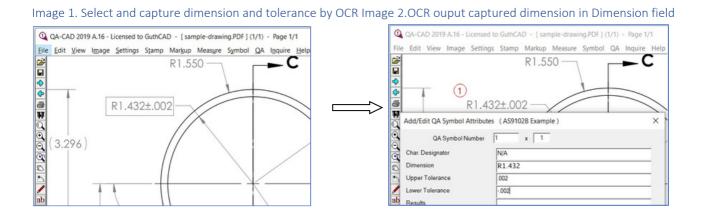
QA-CAD Software Installation and Beginners' Guide Vol.9.10: how to create a FAI report from PDF/CAD drawings in QA-CAD



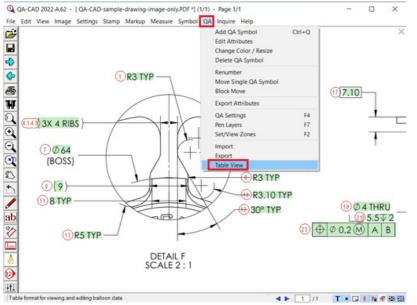
Click the below link to download the latest QA-CAD software. <u>http://www.iqmsolutions.co.in/digiverse-auto-ballooning</u>

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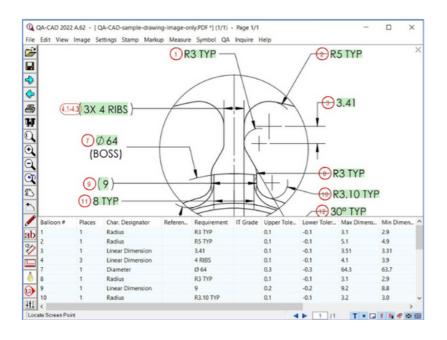
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New feature introduction: inspection table view

Select QA > Table View.

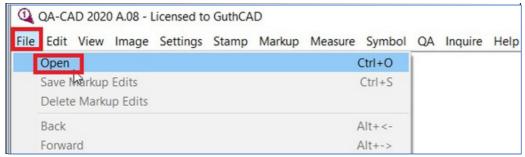


Then you can view the inspection table inside the QA-CAD. You can directly type and correct dimension, upper and lower tolerances in the inspection table. If you click the balloon number in the inspection table, The software auto-focus on the selected balloon number in the drawing. This helps for check purpose.



Open a drawing file

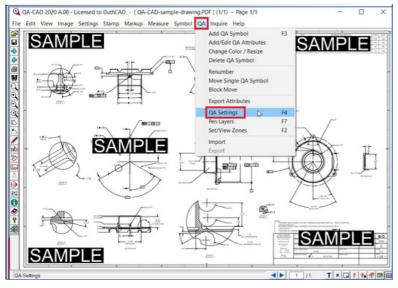
Step 1: First, Open your PDF drawing file in QA-CAD. Select File > Open



Step 2: Select your PDF drawing file (or CAD file). Then press Open button.

Q Open				×
Look in:	🔋 sample		- ← 🗈 💣 🖬 -	
4	Name		Date modified	Type
Quick access	🛃 QA-CAD-sample-drawing.PDF		10/03/2020 3:54 PM	Adobe Acr
Libraries				
This PC				
This PC				
1	¢			>
1	< File name: OA-CAD-sample-dr	awing PDF	•	> Open

Step 3: Next, click 'QA' from top menu and select 'QA Settings'.



Set up your tolerance configuration

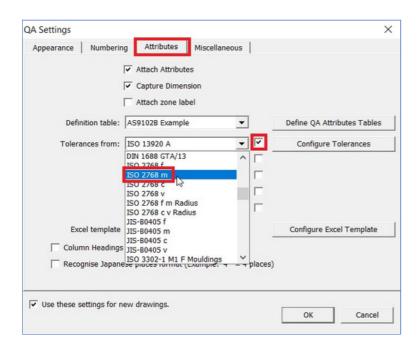
Step 4: Then 'QA Settings' window open and select Attributes tab. QA-CAD can capture dimension and its specified tolerance together from your drawing if the dimension and the tolerance are drawn together (for example: '.174 ±0.02'). However, if tolerance is unspecified in your drawing (for example: '.174'), QA-CAD can enter tolerance automatically based on dimension in the drawing. In QA-CAD, there are three automatic tolerance entry methods in case of unspecified tolerance (You can set up a maximum of 5 tolerance settings).

Method 1: Select tolerance standard from a built-in QA-CAD tolerance table database.

Tolerance

Of General tolerance according to:ISO 2768-mH

If you find tolerance requirement like the above images in your drawing, you need to tick one of the Tolerance settings and select required tolerance standard in its Tolerance from drop-down menu (for example: you can select 2768-m, which is ISO 2768 General tolerances and its medium(m) tolerance class designation). Then press the OK button and proceed to Step 5.



(another example: If your drawing requires ISO 13920, select 13920 in Tolerance from drop-down menu. QA-CAD has the built-in tolerance tables for a wide number of standards. If you cannot find your required tolerance standard, please contact us. Maybe we can add it in QA-CAD.)

Allowable deviations on untoleranced dimensions for welding constructions: EN ISO 13920 Method 2: Set up and use your Default Tolerance.

If you see the below tolerance requirement in your drawing, you need to set up your default tolerance, click Attributes tab and press the configure tolerances button.

	QA Settings	>
	Appearance Numbering Attributes Miscellaneous	
	I Attach Attributes	
	Capture Dimension	
	Attach zone label	
	Definition table: AS9102B Example Define Q	A Attributes Tables
UNLESS OTHERWISE	Tolerances from: ISO 13920 A	gure Tolerances
SPECIFIED DIMENSIONS ARE IN MM AND PER	ISO 13920 B	
ANSI Y14.5M-2009.	ISO 13920 C 🚽 🗖 😽	
TOLERANCES ARE:	ISO 13920 D	
NO DECIMALS:	ISO 2768 m 💌	
NO DECIMALS: +/-0.2	Excel template AS9102B Configu	re Excel Template
DECIMALS:	Column Headings	
.X +/-0.1 .XX +/-0.05 .XXX +/-0.025	Recognise Japanese places format (Example: '4-' = 4 places)	
ANGLES: +/-1 DEG	✓ Use these settings for new drawings. OK	Cancel

Then Manage Tolerances window opens. Click the Default Tolerance tab. Type required linear/angular tolerance depends on decimal places (for example: if decimals are +/-0.1 for .X, type 0.1 as a Linear tolerance for Decimal Places X.X). Once you complete to set up your required tolerances, press the Save button.

Name: Default Tols A	New Save		Delete
Decimal Places	Linear	Angular	
Х.	0.2	1	
X.X	0.1		
X.XX	0.05		
X.XXX	0.025		
X.XXXX			

Then 'OK, Default Tols A saved' window opens. Press OK button. Then the QA settings window opens. Tick one of the tolerance settings and select Default Tols A in its dropdown menu. Proceed to Step 5.

	QA Settings	×
	Appearance Numbering Attributes Miscellaneous	
	Attach Attributes Attach Attributes Capture Dimension Attach zone label Definition table: AS91028 Example Telerances from: ISO 12820 A	Define QA Attributes Tables
QA-CAD 2019 X Ok, 'Default Tols A' saved!	Tolerances from: ISO 13920 A V V Default Tols A Default Tols B Default Tols C sample tolerance1 SAMPLE Basic/Ref Tolerance Custom Example My Sample ISO 13920 A ISO 13920 B Column Headings ISO 13920 D Recognise Japanese procestormore (Example, V V places)	Configure Tolerances
ОК	↓ Use these settings for new drawings.	OK Cancel

Method 3: Set up and use your Custom Tolerance.

 ${\rm DEVIATION}\pm{\rm FOR}~{\rm DIMENSION}$

30

120

0.3

120

315 1000

1.2

315 1000 2000

0.5 0.8

6

30

0.2

OVER

UP TO

0.5

3

0.1

3

6

0.1

If you see the below tolerance requirement table in your drawing, you need to set up your custom tolerance, click Attributes tab and press the configure tolerances button.

	g Attributes Misce Attach Attributes Capture Dimension Attach zone label	laneous	
Definition table:	AS9102B Example	•	Define QA Attributes Tables
Tolerances from:	ISO 13920 A	• F	Configure Tolerances
	ISO 13920 B	_ [
	ISO 13920 C	-	B
	ISO 13920 D		
	ISO 2768 m		
Excel template	AS9102B	-	Configure Excel Template
Column Headings			
Recognise Japane	se places format (Example	e: '4-' = 4 places)	
✓ Use these settings for n	ew drawings.		OK Cancel

6

Then Manage Tolerances window opens. Click Custom Tolerances Tab. Input the whole tolerance requirement table (for example: if OVER 3, UP TO 6 is 0.1, type 3 in Above column and type 6 in Up to column. Then type -0.1 as a lower tolerance and type 0.1 as an upper tolerance). Please note that the largest 'Up to' cell needs to be blank when we create and save a custom tolerance set. Once you complete to input your required tolerance table, press Save button.

