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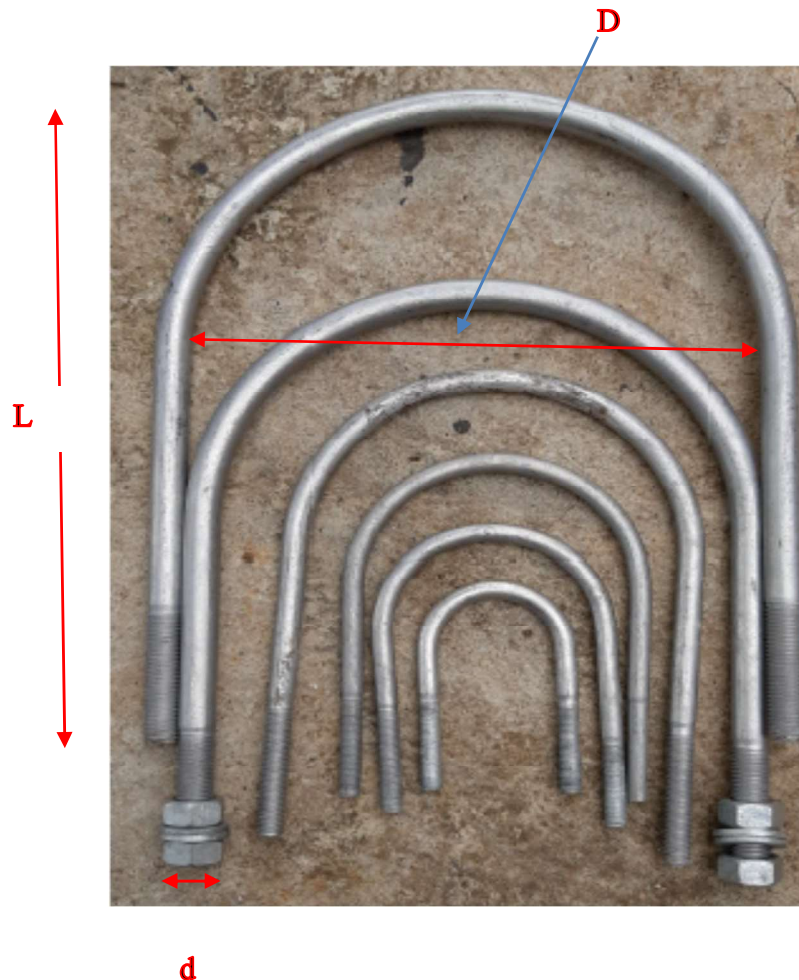
Web site : www.granttechholdings.com

