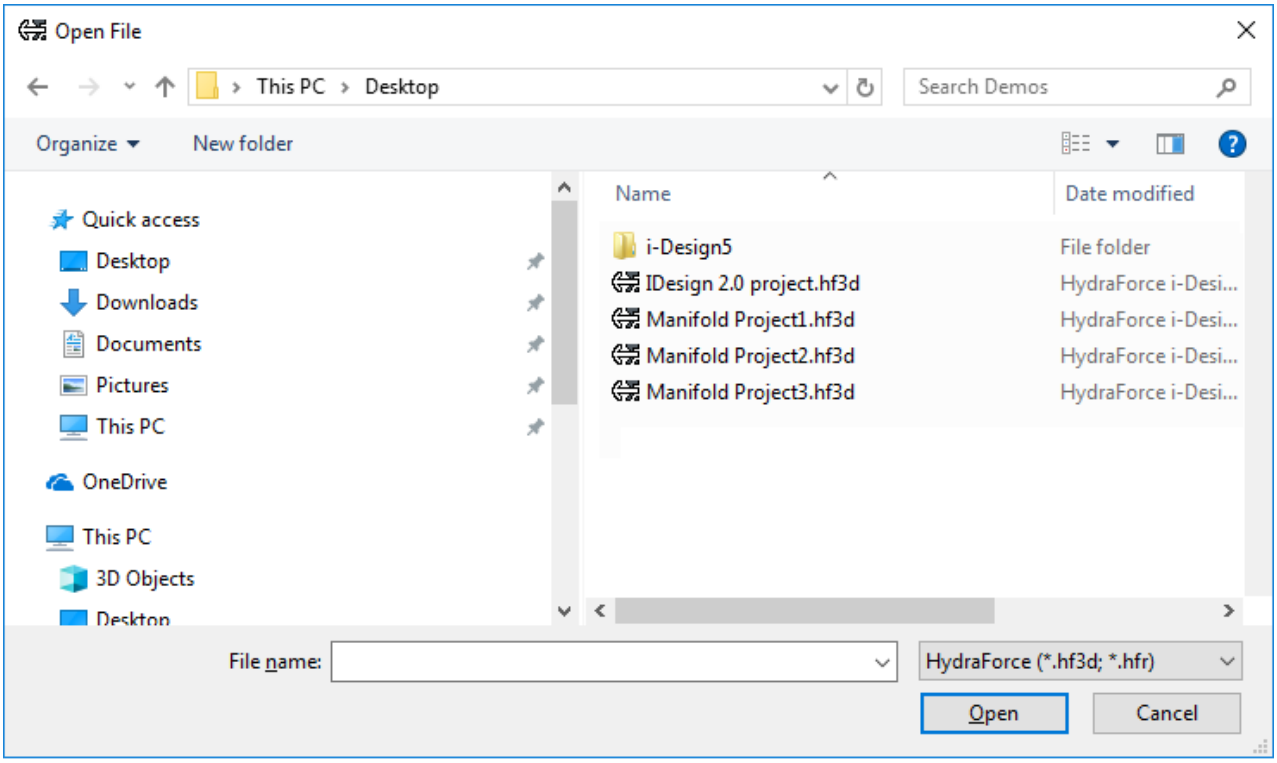


Figure 2-16: File Opening Browser

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”;

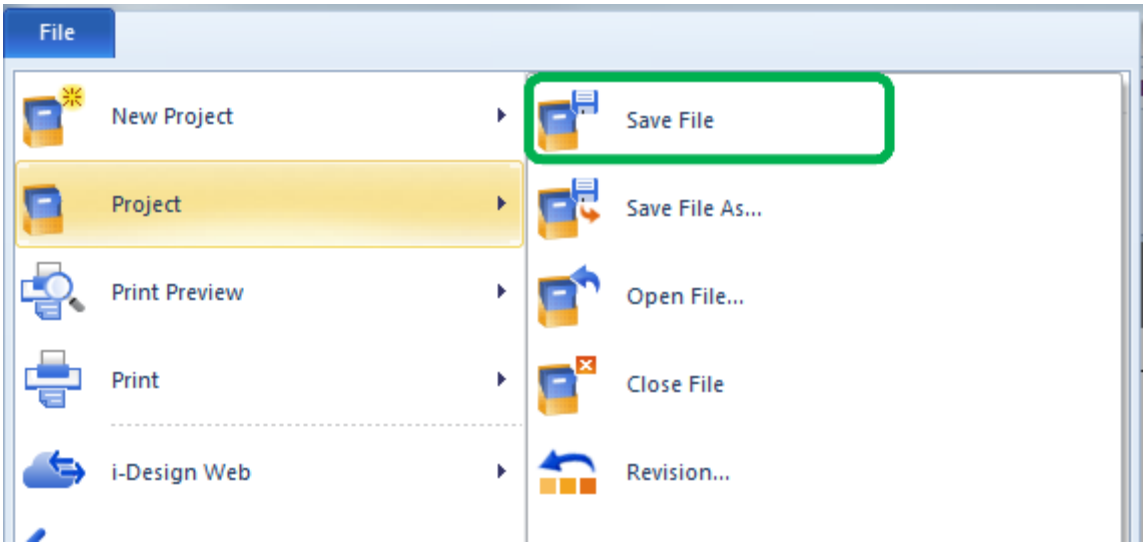


Figure 2-17: File Menu – Save File

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);

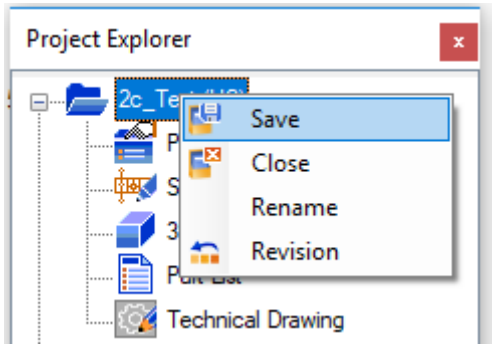


Figure 2-18: Contextual Menu

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.

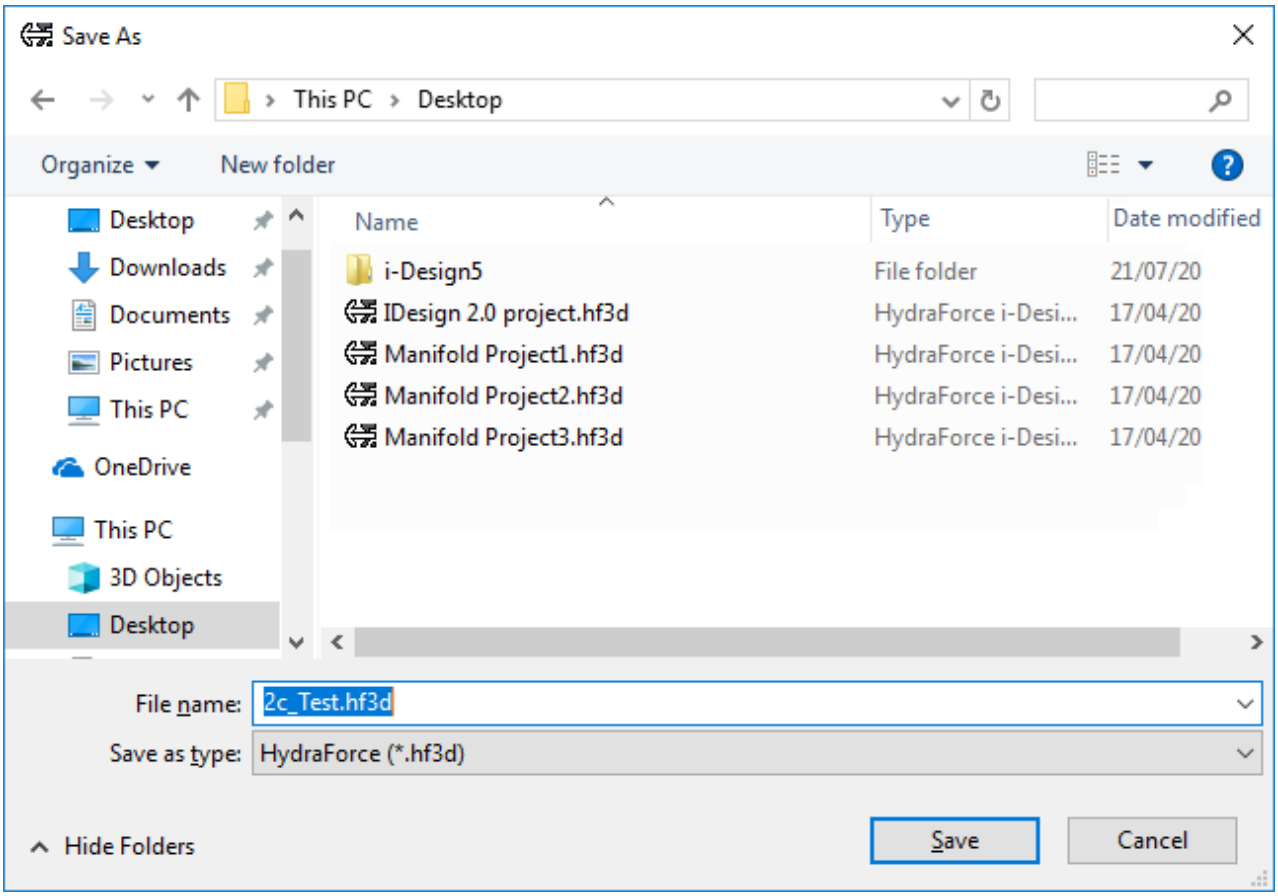


Figure 2-19: File Saving Browser

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", "3D Manifold" or "Technical Drawing";

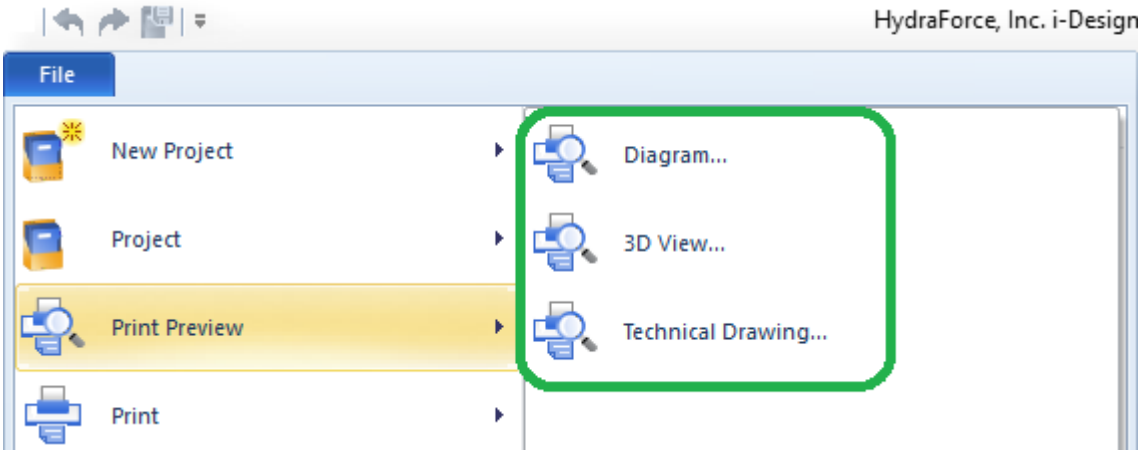


Figure 2-20: File Menu – Print Preview

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", "3D Manifold" or "Technical Drawing";

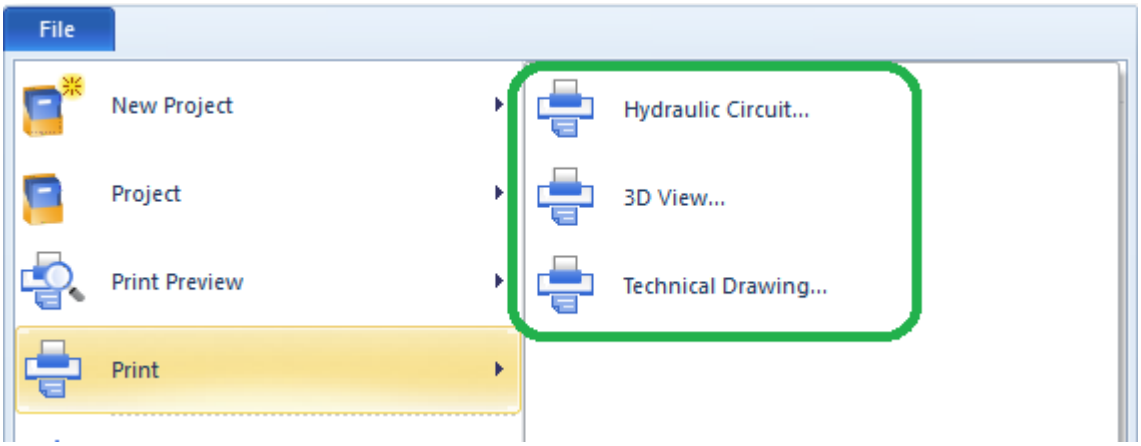


Figure 2-21: File Menu – Print

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;

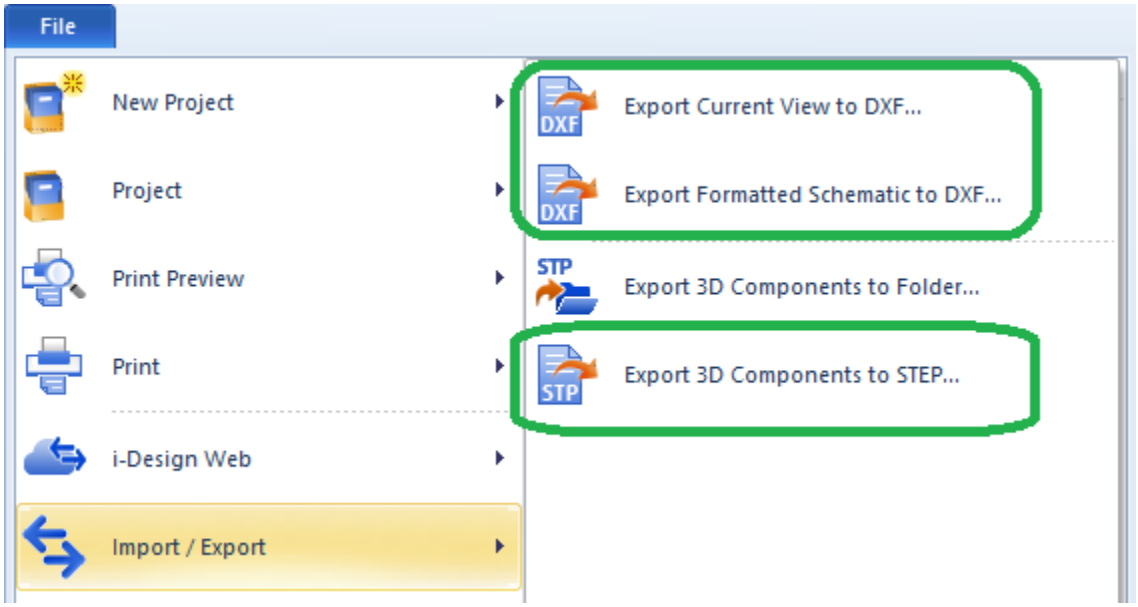


Figure 2-22: File menu – Export DXF

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;

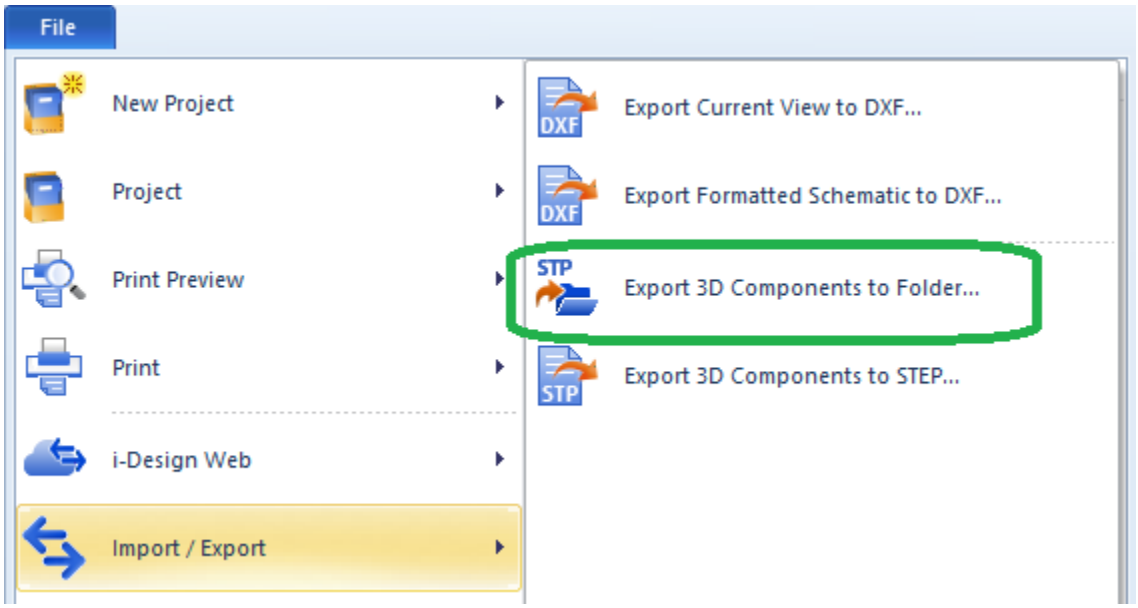


Figure 2-23: File menu – Export 3D Components

A windows explorer dialog box opens.

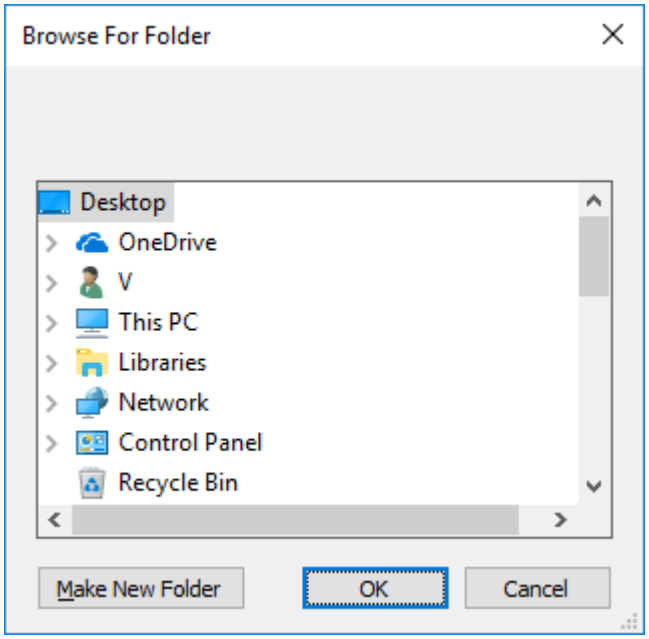


Figure 2-24: Browse for Folder dialog box

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”.

2.2.8 Exporting to Automation Studio

To export to Automation Studio:

1. Select the "File" menu → "Validate with Automation Studio™" command;

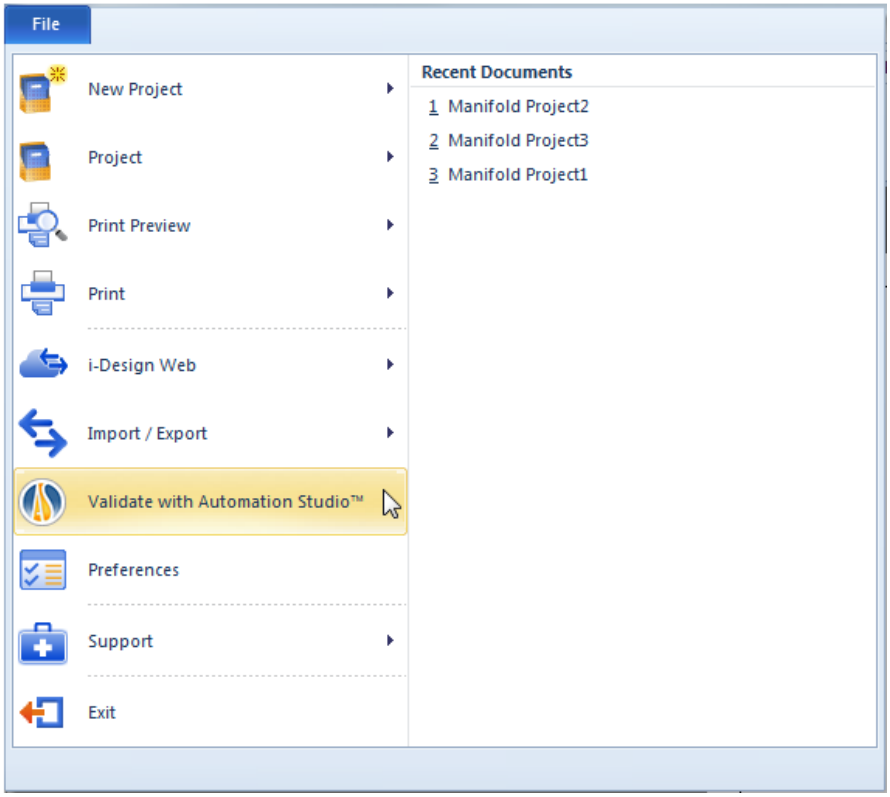


Figure 2-25: File menu – Validate with Automation Studio™

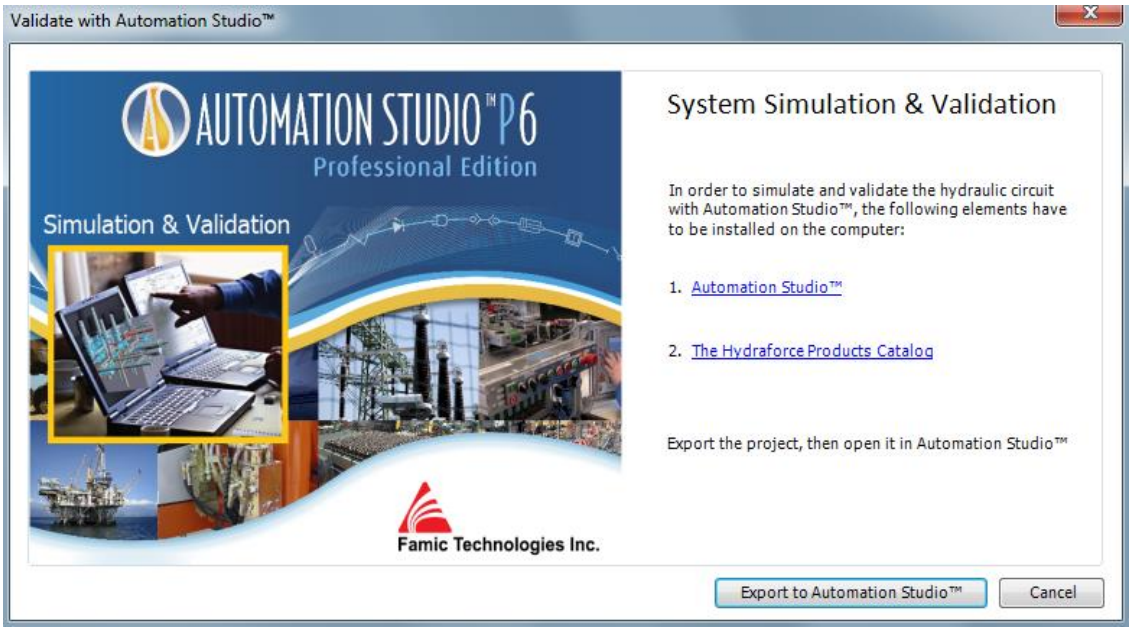


Figure 2-26: Validate with Automation Studio™ Dialog

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

Note: The .hfx format used is compatible with Automation Studio version 6.0 and later revisions.

2.2.9 Opening old Project Files / Update Components

2.2.9.1 Earlier 2.0 Projects

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. Select the 2.0 project file to open and click on the “Open” button;
3. The project file opens and displays the following information message:

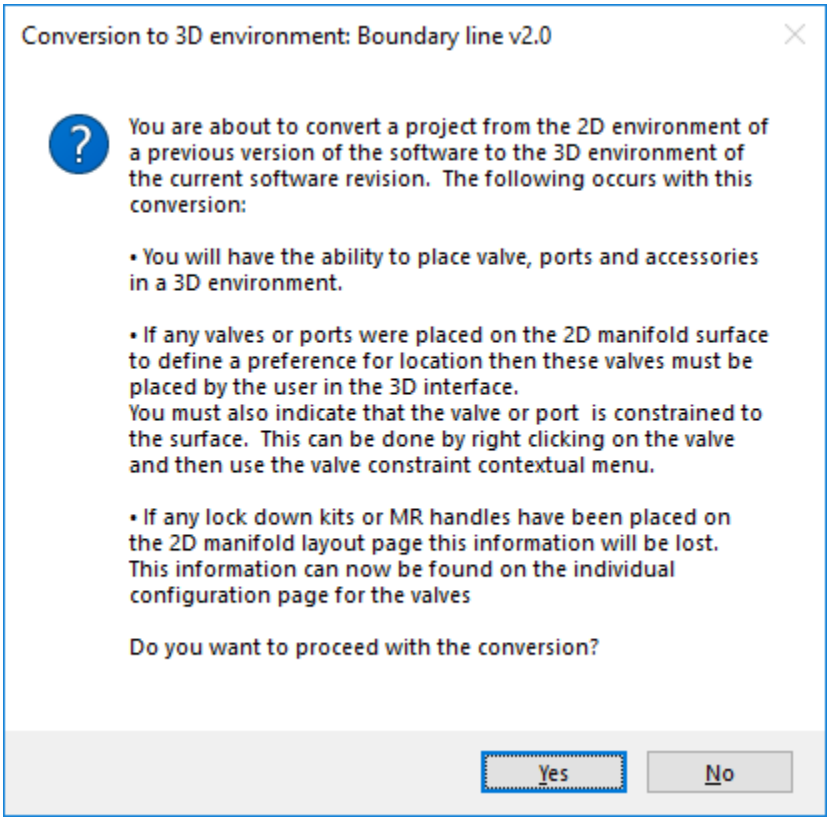


Figure 2-27: Conversion Warning Message

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

The project is not open if the No is clicked.

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.

4. 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.

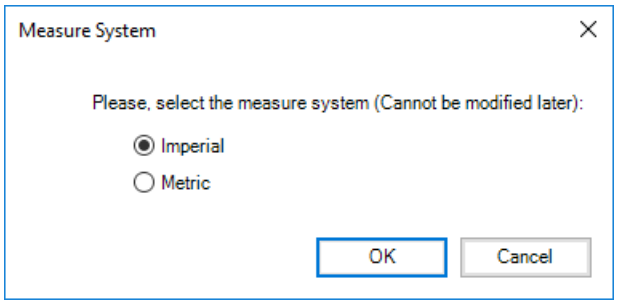


Figure 2-28: Unit System Selection

5. 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.

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

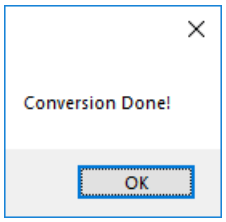


Figure 2-29: 3D Conversion Completed

Once converted, the "Project Explorer" will contain the branches that permit to access the "3D Manifold Layout" and "Technical Drawing" interfaces.

2.2.9.2 Update Components

When components are not up-to-date, a button located in the ribbon bar allows to update them.

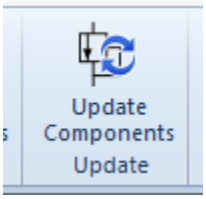
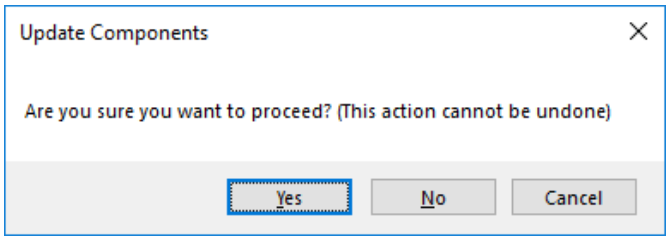


Figure 2-30: Update Components (Design Tab)

The "Update Component" command only appears if the current project is not synchronized with the component database or was never synchronized with the component database.



If the user chooses to proceed, a progress bar appears showing the operations.

After the update is finished, a Project Update Report dialog opens, showing the status of the components update.

