

ADIVA BackDrill Checks

Notice

Representations in this User Guide are meant as an overview and quick reference. Full details can be found in the On-Line manuals located at the *ADIVA Corporation* website - www.adiva.com

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Back-Drill Analysis

The ability to import Back Drills with their layer mapping extends Adiva's DRC Check offering. The following details outline this new functionality...

- Back-Drill files are read as simple Drill files

- Back-Drill files are mapped from start to finish layer

- Back-Drill files may start/end from surface or internal

Back-Drill Analysis involves spacing between...

- Back-Drill and Copper

- Back-Drill and Back-Drill

- Back-Drill and Non-Plated holes

- Back-Drill and Plated holes

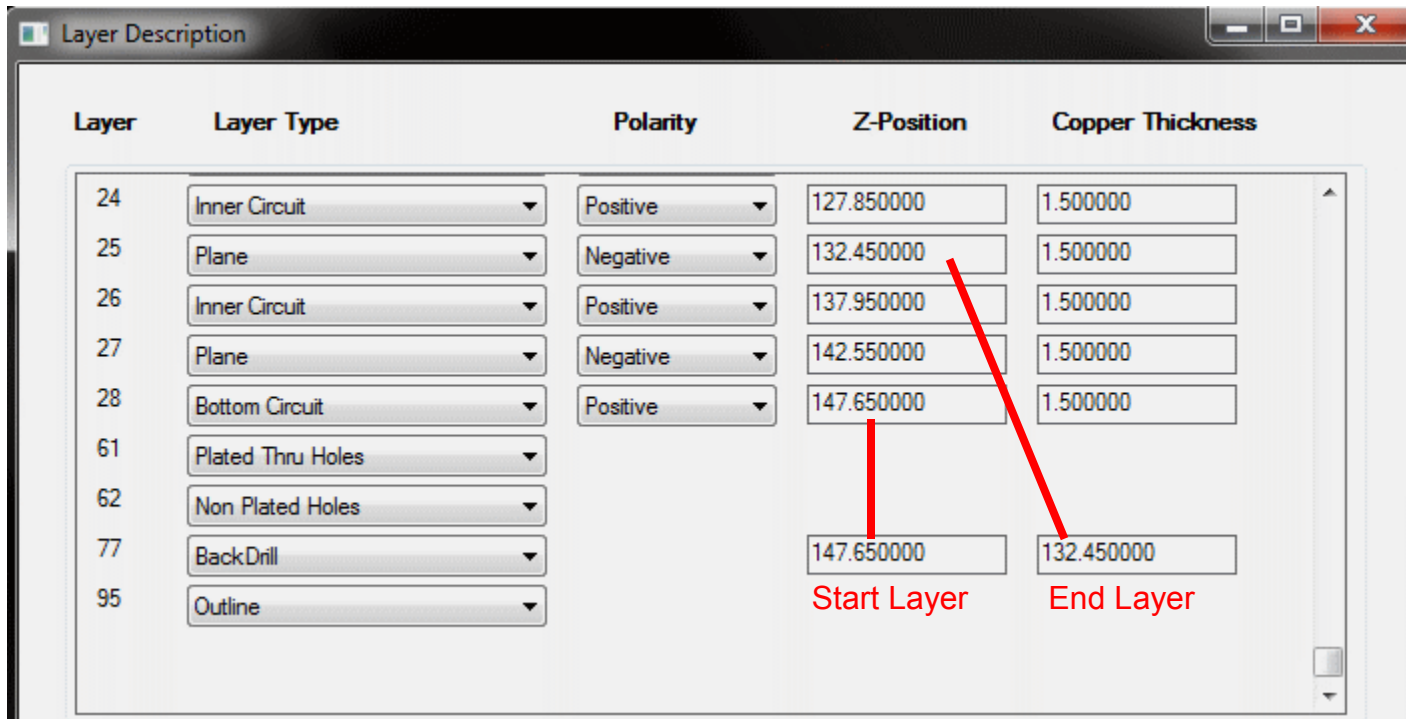
- Back-Drill Misregistration

- Back-Drill Missing Target Hole

Back-Drill Analysis

When defining BackDrills inside Adiva's Layer Description dialog, make sure the start and end layer values match the Z-Position values of the layers where drilling starts and ends. If checking Gerber and drill data comes from a CAD Interface such as Cadence/Orcad, this is already handled automatically and is no concern for the user.

If the checking Gerber and Drill data comes in through a manual import, layer span mapping is very important. For example, if a BackDrill maps from Layer 28 to Layer 25 on an 28-layer board – the Z-Position of Layer 28 should be the drill start Z-Position and the Z-Position of Layer 25 should be the drill end Z-Position as shown below...



