How to manage geometric relationships between components

NextGen takes care of keeping the geometry of the designed components consistent. In some contexts, it is necessary to disable this behavior and separate the dimensions between the various components.
Online version: https://nextgen.sant-ambrogio.it/KB810538
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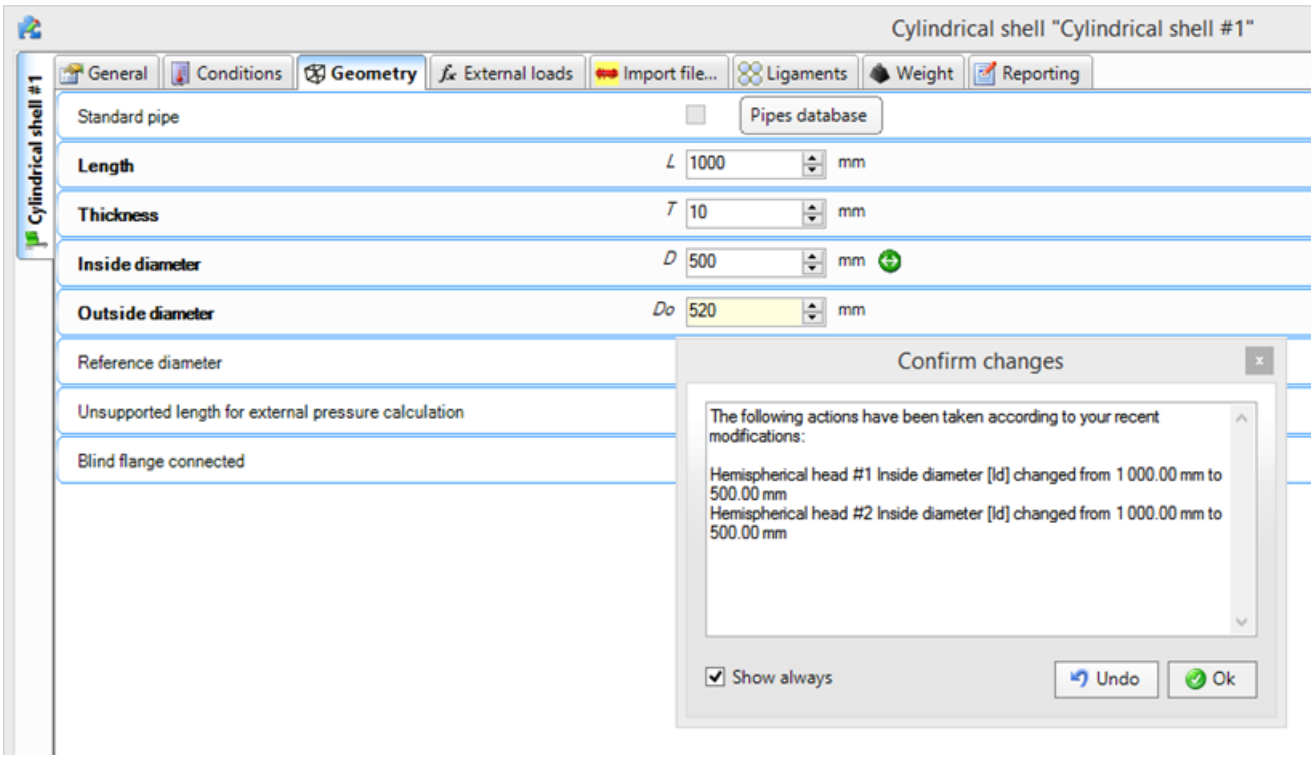
