

ISO DIE SPRINGS



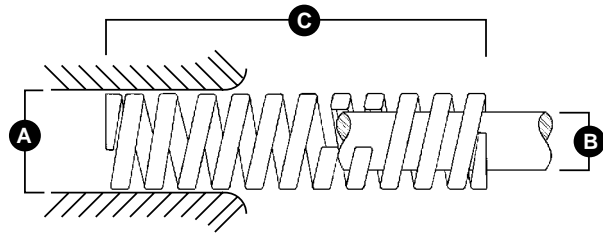
Associated Spring Raymond Die Springs are manufactured using a wire cross section developed to provide optimum balance between load carrying characteristics and cycle life.

Produced under carefully controlled processes with special equipment developed by Barnes Group, Inc's research and development facilities.

All of the manufacturing steps are closely monitored by rigid quality controls, inspection and testing to ensure that the long service life engineered into every die spring is constant.

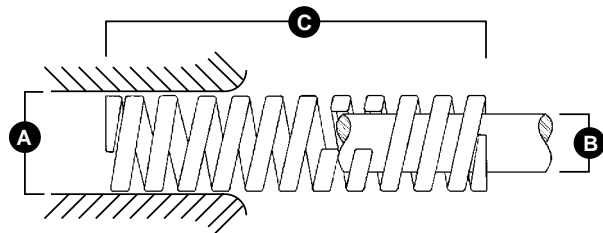
Full technical specifications available on request from Associated Spring by calling 1-800-458-0867.

Springs manufactured in accordance with ISO 10243.



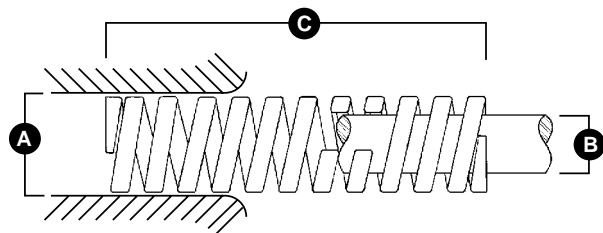
Green • Light Duty

Pages 4-5



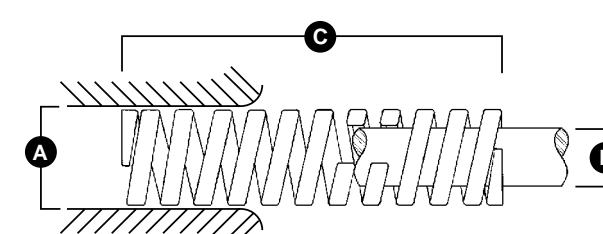
Blue • Medium Duty

Pages 6-7



Red • Heavy Duty

Pages 8-9



Yellow • Extra Heavy Duty

Pages 10-11

Selecting Die Springs

A general rule to observe in spring selection is to always use as many springs as the die will accommodate which will produce the required load with the least amount of deflection. This will increase the useful life of the spring, reduce the chances of spring failure and the resulting downtime, loss of production and increased maintenance cost.

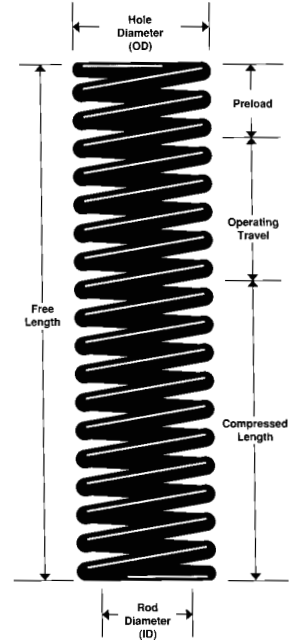
Die spring costs are a very small percentage of the total cost of the die. An effort to save a few cents on die springs is a misguided act that can cost many dollars in lost time and labor.

The more rapidly a spring works, the more attention must be paid to its fatigue limits. In slow moving dies or fixtures, it is possible to get good performance with springs operating near maximum deflection. As the working speed increases, the life expectancy of the spring at that deflection decreases.

Springs for strippers, pressure pads, and other die components can be selected from

the following pages. When selecting a die spring it is necessary to determine the type of performance required of the springs: short, normal, or long run. For short or normal run applications use the deflections tabulated in the long life columns. For long run applications use deflections based on optimum life. The recommended deflections for each spring based on the performance required are shown on pages 6 to 13.

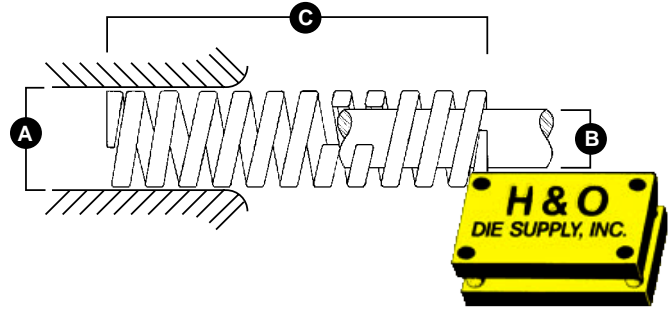
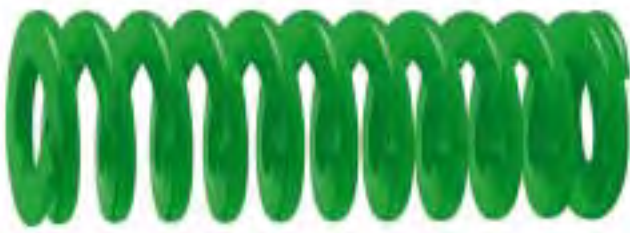
Another approach when selecting a spring is to work back from the amount of operating travel the springs will be subjected to as indicated by the die layout. Select springs in the appropriate duty range which will operate efficiently at the required travel. Calculate the number of springs needed by dividing the load supplied by one spring into the total load required. Round the total number of springs to the next higher even number for balanced performance.



Deflection To Compressed Length Conversion Table

| ISO Die Spring Series | | | | | | | | | | | | |
|-----------------------|-----------------------------------|-------|-------|------------------------------------|-------|-------|-----------------------------------|-------|-------|---|-------|-------|
| Free Length (mm) | Light Duty Compressed Length (mm) | | | Medium Duty Compressed Length (mm) | | | Heavy Duty Compressed Length (mm) | | | Extra Heavy Duty Compressed Length (mm) | | |
| | Deflection in % free length | | | Deflection in % free length | | | Deflection in % free length | | | Deflection in % free length | | |
| | 25% | 30% | 35% | 20% | 25% | 30% | 15% | 20% | 25% | 15% | 17% | 20% |
| 25 | 18.8 | 17.5 | 16.3 | 20.0 | 18.8 | 17.5 | 21.3 | 20.0 | 18.8 | 21.3 | 20.8 | 20.0 |
| 32 | 24.0 | 22.4 | 20.8 | 25.6 | 24.0 | 22.4 | 27.2 | 25.6 | 24.0 | 27.2 | 26.6 | 25.6 |
| 38 | 28.5 | 26.6 | 24.7 | 30.4 | 28.5 | 26.6 | 32.3 | 30.4 | 28.5 | 32.3 | 31.5 | 30.4 |
| 44 | 33.0 | 30.8 | 28.6 | 35.2 | 33.0 | 30.8 | 37.4 | 35.2 | 33.0 | 37.4 | 36.5 | 35.2 |
| 51 | 38.3 | 35.7 | 33.2 | 40.8 | 38.3 | 35.7 | 43.4 | 40.8 | 38.3 | 43.4 | 42.3 | 40.8 |
| 64 | 48.0 | 44.8 | 41.6 | 51.2 | 48.0 | 44.8 | 54.4 | 51.2 | 48.0 | 54.4 | 53.1 | 51.2 |
| 76 | 57.0 | 53.2 | 49.4 | 60.8 | 57.0 | 53.2 | 64.6 | 60.8 | 57.0 | 64.6 | 63.1 | 60.8 |
| 89 | 66.8 | 62.3 | 57.9 | 71.2 | 66.8 | 62.3 | 75.7 | 71.2 | 66.8 | 75.7 | 73.9 | 71.2 |
| 102 | 76.5 | 71.4 | 66.3 | 81.6 | 76.5 | 71.4 | 86.7 | 81.6 | 76.5 | 86.7 | 84.7 | 81.6 |
| 115 | 86.3 | 80.5 | 74.8 | 92.0 | 86.3 | 80.5 | 97.8 | 92.0 | 86.3 | 97.8 | 95.5 | 92.0 |
| 127 | 95.3 | 88.9 | 82.6 | 101.6 | 95.3 | 88.9 | 108.0 | 101.6 | 95.3 | 108.0 | 105.4 | 101.6 |
| 139 | 104.3 | 97.3 | 90.4 | 111.2 | 104.3 | 97.3 | 118.2 | 111.2 | 104.3 | 118.2 | 115.4 | 111.2 |
| 152 | 114.0 | 106.4 | 98.8 | 121.6 | 114.0 | 106.4 | 129.2 | 121.6 | 114.0 | 129.2 | 126.2 | 121.6 |
| 178 | 133.5 | 124.6 | 115.7 | 142.4 | 133.5 | 124.6 | 151.3 | 142.4 | 133.5 | 151.3 | 147.7 | 142.4 |
| 203 | 152.3 | 142.1 | 132.0 | 162.4 | 152.3 | 142.1 | 172.6 | 162.4 | 152.3 | 172.6 | 168.5 | 162.4 |
| 254 | 190.5 | 177.8 | 165.1 | 203.2 | 190.5 | 177.8 | 215.9 | 203.2 | 190.5 | 215.9 | 210.8 | 203.2 |
| 305 | 228.8 | 213.5 | 198.3 | 244.0 | 228.8 | 213.5 | 259.3 | 244.0 | 228.8 | 259.3 | 253.2 | 244.0 |