If the configuration of some components have changed during the update, the Project Update Report dialog shows a message explaining that some components must be manually validated

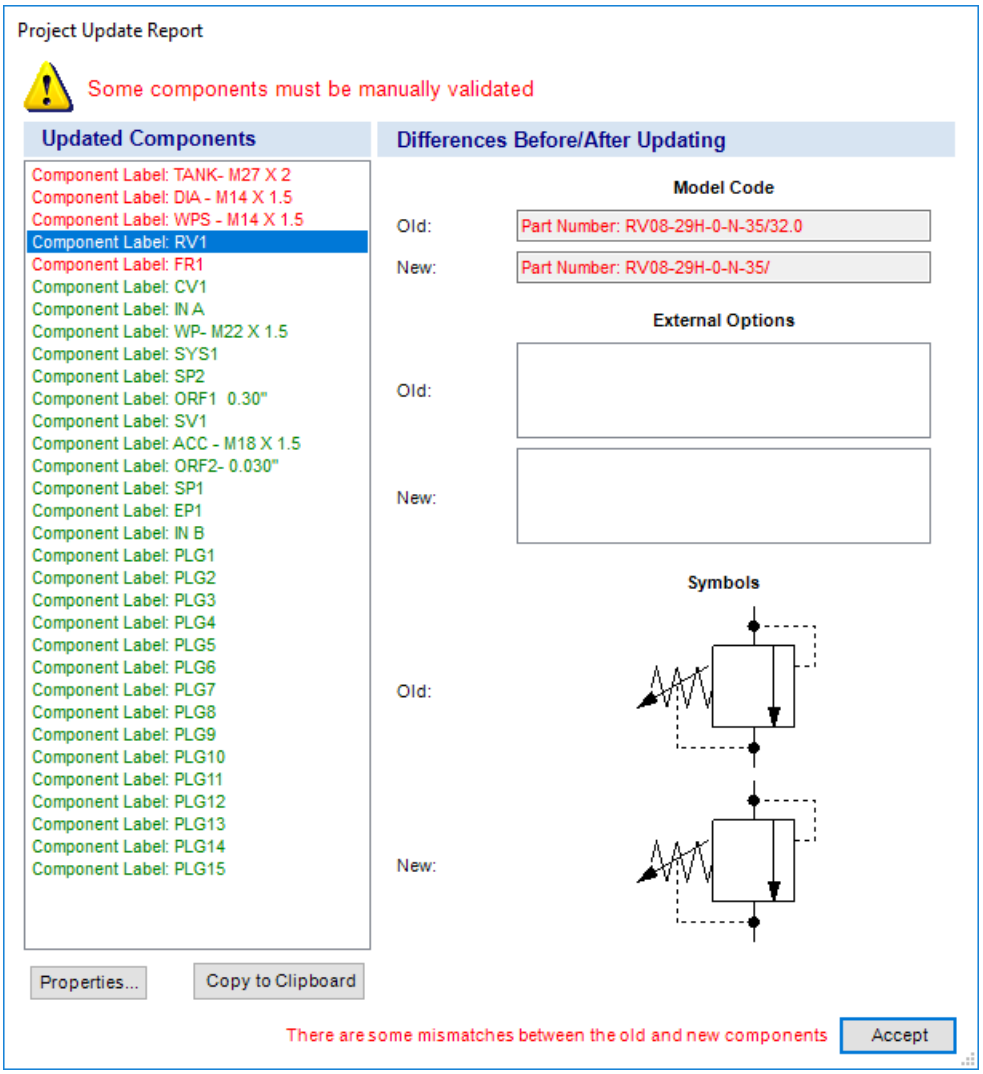


Figure 2-31: Project Update Report

If there are still issues, the button allowing to exit the dialog is named “Accept”. A message is displayed near it in order to indicate to the user that issues are still there.

If there are no mismatches between the old components and the new ones, or if the fixes have been manually done, the Project Update Report dialog shows a message explaining all components were updated successfully. The button allowing to exit the dialog is named “Done”

If the user clicks on the “Properties…” button, the Component Configuration dialog of the selected component will be opened. The Component Configuration dialog will also open if the user double-clicks on the name of one of the component in the list. Then, the user can adjust the options in order to fix the issues.

The “Copy to Clipboard” command will copy the Project Update Report information to the Clipboard in a Xml format (same as Copy function).

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 required for this feature to work properly).

The software update check can generate 3 cases:

1. The update server is not responding

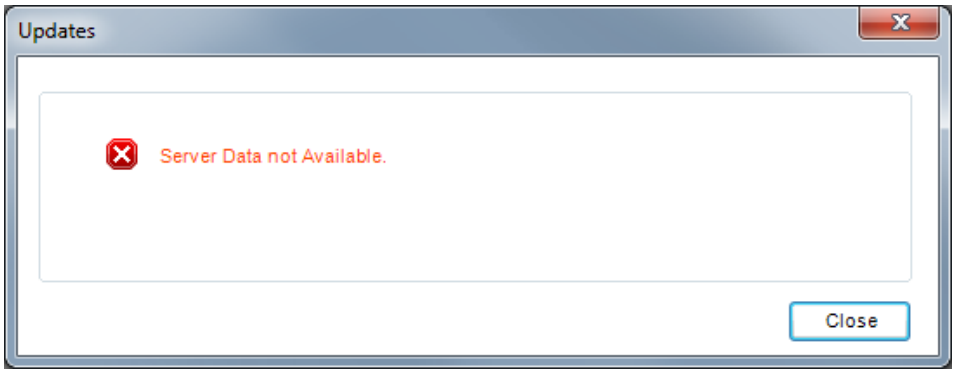


Figure 2-32: Data Server Not Available

2. The update server doesn't have new versions

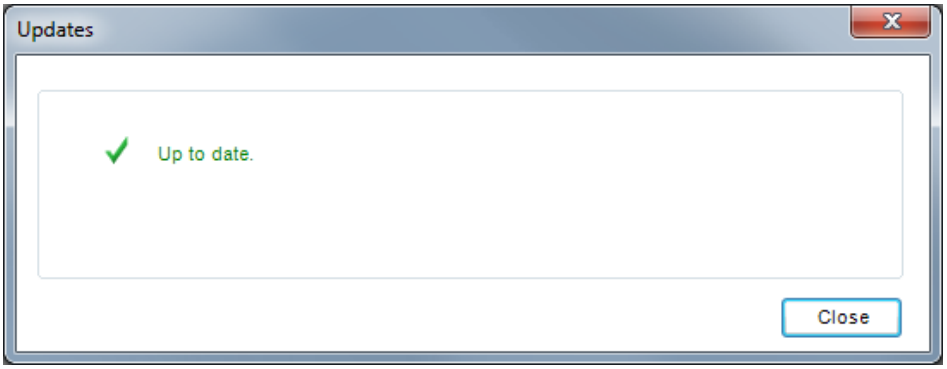


Figure 2-33: Software is Up-to-date

3. The update server has an available update

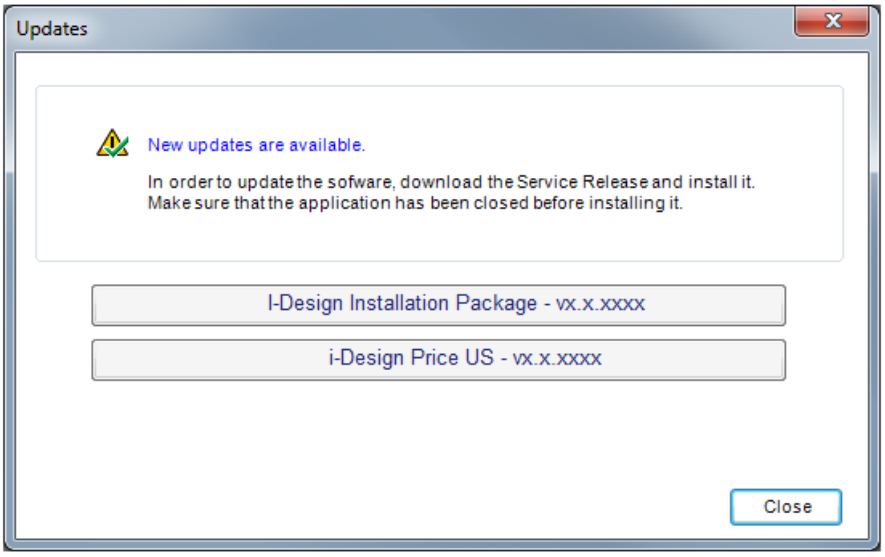


Figure 2-34: Software Updates are Available

You can click on the “i-Design Installation Package – vX.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 or automatically downloads and installs the new package.

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.

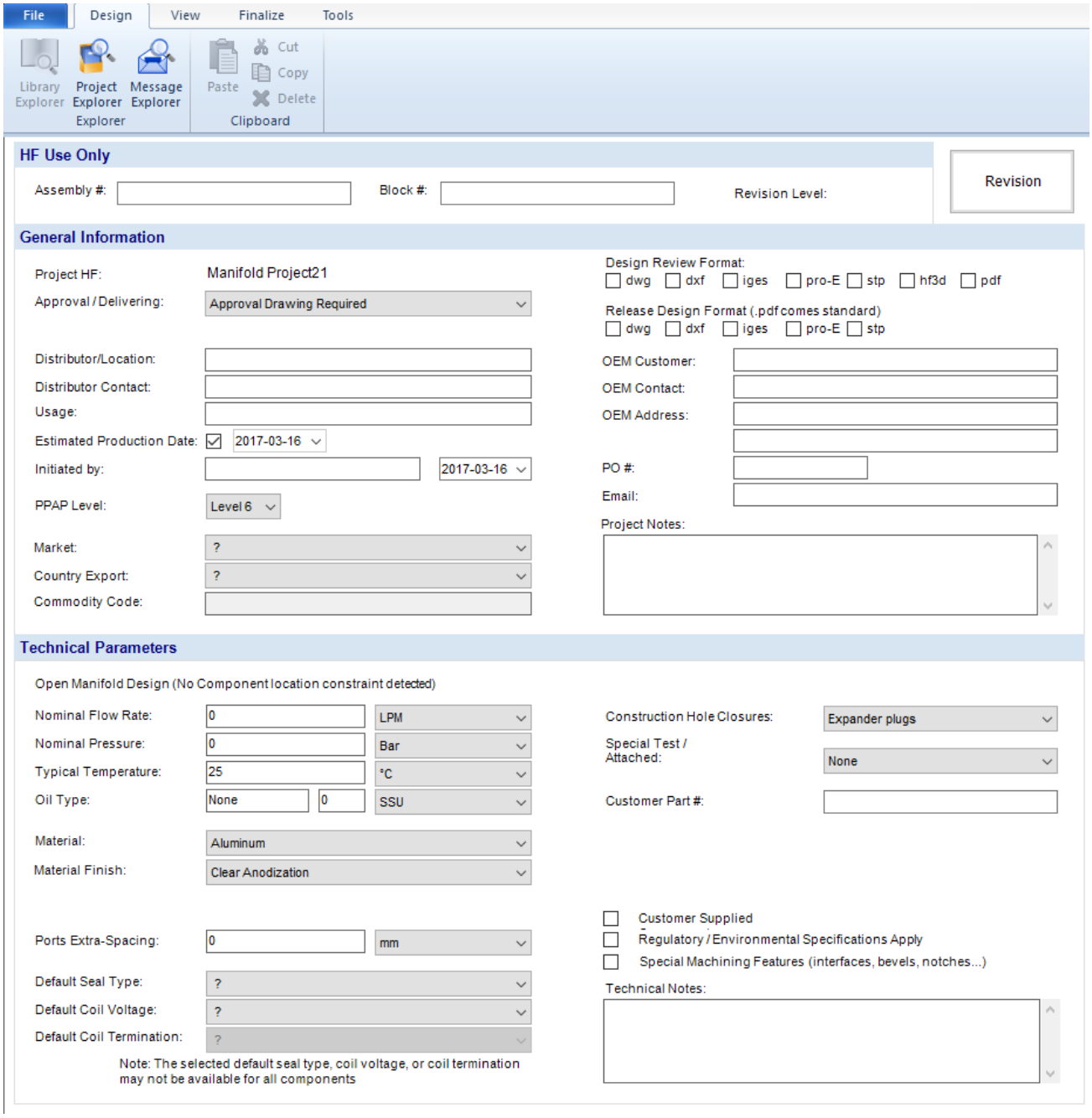


Figure 3-1: Project Parameters Interface for Manifold Projects

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:
  - Approval drawing required;
  - No Approval Drawing – Release Drawing;
  - "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;
- Default Value for Coil Voltage;
- Default Value for Coil termination;
- Material:
  - Aluminum (Default if the nominal pressure is less than or equal to 3499 psi);
  - Durabar: CC SG Iron (Default if the nominal pressure is greater or equal to 3500 psi);

- Material Finish;
- Special Port Spacing for Fittings;
- Construction Hole Closures:
  - SAE threaded plugs (Automatically selected if the Nominal pressure is greater or equal to 3500 psi);
  - Expander plugs (Automatically selected as default if the Nominal pressure is less than or equal to 3499 psi). The user has the possibility to change it back to Expander plugs.
- Special Test/Certification Requirements Attached:
  - None;
  - Prototype only;
  - Production.
- Customer P/N:
  - Shown on block:
    - With HF number;
    - Without HF number.
  - Not shown on block:
    - With HF number.
- Regulatory / Environmental Specifications Apply;
- Technical Notes.

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.
3. 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)

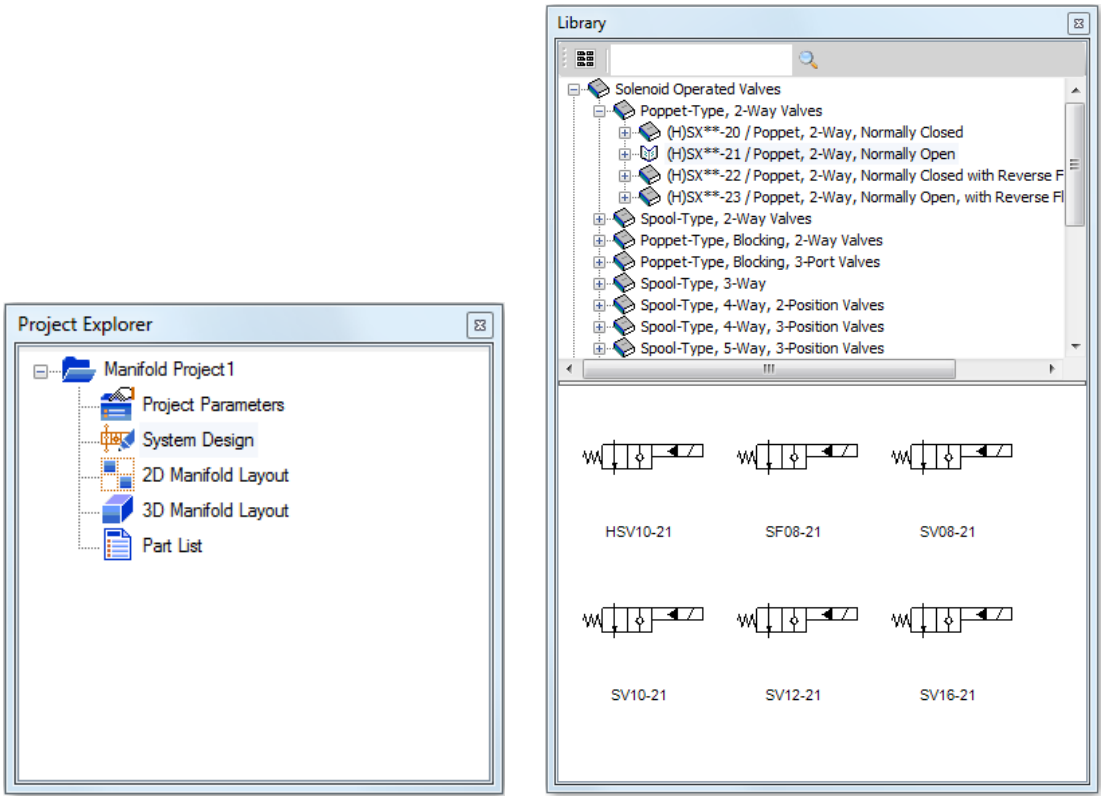


Figure 3-2: System Design Interface – Project Explorer and Library

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 hydraulic system. 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 Hydraulic Circuit Options" → "Default Page Setup". It allows specifying the default page format for every new diagram.

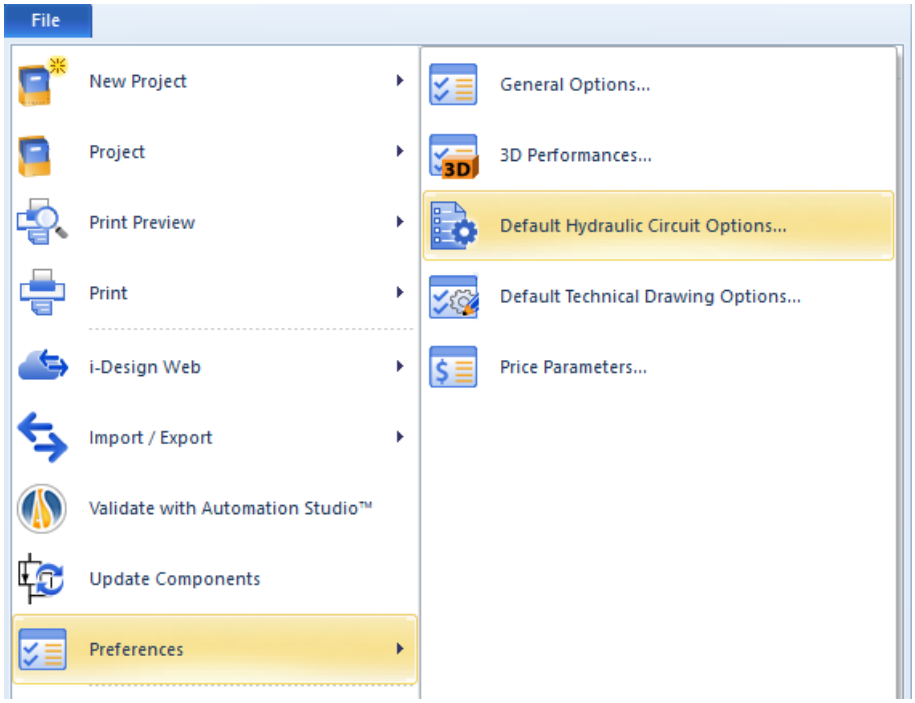


Figure 3-3: "Default Hydraulic Circuit Options" Menu

The "Default Hydraulic Circuit Options" dialog box allows the user to select the default diagram size, orientation and units.

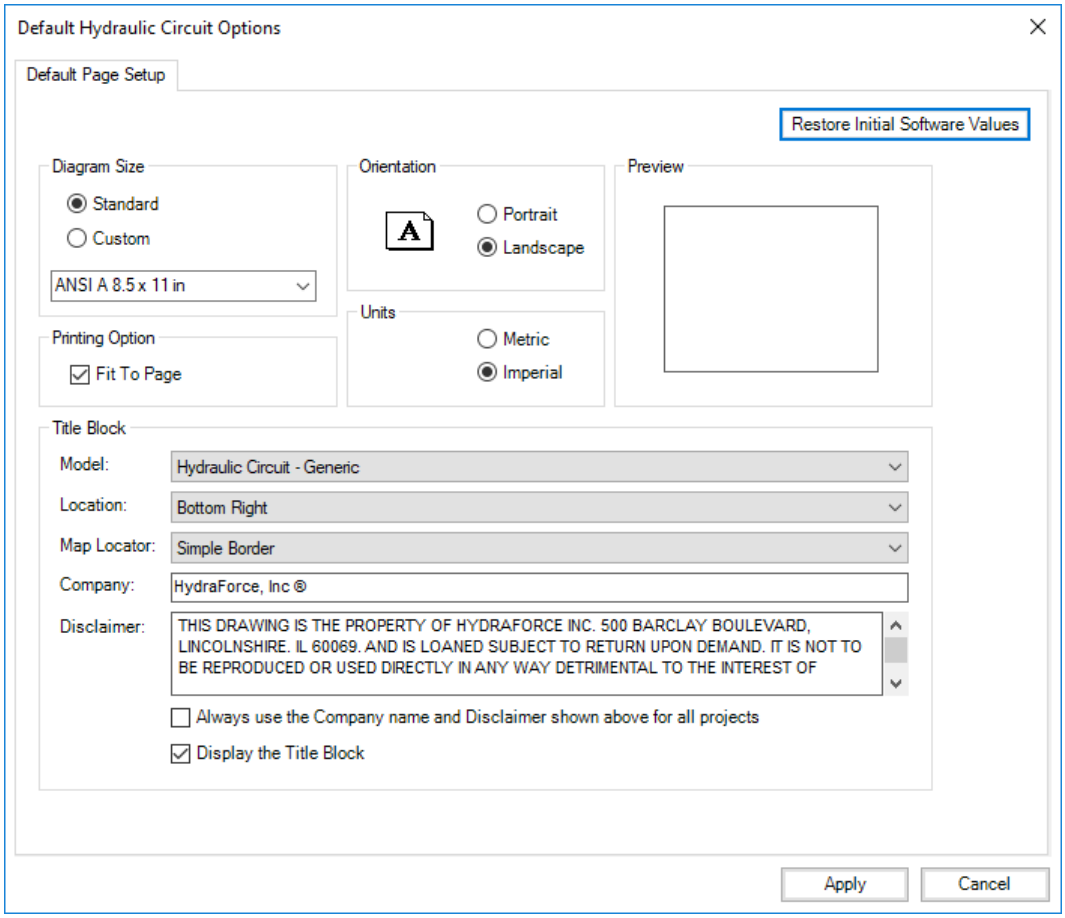


Figure 3-4: Hydraulic Circuit – Default Page Setup Dialog

3.1.2.3.3 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";

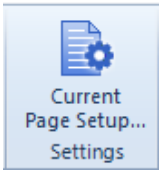


Figure 3-5: Design Tab – Current Page Setup

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".

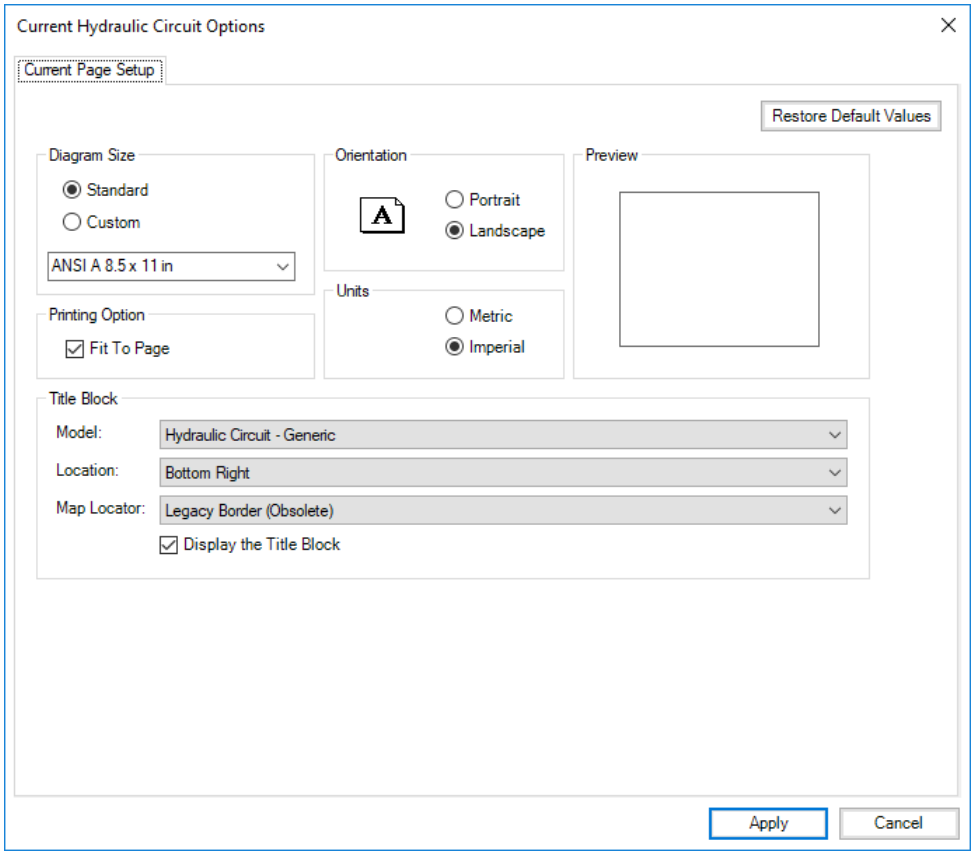


Figure 3-6: Hydraulic Circuit – Curent Page Setup Dialog

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".

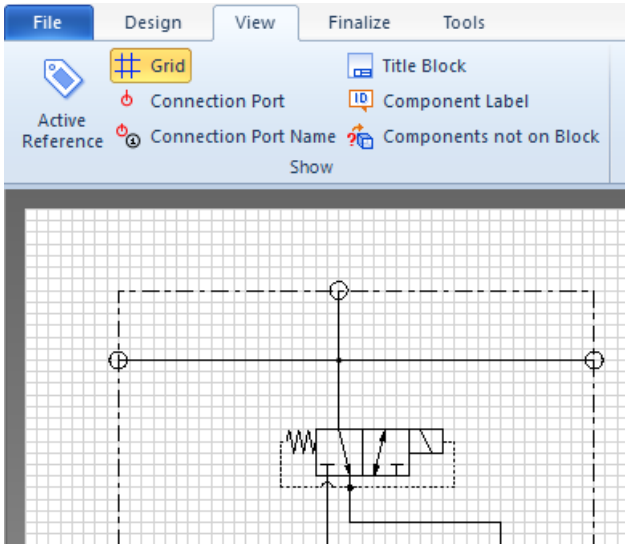


Figure 3-7: Activated Grid Function

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 → “Layout” group → “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” button in the “View” tab → “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” button in the “View” tab → “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” button in the “View” tab → “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” button on the “View” tab → “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” button on the “View” tab → “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.

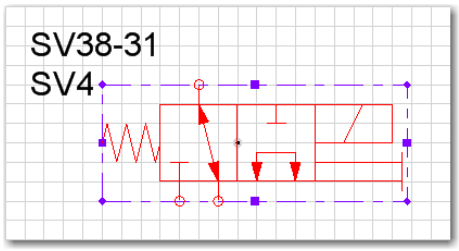


Figure 3-8: Selected Component on the Drawing Area

3.1.2.4.3 Selecting – Window Selection

To select multiple components using the selection window, 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.

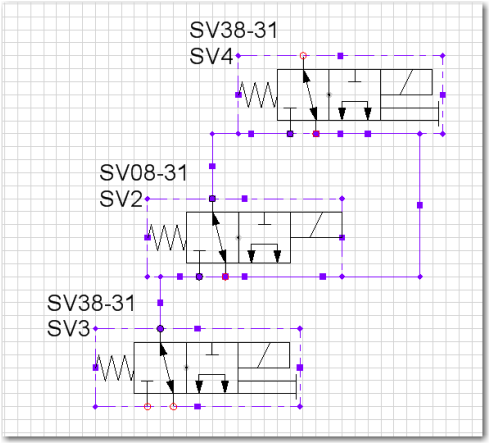


Figure 3-9: Multiple Components Selection on the Drawing Area

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:

Mouse pointer is on	Contents of the contextual menu
Component inserted in the drawing area	Undo (grayed if not available)
	Redo (grayed if not available)
	Cut
	Copy
	Paste (grayed if not available)

Mouse pointer is on	Contents of the contextual menu
	Delete
	Rotate Left
	Rotate Right
	Flip Horizontal
	Flip Vertical
	Properties
	Help
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.

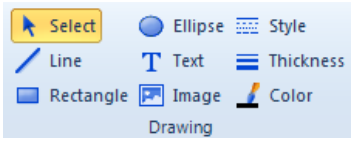


Figure 3-10: Drawing Group

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;

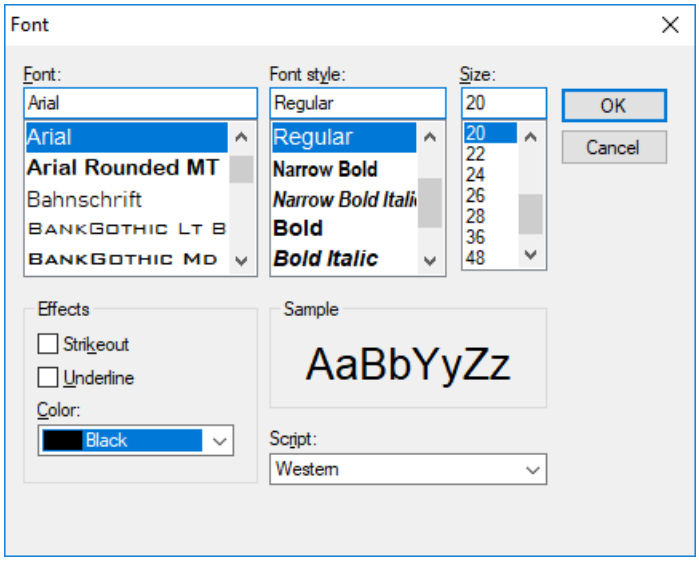


Figure 3-11: Text Attributes Dialog Box

The color selection can be done via the “Color” button located in the ribbon bar. The following dialog opens:

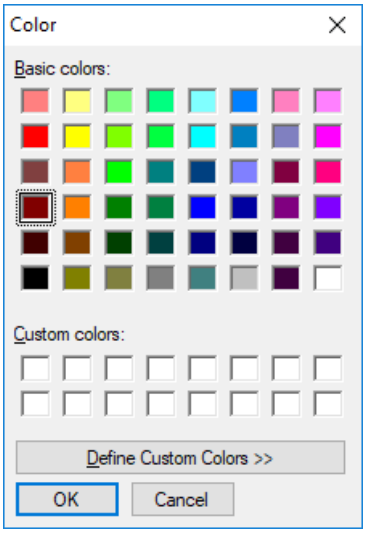


Figure 3-12: Color Picker

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.

