

## Appendix

The appendix section includes additional documentation provided by FATA Automation and third-party vendor information.

### Third Party Vendor

The following list identifies copies of third-party information that has been provided to FATA Automation and is included in this manual.

Third Party Vendor	Information Provided
SEW	SEW Eurodrive Manual
ZMC	Chain - Maintenance Manual

## Bolt Torque Settings

The following sections are FATA Automation Quality Standard torque table specifications for Metric and SAE bolts.

### Metric Bolt Torque Table

Below is a table of nominal torque settings in **Foot-Pounds** for all fasteners without required torque settings. Use the minimum grade torque values with screws fastened into steel plates without harden steel.

DIA	Property Class 8.8		Property Class 9.8		Property Class 10.9		Property Class 12.9	
	Dry Threads	Lubricated Thread	Dry Threads	Lubricated Thread	Dry Threads	Lubricated Thread	Dry Threads	Lubricated Thread
M4	*27.5	*.17	*30	*18	*38.5	*24	*53	*32.5
M5	*56.5	*33.5	*61	*37	*78	*47	*107	*65
M6	*95	*57.5	*103	*61	*132	*79	*180	*109
M8	19	12	21	13	27	16	37	22
M10	39	23	42	25	53	32	73	44
M12	67	40	73	44	92	55	127	76
M14	107	64	116	69	148	89	203	122
M16	167	100	181	108	230	138	316	190
M20	325	195	352	211	449	269	617	370
M24	562	337	609	366	775	465	1066	640
M30	1117	670	1210	726	1540	924	2188	1271

\*Values in Inch-pounds

1 in-lb = 0.1129 Nm

1 ft-lb = 1.356 Nm

## SAE J429 Bolt Torque Tables

Below is a table of nominal torque settings in **Foot-Pounds** for all fasteners without required torque settings. Use the minimum grade torque values with screws fastened into steel plates without harden steel.

Torque-Tension Relationships for SAE J429 Bolts Coarse/Dry Thread			
DIA	Grade 2	Grade 5	Grade 8
1/4--20	65 in-lbs.	100 in-lbs.	143 in-lbs.
5/16--18	134 in-lbs.	210 in-lbs.	305 in-lbs.
3/8--16	20 ft-lbs.	31 ft-lbs	44 ft-lbs.
7/16--14	30	50	70
1/2--13	49	75	107
9/16--12	70	109	154
5/8--11	97	151	211
3/4--10	173	266	376
7/8--9	166	430	606
1--8	250	640	900
1-1/8--7	N/A	800	1288
1-1/4--7	N/A	1120	1817
1-3/8--6	N/A	1470	2382
1-1/2--6	N/A	1950	3161

1 in-lb = 0.1129 Nm

1 ft-lb = 1.356 Nm

Torque-Tension Relationships for SAE J429 Bolts Fine/Dry Thread			
<i>DIA</i>	<i>Grade 2</i>	<i>Grade 5</i>	<i>Grade 8</i>
1/4--28	75 in-lbs	115 in-lbs.	163 in-lbs.
5/16--24	150 in-lbs	230 in-lbs	325 in-lbs
3/8--24	22.5 ft-lbs	35 ft-lbs.	50 ft-lbs.
7/16--20	36	55	78
1/2--20	55	85	120
9/16--18	79	122	172
5/8--18	110	170	240
3/4--16	193	298	420
7/8--14	184	473	668
1--14	N/A	720	995
1-1/8--12	N/A	900	1444
1-1/4--12	N/A	1240	2012
1-3/8--12	N/A	1670	2712
1-1/2--12	N/A	2200	3557

1 in-lb = 0.1129 Nm

1 ft-lb = 1.356 Nm

Tension relationships for Nyloc Fasteners (Foot - Pounds)			
<i>DIA</i>	<i>Lubrication</i>	<i>Recommended</i>	<i>Max. Limit</i>
5/16--18	NONE	17	26
	OILED	12	18
3/8--16	NONE	34	53
	OILED	23	36
7/16--14	NONE	44	67
	OILED	30	46
1/2--13	NONE	83	128
	OILED	57	87
9/16--12	NONE	117	165
	OILED	73	112
5/8--11	NONE	201	309
	OILED	137	211
3/4--10	NONE	384	590
	OILED	262	403
7/8--9	NONE	572	880
	OILED	390	600
1--8	NONE	806	1240
	OILED	549	845
1 1/8--7	NONE	1050	1620
	OILED	715	1100
1 1/4--7	NONE	1525	2340
	OILED	1040	1600
1 3/8--7	NONE	2940	4530
	OILED	2000	3080
1 1/2--6	NONE	3870	5950
	OILED	2640	4060

1 in-lb = 0.1129 Nm

1 ft-lb = 1.356 Nm