



# TONNAGE CHART

APPROXIMATE PRESSURES REQUIRED FOR PUNCHING  
ROUND HOLES IN MILD STEEL

$$P = 3/1416 \times D \times T \times 25 \text{ ton/in}^2$$

| HOLE DIAMETER |               | 1/8<br>.125      | 3/16<br>.1875 | 1/4<br>.250 | 3/8<br>.375 | 1/2<br>.500 | 5/8<br>.625 | 3/4<br>.750 | 7/8<br>.875 | 1<br>1.00 | 1 1/4<br>1.25 | 1 1/2<br>1.50 | 1 3/4<br>1.75 | 2<br>2.00 | 2 1/2<br>2.50 | 3<br>3.00 | 3 1/2<br>3.50 | 4<br>4.00 | 4 1/2<br>4.50 |  |
|---------------|---------------|------------------|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------|---------------|---------------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|--|
| METAL GAUGE   | THICK. INCHES | PRESSURE IN TONS |               |             |             |             |             |             |             |           |               |               |               |           |               |           |               |           |               |  |
| #28           | .015          | .1               | .2            | .3          | .5          | .6          | .7          | .9          | 1.0         | 1.2       | 1.5           | 1.8           | 2.1           | 2.4       | 2.9           | 3.5       | 4.1           | 4.7       | 5.3           |  |
| #26           | .018          | .2               | .3            | .4          | .5          | .7          | .9          | 1.1         | 1.2         | 1.4       | 1.8           | 2.1           | 2.5           | 2.8       | 3.5           | 4.2       | 4.9           | 5.7       | 6.4           |  |
| #24           | .024          | .2               | .4            | .5          | .7          | .9          | 1.2         | 1.4         | 1.7         | 1.9       | 2.4           | 2.8           | 3.3           | 3.8       | 4.7           | 5.7       | 6.6           | 7.5       | 8.5           |  |
| #22           | .030          | .3               | .4            | .6          | .9          | 1.2         | 1.5         | 1.8         | 2.1         | 2.4       | 2.9           | 3.5           | 4.1           | 4.7       | 5.9           | 7.1       | 8.2           | 9.4       | 10            |  |
| #20           | .036          | .4               | .5            | .7          | 1.1         | 1.4         | 1.8         | 2.1         | 2.5         | 2.8       | 3.5           | 4.2           | 4.9           | 5.7       | 7.1           | 8.5       | 9.9           | 11.3      | 13            |  |
| #18           | .048          | .5               | .7            | .9          | 1.4         | 1.9         | 2.4         | 2.8         | 3.3         | 3.8       | 4.7           | 5.7           | 6.6           | 7.5       | 9.4           | 11.3      | 13.2          | 15.1      | 17            |  |
| #16           | .060          | .6               | .9            | 1.2         | 1.8         | 2.4         | 2.9         | 3.5         | 4.1         | 4.7       | 5.9           | 7.1           | 8.2           | 9.4       | 11.8          | 14.1      | 16.5          | 18.8      | 21            |  |
| #14           | .075          | .7               | 1.1           | 1.5         | 2.2         | 2.9         | 3.7         | 4.4         | 5.2         | 5.9       | 7.4           | 8.8           | 10.3          | 11.8      | 14.7          | 17.7      | 20.6          | 23.6      | 27            |  |
| #12           | .105          | 1.0              | 1.5           | 2.1         | 3.1         | 4.1         | 5.2         | 6.2         | 7.2         | 8.2       | 10.3          | 12.4          | 14.4          | 16.5      | 20.6          | 24.7      | 28.9          | 32.9      | 37            |  |
| #11           | .120          | 1.2              | 1.8           | 2.4         | 3.5         | 4.7         | 5.9         | 7.1         | 8.2         | 9.4       | 11.5          | 14.1          | 16.5          | 18.8      | 23.6          | 28.3      | 33.0          | 37.7      | 42            |  |
| #10           | .135          | 1.3              | 2.0           | 2.7         | 4.0         | 5.3         | 6.6         | 8.0         | 9.3         | 10.6      | 12.3          | 15.9          | 18.6          | 21.2      | 26.5          | 31.8      | 37.1          | 42.4      | 48            |  |
| 5/32          | .157          | -                | 2.3           | 3.1         | 4.6         | 6.2         | 7.7         | 9.2         | 10.8        | 12.3      | 15.4          | 18.5          | 21.6          | 24.7      | 30.9          | 37.0      | 43.2          | 49.3      | 56            |  |
| 3/16          | .188          | -                | 2.8           | 3.7         | 5.5         | 7.4         | 9.2         | 11.1        | 12.9        | 14.8      | 18.5          | 22.1          | 25.8          | 29.5      | 36.9          | 44.3      | 51.7          | 59.1      | 66            |  |
| 1/4           | .250          | -                | -             | 4.9         | 7.4         | 9.8         | 12.3        | 14.7        | 17.2        | 19.6      | 24.5          | 29.5          | 34.4          | 39.3      | 49.1          | 58.9      | 68.7          | 78.5      | 88            |  |
| 5/16          | .313          | -                | -             | -           | 9.2         | 12.3        | 15.4        | 18.4        | 21.5        | 24.6      | 30.7          | 36.9          | 43.0          | 49.2      | 61.5          | 73.8      | 86.0          | 98.3      | 111           |  |
| 3/8           | .375          | -                | -             | -           | 11.0        | 14.7        | 18.4        | 22.1        | 25.8        | 29.5      | 36.8          | 44.2          | 51.5          | 58.9      | 73.6          | 88.4      | 103.1         | 117.8     | 133           |  |
| 1/2           | .500          | -                | -             | -           | -           | 19.6        | 24.5        | 29.5        | 35.6        | 39.3      | 49.1          | 58.9          | 68.7          | 73.5      | 98.2          | 117.8     | 137.4         | 157.1     | 177           |  |