RAYMOND® LIGHT DUTY ISO DIE SPRINGS



Raymond® LIGHT DUTY DIE SPRINGS ISO SPECIFICATION SERIES GREEN

| Hole Dia. (mm) | Rod Dia. (mm) | Free Length (mm) | CATALOG NUMBER | Load at 1 mm Def. (N) | LOAD DEFLECTION TABLE | | | | | | |
|----------------|---------------|------------------|----------------|-----------------------|---------------------------------------|-----------------|------------------------------------|-----------------|---|-----------------|---------------------|
| | | | | | For Optimum Life (25% of free length) | | For Long Life (30% of free length) | | Maximum Operating Def. (35% of free length) | | *Maximum Deflection |
| | | | | | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Deflection (mm) |
| 10 | 5 | 25 | ISO110025 | 10.0 | 62.5 | 6.3 | 75.0 | 7.5 | 87.5 | 8.8 | 10.3 |
| | | 32 | ISO110032 | 8.5 | 68.0 | 8.0 | 81.6 | 9.6 | 95.2 | 11.2 | 13.1 |
| | | 38 | ISO110038 | 6.8 | 64.6 | 9.5 | 77.5 | 11.4 | 90.4 | 13.3 | 15.6 |
| | | 44 | ISO110044 | 6.0 | 66.0 | 11.0 | 79.2 | 13.2 | 92.4 | 15.4 | 18.0 |
| | | 51 | ISO110051 | 5.0 | 63.8 | 12.8 | 76.5 | 15.3 | 89.3 | 17.9 | 20.9 |
| | | 64 | ISO110064 | 4.3 | 68.8 | 16.0 | 82.6 | 19.2 | 96.3 | 22.4 | 26.0 |
| | | 76 | ISO110076 | 3.2 | 60.8 | 19.0 | 73.0 | 22.8 | 85.1 | 26.6 | 31.2 |
| | | 305 | ISO110305 | 1.1 | 83.9 | 76.3 | 100.7 | 91.5 | 117.4 | 106.8 | 125.0 |
| 12.5 | 6.3 | 25 | ISO112025 | 17.9 | 111.9 | 6.3 | 134.3 | 7.5 | 156.6 | 8.8 | 10.3 |
| | | 32 | ISO112032 | 16.4 | 131.2 | 8.0 | 157.4 | 9.6 | 183.7 | 11.2 | 13.1 |
| | | 38 | ISO112038 | 13.6 | 129.2 | 9.5 | 155.0 | 11.4 | 180.9 | 13.3 | 15.6 |
| | | 44 | ISO112044 | 12.1 | 133.1 | 11.0 | 159.7 | 13.2 | 186.3 | 15.4 | 18.0 |
| | | 51 | ISO112051 | 11.4 | 145.4 | 12.8 | 174.4 | 15.3 | 203.5 | 17.9 | 20.9 |
| | | 64 | ISO112064 | 9.3 | 148.8 | 16.0 | 178.6 | 19.2 | 208.3 | 22.4 | 26.3 |
| | | 76 | ISO112076 | 7.1 | 134.9 | 19.0 | 161.9 | 22.8 | 188.9 | 26.6 | 31.2 |
| | | 305 | ISO112305 | 1.4 | 106.8 | 76.3 | 128.1 | 91.5 | 149.5 | 106.8 | 125.0 |
| 16 | 8 | 25 | ISO116025 | 23.4 | 146.3 | 6.3 | 175.5 | 7.5 | 204.8 | 8.8 | 10.3 |
| | | 32 | ISO116032 | 22.9 | 183.2 | 8.0 | 219.8 | 9.6 | 256.5 | 11.2 | 13.1 |
| | | 38 | ISO116038 | 19.3 | 183.4 | 9.5 | 220.0 | 11.4 | 256.7 | 13.3 | 15.6 |
| | | 44 | ISO116044 | 17.1 | 188.1 | 11.0 | 225.7 | 13.2 | 263.3 | 15.4 | 18.0 |
| | | 51 | ISO116051 | 15.7 | 200.2 | 12.8 | 240.2 | 15.3 | 280.2 | 17.9 | 20.9 |
| | | 64 | ISO116064 | 10.7 | 171.2 | 16.0 | 205.4 | 19.2 | 239.7 | 22.4 | 26.3 |
| | | 76 | ISO116076 | 10.0 | 190.0 | 19.0 | 228.0 | 22.8 | 266.0 | 26.6 | 31.2 |
| | | 305 | ISO116305 | 2.5 | 190.6 | 76.3 | 228.8 | 91.5 | 266.9 | 106.8 | 125.0 |
| 20 | 10 | 25 | ISO120025 | 55.8 | 348.8 | 6.3 | 418.5 | 7.5 | 488.3 | 8.8 | 10.2 |
| | | 32 | ISO120032 | 45.0 | 360.0 | 8.0 | 432.0 | 9.6 | 504.0 | 11.2 | 12.5 |
| | | 38 | ISO120038 | 33.3 | 316.4 | 9.5 | 379.6 | 11.4 | 442.9 | 13.3 | 15.0 |
| | | 44 | ISO120044 | 30.0 | 330.0 | 11.0 | 396.0 | 13.2 | 462.0 | 15.4 | 18.0 |
| | | 51 | ISO120051 | 24.5 | 312.4 | 12.8 | 374.9 | 15.3 | 437.3 | 17.9 | 20.0 |
| | | 64 | ISO120064 | 20.0 | 320.0 | 16.0 | 384.0 | 19.2 | 448.0 | 22.4 | 25.0 |
| | | 76 | ISO120076 | 16.0 | 304.0 | 19.0 | 364.8 | 22.8 | 425.6 | 26.6 | 30.0 |
| | | 89 | ISO120089 | 14.0 | 311.5 | 22.3 | 373.8 | 26.7 | 436.1 | 31.2 | 35.0 |
| | | 102 | ISO120102 | 12.0 | 306.0 | 25.5 | 367.2 | 30.6 | 428.4 | 35.7 | 41.0 |
| | | 115 | ISO120115 | 10.9 | 313.4 | 28.8 | 376.1 | 34.5 | 438.7 | 40.3 | 46.0 |
| | | 127 | ISO120127 | 9.5 | 301.6 | 31.8 | 362.0 | 38.1 | 422.3 | 44.5 | 51.0 |
| | | 139 | ISO120139 | 8.4 | 291.9 | 34.8 | 350.3 | 41.7 | 408.7 | 48.7 | 56.0 |
| 305 | ISO120305 | 4.0 | 305.0 | 76.3 | 366.0 | 91.5 | 427.0 | 106.8 | 122.0 | | |
| 25 | 12.5 | 25 | ISO125025 | 100.0 | 625.0 | 6.3 | 750.0 | 7.5 | 875.0 | 8.8 | 10.2 |
| | | 32 | ISO125032 | 80.3 | 642.4 | 8.0 | 770.9 | 9.6 | 899.4 | 11.2 | 12.5 |
| | | 38 | ISO125038 | 62.0 | 589.0 | 9.5 | 706.8 | 11.4 | 824.6 | 13.3 | 15.0 |
| | | 44 | ISO125044 | 52.9 | 581.9 | 11.0 | 698.3 | 13.2 | 814.7 | 15.4 | 18.0 |
| | | 51 | ISO125051 | 44.0 | 561.0 | 12.8 | 673.2 | 15.3 | 785.4 | 17.9 | 20.0 |
| | | 64 | ISO125064 | 35.2 | 563.2 | 16.0 | 675.8 | 19.2 | 788.5 | 22.4 | 25.0 |
| | | 76 | ISO125076 | 28.0 | 532.0 | 19.0 | 638.4 | 22.8 | 744.8 | 26.6 | 30.0 |

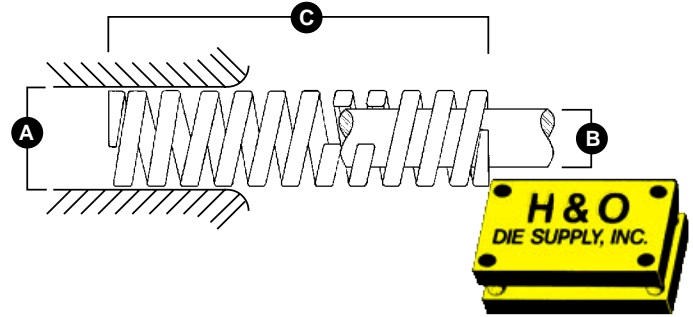
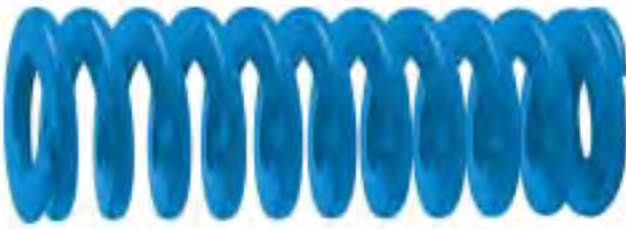
*Tabulated deflections shown represent near solid and are for design information only.



