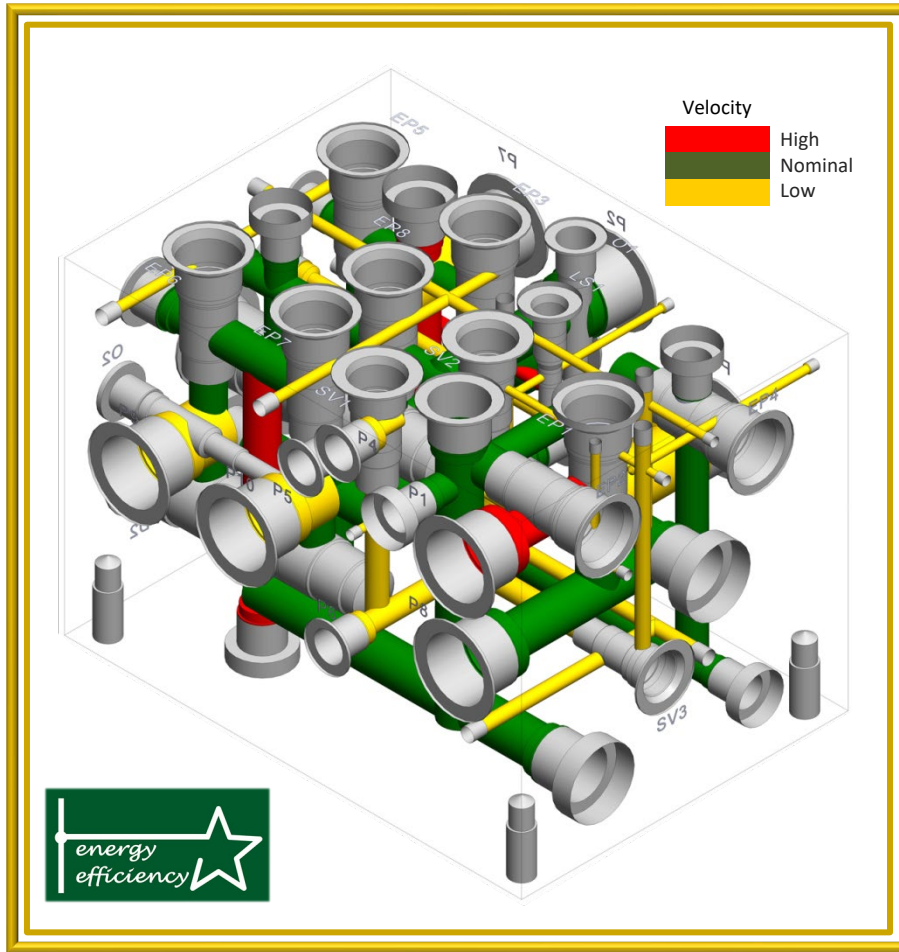


POWER-to-DESIGN MANIFOLDS

MDTools® 945 What's New



SOLIDWORKS 2013
compatible



MDTools® 945 - What's New

User Interface Improved

- Re-organized Ribbon Menu
- Context Flyout

Energy Efficient Design

- Energy Efficient Connections
- Energy Efficient Construction Port
- Check for Velocity Hot Spots in Blocks
- Energy Efficient Smooth Bends

Integrated Browser

- Cavity Library Integrated within the Browser
- Cavity Browser Enhanced
- Connectivity Browser Enhanced

New Interactive Functionality

- Stretch Block
- Stretch and Incline Drill
- Move Cavity or Footprint - Dragging

New Checking Functionality

- Wall thickness Check - Consolidated

Miscellaneous

- Mounting Holes with Preview
- Set Manufacturing Precision

HyDraw to MDTools Integration

- Port Info Captured thro' Schematic Interface

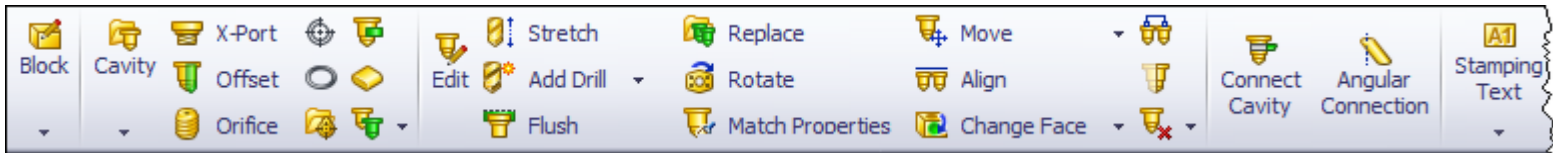
Recap

Contact VEST

User Interface Improved

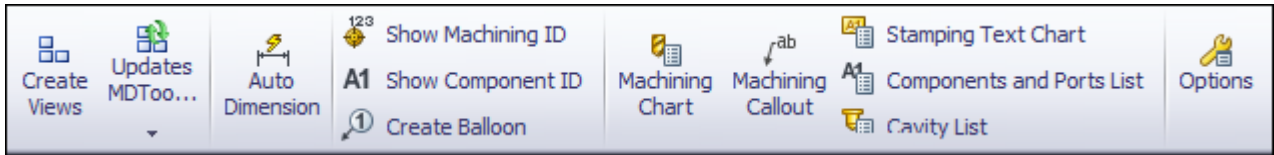


Part Menu

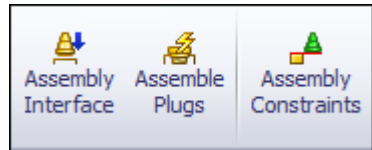


Quick access to all MDTools commands from the ribbon menu.

