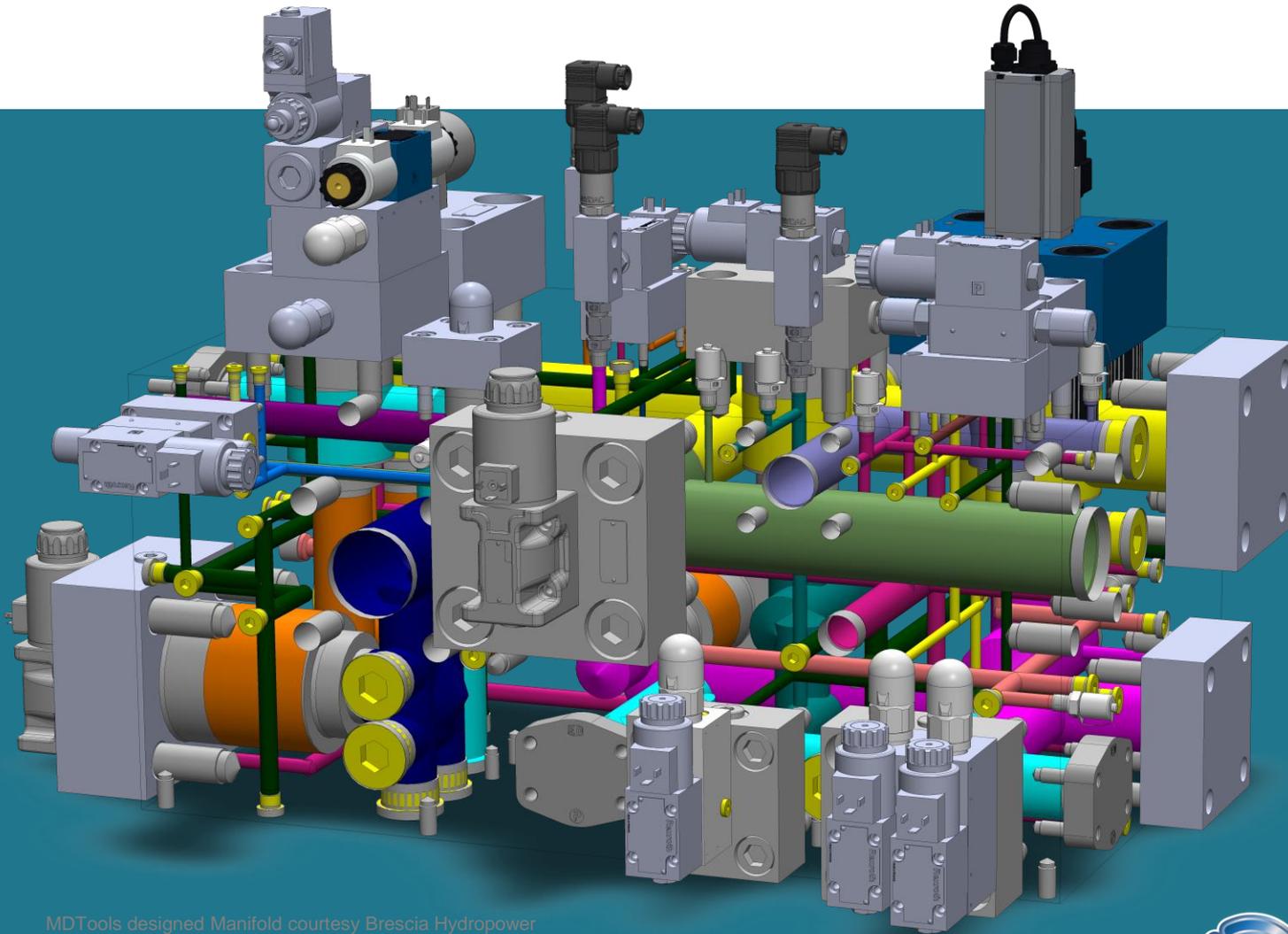


MDTools® 960 What's New



MDTools designed Manifold courtesy Brescia Hydropower



MDTools® 960 What's New?

Design Checks

- Locate Connection Problems
- Locate Wall Thickness Errors
- Locate Broken Nets
- Check Wall Thickness around Undercuts and Slots
- Undercuts and Slots included during Design checks
- Clearance issues in same Net listed

Slot

- Preview while Inserting and Editing a Slot
- Make Connections using Slot
- Add Slot to Inclined Cavities
- Manage Slot Machining sequence

Undercut

- Preview while Inserting and Editing an Undercut
- Preview Mandatory Undercuts
- Create optional Concentric Undercuts
- Undercut's Net info auto assigned
- Manage Undercut Machining Sequence

Machining Callout

- Create Machining Callouts for Slots and Undercuts

Orifice Plugs

- Import Orifice Plugs from HyDraw
- Assemble Orifice Plugs
- Assemble Orifice Discs

Miscellaneous

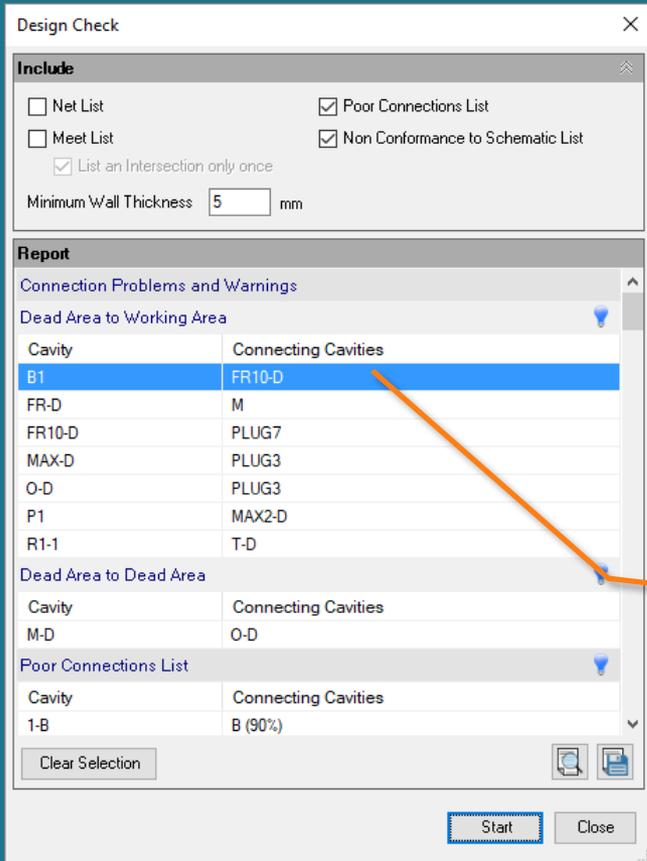
- Rename a Net from MDTools browser
- Move Slot within parent Cavity
- Copy Slot with Cavity
- GUI made Compatible for Window's 125% scaling
- Set Precision for Diameter in Machining Chart
- Preview while Adding Drill to a Cavity



Locate Connection Problems

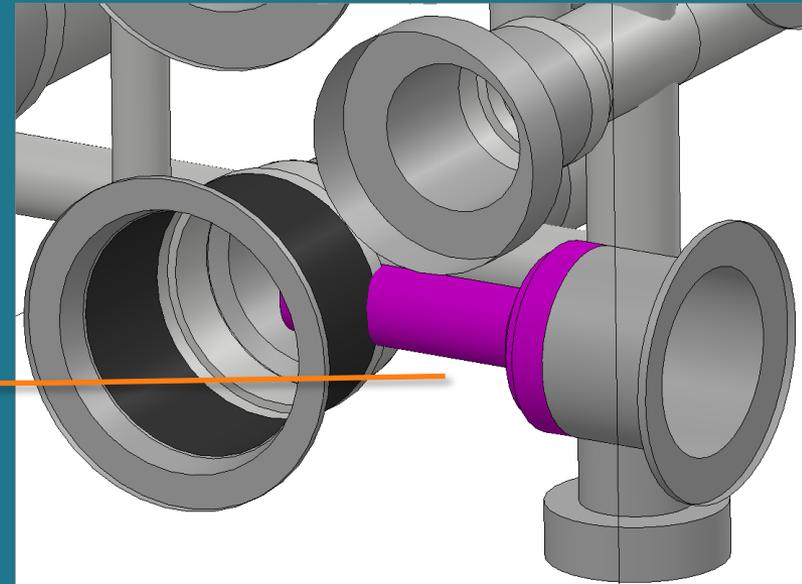
Option selected*

- Indicate Design Errors
- Highlight Selected Cavities
- Remove Color from Unselected Cavities



On a single click, MDTools colors the selected issue.

On double click, MDTools zooms into selected issue



* Default Design Error option is 'Highlight Selected Cavities'
WARNING: Option shown here can be time consuming to process for large manifolds.





