ZW3D Advanced Tutorial

MoldBase Library Customization

CAD

Mold

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Printed in the P. R. China.

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Foreword

In this tutorial, we provide various case studies, which are from easy to difficult and combine theory with practice. We hope to improve users' 3D CAD/CAM skills and techniques with ZW3D.

The tutorial bases on our technical engineers' years of experience in the industry and ZW3D, which is the fruit of a lot of efforts and wisdom. We sincerely hope that the tutorial will do help to you, and your precious advice on it is highly welcomed.

There are three series for this tutorial: *Primary Tutorial, From Entry to Master Tutorial*, and *Advanced Tutorial*. From easy to difficult, they offer a step-by-step learning process that can meet different user needs.

Primary Tutorial series is for users who have little or no prior 3D CAD/CAM experience. If you are green hands of 3D CAD/CAM software, or if you are a new user of ZW3D, we recommend that you get started with this tutorial. Here you can learn the basic knowledge and concepts of ZW3D, rapidly master the simple operations and workflows of ZW3D, and practice simple cases.

From Entry to Master Tutorial series is for users with basic know-how of 3D CAD/CAM software. If you have experience in 3D CAD/CAM software and want to master common functions of ZW3D, we suggest that you start with this series. Here you can dig deeper into the functions and master more operations of ZW3D.

Advanced Tutorial series is for users with practical experience in 3D CAD/CAM software. If you hope to have a comprehensive command of ZW3D and get the complicated operations done independently, you can choose to learn this series. Here you can learn to use the software more flexibly and get rich experience to increase your efficiency.

What you are learning is ZW3D MoldBase Library Customization, an advanced tutorial.

Thanks for being our user! The ZW3D Team

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1 Parameters Creation & Model Building

Key Points:

♦ Parameters Creation
 ♦ Model Building

Mold Library Rules

The built-in mold library is in the **ZWMold** folder.

ZWSOFT > ZW3D 2019 (x64) > ZWMold >							
Name	Date modified	Туре					
🌗 bin	2019/3/20 16:47	File folder					
퉬 Config	2019/3/20 16:47	File folder					
Customization	2019/2/18 13:36	File folder					
🌗 Gate	2019/3/20 16:47	File folder					
퉬 Model	2019/3/20 16:47	File folder					
퉬 Moldbase	2018/12/20 11:39	File folder					
Resource	2019/3/20 16:47	File folder					
퉬 Runner	2019/3/20 16:47	File folder					
퉬 Standard	2019/3/20 16:46	File folder					

Figure 1 Figure 1 Mold Library Folder

Before we start to customize our mold library, we need to learn some rules of it.

In ZW3D MoldBase dialog, there are *Supplier*, *Type* and *Class*.

I MoldBase		
~ ×	C	×
▼ Require	d	^
Supplier	FCPK	-
Туре	PK_I	-
Class	2A2BI	-
Datum		



Accordingly, there is a *Cfg_Moldbase* excel table to configure the file's context.

Files 🕨 ZWSOFT 🕨 ZW3D	2019 (x64) 🕨 ZWMold	▶ Moldbase ▶ Met	ric 🕨	•					
library ▼ Share with ▼ New folder									
Name		Date modified	Туре	Size					
퉬 ЕСРК		2018/12/20 11:39	File folder						
퉬 FUTABA		2018/12/20 11:39	File folder						
🐌 HASCO		2018/12/20 11:39	File folder						
퉬 LKM		2018/12/20 11:39	File folder						
퉬 MEUSBURGER		2018/12/20 11:39	File folder						
🌗 RABOURDIN		2018/12/20 11:39	File folder						
Cfg_Moldbase		2018/12/14 17:32	Microsoft Excel W	13 KB					

Figure 3 Figure 3 Configuration File

In the Cfg_Moldbase excel table, there are not only the Supplier, Type, Class, but also the Z3 path and root

object.

	目动保存 (デ) 日 り・ マー・ Cfg_Moldbase - Excel 3D国									3D国际业	务部2		
Ź	で件 开始	插入	绘图	页面布局	公式	数据	审阅	视图	开发工具	帮助 🖇) 告诉我	你想要做什么	
F1	F19 • : × ✓ fx												
	А		в		С				D			E	
1	#SUPPLIER	#TYPE		#CLASS			#PATH					#ROOTOBJECT	
2	FCPK	PK_I		1A1BI			\FCPK\P	K_I\1A18	BI\1A1BI_F.Z	3		1A1BI	
3				2A1BI			\FCPK\P	K_I\2A18	BI\2A1BI_F.Z	3		2A1BI	
4				2A2BI			\FCPK\P	K_I\2A28	BI\2A2BI_F.Z	3		2A2BI	
5				3A1BI			\FCPK\P	K_I\3A18	BI\3A1BI_F.Z	3		3A1BI	
6				3A2BI			\FCPK\P	К_I\3А28	BI\3A2BI_F.Z	3		3A2BI	

Figure 4 Figure 4 Configuration File's Context

The path of the Z3 should be matched with the one in the directory.

Take 2A2BI F as an example. Its path in the above table is \FCPK\PK_I\2A2BI\2A2BI_F.Z3.

In the directory, it is in below path.

@	× Program Files ► ZWS	OFT ▶ ZW3D 2019 (x64) ▶ 2	ZWMold 🕨 Ma	oldbase 🕨 Metric	▶ FCPK ▶ PK_	I ► 2A2BI
Organize 🔻	Include in library 🔻	Share with 🔻 New fold	er			
Name	Date modified	Туре	Size			
💽 2A2BI_F	2018/12/21 15:01	PNG image	10 KB			
A2BI_F	2018/12/21 15:01	Microsoft Excel Worksheet	194 KB			
😽 2A2BI_F	2018/12/21 15:01	ZW3D Document	2,703 KB			
📄 2A2BI_F	2018/12/21 15:01	Z3L File	3 KB			
💽 2A2BI_FF	2018/12/21 15:01	PNG image	64 KB			

Figure 5 Path of the Z3 File Figure 5

There are five files in the folder. Explanations of them are as below.

1) 2A2BI_F.PNG: It is an image in the interface of *Mold Base* to show some mold info.

Required	
Supplier	FCPK -
Туре	PK_I *
Class	2A2BI *
Datum	
▼ Image	
	*** TCP/BCP Mold Pry=1 Rotate ** 1: PK01 3: PK03 3: PK03 0

Figure 6 **General-View Image**

2) 2A2BI_F.xls: It is an excel table to store parameter groups of the mold base assembly and components.

						-	
47	##PARAME	TER					
48	*ZMD_Internal_N o		\$PRY0ON(mm)	\$CHAMFER(mm)	\$ROTATE(deg)	\$DATUM(mm)	\$PRY(mm)
49	095x095		0;1	0;1;2;3	0;90	4	8
50	095x095		0;1	0;1;2;3	0;90	4	8
51	100x130		0;1	0;1;2;3	0;90	5	10
52	100x130		0;1	0;1;2;3	0;90	5	10
53	156x156		0;1	0;1;2;3	0;90	6	12
54	156x156		0;1	0;1;2;3	0;90	6	12
55	156x156		0;1	0;1;2;3	0;90	6	12
56	156x156		0;1	0;1;2;3	0;90	6	12
57	156x196		0;1	0;1;2;3	0;90	6	12
58	156x196		0;1	0;1;2;3	0;90	6	12

Figure 7 Parameters in Excel Table

These parameters will be shown in the MoldBase command interface.

MoldBase							
Series							
095x095		Normal	At	tribute			
156x156		Clear user	data				
156x196 156x246		Group		STD			•
156x296	≡	Item		Value		Туре	
156x346 190x246		Ew	54		•	1	
196x196 196x296		FP_matl	173)	Ŧ	9.	
196x346 196x396		Fh	6		•	1	
196x446 196x496		BCP	11			9	

Figure 8 Parameters in MoldBase Command

In the **2A2BI_F.xis** table, there are many tabs. The first tab stores the assembly parameters, the following

tabs store components parameters.

Μ	117 • : × ✓ f _x						
	A	D	E	F	G	н	1
1	##KEYS						
2	<name></name>	\$EP0MAT	\$CP0MAT	\$BPOMAT	\$AP0MAT	\$AB0K	\$PRY0ON
3	<tag></tag>	EP_matl	CP_matl	BP_matl	AP_matl	Mold	Pry
4	##CUSTOMS						
5	<name></name>	\$GAP0FIX	\$GAP0MOVE	\$GAP0FP	\$AP0H	\$BP0H	\$CP0H
6	<tag></tag>	Ga	Gb	Ge	Ah	Bh	Ch
7	<min></min>	0	0	0	5	5	5
8	<max></max>	2000	2000	2000	2000	2000	2000
9	##DESCRIPTIONS						
10	<name></name>						
11	<tag> Assembly</tag>			Components	<u>ר</u>		
12				<u>ل</u>	/		
13	##ATTRIBUTES						L
	• 2A2BI PK22	PK03F PK03M	PK31F PK3	1M PK55R	PKOSR PK55L	PK05L PK65	PK06

Figure 9 Tabs in Excel Table

In the 2A2BI tab, main items are shown as below.

	A	В	C	D	E	F	G	H
1	##KEYS							
2	<name></name>	\$BCP0MAT	\$FP0MAT	\$EPOMAT	\$CP0MAT	\$BP0MAT	\$APOMAT	\$AB0K
3	<tag></tag>	BCP_matl	FP_matl	EP_matl	CP_matl	BP_matl	AP_matl	Mold
4	##CUSTOMS							
5	<name></name>	\$L	\$W	\$GAP0FIX	\$GAP0MOVE	\$GAP0FP	\$APOH	\$BP0H
6	<tag></tag>	L	w	Ga	Gb	Ge	Ah	Bh
7	<min></min>	50	50	0	0	0	5	5
8	<max></max>	2000	2000	2000	2000	2000	2000	2000
9	##DESCRIPTIONS							
10	<name></name>							
11	<tag></tag>							
12								
13	##ATTRIBUTES							
14	Name=2A2BI[*ZM	Material= <none></none>	Supplier=FCPK					
15								
16	##COMPONENTS							
17	24201 5 72:584-	\$d<=\$SCBC0M	\$I<=\$BCP0H+\$CP 0H+\$SCBC0M*0.					
17	2A261_F.25.5WITT		5					
42	##PARAMETER							
44	*ZMD_Internal_N o	\$PRY0ON(mm)	\$CHAMFER(mm)	\$ROTATE(deg)	\$DATUM(mm)	\$PRY(mm)	\$GAP0FIX(mm)	\$GAP0MOVE(mm)
45	095x095	0;1	0;1;2;3	0;90	4	8	0.5	0.5
46	095x095	0;1	0;1;2;3	0;90	4	8	0.5	0.5

Figure 10 Main Items

Explanations of them are as below.



	А	В	С	D	E
1	##KEYS				
2	<name></name>	\$BCP0MAT	\$FP0MAT	\$EP0MAT	\$CP0MAT
3	<tag></tag>	BCP_matl	FP_matl	EP_matl	CP_matl

Series 095x095 🔺 Normal Attribute 100x130 156x156 156x196 Clear user data Key Parameters Group s 156x246 156x296 Ту Value Item 156x346 190x246 196x196 3 S Mold ÷ ٩, "1730" * 196x296 AP_matl 196x346 196x396 196x446 1 36 -Ah S 196x496 BP_matl "1730" + 218x246 1 36 -Bh 218x296

Figure 11 Key Parameters



<NAME> The name should be the same as the one in ##PARAMETER.

E.g. The *\$BCPOMAT* is from *##PARAMETER*.

	Α	В	С	J	К	L
1	##KEYS					
2	<name></name>	\$BCP0MAT	\$FP0MAT	\$CHAMFER	\$ROTATE	\$EF0K
3	<tag></tag>	BCP_matl	EP matl	Chamfer	Rotate	СР
43	##PARAMETER					
44	*ZMD_Internal_N o	\$PRY0ON(mm)	\$CHAMFER(mm)	\$BCP0MAT	\$BCP0H(mm)	\$AB0K
45	095x095	0;1	0;1;2;3	1730;2312;2085	12;17	3
		Figure 13	Key Parameters f	rom "Parameters"		

<TAG> TAG Name in the MoldBase Command.