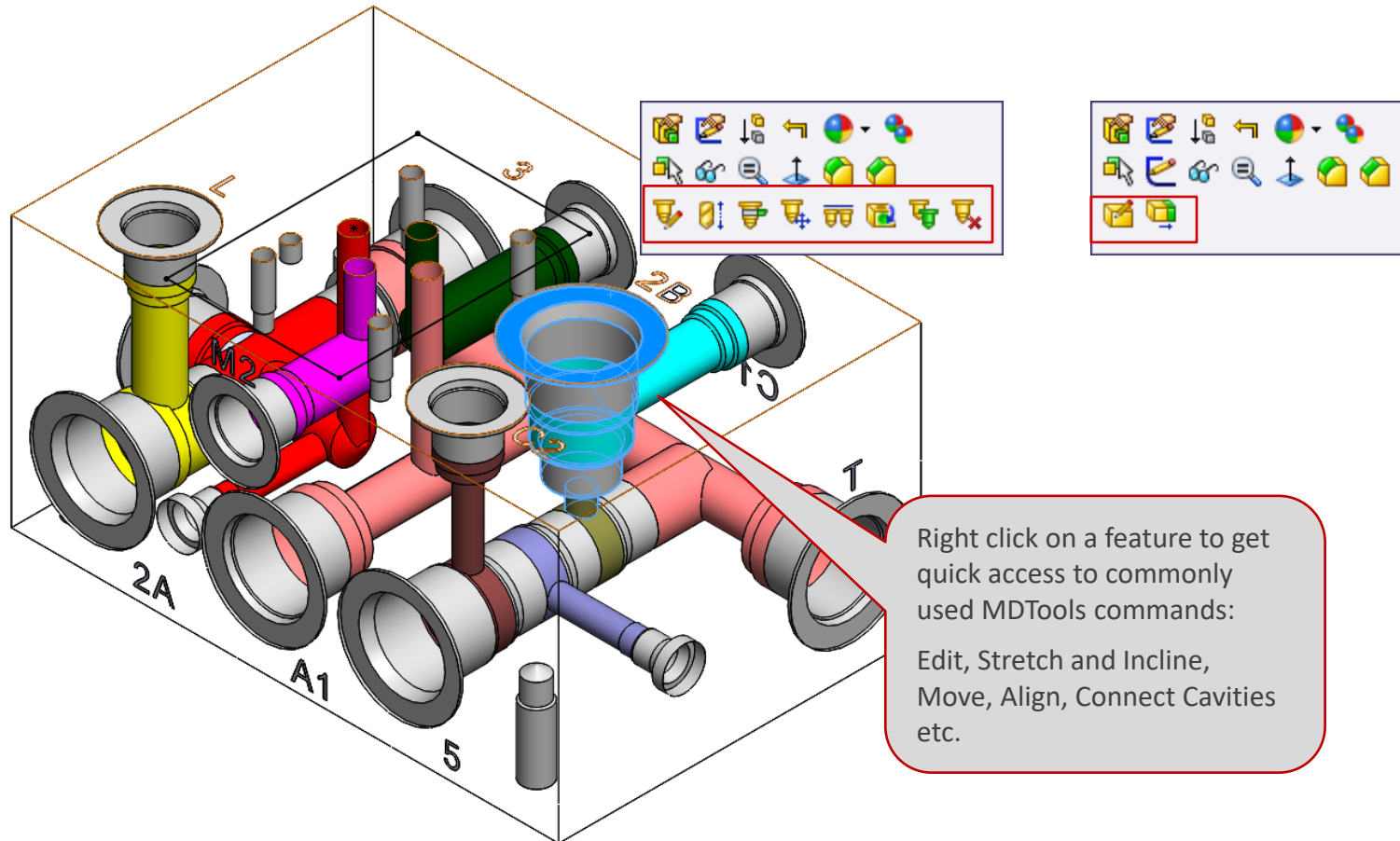
Drawing Menu



Assembly Menu



Note: Drop-down Menu also available



Energy Efficient Design



MDTools Options

Library and Units | Net Color | **Energy Efficiency** | Construction Port | Internet | Misc.

