GD&T Builder Tutorial

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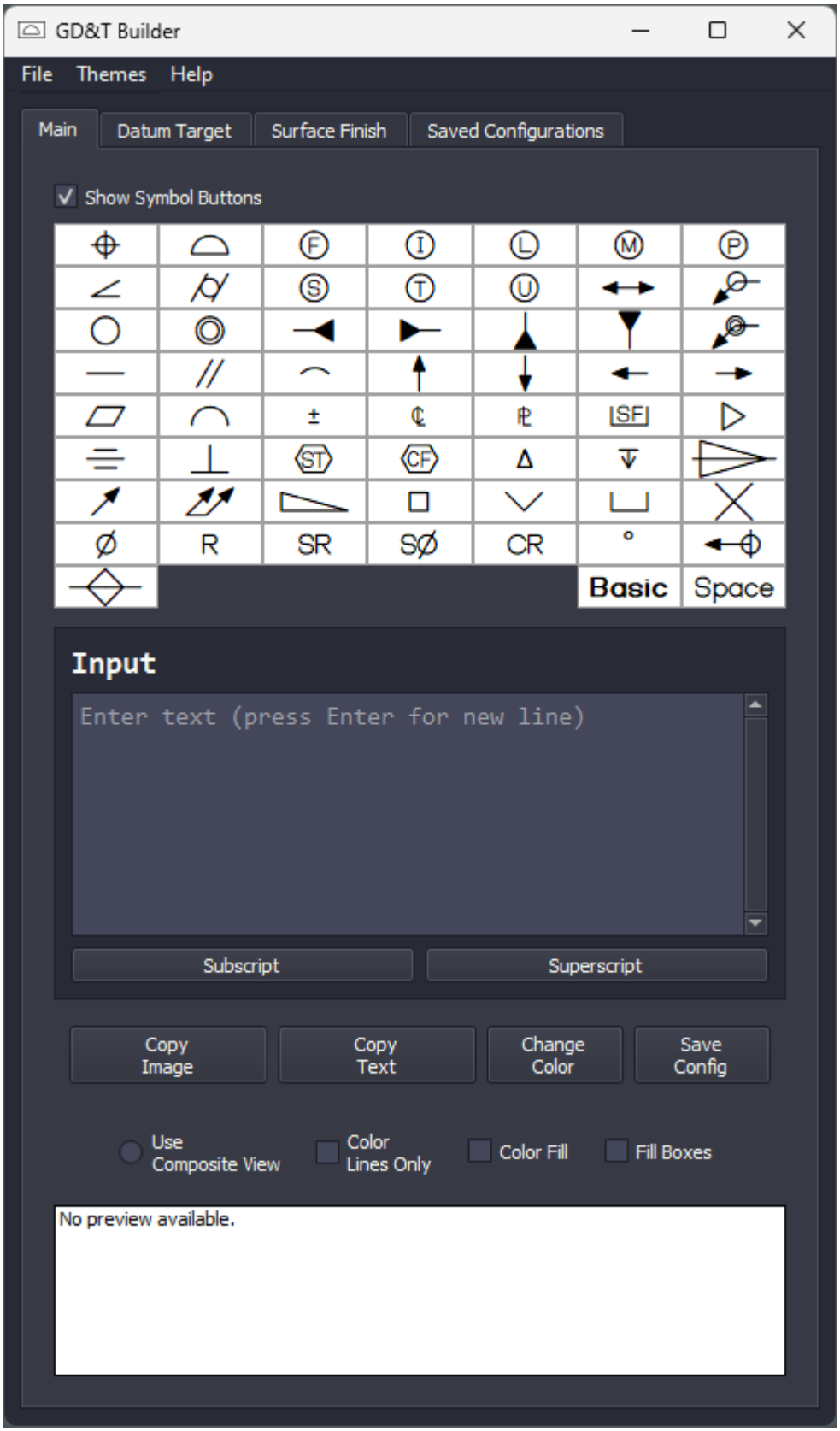
Introduction

GD&T Builder is a powerful application designed to create and manage Geometric Dimensioning and Tolerancing symbols and annotations. This tutorial will guide you through all features and functionality of the application.



Getting Started

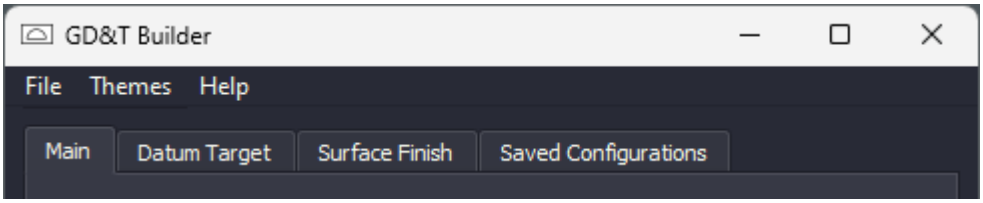
Installation

1. Download the GD&T Builder application
2. Run the installer or executable file
3. The application will automatically install required fonts and create necessary configuration files

Interface Overview

The application consists of four main tabs:

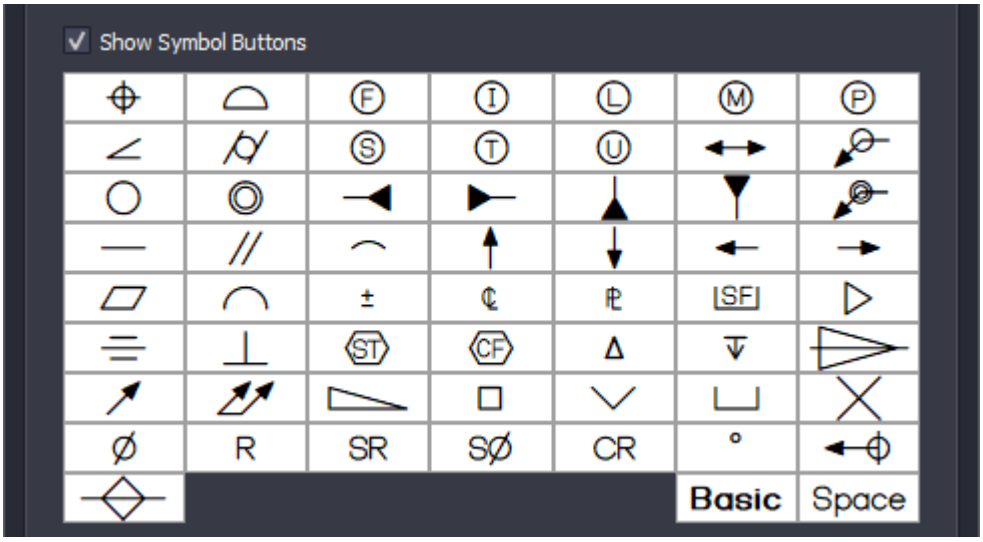
- Main Tab: Primary GD&T symbol creation and editing
- Datum Target Tab: Specialized datum target symbol creation
- Surface Finish Tab: Surface finish symbol creation
- Saved Configurations Tab: Library of saved GD&T configurations



Main Tab

Symbol Buttons

The Main tab features a comprehensive set of GD&T symbol buttons organized in a grid layout. These can be toggled using the "Show Symbol Buttons" checkbox or Ctrl+B shortcut.



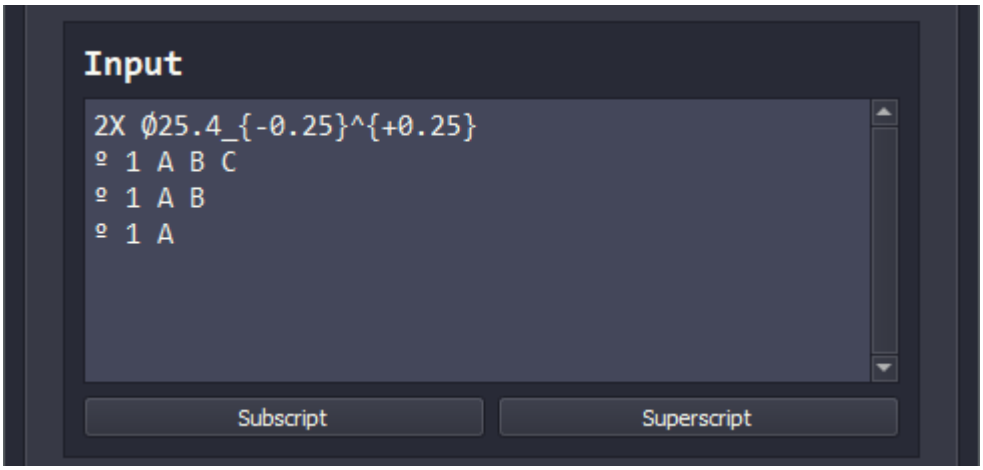
Key features:

- Click any symbol to insert it at the cursor position
- Hover over symbols to see their descriptions
- Basic and Space buttons are always available at the bottom

Text Input

The text input area supports:

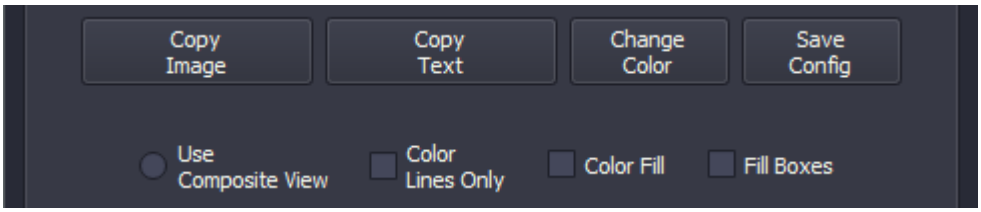
- Regular text entry
- Symbol shortcuts (e.g., 'pos' for Position symbol)
- Subscript/Superscript text using the dedicated buttons
- Multi-line input

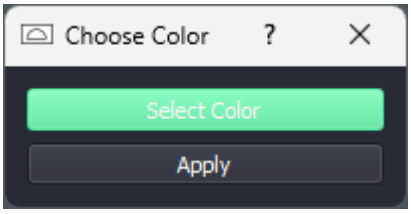


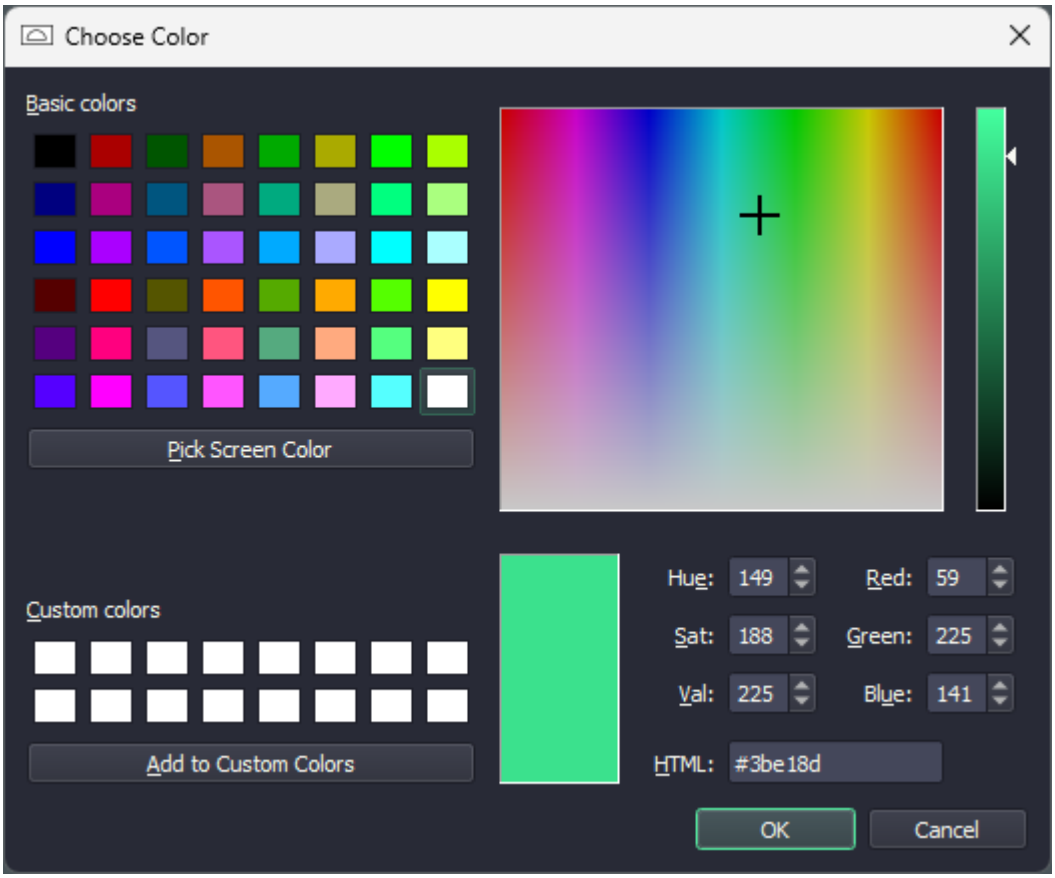
Color Controls

Color controls allow you to customize the appearance of your GD&T symbols:

- Change Color: Select custom colors for symbols
- Color Lines Only: Apply color only to symbol lines
- Color Fill: Fill symbols with selected color
- Fill Boxes: Automatically fill symbol boxes