Layer	Layer Type	Polarity	Z-Position	Copper Thickness
24	Inner Circuit	Positive	127.850000	1.500000
25	Plane	Negative	132.450000	1.500000
26	Inner Circuit	Positive	137.950000	1.500000
27	Plane	Negative	142.550000	1.500000
28	Bottom Circuit	Positive	147.650000	1.500000
61	Plated Thru Holes			
62	Non Plated Holes			
77	BackDrill		147.650000	132.450000
95	Outline			

Start Layer End Layer

Back-Drill Analysis

The screenshot shows the 'PadStack Checklist' dialog box. At the top, there are two dropdown menus: 'Areas' set to 'Whole Layer' and 'Resolution' set to '1/4 Mil'. Below these are two tabs: 'Annular Rings' and 'Holes'. The 'Holes' tab is active, showing a list of 'Hole Checks'. The bottom four items in this list are highlighted with a red rounded rectangle:

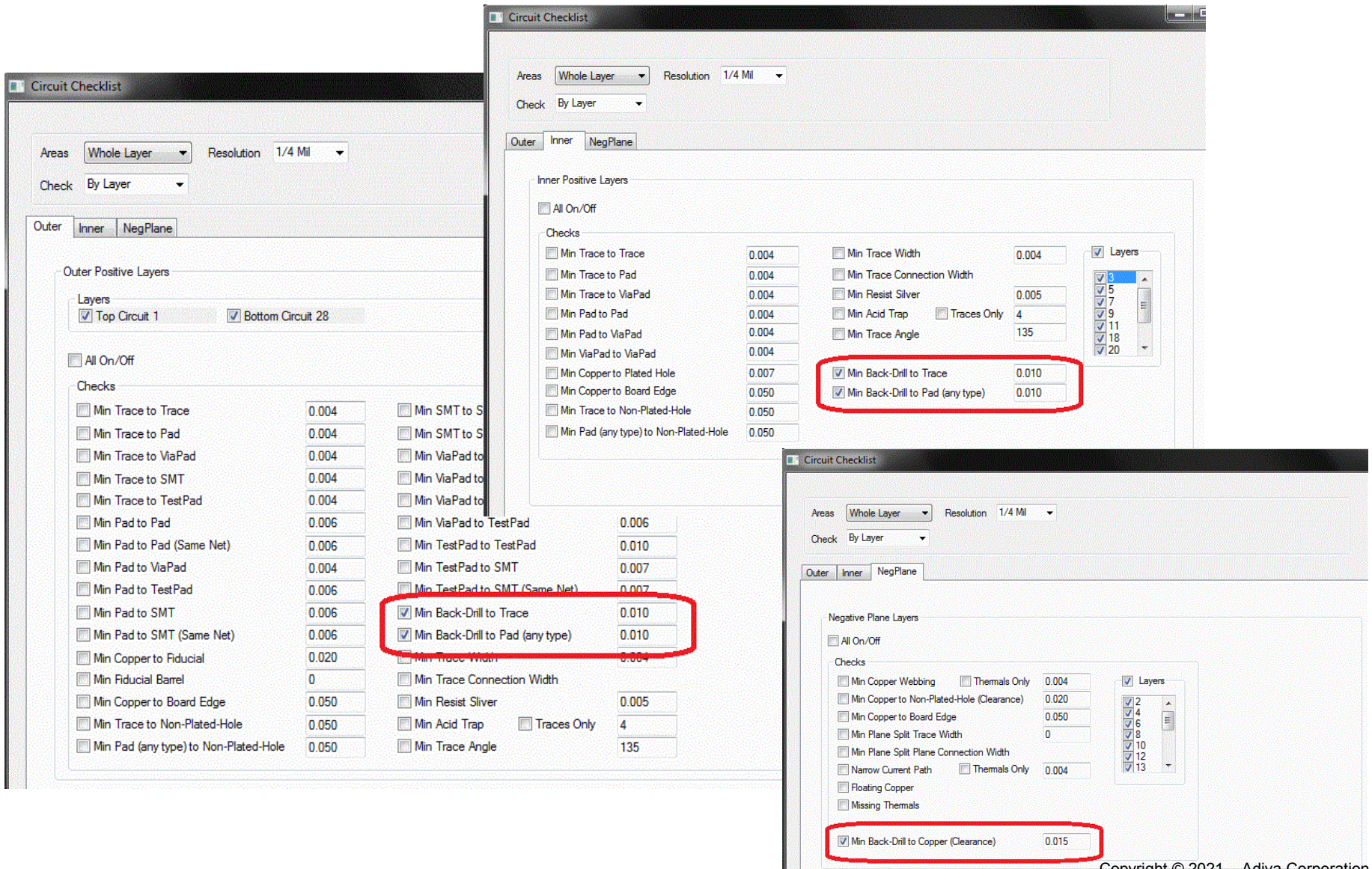
Check	Value
<input type="checkbox"/> All On/Off	
<input type="checkbox"/> Min Plated Hole to Plated Hole	0.015
<input type="checkbox"/> Min Plated Hole to Non-Plated Hole	0.030
<input type="checkbox"/> Min Non-Plated Hole to Non-Plated Hole	0.050
<input type="checkbox"/> Min Non-Plated Hole to Board Edge	0.050
<input type="checkbox"/> Hole to Pad Misregistration Allowance	0.001
<input type="checkbox"/> Aspect Ratio 1x	9
<input checked="" type="checkbox"/> Min Back-Drill to Back-Drill	0.01
<input checked="" type="checkbox"/> Min Back-Drill to Plated Hole	0.01
<input checked="" type="checkbox"/> Min Back-Drill to Non-Plated Hole	0.01
<input checked="" type="checkbox"/> Back-Drill to Plated Hole Misregistration Allowance	0.001

These checks have been added to the PadStack DRC Dialog.

