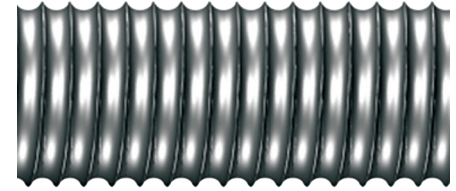
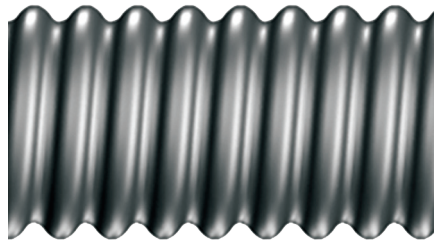
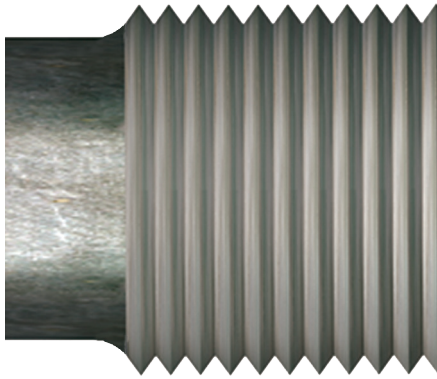




Tie Rod Conversion Chart

Williams All-Thread-Bars are more economical than heavier ASTM A36 upset threaded rods. All-Thread Bars are usually on the order of 10-30% less expensive than A36 tie rods when bar comparisons are based on equivalent ultimate strengths. Not only are the bars less expensive but since the bars are smaller they are lighter. Additional savings result with smaller connectors, protective coatings and material freight. The bars below are shown in sizes relative to each other and have approximately equal yield strength.



Old A36 Tie Rods

Actual Tie Rod Diameter	Heavy Upset Thread Diameter	Nominal Weight	Minimum Yield Strength	Minimum Ultimate Strength
1-1/4" (32 mm)	1-1/2" (38 mm)	4.17 lbs/ft (6.21 kg/m)	44.2 kips (197 kN)	71.2 kips (317 kN)
1-3/8" (36 mm)	1-3/4" (43 mm)	5.05 lbs/ft (7.52 kg/m)	53.5 kips (238 kN)	86.2 kips (383 kN)
1-1/2" (38 mm)	2" (51 mm)	6.01 lbs/ft (8.94 kg/m)	63.6 kips (283 kN)	103 kips (456 kN)
1-5/8" (41 mm)	2" (51 mm)	7.05 lbs/ft (10.5 kg/m)	74.7 kips (332 kN)	120 kips (535 kN)
1-3/4" (43 mm)	2-1/4" (57 mm)	8.18 lbs/ft (12.2 kg/m)	86.6 kips (385 kN)	140 kips (620 kN)
2" (51 mm)	2-1/2" (65 mm)	10.7 lbs/ft (15.9 kg/m)	113 kips (503 kN)	182 kips (810 kN)
2-1/4" (57 mm)	2-3/4" (70 mm)	13.5 lbs/ft (20.1 kg/m)	143 kips (636 kN)	231 kips (1026 kN)
2-1/2" (65 mm)	3-1/4" (83 mm)	16.7 lbs/ft (24.9 kg/m)	177 kips (787 kN)	285 kips (1266 kN)
2-3/4" (70 mm)	3-1/2" (89 mm)	20.2 lbs/ft (30.1 kg/m)	214 kips (952 kN)	345 kips (1532 kN)
3" (76 mm)	3-3/4" (95 mm)	24.0 lbs/ft (35.7 kg/m)	254 kips (1130 kN)	410 kips (1823 kN)
3-1/4" (83 mm)	4" (102 mm)	28.2 lbs/ft (42.0 kg/m)	299 kips (1330 kN)	481 kips (2141 kN)
3-1/2" (89 mm)	4-1/4" (108 mm)	32.7 lbs/ft (48.7 kg/m)	346 kips (1539 kN)	558 kips (2482 kN)
3-3/4" (95 mm)	4-1/2" (114 mm)	37.6 lbs/ft (56.0 kg/m)	398 kips (1770 kN)	641 kips (2851 kN)
4" (102 mm)	4-1/2" (114 mm)	43.1 lbs/ft (64.1 kg/m)	452 kips (2011 kN)	729 kips (3242 kN)
4-1/4" (105 mm)	4-3/4" (121 mm)	48.6 lbs/ft (72.3 kg/m)	511 kips (2273 kN)	823 kips (3661 kN)
4-1/2" (114 mm)	5" (127 mm)	54.5 lbs/ft (81.1 kg/m)	573 kips (2549 kN)	922 kips (4101 kN)
4-3/4" (121 mm)	5-1/4" (133 mm)	60.7 lbs/ft (90.3 kg/m)	638 kips (2838 kN)	1028 kips (4573 kN)
5" (127 mm)	5-1/2" (140 mm)	67.3 lbs/ft (100 kg/m)	707 kips (3145 kN)	1139 kips (5067 kN)
5-1/4" (133 mm)	5-3/4" (146 mm)	74.2 lbs/ft (110 kg/m)	779 kips (3465 kN)	1256 kips (5587 kN)