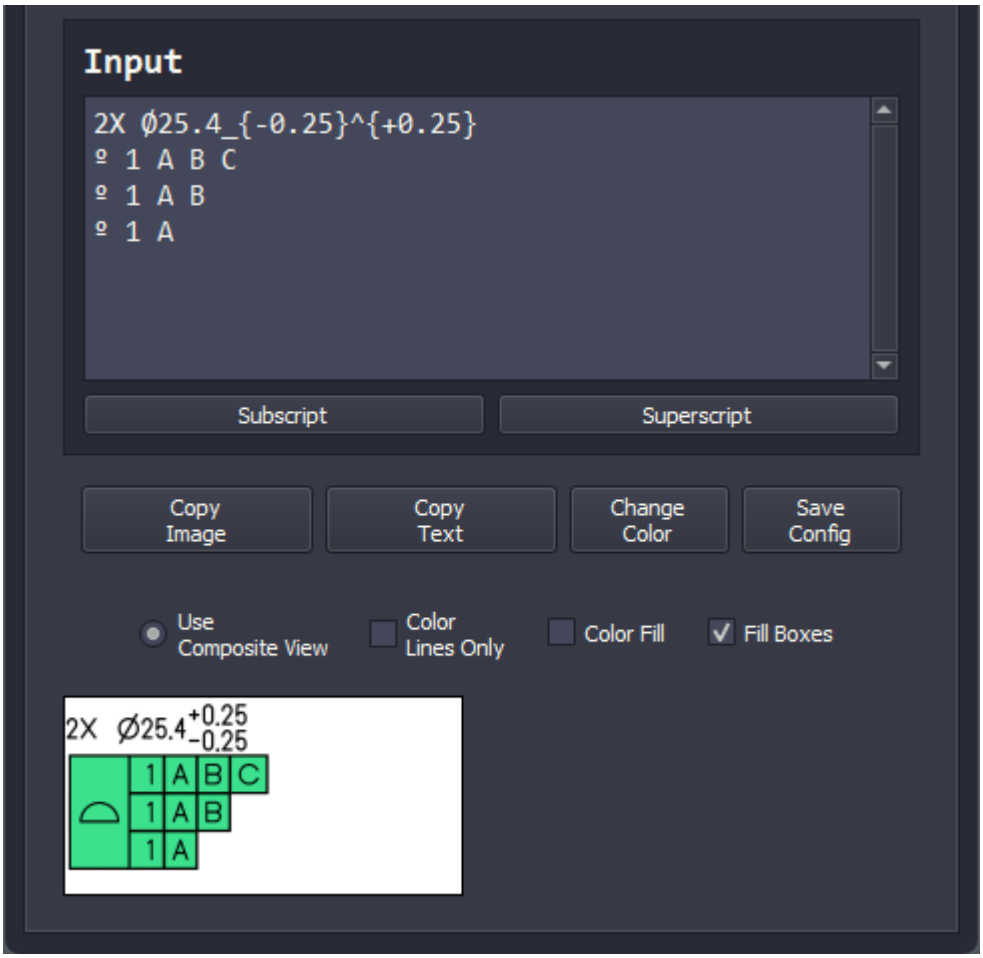




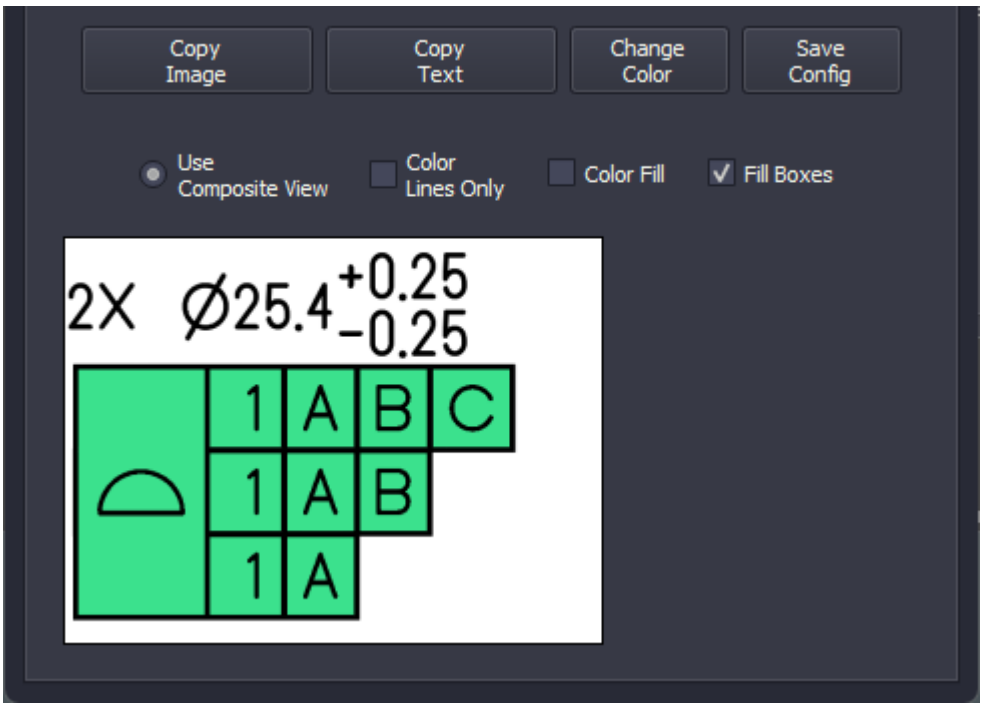
Preview Window

The preview window shows a real-time preview of your GD&T configuration:

- Use Ctrl+Mouse Wheel to zoom in/out
- Preview updates automatically as you type
- Shows exact representation of what will be copied



Zoomed In Example

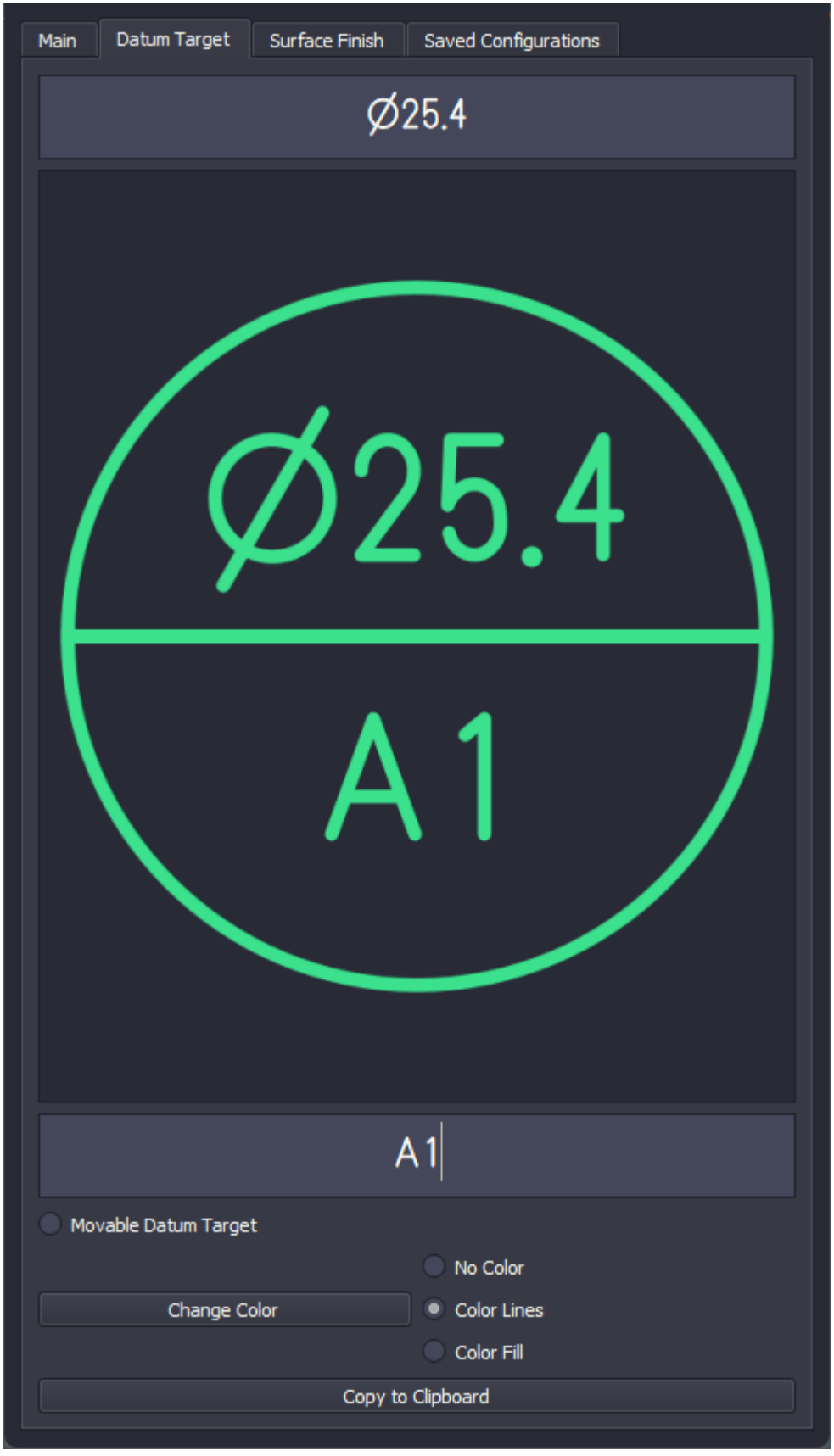


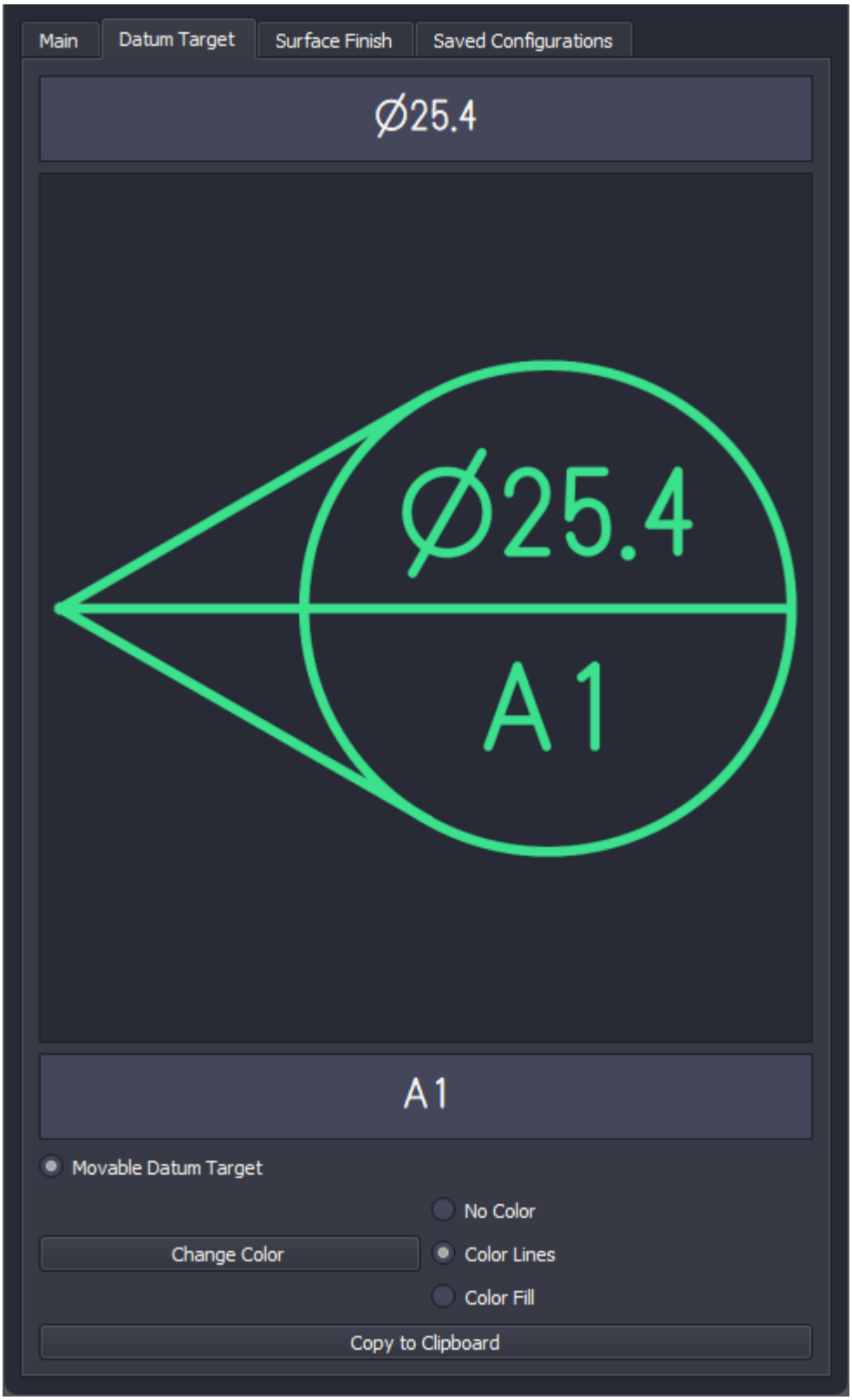
Datum Target Tab

The Datum Target tab provides specialized tools for creating datum target symbols:

- Movable/Fixed datum target options
- Text placement in multiple positions

- Color controls specific to datum targets
- Preview with zoom functionality

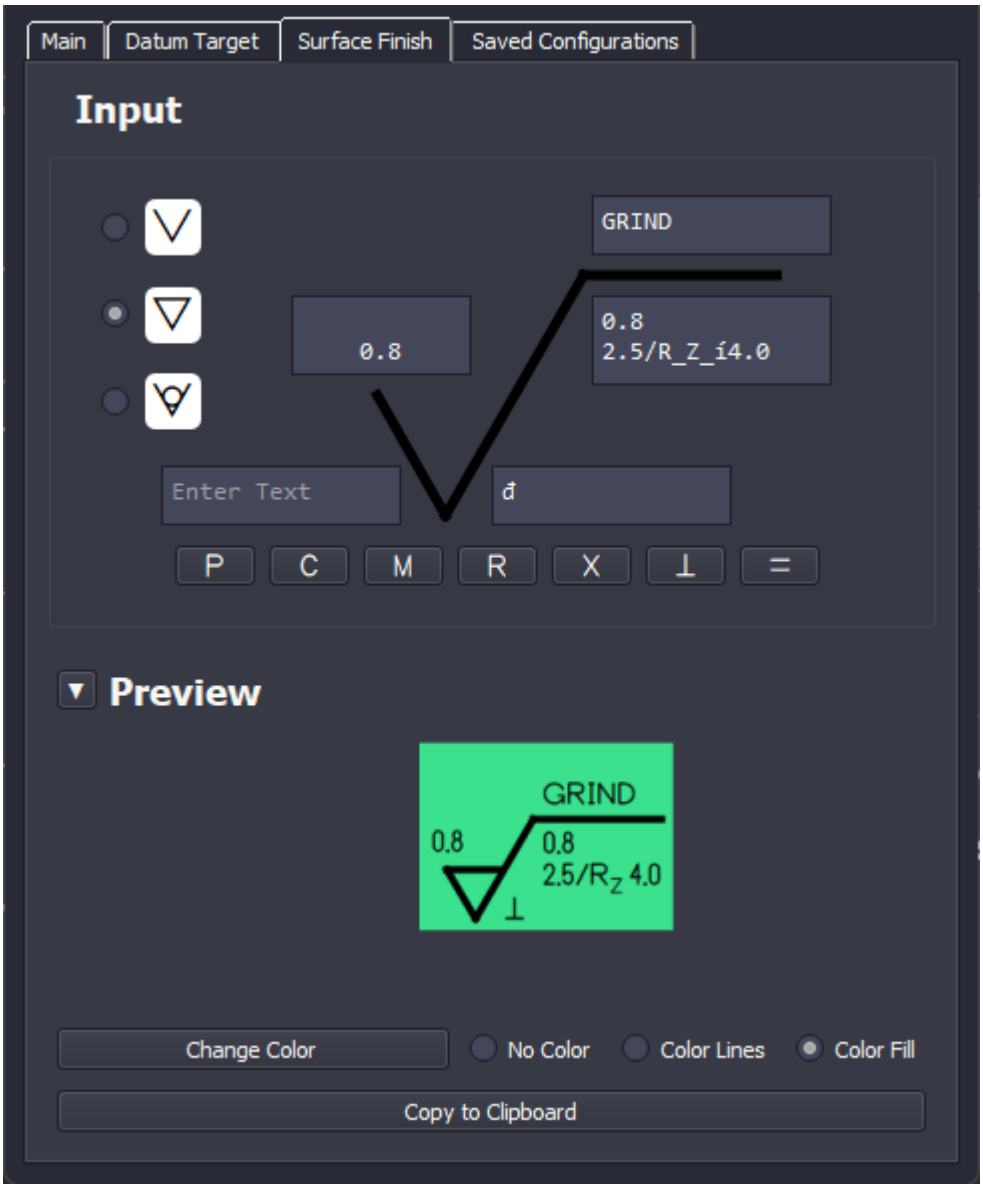




Surface Finish Tab

The Surface Finish tab offers tools for creating surface finish symbols:

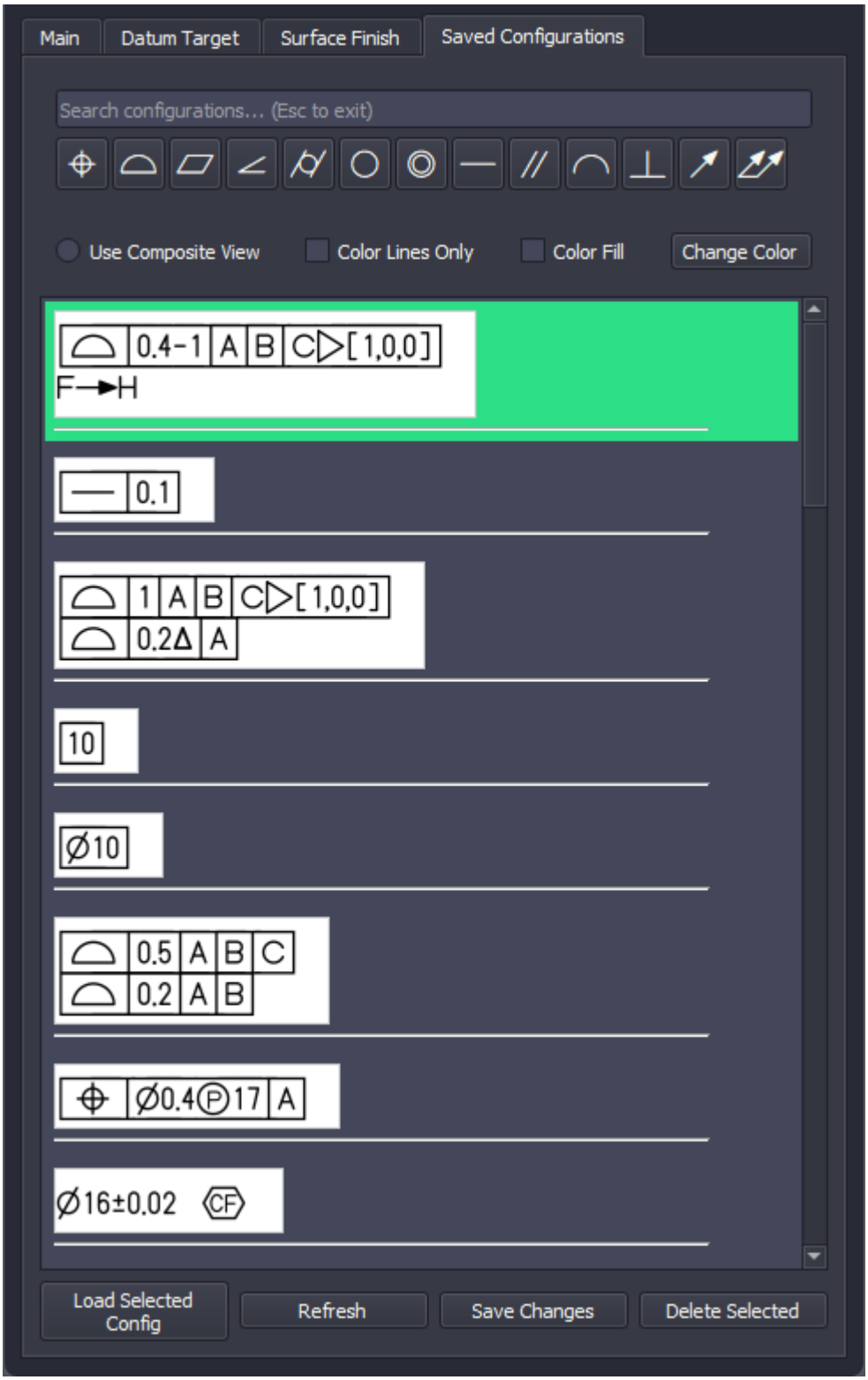
- Three end style options (Basic, Material Removal, Material Removal Prohibited)
- Multiple text input fields for comprehensive annotations
- Lay symbols for surface characteristics
- Preview with zoom functionality



Saved Configurations Tab

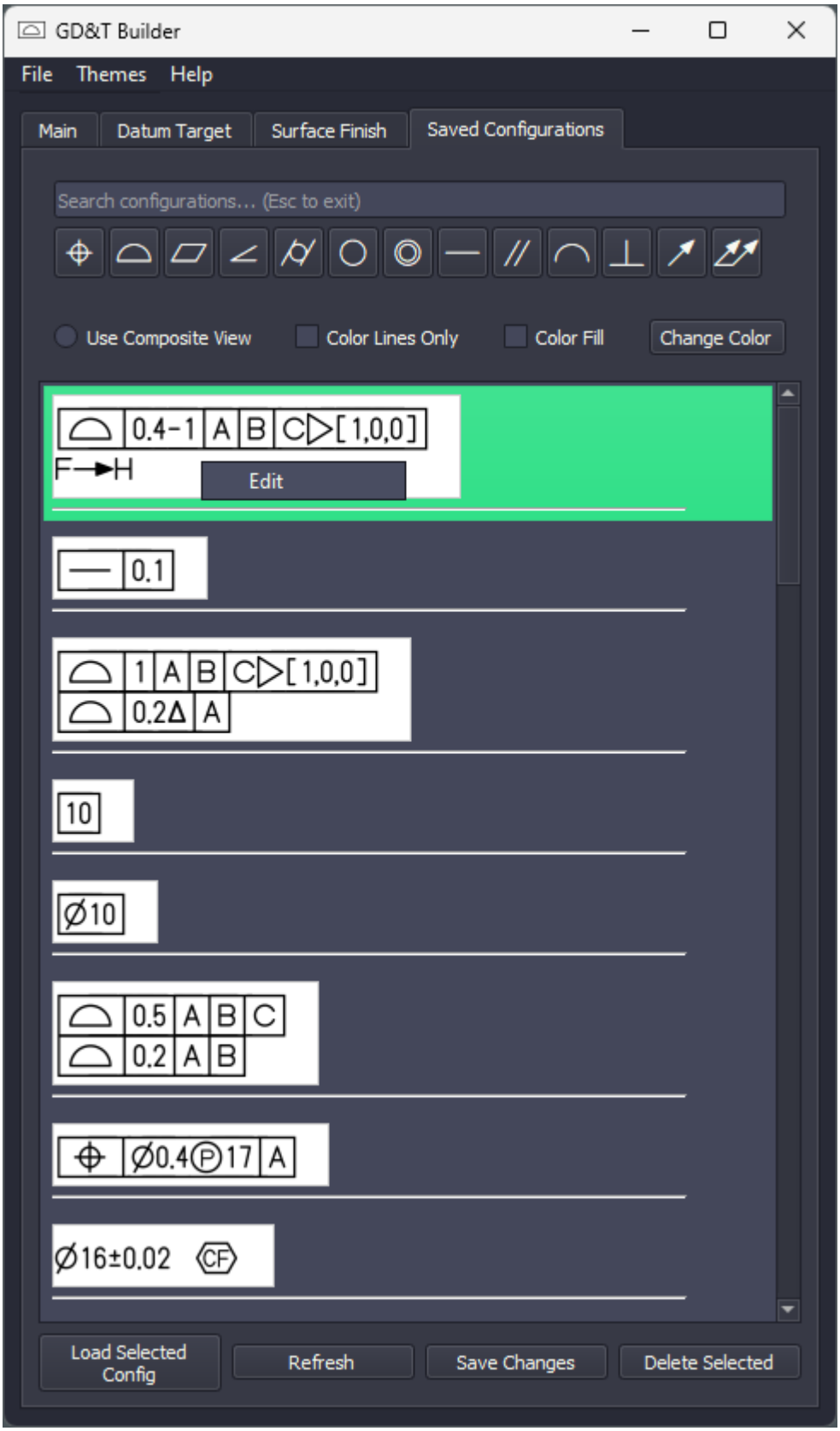
The Saved Configurations tab serves as a library for your GD&T configurations:

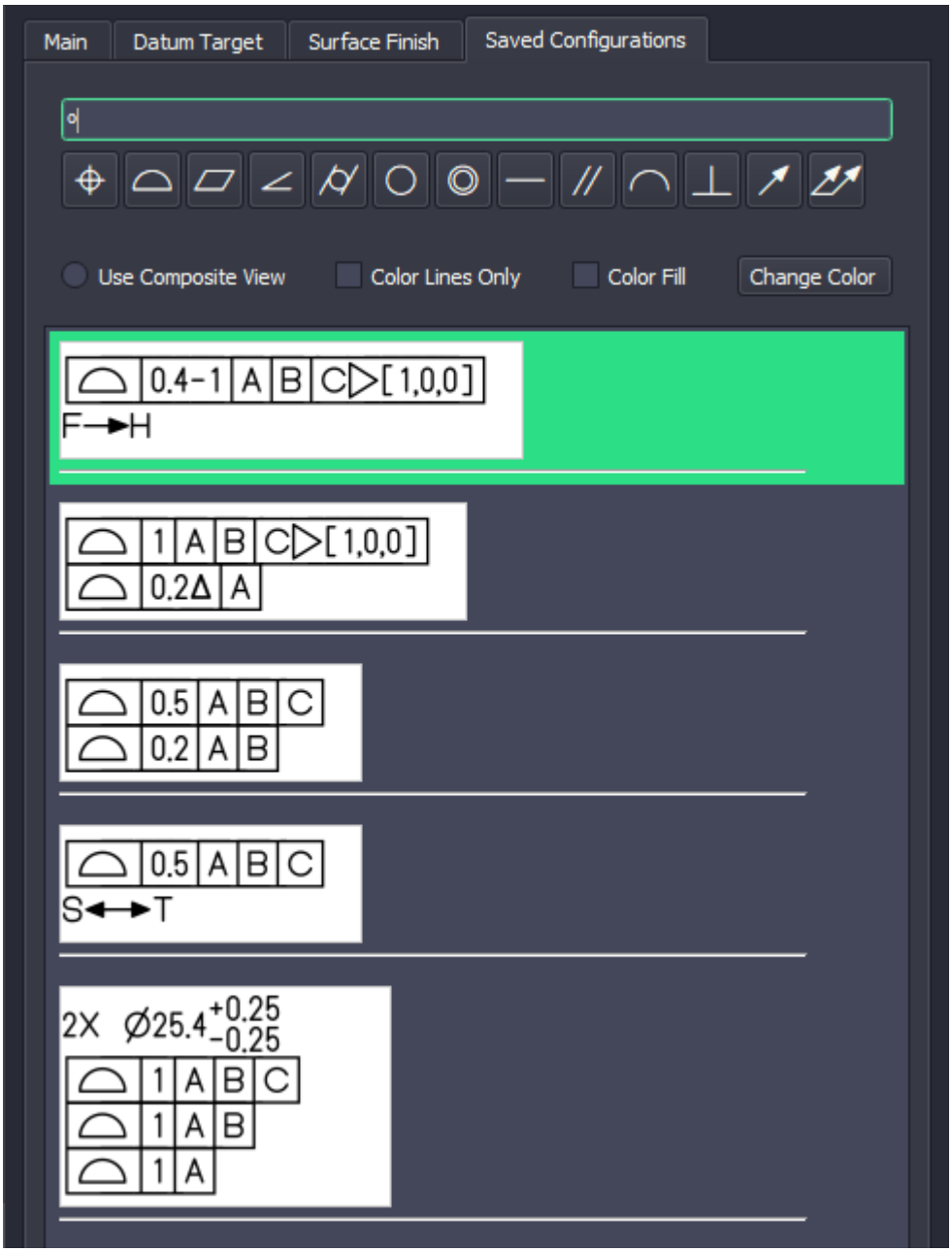
- Save frequently used configurations
- Edit existing configurations
- Preview all saved configurations
- Search and filter capabilities
- Copy configurations as images or keymap text