Simply enter appropriate checking parameters and Execute the PadStack check dialog as would be done for any other PadStack check.

Back-Drill Analysis

These checks have been added to the Circuit DRC Dialog...



Back-Drill Analysis

When the Violation Checklist appears, notice the check results itemize and identify Back Drill objects in the Comment column...

The screenshot displays the Adiva software interface. The main window shows a PCB layout with a white circular pad and an orange trace. Overlaid on this is the 'Violation Checklist Report' dialog box. The dialog has a menu bar (File, Edit, View, Window, Add, Special, Macros, Analysis, Toolkit, Help) and a toolbar. Below the toolbar, there are buttons for 'Adjust Violation Range', 'Violation File', 'Save Violation File', 'Read Violation File', and 'Browse'. A section titled 'Choose Violations to View...' contains radio buttons for 'Critical', 'Concern', and 'Tol', along with 'Accepted' and 'Param' checkboxes. Below this is a table with columns: 'Param', 'Layer', 'Seq', 'Violation Type', and 'Comment'. The table contains two rows of data, both with 'Min Trace to NPHT' in the 'Violation Type' column and 'Back-Drill' in the 'Comment' column. At the bottom of the dialog are buttons for 'Delete Selected Violations', 'Clear Accepted Violation File', 'Close Violation Checklist', and 'Save Violation Summary Report'. To the right of the dialog is a layer stack table with columns 'S', 'E', 'T', 'N', and 'Description'. The table lists various layers such as '27 Plane', '28 Bottom Circuit', '31 Top Paste', '32 Bottom Paste', '35 Buried Vias', '41 Top Mask', '42 Bottom Mask', '51 Top Marking', '52 Bottom Marking', '60 Violation', '61 Plated Thru Holes', '62 Non Plated Holes', '63 BackDrill 1 - 4', '64 BackDrill 1 - 6', '65 BackDrill 1 - 8', '66 BackDrill 1 - 10', '67 BackDrill 1 - 21', '68 BackDrill 1 - 23', '69 BackDrill 28 - 4', '70 BackDrill 28 - 6', '71 BackDrill 28 - 8', '72 BackDrill 28 - 10', '73 BackDrill 28 - 12', '74 BackDrill 28 - 19', and '75 BackDrill 28 - 21'. A red arrow points from the text above to the 'Comment' column in the table.

Param	Layer	Seq	Violation Type	Comment
6	3	1	Min Trace to NPHT	Back-Drill
0	5	2	Min Trace to NPHT	Back-Drill

S	E	T	N	Description
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	27 Plane
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	28 Bottom Circuit
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	31 Top Paste
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	32 Bottom Paste
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	35 Buried Vias
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	41 Top Mask
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	42 Bottom Mask
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	51 Top Marking
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	52 Bottom Marking
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	60 Violation
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	61 Plated Thru Holes
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	62 Non Plated Holes
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	63 BackDrill 1 - 4
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	64 BackDrill 1 - 6
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	65 BackDrill 1 - 8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	66 BackDrill 1 - 10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	67 BackDrill 1 - 21
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	68 BackDrill 1 - 23
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	69 BackDrill 28 - 4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	70 BackDrill 28 - 6
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	71 BackDrill 28 - 8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	72 BackDrill 28 - 10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	73 BackDrill 28 - 12
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	74 BackDrill 28 - 19
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	75 BackDrill 28 - 21

Back-Drill Analysis

During Violation Seek, Back Drills are highlighted along with the object in Violation. Notice the Back Drill layer is displayed also showing its layer mapping...

The screenshot shows the ADIVA software interface with a 'Violation Checklist Report' dialog box open. The dialog box contains the following information:

Adjust Violation Range Violation File: _____
Save Violation File Read Violation File Browse

Choose Violations to View...
 Critical Concern Tol Accepted

	Param	Layer	Seq	Violation Type	Comment
<input checked="" type="checkbox"/> 6	0	3	1	Min Trace to NPTH	Back-Drill
<input type="checkbox"/> 0	0	5	2	Min Trace to NPTH	Back-Drill

Delete Selected Violations Clear Accepted Violation File
Close Violation Checklist Save Violation Summary Report

On the right side of the software, a list of layers is displayed with checkboxes. A red arrow points from the 'Back-Drill' comment in the report to this list. The following items in the list are circled in red:

- 63 BackDrill 1 - 4
- 64 BackDrill 1 - 6
- 65 BackDrill 1 - 8

END

ADIVA BackDrill Checks