# TONNAGE CHART

APPROXIMATE PRESSURES REQUIRED FOR PUNCHING  
SQUARE HOLE IN MILD STEEL

$$P = 4 \times A \times T \times 25 \text{ (ton/in}^2\text{)}$$

| "A" DIM.    |               | 1/4<br>.25       | 1/2<br>.50 | 3/4<br>.75 | 1<br>1.00 | 1 1/4<br>1.25 | 1 1/2<br>1.50 | 1 3/4<br>1.75 | 2<br>2.00 | 2 1/4<br>2.25 | 2 1/2<br>2.50 | 2 3/4<br>2.75 | 3<br>3.00 | 3 1/4<br>3.25 | 3 1/2<br>3.50 | 3 3/4<br>3.75 | 4<br>4.00 | 4 1/4<br>4.250 | 4 1/2<br>4.500 |  |
|-------------|---------------|------------------|------------|------------|-----------|---------------|---------------|---------------|-----------|---------------|---------------|---------------|-----------|---------------|---------------|---------------|-----------|----------------|----------------|--|
| METAL GAUGE | THICK. INCHES | PRESSURE IN TONS |            |            |           |               |               |               |           |               |               |               |           |               |               |               |           |                |                |  |
| #28         | .015          | .4               | .8         | 1.1        | 1.5       | 1.9           | 2.3           | 2.6           | 3.0       | 3.4           | 3.8           | 4.1           | 4.5       | 4.9           | 5.3           | 5.6           | 6.0       | 6.4            | 6.8            |  |
| #26         | .018          | .5               | .9         | 1.4        | 1.8       | 2.3           | 2.7           | 3.2           | 3.6       | 4.1           | 4.5           | 5.0           | 5.4       | 5.9           | 6.3           | 6.8           | 7.2       | 7.7            | 8.1            |  |
| #24         | .024          | .6               | 1.2        | 1.8        | 2.4       | 3.0           | 3.6           | 4.2           | 4.8       | 5.4           | 6.0           | 6.6           | 7.2       | 7.8           | 8.4           | 9.0           | 9.6       | 10.2           | 10.8           |  |
| #22         | .030          | .8               | 1.5        | 2.3        | 3.0       | 3.8           | 4.5           | 5.3           | 6.0       | 6.8           | 7.5           | 8.3           | 9.0       | 9.8           | 10.5          | 11.3          | 12.0      | 12.8           | 13.5           |  |
| #20         | .036          | .9               | 1.8        | 2.7        | 3.6       | 4.5           | 5.4           | 6.3           | 7.2       | 8.1           | 9.0           | 9.9           | 10.8      | 11.7          | 12.6          | 13.5          | 14.4      | 15.3           | 16.2           |  |
| #18         | .048          | 1.2              | 2.4        | 3.6        | 4.8       | 6.0           | 7.2           | 8.4           | 9.6       | 10.8          | 12.0          | 13.2          | 14.4      | 15.6          | 16.8          | 18.0          | 19.2      | 20.4           | 21.6           |  |
| #16         | .060          | 1.5              | 3.0        | 4.5        | 6.0       | 7.5           | 9.0           | 10.5          | 12.0      | 13.5          | 15.0          | 16.5          | 18.0      | 19.5          | 21.0          | 22.5          | 24.0      | 25.5           | 27.0           |  |