Figure 14 Tab Name in MoldBase Command

b. ##CUSTOMS: The parameters of the mold assembly that allow users to customize.

4	##CUSTOMS				
5	<name></name>	\$L	\$W	\$GAP0FIX	\$GAP0MOVE
6	<tag></tag>	L	W	Ga	Gb
7	<min></min>	50	50	0	0
8	<max></max>	2000	2000	2000	2000

Figure 15 Customized Parameters



Figure 16 Customized Parameters in MoldBase Command

<NAME> The name should be the same with the one in **##PARAMETER**.

E.g. The *\$L* is from *##PARAMETER*.

	А		В	С	Q	R	S
1	##KEYS						
2	<name></name>	\$BCP0	MAT	\$FP0MAT			
3	<tag></tag>	BCP_m	atl	FP_matl			
4	##CUSTOMS						
5	<name></name>	\$L		\$W	\$GP0Y	\$SCEP0M	\$SCEP0X
6	<tag></tag>	L		W	GPy	Me	Xe
7	<min></min>	50		90	10	4	10
8	<max></max>	2000		2000	2000	20	2000
43	##PARAMETER						
44	*ZMD_Internal_N o	\$PRY00	DN(mm)	\$CHAMFER(mm)	\$W(mm)	\$L(mm)	\$RP0MAT
45	095x095	0;1		0;1;2;3	95	95	1730;2312;2085

Figure 17 Customized Parameters from "Parameters"

<TAG> TAG Name in the MoldBase command.

4	##CUS	то	MS					
5	<nam< td=""><td>E></td><td>_</td><td>\$L</td><td>_</td><td>\$V</td><td>V</td><td></td></nam<>	E>	_	\$L	_	\$V	V	
6	<tag></tag>	•		L		W		
Seri	es			1				
095	5x095		Normal	Attrib	ute			
100	5x130		Clear use	ata				
156	5x196		Group		ST	D		
150	5x246	≡	Item	Va	lue	Туре		
150)x246)x246		w	95	-	1		
196 196	5x196 5x296		L	95	-	1		
196	5x346							

Figure 18 Tag Name in MoldBase Command

<MIN> The minimum value of the parameter you can input.

<MAX> The maximum value of the parameter you can input.

4	##CUSTOMS			
5	<name></name>	\$L	\$W	
6	<tag></tag>	L	W	
7	<min></min>	50	50	
8	<max></max>	2000	2000	

Figure 19 MIN and MAX Value

c. **##DESCRIPTIONS:** Descriptions for the mold assembly or components.

It is reserved for future use and has no meaning now.

d. ##ATTRIBUTES: Name, Number, Material, etc. are included in Attributes. They will be shown in the

Attribute tab in MoldBase command.

13 ##ATT	RIB	UTES	
14 Name	=2A	2BI[*ZMD_Inter	nal_No]
Series		1	
095x095		Normal Att	ribute
100x130 156x156		Item 🚽	Value
156x196 156x246		Name	2A2BI[*ZMD_Internal_No]
156x296 156x346		Number	
190x246 196x196		Class	
196x296 196x346		Supplier	FCPK
196x396 196x446		Description	
196x496 218x246		Material	<none></none>
218x296 246x246		No BOM	

Figure 20 Attributes in MoldBase Command

e. **##COMPONENTS**: Link to the components and define the parameters relationship of *component* & *assembly* or *component* & *component*.

Here are rules for **##COMPONENTS**.



Figure 21 Component Item

i. 2A2BI_F.Z3:SXE

The "SXE" component in file 2A2BI_F.Z3.

ii. L+I>=\$SAPOH+\$BPOH+\$GAPOFIX+\$GAPOMOVE

L and I are parameters from the component SXE.

	A	В	С	D	E
16	##PARAMETER				
17		\$d1(mm)	\$d(mm)	\$L(mm)	\$l(mm)
18		14	10	25;45;65	12
19		14	10	20;30;50;70	17
20		14	10	25;35;55;75;95	22
21		14	10	20;30;50;70;90	27
22		14	10	25;45;65;85	36
23		14	10	30;45;70	46
24		14	10	35;60	56
25		20	15	35;55;75;95	17
26		20	15	30;50;70;90;110;125;150	22
	A PROVIDENT AND A PROVIDENT A PROVIDENTA A PROVIDA A PROVIDENTA A PROVIDA A PROVIDENTA A PROVIDA A	PK22 P	KO3F F	PK03M PK31F PK31M F	PK55R PK05R PK55

Figure 22 Parameters in Components

\$APOH, \$BPOH, \$GAPOFIX and \$GAPOMOVE are parameters from the current tab 2A2BI.

43	##PARAMETER				
44	*ZMD_Internal_No	\$AP0H(mm)	\$BP0H(mm)	\$GAP0FIX(mm)	\$GAP0MOVE(mm)
45	095x095	36;9;12;17;22;27;46;56	36;9;12;17;22;27;46;56	0.5	0.5
46	095x095	36;9;12;17;22;27;46;56	36;9;12;17;22;27;46;56	0.5	0.5
47	100x130	36;9;12;17;22;27;46;56	36;9;12;17;22;27;46;56	0.5	0.5
48	100x130	36;9;12;17;22;27;46;56	36;9;12;17;22;27;46;56	0.5	0.5
49	156x156	17;22;27;36;46;56;66;76;86;96	17;22;27;36;46;56;66;76;86;96	0.5	0.5
50	156x156	17;22;27;36;46;56;66;76;86	17;22;27;36;46;56;66;76;86	0.5	0.5
	 A281 	SXE PK22 PK03F	PK03M PK31F PK31M	PK55R P	K05R PK55L

Figure 23 Parameters in Assembly

So the whole line means, for the *SXE* component in file 2A2BI_F.Z3, once we input the values of *\$AP0H*, *\$BP0H*, *\$GAP0FIX* and *\$GAP0MOVE*, it will recommend a value from the list of the *\$L* and *\$I* in *SXE* tab to make the inequation true.

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Figure 24 Parameter Relationship in Mold Base

iii. \$SC0D1=[2A2BI_F.Z3:SMe:D1]

\$SCOD1 is a parameter from the *2A2BI*.

2A2BI_F.Z3:SMe:D1 is the D1 parameter from the component SMe in 2A2BI_F.Z3 file.

	\$P(mm)	\$L1(mm)	\$D0(mm)	\$D1(mm)	\$D2(mm)	\$H(mm)
	0.7	1	3.3	4.5	8	5
	0.8	1.25	4.2	5.5	10	6
	1	1.5	5	6.5	11	7
	1.25	2	6.8	9	14	9
	1.5	2.5	8.5	11	18	11
	1.75	3	10.5	13	20	13
	2	3.5	12	15	23	15
	2	4	14	18	26	17
	2.5	5	17.5	22	32	21
T	PE TUE	SMf SMr	n SMe	WK PC) PK01	PK11F

Figure 25 D1 of "SMe"

So the whole line means, the **\$SCOD1** of **2A2BI** should keep the same as the **\$D1** from **SMe**.

D1 is the diamter of the nominal diameter of the screw SMe.

SCOD1 is the pocket diameter of the screw SMe on the plate PK06.

In this way, it ensures that the pocket size is always suitable for the screw.

f. **##PARAMETER:** All parameters in the assembly. Values of all parameters should be listed here.

##PARAM	ETE	R							
*ZMD_Inte	erna	al_No	\$ROT/	ATE(deg)	\$DAT	UM(mm)	\$PRY(mm)	\$GAP0FIX(mm)	\$GAP0MOVE(mm)
095x095	_		0;90		4	1	8	0.5	0.5
095x095			0;90		4		8	0.5	0.5
100x130			0;90		5		10	0.5	0.5
100x130			0;90		5		10	0.5	0.5
156x156			0;90		6		12	0.5	0.5
156x156			0;90		6		12	0.5	0.5
156x196			0;90		6		12	0.5	0.5
156x196			0;90		6		12	0.5	0.5
Series 🧵									
095x095		Norma	l At	bute					
100x130 156x156		Clear us	er data						
156x196		Concertas		CTD					
156x246		Group	-	SID		1			
156x296		Item		Value	Туре				
150x340 190x246		w	95		1				
196×196		<u> </u>			-				
196x296		L	95						
196x346 196x396		AP ma	tl "173	i0" ·	. 9				
196x446					- ×				
196x496		Ah	36	,					
218x246 218x296		BP_ma	tl "173	i0" ·	9				

Figure 26 Parameters in Assembly

***ZMD_Internal_No** is a customized attribute to show the general mold series number of the supplier FCPK.

In some field, there are some values. They are separated by ";".

37	##PARAMETER				
38	*ZMD_Internal_No	\$PRY0ON(mm)	\$CHAMFER(mm)	\$TCP0MAT	\$TCP0H(mm)
39	Default	0;1	0;1;2;3	1730;2312;2085	22
40	095x095	0;1	0;1;2;3	1730;2312;2085	22
41	100x130	0;1	0;1;2;3	1730;2312;2085	22
42	100x130	0;1	0;1;2;3	1730;2312;2085	22
43	156x156	0;1	0;1;2;3	1730;2312;2085	17;22;27
44	156x156	0;1	0;1;2;3	1730;2312;2085	17;22;27
45	156x156	0;1	0;1;2;3	1730;2312;2085	22;27

Figuro 27	Senarators	on the Tal	hlo
rigule Z7	Separators	on the rai	ule

In the *MoldBase* command, they are available for picking.

▼ Parameters							
Series							
095x095		Normal	At	tribute			
100x130 156x156		Clear user	data				
156x196		C	CTD			-	
156x246		Group	510		_		
156x296		Item		Value		*	
156x346		FP_matl	1730)	-		
190x246 106v106					-		
196x296		Fh	6				
196x346		62	0.5		-		
196x396		Ga	0.5				
196x446		Gb	0.5		-		
190x490 218x246			-		-	-	
218x240 218x296		Ge	4		-		
246x246		Chamfer	0		-	≡	
246x296		Chamler	0				
246x346		Rotate	0				
246x396			1		_		
240x440 246x496		Pry Z				Ţ	
246x546							
246x596	▼						

Figure 28 Available Items for Selection

In some field, there are some values. They are **0;1**.

##PARAMETER					
*ZMD_Internal_No	\$PRY00	ON(mm)	\$CHAMFER(mm)	\$ROTATE(deg)	\$DATUM(mm)
095x095	0;1		0;1;2;3	0;90	4
095x095	0;1		0;1;2;3	0;90	4
100x130	0;1		0;1;2;3	0;90	5
100x130	0;1		0;1;2;3	0;90	5
156x156	0;1		0;1;2;3	0;90	6
156x156	0;1		0;1;2;3	0;90	6
156x156	0;1		0;1;2;3	0;90	6
156x156	0;1		0;1;2;3	0;90	6
156x196	0;1		0;1;2;3	0;90	6
156x196	0;1		0;1;2;3	0;90	6

Figure 29 "0; 1" on the Table

Normally they are used as the conditional suppress. If the value equals to 0, the condition is false; if it

equals to 1, the condition is true.

Parameters in component tabs are similar with those in the **2A2BI** assembly tab.

3) 2A2BI_F.Z3: The mold assembly file.

Man	ager					e X3
Filter	All		Preview	Off	*	
Find			in	Name	•	
	Name	-	Туре	Modified		Last Modified
2A28	BI		Assembly		2019	/2/26 15:44
Fixed	d_Half		Assembly		2019	/2/26 15:43
Mov	ring_Half		Assembly		2019	/2/26 15:42
PK01	L		Part		2018	/11/26 19:38
PK03	3F		Part		2018	/11/26 19:39
PK03	BM		Part		2018	/11/26 20:43
PK04	1		Part		2018	/11/26 20:43
PK05	δL		Part		2018	/11/26 20:43
PK05	5R		Part		2018	/11/26 20:43
PK06	5		Part		2018	/11/30 20:10
PK07	1		Part		2018	/11/30 20:09
PK11	IM		Part		2018	/11/26 19:44
PO			Part		2018	/11/22 15:16
SLE			Part		2018	/11/22 15:16
SLEd	I		Part		2018	/11/22 18:08
SMe			Part		2018	/12/11 21:25
SMf			Part		2018	/12/11 21:45
SMn	n		Part		2018	/12/11 21:25
STP			Assembly		2019	/2/26 16:41
TPE			Part		2018	/11/26 20:43
TPE	d		Part		2018	/11/26 20:43
TUE			Part		2018	/12/11 21:26
WK			Part		2018	/12/11 21:26

Figure 30 Objects in Z3 File

The parameters in assembly 2A2BI.Z3 are matched with those in the Excel 2A2BI_F.xls.