Optimize

Diameter Depth

Flow and Velocity Unit

Imperial Metric

Pressure Net ▾

Nominal Velocity Range: 12 - 25 ft/s

Construction Port Sizing

Velocity Range	D2/D1
>35	1.3
25-30	1.1
<25	1
30-35	1.2

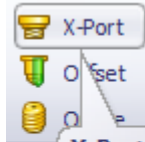
Construction Port

Apply Cancel

Setup MDTools to optimize Diameter and Depth, when making connections and inserting construction ports

Define nominal velocity range of oil flow for tank and pressure connections

Define construction hole upsizing ratio, for different velocity ranges



X-Port
Inserts construction ports for energy efficient connections

Insert Construction Port

Connect to

	Port	Flow (gpm)	Type
<input type="checkbox"/> Cavity1	1	12	Pressure
<input type="checkbox"/> Cavity2	1	12	Pressure

Energy Efficiency

Optimize Diameter

Construction Port

Cavity: SP-06

Drill Diameter: 0.44 in

Cavity ID: X-Port1

Insert Multiple

Continue Cancel

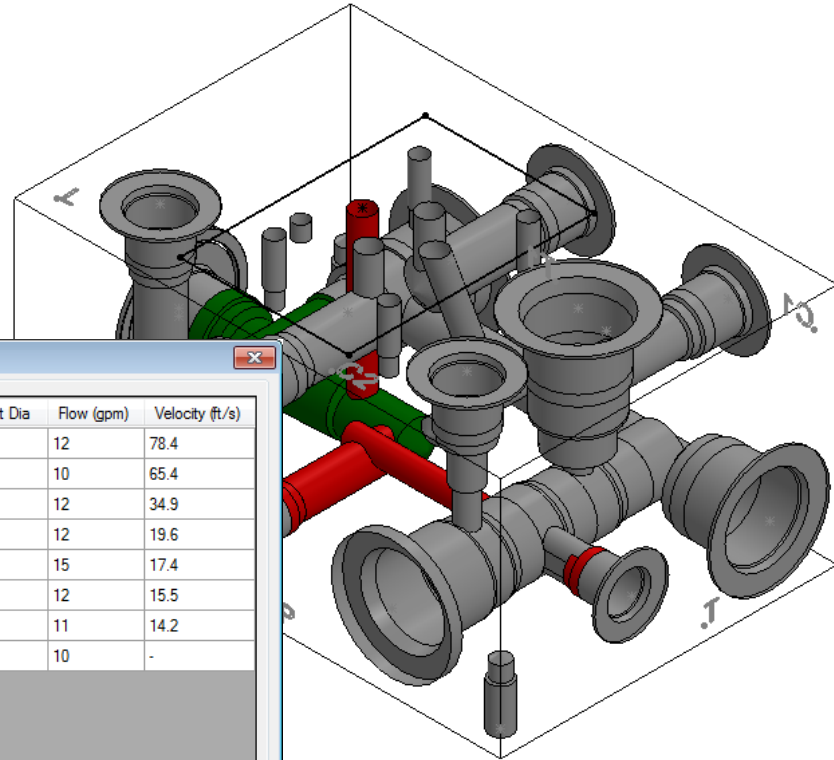
Smart Construction Port selection, based on flow values, is used when connecting ports

If Energy Efficient connection is active, then MDTools suggests Drill Diameter and Construction Port to reduce bend losses

Check for Velocity Hot Spots in Blocks



Check Velocity in Block
Checks velocity in cavities/ports



Check Velocity in Block

Pressure and Tank Nets	Cavity/Port	Drill/Port Dia	Flow (gpm)	Velocity (ft/s)
All Nets	PLUG1 (#4 SAE)	0.25	12	78.4
Net Not Defined	11-P {D03}	0.25	10	65.4
NET1	GP (#4 SAE)	0.375	12	34.9
NET2	P {#8 SAE}	0.5	12	19.6
NET3	aa {}	0.594	15	17.4
NET4	10A-1 {C10-2}	0.5625	12	15.5
NET5	RV-1 {C10-2}	0.5625	11	14.2
NET6	12-3 {C10-4}	0.25	10	-
NET7				
NET8				

Pressure Net Velocity: ■ High ■ Nominal [12-25 ft/s] ■ Low

Close <<

Check velocity for selected nets or for the complete manifold.

Each tank and pressure connection is color coded for oil velocities:

Red – High

Green – Nominal

Yellow – Low



Energy Efficient Smooth Bends



Check Bend
Checks quality of intersections for energy efficient bends

Connect Cavities

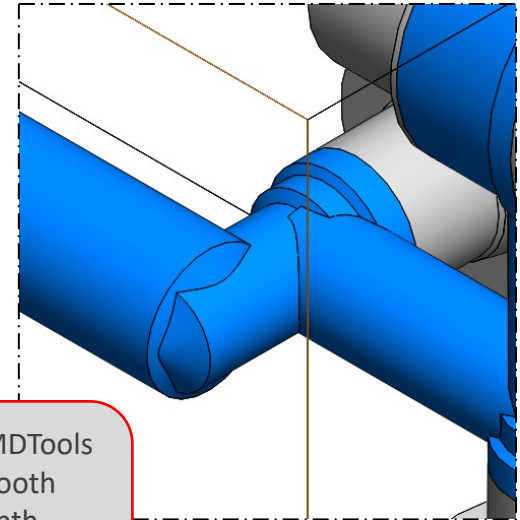
Select
Cavity X < 35.5 Y < 66

Connect cavity to
Cavity1 Port 1

Cavity2 Port Drill Diameter 7

Energy Efficiency
 Optimize Diameter Optimize Depth

With minimum wall thickness
Cavity Wall Thickness 78



Check Bend

Report

	Cavity	Connecting Cavity	Current Depth	Recommended Depth
<input checked="" type="checkbox"/>	1/2 BSPP_1	PCFC-10-1	32.4477	30.45
<input checked="" type="checkbox"/>	7/16 UNO_3	CVFB-08-1	46.4497	44.772

Depth to Tip

MDTools checks and smooths bends in manifold at the end of the design process.

