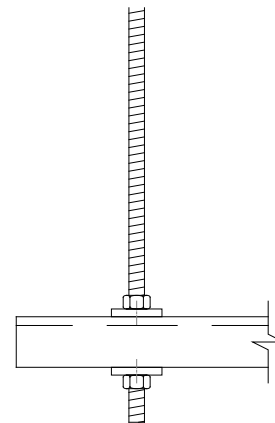
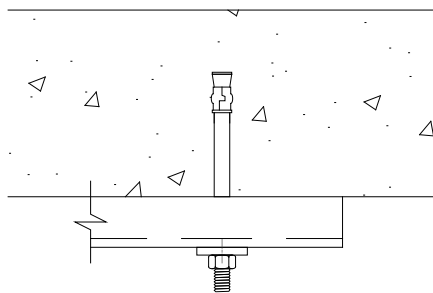


MEMORANDUM

Date: May 22, 2007
Subject: Torque for Thru-Bolt Type Installations
From: Unistrut Engineering

Installations where “thru-bolts” are used to make UNISTRUT® connections require special torque considerations compared to channel nut torque requirements. Unlike channel nut attachments, “thru-bolts” induce a compressive load into the channel sidewalls, and the torque must be set to avoid side wall buckling. Typical “thru-bolt” connections as shown below.



Torque values for “Thru-Bolts” are a function of:

- Channel Bearing Strength to Avoid Sidewall Buckling
- Nut Factor Coefficient of Friction (K) – Assumed 0.22 for EG Plating
- Distance from the “Thru-Bolt” to Channel End

Single Channel Thru-Bolt Torque Limits

Channel	Distance From Thru-Bolt to End of Channel	Maximum Thru-Bolt Torque				
		3/8" Dia.	1/2" Dia.	5/8" Dia.	3/4" Dia.	7/8" Dia.
		(ft-lbs)	(ft-lbs)	(ft-lbs)	(ft-lbs)	(ft-lbs)
P1000	< 2 1/2"	21	29	36	43	51
	≥ 2 1/2"	46	61	76	92	107
P1100	< 2 1/2"	12	16	20	24	28
	≥ 2 1/2"	24	32	40	48	56
P2000	< 2 1/2"	8	11	14	17	19
	≥ 2 1/2"	17	23	29	35	41
P3000	< 2 1/4"	22	29	36	44	51
	≥ 2 1/4"	46	61	77	92	108
P3300	< 1 3/8"	22	30	37	45	52
	≥ 1 3/8"	46	62	77	93	109
P4000	< 1 3/8"	8	11	14	17	20
	≥ 1 3/8"	17	23	29	35	41
P4100	< 1 3/8"	12	16	20	24	29
	≥ 1 3/8"	24	32	41	49	57
P5000	< 5"	21	28	35	42	49
	≥ 5"	45	60	75	90	105
P5500	< 3 3/4"	21	28	35	42	50
	≥ 3 3/4"	45	60	76	91	106

Double Channel Thru-Bolt Torque Limits

Channel	Distance From Thru-Bolt to End of Channel	Maximum Thru-Bolt Torque				
		3/8" Dia.	1/2" Dia.	5/8" Dia.	3/4" Dia.	7/8" Dia.
		(ft-lbs)	(ft-lbs)	(ft-lbs)	(ft-lbs)	(ft-lbs)
P1001	< 5"	21	28	35	42	49
	≥ 5"	45	60	75	90	106
P1101	< 5"	11	15	19	23	26
	≥ 5"	23	31	39	47	55
P2001	< 5"	8	10	13	16	19
	≥ 5"	17	23	28	34	40
P3001	< 4 1/2"	21	28	35	42	50
	≥ 4 1/2"	45	60	76	91	106
P3301	< 2 3/4"	22	29	36	44	51
	≥ 2 3/4"	46	61	77	92	108
P4001	< 2 3/4"	8	11	14	17	20
	≥ 2 3/4"	17	23	29	35	41
P4101	< 2 3/4"	12	16	20	24	28
	≥ 2 3/4"	24	32	40	48	56
P5001	< 10"	20	26	33	40	46
	≥ 10"	44	59	73	88	103
P5501	< 7 1/2"	20	27	34	41	48
	≥ 7 1/2"	44	59	74	89	104