<u>π</u> W = 95 mm ->		Q	R	S	т
π L = 95 mm ->					
π TW = 156 mm	← →	\$W(mm)	\$L(mm)	\$TW(mm)	\$TL(mm)
$\frac{\pi}{1}$ TL = 95 mm		0.5	05	A.F.C.	lor.
π ROTATE = 0 deg	g->	95	95	156	95
π CHAMFER = 0 r	nm ->	95	95	156	95
π DATUM = 4 mm	1->	100	130	156	156
π PRV = 8 mm ->		100	130	156	156
		156	156	206	156
		156	156	206	156
π GAP0FIX = 0.5 n	nm	156	156	206	156
T_ GAPOMOVE = 0	.5 mm	156	156	206	156
π GAP0FP = 4 mm	n	156	196	206	196
π_TCP0H = 22 mn	n ->	156	196	206	196
<u>π</u> AP0H = 12 mm	->				
π BP0H = 27 mm	->				
π LIDOLI – 6 mm					



4) 2A2BI_F.z3I: Specify the path of the mold assembly and components.



Figure 32 Context of z3l File

i. #file=2A2BI_F.Z3|2A2BH: Specify z3 file and object.

- ii. #data=2A2BI_F.xlsx|2A2BH: Specify excel data and tab name.
- iii. #keysSequence: Specify key parameters.
- iv. **#IMAGE=2A2BI_F.png:** Specify image in *MoldBase* command interface.
- v. **#IMAGE=2A2BI_FF.png:** Specify image in *Image* window.
- vi. **#Group:** Specify parameters groups, which will be shown in the MoldBase command.

#Group: std=\$w,\$L,\$tcok,\$tcpomat,\$tcpoh,\$abok,\$apomat,\$apoh,\$bpomat,\$bpoh, \$EFOK,\$cpomat,\$cpoh,\$cpow,\$epomat,\$epoh,\$epomat,\$pomat,\$pomat,\$upoh, \$upoh,\$cpomat,\$cpoh,\$cpow,\$epomat,\$epoh,\$epomat,\$pomat,\$pomat,\$upoh <u>\$BCOK,\$</u>BCP0MAT,\$BCP0H,\$GAP0FIX,\$GAP0MOVÉ,\$GAP0FP,\$CHAMFER,\$ROTATE,\$PRYOON, #Group: GP=\$GP0D,\$GP0X,\$GP0Y #Group: sc=\$scep0M,\$scep0X,\$scep0Y,\$scBc0M,\$scBc0X,\$scBc0Y,\$scP0X,\$scP0Y, Series 095x095 . Normal Attribute 100x130 Clear user data 156x156 156x196 STD Group 156x246 STD 156x296 Item GP 156x346 SC 95 W 190x246

Figure 33 Groups

Group STD includes W, L ABOK, etc.

Group *GP* includes GP0D, GP0X and GP0Y.

Group *SC* includes SCEPOM, SCEPOX, SCEPOY, etc.

- vii. **#file=2A2BI_F.Z3 | PO**: Specify component file and object.
- viii. #data=2A2BI_F.xlsx | PO: Specify componet excel data and tab.
- 5) 2A2BI_FF.png: Image in Image window.



Figure 34 Detail Image

Now that you are clear about the rules, you can start to customize your own mold base library. Modeling Creation

Parameters Creation

STEP 01 Create assembly structure.

Users need to know every detail about their own mold series from mold structure to data. Take **FCPK 2A2BI** type as an example.

Figure 1 is a general view. The mold assembly consists of fixed half and moving half. Some components belong to the fixed half, and others belong to the moving half.



Figure 35 Fixed Half and Moving Half

The general view of the mold base in ZW3D would be like what is shown in figure 36.



Figure 36 Mold Base in ZW3D

Totally it includes 13 types of components.



Figure 37 Components of the Mold Base

e information of components is as below.						
PK01 (Top clamping plate)	The plate to fix the fixed half on the bench.					
SLE (Leader pin)	Match with TPE (Leader pin bushing) to guide the relative movement between fixed and moved halves. There are 4 SLE , one is different from other three. We name the special one as SLEd .					
PK03 (Cavity plate)	Include a plate for cavity (PK03F) and the other plate (PK03M) for core.					
TPE (Leader pin bushing)	Match with SLE (Leader pin) to guide the relative movement between fixed and moved halves. There are 4 TPE , one is different from other three. We name the special one as TPEd .					
TUE (Locating sleeve)	Locate the long SLE (Leader pin).					
SM (Socket head cap screw)	Link and fasten components tightly. The SM in the fixed half is named as SMf , the ones in the moving half are named as SMm , and the ones on the ejector plate are named as SMe .					
PK07 (Ejector plate)	Pass the force of machine to the ejector pin, so that it can eject the products.					
PO (Support washer)	Support the ejector plate to keep it away from PK11M (Bottom clamping plate).					
PCA (Locating ring)	Match the sprue bush with the nozzle of injection machine.					
PK04 (Support plate)	The plate under parting pressure to avoid needless movement of molding parts.					
PK05 (Riser)	Adjust clamping height to ensure there is enough space for ejection. There are two Risers, PK05L and PK05R .					
PK06 (Ejector retainer plate)	The plate to fix the ejector pins and return pins.					
WK (Set Screw)	Link and fasten PO (Support washer).					
PK11M (Bottom clamping plate)	The plate to fix the moved half on the moving table.					

Notes :

Normally the PCA is not considered in the mold base assembly, so in this tutorial, we will ignore the **PCA**. The **WK** is always assembly matched with **PO**.

After clearing up the above information, a structure tree comes out.



Figure 38 Mold Assembly Structure

Accordingly, you can create an assembly in ZW3D as below.

Name 🔺	Туре	Manager		
2A2BI	Assembly	P _	Show All 🔹	
Fixed_Half	Assembly	+0	4 💒 2A2BI	
Moving_Half	Assembly	-	4 🗹 📇 (=)Moving_Half	
PK01	Part	63	🗹 🌍 (-)РКОЗМ	
PK03F	Part	_	- PK04	
PK03M	Part	9		
PKOA	Dart		✓ (-)PK06	
PK04			🗹 🌍 (-)PK07	
PKUSL	Рап	-	🗹 🌍 (-)PK11M	
PK05R	Part	_	🗹 🧊 (-)TPEd	
PK06	Part	$\underline{\mathcal{A}}$	🗹 🌍 (–)TPE x 3	
PK07	Part		🗹 🌍 (-)SMm x 4	
PK11M	Part 🧹		🔽 🌍 (-)TUE x 4	
PO	Part		SMex4	
SLE	Part			
SLEA	Part			
SMo	Dart		Constraints	
Sivie	Pdrt		Constraints	
SMt	Part		4 🗹 📇 (=)Fixed_Half	
SMm	Part		🗹 🌍 (-)PK01	
STP	Assembly		🗹 🌍 (–)PK03F	
TPE	Part		🗹 🌍 (-)SLEd	
TPEd	Part		🗹 🌍 (-)SLE x 3	
TUE	Part		✓	
WK	Part		Constraints	
	- arc			

Figure 39 Mold Structure in ZW3D

Save it in the below folder.

ZWSOFT	ZW3D 2	2019 (x64)	ZWMold	•	Moldbase	Þ	Metric	×	FCPK	•	PK_I	۲	2A2BI
Name	<u>^</u>	Date mo	odified		Туре				Siz	e			
🚼 2A2	BI_F	2018/12	/21 15:01		ZW3D Docu	um	ient			2	2,703 k	(B	

Figure 40 Path of the Z3 File

After building up the structure of the assembly, you can start to add variables for the parameters of components.

STEP 02 Create variables for the main assembly.

Consult the manual of mold base for main parameters of all components.

Take the main W and L as an example. Values of all series are as below.





Go to the main assembly 2A2BI, use Equation Manager.

Follow the below steps to create variables **W** and **L**.

💱 Equation	Manager						~ ×
Expression L	.ist						
Filter All		•				2	
Name		Expression	Value		Unit	Туре	
A 🚆 2A2BI		95	95		mm	Number	
			55			-tumber	
-Variable Inp	ut						
	Number	* Length	•	Min		Max	
Name			nm T		enlage Funne	coion Enl	ist Dimension
Name 2	L		nm ·	ĸ	eplace Expre	ssion Eni	ist Dimension
Expression	95 3					A i	∃ π f(v)
Description						4 🔽 🗴	K
Reset					ОК	Cancel	Apply

Figure 42 Create Variables for W and L

Follow the same steps to create other variables.

Name	Expression	Value	Unit	Туре	Name	Expression	Value	Unit	Туре
4 📥 2A2BI									
<u>π</u> W	95	95	mm	Number	T_GP0Y	37.5	37.5	mm	Number
π_L	95	95	mm	Number	T_SCEP0X	16	16	mm	Number
<u><i>π</i></u> TW	156	156	mm	Number	T_SCEP0Y	20	20	mm	Number
<u>π</u> TL	95	95	mm	Number	<u>π</u> SCBC0X	37.5	37.5	mm	Number
T. ROTATE	0	0	deg	Number	T_SCBC0Y	23	23	mm	Number
T_ CHAMFER	0	0	mm	Number	T_SCBC0M	6	6	mm	Number
T DATUM	4	4	mm	Number	T_SCEP0M	8	8	mm	Number
T_PRY	8	8	mm	Number	T_SCP0X	20	20	mm	Number
T PRYOON	0	0		Number	π SCP0Y	35	35	mm	Number
T_ GAPOFIX	0.5	0.5	mm	Number	TCP0MAT	"1730"	"1730"		String
T GAP0MOVE	0.5	0.5	mm	Number	T APOMAT	"1730"	"1730"		String
T GAP0FP	4	4	mm	Number	T BPOMAT	"1730"	"1730"		String
<u></u>	22	22	mm	Number	T_UPOMAT	"1730"	"1730"		String
<u></u> AP0H	12	12	mm	Number	T_CP0MAT	"1730"	"1730"		String
<u></u> BP0H	27	27	mm	Number	T EPOMAT	"1730"	"1730"		String
<u>π</u> UP0H	6	6	mm	Number	T FPOMAT	"1730"	"1730"		String
	36	36	mm	Number	T_BCP0MAT	"1730"	"1730"		String
CP0W	20	20	mm	Number					
<u>π</u> ΕΡΟΗ	6	6	mm	Number					
T EPOW	54	54	mm	Number					
T_ FP0H	17	17	mm	Number					
<u></u> ВСР0Н	22	22	mm	Number					
<u></u> GP0D	14	14	mm	Number					
<u></u>	37.5	37.5	mm	Number					

Figure 43 Create All Variables

Notes:

Pick the right type for the variable, otherwise it may fail to drive the corresponding parameters. Here are meanings of the variables.

1) L+W

The main length and width of plates like plate A, plate B, etc.



Figure 44 "W" and "L"

2) TL + TW

The length and width of **PK01**.



Figure 45 "TW" and "TL"

3) Rotate

Rotation angle of the mold. The default value is 0.



Figure 46 "Rotate"

4) Chamfer

The chamfer value of all plates.



Figure 47 "Chamfer"

5) Datum

The Length of the DATUM MARK on **PK06**.



6) PRY

The length of pry angle at the plates' corners.



7) PRYOON

A constant to decide whether the *pry angle* is suppressed or not. (More details will be shown at Page 64.)



