

Carboline Southwest Type 5 GP, Type 5 MD, Type 7 GP and Type 7 HD

N-791 Beam Only Unrestrained

Columns Bolded in Gray qualify for 1/2 flange tip thicknesses

| Full Flange Tip Thicknesses (NWC & LWC) | | | | | Unrestrained | | 1/2 Flange Tip Thicknesses (NWC & LWC) | | | | |
|---|-------------|--------|---------|---------|--------------|------|--|-------------|--------|---------|---------|
| 1 Hour | 1 -1/2 Hour | 2 Hour | 3 Hour | 4 Hour | Beam | W/D | 1 Hour | 1 -1/2 Hour | 2 Hour | 3 Hour | 4 Hour |
| 9/16 | 13/16 | 1 3/16 | 1 13/16 | 2 5/16 | 6x9 | 0.39 | 9/16 | 13/16 | 1 3/16 | 2 | 2 3/4 |
| 1/2 | 3/4 | 1 1/16 | 1 9/16 | 2 1/16 | 6x12 | 0.52 | 1/2 | 3/4 | 1 1/16 | 1 3/4 | 2 7/16 |
| 7/16 | 5/8 | 15/16 | 1 3/8 | 1 13/16 | 6x16 | 0.68 | 7/16 | 5/8 | 15/16 | 1 1/2 | 2 1/8 |
| 7/16 | 5/8 | 7/8 | 1 5/16 | 1 11/16 | 6x19 | 0.76 | 7/16 | 5/8 | 7/8 | 1 7/16 | 2 |
| 7/16 | 5/8 | 15/16 | 1 7/16 | 1 13/16 | 6x20 | 0.67 | 7/16 | 5/8 | 15/16 | 1 9/16 | 2 3/16 |
| 3/8 | 9/16 | 13/16 | 1 1/4 | 1 5/8 | 6x26 | 0.83 | 3/8 | 9/16 | 13/16 | 1 3/8 | 1 15/16 |
| 9/16 | 13/16 | 1 3/16 | 1 13/16 | 2 3/8 | 8x10 | 0.37 | 9/16 | 13/16 | 1 3/16 | 2 | 2 13/16 |
| 1/2 | 3/4 | 1 1/16 | 1 5/8 | 2 1/8 | 8x13 | 0.48 | 1/2 | 3/4 | 1 1/16 | 1 13/16 | 2 1/2 |
| 1/2 | 11/16 | 1 | 1 9/16 | 2 | 8x15 | 0.55 | 1/2 | 11/16 | 1 | 1 11/16 | 2 3/8 |
| 1/2 | 11/16 | 1 | 1 1/2 | 2 | 8x18 | 0.58 | 1/2 | 11/16 | 1 | 1 11/16 | 2 5/16 |
| 7/16 | 5/8 | 15/16 | 1 7/16 | 1 13/16 | 8x21 | 0.67 | 7/16 | 5/8 | 15/16 | 1 9/16 | 2 3/16 |
| 7/16 | 5/8 | 7/8 | 1 3/8 | 1 3/4 | 8x24 | 0.7 | 7/16 | 5/8 | 7/8 | 1 1/2 | 2 1/8 |
| 3/8 | 9/16 | 13/16 | 1 1/4 | 1 5/8 | 8x28 | 0.81 | 3/8 | 9/16 | 13/16 | 1 3/8 | 1 15/16 |
| 3/8 | 9/16 | 13/16 | 1 1/4 | 1 5/8 | 8x31 | 0.8 | 3/8 | 9/16 | 13/16 | 1 3/8 | 2 |
| 3/8 | 9/16 | 13/16 | 1 3/16 | 1 9/16 | 8x35 | 0.9 | 3/8 | 9/16 | 13/16 | 1 5/16 | 1 13/16 |
| 3/8 | 1/2 | 3/4 | 1 1/8 | 1 7/16 | 8x40 | 1.03 | 3/8 | 1/2 | 3/4 | 1 3/16 | 1 11/16 |
| 3/8 | 7/16 | 5/8 | 1 | 1 5/16 | 8x48 | 1.21 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 1/2 |
| 3/8 | 7/16 | 9/16 | 7/8 | 1 1/8 | 8x58 | 1.44 | 3/8 | 7/16 | 9/16 | 1 | 1 3/8 |
| 3/8 | 3/8 | 9/16 | 13/16 | 1 1/16 | 8x67 | 1.65 | 3/8 | 3/8 | 9/16 | 7/8 | 1 1/4 |
| 9/16 | 13/16 | 1 3/16 | 1 13/16 | 2 5/16 | 10x12 | 0.39 | 9/16 | 13/16 | 1 3/16 | 2 | 2 3/4 |
| 1/2 | 3/4 | 1 1/16 | 1 5/8 | 2 1/8 | 10x15 | 0.48 | 1/2 | 3/4 | 1 1/16 | 1 13/16 | 2 1/2 |
| 1/2 | 11/16 | 1 | 1 9/16 | 2 | 10x17 | 0.54 | 1/2 | 11/16 | 1 | 1 11/16 | 2 3/8 |
| 7/16 | 11/16 | 1 | 1 1/2 | 1 15/16 | 10x19 | 0.6 | 7/16 | 11/16 | 1 | 1 5/8 | 2 1/4 |
| 7/16 | 11/16 | 1 | 1 1/2 | 1 15/16 | 10x22 | 0.6 | 7/16 | 11/16 | 1 | 1 5/8 | 2 1/4 |
| 7/16 | 5/8 | 7/8 | 1 3/8 | 1 3/4 | 10x26 | 0.7 | 7/16 | 5/8 | 7/8 | 1 1/2 | 2 1/8 |
| 3/8 | 9/16 | 13/16 | 1 1/4 | 1 5/8 | 10x30 | 0.8 | 3/8 | 9/16 | 13/16 | 1 3/8 | 2 |
| 7/16 | 5/8 | 7/8 | 1 5/16 | 1 11/16 | 10x33 | 0.78 | 7/16 | 5/8 | 7/8 | 1 7/16 | 2 |
| 3/8 | 9/16 | 3/4 | 1 3/16 | 1 1/2 | 10x39 | 0.92 | 3/8 | 9/16 | 3/4 | 1 5/16 | 1 13/16 |
| 3/8 | 1/2 | 3/4 | 1 1/8 | 1 7/16 | 10x46 | 1.03 | 3/8 | 1/2 | 3/4 | 1 3/16 | 1 11/16 |
| 3/8 | 1/2 | 3/4 | 1 1/8 | 1 7/16 | 10x49 | 1.01 | 3/8 | 1/2 | 3/4 | 1 1/4 | 1 11/16 |
| 3/8 | 1/2 | 11/16 | 1 1/16 | 1 3/8 | 10x54 | 1.11 | 3/8 | 1/2 | 11/16 | 1 1/8 | 1 5/8 |
| 3/8 | 7/16 | 5/8 | 1 | 1 1/4 | 10x60 | 1.22 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 1/2 |
| 3/8 | 7/16 | 5/8 | 15/16 | 1 3/16 | 10x68 | 1.38 | 3/8 | 7/16 | 5/8 | 1 | 1 3/8 |
| 3/8 | 3/8 | 9/16 | 7/8 | 1 1/16 | 10x77 | 1.54 | 3/8 | 3/8 | 9/16 | 15/16 | 1 5/16 |
| 3/8 | 3/8 | 1/2 | 3/4 | 1 | 10x88 | 1.74 | 3/8 | 3/8 | 1/2 | 7/8 | 1 3/16 |
| 3/8 | 3/8 | 1/2 | 11/16 | 15/16 | 10x100 | 1.97 | 3/8 | 3/8 | 1/2 | 3/4 | 1 1/16 |
| 3/8 | 3/8 | 7/16 | 11/16 | 7/8 | 10x112 | 2.17 | 3/8 | 3/8 | 7/16 | 3/4 | 1 |