Default Tolerance	s Cus tom Example 💌	New Save	Rename	Delete								
Above	Up to (Including)	Lower Tol	Upper Tol	•								
0	3	-0.1	0.1	_								
3	6	-0.1	0.1									
6	30	-0.2	0.2	_								
30	120	-0.3	0.3									
120	315	-0.5	0.5									
315	1000	-0.8	0.8									
1000	2000	-1.2	1.2									
2000												
				-		DEV	IATION	$1\pm$ F(or din	IENSI	ON	
•			,	<u>'</u>	OVER	0.5	3	6	30	120	315	1(
					UP TO	3	6	30	120	315	1000	2
			OK	Cance		0.1	0.1	0.2	0.3	0.5	0.8	ŀ

Then 'OK, Custom Example saved' window opens. Press OK button. Then the QA settings window opens. Tick one of the tolerance settings and select Custom Example in the its dropdown menu. Proceed to Step 5 (If you tick the second tolerance tick box from the top, you can configure 2nd tolerance settings. You can set up a maximum of 5 tolerance settings in case of unspecified tolerance).

	QA Settings	×
	Appearance Numbering Attributes Miscellaneous	
	Attach Attributes Capture Dimension Attach zone label	
	Tolerances from: ISO 13920 A Configure	ributes Tables Tolerances
QA-CAD 2019 ×	Default Tois B Default Tois C sample tolerance1 SAMPLE Basic/Ref Tolerance Custom Example	
Ok, 'Custom Example' saved!	Implement Top Sample Top Sample Top Sample Excel template ISO 13920 A ISO 13920 B Configure Ex Column Headings ISO 13920 C ISO 13920 C Recognise Japanelse procestormuc (Example: 4 - 4 places)	cel Template
ОК	Use these settings for new drawings.	Cancel

Set up your EXCEL template (AS/EN/SJAC9102, PPAP or your inspection report template)

Step 5: Tick 'Attach Attributes', 'Capture Dimension', and 'Attach zone label'. Select 'AS/EN/SJAC9102B Example' in Definition table and ''AS/EN/SJAC9102B' in Excel Template (If you want to output to our built-in PPAP Dimensional Test Results form, select PPAP example in Definition table and EXCEL template).

QA Settings			×
Appearance Numberi	ng Attributes Miscella	aneous	
	 Attach Attributes Capture Dimension Attach zone label 		
Definition table:	AS/EN/SJAC9102B Example		Define QA Attributes Tables
Tolerances from:	Default Tols A	• •	Configure Tolerances
	ISO 13920 A	• •	
	ISO 2768 m	• •	
	JIS B0403 CT1	• •	
	Custom Example	• •	
Excel template	AS/EN/SJAC9102B	-	Configure Excel Template
Column Heading	5		
Recognise Japan	ese places format (Example:	'4-' = 4 places))
Iv Use these settings for a setting of a	new drawings.		OK Cancel

Press OK and proceed to Step 6. However, if you want to output to your EXCEL template file directly, open your EXCEL Template and check start cell and columns.

Start Cell: A8. Column A is Balloon No. Column B is Dimension. Column C is Upper Tolerance. Column D is Lower Tolerance in this example EXCEL file.)

8 5.			Sample	First Piece Approv	val Formut				Hiroyuki Y	amamoto 🕹	60 –	• •
File Ho	me Insert Page Layout	Formulas Data Review	View Help 📿 Tel	I me what you wan								A, Share
Paste	B I U · B · 3		🗐 🖾 Merge & Center 🔸	General \$ - % + Number	a ta <	Conditional Form Formatting - Tab Styles	vie + Styles +	Insert Dele	te Format	∑ AutoSum	* Z ▼ P Sort & Find & Filter * Select * Sting	
48	• 1 × √ fr											
A		c	D			6	н	1	,	ĸ	L	м
	PART NO					REV		T PIECE	APPR	OVAL FO		ATION 1ST DA
-	CUSTOMER						TOCK SUPPLIER			"A" OPERATOR	OPER	"B" OPERAT
Balloon No	Dimension	Upper Tollerance	Lower Tolerance	GAUGES	1	2	3	4	5	6	160/	GAUGE VER ND
						_						
K P	Sheet1					1.4			100			+ 80

Go back to the QA settings window in QA-CAD. Press the Configure EXCEL template button.

- 1	and the law of	1	
Appearance Numbering	Attributes Miscellaneo	us	
	Attach Attributes Capture Dimension Attach zone label		
Definition table:	AS/EN/SJAC91028 Example	•	Define QA Attributes Tables
Tolerances from:	Default Tols A	• •	Configure Tolerances
	ISO 13920 A	• •	
	ISO 2768 m	• •	
	JIS 80403 CT1	• •	
	Custom Example	▼ ▼	
Excel template	AS/EN/SJAC9102B	•	Configure Excel Template
Colum	n Headings		
✓ Recognise Japanes	e places format (Example: '4-'	= 4 places)	
Use these settings for new particular settings for new	w drawings.		
			OK Cancel

Then the Manage Excel templates window opens. Press the New button.

Definition table:	AS/EN/SJAC91	02B Example	_				
Template Name	AS/EN/SJAC91	02B	-	New	Rename	Delete	
				Import	Export		
Excel File Name	C:\Users\movi	e\AppData\Roan	ning\GuthCAI	QA12\C7\AS	EN_SJAC9102	B_ter	Oper
Primary sheet	Form3		-				
Start Row	10	(Cell: A10)					
	Con	figure Columns					
	∏ st	ore large data to	o multiple she	ets			
Primary sheet	end row 57	_					
Subsequent sheets s	start row 1						
Subsequent sheets	end row 50						
				Save	1 0	< 1	Cancel

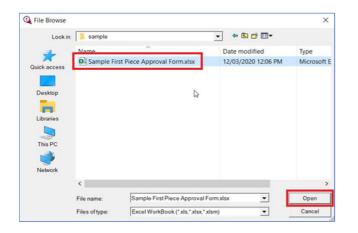
Then select Copy from current EXCEL template and type the template name in New Table Field (typed 'MY SAMPLE' in this below example). Then press the OK button.

New Table	MY SAMPLE			-
nen tuble				
			_	
from current	Excel template (A	S/EN/SJAC910	28)	
	empty Excel to	New Table MY SAMPLE empty Excel template from current Excel template (A	empty Excel template	

Go back to the Manage Excel templates window and click the '…' button next to the Excel File Name input Field (the red rectangle in the below image)

Manage Excel temp	lates				×
Definition table:	AS/EN/SJAC91028 Exam	ple			
Template Name	MY SAMPLE	*	New	Rename	Delete
			Import	Export	
Excel File Name					Dpen
Primary sheet	Form3	Ŧ			
Start Row	1 (Cell: A1)			
	Configure Col	umns			
	Store large	data to multiple sh	eets		
Primary sheet	end row 50				
Subsequent sheets :	start row 1				
a second second	end row 50				
Subsequent sheets					

Then select your EXCEL template file ('SampleFirstPieceApprovalForm.xlsx' was selected in the below example image). Press the Open button.



Press the Configure Columns button in the Manage Excel templates window.

Definition table:	AS/EN/SJAC91028 Example	0			
bennoon oobe.					
Template Name	MY SAMPLE	· _ !	lew	Rename	Delete
		In	nport E	export	
Excel File Name	D:\Drawing-Sample\samp	le\Sample First Piece A	Approval Form	xdsx	Op
Primary sheet	Sheet1	•			
Start Row	1 (Cell: A1)				
	Configure Colun	nns			
	Store large da	ata to multiple sheets			
Primary sheet	end row 50				
Primary sheet ubsequent sheets Subsequent sheets	start row 1		I	કે	

The Configure sheet window opens. In this window, you can set which data is output to which column in an EXCEL template. For example: you can select or change that QA-CAD outputs dimension to Column B.

Form3 Start column A Start row 8 End row 35	Large data:		Layout from sheet: Start row End row	1	
A B Ioon/Item No. ▼ [Zone/Location] ▼	C D	E	F	G	H
I [Zone/Location] ^ [Pen] Char. Designator	K Comments				

Type A in the Start Column and type 8 in the Start Row. Then change Column B to select Dimension in the dropdown menu. (Previously we checked the EXCEL template output cell requirement at page8. Start Cell is A8. Column A is Balloon No. Column C is Dimension. Column C is Upper Tolerance. Column D is Lower Tolerance).

Also change Column C to Upper Tolerance.

onfigure sheet					
Form3 Start column Start row End row	A 8		ata: ert extra rows ore to extra sheets		Layout from sl Start End
A	В	с	D	E	F
Balloon/Item No. V	J	Char. Designator Char. Designator Dimension Upper Tolerance Lower Tolerance Max Dimension Min Dimension UoM Pass / Fail Inspection Tool U: Non-conformance			✓ Lower Tolerance ✓ U

By the way, as you see from the above image, you can change or edit output attributes data. You can also insert another column, delete this column or make this column blank. if you select Max Dimension here, you can output maximum dimension (dimension plus upper tolerance). If you select Min Dimension here, you can output minimum dimension (dimension plus lower tolerance).