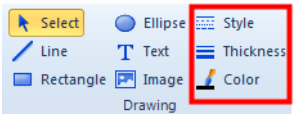


Figure 3-13: Graphical Element Attributes

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.

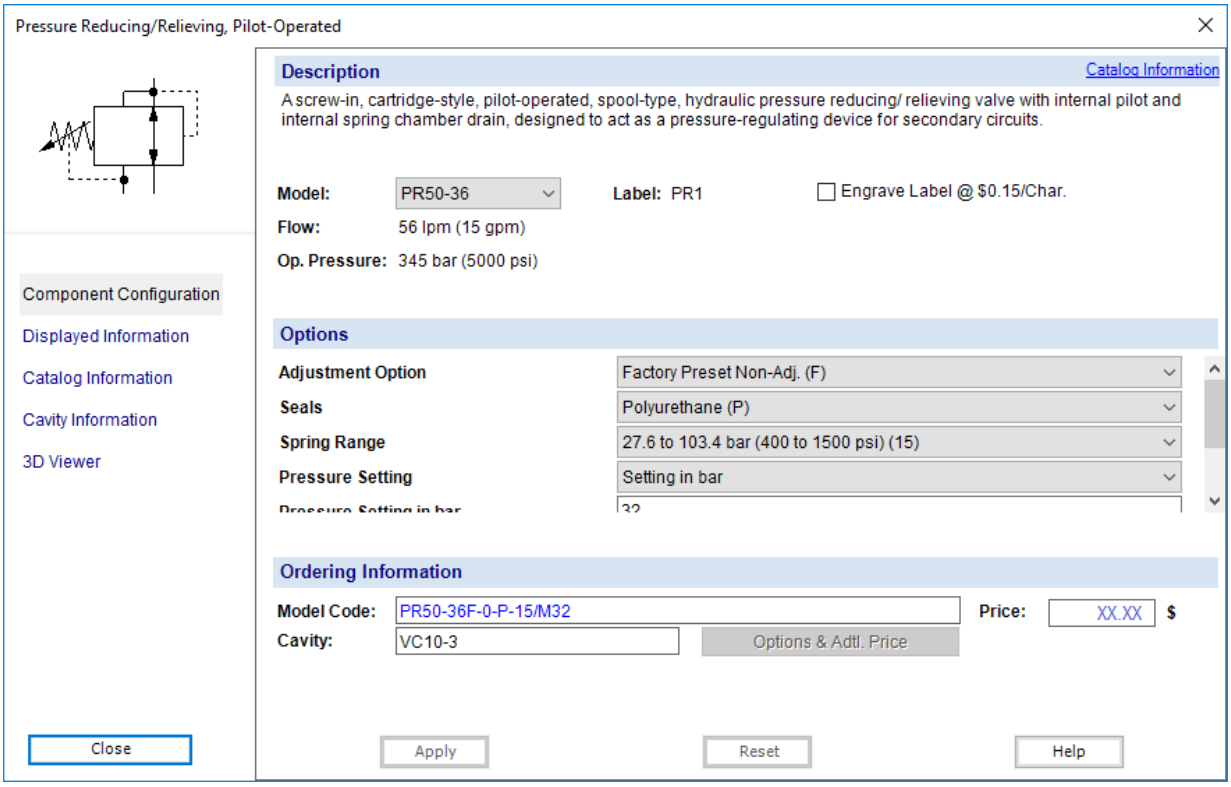


Figure-3-14: Component Properties Dialog

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.

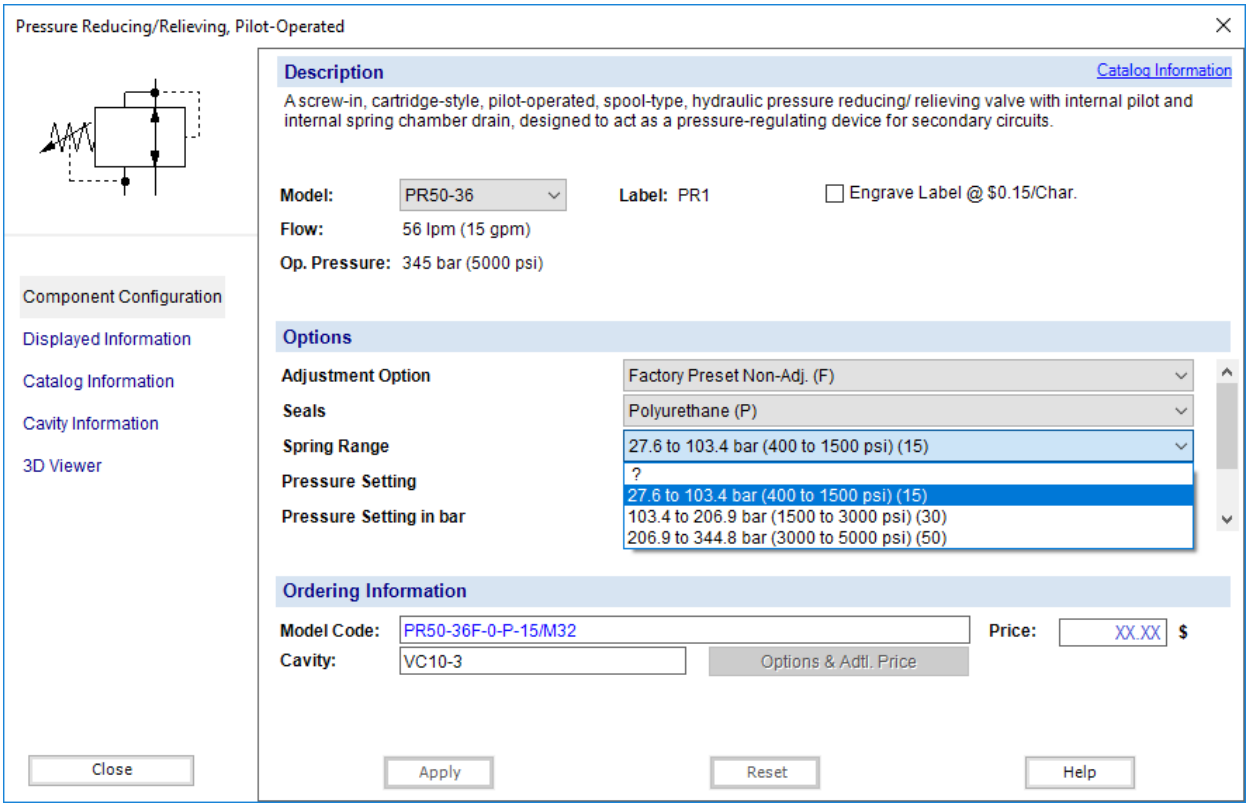


Figure 3-15: Component Properties Dialog – Component Configuration

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.

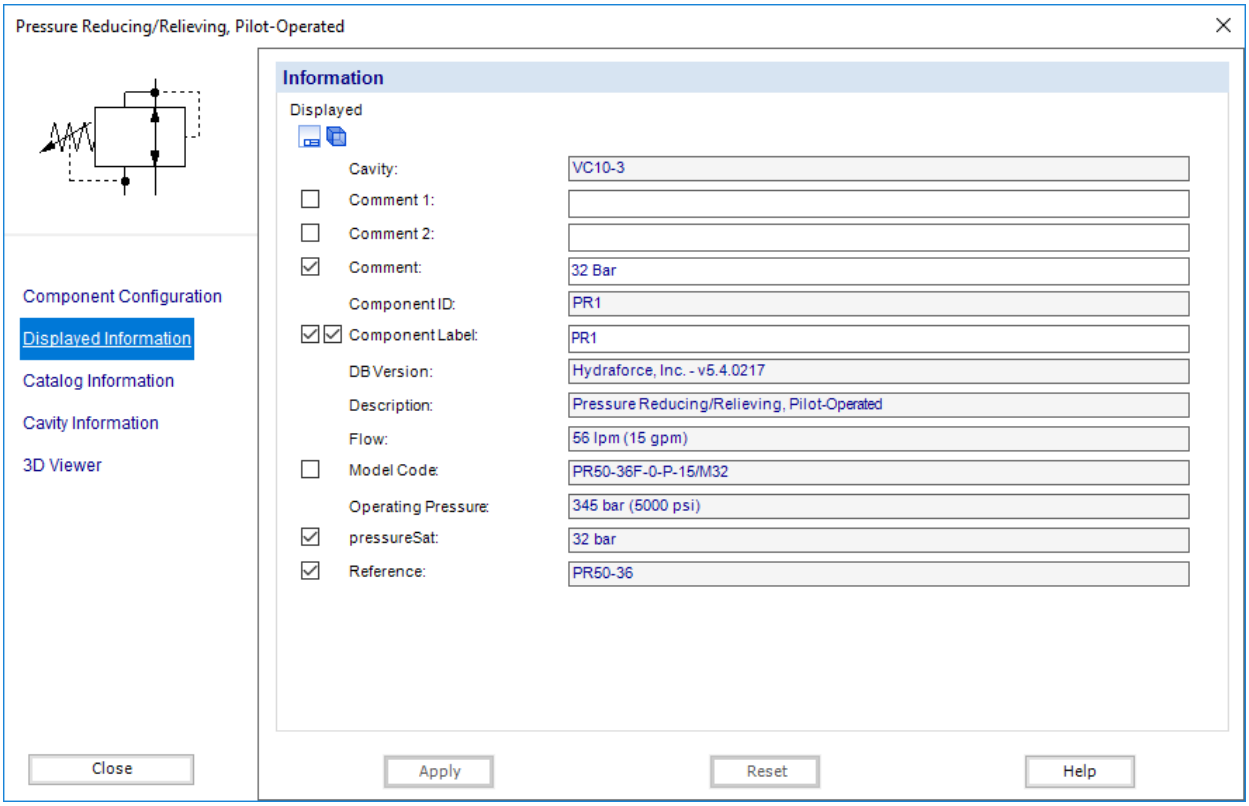


Figure 3-16: Component Properties Dialog Box – Displayed Information

3.1.3.6 Catalog Information

This section will bring up the PDF catalog page for the current component model.

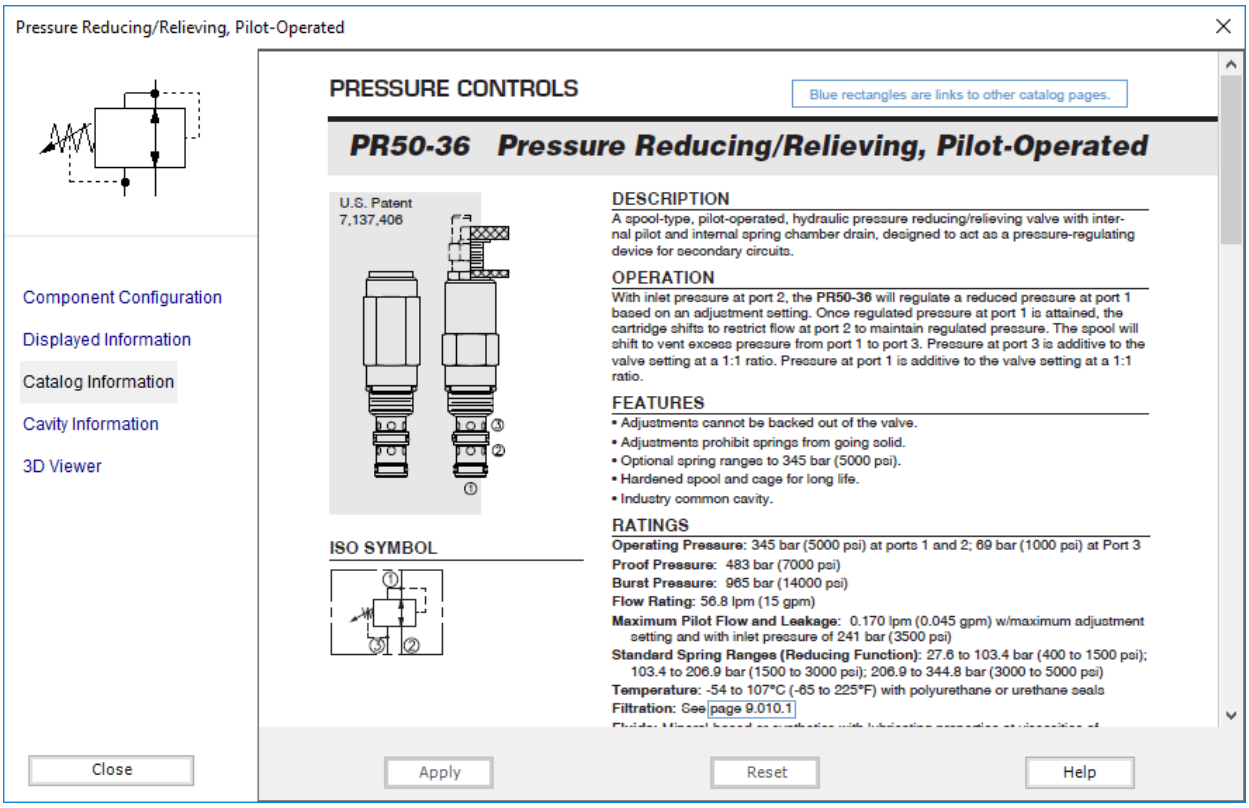


Figure 3-17: Component PDF Data Sheet

3.1.3.7 Viewing Custom Components

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.

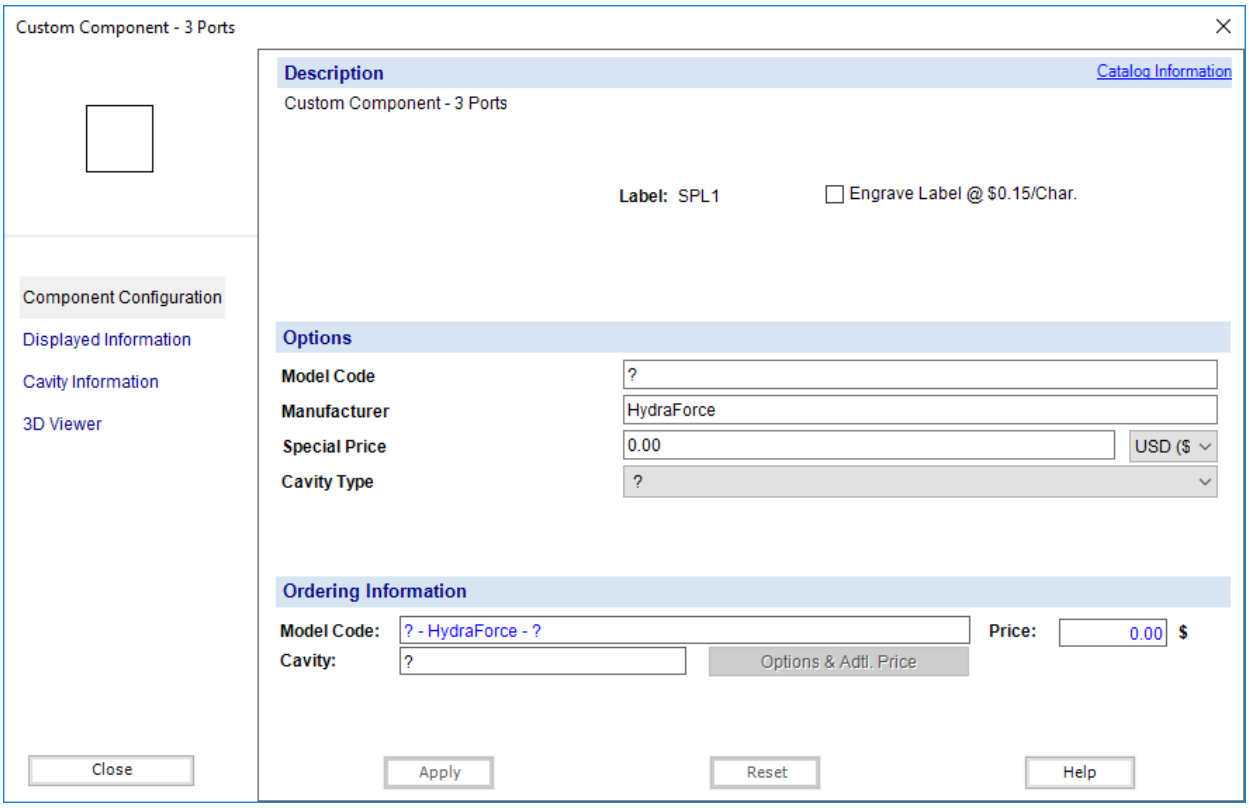


Figure 3-18: Viewing of a 3 Ports Custom Component

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:

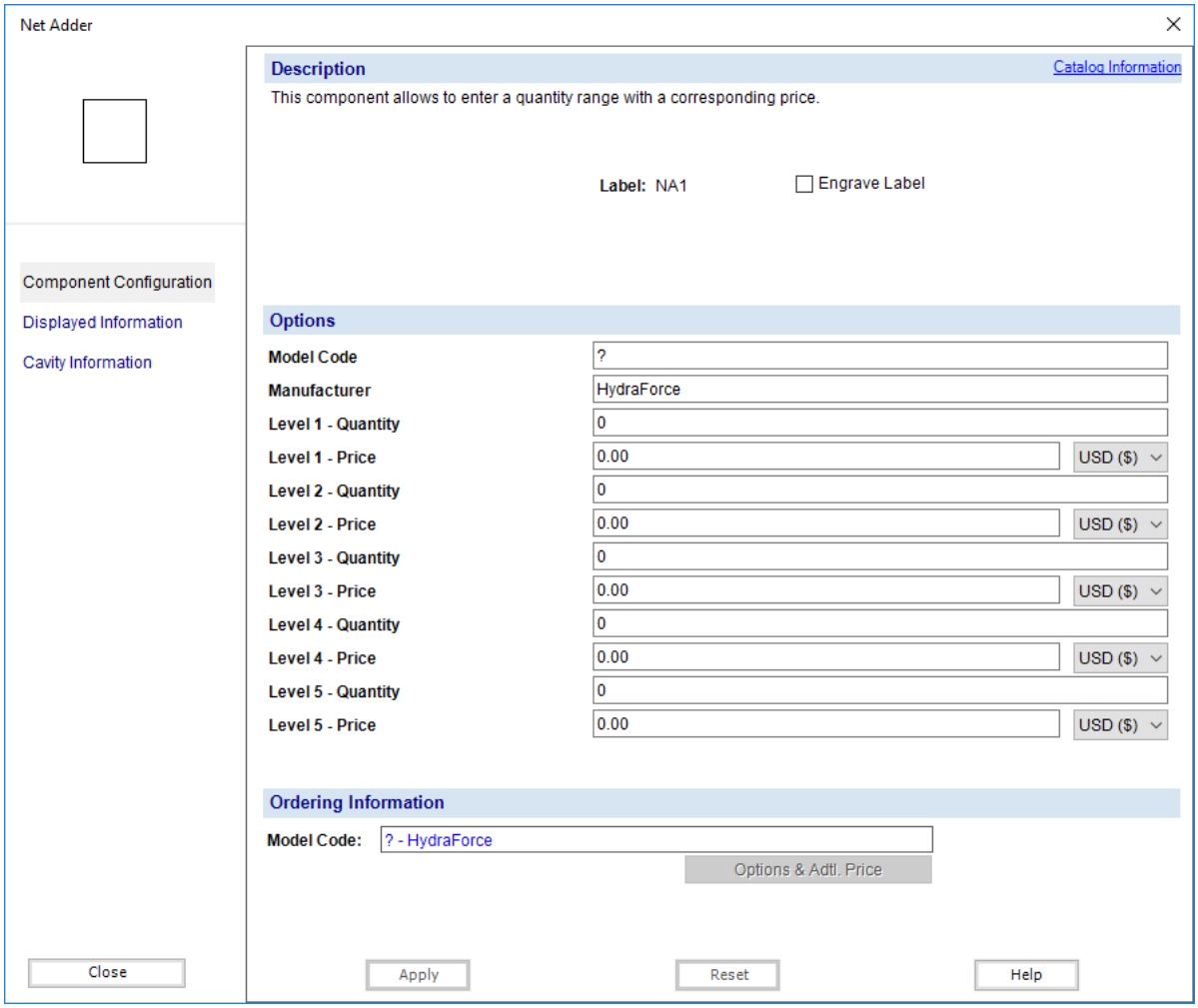


Figure 3-19: Net Adder Component (Component Configuration)

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;

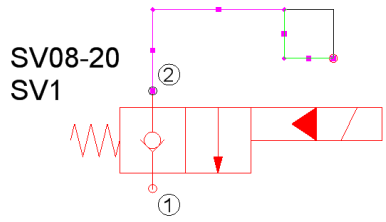


Figure 3-20: Modifying the Shape of a Link

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).

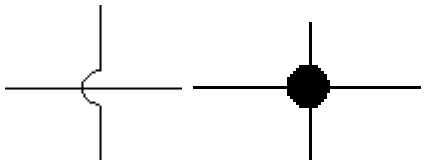


Figure 3-21: Line Jump and Line Connection

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:

Line type	Default Appearance (Example)
Pressure	Solid Black Line
Return	Solid Black Line
Pilot	Short Dashed Black Line
Drain	Short/Long Dashed Black Line
Load Sense	Short/Long Dashed Black Line
Other	Solid Black Line

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

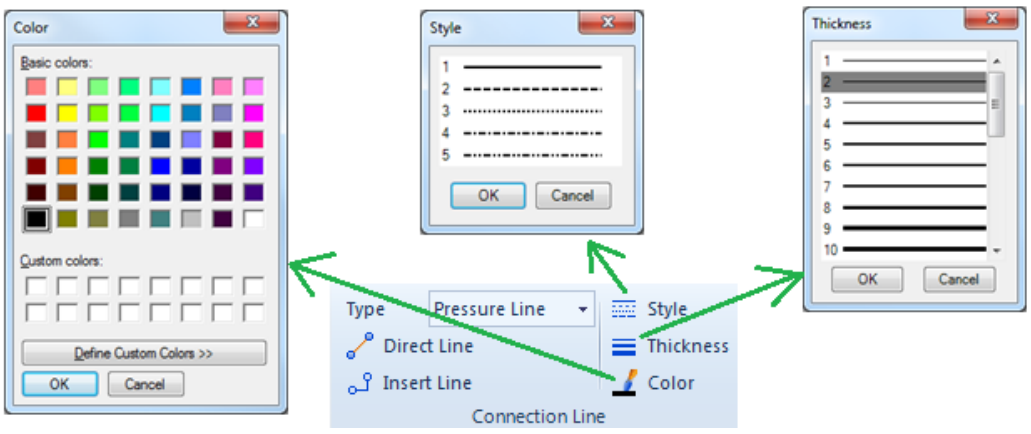


Figure 3-22: Modifying a Connection Line

3.1.4.1.3.3 Behavior for the modifications of Connection Line

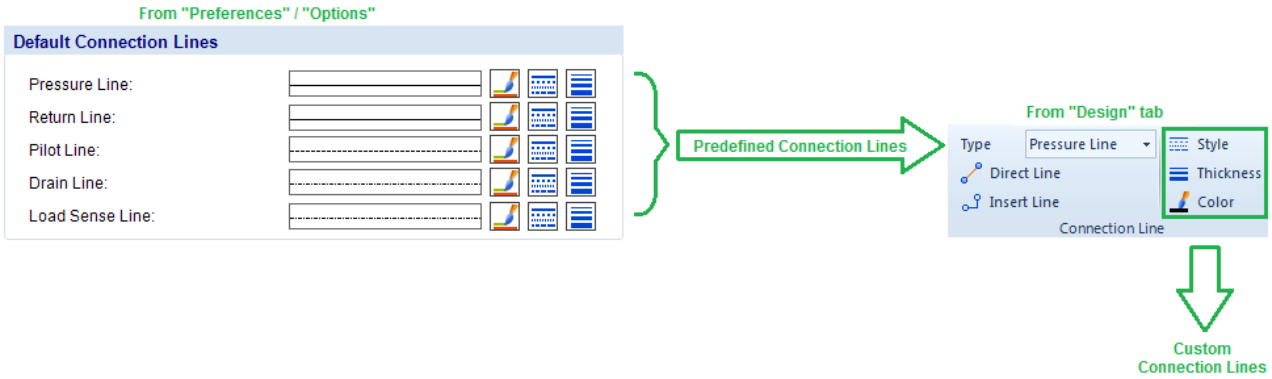


Figure 3-23: Connection Lines Behavior

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.

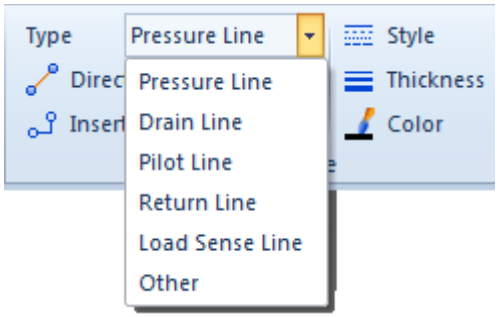


Figure 3-24: Connection Lines Selection

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.

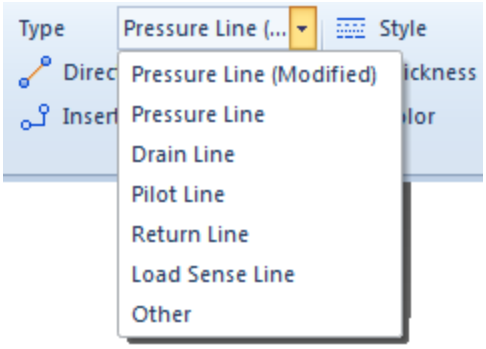


Figure 3-25: Connection Lines Selection – Modified

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.

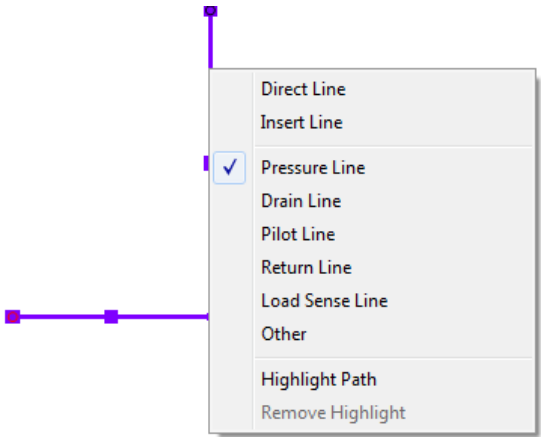


Figure 3-26: Selecting Line Type

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.

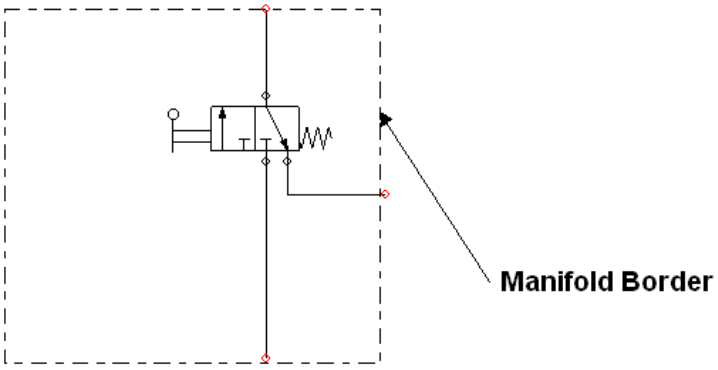


Figure 3-27: Manifold Border

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":

- 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.