Carboline Southwest Type 5 GP, Type 5 MD, Type 7 GP and Type 7 HD

N-791 Beam Only Unrestrained

Columns Bolded in Gray qualify for 1/2 flange tip thicknesses

| Full Flange Tip Thicknesses (NWC & LWC) | | | | | Unrestrained | | 1/2 Flange Tip Thicknesses (NWC & LWC) | | | | |
|---|-------------|--------|---------|---------|--------------|------|--|-------------|--------|---------|---------|
| 1 Hour | 1 -1/2 Hour | 2 Hour | 3 Hour | 4 Hour | Beam | W/D | 1 Hour | 1 -1/2 Hour | 2 Hour | 3 Hour | 4 Hour |
| 1/2 | 3/4 | 1 1/8 | 1 11/16 | 2 3/16 | 12x14 | 0.40 | 1/2 | 3/4 | 1 1/8 | 1 7/8 | 2 5/8 |
| 1/2 | 11/16 | 1 | 1 9/16 | 2 | 12x16 | 0.45 | 1/2 | 11/16 | 1 | 1 11/16 | 2 3/8 |
| 7/16 | 11/16 | 15/16 | 1 7/16 | 1 7/8 | 12x19 | 0.54 | 7/16 | 11/16 | 15/16 | 1 5/8 | 2 1/4 |
| 7/16 | 11/16 | 1 | 1 1/2 | 1 15/16 | 12x22 | 0.62 | 7/16 | 11/16 | 1 | 1 5/8 | 2 1/4 |
| 7/16 | 5/8 | 15/16 | 1 3/8 | 1 13/16 | 12x26 | 0.61 | 7/16 | 5/8 | 15/16 | 1 1/2 | 2 1/8 |
| 3/8 | 9/16 | 13/16 | 1 1/4 | 1 5/8 | 12x30 | 0.69 | 3/8 | 9/16 | 13/16 | 1 3/8 | 2 |
| 3/8 | 9/16 | 13/16 | 1 1/4 | 1 9/16 | 12x35 | 0.81 | 3/8 | 9/16 | 13/16 | 1 3/8 | 1 7/8 |
| 3/8 | 1/2 | 3/4 | 1 1/8 | 1 1/2 | 12x40 | 0.86 | 3/8 | 1/2 | 3/4 | 1 1/4 | 1 3/4 |
| 3/8 | 1/2 | 11/16 | 1 1/16 | 1 3/8 | 12x45 | 0.97 | 3/8 | 1/2 | 11/16 | 1 3/16 | 1 11/16 |
| 3/8 | 1/2 | 3/4 | 1 1/8 | 1 7/16 | 12x50 | 1.06 | 3/8 | 1/2 | 3/4 | 1 3/16 | 1 11/16 |
| 3/8 | 1/2 | 3/4 | 1 1/8 | 1 7/16 | 12x53 | 1.02 | 3/8 | 1/2 | 3/4 | 1 3/16 | 1 11/16 |
| 3/8 | 1/2 | 11/16 | 1 1/16 | 1 3/8 | 12x54 | 1.04 | 3/8 | 1/2 | 11/16 | 1 3/16 | 1 5/8 |
| 3/8 | 1/2 | 11/16 | 1 1/16 | 1 3/8 | 12x58 | 1.1 | 3/8 | 1/2 | 11/16 | 1 1/8 | 1 5/8 |
| 3/8 | 7/16 | 5/8 | 1 | 1 1/4 | 12x65 | 1.11 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 1/2 |
| 3/8 | 7/16 | 5/8 | 15/16 | 1 3/16 | 12x72 | 1.23 | 3/8 | 7/16 | 5/8 | 1 | 1 7/16 |
| 3/8 | 7/16 | 9/16 | 7/8 | 1 1/8 | 12x79 | 1.34 | 3/8 | 7/16 | 9/16 | 1 | 1 5/16 |
| 3/8 | 3/8 | 9/16 | 13/16 | 1 1/16 | 12x87 | 1.47 | 3/8 | 3/8 | 9/16 | 7/8 | 1 1/4 |
| 3/8 | 3/8 | 1/2 | 3/4 | 1 | 12x96 | 1.61 | 3/8 | 3/8 | 1/2 | 13/16 | 1 3/16 |
| 3/8 | 3/8 | 7/16 | 11/16 | 15/16 | 12x106 | 1.77 | 3/8 | 3/8 | 7/16 | 3/4 | 1 1/16 |
| 3/8 | 3/8 | 7/16 | 5/8 | 13/16 | 12x120 | 1.99 | 3/8 | 3/8 | 7/16 | 11/16 | 1 |
| 3/8 | 3/8 | 3/8 | 5/8 | 3/4 | 12x136 | 2.23 | 3/8 | 3/8 | 3/8 | 11/16 | 15/16 |