Then change Column D to Lower Tolerance.

onfigure sheet									
Form	3	Large	data:						
Start column	A	C Ir	nsert extra rows				Layout fr	rom	sheet
Start row	8	@ S	tore to extra sheets					Sta	rt rov
End row	35							En	nd rov
A	в	с	D		E		F		
Balloon/Item No. 💌 🛙	Dimension	▼ Upper Tolerance	 Dimension 	-	Upper Tolerance	- Lower	Tolerance	•	UoM
I	J	к	Dimension Upper Tolerance	^]				
Inspection Tool U	Non-conformanc	Comments	Lower Tolerance Max Dimension						
			Min Dimension						
			UoM Pass / Fail						
			Inspection Tool U						
			Comments						
			[Blank]						
			[<insert] [Insert>]</insert] 						
			[Delete]		Cancel				
			[Merge>]	~					

Delete the rest of the columns (From column F to column K).

Configure sheet								\times
Form3 Start column Start row End row	A 8		ata: ert extra rows re to extra sheets		Layout from sheet: Start row End row	1	*	
A	В	с	D	E	F	G	н	
Balloon/Item No. 🗨 (I I Inspection Tool U 🗸 (J	к	OK	Upper Tolerance Upper Tolerance Upper Tolerance Max Dumension Min Dimension Min Dimension UoM Pass / Fail Inspection Tool U: Non-conformance (Blank) [Comments [Blank] [Comments] [Dealero] [Dealero]	Lower Tolerance 🕨 UoM		Pass / Fail	•

Then press the OK button (In the below example, QA-CAD outputs balloon number to column A, dimension to column B, upper tolerance to column C and lower tolerance to column D in a selected EXCEL template).

Configure sheet							×
Form Start column Start row End row	A 8		sta: ert extra rows re to extra sheets		Layout from sheet: Start row End row	1	•
A Balloon/Item No. 💌	B Dimension <u> </u>	I Upper Tolerance 💌	L Lower Tolerance 💌				
			ОК	Cancel			

Then QA Settings window opens. Select 'MY SAMPLE' in the EXCEL template, press the OK button, and proceed to step 6.

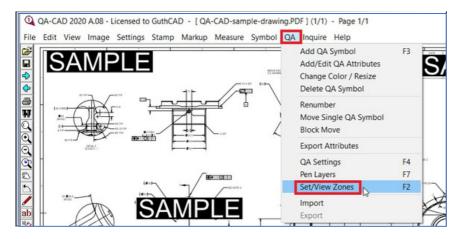
ppearance Numberin	a Attributes Mis	cellaneous	
ppearance Numberin	g Autouces Mis	cellaneous	
	Attach Attributes		
	Capture Dimension		
	Attach zone label		
Definition table:	AS/EN/SJAC9102B Exa	mple 🔻	Define QA Attributes Tables
Gen Tolerance 1:			Configure Tolerances
Gen rolerance 1.	Deladic Tols A	• 1*	Configure rolerances
Gen Tolerance 2:	ISO 13920 B		
Excel template	MY SAMPLE	•	Configure Excel Template
	AS/EN/SIAC9102B		
Header Line (for	MY SAMPLE		
j nedder ene (10	None		
Decimal Point	(Period (.) (Cor	nma (,)	
CSV Separator	(Comma (,) (Ser	nicolon (:)	
	to continu () to bei	(/)	
Use these settings for n	ew drawings.		

(This customize EXCEL template is very easy example. If you need to output

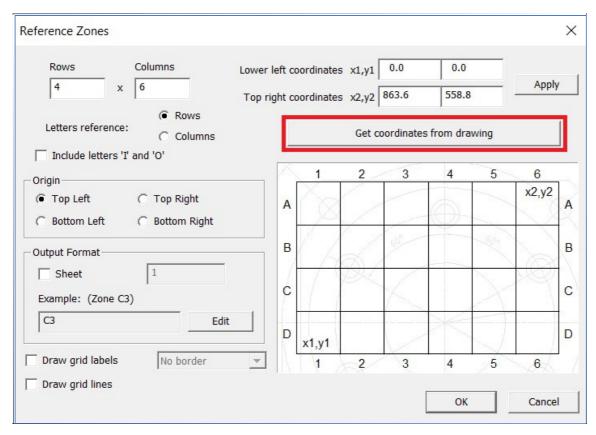
maximum/minimum dimesons or output all dimension and upper/lower tolerances into a single cell, click the Define QA Attributes Tables button.

Set up reference zone

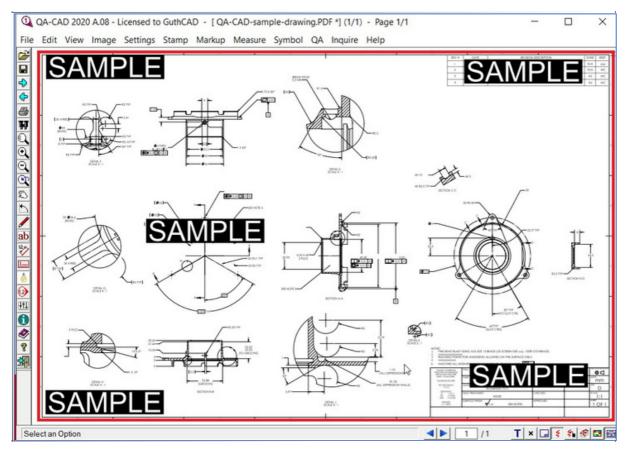
Step 6: Select QA > Set/View Zones (If you do not need to reference location, proceed to step 11).



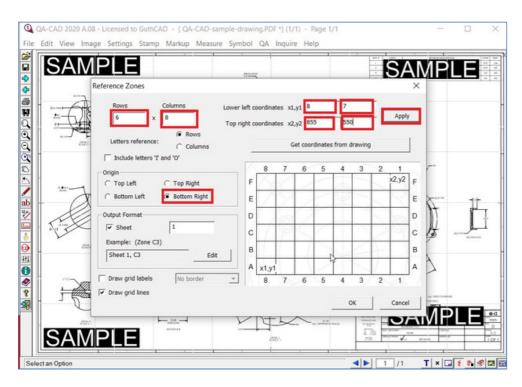
Step 7: A Reference Zones window opens. Press 'Get coordinates from drawing'.



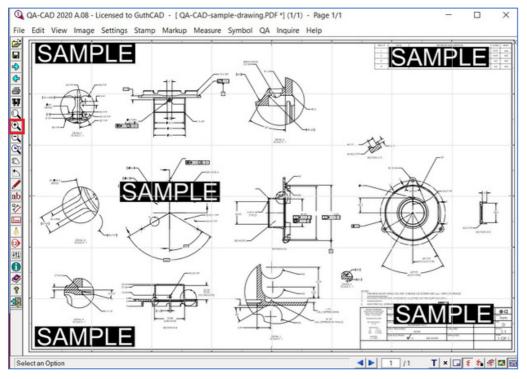
Step 8: Select whole edge of the drawing from left top to right bottom (actually you select edges with black line in QA-CAD. The red lines in the below image are for your reference.) Then left click once.



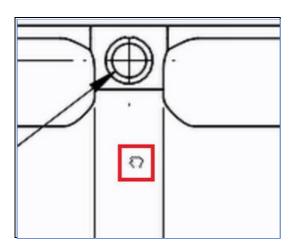
Step 9: Go back to Reference Zones window. Change Rows, Columns, Letters reference and Origin depends on your drawing (In this same drawing, Rows: 6, Columns:8, Origin is Bottom Right). Adjust x1, y1, x2, y2 and press Apply until the grid lines align with the drawing zone (In this same drawing, x1: 8, y1:7, x2:855, y2:550). Then press OK.



Step 10: You can zoom in the software screen by rolling up the mouse wheel if the letters in the drawing are too small or you can zoom out the software screen by rolling down the mouse wheel if the letters in the drawing are too large. Alternatively Press 'Zoom In' button (the red rectangle in the below image) or press 'Zoom Out' button. Then move a mouse pointer to the drawing. When you left click, you can zoom in your drawing.

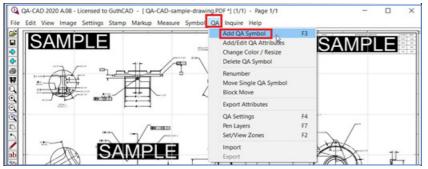


Then press left-click and hold it. The mouse pointer appearance changes to hand symbol. Then you can move the drawing (up or down, left or right).



How to extract individual dimension, tolerance, and notes from text-selectable PDF or AutoCAD files

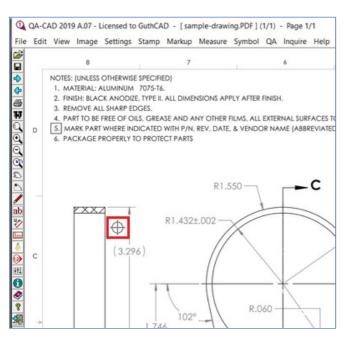
Step 12. Now click 'Add QA symbols' from QA menu.



