Guide by Andy Davis

✓ White Paper

Passion Integrity Expertise Teamwork

Matching Flanges in AutoCAD Plant 3D

How to differentiate flanges that share the same Pressure Class and Facing to ensure a correct match when modelling.

Advanced Plant 3D Users / Administrators

Introduction

It is not uncommon for a Pipe Spec to contain multiple flanges that share the same Pressure Class and Facing yet conform to slightly different design standards. Using the default configuration of AutoCAD Plant 3D, it is not possible to differentiate between these different types of flange. It is quite possible that inserting a flange into a pipe to create a flange set could result in a pair of dissimilar flanges being inserted.

Flanged Joints

The default configuration of joint settings in Plant 3D matches flanges by comparing the Nominal Diameter, Pressure Class and Facing properties of the flanges. Therefore, an additional parameter is required to enable the application to differentiate between different types of flange that share the same Pressure Class and Facing.

Design Standard Property

One way to differentiate between flanges is to use the Design Standard property to identify each type of flange.

To use this property, a value needs to be added to the Design Standard property in the piping catalog where the flanges are defined and also to the flanges in any existing piping spec(s) in which they have already been used. If the flanges are added to a new pipe spec the value of the Design Standard property is copied through to the pipe spec automatically.

Joint Settings

As mentioned previously, the default Flanged and AutoFlange joint settings compare Nominal Diameter, Pressure Class and Facing properties only. Therefore these joints must be modified to recognise the Design Standard property also.

Adding a Design Standard

The value of the Design Standard property is set by adding a value to the Design Std field in the Piping Component Properties panel in the Plant 3D Catalog Editor.

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AutoCAD Plant 3D Spec Editor 2012				Aug. 11. 2011 - 400						
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	Current Port:		Po	rt 1 (S1)		Þ 🔿	Compatible Standard:	ASME B16.5		
	Nominal Unit:		I	nch		•	Manufacturer:			
	End Type:		F	L		•	Material		E	
	Flange Std:					E	Matanial Cada			
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	Facing		R	F		-	Short Description:	FLANGE WN		
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There must also be a value in Design Std column of the Part List panel in the Edit Parts window of the Plant 3D Spec Editor.

AutoCAD Plan	nt 3D Sp	ec Editor 2	012	_	_			August A		10.0.00					_ 0 X
File Edit Spe	ecs Ca	talogs Too	ols Help									Baar	Ba a a a		Barri an
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Min Size		То	Max Si	ze			Long Description	Part	Use Priority Bran	ich In Use					*
1/2"	to		2"		ELL 4	5, 3000 LB, SW,	ASME B16.11, AST/	N A105	•						
3"	to		24ª		ELL 9	O LR, BW, ASME	B16.9, ASTM A234	Gr WPB SMLS, Sch 40	•						
1/2"	to		2"		ELL 9	0, 3000 LB, SW,	ASME B16.11, AST/	N A105	•						
1/2"	to		2"		STRE	ET ELL, 3000 LB	, PEXSW, ASME B1	6.11, ASTM A105	•						E
						Flange									
1/2"	to		2"		FLAN	GE SW, 150 LB,	RF, ASME B16.5, AS	TM A234 Gr WPB							
3"	to		24"		FLAN	GE WN, 150 LB,	RF, ASME B16.5, AS	5TM A234 Gr WPB	*						
3"	to		24"		FLAN	GE WN, 150 LB,	RF, ASME B16.5-An	dy Type A	*						
3"	to		24°			CE MAL 150 L D	DE ACHE DIA E An	J. T	+				×	D	
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×				ш	I			FLANGE WN, 3 1/2" ND,	FLANGE WN		Andy Type A			ASN	AE Valves Catalog 💌
Common filter:	s		_					FLANGE WN, 4" ND, 150	FLANGE WN		Andy Type A				
	~ /	411 ~	_	11	I			FLANGE WN, 5" ND, 150	FLANGE WN		Andy Type A				
Part category	•		_		I			FLANGE WN, 6" ND, 150	FLANGE WN		Andy Type A				
Main end conn	ne	All ~	_					FLANGE WN, 8" ND, 150	FLANGE WN		Andy Type A				
		1	_					FLANGE WN, 10" ND, 15	FLANGE WN		Andy Type A				
Filter Size	Range		Long D					FLANGE WN, 12" ND, 15	FLANGE WN		Andy Type A			Design	Pressure Factor
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26" - 6	0"	Check Val	ve, Dual Plat					FLANGE WN, 16" ND, 15	FLANGE WN		Andy Type A				
3/8" - 2	2"	Globe Valv	ve, Reduced					FLANGE WN, 18" ND, 15	FLANGE WN		Andy Type A				
<u>0 - 0</u>		Hand Leve	er (T-Shape)					FLANGE WN, 20" ND, 15	FLANGE WN		Andy Type A				
<u>1" - 16"</u>		Check Val	ve, Angle, Li					FLANGE WIN, 24 IND, 15	PLANGE WIN		Andy Type A				
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Modifying Joint Settings