| | | | | | | | | | | | |
|------|--------|---------|---------|---------|--------|------|------|--------|---------|--------|---------|
| 3/8 | 3/8 | 3/8 | 9/16 | 11/16 | 12x152 | 2.45 | 3/8 | 3/8 | 3/8 | 5/8 | 7/8 |
| 3/8 | 3/8 | 3/8 | 1/2 | 11/16 | 12x170 | 2.72 | 3/8 | 3/8 | 3/8 | 9/16 | 3/4 |
| 3/8 | 3/8 | 3/8 | 1/2 | 5/8 | 12x190 | 3.00 | 3/8 | 3/8 | 3/8 | 1/2 | 3/4 |
| 3/8 | 3/8 | 3/8 | 7/16 | 9/16 | 12x210 | 3.27 | 3/8 | 3/8 | 3/8 | 1/2 | 11/16 |
| 3/8 | 3/8 | 3/8 | 7/16 | 9/16 | 12x230 | 3.55 | 3/8 | 3/8 | 3/8 | 7/16 | 5/8 |
| 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 12x252 | 3.84 | 3/8 | 3/8 | 3/8 | 7/16 | 5/8 |
| 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 12x279 | 4.19 | 3/8 | 3/8 | 3/8 | 7/16 | 9/16 |
| 3/8 | 3/8 | 3/8 | 3/8 | 7/16 | 12x305 | 4.49 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| 1/2 | 3/4 | 1 | 1 9/16 | 2 1/16 | 12x336 | 4.85 | 1/2 | 3/4 | 1 | 1 3/4 | 2 7/16 |
| 7/16 | 11/16 | 15/16 | 1 7/16 | 1 7/8 | 14x22 | 0.53 | 7/16 | 11/16 | 15/16 | 1 5/8 | 2 1/4 |
| 7/16 | 11/16 | 15/16 | 1 7/16 | 1 7/8 | 14x26 | 0.62 | 7/16 | 11/16 | 15/16 | 1 9/16 | 2 3/16 |
| 7/16 | 5/8 | 7/8 | 1 3/8 | 1 3/4 | 14x30 | 0.64 | 7/16 | 5/8 | 7/8 | 1 1/2 | 2 1/16 |
| 3/8 | 9/16 | 13/16 | 1 1/4 | 1 5/8 | 14x34 | 0.72 | 3/8 | 9/16 | 13/16 | 1 3/8 | 1 15/16 |
| 3/8 | 9/16 | 13/16 | 1 1/4 | 1 9/16 | 14x38 | 0.80 | 3/8 | 9/16 | 13/16 | 1 5/16 | 1 7/8 |
| 3/8 | 1/2 | 3/4 | 1 1/8 | 1 1/2 | 14x43 | 0.87 | 3/8 | 1/2 | 3/4 | 1 1/4 | 1 3/4 |
| 7/8 | 1 5/16 | 1 15/16 | 2 15/16 | 3 13/16 | 14x48 | 0.97 | 7/8 | 1 5/16 | 1 15/16 | 3 1/4 | 4 1/2 |