Step 13: Tick Attach Attributes and Capture Dimension Value. Select 'Single dimension capture' and 'Single Click' as a capture method (If you want to do auto ballooning, proceed to page21). Press the OK button.

QA Start number / Increment			1991 (52)	×
Start number 1		Pen	Size 11.176	_
Sequence: 1 2 3		Balloon	Circle	•
		OCR language		•
Use a constant value		OCK language		
✓ Attach Attributes			Leade	
Discourse and the second se	him and		Opaque	
Capture Dimension	Linear Dimension		Highlight	:
Single dimensions capture		ŀ	lighlight (light)	:
Single Click				
C Box				
C OCR / GD&T Capture				
○ Group dimensions capture				
- •				
Set not specified tolerances from:			-	1
ISO 13920 A		ОК	Cancel	

Step 14: Your mouse pointer changes and looks like a circle with a plus sign on the software (as you can see the circle inside the red rectangle in the below image). In this mode, you can draw balloons on the drawing. Move the circle to where you would like to place a balloon and left-click once. Then the circle is placed.



Step 15: You can move the plus sign to a dimension value (or text) you would like to capture (in this example, the plus sign moved towards 3.296). Left-click twice. The target value is captured and displayed in Dimension field on Add/Edit QA Symbol Attribute window. Press OK button (complete one balloon and its attributes setting).

Image 15-1. Move the plus sign to a dimension value (or text) you want to capture. Left-click once.

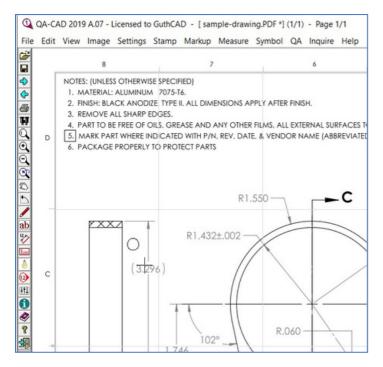


Image 15-2. The red ballon is displayed. Left-click once again.

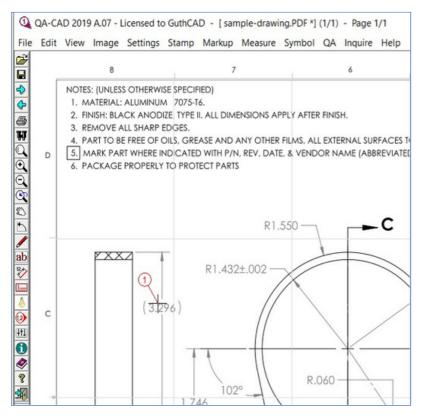


Image 15-3. The target value is captured and displayed in Dimension field on Add/Edit QA Symbol Attribute window. Press OK button. The upper and lower tolerances are automatically entered by your tolerance settings. (In the below image, the Upper and Lower Tolerances were filled from 2768_m, one of QA-CAD's ISO standard tolerance tables).

	8	7	6	5		4	
D	3. REMOVE ALL SHARP E 4. PART TO BE FREE OF C	A 7075-T6. ZE TYPE II. ALL DIMENSIONS APPLY DGES. XILS. GREASE AND ANY OTHER FILM ID CATED WITH P/N, REV. DATE, &	MS. ALL EXTERNAL SURFACES TO				
		Add/Edit QA Symbol Attril	butes (AS9102B Example)		×		
с	(3.2 ⁴	QA Symbol Numb Reference Location Dimension Upper Tolerance Lower Tolerance Results Tooling Nonconformance Number		2			
		Fill Tolerances from:	(€ 2768_m	OK Cancel			

[Select File > Save Markup Edits to save the work ballooned drawing.] With the single click method, you can extract both horizontal PDF text and vertical PDF text, if your drawing is text-selectable PDF file or AutoCAD file.

When use the Box method? capturing a dimension with a "deviation" tolerance format or angular PDF text from textselectable PDF

Image15-4. Click Add QA symbol from the QA menu. Select 'Sngle dimension capture' and 'Box'. Then press the OK button in the QAStart Number window.

QA Start number / Increment	×
Start number 1	Size 5
Sequence: 1 2 3	Pen Red 👻
Sequence. 125	Balloon Circle
Use a constant value	Leader
Attach Attributes	Opaque
Capture Dimension	Highlight:
C Single Click	Highlight (light):
Box	
C OCR / GD&T Capture	
Auto (beta)	
	OK Cancel
	- Contest

Image 15-5.Same as the single-click method. Place a balloon first. Then press the left-click button and hold it to cover dimension, upper tolerance, and lower tolerance by drawing the rectangle.

0	A-CAI	D 2020	A.20 - Li	censed to	GuthCAE) - [900/	4-01-017 r(05.PD	F *] (1/	1) -
File	Edit	View	Image	Settings	Stamp	Markup	Measure	Sym	bol Q	AI
1 1 2 2 2 4 4 1 2 3 0 0		05	6	.35 -	0		+0).0).0	0.	1

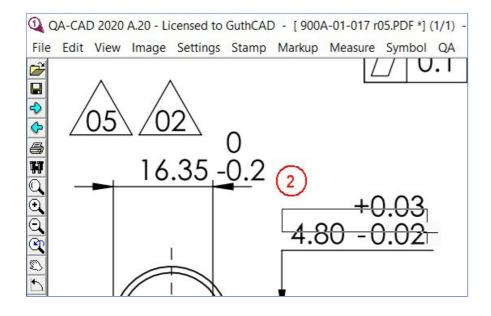


Image 15-6. Left-click again. Then the dimension, the upper tolerance, and the lower tolerance are extracted from the PDF and inserted into each data field automatically.

	A-CAD 202 Edit Vie										lelp
	<u></u>		.35 -	0	2 4.8	- 30	+0. -0.	03 02		<u>A-D</u>	
0	Add/Edit	QA Symbo	I Attribute	s (AS/E	N/SJAC91	02B Ex	ample	e) <table-cell></table-cell>			×
/	Balloon/It	em Numbe	er	2							
ab	Reference	e Location								GD&T	
$\stackrel{\scriptstyle{\sim}}{=}$	Char. Des	signator		N/A							
6	Dimension	n		4.80							
0	Upper To	lerance		+0.03							
<u>#</u>	Lower To	lerance		-0.02							-
	Results										
?	Tooling										-
s.	Nonconfo	rmance Nu	umber								-
	Comment	ts									-
	(C R	nces from: evert) alues as d		C Defa	ult Tols A			ок]	Cancel	

Image 15-7. For angular PDF text, you need to do the same box method operation.

	Add/Edit QA Symbol Attribu	ites (AS/EN/SJAC9102B Example)
	Baloon/Item Number	1 X 1
	Reference Location	GD&T
	Char. Designator	N/A
	Dimension	0.3
\land \land \land \land	Upper Tolerance	0.2
	Lower Tolerance	-0.2
	Results	
21 10	Tooling	
	Nonconformance Number	
11 \0	Comments	
R0.4±0.2	Fil Tolerances from:	C Default Tols A
	(C Revert)	

[Select File > Save Markup Edits to save the work ballooned drawing.] proceed to Step 24.

How to do auto ballooning PDF, raster image files, or DWG / DXF (How to use Group dimension capture feature)

Image 15-8. Click Add QA symbol from the QA menu. Select 'Group dimensions capture' and 'Detect GD&T Callouts'. Then select 'Linear Dimension' and press the OK button (With the Linear Dimension mode,QA-CAD can capture limits of size (maximum and minimum limits).

QA Start number / Increment				\times
Start number 1		Pen	Size 8	
Sequence: 1 2 3		Balloon	Circle	•
Use a constant value	OCR	language	eng	•
Tel amont antitudes			Lead	ler 🦳
Attach Attributes				ue 🔽
Capture Dimension	Linear Dimension		Highligh	nt: 🔽
C Single dimensions capture		н	ighlight (ligh	t): 🕅
C Single Click				
C Box				
OCR / GD&T Capture				
Group dimensions capture	✓ Detect GD&T callouts			
X 0.0 Y 0.0 (offsets)				
✓ Ignore text notes				
Set not specified tolerances from:				
ISO 13920 B		ОК	Cano	el

(If you use an image-only PDF or image file, Group dimensions capture (OCR) is displayed. Proceed to Image 15-13 on page24 in this case.)

Image 15-9. Move a mouse pointer to the left top of the capture target group (R2, R0.35-0.25, R2, \emptyset 40.05-39.95, 0.25 x 45°, \emptyset 49.22-49.20, \emptyset 94.02-93.98 and \emptyset 98 g6 in the below image example).