8) GAP0FIX and GAP0MOVE

Gap of fixed side and moving side. The default value of them is 0.5mm.







The gap of **PK07**.



Figure 52 "GAPOFP"

10) TCPOH, APOH, BPOH, UPOH, CPOH, EPOH, FPOH and BCPOH.

The height of different plates.



Figure 53 Plates Thickness

11) CPOW and EPOW

The Width of **PK05** and **PK06**.



Figure 54 "CPOW" and "EPOW"

- 12) GPOD, SCBCOM, SCEPOM, SCPOM will be used in some inequation for judgement in **##Components** at Page 95.
- 13) GPOX and GPOY

The X coordinate and Y coordinate of the *SLE* pockets.



Figure 55 "GPOX" and "GPOY"

14) SCEPOX and SCEPOY

The X coordinate and Y coordinate of the *SMe* pockets.



Figure 56 Figure 8 "SCEPOX" and "SCEPOY"

15) SCBCOX and SCBCOY

The X coordinate and Y coordinate of the *SMm* pockets.



Figure 57 "SCBPOX" and "SCBPOY"

16) SCPOX and SCPOY

The X coordinate and Y coordinate of the **WK** pockets.



Figure 58 "SCPOX" and "SCPOY"

17) TCPOMAT, APOMAT, BPOMAT, UPOMAT, CPOMAT, EPOMAT, FPOMAT and BCPOMAT.

Materials of plates, which could be shown in the BOM table.

STEP 03 Create variables for every single part.

After finishing variables in main assembly, we need to create variables for all components.

A) PK01

Name	Expression	Value	Unit	Туре
4 📥 PK01				
<u>π</u> W	[2A2BI:W]	95	mm	Number
π_L	[2A2BI:L]	95	mm	Number
<u>h</u>	[2A2BI:TCP0H]	22	mm	Number
<u> </u>	[2A2BI:TCP0MAT]	"1730"		String
<u></u>	14	14	mm	Number
<u>π</u> SC0D2	11	11	mm	Number
<u>π</u> SC0D1	6.5	6.5	mm	Number
<u>π</u> SC0H	7	7	mm	Number

Figure 59 Variables of PK01

- 1) W, L, h, Mat are linked to the corresponding variables in assembly **2A2BI**.
- 2) GB0D, diameter of SLE pockets on PK01.



Figure 60 "GB0D"

3) SC0D2 and SC0D1, head diameter and body diameter of **SMf** pocket.



Figure 61 "SCOD2" and "SCOD1"

4) SCOH, head height of **SMF** pocket.



Figure 62 "SCOH"

B) PK03F

Name	Expression	Value	Unit	Туре
🔺 📥 РКОЗЕ				
<u>π</u> W	[2A2BI:W]	95	mm	Number
<u>π</u> L	[2A2BI:L]	95	mm	Number
<u></u> <i>π</i> h	[2A2BI:AP0H]	12	mm	Number
<u> </u>	[2A2BI:AP0MAT]	"1730"		String
<u><i>π</i></u> GP0D2	16.5	16.5	mm	Number
<u></u> GP0H	3	3	mm	Number
<u> </u>	14	14	mm	Number
<u></u> . M	6	6	mm	Number
<u>π</u> P	1	1	mm	Number
<u>π</u> L1	1.5	1.5	mm	Number
<u>π</u> D0	5	5	mm	Number

- 1) W, L, h, Mat are linked to the corresponding variables in assembly **2A2BI**.
- 2) GP0D2 and GP0D1, head diameter and body diameter of **SLE/SLEd** pocket.



3) GP0H, head height of **SLE/SLEd** pocket.



- 4) M, P, thread diameter and pitch of the SMf pocket.
 - L1, D0, the extended length and diameter of the **SMf** pocket.

Figure 66 Variables of "SMf" Pocket

C) SLE

Name	Expression	Value	Unit	Туре
🔺 📥 SLE				
<u>π</u> d	10	10	mm	Number
<u>π</u> d1	14	14	mm	Number
<u>π</u> s	3	3	mm	Number
<u>π</u> L	30	30	mm	Number
<u>π</u> d2	16	16	mm	Number
<u>π</u>	12	12	mm	Number
<u>π</u> f	3	3	mm	Number

Figure 67 Variables of "SLE"

All variables are shown as below.

Figure 68 All Variables Shown in "SLE" Model

D) SLEd

The variables of SLEd are the same as those in SLEd. The only difference is the value of **d**.

Na	me	Expression	Value	Unit	Туре
4	📥 SLEd				
	<u></u> d	9	9	mm	Number
	<u>π</u> d1	14	14	mm	Number
	<u>π</u> s	3	3	mm	Number
	π	30	30	mm	Number
	<u>π</u> d2	16	16	mm	Number
	π	12	12	mm	Number
	<u>π</u> f	3	3	mm	Number

Figure 69 Variables of "SLEd"

E) SMf

Name	Expression	Value	Unit	Туре
🔺 📥 SMf				
<u></u> d	6	6	mm	Number
<u>π</u>	22	22	mm	Number
<u> </u>	10	10	mm	Number
<u>π</u> s	5	5	mm	Number
<u>π</u> P	1	1	mm	Number

Figure 70 Variables of "SMf"

1) All variables are shown as below.

Figure 71 All Variables Shown in "SMf" Model

F) PK03M

Name	Expression	Value	Unit	Туре
4 📥 PK03M				
<u>π</u> W	[2A2BI:W]	95	mm	Number
<u>π</u>	[2A2BI:L]	95	mm	Number
<u>π</u> h	[2A2BI:BP0H]	27	mm	Number
<u>π</u> Mat	[2A2BI:BP0MAT]	"1730"		String
<u>π</u> M	6	6	mm	Number
<u>π</u> D0	5	5	mm	Number
<u>π</u> L1	1.5	1.5	mm	Number
<u>π</u> p	1	1	mm	Number
<u></u>	16.5	16.5	mm	Number
<u></u> GB0H	3	3	mm	Number
<u></u>	14	14	mm	Number

Figure 72 Variables of "PK03M"

- 1) W, L, h, Mat are linked to the corresponding variables in assembly **2A2BI**.
- 2) M, P, thread diameter and pitch of the **SMm** pocket.
 - L1, D0, the extended length and diameter of the SMm pocket.

Figure 73 Variables of "SMm" Pocket

3) GB0D2, GB0H, GB0D1, head diameter, head height and diameter of **TPE** pocket.

Figure 74 Variables of "TPE" Pocket

G) PK04

Name	Expression	Value	Unit	Туре
🔺 📥 PK04				
<u>π</u> W	[2A2BI:W]	95	mm	Number
<u>π</u>	[2A2BI:L]	95	mm	Number
<u>π</u> h	[2A2BI:UP0H]	6	mm	Number
<u> </u>	[2A2BI:UP0MAT]	"1730"		String
<u>π</u> GB0D	14	14	mm	Number
<u>π</u> SC0D	6.5	6.5	mm	Number

Figure 75 Variables of "PK04"

- 1) W, L, h, Mat are linked to the corresponding variables in assembly 2A2BI.
- 2) GB0D and SC0D, diameter of **TPE** pocket and diameter of **SMm** pocket.

Figure 76 "GB0D" and "SC0D"

H) PK05L

Name	Expression	Value	Unit	Туре
4 📥 PK05L				
<u>π</u> W	[2A2BI:W]	95	mm	Number
<u>π</u> L	[2A2BI:L]	95	mm	Number
<u>π</u> h	[2A2BI:CP0H]	36	mm	Number
<u>π</u> Mat	[2A2BI:CP0MAT]	"1730"		String
<u>π</u> GB0D	14	14	mm	Number
<u></u> SC0D	6.5	6.5	mm	Number

Figure 77 Variables of "PK05L"

- 1) W, L, h, Mat are linked to the corresponding variables in assembly **2A2BI**.
- 2) GB0D and SC0D, diameter of TPE pocket and diameter of SMm pocket.

Figure 78 "GB0D" and "SC0D"

I) PK05R

1) Variables in PK05R are the same as those in PK05L.

Name	Expression	Value	Unit	Туре
4 📥 PK05R				
<u></u>	[2A2BI:W]	95	mm	Number
<u>π</u> L	[2A2BI:L]	95	mm	Number
<u></u> h	[2A2BI:CP0H]	36	mm	Number
<u>π</u> Mat	[2A2BI:CP0MAT]	"1730"		String
<u></u> GB0D	14	14	mm	Number
<u></u> SC0D	6.5	6.5	mm	Number

Figure 79 Variables of "PK05R"

J) PK06

Name	Expression	Value	Unit	Туре
🔺 📥 РКОб				
<u>π</u> W	[2A2BI:W]	95	mm	Number
<u>π</u> L	[2A2BI:L]	95	mm	Number
<u><i>π</i></u> h	[2A2BI:EP0H]	6	mm	Number
<u>π</u> Mat	[2A2BI:EP0MAT]	"1730"		String
<u></u> . M	8	8	mm	Number
<u></u> SC0D	6.8	6.8	mm	Number
T_SCOP	1.25	1.25	mm	Number

Figure 80 Variables of "PK06"

- 1) W, L, h, Mat are linked to the corresponding variables in assembly **2A2BI**.
- 2) SCOD and SCOP, diameter and pitch of the **SMe** Pocket.

Figure 81 "SCOD" and "SCOP"

К) РКО7

Name	Expression	Value	Unit	Туре
4 📥 PK07				
<u>π</u> W	[2A2BI:W]	95	mm	Number
π	[2A2BI:L]	95	mm	Number
π h	[2A2BI:FP0H]	17	mm	Number
<u>π</u> Mat	[2A2BI:FP0MAT]	"1730"		String
<u>π</u> SC0D2	14	14	mm	Number
<u>π</u> SC0D1	9	9	mm	Number
<u>π</u> SC0H	9	9	mm	Number
<u>π</u> SCOM	8	8	mm	Number
T SPOM	4	4	mm	Number
T SPOD	3.3	3.3	mm	Number
T SPOP	0.7	0.7	mm	Number

Figure 82 Variables of "PK07"

- 1) W, L, h, Mat are linked to the corresponding variables in assembly **2A2BI**.
- 2) SC0D2, SC0D1, SC0H, SC0M, head diameter, diameter, head height and thread diameter of the **SMe** pocket on **PK07**.

Figure 83 Variables of "SMe" Pocket

3) SPOM, SPOD, SPOP, thread diameter, diameter and pitch of **WK** pocket.

Figure 84 Variables of "WK" Pocket

L) PK11M

Name	Expression	Value	Unit	Туре
4 📥 PK11M				
<u>π</u> W	[2A2BI:W]	95	mm	Number
<u>π</u> L	[2A2BI:L]	95	mm	Number
<u>π</u> h	[2A2BI:BCP0H]	22	mm	Number
<u> </u>	[2A2BI:BCP0MAT]	"1730"		String
<u><i>π</i></u> SC0D2	11	11	mm	Number
<u>π</u> SC0H	7	7	mm	Number
<u></u>	6.5	6.5	mm	Number
<u>π</u> GB0D	14	14	mm	Number

Figure 85 Variables of "PK11M"

- 1) W, L, h, Mat are linked to the corresponding variables in assembly **2A2BI**.
- SCOD2, SCOH, SCOD1, head diameter, head height, diameter of the SMe pocket.
 GBOD, diameter of TUE pocket on PK11M.

Figure 86 Variables of "TUE" Pocket

M) TPE/TPEd

Name	Expression	Value	Unit	Туре
🔺 📥 TPE				
<u></u> d	10	10	mm	Number
<u>π</u> f	3	3	mm	Number
<u>π</u> d2	16	16	mm	Number
<u>π</u> d1	14	14	mm	Number
<u>π</u> s	3	3	mm	Number
<u>π</u> L	27	27	mm	Number

Figure 87 Variables of "TPE/TPEd"

1) All variables are shown as below.

Figure 88 All Variables of "TPE/TPEd" Model

N) SMm

Name	Expression	Value	Unit	Туре
🔺 📥 SMm				
<u>π</u> d	6	6	mm	Number
<u></u>	65	65	mm	Number
<u> </u>	10	10	mm	Number
<u>π</u> s	5	5	mm	Number
<u>π</u> P	1	1	mm	Number

Figure 89 Variables of "SMm"

1) All variables are shown as below.