Carboline Southwest Type 5 GP, Type 5 MD, Type 7 GP and Type 7 HD

N-791 Beam Only Unrestrained

Columns Bolded in Gray qualify for 1/2 flange tip thicknesses

| Full Flange Tip Thicknesses (NWC & LWC) | | | | | Unrestrained | | 1/2 Flange Tip Thicknesses (NWC & LWC) | | | | |
|---|-------------|--------|--------|---------|--------------|------|--|-------------|--------|---------|---------|
| 1 Hour | 1 -1/2 Hour | 2 Hour | 3 Hour | 4 Hour | Beam | W/D | 1 Hour | 1 -1/2 Hour | 2 Hour | 3 Hour | 4 Hour |
| 3/8 | 1/2 | 11/16 | 1 1/16 | 1 3/8 | 14x53 | 1.06 | 3/8 | 1/2 | 11/16 | 1 3/16 | 1 11/16 |
| 3/8 | 1/2 | 11/16 | 1 1/16 | 1 3/8 | 14x61 | 1.10 | 3/8 | 1/2 | 11/16 | 1 3/16 | 1 5/8 |
| 3/8 | 7/16 | 5/8 | 1 | 1 1/4 | 14x68 | 1.22 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 1/2 |
| 3/8 | 7/16 | 5/8 | 15/16 | 1 3/16 | 14x74 | 1.32 | 3/8 | 7/16 | 5/8 | 1 | 1 7/16 |
| 3/8 | 7/16 | 9/16 | 7/8 | 1 1/8 | 14x82 | 1.45 | 3/8 | 7/16 | 9/16 | 15/16 | 1 3/8 |
| 3/8 | 7/16 | 5/8 | 15/16 | 1 1/4 | 14x90 | 1.31 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 7/16 |
| 3/8 | 7/16 | 9/16 | 7/8 | 1 1/8 | 14x99 | 1.43 | 3/8 | 7/16 | 9/16 | 1 | 1 3/8 |
| 3/8 | 3/8 | 9/16 | 13/16 | 1 1/16 | 14x109 | 1.57 | 3/8 | 3/8 | 9/16 | 15/16 | 1 1/4 |
| 3/8 | 3/8 | 1/2 | 13/16 | 1 | 14x120 | 1.71 | 3/8 | 3/8 | 1/2 | 7/8 | 1 3/16 |
| 3/8 | 3/8 | 1/2 | 3/4 | 15/16 | 14x132 | 1.89 | 3/8 | 3/8 | 1/2 | 13/16 | 1 1/8 |
| 3/8 | 3/8 | 7/16 | 11/16 | 15/16 | 14x145 | 1.99 | 3/8 | 3/8 | 7/16 | 3/4 | 1 1/16 |
| 3/8 | 3/8 | 7/16 | 11/16 | 7/8 | 14x159 | 2.16 | 3/8 | 3/8 | 7/16 | 3/4 | 1 |
| 3/8 | 3/8 | 7/16 | 5/8 | 13/16 | 14x176 | 2.38 | 3/8 | 3/8 | 7/16 | 11/16 | 15/16 |
| 3/8 | 3/8 | 3/8 | 9/16 | 3/4 | 14x193 | 2.60 | 3/8 | 3/8 | 3/8 | 5/8 | 7/8 |
| 3/8 | 3/8 | 3/8 | 9/16 | 11/16 | 14x211 | 2.81 | 3/8 | 3/8 | 3/8 | 5/8 | 13/16 |
| 3/8 | 3/8 | 3/8 | 1/2 | 5/8 | 14x233 | 3.08 | 3/8 | 3/8 | 3/8 | 9/16 | 3/4 |
| 3/8 | 3/8 | 3/8 | 1/2 | 5/8 | 14x257 | 3.36 | 3/8 | 3/8 | 3/8 | 1/2 | 11/16 |
| 3/8 | 3/8 | 3/8 | 7/16 | 9/16 | 14x283 | 3.66 | 3/8 | 3/8 | 3/8 | 1/2 | 11/16 |
| 3/8 | 3/8 | 3/8 | 7/16 | 1/2 | 14x311 | 3.98 | 3/8 | 3/8 | 3/8 | 7/16 | 5/8 |
| 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 14x342 | 4.32 | 3/8 | 3/8 | 3/8 | 7/16 | 9/16 |
| 3/8 | 3/8 | 3/8 | 3/8 | 7/16 | 14x370 | 4.63 | 3/8 | 3/8 | 3/8 | 3/8 | 9/16 |
| 3/8 | 3/8 | 3/8 | 3/8 | 7/16 | 14x398 | 4.93 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| 3/8 | 3/8 | 3/8 | 3/8 | 7/16 | 14x426 | 5.21 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 14x455 | 5.53 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 14x500 | 5.95 | 3/8 | 3/8 | 3/8 | 3/8 | 7/16 |
| 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 14x550 | 6.43 | 3/8 | 3/8 | 3/8 | 3/8 | 7/16 |
| 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 14x605 | 6.96 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 14x665 | 7.49 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 14x730 | 8.08 | 3/8 | 3/8 | 3/8 | 3/8 | 5/16 |
| 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 14x808 | 8.75 | 3/8 | 3/8 | 3/8 | 3/8 | 5/16 |
| 1/2 | 11/16 | 1 | 1 9/16 | 2 | 16x26 | 0.55 | 1/2 | 11/16 | 1 | 1 11/16 | 2 3/8 |
| 7/16 | 5/8 | 15/16 | 1 7/16 | 1 13/16 | 16x31 | 0.66 | 7/16 | 5/8 | 15/16 | 1 9/16 | 2 3/16 |
| 7/16 | 5/8 | 7/8 | 1 3/8 | 1 3/4 | 16x36 | 0.70 | 7/16 | 5/8 | 7/8 | 1 1/2 | 2 1/8 |
| 7/16 | 5/8 | 7/8 | 1 5/16 | 1 11/16 | 16x40 | 0.78 | 7/16 | 5/8 | 7/8 | 1 7/16 | 2 |
| 3/8 | 9/16 | 13/16 | 1 1/4 | 1 9/16 | 16x45 | 0.87 | 3/8 | 9/16 | 13/16 | 1 5/16 | 1 7/8 |
| 3/8 | 1/2 | 3/4 | 1 1/8 | 1 1/2 | 16x50 | 0.96 | 3/8 | 1/2 | 3/4 | 1 1/4 | 1 3/4 |
| 3/8 | 1/2 | 11/16 | 1 1/16 | 1 3/8 | 16x57 | 1.09 | 3/8 | 1/2 | 11/16 | 1 3/16 | 1 5/8 |

Carboline Southwest Type 5 GP, Type 5 MD, Type 7 GP and Type 7 HD

N-791 Beam Only Unrestrained

Columns Bolded in Gray qualify for 1/2 flange tip thicknesses

| Full Flange Tip Thicknesses (NWC & LWC) | | | | | Unrestrained | | 1/2 Flange Tip Thicknesses (NWC & LWC) | | | | |
|---|-------------|--------|--------|---------|--------------|------|--|-------------|--------|--------|--------|
| 1 Hour | 1 -1/2 Hour | 2 Hour | 3 Hour | 4 Hour | Beam | W/D | 1 Hour | 1 -1/2 Hour | 2 Hour | 3 Hour | 4 Hour |
| 3/8 | 1/2 | 11/16 | 1 1/16 | 1 3/8 | 16x67 | 1.09 | 3/8 | 1/2 | 11/16 | 1 3/16 | 1 5/8 |
| 3/8 | 7/16 | 5/8 | 1 | 1 1/4 | 16x77 | 1.25 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 1/2 |
| 3/8 | 7/16 | 9/16 | 1 | 1 1/8 | 16x89 | 1.43 | 3/8 | 7/16 | 9/16 | 1 | 1 3/8 |
| 3/8 | 3/8 | 9/16 | 13/16 | 1 1/16 | 16x100 | 1.59 | 3/8 | 3/8 | 9/16 | 15/16 | 1 1/4 |
| 7/16 | 5/8 | 15/16 | 1 7/16 | 1 13/16 | 18x35 | 0.67 | 7/16 | 5/8 | 15/16 | 1 9/16 | 2 3/16 |