Raymond® LIGHT DUTY DIE SPRINGS ISO SPECIFICATION SERIES GREEN

| Hole Dia. (mm) | Rod Dia. (mm) | Free Length (mm) | CATALOG NUMBER | Load at 1 mm Def. (N) | LOAD DEFLECTION TABLE | | | | | | |
|----------------|---------------|------------------|----------------|-----------------------|---------------------------------------|-----------------|------------------------------------|-----------------|---|-----------------|---------------------|
| | | | | | For Optimum Life (25% of free length) | | For Long Life (30% of free length) | | Maximum Operating Def. (35% of free length) | | *Maximum Deflection |
| | | | | | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Deflection (mm) |
| 25 | 12.5 | 89 | ISO125089 | 24.0 | 534.0 | 22.3 | 640.8 | 26.7 | 747.6 | 31.2 | 35.0 |
| | | 102 | ISO125102 | 21.1 | 538.1 | 25.5 | 645.7 | 30.6 | 753.3 | 35.7 | 41.0 |
| | | 115 | ISO125115 | 18.7 | 537.6 | 28.8 | 645.2 | 34.5 | 752.7 | 40.3 | 46.0 |
| | | 127 | ISO125127 | 16.7 | 530.2 | 31.8 | 636.3 | 38.1 | 742.3 | 44.5 | 51.0 |
| | | 139 | ISO125139 | 15.3 | 531.7 | 34.8 | 638.0 | 41.7 | 744.3 | 48.7 | 56.0 |
| | | 152 | ISO125152 | 14.0 | 532.0 | 38.0 | 638.4 | 45.6 | 744.8 | 53.2 | 61.0 |
| | | 178 | ISO125178 | 12.5 | 556.3 | 44.5 | 667.5 | 53.4 | 778.8 | 62.3 | 71.0 |
| | | 203 | ISO125203 | 10.4 | 527.8 | 50.8 | 633.4 | 60.9 | 738.9 | 71.1 | 81.0 |
| | | 305 | ISO125305 | 7.0 | 533.8 | 76.3 | 640.5 | 91.5 | 747.3 | 106.8 | 122.0 |
| 32 | 16 | 38 | ISO132038 | 94.0 | 893.0 | 9.5 | 1071.6 | 11.4 | 1250.2 | 13.3 | 15.0 |
| | | 44 | ISO132044 | 79.5 | 874.5 | 11.0 | 1049.4 | 13.2 | 1224.3 | 15.4 | 18.0 |
| | | 51 | ISO132051 | 67.0 | 854.3 | 12.8 | 1025.1 | 15.3 | 1196.0 | 17.9 | 20.0 |
| | | 64 | ISO132064 | 53.0 | 848.0 | 16.0 | 1017.6 | 19.2 | 1187.2 | 22.4 | 25.0 |
| | | 76 | ISO132076 | 44.0 | 836.0 | 19.0 | 1003.2 | 22.8 | 1170.4 | 26.6 | 30.0 |
| | | 89 | ISO132089 | 37.2 | 827.7 | 22.3 | 993.2 | 26.7 | 1158.8 | 31.2 | 35.0 |
| | | 102 | ISO132102 | 32.0 | 816.0 | 25.5 | 979.2 | 30.6 | 1142.4 | 35.7 | 41.0 |
| | | 115 | ISO132115 | 29.0 | 833.8 | 28.8 | 1000.5 | 34.5 | 1167.3 | 40.3 | 46.0 |
| | | 127 | ISO132127 | 25.0 | 793.8 | 31.8 | 952.5 | 38.1 | 1111.3 | 44.5 | 51.0 |
| | | 139 | ISO132139 | 23.0 | 799.3 | 34.8 | 959.1 | 41.7 | 1119.0 | 48.7 | 56.0 |
| | | 152 | ISO132152 | 21.5 | 817.0 | 38.0 | 980.4 | 45.6 | 1143.8 | 53.2 | 61.0 |
| | | 178 | ISO132178 | 18.2 | 809.9 | 44.5 | 971.9 | 53.4 | 1133.9 | 62.3 | 71.0 |
| | | 203 | ISO132203 | 15.8 | 801.9 | 50.8 | 962.2 | 60.9 | 1122.6 | 71.1 | 81.0 |
| | | 254 | ISO132254 | 12.5 | 793.8 | 63.5 | 952.5 | 76.2 | 1111.3 | 88.9 | 102.0 |
| 305 | ISO132305 | 10.3 | 785.4 | 76.3 | 942.5 | 91.5 | 1099.5 | 106.8 | 122.0 | | |
| 40 | 20 | 51 | ISO140051 | 92.0 | 1173.0 | 12.8 | 1407.6 | 15.3 | 1642.2 | 17.9 | 20.0 |
| | | 64 | ISO140064 | 73.0 | 1168.0 | 16.0 | 1401.6 | 19.2 | 1635.2 | 22.4 | 25.0 |
| | | 76 | ISO140076 | 63.0 | 1197.0 | 19.0 | 1436.4 | 22.8 | 1675.8 | 26.6 | 30.0 |
| | | 89 | ISO140089 | 51.0 | 1134.8 | 22.3 | 1361.7 | 26.7 | 1588.7 | 31.2 | 35.0 |
| | | 102 | ISO140102 | 43.0 | 1096.5 | 25.5 | 1315.8 | 30.6 | 1535.1 | 35.7 | 41.0 |
| | | 115 | ISO140115 | 39.6 | 1138.5 | 28.8 | 1366.2 | 34.5 | 1593.9 | 40.3 | 46.0 |
| | | 127 | ISO140127 | 37.0 | 1174.8 | 31.8 | 1409.7 | 38.1 | 1644.7 | 44.5 | 51.0 |
| | | 139 | ISO140139 | 32.0 | 1112.0 | 34.8 | 1334.4 | 41.7 | 1556.8 | 48.7 | 56.0 |
| | | 152 | ISO140152 | 28.0 | 1064.0 | 38.0 | 1276.8 | 45.6 | 1489.6 | 53.2 | 61.0 |
| | | 178 | ISO140178 | 25.2 | 1121.4 | 44.5 | 1345.7 | 53.4 | 1570.0 | 62.3 | 71.0 |
| | | 203 | ISO140203 | 22.7 | 1152.0 | 50.8 | 1382.4 | 60.9 | 1612.8 | 71.1 | 81.0 |
| | | 254 | ISO140254 | 17.0 | 1079.5 | 63.5 | 1295.4 | 76.2 | 1511.3 | 88.9 | 102.0 |
| | | 305 | ISO140305 | 14.8 | 1128.5 | 76.3 | 1354.2 | 91.5 | 1579.9 | 106.8 | 122.0 |
| 50 | 25 | 64 | ISO150064 | 156.0 | 2496.0 | 16.0 | 2995.2 | 19.2 | 3494.4 | 22.4 | 25.0 |
| | | 76 | ISO150076 | 125.0 | 2375.0 | 19.0 | 2850.0 | 22.8 | 3325.0 | 26.6 | 30.0 |
| | | 89 | ISO150089 | 109.0 | 2425.3 | 22.3 | 2910.3 | 26.7 | 3395.4 | 31.2 | 35.0 |
| | | 102 | ISO150102 | 94.0 | 2397.0 | 25.5 | 2876.4 | 30.6 | 3355.8 | 35.7 | 41.0 |
| | | 115 | ISO150115 | 81.0 | 2328.8 | 28.8 | 2794.5 | 34.5 | 3260.3 | 40.3 | 46.0 |
| | | 127 | ISO150127 | 71.0 | 2254.3 | 31.8 | 2705.1 | 38.1 | 3156.0 | 44.5 | 51.0 |
| | | 139 | ISO150139 | 66.5 | 2310.9 | 34.8 | 2773.1 | 41.7 | 3235.2 | 48.7 | 56.0 |
| | | 152 | ISO150152 | 60.0 | 2280.0 | 38.0 | 2736.0 | 45.6 | 3192.0 | 53.2 | 61.0 |
| | | 178 | ISO150178 | 52.0 | 2314.0 | 44.5 | 2776.8 | 53.4 | 3239.6 | 62.3 | 71.0 |
| | | 203 | ISO150203 | 44.0 | 2233.0 | 50.8 | 2679.6 | 60.9 | 3126.2 | 71.1 | 81.0 |
| | | 254 | ISO150254 | 35.0 | 2222.5 | 63.5 | 2667.0 | 76.2 | 3111.5 | 88.9 | 102.0 |
| 305 | ISO150305 | 28.5 | 2173.1 | 76.3 | 2607.8 | 91.5 | 3042.4 | 106.8 | 122.0 | | |
| 63 | 38 | 76 | ISO163076 | 189.0 | 3591.0 | 19.0 | 4309.2 | 22.8 | 5027.4 | 26.6 | 30.0 |
| | | 89 | ISO163089 | 158.0 | 3515.5 | 22.3 | 4218.6 | 26.7 | 4921.7 | 31.2 | 35.0 |
| | | 102 | ISO163102 | 131.0 | 3340.5 | 25.5 | 4008.6 | 30.6 | 4676.7 | 35.7 | 41.0 |
| | | 115 | ISO163115 | 116.0 | 3335.0 | 28.8 | 4002.0 | 34.5 | 4669.0 | 40.3 | 46.0 |
| | | 127 | ISO163127 | 103.0 | 3270.3 | 31.8 | 3924.3 | 38.1 | 4578.4 | 44.5 | 51.0 |
| | | 152 | ISO163152 | 84.3 | 3203.4 | 38.0 | 3844.1 | 45.6 | 4484.8 | 53.2 | 61.0 |
| | | 178 | ISO163178 | 71.5 | 3181.8 | 44.5 | 3818.1 | 53.4 | 4454.5 | 62.3 | 71.0 |
| | | 203 | ISO163203 | 61.7 | 3131.3 | 50.8 | 3757.5 | 60.9 | 4383.8 | 71.1 | 81.0 |
| | | 254 | ISO163254 | 47.0 | 2984.5 | 63.5 | 3581.4 | 76.2 | 4178.3 | 88.9 | 102.0 |
| | | 305 | ISO163305 | 38.2 | 2912.8 | 76.3 | 3495.3 | 91.5 | 4077.9 | 106.8 | 122.0 |

*Tabulated deflections shown represent near solid and are for design information only.