To Whom It May Concern

23rd Nov 2020

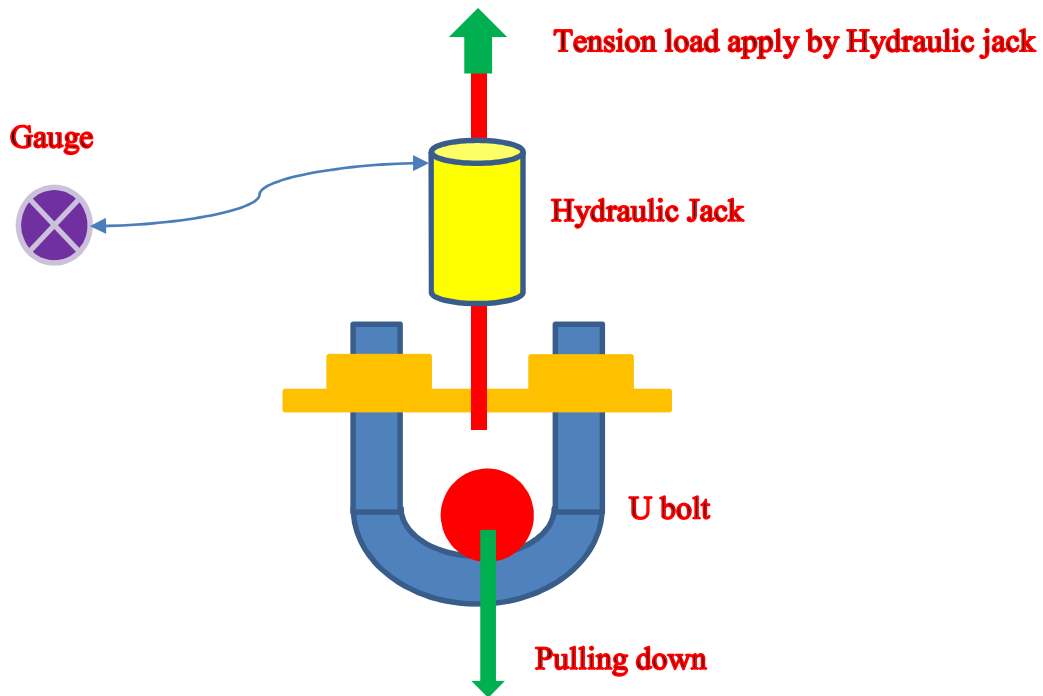
U Bolt Tensile Test Report

Objective: Check the tensile capacity of U bolts which are used to fix steel pipes to steel frames. U bolts are made of Gr. 4.8 carbon steel and hot dip galvanized to minimum gal thickness of 50 microns which sizes are given below.



U bolt size	Clamping diameter D (mm)	Bar diameter d (mm)	U bolt height L (mm)	Finish	
1 ½"	50	10	110	HDG	
2"	65	10	120		
2 ½"	80	10	135		
3"	90	10	150		
4"	115	10	170		
6"	160	12	240		
8"	220	16	290		
9"	250	16	320		

Method of Testing:



1. U bolt is subjected to a tensile load by a hydraulic jack as shown in the diagram
2. Pressure of hydraulic jack is increased gradually and gauge reading is noted
3. Pressure is increased until U bolt failure occur in any means and gauge reading and failure mode is recorded.
4. 1 sample from each type is tested and value is taken as load capacity of U bolt

Observation and Results:

U Bolt size	Sample no	Gauge reading (psi)	Relevant load (kN)	Expected Yield Capacity (kN) 320x steel area x 2	Remarks
1 1/2"	1a	1200	38.2	37.6	No steel failure; shape deformed
2"	1a	1400	45.2	37.6	No steel failure; shape deformed
2 1/2"	3a	1200	38.2	37.6	No steel failure; shape deformed
6"	6a	1800	59.3	54.0	No steel failure; shape deformed

Yield strength of steel = $400 \times 0.8 = 320 \text{ N/mm}^2$

10mm dia. thread bar cross section area = 58.8 mm^2 ; Yield capacity = $320 \times 58.8 = 18.8 \text{ kN}$

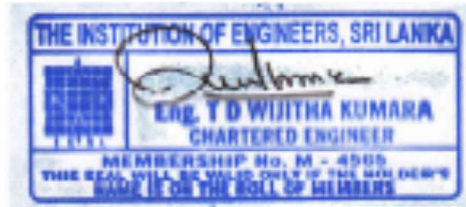
12mm dia. Thread bar cross section area = 84.3 mm^2 ; Yield capacity = $320 \times 84.3 = 27 \text{ kN}$

16mm dia. Thread bar cross section area = 157 mm^2 ; Yield capacity = $320 \times 157 = 50.2 \text{ kN}$

Herewith I certify that U bolt tensile capacities are in accordance with specifications and suitable for intended use.

Yours truly

T.D. Wijitha Kumara



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Observed load (psi)	Calibrated Load (actual load) (kN)				
	0	+200	+400	+600	+800
1000	31.1	38.2	45.2	52.2	59.3
2000	66.3	72.9	79.5	86.1	92.8
3000	99.4	105.9	112.4	119.0	125.5
4000	132.0	138.6	145.3	151.9	158.5
5000	165.1	171.4	177.7	184.0	190.3
6000	196.6	203.2	209.8	216.3	222.9
7000	229.5	235.7	241.9	248.1	254.3
8000	260.5	266.6	272.8	279.0	285.2
9000	291.4				



Sample 1a – Reading 1200psi



Failure mode - shape deformed



Sample 2a – Reading 1400psi



Failure mode – shape deformed



Sample 3a – Reading 1200psi



Failure mode – shape deformed



Sample 6a – Reading 1800psi



Failure mode – shape deformed