| | | | | | | | | | | | |
|------|------|-------|--------|---------|--------|------|------|------|-------|--------|---------|
| 7/16 | 5/8 | 7/8 | 1 5/16 | 1 11/16 | 18x40 | 0.76 | 7/16 | 5/8 | 7/8 | 1 7/16 | 2 |
| 3/8 | 9/16 | 13/16 | 1 1/4 | 1 9/16 | 18x46 | 0.87 | 3/8 | 9/16 | 13/16 | 1 5/16 | 1 7/8 |
| 3/8 | 9/16 | 13/16 | 1 3/16 | 1 9/16 | 18x50 | 0.88 | 3/8 | 9/16 | 13/16 | 1 5/16 | 1 7/8 |
| 3/8 | 1/2 | 3/4 | 1 1/8 | 1 1/2 | 18x55 | 0.96 | 3/8 | 1/2 | 3/4 | 1 1/4 | 1 3/4 |
| 3/8 | 1/2 | 3/4 | 1 1/8 | 1 7/16 | 18x60 | 1.04 | 3/8 | 1/2 | 3/4 | 1 3/16 | 1 11/16 |
| 3/8 | 1/2 | 11/16 | 1 1/16 | 1 5/16 | 18x65 | 1.13 | 3/8 | 1/2 | 11/16 | 1 1/8 | 1 9/16 |
| 3/8 | 7/16 | 5/8 | 1 | 1 1/4 | 18x71 | 1.22 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 1/2 |
| 3/8 | 7/16 | 5/8 | 15/16 | 1 1/4 | 18x86 | 1.27 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 1/2 |
| 3/8 | 1/2 | 11/16 | 1 1/16 | 1 5/16 | 18x76 | 1.13 | 3/8 | 1/2 | 11/16 | 1 1/8 | 1 9/16 |
| 3/8 | 7/16 | 5/8 | 1 | 1 1/4 | 18x88 | 1.24 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 1/2 |
| 3/8 | 7/16 | 9/16 | 7/8 | 1 1/8 | 18x97 | 1.42 | 3/8 | 7/16 | 9/16 | 1 | 1 3/8 |
| 3/8 | 3/8 | 9/16 | 7/8 | 1 1/16 | 18x106 | 1.55 | 3/8 | 3/8 | 9/16 | 15/16 | 1 5/16 |
| 3/8 | 3/8 | 1/2 | 13/16 | 1 | 18x119 | 1.72 | 3/8 | 3/8 | 1/2 | 7/8 | 1 3/16 |
| 3/8 | 3/8 | 3/8 | 5/8 | 3/4 | 18x175 | 2.46 | 3/8 | 3/8 | 3/8 | 11/16 | 15/16 |
| 7/16 | 5/8 | 7/8 | 1 5/16 | 1 3/4 | 21x44 | 0.74 | 7/16 | 5/8 | 7/8 | 1 7/16 | 2 1/16 |
| 3/8 | 9/16 | 13/16 | 1 1/4 | 1 5/8 | 21x50 | 0.83 | 3/8 | 9/16 | 13/16 | 1 3/8 | 1 15/16 |
| 3/8 | 9/16 | 13/16 | 1 1/4 | 1 5/8 | 21x55 | 0.85 | 3/8 | 9/16 | 13/16 | 1 3/8 | 1 7/8 |
| 3/8 | 9/16 | 3/4 | 1 3/16 | 1 1/2 | 21x57 | 0.95 | 3/8 | 9/16 | 3/4 | 1 1/4 | 1 3/4 |
| 3/8 | 9/16 | 3/4 | 1 3/16 | 1 1/2 | 21x62 | 0.95 | 3/8 | 9/16 | 3/4 | 1 1/4 | 1 3/4 |
| 3/8 | 1/2 | 3/4 | 1 1/8 | 1 7/16 | 21x68 | 1.04 | 3/8 | 1/2 | 3/4 | 1 3/16 | 1 11/16 |
| 3/8 | 7/16 | 5/8 | 1 | 1 1/4 | 21x83 | 1.26 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 1/2 |
| 3/8 | 7/16 | 5/8 | 7/8 | 1 3/16 | 21x93 | 1.4 | 3/8 | 7/16 | 5/8 | 1 | 1 3/8 |
| 3/8 | 7/16 | 5/8 | 15/16 | 1 1/4 | 21x101 | 1.3 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 7/16 |
| 3/8 | 7/16 | 9/16 | 7/8 | 1 1/8 | 21x111 | 1.43 | 3/8 | 7/16 | 9/16 | 1 | 1 3/8 |
| 3/8 | 3/8 | 9/16 | 13/16 | 1 1/16 | 21x122 | 1.57 | 3/8 | 3/8 | 9/16 | 15/16 | 1 1/4 |
| 3/8 | 3/8 | 1/2 | 13/16 | 1 | 21x132 | 1.68 | 3/8 | 3/8 | 1/2 | 7/8 | 1 3/16 |
| 3/8 | 3/8 | 1/2 | 3/4 | 15/16 | 21x147 | 1.87 | 3/8 | 3/8 | 1/2 | 13/16 | 1 1/8 |
| 3/8 | 9/16 | 13/16 | 1 1/4 | 1 5/8 | 24x55 | 0.82 | 3/8 | 9/16 | 13/16 | 1 3/8 | 1 15/16 |
| 3/8 | 9/16 | 3/4 | 1 3/16 | 1 1/2 | 24x62 | 0.93 | 3/8 | 9/16 | 3/4 | 1 5/16 | 1 13/16 |
| 3/8 | 9/16 | 3/4 | 1 3/16 | 1 1/2 | 24x68 | 0.94 | 3/8 | 9/16 | 3/4 | 1 1/4 | 1 13/16 |
| 3/8 | 1/2 | 11/16 | 1 1/16 | 1 7/16 | 24x76 | 1.05 | 3/8 | 1/2 | 11/16 | 1 3/16 | 1 11/16 |
| 3/8 | 1/2 | 11/16 | 1 | 1 5/16 | 24x84 | 1.15 | 3/8 | 1/2 | 11/16 | 1 1/8 | 1 9/16 |