Raymond® MEDIUM DUTY DIE SPRINGS ISO SPECIFICATION SERIES BLUE

| Hole Dia. (mm) | Rod Dia. (mm) | Free Length (mm) | CATALOG NUMBER | Load at 1 mm Def. (N) | LOAD DEFLECTION TABLE | | | | | | |
|----------------|---------------|------------------|----------------|-----------------------|---------------------------------------|-----------------|------------------------------------|-----------------|---|-----------------|---------------------|
| | | | | | For Optimum Life (20% of free length) | | For Long Life (25% of free length) | | Maximum Operating Def. (30% of free length) | | *Maximum Deflection |
| | | | | | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Deflection (mm) |
| 10 | 5 | 25 | ISO210025 | 16.0 | 80.0 | 5.0 | 100.0 | 6.3 | 120.0 | 7.5 | 9.5 |
| | | 32 | ISO210032 | 13.0 | 83.2 | 6.4 | 104.0 | 8.0 | 124.8 | 9.6 | 12.2 |
| | | 38 | ISO210038 | 11.9 | 90.4 | 7.6 | 113.1 | 9.5 | 135.7 | 11.4 | 14.4 |
| | | 44 | ISO210044 | 10.3 | 90.6 | 8.8 | 113.3 | 11.0 | 136.0 | 13.2 | 16.7 |
| | | 51 | ISO210051 | 8.9 | 90.8 | 10.2 | 113.5 | 12.8 | 136.2 | 15.3 | 19.4 |
| | | 64 | ISO210064 | 7.5 | 96.0 | 12.8 | 120.0 | 16.0 | 144.0 | 19.2 | 24.3 |
| | | 76 | ISO210076 | 5.3 | 80.6 | 15.2 | 100.7 | 19.0 | 120.8 | 22.8 | 28.9 |
| | | 305 | ISO210305 | 1.6 | 97.6 | 61.0 | 122.0 | 76.3 | 146.4 | 91.5 | 116.0 |
| 12.5 | 6.3 | 25 | ISO212025 | 30.0 | 150.0 | 5.0 | 187.5 | 6.3 | 225.0 | 7.5 | 9.5 |
| | | 32 | ISO212032 | 24.8 | 158.7 | 6.4 | 198.4 | 8.0 | 238.1 | 9.6 | 12.2 |
| | | 38 | ISO212038 | 21.4 | 162.6 | 7.6 | 203.3 | 9.5 | 244.0 | 11.4 | 14.4 |
| | | 44 | ISO212044 | 18.5 | 162.8 | 8.8 | 203.5 | 11.0 | 244.2 | 13.2 | 16.7 |
| | | 51 | ISO212051 | 15.5 | 158.1 | 10.2 | 197.6 | 12.8 | 237.2 | 15.3 | 19.4 |
| | | 64 | ISO212064 | 12.1 | 154.9 | 12.8 | 193.6 | 16.0 | 232.3 | 19.2 | 24.3 |
| | | 76 | ISO212076 | 10.2 | 155.0 | 15.2 | 193.8 | 19.0 | 232.6 | 22.8 | 28.9 |
| | | 305 | ISO212305 | 2.1 | 128.1 | 61.0 | 160.1 | 76.3 | 192.2 | 91.5 | 116.0 |
| 16 | 8 | 25 | ISO216025 | 49.4 | 247.0 | 5.0 | 308.8 | 6.3 | 370.5 | 7.5 | 9.5 |
| | | 32 | ISO216032 | 37.1 | 237.4 | 6.4 | 296.8 | 8.0 | 356.2 | 9.6 | 12.2 |
| | | 38 | ISO216038 | 33.9 | 257.6 | 7.6 | 322.1 | 9.5 | 386.5 | 11.4 | 14.4 |
| | | 44 | ISO216044 | 30.0 | 264.0 | 8.8 | 330.0 | 11.0 | 396.0 | 13.2 | 16.7 |
| | | 51 | ISO216051 | 26.4 | 269.3 | 10.2 | 336.6 | 12.8 | 403.9 | 15.3 | 19.4 |
| | | 64 | ISO216064 | 20.5 | 262.4 | 12.8 | 328.0 | 16.0 | 393.6 | 19.2 | 24.3 |
| | | 76 | ISO216076 | 17.8 | 270.6 | 15.2 | 338.2 | 19.0 | 405.8 | 22.8 | 28.9 |
| | | 305 | ISO216305 | 4.8 | 292.8 | 61.0 | 366.0 | 76.3 | 439.2 | 91.5 | 116.0 |
| 20 | 10 | 25 | ISO220025 | 98.0 | 490.0 | 5.0 | 612.5 | 6.3 | 735.0 | 7.5 | 9.4 |
| | | 32 | ISO220032 | 72.6 | 464.6 | 6.4 | 580.8 | 8.0 | 697.0 | 9.6 | 12.0 |
| | | 38 | ISO220038 | 56.0 | 425.6 | 7.6 | 532.0 | 9.5 | 638.4 | 11.4 | 14.0 |
| | | 44 | ISO220044 | 47.5 | 418.0 | 8.8 | 522.5 | 11.0 | 627.0 | 13.2 | 16.5 |
| | | 51 | ISO220051 | 41.7 | 425.3 | 10.2 | 531.7 | 12.8 | 638.0 | 15.3 | 19.0 |
| | | 64 | ISO220064 | 32.3 | 413.4 | 12.8 | 516.8 | 16.0 | 620.2 | 19.2 | 24.0 |
| | | 76 | ISO220076 | 25.1 | 381.5 | 15.2 | 476.9 | 19.0 | 572.3 | 22.8 | 28.0 |
| | | 89 | ISO220089 | 22.0 | 391.6 | 17.8 | 489.5 | 22.3 | 587.4 | 26.7 | 33.0 |
| | | 102 | ISO220102 | 19.8 | 403.9 | 20.4 | 504.9 | 25.5 | 605.9 | 30.6 | 38.0 |
| | | 115 | ISO220115 | 18.1 | 416.3 | 23.0 | 520.4 | 28.8 | 624.5 | 34.5 | 43.0 |
| | | 127 | ISO220127 | 16.6 | 421.6 | 25.4 | 527.1 | 31.8 | 632.5 | 38.1 | 48.0 |
| | | 139 | ISO220139 | 15.1 | 419.8 | 27.8 | 524.7 | 34.8 | 629.7 | 41.7 | 52.0 |
| 305 | ISO220305 | 6.1 | 372.1 | 61.0 | 465.1 | 76.3 | 558.2 | 91.5 | 114.0 | | |
| 25 | 12.5 | 25 | ISO225025 | 147.0 | 735.0 | 5.0 | 918.8 | 6.3 | 1102.5 | 7.5 | 9.4 |
| | | 32 | ISO225032 | 118.0 | 755.2 | 6.4 | 944.0 | 8.0 | 1132.8 | 9.6 | 12.0 |
| | | 38 | ISO225038 | 93.0 | 706.8 | 7.6 | 883.5 | 9.5 | 1060.2 | 11.4 | 14.0 |
| | | 44 | ISO225044 | 80.8 | 711.0 | 8.8 | 888.8 | 11.0 | 1066.6 | 13.2 | 16.5 |
| | | 51 | ISO225051 | 68.6 | 699.7 | 10.2 | 874.7 | 12.8 | 1049.6 | 15.3 | 19.0 |
| | | 76 | ISO225076 | 43.2 | 656.6 | 15.2 | 820.8 | 19.0 | 985.0 | 22.8 | 28.0 |

*Tabulated deflections shown represent near solid and are for design information only.

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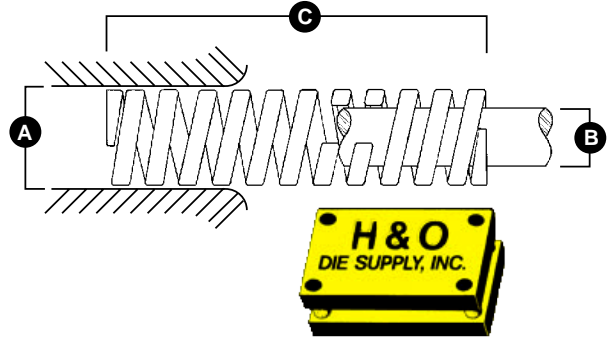
| Raymond® | | MEDIUM DUTY DIE SPRINGS | | | ISO SPECIFICATION SERIES | | | | | | BLUE |
|----------------|---------------|-------------------------|----------------|-----------------------|---------------------------------------|-----------------|------------------------------------|-----------------|---|-----------------|---------------------|
| Hole Dia. (mm) | Rod Dia. (mm) | Free Length (mm) | CATALOG NUMBER | Load at 1 mm Def. (N) | LOAD DEFLECTION TABLE | | | | | | |
| | | | | | For Optimum Life (20% of free length) | | For Long Life (25% of free length) | | Maximum Operating Def. (30% of free length) | | *Maximum Deflection |
| | | | | | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Deflection (mm) |
| A | B | C | | | | | | | | | |
| 25 | 12.5 | 89 | ISO225089 | 38.2 | 680.0 | 17.8 | 850.0 | 22.3 | 1019.9 | 26.7 | 33.0 |
| | | 102 | ISO225102 | 33.0 | 673.2 | 20.4 | 841.5 | 25.5 | 1009.8 | 30.6 | 38.0 |
| | | 115 | ISO225115 | 28.0 | 644.0 | 23.0 | 805.0 | 28.8 | 966.0 | 34.5 | 43.0 |
| | | 127 | ISO225127 | 25.9 | 657.9 | 25.4 | 822.3 | 31.8 | 986.8 | 38.1 | 48.0 |
| | | 139 | ISO225139 | 23.2 | 645.0 | 27.8 | 806.2 | 34.8 | 967.4 | 41.7 | 52.0 |
| | | 152 | ISO225152 | 20.8 | 632.3 | 30.4 | 790.4 | 38.0 | 948.5 | 45.6 | 57.0 |
| | | 178 | ISO225178 | 17.8 | 633.7 | 35.6 | 792.1 | 44.5 | 950.5 | 53.4 | 67.0 |
| | | 203 | ISO225203 | 15.8 | 641.5 | 40.6 | 801.9 | 50.8 | 962.2 | 60.9 | 76.0 |
| | | 305 | ISO225305 | 10.2 | 622.2 | 61.0 | 777.8 | 76.3 | 933.3 | 91.5 | 114.0 |
| 32 | 16 | 38 | ISO232038 | 185.0 | 1406.0 | 7.6 | 1757.5 | 9.5 | 2109.0 | 11.4 | 14.0 |
| | | 44 | ISO232044 | 158.0 | 1390.4 | 8.8 | 1738.0 | 11.0 | 2085.6 | 13.2 | 16.5 |
| | | 51 | ISO232051 | 134.0 | 1366.8 | 10.2 | 1708.5 | 12.8 | 2050.2 | 15.3 | 19.0 |
| | | 64 | ISO232064 | 99.0 | 1267.2 | 12.8 | 1584.0 | 16.0 | 1900.8 | 19.2 | 24.0 |
| | | 76 | ISO232076 | 80.5 | 1223.6 | 15.2 | 1529.5 | 19.0 | 1835.4 | 22.8 | 28.0 |
| | | 89 | ISO232089 | 69.1 | 1230.0 | 17.8 | 1537.5 | 22.3 | 1845.0 | 26.7 | 33.0 |
| | | 102 | ISO232102 | 58.8 | 1199.5 | 20.4 | 1499.4 | 25.5 | 1799.3 | 30.6 | 38.0 |
| | | 115 | ISO232115 | 51.5 | 1184.5 | 23.0 | 1480.6 | 28.8 | 1776.8 | 34.5 | 43.0 |
| | | 127 | ISO232127 | 44.8 | 1137.9 | 25.4 | 1422.4 | 31.8 | 1706.9 | 38.1 | 48.0 |
| | | 139 | ISO232139 | 42.3 | 1175.9 | 27.8 | 1469.9 | 34.8 | 1763.9 | 41.7 | 52.0 |
| | | 152 | ISO232152 | 37.8 | 1149.1 | 30.4 | 1436.4 | 38.0 | 1723.7 | 45.6 | 57.0 |
| | | 178 | ISO232178 | 32.5 | 1157.0 | 35.6 | 1446.3 | 44.5 | 1735.5 | 53.4 | 67.0 |
| | | 203 | ISO232203 | 28.9 | 1173.3 | 40.6 | 1466.7 | 50.8 | 1760.0 | 60.9 | 76.0 |
| 254 | ISO232254 | 21.4 | 1087.1 | 50.8 | 1358.9 | 63.5 | 1630.7 | 76.2 | 95.0 | | |
| 305 | ISO232305 | 18.3 | 1116.3 | 61.0 | 1395.4 | 76.3 | 1674.5 | 91.5 | 114.0 | | |
| 40 | 20 | 51 | ISO240051 | 181.6 | 1852.3 | 10.2 | 2315.4 | 12.8 | 2778.5 | 15.3 | 19.0 |
| | | 64 | ISO240064 | 140.0 | 1792.0 | 12.8 | 2240.0 | 16.0 | 2688.0 | 19.2 | 24.0 |
| | | 76 | ISO240076 | 108.0 | 1641.6 | 15.2 | 2052.0 | 19.0 | 2462.4 | 22.8 | 28.0 |
| | | 89 | ISO240089 | 90.7 | 1614.5 | 17.8 | 2018.1 | 22.3 | 2421.7 | 26.7 | 33.0 |
| | | 102 | ISO240102 | 81.0 | 1652.4 | 20.4 | 2065.5 | 25.5 | 2478.6 | 30.6 | 38.0 |
| | | 115 | ISO240115 | 71.8 | 1651.4 | 23.0 | 2064.3 | 28.8 | 2477.1 | 34.5 | 43.0 |
| | | 127 | ISO240127 | 62.7 | 1592.6 | 25.4 | 1990.7 | 31.8 | 2388.9 | 38.1 | 48.0 |
| | | 139 | ISO240139 | 57.5 | 1598.5 | 27.8 | 1998.1 | 34.8 | 2397.8 | 41.7 | 52.0 |
| | | 152 | ISO240152 | 51.6 | 1568.6 | 30.4 | 1960.8 | 38.0 | 2353.0 | 45.6 | 57.0 |
| | | 178 | ISO240178 | 44.1 | 1570.0 | 35.6 | 1962.5 | 44.5 | 2354.9 | 53.4 | 67.0 |
| | | 203 | ISO240203 | 36.7 | 1490.0 | 40.6 | 1862.5 | 50.8 | 2235.0 | 60.9 | 76.0 |
| 254 | ISO240254 | 30.1 | 1529.1 | 50.8 | 1911.4 | 63.5 | 2293.6 | 76.2 | 95.0 | | |
| 305 | ISO240305 | 24.6 | 1500.6 | 61.0 | 1875.8 | 76.3 | 2250.9 | 91.5 | 114.0 | | |
| 50 | 25 | 64 | ISO250064 | 209.0 | 2675.2 | 12.8 | 3344.0 | 16.0 | 4012.8 | 19.2 | 24.0 |
| | | 76 | ISO250076 | 168.0 | 2553.6 | 15.2 | 3192.0 | 19.0 | 3830.4 | 22.8 | 28.0 |
| | | 89 | ISO250089 | 140.0 | 2492.0 | 17.8 | 3115.0 | 22.3 | 3738.0 | 26.7 | 33.0 |
| | | 102 | ISO250102 | 119.0 | 2427.6 | 20.4 | 3034.5 | 25.5 | 3641.4 | 30.6 | 38.0 |
| | | 115 | ISO250115 | 106.0 | 2438.0 | 23.0 | 3047.5 | 28.8 | 3657.0 | 34.5 | 43.0 |
| | | 127 | ISO250127 | 97.0 | 2463.8 | 25.4 | 3079.8 | 31.8 | 3695.7 | 38.1 | 48.0 |
| | | 139 | ISO250139 | 87.0 | 2418.6 | 27.8 | 3023.3 | 34.8 | 3627.9 | 41.7 | 52.0 |
| | | 152 | ISO250152 | 80.0 | 2432.0 | 30.4 | 3040.0 | 38.0 | 3648.0 | 45.6 | 57.0 |
| | | 178 | ISO250178 | 69.5 | 2474.2 | 35.6 | 3092.8 | 44.5 | 3711.3 | 53.4 | 67.0 |
| | | 203 | ISO250203 | 59.8 | 2427.9 | 40.6 | 3034.9 | 50.8 | 3641.8 | 60.9 | 76.0 |
| | | 229 | ISO250229 | 50.9 | 2331.2 | 45.8 | 2914.0 | 57.3 | 3496.8 | 68.7 | 86.0 |
| 254 | ISO250254 | 43.9 | 2230.1 | 50.8 | 2787.7 | 63.5 | 3345.2 | 76.2 | 95.0 | | |
| 305 | ISO250305 | 38.6 | 2354.6 | 61.0 | 2943.3 | 76.3 | 3531.9 | 91.5 | 114.0 | | |
| 63 | 38 | 76 | ISO263076 | 312.0 | 4742.4 | 15.2 | 5928.0 | 19.0 | 7113.6 | 22.8 | 28.0 |
| | | 89 | ISO263089 | 260.0 | 4628.0 | 17.8 | 5785.0 | 22.3 | 6942.0 | 26.7 | 33.0 |
| | | 102 | ISO263102 | 221.0 | 4508.4 | 20.4 | 5635.5 | 25.5 | 6762.6 | 30.6 | 38.0 |
| | | 115 | ISO263115 | 187.0 | 4301.0 | 23.0 | 5376.3 | 28.8 | 6451.5 | 34.5 | 43.0 |
| | | 127 | ISO263127 | 168.0 | 4267.2 | 25.4 | 5334.0 | 31.8 | 6400.8 | 38.1 | 48.0 |
| | | 152 | ISO263152 | 136.0 | 4134.4 | 30.4 | 5168.0 | 38.0 | 6201.6 | 45.6 | 57.0 |
| | | 178 | ISO263178 | 114.0 | 4058.4 | 35.6 | 5073.0 | 44.5 | 6087.6 | 53.4 | 67.0 |
| | | 203 | ISO263203 | 100.0 | 4060.0 | 40.6 | 5075.0 | 50.8 | 6090.0 | 60.9 | 76.0 |
| | | 229 | ISO263229 | 89.2 | 4085.4 | 45.8 | 5106.7 | 57.3 | 6128.0 | 68.7 | 86.0 |
| | | 254 | ISO263254 | 78.4 | 3982.7 | 50.8 | 4978.4 | 63.5 | 5974.1 | 76.2 | 95.0 |
| | | 305 | ISO263305 | 64.7 | 3946.7 | 61.0 | 4933.4 | 76.3 | 5920.1 | 91.5 | 114.0 |