Locate Wall Thickness Errors

Option selected*

- Indicate Design Errors
- Highlight Selected Cavities
- Remove Color from Unselected Cavities

Design Check

Include

Net List Poor Connections List

Meet List Non Conformance to Schematic List

List an Intersection only once

Minimum Wall Thickness mm

Report

Wall Thickness

Clearance List

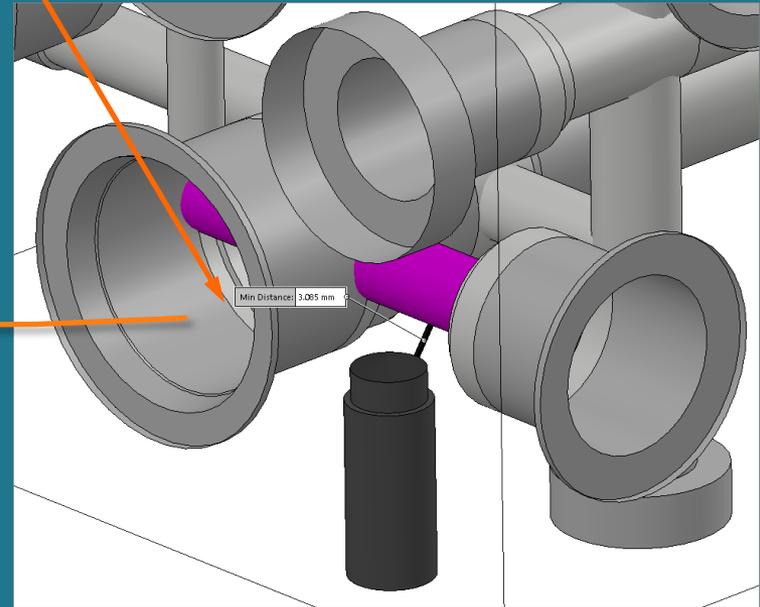
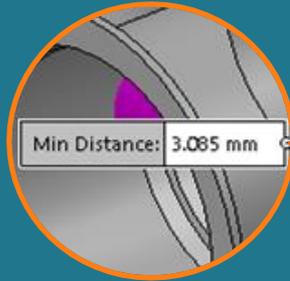
Cavity	Cavities with Wall Thickness < 5
1-A[NET-1]	PLUG1[NET-4] (4.6)
B1[NET-6]	MBolt4 (3.085)
FR-2[NoNet]	O[NET-6] (1.79)
M[NET-7]	EV-D (1.107)
M[NET-7]	PLUG3[NET-6] (2.653)
NG6-A[NET-8]	RM[NET-6] (3.6)
PLUG1-D	MBolt1 (1.7)

Clearance in Same Net

Cavity	Cavities with Wall Thickness < 5
EV-1[NET-6]	PLUG3[NET-6] (3.9)
FR10-3[NET-6]	PLUG4[NET-6] (1.562)
MAX2-2[NET-6]	CON[NET-6] (4.168)
MAX2-2[NET-6]	PLUG3[NET-6] (4.496)

Clear Selection

Start Close



On a single click, MDTools colors the selected issue

On double click, MDTools zooms into selected issue

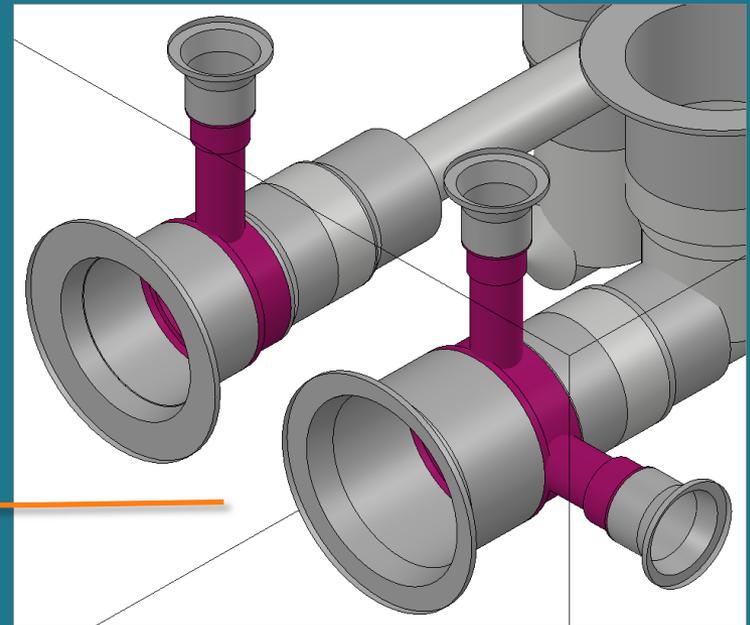
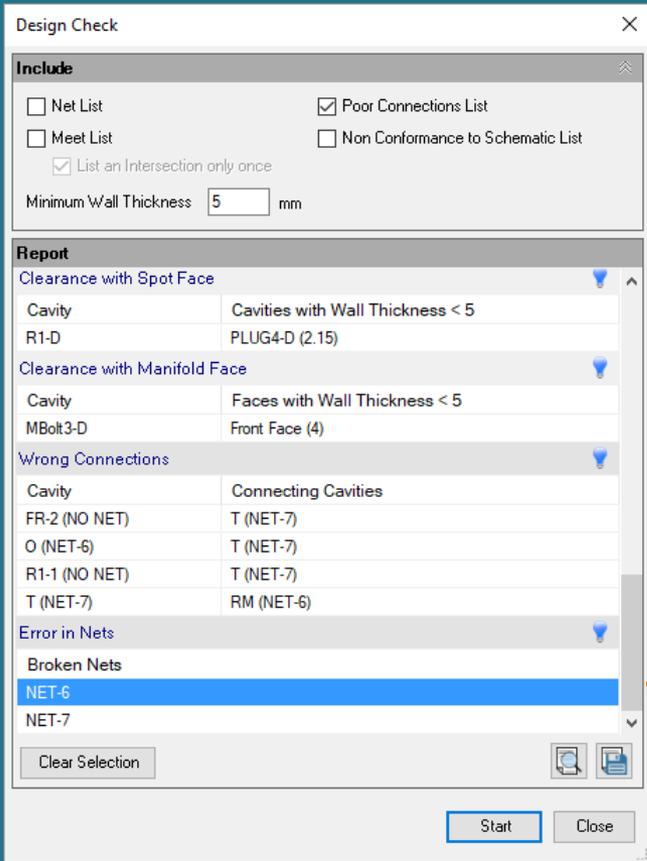
* Default Design Error option is 'Highlight Selected Cavities'
WARNING: Option shown here can be time consuming to process for large manifolds.



Locate Broken Nets

Option selected*

- Indicate Design Errors
- Highlight Selected Cavities
- Remove Color from Unselected Cavities



On a single click,
MDTools colors the
selected issue

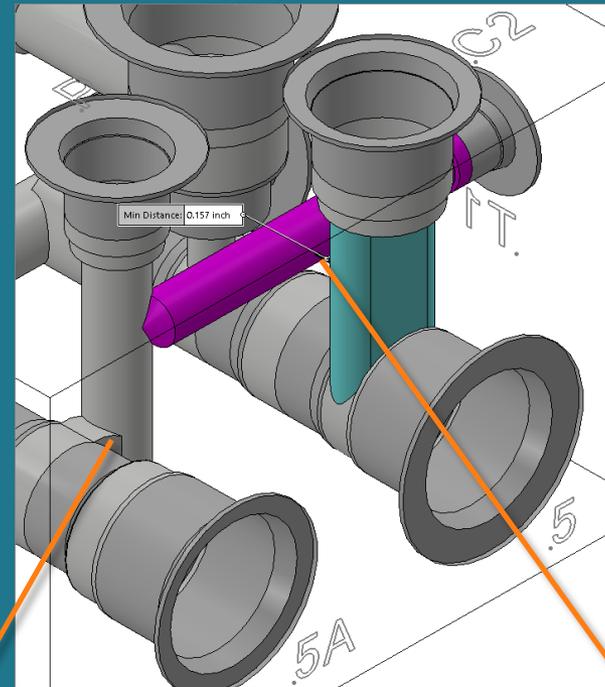
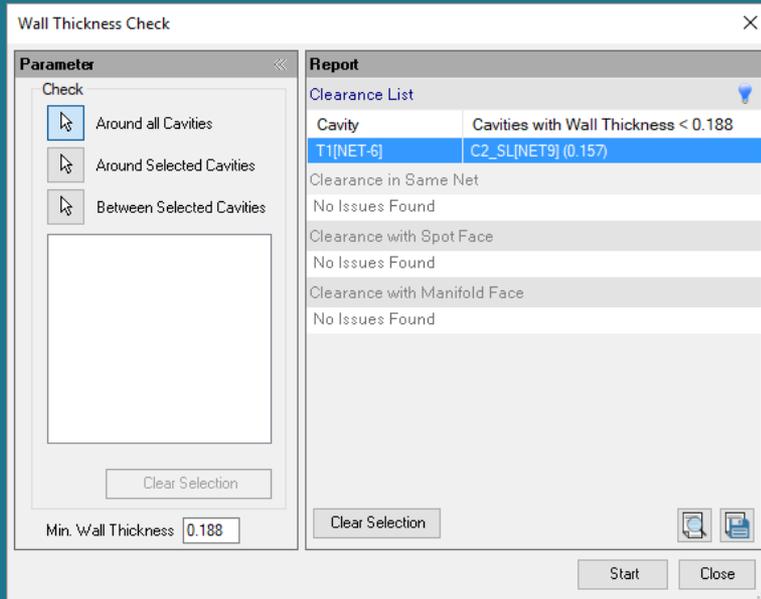
On double click,
MDTools zooms into
selected issue

* Default Design Error option is 'Highlight Selected Cavities'
WARNING: Option shown here can be time consuming to process for large manifolds.