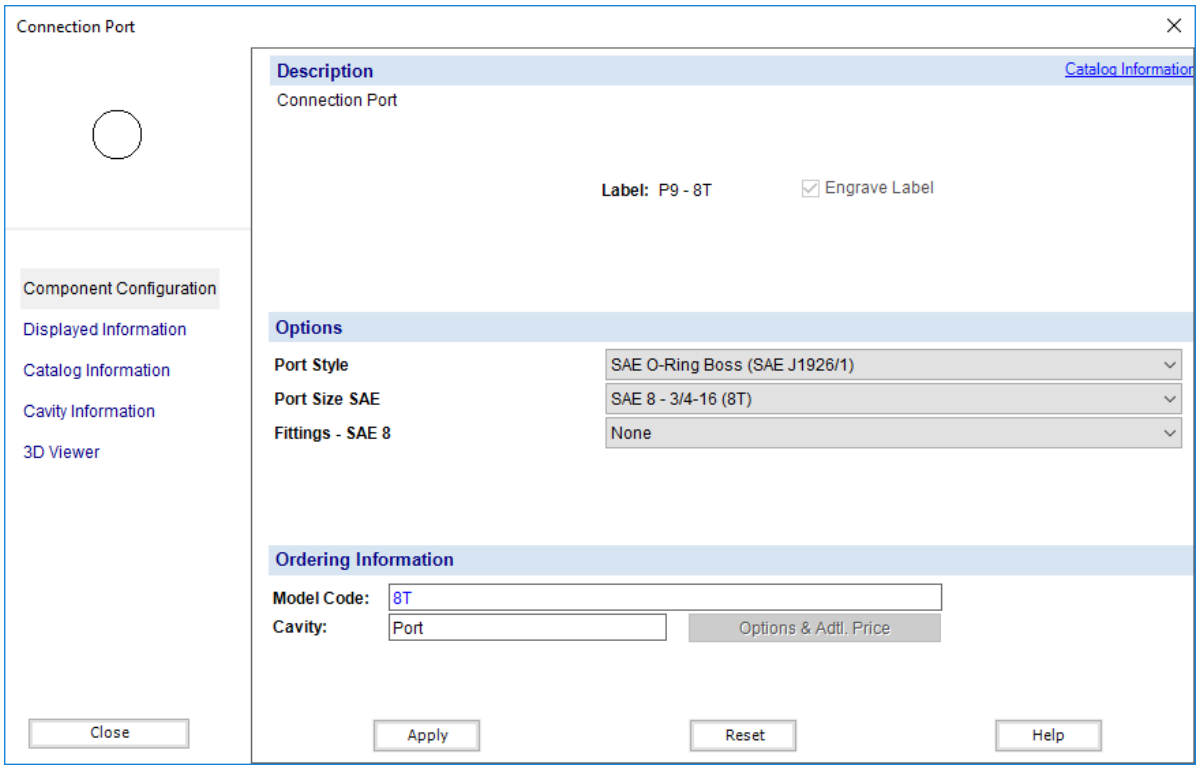


Figure 3-28: Connection Port Component Properties

3.1.4.4 Adding Orifice Discs

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;
4. Appear on the Report (Not check by default).

3.1.5 Manifold Layout Interface

The manifold layout interface 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” editor;

The “3D Manifold Layout” interface is an isometric view of the manifold block. It can be rotated to view each of its faces.

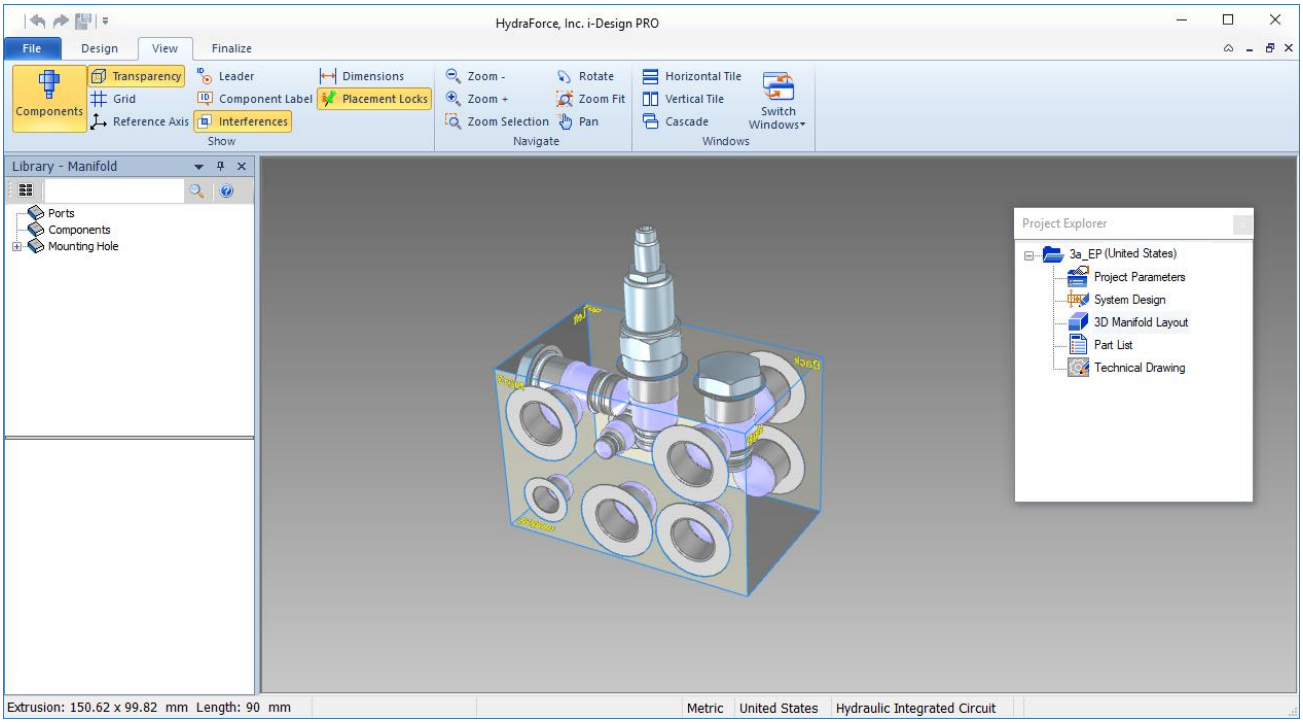


Figure 3-29: 3D Manifold Layout Interface

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.

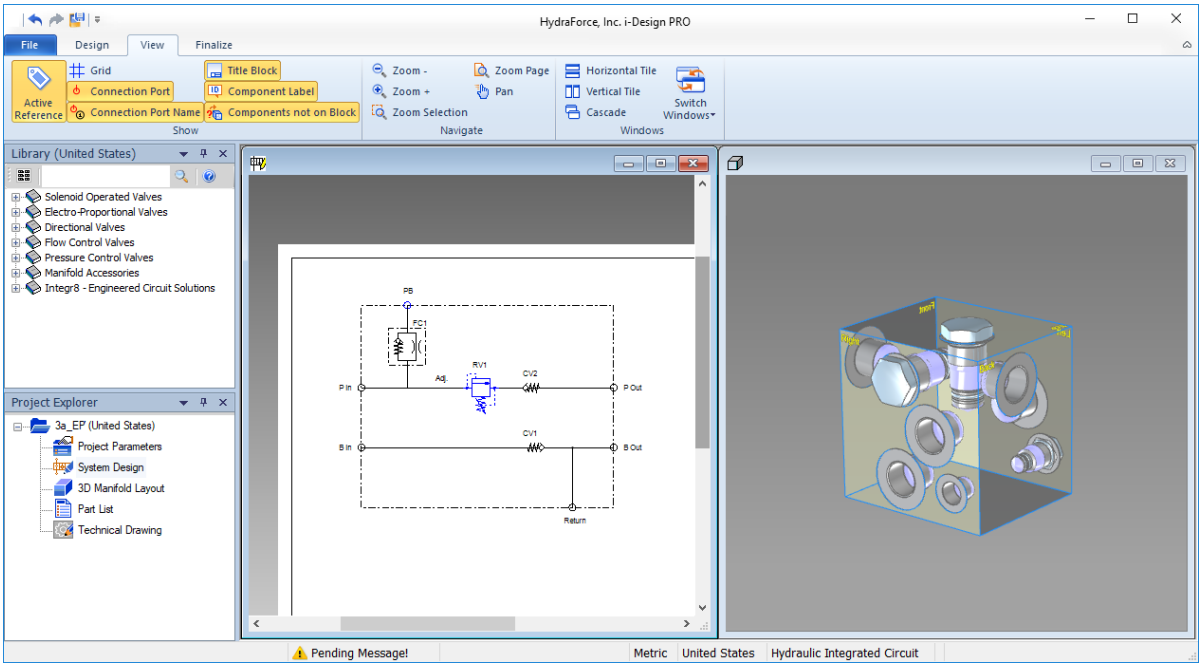


Figure 3-30: "Components not on the Block" Function

Note: It is greatly recommended to use this feature in conjunction with a split screen environment, "System Design" side-by-side with the 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;
2. Components;
3. Mounting Holes;

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

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.

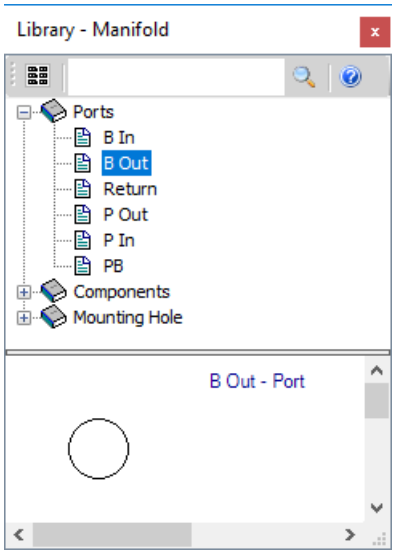


Figure 3-31: Ports in the Manifold Layout Library

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.

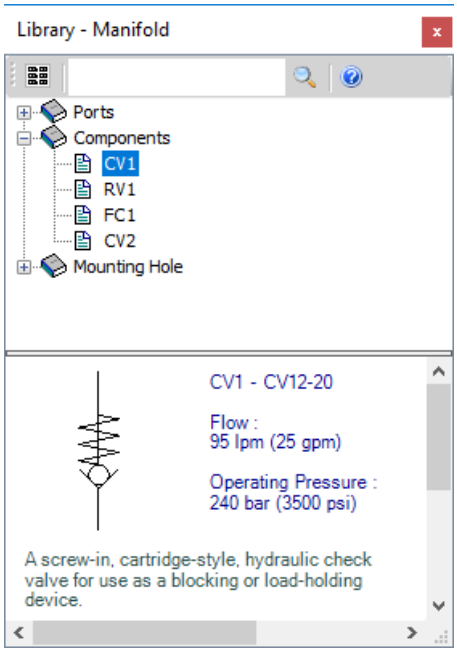


Figure 3-32: Component in the Manifold Layout Library

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 3D manifold layout editor allows 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" editor 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.

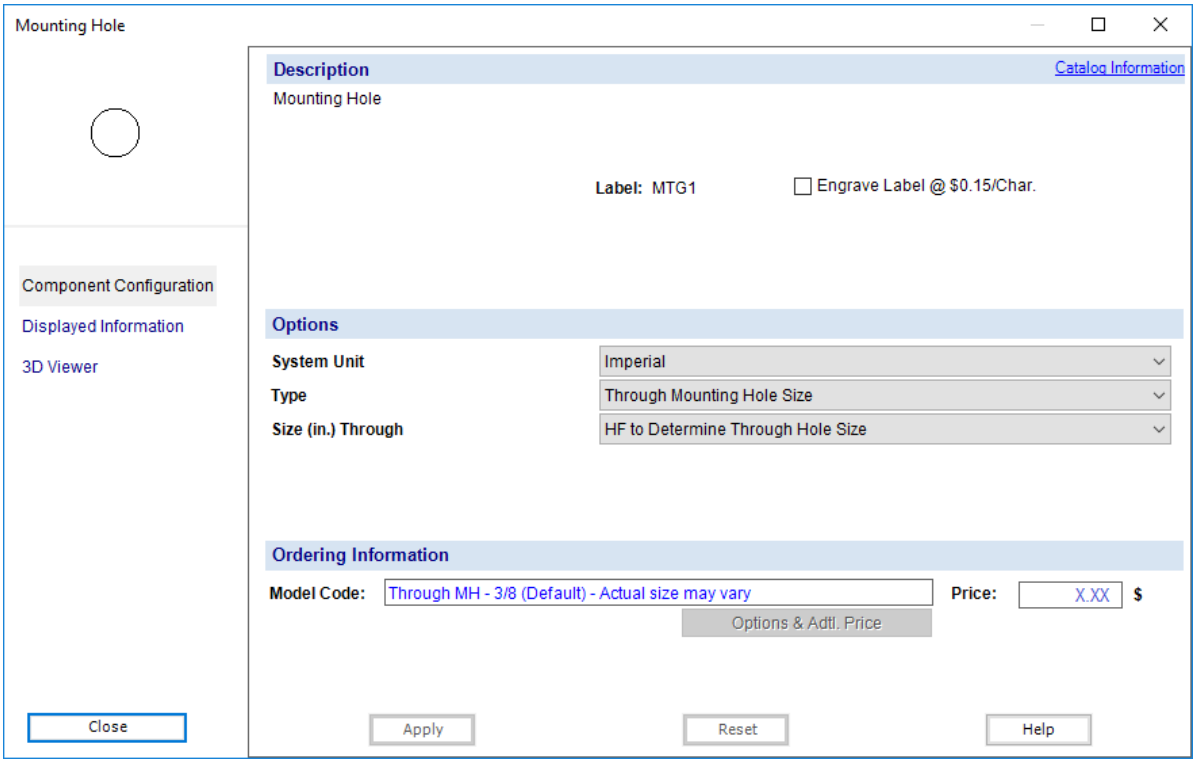


Figure 3-33: Mounting Hole Component Properties Dialog Box

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;

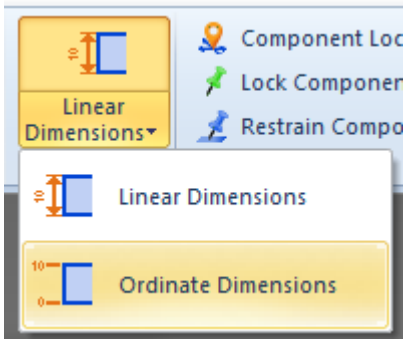


Figure 3-34: Dimension Type Selection

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;

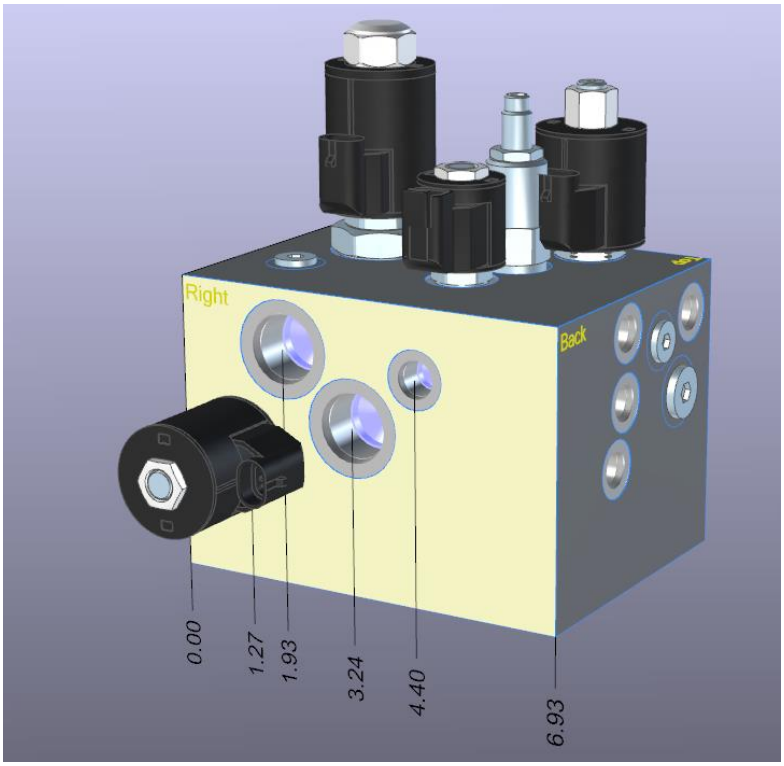


Figure 3-35: Ordinate Dimension Lines

To insert a linear dimension:

1. Select the "Ordinate Dimension" button in the "Design" tab → "Block" group;
2. Anchor points are displayed on each block corner and elements on the block, move over the desired anchor point;
3. Click the left mouse button to create the first side of the dimension;
4. Move over to the next desired anchor point;
5. Click the left mouse button to finalize the dimension between the first and second anchor points;

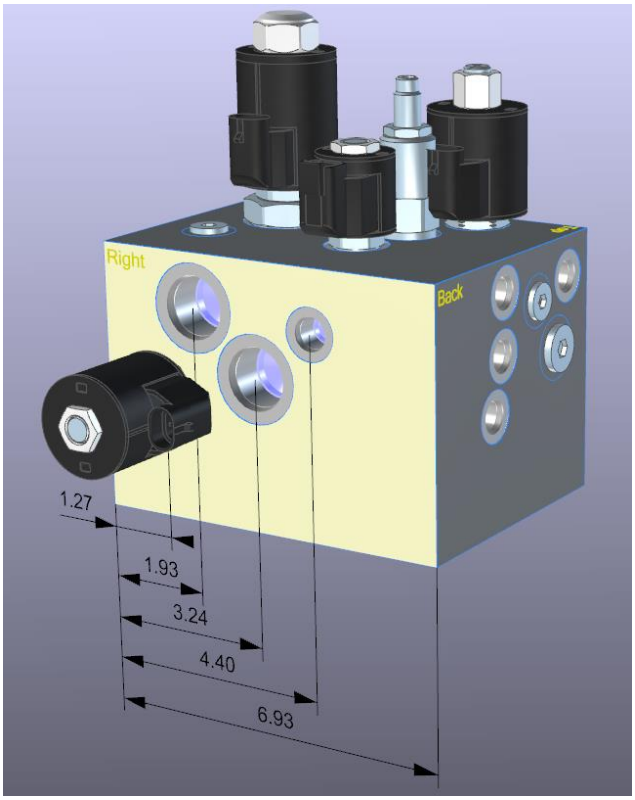


Figure 3-36: Linear Dimension Lines

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;

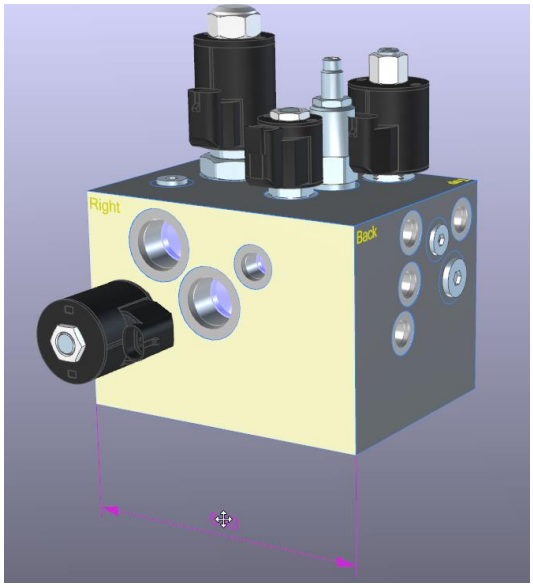


Figure 3-37: Changing Dimension Location

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";

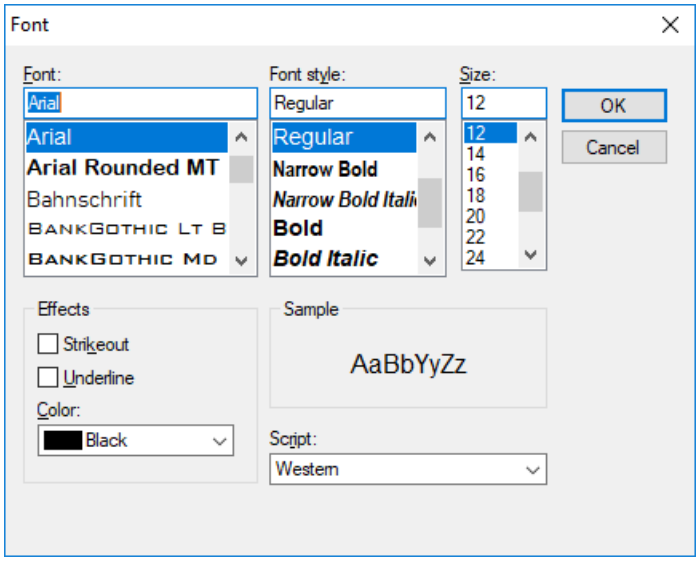


Figure 3-38: Dimension Properties Dialog

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;

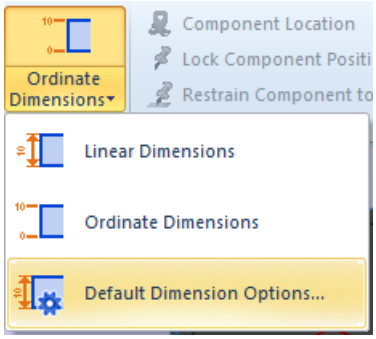


Figure 3-39: Default Dimension Options

3. The "Default Dimension Options" dialog opens. Make the changes and click on "OK". These changes will take effect upon newly created dimension;

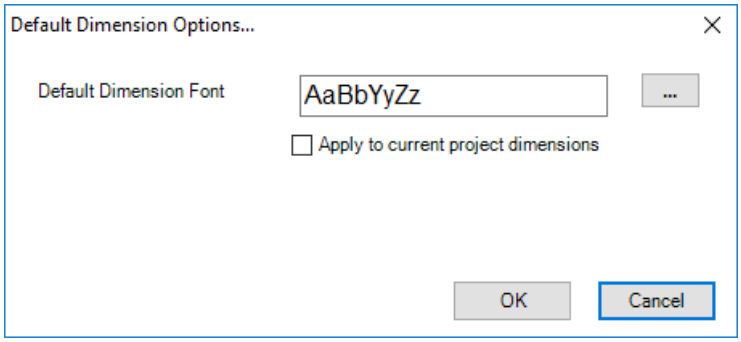


Figure 3-40: Default Dimension Properties Dialog

3.1.6 Manifold Manipulations

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 Layout

The 3D manifold layout 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;
- Dimensions;
- Placement Locks.

3.1.7.1 Transparency

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

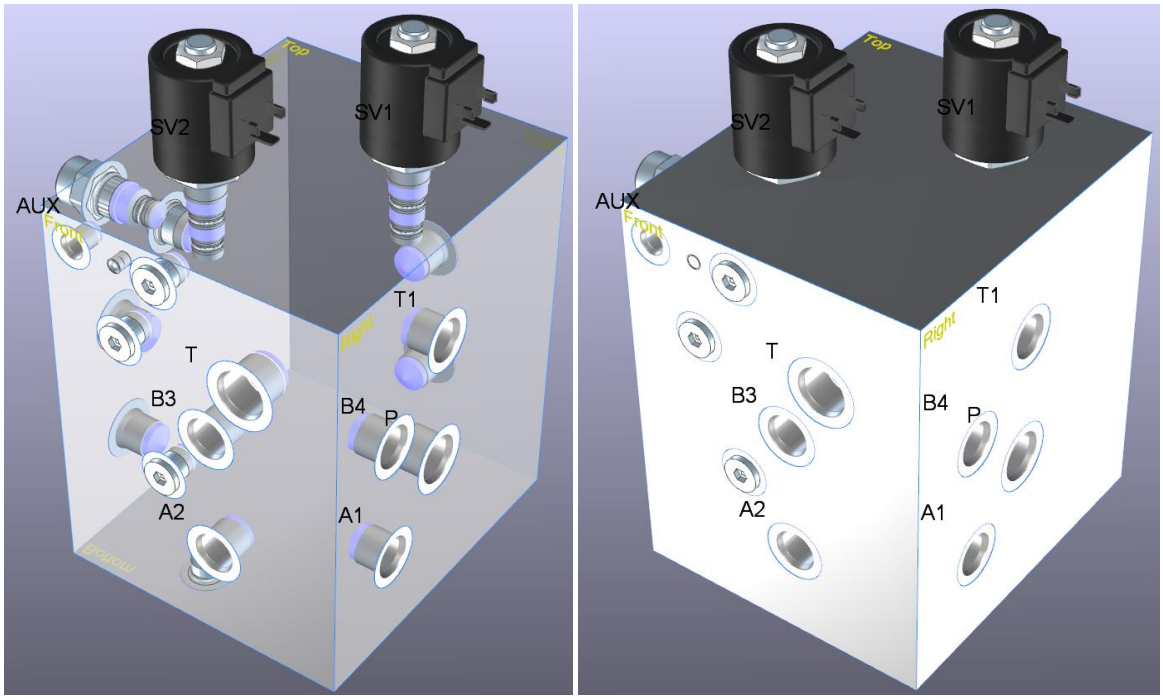


Figure 3-41: Transparent vs. Solid View

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.

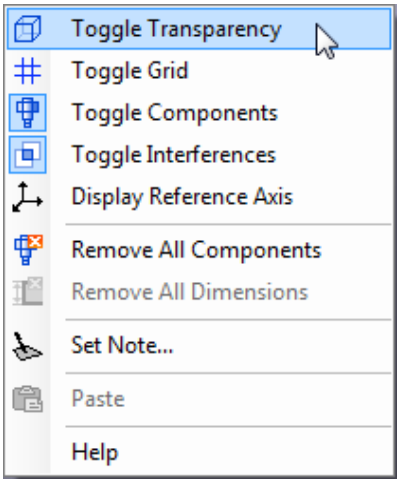


Figure 3-42: Transparency Option

3.1.7.2 View Components

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

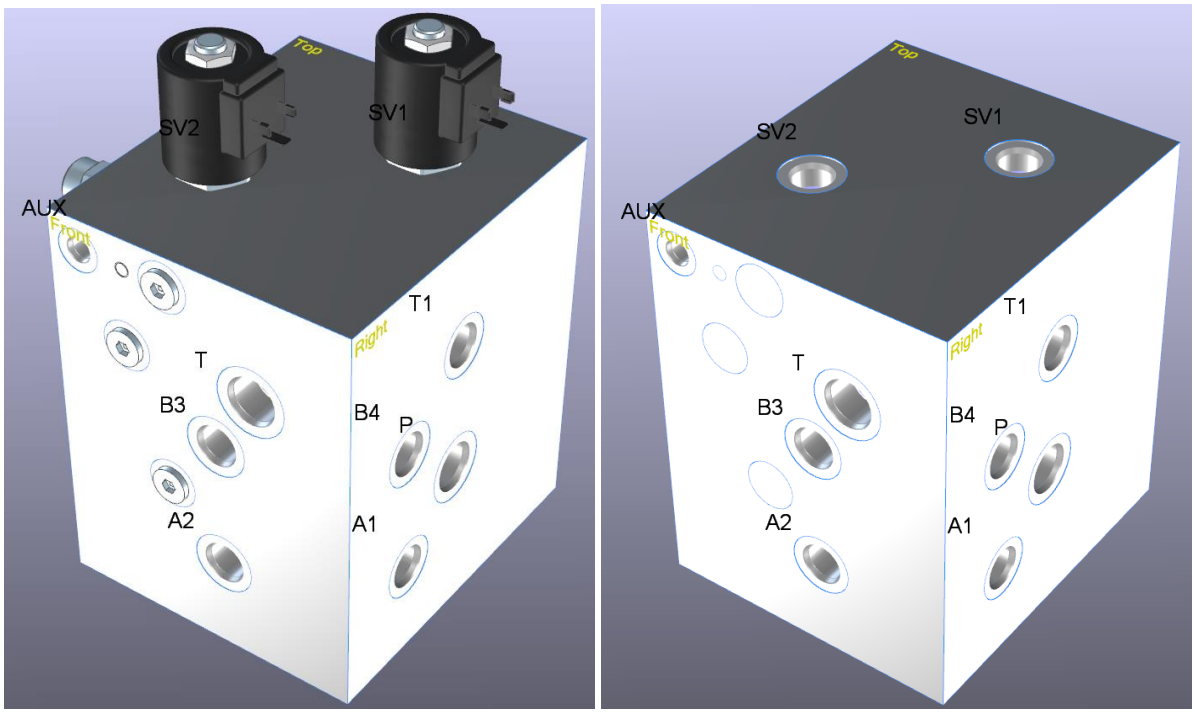


Figure 3-43: View of the Complete Components vs. the Cavities Only

There is 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.