*Tabulated deflections shown represent near solid and are for design information only.

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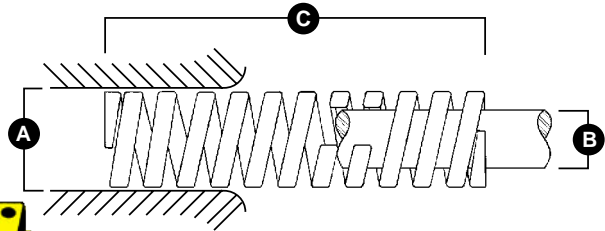
| Raymond® | | HEAVY DUTY DIE SPRINGS | | | | ISO SPECIFICATION SERIES | | | | | | RED |
|----------------|---------------|------------------------|----------------|-----------------------|---------------------------------------|--------------------------|------------------------------------|-----------------|---|-----------------|---------------------|-----|
| Hole Dia. (mm) | Rod Dia. (mm) | Free Length (mm) | CATALOG NUMBER | Load at 1 mm Def. (N) | LOAD DEFLECTION TABLE | | | | | | | |
| | | | | | For Optimum Life (15% of free length) | | For Long Life (20% of free length) | | Maximum Operating Def. (25% of free length) | | *Maximum Deflection | |
| | | | | | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Deflection (mm) | |
| A | B | C | | | | | | | | | | |
| 10 | 5 | 25 | ISO310025 | 22.1 | 82.9 | 3.8 | 110.5 | 5.0 | 138.1 | 6.3 | 7.5 | |
| | | 32 | ISO310032 | 17.5 | 84.0 | 4.8 | 112.0 | 6.4 | 140.0 | 8.0 | 9.6 | |
| | | 38 | ISO310038 | 17.1 | 97.5 | 5.7 | 130.0 | 7.6 | 162.5 | 9.5 | 11.4 | |
| | | 44 | ISO310044 | 15.0 | 99.0 | 6.6 | 132.0 | 8.8 | 165.0 | 11.0 | 13.2 | |
| | | 51 | ISO310051 | 12.8 | 97.9 | 7.7 | 130.6 | 10.2 | 163.2 | 12.8 | 15.3 | |
| | | 64 | ISO310064 | 10.7 | 102.7 | 9.6 | 137.0 | 12.8 | 171.2 | 16.0 | 19.2 | |
| | | 76 | ISO310076 | 7.5 | 85.5 | 11.4 | 114.0 | 15.2 | 142.5 | 19.0 | 22.8 | |
| | | 305 | ISO310305 | 2.1 | 96.1 | 45.8 | 128.1 | 61.0 | 160.1 | 76.3 | 91.5 | |
| 12.5 | 6.3 | 25 | ISO312025 | 42.1 | 157.9 | 3.8 | 210.5 | 5.0 | 263.1 | 6.3 | 7.5 | |
| | | 32 | ISO312032 | 33.2 | 159.4 | 4.8 | 212.5 | 6.4 | 265.6 | 8.0 | 9.6 | |
| | | 38 | ISO312038 | 29.3 | 167.0 | 5.7 | 222.7 | 7.6 | 278.4 | 9.5 | 11.4 | |
| | | 44 | ISO312044 | 24.6 | 162.4 | 6.6 | 216.5 | 8.8 | 270.6 | 11.0 | 13.2 | |
| | | 51 | ISO312051 | 19.6 | 149.9 | 7.7 | 199.9 | 10.2 | 249.9 | 12.8 | 15.3 | |
| | | 64 | ISO312064 | 15.0 | 144.0 | 9.6 | 192.0 | 12.8 | 240.0 | 16.0 | 19.2 | |
| | | 76 | ISO312076 | 13.2 | 150.5 | 11.4 | 200.6 | 15.2 | 250.8 | 19.0 | 22.8 | |
| | | 305 | ISO312305 | 2.8 | 128.1 | 45.8 | 170.8 | 61.0 | 213.5 | 76.3 | 91.5 | |
| 16 | 8 | 25 | ISO316025 | 75.7 | 283.9 | 3.8 | 378.5 | 5.0 | 473.1 | 6.3 | 7.5 | |
| | | 32 | ISO316032 | 52.8 | 253.4 | 4.8 | 337.9 | 6.4 | 422.4 | 8.0 | 9.6 | |
| | | 38 | ISO316038 | 48.5 | 276.5 | 5.7 | 368.6 | 7.6 | 460.8 | 9.5 | 11.4 | |
| | | 44 | ISO316044 | 42.8 | 282.5 | 6.6 | 376.6 | 8.8 | 470.8 | 11.0 | 13.2 | |
| | | 51 | ISO316051 | 37.1 | 283.8 | 7.7 | 378.4 | 10.2 | 473.0 | 12.8 | 15.3 | |
| | | 64 | ISO316064 | 30.3 | 290.9 | 9.6 | 387.8 | 12.8 | 484.8 | 16.0 | 19.2 | |
| | | 76 | ISO316076 | 25.7 | 293.0 | 11.4 | 390.6 | 15.2 | 488.3 | 19.0 | 22.8 | |
| | | 305 | ISO316305 | 7.1 | 324.8 | 45.8 | 433.1 | 61.0 | 541.4 | 76.3 | 91.5 | |
| 20 | 10 | 25 | ISO320025 | 216.0 | 810.0 | 3.8 | 1080.0 | 5.0 | 1350.0 | 6.3 | 7.5 | |
| | | 32 | ISO320032 | 168.0 | 806.4 | 4.8 | 1075.2 | 6.4 | 1344.0 | 8.0 | 9.6 | |
| | | 38 | ISO320038 | 129.0 | 735.3 | 5.7 | 980.4 | 7.6 | 1225.5 | 9.5 | 11.0 | |
| | | 44 | ISO320044 | 112.0 | 739.2 | 6.6 | 985.6 | 8.8 | 1232.0 | 11.0 | 13.0 | |
| | | 51 | ISO320051 | 94.0 | 719.1 | 7.7 | 958.8 | 10.2 | 1198.5 | 12.8 | 15.0 | |
| | | 64 | ISO320064 | 72.1 | 692.2 | 9.6 | 922.9 | 12.8 | 1153.6 | 16.0 | 19.0 | |
| | | 76 | ISO320076 | 59.7 | 680.6 | 11.4 | 907.4 | 15.2 | 1134.3 | 19.0 | 23.0 | |
| | | 89 | ISO320089 | 50.5 | 674.2 | 13.4 | 898.9 | 17.8 | 1123.6 | 22.3 | 27.0 | |
| | | 102 | ISO320102 | 44.2 | 676.3 | 15.3 | 901.7 | 20.4 | 1127.1 | 25.5 | 31.0 | |
| | | 115 | ISO320115 | 38.4 | 662.4 | 17.3 | 883.2 | 23.0 | 1104.0 | 28.8 | 35.0 | |
| | | 127 | ISO320127 | 34.1 | 649.6 | 19.1 | 866.1 | 25.4 | 1082.7 | 31.8 | 38.0 | |
| | | 139 | ISO320139 | 31.0 | 646.4 | 20.9 | 861.8 | 27.8 | 1077.3 | 34.8 | 42.0 | |
| | | 152 | ISO320152 | 28.2 | 643.0 | 22.8 | 857.3 | 30.4 | 1071.6 | 38.0 | 46.0 | |
| | | 305 | ISO320305 | 15.0 | 686.3 | 45.8 | 915.0 | 61.0 | 1143.8 | 76.3 | 91.0 | |
| 25 | 12.5 | 25 | ISO325025 | 375.0 | 1406.3 | 3.8 | 1875.0 | 5.0 | 2343.8 | 6.3 | 7.5 | |
| | | 32 | ISO325032 | 297.0 | 1425.6 | 4.8 | 1900.8 | 6.4 | 2376.0 | 8.0 | 9.6 | |
| | | 38 | ISO325038 | 219.0 | 1248.3 | 5.7 | 1664.4 | 7.6 | 2080.5 | 9.5 | 11.0 | |
| | | 44 | ISO325044 | 187.0 | 1234.2 | 6.6 | 1645.6 | 8.8 | 2057.0 | 11.0 | 13.0 | |
| | | 64 | ISO325064 | 123.0 | 1180.8 | 9.6 | 1574.4 | 12.8 | 1968.0 | 16.0 | 19.0 | |