Check Wall Thickness around Undercuts and Slots



No issues found for Undercut

Not enough clearance found between a slot and another cavity



Undercuts and Slots included in design checks

Create Meet List

Parameters

Cavity Name

Component ID Machining ID

Meet List

2A-1	4-1, P
2A-2	2A_UC, L
2A_UC	L
2B-1	5-2
2B-2	C1
3-A	M1
3-B	M2
3-P	P, PLUG1
3-T	A1, A1_SL
4-1	P
4-2	T
5-1	T
5-3	PLUG2
5-4	C2
A1	A1_SL, T
A1_SL	T
P	PLUG1

List an Intersection only once

Clear Selection

Start Close

Connection Check

Include

Poor Connections List

Report

Connection Problems and Warnings

Dead Area to Working Area

Cavity	Connecting Cavities
5-D	2B_SL
MBolt1	2A_UC

Dead Area to Dead Area

No Issues Found

Unconnected Ports and Cavities

No Issues Found

Poor Connections List

No Issues Found

Wrong Connections

No Issues Found

Error in Nets

No Issues Found

Clear Selection

Start Close



Clearance issues in same Net listed

Clearance issues in same Net,
listed separately

Wall Thickness Check

Parameter

Check

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

Min. Wall Thickness

Report

Clearance List

Cavity	Cavities with Wall Thickness < 0.188
F1-A[NET-2]	P1-3[NET-1] (0.117)
F1_SL[NET-1]	P1-D (0.064)
F1_SL[NET-1]	P1_SL[NET-2] (0.18)

Clearance in Same Net

Cavity	Cavities with Wall Thickness < 0.188
F1-B[NET-3]	P1-4[NET-3] (0.1)
P1-4[NET-3]	F1_UC[NET-3] (0.076)

Clearance with Spot Face

No Issues Found

Clearance with Manifold Face

No Issues Found

Start Close

Design Check

Include

- Net List
- Meet List
- List an Intersection only once
- Poor Connections List
- Non Conformance to Schematic List

Minimum Wall Thickness Inches

Report

Wall Thickness

Clearance List

Cavity	Cavities with Wall Thickness < 0.188
F1-A[NET-2]	P1-3[NET-1] (0.117)
F1_SL[NET-1]	P1-D (0.065)
F1_SL[NET-1]	P1_SL[NET-2] (0.181)

Clearance in Same Net

Cavity	Cavities with Wall Thickness < 0.188
F1-B[NET-3]	P1-4[NET-3] (0.1)
P1-4[NET-3]	F1_UC[NET-3] (0.076)

Clearance with Spot Face

No Issues Found

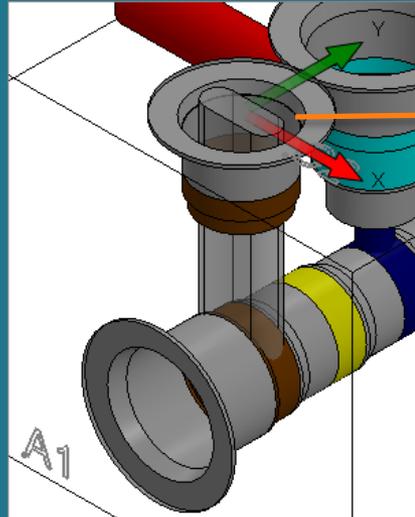
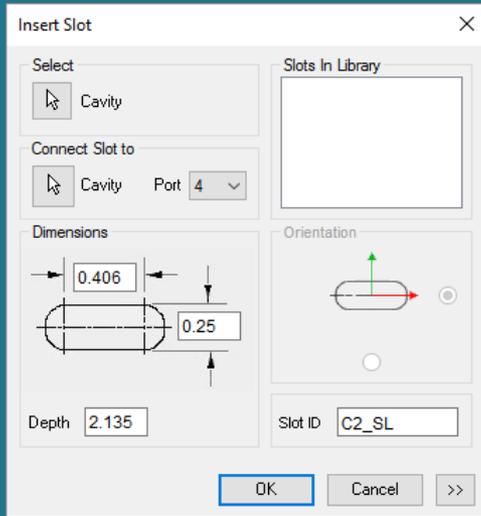
Clearance with Manifold Face

No Issues Found

Start Close

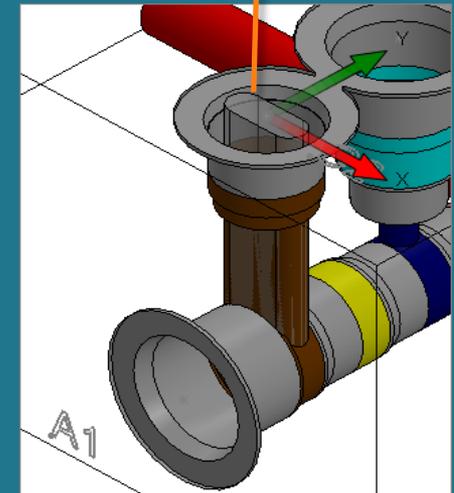
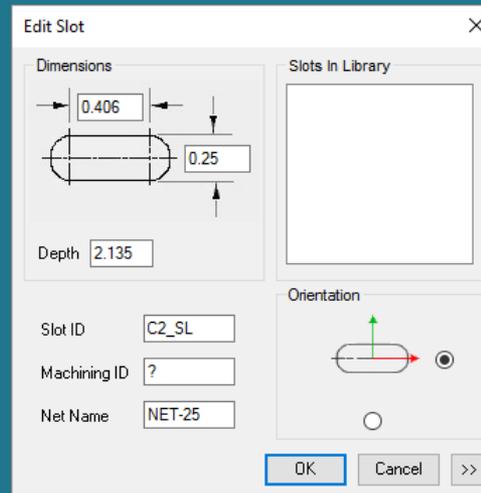


Preview while Inserting and Editing a Slot



Preview before
Insert

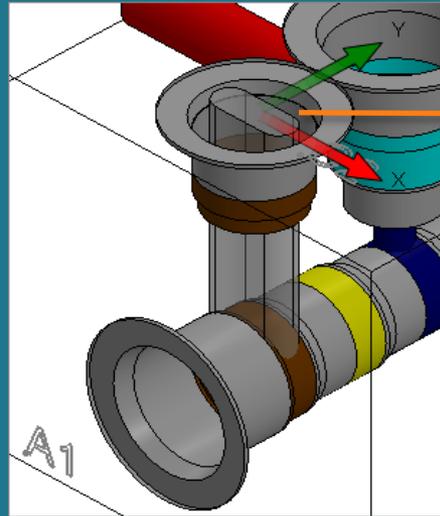
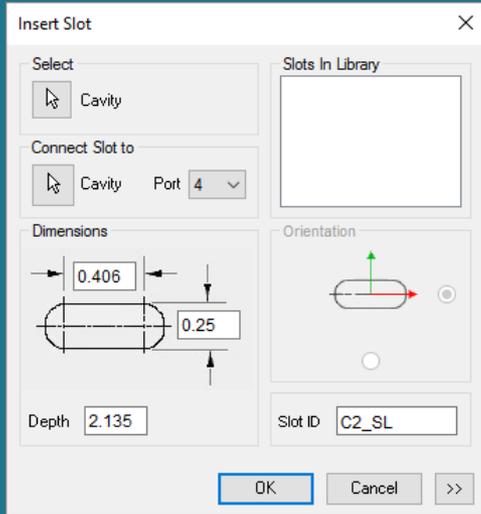
Preview while Edit



Note: Changing dimension and orientation automatically updates the Slot preview.