Managing Configurations

1. Right-click to edit any configuration
2. Double-click to copy to clipboard
3. Use search box to filter configurations
4. Use keyboard shortcuts for quick actions

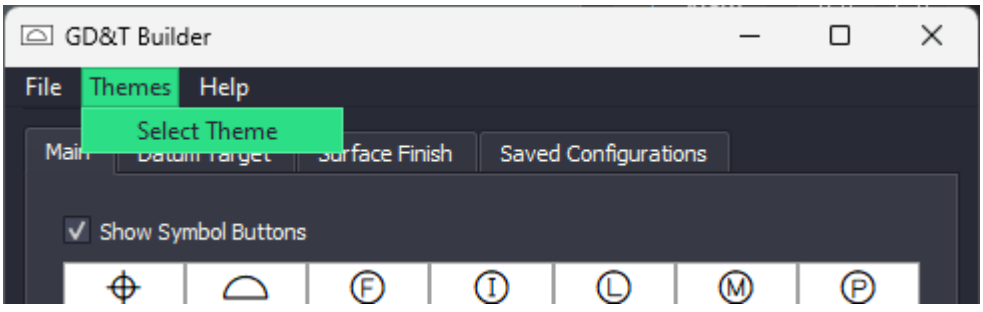

GD&T Builder
File
Themes
Help
Main
Datum Target
Surface Finish
Saved Configurations
Search configurations... (Esc to exit)
Use Composite View
Color Lines Only
Color Fill
Change Color
0.4-1 A B C[1,0,0]
F→H
Edit
0.1
1 A B C[1,0,0]
0.2Δ A
10
Ø10
0.5 A B C
0.2 A B
Ø0.4Ⓟ17 A
Ø16±0.02 CF
Load Selected Config
Refresh
Save Changes
Delete Selected



Theme Customization

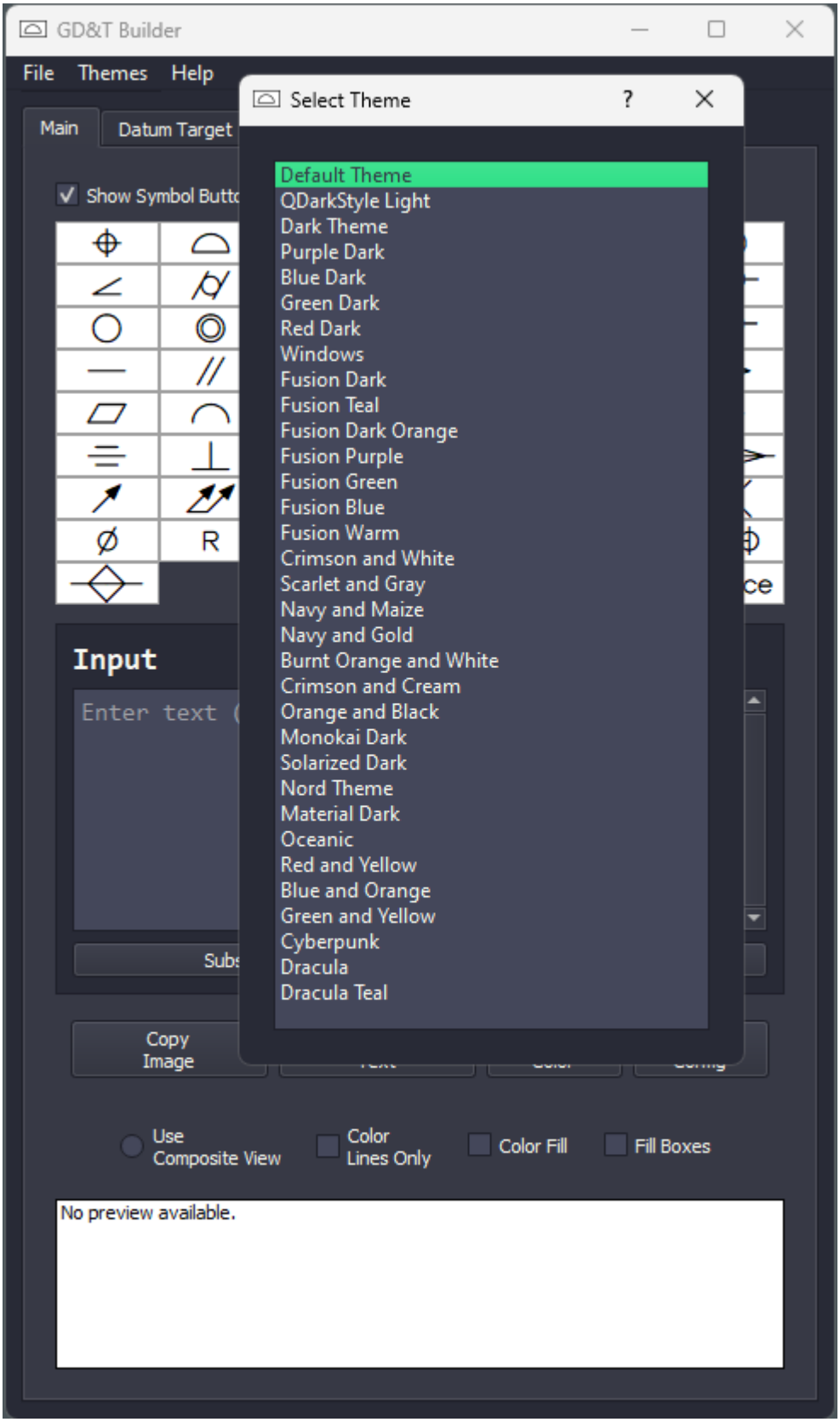
GD&T Builder offers extensive theme customization:

- Multiple built-in themes
- Dark and light mode options
- Custom color schemes



Theme Categories

- Default Themes
- Dark Themes
- Professional Themes
- Custom Themes



Keyboard Shortcuts

GD&T Builder provides comprehensive keyboard shortcuts for efficient workflow:

Global Shortcuts

GUI Shortcuts		
Shortcut	**Action**	**Tab**
Global Shortcuts		
`Ctrl+1`	Switch to Main tab	All
`Ctrl+2`	Switch to Datum Target tab	All
`Ctrl+3`	Switch to Surface Finish tab	All
`Ctrl+4`	Switch to Saved Configurations tab	All
`Ctrl++`	Zoom In GUI	All
`Ctrl+-`	Zoom Out GUI	All
`Ctrl+0`	Reset GUI Zoom	All

Main Tab Shortcuts

Main Tab		
`Ctrl+A`	Copy Image	Main
`Ctrl+B`	Show Symbol Buttons toggle	Main
`Ctrl+S`	Copy Text	Main
`Ctrl+D`	Change Color	Main
`Ctrl+F`	Save Configuration	Main
`Ctrl+C`	Use Composite View	Main
`Ctrl+5`	Color Lines Only	Main
`Ctrl+T`	Place Cursor Back to Input Window	Main
`Ctrl+6`	Color Fill	Main
`Ctrl+7`	Fill Boxes	Main

Datum Target Tab Shortcuts

Datum Target Tab		
Ctrl+A	Copy Image	Datum Target
Ctrl+D	Change Color	Datum Target
Ctrl+M	Moveable Target	Datum Target
Ctrl+N	No Color	Datum Target
Ctrl+8	Color Lines	Datum Target
Ctrl+9	Color Fill	Datum Target

Surface Finish Tab Shortcuts

Surface Finish Tab		
Ctrl+A	Basic End Style	Surface Finish
Ctrl+S	Material Removal End Style	Surface Finish
Ctrl+D	Material Removal Prohibited End Style	Surface Finish
Ctrl+P	Preview Toggle ▶/▼	Surface Finish
Ctrl+F	Copy Image	Surface Finish
Ctrl+G	Change Color	Surface Finish
Ctrl+Z	No Color	Surface Finish
Ctrl+X	Color Lines	Surface Finish
Ctrl+C	Color Fill	Surface Finish

Saved Configurations Tab Shortcuts

Saved Configurations Tab		
Right Click	Edit	Saved Configurations
Double Click on Image	Copy Image to Clipboard	Saved Configurations
Left Click, Ctrl+C	Copy Image to Clipboard	Saved Configurations
Left Click, Ctrl+Shift+C	Copy Keymap Text	Saved Configurations
Left Click, Ctrl+L	Load Selected Config to Main Tab	Saved Configurations
Left Click, Del	Delete Selected Configuration	Saved Configurations
Ctrl+Mousewheel	Change Zoom Level	Saved Configurations
Type shortcuts (e.g., 'pos')	Insert Symbols in Search Box	Saved Configurations
Ctrl+V	Composite View	Saved Configurations
Ctrl+B	Color Lines Only	Saved Configurations
Ctrl+F	Color Fill	Saved Configurations
Ctrl+D	Change Color	Saved Configurations
Ctrl+R	Refresh Configurations List	Saved Configurations
Ctrl+S	Save Changes	Saved Configurations

Tips and Tricks

Efficient Symbol Input

- Use keyboard shortcuts for common symbols
- Learn symbol shortcut patterns
- Use the symbol button grid for reference

Working with Configurations

- Save frequently used configurations
- Use search to quickly find configurations
- Organize similar configurations together

Performance Optimization

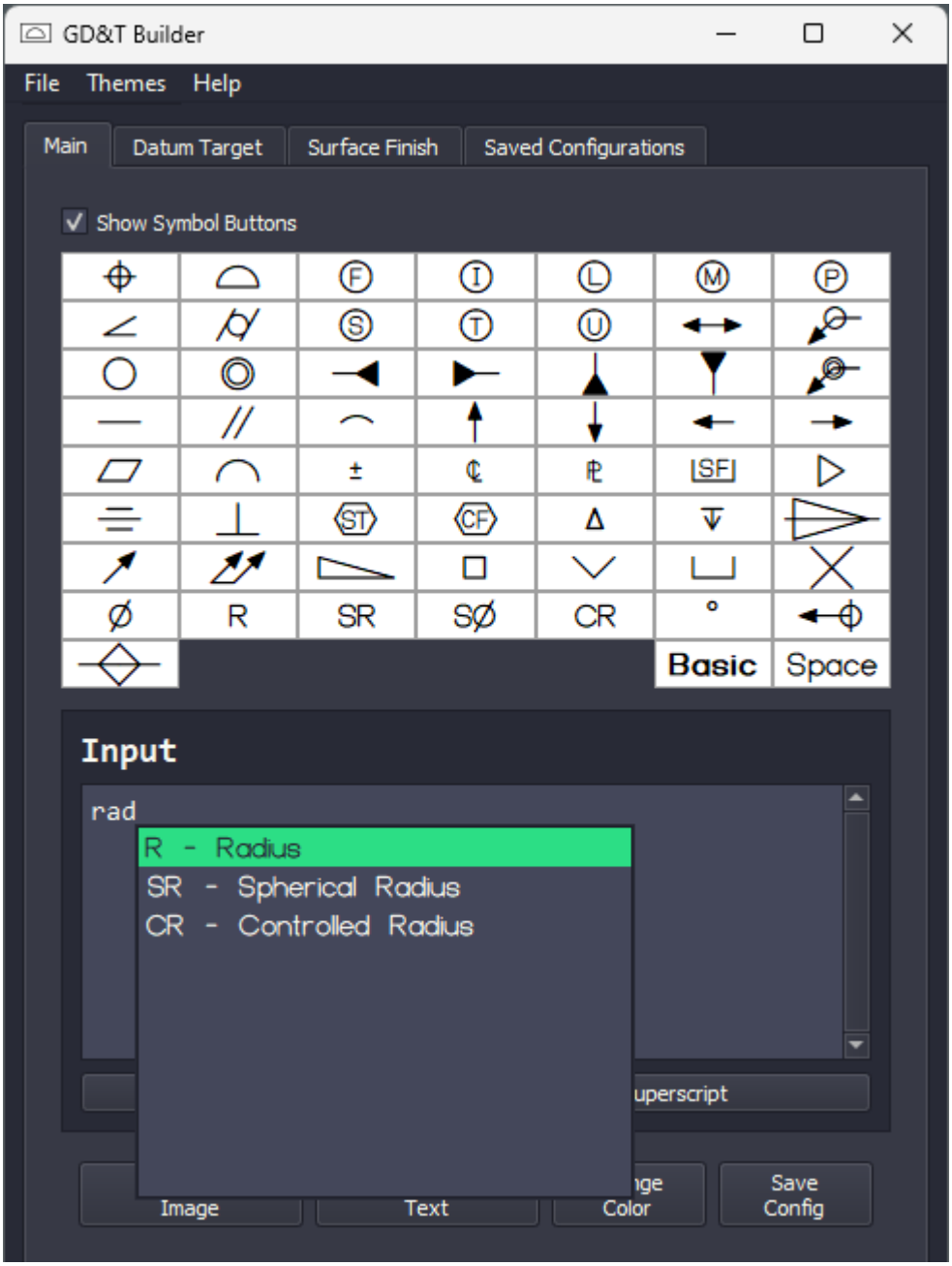
- Use appropriate zoom levels

- Manage saved configurations regularly
- Utilize keyboard shortcuts for faster workflow

Advanced Features

Symbol Shortcuts

The application supports text shortcuts for quick symbol insertion:



Input Shortcuts

Shortcut	Name	Symbol
pro	Surface Profile	
	Profile of a Line	
	Projected	
pos	Position	
per	Perpendicularity	
par	Parallelism	
	Parting Line	
dia	Diameter	
	Spherical Diameter	
cou	Countersink	
	Counterbore	
dep	Depth	
bas	Basic	Basic
run	Runout	
	Total Runout	
ang	Angularity	
cir	Circularity	

str	Straightness	—
fla	Flatness	▱
cyl	Cylindricity	⌭
sym	Symmetry	≡
deg	Degree	°
rad	Radius	R
	Spherical Radius	SR
	Controlled Radius	CR
dyn	Dynamic Profile Tolerance Modifier	Δ
bet	Between Indicator	↔
tra	Translation	▷
slo	Slope	
tap	Conical Taper	
arc	Arc Length	⌒
sqr	Square	□
plu	Plus-Minus	±
sta	Statistical Tolerance	
con	Continuous Feature	
	Concentricity	◎

fre	Free State	Ⓕ
ind	Independency	Ⓘ
lmc	Least Material Condition	Ⓛ
mmc	Maximum Material Condition	Ⓜ
rfs	RFS	Ⓢ
tan	Tangent Plane	Ⓣ
uni	Unilateral	Ⓤ
all	All Around	
	All Over	
ori	Origin	

spa	Space	- 1/8 Space
		- 1/4 Space
		- Half Space
		- 3/4 Space
		- Single Space
		- Double Space