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|----------------|---------------|------------------------|----------------|-----------------------|---------------------------------------|--------------------------|------------------------------------|-----------------|---|-----------------|---------------------|
| Hole Dia. (mm) | Rod Dia. (mm) | Free Length (mm) | CATALOG NUMBER | Load at 1 mm Def. (N) | LOAD DEFLECTION TABLE | | | | | | |
| | | | | | For Optimum Life (15% of free length) | | For Long Life (20% of free length) | | Maximum Operating Def. (25% of free length) | | *Maximum Deflection |
| | | | | | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Deflection (mm) |
| A | B | C | | | | | | | | | |
| 25 | 12.5 | 76 | ISO325076 | 99.0 | 1128.6 | 11.4 | 1504.8 | 15.2 | 1881.0 | 19.0 | 23.0 |
| | | 89 | ISO325089 | 84.0 | 1121.4 | 13.4 | 1495.2 | 17.8 | 1869.0 | 22.3 | 27.0 |
| | | 102 | ISO325102 | 73.0 | 1116.9 | 15.3 | 1489.2 | 20.4 | 1861.5 | 25.5 | 31.0 |
| | | 115 | ISO325115 | 65.0 | 1121.3 | 17.3 | 1495.0 | 23.0 | 1868.8 | 28.8 | 35.0 |
| | | 127 | ISO325127 | 57.7 | 1099.2 | 19.1 | 1465.6 | 25.4 | 1832.0 | 31.8 | 38.0 |
| | | 139 | ISO325139 | 52.7 | 1098.8 | 20.9 | 1465.1 | 27.8 | 1831.3 | 34.8 | 42.0 |
| | | 152 | ISO325152 | 47.8 | 1089.8 | 22.8 | 1453.1 | 30.4 | 1816.4 | 38.0 | 46.0 |
| | | 178 | ISO325178 | 41.0 | 1094.7 | 26.7 | 1459.6 | 35.6 | 1824.5 | 44.5 | 53.0 |
| | | 203 | ISO325203 | 35.8 | 1090.1 | 30.5 | 1453.5 | 40.6 | 1816.9 | 50.8 | 61.0 |
| | | 305 | ISO325305 | 22.9 | 1047.7 | 45.8 | 1396.9 | 61.0 | 1746.1 | 76.3 | 91.0 |
| 32 | 16 | 38 | ISO332038 | 388.0 | 2211.6 | 5.7 | 2948.8 | 7.6 | 3686.0 | 9.5 | 11.0 |
| | | 44 | ISO332044 | 324.0 | 2138.4 | 6.6 | 2851.2 | 8.8 | 3564.0 | 11.0 | 13.0 |
| | | 51 | ISO332051 | 272.0 | 2080.8 | 7.7 | 2774.4 | 10.2 | 3468.0 | 12.8 | 15.0 |
| | | 64 | ISO332064 | 212.0 | 2035.2 | 9.6 | 2713.6 | 12.8 | 3392.0 | 16.0 | 19.0 |
| | | 76 | ISO332076 | 172.0 | 1960.8 | 11.4 | 2614.4 | 15.2 | 3268.0 | 19.0 | 23.0 |
| | | 89 | ISO332089 | 141.0 | 1882.4 | 13.4 | 2509.8 | 17.8 | 3137.3 | 22.3 | 27.0 |
| | | 102 | ISO332102 | 122.0 | 1866.6 | 15.3 | 2488.8 | 20.4 | 3111.0 | 25.5 | 31.0 |
| | | 115 | ISO332115 | 107.0 | 1845.8 | 17.3 | 2461.0 | 23.0 | 3076.3 | 28.8 | 35.0 |
| | | 127 | ISO332127 | 93.0 | 1771.7 | 19.1 | 2362.2 | 25.4 | 2952.8 | 31.8 | 38.0 |
| | | 139 | ISO332139 | 86.0 | 1793.1 | 20.9 | 2390.8 | 27.8 | 2988.5 | 34.8 | 42.0 |
| | | 152 | ISO332152 | 78.0 | 1778.4 | 22.8 | 2371.2 | 30.4 | 2964.0 | 38.0 | 46.0 |
| | | 178 | ISO332178 | 67.2 | 1794.2 | 26.7 | 2392.3 | 35.6 | 2990.4 | 44.5 | 53.0 |
| | | 203 | ISO332203 | 59.1 | 1799.6 | 30.5 | 2399.5 | 40.6 | 2999.3 | 50.8 | 61.0 |
| | | 254 | ISO332254 | 46.4 | 1767.8 | 38.1 | 2357.1 | 50.8 | 2946.4 | 63.5 | 76.0 |
| 305 | ISO332305 | 38.0 | 1738.5 | 45.8 | 2318.0 | 61.0 | 2897.5 | 76.3 | 91.0 | | |
| 40 | 20 | 51 | ISO340051 | 350.0 | 2677.5 | 7.7 | 3570.0 | 10.2 | 4462.5 | 12.8 | 15.0 |
| | | 64 | ISO340064 | 269.0 | 2582.4 | 9.6 | 3443.2 | 12.8 | 4304.0 | 16.0 | 19.0 |
| | | 76 | ISO340076 | 219.0 | 2496.6 | 11.4 | 3328.8 | 15.2 | 4161.0 | 19.0 | 23.0 |
| | | 89 | ISO340089 | 190.0 | 2536.5 | 13.4 | 3382.0 | 17.8 | 4227.5 | 22.3 | 27.0 |
| | | 102 | ISO340102 | 163.0 | 2493.9 | 15.3 | 3325.2 | 20.4 | 4156.5 | 25.5 | 31.0 |
| | | 115 | ISO340115 | 142.0 | 2449.5 | 17.3 | 3266.0 | 23.0 | 4082.5 | 28.8 | 35.0 |
| | | 127 | ISO340127 | 128.0 | 2438.4 | 19.1 | 3251.2 | 25.4 | 4064.0 | 31.8 | 38.0 |
| | | 139 | ISO340139 | 115.0 | 2397.8 | 20.9 | 3197.0 | 27.8 | 3996.3 | 34.8 | 42.0 |
| | | 152 | ISO340152 | 105.0 | 2394.0 | 22.8 | 3192.0 | 30.4 | 3990.0 | 38.0 | 46.0 |
| | | 178 | ISO340178 | 89.0 | 2376.3 | 26.7 | 3168.4 | 35.6 | 3960.5 | 44.5 | 53.0 |
| | | 203 | ISO340203 | 77.0 | 2344.7 | 30.5 | 3126.2 | 40.6 | 3907.8 | 50.8 | 61.0 |
| | | 254 | ISO340254 | 61.0 | 2324.1 | 38.1 | 3098.8 | 50.8 | 3873.5 | 63.5 | 76.0 |
| 305 | ISO340305 | 51.0 | 2333.3 | 45.8 | 3111.0 | 61.0 | 3888.8 | 76.3 | 91.0 | | |
| 50 | 25 | 64 | ISO350064 | 413.0 | 3964.8 | 9.6 | 5286.4 | 12.8 | 6608.0 | 16.0 | 19.0 |
| | | 76 | ISO350076 | 339.0 | 3864.6 | 11.4 | 5152.8 | 15.2 | 6441.0 | 19.0 | 23.0 |
| | | 89 | ISO350089 | 288.0 | 3844.8 | 13.4 | 5126.4 | 17.8 | 6408.0 | 22.3 | 27.0 |
| | | 102 | ISO350102 | 245.0 | 3748.5 | 15.3 | 4998.0 | 20.4 | 6247.5 | 25.5 | 31.0 |
| | | 115 | ISO350115 | 215.0 | 3708.8 | 17.3 | 4945.0 | 23.0 | 6181.3 | 28.8 | 35.0 |
| | | 127 | ISO350127 | 192.0 | 3657.6 | 19.1 | 4876.8 | 25.4 | 6096.0 | 31.8 | 38.0 |
| | | 139 | ISO350139 | 168.0 | 3502.8 | 20.9 | 4670.4 | 27.8 | 5838.0 | 34.8 | 42.0 |
| | | 152 | ISO350152 | 154.0 | 3511.2 | 22.8 | 4681.6 | 30.4 | 5852.0 | 38.0 | 46.0 |
| | | 178 | ISO350178 | 134.0 | 3577.8 | 26.7 | 4770.4 | 35.6 | 5963.0 | 44.5 | 53.0 |
| | | 203 | ISO350203 | 117.0 | 3562.7 | 30.5 | 4750.2 | 40.6 | 5937.8 | 50.8 | 61.0 |
| | | 254 | ISO350254 | 89.0 | 3390.9 | 38.1 | 4521.2 | 50.8 | 5651.5 | 63.5 | 76.0 |
| | | 305 | ISO350305 | 73.0 | 3339.8 | 45.8 | 4453.0 | 61.0 | 5566.3 | 76.3 | 91.0 |

