Patent Application for "CylBoss"

Date of Application: 26/4/2012

Name of Inventor: George Hanson-Graville

Basic Principle:

The CylBoss is a means of retro-fitting a connection into a storage vessel.

It will typically be manufactured from copper and used to add a pipework connection into a water storage cylinder or tank, but can also be used for a variety of liquid or gaseous mediums.

The CylBoss can be made in a variety of connection sizes and threads, to suit the most common connection requirements.

Unique Principle:

The CylBoss creates an internal flange within the storage vessel by pulling in the back end of the fitting, forcing a pre-shaped section to deform into a flange, in a process similar to forming a rivet.

A bolt is used to pull in the back end, and can be reused.

The section that deforms to create the flange will typically be made from annealed (heat treated) copper to soften it so that is capable of deforming as required.

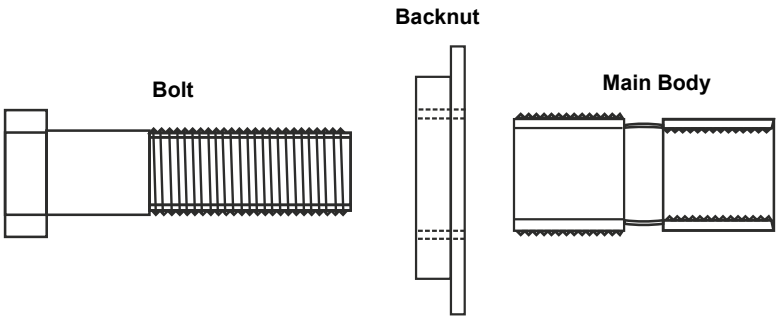
Operation:

1. A hole is drilled through the wall of the tank.
2. CylBoss, typicaly comprising of the main body of the ftting, a rubber (or fibre) waster, and a backnut, are assembled.
3. The bolt is screwed into the assembly.
4. The assembly is inserted into the hole.
5. The assembly is held using grips to prevent rotation.
6. The bolt is turned using a second pair of grips or a spanner the create the flange.
7. The bolt is removed.
8. The backnut is tightened.

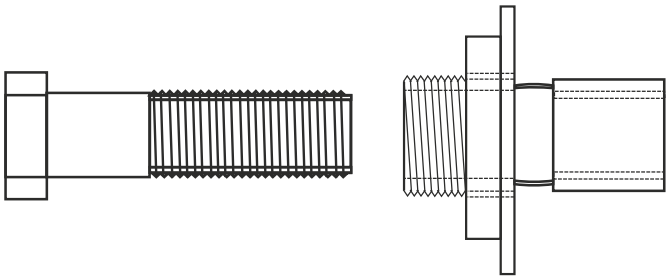
Notes:

In order to help hold the body of the CylBoss while the bolt is tightened up, a split backnut can be used in conjunction with a pair of grips. The split allows the backnut to tighten onto the thread when force from the grips is applied, preventing rotation of the CylBoss.

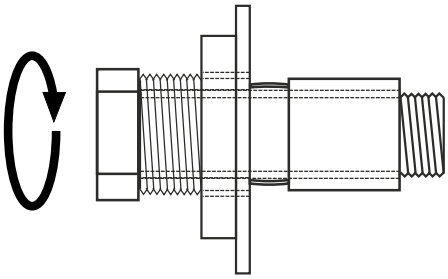
Alternatively, the CylBoss can be manufactured with some spanned flats to help grip it and prevent rotation.