The Flanged and AutoFlange joint settings must be modified within Project Setup of a Plant 3D project to enable the Design Standard property to be recognised during the lookup process.

eneral Settings Project Details Database Setup Drawing Properties	Simple joints							
- Database Setup - Drawing Properties	Simple joints							
- Drawing Properties								
Reports	Name	End 1	End 2	Fasteners	Required Matches	Optional Matches	Add	<u> </u>
- File Name Format	Buttweld	BV, PL	BV, PL	Buttweld	Nominal Diameter	None	Modify	
8ID DWG Settings	Socketweld	PL	SW	Socketweld	Nominal Diameter	None	E Delete	2
lant 3D DWG Settings — Export and Import Settings	Threaded	THDM, PL	THDF	Thread	Nominal Diameter	None		_
Paths	Flanged			Gasket, Bolt	Nominal Diameter, P	Design Std		
Data Manager Configuration	PushFit	PL	PFS	Gasket	Nominal Diameter	None		
Layer and Color Settings Connections	WaferFlanged	FL	WF	Gasket	Nominal Diameter, P	None		
Joint Settings	WaferWafer	WF	WF	Gasket	Nominal Diameter, P	None		
- P&ID Object Mapping Plant 3D Class Definitions	Fusionweld	PPL	PPL	Fusion Weld	Nominal Diameter	None		
ometric DWG Settings	Glue	PPL	PSW	Glue	Nominal Diameter	None		
	Name	End 1	End 2		Connection Part		Add	•
	News	Cod 4	E-d 0		Connection Deat		Add	
	AutoFlange	FL, WF, LUG	PL, BV,	Universal_ET	Flange		Madifu	5
	AutoSleeve	MCM	MJM, N	IJP, PL	Sleeve		Houny	<u> </u>
	AutoThread	THDM	THDM,	PL	Coupling		Delete	<u>.</u>
	Pipe segments Minimum length: 25	Weld	gaps Jse weld gaps Gap size: 3	Weld de Diamet 6	ots er:	Wafer bolts Round up to neare 10	est:	

The Design Std property must be added as an optional match to the Flanged simple joint.

The Design Std property must also be added to End 1 of the compound AutoFlange joint settings.

Setup Compound Joint		23	-	-		_	Σ
Joint name:							
AutoFlange			Fasteners	Required Matches	Optional Matches		Add
End 1: Connection Com	ponent: End 2:		. Buttweld	Nominal Diameter	None		Modify
Undefined_ET Flange	Undefined_ET	~	Socketweld	Nominal Diameter	None	=	Delete
PL E	V PL	=	Thread	Nominal Diameter	None		
THDM	THDM		Gasket, Bolt	Nominal Diameter, P.	Design Std		
SW INDE	SW INDE		Gasket	Nominal Diameter	None		
I FL	A Setup Connection Component		Contrat	Newigel Diseases D	Mana	_	
LAP		_		Second Second			
GRV -	ComplexJointName: AutoFlange						
Preview	Plant 3D Class:	Required P	roperty Matches:				
FL, WF, LUG End - Flanged Joint - Flange	Piping and Equipment	Required	Property	Matches to			
	Pipe Run Component		Part Family Id				
	Adapter		Long Description (Family)				
	Bied Ring Blind Disk		Compatible Standard				
	Cap		Manufacturer				
	Coupling		Material				
	Cross		Material Code				
	Elbow		Long Description (Size)				
	Elbow Side Outlet 🗧		Short Description				
	Flange		Item Code				
	Instrument		Size				
	···· Nipple	V	Design Std	End 1 (FL, WF, L	UG) Design Std		
	Nozzle		Design Pressure Factor				
	- Orifice Plate		Weight				
	Pipe		Weight Unit				
	Plug Peducer	[m]	Connection Port Count				
	Swage		Size Record Id				
	Spacer Disk		Port Name				
	Spectacle Blind		Nominal Unit				
	Strainer		Matching Pipe OD				
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