In Energy Efficient mode, MDTools automatically creates a smooth bend by optimizing drill depth (Energy Efficient Connection mode selected)

Integrated Browser

Cavity Library Integrated within the Browser



Cavity Library integrated within the Browser

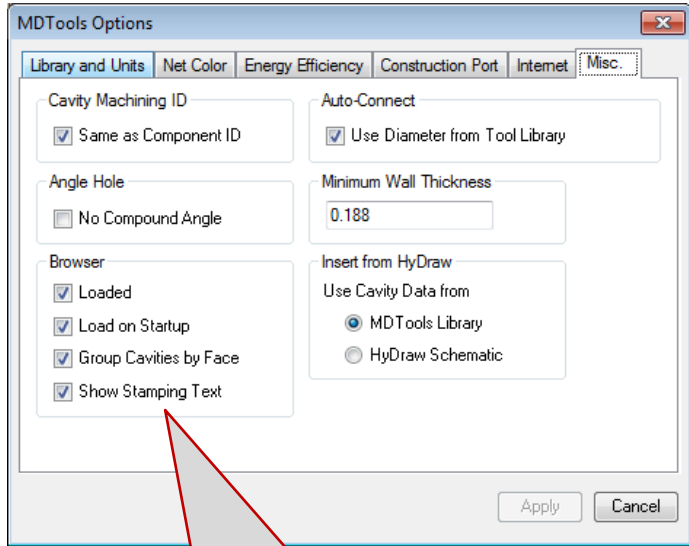
Quickly search and insert a cavity directly from the MDTools Browser.

For Energy Efficient Design, enter Flow and Port Type before inserting the cavity

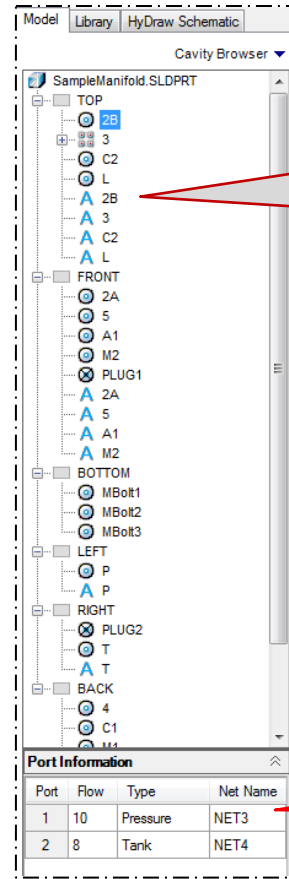
The screenshot shows the MDTools Browser interface with the 'Cavity Library' tab selected. A search bar at the top contains the letter 'C'. Below it, a list of cavity models is displayed, including C-10-2, C-10-3, C-10-3S, C-10-4, C-10-4U, C-10-5S, C-12-2, C-12-2U, C-12-3, C-12-3S, C-12-4, C-12-4U, C-12-5S, C-16-2, C-16-3, C-16-3S, C-16-4, C-16-5S, C-20-2, C-20-3, C-20-3S, C-20-4, C-20-5S, and C-4-2. Below the list is a 'Port Information' section with a table:

Port	Flow	Type	Net Name
1	12	Pressure	Net-1
2	12	Pressure	Net-2

Below the table are two checkboxes: 'Clear Data on Insertion' (unchecked) and 'Construction Port' (checked). A 'Component ID' text box is empty. An 'Insert' button is located at the bottom right of the interface.



Cavity Browser, now also shows stamping text



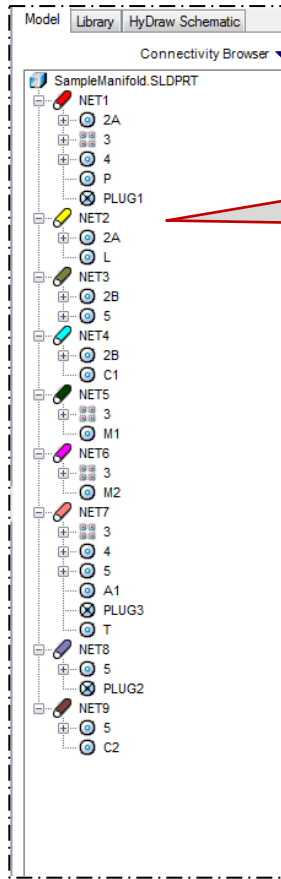
Separate icons used for each feature to easily distinguish between various features

Edit Port Information directly in the browser.