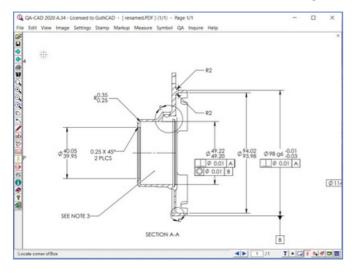


Image 15-10. Press the left-click button and hold it. Then you can enclose the capture targets by drawing the rectangle.

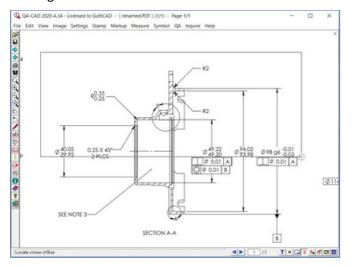
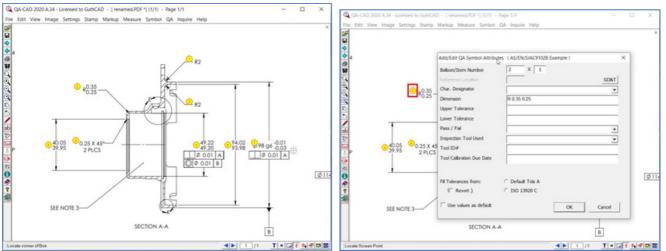


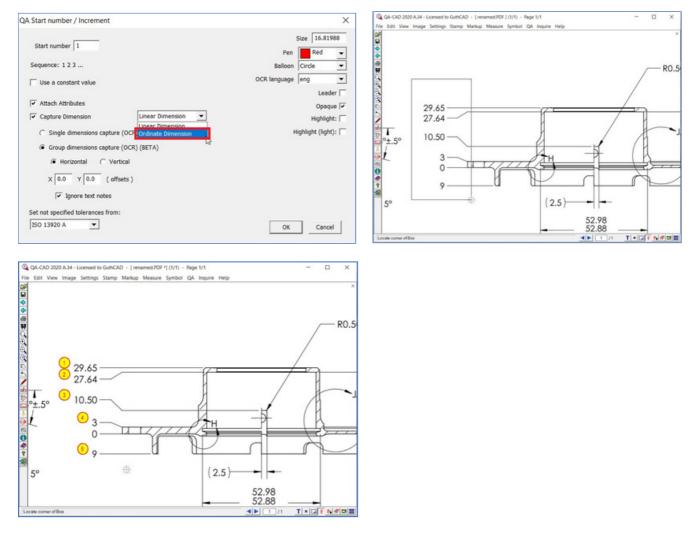
Image 15-11. Once you complete to enclose the targets by the rectangle, double click. Then QA-CAD instantly draws automated balloons to all selected targets. At the same time, QA-CAD extract dimensions, tolerances, GD&T features control frame, or notes from the drawing. With just a few button operations, QA-CAD can balloon specific page areas.



[Select File > Save Markup Edits to save the work ballooned drawing.] If you click one of the

balloons, you can confirm what information balloon stores such as dimension, upper tolerance, lower tolerance, notes, and GD&T features control frame.

Image 15-12. If you need to capture ordinate dimension, select 'Ordinate Dimension' and do auto ballooning.

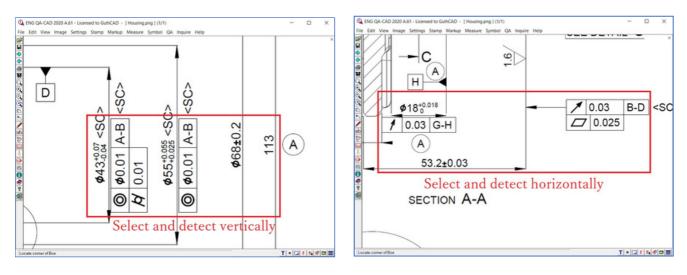


If you have unnecessary balloons, select 'Delete QA symbol' from QA menu and click the unnecessary balloons to delete. If you need to fix deleted balloon number(s) in the balloon number sequence, select 'Renumber' from QA menu. The balloon number sequence will be fixed (example [1,2,4,5,7,8,10] --> [1,2,3,4,5,6,7]). proceed to Step 24.

Image 15-13. If you use image-only PDF or image files, you can see 'Group dimensions capture (OCR) (BETA)' in the QA Srart number window. Select 'Group dimensions capture(OCR)'.

distantia I		Size 16.81988
Start number 1	Pen	Red 🗸
Sequence: 1 2 3	Balloon	Circle
Use a constant value	OCR language	eng 💌
		Leader 🗌
Attach Attributes		Opaque 🔽
Capture Dimension		Highlight:
C Single dimensions capture (OCR)	н	ighlight (light):
Group dimensions capture (OCR) (BETA)		
Horizontal C Vertical		
X 0.0 Y 0.0 (offsets)		
Ignore text notes		
Set not specified tolerances from:		
ISO 13920 A		1

Image 15-14, 15-15. Then select Horizontal or Vertical as the OCR capture direction. If you select 'Horizontal', our OCR program detects targets only horizontally. If you select 'Vertical, our OCR detects targets only vertically. Please note that our OCR program can not detect horizontally and vertically at the same time.



After you select 'Horizontal' or 'Vertical', press the OK button.

Image 15-16. Now it is time to select targets (dimensions, tolerances, and GD&T feature control frames). Please note that we should avoid to selecting and including the CAD model in the OCR selection rectangle. If you include the CAD

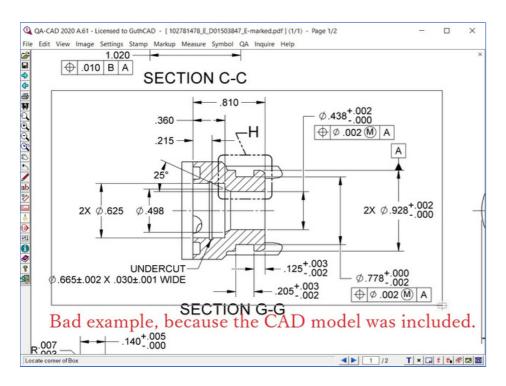


Image 15-17. To avoid selecting the CAD model, divide the targets into 3 or 4 groups (for example: upper part, right part and left part). Select each group individually without including the CAD model as much as possible, as you can see from the below example image.

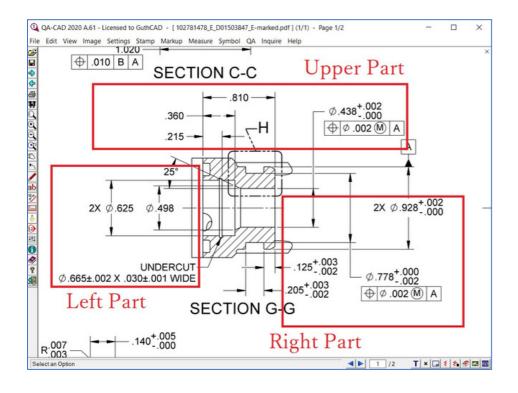


Image 15-18. Let's capture the Upper Part. Move a mouse pointer to the left top of the capture target group (.810, .360, .215, \emptyset .438 +.002 -.000, GD&T features control frame in the below image example). Press the left-click button and hold it. Then you can enclose the capture targets by drawing the rectangle.

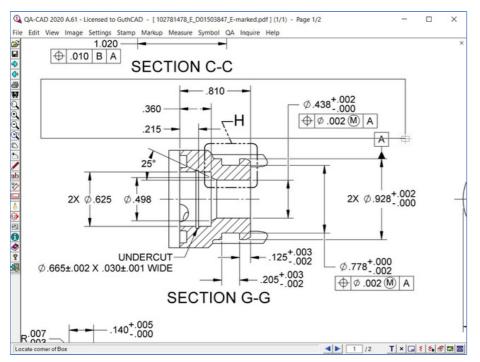


Image 15-19. Once you complete enclosing the targets by the rectangle, left click. Then QA-CAD instantly draws automated balloons to all selected targets. At the same time, QA-CAD extract dimensions, tolerances, GD&T features control frames from the drawing. (You can also undo last auto-balloon with [Ctrl-Z], but only if you do straight after the operation.)

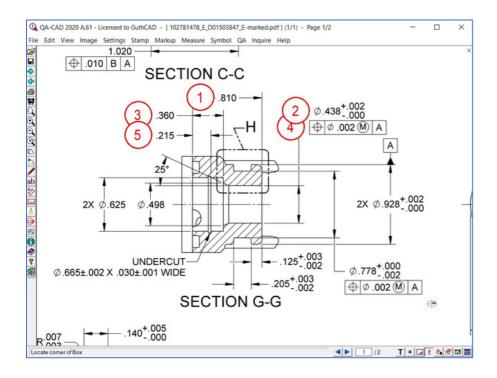


Image 15-20. Now let's do the Right Part. We need the exactly same operation. Move a mouse pointer to the left top of the capture target group. Press the left-click button and hold it. Then you can enclose the capture targets by drawing the rectangle.