		FLAME CUTTING
		SNAGGING
		SAWING
		PLANING

sur	Surface Finish Treatments	SHAPING
		DRILLING
		CHEMICAL MILLING
		ELECT. DISCHARGE MACH
		MILLING
		BROACHING
		REAMING
		ELECTRON BEAM
		LASER
		ELECTRO-CHEMICAL
		BORING
		TURNING
		BARREL FINISHING
		ELECTRO GRINDING
		ROLLER BURNISHING
		GRINDING
		HONING
		ELECTRO-POLISH
		POLISHING

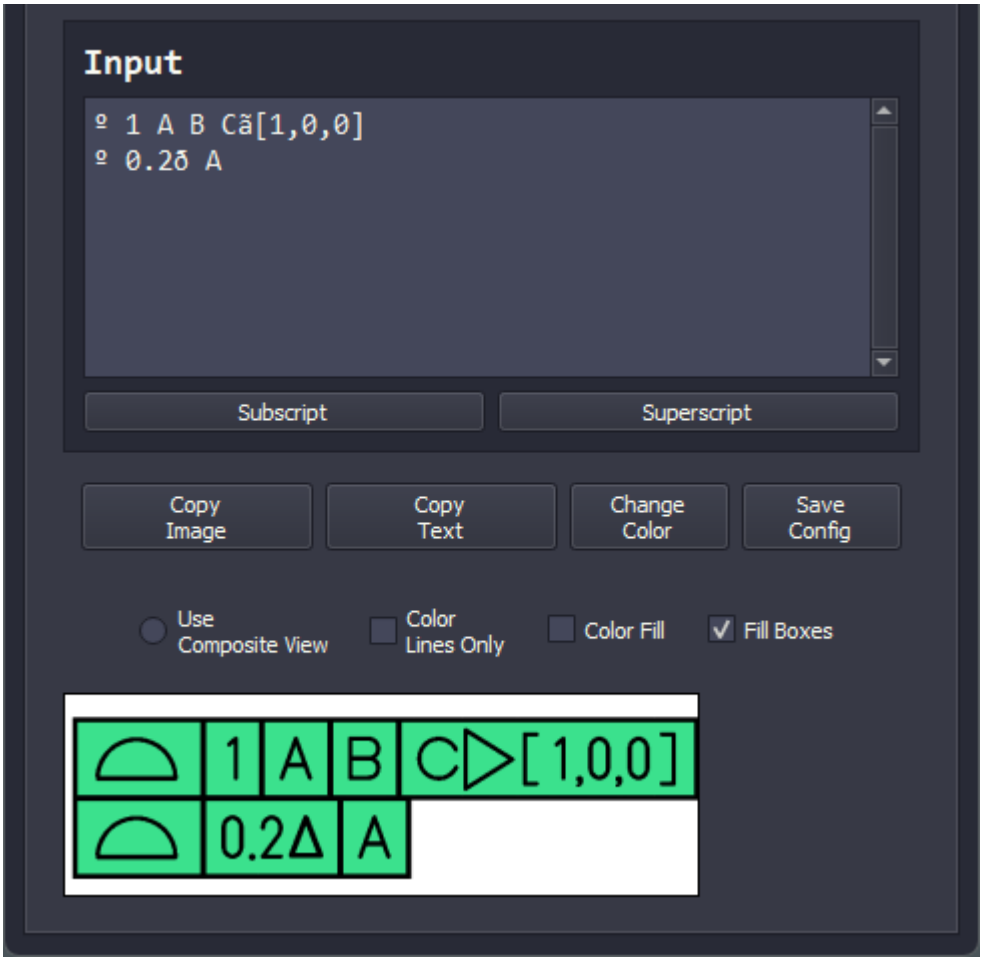
		LAPPING
		SUPERFINISHING
		SAND CASTING
		HOT ROLLING
		FORGING
		PERM MOLD CASTING
		INVESTMENT CASTING
		EXTRUDING
		COLD ROLLING
		DRAWING
		DIE CASTING

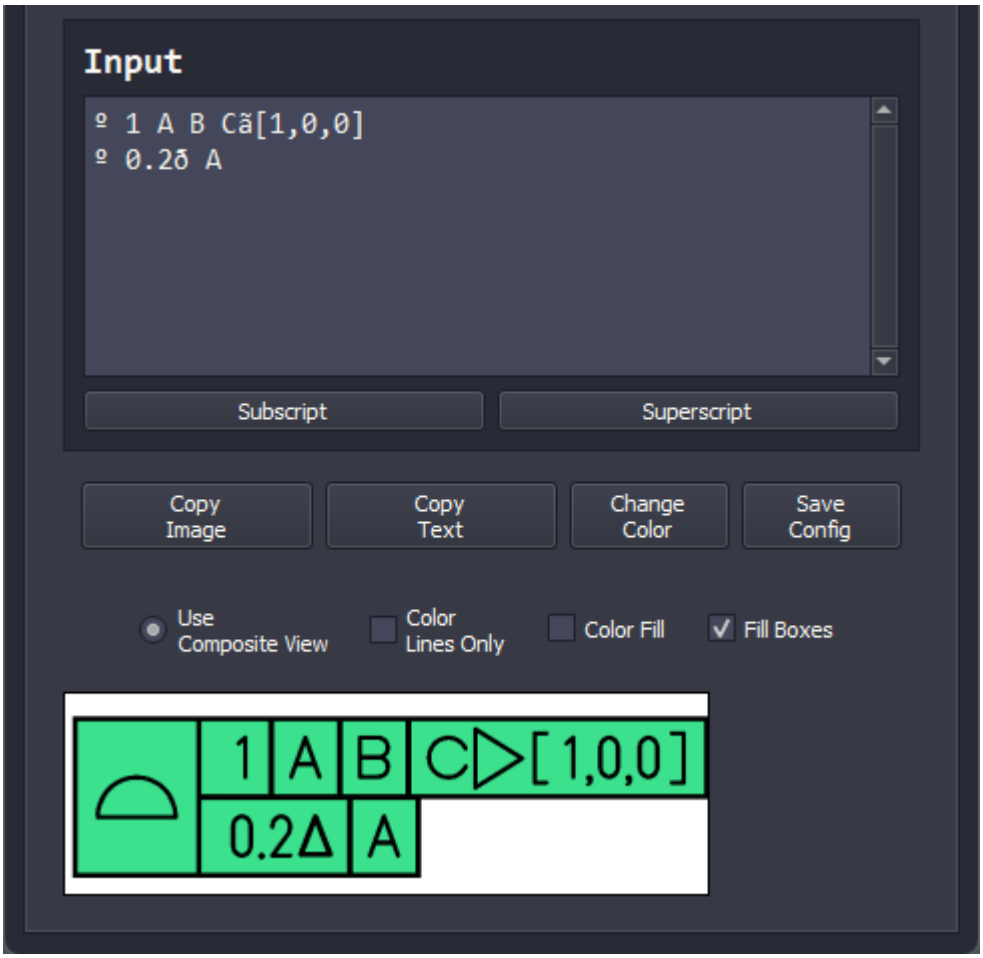
lay	Particulate	P
	Circular	C
	Multidirectional	M
	Radial	R
	Angular	X
	Perpendicular	⊥
	Parallel	=

