

## Tonnage required to punch round holes in mild steel\*

Hole Dia.	Material Thickness													
	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1-1/8"	1-1/4"	1-3/8"	1-1/2"	1-5/8"	
1/8"	1.2													
1/4"	2.4	4.8												
3/8"	3.6	7.1	10.5											
1/2"	4.8	9.5	14	19.1										
5/8"	6	12	17.5	24	30									
3/4"	7.1	14.3	21	28.7	36	42.8								
7/8"	8.3	16.7	24.4	33.4	42	50.3	58.5							
1"	9.6	19.1	28	38.3	48	57.8	66.8	76.5						
1-1/8"	10.7	21.5	31.5	42.8	54	64.5	75	86.3	96.8					
1-1/4"	12	24	34.9	48	60	72	83.3	96	108	120				
1-3/8"	13.1	26.3	38.5	52.5	66	78.8	92.3	105	118.5	131.3	144.8			
1-1/2"	14.3	28.7	42	57.4	71.8	86.3	101	114.8	129	143.3	157.5	172.5		
1-5/8"	15.5	31.1	45	62.3	78	93	109	124.5	140.3	155.3	171	186	202.5	
1-3/4"	16.5	33.5	48.8	66.8	84	101	117	134.3	150.8	167.3	183.8	201	217.5	
2"	19.1	38.3	55.9	76.5	96	115	134	153	172.5	191.3	210	229.5		
2-1/4"	21.5	43.1	63	86.3	108	129	151	172.5	193.5	215.3	236.3			
2-1/2"	24	48	69.8	95.3	120	143	167	191.3	215.3	239.3				
2-3/4"	26.3	52.5	76.5	105	131	158	184	210.8	237					
3"	28.5	57.4	84	115	143	173	201	229.5						
3-1/4"	31.1	62.3	90.8	125	155	186	218							
3-1/2"	33.5	67	97.5	134	167	201								
3-3/4"	36	71.8	105	143	180									
4"	38.3	76.5	112.5	153										

\*This chart is based on punching mild steel with a 65,000 pound tensile strength. To calculate the tonnage required for other materials, multiply the listed tonnage by the Conversion Factor provided by the inset Tonnage Conversion Factors chart.

Tonnage Conversion Factors*	
Material:	Conversion Factor:
Aluminum (2024-0)	0.36
Brass (1/4 Hard)	0.7
Copper (1/2 Hard)	0.52
Steel (50% Carbon)	1.6
Steel Cold Drawn (1018)	1.24
Stainless Steel (303)	1.5

The required punch tonnage provided by this chart is the result of multiplying together the Punch Circumference (in.), Material Thickness (in.), Tensile Strength of the material (tons), and the constant 0.75 (typical tensile to shear strength ratio for steel). All information in this chart and calculations should be verified before applying it to your work, particularly when using a combination which approaches the machine's maximum tonnage capacity.