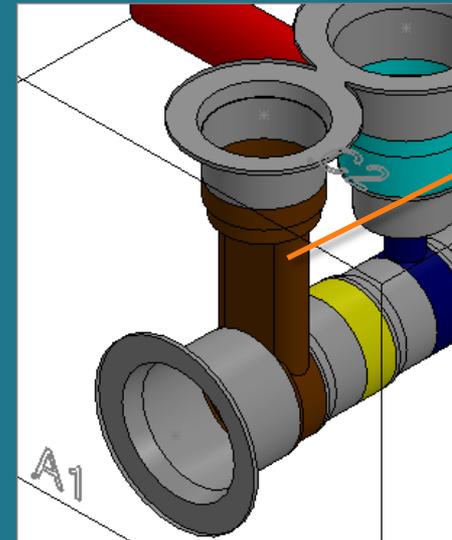


Make Connections using Slot



Preview of Slot

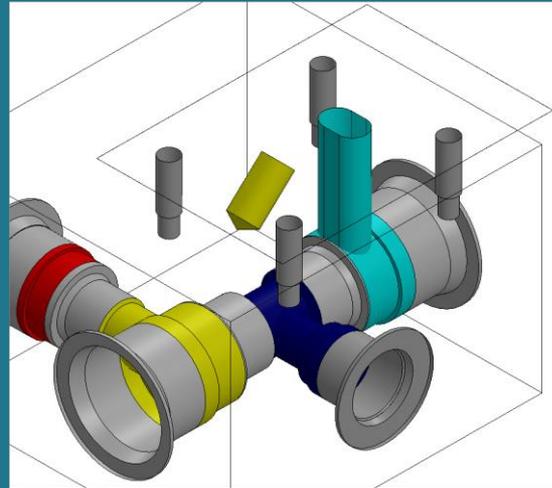
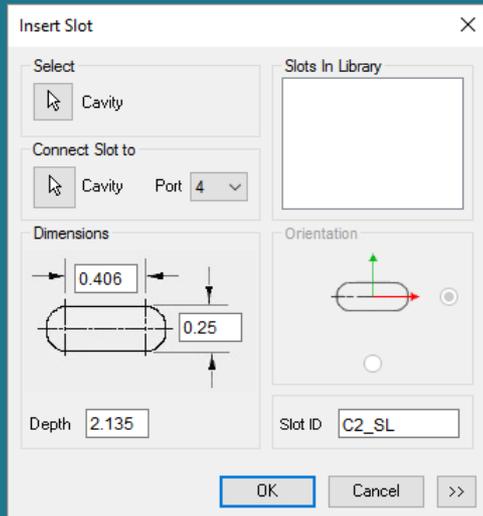
Connection created using Slot



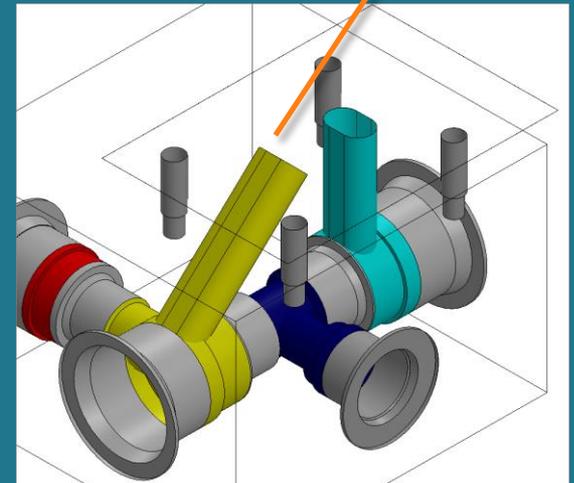
Note: Orientation automatically selected per connecting cavity.



Add Slot to Inclined Cavities



Inclined Slot added



Note: For inclined cavity, **Connect Slot to** option is disabled.



Manage Slot Machining sequence

Width
Diameter

Edit Slot [X]

Dimensions

Width: 0.406

Diameter: 0.25

Depth: 2.135

Slots In Library

Machining Sequence

Operation	Diameter	Depth	Remarks
0 SLOT	\$Dia x \$Width	\$Depth	
1			
2			
3			
4			
5			
6			

Slot ID: C2_SL

Machining ID: ?

Net Name: NET-25

Orientation:

OK Cancel <<

Machining Chart

Name	Operation	Diameter	Depth	Remarks
C1	DRILL	0.438	1.971	
	FORM PORT	# 6 SAE	0.031	
	TAP	9/16-18	0.531	UNF-2B
C2	DRILL	0.250	0.845	
	FORM PORT	# 8 SAE	0.031	
	TAP	3/4-16	0.593	UNF-2B
C2_SL	SLOT	0.25 X 0.406	2.135	
L	DRILL	0.438	2.000	
	FORM PORT	# 6 SAE	0.031	
	TAP	9/16-18	0.531	UNF-2B



Preview Undercuts

Insert Undercut

Select
Parent Cavity Port: 2
Optional Undercut: [dropdown]

Undercut
Undercut ID: 5_UC
Machining ID: ?
Orientation: 0 Degrees

Machining Sequence

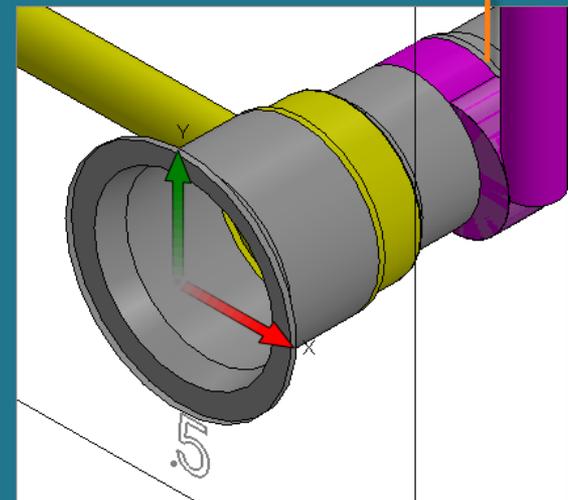
Operation	Diameter	Depth	Remarks
0	UNDERCUT	\$Dia x \$Height	\$Depth
1			
2			
3			
4			

Dimensions

Concentric

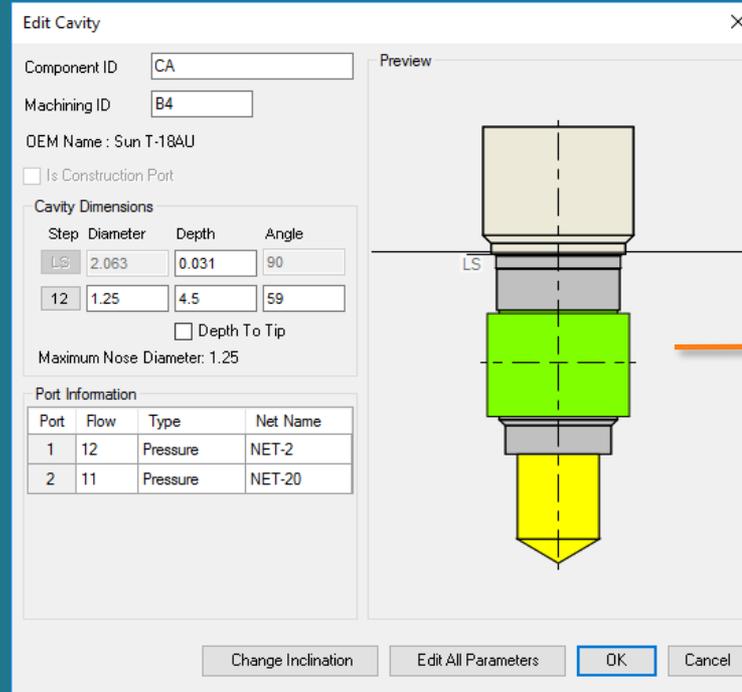
Preview of Undercut in dialog box

Preview of Undercut in model





Preview Mandatory Undercuts



Mandatory Undercut preview in Edit Cavity dialog box.

Note: All Mandatory Undercuts displays in cavity cross-sectional preview.