Grade 75 All-Thread Rebar

Bar Designation & Nominal Diameter	Approx. Thread Major Dia.	Nominal Weight	Minimum Yield Strength	Minimum Ultimate Strength
#8 - 1" (25 mm)	1-1/8" (28.6 mm)	2.7 lbs/ft (3.94 kg/m)	59.3 kips (264 kN)	79 kips (351 kN)
#9 - 1-1/8" (29 mm)	1-1/4" (31.8 mm)	3.4 lbs/ft (5.06 kg/m)	75 kips (334 kN)	100 kips (445 kN)
#10 - 1-1/4" (32 mm)	1-3/8" (34.9 mm)	4.3 lbs/ft (5.50 kg/m)	95.3 kips (424 kN)	127 kips (565 kN)
#11 - 1-3/8" (36 mm)	1-1/2" (38.1 mm)	5.3 lbs/ft (7.85 kg/m)	117 kips (521 kN)	156 kips (694 kN)
#14 - 1-3/4" (43 mm)	1-7/8" (47.6 mm)	7.65 lbs/ft (11.8 kg/m)	169 kips (750 kN)	225 kips (1001 kN)
#18 - 2-1/4" (57 mm)	2-7/16" (61.9 mm)	13.6 lbs/ft (19.6 kg/m)	300 kips (1335 kN)	400 kips (1780 kN)
#20 - 2-1/2" (64 mm)	2-3/4" (69.9 mm)	16.7 lbs/ft (24.8 kg/m)	368 kips (1637 kN)	491 kips (2184 kN)
#24 - 3" (76 mm)	3-3/16" (81.0 mm)	24.0 lbs/ft (35.8 kg/m)	512 kips (2277 kN)	682 kips (3034 kN)
#28 - 3-1/2" (89 mm)	3-3/4" (95.3 mm)	32.7 lbs/ft (48.6 kg/m)	720 kips (3206 kN)	961 kips (4274 kN)
-	-	-	-	-

150 KSI All-Thread-Bar

Nominal Bar Diameter	Approx. Thread Major Dia.	Nominal Weight	Minimum Yield Strength	Minimum Ultimate Strength
1" (26 mm)	1-1/8" (28.6 mm)	3.09 lbs/ft (4.6 kg/m)	102 kips (454 kN)	128 kips (567 kN)
1-1/4" (32 mm)	1-7/16" (36.5 mm)	4.51 lbs/ft (6.71 kg/m)	150 kips (667 kN)	188 kips (834 kN)
1-3/8" (36 mm)	1-9/16" (39.7 mm)	5.71 lbs/ft (8.50 kg/m)	190 kips (843 kN)	237 kips (1054 kN)
1-3/4" (46 mm)	2" (50.8 mm)	9.06 lbs/ft (13.5 kg/m)	312 kips (1388 kN)	390 kips (1734 kN)
2-1/4" (57 mm)	2-1/2" (63.5 mm)	14.1 lbs/ft (20.8 kg/m)	490 kips (2181 kN)	613 kips (2727 kN)
2-1/2" (65 mm)	2-3/4" (69.9 mm)	18.2 lbs/ft (27.1 kg/m)	622 kips (2766 kN)	778 kips (3457 kN)
3" (75 mm)	3-1/8" (79.4 mm)	24.1 lbs/ft (35.8 kg/m)	822 kips (3656 kN)	1027 kips (4568 kN)