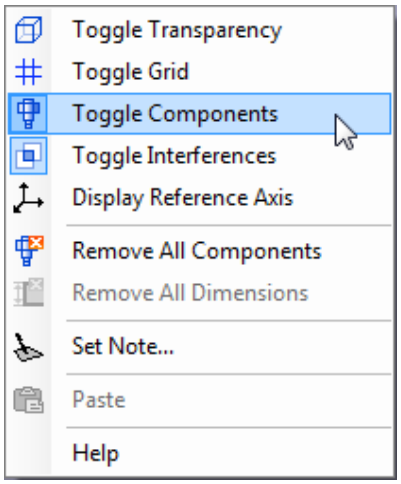


Figure 3-44: View Components Option

3.1.7.3 Manifold Grid

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

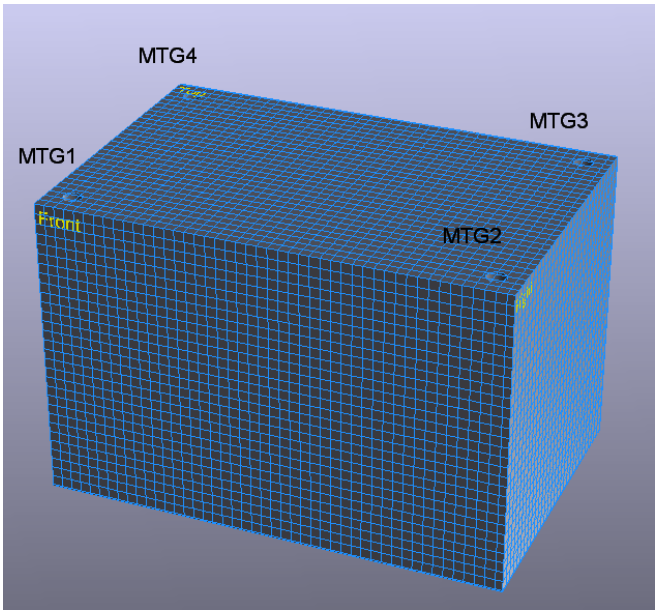


Figure 3-45: Grid in 3D Manifold Layout

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

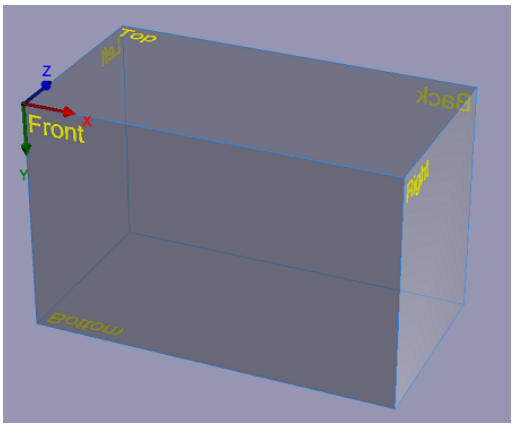


Figure 3-46: Reference Axis

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.

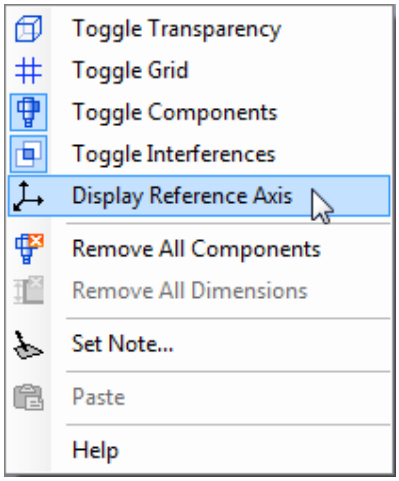


Figure 3-47: View Reference Axis Option

3.1.7.5 View Leader

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

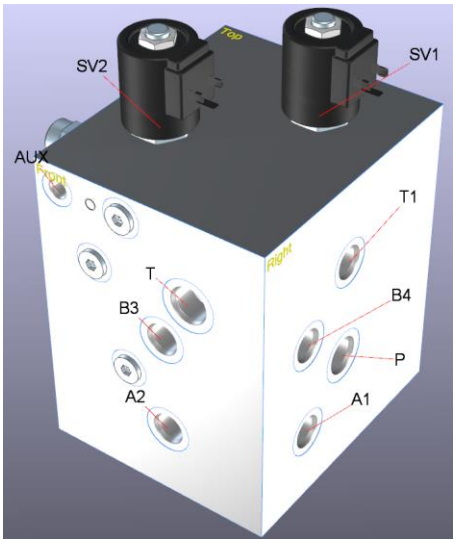


Figure 3-48: Lines Showing the Owners of the IDs

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 Label

The 3D manifold interface may be configured to display/hide the component's Labels. By default, the component's Labels are displayed.

To change the "Component's Labels" 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 3D manifold interface may be configured to display/hide the physical cavities interferences in red. By default, the interferences are displayed.

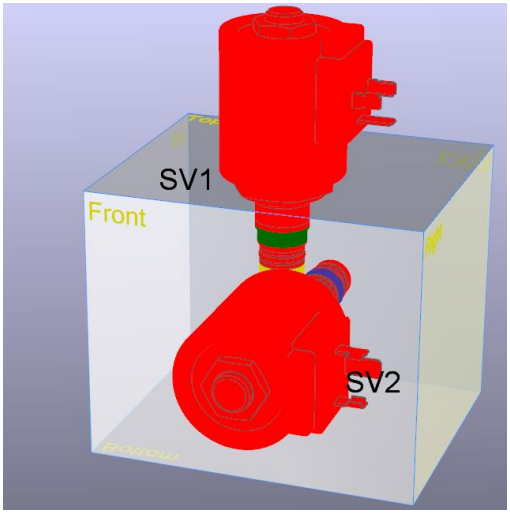


Figure 3-49: Components Interfering

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.

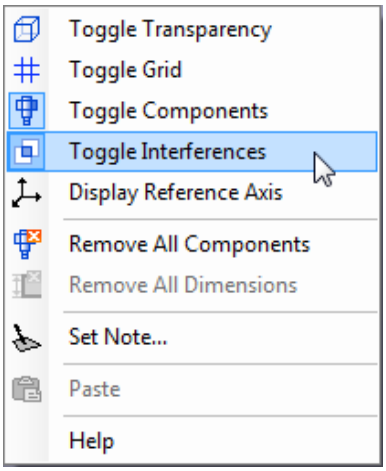


Figure 3-50: View Interferences Option

3.1.7.8 View Dimensions

The 3D manifold interface 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 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 3D manifold interface 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.

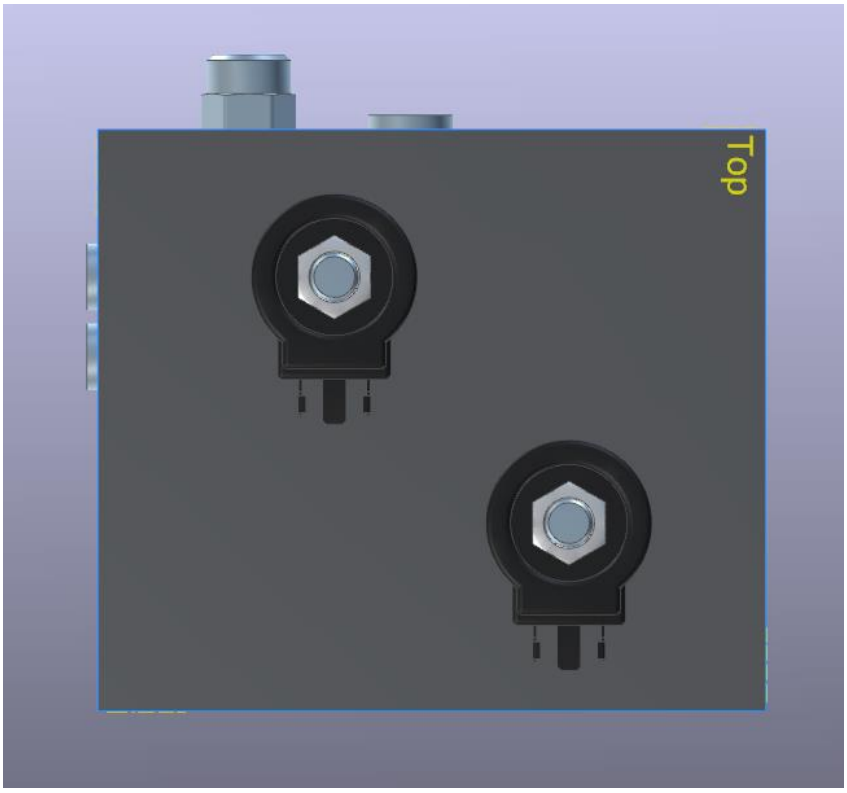


Figure 3-51: 3D Top Face in Flat View

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;

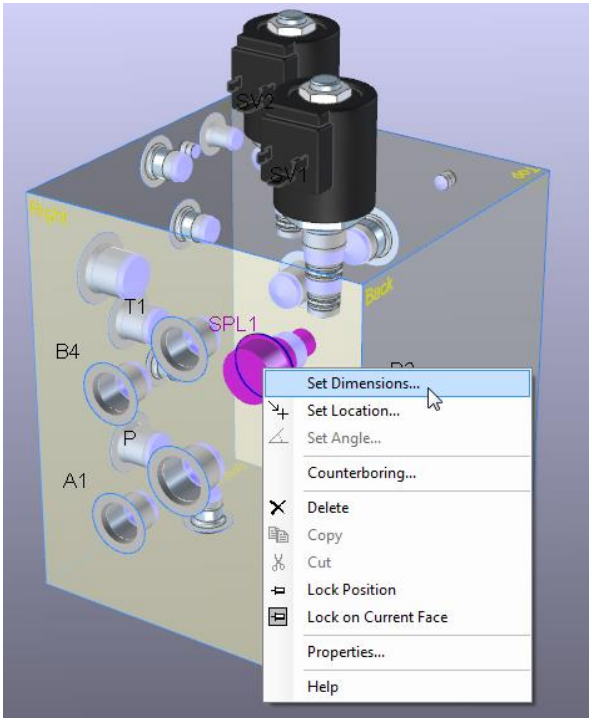


Figure 3-52: 3D Set Dimensions

3. Select the envelop shape in the dialog box that opened;
4. Enter the dimensions of the component.

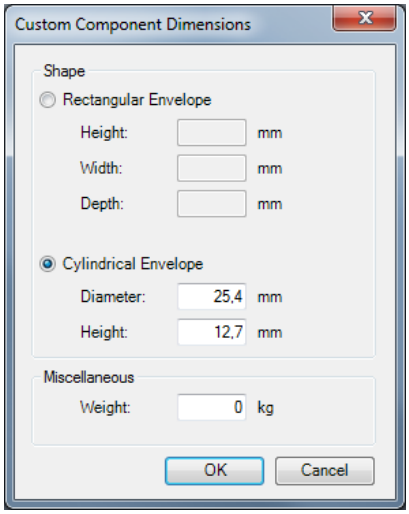


Figure 3-53: Custom Component Envelop Dimensions

Note: Cavities envelops shapes and sizes will be used to signal interferences with other cavities or the manifold edges.

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 in the "Flat" view;
3. By right clicking on the component and choosing "Set Location" from its contextual menu.

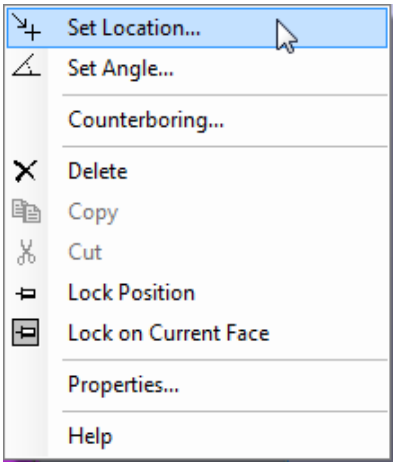


Figure 3-54: Set Location Command

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)

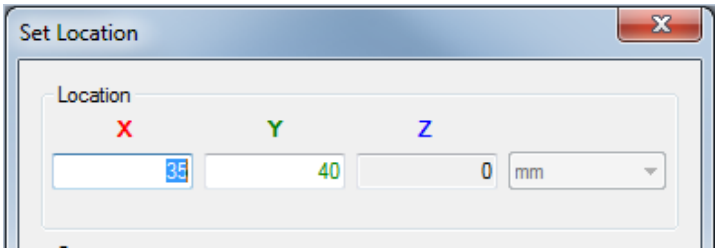


Figure 3-55: Set Location X, Y, Z Fields

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;

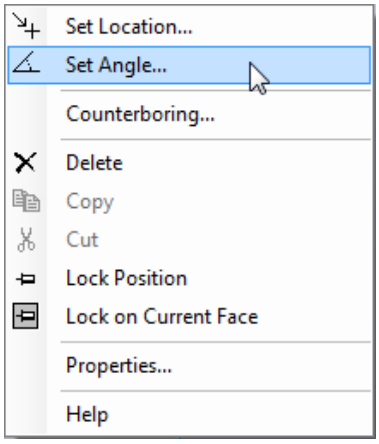


Figure 3-56: Set Angle Command

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

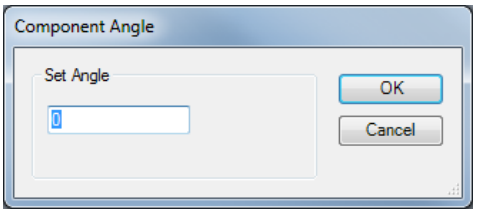


Figure 3-57: Component Angle Dialog

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;

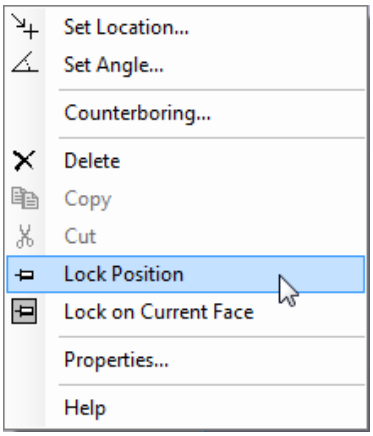


Figure 3-58: Lock Position Command

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.

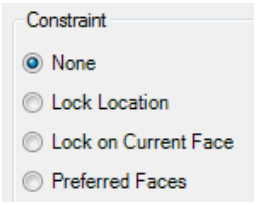


Figure 3-59: Lock Location Radio Button

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 are 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.

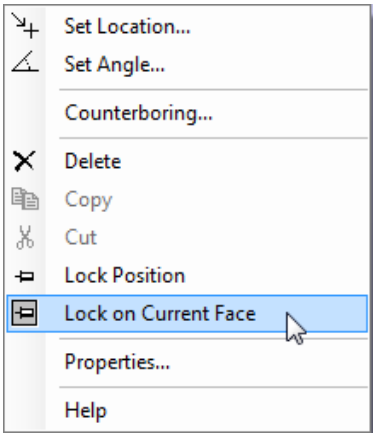


Figure 3-60: Lock on Current Face Command

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.

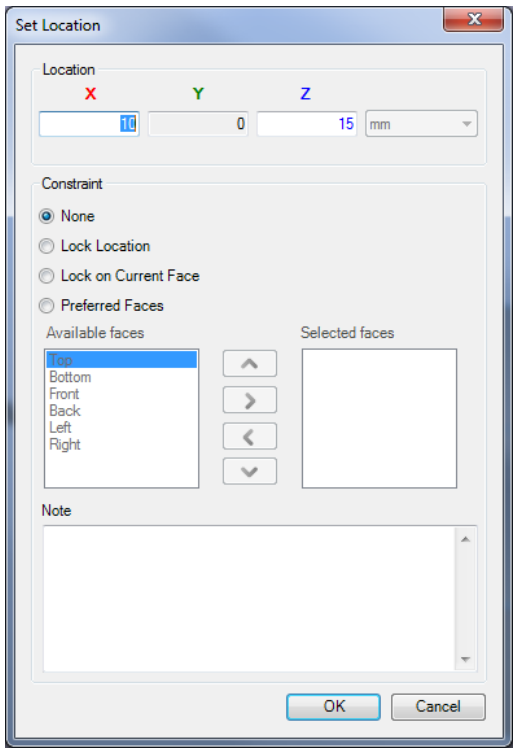


Figure 3-61: Preferred Faces Defined in Set Location Dialog Box

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;

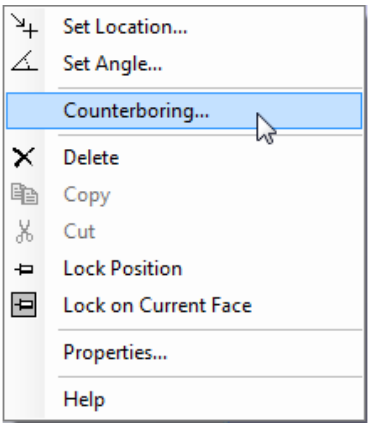


Figure 3-62: Counterboring Command in the Contextual Menu

3. Configure the depth and the diameter of the desired counterboring for this component.

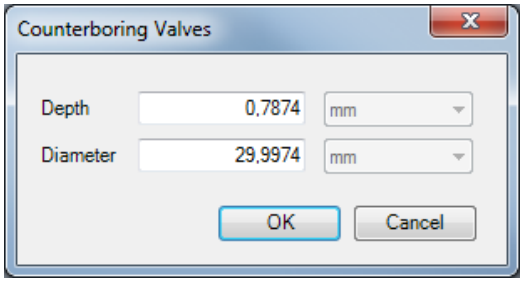


Figure 3-63: Counterboring Dialog Box

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 3D manifold interface. The unit defined when the project has been created is used.

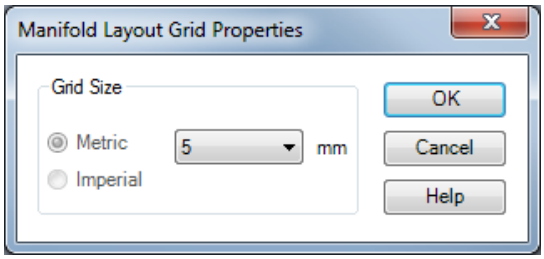


Figure 3-64: Manifold Layout Grid Properties Dialog Box

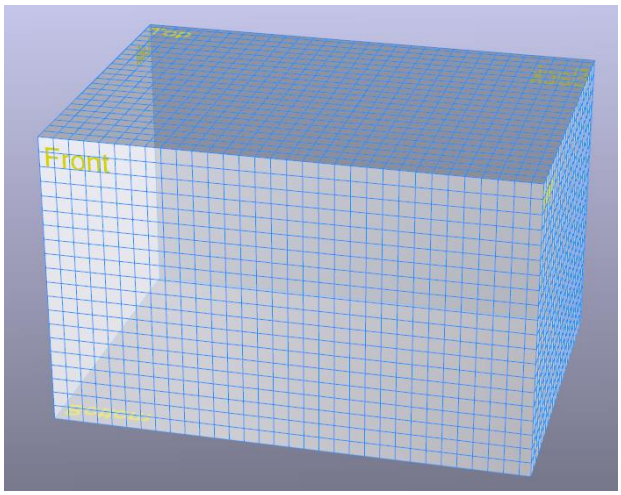


Figure 3-65: Manifold Grid

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 "Flat" view:

1. Double click on the face where the note must appear to display it in flat mode;
2. Right click on the faces where you want to add the note;
3. Select "Set Note" in the contextual menu;

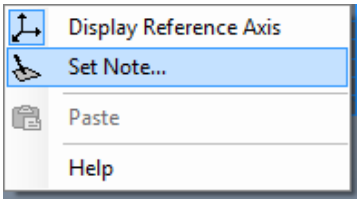


Figure 3-66: Set Note Command in the Manifold Face Contextual Menu

4. Type in the note;

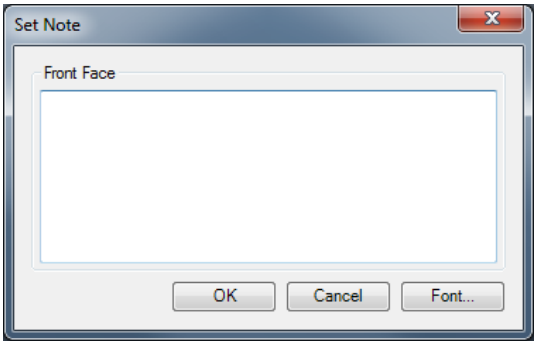


Figure 3-67: Set Note Dialog Box

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

A note is now displayed below the face.

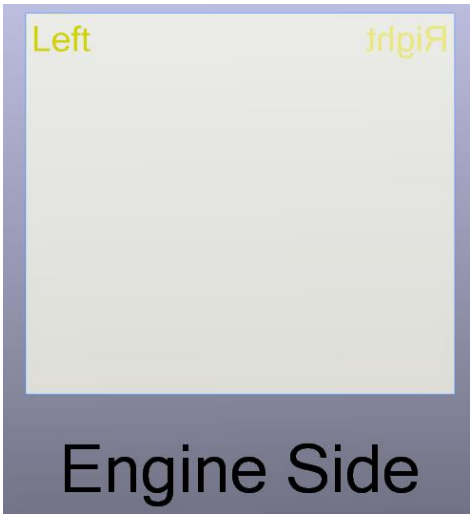


Figure 3-68: Note Added to the Manifold Left Face

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.

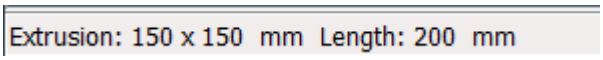


Figure 3-69: Extrusion Size and Length in the Status Bar

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 "3D Manifold Layout" and double click on a face to display it in "Flat mode".
2. Activate the resizing mode be clicking on the "Show Resize Handles" tool in the "Design" tab → "Block" group.

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

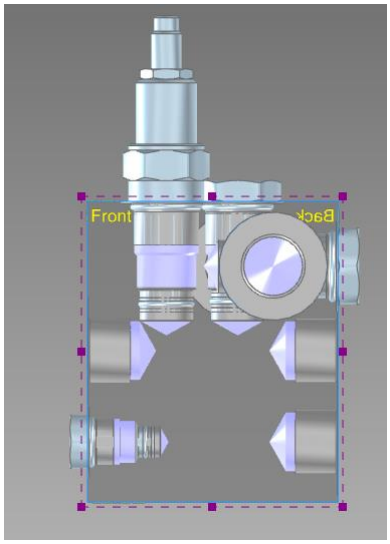


Figure 3-70: The Manifold Layout Interface in Resizing Mode

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".

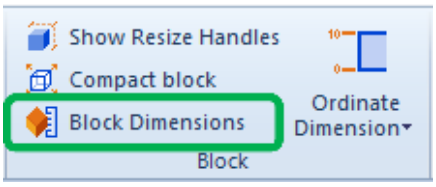


Figure 3-71: Manifold Dimensions…

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

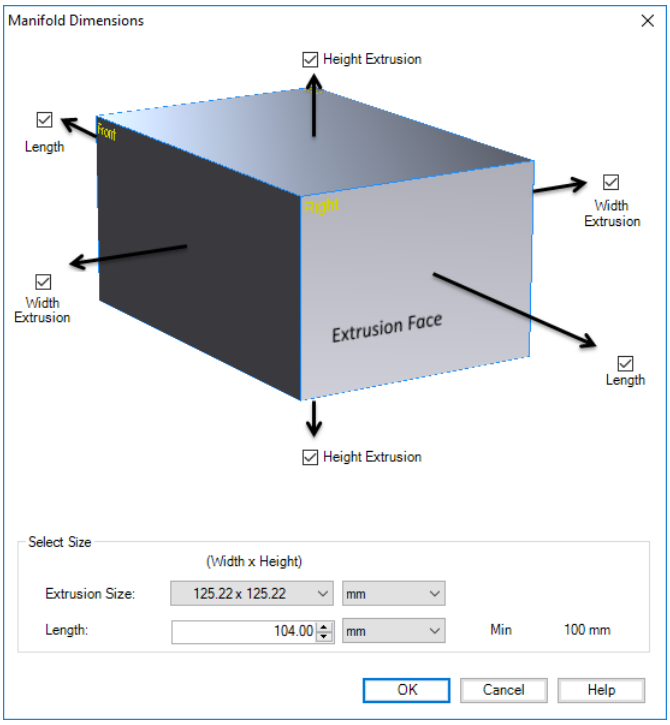


Figure 3-72: The "Manifold Dimensions" Dialog

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.

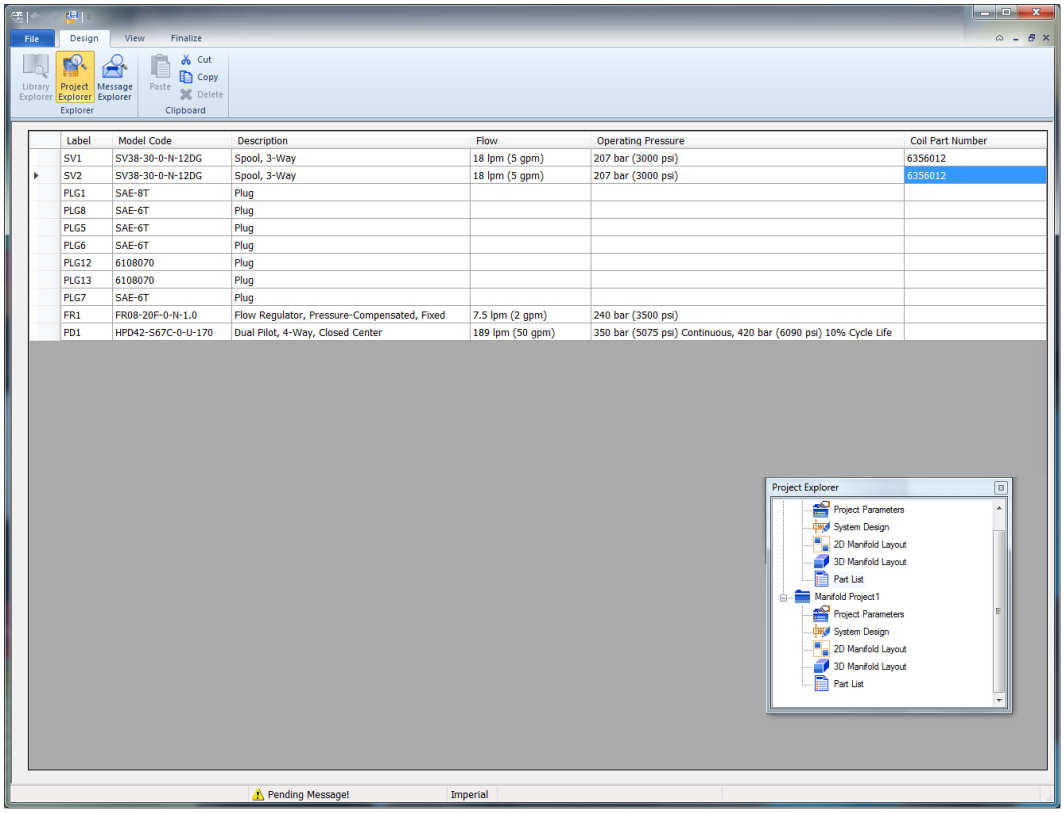


Figure 3-73: Parts List Interface

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).

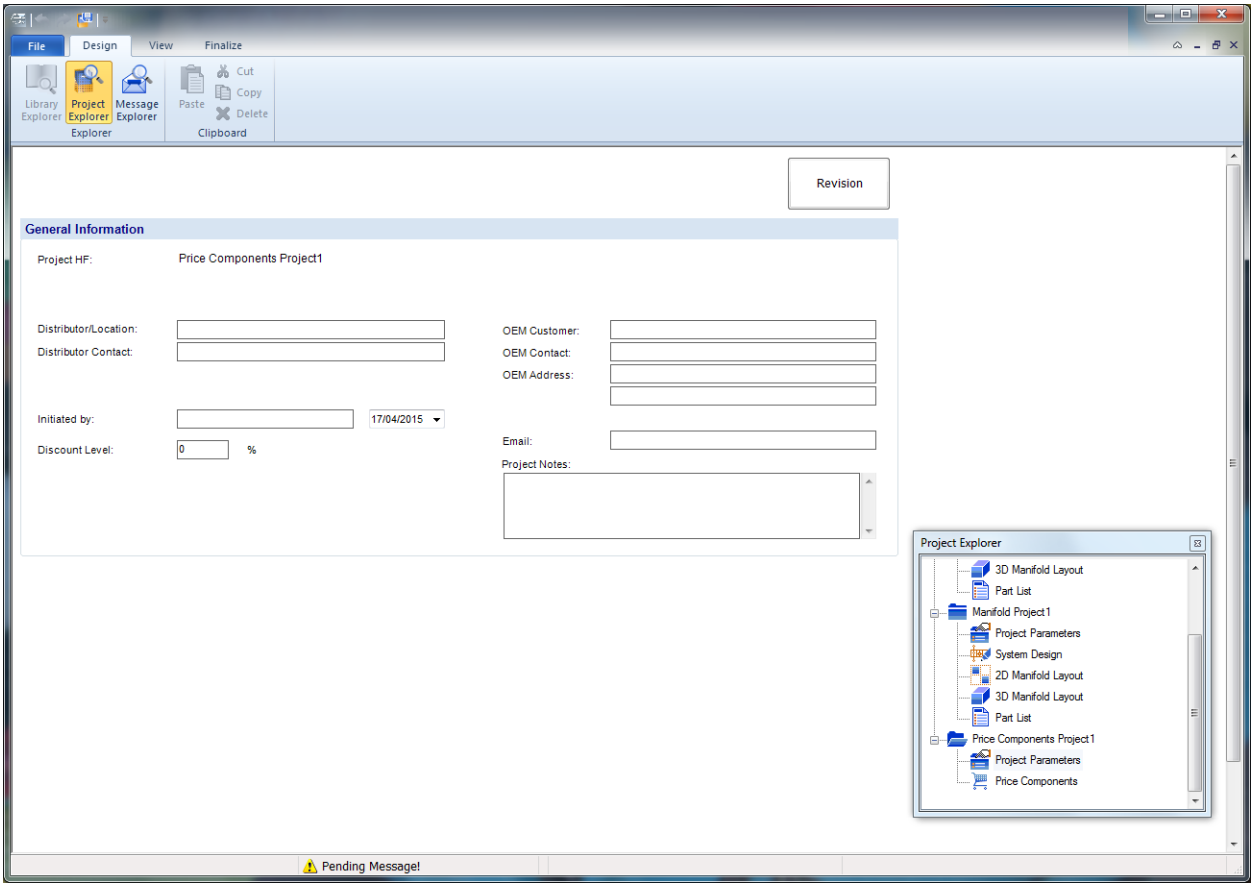


Figure 3-74 Project Parameters Interface

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 values 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.

