

Tonnage Required to punch Round Holes in ASTM A-36 Structural Steel

Round Hole Diameter	Metal Thickness									
	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1-1/8"	1-1/4"
1/8"	1.5									
1/4"	3.0	5.9								
3/8"	4.4	8.8	13.3							
1/2"	5.9	11.8	17.7	23.6	29.5					
5/8"	7.4	14.7	21.1	29.4	37.0	44.2				
3/4"	8.9	17.7	26.5	35.3	44.2	53.0	62.0			
7/8"	10.3	20.6	31.0	41.2	51.5	62.0	72.2	82.5		
1"	11.8	23.6	35.3	47.1	59.0	70.7	82.5	94.3	106.0	
1-1/8"	13.3	26.5	39.7	52.9	66.2	79.4	92.7	106.0	119.0	132.5
1-1/4"	14.7	29.5	44.2	58.9	73.7	88.4	103.2	117.9	132.6	147.3
1-3/8"	16.2	32.4	48.6	64.8	81.0	97.2	113.4	129.6	145.8	162.0
1-1/2"	17.7	35.3	53.0	70.6	88.3	106.0	123.6	141.3	159.0	176.7
1-5/8"	19.2	38.3	57.5	76.6	95.7	114.9	134.0	153.2	172.3	191.5
1-3/4"	20.6	41.2	61.9	82.5	103.1	123.7	144.3	164.9	185.6	206.2
2"	23.5	47.1	70.7	94.3	117.8	141.4	164.9	188.5	212.1	235.6
2-1/4"	26.5	53.0	79.5	106.0	132.5	159.0	185.6	212.1	238.6	
2-1/2"	29.5	58.9	88.4	117.8	147.3					
2-3/4"	32.4	64.8	97.2	129.6						
3"	35.4	70.7	106.0	141.4						

Tonnage requirement for other than mild steel (60,000 Pound Shear Strength)

Metal Type	Multiplier
Aluminum (2024-0)	0.36
Brass (1/4 Hard)	0.70
Copper (1/2 Hard)	0.52
Steel (50% Carbon)	1.60
Steel Cold Drawn (1018)	1.24
Stainless Steel (303)	1.50

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