Figure 90 All Variables of "SMm" Model

Name	Expression	Value	Unit	Туре
🔺 📥 TUE				
<u> d1</u>	11	11	mm	Number
<u>π</u>	50	50	mm	Number
<u><i>π</i></u> d3	14	14	mm	Number
<u>π</u> 11	8	8	mm	Number
<u></u> d2	6.8	6.8	mm	Number
<u></u> M	8	8	mm	Number
<u></u> P	1.25	1.25	mm	Number

Figure 91 Variables of "TUE"

1) All variables are shown as below.

P) SMe

Name	Expression	Value	Unit	Туре
🔺 📥 SMe				
<u></u> d	8	8	mm	Number
<u></u>	20	20	mm	Number
<u> </u>	13	13	mm	Number
<u>π</u> s	6	6	mm	Number
<u>π</u> P	1.25	1.25	mm	Number

Figure 93 Variables of "SMe"

1) All variables are shown as below.

Name Expression Value Unit Туре 4 📥 PO π_d 18 18 Number mm <u>π</u> h 3 3 Number mm <u>π</u> d1 4.3 4.3 Number mm <u>π</u>t 0.4 0.4 Number mm

Figure 95 Variables of "PO"

1) All variables are shown as below.

R) WK

Name	Expression	Value	Unit	Туре
4 📥 WK				
<u></u> π d	4	4	mm	Number
<u>π</u>	8	8	mm	Number
<u>π</u> k	2.3	2.3	mm	Number
π dk	8	8	mm	Number
π_s	2.5	2.5	mm	Number
<u>π</u> P	0.7	0.7	mm	Number

Figure 97 Variables of "WK"

1) All variables are shown as below.

Model Building

Build up model for every component.

Components can be classified as below.

Figure 99 Classification of the Components

STEP 1 Take **PK03M**, **SMf**, **SLE/SLEd** and **PO** as examples to guide you how to build up models for these kinds of components.

A) PK03M

1) Create a block as below.

MoldBase Library Customization <////

Figure 100 Create a Block

 Create a sketch for the location of SLE/SLEd pocket. The dimensions are called from [2A2BI:GP0X] and [2A2BI:GP0Y].

3) Create pockets for SLE/SLEd.

Figure 102 Create Pockets for "SLE/SLEd"

4) Create a sketch for the location of **SMm** pocket. The dimensions are called from [2A2BI:SCBC0X] and [2A2BI:SCBC0Y].

Figure 103 Create Sketch Points for "SMm" Pocket

5) Create pockets for SMm.

Boolean				^	
Hole Specific	ation				
Thread	simple				
Type Diameter	Custom M	mm ‡	• 🖏 π.•		
Pitch	Ρ	mm 0	<u>π</u> •		
Thrds/Unit	0	÷	۰ 🖄		
Depth type	Custom		-		
Depth	1.5*M	mm ‡	<u>π</u> -		
Specification	n → D1 +- ↓ ↓ ↓ ↓ ↓	↑ H1			
Dia (D1)	D0	mm ‡	<u>π</u> -		
Depth (H1)	1.5*M+L1	mm 🗘	<u>π</u> -		
End	Blind				
Tip	118	deg 🗘	۰ 🕑		

Figure 104 Create Pockets for "SMm"

6) Add chamfer on all external edges. The chamfer's value is called from [2A2BI:CHAMFER].

Figure 105 Add a Chamfer

7) Create a sketch for the pry angle. The length value is called from [2A2BI:PRY].

Figure 106 Create a Sketch for the Pry Angle

8) Extrude and cut the pry angle.

Figure 107 Extrude and Cut the Pry Angle

9) Rotate the plate. The angle is called from [2A2BI:ROTATE].

Figure 108 Rotation Angle

Now we have finished building up the model.

Figure 109 Finish PK03M Model

For the feature chamfer, pry angle, they are suppressed in some conditions.

10) Use Conditional Suppress.

Figure 110 Conditional Suppress

🖗 c	onditional Suppres	sion		₽ 🗙					
Filter	All	•		0					
	Feature	Expression	State						
	GPHOLE								
	SCBCSKH								
	SCBCHOLE								
	(Chamfer1) [2A2BI:CHAMFER]=0 True								
	PRYSKH	RYSKH							
	(BPPRY)	[2A2BI:PRY0ON]=0	True						
	MROTATE			•					
Pic	k with dependency								
	ck with same expres	ssion							
Apply	to This configu	ration	•						
Expres	sion [2A2BI:CHAN	//FER]=0		Apply					
		ОК	Cancel						

Figure 111 Conditional Expression

Notes: Here is explanation for conditional suppression.

I) If [2A2BI:CHAMFER]=0 is true, the *Chamfer1* feature will be suppressed.

II) If [2A2BI:PRYOON]=0 is true, the *BPPRY* feature will be suppressed.

After setting these conditional suppressions, let's go back to see what's the difference.

The Chamfer1 and BPPRY has been suppressed.

* Extension

Rules of Equations

1. Common operators,

"+"(Plus), "-"(Minus), "*"(Multiply), "/"(Divide), "^" (Power)

E.g. A = -3 + 30 B = A/2

2. Common functions,

cos(), sin(), tan() ,abs(), sqrt(), ln(), log()

E.g. C = 3*sin(30)

3. Logical operation,

"!" (logical negation), "&" (logical conjunction), "|" (logical disjunction)

E.g. D=(!(C&1)=0)

4. Conditional operators,

```
"<" (less than), ">" (greater than), "=" (equal to)
E = D>0
```

5. Conditional statement,

(condition expression) then (expression1) else (expression2)
E.g. F = ((C=1) & (D=1))

6. Others,

"()" (bracket), used to change the calculation order.

Equation in bracket will be run first.

E.g. G=3, H=2,

Formula 1, I= G+H*2, result, I=7

Formula 2, I= (G+H)*2, result, I=10

B) SMf

1) Create a cylinder as the head of the screw.

Figure 113 Create the Screw Head

2) Create another cylinder as the body of the screw.

Figure 114 Create the Screw Body

3) Create a sketch for the hex pocket.

Figure 115 Create a Sketch for the Hex

4) Extrude the sketch to cut a pocket.

Figure 116 Extrude and Cut the Hex

5) Add chamfers on the top and bottom edges.

Figure 117 Add Chamfers

The **SMf** model has been finished.

C) SLE

1) Create the shoulder.

Figure 118 Create the Shoulder

2) Create the head.

Figure 119 Figure 9 Create the Head

3) Create the body shoulder.

Cylinder	23	
🖌 🗙	•	
▼ Required		
Center	0,0,0 😵 👲 🔹	
Radius	d1 mm ‡ Ø <u>π</u> -	
Length	-l+s mm ‡ <u>π</u> ∗	-9
▼ Boolean		
Î		
Boolean shap	es 1 picked 🛛 🕹	14
▼ Settings		
Align plane	XY 💆	

Figure 120 Create the Body Shoulder

4) Create the body.

Figure 121 Create the Body

5) Add a fillet on the bottom edge.

Figure 122 Add a Fillet on the Top Edge

6) Add a fillet on the edge between body shoulder and body.

Figure 123 Add a Fillet on the Shoulder

Then **SLE** model has been finished.

D) PO

1) Create the body for **PO**.

Figure 124 Create the Body

2) Create a sketch for the pocket.

Figure 125 Create a Sketch for the pocket

3) Revolve the sketch and cut the body.

▼ Required				
Profile P	Skh	1		
Axis A	0,0,1	× 👲 -	360	
Revolve type	2 sides	•		
Start angle S	0 d	eg 🗘 垫 🔻		
End angle E	360 d	eg 🗘 👲 🝷		

Figure 126 Revolve and Cut the Body

4) Add a chamfer on the external edge of the top face.

Figure 127 Add a Chamfer

Now **PO** model has been finished.

STEP 2 Follow similar steps to finish the modeling of the rest components.

After finishing modeling, the result is as below.

Figure 128 Final Result

STEP 3 Add Constraints at where necessary.

Figure 129 Add Constraints

STEP 4 Then add conditional suppressions on SMe and STP.

If the [2A2B:L]<156 is true, SMe and STP will be suppressed.

Figure 130 Conditional Suppression on Components

STEP 5 Set attribute for the plates.

1) Use *Set Attribute* in mold module. Click *TC Plate* and pick *PK01*.

Then the TC plate attribute will be written in the part attribute of **PK01**.

Figure 132 Plate Attribute in "Part Attribute"

This attribute will help you automatically recognize the plate when you insert components.

The plate attributes are matched as below.

Figure 133 Set Attribute for All Plates

Up to now, you have finished building up the mold assembly.

2 Generate Excel Table & z3l

Key Points:

- \diamond Generate excel table and z3I
- ♦ Rules of table
- \diamond Edit table and z3l

2.1 Data Table Generation

2.1.1 Excel and z3l Creation

STEP 01 Go to *Tool* tab, then use *Library Publisher*.

Figure 134 Library Publisher

It will switch to *Config Table*.

Viame Description ² = 2.2281 ² = 2.2281 ² = 2.2281 ² = 0.2281 ² = 0.2282 ² = 0.228	Part Assembly		Filter All	-				
Name Descriptive Config Name W(mm) T.U.(mm) T.U.(mm) 2.24281 Lors attribute Default 95 5.0 5.0 5.0 95 5.0 95 5.0 95 5.0 95 5.0 T.U.(mm) T.U.(mm) T.U.(m) 95 5.0 95 5.0 95 5.0 95 5.0 95 5.0 95 5.0 95 5.0 7 1.C.MAFER 9 .	Filter All - All -							
4 ■ 22281 95 8 <th>Name Descriptiv</th> <th></th> <th>Config Name</th> <th>W(mm)</th> <th>L(mm)</th> <th>TW(mm)</th> <th>TL(mm)</th> <th>RO</th>	Name Descriptiv		Config Name	W(mm)	L(mm)	TW(mm)	TL(mm)	RO
> Standard attribute > > Use attribute > > Use attribute > > Iso attrite > > Iso attrite	4 📇 2A2BI		Default	05 7	Q5 7	156 7	05 π	0
• Duber attribute 3 • Copression 3 • Copression 3 • S. W - • S. W - • S. T - • S. T - • S. Control - • S. Revolv - • J. Control - • J. Control - • J. Control -	Standard attribute		Delaut	35	35	1.00	35	<u> </u>
✓ Elspression 3 ✓ J. L ✓ ✓ J. ROTATE ✓ ✓ J. ROTATE ✓ ✓ J. ROTATE ✓ ✓ J. ROPAT ✓ ✓ J. DATUM ✓ ✓ J. ROPON ✓ ✓ J. GAPORIX ✓ ✓ J. GAPONIXE ✓	🖻 🗀 User attribute 🛛 👝	=						
Ø. Z. W Ø. Z. W Ø. Z. TU Ø. Z. TU Ø. Z. FOTATE Ø. Z. GAPOFIX Ø. Z. GAPOFIX	🛎 🔁 Expression 🛛 🍼							
Ø. J. L Ø. J. TW Ø. J. TW Ø. J. ROTATE Ø. J. ATATE Ø. J. DATUM Ø. J. PRV Ø. J. PRVON Ø. J. GAPOFIX Ø. J. GAPOMOVE	<u>▼</u> <u>π</u> w							
Ø. J. TW Ø. J. TL Ø. J. ROTATE Ø. J. CHAMFER Ø. J. CHAMFER Ø. J. DATUM Ø. J. DATUM Ø. J. DATUM Ø. J. DATUM Ø. J. GAPOFIX Ø. J. GAPOFIX Ø. J. GAPOMOVE	<u>ν</u> <u>π</u> L							
Ø. J. TL Ø. J. ROTATE Ø. J. ROTATE Ø. J. DATUM Ø. J. PRV Ø. J. PRVON Ø. J. RORON Ø. J. RORON Ø. J. RORON	✓ <u>π</u> TW							
Ø. J. ROTATE Ø. J. CAMMER Ø. J. DATUM Ø. J. DATUM Ø. J. DRY Ø. J. DRYON Ø. J. BRYON Ø. J. GAPORIK Ø. J. GAPONIVE	☑ 元 TL							
Ø. J. CHAMFER Ø. J. DATUM Ø. J. PRY Ø. J. PRYOON Ø. J. GADFIX Ø. J. GADFUX	ROTATE							
Ø. 3. DATUM Ø. 3. PRY Ø. 3. PRYOON Ø. 3. GAPORIX Ø. 3. GAPORIX	CHAMFER							
⑦ 1 PRYOON ⑦ 3 GAOPERX ⑦ 3 GAOPONVE	✓							
⑦ 3. PRVOON ⑦ 3. GAOFIX ⑦ 3. GAOFIX	✓ π PRY							
Image: Comparison of the second se	PRYOON							
C APOMOVE	GAPOFIX							
	GAPOMOVE							
GAPOFP 4	GAPOFP		4					
TCPOH	TCP0H		N C C	C 0.11	-C. Manager	Institute Day D	- 1910 - CA	

Figure 135 Configure Variables

STEP 02 Pick all variables to configure them, and click OK.