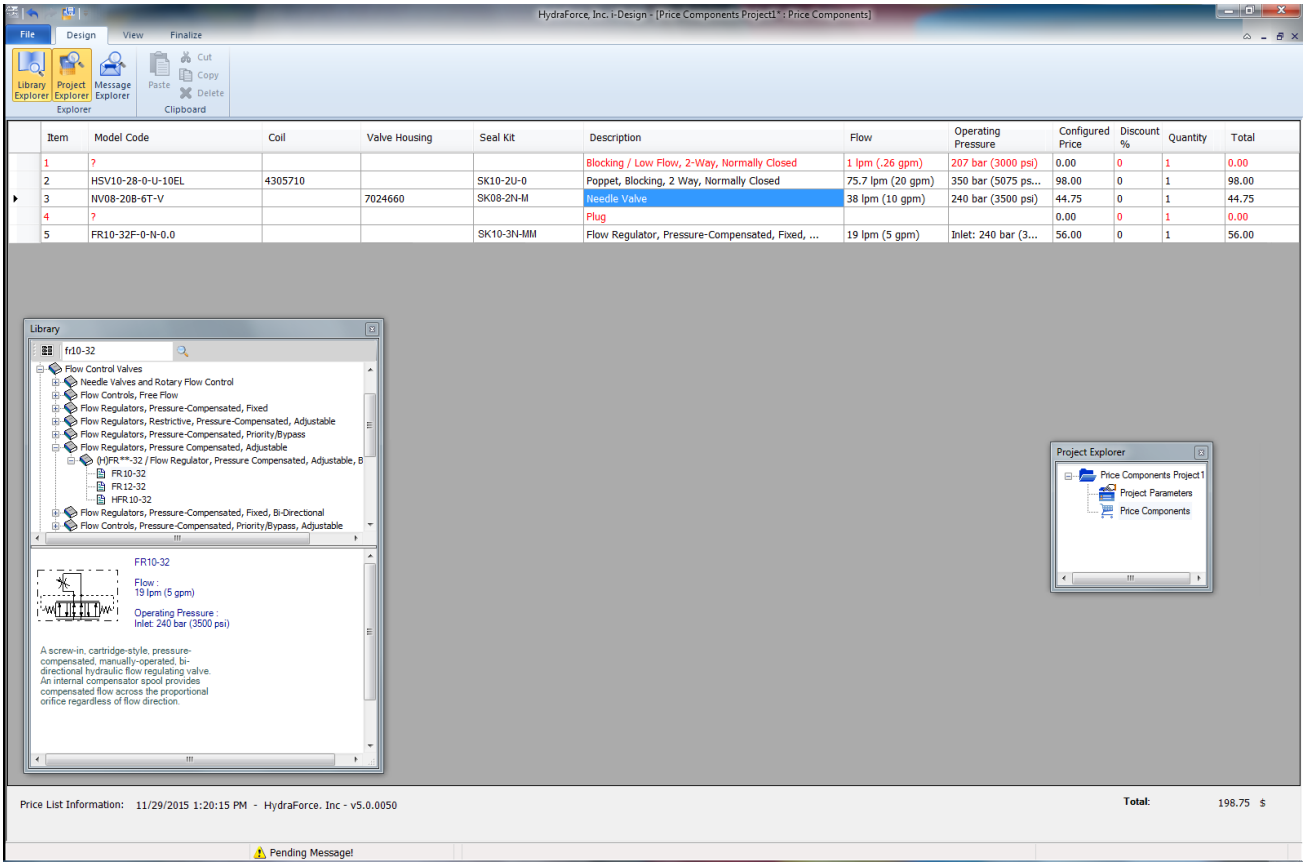


Figure 3-75: Price Components Interface

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 are several ways to access this dialog box:

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

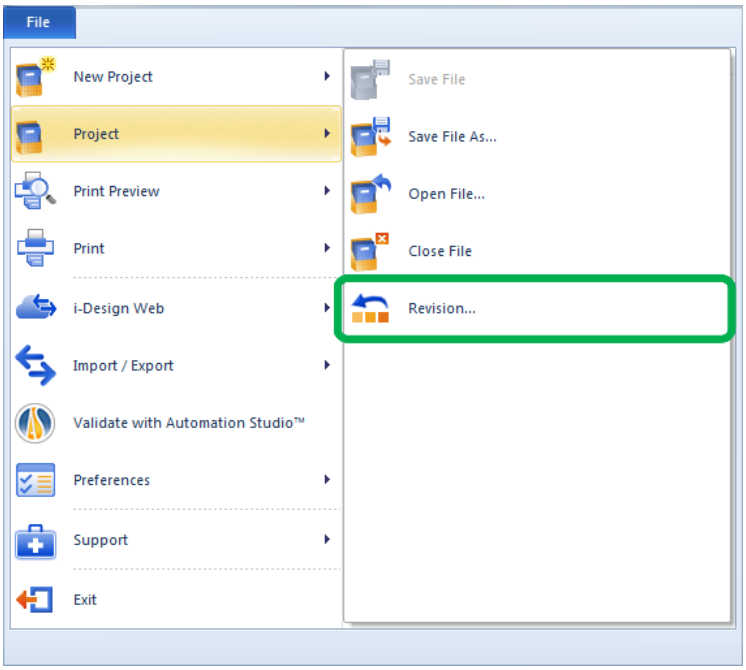


Figure 3-76: Revision in the File Menu

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

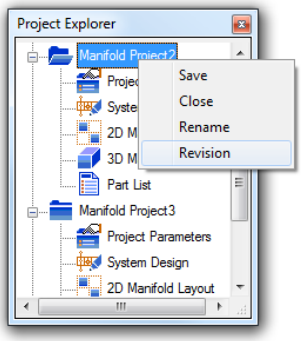


Figure 3-77: Revision in the Project Explorer Context Menu

3. By clicking on the “Revision” button in the “Project Parameters” interface;

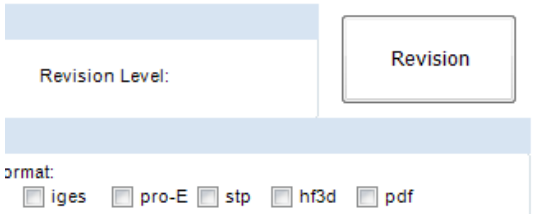


Figure 3-78: Revision Button in the Project Parameters Interface

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.

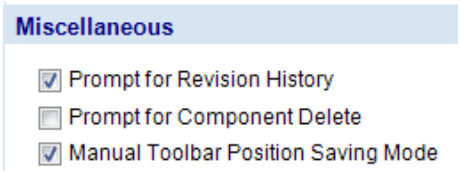


Figure 3-79: Prompt for Revision History Checkbox in the Options

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 user 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.

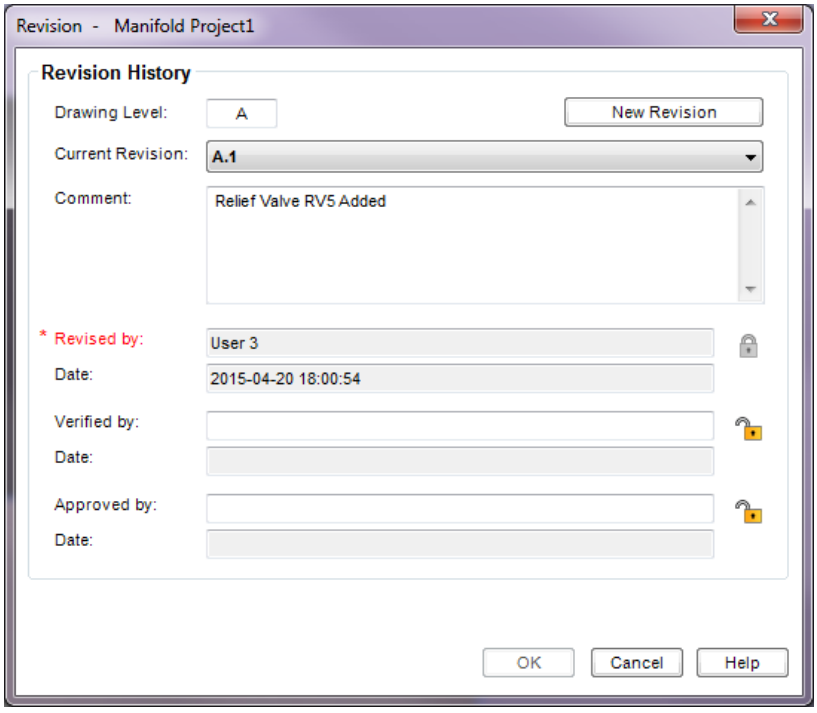


Figure 3-80: Revision History Dialog

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.

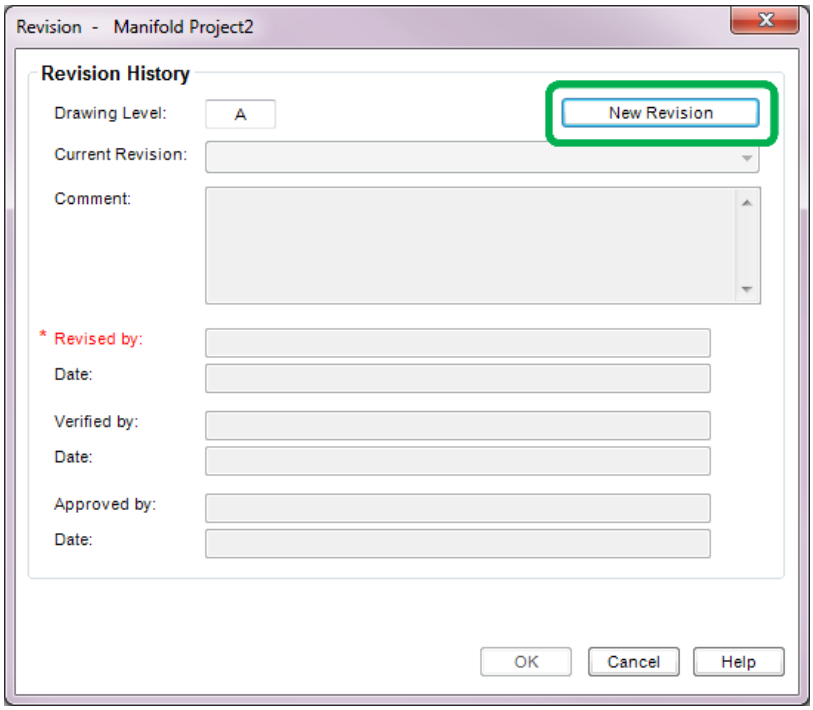


Figure 3-81: New Revision Button

1. To create a new revision, the user needs to click on the “New Revision” button.

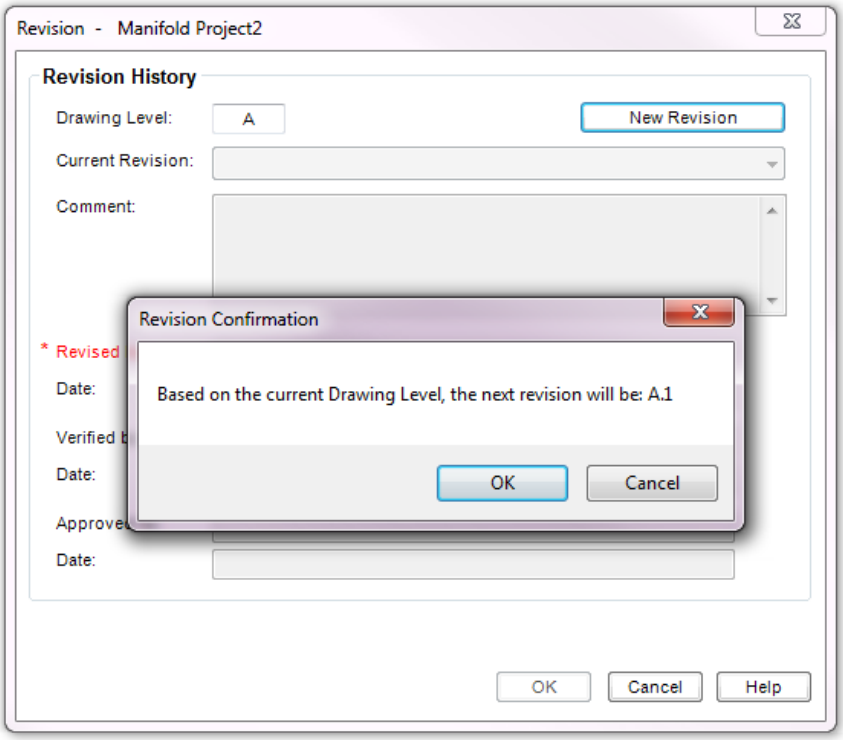


Figure 3-82: Revision Confirmation

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 Drawling 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 use 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

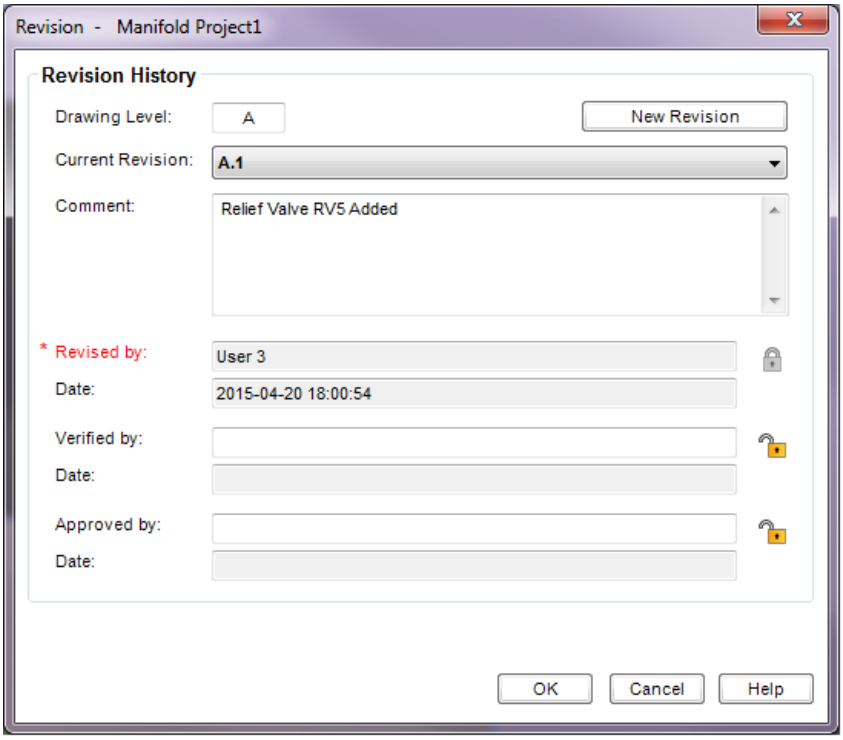


Figure 3-83: New Revision Creation

3.3.3.2 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".

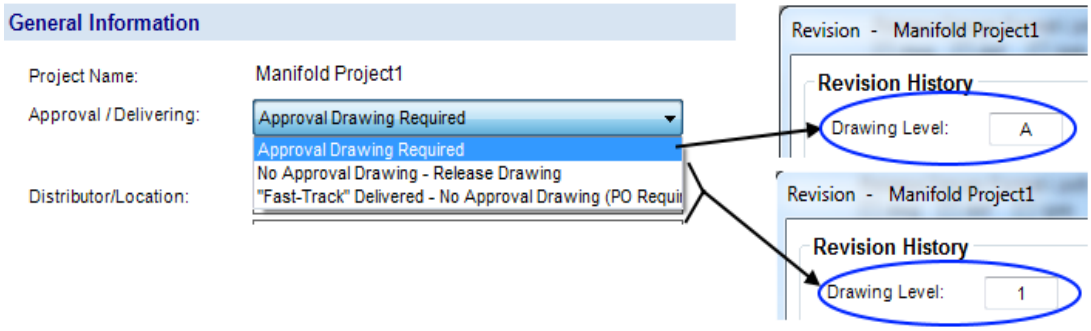


Figure 3-84: Revision Drawing Level

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).

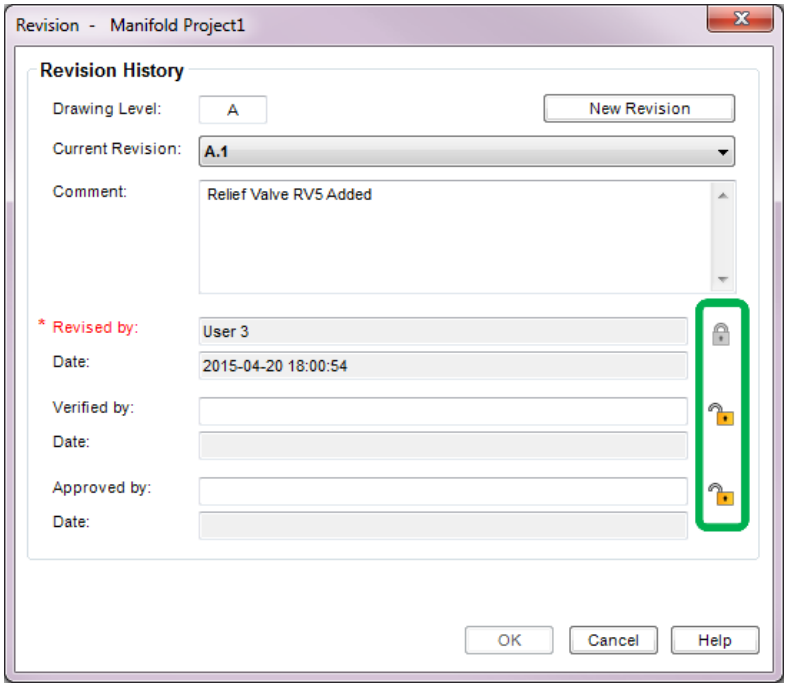


Figure 3-85: Locking Revision Field

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.)

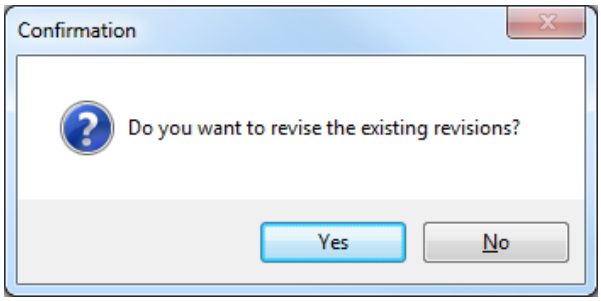


Figure 3-86: Revision History Confirmation

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.

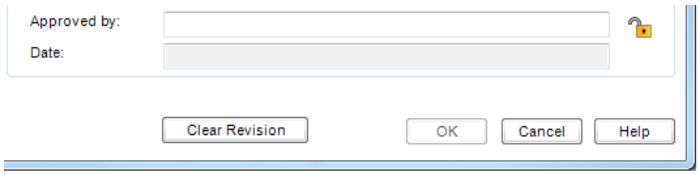


Figure 3-87: Clear Revision History

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.

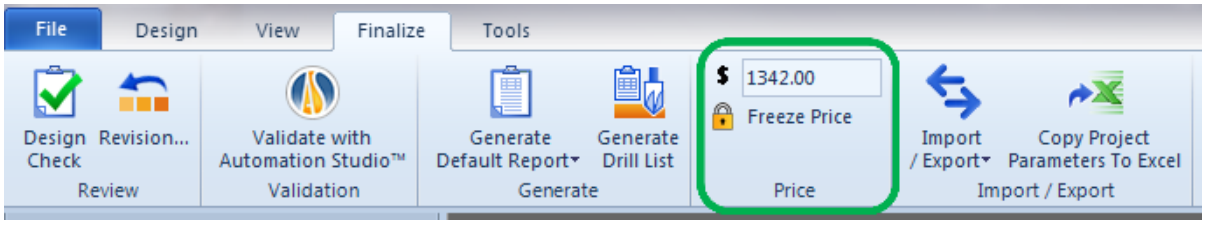


Figure 3-88: Freeze Price Tool in the Finalized Tab

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.

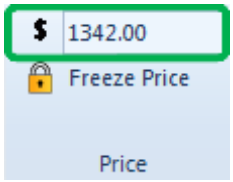


Figure 3-89: Get Total Price in the Finalized Tab

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.

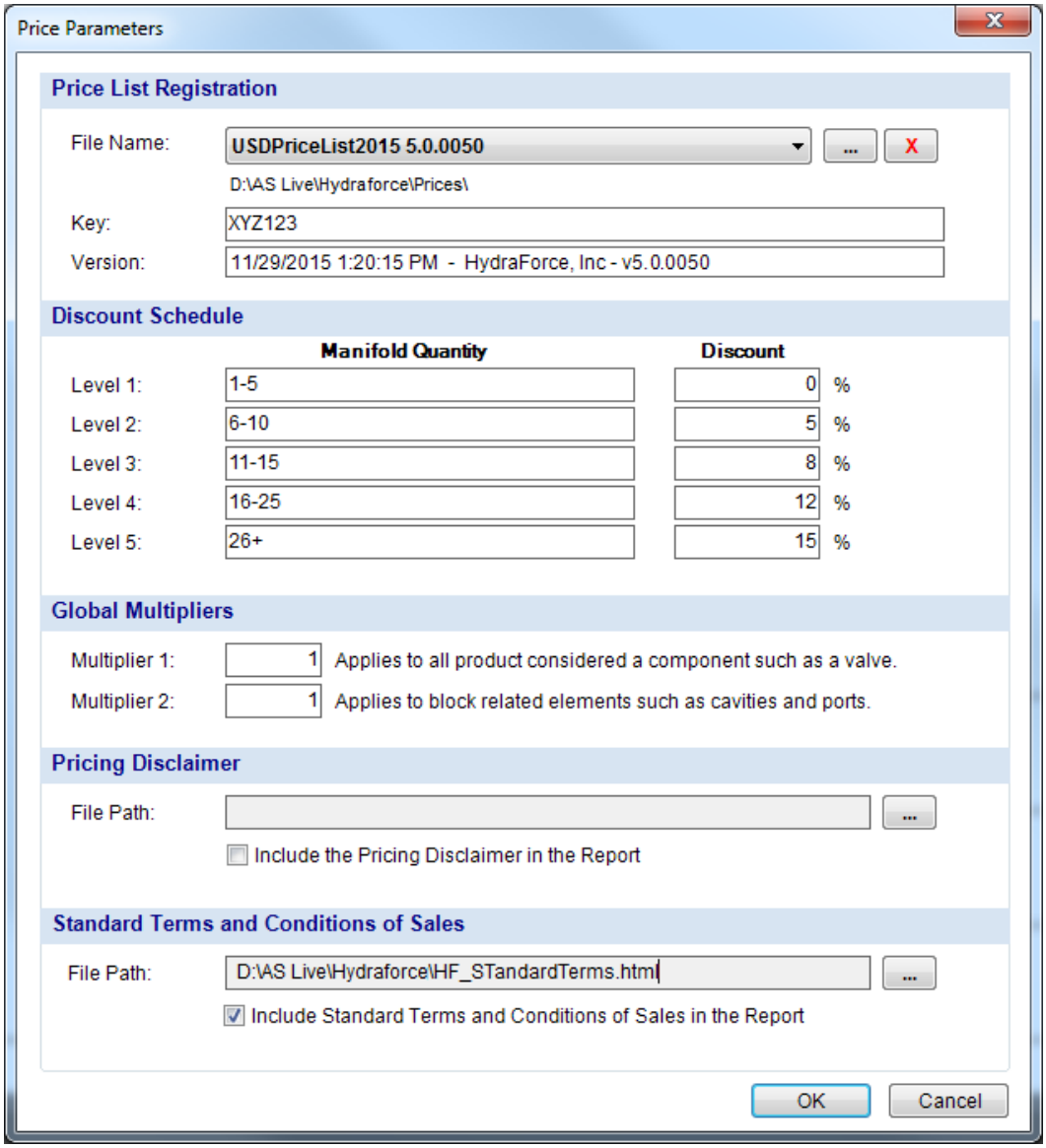


Figure 3-90: The Price Parameters dialog

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).

Discount Schedule

#	Manifold Quantity	Price
1	1-5	$ 63.130
2	6-10	$ 59.973
3	11-15	$ 56.817
4	16-25	$ 53.660
5	26 +UP	$ 50.504

Figure 3-91: 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

3.7.1 General Options

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

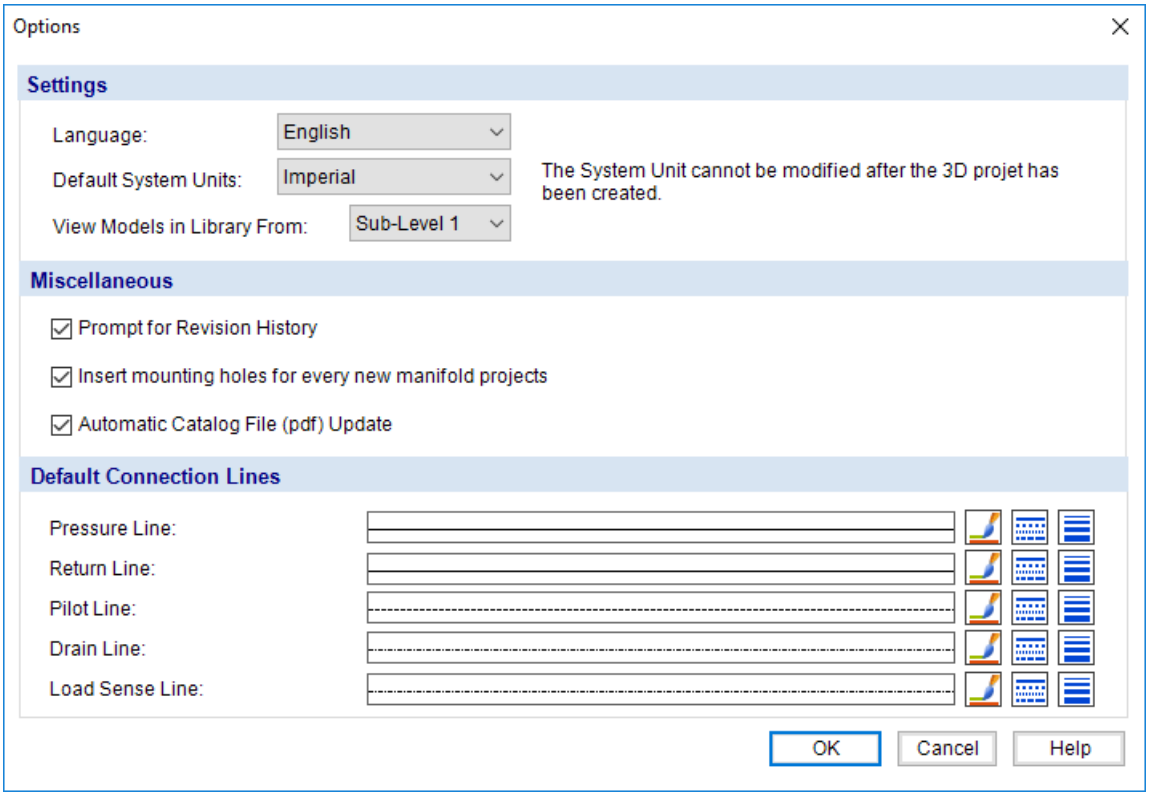


Figure 3-92: Software Options

1. Settings:
    - Language;
    - Default System Units used trough out 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);
2. Miscellaneous:
    - Prompt for revision history when saving a project. It is checked by default;
    - Insert 4 mounting Holes for every new project;
    - Automatic Catalog File Update (pdf). Get from a HydraForce's server.
3. Connection Lines:
    - Default Pressure Line Configuration;
    - Default Return Line Configuration
    - Default Pilot Line Configuration

- Default Drain Line Configuration
- Default Load Sense Line Configuration

3.7.2 Default Hydraulic Circuit Options

Default Hydraulic Circuit Options allow customizing some parameters globally in the application. These following options can be accessed from the "File" menu → "Preferences" → "Default Hydraulic Circuit Options":

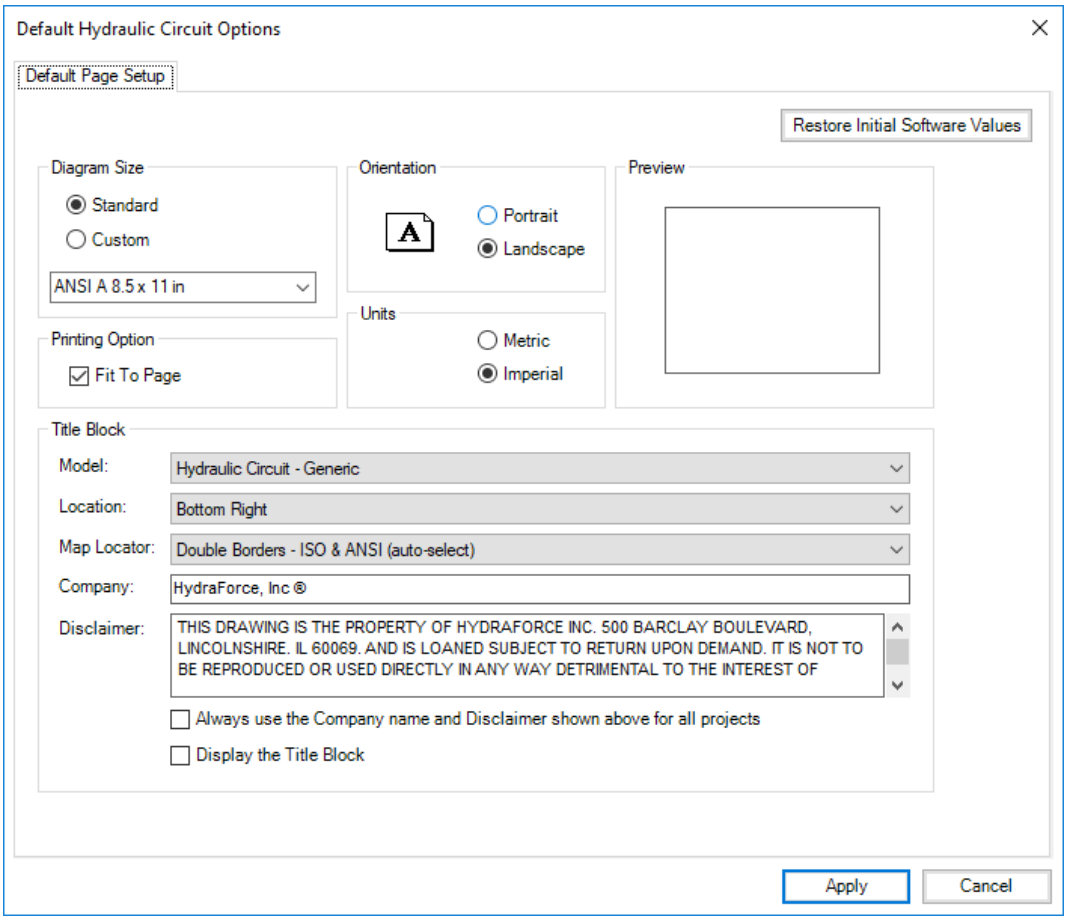


Figure 3-93:Default Hydraulic Circuit Options

1. Default Page Setup:
   - Diagram Size;
   - Printing Option;
   - Page Orientation;
   - Units;
   - Preview;
   - Title Block
     - Model

- Location
- Map Locator
- Company
- Disclaimer

The “Restore Initial Software Values” button allows to replace the current values by the default ones delivered with the software.