Carboline Southwest Type 5 GP, Type 5 MD, Type 7 GP and Type 7 HD

N-791 Beam Only Unrestrained

Columns Bolded in Gray qualify for 1/2 flange tip thicknesses

Full Flange Tip Thicknesses (NWC & LWC)

Unrestrained

1/2 Flange Tip Thicknesses (NWC & LWC)

| 1 Hour | 1 -1/2 Hour | 2 Hour | 3 Hour | 4 Hour | Beam | W/D | 1 Hour | 1 -1/2 Hour | 2 Hour | 3 Hour | 4 Hour |
|--------|-------------|--------|--------|--------|--------|------|--------|-------------|--------|--------|---------|
| 3/8 | 7/16 | 5/8 | 1 | 1 1/4 | 24x94 | 1.28 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 1/2 |
| 3/8 | 7/16 | 5/8 | 15/16 | 1 3/16 | 24x103 | 1.4 | 3/8 | 7/16 | 5/8 | 1 | 1 3/8 |
| 3/8 | 3/8 | 9/16 | 7/8 | 1 1/16 | 24x104 | 1.24 | 3/8 | 3/8 | 9/16 | 15/16 | 1 5/16 |
| 3/8 | 3/8 | 1/2 | 13/16 | 1 | 24x117 | 1.38 | 3/8 | 3/8 | 1/2 | 7/8 | 1 3/16 |
| 3/8 | 3/8 | 1/2 | 3/4 | 15/16 | 24x131 | 1.54 | 3/8 | 3/8 | 1/2 | 13/16 | 1 1/8 |
| 3/8 | 1/2 | 3/4 | 1 1/8 | 1 7/16 | 24x146 | 1.7 | 3/8 | 1/2 | 3/4 | 1 3/16 | 1 11/16 |
| 3/8 | 1/2 | 11/16 | 1 | 1 5/16 | 24x162 | 1.88 | 3/8 | 1/2 | 11/16 | 1 1/8 | 1 9/16 |
| 3/8 | 7/16 | 5/8 | 1 | 1 1/4 | 27x84 | 1.03 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 1/2 |
| 3/8 | 7/16 | 5/8 | 15/16 | 1 3/16 | 27x94 | 1.15 | 3/8 | 7/16 | 5/8 | 1 | 1 3/8 |
| 3/8 | 3/8 | 9/16 | 7/8 | 1 1/16 | 27x102 | 1.24 | 3/8 | 3/8 | 9/16 | 15/16 | 1 5/16 |
| 3/8 | 3/8 | 1/2 | 13/16 | 1 | 27x114 | 1.39 | 3/8 | 3/8 | 1/2 | 7/8 | 1 3/16 |
| 3/8 | 3/8 | 1/2 | 3/4 | 15/16 | 27x146 | 1.55 | 3/8 | 3/8 | 1/2 | 13/16 | 1 1/8 |
| 3/8 | 3/8 | 7/16 | 5/8 | 13/16 | 27x161 | 1.7 | 3/8 | 3/8 | 7/16 | 11/16 | 1 |
| 3/8 | 3/8 | 3/8 | 9/16 | 3/4 | 27x178 | 1.87 | 3/8 | 3/8 | 3/8 | 5/8 | 7/8 |
| 3/8 | 1/2 | 3/4 | 1 1/8 | 1 7/16 | 27x217 | 2.26 | 3/8 | 1/2 | 3/4 | 1 3/16 | 1 11/16 |
| 3/8 | 1/2 | 11/16 | 1 1/16 | 1 3/8 | 27x258 | 2.64 | 3/8 | 1/2 | 11/16 | 1 1/8 | 1 5/8 |
| 3/8 | 7/16 | 5/8 | 1 | 1 5/16 | 30x90 | 1.02 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 1/2 |
| 3/8 | 7/16 | 5/8 | 15/16 | 1 1/4 | 30x99 | 1.12 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 7/16 |
| 3/8 | 7/16 | 5/8 | 15/16 | 1 3/16 | 30x108 | 1.21 | 3/8 | 7/16 | 5/8 | 1 | 1 3/8 |
| 3/8 | 7/16 | 9/16 | 7/8 | 1 1/8 | 30x116 | 1.3 | 3/8 | 7/16 | 9/16 | 15/16 | 1 5/16 |
| 3/8 | 3/8 | 1/2 | 13/16 | 1 1/16 | 30x124 | 1.39 | 3/8 | 3/8 | 1/2 | 7/8 | 1 1/4 |
| 3/8 | 3/8 | 1/2 | 3/4 | 1 | 30x132 | 1.47 | 3/8 | 3/8 | 1/2 | 13/16 | 1 1/8 |
| 3/8 | 3/8 | 7/16 | 11/16 | 7/8 | 30x173 | 1.66 | 3/8 | 3/8 | 7/16 | 3/4 | 1 1/16 |
| 3/8 | 3/8 | 7/16 | 5/8 | 13/16 | 30x191 | 1.85 | 3/8 | 3/8 | 7/16 | 11/16 | 1 |
| 3/8 | 3/8 | 5/16 | 1/2 | 5/8 | 30x211 | 2.01 | 3/8 | 3/8 | 5/16 | 9/16 | 3/4 |
| 3/8 | 7/16 | 5/8 | 1 | 1 5/16 | 30x235 | 2.24 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 1/2 |
| 3/8 | 7/16 | 5/8 | 15/16 | 1 3/16 | 30x326 | 3.05 | 3/8 | 7/16 | 5/8 | 1 | 1 7/16 |
| 3/8 | 7/16 | 9/16 | 7/8 | 1 1/8 | 33x118 | 1.21 | 3/8 | 7/16 | 9/16 | 1 | 1 3/8 |
| 3/8 | 3/8 | 9/16 | 7/8 | 1 1/8 | 33x130 | 1.32 | 3/8 | 3/8 | 9/16 | 15/16 | 1 5/16 |
| 3/8 | 3/8 | 1/2 | 3/4 | 1 | 33x141 | 1.43 | 3/8 | 3/8 | 1/2 | 13/16 | 1 3/16 |
| 3/8 | 3/8 | 1/2 | 11/16 | 15/16 | 33x152 | 1.53 | 3/8 | 3/8 | 1/2 | 3/4 | 1 1/16 |
| 3/8 | 3/8 | 7/16 | 11/16 | 7/8 | 33x201 | 1.79 | 3/8 | 3/8 | 7/16 | 3/4 | 1 |