Port Information

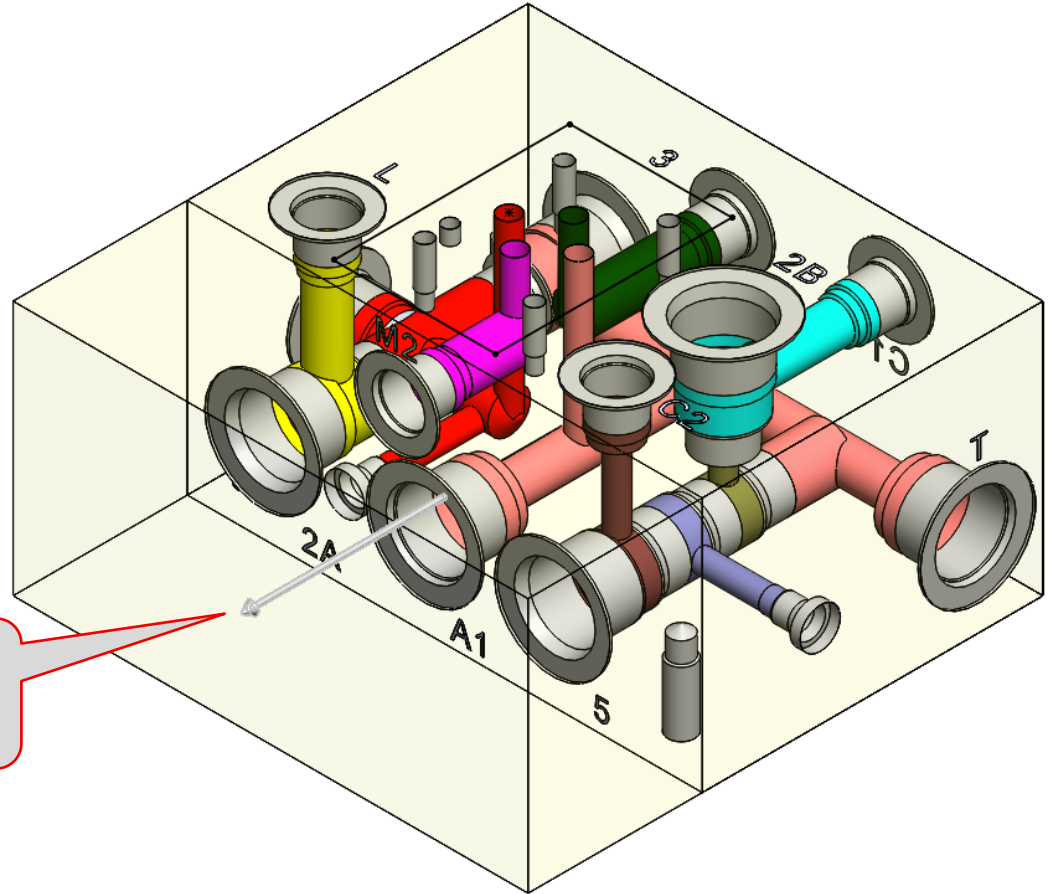
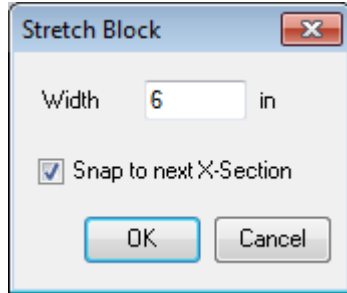
Port	Flow	Type	Net Name
1	10	Pressure	NET3
2	8	Tank	NET4

Connectivity Browser Enhanced



Colored Net icons enhance the visual recognition of nets in Connectivity Browser

New Interactive Functionality



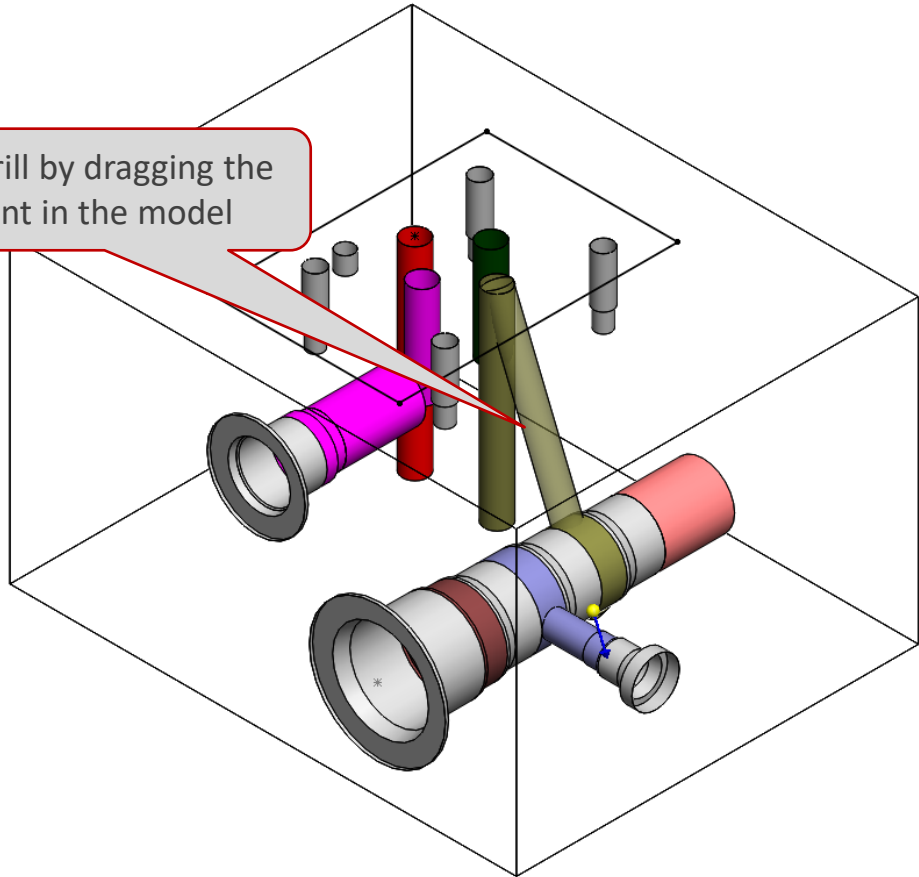
Stretch and change the block size by dragging a manifold face in the model.

