

Intelligent Fastener

Basics Configuration Customizing Library

Basics



- Assemble Fasteners
 - Fastener Definition
 - Use of Orientation
 - Inserts
- Edit Fasteners
 - Reassemble
 - Redefine
 - Delete
 - Check
- File structure of IFX
 - configuration
 - parts/screws_and_pins





Basics - Assemble Fasteners

Fastener Definition

- Select placement references
 - Point, Axis or Cylindrical Surface
 - Single, Pattern or Multi Ref.
 - Surfaces defines connection type
- Configure fastener
 - Measure Diameter
 - Autolength
 - Preview
- Select pattern option
- Assemble fastener and create holes
- Questions?





Select References - Orientation

You may need this if the selected surfaces are not parallel.

- Example: I-Beam with orientation
 - Square Taper Washer for I-Beams
 - Counterbore
 - Use surface only for orientation
- Example: Power Pole without orientation





bw	Select References	x
Positio	n Reference	
A_2:F	11(DATUM AXIS):SL4_LSTAHL	
Placem	ent Surfaces	
Screw	Head	
SIDE	SURF_5:F8:SL4_I_STAHL	
Nut / Th	nread	
61:F5	5:SL2_PLATE	
\$ Mo	re	
Orienta	tion	٦
Select	the orientation reference.	
A	lign 1st Side	
A	lign 2nd Side	
	OK Cancel	



Inserts

New enhancement – only by request

- Two new insert types
- Special hole files necessary



Basics - Edit Fasteners

- Reassemble
 - Reassembled fasteners are "grouped"
- Redefine
- Delete
 - ONLY with IFX Delete! Not with regular Creo functionality.
- Check
 - Verify the length of your screw fasteners.







Basics – Files of IFX

Folder: configuration

- In this folder you find ...
 - configuration files
 - sl_options.cfg
 - sl_data.cfg
 - sl_tolerance.cfg
 - templates for fasteners
 - insert
 - nut
 - pin
 - screw
 - washer

Basics – Files of IFX

sl_options.cfg

Screw Dowel

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bw

- Contains all IFX options.
- To modify this, use the option dialog only!

Reassemble	bw	Intellige	ent Fastener - Op	tions Dialog
× ^{K™}	D:\buw\ifx\if	x\configuration		
Pin v X Delete	🗲 Genera	Screws	Dowel Pins	
Intelligent Fastener 💌	General Opti	ons for Screws and	d Dowel Pins	
Check Screw Fasteners	option		value	description
Update holes.	USE_EXTER	NAL_REFERENCES	6 Yes	All screw and dowel pin hole fea
Suppress	SELECT_PO	S_REFS	2	Search for two surfaces, which
Suppress	GEN_DIGITS	S	3	Define number of decimals.
Resume	COLOR_ST	DPARTS	1	Color new standard parts.
Options	COLOR_HO	LES	1	Transparency of hole surfaces i
Instance Creater	PATH_ABS	LIBRARY	D:\buw\ifx\ifx\p	Complete path to the component
Instance creator	PATH_ABS	ARCHIVES	D:\buw\ifx\ifx\p	Complete path to the component
About Intelligent Fastener	USE_ARCH	IVES	No	Do not use the archive.
	ENTER_DIS	TANCE_VALUES	No	Do not enter the distance values
	LAYERNAM	E_DATUM	00_BUW_DATUM	Layer name for Datums. Leave b
	•	1111		Þ



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sl_data.cfg - #THREAD

- If DG and P are not defined in the fastener *.dat file, then the values are taken from the sl_data.cfg #THREAD list.
- Example:
 - Fastener.dat
 MM / DN=1.6
 - sl_data.cfg
 DG = 1.25
 P = 0.35

UNIT MM				
SYMBOL STRING	DN	LG	DK	к
DIN84-M1_6x2-4_8 M1.6	6 1.6	2	3	1.1

#THRE	AD	DN	DG	Р
MM	1	0. 75	0. 25	
MM	1.6	1. 25	0.35	



sl_data.cfg - #RUNOUT

Defines the additional thread depth (X) and the thread runout (E1)