3.7.3 Default Technical Drawing Options

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

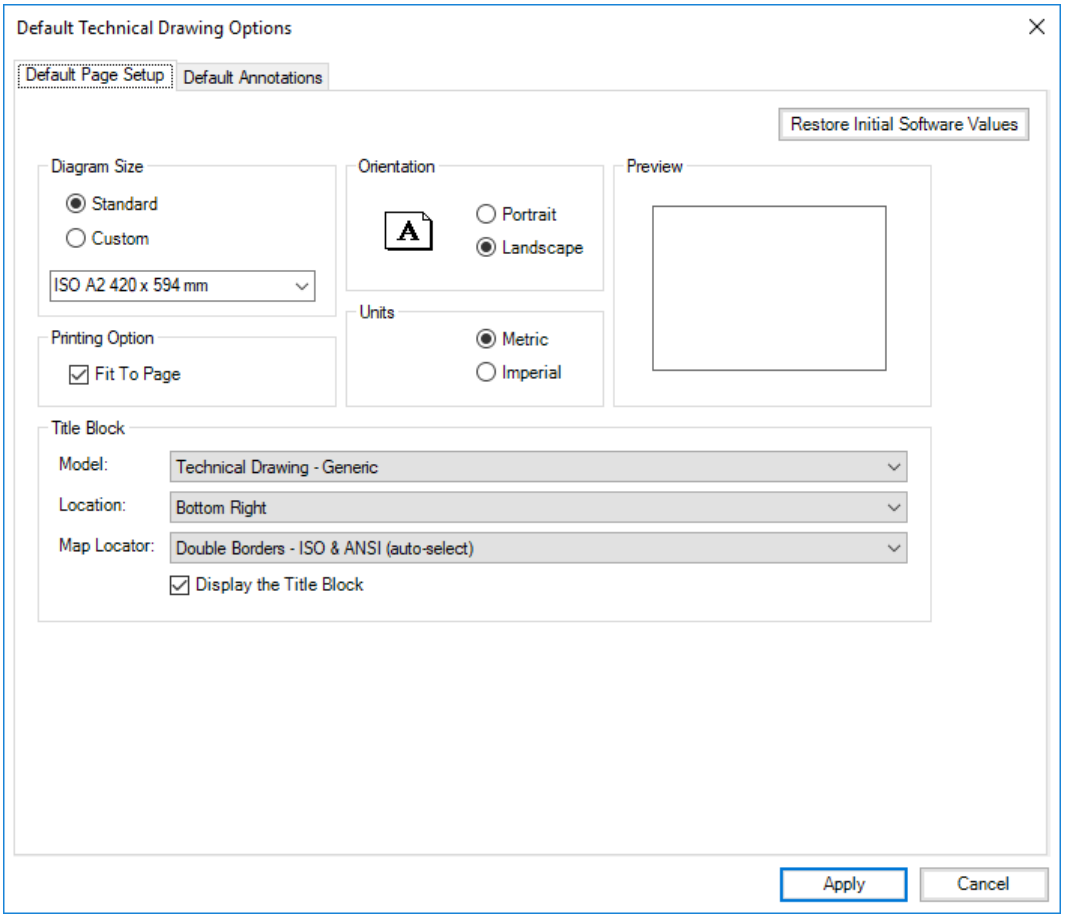


Figure 3-94:Default Hydraulic Circuit Options

1. Default Page Setup:
    - Diagram Size;
    - Printing Option;
    - Page Orientation;

- Units;
- Preview;
- Title Block
  - Model
  - Location
  - Map Locator

2. Default Annotations
   - Dimensions;
     - Line Thickness
     - Text Margin
     - Text Font

The “Restore Initial Software Values” button allows to replace the current values by the default ones delivered with the software.

3.8 3D Performances

The i-Design application relies heavily on the graphic card in order to render the 3D manifold layout. Thus, for large blocks with a lot of components, depending on the graphics card capabilities, the responsiveness in the 3D Manifold Layout interface 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:

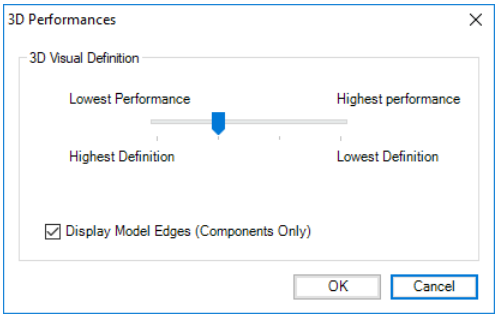


Figure 3-95: The 3D Options dialog

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 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 be right clicking on the valve or port while in the 3D layout screen 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 place 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.

3.10 Technical Drawing

The Technical Drawing interface allows to create a specific layout with multiple views of the assembled project on a page with an optional title block and map locator.

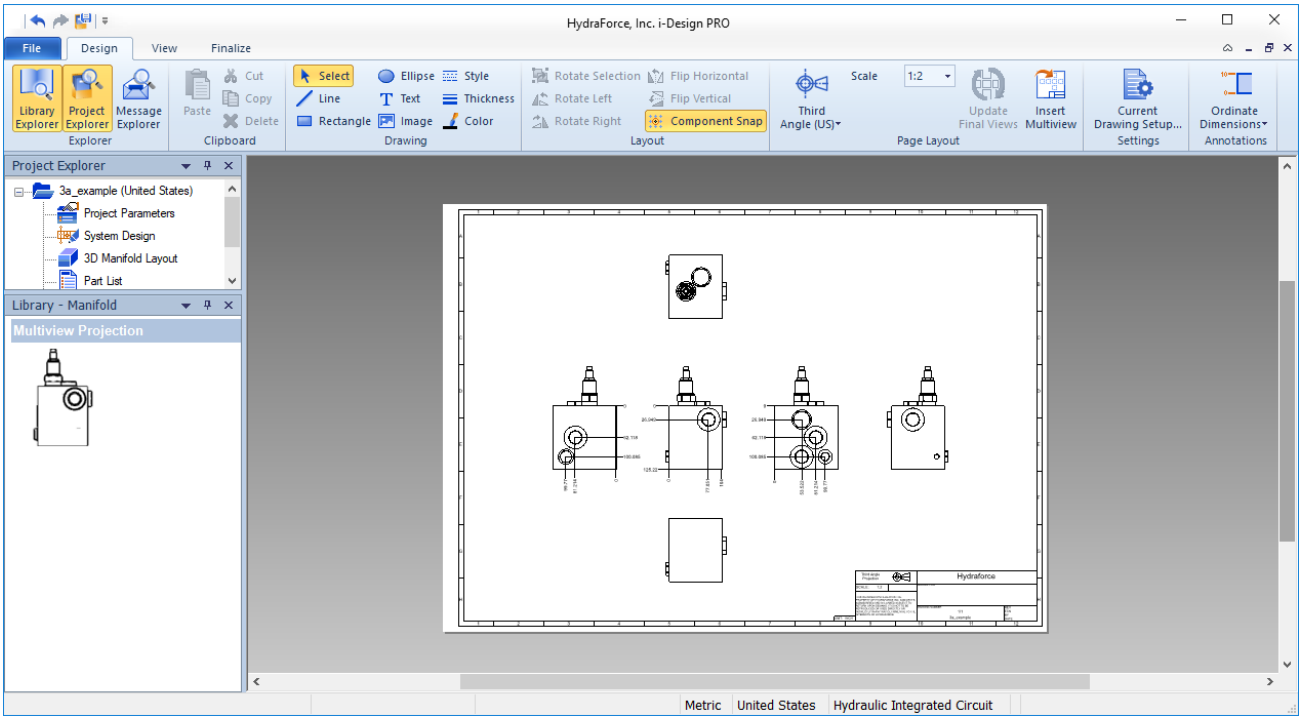


Figure 3-96: Technical Drawing

The "Multiview" images coming from the 3D Layout is available in the library.

The 6 views can be manually dragged & dropped from the library to the Technical Drawing page. While manipulating the views, guidance boxes are displayed in order to easily layout the desired view and avoid representation errors.

Automatic positioning of the orthogonal views can be done by clicking on the "Insert Multiview" button from the "Design"→ "Page Layout" group to launch the automatic positioning of all 6 projections on the page.

3.10.1 Laying Down the Views

The *Technical Drawing* interface requires specific design features which are available under "Design" tab →"Page Layout" group.

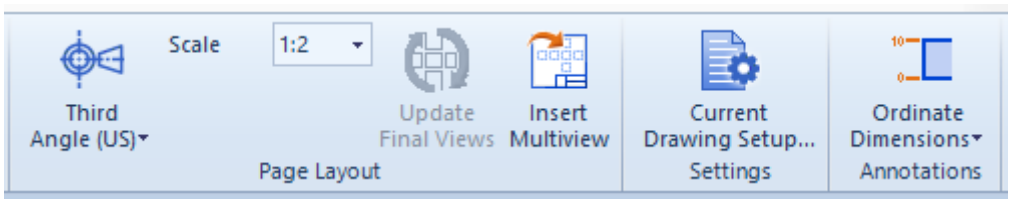


Figure 3-97: Technical Drawing Tools

3.10.1.1 Selecting the Projection Angle

Existing drawing standards (ASME, BS, ISO, …) suggest that the multi-view drawings can be laid out following two different projection angles, First and Third.

Projection angle can be changed by clicking on the split button and selecting another type (First Angle Projection - Europe and the Third Angle Projection - US). The Projection Type button is located in the *Design* tab → *Page Layout* group.

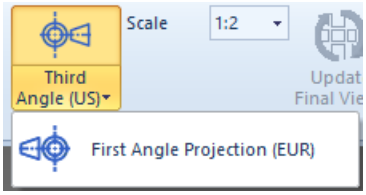


Figure 3-98: Design Tab → Projection Angle Selection

3.10.1.2 Manual Positioning

Individual drawing elements seen as images but these vector graphics are taken from the library and dropped on the page. Each vector image can be resized by using the handles, except for the orthogonal views which are managed by selected scale factor from the *Design* tab → *Page Layout* group → *Scale* drop-down list.

The orthogonal views are positioned according to a special "layout", following some rules: first or third angle projection, scale, alignment, etc...

3.10.1.2.1 Library

The library contains the Multiview Projections

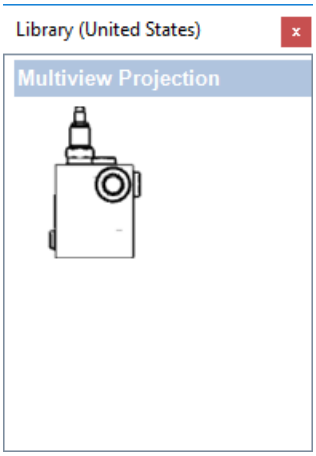


Figure 3-99: Library – Technical Drawing

3.10.1.2.2 Scaling (Orthogonal Views)

To change the scale, select desired ratio from the scale list box located in *Design* tab → *Page Layout* group → *Scale* drop-down list. The size of existing views already on the page automatically changes to adjust to the selected scale. New views to be inserted will use the same scale ratio.

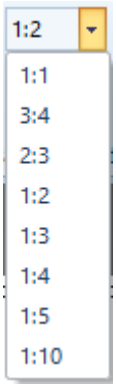


Figure 3-100: Moving View Alignment Lines

As a reminder, the only possibility to change the size of the orthogonal views is via this list box. All the other graphical elements can be resized by using the handle selection.

Note: Scale of 1:1 implies the object has been drawn to true size. Therefore, a scale of 1:2 implies that the object has been reduced to half its size.

3.10.1.2.3 Orthogonal Views Alignment

Alignment lines are shown when a view is moved on the page, to easily align it with the other views already on the technical drawing.

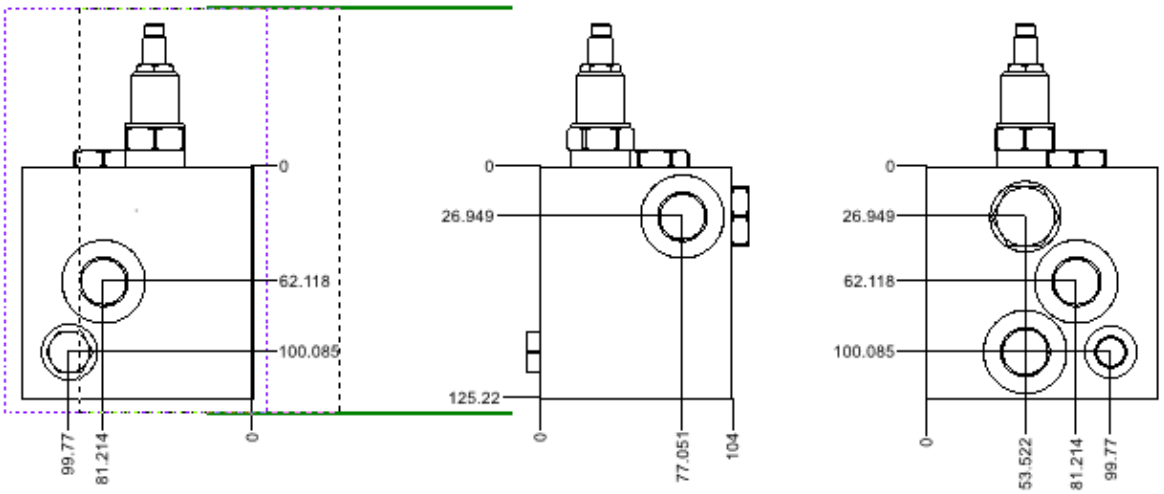


Figure 3-101: Moving View Alignment Lines

3.10.1.2.4 Moving Orthogonal Views

The available destinations positions appear when a view is moved in a direction other than the alignment axis. The view can only be moved (dropped) in the proposed areas. The same mechanism is used when the view is coming from the *Library*.

When the view is dropped in the destination location, it is automatically updated and is positioned in the correct orientation.

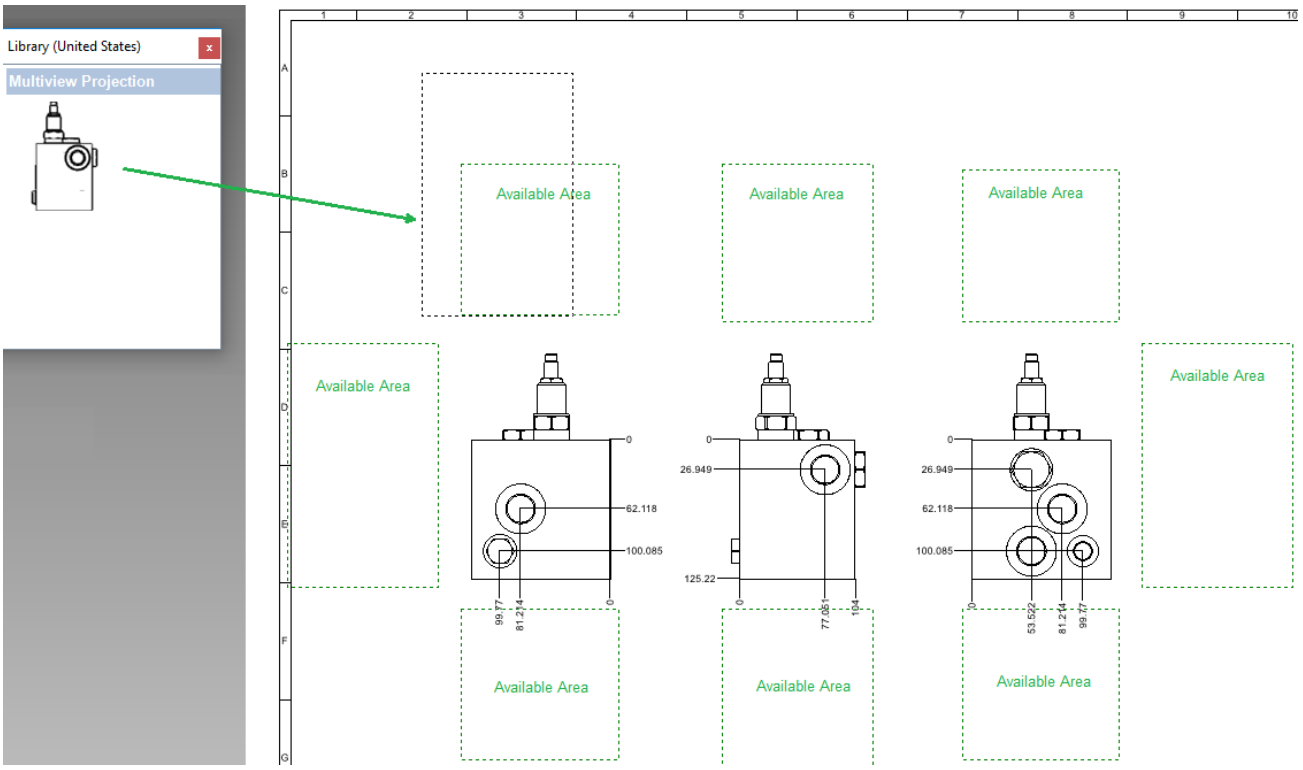


Figure 3-102: Moving View – Available Areas

3.10.1.2.5 Changing a View (Multiview Projections)

Each view can be changed by another one by using the contextual menu of the Multiview projection.

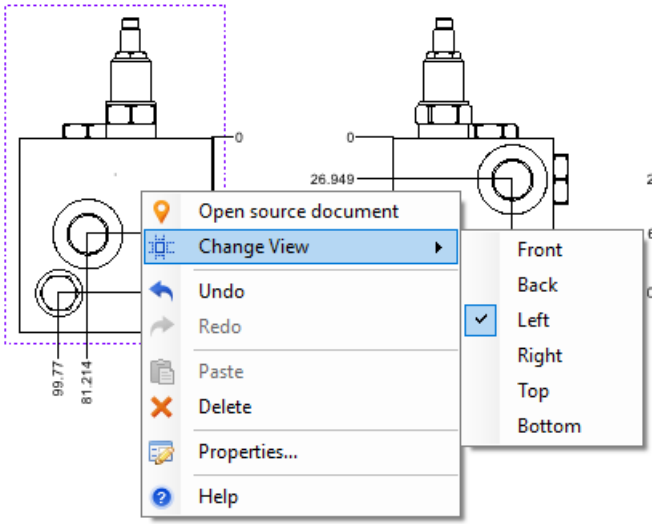


Figure 3-103: View Change

Once the view is changed, all the adjacent views are recalculated consequently.

3.10.1.2.6 Opening the Source Document

The "Open Source Document" command in the contextual menu allows giving the focus on the source of the element (Schematic, 3D Layout, Part List ...)

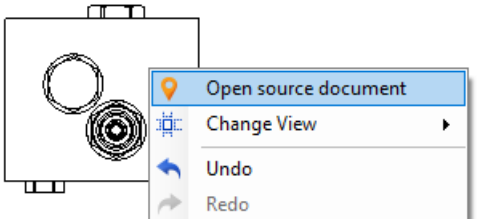


Figure 3-104: Source Document Link

3.10.1.3 Automatic Positioning

Automatic positioning of the default multiviews can be easily achieved by clicking on the "Insert Multiview" button from the *Design* tab → *Page Layout* group.

The system uses some parameters to position the views on the page (margins, projection configuration, elements to insert, etc...)

3.10.2 Updating Views

3.10.2.1 Schematic or Layout Changes

If modifications are done on the project (new component, new option, schematic, 3D layout, BOM, etc…) the graphical elements (Multiview) are not automatically updated to avoid slowing down the application.

If some component modifications (*) have been done, then a warning icon is overlaid on the picture to indicate that they need to be updated.

(*) Some visual modifications are not take in consideration (ex. Display diagram grid, 3D rotation, component spacing, panning the diagram/image etc). In these cases, no warning is triggered.

An icon in the top right corner of a view indicates that the view is not up-to-date.

Outdated views can be updated by clicking on the "Update Draft Views" button from the Design tab → Page Layout group or using the contextual menu → "Update All Views (Draft)"

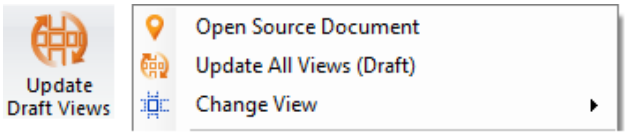


Figure 3-105: Update (Draft) Ribbon and Contextual Menu

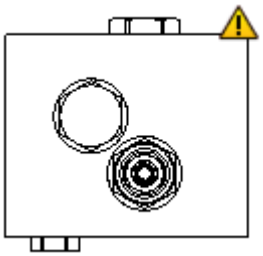


Figure 3-106: Outdated View Needing an Update

3.10.2.2 Technical Drawing Quality

In order to reduce downtime and work flawlessly to lay down the graphical elements, the "draft" quality is used for manual or automatic placement of the orthogonal or isometric views. "Draft" views are not refined and elements might have missing edge lines or internal shapes.

In order to optimize the graphical aspect and finalize the technical drawing, a supplemental step is required to generate the "Final" version with all lines, shapes and outlines.

All draft views can be updated to final views by clicking on the "Update Final Views" button from the Design tab → Page Layout group or using the contextual menu → "Update All Views (Final)".

Note: The "Update Final Views" icon is available only if all "Draft" views are updated. Also, once the views are updated to "Final", the icon "Update Final Views" is grayed-out.

A message appears after clicking on "Update Final Views" button:

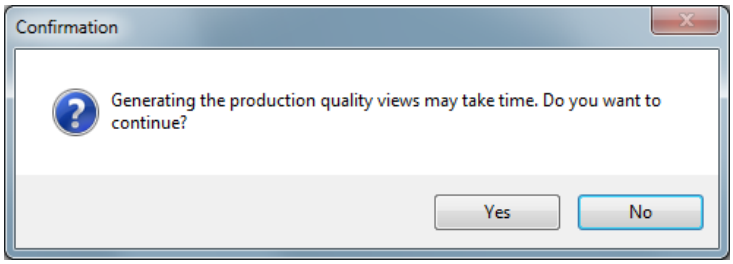


Figure 3-107: Update (Final) Ribbon and Contextual Menu

3.10.2.3 Dimensions (Annotations)

Dimensions can be added on the technical drawing (multiview). Dimensions are created from predefined anchor points or user-defined anchor points.

3.10.2.3.1 Visibility

Dimensions can be shown or hidden from the "View" tab → "Show" group → "Dimensions".

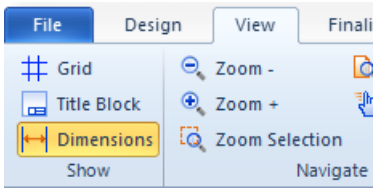


Figure 3-108: Show or Hide Dimensions

Note: The button is also used by the *3D Layout* but is independent, i.e. the dimensions can be displayed on the *Technical Drawing* or/and the *3D Layout* independently.

3.10.2.3.2 Creating Dimensions

Manual dimensioning can be done following two different styles: linear or ordinate. Dimensioning style can be selected from the "Design" tab → "Dimensions" → "Linear Dimension" or "Ordinate Dimension".

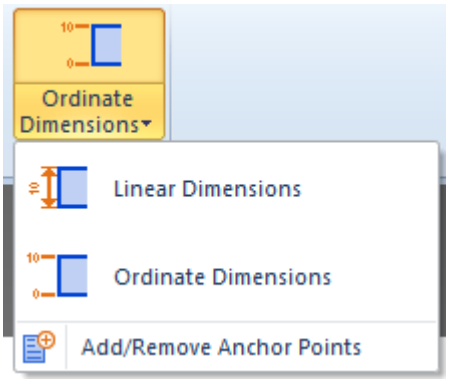


Figure 3-109: Dimension Style and Options Menu

Linear Dimension

Create a linear dimension by clicking on the ribbon bar button "Linear Dimension", once activated anchor points (colored squares) appear on the views. Dimensioning process starts by clicking on the first desired anchor point and moving the mouse, a line attached to the mouse pointer is automatically drawn. Then, clicking on the destination anchor point creates the dimension. Moving the mouse to locate and orient the dimension text. Once the dimension text is properly located and at the right orientation, the dimension is finalized by clicking one last time to fix the dimension layout and finish the dimensioning process.

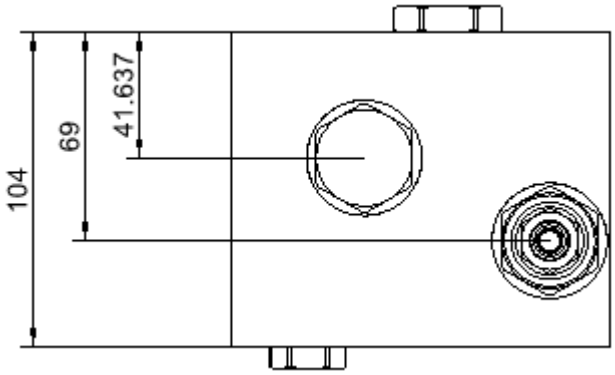


Figure 3-110: Linear Dimensions

Ordinate Dimension

Create an ordinate dimension by clicking on the ribbon bar button "Ordinate Dimension", once activated anchor points (colored squares) appear on the views. Dimensioning process starts by clicking on the desired anchor point it automatically creates the dimension from the origin, shown as the red dot on each view. Moving the mouse to locate and orient the dimension text. Once the dimension text is properly located and at the right orientation, the dimension is finalized by clicking one last time to fix the dimension layout and finish the dimensioning process. Notice that the "0" dimension is created at the same time.