Stretch and Incline Drill



Stretch
Stretches and tilts a cavity in the specified direction

Incline a drill by dragging the drill tip point in the model



Stretch and Incline Drill

Select
 Cavity
Drill Diameter: 0.328
Drill Depth: 5.3
 Depth to Tip

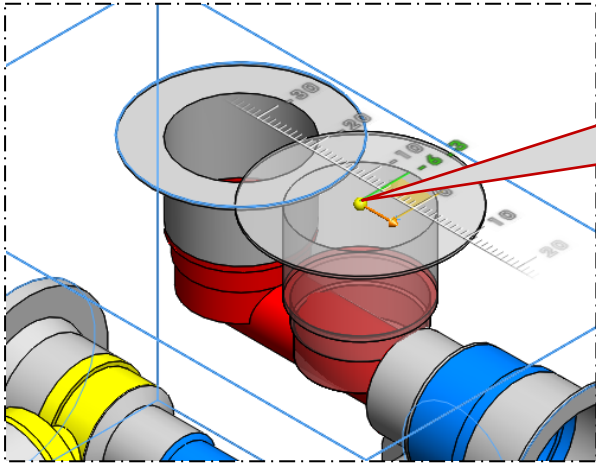
Stretch up to
 Cavity Port: 2

Inclination
 Allow Change No Compound Angle
Beta: 58 Alpha: 124.3

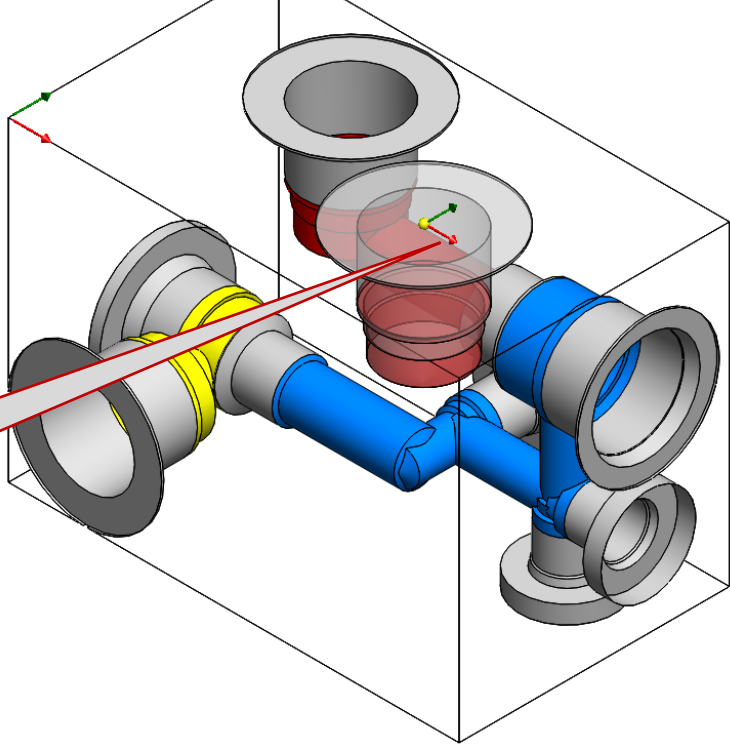
Reset OK Cancel

Stretch a drill up to a cavity (port)
Allow inclination and view the angular change in the model

Move Cavity or Footprint - Dragging

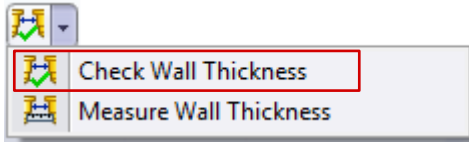


Move a cavity in the model by dragging the center point of the selected cavity



Move a cavity along an ordinate by grabbing one of the directional arrows

New Checking Functionality



Check Wall Thickness

Check Wall Thickness

- Around all Cavities
- Around Selected Cavities
- Between Selected Cavities

Clear Selection

Min. Wall Thickness: 0.188 in

Status: Completed 100 %

Report

Clearance List

Cavity	Cavities with Wall Thickness < 0.188
11-LP	11-BH3 (0.114)
11-T	11-A (0.162)
GP	11-P (0.138)
PLUG1	PLUG3 (0.183)
PLUG1	P (0.026)
PLUG3	GP (0.126)
PLUG3	P (0.066)
T1	11-T (0.011)