It will jump back to the *Library Publisher*. All variables will be shown in the below list.

💯 Library Pu	ıblisher						₽ 33					
Object to Publish												
File name	2A2BI.Z3 🖕											
Object list	2A2BI 👻											
Data Involved to Publish												
Legend												
O Data from configurations												
O Data from	n excel											
	Edit in Exce	9			Sho	ow all dat	a					
▼ Paramete	r Setting											
Availa	able				Driv	ing						
Name			Style	1	Name	Descrip	otive Name					
w		•										
L												
TW		•										
TL												
ROTAT	E	•										
4												
Manage pa	rameters	[ļ	Assembly	y match						
Publish to	Lib											
	ОК		Cano	el:	Ap	oply						

Figure 136 Available Variable List

STEP 03 Right-click some variables to set the *Key* and *Custom* parameters.

👰 Library Pu	ublisher											
▼ Object to	Publish											
File name	2A2BI.Z3	2A2BI.Z3										
Object list 2A2BI *												
▼ Data Involved to Publish												
Legend												
O Data from configurations												
🔘 Data from	n excel											
	Edit in Excel		Sh	ow all data								
▼ Paramete	r Setting											
Availa	able		Driv	/ing								
Name	•	Style	Name	Descriptive Name								
τw		°≱ -	w									
TL		1 -	L									
% S	iet Key											
S	et Custom	~										
	ustomize menu	_										
	**											
Manage parameters Assembly match												
Publish to	Lib											
	ОК	Cancel	A	pply								

STEP 04 After finishing the setting, click **Data from excel**.

MoldBase Library Customization <////

👰 Library Pr	ublisher			₽ 8				
▼ Object to	Publish				ZWSOFT > ZW3	0 2019 (x64) 🕨 ZWMo	ld ▶ Moldbase ▶ Metric	▶ FCPK ▶ PK_I ▶ 2A2
File name	2A2BLZ3			-	 Share with 	 New folder 		
Object list	2A2BI			•	Name	Date modified	Туре	Size
▼ Data Invo	olved to Publish				🔛 2A2BI	2019/3/7 19:17	ZW3D Document	1.718 KB
Legend				-				
O Data from	m configurations							
O Data from	m excel 🚺							
	Edit in Excel	🐲 zwa	D			83		
Paramete Avail Name TW TL ROTA* CHAM DATUI III	er Setting able e interference	Style	There is no vali [Yes] to genera	id corresp ste the exc 2	onding excel data fo el. [No] to cancel. Yes	r this part. No		
Manage pa	arameters	Ass	embly match					
Publish to	Lib							
	ОК	Cancel	Apply					

Figure 138 General Excel Table and z3I

It will automatically create excel file and txt file in the same folder of the z3l file.

👰 Library Pr	ublisher						83					
▼ Object to	Publish						Z	wsc	OFT • ZW3D 20	019 (x64) 🕨 ZWMold	► Moldbase ► Metric ► F0	IPK 🕨 PK_I 🕨 2A2BI
File name	2A28LZ3 👛								Share with 💌	New folder		
Object list	2A28I					•		Na	me	Date modified	Туре	Size
▼ Data Invo	lved to P	ublish						d)	2A2BI	2019/3/26 15:40	Microsoft Excel Worksheet	12 KB
Legend							a '	1	2A2BI	2019/3/7 19:17	ZW3D Document	1,718 KB
🔘 Data from	n configu	rations						a	2A2BI	2019/3/26 15:40	Z3L File	1 KB
Data from	n excel		E:\Pr	ograi	m Files\ZW	SOFT\ZW3D 201	-					
	Edit in Ex	cel		Г	Sh	ow all data						
▼ Paramete	r Setting						_					
Avail	Available Driving											
Nam	e 🔺		Style Name Descriptive Na									
TW			°⊷ w									
TL		H	L	*	L							
ROTA	TE	-	\$		TW							
CHAM	ER		1		п							
DATU	м _	-	\$		CHER							
4	- Þ.		9	*	ROTATE							
Manage pa	arameters				Assembl	ly match						
Publish to	Lib											
	0	ж	C	incel	A	pply						

Figure 139 Excel Table and z3l in Folder

STEP 05 Open the 2A2BI.xls file, then we can see the 2A2BI tab has been created as below.

	А	В	С	D	E	F			
1	##KEYS								
2	<name></name>	\$BCP0MAT	\$FP0MAT	\$EP0MAT	\$CP0MAT	\$UP0MAT			
3	<tag></tag>								
4	##CUSTOMS								
5	<name></name>	\$L	\$W	\$GAP0FIX	\$GAP0MOVE	\$GAP0FP			
6	<tag></tag>								
7	<min></min>								
8	<max></max>								
9									
10	##DESCRIPTIONS								
11	<name></name>								
12	<tag></tag>								
13	##PARAMETER								
14		\$PRY0ON(mm)	\$CHAMFER(mm)	\$ROTATE(deg)	\$DATUM(mm)	\$PRY(mm			
15	Default	0;1	0;1;2;3	0;90	4	8			
16									
17									
	A 2A2BI Sheet1 ⊕ : ◀								

STEP 06 Close the excel file. Go back to ZW3D and activate the component **PK01**.

Figure 141 Activate PK01

STEP 07 Go to **Tool** tab, then use **Library Publisher**

💯 Library Pu	ıblisher			₽ %
▼ Object to	Publish			
File name	2A2BI.Z3			
Object list	PK01			•
🔻 Data Invo	lved to Publish			
Legend				
🔘 Data from	n configurations			
🔘 Data from	n excel			
	Edit in Excel		Sh	ow all data
▼ Paramete	r Setting			
Availa	able		Driv	ing
Nan	ne	Style	Name	Descriptive Name
Manage pa	rameters		Assembl	y match
Publish to	Lib			
	ОК	Cancel	A	oply

Figure 142 Publish PK01

STEP 08 Repeat the same steps as the **2A2BI** assembly.

• Object to	o Publish					
File name	2A2BLZ3				-	
Object list	PK01			•		
🔻 Data Invo	olved to Publish					
Legend					-	
🔘 Data fro	m configuration					
Data fro	m excel	E:\Progra	m Files\ZW	SOFT\ZW3D 201	-	
3	Edit in Excel		Sh	ow all data		
• Paramete	er Setting					
Avai	lable		Driv	ring		
Nam	ne 🔺	Style	Name	Descriptive N	ame	
h		°* -	w	-		
Mat		1 -	L.	🦉 ZW3D		X
GB0	D			\bigcirc	There is	s no valid corresponding excel data for this part
SCOD	02	2		9	[Yes] to	generate the excel, [No] to cancel.
SCOD	01					A Ver No
SCOF	н т				_	
Manage parameters Assemb			Assembl	y match		
Publish to						
	0.00					

Figure 143 General Excel for PK01

STEP 09 Open the excel table **2A2BI.xls** again. The **PK01** tab has been created.

	A	B	C	D	E	F	G	H	I	
1	##KEYS									
2	<name></name>	\$W								
3	<tag></tag>									
4	##CUSTOMS									
5	<name></name>	\$L								
6	<tag></tag>									
7	<min></min>									
8	<max></max>									
9	##DESCRIPTIONS									
10	<name></name>									
11	<tag></tag>									
12	##PARAMETER									
13		\$W(mm)	\$L(mm)	\$h(mm)	\$Mat	\$GB0D(mm)	\$SC0D2(mm)	\$SC0D1(mm)	\$SC0H(mm)	
14	Default	[2A2BI:W]	[2A2BI:L]	[2A2BI:TCP0H]	[2A2BI:TCP0MAT]	14	11	6.5	7	
15										
16										
	← → PK01 2A2BI Sheet1 ⊕ : ◀									

Figure 144 PK01Tab in Excel

STEP 10 Continue to generate the excel data for other components. The results are shown as below.

自动保存 💽 💭 ジェ 🤄 👻 2A2BI - Copy - Excel										3D国际	业务部2			
Ż	(件 开始	插〉	、絵園	页	面布局	公式	数据	审阅	视图	开发工具	加载项	帮助	, P ≇	诉我
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1	##KEYS													
2	<name></name>		\$BCP0M	AT	\$FP0M/	λT.	\$EP0M	AT	\$CPON	IAT	\$UP0MAT		\$BPOM/	AT
3	<tag></tag>													
4	##CUSTOM	5												
5	<name></name>		\$L		\$W		\$GAP0	FIX	\$GAP0	MOVE	\$GAP0FP		\$TCP0H	
6	<tag></tag>													
7	<min></min>													
8	<max></max>													
9	##DESCRIPT	IONS												
10	<name></name>													
11	<tag></tag>													
	< →	TPE	TUE	SMf	SMm	SMe	WK	PO	PK11M	PK03F	PK03M	PK01	2A2	2BI
9.73											FF	8 📾	m	

Figure 145 All Tabs in the Excel Table

STEP 11 Move 2A2BI tab to the first place.

	自动保存 💽 🗜	1 9-0-•		2A2BI - C	opy - Excel	3D)	家业务部2 团
文	(件 开始 插)	、 绘图 页面	祐局 公式	数据 审阅	视图 开发工具	加载项 帮助	○ 告诉我
۲ ħ	Calibri III - B I · S III - B		= = 2 = = = 2 = = = = = - = = = ≫ - grad g	常规 ▼ で × % 9 *00 →00 数字 52	 	 IIII A → Σ 	× 2℃ × × 0 × × MindMa 编辑 Mind
F3	94 × ÷	$\times \checkmark f_{\rm K}$	\$D0=[2A2BI_F	.Z3:SMn:D0]			
1	A	в	с	D	E	F	G
1	##KEYS						
2	<name></name>	\$BCP0MAT	\$FP0MAT	\$EPOMAT	\$CP0MAT	\$UP0MAT	\$BP0MAT
3	<tag></tag>						
4	##CUSTOMS						
5	<name></name>	\$L	\$W	\$GAP0FIX	\$GAP0MOVE	\$GAP0FP	\$TCP0H
6	<tag></tag>						
7	<min></min>						
8	<max></max>						
9	##DESCRIPTIONS						
10	<name></name>						
11	<tag></tag>						
	↓ 2A2I	BI TPE TUE	SMf SMm	SMe WK	PO PK11M	PK03F PK03	ЗМ РКО1
							I II

Figure 146 Figure 10 Adjust the Tab Order

Notes: The sub-assemblies **Fixed_Half**, **Moving_Half** and **STP** have no parameters inside them, so there is no need to generate excel tab for it.

STEP 12 Open the txt file. The assembly and components objects are automatically specified.