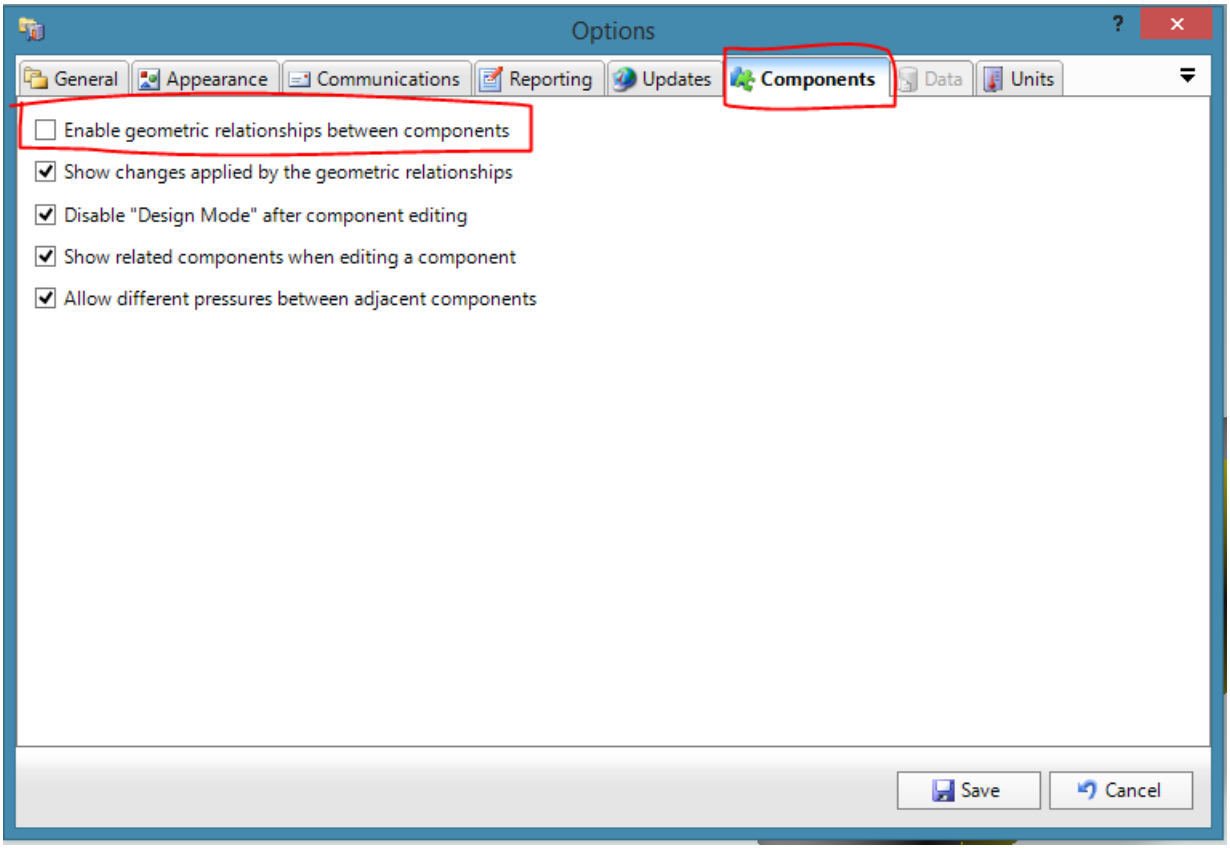
By default, NextGen takes care of maintaining geometric relationships between components of an item. For example, when a vessel made of a cylinder and two heads having inside diameter 1000 mm is made and later cylinder inside diameter is lowered to 500 mm, NextGen resizes adjacent heads to keep vessel's shape congruent. The software shows a message like the following to notify the user:



There are cases when this behavior is not necessary or wantet; here's a couple of options to disable it.

Completely disable geometric relationships

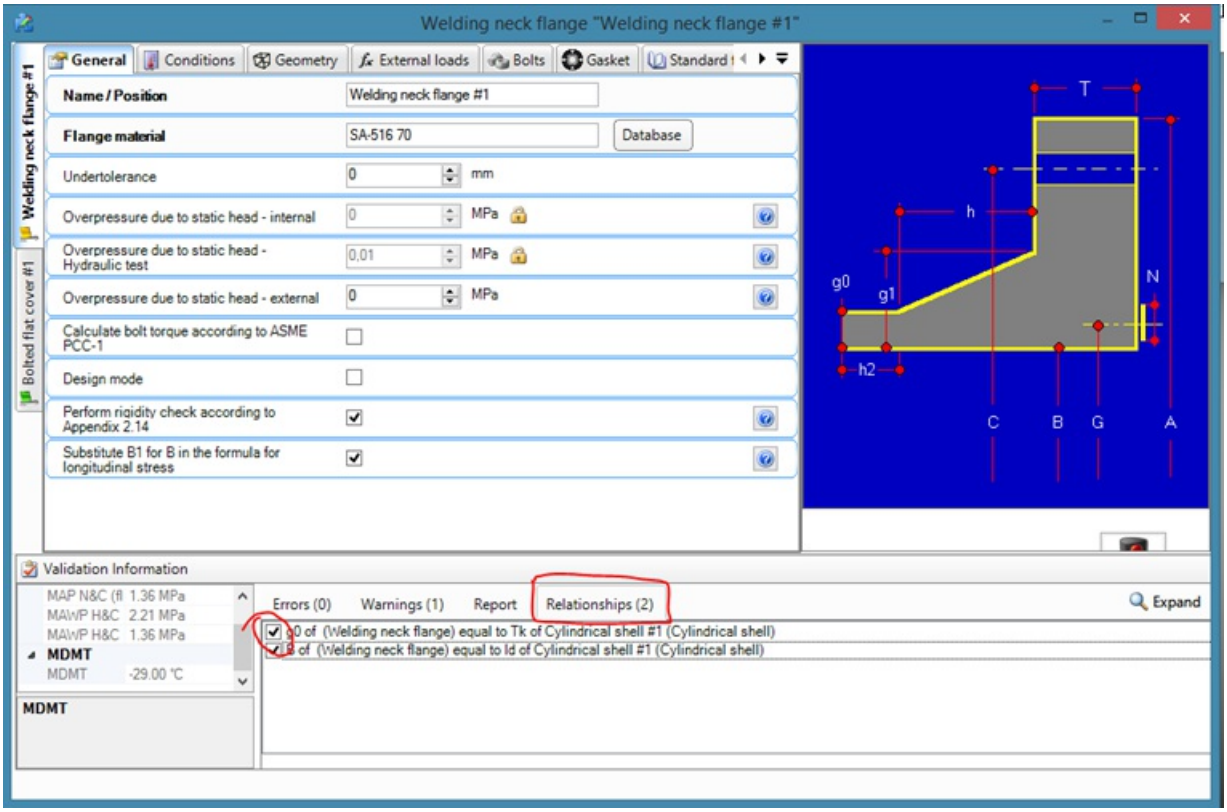
Relationships can be disabled completely by selecting Tools > Options and then unchecking "Enable geometric relationships between components under "Components" tab. This way, the user have complete control over items geometry, including type and number of bolds and gaskets in flange joints.



Partially disable relationships

In cases when only one or few relationships must be disabled, a "Relationships" tab can be found in the component editing window (this tab is visible only when the checkbox "Enable geometric relationships between components" is enabled): from this tab an accurate control over single relationships is possible, enabling or disabling them at wish.

A relationship is defined when a component is connected to another. For example, in a cylinder-flange-blind flange vessel, cylinder will not list any relationship, flange will list relationships with cylinder (go, inside diameter), blind will list relationships with flange (bolts, gasket). These are bi-directional relationships, so if cylinder thickness is modified, go of flange will be modified too. Therefore, it is better to look at both components when a relationship must be disabled.


Welding neck flange "Welding neck flange #1"
General
Conditions
Geometry
External loads
Bolts
Gasket
Standard
Welding neck flange #1
Bolted flat cover #1
Name / Position
Welding neck flange #1
Flange material
SA-516 70
Database
Undertolerance
0
mm
Overpressure due to static head - internal
0
MPa
Overpressure due to static head - Hydraulic test
0,01
MPa
Overpressure due to static head - external
0
MPa
Calculate bolt torque according to ASME PCC-1
Design mode
Perform rigidity check according to Appendix 2.14
Substitute B1 for B in the formula for longitudinal stress
T
h
g0
g1
N
h2
C
B
G
A
Validation Information
MAP N&C (fl 1.36 MPa
MAWP H&C 2.21 MPa
MAWP H&C 1.36 MPa
MDMT
MDMT -29.00 °C
MDMT
Errors (0)
Warnings (1)
Report
Relationships (2)
Expand
g0 of (Welding neck flange) equal to Tk of Cylindrical shell #1 (Cylindrical shell)
g1 of (Welding neck flange) equal to ld of Cylindrical shell #1 (Cylindrical shell)