Clearance with Spot Face

Cavity	Cavities with Wall Thickness < 0.188
--------	--------------------------------------

Clearance with Manifold Face

Cavity	Faces with Wall Thickness < 0.188
PLUG1-1	Front Face (0)
MBolt3-D	Right Face (0.165)
MBolt3-D	Front Face (0.165)
MBolt2-D	Left Face (0.125)
MBolt2-D	Back Face (0.165)
12-D	Back Face (0)


Start Wall Thickness

Various options to check wall thickness are consolidated in a single window

Report includes Clearance with Manifold Face

View the report in a text file or print it

Miscellaneous



Mounting Holes
Inserts mounting holes in the manifold

Insert Mounting Holes

Mounting Hole

Library:

Cavity:

Through Hole

Cavity ID:

Number of Holes

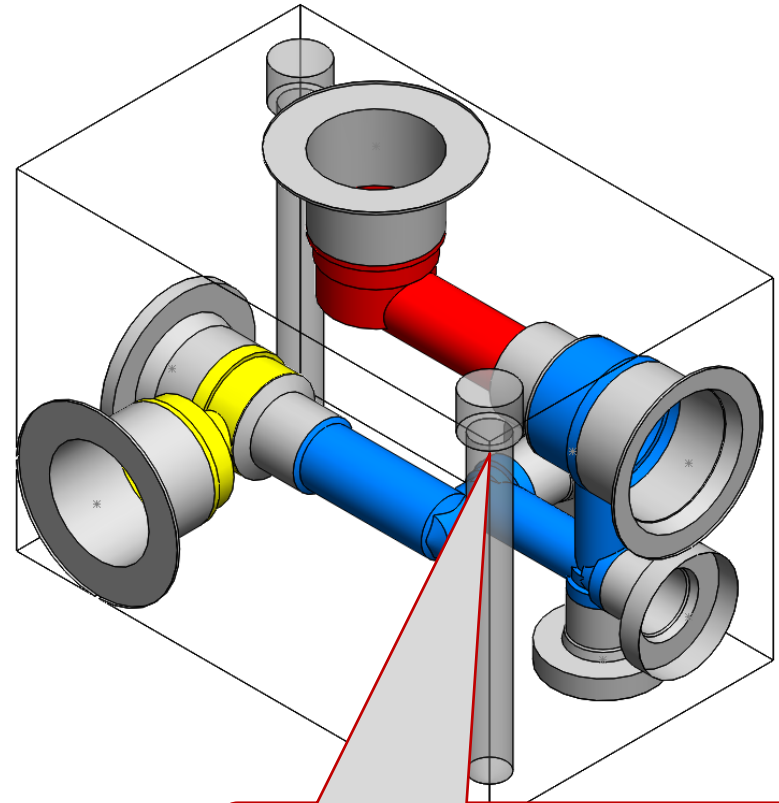
2 4

Face and Location

Distance from Edges: in

Through Hole option to insert through holes

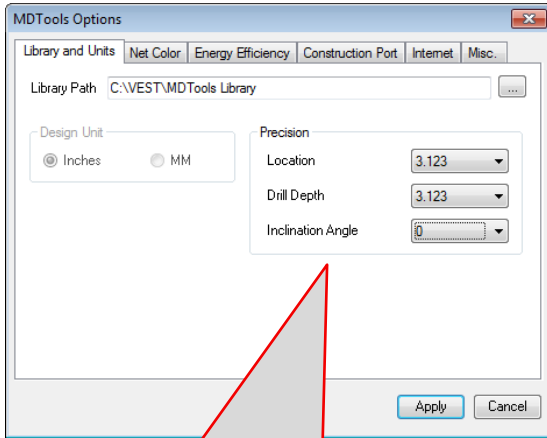
Specify the number of holes (either 2 or 4)