2A2BI - Notepad	
File Edit Format View Help	0
Version=1 #file=2A2BI.Z3 2A2BI #data=2A2BI.X1sx 2A2BI #components 2A2BI=. 2A2BI=.	Assembly Object and Data
#file=2A2BI.Z3 PO #data=2A2BI.xlsx PO	
#file=2A2BI.Z3 WK #data=2A2BI.xlsx WK	
#file=2A2BI.Z3 SMm #data=2A2BI.xlsx SMm	Component Object and Data
#file=2A2BI.Z3 SMf #data=2A2BI.xlsx SMf	
#file=2A2BI.Z3 SMe #data=2A2BI.xlsx SMe	
#file=2A2BI_F.Z3 TUE #data=2A2BI_F.xlsx TUE	

Figure 147 Generated z3l File

2.1.2 Excel and z3l Editing

1) Edit the excel file.

STEP 1 Open the 2A2BI.xls file. Add *attributes* and *components* items in the assembly **2A2BI** tab.

STEP 2Add tags for all keys and custom parameters.

	А	В	С	D	E	F
1	##KEYS					
2	<name></name>	\$BCP0MAT	\$FP0MAT	\$EP0MAT	\$CP0MAT	\$UP0MAT
3	<tag></tag>	BCP matl	FP matl	EP matl	CP matl	UP matl
4	##CUSTOMS					
5	<name></name>	\$L	\$W	\$GAP0FIX	\$GAP0MOVE	\$GAP0FP
6	<tag></tag>	L	W	Ga	Gb	Ge
7	<min></min>					
8	<max></max>					

Figure 149 Add Tags

STEP **3** Add <MIN> and <MAX> for all custom parameters. The values can be consulted from FCPK manual.

	Α	В	С	D	E	F
1	##KEYS					
2	<name></name>	\$BCP0MAT	\$FP0MAT	\$EPOMAT	\$CP0MAT	\$UP0MAT
3	<tag></tag>	BCP_matl	FP_matl	EP_matl	CP_matl	UP_matl
4	##CUSTOMS					
5	<name></name>	\$L	\$W	\$GAP0FIX	\$GAP0MOVE	\$GAP0FP
6	<tag></tag>	L	W	Ga	Gb	Ge
7	<min></min>	50	50	0	0	0
8	<max></max>	2000	2000	2000	2000	2000

Figure 150 Add "MIN" and "MAX"

STEP 4Add Attributes Name, Material and Supplier in the assembly 2A2B

	A	В	C	D
4	##CUSTOMS			
5	<name></name>	\$L	\$W	\$GAP0FIX
6	<tag></tag>	L	W	Ga
7	<min></min>	50	50	0
8	<max></max>	2000	2000	2000
9	##DESCRIPTIONS			
10	<name></name>			
11	<tag></tag>			
12				
13	##ATTRIBUTES			
14	Name=2A2BI[*ZMD_Internal_No]	Material= <none></none>	Supplier=FCPK	

Figure 151 Add Attributes

They are matched with the items in *MoldBase* command.

▼ Parameters								
Series	_							
095x095 🔺	Normal	Attribute						
100x130 156x156	Item		Value					
156x196 = 156x246	Name	2A1BI[*ZM	ID_Internal_No]					
156x296	Number							
190x246	Class							
196x296	Supplier	FCPK						
196x346 196x396	Description							
196x446 196x496	Material	<none></none>						
218x246 218x296	No BOM		·		•			

Figure 152 Attributes in MoldBase Command

[*ZMD_Internal_No] is a customized parameter for the mold series. For example, if you insert the series 095x095, the name of the inserted mold assembly will be **2A2BI095x095**.

The default value of Material is <NONE>, and you can change it before inserting.

STEP 5 Add expressions under the *Component* item.

This part is the most difficult part in this tutorial. It requires users to equip with basic knowledge of parametric design.

Firstly, you need to know what's the meaning of all parameters, and which dimensions they drive.

Secondly, you need to know the relationship among parameters and know how to use equation and inequation.

Thirdly, you need to be familiar with the mold structure and know the relationship among components, like the mate of guide pin and pillar.

Then you can add equations or inequations for each component.

16	##COMPONENTS							
17	2A2BI_F.Z3:SMm	\$d<=\$SCBC0M	\$I<=\$BCP0H+\$CP0H+\$ UP0H+\$SCBC0M*0.5					
18	2A2BI_F.Z3:SMe	\$d<=\$SCEP0M	\$I<=\$FP0H+\$EP0H- \$SCEP0M-1					
19	2A2BI_F.Z3:SMf	\$d<=\$SCBC0M	\$I<=\$TCP0H+\$SCBC0M *0.5					
20	2A2BI_F.Z3:WK	\$d<=\$SCP0M						
21	2A2BI_F.Z3:PO	\$d1>=\$SCP0M						
22	2A2BI_F.Z3:SLE	\$d1<=\$GP0D	\$I<=\$AP0H	L+I>=\$AP0H+\$BP0H+\$G AP0FIX+\$GAP0MOVE				
23	2A2BI_F.Z3:SLEd	\$d1<=\$GP0D	\$I<=\$AP0H	L+I>=\$AP0H+\$BP0H+\$G AP0FIX+\$GAP0MOVE				
24	2A2BI_F.Z3:TPE	\$d1<=\$GP0D	\$L<=\$BP0H					
25	2A2BI_F.Z3:TPEd	\$d1<=\$GP0D	\$L<=\$BP0H					
26	2A2BI_F.Z3:TUE	\$d3<=\$GP0D	\$I>\$BCP0H+\$CP0H					
27	2A2BI_F.Z3:PK01	\$GB0D<=\$GP0D	\$SC0D2=[2A2BI_F.Z3:S Mf:D2]	\$SC0D1=[2A2BI_F.Z3:S Mf:D1]	\$SC0H=[2A2BI_F.Z 3:SMf:H]			
28	2A2BI_F.Z3:PK11M	\$GB0D<=\$GP0D	\$SC0D2=[2A2BI_F.Z3:S Mm:D2]	\$SC0D1=[2A2BI_F.Z3:S Mm:D1]	\$SC0H=[2A2BI_F.Z 3:SMm:H]			
29	2A2BI_F.Z3:PK03F	\$M<=\$SCBC0M	\$GP0D2>[2A2BI_F.Z3: SLE:d2]	\$GP0H=[2A2BI_F.Z3:SLE :s]	\$GP0D1=[2A2BI_F. Z3:SLE:d1]	\$D0=[2A2BI_F.Z3: SMf:D0]	\$P=[2A2BI_F.Z3: SMf:P]	\$L1=[2A2BI_F.Z3:S Mf:L1]
30	2A2BI_F.Z3:PK03M	\$M<=\$SCBC0M	\$GB0D2>[2A2BI_F.Z3: TPE:d2]	\$GB0H=[2A2BI_F.Z3:TP E:s]	\$GB0D1=[2A2BI_F. Z3:SLE:d1]	\$D0=[2A2BI_F.Z3: SMm:D0]	\$P=[2A2BI_F.Z3: SMm:P]	\$L1=[2A2BI_F.Z3:S Mm:L1]
31	2A2BI_F.Z3:PK04	\$GB0D=[2A2BI_F .Z3:SLE:d1]	\$SCOD=[2A2BI_F.Z3:S Mm:D1]					
32	2A2BI_F.Z3:PK05L	\$GB0D=[2A2BI_F .Z3:SLE:d1]	\$SCOD=[2A2BI_F.Z3:S Mm:D1]					
33	2A2BI_F.Z3:PK05R	\$GB0D=[2A2BI_F .Z3:SLE:d1]	\$SCOD=[2A2BI_F.Z3:S Mm:D1]					
34	2A2BI_F.Z3:PK06	\$M<=\$SCEP0M	\$SCOD=[2A2BI_F.Z3:S Me:D0]	\$SCOP=[2A2BI_F.Z3:SM e:P]				
35	2A2BI_F.Z3:PK07	\$SC0M<=\$SCEP0 M	\$SC0D2=[2A2BI_F.Z3:S Me:D2]	\$SCOH=[2A2BI_F.Z3:SM e:H]	\$SC0D1=[2A2BI_F. Z3:SMe:D1]	\$SPOM=[2A2BI_F. Z3:WK:d]	\$SP0D=[2A2BI_F. Z3:WK:D0]	\$SPOP=[2A2BI_F.Z3 :WK:P]

Figure 153 Components Relations

STEP 6 Add ***ZMD_Internal_No** under **##Parameter** in the assembly **2A2B**.

##PARAMETER						
*ZMD_Internal_No	\$PRY0ON(mm)	\$CHAMFER(mm)	\$ROTATE(deg)	\$DATUM(mm)	\$PRY(mm)	\$GAP0FIX(mm)
Default	0;1	0;1;2;3	0;90	4	8	0.5

Figure 154 Add "ZMD_Internal_No"

STEP 7 Add *attributes* item in every component tab. Take PK01 as an example.

STEP 8 Add Name, Number, Material, and Supplier under ##ATTRIBUTES in components.

For the components, the material is driven by the string variable *\$Mat*.

1	##KEYS			
2	<name></name>			
3	<tag></tag>			
4	##CUSTOMS			
5	<name></name>			
6	<tag></tag>			
7	<min></min>			
8	<max></max>			
9	##DESCRIPTIONS			
10	<name></name>			
11	<tag></tag>			
12				
13	##ATTRIBUTES			
14	Name=PK01_[\$W%n]x[\$L%n]x[\$h%n]	Number=PK01-[\$W%n]x[\$L%n]x[\$h%n]/[\$Mat]	Material=[\$Mat]	Supplier=FCPK
15				
16	##PARAMETER			
17		\$GB0D(mm)	\$SC0D2(mm)	\$SC0D1(mm)
18		14;20;26;30;42;54	8;10;11;14;18;20;23;26;32;	4.5;5.5;6.5;9;11;13;15;18;22

Figure 156 Add Attributes in Components

STEP 9 Save the excel table.

1) Edit the z3l file

STEP 1 Open the z3l file.

- a) Delete the item #components.
- b) Add item keysSequence, and add all key parameters.
- c) Change items 2A2BI=. \ to #IMAGE.
- d) Add Group items with parameters included.

Figure 157 Add Items in z3l

Notes:

Key parameters should be the same with those in the **2A2BI** tab of the excel file.

The parameters in *Group* should be picked from the key parameters.

STEP 2 Save the zl3 file.

3 Link to Images

3.1 Add Images

STEP 1 Create an image named **2A2BI_F** in the same folder of **2A2BI.z3**.

ZWSOFT ► ZW3D 2019 (x64) ► ZWMold ► Mole	dbase 🕨 Metric 🕨 FC	CPK ▶ PK_I ▶ 2A2BI	▼ 49
Name	Date modified	Туре	Size
A2BI	2019/3/26 16:54	Microsoft Excel W	14 KB
🛃 2A2BI	2019/3/7 19:17	ZW3D Document	1,718 KB
2A2BI	2019/3/26 16:54	Z3L File	1 KB
N 2A2BI_F	2018/12/21 15:01	PNG image	10 KB

Figure 158 Add General-View Image

STEP 2 Add some general information about the mold in the image.

Figure 159 General-View Image

STEP 3 Create another image named **2A2BI_FF** in the same folder.

ZWSOFT V ZW3D 2019 (x64) V ZWMold Mo	ldbase ► Metric ► F	CPK ▶ PK_I ▶ 2A2BI	▼ 49
Name	Date modified	Туре	Size
A 2A2BI	2019/3/26 16:54	Microsoft Excel W	14 KB
👹 2A2BI	2019/3/7 19:17	ZW3D Document	1,718 KB
2A2BI	2019/3/26 16:54	Z3L File	1 KB
💽 2A2BI_F	2018/12/21 15:01	PNG image	10 KB
R 2A2BI_FF	2018/12/21 15:01	PNG image	64 KB

Figure 160 Add Detailed Image

STEP 4 Add some important parameters in this image for illustration.

Figure 161 Detailed Image

STEP 5 Add these two images' name to the z3l file.

Figure 162 Specify the Images

3.2 Configuration File Modification

STEP 1 Open the configuration file of the mold base in the *Metric* folder.