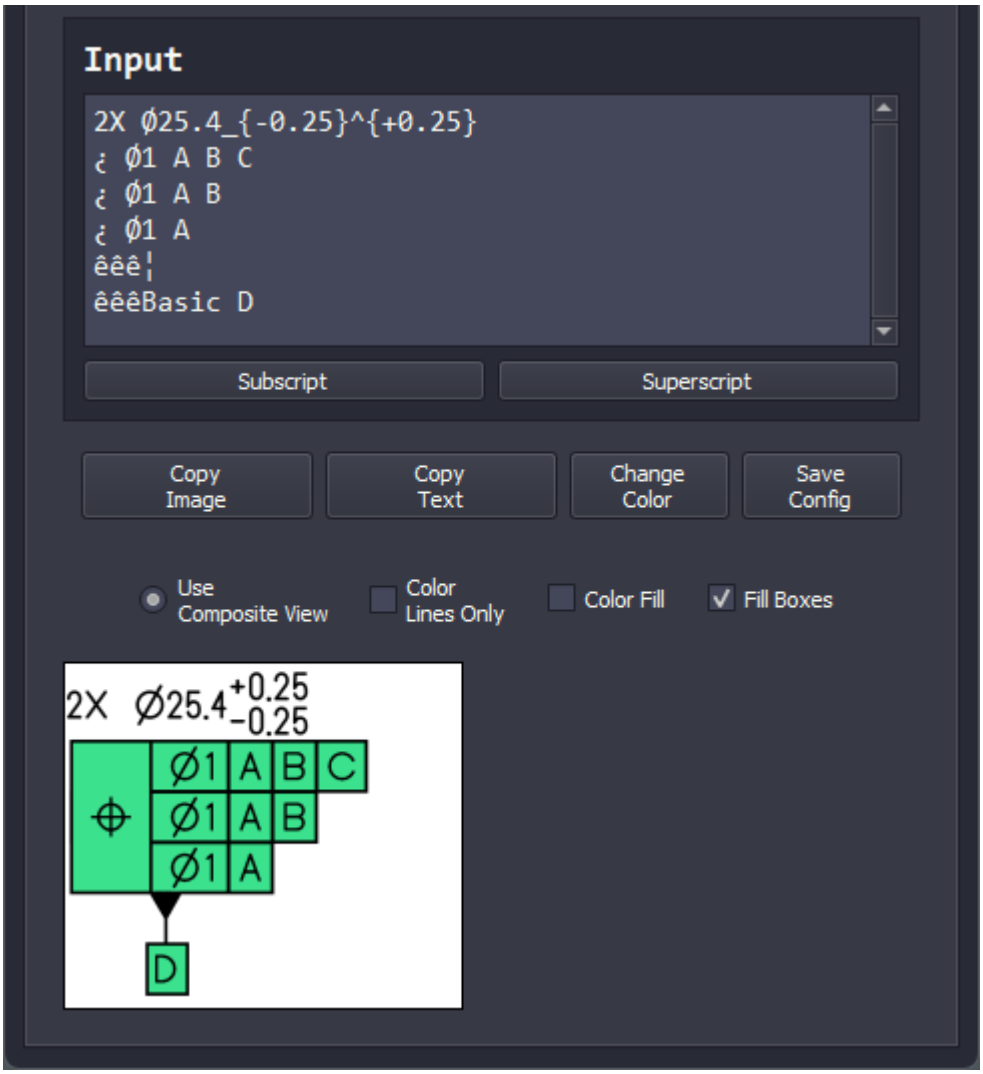
Composite View

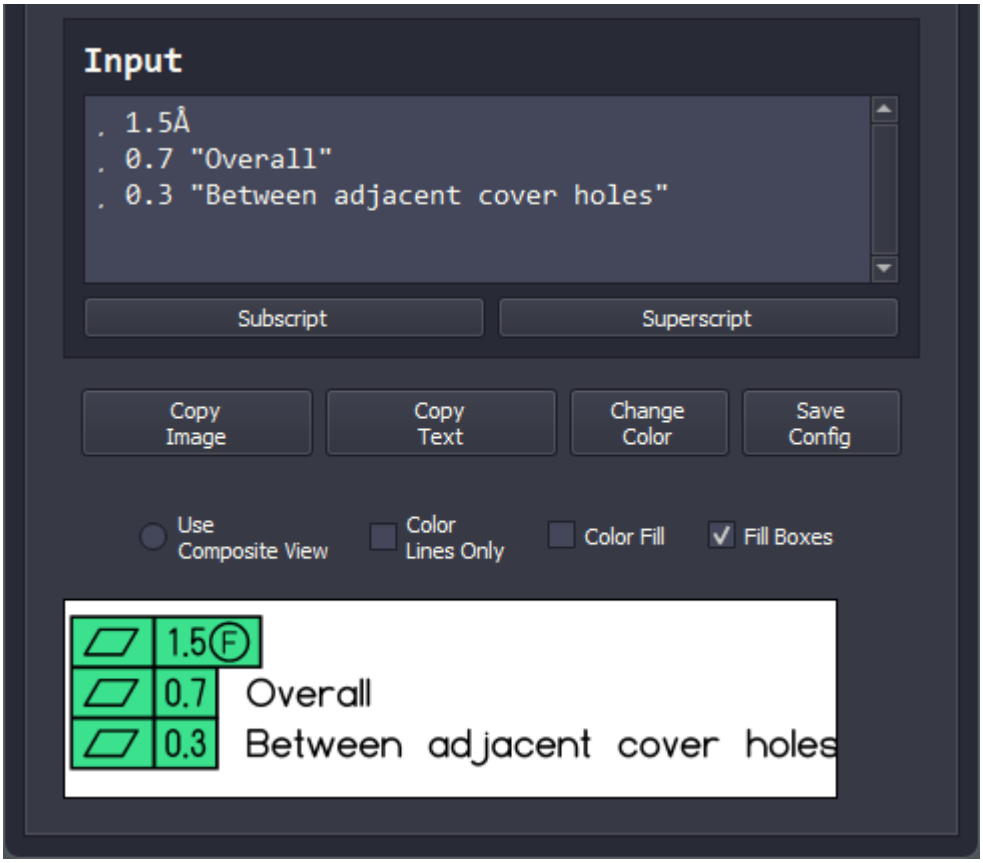
- Enables advanced symbol combinations

- Automates complex GD&T notation
- Provides professional-quality output



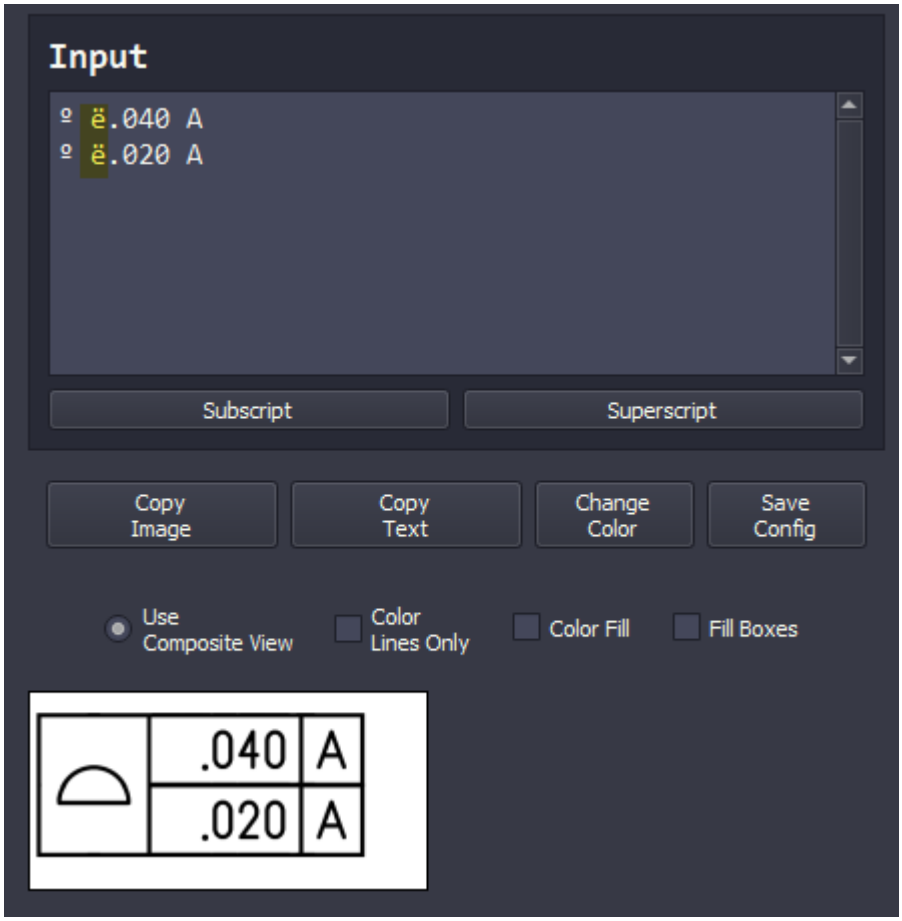

Input
º 1 A B Cã[1,0,0]
º 0.2ð A
Subscript
Superscript
Copy Image
Copy Text
Change Color
Save Config
Use Composite View
Color Lines Only
Color Fill
Fill Boxes
1
A
B
C
[1,0,0]
0.2Δ
A


Input
2X Ø25.4_{-0.25}^{+0.25}
¿ Ø1 A B C
¿ Ø1 A B
¿ Ø1 A
êêê¦
êêêBasic D
Subscript
Superscript
Copy Image
Copy Text
Change Color
Save Config
Use Composite View
Color Lines Only
Color Fill
Fill Boxes
2X Ø25.4 +0.25 −0.25
Ø1 A B C
Ø1 A B
Ø1 A
D

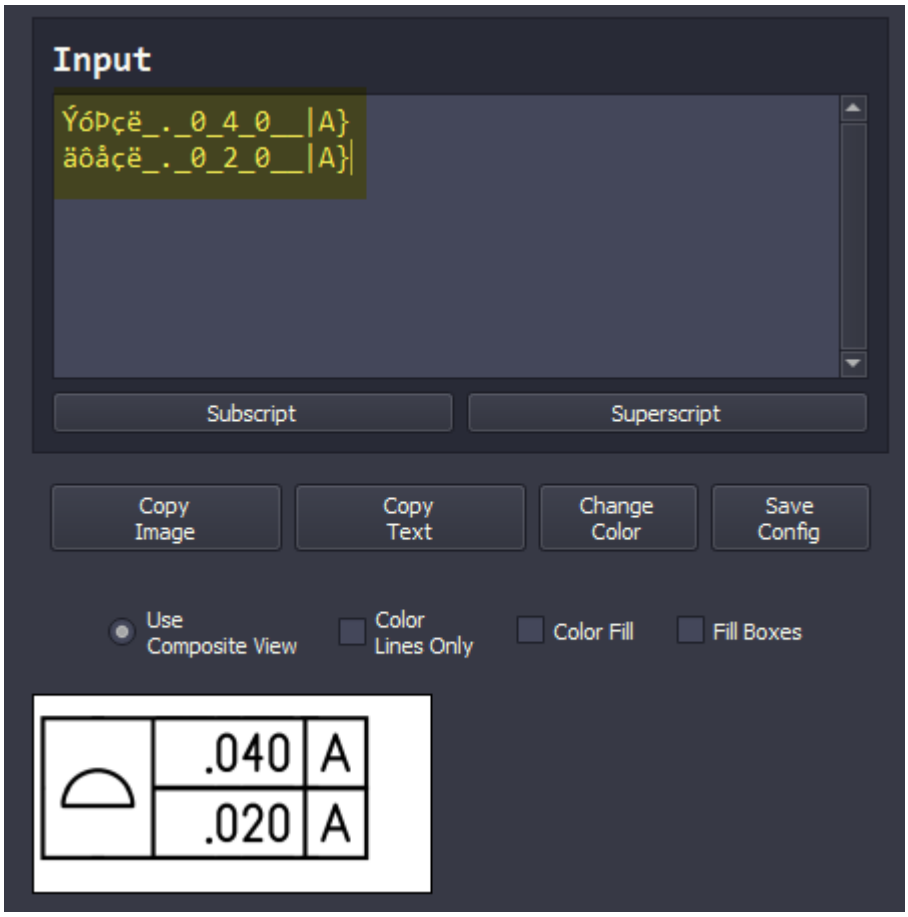

Input
. 1.5Å
. 0.7 "Overall"
. 0.3 "Between adjacent cover holes"
Subscript
Superscript
Copy Image
Copy Text
Change Color
Save Config
Use Composite View
Color Lines Only
Color Fill
Fill Boxes
1.5Ⓕ
0.7
Overall
0.3
Between adjacent cover holes

- Normally, enabling the "Use Composite View" would merge the rows that have a common GD&T symbol, up to 4 rows. In this case, it would be the profile of a surface symbol. But, if we need to do something to the below example, we have to change our input approach to meet this scenario.

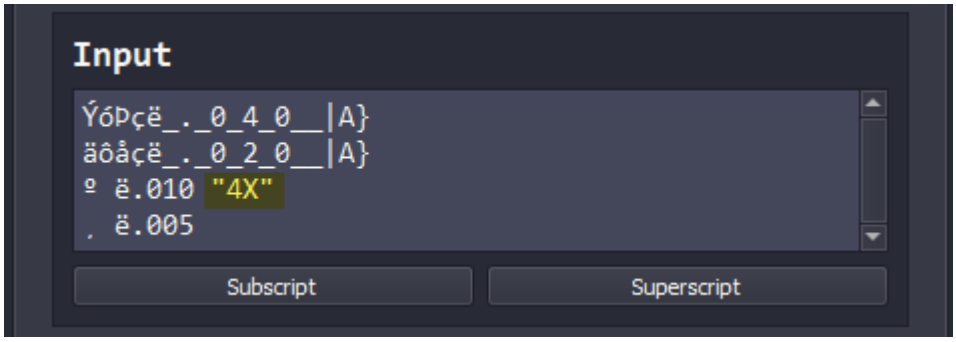
- Enter the composite portion first in the input. Make sure you enable the "Use Composite View" button. Since there is no value placed before the decimal place, I used a 3/4 space in place of it.



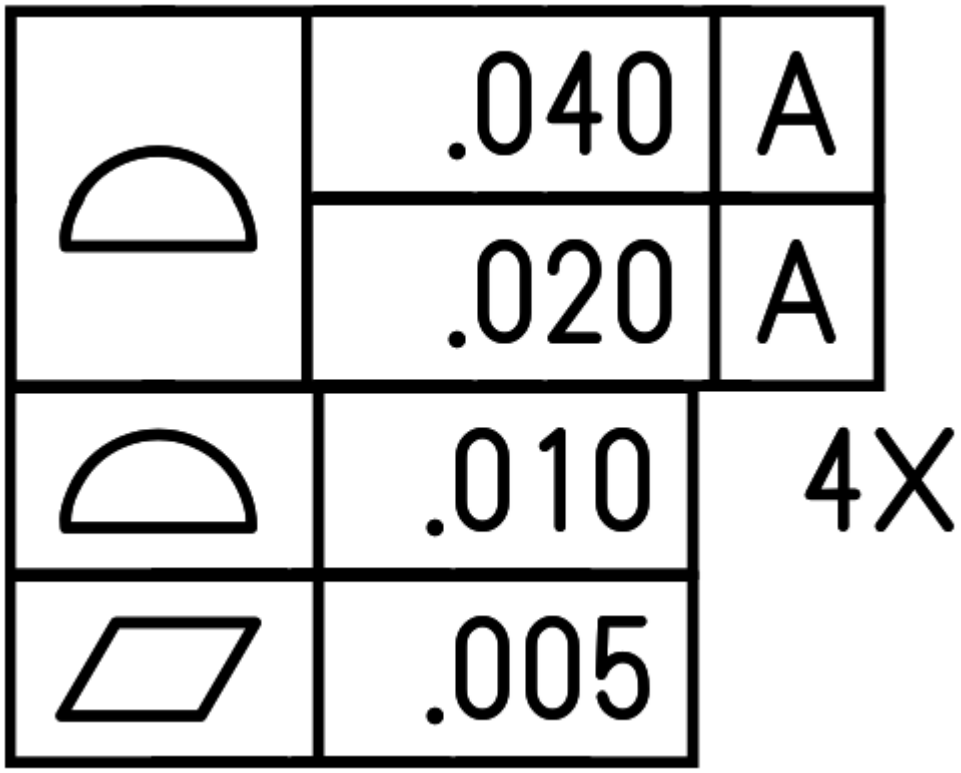
- Click on the "Copy Text" button
- Clear out current Input area and paste what was copied. You now should see the image below.



- Finish the 3rd and 4th rows Input as how you would normally enter them. As a side note, any text you want to place outside the boxes needs to be enclosed by quotation marks. The input of the 3rd row would look like this: º ë.010 "4X".

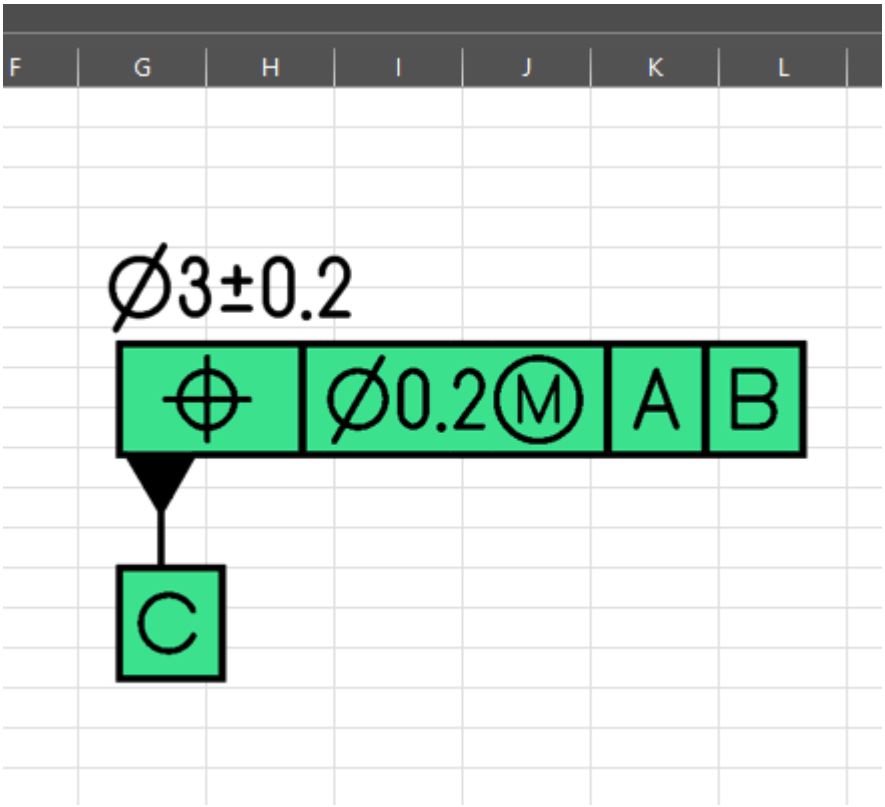


- You should now see the picture below.