!	THREAD	D RUNC	 ரா	
!	X - /	addi ti Thread	ONAL T RUNOU	HREADDEPTH T
!	 			
#RUNOL	וו	DN	Х	E1
MM	1	0.75	1.5	
MM	1.2	0.75	1.5	





sl_data.cfg - #CBSCR and CBNUT

• Defines the list for the option menu in the screw definition dialog. If DN is smaller than the head or washer diameter, then the value is not shown in the option

menu.	#CBSC	R	DN	DI N	974-1 F	R1 DI N91	74-1 R2 🗄	N974-1	R3		
	MM	10	18	24	18	20	24				
		-	Thread	I	110	-	x 70.000		-	Side 1 - Counte	erbore
		W	Side 1 ashers			EN ISO 709	2		•	DIN974-1 R2 - 24.00	00 💌
					DIN (435 I			•	DIN974-1 R2 - 24.00 DIN974-1 R4 - 20.00 DIN974-1 R5 - 24.00	

- Set the default you want to use for your fastener in the top of your *.dat file with #CBSCR and #CBNUT.
- Example for a washer:

•••		
SURFACE	28	
AXIS	71	
CBSCR	DIN974-1 R5	
CBNUT	DIN974-2 R2	



sl_data.cfg - #ADDCB

• COUNTERBOREDEPTH = HEADHEIGHT + WASHERHEIGHT + ADD_DEPTH

#ADDCB	DN	ADD_DEPTH	
• • •			
MM	8	1.0	
MM	10	1.0	
MM	12	1.0	

Screw P: 1.500	ISO 4014 - 5.6
Thread	M10 💌 🔛 x 50.000 💌 🛐 🚺
Side 1 Washers	✓ DIN 127-A ▼
indonoro	DIN 125-1-A
2D - Previe	w



sl_data.cfg - #ETSCR and #MUSCR

These values are used to set the length automatically and to check the length in the Check Screw Fasteners dialog.

#ETSCR	DN	MIN	MAX	Example #ETSCR	Example #MUSCR
				MIN=10; MAX=20	MIN=0; MAX=10
MM	8	8	16	Screw length is ok if the screw-in depth is	Screw length is ok if the length behind the nut is
MM	10	10	20	between 10 and 20.	between 0 and 10.
MM	12	12	24		
• • •					
#MUSCR	DN	MIN	MAX		
• • •					
MM	8	0	8	↓	
MM	10	0	10	10.000	
MM	12	0	12		
•••					



sl_tolerance.cfg - #TOL

• Define the tolerance for the dowel pin holes

10.000 ▼ U x 18.000 ▼ Depth 9.000 ▲	#TOL	DN	STRING	NOM	LOWER	UPPER
\$ 2D Preview	MM MM MM MM MM	10 10 10 10 10	H7 H8 JS8 ±0.01 ±0.02	10 10 10 10 10	- - -0.01 -0.02	- - 0.01 0.02
40.000 30.000	Tolerance ±0.01 H7	Hole V Drill	Diameter 10	1		
Preview	H8 JS8 ±0.01 ±0.02		ок	Cancel		



Folder: parts/screws_and_pins

- In this folder you will find various subfolders that contain the different types (screws, nuts, washers and pins).
- They are also grouped into catalogs like mm and inch.

Basics – Files of IFX



The *.mnu files

- Each folder contain one *.mnu file with the same name as the folder.
- In the *.mnu file all fastener standards are listed.
- You can add a description for your standard to be shown as a tooltip.



Side 1

Washers



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CIN EN ISO 7090



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The *.dat files

• The *.dat files contain some basic information about the fastener in the top of the file and a list of instances with all necessary dimensions and parameters.

Name	Description								
SCREWTYPE NUTTYPE WASHERTYPE PINTYPE	Enter the type of	Enter the type of the standard part.							
UNIT	The unit of the s	tandard part. MM	or INCH						
SURFACE	The feature ID o	f the reference su	urface used fo	r assemble					
AXIS	The feature ID o	f the reference as	xis used for as	semble.					
ORIENT	The feature ID o	f the reference su	urface used fo	r orientation (o	ptional)				
CBSCR	Insert the colum (optional).	n name from the	sl_data.cfg file	e, used for scre	ws and washer	S			
CBNUT	Insert the colum (optional).	n name from the	sl_data.cfg file	e, used for nuts	and washers				
INFO	Inset the value y	ou want to show	in the pull dov	vn for this stan	dard part (option	nal).			
SUBINFO	Allows a selection used (optional).	on box if multiple	instances with	same diamete	er and length sh	ould be			
SYMBOL STR	RING DN	LG	В	S	K	DG			
INSTANCE STR	RING DN	LG	В	S	K	DG			
<mdl-name> M8</mdl-name>	8	40	22	13	5.3	7			