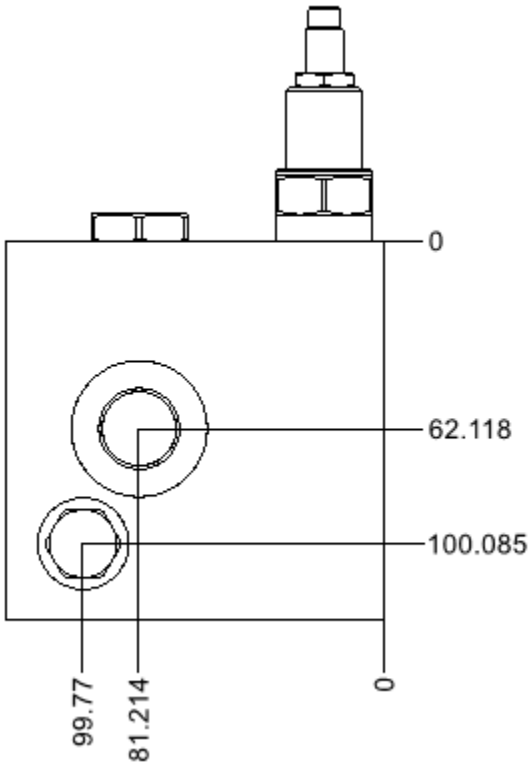


Figure 3-111: Ordinate Dimensions

3.10.2.3.3 Modifying Dimensions

Modify the dimension text position by clicking on the text and moving the text to the new location. The text can be placed in the middle, on one side or on the other side.

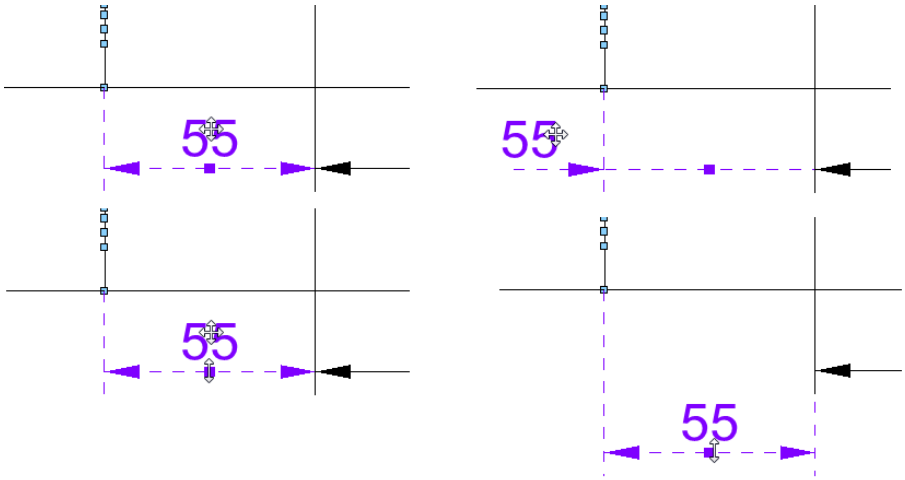


Figure 3-112: Modified Dimensions

Modify the leader lengths or dimension distance from the object by clicking on the handle grip shown on the dimension arrow(s) and then drag the dimension to the new location.

Delete a dimension by clicking on the dimension text or the arrows, once selected press the DELETE key or use the ribbon bar button located in the "Design" tab → "Clipboard" group.

3.10.2.3.4 Creating Anchor Points

Additional anchor points can be created to define specific dimensions.

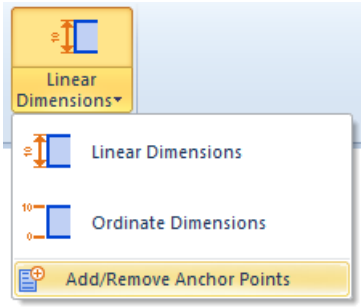


Figure 3-113: Add/Remove Anchor Points Menu

Create an anchor point by clicking on the ribbon bar button "Add/Remove Anchor Points", once activated predefined anchor points appears in gray on the views. Add an anchor point by clicking on an existing line at the desired location. The new user-defined anchor point appears in bright green.

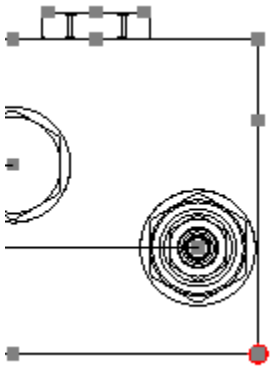


Figure 3-114: Creating User-defined Anchor Points

Delete a user-defined anchor point by clicking on an existing user-defined anchor point.

Note: Predefined anchor points cannot be deleted.

The ESC key allows quitting this mode, then once deactivated all the anchor points return to the same color (blue).

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 the computer. 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, which generates the Sales Manager Report by default.

   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

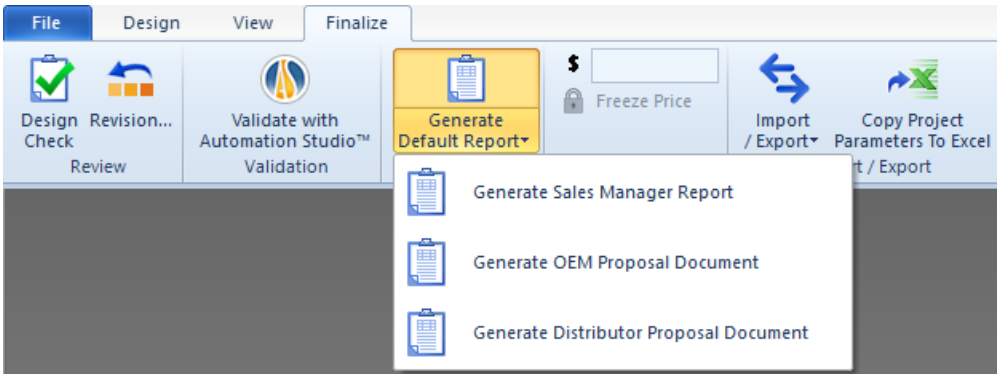


Figure 4-1: Generate Report in the File Menu

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 4: Technical Drawing and 3D Manifold layout;
- 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

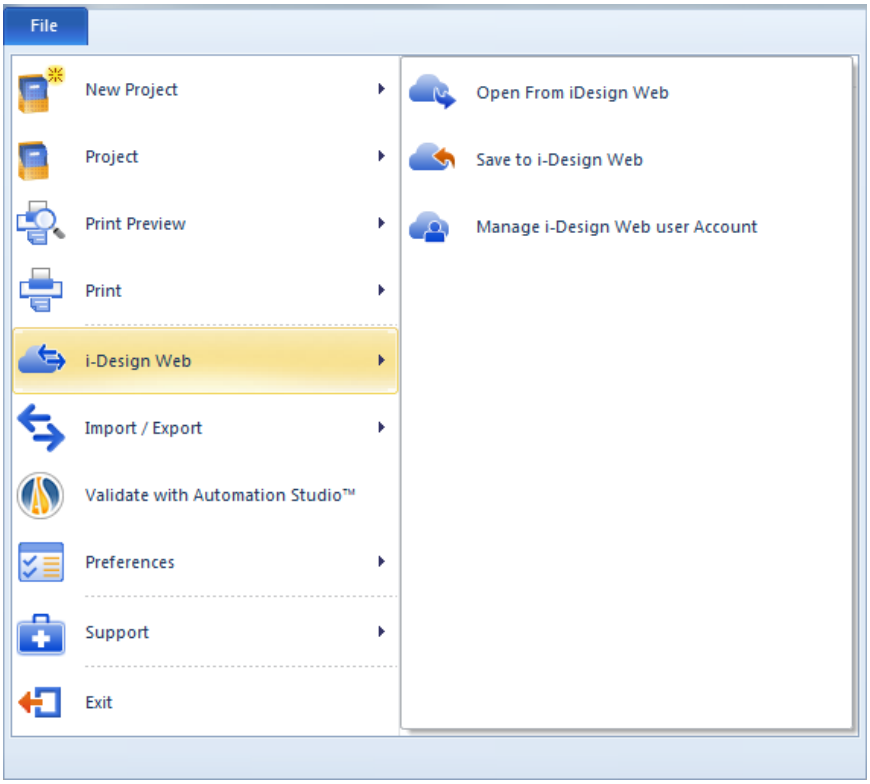


Figure 5-1: i-Design WEB access

5.2 Login

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

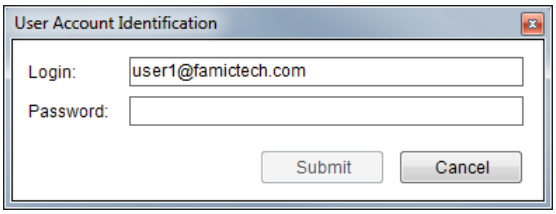


Figure 5-2: i-Design WEB access

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:

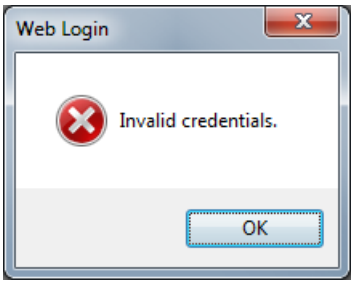


Figure 5-3: i-Design WEB access

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

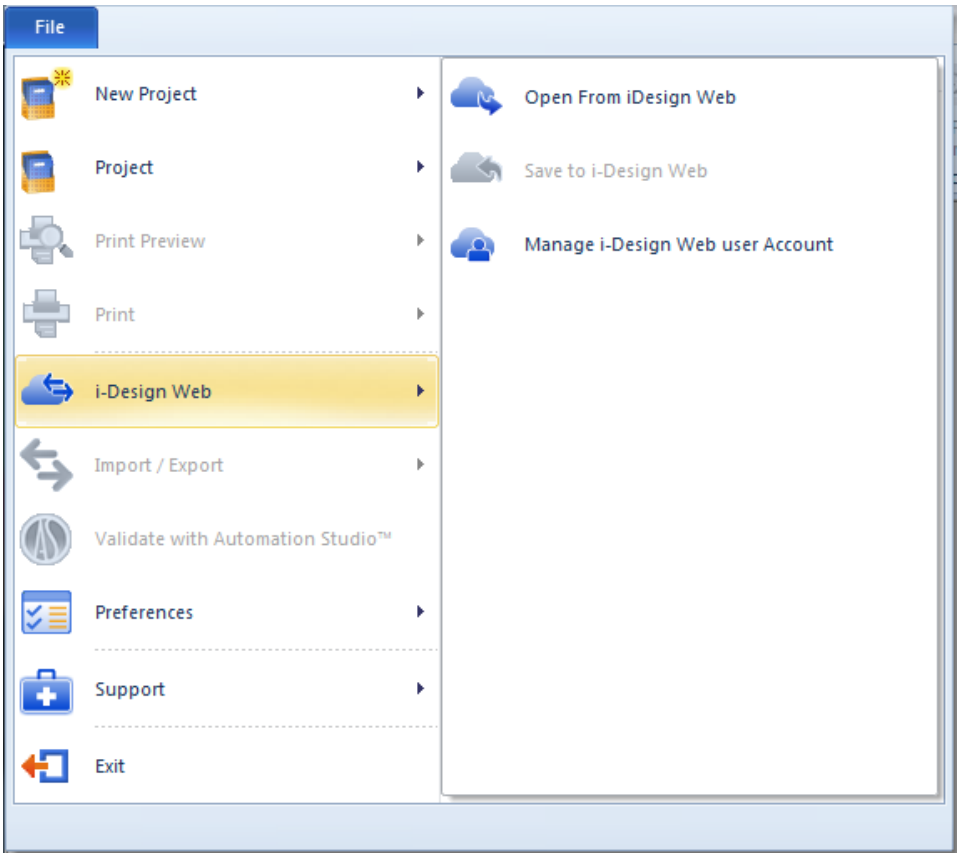


Figure 5-4: i-Design WEB access

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

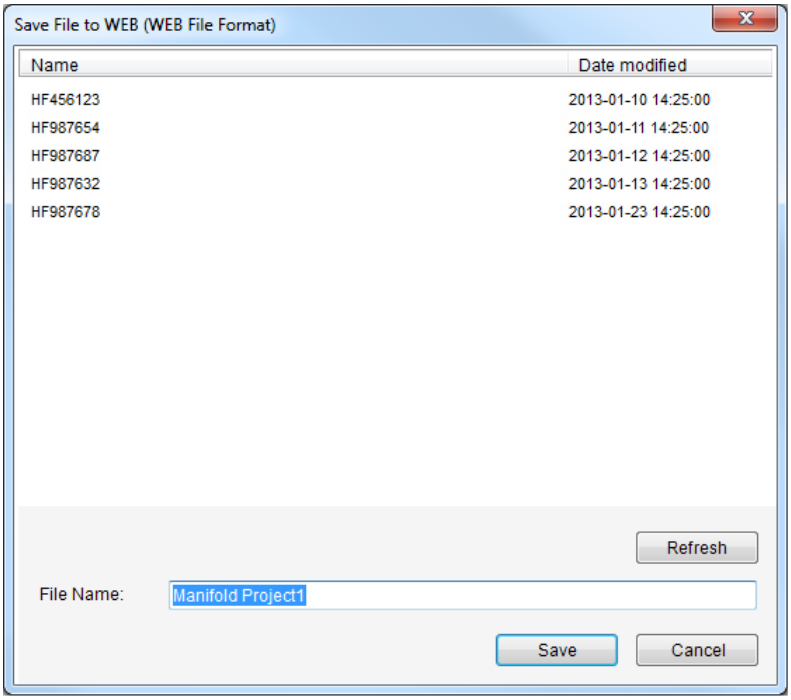


Figure 5-5: Save File to i-Design Web

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

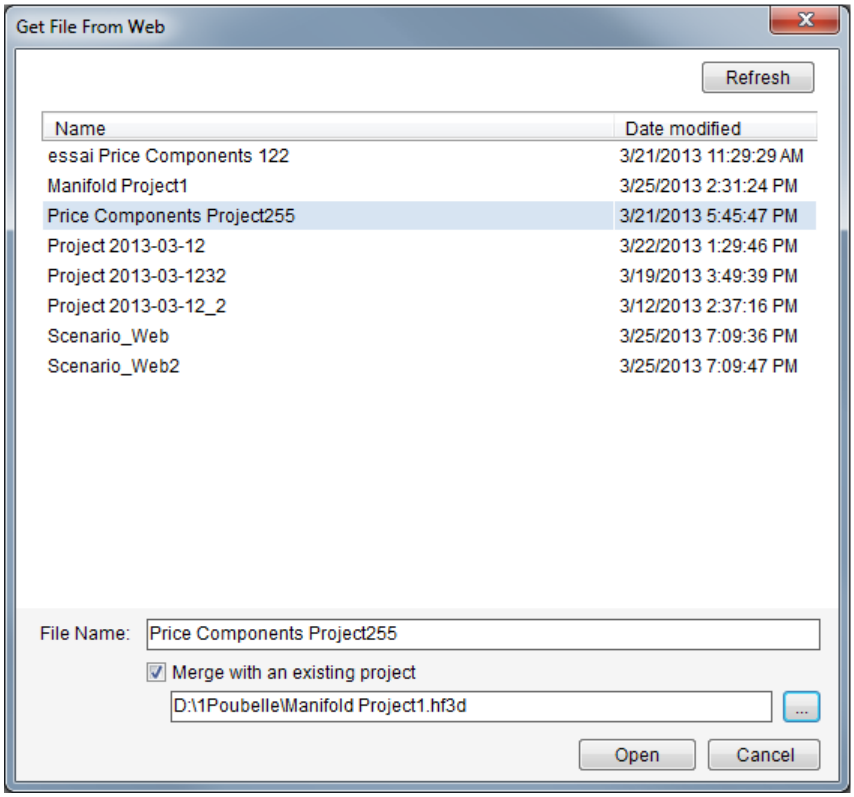
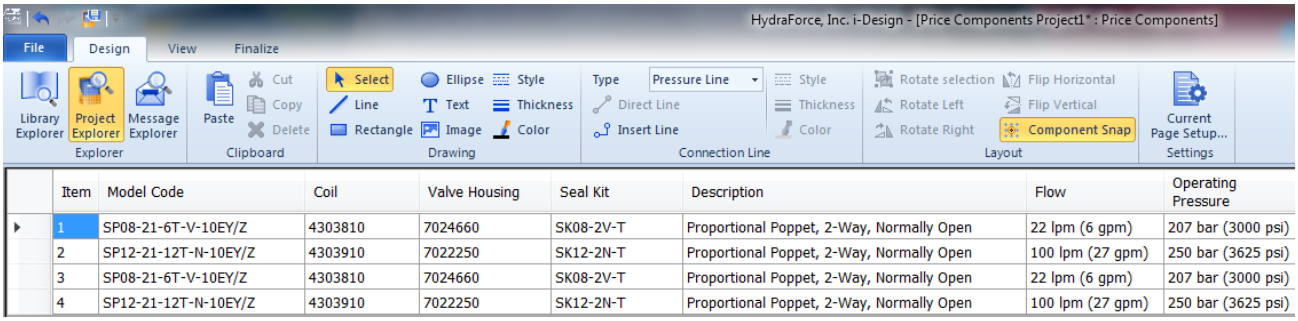


Figure 5-6: Get File from i-Design Web – Price a Manifold

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.



Item	Model Code	Coil	Valve Housing	Seal Kit	Description	Flow	Operating Pressure
1	SP08-21-6T-V-10EY/Z	4303810	7024660	SK08-2V-T	Proportional Poppet, 2-Way, Normally Open	22 lpm (6 gpm)	207 bar (3000 psi)
2	SP12-21-12T-N-10EY/Z	4303910	7022250	SK12-2N-T	Proportional Poppet, 2-Way, Normally Open	100 lpm (27 gpm)	250 bar (3625 psi)
3	SP08-21-6T-V-10EY/Z	4303810	7024660	SK08-2V-T	Proportional Poppet, 2-Way, Normally Open	22 lpm (6 gpm)	207 bar (3000 psi)
4	SP12-21-12T-N-10EY/Z	4303910	7022250	SK12-2N-T	Proportional Poppet, 2-Way, Normally Open	100 lpm (27 gpm)	250 bar (3625 psi)

Figure 5-7: Get File from i-Design Web – Price Components

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.

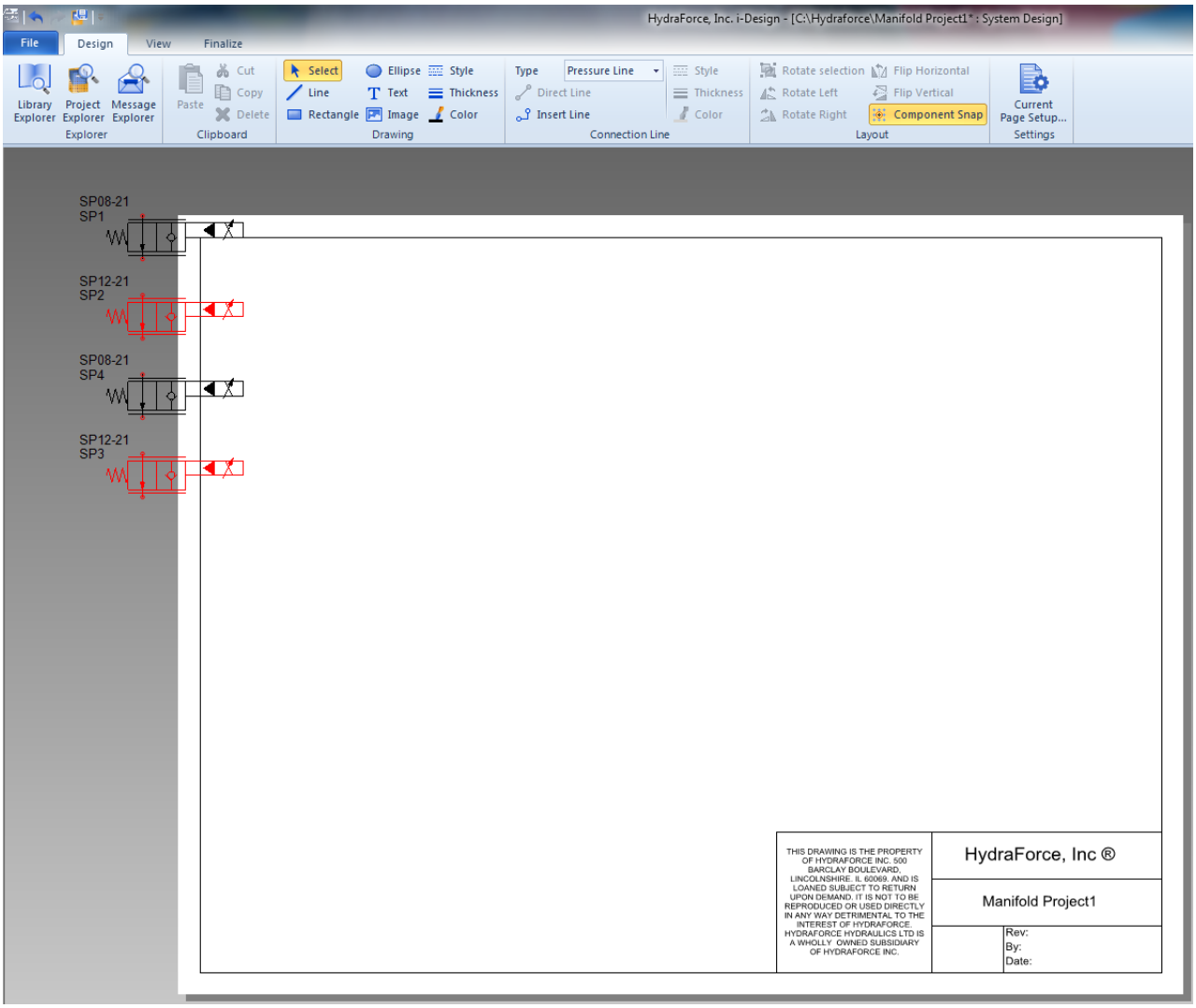


Figure 5-8: Get File from i-Design Web – Price a Manifold

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.

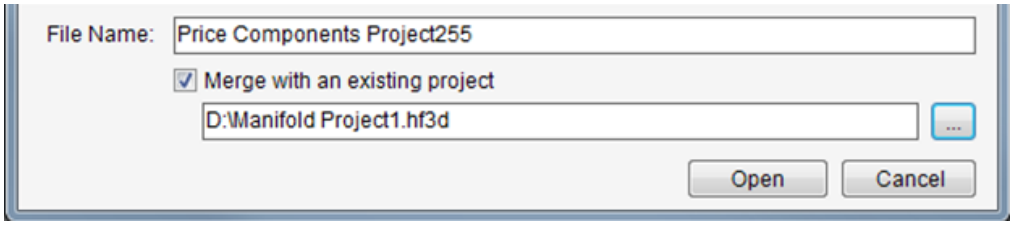


Figure 5-9: Get File from i-Design Web

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, 3-32, 3-33
3D Manifold Layout, 2-15
3D Options, 3-76
3D view quality, 3-76
Automatic Manifold Block Resizing, 3-57
Automation Studio Format, 2-24
Axis, 3-43
Catalog Information, 3-21
Cavities Only View, 3-41, 3-42
Cavity, 3-21
Closing, 2-15
Coil Voltage, 3-4
Color, 3-16
Colors Selection, 3-17
Component
  Copy, 3-12
  Counterboring, 3-52, 3-53
  Custom, 3-22, 3-31
  Cut, 3-13
  Delete, 3-12
  Dimensions, 3-47
  Flip, 3-14
  Identifier, 3-20
  Location, 3-48
  Lock Position, 3-50
  Model, 3-19
  Move, 3-14
  Multiple Select, 3-12
  Net Adder, 3-23
  Paste, 3-13
  Properties, 3-18
  Rapid Copy/Paste, 3-13
  Restrain to Surface, 3-50
  Rotate, 3-13, 3-49
  Select, 3-11
  Snap, 3-10
Components Configurations, 3-47
Connect Components, 3-25
Contents, 1-1
Context Menus, 3-14
Copy, 3-12
Copy/Paste, 3-13
Counterboring, 3-52, 3-53
Current Page Setup, 3-8
Custom Components, 3-22
Cut, 3-13
Default Hydraulic Circuit Options, 3-73
Default Page Setup, 3-7
Default Technical Drawing Options, 3-74
Delete, 3-12
Diagram Editor, 3-4, 3-6
Dimension Line, 3-36, 3-37, 3-38, 3-39
Discount and Multipliers, 3-69
  Discount Schedule, 3-70
  Global Multipliers, 3-70
Displayed Information, 3-21
Drawing Surface, 3-7
DXF Format, 2-22
Ellipse, 3-15
Export
  3D Components to a Folder, 2-22
  Automation Studio, 2-24
  DXF, 2-22
File
  Create, 2-17
  New, 2-17
  Open, 2-17
  Save, 2-18
  Save As…, 2-20
Flip, 3-14
Freezing Prices, 3-67
General Information, 3-3
Graphic Elements, 3-15
Grid, 3-7
  Activating, 3-9
  Manifold, 3-52
Header Section, 2-1
Inserting Components, 3-11
Interface
  2D Manifold Layout, 3-32, 3-33
  Component Properties, 3-18
  Header Section, 2-1
  Main Display, 2-1
  Navigation Pane, 2-1
  Parts List, 3-57
  Price Components, 3-58

Price Components Project Parameters, 3-58
Project Parameters, 3-1
System Design, 3-4
Interferences, 3-45
Library Explorer, 3-5
Line, 3-15
Cross Settings, 3-26
Jump, 3-26
Thickness, 3-17
Link
Create, 3-25
Modify, 3-25
Lock Component Position, 3-50
Main Design Interface, 3-4
Main Display, 2-1, 2-15
Main Interface, 2-1
Manifold
Automatic Shrinking, 3-57
Border, 3-29
Component Library, 3-32, 3-33
Components, 3-34
Dimensioning, 3-55
Edges Resizing, 3-55
Grid, 3-52
Notes, 3-53
Ports, 3-29, 3-33
Resizing Dialog Box, 3-56
Views, 3-40
Manifold Component
Inserting, 3-35
Managing, 3-35
Manifold Layout
2D, 3-32, 3-33
Editor, 3-35
Interfaces, 3-32
Manual Overrides, 3-20
Menu
Contents, 2-3
Help, 2-3
Menus, 2-3
Model Code Configuration, 3-19
Modifying Text Attributes, 3-16
Mounting Holes, 3-34
Defining, 3-35
Move, 3-14
Multiple File Management, 2-14
Navigation Pane, 2-1
Net Adder, 3-23
New File, 2-17
Notes, 3-53
Open File, 2-17
Options, 3-72
Help, 2-5, 2-7, 2-8
Orifice Disks, 3-30
Orifice Plugs, 3-30
Orthogonal Manifold Layout Interface, 3-32, 3-33
Other Component Envelop, 3-47
Other Components, 3-31
Pan, 3-10
Parts Library, 3-4
Parts List, 3-57
Paste, 3-13
Performance, 3-76
Picture, 3-15
Ports, 3-29
Deleting, 3-35
Inserting, 3-35
Managing, 3-35
Manifold, 3-29
Price Components Interface, 3-58
Price Components Project Parameters Interface, 3-58
Price Unfreezing, 3-67
Prices Freezing, 3-67
Print, 2-21
Print Preview, 2-20
Project Parameters, 2-15
Price a Manifold, 3-1
Price Components, 3-58
Rectangle, 3-15
Reference Axis, 3-43
Renaming, 2-15
Report
Contents, 4-2
Generating, 4-1
Importing, 4-2
Resizing
Dialog Box, 3-56
Dragging the Edges, 3-55
Manifold Automatically, 3-57
Restrain to Surface, 3-50
Revision
History, 2-15
Modify, 3-65
Rotate, 3-13
Rotate a Component, 3-49
Satellite Owner Lines, 3-44
Save File, 2-18
Save v2.0 File, 2-20, 2-22, 2-25
Saving, 2-15
Screens, 3-20
Seal Type, 3-4
Search in Library, 3-5
Set Location, 3-48
Snap, 3-10
Software Options, 3-72
System Boundary, 3-29
System Design, 2-15
System Design Interface, 3-4
Technical Parameters, 3-3
Text Box, 3-15
Toolbar
Edit, 2-10, 2-11
File, 2-8, 2-10
View, 2-12

Transparency, 3-40
Unfreezing Prices, 3-67
View
  Cavities Only, 3-41, 3-42
  Component Properties, 3-15
  Component's ID, 3-44, 3-45, 3-46
  Connection Port, 3-18
  Interferences, 3-45
  Manifold Grid, 3-52
  Port Names, 3-17
  Reference Axis, 3-43
  Revision, 3-65
  Satellite Owner, 3-44
  Transparency, 3-40
Warning Messages, 2-16
Zoom, 3-7, 3-10
Zoom-all, 3-10
Zoom-in, 3-10
Zoom-out, 3-10