Create optional Concentric Undercuts

Insert Undercut

Select
Parent Cavity Port: 2
Optional Undercut: [dropdown]

Undercut
Undercut ID: PLUG1_UC
Machining ID: ?
Orientation: 0 Degrees

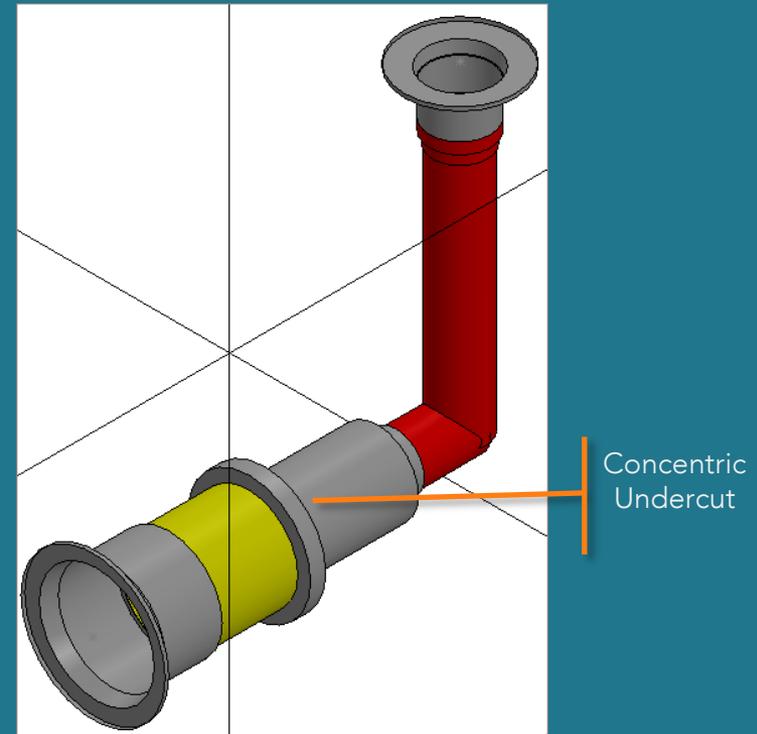
Machining Sequence

Operation	Diameter	Depth	Remarks
0			
1			
2			
3			
4			
5			
6			

Dimensions

Concentric

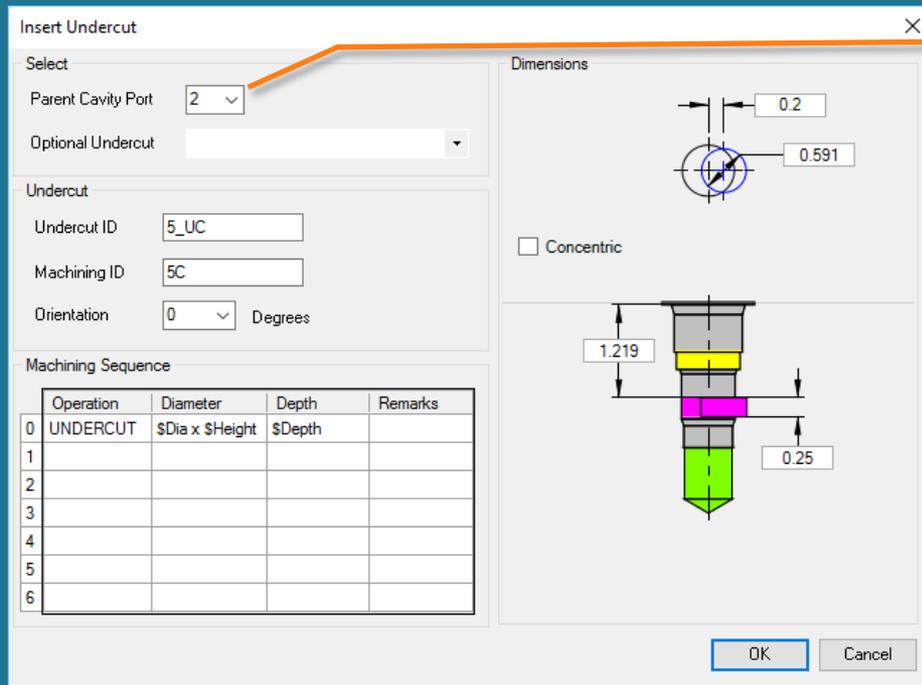
OK Cancel



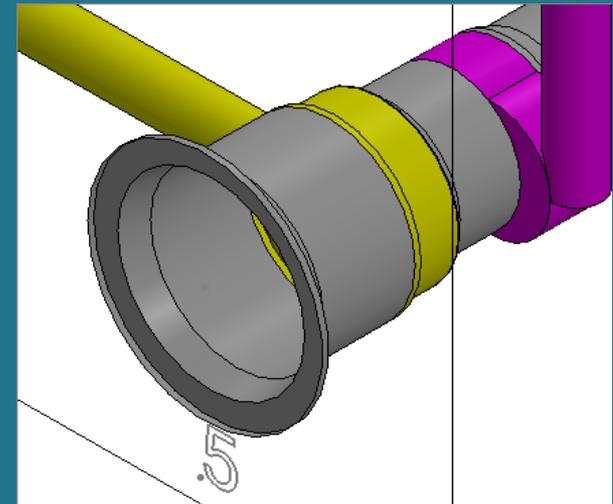
Note: Only Concentric Undercuts can be created in dead area of the parent cavity.



Undercut's Net info auto assigned



Undercut Net information updates automatically per parent cavity port



- Note:**
1. If an undercut lies fully or partially in a cavity port then MDTools assigns parent cavity port net for undercut.
 2. If an undercut lies in dead area then MDTools assigns dead area color for undercut.
 3. **Assign Net** command also considers undercuts while assigning nets per connectivity.



Manage Undercut Machining Sequence

Edit Undercut

Select
Parent Cavity Port: 2
Optional Undercut: [dropdown]

Undercut
Undercut ID: 5_UC
Machining ID: 5C
Orientation: 0 Degrees

Machining Sequence

Operation	Diameter	Depth	Remarks
0	UNDERCUT	\$Dia x \$Height	\$Depth
1			
2			
3			
4			
5			
6			

Dimensions

Concentric

OK Cancel

Machining Chart

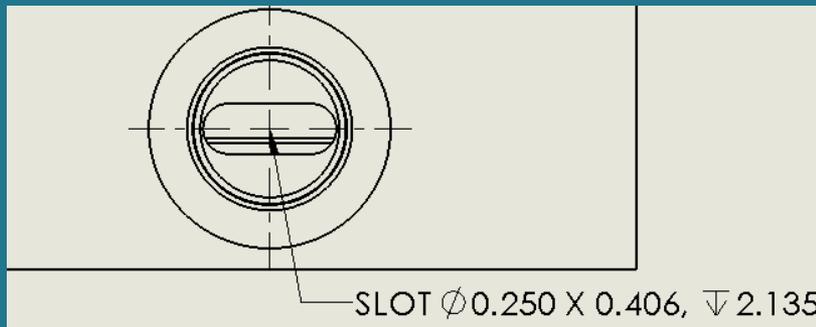
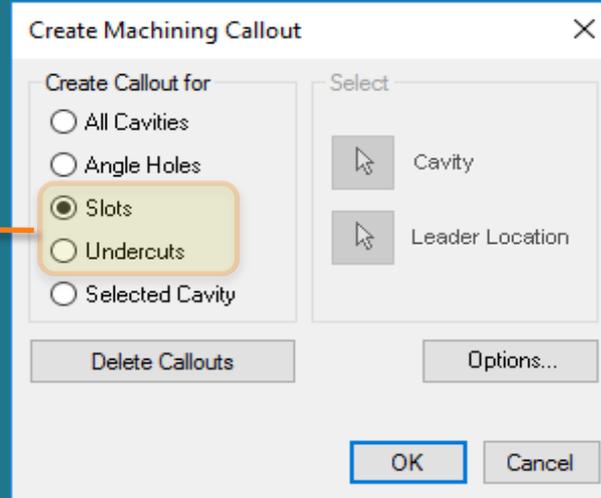
Name	Operation	Diameter	Depth	Remarks
2A	DRILL	5/8	2.667	
	C10-2	1.344	0.031	
5	DRILL	0.609	2.579	
	C10-3	1.187	0.031	
5_UC	UNDERCUT	0.591 X 0.25	1.500	

Note: \$Depth (in Machining Chart) shows depth of undercut from manifold surface.