The *.prt files

- The *.prt files are used like a generic file.
- If the instance doesn't exist, then this file is copied to the workspace. Then the dimensions and parameters are set and then the file is renamed.
- If all instances already exist (in a search_path or in Windchill), then the *.prt file is not necessary.
- Use the instance creator to create all instances in one step.

The *_icon.prt files

• You can add a custom icon for each fastener.

Configuration



Some nice IFX options

- PATH_ABS_LIBRARY and PATH_ABS_ARCHIVES
- USE_EXTERNAL_REFERENCES and SELECT_POS_REFS
 - Update holes
- COLOR_STDPARTS and COLOR_HOLES
- PROVIDE_LAST_REFERENCES
- *_THREAD_SERIES_*
 - Use different hole charts
 - Use different hole notes
- Questions?



• Add new sizes to existing standard

Add Length

SYMBOL	STRING	DN	LG	S	K
M8x70	M8	8	70	13	5.3
M8x80	M8	8	80	13	5.3
SYMBOL	STRING	DN	LG	S	K
M8x70	M8	8	70	13	5.3
M8x75	M8	8	75	13	5.3
M8x80	M8	8	80	13	5.3

Add Diameter

Note: You have to make sure that the diameter exist in a Creo hole chart.

SYMBOL	DN	Н	DN1	DN2
 DIN125-1-A30 DIN125-1-A36 DIN125-1-A39	30 36 39	4.3 5.6 6.0	31 37 40	56 66 72



Add new standard

Add to *.mnu

# your MNU file	
#	
#	
xxx.prt	
Descpription	
Beschreibung	

-

Add dat, prt and gif files

🖉 xxx.dat

🖳 xxx.prt

💌 xxx_icon.gif



• Add new catalog



- Add new folder mm-rs and mm-rs.mnu with new standards
 screws
 mm-rs
 mm-rs.mnu
 MM-RS
 #
 xxx.prt
 Descpription ...
 Beschreibung ...
 - 📙 xxx.prt
 - 💌 xxx_icon.gif



- Add legacy fastener
 - Get IDs use Creo option *show_selected_item_id*
 - Add to mnu
 - Add dat, prt and gif

legacy_screw.dat legacy_screw.prt legacy_screw_icon.gif legacy_screw.prt Legacy screw for Roadshow Legacy screw for Roadshow



- Add fastener with family table
 - Used Dimension Mapping with MUST and NOT filters
 - Add instances to *.dat file

IFX – License Comparison



	IFX Free	IFX Paid	IFX + AFX
Assemble screws on PNT/AXIS/HOLE	4	4	4
Assemble screws via mouse click	4	1	1
Pattern fasteners	4	4	4
Reassemble, redefine and delete fasteners	4	1	1
Assemble dowel pins on PNT/AXIS/HOLE	×	4	4
Assemble dowel pins via mouse click	×	4	1
Change options	×	4	4
Check screw fasteners	×	4	4
Customize fastener components	×	4	4
Assemble on all instances of a feature	×	4	1
Select orientation for screws	×	4	4
Assemble nuts in subassemblies	×	4	1
Allow multiple instances of one size in one *.dat file	×	4	4
Update holes when working without external references	×	4	4
Define automatic hole creation	×	×	4

IFX – Features & Benefits



- Increase productivity
 - Automate repetitive tasks
- Reduce part proliferation
 - Customize the comprehensive library of fasteners to include company or project specific hardware
 - Drive standardization
- Improve design workflows
 - Automatic creation of holes without assembly references
 - Removes requirement to manually align fastener holes which do not have assembly references
- Improve design accuracy
 - Validation tools to ensure fasteners are the correct length
 - Fully aligned mounting holes

Intelligent Fastener Extension



- Questions?
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