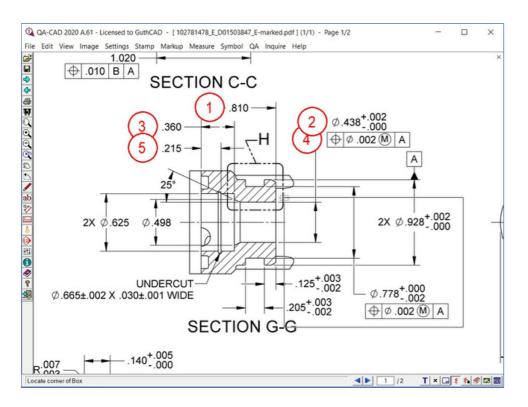


Image 15-21. Once you complete enclosing the targets by the rectangle, left click. Then QA-CAD instantly draws automated balloons to all selected targets, as you can see from the below left image. Now you can select the Left Part by drawing the rectangle and create the balloons on the Left Part with using the exactly same operation.

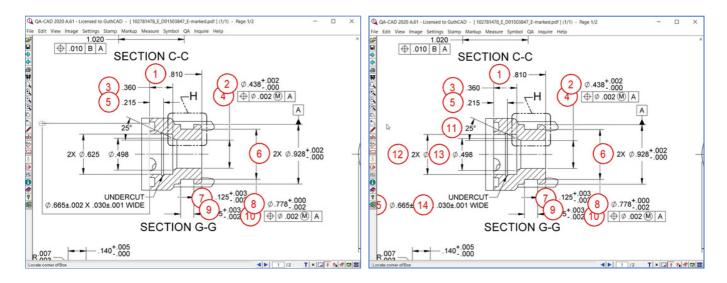
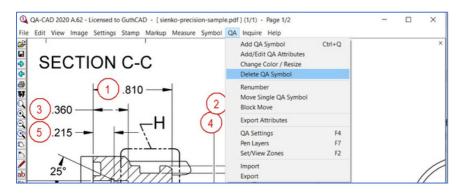


Image 15-22. If you double-click a balloon, you can check what dimension and tolerance (or GD&T) the balloon stores.

Q QA-CAD 2020 A.61 - Licensed to GuthCAD - [102781478_E_D01503847_E-marked.pdf] (1/1) - Page 1/2 File Edit View Image Settings Stamp Markup Measure Symbol QA Inquire Help	- 0	×
□ 1.020		×
Add/Edit QA Symbol Attributes (AS9102B Example)		
Add/Edit QA Symbol Attributes (AS91028 Example) × Baloon/Item Number 10 × Reference Location GD&T GD&T Char. Designator N/A GD&T Dimension		
GD&T GD&T GD&T GD&T		
Char. Designator N/A Ø.438 ^{+.002}		
Q Dimension (♦ Ø.002 ⊗ A) ⊕ Ø.002 M A		
Cp Upper Tolerance .002	A	
Lower Tolerance	귀	
Results	1	
ab Toolng	T	
Nonconformance Number		
	928-002	-
Comments		
Tolerances from:	1	
Solution Cancel Solution S		
SECTION G-G		
SECTION G-G		
R ^{.007} _003		
Locate Screen Point	T × 🖬 🗧 🗞	\$ 🖬 🔤

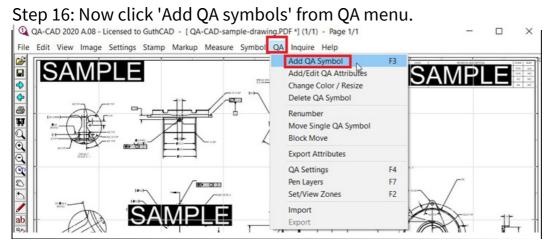
Image 15-23. If you find un-ballooned target(s) after using the 'Group dimensions capture (OCR) (BETA)' feature, please make sure of re-capturing by the Single dimension capture (OCR) method. Or if you find wrong OCR results(wrong dimension / tolerance, GD&T), please select 'Delete QA Symbol' from the QA menu and click a balloon that stores the wrong result to delete it. Then re-capture by the Single dimension capture (OCR) method.



Please remember that you can not re-capture the un-ballooned target(s) or wrong OCR results by using 'Group dimensions capture (OCR) (BETA)', once you did auto ballooning by 'Group dimensions capture (OCR) (BETA)'. You need to use the Single dimension capture (OCR) method.

Please refer to page 29 for how to use the Single dimension capture (OCR) method. If you need to fix deleted balloon number(s) in the balloon number sequence, select 'Renumber' from QA menu. The balloon number sequence will be fixed (example [1,2,4,5,7,8,10] --> [1,2,3,4,5,6,7]).

How to capture individual dimension, tolerance, notes and GD&T features control frame from image only PDF or image files (TIFF, JPEG, etc.) with OCR method (single dimensions capture method)



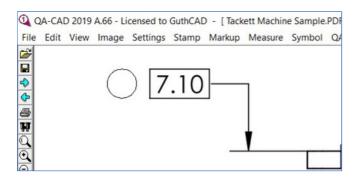
Step 17: Tick Attach Attributes and Capture Dimension. Select 'Single dimension capture (OCR)'. Then press OK button. The default OCR language setting is eng (English). You can choose deu (German), fra(French), jpn(Japanese). You can add other languages.

A Start number / Increment		2
	Size	16.81988
Start number 1	Pen	Red 👻
Sequence: 1 2 3	Balloon Circle	•
Use a constant value	OCR language eng	
		Leader [
Attach Attributes		Opaque 🗟
Capture Dimension	٢	lighlight: [
Single dimensions capture (OCR)	Highligh	nt (light): [
Set not specified tolerances from:		

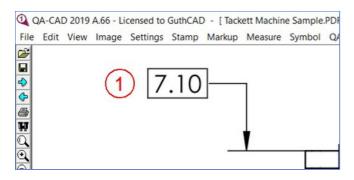
If you open text-selectable PDFs (PDF files with native text), you can see the below window. Tick Attach Attributes and Capture Dimension. Select 'Single dimension capture (OCR)' and 'OCR/GD&T Capture'. Then press OK button.

QA Start number / Increment					×
Start number 1				Size 11.17	6
Start number 1			Pen	Red	-
Sequence: 1 2 3			Balloon	Circle	•
Use a constant value			OCR language	eng	•
				Lead	ler 🕅
Attach Attributes				Opaq	ue 🔽
I ✓ Capture Dimension	Linear Dimension	<u>•</u>		Highligh	nt: 🕅
Single dimensions capture			•	lighlight (ligh	t): [
C Single Click					
C Box					
OCR / GD&T Capture					
C Group dimensions capture					
Set not specified tolerances from:					
ISO 13920 A 💌			ОК	, Cance	
				- Q	

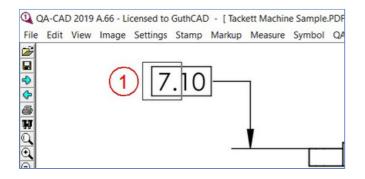
Step 18: Move a mouse pointer to where you want to place a balloon (bubble) and leftclick.



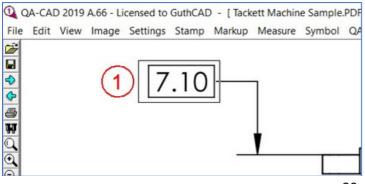
Then the red balloon is placed.



Step 19: Move the plus sign close to your OCR target. Press a left-click button and hold it. Now you can draw a rectangle to enclose target (7.10 is the target in the below image).



Once you complete to draw the rectangle, left click twice.



Step 20: After that, 'Add/ Edit QA symbol attributes' window opens. You can see the dimension you selected in Step 13 is inserted in the attributes table. The upper and lower tolerances are automatically entered by your tolerance settings. (In the below image, the Upper and Lower Tolerances were filled from Default Tols A set).

17	.10	
Add/Edit QA Symbol Attribu	tes (AS9102B Example)	×
Baloon/Item Number Reference Location		iD&T
Char. Designator Dimension Upper Tolerance	7.10	_
Lower Tolerance Results	-0.05	=
Tooling Nonconformance Number		=
Fil Tolerances from:	Default Tols A	
□ Use values as default	OK Can	cel

Step 21: Then place another balloon and repeat the same step to capture dimension or text note.

Q QA-CAD 2019 A.36 - Licensed to GuthCAD - [QA-CAD-sample-drawing.pdf *] (1/1) - Page 1/1	- 🗆 X
File Edit View Image Settings Stamp Markup Measure Symbol QA Inquire Help	
Add/Edit QA Symbol Attributes (AS9102B Example) × Baloon/Item Number 2 × Reference Location E7 GD&T Char. Designator ✓ Dimension Ø 4 THRU	
Char. Designator Char. Designator Dimension O(4 THRU Upper Tolerance Lower Tolerance -0.1 Results Toolng Nonconformance Number Comments Comments	
Image: State of the state o	
$\begin{array}{c c} \hline 2 & \phi & 4 & \text{THRU} \\ \hline & & 5.5 & 7 \\ \hline \hline \phi & 0.2 & \text{M} & \text{A} & \text{B} \\ \hline \end{array}$.2
	<u>2</u> 1 /1 <u>T×♥⊒€ 5</u>

[Select File > Save Markup Edits to save the work ballooned drawing.]