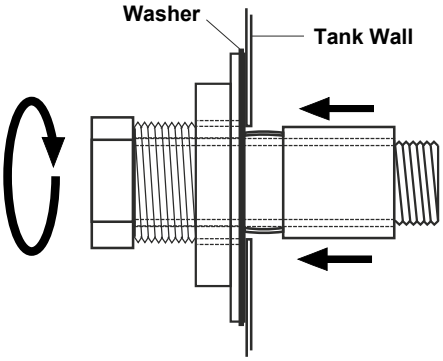
Seperate Components



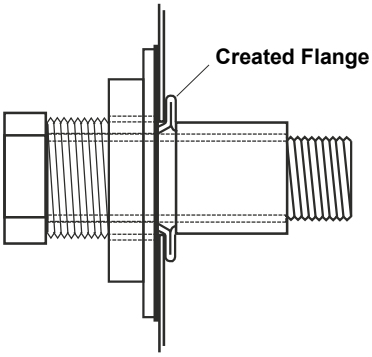
Main body and Backknut assembled.



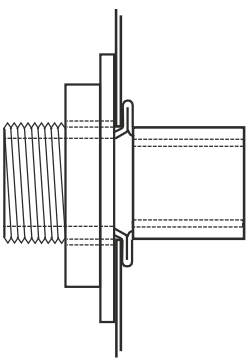
Bolt screwed into main body



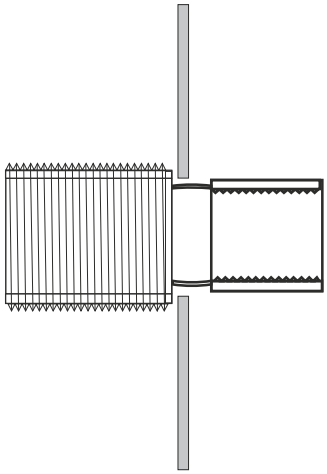
Assembly inserted through hole in tank wall, along with rubber washer, and bolt turned using spanner to generate flange. Body of assembly to be held using another spanner to prevent from rotating.



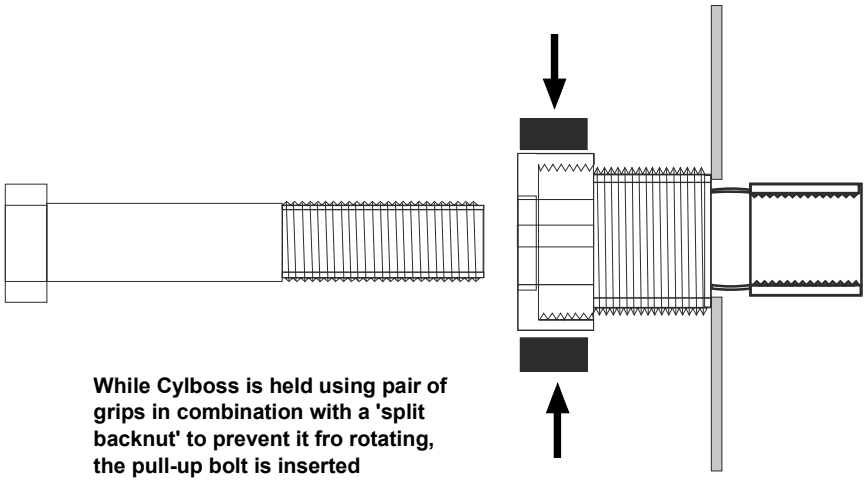
Bolt turned until flange fully formed and further turning becomes difficult.



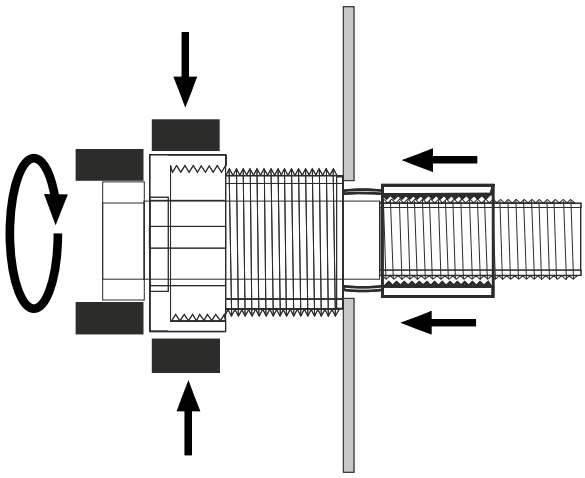
Bolt removed to leave assembled boss fixed into hole.