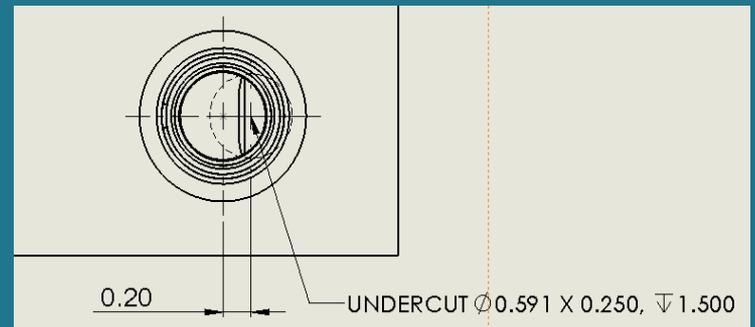


Create Machining Callouts for Slots/Undercuts

Create Machining callouts for slots or undercuts only



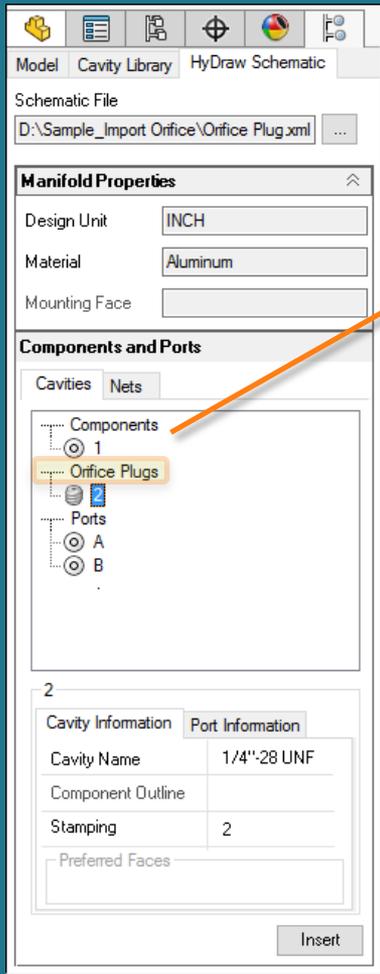
Machining callout created only for Slots



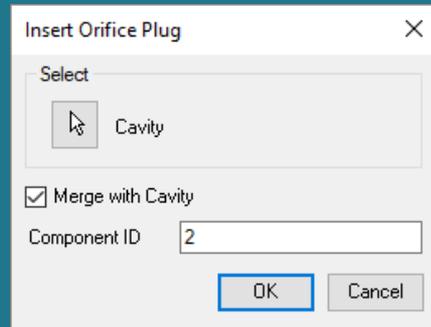
Machining callout created only for Undercuts



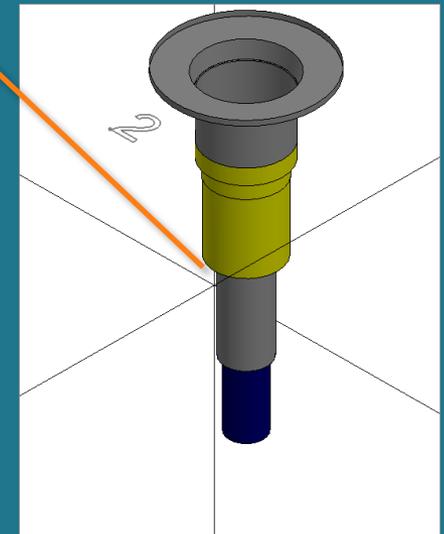
Import Orifice Plugs from HyDraw



MDTools lists Orifice Plugs separately

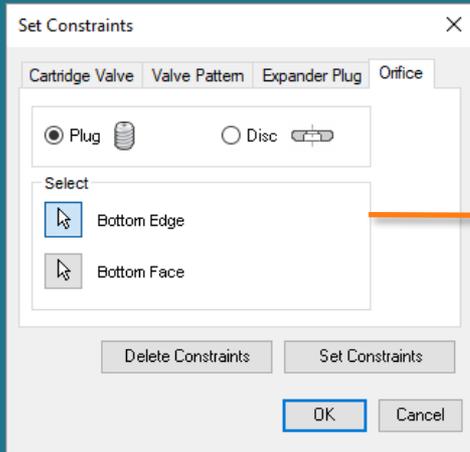


Orifice Plug get inserted to selected cavity

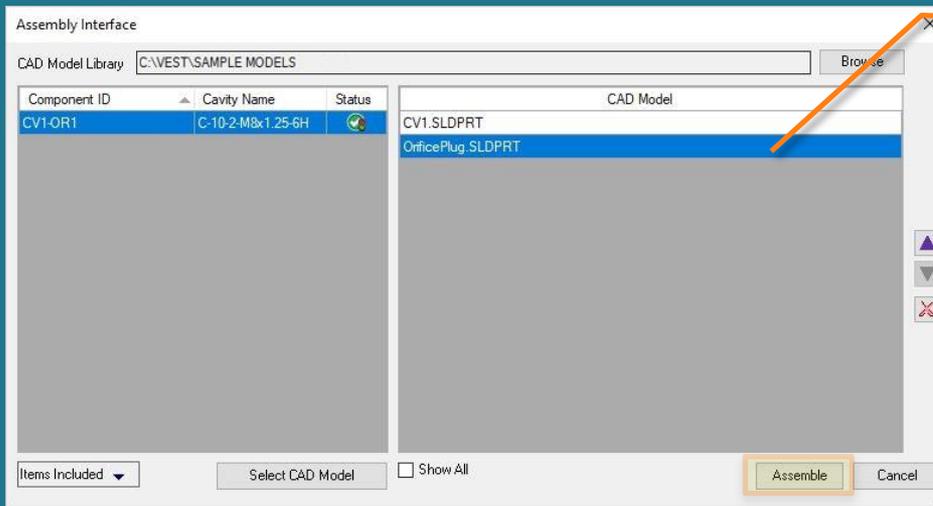




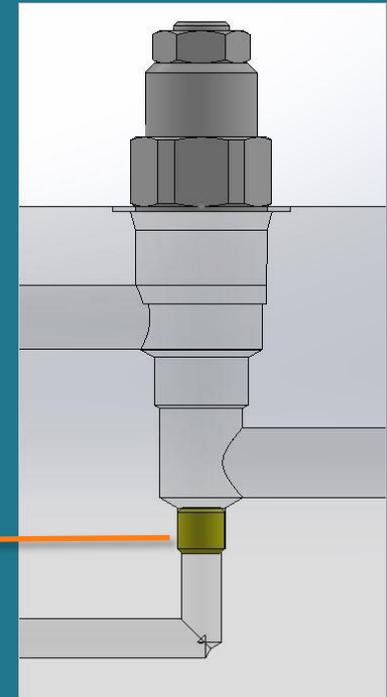
Assemble Orifice Plugs



Set constraints for orifice plug CAD model



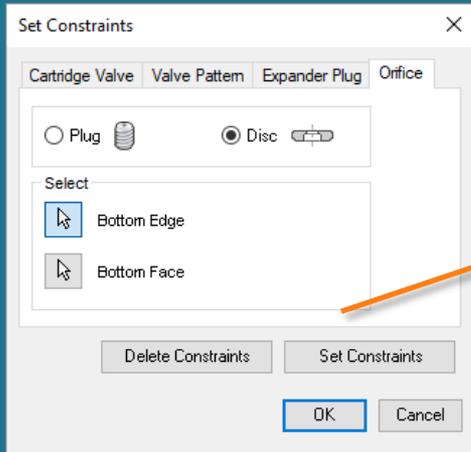
Select Orifice plug CAD model in Assembly Interface and click Assemble



MDTools automatically assembles orifice plug CAD model

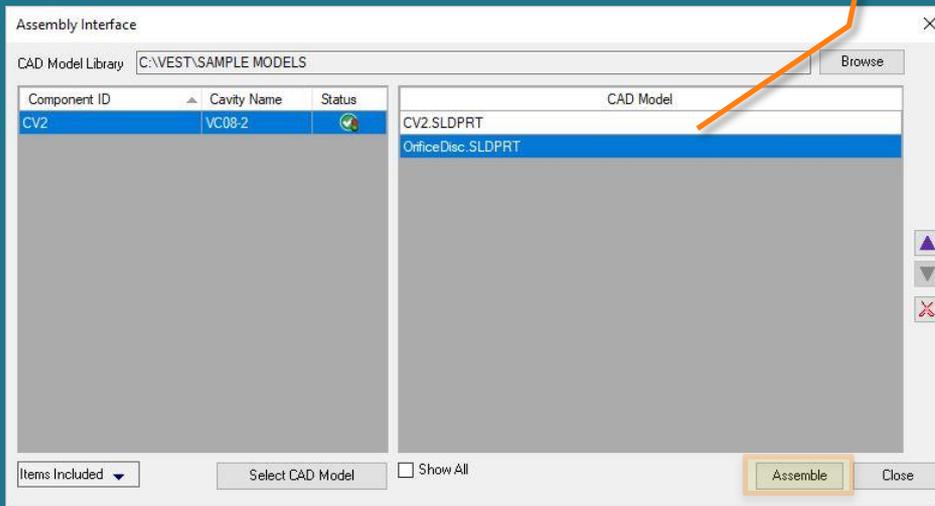


Assemble Orifice Discs

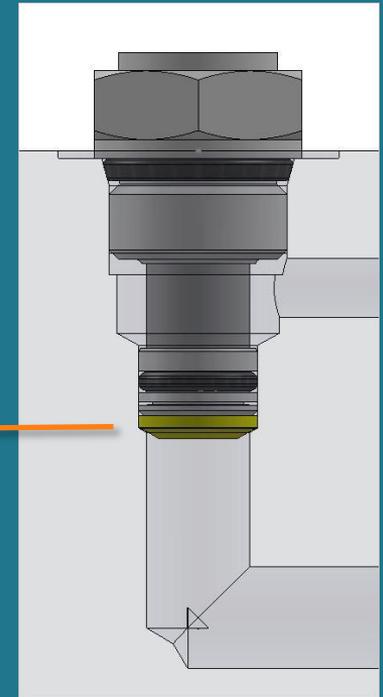


Set constraints for orifice disc CAD model

Select orifice disc CAD model in Assembly Interface and click 'Assemble'