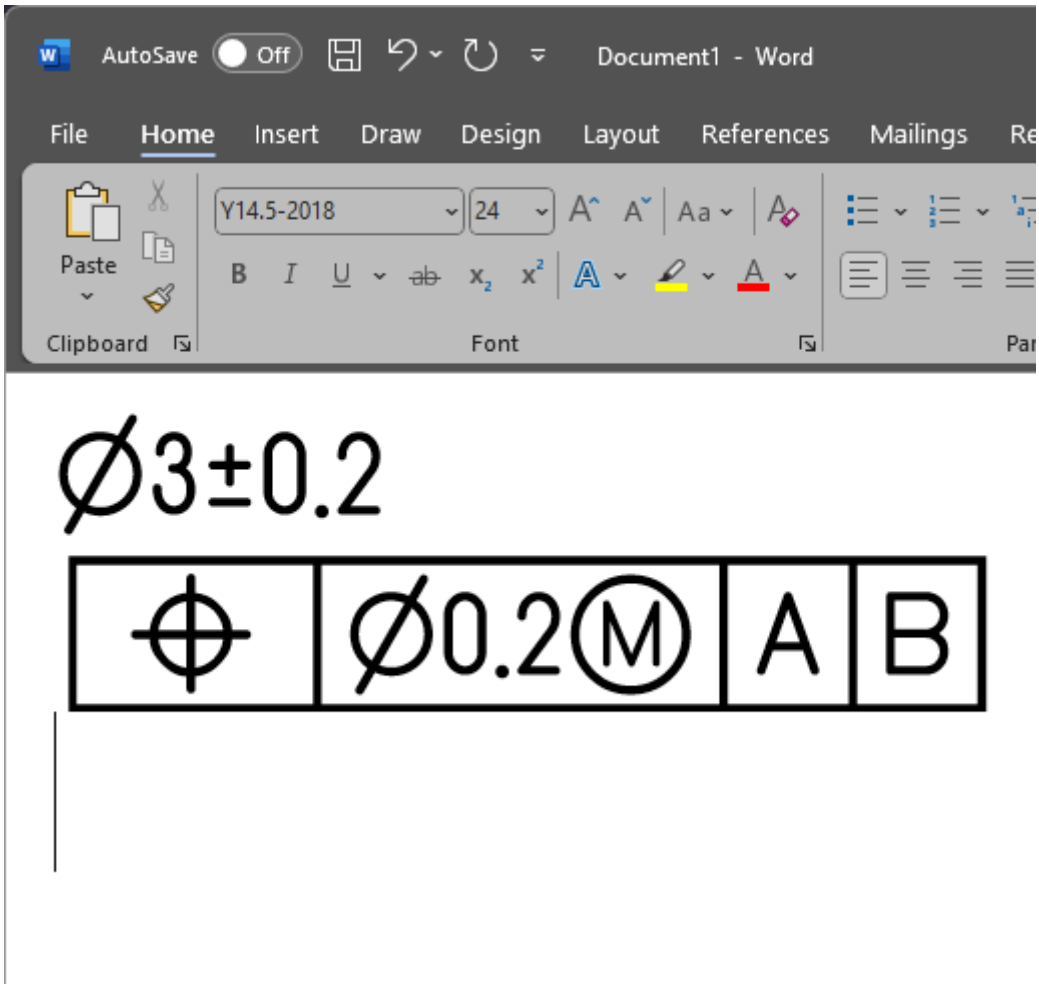
Import/Export

- Save configurations for future use
- Export as images with transparency



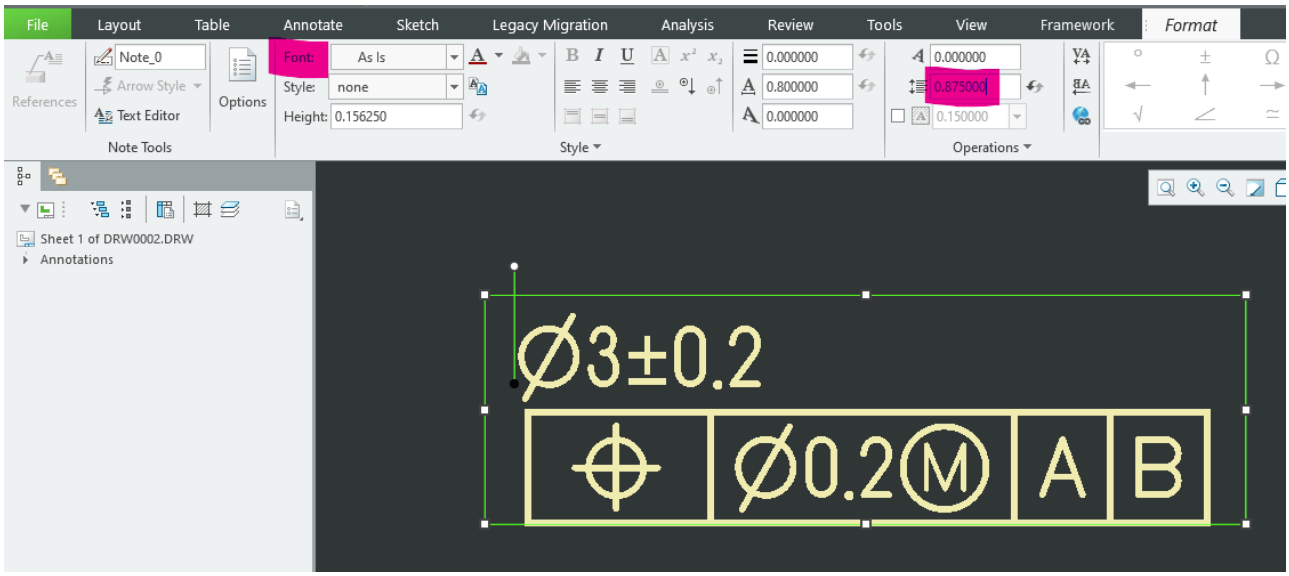
- Copy keymap text for CAD systems and/or other software environments (*works with PTC Creo*)

  In the app, you would create the symbol and click on the Copy Text button. In Microsoft Word for instance, once you choose the font "Y14.5-2018", it will look like this:



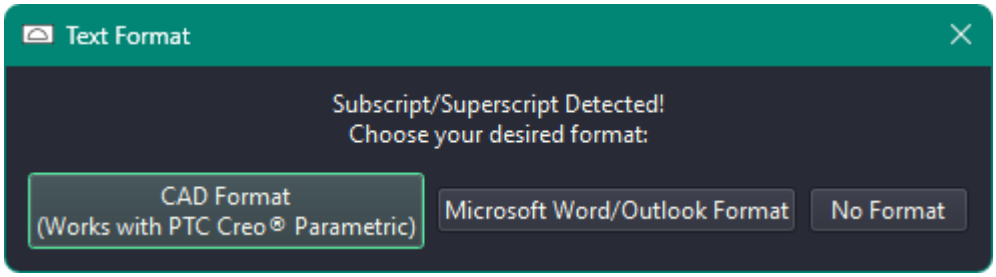
In PTC Creo for instance, you would store the font file "Y14.5-2018_mod_v3.ttf" within the folder that stores the fonts for your CAD software, such as C:\Program Files\PTC\Creo11\Creo 11.0.0.0\Common Files\text\fonts

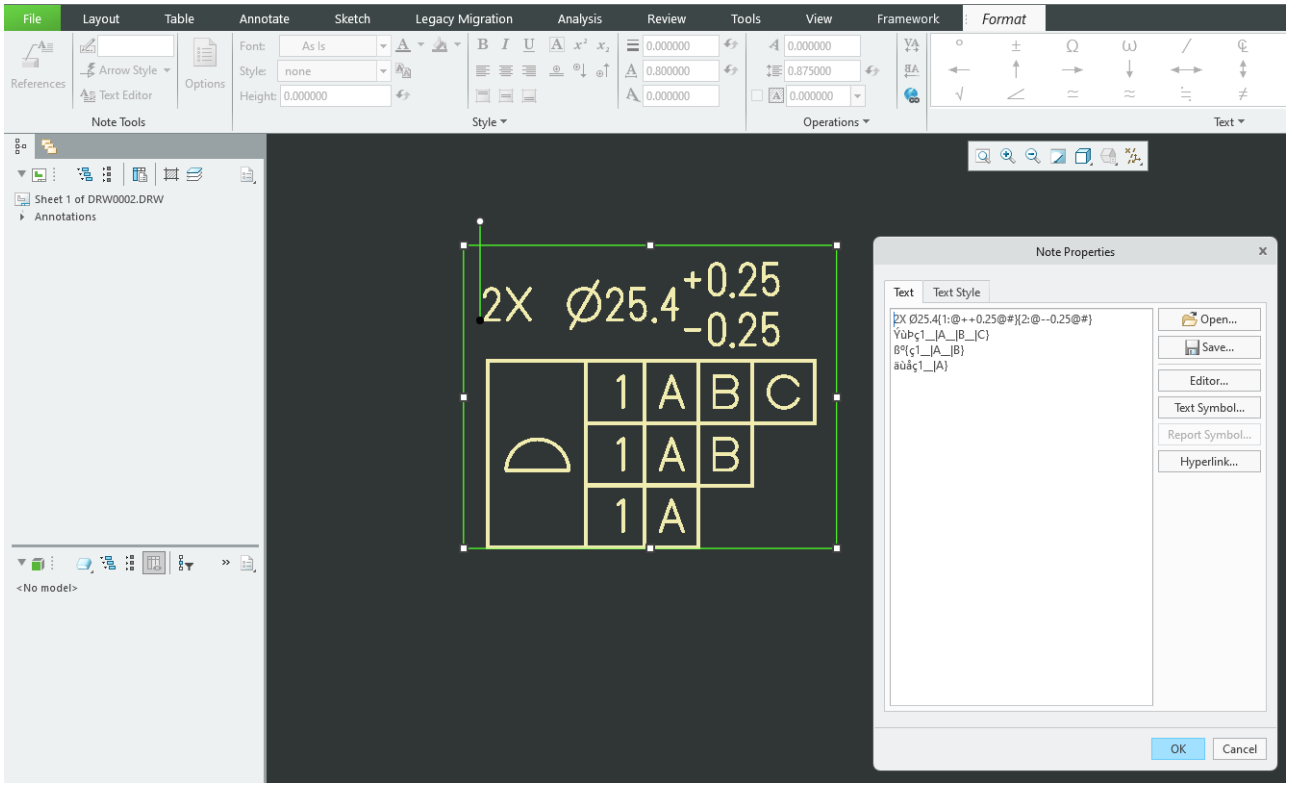
After placing the text in your drawing and picking the Y14.5-2018 font, make sure you set the line spacing to 0.875



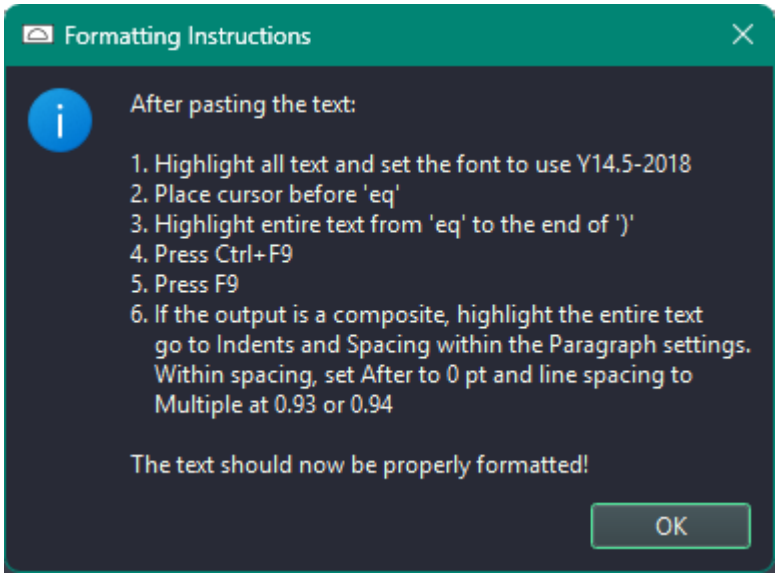
Also, if you have subscript and/or superscript and you want to put it in your drawing, this app can support that also. It can also handle composites. If it detects a subscript and/or superscript, a message will popup

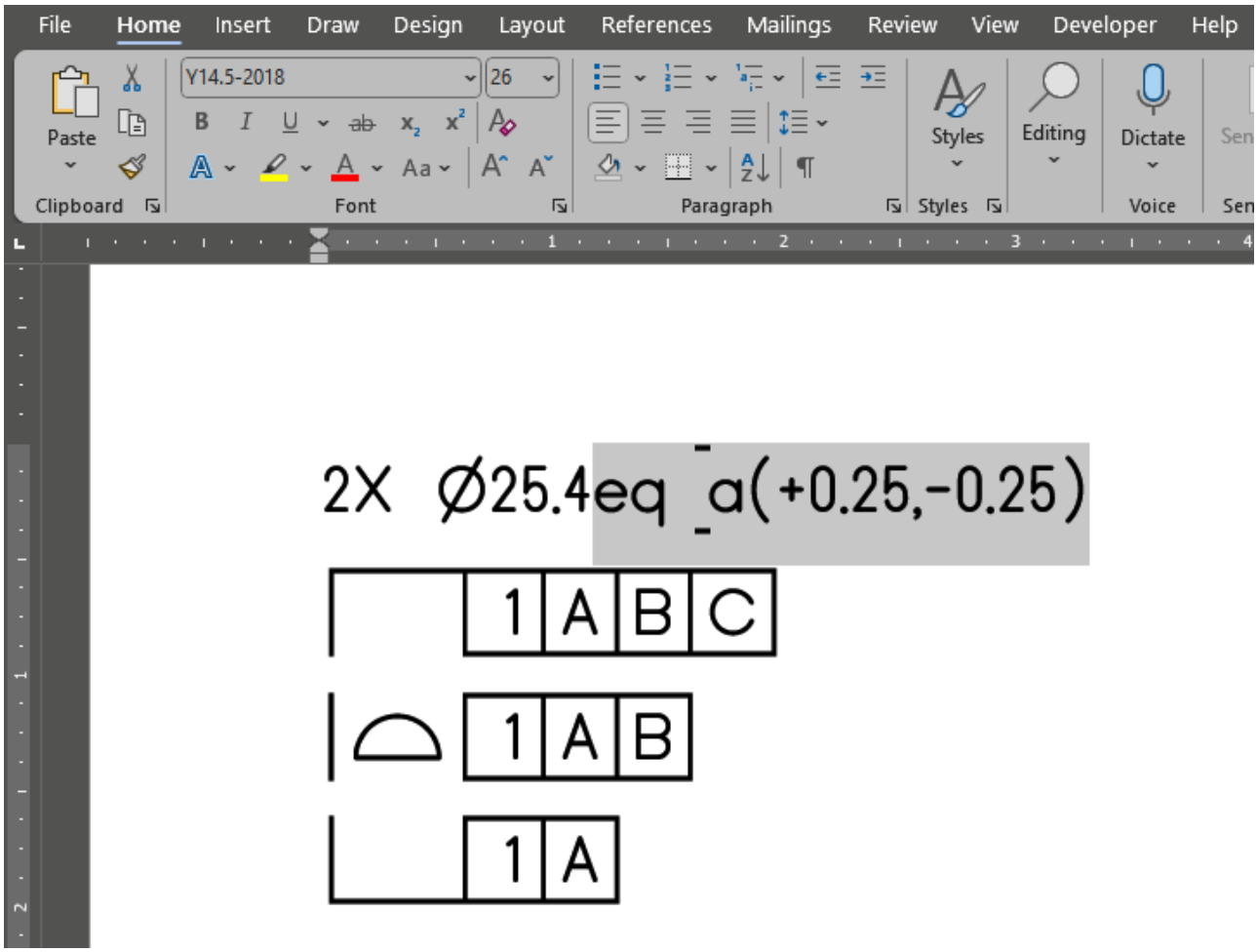
once you click on the Copy Text button. Currently, the subscript/superscript conversion is working in Creo Parametric and also within Microsoft Word/Outlook.

