

HYDRANUT VS SUPERBOLT

A comparison of the merits of using a hydraulic bolt tensioner (HydraNut) rather than a mechanical bolt tensioner (Superbolt)

Given that both systems apply a straight line force to the bolt which induces the material to stretch resulting in a tensile or clamping load, it is really only the speed and efficiency of each of the systems that is being compared.

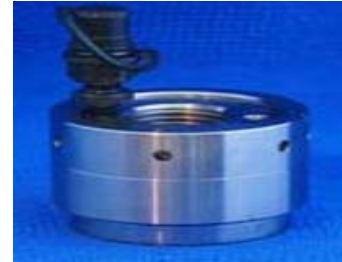
For installation Superbolts require 14 small cap screws to be tensioned in a predetermined sequence to achieve the desired tensile load on the bolt (refer to Superbolt users manual). Hydraulic Tensioners require only one operation to accurately load a bolt by applying a known hydraulic pressure to the piston area and then completing the job by turning down the lock ring and releasing the hydraulic pressure leaving an extremely accurate residual bolt load.

The following example is for a quantity of 32 x 4" nuts tensioning a flange:

SUPERBOLT



HYDRANUT



TASK	DESCRIPTION	TIME (MIN)	TASK	DESCRIPTION	TIME (MIN)
1	Wind the 32 nuts onto the job.	30	1	Wind the 32 nuts onto the job	30
2	Loosely tighten all Superbolt with air gun (448 small bolts)	35	2	Connect Hoses to all of the HydraNuts in series	10
3	Tension up each Superbolt in a pattern to 30% using a torque	45	3	Pump up a HydraNut with pump	3
4	Tension up each Superbolt in a pattern to 60% using a torque	45	4	Wind down Lock Ring	10
5	Tension up each Superbolt in a pattern to 100% using a wrench	45	5	Disconnect Hoses	10
TOTAL		200 (Over 3 Hours!)	TOTAL		63

NB: Superbolts times are based on favourable conditions and, maximum worker speed. (For best results more than 1 worker would be required).



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Superbolt

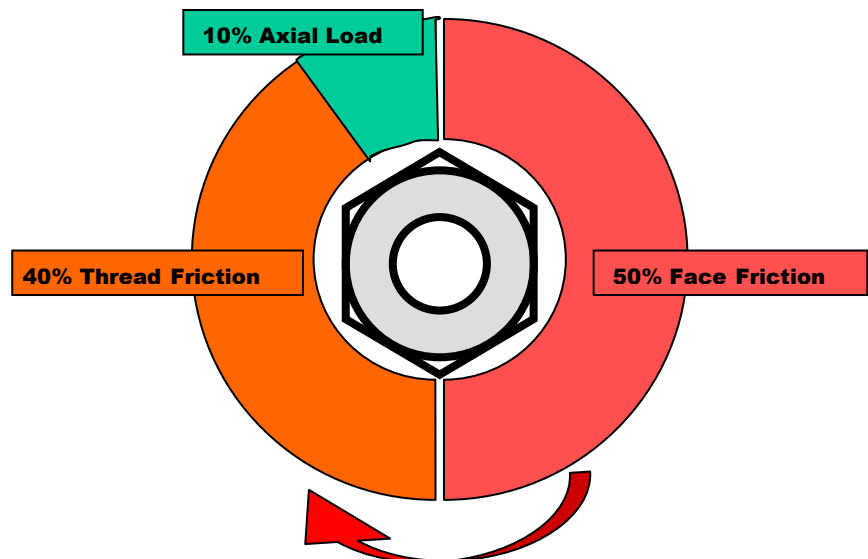
Each cap screw in the Superbolt must be tensioned in the specific pattern described in the relevant installation manual.

The final load in each bolt in the Superbolt is applied with a torque Wrench. Torque wrenches require Continuous monitoring to maintain Accuracy.

Even the small cap screws used on the Superbolts are affected by the same Frictional loss as in Larger bolts which is detailed below.



16 BOLTS



Inaccuracies caused by torque losses from friction between nut and washer (face), thread and nut, plus wind up of the bolt (axial).

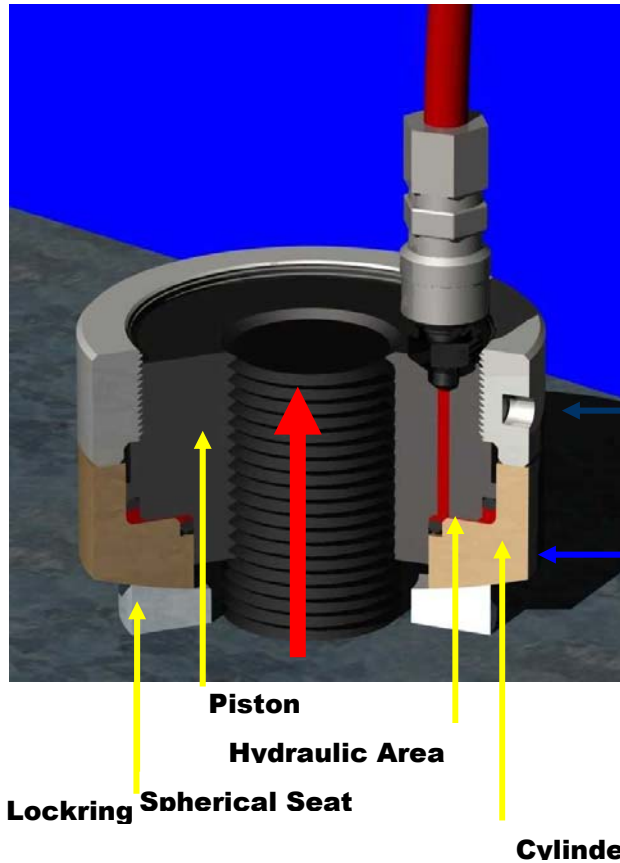
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HydraNut



Hydraulic Pressure is applied
To the Hydraulic nut

The Nut stretches the bolt under
This hydraulic load.

**Known load applied to
bolt**

The lock Ring is then rotated
Down to take the load

**Gap created under
Lockring**

The hydraulic fluid is then
Released.

The nipple is then removed
And the port is plugged.

Simultaneous loading gives
Even compression on the
Tensioning surface.

While installation of the Superbolt can be time consuming and tedious, removal can be fraught with danger, for as described in the Superbolt catalogue removal procedures including the loosening of the cap screws by 1/8th of a turn at a time) must be strictly adhered to prevent the hardened steel washer which supports the screws applying the load, must be released in such a manner that prevents the washer from 'kicking' and jamming onto the stud and remembering that at some stage during both installation and removal the maximum applied load is being carried by just one cap screw this can make things difficult to control.

HYDRANUT is the WINNER !!!

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