Tips: If you would like to capture dimension and tolerance, capture them together.

Que-CAD 2019 A36 - Licensed to GuthCAD - [13265 File Edit View Image Settings Stamp Markup M		×	File Edit View Image Setting	o GuthCAD - [sample.pdf](1/1) - Page 1/1 s Stamp Markup Measure Symbol QA Inquire Help Ø.928 ⁺ .002
8	I x I GORT	REMOVED I TURNING,	Add/Edit QA Symbol Attribute Balloon/Item Number Char. Designator Domension Upper Tolerance Upper Tolerance Upper Tolerance Hit Results Tooling Nonconformance Number Fil Tolerances from: Use values as default	utes (AS91028 Example) X 1 X 2 1.0 - 1.1 928

Tips: You can capture dimension, tolerance, note or GD&T vertically in QA-CAD.

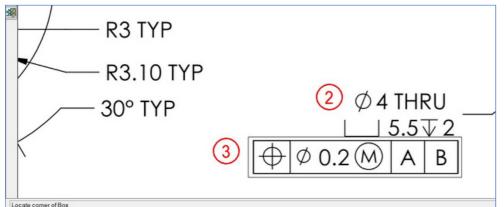
Qu-CAD 2019 A.36 - Licensed to GuthCAD - [K40007361.pdf] (1/1) - Page 1/1 File Edit View Image Settings Stamp Markup Measure Symbol QA Inquire Help	×		
Add/Edit QA Symbol Attribute Babon/Dam Namber Polymona Location Our. Designator Demonion Upper Tolerance Lower Tolerance Lower Tolerance Lower Tolerance Results Toolog Nonconformance Namber Commerts Fill Tolerances from: C Ure values as default	(A591028 Example) × 1 x 1 20		(A5/EN/SIAC91028 Example) X I X I GORT NA GORT NA OK Cancel
Locate corner of Box		L	

You can also capture max/min dimension limits, diameter limits and radius limits.

QA-CAD 2019 A.66 - Licensed to GuthCAD - [Tackett Machine S File Edit View Image Settings Stamp Markup Measure S	
	Add/Edit QA Symbol Attributes (AS9102B Example) X
3 25.25 25.23 (TO GROOVE)	Baloon/Item Number 3 X 1 Reference Location GD&T Char. Designator
	Use values as default OK Cancel
Ø ?	

Step 22: When you capture the GD&T features control frame or the composite GD&T feature control frame, select the whole rectangle of the GD&T features control frame as

you can see from the below image(To capture counterbore and dep use the OCR method like GD&T).



Double left-click, once you complete to draw the rectangle as you can see from the above image.

The captured GD&T control frame was inserted in dimension field (You can also select Ture Position in Character designator field).

Add/Edit QA Symbol Attributes	(AS9102B Example)	×	T
Balloon/Item Number	3 X 1		1
Reference Location	GD&		
Char. Designator			
Reference Location Char. Designator Dimension Upper Tolerance	⊕ Ø0.2◎ A B	-	
Upper Tolerance		-	
Lower Tolerance		-	
Results			
Tooling		-	
Nonconformance Number		-	
4			
Fill Tolerances from:	Default Tols A		
Use values as default	OK Cancel	2 Ø4	THRU
	OK Cancel		
1			5.5√2
5			
	3	0.2(M)	AB
		1 0.2	
10			
Locate corner of Box			the second s

(If you cannot capture GD&T, check Font Settings if our GD&T font file, GuthCAD-GDT.ttf, has been installed in your PC. If not find the font, re-install QA-CAD and reboot your PC.)

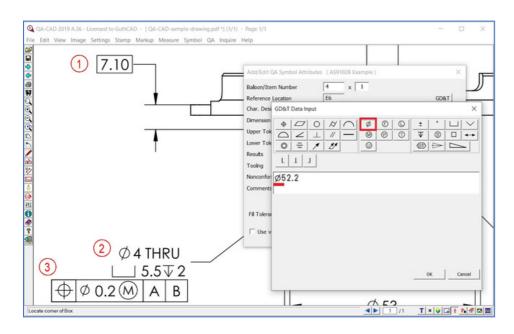
Step 23: If the OCR result is not correct, press the Cancel button and do the OCR operation again.

Q QA-CAD 2019 A.36 - Licensed to GuthCAD - [QA-CAD-sample-drawing.pdf *] (1/	1) - Page 1/1	- 🗆 ×
File Edit View Image Settings Stamp Markup Measure Symbol QA Inquir	e Help	
	Add/Edit QA Symbol Attribu	tes (AS9102B Example) ×
	Baloon/Item Number	4 x 1
ä <u> </u>	Reference Location	E6 GD&T
	Char. Designator	· · · · · ·
S 8	Dimension	\$52.2
3	Upper Tolerance	0.3
	Lower Tolerance Results	-0.3
ab	Tooling	
2	Nonconformance Number	
	Comments	
<u> </u>		
<u>41</u>	Fil Tolerances from:	@ 2768.m
0	ra roerances from:	- 2700_m
?	Use values as default	OK Cancel
2 Ø 4 THRU		(4)
3 5.5 √ 2		Ø 52.2
		P 02.2
⊕ ∅ 0.2 (M) A B		
Locate corner of Box		

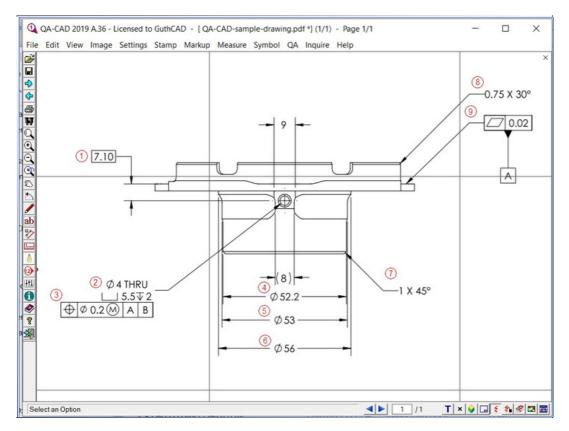
#The software screen zoom rate affects the OCR accuracy. Zooming in or out by rolling the middle mouse wheel button can produce more accurate OCR results. You might need to test and find the best available screen zoom rate depends on your target drawing.

Or alternatively press the GD&T input button (if the result is dimension, tolerance or text note, you can directly correct by typing your PC keyboard).

GD&T Data input window opens. Press a correct symbol button or type correct numbers from keyboard (The above OCR result, \$52.2, was not correct. So \$ was replaced by ∅). Then press OK button. Furthermore, you can type welds and material surface symbols in this software keyboard.

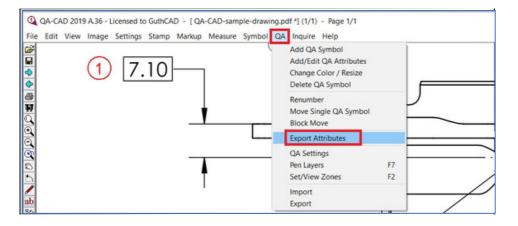


Step 24. Keep repeating this operation until you finish placing all required balloons on the drawing.



Output captured data to EXCEL template

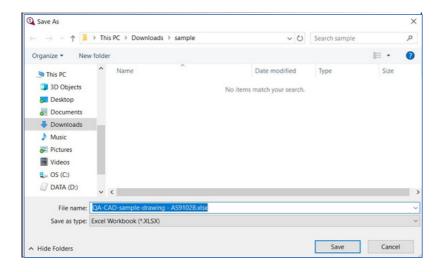
Step 25. Now choose 'export attributes' from QA menu.



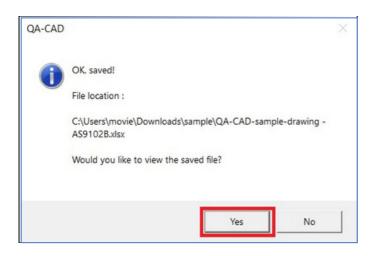
Then select AS9102B EXCEL template file and press OK button (If you selected PPAP or your EXCEL template in Step5, select your designated EXCEL template here. Also you can select AS9102B Word template file here if you like).

Export QA Attributes Type		×
Export QA Attributes to:		
C CSV		
Excel Templat	e AS/EN/SJAC9102B	
C Word XML		
	🔽 Export numeric data as numeric	
G		
Constrain output by ba	loon number range	
		_
	OK Cancel	

Type your new EXCEL file name and press Save button.



Then press Yes button here.

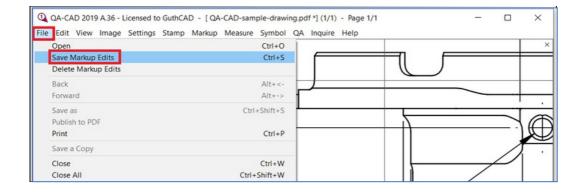


Step 26. As you can see, all values in the balloons are exported to the AS9102 Rev. B Form3 template.