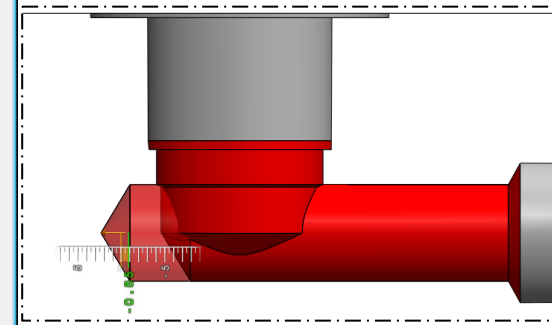
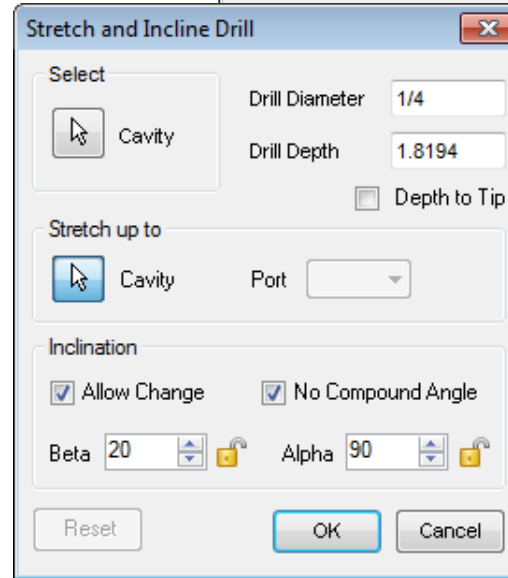
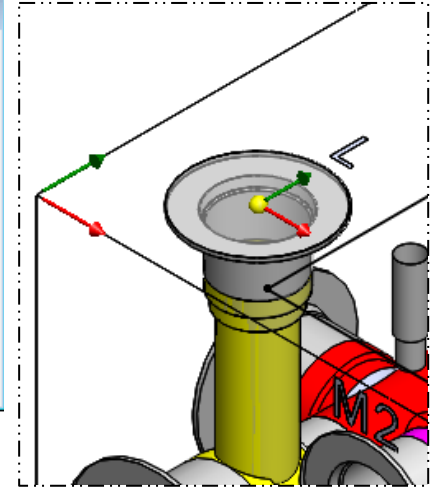
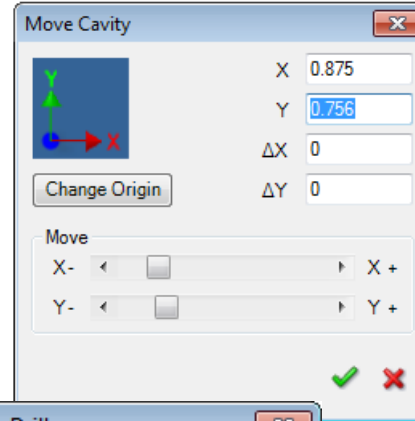
Easily place mounting holes with the help of a preview

Set Manufacturing Precision

NEW



Manufacturing precision values defined at the start of the manifold design process are used by MDTools through out the design process.
(Move Cavity, Stretch and Incline Drill)



HyDraw to MDTools Integration

Port Info Captured thro' Schematic Interface



Model Cavity Library HyDraw Schematic

Schematic File
C:\Users\LK\Desktop\Sample Manifo ...

Manifold Properties

Design Unit: INCH
Material: Aluminum
Mounting Face:

Components and Ports

Cavity Browser

Components

- 10A
- 10B
- 11
- 12
- aa
- MBolt2
- MBolt3
- RV

Ports

- C1
- C2
- GP
- L
- orf
- P
- PLUG1
- PLUG3
- T
- T1
- T2

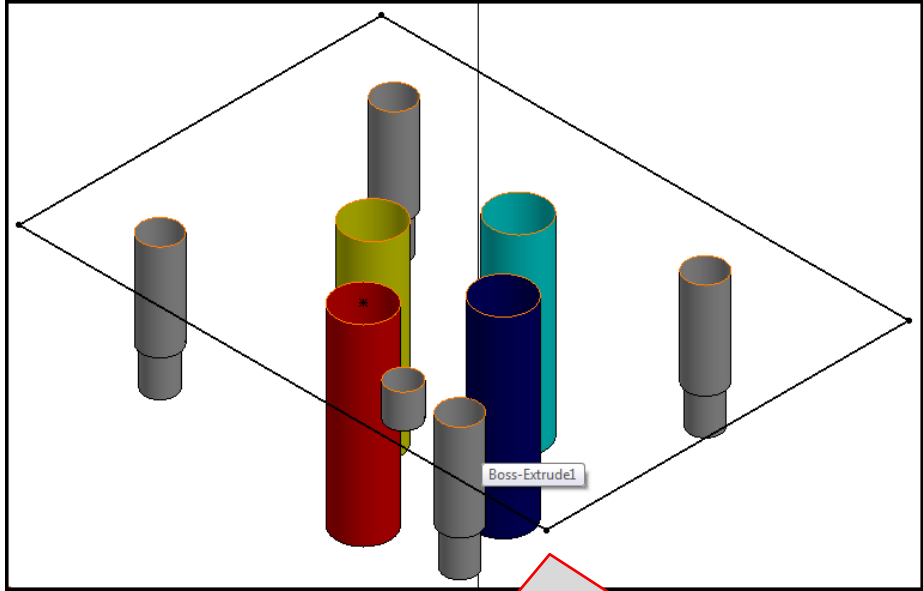
11

Cavity Information Port Information

Cavity Name: D03
Component Outline:
Stamping:
Preferred Faces:

Insert

Enhanced HyDraw Schematic interface allows:
Easy insertion of a cavity with flow and type specified in HyDraw.



MDTools insertion of component outline and stamping text (if defined) with the cavity automatically.

Recap

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Recap

Contact VEST

Do more...

MDTools® manifold design software



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MDTools® 945 Evaluation Software

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Email: sales@VESTusa.com

Visit: www.VESTusa.com

