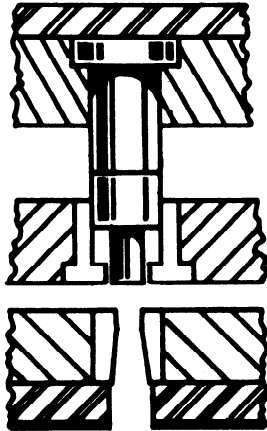




pivot punch corporation

# Tons of Pressure Required for Punching Mild Steel



This table shows the tons of pressure required for single punching mild steel derived by the formula: Tons of pressure required = hole size × material thickness × constant 80. All figures shown are tons or percentages of tons. For intermediate sizes interpolations can be made.

By use of the table, the tons of pressure required for multiple punching can also be figured.

**Example:** Can eight holes  $\frac{1}{8}$ " round and two holes  $\frac{3}{16}$ " round be punched in 16 gauge material on a 10 ton press? Yes.

Tons pressure required for one hole  $\frac{1}{8}$ " round in 16 ga. = .60 tons

Tons pressure required for one hole  $\frac{3}{16}$ " round in 16 ga. = .90 tons

$$\begin{aligned} 8 \text{ holes} \times .60 \text{ tons} &= 4.80 \text{ tons} \\ 2 \text{ holes} \times .90 \text{ tons} &= 1.80 \text{ tons} \\ \hline &= 6.60 \text{ tons} \end{aligned}$$

Tons of pressure for punch sizes over 1" round can also be computed.

**Example:** What pressure is required to punch a  $2\frac{1}{4}$ " round hole in  $\frac{3}{8}$ " thick material? Since a 1" round hole in  $\frac{3}{8}$ " thick material require 70 tons pressure, a  $2\frac{1}{4}$ " round hole in  $\frac{3}{8}$ " thick material requires 157.50 tons.

$$2.25 \text{ round hole} \times 70 \text{ tons} = 157.50.$$

Stock Thickness	PUNCH SIZE															
	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{7}{8}$	$\frac{15}{16}$	1"	
26 ga. .0179	.18	.27	.36	.45	.54	.63	.72	.81	.90	.99	1.07	1.16	1.25	1.34	1.43	
24 ga. .0239	.24	.36	.48	.60	.72	.84	.96	1.08	1.20	1.31	1.43	1.55	1.67	1.89	1.91	
22 ga. .0299	.30	.45	.60	.75	.90	1.05	1.20	1.35	1.50	1.65	1.80	1.95	2.10	2.24	2.39	
20 ga. .0359	.36	.54	.72	.90	1.08	1.26	1.44	1.62	1.80	1.98	2.15	2.33	2.51	2.69	2.87	
18 ga. .0478	.48	.72	.96	1.20	1.43	1.67	1.91	2.15	2.39	2.63	2.87	3.11	3.34	3.58	3.82	
16 ga. .0598	.60	.90	1.20	1.50	1.79	2.09	2.39	2.69	2.99	3.29	3.59	3.89	4.19	4.49	4.78	
14 ga. .0747	.75	1.12	1.49	1.87	2.24	2.61	2.99	3.36	3.73	4.11	4.48	4.86	5.23	5.60	5.97	
12 ga. .1046	1.05	1.57	2.09	2.62	3.14	3.66	4.18	4.71	5.23	5.75	6.28	6.80	7.32	7.85	8.57	
10 ga. .1345	1.34	2.02	2.69	3.36	4.04	4.71	5.38	6.05	6.73	7.40	8.07	8.74	9.42	10.09	10.76	
3/16 .187	1.87	2.81	3.74	4.68	5.61	6.55	7.48	8.42	9.35	10.29	11.22	12.16	13.09	14.03	14.96	
1/4 .250	2.50	3.75	5.00	6.25	7.50	8.75	10.00	11.25	12.50	13.75	15.00	16.25	17.50	18.75	20.00	
3/8 .375		5.62	7.50	9.37	11.25	13.13	15.00	16.88	18.75	20.63	22.50	24.38	26.25	28.13	30.00	
1/2 .500			10.00	17.00	15.00	17.50	20.00	22.50	25.00	27.50	30.00	32.50	35.00	37.50	40.00	
5/8 .625				15.62	18.75	21.87	25.00	28.12	31.25	34.38	37.50	40.63	43.75	46.88	50.00	
3/4 .750					22.50	26.25	30.00	33.75	37.50	41.25	45.00	48.75	52.50	56.25	60.00	
7/8 .875						30.62	35.00	39.37	43.75	48.12	52.50	56.84	61.25	65.63	70.00	
1" 1.000							40.00	44.96	50.00	54.96	60.00	64.96	70.00	74.96	80.00	

PRESSURES ABOVE ARE REDUCED BY SHEAR ON PUNCH END OR STAGGERING PUNCHES

= RATIO HOLES REQUIRING PIVOT STRAIGHT GROUND® WHIPSLEEVE PUNCHES