Fil	A	Hon	ne Insert	Page Layout	Formulas Data	a Review	View H	Help Acroba	nt Q Tell m	10	A Share
	6	HUI	ne msert	rage Layout	Formulas Data	I NEVIEW	VICW I	пер Астора	A IGUI	IC	74 Share
E21			• : ×	$\checkmark f_x$							
1		в	с	D	E	F	G	н	1	L	к
						Si	ample AS9	102B Form			
				FORM 3: (CHARACTERISTI	C ACCOUNT/	ABILITY, V	ERIFICATION,	AND COMPAT	TIBILITY EVAL	UATION
	4.0						_	2.0.11			2.0.1.11
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				Characteristi	ic Accountability	,		Inspe	ction / Test R	esults	
	5.0	har	6. Reference	7. Characteristic	8. Requirement	Upper	Lower	9. Results	10. Designed /	11.	14. Addition
,	No.		Location	Designator	o. nequirement		Tolerance		Qualified	Nonconforman	
		1	Sheet 1, F7	Linear Dimension	7.1	0.2	-0.2		Tooling	ce Number	
2		2	Sheet 1, E7		Ø 4 THRU	0.1	-0.1				
1		3	Sheet 1, E7	True Position	⊕ Ø0.2⊗ A E	3					
1		4	Sheet 1, E6		Ø 52.2	0.3	-0.3				
5		5	Sheet 1, E6		Ø53	0.3	-0.3				
5		6	Sheet 1, E6		Ø56	0.3	-0.3				
7		7	Sheet 1, E6		1X 45°	0.1	-0.1				
1		8	Sheet 1, F5		0.75 X 30°	0.1	-0.1				
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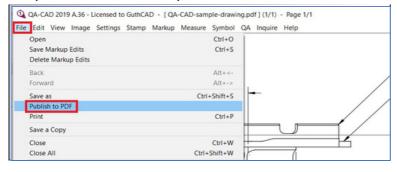
Save the ballooning data without changing an original drawing (to save the work ballooned drawing).

Step 27. Select File > Save Markup Edits to save the work ballooned drawing (This operation generates a CVM file which stores all overlaid balloons and markup information. The original drawing is untouched). When you re-open the ballooned drawing, select the drawing file, not the CVM file.



Publish the ballooned drawing to PDF (to save the delivery ballooned drawing.)

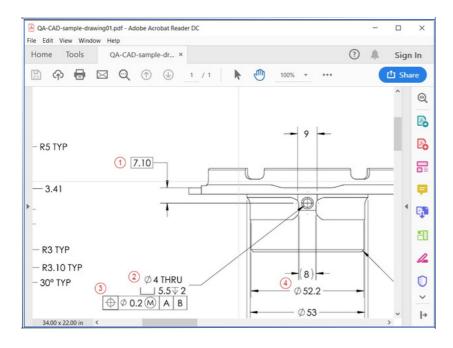
Step 28. You can also publish the ballooned drawing to PDF. Select File >> Publish to PDF



Select PDF printer program (e.g. 'PDF-Xchange 3.0', 'Microsoft prints to PDF', 'Adobe PDF', or your favourite PDF printer program) and proceed PDF output.

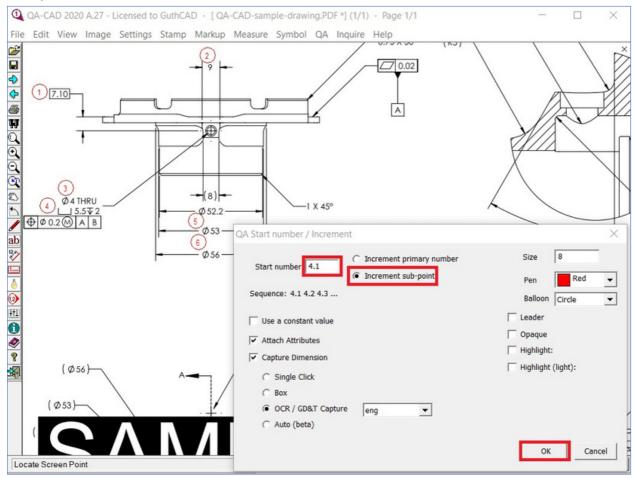
Name:	Microsoft Print to PDF	 Properties
Status:	Adobe PDF Fax	
Type: Where:	Microsoft Print to PDF Microsoft XPS Document Writer OneNote PDF-XChange 3.0	Print to file
Drawings		Copies
Curren	nt Drawing	Number of copies: 1
C All		
C Drawi	ngs list: Select 1,2,	22
Pages		Auto-Rotate for best fit
Currer	nt Page	
C All Pa	ges (1)	
C Pages		

Once you publish to PDF, you can see the ballooned PDF in your PDF reader software.

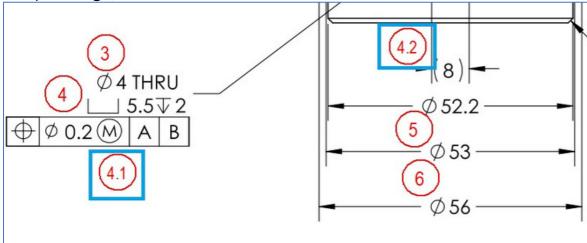


How to enter a new balloon that was missed and the following balloons will change automatically

If you find that you have missed drawing balloon(s) after you drew several balloons (for example: 1,2,3,4,5,6) on the drawing. Select the Add QA symbol from QA menu. Then type a Start number (for example: 4.1 in the sample image). Select the Increment sub-point and press the OK button.



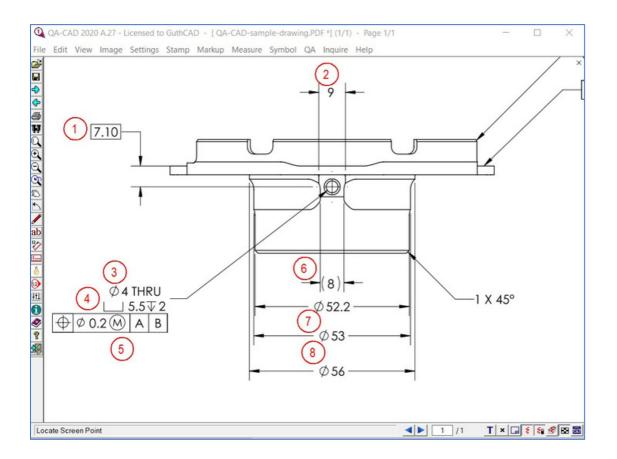
Draw new balloon(s) on the drawing (for example: 4.1 and 4.2 in the blue rectangles of the sample image).



Select the renumber from the QA menu. Press the Apply button in the QA Renumber window (Please leave 1 as a Start number here).

QA Renumber	×
Start number 1	
Preserve primary number groupin	9
Sequence: 1 2 3	
Apply	Undo Close

Then balloon # 4.1, 4.2, and the following balloon numbers are renumbered automatically. (1,2,3,4,4.1,4.2,5,6) --> (1,2,3,4,5,6,7,8)



How to output captured data to two different EXCEL forms (Split the EXCEL output)

QA-CAD can export captured data to two different EXCEL forms. Before you do ballooning, select the QA settings from the QA menu. Tick the Attributes Tab and click the Configure EXCEL template button. The Manage EXCEL templates Window opens. Tick 'Split data output'. Select a new Sheet and press the Configure Columns button. Once you finish configuring your second EXCEL output columns, press the Save button and the OK button.

Definition ta	ble: AS/EN	I/SJAC9102B Exam	nple				
Template N	ame AS/EN	I/SJAC9102B	-	New	Renar	me (Delete
				Import	Export		
Excel File N	ame C:\Us	ers\movie\AppDat	ta\Roaming\Guth	CAD\QA12\C1	AS_EN_SJA	C9102B_tx	Ope
						_	
				1.000	Split data o	output	_
Sheet	Form3		-	Sheet	-orm1		•
Start Row	11	(Cell: A1)		Start Row	1	(Cell: A1))
		nfigure Columns		C	Confi	gure Column	IS
	Cor						
Store larg	Cor e data to mu	-					
		Itiple sheets					
	e data to mu heet end rov	Itiple sheets					

Once you complete ballooning, select the Export Attributes from the QA menu. Then the Export QA Attributes Type Window Opens. Tick 'Constrain output by balloon number range'. Then set up two different balloon number groups (In the below example image, the balloon number 1 to 10 are selected to export to an EXCEL Form3 and the balloon number 11 to 20 are selected to export to an EXCEL Form1). Press the OK button to export to EXCEL forms.

port QA Attri	butes Type		
Export QA At	tributes to:		
C CSV			
Excel	Template	AS/EN/SJAC91028	
		✓ Export numeric data as numeric	
Constrain	n output by ballo	on number range	
Constrain	n output by ballo Form3	on number range Form1	
Constrain	Form3		
Start	Form3	Form1	

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