| | | | | | | | | | | | |
|-----|--------|---------|---------|---------|--------|------|-----|--------|---------|-------|-------|
| 3/8 | 3/8 | 7/16 | 5/8 | 13/16 | 33x221 | 1.97 | 3/8 | 3/8 | 7/16 | 11/16 | 15/16 |
| 3/8 | 3/8 | 3/8 | 9/16 | 3/4 | 33x241 | 2.13 | 3/8 | 3/8 | 3/8 | 5/8 | 7/8 |
| 3/8 | 3/8 | 3/8 | 9/16 | 11/16 | 33x263 | 2.33 | 3/8 | 3/8 | 3/8 | 5/8 | 13/16 |
| 3/8 | 1 5/16 | 1 15/16 | 2 15/16 | 3 13/16 | 33x291 | 2.55 | 3/8 | 1 5/16 | 1 15/16 | 3 1/4 | 4 1/2 |
| 3/8 | 1 5/16 | 1 15/16 | 2 15/16 | 3 13/16 | 33x318 | 2.77 | 3/8 | 1 5/16 | 1 15/16 | 3 1/4 | 4 1/2 |

Carboline Southwest Type 5 GP, Type 5 MD, Type 7 GP and Type 7 HD
N-791 Beam Only Unrestrained

Columns Bolded in Gray qualify for 1/2 flange tip thicknesses

| Full Flange Tip Thicknesses (NWC & LWC) | | | | | Unrestrained | | 1/2 Flange Tip Thicknesses (NWC & LWC) | | | | |
|---|-------------|--------|--------|--------|--------------|------|--|-------------|--------|--------|--------|
| 1 Hour | 1 -1/2 Hour | 2 Hour | 3 Hour | 4 Hour | Beam | W/D | 1 Hour | 1 -1/2 Hour | 2 Hour | 3 Hour | 4 Hour |
| 3/8 | 3/8 | 3/8 | 1/2 | 5/8 | 33x354 | 3.05 | 3/8 | 3/8 | 3/8 | 9/16 | 3/4 |
| 3/8 | 3/8 | 3/8 | 1/2 | 5/8 | 33x387 | 3.31 | 3/8 | 3/8 | 3/8 | 1/2 | 3/4 |
| 3/8 | 3/8 | 5/8 | 15/16 | 1 1/4 | 36x135 | 1.29 | 3/8 | 7/16 | 5/8 | 1 1/16 | 1 7/16 |
| 3/8 | 3/8 | 9/16 | 7/8 | 1 1/8 | 36x150 | 1.43 | 3/8 | 7/16 | 9/16 | 1 | 1 3/8 |
| 3/8 | 3/8 | 9/16 | 7/8 | 1 1/8 | 36x160 | 1.51 | 3/8 | 3/8 | 9/16 | 15/16 | 1 5/16 |
| 3/8 | 3/8 | 9/16 | 13/16 | 1 1/16 | 36x170 | 1.60 | 3/8 | 3/8 | 9/16 | 7/8 | 1 1/4 |
| 3/8 | 3/8 | 1/2 | 13/16 | 1 | 36x182 | 1.72 | 3/8 | 3/8 | 1/2 | 7/8 | 1 3/16 |
| 3/8 | 3/8 | 1/2 | 3/4 | 1 | 36x194 | 1.81 | 3/8 | 3/8 | 1/2 | 13/16 | 1 1/8 |
| 3/8 | 3/8 | 1/2 | 11/16 | 15/16 | 36x210 | 1.96 | 3/8 | 3/8 | 1/2 | 3/4 | 1 1/16 |
| 3/8 | 3/8 | 1/2 | 11/16 | 15/16 | 36x230 | 1.95 | 3/8 | 3/8 | 1/2 | 13/16 | 1 1/16 |
| 3/8 | 3/8 | 7/16 | 11/16 | 7/8 | 36x232 | 2.15 | 3/8 | 3/8 | 7/16 | 3/4 | 1 |
| 3/8 | 3/8 | 7/16 | 11/16 | 7/8 | 36x245 | 2.08 | 3/8 | 3/8 | 7/16 | 3/4 | 1 1/16 |
| 3/8 | 3/8 | 7/16 | 11/16 | 7/8 | 36x247 | 2.08 | 3/8 | 3/8 | 7/16 | 3/4 | 1 1/16 |
| 3/8 | 3/8 | 7/16 | 5/8 | 13/16 | 36x256 | 2.37 | 3/8 | 3/8 | 7/16 | 11/16 | 15/16 |
| 3/8 | 3/8 | 7/16 | 11/16 | 7/8 | 36x260 | 2.18 | 3/8 | 3/8 | 7/16 | 3/4 | 1 |
| 3/8 | 3/8 | 7/16 | 5/8 | 13/16 | 36x280 | 2.35 | 3/8 | 3/8 | 7/16 | 11/16 | 15/16 |
| 3/8 | 3/8 | 3/8 | 5/8 | 3/4 | 36x300 | 2.50 | 3/8 | 3/8 | 3/8 | 5/8 | 7/8 |
| 3/8 | 3/8 | 3/8 | 9/16 | 11/16 | 36x328 | 2.73 | 3/8 | 3/8 | 3/8 | 5/8 | 13/16 |
| 3/8 | 3/8 | 3/8 | 1/2 | 11/16 | 36x359 | 2.97 | 3/8 | 3/8 | 3/8 | 9/16 | 13/16 |
| 3/8 | 3/8 | 3/8 | 1/2 | 5/8 | 36x393 | 3.25 | 3/8 | 3/8 | 3/8 | 1/2 | 3/4 |
| 3/8 | 3/8 | 3/8 | 7/16 | 9/16 | 36x439 | 3.57 | 3/8 | 3/8 | 3/8 | 1/2 | 11/16 |
| 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 36x527 | 4.22 | 3/8 | 3/8 | 3/8 | 7/16 | 9/16 |
| 3/8 | 3/8 | 3/8 | 3/8 | 7/16 | 36x650 | 5.08 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 36x798 | 6.09 | 3/8 | 3/8 | 3/8 | 5/16 | 7/16 |
| 3/8 | 7/16 | 5/8 | 15/16 | 1 3/16 | 40x149 | 1.37 | 3/8 | 7/16 | 5/8 | 1 | 1 3/8 |
| 3/8 | 3/8 | 9/16 | 7/8 | 1 1/8 | 40x167 | 1.53 | 3/8 | 3/8 | 9/16 | 15/16 | 1 5/16 |
| 3/8 | 3/8 | 1/2 | 13/16 | 1 1/16 | 40x183 | 1.66 | 3/8 | 3/8 | 1/2 | 7/8 | 1 1/4 |
| 3/8 | 3/8 | 9/16 | 13/16 | 1 1/16 | 40x199 | 1.64 | 3/8 | 3/8 | 9/16 | 7/8 | 1 1/4 |
| 3/8 | 3/8 | 1/2 | 3/4 | 15/16 | 40x211 | 1.90 | 3/8 | 3/8 | 1/2 | 13/16 | 1 1/8 |
| 3/8 | 3/8 | 1/2 | 3/4 | 1 | 40x215 | 1.76 | 3/8 | 3/8 | 1/2 | 7/8 | 1 3/16 |
| 3/8 | 3/8 | 7/16 | 11/16 | 7/8 | 40x235 | 2.10 | 3/8 | 3/8 | 7/16 | 3/4 | 1 |
| 3/8 | 3/8 | 7/16 | 11/16 | 7/8 | 40x249 | 2.02 | 3/8 | 3/8 | 7/16 | 3/4 | 1 1/16 |
| 3/8 | 3/8 | 7/16 | 5/8 | 13/16 | 40x264 | 2.36 | 3/8 | 3/8 | 7/16 | 11/16 | 15/16 |
| 3/8 | 3/8 | 7/16 | 5/8 | 13/16 | 40x277 | 2.25 | 3/8 | 3/8 | 7/16 | 11/16 | 1 |
| 3/8 | 3/8 | 3/8 | 5/8 | 3/4 | 40x278 | 2.48 | 3/8 | 3/8 | 3/8 | 5/8 | 15/16 |
| 3/8 | 3/8 | 7/16 | 5/8 | 13/16 | 40x297 | 2.41 | 3/8 | 3/8 | 7/16 | 11/16 | 15/16 |
| 3/8 | 3/8 | 3/8 | 9/16 | 3/4 | 40x324 | 2.61 | 3/8 | 3/8 | 3/8 | 5/8 | 7/8 |