*Tabulated deflections shown represent near solid and are for design information only.



Raymond® EXTRA HEAVY DUTY DIE SPRINGS ISO SPECIFICATION SERIES YELLOW

| Hole Dia. (mm) | Rod Dia. (mm) | Free Length (mm) | CATALOG NUMBER | Load at 1 mm Def. (N) | LOAD DEFLECTION TABLE | | | | | | |
|----------------|---------------|------------------|----------------|-----------------------|---------------------------------------|-----------------|------------------------------------|-----------------|---|-----------------|---------------------|
| | | | | | For Optimum Life (15% of free length) | | For Long Life (17% of free length) | | Maximum Operating Def. (20% of free length) | | *Maximum Deflection |
| | | | | | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Deflection (mm) |
| A | B | C | | | | | | | | | |
| 10 | 5 | 25 | ISO410025 | 36.8 | 138.0 | 3.8 | 156.4 | 4.3 | 184.0 | 5.0 | 6.2 |
| | | 32 | ISO410032 | 27.9 | 133.9 | 4.8 | 151.8 | 5.4 | 178.6 | 6.4 | 8.0 |
| | | 38 | ISO410038 | 23.7 | 135.1 | 5.7 | 153.1 | 6.5 | 180.1 | 7.6 | 9.5 |
| | | 44 | ISO410044 | 19.2 | 126.7 | 6.6 | 143.6 | 7.5 | 169.0 | 8.8 | 11.0 |
| | | 51 | ISO410051 | 16.5 | 126.2 | 7.7 | 143.1 | 8.7 | 168.3 | 10.2 | 13.0 |
| | | 64 | ISO410064 | 13.2 | 126.7 | 9.6 | 143.6 | 10.9 | 169.0 | 12.8 | 16.0 |
| | | 76 | ISO410076 | 10.9 | 124.3 | 11.4 | 140.8 | 12.9 | 165.7 | 15.2 | 19.0 |
| | | 305 | ISO410305 | 2.6 | 119.0 | 45.8 | 134.8 | 51.9 | 158.6 | 61.0 | 76.0 |
| 12.5 | 6.3 | 25 | ISO412025 | 58.5 | 219.4 | 3.8 | 248.6 | 4.3 | 292.5 | 5.0 | 6.2 |
| | | 32 | ISO412032 | 43.9 | 210.7 | 4.8 | 238.8 | 5.4 | 281.0 | 6.4 | 8.0 |
| | | 38 | ISO412038 | 36.0 | 205.2 | 5.7 | 232.6 | 6.5 | 273.6 | 7.6 | 9.5 |
| | | 44 | ISO412044 | 30.3 | 200.0 | 6.6 | 226.6 | 7.5 | 266.6 | 8.8 | 11.0 |
| | | 51 | ISO412051 | 26.2 | 200.4 | 7.7 | 227.2 | 8.7 | 267.2 | 10.2 | 13.0 |
| | | 64 | ISO412064 | 21.2 | 203.5 | 9.6 | 230.7 | 10.9 | 271.4 | 12.8 | 16.0 |
| | | 76 | ISO412076 | 17.1 | 194.9 | 11.4 | 220.9 | 12.9 | 259.9 | 15.2 | 19.0 |
| | | 305 | ISO412305 | 4.3 | 196.7 | 45.8 | 223.0 | 51.9 | 262.3 | 61.0 | 76.0 |
| 16 | 8 | 25 | ISO416025 | 118.0 | 442.5 | 3.8 | 501.5 | 4.3 | 590.0 | 5.0 | 6.2 |
| | | 32 | ISO416032 | 89.0 | 427.2 | 4.8 | 484.2 | 5.4 | 569.6 | 6.4 | 8.0 |
| | | 38 | ISO416038 | 72.1 | 411.0 | 5.7 | 465.8 | 6.5 | 548.0 | 7.6 | 9.5 |
| | | 44 | ISO416044 | 60.9 | 401.9 | 6.6 | 455.5 | 7.5 | 535.9 | 8.8 | 11.0 |
| | | 51 | ISO416051 | 52.3 | 400.1 | 7.7 | 453.4 | 8.7 | 533.5 | 10.2 | 13.0 |
| | | 64 | ISO416064 | 41.2 | 395.5 | 9.6 | 448.3 | 10.9 | 527.4 | 12.8 | 16.0 |
| | | 76 | ISO416076 | 34.1 | 388.7 | 11.4 | 440.6 | 12.9 | 518.3 | 15.2 | 19.0 |
| | | 305 | ISO416305 | 8.4 | 384.3 | 45.8 | 435.5 | 51.9 | 512.4 | 61.0 | 76.0 |
| 20 | 10 | 25 | ISO420025 | 293.0 | 1098.8 | 3.8 | 1245.3 | 4.3 | 1465.0 | 5.0 | 6.2 |
| | | 32 | ISO420032 | 224.0 | 1075.2 | 4.8 | 1218.6 | 5.4 | 1433.6 | 6.4 | 8.0 |
| | | 38 | ISO420038 | 177.0 | 1008.9 | 5.7 | 1143.4 | 6.5 | 1345.2 | 7.6 | 9.5 |
| | | 44 | ISO420044 | 149.0 | 983.4 | 6.6 | 1114.5 | 7.5 | 1311.2 | 8.8 | 11.0 |
| | | 51 | ISO420051 | 128.0 | 979.2 | 7.7 | 1109.8 | 8.7 | 1305.6 | 10.2 | 13.0 |
| | | 64 | ISO420064 | 99.0 | 950.4 | 9.6 | 1077.1 | 10.9 | 1267.2 | 12.8 | 16.0 |
| | | 76 | ISO420076 | 81.7 | 931.4 | 11.4 | 1055.6 | 12.9 | 1241.8 | 15.2 | 19.0 |
| | | 89 | ISO420089 | 69.5 | 927.8 | 13.4 | 1051.5 | 15.1 | 1237.1 | 17.8 | 22.0 |
| | | 102 | ISO420102 | 60.6 | 927.2 | 15.3 | 1050.8 | 17.3 | 1236.2 | 20.4 | 26.0 |
| | | 115 | ISO420115 | 53.0 | 914.3 | 17.3 | 1036.2 | 19.6 | 1219.0 | 23.0 | 29.0 |
| | | 127 | ISO420127 | 47.5 | 904.9 | 19.1 | 1025.5 | 21.6 | 1206.5 | 25.4 | 32.0 |
| | | 139 | ISO420139 | 43.0 | 896.6 | 20.9 | 1016.1 | 23.6 | 1195.4 | 27.8 | 35.0 |
| | | 305 | ISO420305 | 21.2 | 969.9 | 45.8 | 1099.2 | 51.9 | 1293.2 | 61.0 | 76.0 |
| 25 | 12.5 | 32 | ISO425032 | 374.4 | 1797.1 | 4.8 | 2036.7 | 5.4 | 2396.2 | 6.4 | 8.0 |
| | | 38 | ISO425038 | 346.0 | 1972.2 | 5.7 | 2235.2 | 6.5 | 2629.6 | 7.6 | 9.5 |
| | | 44 | ISO425044 | 244.0 | 1610.4 | 6.6 | 1825.1 | 7.5 | 2147.2 | 8.8 | 11.0 |
| | | 51 | ISO425051 | 207.5 | 1587.4 | 7.7 | 1799.0 | 8.7 | 2116.5 | 10.2 | 13.0 |
| | | 64 | ISO425064 | 161.0 | 1545.6 | 9.6 | 1751.7 | 10.9 | 2060.8 | 12.8 | 16.0 |
| | | 76 | ISO425076 | 130.8 | 1491.1 | 11.4 | 1689.9 | 12.9 | 1988.2 | 15.2 | 19.0 |
| | | 89 | ISO425089 | 110.5 | 1475.2 | 13.4 | 1671.9 | 15.1 | 1966.9 | 17.8 | 22.0 |

*Tabulated deflections shown represent near solid and are for design information only.