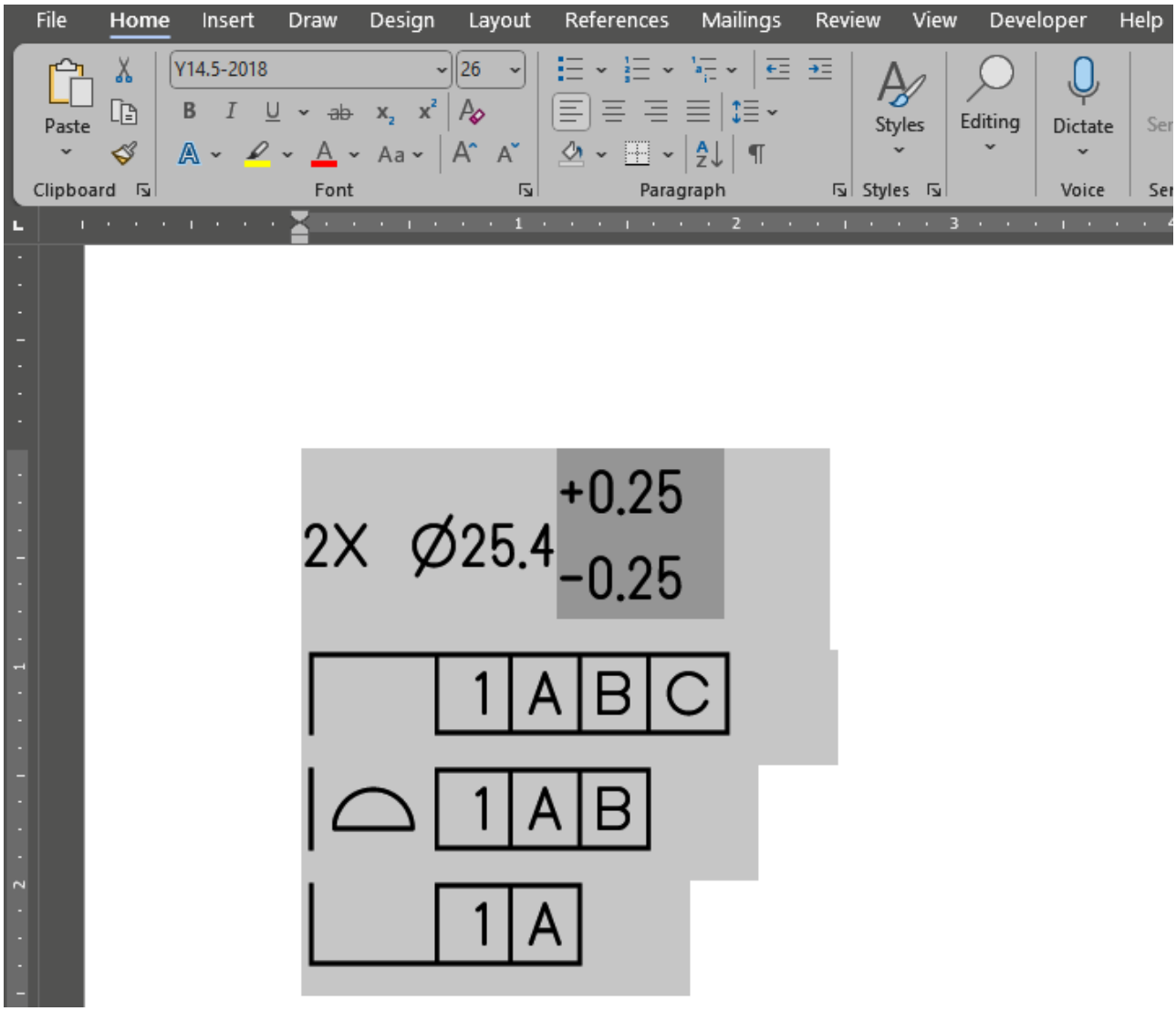


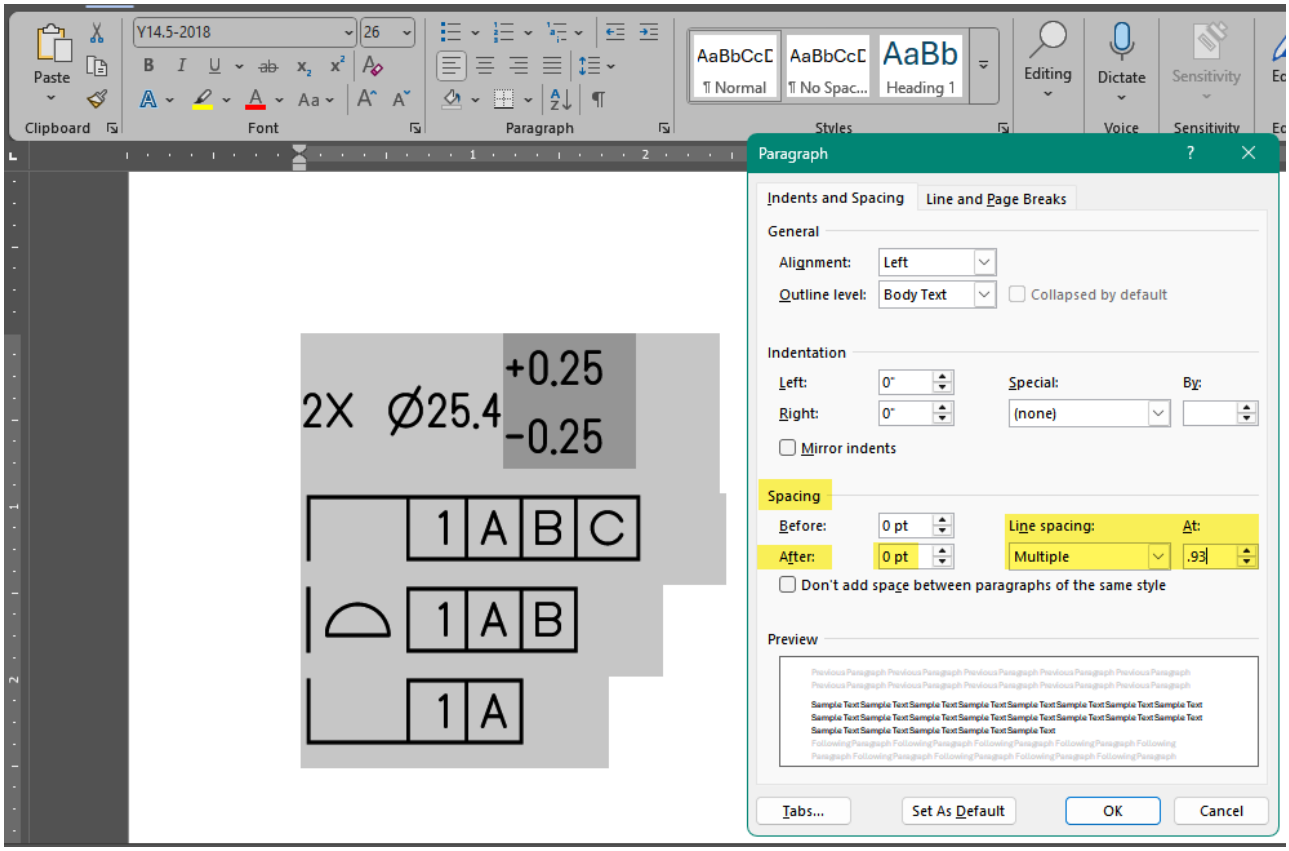


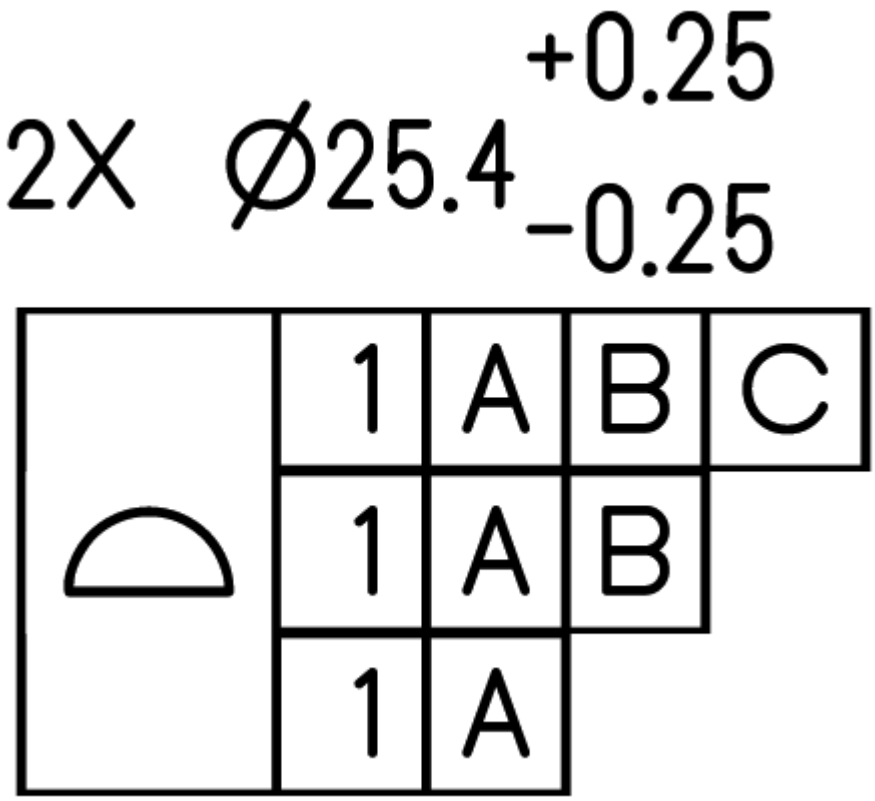
If you pick the Microsoft Word/Outlook option, another popup will show and give you further instructions in showing the copy text with the subscript/superscript properly.




File
Home
Insert
Draw
Design
Layout
References
Mailings
Review
View
Developer
Help
Paste
Y14.5-2018
26
Styles
Editing
Dictate
Clipboard
Font
Paragraph
Styles
Voice
2X Ø25.4eq a(+0.25,-0.25)
1 A B C
1 A B
1 A


File Home Insert Draw Design Layout References Mailings Review View Developer Help
Paste
Y14.5-2018
26
Clipboard
Font
Paragraph
Styles
Editing
Dictate
Voice
2X Ø25.4 +0.25 -0.25
1 A B C
1 A B
1 A

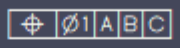
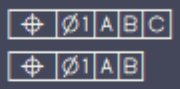
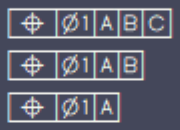
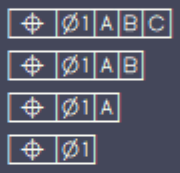
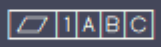
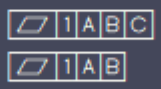
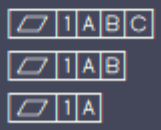
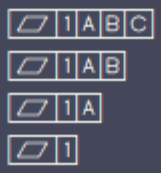

Paste
Y14.5-2018
26
Clipboard
Font
Paragraph
Styles
Editing
Dictate
Voice
Sensitivity
AaBbCcD ¶ Normal
AaBbCcD ¶ No Spac...
AaBb Heading 1
2X Ø25.4 +0.25 -0.25
1 A B C
1 A B
1 A
Paragraph
Indents and Spacing
Line and Page Breaks
General
Alignment: Left
Outline level: Body Text
Collapsed by default
Indentation
Left: 0"
Right: 0"
Special: (none)
By:
Mirror indents
Spacing
Before: 0 pt
After: 0 pt
Line spacing: Multiple
At: .93
Don't add space between paragraphs of the same style
Preview
Tabs...
Set As Default
OK
Cancel

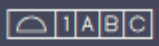
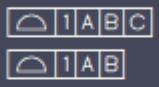
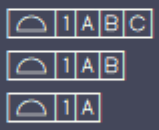
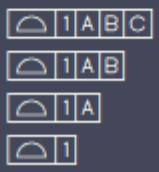


Macros

- Position, Flatness, Profile Macros

Macros Reference

Name	Keystroke	Input	Keymap
Position Macros			
position_1row	p.	¿ Ø1 A B C	
position_2rows	p..	¿ Ø1 A B C ¿ Ø1 A B	
position_3rows	p...	¿ Ø1 A B C ¿ Ø1 A B ¿ Ø1 A	
position_4rows	p....	¿ Ø1 A B C ¿ Ø1 A B ¿ Ø1 A ¿ Ø1	
Flatness Macros			
flatness_1row	f.	. 1 A B C	
flatness_2rows	f..	. 1 A B C . 1 A B	
flatness_3rows	f...	. 1 A B C . 1 A B . 1 A	
flatness_4rows	f....	. 1 A B C . 1 A B . 1 A . 1	

Profile Macros			
profile_1row	s.	º 1 A B C	
profile_2rows	s..	º 1 A B C º 1 A B	
profile_3rows	s...	º 1 A B C º 1 A B º 1 A	
profile_4rows	s....	º 1 A B C º 1 A B º 1 A º 1	

- Arc Length Macros

Arc Length Macros			
arc_1_number	a.	1ìî^{º}	
arc_2_number	a..	11îì^{º}	
arc_3_number	a...	111^{ºì}	
arc_4_number	a....	1111^{ºì}	
arc_5_number	a.....	11111^{ºîë}	

- Subscript and Superscript Macros

Script Macros			
subscript	min	_{}	
superscript	max	^{}	

This tutorial covers the core features of GD&T Builder. For additional support, questions, or requests, please contact by email or refer to the Github page.

email: mtiblow_github@proton.me

Github page: https://github.com/mtiblow/GDT-Builder

End of Tutorial

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