Program Files 🕨 ZWSC)FT > ZW3D 2019 (x64)	ZWMold Mold	dbase 🕨 Metric 🕨
New folder			
Name	Date modified	Туре	Size
퉬 ЕСРК	2019/3/26 18:12	File folder	
퉬 FUTABA	2019/3/20 16:46	File folder	
🐌 HASCO	2019/3/20 16:46	File folder	
퉬 LKM	2019/3/20 16:46	File folder	
MEUSBURGER	2019/3/20 16:46	File folder	
퉬 RABOURDIN	2019/3/20 16:46	File folder	
🌗 TR	2019/2/13 10:16	File folder	
Cfg_Moldbase	2018/12/21 15:01	Microsoft Excel W	13 KB

Figure 163 Configuration File

STEP 2 Add the information of supplier, type, class, path of the z3 file and object in root manager to the configuration file.

	А	В	С	D	E
1	#SUPPLIER	#TYPE	#CLASS	#PATH	#ROOTOBJECT
2	FCPK	PK_I	1A1BI	\FCPK\PK_I\1A1BI\1A1BI_F.Z3	1A1BI
3			2A1BI	\FCPK\PK_I\2A1BI\2A1BI_F.Z3	2A1BI
4			2A2BI	\FCPK\PK_I\2A2BI\2A2BI.Z3	2A2BI
5			3A1BI	\FCPK\PK_I\3A1BI\3A1BI_F.Z3	3A1BI
6			3A2BI	\FCPK\PK_I\3A2BI\3A2BI_F.Z3	3A2BI
7		PK_H	1A1BH	\FCPK\PK_H\1A1BH\1A1BH_F.Z3	1A1BH
8			2A1BH	\FCPK\PK_H\2A1BH\2A1BH_F.Z3	2A1BH
9			2A2BH	\FCPK\PK_H\2A2BH\2A2BH_F.Z3	2A2BH
10			3A1BH	\FCPK\PK_H\3A1BH\3A1BH_F.Z3	3A1BH
11			3A2BH	\FCPK\PK_H\3A2BH\3A2BH_F.Z3	3A2BH

Figure 164 Add Information of the Mold Assembly

3.3 Data Record

STEP 1 Open the excel file. Add all series numbers and values for all variables.

48 *ZMD_internal_No SPRYOON(mm) SCHAMFER(mm) SROTATE(deg) SDATUM(mm) 49 095x095 0;1 0;1;2;3 0;90 4 50 095x095 0;1 0;1;2;3 0;90 4 51 00x130 0;1 0;1;2;3 0;90 5 52 10x130 0;1 0;1;2;3 0;90 5 53 156x156 0;1 0;1;2;3 0;90 6 54 156x156 0;1 0;1;2;3 0;90 6 55 156x156 0;1 0;1;2;3 0;90 6 56 156x156 0;1 0;1;2;3 0;90 6 57 156x156 0;1 0;1;2;3 0;90 6 58 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 50 156	47	##PARAMETER				
49 095x095 0;1 0;1;2;3 0;90 4 50 095x095 0;1 0;1;2;3 0;90 4 51 100x130 0;1 0;1;2;3 0;90 5 52 100x130 0;1 0;1;2;3 0;90 5 53 156x156 0;1 0;1;2;3 0;90 6 54 156x156 0;1 0;1;2;3 0;90 6 55 156x156 0;1 0;1;2;3 0;90 6 56 156x156 0;1 0;1;2;3 0;90 6 51 156x156 0;1 0;1;2;3 0;90 6 51 156x196 0;1 0;1;2;3 0;90 6 58 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 50 156x196 0;1	48	*ZMD_Internal_No	\$PRY0ON(mm)	\$CHAMFER(mm)	\$ROTATE(deg)	\$DATUM(mm)
50 095x095 0;1 0;1;2;3 0;90 4 51 100x130 0;1 0;1;2;3 0;90 5 52 100x130 0;1 0;1;2;3 0;90 5 53 156x156 0;1 0;1;2;3 0;90 6 54 156x156 0;1 0;1;2;3 0;90 6 55 156x156 0;1 0;1;2;3 0;90 6 56 156x156 0;1 0;1;2;3 0;90 6 51 156x156 0;1 0;1;2;3 0;90 6 51 156x156 0;1 0;1;2;3 0;90 6 51 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 53 156x196 0;1 0;1;2;3 0;90 6 54 156x246 0;1 0;1;2;3 0;90 6 54 156x246 0;1	49	095x095	0;1	0;1;2;3	0;90	4
51 100x130 0;1 0;1;2;3 0;90 5 52 100x130 0;1 0;1;2;3 0;90 5 53 156x156 0;1 0;1;2;3 0;90 6 54 156x156 0;1 0;1;2;3 0;90 6 55 156x156 0;1 0;1;2;3 0;90 6 56 156x156 0;1 0;1;2;3 0;90 6 57 156x196 0;1 0;1;2;3 0;90 6 58 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 50 156x196 0;1 0;1;2;3 0;90 6 51 156x196 0;1 0;1;2;3 0;90 6 51 156x196 0;1 0;1;2;3 0;90 6 61 156x246 0;1 0;1;2;3 0;90 6 62 156x246 0;1 0;1;2;3 0;90 6	50	095x095	0;1	0;1;2;3	0;90	4
52 100x130 0;1 0;1;2;3 0;90 5 53 156x156 0;1 0;1;2;3 0;90 6 54 156x156 0;1 0;1;2;3 0;90 6 55 156x156 0;1 0;1;2;3 0;90 6 55 156x156 0;1 0;1;2;3 0;90 6 56 156x156 0;1 0;1;2;3 0;90 6 57 156x196 0;1 0;1;2;3 0;90 6 58 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 51 156x196 0;1 0;1;2;3 0;90 6 51 156x196 0;1 0;1;2;3 0;90 6 52 156x246 0;1 0;1;2;3 0;90 6 52 156x246 0;1 0;1;2;3 0;90 6	51	100x130	0;1	0;1;2;3	0;90	5
53 156x156 0;1 0;1;2;3 0;90 6 54 156x156 0;1 0;1;2;3 0;90 6 55 156x156 0;1 0;1;2;3 0;90 6 56 156x156 0;1 0;1;2;3 0;90 6 57 156x156 0;1 0;1;2;3 0;90 6 58 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 50 156x196 0;1 0;1;2;3 0;90 6 51 156x196 0;1 0;1;2;3 0;90 6 51 156x196 0;1 0;1;2;3 0;90 6 52 156x246 0;1 0;1;2;3 0;90 6 52 156x246 0;1 0;1;2;3 0;90 6	52	100x130	0;1	0;1;2;3	0;90	5
54 156x156 0;1 0;1;2;3 0;90 6 55 156x156 0;1 0;1;2;3 0;90 6 56 156x156 0;1 0;1;2;3 0;90 6 57 156x156 0;1 0;1;2;3 0;90 6 58 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 51 156x196 0;1 0;1;2;3 0;90 6 51 156x196 0;1 0;1;2;3 0;90 6 51 156x196 0;1 0;1;2;3 0;90 6 52 156x196 0;1 0;1;2;3 0;90 6 52 156x246 0;1 0;1;2;3 0;90 6	53	156x156	0;1	0;1;2;3	0;90	6
55 156x156 0;1 0;1;2;3 0;90 6 56 156x156 0;1 0;1;2;3 0;90 6 57 156x196 0;1 0;1;2;3 0;90 6 58 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 50 156x196 0;1 0;1;2;3 0;90 6 51 156x246 0;1 0;1;2;3 0;90 6 52 156x246 0;1 0;1;2;3 0;90 6	54	156x156	0;1	0;1;2;3	0;90	6
56 156x156 0;1 0;1;2;3 0;90 6 57 156x196 0;1 0;1;2;3 0;90 6 58 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 0 156x196 0;1 0;1;2;3 0;90 6 10 156x196 0;1 0;1;2;3 0;90 6 11 156x246 0;1 0;1;2;3 0;90 6 12 156x246 0;1 0;1;2;3 0;90 6 12 156x246 0;1 0;1;2;3 0;90 6 12 156x246 0;1 0;1;2;3 0;90 6	55	156x156	0;1	0;1;2;3	0;90	6
57 156x196 0;1 0;1;2;3 0;90 6 58 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 00 156x196 0;1 0;1;2;3 0;90 6 10 156x196 0;1 0;1;2;3 0;90 6 11 156x246 0;1 0;1;2;3 0;90 6 12 156x246 0;1 0;1;2;3 0;90 6	56	156x156	0;1	0;1;2;3	0;90	6
58 156x196 0;1 0;1;2;3 0;90 6 59 156x196 0;1 0;1;2;3 0;90 6 0 156x196 0;1 0;1;2;3 0;90 6 1 156x196 0;1 0;1;2;3 0;90 6 1 156x246 0;1 0;1;2;3 0;90 6 2 155x246 0;1 0;1;2;3 0;90 6	57	156x196	0;1	0;1;2;3	0;90	6
59 156x196 0;1 0;1;2;3 0;90 6 01 156x196 0;1 0;1;2;3 0;90 6 1 156x196 0;1 0;1;2;3 0;90 6 1 156x246 0;1 0;1;2;3 0;90 6 2 156x246 0;1 0;1;2;3 0;90 6	58	156x196	0;1	0;1;2;3	0;90	6
60 156x196 0;1 0;1;2;3 0;90 6 61 156x246 0;1 0;1;2;3 0;90 6 62 156x246 0;1 0;1;2;3 0;90 6 63 156x246 0;1 0;1;2;3 0;90 6 64 156x246 0;1 0;1;2;3 0;90 6 65 156x246 0;1 0;1;2;3 0;90 6	59	156x196	0;1	0;1;2;3	0;90	6
61 156x246 0;1 0;1;2;3 0;90 6 62 156x246 0;1 0;1;2;3 0;90 6 63 156x246 0;1 0;1;2;3 0;90 6 64 0;1 0;1;2;3 0;90 6 65 0;1 0;1;2;3 0;90 6	60	156x196	0;1	0;1;2;3	0;90	6
62 156x246 0;1 0;1;2;3 0;90 6	61	156x246	0;1	0;1;2;3	0;90	6
C2 15C 24C 2A2BI SIEd SIE TPED TPE TUE SMF SMm SMe WK	62	156x246	0;1	0;1;2;3	0;90	6
	62	156-046 2A2BI	SIEd SIE T	PEd TPE TU	E SMf SMm	SMe WK

Figure 165 Record Data

They will be shown in *MoldBase* command.

MoldBase							
Series							
095x095	*	Normal	At	tribute			
100x130							
156x156		Clear user	data				
156x196		Group		STD			+
156x246		oroup		510			
156x296		Item		Value		Type	*
156x346							
190x246		Ew	54		*		
196x196			-				
196x296	H	FP_matl	1730)	*	3	
196x346							
196x396		Fh	6		٣		
196x446							
196x496		BCP	11			S	
156x236 156x346 190x246 196x196 196x296 196x346 196x396 196x446 196x496		Ew FP_matl Fh BCP	54 1730 6 11)	•	Туре]_

Figure 166 Data Shown in MoldBase Command

STEP 2 Add values for variables of all components.

\$	6d1(mm)	\$d(mm)	\$L(mm)	\$l(mm)	\$s(mm)	\$d2(mm)	\$f(mm)
1	L4	9	25;45;65	12	3	16	3
1	L4	9	20;30;50;70	17	3	16	3
1	L4	9	25;35;55;75;95	22	3	16	3
1	L4	9	20;30;50;70;90	27	3	16	3
1	L4	9	25;45;65;85	36	3	16	3
1	L4	9	30;45;70	46	3	16	3
1	L4	9	35;60	56	3	16	3
2	20	14	35;55;75;95	17	6	25	9

Figure 167 Data in Component Tabs

In the component tabs, you don't have to add series numbers again.

Now you have finished your own library.

4 Summary

It is recommended that you learn ZW3D before trying to customize your own assembly. It requires you to get a good command of parameter design, assembly design and mold knowledge.

The method we have mentioned above is flexible. You can follow the tutorials strictly or you can adjust your steps according to your requirements. For example, if you don't want to add relationships between components, you can use more variables. If you are a *Shape-Mode* user, you don't have to add constraints.

Once you know how to make one library, you'll know how to make all the others and which suits you better. Thanks for learning this tutorial, if you have any questions, feel free to contact us at <u>sales@zwsoft.com</u>.