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7200 Interstate 20 Kennedale, TX 76060 Fax: 214-630-6693



| Raymond® EXTRA HEAVY DUTY DIE SPRINGS ISO SPECIFICATION SERIES YELLOW | | | | | | | | | | | |
|---|---------------|------------------|----------------|-----------------------|---------------------------------------|-----------------|------------------------------------|-----------------|---|-----------------|---------------------|
| Hole Dia. (mm) | Rod Dia. (mm) | Free Length (mm) | CATALOG NUMBER | Load at 1 mm Def. (N) | LOAD DEFLECTION TABLE | | | | | | |
| | | | | | For Optimum Life (15% of free length) | | For Long Life (17% of free length) | | Maximum Operating Def. (20% of free length) | | *Maximum Deflection |
| | | | | | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Load (N) | Deflection (mm) | Deflection (mm) |
| A | B | C | | | | | | | | | |
| 25 | 12.5 | 102 | ISO425102 | 96.3 | 1473.4 | 15.3 | 1669.8 | 17.3 | 1964.5 | 20.4 | 26.0 |
| | | 115 | ISO425115 | 85.7 | 1478.3 | 17.3 | 1675.4 | 19.6 | 1971.1 | 23.0 | 29.0 |
| | | 127 | ISO425127 | 76.3 | 1453.5 | 19.1 | 1647.3 | 21.6 | 1938.0 | 25.4 | 32.0 |
| | | 152 | ISO425152 | 63.5 | 1447.8 | 22.8 | 1640.8 | 25.8 | 1930.4 | 30.4 | 38.0 |
| | | 178 | ISO425178 | 53.9 | 1439.1 | 26.7 | 1631.0 | 30.3 | 1918.8 | 35.6 | 44.0 |
| | | 203 | ISO425203 | 47.0 | 1431.2 | 30.5 | 1622.0 | 34.5 | 1908.2 | 40.6 | 51.0 |
| | | 305 | ISO425305 | 30.9 | 1413.7 | 45.8 | 1602.2 | 51.9 | 1884.9 | 61.0 | 76.0 |
| 32 | 16 | 38 | ISO432038 | 528.2 | 3010.7 | 5.7 | 3412.2 | 6.5 | 4014.3 | 7.6 | 9.5 |
| | | 44 | ISO432044 | 424.4 | 2801.0 | 6.6 | 3174.5 | 7.5 | 3734.7 | 8.8 | 11.0 |
| | | 51 | ISO432051 | 353.0 | 2700.5 | 7.7 | 3060.5 | 8.7 | 3600.6 | 10.2 | 13.0 |
| | | 64 | ISO432064 | 269.2 | 2584.3 | 9.6 | 2928.9 | 10.9 | 3445.8 | 12.8 | 16.0 |
| | | 76 | ISO432076 | 218.5 | 2490.9 | 11.4 | 2823.0 | 12.9 | 3321.2 | 15.2 | 19.0 |
| | | 89 | ISO432089 | 180.3 | 2407.0 | 13.4 | 2727.9 | 15.1 | 3209.3 | 17.8 | 22.0 |
| | | 102 | ISO432102 | 155.0 | 2371.5 | 15.3 | 2687.7 | 17.3 | 3162.0 | 20.4 | 26.0 |
| | | 115 | ISO432115 | 140.0 | 2415.0 | 17.3 | 2737.0 | 19.6 | 3220.0 | 23.0 | 29.0 |
| | | 127 | ISO432127 | 124.0 | 2362.2 | 19.1 | 2677.2 | 21.6 | 3149.6 | 25.4 | 32.0 |
| | | 152 | ISO432152 | 102.0 | 2325.6 | 22.8 | 2635.7 | 25.8 | 3100.8 | 30.4 | 38.0 |
| | | 178 | ISO432178 | 88.2 | 2354.9 | 26.7 | 2668.9 | 30.3 | 3139.9 | 35.6 | 44.0 |
| | | 203 | ISO432203 | 76.0 | 2314.2 | 30.5 | 2622.8 | 34.5 | 3085.6 | 40.6 | 51.0 |
| | | 254 | ISO432254 | 60.8 | 2316.5 | 38.1 | 2625.3 | 43.2 | 3088.6 | 50.8 | 64.0 |
| 305 | ISO432305 | 49.0 | 2241.8 | 45.8 | 2540.7 | 51.9 | 2989.0 | 61.0 | 76.0 | | |
| 40 | 20 | 51 | ISO440051 | 628.0 | 4804.2 | 7.7 | 5444.8 | 8.7 | 6405.6 | 10.2 | 13.0 |
| | | 64 | ISO440064 | 487.0 | 4675.2 | 9.6 | 5298.6 | 10.9 | 6233.6 | 12.8 | 16.0 |
| | | 76 | ISO440076 | 379.0 | 4320.6 | 11.4 | 4896.7 | 12.9 | 5760.8 | 15.2 | 19.0 |
| | | 89 | ISO440089 | 321.0 | 4285.4 | 13.4 | 4856.7 | 15.1 | 5713.8 | 17.8 | 22.0 |
| | | 102 | ISO440102 | 281.0 | 4299.3 | 15.3 | 4872.5 | 17.3 | 5732.4 | 20.4 | 26.0 |
| | | 115 | ISO440115 | 245.0 | 4226.3 | 17.3 | 4789.8 | 19.6 | 5635.0 | 23.0 | 29.0 |
| | | 127 | ISO440127 | 221.0 | 4210.1 | 19.1 | 4771.4 | 21.6 | 5613.4 | 25.4 | 32.0 |
| | | 152 | ISO440152 | 168.0 | 3830.4 | 22.8 | 4341.1 | 25.8 | 5107.2 | 30.4 | 38.0 |
| | | 203 | ISO440203 | 132.0 | 4019.4 | 30.5 | 4555.3 | 34.5 | 5359.2 | 40.6 | 51.0 |
| | | 254 | ISO440254 | 107.0 | 4076.7 | 38.1 | 4620.3 | 43.2 | 5435.6 | 50.8 | 64.0 |
| 305 | ISO440305 | 87.8 | 4016.9 | 45.8 | 4552.4 | 51.9 | 5355.8 | 61.0 | 76.0 | | |
| 50 | 25 | 64 | ISO450064 | 709.0 | 6806.4 | 9.6 | 7713.9 | 10.9 | 9075.2 | 12.8 | 16.0 |
| | | 76 | ISO450076 | 572.0 | 6520.8 | 11.4 | 7390.2 | 12.9 | 8694.4 | 15.2 | 19.0 |
| | | 89 | ISO450089 | 475.0 | 6341.3 | 13.4 | 7186.8 | 15.1 | 8455.0 | 17.8 | 22.0 |
| | | 102 | ISO450102 | 405.0 | 6196.5 | 15.3 | 7022.7 | 17.3 | 8262.0 | 20.4 | 26.0 |
| | | 115 | ISO450115 | 352.0 | 6072.0 | 17.3 | 6881.6 | 19.6 | 8096.0 | 23.0 | 29.0 |
| | | 127 | ISO450127 | 316.0 | 6019.8 | 19.1 | 6822.4 | 21.6 | 8026.4 | 25.4 | 32.0 |
| | | 152 | ISO450152 | 239.0 | 5449.2 | 22.8 | 6175.8 | 25.8 | 7265.6 | 30.4 | 38.0 |
| | | 203 | ISO450203 | 187.0 | 5694.2 | 30.5 | 6453.4 | 34.5 | 7592.2 | 40.6 | 51.0 |
| | | 254 | ISO450254 | 153.0 | 5829.3 | 38.1 | 6606.5 | 43.2 | 7772.4 | 50.8 | 64.0 |
| | | 305 | ISO450305 | 127.0 | 5810.3 | 45.8 | 6585.0 | 51.9 | 7747.0 | 61.0 | 76.0 |

*Tabulated deflections shown represent near solid and are for design information only.

H&O Die Supply
7200 Interstate 20 Kennedale, TX 76060

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Fax: 214-630-6693

Superior Die Set Corporation standard terms and conditions of sale apply to any proposal and must be considered as part of your order. All agreements are contingent upon strikes, fires, accidents or other causes beyond our control; and are subject to revisions occasioned by any other governmental actions.

Quotations: All quotations are subject to change without notice prior to acceptance of purchaser's order by our home office.

Pricing: Prices are subject to change caused by any modifications of the specifications or the terms of the order after acceptance.

Unless otherwise specified, all prices are F.O.B. point of shipment. Prices do not include any sales or use taxes which may be imposed by any governmental body. Such taxes are the responsibility of the buyer.

Terms: 1% — 10 days Net 30 days.

Shipping: The shipping schedule is an estimate based on current backlogs and material availability. Shipping date will be computed from the date of order acceptance or from the date complete information required for manufacture is received.

Delivery route will be determined by our routing instructions or, if not specified, by the best way in accordance with past experience. On all prepaid shipments inbound and outbound, Superior will determine the route instructions and method of shipment. In all other cases Superior will comply with any customer routing requests that are provided in writing.

Returned Goods: No goods are returnable without getting a return goods authorization. Special components or customized products not shown in our catalog are not returnable. If you have problems, contact us, we prefer to inspect before granting return credit. A minimum restocking charge of 10% will be made on all returnable goods. **No Goods are Returnable After Thirty Days of Receipt.**

A complete statement of our standard terms and conditions is available upon request, and appears on the reverse side of our Order Acknowledgement Form.

SUPERIOR QUALITY GUARANTEE

1. Superior Die Set Corporation will ship no standard product until it conforms completely to the standard specifications.

2. All Superior products shall be constructed from metal of the chemical and metallurgical composition specified. Certification of metal composition will be sent with the product on request.

3. All custom Superior products will be manufactured to tolerances specified or approved by the customer in advance of production.

Notification of any deviance from the guarantee must be made in writing to Superior Die Set Corporation, within thirty (30) days of receipt of the product by the customer. If the customer fails to forward such notification within the 30-day period, Superior Die Set Corporation will deem the product to be fully acceptable to the customer as shipped. Any and all modifications or alterations made to our products without agreement in writing from Superior Die Set Corporation will also cause the manufacturer to deem the product to be fully acceptable as shipped.

Superior's liability under the above guarantee is strictly and exclusively limited to the repair or replacement of defective products.



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Firm Name:

Name of Parent Co., if Subsidiary:

Billing Address:

Shipping Address:

Phone Number with area code:

FAX Number with area code:

Year Business Established:

How Long at Present Address:

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Type of Business:

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FAX Number:
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Address:
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Address:
Phone Number:
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IT IS UNDERSTOOD THAT THE BUYER AGREES TO PAY SUPERIOR DIE SET CORP. FOR ALL PURCHASES WITHIN THE TERMS OF 1% 10, NET 30. BUYER ALSO AUTHORIZES SUPERIOR DIE SET CORP. OR IT'S DESIGNEE TO INVESTIGATE THE REFERENCES AND OTHER DATA FURNISHED BY THE BUYER OR BY ANY OTHER PERSON PERTAINING TO BUYER'S CREDIT RESPONSIBILITY AND TO ANSWER ALL QUESTIONS ABOUT THEIR CREDIT EXPERIENCE WITH THE BUYER. THE BUYER CERTIFIES THAT THE INFORMATION ON THIS APPLICATION IS TRUE AND CORRECT AND MADE FOR THE PURPOSE OF OBTAINING CREDIT. THE BUYER HAS READ AND AGREES TO THE ABOVE AS UNDERSIGNED.

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Signed By (**REQUIRED**):
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Date:

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NOTES

QUOTE ONLY
 ORDER

PRINT FORM FOR FAXING

CLEAR FORM



Associated Spring
Raymond  BARNES
GROUP INC

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