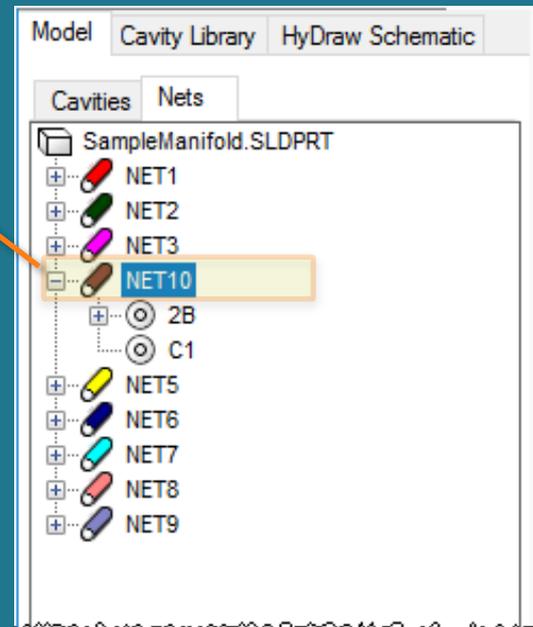
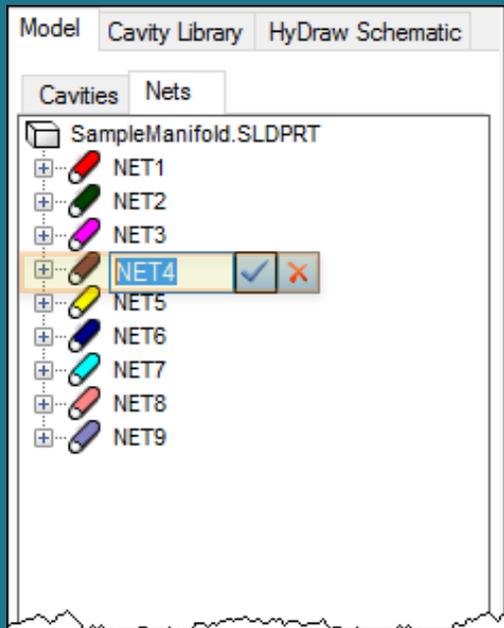
MDTools automatically assembles orifice disc CAD model





Rename a Net from MDTools browser

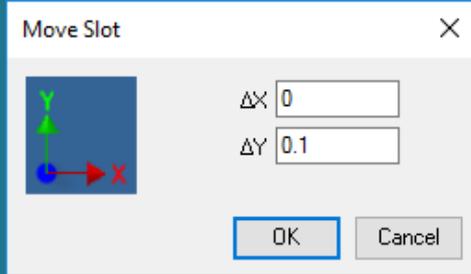
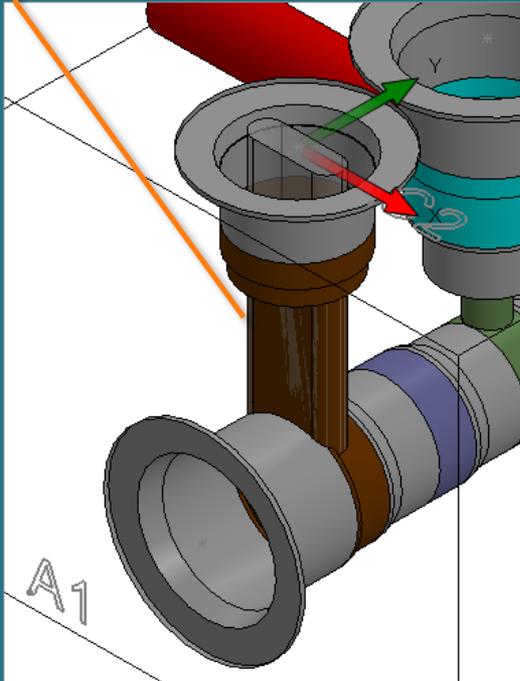
NET4 renamed to NET10



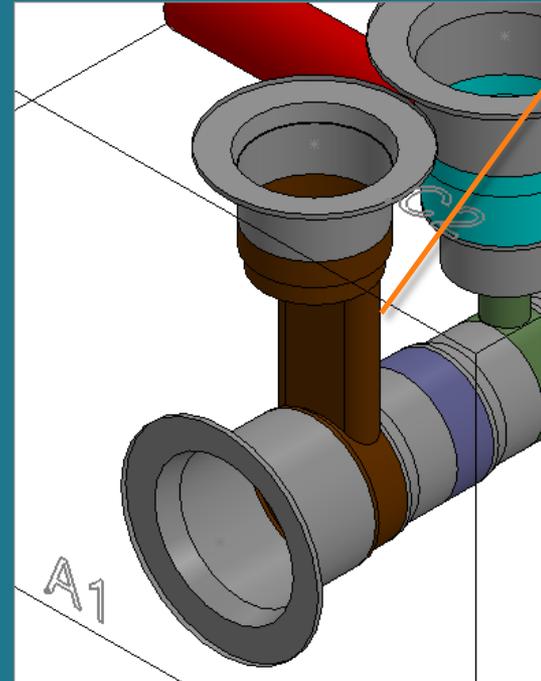


Move a Slot within parent Cavity

Before

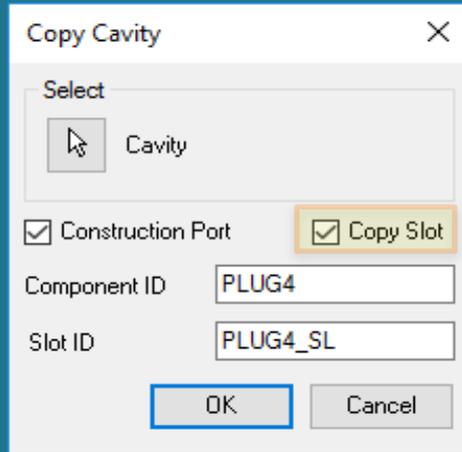


After

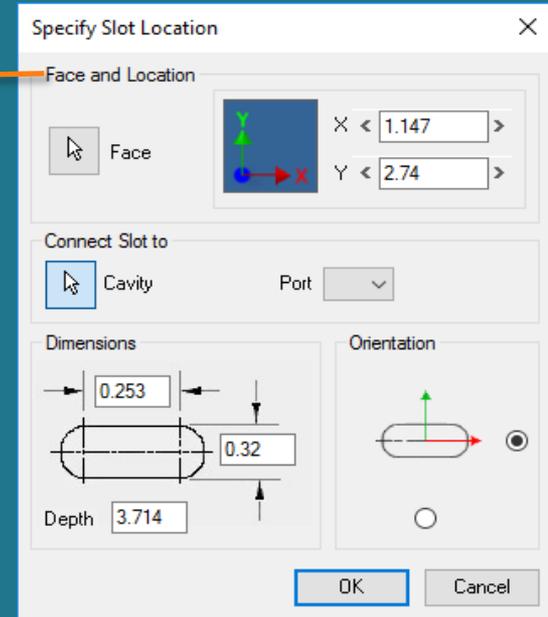




Copy Slot with Cavity

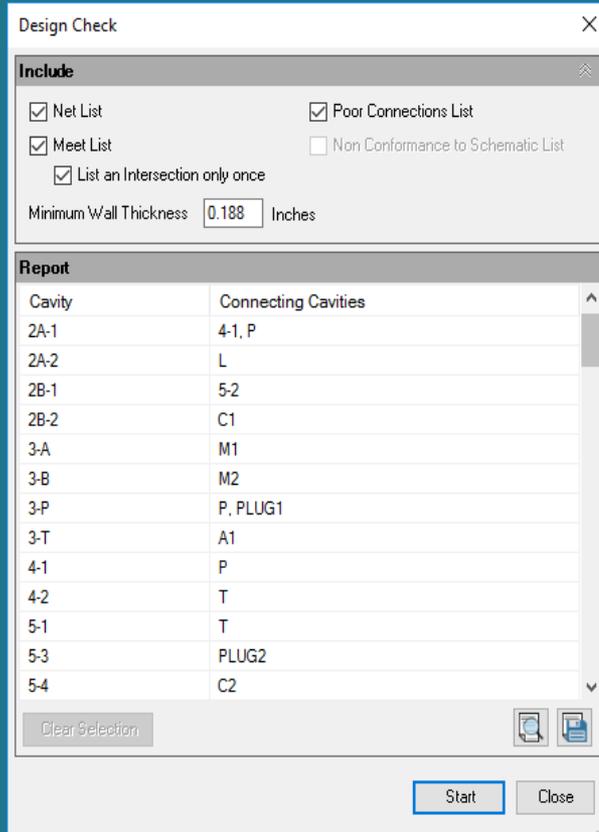


If **Copy Slot** option is selected then **Specify Slot Location** dialog box appears.

