Flange connection (Small) Tongue and Groove

Normally a flange connection exist out of two flanges with equal facing. (FF/FF Flat face, RF/RF Raised face, etc.)

For a Tongue and Groove we have two different flanges;
1x Tongue facing
1x Groove facing

I’ve made two new flanges in the standard (ASME) fitting catalog.

Action 1:
Create end codes in 3D drawing:
- Open Project
- Open drawing
- give command: <plantendcodes>
- Add: (see Figure 1)
  - End code name: TF
  - Description: Tongue Facing
  - OKE
-Add: Also for:
  - End code name: GF
  - Description: Groove Facing
  - OKE

Result in Figure 2

Action 2:
Create in project settings “Simple Joint Setting”:
- Open Project properties
- Plant 3D DWG Settings
- Connections
- Joint Settings
- Simple Joints Add:
  - Joint name : TongueandGroove
  - End 1 <select> : TF
  - End 2 <select> : GF
  - Fasteners <select> : BoltSet, Gasket

Results in Figure 3

Create Compound Joints:
- (Open Project properties)
- (Plant 3D DWG Settings)
- (Connections)
- (Joint Settings)
- Compound Joints Add:
  - Joint name : Auto TG
  - End 1 <select> : TF,GF
  - End 2 <select> : PL,BV, Universal_ET
  - Connection Compound <select> : pipe run component, flange, nom. diameter

Results in Figure 4
**Figure 1**

![Manage Endcodes Dialog Box](image)

<table>
<thead>
<tr>
<th>Endcode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undefined_ET</td>
<td>Undefined End Type</td>
</tr>
<tr>
<td>PL</td>
<td>Plain End, Socket Male</td>
</tr>
<tr>
<td>BV</td>
<td>Banded End</td>
</tr>
<tr>
<td>THDM</td>
<td>Threaded Male</td>
</tr>
<tr>
<td>THDF</td>
<td>Threaded Female</td>
</tr>
<tr>
<td>SW</td>
<td>Socket Weld Joint</td>
</tr>
<tr>
<td>FL</td>
<td>Flanged</td>
</tr>
<tr>
<td>WF</td>
<td>Wafer</td>
</tr>
<tr>
<td>LAP</td>
<td>Lap joint</td>
</tr>
<tr>
<td>GRV</td>
<td>Grooved</td>
</tr>
<tr>
<td>SO</td>
<td>Slip on</td>
</tr>
<tr>
<td>PPL</td>
<td>Plastic Plain</td>
</tr>
<tr>
<td>PSW</td>
<td>Plastic Socket</td>
</tr>
<tr>
<td>LFL</td>
<td>Lined Flange</td>
</tr>
<tr>
<td>LLP</td>
<td>Lined Lap Joint</td>
</tr>
<tr>
<td>LUG</td>
<td>Lug</td>
</tr>
<tr>
<td>RNU</td>
<td>Ret.</td>
</tr>
</tbody>
</table>

**Add Endcode Dialog Box**

- **Endcode name:** TF
- **Description:** Tongue Facing

[Add, Modify, Delete, OK, Cancel, Help...]
Figure 2
Project Settings are ready now. Next step is to make the flanges in the catalog.

- Open: AutoCAD Plant3D 2012 Spec Editor
- Open: Catalog (Pipes and Fitting Catalog)
- search and select a basic flange in the catalog
  For example, Flange WN, 150 LB, RF, ASME B16.5
- Duplicate component (2X)
- Rename : Flange WN, cl. 150, TF, ASME B16.5
  Flange WN, cl.150, GF, ASME B16.5
- <TAB> General Properties:
  Port 1  End type : TF (GF)
  Facing    : TF (GF)
  Port 2  End type : BV (BV)

- <TAB> Size: change size for L (example for 1") see also table below.
  Normally Raised Face flange : L= 55.6 mm
  For Tongue Face Flange : L= 61.0 mm
  For Groove Face Flange : L= 54.0 mm

See Figure 5 (Tongue) and Figure 6 (Groove)
Figure 6
<table>
<thead>
<tr>
<th>Size</th>
<th>RF flange</th>
<th>T(tongue) Face</th>
<th>G(groove) Face</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2”</td>
<td>47,8</td>
<td>53,2</td>
<td>46,2</td>
</tr>
<tr>
<td>3/4”</td>
<td>52,3</td>
<td>57,7</td>
<td>50,7</td>
</tr>
<tr>
<td>1”</td>
<td>55,6</td>
<td>61,0</td>
<td>54,0</td>
</tr>
<tr>
<td>1.1/2”</td>
<td>62,0</td>
<td>67,4</td>
<td>60,4</td>
</tr>
<tr>
<td>2”</td>
<td>63,5</td>
<td>68,9</td>
<td>61,9</td>
</tr>
</tbody>
</table>
Gasket:

Gasket port 1(S1) and port 2(S2)
End type : Undefined_ET
Facing : blanc

Valve: (Both sides Groove Facing)

General Properties:

<table>
<thead>
<tr>
<th>Port</th>
<th>End type</th>
<th>Facing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port 1</td>
<td>GF</td>
<td>GF</td>
</tr>
<tr>
<td>Port 2</td>
<td>GF</td>
<td>GF</td>
</tr>
</tbody>
</table>

Complete pipe spec in Figure 7

Figure 7