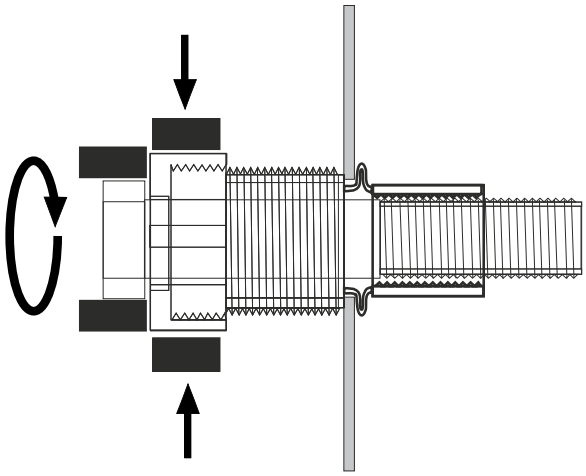
Cylboss inserted into holw in tank wall.



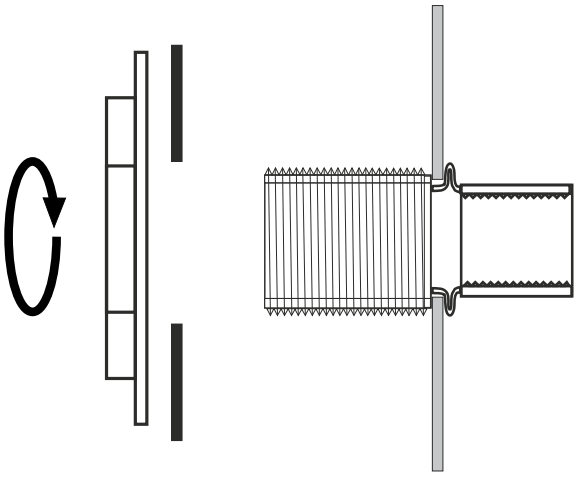
While Cylboss is held using pair of grips in combination with a 'split backnut' to prevent it fro rotating, the pull-up bolt is inserted



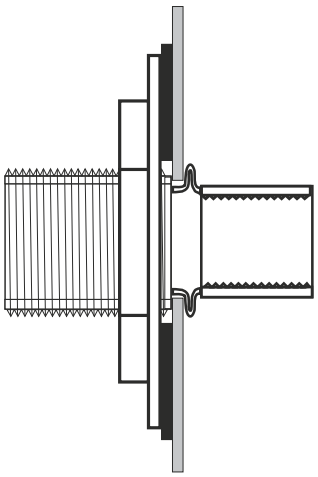
Once inserted the pull-up bolt is tuened using another pair of grips.



The pull-up bolt is turned until the flange on the Cylboss is fully formed.



The bolt is removed and a backnut and washer are fitted.

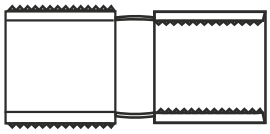


The backnut is tightened to finish the installation.

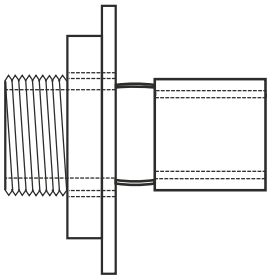
Backnut



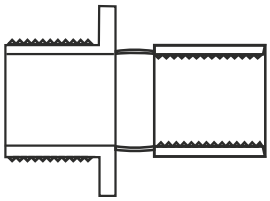
Main Body



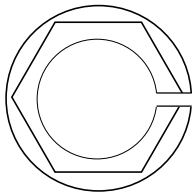
Seperate Components



Main body and Backnut assembled.



Alternative version where boss is manufactured in a single piece, without a backnut.



Backnut with section cut-out to allow backnut to compress onto thread when gripped to prevent rotation of Cylboss while creating flange.