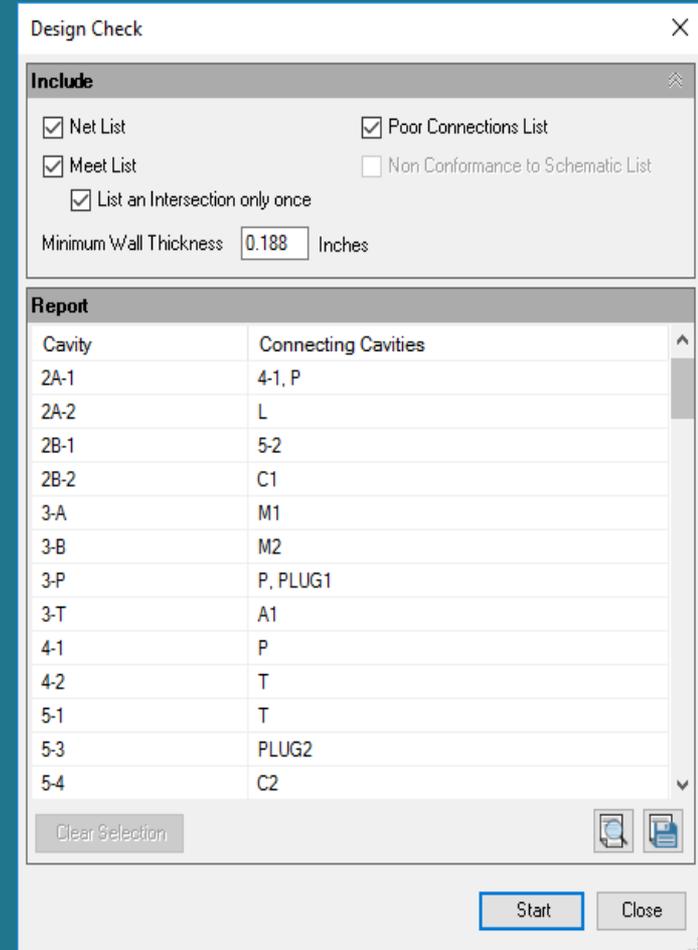




GUI made Compatible for Window's 125% scaling



Design Check dialog box in 100% text scaling

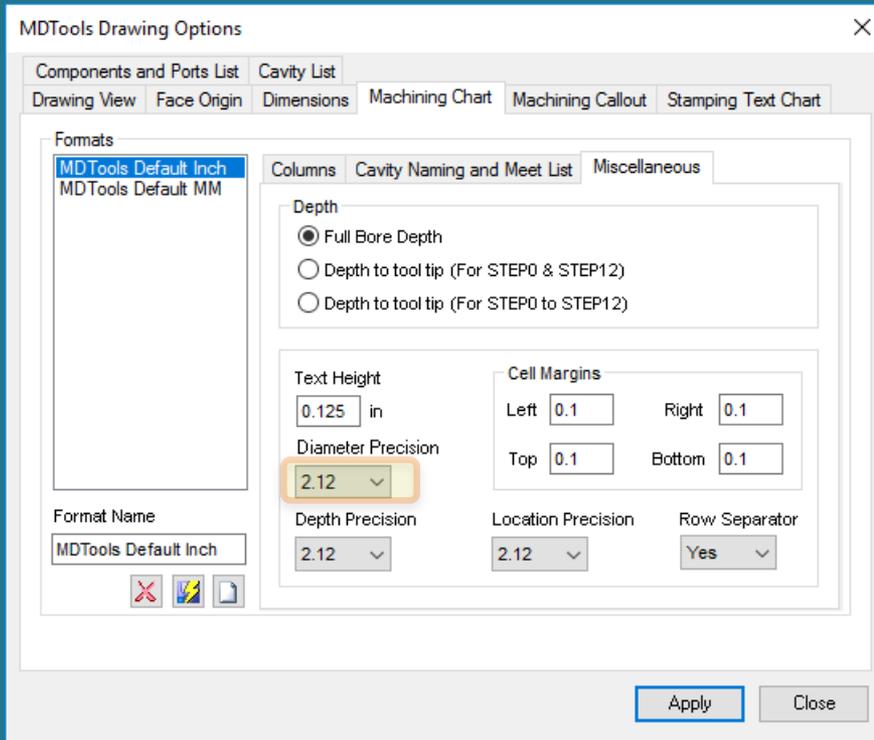


Design Check dialog box in 125% text scaling

Note: Presently, MDTools 960 supports 100% and 125% text scaling.



Set Precision for Diameter



Name	Operation	Diameter	Depth
2A	DRILL	5/8	2.67
	C10-2	1.34	0.03
2B	DRILL	0.25	2.00
	C10-2	1.34	0.03
4	DRILL	0.63	2.67
	C10-2	1.34	0.03
5	DRILL	0.63	3.21
	C10-4	1.34	0.03
A1	DRILL	0.44	3.21

Note: You can set precision for diameter in Machining Chart tab of Machining Drawing Options.



Preview while Adding Drill to a Cavity

Add Drill [X]

Drill Size
Current Drill Diameter = 0.438

Drill Diameter: < 0.438

Drill Depth: > 1.356
 Depth To Tip

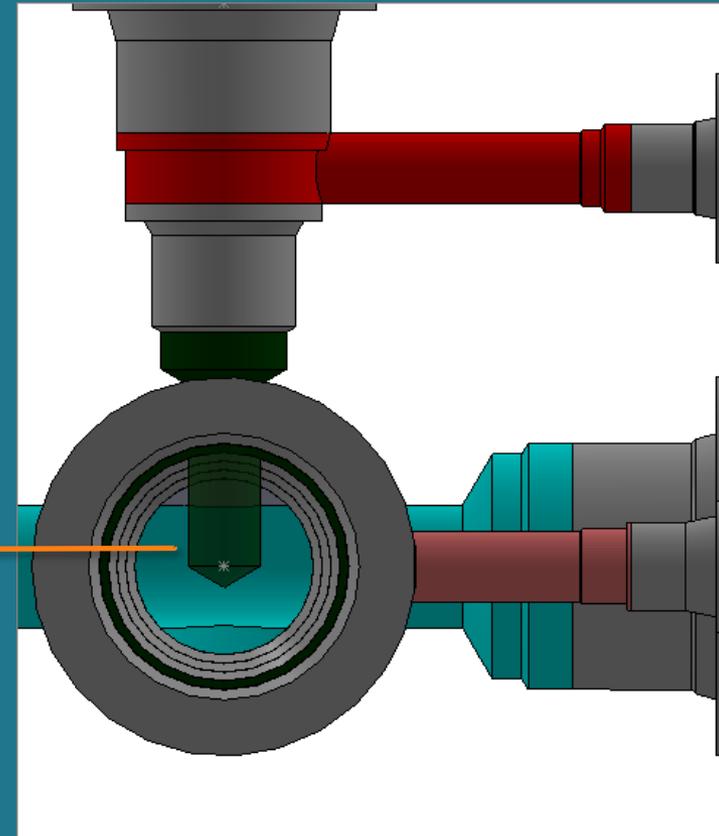
Angle: Degrees Flat Bottom Drill

Operation	Diameter	Depth	Remarks
DRILL	\$STEP12	\$STEP12	

Machining Sequence

Location	Operation	Diameter	Depth	Remarks
<input checked="" type="radio"/> 0	DRILL	\$STEP12	\$STEP12	
<input type="radio"/> 1	DRILL	\$STEP7	\$STEP7	
<input type="radio"/> 2	080-2	\$STEP0	\$STEP0	
<input type="radio"/> 3				
<input type="radio"/> 4				
<input type="radio"/> 5				
<input type="radio"/> 6				

[OK] [Cancel]



Note: Changing dimension automatically updates the preview.

Contact Us



USA: +1 (248) 649-9550
Europe: +39 328 695 70 01

sales@VESTusa.com
carlo.molon@fluidpower.it