Carboline Southwest Type 5 GP, Type 5 MD, Type 7 GP and Type 7 HD
N-791 Beam Only Unrestrained

Columns Bolded in Gray qualify for 1/2 flange tip thicknesses

| Full Flange Tip Thicknesses (NWC & LWC) | | | | | Unrestrained | | 1/2 Flange Tip Thicknesses (NWC & LWC) | | | | |
|---|-------------|--------|--------|--------|--------------|------|--|-------------|--------|--------|--------|
| 1 Hour | 1 -1/2 Hour | 2 Hour | 3 Hour | 4 Hour | Beam | W/D | 1 Hour | 1 -1/2 Hour | 2 Hour | 3 Hour | 4 Hour |
| 3/8 | 3/8 | 3/8 | 9/16 | 11/16 | 40x327 | 2.89 | 3/8 | 3/8 | 3/8 | 9/16 | 13/16 |
| 3/8 | 3/8 | 3/8 | 1/2 | 11/16 | 40x331 | 2.90 | 3/8 | 3/8 | 3/8 | 9/16 | 13/16 |
| 3/8 | 3/8 | 3/8 | 1/2 | 11/16 | 40x362 | 2.90 | 3/8 | 3/8 | 3/8 | 9/16 | 13/16 |
| 3/8 | 3/8 | 3/8 | 1/2 | 11/16 | 40x372 | 2.98 | 3/8 | 3/8 | 3/8 | 9/16 | 13/16 |
| 3/8 | 3/8 | 3/8 | 1/2 | 5/8 | 40x392 | 3.38 | 3/8 | 3/8 | 3/8 | 1/2 | 11/16 |
| 3/8 | 3/8 | 5/16 | 1/2 | 5/8 | 40x397 | 3.15 | 3/8 | 3/8 | 5/16 | 9/16 | 1 |
| 3/8 | 3/8 | 3/8 | 7/16 | 5/8 | 40x431 | 3.42 | 3/8 | 3/8 | 3/8 | 1/2 | 11/16 |
| 3/8 | 3/8 | 3/8 | 7/16 | 9/16 | 40x503 | 3.93 | 3/8 | 3/8 | 3/8 | 7/16 | 5/8 |
| 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 40x593 | 4.56 | 3/8 | 3/8 | 3/8 | 3/8 | 9/16 |
| 3/8 | 3/8 | 1/2 | 3/4 | 1 | 44x230 | 1.77 | 3/8 | 3/8 | 1/2 | 13/16 | 1 3/16 |
| 3/8 | 3/8 | 7/16 | 11/16 | 7/8 | 44x262 | 2.00 | 3/8 | 3/8 | 7/16 | 3/4 | 1 1/16 |
| 3/8 | 3/8 | 7/16 | 5/8 | 13/16 | 44x290 | 2.20 | 3/8 | 3/8 | 7/16 | 11/16 | 1 |
| 3/8 | 3/8 | 3/8 | 9/16 | 3/4 | 44x335 | 2.52 | 3/8 | 3/8 | 3/8 | 5/8 | 7/8 |