| #14         | .075          | 1.9              | 3.8        | 5.8        | 7.5       | 9.4           | 11.3          | 13.1          | 15.0      | 16.9          | 18.8          | 20.6          | 22.5      | 24.4          | 26.3          | 28.1          | 30.0      | 31.9           | 33.8           |  |
| #12         | .105          | 2.6              | 5.3        | 7.9        | 10.5      | 13.1          | 15.8          | 18.4          | 21.0      | 23.6          | 26.3          | 28.9          | 31.5      | 34.1          | 36.8          | 39.4          | 42.0      | 44.6           | 47.3           |  |
| #11         | .120          | 3.0              | 6.0        | 9.0        | 12.0      | 15.0          | 18.0          | 21.0          | 24.0      | 27.0          | 30.0          | 33.0          | 36.0      | 39.0          | 42.0          | 45.0          | 48.0      | 51.0           | 54.0           |  |
| #10         | .135          | 3.4              | 6.8        | 10.1       | 13.5      | 16.9          | 20.3          | 23.6          | 27.0      | 30.4          | 33.8          | 37.1          | 40.5      | 43.9          | 47.3          | 50.6          | 54.0      | 57.4           | 60.8           |  |
| 5/32        | .157          | 3.9              | 7.8        | 11.7       | 15.6      | 19.5          | 23.4          | 27.3          | 31.3      | 35.2          | 39.1          | 43.0          | 46.9      | 50.8          | 54.7          | 58.6          | 62.5      | 66.4           | 70.3           |  |
| 3/16        | .188          | 4.7              | 9.4        | 14.1       | 18.8      | 23.4          | 28.1          | 32.8          | 37.5      | 42.2          | 46.9          | 51.6          | 56.3      | 60.9          | 65.6          | 70.3          | 75.0      | 79.7           | 84.4           |  |
| 1/4         | .250          | 6.3              | 13         | 18.8       | 25.0      | 31.3          | 37.5          | 43.8          | 50.0      | 56.3          | 62.5          | 68.8          | 75.0      | 81.3          | 87.5          | 93.8          | 100.0     | 106.3          | 112.5          |  |
| 5/16        | .313          | -                | 16         | 23.4       | 31.3      | 39.1          | 46.9          | 54.7          | 62.5      | 70.3          | 78.1          | 85.9          | 93.8      | 102           | 109           | 117           | 125.0     | 132.8          | 140.6          |  |
| 3/8         | .375          | -                | 19         | 28.1       | 37.5      | 46.9          | 56.3          | 65.6          | 75.0      | 84.4          | 93.8          | 103           | 113       | 122           | 131           | 141           | 150.0     | 159.4          | 168.8          |  |
| 7/16        | .438          | -                | 22         | 32.8       | 43.8      | 54.7          | 65.6          | 76.6          | 87.5      | 98.4          | 109           | 120           | 131       | 142           | 153           | 164           | 175.0     | 185.9          | 196.9          |  |
| 1/2         | .500          | -                | 27         | 37.5       | 50.0      | 62.5          | 75.0          | 87.5          | 100       | 113           | 125           | 138           | 150       | 163           | 175           | 188           | 200.0     | 212.5          | 225.0          |  |